

Safety Management Assessment For Clark County, Washington


April 2014



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Safety Management Assessment

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Clark County, Washington

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Chapter 1: Introduction

Safety for all modes of travel is an important component of the metropolitan transportation planning process. This is true for the Clark County, Washington region, where [Southwest Washington Regional Transportation Council](#)¹ (RTC) serves as the Metropolitan Planning Organization (MPO) for Clark County, Washington.

Clark County is located in the southwest area of Washington State. It is the 5th most populous county in the state of Washington with a 2013 population of 435,500. Just over half of the Clark County population (52%) live in incorporated cities. Urban Clark County is part of the Portland-Vancouver-Hillsboro, OR-WA Metropolitan Statistical Area.

In 2005, federal transportation legislation designated safety as a stand-alone planning factor and mandated that MPO's develop a safety element as part of their long range transportation plans. In response to this requirement, RTC developed a 2011 Safety Management Assessment, which was integrated into the regional transportation planning process.

Recently the region began working with local governments, WSDOT, and C-TRAN to develop an update to the 2011 Safety Management Assessment. This Safety Management Assessment update is intended to be a data driven process that builds upon Washington's statewide safety plan. The intent is to reduce fatalities and serious injury resulting from traffic collisions in the Clark County region.

This updated Safety Management Assessment will become a component of the long-range Regional Transportation Plan and the overall regional transportation planning process.

The outline for the Safety Management Assessment is:

- Chapter 1 – An introduction to the Safety Management Assessment.
- Chapter 2 – Summary of the Washington State's Strategic Highway Safety Plan, Target Zero.
- Chapter 3 – Discussion of Clark County's collision data.

Federal legislation designated safety as a stand-alone planning factor and mandated that MPO's develop a safety element as part of their long range transportation plans.

¹ <http://www.rtc.wa.gov/>

Transportation safety research has shown that most collisions are preventable.

- Chapter 4 - Recommendation for implementing safety strategies to meet the region's target to reduce traffic fatalities and serious injuries to zero by 2030.

Background

The U.S. Department of Transportation, through the Federal Highway Administration (FHWA) and the Federal Transit Administration, defines safety as freedom from unintentional harm.

Transportation safety research has shown that most collisions are preventable. The largest contributing factor in collisions is the behavior of the users of the transportation system. Many collisions could be avoided if users of the transportation system obeyed laws, avoided distractions, took appropriate precautions, and focused on the task at hand.

In addition to user behavior, the transportation system needs to be designed, maintained, operated, and managed with the safety of all users in mind. The transportation system should serve its purpose without endangering the people who use it.

For the past several decades, national and statewide safety trends have shown significant improvements. According to the National Highway Traffic Safety Administration (NHTSA), nationwide highway deaths fell to 32,367 in 2011. This is the lowest level since 1949 and a 1.9 percent decrease from 2010. In Washington State, fatalities fell to 454 in 2011. This is a 1.3 percent decrease from 2010. In Clark County fatalities resulting from traffic collisions fell to 16 in 2011, this represents a 33% decrease from 2010 fatalities. However, 2011 fatalities were slightly higher than 2008 and 2009 fatalities.

When comparing 2010 fatality rates, Washington State had 0.80 fatalities per 100 million vehicle miles traveled. This is the fourth best among states and well below the national rate of 1.11 fatalities per 100 million vehicle miles traveled.

Purpose and Goal

The purpose of the Safety Management Assessment is to establish a process that provides for effective management of the transportation system to improve safety for the user. This safety assessment is data driven to identify trends in the region's collision data and recommend strategies to reduce fatalities and serious injuries for all modes on the region's roadways.

The goal of the Safety Management Assessment is the same as that of the Washington State's Strategic Highway Safety Plan (Target Zero), which is to reduce traffic fatalities and serious injuries to zero by 2030. This represents a vision that every life is important.

The goal of the Safety Management Assessment is to reduce traffic fatalities and serious injuries to zero by 2030.

The 4E's of Transportation Safety define broad stakeholder communities that must be involved to improve safety for all.

Transportation Safety Planning

Transportation safety planning encompasses many modes and a wide range of stakeholders to improve safety. Vehicle collisions generally involve multiple contributing factors which will require many stakeholders to work together to address safety issues. Generally, the 4E's of Transportation Safety define broad stakeholder communities that must be involved to improve transportation safety for all users.

- Engineering – Plan and build safe and efficient multimodal transportation system. (e.g., design, maintenance, operations, and planning)
- Enforcement – High visible enforcement to deter unsafe behavior and violation of traffic laws. (state and local law enforcement agencies)
- Education – Education of transportation system users to improve behavior and safety. (e.g., driver education, advocacy groups, educators, prevention specialists)
- Emergency Medical Service (EMS) – Highly organized system to ensure appropriate health response to transportation safety. (e.g., first responders, paramedics, fire, and rescue)

Each of these stakeholders brings a unique perspective to safety planning. Engineers approach safety problems from the roadway and vehicle perspectives, law enforcement focuses on road user behavior, education concentrates on prevention of poor behavior, and emergency response personnel concentrate on post-collision care. Each of these stakeholders are necessary to improve transportation safety.

Federal Policy

Transportation professionals have long recognized the need for an organized approach to transportation safety. With implementation of federal transportation legislation, additional funding and requirements have been given to states and regions to enhance transportation safety.

The Highway Safety Improvement Program (HSIP) was established with the goal of reducing highway fatalities. The aim is for the Highway Safety Improvement Program to accomplish this through the prioritization of infrastructure safety funds and the implementation of strategic highway safety planning. Under the Highway Safety Improvement Program, states are required to prepare a Strategic Highway Safety Plan and have the flexibility to target money to their most critical safety needs identified in the state plan.

Under federal legislation, MPOs are challenged with considering ways to increase the safety of the transportation system for all users. The federal transportation planning process requires MPOs to address eight planning factors. One of these

Transportation professionals have long recognized the need for an organized approach to transportation safety.

factors is “Safety.” MPOs are required to develop a transportation planning process that is consistent with the State’s Strategic Highway Safety Plan.

State Context

The Washington State Department of Transportation (WSDOT) is the lead agency for developing the Strategic Safety Plan for the state. Washington State’s Strategic Highway Safety Plan, Target Zero, was initially completed in 2000 and was most recently updated in 2013.

Target Zero helps to assess the safety needs statewide, encouraging and promoting good safety practices in the design and operation of the transportation system as well as promoting safety by system users.



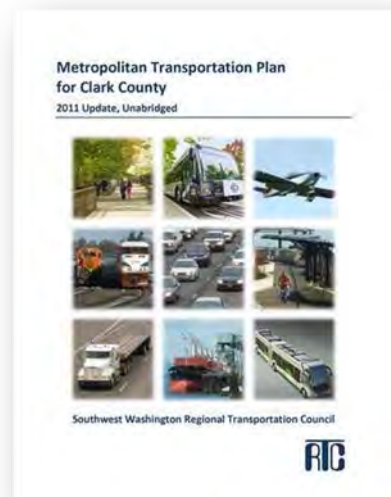
The vision and goal of Target Zero is to reduce traffic fatalities and serious injuries to zero by 2030.

To achieve Target Zero, Washington State must have an average of 24 fewer fatalities and 120 fewer serious injuries each year. Although Washington State has made significant advancement towards their goal, the current trend is not enough to reach the goal of zero fatalities and serious injuries by 2030.

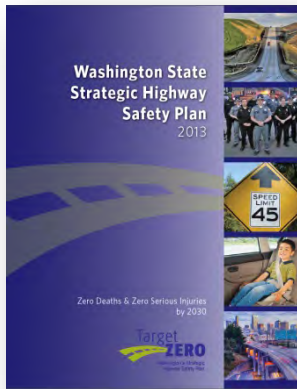
Regional Context

Southwest Washington Regional Transportation Council (RTC) is the Metropolitan Planning Organization for Clark County, Washington and is challenged with considering ways to increase the safety of the transportation system for all users. In response, RTC developed a 2011 Safety Management Assessment for Clark County, Washington. This plan will represent an update to the 2011 Safety Management Assessment for Clark County, Washington.

The Safety Management Assessment for Clark County, Washington, evaluates the safety needs within the Clark County region. It is intended to be a data driven process that builds upon Washington statewide safety plan. The intent is to reduce fatalities and serious injury in the Clark County region.



Chapter 2: Target Zero



Chapter 2 contains a summary of the Washington State’s Strategic Highway Safety Plan, [Target Zero](#)².

Improving safety for all modes of transportation is critical to improving quality of life and improving access for all the citizens of the region. Washington State’s Strategic Highway Safety Plan, Target Zero, establishes a statewide policy of zero fatalities and zero disabling injury collisions by 2030.

Target Zero, helps to assess the safety needs statewide, encouraging and promoting good safety practices in the design and operation of the transportation system, as well as promoting safety by system users.

Target Zero sets state-wide priorities, provides a resource for potential strategies, and monitors outcome at a statewide level.

Vision and Goal

The vision and goal of Target Zero is to reduce traffic fatalities and serious injuries to zero by 2030.

The goal is about saving the “one.” Even one traffic fatality or serious injury is one too many. While Target Zero shows that progress has been made over the last decade, more will need to be done for the state to reach the ultimate goal of zero fatalities and serious injuries.

Target Zero sets statewide traffic safety priorities based upon the most frequently cited contributing factors.

Priorities and Factors

Target Zero sets statewide traffic safety priorities based upon the most frequently cited contributing factors. More than one factor is commonly involved in most collisions. This results in each fatal and serious injury collision being represented under multiple factors. The factors in fatal and serious traffic collisions are grouped into three Priority Levels within Target Zero based on the percentage of traffic fatalities and serious injuries associated with each factor.

² <http://targetzero.com/plan.htm>

Table 1 shows the Washington State Fatality and Serious Injury Factors by Priority Levels, based on the 2009-2011 collision data.

