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# Climate Policy in an Energy Boom

## Opportunities to Reduce Vehicle Use

Current Trends and Future Prospects

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# Social and Economic Interactions Create Demand for Travel

Time

## Growth in:

- Income
- Knowledge

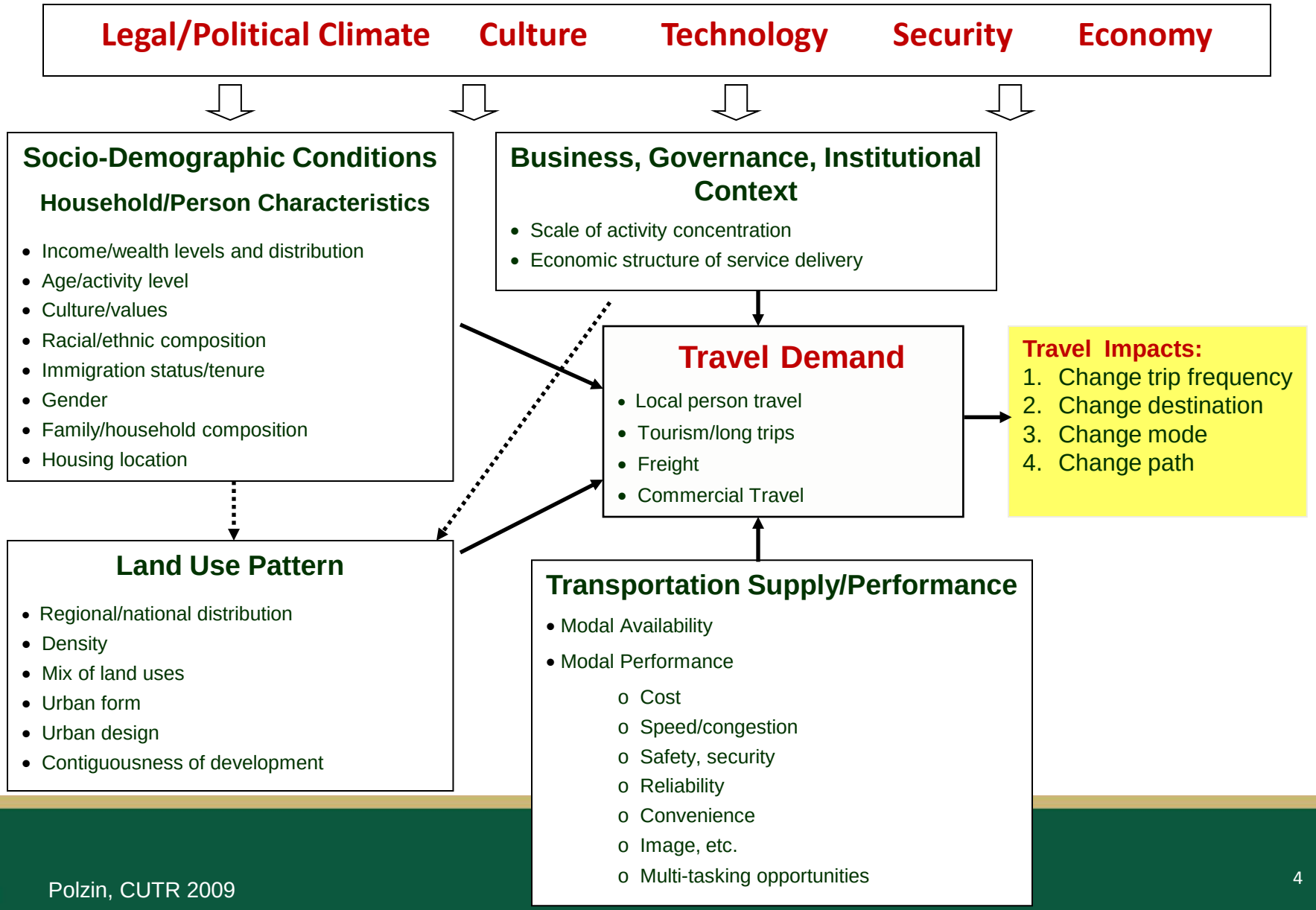
## Specialization in:

