2016 NEVADA
ANNUAL TRAUMA REPORT

Department of Health and Human Services
Division of Public and Behavioral Health
Public Health Preparedness Program

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PURPOSE OF REPORT

The purpose of this report is to provide a picture of trauma within the State of Nevada based upon data submitted by hospitals to the NTR. This report presents data in a usable form for local health authorities, healthcare service providers, and the public. The Annual Trauma Report is to be completed by the Nevada Division of Public and Behavioral Health (DPBH) by July 1st of each year in accordance with Nevada Administrative Code (NAC) 450B.768. The data in this annual report is based upon calendar year.

INTRODUCTION

WHAT IS THE NEVADA TRAUMA REGISTRY (NTR)?

Per Nevada Revised Statutes (NRS) 450B.238, and Nevada Administrative Code (NAC) 450B.768, the NTR was established in 1987, to collect data on persons who sustain a physical (blunt or penetrating) injury caused by an accident or by violence. The NTR data are collected from all licensed acute care hospitals and trauma centers in Nevada.

For the 2016 Annual Trauma Report, ICD-9 codes were utilized. The 2017 report will utilize ICD-10 codes. According to National Trauma Data Bank criteria, for an injury to be reported as a trauma, it must have at least one ICD-9 code from the following ranges: 800-904.9, 925-929.9, or 940-959.9, and the patient must have either:

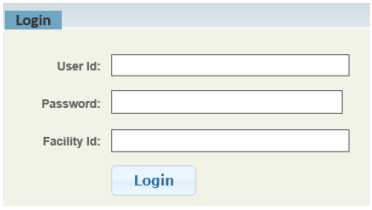
- been admitted to a facility for at least 24 hours;
- died following treatment or evaluation; **or**
- been transferred into or out of a facility.

The NTR currently collects the required data points from both the National Trauma Data Bank (NTDB) established by the American College of Surgeons and data points identified in NAC 450B.766 and 450B.768. Included (but not limited to) are data on the event causing the injury, severity of the injury, place of the injury, length of hospital stay, diagnosis(es) of the patient, discharge destination of the patient and payer source.

The NTR can provide information on the incidence, and prevalence, morbidity, and mortality of injuries in Nevada. The data can be broken down to a specific county, specific hospital, specific race, or specific age group, for example. These data are available for state, private or federal entities, grant applicants to measure the impact of trauma in Nevada, and initiate health education programs that address traumatic injuries.

The 2016 Annual Trauma Report is based upon data submitted to the NTR by Nevada's four designated trauma centers and 29 non-trauma center hospitals, for a total of 33 facilities that operated during the calendar year. To be considered compliant with NAC 450B.768, a hospital has to enter all trauma records into the NTR, or notify the State NTR Manager that no records needed to be submitted, by the quarterly due date.

Non-trauma centers submit trauma data by logging into the NTR via a user name and password. Trauma centers utilize their in-house version of the NTR software and electronically transfer the data from their software to the state NTR.



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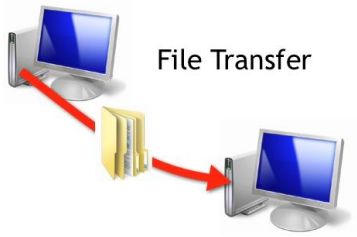


Per NAC 450B.768 – all trauma data (non-trauma centers & trauma centers) must be submitted to the Nevada Trauma Registry no later than 60 days after the calendar year quarter.

- Quarter 1 = January 1 – March 31 (due on June 1)
- Quarter 2 = April 1 – June 30 (due on Sept. 1)
- Quarter 3 = July 1 – September 30 (due on Dec. 1)
- Quarter 4 = October 1 – December 31 (due on March 1).

Below is a summary table that outlines per year the percentage of facilities that were compliant with submitting data to the NTR.

YEAR	% of Non-Trauma Centers Compliant	% of Trauma Centers Compliant
2014	41%	0%
2015	100%	0%
2016	100%	75% *

* In 2016, three out of four trauma centers submitted all trauma data to the NTR. Only one trauma center did not submit Quarter 1 and 2 of 2016 to the NTR. Quarters 3 and 4 include 100% data from non-trauma centers and trauma centers.

State NTR staff continue to train personnel at non-trauma center hospitals to improve data entry accuracy.

The vendor, Digital Innovation, Inc., is working with each designated trauma center to ensure at least 10 year's worth of historical data is transferred into the NTR. As of June 2016, only Sunrise Medical Center has submitted 10 years of historical data. The remaining three trauma centers are in the stages of mapping and testing. Below is the historical data process:

Preparation → Analysis (Mapping) → Development (Conversion) → Testing → Deployment

When analyzing data between 2015 and 2016, it is advised not to compare the data. The 2015 Annual Trauma Report only had data from the non-trauma centers. The number of traumas is expected to rise again with next year's report as all four trauma centers will be submitting data to the NTR during the 2017 year.

In addition to continual training of non-trauma center hospital personnel on the NTR software, the NTR Manager utilizes quarterly facility report cards for each hospital to educate data entry staff. These report cards are tailored for each facility and include information about the facility's compliance and accuracy of data entry against the general accuracy reports of their peer facilities. Additionally, these quarterly report cards provide tips, hints, and notes for each facility about how to improve data entry. The quality and accuracy of data entered into the NTR has a direct impact on what can be analyzed for the Annual Trauma Report.

Finally, the NTR Manager has been developing collaborative relationships with trauma personnel from various disciplines throughout the state. Some of the methods being utilized in these efforts include:

- Hosting quarterly conference calls with trauma center staff;
- When possible, meeting in person with hospital personnel responsible for NTR data entry;
- Participating in local healthcare coalitions; and
- Setting up the framework to begin monthly NTR user group meetings.

Overall, through regular communication, offering NTR user trainings, delivering reminders about quarterly trauma data due dates, and revitalization and development of relationships across the state, hospital data entry compliance has dramatically increased. Additionally, the amount and quality of the data available for analyses within the NTR for subsequent annual reports will continue to improve, thereby strengthening the detail and depth of future annual trauma reports.

NEVADA TRAUMA REGISTRY BACKGROUND

The definition of a trauma incident and the requirements for trauma reporting are outlined in both the Nevada Revised Statutes and Nevada Administrative Code. These statutes and codes are outlined below.

NEVADA REVISED STATUTE (NRS)

NRS 450B.105 "Trauma" defined. "Trauma" means any acute injury which, according to standardized criteria for triage in the field, involves a significant risk of death or the precipitation of complications or disabilities.

NRS 450B.238 Regulations requiring hospital to record and maintain information. The State Board of Health shall adopt regulations which require each hospital to record and maintain information concerning the treatment of trauma in the hospital. The Board shall consider the guidelines adopted by the American College of Surgeons which concern the information which must be recorded.

NEVADA ADMINISTRATIVE CODE (NAC)

The NAC regarding the treatment of trauma in Nevada and the corresponding Trauma Registry reporting requirements, guidelines, and procedures can be found at **NAC 450B.760** through **NAC 450B.774**, inclusive.

In summary, the regulations state that the Division of Public and Behavioral Health shall develop a standardized system for the collection of information concerning the treatment of trauma and carry out a system for the management of that information. The system must provide for the recording of information concerning treatment received before and after admission to a hospital. This system is called the NTR.

Each hospital shall submit to the Division trauma data on a quarterly basis which complies with the criteria prescribed by the Division and contains at least the minimum data set required by the National Trauma Data Bank (NTDB) established by the American College of Surgeons and any other information required by the Division or the State Board of Health.

The Division shall prepare an annual report not later than July 1 for the preceding calendar year summarizing the data submitted by hospitals on patients with traumas.

