

Evolving Travel Behavior and Mobility Trends: Key Insights and Implications from Two Decades of National Surveys

Dr. Steven E. Polzin

Dr. Ram M. Pendyala

Dr. Irfan Batur

School of Sustainable Engineering and the Built Environment

Arizona State University

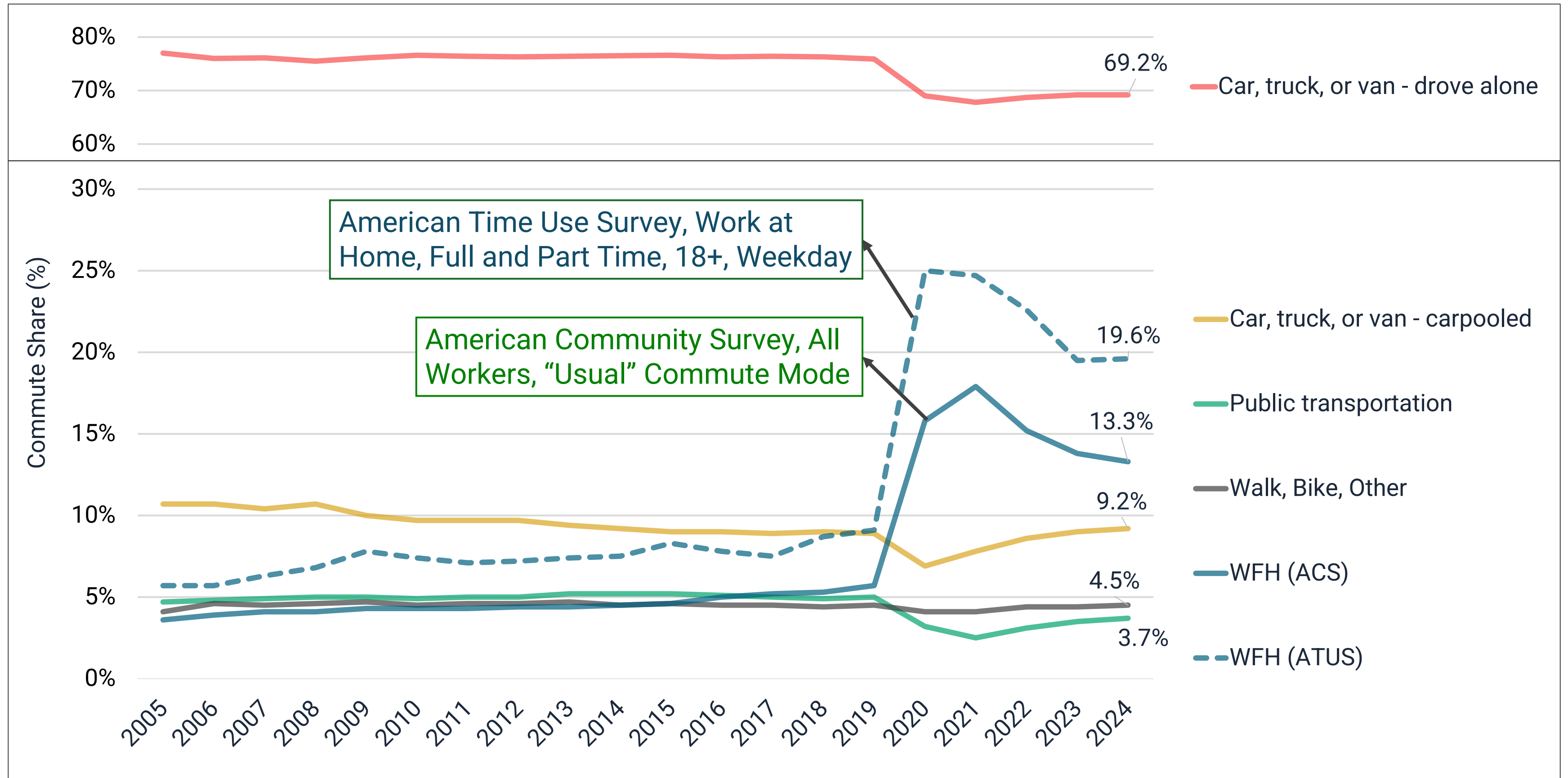


A Review of National Data Trends

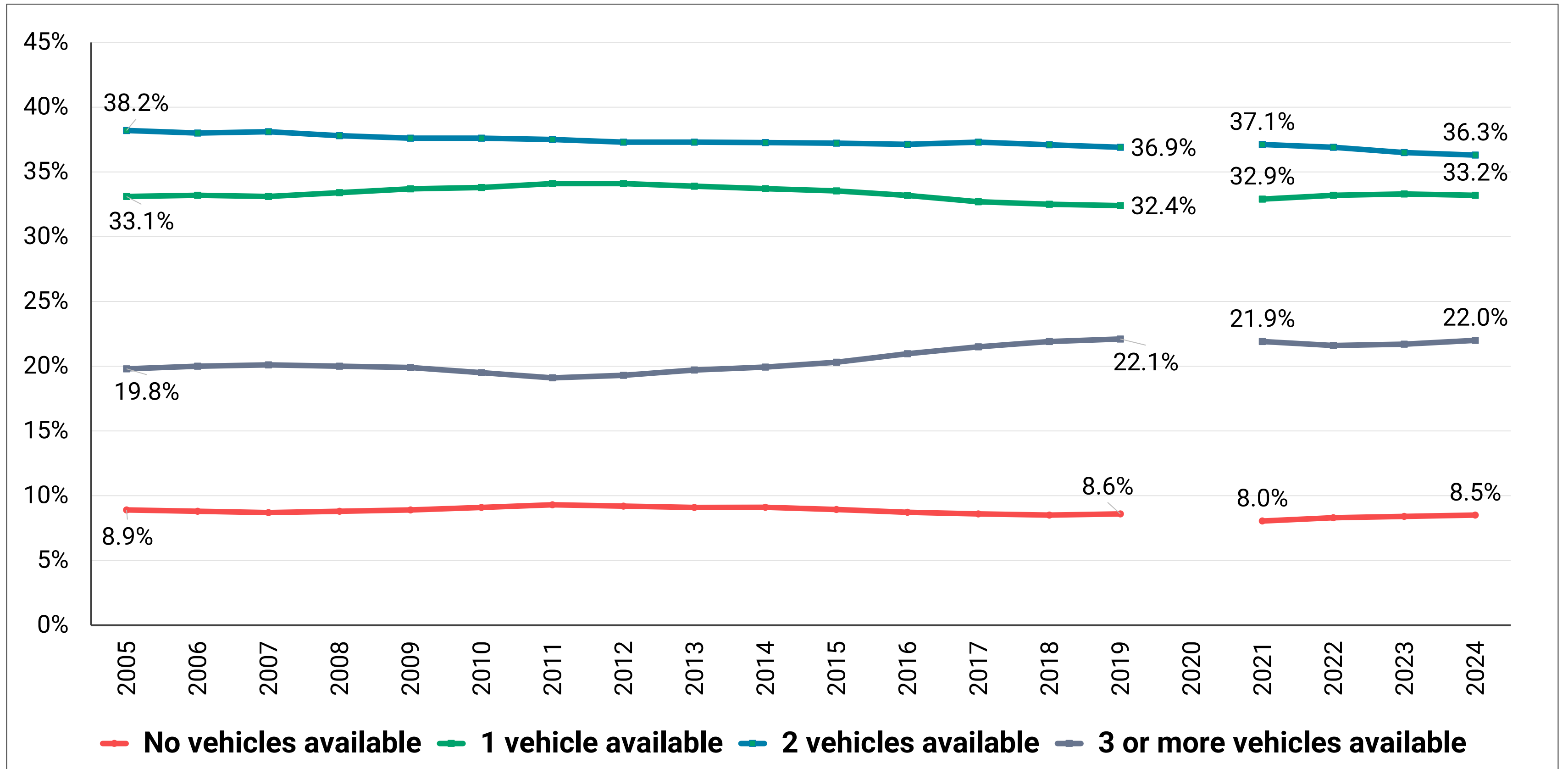
- Survey Data:
 - American Community Survey
 - American Time Use Survey
 - Consumer Expenditure Survey
 - National Household Travel Survey
 - Federal Reserve Data, Census Pulse Survey Data
- Travel Volume Trend Data from USDOT