Table 1: Washington State Fatality and Serious Injury Factors, 2009-2011

Washington State 2009-2011	Fatalities		Serious Injuries	
	# of People	% of Total	# of People	% of Total
Priority Level One				
Impaired Driver Involved	704	50.1%	1,519	21.0%
Run-Off-the-Road	615	43.7%	2,156	29.7%
Speeding Involved	555	39.5%	2,126	29.3%
Young Driver 16-25 Involved	487	34.6%	2,763	38.0%
Distracted Driver Involved	426	30.3%	868	11.9%
Intersection Related	290	20.6%	2,474	34.1%
Traffic Data Systems	N/A	N/A	N/A	N/A
Priority Level Two				
Unrestrained Vehicle Occupants	348	24.8%	764	10.5%
Unlicensed Driver Involved	253	18.0%	N/A	N/A
Opposite Direction	221	15.7%	702	9.7%
Motorcyclists	206	14.7%	1,230	17.0%
Pedestrians	193	13.7%	869	12.0%
EMS and Trauma Care Systems	N/A	N/A	N/A	N/A
Priority Level Three				
Older Driver 75+ Involved	126	9.0%	378	5.2%
Heavy Truck Involved	115	8.2%	341	4.7%
Drowsy Driver Involved	45	3.2%	258	3.6%
Bicyclists	26	1.8%	339	4.7%
Work Zone	9	0.6%	132	1.8%
Wildlife	8	0.6%	78	1.1%
School Bus Involved	3	0.2%	18	0.2%
Vehicle-Train	2	0.6%	3	0.0%
Total	1,406		7,247	

Priority Level One

Priority Level One includes the factors associated with the largest number of fatalities and serious injuries in the state. Each of these factors is involved in at least 30% of the traffic fatalities or serious injuries. Traffic Data Systems, while not a cause of collisions, is considered a Level One priority because of the potential for better data to significantly improve the analysis of collision data.

Priority Level One factors include Impaired Driver Involved, Run-Off-the-Road, Speeding Involved, Young Driver 16-25 Involved, Distracted Driver Involved, Intersection Related, and Traffic Data Systems.



Priority Level Two

Priority Level Two factors, while frequent, are not seen as often as Priority Level One factors. Level Two factors were seen in at least 10% of traffic fatalities or serious injuries. Emergency Medical Services (EMS) is included here due to the significant impact effective EMS response has on preserving life and minimizing injuries.

Priority Level Two factors include Unrestrained Vehicle Occupants, Unlicensed Driver Involved, Opposite Direction, Motorcyclists, Pedestrians, and Emergency Medical Services.

Priority Level Three

Priority Level Three factors are associated with less than 10% of fatalities and serious injuries. Priority Level Three factors have a briefer discussion in the Target Zero Plan.

Priority Level Three factors include Older Driver 75+ Involved, Heavy Truck Involved, Drowsy Driver Involved, Bicyclists, Work Zone, Wildlife, School Bus Involved, and Vehicle-Train.



Understanding of Factors

Target Zero provides a description of the issues associated with each factor by priority level, how other contributing circumstances and factors are related,

and how current programs are working to reduce fatalities and serious injuries. The following describes some of the issues associated with priority level one and two factors.

Impaired Driver Involved (Priority Level One)

The nation has been combating impaired driving for decades. Although progress has been made, impaired driving continues to be the main factor in fatal collisions. Drivers in fatal collisions were as likely to be impaired by drugs as by alcohol, with 25% impaired by both. Just over half of impaired drivers in fatal collisions were ages 16-34. Four out of five impaired drivers in fatal collisions were male. Most impaired collisions occurred on rural roads. Most occur at night time, on weekends, and during summer months.



Washington's system wide approach to addressing impaired driving has led to support for prevention initiatives, comprehensive ignition interlock laws, better law enforcement and prosecutor training, more driving under the influence courts, and innovative, targeted, full time DUI enforcement.

Run-Off-the-Road (Priority Level One)

Over half of all fatal and serious injury run-off-the road collisions occurred in horizontal curves, and often on county roads. Keeping vehicles on the road, and reducing the impacts when the vehicle leaves the road, are keys to reducing fatalities and serious injuries associated with run-off-the-road collisions. The most common contributing factors in fatal or serious injury run-off-the-road collisions were speeding and impairment. Over 90% of fatal and serious injury run-off-the-road collisions involve only one vehicle.

Systematic, low-cost improvements spread over a wide area, in combination with enforcement of impaired driving and speeding will likely reduce the number of run-off-the-road collisions.



Speeding Involved (Priority Level One)

Speeding is often combined with other dangerous driving behaviors such as aggressive driving, impairment, and not wearing a seat belt. The majority of speeding-involved fatalities are a result of run-off-the road collisions. Speeding occurs more often among male drivers, young drivers, and motorcyclists. Speeding fatalities are highest in warm weather, on weekends, and on rural roads.

Education, enforcement, and engineering all play a role in getting drivers to slow down. Traffic calming techniques and speed feedback signs are an engineering solution that is most effective along facilities with posted speeds under 35 mph.

Young Driver 16-25 Involved (Priority Level One)

Motor vehicle crashes are the leading cause of death for people ages 16-25 in Washington State. Drivers in this age group have the highest crash rate, and the highest rates of speeding, impaired driving, and distracted driving of any driver age group in the state. Male drivers in this age group are significantly more likely to be impaired in fatal crashes than female drivers.

Education and enforcement will assist in reducing the number of young drivers involved in fatality and serious injury collisions. This effort includes a Department of Licensing letter after first moving violation, driver training programs, high school outreach, and party intervention patrols.



Distracted Driver Involved (Priority Level One)

Other high-risk behaviors are often coupled with distracted driving. The most common high-risk behaviors include impairment and speeding. Almost half of the distracted driver involved fatalities also included run-off-the-road collision. Contrary to the more common pattern of males being greater represented, females represent a greater portion of the distracted driver involved fatalities and serious injuries. Despite the increase in cell phone usage, there has not been a sharp rise in fatalities involving cell phone use.

Washington State intends to reduce distracted drivers through enforcement and education. The use of a handheld wireless communication device while operating a motor vehicle became a primary enforcement law in 2010. High visibility enforcement efforts, high school distracted driving education, and other efforts are being implemented to reduce distracted driving.

Intersection Related (Priority Level One)



Intersection related collisions have been elevated to the Priority One Level primarily due to the number of serious injuries that occur at intersections. There are many kinds of intersection related collisions, but the most common for fatalities and serious injuries include T-bone 29%, hit pedestrian (19%), left turn (14%), rear-end (12%), and hit bicyclists (8%). The greatest number of these collisions occurred on city streets. Failure to yield is the top contributing circumstance in these collisions.

Implementing current intersection safety technologies, including roundabouts and flashing yellow arrows, while also focusing more on pedestrians, will help to reduce intersection related fatality and serious injury collisions.

Traffic Data Systems (Priority Level One)

Timely, accurate, integrated, and accessible data is the foundation for targeting resources and monitoring progress towards statewide goals. Quality data is essential in the need to diagnose the contributing factors to collisions and the assessment of implemented countermeasures.

Unrestrained Vehicle Occupants (Priority Level Two)

Washington State has one of the highest rates of seat belt use in the country. Fatalities and serious injuries resulting from unrestrained vehicle occupants have been steadily declining since the primary seatbelt law was passed in 2002. However, fatality reductions for children have decreased at a slower rate. The majority of unrestrained vehicle occupant deaths are coupled with other high risk behaviors such as impairment and speeding. The unrestrained vehicle occupant fatality rate is much higher at night.

The efforts to reduce unrestrained vehicle occupants will be accomplished through education and enforcement. The Click It or Ticket program is a high visibility enforcement model that is utilized. The state also utilizes nighttime seat belt patrols, and a comprehensive child passenger safety program.



Unlicensed Driver Involved (Priority Level Two)

Of unlicensed driver involved fatalities, over 78% have a suspended or revoked license. Among unlicensed driver fatalities, 75% are impaired, 47% are speeding, and 39% are both impaired and speeding. Trends suggest that the majority of unlicensed drivers operate a vehicle knowing that they do not have the legal right to do so and they engage in other high-risk behaviors, putting themselves and others in danger. Statistically, an unlicensed driver is more likely to be involved in a collision than a licensed driver. Data collection is problematic for unlicensed drivers and usually is only reviewed when fatalities are involved.

Washington State efforts include restriction of mobility, education, enhanced enforcement, and improved data gathering. In 2009, an interlock program was initiated to allow persons who received a DUI to legally drive and reduce the number of reoccurrences.

Opposite Direction (Priority Level Two)

While opposite direction collisions are less frequent than collisions attributed to other factors, they tend to be more severe. The top contributing factors in fatal or serious injury opposite direction collisions (not including over center line) were impairment (35%), speeding (30%), inattention or distraction (15%), falling asleep (6%), and improper passing (5%).

Washington hopes to reduce opposite direction collisions through engineering. Engineering strategies can help reduce opposite direction fatalities and serious injuries. Major initiatives in recent years have included the use of more center line rumble strips, median barriers, and guardrail. Centerline rumble strips are a cost-effective approach to reducing cross-centerline collisions.

Motorcyclists (Priority Level Two)

Motorcycle fatalities have not been decreasing like other traffic fatalities. In Washington State, motorcycles make up just 4% of the registered vehicles, but account for 14.7% of the traffic fatalities. Impairment and speeding are major contributing factors, and most fatalities are male. About 52% of motorcycle involved fatalities did not involve any other vehicle. Motorcycle operators are the only group of drivers in which drug impairment is more prevalent than alcohol use. Young and middle aged riders are over-represented in fatal crashes. Young riders represent a higher proportion of fatalities, but a much smaller proportion of endorsed riders.



The efforts to reduce motorcyclist fatalities and serious injuries will be accomplished through education and enforcement. This effort includes media required training, media campaigns, high visibility enforcement, safety clinics, and other efforts. The 2007 Impound Law allows law enforcement to impound motorcycles of those operating a motorcycle without a proper motorcycle endorsement. This has resulted in an increase in rider training.

Pedestrians (Priority Level Two)



Walking is an integral component of our transportation system. Almost everyone is a pedestrian at some time. Pedestrian contributing factors are more common than vehicle contributing factors in pedestrian fatalities. For drivers the main contributing factors are distraction (21%), failure to yield (13.5%), and impairment (12%). For pedestrians, the main factors are impairment (50.8%), not visible to the driver (31%), and crossing improperly (28.5%). Most pedestrians involved in fatal



or serious injury collisions are male. Nearly one-third of pedestrian fatalities occur in the winter months, between the hours of 3-9 p.m. Almost half occurred at an intersection and 70% occur in urban areas.

Data supports that higher speeds increase the probability of fatal or serious injury when a pedestrian is struck by a vehicle. The City of Seattle estimates that nine out of 10 pedestrians survive when hit by a vehicle traveling at 20 mph or lower, while only 1 out of 10 pedestrians survive when hit by a vehicle traveling at 40 mph or higher.

