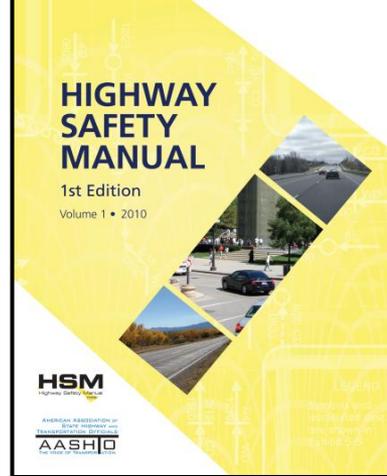




A Brief Introduction To



The Highway Safety Manual (HSM) Lite: Common Sense Safety Measures

Tuesday January 31, 2011
Tribal Transportation Planning
Organization Annual Meeting
Richard A. Rolland, NW TTAP



HSM Lite – The Skinny

Background

- Hillary Isebrands, P.E. FHWA Resource Center – Safety & Design Technical Service Team, hillary.isebrands@dot.gov, provided these slides
- Intended to assist with understanding the value of the HSM and the subtle take aways that may be overlooked if the HSM is not presented in a straight forward manner.
- Provides a look at the Crash Modification Factors for various roadway features (Part C) and other safety countermeasures (Part D) that provide high quality “take aways” from the Highway Safety Manual and the Crash Modification Clearinghouse that, in many cases, can be implemented as low cost safety countermeasures
- It presents common sense safety measures that are recommended to be as a healthy balance between reacting to existing safety problems/locations and proactively implementing treatments that are known to provide safer roadways and intersections. As well as introduce or reinforce a systemic approach to safety.

HSM Lite – The Skinny

Two Day Course with 90 minute HSM Lite

February 6,7,8, 2012 The Quality Inn Oakwood, Spokane WA , Noon to Noon
contact Judy McDonald at 360-705-7809 or McdonJT@wsdot.wa.gov or
Register at:

<http://eefmapps.wsdot.wa.gov/fmi/xsl/LTAPTraining/default.xsl>

Half Day Course

NW Tribal Transportation Symposium April 9 – 12, 2012 - Tentative
(we are working on it)

HSM Lite – The Skinny

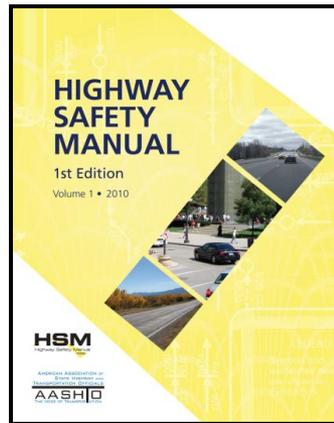
½ day course

Instructors: FHWA Resource Center – (Hillary Isebrands and Mark Doctor)

HSM Lite ½ day course has been designed for local transportation agencies. The material provides a snap shot of highway safety statistics, a brief introduction to the AASHTO Highway Safety Manual, and shows how safety can be incorporated into practice through proven safety countermeasures and low cost safety improvements. Examples and case studies applying the Highway Safety Manual principles and techniques, including Crash Modification Factors, will also be presented.

Highway Safety Manual

- What are the safety issues and challenges specific for local agencies?
- What is the HSM (and what it is not)?
- Why do we need an HSM?
- What is the content within the HSM?



Local Road Safety Challenges

- 41% of all fatal motor vehicle crashes occurred on two-lane rural highways (2009 data)
 - ▶ Achieving national safety goals will require significant reductions in fatal and serious injury crashes on two-lane rural highways
- Large percentage of two-lane rural highways are under local/Tribal-BIA (rather than State) jurisdiction, of which there are thousands (rather than 50 States) and which individually have fewer technical staff and financial resources to address the problem

Formidable Challenges

- Fatal and serious injury crashes are geographically dispersed making traditional “hot-spot” treatment approaches less effective
- Finding effective “systematic” treatments with ever tighter fiscal constraints

Safety Problem (or opportunity) Areas:

Fatal Crash Statistics (2009 Preliminary)

	United States	Washington
Total Fatalities	33,808 (-15.2%)	492 (-5%) (AI 35)
Fatality Rate(HMVMT)	1.26 (-10.6%)	0.87 (-7%)
Roadway Departure	18,807 (54%)	299
Intersection	7,043 (21%)	110
Pedestrians	4,092(12.1%)	59
Speeding Related	10,591 (31%)	210
Alcohol Related	10,848 (32%)	207
Rural Road Fatality Rate (HMVMT)	2.13	1.88
Urban Road Fatality Rate (HMVMT)	0.82	.43

Roadway Safety

“Road safety management is in transition. The transition is from action based on experience, intuition, judgment, and tradition, to action based on empirical evidence, science, and technology...”

