ORNL/SPR-2024/3216

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**July 2024**

OAK RIDGE National Laboratory

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**ORNL/SPR-2024/3216**

Buildings and Transportation Science Division

# TRAVEL PATTERNS AND CHARACTERISTICS OF POPULATION IN RURAL AREAS OF NEW YORK STATE

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July 2024

Prepared for
New York State Department of Transportation

Prepared by
OAK RIDGE NATIONAL LABORATORY
Oak Ridge, TN 37831
managed by
UT-BATTELLE LLC
for the
US DEPARTMENT OF ENERGY
under contract DE-AC05-00OR22725

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## ACKNOWLEDGEMENTS

The authors would like to express their sincere appreciation to Richard Batchelder of the New York State Department of Transportation (NYSDOT) for his guidance and to the NYSDOT for project support that allowed the authors to conduct this study.

## EXECUTIVE SUMMARY

Travel activities in rural communities tend to rely on personal vehicles due to limited public transportation options and long distances to essential services, with demographic factors such as age and income level influencing travel patterns. Addressing transportation challenges in rural New York State (NYS) necessitates understanding demographic trends and travel behaviors. This study examines rural households and populations by studying their demographics, mobility patterns, perspectives on transportation services, and how COVID-19 has influenced their transportation-related behaviors.

### Characteristics of Rural Populations

- **In 2017, urban areas in NYS and the rest of the United States had lower shares of White populations compared to rural areas** (66% vs. 94% in NYS; 73% vs. 89% in the rest of the United States). Conversely, urban areas showed higher shares of Black/African American populations than rural areas (16% vs. 1% in NYS).
- **Urban NYS exhibited a higher proportion of zero-vehicle households (31%) compared to rural areas (3%)**. Additionally, in urban settings, households with incomes under $100K predominantly owned one vehicle. Conversely, lower-income households in rural areas had a higher proportion of zero-vehicle households compared to urban areas (73% vs. 41%).
- **Urban areas experienced an increase in the share of households without children from 2009 to 2017** in both NYS and the rest of the United States. In contrast, rural areas witnessed a decrease in the share of households without children during the same period.

### Mobility of Rural Populations

- **Within NYS, average daily person trip rate was consistently higher in urban areas than in New York City (NYC)** for both 2009 and 2017. In urban NYS, there was a statistically significant decrease in daily person trips per person from 3.7 in 2009 to 3.3 in 2017.
- **Higher average daily person mile traveled (PMT) was observed in rural areas compared to urban areas in both NYS and the rest of the United States.** The PMT for commuting and family/personal business trips in both urban and rural areas across the United States was slightly higher than in NYS. In urban NYS, average walking time was higher than in rural areas for both 2009 and 2017.
- **Urban areas had lower average daily vehicle miles traveled (VMT) compared to rural areas both in NYS and the rest of the United States.** In NYS, urban VMT (19.8 miles) was statistically significantly lower than its rural counterpart (32.7 miles). In rural NYS, there was a slight decrease in the share of VMT for family and business trips, from 36% in 2009 to 33% in 2017. There was a slight increase in the share of VMT for social and recreational purposes, rising from 21% in 2009 to 24% in 2017.
- **The majority of vehicle trips involved a travel party of 1 (i.e., single-person vehicle trip), with its slight decrease observed in urban NYS in 2017 from 2009.** In 2017, a slightly lower proportion of trips with a travel party of 1 was observed in urban NYS (61%) compared to rural areas (64%). The proportion of trips with a travel party of 2 slightly increased across regions from 2009 to 2017.

### Demographics and Mobility of Populations in St. Lawrence County

- **St. Lawrence County had a higher percentage of zero-vehicle households (8%) compared to rural areas in the rest of the United States (3%)**. New York Metropolitan Transportation Council (NYMTC) and NYC showed notably higher rates of zero-vehicle households (38% and 52%, respectively).

- **St. Lawrence County had a higher proportion of single-vehicle households (38%) than the rest of the United States rural areas.** Rural areas in the rest of the United States exhibited more households with three or more vehicles (42%).
- **St. Lawrence County's average daily VMT (28.0 miles) was significantly lower than rural areas in the rest of the United States (36.4 miles).** This number is higher than both NYMTC (16.5 miles) and NYC (10.3 miles). Across regions, family and personal business trips consistently had the highest VMT, with social and recreational trips displaying the lowest VMT in St. Lawrence County, while commuting trips have the lowest VMT in NYMTC and NYC.

**Views of Transportation Services**

- **In NYC, a higher share of rural residents believed that gas affect their travel.** 29% of residents believed gas prices affect travel, rising to 32% in the NYMTC region and 52% in the rest of NYS. Rural NYS residents (57%) agreed more than urban residents (37%) that gas prices affect travel.
- **A higher share of NYC and NYMTC residents believed travel cost too much compared to NYS and the rest of the United States.** Over half in NYC and NYMTC region (58% and 54%) felt travel costs too much, compared to 45% in the rest of NYS and 42% in the rest of the United States.
- **Urban residents in NYS and rest of the United States agreed more than rural counterparts that they used public transport to save money.** NYC also had the highest agreement on "walking to save money" (22% strongly agree, 34% agree). Conversely, over half in rest of NYS and rest of the United States (54% and 60%) disagreed with this.

**Impact of COVID on Travel**

- **The majority of respondents acknowledged using public transit either the same amount or less than they did before the pandemic.** In the Middle Atlantic Census Division, 44% of urban residents noted a decrease in their use of public transit, slightly more than the 36% reported by rural residents.
- **Both in the Middle Atlantic Census Division and across the rest of the United States, urban populations are statistically more likely to report traveling less to physical work locations** (33% and 31% respectively) compared to their rural counterparts (21% and 19% respectively). This consistent pattern suggests that post-COVID, urban populations experienced more reduction in commuting to physical work locations compared to rural areas.

**Origin-Destination (OD) Travel Pattern**

- **NYS Metropolitan Statistical Area (MSA) work trips constituted 28% in 2022 significantly higher than 19% in 2020.** Analyzing passenger trip distribution originating in NYS across 2020, 2021, and 2022 using NHTS passenger OD data reveals an increase in work trips over the years, both in MSA and non-MSA regions.
- **Urban areas saw relatively consistent travel times for personal vehicles between 2010 and 2016, with consistently higher public transportation travel times compared to rural areas**. An examination of personal vehicles versus public transportation across six northern states, New York, New Jersey, Pennsylvania, Massachusetts, Maryland, and Virginia, in 2010 and 2016 revealed that, regardless of region, public transportation travel times generally exceeded those of personal vehicles.

# 1. INTRODUCTION

## 1.1 BACKGROUND

Rural areas in the United States present unique challenges and characteristics compared to urban areas. These regions typically feature lower population densities, greater distances between destinations, and limited access to transportation infrastructure. An evaluation of ten rural counties in New York State—Allegany, Chenango, Delaware, Essex, Greene, Hamilton, Lewis, Schuyler, Sullivan, and Wyoming—revealed a decline in population from 2011 to 2021, contrasting with the overall 4.2% increase in the population of the state during the same period (Office of the New York State Comptroller, 2023). This decline extended to housing units, with rural counties experiencing a 2.3% decrease in 2021, while there was a 3.1% increase statewide. Moreover, rural areas witnessed a shrinking labor force and low labor force participation rates. Over the period from 2012 to 2022, NYS experienced growth in its labor force and job market, whereas the rural counties suffered losses in both labor force and jobs (Office of the New York State Comptroller, 2023).

Demographic and economic characteristics of rural areas significantly influence travel activities in their communities. Personal vehicles are heavily relied upon due to limited public transportation options and sparse infrastructure for alternative modes of transportation. The availability and affordability of vehicles, coupled with the distances required to access essential services such as healthcare, education, and employment, shape travel behaviors in rural areas (Arcury et al., 2005). Additionally, demographic factors such as age, income level, and household composition impact travel patterns among rural residents. Elderly individuals or households in rural communities with lower incomes may encounter difficulties in accessing transportation services, leading to increased reliance on personal vehicles (Bond et al., 2017). Moreover, the COVID-19 pandemic has introduced new dynamics to transportation-related behaviors in rural areas (Huang & Li, 2022). For instance, a study conducted in Metro Boston revealed a trend of rising car ownership attributed to health risk concerns alongside a decline in transit ridership even before the onset of the COVID-19 pandemic (Basu & Ferreira, 2021). According to their survey findings, 18% of households without cars expressed intentions to purchase one due to the pandemic's influence. However, this shift could potentially widen the disparity between low-income individuals and non-low-income counterparts. Studies found that individuals with lower incomes have relied on public transportation, even when facing heightened health risks (Das et al., 2021; Zheng et al., 2023).

To understand the transportation challenges in rural communities in New York State fully, it is crucial to understand the demographics and travel behaviors prevalent in these areas. In this study, we analyze the demographic trends and travel behavior, comparing them with urban areas, and considering temporal and spatial dimensions such as different years and locations like New York City and the rest of the United States. This analysis can help pinpoint crucial areas of concern, guiding policy formulation, infrastructure planning, and the delivery of transportation services tailored to the distinct requirements of these communities. This study report is the third of the special population analysis, investigating demographics and mobility, with a focus on the National Household Travel Survey (NHTS) and New York State. The previous two reports examined the demographic and travel patterns of elderly and low-income populations (Liu et al., 2022; Uddin et al., 2024).

## 1.2 OBJECTIVE

This study examines rural households and populations by studying their demographics, mobility patterns, perspectives on transportation services, and how COVID-19 has influenced their transportation-related behaviors. Specifically, the study aims to provide analyses and comparisons between rural and urban

areas across various regions (e.g., New York City, New York State, Middle Atlantic region, and rest of the United States) for the years 2009, 2017, and 2022—these years correspond to NHTS years.

The key areas of analysis include:

- *Socio-demographics*: Studying various aspects such as demographics, vehicle ownership, and life cycle characteristics of rural households and populations.
- *Mobility patterns*: Evaluating mobility patterns encompasses examining factors such as daily trip rates, trip lengths, and trip purposes among rural populations.
- *St. Lawrence County*: Conducting a focused analysis in a rural county, St. Lawrence County, examining its demographic composition, mobility patterns, and passenger border crossing behavior.
- *Perspectives on transportation services*: Investigating people's views on transportation services entails understanding factors such as the influence of pricing on travel decisions and individuals' access to the Internet.
- *Impact of COVID-19*: Exploring how the COVID-19 pandemic has affected transportation-related behaviors, including shifts towards online purchases and changes in commuting habits.

## 1.3 A BRIEF DESCRIPTION OF MAJOR DATA SOURCES

### 1.3.1 National Household Travel Survey

The National Household Travel Survey (NHTS), sponsored by the Federal Highway Administration (FHWA), serves as one of the key sources for understanding the travel behavior of the American public (Federal Highway Administration, 2017). It gathers daily travel data linked to individual personal and household characteristics, as well as vehicle attributes, encompassing trip frequency, distance, time, transportation mode, and purpose.

In 2017, the NHTS surveyed over 129,000 households, with 26,000 from a national sample and the remainder from add-on samples acquired by thirteen State or MPO partners. These supplementary samples, including the one from the New York State Department of Transportation (NYSDOT), enriched the national dataset, allowing for more detailed analyses of travel behavior.

NYSDOT's add-on data resulted in over 17,000 households' data, facilitating analyses of residents' travel behaviors and aiding transportation planning efforts at a more localized scale than what the national NHTS dataset allows. Furthermore, in 2017, St. Lawrence County, a rural area, obtained a substantial sample of 913 households, enabling focused analyses of demographics and mobility patterns within the county with a degree of confidence.

In 2020, the FHWA initiated the Next Generation National Household Travel Survey (NextGen NHTS) to establish a comprehensive and ongoing travel monitoring program, offering national and regional data products. The NextGen NHTS design is geared towards providing timely data on an ongoing basis to capture emerging trends and changes in travel. Each survey cycle aims to collect data from a minimum target of 7,500 households. According to the NHTS Technical Release Notes, "*this lower sample means that survey data is representative for national or Census Division level analyses, not lower levels of geography such as state or local areas*" (Federal Highway Administration, 2023). The nine Census Divisions into which the data is categorized include New England, Middle Atlantic, East North Central, West North Central, South Atlantic, Mountain, and Pacific. New York State falls within the Middle Atlantic Census Division.

### 1.3.2 American Community Survey

In this study, we relied on the American Community Survey (ACS) to gather demographic insights and commuting details like travel time and transportation modes to work. Administered by the United States Census Bureau, the ACS replaces the decennial census long form. The ACS survey offers estimates covering a wide array of demographic, social, economic, and housing characteristics. These include details such as sex, age, education, employment, and housing tenure.

This household survey collects data from approximately 3.5 million addresses each year. ACS also aggregates sample cases over 5-year periods to produce estimates for smaller geographic areas, such as Census Tracts and Block Groups. Data availability varies by population size, with 1-year estimates accessible for areas with populations of 65,000 or more, while 5-year estimates are available for all areas.

### 1.3.3 Border Crossing

This study analyzed annual and seasonal patterns of cross-border vehicle passenger traffic in St. Lawrence County by leveraging two datasets that capture passenger movements between the United States and Canada. The first dataset utilized is the Bureau of Transportation Statistics (BTS) Border Crossing/Entry Data. This dataset presents summary statistics concerning inbound crossings at both the United States-Canada and United States-Mexico borders (Bureau of Transportation Statistics, 2024). It provides monthly passenger entry counts for each United States border location. Notably, it does not collect comparable data on outbound crossings. The second dataset employed is the data on the number of international visitors entering or returning to Canada from Statistics Canada. This dataset offers daily passenger entry counts for each Canadian province (Statistics Canada, 2024).

### 1.3.4 NextGen NHTS Origin-Destination Data

Alongside a probabilistic core travel survey, NextGen NHTS includes an origin-destination (OD) data program, comprising OD tables for both passenger and truck travel. This study specifically focuses on the analysis of passenger trips. To conduct this analysis, we utilized the 2020, 2021, and 2022 NHTS passenger OD data (Federal Highway Administration, 2020, 2021, 2022). The data are available annually for all three years while monthly data are only available for 2021 and 2022.

The NHTS OD data leverages in-vehicle and smartphone application-generated passive mobility data to summarize travel between 583 zones, covering both Metropolitan Statistical Areas (MSA) and non-MSA areas within each State and the District of Columbia. Among these zones, New York State contains a total of 12 MSA and 3 non-MSA zones. The data provides information on trip counts, transportation modes (air, rail, vehicle, and active transportation and ferries), trip purposes (work and nonwork), and distances.

### 1.3.5 Census Transportation Planning Products Program

The Census Transportation Planning Products Program (CTPP) dataset procures tabulations of ACS 5-year and historical Census decennial data (American Association of State Highway and Transportation Officials, 2024). What distinguishes the CTPP data is its inclusion of OD (Origin-Destination) flows from home to work at detailed geographic levels, setting it apart from standard ACS data. We utilized two series of CTPP data: the 2010 series (derived from the 2006-2010 ACS) and the 2016 series (derived from the 2012-2016 ACS). Each series provides the mean commute travel time for an OD pair at the Census Tract level. We analyzed the travel time data for two transportation modes, each defined within the CTPP:

- Personal vehicle: A car, truck, or van.
- Public transportation: Buses, trolley buses, streetcars, trolley cars, subways, elevated trains, railroads, or ferryboats.

## 1.4 GEOGRAPHICAL REGION AND NHTS YEAR CONSIDERATIONS

The comparison in this study primarily focused on data from two series of the NHTS: 2009 and 2017, as these years allow for a comparison between New York State and the rest of the United States due to the availability of the add-on data. However, the 2022 NHTS only enables comparisons between Census Divisions. As New York State falls within the Middle Atlantic Division, selected attributes are analyzed and compared between this Division and the rest of the United States across 2009, 2017, and 2022. Middle Atlantic Census Division is made up of New York, New Jersey and Pennsylvania. Thus, the comparison results do not directly indicate the differences or similarities between New York State and the rest of the United States. Table 1-1 presents a summary outlining the geographical regions, their definitions, and the corresponding NHTS years used for the analyses.

**Table 1-1. Definition of the geographical regions and the corresponding NHTS years**

| Region | Description | NHTS year |
|---|---|---|
| New York City (NYC) | Five counties/boroughs: New York County, Kings County, Queens County, Richmond County, and Bronx County | 2009, 2017 |
| Rest of NYS (urban) | Urban areas of NYS that excludes NYC | 2009, 2017 |
| Rest of NYS (rural) | Rural areas of NYS | 2009, 2017 |
| New York Metropolitan Transportation Council (NYMTC) | Ten counties: New York County, Kings County, Queens County, Richmond County, Bronx County, Nassau County, Suffolk County, Westchester County, Rockland County, Putnam County | 2009, 2017 |
| NYS Statewide | All areas in the New York State as a whole | 2009, 2017 |
| Middle Atlantic | Middle Atlantic Census Division: includes New York, New Jersey, and Pennsylvania | 2009, 2017, 2022 |
| Rest of U.S. | Rest of the United States, excluding regions of interest | 2009, 2017, 2022 |

## 1.5 ORGANIZATION OF REPORT

The report is organized as follows. Chapter 2 defines urban and rural areas as used within the study. In Chapter 3, demographic analyses—including race, household size, and life cycle—are conducted, alongside vehicle-related analyses such as vehicle ownership and age. Comparisons are made between urban and rural areas in New York State and the rest of the United States. Similarly, selected demographics are analyzed in the Middle Atlantic Census Division and the rest of the United States. Chapter 4 focuses on mobility patterns, examining metrics like person trip rate, person miles traveled, vehicle trip rate, and vehicle miles traveled. Analyses are conducted on trip purposes and modes, comparing urban and rural areas in New York State and the rest of the United States. Selected demographic analyses are also performed in the Middle Atlantic Census Division and the rest of the United States. Chapter 5 presents a detailed analysis of St. Lawrence County, a rural area in Census Division. This includes demographic and mobility analyses, as well as an examination of border crossing behavior between the United States and Canada. Chapter 6 delves into views on transportation services and Internet use, comparing rural and urban areas. Chapter 7 explores the impact of COVID-19 on transportation use, such as commuting to physical work locations and public transportation. Lastly, Chapter 8 analyzes origin-destination patterns in MSA and non-MSA areas using NHTS OD data. Additionally, commute travel times between rural and urban areas are compared using CTPP data.

# 2. DEFINITION OF RURAL AREA

This section discusses the criteria explored for defining rural areas while also comparing their effects on the identification of rural households in New York State. The criteria under consideration are sourced from the Federal Highway Administration (FHWA), the Census Bureau, and the United States Department of Agriculture (USDA) Economic Research Service (ERS). These selected criteria are:

- The 2020 Census Urban Area
- The 2013 Rural-Urban Continuum Codes
- The 2013 Urban Influence Codes
- The 2010 Rural-Urban Commuting Area Codes
- Urban classification variables in 2017 and 2009 NHTS

The subsequent discussion will explore how each of these criteria contributes to delineating rural areas and how they impact the determination of rural households within the context of New York State.

## 2.1 THE 2020 CENSUS URBAN AREA

The urban-rural classification provided by the United States Census Bureau involves the demarcation of geographical regions, encompassing both distinct urban zones and the rural expanse across the nation. These urban areas as defined by the Census Bureau pertain to densely developed regions that encompass a blend of residential, commercial, and various other non-residential urban land usages. Within the scope of the 2020 Census Urban Area, an area is considered urban if it satisfies the criteria of a minimum of 2,000 housing units or a population of at least 5,000 individuals (US Census Bureau, 2020).

## 2.2 THE 2013 RURAL-URBAN CONTINUUM CODES

The 2013 Rural-Urban Continuum Codes (RUCC) incorporate a classification framework designed to differentiate metropolitan counties based on the population size of their corresponding metropolitan areas. Simultaneously, nonmetropolitan counties are distinguished through a combination of factors including the level of urbanization and their adjacency to a metropolitan area, as outlined by the USDA ERS (USDA ERS, 2013a):

- Micropolitan (micro) areas: These constitute nonmetropolitan labor-market regions centered around urban clusters populated by 10,000 to 49,999 individuals. The criteria employed for defining these areas are analogous to those used for metropolitan areas.
- The remaining counties: Frequently denoted as "noncore" counties, these areas do not fall within the classification of "core-based" metropolitan or micropolitan areas. This nomenclature is attributed to their exclusion from such central metropolitan and micropolitan designations.

## 2.3 THE 2013 URBAN INFLUENCE CODES

The 2013 Urban Influence Codes establish a classification framework aimed at differentiating metropolitan counties based on the population size. Nonmetropolitan counties are classified based on the size of their largest city or town and their proximity to metropolitan and micropolitan areas. It is important to note that nonmetropolitan counties correspond to rural areas (USDA ERS, 2013b)**.** The delineation between rural and non-rural areas in the Urban Influence Codes mirrors that of the RUCC. Notably, for the purpose of this study, these subcategories will not be employed.

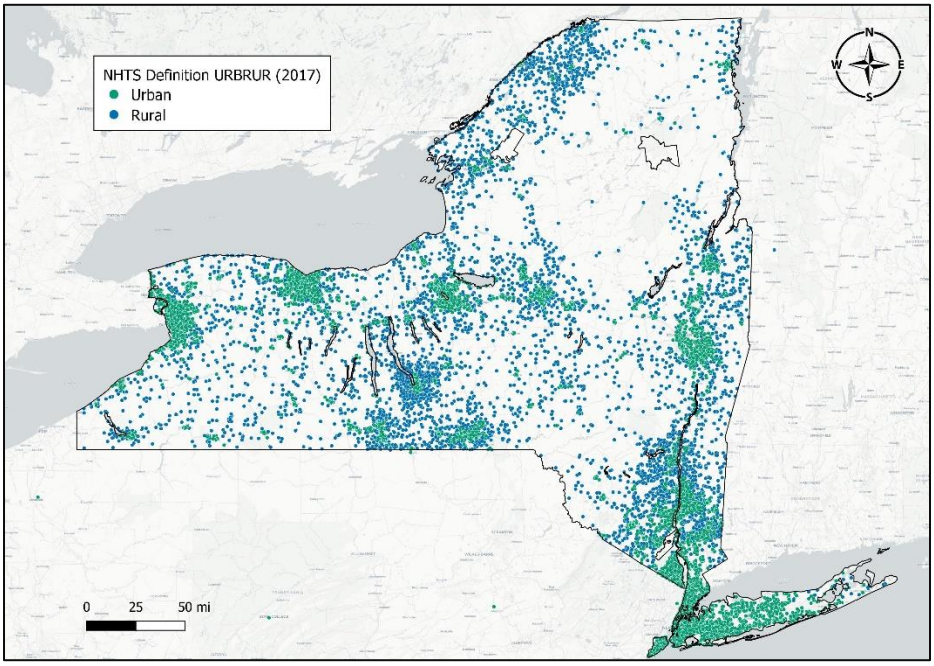
## 2.4 THE 2010 RURAL-URBAN COMMUTING AREA CODES

The 2010 Rural-Urban Commuting Area (RUCA) codes classify metropolitan and micropolitan Census Tracts according to population density, urbanization, and daily commuting. This classification system comprises a dual-tier structure. Integer values ranging from 1 to 10 define commuting areas, ranging from metropolitan and micropolitan to small town and rural areas, grounded in the dimensions of commuting flows' magnitude and directionality (USDA ERS, 2010).

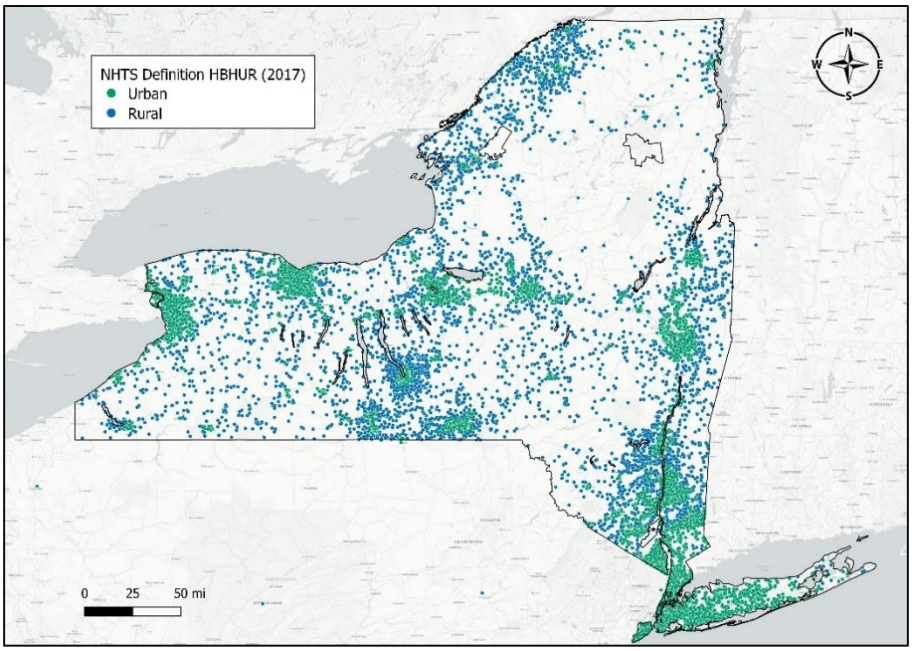
## 2.5 NHTS

Multiple variables within the NHTS contribute to the determination of urban classification. These variables include *HBHUR* (urban/rural indicator at the Census Block Group level), *URBRUR* (household's urban/rural location), *URBANSIZE* (size of the urban area corresponding to the home address), and *URBAN* (urban area classification of the household). Among these variables, HBHUR and URBRUR directly indicate whether a household is situated in a rural area, making them particularly pertinent for rural classification. The distributions of the NHTS households in New York State based on these two criteria in the years 2009 and 2017 are shown in Figure 2-1.

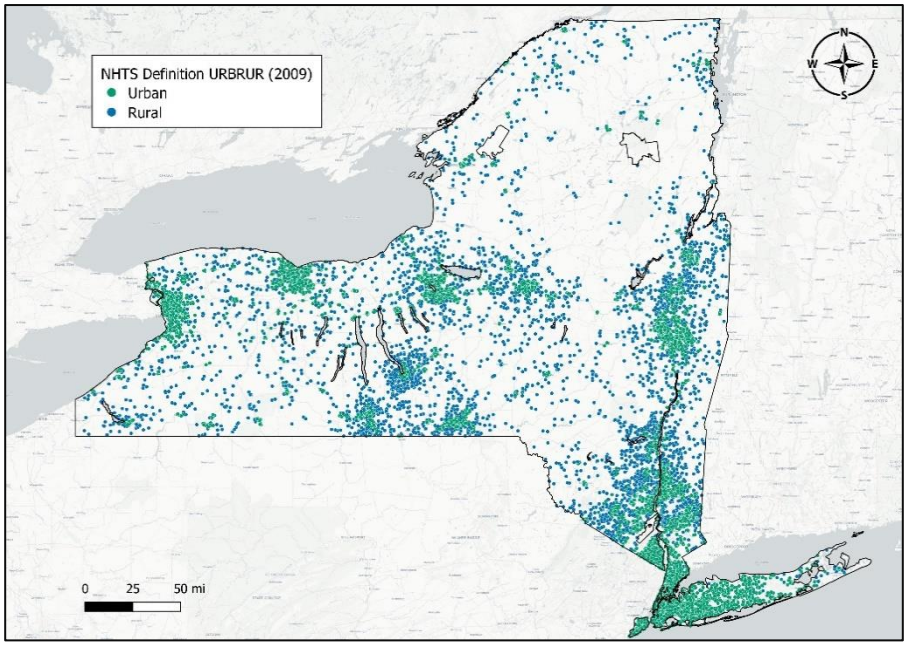
Note that the HBHUR variable in the 2017 NHTS explicitly designates rural as a category. However, in the 2009 NHTS, HBHUR did not isolate rural as a distinct category; instead, it combined "town" and "country."



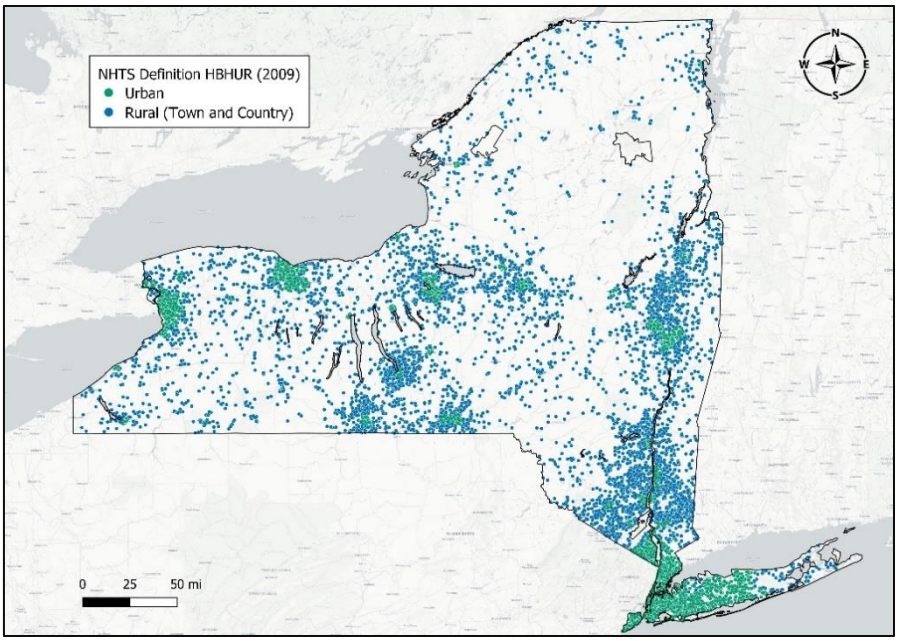

(a) Rural classification using URBRUR (2017 NHTS)



(b) Rural classification using HBHUR (2017 NHTS)



(c) Rural classification using URBRUR (2009 NHTS)



(d) Rural classification using HBHUR (2009 NHTS)

**Figure 2-1. Distribution of NHTS households by rural classification in New York State**

## 2.6 SELECTION OF RURAL DEFINITION

Table 2-1 provides an overview comparing the count of households classified as rural and non-rural using the criteria presented above. While the criteria formulated by both the Census and the USDA ERS prove to be valuable tools, it's important to note a limitation: the publicly available NHTS data do not have precise location for the households. Consequently, applying these criteria to households situated in the rest of the United States poses challenges. One of the main objectives of this study is to conduct a comparative analysis of household characteristics between rural and non-rural areas over different years. To facilitate this analysis, the *URBRUR* variable is chosen as it holds the capacity to classify rural households in both the 2009 and 2017 NHTS datasets.

## 2.7 AGE AND GENDER DISTRIBUTION USING ACS DATA

The Census Tract data on age and gender were examined using the American Community Survey (ACS) data. The Census Tract-based RUCA criteria were used to classify areas into urban and rural categories. The distribution of population by age groups and sex in 2017 and 2010 are illustrated in Figure 2-2 and Figure 2-3 respectively. The total population count is higher in urban than rural areas. Within rural areas, more males aged between 19 and 25 can be observed compared to females. Conversely, in urban areas, a higher population of females aged over 50 is observed compared to males.

**Table 2-1. Comparison of the rural criteria**

| Definition | Organization /source | Definition of rural area | Unit | Year | Number of non-rural households | | Number of rural households | | Percent rural households |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | New York City | Rest of New York State | New York City | Rest of New York State | |
| The 2020 Census Urban Area | Census Bureau | Not in at least 2,000 housing units or have a population of at least 5,000 | UACE20[1] | 2020 | 386 | 10,929 | 0 | 5,894 | 34.2% |
| The 2013 Rural-Urban Continuum Codes | USDA ERS | Not Metro area | County | 2013 | 386 | 14,011 | 0 | 2,812 | 16.3% |
| The 2010 Rural-Urban Commuting Area Codes | USDA ERS | | Census Tract | 2010 | 386 | 13,200 | 0 | 3,481 | 20.2% |
| The 2013 Urban Influence Codes | USDA ERS | | County | 2013 | 386 | 14,011 | 0 | 2,812 | 16.3% |
| NHTS Variable (HBHUR: Urban / Rural indicator - Block Group) | FHWA | R=Rural; Rest is not Rural (C=Second City S=Suburban T=Small Town U=Urban) | Household | 2017 | 386 | 11,494 | 0 | 5,329 | 31.0% |
| | | TC = Town and Country; Rest is not Rural (-9 = N/A C = Second City S = Suburban U = Urban X = Unassigned) | Household | 2009 | 1,794 | 4,894 | 0 | 7,943 | 54.3% |
| NHTS Variable (URBRUR: Household in urban/rural area) | | 02=Rural; Rest is not Rural (01=Urban) | Household | 2017 | 386 | 11,462 | 0 | 5,361 | 31.2% |
| | | 02=Rural; Rest is not Rural (-9 = Not ascertained 01=Urban) | Household | 2009 (2010 classification) | 1,794 | 8,698 | 0 | 4,139 | 28.3% |
| NHTS Variable (URBAN: Household's urban area classification) | | 04=Not in urban area; Rest is not Rural (01=In an urban area 02=In an urban cluster 03=In an area surrounded by urban areas) | Household | 2017 | 386 | 11,465 | 0 | 5,358 | 31.1% |

[1] 2020 Census urban area code

| Definition | Organization /source | Definition of rural area | Unit | Year | Number of non-rural households | | Number of rural households | | Percent rural households |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | New York City | Rest of New York State | New York City | Rest of New York State | |
| | | 04=Not in urban area; Rest is not Rural<br>(01=In an urban area<br>02=In an urban cluster<br>03=In an area surrounded by urban areas<br>-9 = Not ascertained) | Household | 2009 (2010 classification) | 1,794 | 8,698 | 0 | 4,139 | 28.3% |
| NHTS Variable (URBANSIZE: Urban area size where home address is located) | | 06=Not in an urbanized area; Rest is not Rural<br>(01=50,000 - 199,999<br>02=200,000 - 499,999<br>03=500,000 - 999,999<br>04=1 million or more without heavy rail<br>05=1 million or more with heavy rail) | Household | 2017 | 386 | 9,624 | 0 | 7,199 | 41.8% |
| | | 06=Not in an urbanized area; Rest is not Rural<br>(01=50,000 - 199,999<br>02=200,000 - 499,999<br>03=500,000 - 999,999<br>04=1 million or more without subway or rail<br>05=1 million or more with subway or rail<br>-9 = Not ascertained) | Household | 2009 (2010 classification) | 1,794 | 7,601 | 0 | 5,236 | 35.8% |

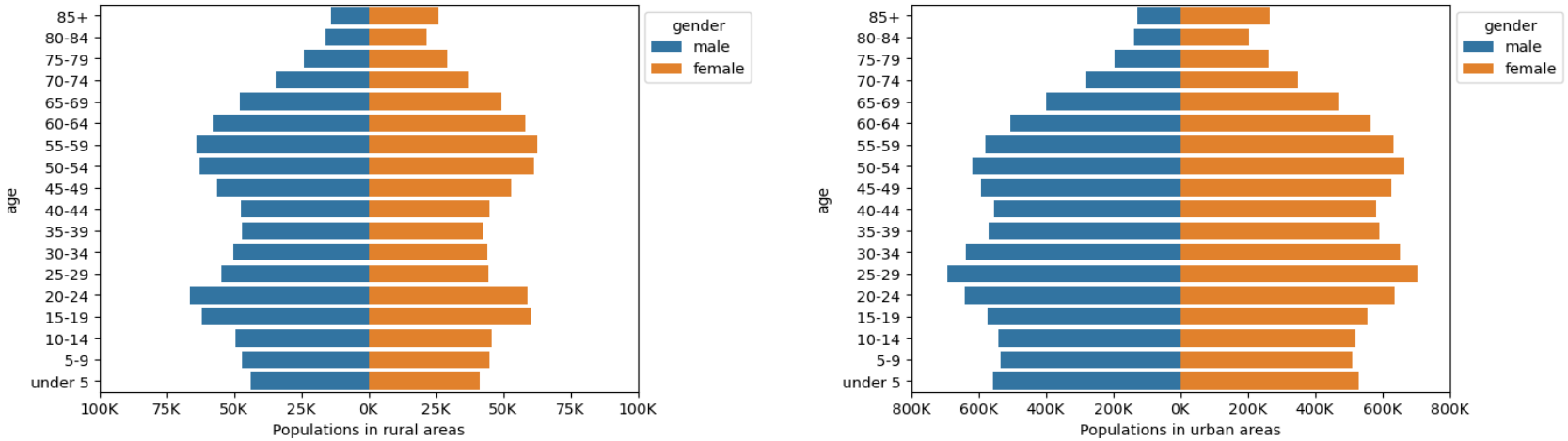



**Figure 2-2. Population pyramids based on 2017 ACS 5-year estimates**
(Left: rural area and Right: urban area)

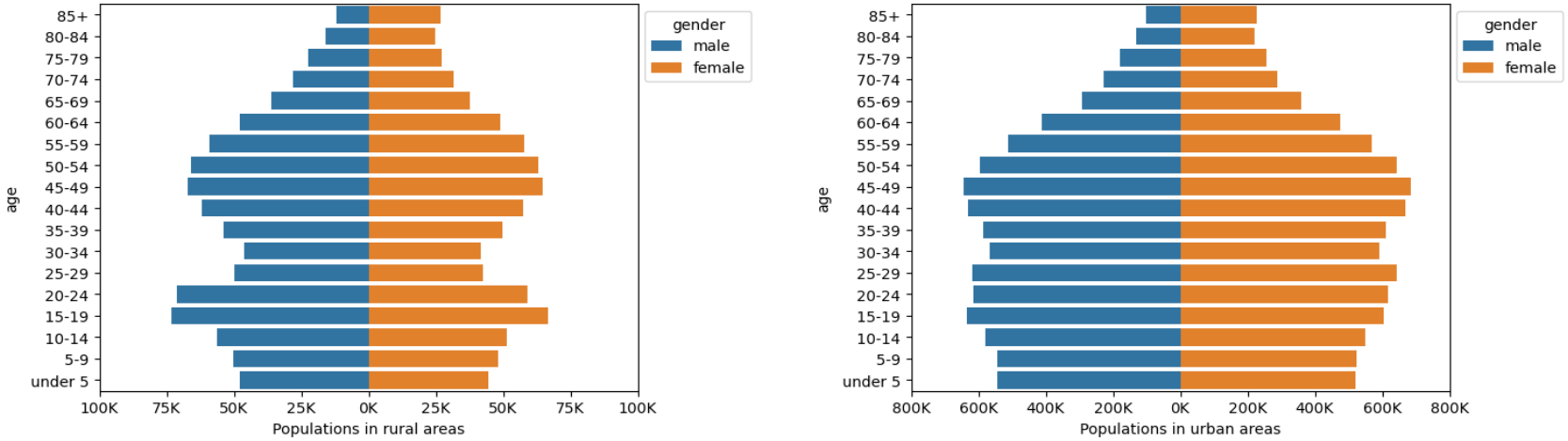



**Figure 2-3. Population pyramids based on 2010 ACS 5-year estimates**
(Left: rural area and Right: urban area)

# 3. DEMOGRAPHICS IN RURAL AREA

## 3.1 OVERVIEW

This section presents demographic comparisons between New York State (NYS) and the rest of the United States, primarily utilizing data from the National Household Travel Survey (NHTS). The analyses encompass various factors such as household race, household size, vehicle ownership, driver availability, household income, and zero-vehicle households. As the 2022 NHTS only provides Census Division information, demographic comparisons between the Middle Atlantic Division and the rest of the United States are conducted for selected analyses across the years 2009, 2017, and 2022.

In the following sections, margins of error are calculated at a 95% confidence level for all analyses. Any statistical significance in comparisons is clearly described. In some figures, error bars are directly included to show the margins of error.

The distribution of rural households in NYS and rest of the United States is presented in Figure 3-1. In 2017, a higher percentage of rural households is evident in the rest of the United States (18%) compared to NYS (11%). This pattern is consistent with the observations in 2009, and no statistically significant variations[2] in the share of rural households can be distinguished between 2009 and 2017.

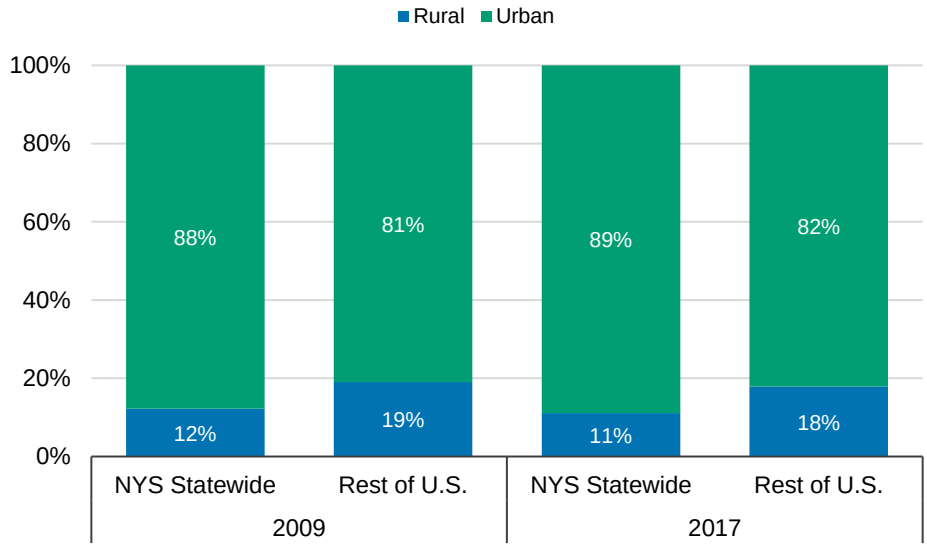



**Figure 3-1. Share of households by rural classification (2009 and 2017 NHTS data)**

According to Figure 3-2, the share of populations (age 5+) residing in rural households in the rest of the United States is 18%, surpassing the 11% recorded in NYS for the year 2017. While a slight decline is observed from 2009 to 2017, such as a decrease from 13% to 11% in rural populations for NYS, the difference is not statistically significant.

[2] Statistical significance is determined based on a 95% confidence interval.

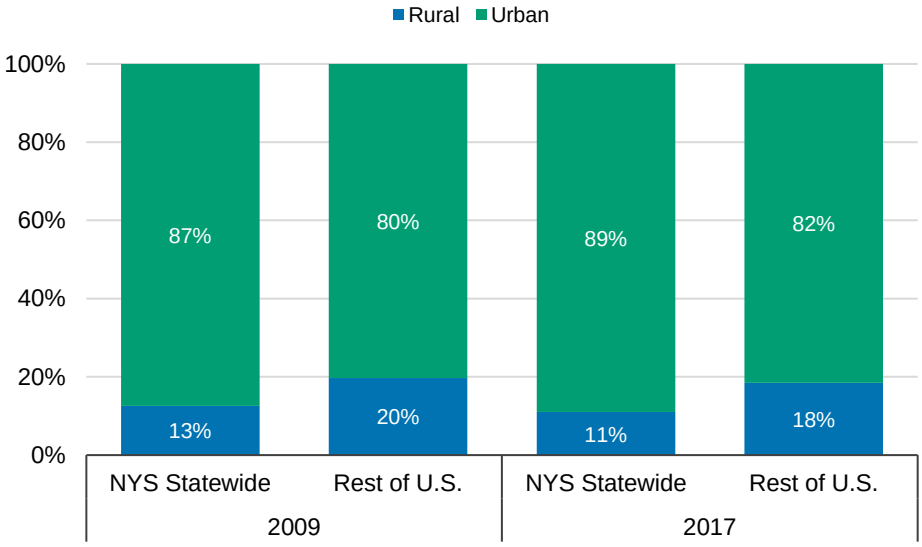



**Figure 3-2. Share of population age 5 years and older by rural classification (2009 and 2017 NHTS data)**

When examining urban areas, Figure 3-3 shows that more than 50% of the urban households were situated in areas with a population density exceeding 2000 persons per square mile. In NYS, the share of urban households in areas with a population density exceeding 2000 persons per square mile accounted for 81% in 2009 and increased to 83% in 2017.