Washington State will work to reduce pedestrian collisions through education, enforcement, and engineering. This includes high visibility enforcement, safe routes to school programs, channelization enhancements, pedestrian improvements, and other measures. Pedestrian improvements could include things such as medians, street lighting, pedestrian countdown heads, and ADA upgrades.

Emergency Medical Services (Priority Level Two)

Washington States Emergency Medical Services and trauma system provides care for patients with severe injuries, resulting in mortality rates that are significantly lower at hospitals with trauma centers than at hospitals without a trauma center.

Objectives & Strategies

Target Zero includes specific objectives and strategies to help reduce traffic fatalities and serious injuries. These strategies were developed using national-level research, existing pilot programs, and input from many statewide stakeholders. Each of the strategies in Target Zero has been given an effective rating: Proven through professional evaluation, Recommended based on documented best practices, and Unknown with limited evaluation. The majority of Target Zero strategies focus on the four E's of transportation safety (Engineering, Enforcement, Education, and Emergency Medical Services).

Target Zero includes 14 objectives and 39 strategies for impaired driver involved collisions.



RTC's Support for Target Zero

Southwest Washington Regional Transportation Council (RTC) supports the State's Target Zero plan through the regional transportation planning process. It is the intent of RTC, through collaboration with WSDOT and other local agencies, to work together to achieve the vision of the Washington State's Strategic Highway Safety Plan Target Zero and reduce traffic fatalities and serious injuries to zero by 2030.

RTC views the Safety Management Assessment for Clark County as a logical extension of our efforts to improve transportation safety throughout the Clark County region. It is vital that the region build and maintain a transportation system that provides a safe and secure means of travel by all modes.



Chapter 3: Clark County Collision Data

Clark County collision data is compared to collision data contained in the Washington State Strategic Highway Safety Plan Target Zero, to assess how trends within Clark County compare to statewide trends.

Fatalities and Serious Injuries Trends

Over the past several decades, national and statewide safety trends have shown significant reduction in fatalities and serious injuries resulting from traffic collisions.

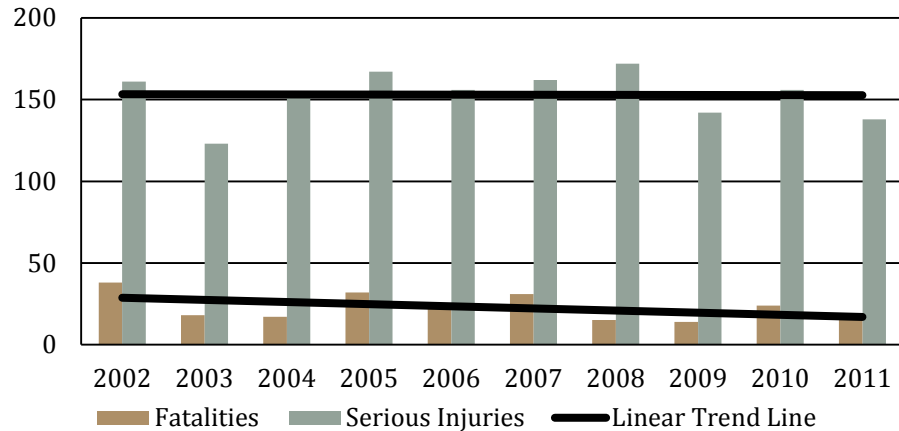
Figure 1 shows the statewide declining trend for both fatalities and serious injuries between years 2002-2011. Over the ten year period fatalities declined 31 percent and serious injuries declined 33 percent. Between 2010 and 2011 fatalities declined 1.3 percent and serious injuries declined 3.8 percent. To reduce traffic fatalities and serious injuries to zero by 2030, fatalities must be reduced by an average of 24 per year and serious injuries must be reduced by an average of 120 per year.

Figure 1: Washington State Fatality and Serious Injury Trends 2002-2011

Figure 2 shows a declining trend for both fatalities and serious injuries in Clark County between years 2002-2011. The Clark County serious injury trend is lower than the statewide average. Over the ten year period fatalities declined 58 percent and serious injuries declined 14 percent. To reduce traffic fatalities and serious

injuries to zero by 2030, fatalities must be reduced by an average of one per year and serious injuries must be reduced by an average of nine per year.

Figure 2: Clark County Fatality and Serious Injury Trends 2002-2011



Source: WSDOT Collision Database

There are a number of factors that have contributed to this decline in traffic fatalities and serious injuries. Exposure to the risk of traffic collisions has declined because people were driving fewer miles due to higher gasoline prices and the slowing of the economy. As the economy recovers, the exposure to the risk of traffic collisions is likely to increase, and other measures will need to be implemented to lower the risk of fatalities and serious injuries. Other measures include improvements in vehicle design, enhancements to the transportation system, education of the transportation users, enforcement of traffic laws, and improved emergency response time.

Clark County Priorities and Factors

Clark County traffic safety priorities are set based upon the most frequently cited contributing factors. The factors in fatal and serious injury collisions are grouped into three Priority Levels based on the percentage of fatalities and serious injuries associated with each factor. In Clark County the factors land in the same priority level as statewide, but prioritize differently within each Priority Level. Table 2 shows the Clark County Fatality and Serious Injury Factors by Priority Levels, based on the 2009-2011 collision data.

Table 2: Clark County Fatality and Serious Injury Factors, 2009-2011

Washington State 2009-2011	Fatalities		Serious Injuries	
	# of People	% of Total	# of People	% of Total
Priority Level One				
Impaired Driver Involved	28	51.9%	96	22.0%
Young Driver 16-25	19	35.2%	195	44.7%
Speeding Involved	21	38.9%	116	26.6%
Involved Run-Off-the-Road	20	37.0%	125	28.7%
Distracted Driver Involved	17	31.5%	56	12.8%
Intersection Related	9	16.7%	166	38.1%
Traffic Data Systems	N/A	N/A	N/A	N/A
Priority Level Two				
Unrestrained Vehicle Occupants	15	27.8%	50	11.5%
Pedestrians	11	20.4%	58	13.3%
Opposite Direction	11	20.4%	40	9.2%
Unlicensed Driver Involved	10	18.5%	N/A	N/A
Motorcyclists	9	16.7%	66	15.1%
EMS and Trauma Care Systems	N/A	N/A	N/A	N/A
Priority Level Three				
Heavy Truck	4	7.4%	10	2.3%
Involved Older Driver 75+ Involved	3	5.6%	21	4.8%
Bicyclists	1	1.9%	25	5.7%
Drowsy Driver Involved	0	0.0%	10	2.3%
Work Zone	0	0.0%	9	2.1%
Wildlife	0	0.0%	7	1.6%
School Bus Involved	0	0.0%	1	0.2%
Vehicle-Train	0	0.0%	0	0.0%
Total	168		1,051	

Factors

Over the last decade, Washington State has focused their safety efforts to address the most common factors involved in fatalities and serious injuries. This effort has shown results with a reduction in fatalities and serious injuries. This section displays fatality trends by priority factor.

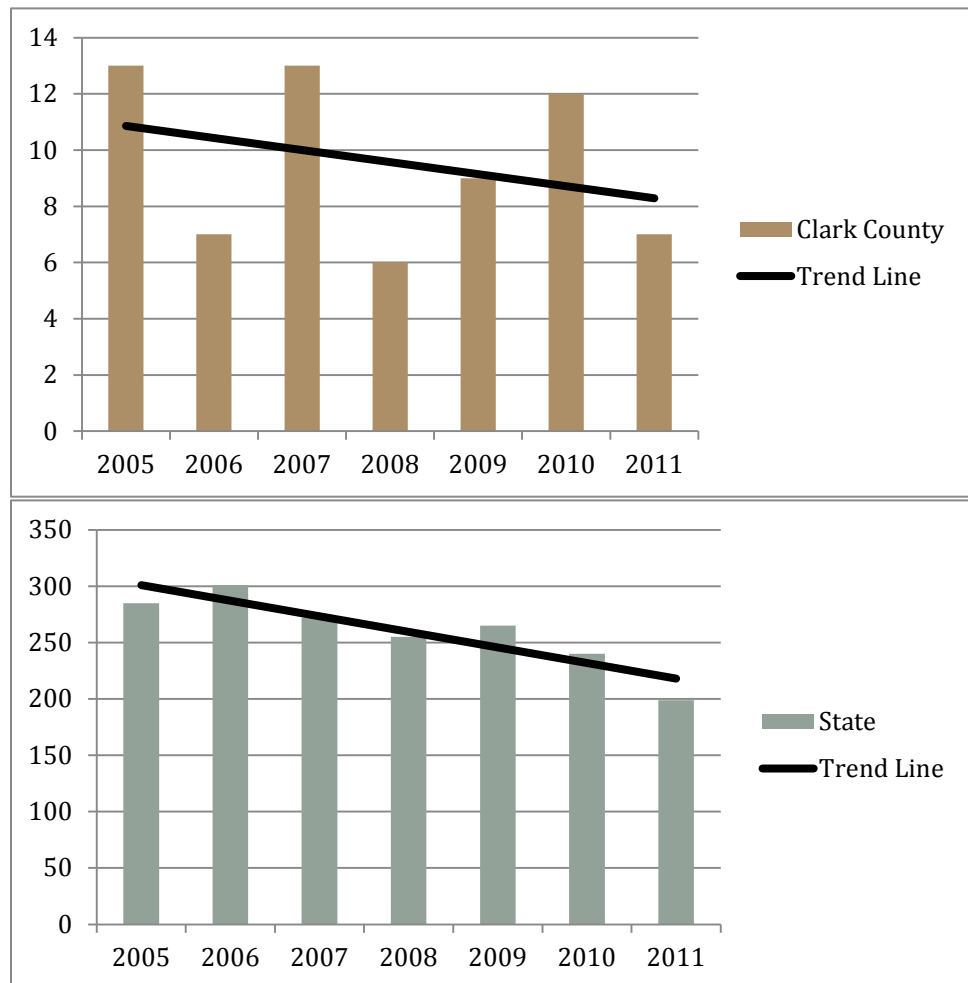
Impaired Driver Involved



Impaired drivers are involved in approximately 52 percent of the fatalities and 22 percent of the serious injuries in Clark County. This is slightly higher than the statewide percentages. Impaired driving is the highest factor in Clark County.

Over the seven year period of 2005-2011, impaired driver fatalities declined 46 percent in Clark County and 30 percent statewide. Although Clark County has a downward trend, the lowest year for impaired driver fatalities was in year 2008 with six fatalities. The state has a downward trend.

