

Northeast Corridor Intercity Travel Study

September 2015





Congress established the Northeast Corridor Infrastructure and Operations Advisory Commission (the Commission) to develop coordinated strategies for improving the Northeast's core rail network in recognition of the inherent challenges of planning, financing, and implementing major infrastructure improvements that cross multiple jurisdictions. The expectation is that by coming together to take collective responsibility for the NEC, these

disparate stakeholders will achieve a level of success that far exceeds the potential reach of any individual organization.

The Commission is governed by a board comprised of one member from each of the NEC states (Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, and Maryland) and the District of Columbia; four members from Amtrak; and five members from the U.S. Department of Transportation (DOT). The Commission also includes non-voting representatives from four freight railroads, states with connecting corridors and several commuter operators in the Region.



Contents

1. Executive Summary	4
<hr/>	
2. Methodology Overview	6
<hr/>	
3. Trip Profile	8
<hr/>	
3.1 Intercity Trip Estimates	8
3.2 Vehicle Occupancy/Party Size	11
3.3 Intercity Trip Purpose	12
4. Traveler Profile	14
<hr/>	
4.1 Demographics	14
4.2 Reason for Choosing Mode	16
4.3 If Chosen Mode Were Not an Option	17



1. Executive Summary

As part of its mission to implement a long-term regional investment strategy for the Northeast Corridor (NEC), the Northeast Corridor Commission is interested in all long-distance travel in the NEC Region. While the Commission enjoys access to quality data on rail and air travel, no such data has yet been available for automobile and intercity bus travel. To fill this data gap, RSG was commissioned to conduct separate studies of intercity automobile and bus travel around the NEC.

The Northeast Corridor Auto Origin-Destination Study examined intercity automobile travel volumes and patterns in the entire NEC Region. It employed novel analysis of observed travel behavior through the collection of anonymous toll transaction data, photographic license plate capture, and a large-scale driver survey.

The Northeast Corridor Intercity Bus Study consisted of a survey of bus passengers coupled with a careful compilation of bus schedule data. Using both of these datasets in tandem yielded an accurate picture of bus travel. The bus study covered a similar geographic extent to the auto study.

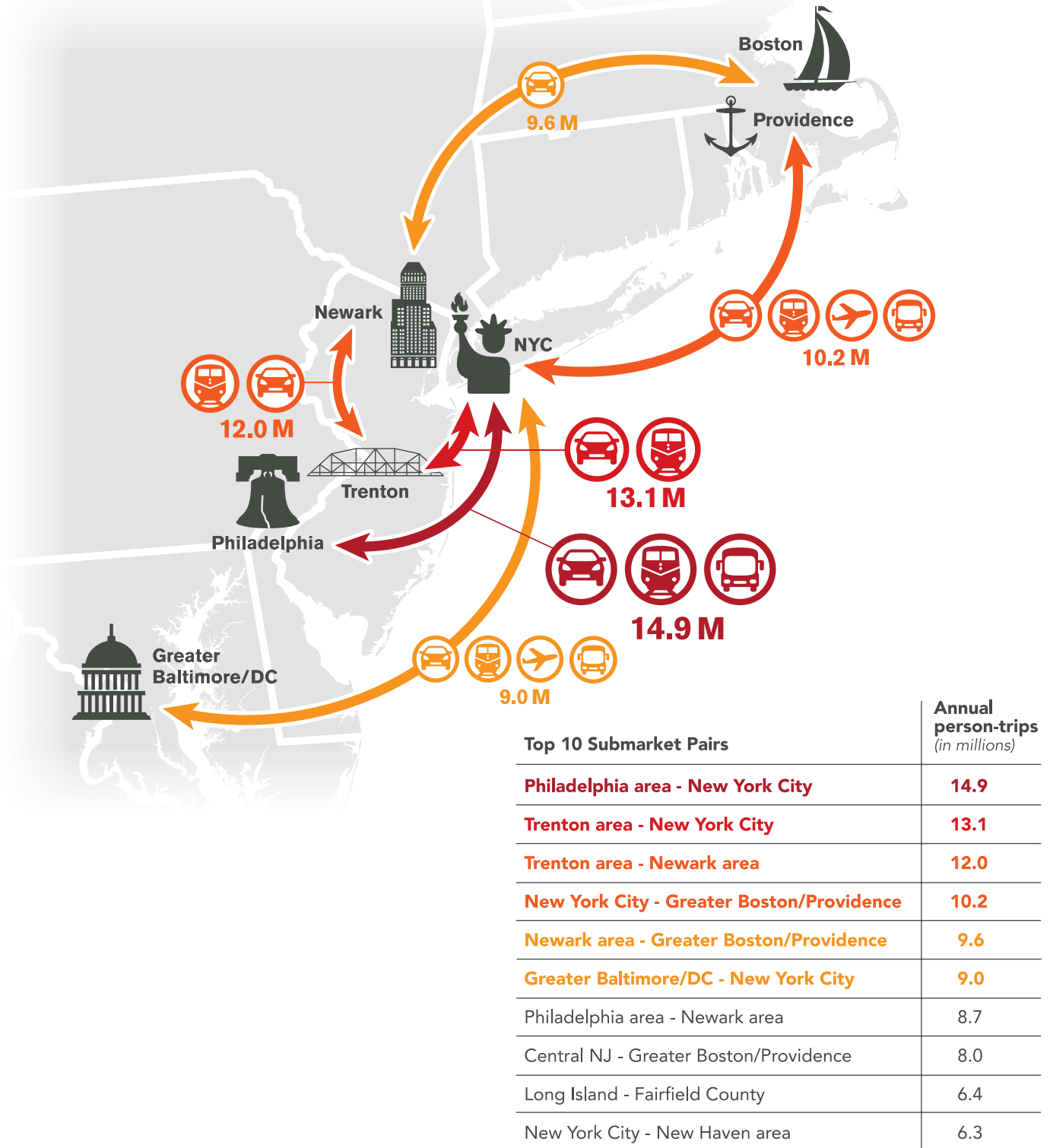
Results of both studies were compared with available data for rail and air travel. This summary report describes estimates of mode split for major submarket pairs as well as information on trip purpose and why travelers chose a particular mode. Demographic information for surveyed bus and automobile travelers is also provided.

