



MOVING FORWARD

Journey to Work Trends in the
City of Cambridge, Massachusetts

Photo by Gretchen Ertl 2015

City of Cambridge | Community Development Department | 2016

City Hall Annex 344 Broadway Cambridge, MA 02139

CREDITS

DAVID P. MAHER	Mayor	RICHARD C. ROSSI	City Manager
DENNIS A. BENZAN	Vice Mayor	LISA C. PETERSON	Deputy City Manager
DENNIS J. CARLONE	City Councilor	IRAM FAROOQ	Acting Assistant City Manager for Community Development
LELAND CHEUNG	City Councilor	HENRY KRAUSE	Planning Information Intern
CRAIG A. KELLEY	City Councilor	IAN JAKUS	Planning Information Intern
NADEEM A. MAZEN	City Councilor	SHARON RON	Planning Information Intern
MARC C. McGOVERN	City Councilor	BRENDAN MONROE	GIS Analyst
E. DENISE SIMMONS	City Councilor	CLIFFORD COOK	Planning Information Manager
TIMOTHY J. TOOMEY, JR	City Councilor		

FOCUS & SUMMARY

For those with a daily commute, traffic congestion, departure times, and travel duration play fundamental roles in shaping the start and end to one's work day. For city planners, understanding the data behind these commuting patterns is an essential element in the transportation planning process. With a heightened need to reduce greenhouse gas emissions, maintain safe commuting environments, and sustain a high quality urban experience, Journey to Work data provides key insight into how we can best develop transportation policies and infrastructure to meet the needs of our community.

Moving Forward provides an evaluative summary of commuting trends in Cambridge to support both current and future planning initiatives. To achieve this, we analyzed 20 years of transportation data from the Decennial Census of Population, the American Community Survey (ACS) and the Census Transportation Planning Products (CTPP) program, tracking changes in commuting trends of three different groups of workers:

- Those working in Cambridge, regardless of household origin — the Workforce
- Employed residents of Cambridge, regardless of workplace destination — the Labor Force
- Residents of Cambridge who also work in the city — the Resident Labor Force

These three labor groups differ in size, demography, and mode usage, yet their commuting experience reflects a common theme: over time a decrease in the proportion of workers who drive alone to work and an increase in those traveling by a sustainable mode of transportation.

By weaving together and comparing Journey to Work data from across two decades, this report sheds further light on the changing landscape of commuting trends in Cambridge. Through this analysis, the City of Cambridge Community Development Department hopes to provide insight into the ways we can continue to move our transportation planning, our policies, and our communities forward into a sustainable, environmentally healthy future.

ABOUT THE DATA

The data in this document derives from three sources, all of which include counts for all commuting modes to and from all towns where Cambridge residents work or in which Cambridge workers reside:

- The 1990 data originates from Journey to Work data supplied to the Massachusetts Central Transportation Planning Staff by the Census Bureau. The data derives from a special compilation of 1990 Decennial Census data provided to transportation planners.
- The 2000 data derives from the 2000 Census Transportation Planning Products (CTPP), a special tabulation of 2000 Decennial Census data. The CTPP summarizes information by place of residence (Part 1), by place of work (Part 2), and by worker-flows between home and work (Part 3). In the case of Part 3 of the CTPP the Census Bureau took steps that make comparisons to analogous data sets problematic. To protect confidentiality many values were rounded or suppressed and commute modes combined. This affects the user's ability to separate bicyclers, walkers, and several other "minor" modes of commuting into individual categories. While, there exists no straightforward means to generate values for all modes, such figure have been approximated using a series of calculations.
- The 2006 – 2010 data is excerpted from the most recent version of the CTPP. Unlike prior data sets, the most current data is based on a recompilation of data from the American Community Survey, the Census Bureau program that replaced the Decennial Census.

Both the 1990 and 2000 JTW data derive from the results of the long form Decennial Census questionnaire, which was sent to approximately one in six households for completion on the same date – April 1 of the respective census year - and included a range of socioeconomic questions including ones concerning job location and commute mode, length and start time. The ACS replaces the long form questionnaire and incorporates analogous questions related to commuting. The newer survey is administered on a rolling basis throughout the year to approximately 1% to 2% of the population annually. The 2006-2010 dataset compiles five years of ACS results into a single file.

Inclusion of Students and Other Group Quarters Residents in JTW Mode Data

The JTW data sets from 1990, 2000 and 2006-10 all include data collected from employed students living both on and off campus. However, residents of noninstitutionalized group quarters, such as dormitories, are not included in tables that rely upon household statistics such as those about income, presence of children, and vehicle availability. Residents of institutional group quarters, such as nursing homes and jails, were included in JTW data generated from the 1990 and 2000 decennial censuses. Starting in 2006 institutional group quarters residents were excluded from all JTW statistics collected through the ACS.

Proportion of Commuters Assigned to Walking Mode

Commute mode data derives from the question: "How did this person usually get to work last week? If this person used more than one method of transportation during the trip mark the box for the one used for most of the

ABOUT THE DATA

distance.” Responses should account for the majority of distance traveled, rather than time taken. Mistaken answers based on time rather than distance might help account for the seemingly large proportion of commuters who either report walking from Cambridge to work in distant towns or walking from distant towns to work in Cambridge. Another source for such commuters comprises persons commuting to work during Census week from hotels or another person’s private residence. Whatever the source for these long distance person’s private residence. Whatever the source for these long distance walkers, similarly high figures are reported by each of the JTW data sets.

Availability of Vehicles and Single Occupancy Vehicle Mode

The number of vehicles available to the household is compiled from the answer to the question: “How many automobiles, vans, and trucks of one-ton capacity or less are kept at home for use by members of this household?”

An anomaly in the data is the frequency with which persons who report no access to a vehicle also report driving alone to work. This issue may have several causes. Aside from incorrect answers to the question, there appear to be at least three likely explanations. Under some circumstances work vehicles that are brought home by an employee might not be considered a vehicle “available to the household.” The questionnaire instructions exclude certain such vehicles, if they are not otherwise available for personal errands. Vehicles might also be incorrectly excluded using a misinterpretation of the rule. A second possibility is vehicles borrowed from friends and family members, which the respondent does not

consider a household vehicle. A third possibility, which seems more possible within the Cambridge context, is persons who use a carshare vehicle for commuting purposes, such as Zip Car, Enterprise, or Hertz.

TABULAR DATA

Data tables with Journey to Work data by census tract from the 1990, 2000 and 2006 – 2010 data sets are available on the City of Cambridge Open Data Portal: <https://data.cambridgema.gov/>

Select demographic and socio-economic data from the 2006 – 2010 Journey to Work dataset is also available at this location.

LINKS TO EXTERNAL DATA

- AASHTO’s Census Transportation Planning Products: <http://data5.ctpp.transportation.org/ctpp/Browse/browsetables.aspx>
- For more info about the CTPP program see: <http://ctpp.transportation.org/Pages/5-Year-Info.aspx>
- 2010 Census Tract Population Characteristics and ACS Census Tract sociodemographic characteristics: <https://data.cambridgema.gov/>
- 2009-2011 Journey to Work Data: <http://www.census.gov/hhes/commuting/>

ABOUT US

The Community Development Department (CDD) is the planning agency for the City of Cambridge, Massachusetts. Our mission is to enhance the character and diversity of the city's neighborhoods and support sustainable economic growth that expands opportunities for residents, enables a high quality of life within the community, and contributes to a healthy environment.

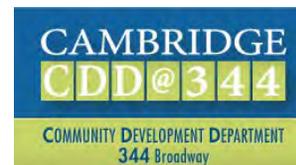
CDD takes an interdisciplinary approach to manage and guide physical change in a manner consistent with the City's priorities, engaging and collaborating with community partners and other government agencies to make Cambridge a desirable place to live and work.

PRIMARY CONTACT

Cliff Cook, Planning Information Manager
Cambridge Community Development Department
344 Broadway, Cambridge, MA 02139
ccook@cambridgema.gov
617/349-4656

SUGGESTED CITATION

Moving Forward: Journey to Work Trends in the City of Cambridge. City of Cambridge, Massachusetts Community Development Department. 2016.



GLOSSARY & KEY TERMS

- Cambridge Resident Labor Force** Cambridge residents also working in the city; this group is a subset of the Workforce and of the Labor Force.
- Destination** The town to which workers are commuting.
- Inner Core** The 21 cities and towns comprising the center of the metropolitan Boston area as defined by MAPC; this includes Boston and Cambridge.
- Labor Force** Employed Cambridge residents regardless of workplace location.
- MAPC** Metropolitan Area Planning Council, the regional planning agency for the 101 cities and towns of Metropolitan Boston.
- Metro North** The cluster of towns along the northern Massachusetts coastline between Boston and New Hampshire.
- Metro South** The cluster of towns south of Boston in Massachusetts' Southeastern region, including towns along the South shore and the Cape and Islands
- Metro West** The cluster of towns west of Boston and east of Worcester, Massachusetts.
- Mode** The primary method of commuting (for example, driving alone, car pooling, public transit, walking, biking, etc.).
- Origin** The town from which a worker commutes.
- Public Transportation** Bus, trolley, streetcar, subway, railroad, ferryboat, or elevated rail as provided by the MBTA or another transportation service, such as the EZRide Shuttle.
- Sustainable Mode** Carpooling, public transportation, walking, and biking.

GLOSSARY & KEY TERMS

TAD Traffic Analysis District, a grouping of Traffic Analysis Zones.

TAZ Traffic Analysis Zone, the smallest geographic unit used for Journey to Work data collection, analogous to a census blockgroup.

White-Alone Refers to persons who select the single racial group White when reporting their race to the U.S. Census.

Workforce Workers in Cambridge regardless of origin of commute (i.e. household location).

TABLE OF CONTENTS

Part 1: COMMUTING TO WORK IN CAMBRIDGE.....	11	Part 2: CAMBRIDGE RESIDENTS COMMUTING TO WORK.....	27
Overview.....	12	Overview.....	28
By the Numbers.....	13	By the Numbers.....	29
Changes in Mode of Commuting since 1990.....	14	Changes in Mode of Commuting since 1990.....	30
Public Transit Use by Town of Origin.....	15	Public Transit Use by Town of Destination.....	31
Driving Alone by Town of Origin.....	16	Driving Alone by Town of Destination.....	32
Region of Origin.....	17	Region of Destination.....	33
Driving Alone & Public Transit Use.....	18	Driving Alone & Public Transit Use.....	34
Biking & Walking.....	19	Biking & Walking.....	35
Demographics.....	20-26	Demographics.....	36-42
Age.....	20	Age.....	36
Minority Status.....	21	Minority Status.....	37
Presence of Children Under 18.....	22	Presence of Children Under 18.....	38
Vehicles Available.....	23	Vehicles Available.....	39
Travel Time.....	24	Travel Time.....	40
Time Arriving.....	25	Time Leaving.....	41
Annual Household Income.....	26	Annual Household Income.....	42

TABLE OF CONTENTS

- Part 3: LIVING AND WORKING IN CAMBRIDGE** 43
 - Overview..... 44
 - By the Numbers..... 45
 - Changes in Mode of Commuting since 1990..... 46
 - Modes of Transportation by Census Tract..... 47
 - Resident Labor Force by TAD..... 48
 - Demographics..... 49-53
 - Age..... 49
 - Vehicles Available..... 50
 - Travel Time..... 51
 - Time Arriving..... 52
 - Annual Household Income..... 53
- PART 4: CONCLUSION & REFERENCE LIST** 54
 - Conclusion..... 55
 - Reference List..... 56-57



COMMUTING TO WORK IN CAMBRIDGE

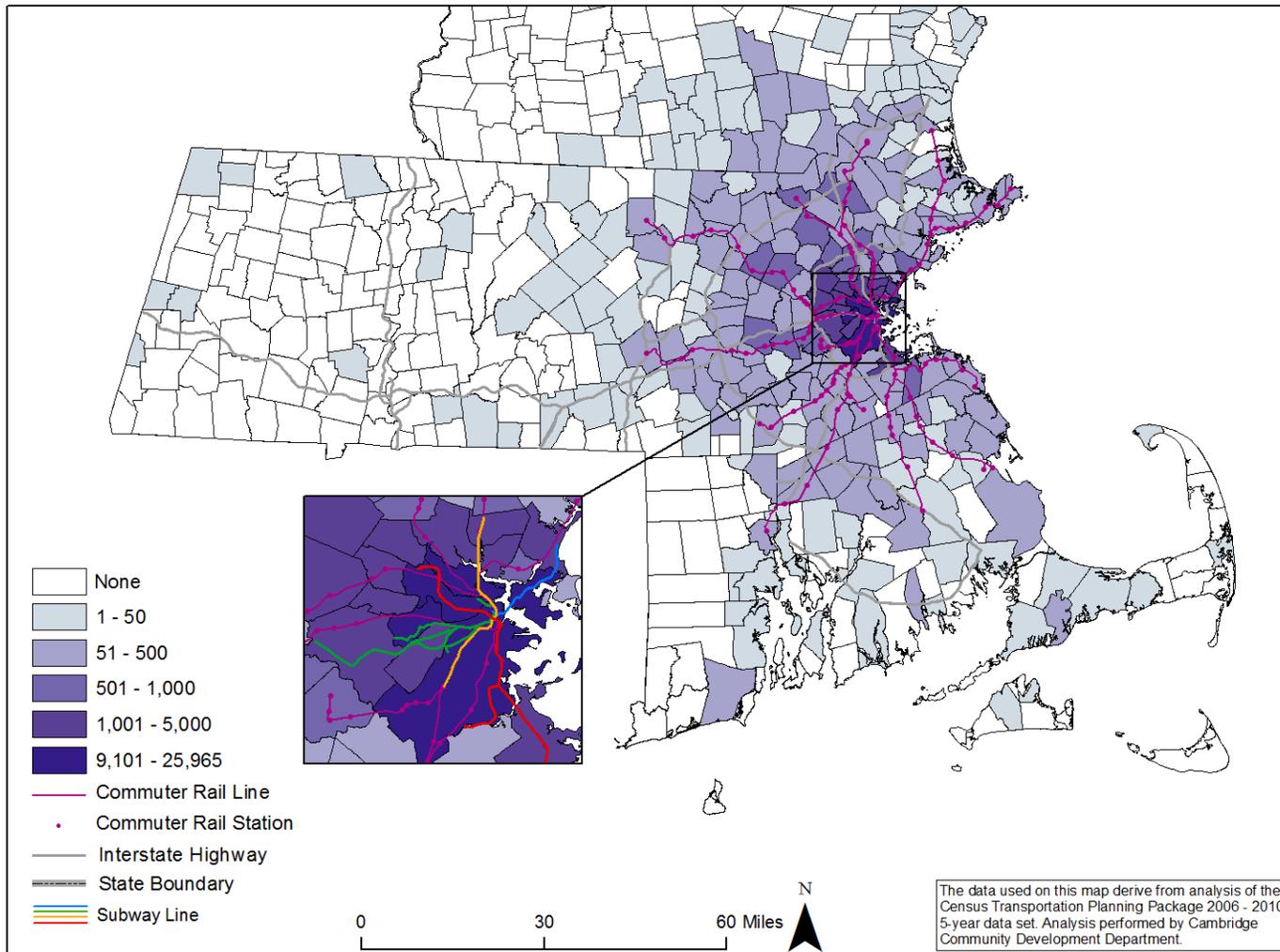
Photo by Gretchen Ertl 2015

Moving Forward | 2016 | Cambridge, Massachusetts | Community Development Department

COMMUTING TO CAMBRIDGE

Overview

Cambridge Workforce, by Town of Origin



Map prepared by Ian Jakus on July 29, 2014. CDD

Journey to Work data reports that for 2006-2010 the Cambridge Workforce was composed of 115,570 persons, including those who work at home. This compares to 114,113 in 2000 and 109,248 in 1990. Unlike figures reported by the Massachusetts Executive Office of Labor & Workforce Development (EOLWD), this figure includes all persons reporting a place of work in the city, regardless of their membership status in the unemployment compensation system.¹ Today's Workforce primarily consists of residents of the Inner Core of the Boston metropolitan region. Journey to Work data show these workers are increasingly turning away from driving alone and embracing efficient, sustainable modes of transportation.