Safety Trade-Offs?

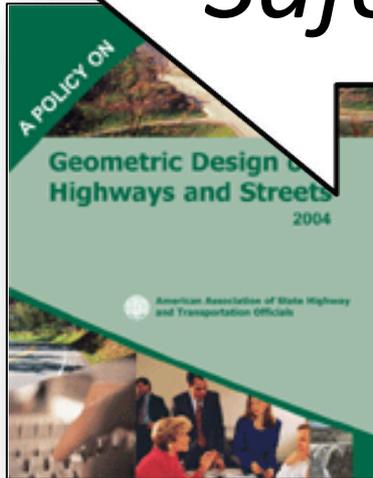


What Do You Do?

Highway Safety has Two Dimensions

*Nominal
Safety*

*Substantive
Safety*

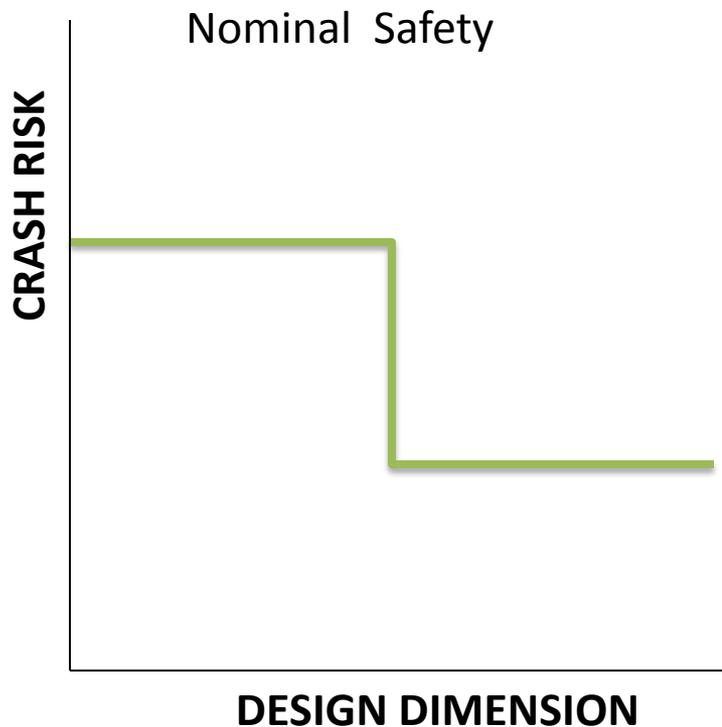


**Standards
Compliance**

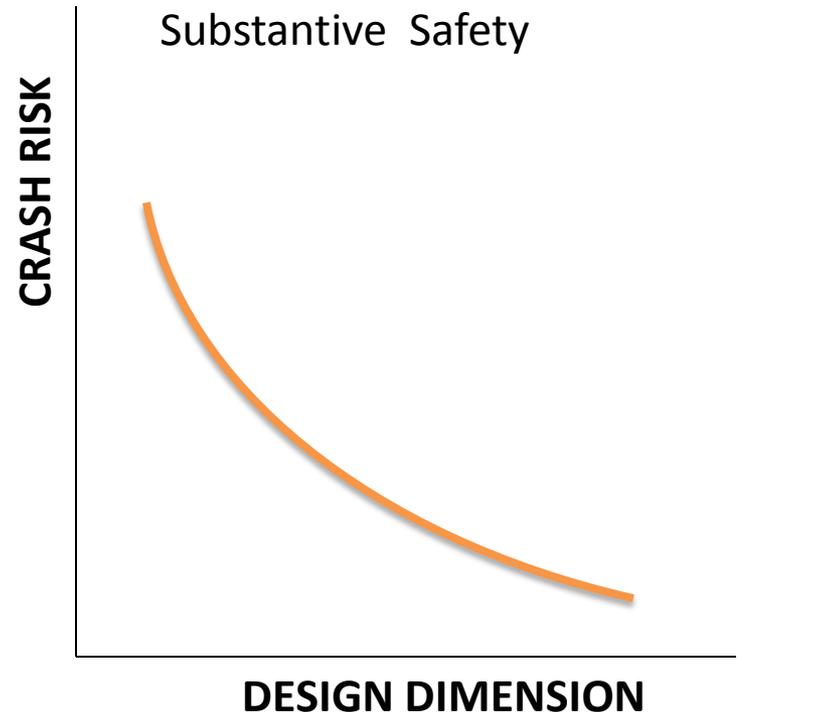
**Expected or Actual
Crash Frequency
and Severity**