Figure 3: Fatalities Involving Impaired Drivers





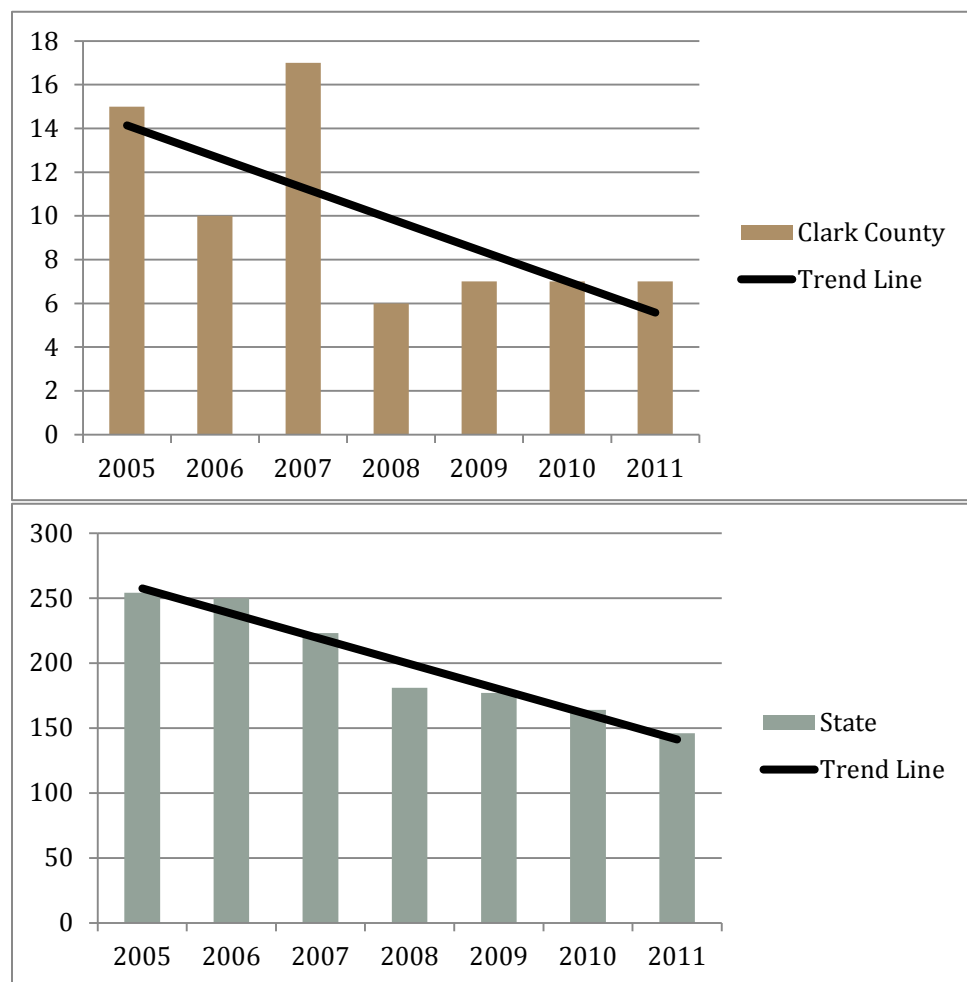
Young Driver 16-25 Involved

In Clark County, the young driver involved factor is elevated to the second highest factor under Priority One Level. This is primarily due to the number of serious injuries involving young drivers.

Young drivers age 16 to 25 are involved in approximately 35 percent of the fatalities and 45 percent of the serious injuries in Clark County. Clark County has a serious injury percentage that is approximately seven percent higher than the statewide average, despite Clark County having a lower portion of its population in this age range than the statewide average.

Over the seven year period of 2005-2011, young driver fatalities declined 53 percent in Clark County and 43 percent statewide. Although Clark County has a downward fatality trend, the trend has been flat the last four years. The State has a downward trend.

Figure 4: Fatalities Involving Young Driver 16-25



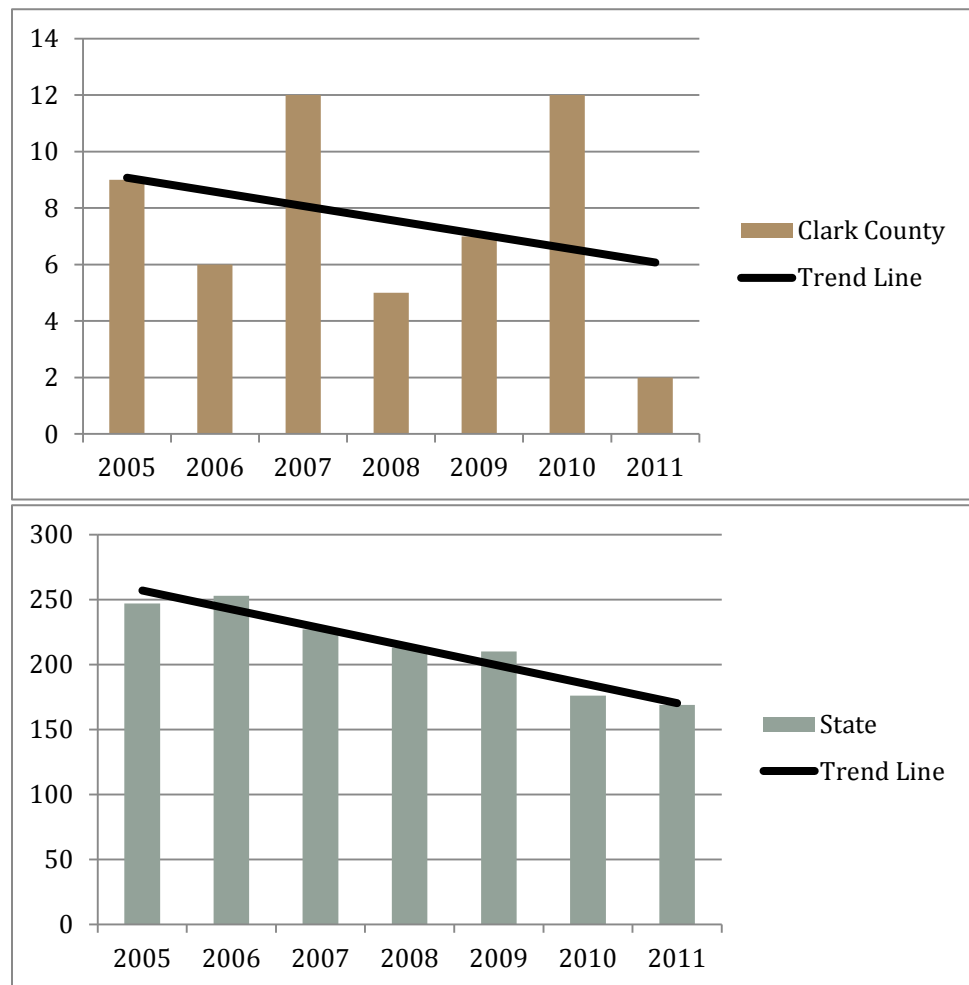


Speeding Involved

Speeding is involved in approximately 39 percent of the fatalities and 27 percent of the serious injuries in Clark County. Clark County has a fatality and serious injury percentage that is approximately the same as the statewide average. Speeding involved is the third most common factor contributing to fatal and serious injury collisions in Clark County.

Over the seven year period of 2005-2011, speeding fatalities declined 78 percent in Clark County and 32 percent statewide. Although Clark County has a downward fatality trend, the trend varies significantly between years and 2011 was significantly lower than any previous year. The state has a positive downward trend.

Figure 5: Fatalities Involving Speeding





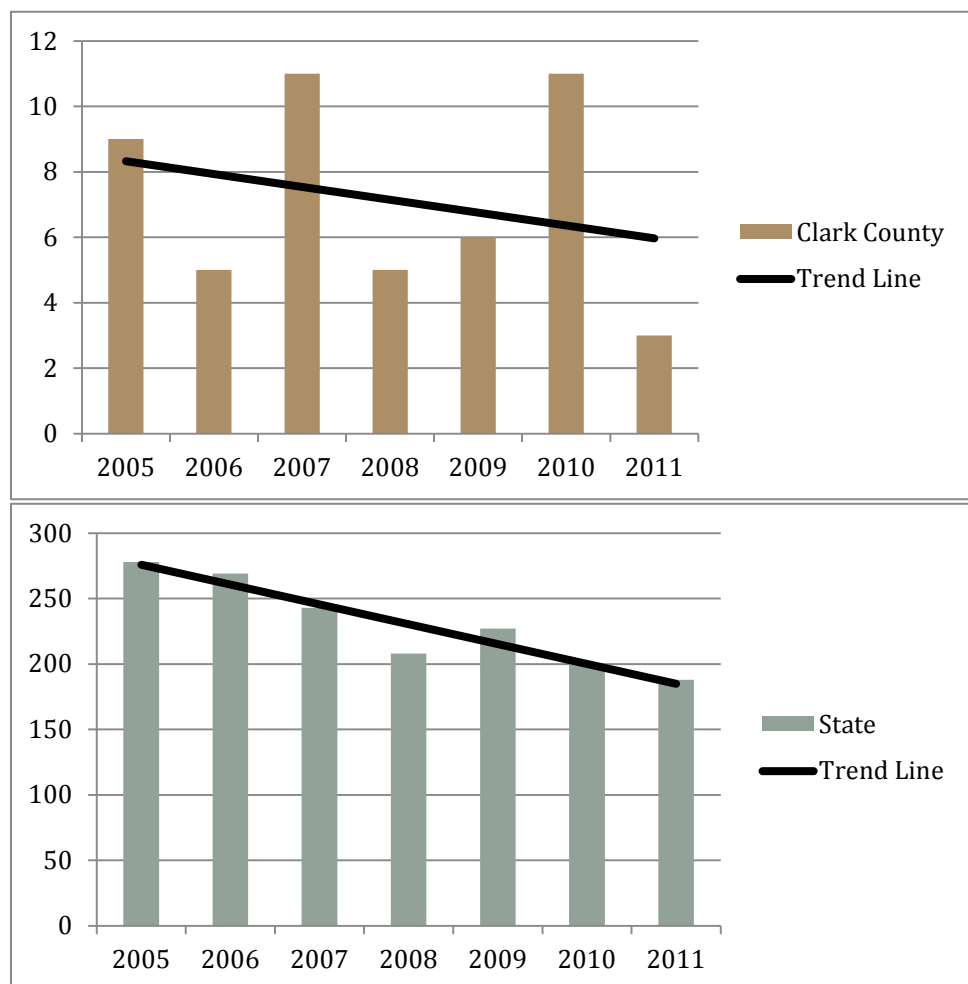
Involved Run-Off-the-Road

The run-off-the-road factor has been lowered from the second highest factor at the state level to the fourth highest factor within Clark County. This may be due to the urban nature of much of Clark County, where run-off-the-road collisions are less frequent.

