



Social Benefits and Costs of the Automobile

Joel Schwartz

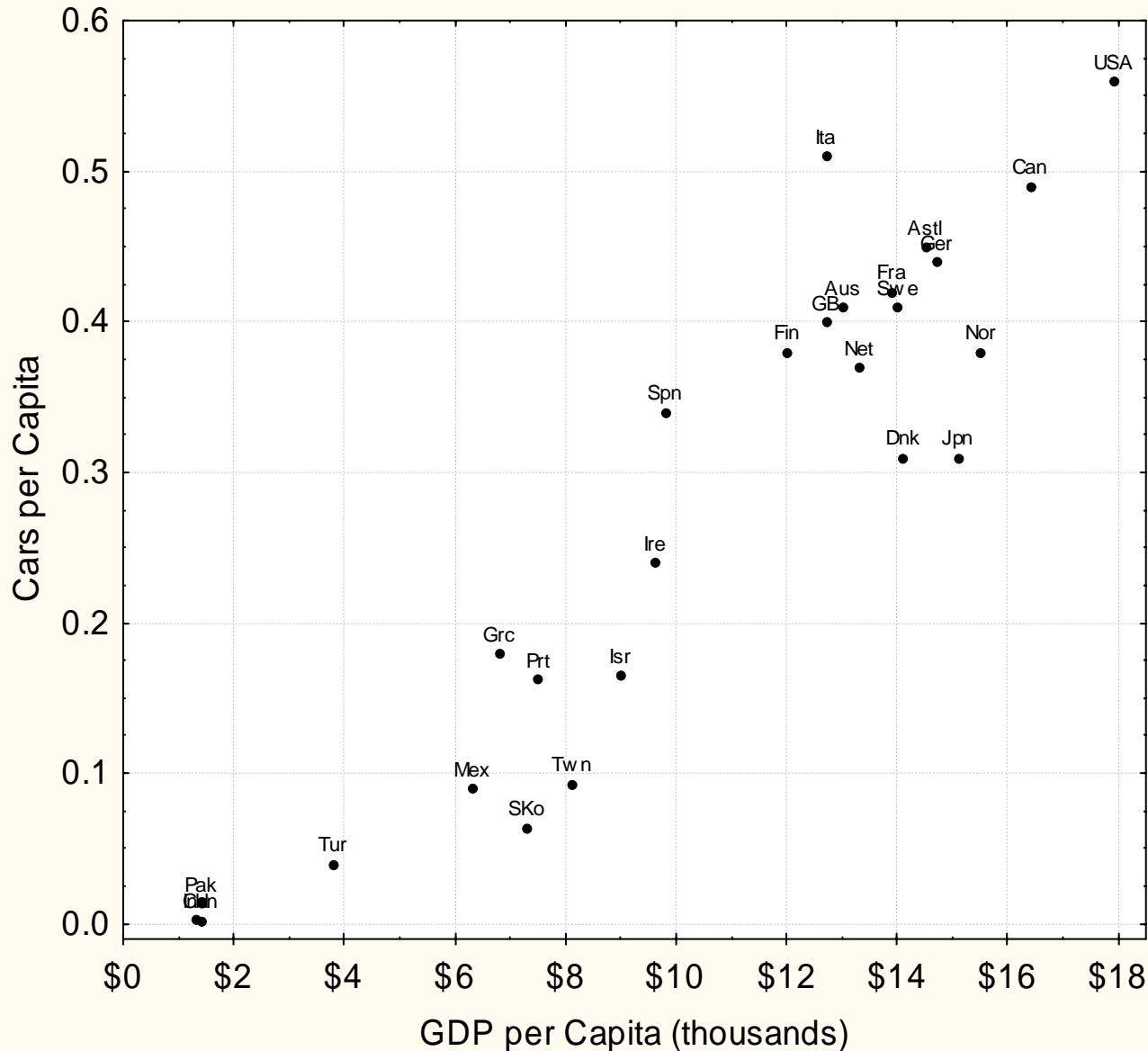
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American Enterprise Institute

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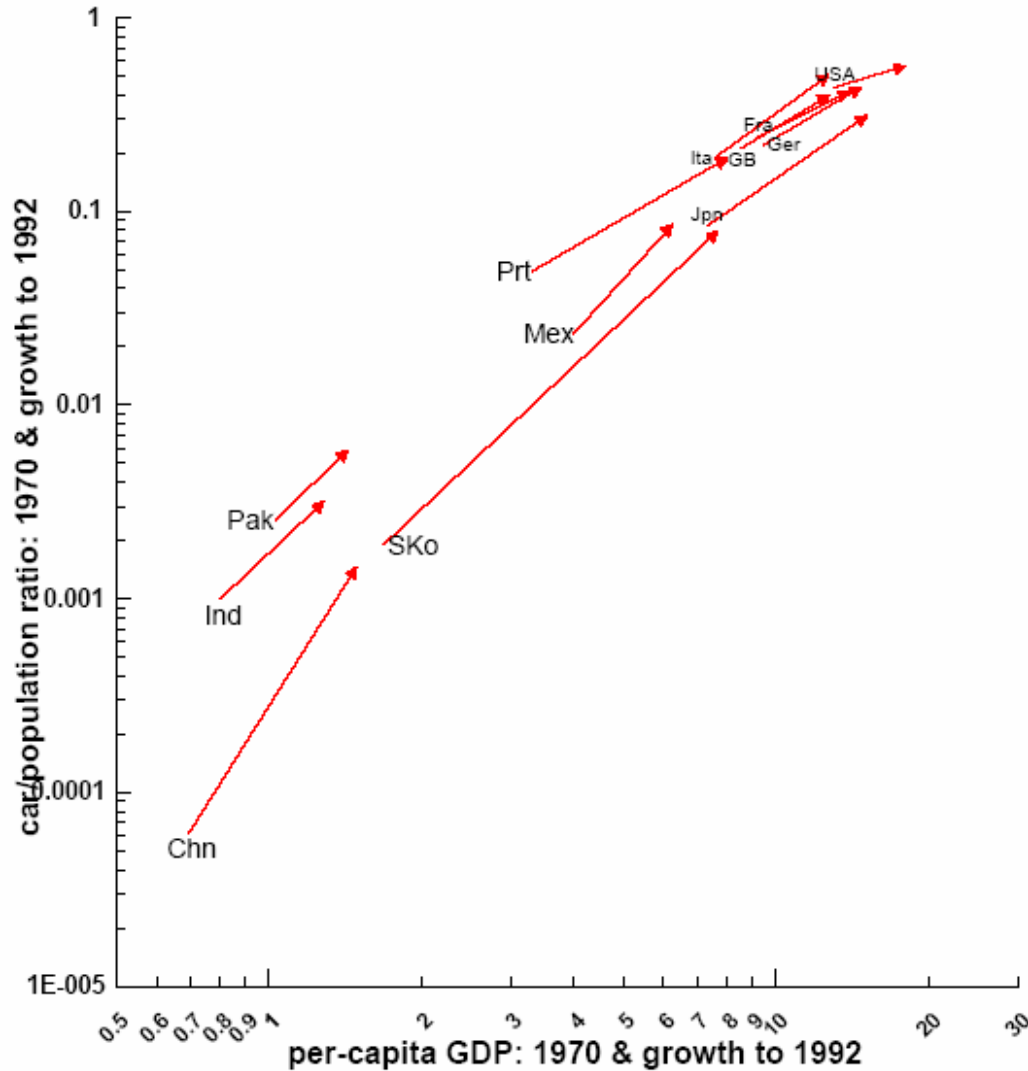
October 20, 2006