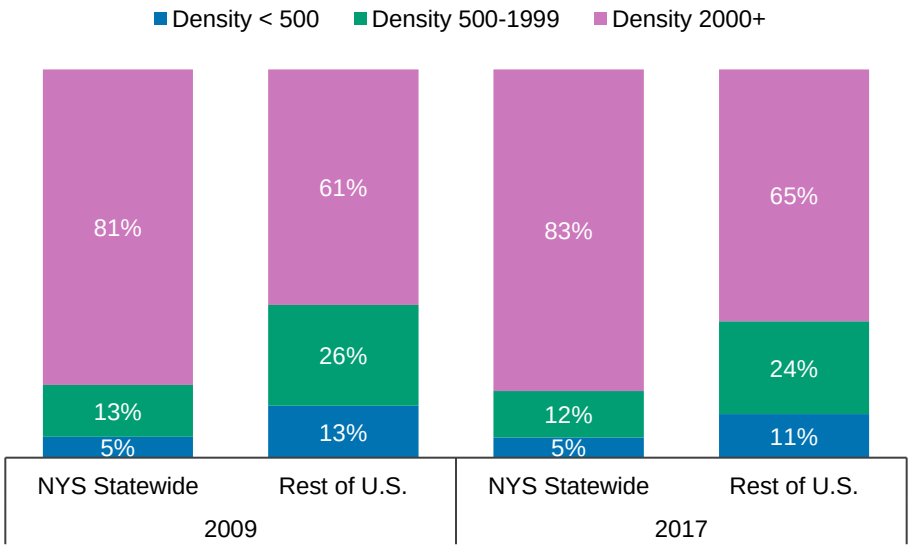



**Figure 3-3. Share of households by population density in urban areas (2009 and 2017 NHTS data)**

## 3.2 DEMOGRAPHIC PROFILE

### 3.2.1 Household Race

The distribution of households by race and rural classification is illustrated in Figure 3-4. In 2017, NYS urban areas exhibited a White household share of 66%, statistically significantly lower than the rural areas (94%). Conversely, the Black/African American household share in NYS urban areas (16%) was

statistically significantly higher than in rural areas (1%). In the rest of the United States, the White household share is also statistically significantly lower in urban areas (73%) compared to rural areas (89%). The race distribution in urban and rural areas of NYS and rest of the United States for 2009 is similar to that of 2017.

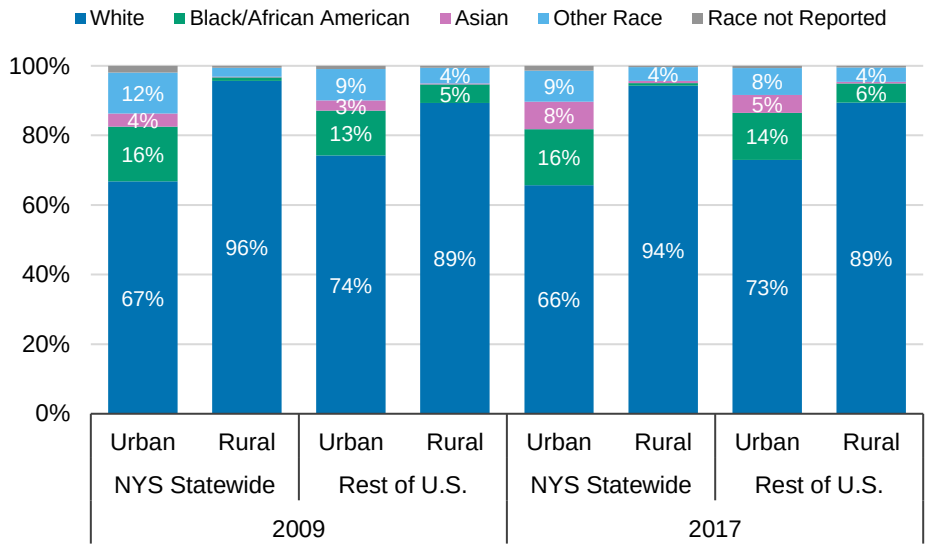



**Figure 3-4. Share of households by rural classification and household race (2009 and 2017 NHTS data)**

Upon closer examination within NYS, New York City (NYC) stands out for its heightened racial diversity. In NYC, the White household comprises 54%, statistically significantly lower than the observed in the rest of NYS urban areas in 2017 (77%). Furthermore, both the Asian and Black/African American households show a higher share in NYC compared to the rest of NYS urban areas, both in 2009 and 2017. It is also noteworthy that the share of Asian households in NYC experienced a significant rise from 6% in 2009 to 11% in 2017, mirroring a similar increase from 1% to 5% in the rest of NYS urban areas during the same period.

Figure 3-6 shows the comparison of household race distributions between rural and urban areas across three NHTS years (2009, 2017, and 2022), focusing on the Middle Atlantic Division and the rest of the United States. Urban areas in the Middle Atlantic Division experienced a slight rise in Asian households, from 6% in 2017 to 9% in 2022. Across the rest of the United States urban areas, there was a modest increase in Asian households, from 3% in 2009 to 8% in 2022. In 2022, the percentage of Asian households in rural areas in Middle Atlantic Division stands at 8%, a statistically significant increase compared to previous years within the same region. This disparity can be attributed to a low sample size, with only 17 sampled households representing rural Asians nationwide in 2022.

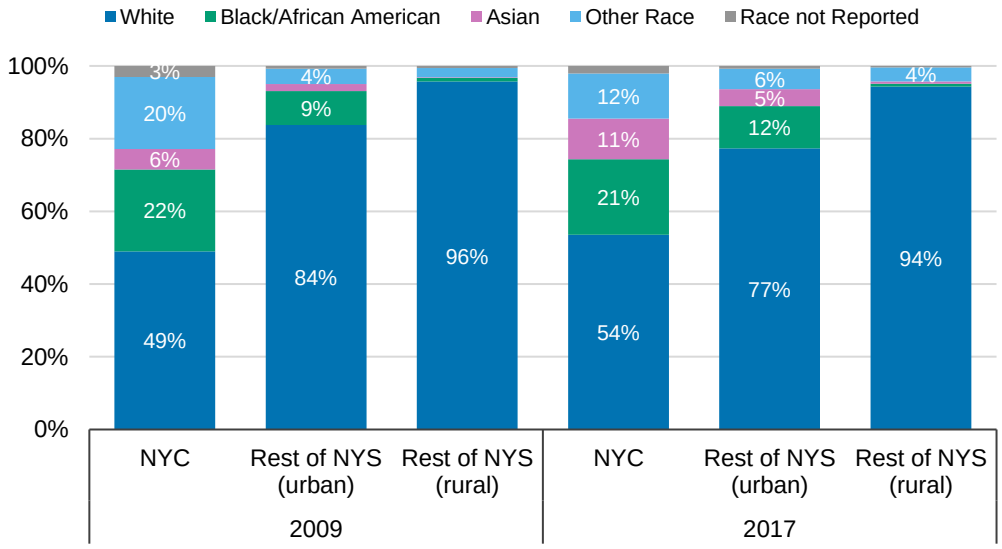



**Figure 3-5. Share of households by rural classification and household race in NYS (2009 and 2017 NHTS data)**

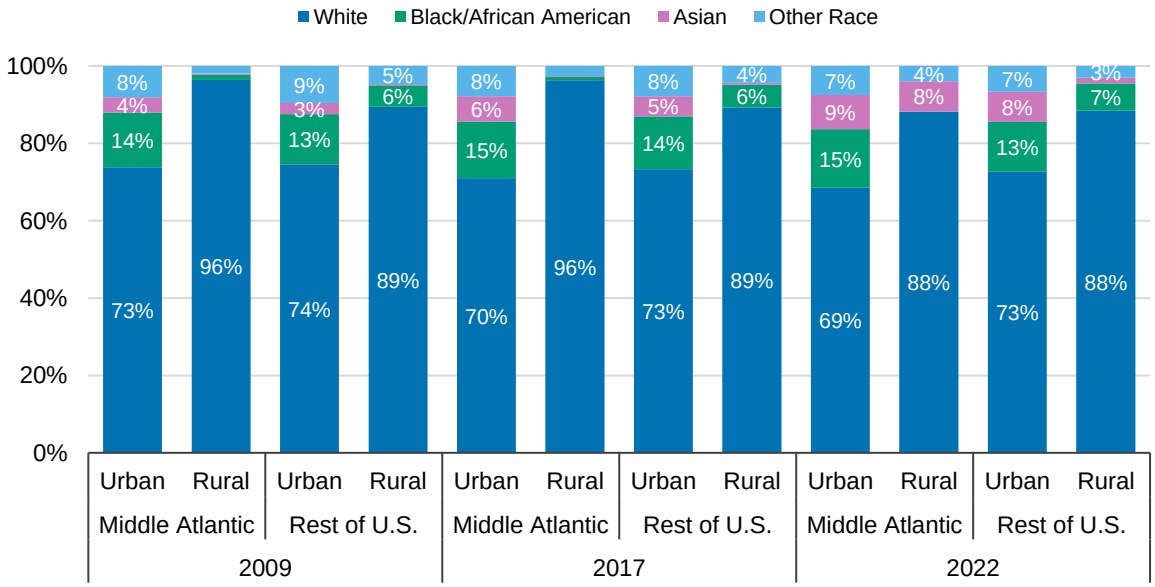



**Figure 3-6. Share of households by rural classification and household race (2009, 2017, and 2022 NHTS data)**

### 3.2.2 Household Size

The distribution of household size is presented in Figure 3-7. In 2017, the proportion of one-person households in urban NYS is statistically significantly higher (31%) than in rural areas (17%). The urban-rural difference in the share of one-person households in 2017 (14%) is also significantly greater than that in the rest of the United States (9%).

Compared to 2009, the share of one-person households in rural NYS has significantly decreased in 2017 (23% vs. 17%). Furthermore, there is a significant increase in the share of 4-person households in rural

NYS from 2009 (15%) to 2017 (23%). However, this pattern is unique to rural NYS and is not observed in rural areas across the rest of the United States.

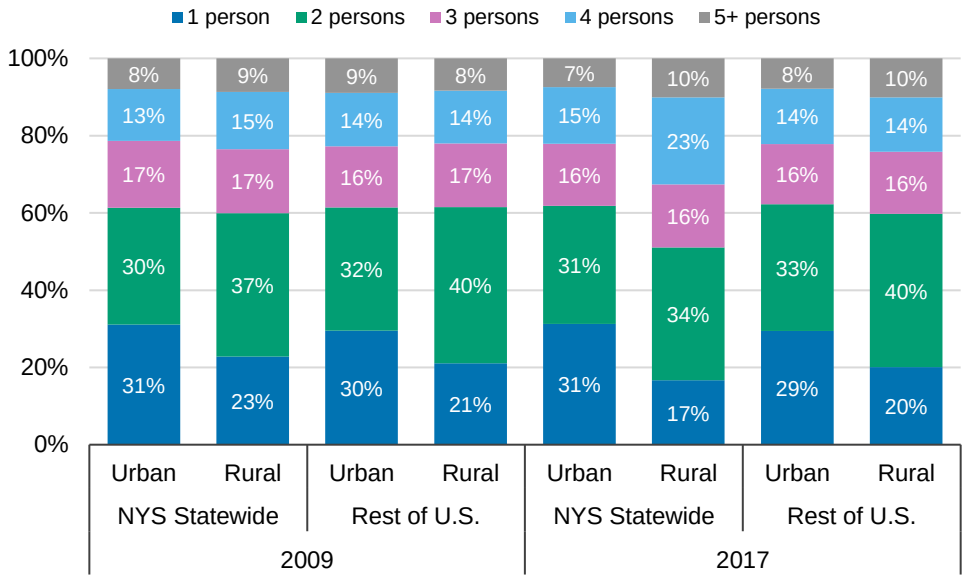



**Figure 3-7. Share of households by household size and rural classification (2009 and 2017 NHTS data)**

Compared to 2017, the share of one-person households in the rural Middle Atlantic Division experienced a statistically significant increase, rising from 14% to 24% by 2022. Conversely, the share of four-person households in the same region saw a slight decline from 21% to 18% during the same period. In other rural areas across the United States, there was a statistically significant increase in the share of one-person households from 2017 to 2022 (21% to 24%).

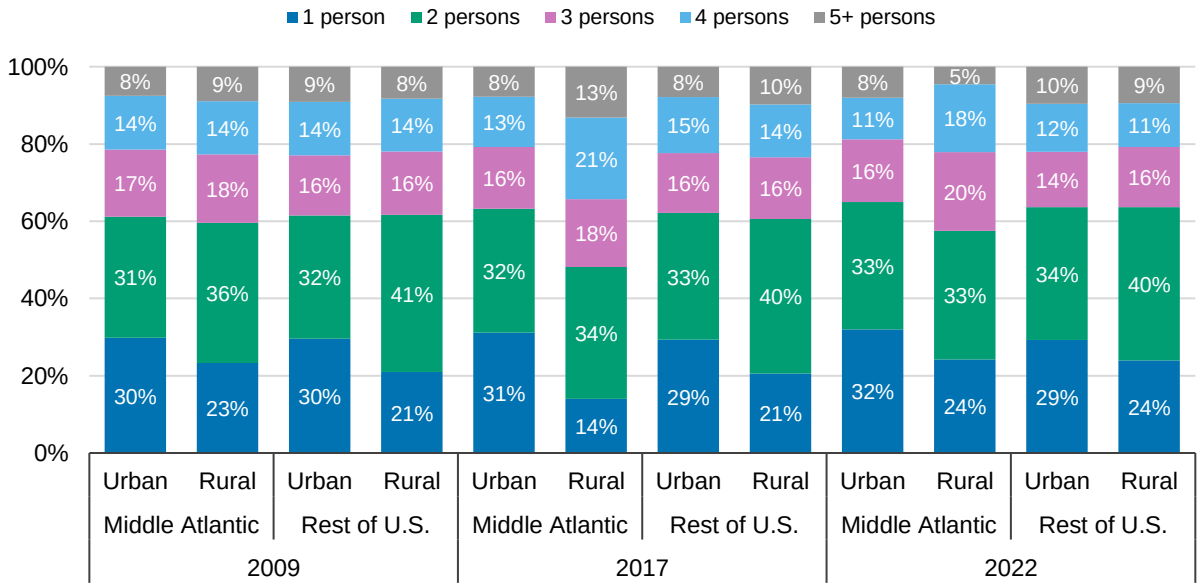



**Figure 3-8. Share of households by household size and rural classification (2009, 2017, and 2022 NHTS data)**

### 3.2.3 Vehicle Summary

Table 3-1 provides an overview of household vehicle statistics. In rural areas, households on average tend to own a higher number of vehicles compared to the number of workers and drivers, a trend consistent across both 2009 and 2017 in both NYS and the rest of the United States. For instance, in NYS in 2017, the average rural household owned 2.3 vehicles, which is statistically significantly higher than the average urban household ownership of 1.2 vehicles. This rural vehicle count also significantly exceeds the number of workers (1.4) and drivers (2.0) per household. Additionally, rural households demonstrate a higher proportion of ownership of three or more vehicles, a trend observed in both NYS and the rest of the United States in both 2009 and 2017.

**Table 3-1. Summary of household vehicles (2009 and 2017 NHTS data)**

| | 2009 | | | | 2017 | | | |
|---|---|---|---|---|---|---|---|---|
| | NYS Statewide | | Rest of U.S. | | NYS Statewide | | Rest of U.S. | |
| | Rural | Urban | Rural | Urban | Rural | Urban | Rural | Urban |
| **General statistics** | | | | | | | | |
| Workers per household | 1.2 | 1.1 | 1.2 | 1.1 | 1.4 | 1.2 | 1.2 | 1.2 |
| Drivers per household | 1.9 | 1.5 | 1.9 | 1.7 | 2.0 | 1.4 | 1.9 | 1.7 |
| Vehicles per household | 2.1 | 1.2 | 2.4 | 1.8 | 2.3 | 1.2 | 2.5 | 1.8 |
| **Vehicle ownership** | | | | | | | | |
| No vehicle | 3% | 32% | 3% | 8% | 3% | 31% | 3% | 9% |
| 1 vehicle | 27% | 33% | 22% | 35% | 25% | 35% | 21% | 36% |
| 2 vehicles | 44% | 25% | 36% | 37% | 35% | 22% | 33% | 34% |
| 3+ vehicles | 25% | 10% | 39% | 20% | 36% | 12% | 42% | 21% |

### 3.2.4 Vehicle Ownership

As can be seen from Figure 3-9, the share of households without vehicles is significantly higher in urban NYS (31%) compared to rural NYS (3%) in 2017. This consistent pattern is also evident in 2009. Conversely, the share of households with three or more vehicles is higher in rural areas than in urban areas, both in NYS and the rest of the United States, for both 2009 and 2017. For instance, the share of households with three or more vehicles in rural areas in the rest of the United States is 42%, a statistically significant difference compared to urban areas (21%).

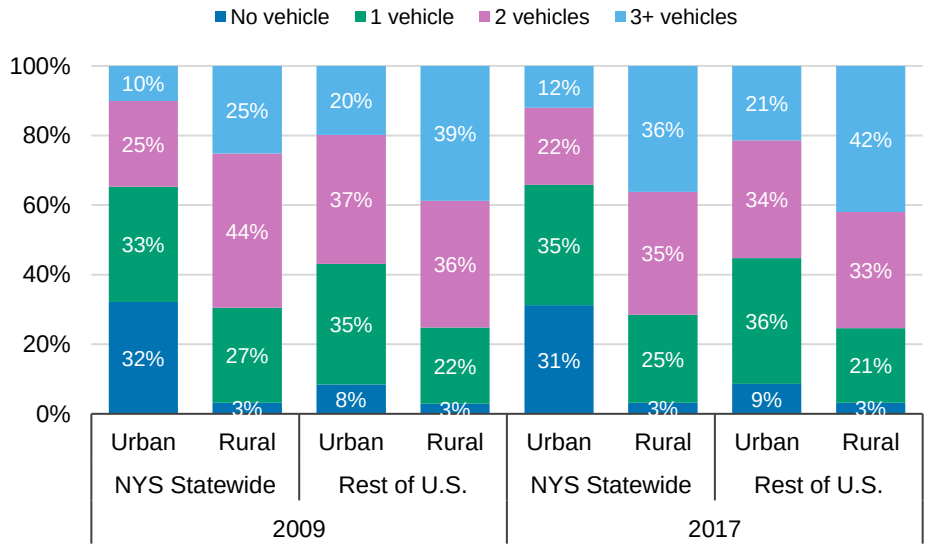



**Figure 3-9. Share of households by vehicle ownership and rural classification (2009 and 2017 NHTS data)**

Exploring further into NYS, Figure 3-10 shows that the share of households without vehicles in NYC stood significantly higher at 52% in 2017 compared to rest of NYS urban areas at 12% in 2017. This disparity contributes to the significant difference observed between urban and rural areas in NYS. Additionally, in NYS, the share of households with two or more vehicles is lower in NYC than in rest of NYS urban areas, both in 2009 and 2017. For instance, the share of households with two vehicles is significantly lower in NYC (11%) than in rest of NYS urban areas (33%) in 2017.

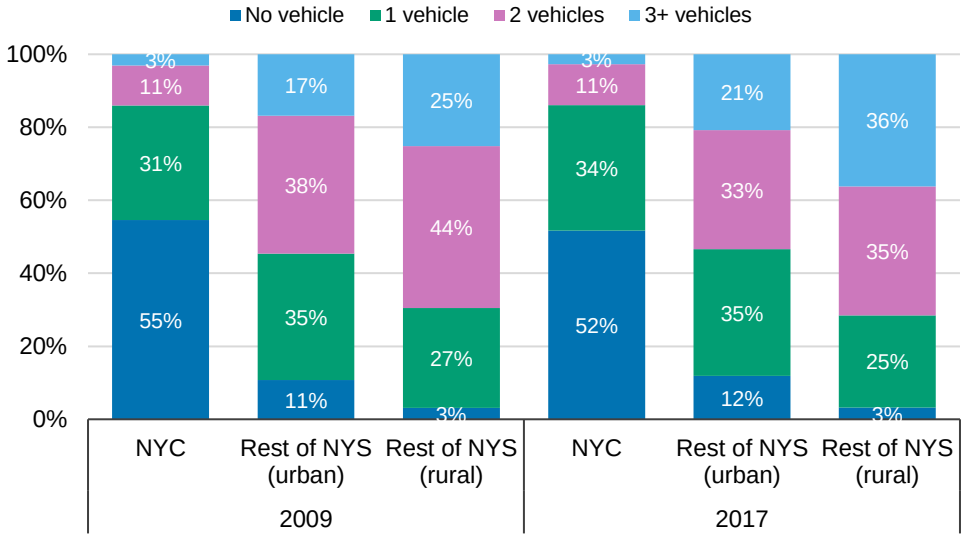



**Figure 3-10. Share of households by vehicle ownership and rural classification in NYS (2009 and 2017 NHTS data)**

Figure 3-11 shows the share of zero-vehicle households and single-vehicle households is consistently higher in urban areas compared to rural areas across various years and regions. In the urban Middle Atlantic Division, there was a slight increase in the proportion of two-vehicle households from 26% in 2017 to 32% in 2022, whereas this proportion remained relatively stable in rural areas. In the rest of the United States, the share of two-vehicle households witnessed statistically significant increases in both

urban and rural areas. In urban areas, it rose from 34% in 2017 to 38% in 2022, while in rural areas, it saw a statistically significant increase from 33% in 2017 to 41% in 2022.

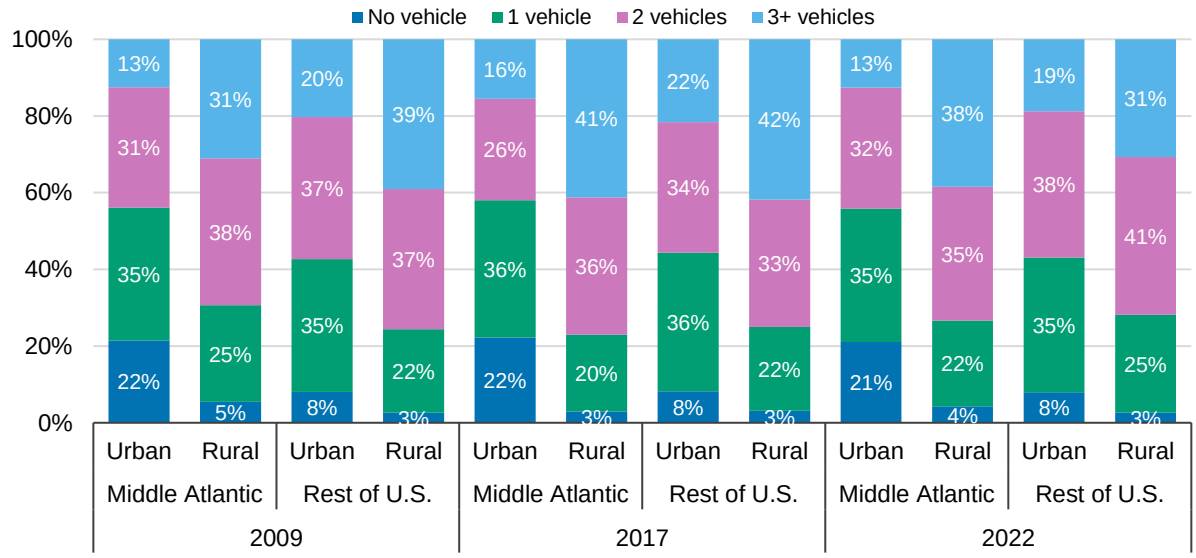



**Figure 3-11. Share of households by vehicle ownership and rural classification (2009, 2017, and 2022 NHTS data)**

### 3.2.5 Vehicle Age

Figure 3-12 suggests that urban households own relatively newer vehicles (about 1 to 2 years) on average compared to their rural counterparts, both in NYS and the rest of the United States, for both 2009 and 2017. It is worth noting that the observed differences are not statistically significant.

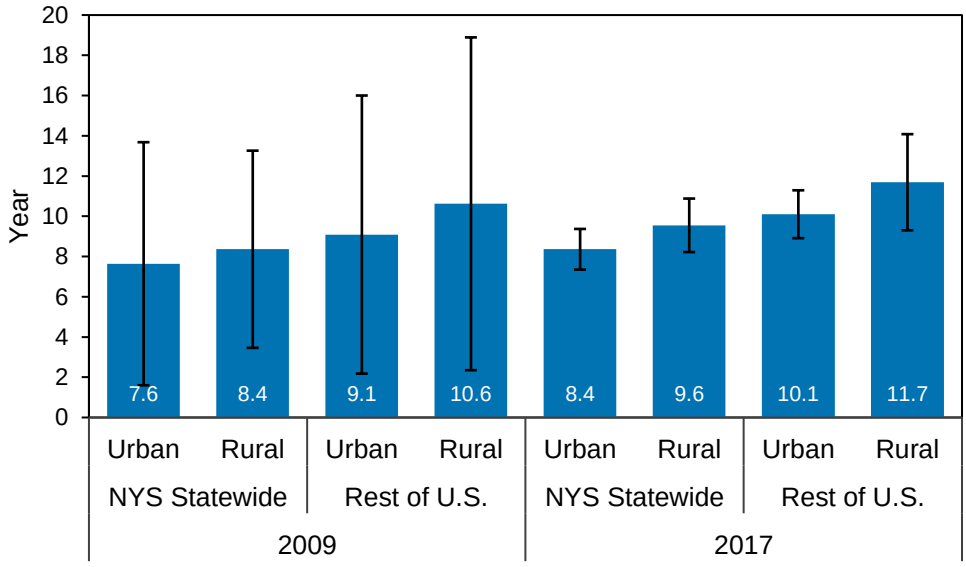



**Figure 3-12. Average vehicle age by rural classification (2009 and 2017 NHTS data)**

### 3.2.6 Vehicle Type and Age

Table 3-2 shows a summary of vehicle-related statistics comparing urban and rural areas, encompassing the distribution of vehicle types, vehicle ages, and the distribution of vehicles by vehicle miles traveled (VMT). Notably, rural areas exhibit a greater share of pickup trucks compared to urban areas, both within NYS and the rest of the United States. For instance, in 2017, the share of pickup trucks in rural areas of NYS amounted is 20.4%, which is statistically significantly higher than the 5% share observed in urban areas. Moreover, households in rural areas had slightly higher share of VMT using vehicles that are 10 years or older compared to their urban counterparts regardless of year and region. Contrasting NYS with the rest of the United States, it is observed that NYS households had lower share of VMT using vehicles that are 10 years or older, both in rural and urban settings.

**Table 3-2. Types and age of vehicles by rural classification (2009 and 2017 NHTS data)**

| | 2009 | | | | 2017 | | | |
|---|---|---|---|---|---|---|---|---|
| | NYS Statewide | | Rest of U.S. | | NYS Statewide | | Rest of U.S. | |
| | Rural | Urban | Rural | Urban | Rural | Urban | Rural | Urban |
| **Vehicle type** | | | | | | | | |
| Auto | 45.6% | 62.9% | 37.3% | 53.8% | 41.7% | 56.3% | 36.3% | 53.4% |
| Van | 9.3% | 9.0% | 7.2% | 8.5% | 6.2% | 6.6% | 5.9% | 6.1% |
| SUV | 18.8% | 20.3% | 18.2% | 20.0% | 25.4% | 29.6% | 22.1% | 24.0% |
| Pickup truck | 21.1% | 5.5% | 30.9% | 14.1% | 20.4% | 5.0% | 29.1% | 12.5% |
| Other truck | 0.5% | 0.1% | 0.9% | 0.2% | 0.8% | 0.3% | 0.8% | 0.4% |
| RV | 0.6% | 0.2% | 0.8% | 0.4% | 0.9% | 0.3% | 1.1% | 0.5% |
| Motorcycle | 3.8% | 1.9% | 4.3% | 2.8% | 4.2% | 1.8% | 4.2% | 3.0% |
| **Vehicle age** | | | | | | | | |
| Average vehicle age | 8.4 | 7.6 | 10.6 | 9.1 | 9.6 | 8.4 | 11.7 | 10.1 |
| **Percent of VMT** | | | | | | | | |
| Less than 10 years | 67.3% | 69.8% | 55.3% | 62.4% | 57.6% | 63.0% | 45.2% | 52.2% |
| More than 10 years | 32.7% | 30.2% | 44.7% | 37.6% | 42.4% | 37.0% | 54.8% | 47.8% |

### 3.2.7 Driver Availability

Examining Figure 3-13, it is evident that the probability of being a driver is statistically significantly lower in urban areas (62%) of NYS in 2017 compared to rural areas (77%). This distinction is also significant in the rest of the United States, though the gap is narrower than in NYS. Notably, the likelihood of being a driver in NYS urban areas in 2017 (62%) is statistically significantly decreased compared to the same area in 2009 (69%).

According to Figure 3-14, the probability of being a driver is markedly lower in NYC in 2017 (53%) compared to rest of NYS urban areas in the same year (70%), a statistically significant difference. Furthermore, when contrasting 2009 and 2017, there is a decrease in the likelihood of being a driver in NYC—from 62% to 53%. Despite this temporal decline, the difference is not statistically significant.

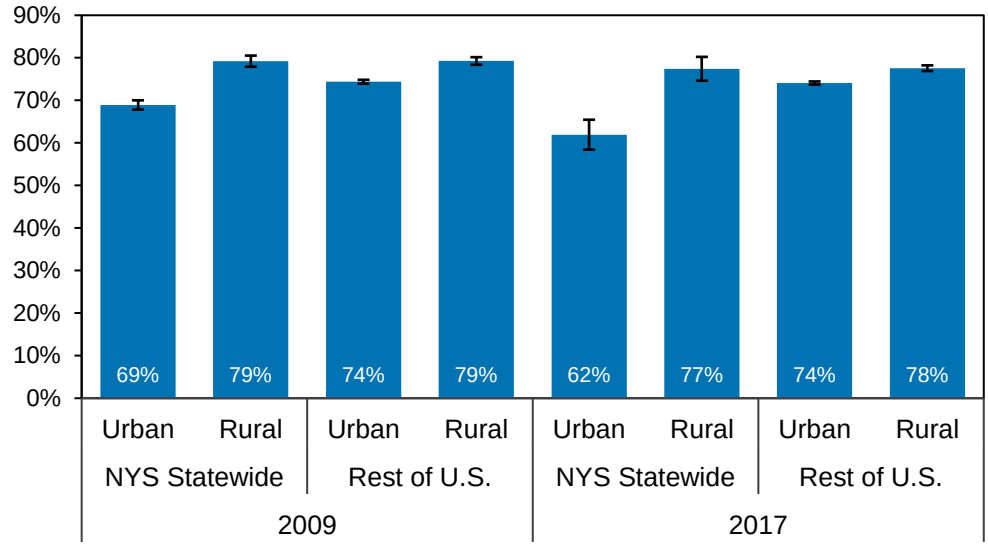



**Figure 3-13. Likelihood of being a driver by rural classification (2009 and 2017 NHTS data)**

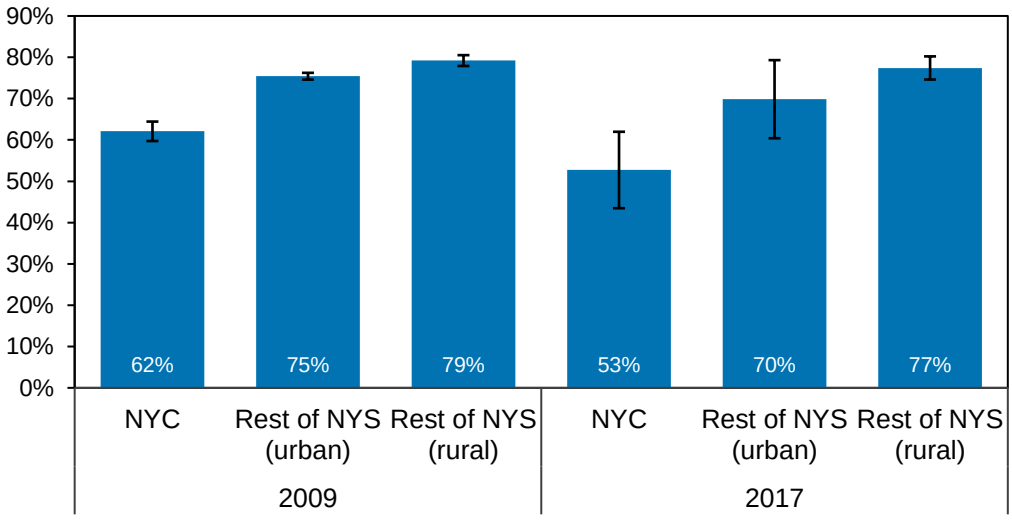



**Figure 3-14. Likelihood of being a driver by rural classification in NYS (2009 and 2017 NHTS data)**

Figure 3-15 shows the comparison spanning the years 2009, 2017, and 2022 within both the Middle Atlantic Division and the rest of the United States. The probability of individuals being a driver in rural Middle Atlantic saw a slight decline from 80% in 2009 to 75% in 2017, followed by a slight increase to 80% in 2022. Similarly, in rural areas across the rest of the United States, this trend mirrored a slight decrease from 79% in 2009 to 78% in 2017, followed by a modest increase to 81% in 2022.

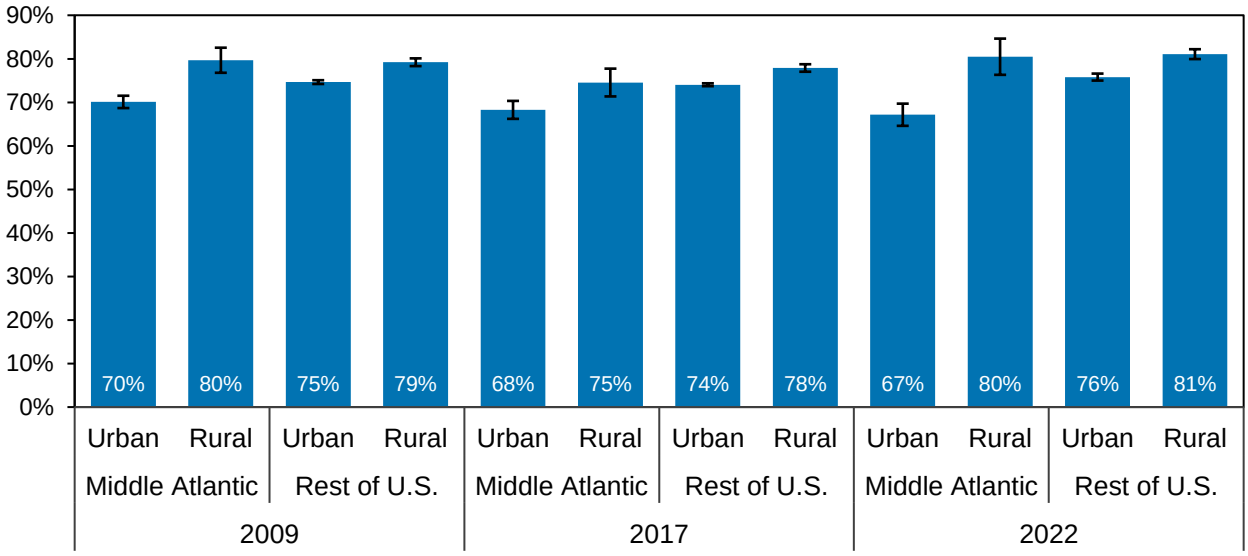



**Figure 3-15. Likelihood of being a driver by rural classification (2009, 2017, and 2022 NHTS data)**

### 3.2.8 Number of Drivers

Figure 3-16 shows that in 2017, the proportion of households with no drivers in NYS urban areas (18%) is statistically significantly higher than in rural areas (2%). Similarly, in the rest of the United States, urban areas (6%) exhibit a statistically significantly higher share of no-driver households compared to rural areas (3%). However, it's worth noting that the disparity in the share of no-driver households between rural and urban areas is smaller in the rest of the United States (3%) than in NYS (16%). Additionally, the share of households with two drivers is significantly lower in NYS urban areas (35%) than in rural areas (55%). Interestingly, a significant increase is observed in the share of no-driver households in NYS urban areas from 2009 to 2017 (11% to 18%).

In Figure 3-17, the distribution of NYS households in 2017 reveals some distinctions. The proportion of no-driver households in NYC (28%) is significantly higher than in rest of NYS urban areas (9%). Conversely, the share of two-driver households in NYC (28%) is significantly lower compared to rest of NYS urban areas (42%). A significant shift is evident in NYC from 2009 to 2017, with the share of no-driver households increasing from 16% to 28%.

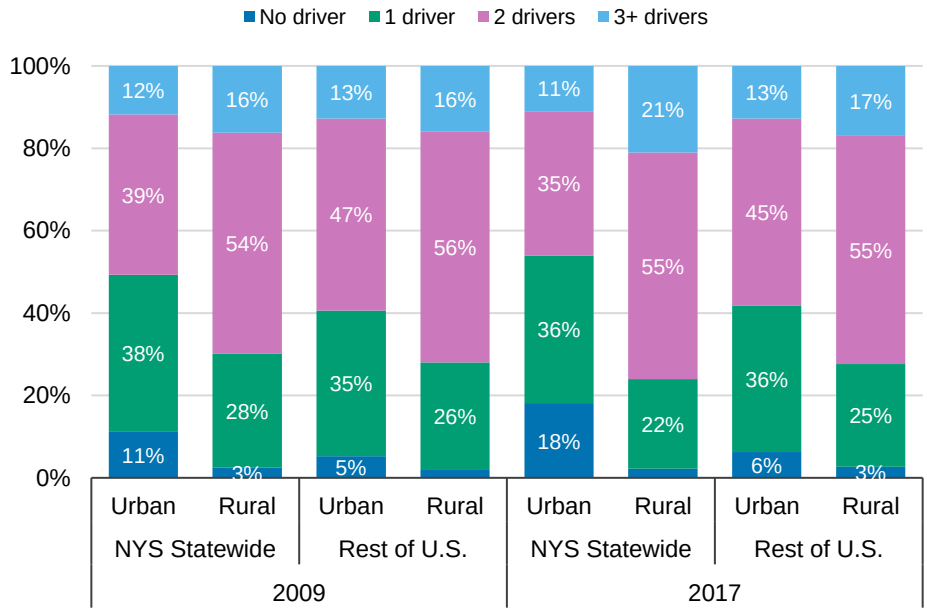



**Figure 3-16. Share of households by number of drivers and rural classification (2009 and 2017 NHTS data)**

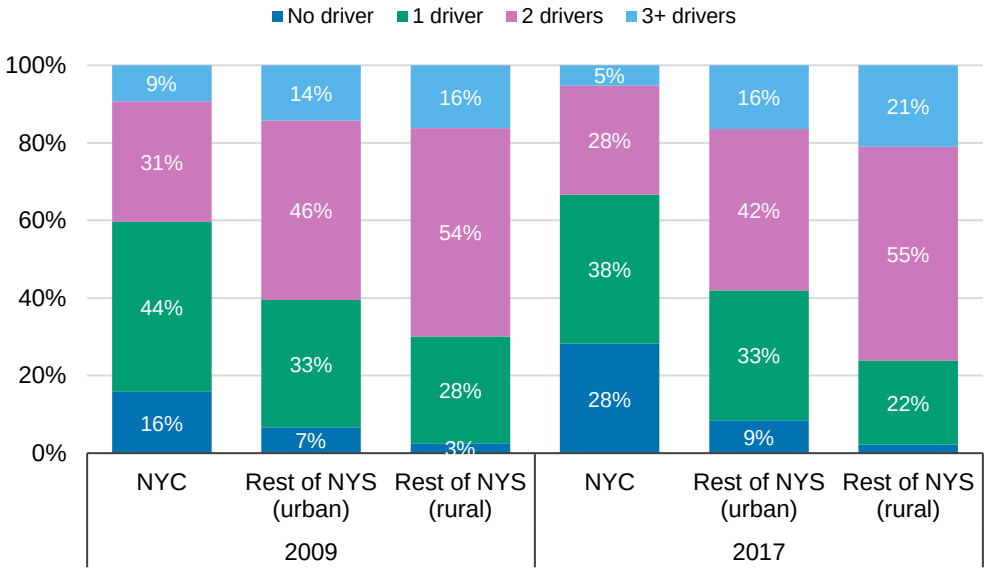



**Figure 3-17. Share of households by number of drivers and rural classification in NYS (2009 and 2017 NHTS data)**

Figure 3-18 shows the comparison between 2009, 2017, and 2022 within the Middle Atlantic Division and the rest of the United States based on NHTS data. At this geographical level, the pattern is very similar across the years for both urban rural areas in Middle Atlantic and the rest of the United States. The proportion of no-driver households in rural Middle Atlantic experienced a slight uptick, rising from 2% in 2017 to 5% in 2022.

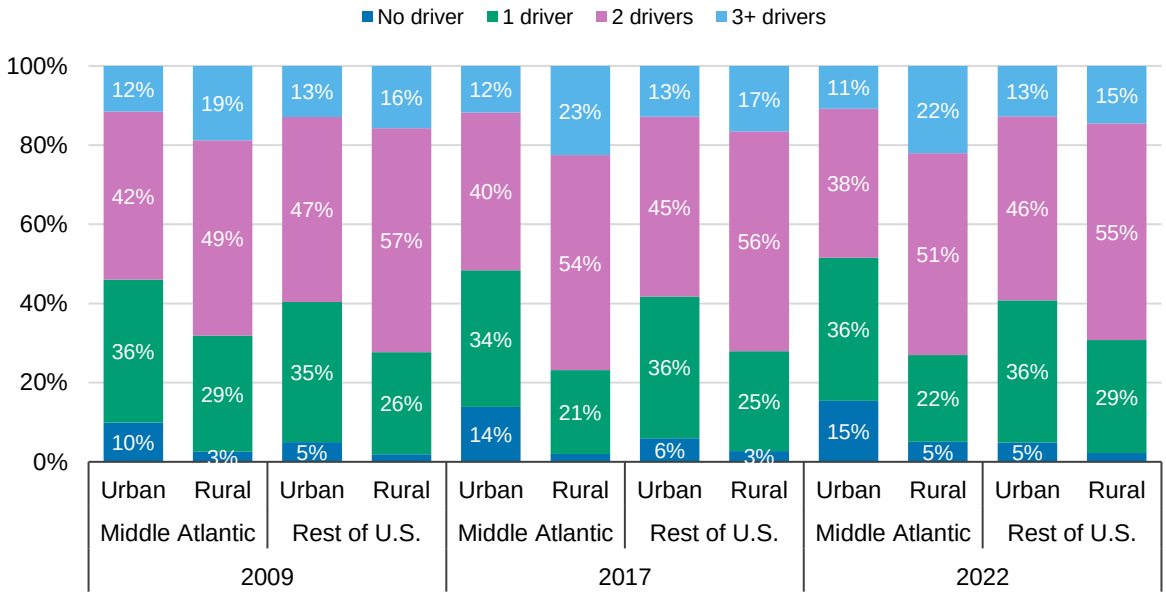



**Figure 3-18. Share of households by number of drivers and rural classification (2009, 2017, and 2022 NHTS data)**

### 3.2.9 Number of Drivers and Number of Vehicles

Figure 3-19 shows that in 2017, the proportion of households with a number of vehicles lower than the number of drivers is 27% in urban NYS, statistically significantly surpassing rural areas at 14%. Conversely, the share of households with a number of vehicles higher than the number of drivers is statistically significantly higher in rural NYS (28%) compared to its urban counterparts (8%). In both NYS and the rest of the United States, the proportion of households where the number of vehicles equal to the number of drivers tends to be higher in urban areas compared to rural areas. For instance, in NYS in 2017, the percentage of households with an equal number of drivers and vehicles is 65% in urban areas, whereas it stands at 58% in rural areas.