Commute Patterns and Access

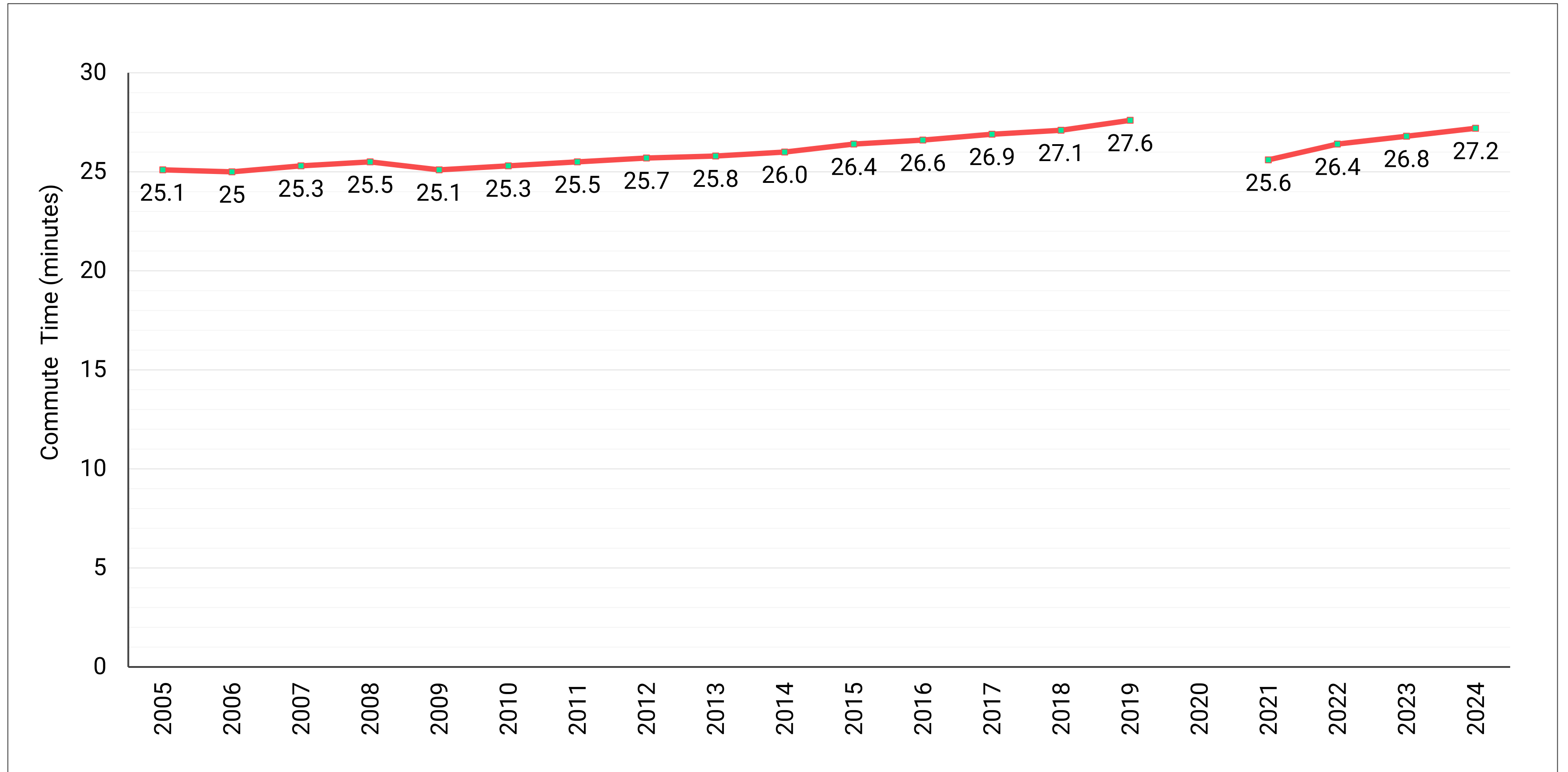
Commute Mode



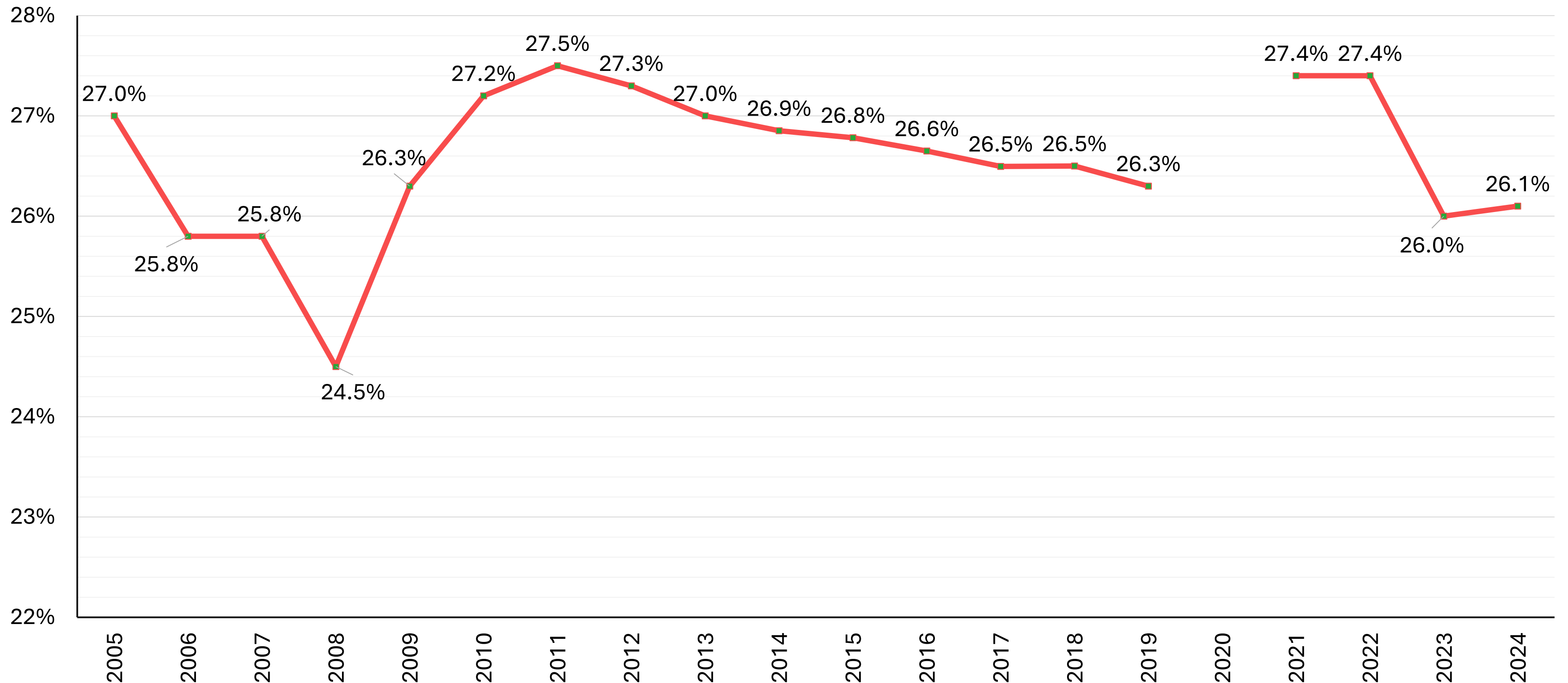
Household Vehicle Availability



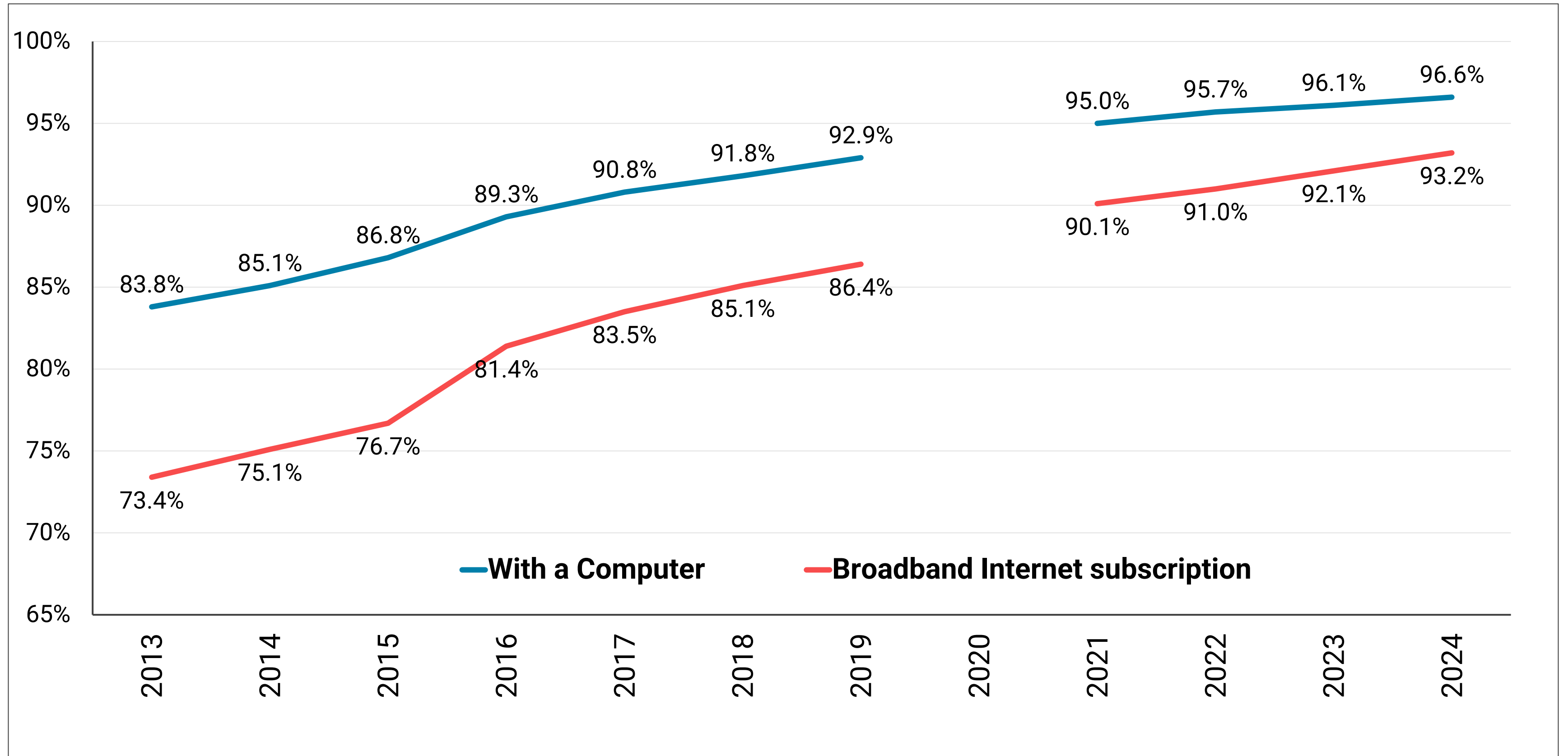
Average Commute Time (2005-2024)



