

# **Motor Vehicle Injury**

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# In the next 20 minutes

- What's the problem: Epidemiology and risk factors
- What works: Evidence-based strategies
- What to do about it: Recommendations
  
- Belts: occupant protection
- Booze: alcohol-impaired drivers
- Speeding
- Motorcycles
- Fines and penalties
- Data

# The big picture: North Carolina motor vehicle injury in 2007

- Traffic fatalities: 1,675
- Per VMT: 1.62 (100 million)
- Per population: 18.49 (100 thousand)
  
- Traffic injuries: about 60 for each fatality
- So about 100,000 in 2007
  
- 2008 prelim traffic fatalities: 1,383 down 19%

# North Carolina and US: 2007

	NC	US	NC v US
Fatalities	1,675	41,059	4 %
Per VMT	1.62	1.36	+ 19 %
Per person	18.49	13.61	+ 36 %

# NC and US: 2003-2007

2003-2007	NC	change	US	change
Fatalities	+ 122	+ 8 %	- 1,824	- 4 %
Per VMT	- 0.04	- 2 %	- 0.12	- 8 %
Per person	+ 0.05	+ 0 %	- 1.15	- 8 %

# Before we start

- There's extensive research on motor vehicle injury-reduction strategies over the last 40+ years – we know what works
- No silver bullets – nothing easy, quick, and cheap – progress will be hard, long-term, and expensive
- Not monolithic – need a mix of strategies to address different problem areas

# Motor vehicle injury prevention strategies

- Better roads
- Better vehicles
- Better behavior: drivers, passengers, pedestrians, bicyclists, ...
  
- Today's agenda: better behavior

# How to (try to) change behavior

- 1) Persuasion – education, training
- 2) Coercion – laws, enforcement, sanction
- 3) Environment – physical and social

# Persuasion: education, training

- Can work, but often does not
  - knowledge alone rarely changes behavior
- To have any chance
  - high quality, high intensity – real social marketing
- Better chance of success if one or more of
  - presents new information
  - part of a larger effort

# Coercion: laws and enforcement

## Characteristics of effective components

- Laws
  - acceptable to public
  - enforceable – observable behavior
  - highly publicized
- Enforcement
  - violators likely to be detected, punished
- Sanctions
  - prompt, intrusive
- Deterrence theory: consequences should be certain, swift, and (appropriately) severe

# The Big Three, plus one

- Belts
- Alcohol
- Speeding

and

- Motorcycles

# NC Traffic Fatalities 2007

Unbelted	540	32 %
Driver $\geq$ .08	487	29 %
Speeding	620	37 %
Motorcyclists	201	12 %
Total	1,675	

# Seat belts

- 540 unbelted fatalities; 32% of total fatalities
  - Increased 3% in 4 years: 523 in 2003
- Belts are effective:
  - reduce fatality risk by 45% in cars, 60% in light trucks
  - reduce serious injury risk by 50% in cars, 65% in light trucks
- Belt use:
  - 88% observed, 15<sup>th</sup> of all states (best state: 98%)
  - 44% of fatalities, 13<sup>th</sup> of all states (best state: 58%)
  - belt use increasing gradually: 86% in 2003
  - in 1996: 80% observed belt use, 3<sup>rd</sup> of all states
- Potential lives saved in 2007 with 100% belt use: 177

# What works to raise belt use?

- Primary belt use law
  - 12 to 18 percentage point increase
  - NC has primary law but only in front seat
  - fine only \$25 for front seat, \$10 for rear seat
- High-visibility belt law enforcement
  - 6 to 8 percentage point increase
  - “Click It or Ticket”

# What should NC do?

- Re-invigorate CIOT: “Click It or Ticket”
  - targeted to high-risk areas and occupants
  - nighttime enforcement – hard-core non-users
  - more officers on the road, at checkpoints
  - more publicity – paid ads
- Provide needed resources
- Strengthen belt use laws
  - primary law for rear seat
  - increase belt law fines

# Recommendation

- NC should re-invigorate highly-publicized seat belt law enforcement, targeted to areas and groups of occupants with high non-use rates
- Specific actions
  - All NC law enforcement agencies with traffic responsibilities should actively enforce the belt law throughout the year, with special emphasis during the CIOT campaign
  - GOHS should allocate additional resources to CIOT activities targeted to those who do not buckle up, including paid ads and nighttime enforcement
  - The NC legislature should enact a primary belt use law for rear seat occupants
  - The NC legislature should increase belt law fines to at least \$50 for all seat positions

# Alcohol-impaired driving (DWI)

- 487 fatalities with driver over illegal .08 BAC;  
29% of total fatalities
  - Increased 21% in 4 years: 403 in 2003

# What works to reduce DWI?

A complete deterrence system:

- Strong laws
- Vigorous high-visibility enforcement
  - checkpoints, saturation patrols, other intensive enforcement
  - extensive publicity, including paid ads
- Effective prosecution, adjudication, sanction
  - prosecutor and court priority
- Careful offender monitoring and treatment
  - interlocks
- And it all requires resources