METHODOLOGY

The NTR is a depository of trauma incident data from across the state. All hospitals within Nevada are required to submit data quarterly to the NTR. To be classified as a trauma, a series of criteria identified by the American College of Surgeons must be met. For an incident to be classified as a trauma, the patient must have:

- At least one diagnostic code for injury:
  - (ICD-9) between 800.0-904.9, 925.0-929.9, or 940.0-959.9; and
- At least one of the following criteria:
  - Patient was in the hospital for at least 24 hours due to injuries;
  - Injury resulted in death; or
  - Patient was transferred between hospitals using EMS or air ambulance.

Each year the data within the NTR will be statistically analyzed to evaluate incident traumas in Nevada. This evaluation is presented in the Annual Trauma Report, written by the state, in accordance with **NAC 450B.768**.

In 2016, the NTR captured 8,864 trauma cases. This report includes cases for patients with an Emergency Department/Hospital Arrival Date between January 1, 2016 and December 31, 2016. All data were analyzed using SAS Version 9.4 (SAS Institute, Cary, NC).

All trauma rates were calculated per 100,000 Nevada residents using the Nevada State Demographer, age, sex, race, and Hispanic origin (ASRHO) estimates and projections, vintage 2015 population data. When appropriate, a 95% Confidence Interval (CI) was calculated for comparing rate estimates. CIs provide a range of values that describe the uncertainty surrounding an estimate and may be used to assess statistical significance. When comparing trauma rates within a table, if the range of the CIs for two rates do not overlap, the rates can be considered significantly different. If the CI ranges overlap, then the difference is not significant.

Example:

Group	Count [Confidence Interval]
A	392 [385, 398]
B	390 [380, 399]
C	826 [796, 857]

In the table to the left, the CIs for groups A and B share a range of values (385-398), thus there is no statistically significant difference in these rates. However, there is a statically significant difference between group A and group C and between group B and group C as the ranges for their CIs do not overlap.

RESULTS

From January 1, 2016 through December 31, 2016, a total of 8,864 traumas were recorded in the NTR by the 33 facilities in Nevada. In 2015, 2,960 traumas were recorded. Please do not compare data between 2015 and 2016. In 2015, only non-trauma centers were submitting trauma data to the NTR.

8,864 Traumas in 2016

The following pages includes data analysis of:

- Trauma cases
- Demographics
- Place and mechanism of injury
- Injury characteristics
- Patient transportation
- Patient discharge and transfer
- Risk factors
- Safety equipment, and
- The breakdown of Falls data.

Technical Notes: Throughout this report, trauma cases are presented in several different ways.

- Total trauma cases includes all cases reported to the Nevada Trauma Registry, including transfers between facilities. Therefore, in the event that a trauma patient presents at one facility and is transferred to another facility, that case is represented twice.

- Unique trauma cases are calculated by matching trauma records based on birth date, injury date, patient zip code, and discharge/arrival date. Unique trauma cases includes only the first presentation to a facility, and not transfers between facilities; except in Tables 4, 9, 11, 16, 17, 18 and Figure 8 where traumas are assigned to the last transfer facility. This logic was used in order to account for the following situations:
    - When considering traumas that result in deaths, it is important to analyze based on the facility at time of death. Therefore, throughout this report, when a table lists Mortality Proportion and 8,864 in Unique Traumas, the table is based upon last facility.
    - There were some instances where the mechanism of injury differed between facility of first presentation and facility at time of death. In this case the mechanism was assigned based on facility at time of death. Please note, the State of Nevada does not try and change/correct patient records at the first facility if it does not match information at the last facility.

- Patient Transfer trauma cases are determined by the following question reported by the facilities, “If transferred, facility?”. This question is self-report by hospital staff and does not always align with the results of our match to calculate unique trauma cases.

TRAUMA CAUSES BY FACILITY

Table 1: Trauma Cases by Facility, 2016 (includes Nevada Residents and Non-Residents)

County	Facility	Unique Traumas # Trauma Patients		Total Trauma Cases*	
Clark County	Boulder City Hospital	46	0.5%	46	0.5%
	Centennial Hills Hospital	28	0.3%	28	0.3%
	Desert Springs Hospital Center	10	0.1%	10	0.1%
	Henderson Hospital	30	0.3%	30	0.3%
	Mesa View Regional Hospital	110	1.2%	110	1.2%
	Mountain View Hospital	382	4.3%	385	4.1%
	North Vista Hospital	288	3.2%	288	3.0%
	Southern Hills Hospital Medical Center	83	0.9%	91	1.0%
	Spring Valley Hospital Medical Center	181	2.0%	187	2.0%
	St. Rose Dominican Hospital De Lima Campus	211	2.4%	214	2.3%
	St. Rose Dominican Hospital San Martin Campus	96	1.1%	100	1.1%
	St. Rose Dominican Hospital Siena Campus §	256	2.9%	260	2.7%
	Summerlin Hospital Medical Center	240	2.7%	251	2.6%
	Sunrise Hospital Medical Center §	898	10.1%	1,005	10.6%
	University Medical Center §	2,856	32.2%	3,145	33.1%
	Valley Hospital Medical Center	25	0.3%	25	0.3%
Washoe County	Incline Village Community Hospital	12	0.1%	12	0.1%
	Northern Nevada Medical Center	153	1.7%	154	1.6%
	Renown Regional Medical Center §	1,519	17.1%	1,719	18.1%
	Renown South Meadows Medical Center	5	0.1%	5	0.1%
	St. Mary's Regional Medical Center	293	3.3%	296	3.1%
All Other Counties	Banner Churchill Community Hospital	161	1.8%	161	1.7%
	Battle Mountain General Hospital	32	0.4%	32	0.3%
	Carson Tahoe Regional Medical Center	215	2.4%	216	2.3%
	Carson Valley Medical Center	116	1.3%	116	1.2%
	Desert View Hospital	413	4.7%	413	4.3%
	Grover C. Dils Medical Center	4	0.0%	4	0.0%
	Humboldt General Hospital	7	0.1%	7	0.1%
	Mt. Grant General Hospital	7	0.1%	7	0.1%
	Northeastern Nevada Regional Hospital	100	1.1%	100	1.1%
	Pershing General Hospital	16	0.2%	16	0.2%
	South Lyon Medical Center	20	0.2%	20	0.2%
	William Bee Ririe Hospital	51	0.6%	51	0.5%
NEVADA (TOTAL)		**8,864**	**100%**	**9,504**	**100%**

* Total trauma cases are all the cases reported to the Nevada Trauma Registry in 2016, including transfers between facilities.

Unique trauma cases are calculated by matching trauma records based on birth date, injury date, patient zip code, and discharge/arrival date. Unique traumas cases includes only the first presentation to a facility, and not transfers between facilities.

§ Designated Trauma Centers

Out of all the facilities listed in Table 1, the designated trauma centers had the highest number of trauma cases. 1) University Medical Center had the highest number of unique trauma cases at 2,856 (32.2%), followed by 2) Renown Regional Medical Center at 1,519 cases (17.1%), and 3) Sunrise Medical Center at 898 cases (10.1%).

Out of the non-trauma centers, the facility with the highest number of trauma cases was 1) Desert View Hospital at 413 cases (4.7%), 2) Mountain View Medical Center at 382 cases (4.3%), and 3) St. Mary's Regional Medical Center at 293 cases (3.3%).

DEMOGRAPHICS

Of the 8,864 unique traumas recorded in the NTR between January 1, 2016 and December 31, 2016, 62.2% of them were in male patients, 37.7% were in female patients. (See Table 2).