Percent of Zero-Worker Households (2005-2024)



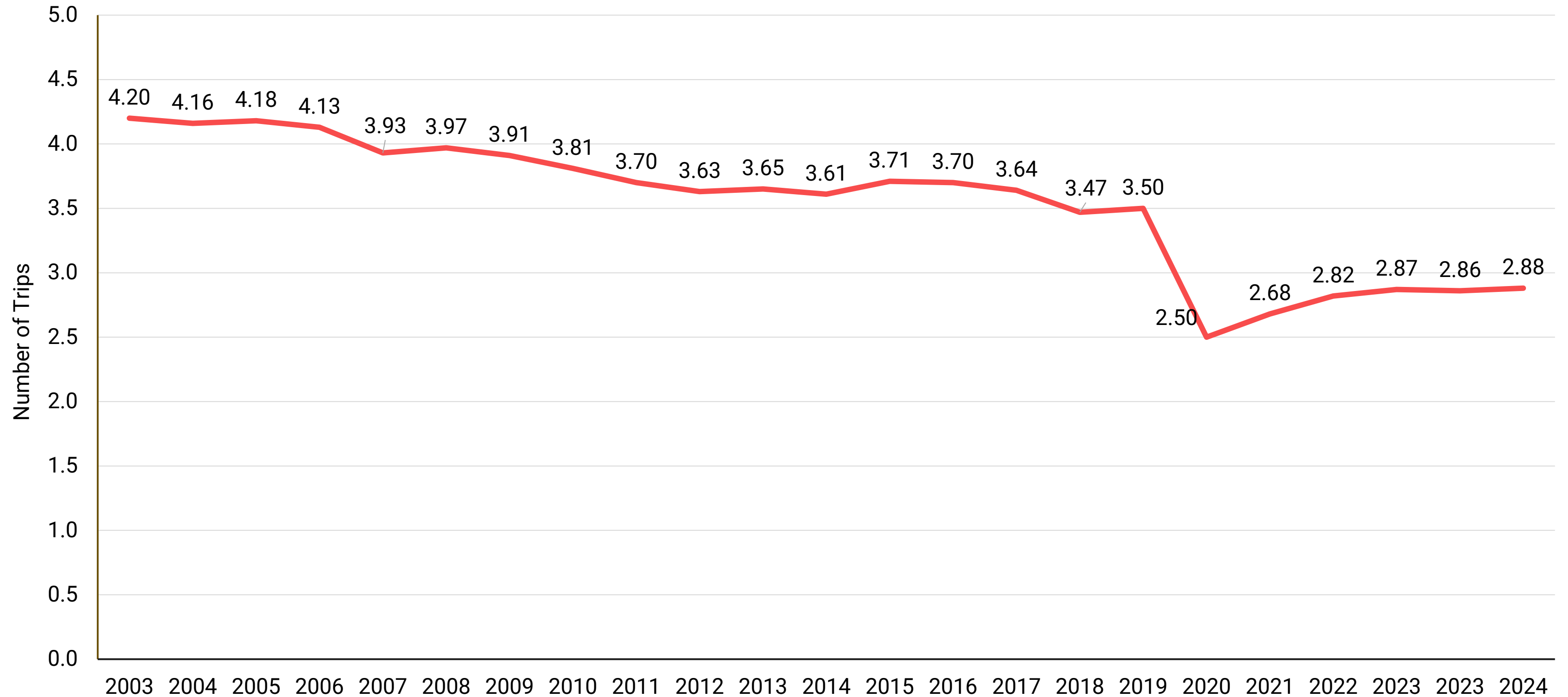
Household Connectivity



Trip Rates and Travel Time

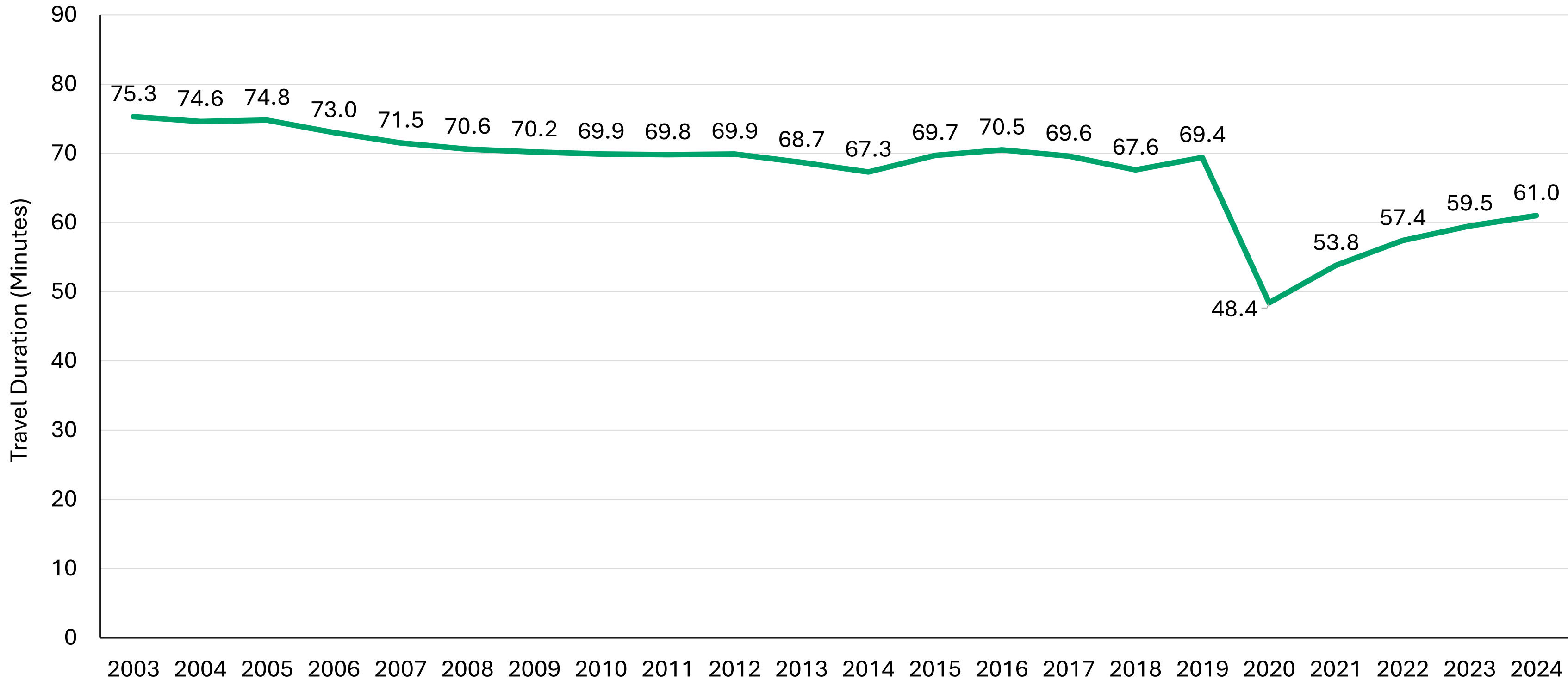
Daily Trip Rates Per Person, ATUS, ≥ 15

T3 Dashboard | Travel



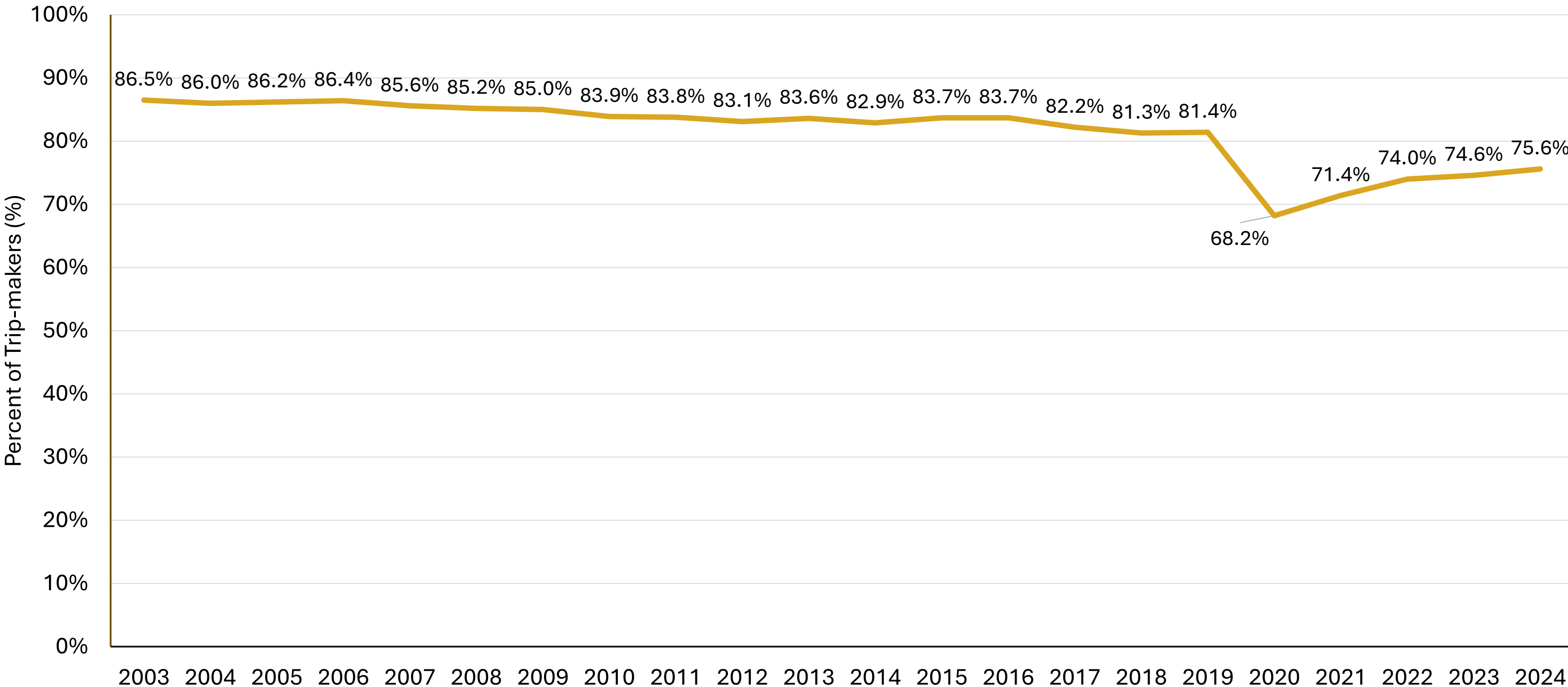
Daily Travel Duration (Minutes), ATUS, ≥ 15