The explanation for the higher proportion of households with more vehicles than drivers in rural areas compared to urban areas in both 2009 and 2017 in NYS finds its reasoning in the considerably lower share of households with a number of vehicles higher than the number of drivers in NYC (3%) compared to rest of NYS urban areas (13%) in 2017, as depicted in Figure 3-20. Furthermore, a statistically significant higher share of households with a number of vehicles lower than the number of drivers is also evident in NYC (39%) compared to rest of NYS urban areas (16%) in 2017. However, it is essential to note that this share has seen a significant decrease in NYC from 58% in 2009 to 39% in 2017.

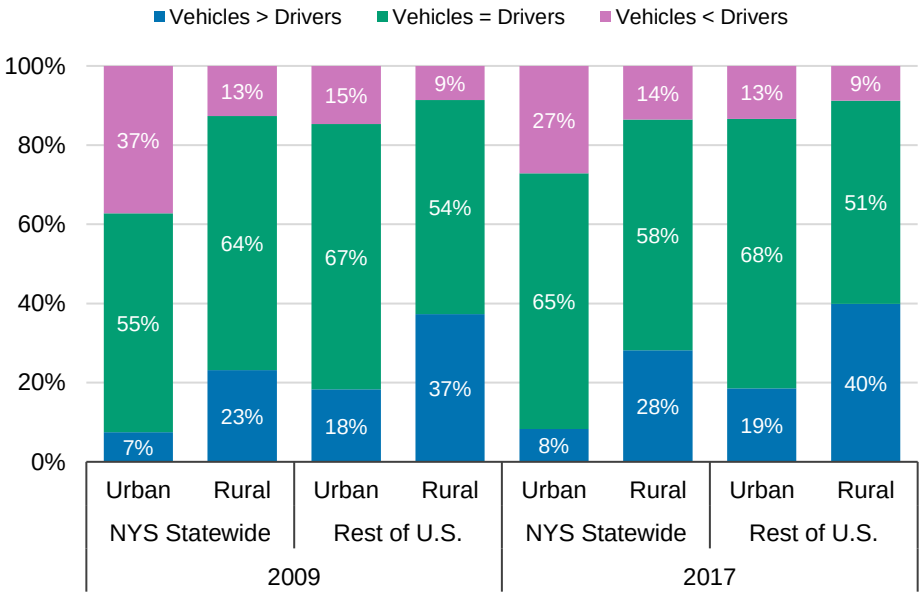



**Figure 3-19. Share of households by number of vehicles with respect to number of drivers and rural classification (2009 and 2017 NHTS data)**

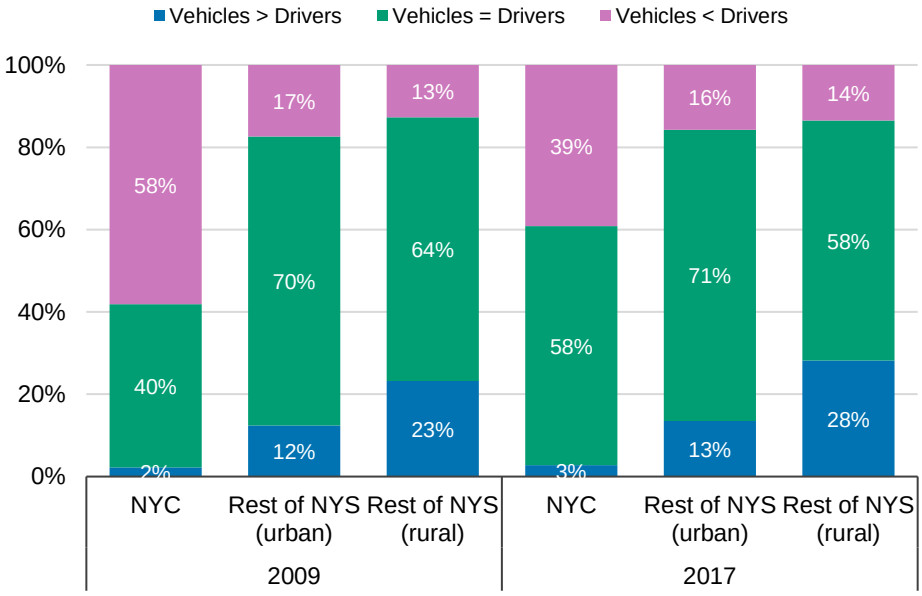



**Figure 3-20. Share of households by number of vehicles with respect to number of drivers and rural classification in NYS (2009 and 2017 NHTS data)**

### 3.2.10 Workers

A comparable distribution of workers between rural and urban areas for both NYS and rest of the United States can be seen in Figure 3-21. In 2009, the share of workers in rural areas is higher than that in urban areas in NYS. However, in 2017, there is no significant difference observed between urban and rural areas in NYS regarding the share of workers.

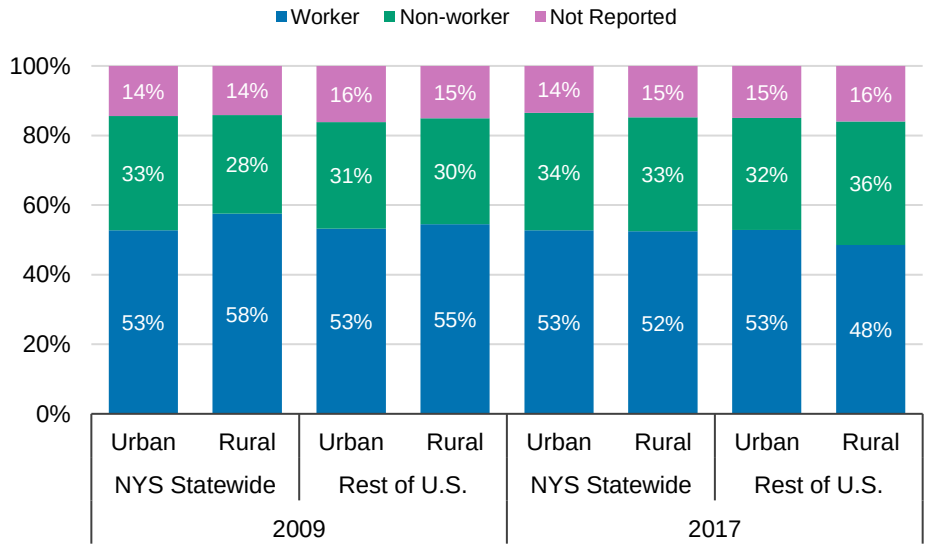



**Figure 3-21. Share of population employed by rural classification (2009 and 2017 NHTS data)**

### 3.2.11 Life Cycle

Figure 3-22 shows a significant increase in the share of households comprising adults without children in urban areas, both in NYS and the rest of the United States, from 2009 to 2017. Conversely, the opposite trend is observed in rural areas, with a significant decrease in the share of households without children during the same period, in both NYS and the rest of the United States. In 2017, the share of households with two adults and children is statistically significantly higher in rural NYS (38%) compared to urban NYS (26%). A similar pattern is observed in the rest of the United States, where households with two adults and children make up 31% in rural areas compared to 27% in urban areas.

Breaking it down further in NYS, as shown in Figure 3-23, the rise in households without children in urban NYS can be primarily attributed to the increase in NYC. In 2009, the percentage of households without children in NYC stood at 40%, which then rose to 51% by 2017.

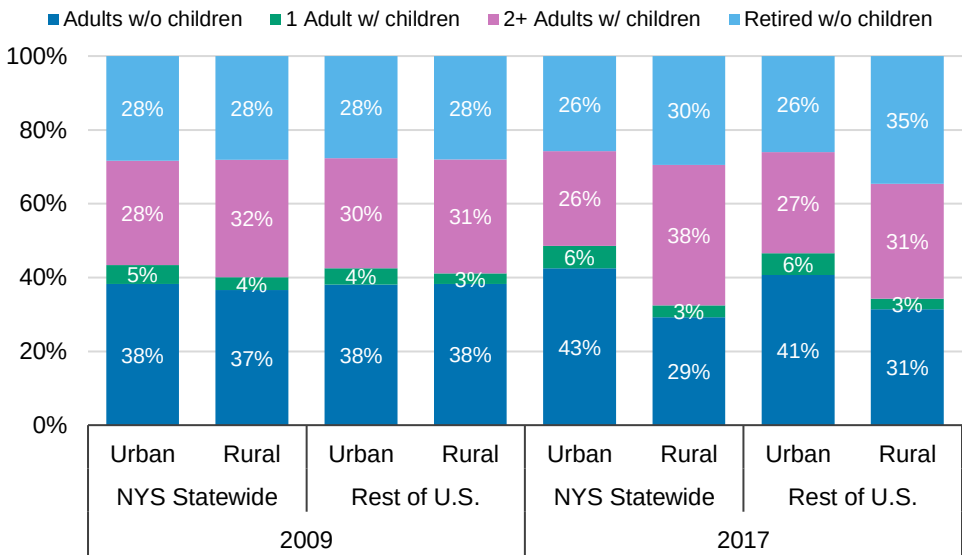



**Figure 3-22. Share of households by life cycle category and rural classification (2009 and 2017 NHTS data)**

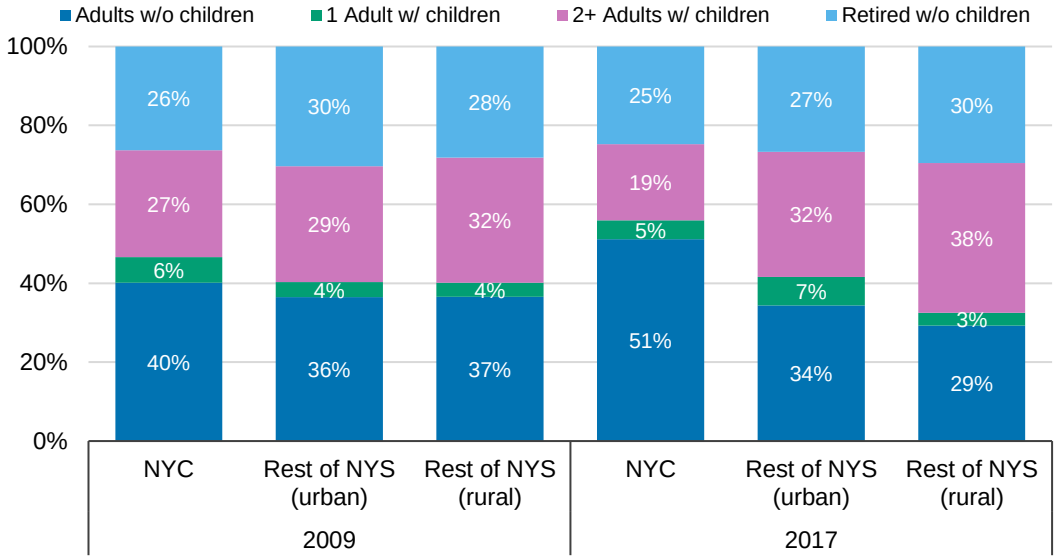



**Figure 3-23. Share of households by life cycle category and rural classification in NYS (2009 and 2017 NHTS data)**

Figure 3-24 shows the distribution of households by life cycle category in both rural and urban areas across different years. A noticeable trend emerges in the rural Middle Atlantic Division, where there is a steady increase in the proportion of retired households without children, climbing from 24% in 2009, to 31% in 2017, and further to 42% in 2022. This pattern is similar in the rest of the United States. Conversely, there's a decreasing trend in the share of households with adults but no children in rural Middle Atlantic, declining from 43% in 2009, to 25% in 2017, and ultimately to 24% in 2022. In 2022, rural Middle Atlantic households exhibit a higher percentage of retired individuals without children (42%) compared to urban areas (30%), while conversely, they have a lower percentage of households with adults and no children (24%) compared to urban areas (39%).

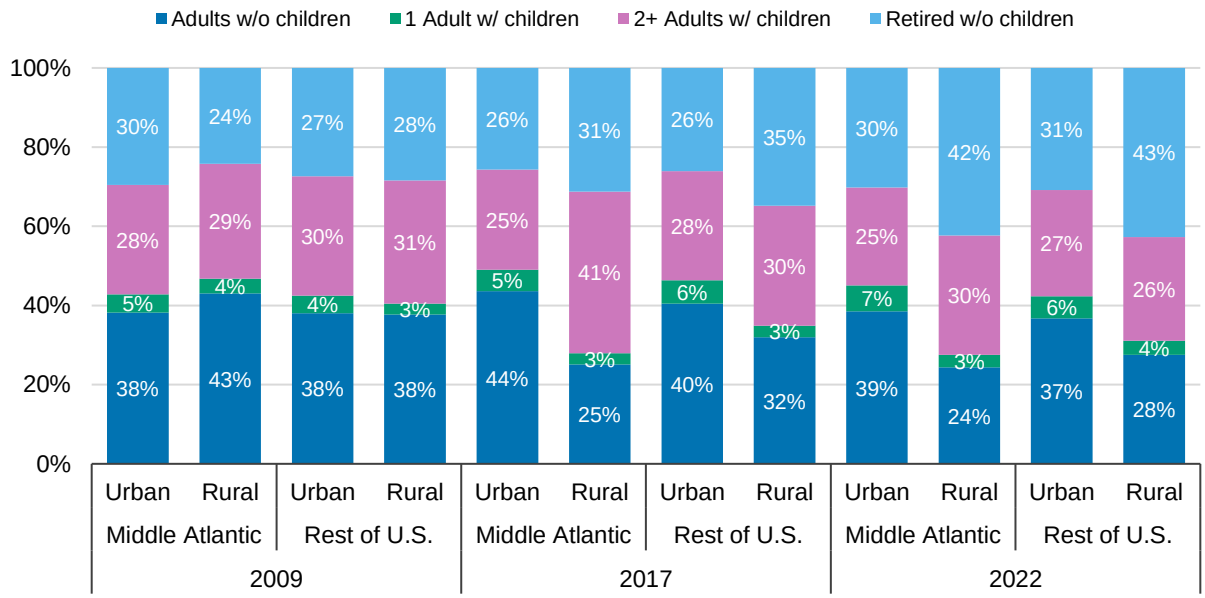



**Figure 3-24. Household distribution by life cycle category and rural classification (2009, 2017, and 2022 NHTS data)**

### 3.2.12 Household Income

Household income distribution for the years 2009 and 2017 is depicted in Figure 3-25 and Figure 3-26, respectively. Given the income categories are different in 2009 and 2017, the household income distributions are analyzed separately.

In 2009, one distinct observation emerges. The share of households with an annual income between $25K and $50K is statistically significantly higher in rural NYS (29%) compared to urban NYS (23%). Conversely, the share of households with an annual income exceeding $100K (19%) is higher in urban NYS than in rural areas (14%).

In 2017, a statistically significantly higher share of households with an annual income exceeding $200K is observed in urban NYS (9%) compared to rural NYS (6%). On the flip side, a statistically significantly higher share of households with the lowest income, less than $25K, is observed in urban NYS (22%) than in rural NYS (18%).

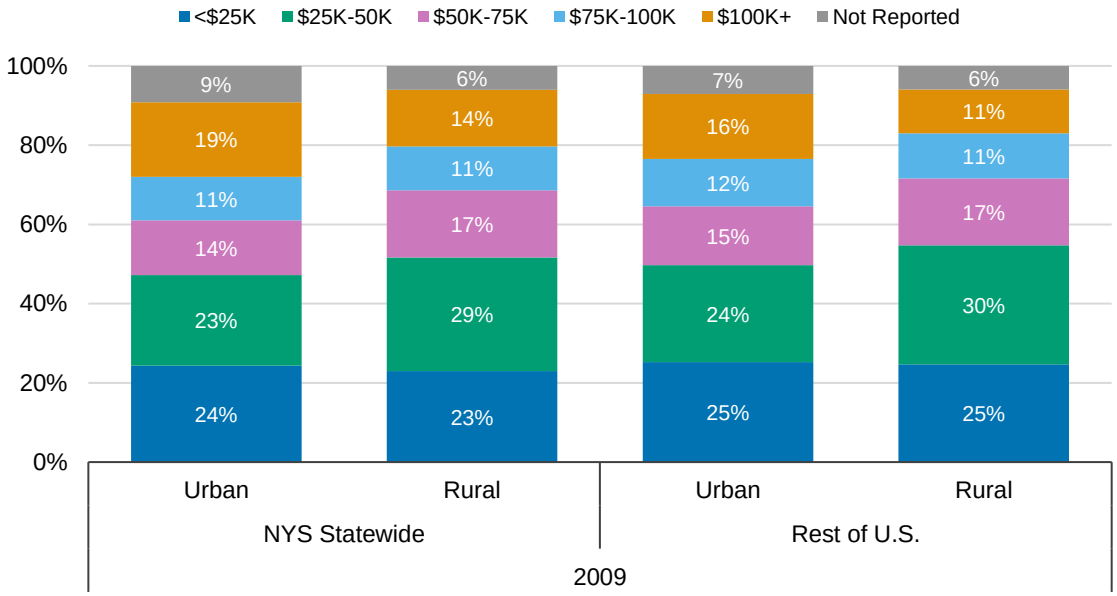



**Figure 3-25. Share of households by household income in 2009 (NHTS data)**

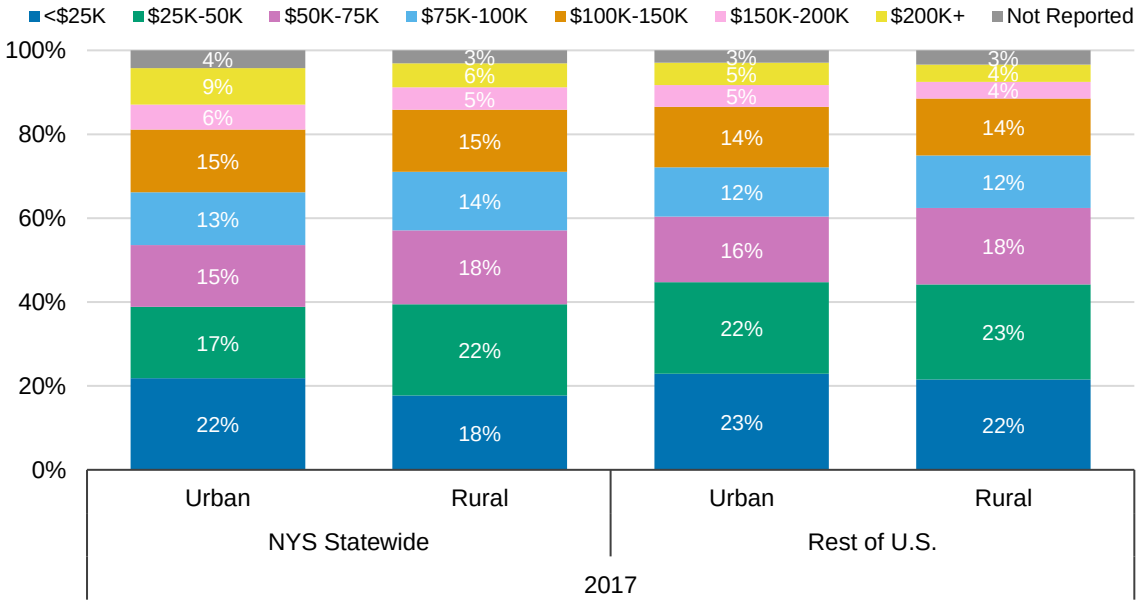



**Figure 3-26. Share of households by household income in 2017 (NHTS data)**

### 3.2.13 Household Income and Vehicle Ownership

The relationship between household income and vehicle ownership is analyzed and shown in Table 3-3. In NYS urban areas, households with an income under $100K predominantly own one vehicle. For example, 44% of urban households with an annual income between $50K and $75K possess only one vehicle. However, as income surpasses $100K, a shift occurs, and the majority of urban households tend to own two vehicles.

Conversely, in rural NYS, a slightly different pattern emerges. The majority of households with an income lower than $50K own one vehicle, while the majority of households with an income higher than $75K tend to own two vehicles. For instance, 36% of rural households with an annual income between $75K and $100K own two vehicles.

**Table 3-3. Share of households by vehicle ownership, income and rural classification (2017 NHTS data)**

| Income | Region | No vehicle | | 1 vehicle | | 2 vehicles | | 3+ vehicles | |
|---|---|---|---|---|---|---|---|---|---|
| | | Rural | Urban | Rural | Urban | Rural | Urban | Rural | Urban |
| <$25K | Rest of U.S. | 12% | 27% | 49% | 52% | 25% | 15% | 14% | 6% |
| | NYS Statewide | 13% | 59% | 54% | 33% | 21% | 7% | 12% | 1% |
| $25K-50K | Rest of U.S. | 1% | 4% | 26% | 51% | 37% | 30% | 36% | 15% |
| | NYS Statewide | 3% | 34% | 38% | 46% | 34% | 15% | 26% | 6% |
| $50K-75K | Rest of U.S. | 1% | 3% | 12% | 35% | 37% | 40% | 50% | 23% |
| | NYS Statewide | 0% | 22% | 20% | 44% | 41% | 23% | 39% | 11% |
| $75K-100K | Rest of U.S. | 0% | 2% | 7% | 26% | 36% | 45% | 57% | 28% |
| | NYS Statewide | 0% | 23% | 11% | 33% | 42% | 30% | 47% | 15% |
| $100K-150K | Rest of U.S. | 0% | 1% | 4% | 16% | 35% | 47% | 60% | 36% |
| | NYS Statewide | 0% | 16% | 6% | 26% | 39% | 37% | 55% | 22% |
| $150K-200K | Rest of U.S. | 0% | 2% | 3% | 15% | 35% | 45% | 62% | 39% |
| | NYS Statewide | 0% | 17% | 4% | 25% | 46% | 32% | 51% | 26% |
| $200K+ | Rest of U.S. | 0% | 1% | 4% | 12% | 28% | 45% | 69% | 42% |
| | NYS Statewide | 0% | 19% | 17% | 27% | 32% | 33% | 51% | 21% |

## 3.3 ZERO-VEHICLE HOUSEHOLDS

### 3.3.1 Share of Zero-Vehicle Households

Zero-vehicle households between urban and rural areas in both NYS and the rest of the United States are compared below. There is a higher proportion of zero-vehicle households in urban areas compared to rural areas in both regions. Specifically, in both 2009 and 2017, almost all of the zero-vehicle households are in urban areas for NYS.

### 3.3.2 Household Income

In 2009 (Figure 3-28), a higher proportion of zero-vehicle households with an income lower than $25K is observed in rural NYS (67%) compared to urban areas (44%). This pattern is also reflected in the rest of the United States.

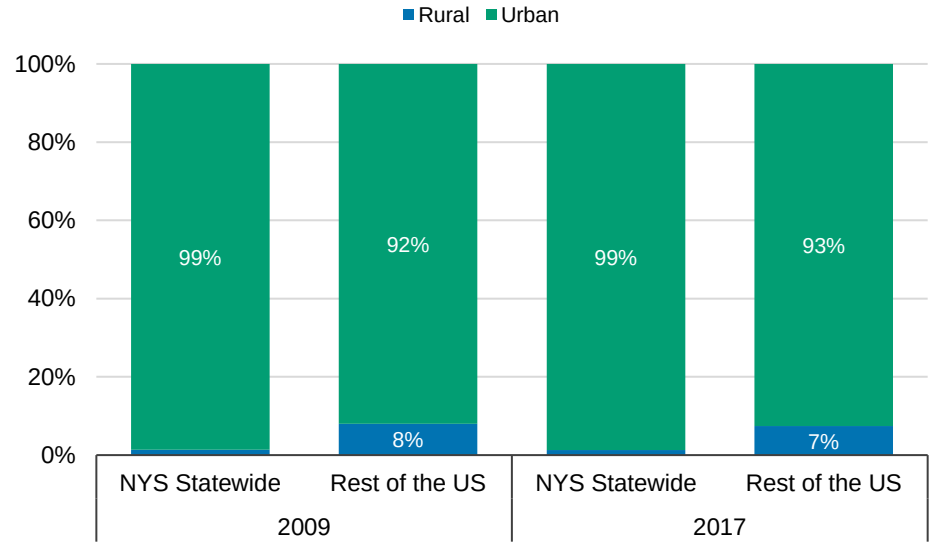



**Figure 3-27. Share of households by rural classification among zero-vehicle households (2009 and 2017 NHTS)**

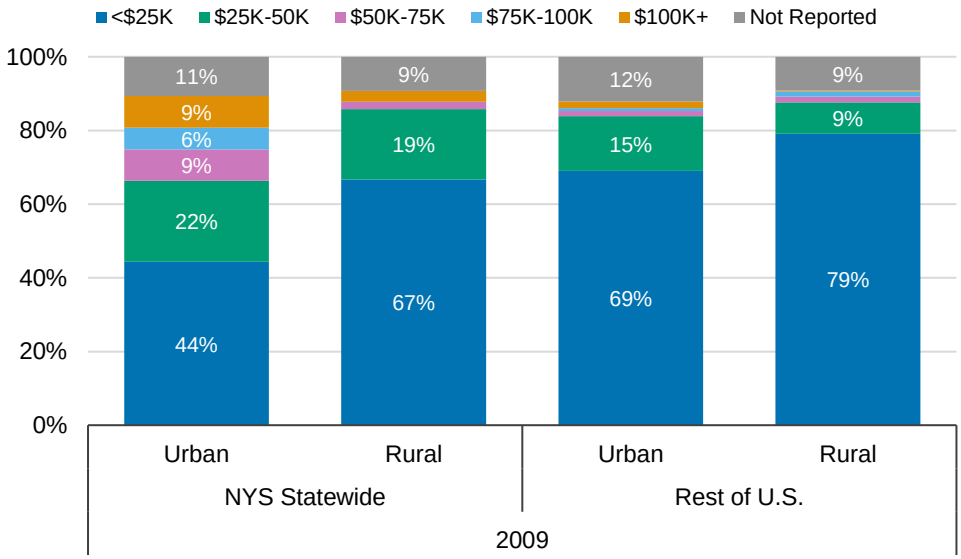



**Figure 3-28. Share of zero-vehicle households by household income in 2009 (NHTS data)**

As shown in Figure 3-29, in 2017, the distribution of zero-vehicle households with an income lower than $25K reveals a distinct pattern. The share of such households is lower in urban areas compared to rural areas in both NYS and the rest of the United States. Notably, in NYS, the share of zero-vehicle households with an income lower than $25K in urban areas is statistically significantly lower (41%) than that in rural areas (73%). Additionally, zero-vehicle households with an income between $50K and $75K in urban areas are statistically significantly more prevalent than in rural areas.

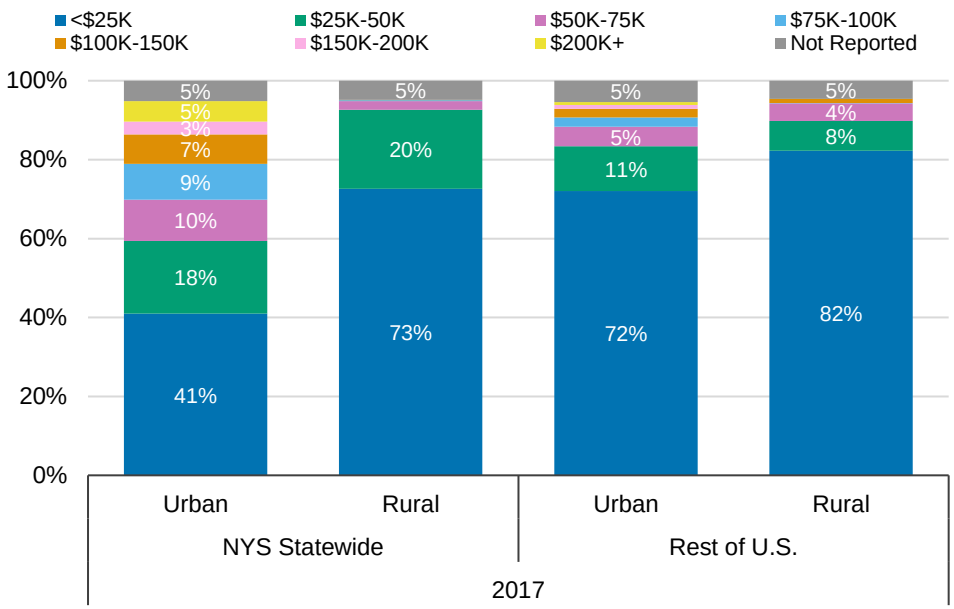



**Figure 3-29. Share of zero-vehicle households by household income in 2017 (NHTS data)**

# 4. MOBILITY IN RURAL AREAS

## 4.1 OVERVIEW

This section offers detailed analyses on mobility within rural areas, focusing on both person and vehicle trips. Key metrics examined include person trip rate, person miles traveled, average distance of person trips, vehicle trip rate, vehicle miles traveled, and average travel time of vehicle trips. These analyses are cross-referenced with factors such as trip purpose, mode of transportation, and party size to provide a comprehensive understanding of rural mobility patterns. Margins of error are calculated at a 95% confidence level for all analyses. Any statistical significance in comparisons is clearly described. In some figures, error bars are directly included to show the margins of error.

### 4.1.1 Travel Day

The percentage of individuals who did not travel on the NHTS designated day in New York State (NYS) is marginally lower in rural areas compared to urban ones in 2009 (Table 4-1). However, in 2017, this percentage is lower in urban areas than in rural ones. In particular, the non-traveling population in rural areas constituted 20%, while in urban areas it was slightly lower at 17.6%.

**Table 4-1. Travel summary for NYS residents by rural classification (2009 and 2017 NHTS data)**

| Estimate | 2009 | | 2017 | |
|---|---|---|---|---|
| | Rural | Urban | Rural | Urban |
| Total number of persons | 2,303,100 | 15,961,989 | 2,048,016 | 16,562,687 |
| Number of persons did not travel on travel day | 369,883 | 2,797,833 | 409,291 | 2,911,460 |
| Percent of persons did not travel on travel day | 16.1% | 17.5% | 20.0% | 17.6% |

Figure 4-1 shows that in both 2009 and 2017, the percentage of individuals who traveled was substantially higher in urban areas, standing at 88% and 89%, respectively, compared to 12% and 11% in rural areas. There is no significant difference between the proportions of urban and rural individuals among those who traveled or did not travel between 2009 and 2017.

In alignment with the trends observed among residents, the proportion of rural drivers who traveled on the designated day is consistently and statistically significantly lower than their urban counterparts in both 2009 and 2017. Moreover, a noteworthy pattern emerges when considering drivers who actively drove on that day, with a statistically significantly higher share of rural drivers (17%) compared to those who did not drive (8%) in 2017. This trend is mirrored in 2009 data. No statistically significant difference in the share is discerned between the years 2009 and 2017, however.

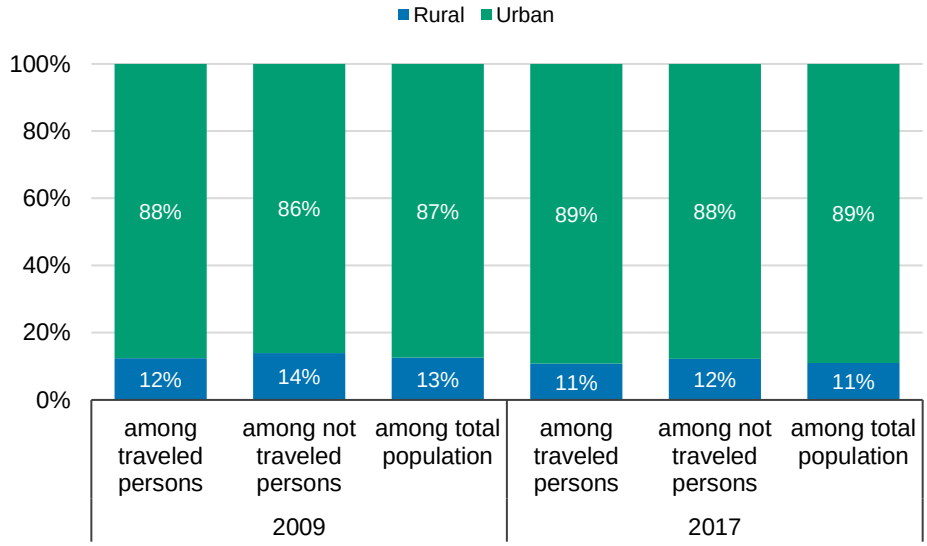



**Figure 4-1. Share of population in NYS by travel status and rural classification on NHTS-assigned travel day (2009 and 2017 NHTS data)**

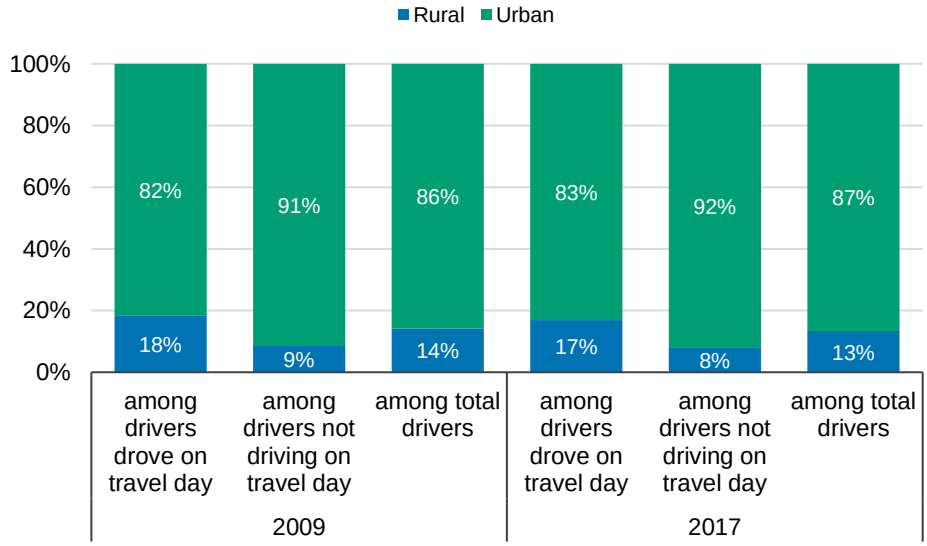



**Figure 4-2. Share of drivers in NYS by travel status and rural classification on NHTS-assigned travel day (2009 and 2017 NHTS data)**

## 4.2 TRAVEL STATISTICS BY PERSON TRIPS

### 4.2.1 Average Daily Person Trip Rate

As we can see from Figure 4-3, the average number of daily person trips per person in urban areas surpasses that in their rural counterparts. Notably, a decline in daily person trip rates is evident from 2009 to 2017, both in NYS and in the rest of the United States. For example, in urban NYS, there was a statistically significant decrease in daily person trips from 3.7 in 2009 to 3.3 in 2017.

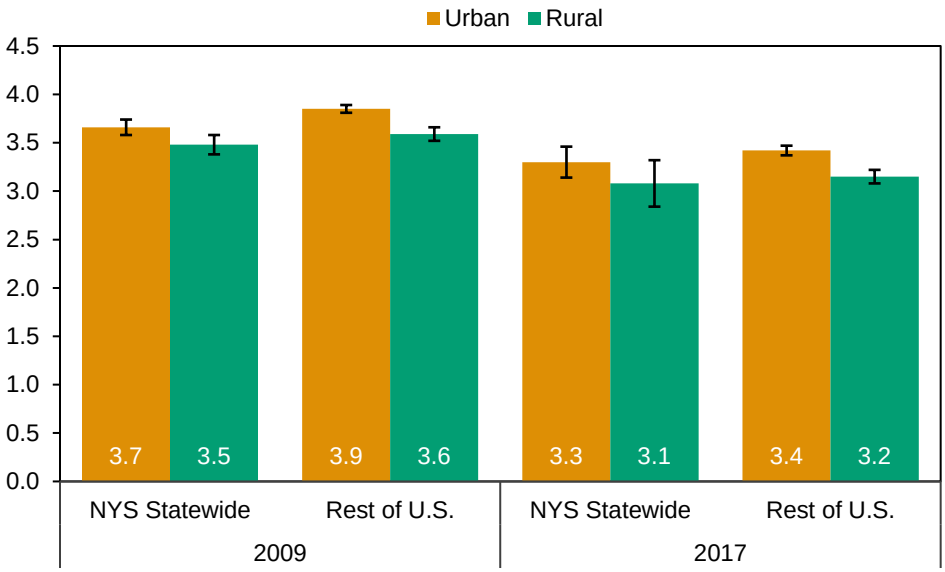



**Figure 4-3. Average daily person trips per person by rural classification (2009 and 2017 NHTS data)**

Examining the data within NYS, as illustrated in Figure 4-4, the average daily person trip rates are consistently higher in rest of NYS urban areas in both 2009 and 2017. Notably, in 2009, the disparity in average daily person trip rates between rest of NYS urban (3.9) and NYC (3.5) areas was statistically significant. However, in 2017, this gap had narrowed, and there was no longer a statistically significant difference. Additionally, there is no statistically significant distinction between NYC and rest of NYS rural areas in both 2009 and 2017.

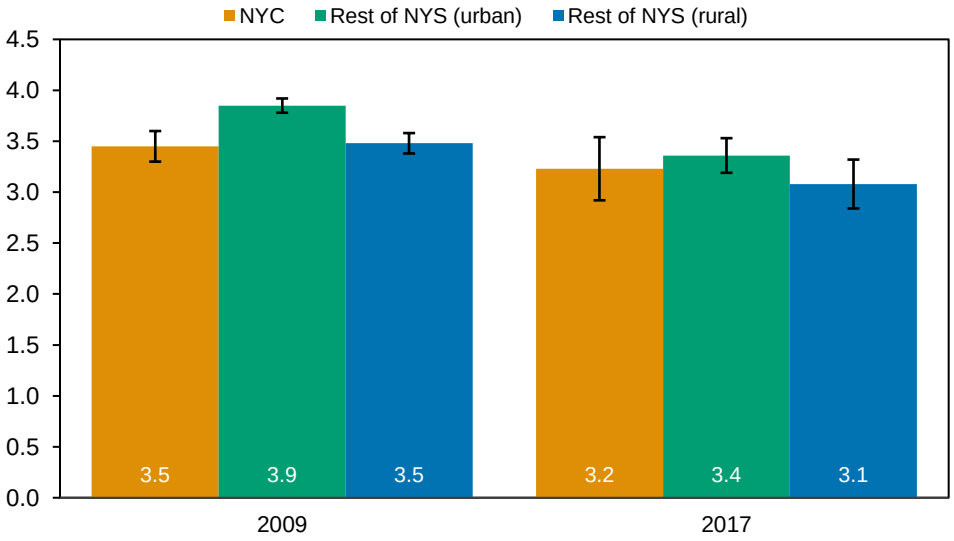



**Figure 4-4. Average daily person trips per person by rural classification in NYS (2009 and 2017 NHTS data)**

The average daily person trip rates in 2009, 2017, and 2022 are shown in Figure 4-5. Generally, there was a decline in average daily person trip rates from 2009 to 2022. Specifically, within the urban Middle Atlantic region, there was a decline in average daily person trip rates from 3.8 in 2009 to 3.4 in 2017, further decreasing to 2.0 in 2022. Similar trend can be observed in rural areas of the rest of the United States, where the average daily person trip rates decreased from 3.2 in 2017 to 2.0 in 2022.

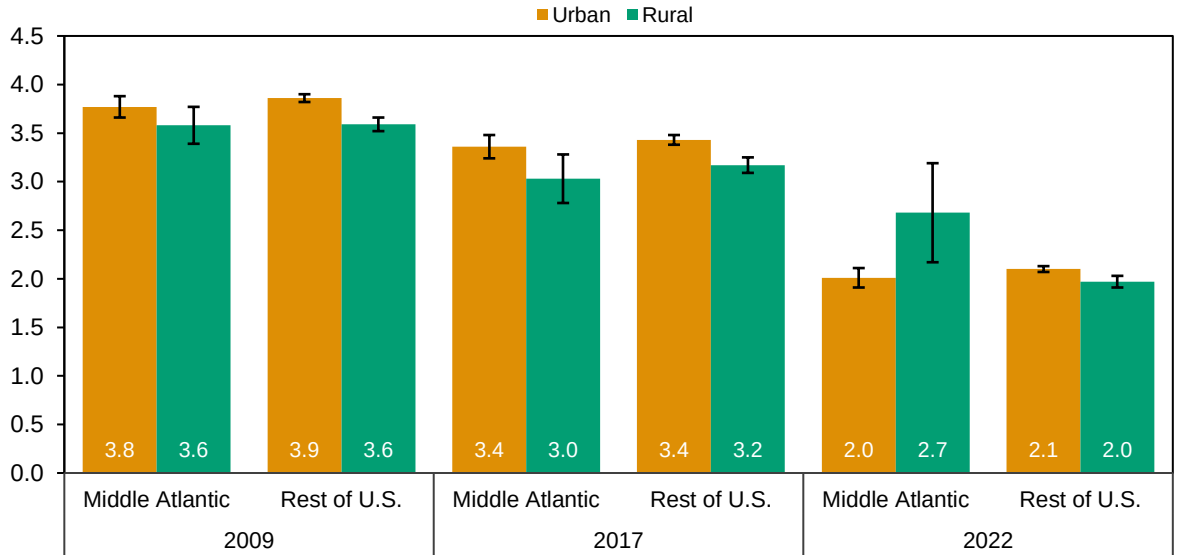



**Figure 4-5. Average daily person trips per person by rural classification in NYS (2009, 2017, and 2022 NHTS data)**

### 4.2.2 Trip Purpose

A summary of the distribution of the average daily person trips per person by trip purpose is provided in Figure 4-6. Notably, *family and personal business* trips constitute the majority of the trips across both rural and urban areas. However, there has been a decline in the share of *family and personal business* trips from 2009 to 2017 in both rural and urban areas. In NYS urban areas specifically, there was a statistically significant decrease in the share of *family and personal business* trips, dropping from 43% to 38% between 2009 and 2017. Importantly, no statistically significant differences are observed between urban and rural areas within NYS or when comparing NYS to the rest of the United States for any trip purposes.

### 4.2.3 Transportation Mode

Figure 4-7 illustrates that privately-owned vehicle (POV) trips constitute the majority of daily person trips. Urban NYS exhibits a statistically significantly higher share of public transport trips compared to its rural counterpart. In 2017, the share of public transport trips in urban areas is 13%, a difference from the rural share of 1%. Similarly, walking trips in urban NYS (25%) also statistically significantly surpass their rural counterpart (7%) in 2017.

Both urban and rural areas in the rest of the United States have POV trips accounting for over 80% of daily person trips in both 2009 and 2017. In 2017, the share of walking trips in urban areas in rest of the United States is 11%, statistically significantly higher than the 5% observed in rural areas, although the difference is smaller than that in NYS. Comparing 2009 to 2017, there are no statistically significant differences in the distribution of transportation modes in either NYS or the rest of the United States.