- Employment
- Consumption
- Social Relationships
- Time Use

## Growth in:

- Person Travel
- Commerce
- Communication

# Framework for Thinking About Travel Demand



# Growing Awareness and Interest in VMT Trends and Travel Behavior

- "Things Won't Get a Lot Worse: The Future of U.S. Traffic Congestion," Charles Lave, 1991
- *Aggregate Vehicle Mile Forecasting Model*. Oak Ridge National Laboratory, 1995.
- The Past and Future of Global Mobility. *Scientific American*, October, 1997
- *Factors that Affect VMT Growth*. U.S. Department of Energy, 1998
- *The Transportation Sector Model of the National Energy Modeling System: Model Documentation Report*, U.S. Department of Energy, 2001.
- The Case for Moderate Growth in Vehicle Miles of Travel: A Critical Juncture in U.S. Travel Behavior Trends. U.S. Department of Transportation, April 2006.
- *Transportation for Tomorrow: Report of the National Surface Transportation Policy and Revenue Study Commission*. 2007
- *The Road…Less Traveled: An Analysis of Vehicle Miles Traveled Trends in the U.S*. Brookings Institute, Washington, D.C., December 2008.
- Causes of Youth Licensing Decline: A Synthesis of Evidence. *Transport Reviews*, Vol. 33, No. 3, 2013,
- *A New Direction: Our Changing Relationship with Driving and the Implications for America's Future*. U.S. PIRG Education Fund and Frontier Group, Spring 2013.
- "The End of Car Culture." *New York Times*, June 29, 2013.

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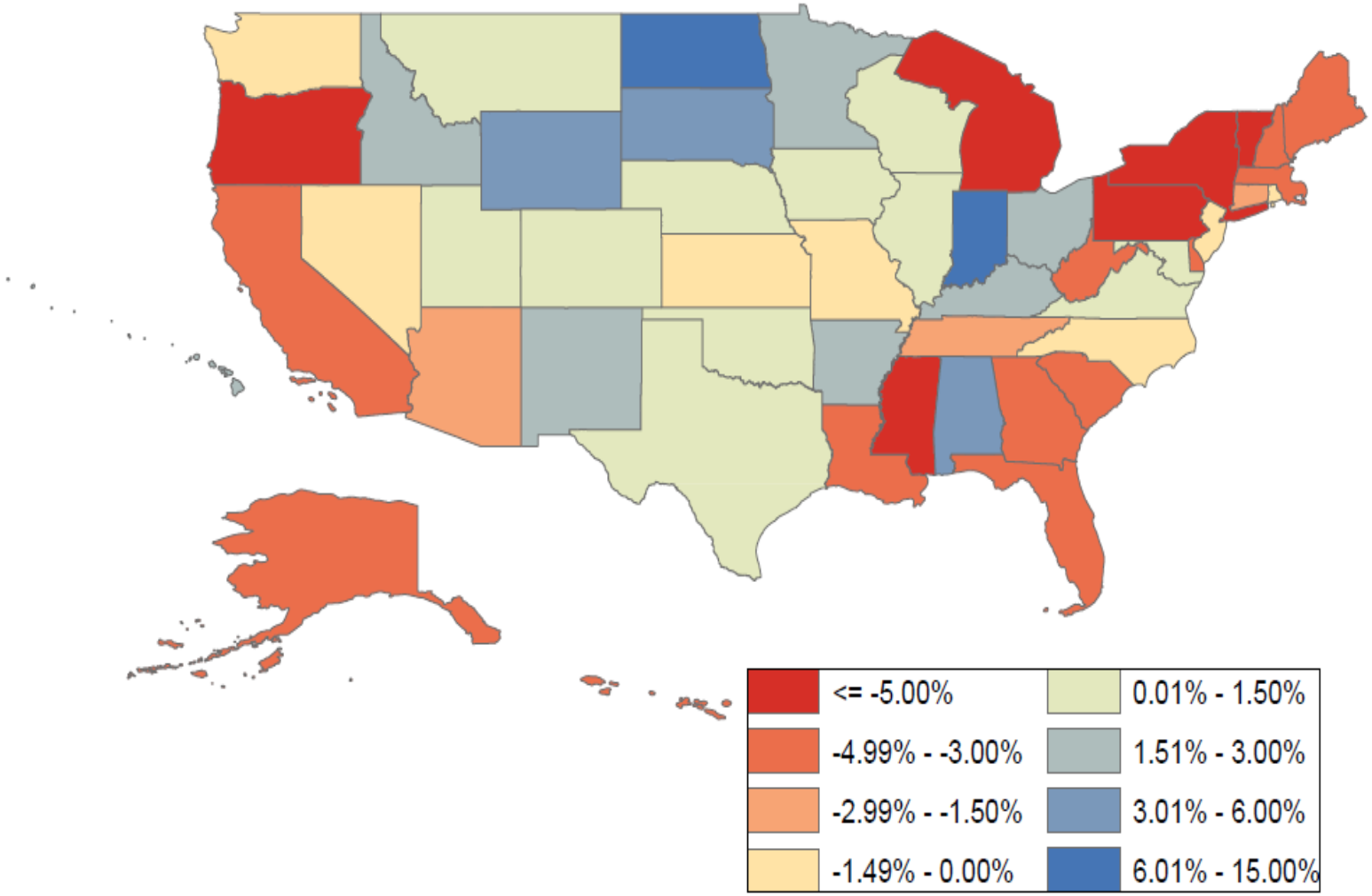
# Person Travel in Perspective

