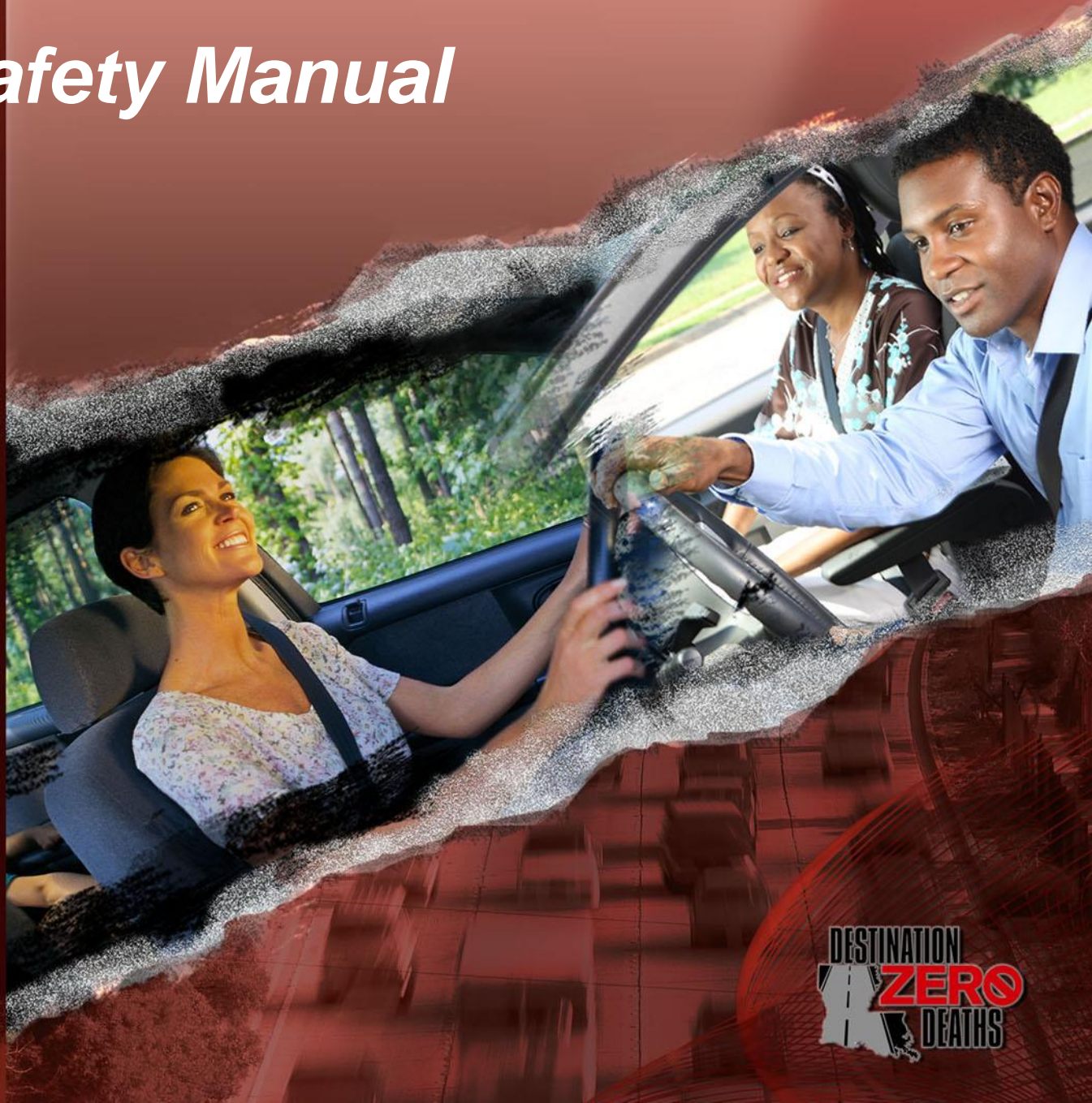


Highway Safety Manual

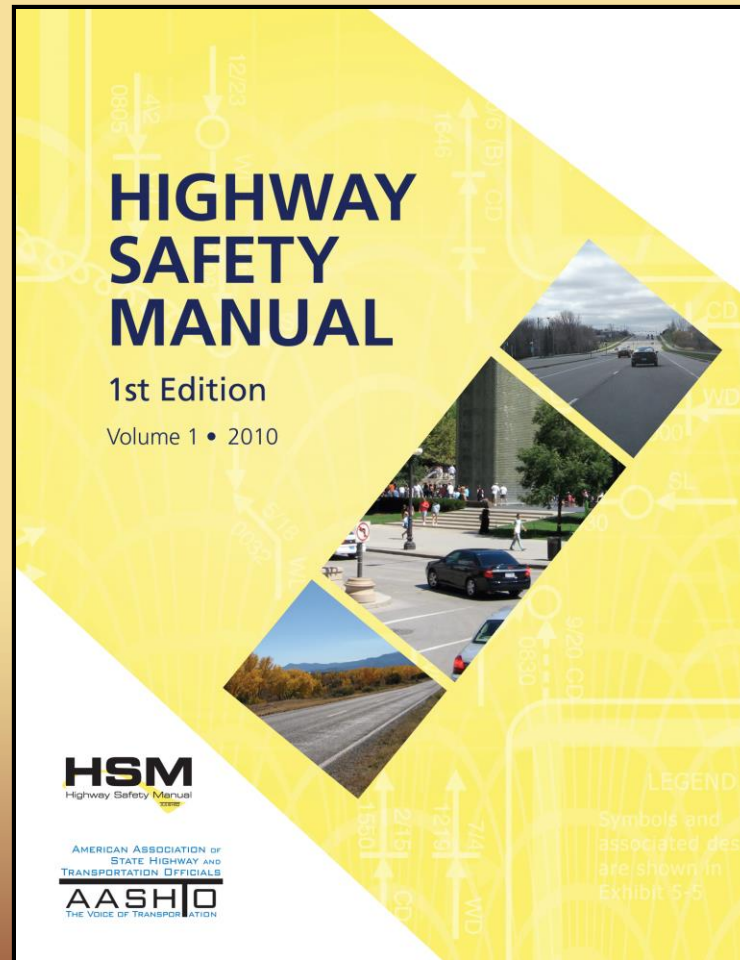
June 16, 2011

presented to
Statewide Traffic Engineers

presented by
Dan Magri, P.E.
Louisiana Department
of Transportation
and Development

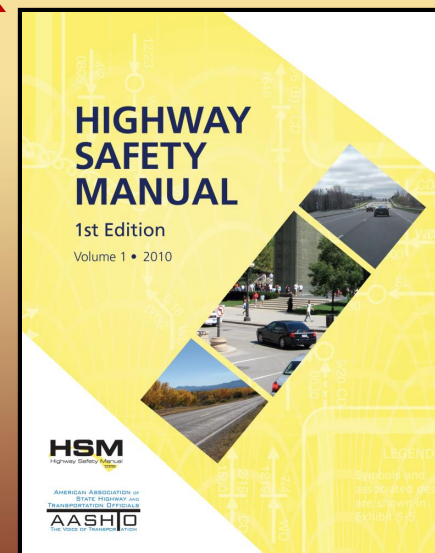
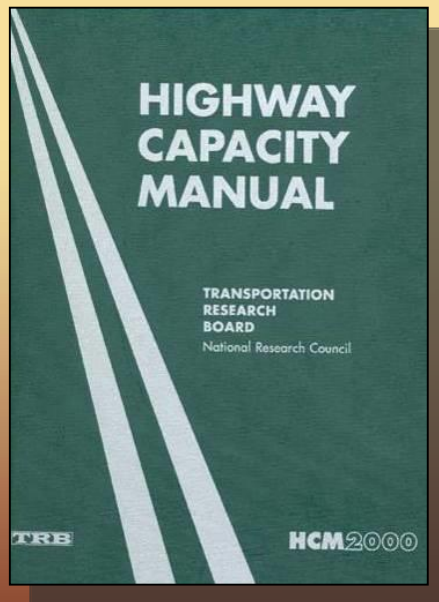


A Brief Introduction to the Highway Safety Manual



New Highway Safety Manual of 2010

- ▶ **Methodology is like that for assessing and assuring the adequacy of Capacity**
- ▶ **HSM allows the transportation professional to understand and quantify highway safety performance for informed and balanced decision making**



What is the HSM

Akin to the HCM, but for safety...