Table 2: Nevada Trauma Cases by Sex (Unique Traumas)

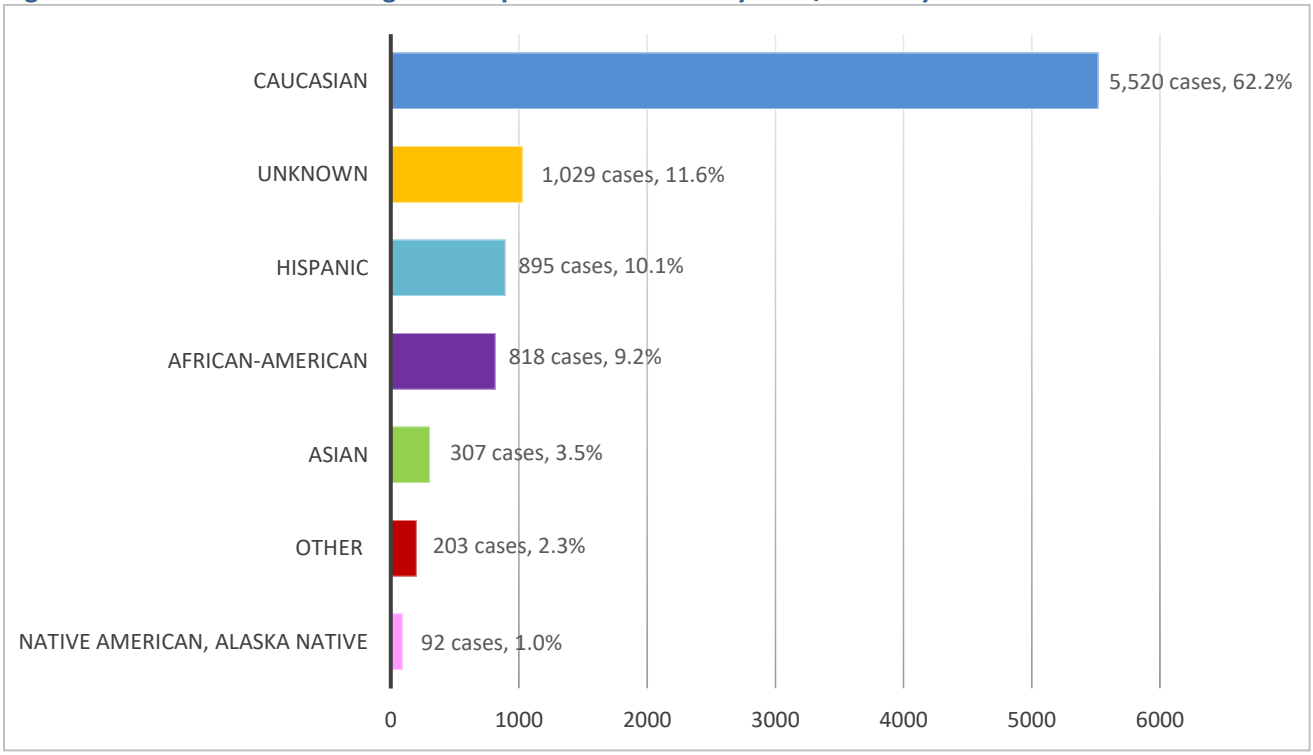
Sex	Count	Percent	Rate per 100,000 (95% CI)
Male	5,515	62.2%	377.7 (367.7-387.6)
Female	3,340	37.7%	231.5 (223.7-239.4)
Sex Not Reported	9	0.1%	-
TOTAL	8,864	100%	305.4 (299.0-311.7)

Table 3: Trauma Cases by Race/Ethnicity (Unique Traumas)

Race/Ethnicity	Count	Percent	Rate per 100,000 (95% CI)
Caucasian	5,520	62.3%	360.2 (350.7-369.7)
Hispanic	895	10.1%	108.0 (100.9-115.0)
African-American	818	9.2%	331.0 (308.4-353.7)
Asian	307	3.5%	117.3 (104.2-130.4)
American Indian, Alaskan Native	92	1.0%	281.3 (223.8-338.8)
Other	203	2.3%	-
Unknown	1,029	11.6%	-
TOTAL	8,864	100%	305.4 (299.0-311.7)

See **Figure 1** to see data listed in Table 3 as a chart.

Figure 1: Number and Percentage of Unique Trauma Cases by Race/Ethnicity



Trauma affects people of all races and ethnicities. Per the 2010 Nevada Census, Nevada's highest populations by Race and Ethnicity were the following:

- Caucasian – 66%
- Hispanic – 26.5%
- African-American – 8.1%

Due to Nevada having higher percentages of Caucasian, Hispanic, and African-American populations over other races/ethnicities, the data reflects that higher percentages of trauma cases also occur to Caucasian, Hispanic, and African-American people.

Table 4: Age-Specific Trauma Incidence and Mortality Proportion (Unique Traumas)

Age Groups	Count	Column Percent	Deaths	Mortality Proportion * (Row Percent)
<1	62	0.70%	1	1.6%
1-5	164	1.85%	4	2.4%
6-17	549	6.19%	13	2.4%
18-24	825	9.31%	60	7.3%
25-34	1,171	13.21%	88	7.5%
35-44	921	10.39%	56	6.1%
45-54	1,052	11.87%	69	6.6%
55-64	1,120	12.64%	49	4.4%
65-74	1,122	12.66%	68	6.1%
75-84	1,078	12.16%	51	4.7%
85+	800	9.03%	50	6.3%
TOTAL	8,864	100%	509	5.7%

* By last transfer facility.
Please note, that throughout this report, when a table lists Mortality Proportion and 8,864 in Unique Traumas, the table is based upon last facility.

Table 4 breaks the number of trauma cases down by age, deaths, and the percentage of death per age group. Out of the 8,864 unique trauma cases in Nevada for 2016, the age group with the highest number/percentage of traumas was age 25-34 years old at 1,171 cases or 13.21%, second was 65-74 years old at 1,122 cases or 12.66%, and third was 55-64 years old at 1,120 cases or 12.64%. The age group of 25-34 years old also has the highest percentage of death from their trauma at 7.5%, followed by 18-24 years old (7.3%), and 45-54 years old (6.6%).

