

Getting Home Safely:

An Analysis of Highway Safety in Nevada

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Founded in 1971, The Road Information Program (TRIP)® of Washington, DC is a nonprofit organization that researches, evaluates and distributes economic and technical data on highway transportation issues. TRIP is supported by insurance companies, equipment manufacturers, distributors and suppliers; businesses involved in highway engineering, construction and finance; labor unions; and organizations concerned with an efficient and safe highway transportation network.

Executive Summary

Nevada's network of roads and highways provides its citizens and visitors with a high level of mobility, which enhances the quality of life in the state and supports Nevada's growing economy. But travel on the state's roads and bridges continues to result in an unacceptable rate of traffic fatalities, with an average of one fatality occurring on Nevada's roads and highways every 22 hours.

This report examines the rate of traffic fatalities in Nevada, the cost of serious traffic crashes in the state, and the roadway sections and intersections in Nevada with the highest rate of serious traffic crashes. Also included in the report are steps that can be taken to further improve the safety of the state's traveling public and its visitors.

The following are the most critical findings of the report:

Despite a decrease in traffic fatalities in Nevada in 2007, traffic crashes remain a major source of fatalities in the state, with an average of 398 people being killed annually in roadway collisions from 2003 to 2007. With population and vehicle travel increasing in Nevada at the fastest rate in the country, traffic fatalities in the state are at risk of increasing again unless the state is able to improve traffic safety.

- Traffic fatalities in Nevada dropped to 371 in 2007 after increasing for three straight years between 2003 and 2006 from 367 to 431.
- In 2006 there were 17.3 traffic fatalities per 100,000 persons in Nevada, higher than the national average of 14.2 traffic fatalities per 100,000 persons. In 2007, the rate of traffic fatalities per 100,000 persons in Nevada dropped to 14.5.
- On average, one person is killed every 22 hours in traffic crashes on Nevada's roads.
- From 1990 to 2006, Nevada's population more than doubled, from 1.2 million to 2.5 million people – the fastest rate of population growth in the nation. While the U.S. population grew 20 percent from 1990 to 2006, Nevada's population increased 108 percent during that time.
- From 1990 to 2005, vehicle miles of travel in Nevada increased by 103 percent, from approximately 10 billion annual vehicle miles of travel to approximately 22 billion, the fastest rate of growth in the nation.
- From 2006 to 2007 the number of traffic fatalities in Clark County decreased from 286 to 245 and increased in Washoe County from 32 to 46.

The Nevada Department of Transportation (NDOT) has identified the 60 sections of state roadways and intersections with the highest rate of serious traffic crashes, based on a comparison of the number of serious accidents which occurred and the volume of traffic carried on a particular roadway or intersection.

- The route found to have the highest rate of serious traffic crashes from 2003 to 2006 is a section of State Route 159 in Clark County, which experienced nine traffic fatalities and 72 crashes resulting in injuries.
- Other road sections and intersections listed among the states top 20 in terms of fatal and injury-causing traffic crashes include highways and intersections in Clark, Douglas, Churchill, Washoe, Carson City, Lyon and Storey counties.

Traffic crashes take a tremendous economic toll on a community, in addition to the suffering and grief that they cause to those injured or killed and their loved ones.

- The National Highway Traffic Safety Administration estimates that in 2007, the economic cost of vehicle crashes in Nevada was \$2.2 billion, an average of \$876 per resident. These costs include medical costs, lost economic and household productivity, psychological or emotional trauma, property damage and travel delays.

Numerous roadway safety improvements can be made to reduce serious crashes and traffic fatalities. These improvements are designed largely to keep vehicles from leaving the correct lane, reducing the consequences of a vehicle leaving the roadway and improving the design of intersections.

- Several key factors contribute to fatal and serious traffic collisions in Nevada. These factors include human behavior, the safety features of the vehicle, the medical care of the victims and the safety design of the actual roadway. The design of a roadway has been found to be an important factor in approximately one third of all fatal traffic crashes.
- The type of safety design improvement that is appropriate for a section of rural road will depend partly on the amount of funding available and the nature of the safety problem on that section of road.
- Low cost safety improvements include rumble strips, centerline rumble strips, improving signage and pavement/lane markings, installing lighting, removing or shielding roadside obstacles, the use of chevrons and post-mounted delineators along curves, and upgrading or adding guardrails.
- Moderate-cost safety improvements include adding turn lanes at intersections, resurfacing pavements and adding median barriers.

