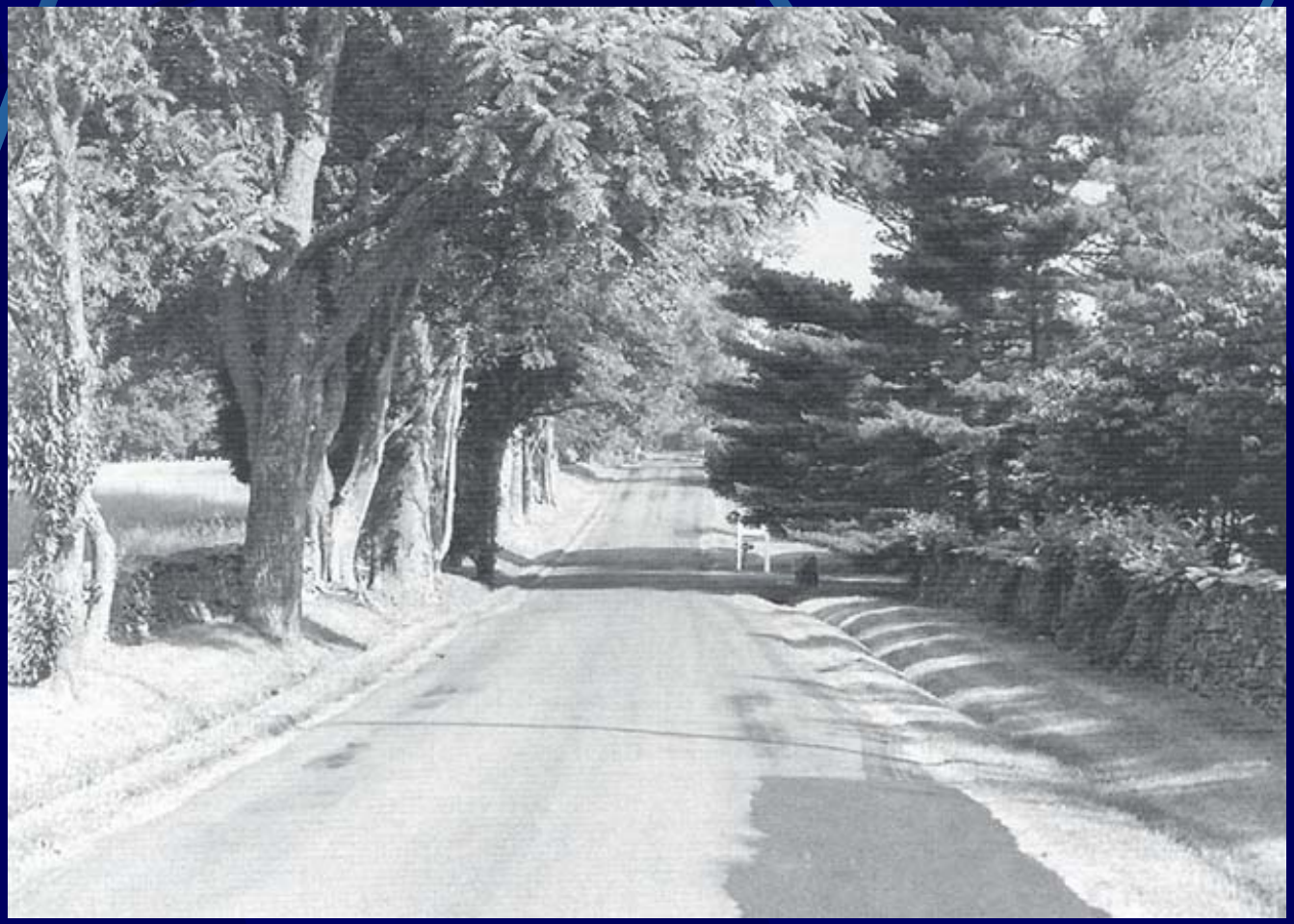
THE HIGHWAY SAFETY MANUAL

Presenter Name
Affiliation
Date
Meeting Name

Overview of Presentation

- What is the need for a ‘Highway Safety Manual’?
- What is the HSM?
- History on the Evolution of the HSM
- Organization and contents of the HSM
- HSM user survey results

Is this road “safe” or “unsafe”?



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What about these alternatives? Is one 'safer' than the others?