1. EOLWD reports the number of workers covered by unemployment compensation systems, excluding the self employed, students, and other certain categories.

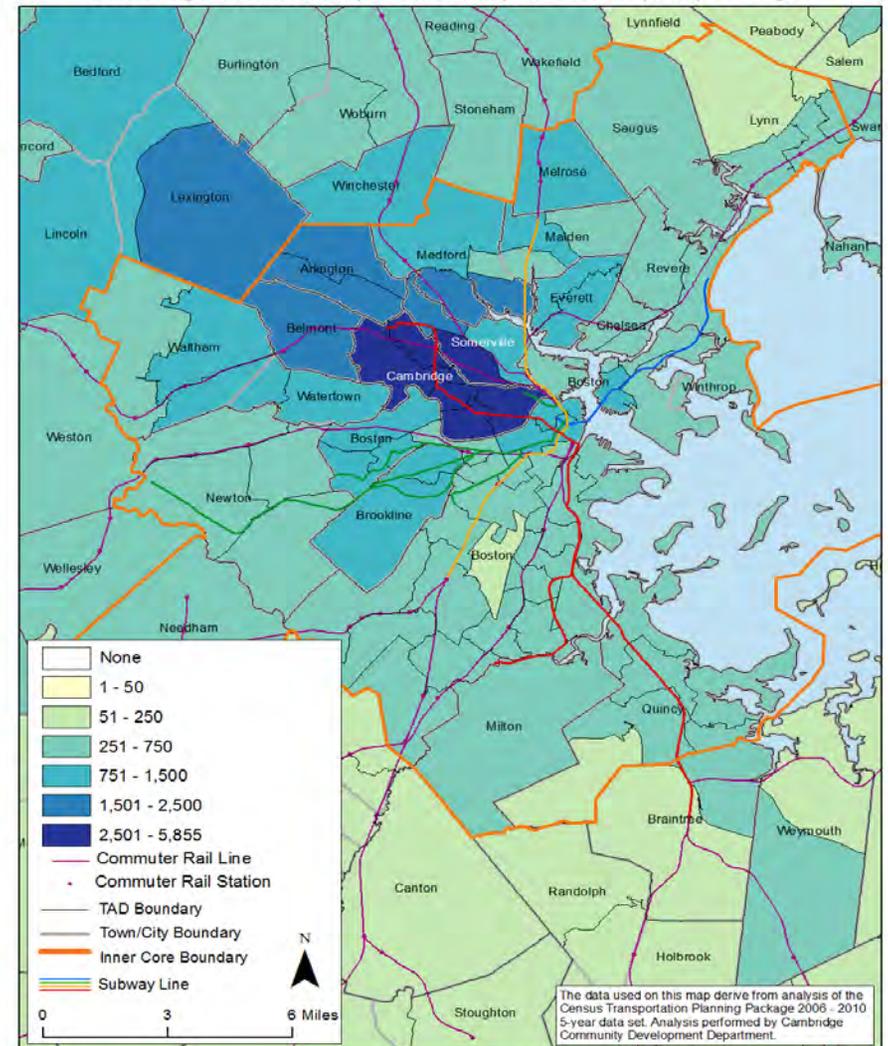
COMMUTING TO CAMBRIDGE

By the Numbers

The majority of the Cambridge Workforce resides in the Inner Core of the Boston region. After Cambridge, Boston is the second largest contributor to the city's Workforce, sending nearly 15% of the total Workforce population. By region:

- 71%** (or 82,435) Live in the Inner Core
- 22%** (or 25,965) Reside in Cambridge
- 15%** (or 17,100) Reside in Boston
- 9%** (or 9,875) Live in the Metro West Region
- 8%** (or 8,904) Live in the Metro South Region
- 7%** (or 8,130) Live in the Metro North Region
- 3%** (or 3,781) Live throughout the rest of Massachusetts
- <3%** (or 2,795) Travel from New Hampshire (2,080) or Rhode Island (715)

Cambridge Workforce by Traffic Analysis District (TAD) of Origin

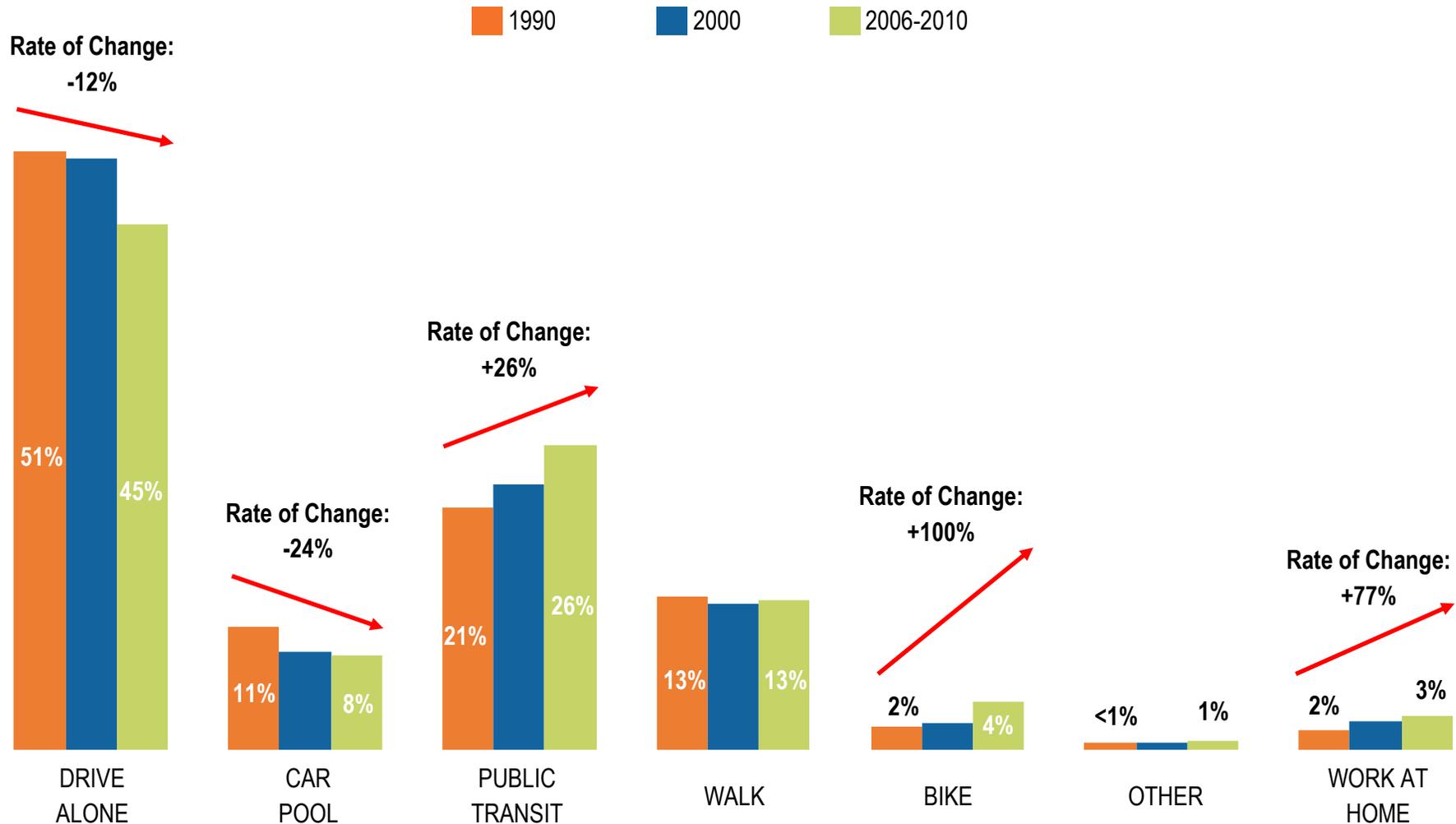


Map prepared by Ian Jakus on July 29, 2014. Updated August 12, 2015.

