Transportation Planning in a Dynamic World

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Outline

- A framework
- Empirical evidence of changes
- Implications on Planning
  - Changing Values and Behaviors
  - Funding Issues
  - Climate change
- Next Steps

An Era with Unprecedented Changes That Impact Transportation

Changes in:

Values/Culture

Technology

Governance

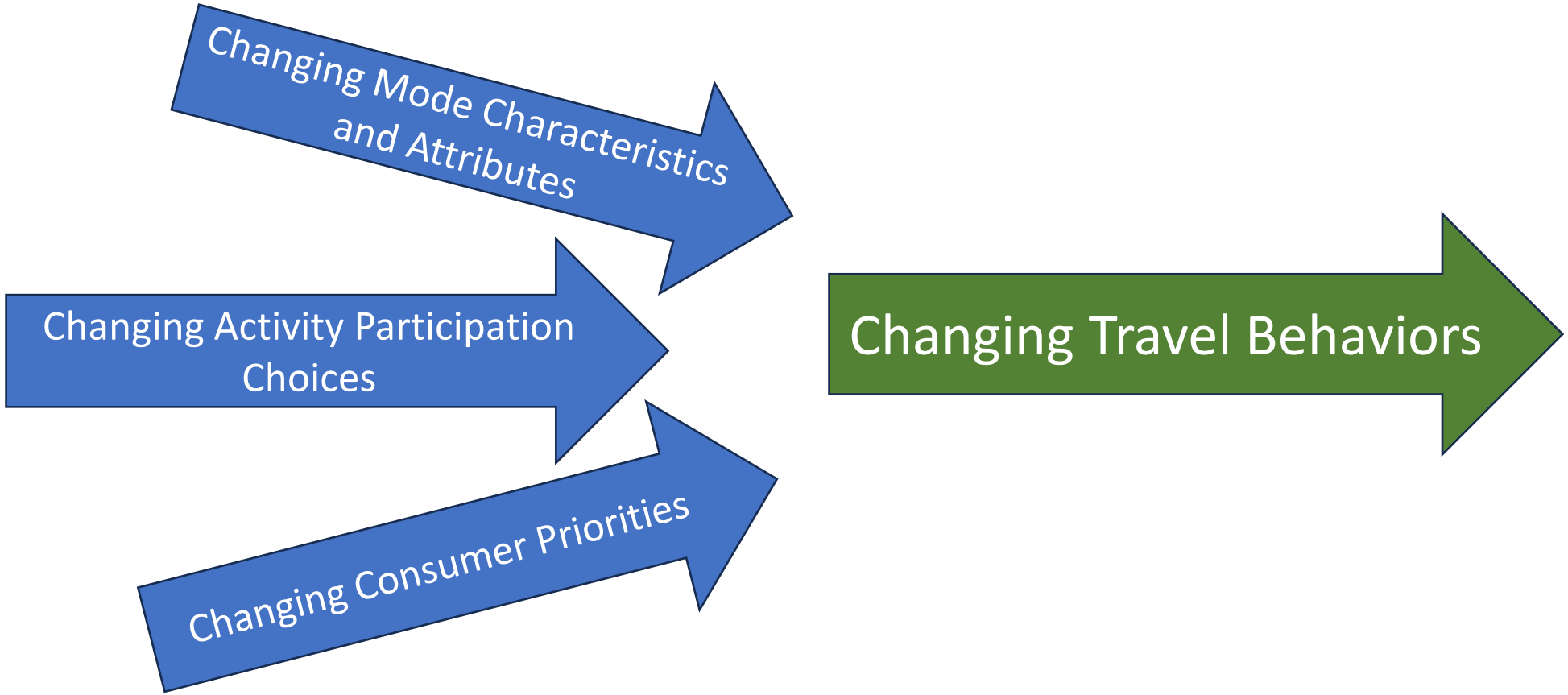
Economy

Global Relationships

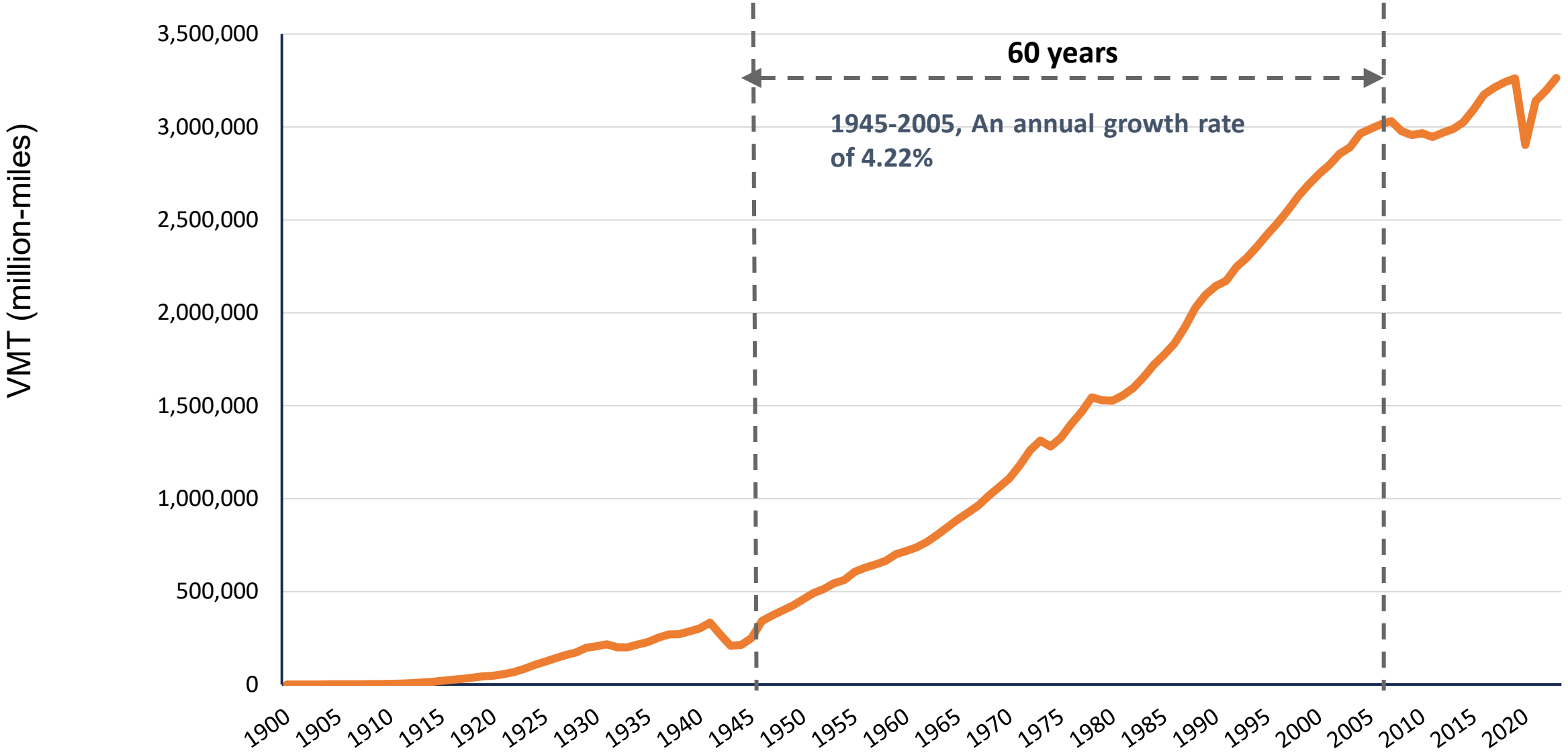
Businesses Characteristics

Environment/climate

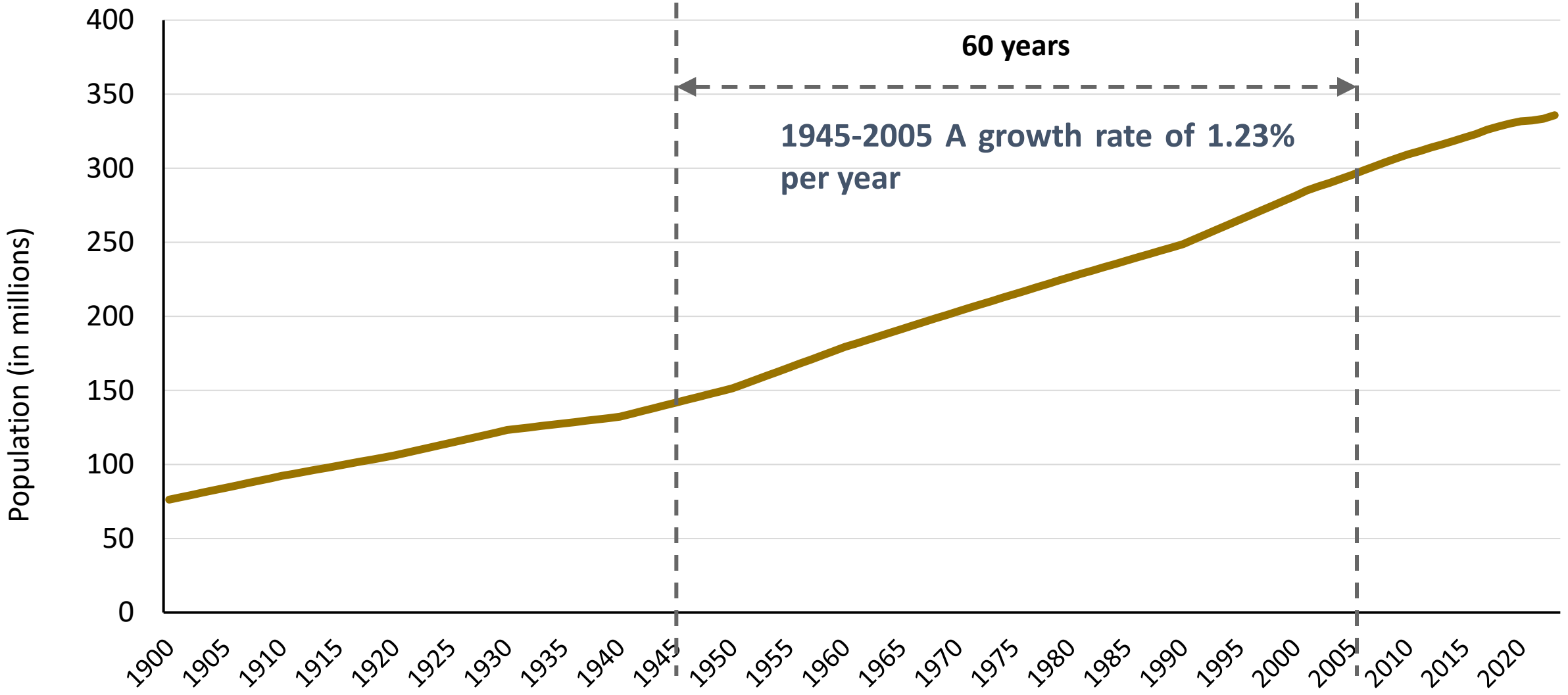
Political Environment



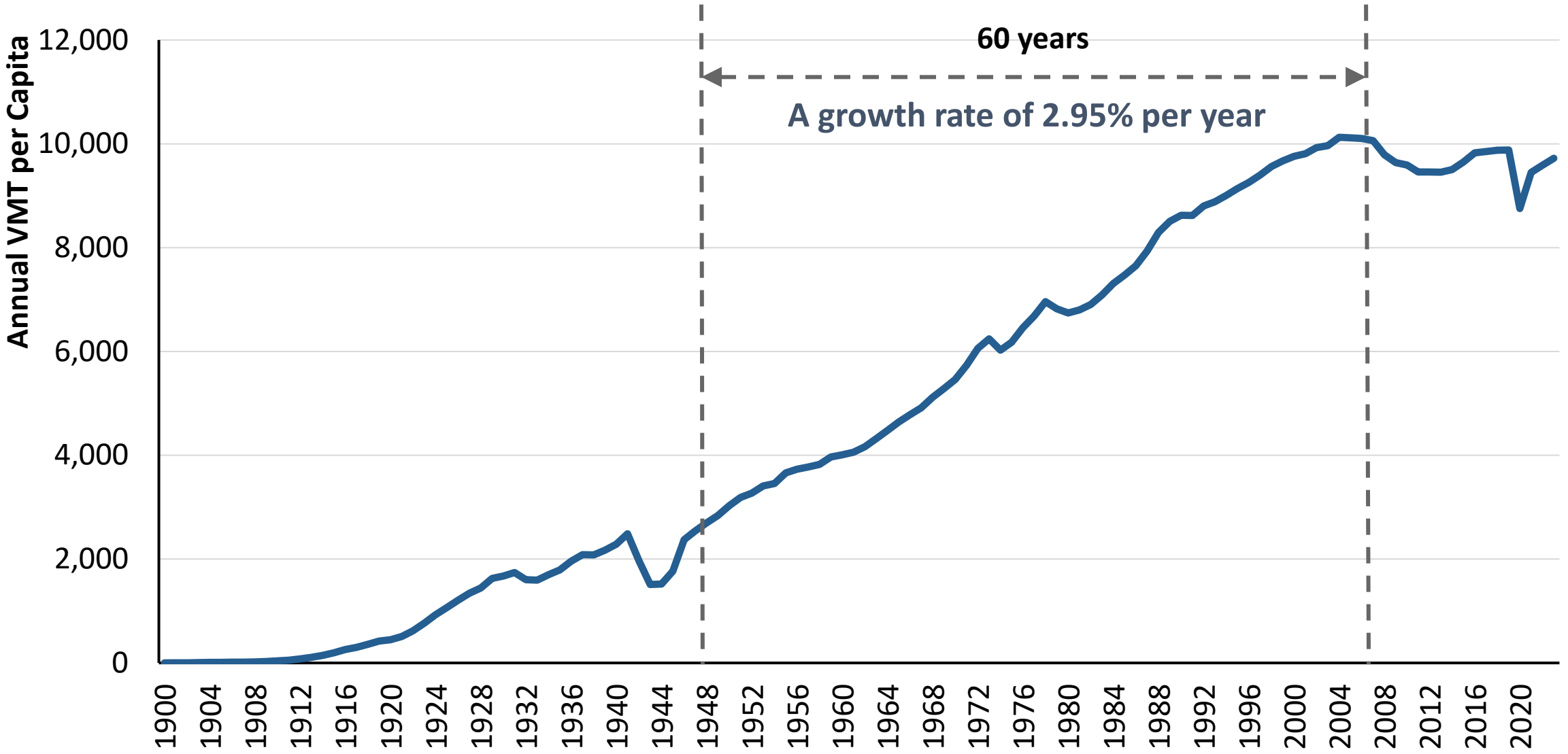
VMT in the United States (1900 – 2023)



