

Behavioral Traffic Safety Countermeasures: What Works?

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In the next 30 minutes:

- Driver behavior can change
 - and behavior change can reduce crashes, injuries, fatalities
- There's a lot of good science documenting what works and what doesn't work
- General principles
- Specific examples
- Where to go for more information

Countermeasures That Work:

A Highway Safety Countermeasure Guide
For State Highway Safety Offices
Fifth Edition, 2010

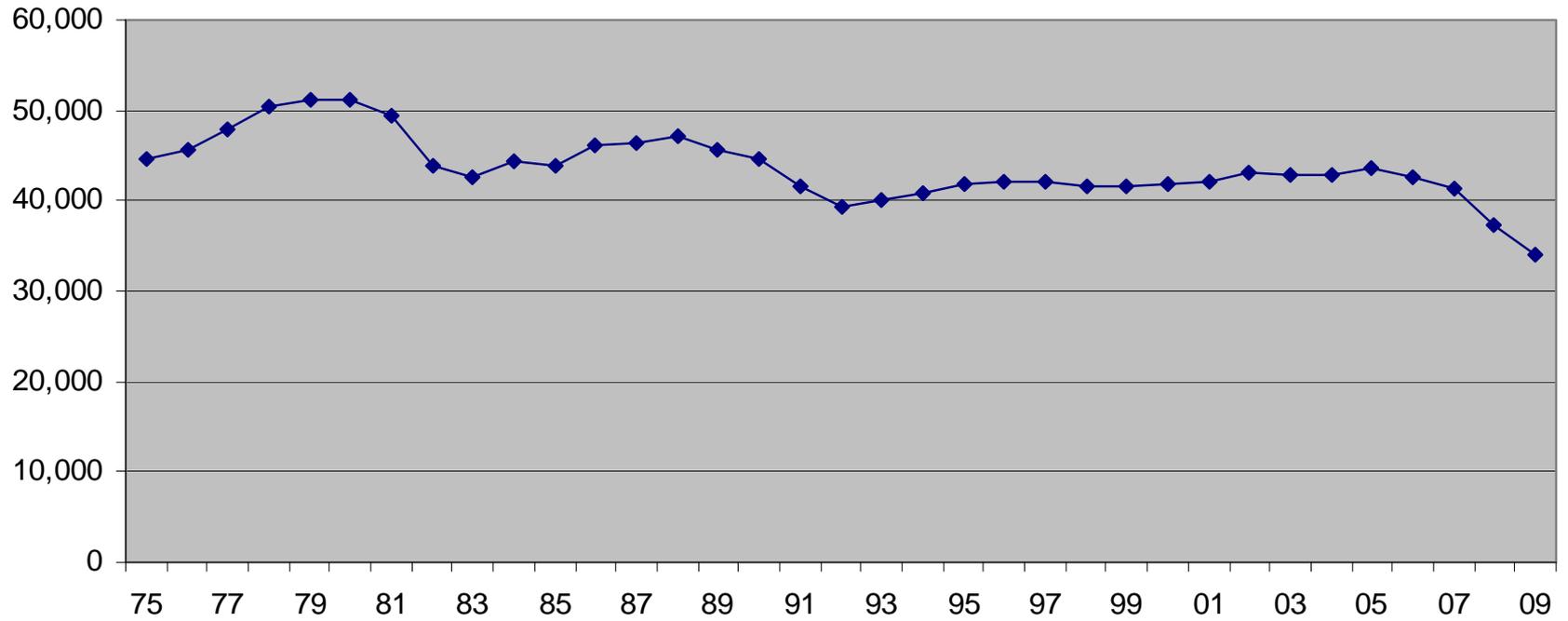


Traffic safety since 1975

	1975	2009	change
Drivers	130 M	210 M	+ 62 %
VMT	1,328 B	2,928	+ 120 %
Fatalities	44,525	33,963 *	- 24 % *
Fatals/VMT	3.35	1.16 *	- 65 % *

* estimated

US Traffic Fatalities



What did it?

