

2015 ANNUAL TRAUMA REPORT



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

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TABLE OF CONTENTS

ACKNOWLEDGMENTS..... 1

PURPOSE OF REPORT 1

INTRODUCTION..... 1

NEVADA TRAUMA REGISTRY BACKGROUND 2

METHODOLOGY 3

RESULTS 4

 Demographics..... 6

 Place and Mechanism of Injury 14

 Injury Characteristics: Injury Severity Score (ISS)..... 18

 Patient Transportation 19

 Patient Discharge and Transfer 20

 Risk Factors: Drug/Alcohol Use 20

 Safety Equipment 21

 Falls..... 22

FINAL NOTE 23

CITATIONS 24

ADDITIONAL INFORMATION 24

FUNDING SOURCE..... 24

RECOMMENDED CITATION 24

LIST OF FIGURES

Figure 1: Percentage of Trauma Cases by Race/Ethnicity 7

Figure 2: Age and Sex-Specific Trauma Rates per 100,000 Nevada Residents 9

Figure 3: County-Specific Trauma Rates per 100,000 County Residents 11

Figure 4: Primary Payment Source Proportion for 2014 and 2015 Traumas in Nevada..... 13

Figure 5: Top Five Mechanisms of Unintentional Trauma 16

Figure 6: Top Four Mechanisms of Homicide/Assault-Related Trauma in 17

Figure 7: Top Four Mechanisms of Suicide/Self-Inflicted Trauma in 17

Figure 8: Trauma Mortality Proportion by Injury Severity Score, Nevada vs. National..... 18

Figure 9: Proportion of Helmet Use Among Pedal Cyclist, Motorcyclists, and Off-Road Vehicle Users 21

LIST OF TABLES

Table 1: Nevada Trauma Cases by Non-Trauma Center Hospital 5

Table 2: Nevada Trauma Cases by Sex 6

Table 3: Trauma Rate by Race/Ethnicity 6

Table 4: Age-Specific Trauma Incidence and Mortality Proportion 8

Table 5: Age and Sex-Specific Trauma Rates per 100,000 Nevada Residents 9

Table 6: County-Specific Trauma Rates per 100,000 County Residents 10

Table 7: Primary Payment Source Proportion for 2014 and 2015..... 12

Table 8: Trauma Incidence by Place of Injury 14

Table 9: Trauma Incidence and Mortality Proportion by Mechanism of Injury 15

Table 10: Trauma Rates for Top Three Mechanisms of Injury by Age 16

Table 11: Trauma Incidence and Mortality Propotion by Injury Severity Score (ISS)..... 18

Table 12: Mode of Transport to Reporting Hospital 19

Table 13: Mode of Transport by Injury Severity Score (ISS) 19

Table 14: Patient Transfer to Nevada Trauma Centers by Injury Severity Score (ISS) 20

Table 15: Injury Intent and Drug/Alcohol Use 20

Table 16: Trauma Rate for Falls by Sex 22

Table 17: Incidence and Mortality Proportion by Type of Fall 22

Table 18: Trauma Rate by Age and Type of Fall 23

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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 Nevada Trauma Registry (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](#).

INTRODUCTION

The 2015 Annual Trauma Report is based upon data submitted to the Nevada Trauma Registry (NTR) by the 29 non-trauma center hospitals that operated in Nevada 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. One-hundred percent (100%) of non-trauma center hospitals in Nevada were compliant during 2015. This is a significant improvement over 2014 when only 41% of these facilities were compliant for the entire year. While non-trauma center hospital compliance was achieved in 2015, the accuracy of trauma data entry varied widely (range: 10% to 100%), with the vast majority of facilities earning an accuracy rating greater than 80%. State NTR staff continue to train personnel at non-trauma center hospitals to improve data entry accuracy.

No trauma data were collected from the four trauma centers within Nevada during 2015. Due to upgrades to the trauma system software at the state and for each trauma center, it was not possible to include trauma data for these four facilities in this report. However, the 2016 Annual Trauma Report will include data from the trauma centers with an update to the 2015 statistics as well. Therefore, the data analyzed for this 2015 Annual Trauma Report should be cautiously applied as the complete picture of trauma in Nevada is not currently available.

In addition to continual training of non-trauma center hospital personnel on the upgraded 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.

Near the end of 2016, the NTR Manager will be soliciting interest from trauma personnel across numerous disciplines throughout Nevada to serve on a Trauma Registry Advisory Committee. The purpose of this committee will be to provide feedback and advice to the NTR Manager regarding the challenges and successes of the software being used for the NTR, to provide input regarding further development and evolution of the NTR, and to provide insight into information needs of communities regarding traumas to assist with establishing local initiatives and priorities.

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 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.

Each hospital shall submit to the Division quarterly reports which comply with the criteria prescribed by the Division and which contain 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 quarterly reports must be submitted on or before:

- June 1 for the period beginning on January 1 and ending on March 31.
- September 1 for the period beginning on April 1 and ending on June 30.
- December 1 for the period beginning on July 1 and ending on September 30.
- March 1 for the period beginning on October 1 and ending on December 31.

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 Nevada Trauma Registry (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; or
 - (ICD-10) S00-S99 with a 7th character modifier of A, B, or C (excluding S00, S10, S20, S30, S40, S50, S60, S70, S80, S90), T07, T14, T20-T28 with a 7th character modifier of A, T30-T32, and T79.A1-T79.A9 with a 7th character modifier of A; and
- At least one of the following criteria:
 - Injury resulted in death;
 - Patient was transferred between hospitals using EMS or air ambulance; or
 - Patient was in the hospital for at least 24 hours due to injuries.

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 2015, the NTR captured 2,963 trauma cases. This report includes cases for patients with an Emergency Department/Hospital Arrival Date between January 1, 2015 and December 31, 2015. All data were analyzed using SAS Version 9.4 (SAS Institute, Cary, NC). Population denominators were taken from the 2003-2014 Age, Sex, Race, and Hispanic Origin (ASRHO) Estimates and Projections provided by the Nevada State Demographer's Office.

All trauma rates were calculated per 100,000 Nevada residents using 2015 population denominators from the Nevada State Demographer's Office. 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 statistically significant. 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 above, 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, 2015, through December 31, 2015, a total of 2,963 traumas were recorded in the NTR by the 29 non-trauma center hospitals in Nevada. This is more than twice the number of traumas reported in Nevada during 2014. These numbers should not be compared or utilized to make an argument that traumas are increasing in Nevada. Rather, it is important to remember that in 2014, numerous non-trauma hospitals were not reporting trauma data to the Nevada Trauma Registry (NTR) throughout the year, thus resulting in missing data. In 2015, however, every non-trauma hospital was compliant with [NAC 450B.760](#) through [NAC 450B.774](#) inclusive, providing a more robust data set to analyze. The number of traumas is expected to rise again with next year’s report as all four trauma centers will begin submitting data to the NTR during the 2016 year.

Technical Note: Unless otherwise noted, all rates presented in this report are calculated per 100,000 Nevada residents even though traumas can occur within Nevada to non-residents and non-residents can be transported to Nevada hospitals for treatment.