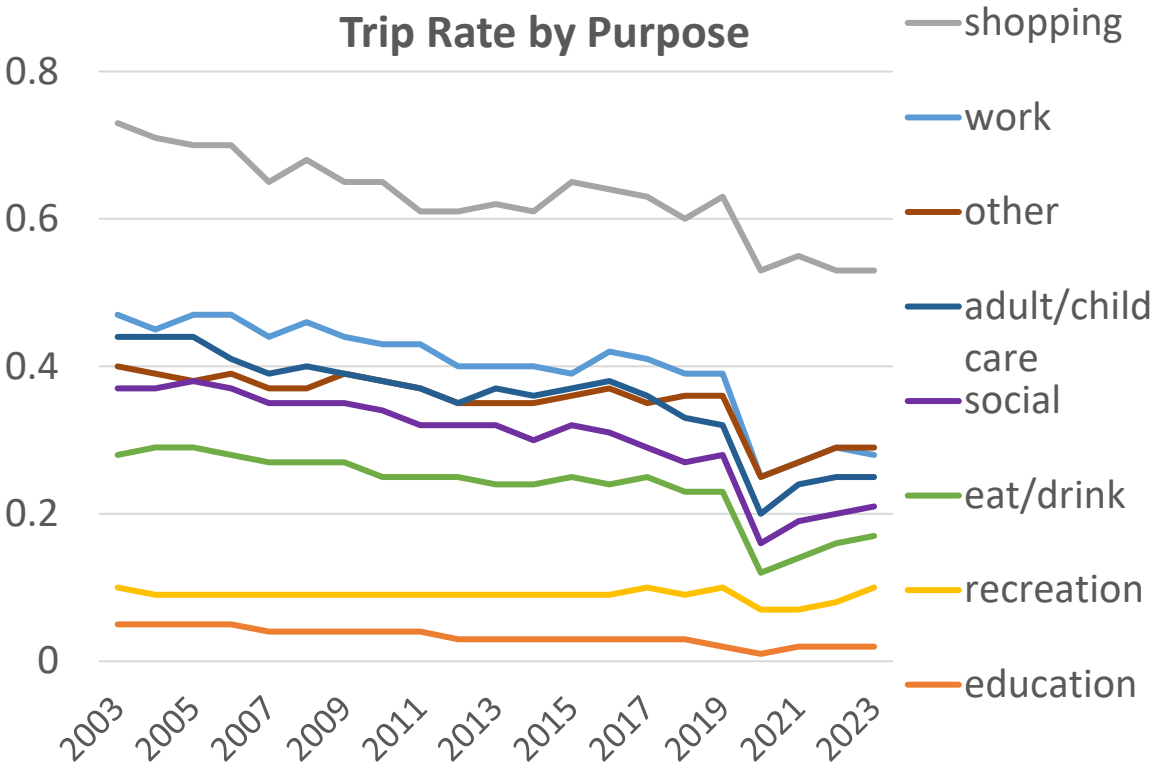
U.S. Population (1900-2023)

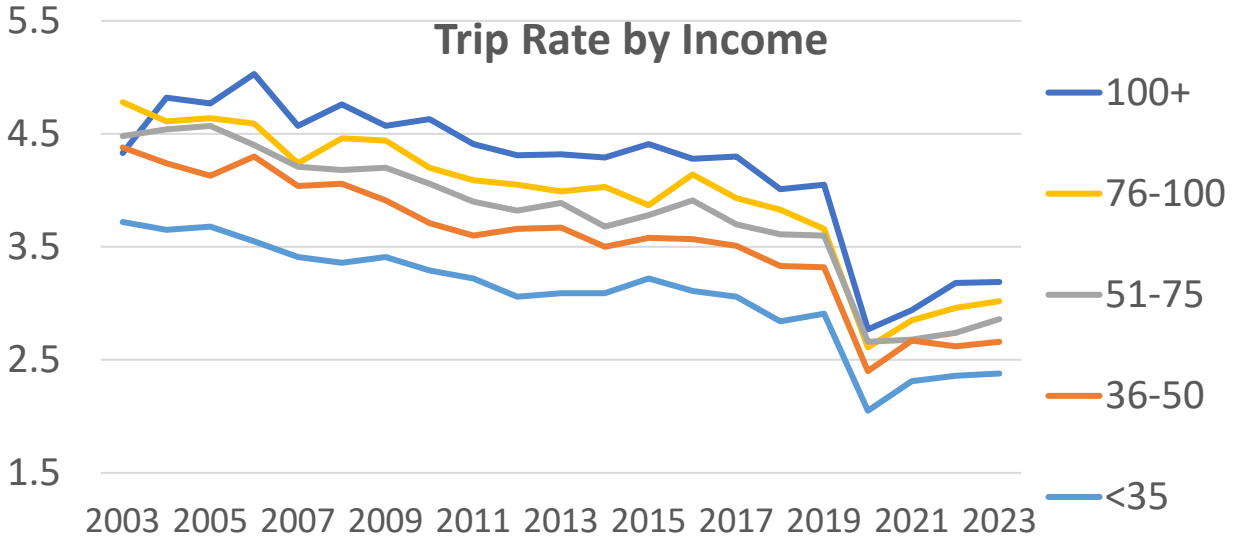


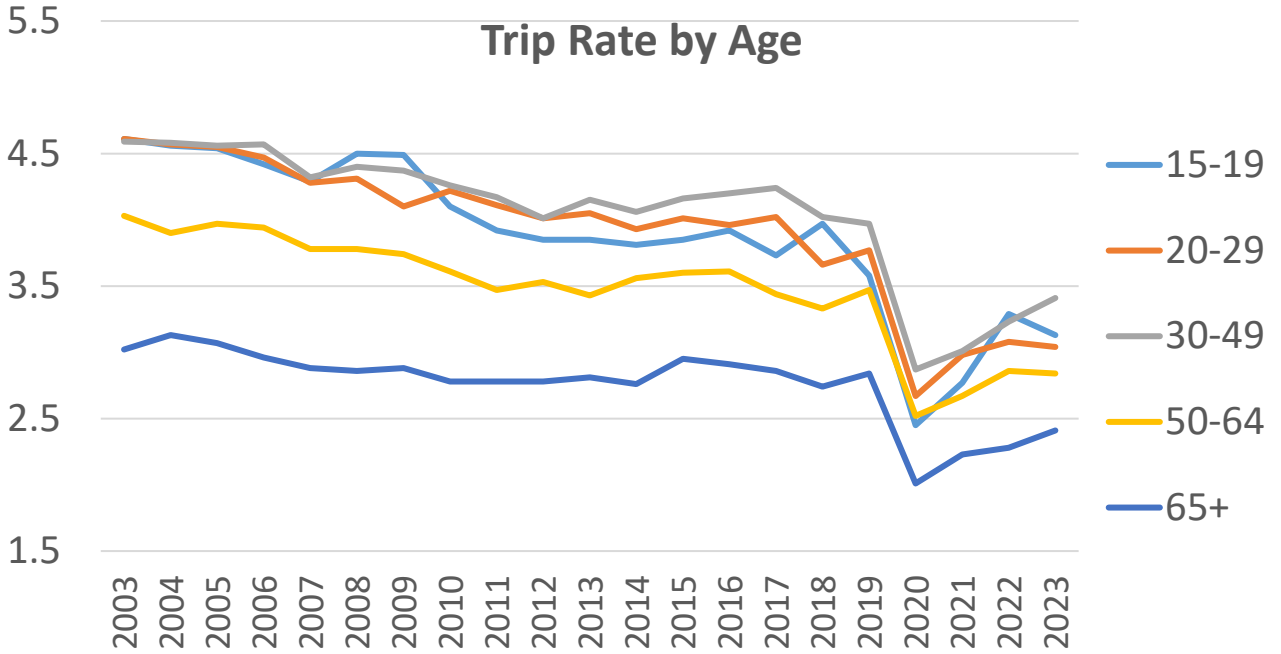
VMT per Capita in the U.S. (1900-2023)