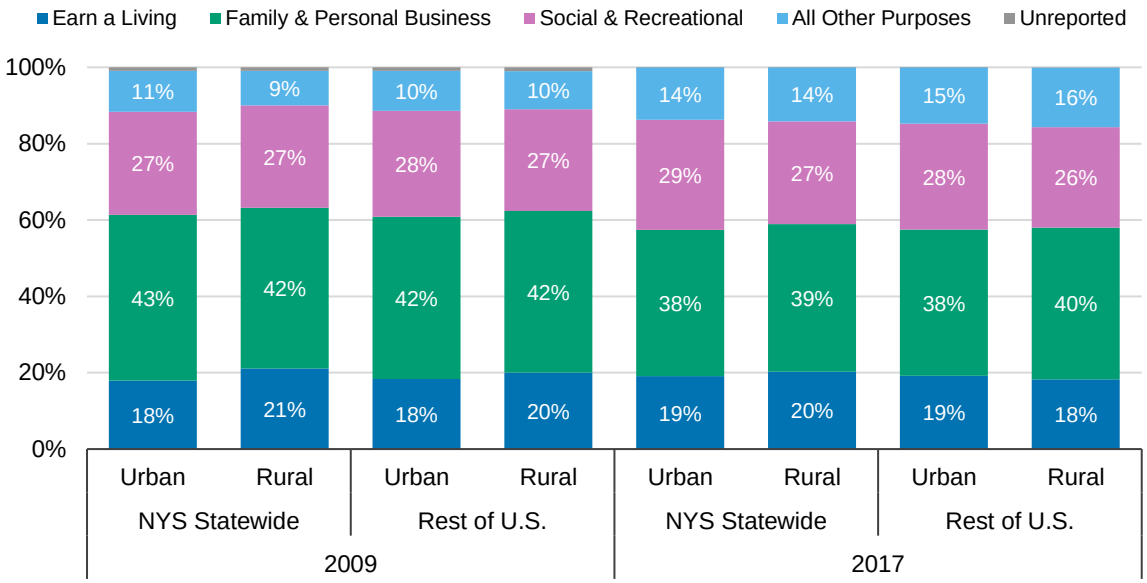



**Figure 4-6. Distribution of average daily person trips per person by trip purpose (2009 and 2017 NHTS data)**

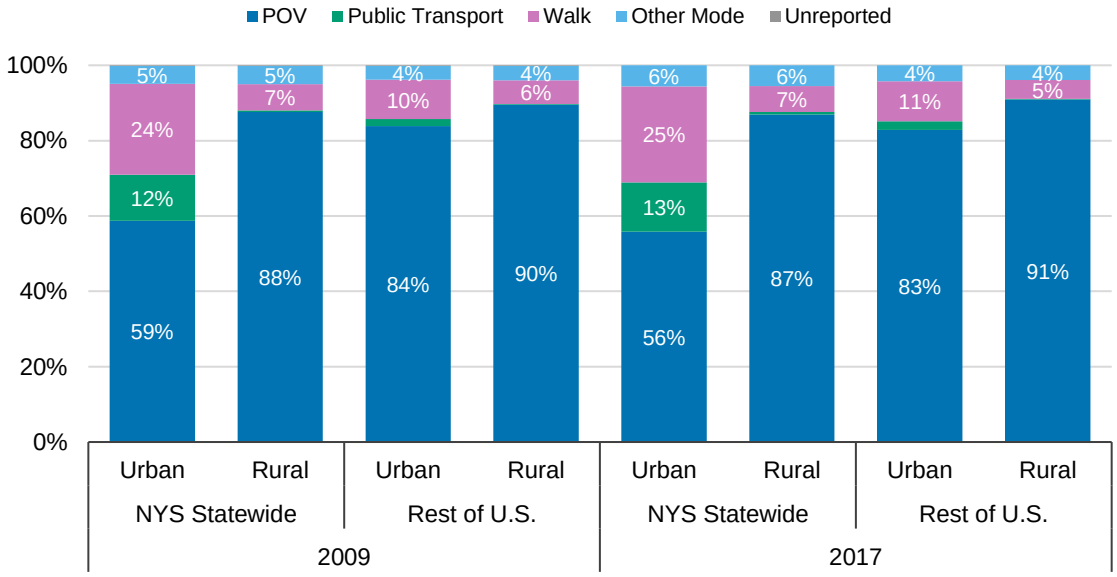



**Figure 4-7. Distribution of average daily person trips per person by transportation mode (2009 and 2017 NHTS data)**

The above discrepancy on daily person trips between rural and urban areas in NYS can be elucidated by examining the distinction between NYC and rest of NYS urban areas. As depicted in Figure 4-8, a markedly lower share of POV trips is evident in both 2009 (33%) and 2017 (28%) in NYC compared to rest of NYS urban areas, where POV trips constituted 81% in 2009 and 79% in 2017. Notably, walking trips take the lead with a share of 39% in 2009, increasing slightly to 41% in 2017 in NYC.

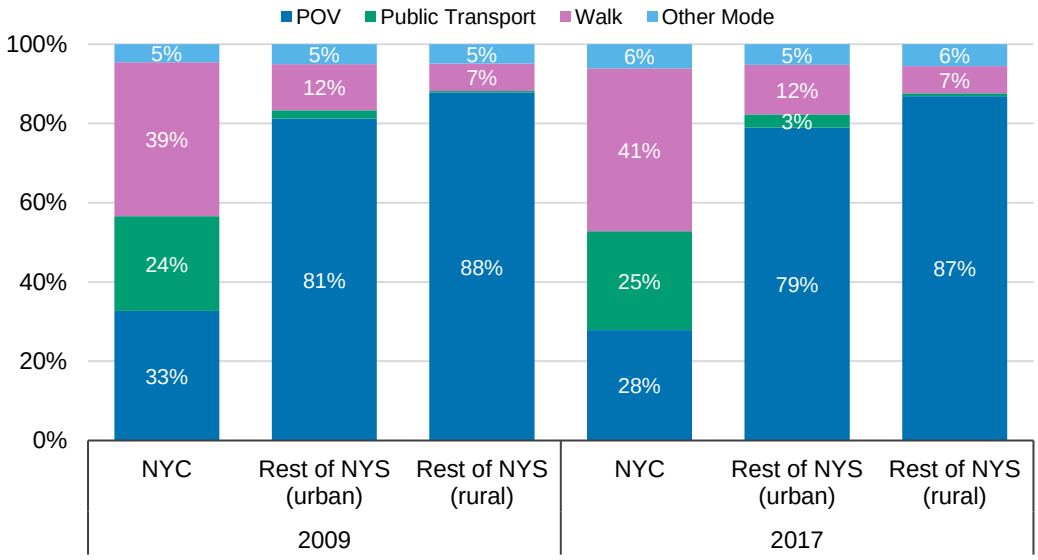



**Figure 4-8. Distribution of average daily person trips per person by transportation mode in NYS (2009 and 2017 NHTS data)**

### 4.2.4 Commute Trips by Mode

The commuting mobility trends indicate that the majority of person trips and person miles traveled (PMT) are accomplished via privately-owned vehicles (POVs), with an exception observed in urban areas of NYS (Table 4-2). In 2017, the portion of commute person trips made by POV amounted to 55.9%, statistically significantly lower than the corresponding rural statistic of 94.4%. There is also a statistically significant decline compared to 2009 (63.3%). Public transport and walking constitute substantial portions of the commute mode share in urban NYS, accounting for 29.2% and 10.8% of person trips respectively in 2017. These percentages represent statistically significant increases compared to their rural counterparts, which stand at 1.6% for public transport and 3% for walking. Similar trends are reflected in commute PMT.

### 4.2.5 Walk and Bike Trips

According to Table 4-3, in NYS, urban areas exhibit a lower proportion of individuals who did not engage in walking activities during the previous week compared to rural areas. In 2009, the share of individuals who did not walk last week stood at 25% in urban areas, a statistically significant difference from the rural share of 33%. By 2017, this urban share further decreased to 18%, again statistically significant. Conversely, in the rest of the United States, the disparity between urban and rural shares is not statistically significant.

Moreover, in NYS, the average walking time in urban areas is statistically significantly higher than in rural areas for both 2009 and 2017. For instance, the average walking time in urban NYS is 12.1 minutes, whereas in rural areas it is only 3.6 minutes. There is no statistically significant difference between urban and rural areas in either NYS or the rest of the United States when it comes to biking activities.

**Table 4-2. Daily commute pattern by transportation mode (2009 and 2017 NHTS data)**

| | 2009 | | | | 2017 | | | |
|---|---|---|---|---|---|---|---|---|
| | NYS Statewide | | Rest of U.S. | | NYS Statewide | | Rest of U.S. | |
| | Rural | Urban | Rural | Urban | Rural | Urban | Rural | Urban |
| **Share of commute person trips by mode** | | | | | | | | |
| POV | 95.1% | 63.3% | 96.4% | 92.2% | 94.4% | 55.9% | 96.8% | 88.7% |
| Public Transport | 0.1% | 24.4% | 0.3% | 3.2% | 1.6% | 29.2% | 0.2% | 4.9% |
| Walk | 3.3% | 9.3% | 1.9% | 2.9% | 3.0% | 10.8% | 1.6% | 3.9% |
| Other Mode | 1.3% | 2.8% | 1.4% | 1.5% | 1.1% | 4.2% | 1.4% | 2.5% |
| Unreported | 0.2% | 0.2% | 0.1% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% |
| **Share of commute person miles traveled (PMT) by mode** | | | | | | | | |
| POV | 97.2% | 81.9% | 96.3% | 95.2% | 95.1% | 64.7% | 96.8% | 91.8% |
| Public Transport | 0.1% | 15.0% | 0.1% | 2.6% | 3.6% | 32.4% | 0.4% | 5.3% |
| Walk | 0.0% | 1.0% | 0.0% | 0.1% | 0.1% | 0.7% | 0.1% | 0.5% |
| Other Mode | 0.7% | 1.3% | 1.2% | 1.4% | 1.2% | 2.3% | 2.7% | 2.3% |
| Unreported | 1.9% | 0.8% | 2.4% | 0.7% | 0.0% | 0.0% | 0.0% | 0.1% |

**Table 4-3. Walking and biking activities (2009 and 2017 NHTS data)**

| | 2009 | | | | 2017 | | | |
|---|---|---|---|---|---|---|---|---|
| | NYS Statewide | | Rest of U.S. | | NYS Statewide | | Rest of U.S. | |
| | Rural | Urban | Rural | Urban | Rural | Urban | Rural | Urban |
| **Walking trip statistics** | | | | | | | | |
| Percent not taking walking trips last week | 33% | 25% | 32% | 33% | 30% | 18% | 28% | 27% |
| Average minutes spent walking per day | 3.4 | 13.3 | 3.1 | 6.1 | 3.6 | 12.1 | 2.8 | 5.8 |
| **Biking trip statistics** | | | | | | | | |
| Percent not taking biking trips last week | 89% | 90% | 87% | 87% | 91% | 88% | 89% | 87% |
| Average minutes spent biking per day | 0.8 | 0.5 | 0.4 | 0.9 | 0.3 | 1.2 | 0.4 | 0.8 |

### 4.2.6 Transportation Mode and Trip Purpose

The analysis of the interaction between transportation mode use and trip purposes is presented in Figure 4-9, focusing on NYS in 2017. In the case of walking, a substantial majority of trips in urban NYS are categorized as *family and personal business* trips. However, this share is higher than in rural areas, where it accounts for only 20%, although this difference is not statistically significant. Comparing the two modes, POV-passenger and POV-driver, the share of commuting trips for POV-passenger is statistically significantly lower compared to POV-driver in both urban (6% vs. 24%) and rural (6% vs. 28%) NYS.

When comparing the rest of the United States (Figure 4-10) to NYS (Figure 4-9), a notable distinction arises in the share of walking trips for family and personal business purposes. In urban areas, the rest of the United States exhibits a lower share at 29%, compared to NYS with 41%. However, this disparity is not statistically significant. Another noteworthy difference emerges in public transport trips in rural areas. In rural NYS, there is a higher share of public transport trips associated with commuting (44%), whereas in the rest of the United States, a relatively higher share of public transport trips is social and recreational (37%). Despite this distinction, the observed difference is not statistically significant.

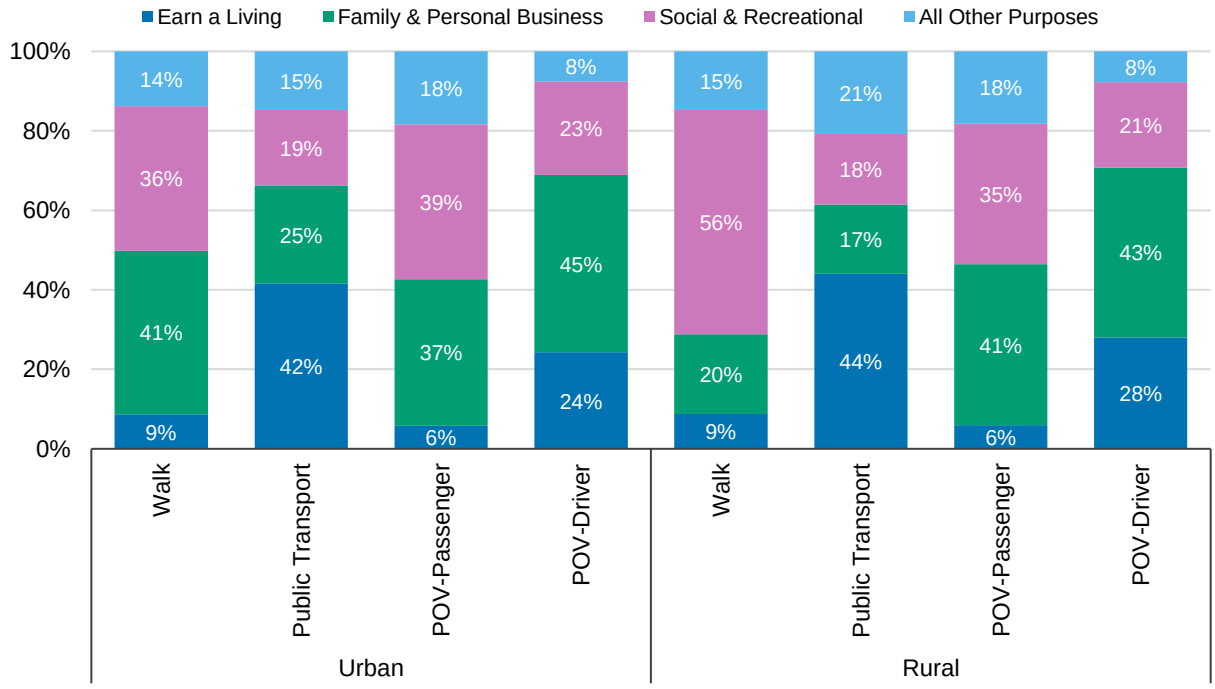



**Figure 4-9. Distribution of average daily person trips per person by transportation mode and trip purpose in NYS (2017 NHTS data)**

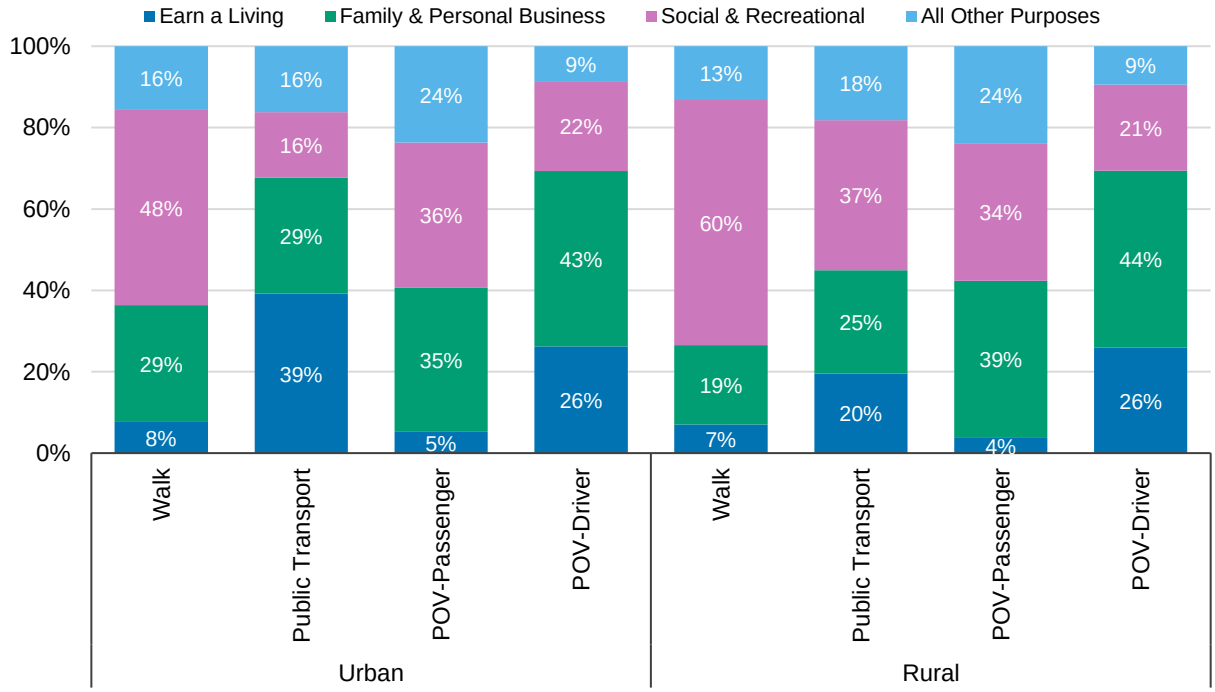



**Figure 4-10. Distribution of average daily person trips per person by transportation mode and trip purpose in rest of the United States (2017 NHTS data)**

## 4.3 TRAVEL STATISTICS BY VEHICLE TRIPS

### 4.3.1 Average Daily Vehicle Trip Rate

Figure 4-11 presents the average daily vehicle trip rate in 2017. In NYS, a distinctive pattern emerges with the average daily vehicle trips per driver being higher in rural areas (2.5) compared to urban areas (2.1). This contrasts with the rest of the United States, where the average daily vehicle trips per driver is statistically significantly higher in urban areas (2.8) than in rural areas (2.6).

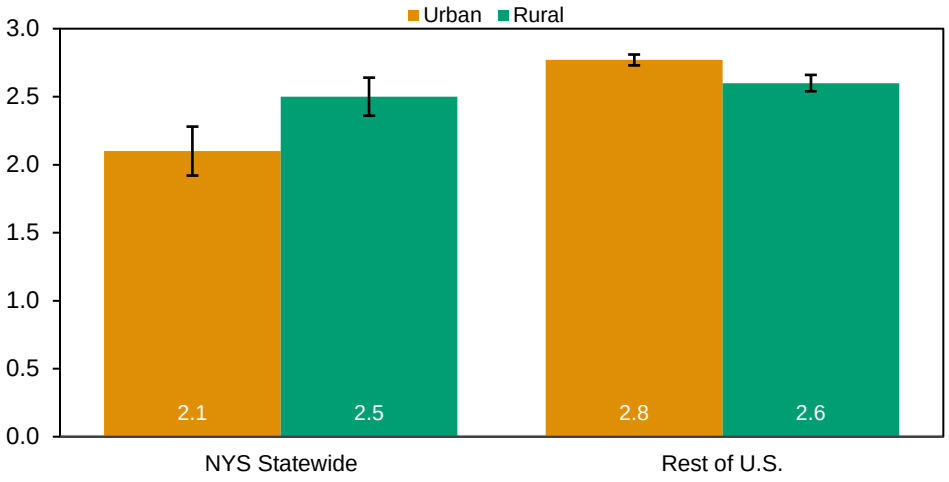



**Figure 4-11. Average daily vehicle trips per driver by rural classification (2017 NHTS data)**

Upon further analysis of the average daily vehicle trip rates within NYS, it becomes evident that NYC exhibits a statistically significant lower count compared to other urban areas within NYS. Additionally, other urban areas in NYS demonstrate a slightly higher average daily vehicle trips per driver than their rural counterparts, mirroring pattern observed in the rest of the United States.

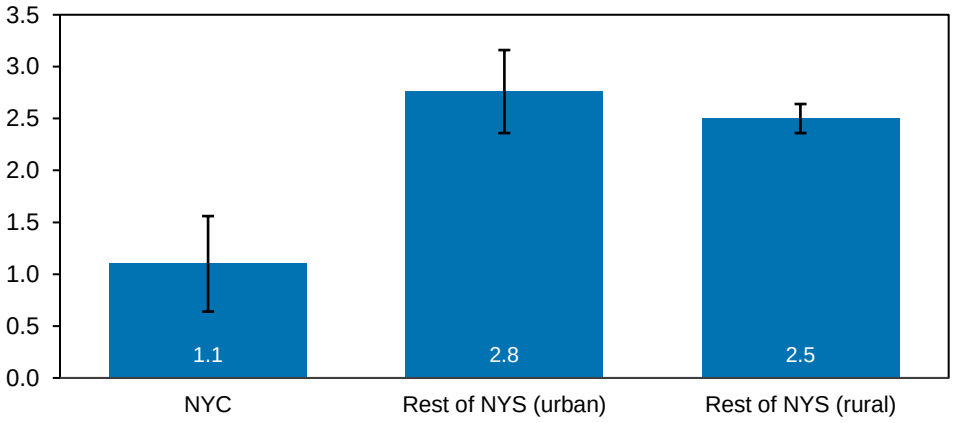



**Figure 4-12. Average daily vehicle trips per driver in NYS (2017 NHTS data)**

### 4.3.2 Vehicle Trip by Purpose

Figure 4-13 shows that the predominant purpose for vehicle trips is family and personal business trips. In urban NYS, 45% of vehicle trips are categorized as family and personal business, slightly higher than the 43% observed in rural areas in 2017. Conversely, a greater share of vehicle trips is attributed to

commuting in rural NYS (28%) compared to urban areas (24%). However, these differences are not statistically significant.

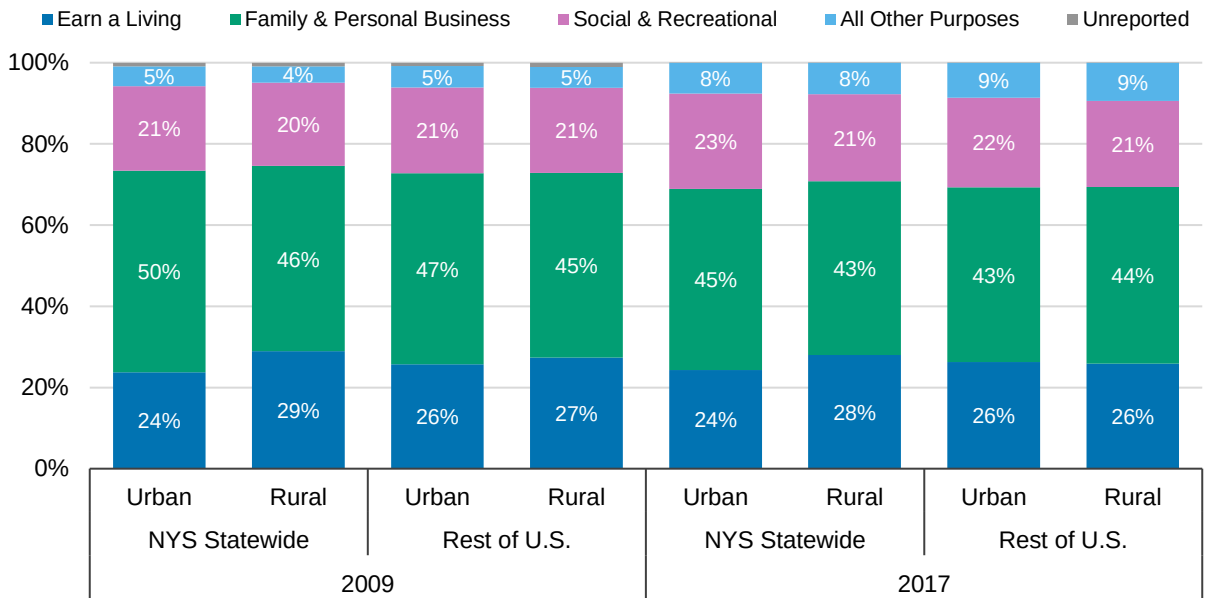



**Figure 4-13. Distribution of average daily vehicle trips per driver by trip purpose (2009 and 2017 NHTS data)**

### 4.3.3 Party Size

The analysis of average daily vehicle trip rate by party size, illustrated in Figure 4-14, reveals that the majority of vehicle trips involve a travel party of 1 (i.e., single-person vehicle trip). The proportion of trips with travel party over 2 are lower than 15% across regions and years. In 2017, a slightly lower proportion of trips with a travel party of 1 is observed in urban NYS (61%) compared to rural areas (64%). When comparing to 2009, the proportion of vehicle trips with a travel party of 2 has slightly increased and the proportion of vehicle trips with a travel party of 1 has slightly decreased in all regions.

Upon further examination within NYS (Figure 4-15), it becomes evident that NYC exhibits a lower proportion of vehicle trips with a travel party of 1, accounting for 52% in 2017. This proportion is slightly lower than that observed in rest of NYS urban areas (64%). However, this difference is not statistically significant.

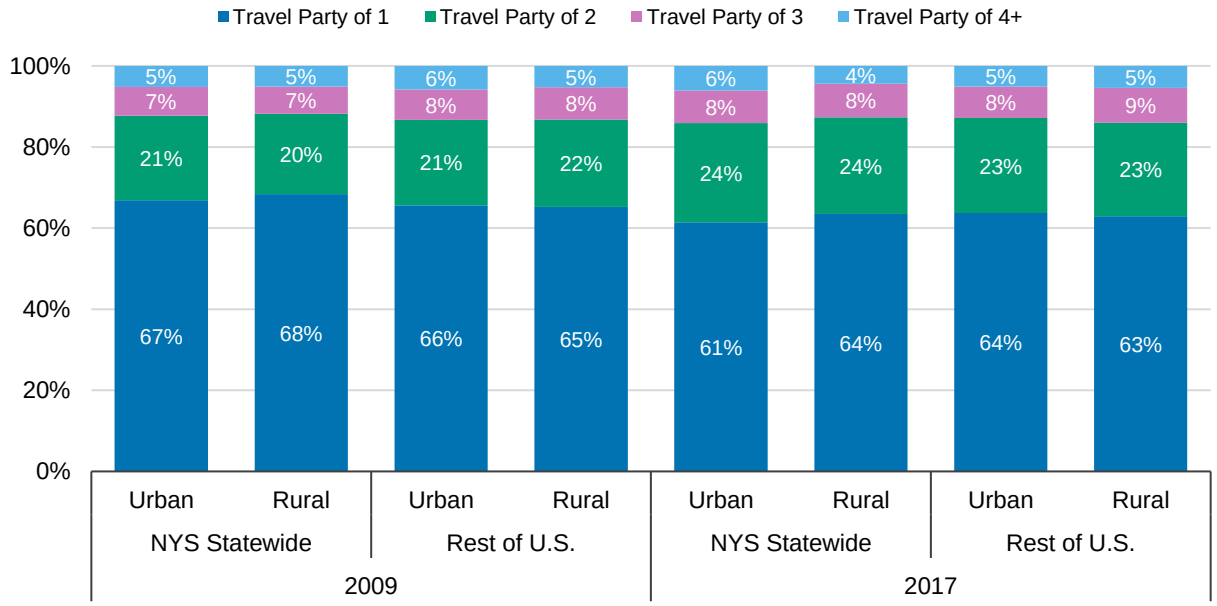



**Figure 4-14. Distribution of average daily vehicle trips per driver by party size (2009 and 2017 NHTS data)**

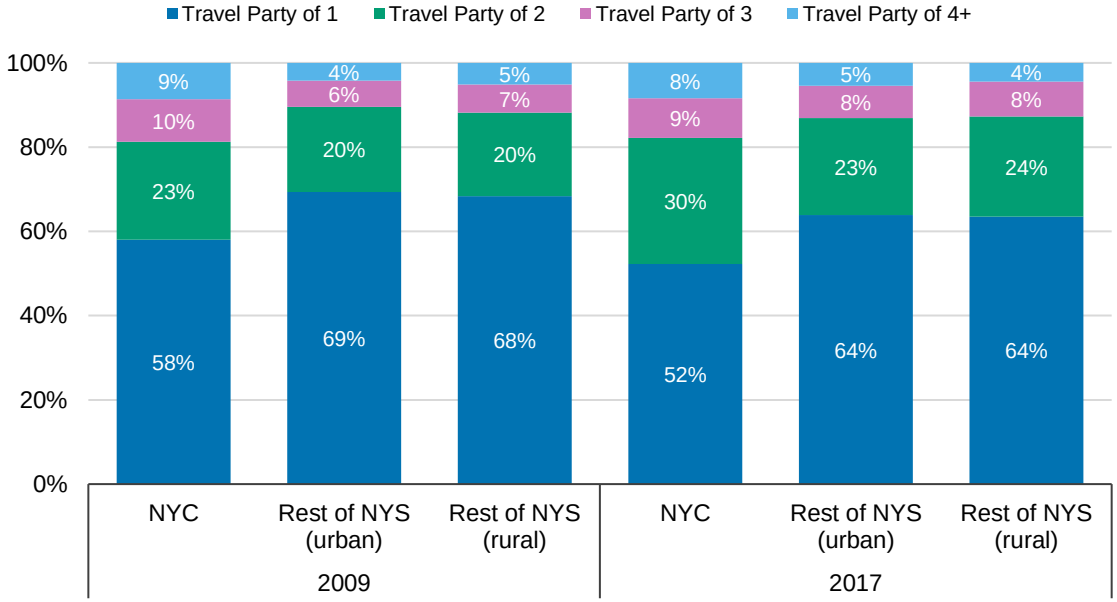



**Figure 4-15. Distribution of average daily vehicle trips per driver by party size in NYS (2009 and 2017 NHTS data)**

### 4.3.4 Population Density Impact in Urban Areas

The influence of population density in urban areas on average daily vehicle trip distance is explained in Figure 4-16. Population density was defined as the category of population density in persons per square mile in the Census Block Group of the household's home location in 2009 and 2017. A lower vehicle trip distance can be observed in areas with a population density higher than 2000 persons across regions and years. In 2017, the average vehicle trip distance in NYS where population density is higher than 2000 is

5.7 miles, lower than in areas where population density is smaller than 500 (11 miles) and between 500 and 2000 (8.7 miles).

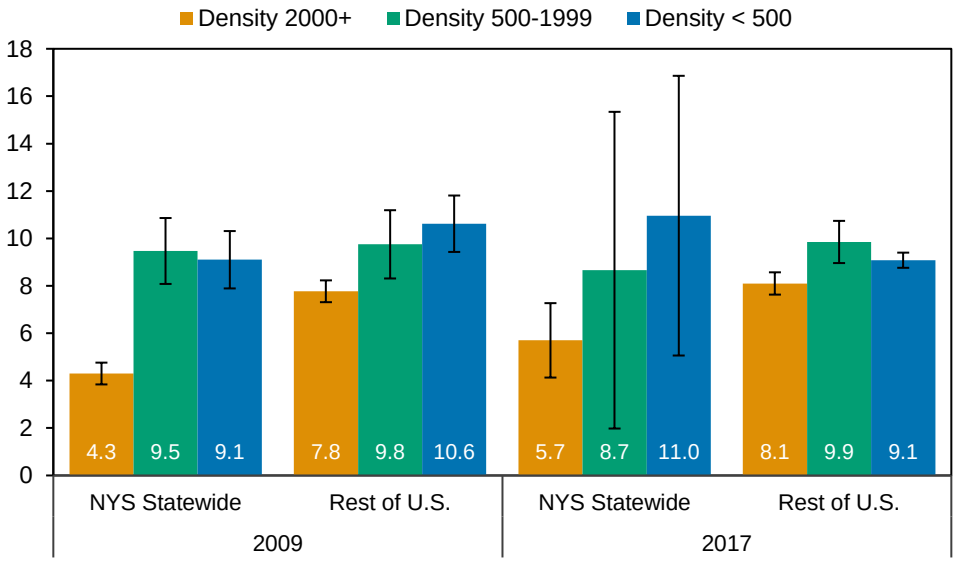



**Figure 4-16. Average daily vehicle trip distance (miles) by population density (2009 and 2017 NHTS data)**

### 4.3.5 Average Daily Vehicle Trip Travel Time

Figure 4-17 shows the total daily travel time for vehicle trips. The figure illustrates a notable trend that higher travel times are observed in rural areas compared to urban counterparts. In 2017, the average travel time is 55.3 minutes in rural areas, statistically significantly exceeding the 45.8 minutes observed in urban areas. This gap is lower in the rest of the United States, with rural travel time at 59.4 minutes and urban at 55.3 minutes. A similar pattern is observed in 2009, and there is no statistically significant difference between travel times in 2009 and 2017.

Figure 4-18 shows that the average daily vehicle trip travel time is lower in NYC. In 2017, a statistically significantly lower travel time is observed in NYC (32.4 minutes) in comparison to rest of NYS urban areas (54.4 minutes). Although the average vehicle trip travel time has seen a slight increase from 25.9 minutes in 2009 to 32.4 minutes in 2017, this difference is not found to be statistically significant.

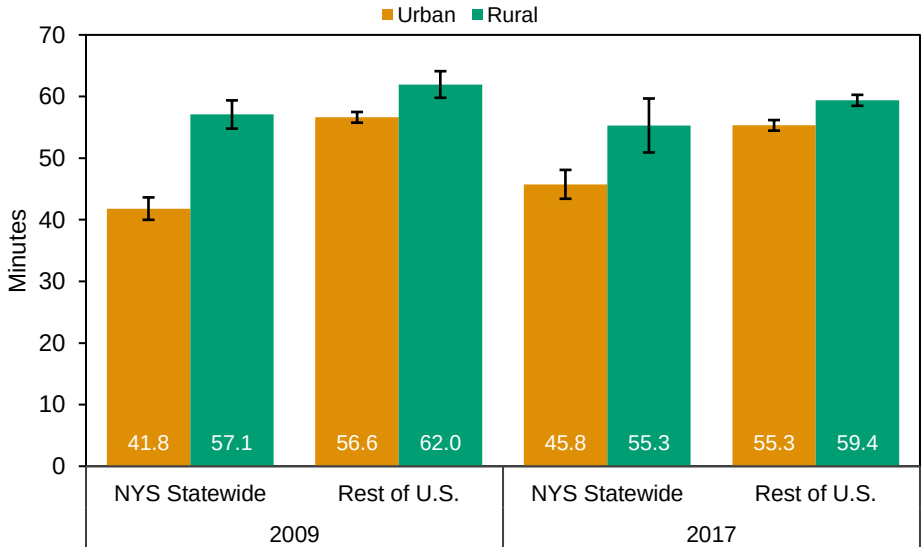



**Figure 4-17. Average daily vehicle trip travel time (minutes) by rural classification (2009 and 2017 NHTS data)**

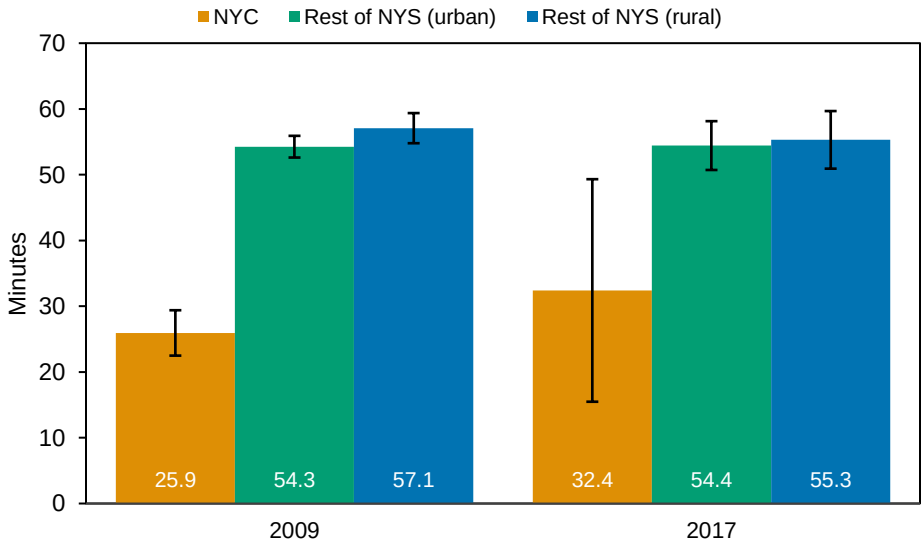



**Figure 4-18. Average daily vehicle trip travel time (minutes) by rural classification in NYS (2009 and 2017 NHTS data)**

### 4.3.6 Average Travel Time per Vehicle Trip

The average travel time per vehicle trip is illustrated in Figure 4-19, mirroring the patterns observed in daily vehicle trip travel time. On average, the travel time per vehicle trip is 18.3 minutes in rural NYS, statistically significantly higher than the 14.2 minutes observed in urban areas. This difference is more modest in the rest of the United States, with the average travel time per vehicle trip at 18.5 minutes in rural areas, statistically significantly higher than the 16.7 minutes observed in urban areas. This consistent pattern is also evident in 2009. Notably, in NYS, the average travel time per vehicle trip has statistically significantly increased in both rural and urban areas. For instance, the average travel time per vehicle trip was 16.9 minutes in rural areas in 2009, increasing to 18.3 minutes in 2017.

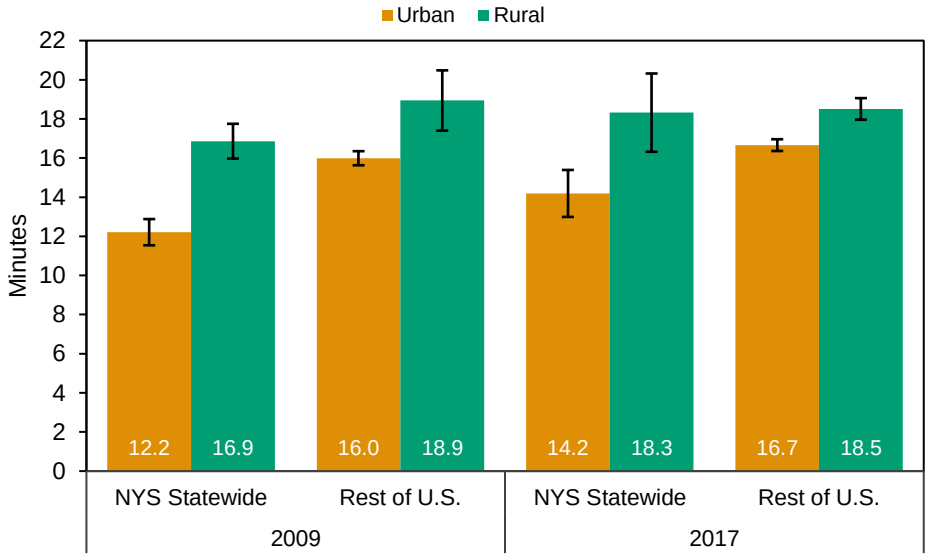



**Figure 4-19. Average travel time per vehicle trip (minutes) by rural classification (2009 and 2017 NHTS data)**

As illustrated in Figure 4-20, a slightly lower travel time per vehicle trip in NYC (11.1 minutes) was observed compared to rest of NYS urban areas (16.2 minutes) in 2017. In 2009, the average travel time per vehicle trip was statistically significantly lower in NYC (8.5 minutes) compared to rest of NYS urban areas (15.1 minutes).

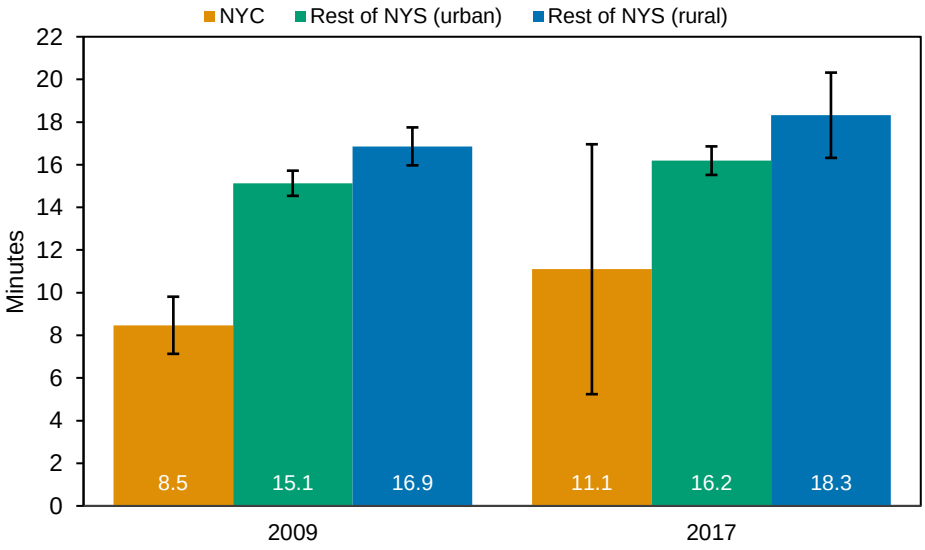



**Figure 4-20. Average travel time per vehicle trip (minutes) by rural classification in NYS (2009 and 2017 NHTS data)**

## 4.4 TRAVEL STATISTICS RELATED TO TRIP LENGTH

### 4.4.1 Average Daily Person Miles Traveled

The average daily person miles traveled (PMT) in rural areas surpasses that in urban areas, both in NYS and the rest of the United States. In 2017, the rural average daily PMT in NYS is statistically significantly higher at 43.1 miles, compared to the urban counterpart at 30.8 miles. A similar trend is observed in the

rest of the United States, where the rural average daily PMT is 47.7 miles, slightly exceeding the urban estimate of 37.5 miles. It is worth noting that there are no statistically significant changes in PMT when comparing the data from 2009 to 2017 in both NYS and the rest of the United States. Examining NYS (Figure 4-22), the average daily PMT in NYC is statistically significantly lower than rural areas within NYS, observed in both 2009 and 2017.

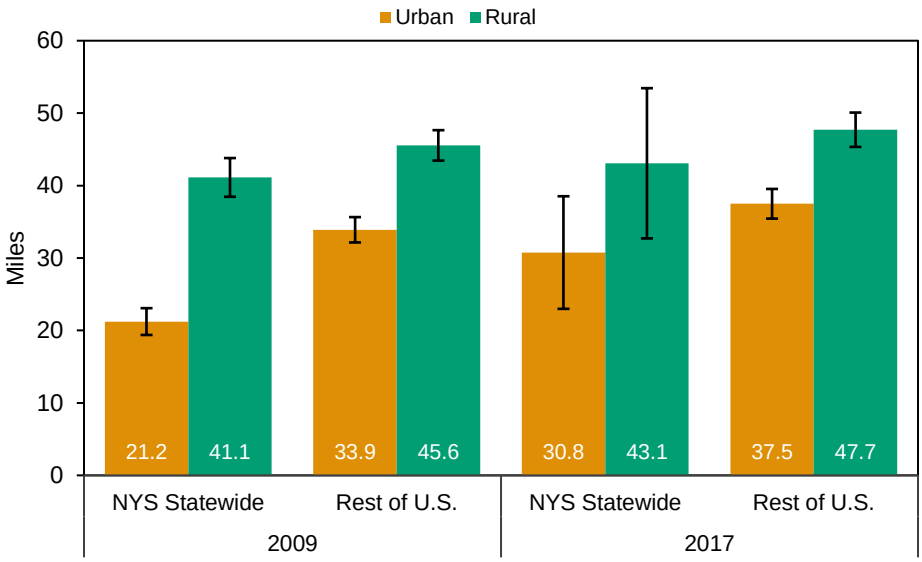



**Figure 4-21. Average daily person miles traveled (PMT) by rural classification (2009 and 2017 NHTS data)**

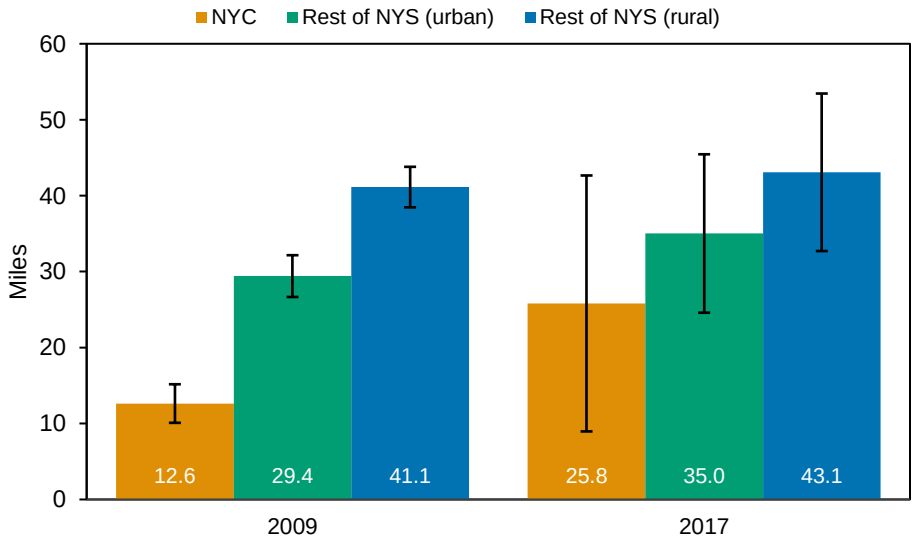



**Figure 4-22. Average daily PMT by rural classification in NYS (2009 and 2017 NHTS data)**

### 4.4.2 PMT by Trip Purpose

Figure 4-23 illustrates the distribution of average daily PMT by trip purpose. In rural NYS, the proportion of commuting trips experienced a slight decline from 26% in 2009 to 23% in 2017. Conversely, the share of social and recreational trips in rural NYS saw a marginal increase, rising from 28% to 30% in 2017.

