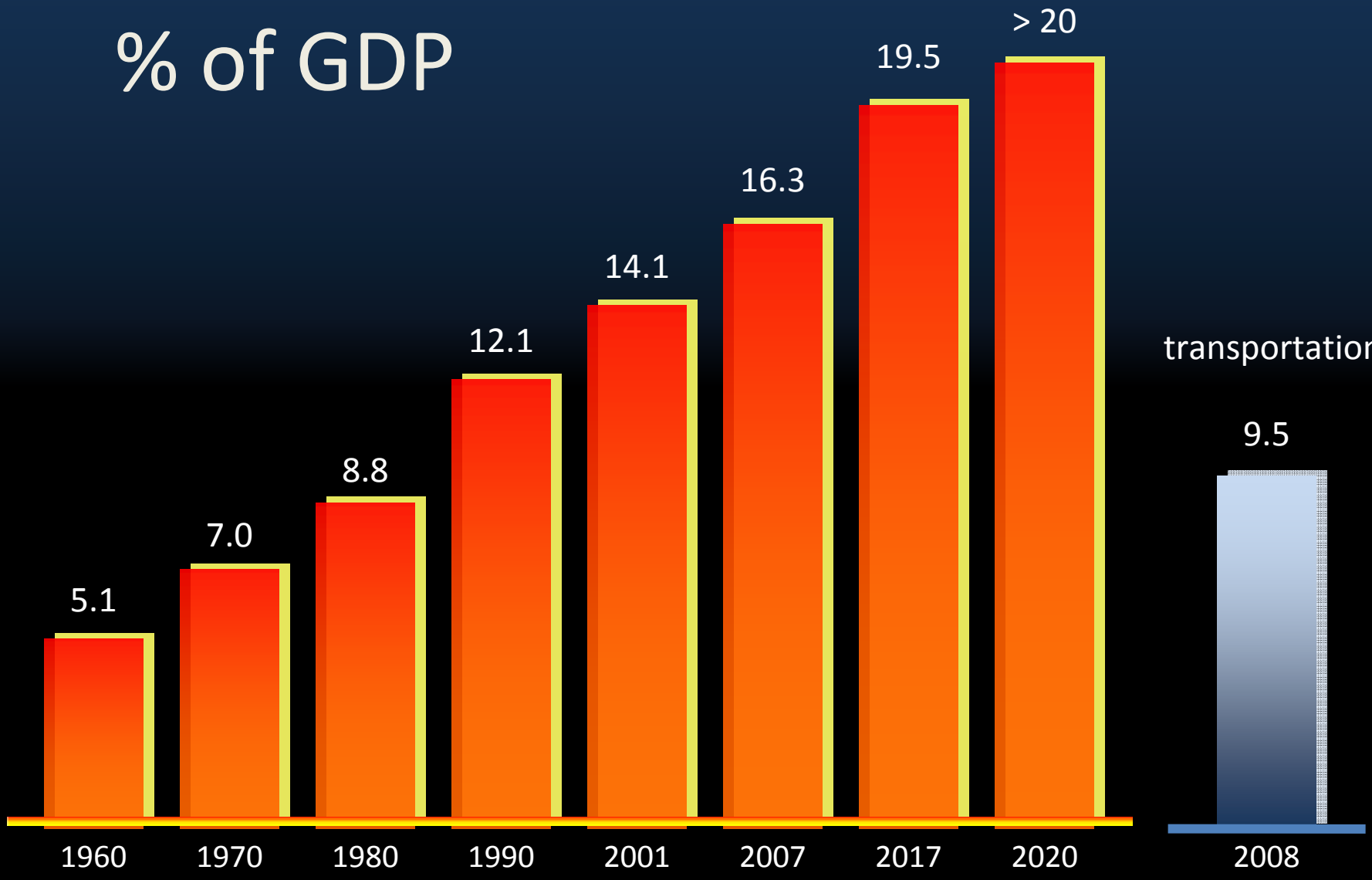
Health Impact Assessments (HIA)

Tools for Active, Healthy Communities

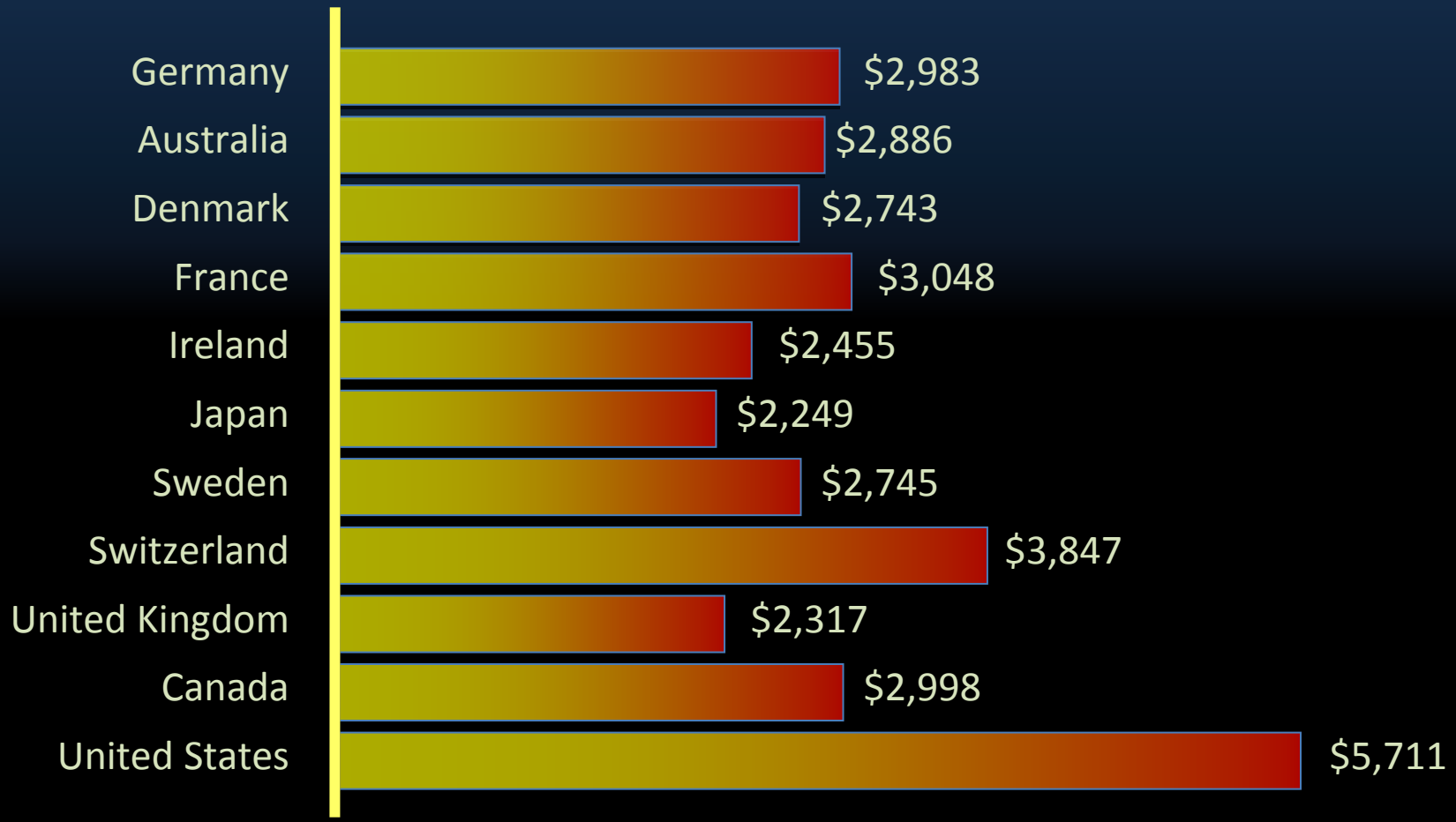
1

Public Health

US Health Care
% of GDP

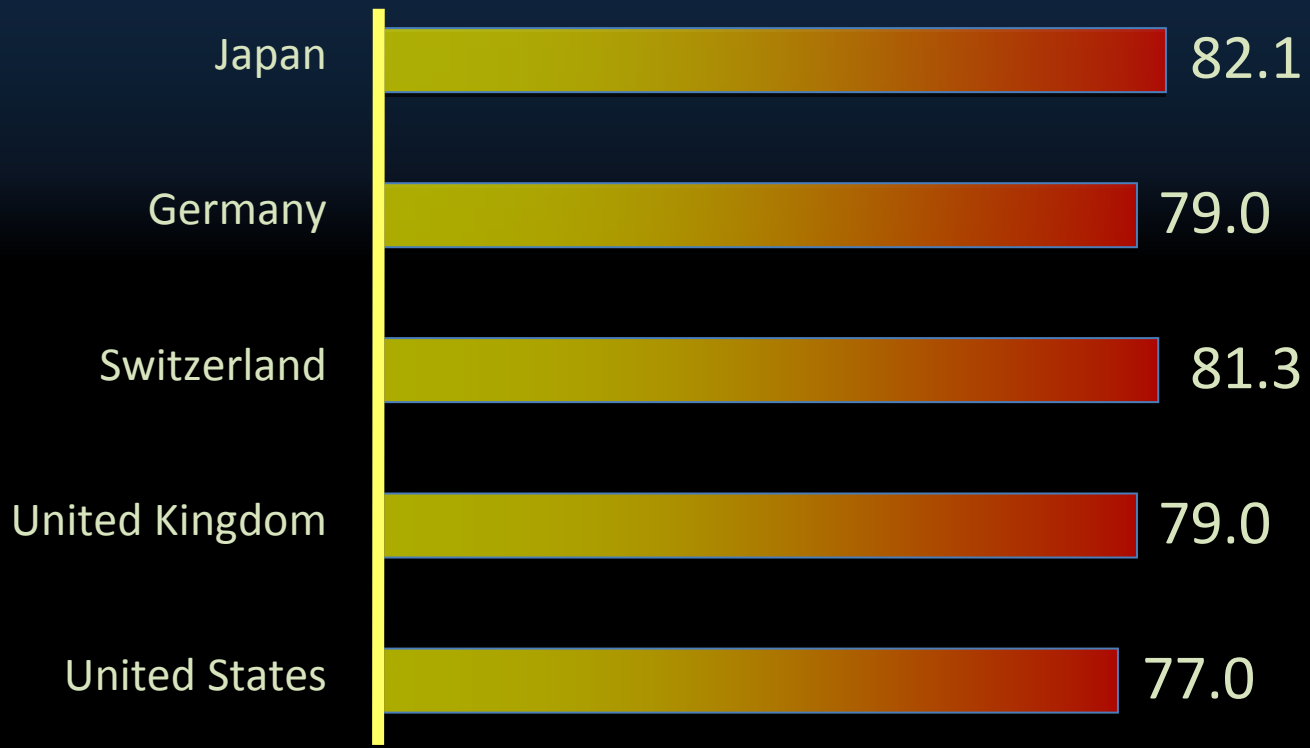


Annual Health Care Costs/Capita



Source: Kaiser Family Foundation, Visual Economics, 2010

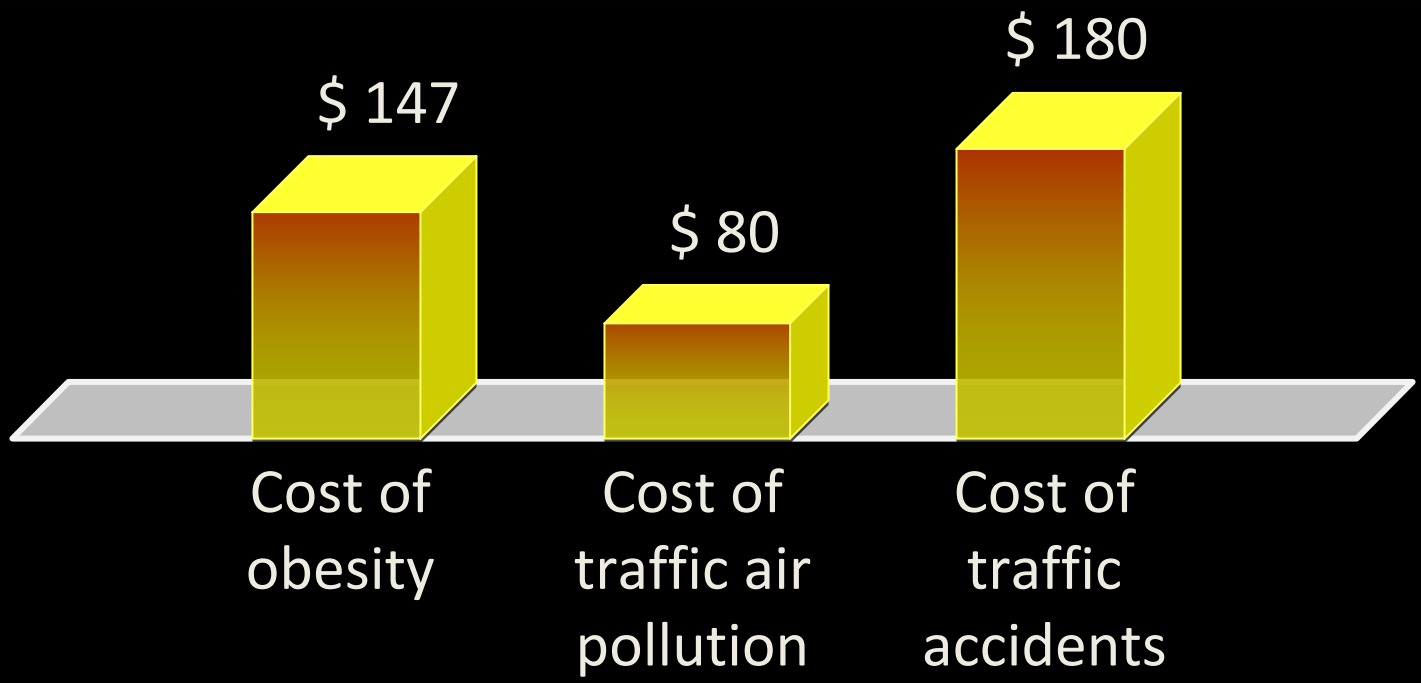
Average Life Expectancy



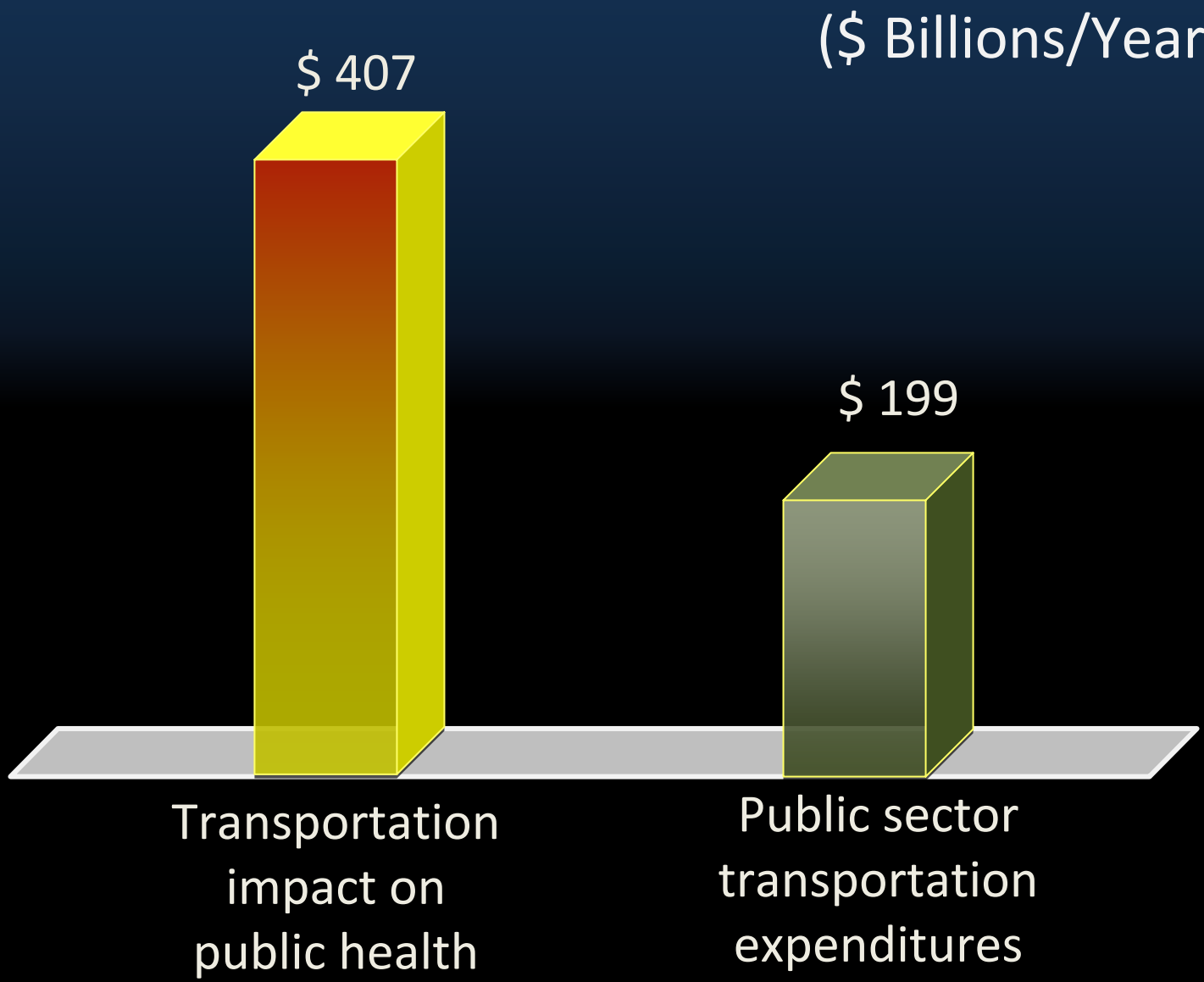
Source: Kaiser Family Foundation, Visual Economics, 2010

Scale – United States Economy

($ Billions/Year)



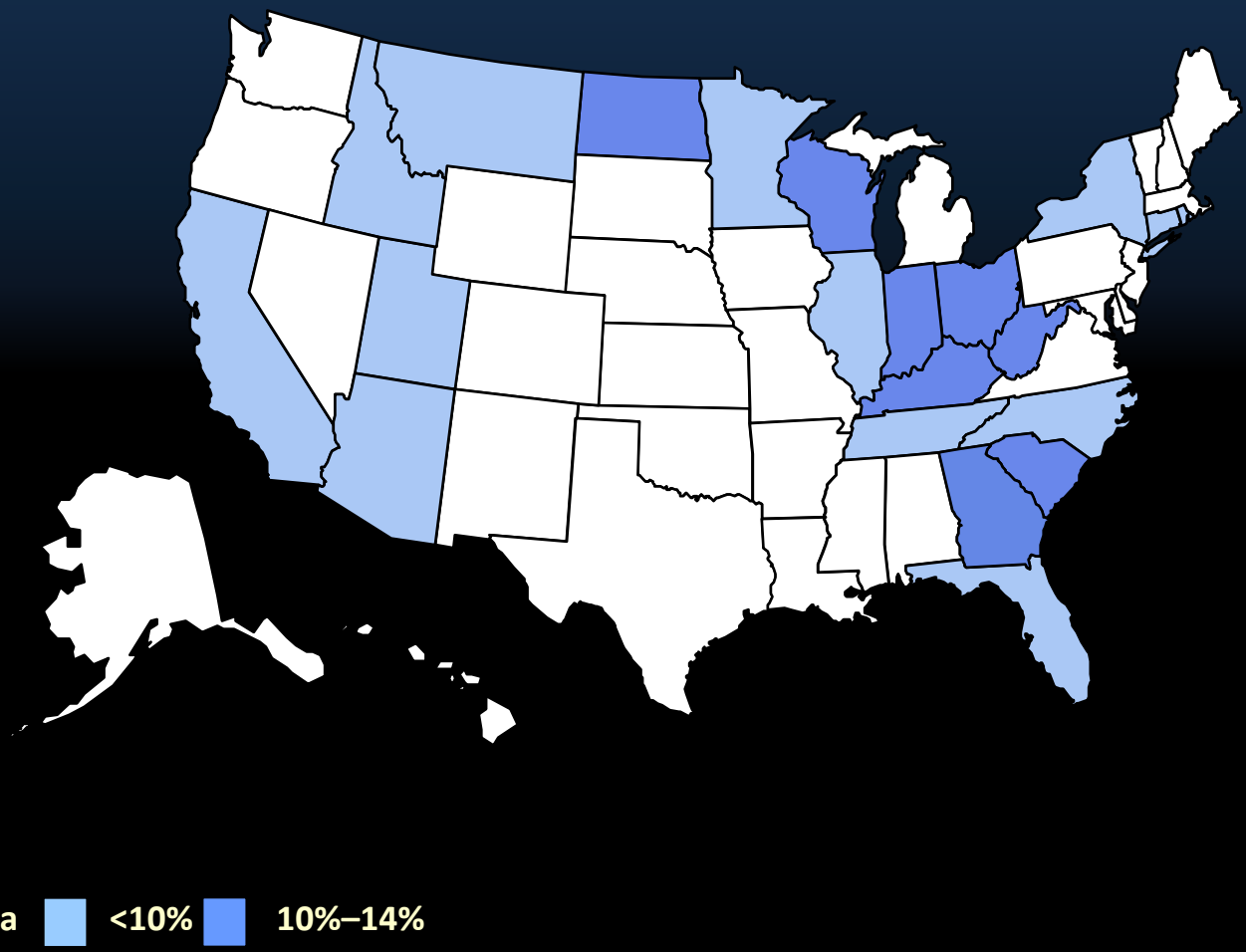
Scale – United States Economy



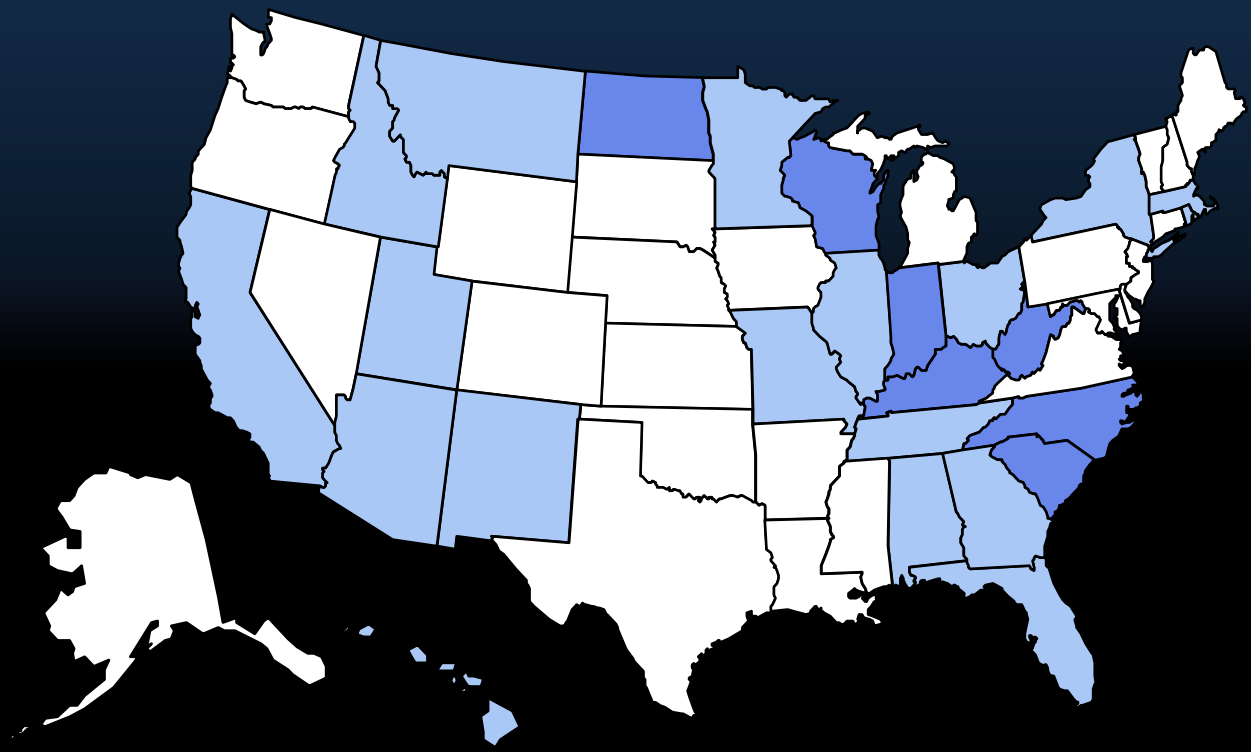
Obesity

1985

Obesity Trends Among U.S. Adults



1986



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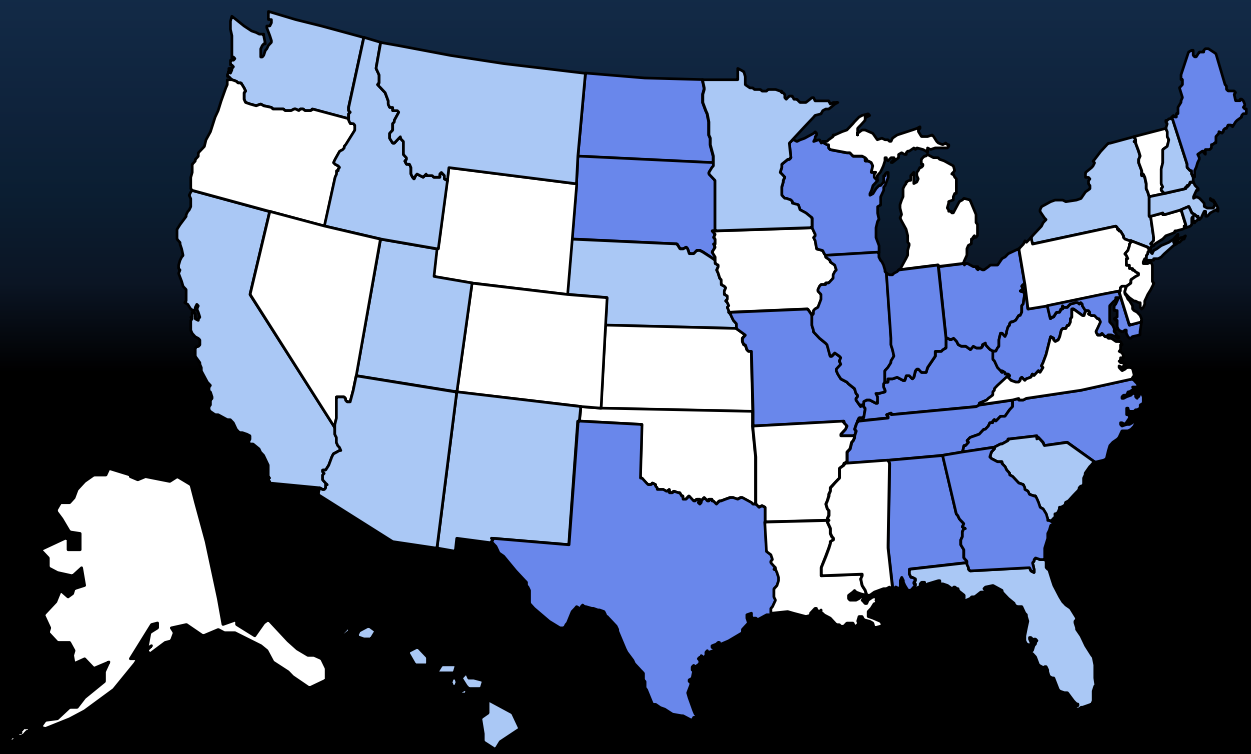

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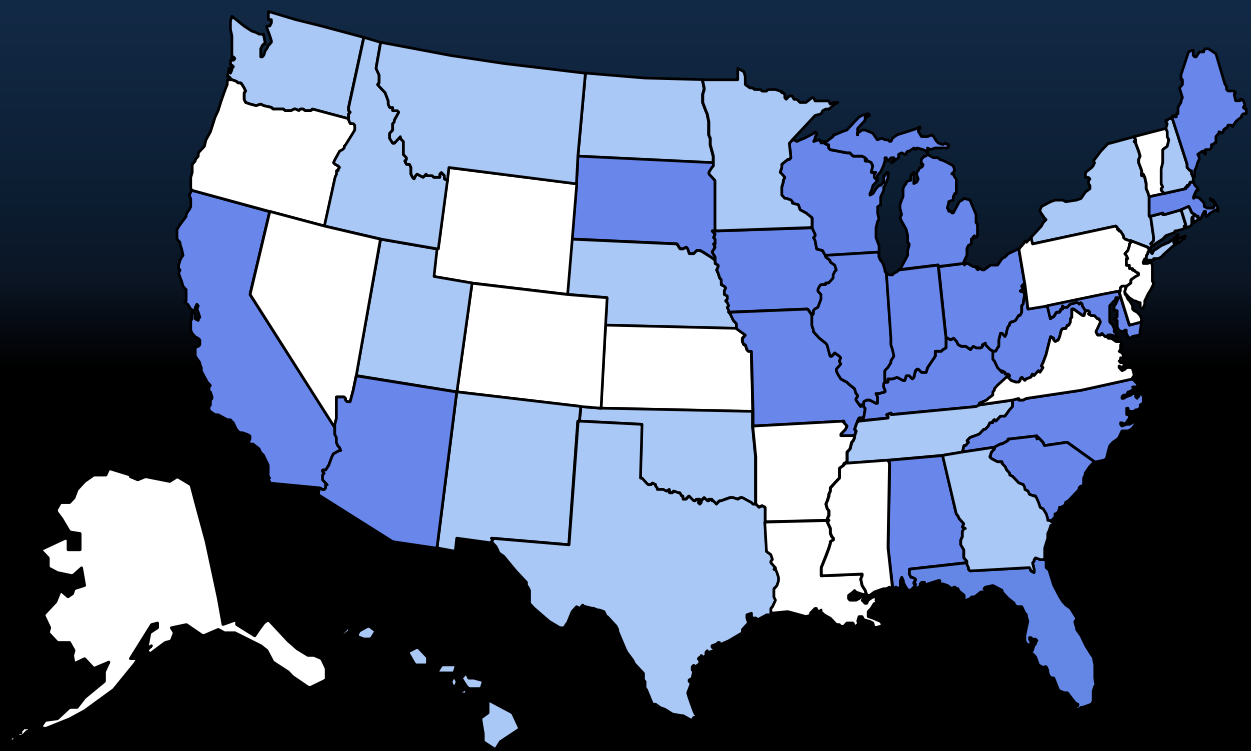

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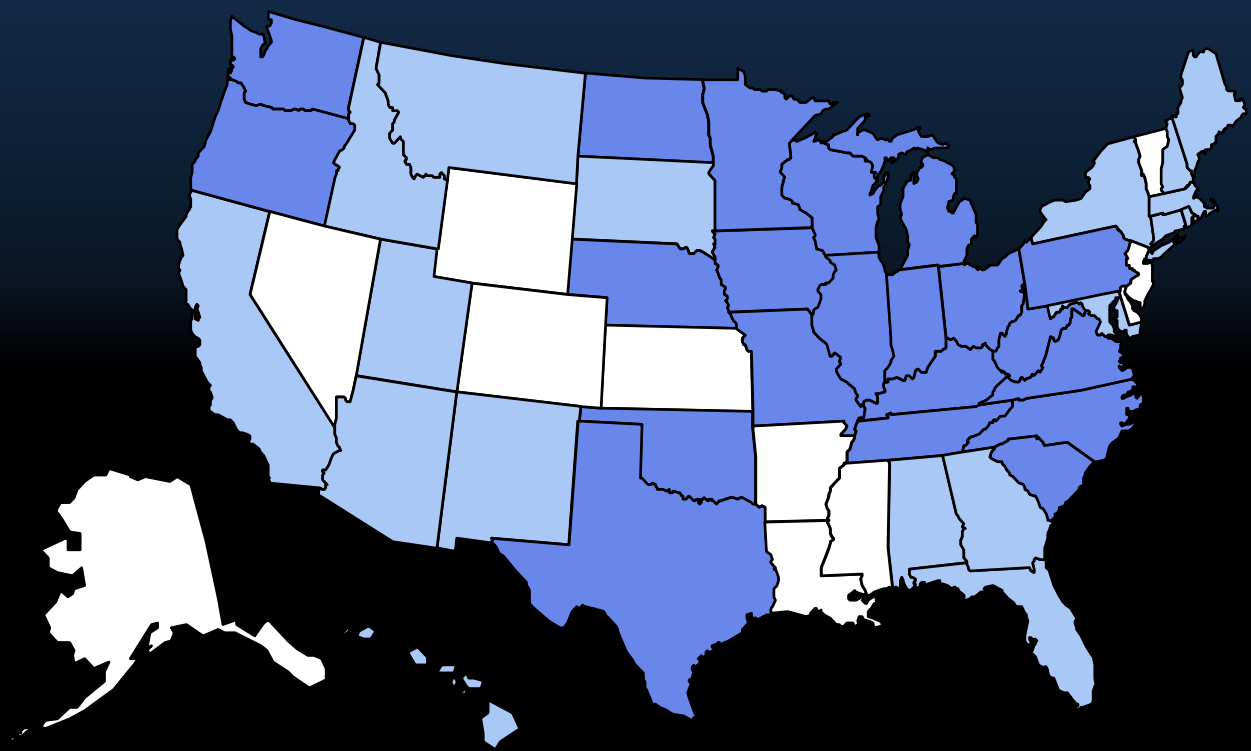