Cars/capita vs. GDP/capita by country, 1992



GDP in \$1990 at PPP
Source: Dargay & Gately, NYU, 1997

Trend car ownership vs. GDP by country, 1970-1992

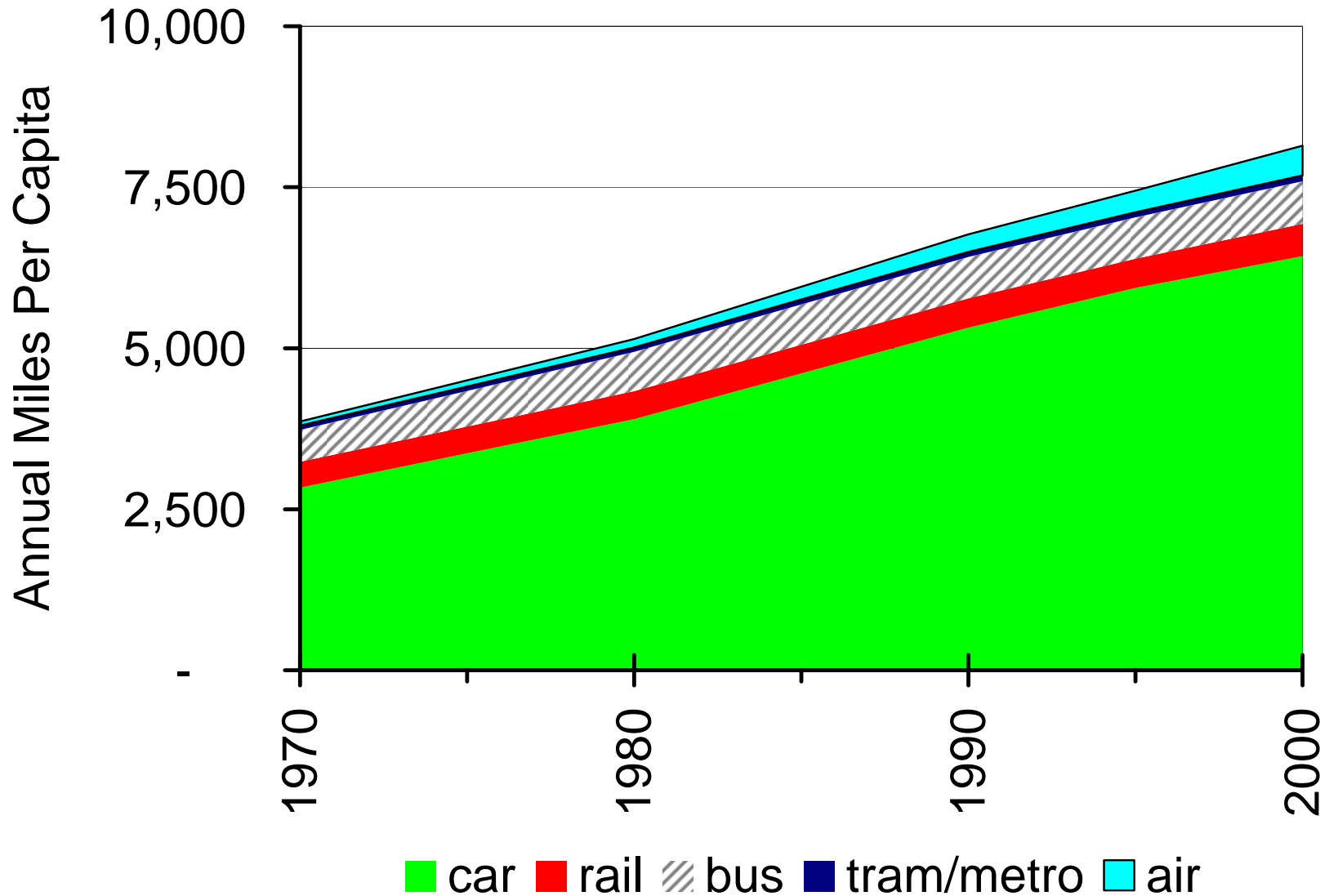


Note Log-Log scale

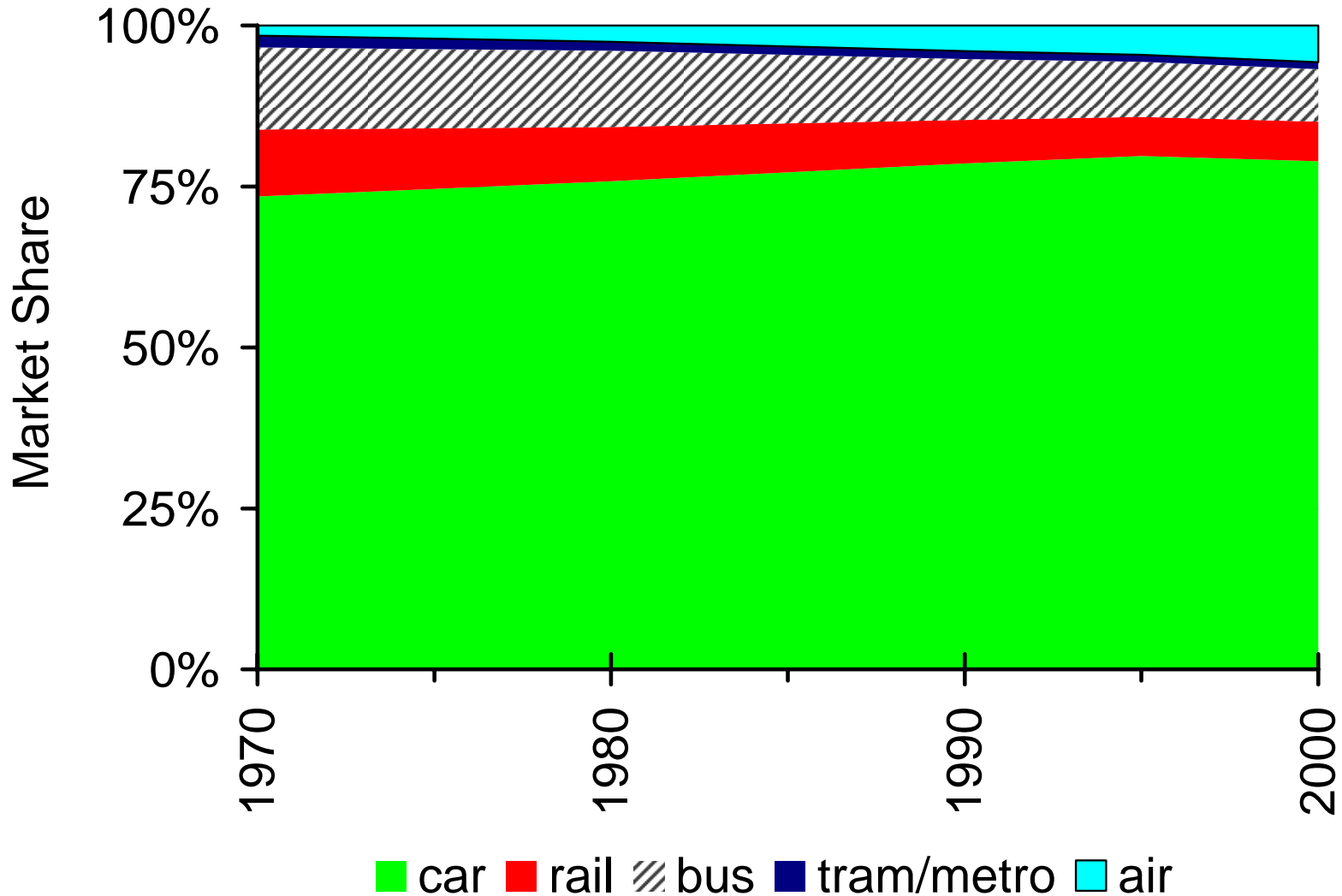
GDP in \$1990 at PPP

Source: Dargay & Gately, NYU, 1997

