

SECTION 6.6

SAFETY



W A M P O

Wichita Area Metropolitan Planning Organization



Overview

The safety of the transportation system is, and should be, a daily concern for everyone. We all use transportation, from biking and walking, to driving and taking the bus. Safety is the responsibility of the traveling public; those that build, operate, and maintain the transportation systems; and those that enforce the rules. One of the four goals of the MTP 2035 is to achieve a transportation system that enhances safety and public welfare. This shows the importance of transportation safety concerns.

This section covers federal requirements for addressing transportation safety and identifies WAMPO's role in planning a safe transportation system. Safety statistics for many of the modes of transportation and some mitigation strategies are also included.

Background

Congress passed the Highway Safety Acts in 1966, which required states to develop highway safety plans. The plans were intended to be a systematic approach to addressing highway safety problems. These Acts set the framework for safety initiatives that reduced the highway death toll from more than five deaths per 100 million vehicle miles traveled to 1.5 deaths per 100 million vehicle miles traveled in 2003.

Roles in Transportation Safety

There are several state and national initiatives to improve transportation safety. These initiatives work well with the metropolitan transportation planning process. Currently, states are coordinating with the American Association of State Highway Transportation Officials (AASHTO) to develop Strategic Highway Safety Plans (SHSP). These plans are coordinated, comprehensive, collaborative, and data-driven efforts that contribute to AASHTO's national highway safety goal.

WAMPO

WAMPO is responsible for addressing safety in the MTP 2035. The MTP 2035 includes recommendations to increase the safety of motorized and non-motorized users.

Why is transportation safety important?

Transportation safety affects everyone, every day whether you travel by car, bus, bicycle, or walk.



Crash



Police Truck



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Fire Truck



State Trooper



Local Police Agency

WAMPO develops many other plans and programs, most of which include a safety element. WAMPO also develops surveys that ask about safety concerns. The [WAMPO Safety Plan](#) includes data on crashes and strategies to mitigate them. Previous safety survey results are included in this section.

The approach to safety planning should be proactive, not reactive. Safety should be considered throughout the planning process and continue into implementation and construction. There should be a seamless relationship with other planning activities and a consistent set of policies and procedures.

Federal and State Agencies

The Federal Highway Administration (FHWA), Federal Transit Administration (FTA), and other national agencies set safety guidelines, rules, and procedures for addressing safety. In the 2005 AASHTO [Strategic Highway Safety Plan: A Comprehensive Plan to Substantially Reduce Vehicle-Related Fatalities and Injuries on the Nation's Highways](#), 22 national safety emphasis areas were identified. The Kansas Department of Transportation (KDOT) incorporates these national guidelines into their state safety planning efforts.

Regional and Local Agencies

Regional agencies incorporate state and national safety initiatives into regional planning documents to help guide city/county plans, zoning laws, multimodal plans, neighborhood plans, access management strategies, and site plans.

No matter what the current level of safety, transportation planners should strive to systematically reduce the frequency and severity of incidents. The basic premise of safety conscious planning is that all planning organizations routinely and effectively consider safety as an explicit priority in all projects and programs. Local emergency services departments, such as police, fire, and emergency management, should be involved in transportation planning and decision making. Many of these organizations typically work within the four E's: Education, Engineering, Enforcement, and Emergency Services. Transportation safety includes each of these four sectors to truly engage in a comprehensive regional discussion.



