

New Perspectives on Travel Demand: *Where Are We Going?*

Highway Information Seminar 2009

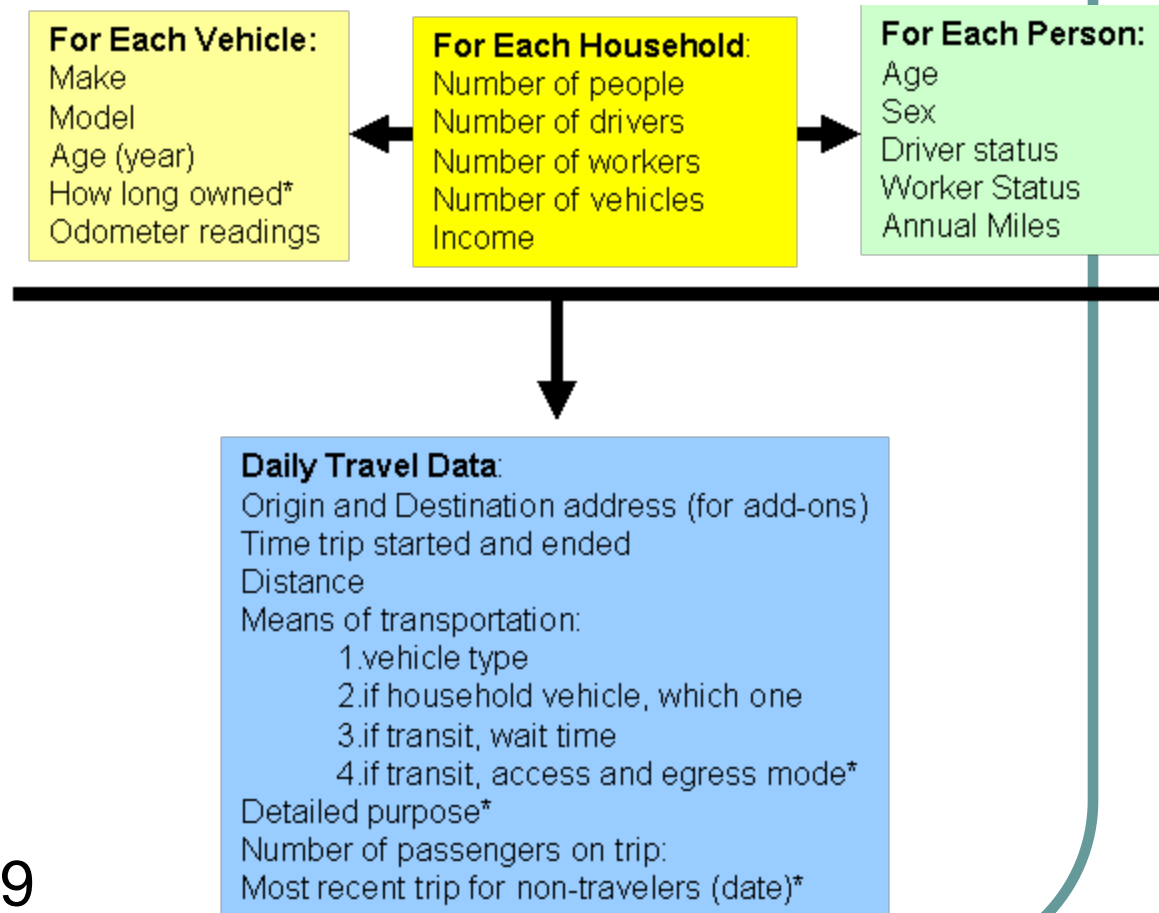
Heather Contrino, FHWA Office of Policy

Adella Santos, Cambridge Systematics

Nancy McGuckin, Travel Behavior Analyst

About the data source: 2009 NHTS

- Over 150,000 households
- Over 300,000 people
- Over one-million travel day trips
- 20 State and MPO add-ons
- RDD and CPO sample
- 40 years of travel data—1969 to 2009



NHTS Methods and Design

- List-assisted RDD sample
- Computer-Aided Telephone Interviews
- 13-month data collection period:
April08 through May09
- Advance letter with \$5 incentive
- Household recruitment
- Mail-out Dairy packets
- Reminder calls
- Person level retrieval



2008 NHTS Data Methods

- Collected interviews from HH people ages 5 & older within 7 days of Travel Date
- Collected Proxy interviews
 - 5 – 13 year olds (always)
 - 14 – 15 year olds (unless parent requests in-person)
 - 16+ years old (only after day 3)
- Recruit—10 minutes/Retrieval – 18 minutes per interview
- A complete HH interview required 50% of all adult household members: Non-responding HH members are accounted for in the weights

2008 NHTS Data Coverage

- Weighted to represent one calendar year for annual estimates
- Every sampled HH was assigned a travel day:

Ensured **balance** across **each day** of the week and month of the year

Compare Mondays to Fridays and weekdays to weekend

New data items of interest include:

- Whether Highway or Toll road was used for the trip
- Whether vehicle is Hybrid/Alt. Fuel
- New section detailing children's travel to school (Safe Routes to School)
- Internet shopping and deliveries
- Whether non-travelers would like to get out more



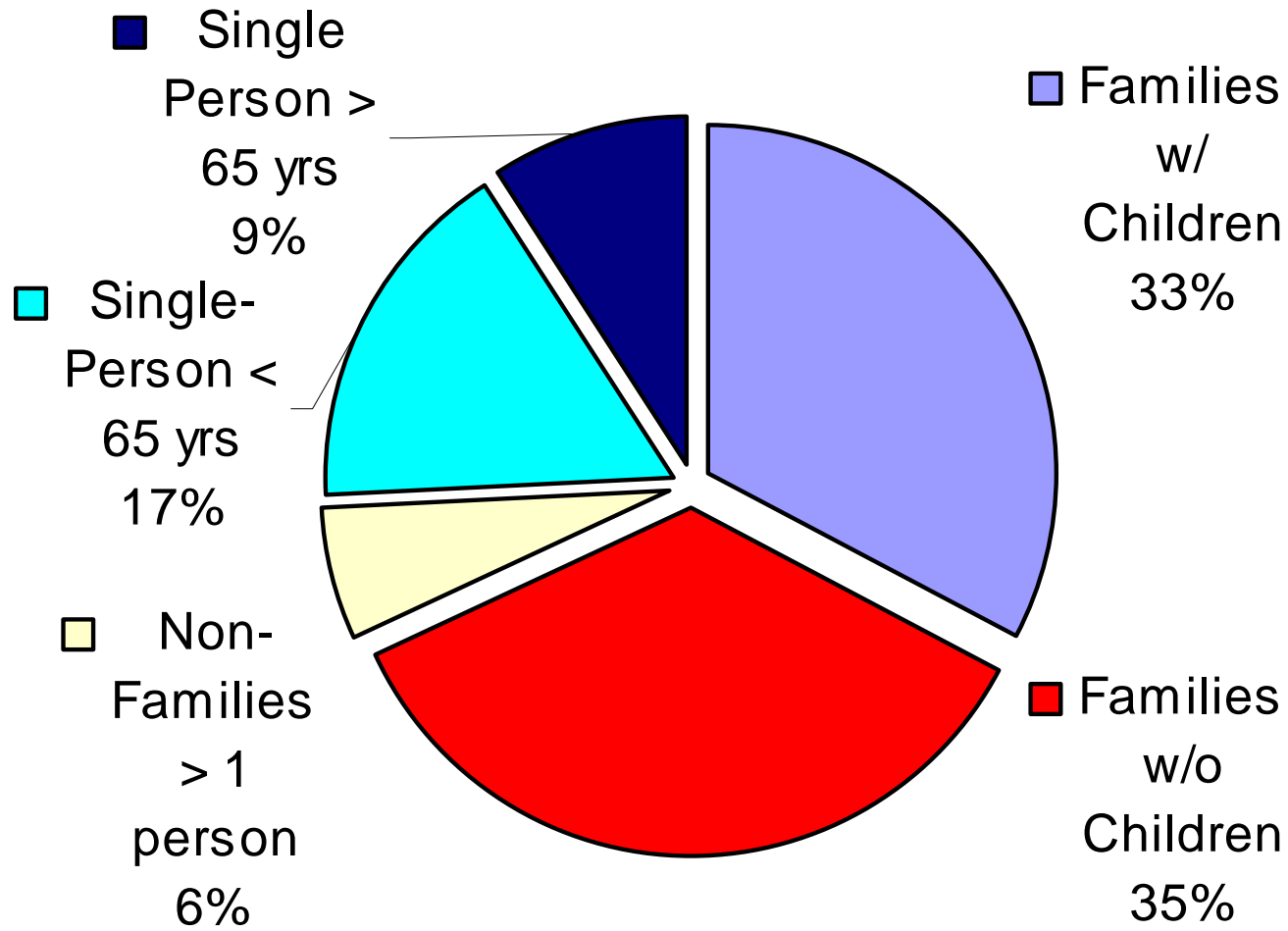
Outline

- ✓ A few trends in historic patterns in travel
 - Changes in family structure and vehicle availability
 - Immigration
 - Cost of travel
 - Internet use and travel
- ✓ Increased emphasis on climate change
- ✓ The challenges of an aging population

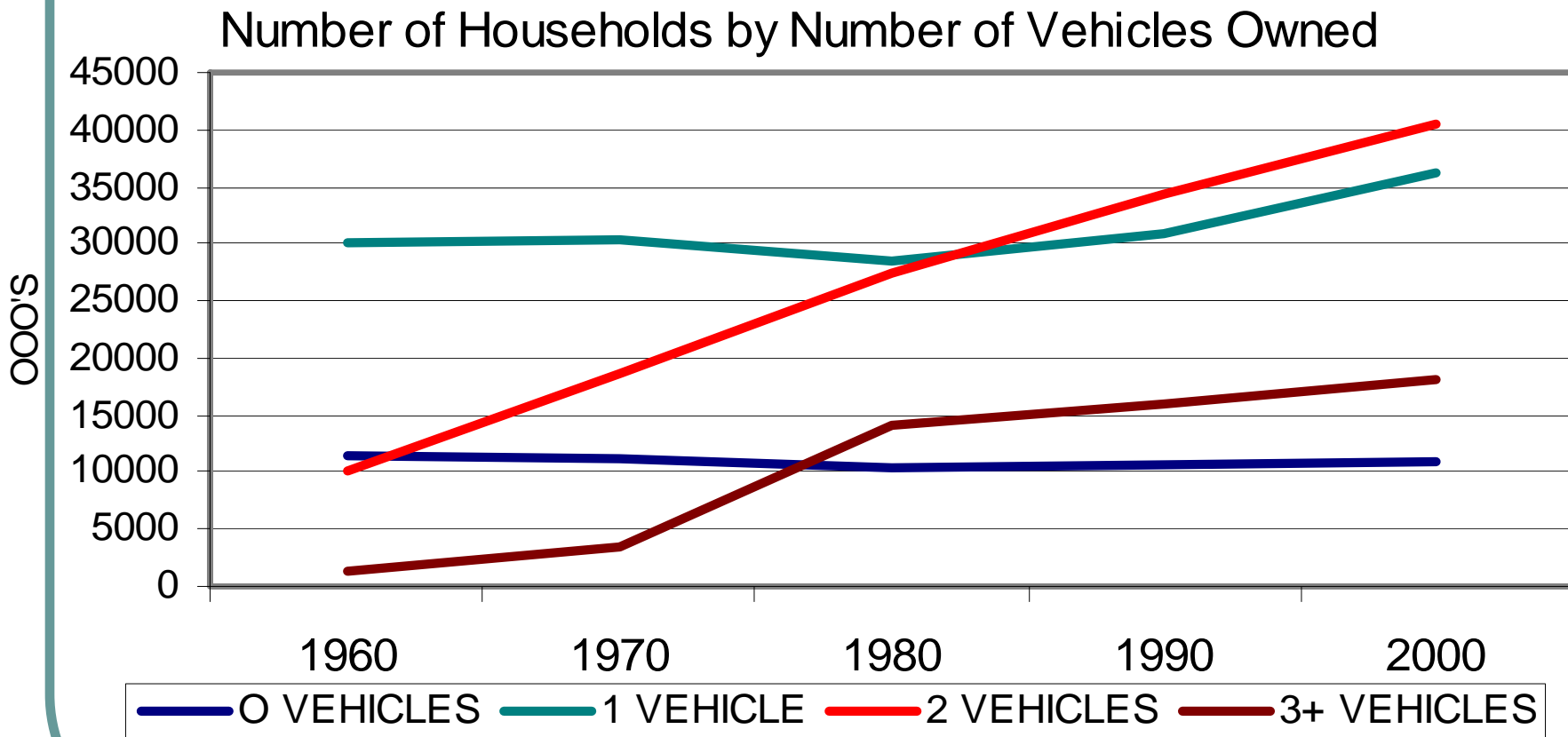


Changes in basic travel demand indicators

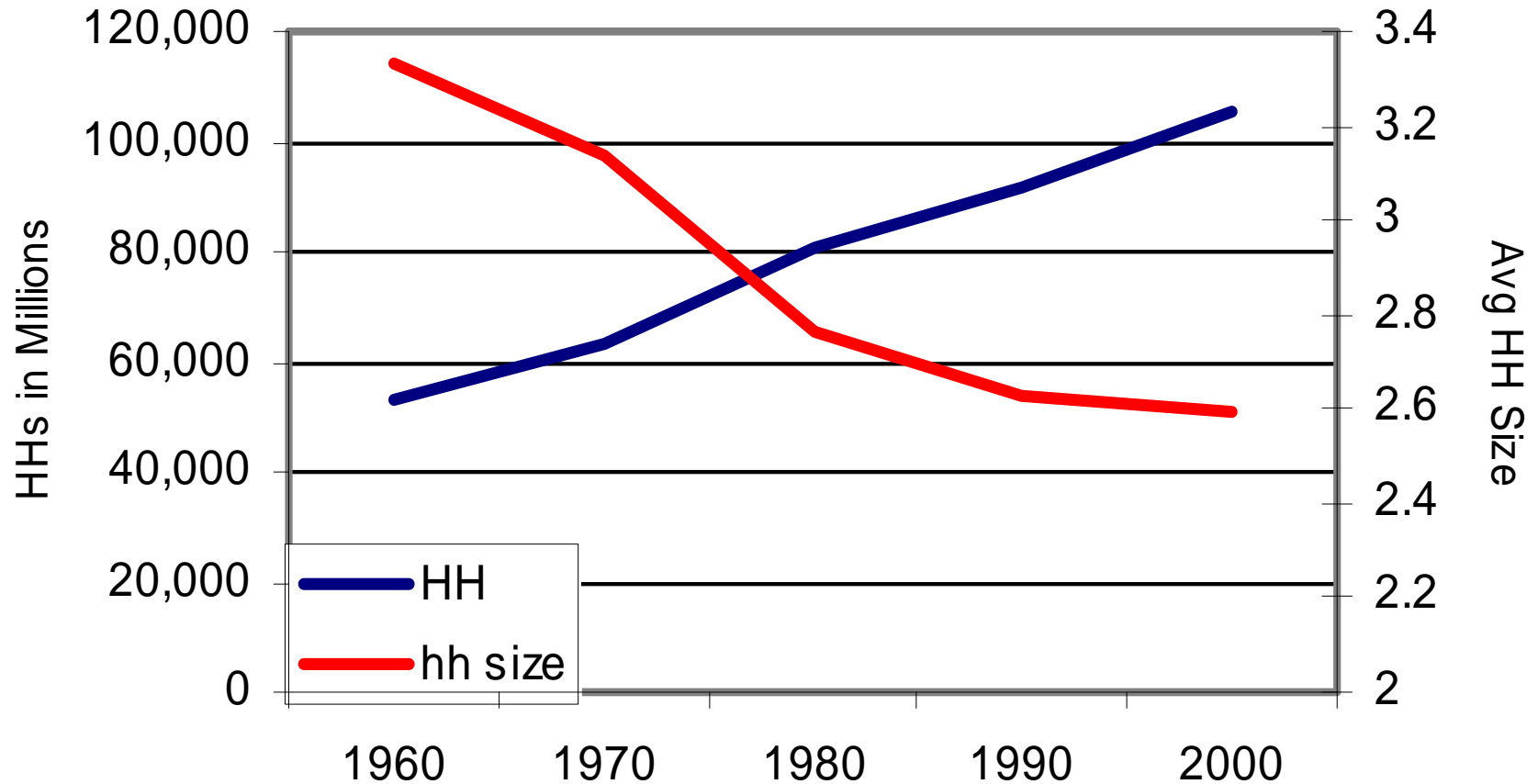
For the first time in Census history the majority of households have no children...