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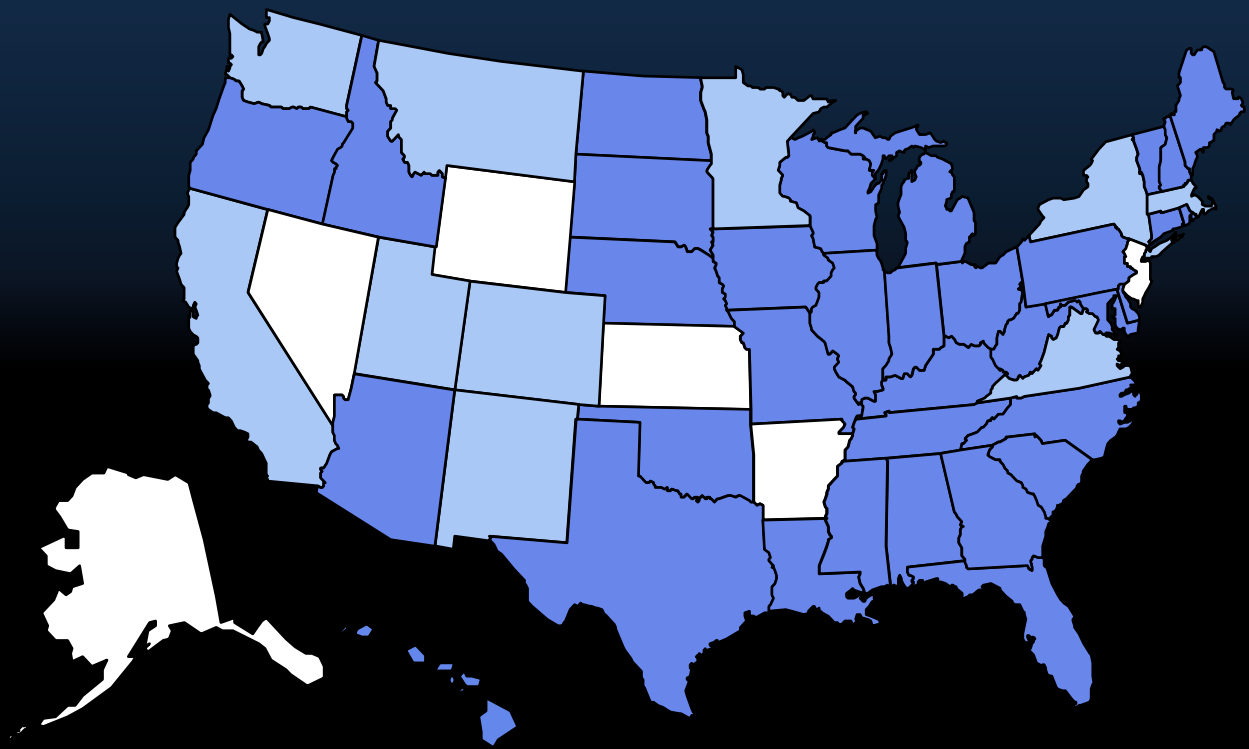

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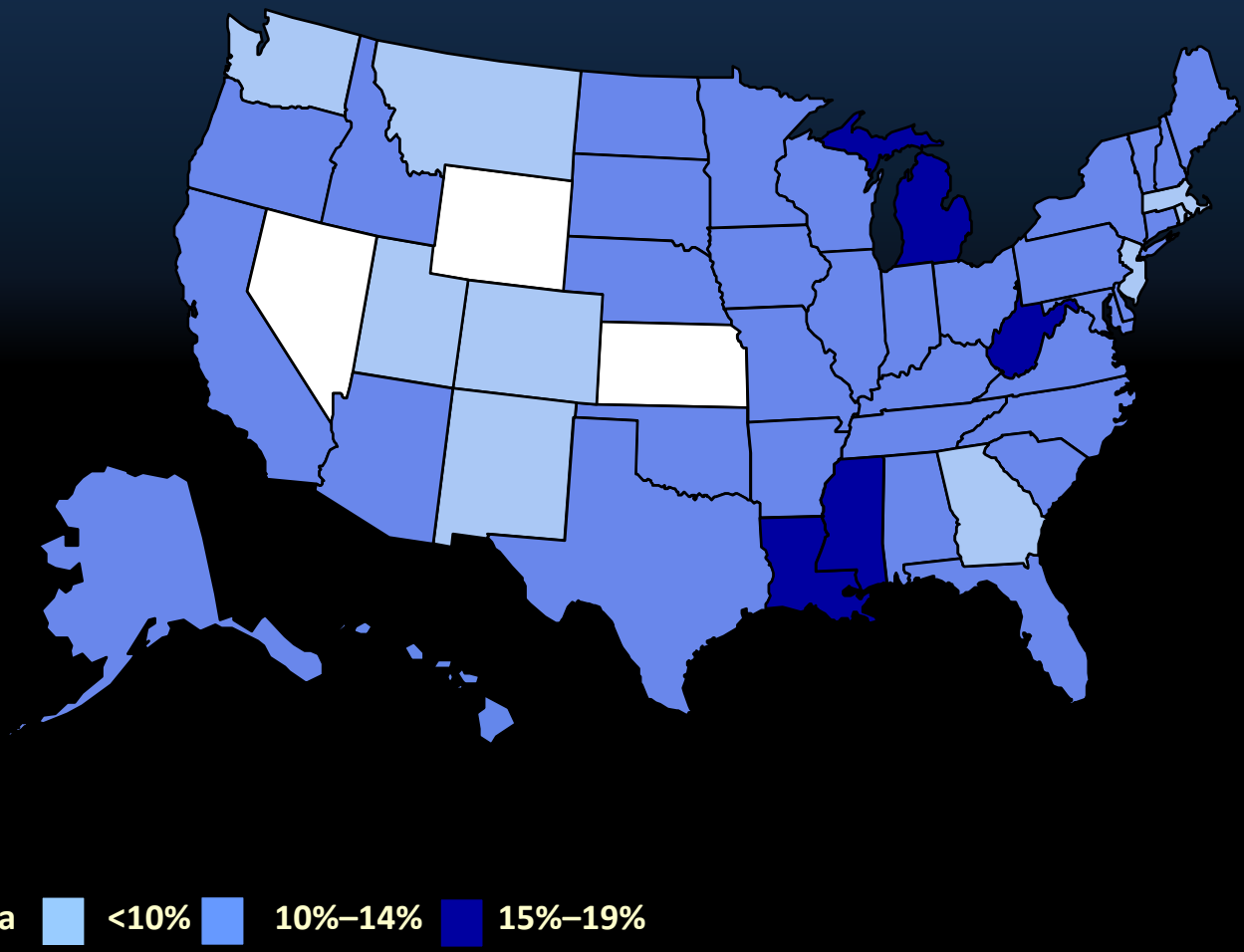

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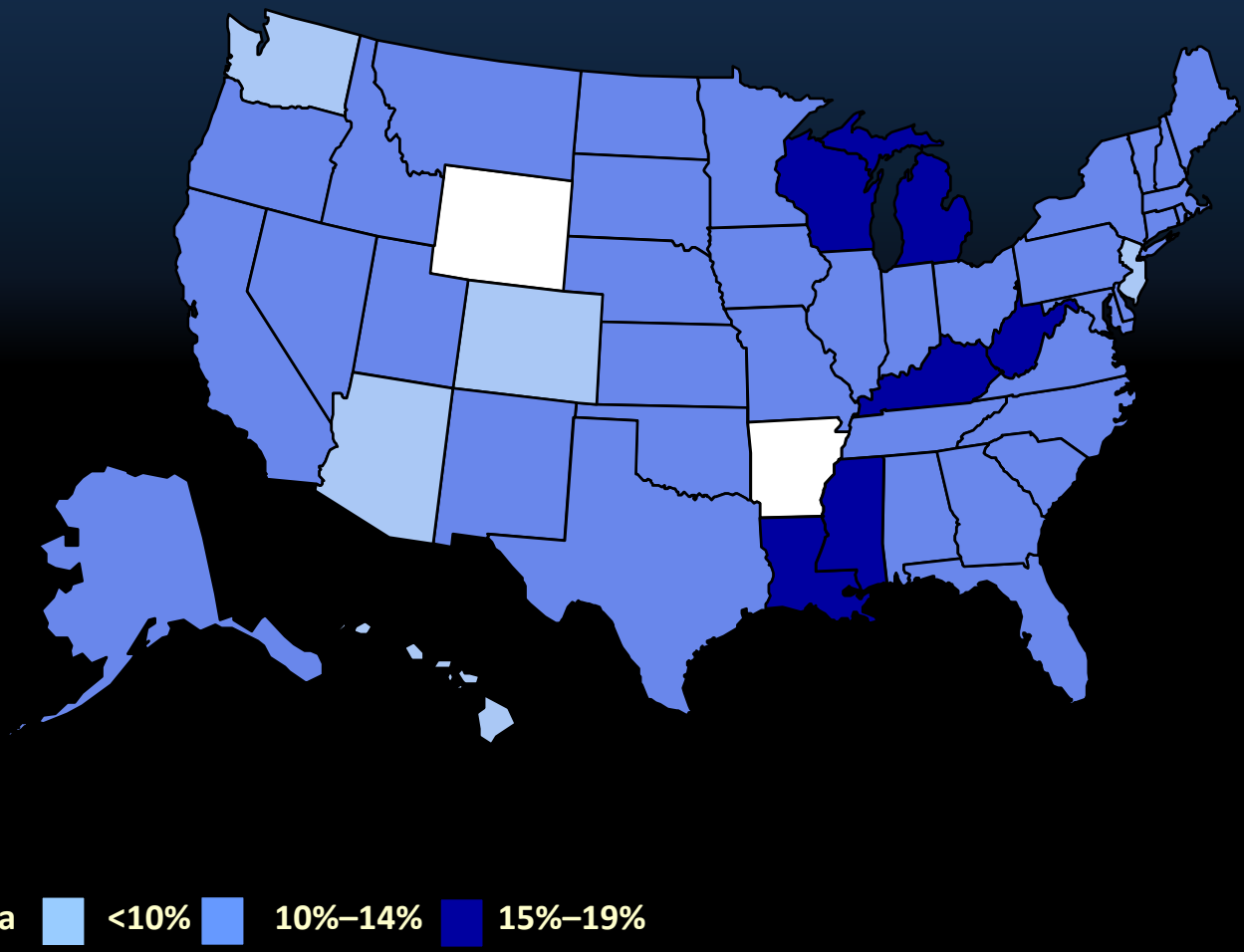

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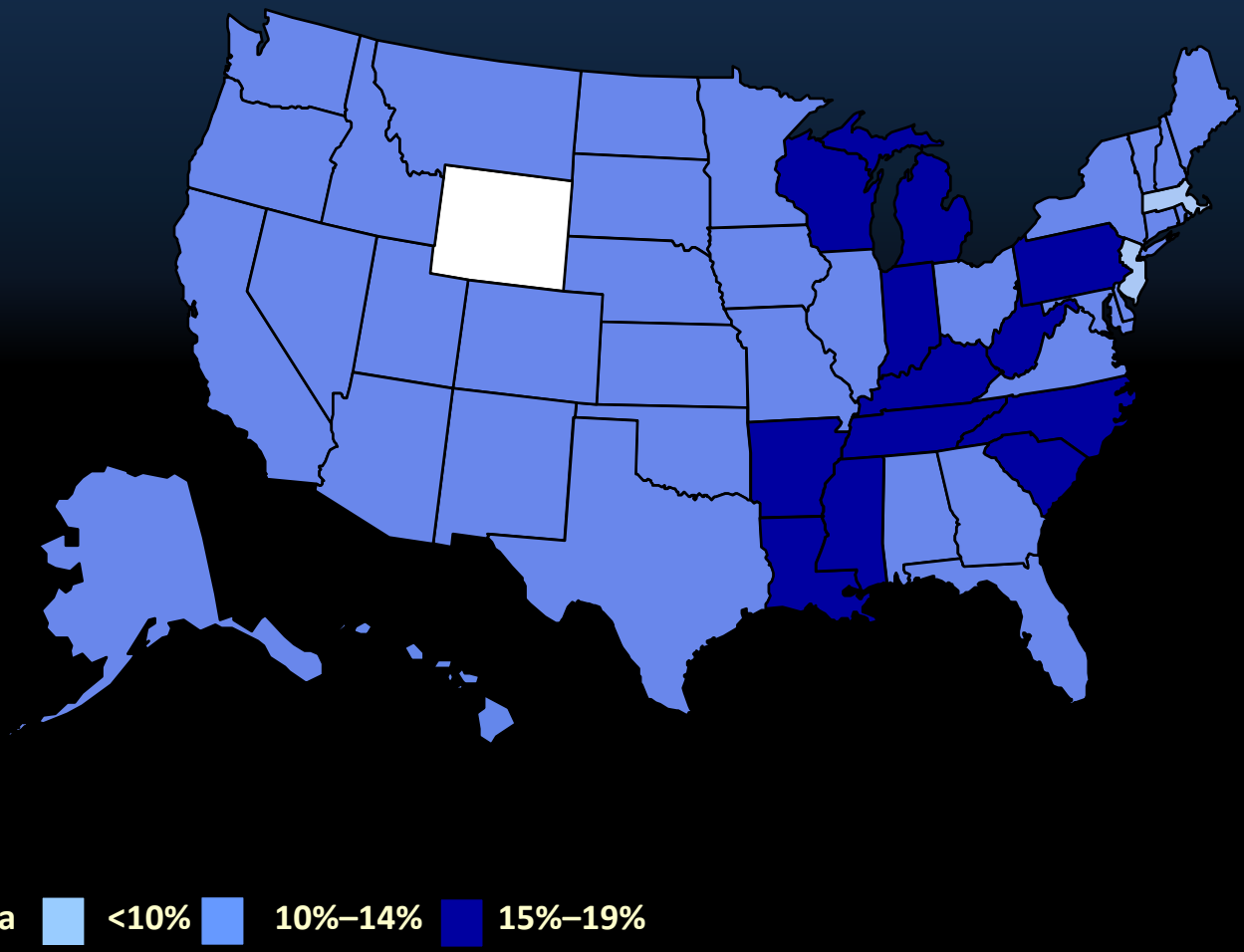

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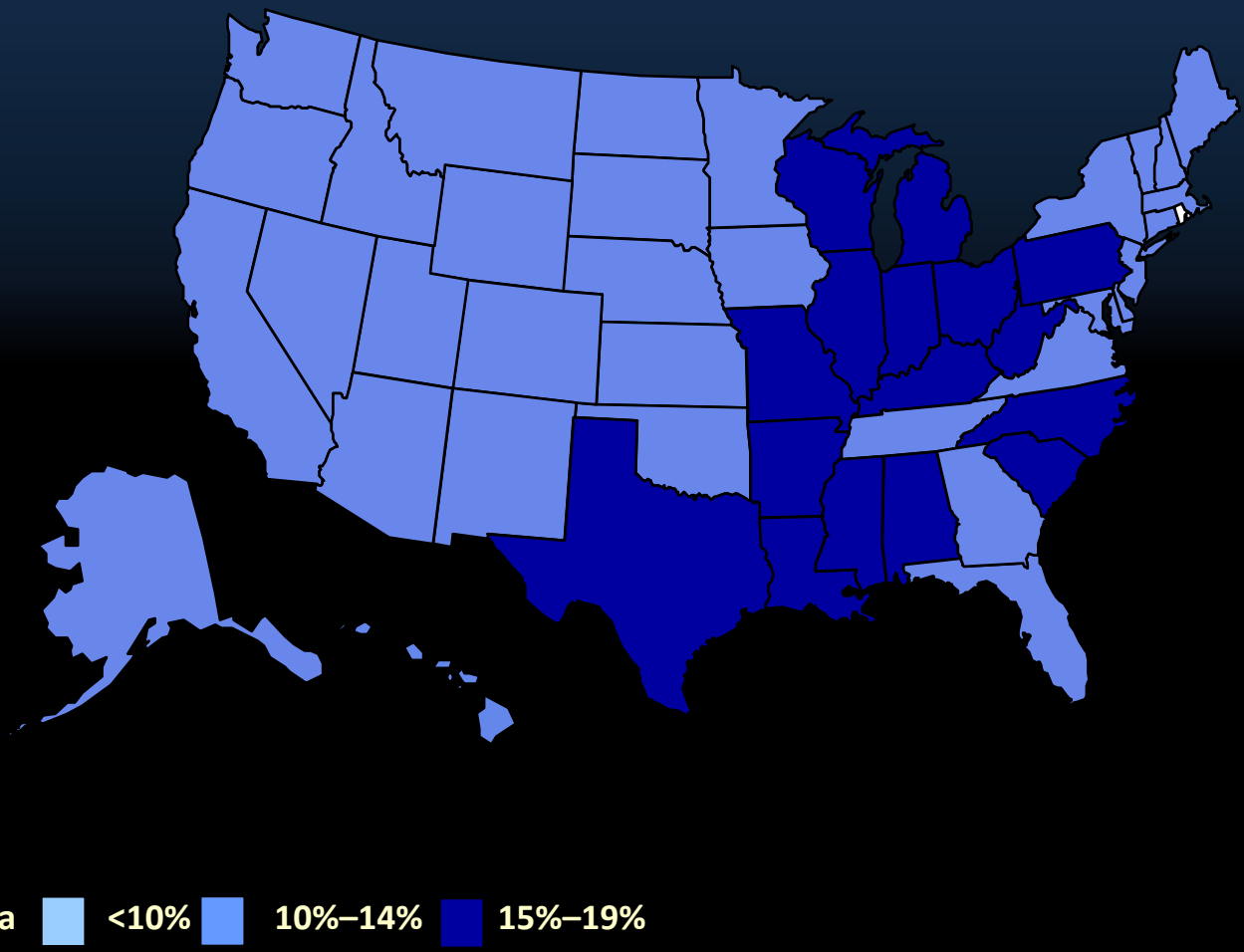

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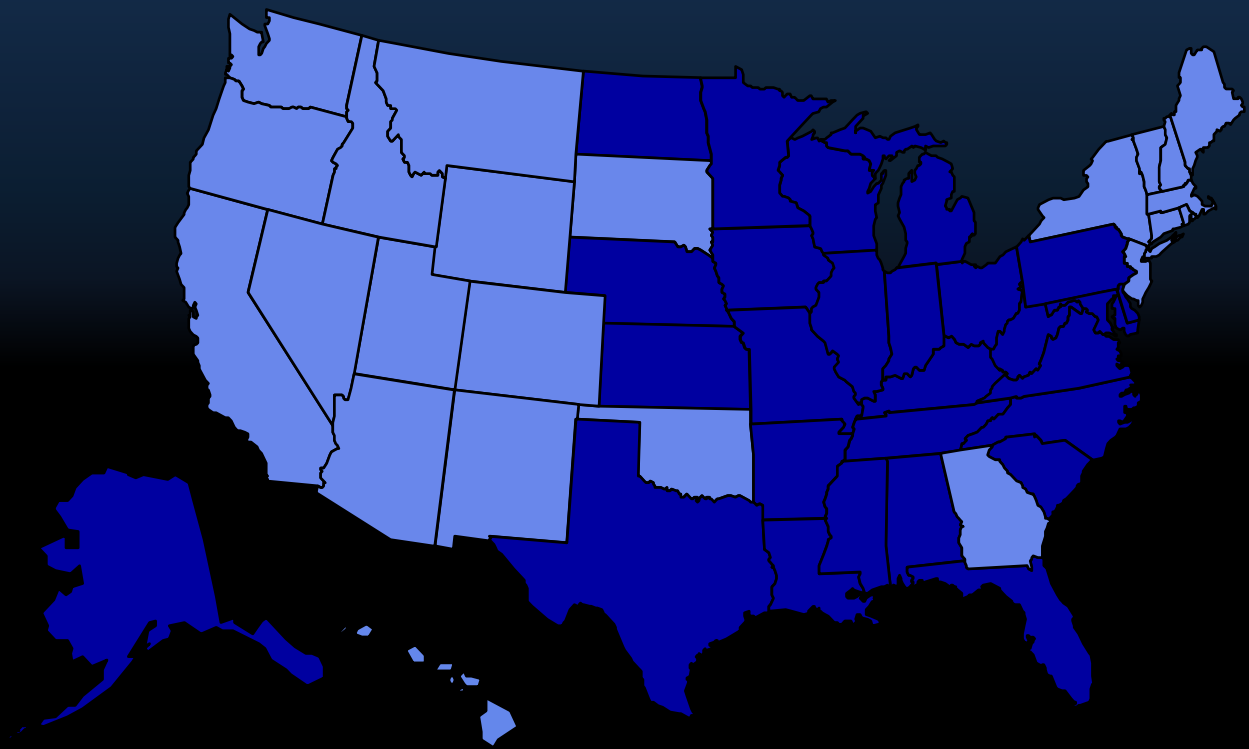

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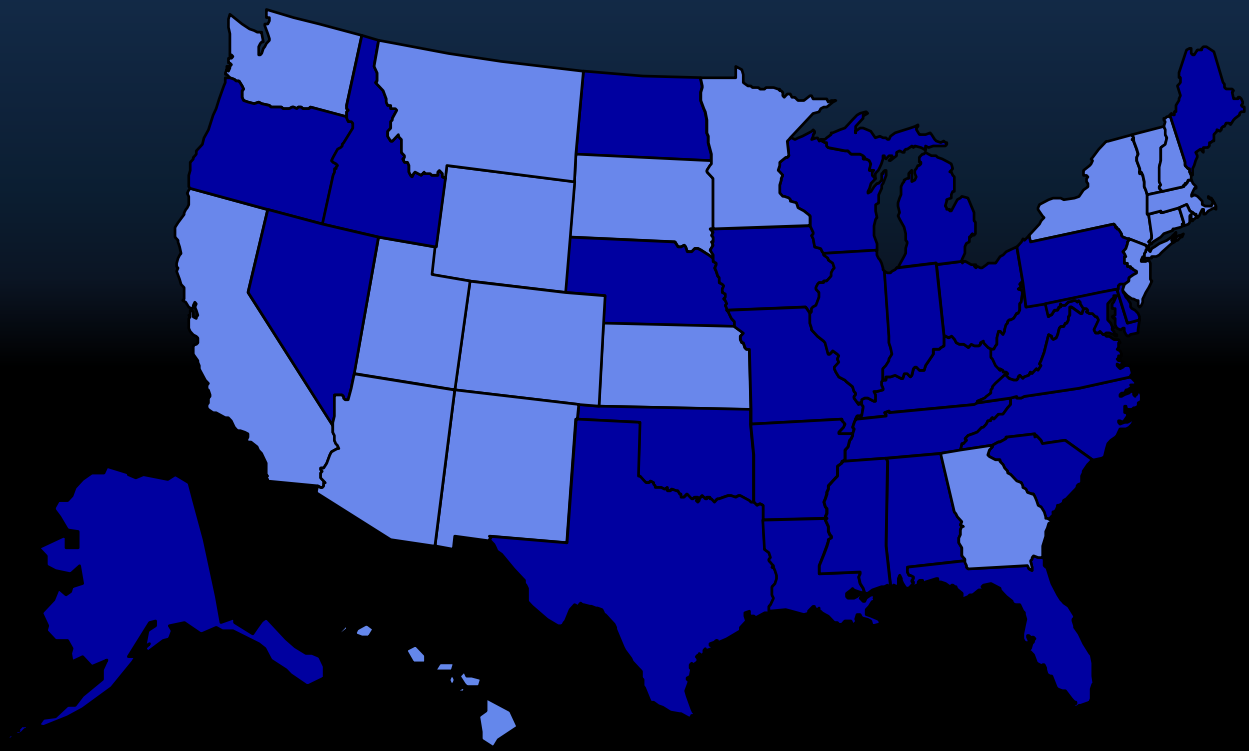

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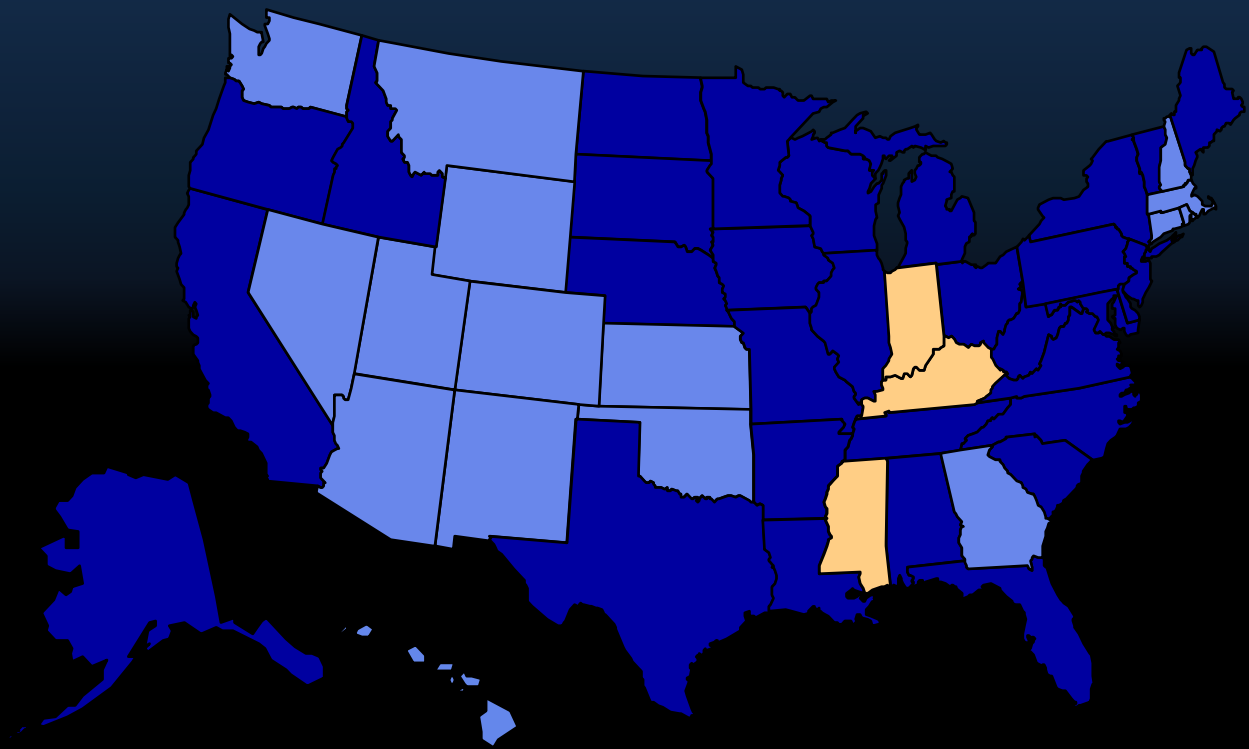

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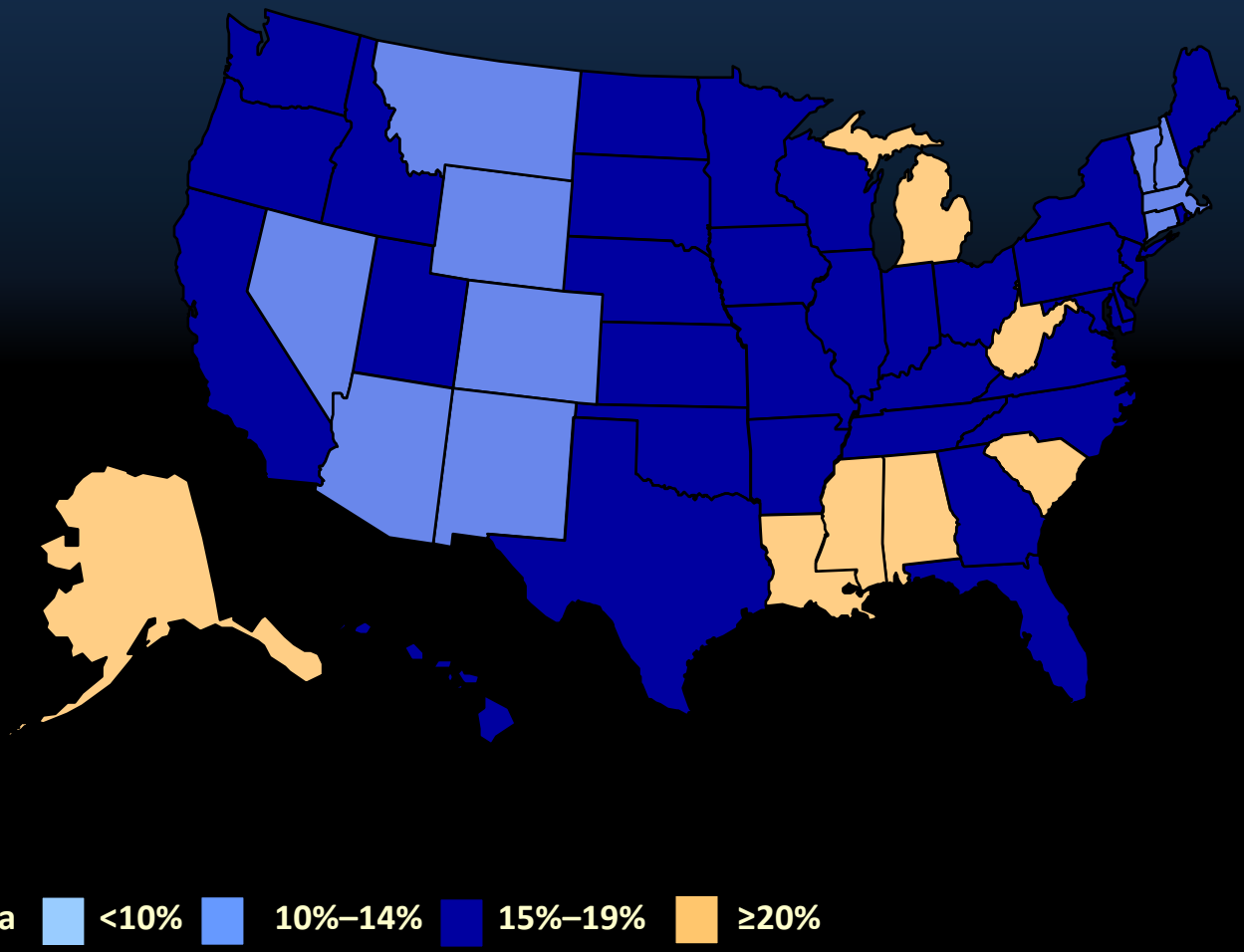

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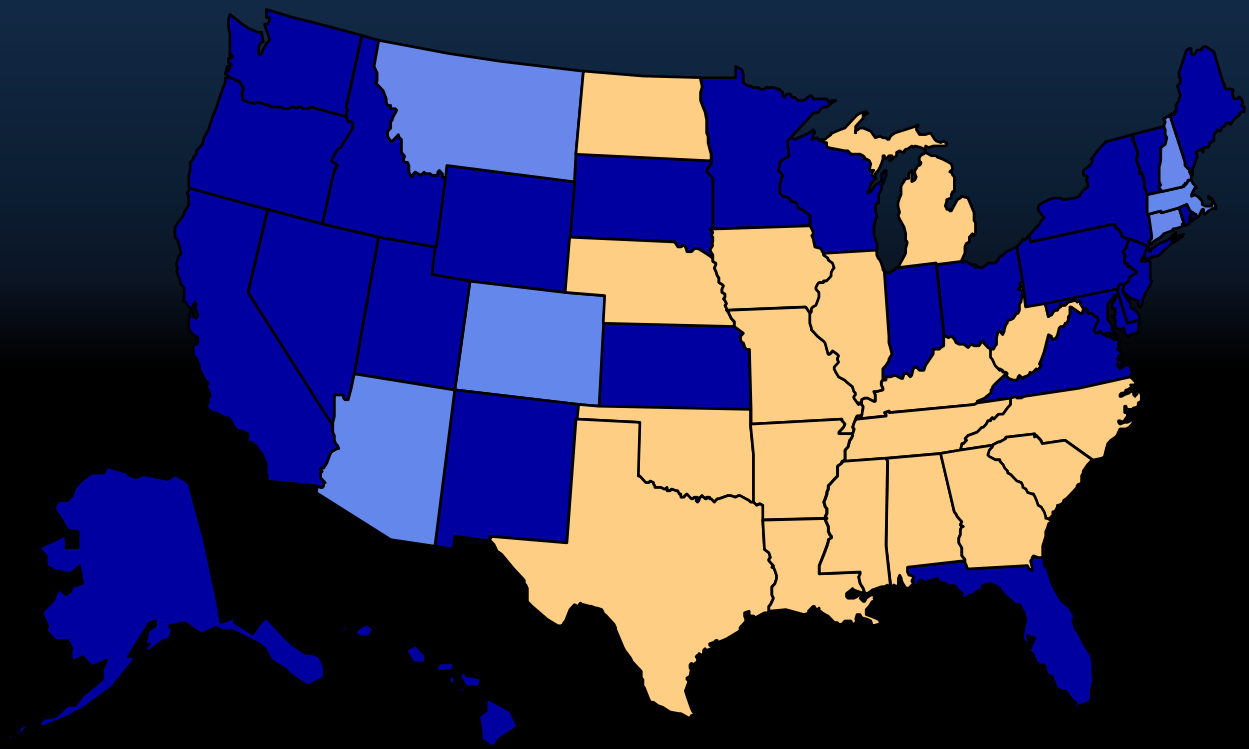

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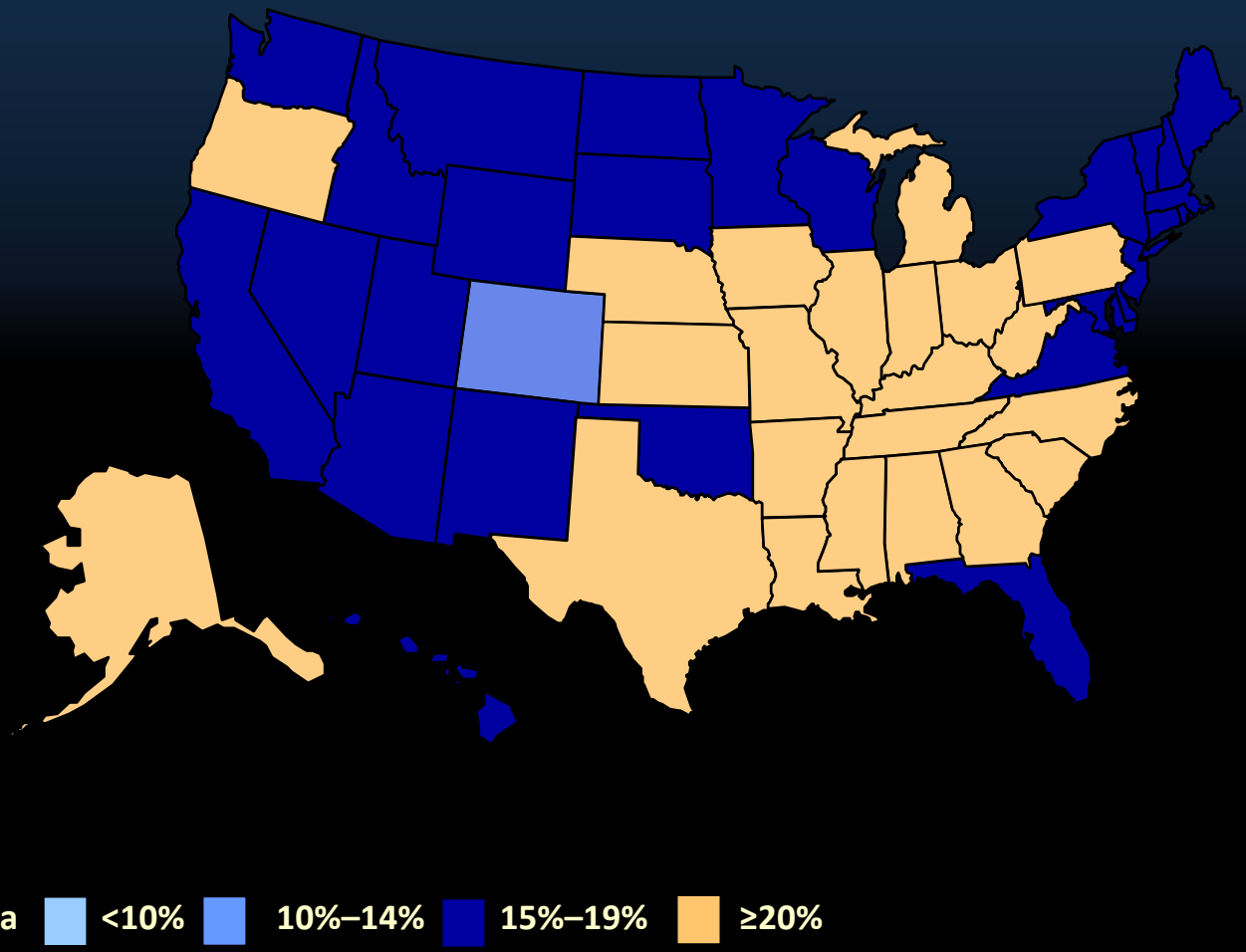