HSM
Highway Safety Manual

Unlike Nominal Safety, Substantive Safety is a Continuum



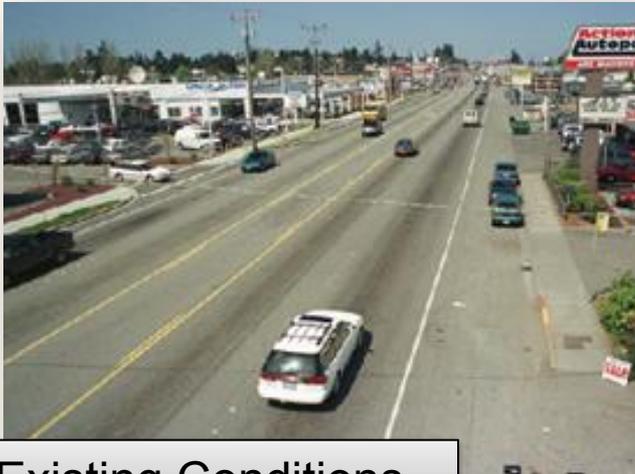
Lane Width, Radius of Curve, Stopping Sight Distance, etc.



Lane Width, Radius of Curve, Stopping Sight Distance, etc.

Meeting standards does not necessarily make a highway safe

Substantive Safety may Vary when Nominal Safety Does Not



Existing Conditions



Alternative 1



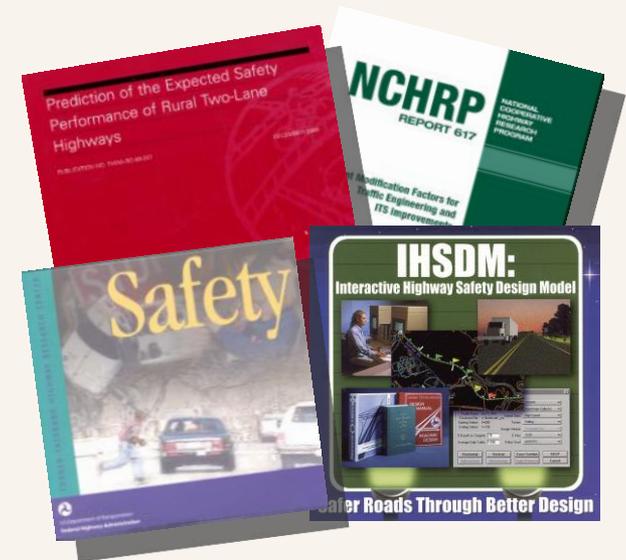
Alternative 2



Alternative 3

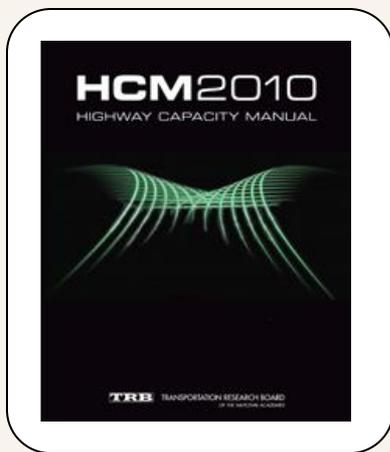
What is the HSM?