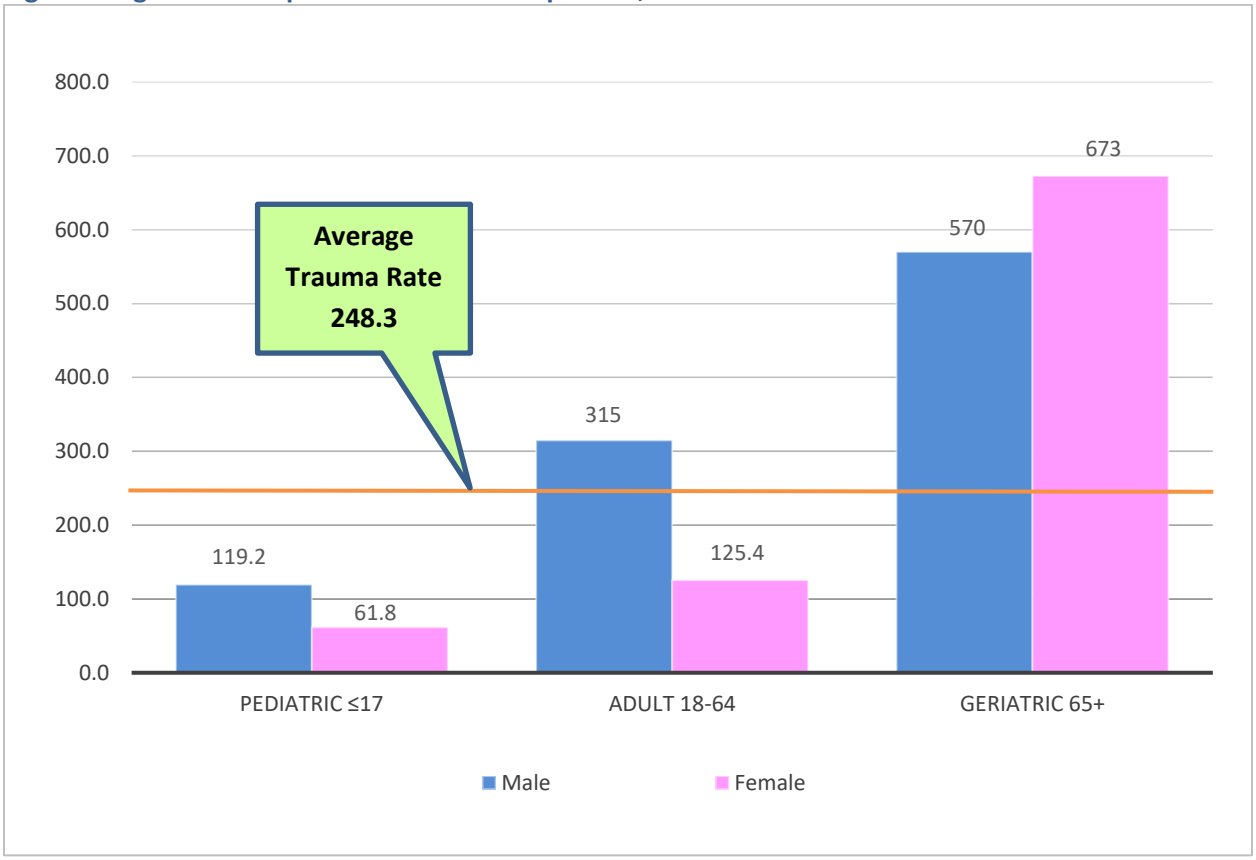
Table 5: Age and Sex-Specific Trauma Rates per 100,000 Nevada Residents (Unique Traumas)

Age Group	Male		Female		Total	
	n	Rate per 100,000 (95% CI)	n	Rate per 100,000 (95% CI)	n	Rate per 100,000 (95% CI)
Pediatric ≤17	422	119.2 (107.8-130.6)	207	61.8 (53.4-70.3)	629	91.3 (84.2-98.5)
Adult 18-64	2,886	315.0 (303.5-326.5)	1,112	125.4 (118.1-132.8)	4,001	222.0 (215.1-228.8)
Geriatric 65+	1,084	570.0 (536.1-603.9)	1,490	673.0 (638.9-707.2)	2,577	626.1 (602.0-650.3)
TOTAL *	4,392	300.8 (291.9-309.7)	2,809	194.7 (187.5-201.9)	7,207	248.3 (242.5-254.0)
	61%		39%			

* There were six cases where sex was not reported

To further breakdown the number of trauma cases in Nevada Residents only, males overall account for 61% of the trauma cases, whereas females account for 39%. The age and sex of the highest number of trauma cases in 2016 were males aged 18-64 years old at 40% of the total cases.

Figure 2: Age and Sex-Specific Trauma Rates per 100,000 Nevada Residents



Traumas per age, sex & 100,000 people in NV Residents

#1 - **SENIORS** are more likely to have a trauma with senior females even more likely than senior males.

Table 6: County-Specific Trauma Rates per 100,000 County Residents (Unique Traumas)

County *	Count	Rate per 100,000 (95% CI)
Carson City	167	306.1 (259.7-352.5)
Churchill	164	649.7 (550.3-749.1)
Clark	5,109	241.1 (234.5-247.7)
Douglas	161	330.9 (279.8-382.0)
Elko	99	188.1 (151.1-225.2)
Esmeralda	5	504.0 (62.2-945.8)
Eureka	8	409.0 (125.6-692.4)
Humboldt	43	253.7 (177.8-329.5)
Lander	35	538.4 (360.0-716.7)
Lincoln	13	264.2 (120.6-407.8)
Lyon	135	247.0 (205.3-288.6)
Mineral	20	430.5 (241.8-619.1)
Nye	463	1,026.7 (933.2-1,120.2)
Pershing	23	340.4 (201.3-479.6)
Storey	12	291.1 (126.4-455.8)
Washoe	1,058	237.1 (222.8-251.4)
White Pine	45	449.9 (318.4-581.3)
Out-of-State	887	-
Unknown	397	-
TOTAL	8,864	-

* Where trauma occurred according to Federal Information Processing Standard (FIPS) code.

Highest Trauma Cases

Utilizing FIPS codes of where an injury occurred:

#1) Clark county recorded the highest number of trauma cases at 5,109 cases.

#2) Washoe with 1,058 trauma cases.

#3) Nye county with 463 trauma cases.

However, there were 887 trauma cases that occurred out-of-state, and 397 were unknown.

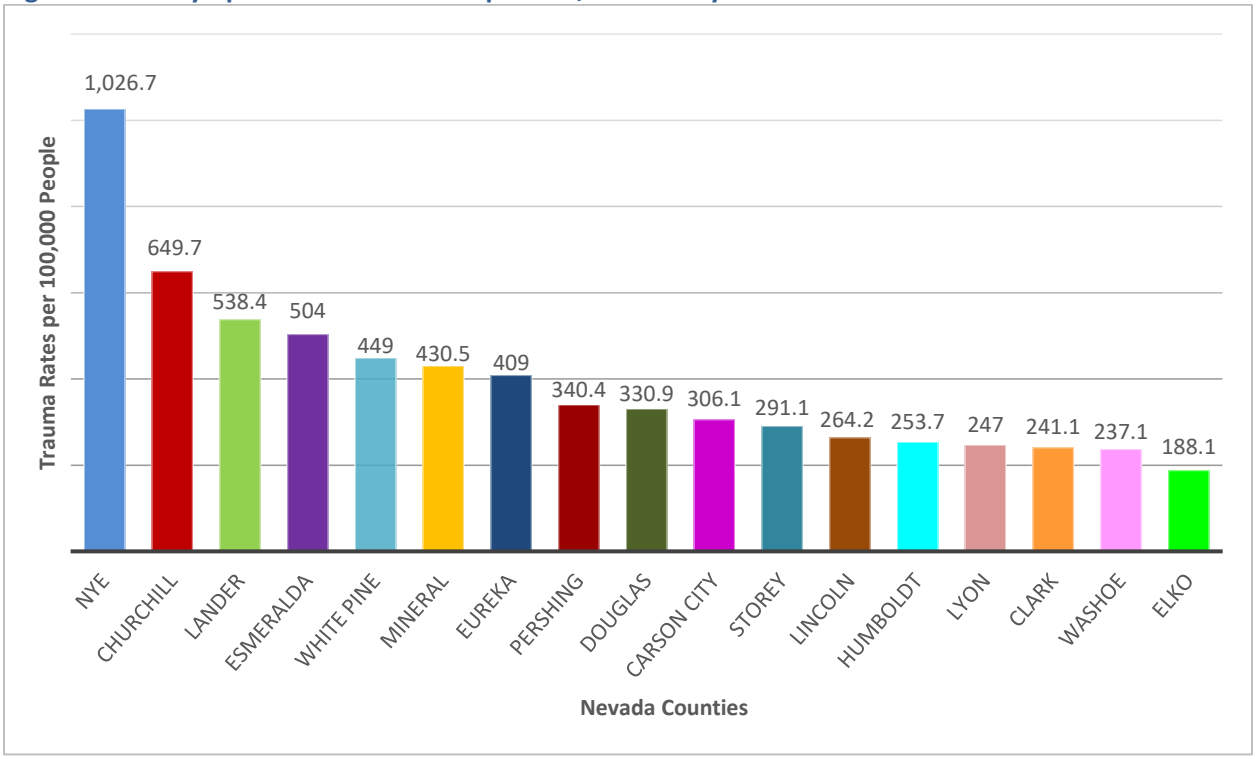
Highest Trauma Rate

When comparing the number of cases per 100,000 in each county, **rural counties had a higher rate of traumas than urban counties.**

#1 Nye County
#2 Churchill County
#3 Lander County

See also Figure 3 - next page

Figure 3: County-Specific Trauma Rates per 100,000 County Residents



When analyzing the number of trauma cases per 100,000 people in Nevada, this analysis shows that Nye County had the highest rate at 1,026.7 cases per 100,000 people. This was then followed by Churchill County with 649.7 cases per 100,000 people, and then Lander County at 538.4 cases per 100,000 people.

