

Taking the Car out of Carbon:

New Tools and Practices for Measuring the Sustainability Impacts of Land Use and Transportation Policies

Presentation to the New Partners for Smart Growth Conference, San Diego

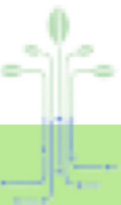
February 3, 2012

Projjal K. Dutta, AIA, LEED AP

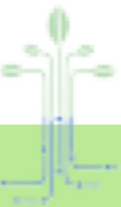
pductta@mtahq.org (212) 878 1065

Director, Sustainability Initiatives

www.mta.info/sustainability; [@projjal](https://twitter.com/projjal) ; takingthecaroutofcarbon.tumblr.com



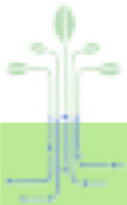
Energy Consumption & Sustainability: Microview



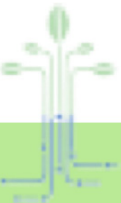
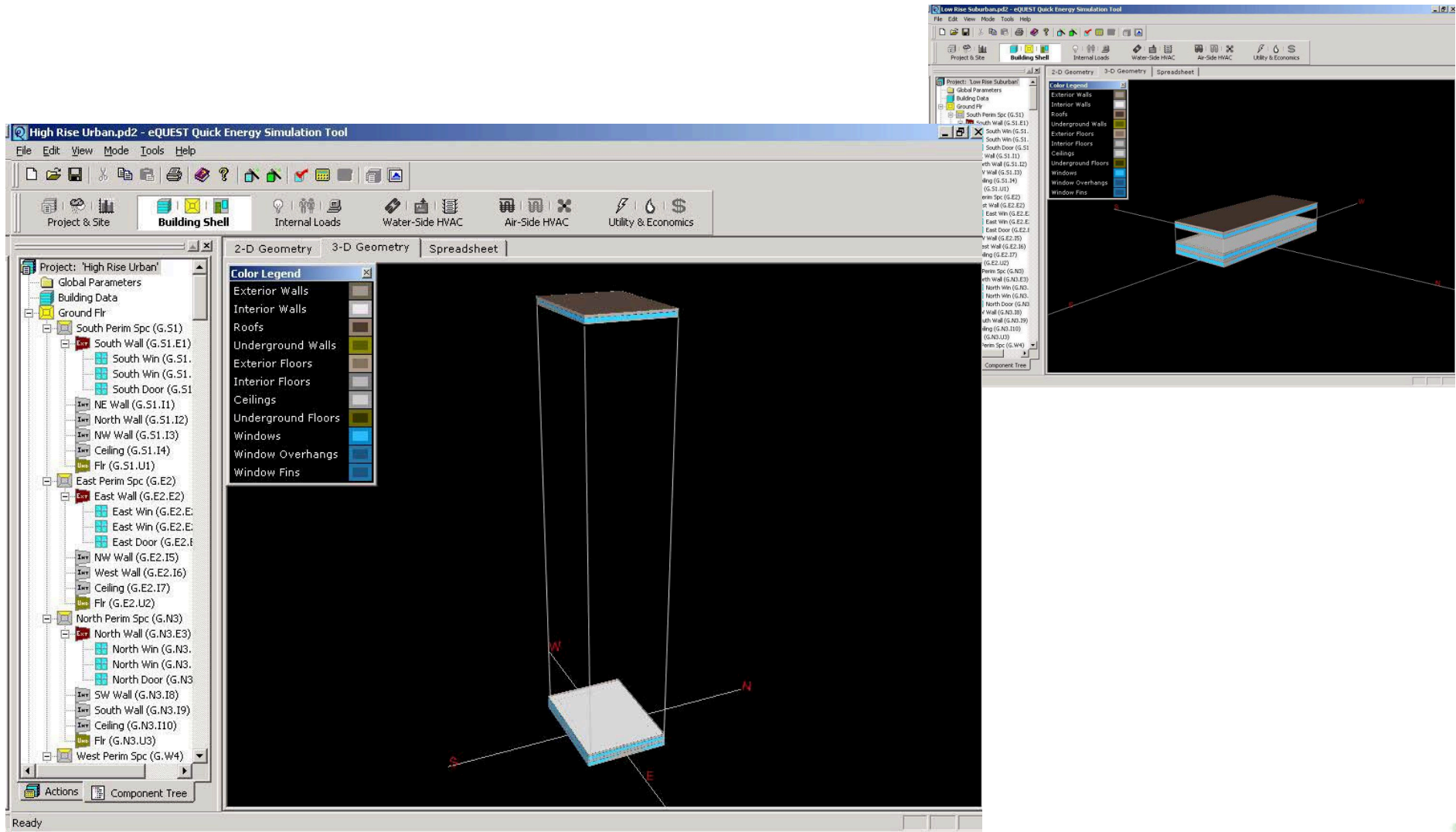
Energy Use: High-Rise vs. Low-Rise Development



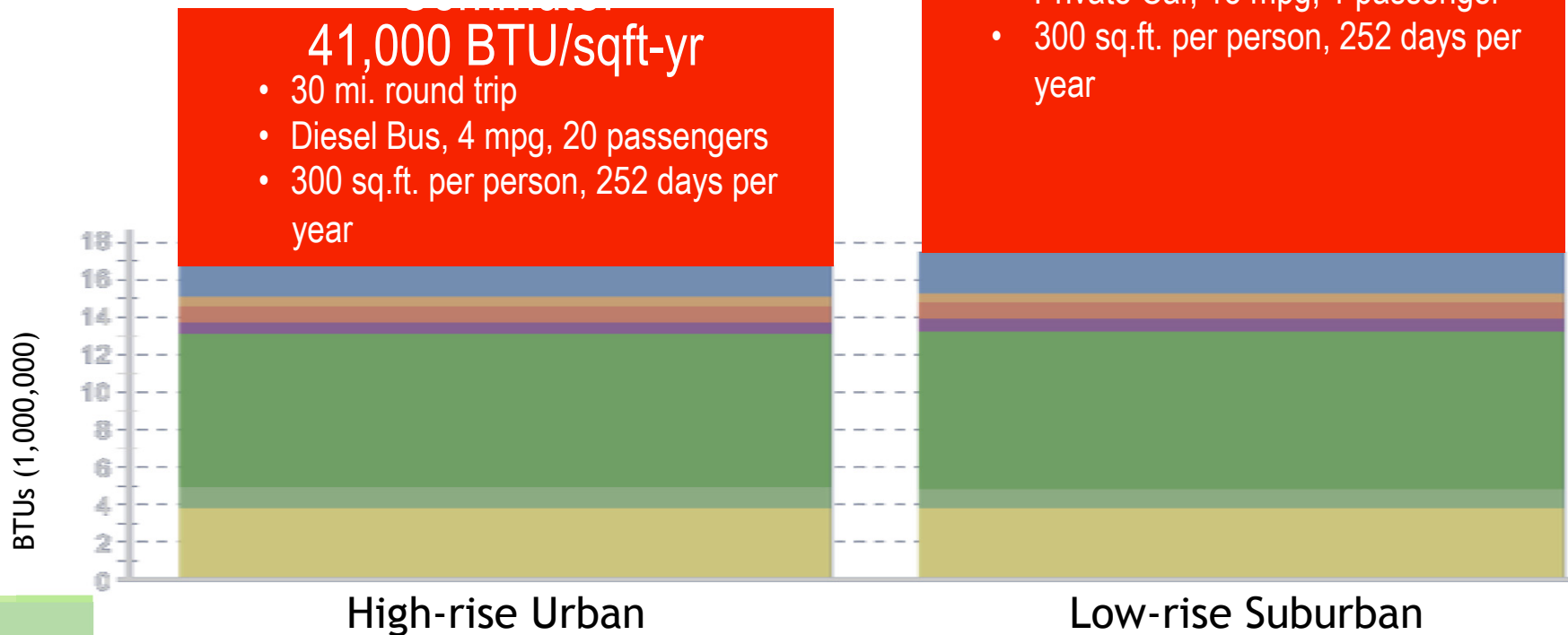
	High-Rise	Low-Rise
Number of buildings	1	10
Average floor size	30,612 sf	36,000 sf
Area of roof	88,000 sf	375,000 sf
Area of ext wall	343,000 sf	385,000 sf
Area of parking	0 sf	1,837,500 sf



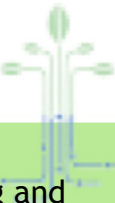
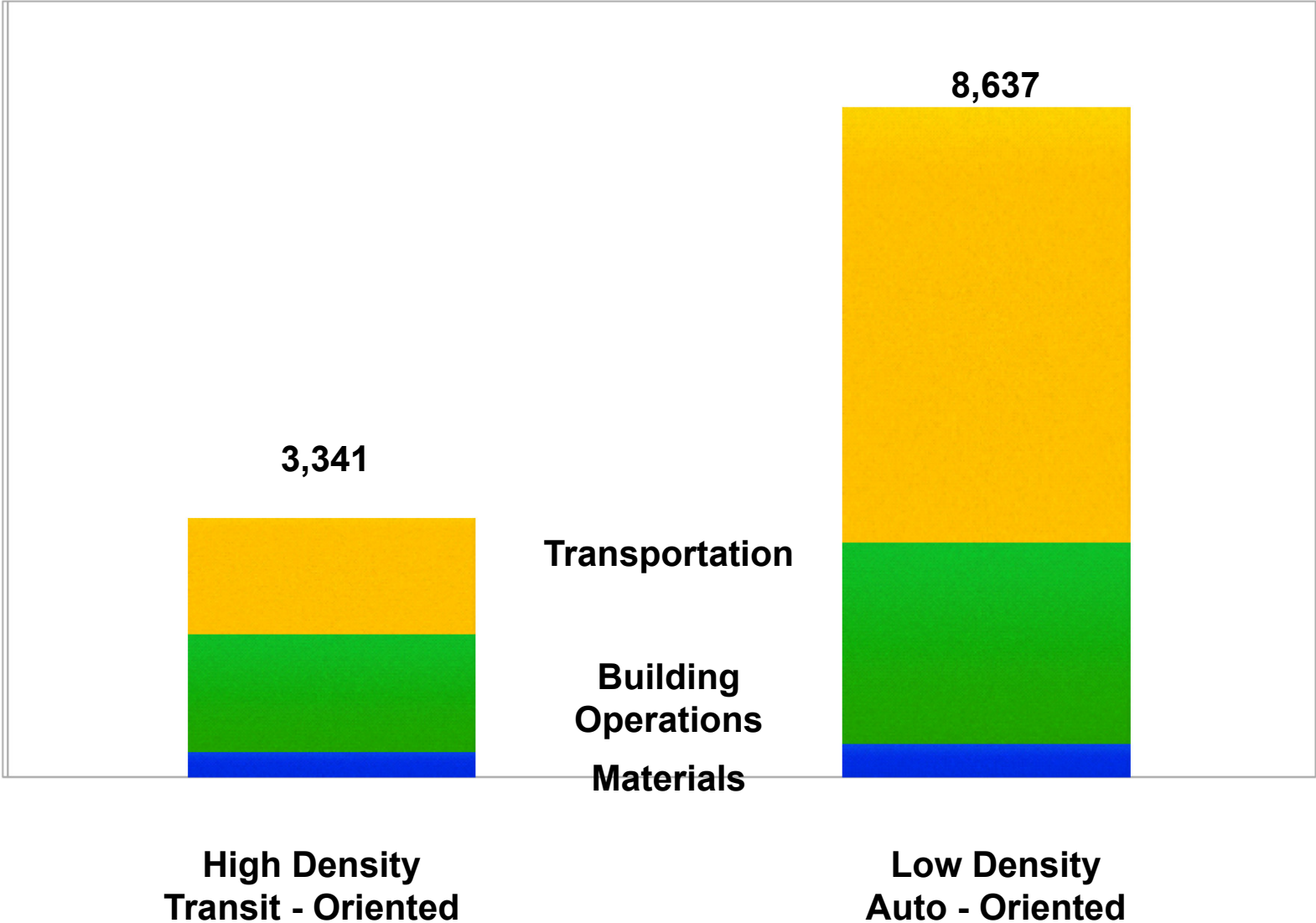
Energy Consumption: Low-Rise Office Park vs. Tall Urban Building



