 **A New Angle on Speed**

Speed Management in a Toward Zero Deaths Framework

Lifesavers - Nashville
April 29, 2014

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Senior Research Associate

Main Talking Points

- What has happened to speed limits as a safety measure
- Different stakeholders have different needs/perspectives about Speed
- What can we learn from Toward Zero deaths jurisdictions
- Institutionalizing good practices
- Framing the Message

**Focus on Speed Management:
Best/Good Practice**

- Appropriate (sometimes LOWER) speed limits – *suited to land uses, road designs, people*
- Inform the driver
- Road designs and enforcement make limits **credible**
- Enforcement - PERCEPTION
- Penalties that support enforcement – consistency, more than intensity
- Publicity
- Prioritize allocation of resources

Group wants crackdown on traffic scofflaws

From Urban

BY JIM WISE
jwise@newsobserver.com January 3, 2014



DURHAM — Some citizens concerned about pedestrians' and cyclists' welfare want Durham police to put a priority on enforcing the traffic laws.

"I'm not saying this ought to be up there with the homicides, but the issue is it should be a priority," said Philip Azar, co-chairman of an InterNeighborhood Council committee on traffic. It, and some members of the city's Bicycle and Pedestrian Advisory Commission, are working on a resolution to the City Council pushing for more stringent enforcement and suggesting 10 specific actions to improve the situation.

"While this has consistently been an issue on a location by location basis and an individual neighborhood basis, it is actually a community-wide and city-wide issue that needs a real priority and a plan assigned to it," Azar said.

According to data from the University of North Carolina Highway Safety Research Center, Durham averaged 69.8 vehicle-pedestrian collisions in the five years 2006 through 2010 (bit.ly/1pH0D7), fifth highest average in the state, and 36.6 bicycle-vehicle crashes (bit.ly/1d061G4), tied with Greensboro for fourth highest.

To Rural

Farmer asks drivers to show some respect

Patience can help avoid car-tractor crashes

By SAMANTHA GILMAN
sgilman@newsobserver.com
CLAYTON: It's a dangerous scene for farmers, and they have a request for drivers: Please, be patient.

Farmers need wide highways to move large pieces of equipment more than ever, as compacted rows cause them to work more fields that often are separated by subdivisions. Tractors, combines and sprayers might "pop out at 20 mph on the road and stretch up to 15 feet wide, often exceeding 8-foot-increasing traffic.

There have been about 200 accidents a year involving farm equipment on North Carolina roads in



NEWS/PHOTO: 2014 NEWS & OBSERVER/PHOTO

There have been about 200 accidents a year involving farm equipment on North Carolina roads in the last decade, according to the state Department of Transportation. In the past three years, those crashes resulted in 17 deaths and 329 injuries.

Accidents with farm vehicles are especially dangerous because of the difference in speed and size of the vehicles involved. Picture a 4,000-pound car going 50 mph and running over a 20,000-pound tractor.

30 Online traffic: Find out regional traffic maps and more transportation news at news.com/traffic.

Randy Edwards, who lives in the Archer Lodge area of Johnston County, says that in spite of green lights such as flashing lights on his tractor, drivers seem unaware he see him.

"They just run right up on you," Edwards said. "They don't realize that farm machinery is not moving but 20, 25 miles per hour. And they end up just going fast."

Edwards raises cattle and grows vegetables, wheat, sweet potatoes, tobacco and hay. He says parts of Smithfield Road near Archer Lodge and Covered Bridge Road

SEE FARMERS, PAGE 14

Purpose of Speed Limits

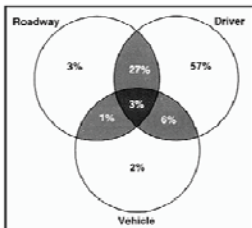
- to promote highway safety – traditionally by establishing maximum safe speed under favorable conditions

(NCHRP, 2009). Enforcement, engineering speed management strategies are both crucial to, and depend on, safety of speed limits established.

- Speed Limits – Is this Paradigm still valid?

Crash Causes

- Driver states, ability, performance
- Vehicle condition
- Roadway
- Environment



▪ Policy / Society Culture

Figure 1 from Rumar, 1985 and Lum and Reagan, 1995 /n White Paper No. 6 – "Safer Infrastructure" by P. Jovanis and E. Donnell

What's wrong with the status quo?