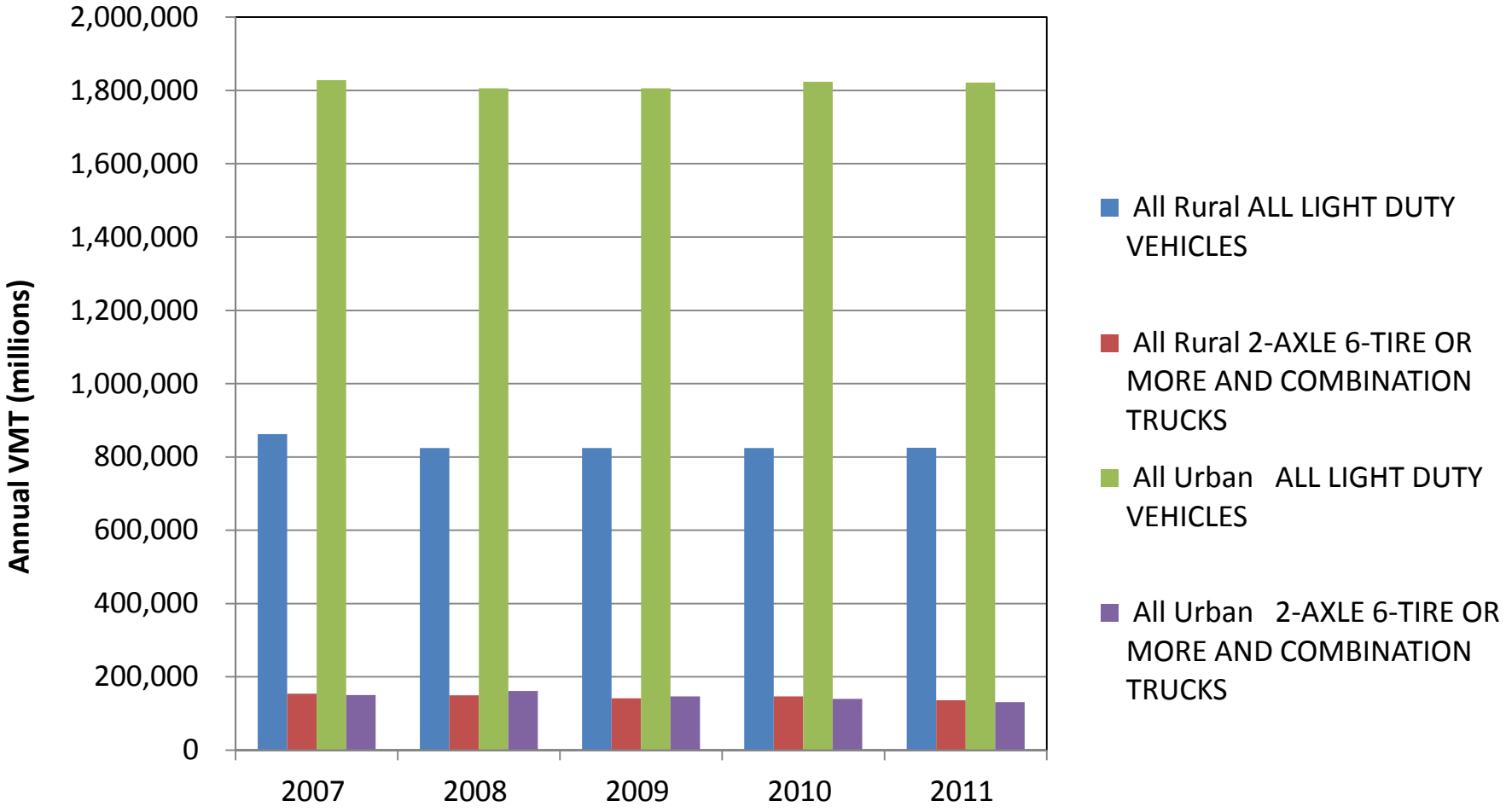
| Household Travel | *Private Vehicle Travel 2009* | |
|---|---|---|
| | **Percent of VMT** | **Percent of Total Roadway VMT** |
| Commuting | 27.8 | 76[1] |
| Work-Related/Business Travel | 9 | |
| Other Resident Travel | 63.2 | |
| Subtotal | 100% | |
| **Public and Commercial Travel** | | |
| Public Vehicle Travel | | 2[2] |
| Utility/Service Travel | | 12[3] |
| **Freight and Goods Movement Travel** | | 10[4] |
| Total | | 100% |