Greater New York (a very large area that includes the five boroughs of NYC, Southern New York State, Northeastern New Jersey, and Southwestern Connecticut) is the major generator/magnet on the corridor for all trips. Trips to or from greater New York account for 78% of intercity auto trips, 91% of intercity rail trips, 64% of intercity air trips, and 91% of intercity bus trips in the region. The greater Philadelphia/Trenton area and Connecticut are also major auto markets.

Both intercity bus and auto trips are much more likely to be taken for leisure than business. Auto travelers on the corridor underestimate the cost of gas and other operating expenses associated with driving. Time savings, lower cost, and the need for a vehicle at the destination are the top reasons cited for choosing auto, while price is by far the most commonly cited reason for choosing bus.

Automobile trips were more likely than bus trips to involve several other travelers in the party; roughly 50% of auto trips and 26% of bus trips were taken by a party of more than one. About 38% of drivers and 54% of bus travelers say that would have taken the train had their chosen mode not been an option.

Flowchart and Estimates of Annual Intercity Person-Trips for Top Submarkets Across All Modes



2. Methodology Overview

This report focuses on intercity trips. Rail and bus trips include only those along the NEC which connect distinct metropolitan areas. Automobile trips include only those over 30 miles. All commercial air travel is considered to be “intercity” and is included.

Data for the automobile study were collected using electronic tolling transactions to recruit respondents as well as through photographic license plate capture in Connecticut. The sampling period consisted of three consecutive days: a Saturday, a Sunday, and a Monday. Travelers whose toll plaza patterns were consistent with relevant long-distance trips were sent an invitation to an online survey. This survey asked about the particular trip (e.g., origin, destination, trip purpose, occupancy) and about the respondent (e.g., demographic information, trip history, attitude questions).

For the bus study, surveys were distributed at major bus terminals in New York City, Boston, and Washington DC. Additionally, several curbside locations in New York were surveyed, allowing for the inclusion of a wide variety of virtually all bus companies making long-distance trips on the corridor. Passengers could complete the survey immediately and return it to staff, complete the survey online, or return it via Business Reply Mail.

While distributing the bus surveys, staff also counted passengers as they boarded. These counts were used to develop a model of ridership based on factors like origin and destination, bus company, and time of day. This model was then applied to meticulously collected schedule data for all the bus companies in the region, yielding estimates of total ridership.

Data for both studies were aggregated to the same “submarket” geography (the full “markets” were only used for the automobile study). Certain submarkets do not appear in the bus data, as the bus study deliberately ignored routes that were likely to serve a high proportion of commuters. Its geographic scope was also narrower; only routes originating or terminating in New York City, Washington DC, or Boston were included. For this reason, comparisons of market size involving bus are not entirely apples-to-apples. However, based on estimates developed through the bus study, travel to or from those three cities accounts for over 90% of the intercity bus travel in the NEC Region.

Each county on the corridor was assigned to a submarket. Submarkets of particular interest are discussed in this report, and described in the map and table on the next page.

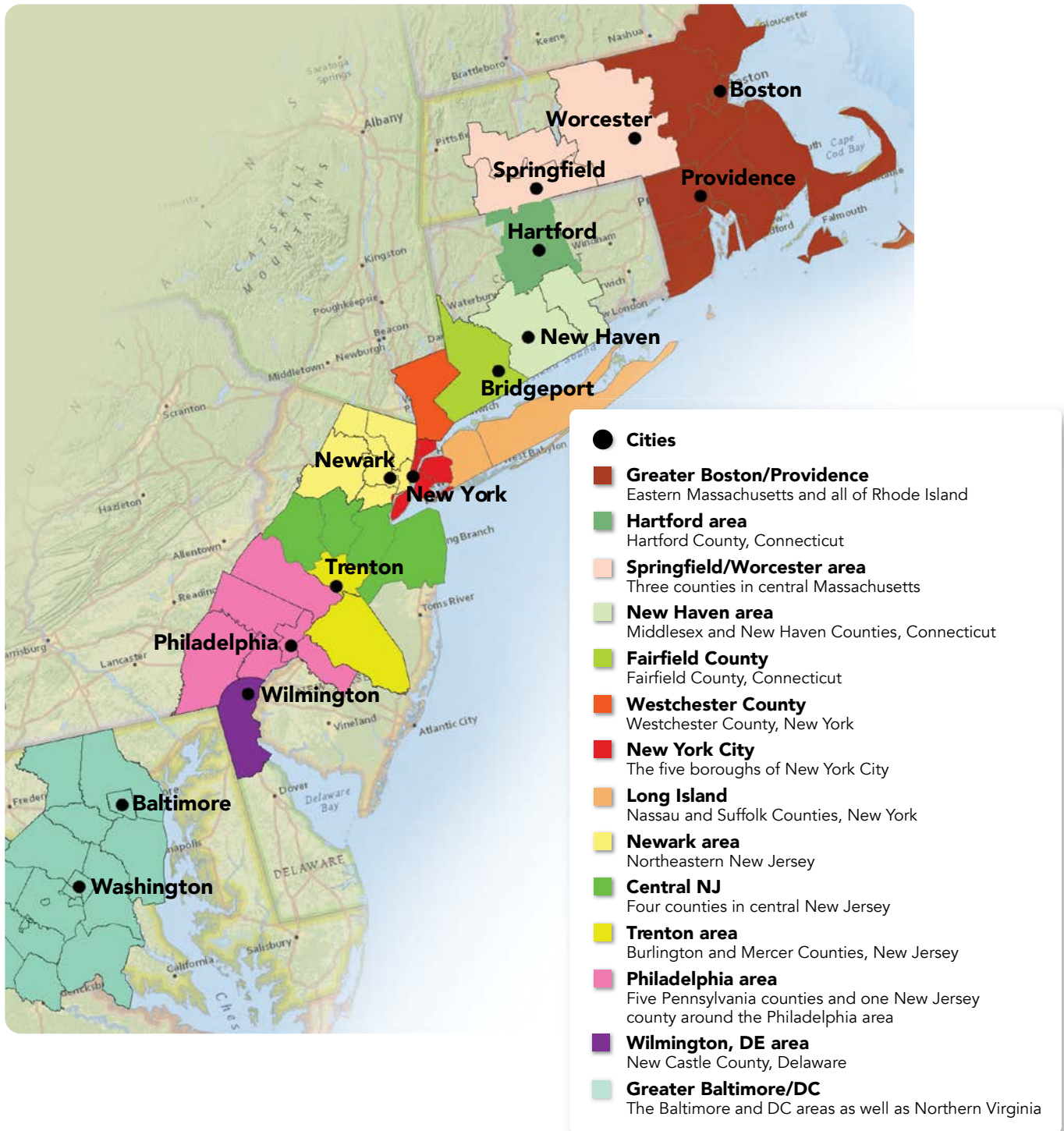
The electronic tolling methodology used for the automobile study allowed for only limited granularity on the southern and northern ends of the corridor, where toll plazas are more sporadic. Additionally, since Connecticut has no toll plazas, the four license plate capture sites were the only recruitment sites in the state. The large number of toll plazas around major cities allowed for much more granularity; this allowed the greater New York and greater Philadelphia areas to be split into finer submarkets, while submarkets closer to the ends of the corridor are larger.

