On A Collision Course?

Smart Growth and Traffic Safety


SOLSTICE

Speakers

Jim Charlier, Charlier Associates (Boulder)

Norm Garrick, University of Connecticut

Eric Dumbaugh, Texas A & M University

Speakers

Jim Charlier, Charlier Associates (Boulder)

INTRODUCTION:

1. Basic facts about traffic safety
2. General policy implications

1

Traffic Safety in the U.S.

Classification of Accidents

- Fatal Crashes ……30,707
- Injury Crashes ……1,517.000
- Property Damage Only Crashes ……..3,957,000

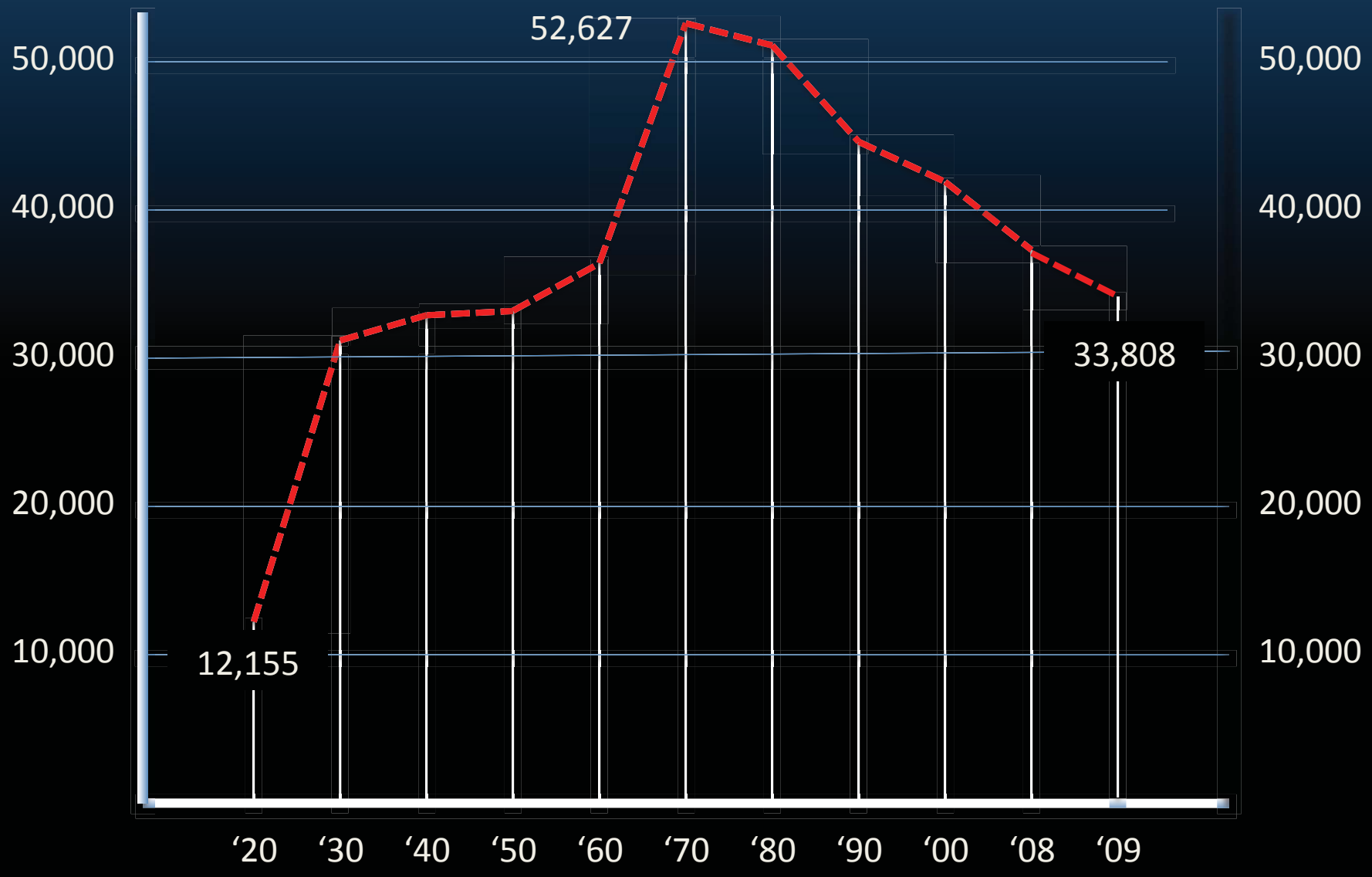
TOTAL ……5,505,000

Your Probability…

… of dying in a traffic accident: 0.001%

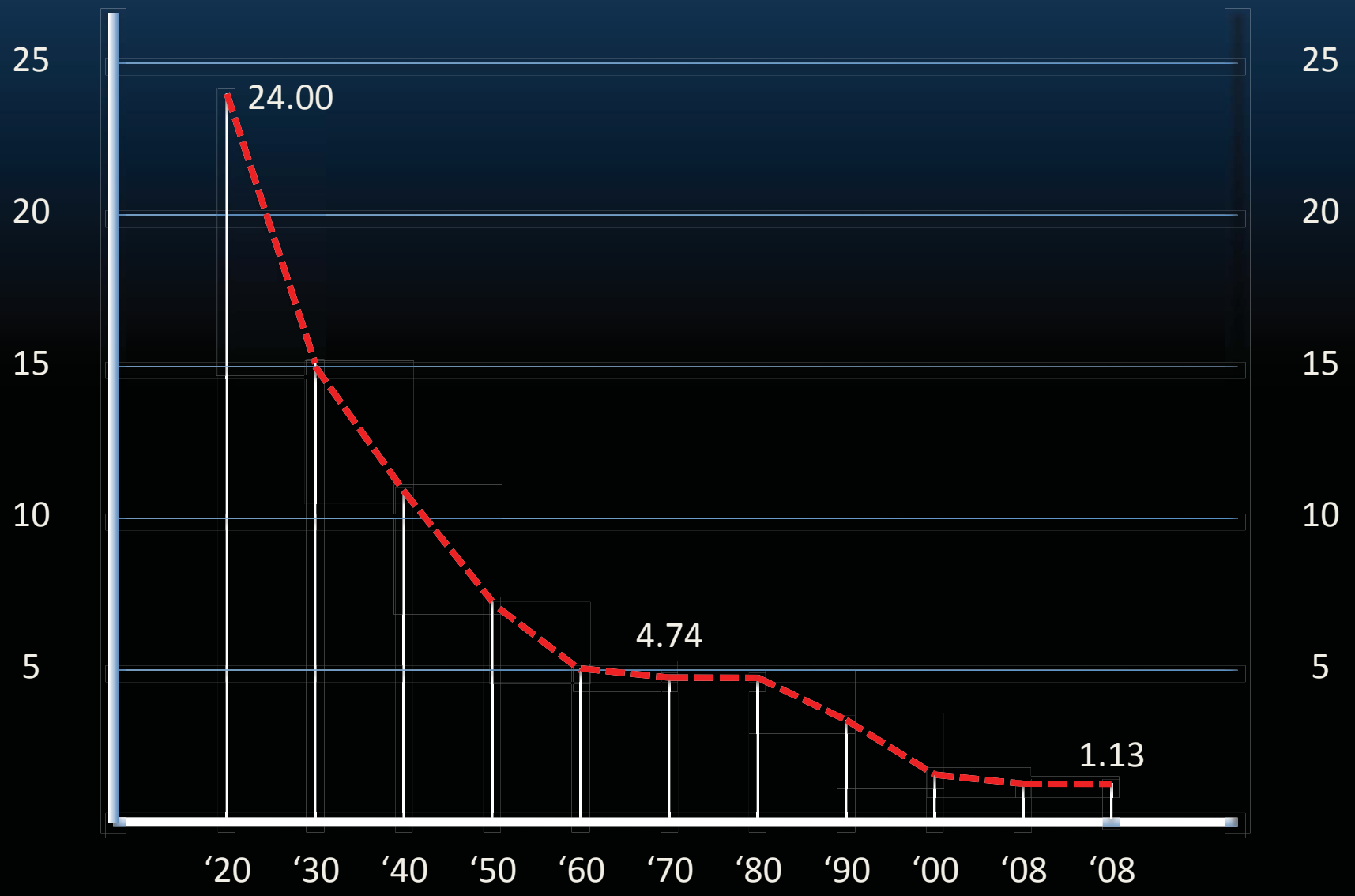
… of being injured in a traffic accident: 0.722%