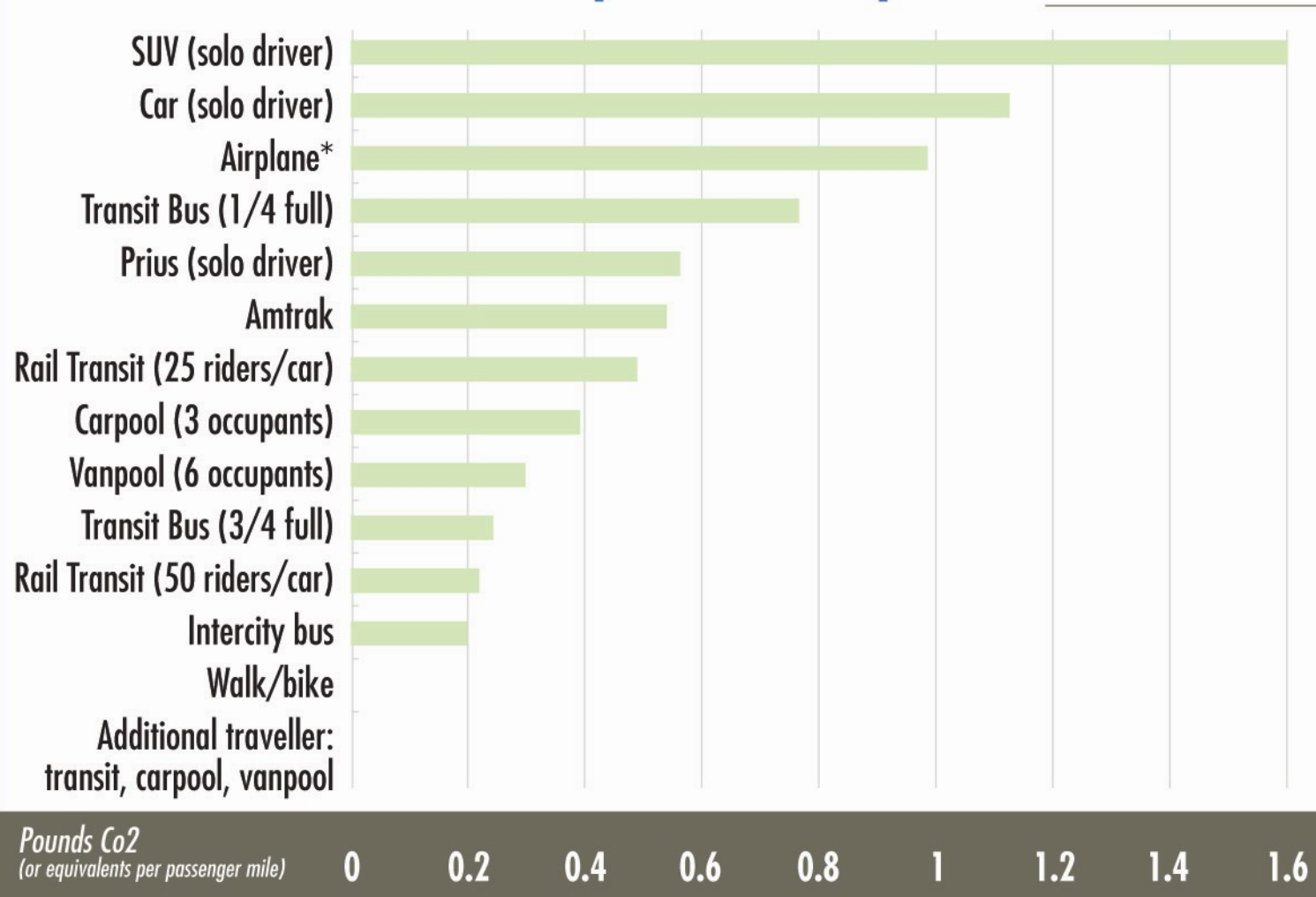
Energy Use: High-Rise vs. Low-Rise Development



GHG Per Person: Kg CO₂E (Carbon dioxide equivalent) pa.

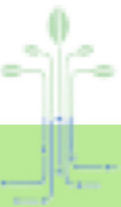


GHG Emissions of Transportation Options

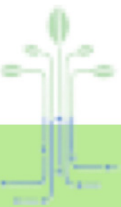


Sightline Institute (<http://www.sightline.org/maps/charts/climate-CO2byMode>)