Vehicle ownership distribution patterns have changed...

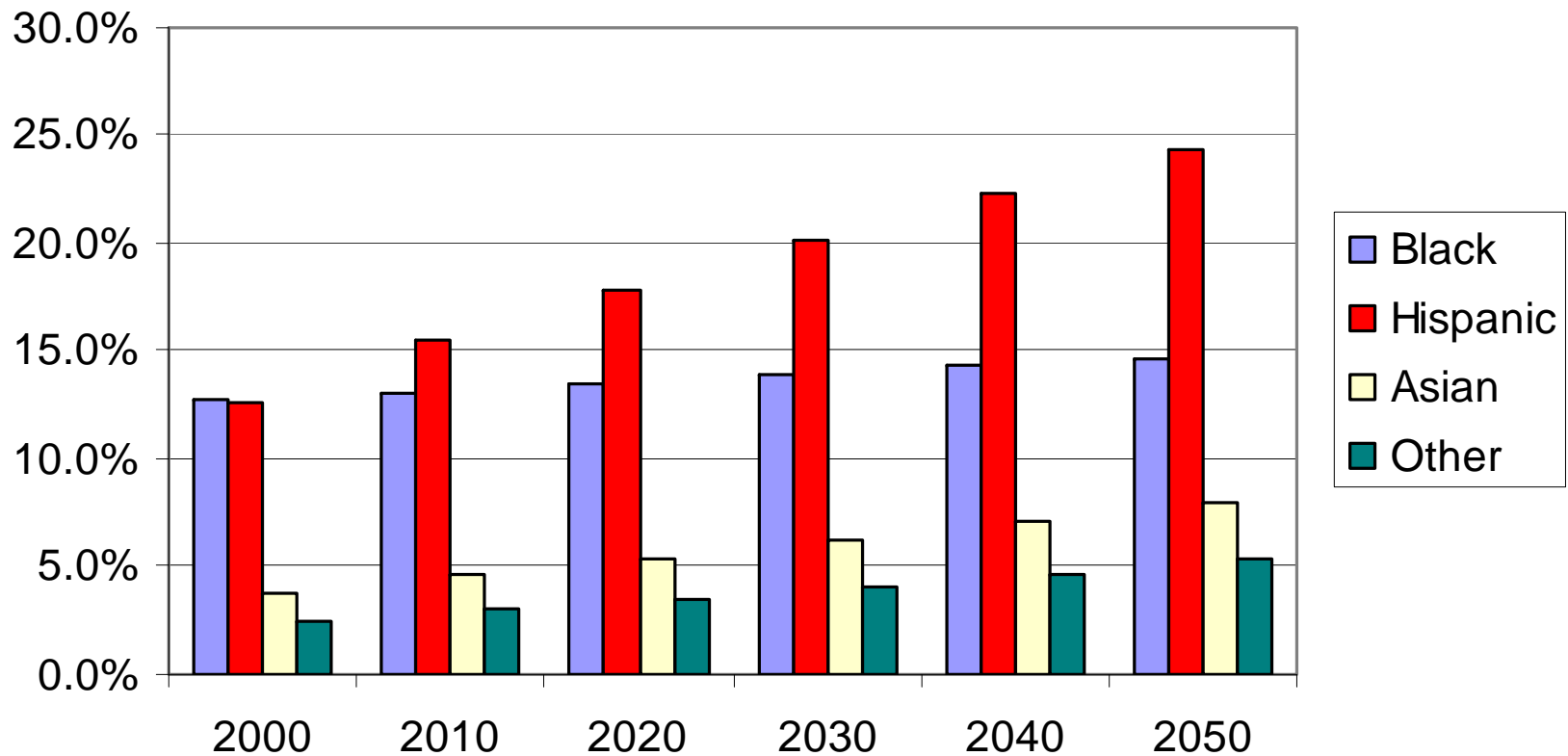


The number of households has grown while the the average size has dropped...



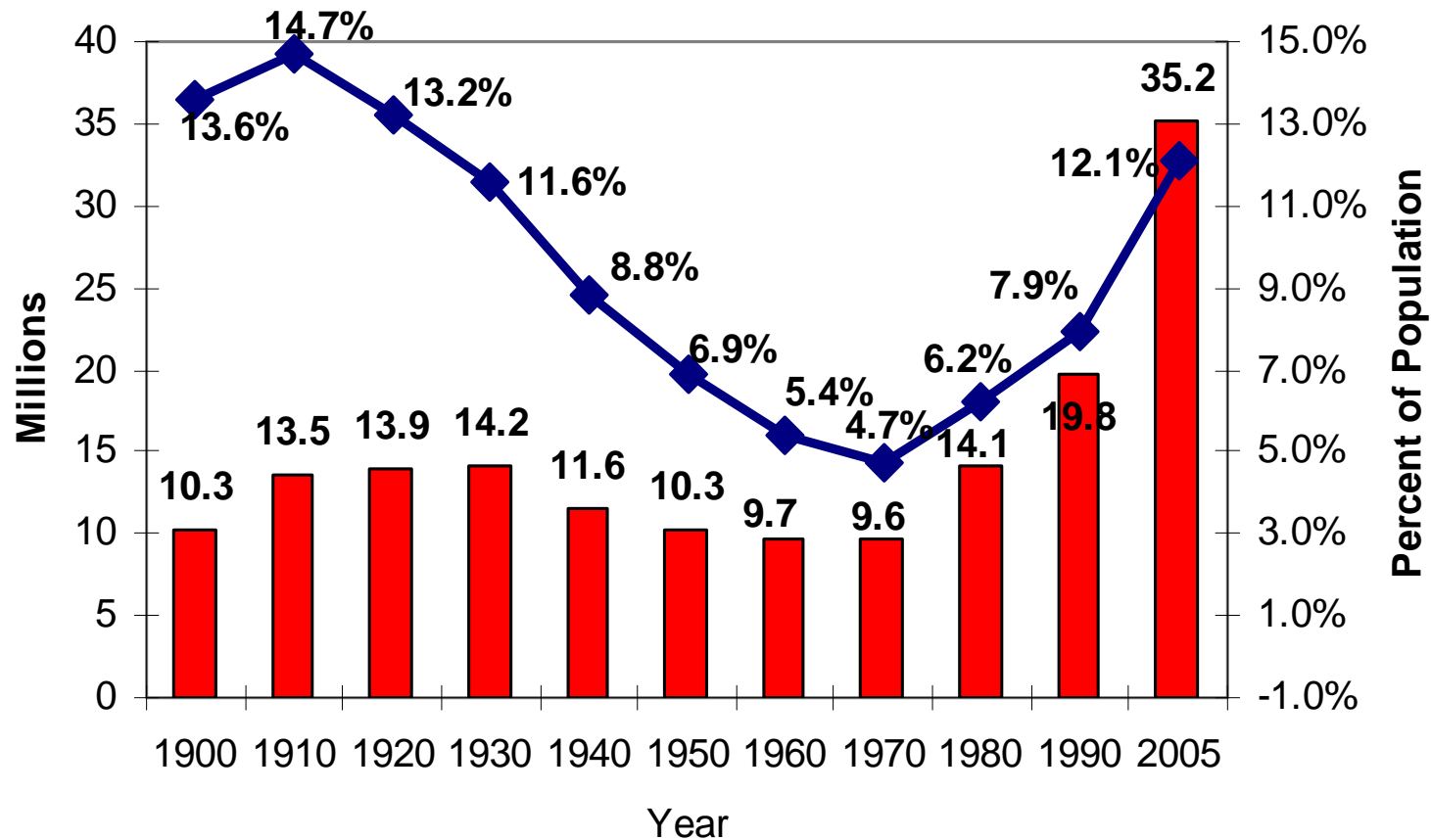
Growing diversity will impact travel demand...

Projected Population Growth by Race and Ethnicity
(Percent Growth)



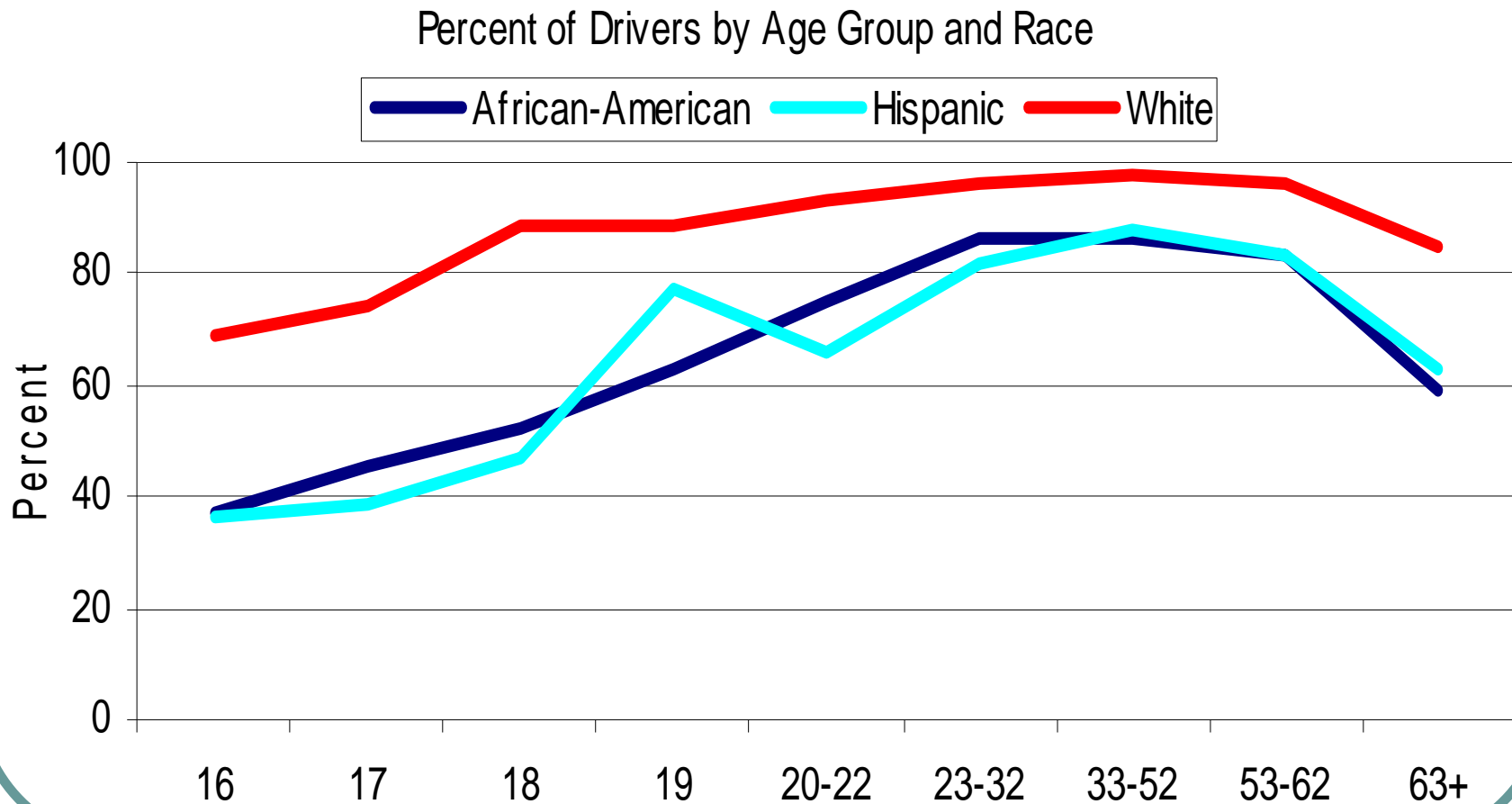
And trends in immigration...

Immigrants in the U.S., Number and Percent of Population



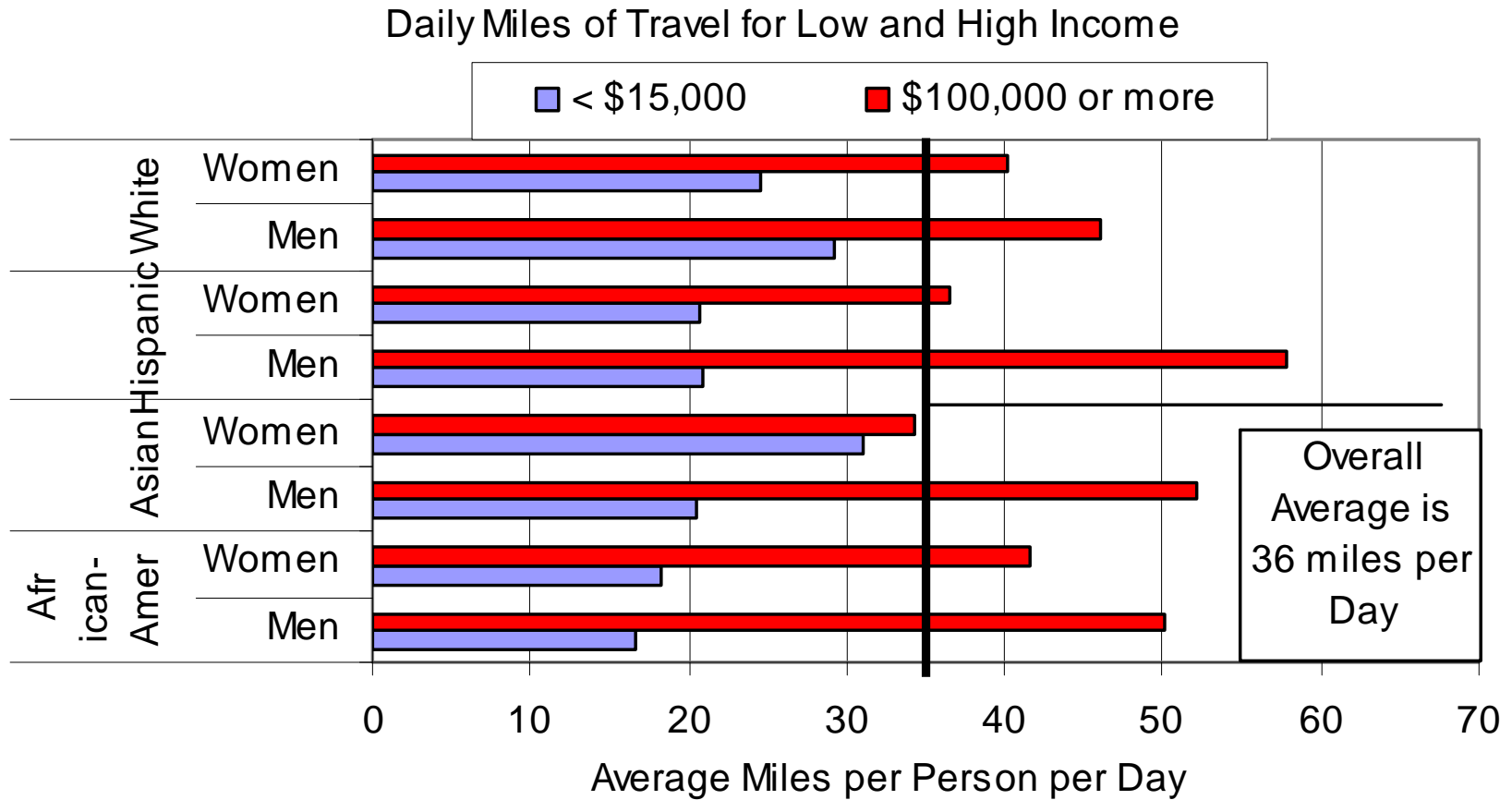
Source: Decennial Census for 1990 to 2000, Center for Immigration Studies and Analysis of March 2005 Current Population Survey Data

For example, whites start driving earlier than African-Americans and Hispanics....