Because of this variation in granularity, the size of each submarket should be taken into consideration when comparing the total number of automobile or bus trips. The New York City submarket, for example, includes only the five boroughs (469 sq mi), while the greater Boston/Providence submarket contains 14 counties (7,140 sq mi). Names used for the submarkets were kept as simple as possible to improve readability, and the map and table can be referenced if the reader would like more specific geographic submarket details. The analyses that follow are based on the submarkets defined in the map.

As this is a long-distance origin-destination study, not all submarket pairs from the following map were analyzed. Adjacent submarket pairs not considered long-distance are not included in this analysis (e.g., New York City to Fairfield County, Connecticut).

All figures and results presented are from the NEC Intercity Auto Origin-Destination Study or the NEC Intercity Bus Study unless otherwise noted.

Submarket Map



West Gates					DEPARTURES					East Gates				
Time	Number	Train	To	Status	Track	Time	Number	Train	To	Status	Track			
12:34A	56	VERMONT	ST. ALBANS	STAND BY	8W	12:35P	171	REGIONAL EWR	LYNCHBURG	ON TIME				
12:46A	6625	MID DIRECT SEC	DOVER	ALLBOARD	2	12:37P	3843	NE CORR SEC EWR	TRENTON	ON TIME				
12:00P	2117	ACELA EXPRESS	WASHINGTON	BOARDING	13E	12:43P	3243	NJCOAST SEC EWR	BAYHEAD	ON TIME				
12:03P	2158	ACELA EXPRESS	BOSTON	STAND BY		12:46P	6627	MID DIRECT SEC	DOVER	ON TIME				
12:05P	645	KEYSTONE	HARRISBURG	ON TIME		1:00P	2159	ACELA EXPRESS	WASHINGTON	ON TIME				
12:07P	3841	NE CORR SEC EWR	TRENTON	ON TIME		1:03P	2160	ACELA EXPRESS	BOSTON	ON TIME				
12:24P	6237	MID DIRECT SEC	MONTCLAIR	ON TIME		1:05P	3845	NE CORR SEC EWR	TRENTON	ON TIME				
12:30P	86	REGIONAL	BOSTON	ON TIME		1:15P	283	EMPIRE SERVICE	NIAGARA FALL	ON TIME				
SEC-STOPS AT SECAUCUS EWR-STOPS AT NEWARK AIRPORT					SEC-STOPS AT SECAUCUS EWR-STOPS AT NEWARK AIRPORT					SEC-STOPS AT SECAUCUS EWR-STOPS AT NEWARK AIRPORT				



3. Trip Profile

3.1 INTERCITY TRIP ESTIMATES

Automobile travel dominates the intercity travel market in the NEC Region. Only one submarket pair – DC/Baltimore to New York City – shows a majority of trips being made without a car. Market share for rail is higher than bus for every submarket pair, though DC/Baltimore to New York and Boston/Providence to New York City have only slightly lower levels of bus ridership than rail. Newark to Boston/Providence shows a high proportion of automobile travel given that it is well served by alternative modes.

Estimates of Annual Intercity Person-Trips for Top 25 Submarket Pairs Across All Modes