Crashes in the WAMPO Region

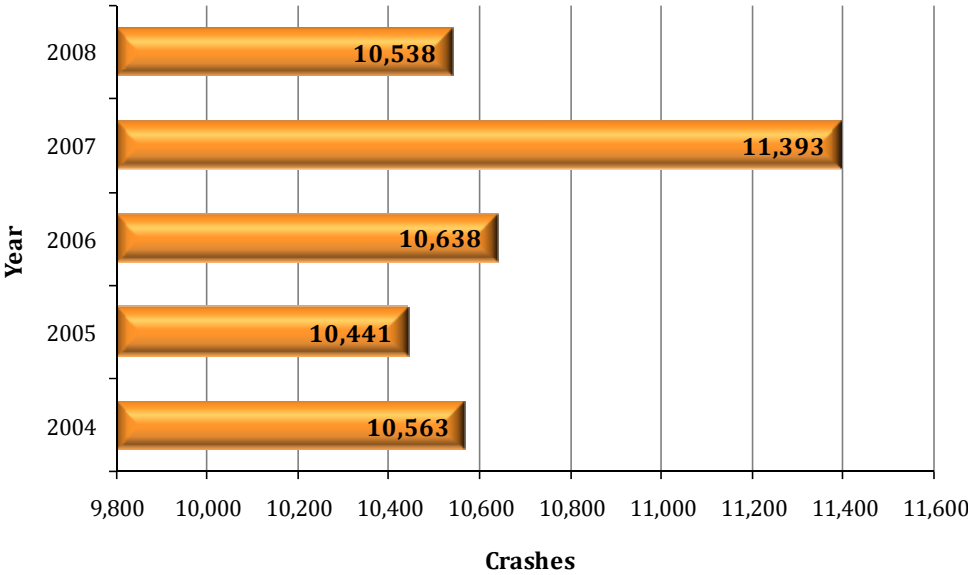
KDOT maintains the Kansas Accident Records System (KARS) of crash data for the state. KARS contains information on the number of crashes, contributing causes (road conditions, weather, animals, etc.), location, and severity (fatality, injury, or property damage only). Detailed crash analysis for the region is contained in the WAMPO Safety Plan. The following paragraphs provide an overview of crash data.

Kansas Accident Records System (KARS)

A database for the state of Kansas maintained by KDOT that records crashes.

In the region, there were 53,573 crashes resulting in 23,820 injuries and 237 fatalities from 2004-2008. **Exhibit 6.6.1** identifies the number of crashes over the five year period in the region.

Exhibit 6.6.1: 2004–2008 Crashes per Year



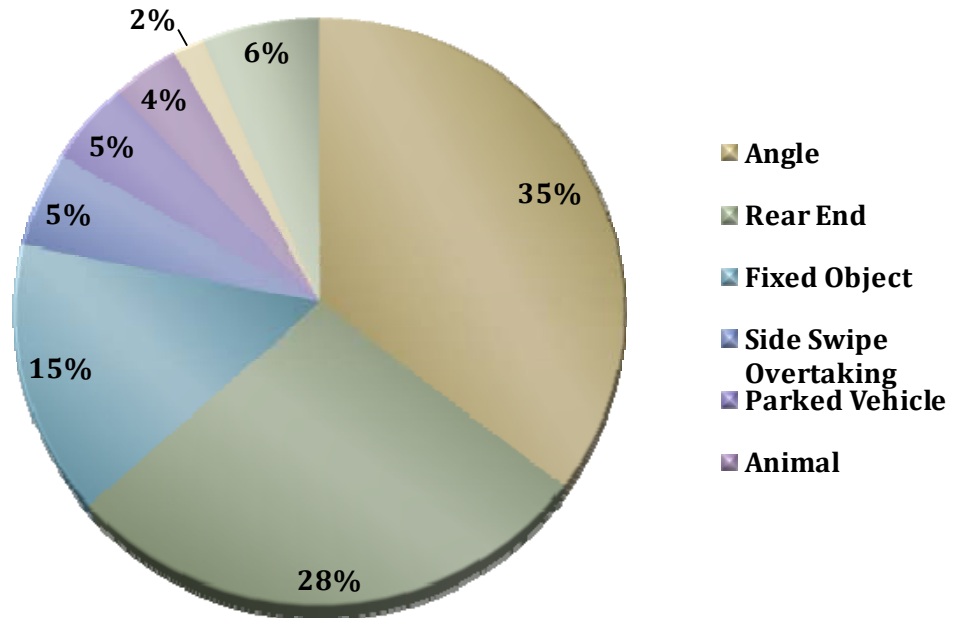
Types of Crashes

It is important to know the common types of crashes because they are often associated with different conditions: driver, vehicle, or roadway. The most prominent crash types are angle, rear end, and fixed object collisions, as shown in **Exhibit 6.6.2**. These three crash types account for 78% of the regional crashes.



