

every day counts 



DDSA in Planning

DDSA in the Planning Process



DDSA tools can be applied to help identify which roadways aren't performing as they should, determine the scope and need of potential projects, and prioritize them.

DDSA in the Planning Process

- **System Level Planning**
 - Network Screening
- **Project Level Planning**
 - Establishing Project Scope
 - Project Prioritization



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What is Network Screening?



- i.e. Which sites have the most potential for safety improvement?

Steps

1. Establish focus
2. Identify network
3. Select performance measures
4. Select screening method
5. Screen and evaluate results

Traditional vs. Advanced Network Screening

From simple safety performance measures:

- Crash frequency
- Crash rate
- Equivalent property damage only (EPDO)

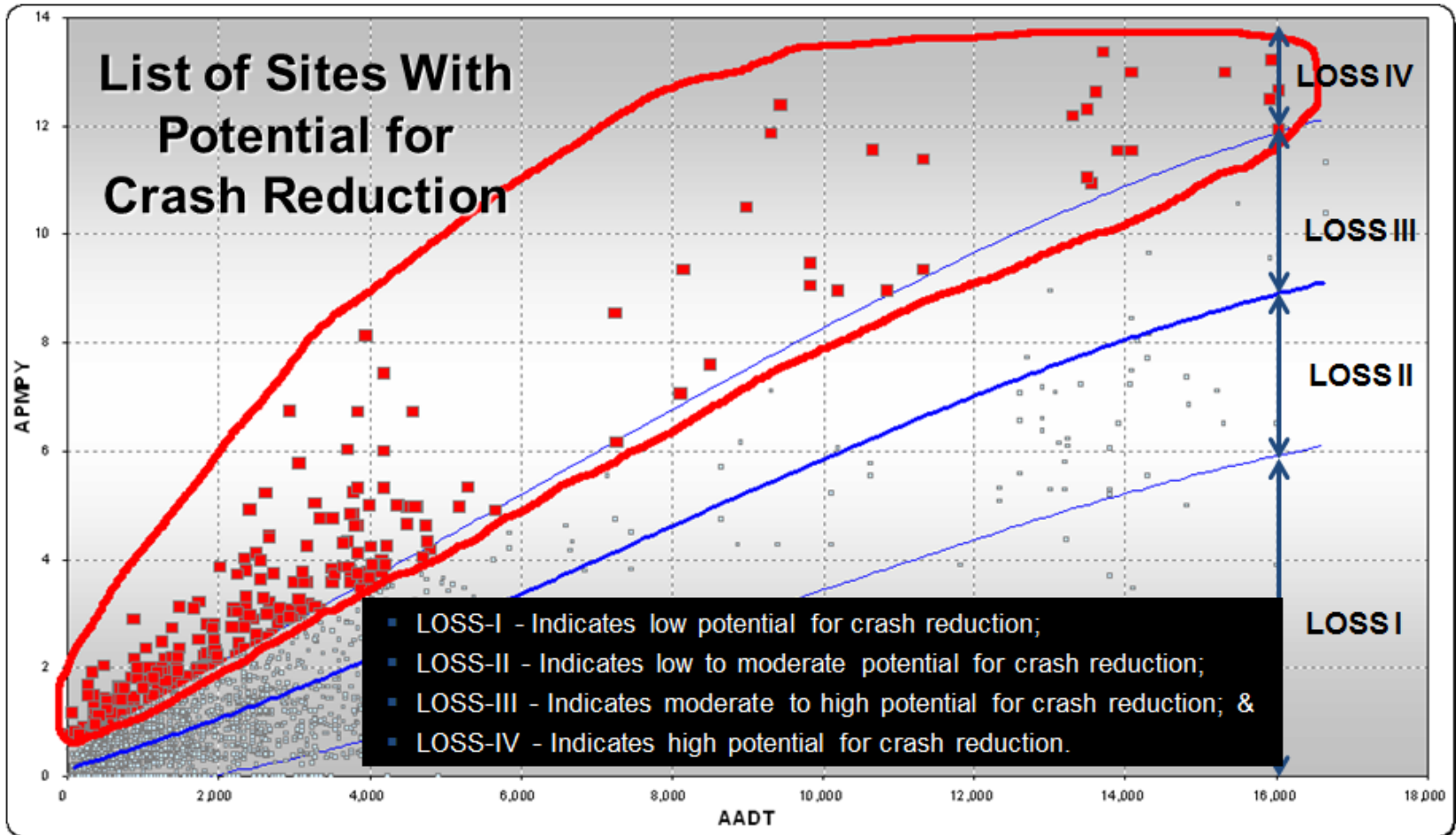
To advanced safety performance measures:

- **Excess Predicted Average Crash Frequency**
- **Level of Service of Safety**
- **Potential for Safety Improvement**
- **Systemic Sites with Promise**



Example: Montana DOT - Network Screening

Level of Service of Safety

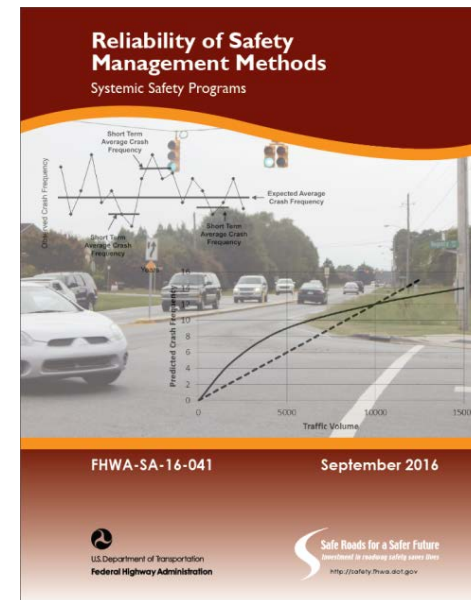


Credit: Montana DOT



Advanced Methods in Network Screening

- **Advanced Methods are More Reliable**
- More reliable measures account for potential bias due to:
 - Regression-to-the-mean
 - Changes in traffic volume
 - Nonlinear relationship between crash frequency and traffic volume
 - Differences in crash severity



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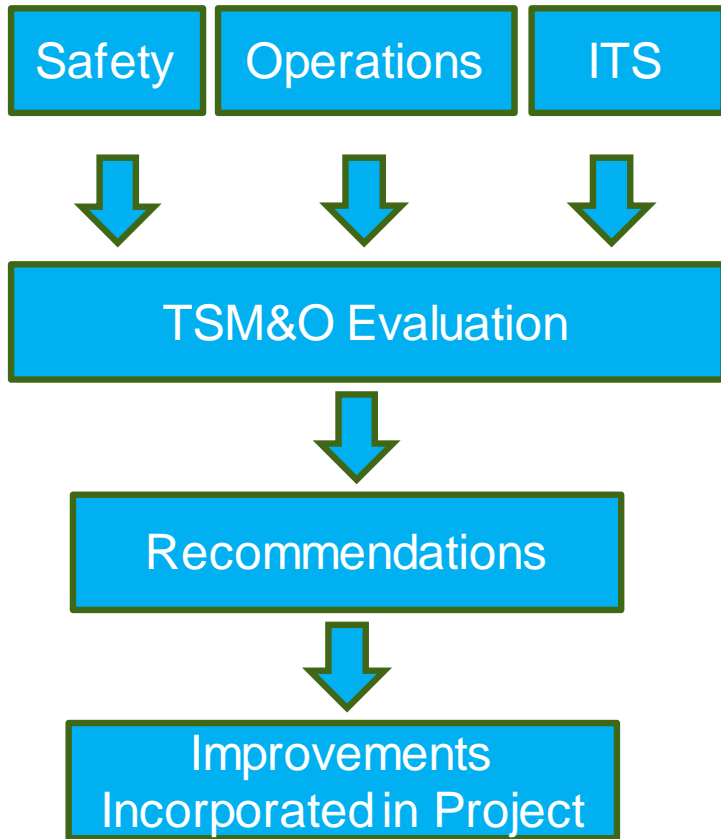