Table 1: Nevada Trauma Cases by Non-Trauma Center Hospital

Facility	Number of Trauma Cases	Percentage of Trauma Cases
Banner Churchill Community Hospital	145	4.9%
Battle Mountain General Hospital	21	0.7%
Boulder City Hospital	53	1.8%
Carson Tahoe Regional Medical Center	110	3.7%
Carson Valley Medical Center	135	4.6%
Centennial Hills Hospital	70	2.4%
Desert Springs Hospital Center	10	0.3%
Desert View Hospital	294	9.9%
Grover C. Dils Medical Center	3	0.1%
Humboldt General Hospital	17	0.6%
Incline Village Community Hospital	5	0.2%
Mesa View Regional Hospital	131	4.4%
Mountain View Hospital	382	12.9%
Mt. Grant General Hospital	11	0.4%
North Vista Hospital	206	7.0%
Northeastern Nevada Regional Hospital	80	2.7%
Northern Nevada Medical Center	95	3.2%
Nye Regional Medical Center*	13	0.4%
Pershing General Hospital	26	0.9%
Renown South Meadows Medical Center	34	1.1%
South Lyon Medical Center	11	0.4%
Southern Hills Hospital Medical Center	74	2.5%
Spring Valley Hospital Medical Center	245	8.3%
St. Mary's Regional Medical Center	68	2.3%
St. Rose Dominican Hospital De Lima Campus	294	9.9%
St. Rose Dominican Hospital San Martin Campus	166	5.6%
Summerlin Hospital Medical Center	194	6.5%
Valley Hospital Medical Center	34	1.1%
Williams Bee Ririe Hospital	36	1.2%
Total	2,963	100.0%

*Nye Regional Medical Center closed in 2015 and only recorded trauma data for quarter 1.

Of the non-trauma hospitals in Clark County, the greatest percentage of trauma cases were initially addressed at Mountain View Hospital, followed by St. Rose Dominican Hospital – De Lima Campus, and Spring Valley Hospital Medical Center. In Washoe County, the greatest percentage of trauma cases were initially addressed at Northern Nevada Medical Center. Within the rural/frontier counties, Desert View

Hospital (Nye County), followed by Banner Churchill Community Hospital (Churchill County), and Carson Valley Medical Center (Douglas County) initially addressed the greatest percentage of trauma cases (See Table 1).

Demographics

Of the 2,963 traumas recorded in the NTR between January 1, 2015 through December 31, 2015, there was no statistically significant difference in the trauma rate between males and females, with an almost equal number of traumas experienced by each sex (See Table 2).

Table 2: Nevada Trauma Cases by Sex

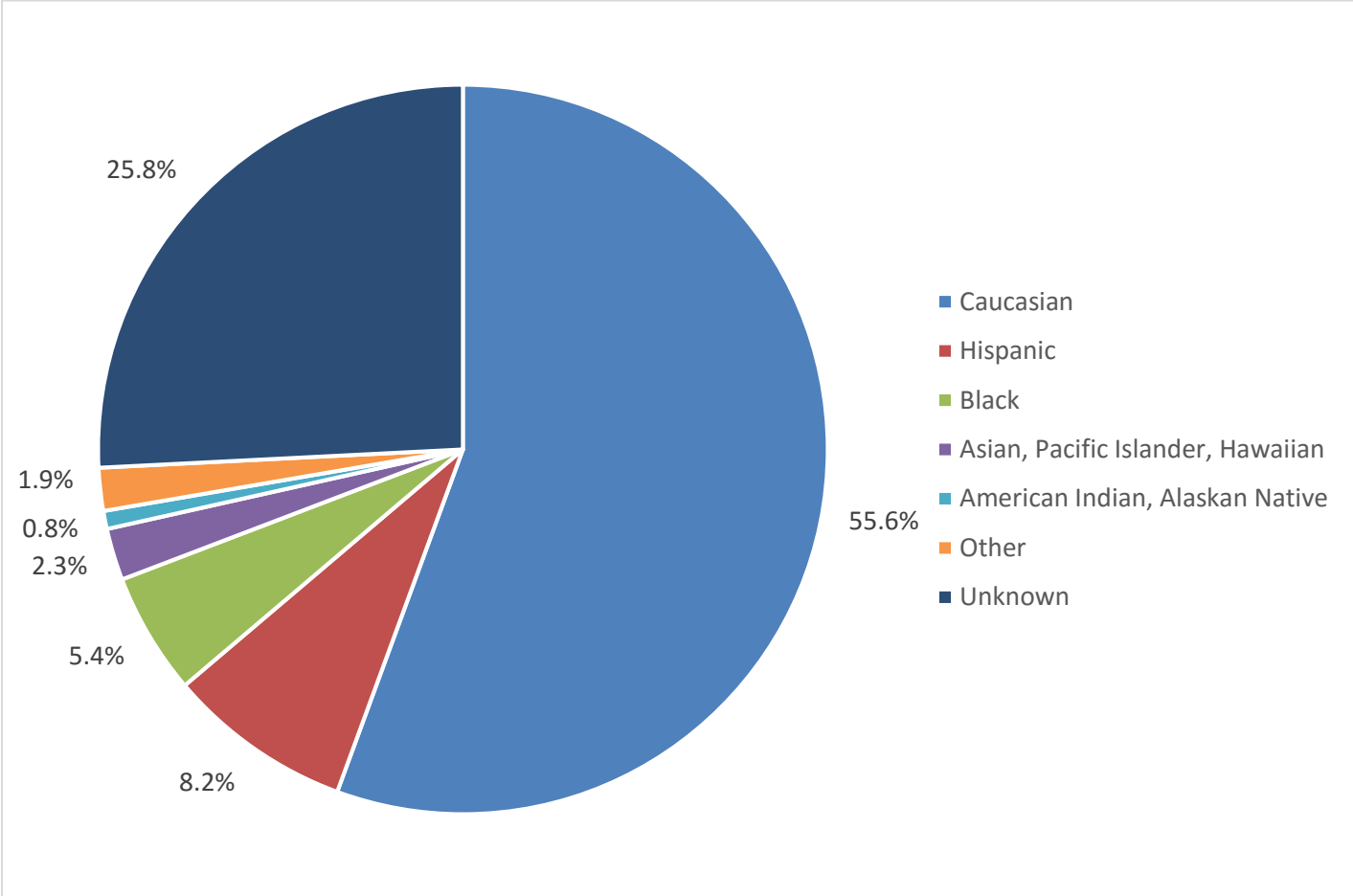
Sex	Count	Percent	Rate per 100,000 (95% CI)
Male	1,476	49.8%	102.0 [96.8, 107.2]
Female	1,477	49.8%	103.5 [98.2, 108.8]
Sex Not Reported	10	0.4%	
Total	2,963	100.0%	103.1 [99.4, 106.8]

Additionally, most traumas were experienced by those who primarily identified as Caucasian and non-Hispanic (See Figure 1). While a greater number of trauma patients identified as Hispanic, those who identified as Black or American Indian/Alaskan Native had a significantly greater trauma rate (See Table 3).