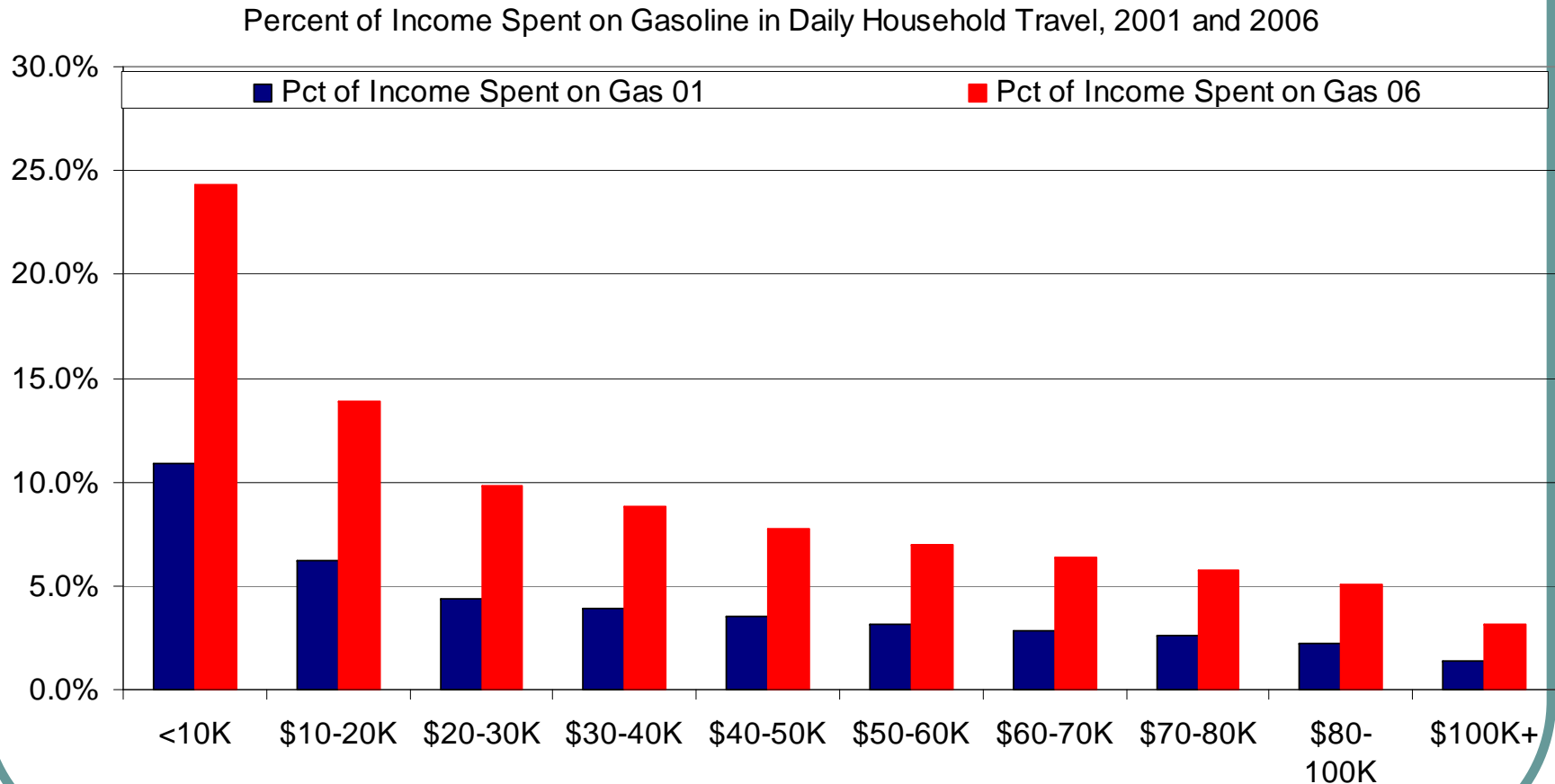


Source: NHTS 2001

And high-income Hispanic men travel more miles per day...



Transportation cost is becoming a bigger issue...



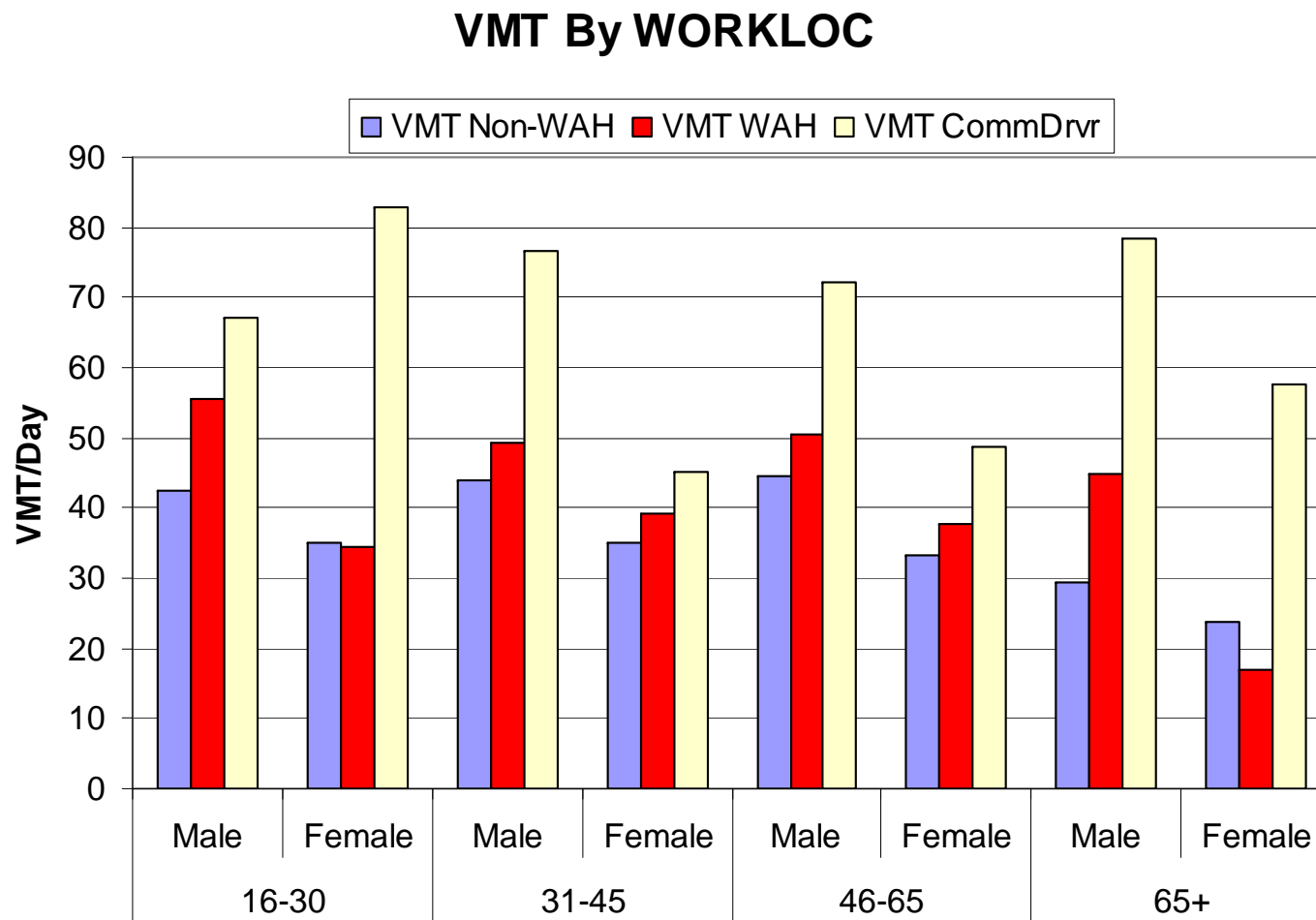
Source: NHTS 2001 and 2006 update

Raising the value of substitutes like telecommuting...

Number of workers in US	145,272,000
Number of workers who sometimes work at home	10,389,672
Percent	7.2%
Average one-way distance to work (vehicle miles) for those workers	17.5
Vehicle miles saved each work at home day	363,638,520
Gas saved each work at home day (gallons)*	17,913,228
CO ₂ emissions reduced per day (tons)	72,550

* using fleet average (NHTS/EIA 2006) of 20.3 mpg

But telecommuting may not reduce total VMT...



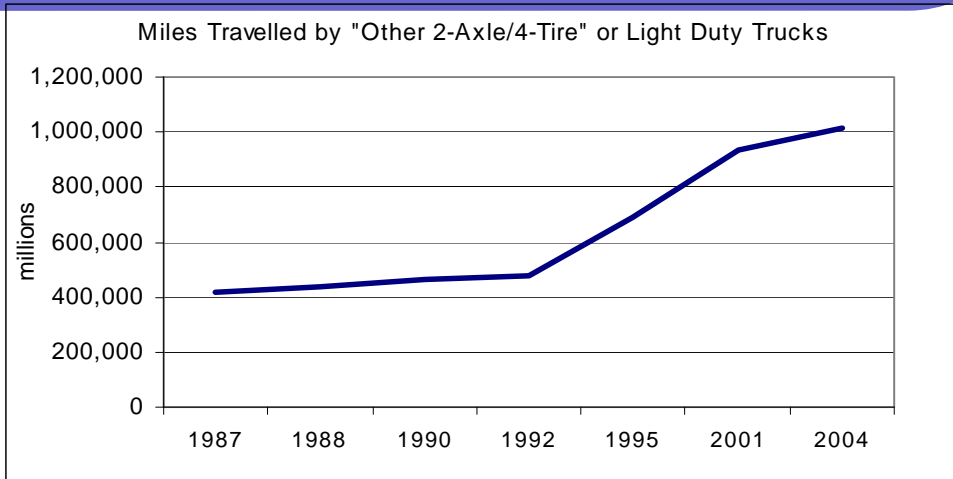
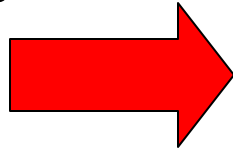
Internet use may also influence *shopping* behavior...

- 30 percent of adults purchased something over the Internet in the last month
- 3.7 times a month one of those purchases is delivered to the household
- But people who shop on-line travel more miles for shopping trips in real life:

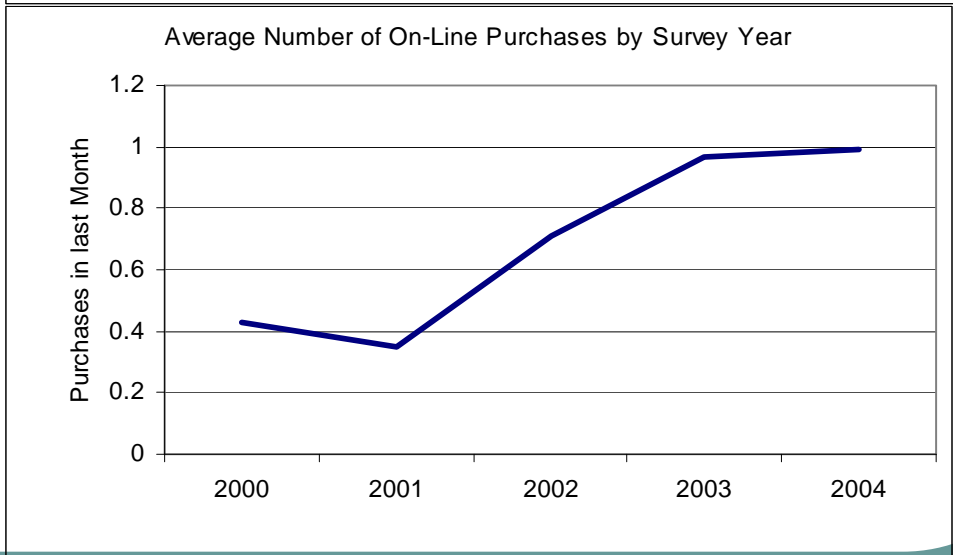
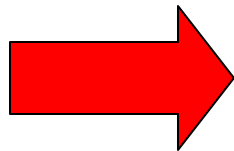
On average 3.9 miles versus 3.5 miles

But Internet shopping increases deliveries to households...

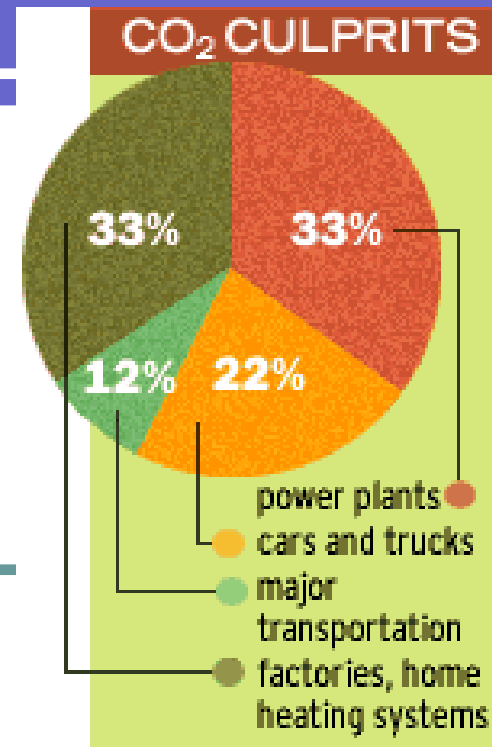
**Rise in VMT by
Light-Duty
Trucks**



**Rise in On-line
Purchases**

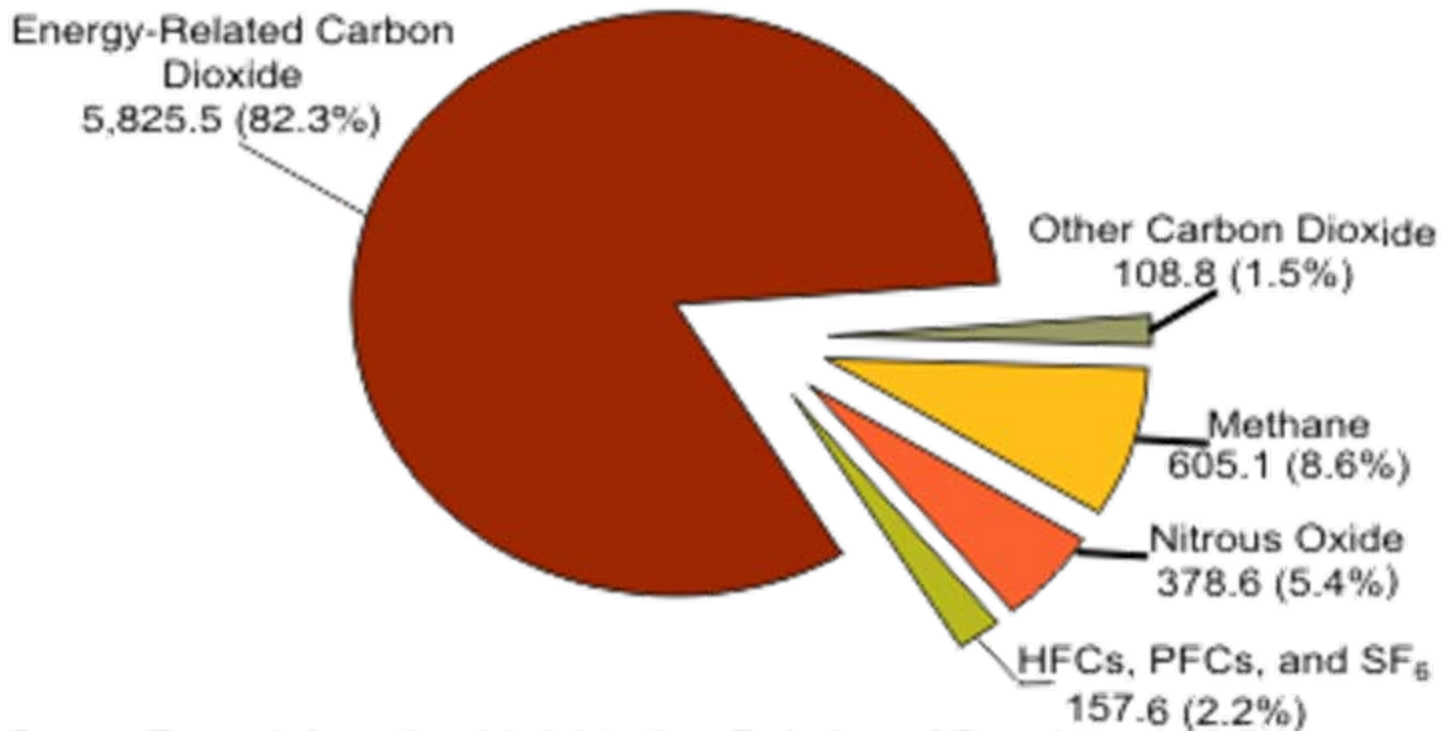


Daily travel's role in global climate change



Carbon dioxide (CO₂) accounts for over 80 percent of total GHG emissions in the US...

