



Nevada Department of Transportation

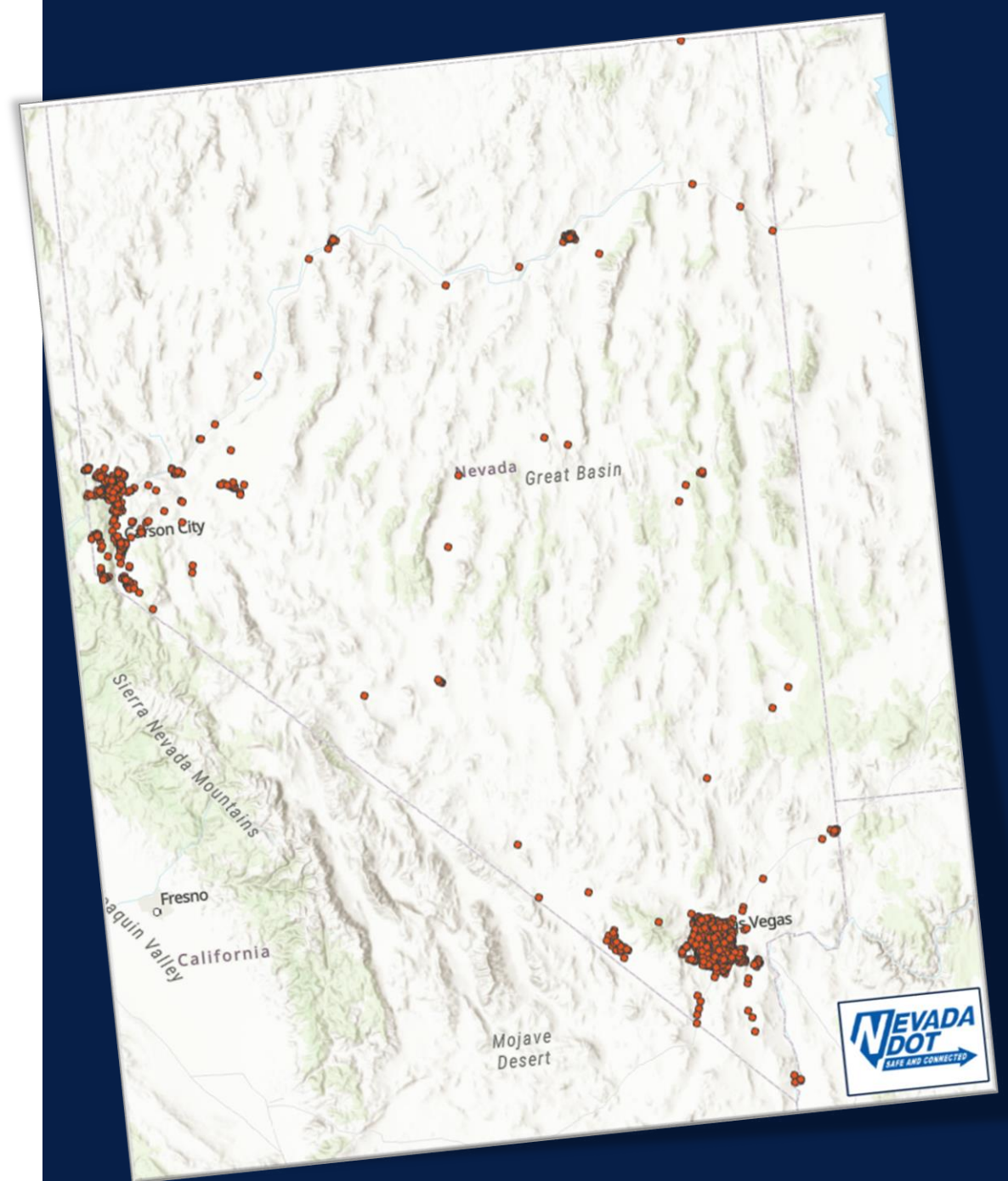
Vulnerable Road User Safety Assessment



September 13, 2023

Project Background

- The Nevada Department of Transportation (NDOT) Traffic Safety Engineering Division developed a Vulnerable Road User Safety Assessment as described in 23 U.S.C. 148(1).
- The assessment was completed in accordance with the requirements of the Infrastructure Investment and Jobs Act (IIJA) A.K.A the Bipartisan Infrastructure Law (BIL)
- The assessment identifies and assesses the safety of Vulnerable Road Users (VRUs), such as pedestrians, bicyclists, and people in wheelchairs etc. .
- The assessment also develops recommendations to improve the safety of VRUs.



WHAT:

A VRU is someone who faces an elevated risk of injury or harm in traffic scenarios due to the absence of protective features typically found in motor vehicles.

Motorcycles, while lacking the protective features of motor vehicles are not considered VRUs.

WHO:

- **Pedestrians**
- **Cyclists**
- **Rollerbladers**
- **Scooter and E-bike riders:** scooters whether manual or electric, electric bikes, and mopeds.
- **Skateboarders:** manual or electric (one wheel and hoverboards)
- **Wheelchair users:** including mobility scooters
- **Highway/ Construction workers:** on foot in a work zone
- **Horseback riders:** people riding on or near roadways
- **Pedestrians with mobility aids:** crutches, walkers, or canes.
- **Children:** who may not have the same level of awareness as an adult
- **Individuals with disabilities:** individuals with cognitive or physical impairments that may impact their capacity to safely navigate traffic.

