Recent Changes and Future Directions In Travel Behavior

Novel Modes Workshop

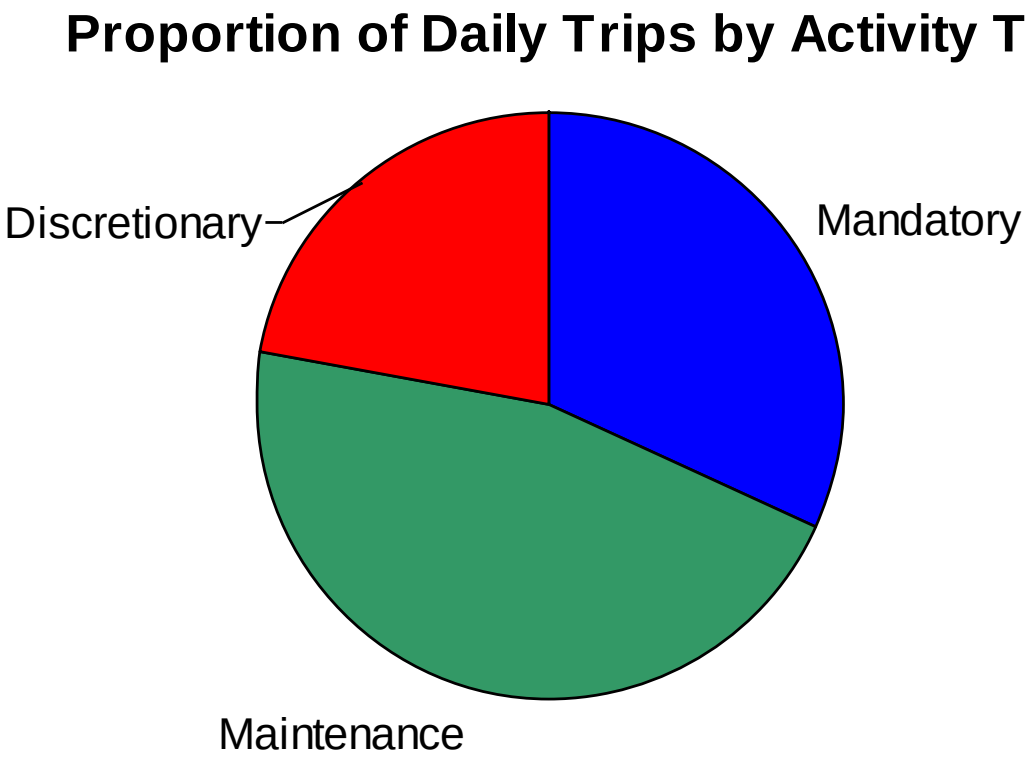
Nancy McGuckin

Travel Behavior Analyst

Outline of this discussion:

- Context of travel behavior (e.g. travel as derived demand—but not exclusively!)
- Recent changes indicate an unprecedented shift: people are traveling less for daily activities
- Look at the layered effect of demographic, social, economic, and technological changes
- Some thoughts on future directions

People travel to engage in activities:

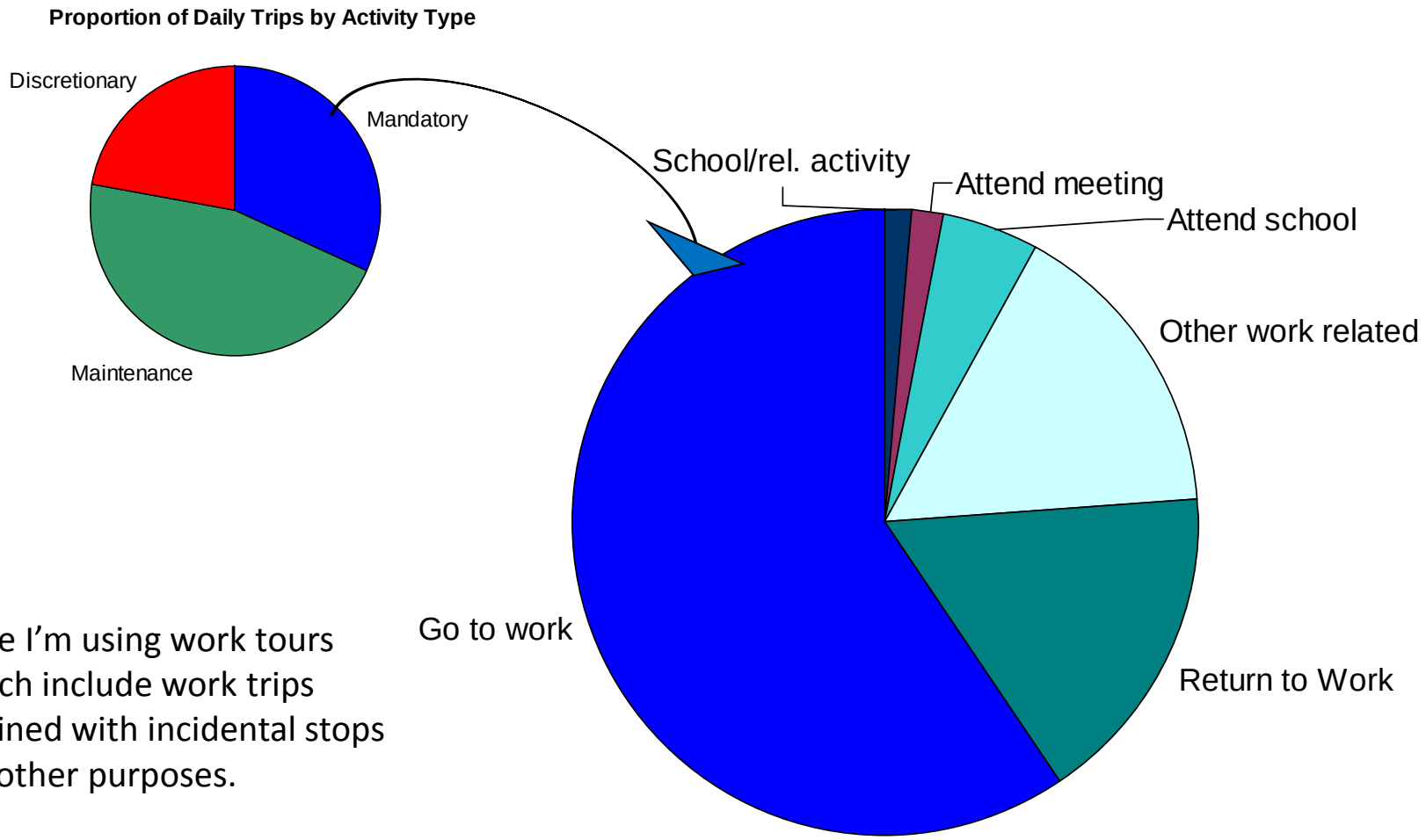


Mandatory travel (work, school) have little flexibility in schedule or location

Maintenance travel (shopping, errands) have more flexibility in time and/or location