The Choice

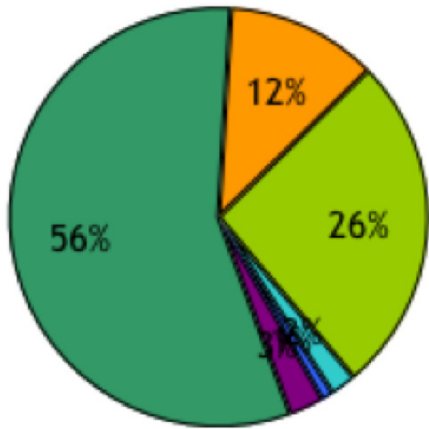


Energy Consumption & Sustainability: Macroview

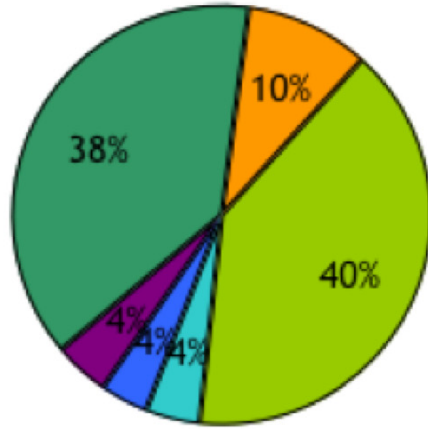


Energy Consumption by Sector, 2005

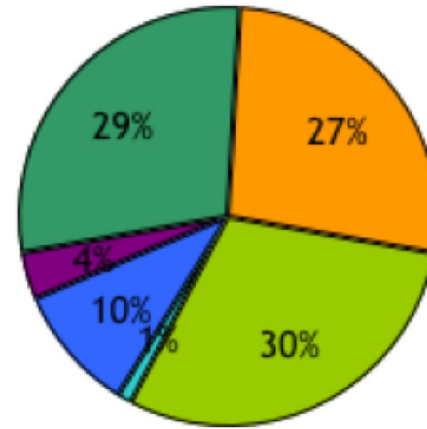
India



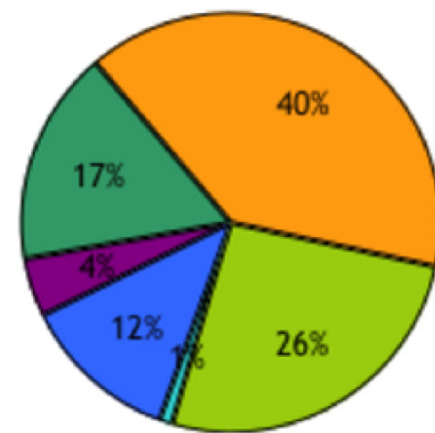
China



Germany



USA



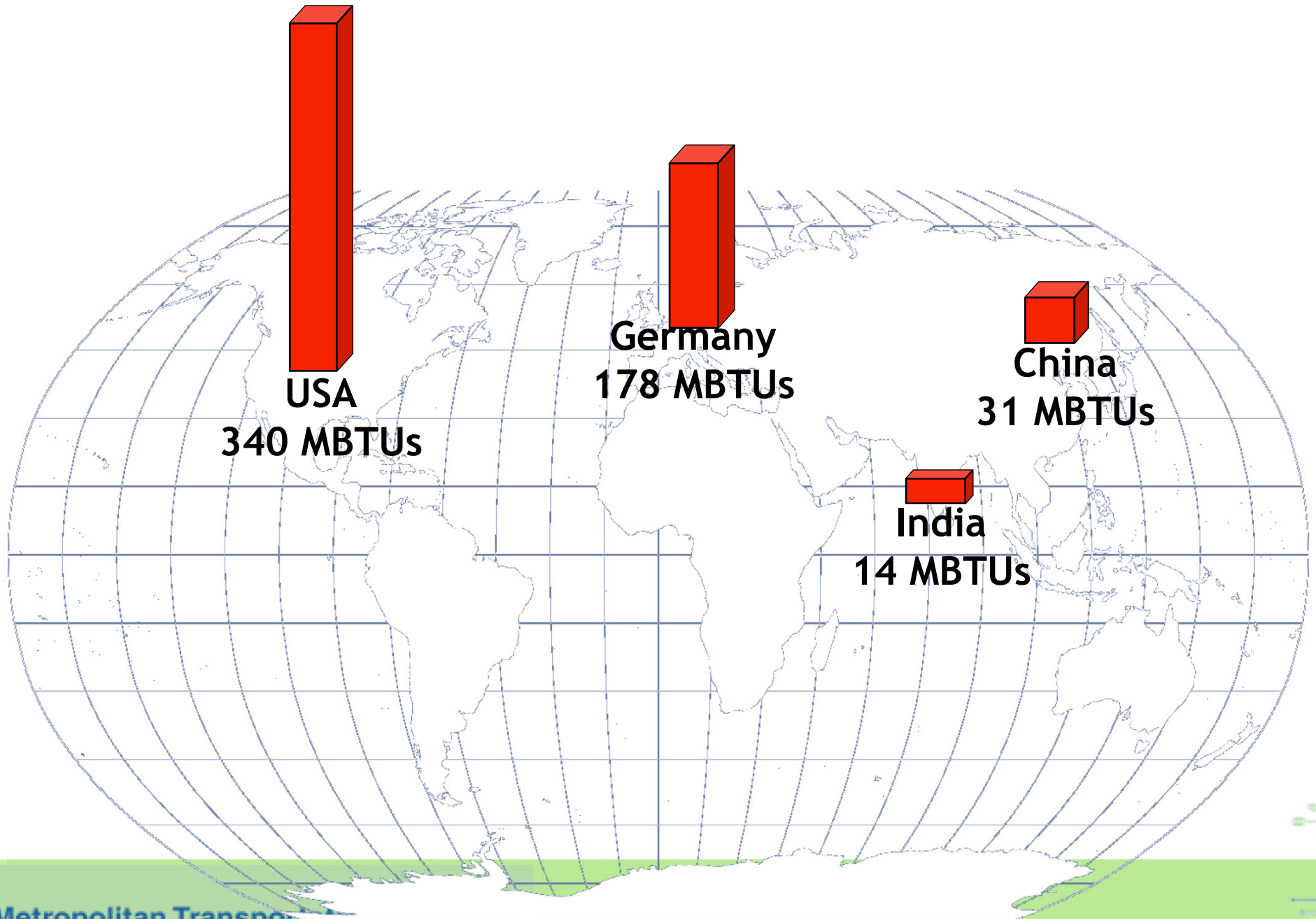
● Residential
● Agriculture

● Transportation
● Commercial

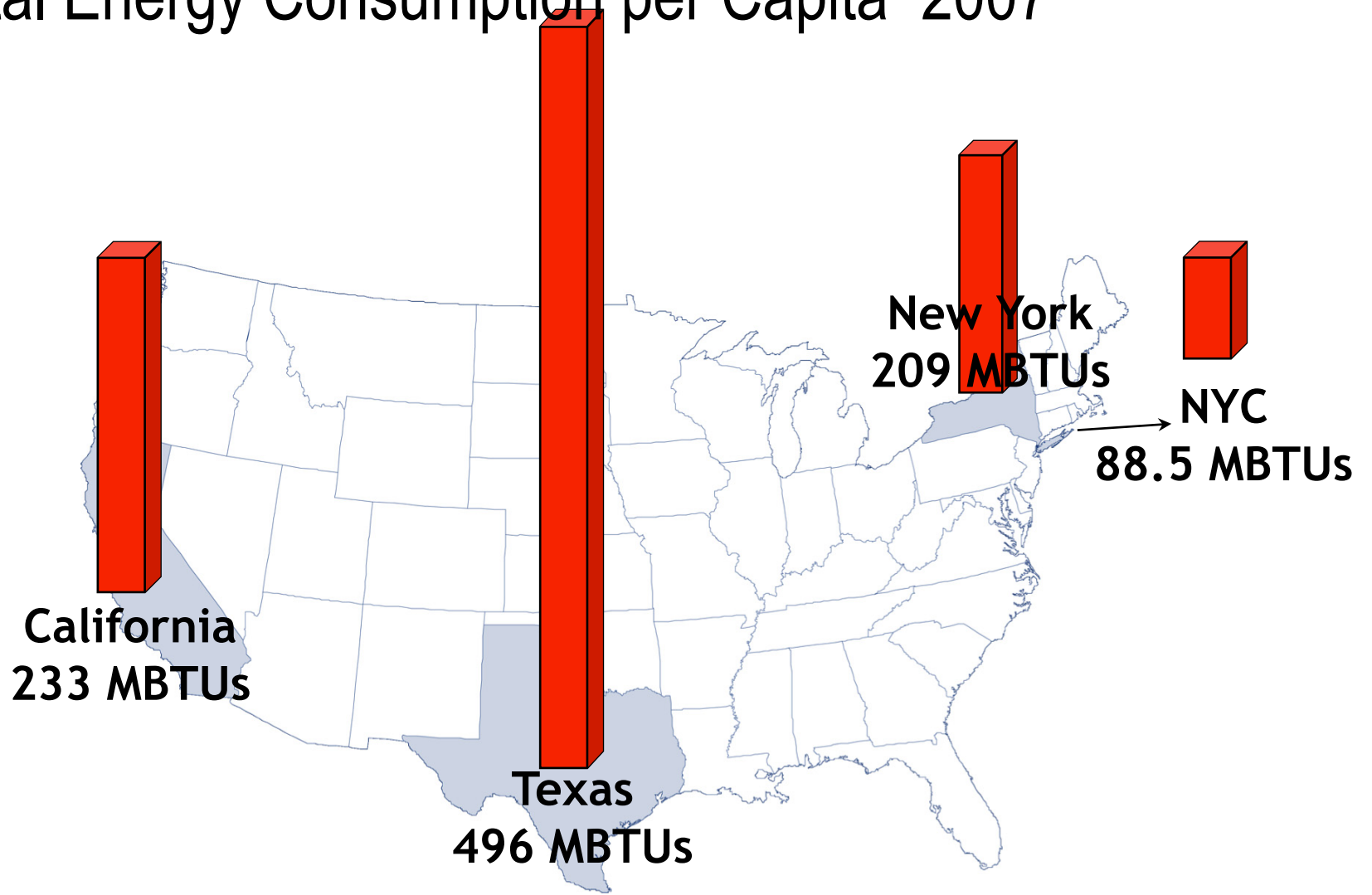
● Industry
● Other



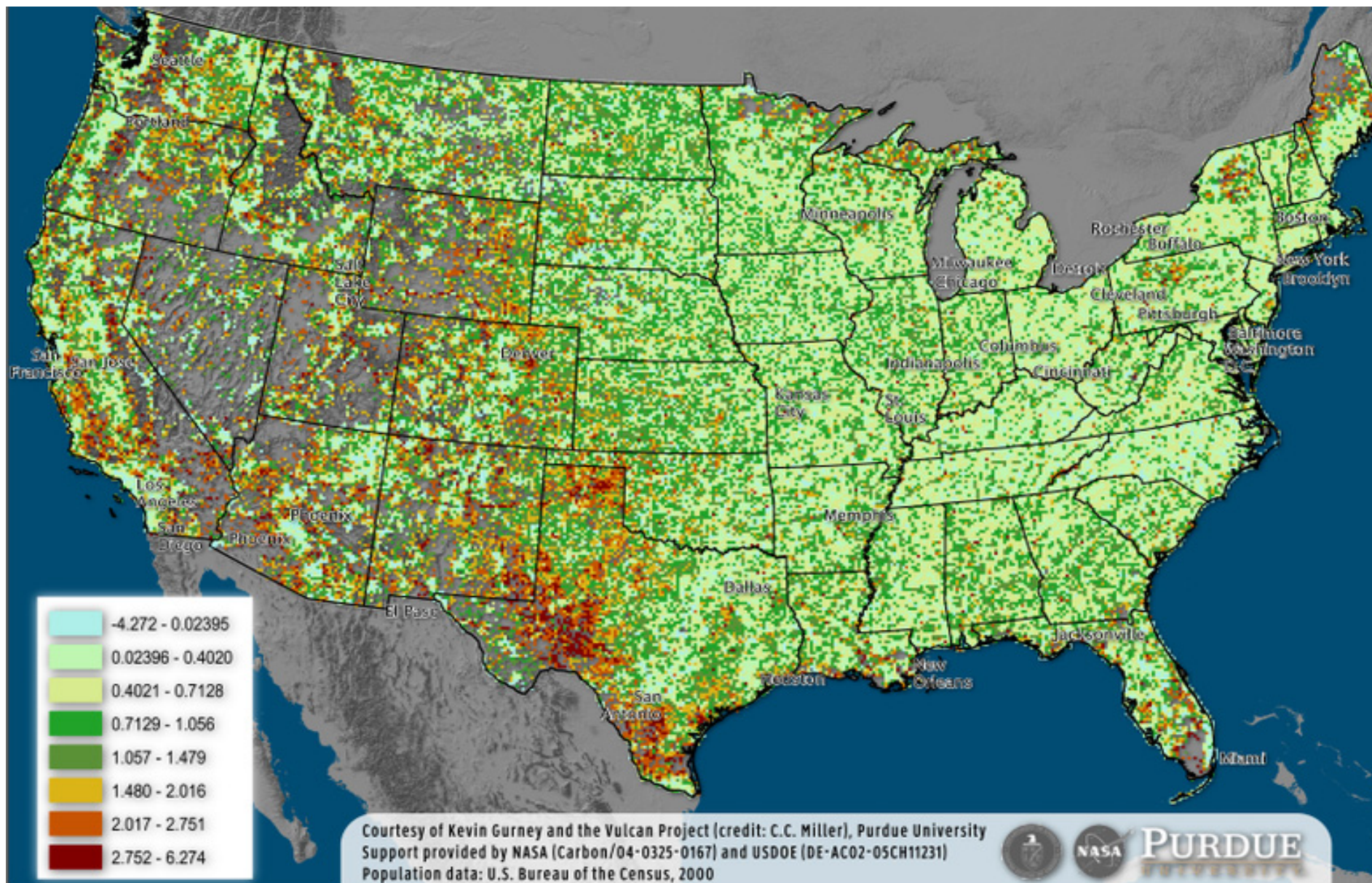
Total Energy Consumption per Capita, 2005