Speed Limit
55 mph

Speed Limit
35 mph



Planning & Design Policies and Guidelines

- Existing road engineering manuals and design guides – **safety implied** by designing to recommendations
- Guidance urging designers to use **higher design speeds**
- **Speed limits / intended operating speeds** - often an **afterthought**

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

Enforcement and Publicity

- *Insufficient enforcement* resources
- *Publicity /communications* not used enough or well

- Speed enforcement
- Courts
- Operating speeds over time
- Speeding-related fatalities/fatality percentage
- Urban areas, community livability
- Residents, farmers, cyclists, drivers in rural areas

	2008	2009	2010	2011	2012
Fatalities	11,767	10,664	10,508	10,001	10,219
VMT Rate*	0.40	0.36	0.35	0.34	0.34
Pop. Rate**	3.87	3.48	3.40	3.21	3.26
Pct of Total	31.44%	31.47%	31.84%	30.79%	30.45%

* Rate per 100 million miles of travel
 ** Rate per 100,000 population

Purpose of Speed Limits

- to promote highway safety – traditionally by establishing maximum safe speed under favorable conditions
- **Speed Limits – Is this Paradigm still valid?**

What Can be Done

Humans are Fallible

- Safe System (Netherlands, Australia)
- Vision Zero (Sweden, NYC)
- Making Roads Safer (U.K.)
- Toward Zero Deaths (U.S. & many states)

Safer Countries

- New allocation of responsibility
 - Designers of system are responsible
 - Users are responsible for following rules of use
- But if user fails, system must reduce harm

And,


- Managing speed is a key principle



Setting Speed Limits

Injury Minimization

- Setting speed limits according to the tolerance of the human body to injury during a crash (managing the crash energy)
- Look to the speed of travel and the likely types of collision to determine the maximum speed
 - Pedestrian/cyclist crash → 20 mph (30 km/h)
 - Side impact crash → 30 mph (50 km/h)
 - Head-on crash → 45 mph (70 km/h)



From Gerry Forbes, INTUS Road Safety Engineering Inc. presentation for FHWA

If Limits Are Not Safe or Credible

- What needs to be changed?
- What can be changed (to improve safety)?
 - The limit
 - The road design
 - Enforcement
 - Vehicles
 - Drivers

Fewer Different Limits

- May be more comprehensible to drivers
- May reduce confusion
- May help with thinking about design


Systematic Process

- Network screening *or*
- Data Driven Approach to Crime and Traffic Safety (DDACTS)
- Diagnosis
- Identify alternate treatments
- Prioritize most cost-effective


Systematic – Screen and Rank Safety Issues

Table 3: Prioritization Matrix

Frequency of Crashes	Severity of Crashes			
	Possible/Minor Injury	Moderate Injury	Serious Injury	Fatal
Frequent	Moderately High	High	Highest	Highest
Occasional	Middle	Moderately High	High	Highest
Infrequent	Low	Middle	Moderately High	High
Rare	Lowest	Low	Middle	High



Speed Study + Field Diagnosis



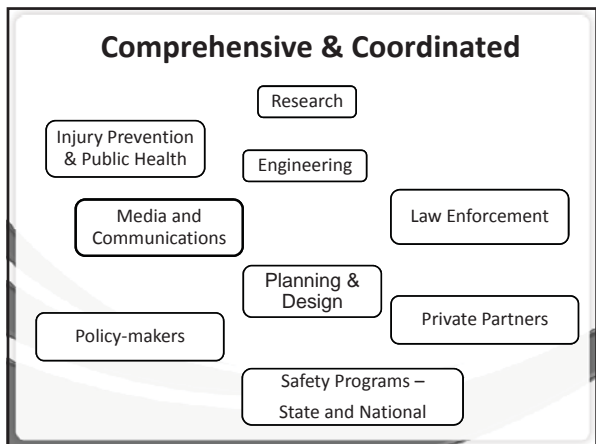
What are the solutions?