- Better roads?
but the Interstate system was already built
- Safer vehicles?
most FMVSS standards in place by 1970
- Safer drivers?
but behavior can't be changed

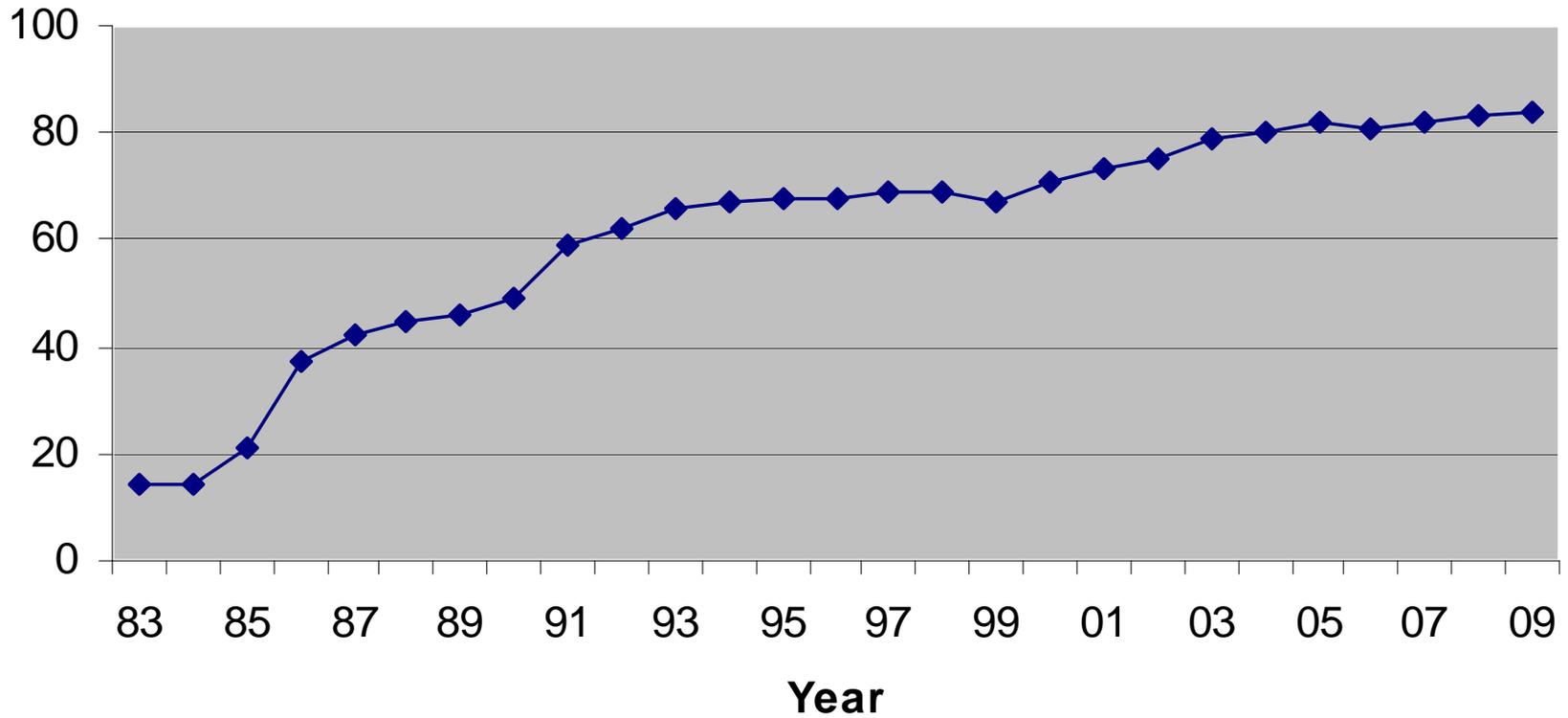
Behavior did change!