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What is the Highway Safety Manual (or HSM)?

- Purpose: To provide the best factual information and tools in a useful form to facilitate roadway planning, design, operations, and maintenance decisions based on explicit consideration of their safety consequences.
  - Synthesis of validated highway research
  - Adapted & integrated to practice
  - Analytical tools for predicting impact on road safety

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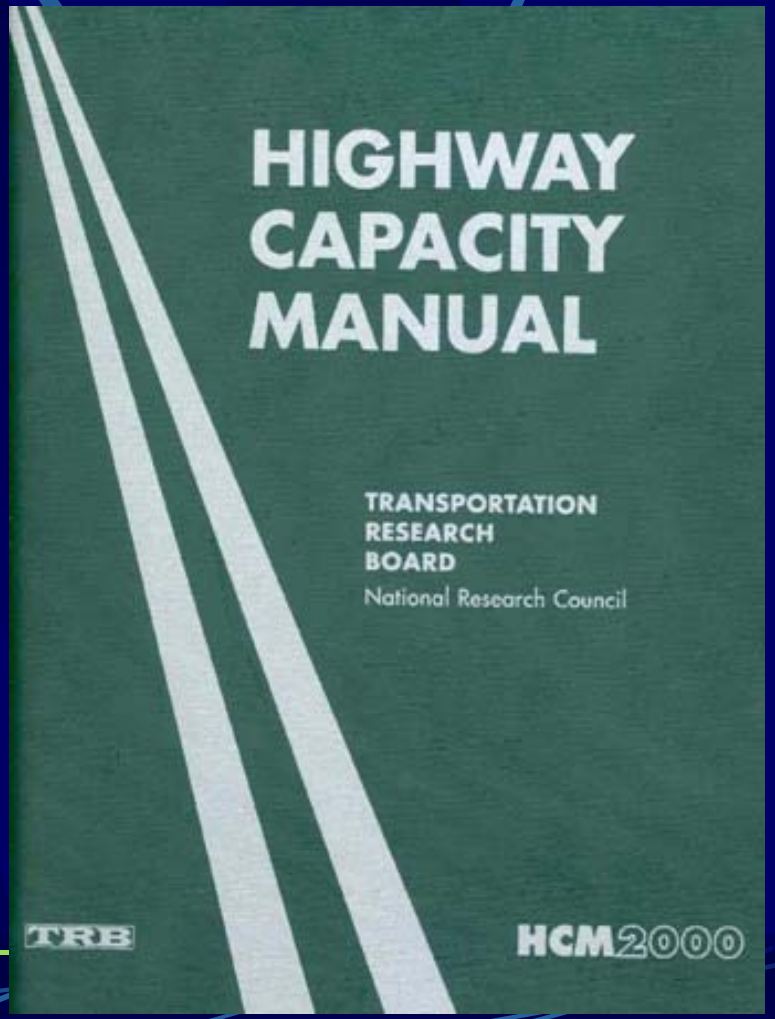
The 'vision' of the HSM -- a document akin to the HCM

- Definitive; represents quantitative 'state-of-the-art' information
- Widely accepted within the professional practice of transportation engineering
- Science-based; updated regularly to reflect research



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Targeted Users of the HSM

- Primarily users:
  - Front-line decision makers
    - Analysts studying the effect of actions on road users
    - Planners, designers and those responsible for the operations and maintenance
- Secondary users:
  - Management
  - Educational Institutions

History (1)

- Started with discussions within TRB about role of safety in Highway Capacity Manual
- Conference Session at TRB's January 1999 Annual Meeting concluded:
  - The absence of, and the need for a single authoritative document to use for estimating safety impacts
- December 1999 Workshop confirmed:
  - The crucial need for a stand-alone document to be named the Highway Safety Manual

History (2)

- Formation of a TRB Joint Subcommittee for the development of a HSM:
  - Members of sponsoring committees
  - AASHTO, FHWA, ITE
- Meetings since January 2000:
  - About 100 members and friends
  - Status 2003: Task Force

Research & Development

- Task Force key objective to provide direction and oversight of research
- Relevant NCHRP effort:
  - 17-25: CRFs for Traffic Engineering & ITS Improvements 7/06
  - 17-26: Part III: Urban & Suburban Arterials 2/07
  - 17-27: Parts I & II (Intro & Knowledge) 5/07
  - 17-29: Part III: Multi-lane Rural Highways 7/06
  - 17-34: Parts IV & V (Safety Systems & Evaluation) 9/06
  - 17-36: Production of the First Edition ?/08
- Other related initiatives
  - IHSDM, *SafetyAnalyst,* Human Factors Guidelines

