PREDICTING HIGHWAY SAFETY FOR TWO-LANE RURAL HIGHWAY SEGMENTS

PURPOSE

To learn how to apply a HSM crash prediction model to two-lane rural highways with different design and operational characteristics

LEARNING OBJECTIVES

- Be able to describe the Safety Performance Function (SPF) for the base conditions on two lane rural highway segments
- Be able to describe the safety effects of different design features on segments of two lane rural highways
- Be able to relate the safety effects of a segment design element to the corresponding Crash Modification Factor (CMF).
- Be able to predict highway safety on two lane rural segments by applying appropriate SPF and CMFs to the Safety Performance Function

REQUIRED RESOURCES

- The two-lane rural highway problem to be completed (in the INFORMATION section next page)
- Copies of the required HSM equations, tables, and figures

TASKS

Read the problem statement in the INFORMATION section. Identify the characteristics of the two-lane rural highways in the problem. Calculate the SPF of the base conditions and the CMFs from the provided HSM resources. Apply the SPF and CMFs to the Safety Performance Function and calculate the HSM predicted crash rate (crash/year). After completing the problems, peer-reviews and discussions will be held.

DELIVERABLE

Completed solutions to the problems.

INFORMATION

Problem Statement:

A rural two lane highway is located in a rural county of population 25,000. The ADT of the highway is 3,500 vpd and the length of the highway is 26,485 feet (5.02 mile). The highway has the following design and operation characteristics:
• Lane width: 10 ft
• Shoulder width and type: 2 ft, gravel
• Driveway density: 6.17 per mile
• Centerline rumble strip: No
• Edgeline rumble strip: Yes

• Passing lane and climbing lane: No
• Two Way Left Turn Lane (TWLTL): No
• Roadside Hazard Rating: 6
• Lighting: No
• Automatic Enforcement: No

Calculate the following:

1. Base Condition Safety Performance Function (SPF)
2. The Crash Modification Factors of all the above characteristics
3. The predicted SPF (rashes/year) for the rural highway