Data Driven Process for VRU high-risk areas



VRU High-Risk Areas Identified!

NDOT purchased "Near Miss" data which will be utilized once available to identify, locate, and assess potential near misses for VRUs.

Data received and analyzed. Crashes were separated by severity type.

Using GIS, crashes were joined to all statewide routes to produce accurate locations where the VRU crashes occurred.

Each county's emergency access, and bus stop locations were added to the maps.

Census tracts were analyzed to identify average median household incomes and other equity data, which qualified

Data was displayed in graphs showing demographics in multiple categories

Zip code data where the VRU resided, *not* where the crash occurred, was analyzed.





Evaluating Equity

- The VRU assessment looked at data from all 17* Nevada counties, the highest rates of VRU crashes occurred in areas where VRU's access daily and the next rates occur in areas with annual incomes around or below \$35,000.
**Only 10 Counties were Identified as high-risk areas after analysis.*
- The assessment revealed most VRUs residing in economically disadvantaged neighborhoods predominantly rely on public transportation as their mode of commuting.
- The driver age group most frequently involved in VRU crashes is 25-64 years old, coinciding with the largest segment of drivers in the United States.

Collaboration with Regional Transportation Commission (RTC)

- RTC provided NDOT data on transit stop locations throughout Clark and Washoe counties.
- **60% of VRUs in Clark County and 35% in Washoe County experience injuries due to crashes occurring within a 125-foot radius of a bus stop.**
- NDOT will invite RTC to meetings to work together on addressing concerns safety for VRUs at or around RTC facilities.



Findings of VRU assessment

Total VRU Crashes by County from 2016-2020

Clark County: 5,602 Crashes
Washoe County: 1,276 Crashes
Carson City: 110 Crashes
Elko County: 69 Crashes
Douglas County: 68 Crashes
Nye County: 49 Crashes
Churchill County: 46 Crashes
Lyon County: 30 Crashes
Humboldt County: 6 Crashes
White Pine County: 6 Crashes

****Counties not included in VRU assessment: Esmerelda (1 crash), Eureka (3), Lander (1), Lincoln (3), Mineral (0), Pershing (1), and Storey(6).****

- Fatal VRU crashes accounted for **6.10%** of all VRU crashes throughout Nevada from 2016-2020.
- **Non-serious injury** VRU crashes were the **most common** type of crash in Nevada, accounting for over a third of all crashes at **37.94%**.
- VRU crashes are **most likely** to occur near **economically disadvantaged neighborhoods, grocery stores, health clinics, parks, bus stops, and fast food restaurants.**
- The data also showed that VRUs are struck the **most in October** and the **least in July.**
- VRUs are **more likely** to be struck by vehicles between **1:00 PM and 6:00 PM.**

Functional Classification System – Findings

Local (31.44%)

Minor Arterial (30.75%)

Minor Collector (17.90%)

Principal Arterial: Other (17.36%)

Interstate (1.70%)

Principal Arterial: Other Freeways/Expressways (0.40%)

Major Collector (0.37%)

Top Zip Code areas in 5 Critical Counties

Clark County

Zip code	Crash Count	Location Description
89101	432	Location: Las Vegas – Clark County Covers downtown Las Vegas, the Arts District, and residential areas.
89121	275	Residential neighborhoods near Flamingo Road and Eastern Avenue.
89119	273	Around McCarran International Airport, includes residential housing, hotels, and enterprises.
89030	273	Northern Part of Clark County, Nevada Mix of residential zones and community amenities
89108	229	Northwest of downtown Las Vegas, Nevada Residential neighborhoods, apartment complexes, and local businesses.

Washoe County

Zip code	Crash Count	Location Description
89502	225	Location: Reno – Washoe County Encompasses various neighborhoods and commercial zones.
89431	155	Located within the city of Sparks, Nevada Covers different neighborhoods and commercial areas.
89512	115	Located within the city of Reno, Nevada Includes neighborhoods and commercial districts.
89503	74	Located within the city of Reno, Nevada Encompasses neighborhoods and commercial districts
89434	64	Located East of Sparks Encompasses the towns of Lockwood, McCarren, and Patrick along IR 80.