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Exhibit 6.6.2: 2004–2008 Crash Types



Angle Crashes

Angle crashes commonly occur where two roads intersect. There are a number of reasons for angle crashes, such as unsafe speeds, lack of visibility, or disregard for traffic signs and signals.



Rear End Crash

Rear End Crashes

Rear end crashes are more common in areas with heavy congestion, locations with stop and go traffic, or at intersections. These conditions can be influenced by curves or hills in the roadway that interfere with the driver's ability to anticipate an upcoming traffic queue or intersection.

Fixed Object Crashes

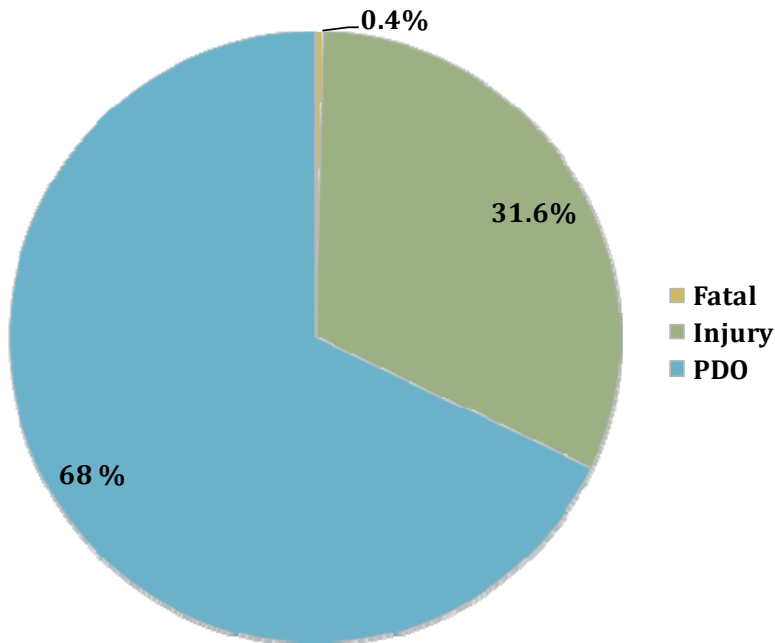
Fixed object crashes occur when a vehicle collides with a stationary item such as a sign, pole, mailbox, or other fixed object. In some cases, the removal of fixed objects from the area surrounding the road may reduce these crashes. Often times, driver and vehicle errors play a more prominent role than roadway design factors in these types of crashes.



Crash Severity

The KARS crash severity data is reported in three categories: property damage only (PDO) crashes, injury crashes, and fatal crashes. The crash severity in the WAMPO region for 2004-2008 is shown in **Exhibit 6.6.3**.

Exhibit 6.6.3: 2004–2008 Crash Severity



Property Damage Only Crashes

Over two thirds of the crashes in the region are PDO crashes. There are no injuries in these crashes, but there is damage to vehicles and property. PDO crashes have far reaching impacts on transportation system performance and the regional economy due to their high frequency. The impacts are the major delays and congestion resulting from the crash and costs associated with crashes.

Injury Crashes

Injury crashes account for over 31% of the crashes in the region. These are crashes that result in a driver, passenger, cyclist, or pedestrian sustaining physical pain or a disabling injury. Although injury crashes are less frequent than PDO crashes, they impact the quality of life and the economy of the region. The productivity loss while recovering from injuries or the loss in quality of life with a disabling injury can be a significantly greater impact than the cost of damage to personal property in a PDO crash. Furthermore,



