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NC Speed Management Draft Recommendations

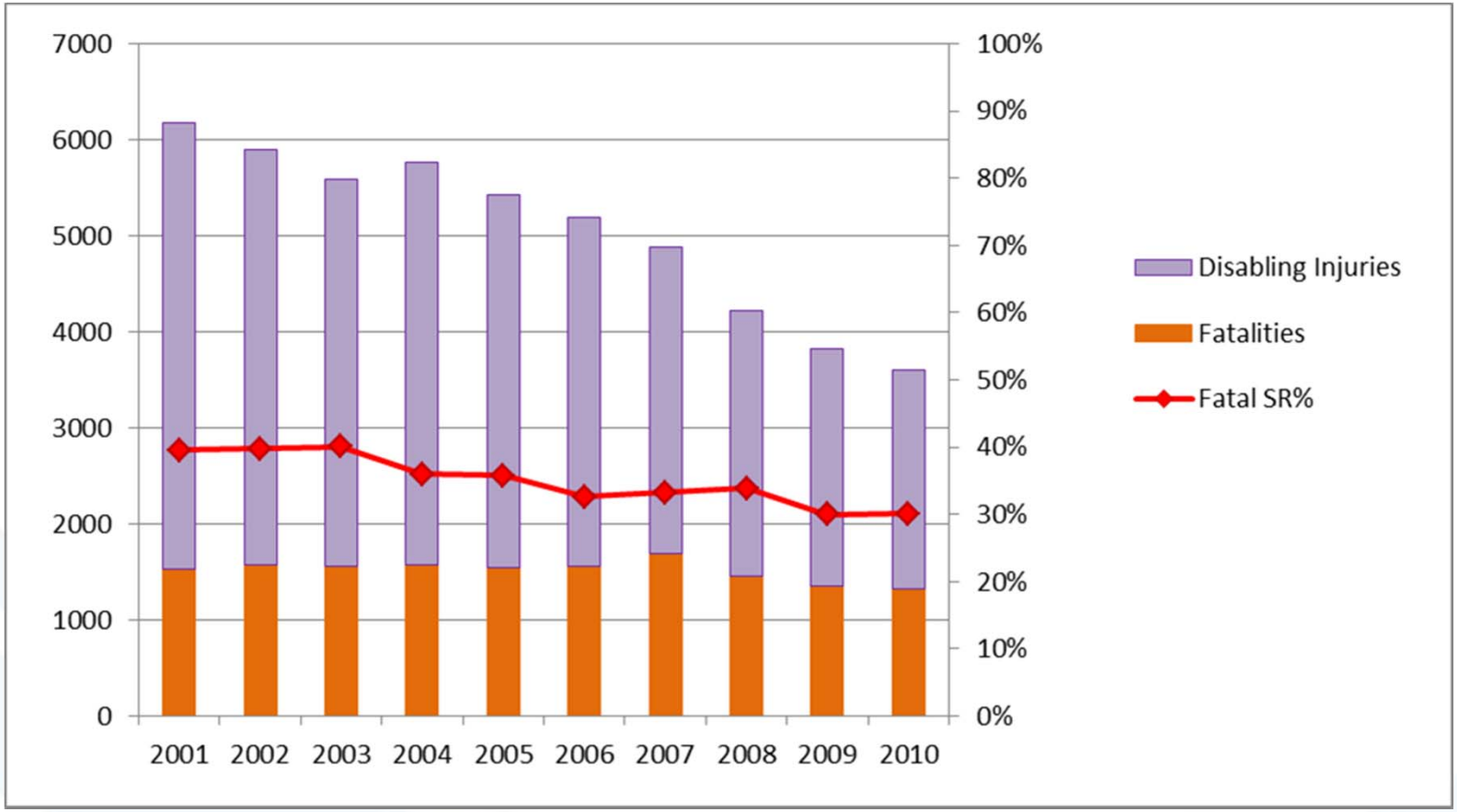
Executive Committee for Highway Safety

September 25, 2012

Presentation Outline

- Historical Context
- Approach
- Recommended Strategies
- Discussion

NC Trend in Serious Crashes



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Speed Matters

Fatal Crashes	[mph]					
$V_{o\ mean}$ ΔV [mph]	30	40	50	60	70	80
-5	0.22	0.36	0.48	0.58	0.67	0.75
-4	0.36	0.48	0.58	0.66	0.73	0.8
-3	0.51	0.61	0.68	0.74	0.8	0.85
-2	0.66	0.73	0.79	0.83	0.86	0.9
-1	0.83	0.86	0.89	0.91	0.93	0.95
0	1	1	1	1	1	1
1	1.18	1.14	1.11	1.09	1.07	1.05
2	1.38	1.28	1.22	1.18	1.14	1.1
3	1.59	1.43	1.34	1.27	1.21	1.16
4	1.81	1.59	1.46	1.36	1.28	1.21
5	2.04	1.75	1.58	1.46	1.36	1.27

$\bar{v}_0$

$\frac{\bar{v}_1}{\bar{v}_0}$

(From AASHTO, 2010, *Highway Safety Manual,* p. 3-57).

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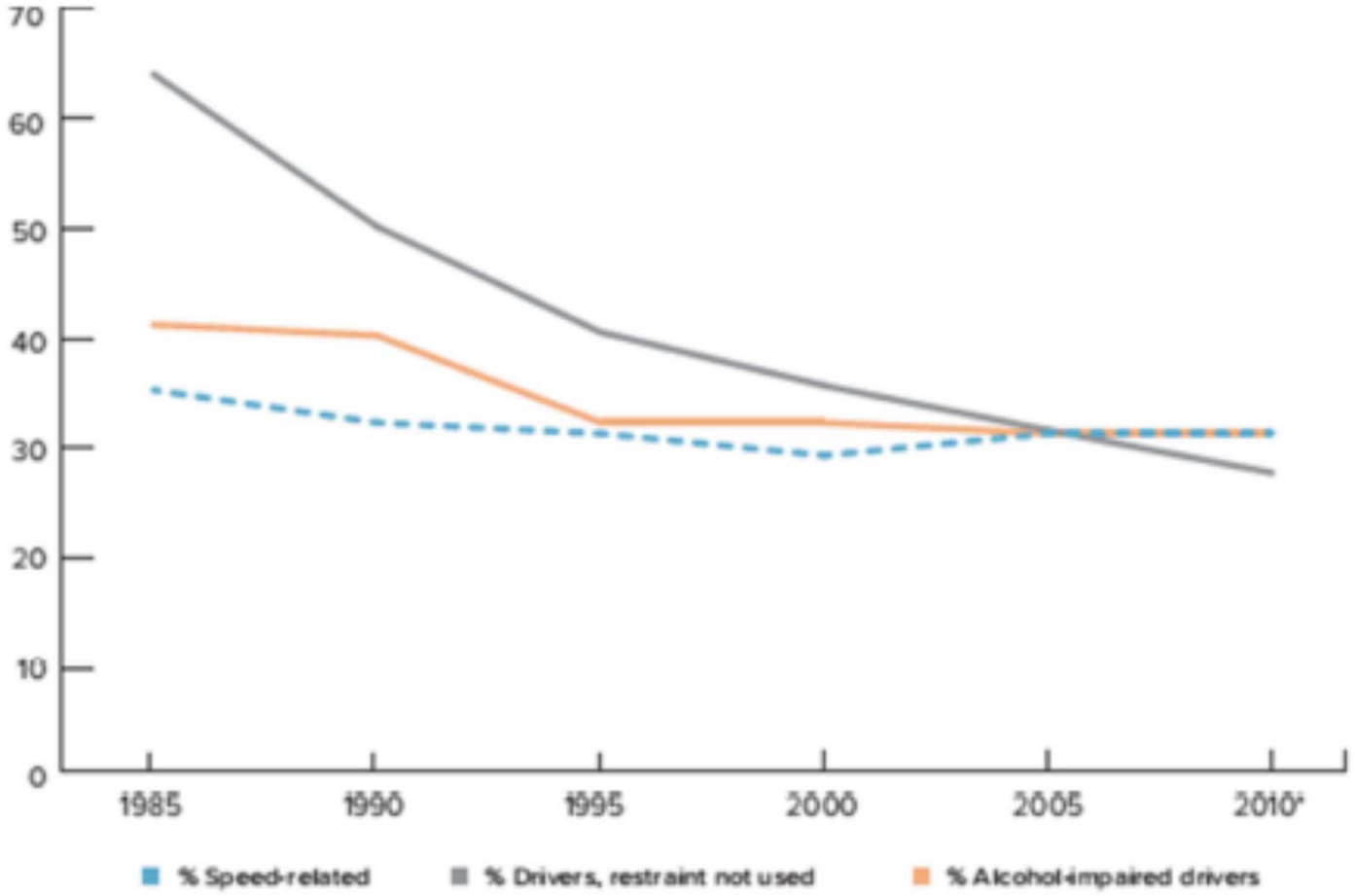
Changing Behavior