- Moderate to high-cost improvements include improving roadway alignment, reducing the angle of curves, widening lanes, adding or paving shoulders and adding intermittent passing lanes or adding a third or fourth lane.

Sources of information for this report include the Nevada Department of Transportation, the Federal Highway Administration, the National Highway Traffic Safety Administration and the U.S. Department of Transportation.

Introduction

Whether people are traveling to work or school, shopping, or visiting friends, getting home safely is the most important consideration. And with travel continuing to rapidly increase in Nevada, it is important that every practical step is taken to minimize the likelihood of traffic crashes that can result in injuries and deaths.

This report examines highway safety in Nevada, lists the routes in the state with the highest serious crash rates and describes efforts the state has made to reduce traffic fatalities. The report also includes steps that can be taken to further improve highway safety in Nevada.

Sources of information for this report include the Nevada Department of Transportation, the Federal Highway Administration, the National Highway Traffic Safety Administration and the U.S. Department of Transportation.

Trends in Population and Travel Growth in Nevada

Nevadans enjoy modern lifestyles that rely on a high level of personal and commercial mobility. Significant increases have occurred in the state's population and the rate of travel of its residents.

The continued shift of economic activity to the U.S. Southwest, a shift towards services and the desirability of mild climates, have all contributed to significant population gains in Nevada. From 1990 to 2006, Nevada's population more than doubled, from 1.2 million to 2.5 million people – the fastest rate of population growth in

the nation. While the U.S. population grew 20 percent from 1990 to 2006, Nevada's population increased 108 percent during that time. Similarly, from 1990 to 2005, vehicle miles of travel in Nevada increased by 103 percent, from approximately 10 billion annual vehicle miles of travel to approximately 22 billion.

Traffic Fatalities in Nevada

Several key factors contribute to fatal and serious traffic collisions in Nevada. These factors include human behavior, the safety features of the vehicle, the medical care of the victims and the safety design of the actual roadway.¹ The design of a roadway has been found to be an important factor in approximately one third of all fatal traffic crashes. Human behavioral issues include whether safety belts are used, whether a driver is impaired by alcohol or drugs, whether a driver is distracted or drowsy or whether a driver is speeding.

Traffic crashes are a major source of fatalities in Nevada, with an average of 398 people killed annually in highway vehicle collisions from 2003 to 2007. During that period, nearly 2,000 people – 1,991 were killed in traffic crashes in Nevada.² On average, one person is killed every 22 hours in traffic crashes on Nevada's roads. After increasing from 367 in 2003 to 431 in 2006, traffic fatalities in Nevada decreased to 371 in 2007.

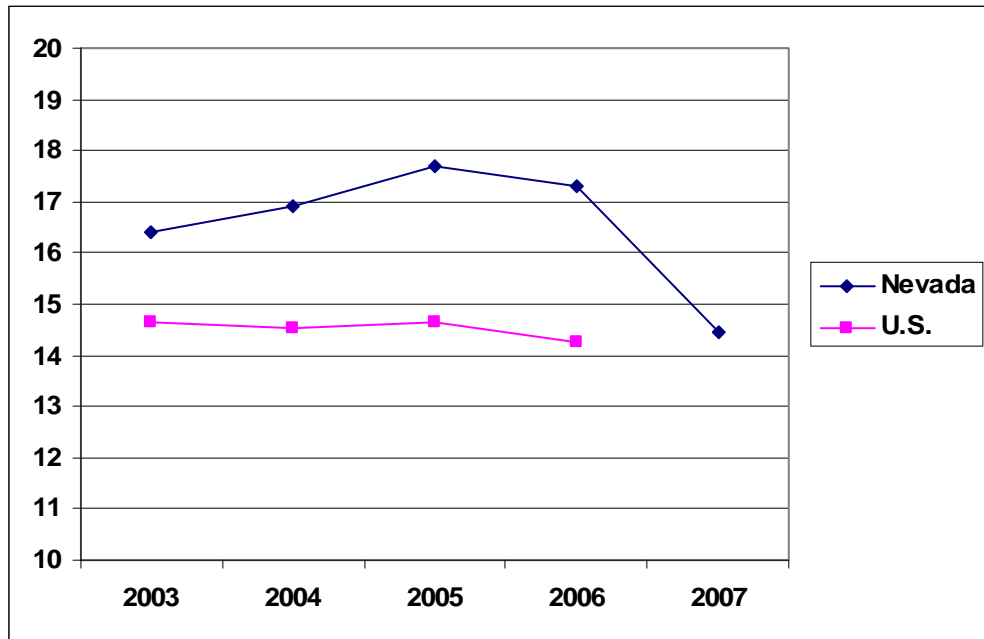
Chart 1. Annual traffic fatalities in Nevada from 2003 to 2007