COMMUTING TO CAMBRIDGE

Modes of Transportation

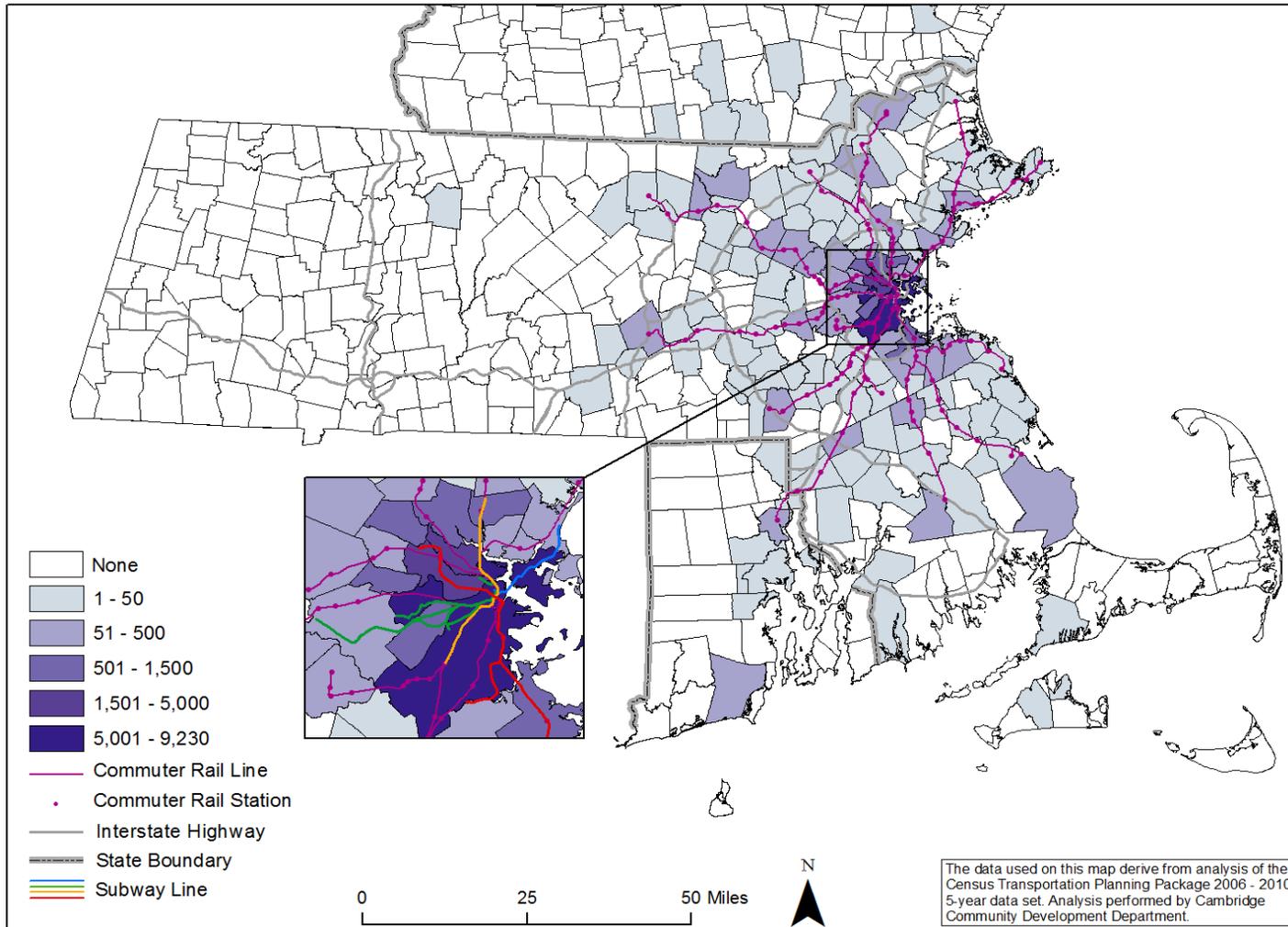
CHANGE IN MODES OF COMMUTING SINCE 1990



COMMUTING TO CAMBRIDGE

Public Transit Use by Town of Origin

Cambridge Workforce Using Public Transit, by Town of Origin



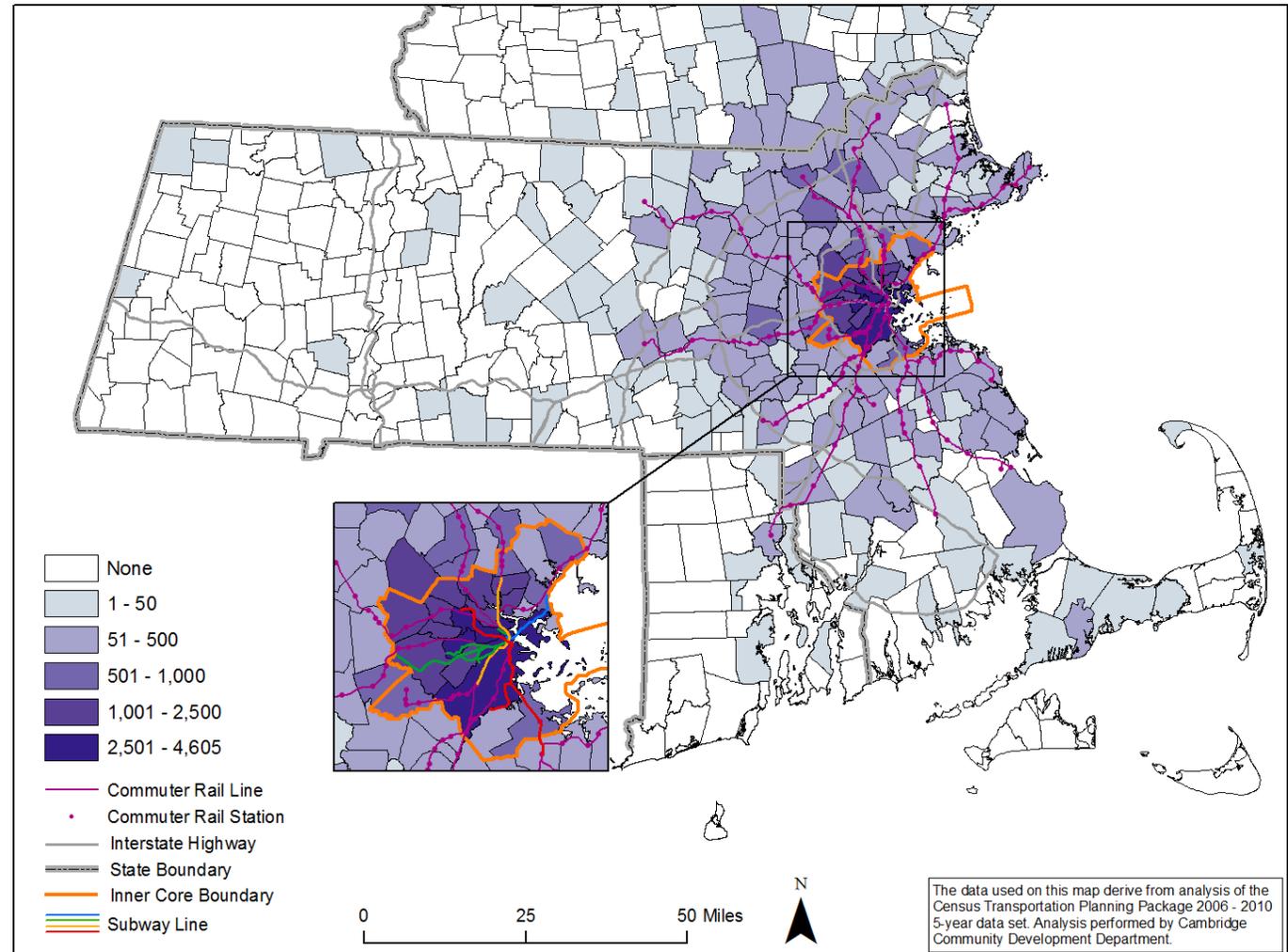
Public transit use by the Workforce has increased by 26% since 1990. Today, over 30,000 (or one in four) Cambridge Workforce members use local and commuter bus and rail systems to arrive to work. Public transit is most heavily used by workers commuting from Suffolk, Middlesex, and Norfolk counties. Larger proportions of residents in more distant towns use the MBTA rail network to commute car free to Cambridge. For example, 54% of Rhode Island workers use public transit, most of whom originate from Providence County.

COMMUTING TO CAMBRIDGE

Driving Alone by Town of Origin

Driving alone is diminishing in popularity as the primary commuting method in the Workforce. Despite the Workforce's steady growth in recent years, less than half (45%) now drive alone to work. Driving Since 1990, this number has decreased by 12%. Among the 71% of the Workforce living in the Inner Core Region, only 36% drive alone to work. The City's investment in transportation infrastructure for more sustainable methods of commuting has led to increasing numbers of commuters using public transit, biking, or walking.

Cambridge Workforce Who Drive Alone, by Town of Origin



Map prepared by Ian Jakus on July 29, 2014. Updated August 17, 2015.

COMMUTING TO CAMBRIDGE

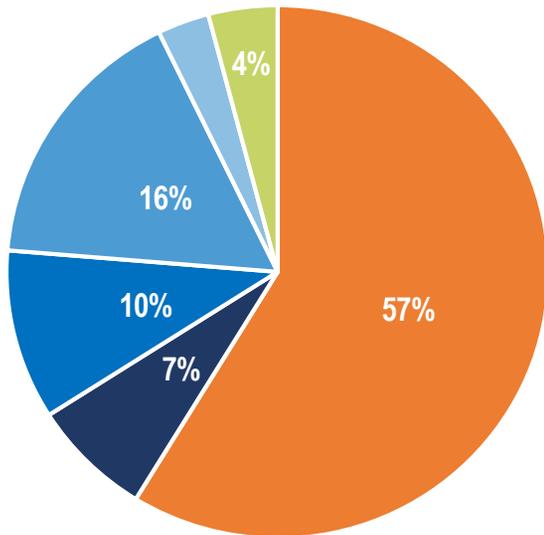
Region of Origin

■ Inner Core
 ■ Metro North
 ■ Metro South
 ■ Metro West
 ■ Rest of State
 ■ Out of State

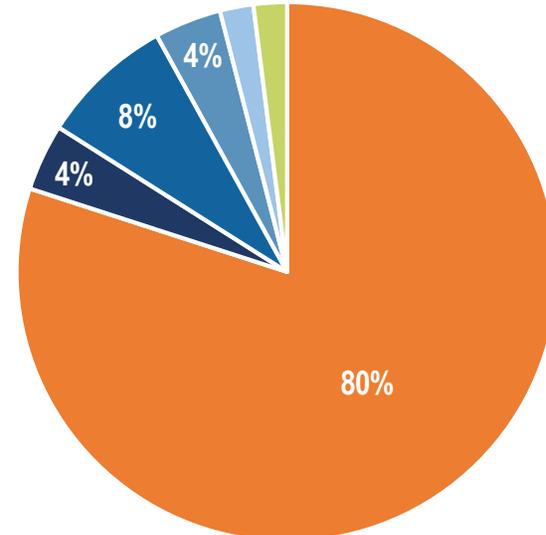
PROPORTION OF WORKFORCE BY REGION OF ORIGIN



DRIVE ALONE BY REGION OF ORIGIN



PUBLIC TRANSIT USE BY REGION OF ORIGIN

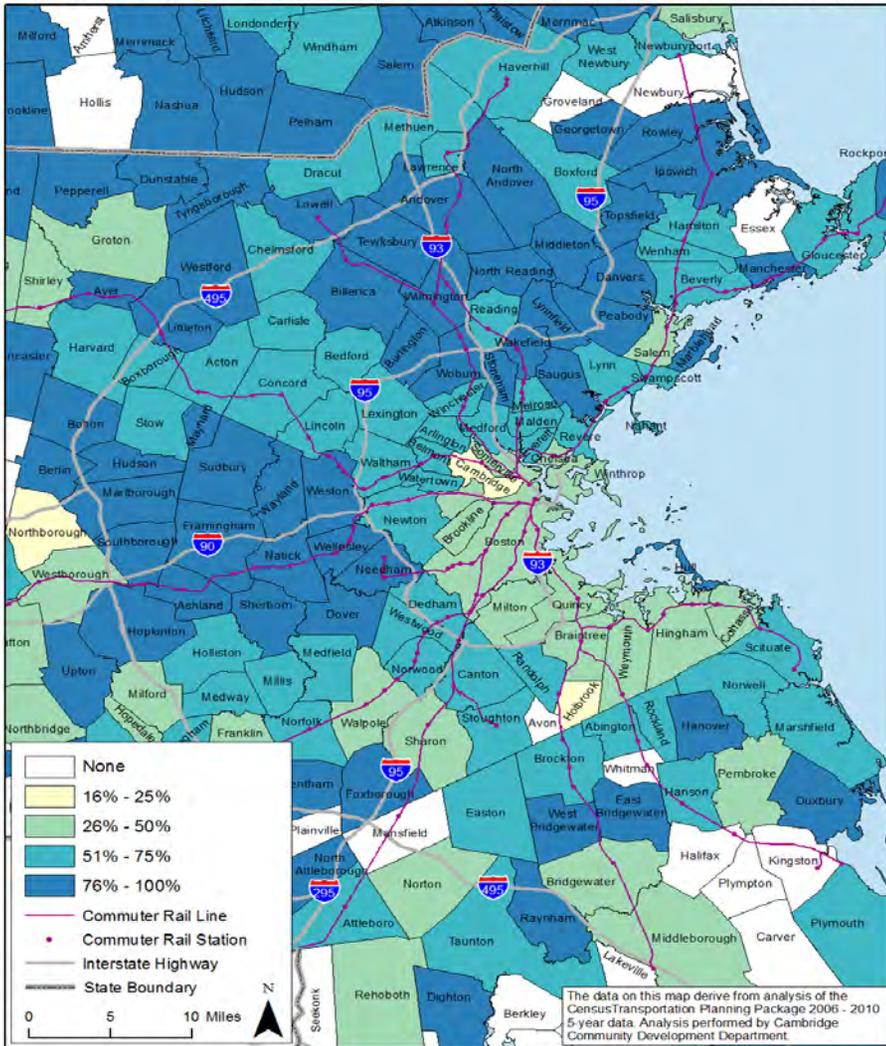


Note: the above pie charts compare all workers who drive alone or take public transit to each region of origin. For example, 57% of all those who commute to Cambridge by driving alone live in the Inner Core.

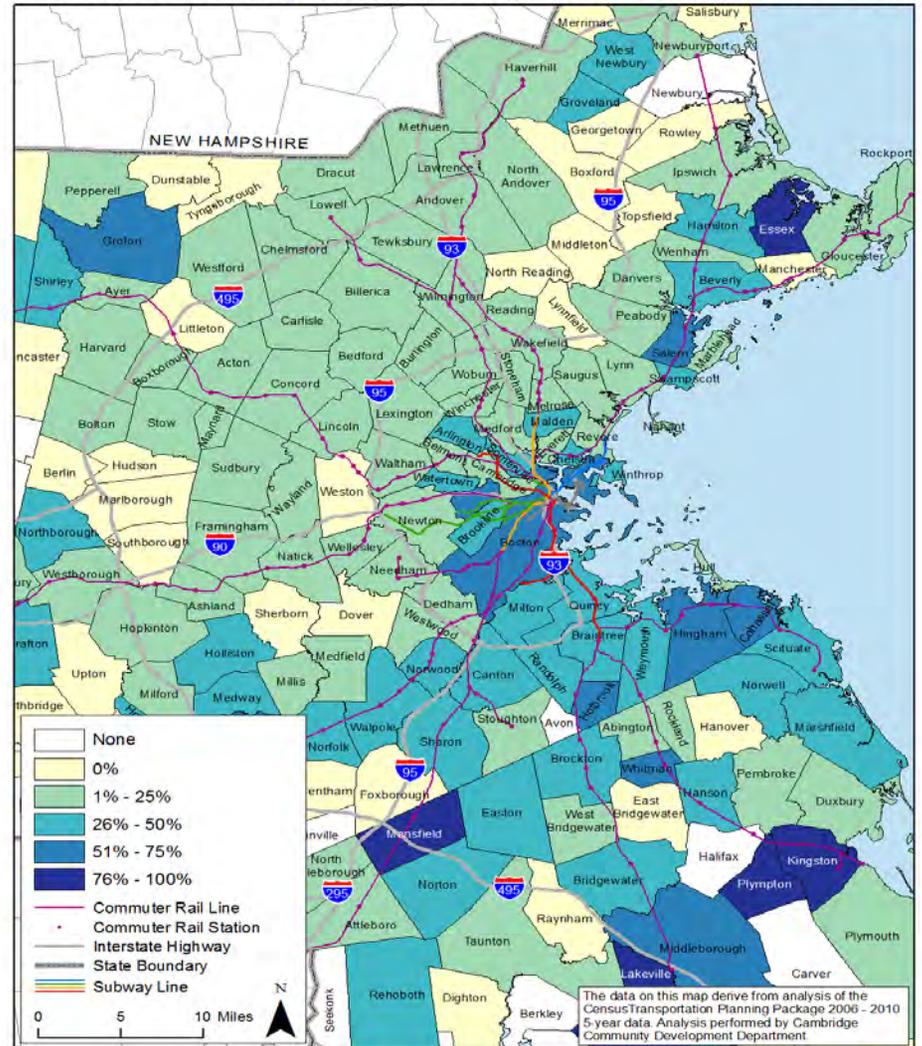
COMMUTING TO CAMBRIDGE

Drive Alone &
Transit Use

Proportion of Cambridge Workforce Who Drive Alone, by Town of Origin



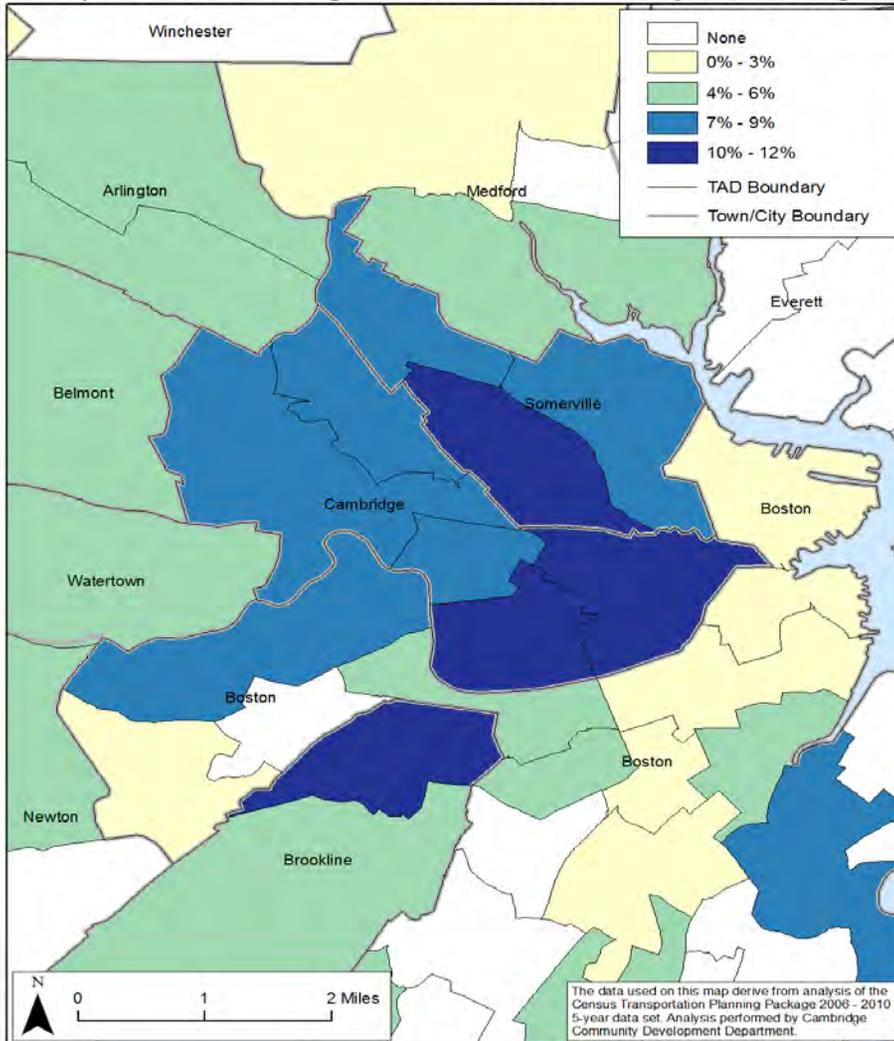
Proportion of Cambridge Workforce Taking Public Transit, by Town of Origin



