

## ADAM Assignment 2: Elasticity in Travel Demand

### **Objective:**

This assignment helps students to understand the role of the global variables and the concept of elasticity. Students will alter global variables on the model and explore the different outcomes that result from the exercise.

### **Elasticity:**

Elasticity measures the responsiveness of one variable to changes in another variable. Specifically it is the percentage change in one variable in response to a percentage change in another. The elasticity of Y due to X can be found by calculating:

$$Elasticity = \frac{\% \text{ Change in } Y}{\% \text{ Change in } X} = \frac{\frac{Y2 - Y1}{Y1}}{\frac{X2 - X1}{X1}}$$

### **Instructions:**

We use the Sioux Falls network for this exercise. Keep trip production rate and trip attraction rate as the same. The global variables that we will be altering are the following:

- Travel length coefficient
- Peak hour rate
- Auto mode share
- Auto occupancy

We will be altering one variable at a time (keep others as default). Record the output statistics under the default scenario and a new scenario created by changing one of the global variables above. You will then calculate the elasticity associated with each of the above global parameters. The measures of effectiveness (MOEs) for which you will calculate elasticities with respect to the global parameters are the following:

- Vehicle Hours Traveled
- Vehicle Kilometers Traveled
- Number of Trips

These can be found in the system statistics output.

### **Submittal:**

Write a short report (2-3 pages) including a table for elasticities. Your report should illustrate your understanding of the concept of elasticity. Comment on your results.