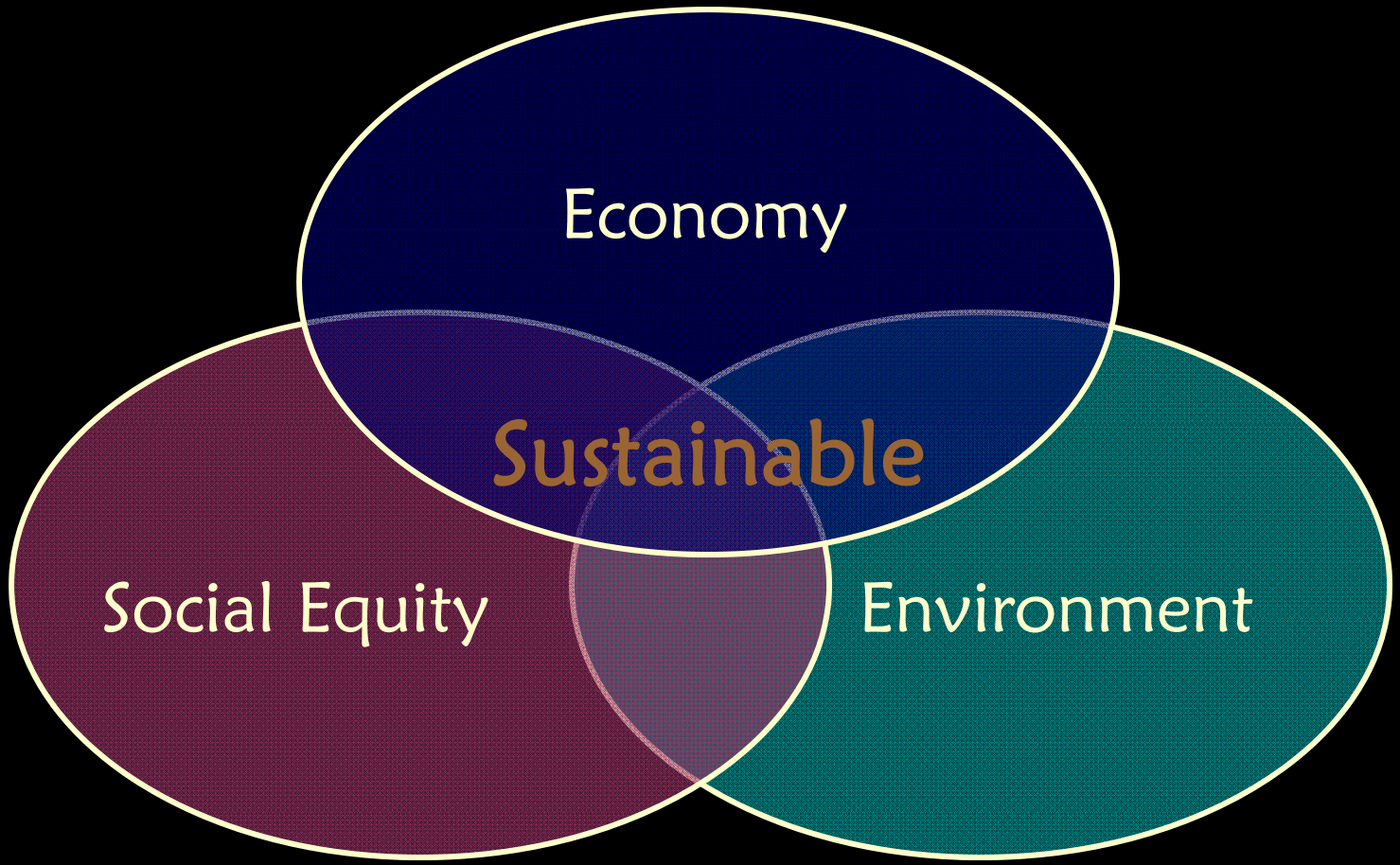
LEED ND Pilot Credits

	Transportation	Environment	Architecture	Other	Totals
Smart Location & Linkage	23	7	-	-	30
Neighborhood Pattern & Design	30	-	7	2	39
Green Construction & Technology	8	14	9	-	31
Innovation & Design Process	-	-	-	6	6
Point Totals	61	21	16	8	106

Sustainable Mobility

- Why LEED ND is so important -

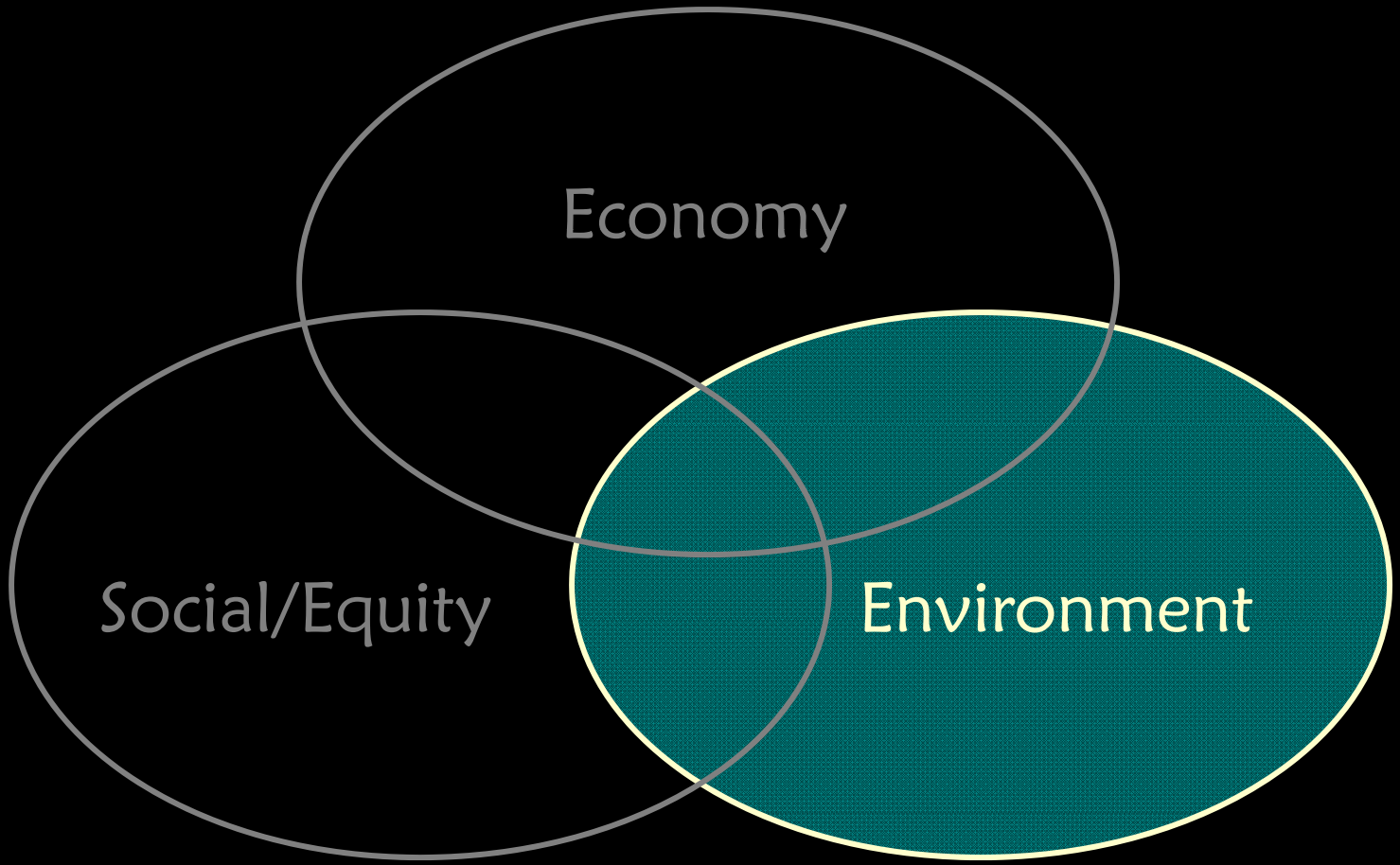
CLASSIC SUSTAINABILITY



Sustainability Defined

How can we meet the needs of today while allowing future generations to meet their needs?

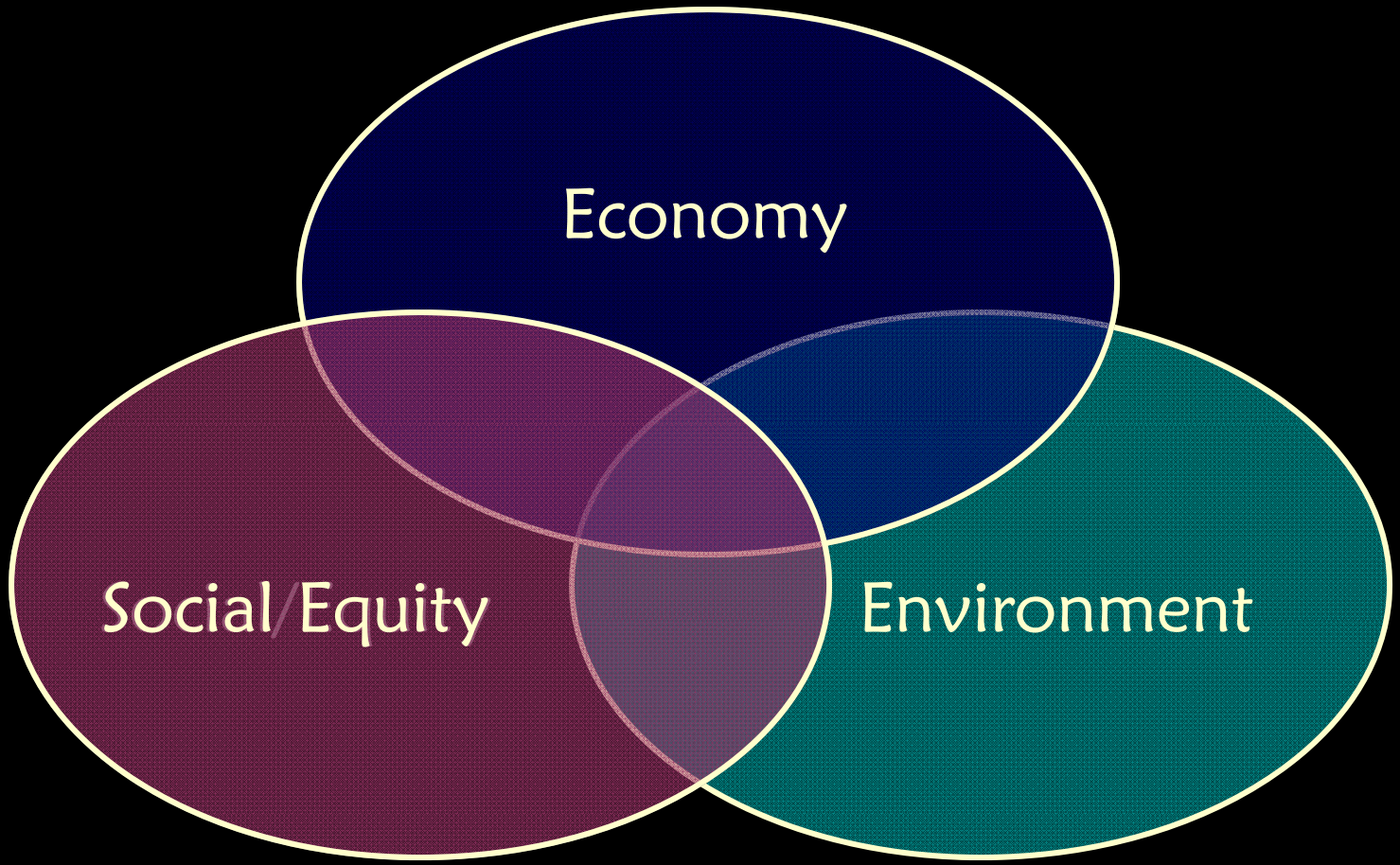
Impacts



Overview: Climate Change

- Greenhouse gases associated with human activities are contributing to global warming with potentially serious consequences
- Emerging U.S. policy:
  - Limit temperature increase to no more than 2° to 3° Centigrade
  - Cut greenhouse gas emissions by 60% to 80% below 1990 levels by 2050