Carson City

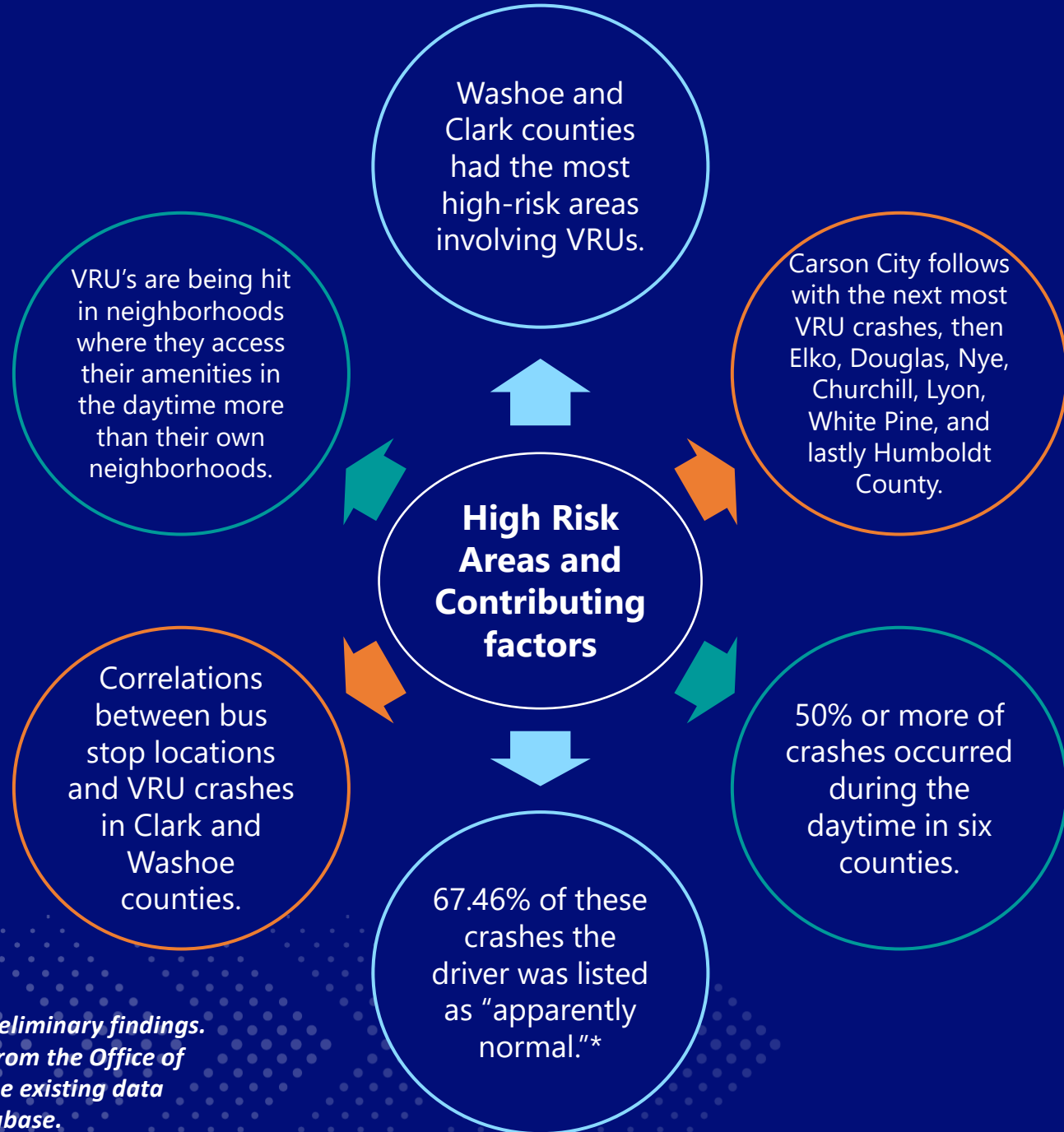
Zip code	Crash Count	Location Description
89701	82	Location: Carson City Majority of city limits of Carson City, Nevada South of US 50 and East of US 395.
89706	35	Located in Carson City, Nevada Located North of US 50 and East of I-580.

Douglas County

Zip code	Crash Count	Location Description
89410	22	Location: Gardnerville and Topaz – Douglas County Area from the town of Topaz to Gardnerville.
89423	11	Location Minden, Indian hills, Genoa, and Johnson Lane Situated along US 95, from Pinenut Road North to Zerolene Road

Elko County

Zip code	Crash Count	Location Description
89801	52	Location: Elko, Wildhorse, Osino, Elburz, and Coin – Elko County Area is North of I-80 up to Wild Horse in White Pine.



**Impairment data is based on preliminary findings. Further information is required from the Office of Traffic Safety (OTS) to address the existing data gaps within the NDOT crash database.*

Nevada Crash Severity: VRU vs. All Vehicle Crashes

VRU Crash Severity

6.11% of all VRU Crashes are
Fatal Injury Crashes

86.71% of all VRU crashes are
Injury Crashes

7.18% of all VRU crashes are
Property Damage Only Crashes

ALL Nevada Crash Severity

.627% of all Nevada Crashes are
Fatal Injury Crashes

42.16% of all Nevada Crashes are
Injury Crashes

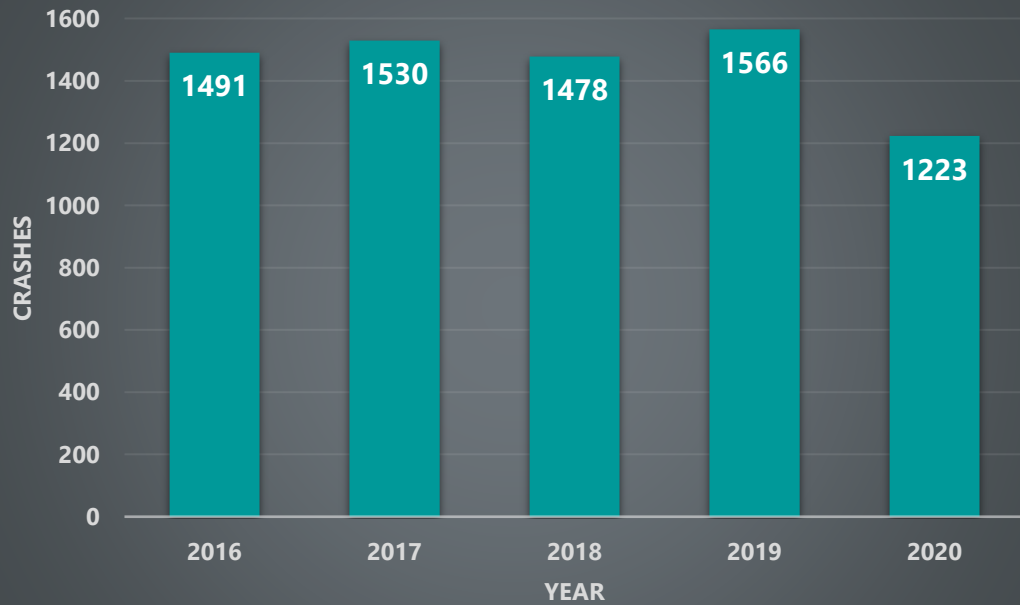
57.21% of all Nevada Crashes are
Property Damage Only Crashes