- Some examples

Where behavior has changed

- Kids in cars
 - child seats
 - kids in back

US Seat Belt Use - Front Seat



Where behavior has changed

- Belt use

1960: 0 %

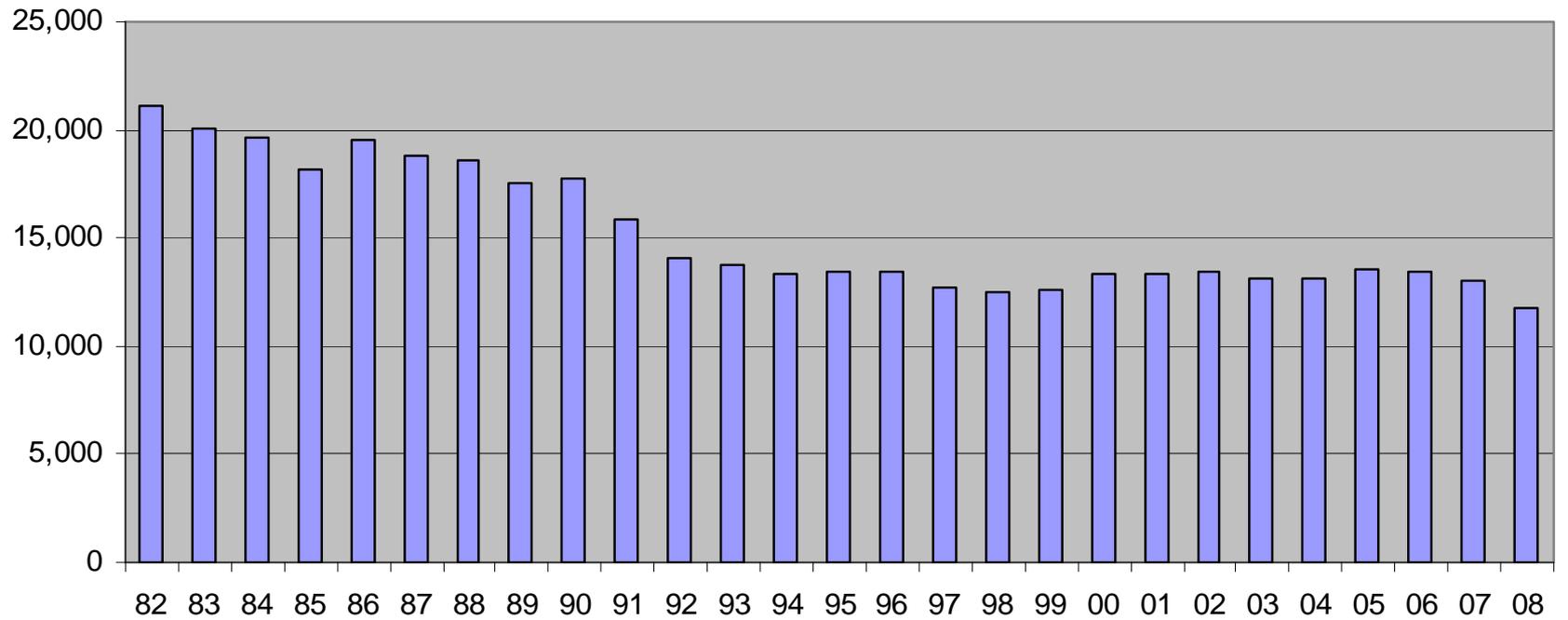
1980: 12 %

2000: 71 %

2009: 84 % (MI at 97.9%)