| YEAR | FATALITIES |
|-------------|-------------------|
| 2003 | 367 |
| 2004 | 395 |
| 2005 | 427 |
| 2006 | 431 |
| 2007 | 371 |

Source: National Highway Traffic Safety Administration

The rate of traffic fatalities in Nevada was significantly higher than the national average between 2003 and 2006. But the significant drop in traffic fatalities in Nevada in 2007 has brought the fatality rate in the state much closer to the national average. In 2006 there were 17.31 traffic fatalities in Nevada per 100,000 residents, higher than the national average, which was 14.24 traffic fatalities per 100,000 residents in 2006. But in 2007, the traffic rate in Nevada declined to 14.46 traffic fatalities per 100,000 residents in the state (the national traffic fatality rate for 2007 is not yet available).

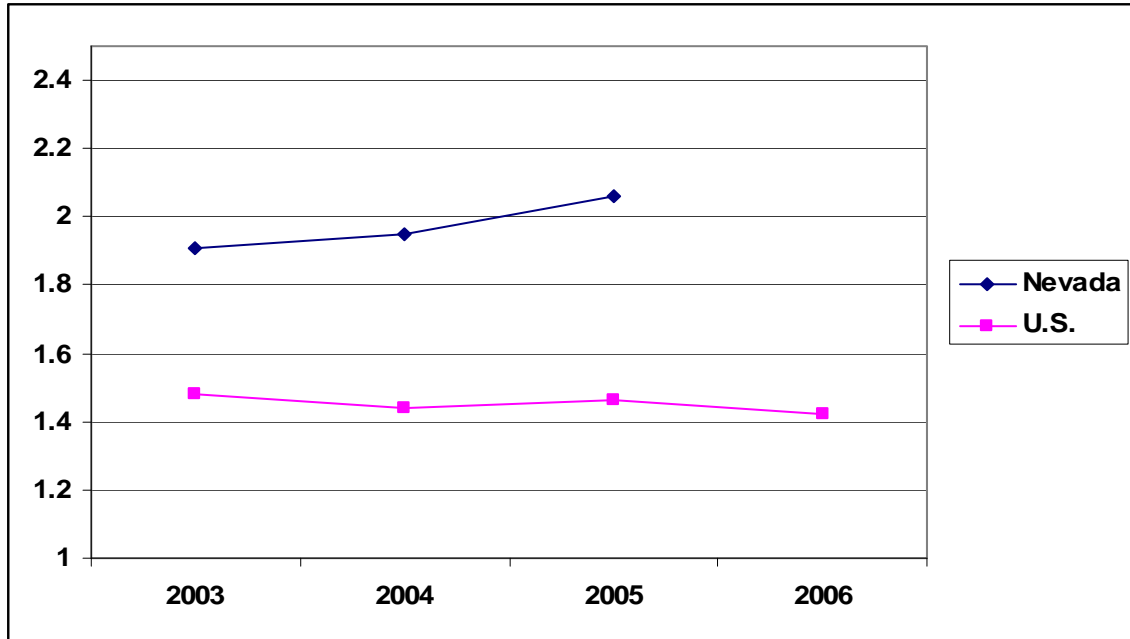
Chart 2. Traffic fatalities per 100,000 persons, 2003 to 2007



Source: TRIP analysis of National Highway Traffic Safety Administration data

The rate of traffic fatalities per 100 million vehicle miles of travel in Nevada has also been significantly higher than the national average in recent years, but will likely be much closer to the national average in 2007 because of the decrease in traffic fatalities in Nevada (traffic fatality rates per 100 million vehicle miles of travel are not yet available for Nevada for 2006 and 2007 and for 2007 nationally). In 2005, there were 2.06 traffic fatalities per 100 million vehicle miles of travel in Nevada, compared to a national average 1.46.