Impacts

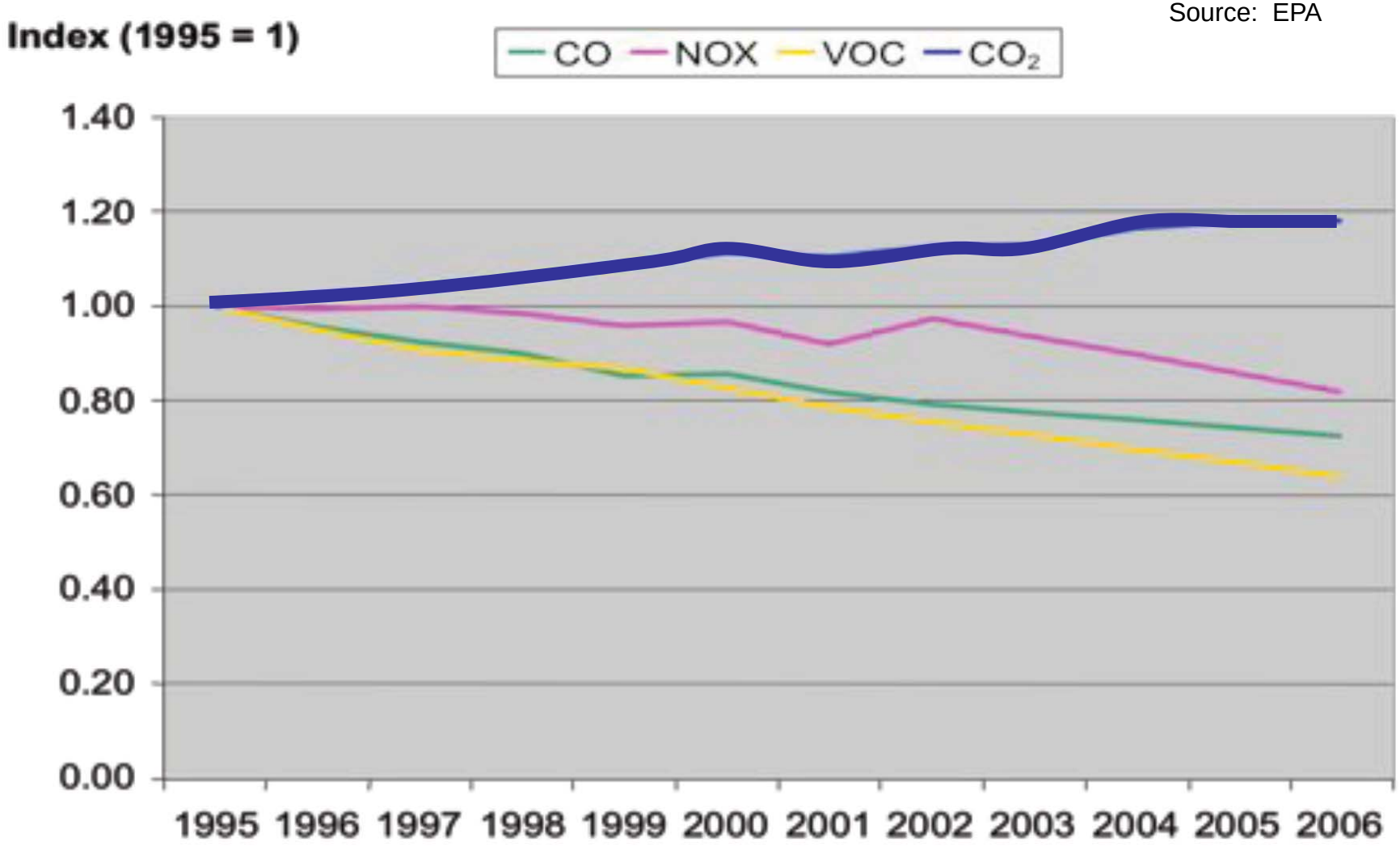


Climate Change Goal

- *Cut GHG emissions by 60% to 80% below 1990 levels by 2050*

U.S. Transportation Emissions

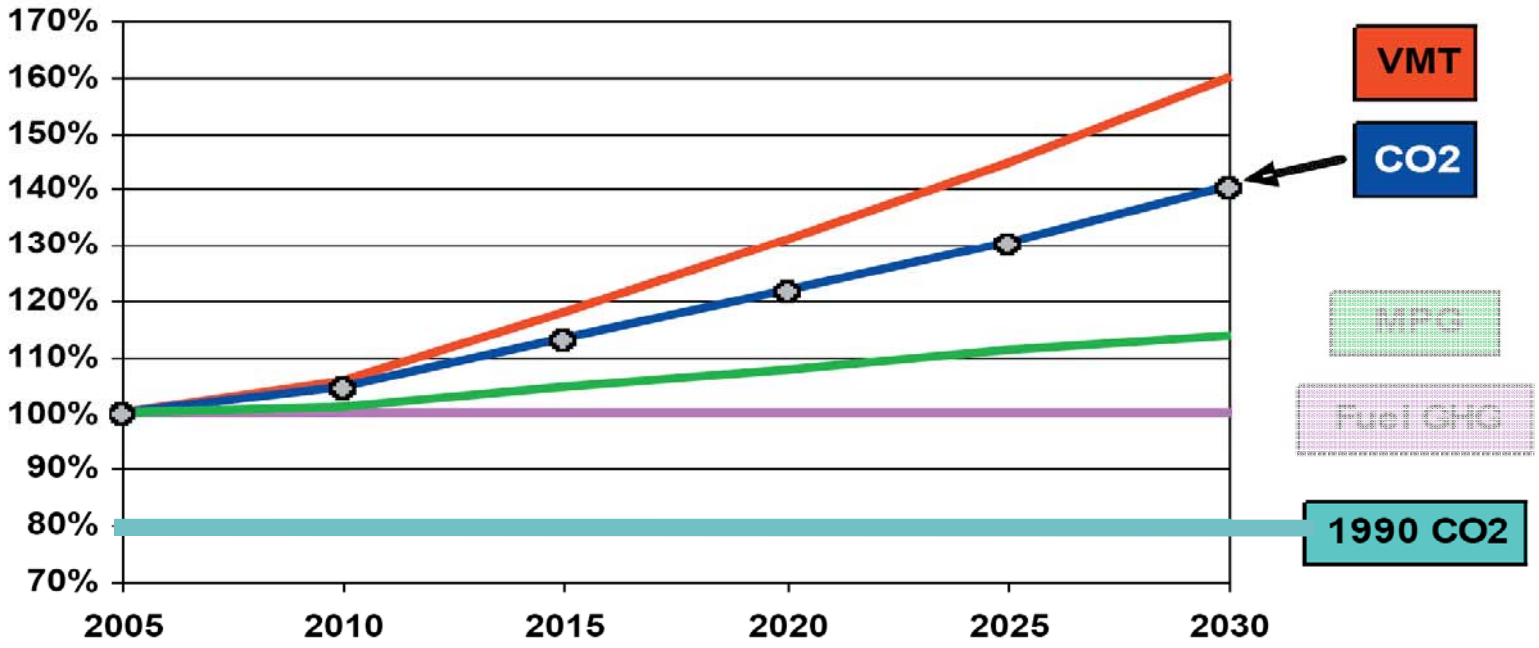
Source: EPA



Motor Vehicles & CO_2

FIGURE 0-2

PROJECTED GROWTH IN CO_2 EMISSIONS FROM CARS AND LIGHT TRUCKS



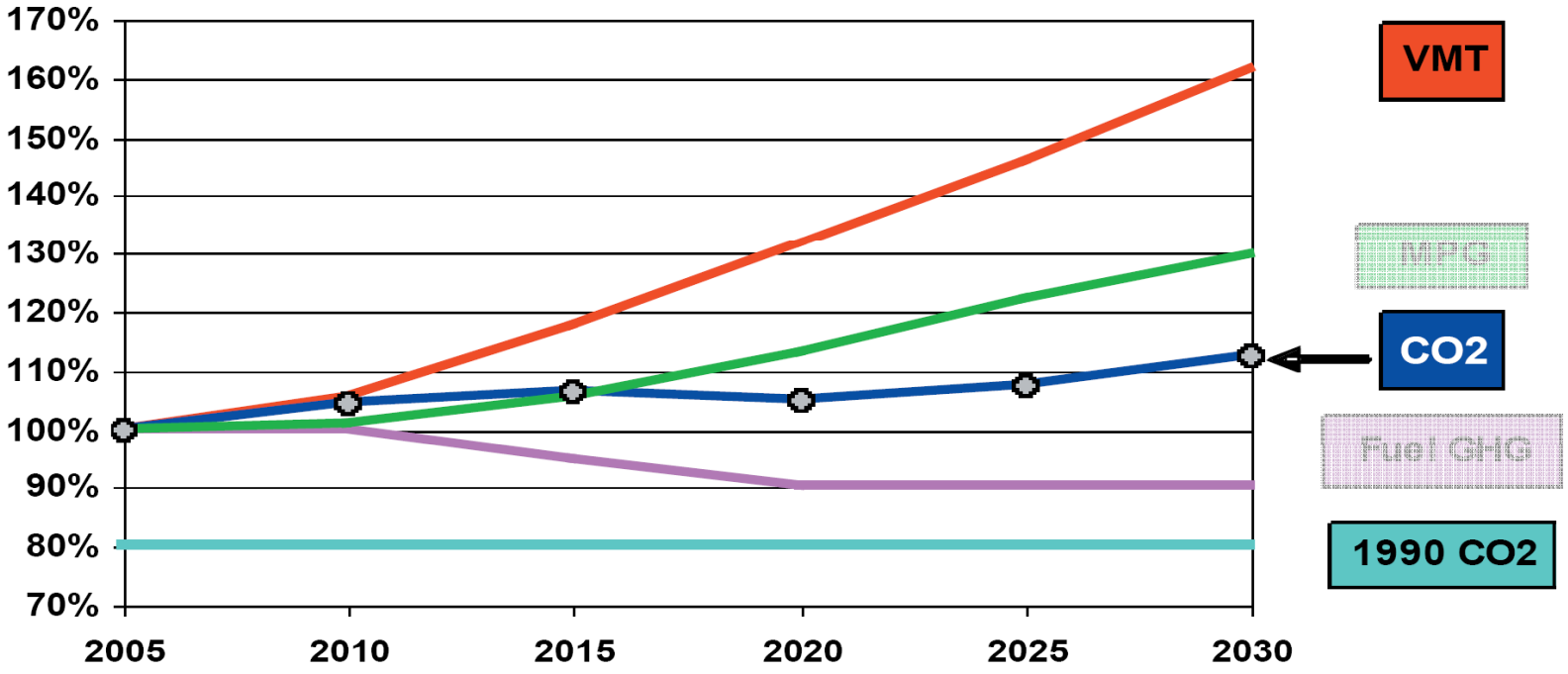
Center for Clean Air Policy

SOURCE: EIA 2007.

Technology Alone Cannot Solve the Problem

Projected Growth in CO_2 Emissions from Cars and Light Trucks Assuming Stringent Nationwide Vehicle and Fuel Standards*

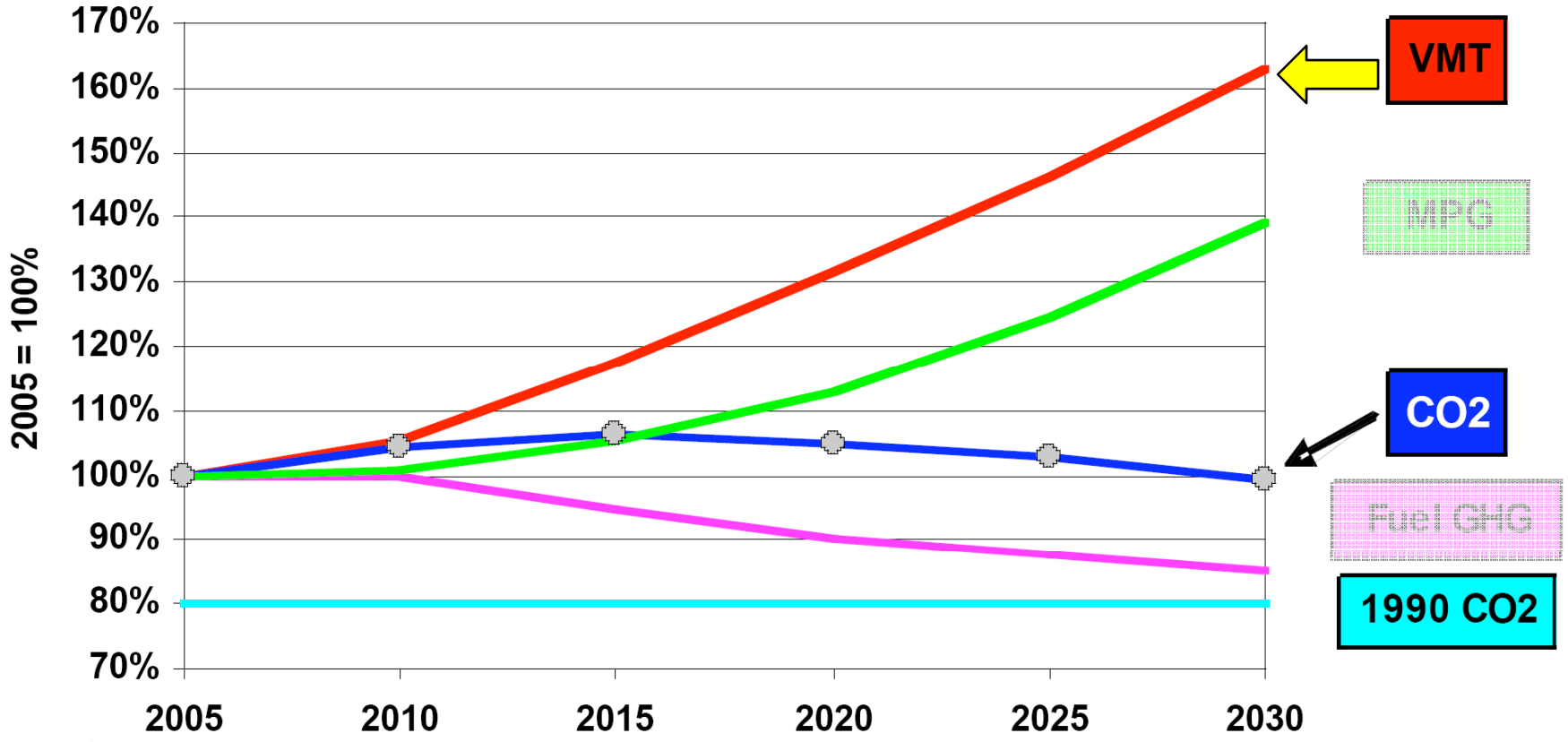
*With Senate CAFE levels -- New Passenger Vehicle Fuel Economy of 35 mpg in 2020 and California Low Carbon Fuel Standard of -10% in 2020 applied nationally.



Center for Clean Air Policy

Sources: VMT: EIA with 10% rebound MPG: US Senate, Fuels: C.