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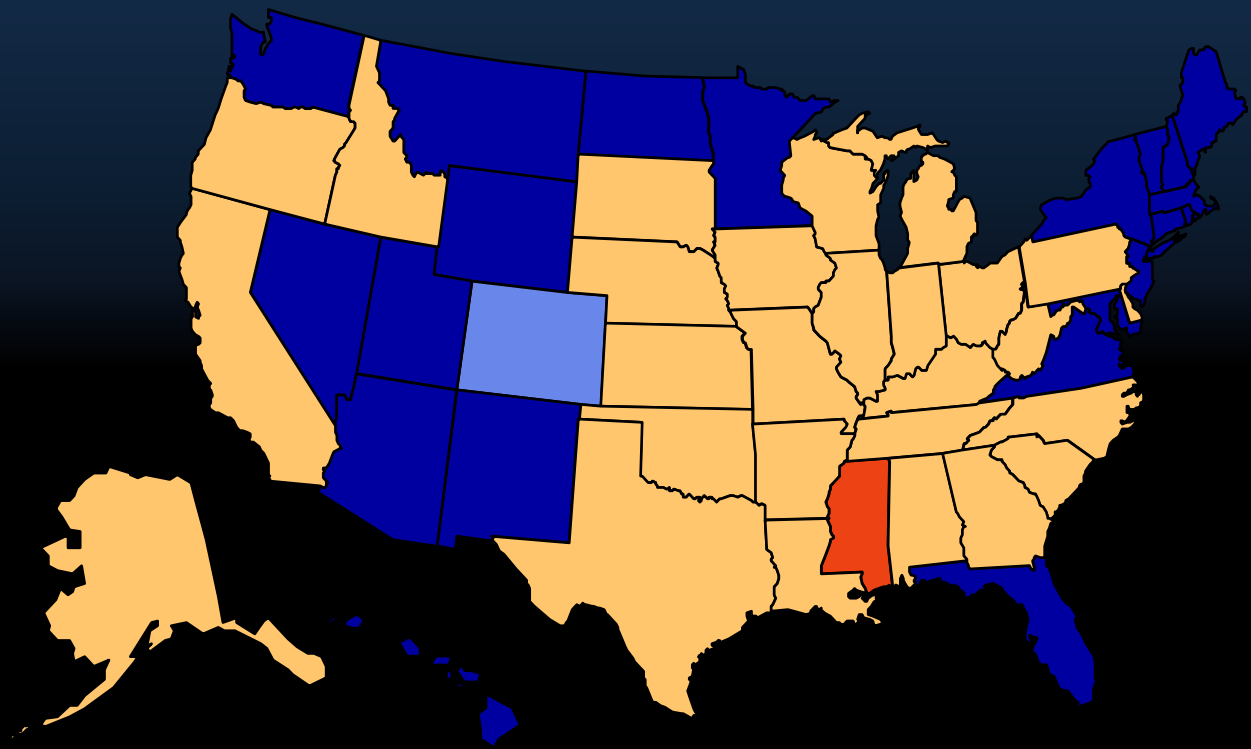

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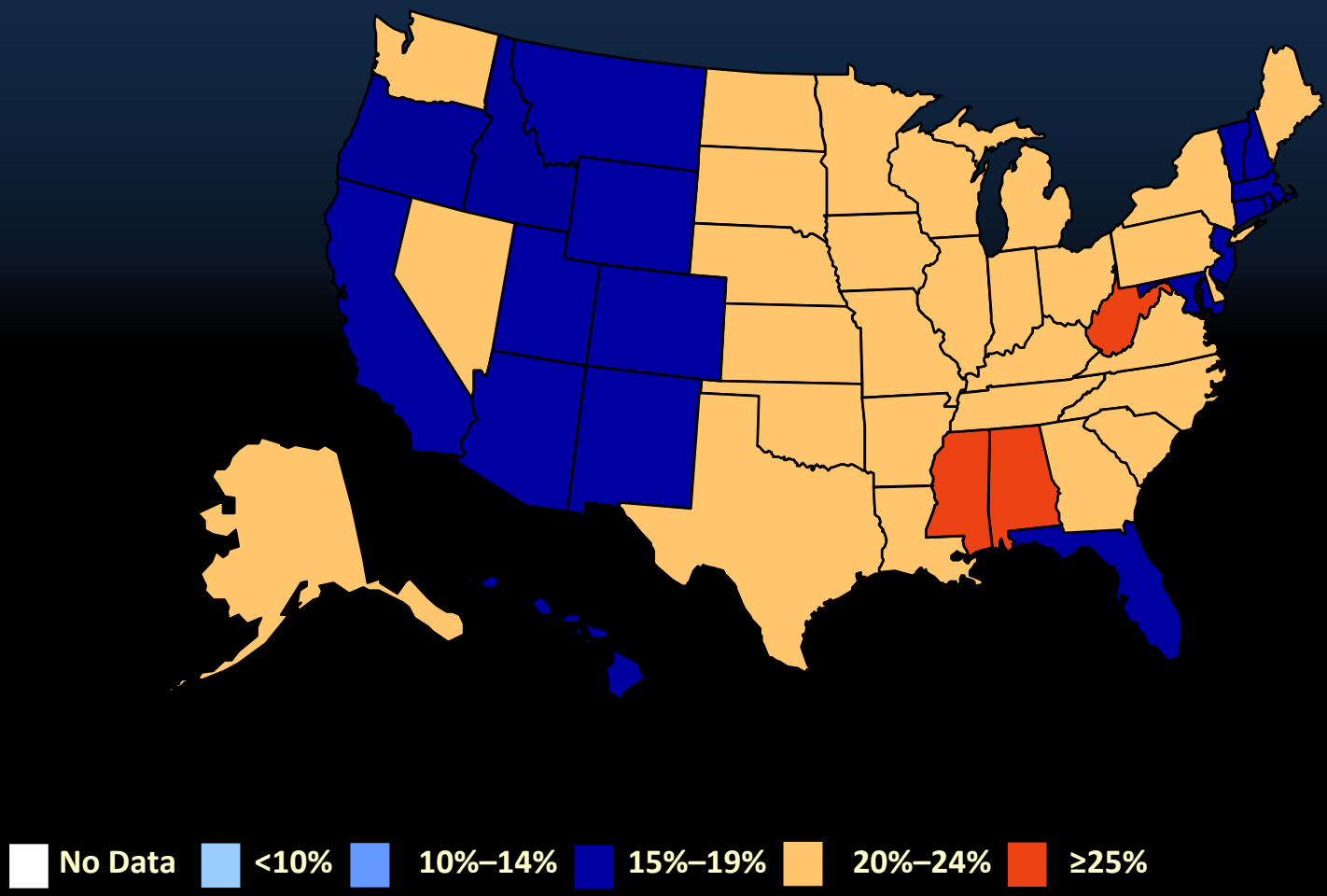

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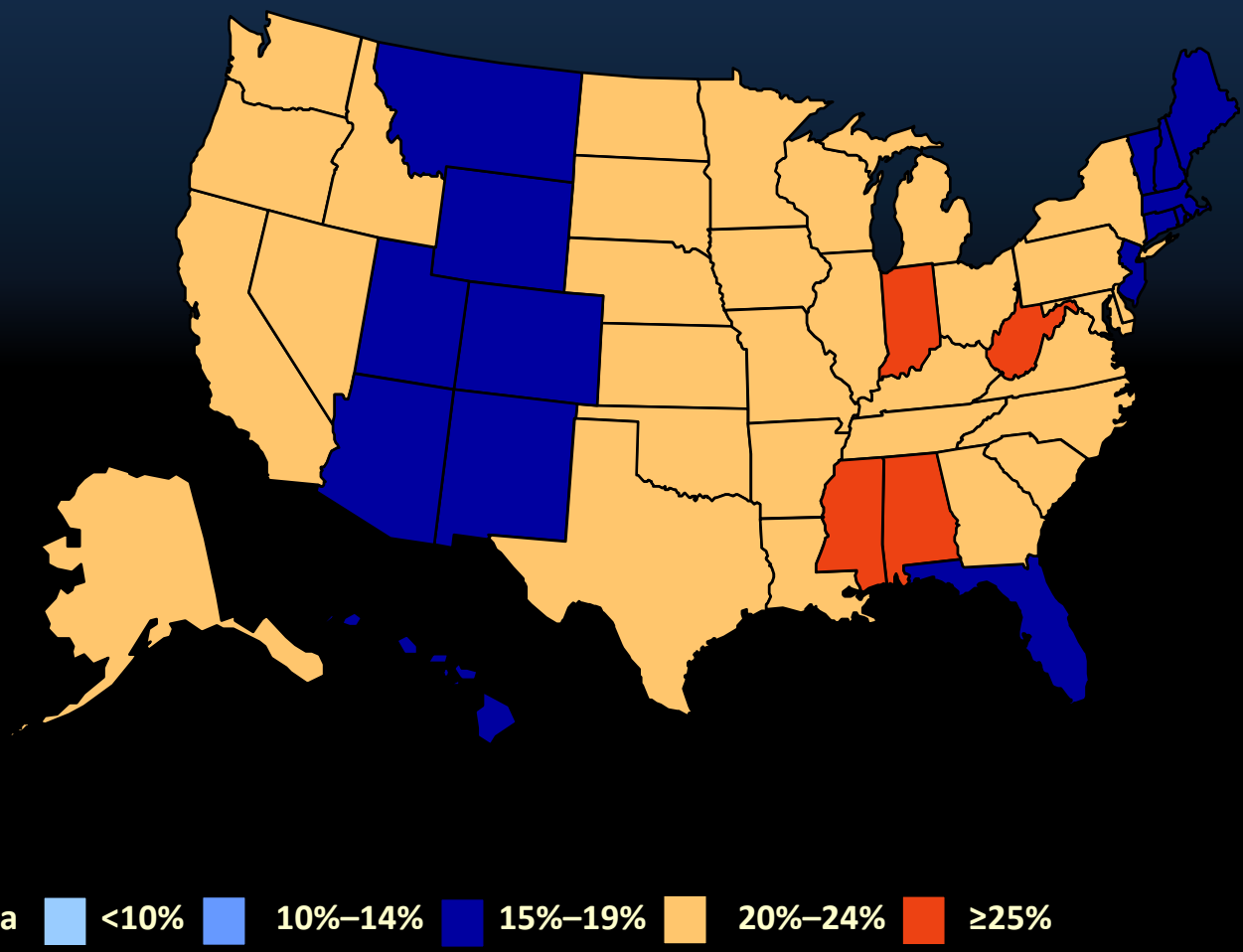

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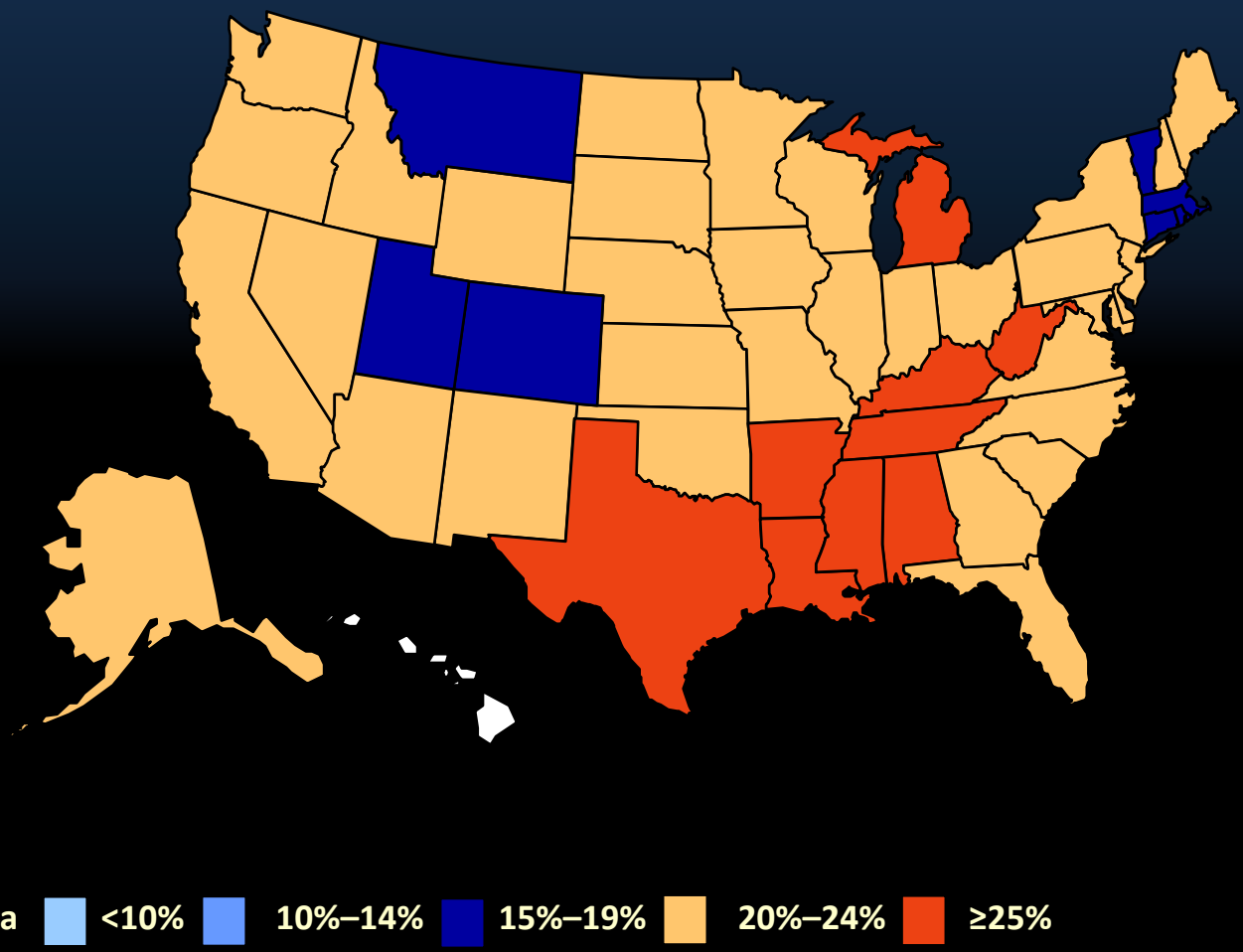

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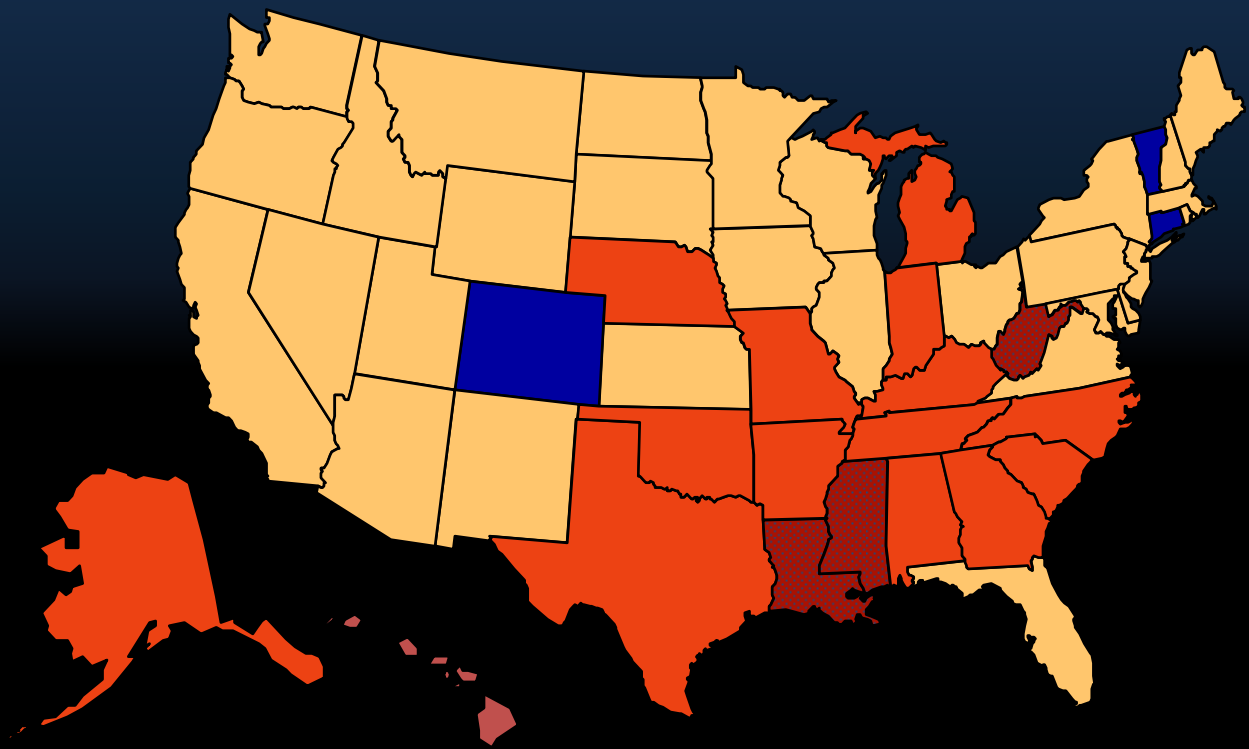

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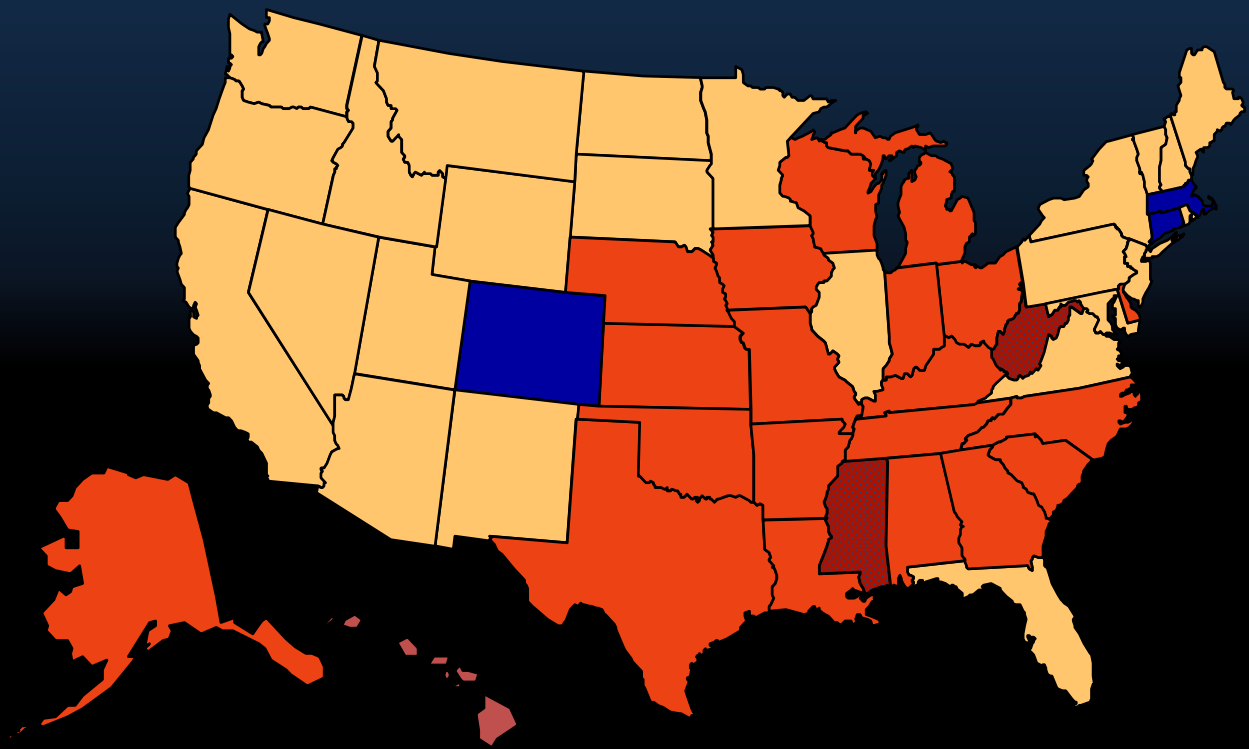

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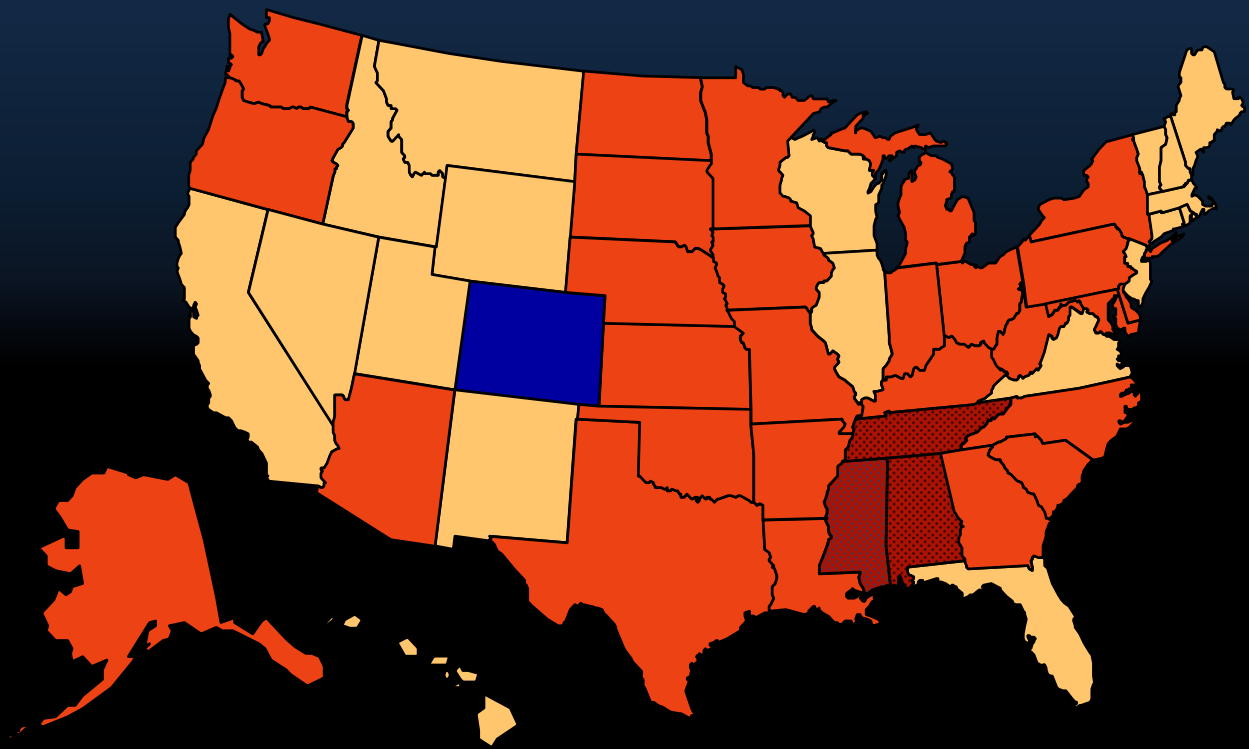

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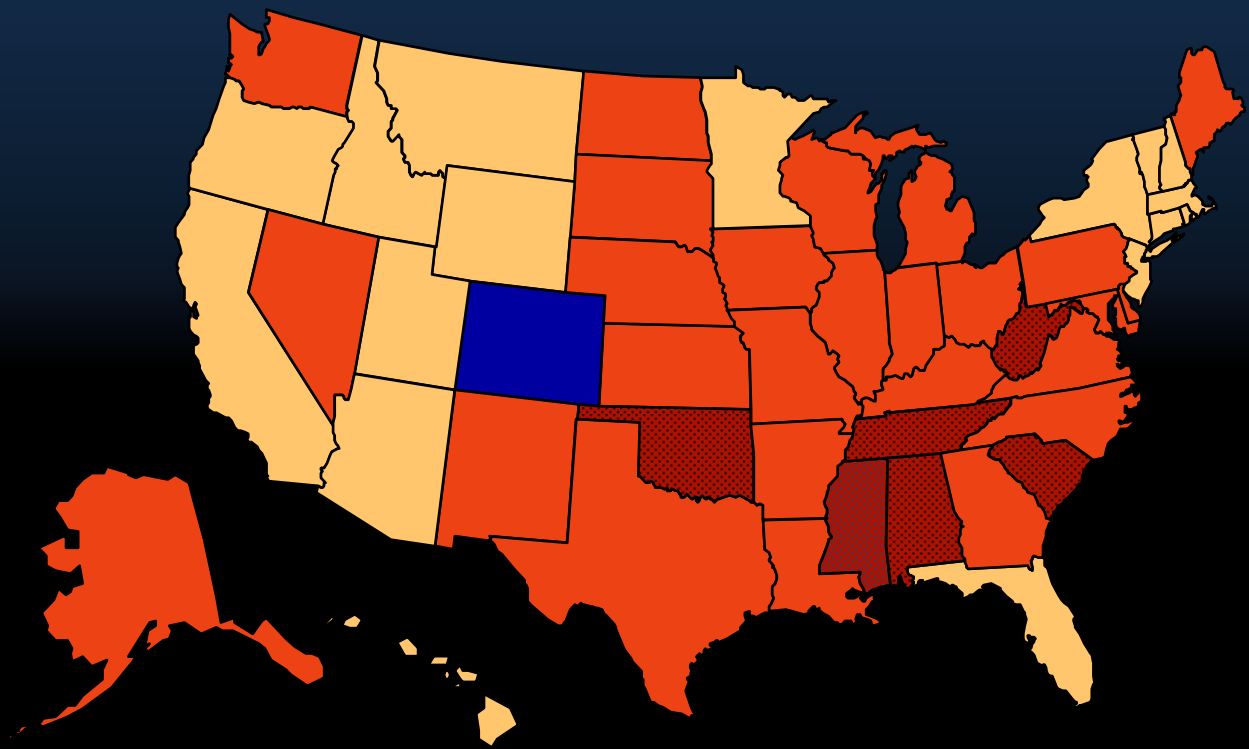
2008



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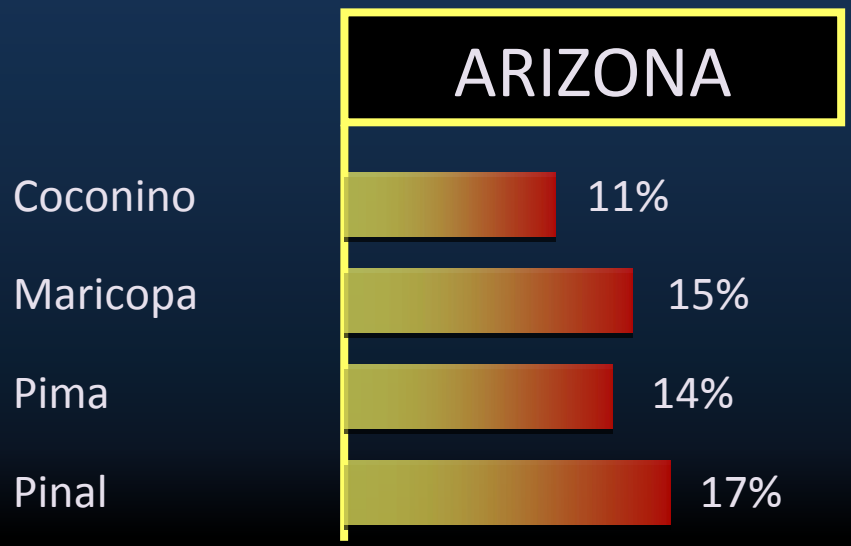
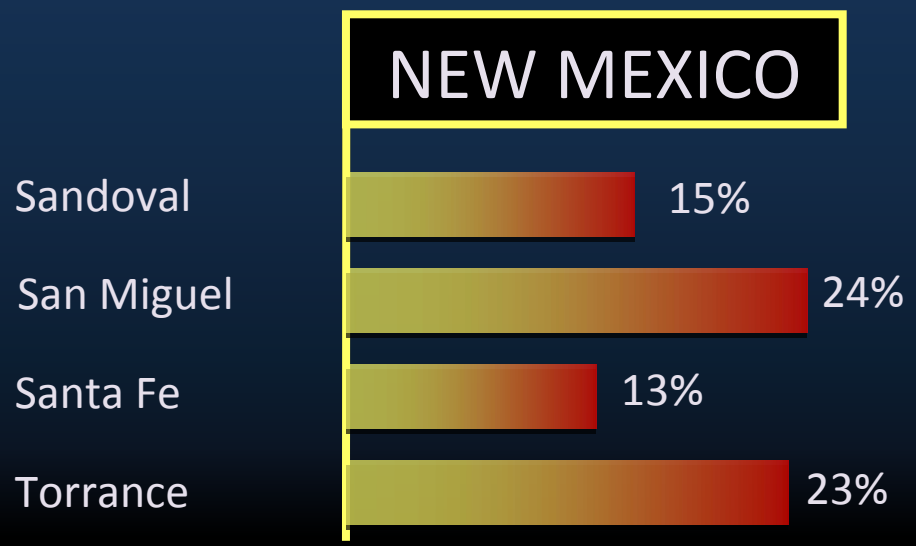
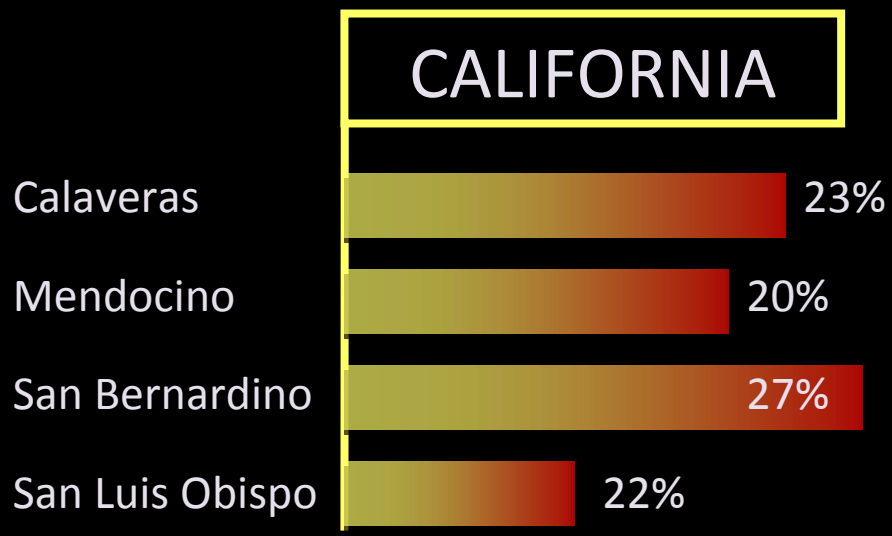
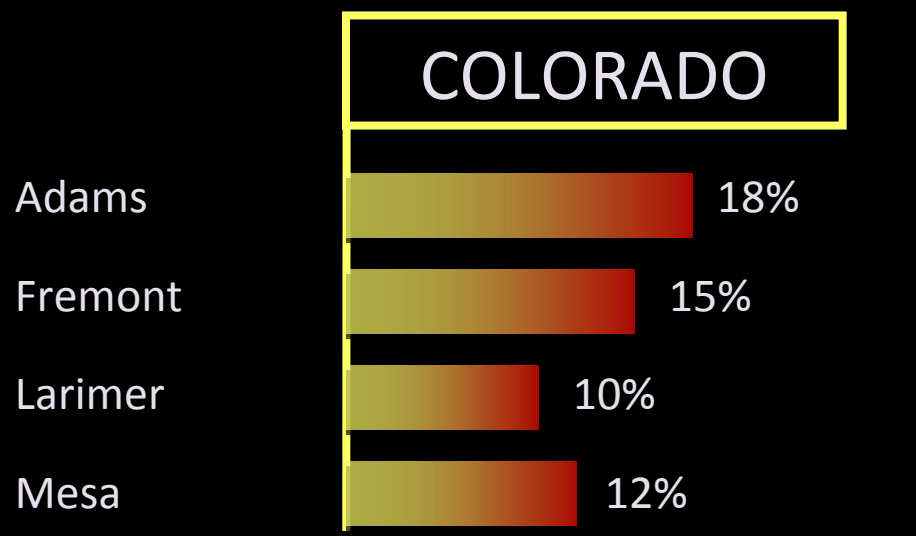
Health Indicators – Poor or Fair Health