Annual US Traffic Fatalities



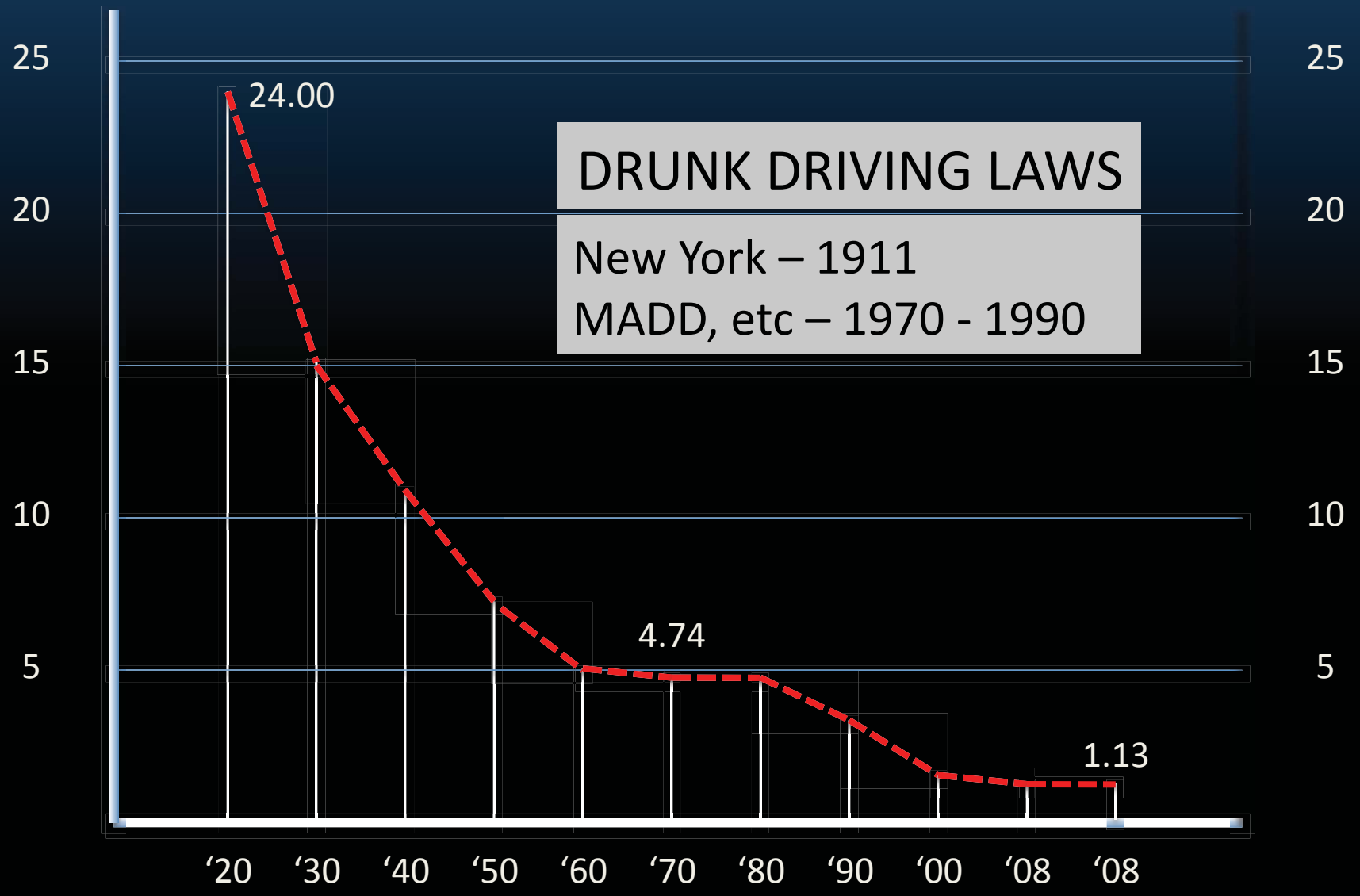
Source: NHTSA, FHWA

US Traffic Fatality Rate/HMVM



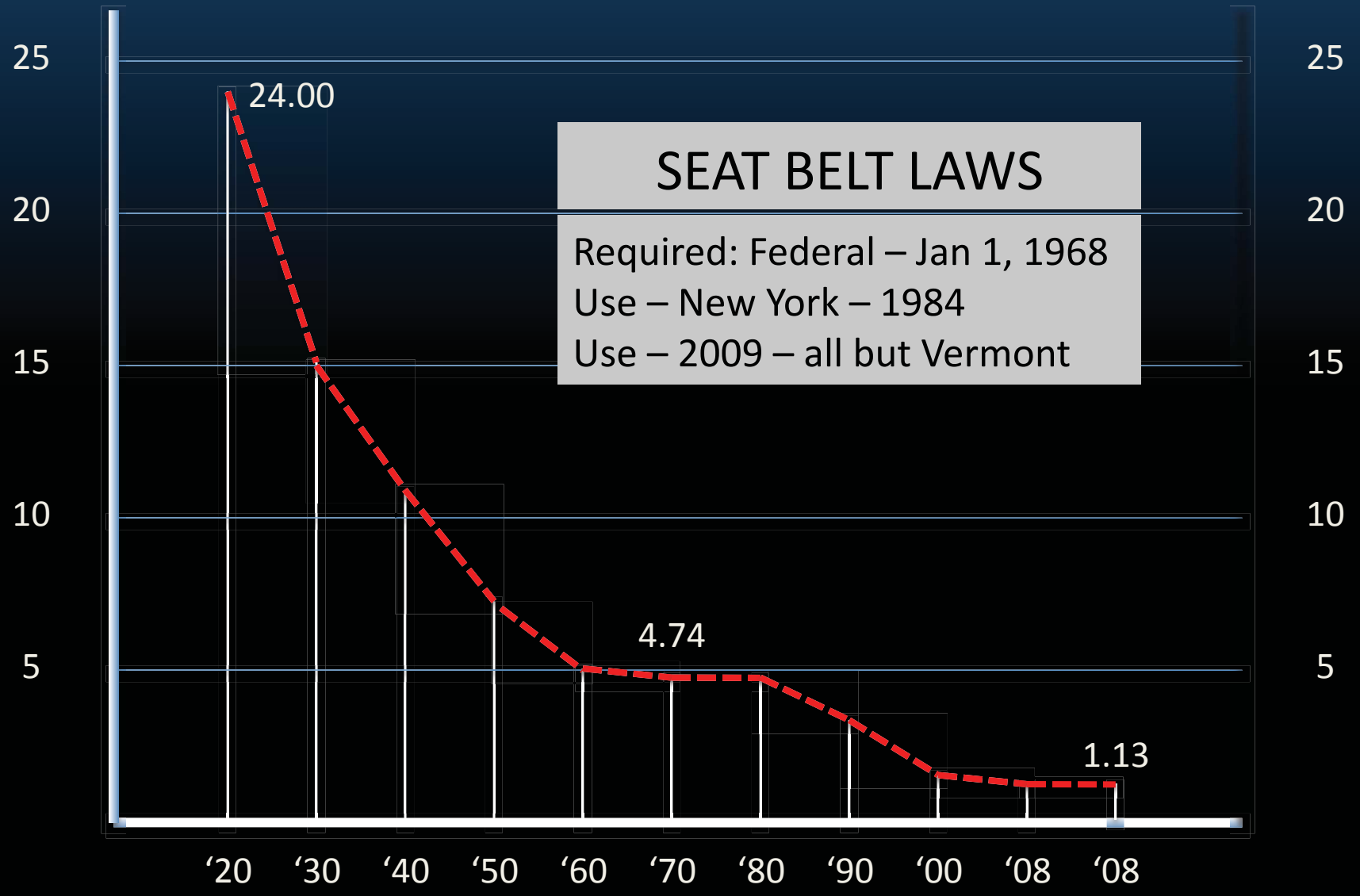
Source: NHTSA, FHWA

US Traffic Fatality Rate/HMVM



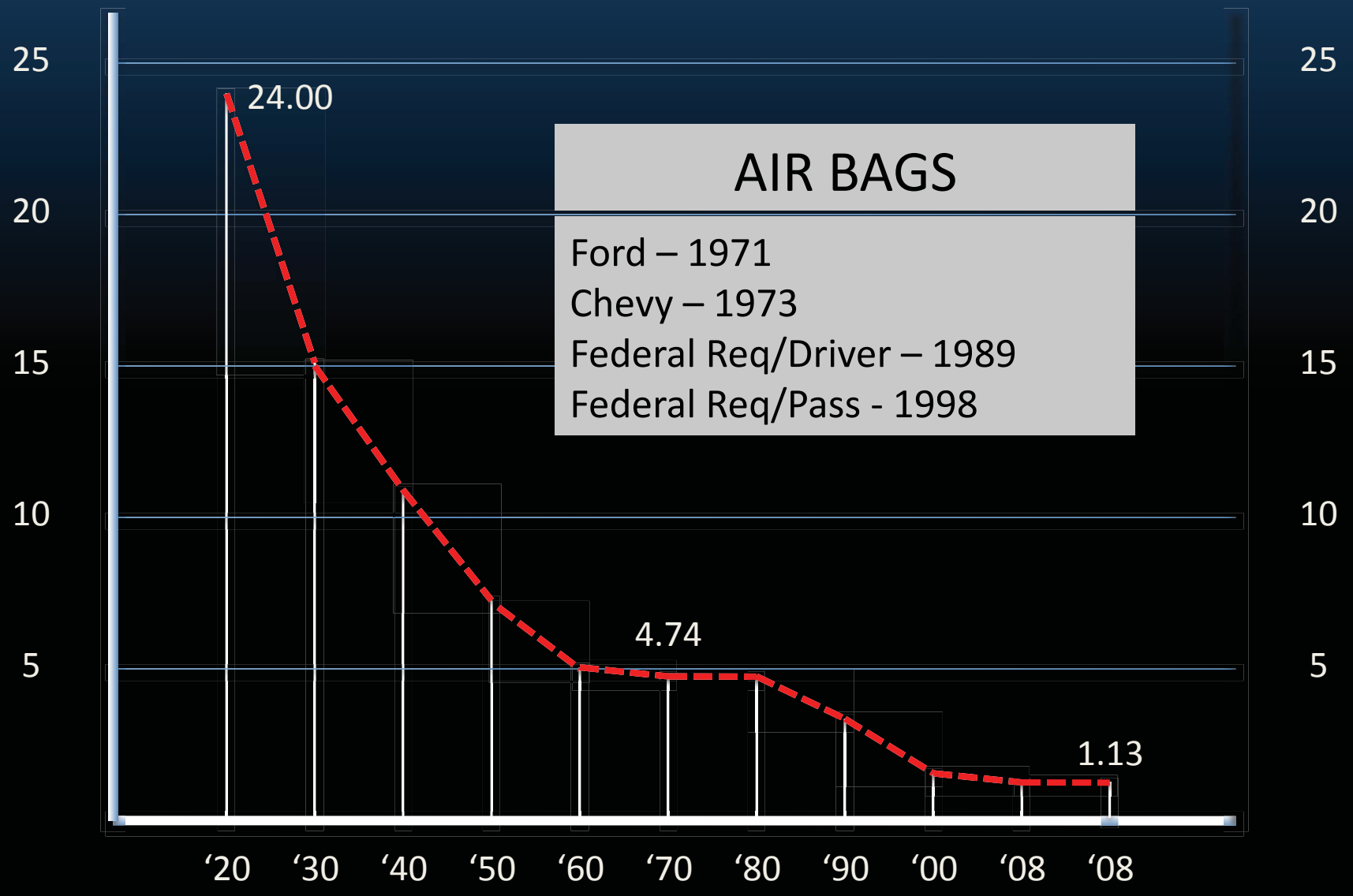
Source: NHTSA, FHWA

US Traffic Fatality Rate/HMVM



Source: NHTSA, FHWA

US Traffic Fatality Rate/HMVM



Source: NHTSA, FHWA

"Changes in highway infrastructure between 1984 and 1997 have not reduced traffic fatalities and injuries, and have even had the effect of increasing total fatalities and injuries.

Other factors, primarily changes in the demographic age mix of the population, increased seat belt usage, and improvements in medical technology are responsible for the downward trend in fatal accidents."

Noland, R. B. 2001, Transportation Research Board

Traffic Safety Factors: 1960 - 2010

SAFER:

- Seatbelts
- Airbags
- Emergency Services
- Drunk Driving Laws
- Child Restraints

The net improvement in safety is due to factors other than roadway design

SAFER:

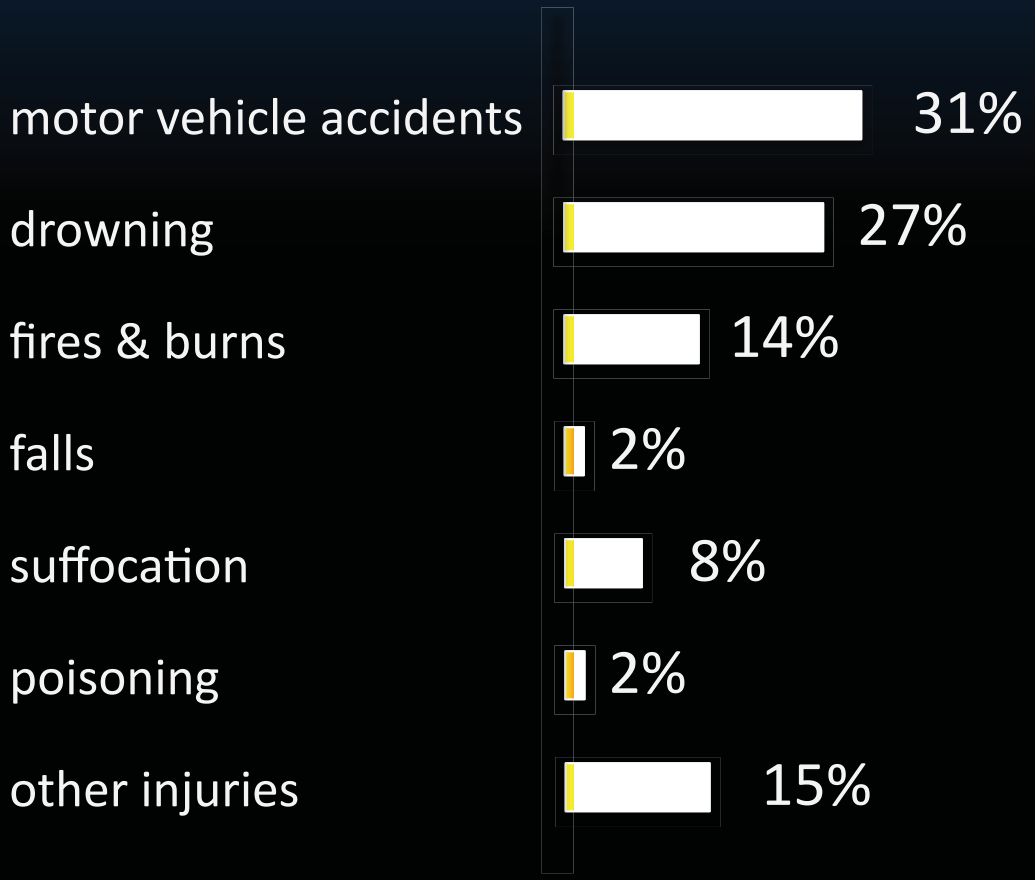
- Paved Shoulders
- Better Guardrails
- Better Signs
- Better Signals
- Better Lighting

LESS SAFE

- Wider lanes
- More lanes
- Right turns on red
- Two-way left-turn lanes
- Higher speeds

Traffic accidents are the leading cause of unintentional injury death in children

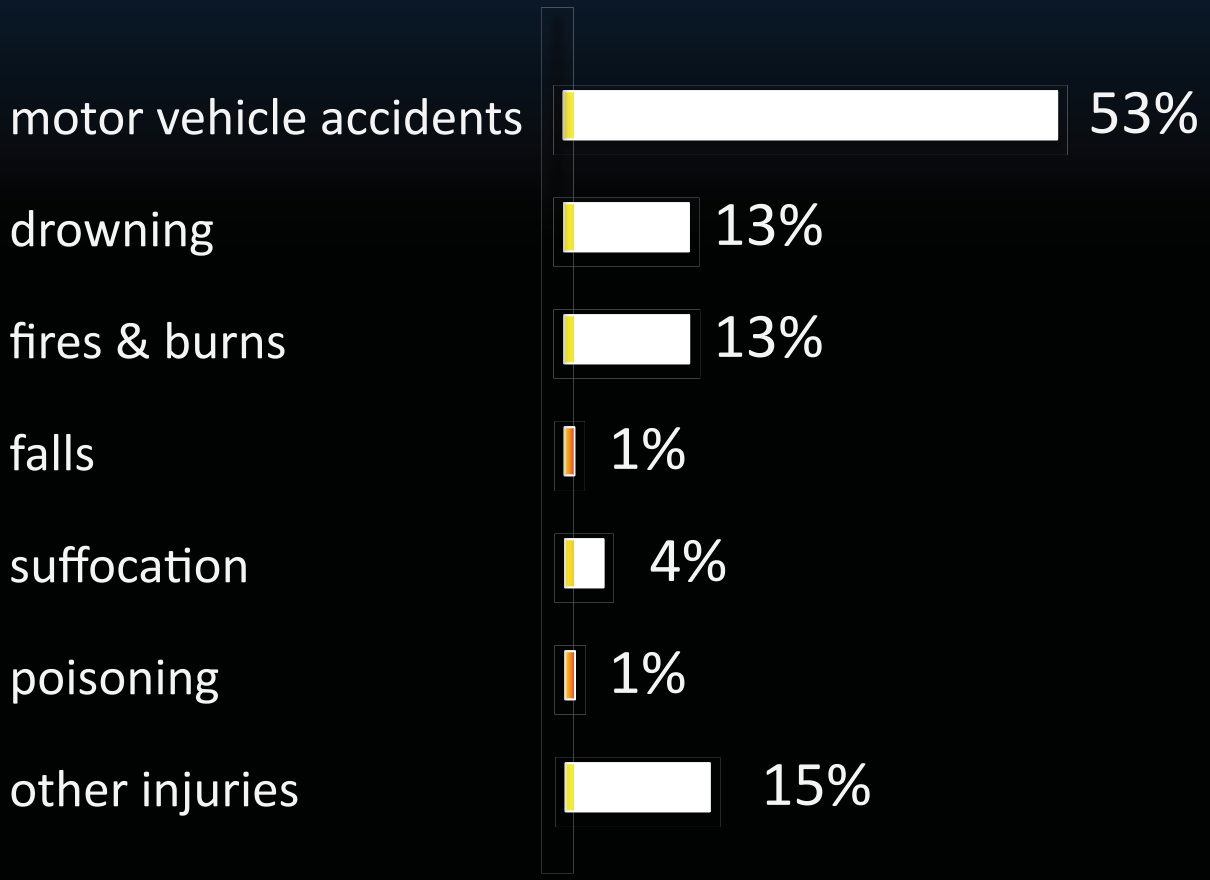
age 1 - 4



Source: CDC National Vital Statistics System, 2000 - 2005

Traffic accidents are the leading cause of unintentional injury death in children

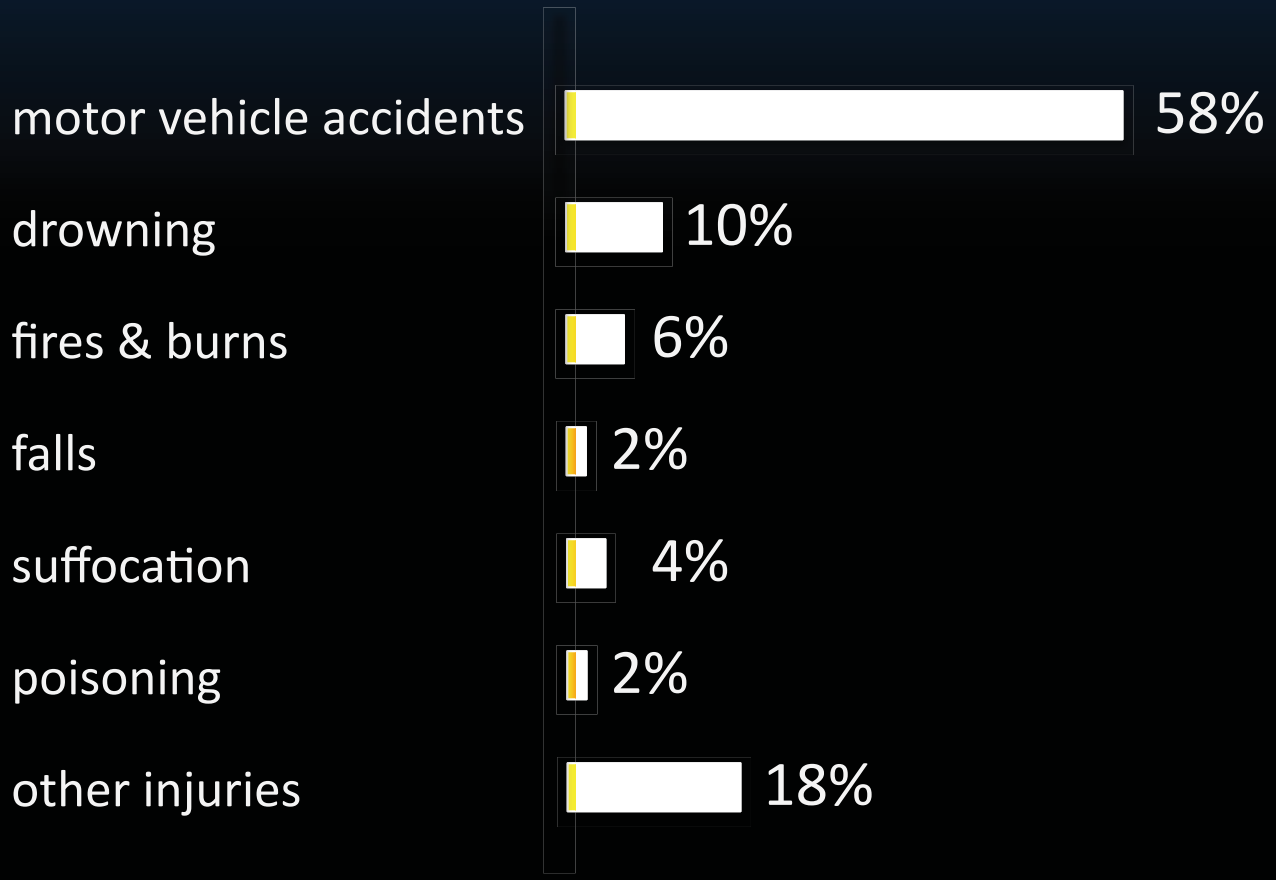
age 5 – 9



Source: CDC National Vital Statistics System, 2000 - 2005

Traffic accidents are the leading cause of unintentional injury death in children