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Process

1) Problem identification
2) Literature review and review of current practice
3) Speed symposium – International experiences
4) Stakeholders workshop – NC focus
5) Recommendations

Stakeholders

Injury Prevention & Public Health

Engineering & Planning

Law Enforcement & Adjudication

International Experts

Transit

Research

Media & Communications

Safety Programs (State and National)

Nature of Issues

- SR crashes more severe; more fatalities & injured
- Treatment targets are often diffuse
- Many miles of roadway; only small percentage can be treated each year
- Designs and limits and environments often not in sync
- Enforcement resources stretched
- Minimal use of publicity to supplement enforcement
- High enforcement tolerances
- Criminal adjudication system costly and broken
- Efforts have not been coordinated

➢ Drivers not getting the message – from roadway design/operations, enforcement, adjudication, media

Overarching Themes

- All hands on deck
  - Comprehensive and cooperative public health approach to speed management
- Investment
  - Early successes (frame the message)
  - Return on Investment
- Persistence
  - Complex and multifaceted problem
  - Large network

Speed Management Objectives

- Communicate better, raise profile of safety impact of speed
- Establish limits with a better balance of reducing harm as well as maintaining mobility
- Design roads to support limits established
- Enhance deterrence through better enforcement, penalty, and publicity strategies
- Adopt policies and laws to allow proven strategies & new technologies and to support cooperative efforts
- Measure/monitor speeding as risk factor and effectiveness of strategies
- Try promising new measures (driver rewards, Intelligent Speed Adaptation, Variable Speed Limits)

Speed Management Strategies

- Engineering
- Enforcement
- Public Information/Education
- Management

Engineering Strategies

- Conduct a speed and safety review of all new designs; design to an established operating speed
- Prioritize use of design features that limit or manage speeds to the appropriate level
- Standardize speed limit setting procedures across the State using injury minimization as ***a*** core principle

Engineering Strategies

- Lower maximum default rural speed limit from 55 to 45 mph
- Implement method for prioritizing speed limit and safety assessment reviews
- Use variable speed limits on freeways and other roadways where a single limit may not always convey the safest speed

Enforcement Strategies

- Use automated speed enforcement to supplement traditional enforcement
- Lower speeding enforcement tolerances (publicize)
- Randomly deploy, marked, parked, visible enforcement to a large extent of the network where serious crashes occur

Enforcement Strategies

- Shift from criminal to standardized, civil penalties for most speeding violations
- Improve availability of accurate driver history data to enforcement officers and the courts

PI & E Strategies

- Develop a coordinated message strategy for public outreach that can be used by all stakeholders (Framing the Issue)
- Utilize earned, paid, and social media campaigns to enhance deterrence and support enforcement strategies
- Educate court officials on the importance of their role in traffic safety

Innovative Strategies

- Implement a driver reward approach to encourage following limits
- Implement Intelligent Speed Adaptation
- Reduce exposure through demand-management strategies and minimizing excess capacity

Management Strategies

- Establish an on-going speed monitoring program
- Realign SHP and NCDOT divisions to same counties/areas

Discussion

Potential Next Steps

- Identify strategies of interest
- Form speed management work group
- Identify roles and responsibilities
- Develop implementation plan
- Feasibility studies, additional research & implementation needs
-

Proven Engineering Strategies

- Prioritize Roundabouts and other Speed managing designs
  - Goals – Foster creation of self-enforcing designs, minimize need for enforcement, and minimize future speeding-related crashes, fatalities, and injuries

  Examples:
  - Roundabouts: – 66% to 90% Fatal and Injury (U.S.)
  - Road diets: – 19 to 47% Fatal and Injury (U.S.)

Promising Policy Strategy

- Lower maximum default rural speed limit from 55 to 45 mph
  - Goal – Establish safer default limit for many miles of roads that do not meet modern design standards for 55 mph and cannot be changed right away
  - Proven in some contexts – urban areas, with support of automated enforcement and publicity, lower enforcement tolerances, limits may be posted

Proven Enforcement Strategies

- Automated speed enforcement
  - Goal – Increase perceived and actual risk of being detected speeding to increase deterrence of speeding
  - – 20 to 25% - fatal and injury crashes
- Randomly deploy, marked, parked, visible enforcement to a large extent of network where serious crashes occur
  - Goal - Maximize population-wide deterrence through sustainable deployment strategies
  - – 15% total statewide F. and I. crashes (Queensland, AU)

Policy/Enforcement Strategy

- Shift from criminal to standardized civil penalties for some speeding violations
  - Goal - improve population-wide deterrence as possible alternative to costly court system that isn't working as it should
  - Tried and works with respect to ASE;
  - Fits with deterrence principles, increasing expectation and consistency of punishment
  - Consistency (may be) more important than degree of punishment
  - But, would allow for scaling intensity to seriousness and frequency of violations

Proven Education and Public Information Strategy

- Implement earned, paid, and social media campaigns to support enforcement strategies
  - Goal - to enhance the deterrent effects of enforcement
  - Media publicity, Charlotte ASE program: – 10% fatal and injury (associated with Charlotte NC ASE program)
  - Paid publicity campaigns Victoria (and other states), AU: proven to enhance crash reduction effects independent of enforcement intensity