…Even With Very Stringent Standards

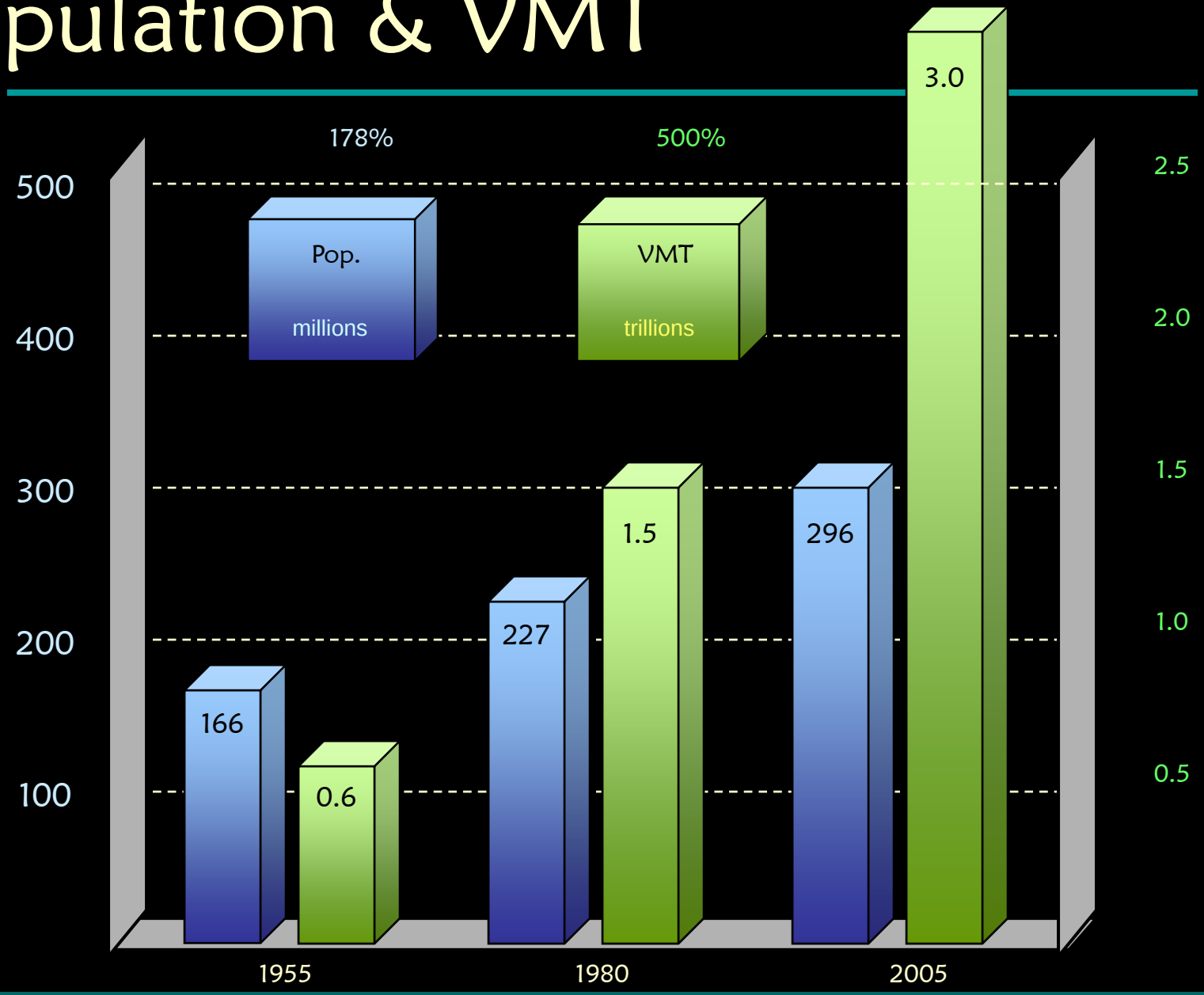


Sources: VMT: EIA with 10% rebound, MPG & Fuel: Trend Extrapc

Center for Clean Air Policy

United States

Population & VMT

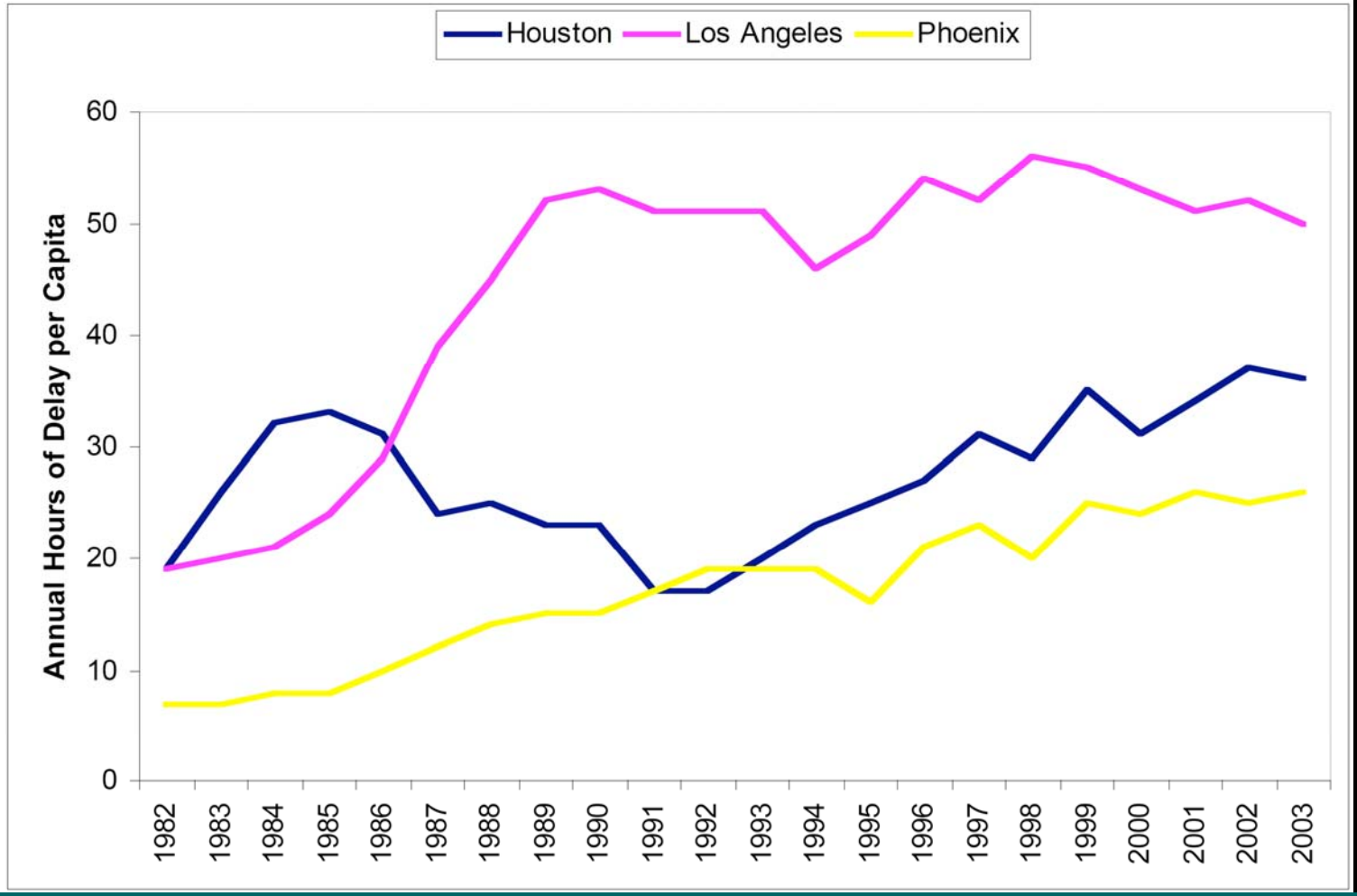


Supply-Side Failure

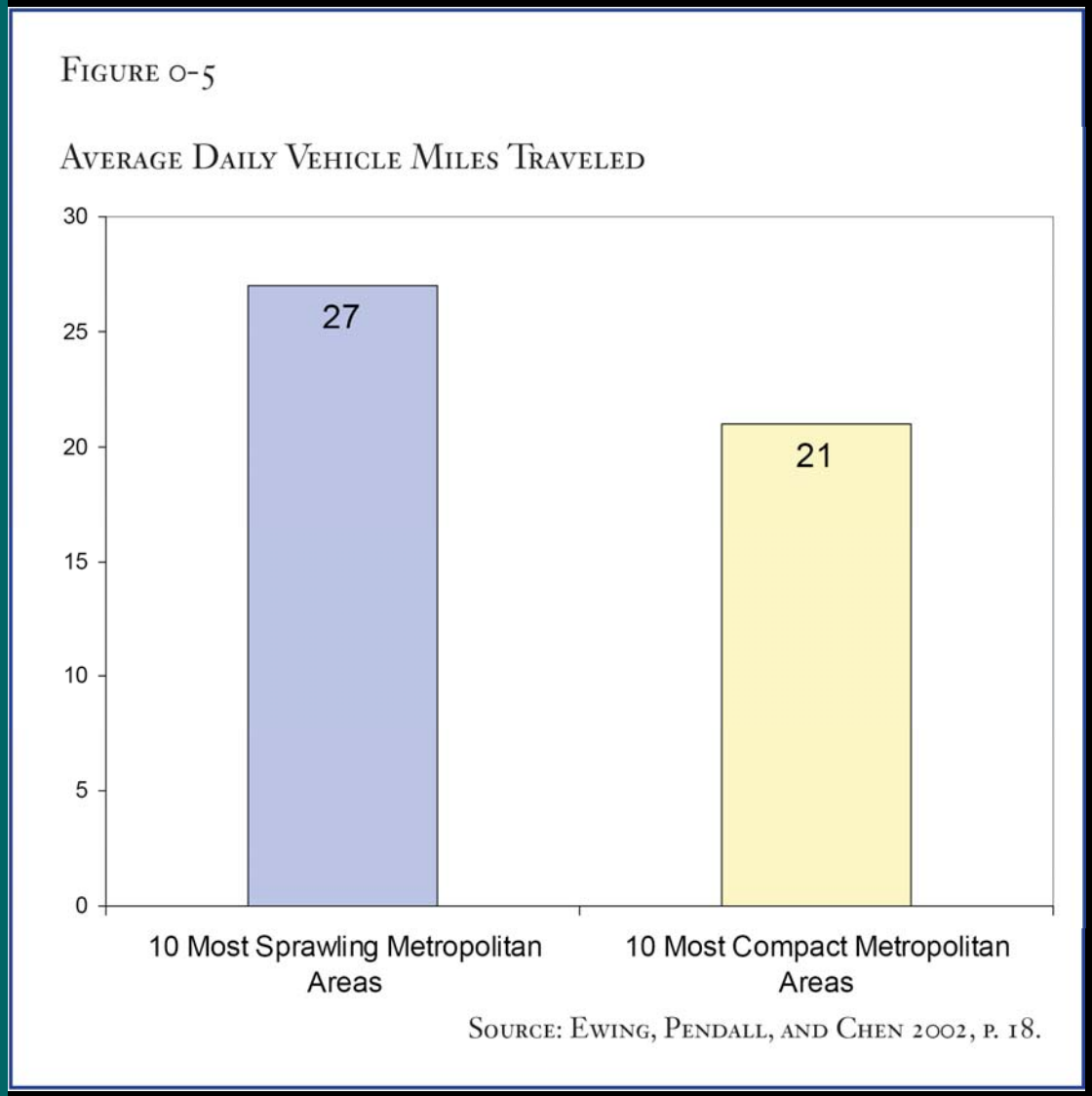
- VMT has grown twice as fast as highway capacity in the nation's urbanized areas
- Highway building itself induces more traffic, induces low efficiency development patterns and accelerates CO_2 emissions

Road Building Has Not Reduced Delay

Figure 1-6 Growth of Annual Hours of Delay per Capita
Source: Schrank and Lomax 2005.



Urban Design & VMT



- Compact cities generate less VMT/capita
- The difference (>20%) is more than can be achieved thru either alt. fuels or improved fuel economy

Research Findings 1

- No significant correlation between high density/mixed use development and congestion or delay
- Sprawl does not consistently increase or reduce congestion
- Land use mix alone can account for >20% reduction in VMT/household

Research Findings 2

- Higher gross density reduces VMT/household (big cities and smaller towns)
- Connected street networks do not reduce delay, but do reduce VMT/household
- Residents of sprawl areas exhibit lower physical activity, higher levels of obesity and other health problems

Active Living by Design

- also why LEED ND is so important -

AMERICAN COUNCIL ON SCIENCE AND HEALTH

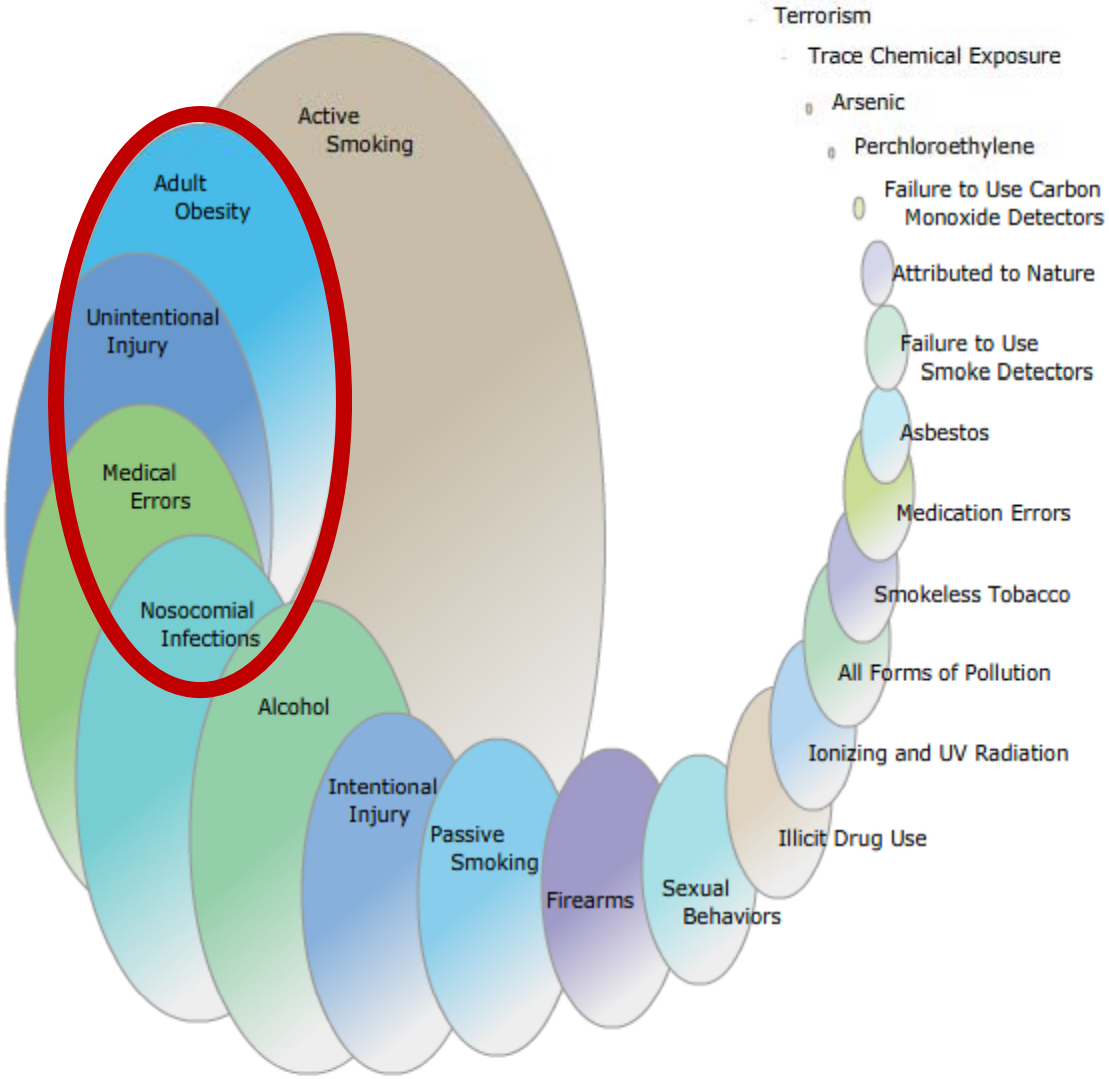
RISKOMETER.ORG

Risk Rings: Exposures

Exposures to behaviors and our environment offer all sorts of risks. Here we present a full spectrum of exposures that caused American deaths - the size of each ring is proportional to the number of deaths from the specified cause.

Use your mouse and click the rings. See the "odds of dying" from any of the exposures presented. The 'odds of dying' is reported here as the number of people expected to produce one death from a particular cause. This number is calculated by dividing the United States population, approximately 300 million people, by the number of deaths from each cause during 2002. Using this method, 771 people would be expected to yield one death from active smoking . In contrast, 5,882,353 Americans would yield one death from exposure to the dry cleaning chemical, perchloroethylene.

Active Smoking was the leading cause of exposure death. In contrast, exposure to the dry-cleaning fluid, Perchloroethylene and to numerous environmental chemicals- resulted in virtually no deaths at all.



Adult Obesity

Odds of Dying:
1 in 2,681

Obesity due to Dietary Practices:
1 in 3,570

Obesity due to Sedentary Lifestyle:
1 in 10,767

Deaths that are a consequence of obesity likely represent the second largest number of deaths produced by preventable risk factors.

The exact number of deaths attributable to obesity is impossible to measure directly because the condition of obesity is seldom listed as an underlying cause of death - thus the figures presented here are an estimate that will surely change as more data are accumulated.

Deaths that are a consequence of obesity frequently result from an array of diseases associated with obesity (including cardiovascular disease, cancer, respiratory disease, stroke, and diabetes, among others), although each of these causes of death can exist without obesity.

Obesity Trends Among U.S. Adults between 1985 and 2007

Definitions:

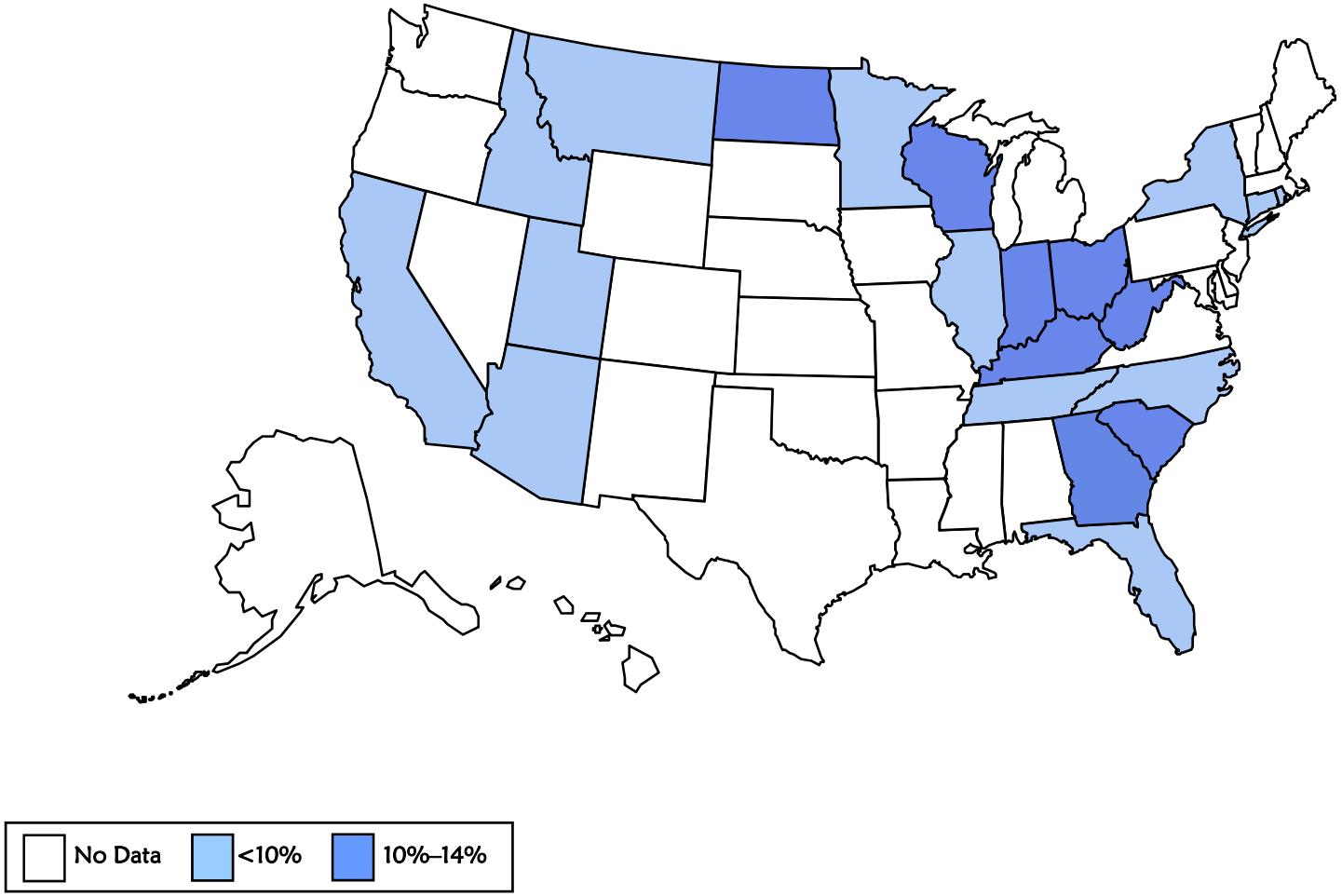
- Obesity: Having a very high amount of body fat in relation to lean body mass, or Body Mass Index (BMI) of 30 or higher.

- Body Mass Index (BMI): A measure of an adult's weight in relation to his or her height, specifically the adult's weight in kilograms divided by the square of his or her height in meters.

Obesity Trends* Among U.S. Adults

BRFSS, 1985

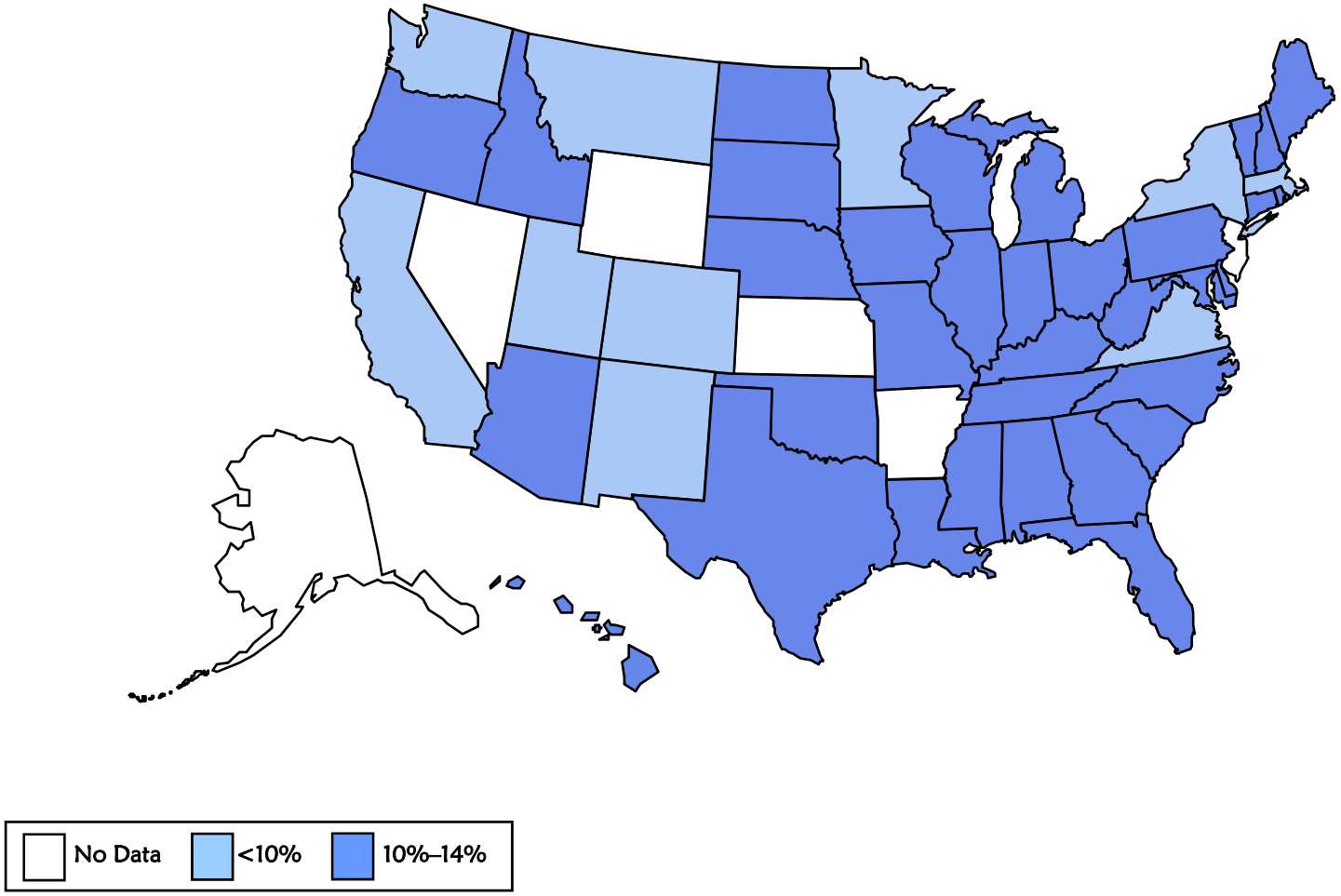
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)