- ▶ Provides a synthesis of validated highway safety research
- ▶ Facilitates explicit consideration of safety throughout the project development process
- ▶ Provides analytical tools for predicting the impact of decisions on road safety
- ▶ A set of tools for Prediction of Crash Frequency and for Analysis of safety



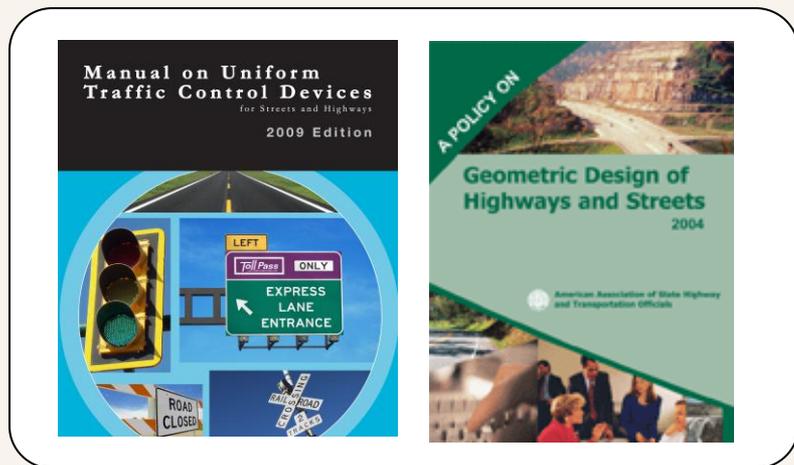
Highway Safety Manual

HSM is like the HCM



- 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

HSM is **not** Like the MUTCD & Green Book



- The HSM does **not** establish a legal standard of care
- The HSM does **not** create a public duty
- The HSM does **not** set any requirements or mandates, or tell you what to do
- The HSM does **not** contain “Warrants”, “Standards” nor “Best Practice” guidance
- The HSM does **not** supersede other publications that do.

Legal Context



**Use is Protected Under
Federal Law 23 USC
Section 409: Discovery
and admission as
evidence of certain
reports and surveys**

The HSM was reviewed by the AASHTO Subcommittee on Legal Affairs and the TRB Committee on Tort Liability and Risk Management

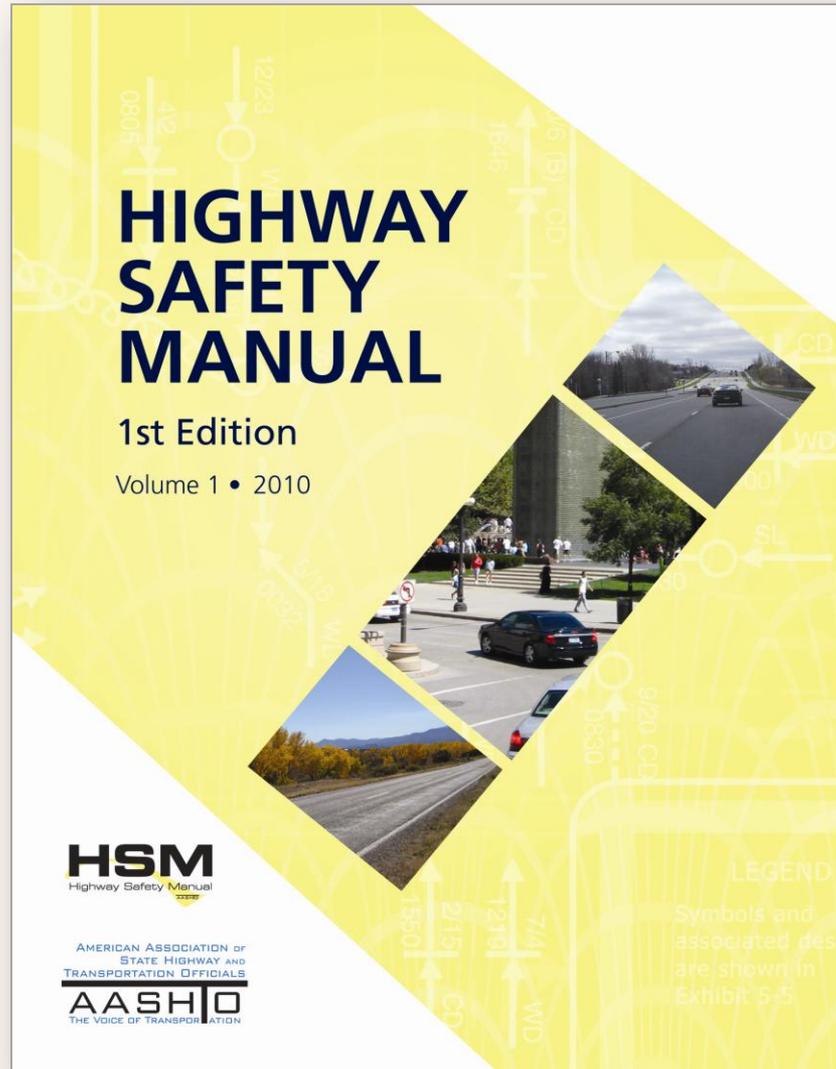
Highway Safety Philosophy

- There is no such thing as “absolute safety”
 - There is safety “risk” in all highway facilities
- Agencies try to operate and improve roads to the highest level that funding limitations allow
 - Safety risk is also due to factors over which transportation agencies have little control
 - User behavior
 - Environmental conditions