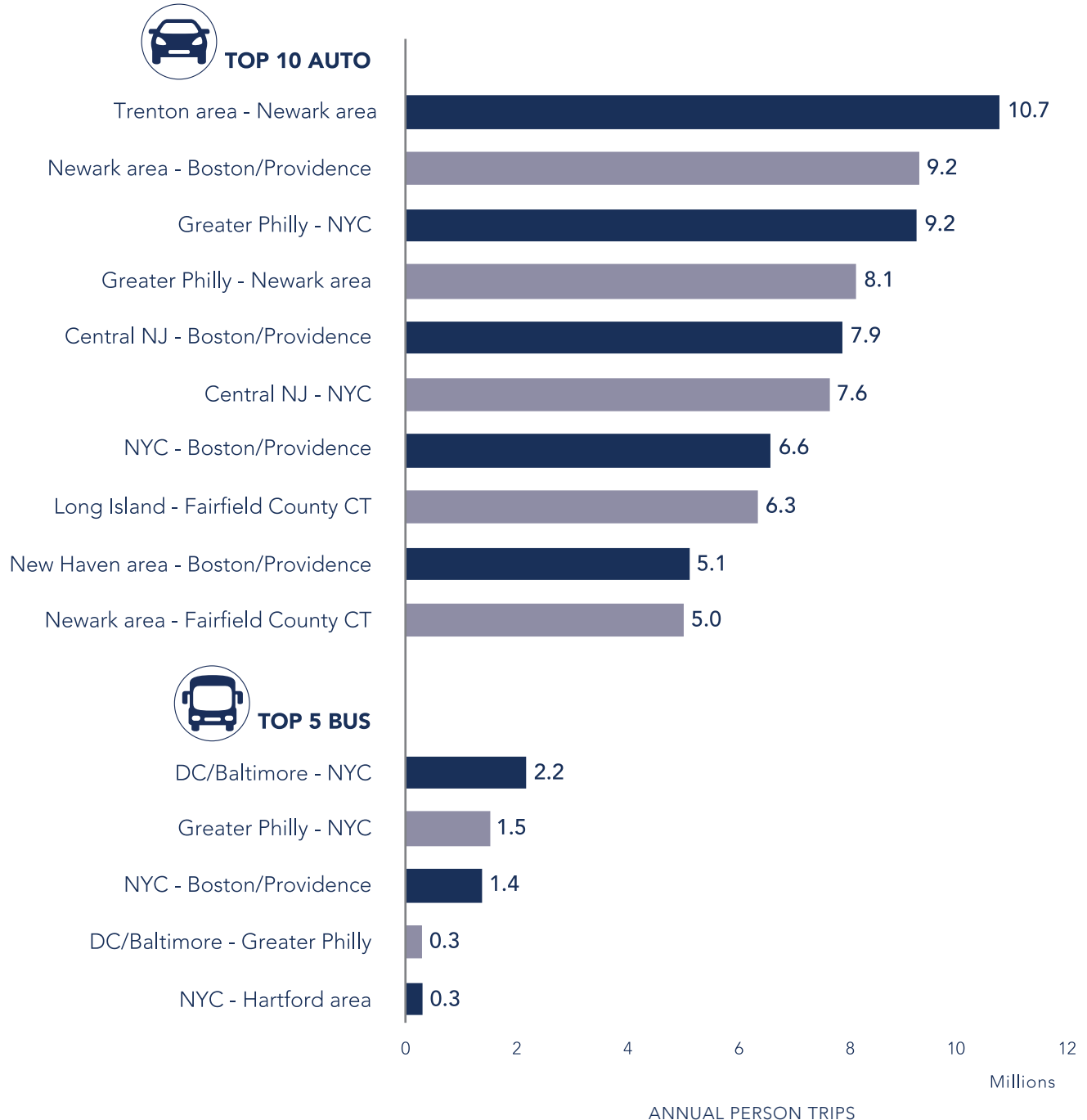


Trip totals may not be directly comparable in all cases. Bus trips include only those along the NEC which connect distinct metropolitan areas. Automobile trips include only those over 30 miles. For both rail and air data, boarding and alighting estimates are distributed to origins and destinations based on population data and a set of assumptions about how far people will travel to get to the terminal. For rail, the boarding and alighting estimates come from Amtrak and a few commuter rail operators. For air, the boarding and alighting data come from the Airline Origin and Destination Survey Databank 1B (DB1B).

TOP SUBMARKET PAIRS

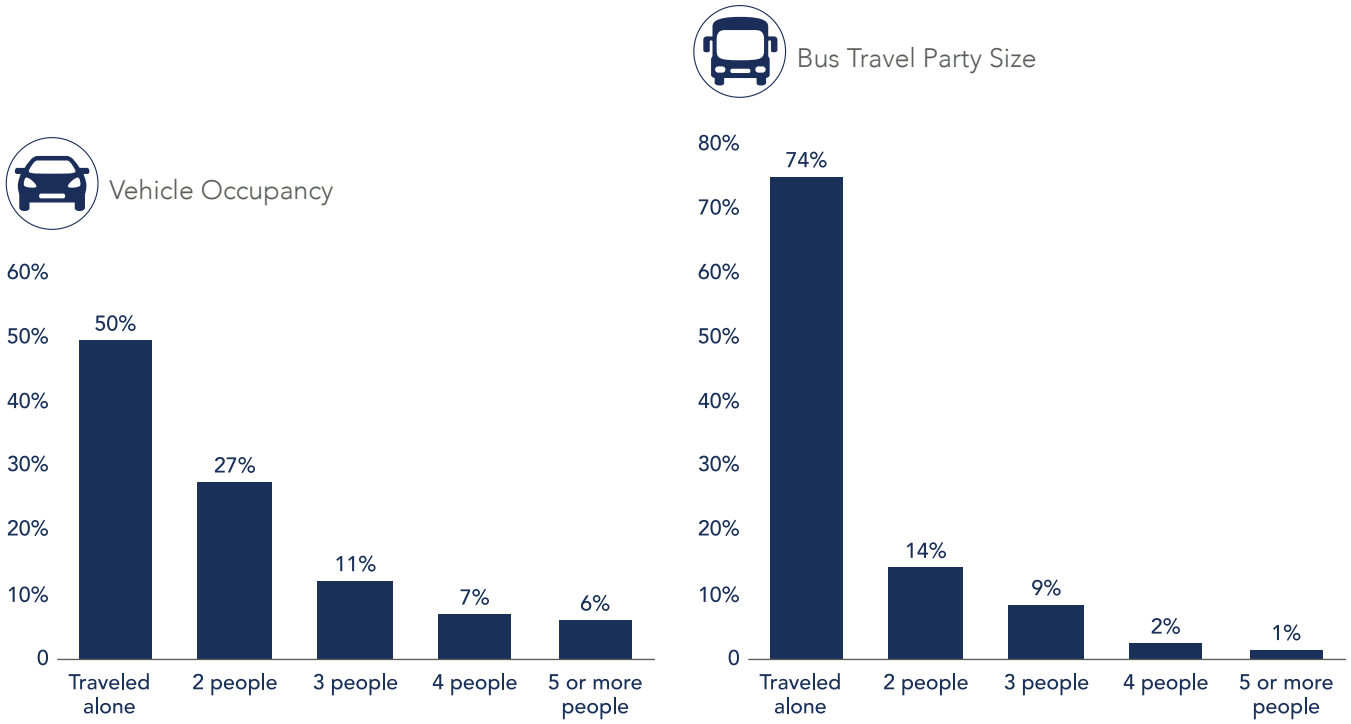
According to the bus survey data, the bulk of intercity bus travel in the NEC Region takes place on the routes connecting Baltimore/DC/Northern VA, Greater Philadelphia, and Eastern Massachusetts/Rhode Island to New York City. According to the automobile survey data, most of the top submarket pairs for automobile travel connect drivers in New Jersey to the major cities of the corridor.