Obesity Trends* Among U.S. Adults

BRFSS, 1990

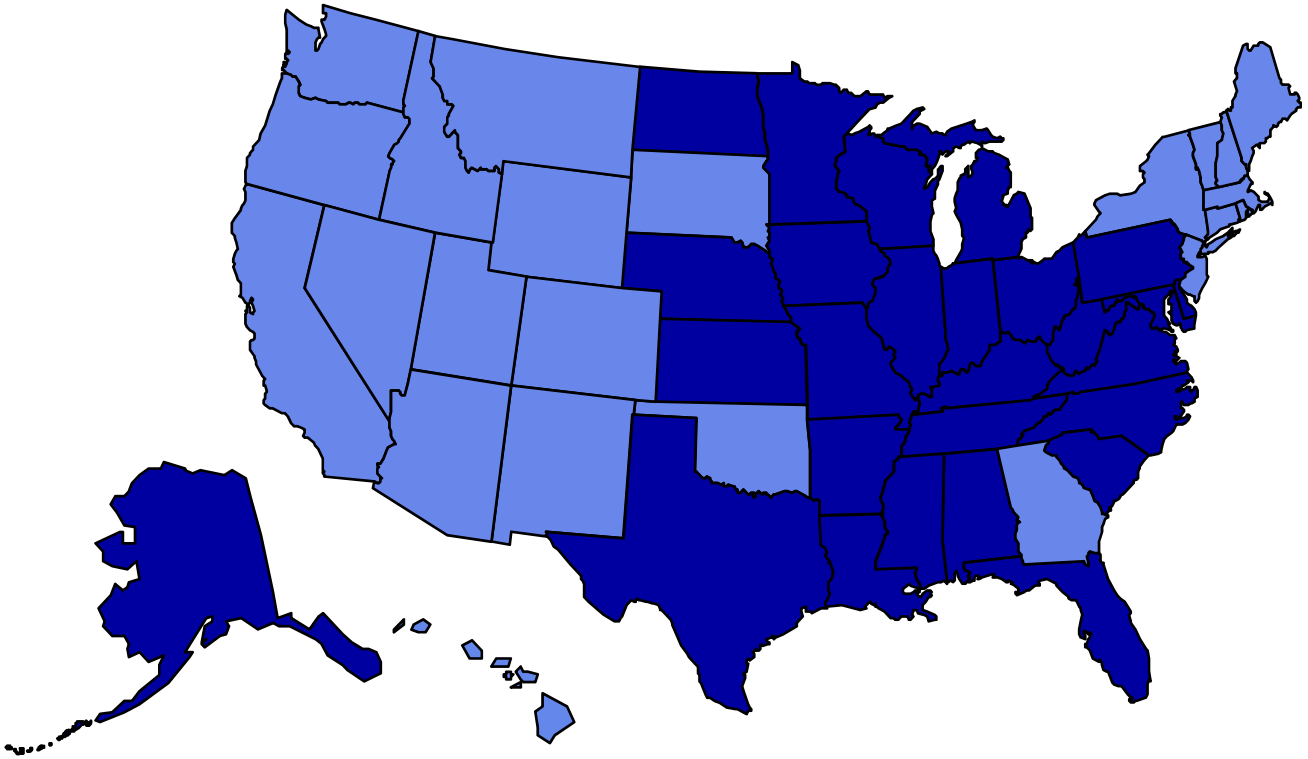
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)

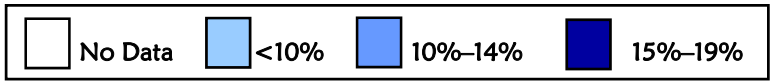


Obesity Trends* Among U.S. Adults

BRFSS, 1995

(*BMI ≥30, or ~ 30 lbs. overweight for 5′ 4″ person)

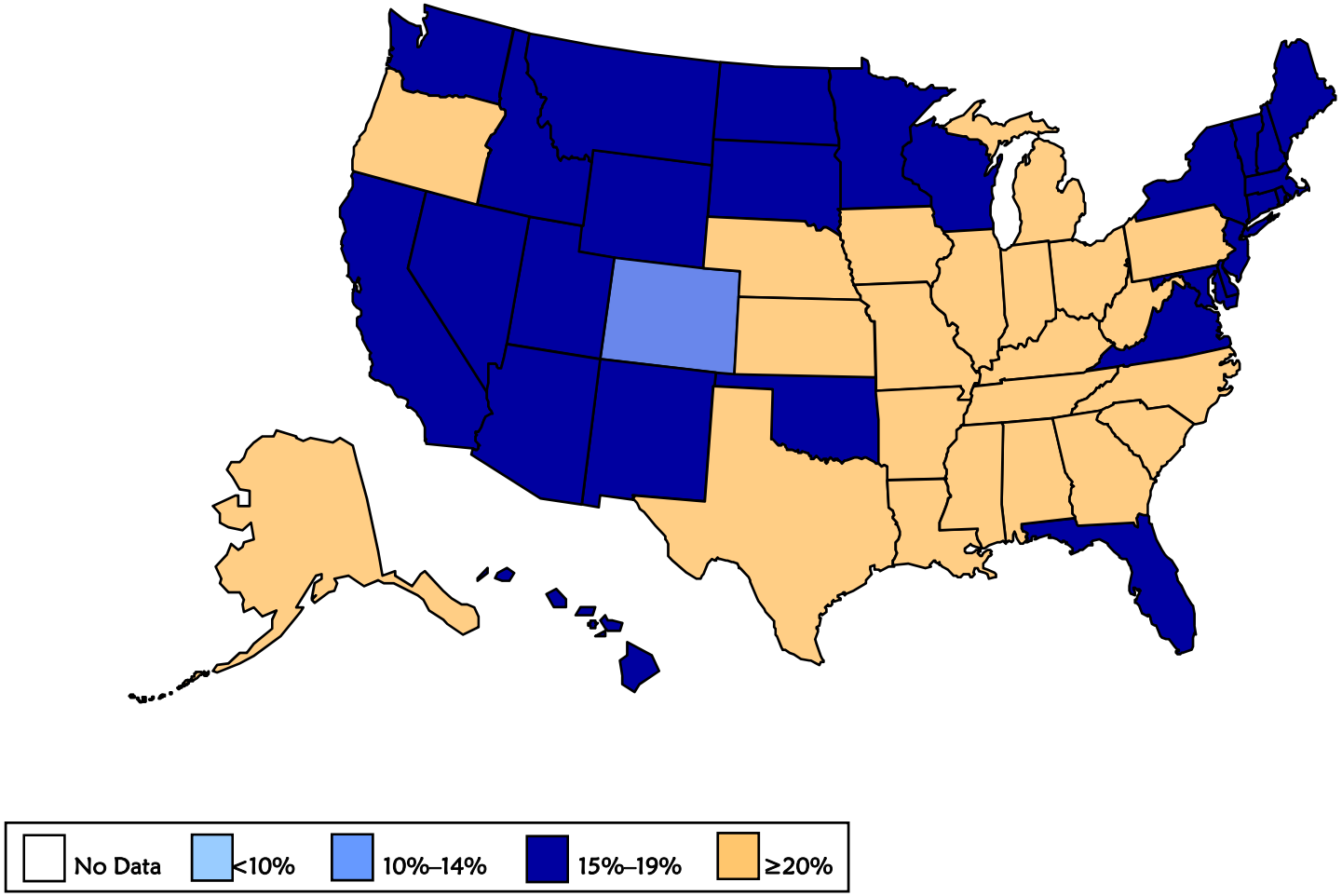




Obesity Trends* Among U.S. Adults

BRFSS, 2000

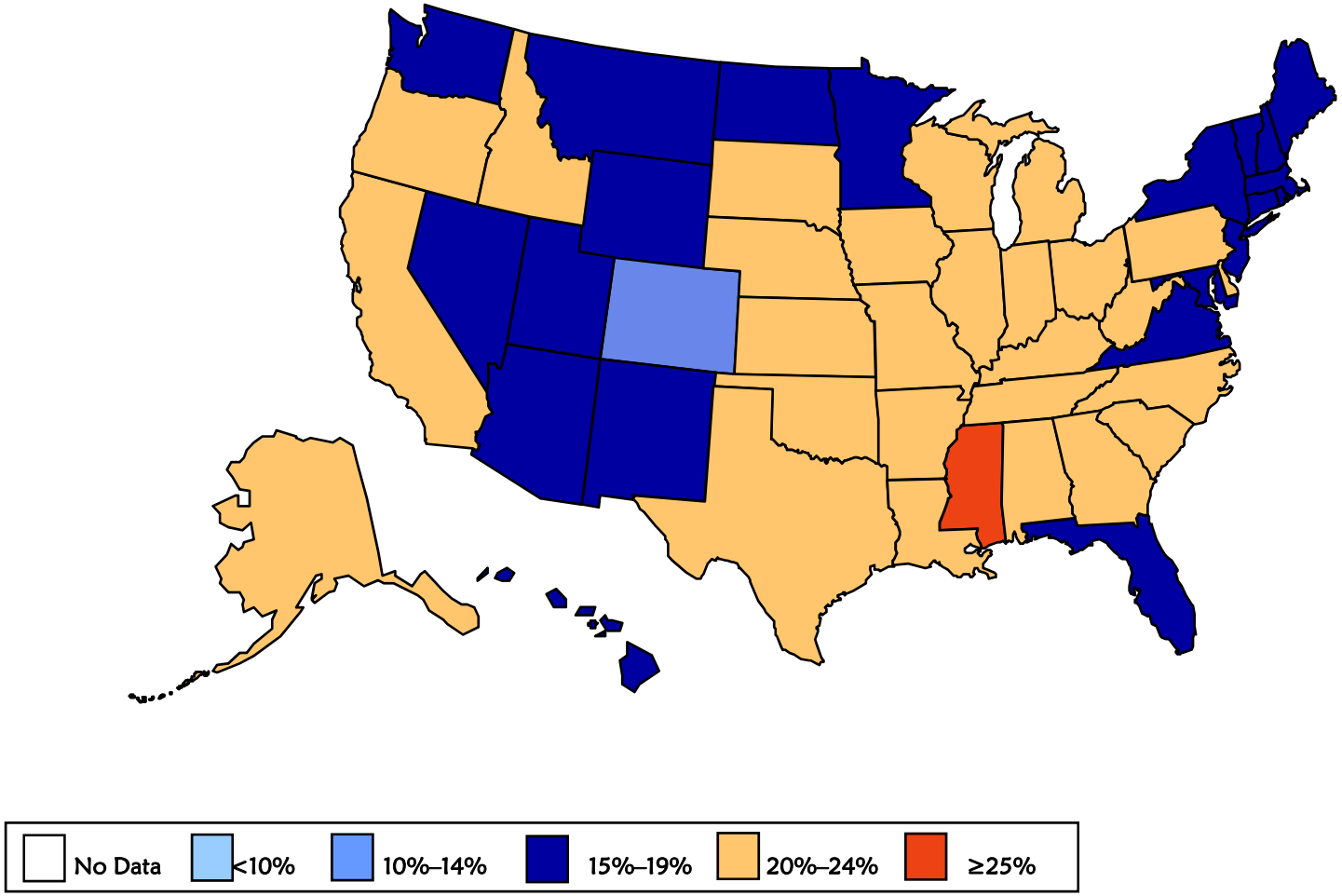
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



Obesity Trends* Among U.S. Adults

BRFSS, 2001

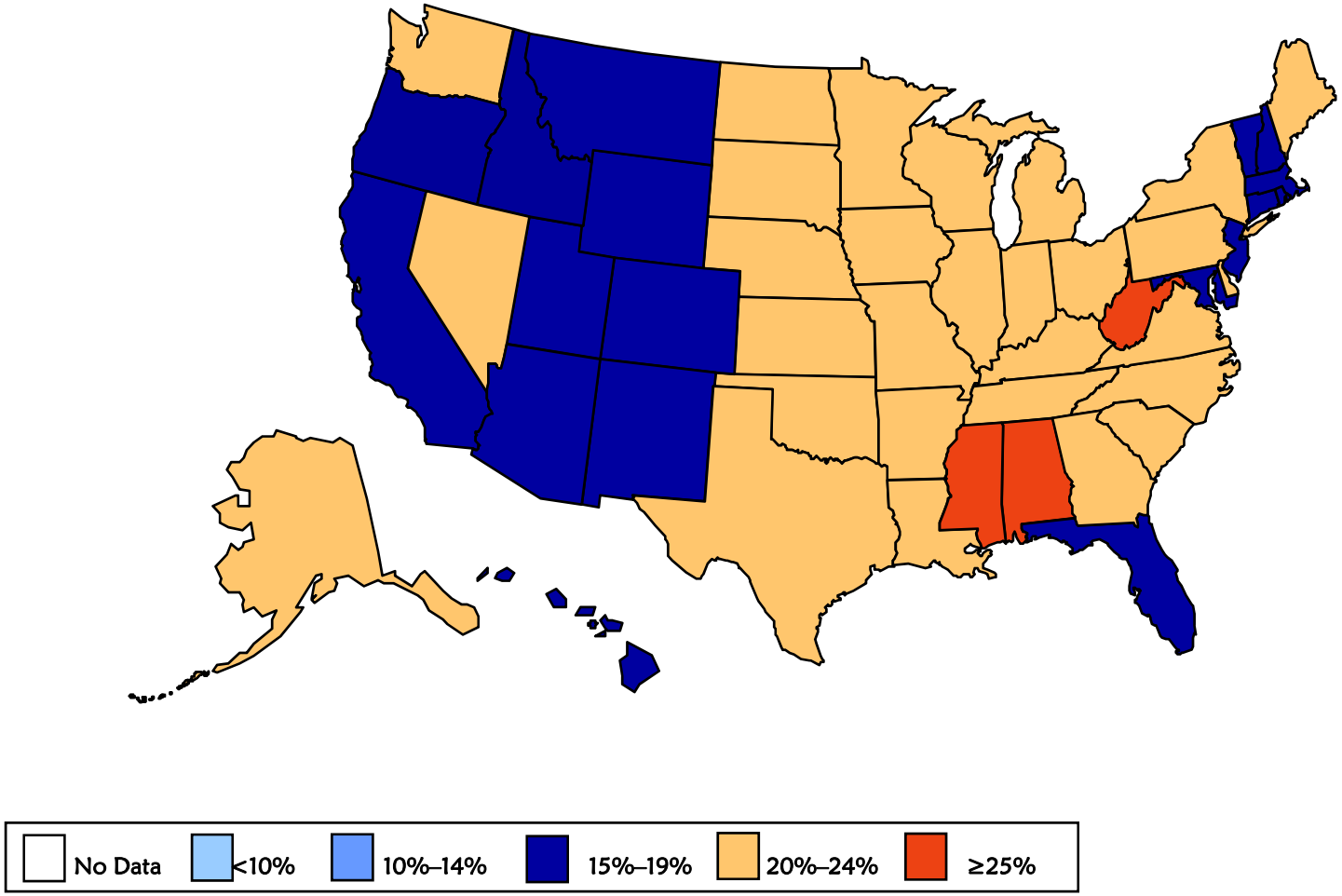
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