Total Energy Consumption per Capita 2007

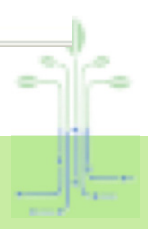
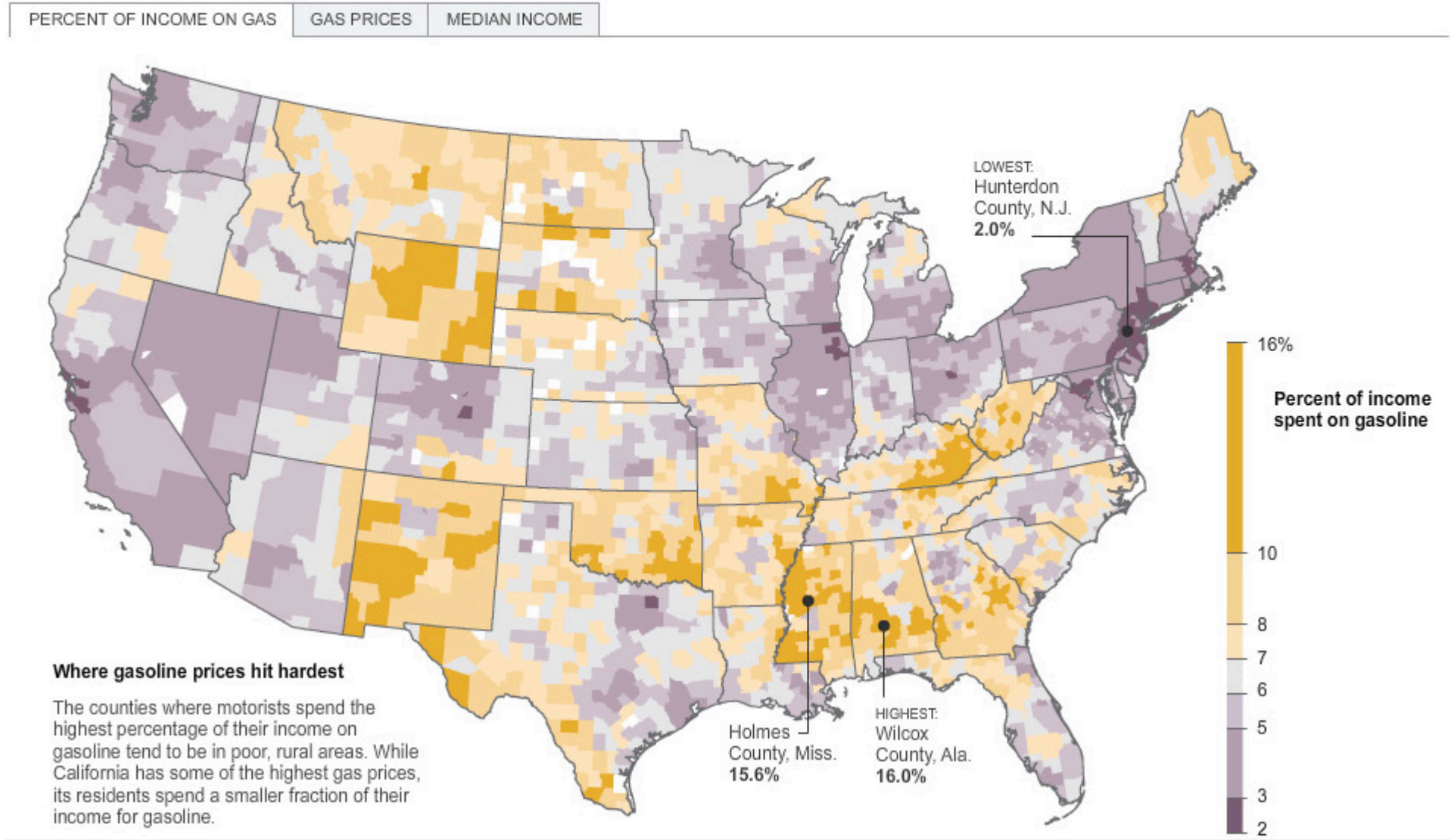


Total Carbon Dioxide Emissions per Capita, 2002



The Varying Impact of Gas Prices

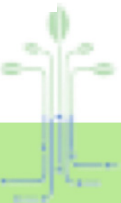
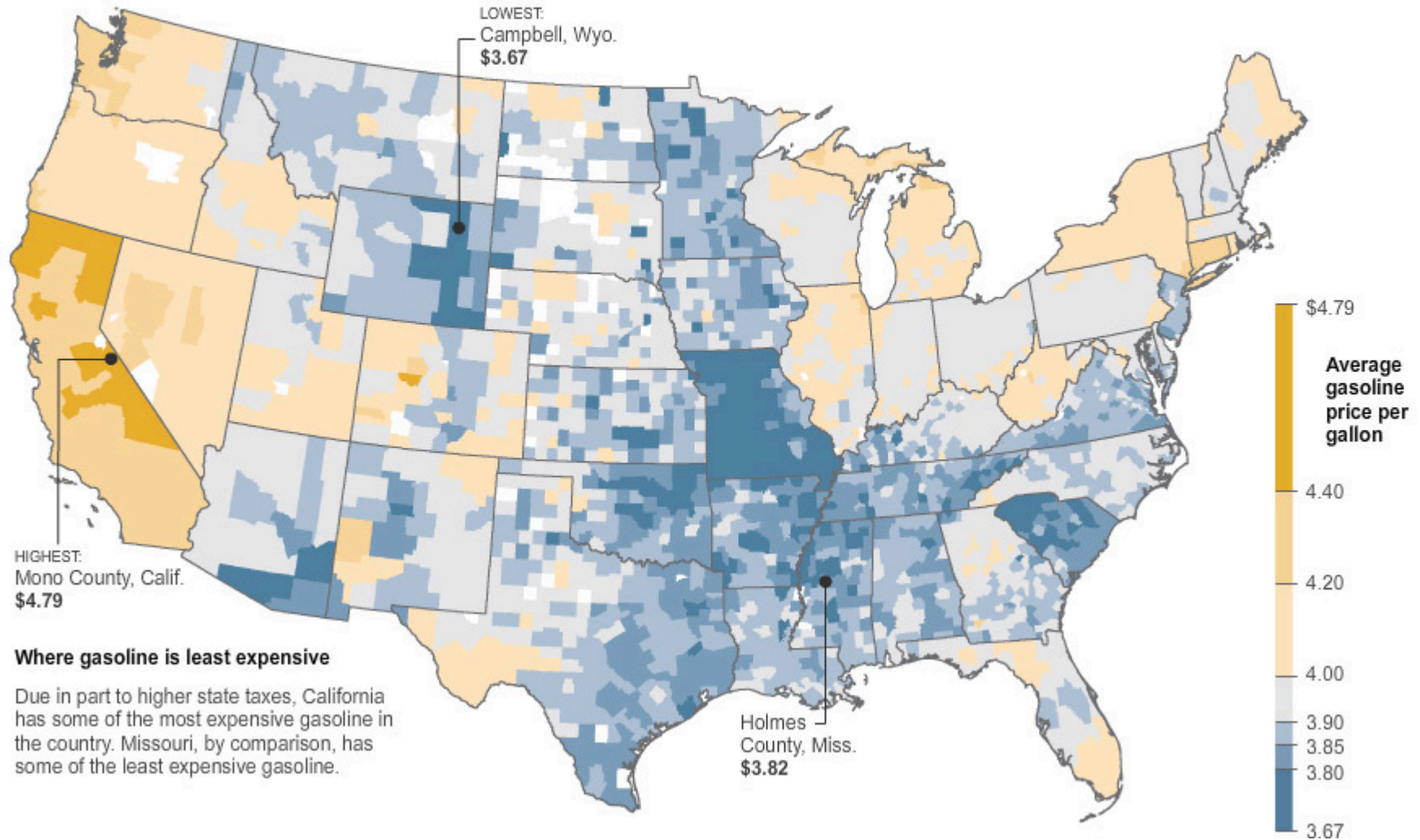
Gas prices are high throughout the country, but how hard they hit individual families depends on income levels, which vary widely.

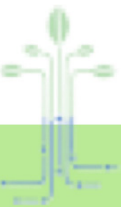


The Varying Impact of Gas Prices

Gas prices are high throughout the country, but how hard they hit individual families depends on income levels, which vary widely.

PERCENT OF INCOME ON GAS GAS PRICES MEDIAN INCOME





Who Framed Roger Rabbit?

Judge Doom (JD): *Toontown will be erased in a matter of minutes.*

Jessica Rabbit (JR): *I suppose you think no-one will notice that Toontown has disappeared.*

JD: Who's got time to wonder what happened to some ridiculous talking mice when you are driving by at 75 miles an hour.

JR: What are you talking about? There is no road past Toontown.

JD: Not Yet. Several months ago I had the good providence to stumble upon the plan of the City Council - a construction plan of epic proportions. They are calling it a Freeway.

Eddie Valiant (EV): Freeway? What the hell is a Freeway?

JD: Eight lanes of shimmering cement running from here to Pasadena. Smooth, safe, fast. Traffic jams will be a thing of the past.

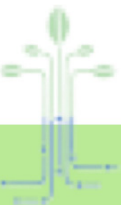
EV: So that's why you killed Acme Maroon? For this Freeway? I don't get it!

JD: Of course not, you lack vision. I see a place where people get on and off the freeway. On and off, off and on, all day, all night. (*EV and JR look at each other incredulously*). Soon, where Toontown once stood, will be a string of gas-stations, inexpensive motels, restaurants that serve rapidly prepared food, tire salons, automobile dealerships and wonderful, wonderful billboards reaching as far as the eye can see. My god, it'll be beautiful!

EV: C'mon. Nobody is gonna drive on this lousy freeway, when they can take the Redcar for a nickel.

JD: They'll drive, they'll have to. You see, I bought the Redcar, so that I could dismantle it.