T3 Dashboard | Travel



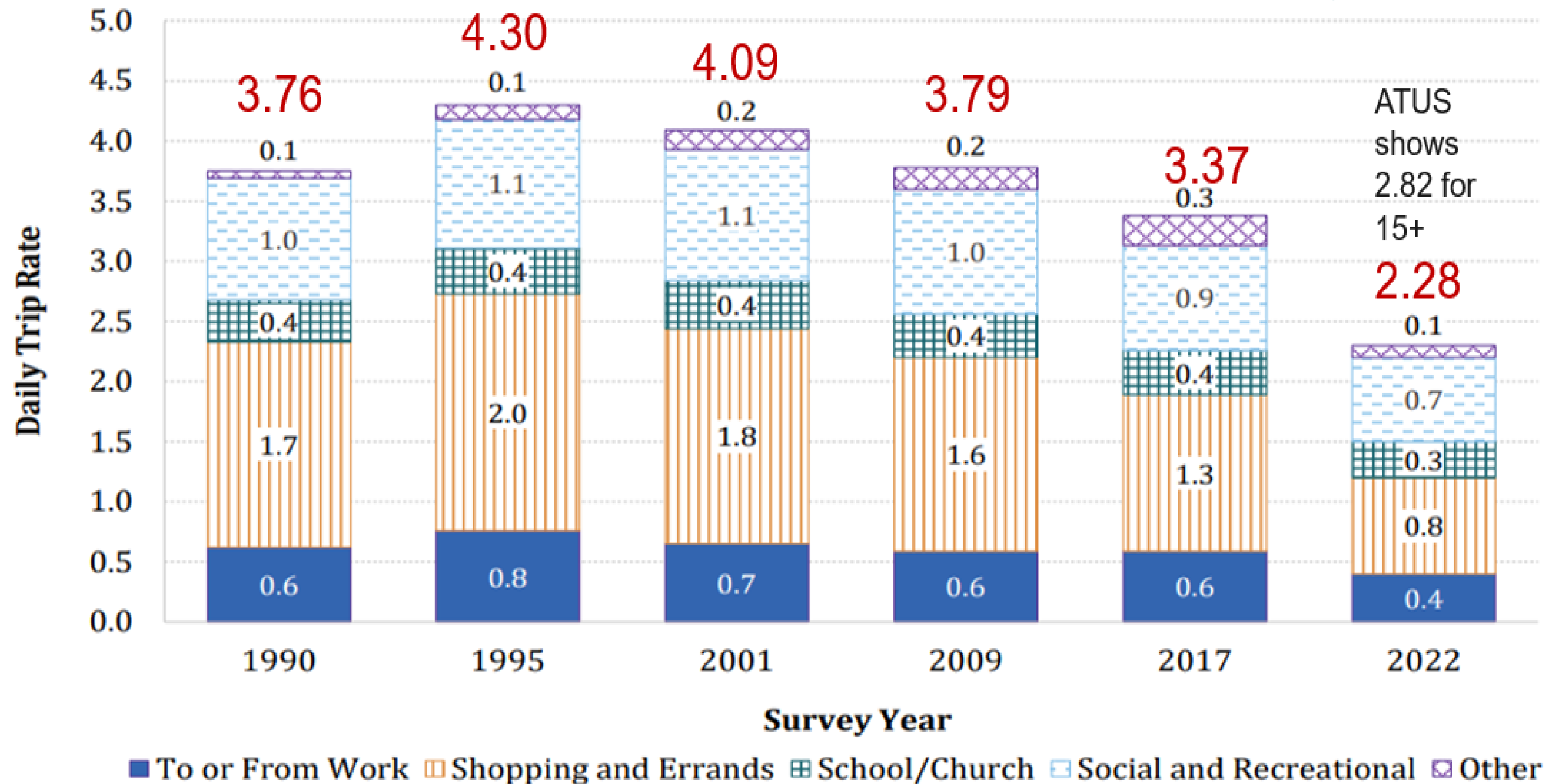
Percent Mobile on Survey Day, ATUS, ≥15

T3 Dashboard | Travel



Daily Trip Rates per Person by Trip Purpose

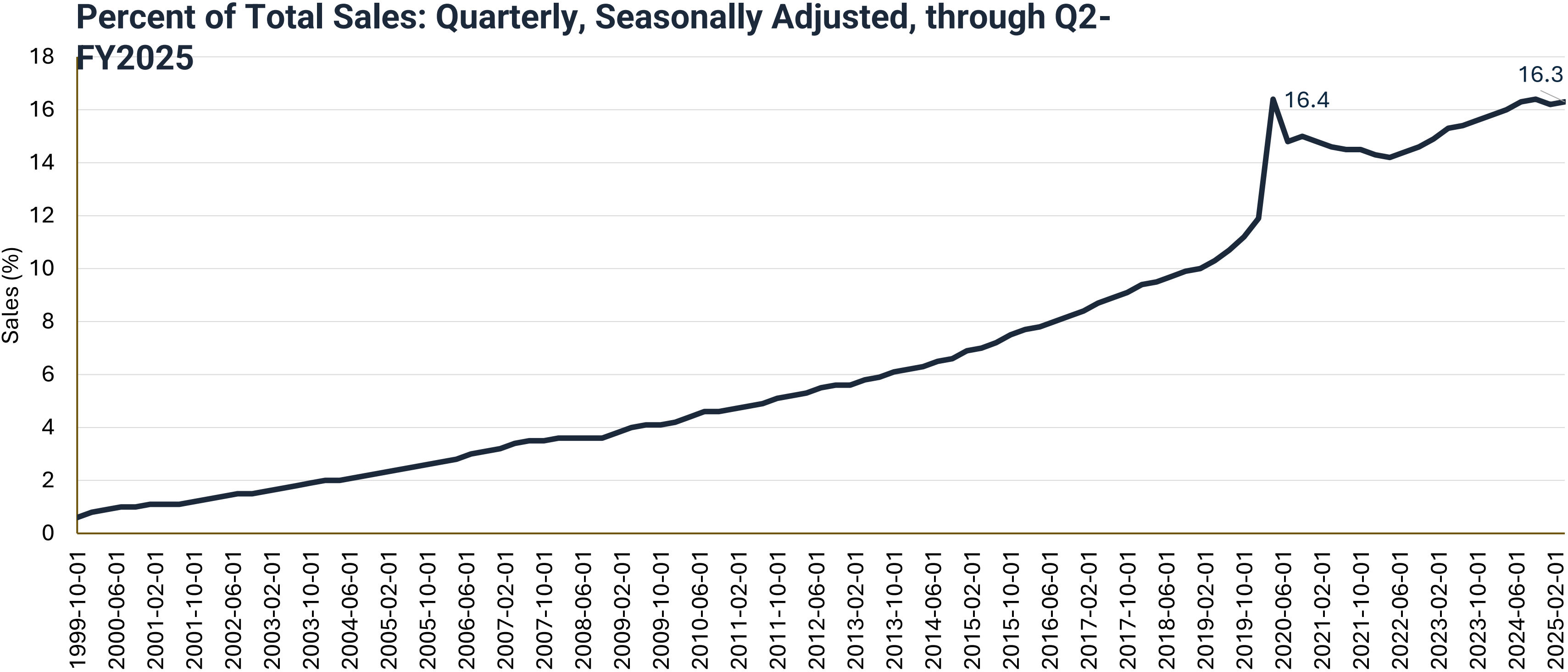
US National Household Travel Survey



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.