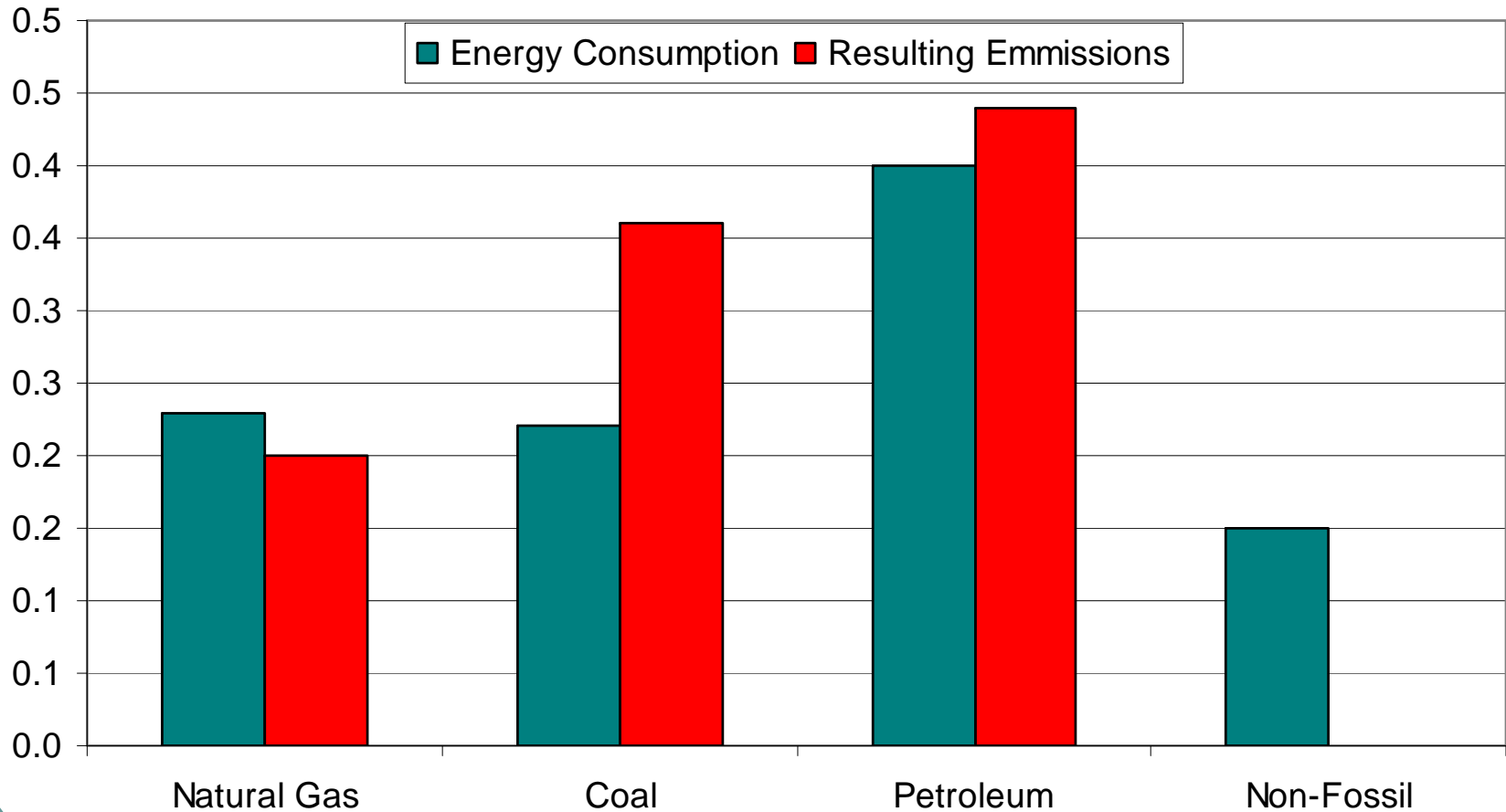
Green House Gas Emissions



Source: Energy Information Administration, *Emissions of Greenhouse Gases in the United States 2006* (Washington, DC, November 2007)

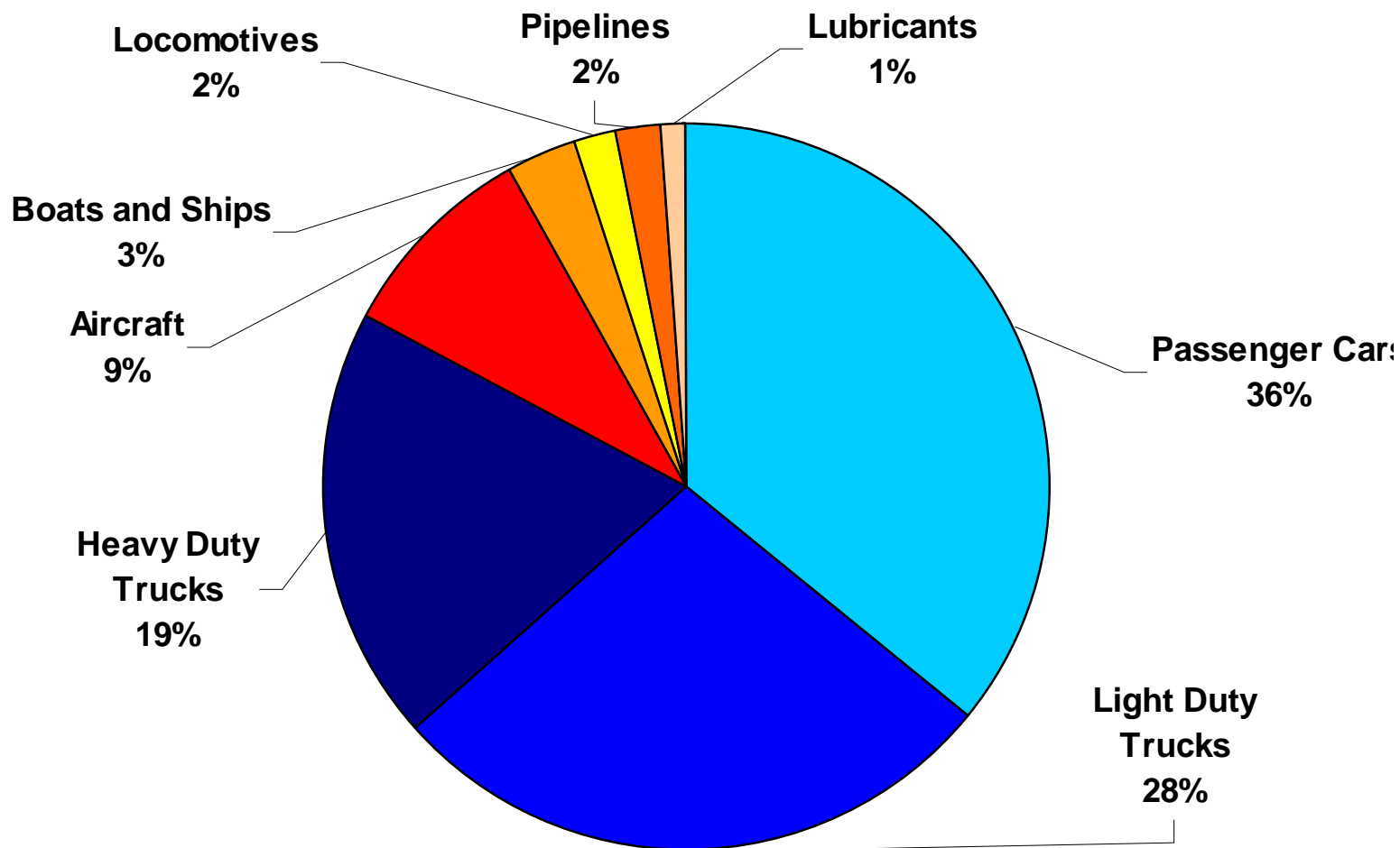
Any process that burns fossil fuel releases CO₂ into the air...

US Primary Energy Consumption



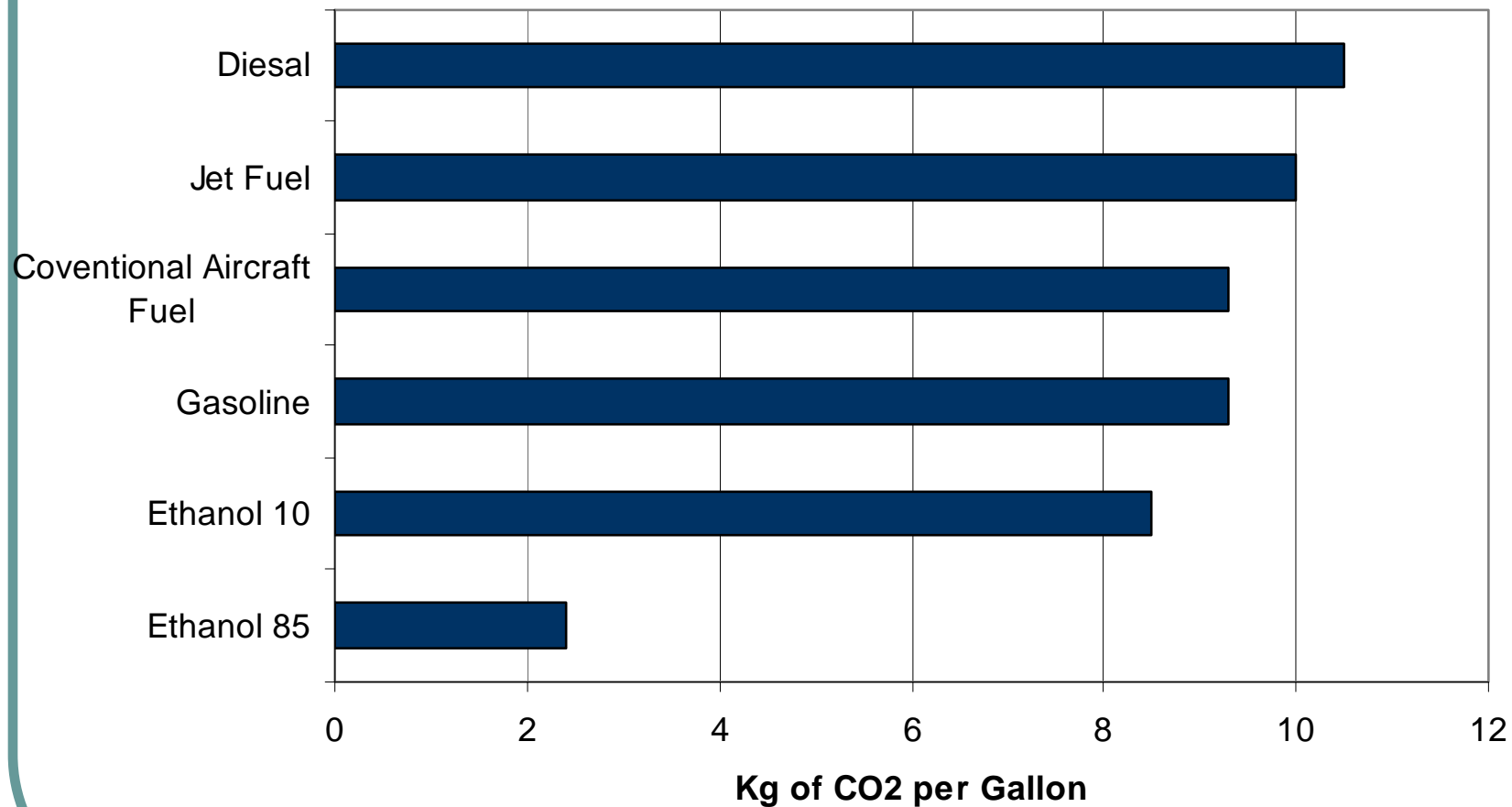
Source: Energy Information Agency

“On-Road” sources account for over 80% of all CO₂ from transportation...



Source: Green House Gas Emissions from the US Transportation Sector, 1990-2003
www.epa.gov

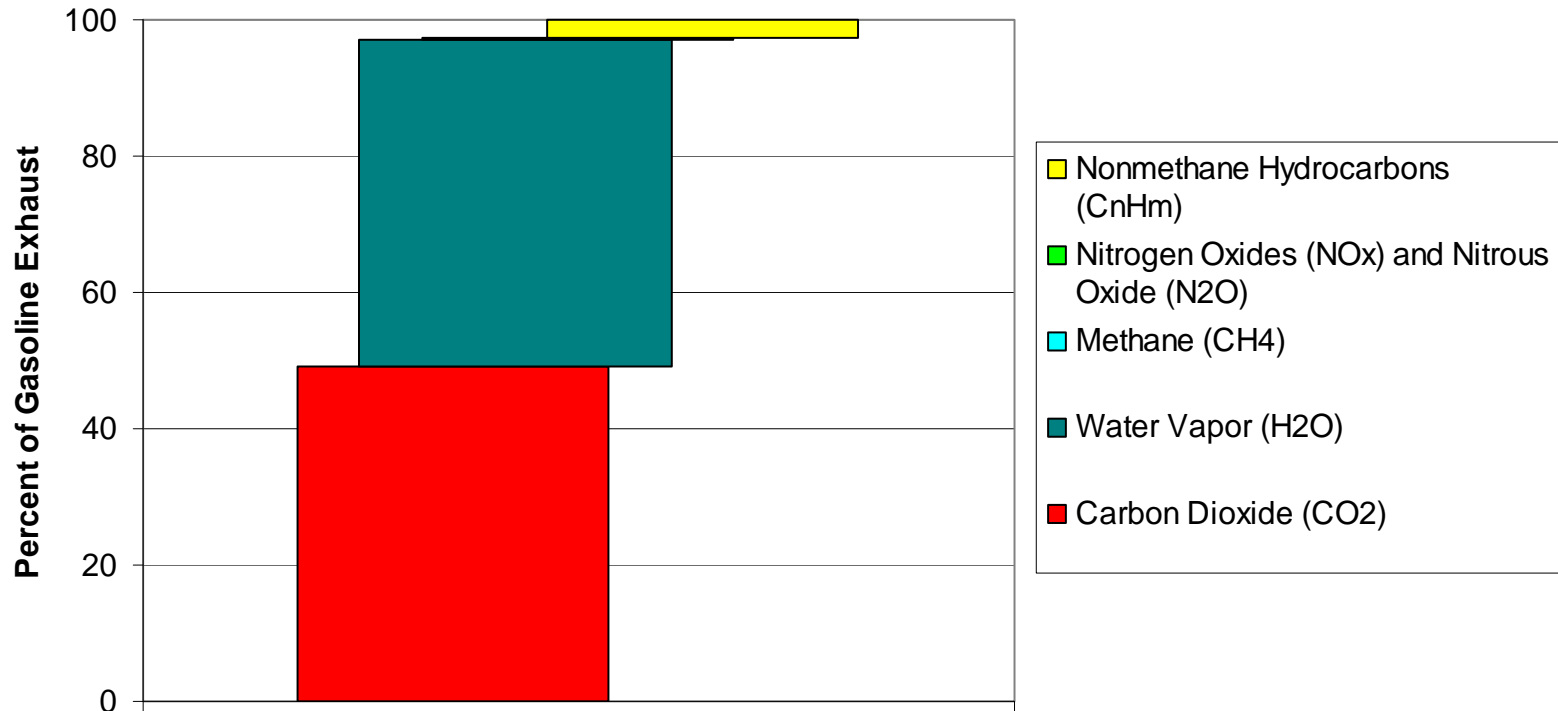
Fuels used for transportation vary in the amount of CO₂ impact...



