

CENTRAL ARIZONA GOVERNMENTS
**STRATEGIC TRANSPORTATION
SAFETY PLAN**

TECHNICAL MEMORANDUM #4

Revised July 23, 2015

ENGINEERING

ENFORCEMENT

EDUCATION

EMERGENCY RESPONSE

PREPARED FOR



PREPARED BY



WITH



CAG STRATEGIC TRANSPORTATION SAFETY PLAN

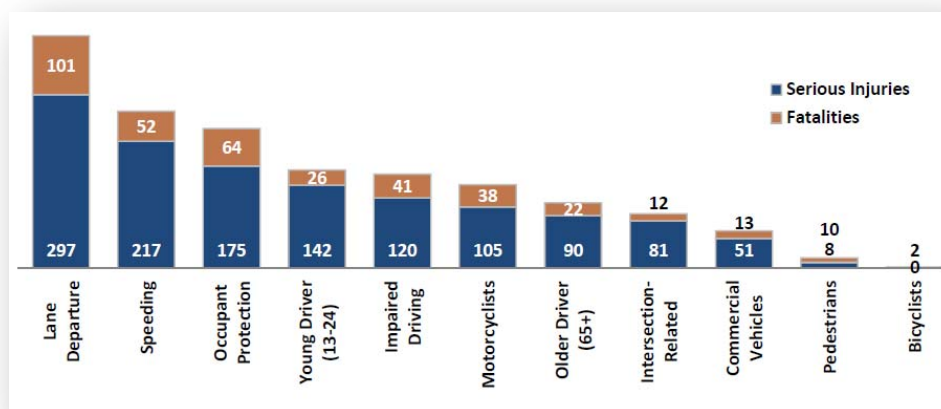
Introduction

The objective of the Emphasis Areas, Goals, and Performance Measures task for the Central Arizona Governments (CAG) Strategic Transportation Safety Plan (STSP) project is to identify emphasis areas for the Plan, develop safety goals, and identify performance measures and targets to track progress towards the goals. Each of these has been identified and further developed based on crash data, and input from the Multidisciplinary Safety Committee (MDSC) and participants at the June Transportation Safety Planning Workshop.

Emphasis Areas

Emphasis areas represent the key factors contributing to crashes, which if addressed, have the greatest potential to reduce fatalities and serious injuries. The Arizona Strategic Highway Safety Plan (SHSP) identifies 12 emphasis areas, including: speeding and aggressive driving, impaired driving, occupant protection, motorcycles, distracted driving, roadway infrastructure and operations, age related, heavy vehicles/buses/transit, nonmotorized users, natural risks, traffic incident management, and interjurisdictional coordination. A thorough evaluation of crashes occurring in the CAG region between 2009-2013 was conducted to support the identification of emphasis areas. To increase the eligibility for Highway Safety Improvement Program (HSIP) funding, the potential emphasis areas reviewed for the CAG STSP align with those in the Arizona SHSP. The full evaluation was included as an attachment in the March 27th memorandum, but a high level summary of the possible emphasis areas is detailed in Figure 1.

Figure 1. Potential Emphasis Areas for the CAG Region



CAG STRATEGIC TRANSPORTATION SAFETY PLAN

At the April MDSC meeting, committee members reviewed the data, which presented the possible emphasis areas for the CAG region. Based on the results of the data and committee discussion, the following emphasis areas were chosen:

- Lane Departure Crashes
- Occupant Protection
- Impaired Driving
- Speeding
- Young Drivers
- Motorcycles

These emphasis areas provide a comprehensive approach to addressing crashes in the CAG region. Intersection-related crashes were not identified as an emphasis area, however infrastructure projects at intersections with the highest potential for safety improvements, have been identified as part of the network screening process and will be included in the STSP.

CAG STSP Draft Vision

A *vision* statement is a big picture, aspirational idea of what an agency wants to achieve and is different from the goal. At its April meeting, the MDSC developed the preliminary vision for the STSP: *Make Central Arizona a safer place to live, work and recreate by reducing transportation fatalities and serious injuries*. At the June Transportation Safety Planning workshop, participants preferred the following text for the vision statement: *Make Central Arizona a safer place to live, work and recreate by reducing transportation fatalities and serious injuries through engineering, law enforcement, emergency response, and education*. Some variations to both vision statements were also suggested.