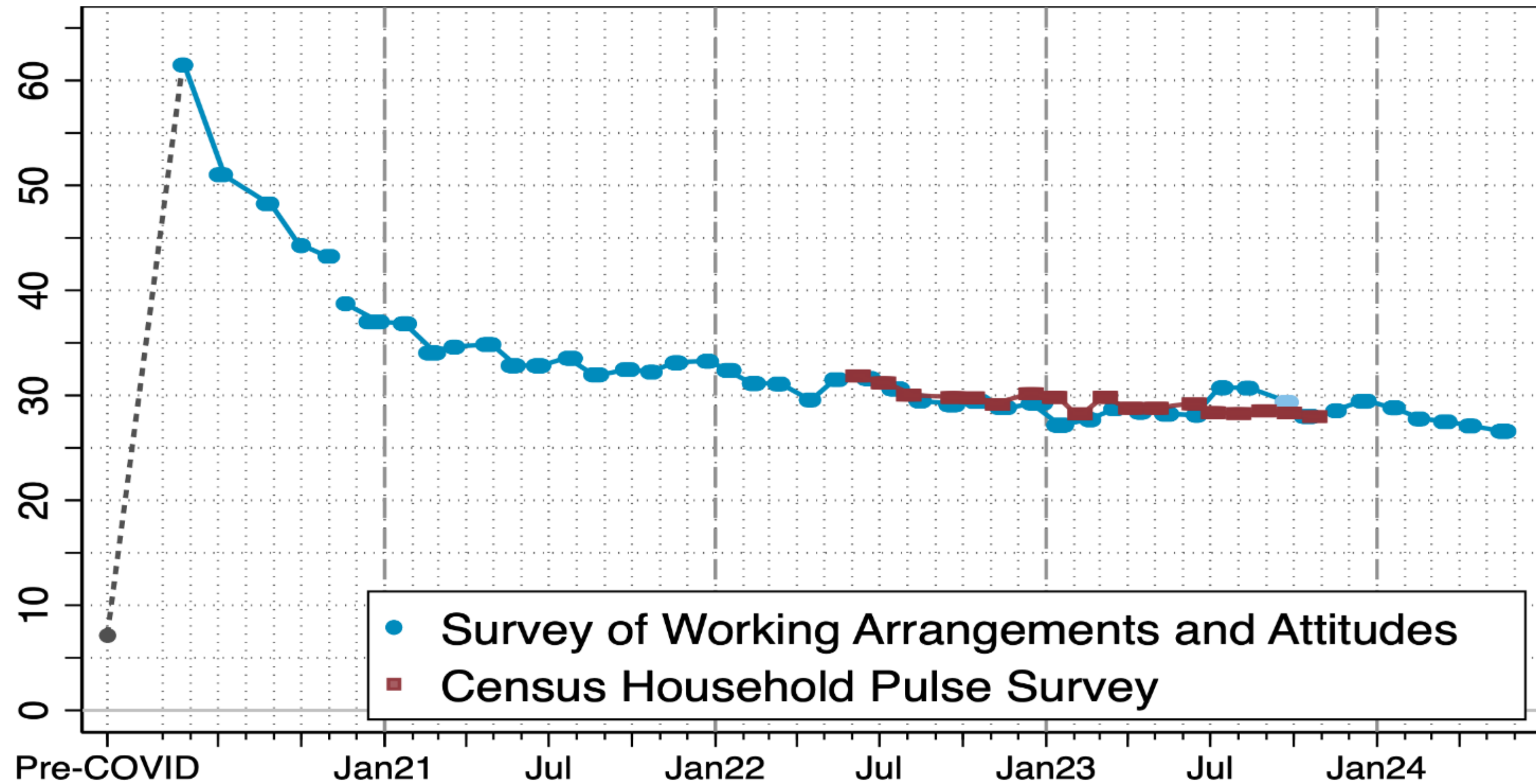
ICT Substitution for Travel

E-Commerce Retail Sales



Source: Federal Reserve Economic Data, Federal Reserve Bank of St. Louis, <https://fred.stlouisfed.org>

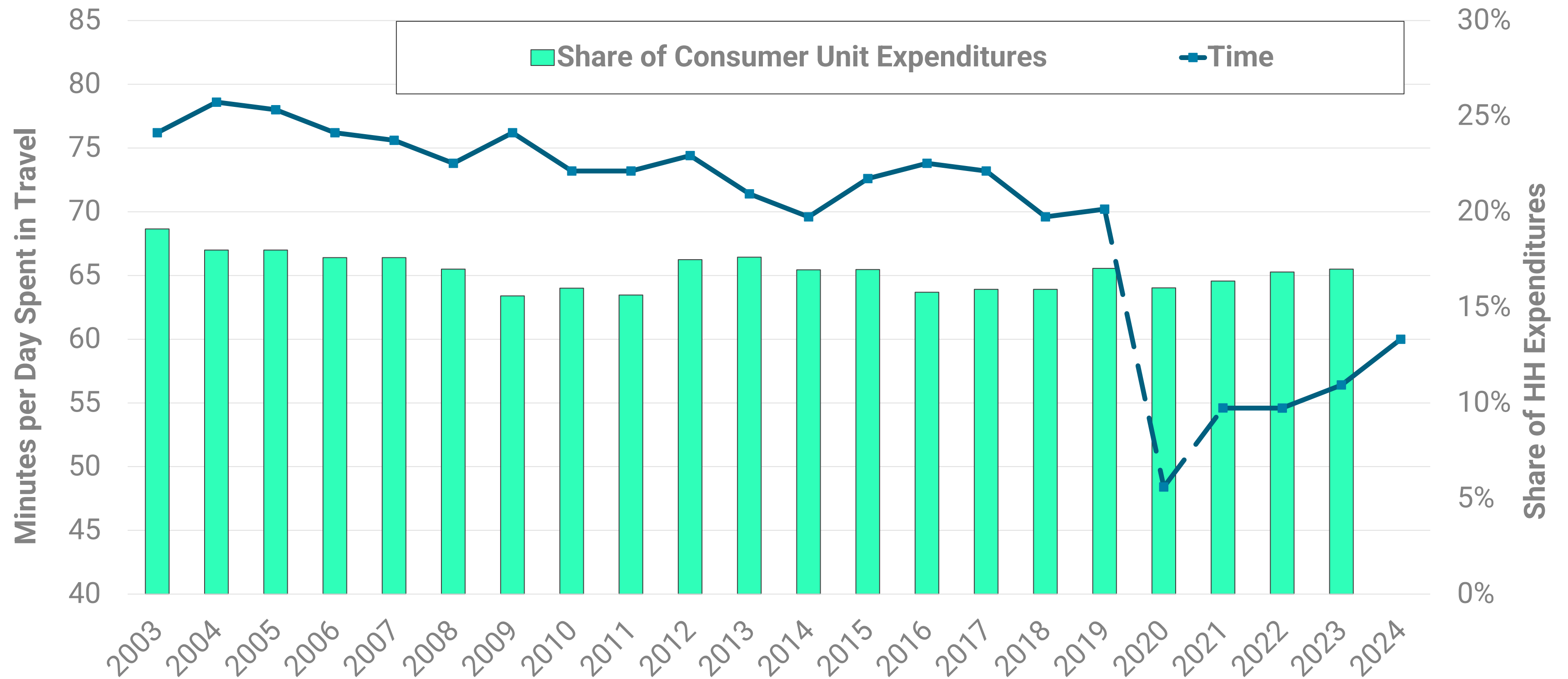
Percentage of Full Days Worked from Home