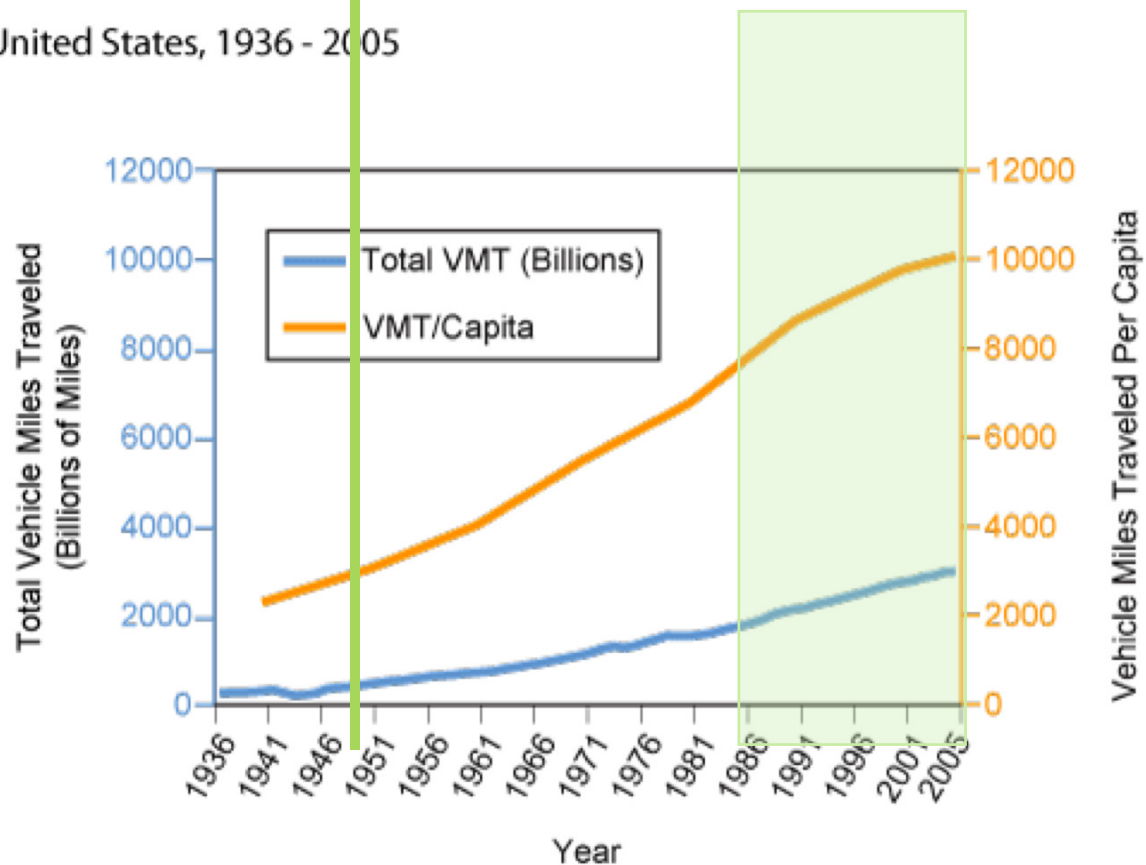
- From "**Who Framed Roger Rabbit**". Robert **Zemeckis**, Director, **1988**



Vehicle Miles Traveled Trend-lines

Trends in Vehicle Miles Traveled

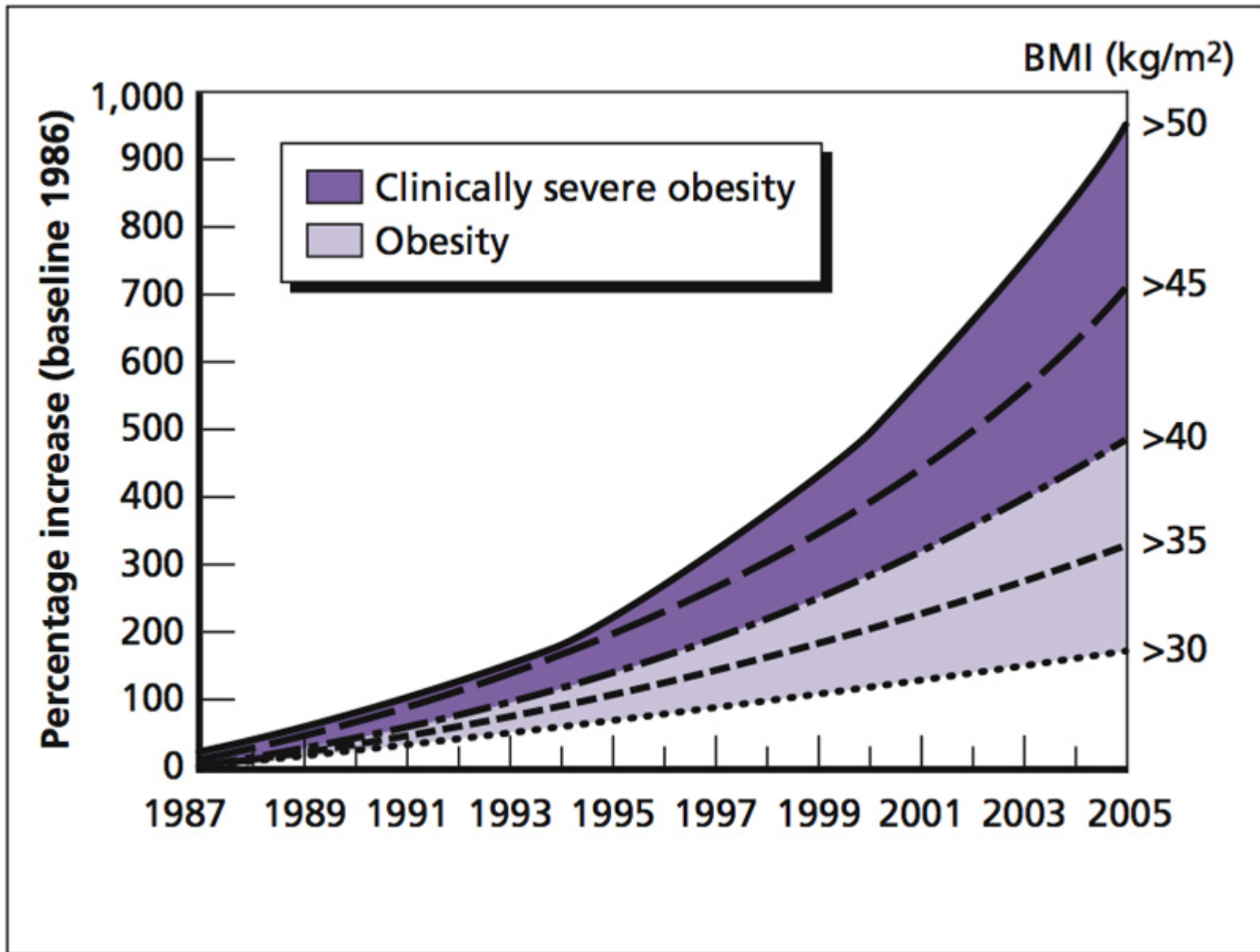
United States, 1936 - 2005



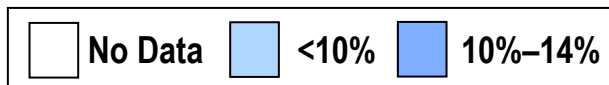
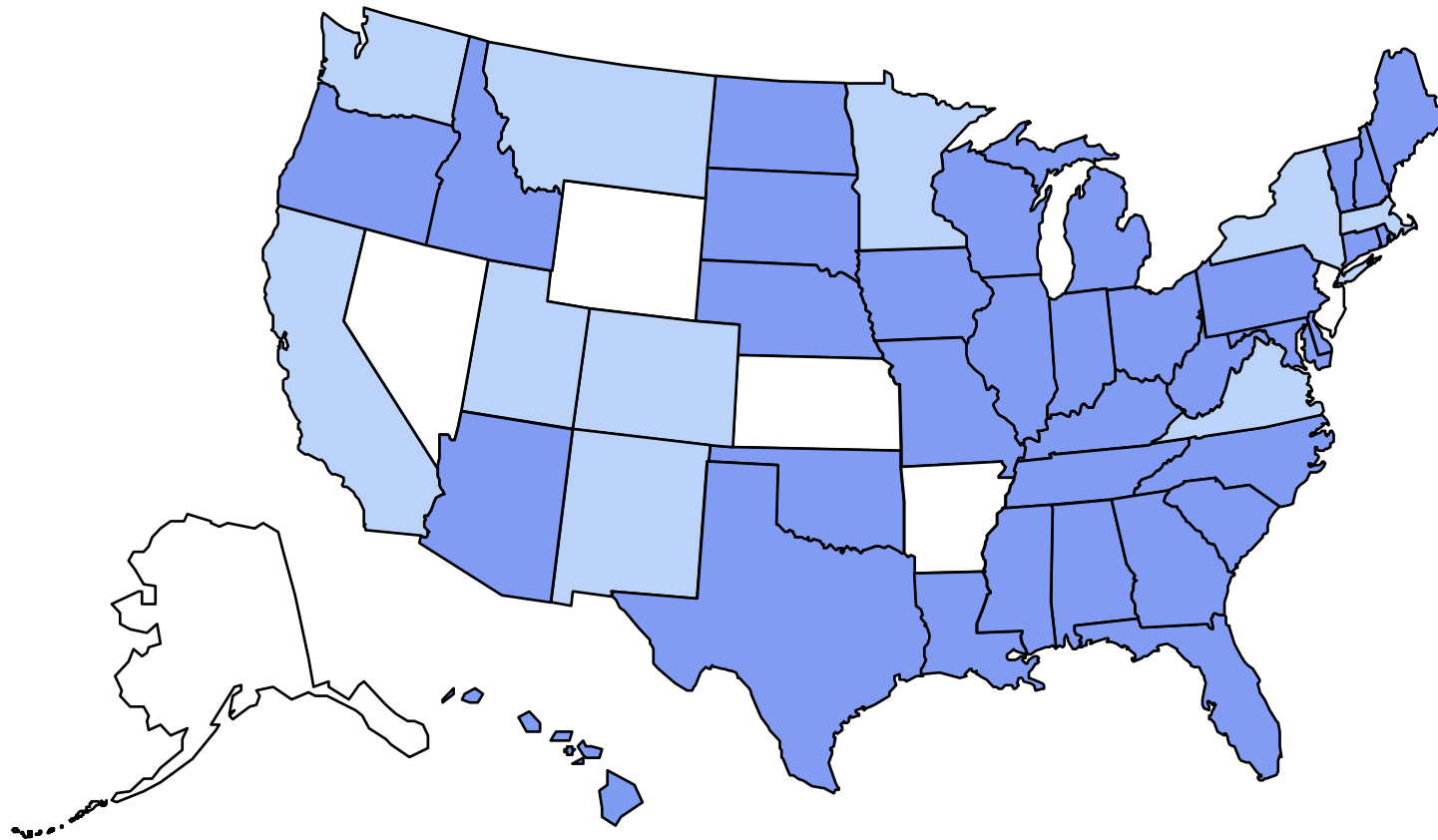
Sources: US DOT, Federal Highway Administration
US Census Bureau