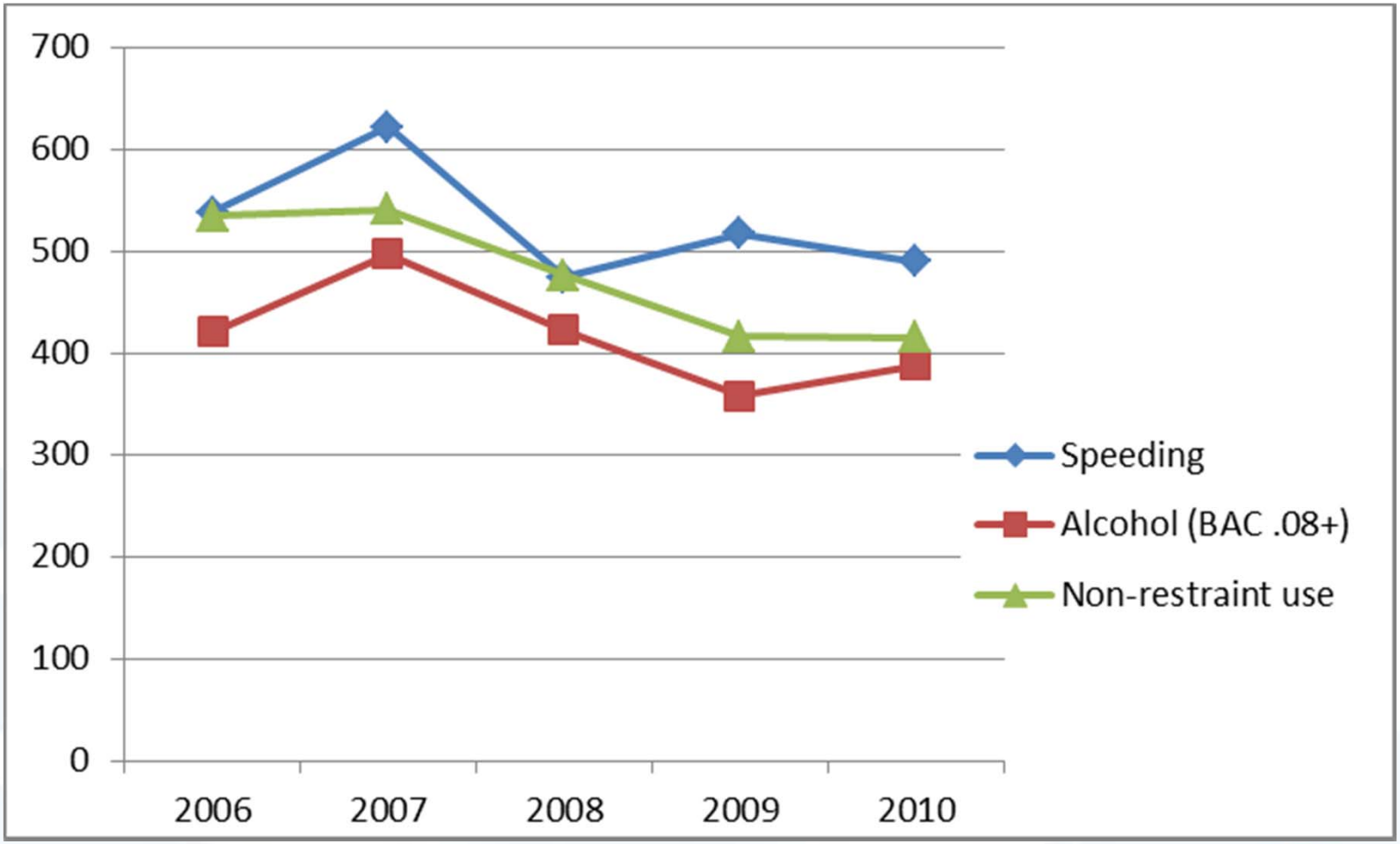
Recap

- Measure/understand speeding as risk factor (belts/booze)
- Communicate better, raise profile of safety import of speed
- Establish limits with a better balance of reducing harm as well as maintaining mobility
- Design roads, enforce and generate publicity to support limits established
- Adopt policies and laws to allow proven strategies & new technologies
- Try promising new measures (driver rewards, Intelligent Speed Adaptation, Variable Speed Limits)

Can we do it here?

- Must decide value of future lives - which generation will pay for major changes in system
  - Parallels with environmental debate
- Value of a life versus mobility (perceived/real)
  - Current costs of crashes 2.4 times > cost of congestion
- Need partners – public and private
- Some eff. strategies (ASE) can also pay $ cost for themselves
- Practitioners can do a lot using evidence base
- CMFs available to help make good decisions

NC 5-yr Trends (FARS)



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Focus on Speeding:
Difficult to Solve

Elvik, R. (2010). Why some road safety problems are more difficult to solve than others. *Accident Analysis & Prevention* 42(4):1089-96.

* Mobility and other Perceived rewards

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People Killed and Injured in reported SR Crashes (only) 2002 - 2011

Age of Person	Injury Status of Person					Total
	Fatal Injury	A Injury	B Injury	C Injury	No Injury	
< 14	131	343	2,279	6,940	23,433	33,126
14 to 15	85	210	1,281	2,503	6,628	10,707
16 to 20	974	1,978	14,016	23,327	65,064	105,359
21 to 25	846	1,574	9,334	15,222	45,475	72,451
26 to 30	578	1,150	5,833	9,838	28,506	45,905
31 to 40	880	1,657	8,080	14,536	41,441	66,594
41 to 50	684	1,167	5,887	10,748	30,015	48,501
51 to 60	389	654	3,369	6,273	17,831	28,516
61 yo 70	215	268	1,428	2,771	7,762	12,444
71+	163	120	805	1,532	4,046	6,666
Total	4,945	9,121	52,312	93,690	270,201	430,269

Requires Resolve

Wegman. F. (2007). Road traffic in the Netherlands: Relatively safe but not safe enough! pp. 281-304 *IN* Improving Traffic Safety Culture in the United States: The Journey Forward, AAA Foundation for Traffic Safety: Washington, D.C.

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More details will be available
in Executive Summary report to NCDOT

Contact Libby Thomas
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919-962-7802

NC Issues Speed Limit Setting

Diverse practices:

- Statutory (rural & urban maximums)
- Speed zones – Established through engineering review & engineering judgment - it's a large State
- Local ordinances / political decision (but may consider safety)
- Let drivers decide (operating speed influence) – drivers not best judges

➢ Inconsistent outcomes – confusing to drivers

NC Design Issues

- Legacy network (including many miles of rural two lanes – not designed to modern standards)
- Diverse roadway designs and speed limits send mixed messages to drivers about safe speeds

All states:

- Existing manuals and design guides – safety implied, by designing to standards (standards often established before safety evidence available)
- Design guidelines and practices urging use of higher design speeds – may counteract intended safety margins with higher operating speeds

➢ Designs frequently inconsistent with speed limits and/or safety needs of roadway

NC Enforcement Issues

- Until recently, enforcement has worked alone to try to combat speeding
- Enforcement resources have not kept pace with increasing miles traveled
- Targeting latest crash hot spots may not target enough of the problem
- Publicity has not been maximally used to support enforcement
- Effective technologies have underutilized for policy reasons
- High tolerances above the limit before enforced

➢ Low deterrence of speeding

Other Enforcement and Penalty Issues

- Speed enforcement may not be a priority for all agencies
- Low perceived and actual chance of being ticketed
- Only a portion of those ticketed are convicted as charged
- Recent research shows that deterrence of repeaters from court-administered sanctions is low (no matter the outcome)

Public Information and Education

- Generally, campaigns not used very much to support enforcement
- Educational programs – in current state, don’t work (even if being used)

Recommended Core Strategies

- Establish an on-going speed monitoring program
  - Goals - Recommended practice to
    - track speeding and crash trends over time
    - measure progress of program (measures targeting unsafe speeds)
    - use to adjust targets and program elements
    - use data gathered for communicating about the risks – raise profile of the issue equal to alcohol and restraint use

Recommended Core Strategy

- Develop a coordinated communications strategy and message framework for use by stakeholders
  - Goals - Recommended practice (proven in other contexts) to:
    - maintain program credibility, address public concerns
    - increase public and political support for effective speed management strategies
    - keep focus on safety reasons for program

Recommended Core Strategy

- Standardize speed limit setting procedures across the State using an injury minimization/safe systems approach
  - Goal - Recommended to restore credibility *and safety function* of speed limits and reduce severe crashes
  - - 12% casualty (F & I) crashes - Victoria State, Australia: lower urban limits (with ASE and publicity)
  - - 9.7% fatalities and - 4.1% in injury crashes - Netherlands: Lower limits (urban and some types rural roads) and engineering (widely implemented low-cost measures, roundabouts, etc.)
- Coordinate with Complete Streets design guidance and implementation