Prioritizing Vulnerable Road User Safety in Investments and Projects

NDOT is working to improve safety for VRUs by implementing a variety of physical and educational programs which include:

- Raising Awareness
- Construction Projects
- Collaborating
- Taking a Comprehensive Approach
- Monitoring the Effectiveness

Total Nevada VRU Injury Crashes

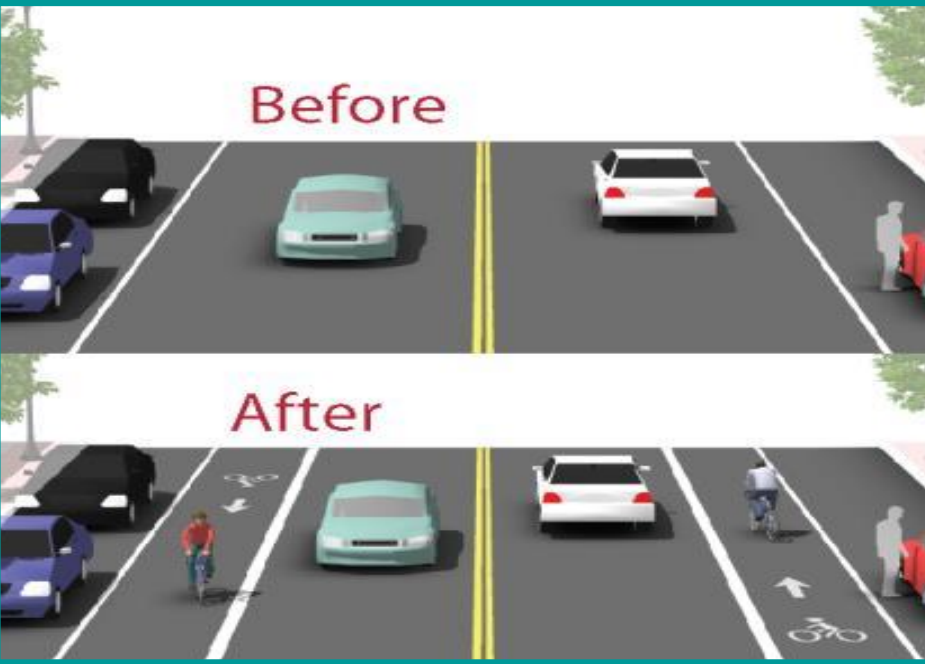


■ Total Nevada VRU Injury Crashes

Improving Safety for Vulnerable Road Users

Low-Speed Zones

- Reducing the speed limit
 - Lane narrowing
- Inserting speed bumps/humps
 - Lowers kinetic energy, which makes it safer for VRUs to cross the street or walk/bike along the side of the road.



Improving Safety for Vulnerable Road Users

Shared Space

- Eliminates traditional traffic controls, such as stop signs and traffic lights.
- Forces drivers and VRUs to share the road and be more aware of each other.
- Can be a controversial design but has been shown to reduce the number of VRU crashes in the right environment.