Obesity Trendlines



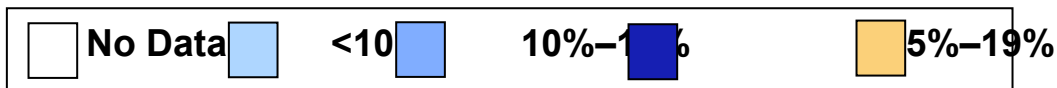
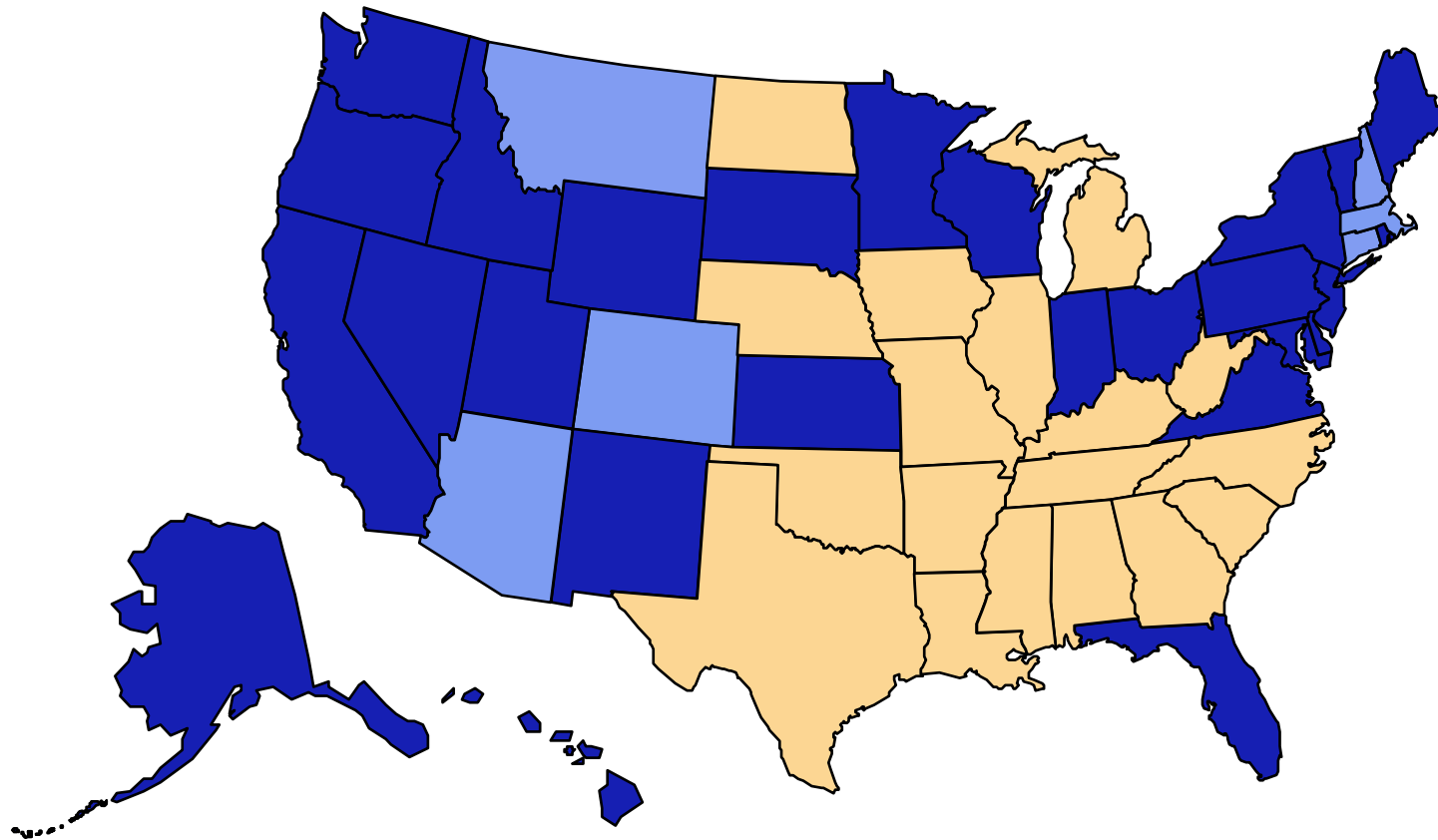
Obesity Trends* Among U.S. Adults BRFSS, 1990



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



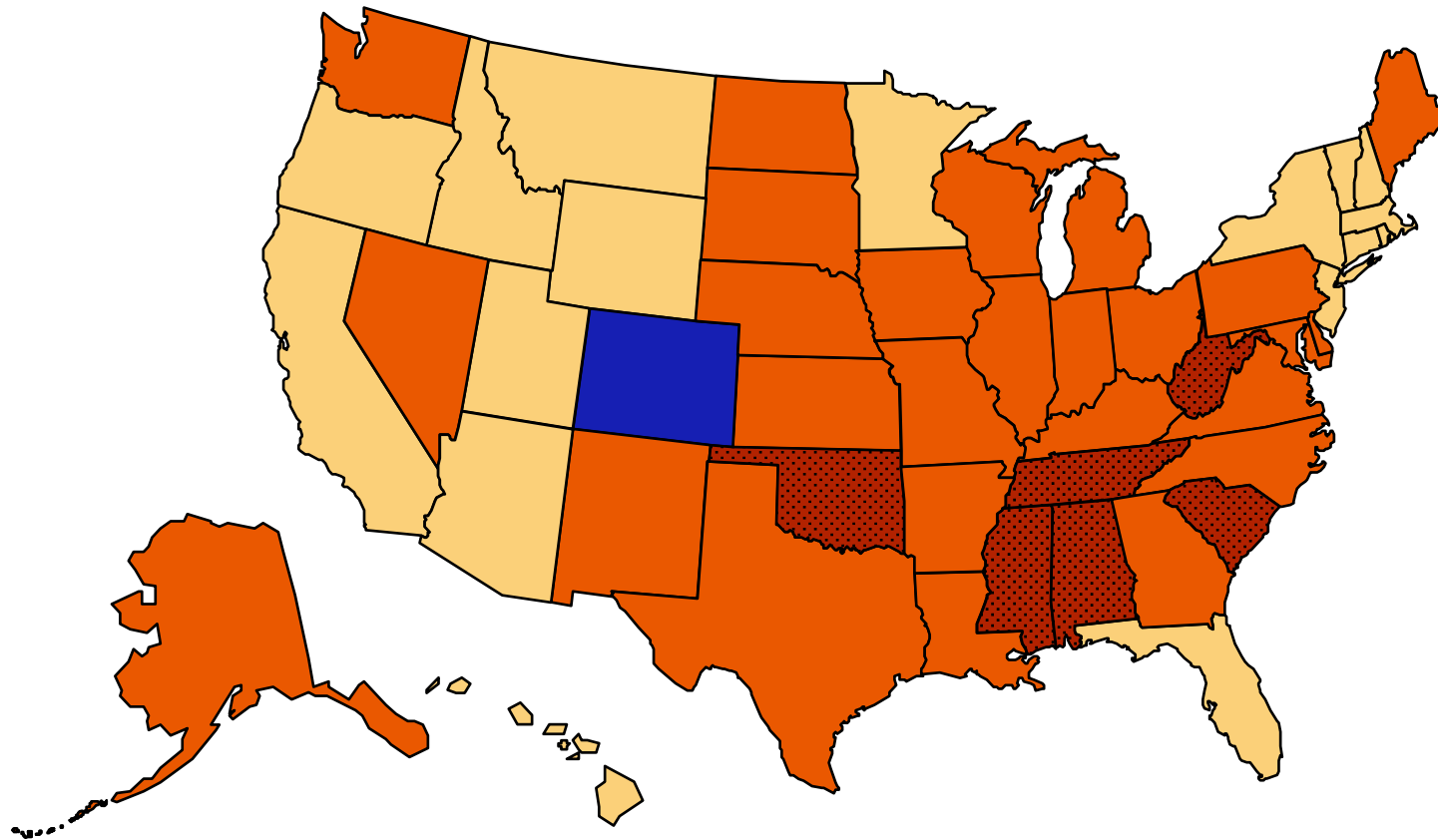
Obesity Trends* Among U.S. Adults BRFSS, 1999



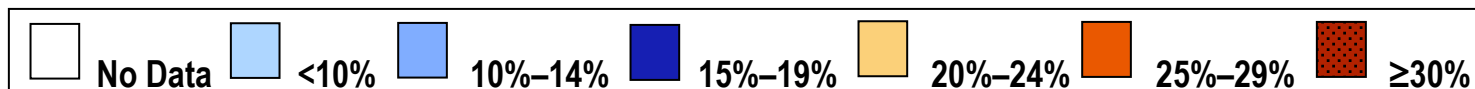
(*BMI ≥ 30 , or ~ 30 lbs. overweight for 5' 4" person)



