

Trends in U.S. Travel Behavior: Insights and Implications

Presentation at the 3rd Symposium on
Activity-Based Modeling
Raitenhaslach, Bavaria, December 2024

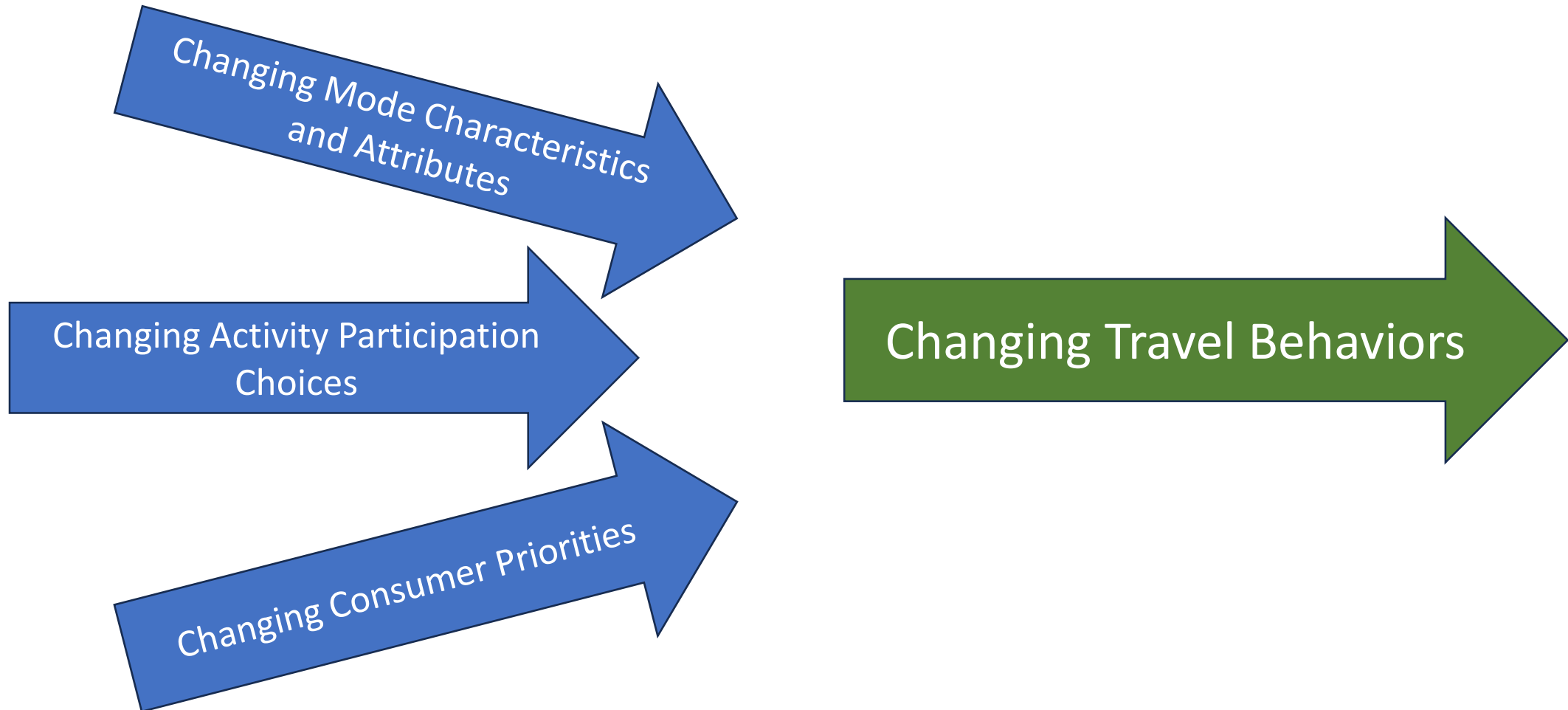
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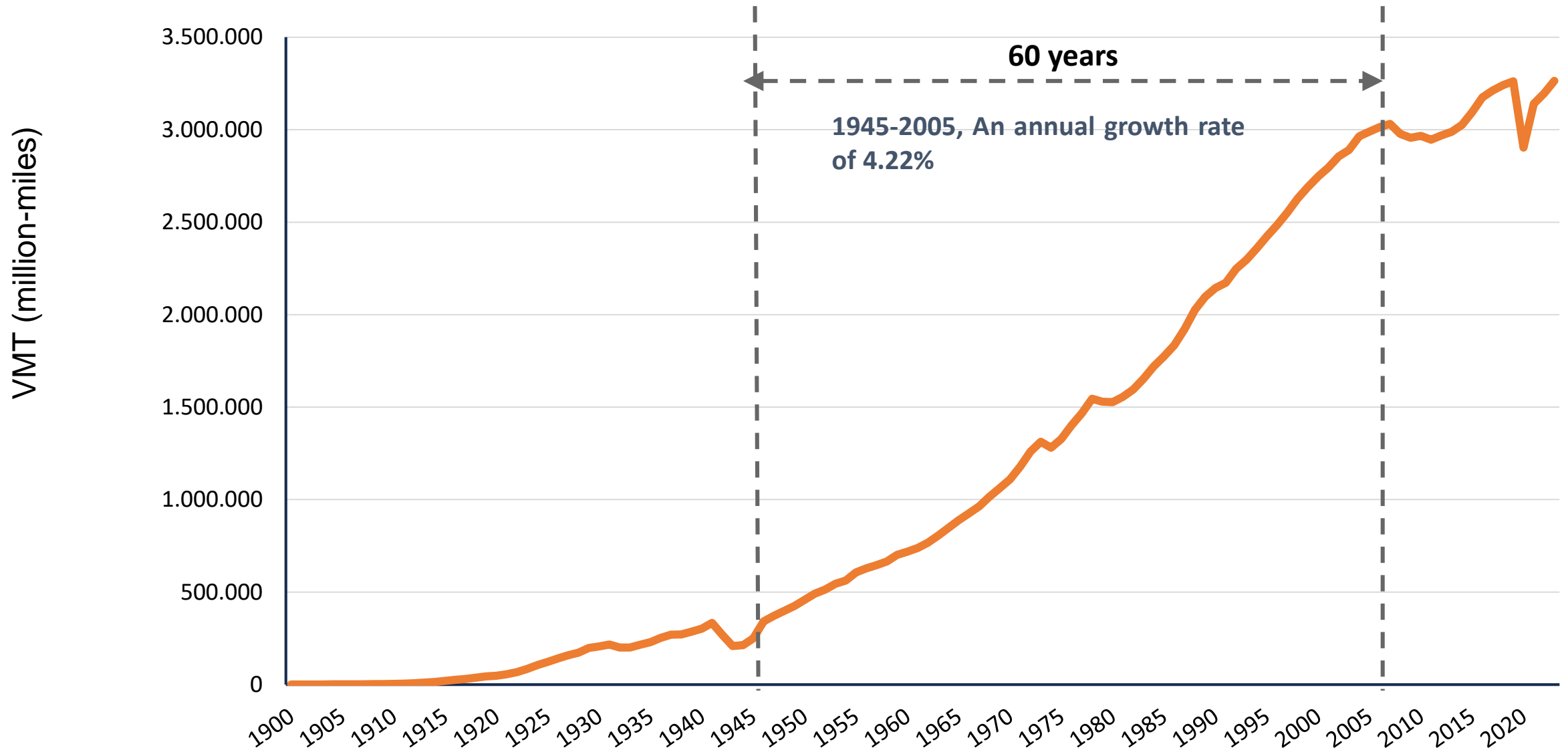
TOMNET Transportation Center
Teaching Old Models New Tricks



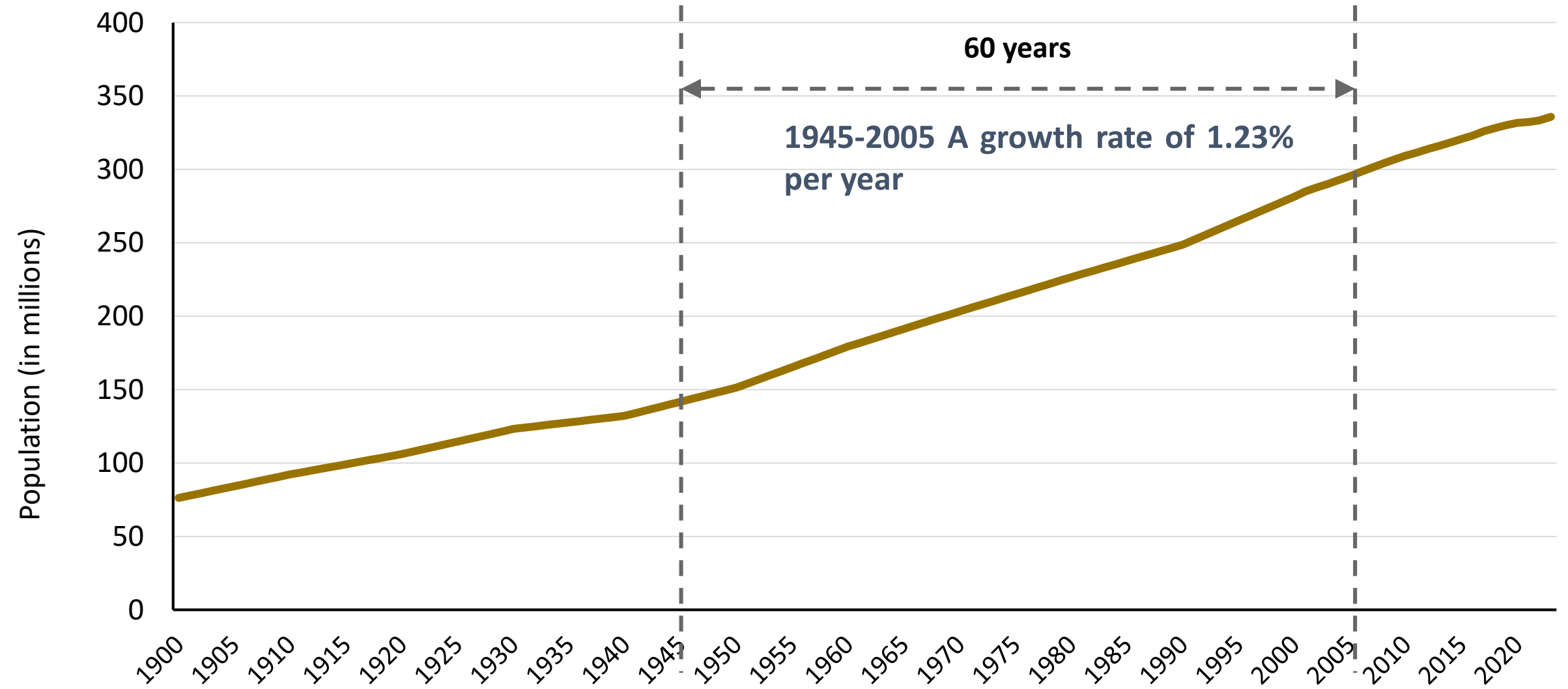
An Era with Unprecedented Changes in Travel Behavior



