Safety Analyst – The What, Why, and How?

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Presentation Overview

- Roadway Safety Management Process
- Safety Analyst
  - What is Safety Analyst?
  - Why use Safety Analyst?
  - What can you do with Safety Analyst?
  - What is the Safety Analyst data model?
  - What are the modules and tools within Safety Analyst?
  - What is FDOT’s progress with Safety Analyst deployment?
Roadway Safety Management Process

1. Network Screening
2. Diagnosis
3. Countermeasure Selection
4. Economic Appraisal
5. Project Prioritization
6. Safety Effectiveness Evaluation
New Safety Analysis Tools

Provide state-of-the-art analytical tools for use in the decision-making process to identify and manage a systemwide program of site-specific improvements to enhance highway safety by cost-effective means.

Provide analytical tools and techniques for quantifying the safety effects of decisions made in planning, design, operations, and maintenance.

Safety Analyst

Provide state-of-the-art analytical tools for use in the decision-making process to identify and manage a systemwide program of site-specific improvements to enhance highway safety by cost-effective means.
Tools for Safety Management

To assist agencies in making better decisions about:

- Where to make highway safety improvements?
- What improvements to make?
- How effective the implemented safety improvements are?
Why Use Safety Analyst?

• Safety Analyst can proactively determine which sites have the highest potential for safety improvement

• Safety Analyst integrates all parts of the roadway safety management process into a single software package

• Safety Analyst automates state-of-the-art statistical approaches as described in Part B of the HSM
What Can You Do With Safety Analyst?

• Identify locations with greatest potential for safety improvement
• Perform site-specific diagnosis to identify crash contributing factors and crash patterns
• Select countermeasure(s)
• Conduct economic appraisal and prioritize safety improvement projects
• Evaluate countermeasures
Safety Analyst Capabilities

- Automates all the steps in the roadway safety management process
- Automatically divides the entire road network into predefined site subtypes
- Performs quality control and identifies problems with the data sets
- Applies empirical Bayes (EB) method and ranks problematic sites based on their potential for safety improvement
- Provides expert system to diagnose site conditions and collision patterns and suggest potential countermeasures
Safety Analyst Development Timeline

- Development of SA began in 2001
- White papers defining the functionality of the software tools are released
- Interim software tools are released
- SA is evaluated
- SA is released in 2010
Safety Analyst Data Model

Safety Analyst Data Management Tool

CREATE DATASET PROFILES

IMPORT

POST PROCESS

CALIBRATE

REPORT

EXPORT

Data Manager

Data Management and ICM Tools

CRASH Data

Inventory Data

Traffic Data

External Source Data

Data Set
- Crash (accident) data
- Inventory data
- Traffic data
- Implemented CM
- Calibration data
Safety Analyst Administration Tool

Federal database + Agency database → System database

- Edit data attributes
- Edit agency site subtypes
- Edit agency specified user preferences
- Edit agency countermeasures
- Edit agency diagnostics data
- Edit agency specified distribution data
- Edit agency specified SPF data
- Edit cost-related default parameters
- Edit agency organization information
- Edit user-defined administrative preferences
- Submit a software related problem
Safety Analyst Analytical Tool

Analytical Tool Framework

User

Workbook

Site list
Safety Analyst Modules

1. Network Screening

2. Diagnosis and Countermeasure Selection

3. Economic Appraisal and Priority Ranking

4. Countermeasure Evaluation
Safety Analyst Application Process
FDOT’s Progress with Safety Analyst Deployment

• **Concern:** Safety Analyst has stringent data requirements
  **Solution:** A conversion program has been developed to automatically generate Safety Analyst import files. However, the program needs to be updated to include data from non-state roads.

• **Concern:** Safety Analyst requires Florida-specific SPFs
  **Solution:** Florida-specific SPFs have been developed to use with Safety Analyst.

• **Concern:** Safety Analyst has steep learning curve
  **Solution:** We will provide technical support and expert advice on Safety Analyst.
Summary

• Roadway safety management is a data-intensive, statistically complex, and computationally rigorous process.

• Safety Analyst automates all the steps in roadway safety management process.

• Safety Analyst requires minimum statistical expertise.

• Data requirements are intense. However, it is a one-time process.

• Safety Analyst can play an important role so that highway agencies get the greatest possible safety benefit from each safety dollar spent.

• Safety Analyst can be used to create safety assessment reports based on rigorous data analysis to secure safety funds and justify their use.
Thank You!

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