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

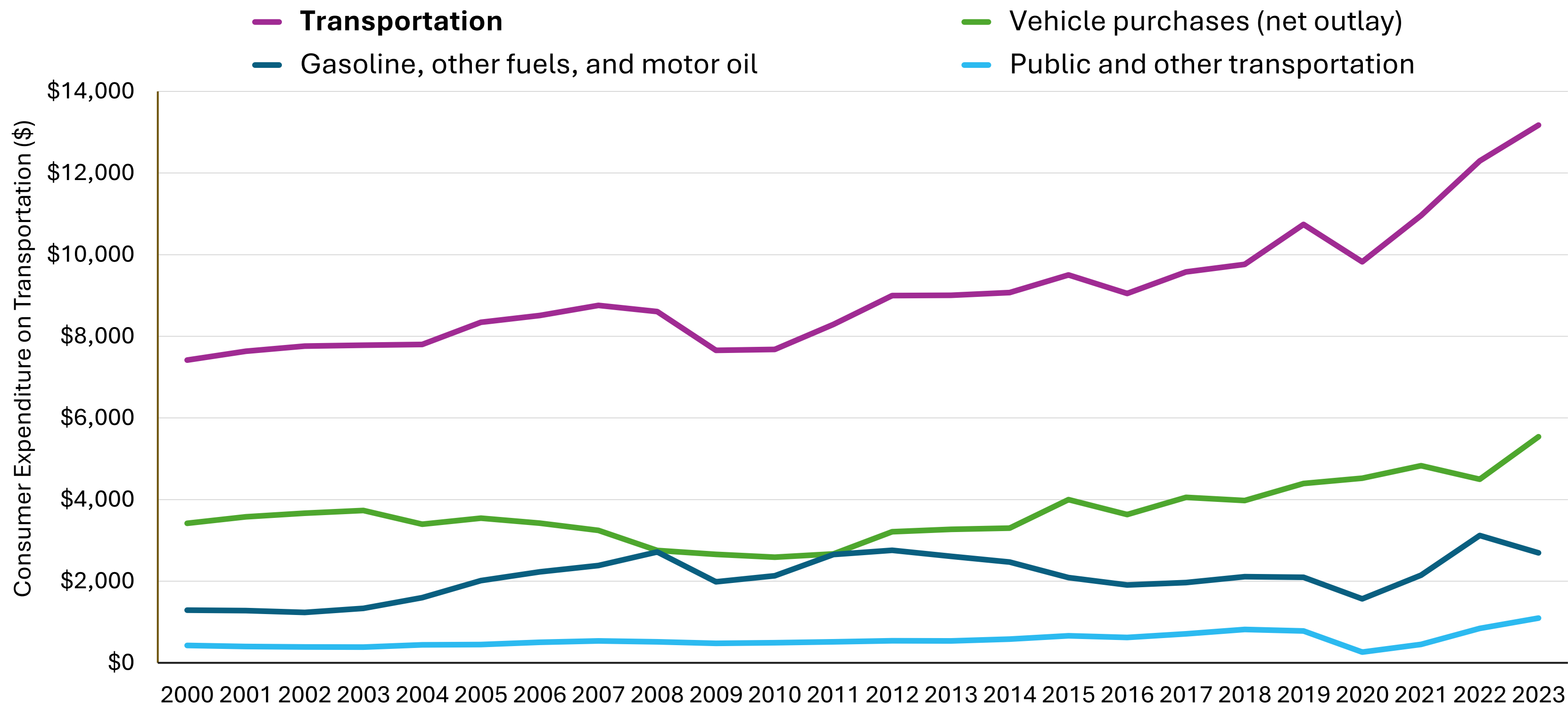
Consumer Expenditure on Transportation

Time and Money Expenditures for Travel



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

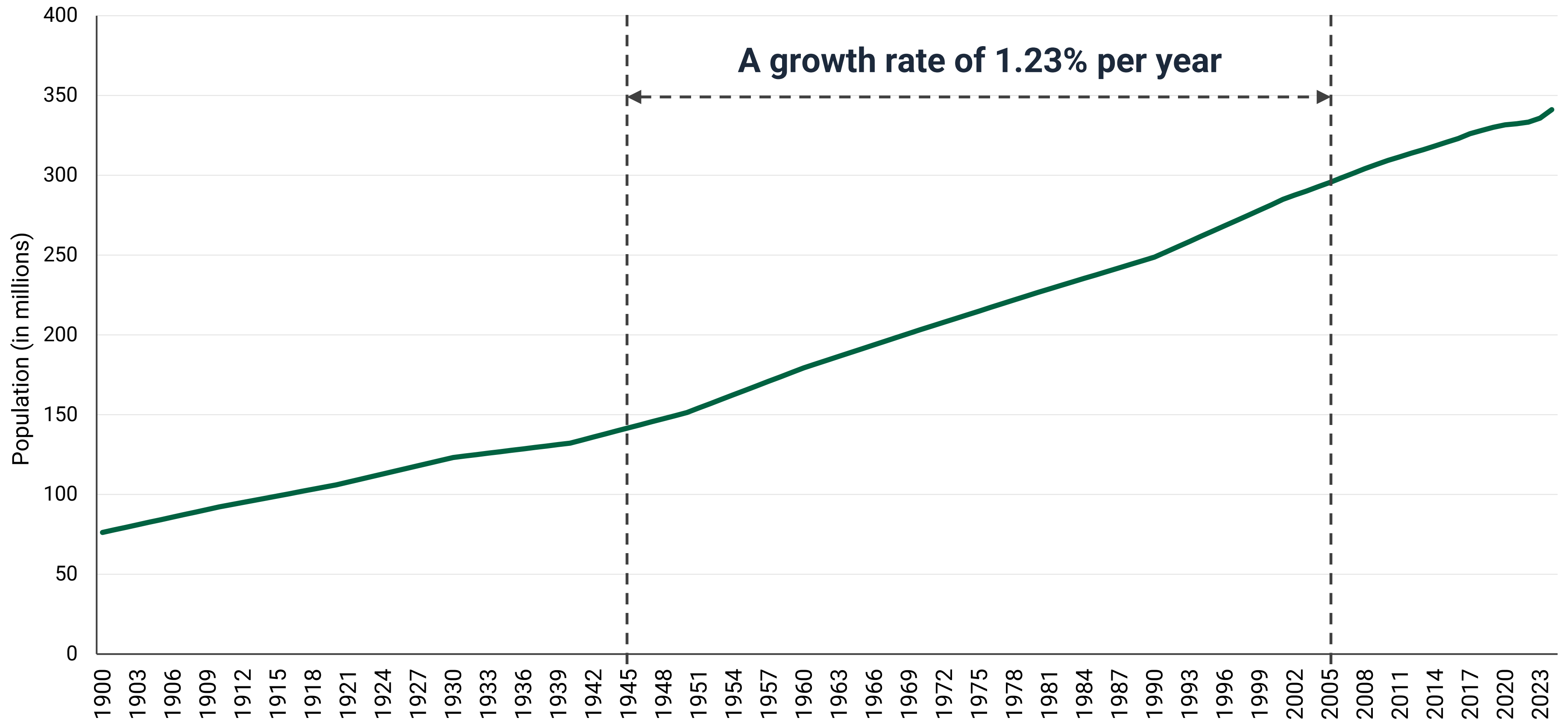
Consumer Expenditures on Transportation



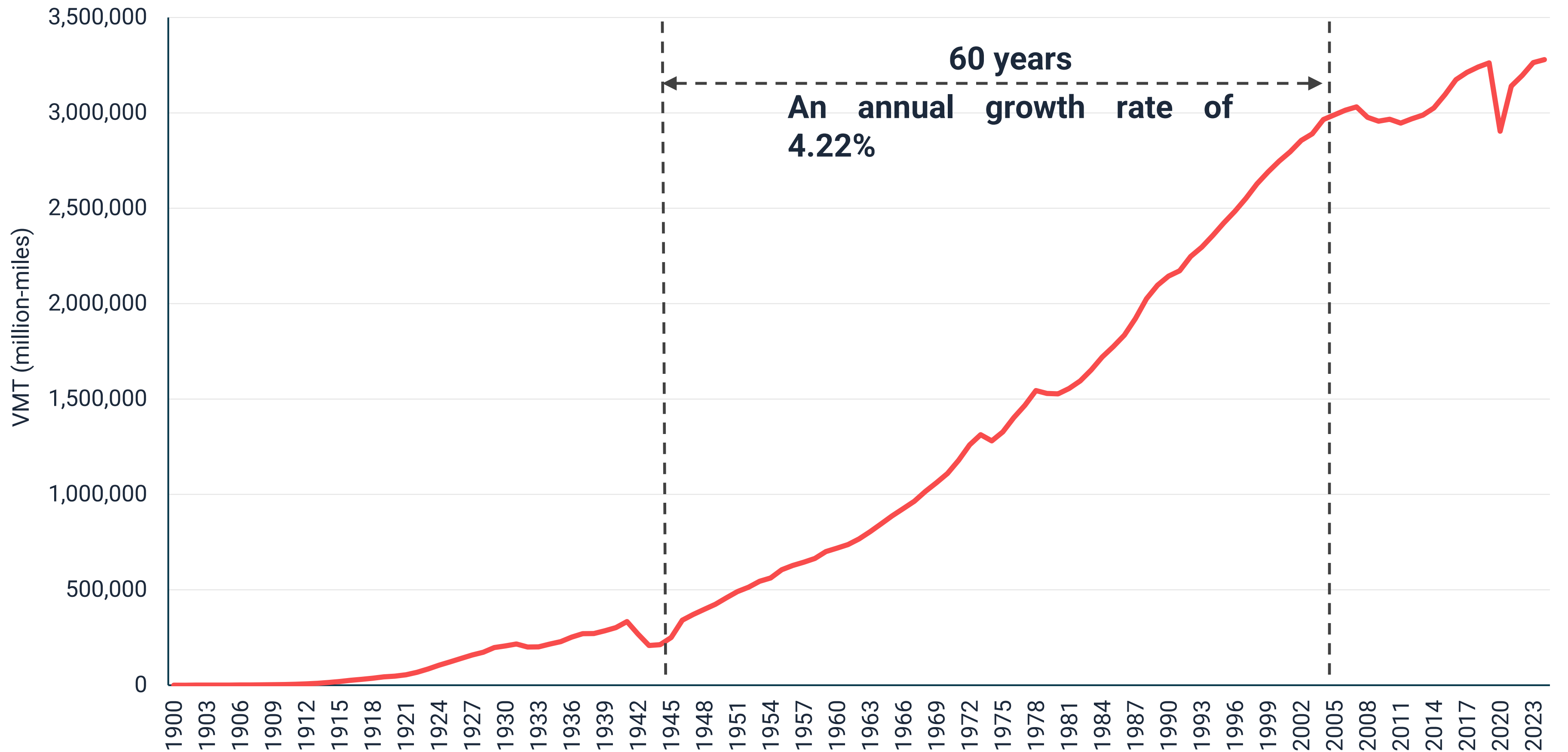
Source: Consumer Expenditure Survey (CE)