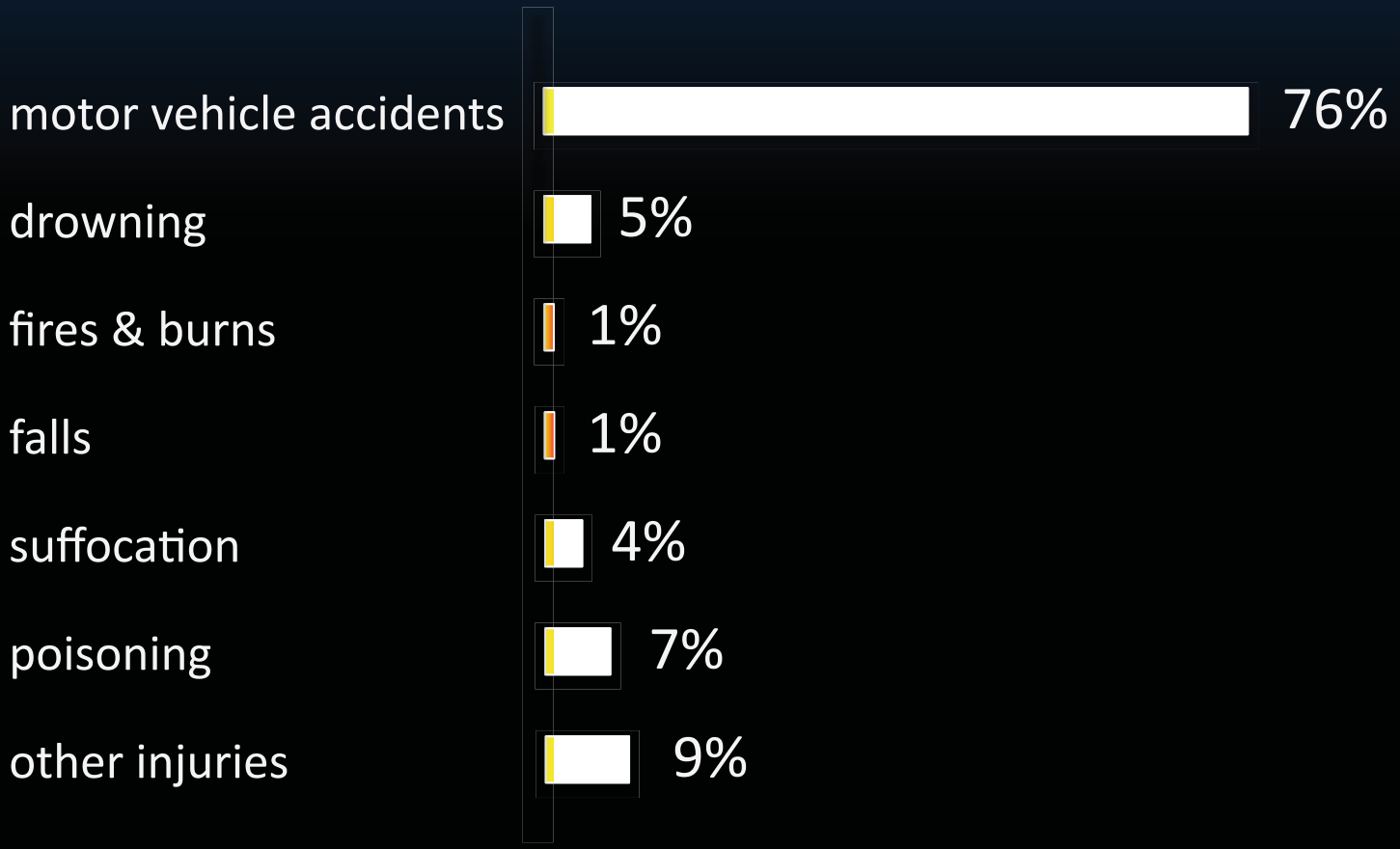
age 10 – 14



Source: CDC National Vital Statistics System, 2000 - 2005

Traffic accidents are the leading cause of unintentional injury death in children

age 15 – 19



Source: CDC National Vital Statistics System, 2000 - 2005

Five things that worry parents the most:

- Kidnapping
- School snipers
- Terrorists
- Dangerous strangers
- Drugs

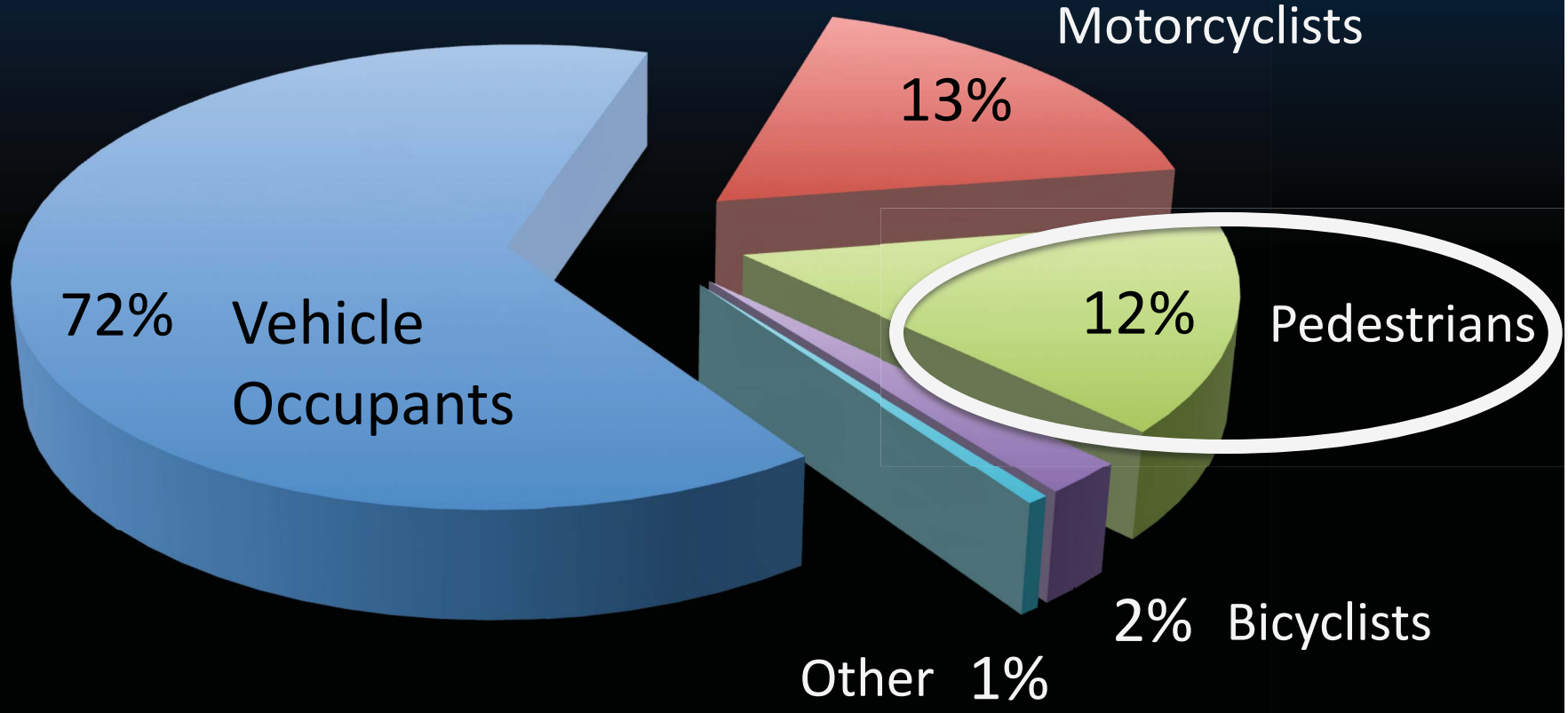
Five things most likely to cause injury or death (children < 18):

- Car accidents
- Homicide*
- Child abuse
- Suicide
- Drowning

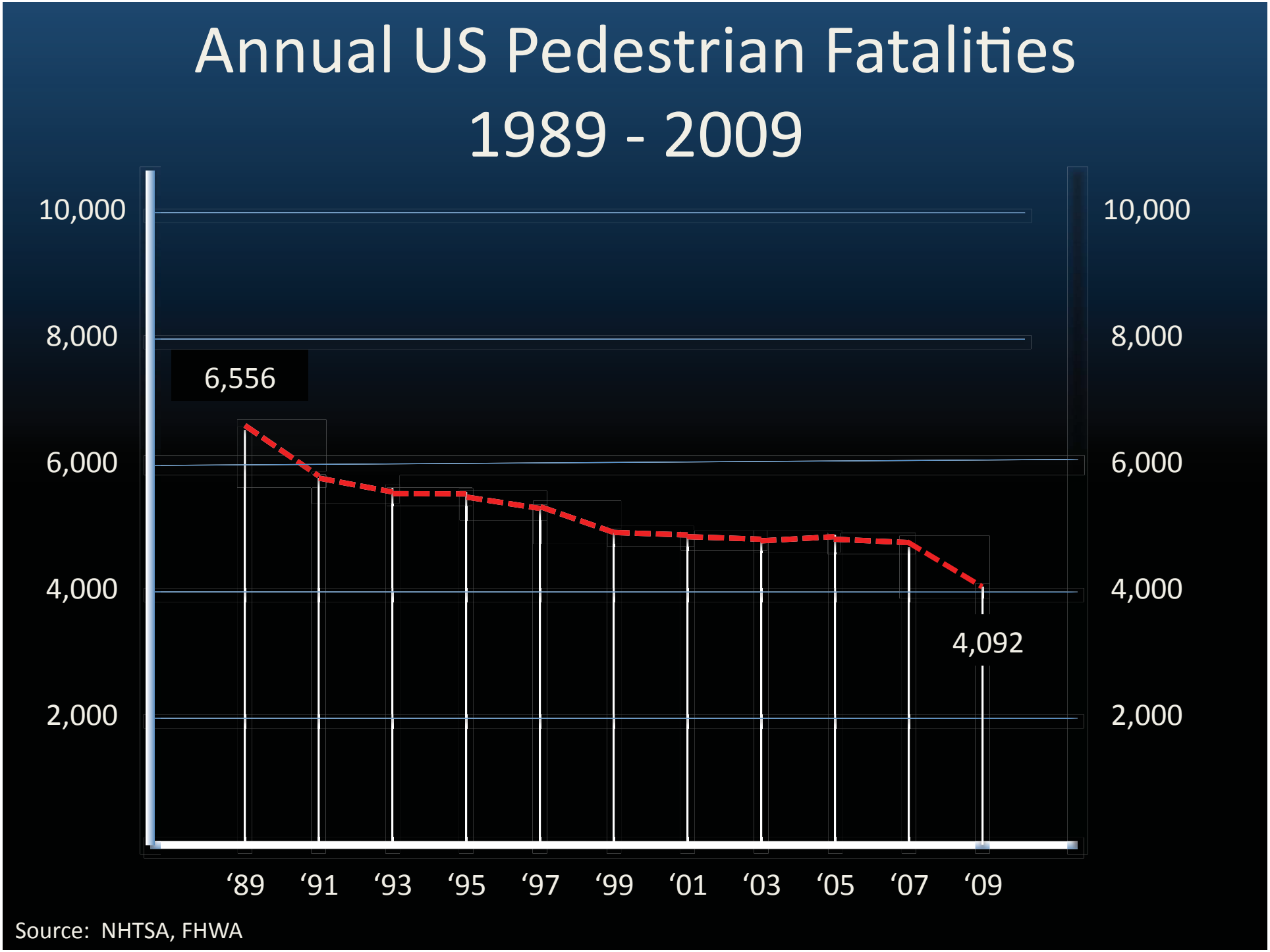
* someone they know

The most dangerous thing your child does, statistically, is get into a car with you.