Source: Green House Gas Emissions from the US Transportation Sector, 1990-2003

www.epa.gov

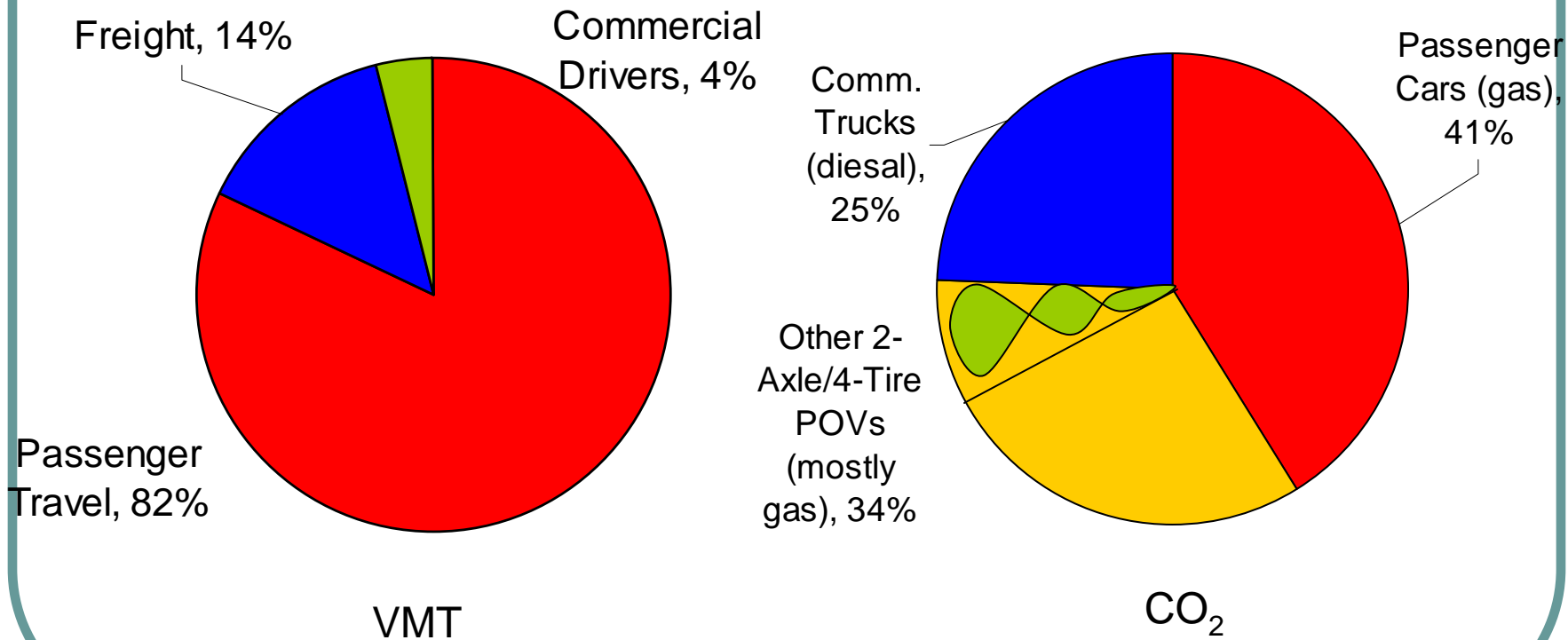
Gasoline 'tail-pipe' emissions are about half CO₂ and half water vapor...



Note: Tailpipe emissions account for about 60% of lifecycle emissions from vehicle transport, and do not include manuf./tires/maintenance/fuel production, etc. (VTPI)

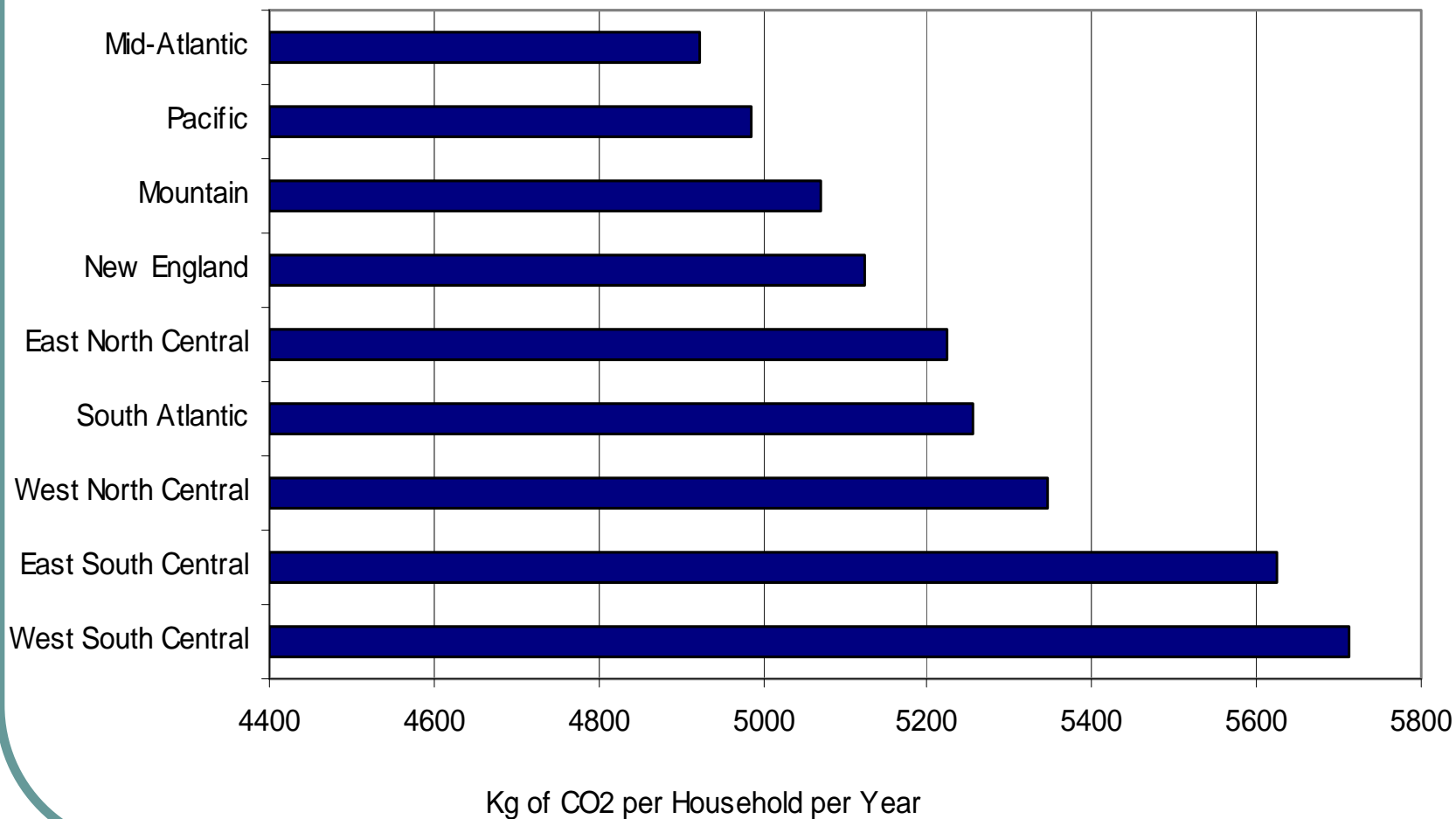
Passenger travel is the largest sources of CO₂ emissions from mobile sources...

Passenger travel accounts for 82% of VMT and about 75% of CO₂



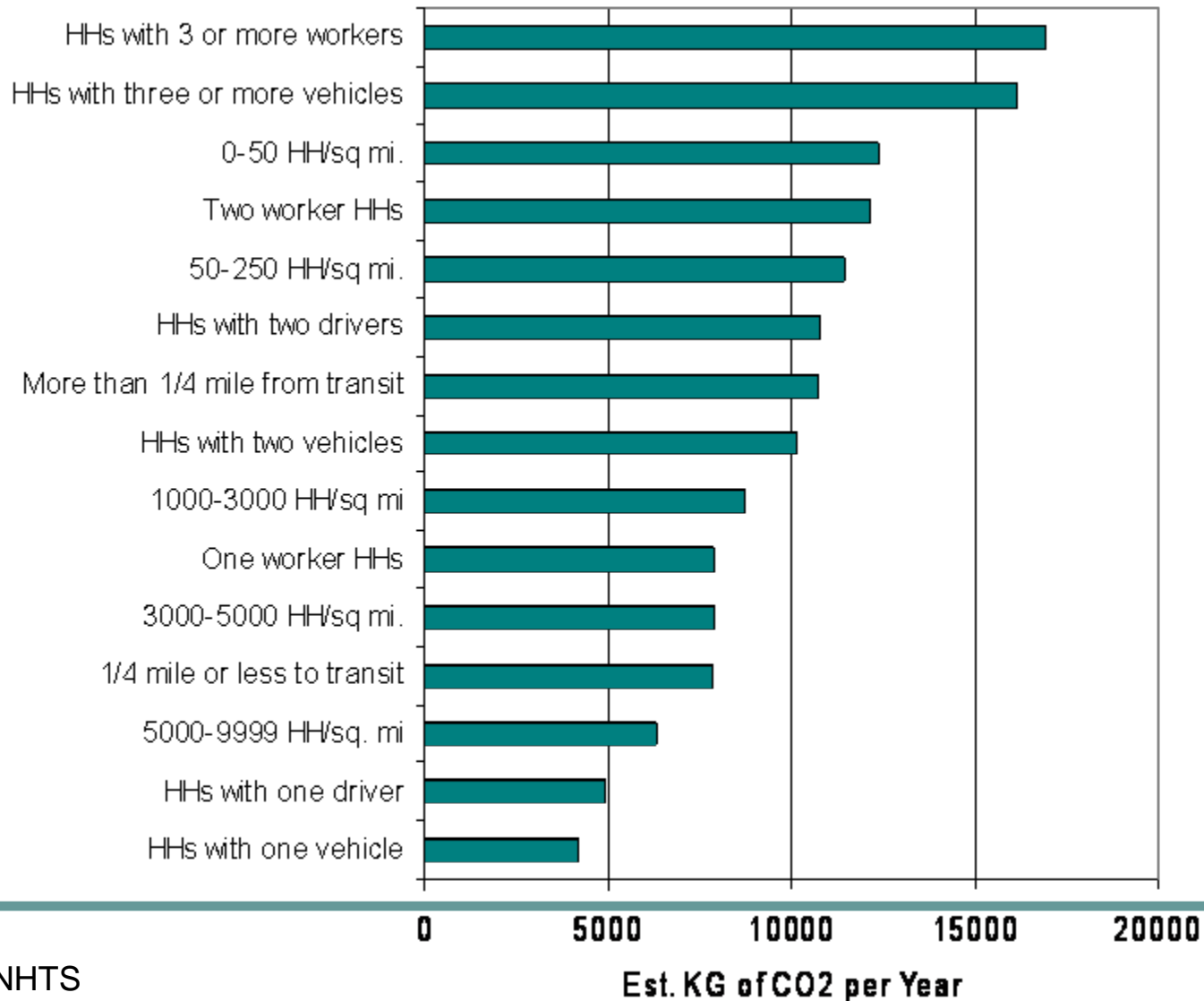
Source: McGuckin's analysis based on Highway Statistics VM-1 2009.
Gasoline=8.8Kg CO₂ per gallon, diesel=10.1Kg CO₂ per gallon

The mix of vehicles, the amount their driven and the carbon impact varies by region...



Source: NHTS 2001

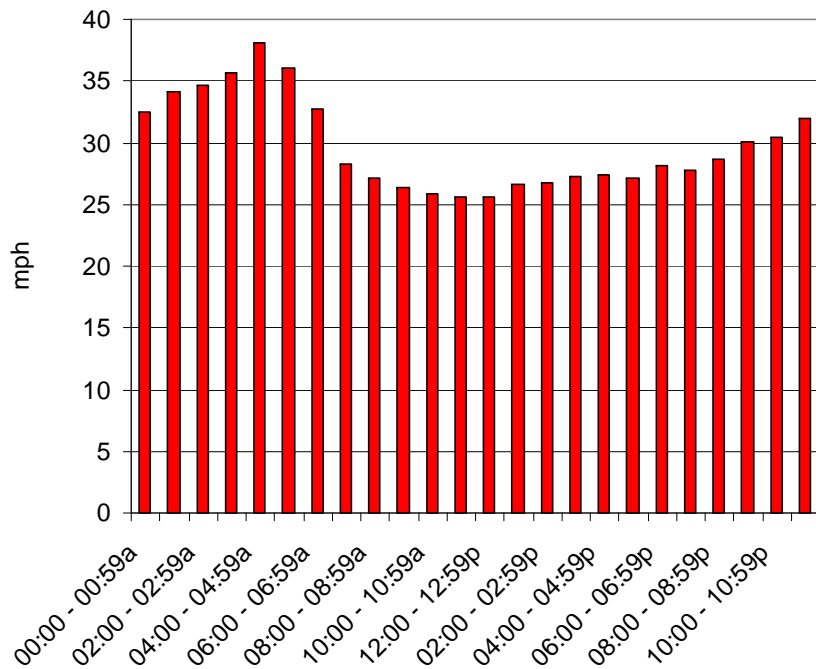
And by factors such as workers, drivers, density, and distance to transit...