Traumas / 100,000 People

#1 Nye County

#2 Churchill County

#3 Lander County

Table 7: Primary Payment Source Proportion for 2015 and 2016

Primary Source of Payment	2015	2016	Difference
Medicare	38.0%	26.2%	-31.1%
Private Insurance	17.4%	22.9%	31.6%
Medicaid	12.5%	20.9%	67.2%
Self Pay	8.3%	9.0%	8.4%
Other Commercial	8.1%	3.7%	-54.3%
No Fault Automobile	1.3%	3.3%	153.8%
Other Government	1.6%	2.9%	81.3%
Worker's Compensation	2.4%	1.5%	-37.5%
Other	2.5%	0.9%	-64%
Military	0.9%	0.4%	-55.6%
Charity	0.1%	0.3%	200%
Unknown	6.9%	7.9%	14.5%
TOTAL	100%	100%	NA

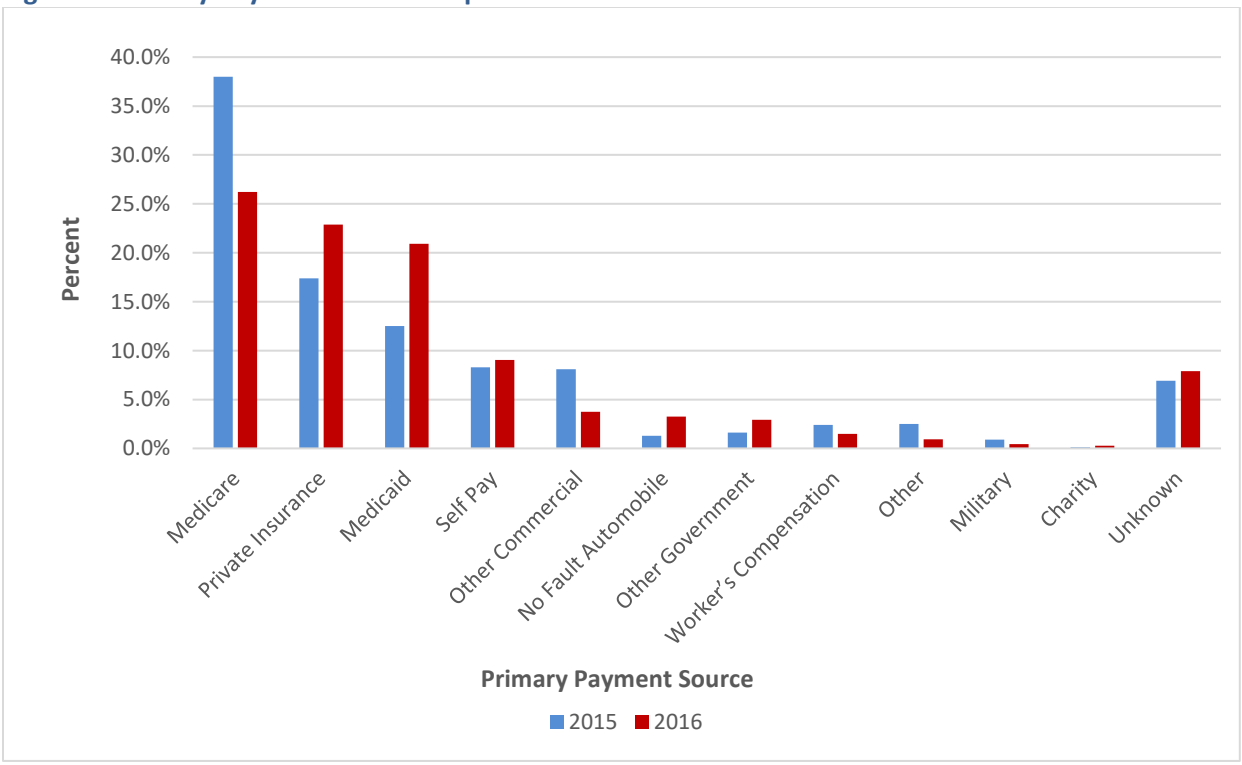
On page 4 of this report, it is recommended to not compare 2015 and 2016 data. However, 2015 data in Table 7 was included due to the data being from proportions.

Of the 9,504 total traumas reported in Nevada in 2016, the majority were paid for through Medicare, followed by private health insurance, Medicaid, and then Self Pay. This order was the same in 2015.

From 2015 to 2016, the number of traumas covered by Medicaid increased by 67.2%, whereas Medicare decreased by 31.1%.

Figure 4 displays the difference in Primary Source of Payment between 2015 and 2016 in a column chart.

Figure 4: Primary Payment Source Proportion for 2015 and 2016 Traumas in Nevada



PLACE AND MECHANISM OF INJURY

In 2016, the majority of traumas occurred in the home, followed by the street, and then via recreation (See Table 8).

Table 8: Trauma Incidence by Place of Injury (Unique Traumas)

Place of Injury	Count	Percent
Home	3,346	37.7%
Street	3,210	36.2%
Recreation	645	7.3%
Public Building	514	5.8%
Residential Institution	159	1.8%
Industry	113	1.3%
Farm	23	0.3%
Mine	4	0.0%
Other	254	2.9%
Unspecified	333	3.8%
Unknown	263	3.0%
TOTAL	8,864	100%

#1 place of injury was in the **HOME**

Table 9: Trauma Incidence and Mortality Proportion by Mechanism of Injury (Unique Traumas)

Mechanism	Count	Column Percent	Deaths	Mortality Proportion * (Row Percent)
Falls	3,943	44.5%	141	3.6%
Motor Vehicle Traffic-Related	1,860	21.0%	113	6.1%
Struck by/Against	682	7.7%	12	1.8%
Other Transport	562	6.3%	23	4.1%
Firearm	456	5.1%	137	30.0%
Cut/Pierce	432	4.9%	17	3.9%
Pedestrian, Other	372	4.2%	47	12.6%
Pedal Cyclist, Other	153	1.7%	0	0.0%
Fire/Burn	71	0.8%	1	1.4%
Other Specified	64	0.7%	5	7.8%
Natural/Environmental	62	0.7%	1	1.6%
Machinery	47	0.5%	3	6.4%
Unspecified	41	0.5%	0	0.0%
Not Elsewhere Classifiable	40	0.5%	1	2.5%
Overexertion	10	0.1%	0	0.0%
Poisoning	9	0.1%	0	0.0%
Suffocation	9	0.1%	4	44.4%
Drowning	1	0.0%	0	0.0%
Unknown	50	0.6%	4	8.0%
TOTAL	8,864	100%	509	5.7%

* By last transfer facility.