2009 Fatalities

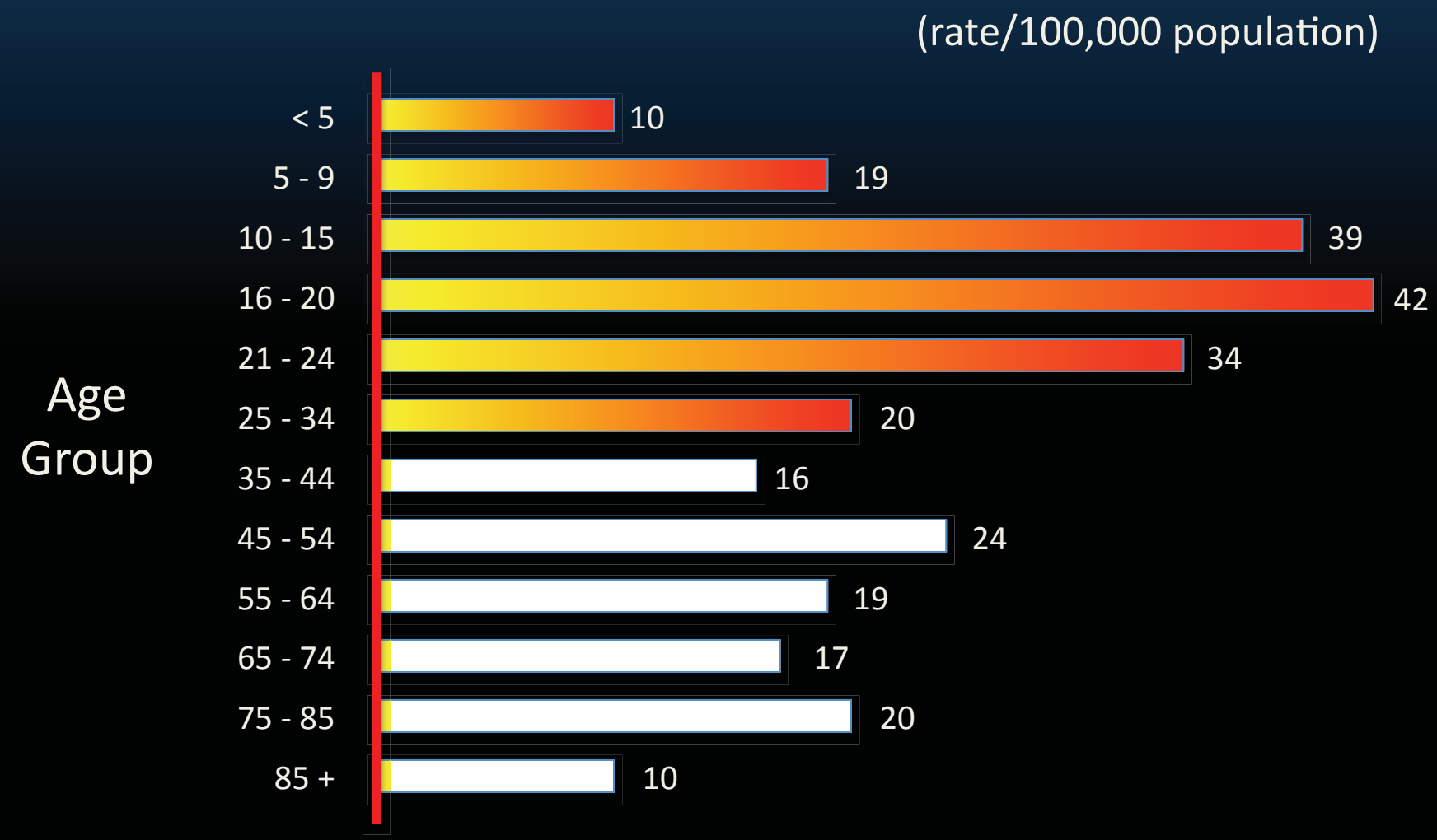


Annual US Pedestrian Fatalities 1989 - 2009



Source: NHTSA, FHWA

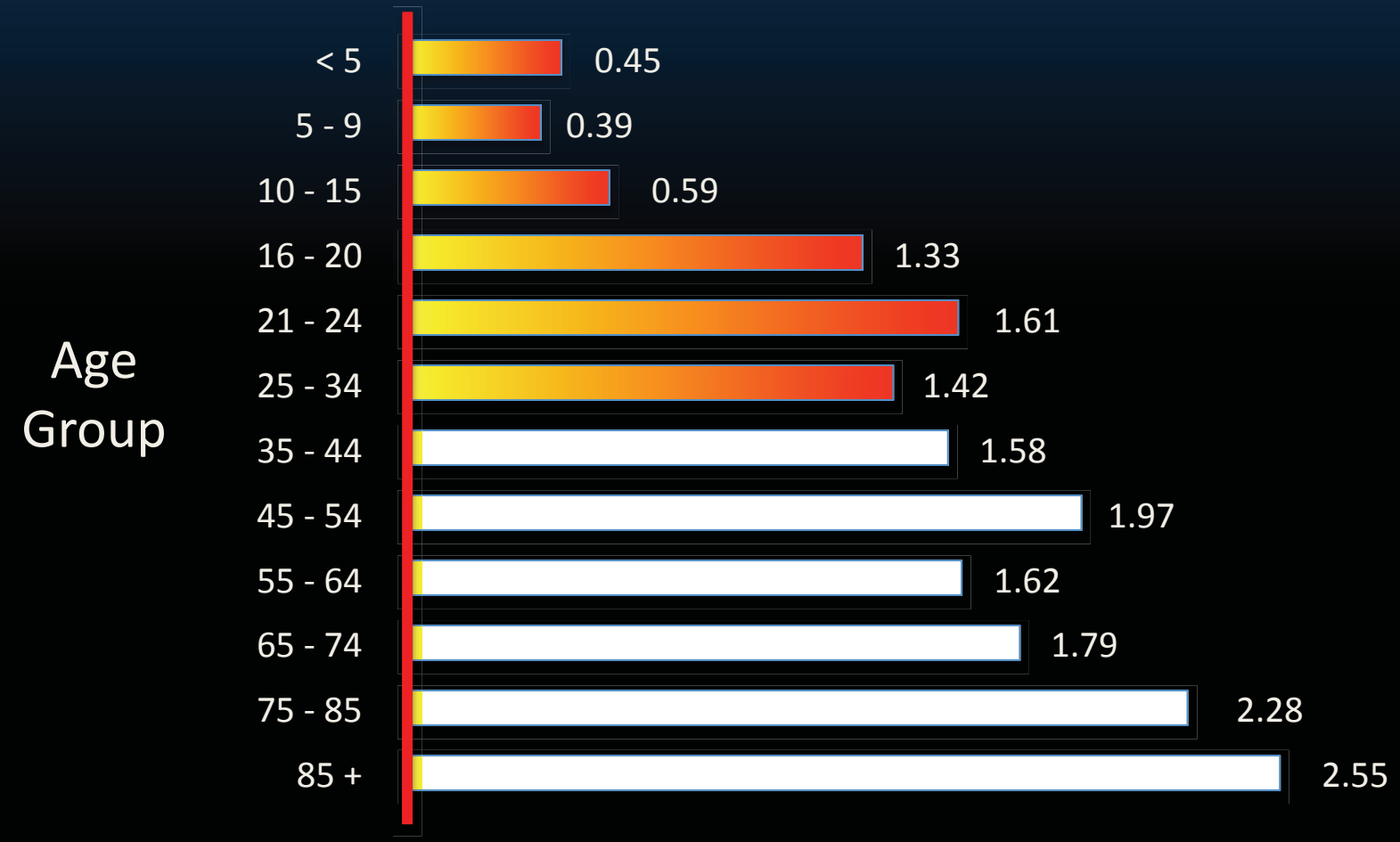
US Injury Rate: Pedestrians Hit by Motor Vehicles



Source: NHTSA, 2008

US Fatality Rate: Pedestrians Hit by Motor Vehicles

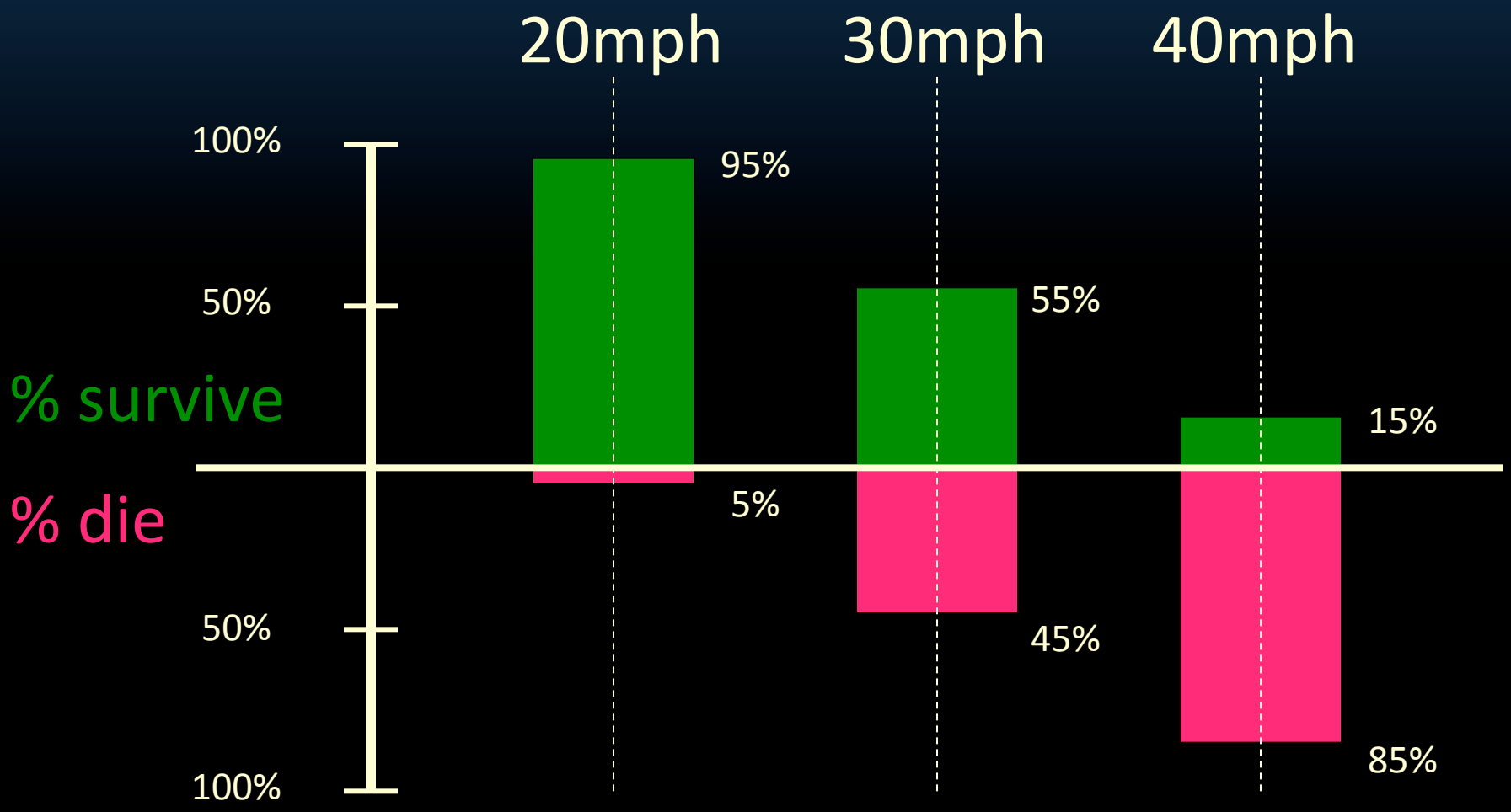
(rate/100,000 population)



Source: NHTSA, 2008


ALOHA
Honolulu

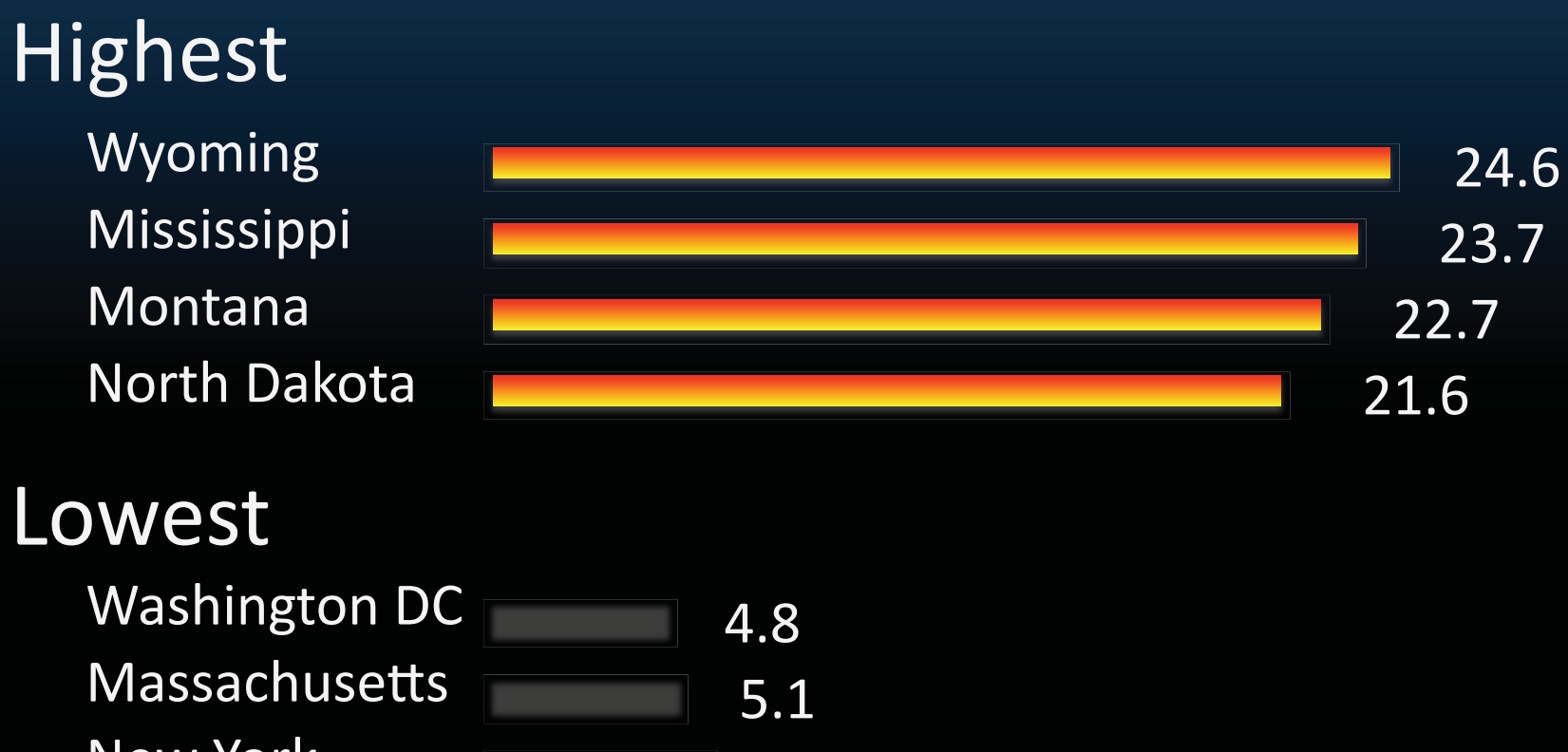
pedestrian survival rates & vehicle speed