Next Steps: This vision statement should be revisited by CAG staff and the TTAC and finalized.

Transportation Safety Goals

In support of the vision, goals reflect agreed-upon system-wide priorities and provide direction for future transportation planning activities. They establish a framework to help identify strategies and actions (how specifically will the goals be met);

performance measures (how will progress towards the goals be assessed); and projects (identification of projects that meet the goals outlined in the STSP).

Goals Defined

Goal –Statement(s) outlining what is expected to be attained or achieved. Goals are believable, attainable and based on identified needs. They answer the questions, “what do we want our area to look like?” and “What do we want to achieve?”

Goals are not prescriptive, do not look the same in every plan, and are often developed based on legislative priorities, coordination with other goals, and/or public/stakeholder input. The purpose of this section is to present options for transportation safety goals for the CAG STSP. CAG staff and the MDSC will be asked to provide input into their preferred goal statement or statements.

STSP Transportation Safety Goal Options

- 1) The Federal transportation bill, Moving Ahead for Progress in the 21st Century (MAP-21), identifies seven national performance goals, meant to encourage States to focus investments and resources on projects that will make progress towards those specific goals. The national safety goal in MAP-21 is: **To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.** This goal could be customized for the CAG STSP and read as: **To achieve a significant reduction in traffic fatalities and serious injuries on all public roads in the CAG Region.**
- 2) Legislation identifies “planning factors” or ideals planners need to consider when developing their transportation plans. These factors are also meant to help agencies focus resources on priority areas. The national safety planning Factor is: **Increase the safety of the transportation system for motorized and non-motorized users.** This goal could be customized for the CAG STSP and read as: **Increase the safety of the transportation system for motorized and non-motorized users in the CAG region.**
- 3) The Arizona SHSP identifies the following goal: **Reduce fatalities and the occurrence and severity of serious injuries on all public roadways in Arizona.** This goal could be customized for the CAG STSP and read as: **Reduce fatalities and the occurrence and severity of serious injuries on all public roadways in the CAG Region.**

- 4) An option, which is prevalent in other safety plans, is to set a numeric goal, such as: **Reduce the 5-year average of fatal and sever injuries by x percent by x year.** Potential options for a numeric goal are further described in the “performance targets” section below.
- 5) In addition to an overall safety goal, goals can also be developed for each emphasis area. An example of how one would read is: **Reduce fatalities and the occurrence and severity of serious injuries resulting from young-driver-involved crashes on all public roadways in the CAG Region.**

Next Steps: CAG Staff should review the goal options and discuss with appropriate transportation and safety stakeholders (MDSC and TTAC) to determine the goal statement(s). If necessary Cambridge Systematics will arrange a conference call with CAG Staff, the MDSC, the TTAC, or some combination of these individuals, to discuss these options and move forward with goal recommendations.

Performance Measures and Targets

Performance measures are tied to goals and are used to assess the effectiveness of programs and projects that address transportation issues and deficiencies. Performance targets are a numeric goal and describe the extent to which an agency will address its goals, taking into account resources, funding, and possibly other external factors (i.e. population growth).

MAP-21 will likely require State DOTs and MPOs set (or adopt) safety targets for the following performance measures:

- Fatalities,
- Fatality rate (fatalities per 100 million vehicle miles traveled),
- Serious injuries, and
- Serious injury rate (serious injuries per 100 million vehicle miles traveled).