Chart 3. Nevada, U.S. fatality rates per 100 million vehicle miles of travel for 2001 - 2005

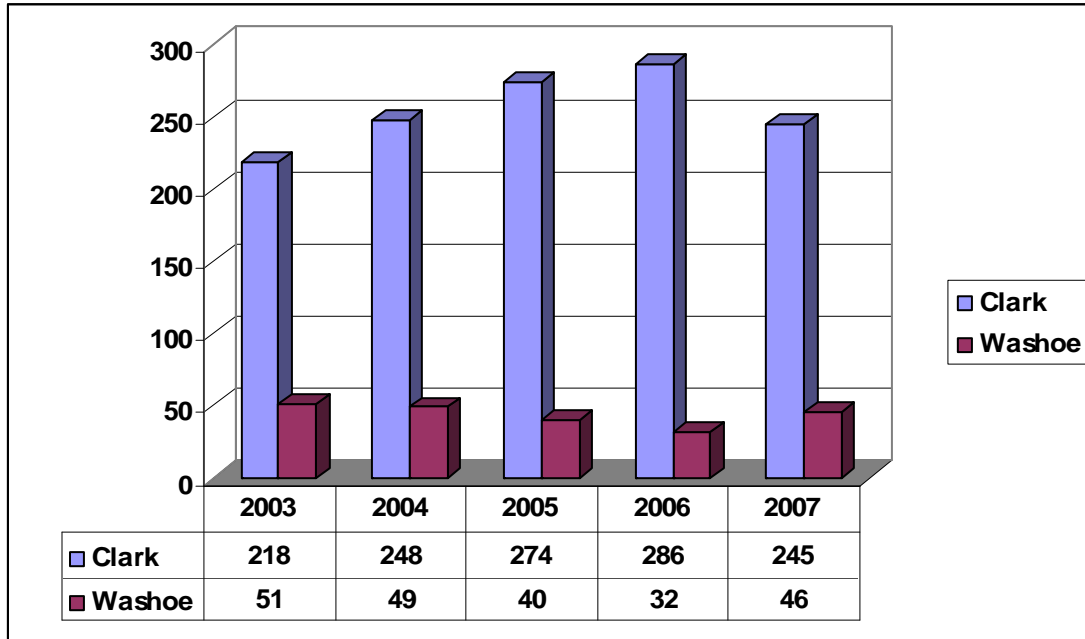


TRIP analysis of National Highway Traffic Safety Administration data

Traffic Fatalities in Nevada's Largest Counties

From 2003 to 2007, three-quarters of Nevada's traffic fatalities occurred in the state's two most populous counties, Clark and Washoe counties. During this period there was an average of 254 traffic fatalities in Clark County and 44 traffic fatalities in Washoe County. In 2007, the number of traffic fatalities in Clark County decreased to 245, from 286 in 2006 and the number of traffic fatalities in Washoe County increased to 46 from 32 in 2006.

Chart 4. Traffic fatalities in Clark and Washoe Counties, 2003-2007



Source: Nevada Department of Transportation

The Cost of Serious Traffic Crashes

Traffic crashes take a tremendous economic toll on a community, in addition to the suffering and grief that they cause to those injured or killed and their loved one. The National Highway Traffic Safety Administration (NHTSA) annually estimates the total *economic costs of motor vehicle crashes in each state. In 2007, NHTSA estimates that the cost of vehicle crashes in Nevada was \$2.2 billion, which is \$876 per resident. These costs include medical costs, lost economic and household productivity, psychological or emotional trauma, property damage and travel delays.³

High Accident Routes in Nevada

Using data provided by the Nevada DOT, TRIP has identified the sections of the state's major roads and highways that have the highest rate of serious traffic crashes, based on traffic crash data over the 2003 to 2007 period. The data includes the number of fatal crashes that occurred on a segment of a highway or an intersection and also the number of crashes which resulted in injury.