1

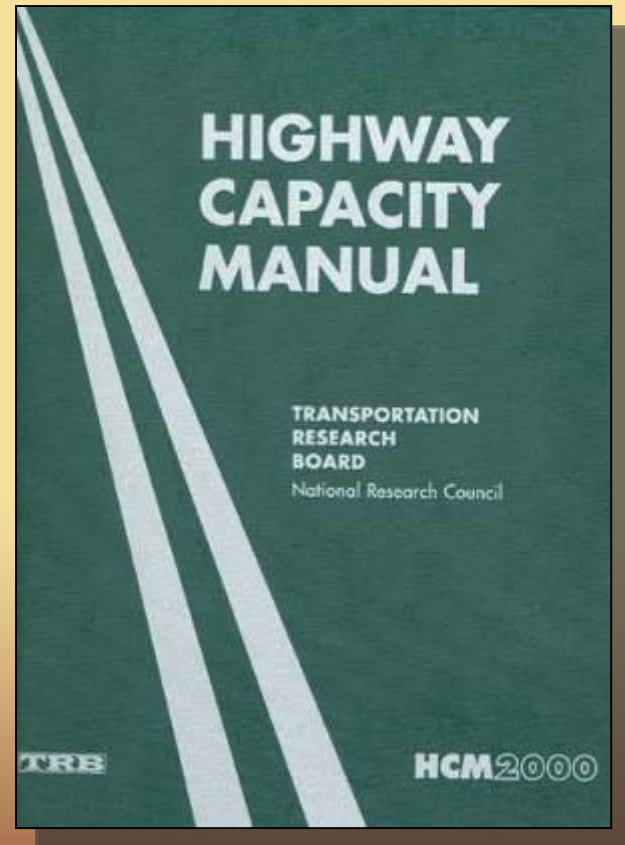
Definitive; represents quantitative 'state-of-the-art' information

2

Widely accepted within professional practice of transportation engineering

3

Science-based; updated regularly to reflect research



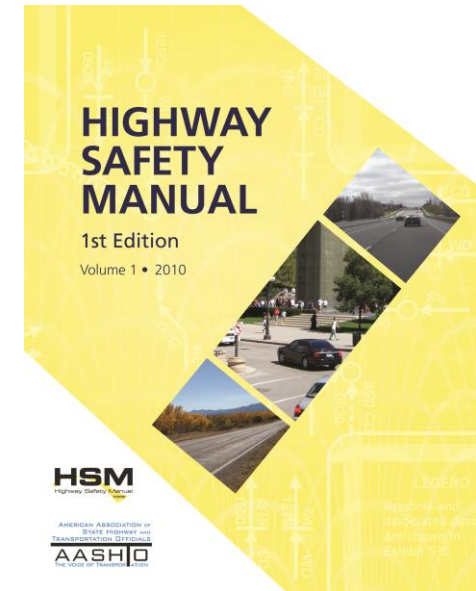
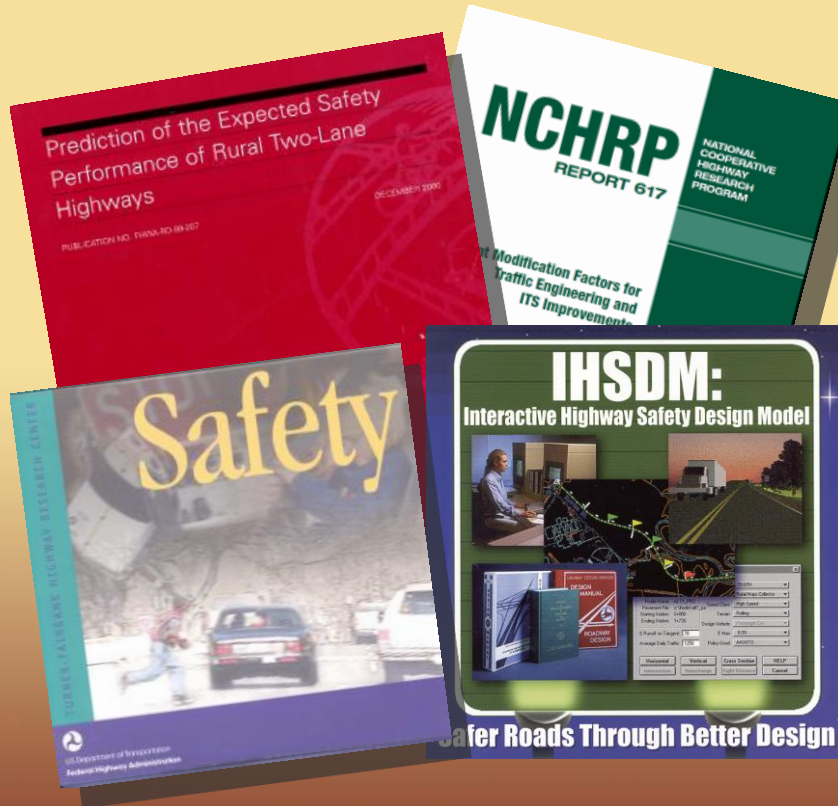
What is the HSM