Sources: CIA 2013, Brief 2,
NHTS 2009, FHWA State Statistical Abstracts, FHWA
[1]FHWA estimate based on NHTS data.
[2]FHWA estimate using vehicle registration data.
[3]FHWA estimate based on HPMS data and NHTS.
[4]FHWA estimate based on HPMS data

# VMT Change by State, 2007– 2012



# Truck Versus Light Vehicle VMT Trends



# Urban Versus Rural VMT Trends

As of 2011, 33% of VMT was rural.

- Rural accounts for 2.9% of the total 4.2% decline in VMT since 2007.
- Heavy vehicle VMT accounts for 30% of the rural VMT decline.
- Rural – typically longer distance trip travel – is an expected reduction area due to fuel prices and economic stress.
- Reduced travel on rural facilities is partially attributable to less long distance commutes and travel by urban residents.

# Urban Versus Rural VMT Trends

As of 2011, 67% of VMT was urban.

- Up 1% in share since 2007.
- Urban accounts for 1.3% of the total 4.2% decline in VMT since 2007.
- Heavy vehicle VMT accounts for 74% of the urban VMT decline.
- Urban light vehicle declines accounts for only about 8% of total VMT declines from 2007-2011.

# Thus Urban Per Capita Travel …

- Offset urban population growth and contributed 8% to overall VMT decline.