Similarly, in rural areas across the rest of the United States, the percentage of commuting trips also experienced a slight decrease from 27% to 22%. The share of trip purposes other than these three main purposes showed an upward trend from 2009 to 2017 across all regions.

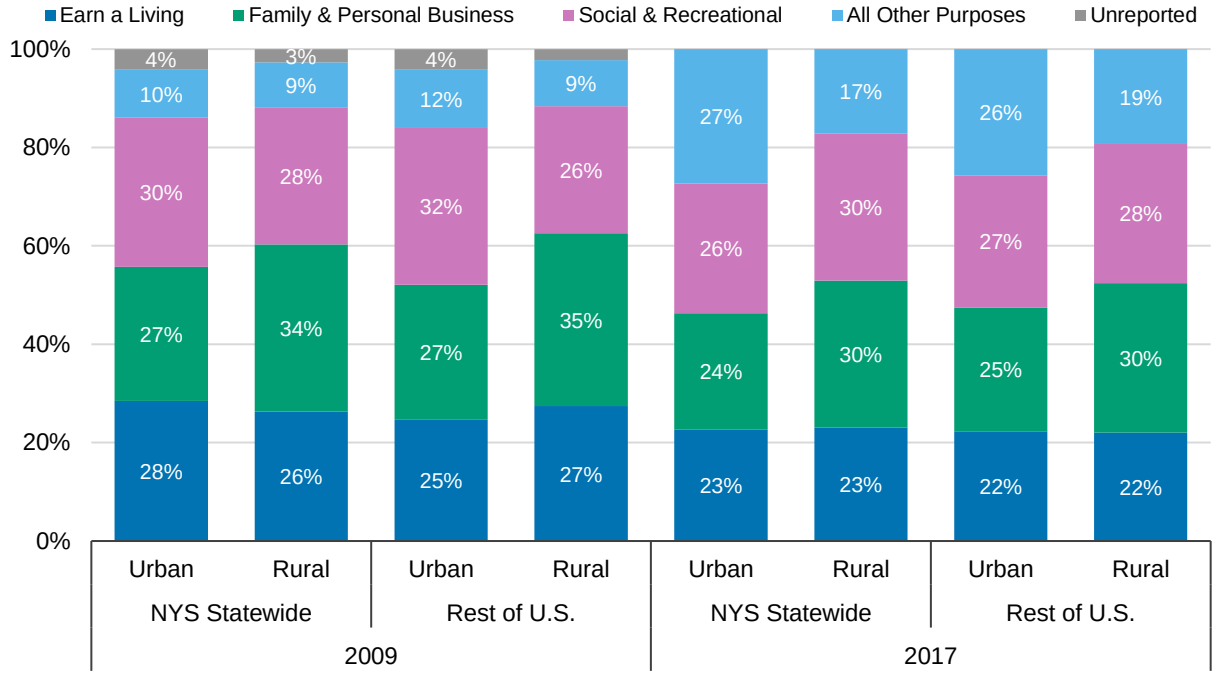



**Figure 4-23. Distribution of average daily PMT by trip purpose (2009 and 2017 NHTS data)**

Table 4-4 presents the average daily PMT estimates. A higher PMT is observed in rural areas compared to urban areas in both NYS and the rest of the United States. In 2017, for instance, the average PMT for commuting trips in rural NYS is 10 miles, whereas it is 7 miles in urban areas, although this difference is not statistically significant. Additionally, the PMT for commuting and family/personal business trips in both urban and rural areas in the rest of the United States is slightly higher than in NYS. When comparing 2009 to 2017, there is a slight increase in PMT for all trip purposes in urban NYS. For example, the PMT for social and recreational trips rising from 6.4 to 8.1 miles. In the rest of the United States, the PMT for social and recreational trips decreased from 10.8 to 10.1 miles in urban areas. However, these differences are not statistically significant.

**Table 4-4. Average daily PMT (miles) by trip purpose (2009 and 2017 NHTS data)**

| Year | Region | Class | Earn a Living | Family & Personal Business | Social & Recreational | All Other Purposes | Unreported |
|---|---|---|---|---|---|---|---|
| 2009 | NYS Statewide | Urban | 6.0 | 5.8 | 6.4 | 2.1 | 0.9 |
| | | Rural | 10.8 | 14.0 | 11.4 | 3.8 | 1.1 |
| | Rest of U.S. | Urban | 8.4 | 9.3 | 10.8 | 4.0 | 1.4 |
| | | Rural | 12.5 | 16.0 | 11.8 | 4.3 | 1.0 |
| 2017 | NYS Statewide | Urban | 7.0 | 7.3 | 8.1 | 8.4 | 0.0 |
| | | Rural | 10.0 | 12.9 | 12.9 | 7.4 | 0.0 |
| | Rest of U.S. | Urban | 8.4 | 9.4 | 10.1 | 9.6 | 0.0 |
| | | Rural | 10.5 | 14.5 | 13.5 | 9.2 | 0.0 |

Figure 4-24 shows that the share of social and recreational PMT in urban Middle Atlantic region increased from 30% in 2017 to 48% in 2022. This trend can also be observed in the rest of the United States. On the contrary, the share of family and personal business PMT decreased in urban Middle Atlantic region, from 29% in 2017 to 18% in 2022. In rural rest of the United States, the share of commuting trips increased from 24% in 2017 to 38% in 2022 while the share of family and personal business trips decreased from 33% in 2017 to 24% in 2022.

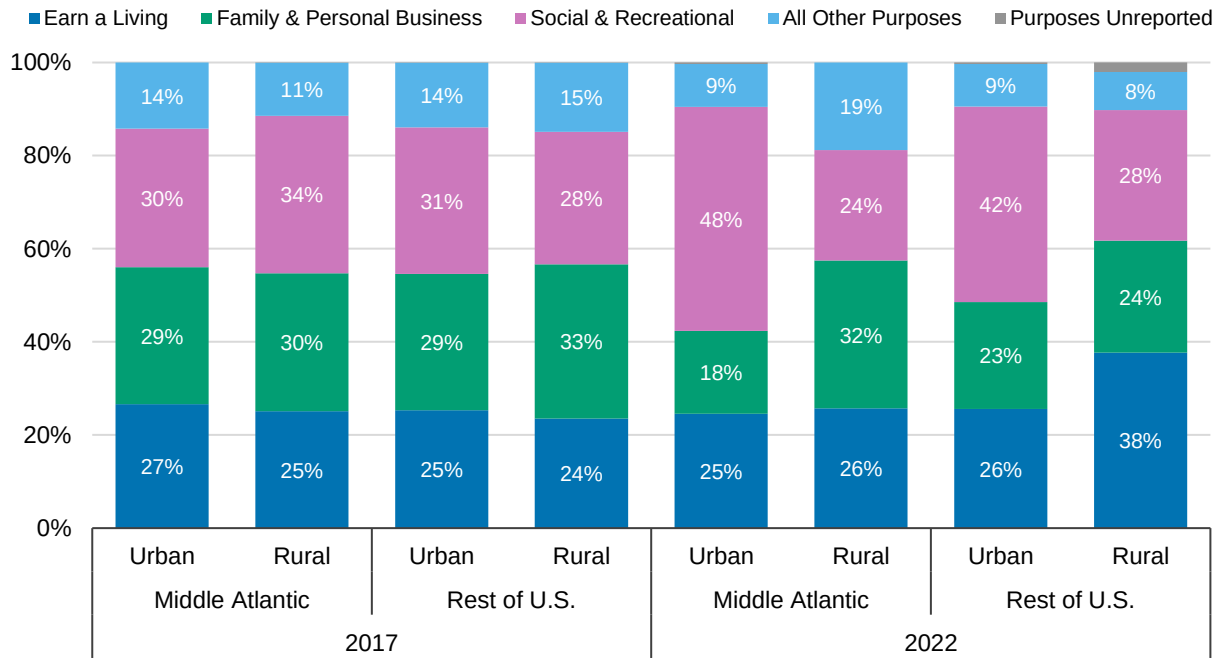



**Figure 4-24. Distribution of average daily PMT by trip purpose (2017 and 2022 NHTS data)**

Table 4-5 shows a slight decrease in PMT for family and personal business trips within rural Middle Atlantic region. Specifically, PMT stood at 10.2 in 2017 and decreased to 8.5 by 2022. Similarly, commuting trip PMT within rural Middle Atlantic regions also decreased from 8.6 in 2017 to 6.9 in 2022. Moreover, an additional trend observed is a statistically significant increase in PMT for commuting trips in rural areas across the rest of the United States from 9.5 in 2017 to 12.4 in 2022.

**Table 4-5. Average daily PMT (miles) by trip purpose (2017 and 2022 NHTS data)**

| Year | Region | Class | Earn a Living | Family & Personal Business | Social & Recreational | All Other Purposes | Unreported |
|---|---|---|---|---|---|---|---|
| 2017 | Middle Atlantic | Urban | 6.8 | 7.5 | 7.6 | 3.6 | 0.0 |
| | | Rural | 8.6 | 10.2 | 11.6 | 3.9 | 0.0 |
| | Rest of U.S. | Urban | 7.2 | 8.3 | 8.9 | 3.9 | 0.0 |
| | | Rural | 9.5 | 13.3 | 11.4 | 6.0 | 0.0 |
| 2022 | Middle Atlantic | Urban | 4.3 | 3.1 | 8.5 | 1.6 | 0.1 |
| | | Rural | 6.9 | 8.5 | 6.3 | 5.0 | 0.0 |
| | Rest of U.S. | Urban | 5.3 | 4.8 | 8.7 | 1.9 | 0.1 |
| | | Rural | 12.4 | 7.9 | 9.3 | 2.7 | 0.7 |

### 4.4.3 Person Trip Length

The average person trip length for both NYS and the rest of the United States is depicted in Figure 4-25. Consistent with the observed pattern in PMT, the average person trip length is higher in rural areas compared to urban areas. In NYS in 2017, for instance, the average person trip length is 13.3 miles in rural areas, slightly higher than that observed in urban areas (9.1 miles).

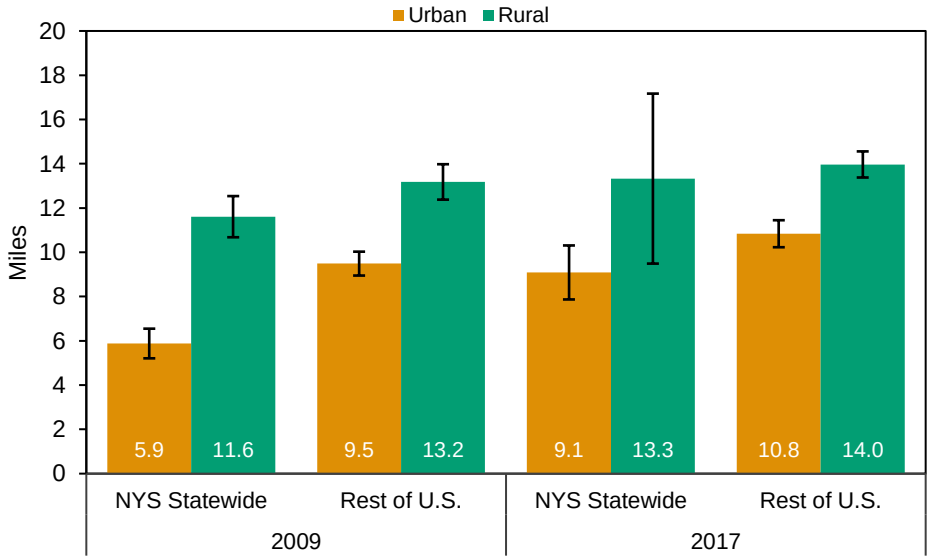



**Figure 4-25. Average daily person trip length (miles) by rural classification (2009 and 2017 NHTS data)**

Examining NYS and making a comparison between NYC and rest of NYS urban areas, there is a notable difference in the average person trip length in 2017. Specifically, the average person trip length is slightly lower in NYC at 7.4 miles than the average of 10.6 miles observed in rest of NYS urban areas.

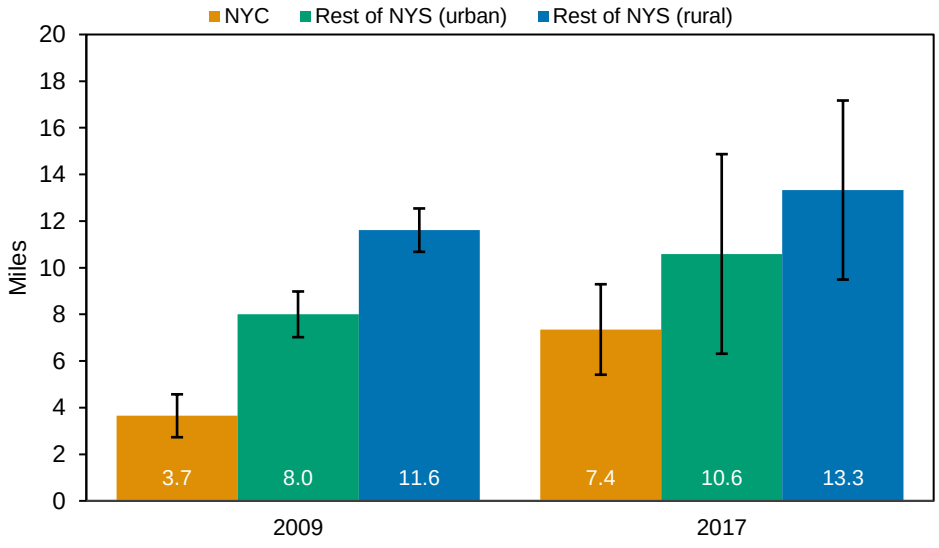



**Figure 4-26. Average daily person trip length (miles) by rural classification in NYS (2009 and 2017 NHTS data)**

### 4.4.4 Vehicle Miles Traveled

Comparing vehicle miles traveled (VMT) between rural and urban areas, as illustrated in Figure 4-27, a distinct pattern emerges with lower VMT in urban areas compared to rural areas. In NYS, urban VMT (19.8 miles) is statistically significantly lower than its rural counterpart (32.7 miles). Similarly, in the rest of the United States, urban VMT (27.1 miles) is statistically significantly lower than rural VMT (36.4 miles). However, when examining the differences within each region, there is no statistically significant distinction between NYS and the rest of the United States. Despite this, a notable finding is that urban areas in the rest of the United States exhibit a statistically significantly higher VMT (27.1 miles) compared to urban areas in NYS (19.8 miles). The gap is smaller in rural areas, where rest of the United States rural VMT is 36.4 miles, slightly exceeding the 32.7 miles observed in NYS.

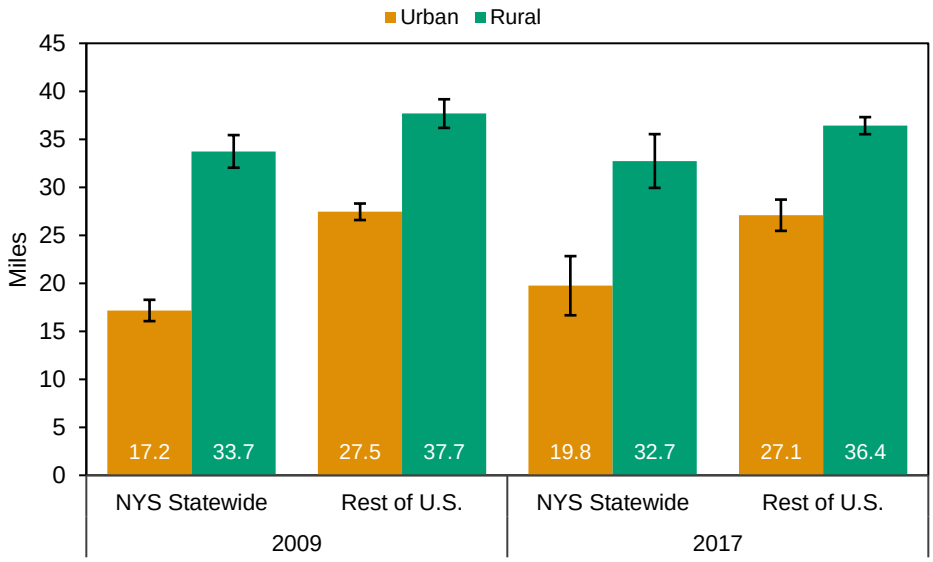



**Figure 4-27. Average daily vehicle miles traveled (VMT) by rural classification (2009 and 2017 NHTS data)**

### 4.4.5 VMT by Trip Purpose

Figure 4-28 shows the distribution of average daily VMT by trip purpose. In rural NYS, there was a slight decrease in the share of VMT of family and personal business trips, from 36% in 2009 to 33% in 2017. There was a slight uptick in the share of VMT for social and recreational purposes, rising from 21% in 2009 to 24% in 2017. Rural area has a slightly higher proportion of family and personal business VMT compared to their urban counterparts in the rest of the United States both 2009 and 2017 data.

Table 4-6 shows average daily VMT by trip purpose. In rural NYS in 2017, the VMT for work trips (10.8 miles) and family and personal business trips (10.7 miles) is higher than that for social and recreational trips (8 miles). Comparing to 2009, there is a decrease in VMT for both working trips and family and personal business trips in 2017. However, these variations in VMT for different trip purposes and across years are not statistically significant in either rural or urban areas. In rural rest of the United States in 2017, the VMT of family and personal business trips (12.1 miles) is statistically significantly higher than that of social and recreational trips (8.7 miles).

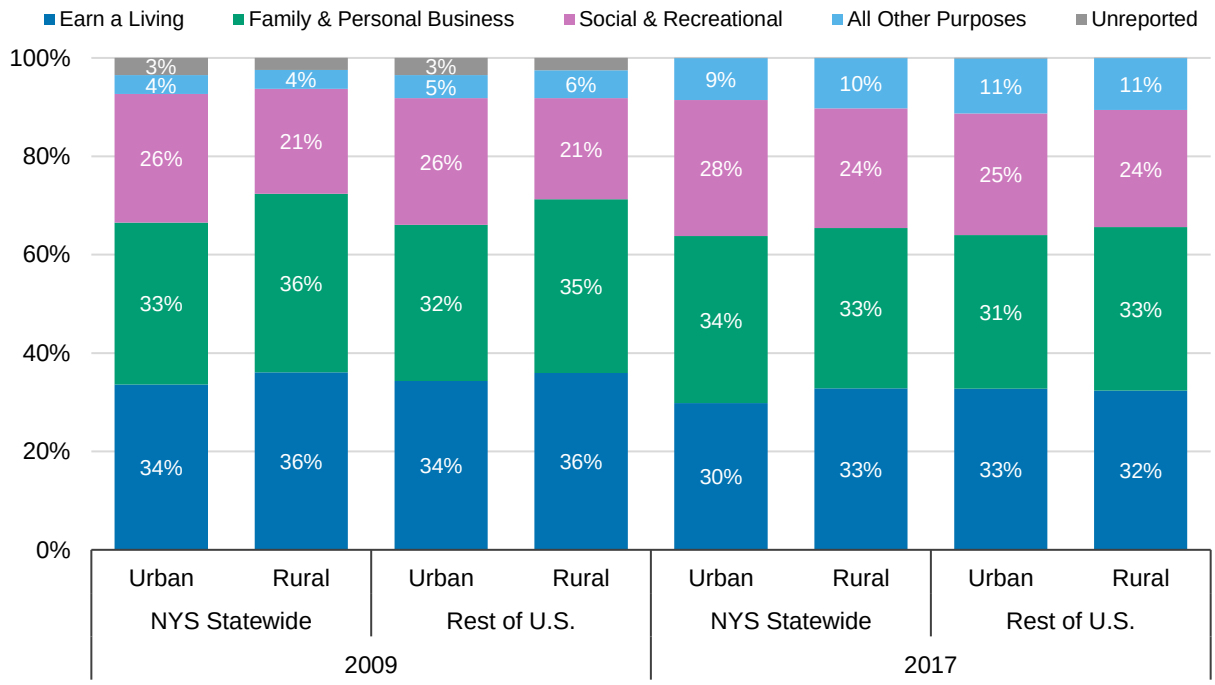



**Figure 4-28. Distribution of average daily VMT by trip purpose (2009 and 2017 NHTS data)**

**Table 4-6. Average daily VMT (miles) by trip purpose (2009 and 2017 NHTS data)**

| Year | Region | Class | Earn a Living | Family & Personal Business | Social & Recreational | All Other Purposes | Unreported |
|---|---|---|---|---|---|---|---|
| 2009 | NYS Statewide | Urban | 5.8 | 5.7 | 4.5 | 0.7 | 0.6 |
| | | Rural | 12.2 | 12.3 | 7.2 | 1.3 | 0.8 |
| | Rest of U.S. | Urban | 9.4 | 8.7 | 7.1 | 1.3 | 1.0 |
| | | Rural | 13.6 | 13.3 | 7.7 | 2.1 | 0.9 |
| 2017 | NYS Statewide | Urban | 5.9 | 6.7 | 5.5 | 1.7 | 0.0 |
| | | Rural | 10.8 | 10.7 | 8.0 | 3.3 | 0.0 |
| | Rest of U.S. | Urban | 8.9 | 8.5 | 6.7 | 3.0 | 0.0 |
| | | Rural | 11.8 | 12.1 | 8.7 | 3.9 | 0.0 |

Figure 4-29 shows the distribution of average daily VMT by trip purpose. In rural areas of the rest of the United States, the share of family and personal business trips has consistently declined. It decreased from 35% in 2009 to 33% in 2017, further dropping to 24% in 2022. This declining trend is not observed in the rural Middle Atlantic region. For social and recreational trips in urban areas in rest of the United States, the share remained stable between 2009 and 2017 at 25%. However, there was a slight increase to 36% in 2022.

The VMT for family and personal business trips exhibit a declining trend in rural areas across the rest of the United States (Table 4-7). Specifically, VMT stood at 12.3 miles in 2017 and statistically significantly dropped to 7.2 miles in 2022. A similar downward trend is evident in the rural Middle Atlantic region, where VMT was 9.4 miles in 2017 and reached 7 miles by 2022. Additionally, VMT for commuting trips

in urban areas also saw a decrease. For instance, in the urban Middle Atlantic region, VMT was 7.4 miles in 2017 and slightly declined to 5.3 miles in 2022.

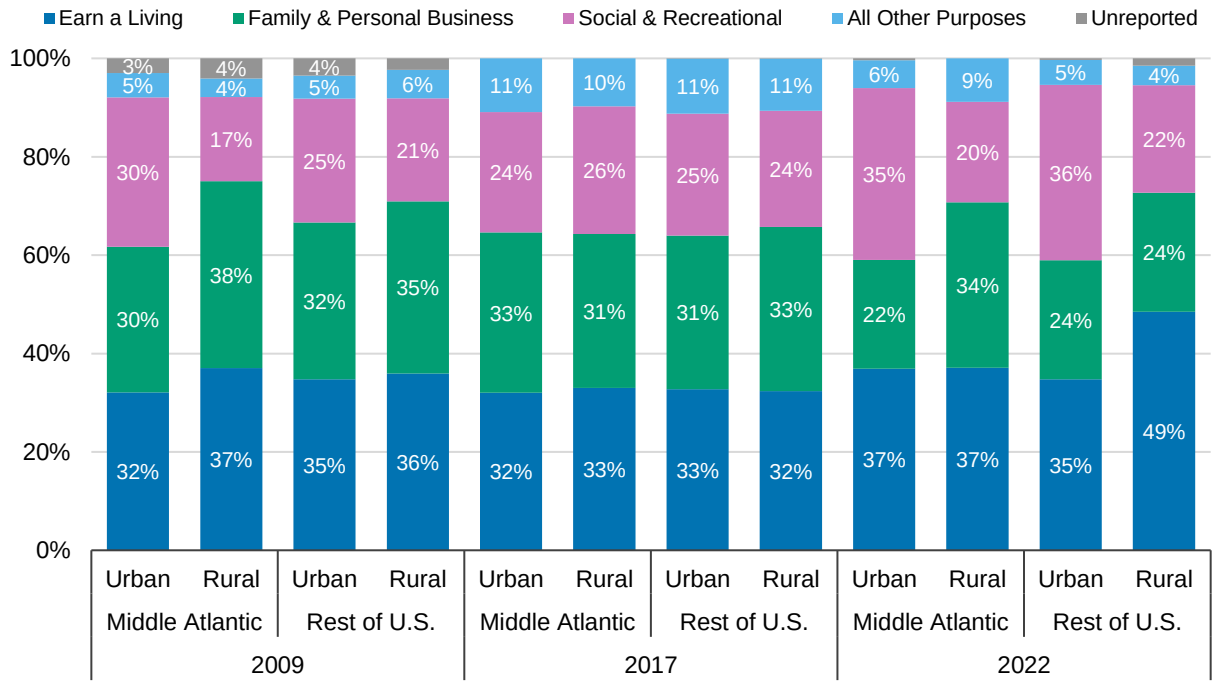



**Figure 4-29. Distribution of average daily VMT by trip purpose (2009, 2017, and 2022 NHTS data)**

**Table 4-7. Average daily VMT (miles) by trip purpose (2017 and 2022 NHTS data)**

| Year | Region | Class | Earn a Living | Family & Personal Business | Social & Recreational | All Other Purposes | Unreported |
|---|---|---|---|---|---|---|---|
| 2017 | Middle Atlantic | Urban | 7.4 | 7.6 | 5.7 | 2.5 | 0.0 |
| | | Rural | 10.0 | 9.4 | 7.8 | 2.9 | 0.0 |
| | Rest of U.S. | Urban | 8.9 | 8.5 | 6.8 | 3.0 | 0.0 |
| | | Rural | 12.0 | 12.3 | 8.7 | 3.9 | 0.0 |
| 2022 | Middle Atlantic | Urban | 5.3 | 3.2 | 5.0 | 0.8 | 0.1 |
| | | Rural | 7.7 | 7.0 | 4.2 | 1.8 | 0.0 |
| | Rest of U.S. | Urban | 6.3 | 4.4 | 6.4 | 0.9 | 0.1 |
| | | Rural | 14.4 | 7.2 | 6.5 | 1.2 | 0.4 |

### 4.4.6 Average Vehicle Trip Length

Figure 4-30 illustrates that the average vehicle trip length is higher in rural areas than in urban areas, irrespective of the region. In 2017, for instance, the average vehicle trip length in rural NYS is 11 miles, statistically significantly surpassing the 6.4 miles observed in urban areas. This difference is less pronounced in the rest of the United States, where the rural average vehicle trip length is 11.7 miles compared to the urban average of 8.6 miles. No significant temporal changes can be observed between 2009 and 2017 in either rural or urban areas.

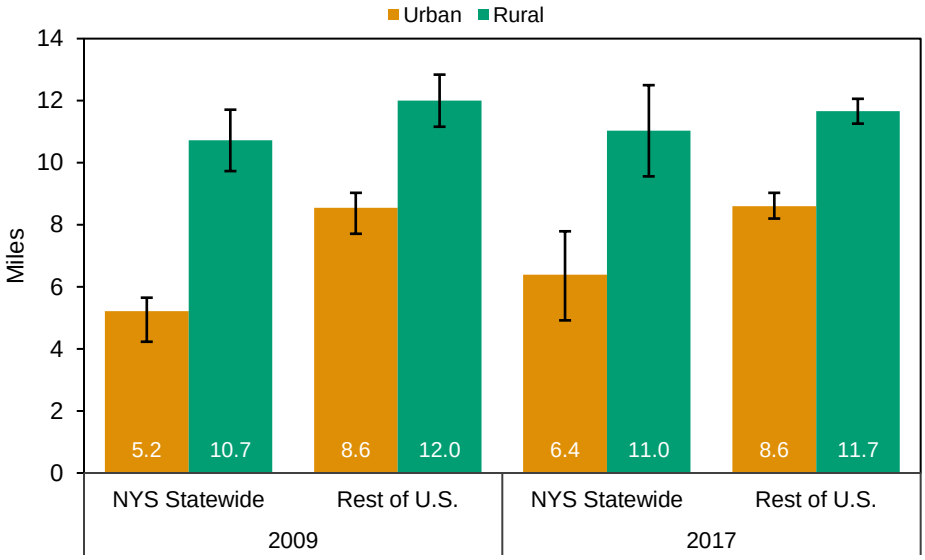



**Figure 4-30. Average vehicle trip length (miles) by rural classification (2009 and 2017 NHTS data)**

Examining the breakdown in NYS, as depicted in Figure 4-31, NYC stands out with the lowest average VT length in both 2009 (2.8 miles) and 2017 (3.8 miles). This estimate is statistically significantly lower than the average VT length in rest of NYS urban areas, which measures 7.1 miles in 2009 and 8.1 miles in 2017.

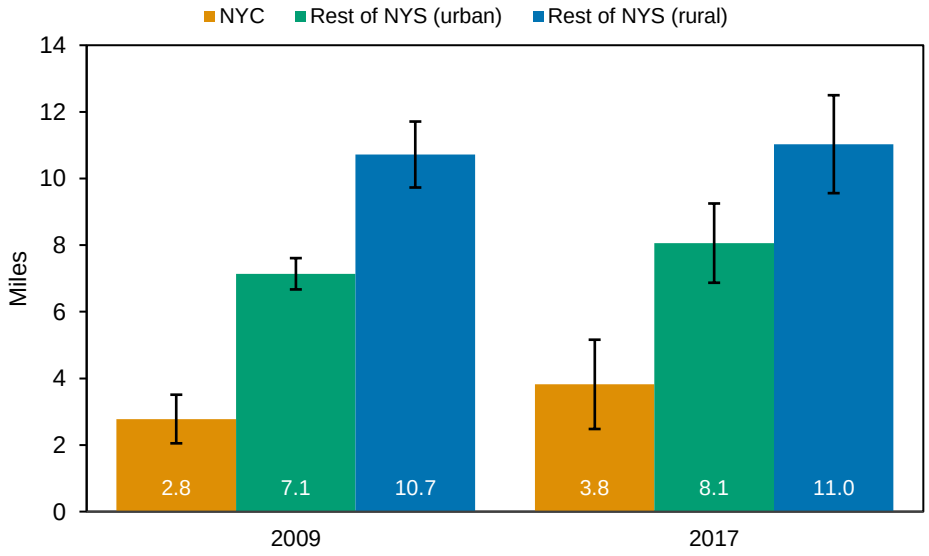



**Figure 4-31. Average vehicle trip length (miles) by rural classification in NYS (NHTS data)**

# 5. DEMOGRAPHICS AND MOBILITY IN ST. LAWRENCE COUNTY (2017 NHTS)

In 2017 NHTS New York State (NYS) add-on data, a significant increase in sample observations occurred for St. Lawrence County. This presents a unique opportunity to conduct focused analysis in this predominantly rural area. As a comparison, we also consider rural regions across the rest of the United States. Additionally, New York Metropolitan Transportation Council (NYMTC) and New York City (NYC), largely urban areas within New York State, are included for comparison purposes. This analysis aims to discern how demographic and trip patterns in St. Lawrence County compare those in the rest of NYS and the United States. Margins of error are calculated at a 95% confidence level for all analyses. Any statistical significance in comparisons is clearly described. In some figures, error bars are directly included to show the margins of error.

## 5.1 DEMOGRAPHICS

### 5.1.1 Household Race

Figure 5-1 shows that in St. Lawrence County and rural areas across the rest of the United States, a larger proportion of White households is noticeable compared to NYMTC and NYC. St. Lawrence County, in particular, exhibits a slightly higher percentage of White populations (93%) compared to rural areas in the rest of the United States (89%). Notably, St. Lawrence County also has a statistically significant lower representation of Black or African American populations (1%) compared to rural areas in the rest of the United States (6%).

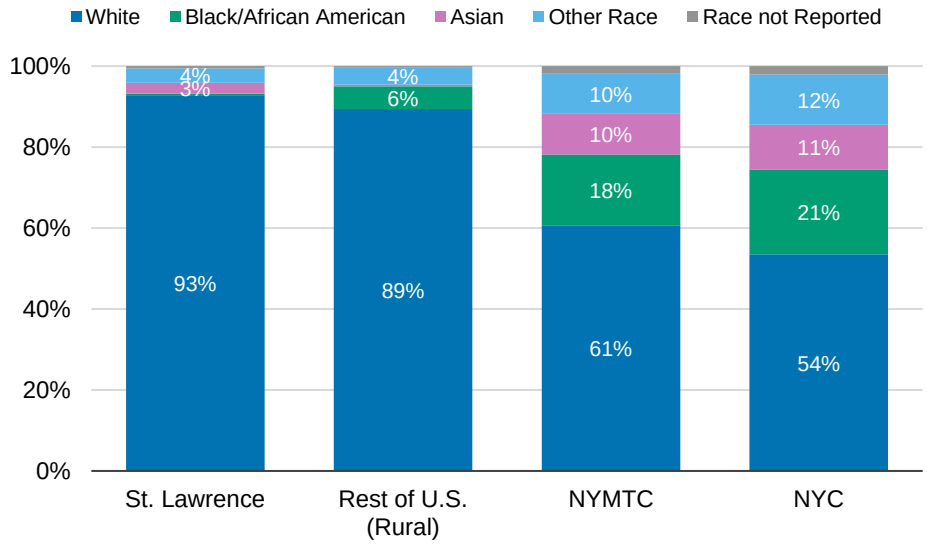



**Figure 5-1. Share of households by race and region (2017 NHTS)**

### 5.1.2 Household Size

As shown in Figure 5-2, in rural areas across the rest of the United States, a greater proportion of households with two persons is evident, accounting for 40%, which is significantly higher than the estimate observed in St. Lawrence County, standing at 32%. Conversely, St. Lawrence County exhibits a notably higher percentage of live-alone households, comprising 27%, compared to rural areas in the rest of the United States, which report 20%. In comparison to both St. Lawrence County and rural areas across the United States, NYMTC and NYC show a higher prevalence of live-alone households, constituting

32% and 38% respectively. However, NYMTC and NYC demonstrate similar proportions of two-person households, each representing 31%, mirroring the figures observed in St. Lawrence County.

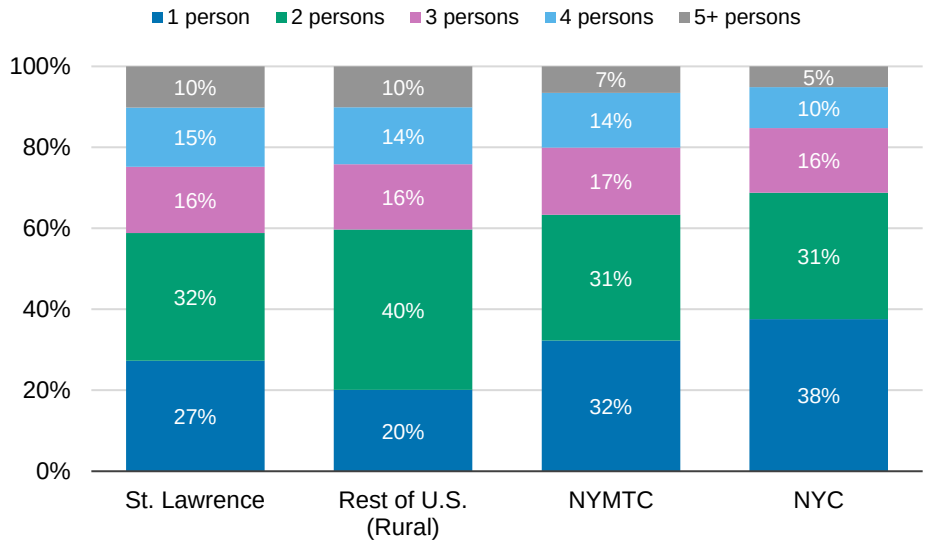



**Figure 5-2. Share of households by household size and region (2017 NHTS)**

### 5.1.3 Vehicle Ownership

St. Lawrence County has a significantly larger percentage of households with zero vehicle, at 8%, compared to rural areas in the rest of the United States, where this estimate is 3%. In contrast, NYMTC and NYC exhibit considerably higher rates of zero-vehicle households, at 38% and 52% respectively. Furthermore, St. Lawrence County has 38% of single-vehicle households, which is statistically significantly higher than the 21% observed in rural areas in the rest of the United States. Conversely, rural areas in the rest of the United States show a statistically significantly greater share of households with three or more vehicles, accounting for 42%, compared to only 22% in St. Lawrence County. These estimates are statistically significantly lower in NYMTC and NYC, at 10% and 3%, respectively.

### 5.1.4 Vehicle Age

Vehicle age is the highest in rural areas across the rest of the United States, with St. Lawrence County following (Figure 5-4). Meanwhile, vehicle age in NYMTC and NYC is comparable, and is slightly lower than in St. Lawrence County.

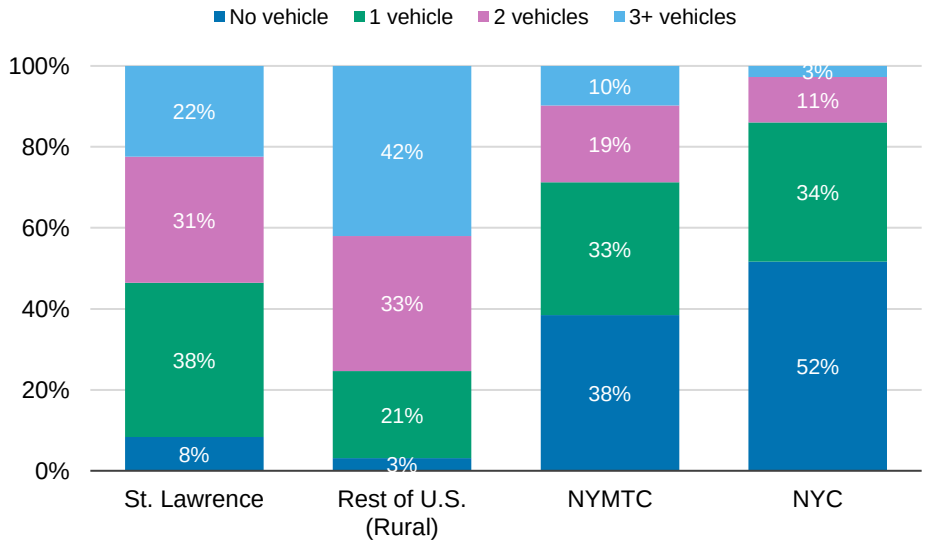



**Figure 5-3. Share of households by vehicle ownership and region (2017 NHTS)**

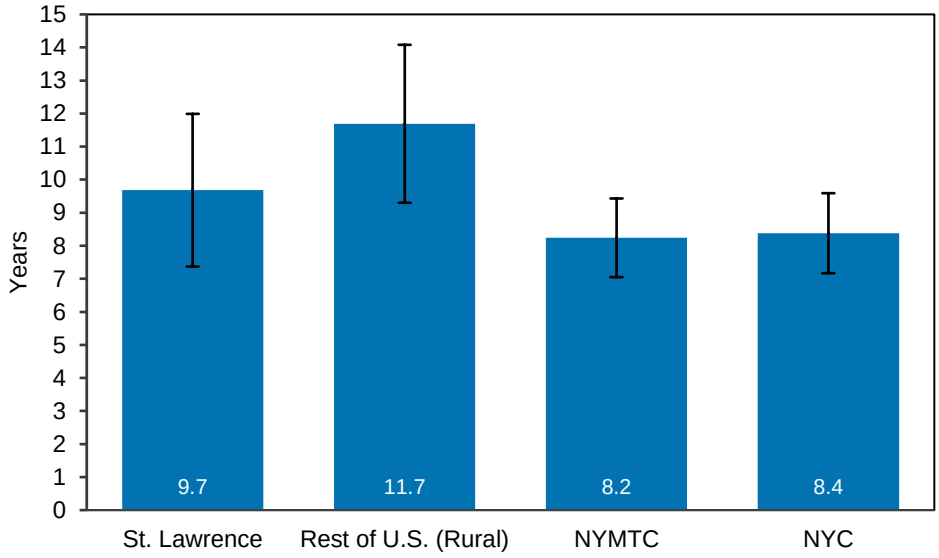



**Figure 5-4. Vehicle age by region (2017 NHTS)**

### 5.1.5 Life Cycle

Figure 5-5 depicts that St. Lawrence County exhibits a household distribution akin to other rural areas across the United States. However, in contrast to NYMTC and NYC, St. Lawrence County stands out with a statistically significantly greater proportion of households comprising two adults with children. Additionally, St. Lawrence County represents a statistically significantly higher share of retired households without children compared to both NYMTC and NYC.

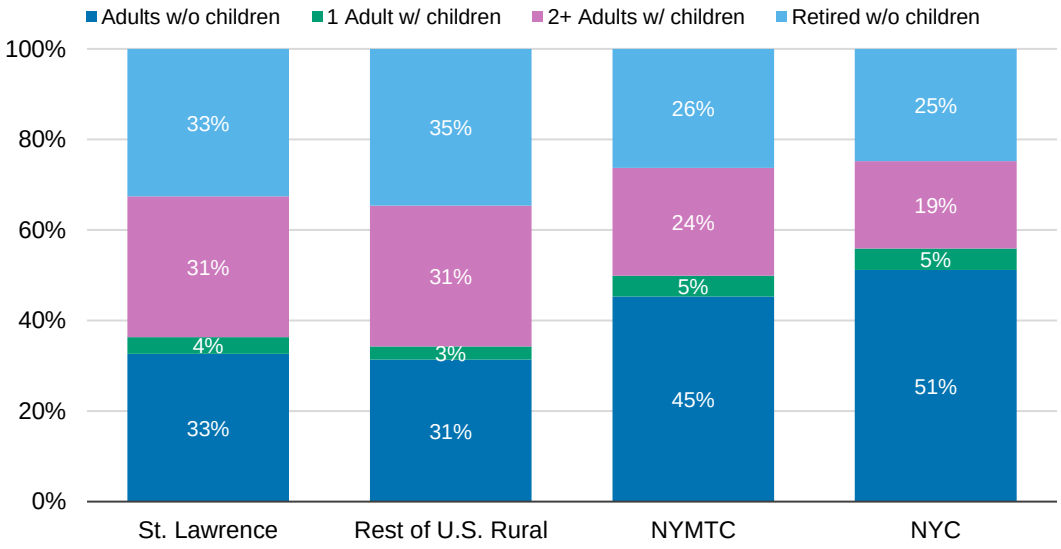



**Figure 5-5. Share of households by life cycle category and region (2017 NHTS)**

### 5.1.6 Household Income

In terms of household income (Figure 5-6), St. Lawrence County stands out with the highest proportion of households earning below $25K annually, accounting for 31%, surpassing other regions. The share of households earning between $25K and $50K is comparable between St. Lawrence County (26%) and rural areas in the rest of the United States (23%), but statistically significantly higher than in NYMTC (16%) and NYC (17%). Conversely, in the highest income bracket, St. Lawrence County (1%) exhibits a statistically significantly lower share compared to rural areas in the rest of the United States (4%), which is also statistically significantly lower than in NYMTC (11%) and NYC (10%).