A New Era in Highway Safety Analysis

- Modeling (SPFs) in First Edition HSM will be rudimentary
- Gaps in knowledge (AMFs)

- Encourage:
  - Evidence-based decision making
  - More resources focused on safety research
  - Innovative approaches to improving safety

Outline of HSM First Edition

Part I – Introduction and Fundamentals
Part II – Knowledge
Part III – Predictive Methods
Part IV – Safety Management of a Roadway System
Part V – Safety Evaluation
Glossary

Part I - Chapter 1
Introduction and Overview

1.1 Purpose
1.2 Background on the Need for HSM
1.3 Scope of the HSM
1.4 Intended Audience
1.5 Intended use of the HSM
1.6 Context for the HSM: Use and Misuse of the Manual
1.7 Nature of the HSM
1.8 Organization of HSM

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Part I - Chapter 2
Fundamentals

2.1 What is Safety?

2.2 How Road Safety is Measured

2.3 Safety Performance, Crash Causation, Countermeasures, Accident Modification Functions

2.4 Human Factors in Road Safety

2.5 Traffic Exposure, Traffic Mix and Demand Management

2.6 Speed and Safety

2.7 Safety Evaluation

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Part II - Chapter 3
Roadway Segments

3.1 Safety Effects of Design Elements

3.2 Safety Effects of Traffic Control and Operational Elements

3.3 Pedestrian and Bicyclist Safety on Roadway Segments

3.4 Safety Effects of Other Elements

Part II - Chapter 4
Intersections

4.1 Safety Effects of Design Elements

4.2 Safety Effects of Traffic Control and Operational Elements

4.3 Pedestrian and Bicyclist Safety at Intersections

4.4 Safety Effects of Other Elements

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Part II - Chapter 5
Interchanges

5.1 Safety Effects of Design Elements

5.2 Safety Effects of Traffic Control and Operational Elements

5.3 Pedestrian and Bicyclist Safety at Interchanges

5.4 Safety Effects of Other Elements

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Part II - Chapter 6
Special Facilities & Geometric Situations

- 6.1 Railroad-Highway Grade Crossings
- 6.2 Work Zones
- 6.3 Bridges
- 6.4 Tunnels
- 6.5 Two-way Left-turn Lanes
- 6.6 Passing Lanes/Short Four-Lane Sections on Two-Lane Highways
- 6.7 Climbing Lanes
- 6.8 Emergency Escape Ramps
- 6.9 Rest Stops
- 6.10 High Occupancy Vehicle Facilities
- 6.11 Reversible Roadways & Lanes
- 6.12 Weaving Areas
- 6.13 Collector-Distributor Roads
- 6.14 Frontage Roads
- 6.15 Transit Facilities and Related Features
- 6.16 Bicyclist and Pedestrian Facilities and Related Features
- 6.17 Toll Plazas
- 6.18 Special Events

Part II - Chapter 7
Road Networks

7.1 Introduction
7.2 Safety in Transportation Network Planning
7.3 Safety in the Planning and Design of Residential Neighborhoods and Commercial Areas
7.4 One-Way Systems and Turn Restrictions
7.5 Safety in Traffic Calming
7.6 Access Management
7.7 Road-use Culture
7.8 Transitions between Highway Facility Types
7.9 Security (against Crime) and Safety

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Part III - Chapter 8
Rural, Two-Lane Roads

8.1 Introduction
8.2 Methodology
8.3 Applications
8.4 Example Problems
8.5 References
8.6 Appendices

Part III - Chapter 9
Rural, Multi-Lane Highways

9.1 Introduction
9.2 Methodology
9.3 Applications
9.4 Safety Issues Not Explicitly addressed by the Methodology
9.5 Example Problems
9.6 References