Table 3: Trauma Rate by Race/Ethnicity

Race/Ethnicity	Count	Percent of Total Traumas	Rate per 100,000 (95% CI)
Caucasian	1,646	55.6%	107.5 [102.3, 112.7]
Hispanic	244	8.2%	30.1 [26.3, 33.9]
Black	159	5.4%	65.4 [55.2, 75.6]
Asian, Pacific Islander, or Hawaiian	69	2.3%	26.9 [20.5, 33.2]
American Indian, Alaskan Native	23	0.8%	70.7 [41.8, 99.7]
Other	58	1.9%	
Unknown	764	25.8%	
Total	2,963	100.0%	103.1 [99.4, 106.8]

Figure 1: Percentage of Trauma Cases by Race/Ethnicity



Trauma affects people of all ages. Of the trauma cases reported in Nevada during 2015, patients between the ages of 75-84 experienced the greatest percentage of traumas. Furthermore, 1.3% of all traumas treated at non-trauma hospitals in Nevada were fatal. Even though patients in the 85+ age group did not report the greatest number of traumas, the mortality proportion was greatest for this group at 2.2% (See Table 4).

Table 4: Age-Specific Trauma Incidence and Mortality Proportion

Age Groups	Count	Column Percent	Deaths	Mortality Proportion (Row Percent)
Total	2,963	100%	37	1.2%
<1	30	1.0%	0	0.0%
1-5	58	2.0%	1	1.7%
6-17	168	5.7%	1	0.6%
18-24	167	5.6%	1	0.6%
25-34	229	7.7%	1	0.4%
35-44	189	6.4%	0	0.0%
45-54	265	8.9%	2	0.8%
55-64	332	11.2%	3	0.9%
65-74	448	15.1%	3	0.7%
75-84	578	19.5%	12	2.0%
85+	488	16.5%	12	2.2%
Unknown Age	11	.4%	1	9.1%

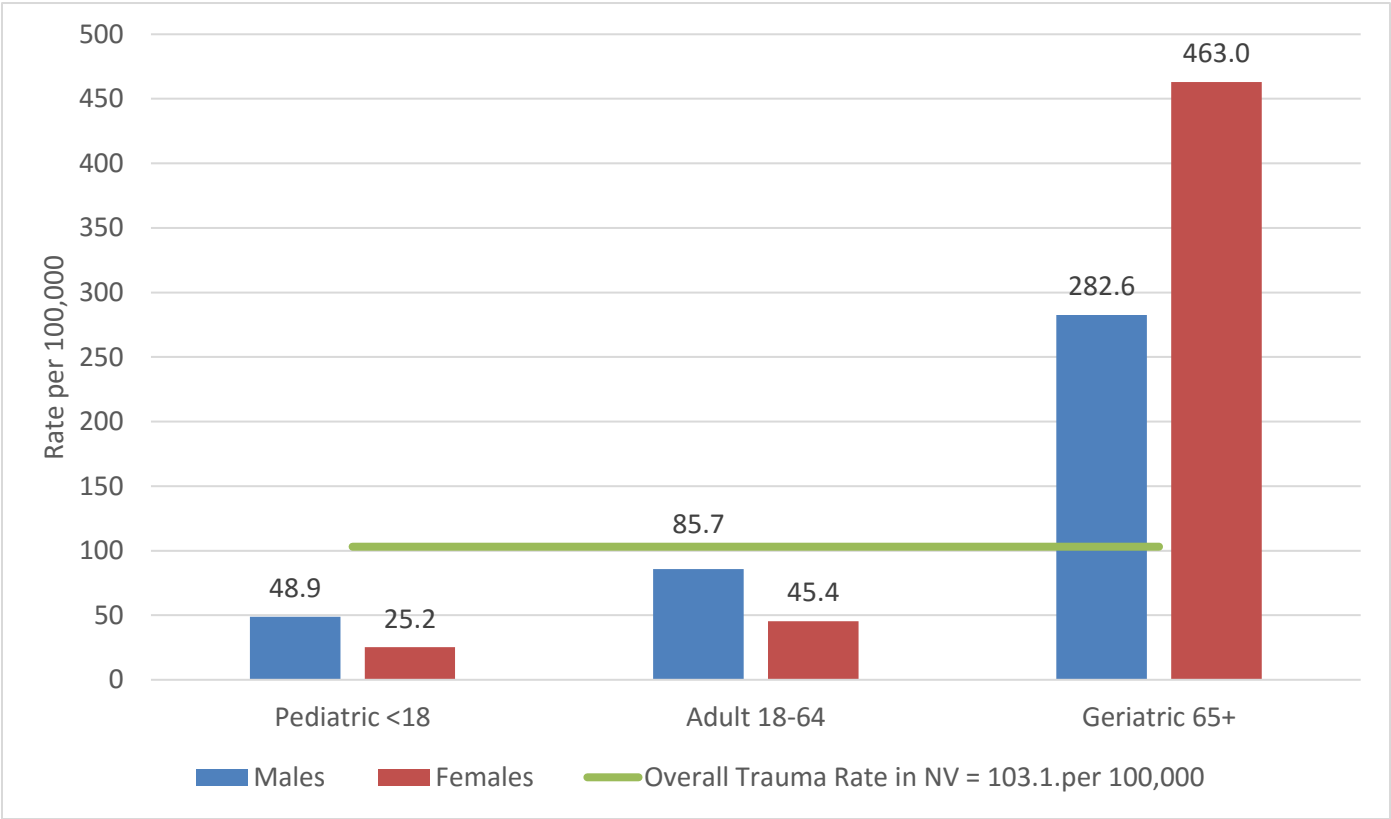
To give an additional picture of trauma in Nevada, it is helpful to analyze the data by age and sex. For the purpose of these analyses, age groups were consolidated into pediatrics (patients < 18 years of age), adults (patients aged 18-64), and geriatric (patients aged > 65). While the trauma rate for males and females was not statistically different overall, there were some differences to note when age was factored into the review. In general, 2015 trauma rates in Nevada were statistically higher for males in both the pediatric and adult groups. However, trauma rates were statistically higher for females in the geriatric group. Additionally, the trauma rate for pediatrics and adults was statistically lower than the overall Nevada rate with the geriatric trauma rate being statistically higher than the overall Nevada rate (See Table 5 and Figure 2).

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

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 <18	172	48.9 [41.6, 56.2]	84	25.2 [19.8, 30.6]	256	37.4 [32.8, 42.0]
Adult 18-64	780	85.7 [79.7, 91.7]	400	45.4 [41.0, 49.9]	1,180	66.0 [62.3, 69.8]
Geriatric >64	523	282.6 [258.4, 306.8]	991	463.0 [434.2, 491.8]	1,514	380.3 [360.3, 398.5]
Unknown	1		2		13	
Total	1,476	102.0 [96.8, 107.2]	1,477	103.5 [98.2, 108.8]	2,963	103.1 [99.4, 106.8]

*A total of 13 trauma records were missing age and/or sex data for the patient.

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



Trauma injuries were recorded in almost every county in Nevada during 2015. Utilizing zip/postal codes of where an injury occurred, Nye county reported the highest trauma rate, followed by Churchill, White Pine, and Pershing counties (See Table 6 and Figure 3).