ATUS Data Shows Systematic Declines Across Income, Age and Trip Purposes

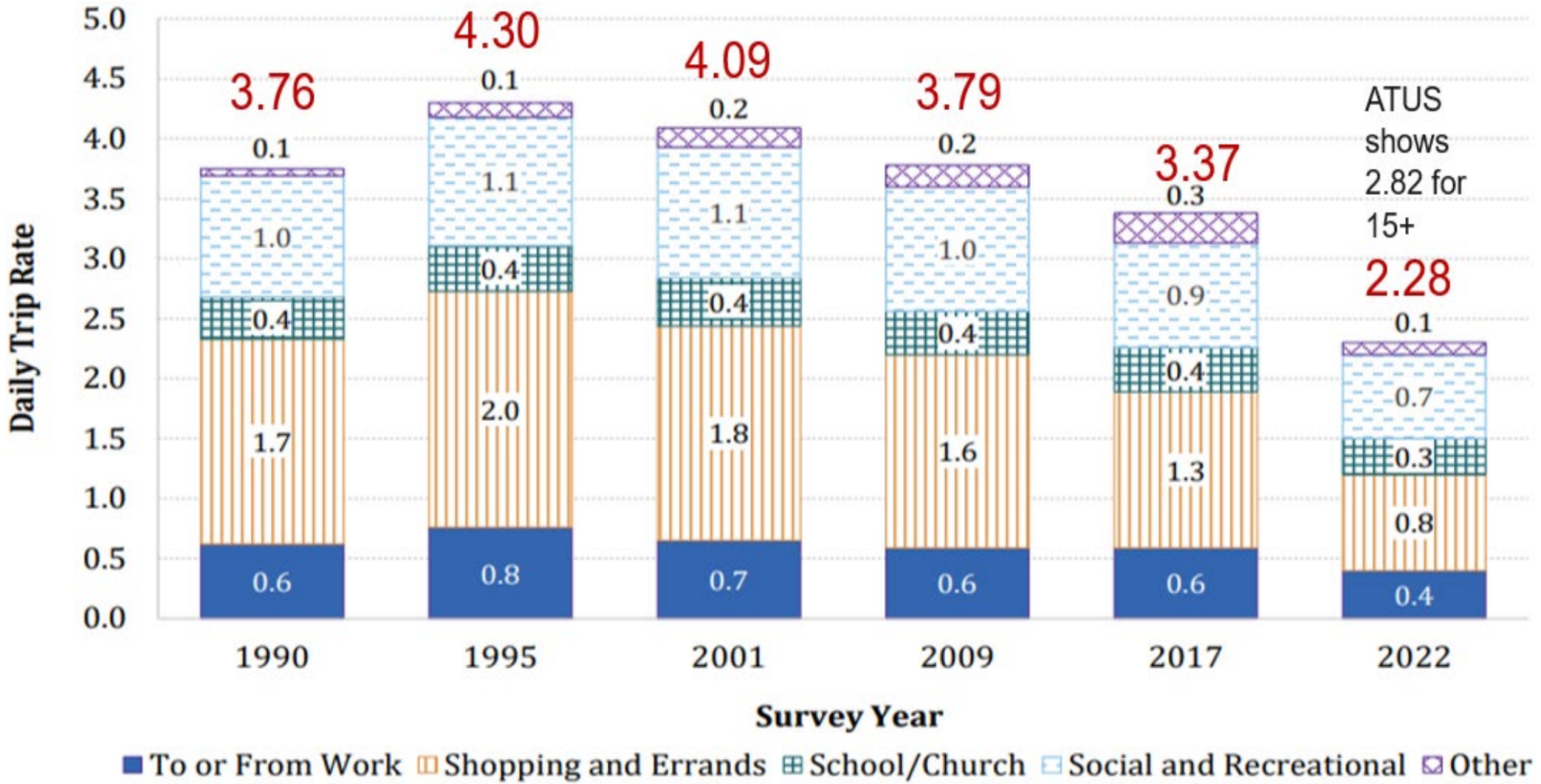






Daily Trip Rates per Person by Trip Purpose

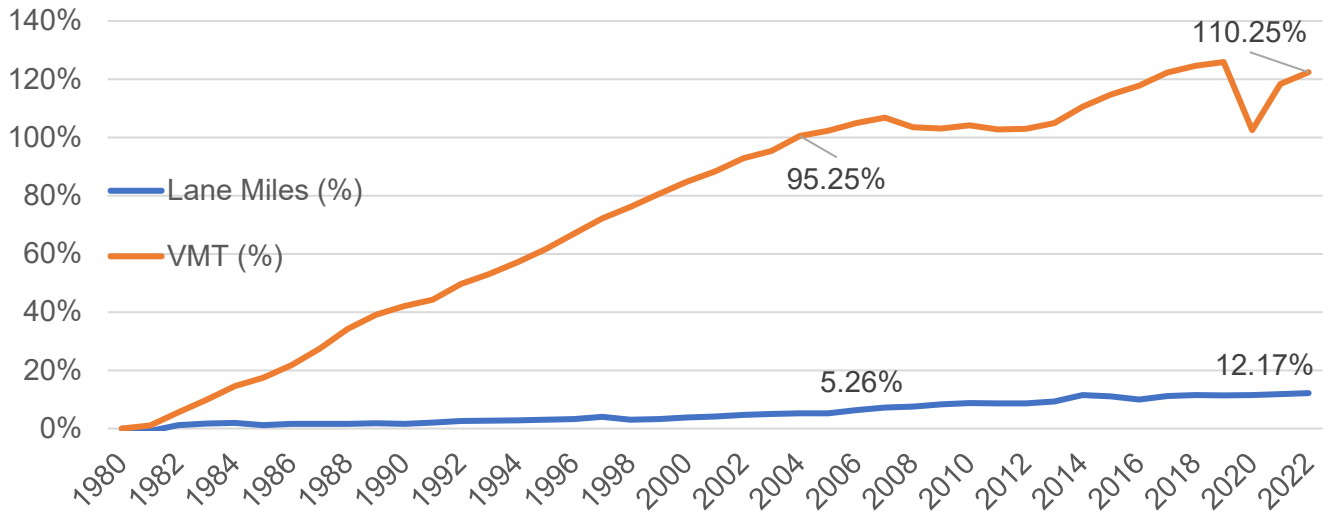
US National Household Travel Survey



Note: The "Other" trip purpose category includes trips for work-related business and trips not categorized. For explanations of adjustments as well as specific differences in survey methods over time, please refer to Section 1.2.

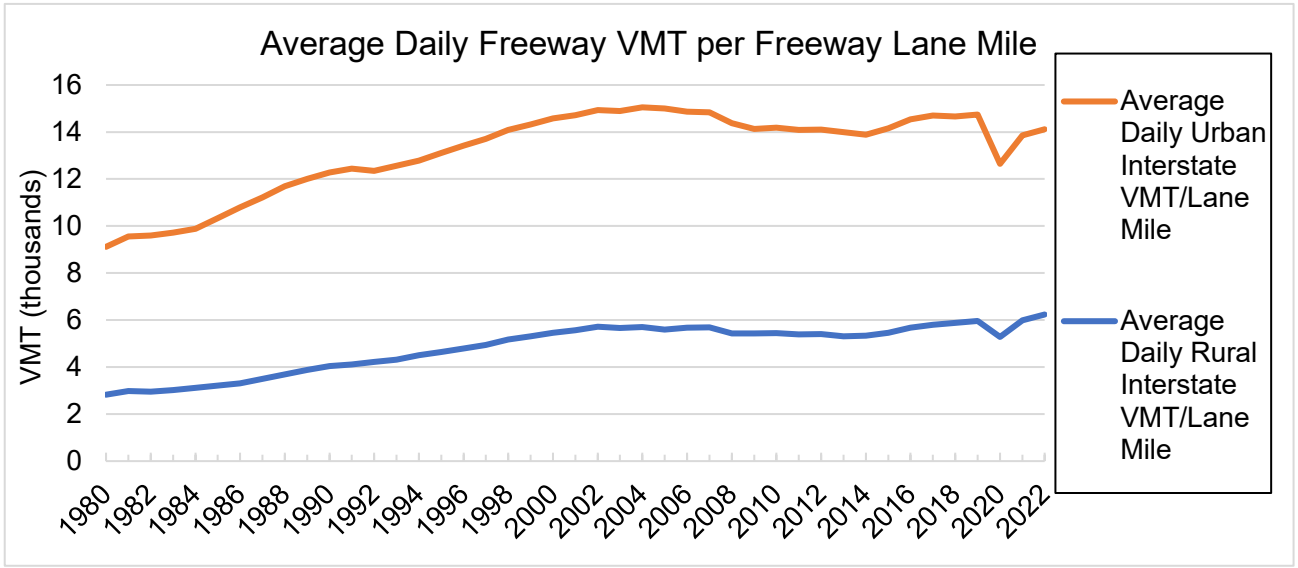
Comparative Growth in VMT and Lane Miles