Source: NHTS

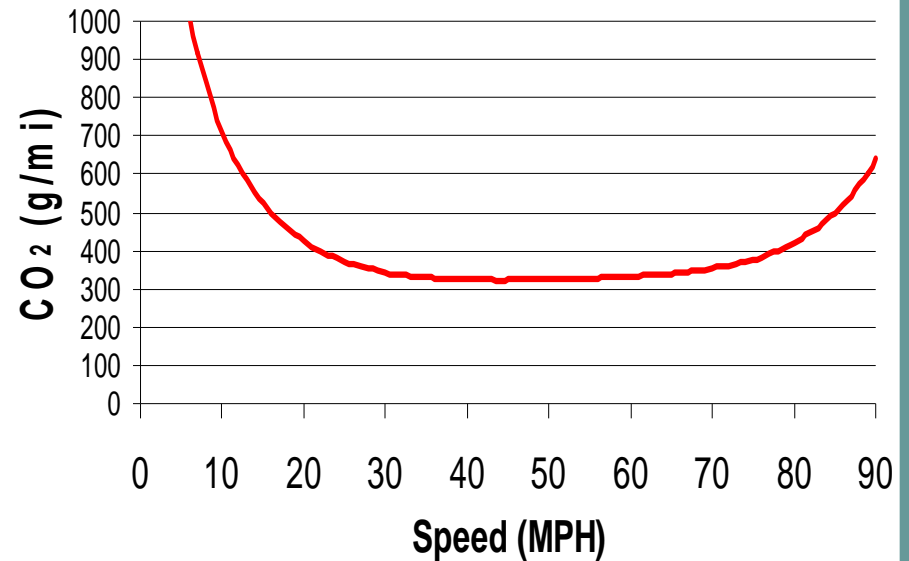
Congestion contributes to CO₂ emissions from vehicles...

Speed profile by time of day



Source: NHTS

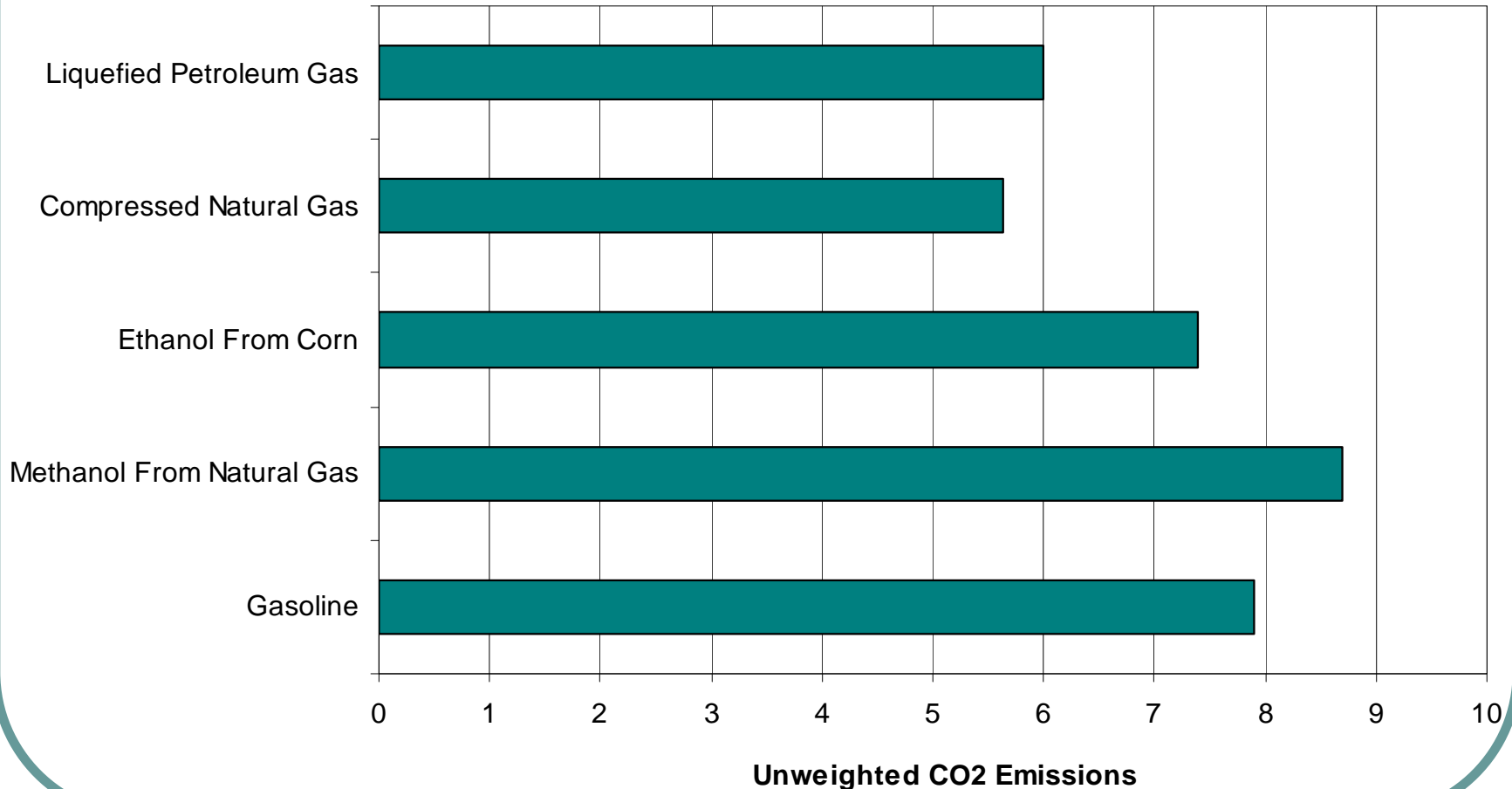
CO₂ Emissions Rates by Speed



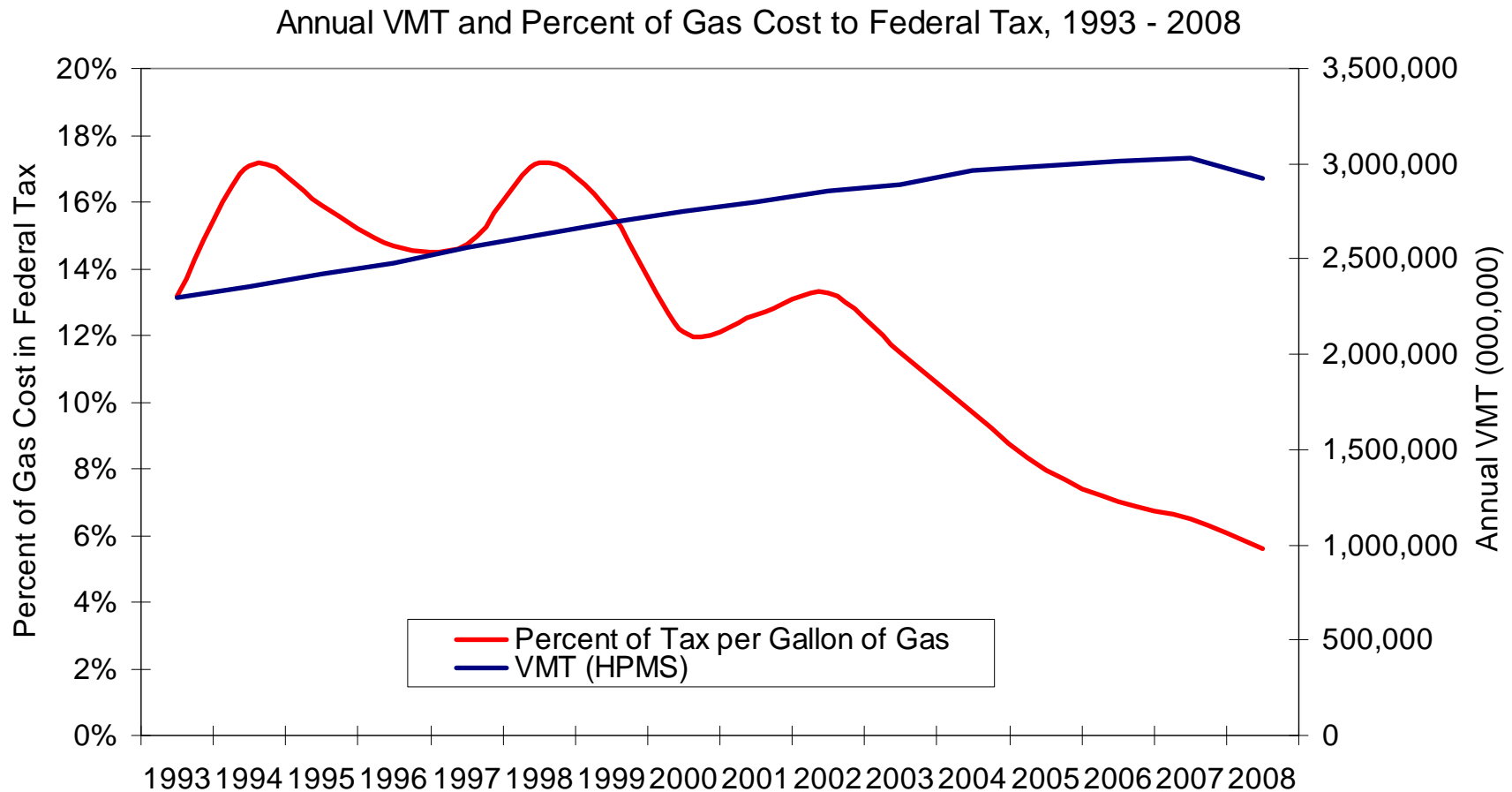
Source: University of California, Riverside, via Alan Pisarski, ITE PPT

But remember--many common alternate fuels still have CO2 impacts...

Encourage the right alternate fuels:



Lower VMT and more alternative fuels have unintended consequences...



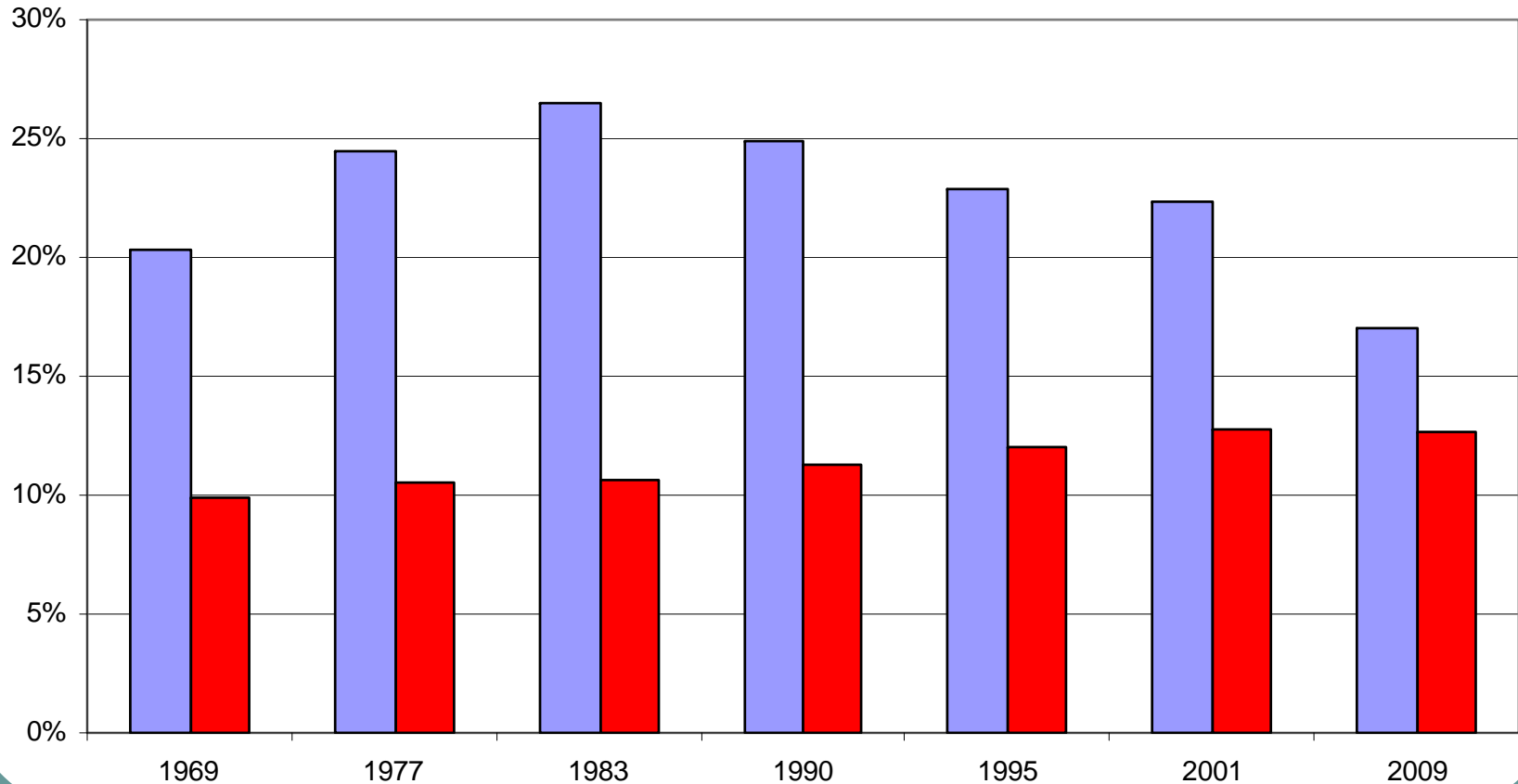
Source: McGuckin analysis of HPMS

A New Challenge: Aging Beyond Driving



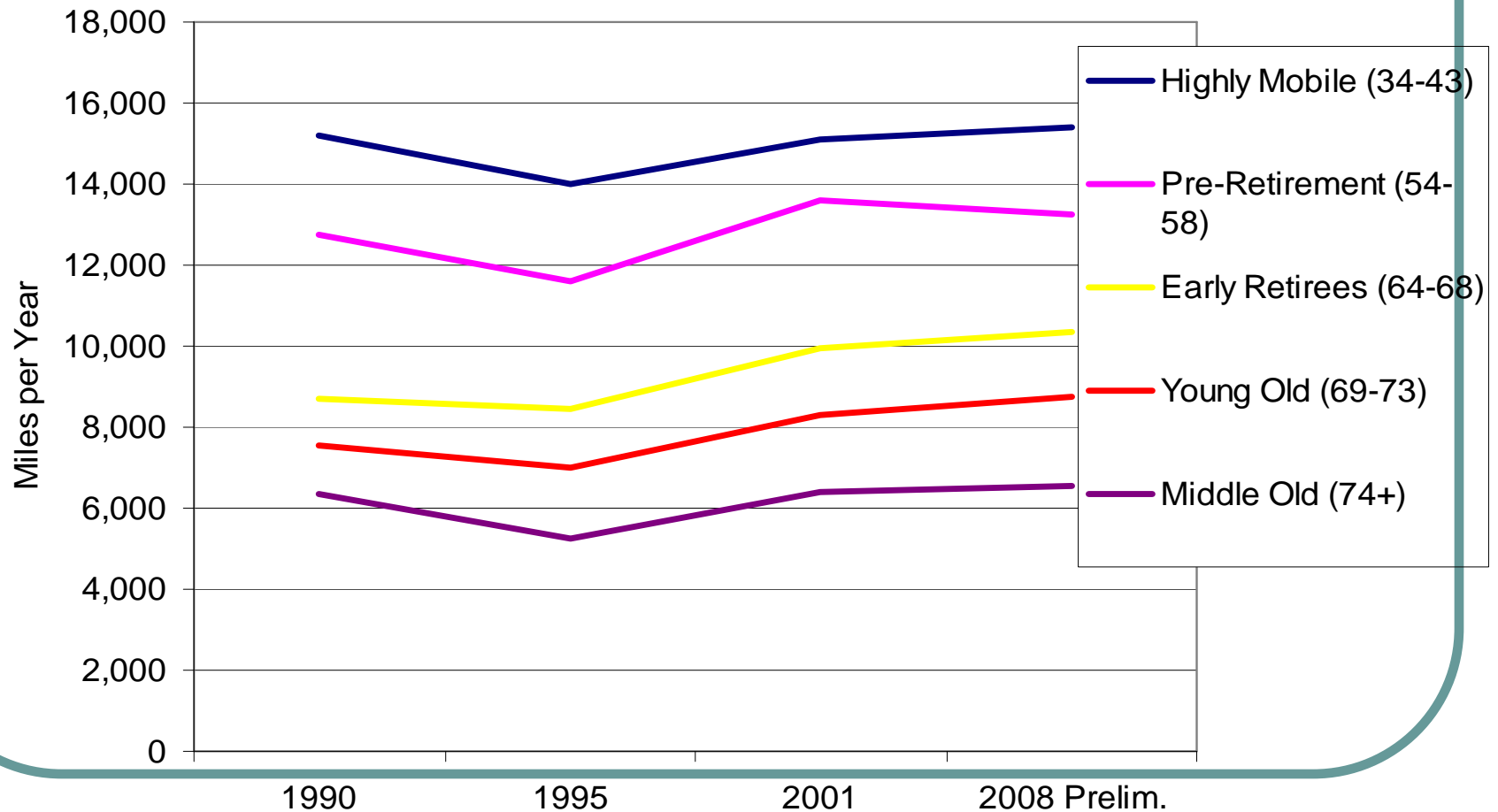
The population is aging out of high-traveling years...