## 5.2 MOBILITY

### 5.2.1 Average Daily Person Trip Rate

The average daily person trips per person across all regions are relatively consistent (Figure 5-7). St. Lawrence County exhibits a slightly lower person trip rate (3.1) compared to rural areas in the rest of the United States (3.2), as well as NYMTC (3.3) and NYC (3.2).

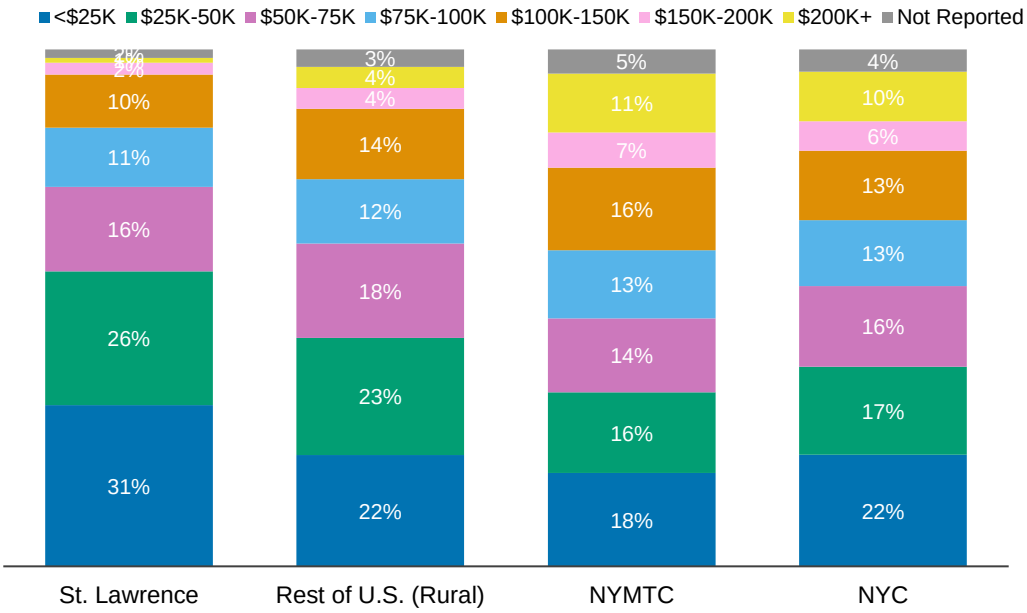



**Figure 5-6. Share of households by income category and region (2017 NHTS)**

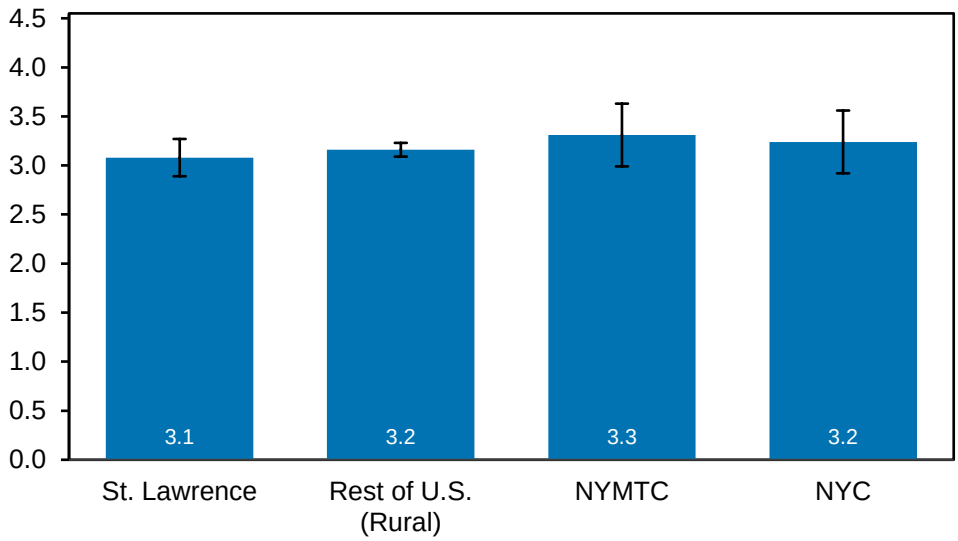



**Figure 5-7. Average daily person trips per person by region (2017 NHTS)**

### 5.2.2 Average Daily PMT

Figure 5-8 shows that St. Lawrence County exhibits a slightly higher average daily person miles traveled PMT (34.7) in comparison to NYMTC (31.6) and NYC (25.8). However, this estimate remains significantly lower than that observed in rural areas in the rest of the United States, which stands at 47.7.

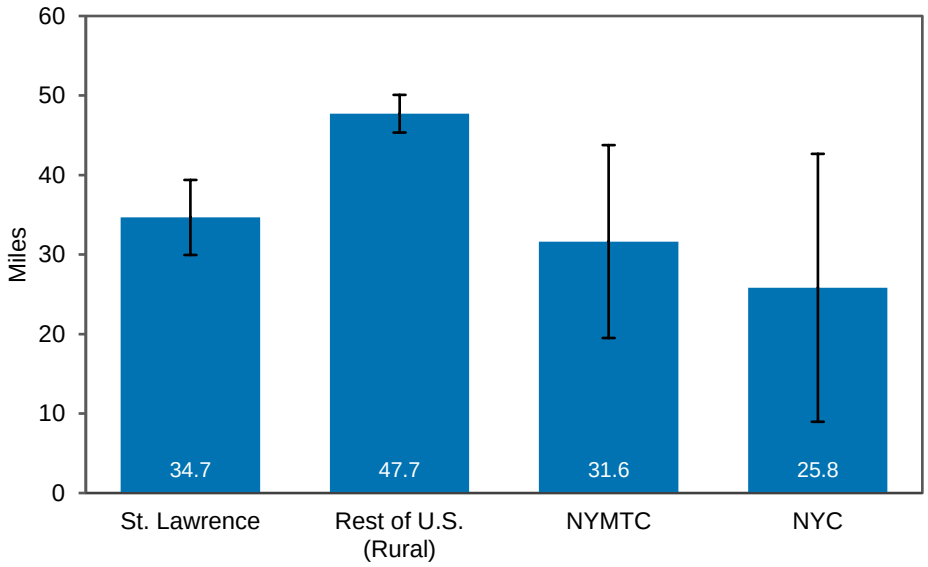



**Figure 5-8. Average daily person miles traveled (PMT) by region (2017 NHTS)**

### 5.2.3 PMT by Trip Purpose

Table 5-1 illustrates that both St. Lawrence County and rural areas across the rest of the United States show the highest average daily person miles traveled (PMT) for family and personal business trips. In contrast, in NYMTC and NYC, social and recreational trips exhibit the highest PMT. Rural areas in the rest of the United States demonstrate the highest PMT for all three major trip purposes compared to other regions. St. Lawrence County reports slightly lower PMT for family and personal business trips (11.9) than rural areas in the United States, while slightly exceeding NYMTC (7.2) and significantly surpassing NYC (5). For commuting trips, St. Lawrence County shows significantly lower PMT (7.9) compared to rural areas in the rest of the United States (10.5), albeit slightly higher than both NYMTC (6.8) and NYC (5).

**Table 5-1. Average daily PMT (miles) by trip purpose and by region (2017 NHTS)**

| Region | Earn a Living | Family & Personal Business | Social & Recreational | All Other Purposes |
|---|---|---|---|---|
| St. Lawrence | 7.9 | 11.9 | 10.7 | 4.1 |
| Rest of U.S. (Rural) | 10.5 | 14.5 | 13.5 | 9.2 |
| NYMTC | 6.8 | 7.2 | 7.9 | 9.7 |
| NYC | 5.0 | 5.0 | 6.2 | 9.7 |

### 5.2.4 Average Daily Vehicle Trip Rate

Figure 5-9 reveals that St. Lawrence County exhibits a comparable vehicle trip rate to rural areas in the rest of the United States, with both at 2.6. These estimates are statistically significantly higher than those observed in NYMTC (1.8) and NYC (1.1).

### 5.2.5 Average Daily VMT

According to Figure 5-10, the average daily vehicle miles traveled (VMT) in rural areas in the rest of the United States is significantly higher (36.4) compared to St. Lawrence County, which is 28. Conversely,

St. Lawrence County exhibits a statistically significantly higher VMT than both NYMTC (16.5) and NYC (10.3).

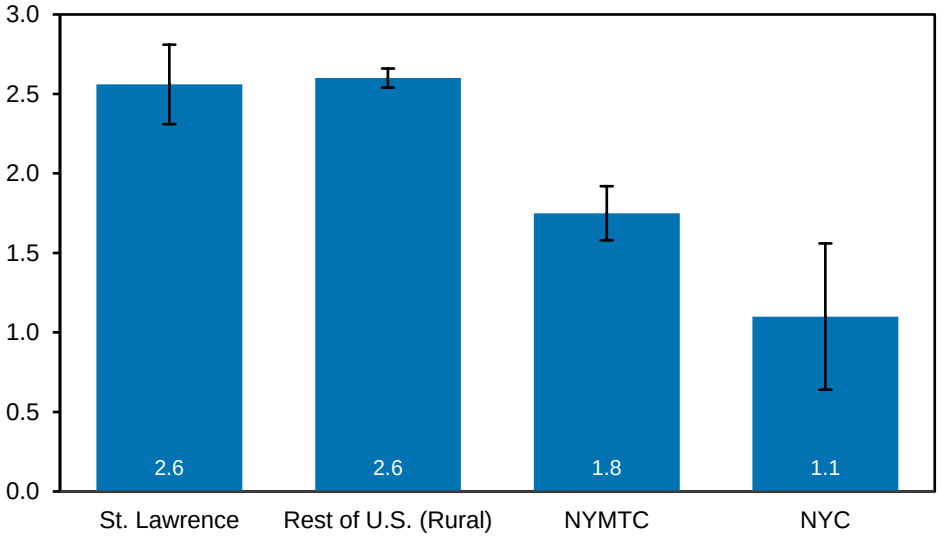



**Figure 5-9. Average daily vehicle trips per driver by region (2017 NHTS)**

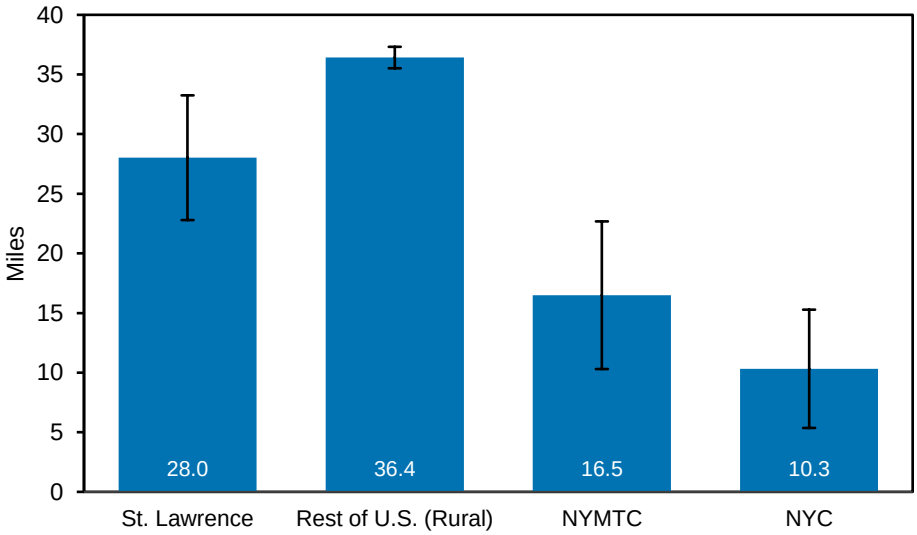



**Figure 5-10. Average daily vehicle miles traveled (VMT) by region (2017 NHTS)**

### 5.2.6 VMT by Trip Purpose

In Table 5-2, across all four regions, family and personal business trips consistently exhibit the highest VMT among other trip purposes. However, in St. Lawrence County, social and recreational trips display the lowest VMT, whereas in NYMTC and NYC, commuting trips have the lowest VMT. In particular, in NYC, the VMT for commuting stands at 2.6, significantly lower than NYMTC (4.5), St. Lawrence County (9.1), and rural areas across the rest of the United States (11.8).

**Table 5-2. Average daily VMT (miles) by trip purpose (2017 NHTS)**

| Region | Earn a Living | Family & Personal Business | Social & Recreational | All Other Purposes |
|---|---|---|---|---|
| St. Lawrence | 9.1 | 10.1 | 7.5 | 1.4 |
| Rest of U.S. (Rural) | 11.8 | 12.1 | 8.7 | 3.8 |
| NYMTC | 4.5 | 5.7 | 5.0 | 1.3 |
| NYC | 2.6 | 3.8 | 3.2 | 0.8 |

## 5.3 BORDER CROSSING TRIPS

An analysis of the seasonal patterns of cross-border passenger traffic in St. Lawrence County was performed. Passengers entering United States are defined as inbound passengers and those entering Canada are defined as outbound passengers. The analysis focuses on data between January 2017 and May 2023, aligning with the availability of both datasets. Specifically, the analysis emphasizes passenger movements using personal vehicles, as other modes exhibit relatively lower counts compared to personal vehicles. The BTS dataset categorizes passenger counts into four transportation modes: buses, personal vehicles, trains, and pedestrians. For this analysis, we focus on personal vehicles. Similarly, Statistics Canada distinguishes between automobiles (under 8 passengers), motorcycles, and other land vehicles. Here, we exclusively consider counts for automobiles.

While BTS data allows us to obtain inbound passenger counts for each entry point in both Massena and Ogdensburg, Statistics Canada provides counts only at the province level. Consequently, we aggregate the total number of personal vehicle passengers to Ontario for analysis and comparison.
Figure 5-11 shows the share of inbound automobile passengers based on BTS data, from the two entry points in St. Lawrence County among entry points in NYS. The share is relatively stable across years with average of 31.6%.

Figure 5-12 shows the annual inbound personal vehicle passengers and Figure 5-13 shows the annual outbound personal vehicle passengers. From 2019 to 2020, both inbound and outbound passengers experienced a decline (due to COVID restrictions), and as of 2023, they have yet to return to their 2019 levels. Specifically, inbound personal vehicle passengers entering the United States from two locations in St. Lawrence County decreased from 2 million to 1 million. In 2023, the count stood at 1.8 million. Similarly, outbound personal vehicle passengers departing from the United States to Canada, from the entire Ontario province, decreased from 46 million to 10 million. By 2023, the count had risen to 39.2 million.

Figure 5-14 shows that the monthly pattern indicates a higher frequency of both outbound and inbound trips during the summer months, particularly between June and August. Compared to outbound trips, the share of inbound trips is slightly higher between October and February.

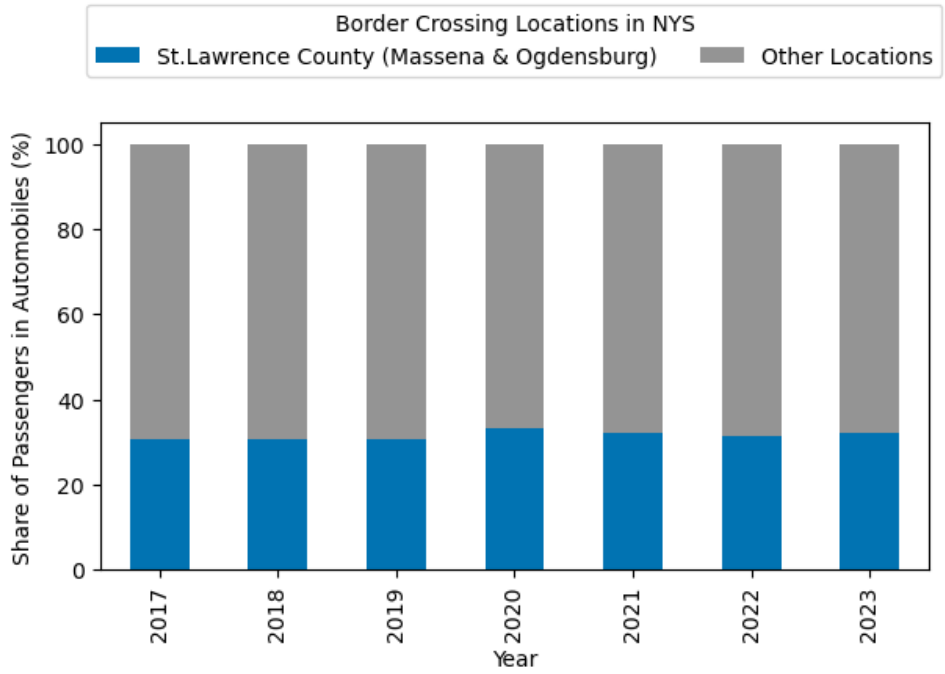



**Figure 5-11. Share of passengers by border crossing locations (BTS Border Crossing data)**

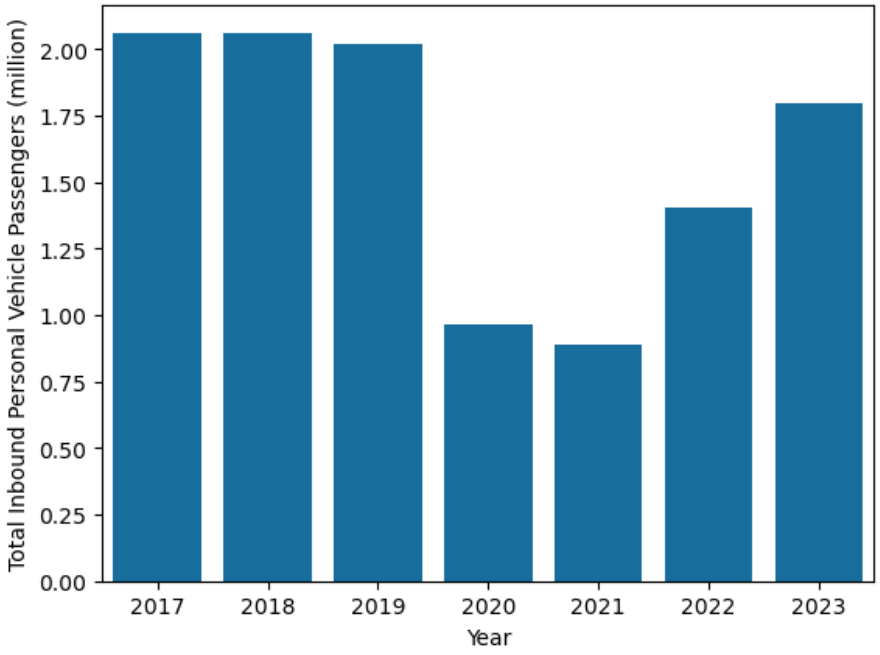



**Figure 5-12. Annual number of inbound personal vehicle passengers through two entry points in St. Lawrence County (BTS Border Crossing data)**

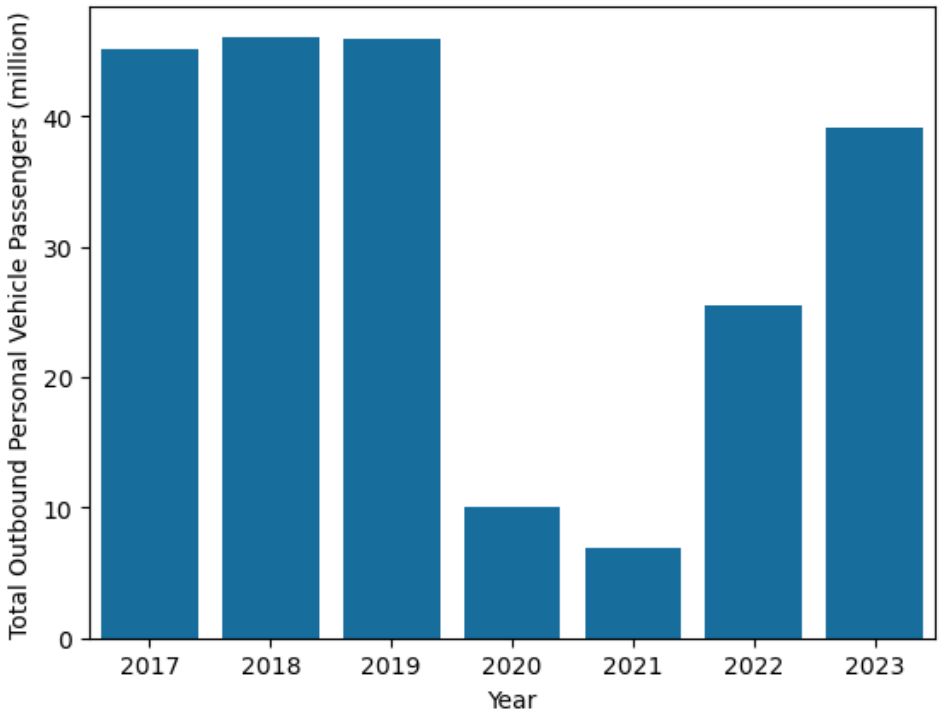



**Figure 5-13. Annual number of outbound personal vehicle passengers through 14 land border exit points in Ontario province in Canada (Statistics Canada data)**

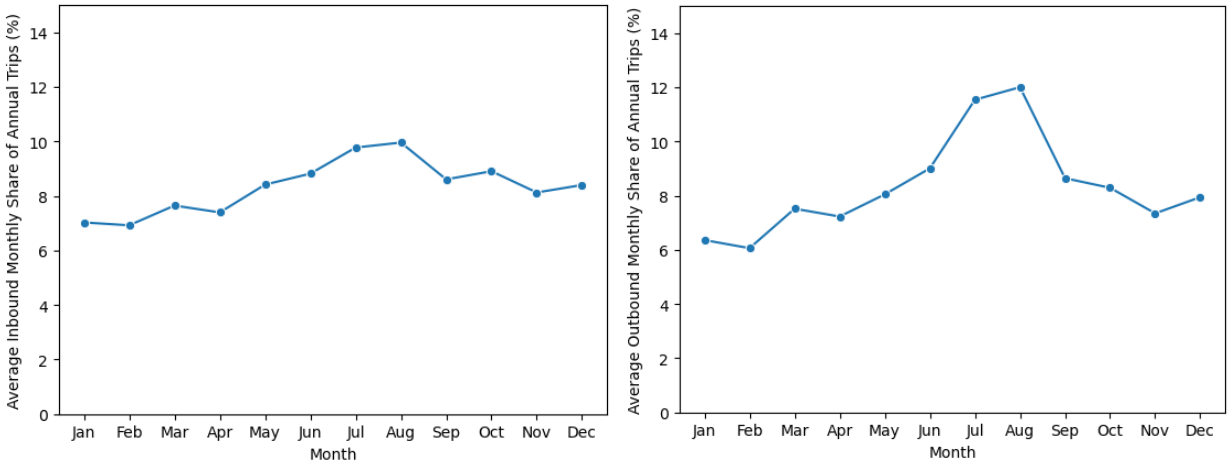



**Figure 5-14. Share of passenger trips by month**

Left: Share of inbound personal vehicle passengers through two entry points in St. Lawrence County (BTS Border Crossing data). Right: Share of outbound personal vehicle passengers through 14 land border exit points in Ontario province in Canada (Statistics Canada data)

# 6. VIEWS OF TRANSPORTATION SERVICES (2017 NHTS)

In the 2017 NHTS recruitment survey, one adult from each household was tasked with answering questions regarding their travel habits, including modes of transportation used and associated costs, as well as their frequency of Internet usage. Drawing upon data obtained from this recruitment survey, this section focuses on analyzing respondents' perspectives regarding travel expenses and Internet usage frequency. The discussions are provided for respondents living in New York City (NYC), New York Metropolitan Transportation Council (NYMTC), New York State (NYS) excluding NYMTC, NYS statewide, rest of United States as well as rural and urban areas in NYS and rest of United States.

## 6.1 VIEWS OF TRAVEL COST IMPACTS ON TRAVEL BEHAVIOR

The recruitment survey asked the respondents from each surveyed household to answer the question "How much do you agree or disagree with each of the following?" This includes five parts as listed below:

- The price of gas affects the number of places I go
- Getting from place-to-place costs too much
- I walk to places to save money
- I bike to places to save money
- I use public transportation to save money

For each part listed above, the survey respondent would select one option from the provided list of strongly agree, agree, neutral (neither agree or disagree), disagree, and strongly disagree.

### 6.1.1 Price of Gas Affects Amount of Travel

A comparison of gas price effects across regions is illustrated in Figure 6-1. In NYC, 29% of residents strongly agree or agree with this statement. This share increases to 32% in the NYMTC region and 52% in the rest of NYS. In the rest of the United States, this percentage closely mirrors that of the rest of NYS at 50%. Notably, both NYC and NYMTC have the highest share of residents who neither agree nor disagree with price of gas affecting their travel, accounting for 29% and 28%, respectively.

Figure 6-2 presents a comparison of the impact of gas prices based on rural classification. In NYS, a higher percentage of rural residents strongly agree or agree that gas prices influence their travel (57%) compared to their urban counterparts (37%). Conversely, more people in urban areas were found to have neutral attitude with this statement (26%) than in rural areas (18%). In the rest of the United States, the proportion of rural residents who strongly agree or disagree with the statement is similar to that of NYS (57%). However, the percentage of urban residents who strongly agree or agree is lower (48%) than their rural counterparts but higher than that in urban areas of NYS.

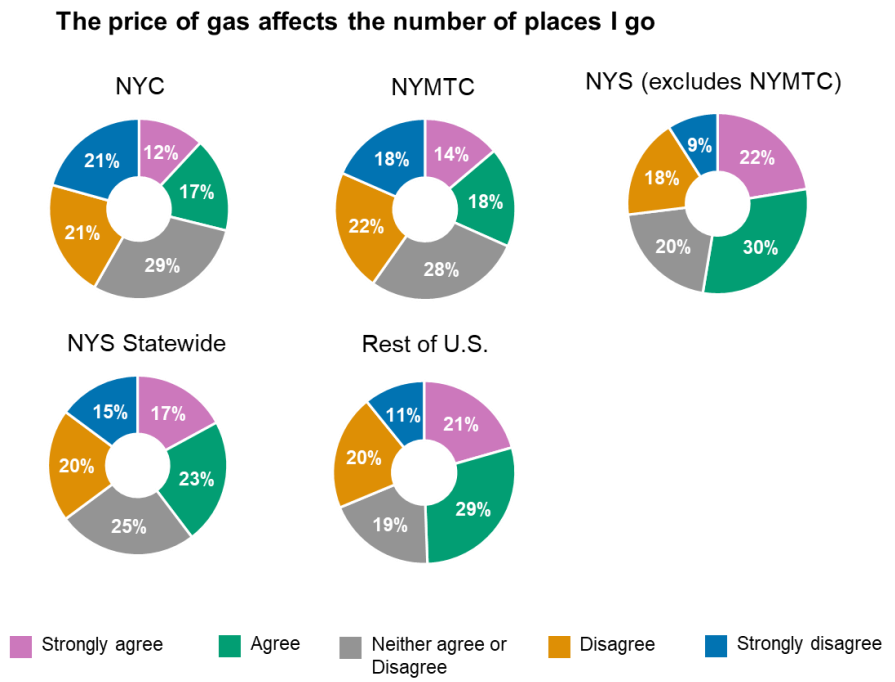



**Figure 6-1. Share of ratings on "The price of gas affects the number of places I go" by region (2017 NHTS)**

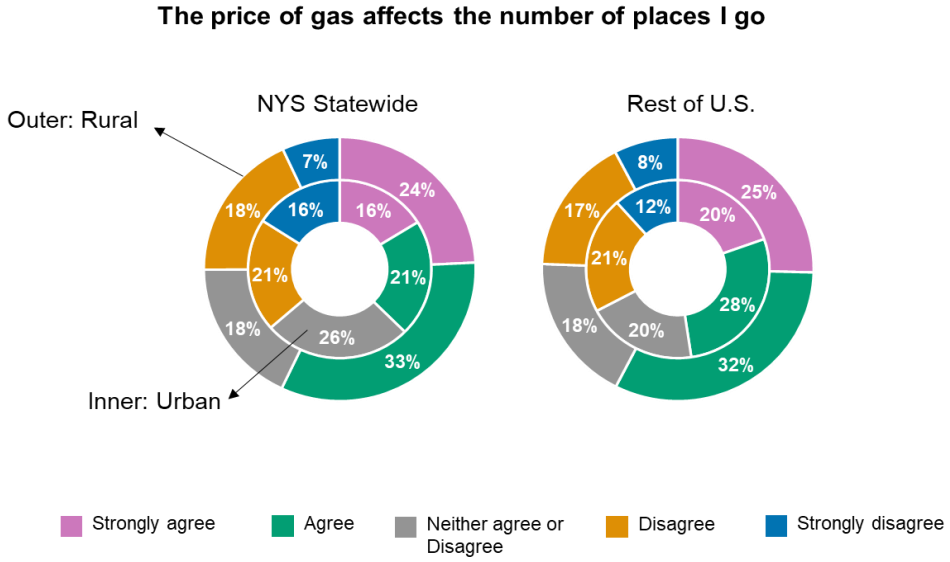



**Figure 6-2. Share of ratings on "The price of gas affects the number of places I go" by rural classification (2017 NHTS)**

### 6.1.2 Travel Costs Too Much

According to Figure 6-3, over half of the residents in NYC and NYMYC strongly agree or agree that travel costs too much with lower share in the rest of NYS (45%) and the rest of the United States (42%). Specifically, 58% of NYC residents and 54% of those in the NYMTC region strongly agree or agree with this sentiment. Across all regions, there is a similar proportion of respondents who strongly disagree with this statement, with only 6% in the rest of the United States and 5% in other regions. Notably, a higher

percentage of respondents strongly agree or agree in NYS statewide (50%) compared to the rest of the United States (42%).

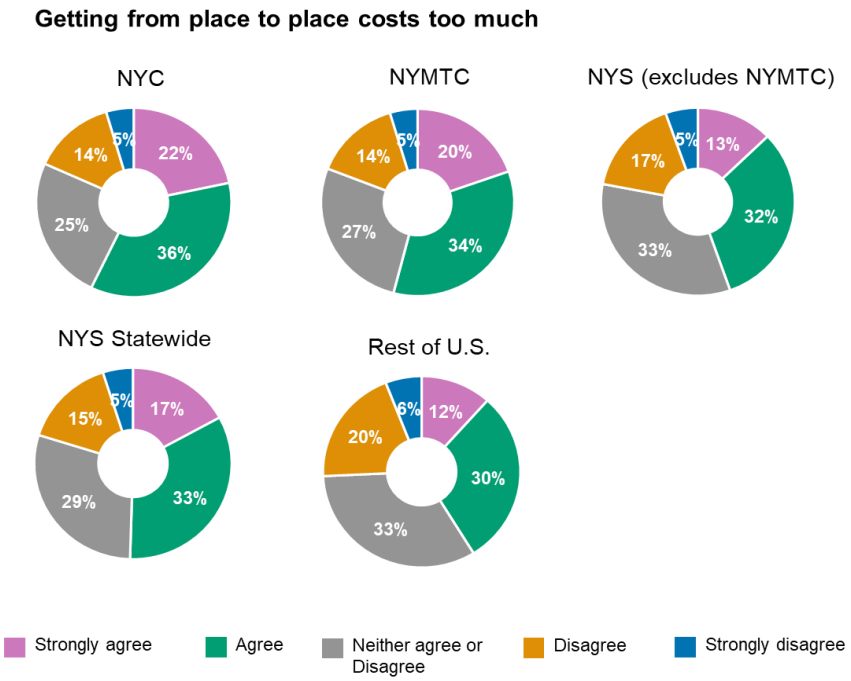



**Figure 6-3. Share of ratings on "Getting from place to place costs too much" by region (2017 NHTS)**

As shown in Figure 6-4, in NYS a higher percentage of urban residents strongly agree that travel costs too much (17%) compared to rural residents (14%). In the rest of the United States, however, more rural residents strongly agree with the statement (14%) than urban residents (11%). A higher percentage of rural residents in NYS agree with the statement (35%) compared to urban residents (33%). Similarly, in the rest of the United States, 32% of rural residents agree with the statement while 29% of urban residents do so.

### 6.1.3 Walk to Save Money

The share of ratings on "walk to places to save money" by region are depicted in Figure 6-5. Notably, NYC has the highest proportion of people who strongly agree (22%) or agree (34%) with this statement among all regions. Similarly, the NYMTC region also exhibits a relatively higher share, with 17% strongly agreeing and 28% agreeing. Conversely, in the rest of NYS and the rest of the United States, over half of the individuals strongly disagree or disagree with this statement, at 54% and 60%, respectively.

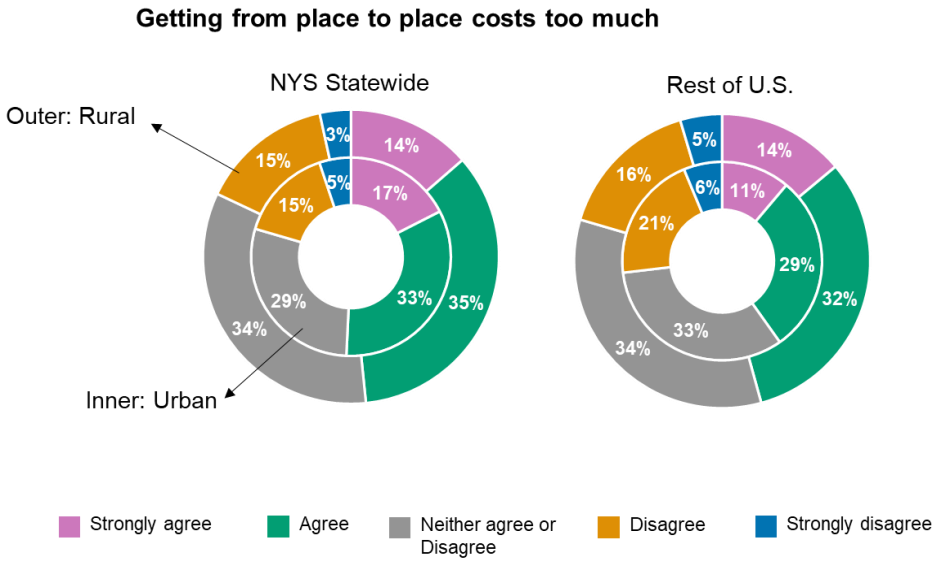



**Figure 6-4. Share of ratings on "Getting from place to place costs too much" by rural classification (2017 NHTS)**

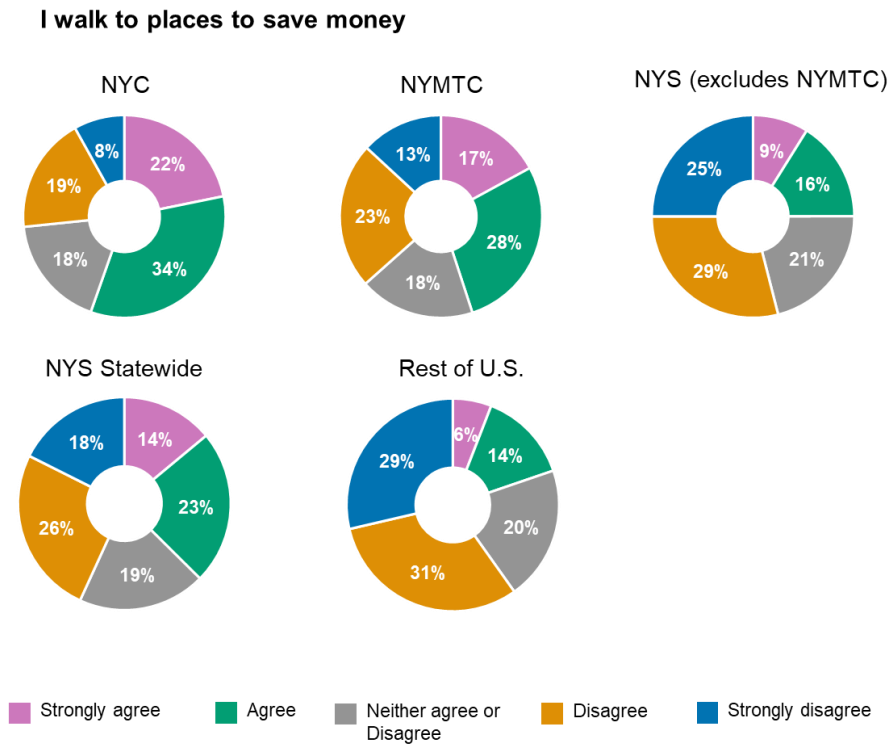



**Figure 6-5. Share of ratings on "I walk to places to save money" by region (2017 NHTS)**

As shown in Figure 6-6, a higher share of urban residents agree or strongly agree with the statement regarding walking to save money compared to their rural counterparts in both NYS and the rest of the United States In particular, 40% of urban residents strongly agree or agree, while only 14% of rural residents do so in NYS. Similarly, in the rest of the United States, 22% of urban residents strongly agree or agree, which is lower than in urban NYS but higher than in rural areas of the rest of the United States

(12%). The percentage of rural residents who disagree or strongly disagree is comparable between NYS (62%) and the rest of the United States (65%). However, a lower percentage of urban residents in NYS (41%) strongly disagree or disagree compared to their counterparts in the rest of the United States (59%).

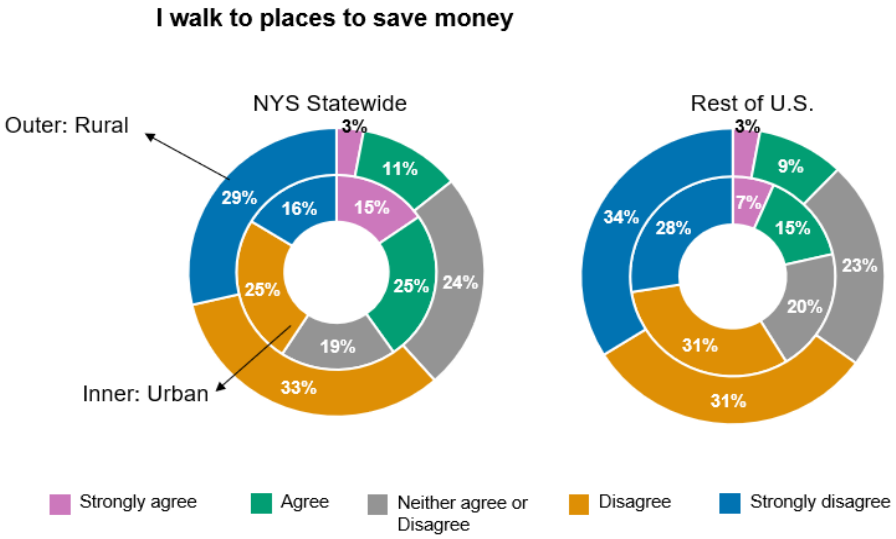



**Figure 6-6. Share of ratings on "I walk to places to save money" by rural classification (2017 NHTS)**

### 6.1.4 Bike to Save Money

Figure 6-7 illustrates that the majority of residents across all regions strongly disagree or disagree with the statement regarding biking to save money. Notably, there is a relatively lower share of people who strongly disagree or disagree in NYC (52%) and the NYMTC region (59%) compared to NYS (62%) and the rest of the United States (71%). Moreover, a higher share of people in the rest of the United States strongly disagree compared to those in NYS statewide (42% vs. 37%).

Comparing the shares of people by rural classification (Figure 6-8), in NYS, urban areas have a higher share of residents who strongly agree or agree (12%) compared to rural areas (6%). This pattern mirrors the trend observed across the rest of the United States, with urban areas accounting for 10% and rural areas for 5% of residents who strongly agree or agree with this statement. Furthermore, in NYS, a lower share of urban residents strongly disagree (37%) compared to rural residents (41%), while in the rest of the United States, this difference is slightly narrower, with urban at 41% and rural at 44%.

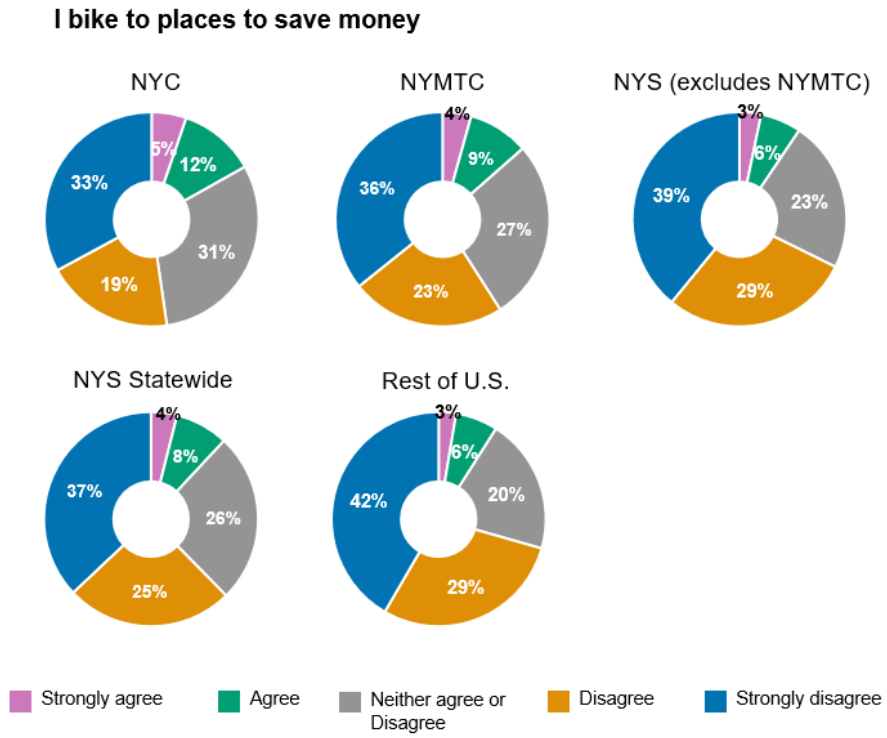



**Figure 6-7. Share of ratings on "I bike to places to save money" by region (2017 NHTS)**

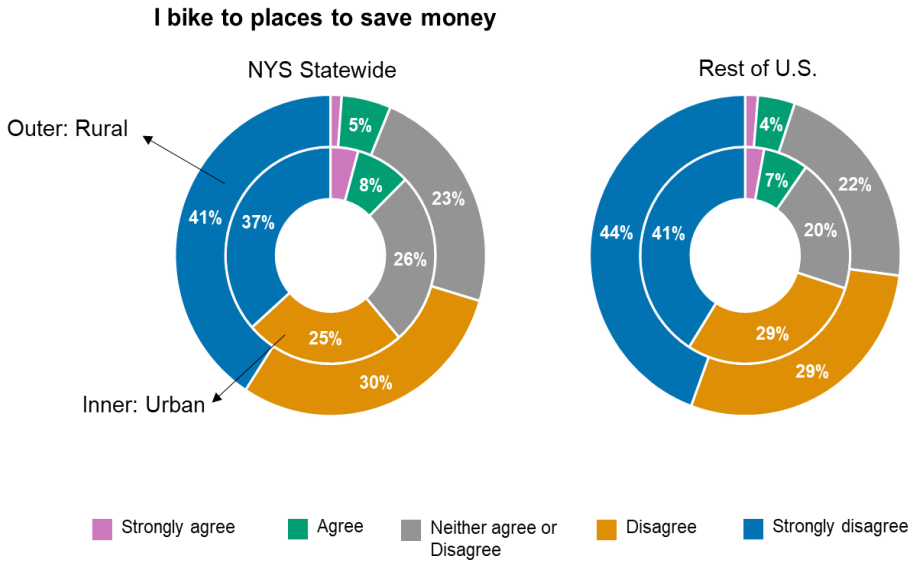



**Figure 6-8. Share of ratings on "I bike to places to save money" by rural classification (2017 NHTS)**

### 6.1.5 Use Public Transportation to Save Money

Figure 6-9 shows a difference in views regarding the use of public transportation to save money among residents of NYC, the NYMTC region, rest of NYS and the rest of the United States. Specifically, 34% of NYC residents and 26% of NYMTC residents strongly agree with using public transportation to save money, whereas only 6% of those in both rest of NYS and rest of the United States strongly agree. Conversely, 37% of individuals in the rest of NYS and 38% in the rest of the United States strongly

disagree with this statement, while only 8% of NYC residents and 14% of NYMTC residents strongly disagree.