Top 3 Traumas

#1 Falls

#2 Motor Vehicle Traffic-Related

#3 Struck by/Against

Top 3 Deaths by Traumas

#1 Suffocation

#2 Firearms

#3 Pedestrian, Other

In 2016, out of the 8,864 total unique trauma cases, the top three mechanisms of traumatic injury in Nevada were Falls (44.5%), Motor Vehicle Traffic-Related (21%), and Struck by/Against (7.7%). Additionally, out of the total trauma cases, higher proportions of death were from Suffocation (44.4%), Firearm (30%), or Pedestrian, Other (12.6%).

Currently the NTR collects trauma data via ICD-9 codes. With ICD-9 codes, some trauma mechanisms are not available as a code. For example, in Table 9, a facility can choose one of the following ICD-9 codes if the cause of the trauma is not available as an ICD-9 choice: Pedestrian, Other; Other Specified, Not Elsewhere Classifiable, Unspecified, and Unknown. Staring January 1, 2017, the NTR will start collecting data via ICD-10 codes which will have more trauma code choices.

According to the "National Trauma Data Bank 2016 Annual Report," Falls was also the number one cause of trauma injury at 44.18%. Motor Vehicle Traffic-Related was the second leading cause of trauma injury at 25.97%. Struck by/Against was the third leading cause at 6.46%. Top three deaths by traumas were from Suffocation, Firearms, and Drowning.

National Top 3 Traumas

#1 Falls

#2 Motor Vehicle Traffic-Related

#3 Struck by/Against

National Top 3 Deaths by Traumas

#1 Suffocation @ 27.12%

#2 Firearms @ 15.3%

#3 Drowning @ 19.2%

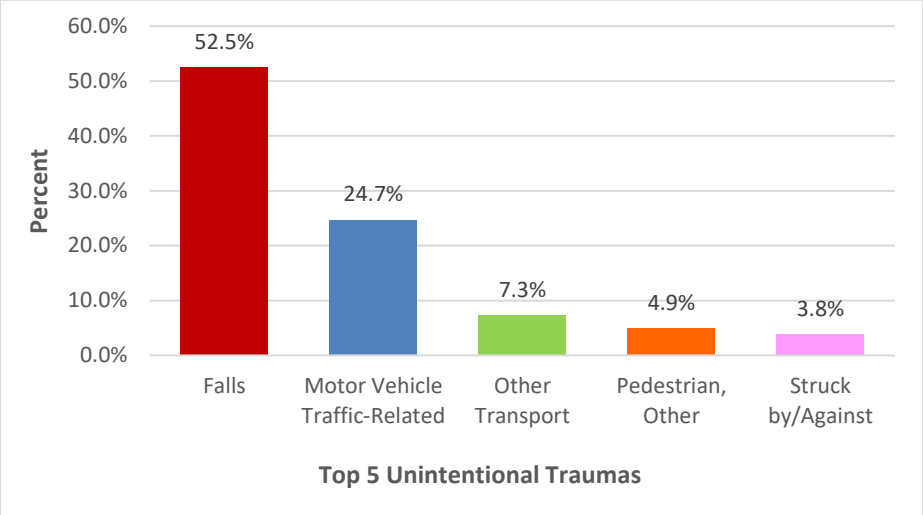
Table 10: Trauma Rates for Top Three Mechanisms of Injury by Age (Unique Traumas)

Age Group	Falls		Struck by/Against		Motor Vehicle Traffic-Related	
	n	Rate per 100,000 (95% CI)	n	Rate per 100,000 (95% CI)	n	Rate per 100,000 (95% CI)
Pediatric ≤17	251	36.4 (31.9-41.0)	108	15.7 (12.7-18.6)	129	18.7 (15.5-22.0)
Adult 18-64	1,274	70.7 (66.8-74.6)	517	28.7 (26.2-31.2)	1,442	80.0 (75.9-84.1)
Geriatric 65+	2,427	589.7 (566.2-613.2)	47	11.4 (8.2-14.7)	289	70.2 (62.1-78.3)

Table 10 outlines the top three mechanism for injury by age. The number one trauma injury per age group are the following:

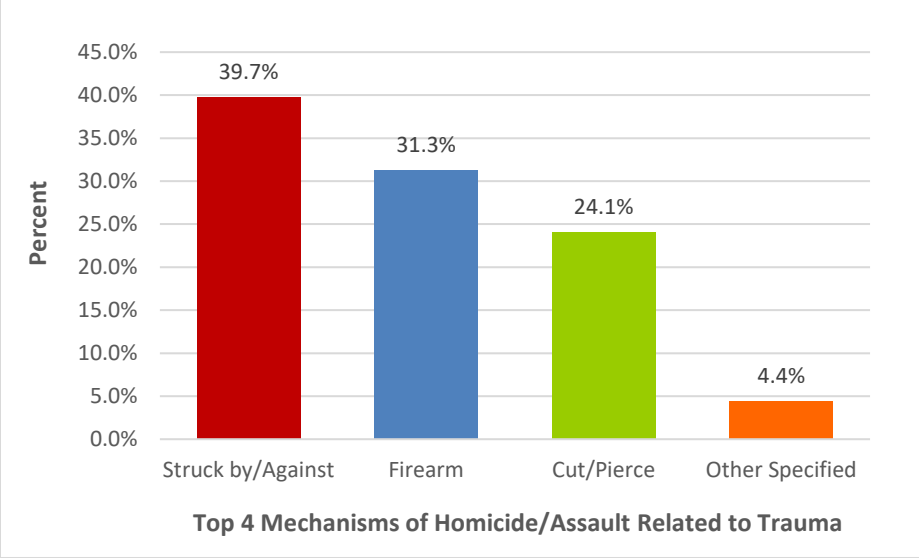
- Pediatrics ≤17 years old = Falls
- Adults 18-64 years old = Motor Vehicle Traffic-Related
- Geriatric 65+ years old = Falls

Figure 5: Top Five Mechanisms of Unintentional Trauma (n=7,525)



FALLS
#1 cause of unintentional trauma

Figure 6: Top Four Mechanisms of Homicide/Assault-Related Trauma (n=972)



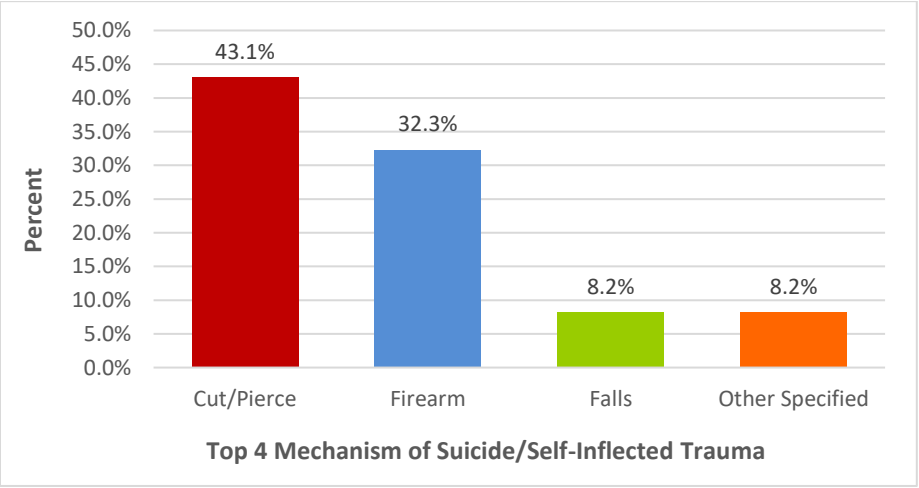
Homicide/Assault

#1 Struck by/Against

#2 Firearm

#3 Cut/Pierce

Figure 7: Top Four Mechanisms of Suicide/Self-Inflicted Trauma (n=232)



Suicide/Self-Inflicted

#1 Cut/Pierce

#2 Firearm

#3 Falls

INJURY CHARACTERISTICS: INJURY SEVERITY SCORE (ISS)