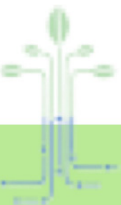
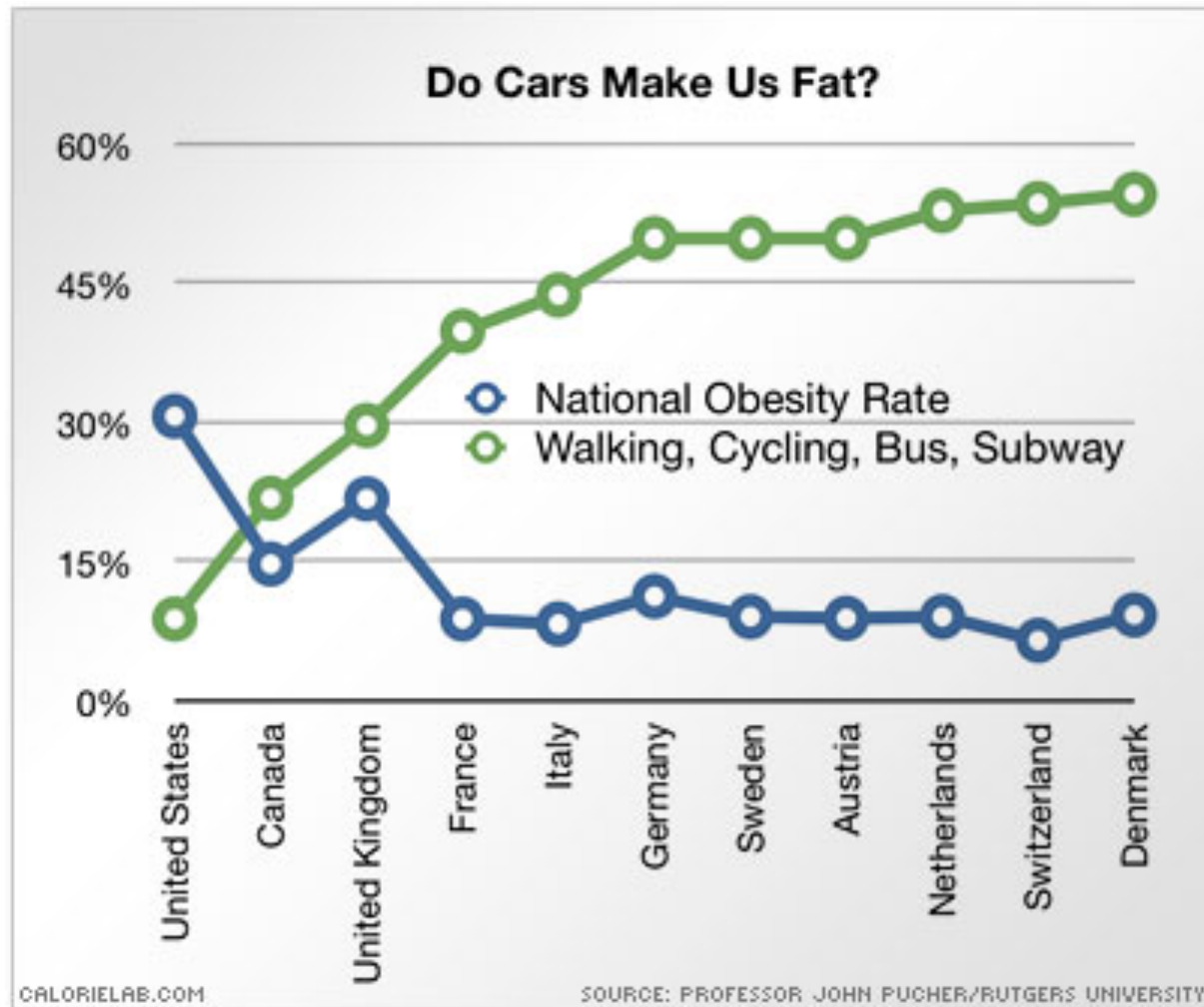
Obesity Trends* Among U.S. Adults BRFSS, 2008



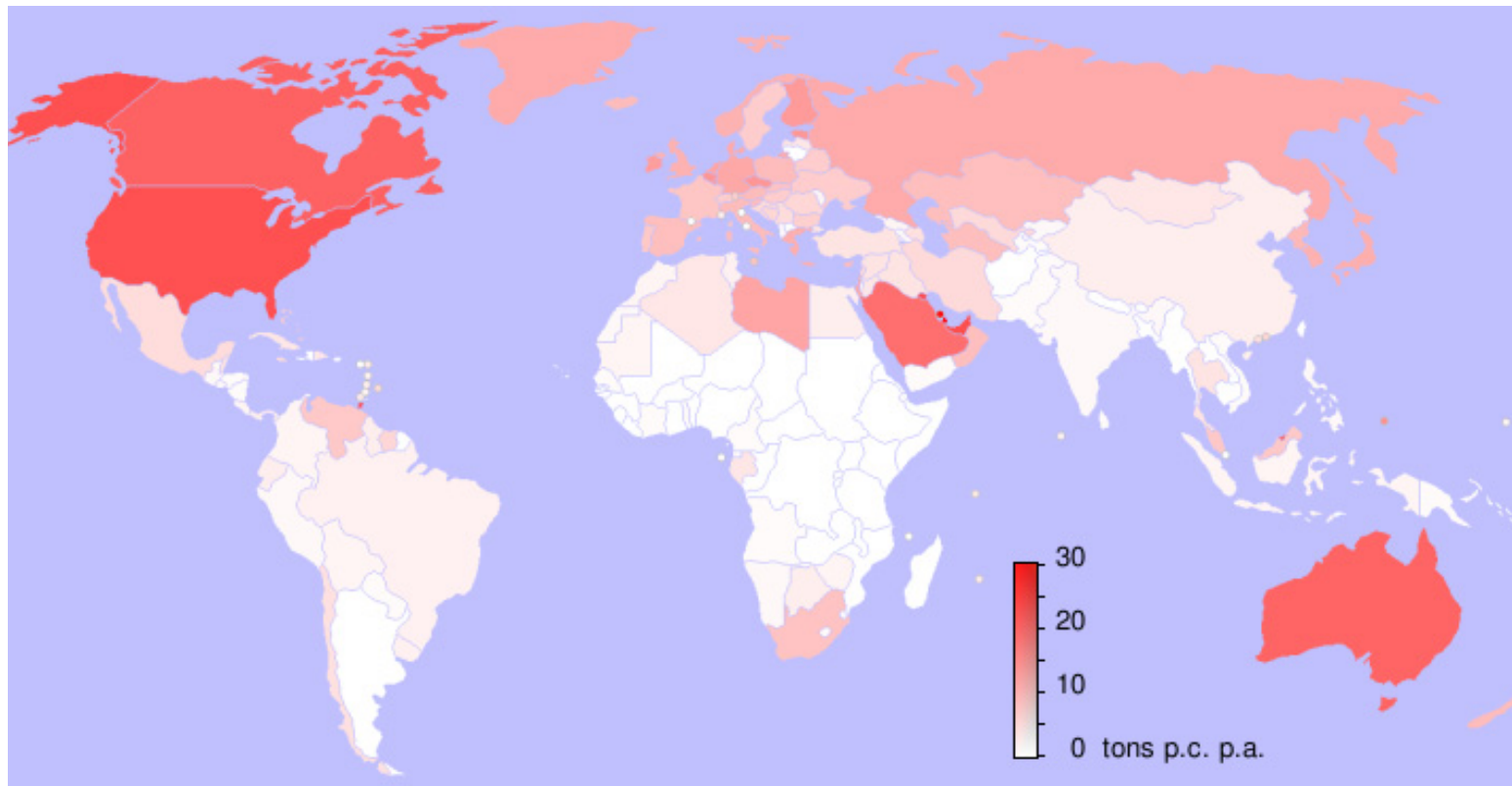
(*BMI ≥ 30 , or ~ 30 lbs. overweight for 5'



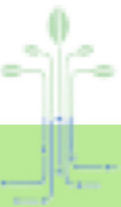
Inverse Correlation



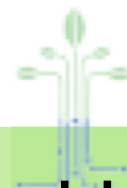
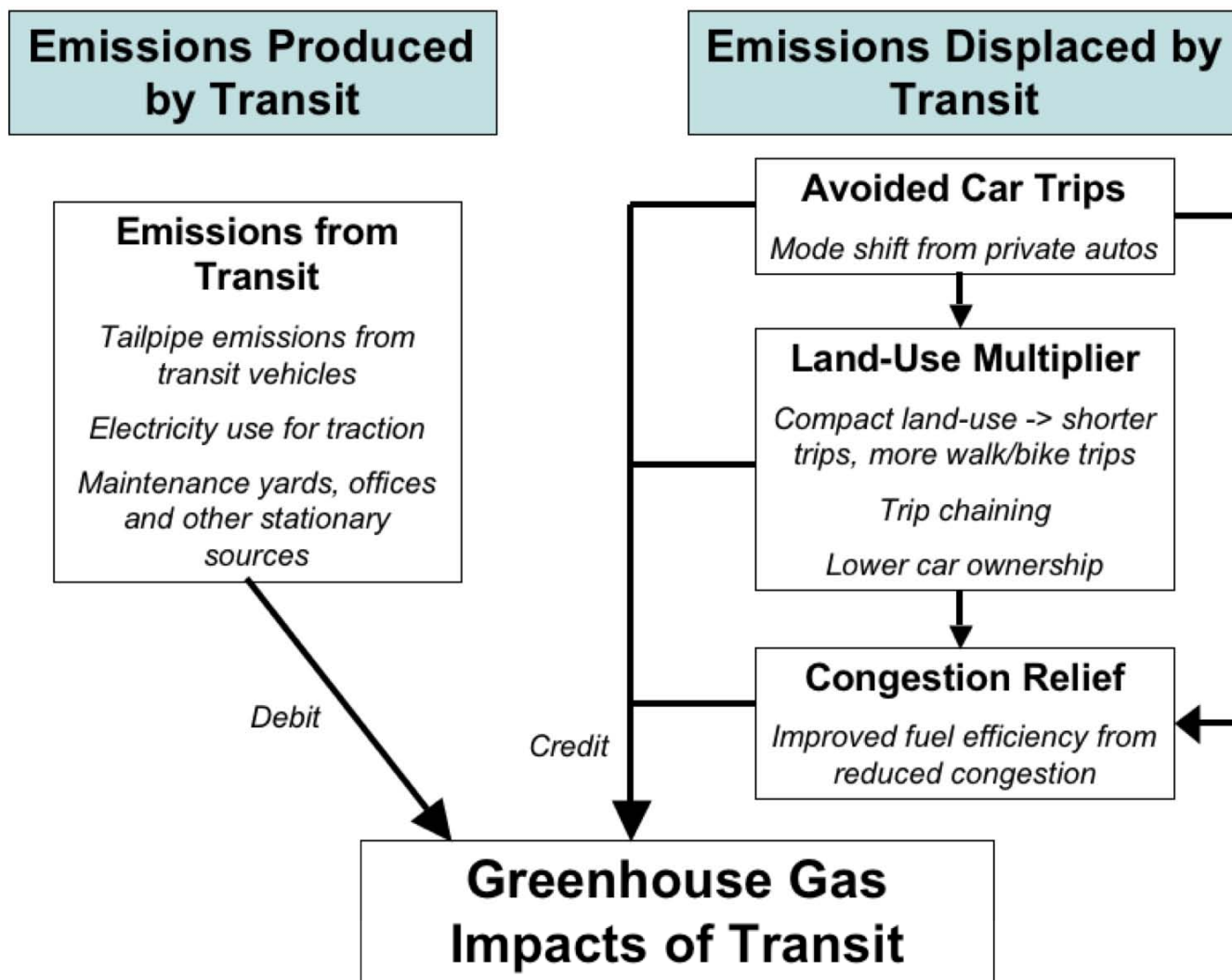
Global Carbon Dioxide Emissions per Capita, 1990–2004



Source: US Department of Energy Carbon Dioxide Information Analysis Center (CDIAC)