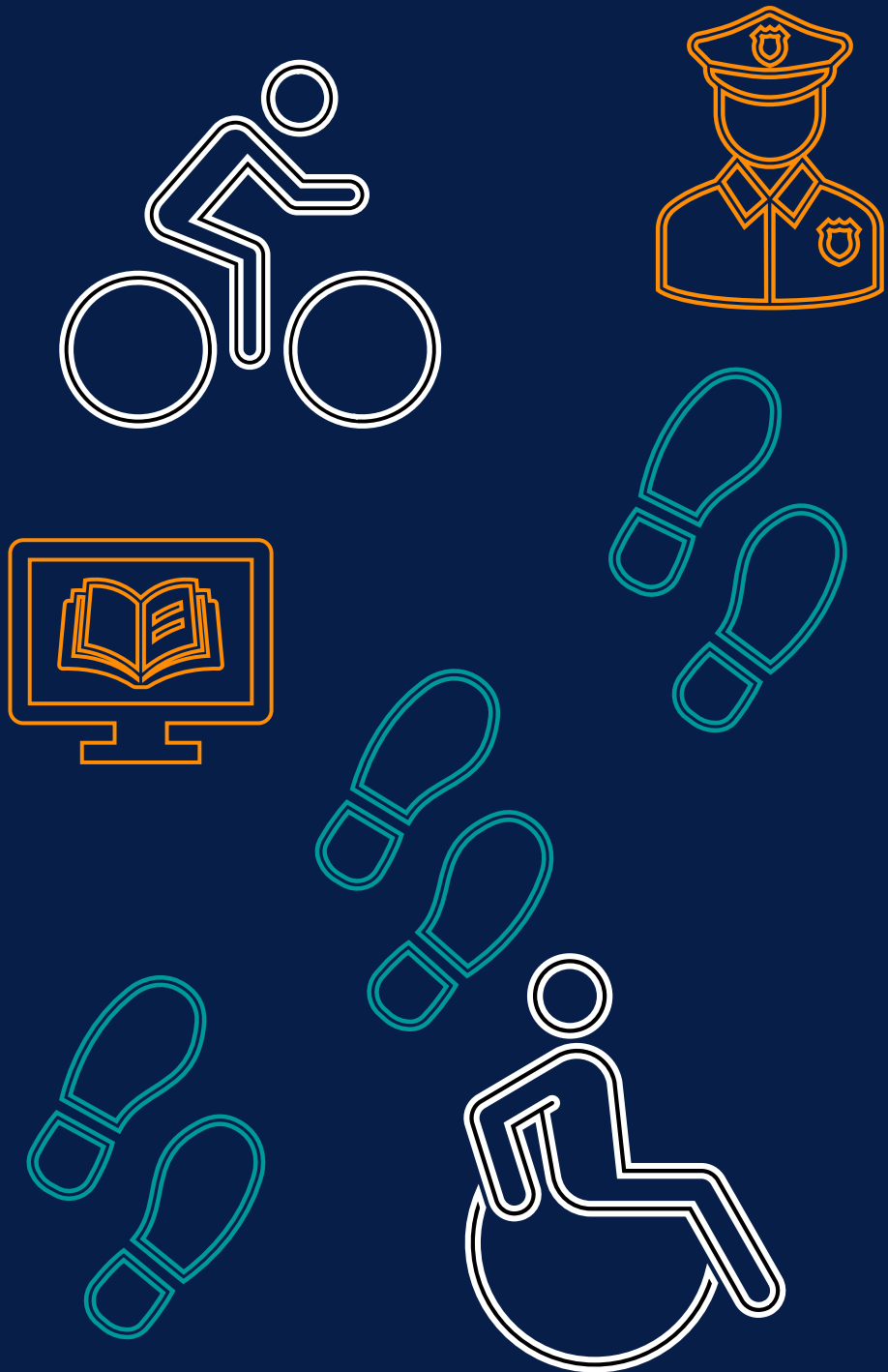


Improving Safety for Vulnerable Road Users

Protected Bike Lanes

- Physically separated from traffic by a barrier, such as a curb or a row of plastic or metal post.
- Makes cyclists more visible to drivers.



