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Projects, Prioritization and Asset Management
Evolutionary Vision & Steps

Start with an articulation of the long term goals, and use that “Ultimate Vision” to drive the expression of the strategic direction as well as the next tactical step(s).

This is an iterative process; e.g. each year, refine long-term vision, current capability, and appropriate next step.

Ultimate Vision

Next Step

Useful step AND Lays foundation for vision

Current Capability

Now 1-2 years 4-5 years
Traffic Records - Project Overview

GIS compliant Crash DB

Updated Crash Form 99% MMUCC

Electronic Crash Reporting System

Integrated Safety Analysis System

Integrating Roadway Features

Road attribute database

GIS Integration

City Street LRS

Automated Publications

Automated QC Checks

Safety / Asset Management Integration

Web-based analysis

Comprehensive QA process

RMS Integration?

Citations?

EMS?
Safety Projects – Overall Process

1. Identify safety issues
2. Select appropriate remedies
3. Dimension safety project
4. Prioritize & Optimize Projects
5. Project Planning
6. Project Deployment
7. Project Benefits & Costs
8. Remedies and Reductions
9. Prioritized Opportunities
10. Updates to CMFs

Effectiveness Studies

Feedback Loop
Example Safety Condition Graph

Grade

High Budget
Nominal Budget
Low Budget

09 10 11 12 13 14 15 16 17 18

Years
Overview – Safety Index

• Reflects how Safety Performance is understood by wide audience
  – to WYDOT exec Staff, commissioners, legislature, public
• “Report Card” grade; A-F (A is best)
• Maps directly from the Performance Measure
  – Much like PSR is mapped to Poor / Fair / Good / Excellent for pavement
Safety Analysis, Project Selection & Rollup

- Identify safety issues
- Select appropriate remedies
- Dimension safety project
- Project Planning
- Project Deployment

Effectiveness Studies

- Roll Up By:
  - Network
  - District
  - Route/Corridor
  - Segment

Benefits

- Time Horizon (years)
- Score

Translation of all segment scores to a Safety Rating/mi

Project Contribution

Candidate Safety Projects

Performance “rollup”

Recommended projects

- CARE
- DiExSys
- Intersec’n Magic
- Risk-Based
- District inputs
- Public inputs

Project Prioritization/Selection

Performance Projections

Project Implementation

- Town Hall Meeting
- District inputs
- Public inputs

Project Deployment
Objective: Safety stack of projects

Expected: A prioritized list of projects with their associated Benefits and Costs…

In order to:
- Prioritize between safety projects
- Trade off between programs
- Consolidate with other program projects (at the margin)
Calculating Project Benefit

- Benefit = expected reduction in frequency and/or severity of future crashes, based on
  - Severity of the problem
    - Current frequency of PDO, Injury, Fatality
  - Selected remedies
  - Expected improvements on crashes
    - Published CMF (e.g. NCHRP Digest 299)
    - Adapted for Wyoming experience
  - Expected reduction percentage for each severity;
    - Proportional to crashes (based on % of crashes that result in injuries/fatalities),
    - Decoupled from crashes (e.g. cable median barriers)
  - Weight based on federal standard costs for each severity
  - Expected life of remedy
  - Future traffic growth
Benefit of Safety Projects

Score as a result of the Safety Improvement Project
(area = NPV of Benefit)

Time Horizon (years)
Safety Management System

• DATA DRIVEN
  • Turn data into useable information about a roadway segment

• NEED TO DEVELOP INFORMATION FOR DECISION MAKING
  • Don’t need everything, just some critical data
  • All roads are competing for limited resources
  • Need to know how they stack up against one another
Safety Management System

- Safety Analysis
  - Hazard/Problem Identification
  - Prioritization/Trade-offs
  - Evaluation of Strategies
- Reporting of Info to Decision Makers
- Compatible with the SHSP
- Integrate with other Management Systems
1. Program-to-Program Tradeoff Analysis – How to Invest $ across programs
   a) Program-to-program tradeoffs
   b) Functional Class splits

2. Project-to-Project Scenario Analysis -- Benefit-to-Cost “At the Margin” for each asset class/program, for final Programming
Engineering

- You can’t build your way out of all your safety issues

- There are Safety Problems that can be addressed with engineering solutions, BUT

- A large percentage of the Safety Problems on our roadways are HUMAN BEHAVIOR related…

- BELTS, BOOZE & SPEEDING