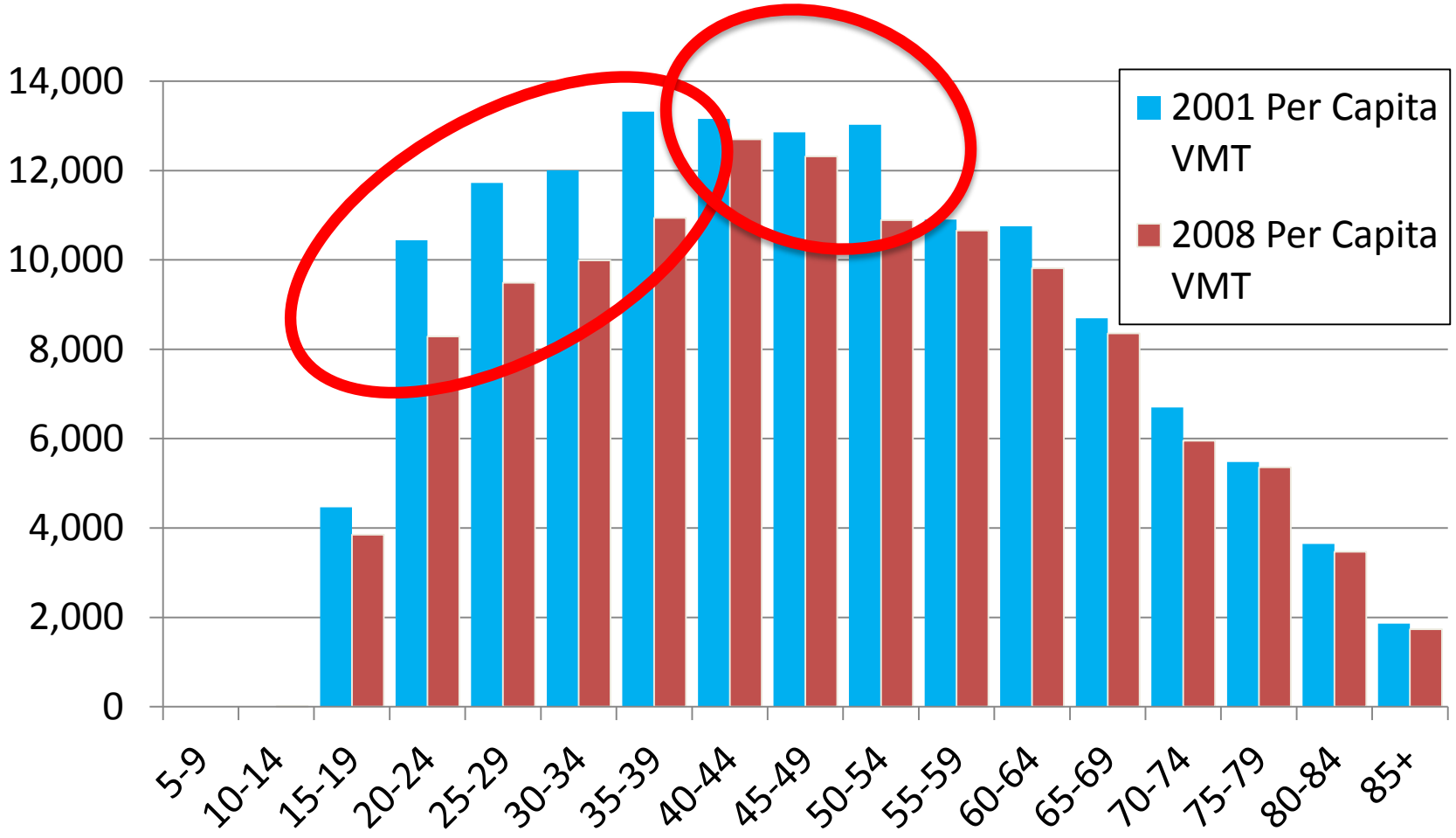
# Mode Shifts and VMT Trends

- Based on person miles, increased transit use can explain ≈ 5.6% of urban light-vehicle declines in VMT.
- Carpooling continued to decline but overall occupancy increased 2% from 2001 to 2009.
- Bike and walk together constitute less than 1% of total person miles of travel thus changes are not meaningful in explaining VMT changes.
- Domestic airline travel declined by 1/10 of 1% between 2005 and 2012.
- Amtrak and intercity bus are an order of magnitude to small to influence VMT meaningfully.

# Thus the majority of urban per capita travel reductions are from trip rate and trip length changes.

- Between 2001 and 2009 (NHTS reference points) the person trip rate declined 4.4 percent and the trip length declined 6.2 percent.
- Work at home increased from 3.26 percent in 2000 to approximately 4.33 percent of the workforce in 2011.