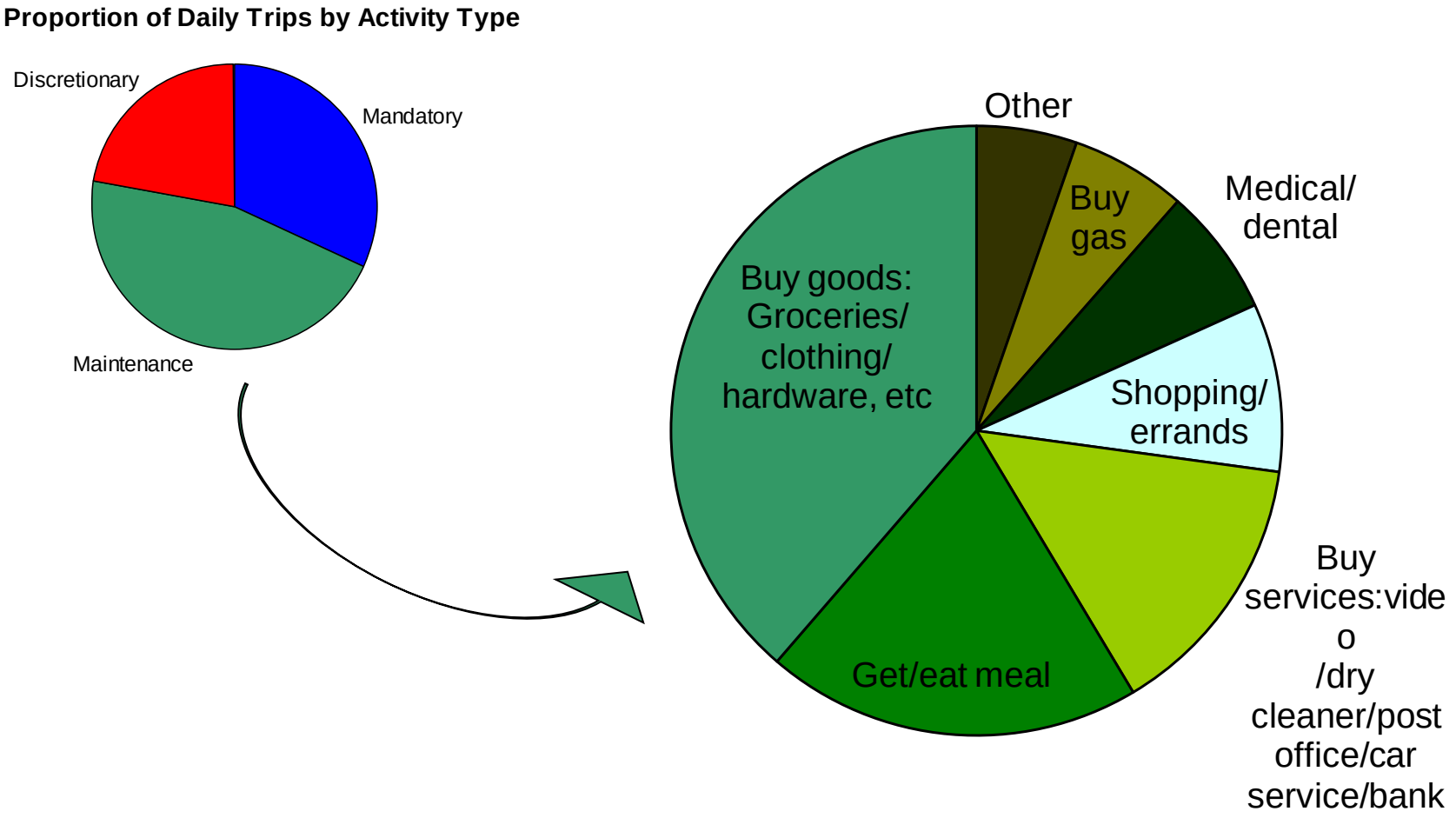
Discretionary activities (social visit, recreation) have the most flexibility in time and location

Mandatory activities are dominated by work:

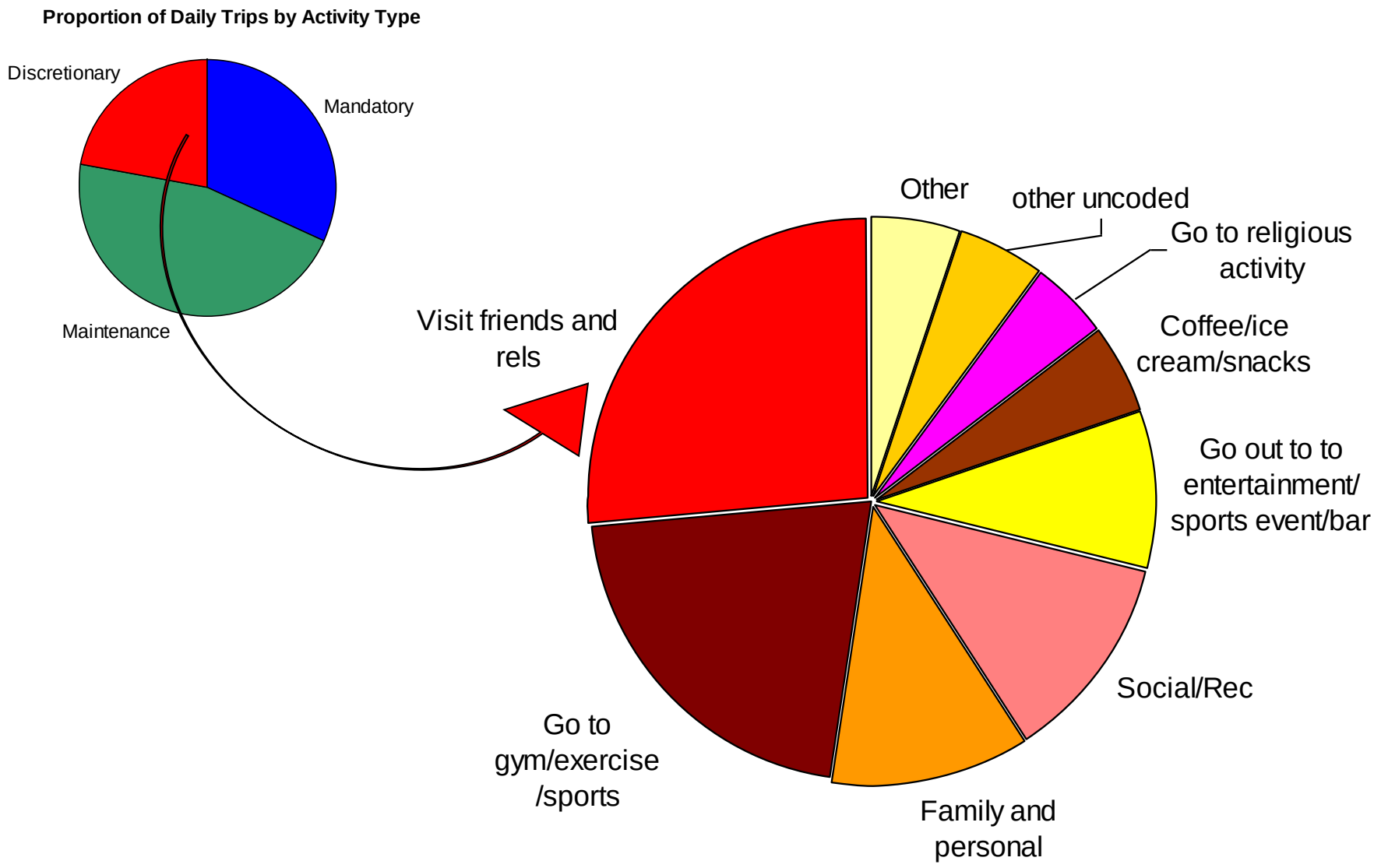


Here I'm using work tours which include work trips chained with incidental stops for other purposes.

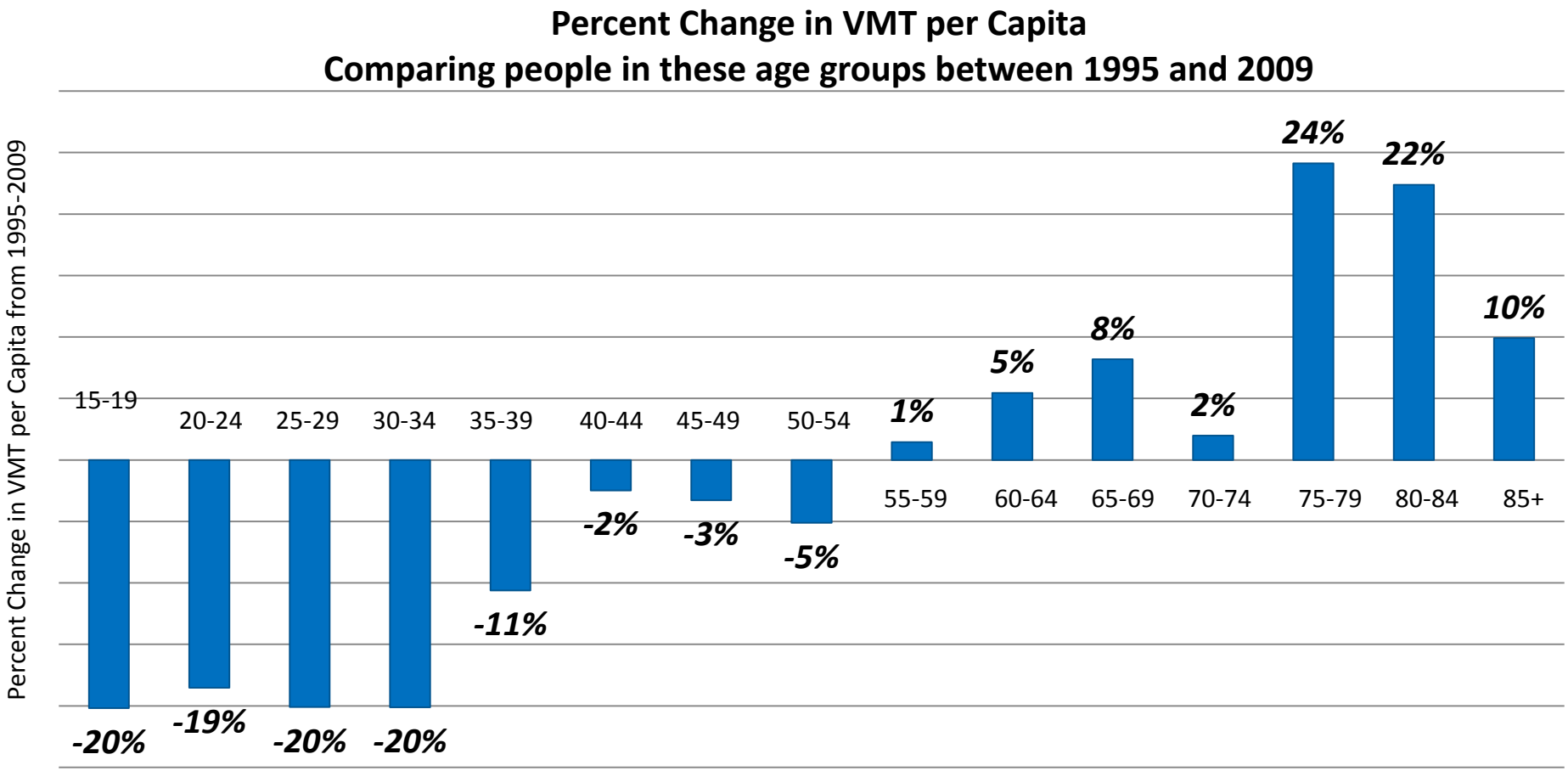
Three-quarters of travel for maintenance activities includes shopping, errands, and meals…