Run-off-the-road is involved in approximately 37 percent of the fatalities and 29 percent of the serious injuries in Clark County. Clark County has a run-off-the-road fatality percentage rate that is approximately seven percent lower than the statewide average.

Over the seven year period of 2005-2011, run-off-the road involved fatalities declined 67 percent in Clark County and 32 percent statewide. Although Clark County has a downward fatality trend, the trend varies significantly from year to year. The state has a positive downward trend.

Figure 6: Fatalities Involving Run-Off-the-Road



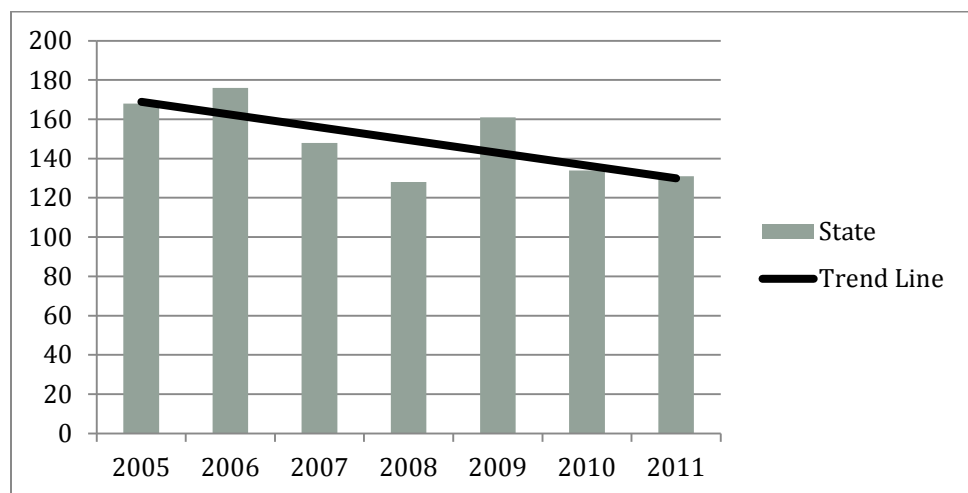
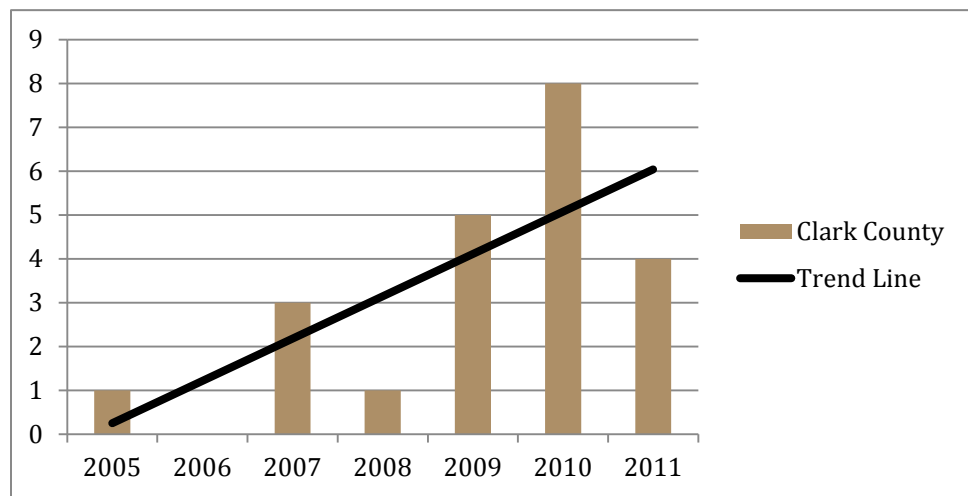
Distracted Driver Involved



The distracted driver factor is involved in approximately 31 percent of the fatalities and 13 percent of the serious injuries in Clark County. Clark County has a distracted driver involved fatality and serious injury percentage that is approximately the same as the statewide average. Distracted driver involved is the fifth most common factor contributing to fatal and serious injury collisions in Clark County.

Over the seven year period of 2005-2011, distracted driver involved fatalities increased 300 percent in Clark County while decreasing 22 percent statewide. Although Clark County has an upward fatality trend, the percentage of fatalities where distracted drivers were involved is consistent with the statewide average for same time period. The State has a downward trend. This trend may be partially related to a higher priority being placed on the reporting of distracted driving.

Figure 7: Fatalities Involving a Distracted Driver



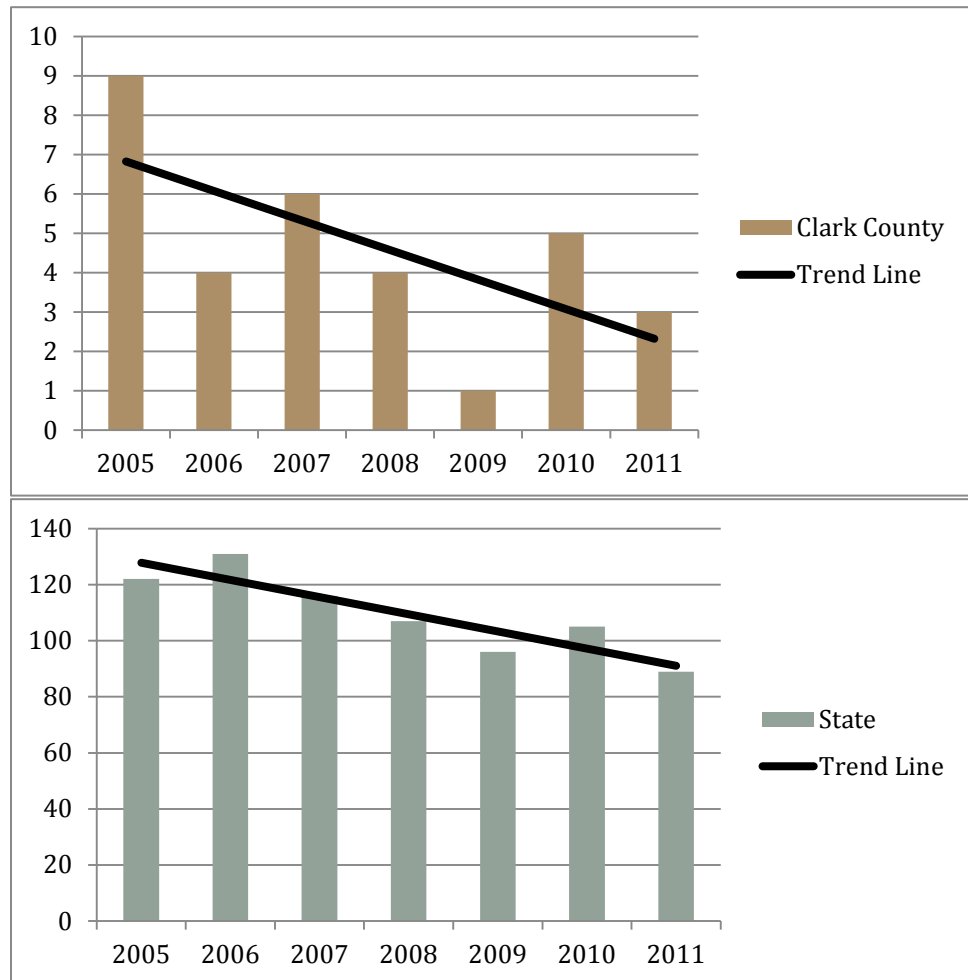


Intersection Related

The intersection related factor is involved in approximately 17 percent of the fatalities and 38 percent of the serious injuries in Clark County. Clark County has a distracted driver involved fatality percentage that is 4 percent lower than the statewide average and serious injury percentage that is approximately 4 percent higher than the statewide average. Intersection related is the sixth most common factor contributing to fatal and serious injury collisions in Clark County.

Over the seven year period of 2005-2011, intersection related fatalities declined 67 percent in Clark County and 27 percent statewide. Clark County has a strong downward fatality trend for intersection related fatalities. The state has a downward trend.

Figure 8: Fatalities that are Intersection Related



Traffic Data Systems

Quality data is essential in the need to identify contributing factors and remains in Priority Level One.

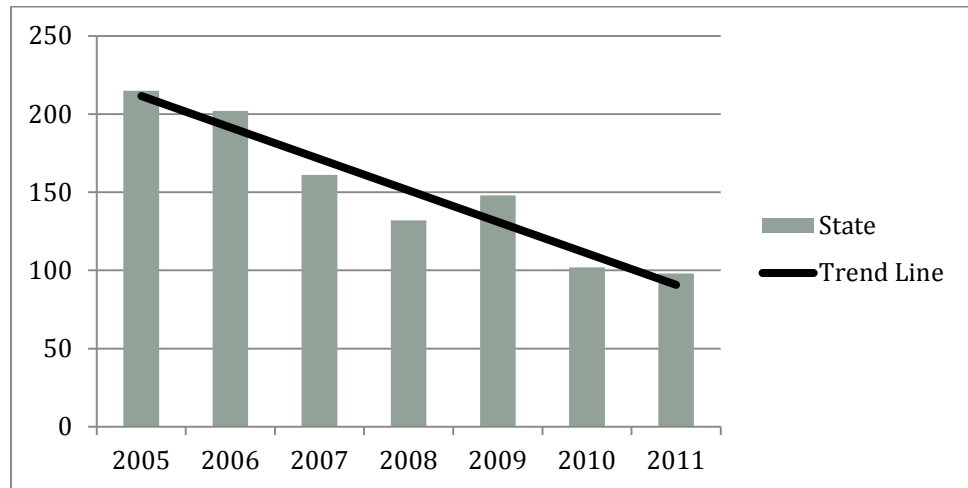
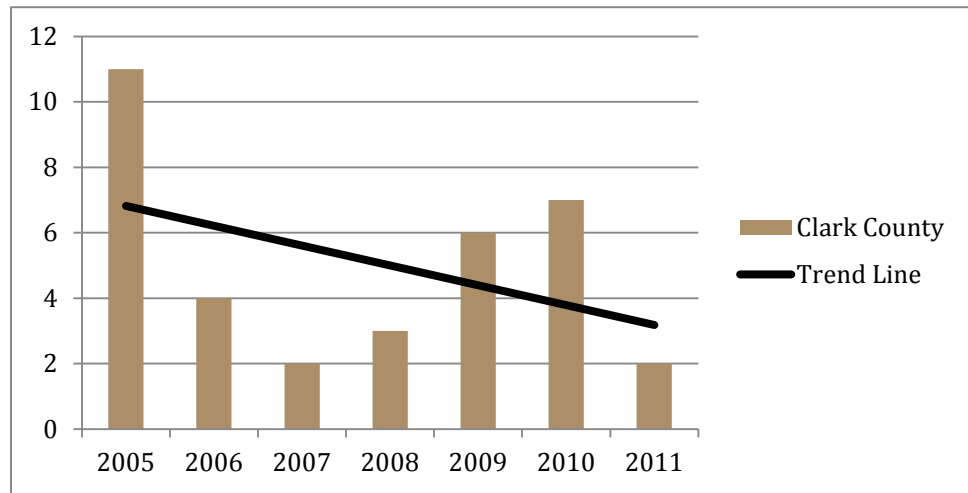