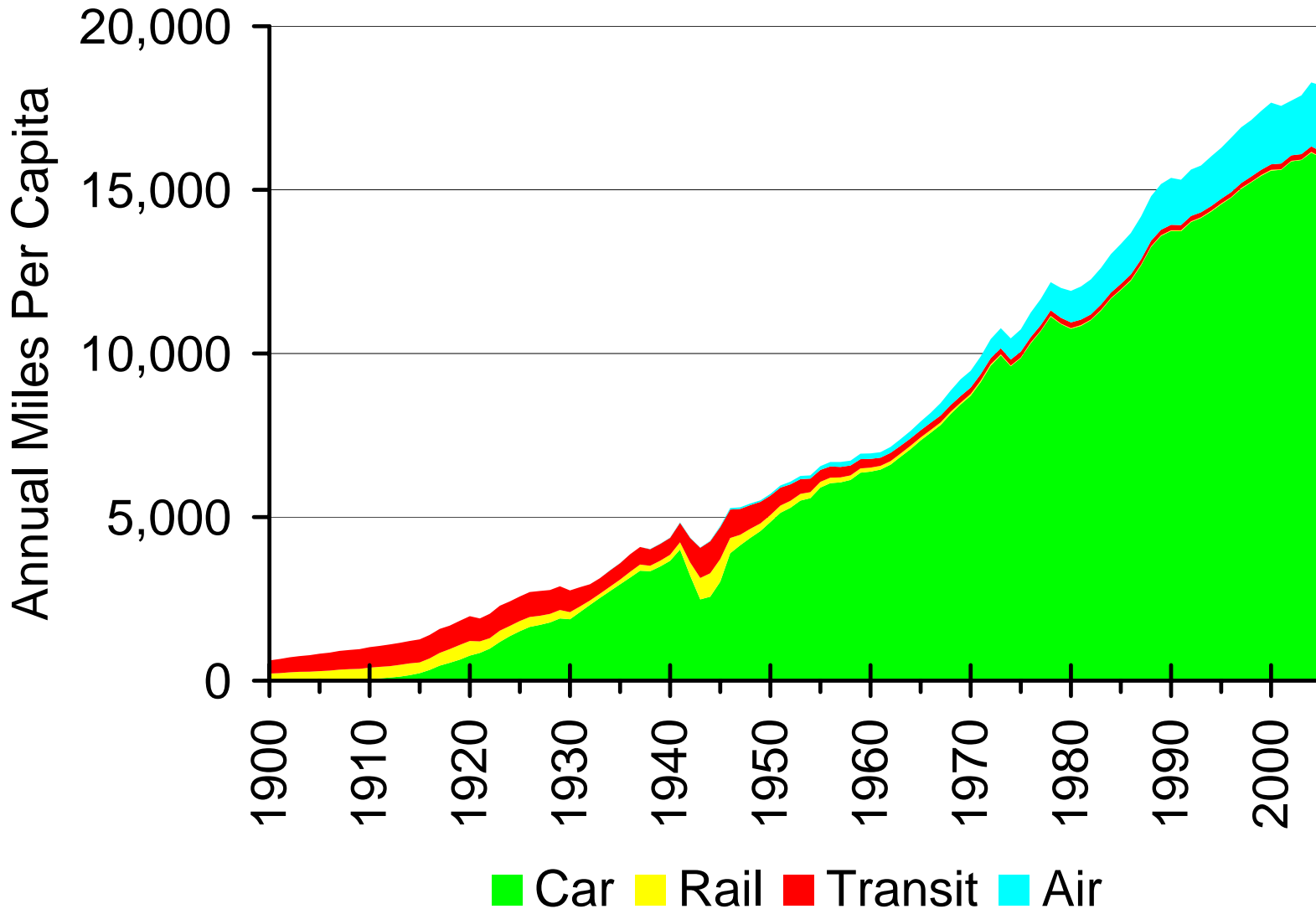
EU15 Person-Miles per Capita, 1970-2000



EU15 Market Share by Mode, 1970-2000

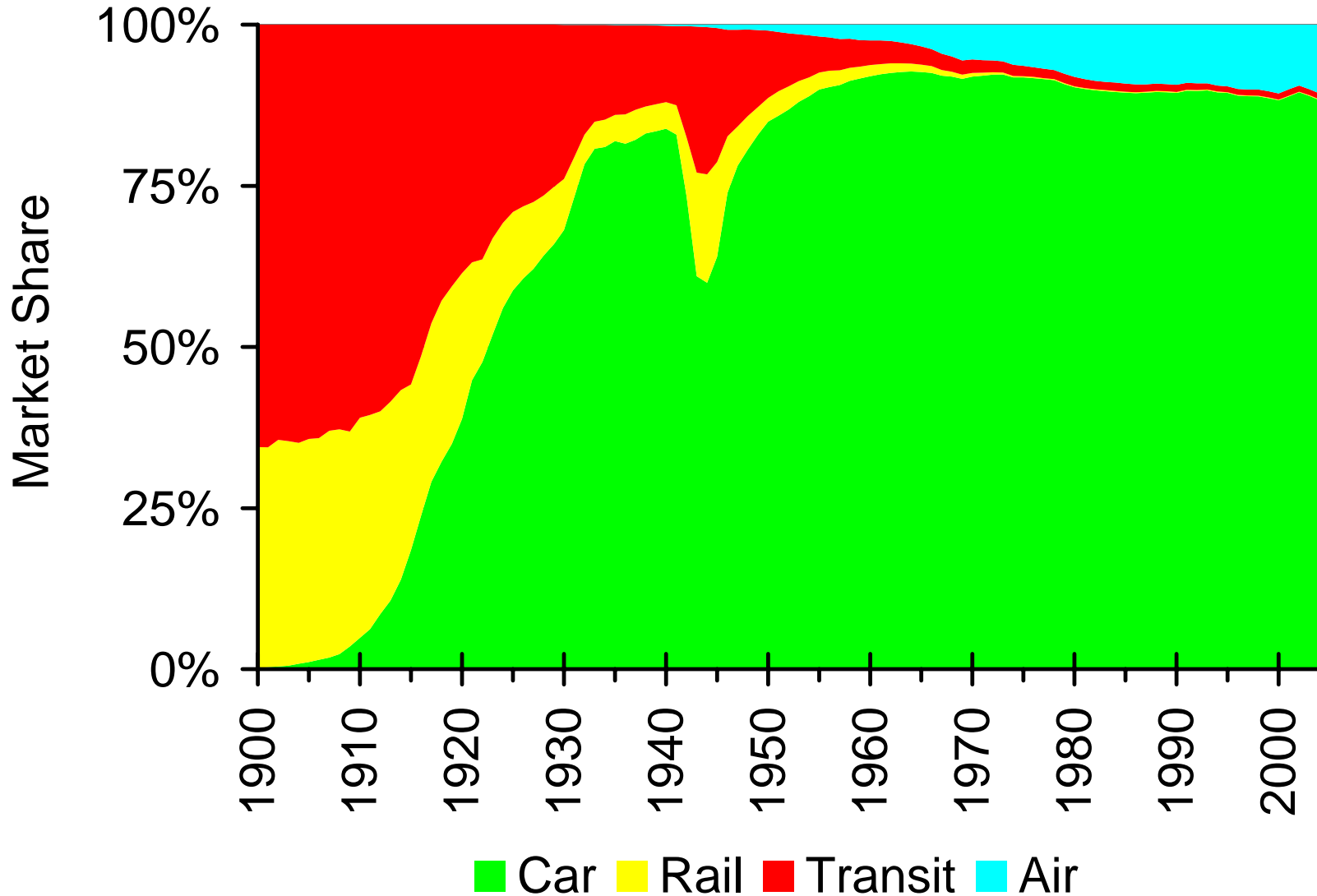


US Person-Miles per Capita, 1900-2005



Sources: Compiled by Randal O'Toole from FDOT, APTA, and Census. Pre-1930 car data estimated based on vehicle registrations