Table 6: County-Specific Trauma Rates per 100,000 County Residents

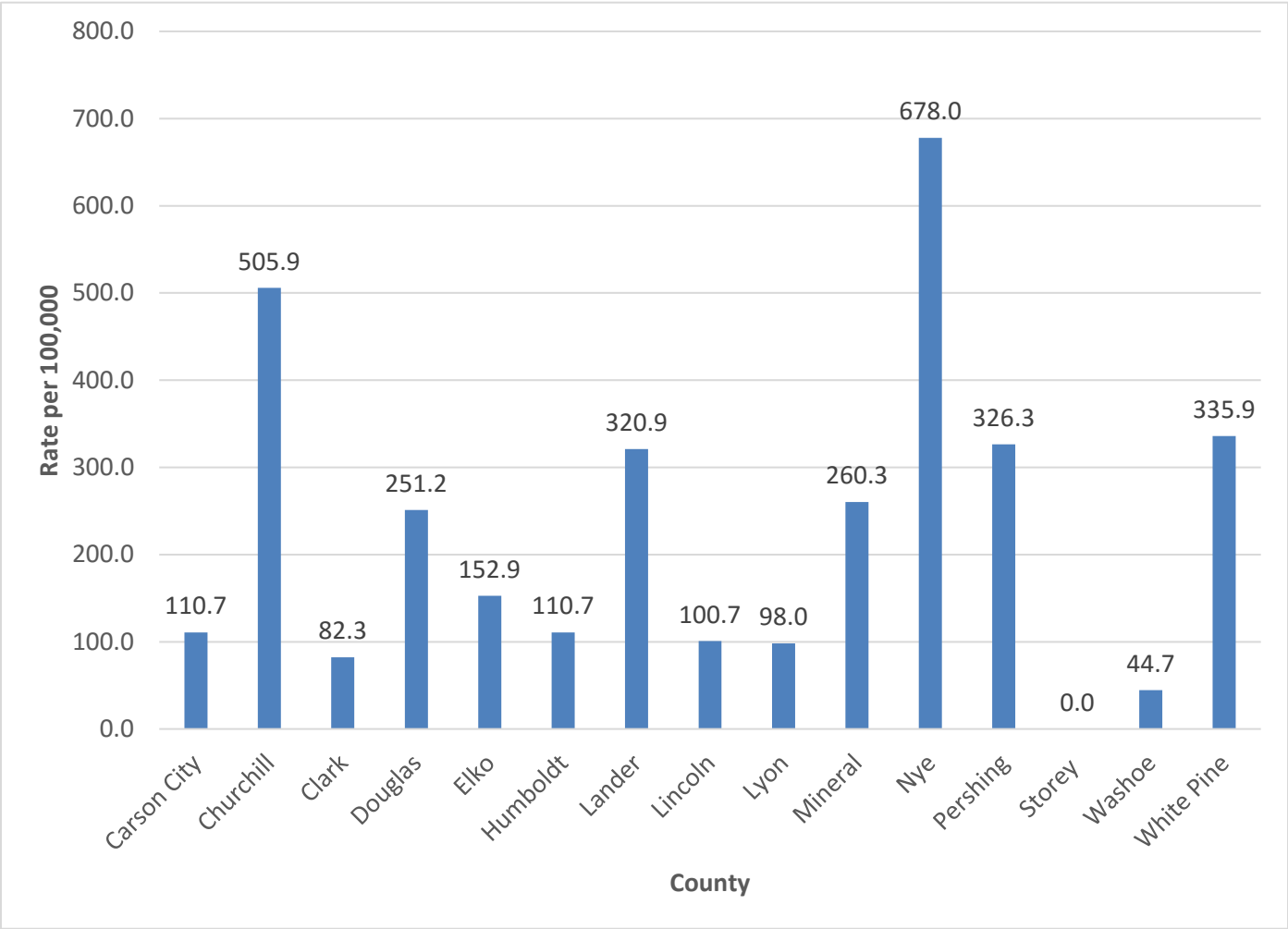
County	Total Trauma Cases	Rate per 100,000 (95% CI)
Carson City	60	110.7 [82.7, 138.7]
Churchill	127	505.9 [417.9, 593.9]
Clark	1,724	82.3 [78.4, 86.1]
Douglas	122	251.2 [206.6, 295.8]
Elko	81	152.9 [119.6, 186.2]
Esmeralda	3	*
Eureka	1	*
Humboldt	19	110.7 [60.9, 160.4]
Lander	21	320.9 [183.6, 458.1]
Lincoln	5	100.7 [12.4, 189.1]
Lyon	53	98.0 [71.6, 124.4]
Mineral	12	260.3 [113.0, 407.6]
Nye	307	678.0 [602.2, 753.9]
Pershing	22	326.3 [189.9, 462.6]
Storey	0	0
Washoe	197	44.7 [38.4, 50.9]
White Pine	34	335.9 [223.0, 448.8]
Out of State	50	N/A
Unknown	125	N/A

*Due to the small number of trauma cases reported, a rate and 95% CIs are not reported.

Note: Total trauma cases reported in this table are associated with the reported zip/postal code of where the injury occurred.

Note: County trauma rates are calculated utilizing each county's respective population data per 100,000.

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



Of the more than 2,900 reported trauma incidents in Nevada in 2015, the majority were paid for through Medicare, followed by private insurance, Medicaid, and self-pay (See Table 7).

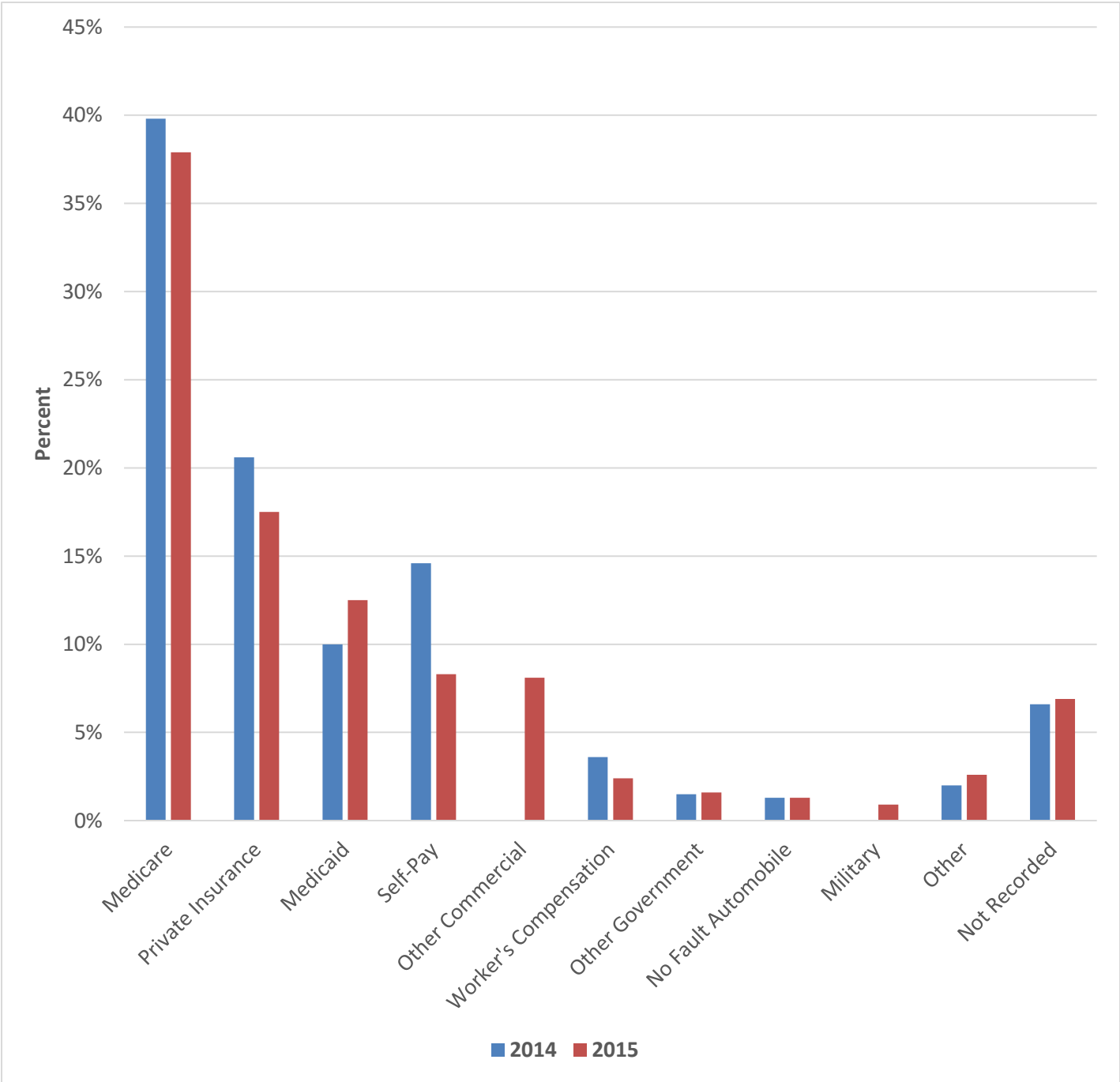
Table 7: Primary Payment Source Proportion for 2014 and 2015