To determine which routes and locations have high serious crash rates, the Nevada DOT provided data on segments of rural highways that have high rates of crashes that resulted in injuries and fatalities from 2003 to 2006. The Nevada DOT also provided TRIP with data on urban intersections that had high rates of crashes that resulted in injuries and fatalities from 2004 to 2006. By combining data on the number of crashes, the severity of crashes, the length of the route and the overall travel levels, TRIP was able to calculate a severity rate for each segment of state highway and intersection identified by NDOT. These rates were then used to rank the state's 60 top high accident locations.

The route found to have the highest rate of serious traffic crashes from 2003 to 2006 is a 13-mile segment of State Route 159 in Clark County, which experienced nine traffic fatalities and 72 injury crashes during that time.⁴ Other roads listed among the 20 state routes with the highest serious accident rate include roads in Douglas, Churchill, Washoe, Carson City, Storey and Lyon counties. The following chart includes the 60 Nevada roadway sections and intersections the highest rate of serious crashes. The chart indicates whether the roadway location is a highway segment or an intersection.

Chart. 5: Nevada Roadway Locations with the Highest Serious Accident Rates

| Rank | Highway or Intersection | County | Description | Daily Travel | Injury Crashes | Fatal Crashes | Fatalities |
|------|-------------------------|-------------|--------------------------------------|--------------|----------------|---------------|------------|
| 1 | Hwy | Clark | SR 159 from MP 1.4 to MP 14.1 | 1,950 | 72 | 7 | 9 |
| 2 | Hwy | Douglas | SR 88 from MP 0 to MP 7.1 | 4,600 | 48 | 2 | 2 |
| 3 | Hwy | Clark | SR 604 from MP 13 to MP 25.9 | 1,900 | 34 | 2 | 2 |
| 4 | Int. | Clark | E. Owens Ave. at Pecos Rd. | 30,700 | 20 | 3 | 3 |
| 5 | Hwy | Churchill | SR 117 from MP 0 to MP 5.2 | 1,900 | 10 | 1 | 3 |
| 6 | Int. | Washoe | Oddie Blvd. at Sullivan Lane | 23,300 | 22 | 0 | 0 |
| 7 | Hwy | Douglas | US 50 from MP 7 to MP 12.2 | 13,000 | 41 | 2 | 2 |
| 8 | Hwy | Clark | SR 160 from MP 12.2 to MP 43.2 | 8,660 | 126 | 23 | 23 |
| 9 | Int. | Clark | Jones Blvd. at Hacienda Ave. | 44,350 | 24 | 2 | 2 |
| 10 | Int. | Washoe | Oddie Blvd. at EL Ranchor Dr. | 38,350 | 25 | 1 | 1 |
| 11 | Int. | Clark | Spring Mountain Rd. at Jones Blvd. | 66,850 | 35 | 2 | 2 |
| 12 | Hwy | Carson City | US 50 from MP 0 to MP 6 | 13,298 | 44 | 2 | 2 |
| 13 | Hwy | Storey | SR 342 from MP 0 to MP 3.7 | 2,200 | 8 | 0 | 0 |
| 14 | Int. | Clark | S. Durango Dr. at Sahara Ave. | 73,550 | 39 | 1 | 1 |
| 15 | Hwy | Douglas | US 395 from MP 0 to MP 3 | 4,600 | 13 | 0 | 0 |
| 16 | Hwy | Lyon | SR 341 from MP 0 to MP 10 | 3,350 | 22 | 2 | 2 |
| 17 | Int. | Clark | E. Washington Ave. at Pecos Rd. | 38,850 | 16 | 2 | 2 |
| 18 | Int. | Clark | S. Fort Apache Rd. at Sahara Ave. | 66,400 | 33 | 1 | 0 |
| 19 | Int. | Clark | N. Buffalo Dr. at Cheyenne Ave. | 67,350 | 38 | 0 | 0 |
| 20 | Int. | Clark | N. Lamb Blvd. at Charleston Blvd. | 97,150 | 42 | 1 | 1 |