Proven Engineering Strategies

- Prioritize Roundabouts and other Speed managing designs
  - Goal – Use speed limiting designs and other best speed management practices to minimize future speeding-related crashes and injuries
  - Roundabouts: - 66% to 90% Fatal and Injury (U.S.)
  - Road diets: - 19 to 47% Fatal and Injury (U.S.)
  - Narrow high speed (two-lane) intersection approaches using low-cost measures: promising crash reductions
  - Appropriate traffic calming (esp. in ped/cycle areas): manage speeds
  - Appropriate sight distances for speed

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Other Promising Engineering Strategies

- Coordinated signal progression on corridors
- Minimize design speed exceptions
- Improve shoulders (safety edge) on rural two-lanes
- Separate slower, smaller from faster/heavier traffic if road is intended to serve higher-speeds

Policy - Limits

- Lower maximum default rural speed limit from 55 to 45 mph
  - Goal - – Lower baseline risk of rural, multi-purpose roads that do not meet modern design standards for 55 mph roadways
  - If average speeds reduced by 2 – 4 mph, could save 107 to 214 lives and -2200 to 4200 injuries (assuming current average operating speeds of 50 mph
  - Lower limits (with enforcement or design supporting) have reduced injuries and fatalities in urban areas

Policy - Limits

- Identify and implement appropriate/safer limits for different types urban / suburban road
  - Goal – Establish appropriate baseline speed limits & baseline risk
  - Lower limits (with enforcement or design supporting) have reduced injuries and fatalities in urban areas
  - But no safety estimates available since involves diverse road types, designs, speed limits, *and* lack data on operating speeds
  - Roads with mixed traffic types, full access, and non-separated facilities/crossings, etc., should have low limits
  - Roads that serve distributor should also have low limits unless/until different weight and speed of users can be separated

Engineering Practice

- Implement methods for identifying and prioritizing roads for review of speed limits and conducting safety and design assessments
  - Goal - Recommended supporting practice for prioritizing target roads/areas
- Determine speed limit and intended operating speed before design of new roads/upgrades and assess all new designs
  - Goal - Recommended practice to prevent future speed discord issues and speeding-related crash problems (in keeping with safer systems approach)

Design and Engineering Strategies

- Prioritize proven speed managing/crash reducing designs
  - Goal - Design improvements so that roads are self-enforcing to the extent feasible to prevent future speeding and speeding-related crashes

<u>Specific proven measures:</u>

- Roundabouts – intersection design and traffic control
- Road diets (fewer lanes) for appropriate corridors
- Narrower lanes in some contexts
- Appropriate traffic calming
- Appropriate sight distances for speed
- Signal timing and phasing

Proven Policy - Enforcement Strategies

- Implement Automated enforcement
  - Goal – Increase perceived and actual risk of being detected speeding to increase deterrence of speeding
  - - 20 to 25% - fatal and injury crashes (Location-specific, fixed, conspicuous OR area-wide from covert, mobile types)

Enforcement Strategies

- Lower speeding enforcement tolerance
  - Goal - target lower-level speeding (large extent so big impact on safety), and potentially lower higher end speeding; support limits established.
  - – 27% fatal crashes; – 10% injury crashes (Victoria, AU; with ASE and media)
- Randomly deploy, marked, parked, visible enforcement to a large extent of network where serious crashes occur
  - Goal - Maximize population-wide deterrence through sustainable deployment strategies
  - – 15% total statewide F. and I. crashes (Queensland, AU)

Policy/Enforcement Strategy

- Shift from criminal to standardized civil penalties for some speeding violations
  - Goal - improve population-wide deterrence as possible alternative to costly court system that isn't working as it should (Tried and works with respect to ASE; fits with deterrence principles, increasing expectation and consistency of punishment)
  - Consistency (may be) more important than degree of punishment
  - But, would allow for scaling intensity to seriousness and frequency of violations

Proven Education and Public Information Strategy

- Implement earned, paid, and social media campaigns
  - Goal - to enhance the deterrent effects of enforcement
  - Campaigns should reinforce the type of enforcement undertaken
  - Media publicity, Charlotte ASE program: – 10% fatal and injury (associated with Charlotte NC ASE program)
  - Paid publicity campaigns Victoria (and other states), AU: - proven to enhance crash reduction effects independent of enforcement intensity

Penalties – Education & ITS Strategies

- Educate courts officials about the importance of their role in traffic safety
  - Goal - improve consistency and certainty of prosecution of speeding violations and deterrence (Frequently-recommended strategy, but unknown whether it would work)
- Improve availability of accurate driver history data to enforcement officers and the courts

  - Goal - improve prosecution outcomes of speeding violations, especially repeat violators (unproven; may have helped with DUI)

Other Information Technologies - Limits

- Make wider use of variable speed limits on freeways or other roads with conditions where a single posted speed limit may frequently be inappropriate
  - Goal - provide better information about safe travel speeds when conditions vary extensively on a roadway / by time (European exp.)
  - Speed reductions in Wyoming trial - 0.47 to 0.75 mph for every mph reduction in speed limit
  - Could combined with automated enforcement

Other Potential Cooperative Strategies

- Realign SHP and NCDOT divisions to same counties/areas

Innovative Approaches (Emerging)

- Improve recognizability and consistency among roads of the same type and speed limit
  - Establishing fewer road types and different speed limits is also a strategy of the Dutch safe systems approach
- Create guidelines and conduct outreach to cities and local planning agencies to adopt effective policies, planning and design guidance

Innovative Approaches (Emerging)

- Implement a driver reward approach to encourage safe speeds
  - Promising reductions in speeding – Insurance-based rewards and fleet (rental vehicle) programs
- Implement Intelligent Speed Adaptation
  - Able to directly limit speed of vehicle – vehicle “knows” the limit through digital technolgy
- Reduce exposure through demand-management strategies (HOV lanes, more transit options, more biking-walking options, etc.)
  - Recent declines in crashes and injuries demonstrates that reduced exposure saves lives

Safer Countries

- New allocation of responsibility
- Designers of system are responsible for design, operation and use, and thus safety of system
- Users are responsible for following rules of use
  - But if user fails, system designers must take necessary steps to reduce harm

From Letty Aarts presentation

Summary

- Monitor/measure speeding as risk factor (belts/booze);
- Communications – raise profile, frame the issue, Injury Prevention/Public Health approach
- Establish speed limit setting practice based on safety and harm prevention as a core principle – enhance safety purpose and credibility
- Processes for prioritizing review of limits & safety
- Design and enforce to support limits
- Adopt policies and laws to allow use of proven/promising strategies & new technologies; alter methods that aren't working

Can we do it here?