Discretionary is the most diverse:



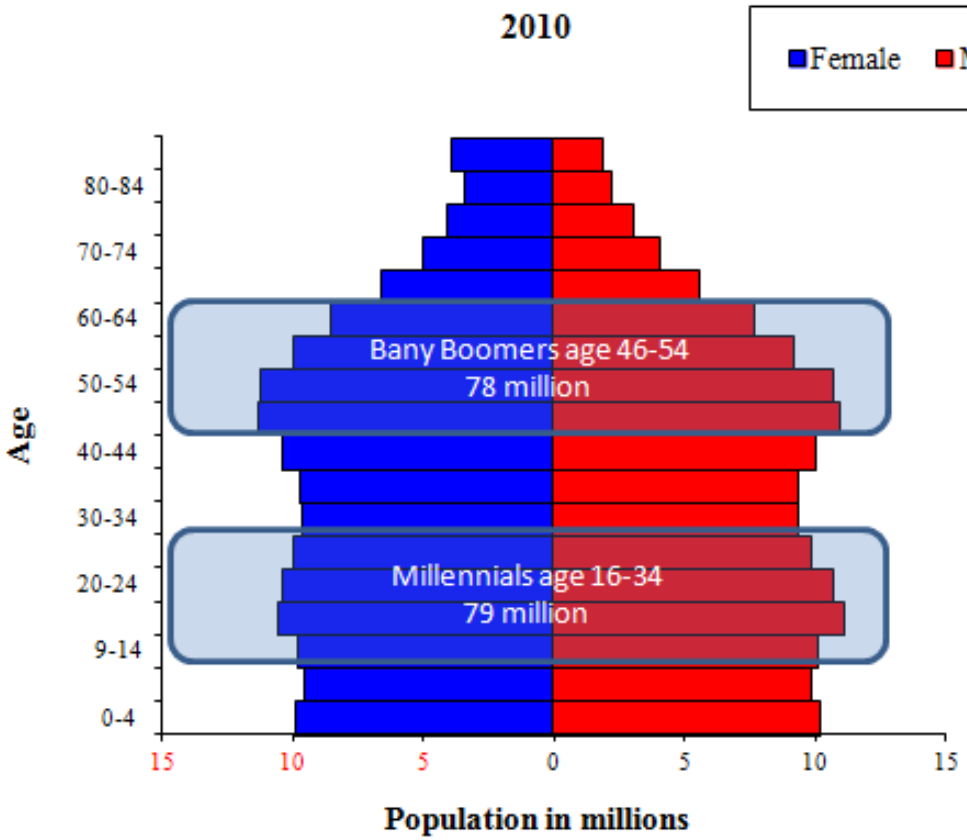
Young age groups have changed the most--their decline in driving has garnered some interest. This graph compares changes in driving rates by age group:

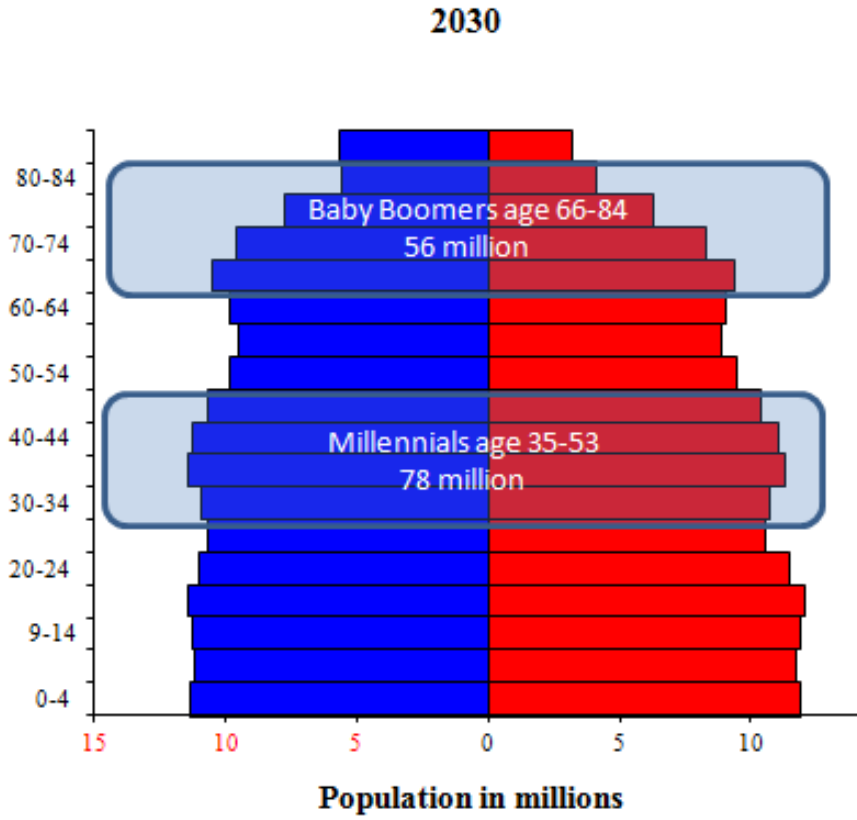


Source: McGuckin's analysis of NHTS Data Series, comparing VMT per capita from the NHTS data series, 1995-2009

The younger age group (millenials) are a big cohort, at least as numerous as the baby-boom:

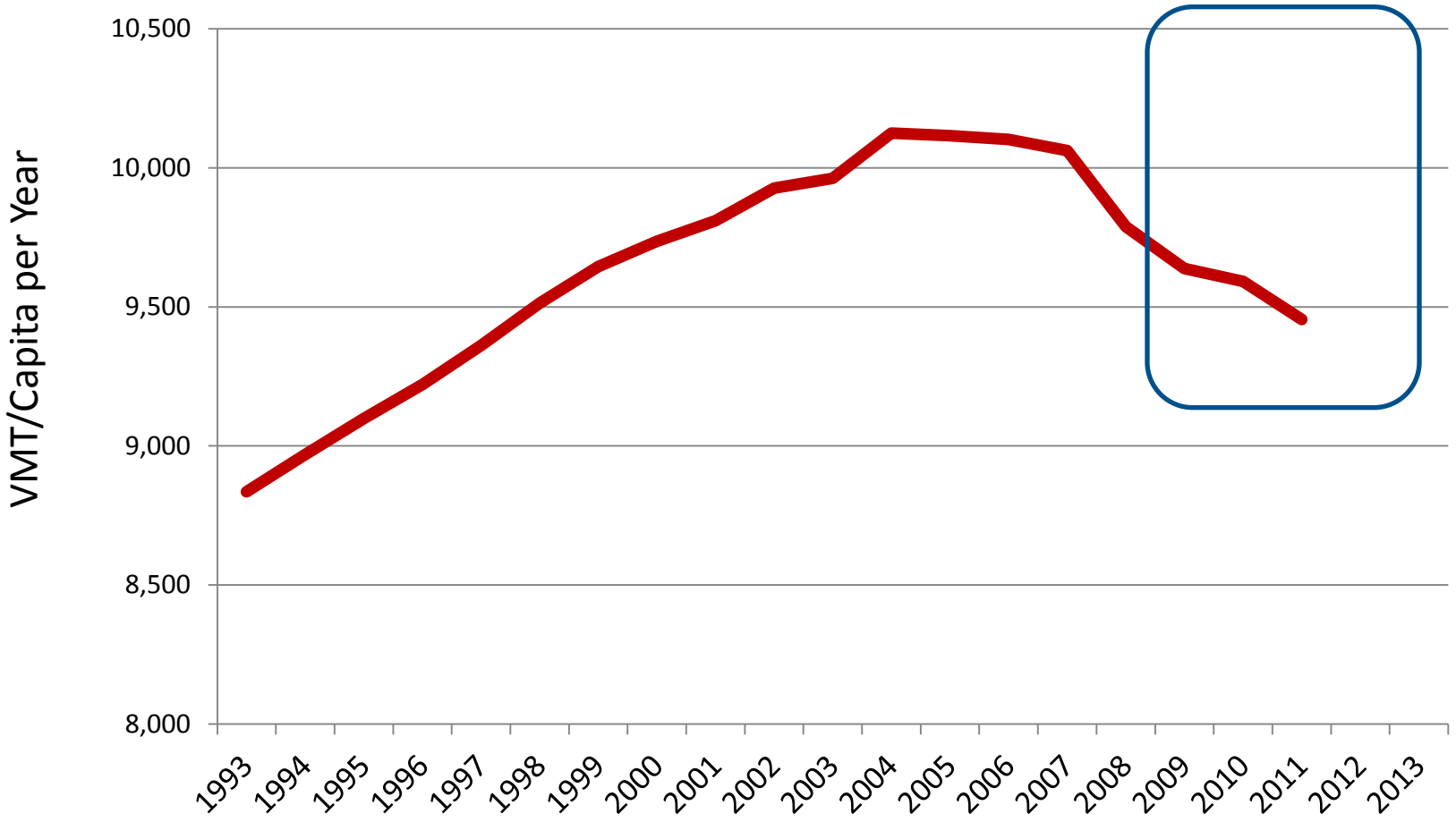
In 2030, Millenials will outnumber Baby-Boomers by 22 million:





Source: McGuckin's analysis of Census historic tables 1900 to 2010, and 2030 forecast

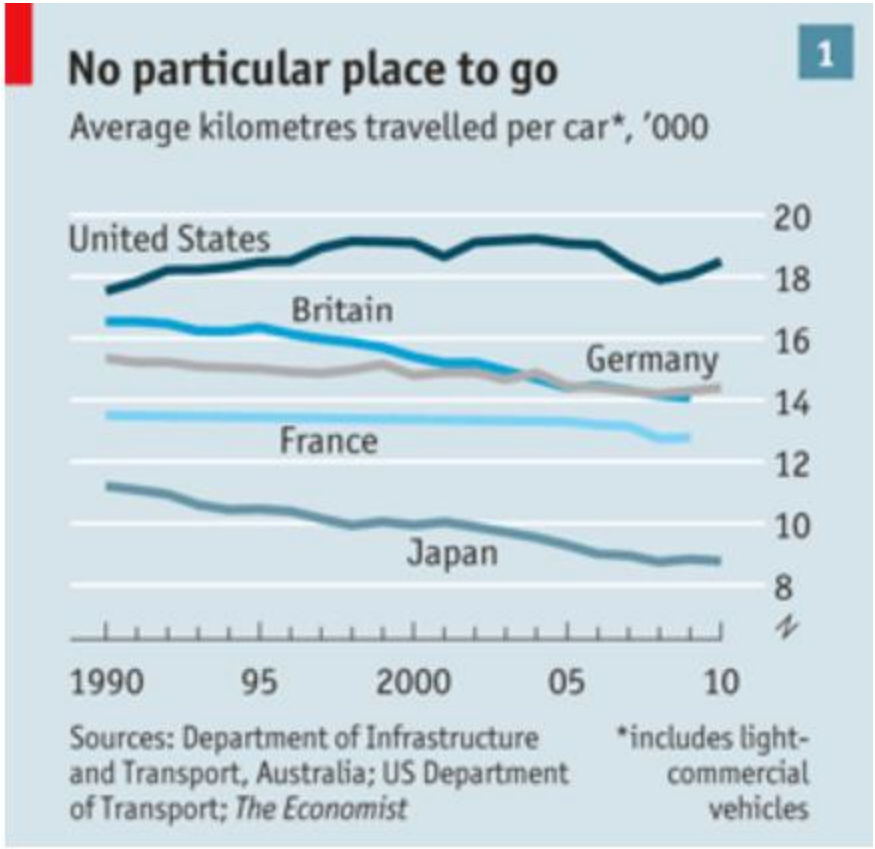
As a result of big changes in a big population group, overall national trends show an unprecedented change:



Source: McGuckin's analysis of Census Population (Jul 1) and HPMS Historic VM-1 Tables including all VMT and Census Population Estimates

Summary

- The shifts in travel are strongest in younger age groups—Millenials--especially young men.
- Baby Boomers are driving much more than people of the same age two decades ago, but even their travel is slowing as the exit the workforce and age past driving.
- The same phenomenon (declines in travel) occurs throughout the western world



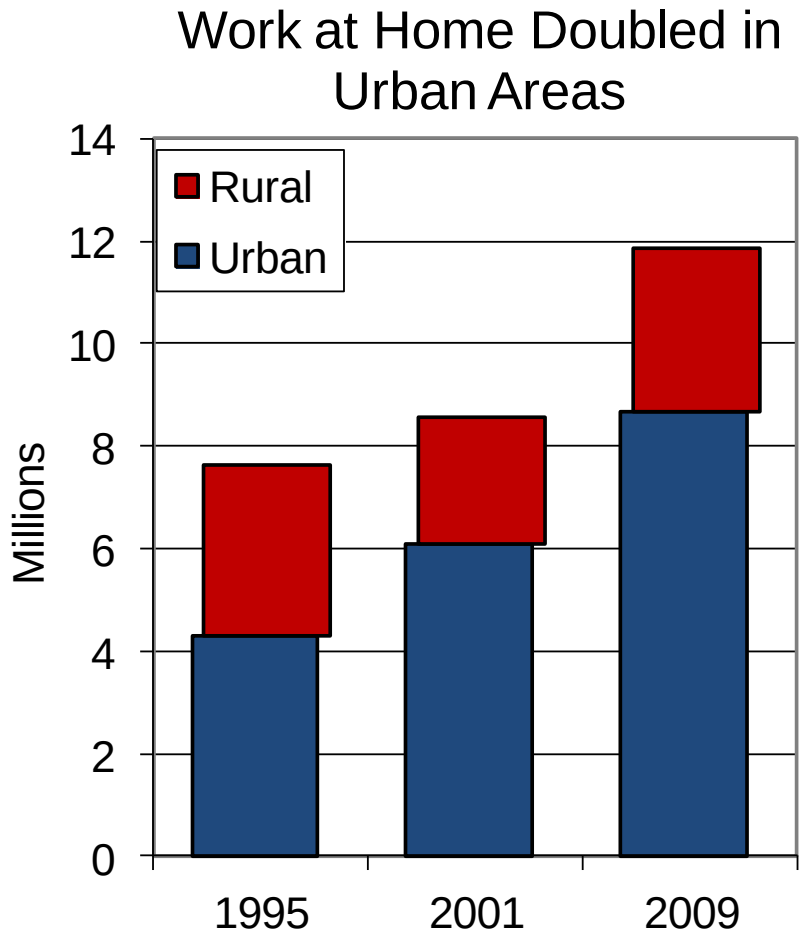
Source: The Economist, the Future of Driving, 2012 at: http://www.economist.com/node/21563280/

Why have travel rates changed?

- Economic Necessity
- Information-Communication Technology
- Social Value of Travel