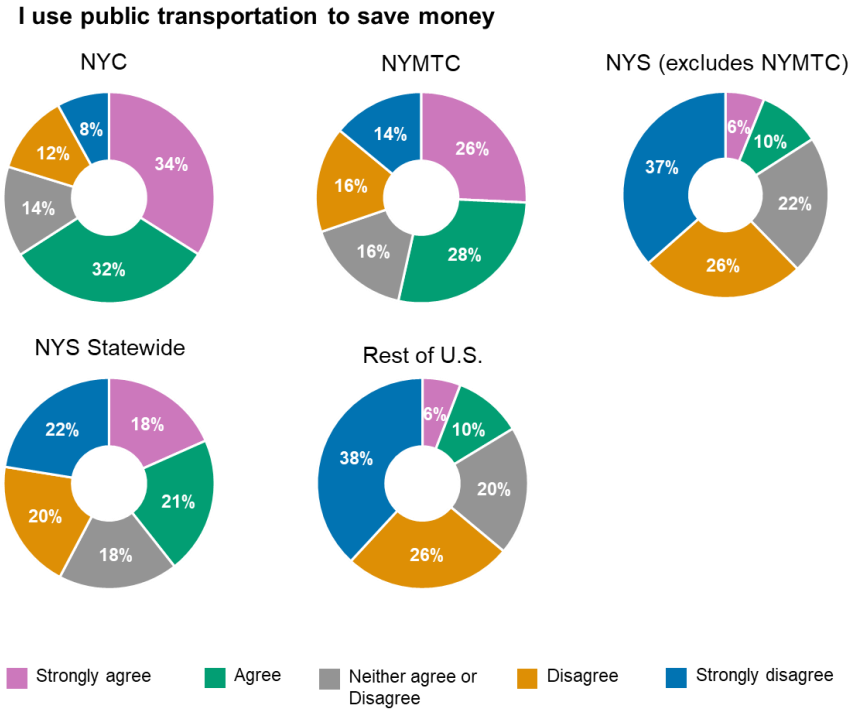



**Figure 6-9. Share of ratings on "I use public transportation to save money" by region (2017 NHTS)**

When examining by rural classification (Figure 6-10), a higher share of urban residents strongly agree or agree with the statement compared to rural residents in both NYS and the rest of the United States. In NYS, 43% of urban residents strongly agree or agree, while only 8% of their rural counterparts do so. A similar pattern is observed in the rest of the United States, where 19% of urban residents agree, while only 5% of rural counterparts do. However, this difference is less pronounced in NYS. Regarding the percentage of people who strongly disagree with this statement, a contrast is apparent between urban areas in the two regions, with NYS at 20%, whereas 36% in the rest of the United States.

### 6.1.6 Overall Travel Costs Concerns

When comparing the share of people expressing these concerns across regions (Figure 6-11), in NYC, the highest percentage of individuals indicated using public transportation to save money (66%). In the NYMTC region, a comparable share can be observed between residents who use public transportation to save money (53%) and those who think travel costs too much (54%). Concerns about travel costs in general also rank highest in NYS statewide (50%), while in the rest of the United States, gas prices are the primary concern among other categories (49%).

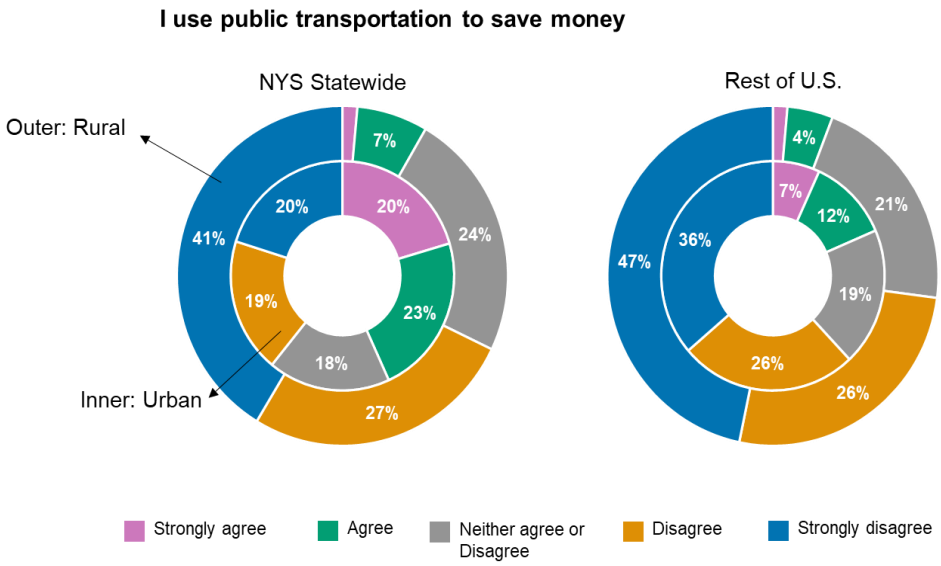



**Figure 6-10. Share of ratings on "I use public transportation to save money" by rural classification (2017 NHTS)**

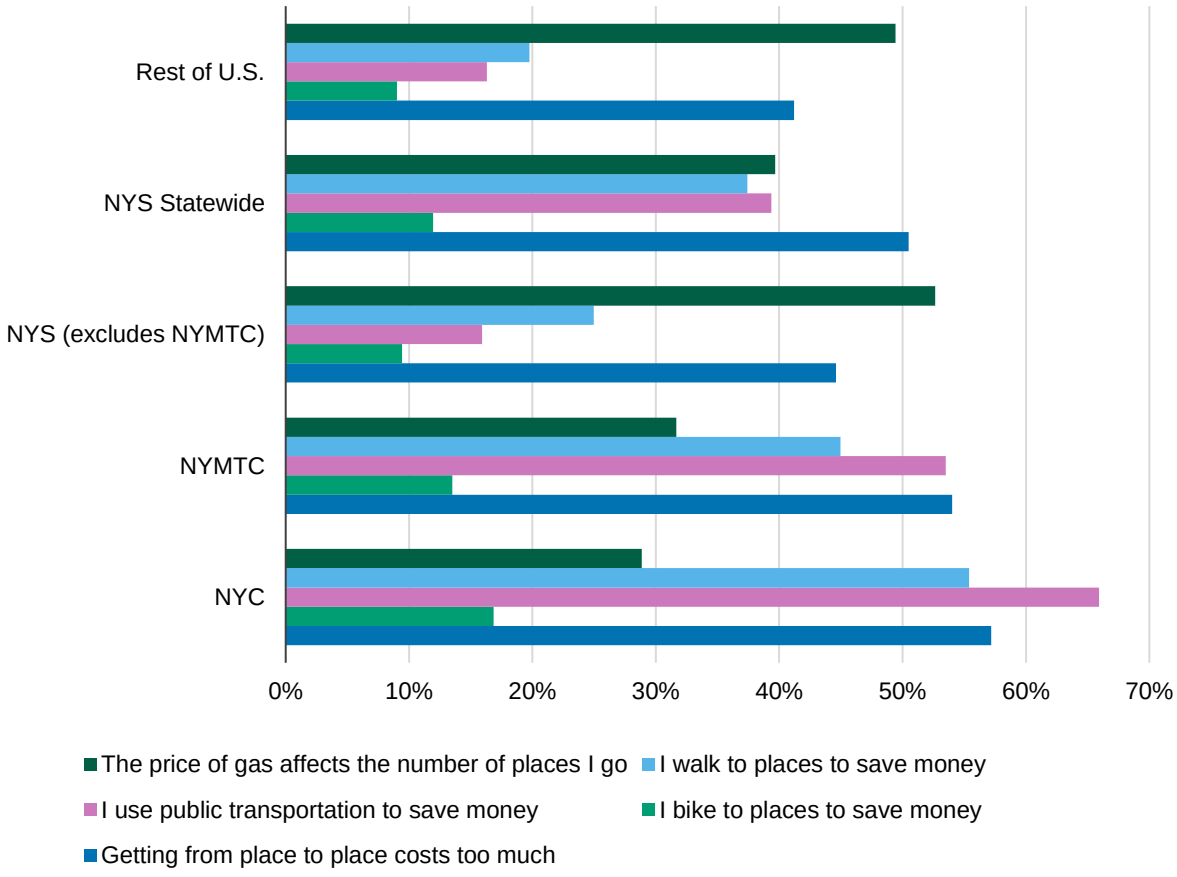



**Figure 6-11. Issues associated with travel concerns by regions (2017 NHTS)**

In Figure 6-12, the comparison of travel concerns by rural classification is depicted. In both NYS and the rest of the United States, gas costs emerge as the primary concern in rural areas, while general travel costs take precedence in urban areas. In NYS, 51% of urban residents believe traveling costs too much, compared to 40% in the rest of the United States. Additionally, 58% of rural residents in NYS perceive gas prices as too high, slightly higher than the 57% of rural residents in the rest of the United States who share the same perception.

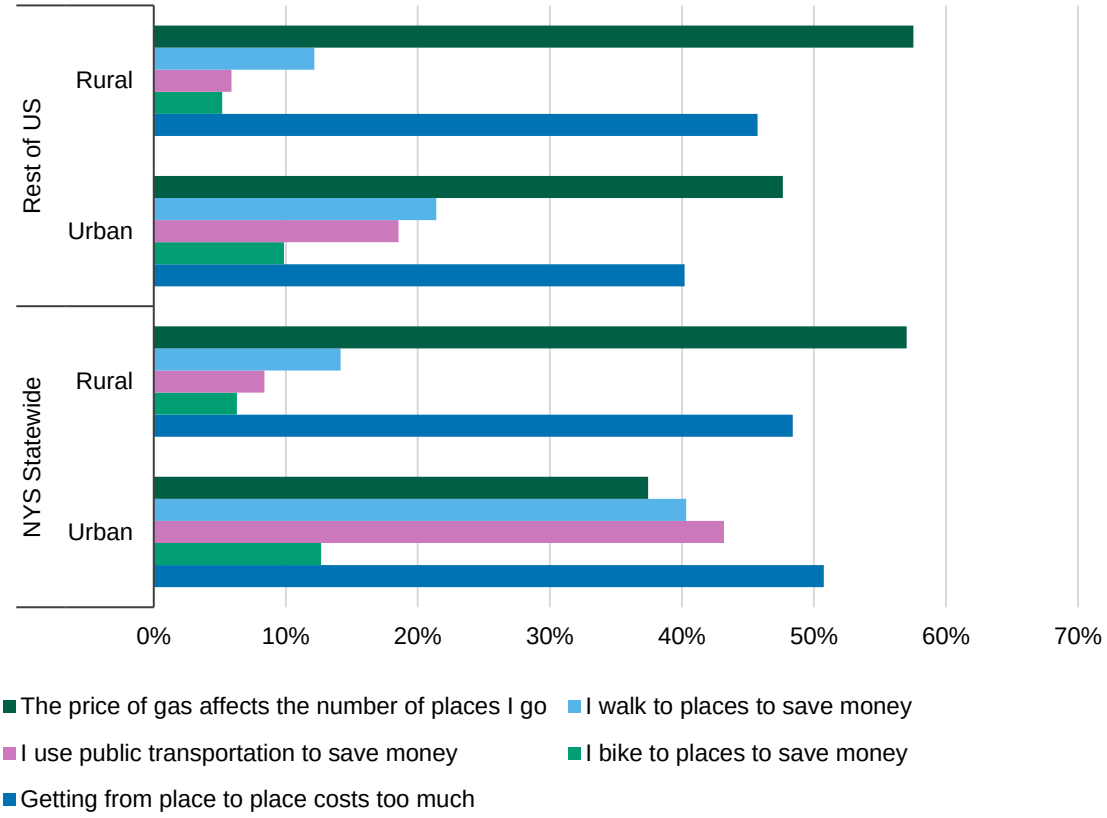



**Figure 6-12. Issues associated with travel concerns by rural classification (2017 NHTS)**

## 6.2 ACCESS TO THE INTERNET BY TECHNOLOGY

The majority of people access the Internet daily using desktops, laptops, or smartphones, regardless of region (Figure 6-13). However, the frequency of using tablets to access the Internet is lower compared to desktops or laptops. Overall, the percentage of residents who never use tablets is higher than those who never use smartphones, which is also higher than those who never use desktops or laptops across regions.

A higher share of residents in NYC (72%) and the NYMTC region (73%) use desktops or laptops daily to access the Internet compared to the statewide average of 70%. Conversely, a lower share of residents in the rest of NYS (66%) use desktops or laptops daily compared to the statewide average. Regarding internet access frequency, in New York State, 73% of individuals access the internet daily, while the rest of the United States reports a slightly higher rate of 75%.

A higher share of residents in NYC (76%) and NYMTC (76%) use smartphones daily to access the Internet compared to the statewide average of 73%. Conversely, a lower share of residents in the rest of NYS (69%) use smartphones daily compared to the statewide average. Furthermore, a higher share of

residents in NYS excluding NYMTC (23%) never use smartphones to access the Internet compared to the statewide average (19%). The frequency of using tablets to access the Internet is comparable across regions.

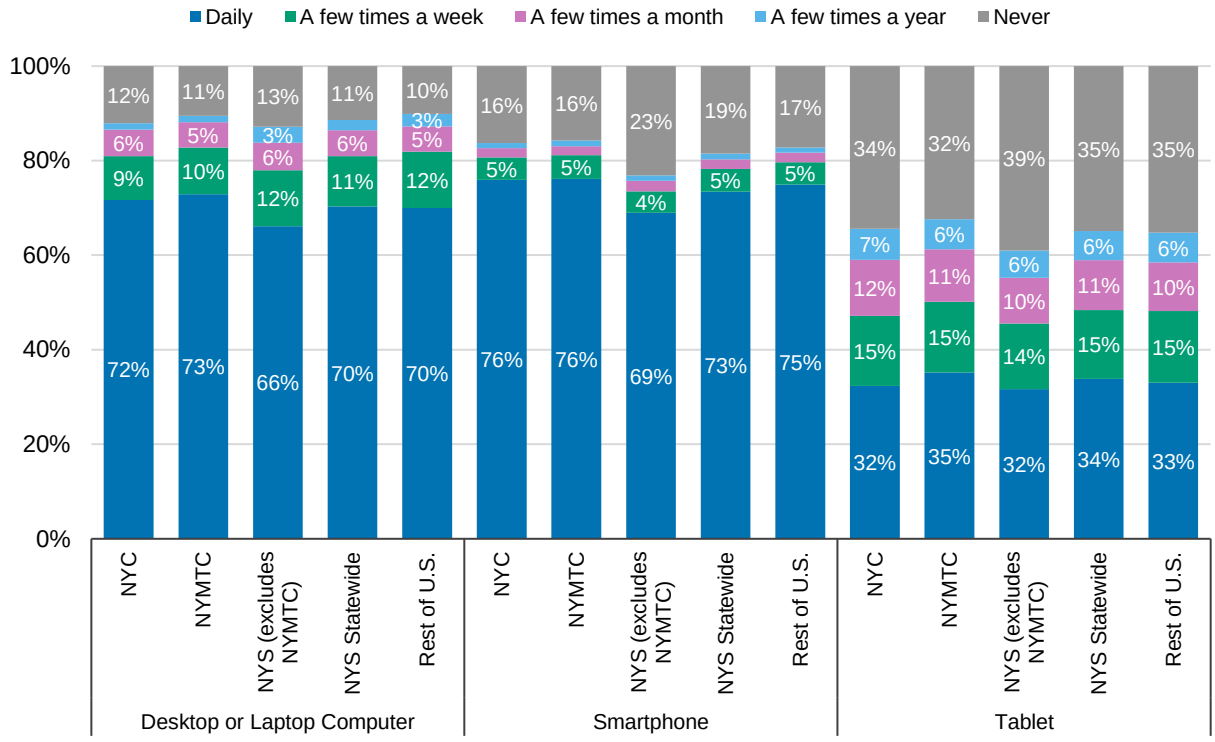



**Figure 6-13. Frequency of using Desktop or Laptop Computer, Smartphone, or Tablet to access the Internet by region (2017 NHTS)**

In both NYS and the rest of the United States, rural regions exhibit a slightly lower daily use of desktops or laptops to access the Internet (Figure 6-14). Specifically, 71% of urban residents in NYS use desktops or laptops daily to access the Internet, while 68% of their rural counterparts do so. Similarly, in the rest of the United States, 71% of urban residents use desktops or laptops daily, compared to 64% of rural residents.

Moreover, urban regions demonstrate a slightly lower daily use of smartphones to access the Internet than rural regions in both NYS (74% vs. 77%) and the rest of the United States (66% vs. 67%). The frequency of using tablets to access the Internet remains comparable across rural and urban areas.

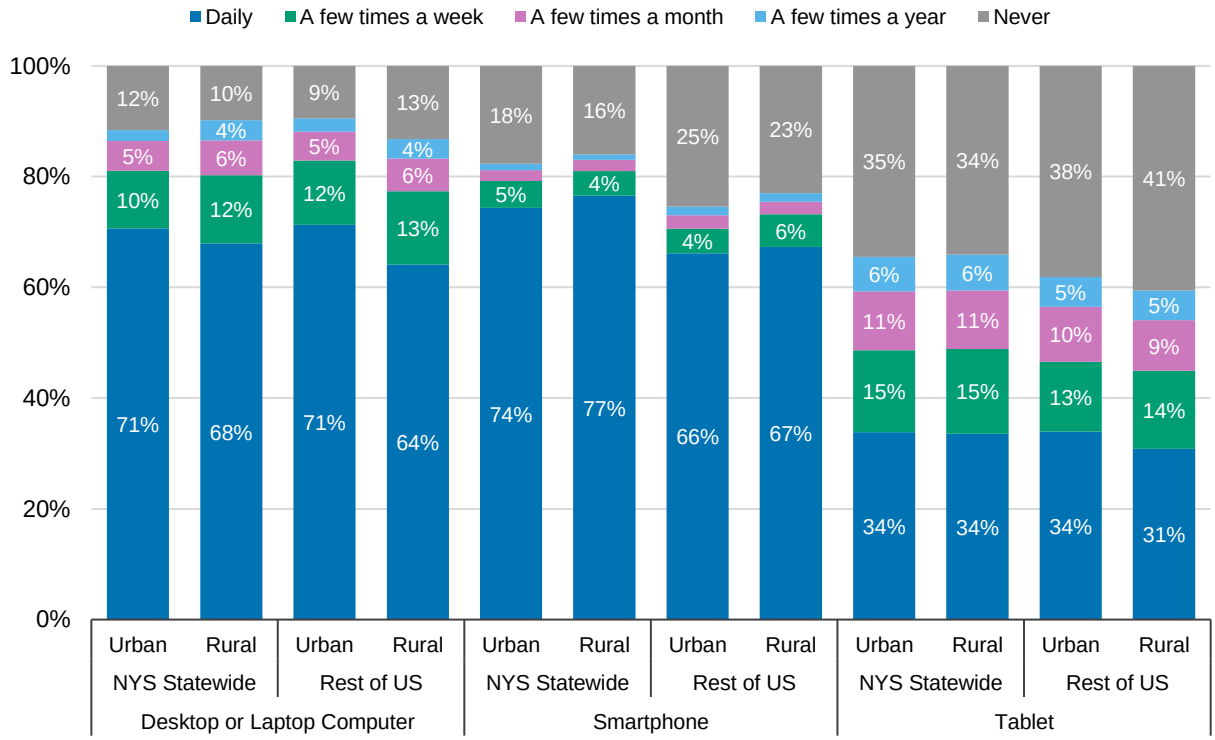



**Figure 6-14. Frequency of using Desktop or Laptop Computer, Smartphone, or Tablet to access the Internet by rural classification (2017 NHTS)**

# 7. IMPACT OF COVID (2022 NHTS)

In the 2022 NHTS, data were gathered to understand the influence of the COVID-19 pandemic on people's transportation-related behaviors. The survey asked about behaviors before and after COVID, defining the period before COVID as spanning from September 1, 2019, to February 29, 2020[3]. Specifically, respondents were asked about the impact on various aspects, including online purchases for home delivery, the utilization of public transit, commuting to physical work locations, and commuting to physical school locations. Additionally, respondents were asked to specify whether these impacts were perceived as permanent or temporary. This section offers an analysis of these aspects to discern how the impact differs between urban and rural areas in the Middle Atlantic Census Division and the rest of the United States.

## 7.1 COVID IMPACT ON ONLINE PURCHASES FOR HOME DELIVERY

Figure 7-1 illustrates the outcomes regarding whether COVID has prompted individuals to engage in more online purchases. Over 50% of the respondents, regardless of their regions, reported same online purchase behavior as before COVID. However, a noteworthy distinction emerges when considering urban and rural areas, particularly in the Middle Atlantic Census Division. Urban residents have a slightly higher likelihood (40%) of stating that they now make online purchases more frequently than before, compared to their rural counterparts (35%). This trend is consistent across the rest of the United States, with 40% of urban residents indicating an increase in online purchases, a statistically significant amount compared to the 36% reported by rural populations.

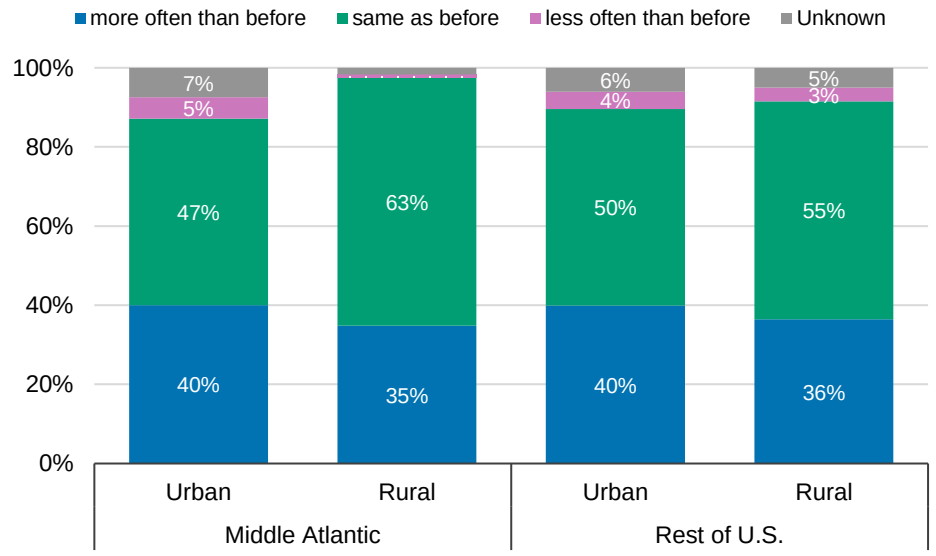



**Figure 7-1. COVID impact on online purchases for home delivery (2022 NHTS)**

Figure 7-2 presents the findings on whether individuals perceive the shift in online purchase behavior to be permanent or temporary. Notably, there is a consistent trend across all regions, indicating a lower percentage of people who consider the change as temporary compared to those who view it as a permanent shift. In the Middle Atlantic Census Division, a significant distinction emerges, with a statistically significantly higher proportion of individuals (21%) believing the change is temporary, in contrast to the rural population (7%). However, this discrepancy is not statistically significant in the rest

[3] Source: https://nhts.ornl.gov/assets/2022/doc/2022%20NextGen%20NHTS%20Annotated%20Survey.pdf

of the United States. The data underscores a prevailing sentiment among respondents that the transformation in online purchasing habits, triggered by the impact of COVID, is likely to be a lasting shift rather than a temporary adjustment.

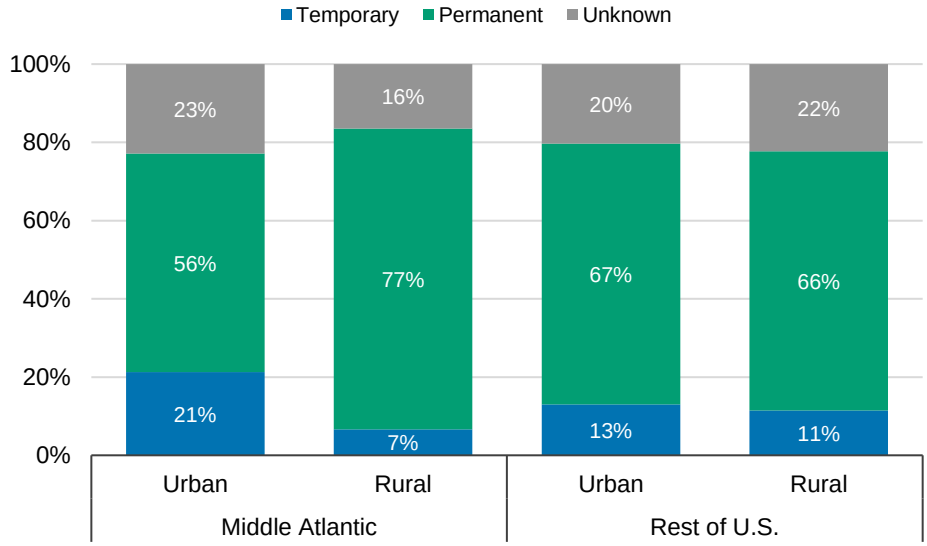



**Figure 7-2. Permanent or temporary COVID impact on online purchases for home delivery (2022 NHTS)**

## 7.2 COVID IMPACT ON PUBLIC TRANSIT USE

As shown in Figure 7-3, a majority of respondents reported using public transit either the same amount or less than before the onset of COVID. In the Middle Atlantic Census Division, 44% of urban residents noted a reduction in their use of public transit, slightly higher than the 36% reported by their rural counterparts. However, this difference is not statistically significant.

Similarly, in the rest of the United States, 34% of urban residents indicated a decrease in public transit usage, a figure statistically significantly lower than the corresponding urban percentage in the Middle Atlantic region. This decrease in public transit usage among urban residents in the rest of the United States is also statistically significantly higher than the 27% reported by rural individuals.

Regarding the permanence or temporality of the change in public transit use (Figure 7-4), there is a notable distinction in rural Middle Atlantic, where a statistically significantly higher percentage of individuals (60%) indicated that the change is temporary compared to their urban counterparts (37%). However, a closer examination of the data reveals a potential influencing factor—a relatively smaller sample size. Specifically, 27 respondents in rural Middle Atlantic expressed the view that the change is temporary, while only 6 people regarded it as a permanent shift. In the rest of the United States, responses are nearly evenly split, with no significant difference observed between urban and rural areas. The share of respondents who did not know is comparable to those who stated the change is permanent except for rural Middle Atlantic Census Division.

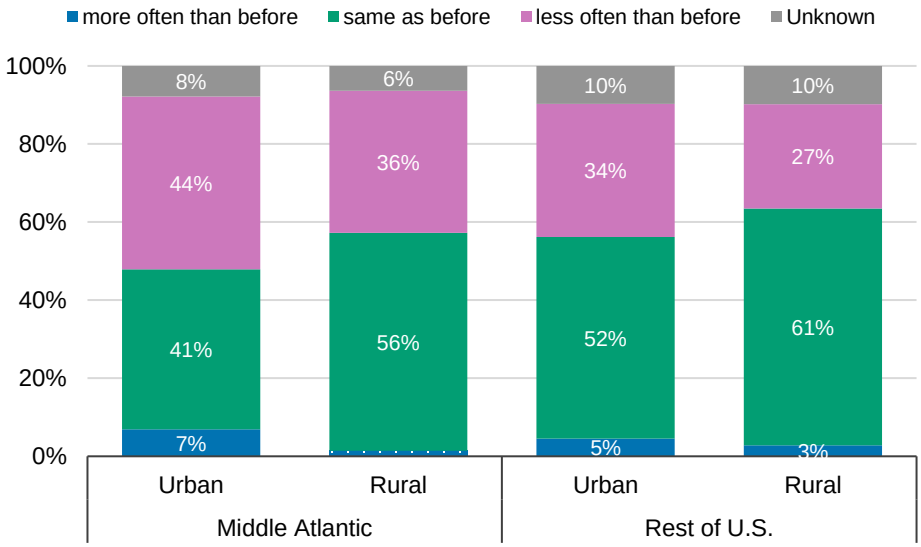



**Figure 7-3. COVID impact on use of public transit (2022 NHTS)**

Note: Shaded area indicates sample size less than 5.

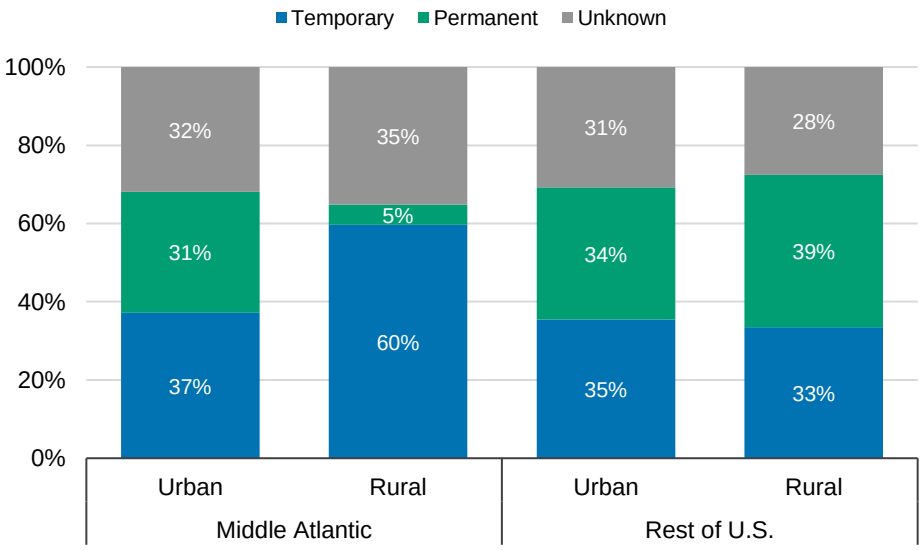



**Figure 7-4. Permanent or temporary COVID impact on use of public transit (2022 NHTS)**

## 7.3 COVID IMPACT ON TRAVEL TO A PHYSICAL SCHOOL LOCATION

Concerning travel to physical school or class locations, the majority of individuals reported maintaining the same patterns as before COVID (Figure 7-5). In the rest of the United States, a statistically significantly higher percentage of individuals in rural areas (78%) indicated a consistent pattern compared to their urban counterparts (70%). However, it is worth noting that the differences between urban and rural responses in the Middle Atlantic Census Division are not statistically significant.

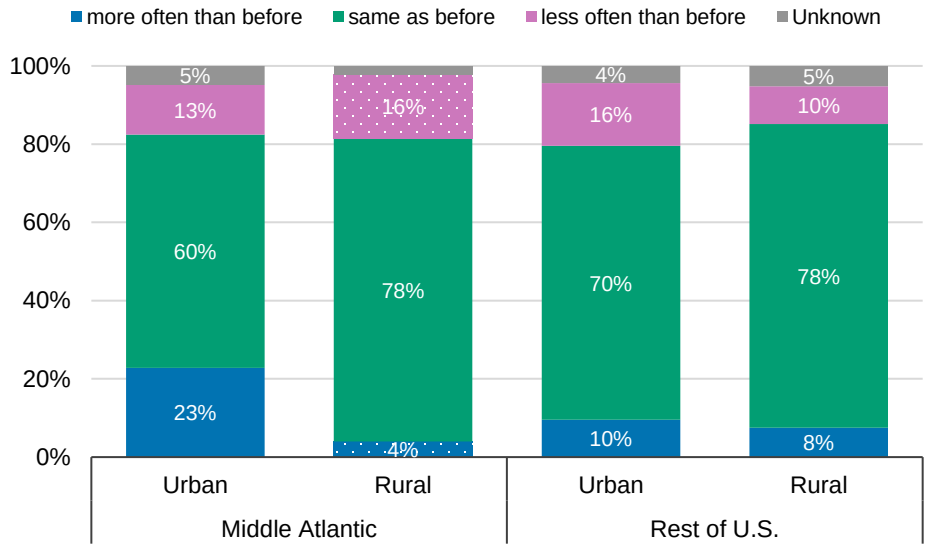



**Figure 7-5. COVID impact on travel to a physical school/class location (2022 NHTS)**

Note: Shaded area indicates sample size less than 5.

The majority of populations in the rest of the United States perceive the change in travel to physical school or class locations as permanent (Figure 7-6). Notably, a statistically significantly higher percentage of urban populations in the rest of the United States (41%) indicated that the change is temporary compared to their rural counterparts (32%). This contrasts with the pattern observed in the Middle Atlantic Census Division, where a statistically significantly higher percentage of rural populations (77%) believed the change is temporary compared to urban populations (28%). It is important to consider that this difference in the Middle Atlantic Census Division may be influenced by a relatively low sample size in rural areas rather than reflecting an actual behavioral pattern.

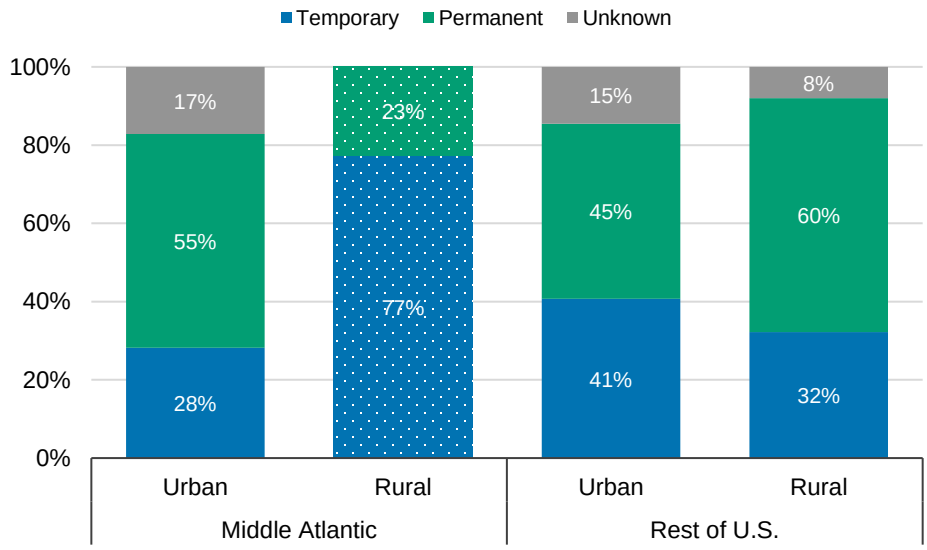



**Figure 7-6. Permanent or temporary COVID impact on travel to a physical school/class location (2022 NHTS)**

Note: Shaded area indicates sample size less than 5.

## 7.4 COVID IMPACT ON TRAVEL TO A PHYSICAL WORK LOCATION

The majority of people across regions maintained the same commute patterns as before COVID (Figure 7-7). However, a distinctive trend emerges when comparing urban and rural areas. In both the Middle Atlantic Census Division and the rest of the United States, a statistically significantly higher share of urban populations reported traveling less to a physical work location (33% and 31%, respectively) compared to their rural counterparts (21% and 19%, respectively). This consistent pattern suggests that, in the wake of COVID, urban populations were more likely than their rural counterparts to experience a reduction in commuting to physical work locations. This shift in commuting behavior aligns with broader trends in remote work and telecommuting that became more prevalent during the pandemic.

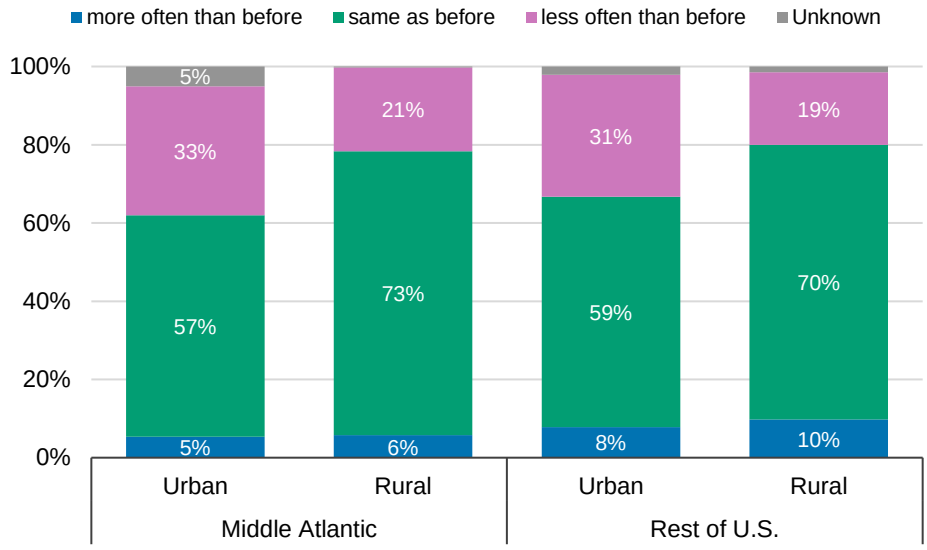



**Figure 7-7. COVID impact on travel to a physical work location (2022 NHTS)**

According to Figure 7-8, the prevailing sentiment among the majority of people, regardless of their rural or urban residence, is that the change in commute patterns is permanent. No statistically significant differences are observed between rural and urban populations in any specific region. A higher share of respondents stated unknown in the Middle Atlantic Census Division (30% in urban and 37% in rural) than in the rest of the United States (21% in urban and 17% in rural).

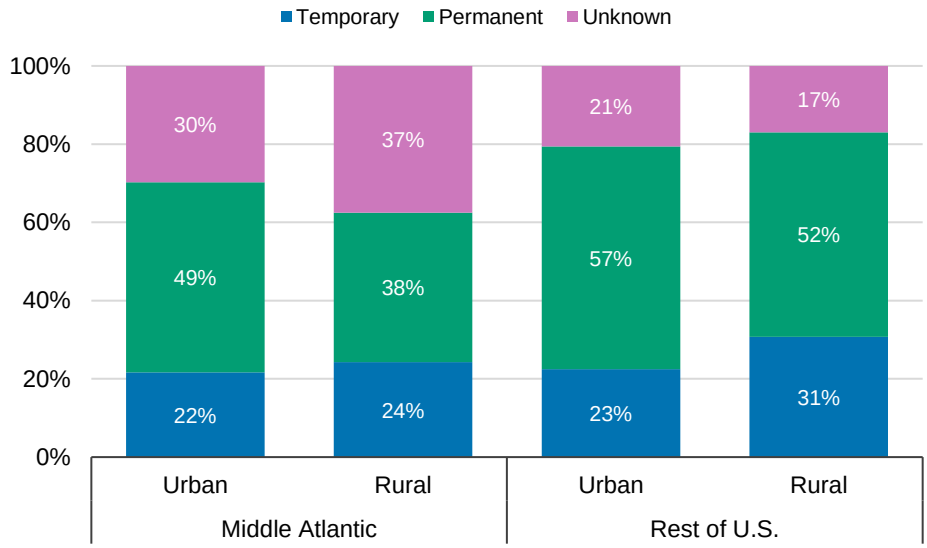



**Figure 7-8. Permanent or temporary COVID impact on travel to a physical work location (2022 NHTS)**

# 8. ANALYSIS OF ORIGIN-DESTINATION DATA

In this section, we conducted analyses employing two origin-destination (OD) datasets. First, we evaluated passenger trips using NHTS OD data for NYS's Metropolitan Statistical Area (MSA) versus non-MSA regions. Second, leveraging the Census Transportation Planning Program (CTPP) dataset, we compared the commute travel time between 2010 and 2016 in six States in Middle and South Atlantic Census Divisions.

## 8.1 NHTS PASSENGER OD DATA

We analyzed NHTS passenger OD data for MSA and non-MSA regions. The NHTS OD data leverages passive mobility data generated by in-vehicle and smartphone applications to summarize travel across 583 zones, including both MSA and non-MSA regions within each State and the District of Columbia. Among these zones, New York State contains a total of 12 MSA and 3 non-MSA zones, as depicted in Figure 8-1. The data provides comprehensive information on trip counts, transportation modes (including air, rail, vehicle, and active transportation and ferries), and trip purposes (both work-related and non-work-related).

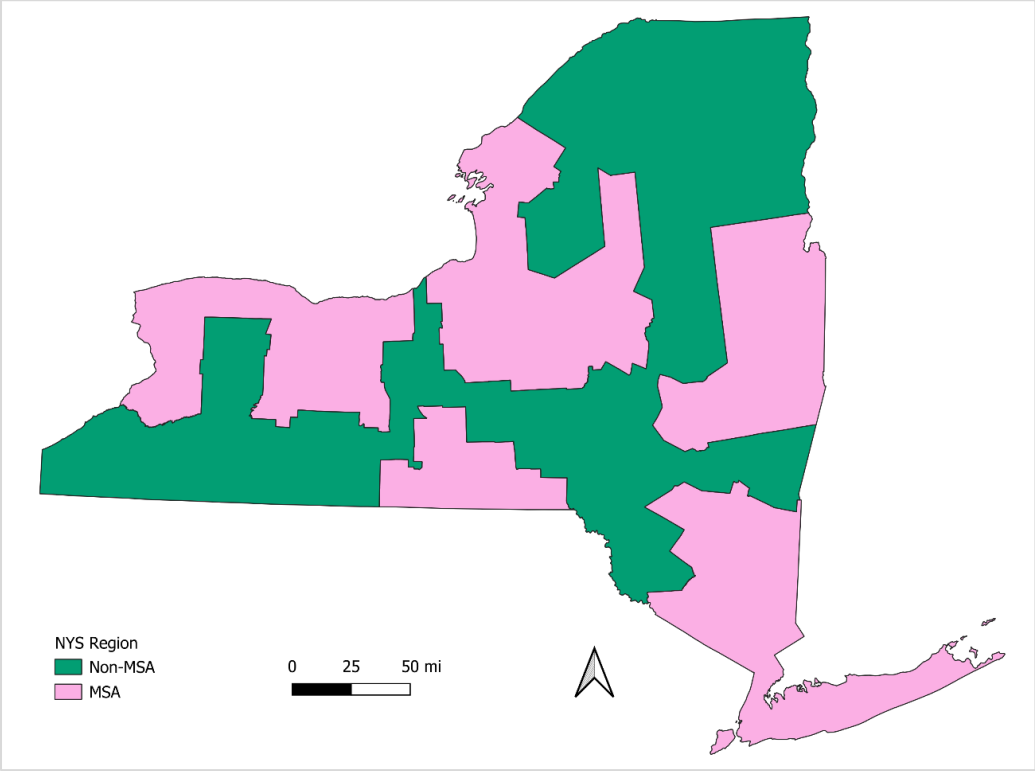



**Figure 8-1. NHTS zones in New York State by MSA and Non-MSA regions**

Table 8-1 shows the distribution of passenger trips originating in NYS by region and transportation mode, based on 2020, 2021, and 2022 passenger NHTS OD data. The majority of trips originated in MSA compared to non-MSA regions over the years. Regional share of trips for MSA slightly increased over the years. When examining trips by transportation mode, it is evident that vehicular trips are dominant in both MSA and non-MSA regions, followed by ATF, rail, and air trips. Notably, non-MSA areas generated a low number of rail trips (0.02% of total trips), whereas the MSA rail trips comprise approximately 4% to 6% of the total trips. Table 8-2 shows the distribution of the terminating trips over the years, showing similar numbers and patterns as the originating table.