US Market Share by Mode, 1900-2005

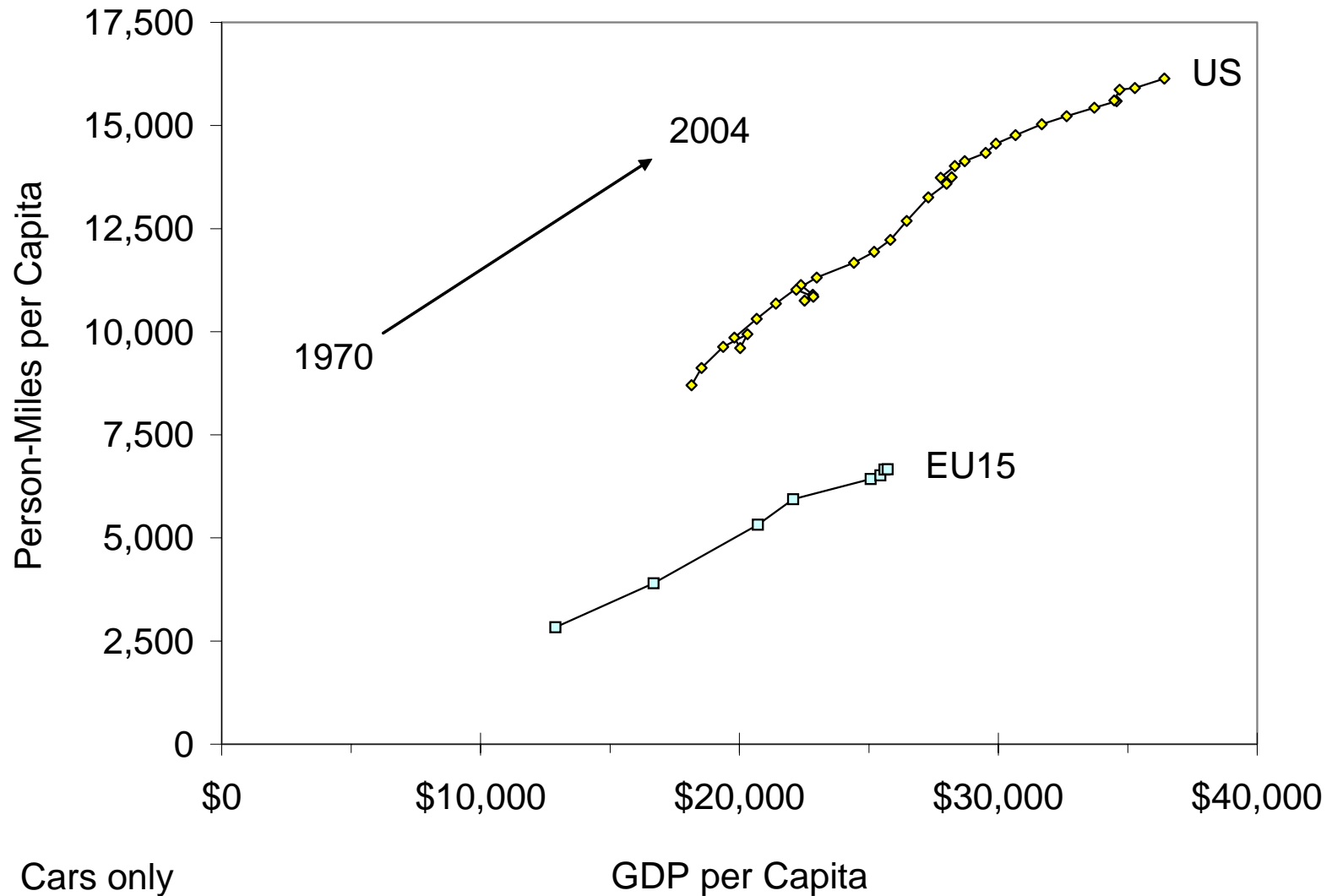


Even huge taxes have modest effect on automobile ownership

○ Singapore

- Densely populated; widely available public transit
- Government introduced annual quota on new automobiles in 1990, after rapid rise in number of autos during 1980s.
 - Permits sold for US\$18,000 in 1997, a 60% increase in purchase costs.
 - Economic study estimated that this reduced car ownership by 7%-11%.

Person-miles vs. GDP, EU15 and US



Benefits of automobile travel

- Speed, access, convenience, flexibility
- Allows fulfillment of widespread human desire for autonomy, privacy, space
- Facilitates greater choice of housing, neighborhoods, jobs, shopping, consumer goods
- Reduces costs of consumer goods
- Rapid emergency response
- More opportunities for recreation, social interaction

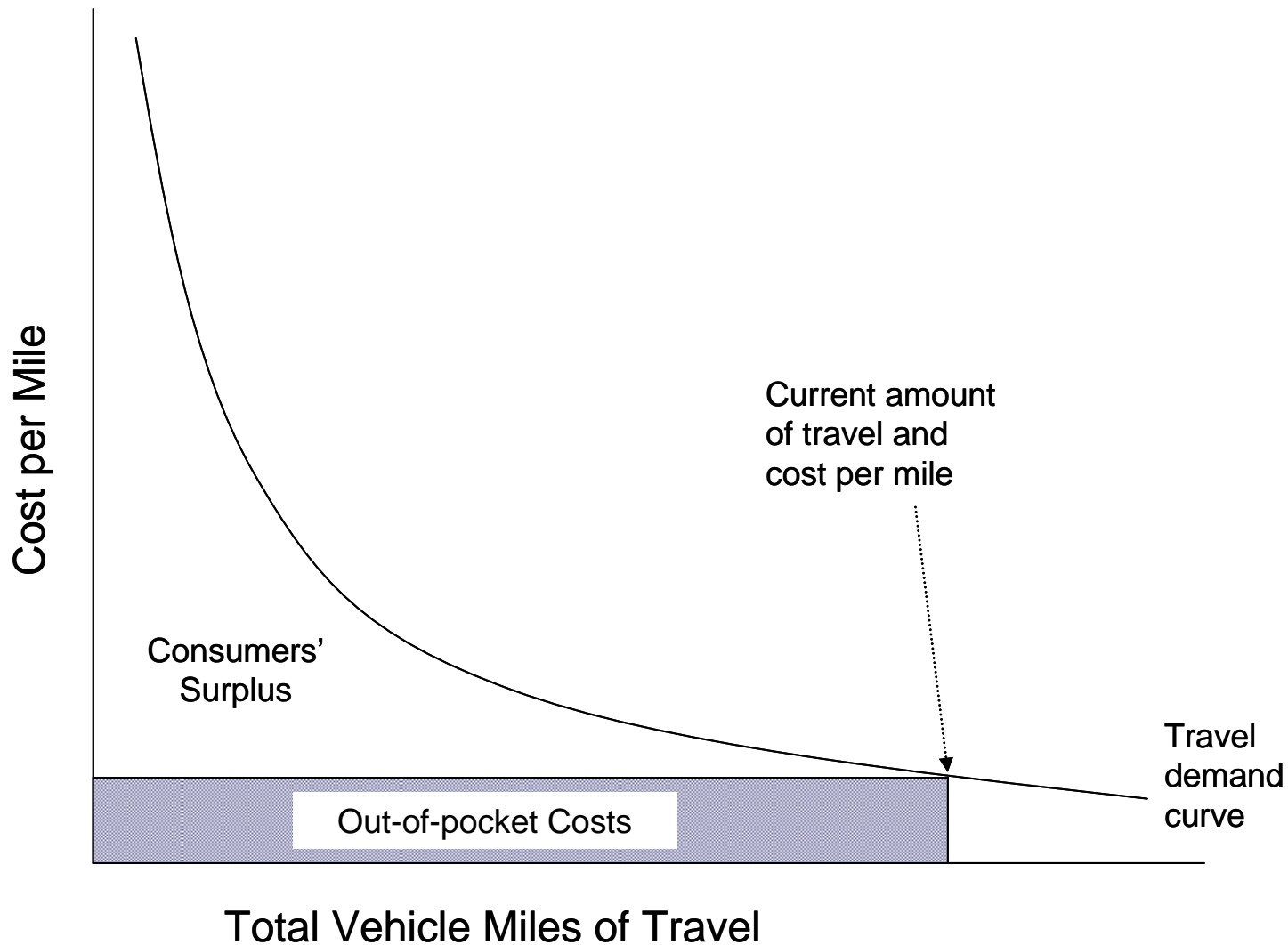
Costs of automobile travel

- Accidents
- Air pollution
- Greenhouse gases
- Security costs
- Congestion
- Noise
- Costs of owning/operating a car

Cost-benefit Analysis

- Many estimates of the “real” cost of driving, with varying degrees of plausibility
- Mark DeLucchi performed what is probably the most careful and detailed analysis of all costs imposed by driving
 - Careful effort to assess direct and indirect costs; internal and external costs; subsidies; etc.
- Result: \$2 trillion to \$4 trillion per year
 - Scaled 1991 estimate to 1995 driving levels and 1995 dollars.