Proactive Process

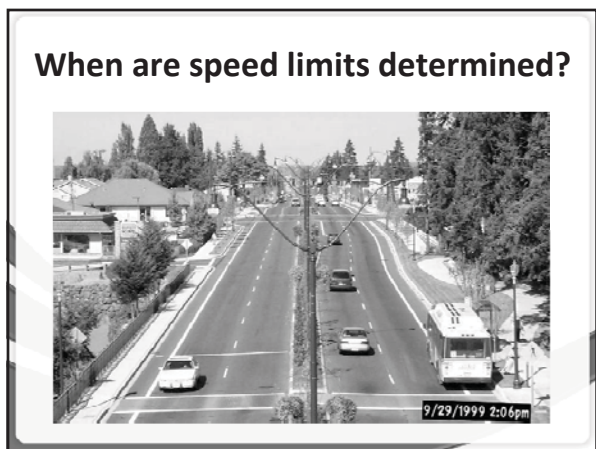
- **Plan** for desired speed
- **Integrate** with land use, other transport plans, user needs
- **Institutionalize** speed managing **designs**
- **Institutionalize** cooperation

Importance of Broad Perspective

- Who gets to decide speed limits?



- ### Policies
- Lower limits in urban areas (with ASE enforcement):
 - 12% casualty (F & I) crashes (Victoria, AU)
 - Widely implemented road diets (NYC)
 - 70% injury and fatal crashes
 - Licensing – study current practices & effects
 - Criminal justice system approach to penalties - what are effects
 - Reduce exposure – are there alternatives for transportation



Designs that Support Limits

- Roundabouts (instead of two-way stop or signal): - 66% to 90% Fatal and Injury
- Road diets: - 19 to 47% Fatal and Injury
- Fewer lanes, narrower lanes, traffic calming elements



Enforcement to Supplement

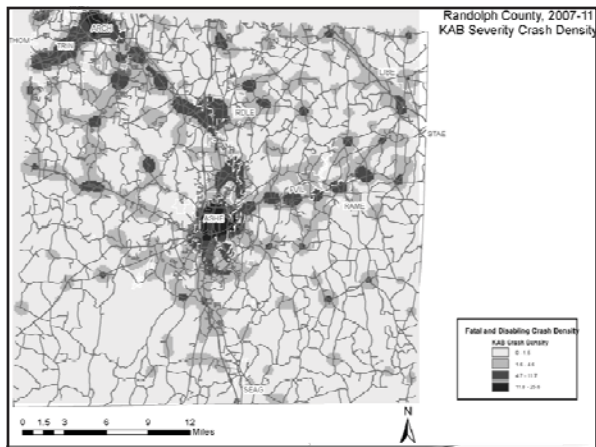
- Population-wide deterrence



http://www.miami-police.org/traffic_enforcement.html



http://www.seattle.gov/police/technology/speed_photo.htm



Enforcement Strategies

- Automated enforcement: – 25% injury crashes (dep. on environment & implementation)
- Lower speeding tolerance (Victoria, AU): – 27% fatal crashes; – 10% injury crashes
- Improve regular enforcement allocation



Judicial Coordination

- Improve prosecution effectiveness; perhaps focus on target corridors (tried, not proven)

Publicity

- Increase the perception that speeders will be caught any where and any time
- Media publicity: – 10% fatal and injury (associated with Charlotte NC ASE program)

Overcoming the Barriers

Communications

- Framing the message
- Credible messengers to target audiences
- Take advantage of injury prevention partners and communications experts



What is the Message

- This...

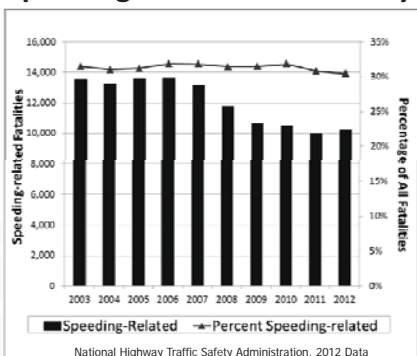
Nationwide Speeding-Related Fatalities

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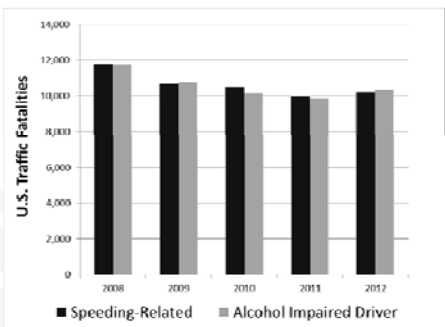
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Source: NHTSA Data Handbooks – prepared for each State

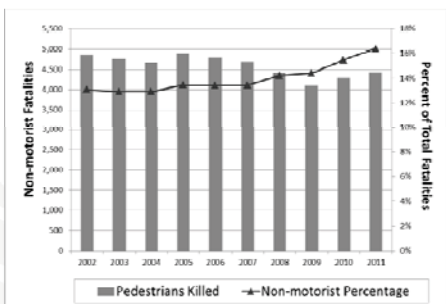
U.S. Speeding-related Fatalities by Year