# PMT and VMT per Capita by Age



# Licensure by Age



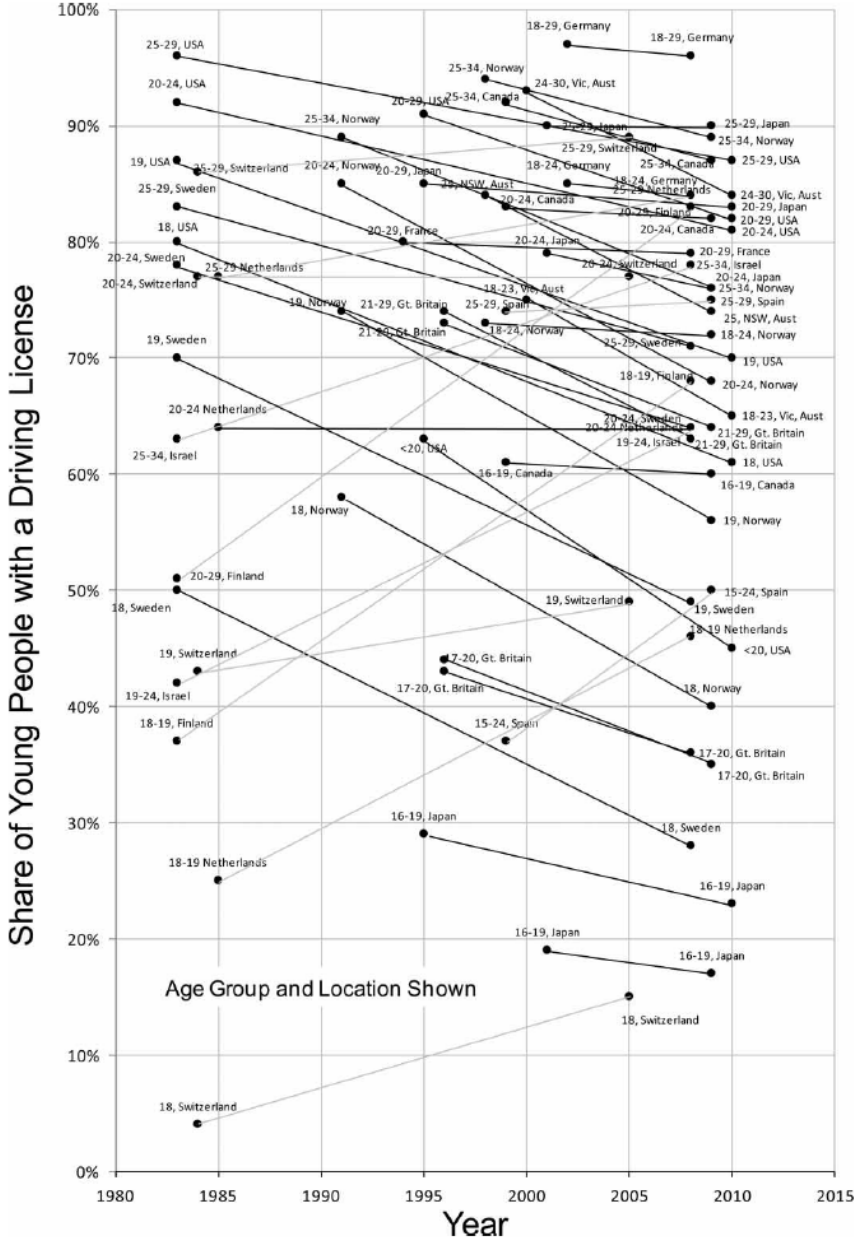



**Figure 1.** Young people driver licensing trends from international data.
*Source*: Raimond and Milthorpe (2010), Kuhnimhof et al. (2012a), Sivak and Schoettle (2012a, 2012b), and Delbosc and Currie (2013).

# Licensure by Age

The AAA Foundation surveyed a random sample of 1,039 young people ages 18-20 to investigate the ages at which they obtained licenses, and reasons for waiting to obtain a license among those who were not licensed within 1 year of their state's minimum age.

- 44% licensed within 1 year of minimum age, 54% licensed before turning 18.
- Strongest predictor of delayed licensing was low household income.
- Racial and ethnic differences still present after controlling for income.
- Most cited not having a car, costs associated with driving, and ability to get around without driving as main reasons for not getting licensed sooner.
- Little/no support for hypotheses from previous studies regarding GDL, social media as important reasons for low licensing rates.

# Understanding Weak Travel Demand for Millennials

- Economic conditions:
  - very high unemployment
  - high school loan debt
  - limited compensation due to competitive job market, etc.
  - Economic stress  limits the ability to carryout some activities and is exacerbated by higher fuel costs.

- Different composition than did the young workforce decades earlier:
  - delayed marriage
  - delayed start a family
  - delayed homeownership
  - more urban
  - more minority, more likely to be born outside of the US
  - perhaps more likely to have come from a lower income household less able to provide parental financial support for education, car and homeownership

- Value differences:
  - substitute communication technology in lieu of travel
  - does not see vehicle ownership being a path to freedom and independence
  - do not depend on travel as an enabler of socialization
  - different sensitivities to environment