Change Since 1980 (U.S. Totals)

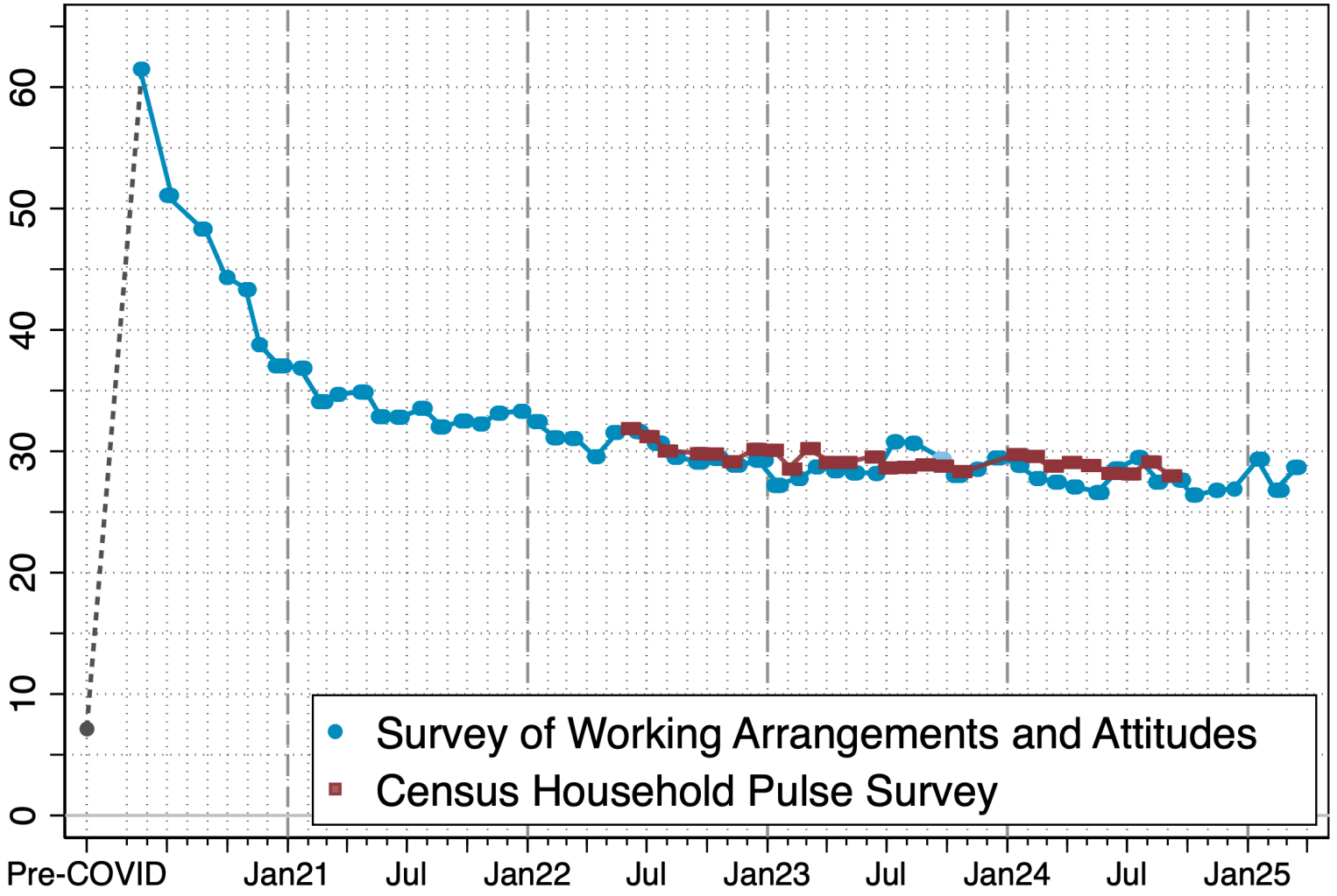


Between 1980 and 2004 VMT grew 17.3 times as fast as lane miles.

Between 2005 and 2022 VMT grew 1.31 times as fast.



Percentage of Full Days Worked from Home



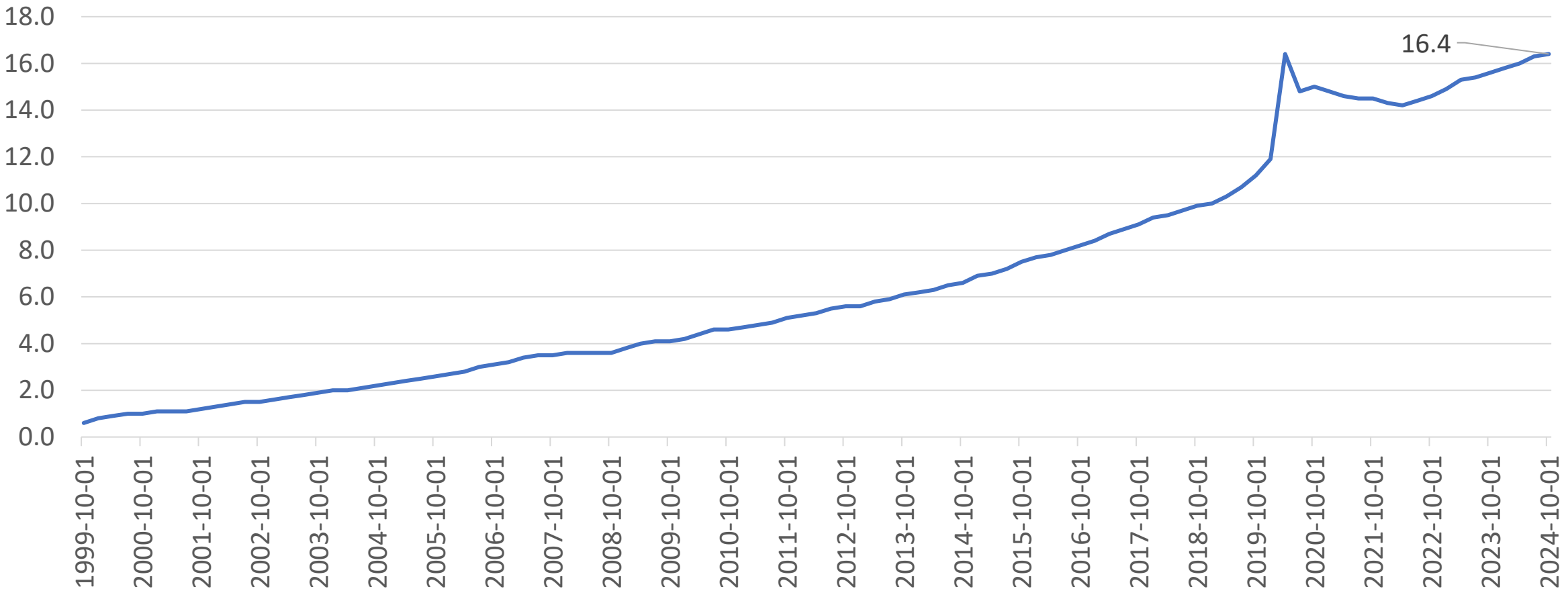
Source: Survey of Working Arrangements and Attitudes (SWAA), www.wfhresearch.com

Between zero-worker households and teleworkers, nearly half of households do not commute on a given day.