It's the product of:

- ▶ **\$7 million, 10-year research program funded by NCHRP, AASHTO & FHWA**
- ▶ **Thousands of hours of effort in reviewing the research results:**
 - **TRB Task Force on Development of the HSM**
 - **AASHTO Joint Task Force on the HSM, with members from Safety, Design, and Traffic Engineering**

What is the HSM?

Contains Best Science & Research



- Synthesis of previous research
- New research commissioned by AASHTO and FHWA

What is the HSM?

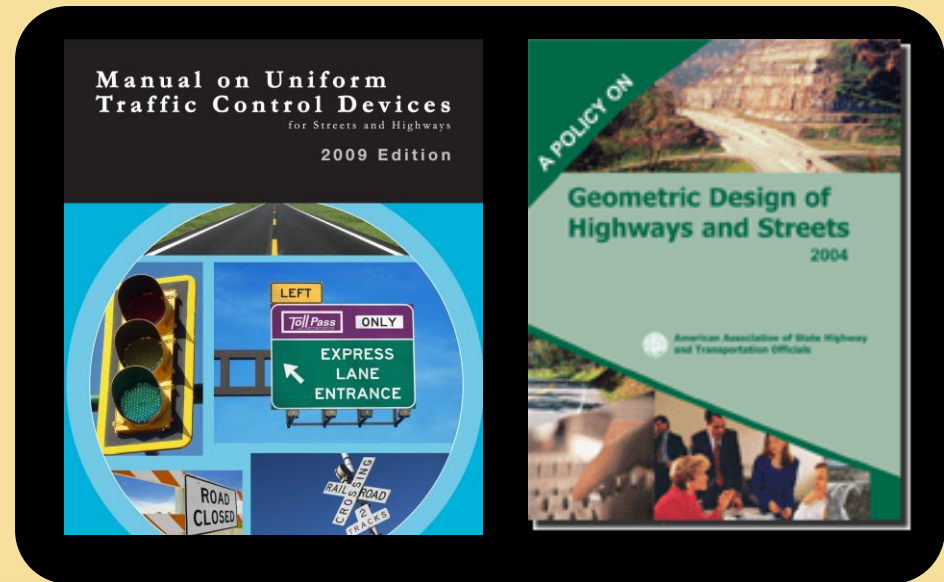
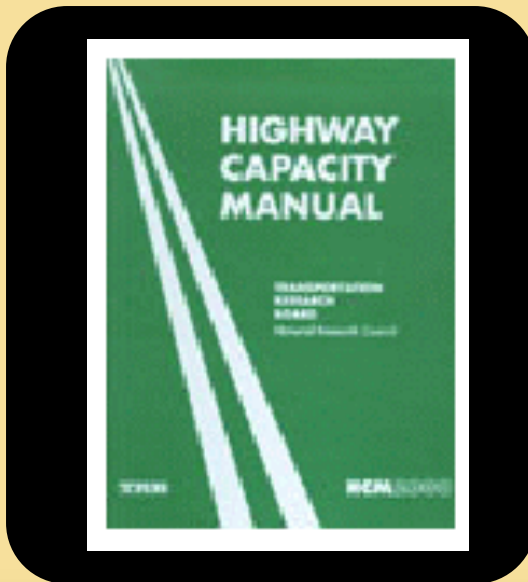
An AASHTO Publication that...

- ▶ **Provides a set of tools for prediction of crash frequency and for analysis of safety**
- ▶ **Facilitates explicit consideration of safety throughout the project development process**
- ▶ **Provides a synthesis of validated highway safety research**
- ▶ **Provides analytical tools for predicting the impact of decisions on road safety**

WHAT THE HSM IS.....