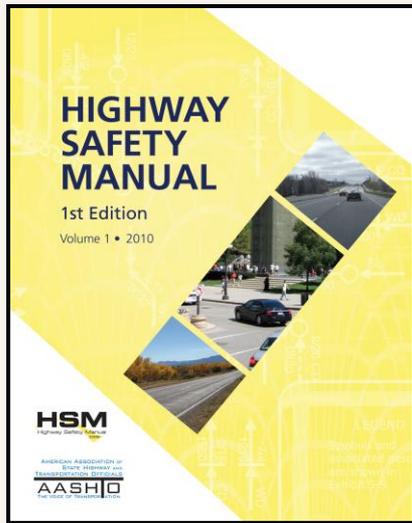
Reactive vs Proactive Approach to Safety

- ▶ Reactive – an agency “reacts” to a crash or history of crashes and implements a countermeasure
- ▶ Proactive – an agency seeks out locations that may be a higher risk (i.e. rural roads, curves, intersections) for crashes implements countermeasures to prevent crashes

The Highway Safety Manual



The Highway Safety Manual



1 Publication
3 volumes
4 parts
17 chapters
1,000± pages

1 year to publish
10 years to develop
TRB/FHWA/AASHTO
35 person TRB Task Force
21 meetings
20,000 volunteer hours
\$5± million, NCHRP projects
Additional FHWA \$

And this is the 1st Ed.!

HSM for Local Agencies Summary



Achieving Safety is a Balance of Many Factors

We routinely balance safety in many decisions we make

Tradeoffs we routinely make:

- Economics versus safety
- Stakeholder preferences
- Environmental impacts
- Capacity or speed versus safety
- Ease of maintenance versus safety

Safety Design Key Concepts

- Achieving appropriate balance requires information, evaluation, risk assessment, and a decision process
- The level of evaluations should reflect the scope of the project, the extent of safety problems, and the potential opportunities to reduce crashes and their severity
- Nominal safety and substantive safety have different, but related, goals

Look for Opportunities...

- Look for opportunities to decrease number and severity of crashes
- Use available data
- “Cause” of crashes on crash reports?
 - Roadway and environment?
 - Driver error?
 - Vehicle?
- Look for opportunities to reduce driver errors
- Consider the proven safety countermeasures

Resources & Contacts

AASHTO HSM Information

<http://www.highwaysafetymanual.org>

Kelly Hardy, AASHTO

khardy@ashto.org 202-624-5868

FHWA HSM Information

<http://safety.fhwa.dot.gov/hsm>

Esther Strawder, FHWA

esther.strawder@dot.gov 202-266-6836

SafetyAnalyst Information

<http://www.safetyanalyst.org>

Vicki Schofield, AASHTO

vschofield@ashto.org 202-366-3640

IHSDM Information

<http://www.IHSDM.org>

Clayton Chen, FHWA

clayton.chen@dot.gov 202-493-3054

CMF Clearinghouse Information

<http://www.cmfclearinghouse.org>

Karen Yunk, FHWA

Karen.yunk@dot.gov 609-637-4207

Future HSM Development and Feedback

<http://safetyperformance.org>

Rick Pain, TRB Rpain@nas.edu

202-334-2964

Resources & Contacts

Highway Safety Manual Website www.highwaysafetymanual.org

AASHTO

- Kelly Hardy: khardy@aaashto.org

AASHTO Safety Mgmt Subcommittee, Task Group

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- Priscilla Tobias, IDOT, Priscilla.Tobias@illinois.gov

FHWA

- Mike Griffith, mike.griffith@dot.gov
- Ray Krammes, ray.krammes@dot.gov
- Gene Amparano, gene.amparano@dot.gov
- Hillary Isebrands, hillary.isebrands@dot.gov
- YOUR State Division Office Safety Specialist or LTAP Liaison

State DOTs

- YOUR State DOT Office of Safety

TRB Highway Safety Performance Committee

- John Milton, WSDOT, miltonj@wsdot.wa.gov



Questions?

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