Unrestrained Vehicle Occupants

The unrestrained vehicle occupant factor is involved in approximately 28 percent of the fatalities and 11 percent of the serious injuries in Clark County. Clark County has an unrestrained vehicle occupant fatality percentage that is 3 percent higher than the statewide average and serious injury percentage that is approximately the same as the statewide average. Unrestrained vehicle occupants is the eighth most common factor contributing to fatal and serious injury collisions in Clark County.

Over the seven year period of 2005-2011, unrestrained vehicle occupant fatalities declined 82 percent in Clark County and 54 percent statewide. Clark County has a downward fatality trend for unrestrained vehicle occupants. The State has a positive downward trend.

Figure 9: Fatalities with an Unrestrained Vehicle Occupant





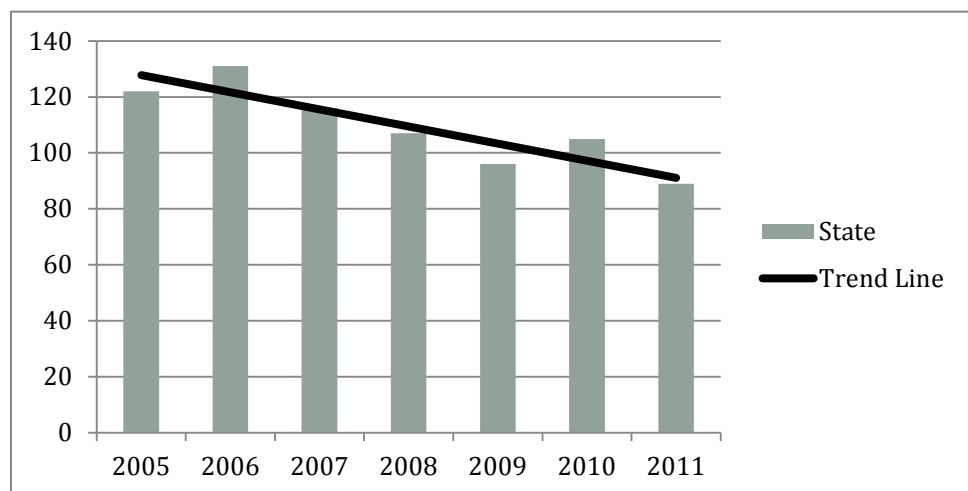
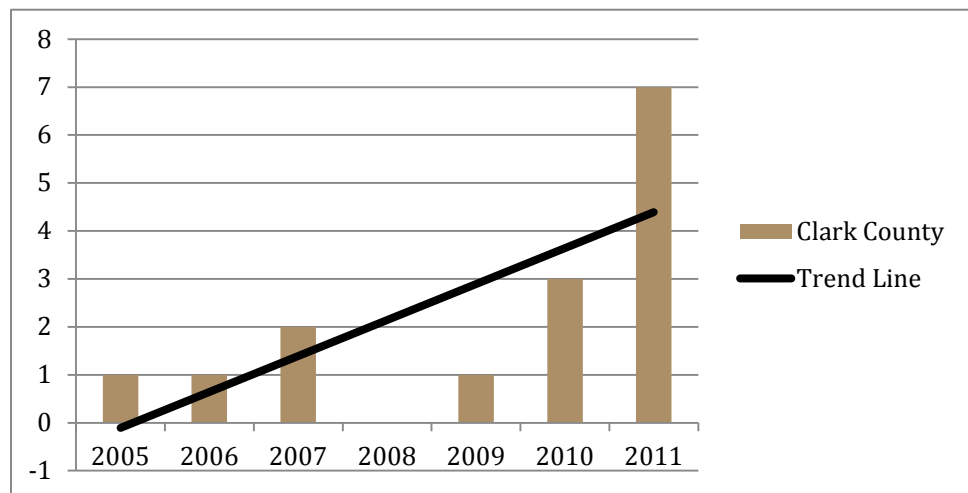
Pedestrians

In Clark County, the pedestrian factor has been elevated to the second highest factor under Priority Two Level. This is primarily due to the number of fatalities involving pedestrians in Clark County.

Pedestrians are involved in approximately 20 percent of the fatalities and 13 percent of the serious injuries in Clark County. Clark County has a pedestrian fatality percentage that is 6 percent higher than the statewide average and serious injury percentage that is 1 percent higher than the statewide average. Pedestrian fatalities and serious injuries is the ninth most common factor in Clark County.

Over the seven year period of 2005-2011, Clark County pedestrian involved fatalities increased from one to seven and serious injuries increased by 23 percent. Statewide pedestrian fatalities declined by 8 percent. Clark County has an upward fatality trend for pedestrian related fatalities and serious injuries. The State has a downward trend.

Figure 10: Fatalities Involving a Pedestrian



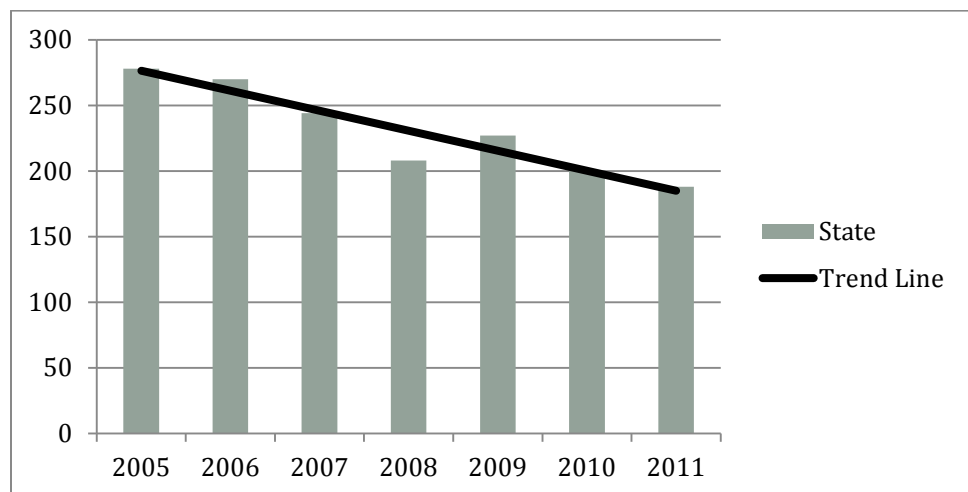
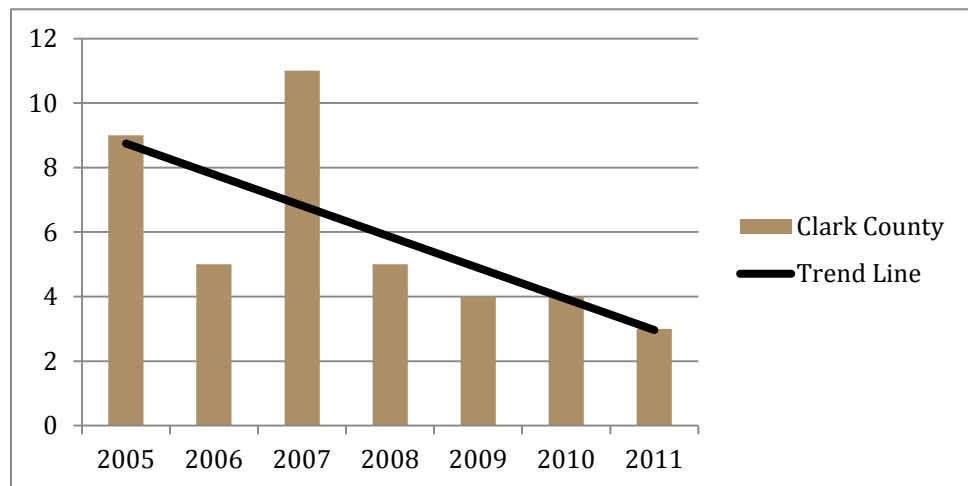


Opposite Direction

Opposite direction collisions are involved in approximately 20 percent of the fatalities and 9 percent of the serious injuries in Clark County. The Clark County opposite direction fatality rate is about 4 percent higher than statewide average and serious injury rate is approximately the same as the statewide average. Opposite direction collisions are the third most common factor contributing to fatal and serious injury collisions, under Priority Level Two, in Clark County.

Over the seven year period of 2005-2011, opposite direction fatalities declined 67 percent in Clark County and 32 percent statewide. Clark County has a downward fatality trend. The State has a downward trend.