Primary Source of Payment	2014	2015
Medicare	39.8%	37.9%
Private Insurance	20.6%	17.5%
Medicaid	10.0%	12.5%
Self-Pay	14.6%	8.3%
Other Commercial*	0.0%	8.1%
Worker's Compensation	3.6%	2.4%
Other Government	1.5%	1.6%
No Fault Automobile	1.3%	1.3%
Military*	0.0%	0.9%
Other	2.0%	2.6%
Not Recorded	6.6%	6.9%
Total	100%	100%

*These sources of payment were not captured in 2014.

From 2014 to 2015, Medicaid increased as a primary payer source, while Medicare, private insurance, and self-pay decreased as primary payer sources. It is possible that the increase in Medicaid payments for trauma-related injuries is associated with the expansion of this program as part of the Patient Protection Affordable Care Act. However, Medicare is still the largest primary payer in Nevada, which coincides with the greatest number of trauma injuries occurring among patients older than 65 years of age (See Figure 4). According to the American College of Surgeons 2015 Trauma report, Medicare is also the largest primary payer for traumas nationwide at 25.9%, which is much lower than Nevada's 37.9%.

Figure 4: Primary Payment Source Proportion for 2014 and 2015 Traumas in Nevada



Place and Mechanism of Injury

In 2015, the vast majority of traumas occurred in the home, followed by the street and through recreation (See Table 8).

Table 8: Trauma Incidence by Place of Injury

Place of Injury	Trauma Count	Percent
Home	1,587	53.6%
Street	409	13.8%
Recreation	179	6.0%
Public Building	133	4.5%
Residential Institution	82	2.8%
Industry	43	1.5%
Farm	12	0.4%
Mine	5	0.1%
Other	74	2.5%
Unspecified	309	10.4%
Unknown	130	4.4%
Total	2,963	100.0%

In 2015, the top six mechanisms of traumatic injury in Nevada were Falls, Struck by/Against, Motor Vehicle Traffic, Other Transport, Cut/Pierce, and Other Pedal Cyclist. The identified mechanisms with the highest mortality proportions were Drowning/Suffocations (60.0%) and Firearms (2.1%) (See Table 9).

Table 9: Trauma Incidence and Mortality Proportion by Mechanism of Injury

Mechanism	Trauma Count	Column Percent	Deaths	Mortality Proportion (Row Percent)
Falls	1,963	66.3%	24	1.2%
Struck by/Against	223	7.5%	1	0.4%
Motor Vehicle Traffic	192	6.5%	2	1.0%
Other Transport	147	4.9%	0	0.0%
Cut/Pierce	79	2.7%	1	1.3%
Pedal Cyclist, Other	52	1.8%	0	0.0%
Firearm	48	1.6%	1	2.1%
Fire/Burn	44	1.5%	0	0.0%
Unspecified	41	1.4%	1	2.4%
Natural/Environmental	36	1.2%	0	0.0%
Other Specified	36	1.2%	1	2.8%
Overexertion	28	0.9%	0	0.0%
Not Elsewhere Classifiable	26	0.9%	1	3.8%
Machinery	17	0.6%	0	0.0%
Pedestrian, Other	16	0.5%	0	0.0%
Poisoning	10	0.3%	0	0.0%
Drowning/Suffocation	5	0.2%	3	60.0%
Total	2,963	100.0%	35	1.2%

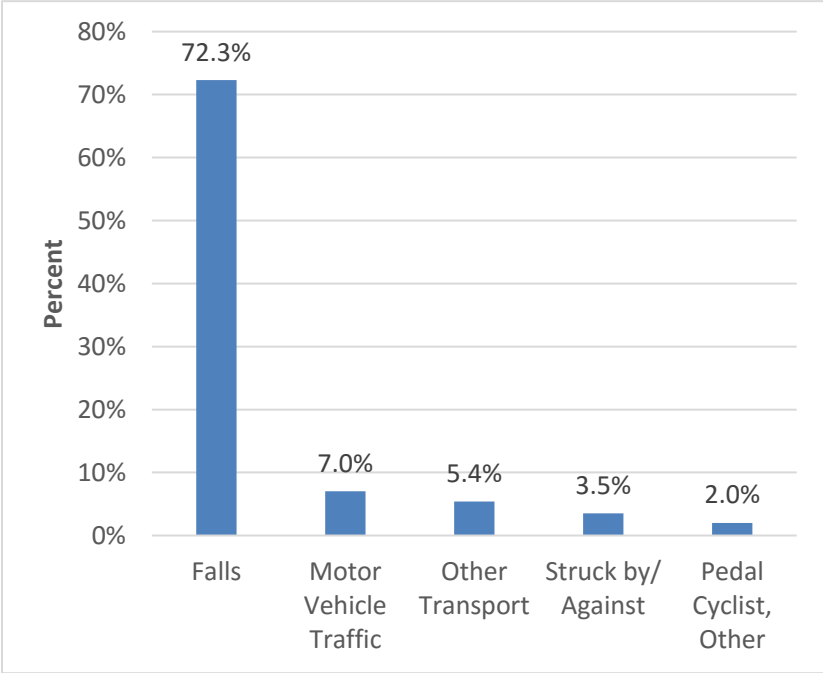
Taking a closer look at the top three mechanisms of traumatic injury shows trauma rates for falls being highest across all age groups. The trauma rate for being Struck by/Against had the second highest trauma rate for pediatrics and adults. Patients within the geriatric group were statistically more likely to have experienced a trauma related to Motor Vehicle Traffic than a trauma associated with being Struck by/Against (See Table 10).