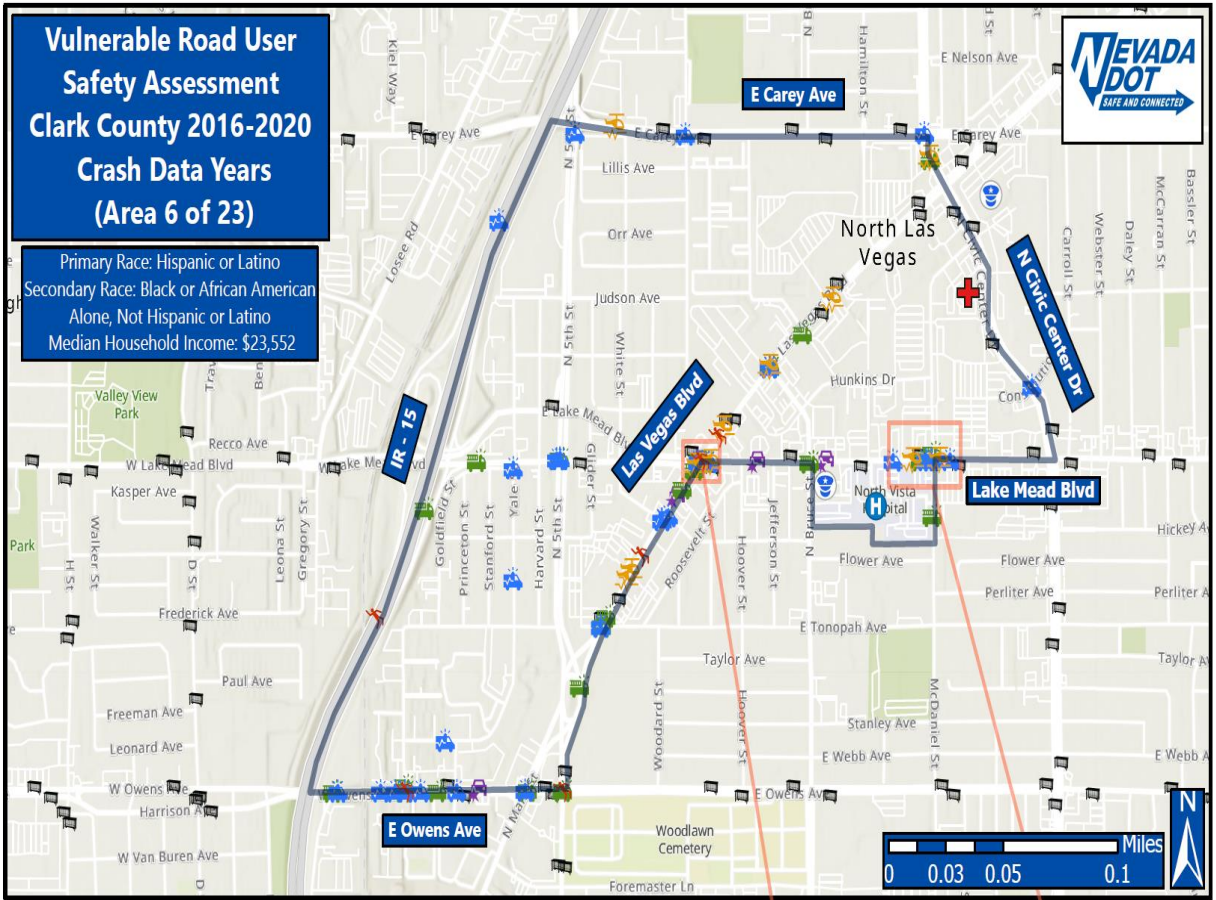


Improvement Concepts

- **Incorporating** community input in identified high-risk areas.
- **Enhancing** driver/public education on VRU safety.
- **Reviewing** VRU laws eliminating the windshield bias.
- **Implementing** roadway engineering enhancements to roads for the safety of VRUs and all other road users.
- **Partnering** with Local Governments, and RTC to improve transit stop accessibility.
- **Promoting** VRU safety awareness among VRUs during travel.

Clark County High-Risk Areas

There were a total of 23 high-risk areas identified in Clark County, below are the top 2.



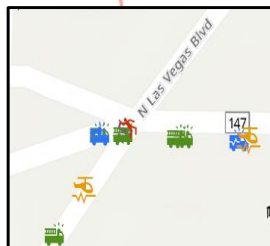
Vulnerable Road User Safety Assessment
Clark County 2016-2020
Crash Data Years
(Area 6 of 23)

Primary Race: Hispanic or Latino
 Secondary Race: Black or African American Alone, Not Hispanic or Latino
 Median Household Income: \$23,552

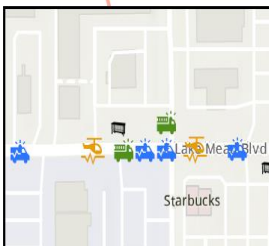


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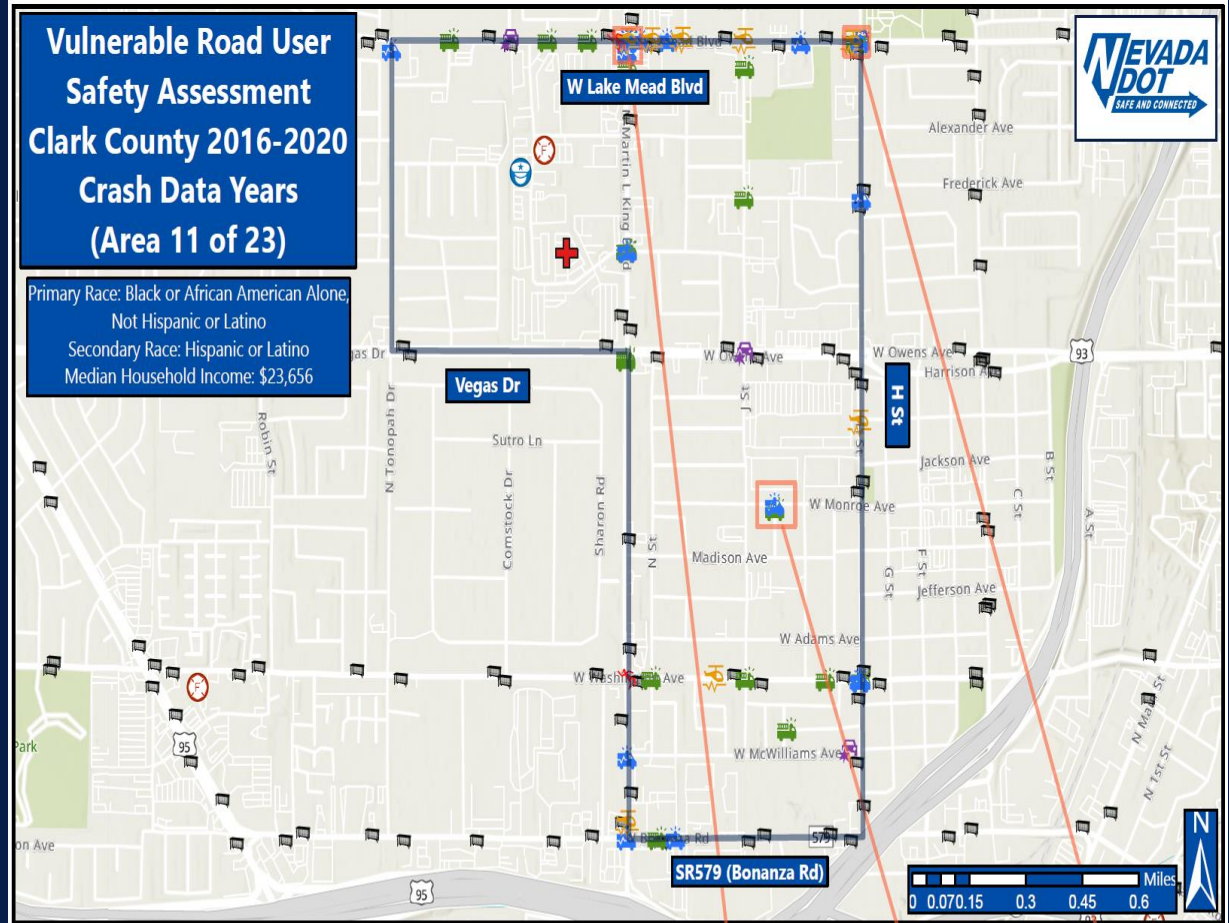
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- Serious Injury Crashes
- Non Serious Injury Crashes
- Claimed/Possible Injury Crashes
- Property Damage Only Crashes
- Bus Stops
- Emergency Clinic
- Hospitals
- Fire Stations
- Law Enforcement
- Tract Boundary



