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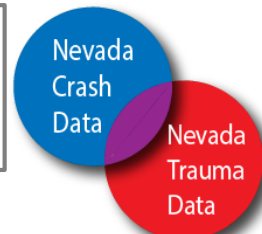


Funding statement:
Funding for this project comes from the Nevada Department of Public Safety- Office of Traffic Safety. Grant #TS-2019-UNLV-00089



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Nevada Department of Transportation crash records were linked to Nevada trauma records from the four Nevada trauma centers: University Medical Center, Renown Regional Medical Center, St. Rose Dominican Hospital and Sunrise Medical Center. This analysis used Nevada trauma data for years 2013-2017 for senior trauma patients age 65+ involved in a traffic injury (N = 2731).



Nevada Seniors 360°:

A road-user status report for Nevada's seniors aged 65+

Background: While the top 6 leading causes of death in 2017 for seniors (age 65+) nationally is chronic illness, the 7th leading cause is unintentional injury, which includes vehicular trauma¹. In comparison to younger drivers, seniors tend to drive less as they age. However, when seniors are involved in a crash, the risk of fatality is high due to their increased susceptibility for injury². The impact of such unintentional injuries on older adults should not be underestimated. Trauma incurred from a road user crash can be the catalyst that changes the life of a formerly independent and mobile senior into a life of reduced quality. This may include disability, decreased independence, and early death. In 2017 in Nevada, 26.6% of the Years of Potential Life Lost before age 85 were due to Unintentional Motor Vehicle Traffic³. The purpose of this report is to help identify demographic groups and associated behaviors which can be the focus of injury prevention efforts.

Figure 1 MECHANISM OF INJURY BY SENIOR AGE GROUP

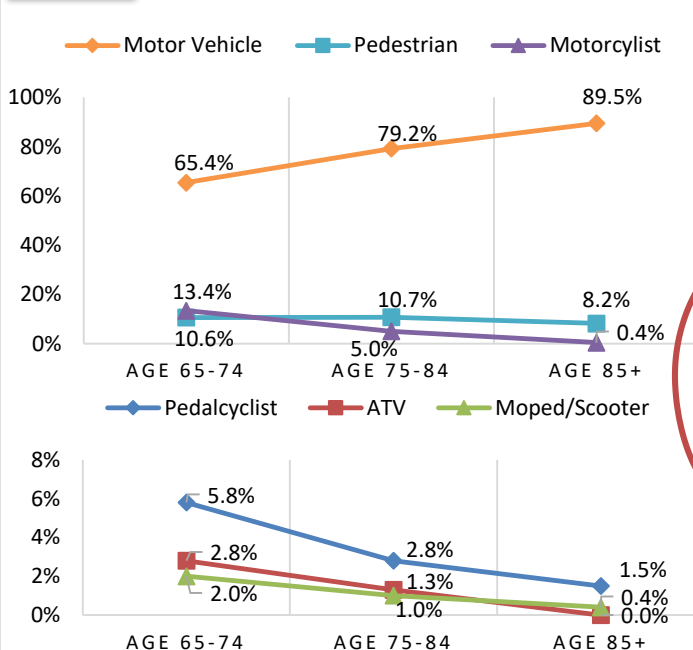
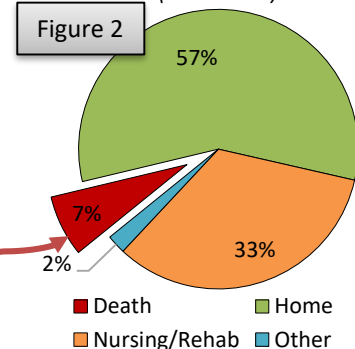


Figure 2 Hospital Disposition (2013-2017)



The percentage of seniors that die from injuries increases for each age group. Percentage of deaths for all age groups is 7%, but there is a significant difference by age group ($p < .001$):

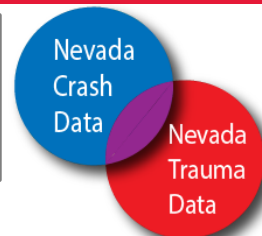
- Age 65-74: 5.4%
- Age 75-84: 8.1%
- Age 85+: 13.6%

Mechanism of Injury by Senior Age Group:

Figure 1 reveals changes in mode of transportation based on age group for seniors admitted to a Nevada trauma center for a road user injury ($p < .001$). As seniors transition from retirement age into more advanced years, there is an increase in the within-group distribution of those admitted for a motor vehicle crash (65.4% to 89.5%), while all other modes of transportation-related injuries decrease. This pattern may be due to increased visual impairment^{3,4} and mobility limitations over time (e.g., motor vehicle occupancy is physically easier than riding a motorcycle), and/or the reduction of risk-taking behaviors as populations age⁵, encouraging the utilization of safer modes of transportation (i.e., motor vehicles). In particular, the reduction of admitted motorcyclists from younger to older seniors (13.4% to 0.4%) underscores this point.