75% of Pedestrian
Fatalities Occur Away
From Intersections

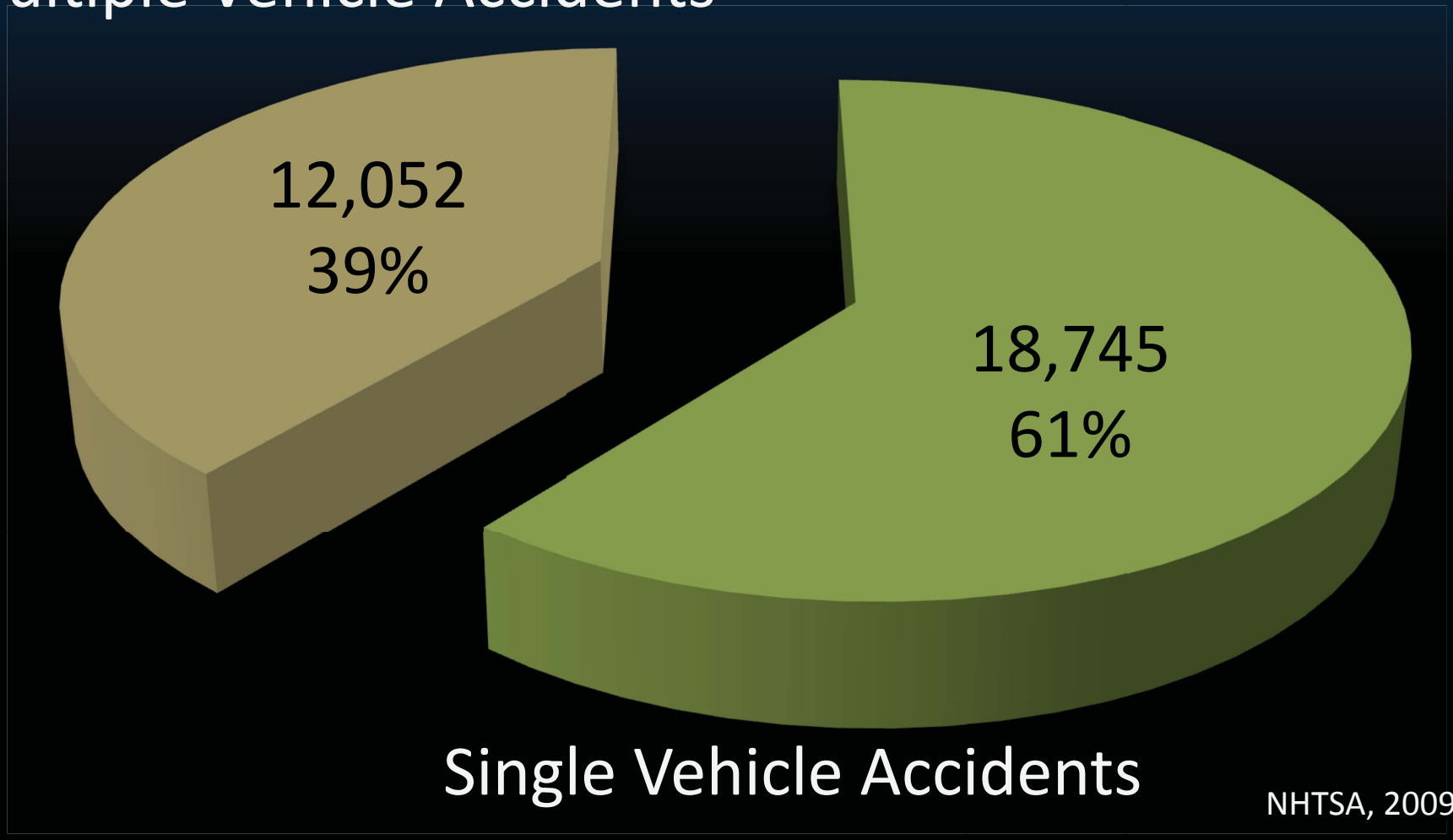
Rural Places Have High Fatality Rates

Fatality Rate per 100,000 Population



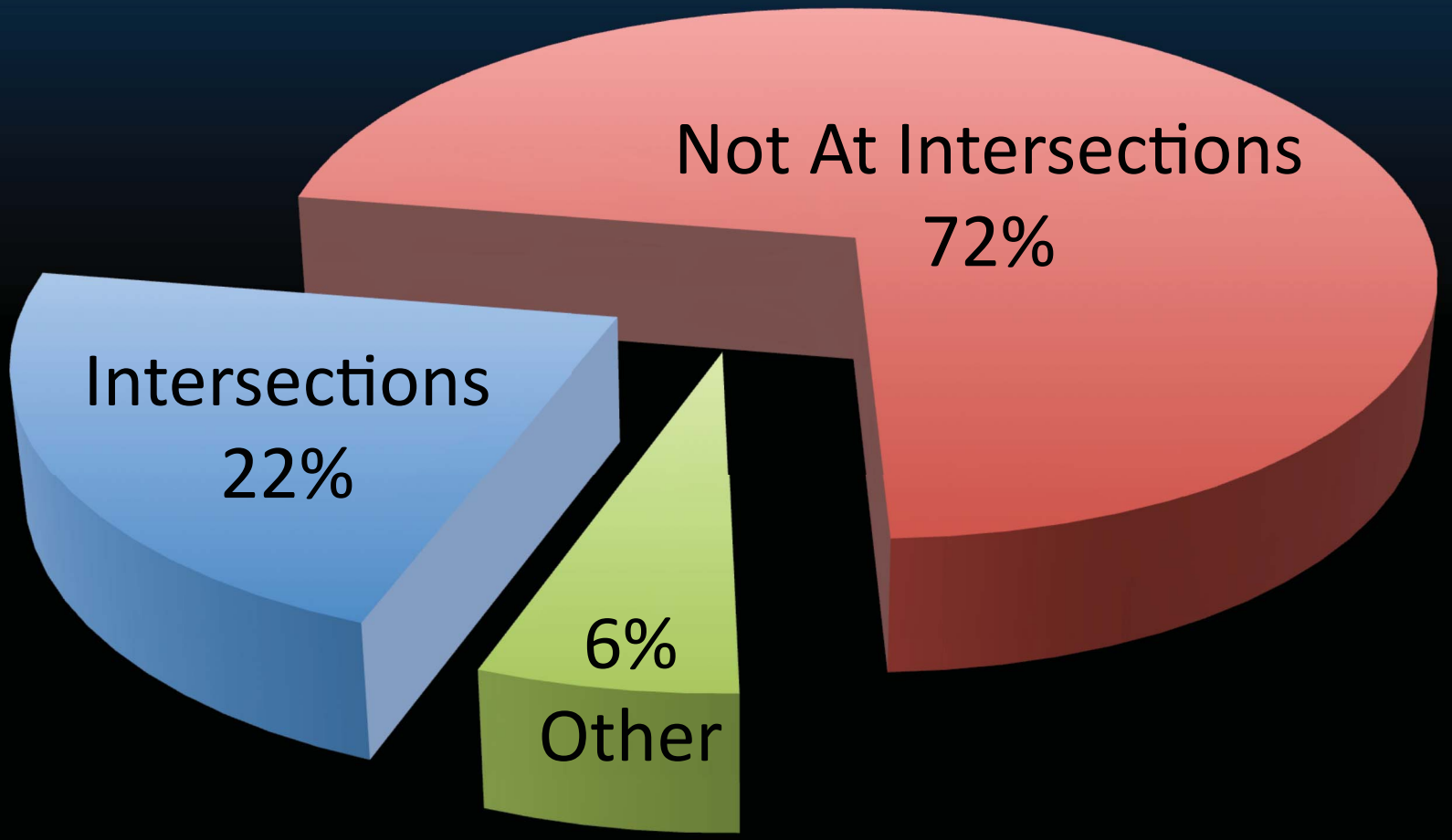
NHTSA, 2009

Most Fatalities Occur In Single Vehicle Crashes

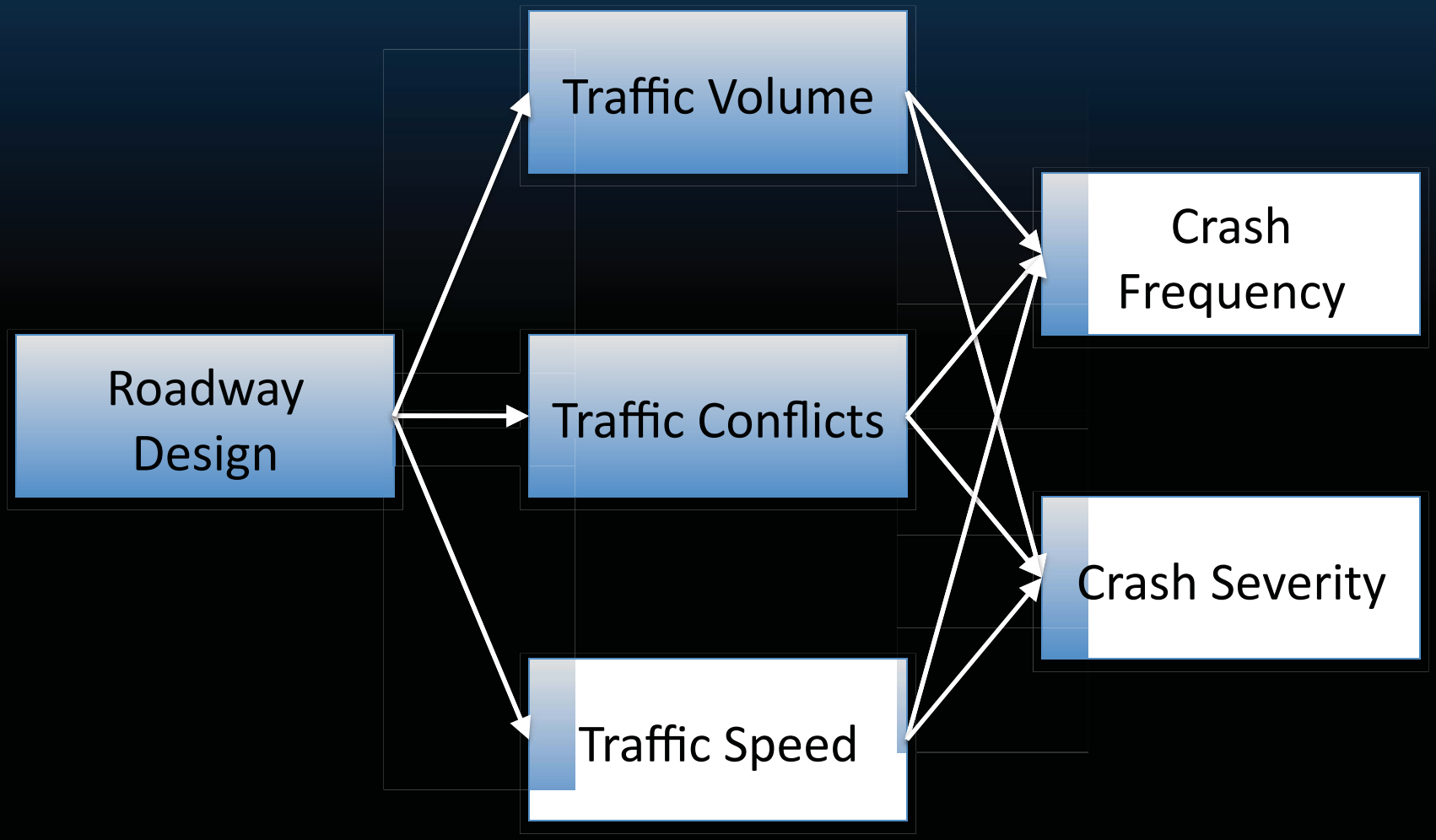


NHTSA, 2009

Less Than ¼ of Fatal Crashes Occur At Intersections



Pre-1950 Traffic Safety Model



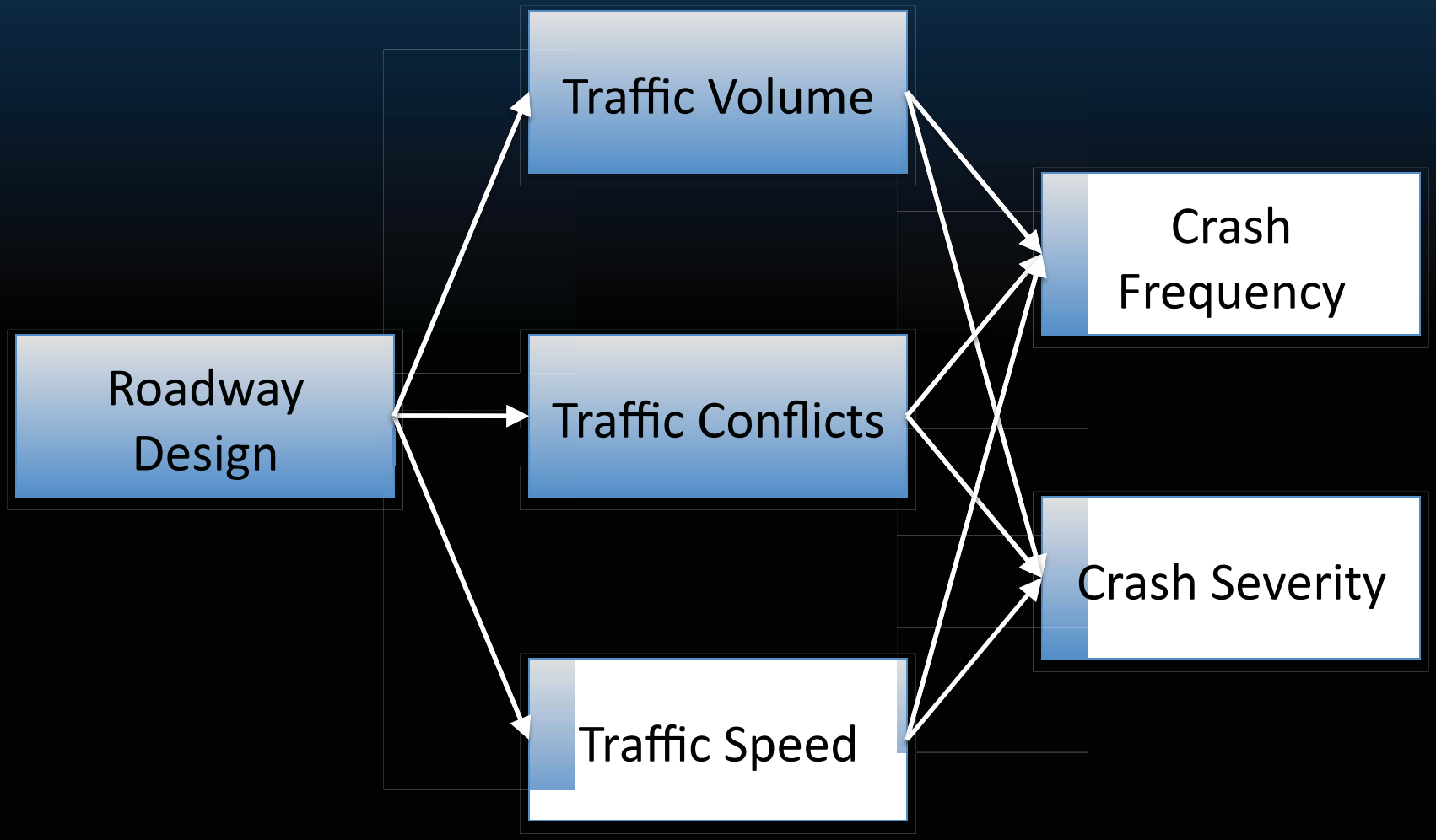
Based on and Revised from Ewing and Dumbaugh, Journal of Planning Literature, Vol. 23, No. 4

The “Foolproof Highway”

The “Foolproof Highway”

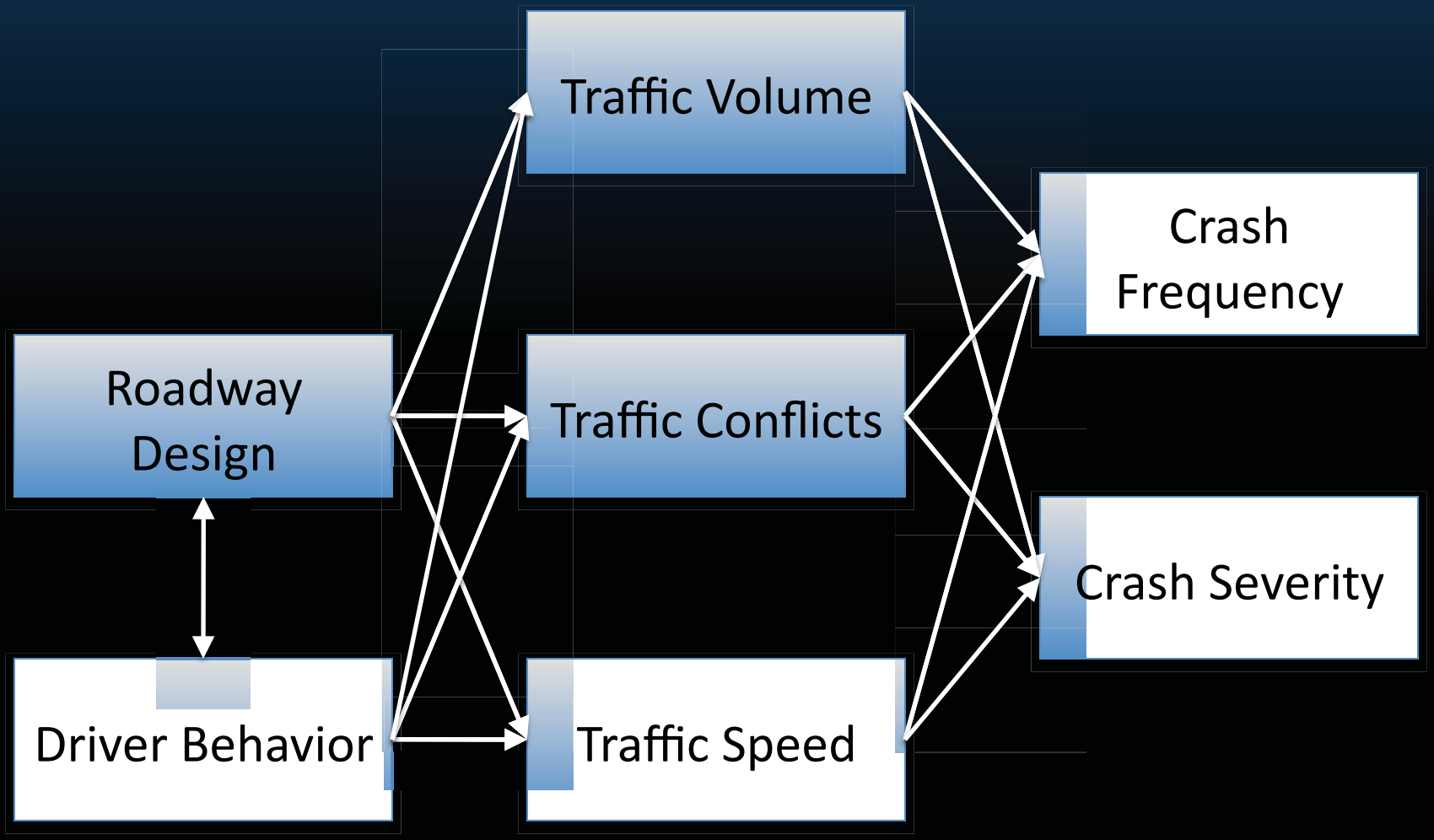

MILE
14
AHEAD

Pre-1950 Traffic Safety Model



Based on and Revised from Ewing and Dumbaugh, Journal of Planning Literature, Vol. 23, No. 4

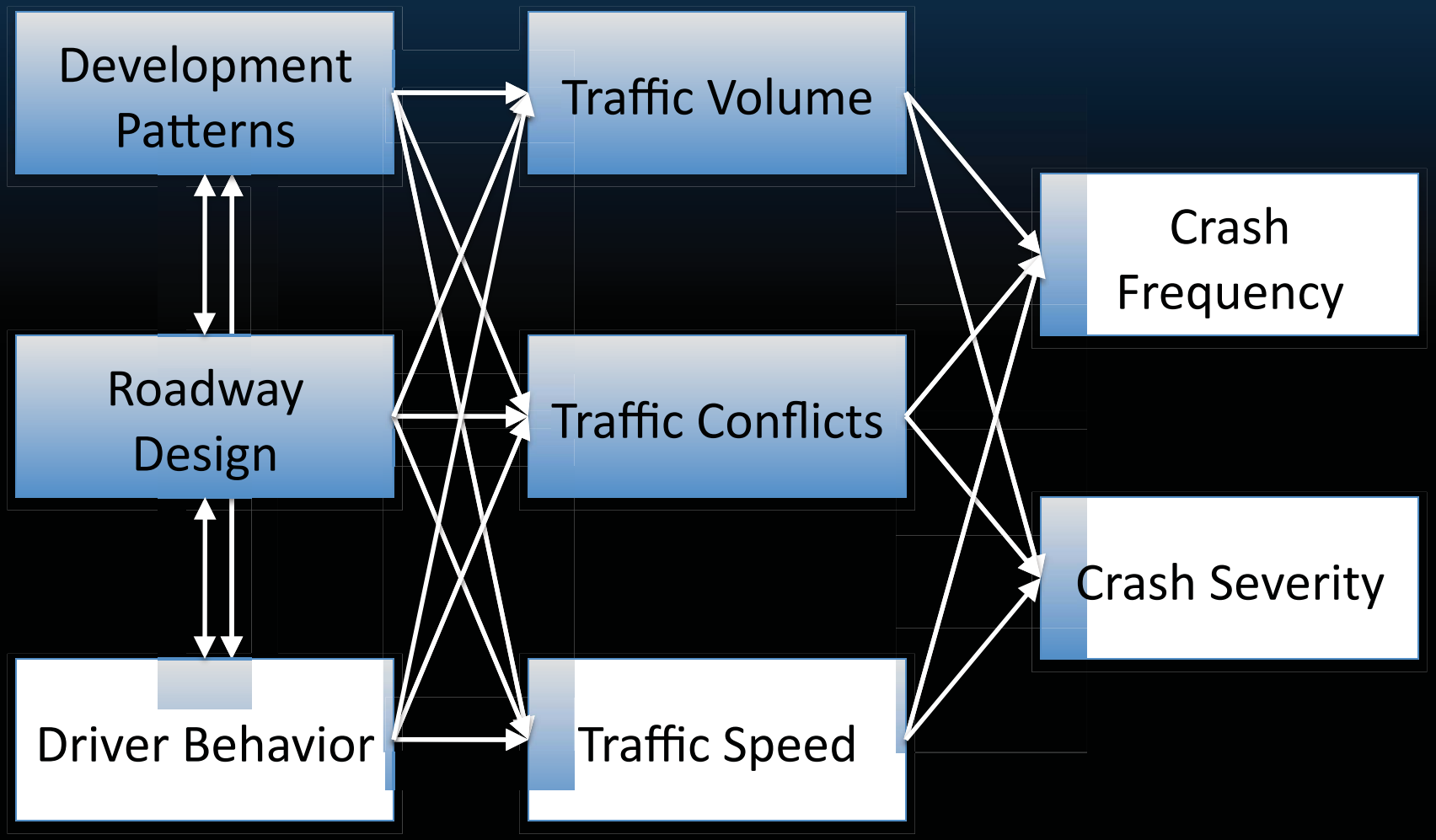
Traditional Traffic Safety Model



Based on and Revised from Ewing and Dumbaugh, Journal of Planning Literature, Vol. 23, No. 4