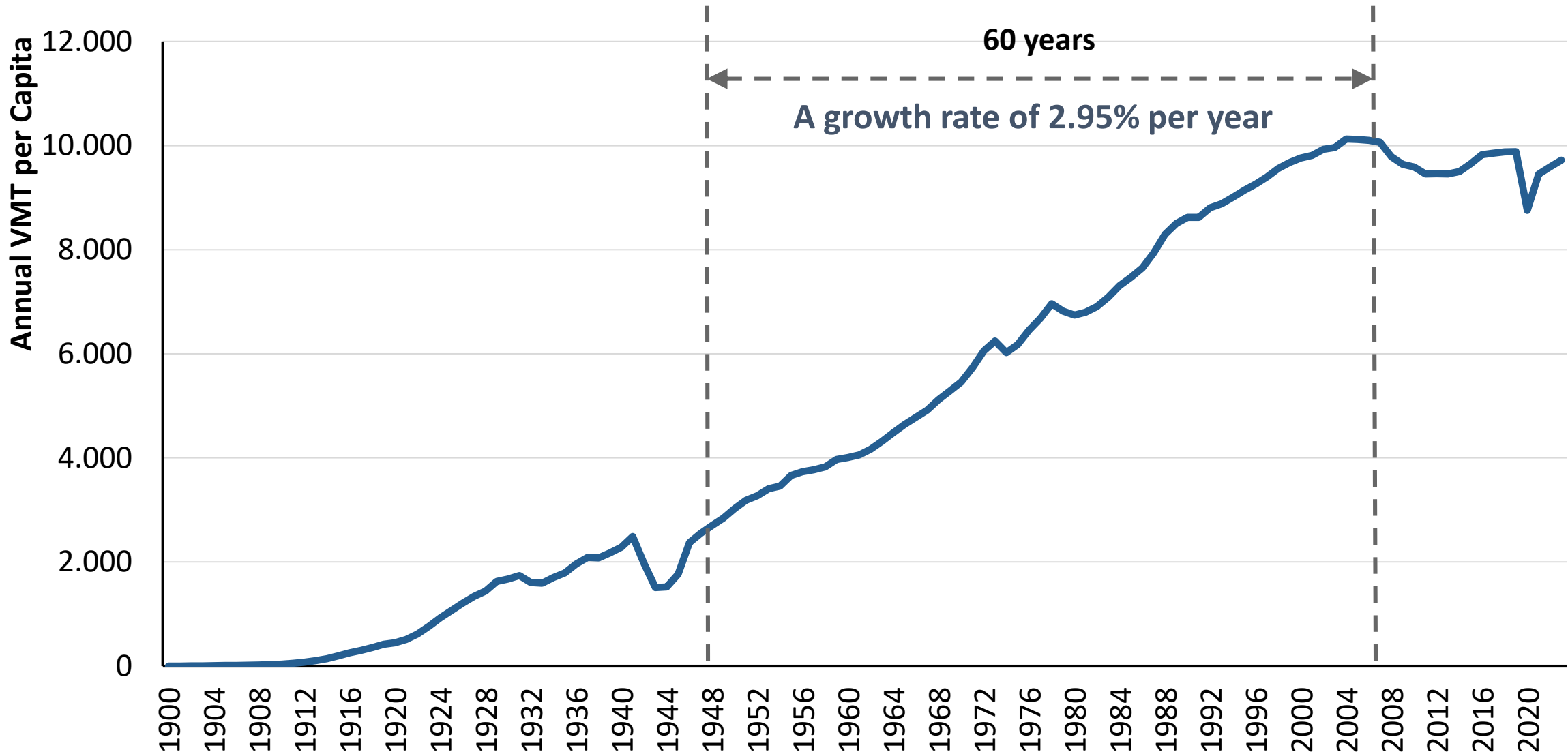
VMT in the United States (1900 – 2023)



U.S. Population (1900-2023)

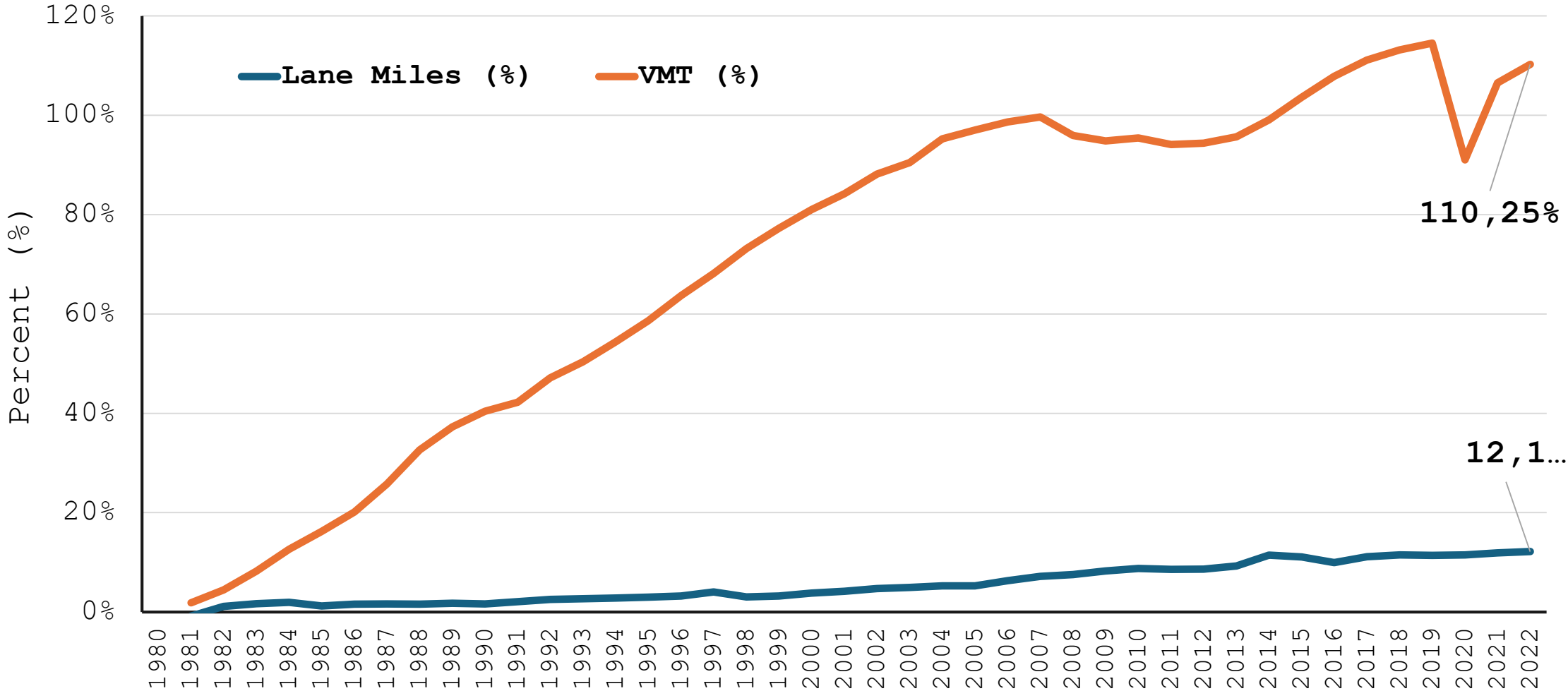


VMT per Capita in the U.S. (1900-2023)