Las Vegas Blvd & Lake Mead Blvd



Lake Mead Blvd & McDaniel St



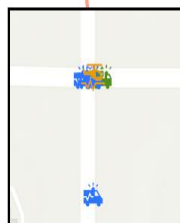
Vulnerable Road User Safety Assessment
Clark County 2016-2020
Crash Data Years
(Area 11 of 23)

Primary Race: Black or African American Alone, Not Hispanic or Latino
 Secondary Race: Hispanic or Latino
 Median Household Income: \$23,656

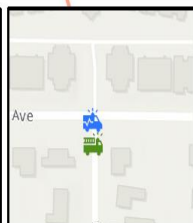


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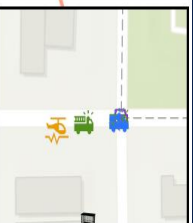
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W Lake Mead Blvd & N MLK Blvd



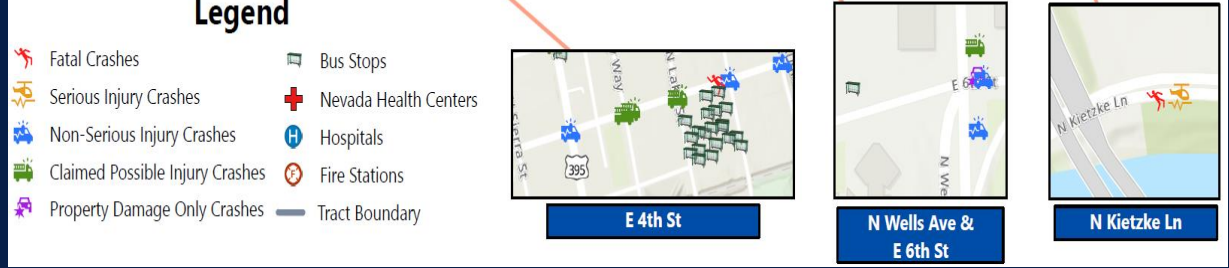
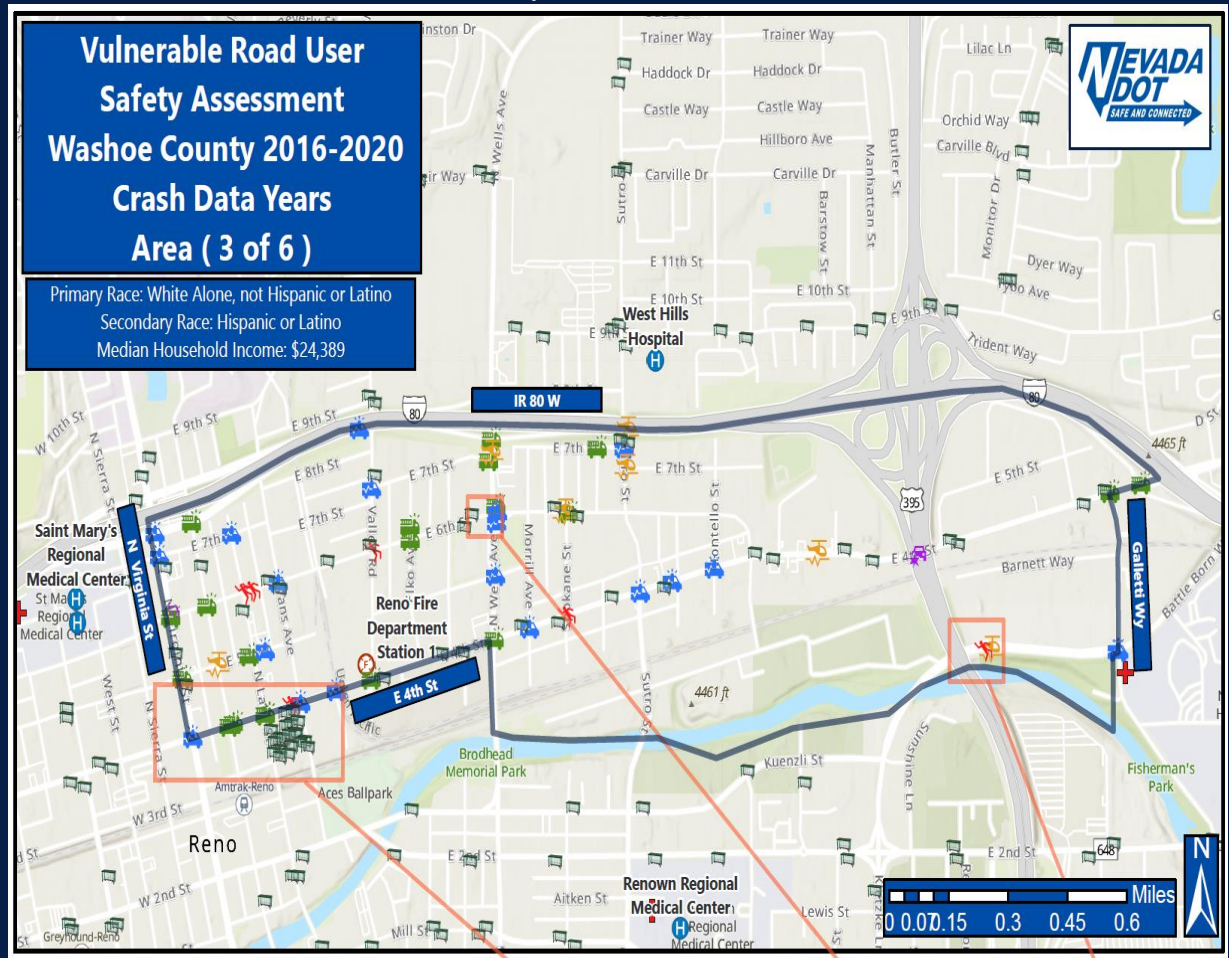
W Monroe Ave & Ivy Ln