...Like the HCM

...NOT Like the MUTCD & Green Book



- ▶ The HSM describes the mathematical relationships for safety performance based upon exposure and roadway conditions
- ▶ The HSM is an analysis tool only; just like the HCM
- ▶ The HSM does not have “Standards” nor “Best Practice” guidance
- ▶ The HSM does not supersede other publications that do

OUTLINE of the HSM

Part A
Introduction,
Human
Factors, and
Fundamentals

Part B
Roadway
Safety
Management
Process

Part C
Predictive
Method

Part D
Accident
Modification
Factors

PART C - PREDICTIVE METHODS

Chapter 10



**Two-Lane
Rural Roads**

Chapter 11



**Rural Multilane
Highways**

Chapter 12



**Urban/ Suburban
Arterial Highways**

Part C Common Procedures

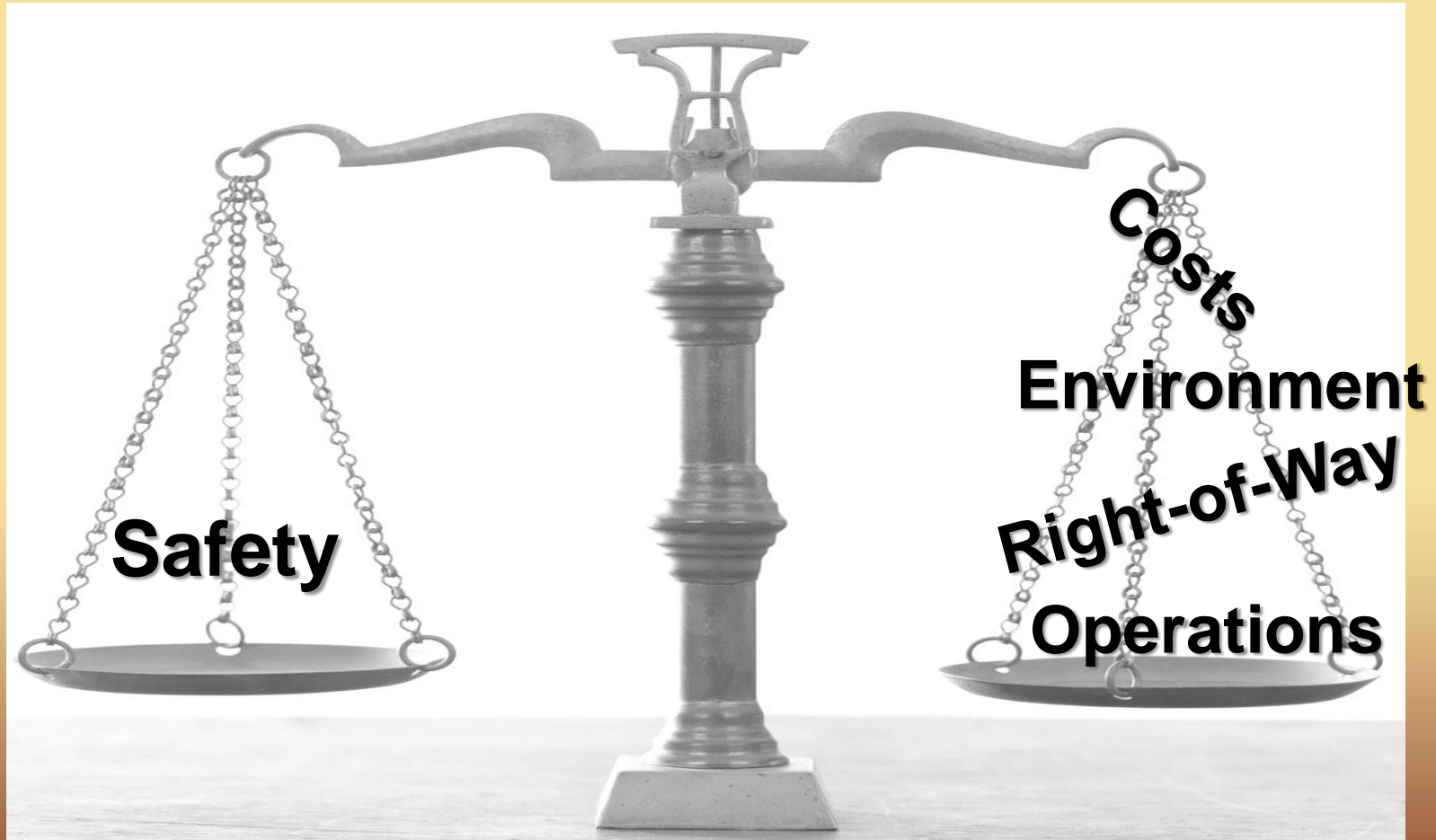
- Safety Performance Functions
- Crash Modification Factors
- Calibration for local conditions

Why should we use the HSM?