Top Submarket Pairs by Auto and Bus Modes



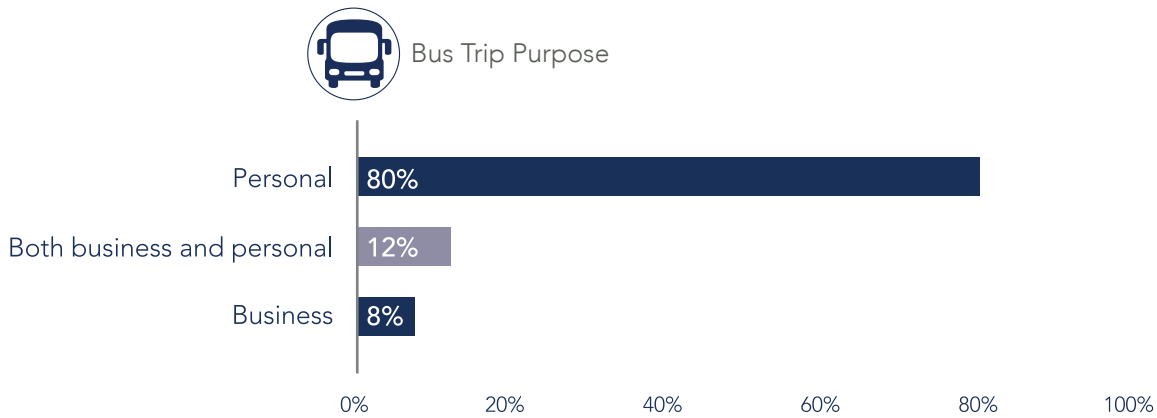
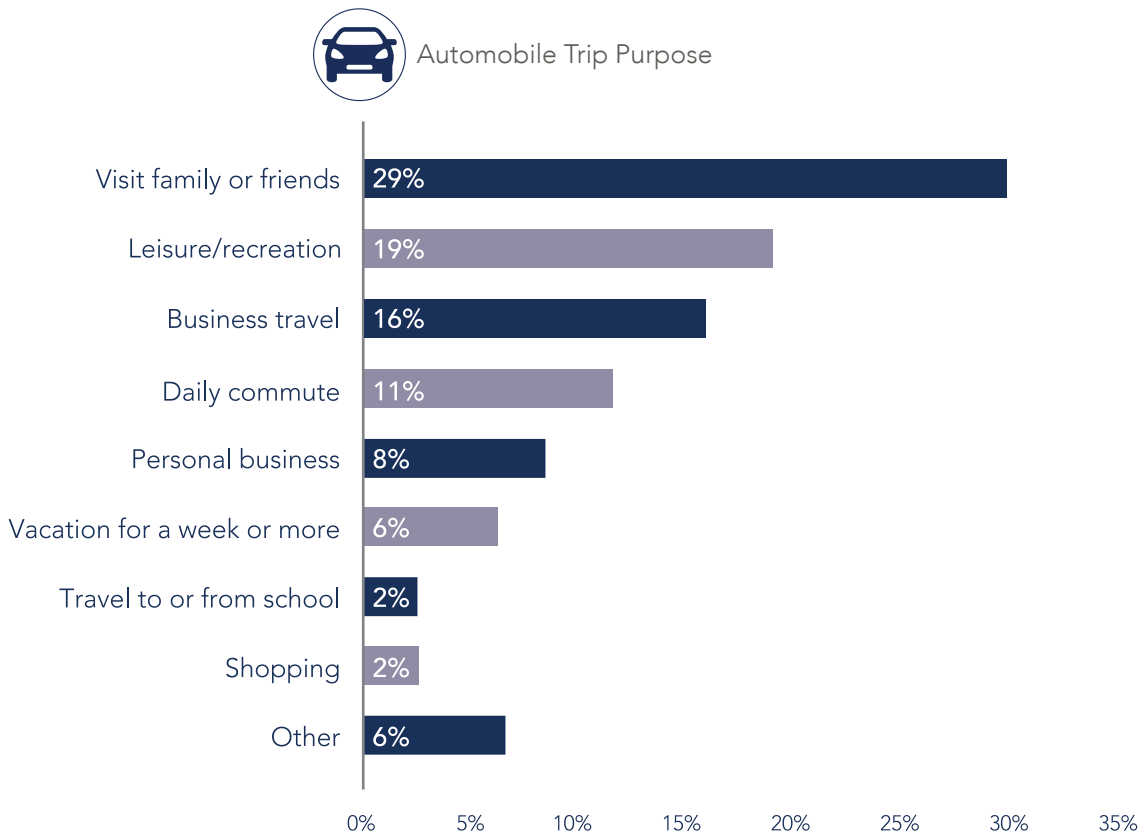
3.2 VEHICLE OCCUPANCY/PARTY SIZE

According to the automobile survey data, half of all automobile respondents were traveling with one or more other people in the vehicle. Meanwhile, according to the bus survey data, nearly three quarters (74%) of bus travelers were traveling alone. This likely reflects the fixed-cost nature of automobile travel, as compared to the per-passenger pricing of bus travel.



