

**CE 467 / 567 Highway Safety and Operations**  
**Homework 1**

Due Thursday, August 31, 2006

Problem 1

Identify one (1) location that you perceive to have a traffic safety problem in Tucson or within the University of Arizona. Describe your perceptions of the safety problem in 2-3 paragraphs. Within your description, explain:

1. What the nature of the safety problem is;
2. Elements of the roadway, vehicles, drivers, and/or environment that contribute to this safety problem;
3. A metric (or metrics) you might think are appropriate to measure this safety problem; and,
4. An improvement you might recommend to improve the safety of the location.

Problem 2

The National Highway Traffic Safety Administration (NHTSA) has a web site for traffic statistics, called the National Center for Statistics and Analysis at NHTSA. Statistics on fatalities for the state of Arizona, for the 2005 calendar year, can be found at the following URL (also a link on the course web site):

[http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/4\\_AZ/2005/4\\_AZ\\_2005.htm](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/4_AZ/2005/4_AZ_2005.htm)

Based on these data, answer the following questions:

- a. What percentage of the traffic fatalities in Arizona occur...
  - (1) in single-vehicle crashes?
  - (2) in roadway departure crashes?
  - (3) in intersections or related to intersections?
  - (4) in alcohol-related crashes (i.e., with BAC levels over 0.01)?
  - (5) to passengers who are not restrained? (hint: be careful)
- b. Geographically, what areas of the state have the highest fatality rates (fatalities per 100,000 population)?
- c. For Maricopa and Pima counties (the most populated counties in the state):
  - (1) Are the overall fatality rates (fatalities per 100,000 population) in these counties higher or lower than the median of all US counties?
  - (2) Are the alcohol-related fatality rates in these counties higher or lower than the median of all US counties?
- d. From your answers to these questions, and a review of the other data at this site, what do you believe should be some of the current priorities for highway safety management in Arizona?

Problem 3

In the course's electronic reserves, read the AASHTO Strategic Highway Safety Plan (2005). Then answer the following questions:

- a. Would you consider the 22 plan areas to be "comprehensive in scope", as suggested on page 2? You might consider using a Haddon Matrix and/or the four E's in categorizing plan elements, and you also might consider some of the cost information given on page 5.
- b. Does the plan reflect what you believe to be critical issues in Arizona, from part (d) of Problem 2?
- c. **Choose one of the 22 plan areas.** *In your own words*, explain what specific strategies the plan area contains, and what information is provided in the plan about the cost-effectiveness of these strategies.