Table 10: Trauma Rates for Top Three Mechanisms of Injury by Age

Age Group	Mechanism of Injury					
	Falls		Struck by/Against		Motor Vehicle Traffic	
	n	Rate per 100,000 (95% CI)	n	Rate per 100,000 (95% CI)	n	Rate per 100,000 (95% CI)
Pediatric <18	126	18.4 [15.2, 21.6]	30	4.4 [2.8, 5.9]	21	3.1 [1.8, 4.4]
Adult 18-64	473	26.4 [24.0, 28.8]	139	7.8 [6.5, 9.1]	131	7.4 [6.1, 8.6]
Geriatric 65+	1,363	341.5 [323.4, 359.7]	14	3.5 [1.7, 5.3]	40	10.0 [6.9, 13.1]
Unknown	1		0		0	

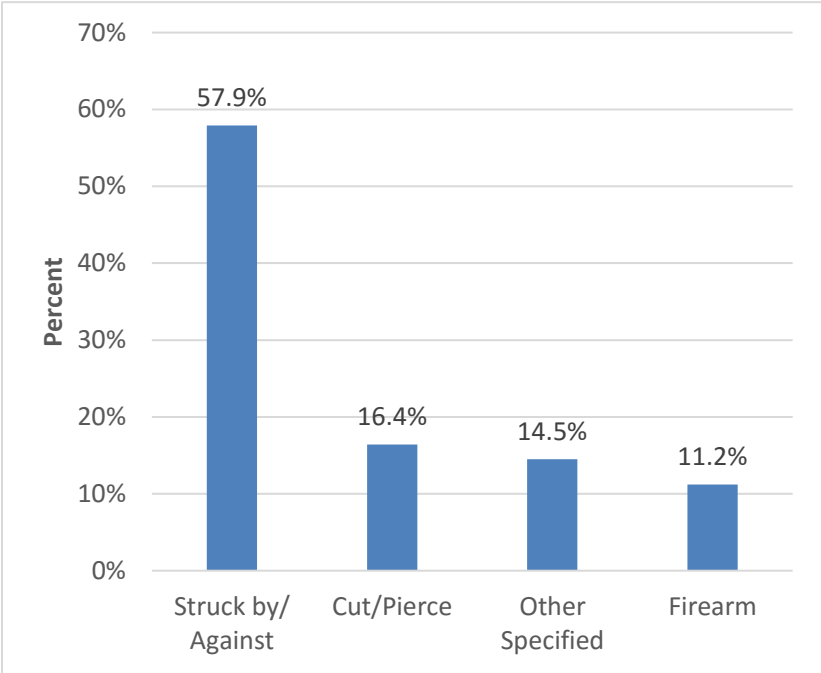
The majority of traumas recorded in the NTR for 2015 were unintentional (91.6%). However, it is important to further investigate the mechanism of injury by intent as it relates to traumas. Intentionality was unable to be determined for 64 trauma cases.

Figure 5: Top Five Mechanisms of Unintentional Trauma (n=2,715)



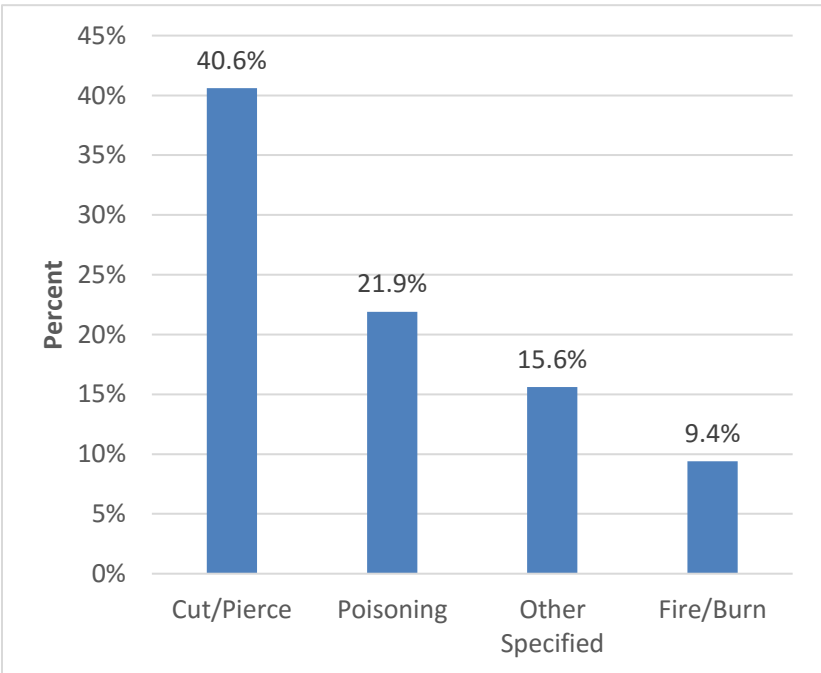
In 2015, Falls were the most common mechanism of unintentional trauma in Nevada.

Figure 6: Top Four Mechanisms of Homicide/Assault-Related Trauma (n=152)



Struck by/Against and Cut/Pierce were the top mechanisms of Homicide/Assault-related trauma in Nevada.

Figure 7: Top Four Mechanisms of Suicide/Self-Inflicted Trauma (n=32)



Cut/Pierce and Poisoning were the top mechanisms of Suicide/Self-Inflicted trauma in Nevada.