3.3 INTERCITY TRIP PURPOSE

The two surveys asked different questions relating to trip purpose, with the automobile survey providing more detail. For both bus and automobile intercity trips, the surveys suggest that more people are traveling for leisure than for business.





ACELA EXPRESS TO NY.
IT REALLY IS OUR WAY
OR THE HIGHWAY.

Acela Express® 12 times each weekday to New York and back.



www.amtrak.com

Keep Moving

Acela

INFORMATION

TO	From	Status	Time
PHILADELPHIA	PHILADELPHIA	BOARDING	7:10
NEW YORK	BOSTON	BOARDING	7:15
NEW YORK	PHILADELPHIA	ON THE	7:20
BOSTON	NEW YORK	ON THE	7:25
BOSTON	NEW YORK	ON THE	7:30
NEW YORK	BOSTON	ON THE	7:35
PHILADELPHIA	PHILADELPHIA	ON THE	7:40
DEPARTURES BY POLICE			
PLEASE TO TAHO OR ALL LUGGAGE			

Behind Stairway One

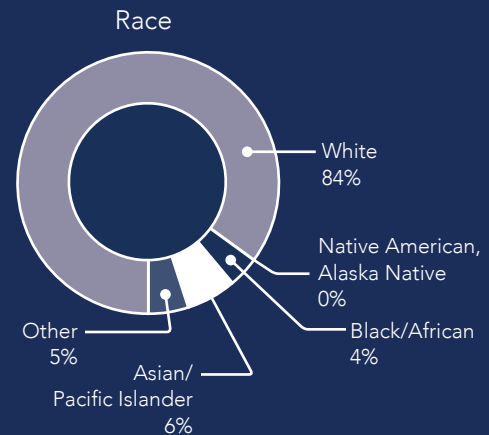
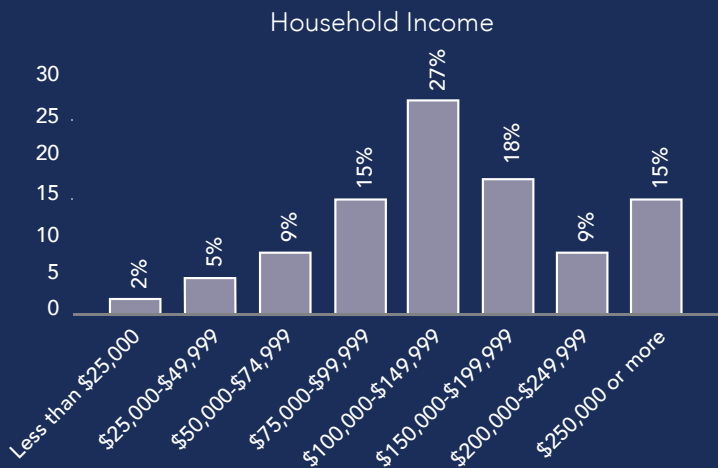
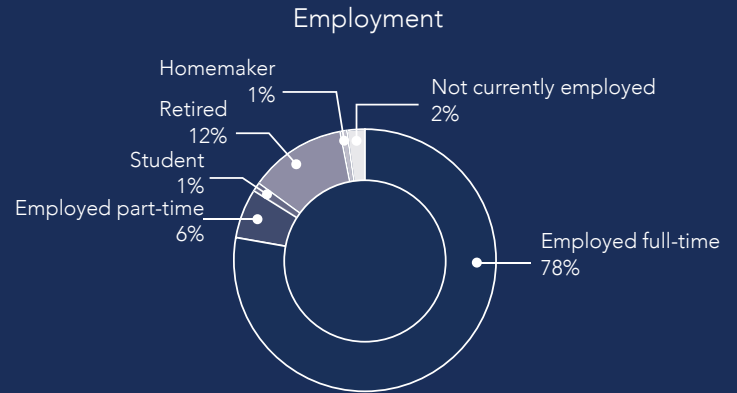
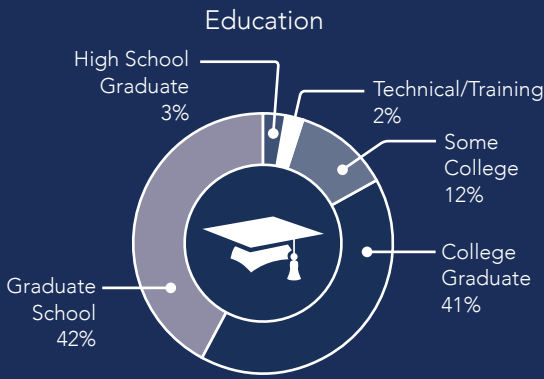
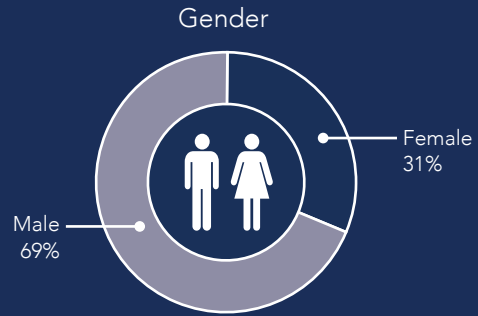
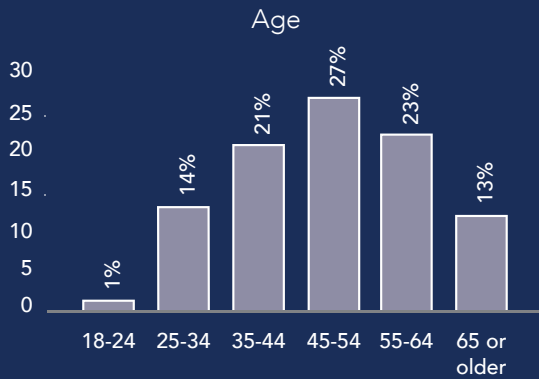