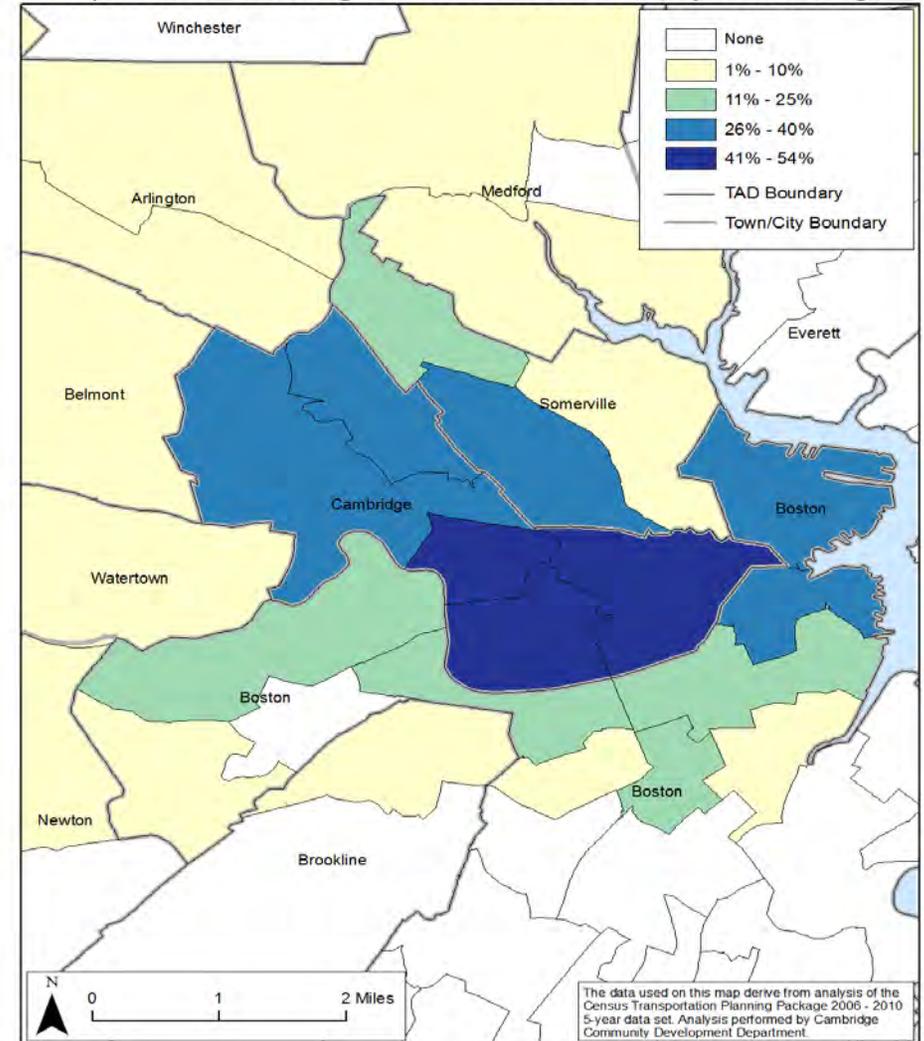
COMMUTING TO CAMBRIDGE

Biking & Walking by TAD

Proportion of Cambridge Workforce Who Bike, by TAD of Origin



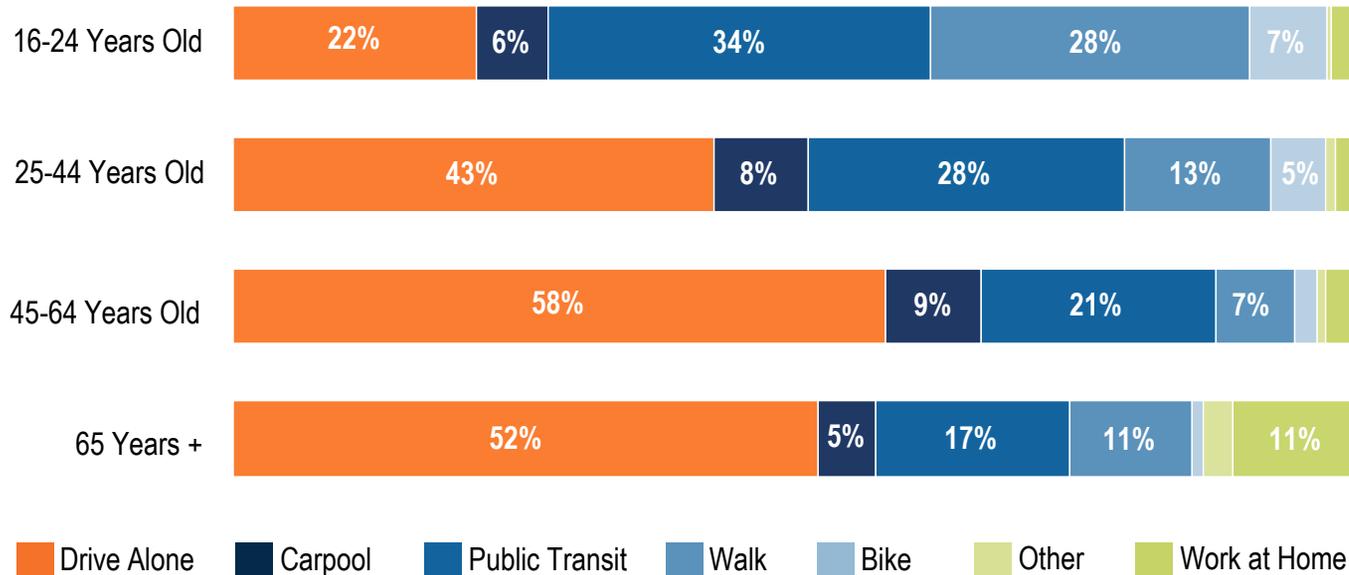
Proportion of Cambridge Workforce Who Walk, by TAD of Origin



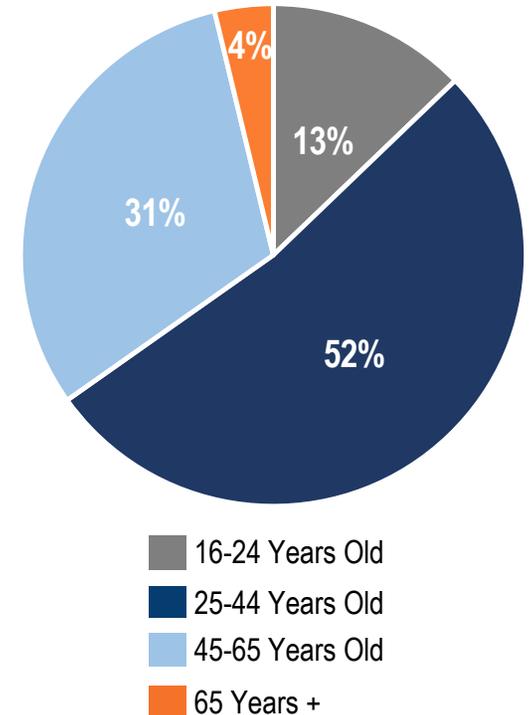
COMMUTING TO CAMBRIDGE

Age of Worker

AGE OF WORKER



PROPORTION OF WORKFORCE



65%

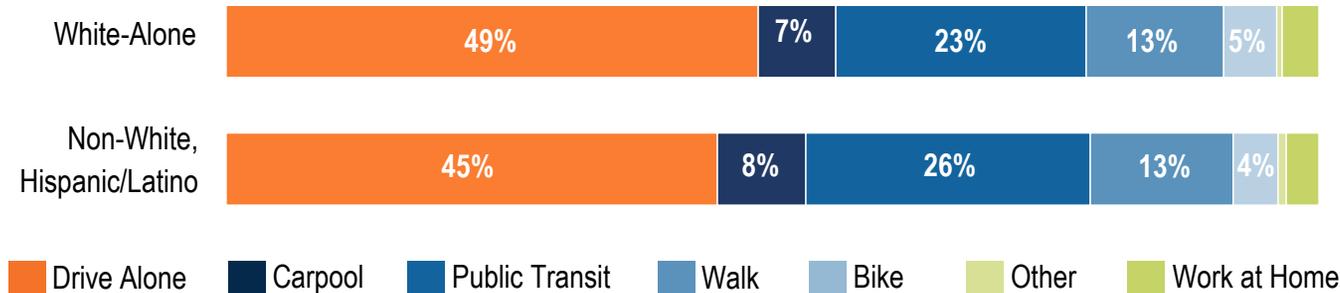
of the Workforce is under the age of 44. Of this group, 53% choose to take public transit, walk, or bike to work. What's more, 75% of 16 to 24 year olds either carpool, take public transit, walk, bike, or use some other mode of transportation to commute to work in

Cambridge. 44% of those who drive alone are older than 45. This group composes 1/3 of the total Workforce.

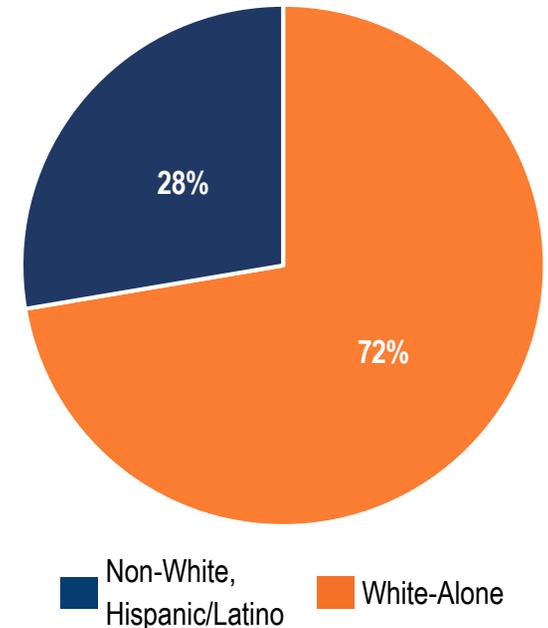
COMMUTING TO CAMBRIDGE

Minority Status

MINORITY STATUS



PROPORTION OF WORKFORCE



50%

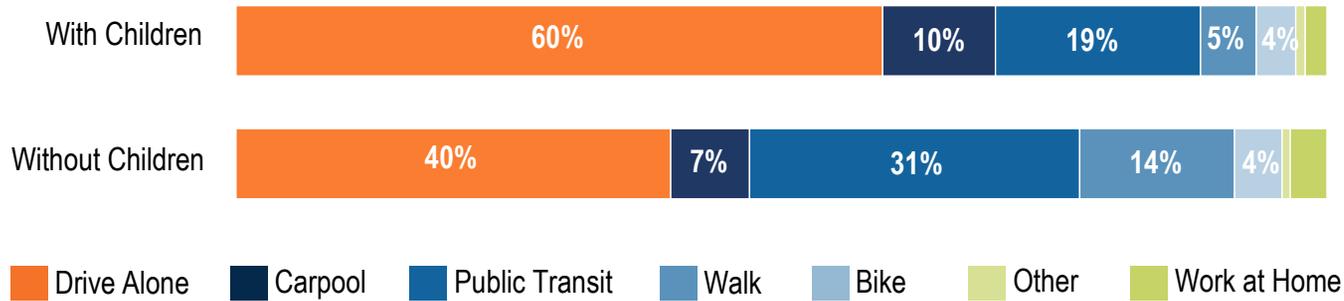
of both White-Alone and of Non-White and Hispanic workers commute to Cambridge using sustainable modes of transportation. Non-White and Hispanic workers drive alone somewhat less and take public transit slightly more than their White-Alone colleagues.

Regardless, both groups include similar proportions who carpool, bike, walk, or work at home, all of which combine to create a majority who use sustainable transportation methods to arrive to work in Cambridge.