Percent of Population 20-34 and 65+



As people age they drive fewer miles...

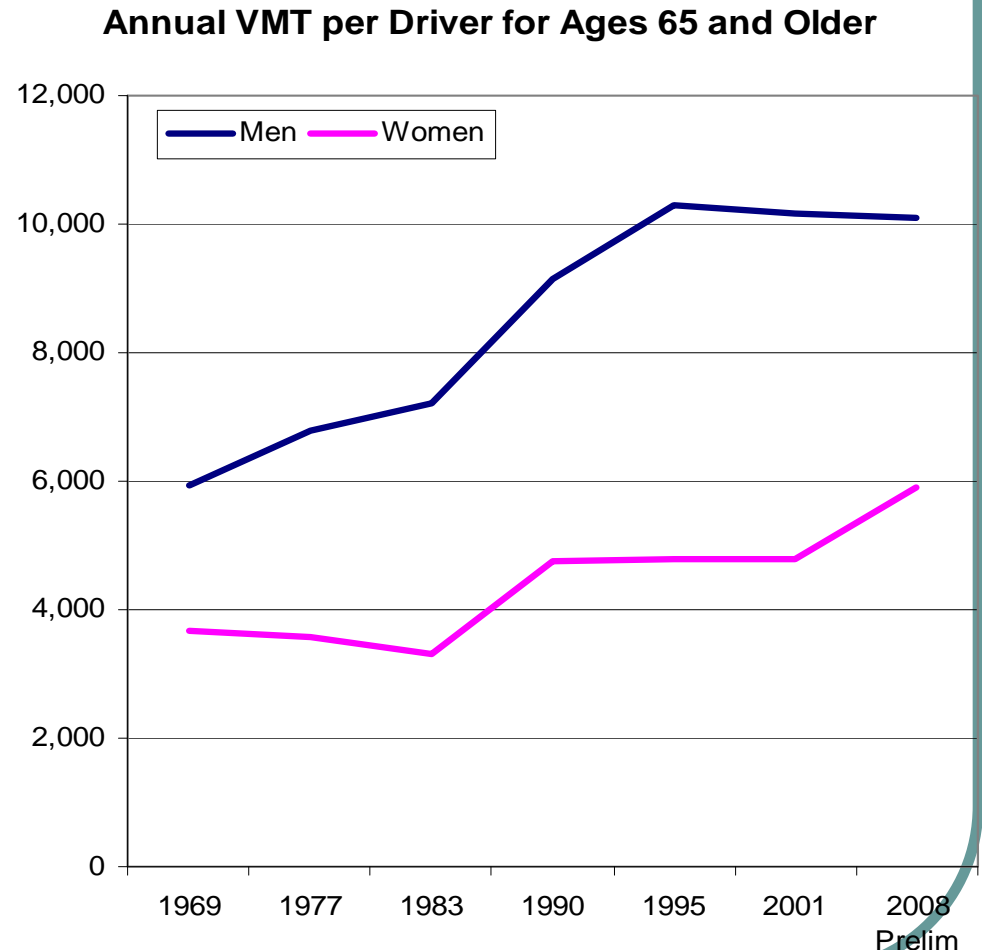
Annual VMT per Driver by Age Class



Source: NHTS data series

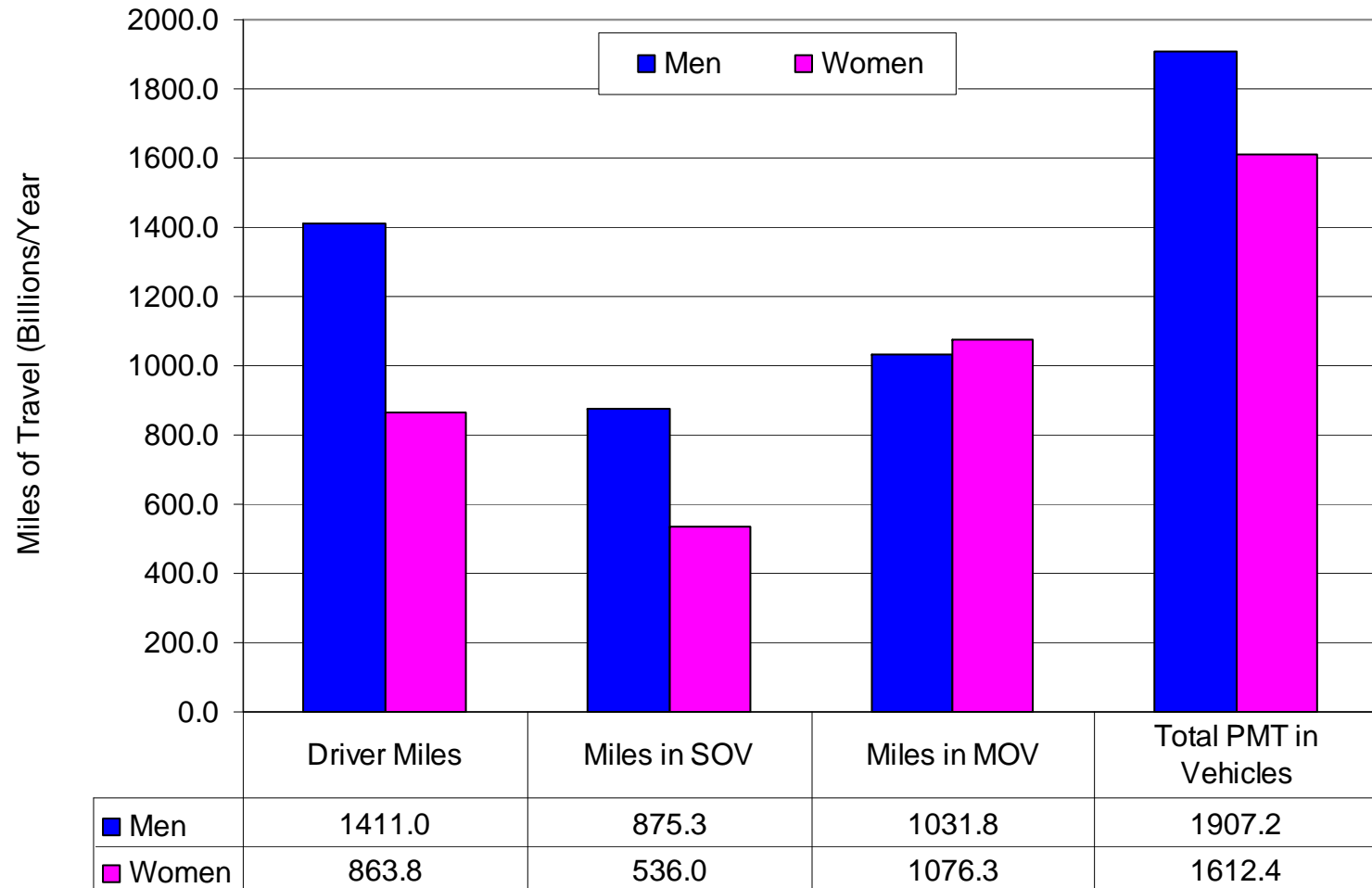
But women drivers aged 65 and older are traveling at historically high rates...

- Men's vehicle travel seems to be leveling off
- While women's vehicle travel continues to grow
- Younger cohorts have different travel than current elderly



Source: NHTS data series

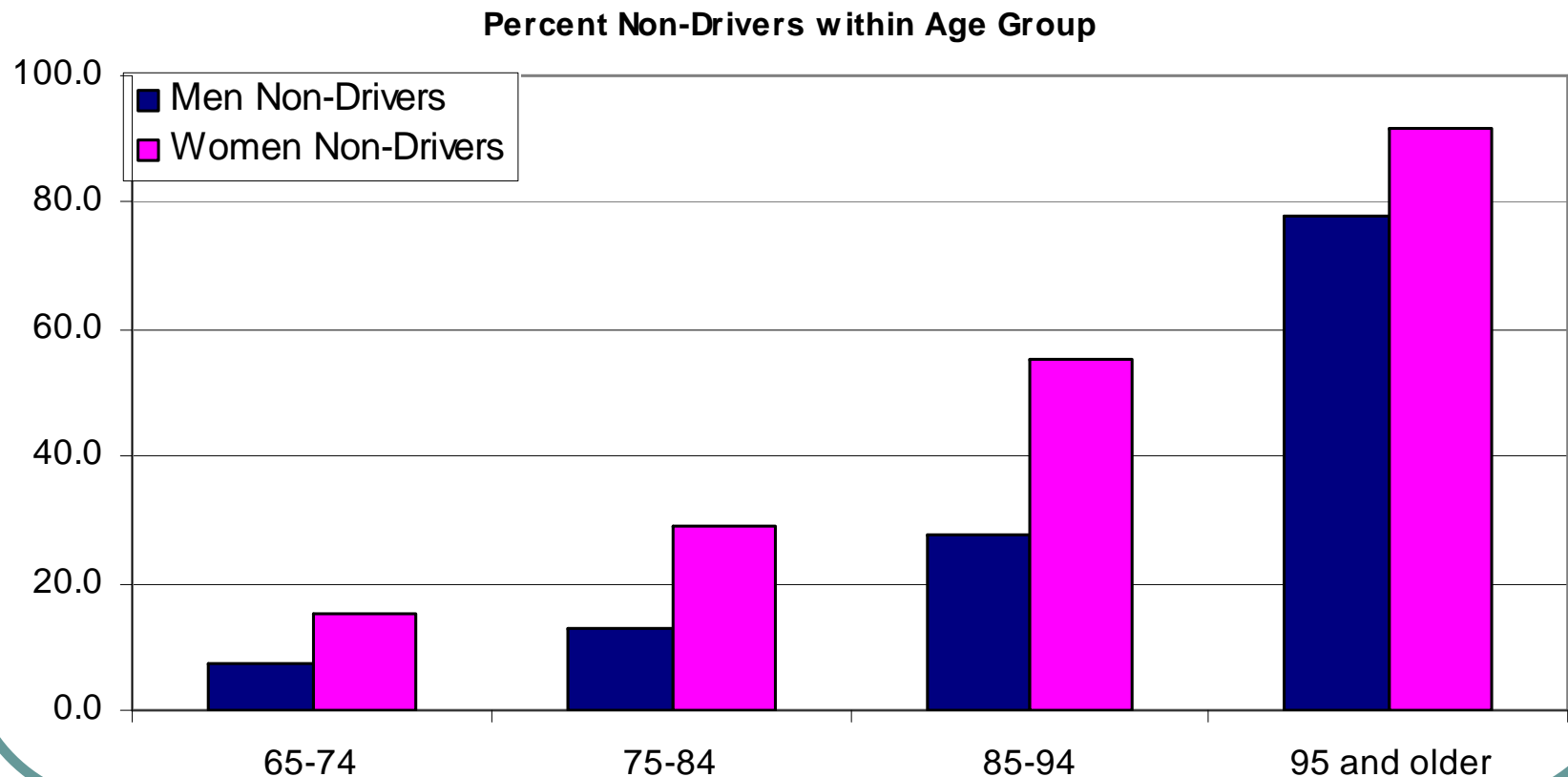
While women *drive* fewer miles they travel a bit *more* in multi-occupant trips...



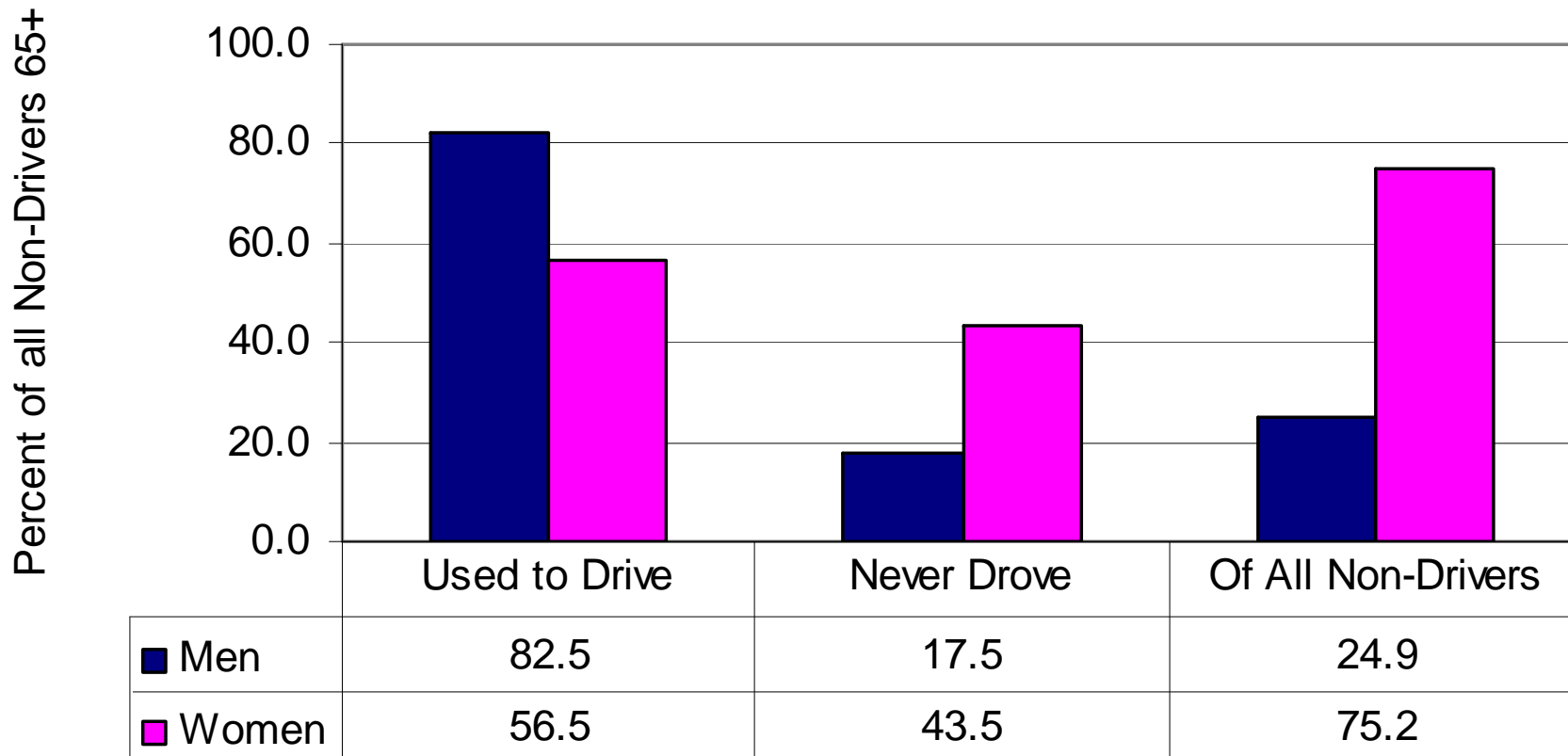
Source: 2009 NHTS, Men and Women 16+

Increasing longevity means many seniors will age past driving...