After the Crash



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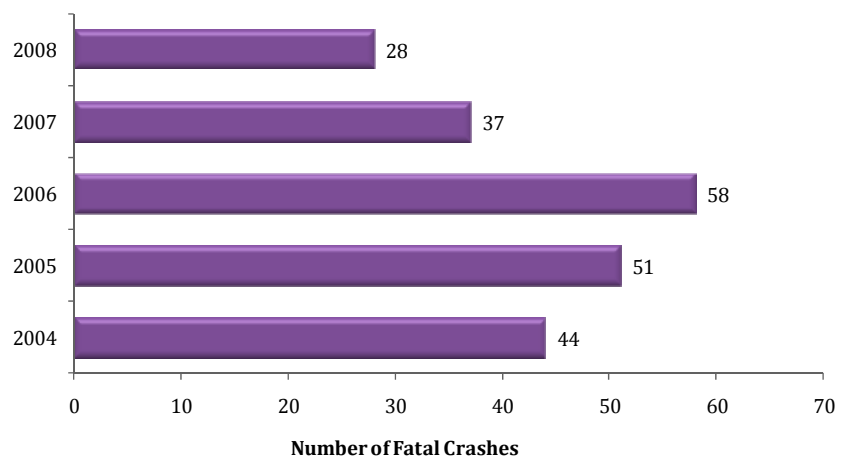
concerns over sustaining injury on the transportation system can serve as a barrier to mobility and livability for the people of the region.

Fatal Crashes

Fatal crashes are the most severe crash type that occurs on the transportation system. Fatal crashes account for less than 1% of the crashes in the region. While far less frequent and affecting a smaller percent of the population than PDO or injury crashes, the loss to the region is enormous in terms of quality of life, economic productivity, and the unquantifiable loss of an individual to family and loved ones.

Based on 2004-2008 KARS data, the region experienced 217 fatal crashes that resulted in a total of 237 deaths. The number of fatal crashes peaked in 2006 with 58 crashes involving a fatality. Fatal crashes have declined in the two years following 2006. The 28 fatal crashes in 2008 represent a 50% decrease since 2006. While rural crashes account for 14% of the region's total crashes, one out of every three (33%) fatal crashes occurs in the rural areas. The fatal crashes by year are shown in **Exhibit 6.6.4**.

Exhibit 6.6.4: Fatal Crashes by Year 2004–2008



WAMPO Safety Survey Results

Respondents to a 2010 WAMPO transportation safety survey identified locations with safety concerns. Major areas of concern identified were US-54/400 (Kellogg),



other freeways and interstate routes (e.g., I-135, I-235, K-96) and associated interchanges, and construction areas. Several respondents indicated there were no locations of safety concerns. Most 2010 respondents (96%) felt safe or somewhat safe as a motorist in the region. **Exhibit 6.6.5** shows the corresponding survey result.

Exhibit 6.6.5: Do you Feel Safe as a Motorist?

| Answer Options | Response Percent | Response Count |
|---------------------------|------------------|----------------|
| Yes | 47.4% | 54 |
| Somewhat | 49.1% | 56 |
| No | 2.6% | 3 |
| N/A I don't drive | 0.9% | 1 |
| Total Number of Responses | | 114 |

The top concerns identified in the survey were:

- Inattentive driving.
- Aggressive driving.
- On/off ramps are too short.
- Pavement conditions.

Contributing Circumstances

The contributing factors to a crash can be related to many things, but they are categorized into three main circumstances: driver, environment, or road.

Driver

Crashes due to the driver, bicyclist, or pedestrian are related to the condition of the user. Driver conditions that can lead to crashes include alcohol, inattention, or disregard for traffic controls. Nine of the top ten circumstances leading to regional crashes are related to driver behavior (**Exhibit 6.6.6**) and driver related issues contributed to 90% of the crashes. Greater driver responsibility for crashes provides greater opportunity to reduce crashes through education and enforcement.



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Roadway

Factors such as design of roadways, pavement markings, and traffic signal controls, can contribute to crashes. Regional communities and the State have the greatest control of these factors as many can be improved by planning and engineering solutions. Road improvements including intersection design, traffic control, visibility, and lighting are opportunities to enhance safety.



Animal Crossing Warning Sign

Environment

The environment can also be a cause of crashes. This can include crashes due to weather or animals on the roadway.

Exhibit 6.6.6 displays the top ten contributing circumstances identified from 2004 - 2008.