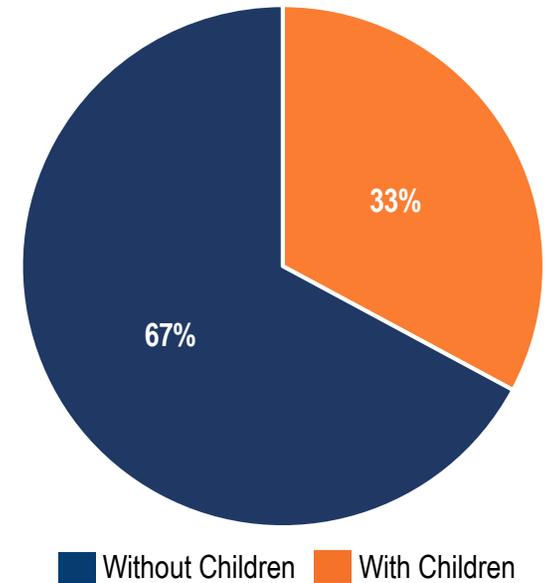
COMMUTING TO CAMBRIDGE

Presence of Children

PRESENCE OF CHILDREN UNDER 18



PROPORTION OF WORKFORCE



67%

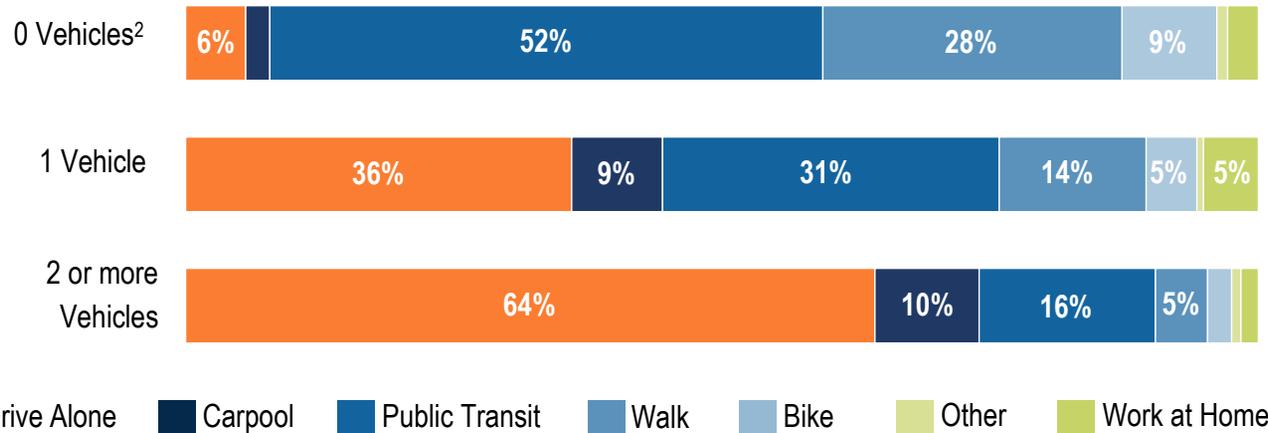
Cambridge Workforce members do not have a child under 18 living at home. Of those without children, nearly 60% travel to work by some means of sustainable transportation, the most popular being public transit and walking. Driving alone to work is more popular among those who have

children compared to those who do not. However, nearly 40% of those with children commute by a sustainable mode.

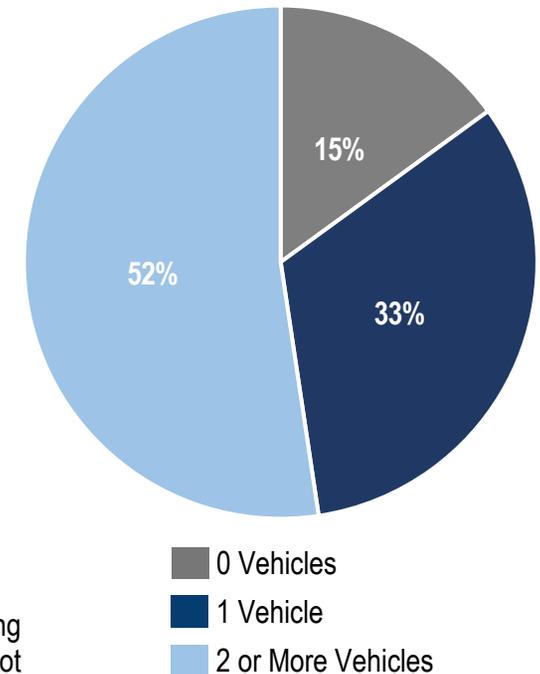
COMMUTING TO CAMBRIDGE

Vehicles Available

VEHICLES AVAILABLE



PROPORTION OF WORKFORCE



85%

of the Workforce has at least one vehicle. The more vehicles one has access to, the more likely one is to drive alone to work; those with two or more vehicles drive alone twice as often as those with just one. However, of those with only one vehicle, two thirds travel to work by some other means of sustainable transportation, the most popular being public transit (31%)

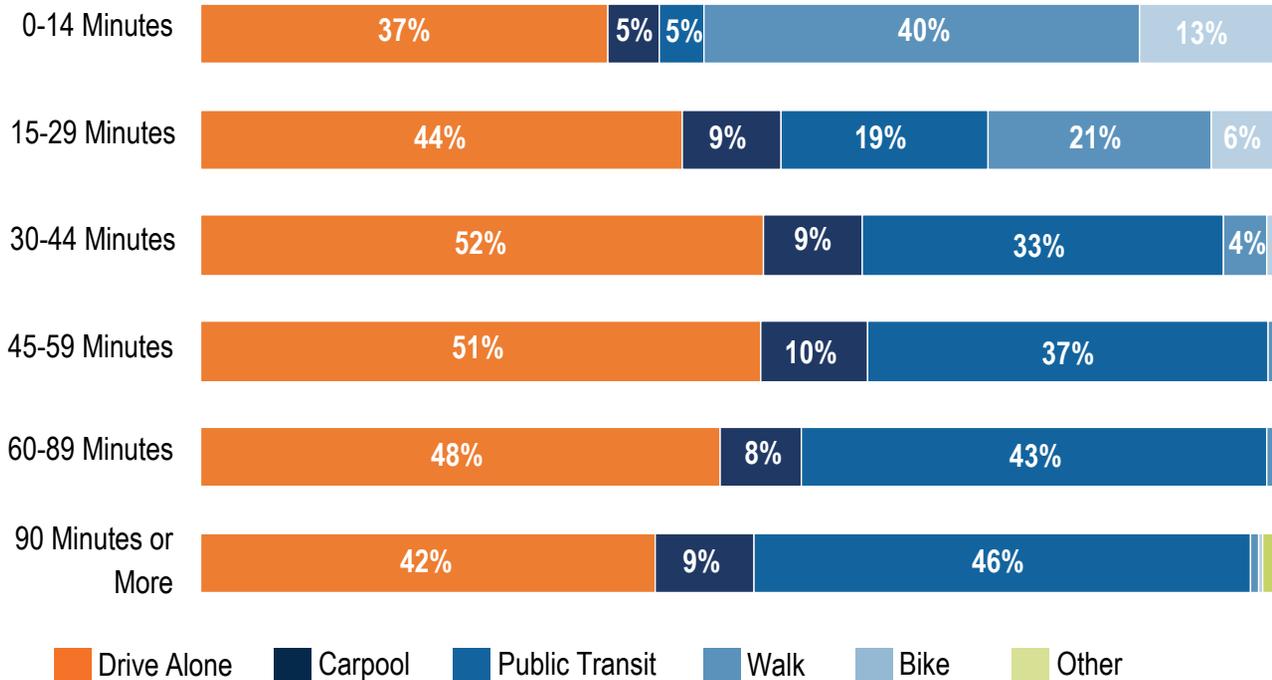
followed by walking (14%) and biking (9%). 15% of the Workforce does not own a vehicle at all, a majority of whom (52%) take public transit, while 28% walk and 9% bike to work.

2. Reasoning for the proportion of workers who drive alone to work without an available vehicle remains inconclusive. See "About the Data" for discussion of this issue.

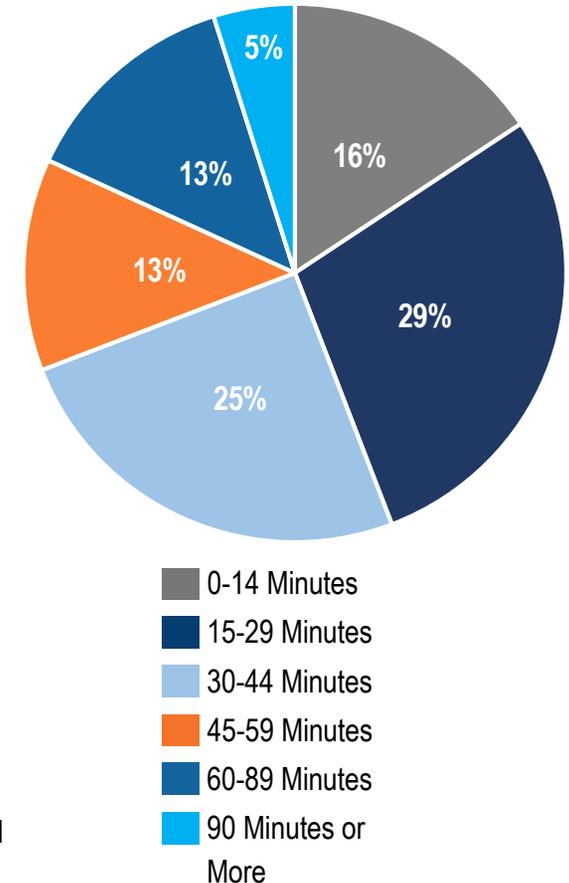
COMMUTING TO CAMBRIDGE

Travel Time

TRAVEL TIME



PROPORTION OF WORKFORCE



45%

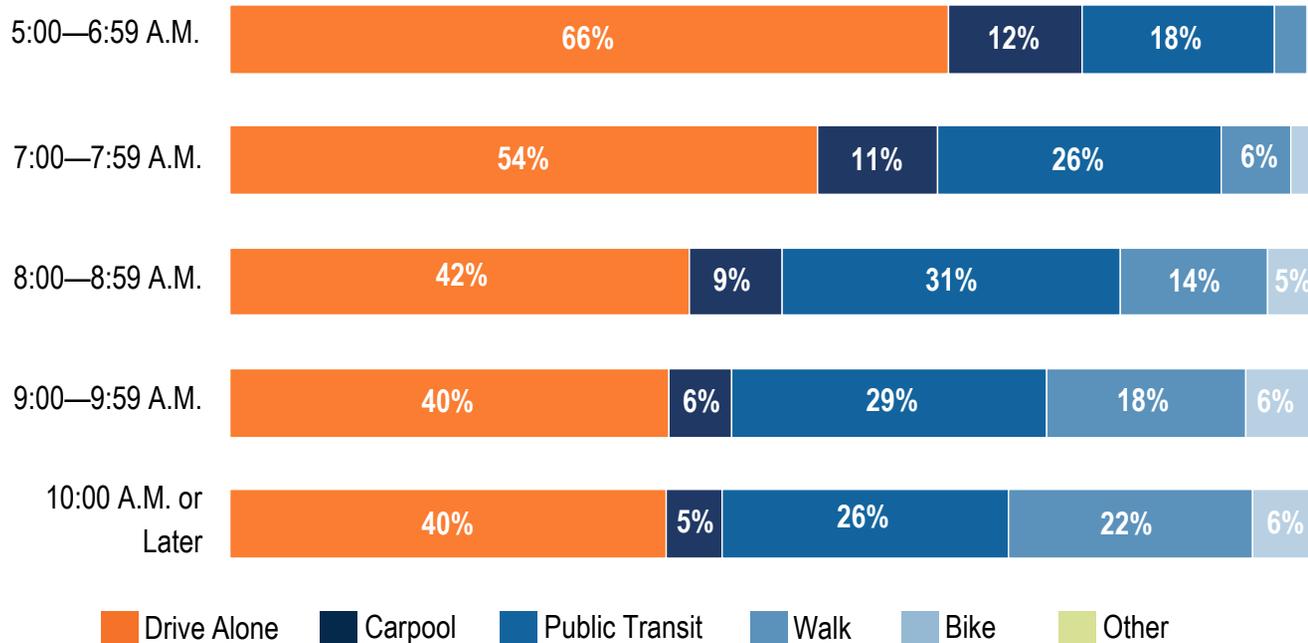
of Cambridge Workforce members have a commute time of up to 29 minutes. Of this same group, 58% commute by a sustainable mode. However, those with commute times between 30 and 59 minutes (roughly 38% of the Workforce)

have the highest proportion of workers who drive alone to work (52%). Meanwhile, public transit use, which grows alongside travel time, is most common among the 18% of the Workforce traveling at least an hour to work.

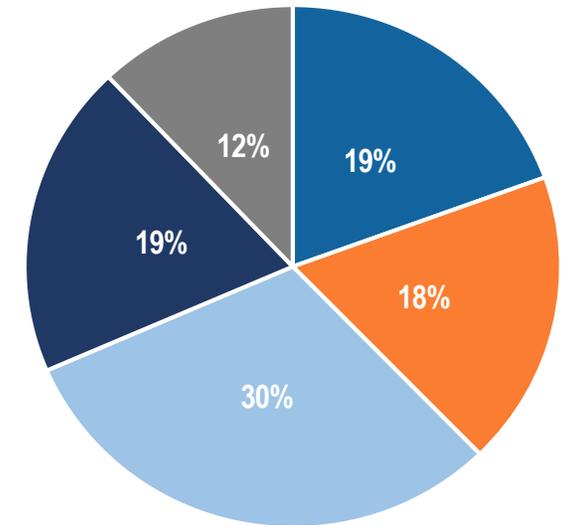
COMMUTING TO CAMBRIDGE

Time Arriving

TIME ARRIVING



PROPORTION OF WORKFORCE



- 5:00 A.M. — 6:59 A.M.
- 7:00 A.M. — 7:59 A.M.
- 8:00 A.M. — 8:59 A.M.
- 9:00 A.M. — 9:59 A.M.
- 10:00 A.M. or Later