Obesity Trends* Among U.S. Adults

BRFSS, 2002

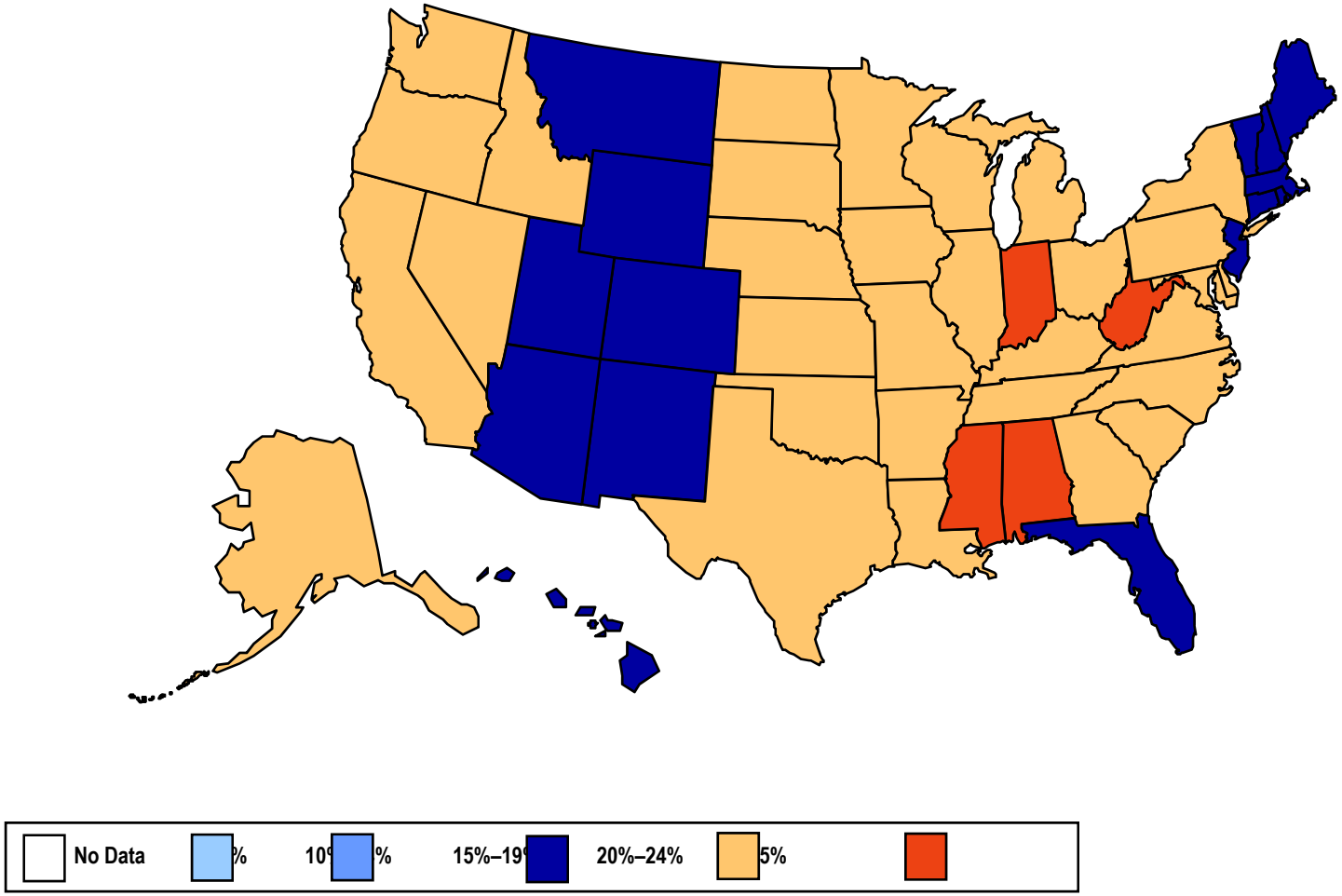
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



Obesity Trends* Among U.S. Adults

BRFSS, 2003

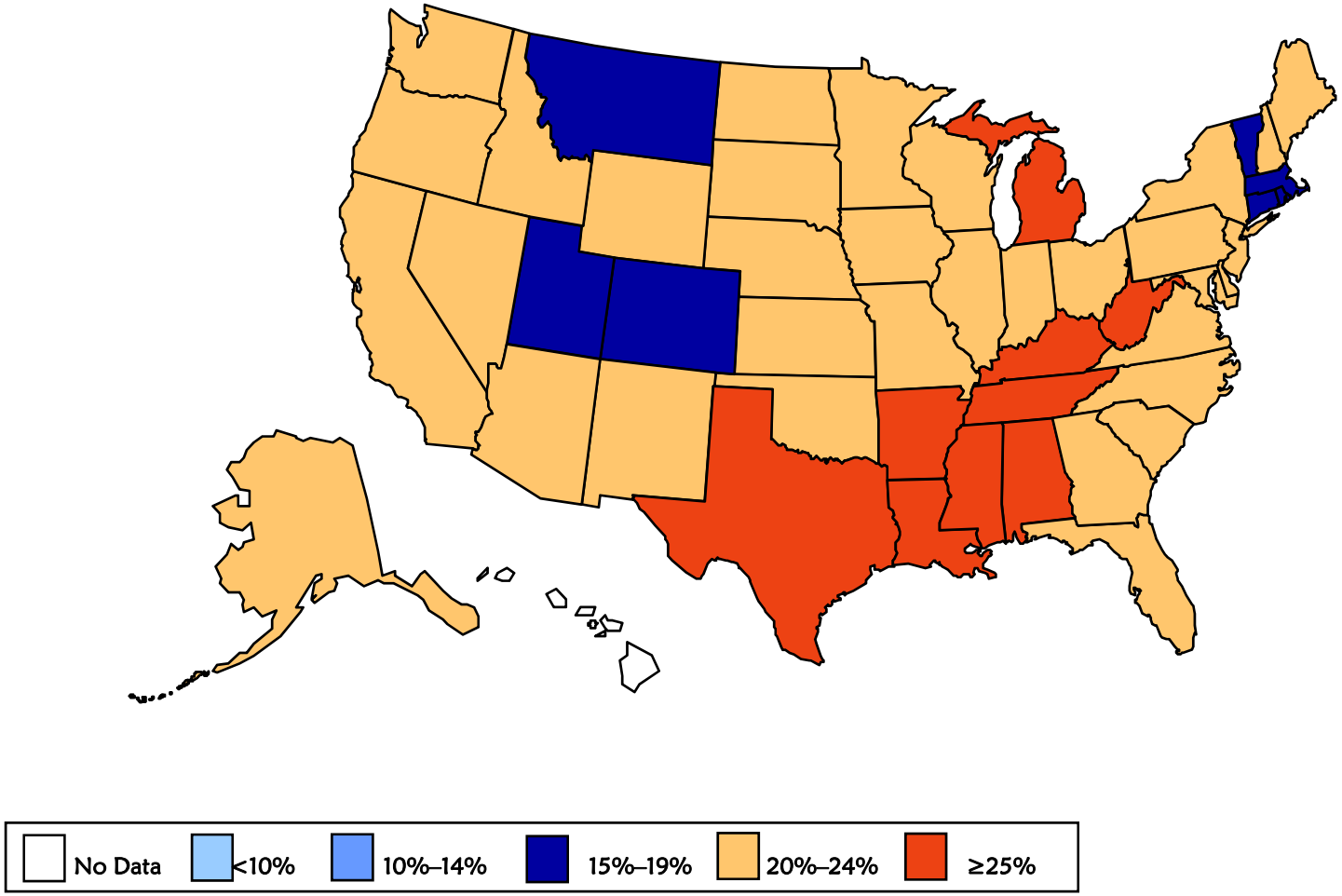
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



Obesity Trends* Among U.S. Adults

BRFSS, 2004

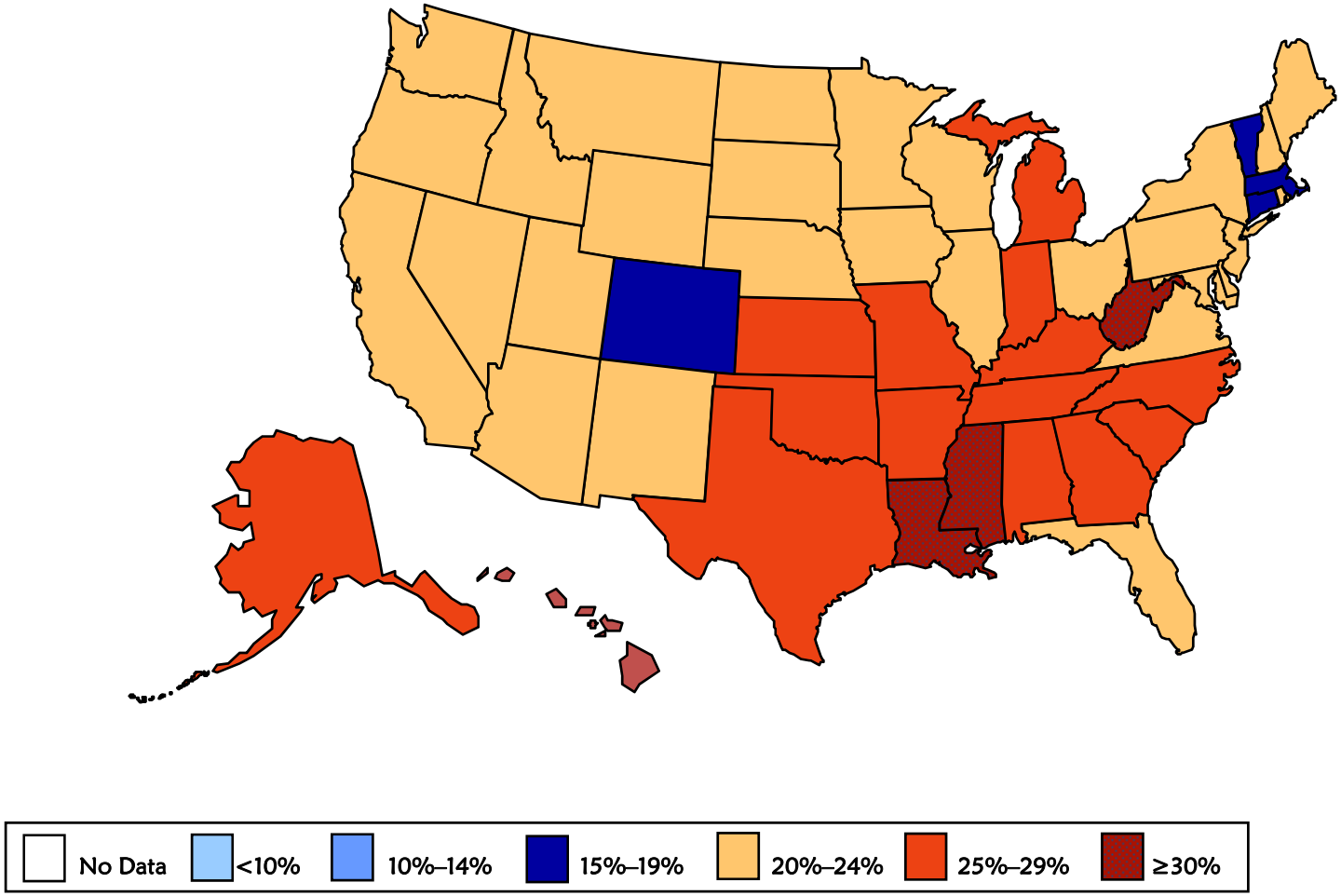
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



Obesity Trends* Among U.S. Adults

BRFSS, 2005

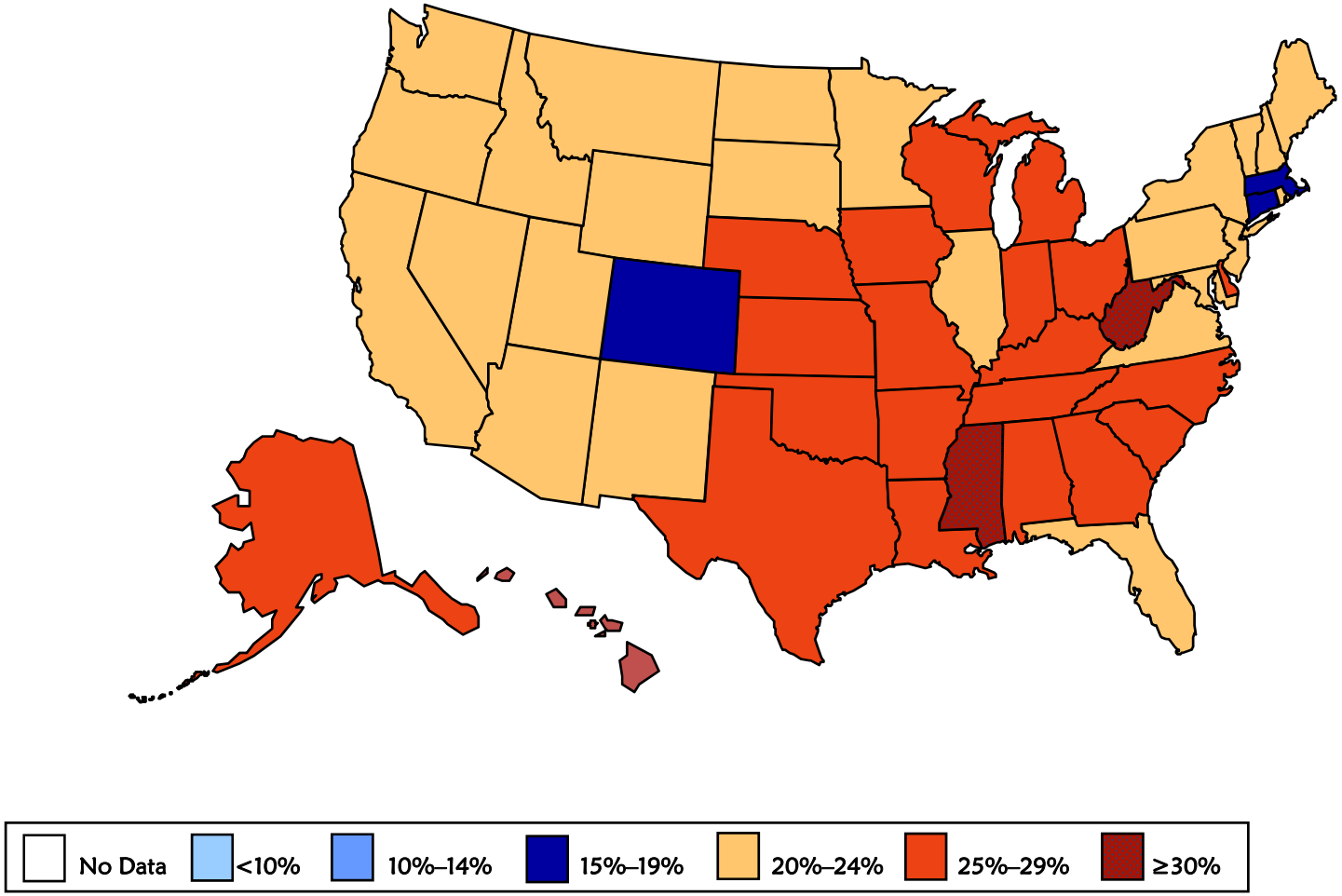
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



Obesity Trends* Among U.S. Adults

BRFSS, 2006

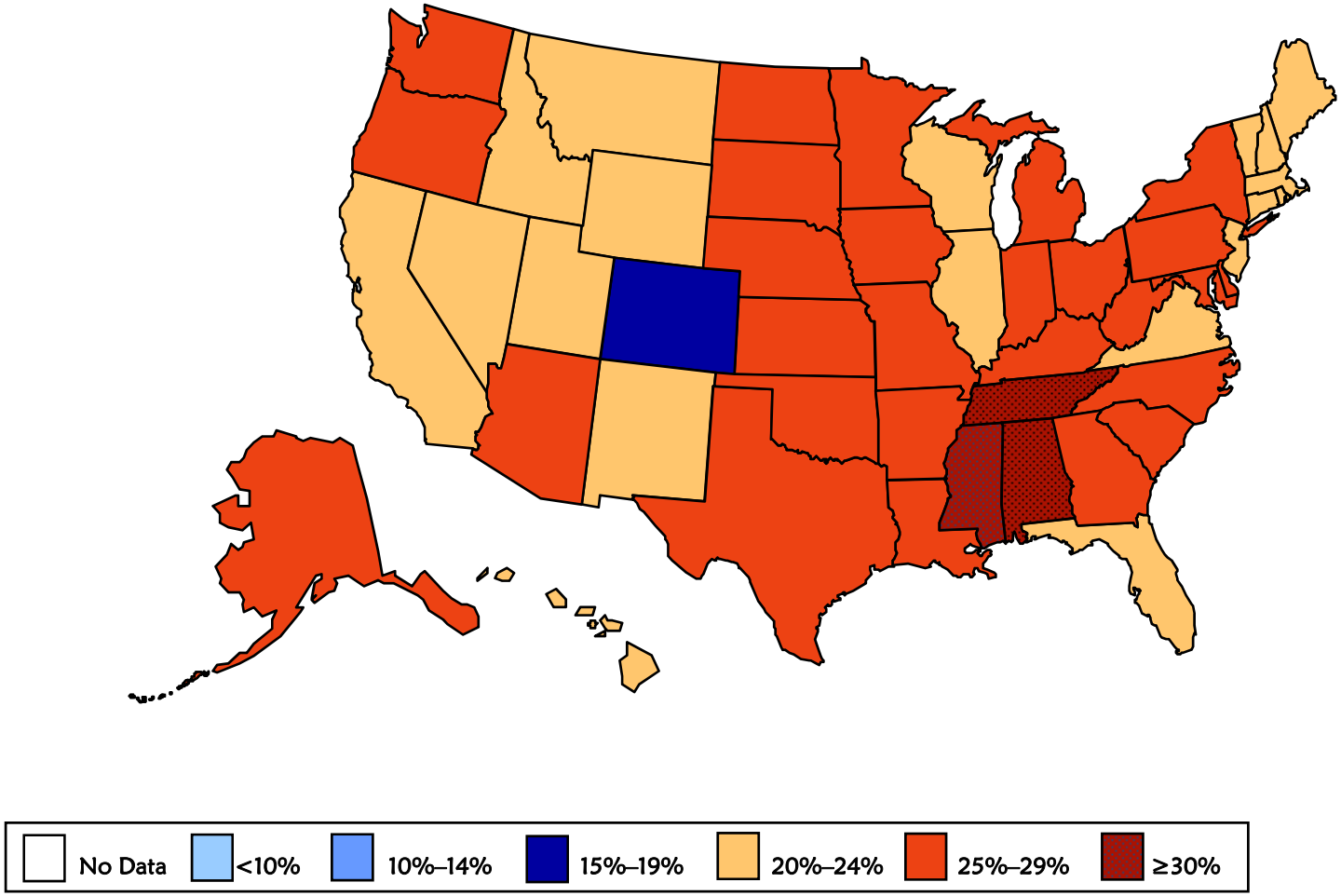
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