Figure 11: Fatalities Involving Opposite Direction Collision



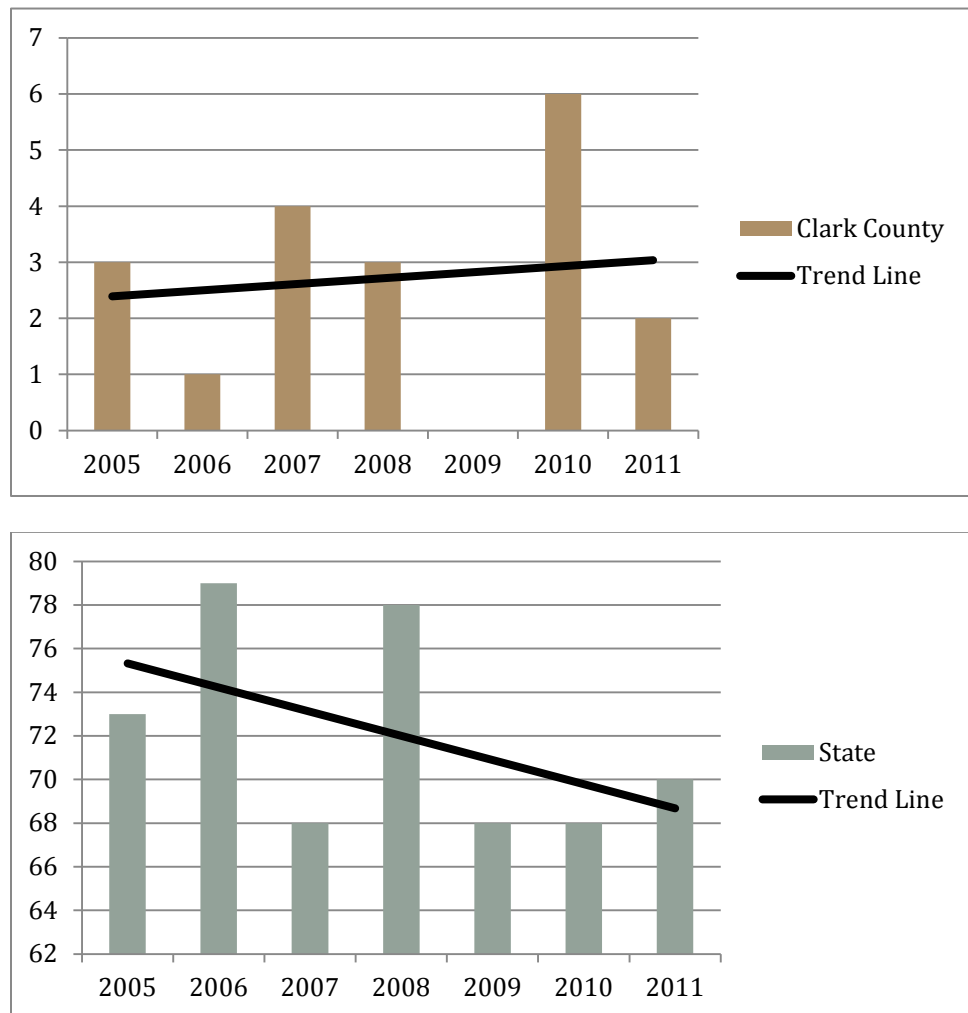


Motorcyclists

Motorcyclists are involved in approximately 17 percent of the fatalities and 15 percent of the serious injuries in Clark County. Clark County has a motorcyclist involved fatality and serious injury percentage that is similar to the statewide average. Motorcyclist fatalities and serious injuries is the eleventh highest factor in Clark County.

Over the seven year period of 2005-2011, motorcycle involved fatalities declined by 33 percent in Clark County and declined by 4 percent statewide. Clark County has a slightly upward fatality trend for motorcycle related fatalities, which can be attributed a high number of fatalities in 2010. Although the State has a downward trend, it varies significantly between years.

Figure 12: Fatalities Involving a Motorcyclist



Unlicensed Driver Involved

Data on this factor was not available at the County level, but is assumed to be similar to the statewide average and will remain under Priority Level Two.

EMS and Trauma Care Systems

Emergency Medical Services and trauma systems provide care to reduce mortality rates and remain under Priority Level Two.

Clark County High Collision Intersections

Intersections are among the most hazardous components of the roadway system. Intersections, where two or more roads cross, are a major point of conflict between transportation system users. Intersections are a location where critical judgments are made by system users. Intersections involve turning, crossing maneuvers, and stopping that provide opportunities for conflicts between various transportation system users. Safe travel through an intersection requires road users to understand and comply with clear assignment of right-of-way.

Improving the safety of intersections is a key strategy for increasing roadway safety. Collisions at intersections represent a significant portion of the region's total collisions and account for about a third of the total county-wide collisions and almost half of the collisions within cities.



Although intersections are a priority level one factor, the vast majority of the fatalities and serious injuries at intersections often involve other factors (impairment, distracted driver, speeding, etc.). Fatalities and serious injury collisions are often random and do not necessarily occur at the intersections with the highest collision rates. Improving safety at intersections will result in the reduction of overall collision rates and improve road safety.

Intersection

Major intersections of two arterials, controlled with a traffic signal, generally have the highest total number of collisions. For the purpose of this report, intersections with 20 or more collisions for years 2009-2011 have been identified. The analysis of Clark County collision data identified 23 high collision intersections. Table 3 includes a list of these intersections, prioritized by collision rate.

Collision rates can be an effective tool to measure the relative safety at a particular intersection. To calculate a collision rate, the average number of collisions per year is divided by the annual number of million vehicles entering an intersection.

Collision rate analysis can be a useful tool to determine how a specific intersection compares to the average intersection within a region.

It is important to note that many of the identified intersections have collision rates well below the average but have 20 or more collisions due in part to overall traffic volumes. Of the 23 identified intersections, eleven had a collision rate above 0.70, and are considered to have a collision rate above average. Figure 13 displays Clark County high collision intersections by collision rate.

Table 3: 2009-2011 High Collision Intersections

Intersections	Total Collisions	Collision Rate
SR-500 @ 54th Avenue	94	1.38
NE 119th Street @ NE 72nd Avenue	29	1.16
SR-500/SR-503 @ Padden Parkway	67	1.09
Padden Parkway @ 94th Avenue	39	1.05
SR-500 @ NE 152nd Avenue	23	1.03
SR-500 @ 42nd Avenue	62	0.97
SR-503 @ SR-502	46	0.90
SR-500 @ Fourth Plain	64	0.86
NE 18th Street @ NE 112th Avenue	25	0.84
SR-503 @ NE 99th Street	29	0.74
Highway 99 @ 78th Street	40	0.73
SR-502 @ SW 12th Avenue	22	0.68
SR-500 @ 76th Street	30	0.61
Fourth Plain @ Andresen Road	26	0.60
Highway 99 @ NE 99th Street	22	0.56
Mill Plain @ 164th Avenue	28	0.54
NE 78th Street @ NE St. Johns Road	21	0.54
SR-503 @ NE 199th Street	20	0.54
Andresen Road @ Padden Parkway	29	0.52
SR-500 @ NE 65th Street	21	0.49
Mill Plain @ 136th Avenue	31	0.47
SE 164th Avenue @ SE 34th Street	20	0.44
Mill Plain @ Chkalov Drive	27	0.35

In addition to intersections identified in this report, there are other locations that may have safety concerns. Local jurisdictions are encouraged to conduct their own safety analysis of their transportation system and make appropriate improvements to enhance transportation safety.

Figure 13: Clark County Collision Intersections by Collision Rate



Intersection Evaluations and Improvements

Four major types of collisions occur at intersections: 1) angle collisions, 2) rear-end collisions, 3) side-swipe collisions, and 4) pedestrian and bicycle collisions.

Reducing the frequency and severity of collisions can be accomplished through analyzing intersection collision patterns and applying appropriate



countermeasures. Intersection collisions have many causes and are not necessarily related to design. Collisions can also be related to operational control, insufficient maintenance, weather, and human error. All of these elements must be considered when developing solutions.

Low-cost countermeasures, focusing on intersection design and operation can be most cost effective at improving intersection safety.

Low-cost countermeasures can include improvements such as signal operation

improvements (timing), rumble strips, pedestrian countdown timers, road markings, signage, lighting, and median barriers. Other higher cost countermeasures may need to be considered where low cost countermeasures will be ineffective. This could include access management, street lighting, channelization improvements, and left turn lane upgrades. Larger scale improvements include grade separation, roundabouts, and other innovative approaches.

The intersections of concern are high volume intersections that can be particularly challenging for pedestrians and cyclists to traverse. Due to the high vulnerability of pedestrians and cyclists any upgrades to these intersections should include countdown signal heads and accessible pedestrian signal push button upgrades.

Safety Committee

RTC formed a regional Safety Committee to review collision data at the high collision locations and to help identify potential low-cost countermeasures and other potential safety improvements. The committee also reviewed long-term solutions identified in the Regional Transportation Plan.

In reviewing the high collision locations, it became apparent that local jurisdictions are well aware of the safety concerns associated with these locations. Countermeasures or intersection improvements have been or will soon be made to many of the high collisions locations.





Countermeasures: Recommendations

This section discusses the recommendations from the Safety Committee for the eleven intersections with collision rates above average (0.70 collisions per million entering vehicles). Local jurisdictions should consider these recommended countermeasures along with other potential solutions when making improvements at these intersections.

SR-500 @ 54th Street

This intersection has the highest collision rate and number of collisions among the intersections for years 2009-2011. It is the third highest volume intersection in Clark County with 62,000 entering vehicles per day. As with many high speed and high volume intersections, it has a high number of rear-end collisions (88% of collisions). Most are associated with vehicles going straight, but many are associated with two right turning vehicles.

The long-term solution identified in the Regional Transportation Plan (RTP) is a new interchange at this location to eliminate the at-grade intersection.

Potential short-term counter measures include protective-permissive flashing yellow arrow for left-turn movements off NE 54th Avenue. Prepare to Stop When Flashing warning signs could be added to SR-500 that are triggered when traffic is stopped.

NE 119th Street @ NE 72nd Avenue

This intersection has the second highest collision rate, but is tied for the tenth most collisions for years 2009-2011. This intersection is located at the edge of the suburban area with 23,000 entering vehicles per day. The most common collision type at this intersection is associated with turning movements (84% of collisions).

Clark County has a transportation improvement project scheduled to begin in the year 2014 that will improve channelization, access control, and provide other safety improvements.

Countermeasures were implemented in November 2013 to upgrade signals to include LED lights, radar detection, and protective left turn movements for all directions.

SR-500/SR-503 @ Padden Parkway



This intersection has the third highest collision rate and the second highest number of collisions for years 2009-2011. It is the sixth highest volume intersection in Clark County with 57,000 entering vehicles per day. This intersection has a regional bicycle and pedestrian trail running along the south side of Padden Parkway. The most common collision type at this intersection is rear-end collisions (67% of collisions). Approximately half are associated with two right turning vehicles.

The long-term solution identified in the Regional Transportation Plan (RTP) is a new interchange at this location.

Potential short-term counter measures include signaling right turn slip lanes to provide protection for all movements and modes.