**Table 8-1 Distribution of passenger trips originating in NYS by region and transportation mode (2020, 2021, and 2022 NHTS OD data)**

| Year | Region | Total Trips | Region Share | Transportation Mode | | | |
|---|---|---|---|---|---|---|---|
| | | | | Air | Rail | Vehicle | ATF[a] |
| 2020 | Non-MSA | 1,420,900,820 | 7.4% | 0.0% | 0.0% | 80.9% | 19.1% |
| | MSA | 17,850,029,753 | 92.6% | 0.1% | 3.9% | 67.0% | 29.0% |
| 2021 | Non-MSA | 1,312,616,944 | 6.5% | 0.0% | 0.0% | 82.5% | 17.5% |
| | MSA | 18,921,624,299 | 93.5% | 0.1% | 4.0% | 68.5% | 27.3% |
| 2022 | Non-MSA | 1,233,394,363 | 6.1% | 0.0% | 0.0% | 80.0% | 19.9% |
| | MSA | 18,886,558,107 | 93.9% | 0.2% | 5.6% | 66.3% | 27.9% |

[a] active transportation/ferries

**Table 8-2 Distribution of passenger trips terminating in NYS by region and transportation mode (2020, 2021, and 2022 NHTS OD data)**

| Year | Region | Total Trips | Region Share | Transportation Mode | | | |
|---|---|---|---|---|---|---|---|
| | | | | Air | Rail | Vehicle | ATF[a] |
| 2020 | Non-MSA | 1,422,329,127 | 7.4% | 0.0% | 0.0% | 80.9% | 19.1% |
| | MSA | 17,852,442,942 | 92.6% | 0.1% | 3.9% | 67.0% | 29.0% |
| 2021 | Non-MSA | 1,305,043,782 | 6.5% | 0.0% | 0.0% | 82.4% | 17.6% |
| | MSA | 18,925,776,352 | 93.5% | 0.1% | 4.1% | 68.5% | 27.3% |
| 2022 | Non-MSA | 1,227,937,213 | 6.1% | 0.0% | 0.0% | 79.9% | 20.0% |
| | MSA | 18,901,795,999 | 93.9% | 0.2% | 5.6% | 66.3% | 27.9% |

[a] active transportation/ferries

Figure 8-2 illustrates the distribution of passenger trips originating in NYS over the years, categorized by trip purpose, based on 2020, 2021, and 2022 NHTS passenger OD data. Trip purposes within the data include both work and non-work trips. It is evident that work trips have been on the rise over the years in both MSA and non-MSA regions. For instance, in 2020, non-MSA work trips accounted for 21%, and by 2022, this figure had increased to 30%. This change could potentially be attributed to the impact of the pandemic. Due to flexible work arrangements (such as working from home or hybrid work environments), there was a reduced need for commuting to the workplace. As the pandemic subsides, people are returning to the workplace, resulting in an increase in work trips. Notably, the percentage increase in work trips is higher in non-MSA regions compared to MSA regions. Conversely, non-work trips have decreased over the years in both MSA and non-MSA regions. Furthermore, Figure 8-3 shows the distribution of work and non-work trips based on the distance from origin to destination. The majority of both work and non-work trips originating in NYS fall within the 0-10 miles range, followed by trips spanning 10-25 miles, 25-50 miles, and others. This trend persisted across the years from 2020 to 2022. The proportion of trips covering distances of "0-10" miles is lower in non-MSA regions compared to MSA regions, indicating that MSA regions have more short-distance trips than non-MSA regions. Conversely, trips spanning 10-25 miles are more prevalent in non-MSA regions.

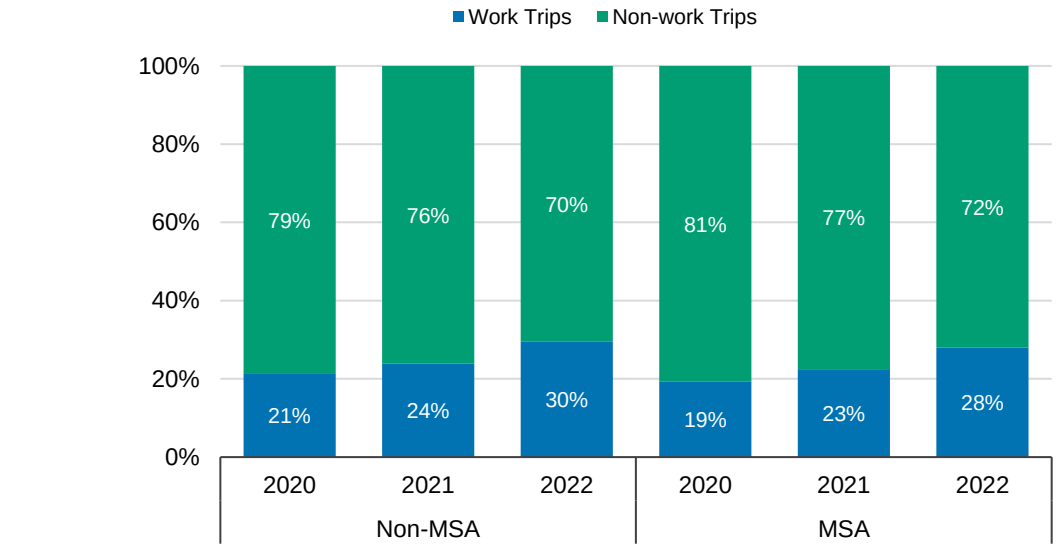



**Figure 8-2. Distribution of passenger trips over the years originating in NYS by trip purpose (2020, 2021, and 2022 NHTS OD data)**

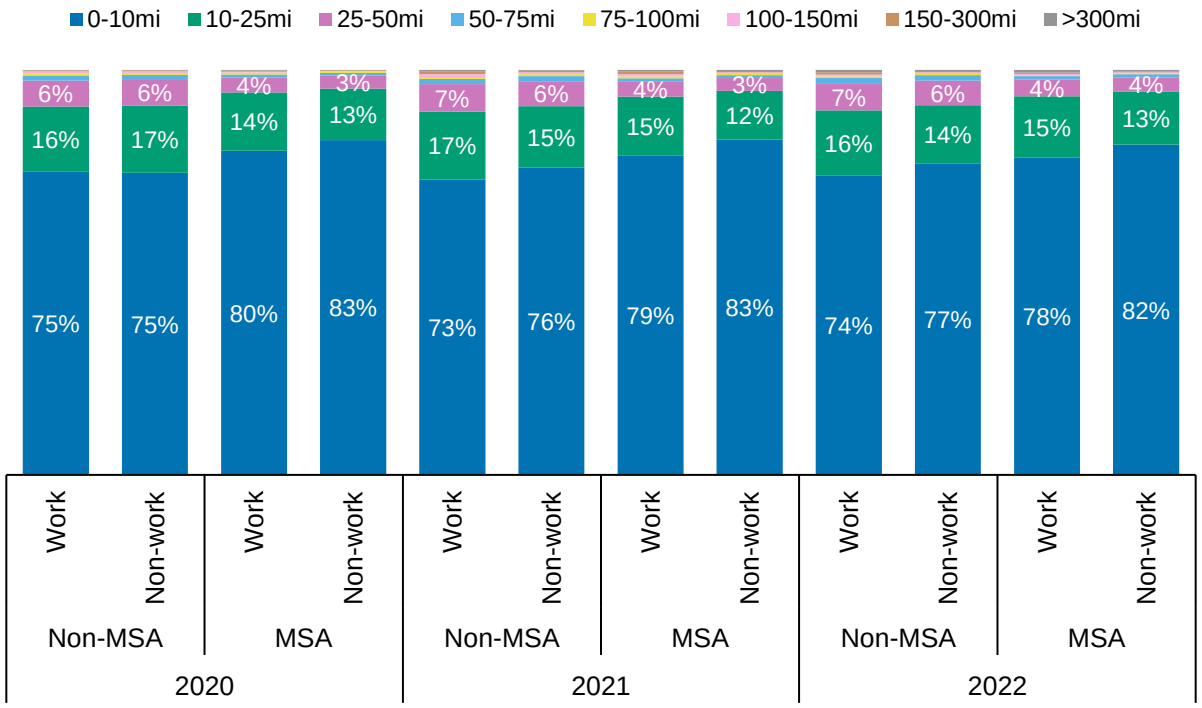



**Figure 8-3. Distribution of passenger trips over the years originating in NYS by trip purpose and distance (2020, 2021, and 2022 NHTS OD data)**

Table 8-3 presents the top five destination NHTS zones outside NYS for MSAs and non-MSAs regions, along with the number of annual passenger trips categorized by transportation modes based on the 2022 NHTS OD data. For the non-MSA NYS origin regions, the highest number of terminating passenger trips outside NYS was observed in "PA-NonMSA areas (NW)", accounting for 22% of all such trips

terminating outside NYS. This was followed by 11% for "Erie, PA", 8% for "PA-NonMSA areas (NE)", and others. Among the four modes of transportation, vehicle trips comprised the largest share in the top five destination zones outside NYS for trips originating in non-MSA NYS regions. For instance, 97% of the trips terminating in "PA-NonMSA areas (NW)" were taken by vehicles. Similarly, other destination zones reported vehicle shares exceeding 90%.

**Table 8-3 Top 5 destination zones outside NYS with the highest number of annual passenger trips by transportation mode (2022 NHTS OD data)**

| Origin NYS Region | Top 5 Destination Zones outside NYS | Destination State | Total Trips | Share of All Destination Zones | Transportation Mode | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | air | rail | vehicle | ATF[a] |
| Non-MSA | PA-NonMSA areas (NW) | PA | 4,220,957 | 22.3% | 0.0% | 0.0% | 96.6% | 3.4% |
| | Erie, PA | PA | 2,052,969 | 10.9% | 0.0% | 0.0% | 95.8% | 4.2% |
| | PA-NonMSA areas (NE) | PA | 1,501,834 | 7.9% | 0.0% | 0.0% | 97.2% | 2.8% |
| | Burlington-South Burlington, VT | VT | 1,246,953 | 6.6% | 0.0% | 0.0% | 94.7% | 5.3% |
| | PA-NonMSA areas (NE) | PA | 1,213,218 | 6.4% | 0.0% | 0.0% | 92.6% | 7.4% |
| MSA | New York-Newark-Jersey City, NY-NJ-PA | NJ | 277,384,995 | 57.0% | 0.0% | 8.9% | 83.7% | 7.5% |
| | Bridgeport-Stamford-Norwalk, CT | CT | 53,208,853 | 10.9% | 0.0% | 6.9% | 87.9% | 5.2% |
| | Miami-Fort Lauderdale-West Palm Beach, FL | FL | 7,492,959 | 1.5% | 50.2% | 3.0% | 46.8% | 0.0% |
| | Philadelphia-Camden-Wilmington, PA-NJ-DE-MD | PA | 7,126,747 | 1.5% | 0.4% | 23.5% | 76.1% | 0.0% |
| | PA-NonMSA areas (NE) | PA | 6,465,612 | 1.3% | 0.0% | 0.0% | 91.1% | 8.9% |

[a] active transportation/ferries

Figure 8-4 illustrates the distribution of passenger trips originating in NYS in 2022, categorized by distance and transportation mode for both MSA and non-MSA regions. The majority of vehicle trips originating in NYS non-MSA regions (70%) have trip distances between 0-10 miles, followed by trip distances between 25-50 miles (18%), 75-100 miles (8%), and others. For ATF transportation mode, 98% of the trips have distances less than 10 miles. Rail trips show that 18% of the trips were shorter in length (i.e., 0-10 miles) and 32% of the trips were between 10 and 25 miles. Regarding air trips, 62% of the trips have distances over 300 miles, followed by 32% for 50-75 miles trips, and others. On the other hand, passenger trips originating in NYS MSA regions exhibit a similar pattern for ATF, vehicle, and air travel. However, there are a few differences between MSA vs non-MSA originating trips. For example, it has been observed that 61% of the rail "0-10" trips originate in MSA compared to 18% for non-MSA regions.

The distribution of trip distance terminating in MSAs and Non-MSAs of NYS in 2022 is shown in Figure 8-5. The distribution is similar to the distribution of trip distances for trips originating in NYS.

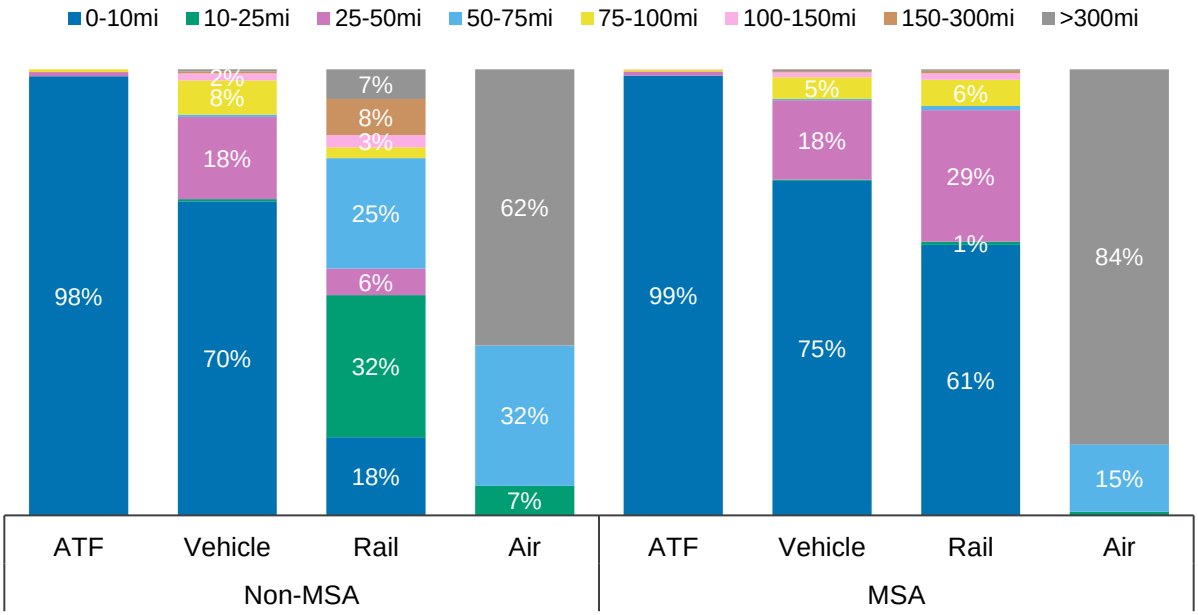



**Figure 8-4. Distribution of passenger trips originating in NYS by region, distance, and transportation mode (2022 NHTS OD data)**

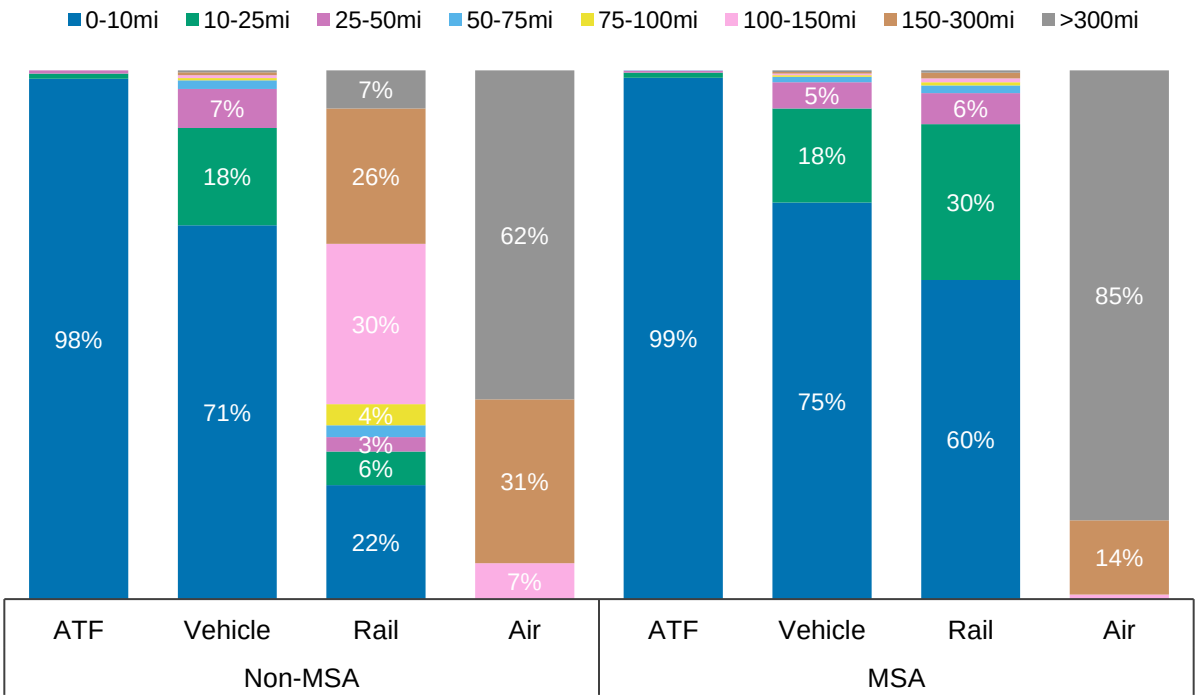



**Figure 8-5. Distribution of passenger trips terminating in NYS by region, distance, and transportation mode (2022 NHTS OD data)**

Figure 8-6 and Table 8-4 provide descriptive data and trends regarding the monthly trips originating from NYS's non-MSA and MSA regions in 2022. Notably, July and August experienced a higher percentage of total trips in non-MSAs, which is consistent with the usual increase in travel during the summer months and for vacations. This trend of monthly trip shares is similar across both MSAs and non-MSAs. In non-MSAs, vehicle trips accounted for the majority of trips among the four transportation modes, with vehicle trips gradually increasing over the months. For instance, vehicle trips comprised 74% of total trips in January, rising to 87% by November 2022. Furthermore, non-MSAs exhibited a higher percentage of vehicular trips compared to MSAs. On the other hand, ATF trips gradually decreased over the months in non-MSAs, with their percentage being lower than in MSAs. Furthermore, this similar trend had been observed in the monthly share of passenger trips terminating in MSA and non-MSA regions, presented in Table 8-5.

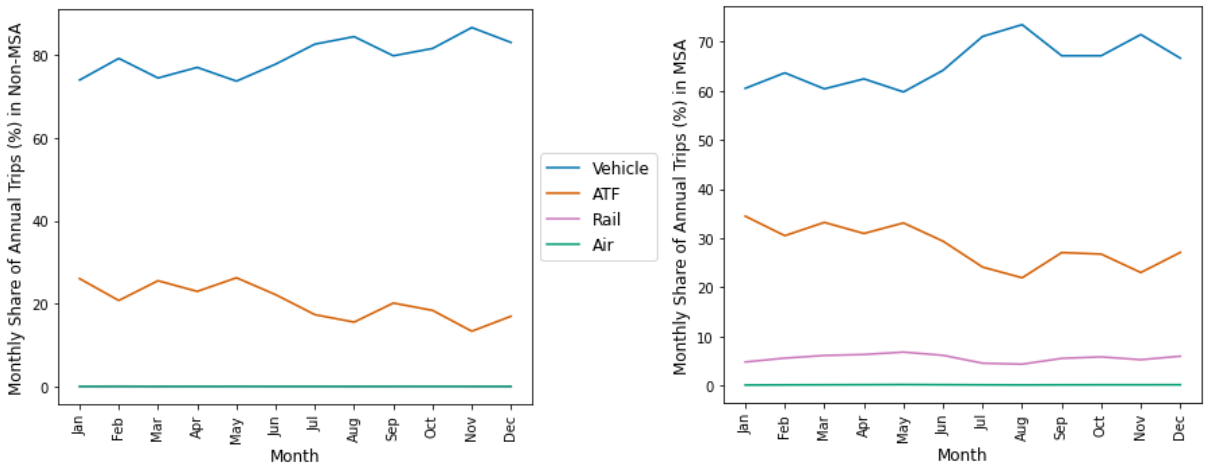



**Figure 8-6. Monthly distribution of passenger trips originating in NYS by transportation mode (2022 NHTS OD data). Left: non-MSA, Right: MSA**

**Table 8-4. Monthly share of passenger trips by mode originating in non-MSA and MSA regions (2022 NHTS OD data)**

| Region | Month | Total Trips | Monthly Share | Transportation Mode Share | | | |
|---|---|---|---|---|---|---|---|
| | | | | Air | Rail | Vehicle | ATF[a] |
| Non-MSA | Jan | 94,063,827 | 7.63% | 0.01% | 0.02% | 73.95% | 26.02% |
| | Feb | 89,554,299 | 7.26% | 0.01% | 0.06% | 79.18% | 20.75% |
| | Mar | 96,182,828 | 7.80% | 0.01% | 0.01% | 74.45% | 25.52% |
| | Apr | 85,537,159 | 6.94% | 0.02% | 0.02% | 77.01% | 22.94% |
| | May | 82,961,172 | 6.73% | 0.03% | 0.04% | 73.69% | 26.23% |
| | Jun | 96,037,887 | 7.79% | 0.02% | 0.03% | 77.80% | 22.15% |
| | Jul | 117,957,179 | 9.56% | 0.02% | 0.02% | 82.63% | 17.33% |
| | Aug | 134,602,387 | 10.91% | 0.01% | 0.02% | 84.43% | 15.53% |
| | Sep | 97,312,480 | 7.89% | 0.03% | 0.03% | 79.81% | 20.13% |
| | Oct | 116,723,774 | 9.46% | 0.02% | 0.04% | 81.58% | 18.36% |
| | Nov | 127,597,629 | 10.35% | 0.01% | 0.04% | 86.63% | 13.33% |
| | Dec | 94,805,976 | 7.69% | 0.02% | 0.01% | 83.03% | 16.95% |
| MSA | Jan | 1,284,719,979 | 6.80% | 0.13% | 4.83% | 60.53% | 34.51% |
| | Feb | 1,300,042,731 | 6.88% | 0.16% | 5.61% | 63.69% | 30.54% |
| | Mar | 1,469,234,698 | 7.78% | 0.18% | 6.15% | 60.43% | 33.24% |
| | Apr | 1,431,154,534 | 7.58% | 0.20% | 6.35% | 62.46% | 30.99% |
| | May | 1,313,260,793 | 6.95% | 0.23% | 6.84% | 59.80% | 33.13% |

| Region | Month | Total Trips | Monthly Share | Transportation Mode Share | | | |
|---|---|---|---|---|---|---|---|
| | | | | Air | Rail | Vehicle | ATF[a] |
| | Jun | 1,464,122,641 | 7.75% | 0.20% | 6.18% | 64.20% | 29.42% |
| | Jul | 1,816,167,485 | 9.62% | 0.17% | 4.58% | 71.10% | 24.15% |
| | Aug | 2,094,095,467 | 11.09% | 0.15% | 4.38% | 73.50% | 21.96% |
| | Sep | 1,629,872,112 | 8.63% | 0.17% | 5.56% | 67.17% | 27.10% |
| | Oct | 1,839,375,490 | 9.74% | 0.18% | 5.86% | 67.17% | 26.79% |
| | Nov | 1,784,171,113 | 9.45% | 0.18% | 5.29% | 71.49% | 23.04% |
| | Dec | 1,460,150,373 | 7.73% | 0.19% | 6.00% | 66.67% | 27.14% |

[a] active transportation/ferries

**Table 8-5. Monthly share of passenger trips by mode terminating in non-MSA and MSA regions (2022 NHTS OD data)**

| Region | Month | Total Trips | Monthly Share | Transportation Mode Share | | | |
|---|---|---|---|---|---|---|---|
| | | | | Air | Rail | Vehicle | ATF[a] |
| Non-MSA | Jan | 94,078,347 | 7.66% | 0.01% | 0.01% | 73.92% | 26.05% |
| | Feb | 89,551,973 | 7.29% | 0.01% | 0.04% | 79.18% | 20.78% |
| | Mar | 96,001,840 | 7.82% | 0.02% | 0.01% | 74.37% | 25.60% |
| | Apr | 85,114,770 | 6.93% | 0.01% | 0.02% | 76.97% | 23.00% |
| | May | 82,456,752 | 6.72% | 0.02% | 0.03% | 73.55% | 26.39% |
| | Jun | 95,586,336 | 7.78% | 0.02% | 0.02% | 77.71% | 22.25% |
| | Jul | 117,182,515 | 9.54% | 0.01% | 0.01% | 82.55% | 17.43% |
| | Aug | 133,966,216 | 10.91% | 0.01% | 0.02% | 84.36% | 15.61% |
| | Sep | 96,976,488 | 7.90% | 0.01% | 0.03% | 79.72% | 20.23% |
| | Oct | 115,932,961 | 9.44% | 0.01% | 0.03% | 81.49% | 18.47% |
| | Nov | 126,717,846 | 10.32% | 0.01% | 0.03% | 86.50% | 13.46% |
| | Dec | 94,309,896 | 7.68% | 0.01% | 0.01% | 82.97% | 17.01% |
| MSA | Jan | 1,285,247,056 | 6.80% | 0.14% | 4.89% | 60.48% | 34.49% |
| | Feb | 1,300,810,243 | 6.88% | 0.19% | 5.64% | 63.65% | 30.52% |
| | Mar | 1,472,901,565 | 7.79% | 0.19% | 6.20% | 60.45% | 33.16% |
| | Apr | 1,431,172,177 | 7.57% | 0.19% | 6.38% | 62.42% | 31.00% |
| | May | 1,315,788,184 | 6.96% | 0.24% | 6.87% | 59.82% | 33.07% |
| | Jun | 1,466,195,343 | 7.76% | 0.21% | 6.23% | 64.16% | 29.39% |
| | Jul | 1,818,051,881 | 9.62% | 0.17% | 4.61% | 71.08% | 24.14% |
| | Aug | 2,095,780,785 | 11.09% | 0.15% | 4.41% | 73.48% | 21.96% |
| | Sep | 1,629,707,239 | 8.62% | 0.19% | 5.60% | 67.11% | 27.11% |
| | Oct | 1,839,676,063 | 9.73% | 0.17% | 5.91% | 67.12% | 26.80% |
| | Nov | 1,784,883,936 | 9.44% | 0.18% | 5.29% | 71.50% | 23.04% |
| | Dec | 1,461,386,147 | 7.73% | 0.21% | 5.99% | 66.68% | 27.12% |

[a] active transportation/ferries

## 8.2 CTPP PASSENGER OD DATA

The comparison of travel times between personal vehicles and public transportation was conducted across six States in Middle and South Atlantic Census Divisions—New York (NY), New Jersey (NJ), Pennsylvania (PA), Massachusetts (MA), Maryland (MD), and Virginia (VA)—for the years 2010 and

2016, as illustrated in Figure 8-7. It was observed that, irrespective of the region, public transportation travel times generally exceeded those of personal vehicles. In urban areas, travel times for personal vehicles remained relatively consistent between 2010 and 2016. Furthermore, in both 2010 and 2016, urban areas consistently exhibited higher public transportation travel times compared to rural areas across all six states. Additionally, within both urban and rural settings, New Jersey and Maryland stood out with slightly longer public transportation travel times compared to the other states.

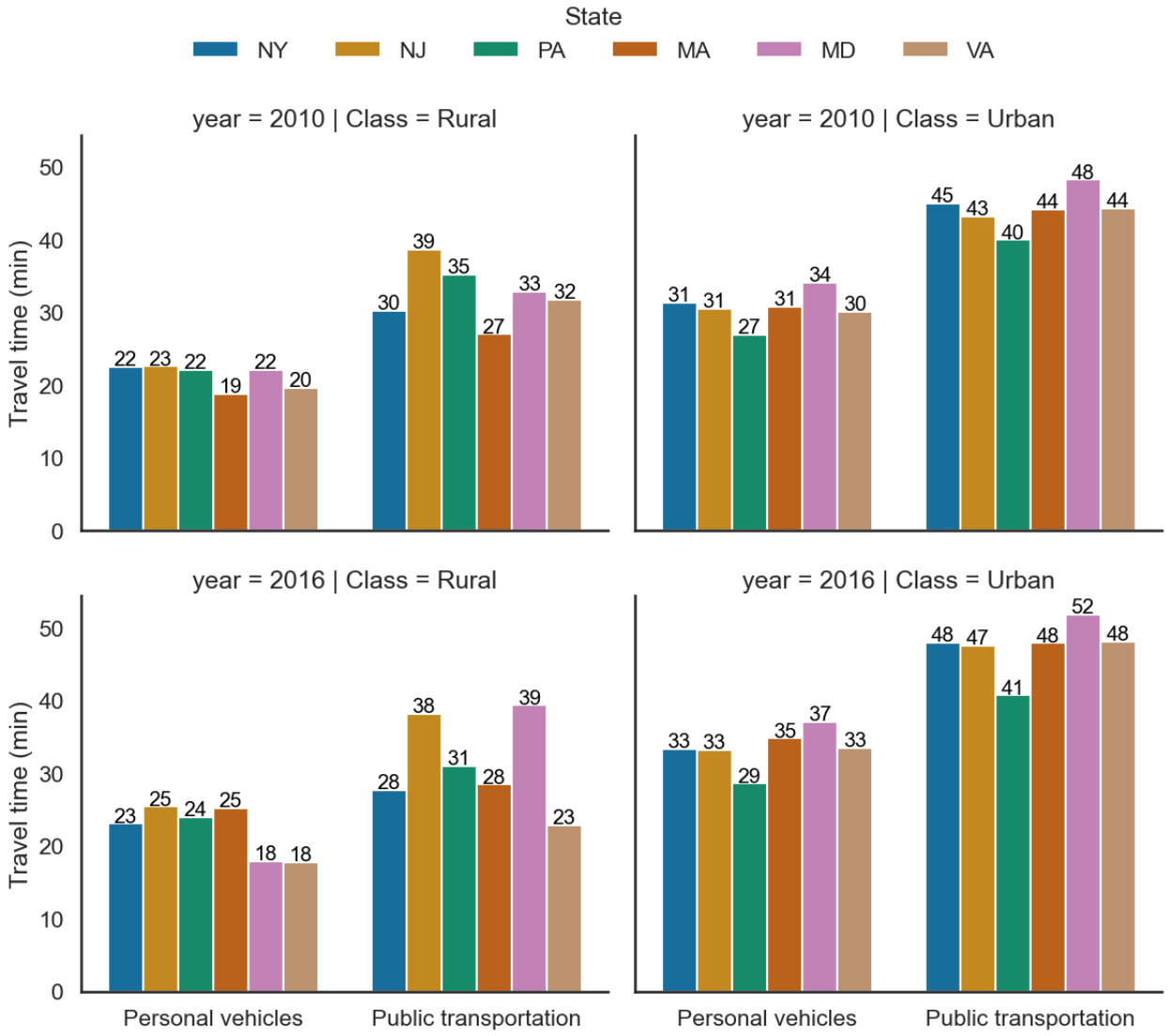



**Figure 8-7. Travel time of personal vehicles and public transportation in six States in Middle and South Atlantic Census Divisions (2010 and 2016 CTPP data)**

# 9. CONCLUSIONS

This study explored distinct demographic and transportation patterns between urban and rural areas in New York State (NYS). Urban areas were characterized by a diverse population with a significant number of households without a vehicle. Vehicle ownership in these areas varied based on income levels, and there is a rising trend of households without children. In contrast, rural areas predominantly consisted of White populations, with fewer Black/African American residents. Vehicle ownership was less prevalent but more income-dependent, and the proportion of households without children is declining. This disparity suggests potential challenges in mobility options for low-income or minority individuals in rural regions. Future research could be conducted to enhance accessibility and transportation alternatives for different demographic and geographical brackets.

Additionally, urban residents were more inclined to utilize public transportation to save money, with New York City (NYC) leading efforts in the preference for walking as a cost-saving measure compared to other regions within NYS and the rest of the United States. This discrepancy indicates an opportunity to explore more affordable transportation solutions to mitigate transportation costs. Future studies could also focus on evaluating the walking infrastructure in NYC and enhancing pedestrian safety measures to encourage walking as a viable transportation option.

In summary, this study's findings highlight the need for targeted interventions to address the unique mobility challenges faced by low-income or minority individuals in rural areas, evaluate cost-effective transportation alternatives, and understand the economic ramifications of changing commuting patterns on rural employment centers. Future research directions could encompass exploring innovative mobility solutions, enhancing walking infrastructure, and conducting economic analyses to support informed policy decisions and improve transportation equity across urban and rural areas in NYS.

The data collection process had certain limitations that impacted our ability to make direct comparisons across different years. One significant limitation was the variability in how trip distances were collected in the surveys over time. Prior to 2017, respondents self-reported trip distances. In 2017, trip distances were calculated using route geometry obtained from the Google API. To facilitate the comparisons with the previous surveys, an adjusted distance variable was estimated for the 2017 data. However, in 2022, trip distances were again derived from the Google API without estimating an adjusted distance variable, making direct comparisons only possible with the 2017 data. This inconsistency in data collection methods across years introduces a potential bias in estimation. Consequently, while researchers could analyze trends within each year, caution should be exercised when comparing trip distances between different years due to these methodological differences.

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# APPENDIX A. GLOSSARY OF NHTS TERMS

## APPENDIX A. GLOSSARY OF NHTS TERMS

This glossary provides the most commonly used terms in the National Household Travel Survey (NHTS) and the terms used in this report, along with definitions of those terms. These definitions are provided to assist the user in interpreting the NHTS data.

| | |
|---|---|
| **Adult** | For NHTS, this is defined as a person 18 years or older. |
| **Block Group** | A subdivision of a Census Tract that contains 600 to 3,000 people. The source used for the 2017 NHTS was the United States Census Bureau 2014 TIGER/Line Shapefiles (derived from Census 2010 definition). |
| **Census Tract** | A small subdivision of a county, generally have a population size between 1,200 and 8,000 people, with an optimum size of 4,000 people. The geographic size of the tract may vary considerably, depending on population density. Tracts were designed to be homogeneous in regard to population characteristics, economic status and living conditions when they were first delineated. Since the first tracts were delineated for the 1890 Census, today's tracts may be far from homogeneous. The source used for the 2017 NHTS was the United States Census Bureau 2014 TIGER/Line Shapefiles (derived from Census 2010 definition). |
| **Destination** | For travel day trips, the destination is the point at which there is a break in travel, except if the break is only to change vehicles or means of transport. |
| **Driver** | A driver is a person who operates a motorized vehicle. If more than one person drives on a single trip, the person who drives the most miles is classified as the principal driver. |
| **Elderly** | A person 65 years or older. |
| **Elderly Household** | Households with one or more persons aged 65 years or older. |
| **Employed** | A person is considered employed if (s)he worked for pay, either full time or part time, during the week before the interview. This includes persons who work at home or persons who have more than one job. |
| **Household** | A group of persons whose usual place of residence is a specific housing unit; these persons may or may not be related to each other. The total of all US households represents the total civilian non-institutionalized population. A household does not include group quarters (i.e., 10 or more persons living together, none of whom are related). |

**Household Income**

Household income is the money earned by all family members in a household, including those temporarily absent. Annual income consisted of the income earned 12 months preceding the interview. Household income includes monies from all sources, such as wages and salary, commissions, tips, cash bonuses, income from a business or farm, pensions, dividends, interest, unemployment or workmen's compensation, social security, veterans' payments, rent received from owned property (minus the operating costs), public assistance payments, regular gifts of money from friends or relatives not living in the household, alimony, child support, and other kinds of periodic money income other than earnings. Household income excludes in-kind income such as room and board, insurance payments, lump-sum inheritances, occasional gifts of money from persons not living in the same household, withdrawal of savings from banks, tax refunds, and the proceeds of the sale of one's house, car, or other personal property.

**Household Members**

Household members include all people, whether present or temporarily absent, whose usual place of residence is in the sample unit. Household members also include people staying in the sample unit who have no other usual place of residence elsewhere.

**Household Vehicle**

A household vehicle is a motorized vehicle that is owned, leased, rented or company-owned and available to be used regularly by household members during the two-week travel period. Household vehicles include vehicles used solely for business purposes or business-owned vehicles, as long as they are driven home and can be used for the home to work trip (e.g., taxicabs and police cars). Household vehicles include all vehicles that were owned or available for use by members of the household during the travel period, even though a vehicle may have been sold before the interview. Vehicles excluded from household vehicles are those which were not working and were not expected to be working within 60 days, and vehicles that were purchased or received after the designated travel day.

**Journey-to-Work Trips (Commute Trips)**

Includes travel to and from a place where one reports for work. Does not include any other work-related travel. Does not include any trips for persons who work at home.

**Means of Transportation**

A mode of travel used for going from one place (origin) to another (destination). A means of transportation includes private and public transit modes, as well as walking.

The following transportation modes, grouped by major mode, are included in the NHTS data.

**Active Modes** – include modes where a person must actively move from one place to the next.

1. Walk: This category includes walking and jogging.

2. Bicycle: This category includes bicycles of all speeds and sizes that do not have a motor.

**Private Vehicle** – a stipulation for being a private vehicle is that the vehicle is privately operated, including rental cars.

3. Car. Includes cars and station wagons. Leased and rented cars are included if they are privately operated and not used for picking up passengers in return for fare.

4. Sport Utility Vehicle. Includes vehicles that are a hybrid of design elements from a van, a pickup truck and a station wagon. Examples include a Ford Explorer, Jeep Cherokee, or Nissan Pathfinder.

5. Van. Includes vans or minivans designed to carry 5 to 13 passengers, or to haul cargo.

6. Pickup Truck. Includes vehicles with an enclosed cab that usually accommodates 2-3 passengers and has an open cargo area in the rear. Late model pickups often have a back seat that allows for total seating of 4-6 passengers. Pickup trucks usually have the same size of wheel-base as a full-size station wagon. This category also includes pickups with campers.

7. Motorcycle/Moped: This category includes large, medium, and small motorcycles and mopeds.

8. RV (Motor Home, ATV, snowmobile): An RV or motor home includes a self-powered recreational vehicle that is operated as a unit without being towed by another vehicle (e.g., a Winnebago motor home). This category also includes ATVs and snowmobiles.

18. Rental Car: Includes Zipcar and Car2Go, in addition to commercially rented cars for private use.

9. Golf Cart/Segway: This includes all electric or gas operated vehicles designed for use on a golf course, but whose use has recently extended to use within smaller, often gated, communities. NOTE: Travel taken via golf cart is NOT included in vehicle trips and vehicle miles of travel.

**Public Transportation**, as used in FHWA publications and analysis of NHTS data, typically includes the following, that are indicated in bold below, public or commuter bus, commuter rail, and subway/elevated rail/light rail/streetcar.

Bus: This category includes:

11. **Public or Commuter Buses**, these are local public transit buses that are available to the general public and buses used for short-distance public transport purposes (e.g., city bus or public bus), school buses,

13. Private/Charter/Tour/Shuttle Buses, these are private buses operating on a fixed schedule between population centers, and are buses that shuttle passengers from one fixed place to another (e.g., airport shuttles), and

14. City-to-City Buses, these are buses that run from one urban center to the other (e.g., Greyhound).

Train: This category includes:

15. **Amtrak/Commuter Rail** that run from one urban center to another,

16. **Subway/Elevated Rail/Light Rail/Street Car** (also known as rail rapid transit) is a high capacity system operated on a fixed rail or guide way system on a private right of way, and vehicles that run on a fixed rail system powered by electricity obtained from an overhead power distribution system.

**Other Modes**

10. School Buses.

12. Paratransit /Dial-A-Ride.

17. Taxi/limo. Taxis include the use of a taxicab by a passenger for fare, including limousines. In 2017, this category also includes ridesharing such as Uber and Lyft.

19. Airplane. Airplanes include commercial airplanes and smaller planes that are available for use by the general public in exchange for a fare. Private and corporate planes and helicopters are also included.

20. Boat/Ferry/Water Taxi. This includes travel by passenger line ferries.

97. Something else. Includes any type of transportation not previously listed (skate boards, roller blades, sailboats, cruise ships, etc.).

**Metropolitan Statistical Area (MSA)** Except in the New England states, a metropolitan statistical area is a county or group of contiguous counties which contains at least one city of 50,000 inhabitants or more, or "twin cities" with a combined population of at least 50,000. In addition, contiguous counties are included in an MSA if, according to certain criteria, they are socially and economically integrated with the central city. In the New England states, MSA's consist of towns and cities instead of counties. The source used for the 2017 NHTS was the United States Census Bureau 2014 TIGER/Line Shapefiles (derived from Census 2010 definition).

**Motorized Vehicle** Motorized vehicles are all vehicles that are licensed for highway driving. Snow mobiles and minibikes are specifically excluded.

**New York City (NYC)** New York City is defined in this report as the five-county area: Bronx, Kings, Queens, New York (Manhattan), and Richmond.

**Occupancy** Occupancy is the number of persons, including driver and passenger(s) in a vehicle.

**Occupancy Rate** NHTS occupancy rates are generally defined as the mileage-weighted averages of the number of persons on a vehicle trip.

**Origin** Origin is the starting point of a trip.

| | |
|---|---|
| **Passenger** | For a specific trip, a passenger is any occupant of a motorized vehicle, other than the driver. |
| **Person Miles of Travel (PMT)** | PMT is a primary measure of person travel. When one person travels one mile, one person mile of travel results. Where 2 or more persons travel together in the same vehicle, each person makes the same number of person miles as the vehicle miles. Therefore, four persons traveling 5 miles in the same vehicle results in 20 person miles (4 x 5 = 20). |
| **Person Trip** | A person trip is a trip by one or more persons in any mode of transportation. Each person is considered as making one person trip. For example, four persons traveling together in one auto are counted as four person trips. |
| **Population Density** | Category of population density (persons per square mile) in the Census Block Group of the household's home location including 0-99, 100-499, 500-999, 1000-1999, 2000-3999, 4000-9999, 10000-24999, and 25000-999999. |
| **Privately Owned Vehicle (POV)** | A privately-owned vehicle or privately-operated vehicle. Either way, the intent here is that this is not a vehicle available to the public for a fee, such as a bus, subway, and taxi. |
| **Travel Day** | A travel day is a 24-hour period from 4:00 a.m. to 3:59 a.m. designated as the reference period for studying trips and travel by members of a sampled household. |
| **Travel Day Trip** | A travel day trip is defined as any time the respondent went from one location to another by private motor vehicle, public transportation, bicycle, walking, or other means during the NHTS assigned reporting travel day. However, a separate trip is not counted in two instances:<br>1. When the sole purpose for the trip is to get to another vehicle or mode of transportation in order to continue to the destination.<br>2. Travel within a shopping center, mall or shopping areas of 4-5 blocks is to be considered as travel to one destination. |
| **Vehicle** | In the 2017 NHTS, the term vehicle includes autos, passenger vans, sport utility vehicles, pickups and other light trucks, RVs, motorcycles and mopeds owned or available to the household. |
| **Vehicle Miles of Travel (VMT)** | VMT is a unit to measure vehicle travel made by a private vehicle, such as an automobile, van, pickup truck, or motorcycle. Each mile traveled is counted as one vehicle mile regardless of the number of persons in the vehicle. |
| **Vehicle Occupancy** | Vehicle occupancy is the number of persons, including driver and passenger(s) in a vehicle; also includes persons who did not complete a whole trip. |
| **Vehicle Occupancy Rate** | NHTS occupancy rates are generally calculated as person miles divided by vehicle miles. |

| | |
|---|---|
| **Vehicle Trip** | A trip by a single POV regardless of the number of persons in the vehicle. |
| **Work-Related Travel** | These are trips related to business activities except travel to the place of work: for example, a plumber drives to a wholesale dealer to purchase supplies for his business or a company executive travels from his office to another firm to attend a business meeting. Business, out-of-town trips, and professional conventions are also included. |
| **Worker** | See “Employed.” |