– "everybody" now wears belts

Traffic Fatalities with a Driver over .08 BAC



Where behavior has changed

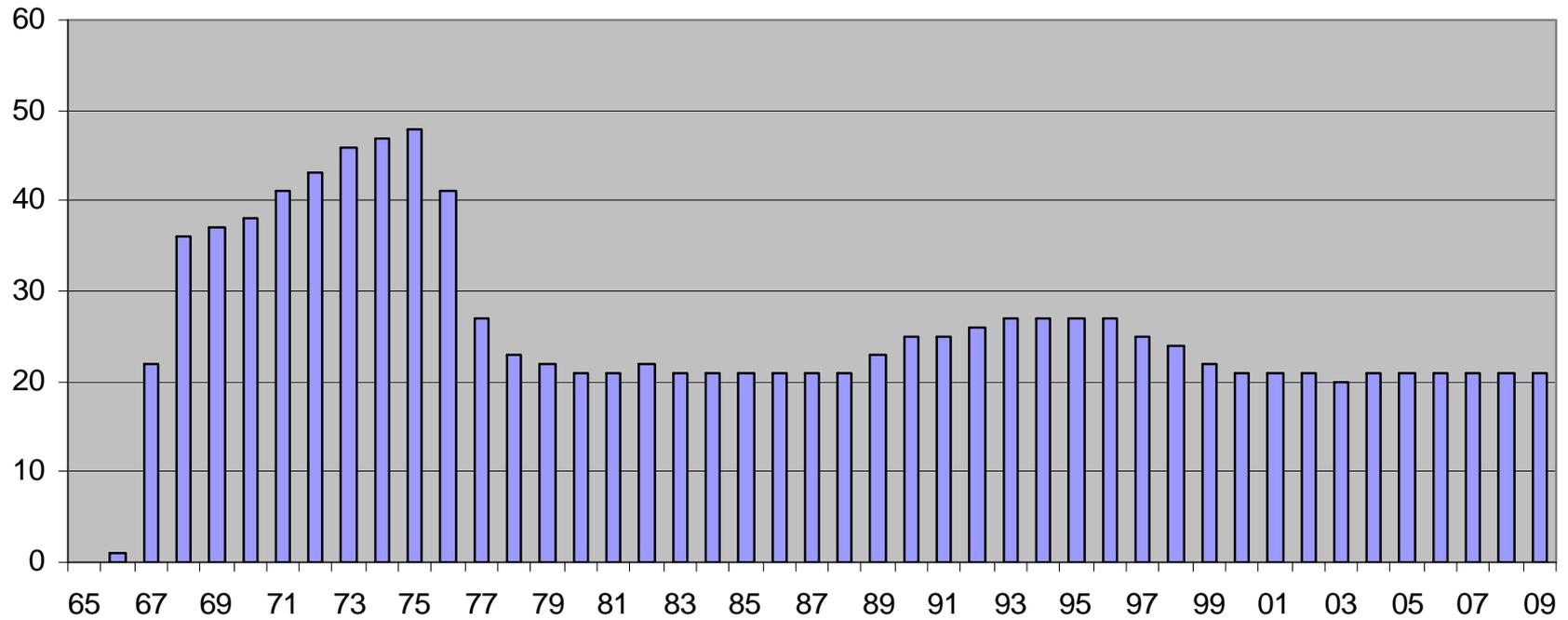
DWI

- 1982: 21,113 fatalities with driver over .08 BAC
- 2008: 11,773 44 % lower
- “One for the road” became designated driver

Where it hasn't (or has changed for the worse)

- Speeding
- Cell phone use (and texting, and other electronics)
 - cultural conflict: instant communication meets driving
- Motorcycle helmets

Universal Motorcycle Helmet Laws - States and DC



How do you change behavior?

- A (very) little theory

How do you change behavior?

- How do you keep your child from pulling the cat's tail?
- Persuasion
- Coercion (deterrence)
- Environment (prevention, intervention)

Persuasion

- Education and information
 - easy to do; hard to have any effect
- Characteristics of effective programs
 - well-researched and tested
 - fit the target group in content and delivery
 - sufficient intensity and duration
 - based on behavior change models, with concrete steps
 - part of larger effort (e.g., information on enforcement campaign)
 - present new information

Persuasion

- Characteristics of ineffective programs
 - passive messages – signs, brochures, buttons
 - slogans; “just say no”
 - lectures presenting information without action steps
 - short-term, low-intensity
 - PSAs

Coercion (deterrence)

- Behavior brings consequences –
 laws, enforcement, sanctions
- Deterrence theory: consequences must be
 - certain
 - swift
 - severe
- Effective highway safety laws also are
 - well-known
 - enforceable and enforced
 - accepted

Environment (prevention; intervention)

- “Automatic” methods that don’t allow unsafe behavior
 - security screening at airports
 - air bags
 - alcohol interlocks
 - roadway features: median barriers, left-turn traffic signals, ...

Let's look at what works

Traffic fatalities 2008, Michigan and US

	Michigan	Percent	US percent
Unbelted	241	29 %*	44 %*
Alcohol	282	29 %	32 %
Speeding	232	24 %	31 %
Age < 21*	166**	12 %**	11 %**
Motorcycles	128	13 %	14 %
Peds, bikes	144	15 %	14 %
Trucks	88	9 %	11 %
Total	980		37,261

* estimated

** drivers in fatal crashes

Belts – What works?