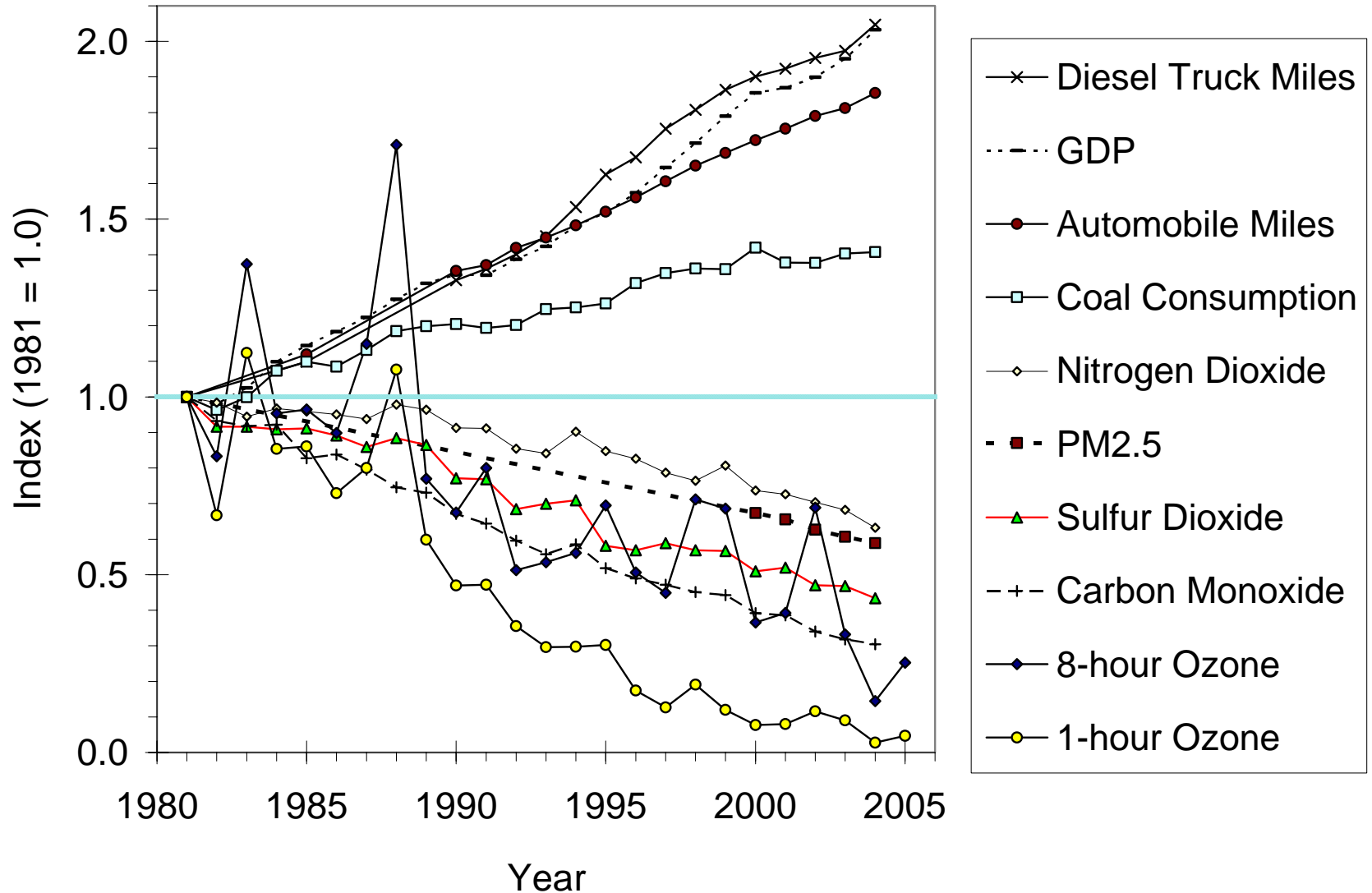
Schematic of automobile benefits



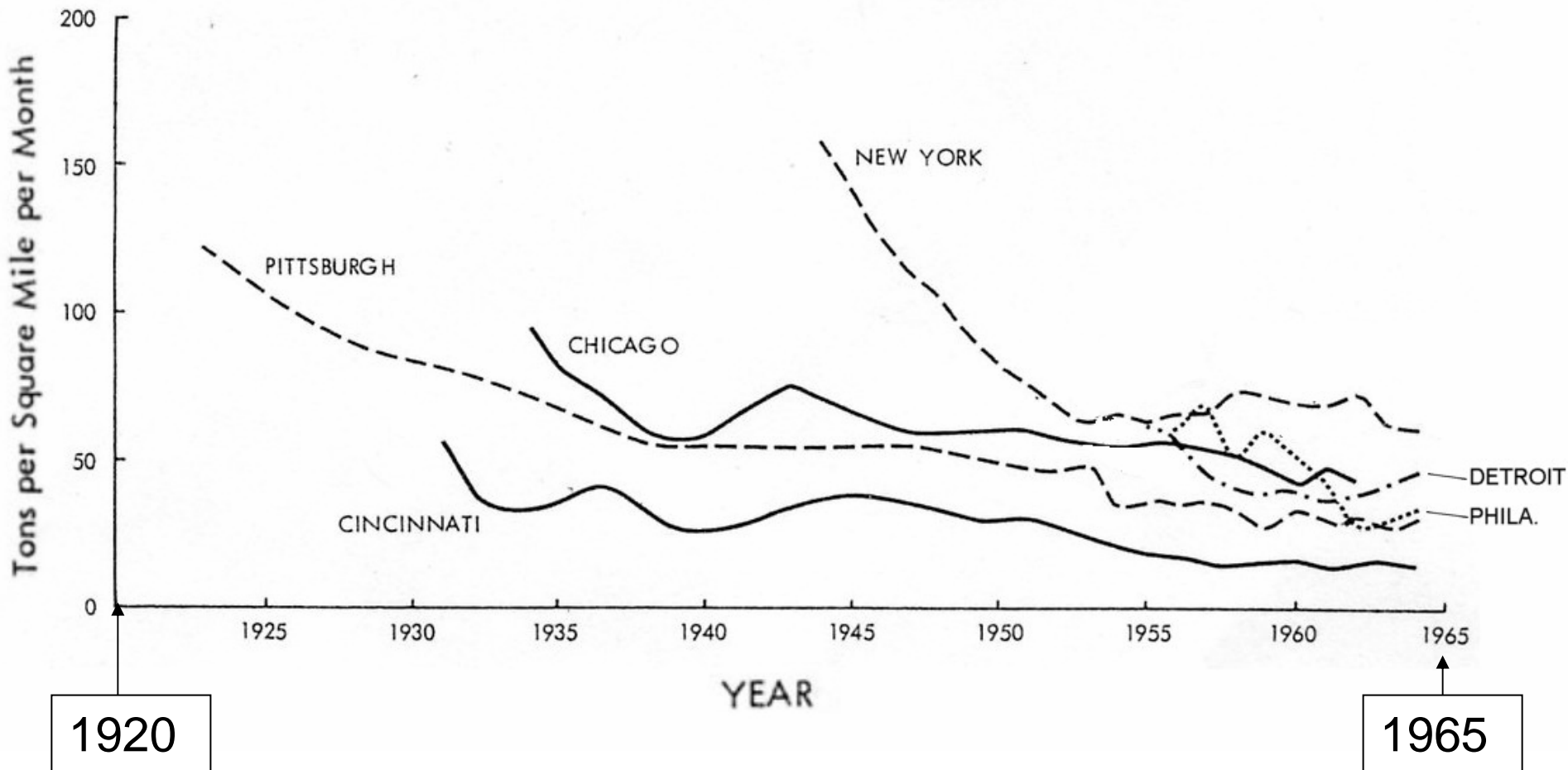
So what are the benefits?