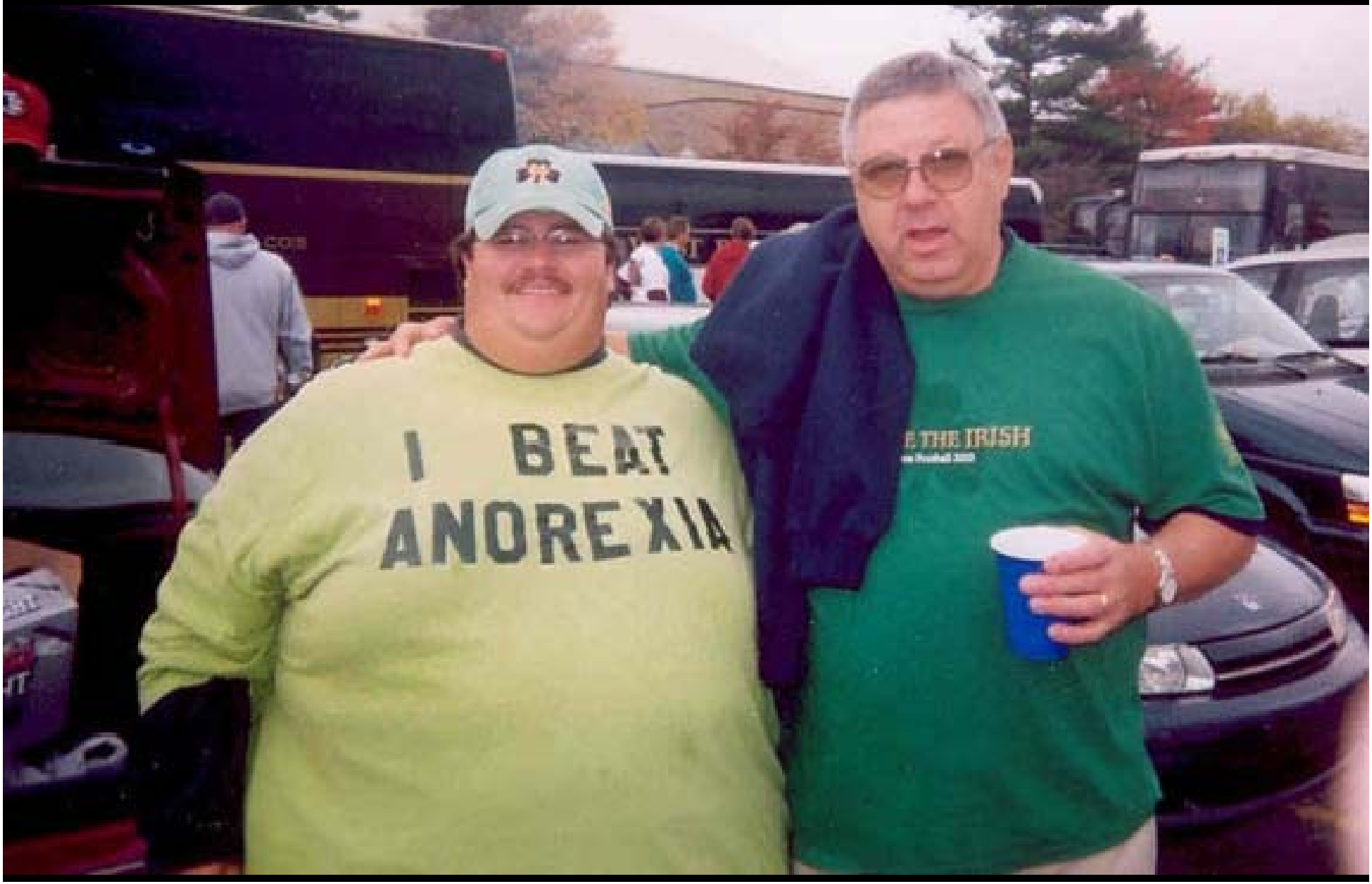
Obesity Trends* Among U.S. Adults

BRFSS, 2007

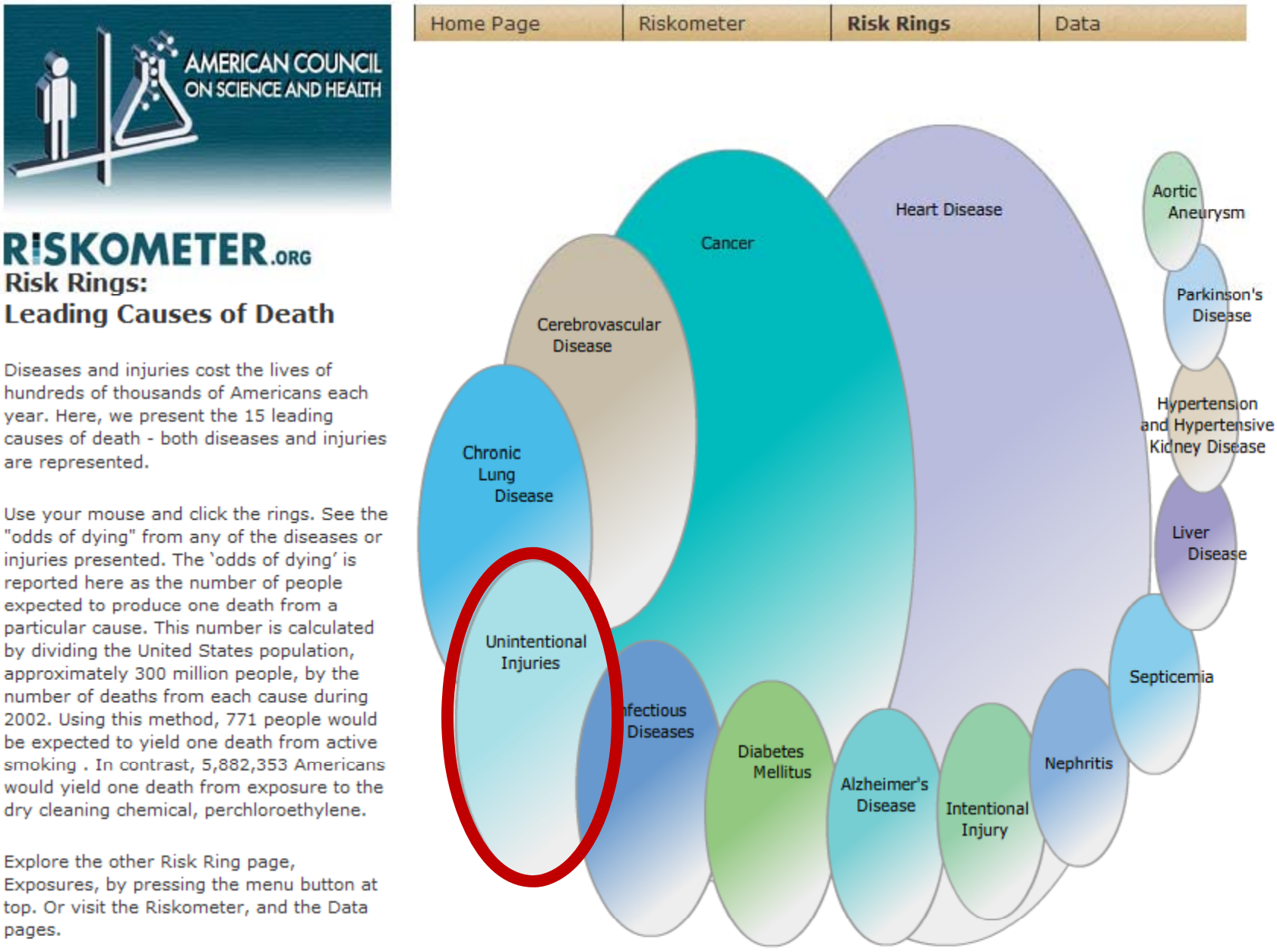
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