Injury Severity Score (ISS) is an anatomical scoring system that provides an overall score for patients with multiple injuries. The ISS has values from 1 to 75:

ISS score of 1-8 = Minor
ISS score of 9-15 = Moderate
ISS score of 16-24 = Serious
ISS score 25-75 = Severe

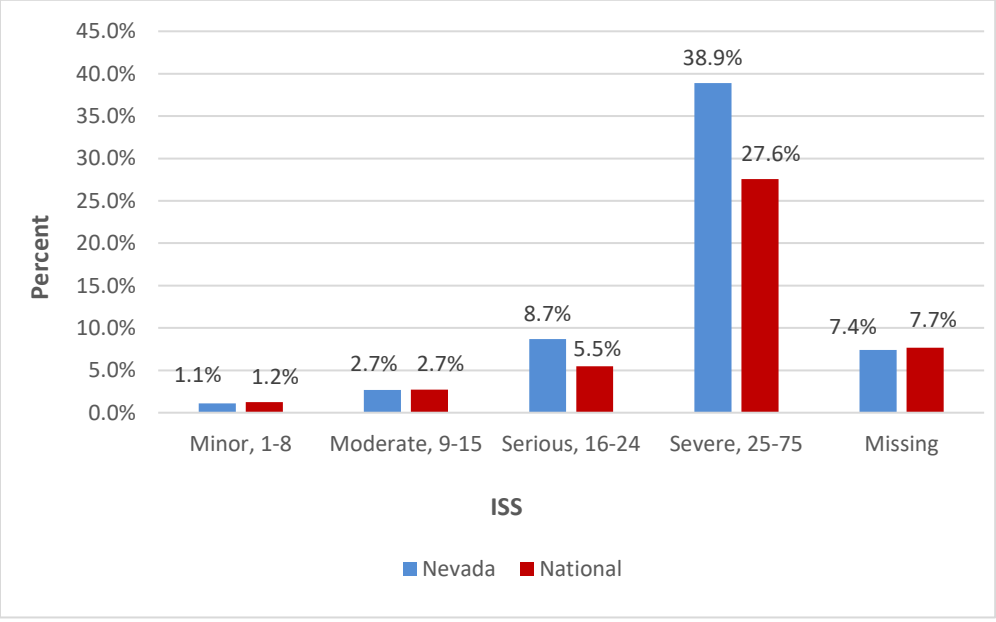
Table 11: Trauma Incidence and Mortality Proportion by Injury Severity Score (ISS) (Unique Traumas)

Injury Severity Score	Count	Column Percent	Deaths	Mortality Proportion * (Row Percent)
Minor, 1-8	4,068	45.9%	43	1.1%
Moderate, 9-15	3,059	34.5%	82	2.7%
Serious, 16-24	936	10.6%	81	8.7%
Severe, 25-75	774	8.7%	301	38.9%
Missing/NA/ND	27	0.3%	2	7.4%
TOTAL	8,864	100%	509	

* By last transfer facility.

In 2016, the majority of patients had a Minor ISS between a 1 and 8 and ultimately had the lowest mortality proportion rate. Correspondently, patients with a Severe ISS between a 25 and 75 had the highest mortality proportion rate. Therefore, the lower the ISS the less likely a patient was to die from their trauma. The higher the score, the more likely for a patient to die.

Figure 8: Trauma Mortality Proportion* by Injury Severity Score, Nevada vs. National



Nevada has **higher** proportions of **deaths** in the categories of Serious, and Severe than the National average

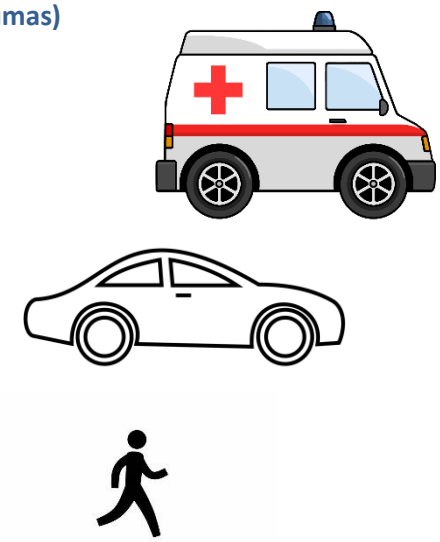
* By last transfer facility.
Data sources: Nevada Trauma Registry, 2016; American College of Surgeons, "National Trauma Data Bank 2016 Annual Report"

PATIENT TRANSPORTATION

Patients have many ways of getting to a hospital. In 2016, the majority of trauma patients in Nevada were transported to the hospital by ground ambulance followed by private vehicle or walk-ins. (See Table 12).

Table 12: Mode of Transport to Reporting Hospital (Unique Traumas)

Mode of Arrival	Count	Percent
Ground Ambulance	6,069	68.5%
Private Vehicle or Walk-in	1,740	19.6%
Helicopter Ambulance	807	9.1%
Fixed-Wing Ambulance	56	0.6%
Police	19	0.2%
Other	17	0.2%
Public Safety	1	0.0%
Water Ambulance	1	0.0%
Unknown	154	1.7%
TOTAL	8,864	100%



In addition to reviewing the data regarding mode of patient arrival, it may also be valuable for community stakeholders to review patient mode of arrival according to Injury Severity Score (ISS) ranges (See Table 13). In Table 13, people with the highest ISS were transported to the hospital via ground ambulance.

Table 13: Mode of Transport by Injury Severity Score (ISS) (Unique Traumas)

Mode of Arrival	Injury Severity Score Range											
	Minor 1-8		Moderate 9-15		Serious 16-24		Severe 25-75		Missing/ NA ISS Scores		Total Cases	Total Percent
	#	%	#	%	#	%	#	%	#	%	#	%
Ground Ambulance	20	0.3	2,609	43.0	2,219	36.6	642	10.6	579	9.5	6,069	68.5
Private Vehicle or Walk-in	8	0.5	1,176	67.6	471	27.1	58	3.3	27	1.6	1,740	19.6
Helicopter Ambulance	0	0.0	218	27.0	281	34.8	173	21.4	135	16.7	807	9.1
Fixed-Wing Ambulance	1	1.8	17	30.4	26	46.4	9	16.1	3	5.4	56	0.6
Police	0	0.0	17	89.5	1	5.3	1	5.3	0	0.0	19	0.2
Other	0	0.0	7	41.2	10	58.8	0	0.0	0	0.0	17	0.2
Public Safety	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0	1	0.0
Water Ambulance	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0	1	0.0
Unknown	1	0.6	97	63.0	53	34.4	1	0.6	2	1.3	154	1.7
TOTAL	30	0.3%	4,141	46.7%	3,063	34.6%	884	10.0%	746	8.4%	8,864	100%

High ISS = Ground Ambulance

PATIENT DISCHARGE AND TRANSFER

Of the 9,504 total trauma cases in Nevada during 2016, 1,246 were transferred to a designated trauma center. University Medical Center received the highest number of transferred patients from other facilities, but Sunrise Hospital Medical Center had the lowest average ISS out of the trauma centers. See Table 14.

Table 14: "Patient Transfer to" Nevada Trauma Centers by Injury Severity Score (ISS)

Trauma Center Patient Transferred	Injury Severity Score Range				
	Count	Mean ISS	Median ISS	Standard Deviation	ISS Range
Renown Regional Medical Center	353	6.8	5.0	4.1	1 - 25
St. Rose Dominican Hospital Siena Campus	16	6.6	8.0	2.4	4 - 9
Sunrise Hospital Medical Center	328	5.6	4.0	4.3	1 - 26
University Medical Center	549	5.7	4.0	4.8	1 - 27
TOTAL	1,246				

"Patient Transfer to" is determined by the question, "Was Patient Transferred to Facility?" and not through the matching process that creates the Unique Traumas.

