A Visualization Tool for a Highway Safety Management System

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Introduction

- With lot of research, Federal Highway Administration has released a highway safety management system software called as SafetyAnalyst (SA)
- SA has a suite of analytical tools to identify and manage system-wide safety improvements:
  - Network Screening
  - Diagnosis and Countermeasure Selection
  - Economic Analyses and priority Ranking
  - Countermeasure Evaluation
- SA provides a very rudimentary approach to display results just in tabular and textual format
- This study proposes a visualization tool that expands the output capabilities provided by SafetyAnalyst

Objective

- To enable an easy use of SA and to provide visual information
- To facilitate the development of the database required by SA
- To enable extraction and formatting of the information required by SA with a little user involvement

Significant Functions

- Visualization of output using multiple complementary displays and formats -- spatial plot, bar charts, tables and an editable report
- Spatial plot shows the location of sites of interest in Google map with standard pan, rotate and zoom
- Sites are displayed as a f(rank) such that user can retrieve information without milepost of a particular site of interest

SA Navigation GUI

- SA Web Based Visualization Interface
- Module I: Conventional Network Screening SA Results
- Module II: Diagnosis and counter Measure selection
- Collision Diagram: Graphically represent crashes at particular location providing information on type, severity, speed, light conditions and roadway conditions
- Module III: Economic Appraisal
- Module IV: Countermeasure Evaluation

Conclusion

- Developed Visualization tool expands the input and output capabilities provided by Safety Analyst (SA)
- The tool facilitates the analysis by providing visual information to the user as soon as the information is generated by the SA
- The user can make better decisions during the modeling and analysis process without assessing all modules in SA
- This tool will be further developed with two alternative displays i.e. Google maps (existing) and ArcGIS (for advanced modeling and analysis)

Acknowledgements

Nevada Department of Transportation, Regional transportation Commission Southern Nevada, Freeway and Arterial System of Transportation and Other Agencies