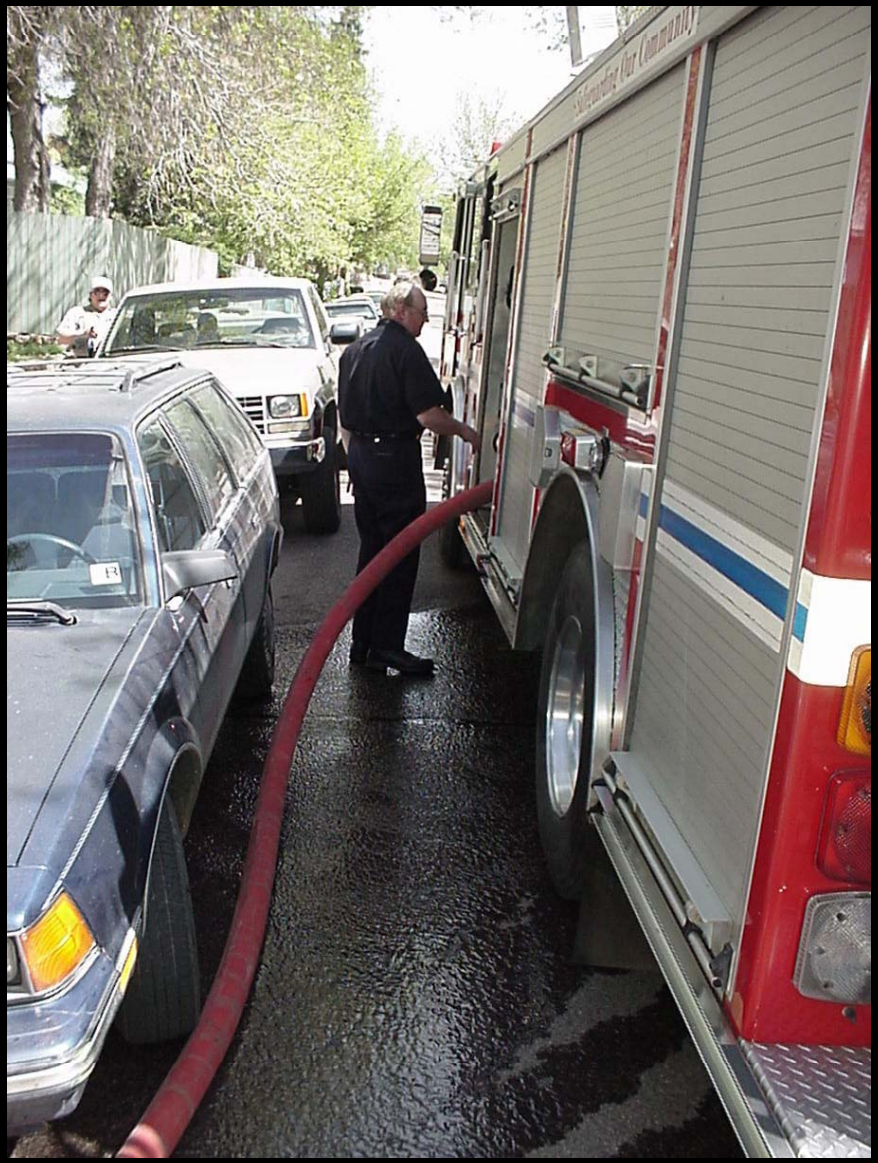
We cannot escape our DNA…

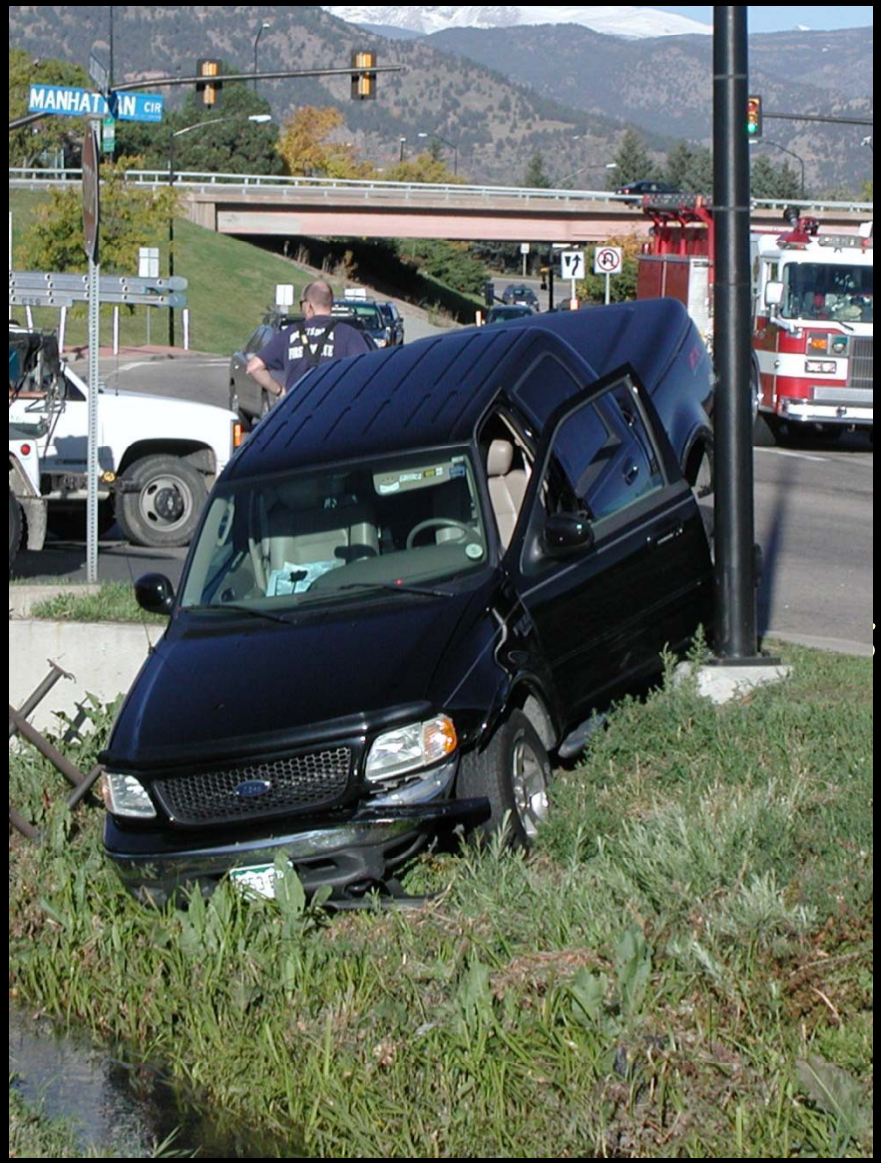


….no matter how hard we try



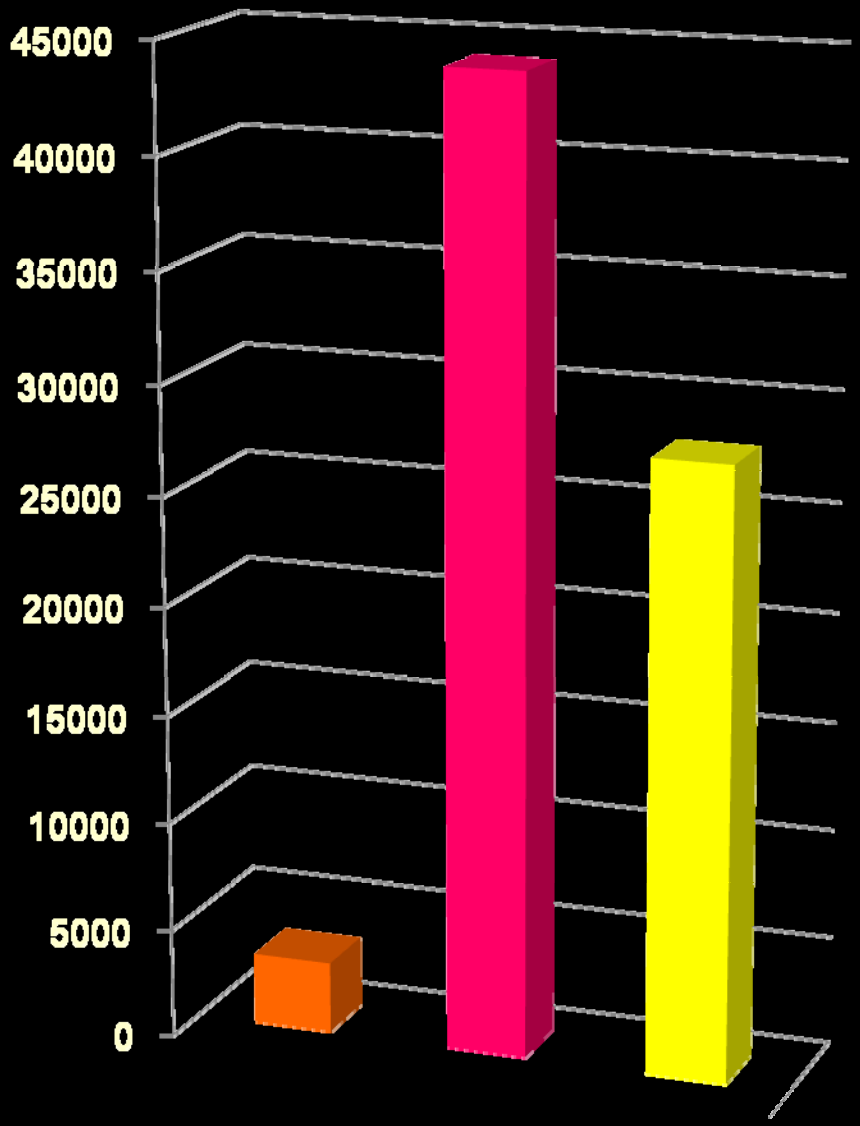
Leading Causes of Death, 2002




MANHATTAN CIR

Cause of Death

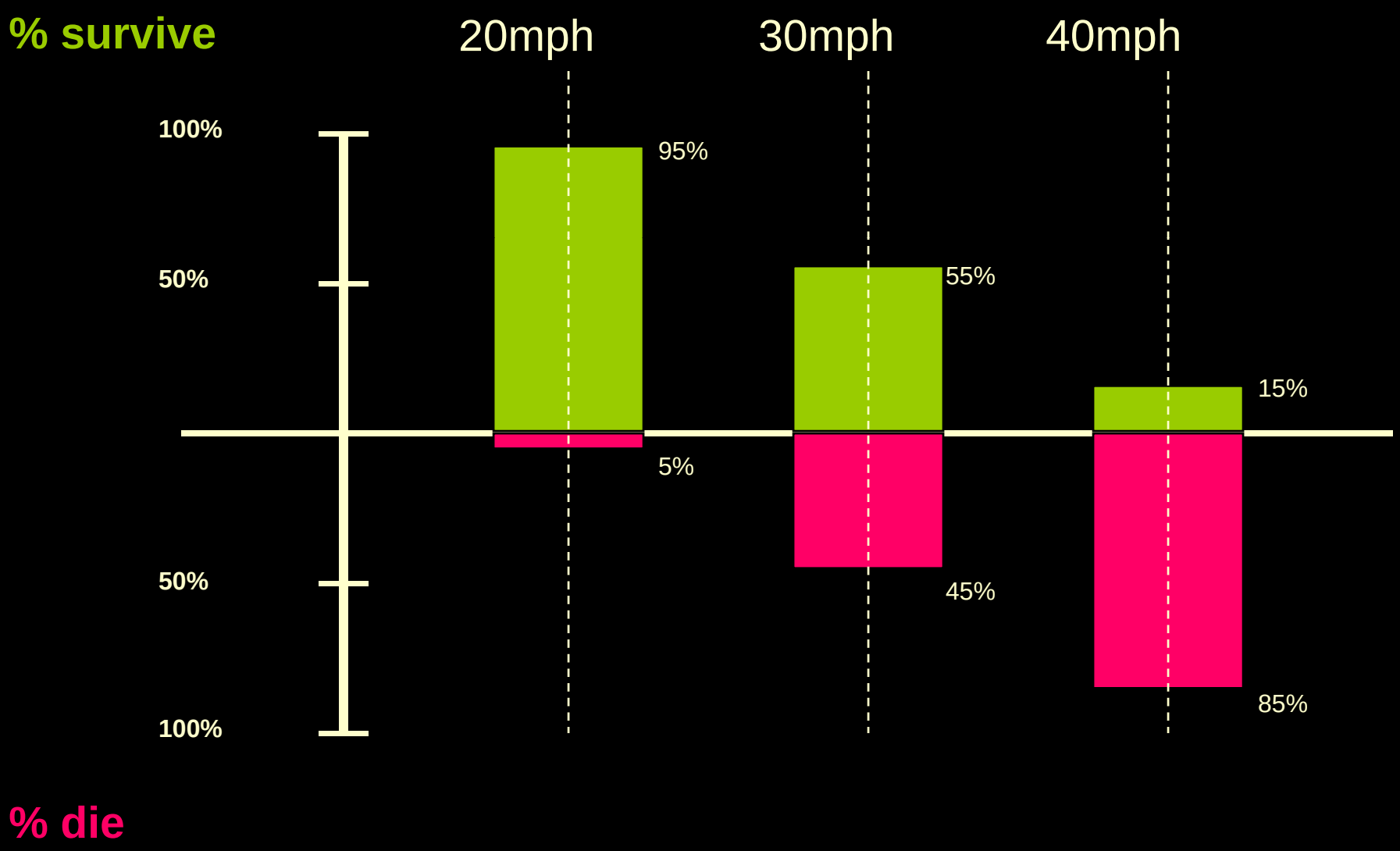
U.S. 2002



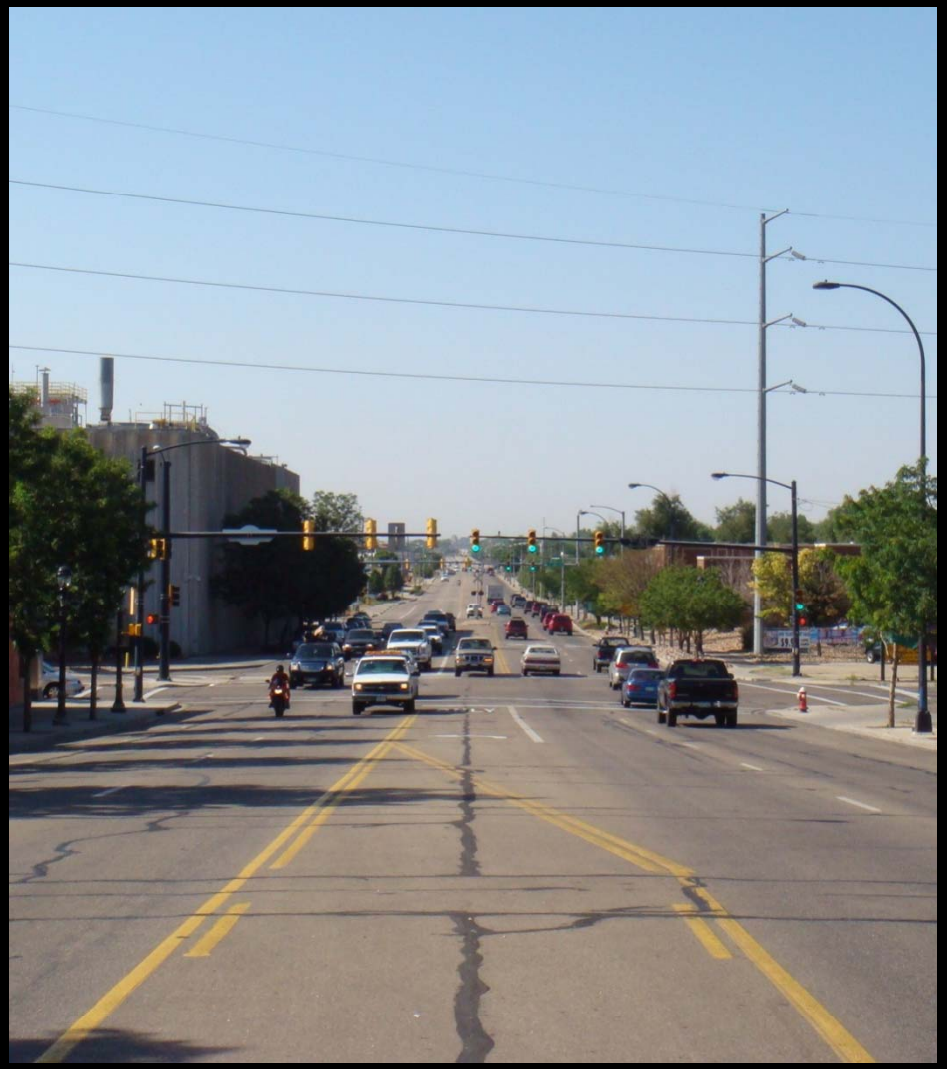
	Number Deaths	Odds of Dying
Fire/Burn	3,261	1 in 91,996
Vehicular Traffic	44,065	1 in 6,808
Sedentary Lifestyle	27,864	1 in 10,767

Source: American Council on Science and Health
2002 data based on 2,443,387 total U.S. deaths