# What should NC do?

- Increase high-visibility enforcement
  - well-publicized and highly-visible checkpoints reduce alcohol-related crashes, injuries, and fatalities by 20%
- Increase resources for DWI enforcement, prosecution, adjudication, treatment, and monitoring
- Require alcohol interlocks for all DWI offenders
  - interlocks reduce DWI by at least 50% while installed

# Recommendation

- NC should strengthen the DWI control system and provide increased resources
- Specific actions
  - All NC law enforcement agencies with traffic responsibilities should actively enforce DWI laws throughout the year and should conduct regular checkpoints
  - The NC legislature should provide additional resources for DWI enforcement by allocating at least \$50 from of the \$100 driver license reinstatement fee to DWI programs
  - The NC legislature should require an alcohol interlock for all DWI offenders

# Speeding

- 620 fatalities in crashes involving speeding;  
37% of total fatalities
  - increased 8% in 4 years; 573 in 2003

# What works to reduce speeding?

- Vigorous speed limit enforcement
  - realistic speed limits
  - high-visibility enforcement
  - real penalties
  - highly publicized
- Automated enforcement – speed cameras
  - AZ 101: multilane, 65 mph, 130-170,000 ADT
    - 6 speed cameras: vehicles over 75 mph from 50% to 0.5%
    - crashes down 60%, injury crashes down 40%
  - speed cameras complement red-light cameras
  - NC constitutional issue with automated enforcement

# What should NC do?

- Embrace speeding and red-light running control as the third leg of a belts, booze, and speeding motor vehicle injury control strategy

# Recommendation

- NC should adopt speeding and red-light running as a major traffic safety priority
- Specific actions
  - All NC law enforcement agencies with traffic responsibilities should actively enforce speeding, red-light running, and aggressive driving laws
  - The NC legislature should allow speed and red-light camera programs to be funded by violators' fines
  - NC counties, cities, and towns should implement speed and red-light cameras where needed to control dangerous roads and intersections

# Motorcyclists

- 201 fatalities, 12% of total fatalities
  - Increased 86% in 4 years: 108 in 2003
- It's not just more motorcyclists
  - fatalities per 100,000 registered motorcycles up 53%, from 113 in 2003 to 173 in 2007

# What works to reduce motorcycle crashes and injuries?

- Helmets
  - NC has helmet law: only 14 unhelmeted fatalities
  - fake helmets: NC law now requires USDOT helmets
- Operator licensing
  - NC law allows learner's permits to be renewed indefinitely
- Operator education and training
  - young novice motorcyclists
  - older returning motorcyclists

# What should NC do?

- Assure that all motorcyclists are properly licensed
  - eliminate indefinite renewal for learner's permits
  - match operator license and vehicle registration files
  - consider graduated licensing for motorcyclists
- Encourage all motorcyclists to be trained
  - beginning riders
  - returning riders
- Include motorcyclists in law enforcement activities
  - DWI checkpoints

# Recommendation

- NC should assure that all motorcyclists are properly licensed and trained and that motorcyclists are included in law enforcement activities
- Specific actions
  - The NC legislature should change motorcycle learner permit provisions so permits cannot be renewed indefinitely
  - The NC DMV should match operator license and vehicle registration files
  - The NC DMV should consider graduated licensing for motorcyclists
  - All NC law enforcement agencies with traffic responsibilities should include motorcyclists in enforcement activities

# Two general subjects

# Traffic fines and penalties

- Sanctions are ineffective if they aren't appropriately severe
- Some NC fines and penalties aren't
  - Belt law fine: front seat: \$25, rear seat \$10 (since 1988)
    - Some States have belt law fines are over \$100 (and belt use in these States is well above 90%)

# Recommendation

- GOHS should review all traffic violation fines and penalties and recommend changes to the NC legislature
- The NC legislature should increase traffic violation fines and penalties as recommended by GOHS

# Data

- Good traffic injury data help identify problems and monitor progress
  - 60 times more injuries than fatalities
  - identify locations and problem areas within NC
  - provide motor vehicle injury data comparable to data on other injuries and diseases
- CODES: Crash Outcome Data Evaluation System
  - link crash and medical data – diagnoses, outcomes, costs
  - 29 states participate; NC does not

# Recommendation

- GOHS should work with the NHTSA Region 3 office to implement CODES in NC

# Basic sources

- Data: NHTSA's National Center for Statistics and Analysis (NCSA)
  - <http://www.nhtsa.dot.gov/>, then click on NCSA
  - NC data at [http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/37\\_NC/2007/37\\_NC\\_2007.htm#TAB5C](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/37_NC/2007/37_NC_2007.htm#TAB5C)
- Programs: Countermeasures That Work 2009
  - <http://www.nhtsa.gov/staticfiles/DOT/NHTSA/Traffic%20Injury%20Control/Articles/Associated%20Files/811081.pdf>

# Questions?

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