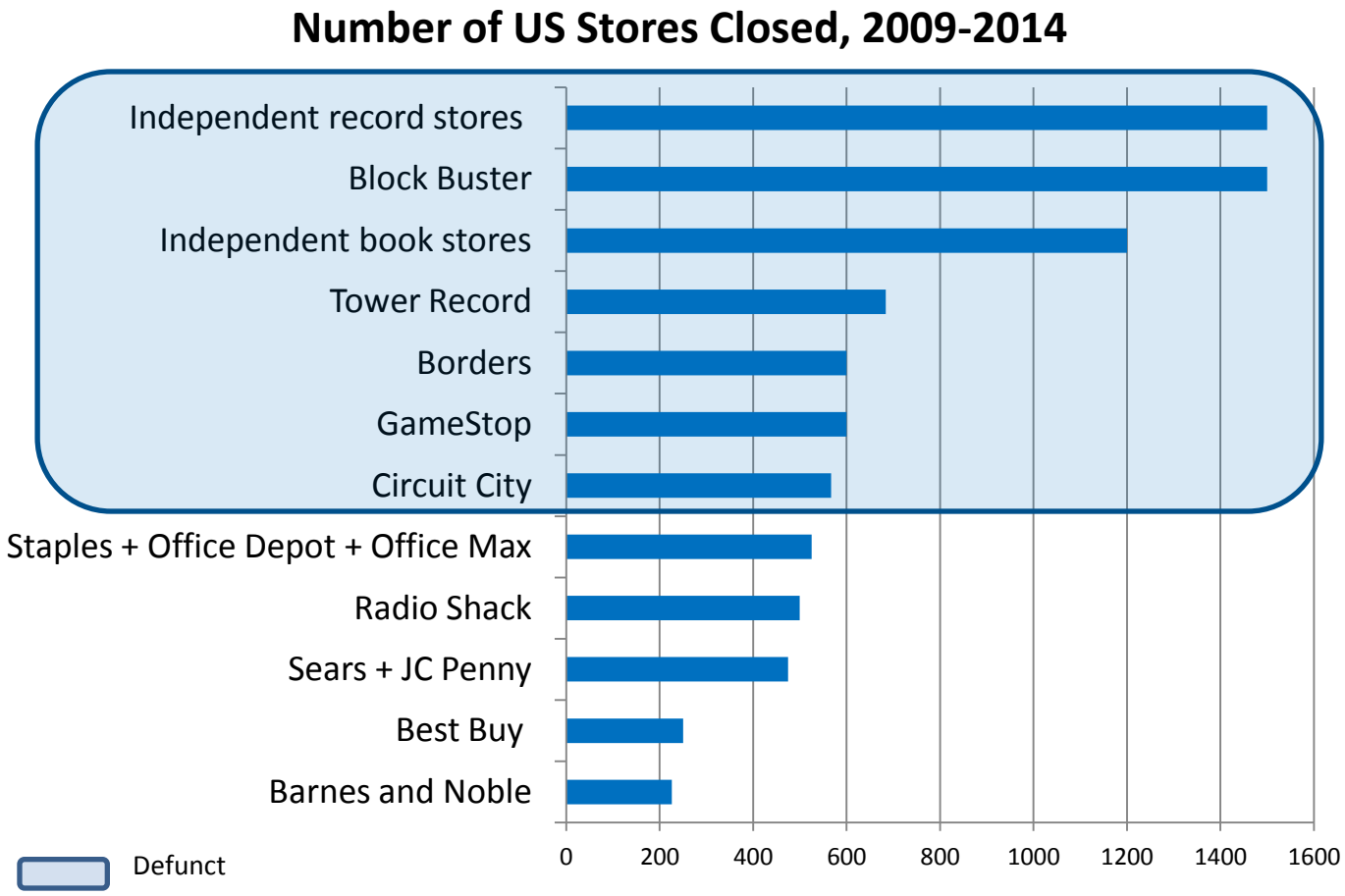
Economic necessity: ***Mandatory*** travel has declined the least

- Work trips per worker about the same, BUT fewer workers and fewer workers commuting to work (as baby boomers started to retire)
- More people working at home →
- On-line higher education (in part or in whole)



Technological replacement:

Maintenance travel declined the most. On-Line activity is literally changing urban landscapes.



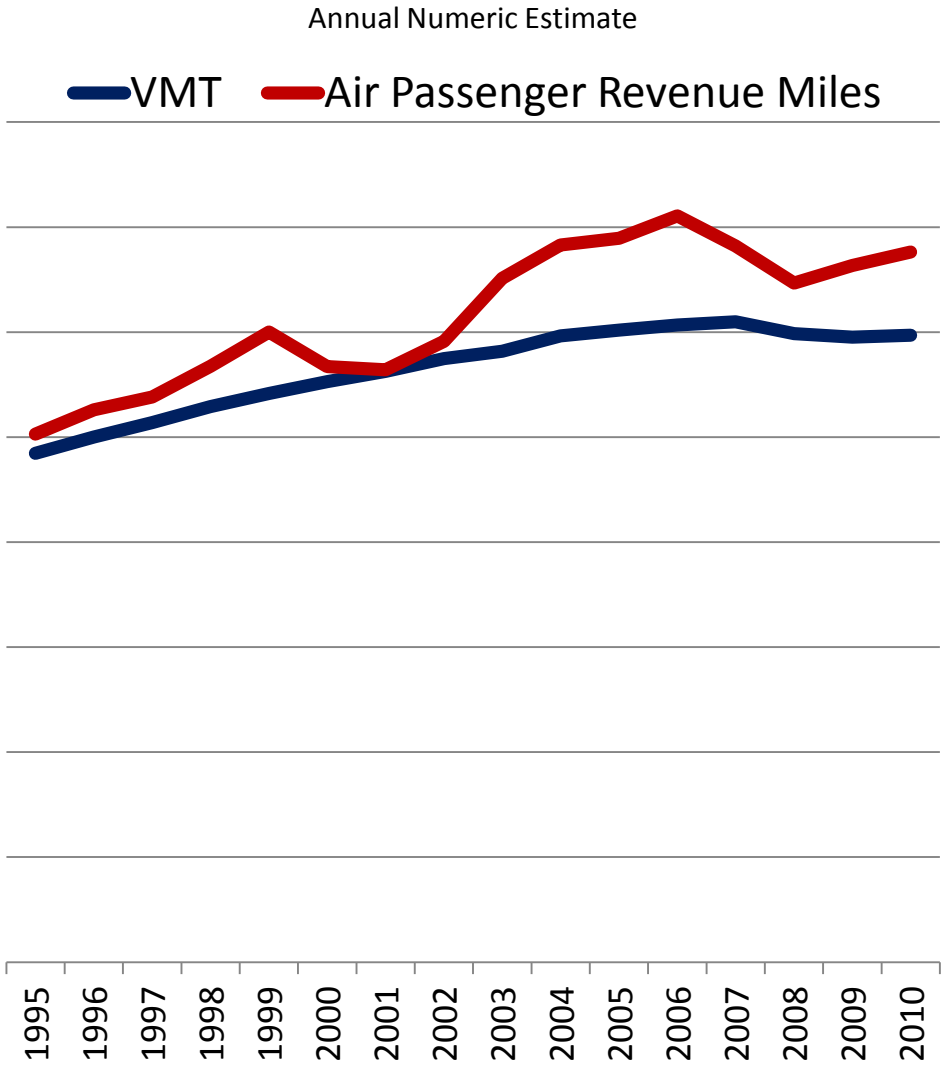
Nancy McGuckin's analysis, sources: Business Insider, Wikipedia, USA Today

Social Value of Travel:
Discretionary travel stayed about the same:

Local discretionary travel stayed about the same.

Long-distance travel increased slightly

(This graph shows the increase in air travel (red line) while vehicle travel flattened (the blue line)



Source: McGuckin's analysis of HPMS and BTS data

How do these changes affect choice of travel modes?

- Social impacts: New attitudes toward vehicle ownership
- Economic impacts: Shift to transit during gas price spikes
- Situational: Walk and bike when possible for exercise and pleasure
- Environmental: Hybrid/alternative fuel vehicles

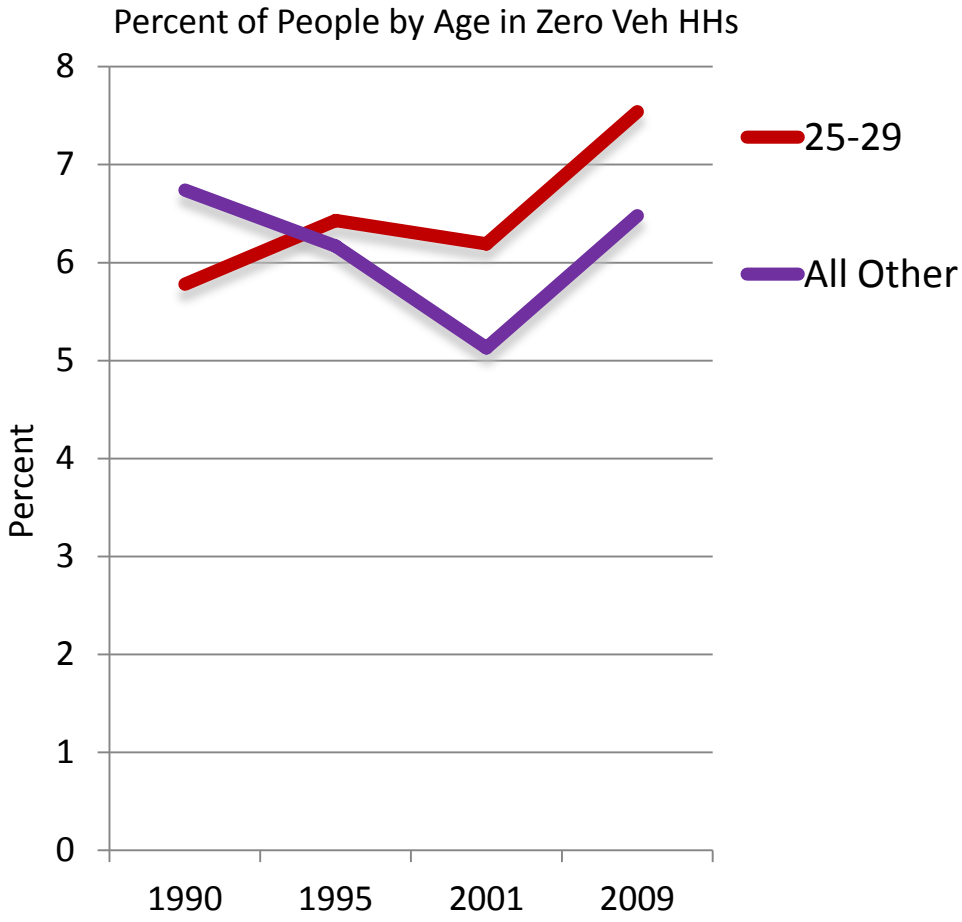
Social impacts on mode: Attitudes may be changing about auto ownership