Pedestrian Survival Rates – Vehicle Speeds



Conventional Street Design

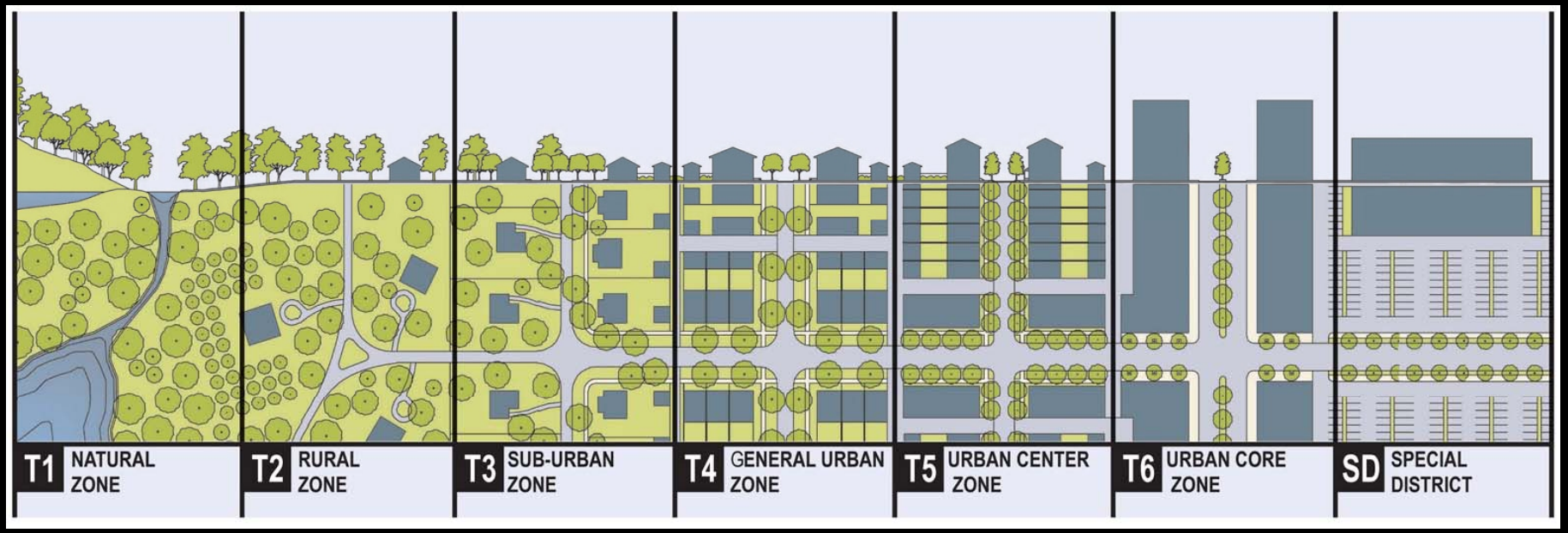


Life at > 35 mph

Context-Sensitive Design

- how we reduce auto dependency -

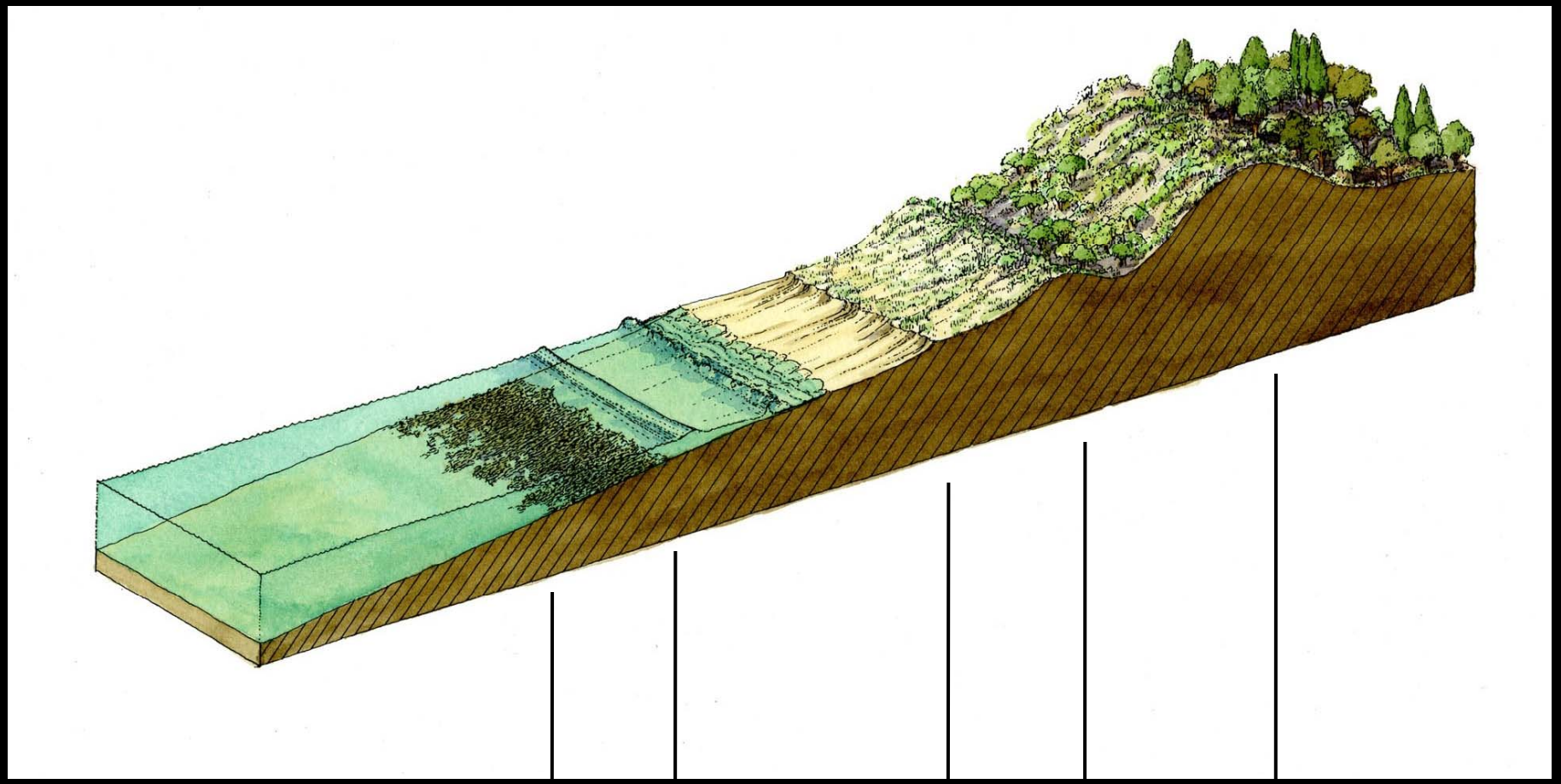
CONTEXT



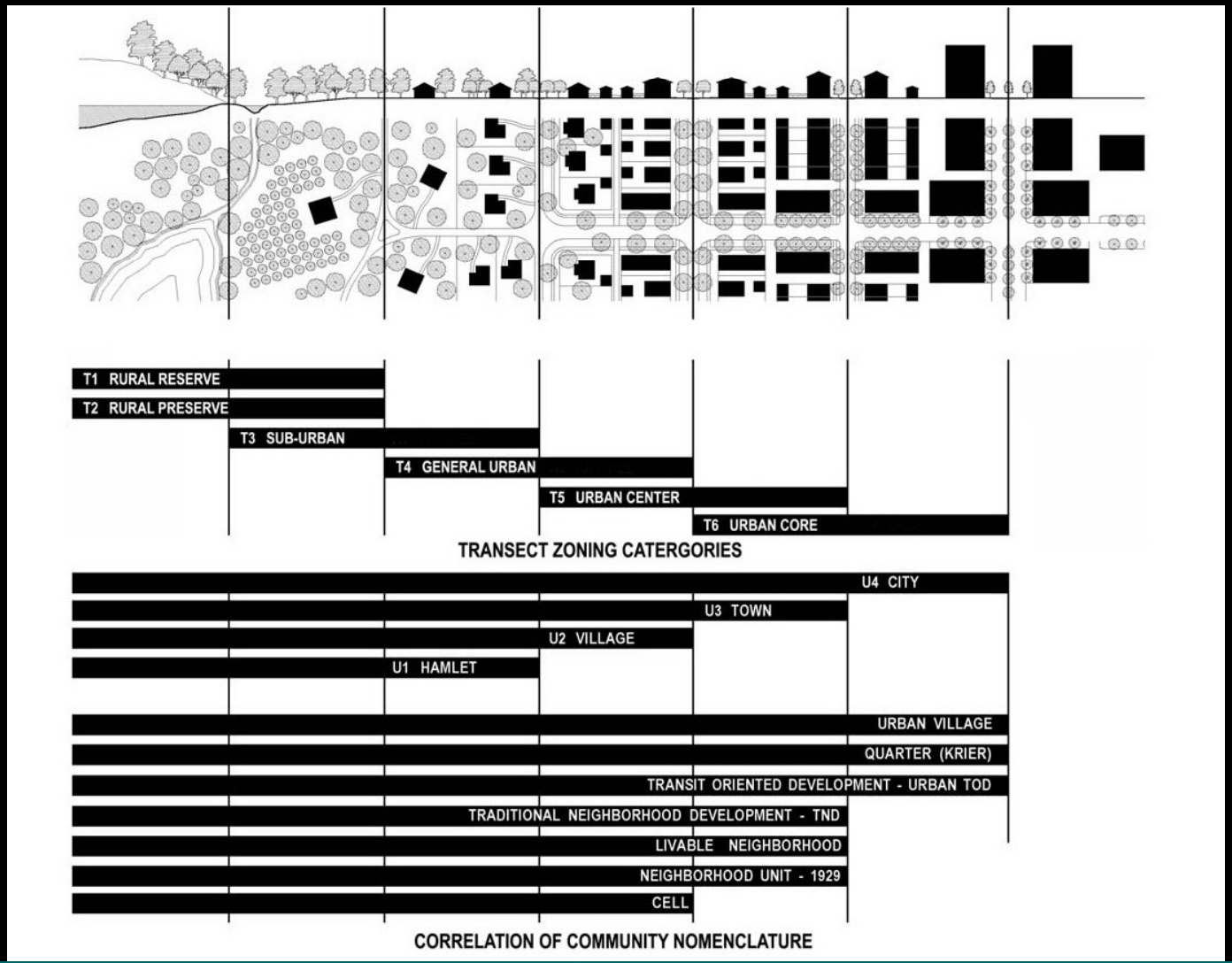
RURAL → URBAN

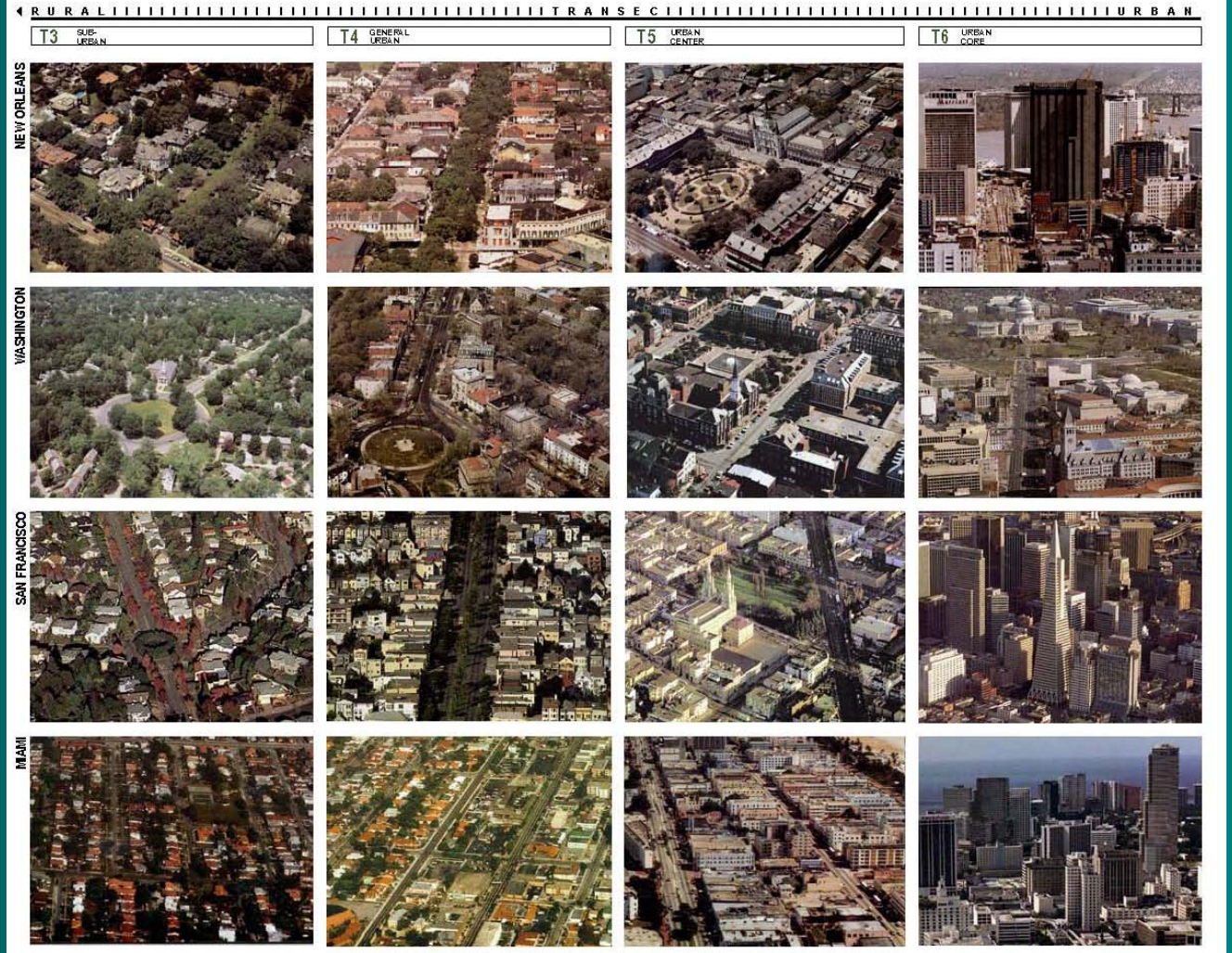
"TRANSECT"

Transect as Organizing Tool



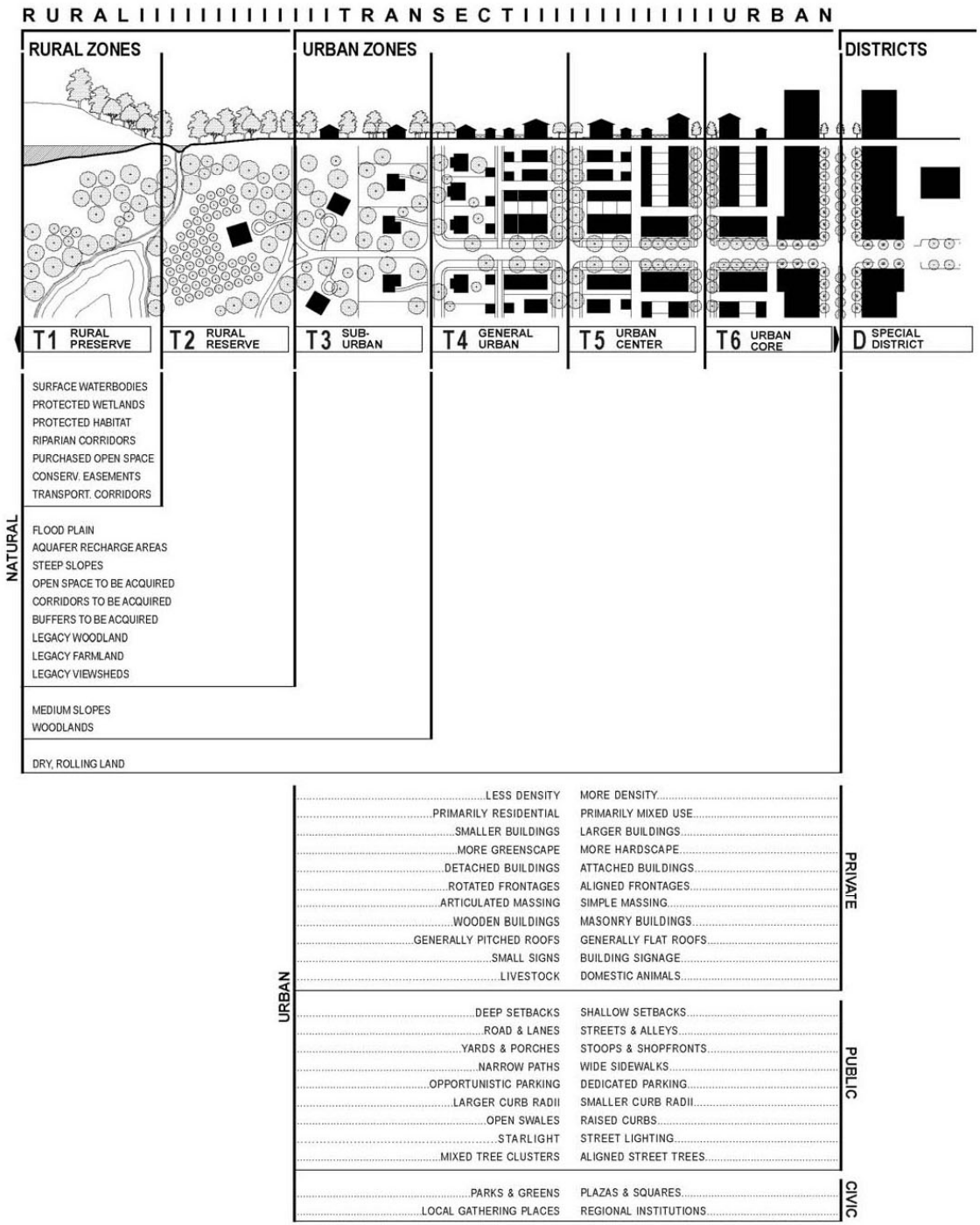
Transect as Organizing Tool





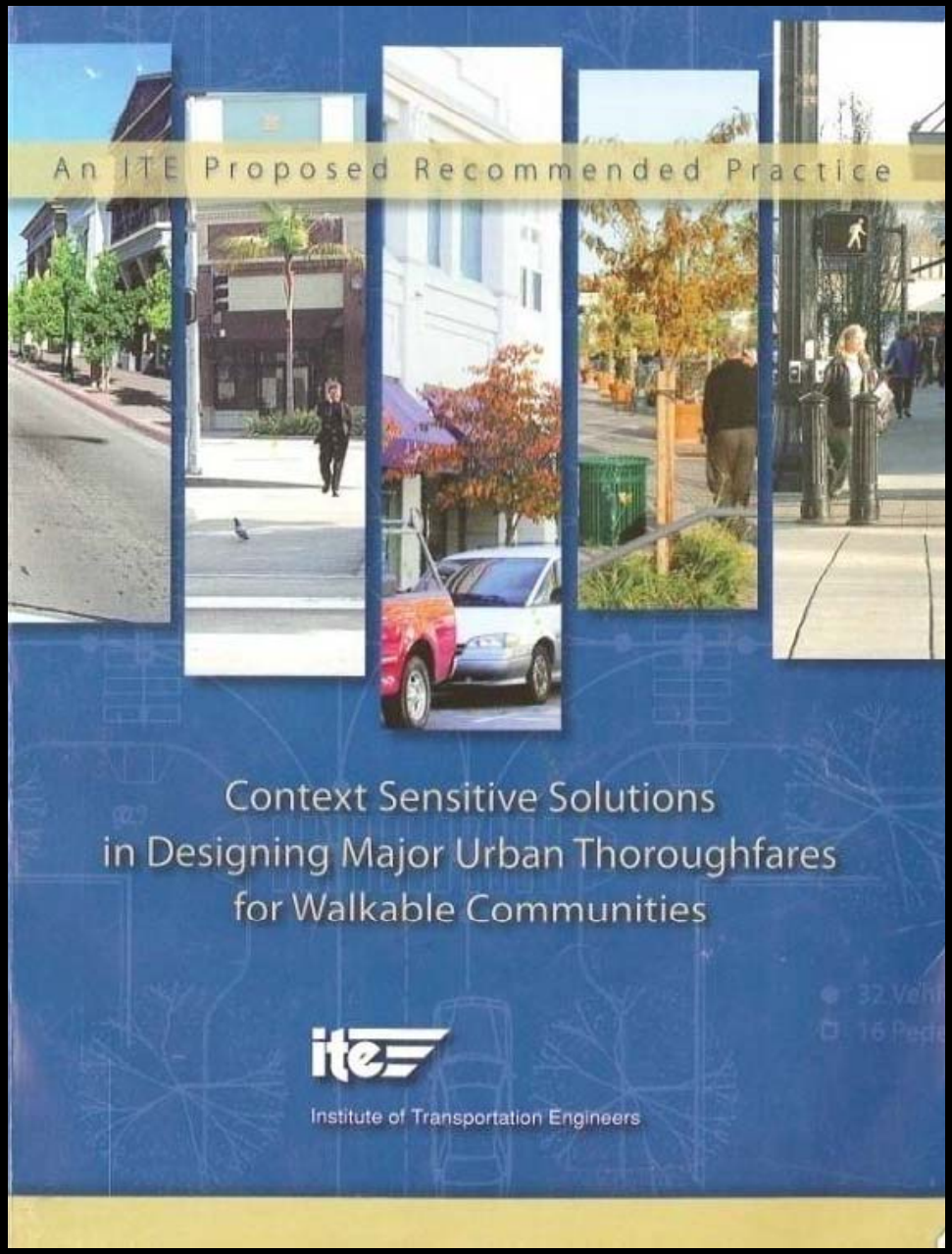
CONTEXT:
Right Tools for the Right Place

DPZ Transects



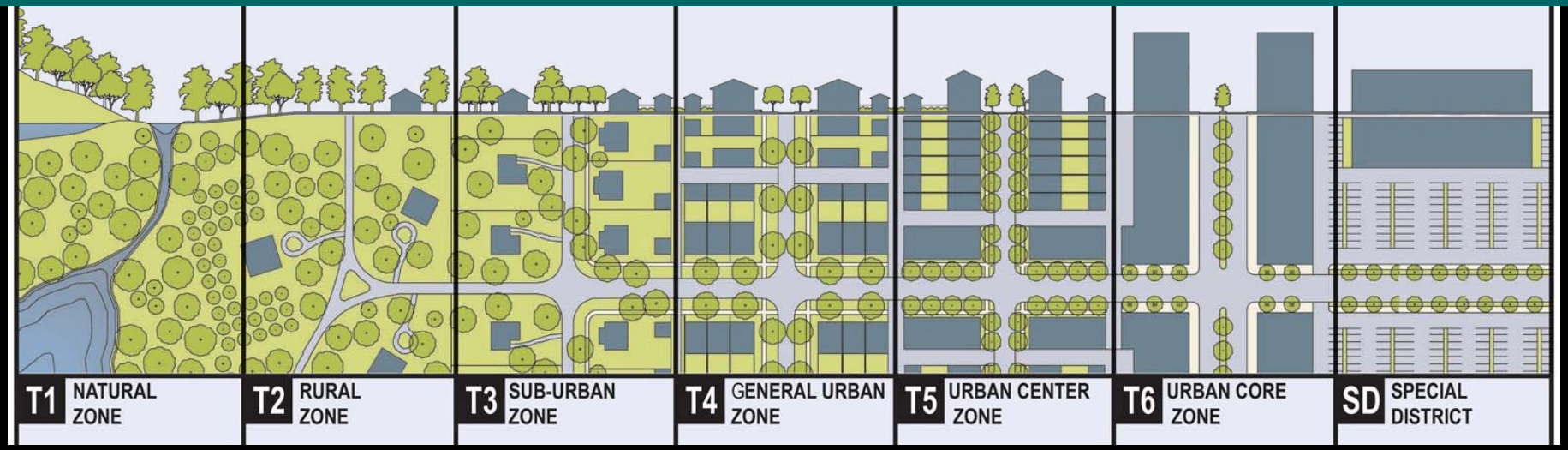
CONTEXT:
Right Tools for the Right Place

SmartCode 9.0

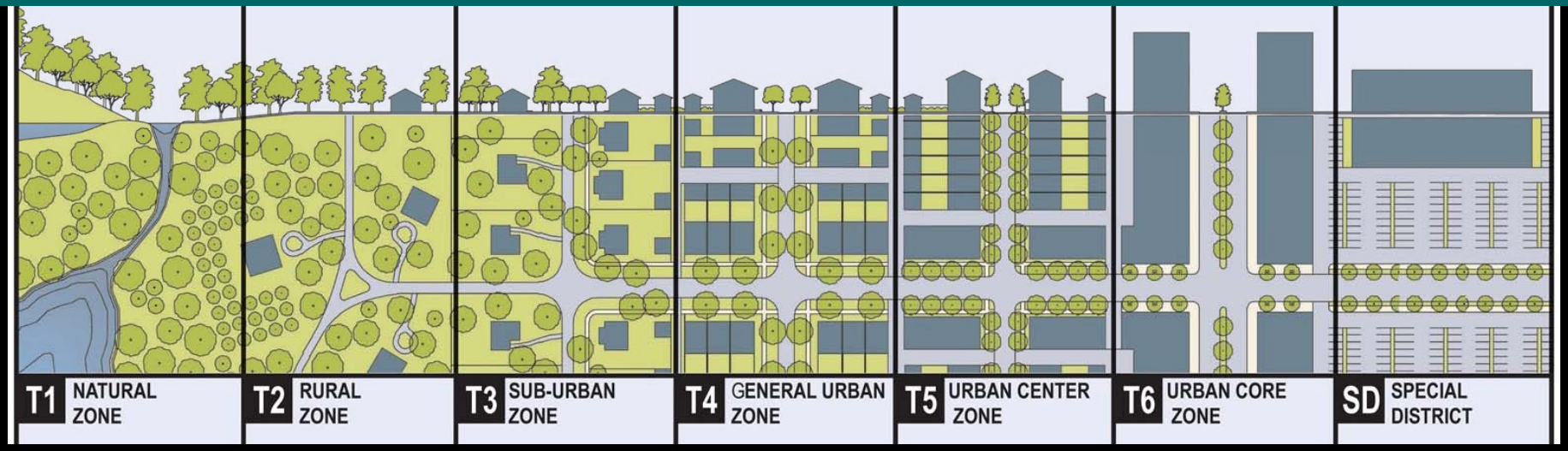


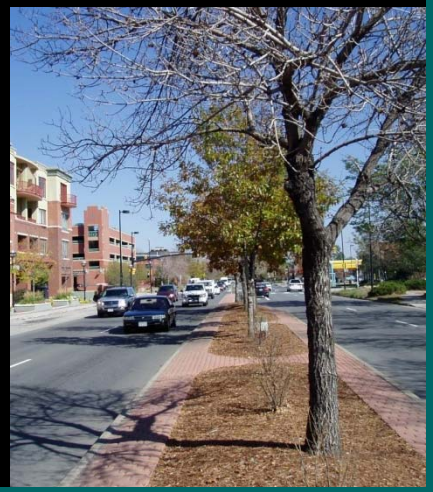
CONTEXT:
Right Tools for the Right Place

www.ite.org/css/



Context-Sensitive Overview of Transportation Modes and Facilities



AUTOMOBILES

- Design Speed
- Lane Widths