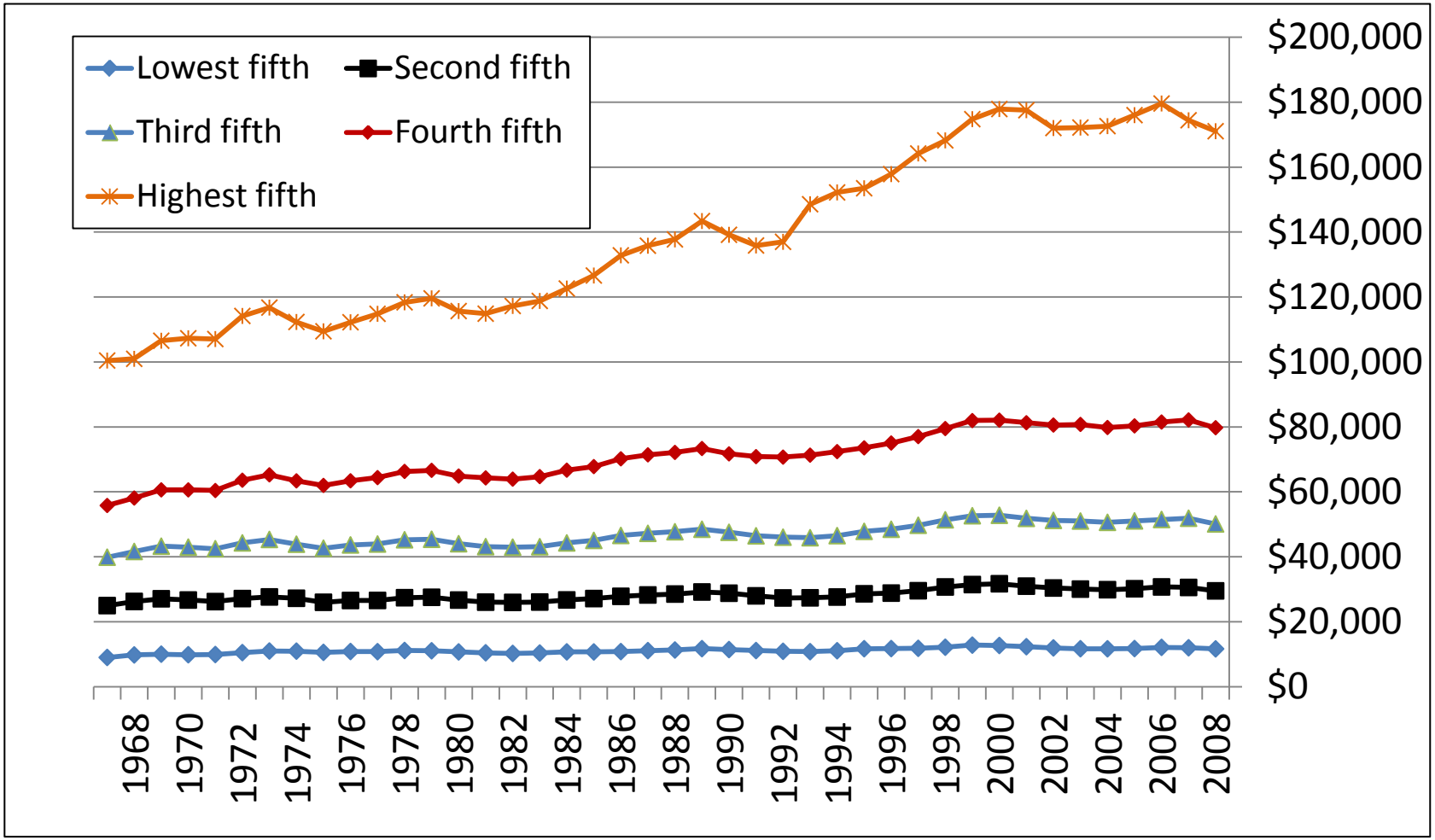
# Americans' Mobility Aspirations?

First thing I'm going to do is sell my big pickup truck and go for a walk

I'm not going to Disney. I'm going to stay home and watch the Disney Channel on the Big Screen