Part III - Chapter 10
Urban/Suburban Arterial Highways

10.1 Introduction

10.2 Methodology

10.3 Application

10.4 Safety Issues not Explicitly addressed by the Methodology

10.5 Example Problems

10.6 References

Part IV - Safety Management of a Roadway System

Chapter 11	Identification of Sites with Promise
Chapter 12	Diagnosis of the Nature of Safety Problems at Specific Sites
Chapter 13	Selection of Countermeasures to Reduce Accident Frequency and Severity at Specific Sites
Chapter 14	Economic Appraisal of all Sites under Consideration
Chapter 15	Prioritized Rankings of Improvement Projects

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Part V - Chapter 16
Safety Evaluation of Implemented Measures

16.1 Introduction
16.2 Why Evaluate?
16.3 Data Needs and Limitations
16.4 Approach to Conducting a Valid Evaluation

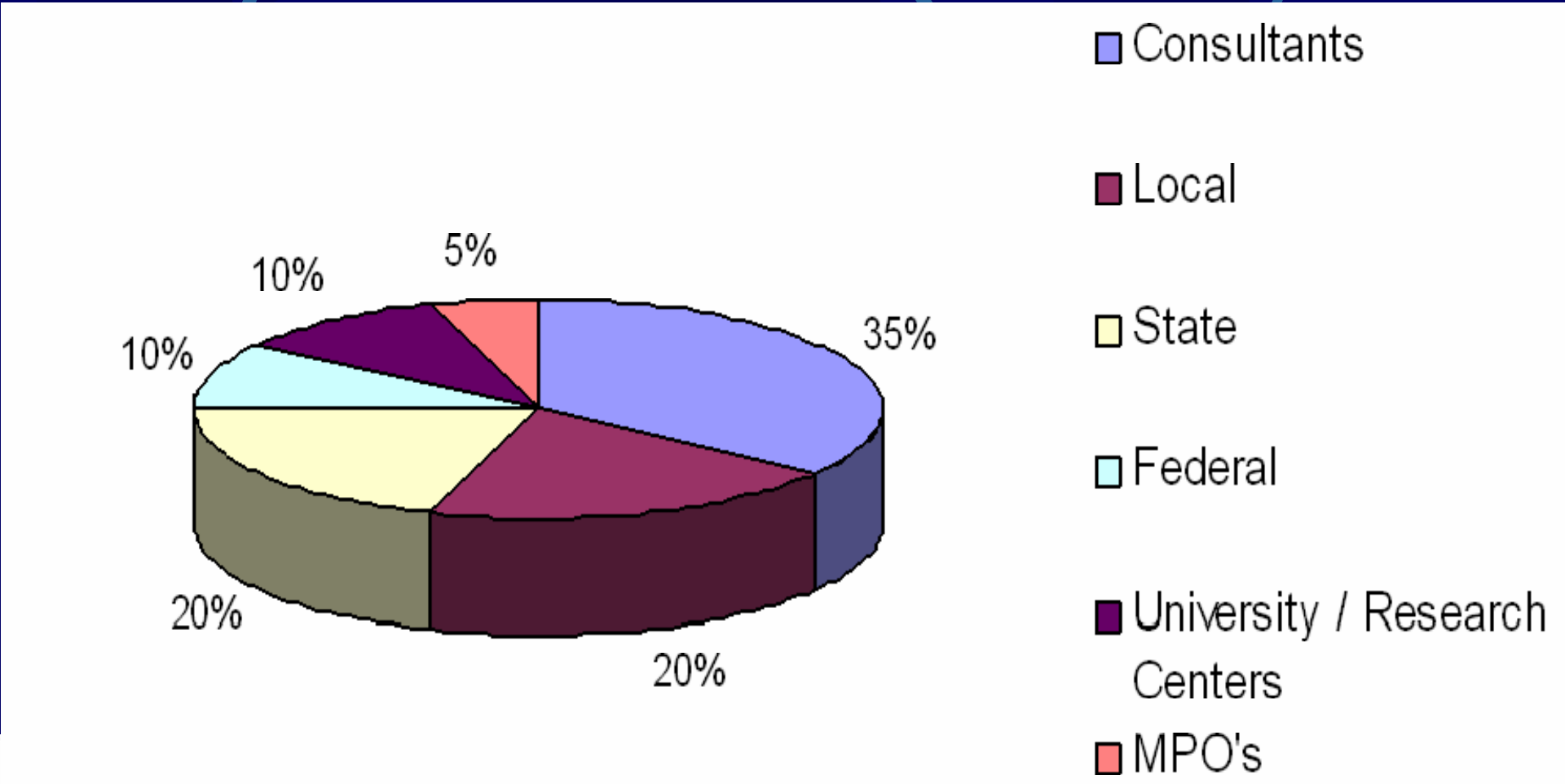
Challenges to HSM Development

- Must have good liaison with the potential user community
- Must be cognizant to highway agency concerns about tort liability
- Substantial funding and time needed to produce the first edition HSM