- **Primary belt use law**
 - 12 to 18 percentage point increase (CDCP 13 study review)
MI: 13 percentage point increase after 2000 primary law
- **High visibility belt law enforcement**
 - 6 to 8 percentage point increase (CDCP 16 study review; CIOT evaluations)
 - needs good communications

What else might work?

- **Sustained belt law enforcement** (CA, OR, WA data)
- **Nighttime enforcement** (6 percentage points in PA study)
- **Communications for low belt use groups** (7 percentage points, ND and TX pickup truck program studies)
- **Employer and school programs** (6 to 28 percentage points in older studies)

What probably won't work

- Generic communications with no enforcement link

Alcohol - What works?

- **Laws**

- ALR (13% crash reduction, 13 studies)
- BAC test refusal penalties (refusal reduction, 1 study)
- DWI code review (system issue)

- **Enforcement**

- checkpoints (20% crash reduction, CDCP 11 study review)
- saturation patrols and other intensive enforcement (14% reduction, drinking drivers in fatal crashes, MI study)
- enforcement techniques: SFST, PBT, PAS
 - PBT – arrests increase (subjective)
 - PAS – 50% increase in arrests at checkpoints (several studies)

What works?

- **Prosecution, adjudication, sanction**
 - DWI courts (recidivism reduced; several studies)
 - diversion and plea bargain restrictions (52 studies of plea agreement restrictions; reduce outcome measures, effects confounded with other measures)
 - vehicle and license plate sanctions – impound, immobilize, special plates (reduce recidivism; several studies)
- **Monitoring and treatment**
 - interlocks (reduce recidivism at least 50% while on car; 11 studies)
 - alcohol problem assessment and treatment (reduce recidivism and crashes 7-9%; large meta-analysis of hundreds of studies)
 - close monitoring (reduce recidivism substantially; 3 case studies)
- **Infrastructure**
 - DWI tracking systems (system issue)

What works?

- Youth
 - Zero tolerance law enforcement (21% crash reduction in 1 old study)
 - MDA 21 law enforcement (various strategies, a few studies)
- Prevention and intervention
 - brief interventions (drinking and crash reductions, many studies)
 - responsible beverage service (drinking reductions, CDCP 5 study review)

What else might work?

- **Laws**
 - high-BAC (1 study)
 - open container (1 study)
 - lower BAC limit for repeat offenders (2 studies)
- **Prosecution, adjudication, sanction**
 - court monitoring (2 older studies)
- **Prevention and intervention**
 - designated driver campaigns (1 CDC review; evidence inconclusive)
- **Youth**
 - school and youth programs (1 CDC review; evidence inconclusive)

What probably won't work

- Stand-alone media campaigns (1 CDC review)
- Stiffer sanctions

Speed - What works?

- **Speed limits and enforcement** (many studies of 55+ mph limits, few studies of lower limits)
 - realistic speed limits
 - high-visibility enforcement
 - real penalties
 - highly publicized
- **Automated enforcement – speed cameras**
 - 20-25% crash reduction, 13 study review; lots of international experience

What else might work?

- Aggressive driving laws (no studies)

What probably won't work

- Feel-good communications

What does all this mean?

- Behavior can change
 - and behavior change can reduce crashes, injuries, and fatalities
- It isn't easy
 - it isn't rocket science – it's harder
- But there's good science on what works and what doesn't
 - and documenting the characteristics of effective and ineffective strategies
- Remember the three methods
 - Persuasion (communications)
 - Coercion (deterrence)
 - Environment (prevention, intervention)
- And Michigan has used this science to good advantage

MICHIGAN TRAFFIC DEATHS FALL TO 871 IN 2009

State experiences 11 percent decline.

Michigan's traffic deaths reached a milestone of 871 in 2009, the lowest number the state has recorded since 1924 when there were 863 traffic fatalities.

“A variety of factors contributed to the decline, including fewer miles driven, the state's high seat belt use, strict enforcement of traffic laws, roadway engineering improvements and vehicle safety features.”