Padden Parkway & NE 94th Avenue

This intersection has the fourth highest collision rate and the seventh highest number of collisions for years 2009-2011. This intersection has 35,000 entering vehicles per day. This intersection has a regional bicycle and pedestrian trail running along the south side of Padden Parkway. The most common collision type at this intersection is associated with turning movements (62% of collisions).

The long-term solution identified in the Regional Transportation Plan (RTP) is a new interchange at this location. Clark County has a transportation improvement project scheduled for year 2015 that will improve channelization, access control, and provide additional safety improvements.

Countermeasures were implemented in July 2013 to provide protected left turn coordination for all directions.



SR-500 @ NE 152nd Avenue

This intersection has the fifth highest collision rate and 17th highest number of collisions for years 2009-2011. This intersection has 12,000 entering vehicles per day. This intersection has a regional bicycle and pedestrian trail running along the south side of Padden Parkway. Also, at this intersection the eastbound right lane becomes a right turn only drop lane. The most common collisions at this intersection are associated with turning movements (61% of collisions).

Countermeasures were implemented in 2010 to provide protected permissive left turns and improved lane markings for the eastbound right turn drop lane.

SR-500 @ 42nd Avenue

This intersection has the sixth highest collision rate and the fourth highest number of collisions for years 2009-2011. It is the fifth highest volume intersection in Clark County with 58,000 entering vehicles per day. As with many high speed and high volume intersections, it has a high number of rear-end collisions (76% of collisions). Most are associated with vehicles going straight, but many are associated with two right turning vehicles.

The long-term solution identified in the Regional Transportation Plan (RTP) is grade-separation.

Potential short-term countermeasures include protective-permissive flashing yellow arrow for left-turn movements off NE 42nd Avenue. Flashing prepared to stop warning signs could be added to SR-500 that are triggered when traffic is stopped.

SR-503 @ SR-502

This intersection has the seventh highest collision rate and the fifth highest number of collisions for years 2009-2011. This intersection had two serious collisions associated with pedestrians and one with a bicyclist. It is the 14th highest volume intersection in Clark County with 47,000 entering vehicles per day. The majority of collisions are rear-end collisions (57% of collisions) and turning collisions (30% of collisions).

The addition of free right turn lanes for all directions has been identified as a need at this intersection. The Safety Committee noted that special consideration should be given to provide protection for pedestrians and bicyclists as part of adding right turn lanes. The Safety Committee also recommended that a roundabout be considered as a potential safety improvement, although it may not work given the high volume at this intersection.

Potential short-term countermeasures include advanced walk signal phasing, relocating crosswalks, and pedestrian countdown signals.

SR-500 @ Fourth Plain

This intersection has the eighth highest collision rate and the third highest number of collisions for years 2009-2011. It is the second highest volume intersection in Clark County with 72,000 entering vehicles per day. This intersection has a high number of rear-end collisions (63% of collisions). The majority of the rear end collisions are occurring on the south leg of the intersection where the posted speed limit is reduced from 55 mph to 40 mph.

Over the years, many long-term solutions have been discussed but no long-term solution has been identified or included in the Regional Transportation Plan (RTP).

Proposed short-term countermeasures deal with slowing traffic on the south leg. Potential countermeasures include ITS technology that can warn motorists of queuing traffic and traffic calming techniques to reduce speeds. The Safety Committee also recommended improvements be made to the SR-500 @ NE 65th Street intersection to improve operations at the SR-500 @ Fourth Plain intersection.



NE 18th Street @ NE 112th Avenue

This intersection has the ninth highest collision rate and 16th highest number of collisions for year 2009-2011. This intersection has 28,000 entering vehicles per day.



The City of Vancouver completed the reconstruction of this intersection in 2011. Improvements included enhanced traffic signals, improved channelization, access control, standard lane widths, and other safety benefits.

10. SR-503 @ NE 99th Street

This intersection has the tenth highest collision rate and is tied for the tenth highest number of collisions for year 2009-2011. This intersection has 37,000 entering vehicles per day. The majority of the collisions are associated with rear-end collisions (59% of collisions).

The County has a planned project at this intersection that includes the installation of an eastbound left turn lane and westbound left and right turn lanes. The improvement includes alignment of east and west approach roads. The timeline for construction of this project has not been determined.

The Safety Committee could not identify any short-term countermeasures to improve this intersection. The Safety Committee recommended that this intersection be rebuilt with improved channelization, access control, and traffic control.

11. Highway 99 @ 78th Street

This intersection has the eleventh highest collision rate and has the sixth highest number of collisions for year 2009-2011. This intersection is the seventh highest volume intersection in Clark County with 54,000 entering vehicles per day. The majority of the collisions are associated with rear-end collisions (49% of collisions) and turning collisions (33% of collisions).

Long-term, this intersection should be rebuilt to improve mobility and safety for all modes.

Countermeasures will be implemented in 2014 to upgrade signal to include LED lights, detection, and new signal coordination.



Chapter 4: Recommendations

This section includes the recommendations of the Safety Management Assessment for the Clark County region.

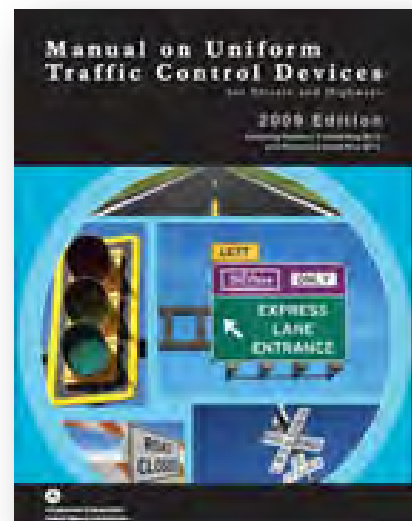
In order to meet the regional goal of reducing traffic fatalities and serious injuries to zero by 2030, the region must take action to implement the recommendations of this Safety Management Assessment. Implementation of these recommendations will take action from the many partner organizations that share the responsibility for improving transportation safety in the Clark County region. This includes federal, state, regional, and local governments and other safety stakeholders.

National Safety Recommendations

Improving transportation safety is a national priority. The Federal Highway Administration has recommended processes, infrastructure design techniques, and highway features that are encouraged to improve safety for all transportation users. National safety recommendations should be implemented to improve transportation safety. This includes the recommendations included in the Manual on Uniform Traffic Control Devices and the Federal Highway Administration's Proven Safety Countermeasures.

The Manual on Uniform Traffic Control Devices (MUTCD) defines the standards used by transportation engineers nationwide for traffic control devices on the public transportation system.

The Federal Highway Administration has issued guidance on proven safety countermeasures. The guidance uses the latest safety research to advance countermeasures that have shown great effectiveness in improving safety. This includes the use of the following safety countermeasures where appropriate: road diet, pedestrian hybrid beacons, medians/pedestrian crossing islands, safety edge, enhanced delineation and friction, longitudinal rumble strips, backplates with reflective borders, and roundabouts.



Target Zero

The State's Target Zero safety plan should be considered as the regional framework for building partnerships and resources to reduce traffic fatalities and serious injuries within the region. Partner organizations should take steps to follow the priorities and implement the strategies identified in the state's safety plan, Target Zero.



Clark County Needs

Factors

County traffic safety priorities are set based upon the most frequently cited contributing factors. The factors in fatal and serious traffic collisions are grouped into three Priority Levels based on the percentage of traffic fatalities and serious injuries associated with each factor. In Clark County the factors land in the same priority level as statewide, but prioritize differently within each Priority Level.

Regional partner organizations should focus on addressing the most common factors for fatalities and serious injuries in Clark County. Within Clark County, Priority Level One Factors include impaired drivers, young drivers, speeding, run-off-the-road, distracted drivers, and intersection related. The Priority Level Two Factors include unrestrained occupants, pedestrians, opposite direction, motorcyclists, and unlicensed drivers. Points awarded under the Safety criteria in the regional project selection evaluation process should prioritize investments to address these same factors.



High Collision Intersections

Improving the safety of intersections is a key strategy for increasing roadway safety. Collisions at intersections represent a significant portion of the region's total collisions. The analysis of Clark County collision data identified eleven intersections that had collision rates above the regional average. A regional Safety Committee reviewed collision data at these high collision locations and identified potential low-cost countermeasures and other safety improvements.

Local jurisdictions should consider the specific project recommendations of the Safety Committee and program appropriate improvements at high collision intersections.

Additional Needs

There are areas where Clark County did not see the positive trends that were experienced statewide. Additional efforts in public information, enforcement, and engineering should be focused on improving safety concerning distracted driving, pedestrians, motorcyclists, and young drivers where an increasing trend is shown for fatalities and serious injuries.

Distracted Driver Involved

Despite strong education and enforcement efforts, the trend for distracted driver-involved fatalities and serious injuries for years 2005-2011 have increased considerably in Clark County. Statewide the trend is downward. The trend shows that more must be done in Clark County to aggressively implement the strategies for distracted drivers.



Pedestrians

Despite engineering, educational, and enforcement efforts, the upward trend for pedestrian fatalities and serious injuries indicate the need to improve pedestrian safety. The trend shows that much must be done to implement pedestrian safety improvements within the Clark County region.

Motorcyclist

The 2005-2011 trend shows that motorcycle fatalities and serious injuries are on the rise. Despite helmet laws, endorsement laws, and other strategies the numbers are not consistently declining. The trend shows that more must be done to improve motorcycle safety in Clark County, especially among older motorcyclists.

Young Drivers 16-25

Clark County is experiencing a high percentage of young drivers involved in serious injury collisions. This is despite Clark County having a lower than statewide average portion of its population in this age range. These numbers indicated that much more must be done through education and enforcement to improve safety among young drivers.

Regional Traffic Control

The regional transportation partners should work together to develop regional standards for traffic signal control and timing to reduce collisions at signalized intersections. A regional approach will improve transportation user expectation and understanding, which should result in fewer collisions. The region should also develop a systematic approach to implement these changes. The region should also investigate nationwide practices in considering additional measure to improve safety and traffic control. Traffic signal control improvements could include the following:

- Detection of all transportation users (vehicles, bicycles, pedestrians)
- Replace all traffic signals indicators with higher visible LED indicators
- Provide countdown pedestrian indicators
- Convert pedestrian pushbuttons to ADA accessible buttons
- Replace all optically programmed signals
- Upgrade protected/permissive lefts to protected lefts or Flashing Yellow Arrow Left
- Review signing, markings, visibility at approaches to ensure that MUTCD standards are met
- Add backplates with retro-reflective borders to all traffic signals