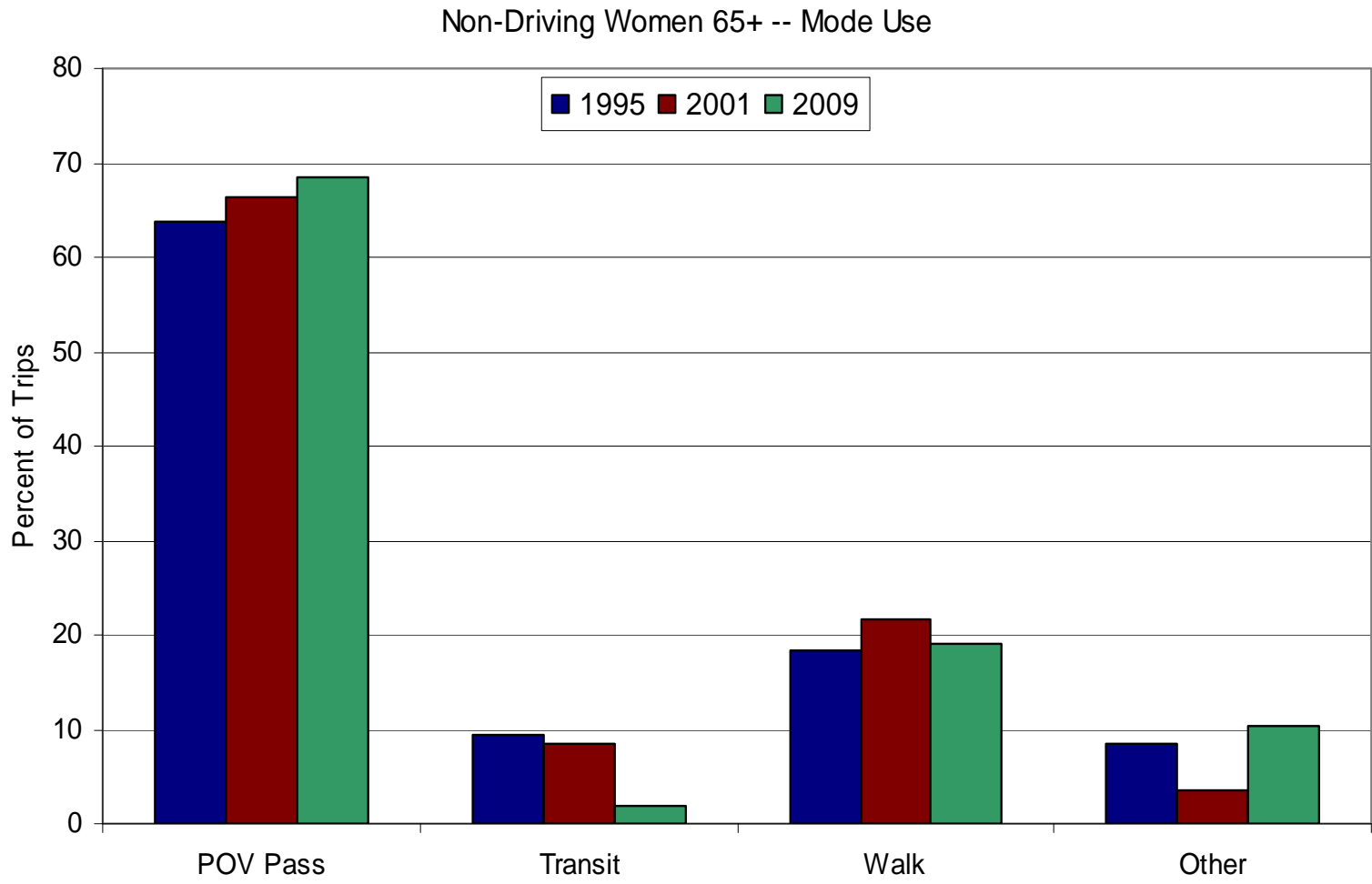
Driving cessation doubles each decade after age 65, and women cease driving at twice the rates of men



Of all non-drivers over 65, three-quarters are women ...



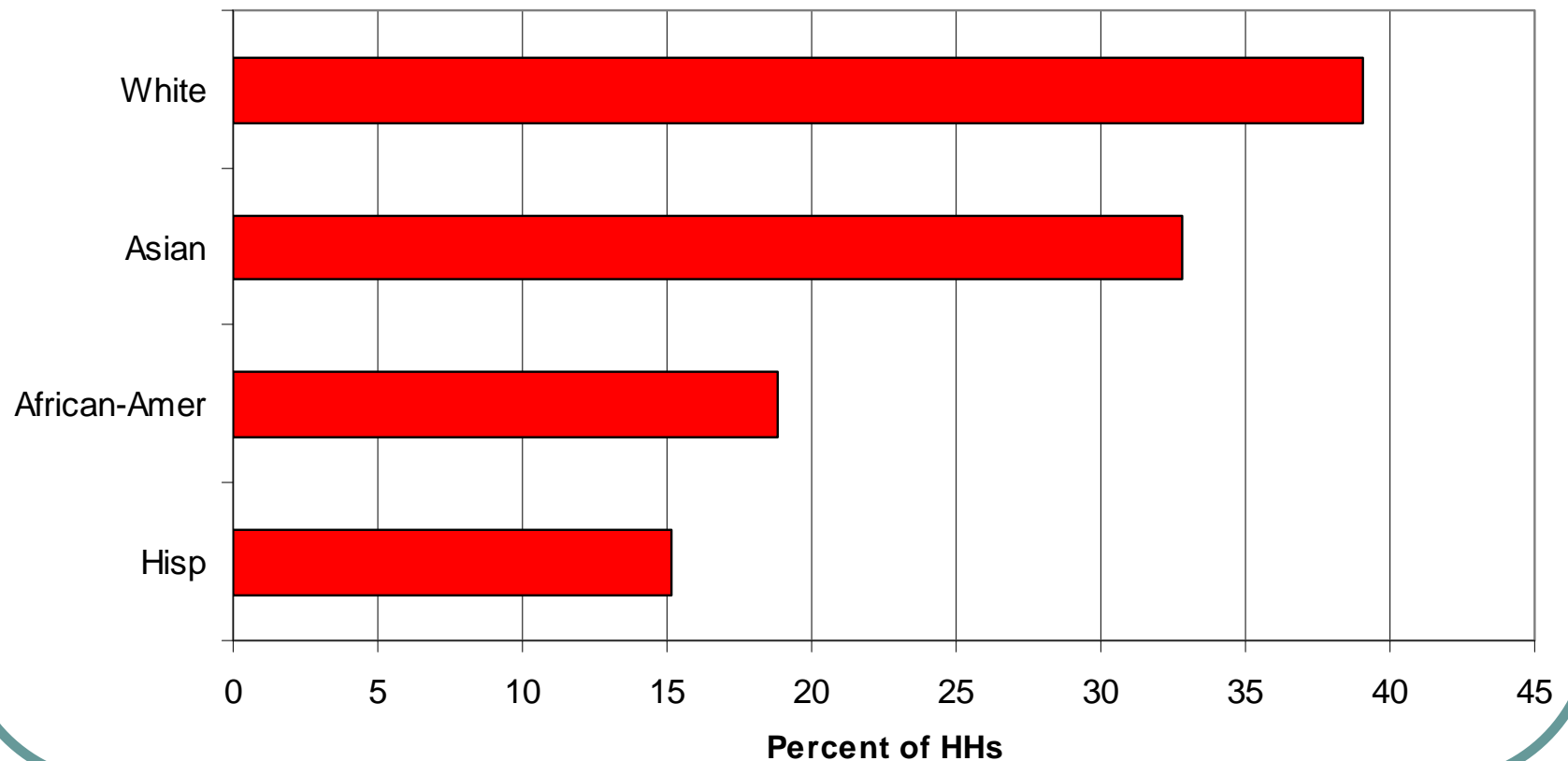
Trends in travel by non-drivers 65+ show a growing reliance on POV...



Source: NHTS data series

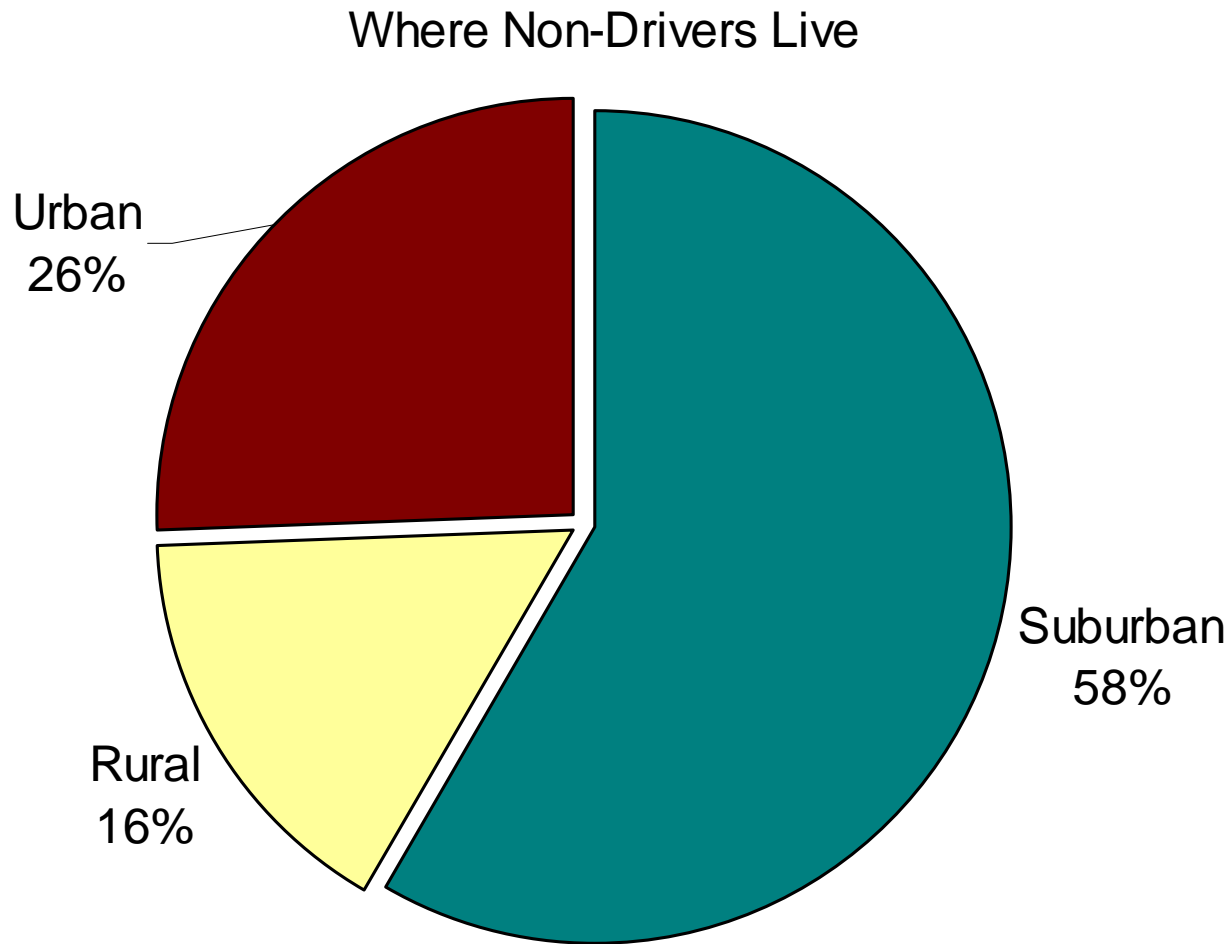
Many non-drivers do not have easy access to transit...

Percent of Households with a Non-Driving Women 65+ Located More than 1/2 Mile from Closest Bus line



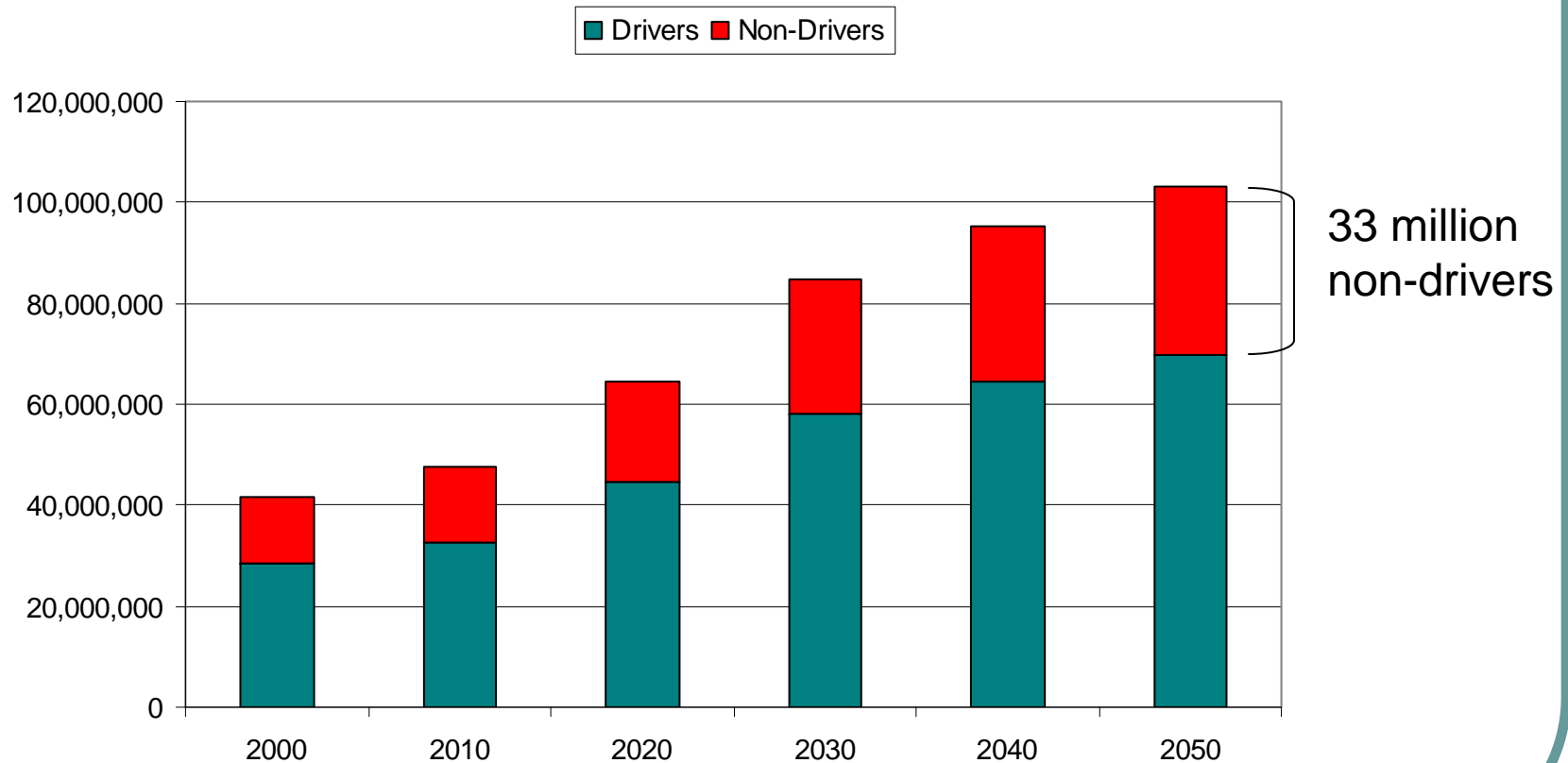
Source: 2001 NHTS

And live in less dense areas—3/4 in rural and suburban areas...



To provide transport for non-driving elders is a massive planning challenge...

Cohort Growth in Drivers and Non-Drivers 65+



Source: 2009 NHTS and US Census projections

Just some food for thought...

Share your own thoughts!