Exhibit 6.6.6: Top 10 Contributing Circumstance 2004–2008

| | Category | Contributing Circumstance (Top 10) | % of Total |
|----|-------------|--|------------|
| 1 | Driver | Inattention | 27.2% |
| 2 | Driver | Failed to yield right of way | 16.0% |
| 3 | Driver | Followed too closely | 8.7% |
| 4 | Driver | Too fast for conditions | 8.0% |
| 5 | Driver | Disregarded traffic signs, signals, markings | 7.5% |
| 6 | Driver | Under the influence of alcohol | 4.0% |
| 7 | Driver | Improper lane change | 3.2% |
| 8 | Driver | Reckless/careless driving | 2.6% |
| 9 | Driver | Made improper turn | 2.6% |
| 10 | Environment | Animal | 2.5% |

*More than one Contributing Circumstance may be recorded per accident
Source: Kansas Department of Transportation



83rd Street S. Bridge Over the Arkansas River with Bicycle/Pedestrian Crossing

The majority of the contributing circumstances are related to driver behavior. The top ten identified contributing circumstances account for over 80% of the total reasons for crashes. Increased education and enforcement are potential solutions to modify driver behaviors that contribute to crashes in the region.

As stated earlier, the top safety concerns were inattentive driving and aggressive driving. Poor driving habits were also identified as a concern of bicyclists.



Bicycle and Pedestrian Safety

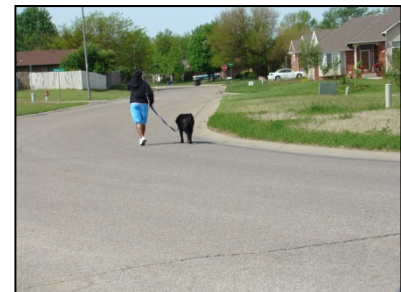
Analyzing bicycle and pedestrian crashes can be an important step to improve safety and the walkability and bikeability of the region. During the five year period from 2004-2008, there were 940 reported crashes involving cyclists and pedestrians in the WAMPO region; 27 resulted in fatalities.

According to the 2010 WAMPO transportation safety survey, 30% of respondents indicated they feel safe while walking and 50% feel somewhat safe. The top safety concerns were: the lack of pedestrian facilities, sidewalks, and crossings; poor driving habits; travel speed of motorists; and crime. Several respondents commented that drivers do not yield to pedestrians in crosswalks.

Bicycle safety is another important issue for the transportation system. The survey also showed that 31% of cyclists do not feel safe (**Exhibit 6.6.7**).



Pedestrian Crossing Location



Pedestrian Where No Sidewalks Are Present

Exhibit 6.6.7: Do you Feel Safe as a Bicyclist?

| Answer Options | Response Percent | Response Count |
|--|------------------|----------------|
| Yes | 5.3% | 6 |
| Somewhat | 22.1% | 25 |
| No | 31.0% | 35 |
| N/A I don't use a bicycle for transportation | 41.6% | 47 |
| Total Number of Responses | | 113 |

*1 of the respondents to the safety survey skipped this question.

Lack of road shoulders or bicycle lanes was noted as a safety concern by 93% of respondents. Other top concerns for cyclists were poor driving habits, lack of pathway connections, narrow lanes, and high travel speed of motorists. Major arterials and heavily travelled streets were identified as areas avoided by pedestrians and bicyclists.

Crash statistic mapping identifies specific streets or intersections that may need to be targeted for safety improvements. The WAMPO Safety Plan discusses the locations of bicycle and pedestrian crashes in the region. It shows that the vast majority of crashes occur in the urbanized areas where exposure to automobiles and conflict points is the greatest. A detailed examination of the



Bicyclist



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crash locations indicates several streets, intersections, and areas that have had many crashes. The region should focus on crash mitigation strategies specific to the types of crashes occurring in these areas.

Railroad Crossing Safety

The WAMPO Railroad Crossing Plan (RRCP) includes an inventory of the existing railroad crossings. Existing conditions such as the warning devices, crossing surface, number of trains, and the vehicular traffic volumes at these crossing were collected and used to identify potentially hazardous crossings.

In an effort to address safety and congestion issues at the region's crossings, the RRCP provides a toolbox of strategies to mitigate hazards at rail crossings. This toolbox gives the region and local communities potential solutions to apply at crossings. The following tools provide the framework for the RRCP's toolbox:

- Crossing condition.
- Quiet zones.
- Land use planning.
- Grade separation.
- Crossing consolidation.
- Turn lane extension.
- Active warning devices.
- Crossing geometry.
- Approach improvements.