VMT and Transit Ridership

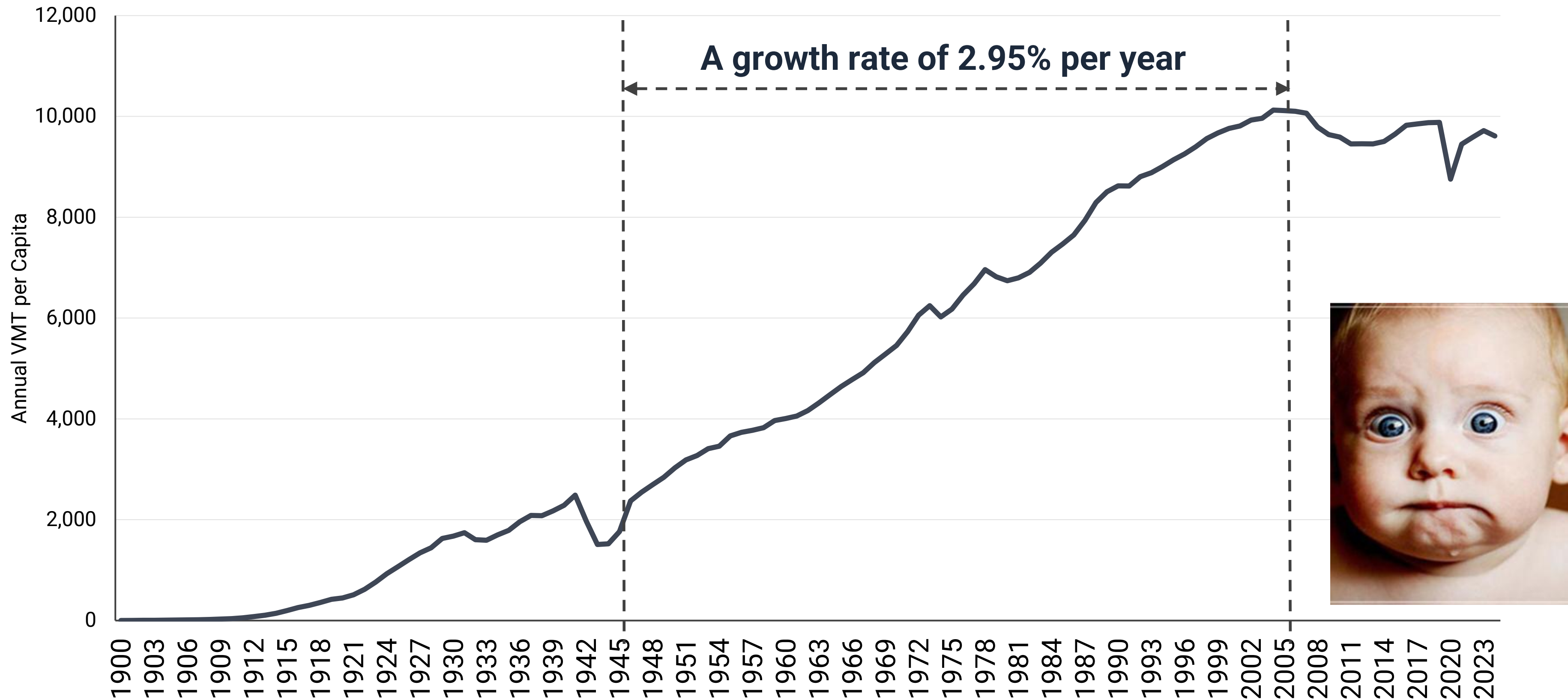
U.S. Population (1900-2024)



VMT in the United States (1900 – 2024)

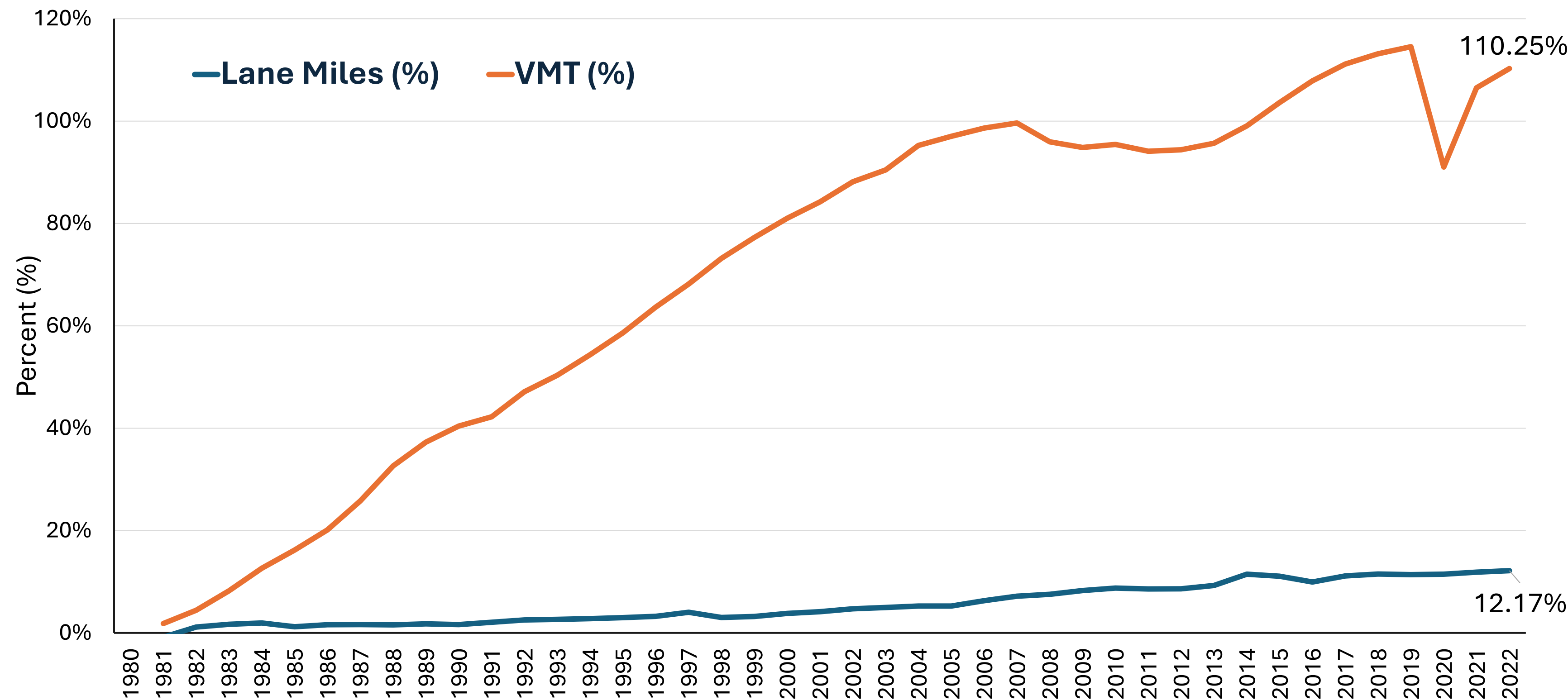


VMT per Capita in the U.S. (1900-2024)



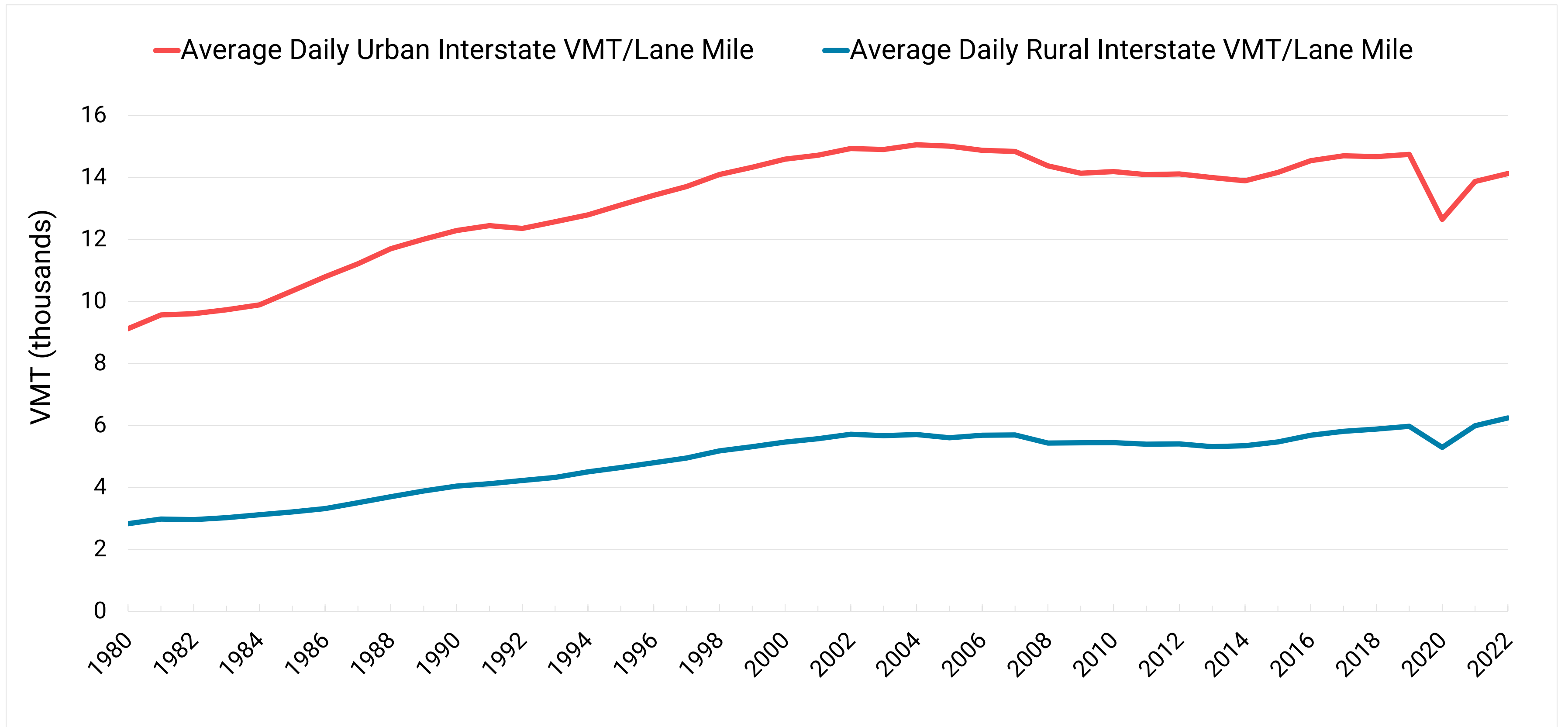
Comparative Growth in VMT and Lane Miles