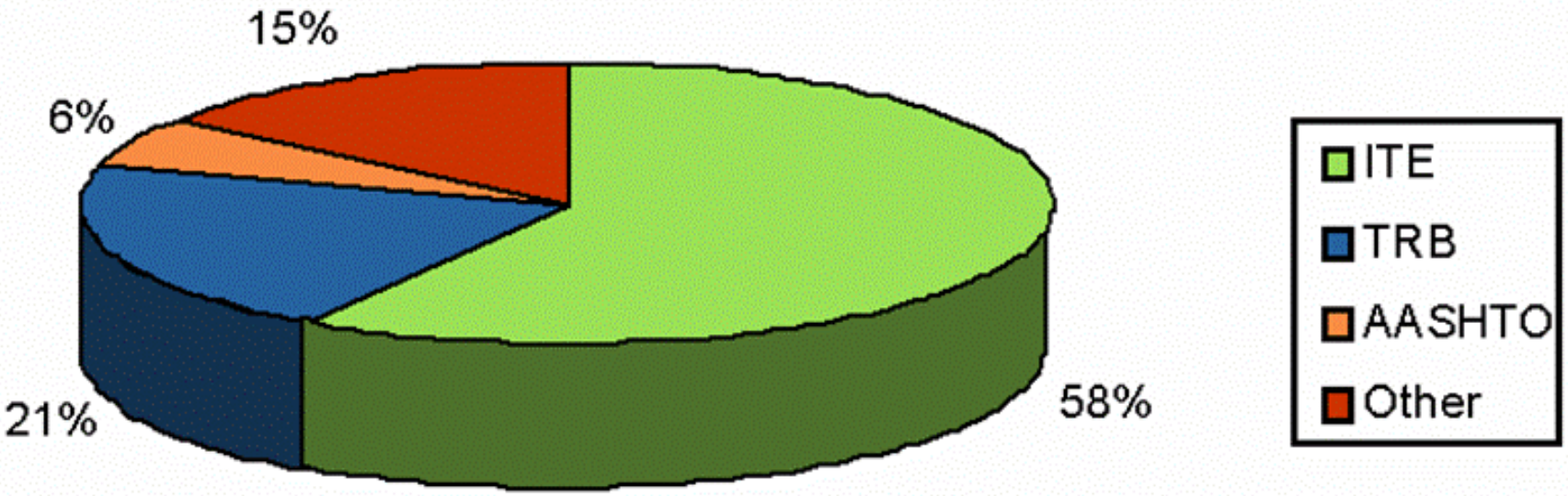
User Survey Background

- A web survey conducted in 2002 by User Liaison and Support Subcommittee
- Over 2000 invitations
- 288 complete responses

User Survey Results – *Employment Type*



User Survey Results – *Participant Affiliation*



User Survey Results – *Priority of Topics in HSM*

1st	Safety Effects
2nd	Safety Principles
3rd	Measures of Safety
4th	Methods to Predict Safety Impact
5th	Decision-Making Tools

User Survey Results – Priority of Facility Types in HSM

1st	Signalized Intersections
2nd	Multilane Roads
3rd	Two-lane Roads
4th	Yield and STOP-controlled Intersections
5th	Interchanges

User Survey Results – *Applications for HSM*

- System-wide and Planning Programs
- Integration with Training, University Courses, and Association References
- Prepare Responses to Citizens & Politicians
- A Daily Reference – A Professional Handbook (Interfacing with a Software)

Some Recent and Short-Term Activities

- Development of comprehensive knowledge base for Part II Knowledge Chapters (AMFs and Standard Errors)
- Substantial modeling effort for Part III Predictive Model Chapters through NCHRP

- Mid-year Meeting – June 2006
- Launch of an Improved Public Website
- Development of Guiding Principles
- Adoption of a Decision Rule for AMF acceptance
- Identification of Users for "Usability Testing and Usefulness" of HSM Material

Thank You
Any Questions?

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