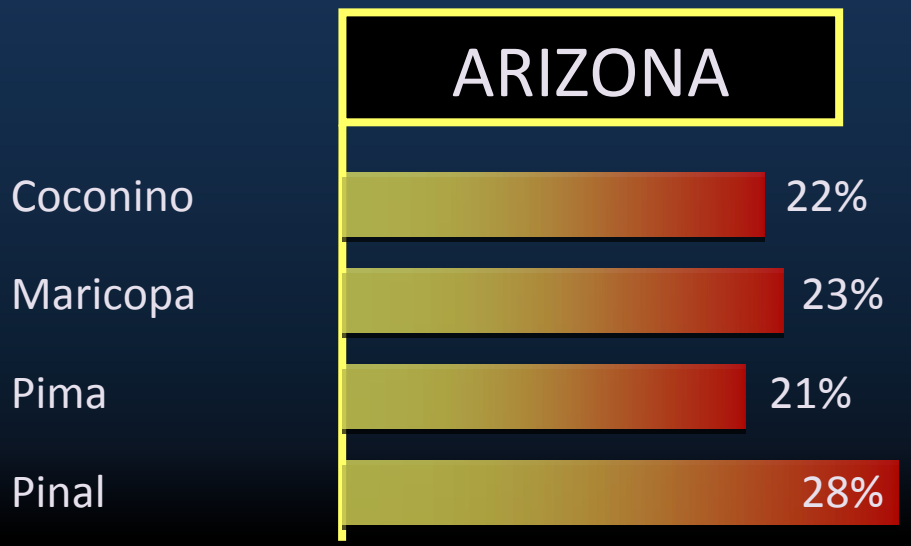


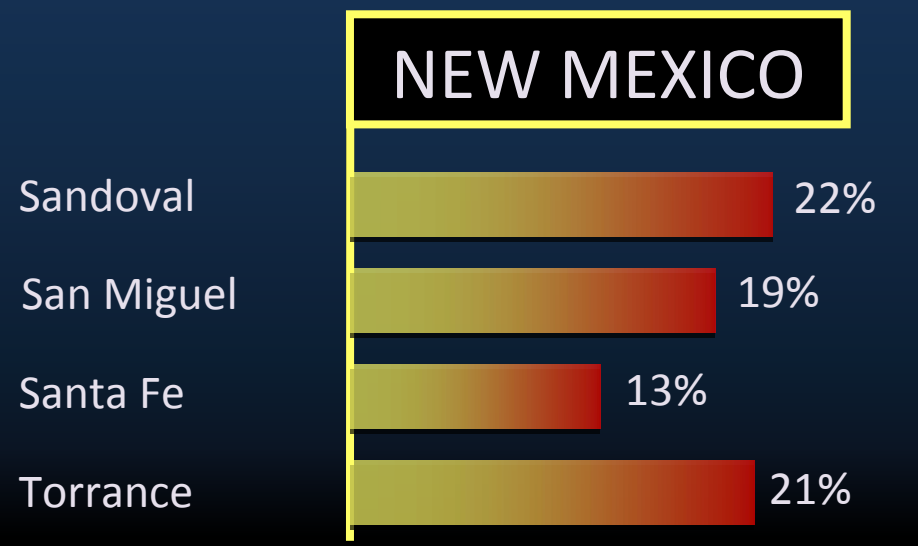


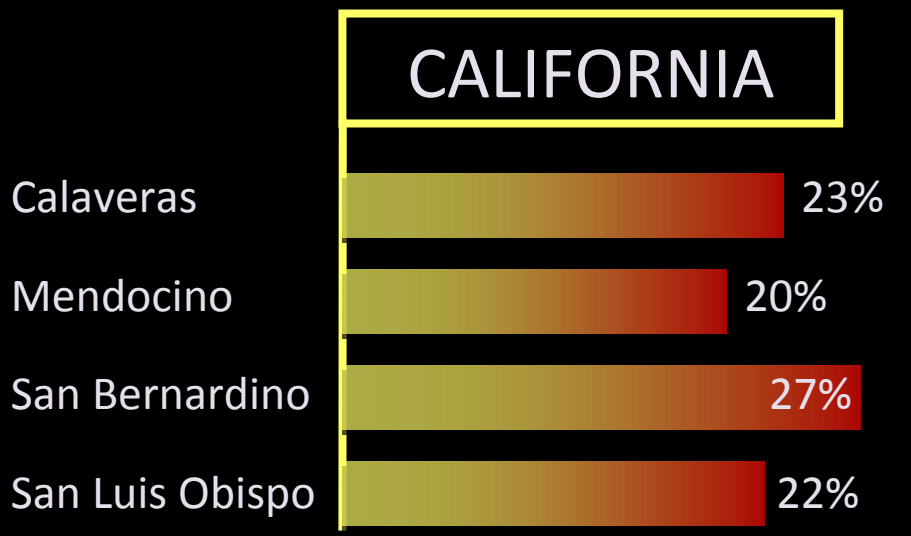


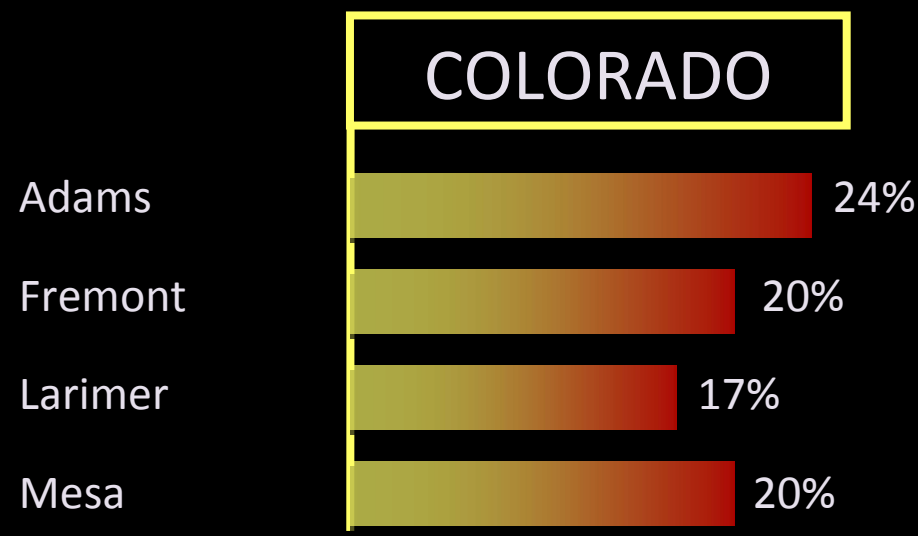


Health Indicators – Adult Obesity









Issues Influencing How Americans Vote

(% Very Important + Somewhat Important)

Economy	96%
Government Ethics	96%
National Security	92%
Social Security	89%
Taxes	88%
Education	88%
Health Care	87%
Immigration	87%
War in Iraq	83%
Abortion	64%

Source: Rasmussen Reports, May 2010

BOTTOM LINE

Public health is of critical importance to the US economy and is becoming a major transportation policy issue.

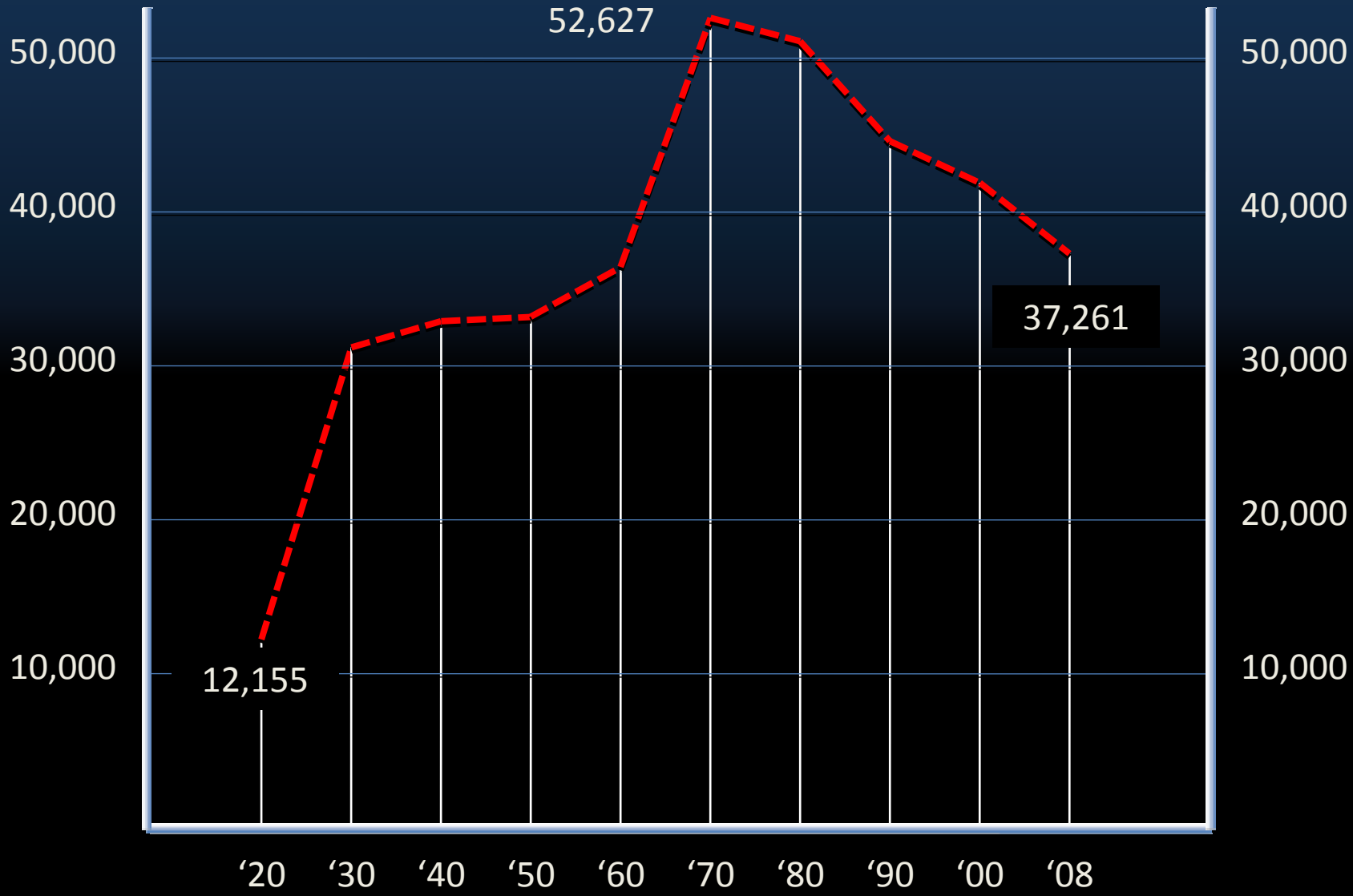
2

Transportation & Public Health

Transportation & Public Health

Traffic Safety + Personal Health

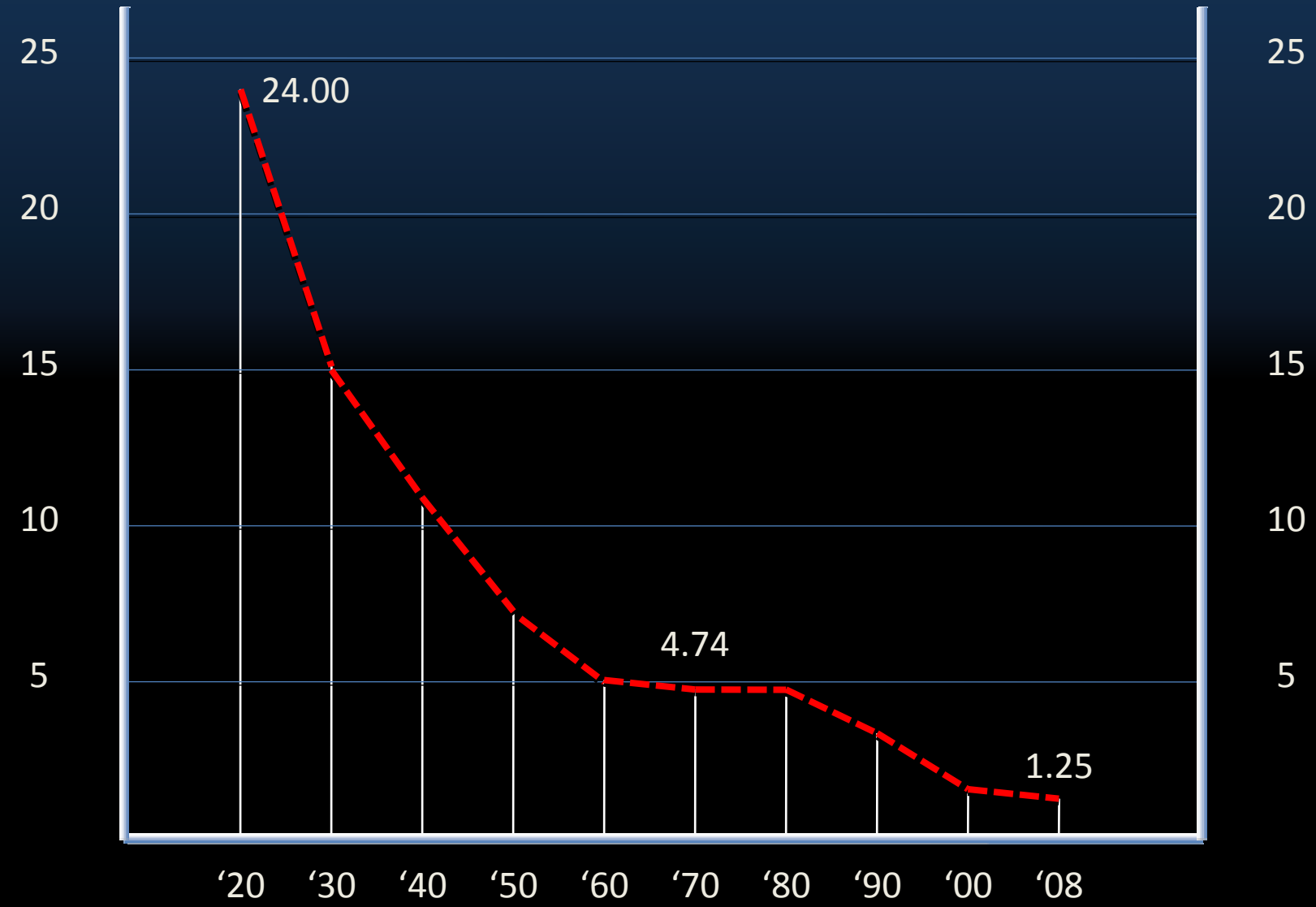
Annual US Traffic Fatalities



Source: NHTSA, FHWA

US Traffic Fatality Rate/HMVM

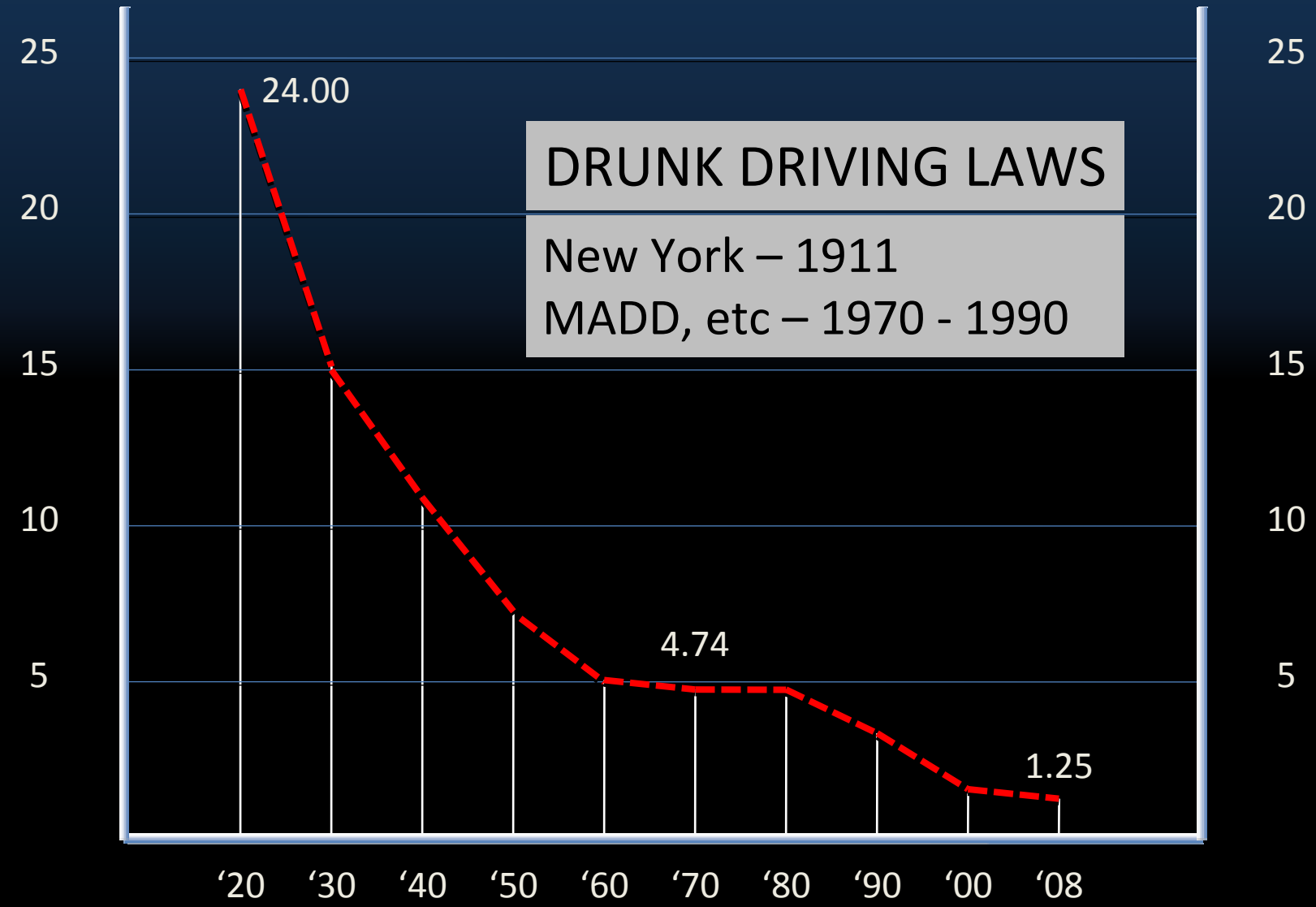
(hundred million vehicle miles)



Source: NHTSA, FHWA

US Traffic Fatality Rate/HMVM

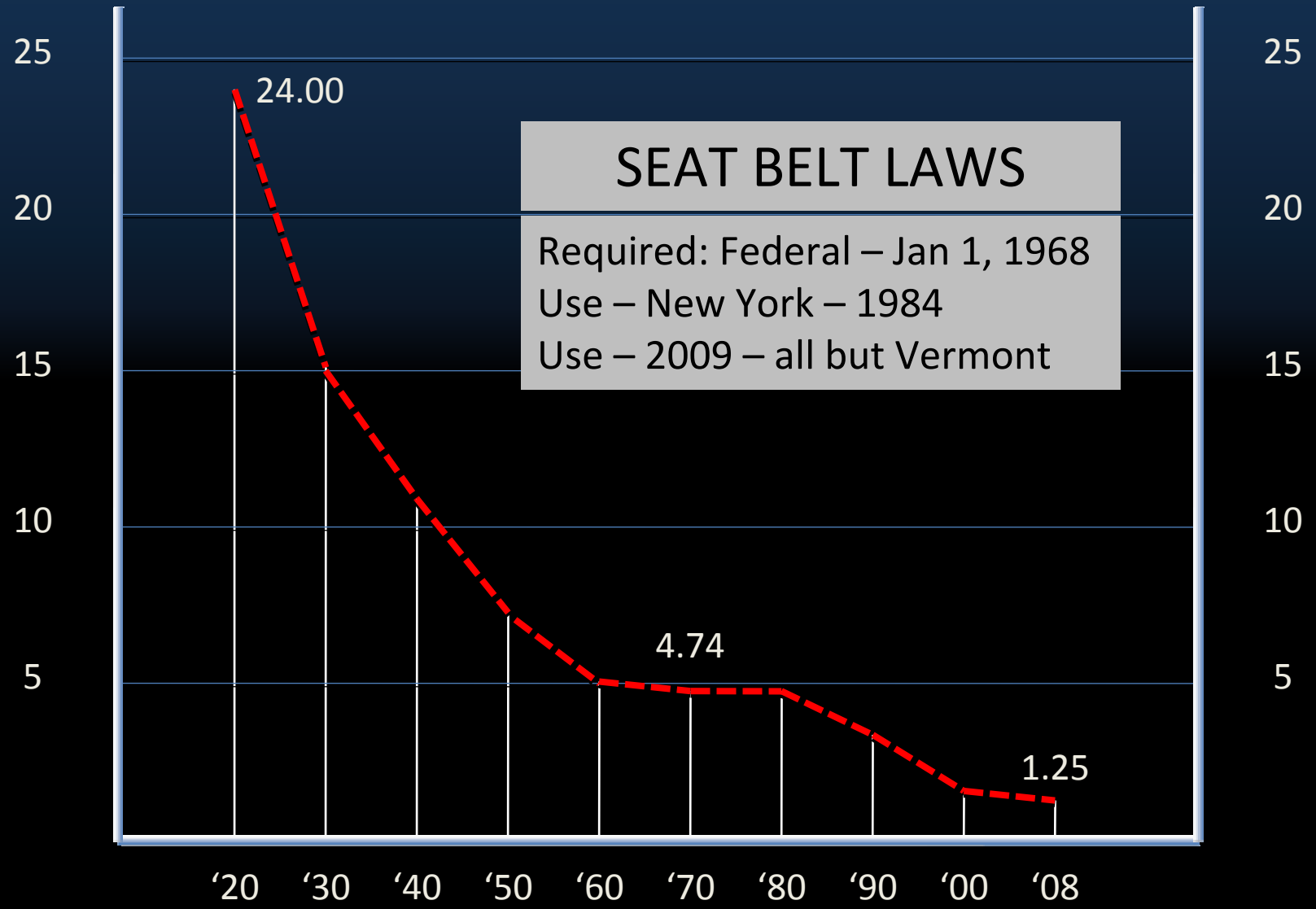
(hundred million vehicle miles)



Source: NHTSA, FHWA

US Traffic Fatality Rate/HMVM

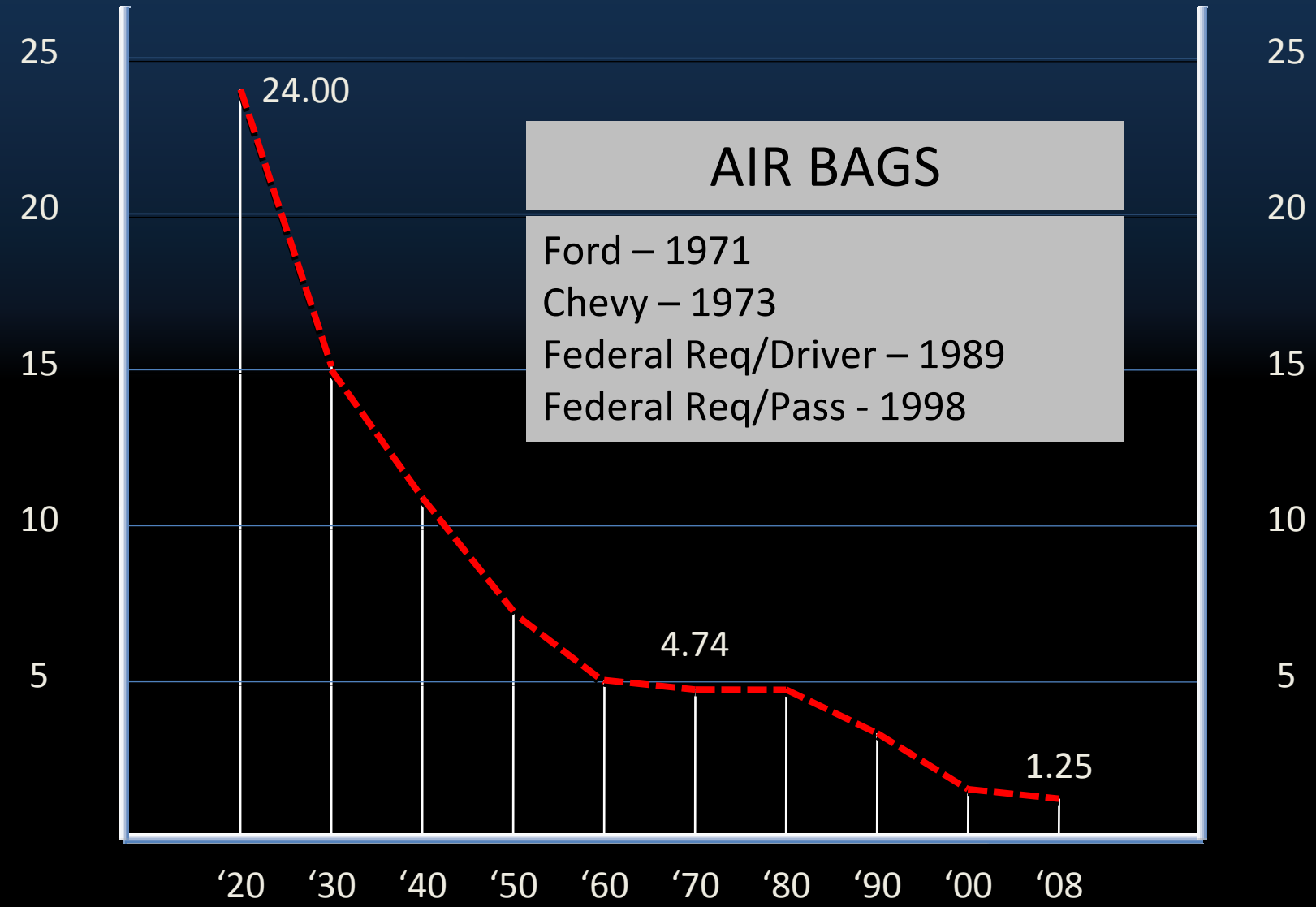
(hundred million vehicle miles)



Source: NHTSA, FHWA

US Traffic Fatality Rate/HMVM

(hundred million vehicle miles)



Source: NHTSA, FHWA

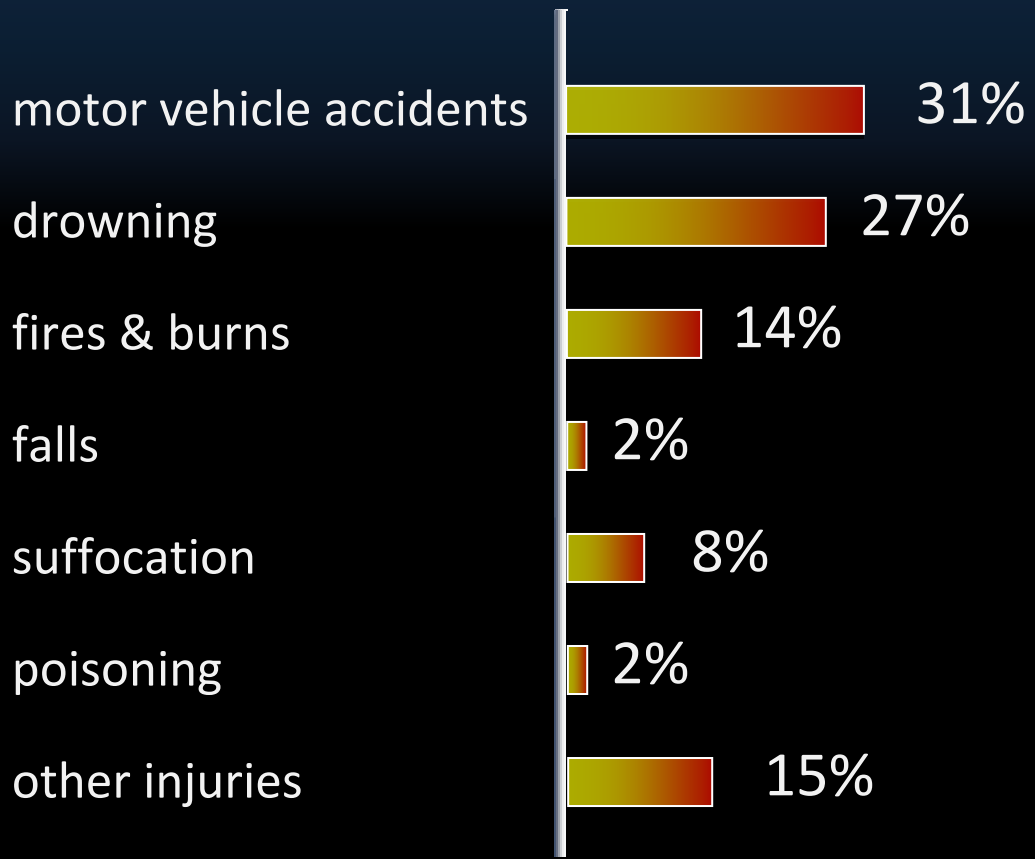
“Changes in highway infrastructure between 1984 and 1997 have not reduced traffic fatalities and injuries, and have even had the effect of increasing total fatalities and injuries.

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 accidents are the leading cause of unintentional injury death in children