Change Since 1980 (U.S. Totals)



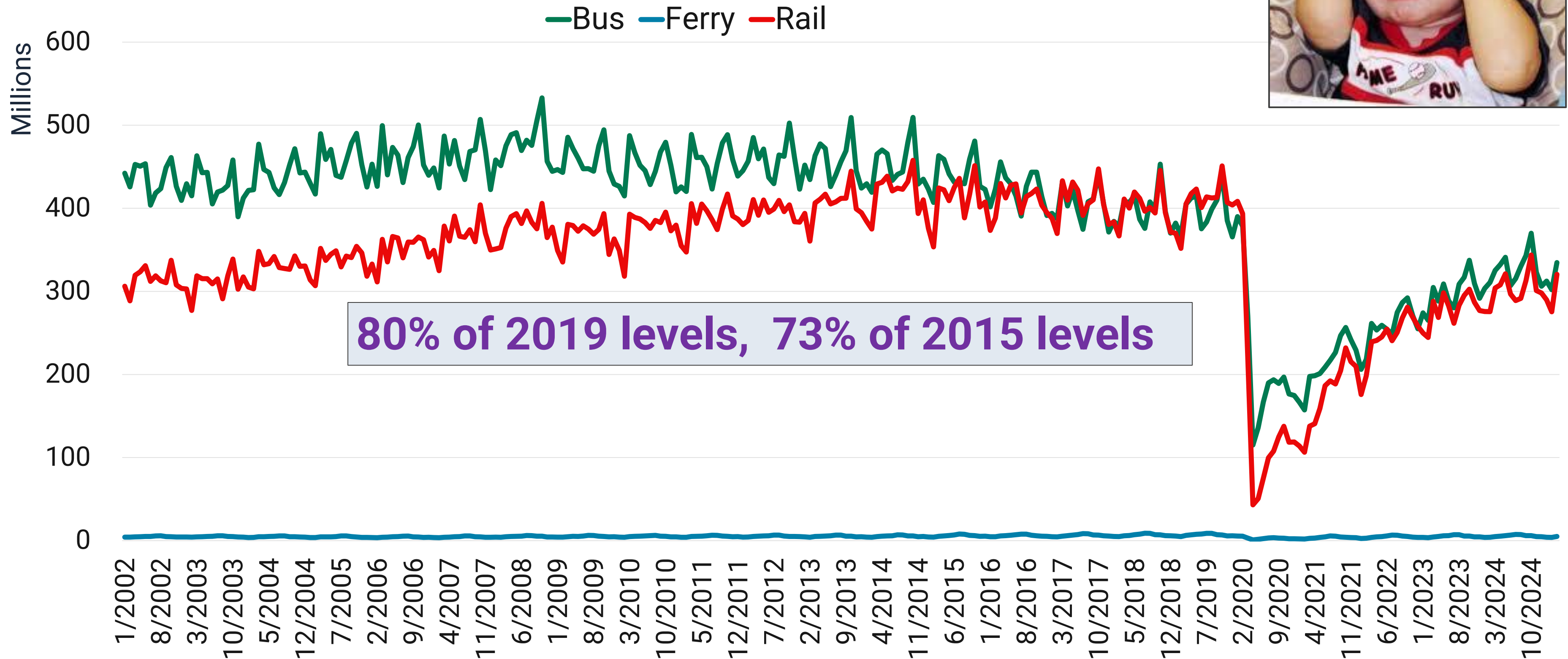
Average Daily Freeway VMT per Freeway Lane Mile

Change Since 1980 (U.S. Totals)



U.S. Public Transit Ridership

Monthly, FTA National Transit Database (NTD)



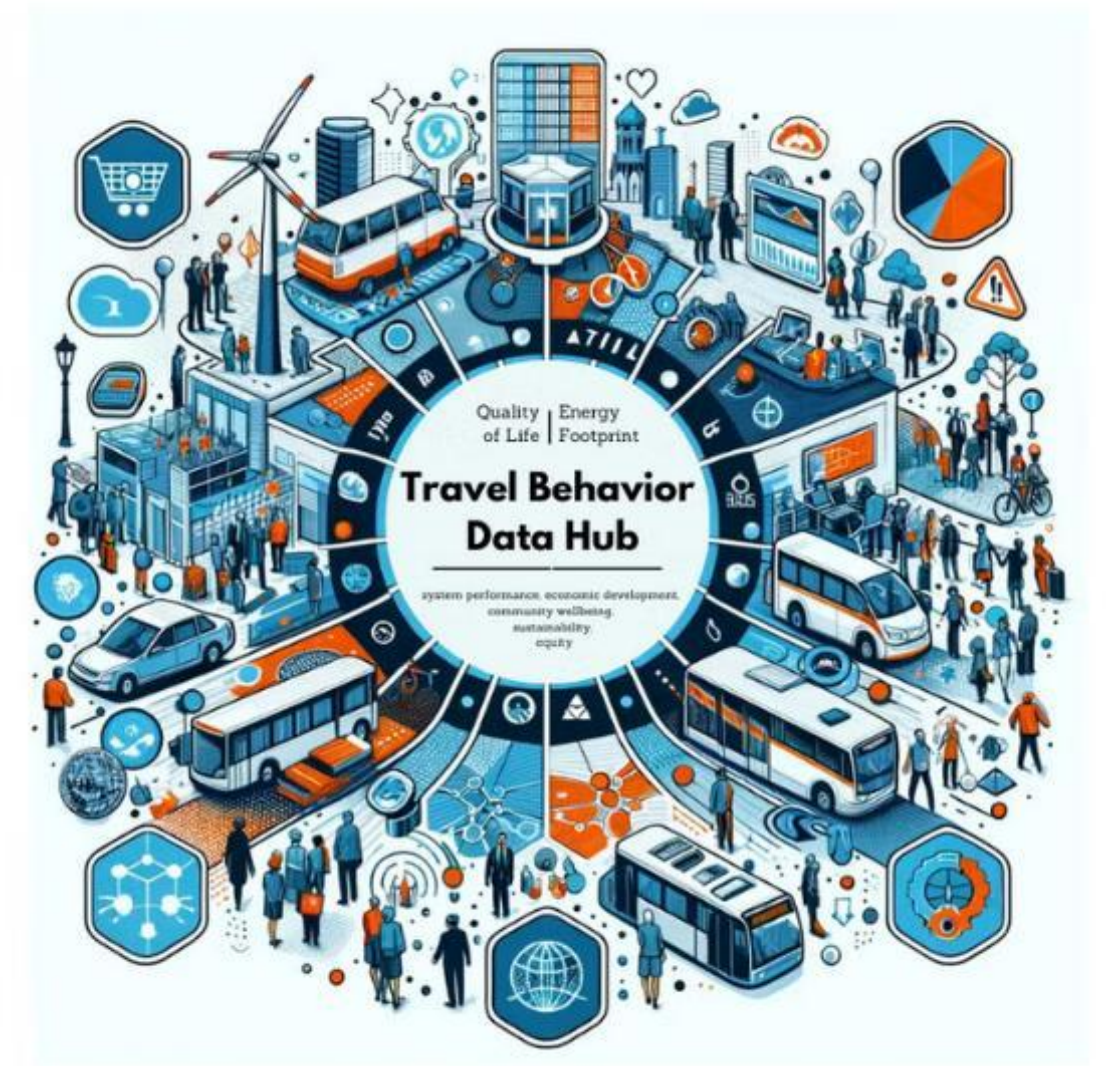
Take Aways

- ▶ **Travel has changed markedly** with a dramatic decline in the rate of VMT growth
- ▶ Understanding **ICT substitution effect is critical** to understanding travel trends
- ▶ **Trip making has declined** significantly impacting local travel and transit
- ▶ Trends are still stabilizing but **no return to pre-COVID conditions**
- ▶ **Uncertainties remain** due to the impacts of **automation**, enhanced **communications**, **AI**, onshoring of manufacturing, **supply chain changes**, **economic trends**, and unknown changes
- ▶ Using **multiple survey and count data sets** enhances the ability to **interpret emerging trends**



Travel Behavior Data (TBD) Hub

- A [one-stop shop](#) for travel behavior insights, empowering planners & policymakers & the public
- **Integrates key datasets** (ACS, NHTS, ATUS, CES, CFS, VIUS, NHANES, RECS, CBECS) + StreetLight Data for O-D flows
- **Leverages advanced methods** in aggregation, fusion, imputation, and prediction
- Features **well-being**, **energy footprint**, and **mobility poverty** calculators



For more information: <https://tbd.ctr.utexas.edu/about/>
sepolzin@asu.edu, ibatur@asu.edu, Ram.Pendyala@asu.edu