| 21 | Int. | Clark | E. Washington Ave. at Lamb Blvd. | 56,750 | 22 | 2 | 2 |
| 22 | Int. | Clark | E. Washington Ave. at Nellis | 52,850 | 25 | 1 | 1 |
| 23 | Hwy | Washoe | SR 341 from MP 3.6 to MP 17.8 | 13,700 | 87 | 3 | 3 |
| 24 | Int. | Clark | Tropicana Ave. at Paradise Rd. | 120,000 | 47 | 0 | 0 |
| 25 | Hwy | Douglas | SR 207 from MP 0 to MP 7.8 | 5,400 | 19 | 2 | 2 |
| 26 | Int. | Washoe | McCarran Blvd. at Pyramid Highway | 59,250 | 27 | 0 | 0 |
| 27 | Int. | Clark | Flamingo Rd. at Maryland Pkwy. | 126,750 | 33 | 2 | 2 |
| 28 | Int. | Clark | Stewart Ave. at Nellis | 64,050 | 23 | 1 | 1 |
| 29 | Int. | Clark | E. Charleston Blvd. at Easem Ave. | 87,350 | 28 | 1 | 1 |
| 30 | Int. | Clark | N. Decatur Blvd. at Smoke Ranch Rd. | 55,300 | 24 | 0 | 0 |
| 31 | Int. | Clark | S. Valley View Blvd. at Sahara Ave. | 90,600 | 28 | 1 | 1 |
| 32 | Int. | Clark | Tropicana Ave. at Cameron St. | 56,650 | 24 | 0 | 0 |
| 33 | Int. | Clark | Flamingo Rd. at Koval Ln. | 108,700 | 26 | 2 | 2 |
| 34 | Int. | Clark | Flamingo Rd. at Torrey Pines Dr. | 65,000 | 26 | 0 | 0 |
| 35 | Int. | Clark | Flamingo Rd. at Swenson St. | 90,150 | 32 | 0 | 0 |
| 36 | Hwy | Clark | I-15 from MP 0 to MP 25.5 | 45,500 | 155 | 13 | 18 |
| 37 | Hwy | Churchill | US 50A from MP 0 to MP 16.7 | 7,300 | 37 | 5 | 5 |
| 38 | Int. | Clark | Desert Inn Rd. at Jones Blvd. | 88,350 | 25 | 1 | 1 |
| 39 | Int. | Clark | Tropicana Blvd. at Jones Blvd. | 105,050 | 28 | 1 | 1 |
| 40 | Int. | Clark | S. Decatur Blvd. at Sahara Ave. | 111,000 | 34 | 0 | 0 |
| 41 | Hwy | Lyon | US 50 East from MP 0 to MP 3.7 | 23,200 | 20 | 1 | 1 |
| 42 | Int. | Clark | Rainbow Blvd. at Desert Inn Rd. | 103,450 | 17 | 3 | 3 |
| 43 | Int. | Clark | Flamingo Rd. at Spencer St. | 70,100 | 25 | 0 | 0 |
| 44 | Int. | Clark | N. Lamb Blvd. at Lake Mead Blvd. | 73,550 | 20 | 1 | 1 |
| 45 | Hwy | Clark | I-15 from MP 58.4 to MP 64.1 | 24,000 | 16 | 4 | 7 |
| 46 | Hwy | Clark | US 95 N from MP 94 to MP 121.2 | 5,500 | 40 | 7 | 8 |
| 47 | Hwy | Elko | I-80 East from MP 45.8 to MP 50.8 | 6,800 | 11 | 1 | 1 |
| 48 | Hwy | Washoe | US 395 North from MP 0.5 to MP 6.6 | 30,500 | 36 | 1 | 2 |
| 49 | Int. | Clark | Flamingo Rd. at Decatur Blvd. | 129,750 | 23 | 2 | 2 |
| 50 | Int. | Clark | Las Vegas Blvd. at Tropicana Ave. | 149,850 | 35 | 0 | 0 |
| 51 | Hwy | Douglas | US 395 South from MP 24.4 to MP 30.2 | 31,500 | 25 | 3 | 3 |
| 52 | Int. | Clark | E. Charleston Blvd. at Nellis | 96,600 | 26 | 0 | 0 |
| 53 | Int. | Clark | W. Charleston Blvd. at Main St. | 85,300 | 24 | 0 | 0 |
| 54 | Int. | Clark | W. Sahara Ave. at Las Vegas Blvd. | 121,650 | 29 | 0 | 0 |
| 55 | Int. | Clark | Tropicana Ave. at Pecos Rd. | 115,250 | 28 | 0 | 0 |
| 56 | Int. | Clark | Flamingo Rd. at Eastern Ave. | 113,450 | 27 | 0 | 0 |
| 57 | Hwy | Pershing | I-80 East from MP 3 to MP 7.3 | 8,300 | 3 | 2 | 2 |
| 58 | Hwy | Clark | I-15 from MP 76 to MP 88.7 | 19,500 | 34 | 5 | 5 |
| 59 | Hwy | Lyon | US 50 from MP 0 to MP 6 | 23,200 | 13 | 1 | 1 |
| 60 | Hwy | Douglas | US 395 from MP 3 to MP 15.4 | 8,900 | 27 | 2 | 4 |