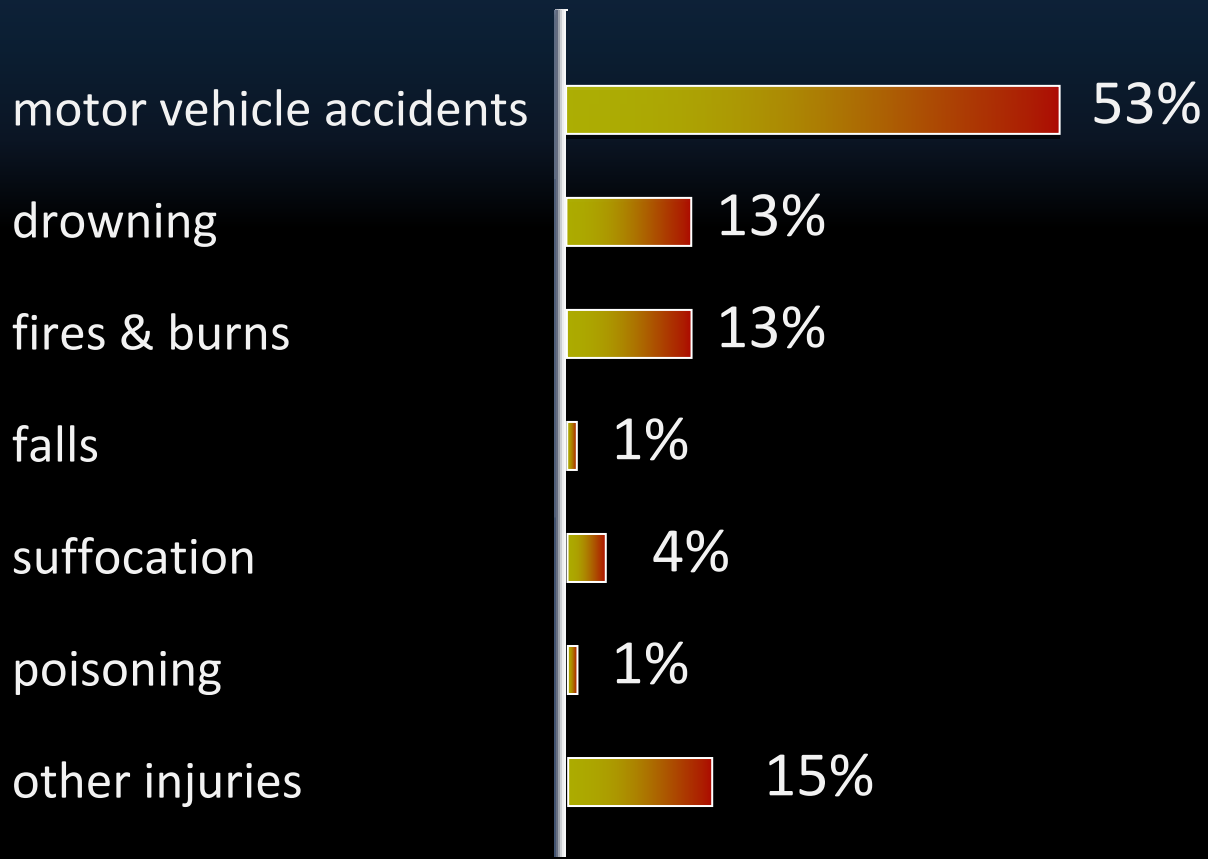
age 1 - 4



Source: CDC National Vital Statistics System, 2000 - 2005

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

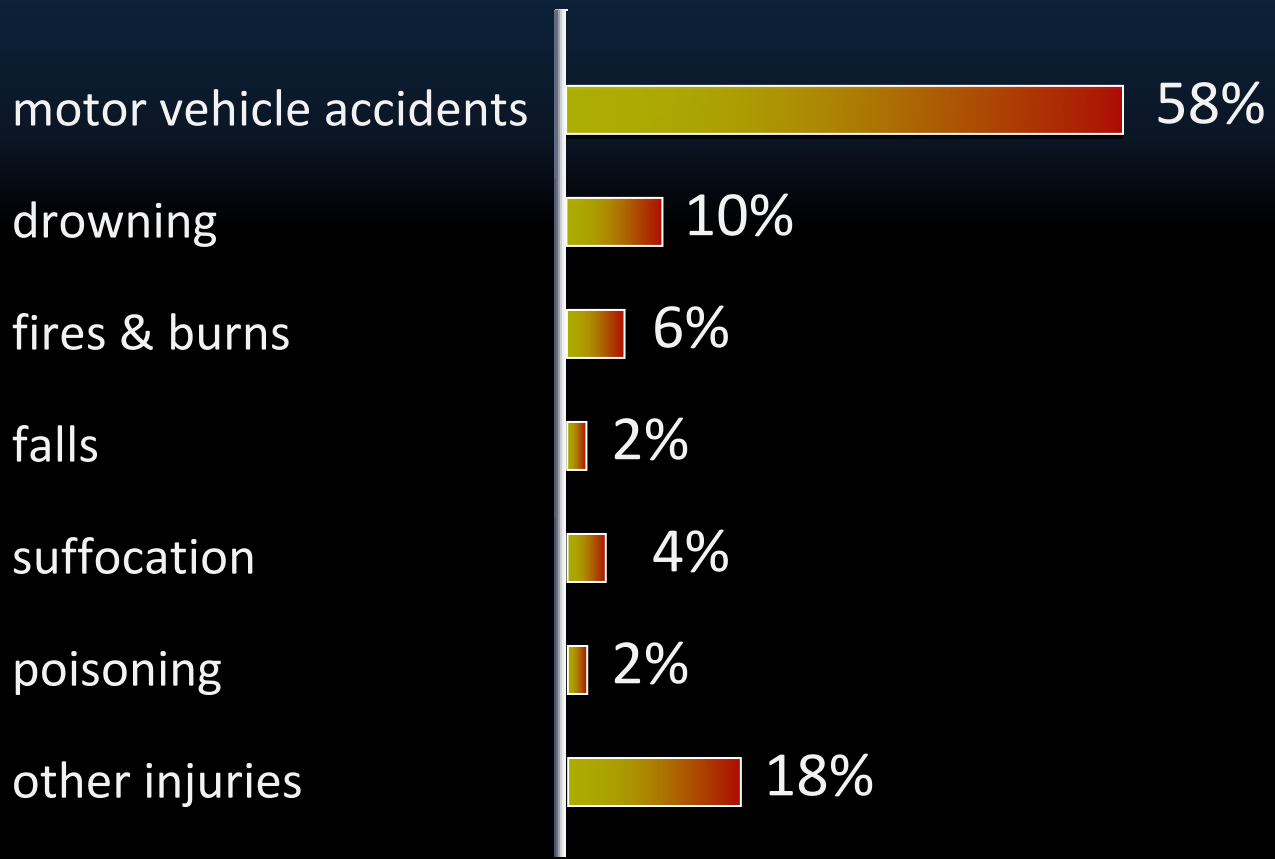
age 5 – 9



Source: CDC National Vital Statistics System, 2000 - 2005

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

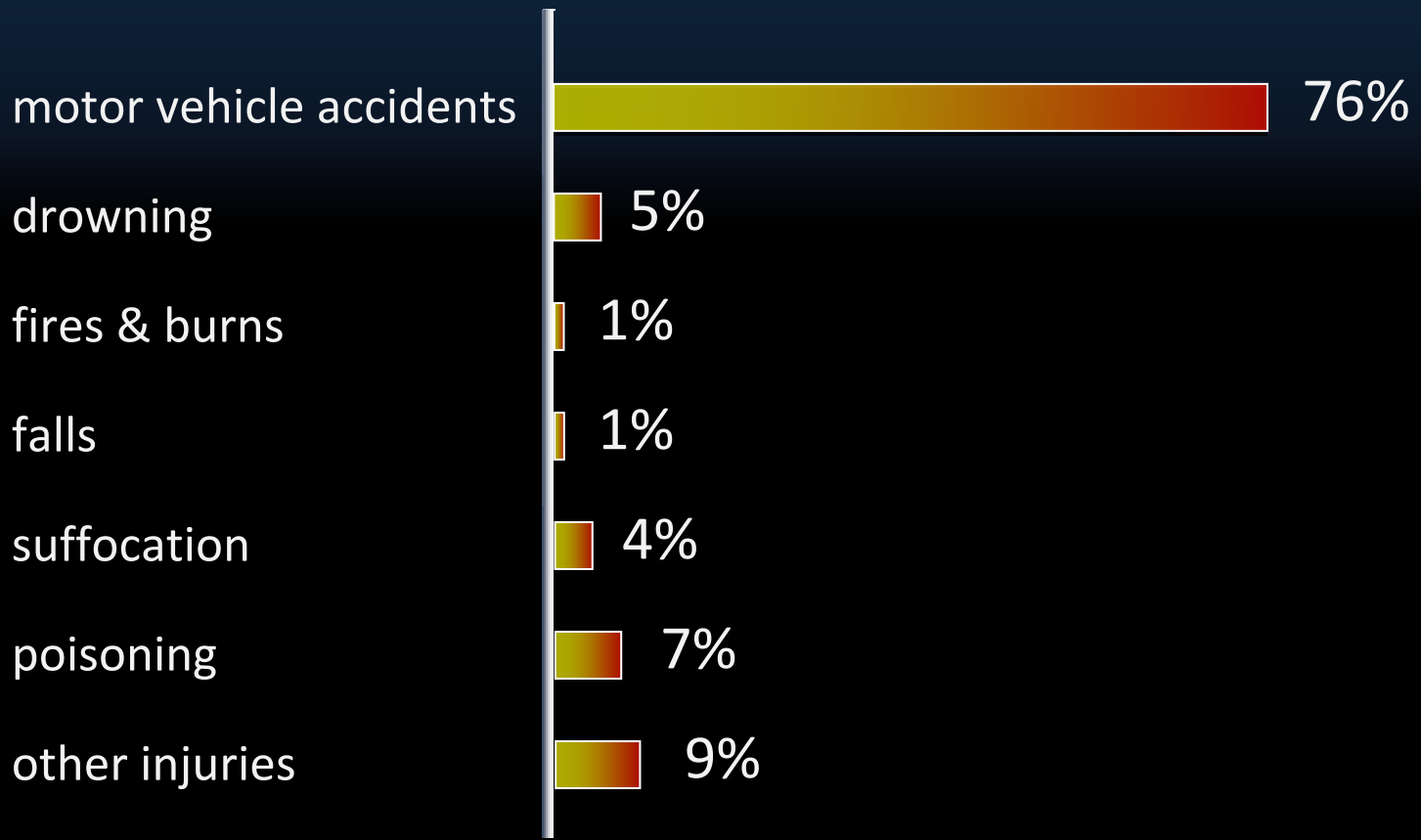
age 10 – 14



Source: CDC National Vital Statistics System, 2000 - 2005

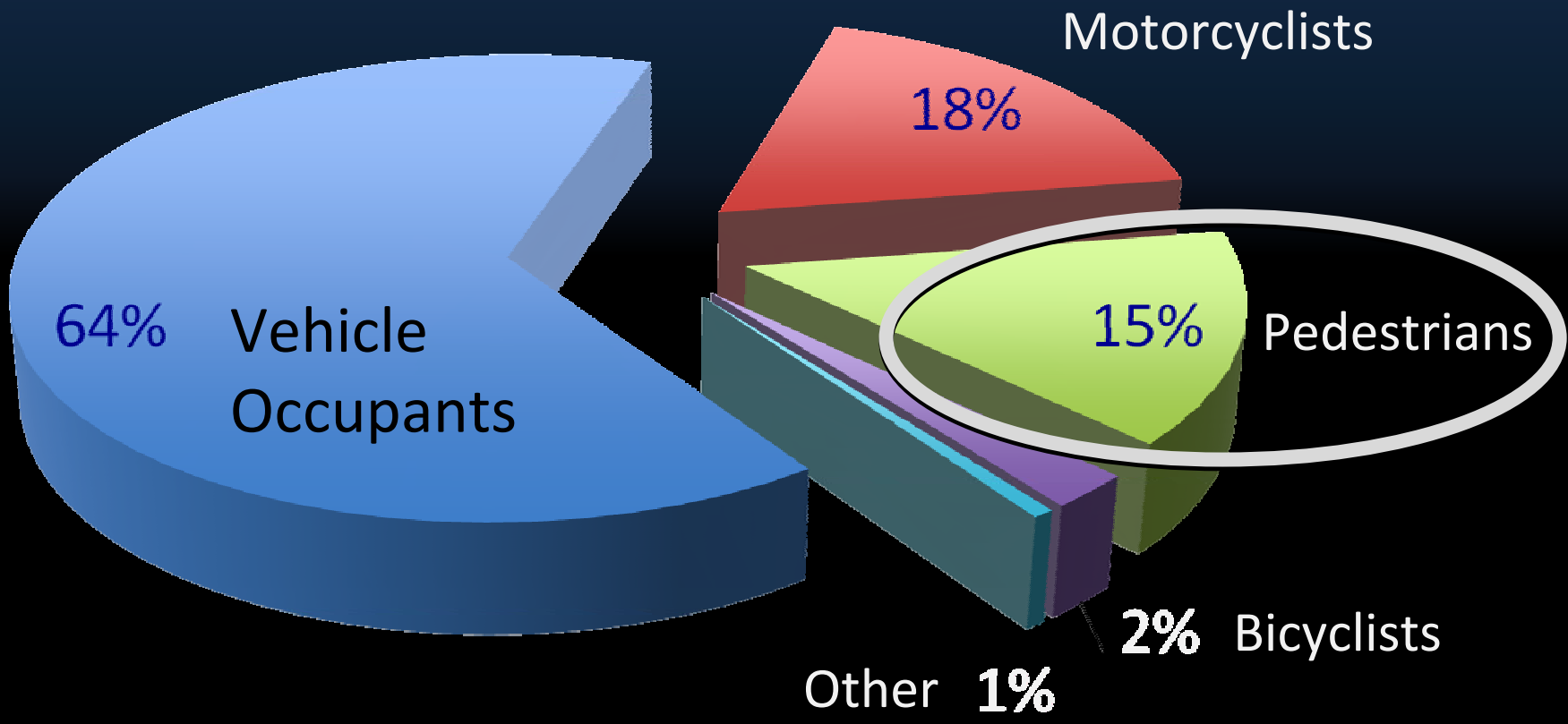
Traffic accidents are the leading cause of unintentional injury death in children

age 15 – 19

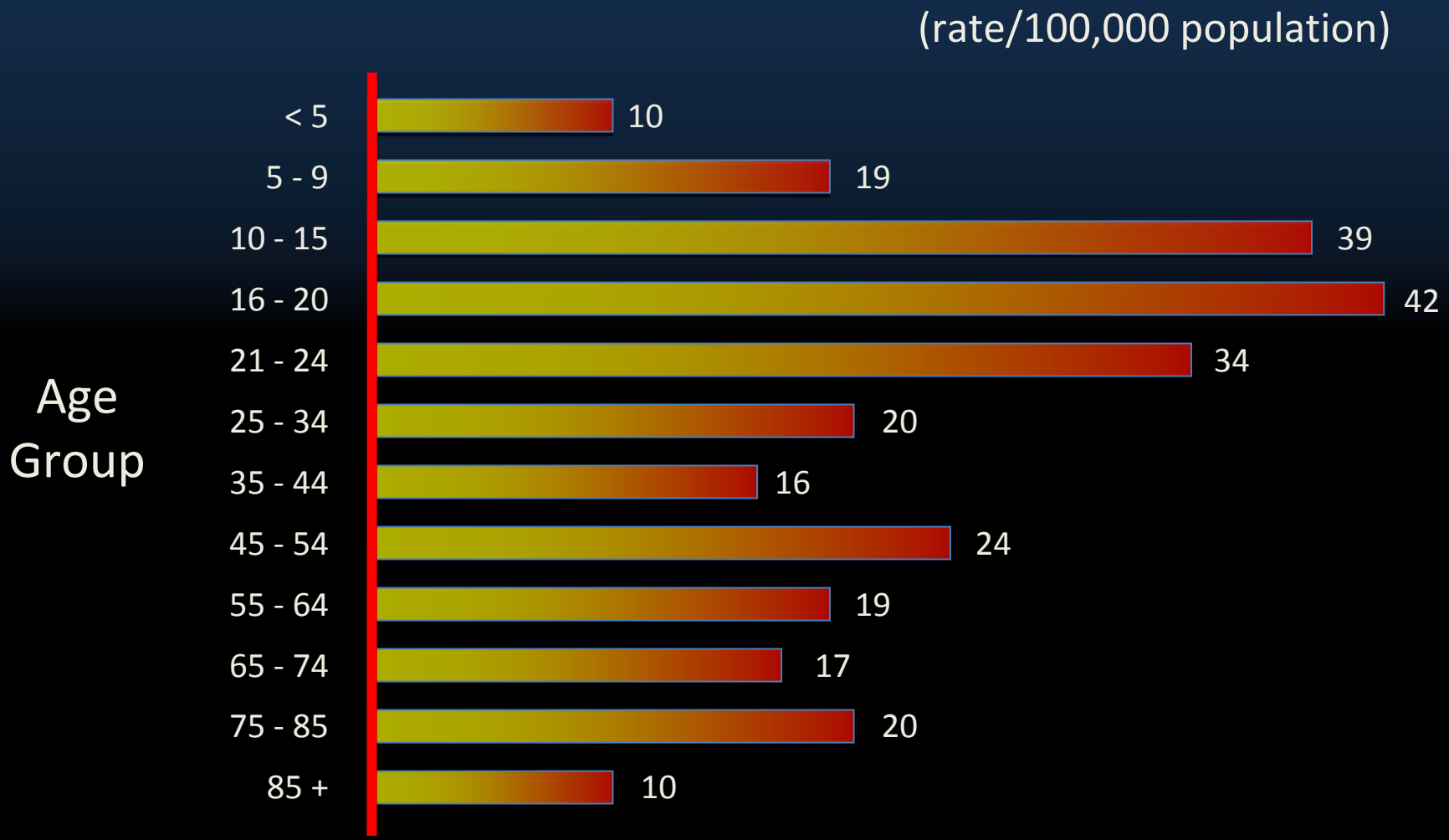


Source: CDC National Vital Statistics System, 2000 - 2005

2008 Fatalities



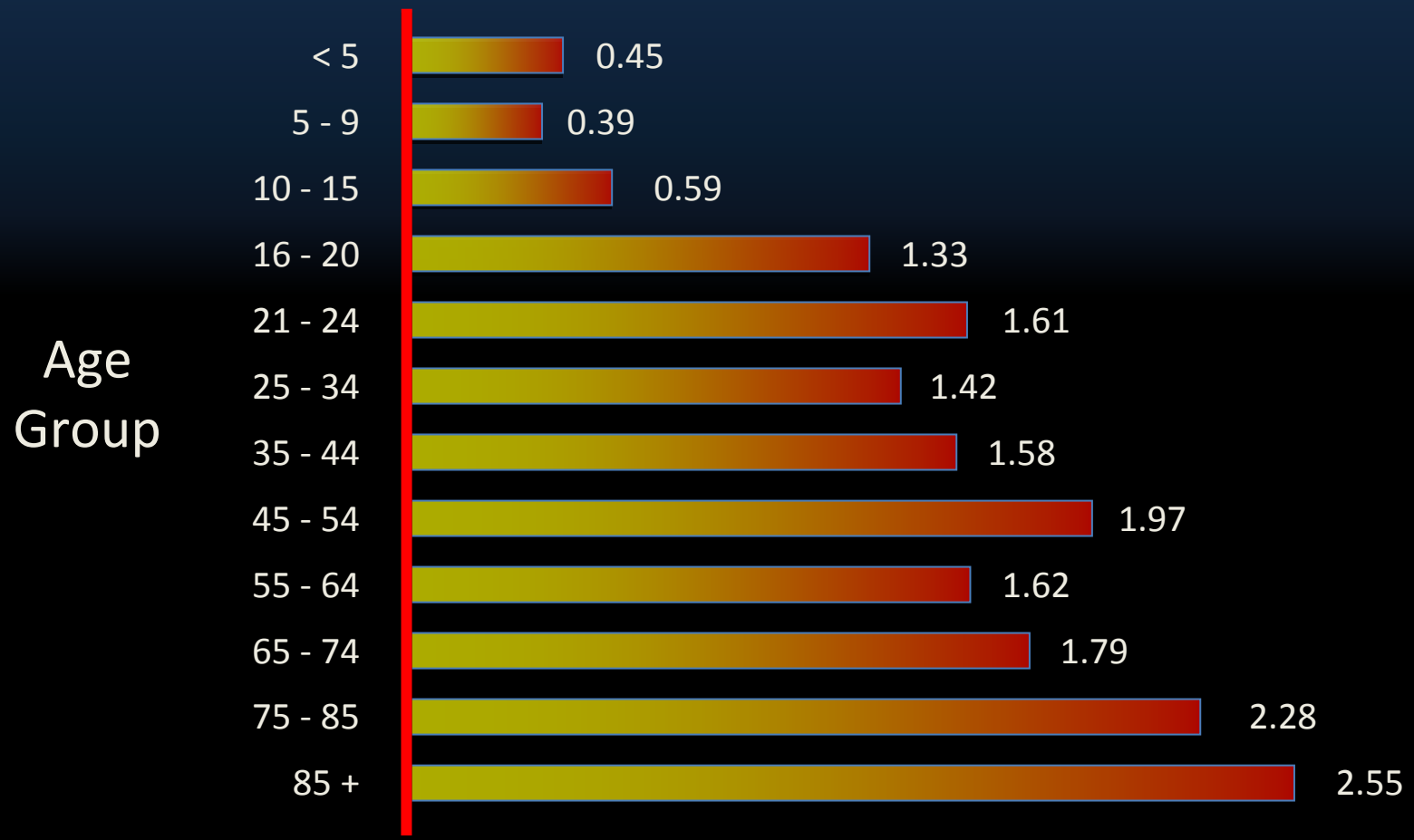
US Injury Rate: Pedestrians Hit by Motor Vehicles



Source: NHTSA, 2008

US Fatality Rate: Pedestrians Hit by Motor Vehicles

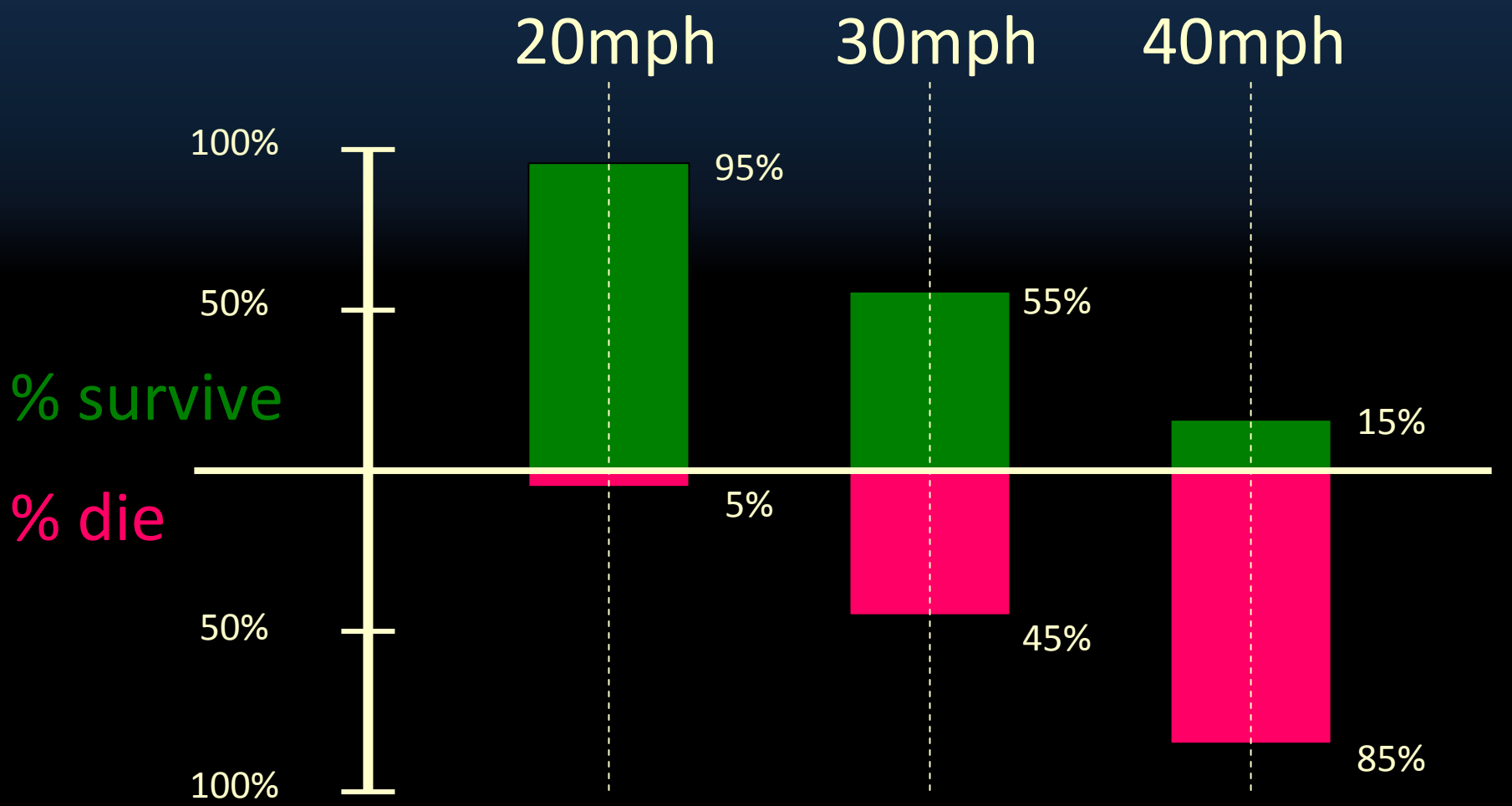
(rate/100,000 population)



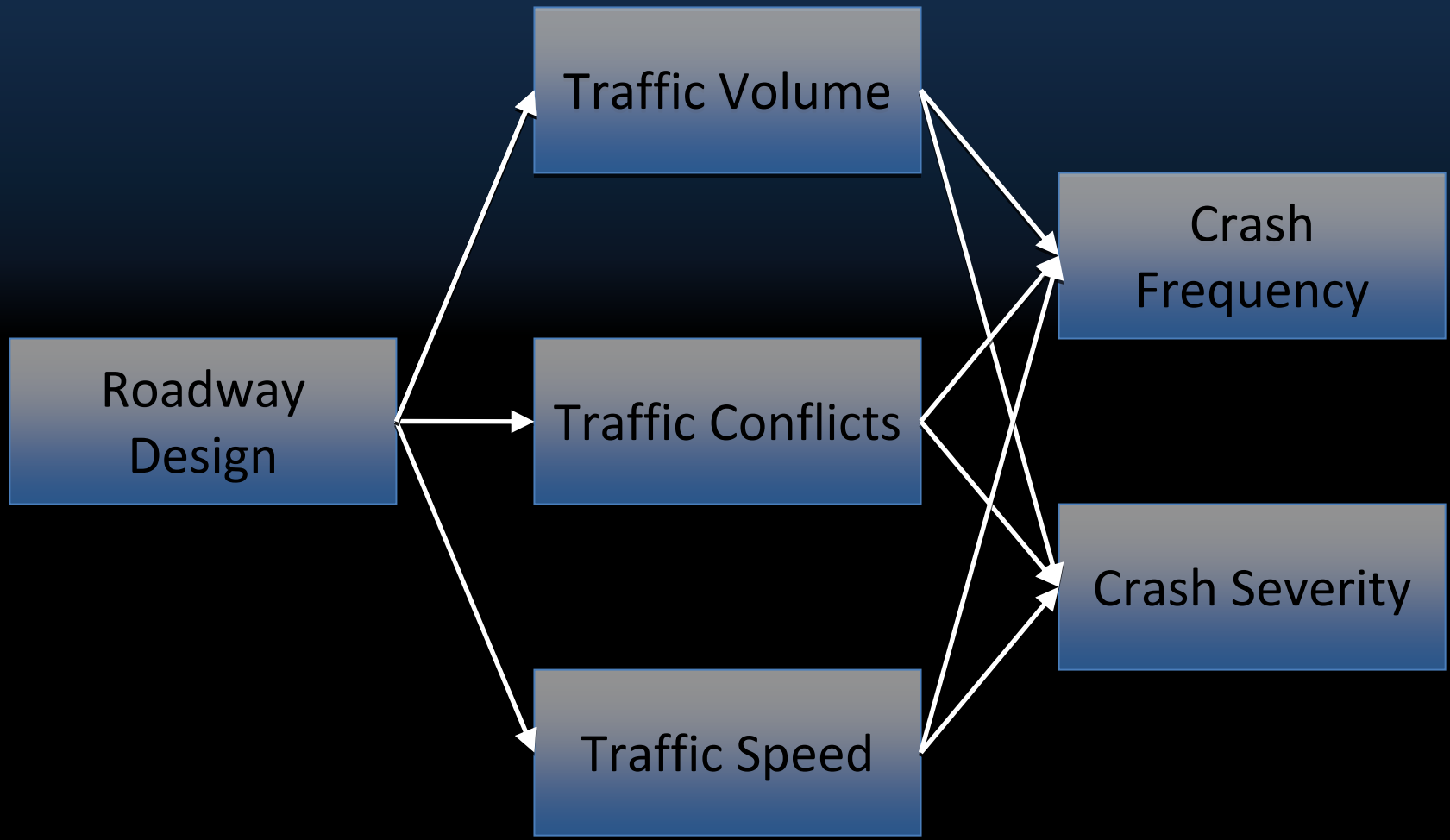
Source: NHTSA, 2008

Honolulu

pedestrian survival rates & vehicle speed

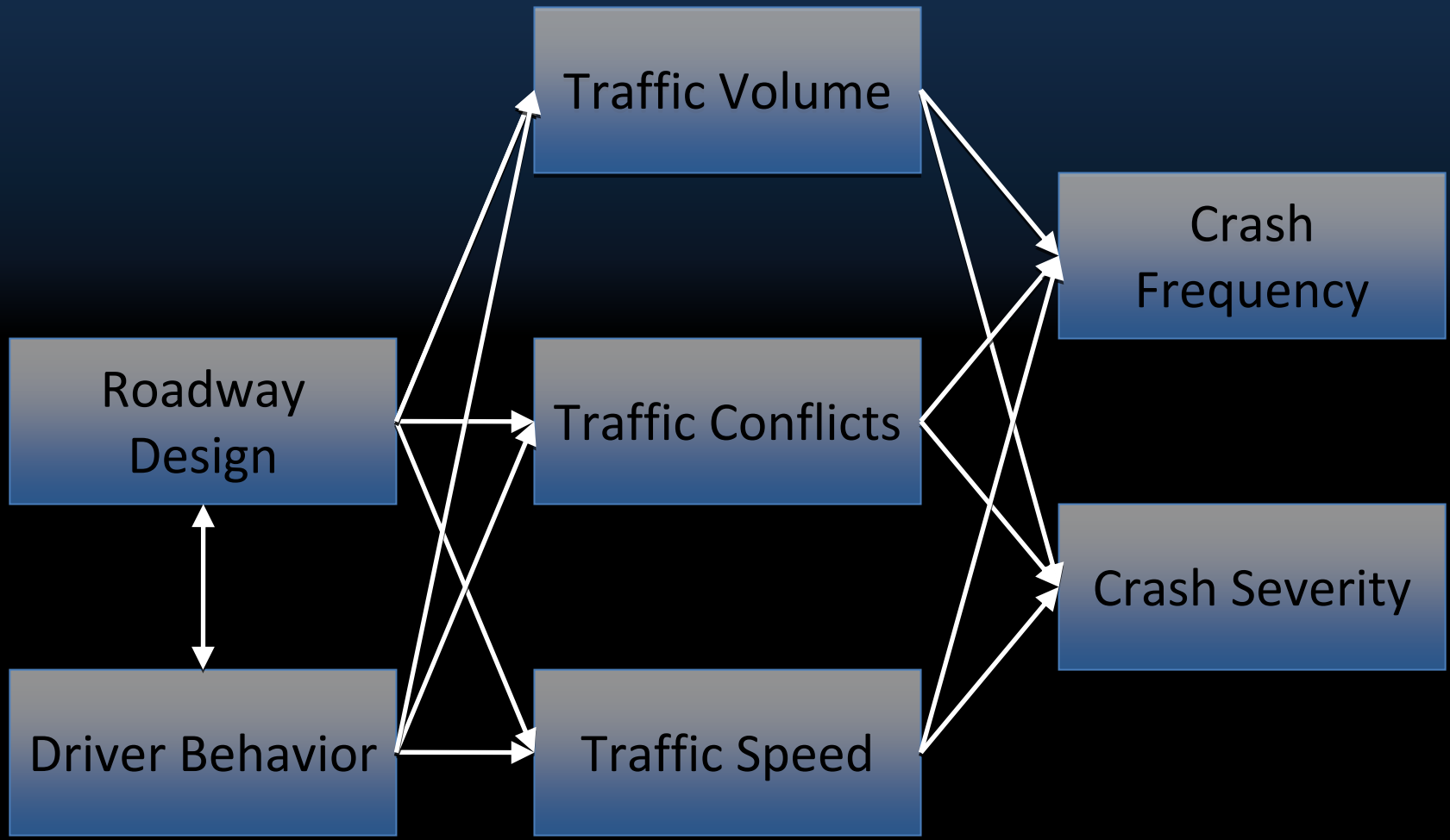


Pre-1950 Traffic Safety Model



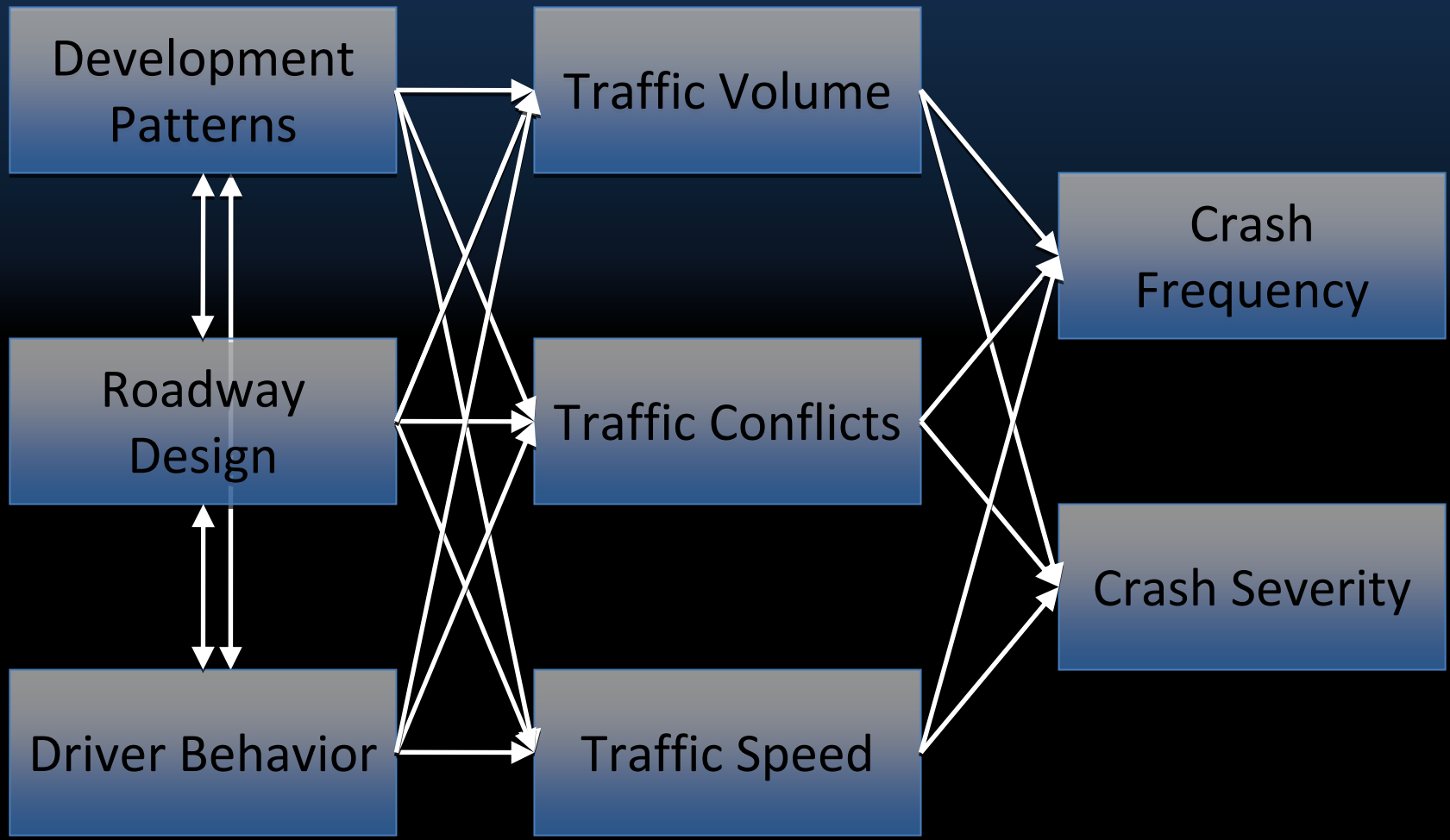
Based on and Revised from Ewing and Dumbaugh, Journal of Planning Literature, Vol. 23, No. 4