67%

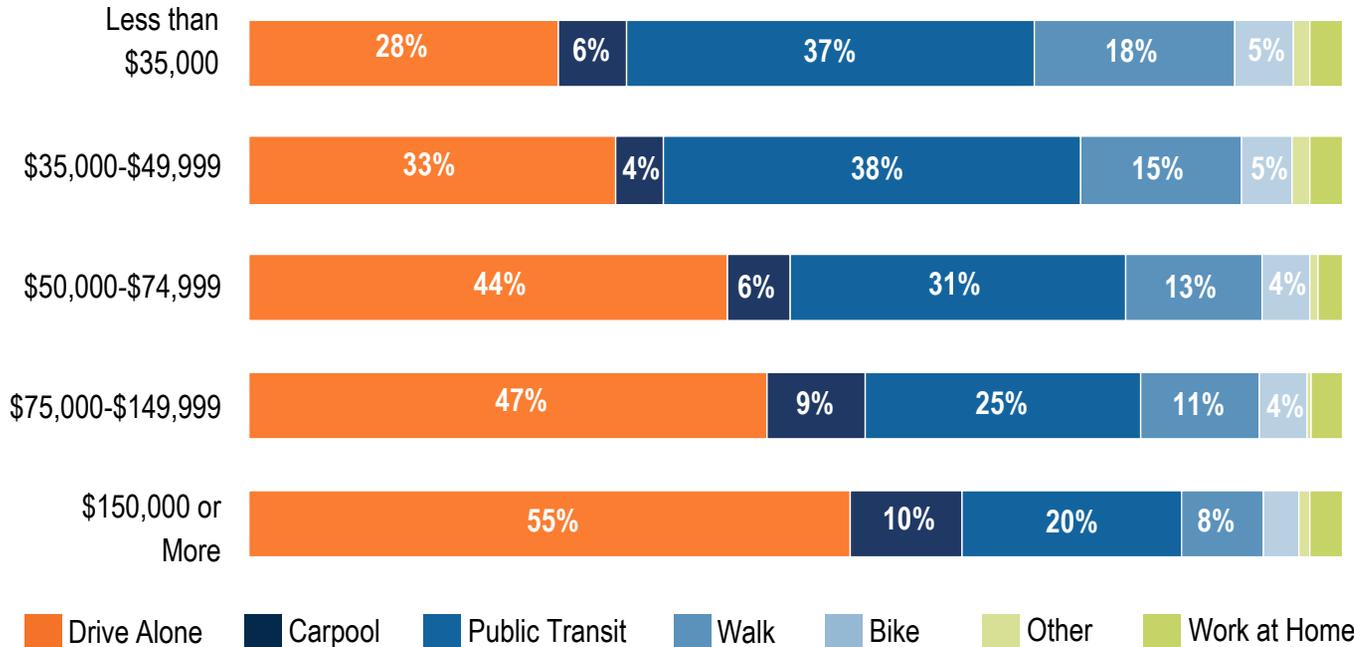
of the Workforce arrive to work after 8:00 A.M. Driving alone becomes less popular as the morning progresses, as proportions of workers who take public transportation, walk, and bike all increase. 30% of the Workforce

arrive to work between 8:00 A.M. and 9:00 A.M., when public transit use is at its highest (31%).

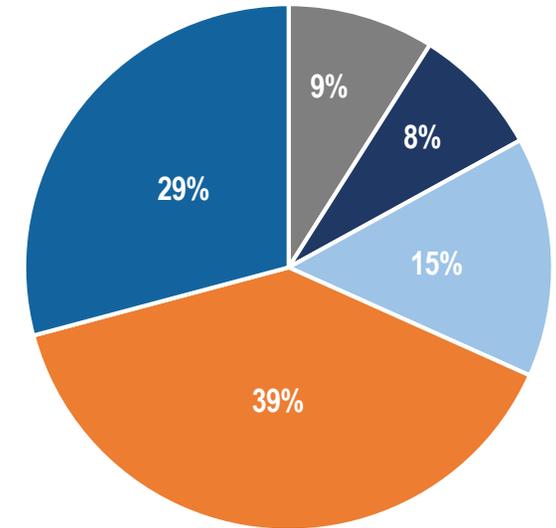
COMMUTING TO CAMBRIDGE

Household Income

ANNUAL HOUSEHOLD INCOME



PROPORTION OF WORKFORCE



60%

of the Workforce earning less than \$75,000 a year use a sustainable means of transportation to commute to work. Among households earning above that level, sustainable modes of commuting decline to 46%. The

proportion of workers who drive alone increases alongside annual income, yet the only income bracket with a majority of workers who commute to work by driving alone is \$150,000 or more.



COMMUTING FROM CAMBRIDGE TO WORK

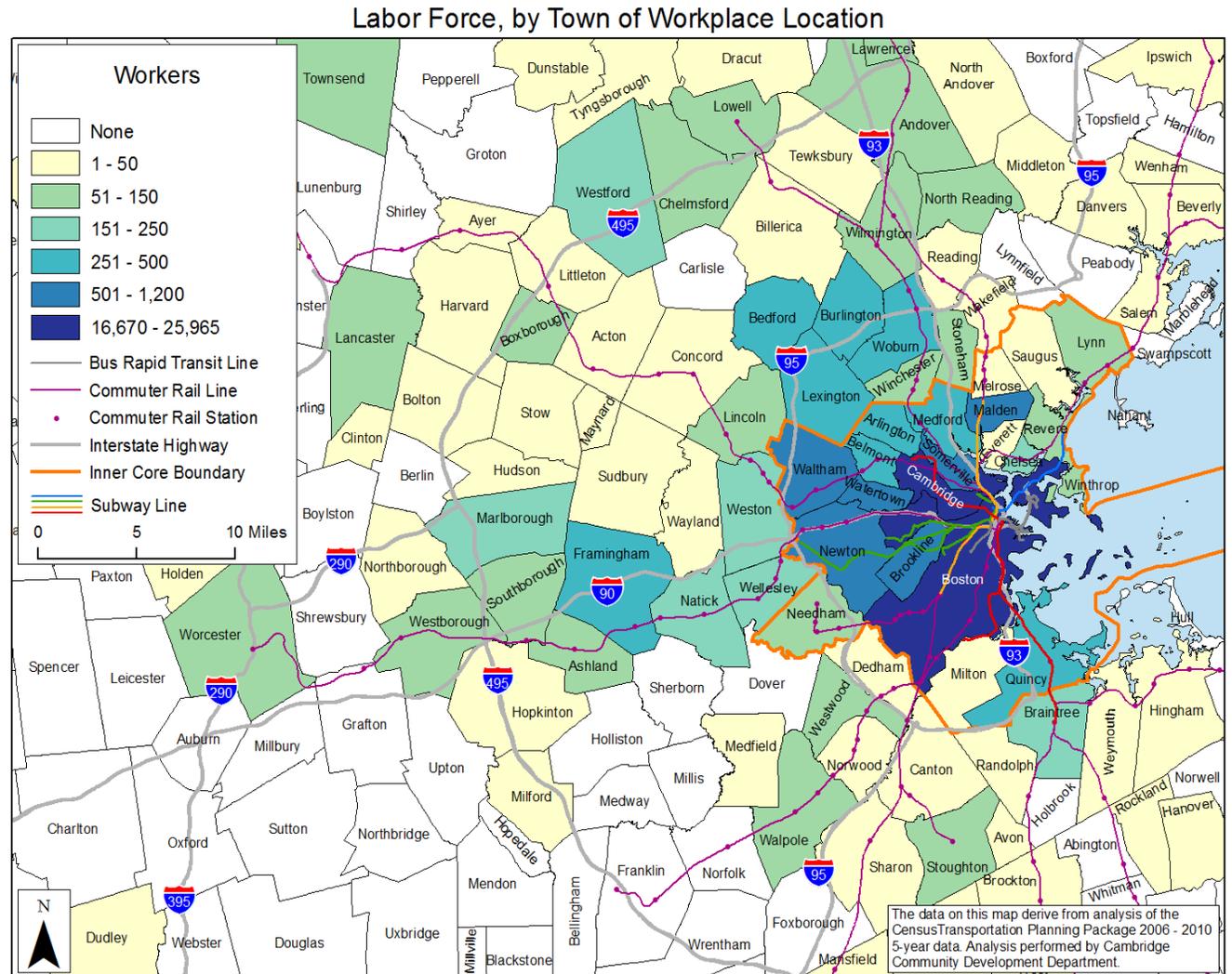
Photo by Gretchen Ertl 2015

Overview

COMMUTING FROM CAMBRIDGE

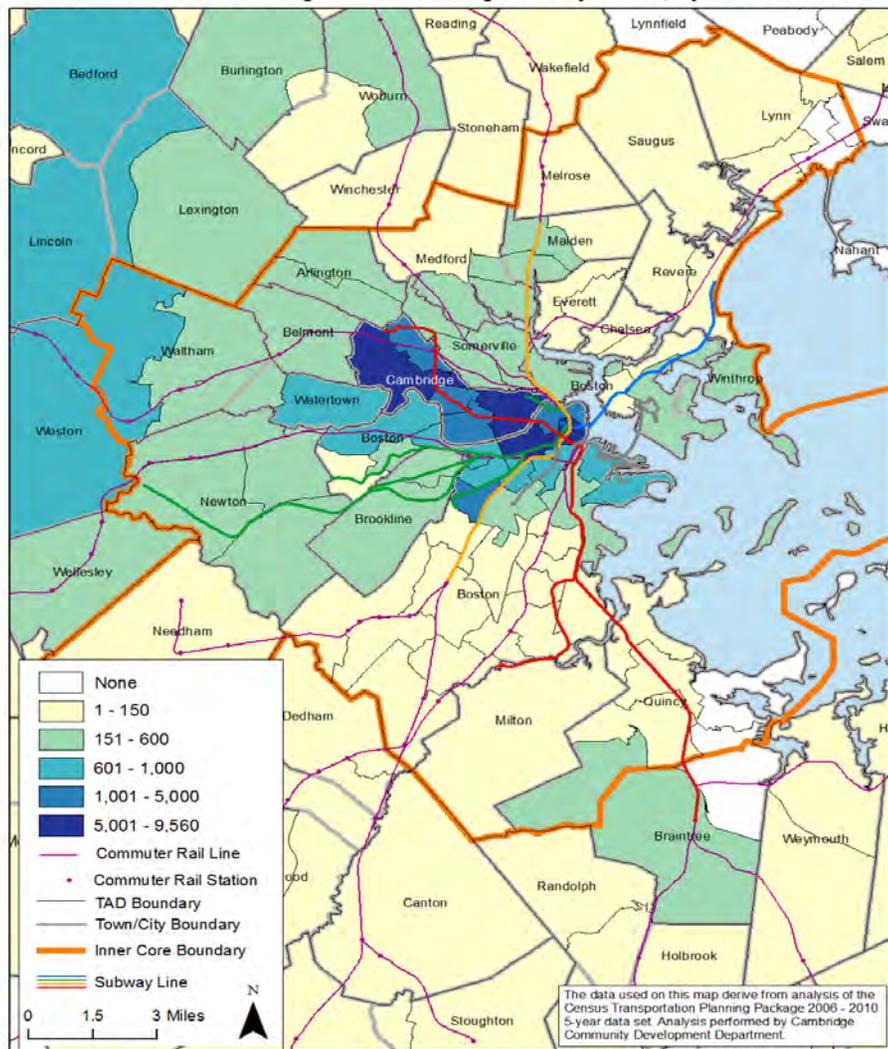
The 2006-2010 Journey to Work dataset reports that the Cambridge Labor Force is composed of 62,218 members (or 60% of the City's total population).³ This figure (compared to 54,979 in 2000 and 52,355 in 1990) includes all Cambridge residents working or seeking work in any jurisdiction. Of these 60,000+ residents, nearly 94% (or 58,620 members) were employed in 2010. The vast majority — 83% — of today's employed Labor Force works in the Inner Core Region. As with the Workforce, the data demonstrate an increase in these workers' efforts to leave their vehicles at home and commute to work by a sustainable mode of transportation.

3. Proportion of total population is based on 2006-10 American Community Survey five-year dataset, which differs from other sources.



COMMUTING FROM CAMBRIDGE

Labor Force Commuting from Cambridge to Anywhere, by TAD Location



The data used on this map derive from analysis of the Census Transportation Planning Package 2006 - 2010 5-year data set. Analysis performed by Cambridge Community Development Department.
Map prepared by Ian Jakus on July 29, 2014. Updated August 19, 2015.

Over two-thirds of the Cambridge Labor Force work in the City itself or in Boston. The rest of the Labor Force is spread out across the state:

62,218 (or 60% of the total population)

Cambridge residents are members of the Labor Force

94% (or 58,620)

Are employed

92% (or 53,930)

Of employed Labor Force members work in the Inner Core, of which:

44% (or 25,965)

Work in Cambridge

27% (or 16,670)

Work in Boston

6% (or 3,475)

Work in neighboring towns Somerville, Arlington, Belmont, Watertown, and Brookline

6% (or 3,418)

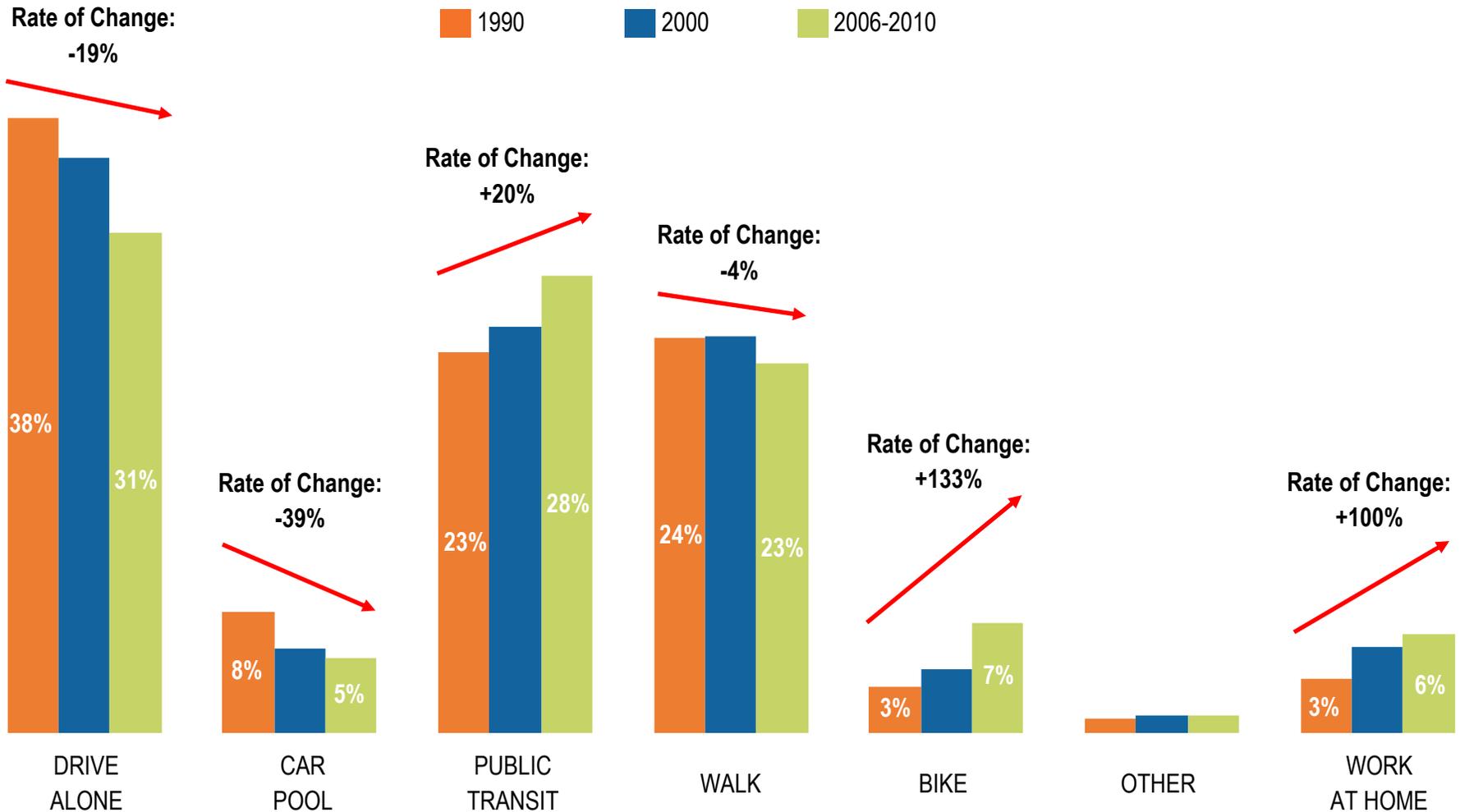
Work in the Metro West, Metro South, and Metro North Regions