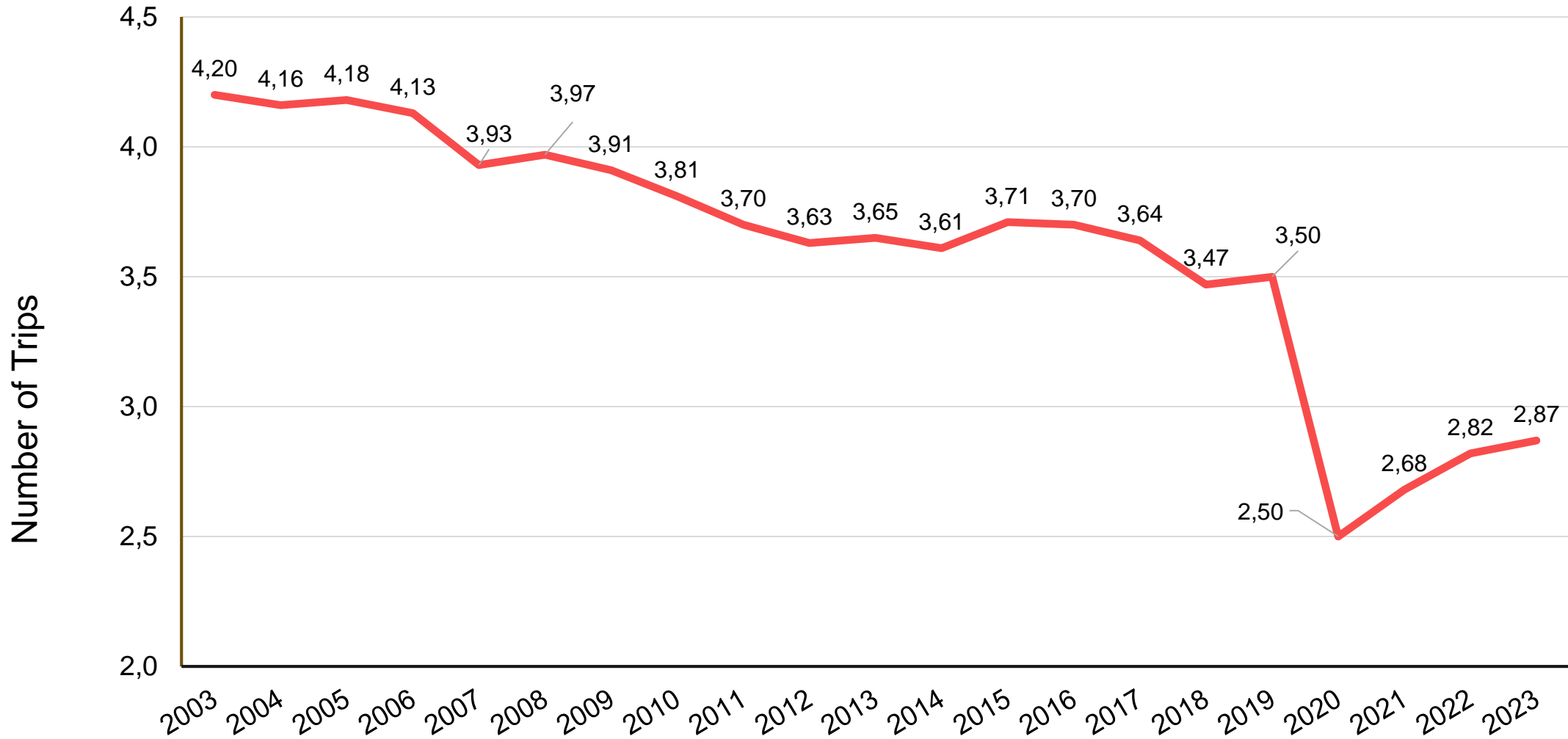


Comparative Growth in VMT and Lane Miles

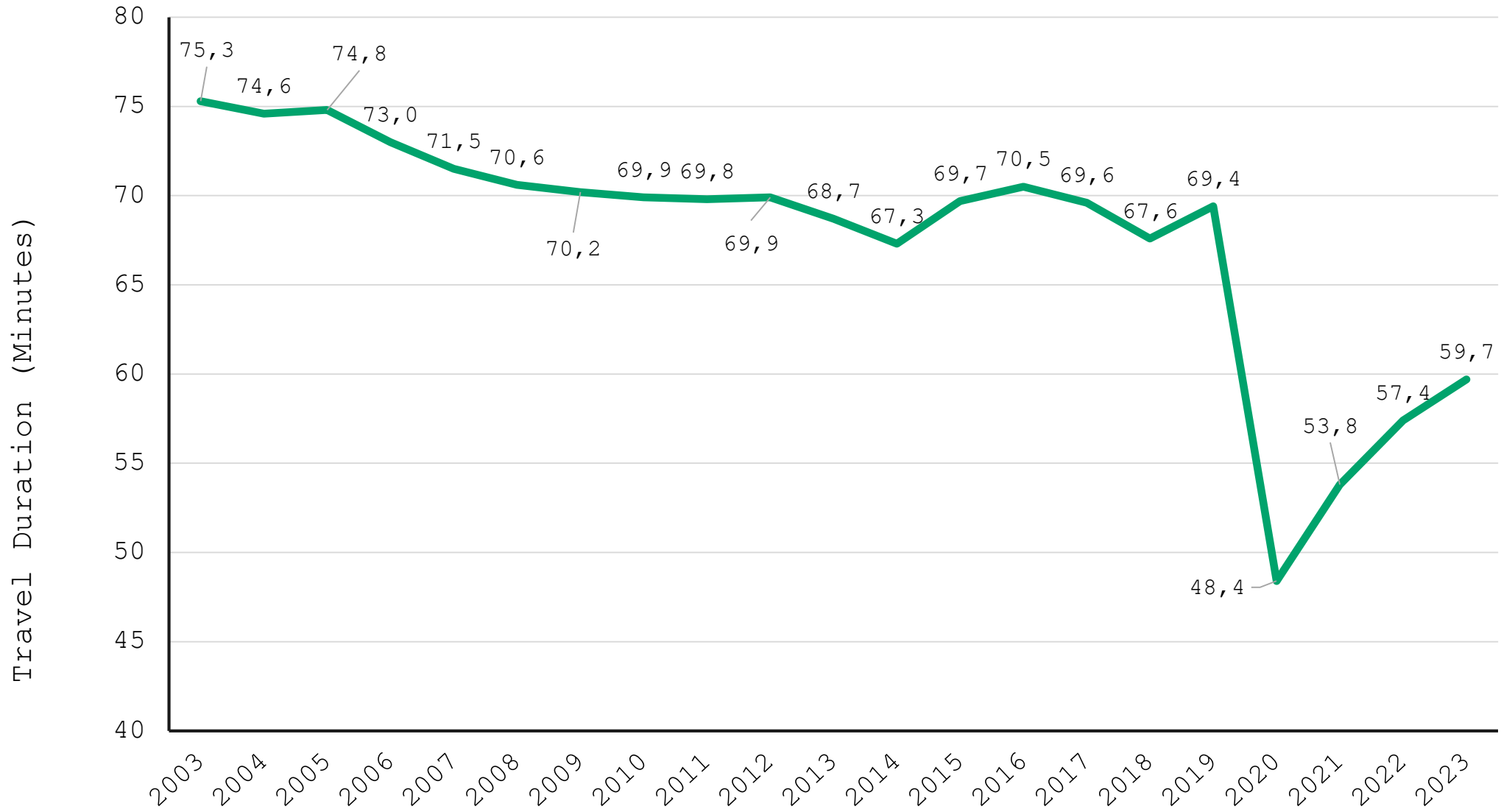
Change Since 1980 (U.S. Totals)