Traditional Traffic Safety Model



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

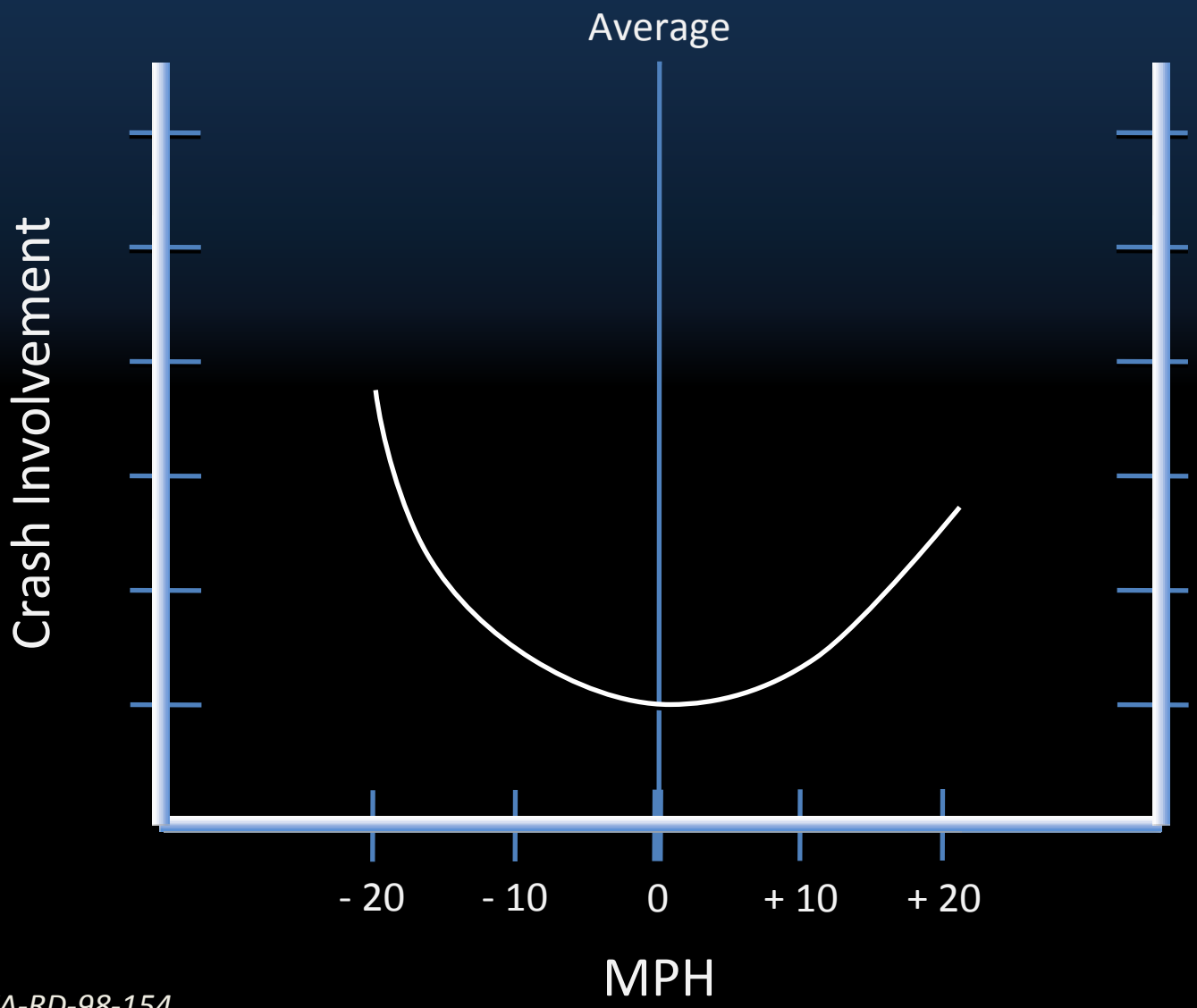
Context-Based Traffic Safety Model



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

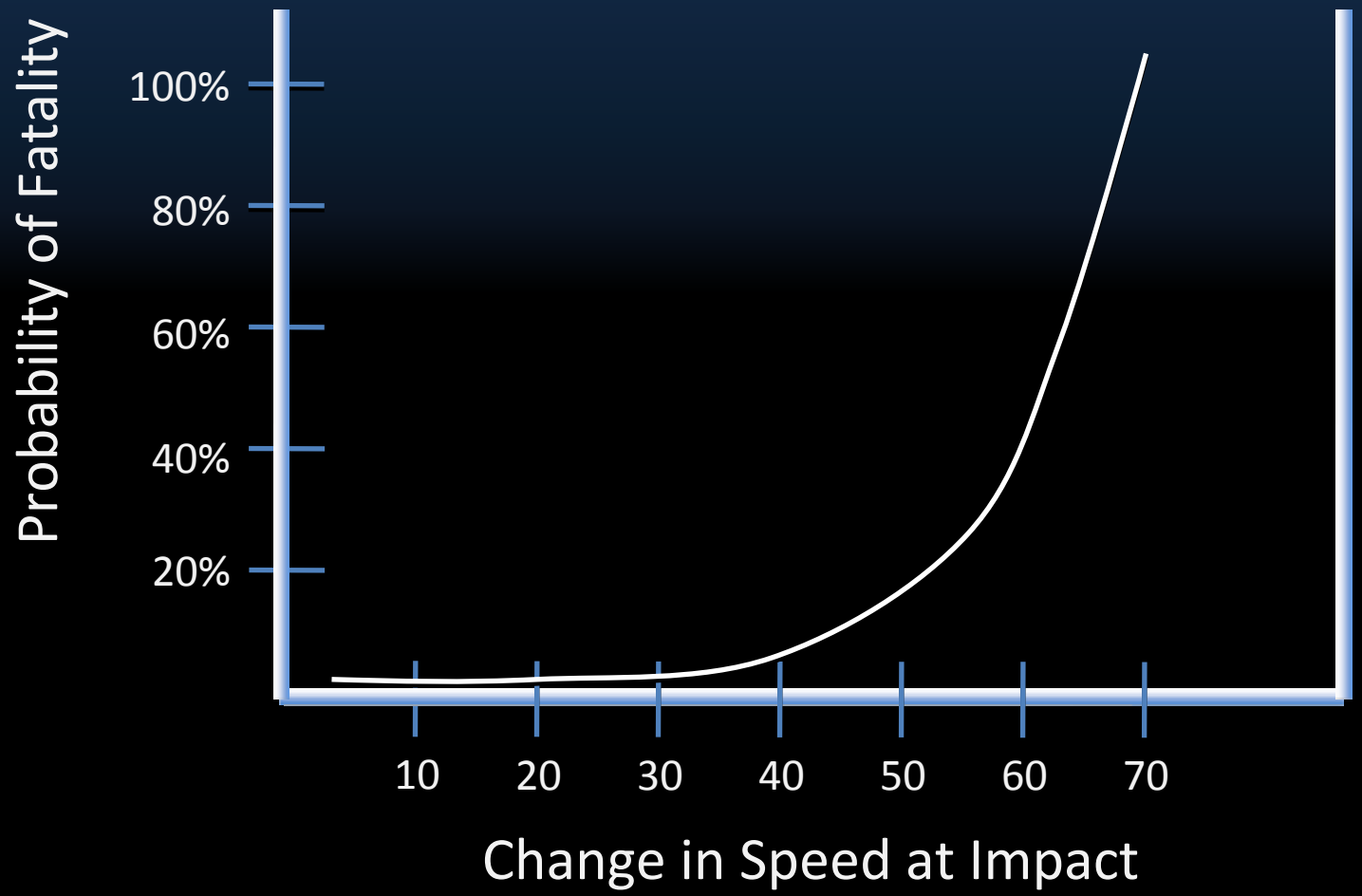
Speed

The U-Shaped Curve



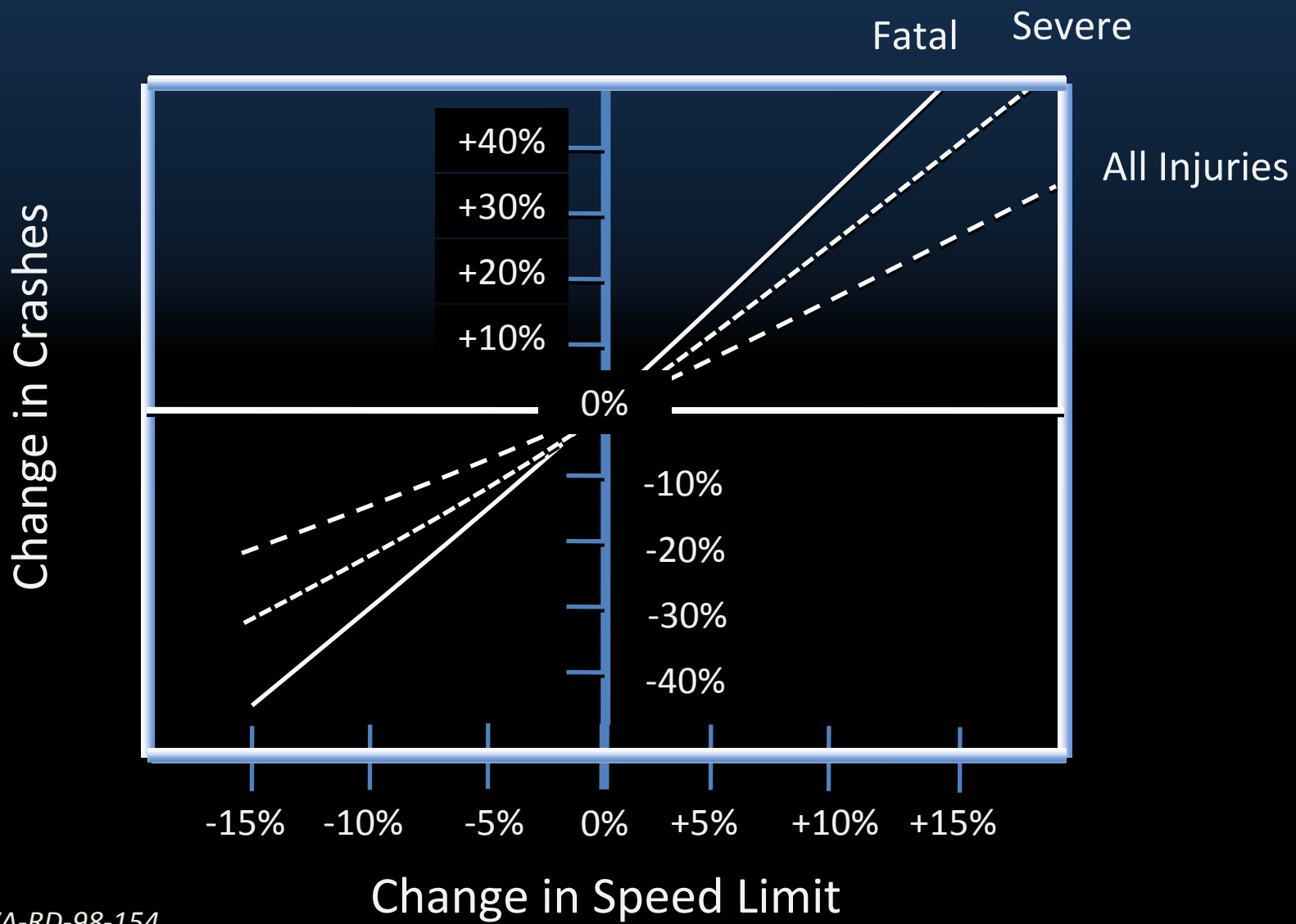
Source: FHWA-RD-98-154

Crash Severity



Source: FHWA-RD-98-154

Changing Speed Limits

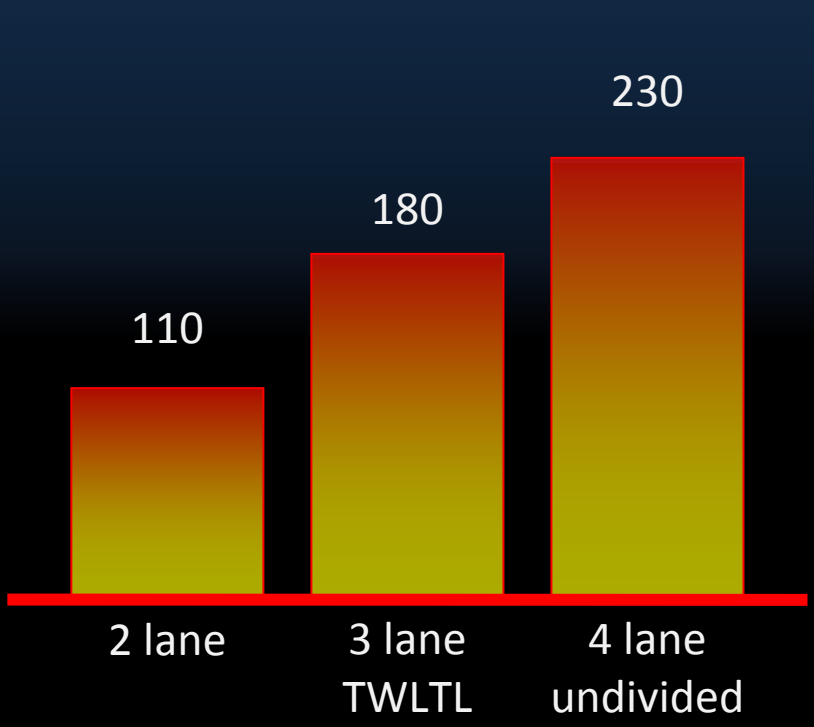


Source: FHWA-RD-98-154

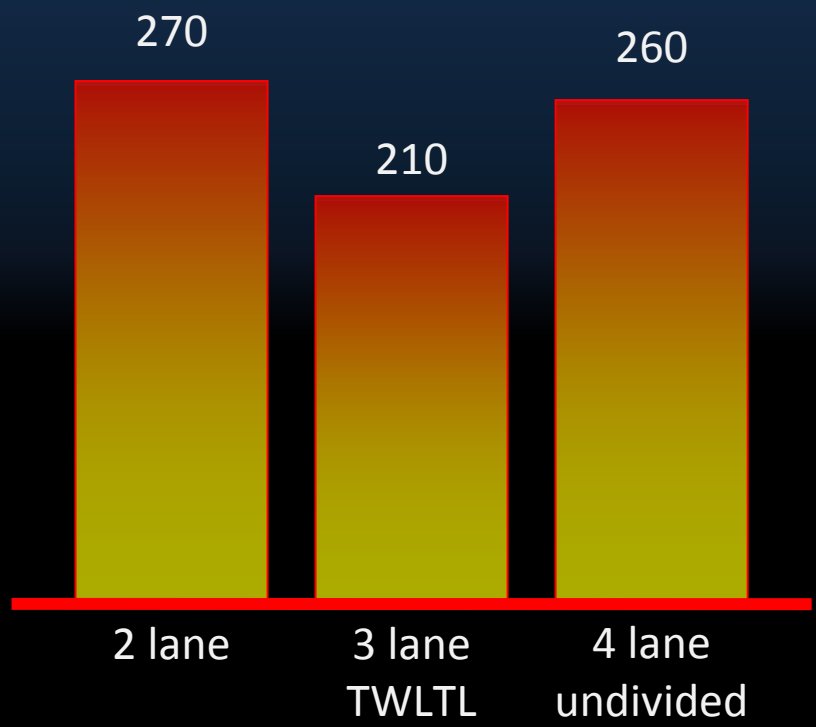
Cross Section

Number of Lanes

Collision Rates – Medium Density – Controlling for ADT



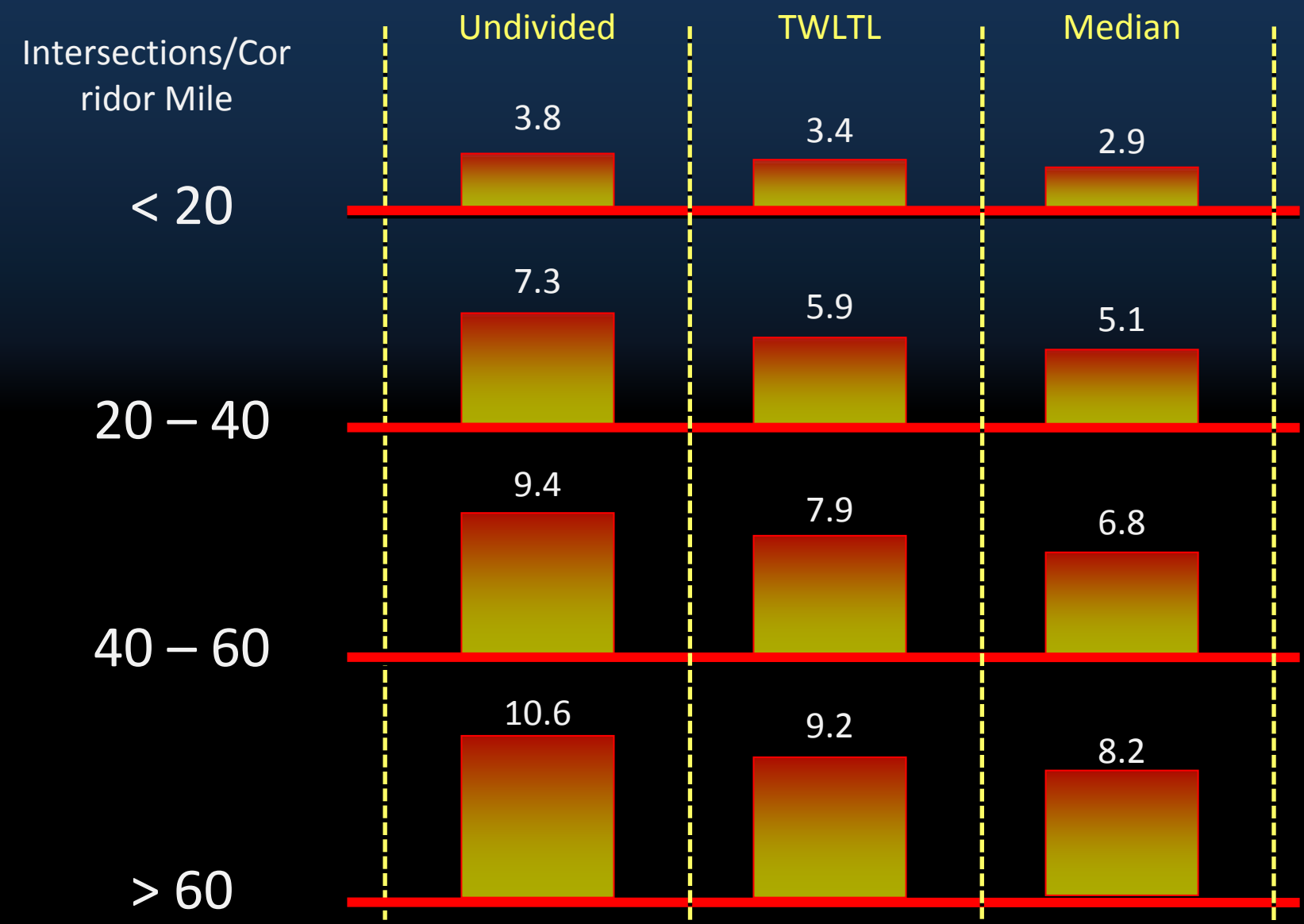
Residential Land Uses



Commercial Land Uses

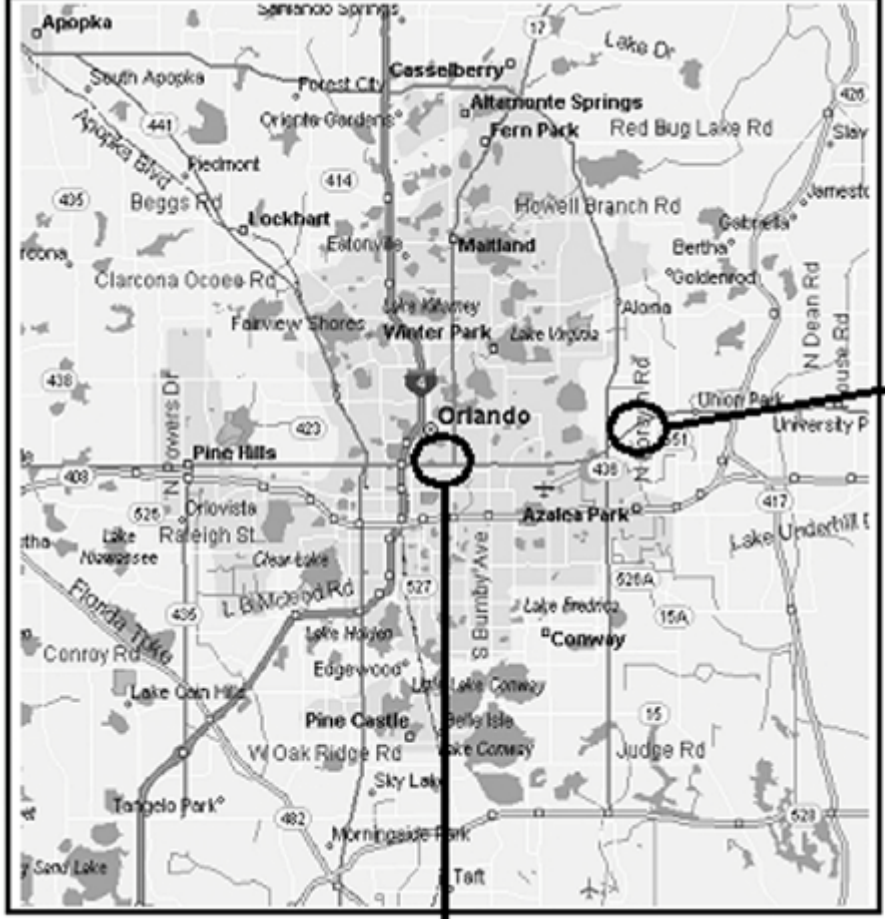
Source: Hummer and Lewis, FHWA/NC/2000-003, NCSU

Accident Rates + Access Management



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

Street Design + Urban Environment

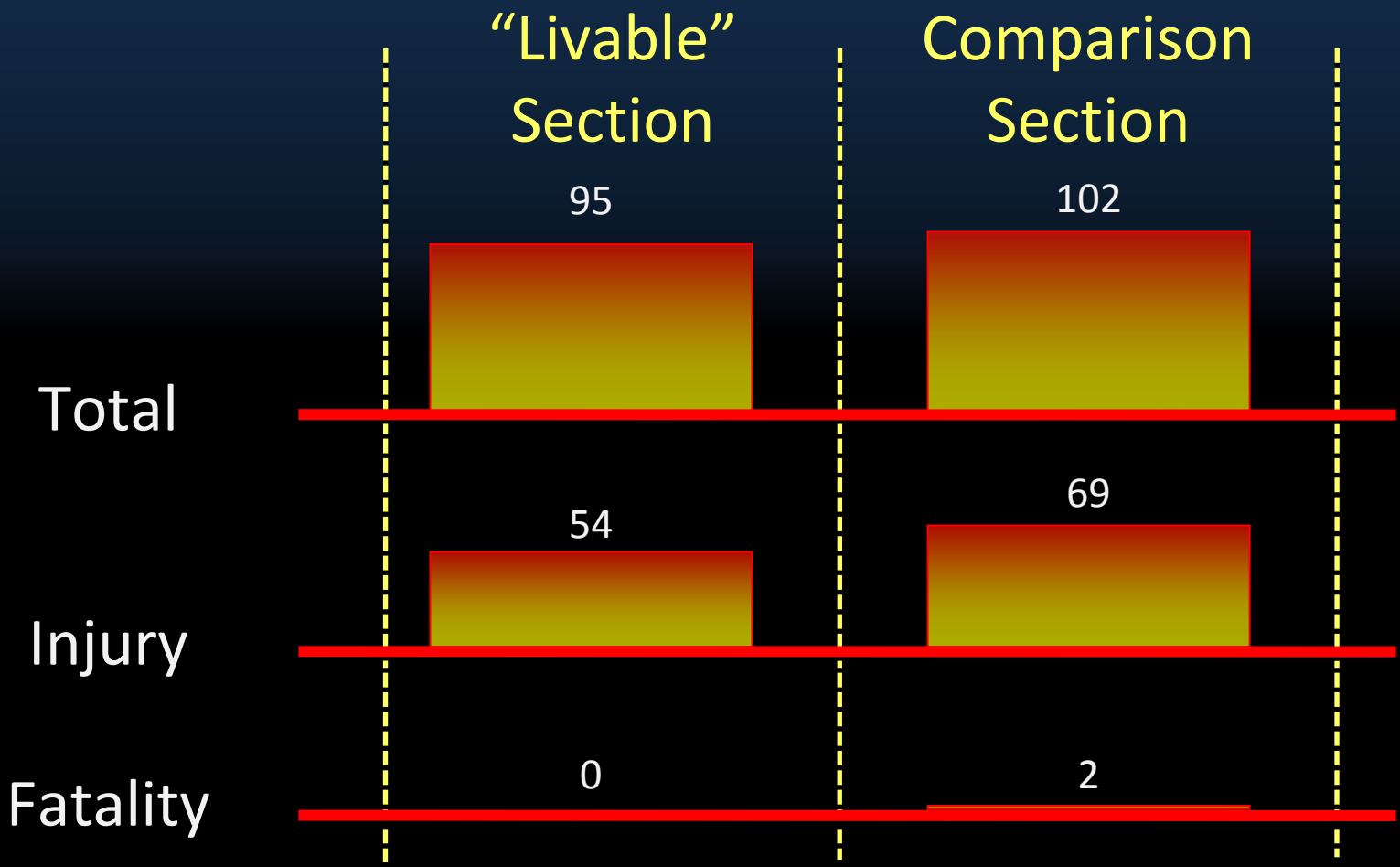


Colonial Drive:
Comparison section

Colonial Drive: Livable section

Street/Urban Design

Mid-Block Crashes/100 MVMT



Source: Eric Dumbaugh, JAPA, Summer 2005, Vol. 71, No. 3

2 Primary Elements

Traffic Safety + Personal Health

Humans:

- recently descended from nomadic hunter/gatherers…
- walked & worked, burning calories
- experienced the world @ 2 – 3mph
- bodies were designed for collisions @ < 5 mph

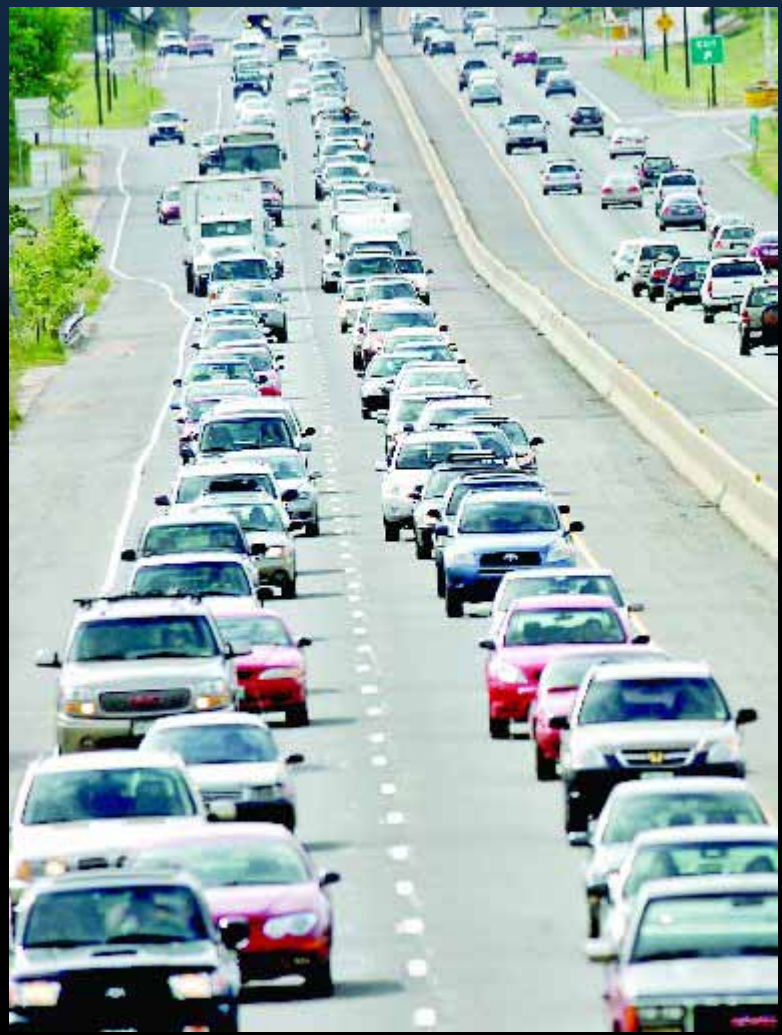
we evolved as “walkers”

we are still “walkers”

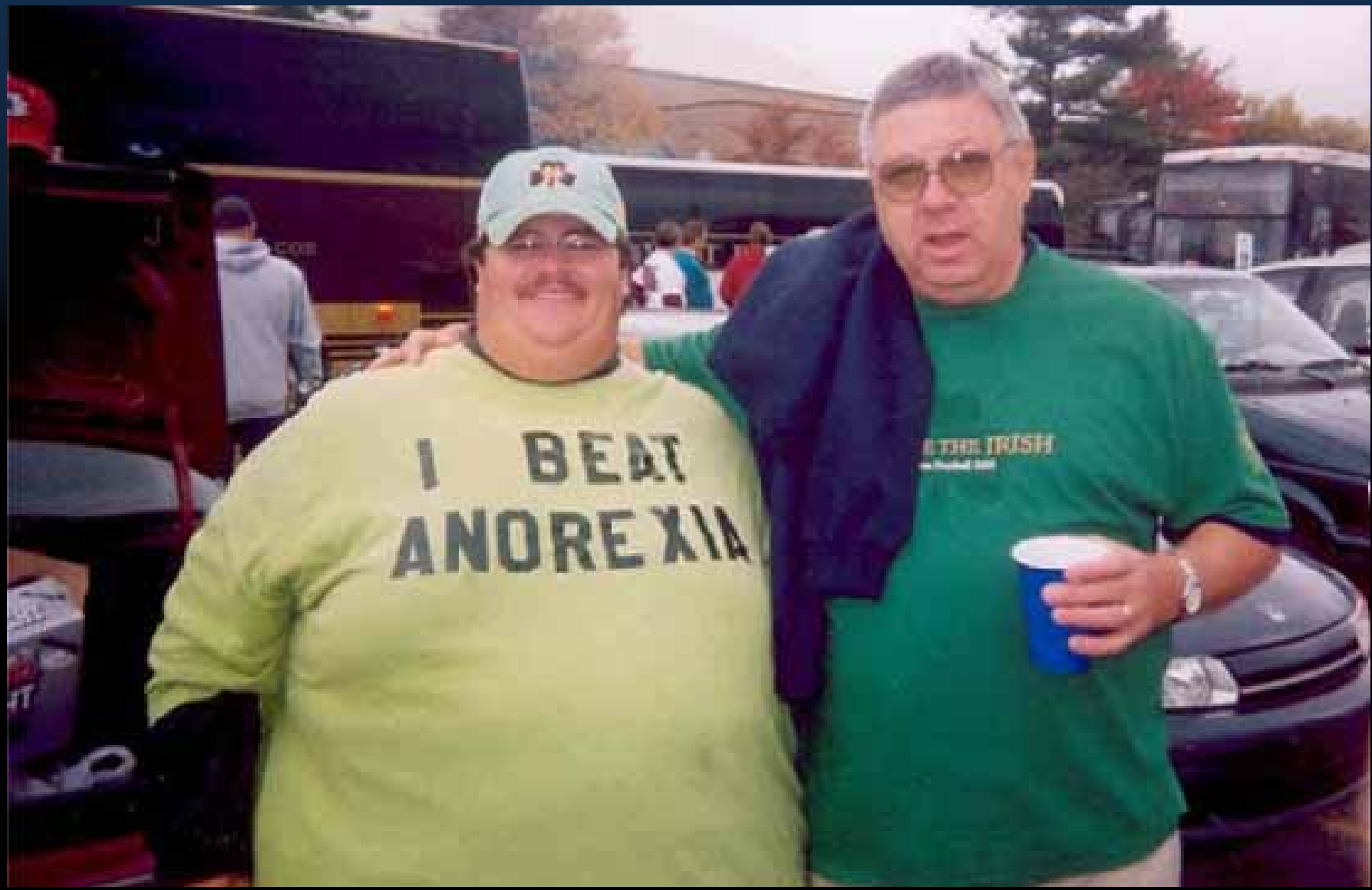
human history

this is what we do…

…but it is not who we are.



we cannot escape our DNA…

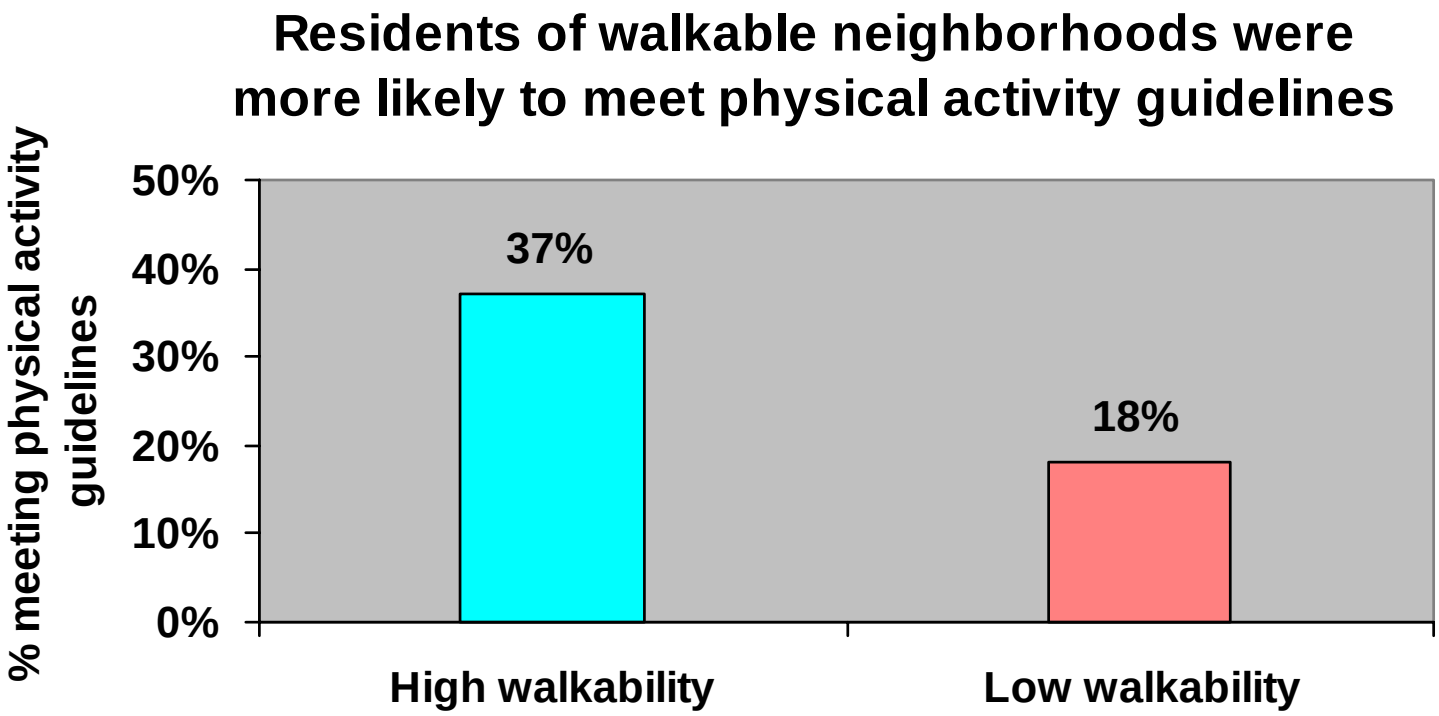


…no matter how hard we try

Research

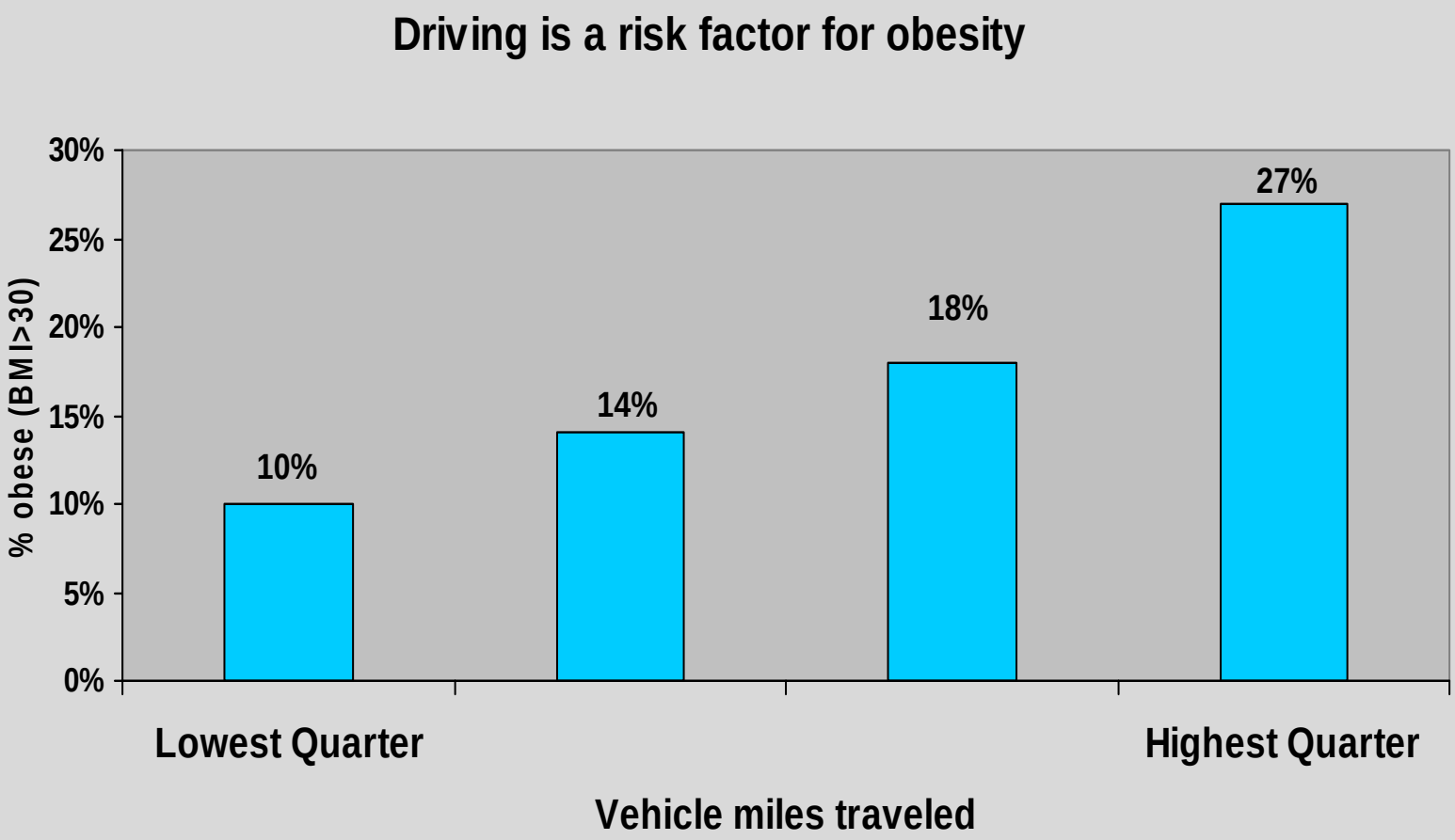
- US Centers for Disease Control
- Robert Wood Johnson Foundation

Extensive Research



Frank, Schmid, et al., Am J Prev Med, 2005

Extensive Research



Lopez-Zetina, Health and Place, 2006

Extensive Research

States with the Highest Rates of Physical Inactivity			
Rank	**State**	**Percentage of Adult Physical Inactivity (Based on 2006-2008 Combined Data, Including Confidence Intervals)**	**Obesity Ranking**
1	Mississippi	31.8% (+/-0.9)	1
2	Kentucky	30.4% (+/-1.0)	7
3 (tie)	Louisiana	30.3% (+/-0.9)	8
3 (tie)	Oklahoma	30.3% (+/-0.8)	6
5	Tennessee	29.8% (+/-1.2)	4
6	Alabama	29.5% (+/-1.0)	2
7	Arkansas	28.8% (+/-0.9)	10
8	Texas	28.4% (+/-0.9)	14
9	West Virginia	28.3% (+/-1.0)	3
10	New Jersey	26.7% (+/-0.8)	42

*Note: For rankings, 1 = Worst Health Outcome. 1 = Highest Rates of Physical Inactivity.