Performance Measures

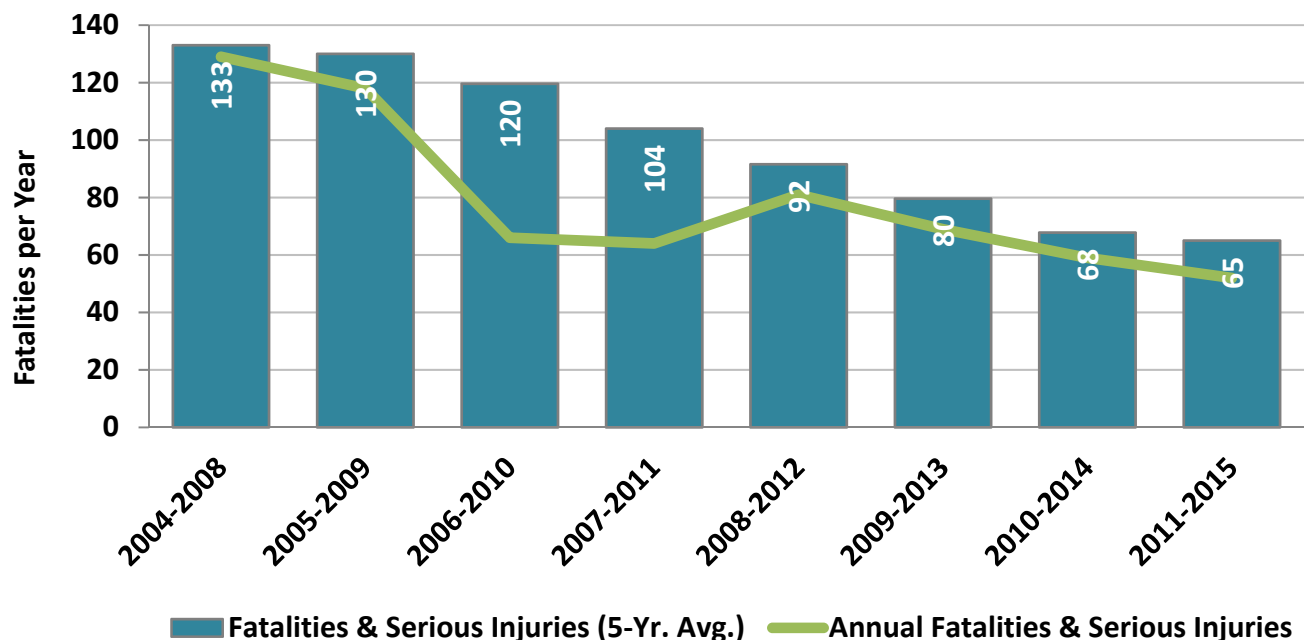
While CAG is not an MPO and is not required to set safety performance measures (or targets), it is still good planning practice to track and evaluate safety. The crash data are available to establish and annually track fatalities and serious injuries for the CAG region as a whole and by emphasis area (fatality and serious injury rate performance measures can also be calculated, subject to data availability and CAG’s interest). We recommend CAG establish the following performance measures and use five year rolling averages to track progress. Five year rolling averages smooth out random year-to-year fluctuations in fatalities and serious injuries. For emphasis areas, tracking of the combined number of fatalities and serious injuries is recommended to simplify reporting.

CAG STRATEGIC TRANSPORTATION SAFETY PLAN

- Number of fatalities
- Number of serious injuries
- Number of roadway departure fatalities and serious injuries
- Number of occupant protection fatalities and serious injuries
- Number of impaired driving fatalities and serious injuries
- Number of speeding fatalities and serious injuries
- Number of motorcycles fatalities and serious injuries
- Number of young driver fatalities and serious injuries

Upon confirmation of the performance measures, CS will provide CAG with an excel tracking sheet to monitor performance for the above-mentioned measures on an annual basis. A sample graph, tracking performance for roadway departure fatalities and serious injuries, is shown in Figure 2 to demonstrate how performance tracking will work.

Figure 2. Tracking Performance Measures



Performance Targets

Establishment of performance targets should be based on consideration of past trends, anticipated changes in travel patterns, and future safety projects. Performance targets should be ambitious, yet

achievable. However, it is recognized that some factors influencing safety are beyond the control of CAG and its partner agencies. For example, an increase in development in the CAG region could result in an unexpected increase in vehicle trips and crashes.

For the CAG region, we have evaluated the 5-year rolling average trends for fatalities and serious injuries, over the 2004-2008 to 2009-2013 time period (Figures 3 and 4). Based on this evaluation, it is clear that both fatalities and serious injuries have dropped considerably. The average annual reduction in fatalities during this period was 12.7%, or around 2.1 fatalities per year (Fig. 3, black trend line). However, annual fatalities have actually increased each year since 2010 (Fig. 3, green line), which may indicate a reversal of this trend. For serious injuries, the average reduction was 11.7%, or 7.7 serious injuries per year (Fig. 4, black trend line).