Information

4. Traveler Profile

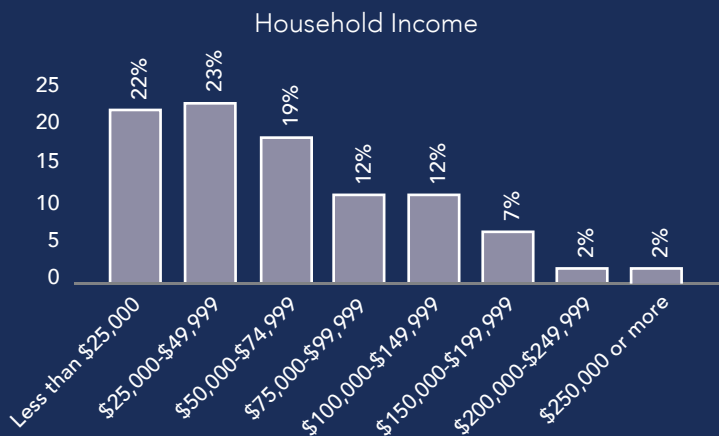
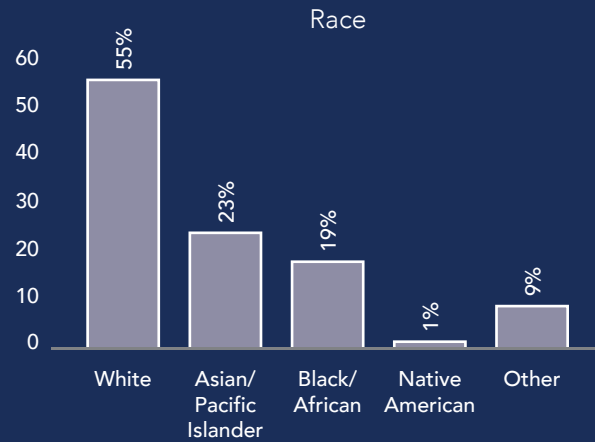
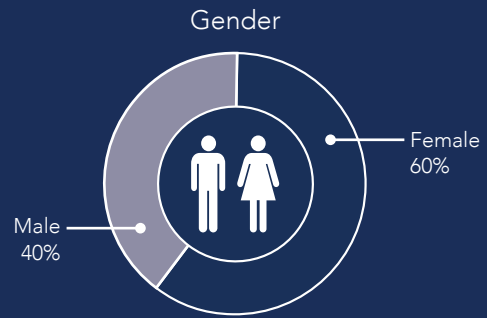
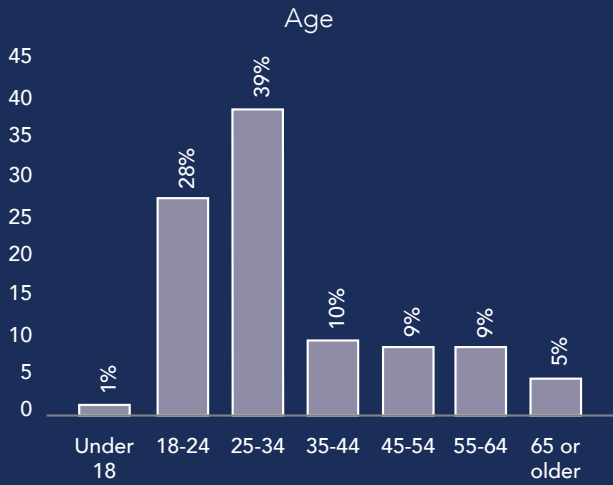
DEMOGRAPHIC PROFILE OF INTERCITY AUTOMOBILE TRAVELERS

The sample for the automobile study was largely middle-aged, white, and male, with a median household income in the \$100,000-\$150,000 range. People with these characteristics may be more likely to drive on long-distance trips, though this result may also reflect characteristics of the people most likely to respond to the study.



DEMOGRAPHIC PROFILE OF BUS TRAVELERS

Compared with the automobile sample, respondents to the bus study were much more likely to be female, under 35, and nonwhite. Respondents had a median household income in the \$50,000-\$75,000 range.



The total exceeds 100%, as the bus survey allowed respondents to select more than one race

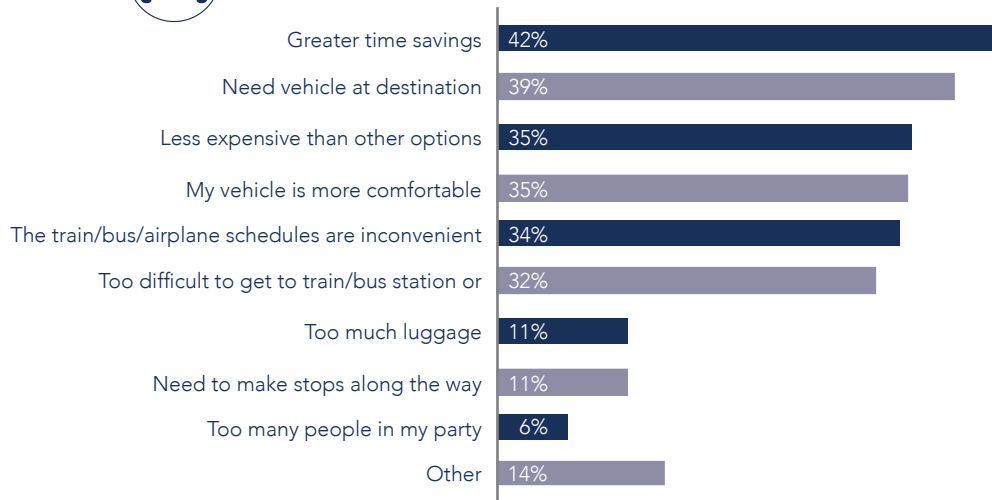
4.2 REASON FOR CHOOSING MODE

Time savings and the need for a vehicle at the destination were the top reasons respondents to the automobile survey chose to drive. Very few people gave luggage, stops, or travel party size as reasons to drive instead of using another mode. According to the bus survey, price is by far the most commonly cited reason for choosing bus.