Wider + Straighter + Faster = Better

Context-Based Traffic Safety Model



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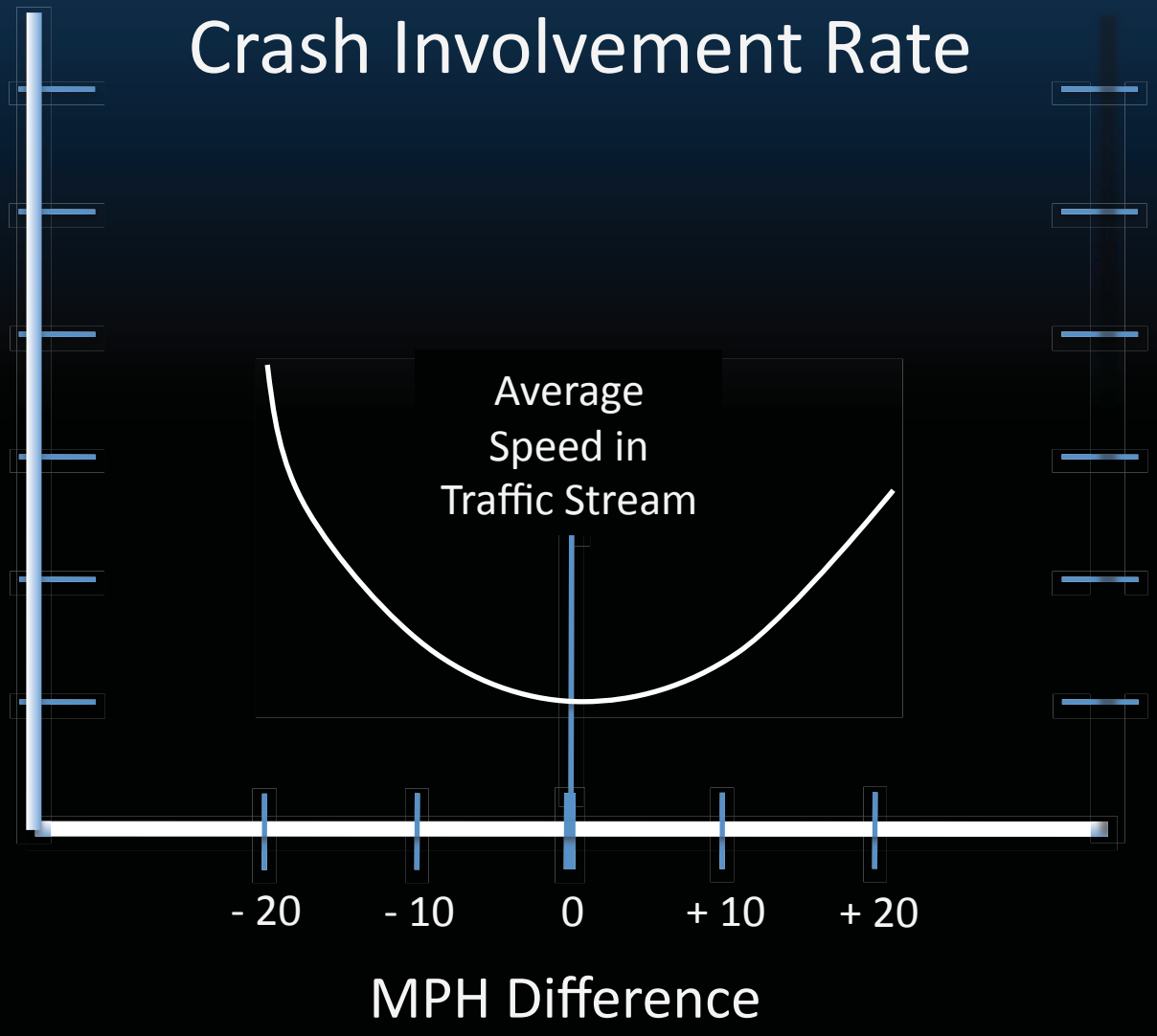
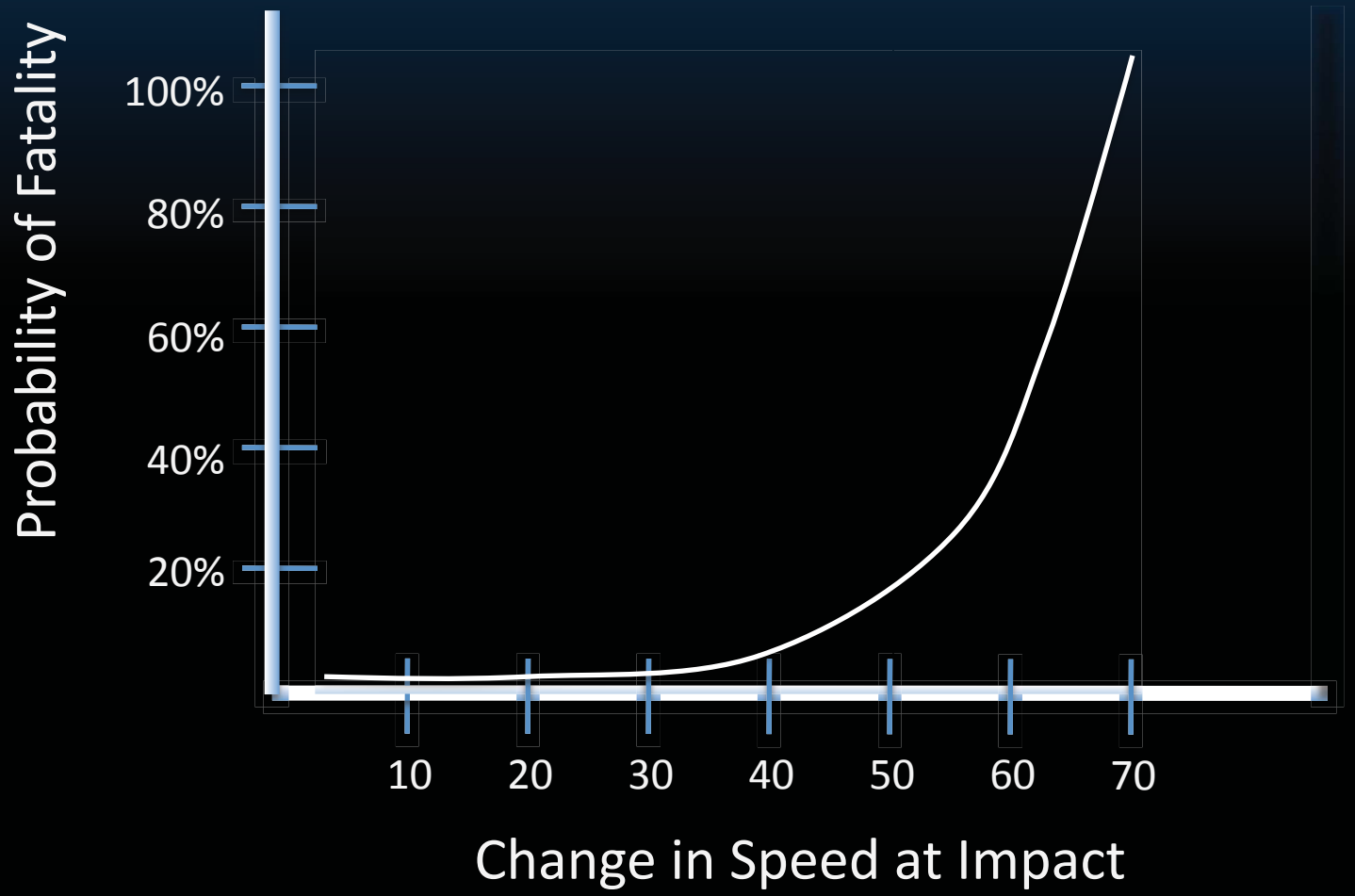
Speed

The U-Shaped Curve



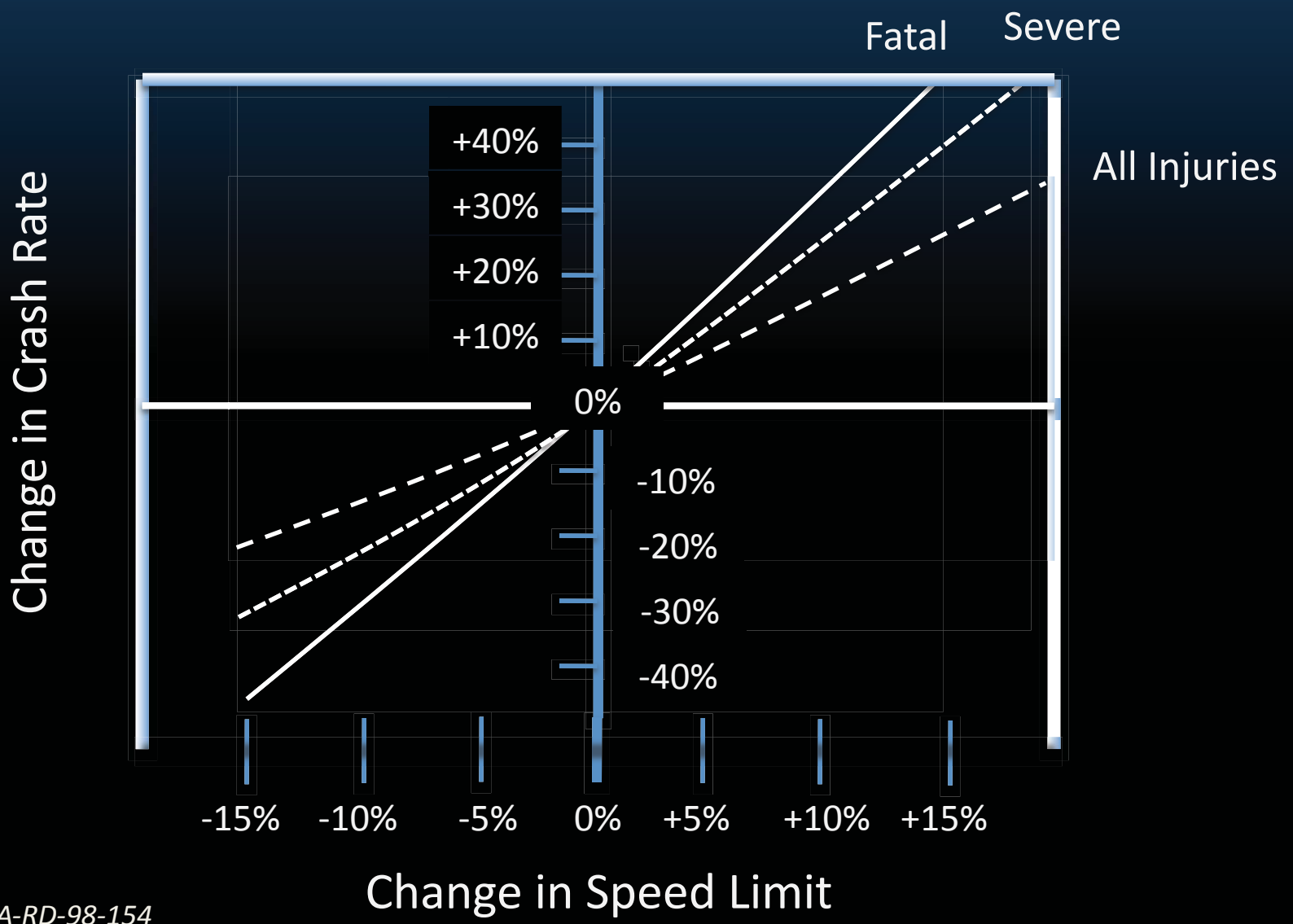
Source: FHWA-RD-98-154

Crash Severity



Source: FHWA-RD-98-154

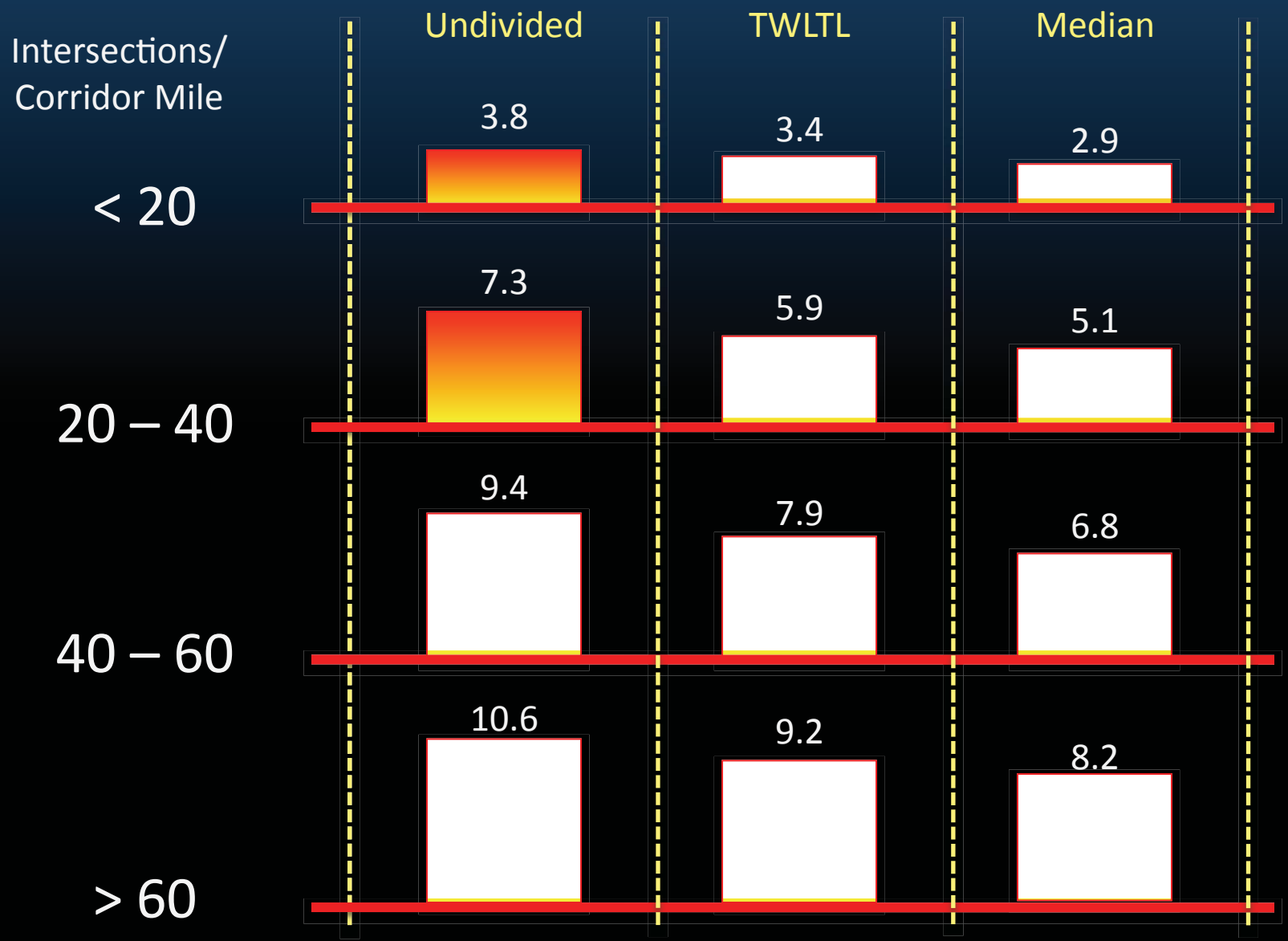
Changing Speed Limits



Source: FHWA-RD-98-154

Cross Section Tradeoffs?