Other safety improvements and mitigation strategies may be added to the toolbox as needed. The RRCP is available on the WAMPO website.

Transit Safety

Over 78% of the respondents to the 2010 WAMPO transportation safety survey indicated they do not use transit. Of those that use transit, the largest transit related safety concern is the lack of pedestrian facilities, sidewalks, and street crossings to access transit stops, as shown in **Exhibit 6.6.8**. Other concerns include conditions of buses; crime; the lack of, or conditions of, transit stops; and wheelchair accessibility (ADA ramps) to transit stops.



Rail Crossing Safety Features



At-Grade Rail Crossing



Exhibit 6.6.8: Safety Concerns of Transit Users

| Answer Options | Response Percent | Response Count |
|---|------------------|----------------|
| Driving Habits | 20.0% | 4 |
| Crime | 40.0% | 8 |
| Lack of pedestrian facilities/sidewalks/crossings to access stops | 60.0% | 12 |
| Condition of buses | 35.0% | 7 |
| Other (please specify) | | 9 |
| Total Number of Responses | | 20 |

*94 of the respondents to the safety survey skipped this question.

School Safety

Safety of school children is very important for the region. There are typically three ways children get to school: walking or biking, school buses, and by car.

School Buses

School buses face the same risks as other motorists when driving on the roads throughout the region. However, an added safety risk is present when school buses are picking up or dropping off students. Collisions involving motorists who illegally passed a stopped school bus accounted for almost one-fourth of the pedestrian fatalities in school bus related crashes across the nation between 1989 and 1999. Education and enforcement of traffic rules around school buses could help improve safety and reduce the number of these crashes.

Walking and Biking

Safe Routes to School (SRTS) was established through SAFETEA-LU to encourage children to walk or bike to school. SRTS funds plans and projects that make walking and biking to school for kindergarten through 8th grade students safer and more feasible. It also provides funding for educational programs. Examples of eligible projects are:

- Sidewalk improvements.
- Traffic calming efforts.
- Speed reduction initiatives.
- Pedestrian and bicycle crossing improvements.



School Zone Warning Signal



School Bus Facility

What is Safe Routes to School?

A national program to encourage students in kindergarten through 8th grade to walk or bike to school.



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- On street/off street bicycle and pedestrian facilities.
- Secure bicycle parking.
- Traffic diversion programs around schools.



Safe Routes to School Program

WAMPO has a [SRTS Plan](#) for the region. It is available on the WAMPO website.

Cars

During the MTP 2035 development, the public expressed concern about high school students driving to and from school, especially when driving on gravel or dirt roads. Educational programs and physical improvements to roads can help address this safety concern.

Recommendations

There is an opportunity and need to improve the safety of the regional transportation system. There are strategies to improve safety being implemented in the WAMPO region by local, regional, state, and federal transportation agencies. These will help to meet the goals of the MTP 2035, specifically to achieve a transportation system that enhances safety and public welfare. The region plays a significant role in the statewide effort to reduce crashes and crash severity. The region should incorporate safety measures from the safety toolbox in the [WAMPO Safety Plan](#) to address the issues identified in this section. The following outlines focus areas.

Reduce Deaths and Injuries Resulting from Motor Vehicle Crashes

Improving intersection safety through enforcement and design can reduce crash frequency and severity. Congested corridors with stop and go traffic are likely to benefit from safety improvements and programs. Engineering and enforcement can help provide relatively safe and consistent travel speeds. Proper visibility, sight distance, and improved access management are potential ways to address safety.



ADA Crosswalk Ramp



Stalled Car on Freeway Ramp



Reduce the Number and Severity of Bicycle and Pedestrian Crashes

Because bicycle and pedestrian crashes occur only in areas of pedestrian and cycling exposure, projects and programs targeted at users and specific locations can be effective countermeasures to reduce the number of crashes.

Update Safety Data

WAMPO should continue to monitor and update crash data and identify trends as data becomes available from KDOT. The regional safety survey should be periodically revised and distributed to obtain an updated perspective of public concerns.