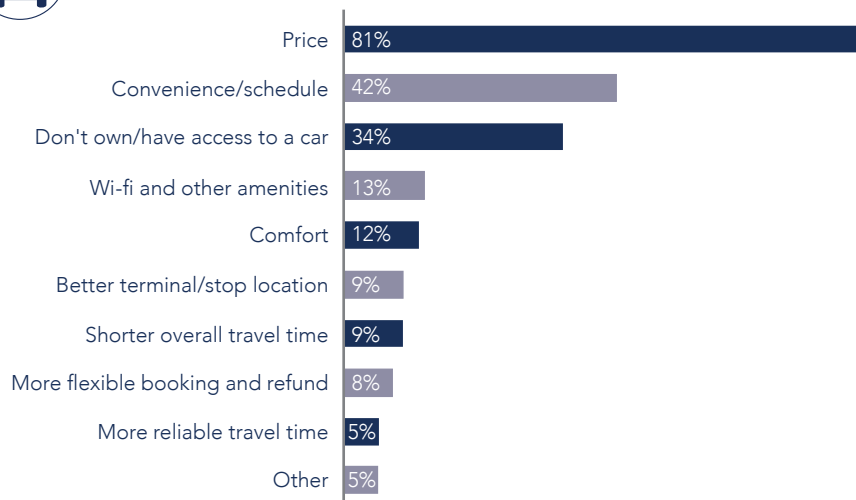
Over a third of the drivers said they drove because it was less expensive than other options. However, study participants gave an average perceived total operating cost of \$0.31 per mile, far below the IRS standard of \$0.565.



Reason for Choosing Automobile for Intercity Trips



Reason for Choosing Bus for Intercity Trips





SOUTH STATION
SOUTH STATION
TO TRAINS



MADISON SQUARE GARDEN

100% Jesse.
T-Mobile

LADY GAGA
WITH SPECIAL GUESTS
KID CUDI & JASON DERULO
JANUARY 20, 21, 23 & 24 7:30PM
WWW.RADIOCITY.COM
RADIO CITY

AMTRAK

PENN STATION

AMTRAK

CHASE

A MUSCLE MADE OF MICROCHIPS.
verizon | Google
DROID DOES

THOUSANDS OF ANDROID APPS
IN YOUR POCKET?

IS THAT A...
IN YOUR POCKET?

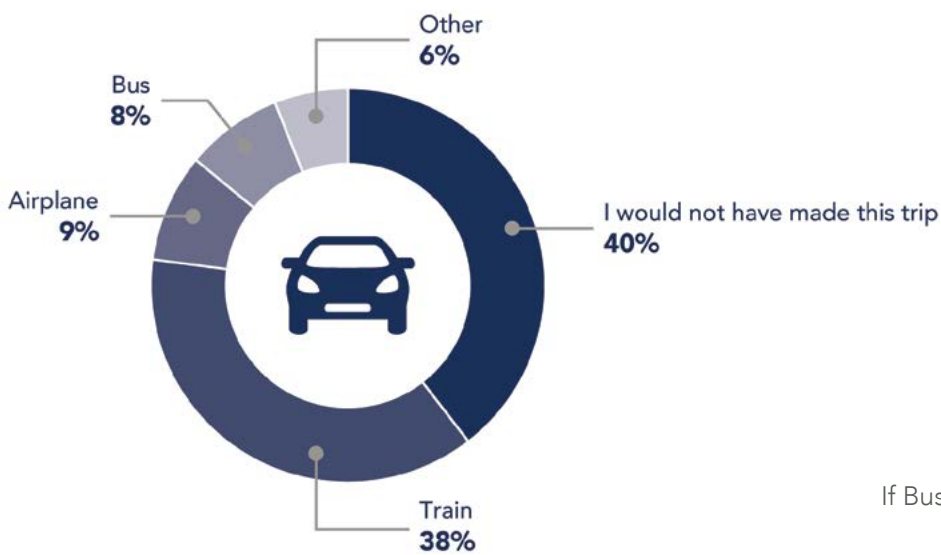
PRETTY AIN'T EVERYTHING.
verizon | Google



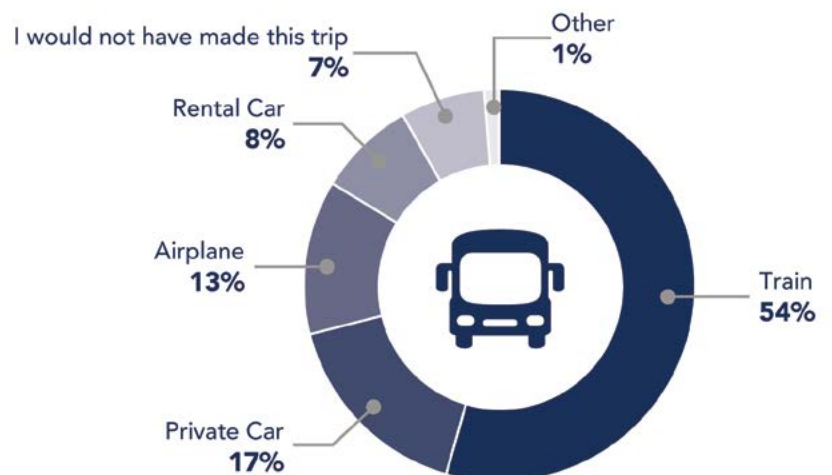
4.3 IF CHOSEN MODE WERE NOT AN OPTION

According to the surveys, over half of bus riders and over a third of drivers said that if they were not able to take their chosen mode, they would have instead taken a train. Interestingly, while only 7% of bus riders said they would have foregone the trip entirely if the bus had not been an option, 40% of the automobile travelers said they would have skipped the trip if they hadn't been able to drive.

If Driving Were Not an Option



If Bus Were Not an Option





NORTHEAST CORRIDOR
INFRASTRUCTURE AND OPERATIONS
ADVISORY COMMISSION



www.nec-commission.com