Transit GHG Emissions Typology



Total: 2.4 million metric tons

Non-Revenue Fleet -Traction

Electricity - Non-traction

Electricity-Traction

Transit Effect Multiplier = 8.24

For every unit of GHG that the MTA emits

It helps avoid 8.24 units

Heating - Non-traction

In the net it helps avoid about 17 million metric tonnes

@ \$30 / ton ~ 500 million

Currently un-recognized and un-compensated

Revenue Fleet Fuel -Traction



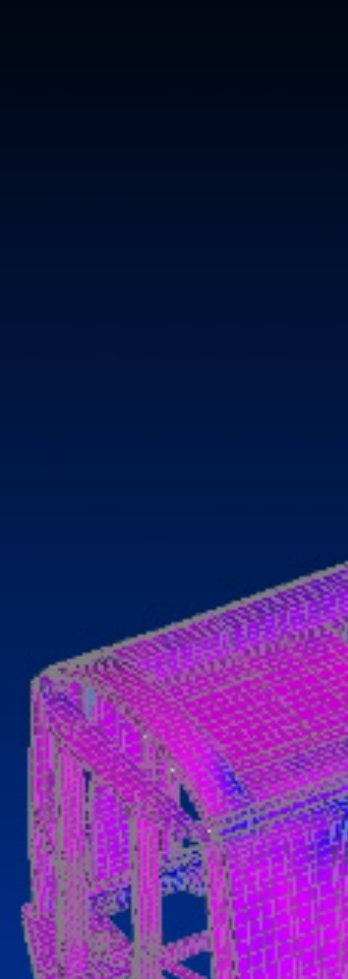
Energy/
Carbon



Facilities



Smart Growth/
TOD



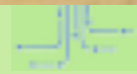
Materials Flow



Water
Management



Climate
Adaptation

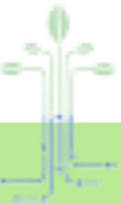
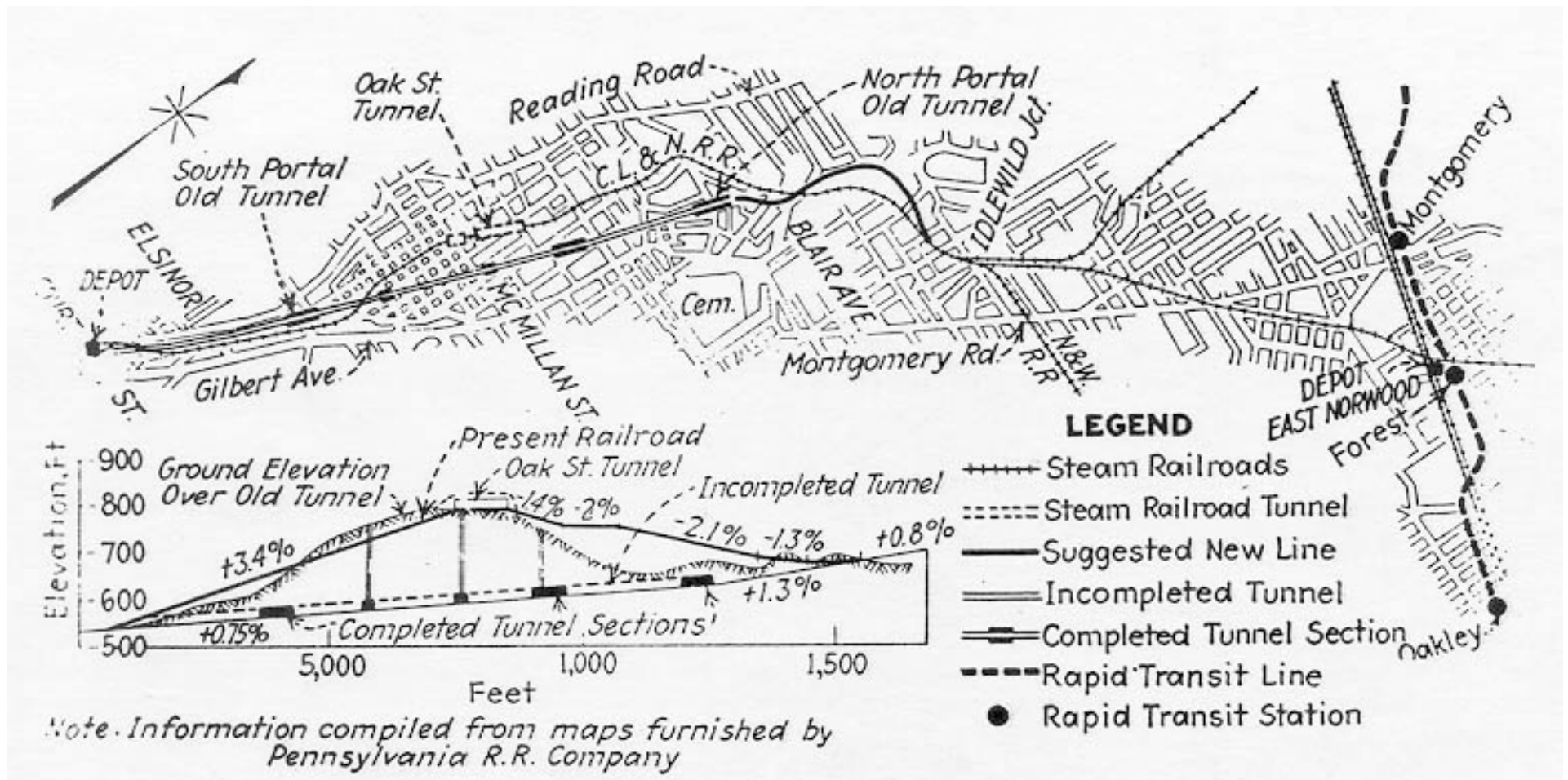


[www.mta.info/
sustainability](http://www.mta.info/sustainability)

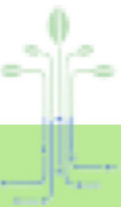
**Greening Mass Transit
& Metro Regions:** The Final Report
of the Blue Ribbon Commission
on Sustainability and the MTA



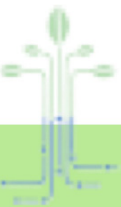
Is Transit for Everywhere? Cincinnati's Close Brush



Is Transit for Everywhere? Cincinnati's Close Brush



Is Transit for Everywhere? Cincinnati's Close Brush



Is Transit for Everywhere? What happened in NYC



Is Transit for Everywhere? What happened in NYC



Is Transit for Everywhere? Can LA become a Transit City?

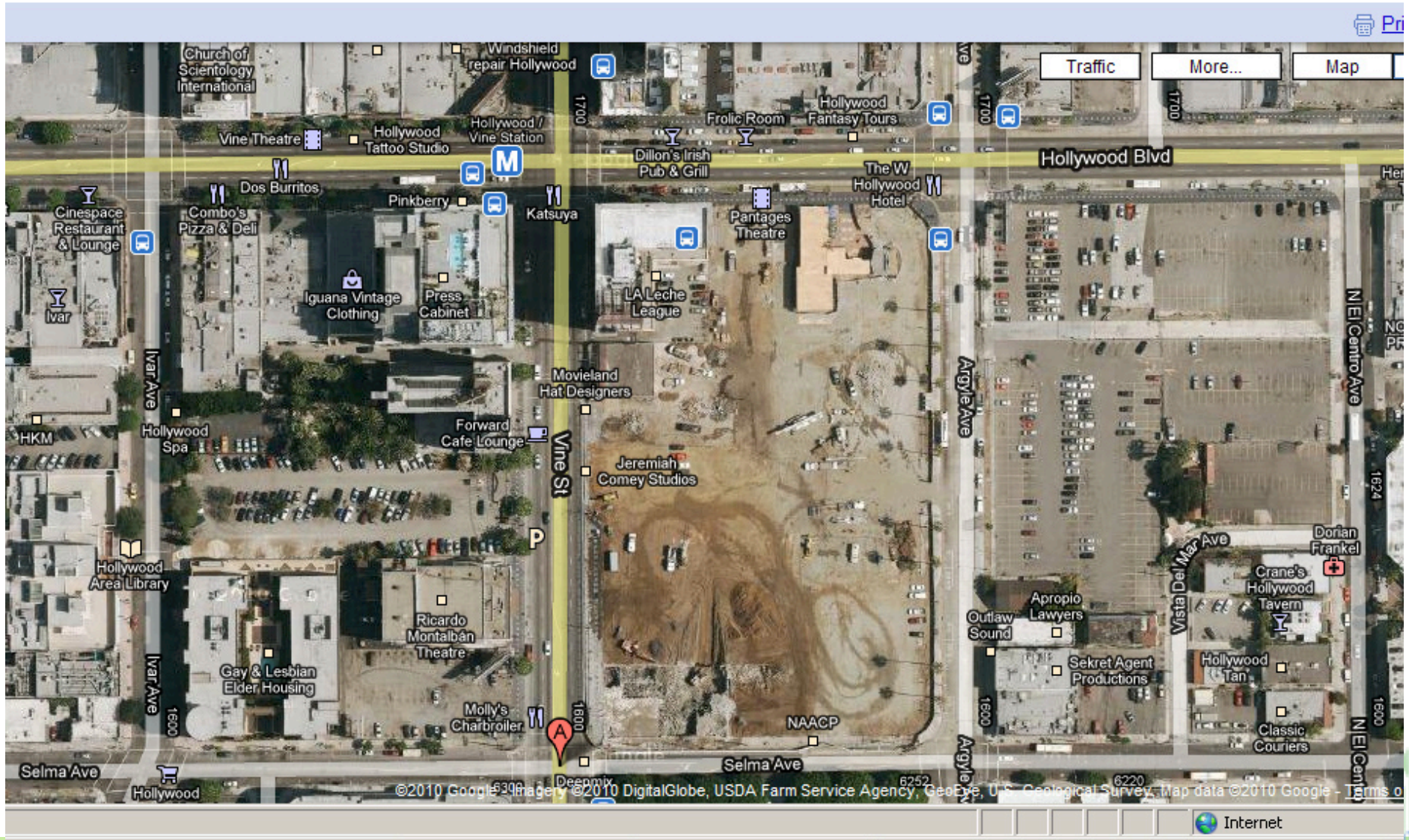


Is Transit for Everywhere? Can LA become a Transit City?

hollywood blvd, vine street, la

Search Maps

Show search options





Conclusions



Taking the Car out of Carbon:

New Tools and Practices for Measuring the Sustainability Impacts of Land Use and Transportation Policies

Presentation to the New Partners for Smart Growth Conference, San Diego

February 3, 2012

Projjal K. Dutta, AIA, LEED AP

pductta@mtahq.org (212) 878 1065

Director, Sustainability Initiatives

www.mta.info/sustainability; [@projjal](https://twitter.com/projjal) ; takingthecaroutofcarbon.tumblr.com