- Difficulty: what does the demand curve for driving look like at lower levels of driving
- One approach: look at what people pay for cabs and for rental cars (Hogarty, API, 1998)
 - Cabs \$4.30/mile; Rental Car \$7.60/mile
- Hogarty estimated total benefits at \$5.8-\$9.5 trillion for 1995 for automobiles.
 - About 80% of benefits are consumer's surplus
- Add in value of road freight transport for total benefit of \$6.9-\$10.6 trillion in 1995
 - Top of DeLucchi's cost range is \$4 trillion

More Driving, Less Pollution



Air pollution was improving long before Clean Air Act



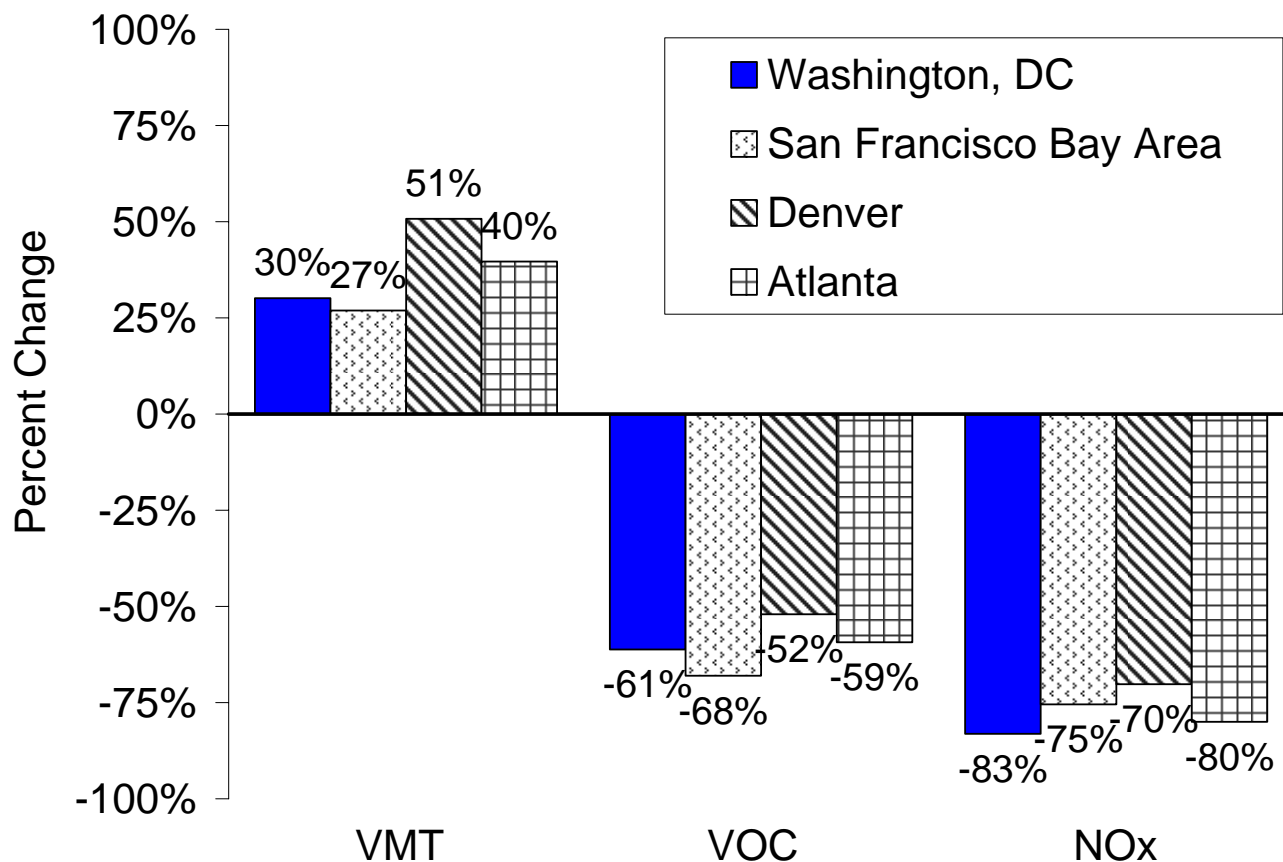
“dustfall” trends in American cities

Most remaining vehicle air pollution will be eliminated in next 20 years

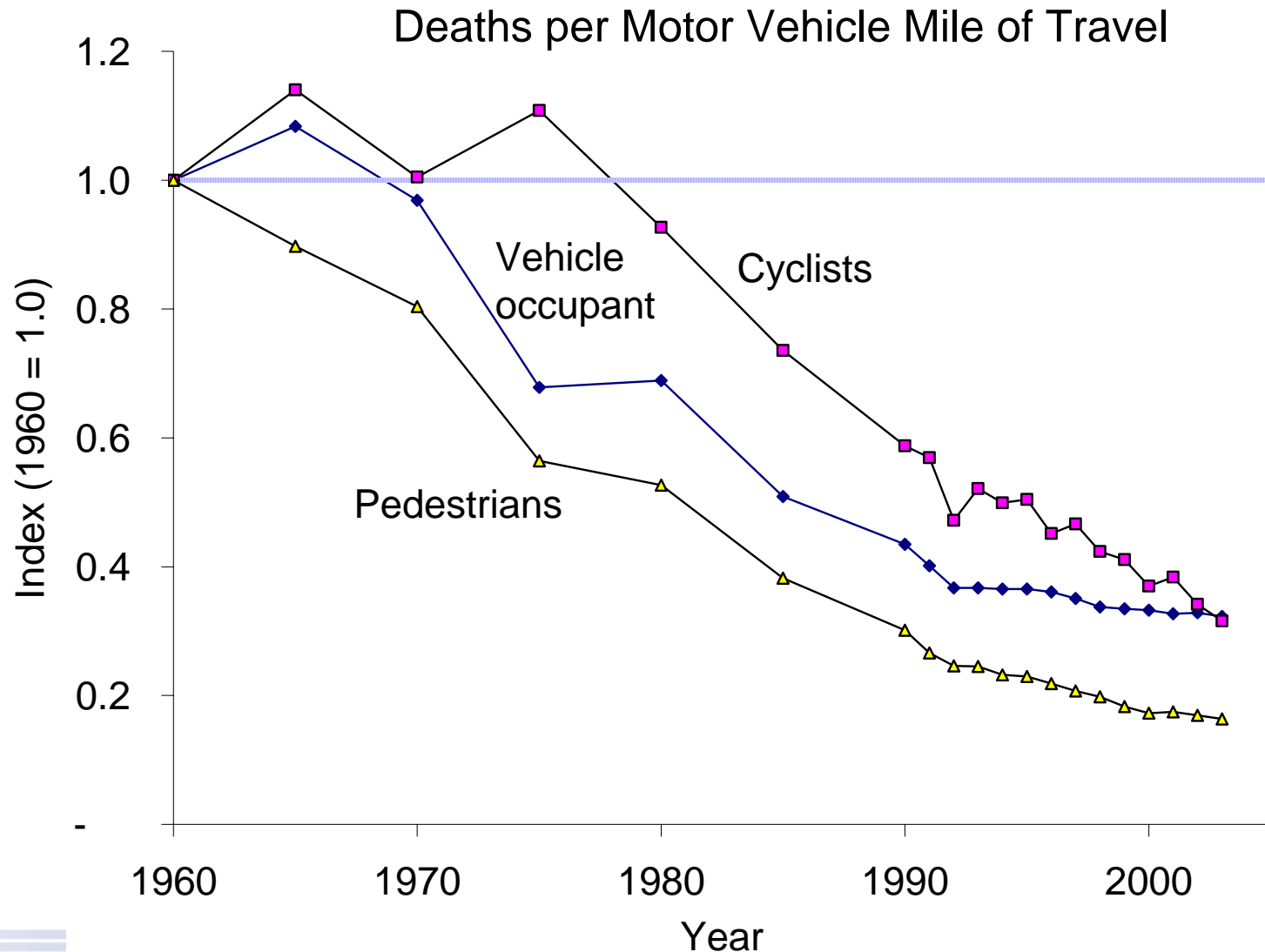
Even regulators and planners predict large pollution declines despite large increases in VMT