[Source: WFH Research | Survey of Working Arrangements and Attitudes]

E-Commerce Retail Sales

Percent of Total Sales, Quarterly, Seasonally Adjusted, thru Q4-FY24



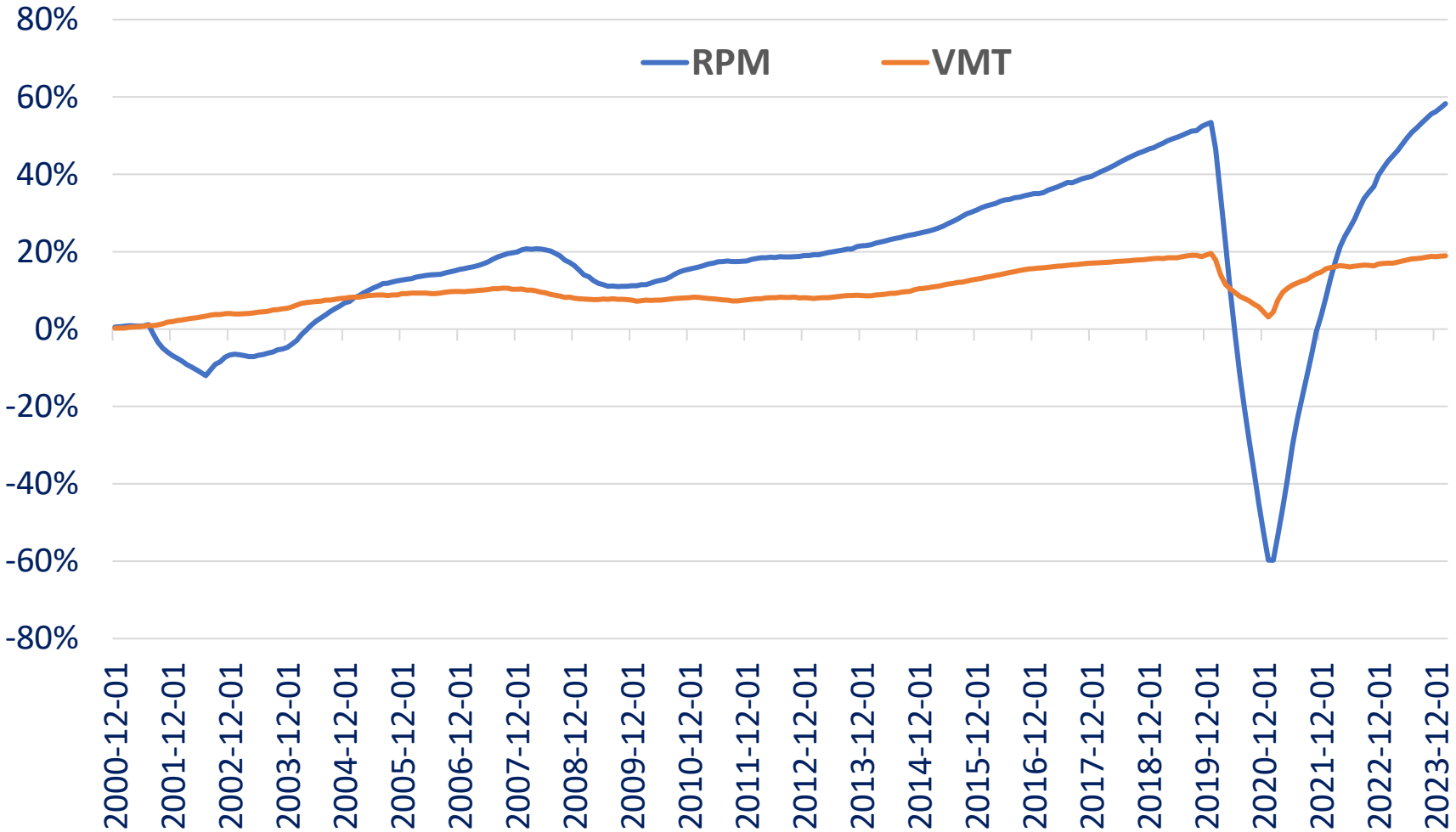
Source: Federal Reserve Economic Data, [E-Commerce Retail Sales as a Percent of Total Sales (ECOMPCTSA) | FRED | St. Louis Fed]

A Shift Away from Household Based Travel

	2009		2017		2022	
	Percent of Household VMT	Percent of all Roadway VMT	Percent of Household VMT	Percent of all Roadway VMT	Percent of Household VMT	Percent of all Roadway VMT
Household Travel						
Commuting	27.8%	76%	30.2%	70.4%	30.07%	56.9%
Work Related/Business	9.0%		3.2%		8.9%	
Other Household Travel	63.2%		66.6%		61.03%	
Subtotal	100%		100%		100%	
Public and Commercial Travel						
Public Vehicle Travel	2%		14%	20.5%		32.7%?
Utility/Service/Commercial Travel	12%					
Heavy freight and goods	10%			9.1%		10.4%
Total	100%			100%		100%

Revenue Pass. Miles vs VMT,

Percent Change 2000-2023

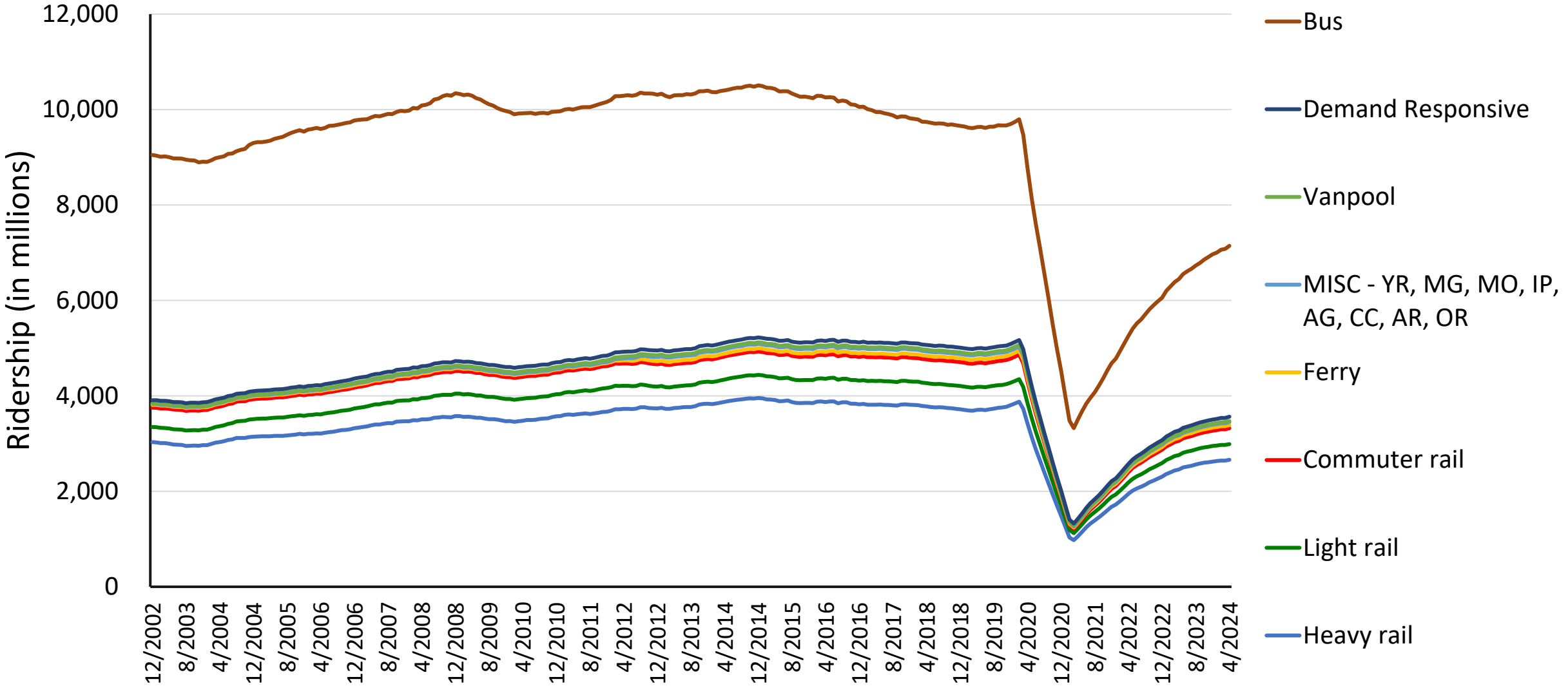


Had air and road volumes grown at the same pace since 2000, VMT would be about 5% higher to equal the same passenger miles of travel.