- Must decide value of future lives - which generation will pay for major changes in system
  - Parallels with environmental debate
- Value of a life versus mobility (perceived/real)
  - Current costs of crashes 2.4 times > cost of congestion
- Need partners – public and private
- Some eff. strategies (ASE) can also pay $ cost for themselves
- Practitioners can do a lot using evidence base
- CMFs available to help make good decisions

Discussion

- Feedback and discussion
- Potential next steps
  - Identify strategies of interest
  - Form speed management work group
  - Identify roles and responsibilities
  - Feasibility studies, additional research & implementation needs
  - Develop implementation plan

Thank you for this opportunity

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Reasons drivers speed

- Don't know the speed limit
- Enjoy driving fast
- Keeping up with traffic
- Habituation *and* habit
- Drive at speed think will trigger a ticket
- In a hurry/late
- Busy doing other tasks while driving
- Other Impairment
- Roadway cues
- Built environment
- Do not perceive risky situations – people, curves, weather, congestion, narrow lanes
- Culture/social cues
- Feedback loop –

  Individual risk of crashing from speeding / trip is low

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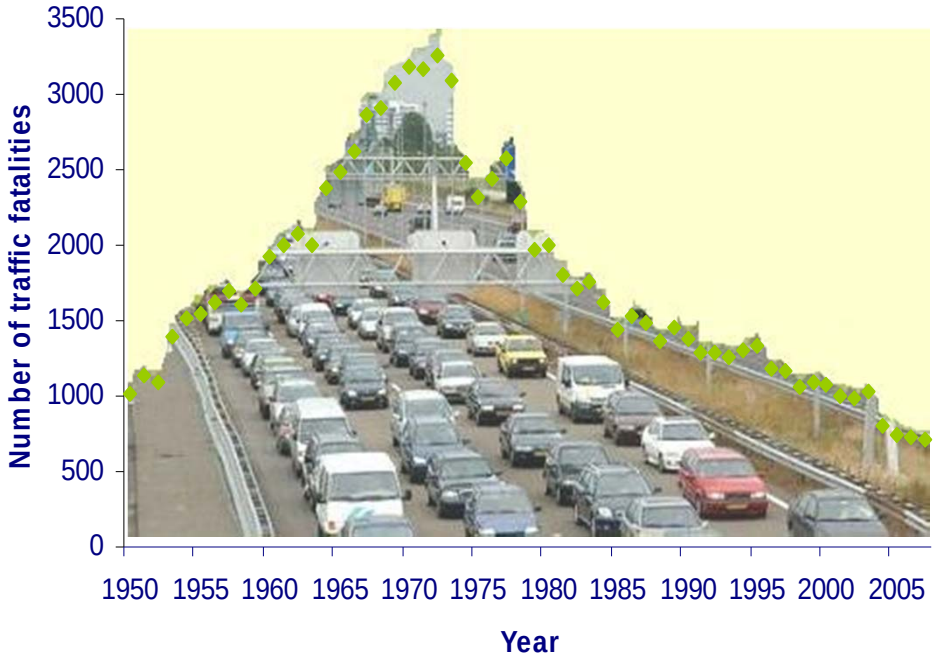
Enforcement & Judicial

- Enforcement may not be a priority
- Chance of being ticketed
- Is speeding a “crime”?
- “Credibility” of speed limits
- Judiciary – may not support enforcement
  - Clogged courts, few convictions as charged; non-consistent treatment of offenders

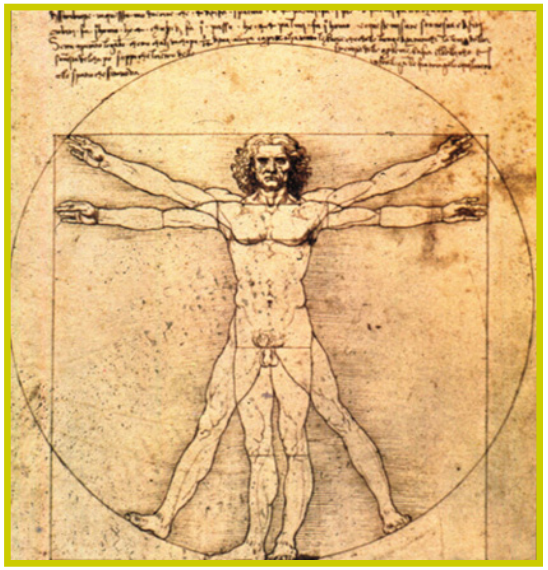
Traffic safety in the Netherlands

Our safety 'landscape' over years…



Core of Sustainable Safety

- Aims:
  - Preventing crashes
  - Reducing probability of serious injury
- Human as the measure of all things
- Integrated proactive approach of :



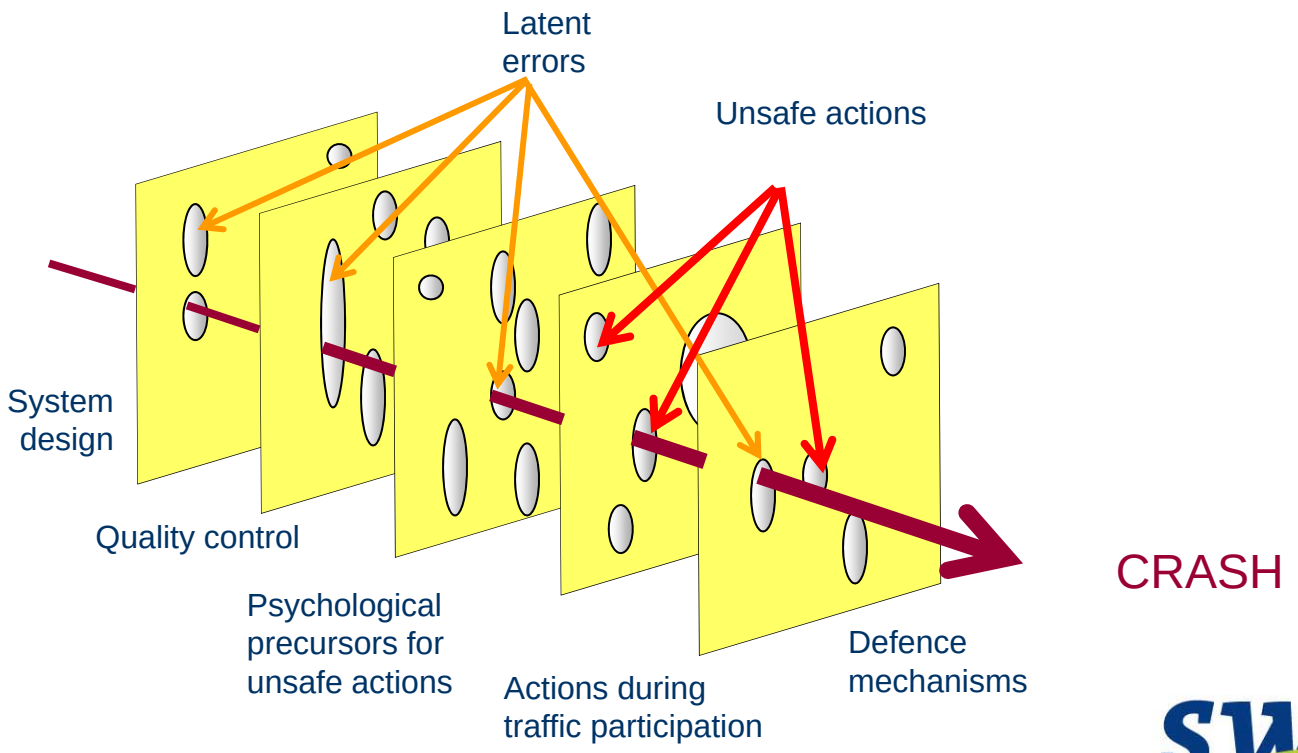
- Infrastructure


- Vehicle


- People


Proactive approach

- Prevention of latent errors (system gap)
  - Intervene as early in chain as possible
  - Make unsafe acts less dependent on choices of individual road users