<2% (or 998)

Work elsewhere

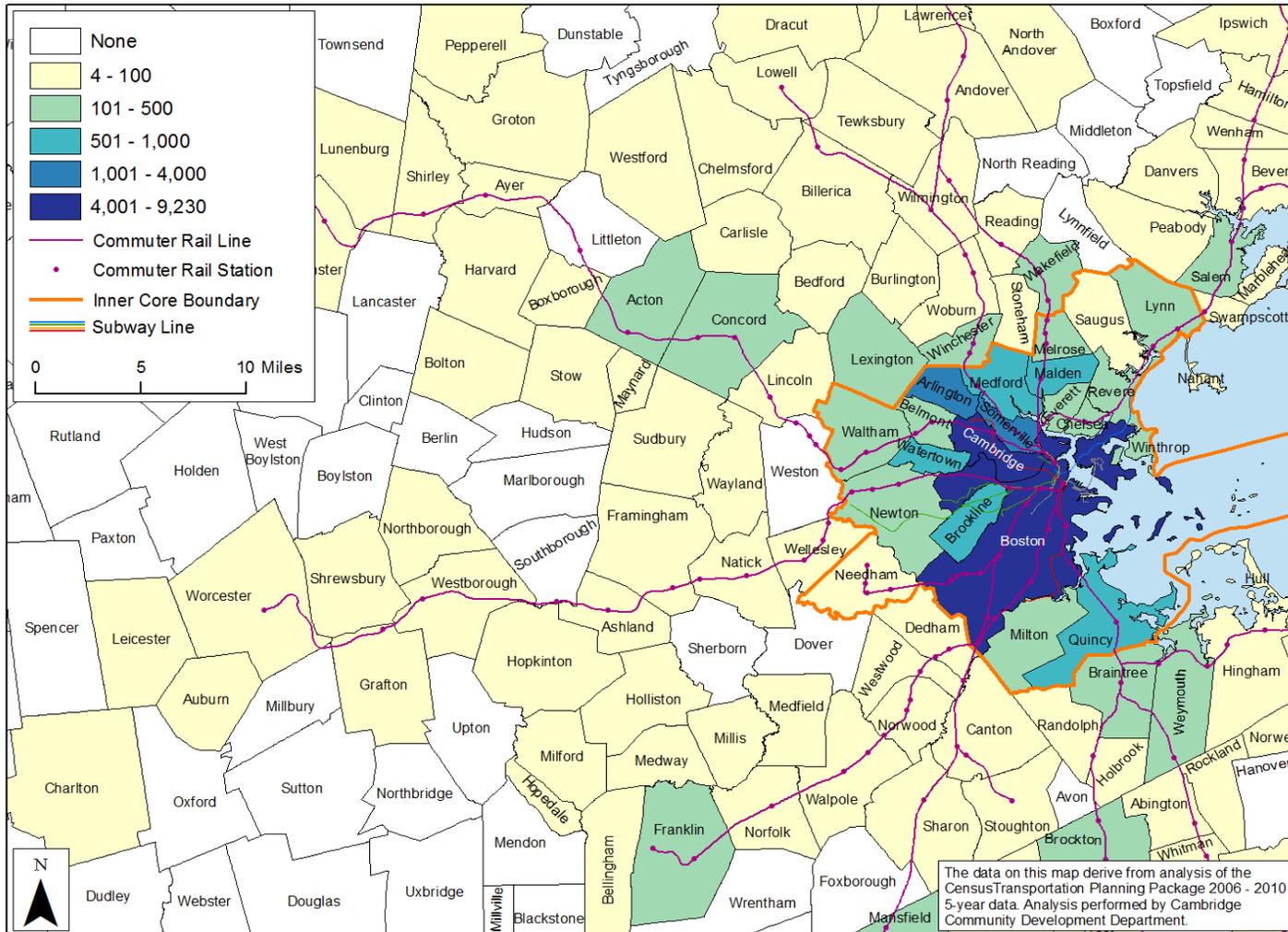
COMMUTING FROM CAMBRIDGE

CHANGE IN MODES OF COMMUTING SINCE 1990



COMMUTING FROM CAMBRIDGE

Labor Force Commuting from Cambridge Using Public Transit, by Town of Workplace Location



The data on this map derive from analysis of the Census Transportation Planning Package 2006 - 2010 5-year data. Analysis performed by Cambridge Community Development Department.
Map prepared by Ian Jakus on July 29, 2014. Updated August 14, 2015.

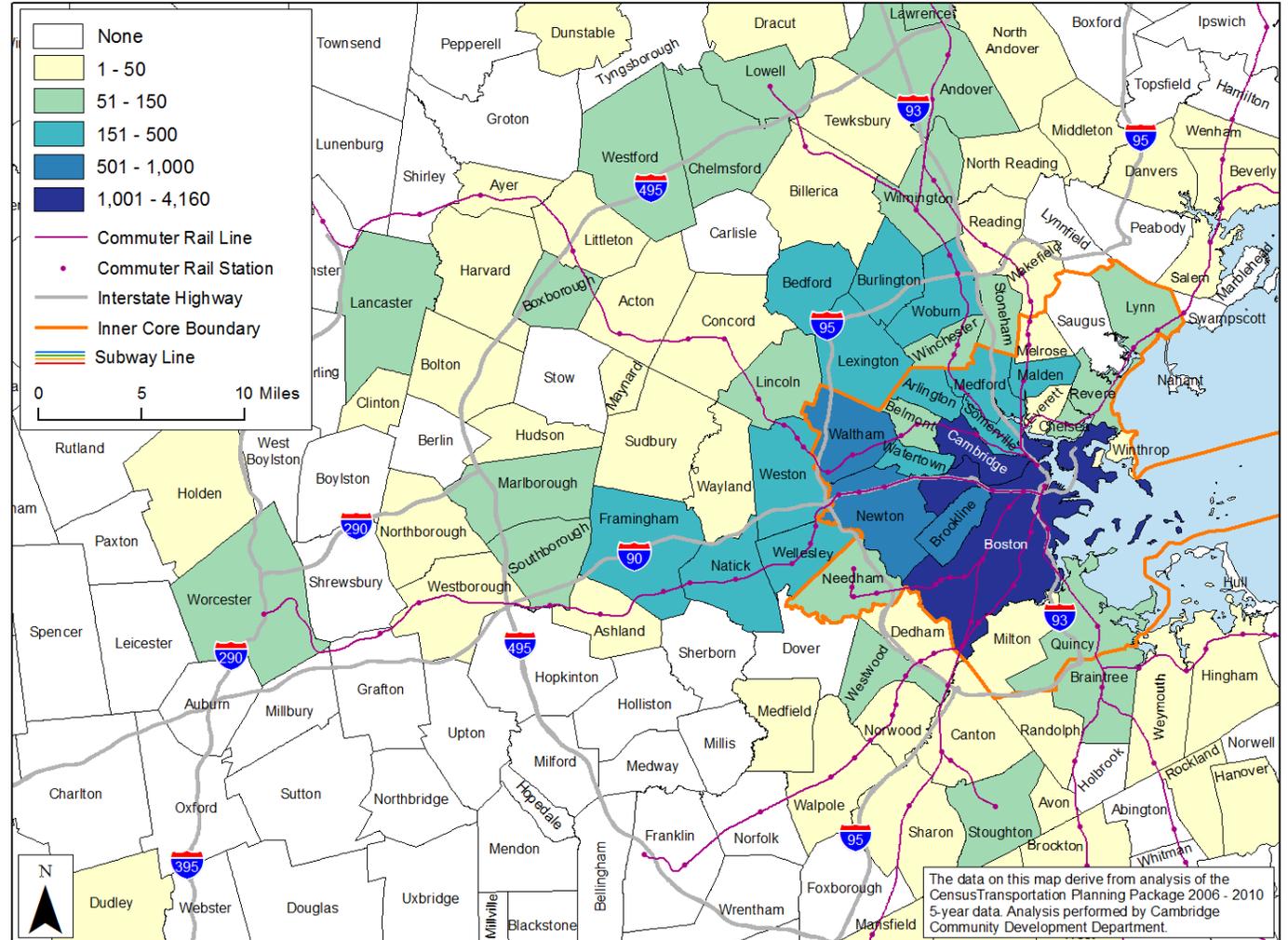
Nearly 16,000 Cambridge residents (or one in four) commute to work via public transit. Since 1990, public transit use by the Labor Force has increased by 20%. Roughly 97% of the Labor Force using public transit are destined for the Inner Core Region. Of the over 4,000 residents commuting outside the Inner Core boundary to workplace locations out of state or to Massachusetts' Metro West, South, or North regions, over 12% use public transit.

Driving Alone by Destination

COMMUTING FROM CAMBRIDGE

Even with a 9% uptick in overall size since 1990, the Labor Force has seen a 7% decrease in the proportion of workers who drive alone to work. Since most workers are driving to work in the Inner Core Region, towns within this boundary, like Waltham, Newton, Brookline, Boston, Arlington, and Somerville, have the highest densities of Cambridge residents driving to work. Overall, less than one in three (or nearly 18,000) Labor Force workers drive alone to work today.

Labor Force Workers Commuting from Cambridge Who Drive Alone, by Town of Workplace Location



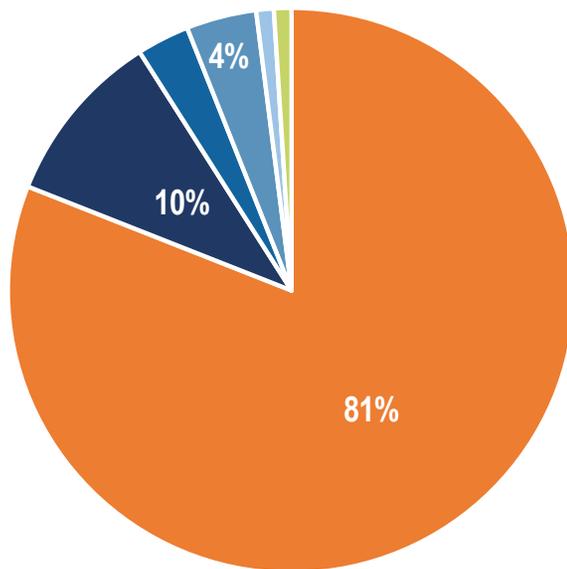
COMMUTING FROM CAMBRIDGE

■ Inner Core
 ■ Metro North
 ■ Metro South
 ■ Metro West
 ■ Rest of State
 ■ Out of State