Actual improvement will be greater. EPA & CARB models understate emissions declines

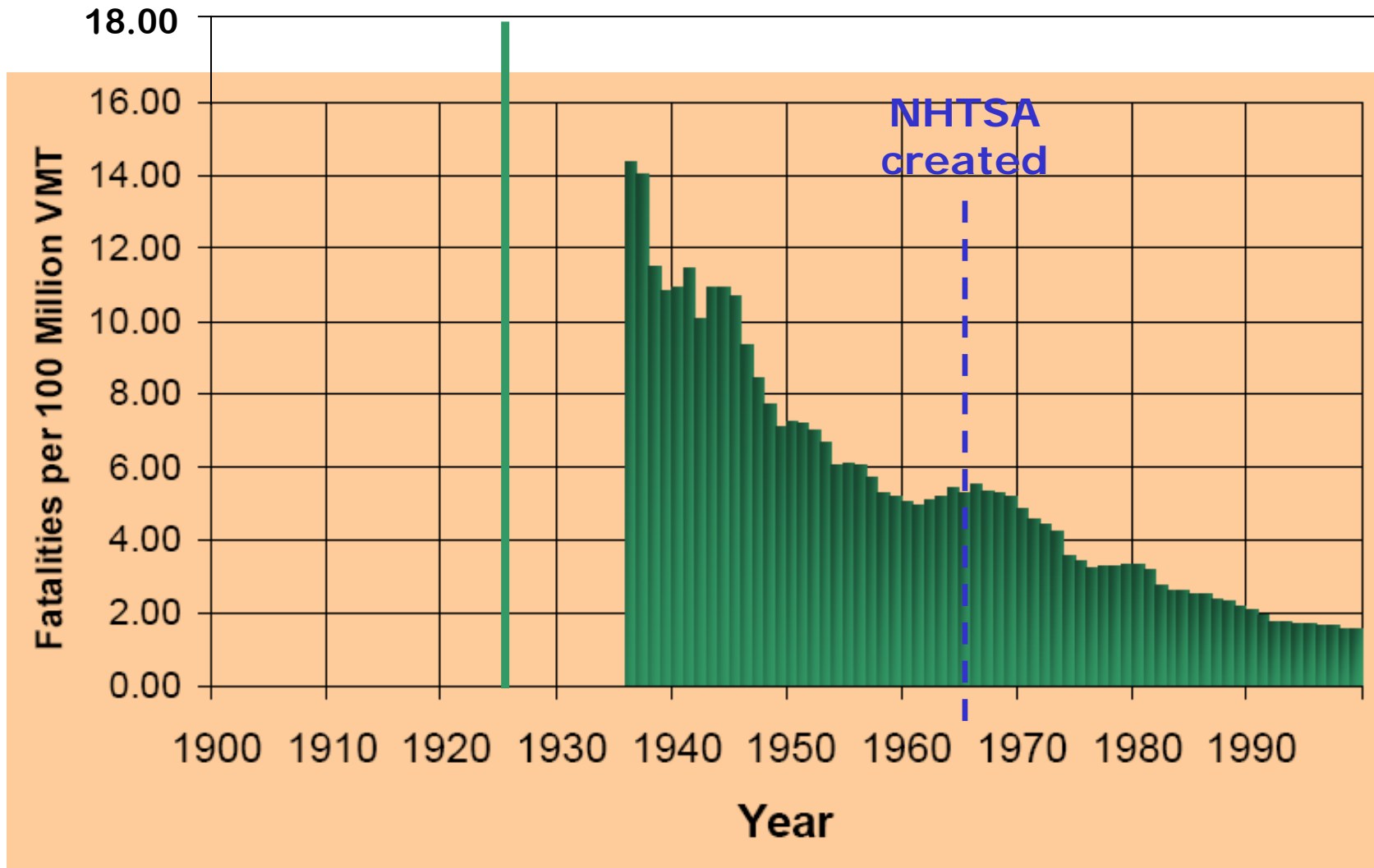
Metro Conformity Findings: % change in VMT and motor vehicle emissions, 2005-2025



More Driving, Less Risk



Auto risks were dropping long before era of federal safety regulation



Sources: Griffin, 2006 (graph); Wattenberg, 2000 (1925 value)

More Driving, More Congestion

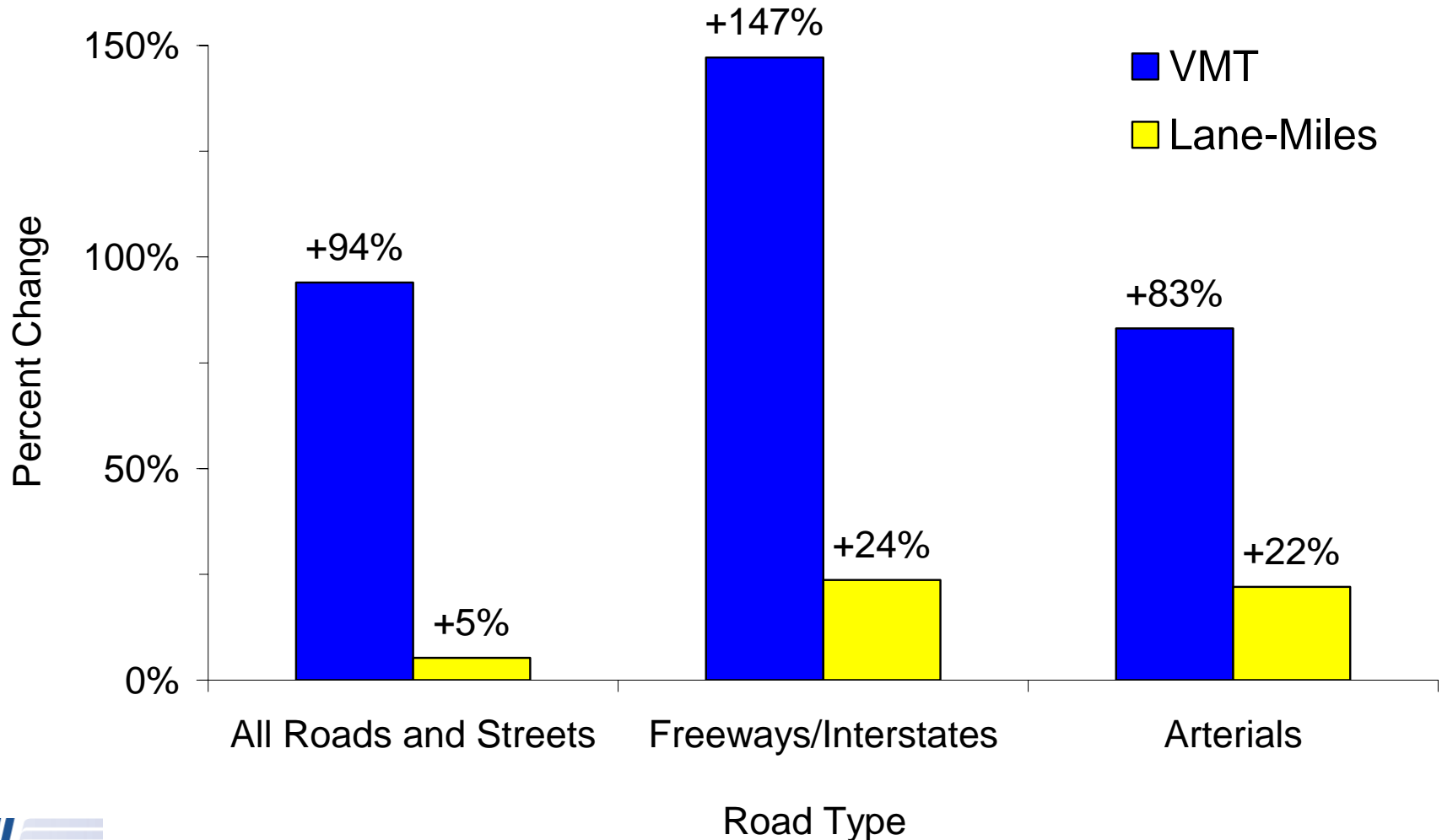
Table 1: Trends and Forecasts of Travel Time Indices