Establishing Project Scope

Typical process:

1. Assess the performance of the existing site
 - Condition/status of pavement, structures, congestion, safety, etc.
2. Propose improvements
3. Determine necessary funding and schedule
 - Done at a level commensurate with the type and scale of the project

Example: Colorado DOT Safety Analysis in Scoping

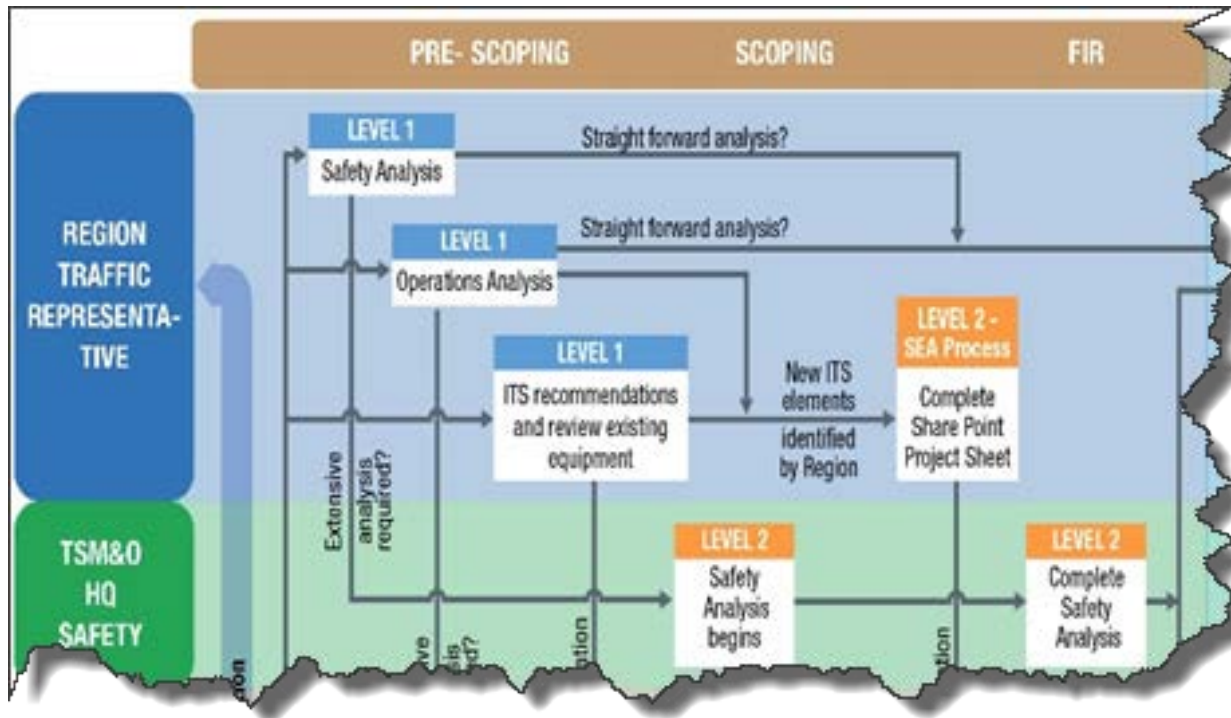


Credit: Colorado DOT

- The Transportation Safety Management & Operations (TSM&O) Evaluation consists of three parts
 - Safety, Operations, and ITS analyses
- The TSM&O Evaluation makes recommendations for improvements related to Safety, Operations, and ITS
- All projects require a TSM&O Evaluation.