"For Millennials, cars are not status symbols; they are perceived as unnecessary luxuries that are:

- Expensive
- Harmful to the environment
- Antisocial

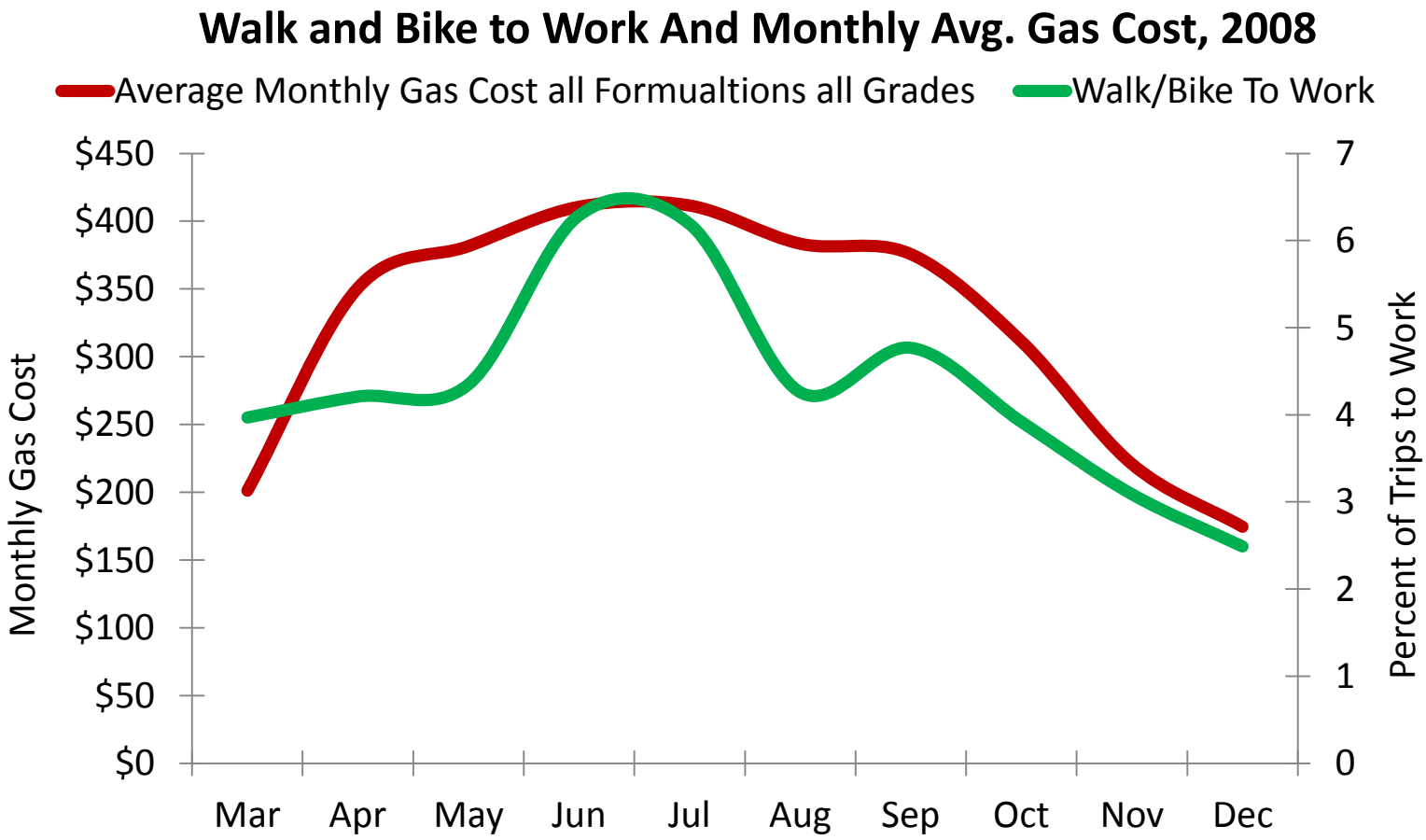
They would rather own a great smartphone or laptop instead. (Real-time, portable technology helps to confer the sense of "freedom" that owning a car does not)"

Latitudes Report on Phase 1 findings for TCRP "Millenials and Mobility"



Source: McGuckin's analysis of NHTS Data Series

Economic impacts on mode: Rising gas prices do effect choice of mode

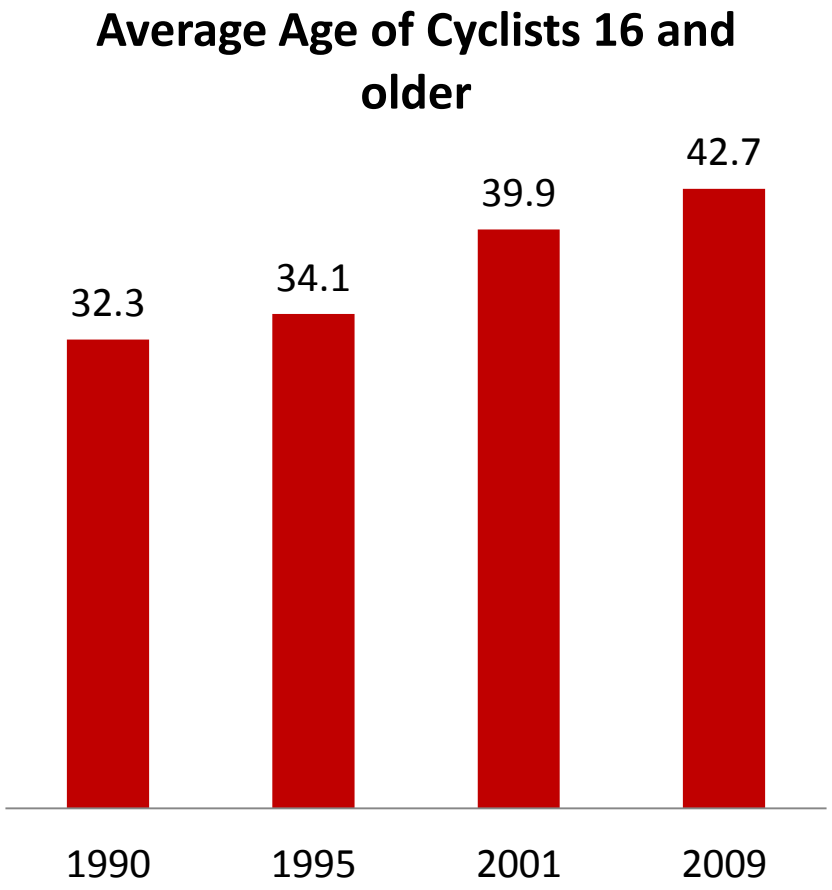


Source: McGuckin's analysis of 2009 NHTS, Gas Cost from EIA.GOV

Demographic impacts on mode:
Although there has been a lot of new interest in cycling, cyclists are getting older (and fewer children are cycling):

Baby Boomers continue to cycle and the average adult cyclist is over ten years older than he(she) was just two decades ago.