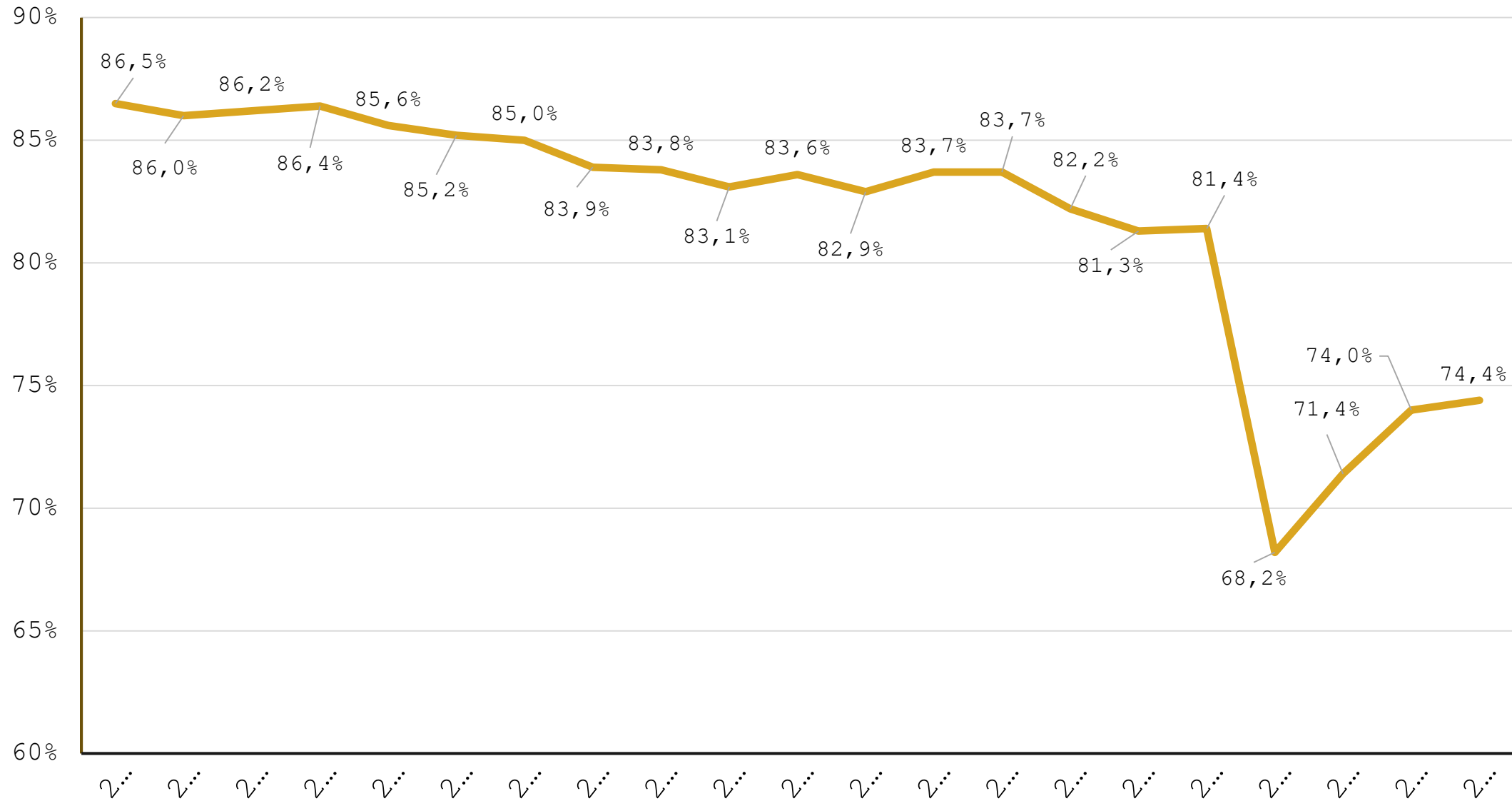
Daily Trip Rates Per Person, ATUS, ≥15



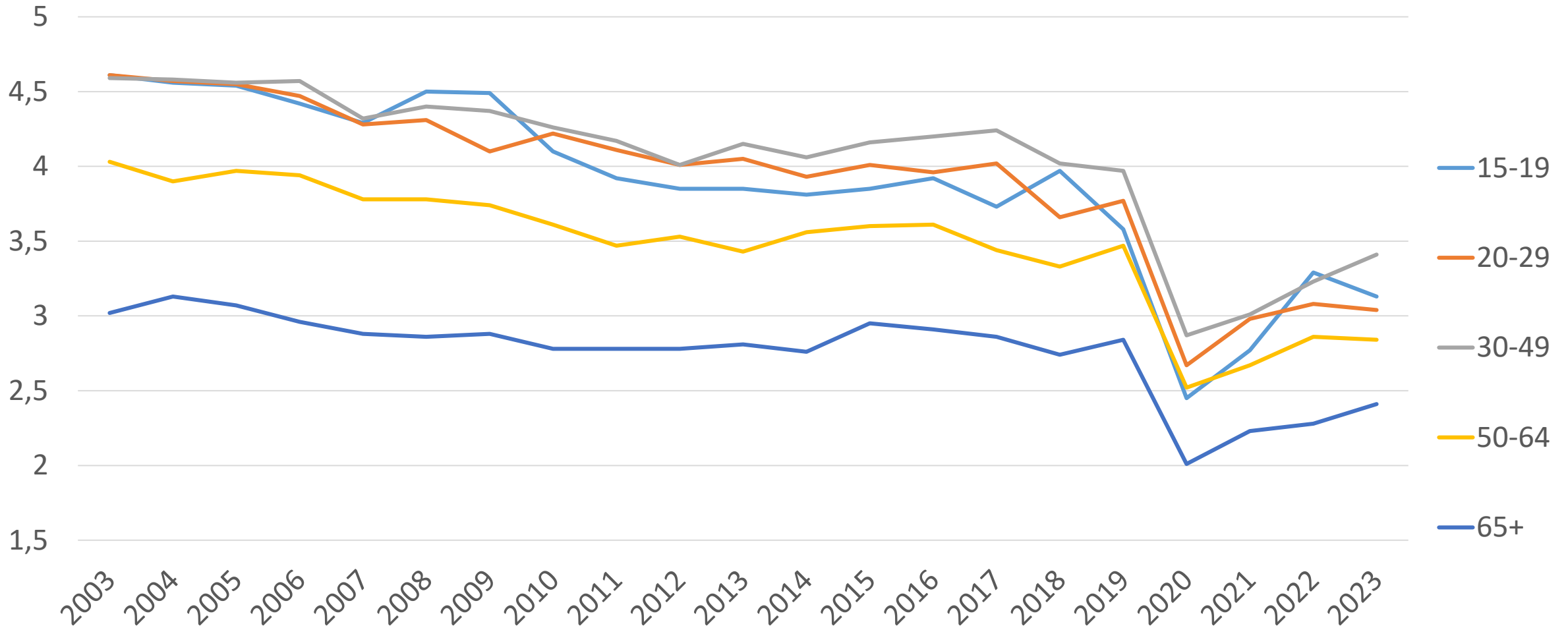
Daily Travel Duration (Minutes), ATUS, ≥ 15