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 16-24 = Serious

ISS score of 9-15 = Moderate

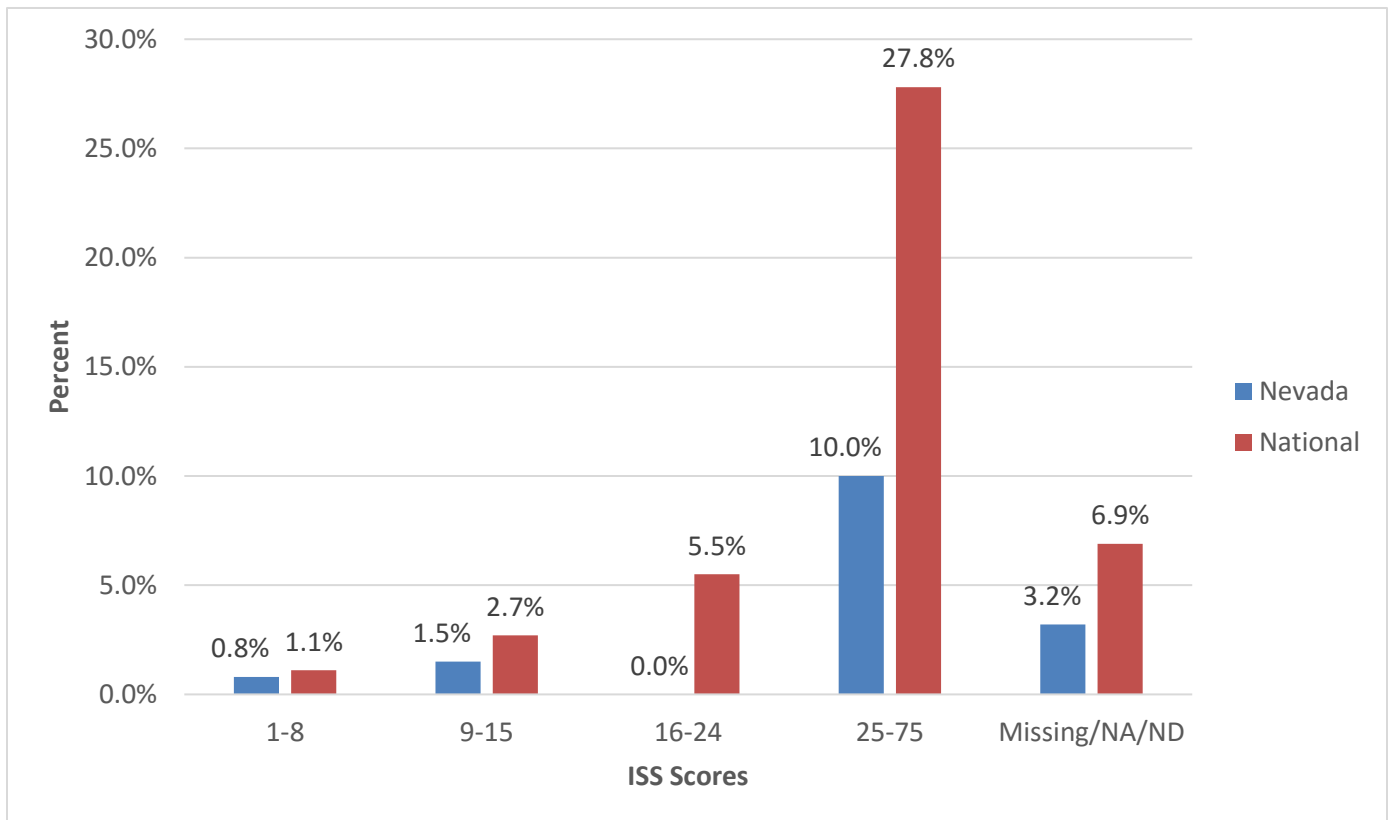
ISS score 25-75 = Severe

In 2015, the majority of patients had an ISS between 1 and 8. The most seriously injured patients experienced the highest mortality (See Table 11). Across the board, the proportion of deaths associated with each ISS grouping is lower in Nevada than the national proportion (See Figure 8).

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

Injury Severity Score	Count	Column Percent	Deaths	Mortality Proportion (Row Percent)
1-8	1,554	52.4%	12	0.8%
9-15	1,132	38.2%	17	1.5%
16-24	93	3.1%	0	0.0%
25-75	30	1.0%	3	10.0%
Missing/NA/ND	154	5.2%	5	3.2%

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



Data sources: Nevada Trauma Registry, 2015; American College of Surgeons, 2015

Patient Transportation

In 2015, 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

Mode of Arrival	Trauma Count	Percent
Ground Ambulance	1,614	54.5%
Private Vehicle or Walk-In	1,051	35.5%
Police	12	0.4%
Other	12	0.4%
Helicopter Ambulance	6	0.2%
Fixed-Wing Ambulance	3	0.1%
Unknown	265	8.9%
Total	2,963	100.0%

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).

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

Mode of Arrival	Injury Severity Score Range				
	1-8 (Minor)	9-15 (Moderate)	16-24 (Serious)	25-75 (Severe)	Missing/NA ISS Scores
Ground Ambulance	729	724	55	14	92
Private Vehicle or Walk-In	677	279	35	13	47
Police	7	3	1	0	1
Other	8	3	1	0	0
Helicopter Ambulance	2	2	1	1	0
Fixed-Wing Ambulance	2	0	0	0	1
Missing	129	121	0	2	13
Total	1,554	1,132	93	30	154

Patient Discharge and Transfer

Of the 2,963 traumas originally seen at non-trauma hospitals, 1,422 (or 48.0%) were transferred to another acute care facility either in Nevada or out of state. Of those transferred to another in-state acute care facility, 65.3% were transferred to one of the four trauma centers in Nevada for additional care. An additional 13.5% were transferred out-of-state for further care (See Table 14).

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

Facility Patient Transferred to	Trauma Cases	Mean ISS	Standard Deviation	ISS Range
Renown Regional Medical Center	297	7.5	4.7	1-34
St. Rose Dominican Hospital Siena Campus	7	5.7	3.3	1-10
Sunrise Hospital Medical Center	319	6.1	4.0	1-25
University Medical Center	306	6.0	4.9	1-25

Risk Factors: Drug/Alcohol Use

Of the 2,963 traumas recorded in the NTR in 2015, injury intent and alcohol or drug use was determined for a little more than 2,700 of these records. Drug/alcohol use includes patients who were confirmed, suspected, or reported to have taken either substance. Overall, drug/alcohol use was involved in 40% of the cases of suicide and 22.1% of the cases of homicide/assault in 2015 (See Table 15).

Table 15: Injury Intent and Drug/Alcohol Use

Injury Intent	Trauma Cases	Drug/Alcohol Use	Percent Drug/Alcohol Use (Row Percent)
Unintentional	2,470	135	5.5%
Suicide	30	12	40.0%
Homicide/Assault	145	32	22.1%
Legal Intervention	2	0	0.0%
Undetermined (accidental/intentional)	21	2	9.5%
Missing	39	3	7.7%
Total	2,707	184	6.8%