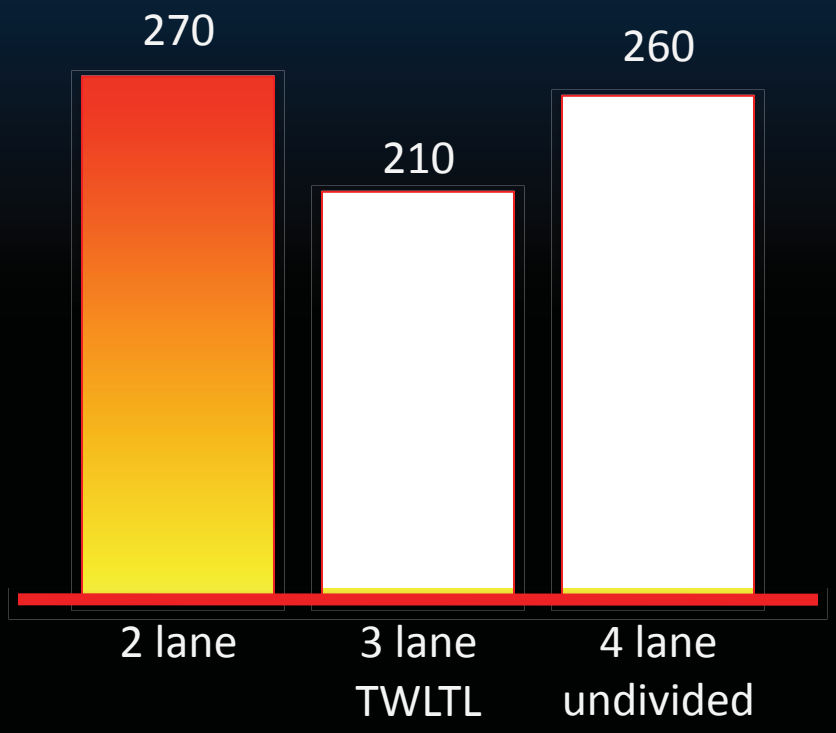
Access Management



Source: Hummer and Lewis, FHWA/NC/2000-003, NCSU

Safety Tradeoffs – Cross Section

Collision Rates – Medium Density – Controlling for ADT



Commercial Land Uses

Source: Hummer and Lewis, FHWA/NC/2000-003, NCSU

2

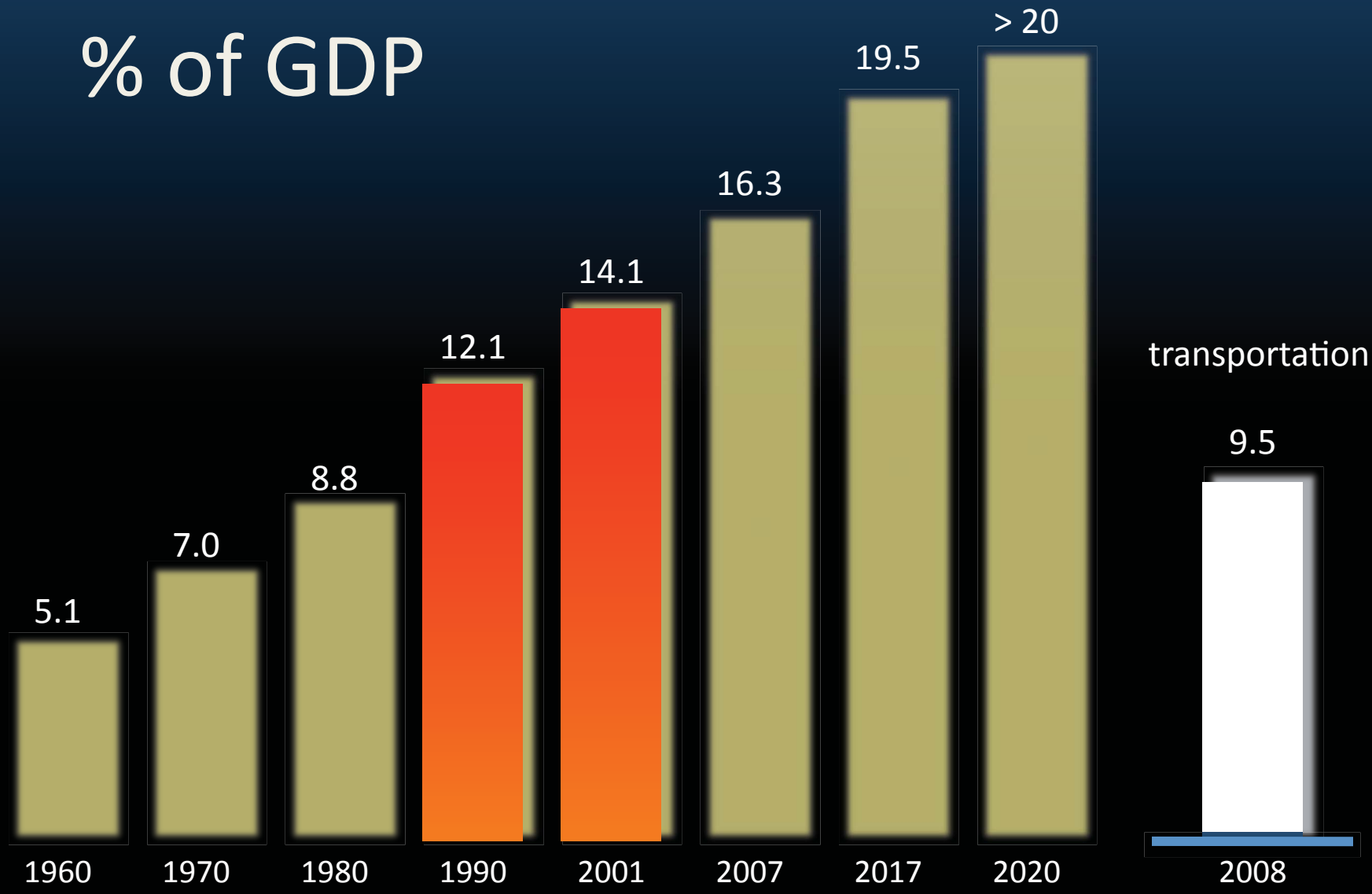
Policy Implications

“Main Street”

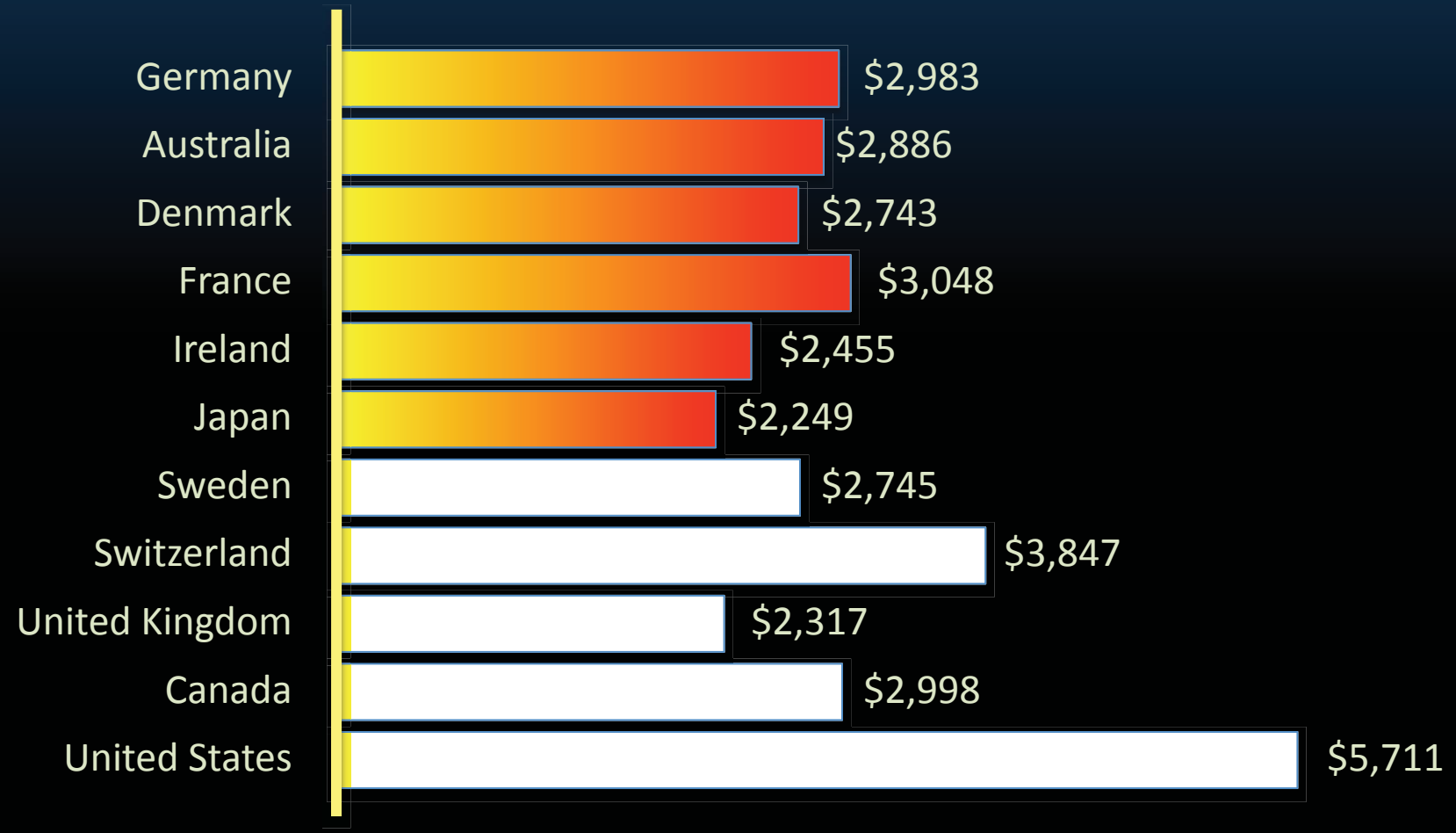
“Main Street”

Local Streets

US Health Care
% of GDP

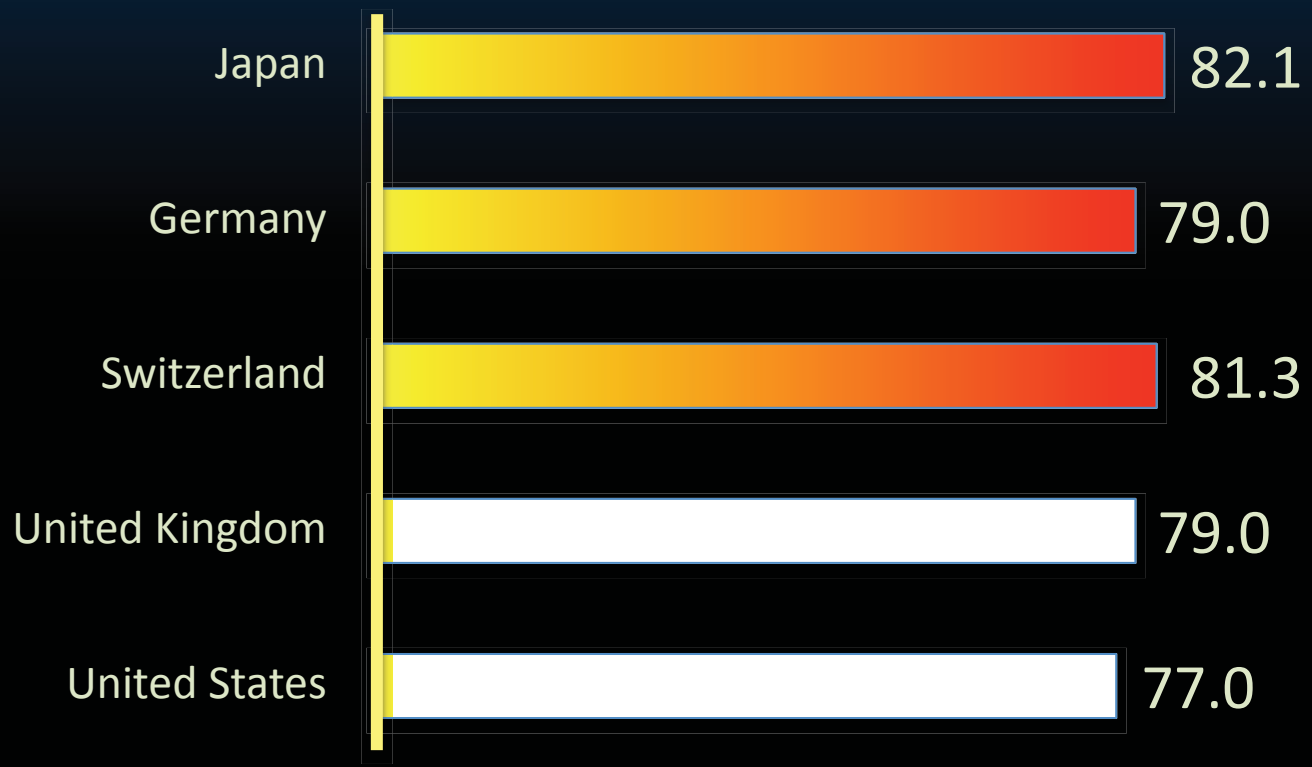


Annual Health Care Costs/Capita



Source: Kaiser Family Foundation, Visual Economics, 2010

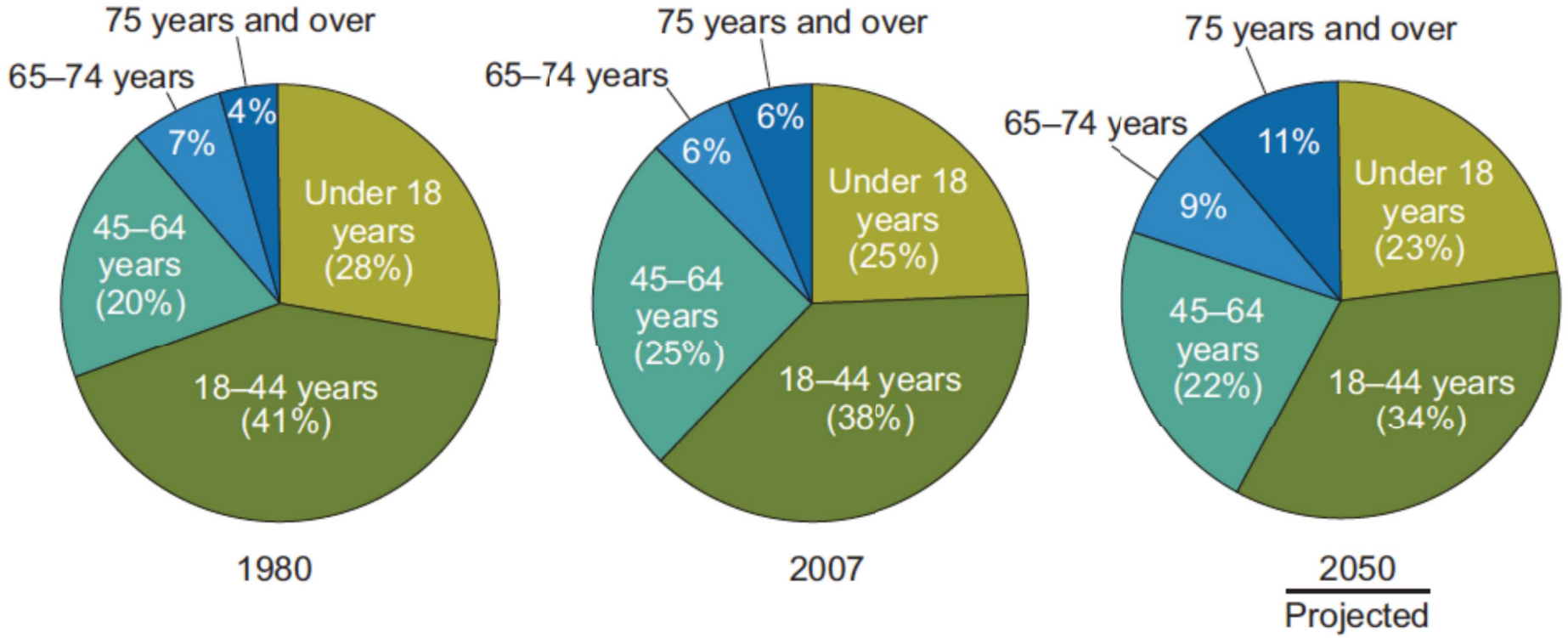
Average Life Expectancy



Source: Kaiser Family Foundation, Visual Economics, 2010

Increased Exposure to Health Care Costs

Figure 1B. Percent distribution of the total population, by age: United States, 1980, 2007, 2050