Proactive approach

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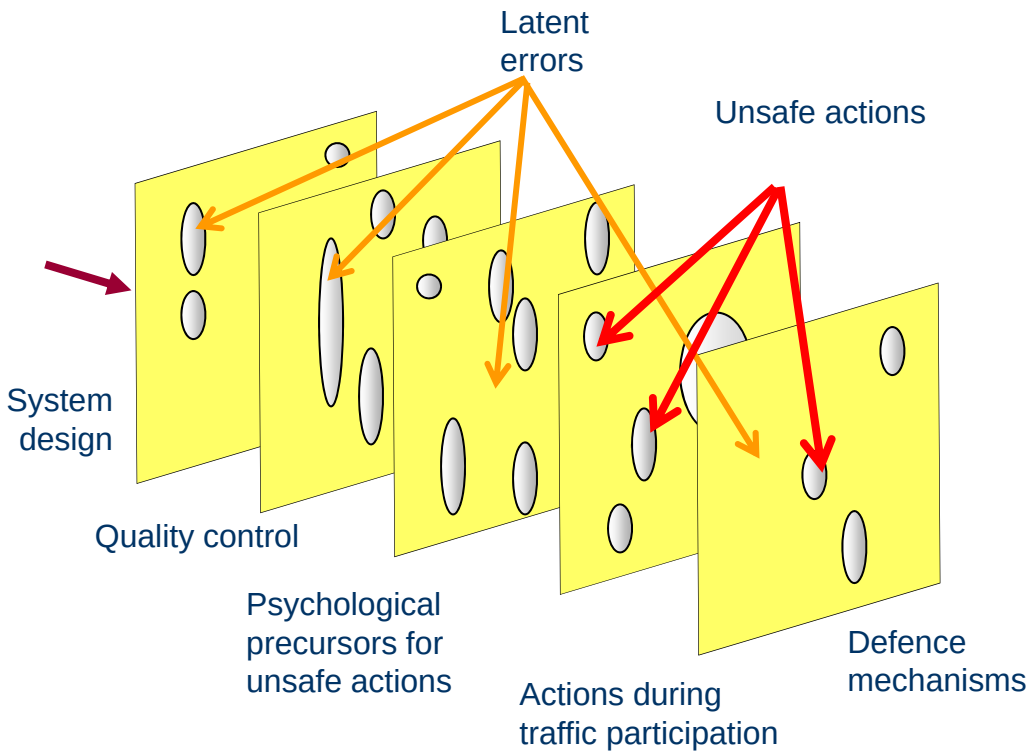

Road traffic planning and design

- Through roads
  - Traffic should flow

Flow = high speed: separation of mass + speed differences

- Distributor roads
  - Flow function on road sections
  - Exchange of traffic at intersections

Exchange = mixing of vulnerables: reduce speed!

- Access roads
  - Residence and exchange of traffic is central

Safety principles - Netherlands

	Sustainable safety principles
originally	**Functionality** of roads
originally	**Homogeneity** of masses and/or speed and direction
originally	**Predictability** of road course and road user behaviour by a recognizable road design
additions	**State awareness** by the road user
additions	**Forgivingness** of the environment and of road users

More Lessons from Abroad

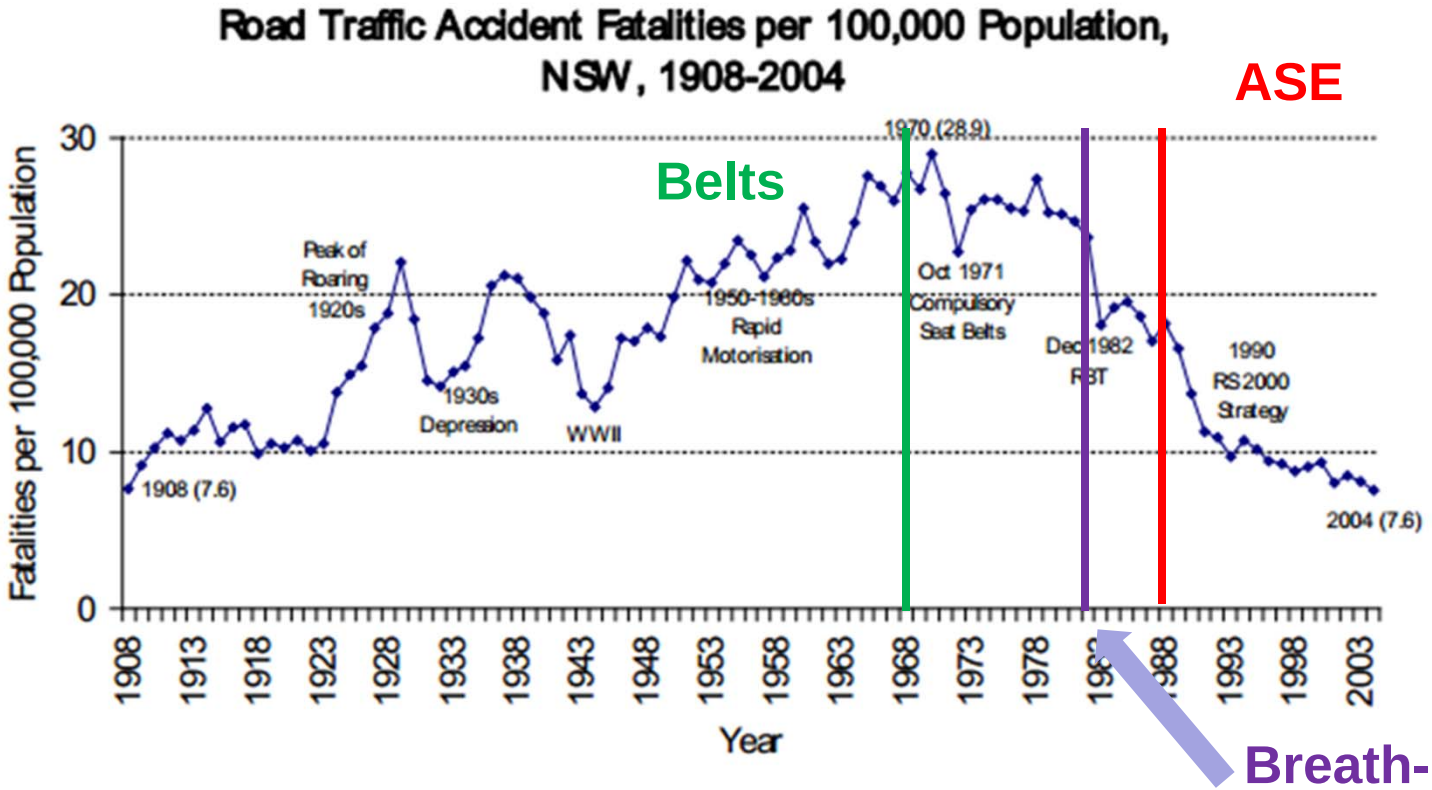

Figure 5. Trends in Fatality Rates for New South Wales

White Papers from "Toward Zero Deaths: A National Strategy on Highway Safety: No. 6 – Safer Infrastructure" by Paul Jovanis and Eric Donnell