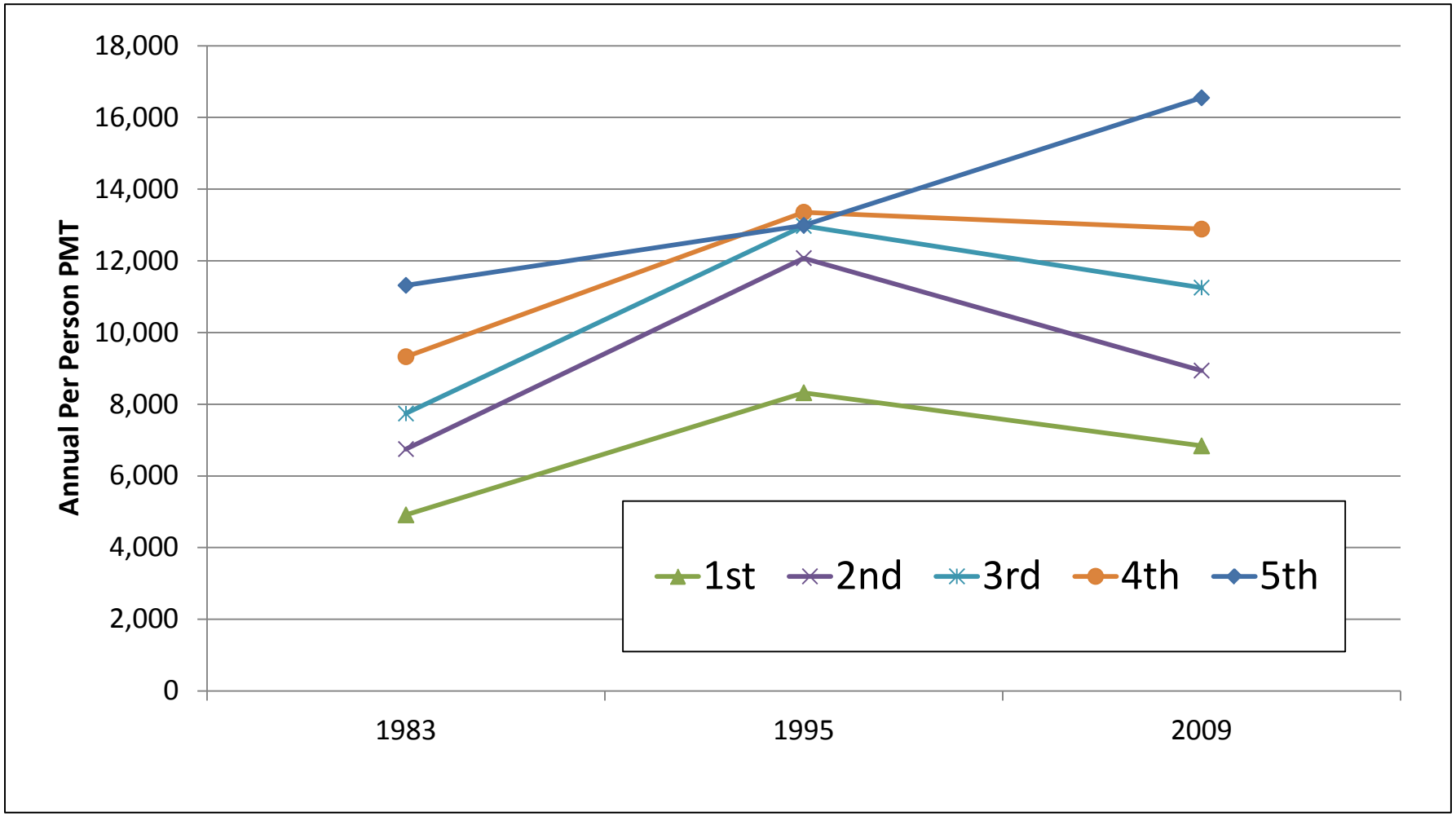
I'm selling the suburban house and buying a little downtown condo.

# Mean Household Income Received by Each Quintile 1967 to 2008




*2008 dollars*

# PMT by Income Quintile



# Summary

Several historic trends that have supported growing VMT have played themselves out:

- labor force participation
- vehicle ownership and licensure levels,
- migration from city to suburbs
- shifts to personal vehicle

It's premature to discern the magnitude of new trends due to limited data and economic/demographic uncertainties

- The significance and duration of the economic impact is unknown.
- What is the new economic normal?

# So what might help?

- Travel options will fare better if the high fixed, low variable cost of auto ownership changes.
- Transportation revenues should be user based with transparency to influence behavior - the trend is away from that to general funds, land use value capture, etc., that do not have feedback to travel behavior.
- Delivery of services and products continue to experience economy of scale by consolidation at the cost of additional travel (retail, schools, services, healthcare, etc.).
- Be aware of the presumption that the switch to transit is more energy efficient.
- We don't know what the consequences of autonomous or connected smart vehicles will be.

# Other Strategies

- Reorganize sports conferences to minimize travel. Don’t give out tickets to the visiting team.
- Require divorcing couples with kids to do an environmental impact statement on the visitation/shared custody transportation plan.
- Require annual leave to be used in two week blocks to avoid those energy intensive weekend getaways.
- Make house swapping practical and cheap to enable optimization of household travel.
- Outlaw youth sports travel teams.

# As You Prepare for the Future, Remember:

Some things don't go as planned.

# Additional Information

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