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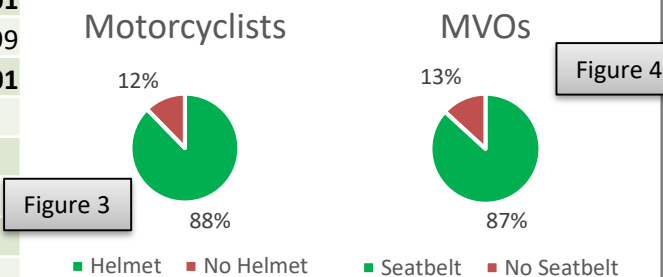
Nevada Seniors 360°:

A road-user status report for Nevada's seniors aged 65+

Demographics & Safety Gear: Table 1 details senior (age 65+) trauma patient demographics and use of safety gear by the top 3 most frequent road user injury types (N=2508) (**Bolded items indicate statistical significance.**) The median age of motorcyclists is lower than those of

Table 1	MVO	Motorcycle	Pedestrian	p-value
N	1958 (78.1%)	266 (10.6%)	284 (11.3%)	<.001
Age (Median)	73.2	68.0	72.0	<.001
Sex (Male)	50.5%	91.4%	64.1%	<.001
Region (South)	65.3%	59.0%	66.9%	0.099
Race/Ethnicity				<.001
White	80.8%	92.7%	77.1%	
Black	4.3%	3.1%	4.4%	
Asian	7.4%	1.5%	5.1%	
Hispanic	2.0%	0.4%	1.5%	
Other Race	5.5%	2.3%	12.0%	

motor vehicle occupants (MVOs) and pedestrians (68, vs. 73 & 72). Males comprise the majority of senior motorcyclists injured (91%), and pedestrians (64%), while MVOs gender is about equal (50%).



A comparison of Trauma **Hospital Outcomes** by the top 3 most frequent road user types for Nevada seniors (N=2508, Table 2) reveals that **MVOs** experience lower Abbreviated Injury Scores (AIS) in comparison to other road users. **Motorcyclists** incur greater average chest (1.58), and upper extremity (1.08) injuries. Senior **pedestrians** are of particular concern, as data analyses reveal that, comparatively, they experience greater head (1.24) and lower extremities (1.62) injuries.

Table 2	MVO	Motorcycle	Pedestrian	p-value
AIS Scores (Mean - Scale 0-6)				
Head	0.51	0.66	1.24	<.001
Face	0.13	0.28	0.28	<.001
Neck	0.04	0.00	0.05	0.16
Abdomen	0.29	0.37	0.30	0.88
Chest	1.03	1.58	0.93	<.001
Upper Extremities	0.52	1.08	0.74	<.001
Lower Extremities	0.61	1.11	1.62	<.001
ISS (Mean - Scale 0-75)	8.55	12.61	12.62	<.001
Hosp Free-Days-30 (Mean)	24.34	22.17	20.10	<.001
Hospital Charges (Median)	\$ 42,983	\$ 65,322	\$ 61,370	<.001
Hospital Disposition				<.001
Death	5.6%	8.3%	16.7%	
Home	59.7%	58.1%	36.8%	
Nursing/Rehab	32.7%	32.3%	43.5%	
Other	2.0%	1.3%	2.9%	

Hospital disposition shows that **senior pedestrians have an almost 3x higher risk of death as compared to senior Motorcyclists and MVOs.** Seniors are considered vulnerable road users as they may be limited in mobility and task capability. If injured, seniors are less able to recover in comparison to younger counterparts due to chronic diseases such as osteoporosis⁶. As Nevadans we must be careful not to cause injury to others while on our roads. Special attention must be paid to senior populations, particularly pedestrian and motorcyclist seniors.

References:

1. CDC WISQARS Leading Causes of Death. Site accessed 3/30/2019: <https://webappa.cdc.gov/sasweb/ncipc/leadcause.html>
2. Insurance Institute for Highway Safety: *Older Drivers*. Site accessed 3/30/2019: <https://www.iihs.org/iihs/topics/t/older-drivers/fatalityfacts/older-people/2016>
3. CDC WISQARS Years of Potential Life Lost. Site accessed 3/30/2019: <https://webappa.cdc.gov/sasweb/ncipc/ypll.html>
4. Cahour, B., Forzy, J., & Martin, C. (2010). Feelings and strategies of senior drivers: Ways of

coping with fear? Paper presented at the Proceedings of the 28th Annual European Conference on Cognitive Ergonomics, 161-168.

5. Tim D. Windsor, Kaarin J. Anstey, Janine G. Walker, Ability Perceptions, Perceived Control, and Risk Avoidance Among Male and Female Older Drivers, *The Journals of Gerontology: Series B*, Volume 63, Issue 2, March 2008, Pages P75-P83, <https://doi.org/10.1093/geronb/63.2.P75>
6. Azami-Aghdash, S., Aghaei, M. H., & Sadeghi-Bazarghani, H. (2018). Epidemiology of road traffic injuries among elderly people: a systematic review and meta-analysis. *Bulletin of Emergency & Trauma*, 6(4), 279.