Research Conclusion #1:

People who are active as part of a regular daily routine
are less obese and are healthier

"Active Living…"

Research Conclusion #2:

People who live where walking and bicycling are convenient, safe and comfortable are much more active.

"…by Design"

“Active Living by Design”

Air Pollution & Health

	MAJOR SOURCES	HEALTH EFFECTS	ENVIRONMENTAL EFFECTS
SO_2	Industry	Respiratory and cardiovascular illness	Precursor to acid rain, which damages lakes, rivers, and trees; damage to cultural relics
NO_x	Vehicles; industry	Respiratory and cardiovascular illness	Nitrogen deposition leading to over-fertilization and eutrophication
PM	Vehicles; industry	Particles penetrate deep into lungs and can enter bloodstream	Visibility
CO	Vehicles	Headaches and fatigue, especially in people with weak cardiovascular health	
Lead	Vehicles (burning leaded gasoline)	Accumulates in bloodstream over time; damages nervous system	Fish/animal kills
Ozone	Formed from reaction of NO_x and VOCs	Respiratory illness	Reduced crop production and forest growth; smog precursor
VOCs	Vehicles; industrial processes	Eye and skin irritation; nausea; headaches; carcinogenic	Smog precursor

Air Pollution & Health

- Importance of proximity
- Accumulation over time: children
- Tie to equity & environmental justice
- $80 million/year

BOTTOM LINE:

Transportation planning & design are major determinants of public health.

3

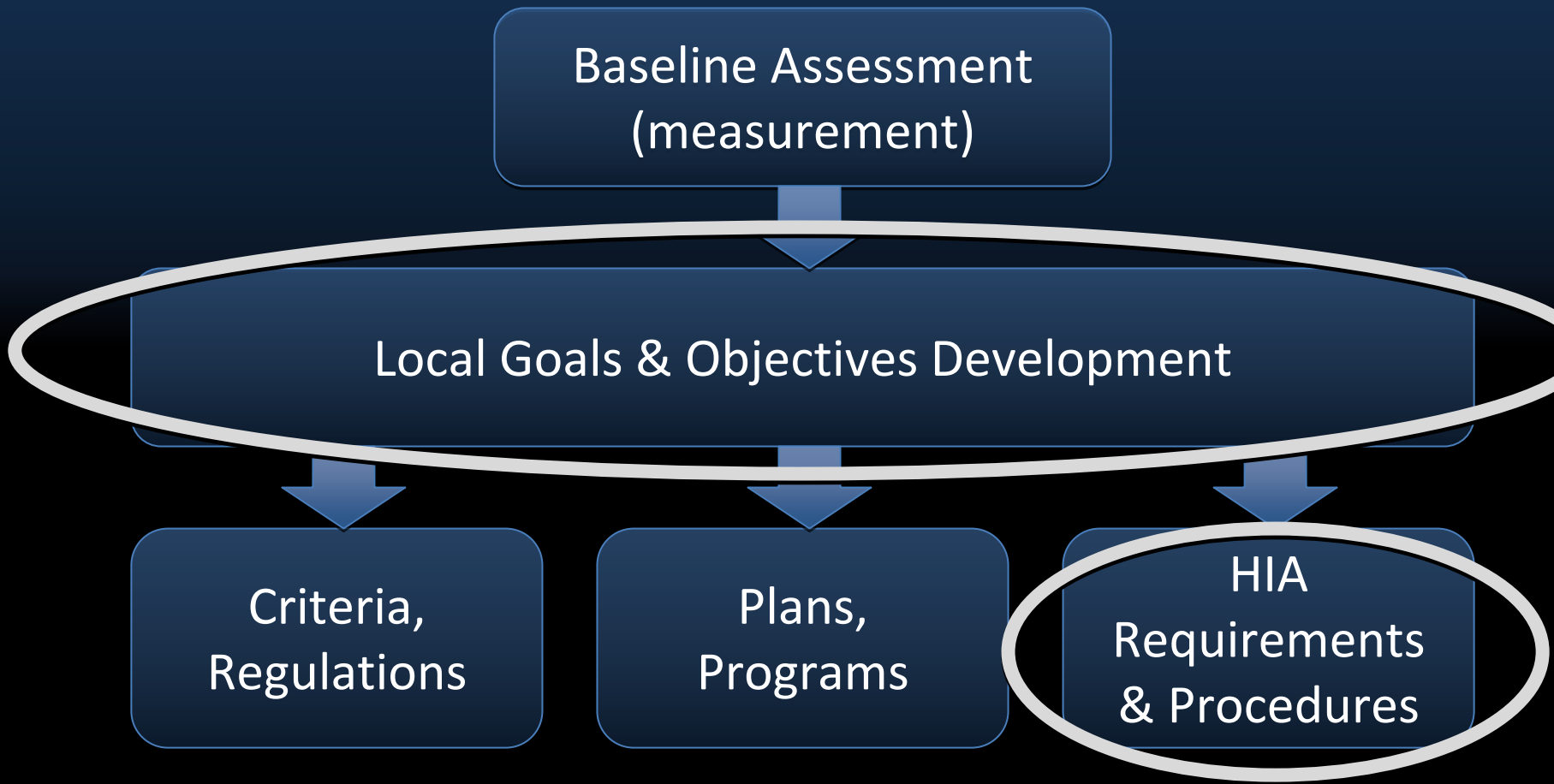
Health Impact Assessments

2 Potential Perspectives

- Assessing impacts of proposed actions to improve public health
- Assessing impacts of proposed transportation projects on public health

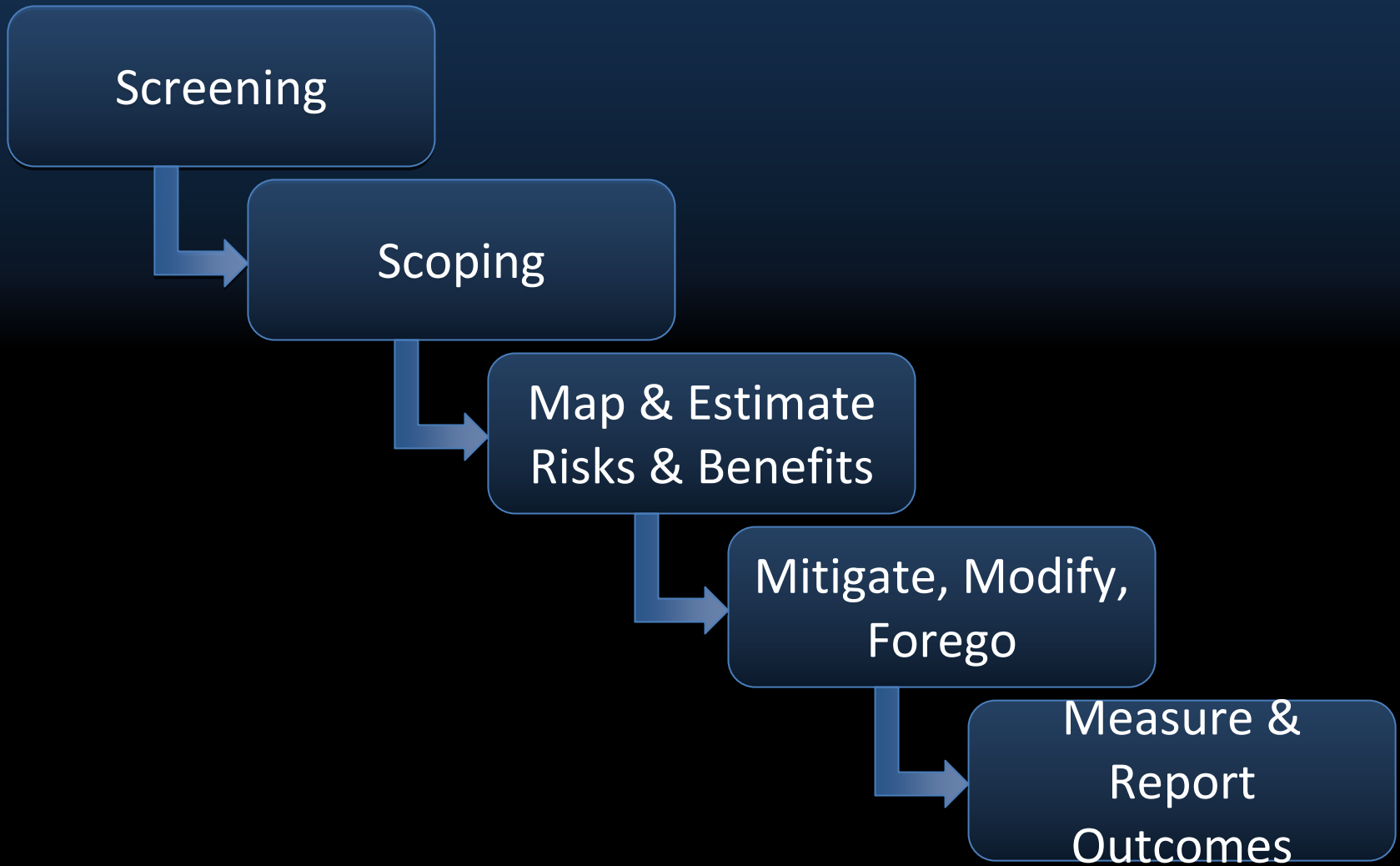
We Make Choices

Local Health Policy

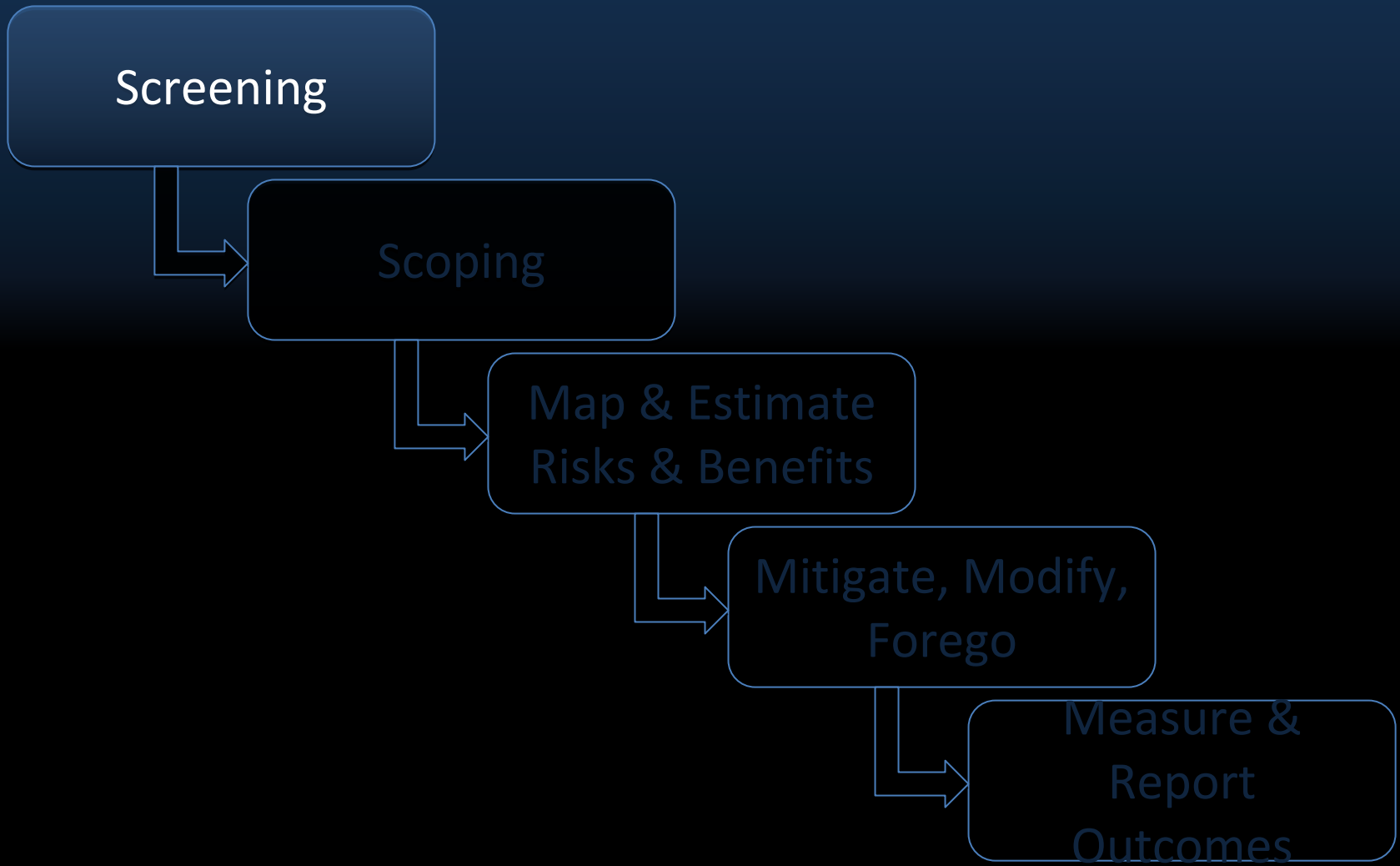


Local Goals & Objectives Structure

Health Impact Assessment Process



Health Impact Assessment Process



Screening – Level

- Programs?
- Specific Capital projects?
- Operations, procedures?

Screening – Project Type

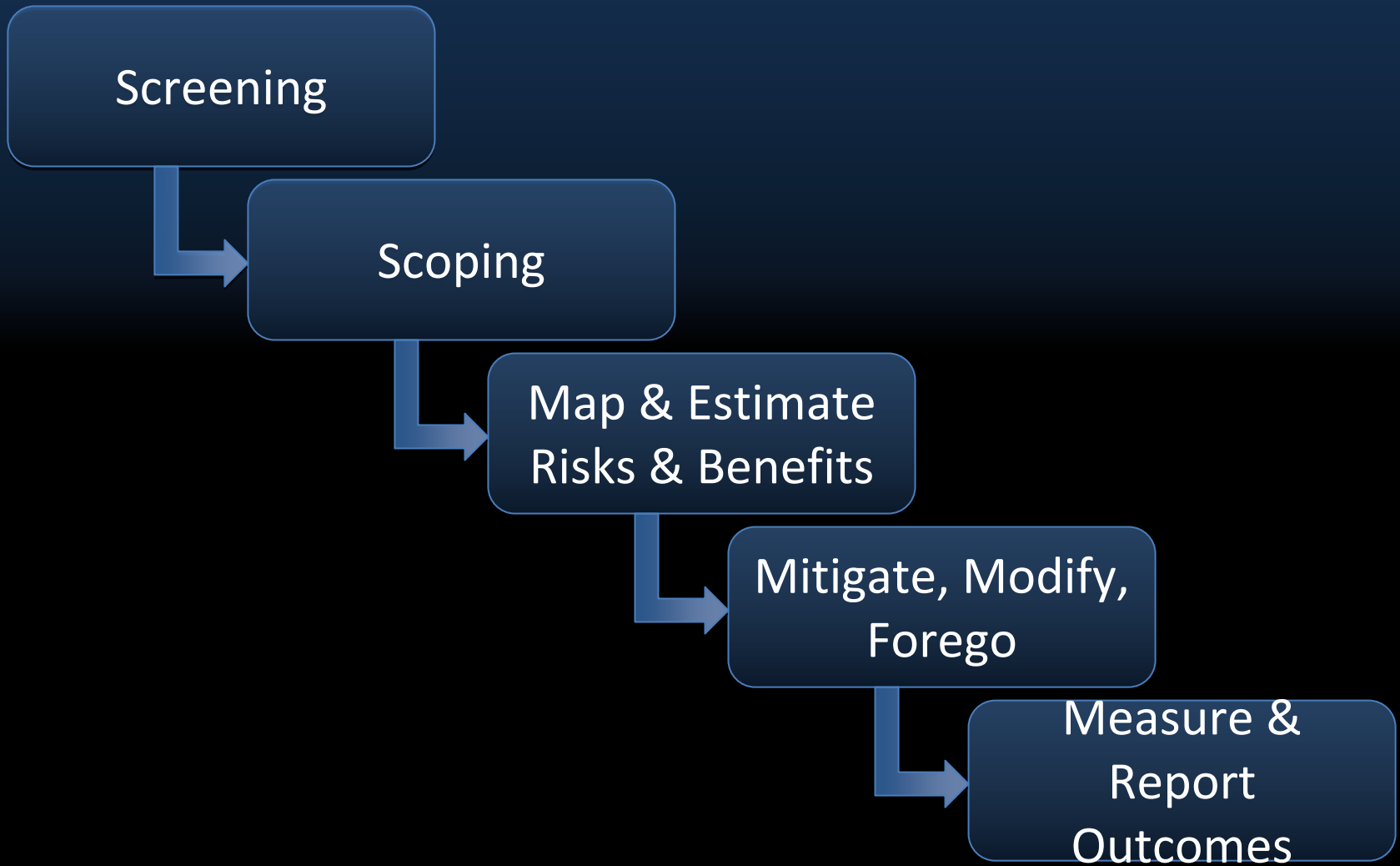
Screen In:

- Add lanes projects?
- New centerline projects?
- Major transit corridors?

Screen Out:

- Maintenance?
- Rehab & repair?
- Bridge replacement?

Health Impact Assessment Process



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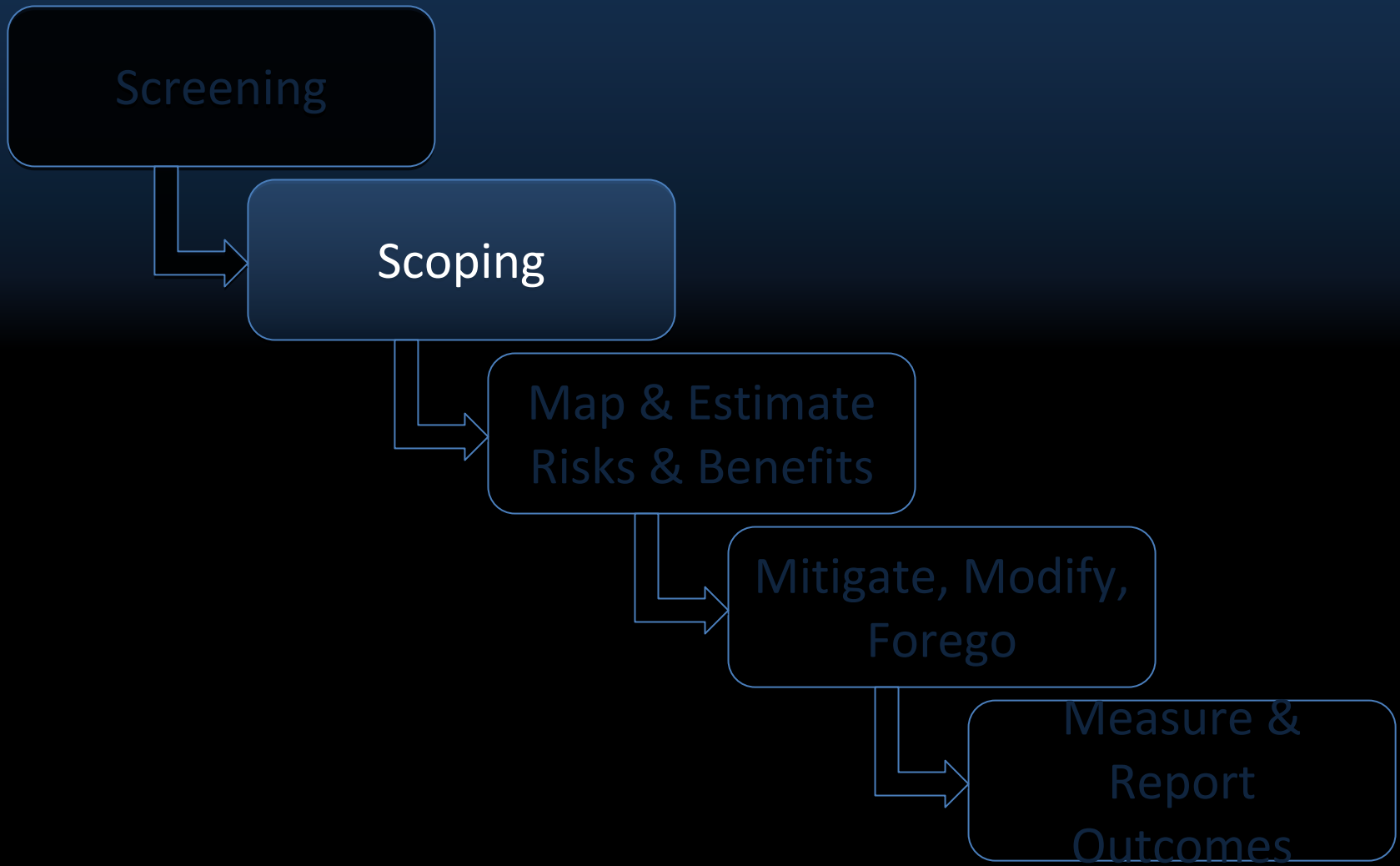
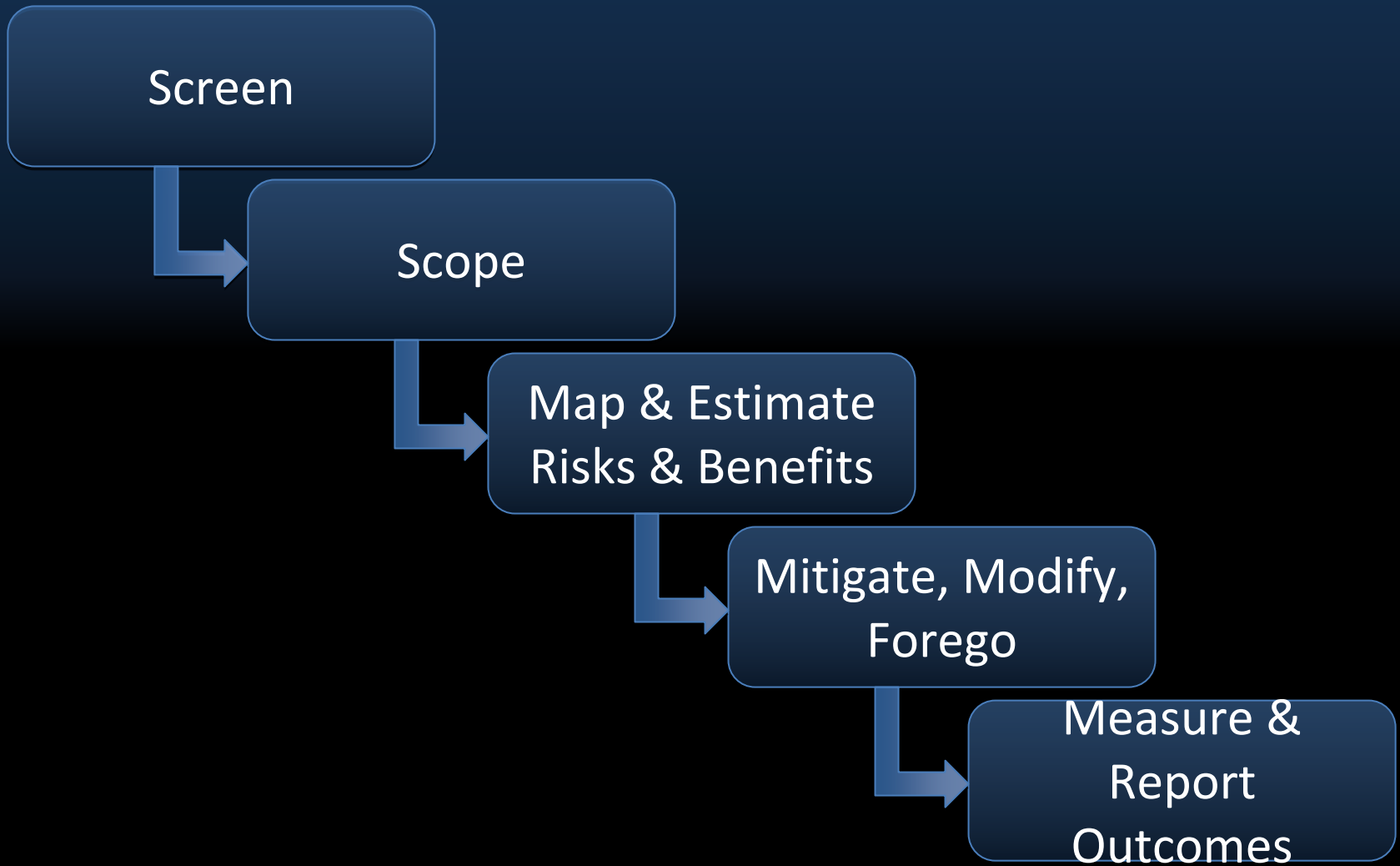


Scoping

- Who prepares HIA?
- Public process?
- Which potential health impacts to be studied?
- Methodology?
- Scale:
  - Rapid
  - Intermediate
  - Comprehensive

Health Impact Assessment Process



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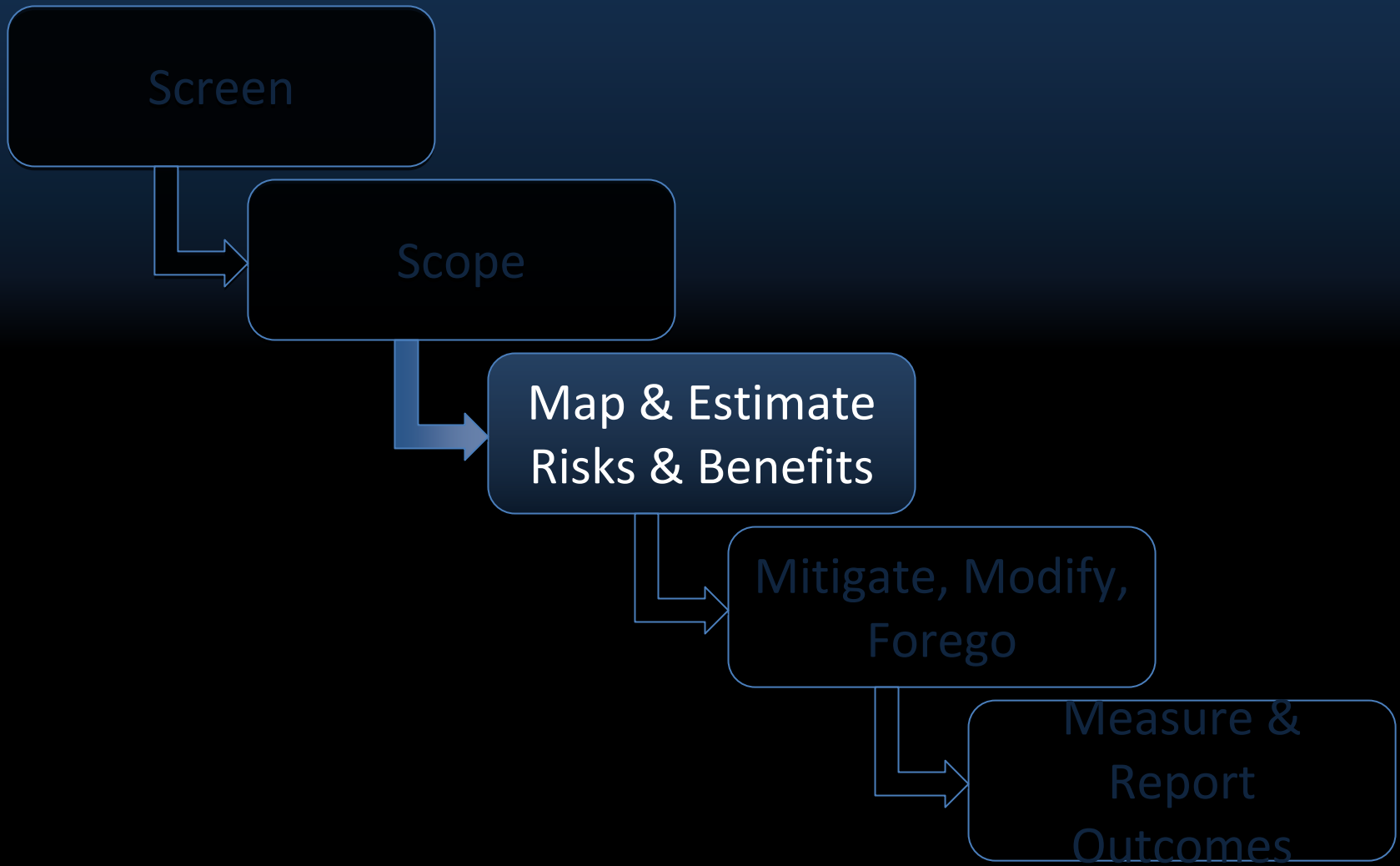
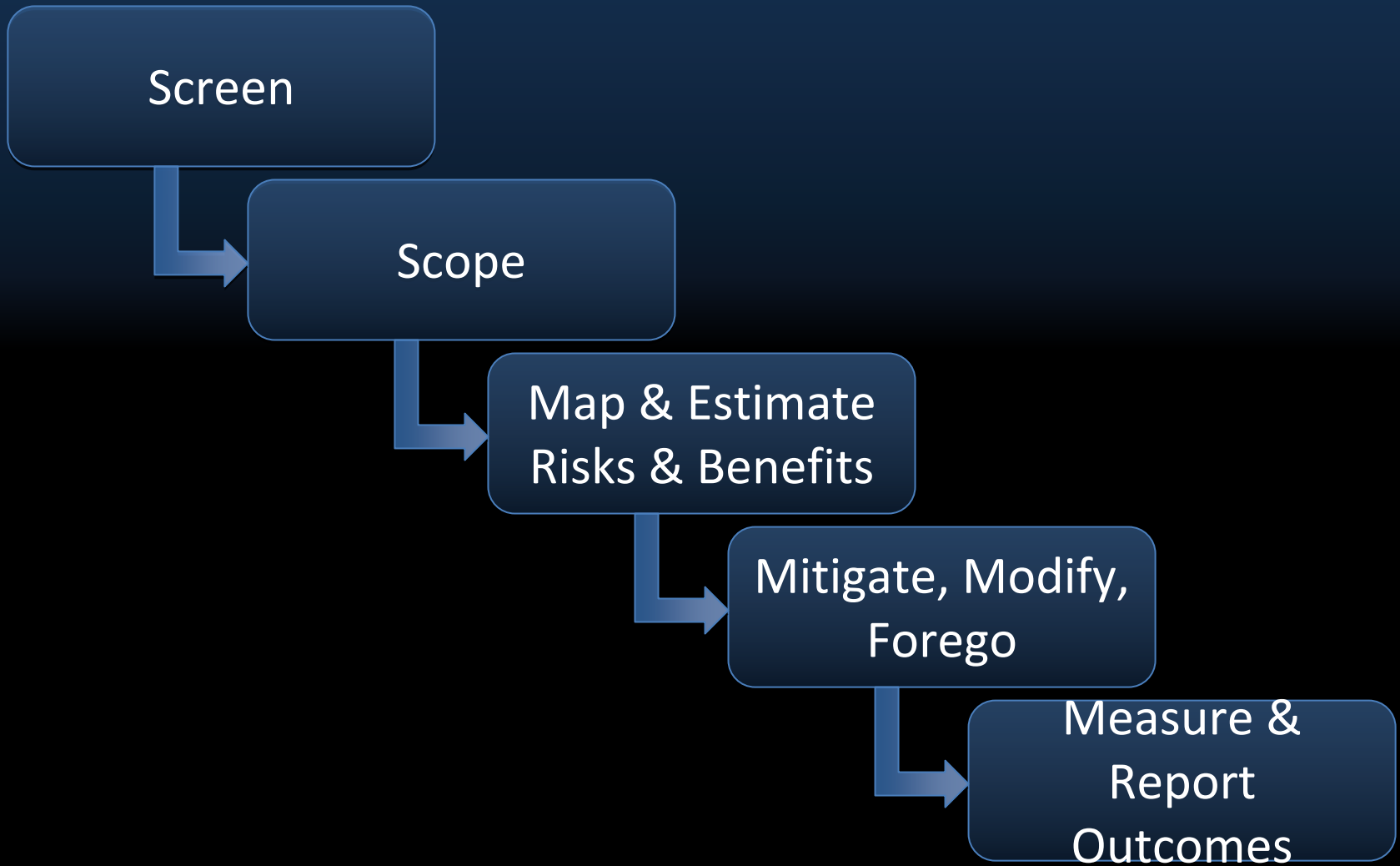