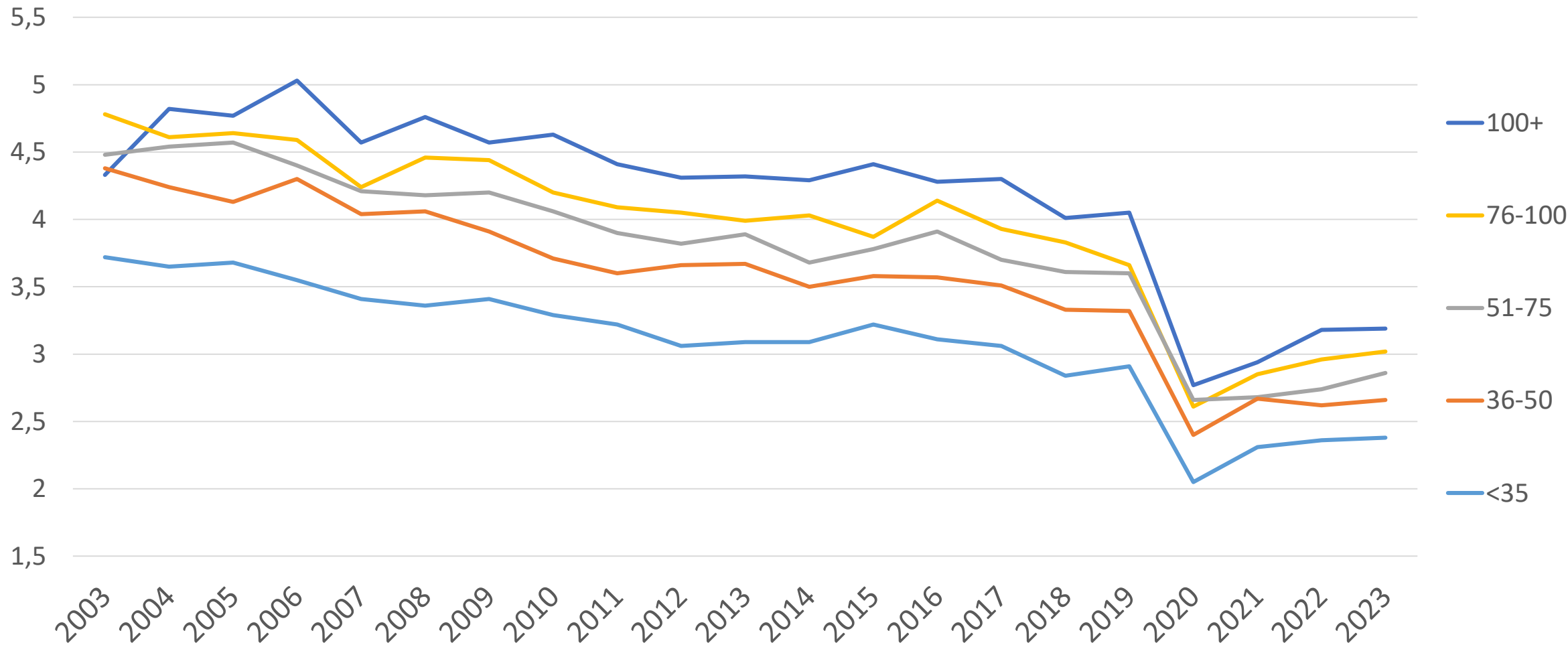
Percent Mobile on Survey Day, ATUS, ≥15



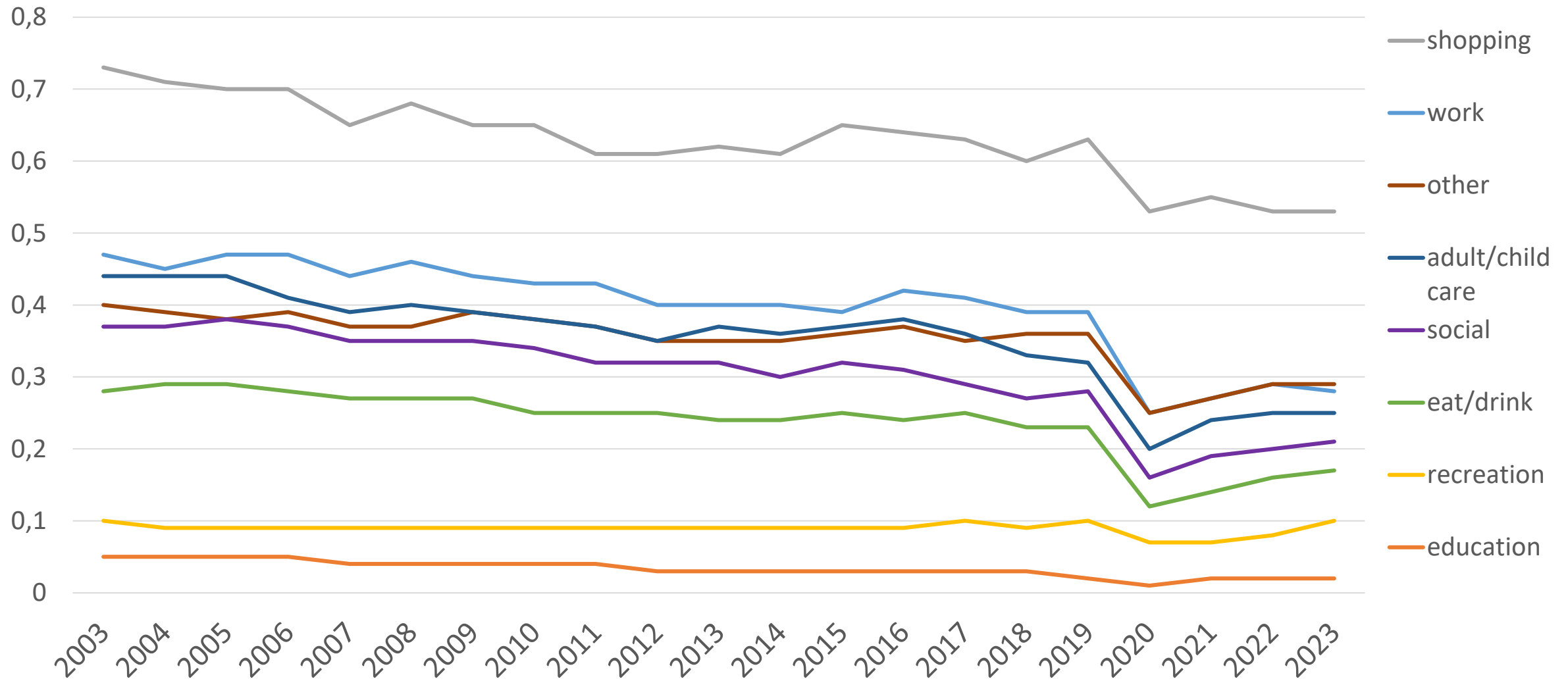
Trip Rate Trend by Age



Trip Rate Trend by Income

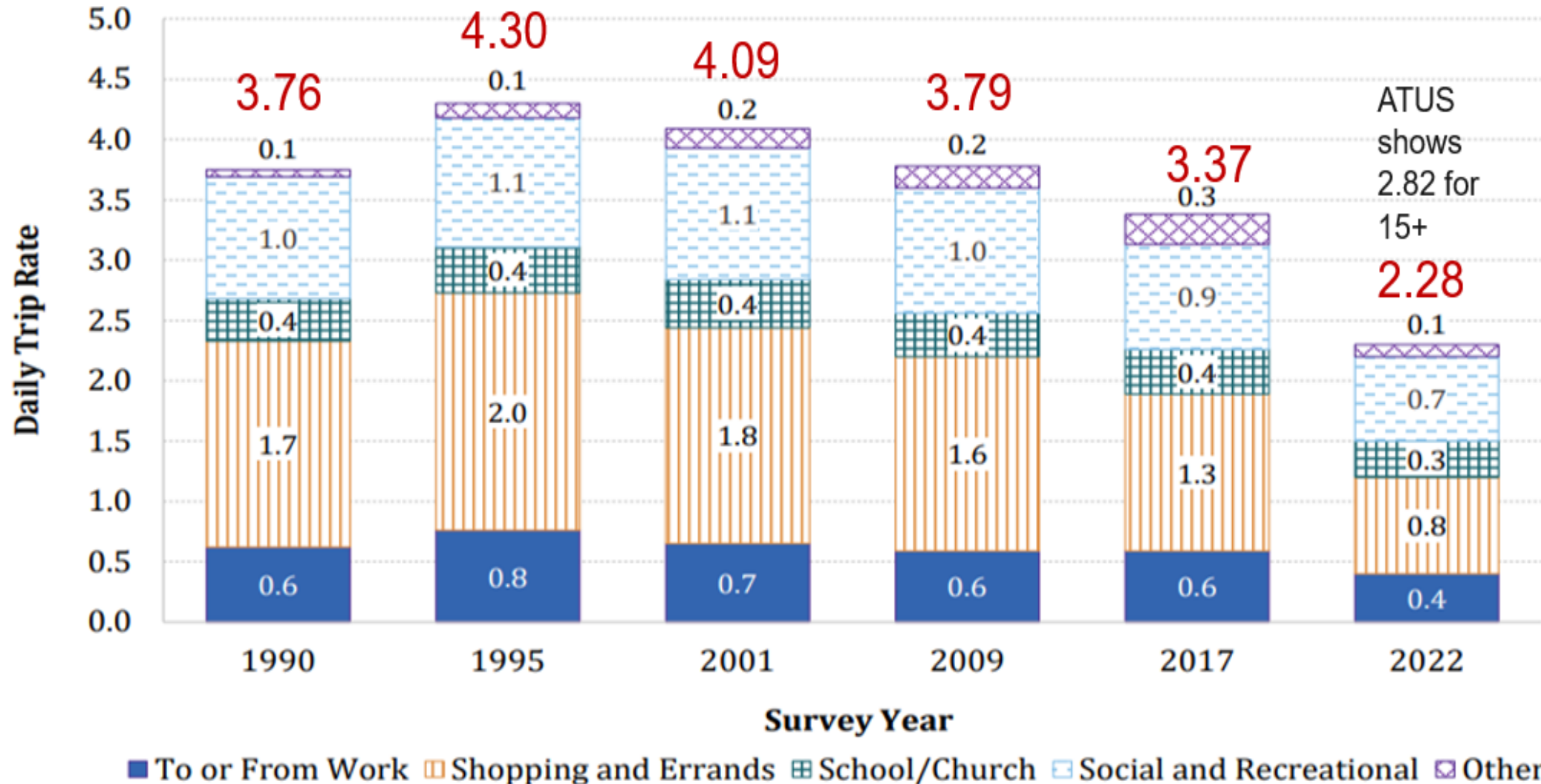


Trip Rate Trend by Trip Purpose



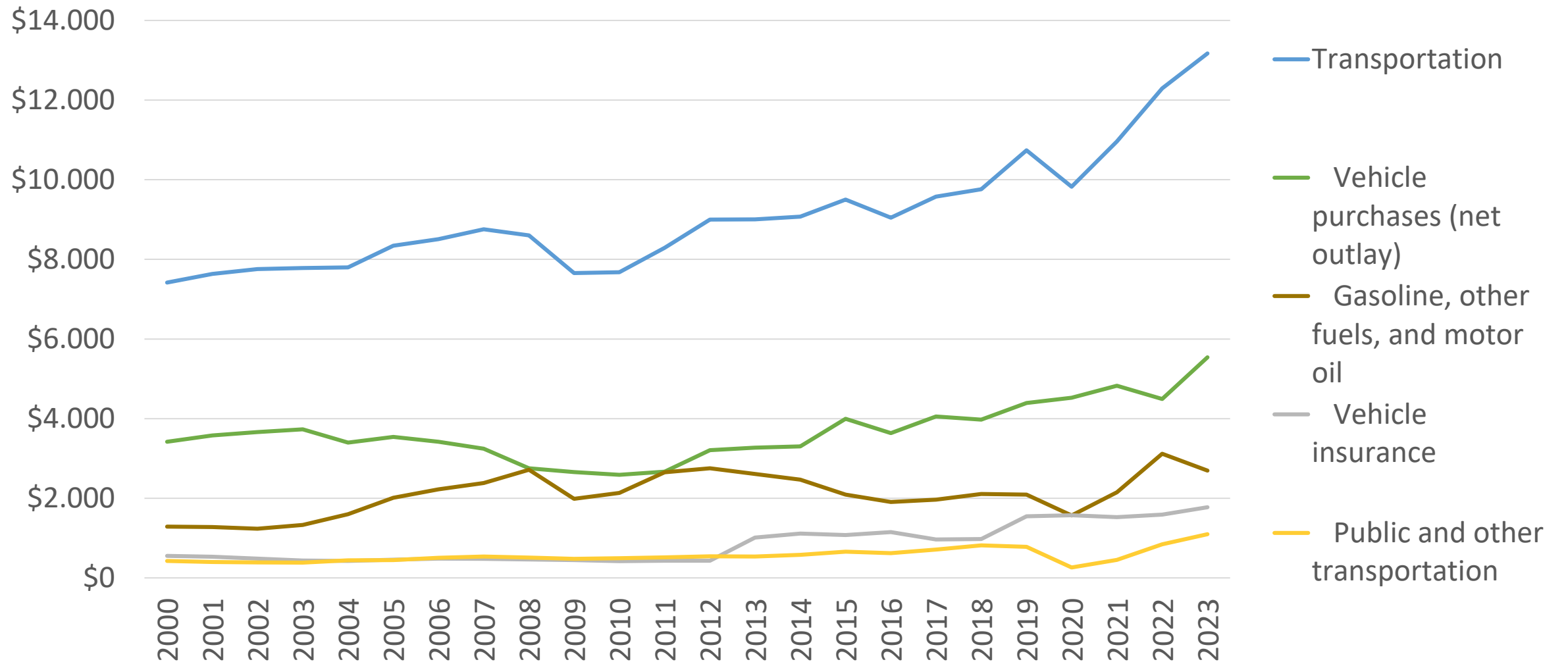
Daily Trip Rates per Person by Trip Purpose