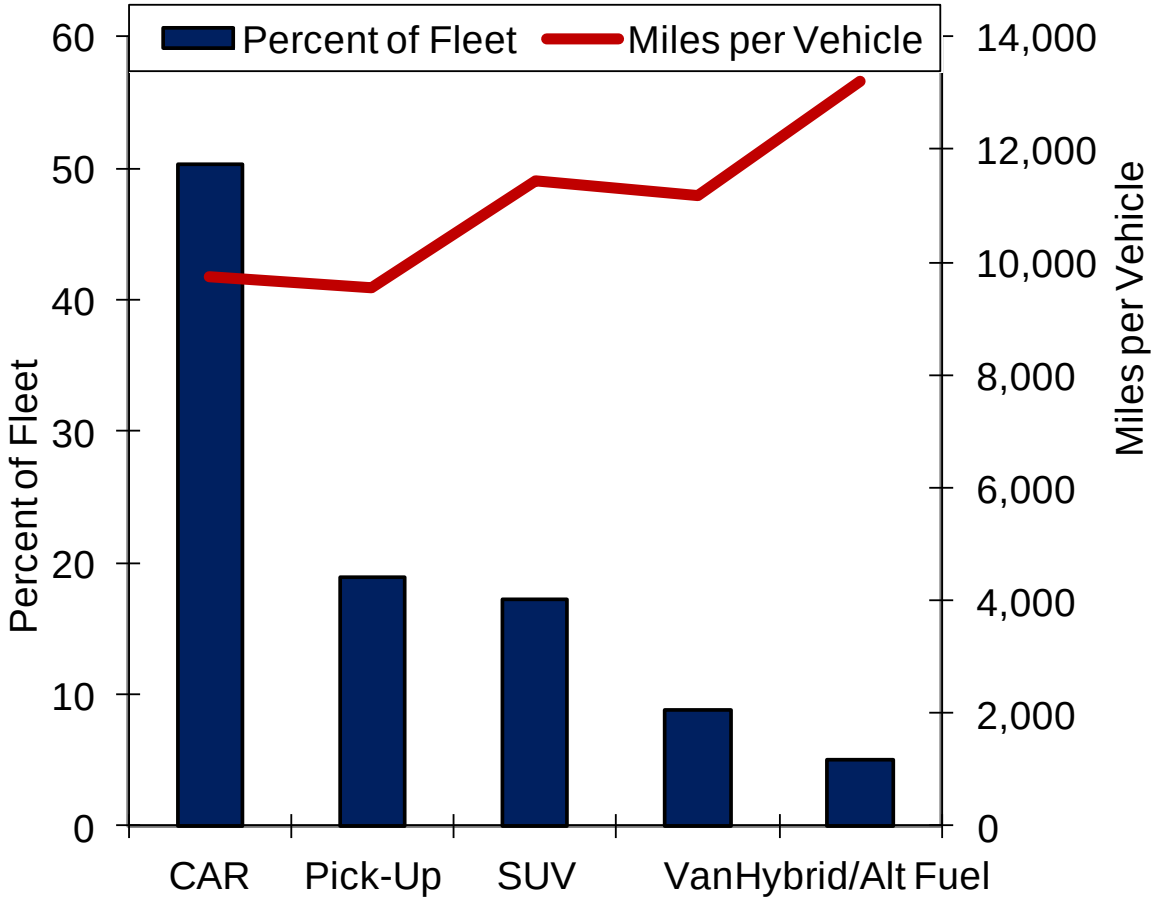
Aging of this group impacts infrastructure design for cyclists in many of the same ways it does for pedestrians and drivers.



Source: McGuckin's analysis of NHTS Data Series

Vehicle technology impact on mode: Where is the hybrid market going?

Currently, the largest segment of hybrid car owners is the Baby Boomers; however Gen Y will make up about forty percent of car buyers within 10 years.



Source: McGuckin's analysis of 2009 NHTS

People who drive Hybrid/alt fuel vehicles are richer, older, live further from work and drive more miles overall:

NHTS 2009 Var Name:	Label	Drives a Hybrid	Drives another Passenger Vehicle
Income	**Household Income**	$82,777	$76,135
R_AGE	**Respondent Age**	48.09	46.62
VEHMILES	**Miles vehicle driven last 12 months**	14,260	11,258
VEHAGE	**Vehicle Age**	3.6 years	9.0 years
DISTTOWK	**Distance to Work in Miles**	18.2 miles	14.4 miles

For people with many choices available, Mode use can be situational (rather than habitual):

	Walking	Driving	Bus/Rail	Bicycle
Optimal Situations	Nice Outside Need Exercise	Getting There ASAP Bad Weather Shopping	To or From Work Alone	Nice Outside Need Exercise
Pereived benefits	Better for Environment Affordable Connected to Community	More Personal Space Flexible	Pay-per-Use/Affordable Better for Environment	Better for Environment Affordable Connected to Community
Top Barriers	Slow	Too Expensive	Lack of Personal Space	Slow Not Child Friendly Not Compatible with Other Modes

Source: TCRP Study of Millenials and Mobility, Latitudes Phase 2 Findings, page 15

Transportation Trends: ENVIRONMENTAL CONSIDERATIONS

Millennials are thinking about the environment more than generations before them. San Franciscans & those living with roommates are the most likely to cite environmental considerations as a motivating factor in their transportation decisions.

*% Say 'I **care about the environment**' as a motivation for their transportation routine overall (Q31, n varies by sample group)*	
TOTAL	34%
Boston, MA	35%
Chicago, IL	33%
San Francisco, CA	**42%**
Seattle, WA	37%
Portland, OR	35%
Washing-ton, DC	25%
Living w/ spouse or partner	33%
Living w/ parents or other family	36%
Living with roommates	**44%**
Living alone	31%
No children (aged 18 or under living in HH)	37%
Parents (of children 18 or under living in HH)	30%

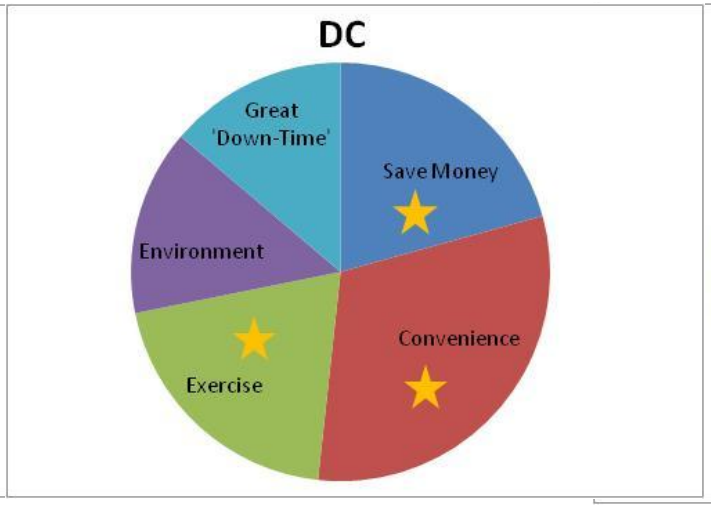
37%

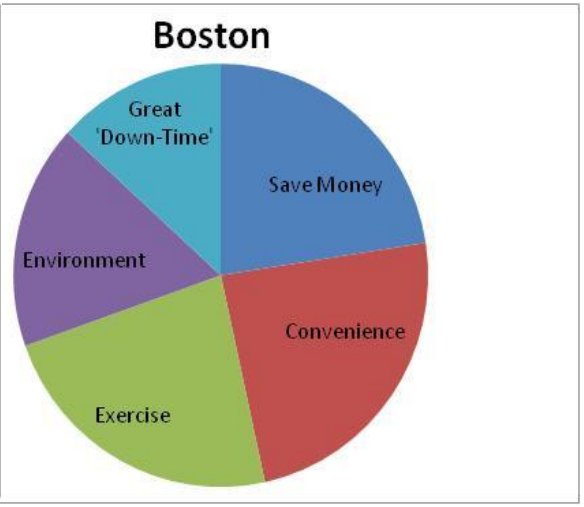
total say they are increasingly feeling a bit better about their "carbon footprint" (Q34)

Source: TCRP Study of Millenials and Mobility, Latitudes Phase 2 Findings, page 16

It seems millenials in the cities studied balance competing factors in their transport choices:

- Convenience
- Exercise
- Save Money
- Environmentally Friendly
- Enjoyable ("Great down time")