Source: FRED

U.S. Public Transit Ridership

12-Month Rolling Average, Stacked Lines



Planning Challenges

Values Related:

Complex, controversial and competing goals:

- Expanded stakeholders
- Complex funding/governance
- Diminished confidence in professionals
- Mixed perspectives between “predict and provide” approaches—where infrastructure investments are based on anticipated demand—and “decide and provide” approaches

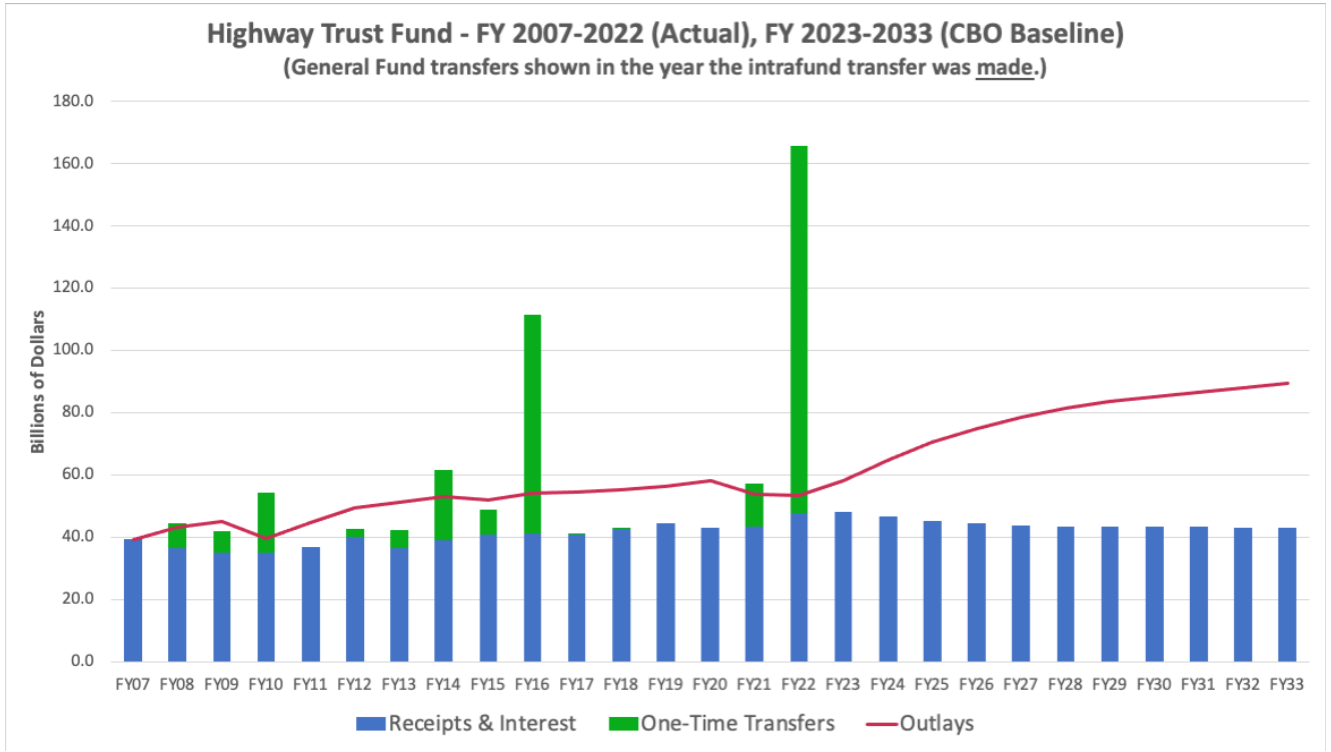
Behavior Related:

Dramatic influence of communications:

- The need for travel
- The potential for induced demand
- The magnitude of agglomeration/economies of scale influence
- The influence of safety, reliability, comfort, etc.

Transportation Funding's Impacts on Planning

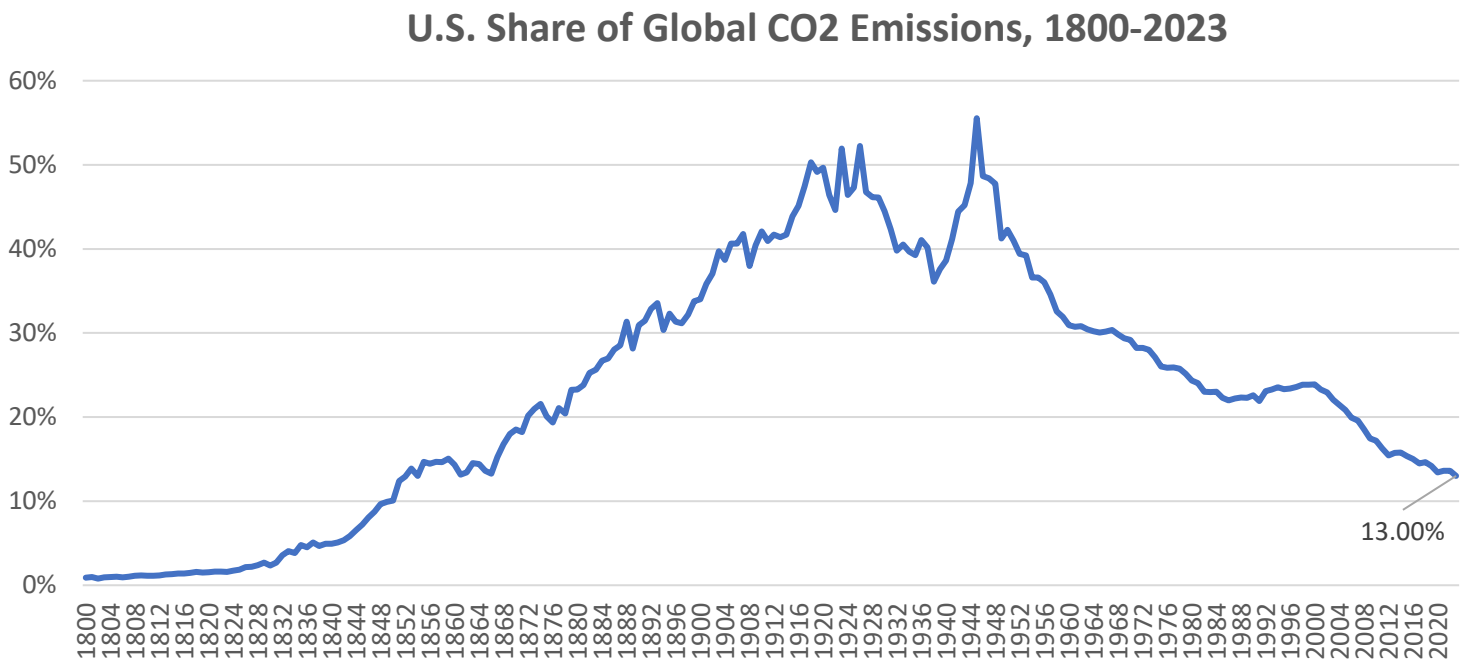
- Funding Levels and modal allocation?
- Reliance on user fees?
- Funding responsibility by level of governance?
- Funding structure's impact on decision making authority?
- Determining "needs" verses "wants"?
- Spending levels impact of spending capacity?
- Spending uncertainty impact on planning?