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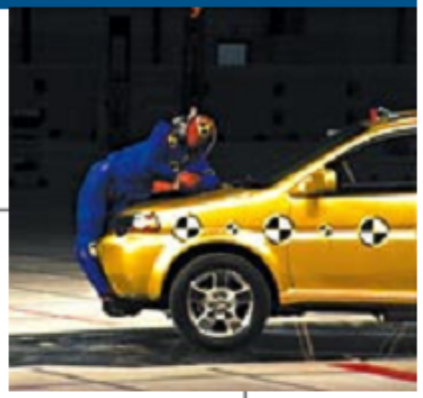
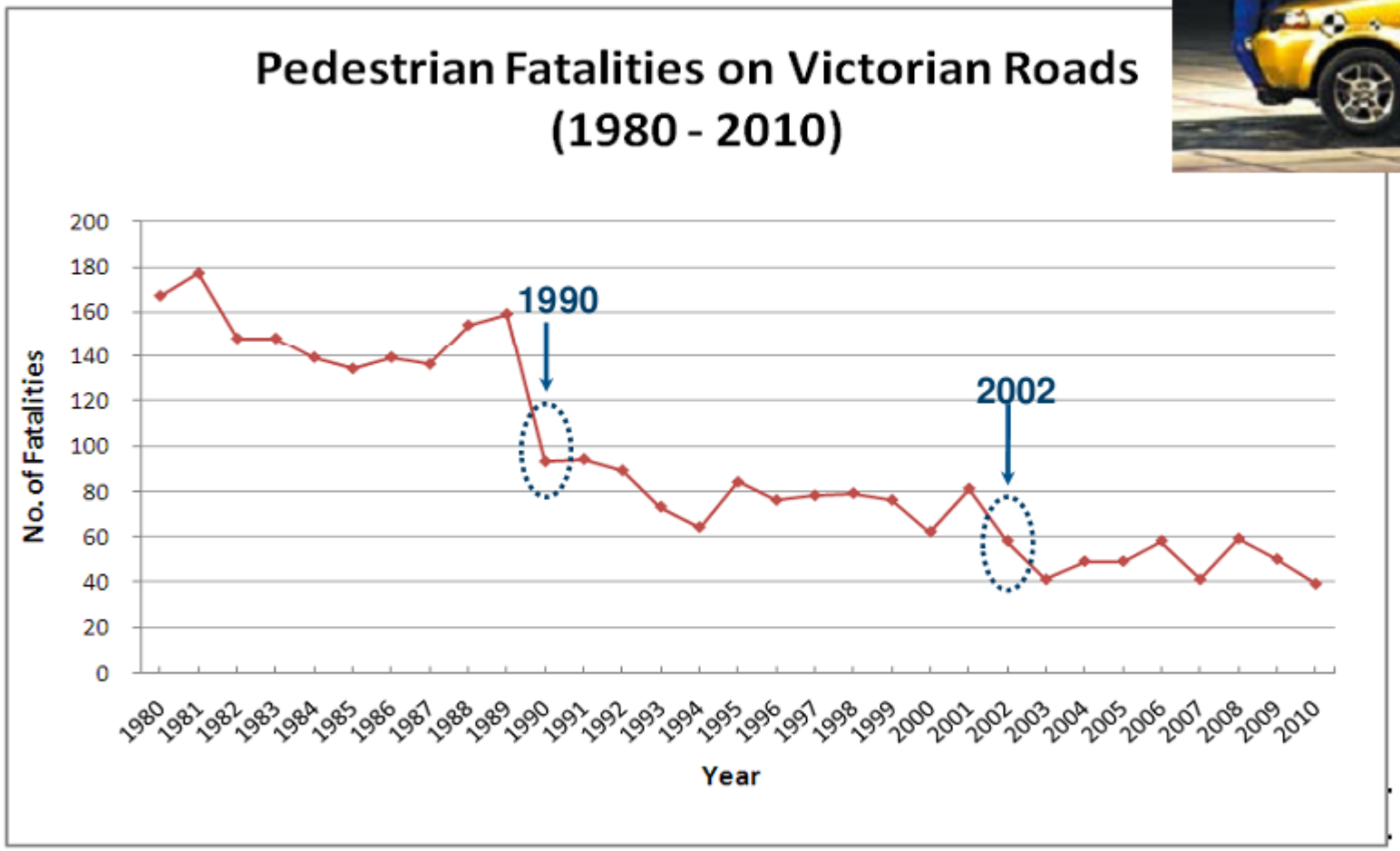
Evidence of Effectiveness





Dr. Bruce Corben presentation

Speed-related campaigns

Program Integration with Public Relations

Dr. Bruce Corben presentation

Managing Speed is a Key Principle

- To preventing crashes, and
- To minimize harm when all else fails, and a crash occurs
  - Pedestrians not exposed to cars > 30 km/hr
  - Car occupants not exposed to right angle collisions with cars exceeding 50 km/hr or head-on with cars exceeding 70 km/hr.
- These rules then lead to policies on speed limits, prioritizing roundabout use & other design, separation/barriers, communications, marketing

What is a ‘safe’ speed?

(adopted from Tingvall & Haworth)

Types of infrastructure and traffic	Maximum safe travel speed (km/h)
Locations with possible conflicts between cars and pedestrians	30 (20 mph)
Intersections with possible side collisions between cars	50 (30 mph)
Roads with possible frontal collisions between cars	70 (40 mph)
Roads with no possibility of side or frontal collisions (only collision with structures)	>100 (> 60 mph)

Policies from Europe and Australia

- Safer speed limits and safer speeds - low cost measures – widely implemented - (supporting
- Credible limits
- Lower urban limits (Europe and Australia) - Make limits credible through road design/infrastructure changes
- Cost effectiveness (evidence-based strategies)
- Inform drivers – must know limit, expectations
- Enforce limits
- Fewer different road types may be better – more homogeneous designs

Credibility features

- Accelerators:
  - Open road environment
  - Wide road
  - Straight road stretches
  - High quality road surface

- Decelerators:
  - Dense road environment
  - Narrow roads
  - Short road stretches
  - Physical speed reducers
  - Low quality road surface

Examples of ‘self-explaining’ elements

High-speed roads

(e.g. Theeuwes, 1994):

Low-speed road sections

(e.g. Martens et al. 1997; Davidse et al., 2004 Elvik & Vaa, 2004):

Presence of other road users

(e.g. Kaptein & Theeuwes, 1996; Davidse et al., 2007):

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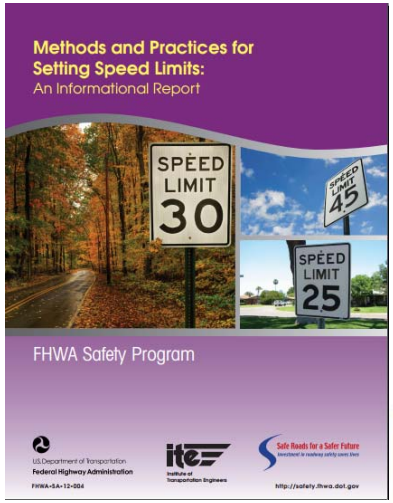
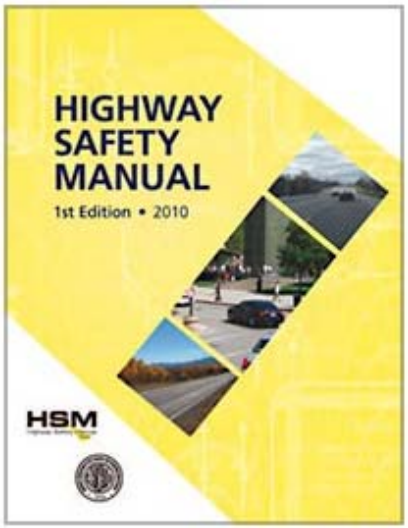
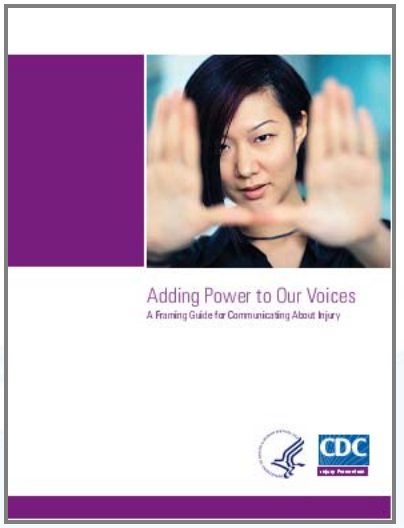
Resources and Tools

- Methods and Practices for Setting Speed Limits
- Highway Safety Manual
- Interactive Highway Design Module software – design consistency; predict operating speeds (not yet all road types) (supports HSM implementation)
- FHWA speed management resources
- NCHRP guides
- CDC Framing Guide
- NHTSA







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Speed-related campaigns

Program Integration with Public Relations

Dr. Bruce Corben presentation

Focus on Speeding:
Difficult to Solve

Elvik, R. (2010). Why some road safety problems are more difficult to solve than others. *Accident Analysis & Prevention* 42(4):1089-96.