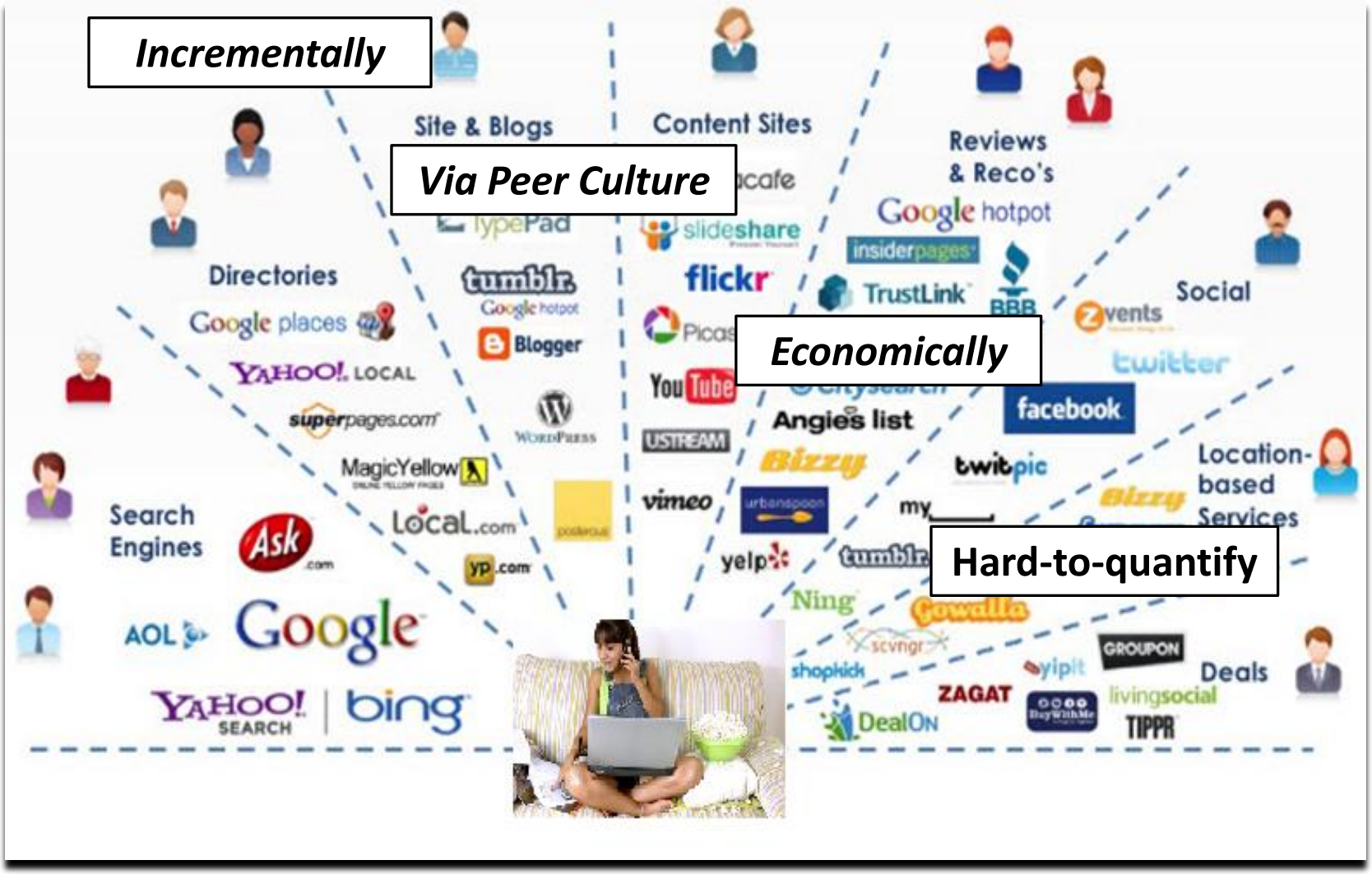


Source: TCRP Study of Millenials and Mobility, Latitudes Phase 2 Findings, page 16

Some thoughts on where are we heading

- Widespread adoption of new technology
- Some evidence for substitution effects for social and shopping
- System-wide changes in the brick-and-mortar and delivery for goods and services
- “A Million Markets of One”

People are responding to changes in information technology the way people do:

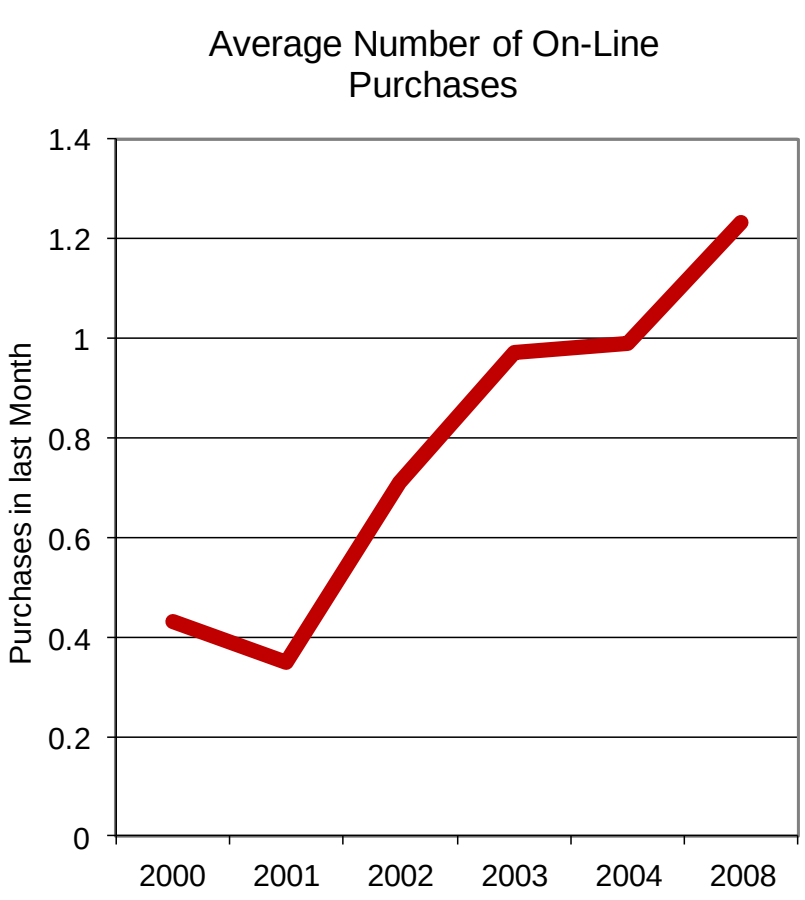


System-wide changes are taking place all around us:

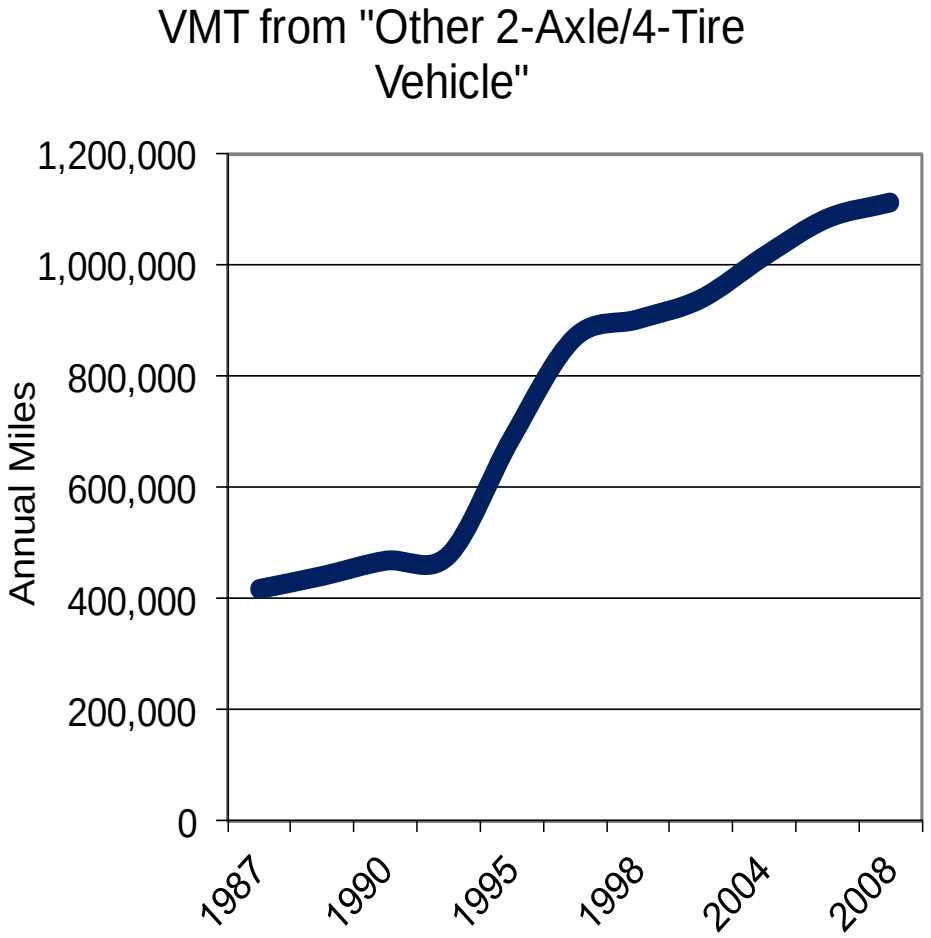
(and faster than I can make a new slide!)

Old School	New School
• Bookstores	• Amazon /Kindle
• Travel Agent	• On-line booking
• Blockbuster	• Streaming Video
• Avis/Hertz	• Zipcar
• Greyhound	• Megabus
• Taxi	• Uber/Lyft
• Priceline	• Hotel Tonight
• Facebook/Myspace	• IM/Skype/Vine
• Big Data	• Bigger Data
• The Internet	• The Internet of Things

Increase in small commercial vehicle travel may be related to internet deliveries…



Source: USPS HDS Data, 2008 from NHTS



Source: Historic HPMS

And urban goods delivery will continues to grow:

Bike-train

The E-Deliver

Source: McGuckins analysis and projection of HPMS VM-1 data, re-creating the US PIRG graphic Fig 1 in “New Directions’

Technology enables “a million markets of one”-- individualized modes based on context

New mobility apps:

- Digital maps and navigation
- Location-based services
- Multi-modal journey planners
- Multi-modal traveler information services

Smart Transactions (infrastructure use, insurance, parking, etc):

- Pay as you driver/insure as you drive
- Credit card smart phone ticketing

Thank you!

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www.travelbehavior.us