Office of Highway Safety Planning Director Michael L. Prince

March 25, 2010 Contact: Anne Readett (517) 333-5317

And finally

- It's a system: roads, vehicles, drivers, laws, enforcement, communications
 - driver behavior is influenced by vehicles and roads
- 871 fatalities and dropping
 - It won't be easy: economy will rebound, driver distractions increasing, vehicle and roadway improvements take a long time
- Work together
 - SHSP involves everyone in collaborative strategies

STATE OF MICHIGAN **STRATEGIC HIGHWAY SAFETY PLAN**



For more information

Countermeasures That Work:

A Highway Safety Countermeasure Guide
For State Highway Safety Offices
Fifth Edition, 2010



NCHRP

REPORT 622

NATIONAL
COOPERATIVE
HIGHWAY
RESEARCH
PROGRAM

Effectiveness of Behavioral Highway Safety Countermeasures

TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

Research Results Digest 322

PUBLIC INFORMATION AND EDUCATION IN THE PROMOTION OF HIGHWAY SAFETY

This digest is an interim deliverable from NCHRP Project 17-33, "Effectiveness of Behavioral Highway Safety Countermeasures," which is being carried out under a contract with Preusser Research Group, Inc. under the direction of David F. Preusser (Principal Investigator). It was prepared by Allan F. Williams, Preusser Research Group, Inc. This digest assesses the role of public information and education programs in contributing to behavior change in the highway safety area, and indicates possible future directions.

INTRODUCTION

Public information and education (PI & E) programs have been used extensively in the highway safety field, although many programs have been of poor quality. Even high-quality programs rarely work by themselves in changing individual behavior; their contribution is greater when combined with other prevention efforts in support of law enforcement or as part of broader-based community programs. Money allocated to PI & E programs should be concentrated on high-quality programs incorporating elements likely to be successful in changing individual behavior. It is also important that PI & E programs be used to promote and support effective policies that, once implemented, have permanent effects on the population as a whole.

PI & E programs have been widely used to provide information about health issues and to encourage healthy behavior. Public information programs and education programs have the same goals. Public information programs are typically referred to as mass media programs, because that is their usual method of delivery—through tele-

vision, radio, the Internet, and print (newspapers, brochures, and pamphlets). Most education programs involve direct, face-to-face contact with a specific audience. Both types of communications can be stand-alone efforts or part of broader programs, such as community-based programs or enforcement programs. Sometimes both public information and education messages are used in the same program.

Increased knowledge about a health issue often results in a more informed public and shapes attitudes. This is important in that it can help set the public agenda, establishing the problem as one of concern, and providing support and impetus for laws and other means for addressing the problem. A more ambitious goal is to change individual behavior through public information and education, the subject of the present paper. An assessment will be made of PI & E programs that have been used in the highway safety field and their effects on behavior; suggestions for future directions will be offered.

Behavior change is a common goal in various health areas, including those dealing with tobacco, alcohol, and other drug use. In

For more information

- Countermeasures That Work, Fifth Edition, 2010
NHTSA DOT HS 811 258
<http://www.nhtsa.dot.gov/>, then Traffic Safety, then Research
- Effectiveness of Behavioral Highway Safety Countermeasures
Preusser et al., 2008 NCHRP Report 622
http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_622.pdf
- Public Information and Education in the Promotion of Highway Safety
Williams, 2007 NCHRP Research Results Digest 322
http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rrd_322.pdf

VOLUME 23

NCHRP

NATIONAL
COOPERATIVE
HIGHWAY
RESEARCH
PROGRAM

REPORT 500

Guidance for Implementation of the
AASHTO Strategic Highway Safety Plan

Volume 23: A Guide for Reducing Speeding-Related Crashes



TRANSPORTATION RESEARCH BOARD
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For more information

- NCHRP guides – AASHTO Strategic Highway Safety Plan
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 - 22 Motorcycles 2009
 - 19 Young drivers 2007
 - 18 Bicycles 2008
 - 16 Alcohol 2005
 - 14 Distracted and fatigued drivers 2005
 - 11 Belt use 2004
 - 10 Pedestrians 2004
 - 9 Older drivers 2004
 - 2 Unlicensed drivers 2003
 - 1 Aggressive drivers 2003

<http://www.trb.org/Main/Blurbs/152868.aspx>

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Questions?