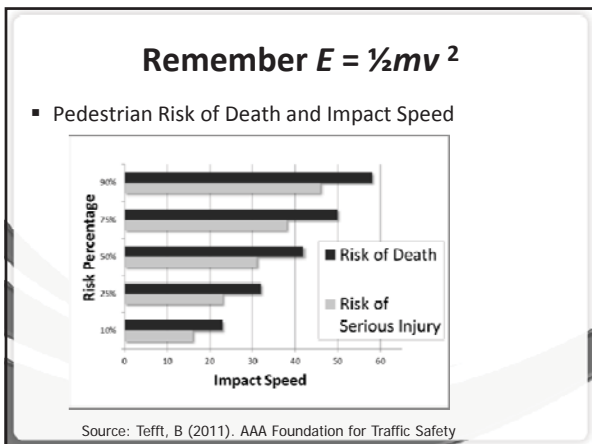


Speed or Alcohol



U.S. Non-motorist Fatalities by Year





Framing the Issue

- Or This
- <https://www.youtube.com/watch?v=eryfhMWfl1U>

Speed-related campaigns

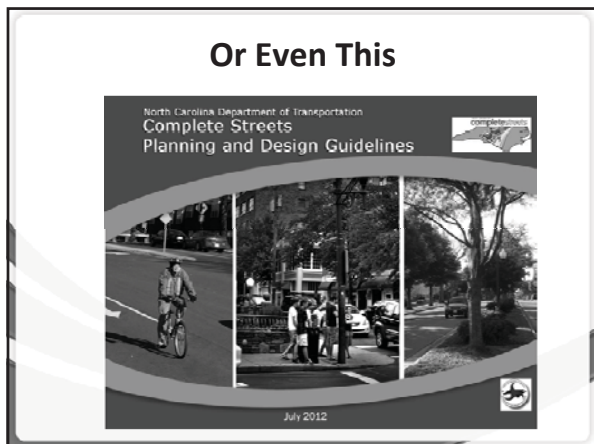
Program Integration with Public Relations

Everybody hurts when you speed.

Pictures of You - TAC's Anti Speed TV ad campaign

Courtesy Dr. Bruce Corben

MONASH University
Towards Safer Travel Speeds in Australia
17 OCTOBER 2013 14



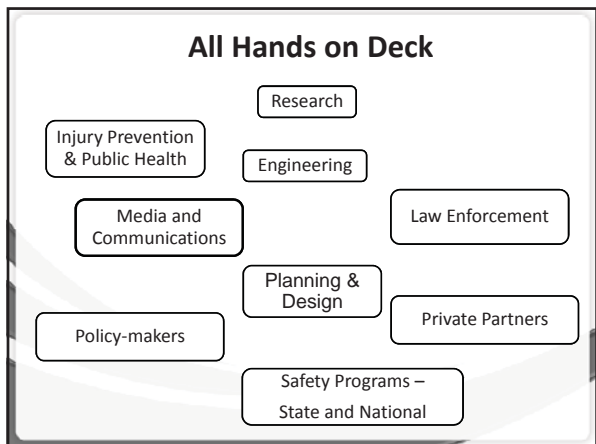
What messages will be remembered?

This is why "we" are:

- Enforcing limits
- Changing road designs
- Lowering limits
- Adding Automated Speed Enforcement

Can we do it here?

- Must decide value of future lives - which generation will pay for major changes in system
- Value of a life versus mobility (perceived/real)
 - Current costs of crashes 2.4 times > cost of congestion
- Need partners
 - High level champion is a plus
- Some strategies (ASE) can pay for themselves (\$)
- Practitioners can do a lot using evidence base
- CMFs available to help make good decisions



- #### Take Away Messages
- Frame the message about public safety/injury reduction
 - Present the message in a way that resonates with the public (not how safety stakeholders think)
 - Coordinate with partners/ use their expertise
 - Address current system using systematic processes
 - Be proactive/plan for a future system that manages speed, reduces harm

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Questions

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Other Promising Strategies

- Variable speed limits
- Rewards systems (e.g. lower insurance costs)
- Intelligent speed adaptation – vehicle limits speed
- Completing the Streets