US National Household Travel Survey

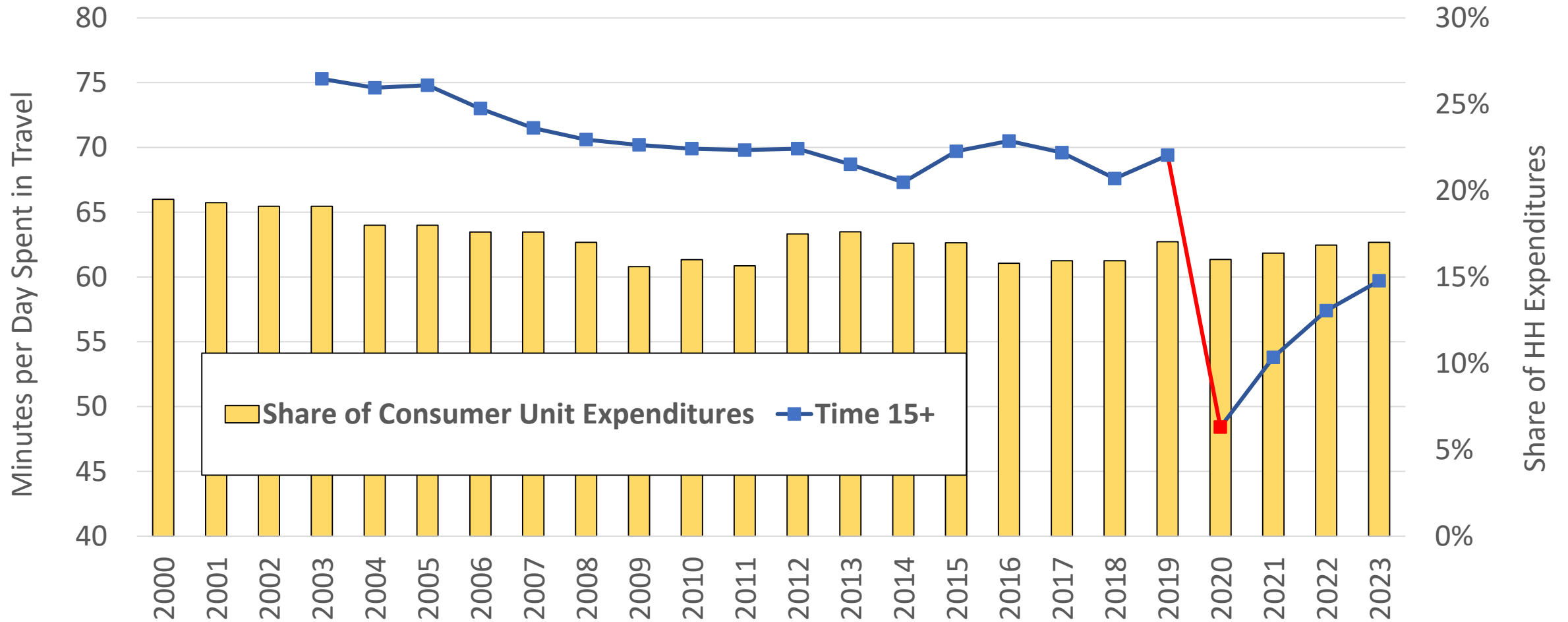


Note: The "Other" trip purpose category includes trips for work-related business and trips not categorized. For explanations of adjustments as well as specific differences in survey methods over time, please refer to Section 1.2.

Consumer Expenditures on Transportation



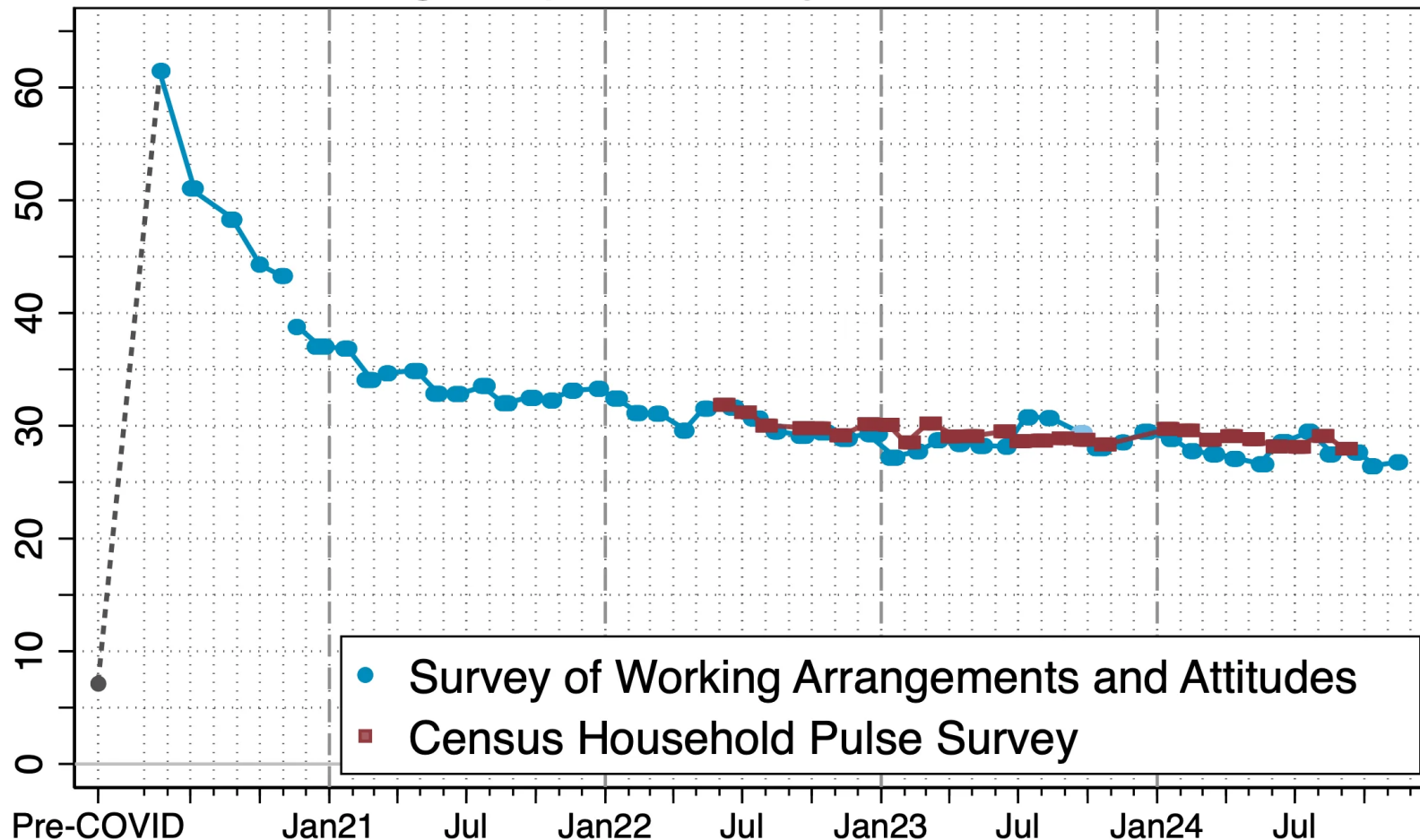
Time and Money Expenditures for Travel



Source: Consumer Expenditure Survey (CE) and American Time Use Survey (ATUS)

Percentage of Full Days Worked from Home

Percentage of paid full days worked from home



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

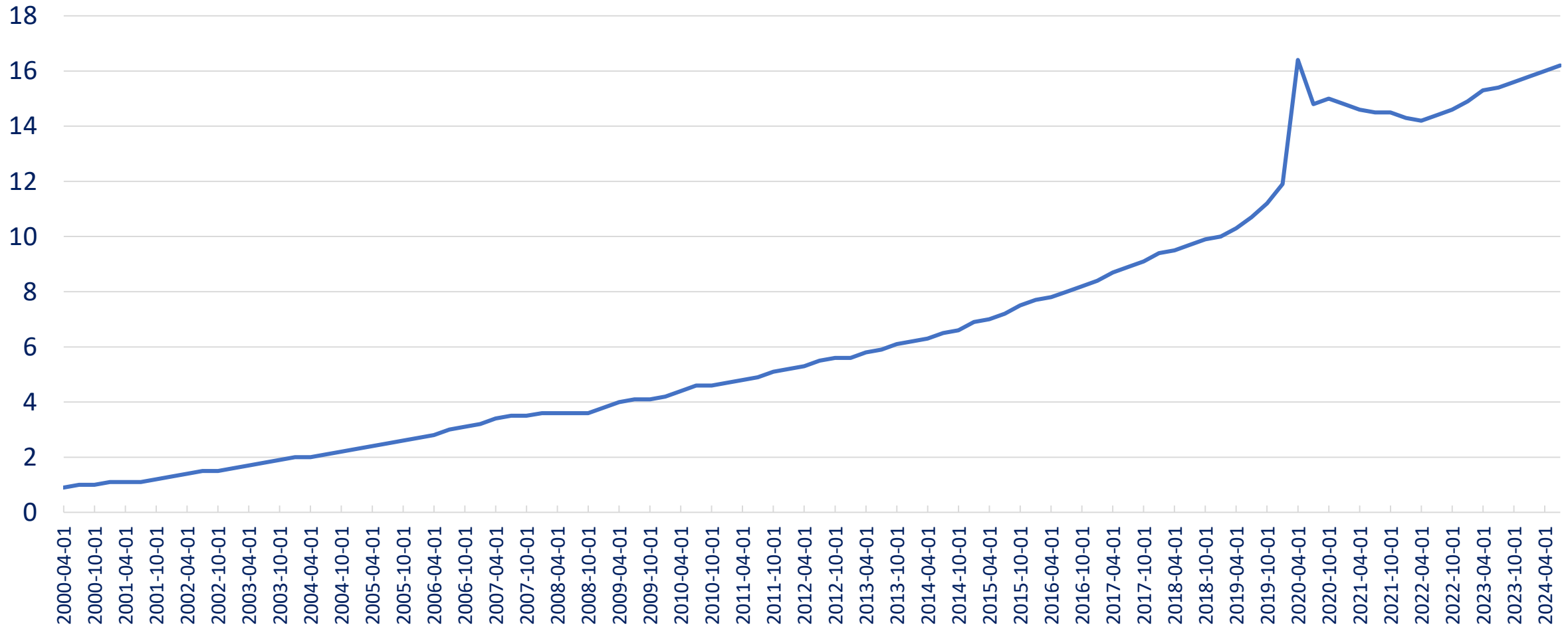
*We estimate the pre-COVID rate using the 2019 American Time Use Survey