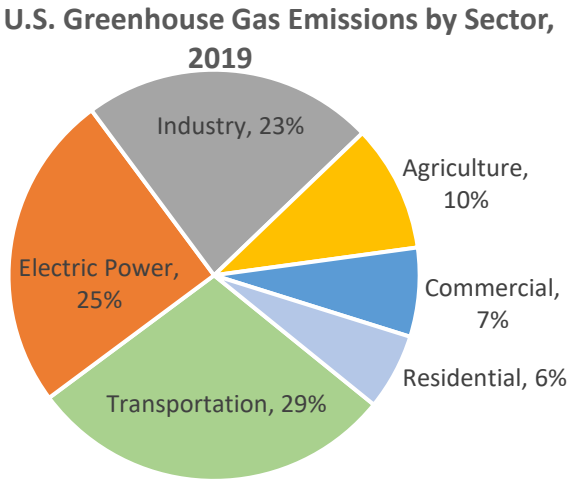
Source: Jeff Davis, Eno Center for Transportation.

What about Climate Change?

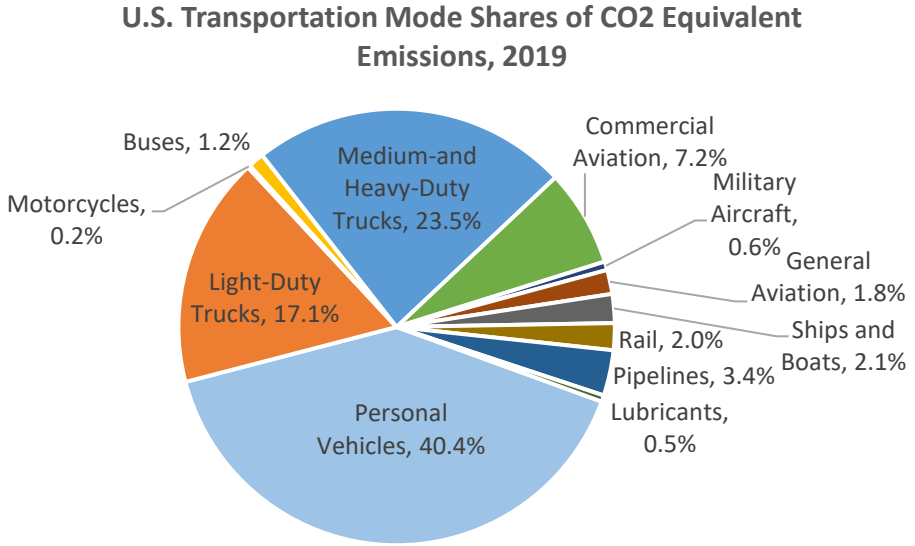
How influential should carbon emissions be in transportation planning? Is it all we should worry about, or should we not worry about it at all?



Source: https://ourworldindata.org/co2/country/united-states?country=~USA#what-share-of-global-co2-emissions-are-emitted-by-the-country



Fast Facts from the Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2019 (epa.gov)

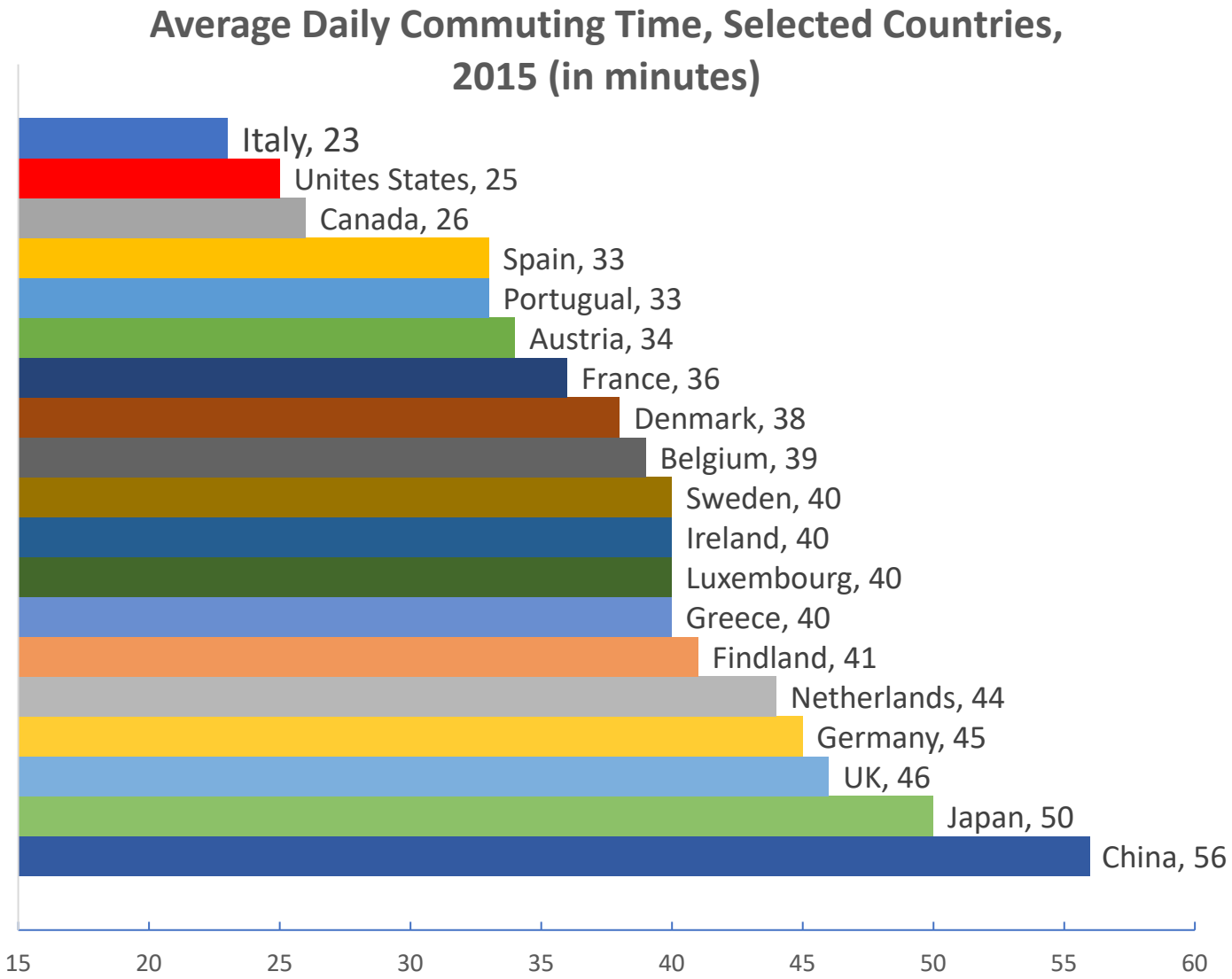


Source: Fast Facts: U.S. Transportation Sector Greenhouse Gas Emissions, 1990-2020, United States Environmental Protection Agency.

Step One

Recognize the world has changed and get busy updating planning processes and tools.

But the U.S. Stacks up Pretty Well
Commute Time for Selected Countries



Italy and the US have the least commute time while Japan and China have the highest commute time

Source: Jean-Paul Rodrique, The geography of Transport Systems, 6th Edition, ISBN 9781032380407, April 30, 2024
Average commuting Time, One Way, Selected Metropolitan Areas, Data Originally sourced from OECD