Mapping & Estimating Challenges

- Determining scale
  - corridor?
  - neighborhood?
  - city?
  - region?
- Estimating impacts
  - lack of baseline data
  - lack of funding for HIA
  - no proof of cause-effect relationships
  - common measure of outcome – value of health

Health Impact Assessment Process



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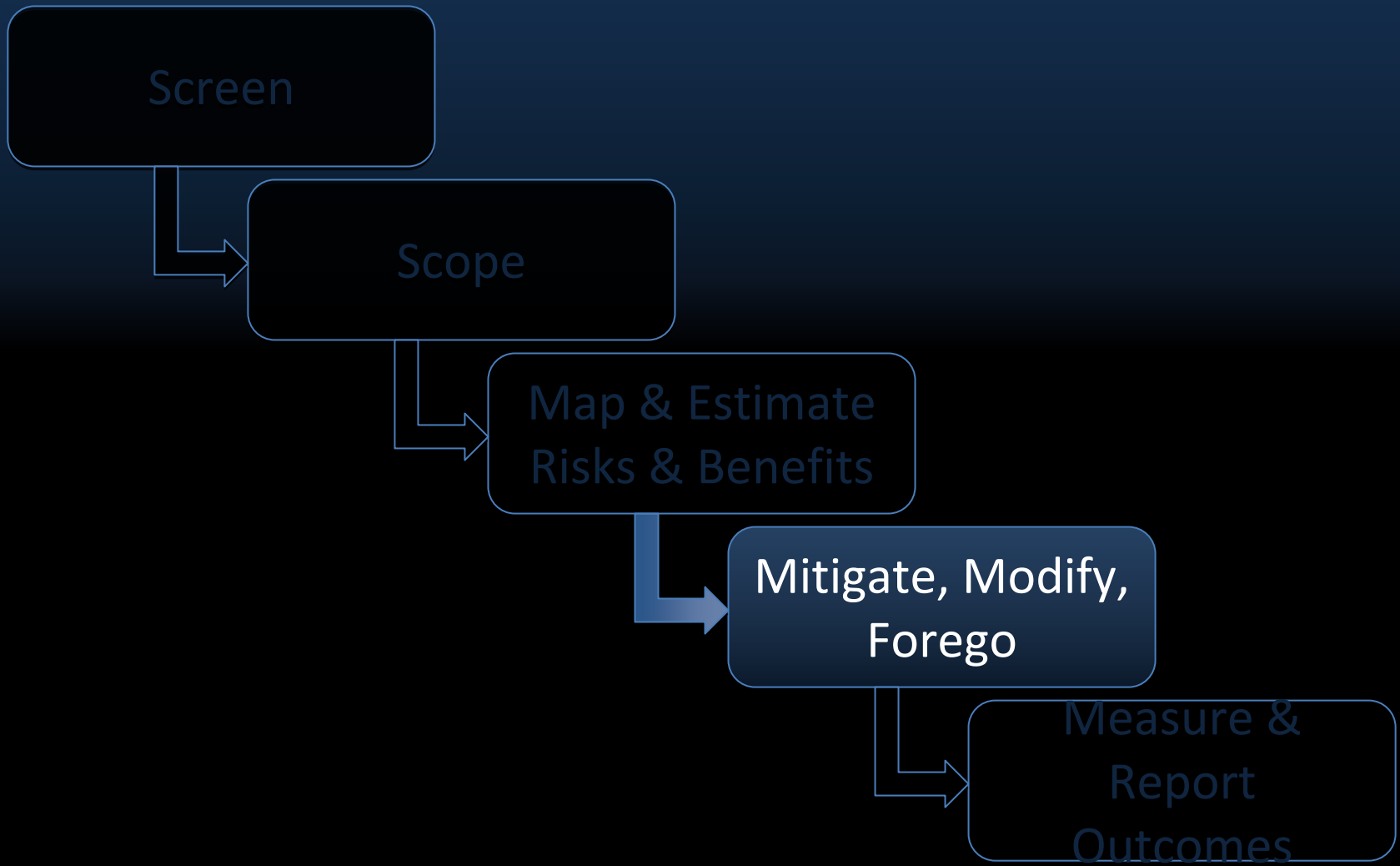
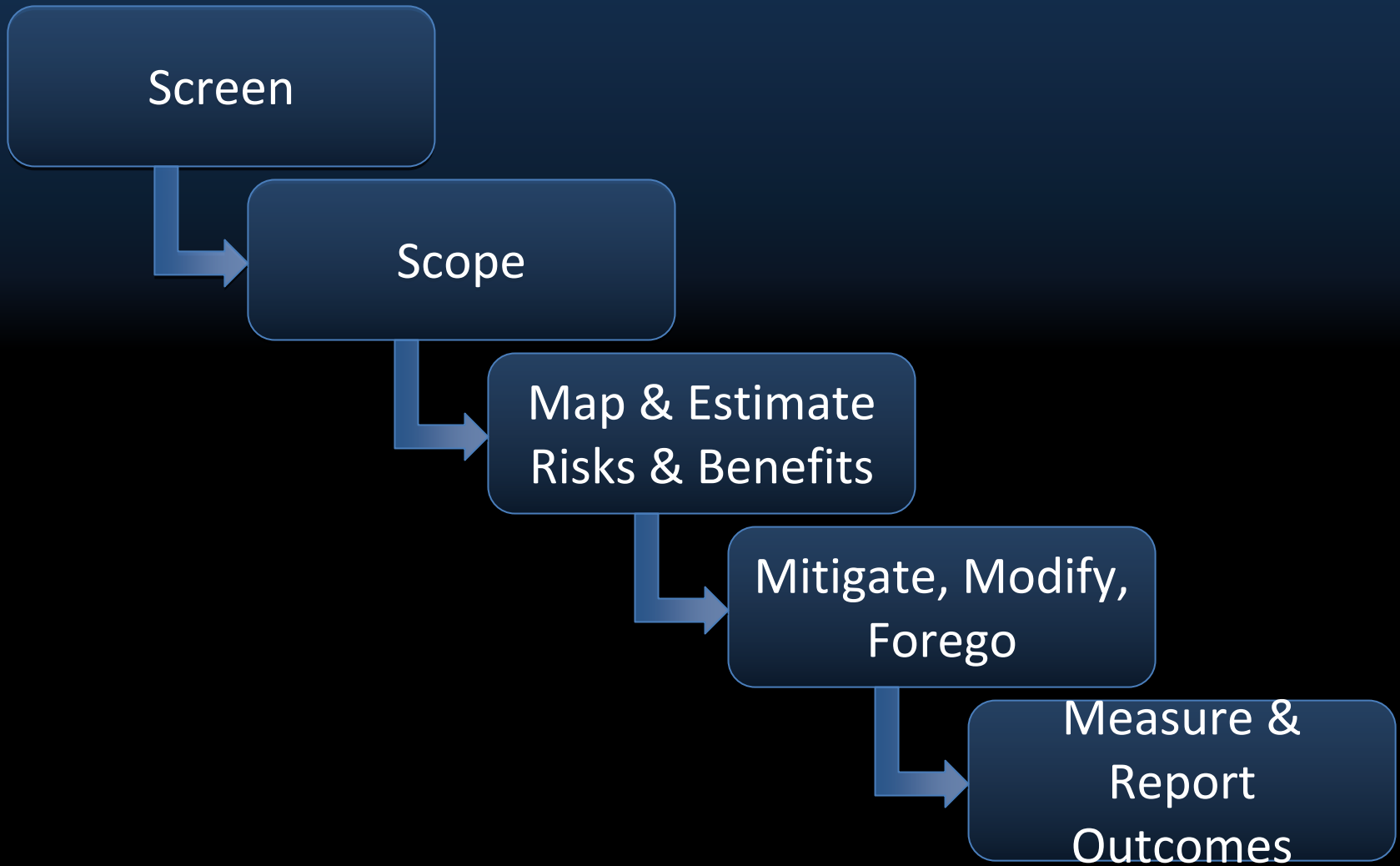


Recommendations

- Who decides?
- How are changes funded?

Health Impact Assessment Process



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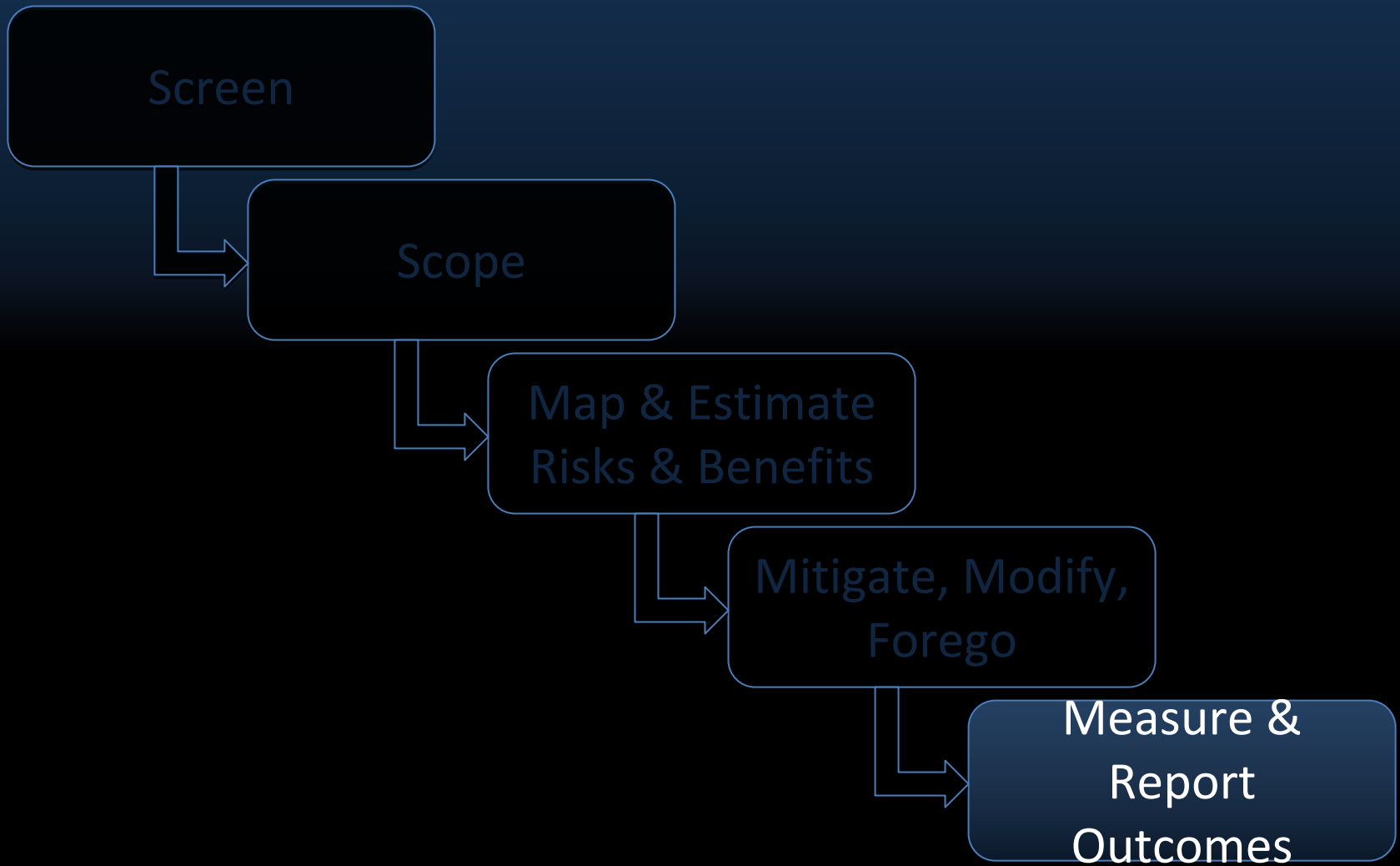

Local Goals & Objectives Structure

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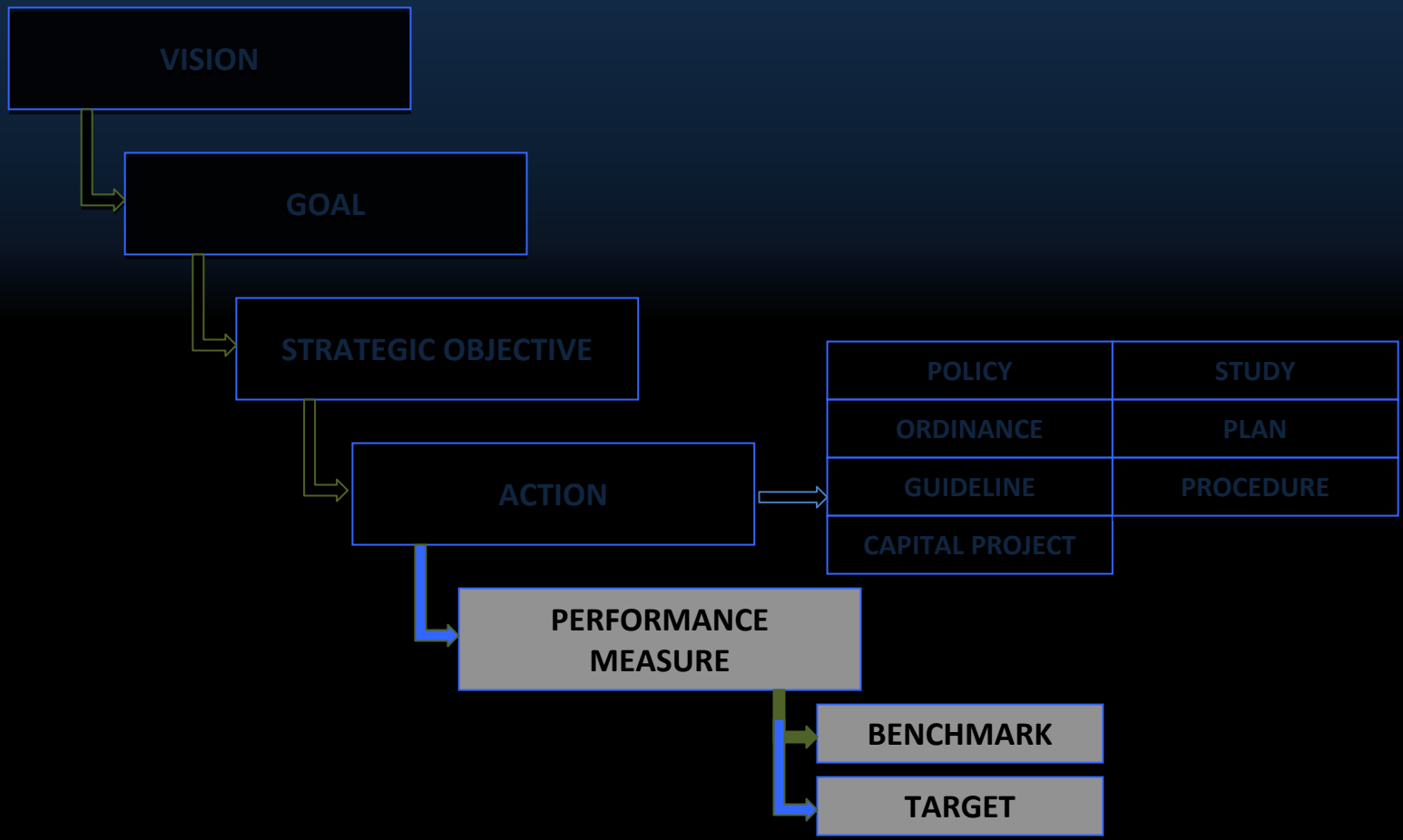
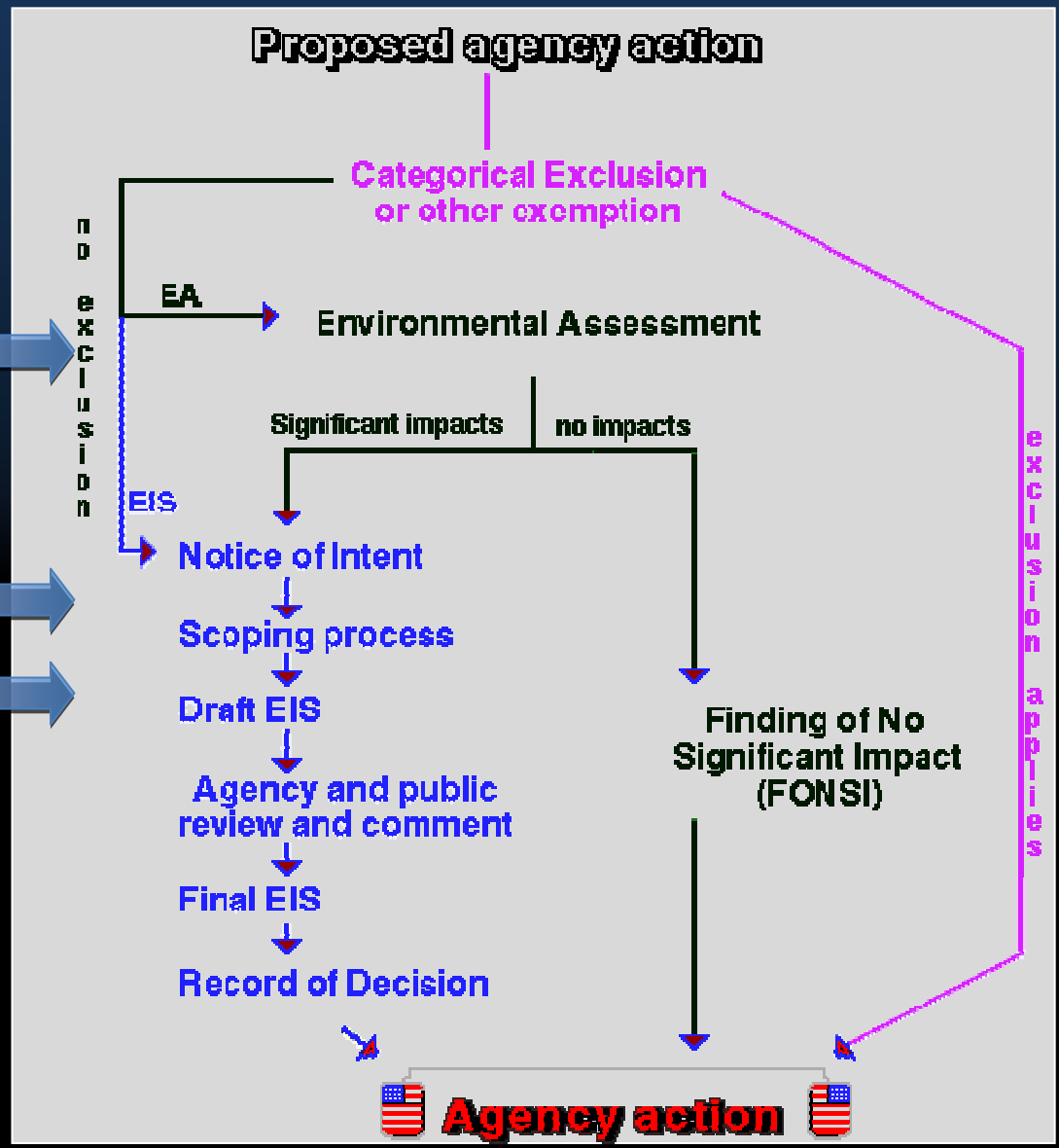


Integration with NEPA

- Screening
- Scoping
- Map & Estimate Risks & Benefits
- Mitigate, Modify, Forego
- Measure & Report Outcomes



BOTTOM LINE

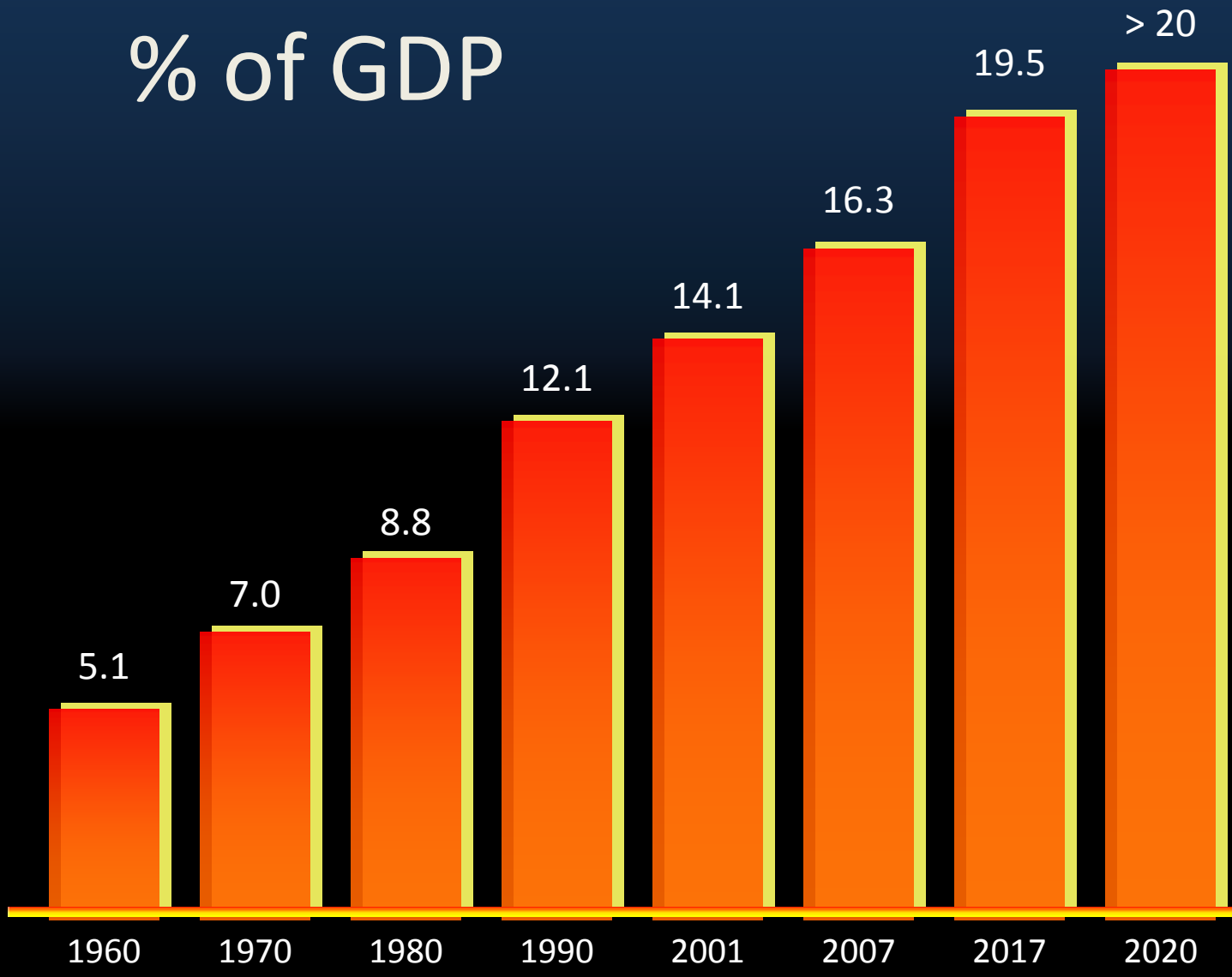
Health impact assessment techniques are being developed by health professionals; best practices for transportation are just now being established.

Wrap Up

1

Public Health

US Health Care
% of GDP



BOTTOM LINE

Public health is of critical importance to the US economy and is becoming a major transportation policy issue.

2

Transportation & Public Health

Transportation & Public Health

Traffic Safety + Personal Health

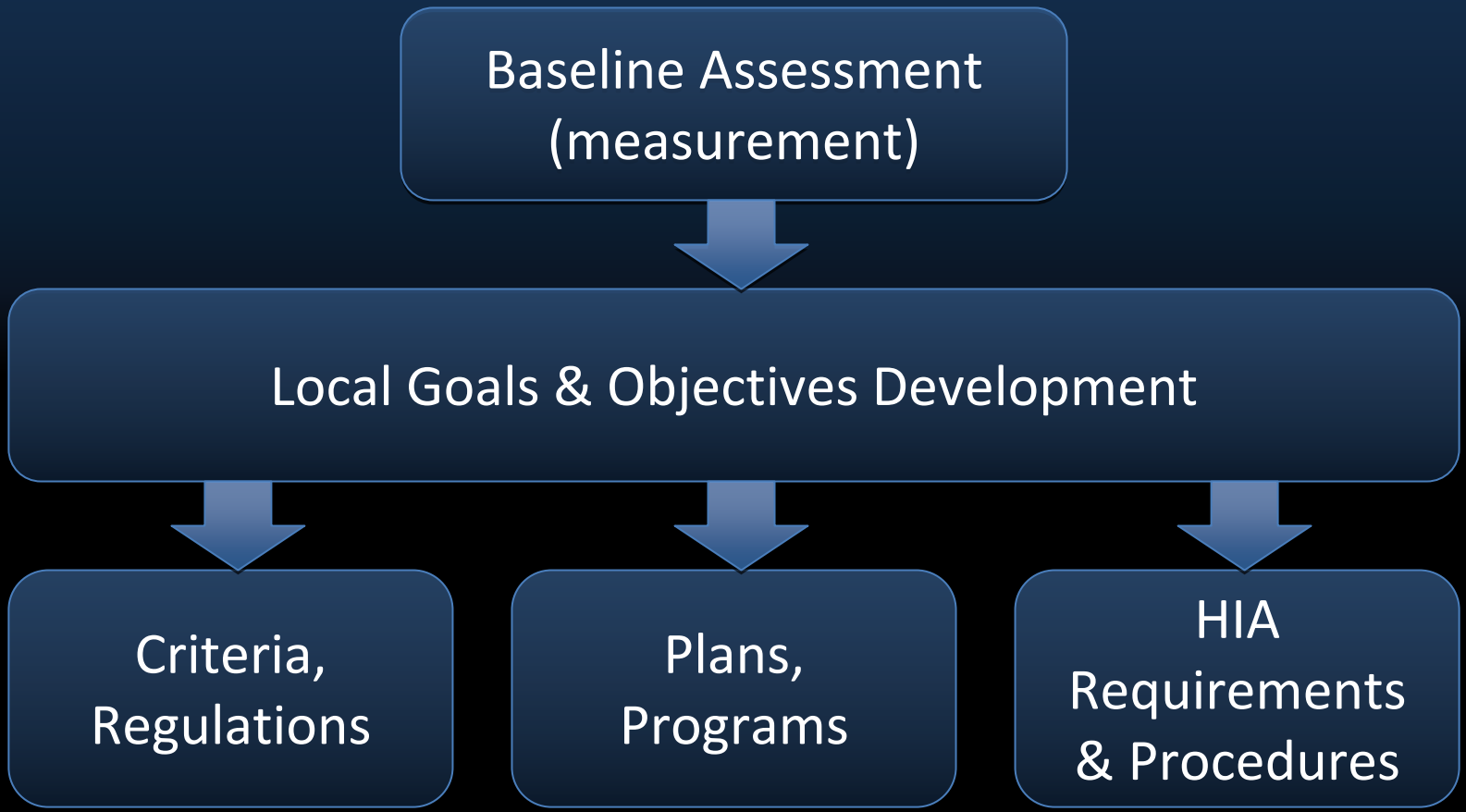
BOTTOM LINE:

Transportation planning & design are major determinants of public health.

3

Health Impact Assessments

Local Health Policy



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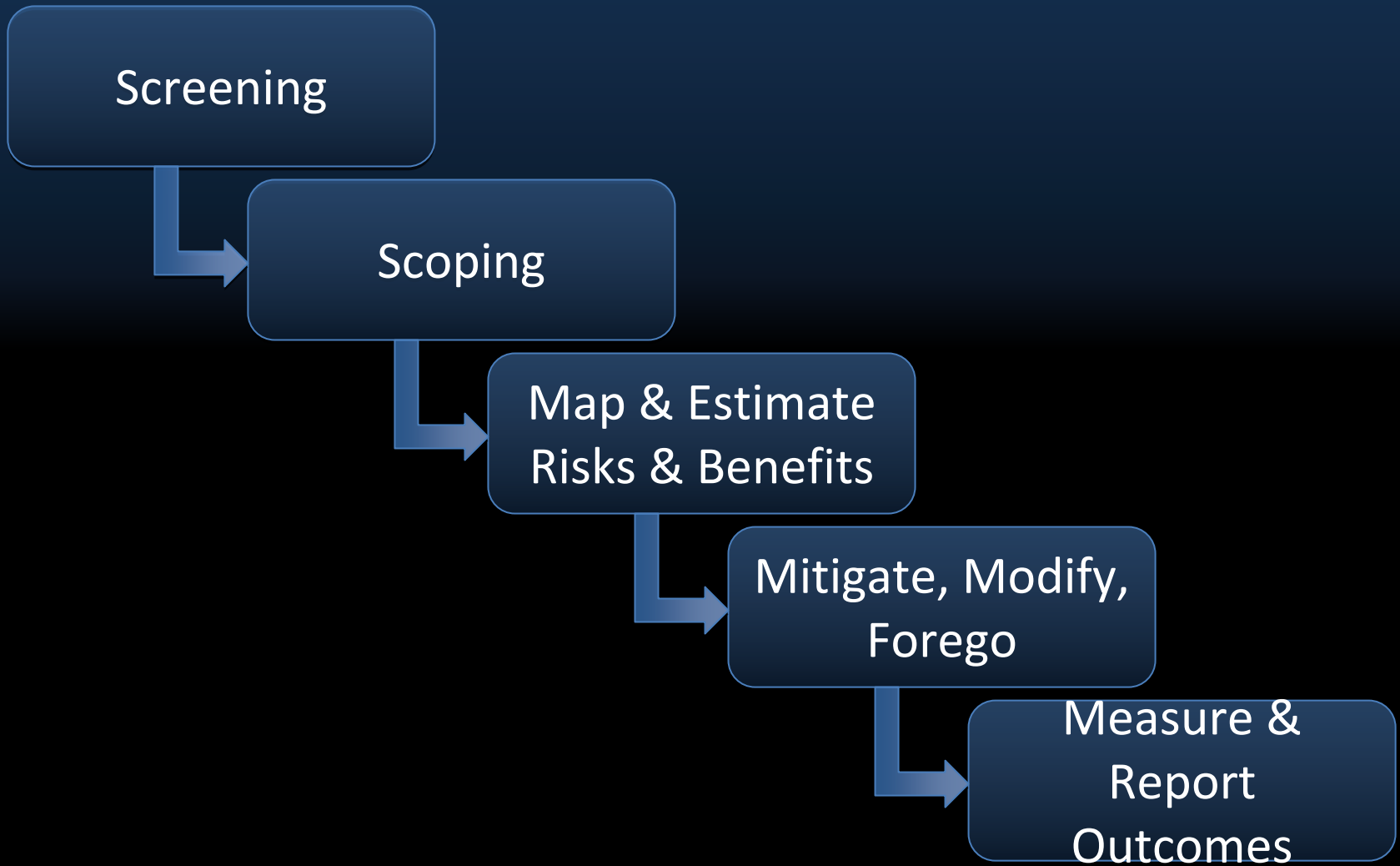

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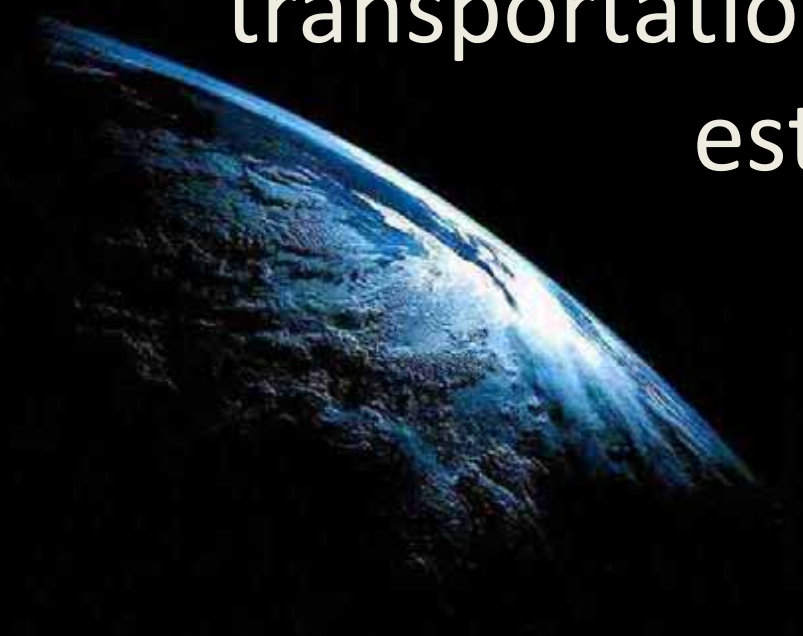

Thanking You

www.charlier.org