Source: TRIP analysis of Nevada Department of Transportation data.

Making Roads Safer

A variety of design improvements can help improve road safety. The goal of these improvements is to keep vehicles from leaving the correct lane, reducing the consequences of a vehicle leaving the roadway and improving the design of intersections.

These improvements include:

Low cost:

Rumble strips – Rumble strips have been found to reduce run-off-the-road crashes by between 25 to 43 percent.⁵ Rumble strips are raised or grooved patterns constructed on the roadway's shoulder.

Centerline rumble strips – Several states have started to install centerline rumble strips to alert drivers who may be encroaching or have strayed into an opposing lane.

Improved signage and pavement markings – Forty-two percent of traffic fatalities on rural, non-Interstate routes from 1999 to 2003 occurred while it was dark.⁶ Traffic signs and pavement markings represent the first line of crucial information for drivers and can help improve night-time visibility. Signs with greater retroreflectivity, more visible pavement markings and raised, reflective lane markings can all assist drivers to stay on a roadway, particularly at night.

Install lighting – A recent study of the addition of street lighting at 49 isolated rural intersections in Minnesota found that nighttime crashes decreased by 35 percent after the addition of lighting.⁷ Forty-two percent of all traffic fatalities on rural, non-Interstate routes from 1999 to 2003 occurred while it was dark.⁸

Removing or shielding road-side obstacles – Trees, large rocks, utility poles, heavy mail boxes and other road-side objects can be shielded, moved or moved back to reduce the likelihood of a vehicle leaving the roadway striking these objects.

Upgrade or add guardrails – Adding or improving guardrails has been found to reduce traffic fatality rates by between 50-58 percent.⁹

Chevrons and post-mounted delineators along curves – The use of chevrons or post-mounted delineators has been found to be effective in reducing crashes at curves by providing drivers with better visual cues about the presence and geometry of a curve.¹⁰

Moderate cost:

Install median barriers – Median barriers have been found to reduce traffic fatality rates by 65 percent.¹¹

Adding turn lanes at intersections – The addition of left turn lanes at rural intersections was found to reduce crashes by between 33 and 48 percent.¹² The addition of right turn lanes at intersections was found to reduce crashes by between eight and 26 percent.¹³

Resurfacing pavements - Resurfaced pavements have been found to result in a 25 percent reduction in fatal crashes.¹⁴

Moderate to high cost:

Add or pave shoulders – Paving or widening shoulders has been found to reduce traffic fatality rates by 10 to 35 percent, depending on the width of the widening and the location.¹⁵

Improved roadway alignment – Realigning roadways has been found to average a 50 percent reduction in traffic fatality rates.¹⁶

Construct intermittent passing lanes or two-way left-turn lane – Adding passing lanes has been found to reduce traffic fatality rates by 20 percent. The addition of a two-way left-turn lane has been found to reduce traffic fatality rates by 30 percent.¹⁷

Widen lanes – Making lanes wider has been found to reduce traffic fatality rates by eight to 10 percent.¹⁸

Add lanes – A recent report on the likely safety benefit of converting two-lane rural roads into four-lane routes found that traffic accident rates would be reduced by between 40 to 60 percent.

Conclusion

Residents and visitors of Nevada depend on the state's system of roads and highways for safe and efficient travel. Unfortunately, the serious and fatal traffic crash rates in the state remain very high.

The recent reduction in the number of traffic fatalities in Nevada are a welcome development. But to insure that traffic fatalities in the state do not begin to increase will require that the state improve the safety features of its roads, highways and intersections.

References

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