City Size	1982	1993	1995	2003	2030 Est.	Relative Increase in 'Delay' 2003 to 2030
Ave 3+ M	1.15	1.35	1.36	1.46	1.76	65%
Ave 1-3 M	1.08	1.18	1.21	1.28	1.53	89%
Ave 500K-1M	1.05	1.11	1.13	1.18	1.36	100%
Ave 250-500 K			1.04	1.06	1.15	150%
Ave 50-250 K			1.03	1.04	1.09	125%

Source: Hartgen & Fields, Building Roads to Reduce Traffic Congestion in America's Cities, Reason, 2006

Road space has not kept pace with demand

Percent Change in VMT and Lane-Miles, 1980-2004

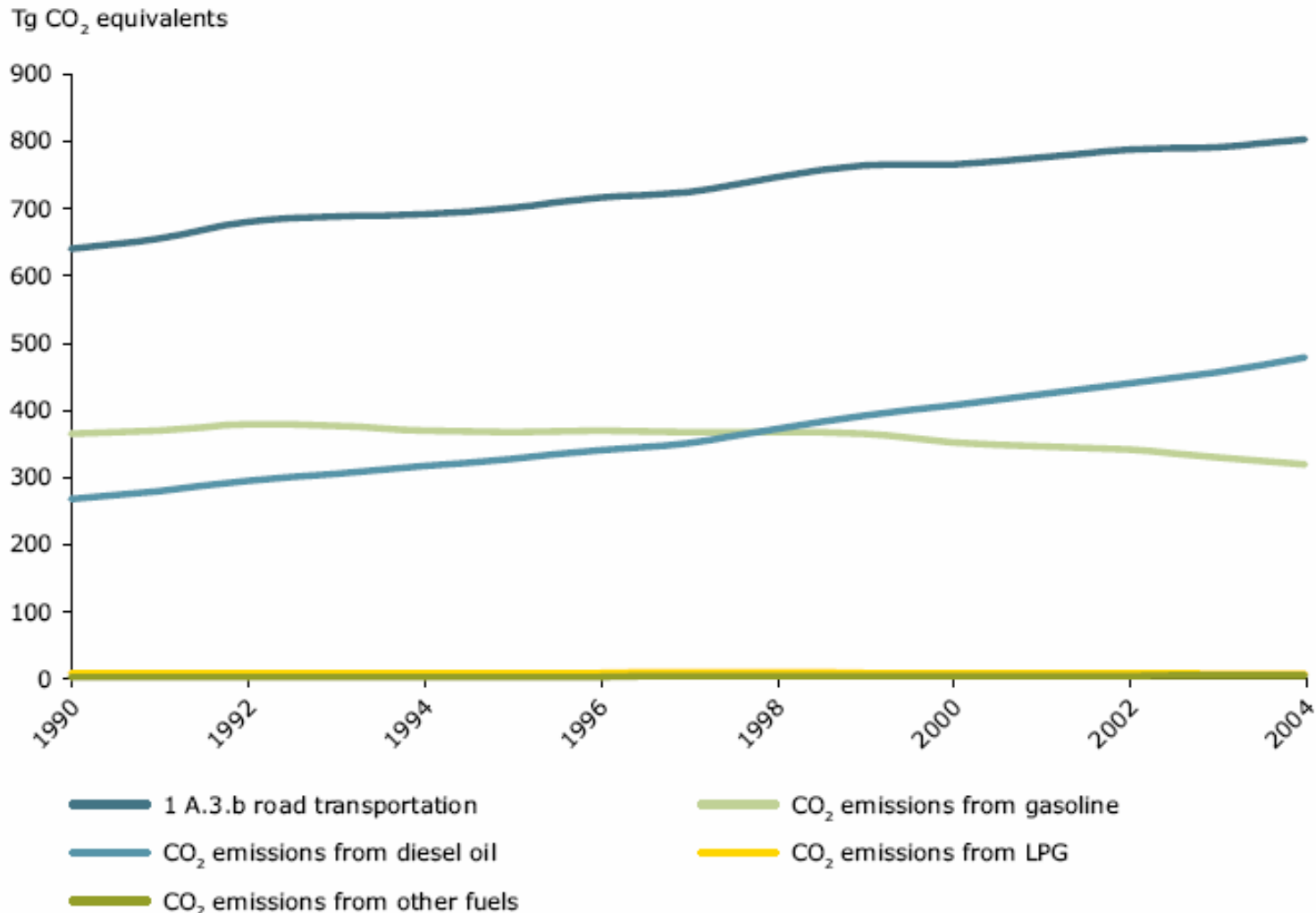


“98% of U.S. Commuters Favor Public Transportation for Others”

– *The Onion*, November 29, 2000

EU15 road transport CO₂ trend, 1990-2004

Figure 3.45 CO₂ Emission trend from 1.A.3.b 'Road transport'



Real-world: Can't have it all; Have to make tradeoffs.

- Of course, most people would like to have...
 - A large single-family home on a quiet, uncongested street AND
 - All of their preferred restaurants, cafes, stores, and services within walking distance and with prices as low and selections as large as at warehouse stores AND
 - Good schools nearby AND
 - A short drive to work on uncongested roads, but no busy roads near their house AND
 - Transit available to any place they want to go with rapid service and short wait times and at a low cost
- That's why surveys often seem to show that people want higher density or less automobile travel and more transit
- In surveys you don't have to make tradeoffs. In the real world you do. The reality is that you can't have all these things at once (at least until we have Star Trek transporters) and you have to make tradeoffs. For people who can afford it, the tradeoff ends up being the suburban home, most travel by car, and a commute on relatively congested roads.

What Is the Alternative?

- There is no realistic alternative to the automobile that would not require large reductions in people's autonomy, prosperity, and quality of life
- Automobile travel provides a level of opportunity, choice, and mobility unparalleled in human history
- Policymakers should continue to reduce the negative side effects of automobile travel; but they should also stop trying to erode the huge benefits of automobile travel and instead craft policies that work in concert with people's preferences, rather than against them.

○ Acknowledgements

- Randal O'Toole and Wendell Cox for providing tons of transportation and land use data
- American Enterprise Institute for supporting my work

○ Contact info

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