Investigation of Crashes and Identifying the Best Practices for Setting up Speed Zones in Towns Along Rural Highways in Nevada

Krishna P Shrestha, B.E. (Civil), M.S.E. (Civil)
Dr. Pramen P. Shrestha, Advisor
Civil and Environmental Engineering and Construction

Study Objectives
- To determine the factors associated with crashes
- To determine the factors that affect a speed limit
- To identify the best practices used by other state DOTs when setting up speed zones in towns along their rural highways
- To provide recommendations for preparing speed-zone guidelines in towns along the rural highways in Nevada

Research Methodology
- Setting up the scope and objectives of the study
- Literature review
- Crash data collection from the NDOT
- Spot speed and road characteristics data collection
- Survey questionnaire data collection from state DOTs
- Data analysis
- Identification of best practices and factors to be considered while setting up a speed zone
- Conclusions and recommendation for preparing a speed zone guideline

Traffic Survey Locations

Background

Crash statistics comparison (urban and rural areas of Nevada in 2010)

PDO crashes

Non-fatal injury-causing crashes

Fatal crashes

Urban Rural

Study Objectives

Crash Data

- From Nevada Citation & Accident Tracking System (NCATS)
- From 2002 – 2010
- 337 crash records
- 12 Independent variables

Site Data

- Spot speed data
- Step down speed limits
- Overall road-side development
- Presence of pedestrian facilities
- Type of median separator etc.

Questionnaire Survey Data

- Response from 37 states
- 6 sections

Results

- Although fraction of PDO and non-fatal injury-causing crashes are very small for rural areas, almost half the fatal crashes occurs in rural areas.
- Majority of crashes occurred in occurred in normal driving conditions but severe crashes were associated with factors like inattention, speeding, and driving under influence.
- Total number of crashes, number of injuries, and number of PDO crashes were significantly correlated with the percentage of vehicle exceeding posted speed limits.
- Overall fatigue and inattention, run off lane/road, failure to yield, turning related, and animal/object in roadway were top 5 factors associated with crashes.
- Various states uses different guidelines prepared by corresponding DOTs, there is no nationally accepted speed zone guidelines. But the basic principles in those guidelines are same.
- Proper guidelines as well as enforcement is necessary to reduce crashes in the towns along the rural highways of Nevada. This will be an important step towards achieving “Zero Fatalities” in Nevada.

Conclusions