*The break in the series in November 2020 reflects a change in the survey question.

*The SWAA Sept. 2023 estimate averages August and October due to data quality issues in September.

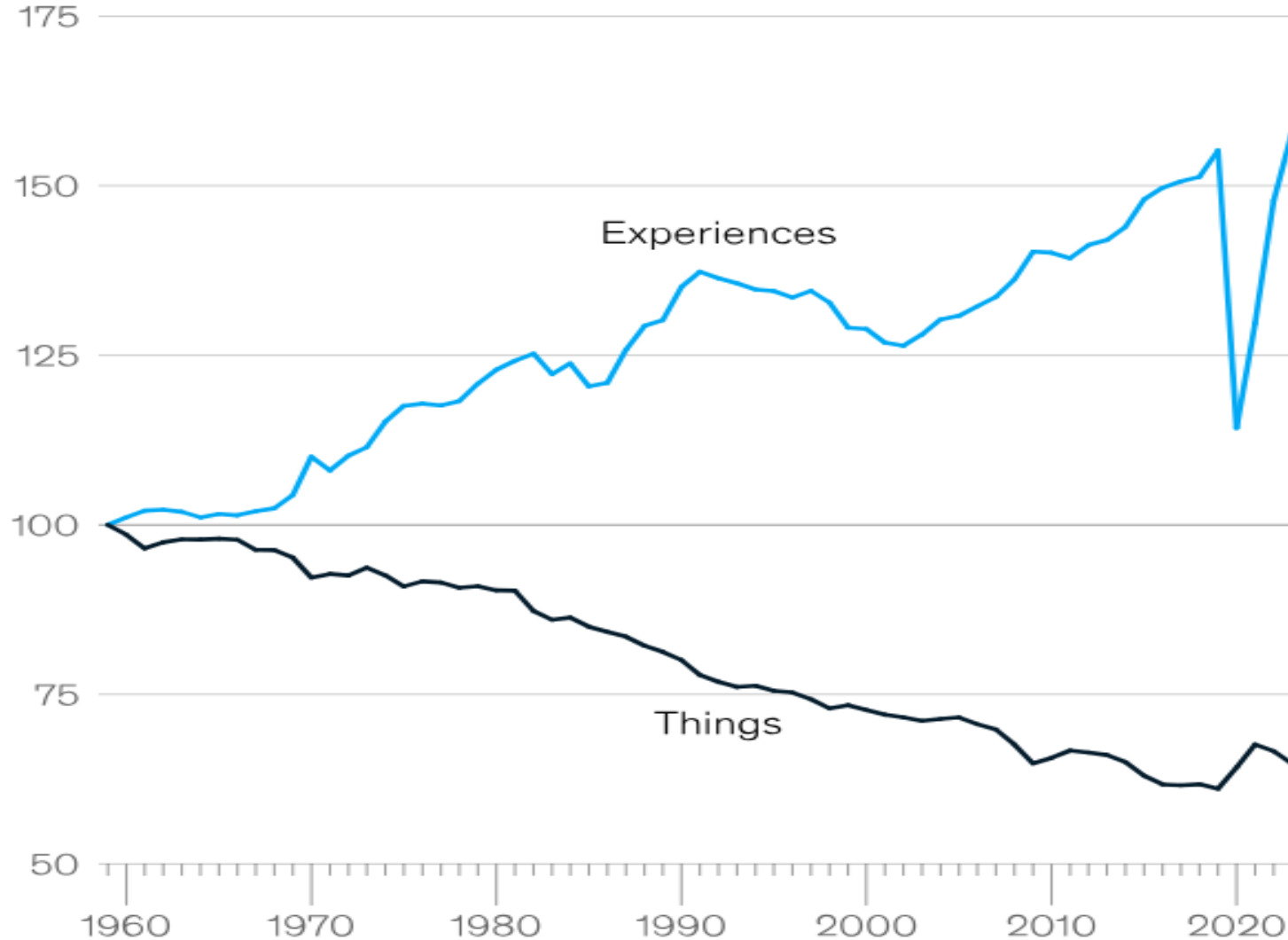
E-Commerce Retail Sales

Percent of Total Sales, Quarterly, Seasonally Adjusted, thru Q3-2024



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

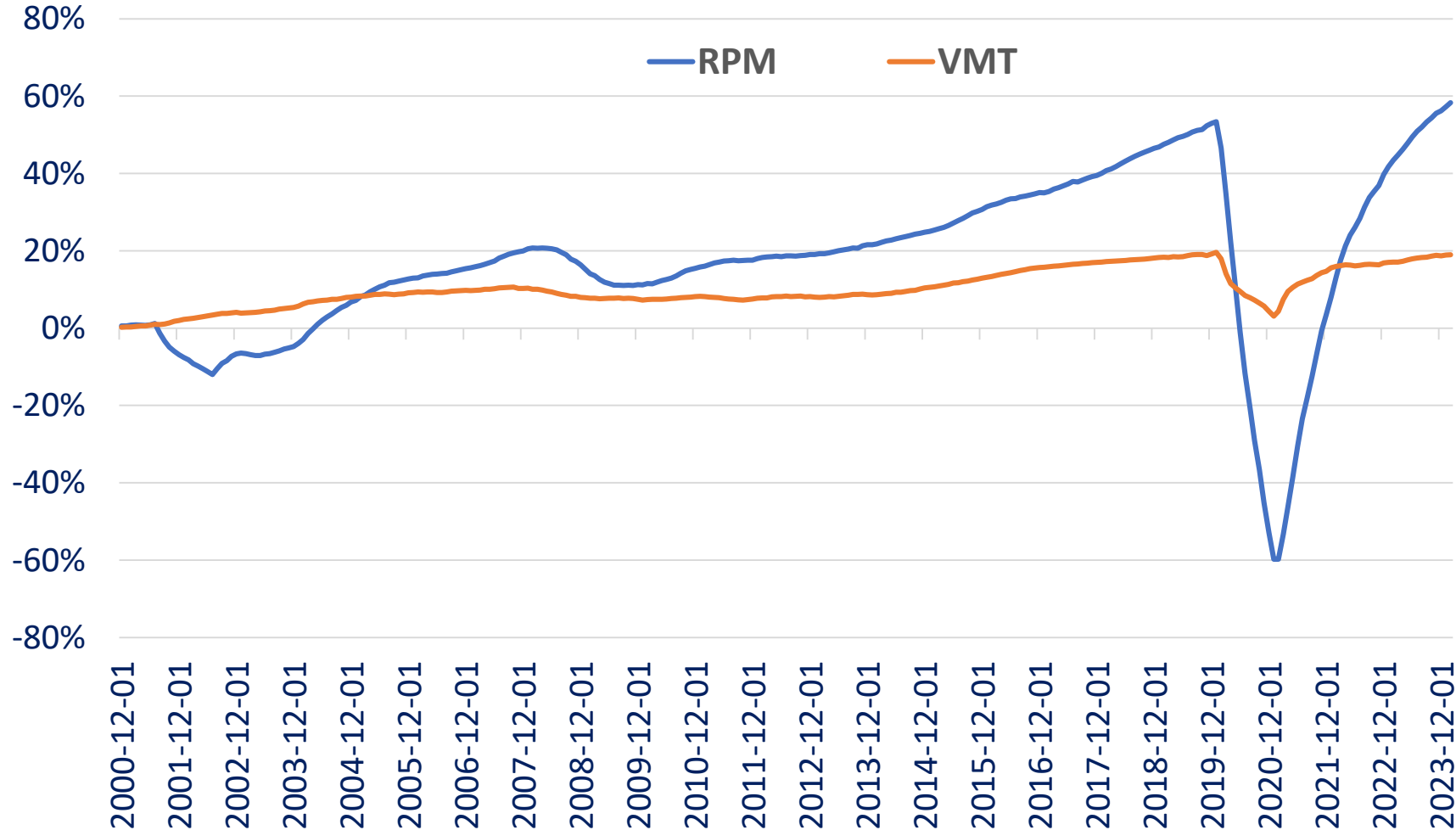
Expenses on Experiences vs Items



Changes in spending on things and experiences as a share of discretionary spending, Index 1959=100

Revenue Pass Miles vs. VMT

Percent change from 2000



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.