Adopting performance targets based on these trends would make CAG responsible for achieving a dramatic drop in fatalities and serious injuries. The 2016-2020 projected number of fatalities based on this trend is 10 per year, down from 25 in the 2009-2013 period. Similarly, serious injuries would decline from 91 in the 2009 to 2013 period to 43 in the 2016 to 2020 period. Although the CAG region has experienced a steep decline in fatalities and serious injuries, it is not clear that these performance targets are realistic or achievable.

The Arizona SHSP established the following performance target: **Reduce the total number of fatalities and serious injuries in Arizona by three to seven percent during the next five years from the 2013 base year.** To be consistent with the statewide performance target and to reflect uncertainty over future trends, we recommend that CAG consider adopting a five percent reduction target for both fatalities and serious injuries. This equates to a reduction of around 1.0 fatalities per year and of 3.8 serious injuries per year, which is achievable and realistic. Five year average targets based on this reduction are shown in orange in Figures 3 and 4.

Based on this recommendation, from 2016 to 2020 in the CAG region, there would be an average of 17 fatalities and 63 serious injuries per year. Compared to the 2009-2013 baseline, this represents a 31 percent total reduction, or around 31 lives saved and 115 serious injuries avoided by 2020.

Figure 3. Fatality Trends and Performance Target Options

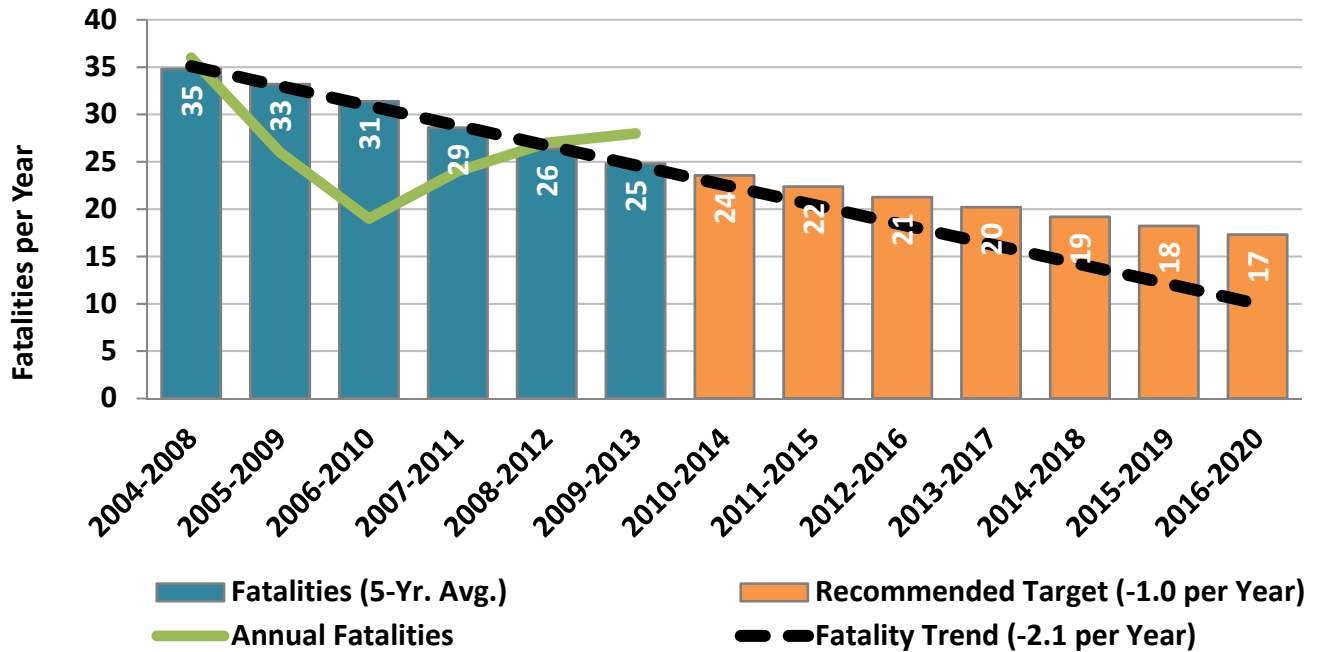
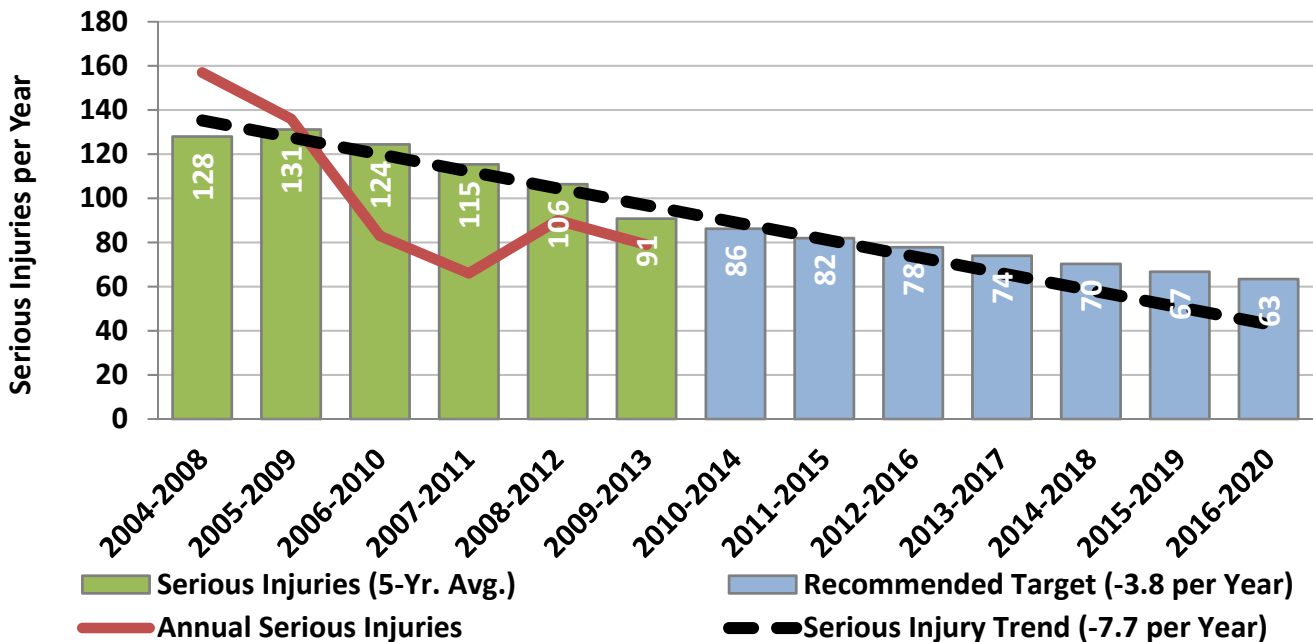


Figure 4. Serious Injury Trends and Performance Target Options



The header features a dark orange background on the left and a dark grey background on the right, separated by a series of white diagonal lines that create a sense of motion and depth. The text is white and positioned in the upper left corner.

CAG STRATEGIC TRANSPORTATION SAFETY PLAN

To the extent possible, anticipated changes in VMT, demographics, or other factors that impact safety should also be considered in the target-setting process. The reasonableness of proposed targets should be compared against these trends. We recommend that the MDSC consider these factors using the best available data and adopt an appropriate target for the CAG region. The recommended five percent reduction target can be used as a starting point for that conversation, but ultimately CAG should adopt a target that it is comfortable with and that is ambitious, yet achievable.

Next Steps: CAG Staff should review the performance measures and targets options and discuss with appropriate transportation and safety stakeholders (MDSC and TTAC). If necessary Cambridge Systematics can arrange a conference call with CAG Staff, the MDSC, the TTAC, or some combination of these individuals, to discuss these options and move forward with recommendations for performance measures and targets.