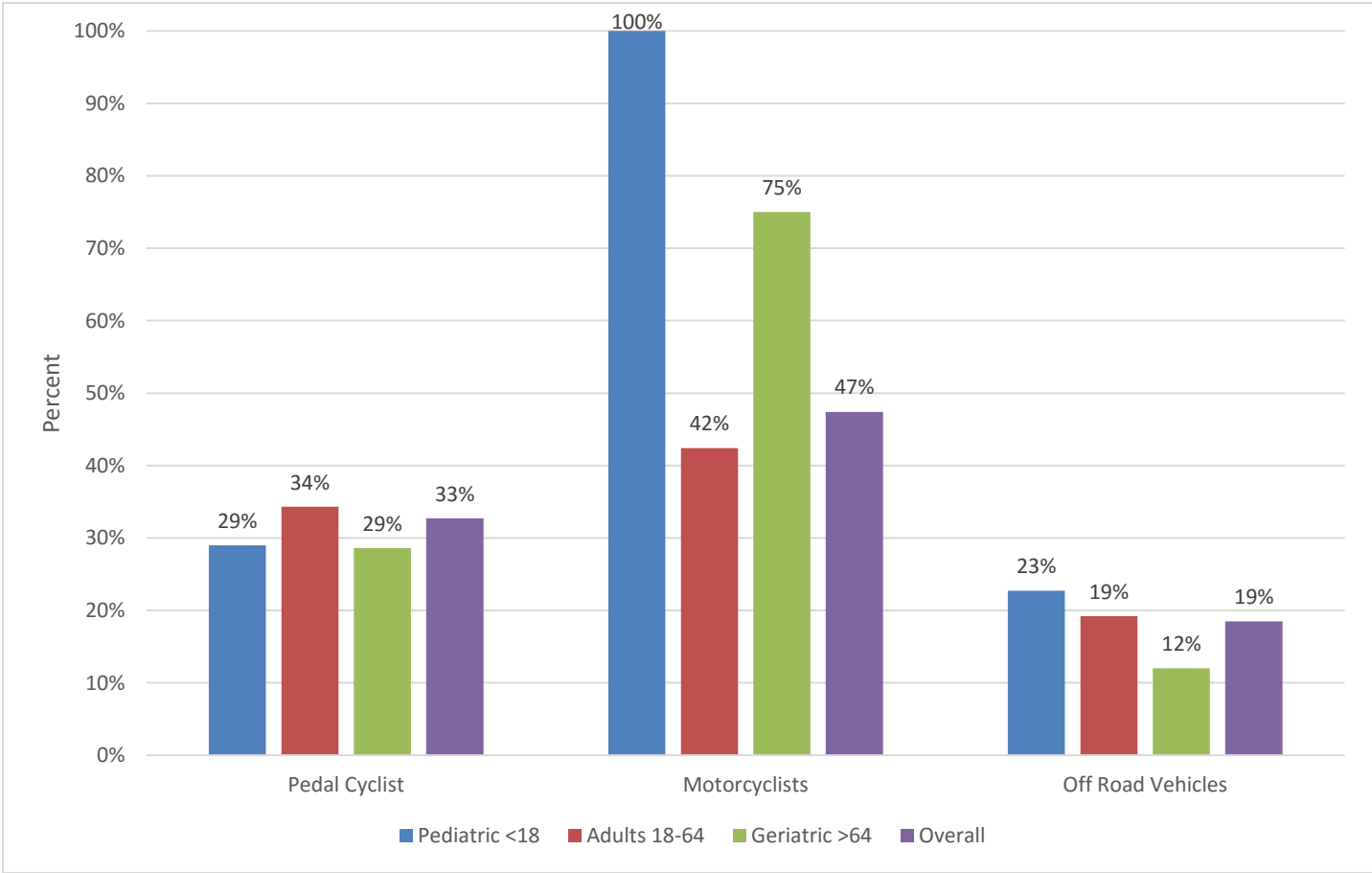
Male trauma patients between the ages of 18-64 were significantly more likely to have drugs or alcohol involved in their injury than females of the same age group (11.6 per 100,000 vs. 5.2 per 100,000 respectively). Additionally, patients who identified as Hispanic were statistically less likely to have drugs or alcohol involved in their injury than Caucasian patients (3.2 per 100,000 vs. 9.5 per 100,000 respectively).

Safety Equipment

In 2015, some form of vehicle restraints were used in 45.5% of all traumas related to Motor Vehicle Traffic. Restraint use was lowest among the adult population (18-64 years of age) with 34% utilizing no restraint devices.

Almost half of motorcyclists involved in traumas related to motor vehicle traffic were wearing helmets. More than 2 out of every 3 pediatric pedal cyclists were **not** wearing helmets when involved in traumas related to motor vehicle traffic. Furthermore, more than 3 out of 4 pediatric off-road vehicle users were **not** wearing helmets when involved in traumas related to motor vehicle traffic (See Figure 9).

Figure 9: Proportion of Helmet Use among Pedal Cyclists, Motorcyclists, and Off-Road Vehicle Users



Falls

Falls were the leading mechanism of trauma in Nevada during 2015. Females experienced a significantly greater trauma rate associated with falls than males. Furthermore, the trauma rate for falls among females was significantly greater than the overall trauma rate for falls in Nevada during 2015 (See Table 16).

Table 16: Trauma Rate for Falls by Sex

Sex	n	Rate per 100,000 (95% CI)
Female	1,195	109.2 [103.0, 115.4]
Male	767	70.0 [65.1, 75.0]
Unknown	1	
Total Falls in NV	1,963	68.3 [65.3, 71.3]

Falls can be further typed by apparatus, location, or height. Same level falls associated with slipping, tripping, or stumbling accounted for more than half of all falls recorded in the NTR in 2015. However, the greatest mortality proportion was associated with unspecified falls (See Table 17).

Table 17: Incidence and Mortality Proportion by Type of Fall

Types of Falls	Count	Percent of Falls (Column Percent)	Deaths	Mortality Proportion (Row Percent)
Same Level, Slipping/Tripping/Stumbling	990	50.4%	12	1.2%
Other and Unspecified	586	29.9%	10	1.7%
Multi-Level	208	10.6%	2	1.0%
Steps	75	3.8%	0	0.0%
On or From Ladder/Scaffolding	51	2.6%	0	0.0%
Out of Building /Structure	17	0.9%	0	0.0%
Collision/Push/Shove By/Other Person	14	0.7%	0	0.0%
Fracture, Unspecified	12	0.6%	0	0.0%
In Hole/Other	9	0.5%	0	0.0%
Suicide Related	1	0.1%	0	0.0%
Total	1,963	100.0%	24	1.2%

Traumas associated with falls impact every age group. However, the geriatric group (age 65+) have significantly greater trauma rates associated with different types of falls when compared to pediatric and adult populations (See Table 18).

Table 18: Trauma Rate by Age and Type of Fall

Age Group	Type of Fall					
	Multi-Level		Other and Unspecified		Same Level, Slipping/Tripping/Stumbling	
	n	Rate per 100,000 (95% CI)	n	Rate per 100,000 (95% CI)	n	Rate per 100,000 (95% CI)
Pediatric <18	47	6.9 [4.9, 8.8]	35	5.1 [3.4, 6.8]	29	4.2 [2.7, 5.8]
Adult 18-64	50	2.8 [2.0, 3.6]	141	7.9 [6.6, 9.2]	186	10.4 [8.9, 11.9]
Geriatric 65+	110	27.6 [22.4, 32.7]	410	102.7 [92.8, 112.7]	775	194.2 [180.5, 207.9]
Unknown	1		0		0	
Total	208	7.2 [6.3, 8.2]	586	20.4 [18.7, 22.0]	990	34.4 [32.3, 36.6]

FINAL NOTE

With vast improvements in non-trauma center 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 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 2016, additional enhancements will occur with the NTR through the transmission of data from the four trauma centers in Nevada. 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. It is with great pleasure that state staff have the opportunity to serve the citizens of Nevada through the Nevada Trauma Registry.

CITATIONS

American College of Surgeons. National Trauma Data Bank 2015 Annual Report. Available at:

<https://www.facs.org/~media/files/quality%20programs/trauma/ntdb/ntdb%20annual%20report%202015.ashx>

Nevada State Demographer's Office. 2003-2014 ASRHO Estimates and Projections. Division of Public and Behavioral Health edition. Vintage 2015.

Nevada State Legislature. Senate Bill No. 35. 1987 64th Regular Session. Available at:

<http://www.leg.state.nv.us/Statutes/64th/Stats198705.html#Stats198705page1042>

Nevada State Legislature. Senate Bill No. 461. 1993 67th Regular Session. Available at:

<http://www.leg.state.nv.us/Statutes/67th/Stats199313.html#Stats199313page2836>

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