W Lake Mead Blvd & Revere St

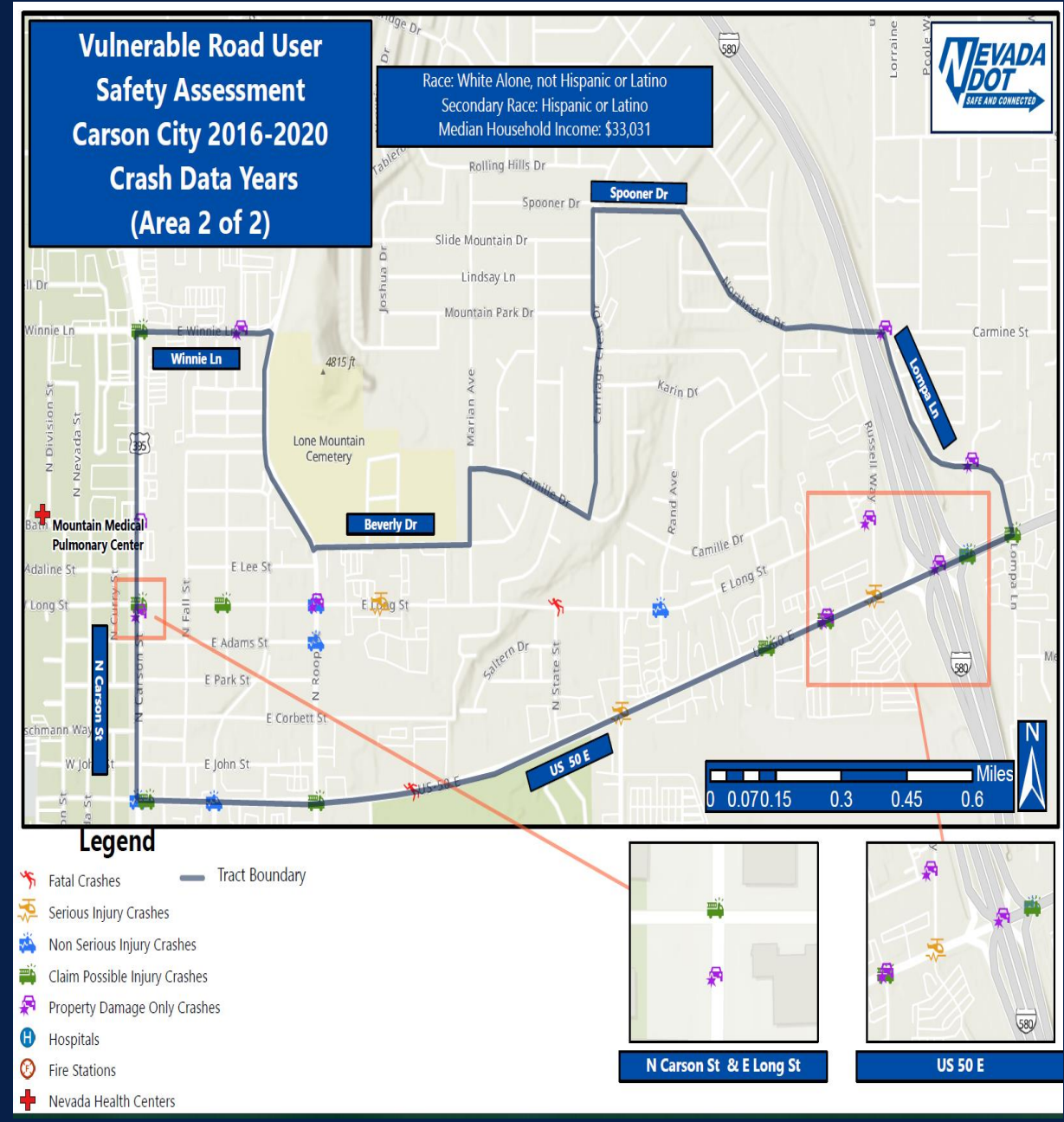
Washoe County High-Risk Areas

There were a total of 6 high-risk areas identified in Washoe County, below are the top 2.



Carson City High-Risk Areas

There were a total of 2 high-risk areas identified in Carson City.



Douglas County High-Risk Areas

There were a total of 1 high-risk areas identified in Douglas County. Equity Criteria was not under \$30,000 but inside this tract there are restaurants, and other amenities in which VRU's in this community use.