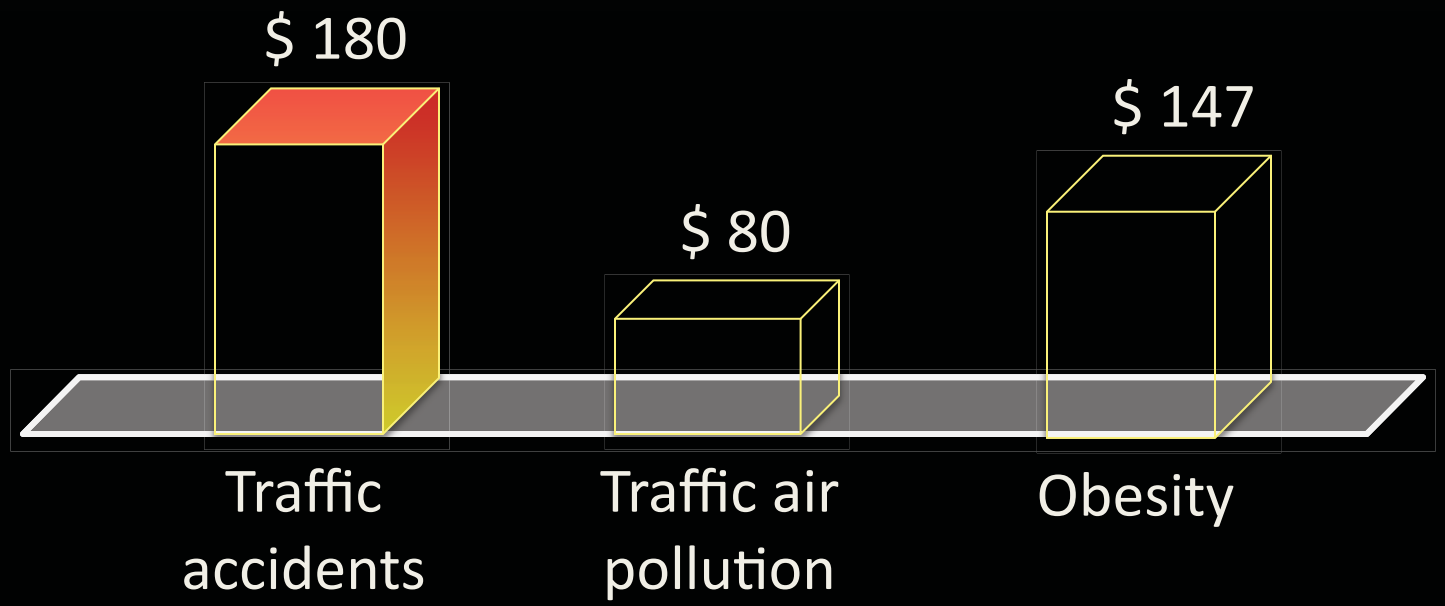


US Dept of Health and Human Services, 2009 Annual Report

Scale – United States Economy

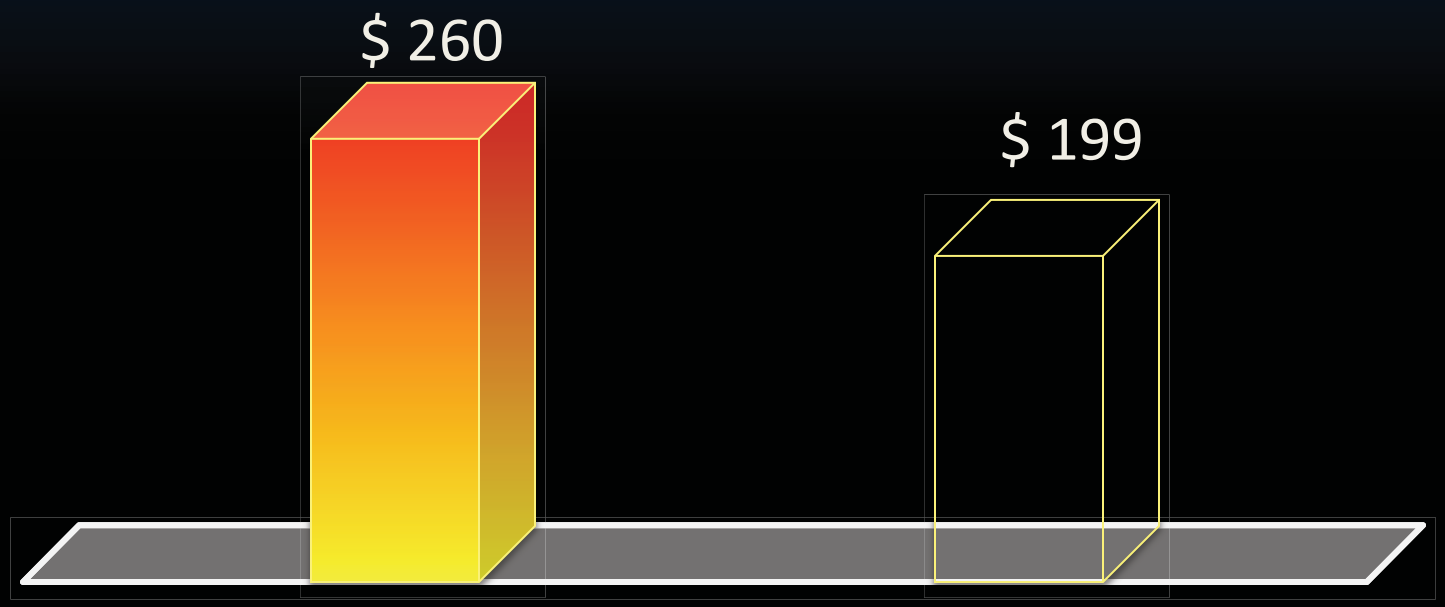
($ Billions/Year)

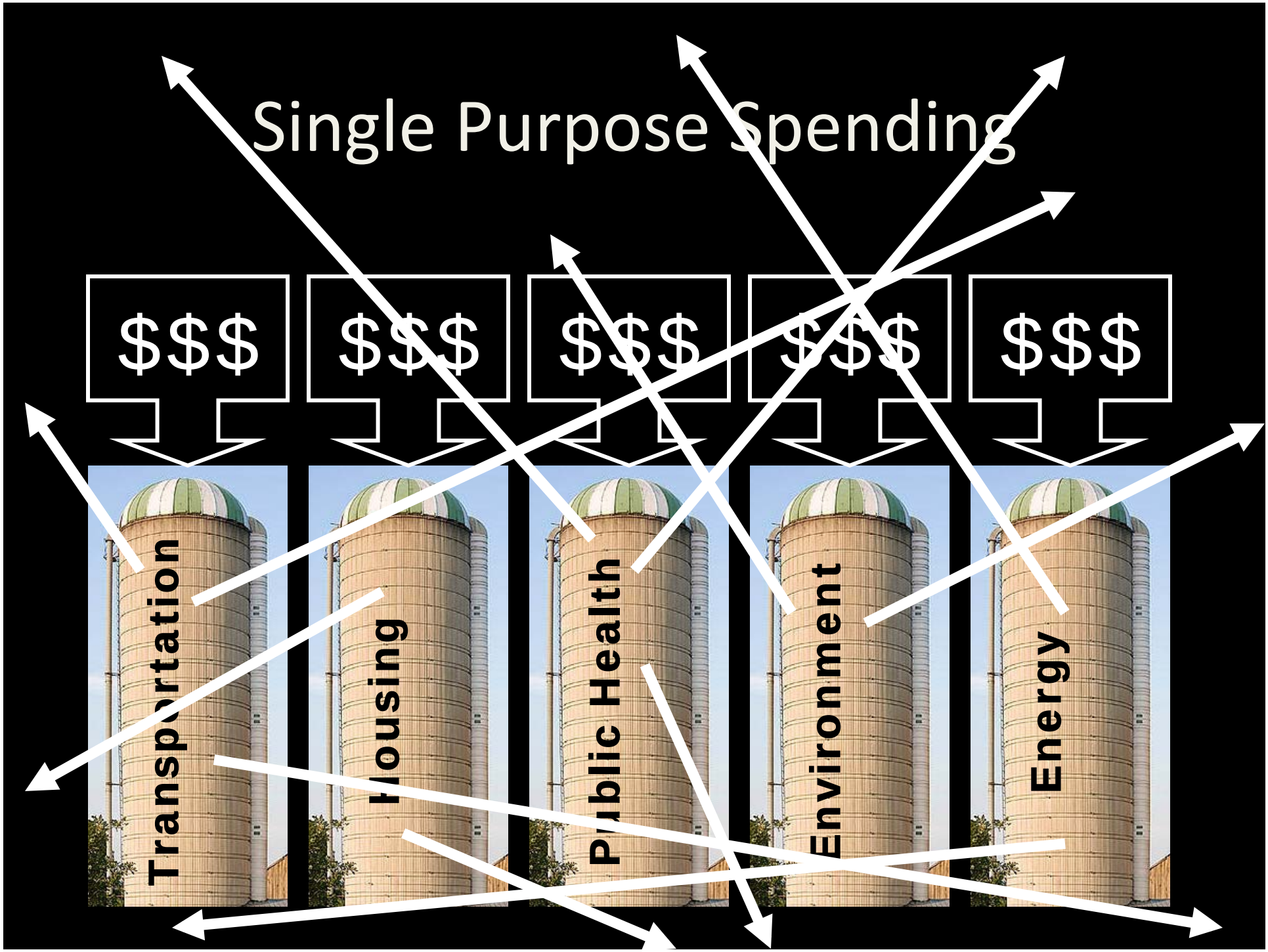
Public Health Costs…



Scale – United States Economy

($ Billions/Year)




Single Purpose Spending
$$$
$$$
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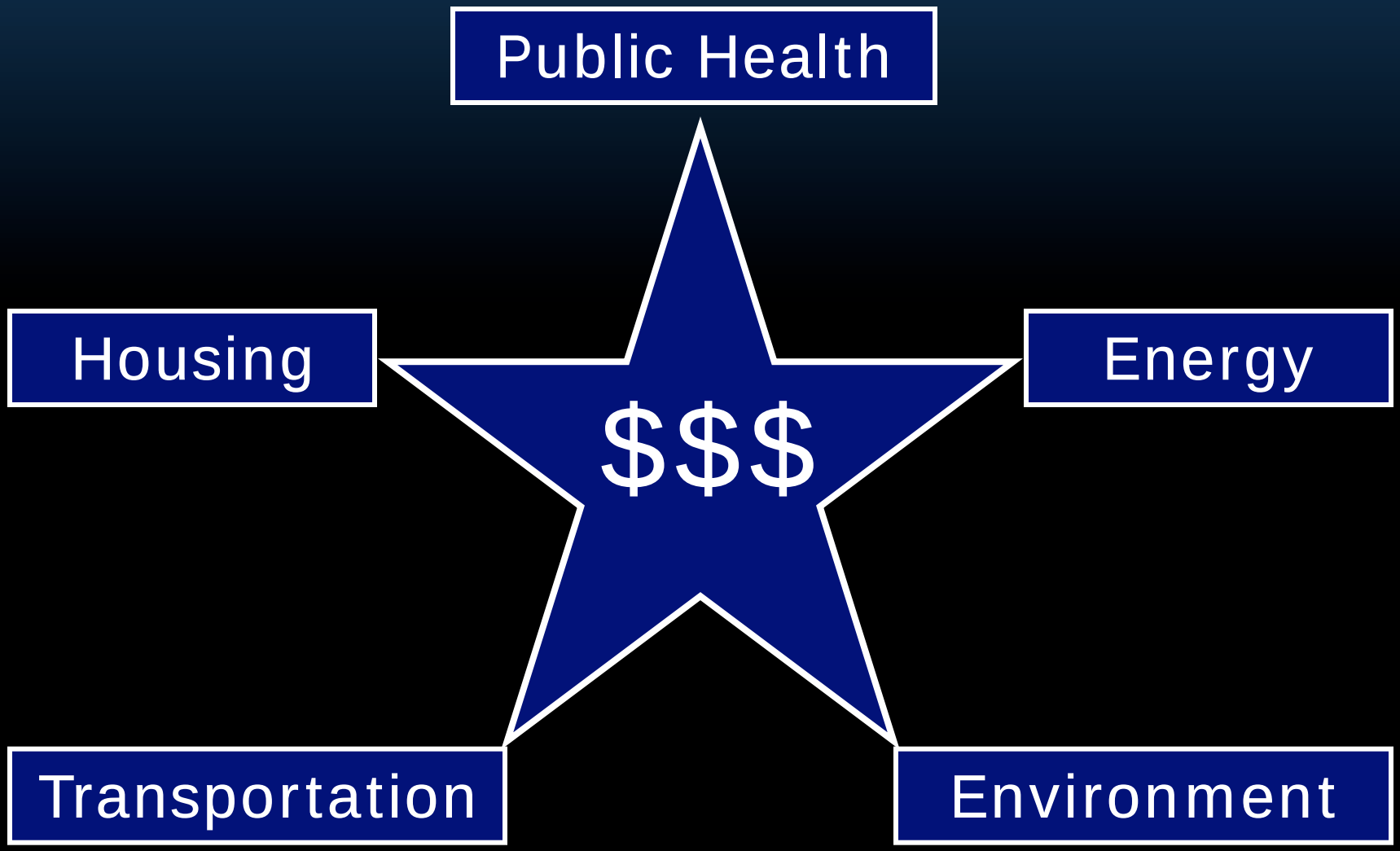
$$$
$$$
Transportation
Housing
Public Health
Environment
Energy

Integrated, Strategic Investment



Wrap Up

Some Resources

The Built Environment and Traffic Safety: A Review of Empirical Evidence (Reid Ewing, Eric Dumbaugh)

Traffic Safety Facts 2009, National Highway Traffic Safety Administration, US DOT

Speakers

Jim Charlier, Charlier Associates (Boulder)

Norm Garrick, University of Connecticut

Eric Dumbaugh, Texas A & M University

Wider travel lanes:

- SAFER?
- LESS SAFE?

More lanes:

- SAFER?
- LESS SAFE?

Connected street networks:

- SAFER?
- LESS SAFE?

Bigger intersections:
(more turn lanes)

- SAFER?
- LESS SAFE?