- ▶ **We need quantitative estimates of safety performance for many planning and project development decisions.**
- ▶ **More reliable estimates lead to more safety cost-effective decision making.**
- ▶ **The estimation methods in the HSM are based upon good science/research and improve upon much of current practice.**

Why should we use the HSM?

Quantifying safety facilitates tradeoff analysis...

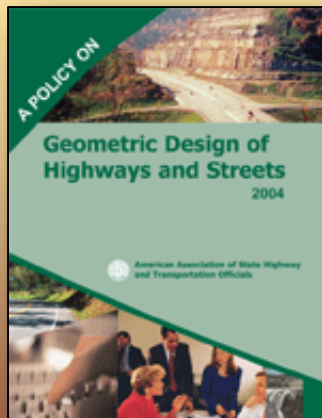


Why should we use the HSM?

HSM methods complement design guidelines...

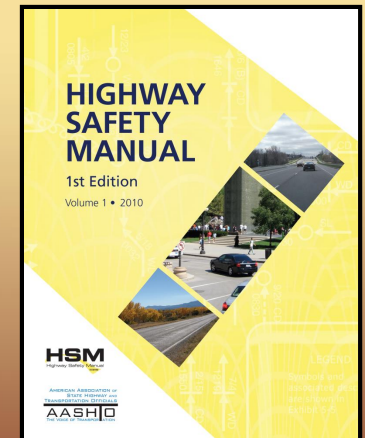
*Nominal
Safety*

*Substantive
Safety*



Examined in reference to compliance with standards, warrants, guidelines and sanctioned design procedures

The expected or actual crash frequency and severity for a highway or roadway



**Ezra Hauer, ITE Traffic Safety Toolbox Introduction, 1999*



Why should we use the HSM?

Decisions requiring quantitative safety estimates:

- ▶ **Mitigating Design Exceptions**
- ▶ **Identifying sites with the most potential for crash frequency or severity reduction**
- ▶ **Identifying crash patterns and treatments to address those patterns**
- ▶ **Conducting economic appraisals of projects**
- ▶ **Evaluating the crash reduction benefits of implemented treatments**
- ▶ **Estimating the effects of design decisions on crash frequency and severity**

SUBSTANTIVE SAFETY MAY VARY ***Even when meeting NOMINAL Geometric Requirements***



Existing Conditions



Alternative 1



Alternative 2

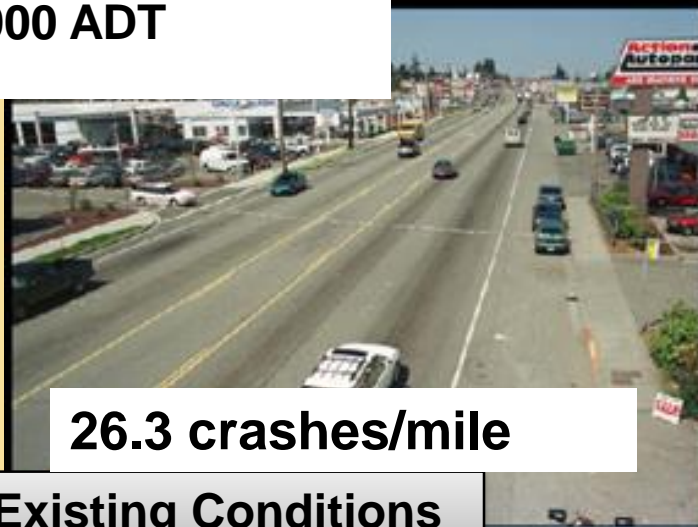


Alternative 3

SUBSTANTIVE SAFETY MAY VARY


Even when meeting NOMINAL Geometric Requirements

At 20,000 ADT



Why should we use the HSM?

Better methods improve the “bottom line”

- 
- Better safety analysis tools to support decision making
 - More safety cost-effective investments
 - More lives saved and injuries avoided per dollar invested

DOTD HSM Implementation Approach

- ⊕ **Implementation Team**
- ⊕ **Training**
- ⊕ **Integrating into Processes**
- ⊕ **SHSP**
- ⊕ **Stage 0 Process**
- ⊕ **Design Exceptions**
- ⊕ **Environmental**
- ⊕ **Marketing/Communications Plan**

Next Steps

⊕ **Training**

- **Consultants**
- **MPOs**
- **Local Traffic Engineers**
- **Local Personnel**

⊕ **Data Need Assessment**

⊕ **Implementation Plan**

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