Example: CO DOT - Safety Analysis in Scoping

- Region and HQ provide the safety analysis to Project Manager
 - Can include DE/PBPD analysis
- PM can make data-driven decisions *when adjustments to the scope can be made*
- DDSA concepts now more familiar to PM, rather than SMEs



Credit: Colorado DOT

Safety Analysis in Project Prioritization

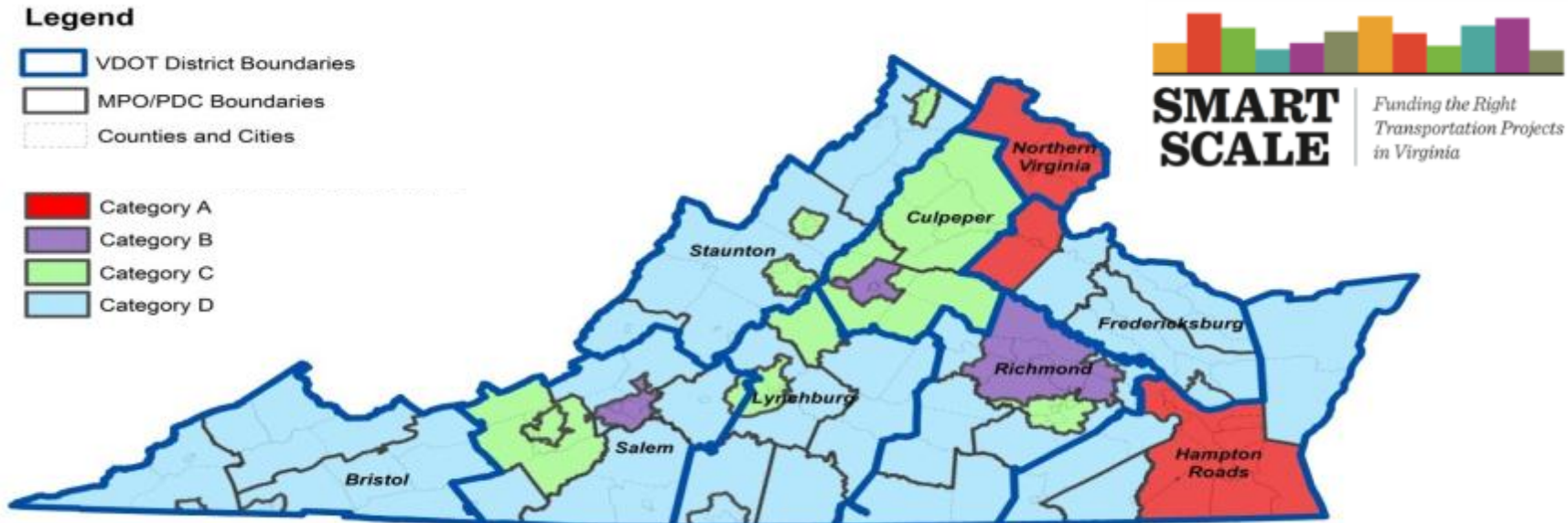
Typical process:

- Identify criteria for scoring projects
- Develop list of potential projects
- Apply scoring methods for each criteria
- Rank and prioritize list of projects



Example: Virginia DOT – Safety Performance in Project Prioritization

Project Weighting Factors



Credit: Virginia DOT

| Factor | Congestion Mitigation | Economic Development | Accessibility | Safety | Environmental Quality | Land Use |
|------------|-----------------------|----------------------|---------------|--------|-----------------------|----------|
| Category A | 45% | 5% | 15% | 5% | 10% | 20% |
| Category B | 15% | 20% | 25% | 20% | 10% | 10% |
| Category C | 15% | 25% | 25% | 25% | 10% | |
| Category D | 10% | 35% | 15% | 30% | 10% | |

Example: Virginia DOT - Planning-Level CMFs for each project type

e.g. converting 2-lane road to 4-lane divided:



Credit: Virginia DOT

- 1. Countermeasures and CMF values combined to develop 1 CMF for each project type**
 - e.g. CMF = 0.80 (20% crash reduction)
- 2. CMF applied to previous crash history**
 - e.g. 2 F+SI Crashes avoided per year
- 3. This value is used for the safety portion of the project score**