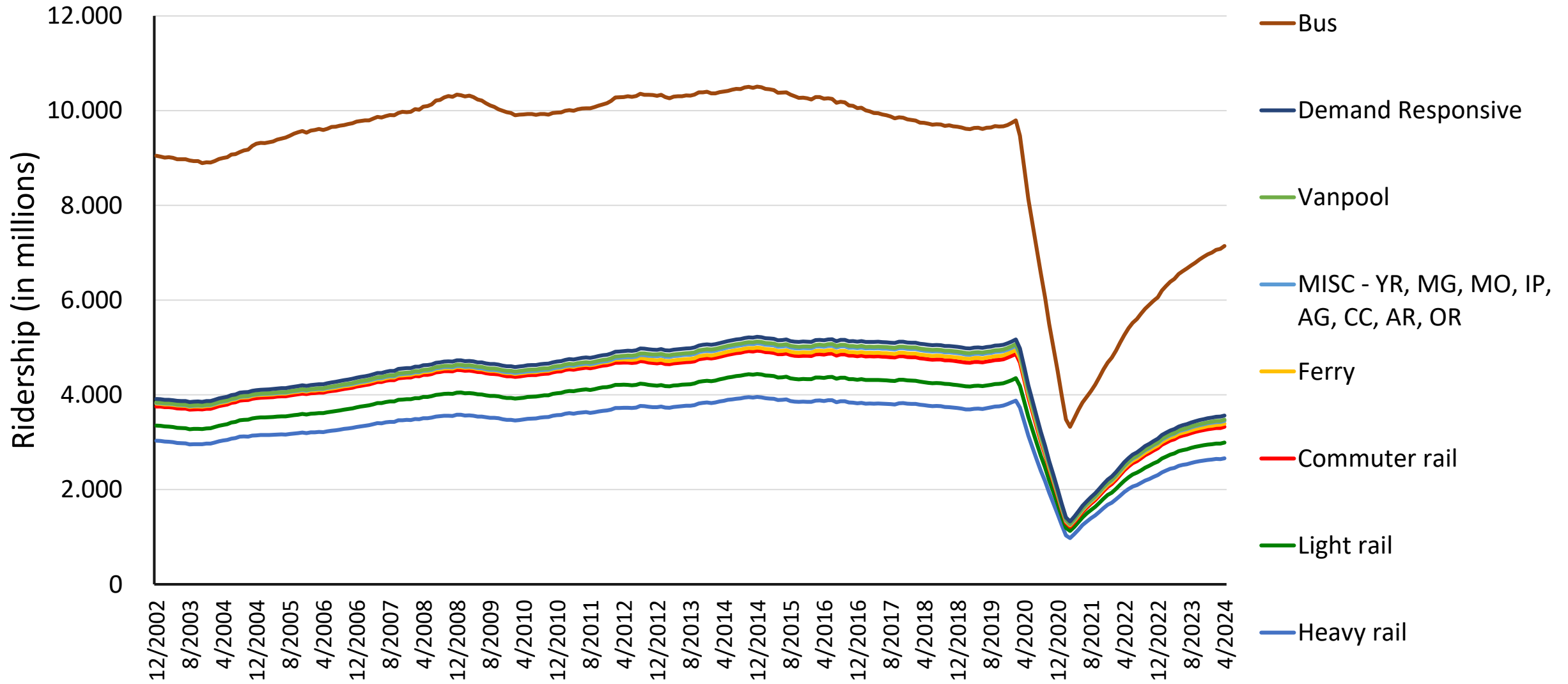
Source: FRED

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%	

U.S. Public Transit Ridership

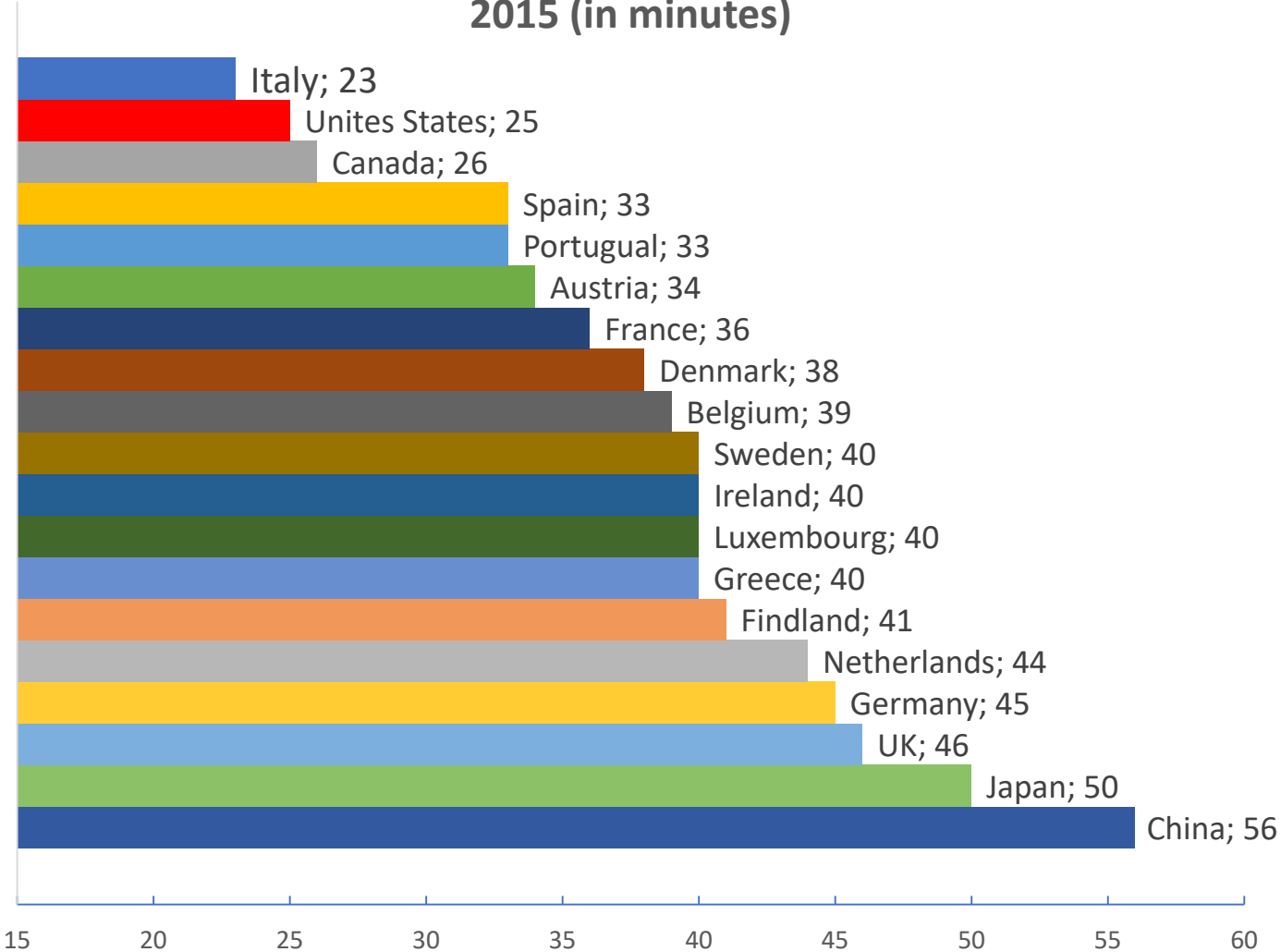
12-Month Rolling Average, Stacked Lines



But the U.S. Stacks up Pretty Well

Commute Time for Selected Countries

Average Daily Commuting Time, Selected Countries, 2015 (in minutes)



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

Source: Jean-Paul Rodrigue, 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

Things to Watch

- **Monitor ongoing changes with quality data and analysis**
- **Pay more attention to non-household-based travel**
 - Shift from HH to commercial activities
 - Onshoring of manufacturing
 - Freight impacts of e-commerce
- **Explore evolving trend of telework and its disparate geographic implications on travel demand**
- **Explore evolving impact of communication substitution**
- **Explore emerging characteristics of household composition and behavior**
- **Watch micromobility, passenger air travel trends**

- **And then there is automation**
- **And the unknowns**

Implications

- High uncertainty
- Significant challenges for modeling/forecasting
- More and better data and computational capabilities
- Contentious and political environment

- Favors incremental, adaptable and flexible investments and services
- Case studies and experimentation may be as important as forecasting



USDOT NATIONAL CENTER FOR UNDERSTANDING FUTURE
TRAVEL BEHAVIOR AND DEMAND

Thank You

Support provided by the **ASU TOMNET UTC** and the **Travel Behavior and Demand National Transportation Research Center**

Collaborators include Ram Pendyala and Irfan Batur

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U.S. Public Transit Ridership Change

Transit Mode	Change (%) February 2019 to February 2024	Change (%) Between April 2023 and April 2024
Heavy rail	-31.40%	8.20%
Light rail	-29.90%	8.90%
Commuter rail	-35.00%	11.60%
Ferry	-21.40%	9.90%
MISC - YR, MG, MO, IP, AG, CC, AR, OR	-28.90%	12.50%
Vanpool	-35.30%	9.60%
Demand Responsive	-11.20%	13.00%
Bus	-22.60%	12.80%