* Mobility and other Perceived rewards

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Requires Political Will

Wegman. F. (2007). Road traffic in the Netherlands: Relatively safe but not safe enough! pp. 281-304 *IN* Improving Traffic Safety Culture in the United States: The Journey Forward, AAA Foundation for Traffic Safety: Washington, D.C.

- David Harkey, Director

History of Speed Management in NC (…Council's Version…)

- For many years, NC speed management was primarily by
  - Speed limit setting,
  - Enforcement by NCSHP and local agencies
  - Driver education for beginners
  - Sporadic publicity campaigns
- In recent years, added
  - Changes in roadway design (e.g., roundabouts and neighborhood street speed tables)
  - A combined publicity/enforcement campaign ("No Need to Speed")
  - Two automated (speed camera) enforcement programs (Charlotte and early trial in Iredell County).

Basic Injury-reducing Strategies

- Reduce exposure – reduce amount of driving; separate vulnerable users
- Reduce consequences of a crash – vehicles, belts, roadsides, etc.
- Reduce risk – speeding too fast for conditions or exceeding limits, & other risk factors for SR crashes
- Speed affects both risk of a crash and consequences
  - Remember $E = \frac{1}{2}mv^2$

Speed Data

Problem in defining size of NC speeding problem

- No systematic measurements of *speeds* on our roadways
  - Can't trace changes in speed or speeding across time for different roadway types.
- Typically use "speed –related" in crash data
  - Includes "exceeding limit" plus "too fast for conditions"
  - Both have to be based on an officer's judgment after-the-fact

(Potentially) other Speed-Related*

- 839 pedestrians killed (2006-2010)
  - 54% fatalities rural and 46% urban
  - 61% injured in urban areas
- 100 bicyclists killed (2006-2010)
  - 57% fatalities rural and 46% urban
  - 55% injured in urban areas
- About 1000 other fatalities each year

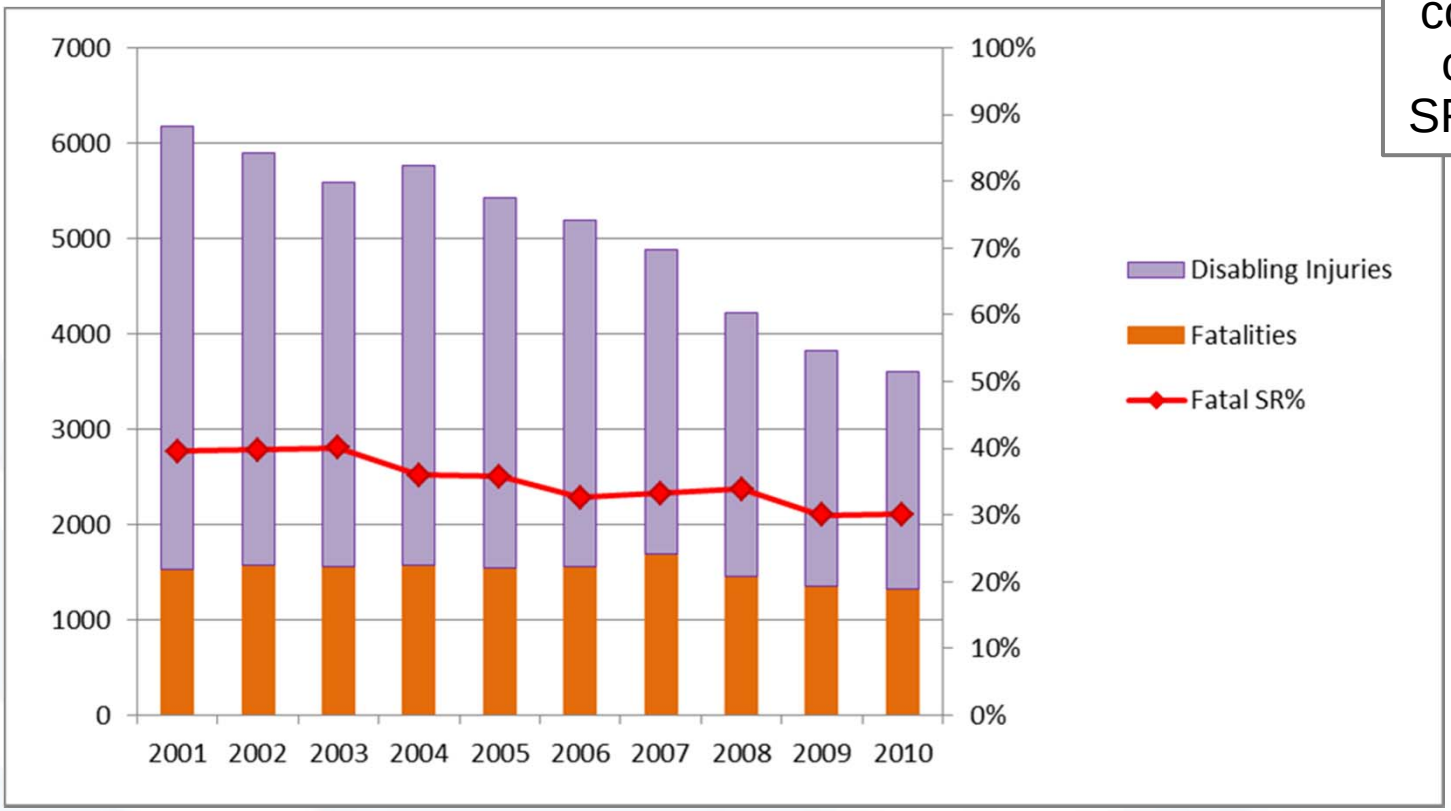
*Potential mismatch between operating speeds and context

Speed Management:
Best Practice

- Safe speed limits and safe speeds
- Road designs that make limits *credible* to drivers
- Inform the driver – Signs, designs, operations
- Enforcement that supports the limits – Deterrence-based strategies (Automated)
- Penalties that support enforcement – Consistency may be more crucial than intensity
- Publicity supports enforcement
- Good program PR / public input – Focus on the safety reasons for program elements

Ten-year Trend in Serious Crashes

$2.2 billion / year in comprehensive crash costs – SR crashes only



The red line indicates the percentage of fatal crashes attributed to speeding in NC.

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Speed Limits

- Purpose – to promote highway safety – traditionally by establishing maximum safe speed under favorable conditions
- Provide basis for design and engineering
  - Design also crucial to support limits established
- Provide basis for enforcement
  - Enforcement also crucial to supports limits established
    - *esp. needed when roadway sends wrong message

Considerations - Setting Limits

- Drivers don't necessarily know or choose safe speed (significant research evidence supports this)
- Consistent process needed to take back credibility – establish safety reasons for speed limits
- Intentionally established limit based on intended roadway purposes provides a framework for roadway design *AND* for credible enforcement
- Limits = One way to communicate with drivers – drivers *are* influenced by limits

LT4

The Problem(s)

Speeding Laws / Definitions

- Exceeding speed limits
- Exceeding a safe speed for conditions
  - Basic Speed rule – Thou shalt not
  - The ‘reasonable driver’ fallacy – many SR crashes fall under this category

In Short:

Drivers not getting the message – from roadway design, enforcement, adjudication, media

Speeding is difficult to solve – comprehensive/cooperative approaches needed

Slide 88

LT4 Could use this one slide - to illustrate the problem in lieu of 16 - 21 - OR keep in 16 -21 if think more detail is needed.
Libby Thomas, 9/23/2012