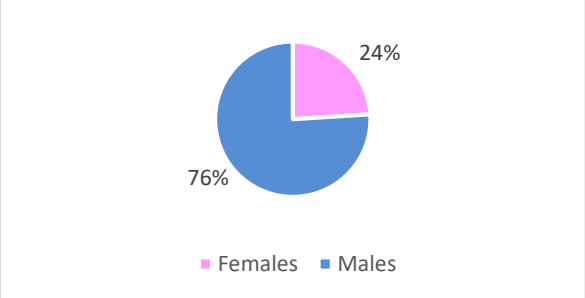
RISK FACTORS: DRUG/ALCOHOL USE

Of the 8,864 unique traumas recorded in the NTR in 2016, Drug/Alcohol Use was determined to be involved in 1,299 (15%) of the cases. 12% of Unintentional trauma injury involved drug or alcohol use, and 25% of Homicide/Assault involved drug or alcohol use.

Table 15: Injury Intent and Drug/Alcohol Use (Unique Traumas)

Injury Intent	Count	Drug/Alcohol Use	Percent Drug/Alcohol Use (Row Percent)
Legal Intervention	20	8	40%
Suicide	232	86	37%
Homicide/Assault	972	246	25%
Missing	50	9	18%
Undetermined (accidental/intentional)	65	10	15%
Unintentional	7,525	940	12%
TOTAL	8,864	1,299	15%

Figure 9: Drug/Alcohol Use by Sex in Adults 18 Years and Older (Unique Traumas)

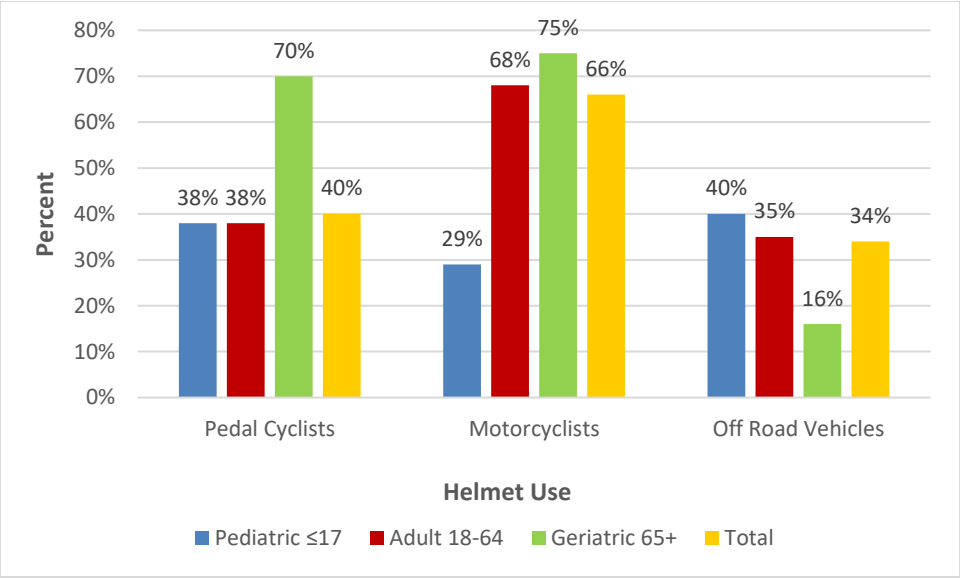


MALE trauma patients 18 years or older were significantly **more likely** to have drugs or alcohol involved in their injury than females of the same age group.

SAFETY EQUIPMENT

Helmet use is an important safety measure especially when riding a bicycle, motorcycle, or an off-road vehicle. Unfortunately, even with helmet laws, not everyone wears one when participating in these activities. Overall, only 40% of the trauma wore helmets when on a bicycle, 66% while on a motorcycle, and 34% while on an off-road vehicle. See Figure 10.

Figure 10: Proportion of Helmet Use among Pedal Cyclists, Motorcyclists, and Off-Road Vehicle Users (Unique Traumas)



Among people with traumas, **SENIORS** are more likely to have worn a helmet

FALLS – BY LAST TRANSFER FACILITY

Falls were the leading mechanism of trauma in Nevada during 2016. Correspondingly, most traumas occur at home (See Table 8). When breaking down the falls by sex, the trauma rate was higher for females than males, but only by 97 cases or 2%. (See Table 16).

Table 17 is broken down further by the type of falls. This table outlines that the number one type of fall that caused a trauma injury was from Same Level, Slipping/Tripping/Stumbling at 53.3%. However, the number one type of fall that caused death was from suicide (such as jumping off a building).

Table 16: Trauma Rate for Falls by Sex (Unique Traumas) *

Sex	n	Rate per 100,000 (95% CI)
Female	2,018	139.9 (133.8-146.0)
Male	1,923	131.7 (125.8-137.6)
Unknown	2	-
TOTAL	3,943	135.8 (131.6-140.1)

* By last transfer facility.

More fall traumas occur to females than males

Table 17: Incidence and Mortality Proportion by Type of Fall (Unique Traumas)

Type of Falls	Count	Percent of Falls (Column Percent)	Deaths	Mortality Proportion * (Row Percent)
Same Level, Slipping/Tripping/Stumbling	2,100	53.3%	69	3.3%
Other and Unspecified	674	17.1%	26	3.9%
Multi-Level	602	15.3%	23	3.8%
Steps	179	4.5%	6	3.4%
On or From Ladder/Scaffolding	172	4.4%	6	3.5%
Out of Building/Structure	106	2.7%	7	6.6%
Collision/Push/Shoved By Another Person	47	1.2%	0	0.0%
In hole/other	19	0.5%	0	0.0%
Suicide Related	19	0.5%	4	21.1%
Fracture, Unspecified	11	0.3%	0	0.0%
Undetermined Fall High Place	11	0.3%	0	0.0%
Assault Related	2	0.1%	0	0.0%
Late Effect of Fall	1	0.0%	0	0.0%
TOTAL	3,943	100%	141	3.6%

* By last transfer facility.

Table 18: Trauma Rate by Age and Type of Fall (Unique Traumas) *

Age Group	Type of Fall					
	Same level, Slipping/Tripping/Stumbling		Other and Unspecified		Multi-Level	
	n	Rate per 100,000 (95% CI)	n	Rate per 100,000 (95% CI)	n	Rate per 100,000 (95% CI)
Pediatric ≤17	74	10.7 (8.3-13.2)	25	3.6 (2.2-5.1)	106	15.4 (12.5-18.3)
Adult 18-64	518	28.7 (26.3-31.2)	206	11.4 (9.9-13.0)	207	11.5 (9.9-13.0)
Geriatric 65+	1,508	366.4 (347.9-384.9)	443	107.6 (97.6-117.7)	289	70.2 (62.1-78.3)
TOTAL	2,100	72.3 (69.2-75.4)	674	23.2 (21.5-25.0)	602	20.7 (19.1-22.4)

* By last transfer facility.

FINAL NOTE

With vast improvements in data entry compliance and accuracy, the quality of the data available in the Nevada Trauma Registry (NTR) has been enhanced. The NTR Manager and Coordinator thank all NTR users, at the various trauma and non-trauma centers in Nevada, for their patience and diligence in learning to accurately enter data into the NTR. Your dedication and efforts are recognized and valued.

In 2017, we are hopeful to fully complete the historical data upload from the three remaining trauma centers. Through collaborative partnerships to improve the amount and quality of information in the NTR, these data and subsequent reports become more valuable to the various NTR community stakeholders.

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ADDITIONAL INFORMATION

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