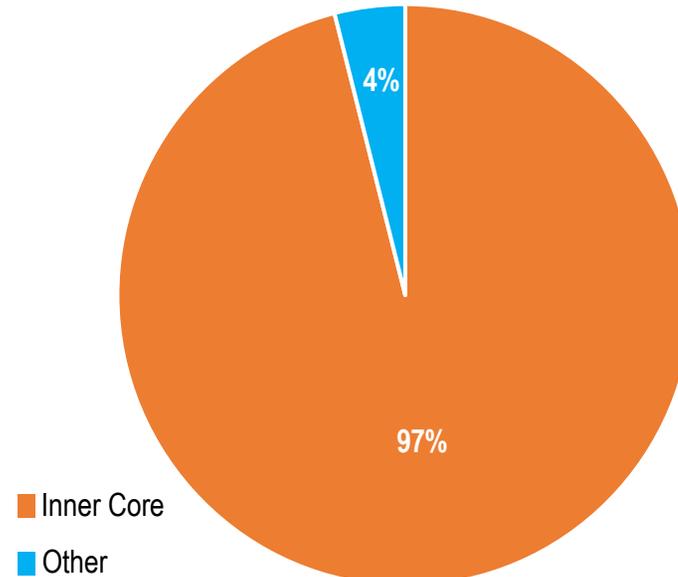
PROPORTION OF LABOR FORCE BY REGION OF DESTINATION



DRIVE ALONE BY REGION OF DESTINATION



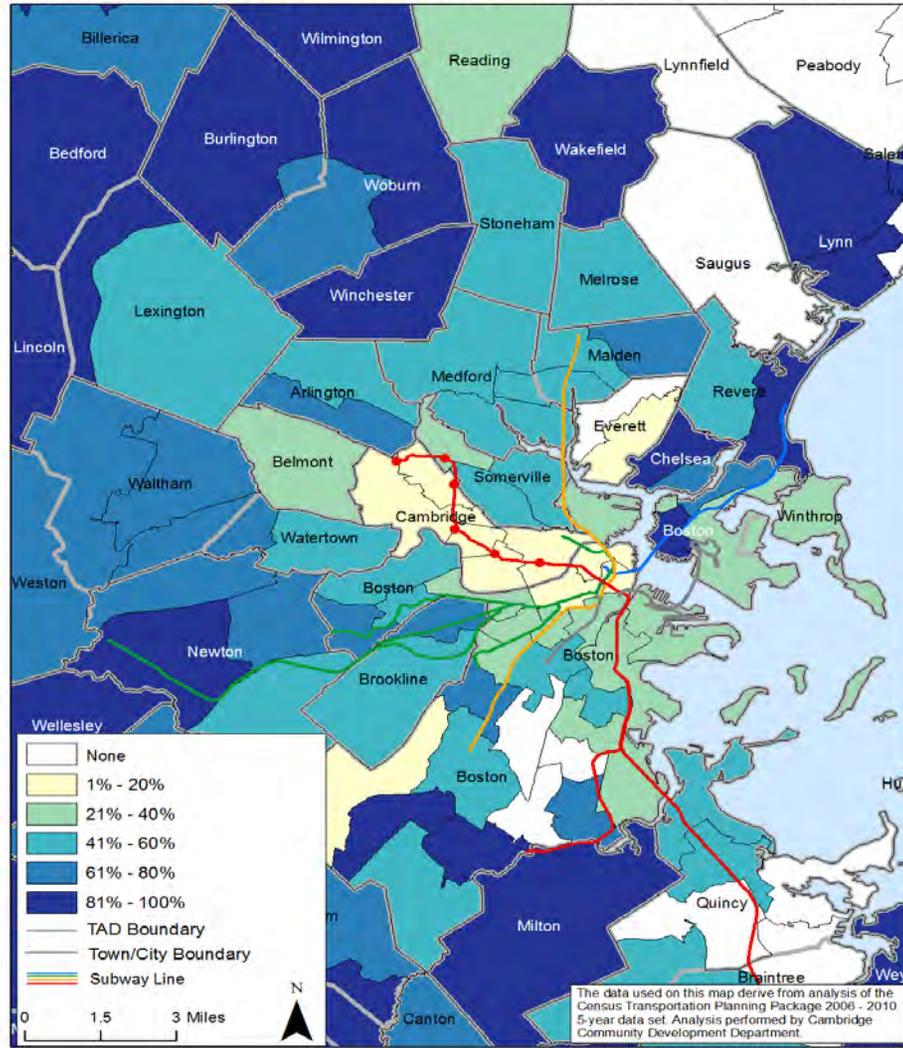
TRANSIT USE BY REGION OF DESTINATION



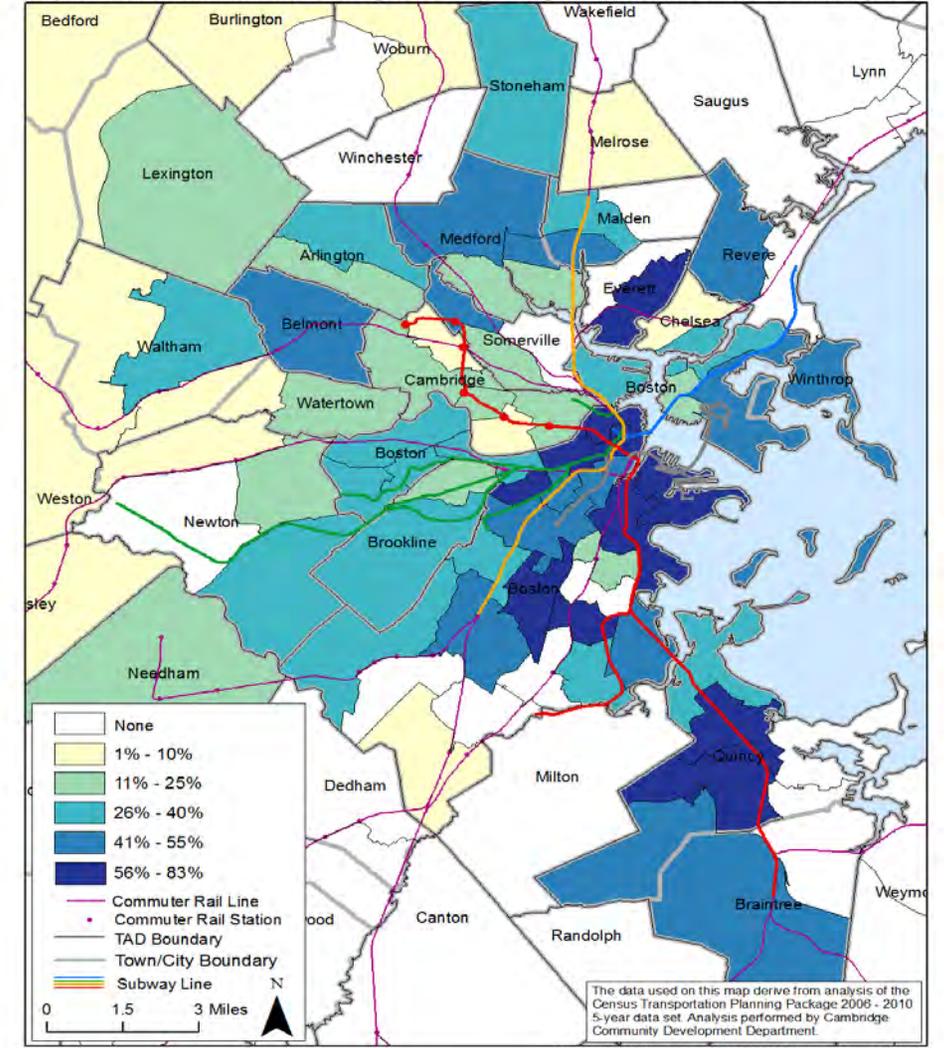
Note: the above pie charts compare all residents who drive alone or take public transit to each region of workplace location. For example, 81% of all those who drive alone work in the Inner Core.

COMMUTING FROM CAMBRIDGE

Proportion of Workers Commuting from Cambridge who Drive Alone, by TAD

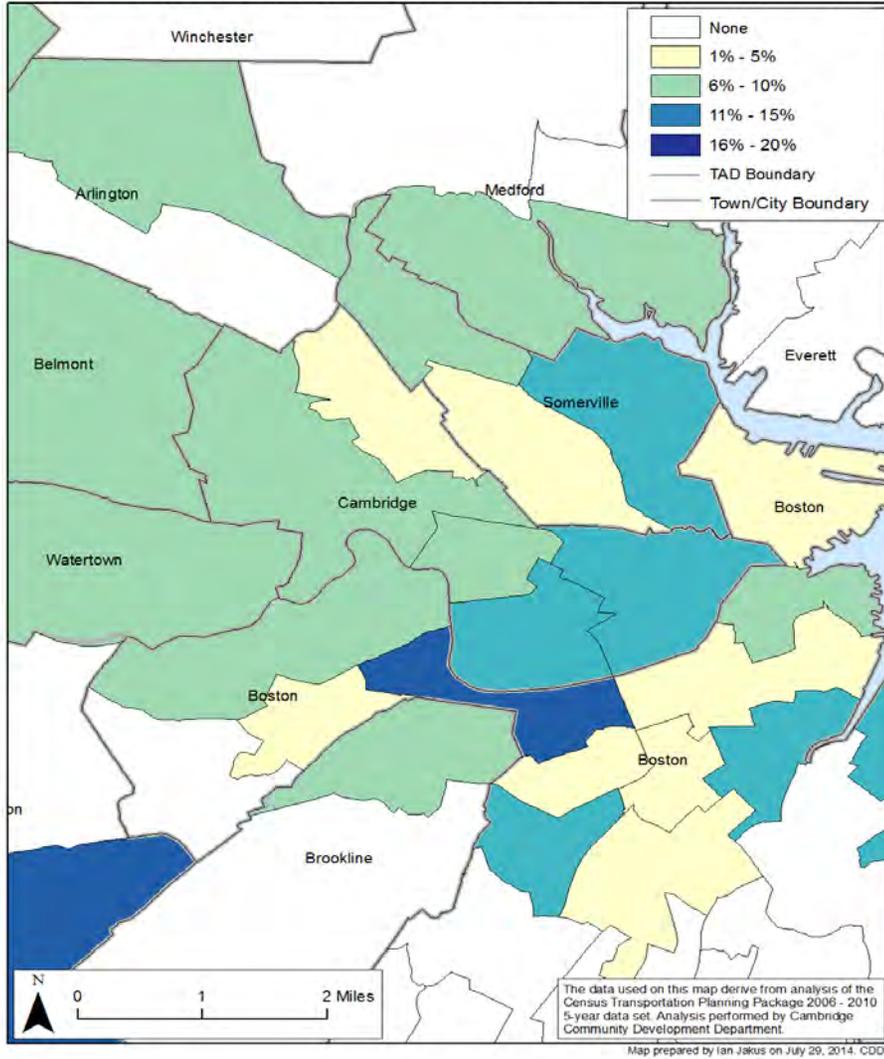


Proportion of Workers Commuting from Cambridge Who Took Public Transit, by TAD

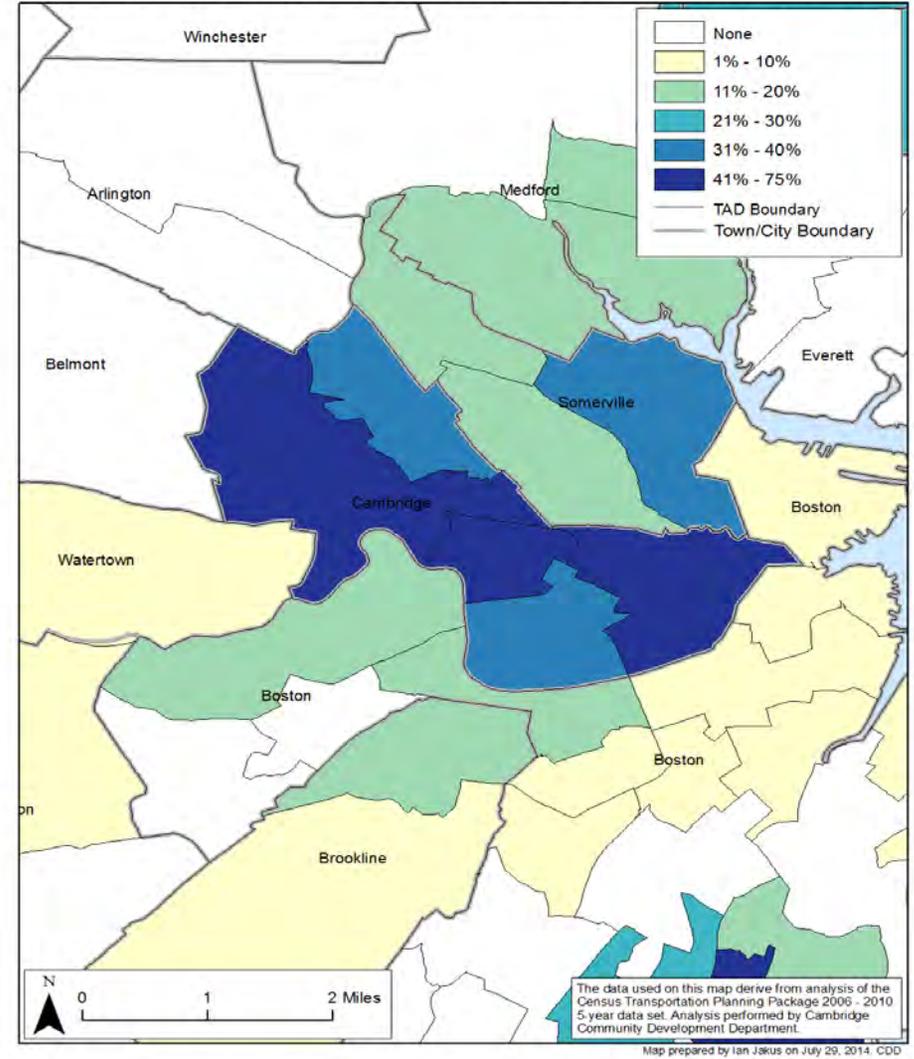


COMMUTING FROM CAMBRIDGE

Proportion of Resident Workers Commuting from Cambridge who Bike, by TAD

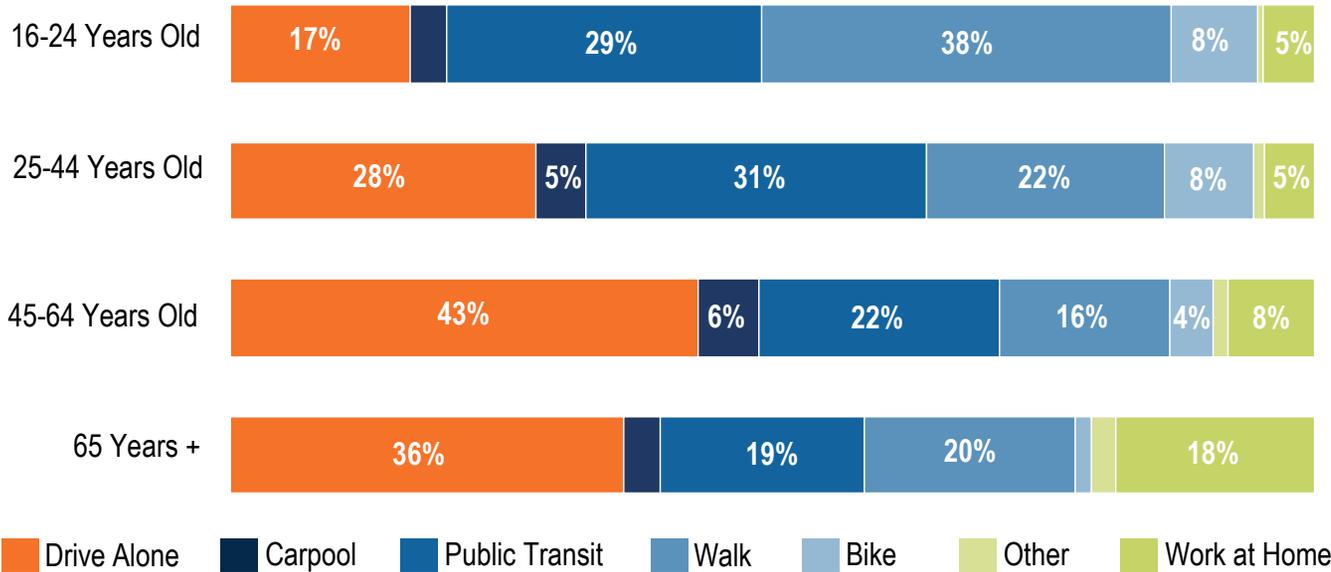


Proportion of Resident Workers Commuting from Cambridge who Walk, by TAD

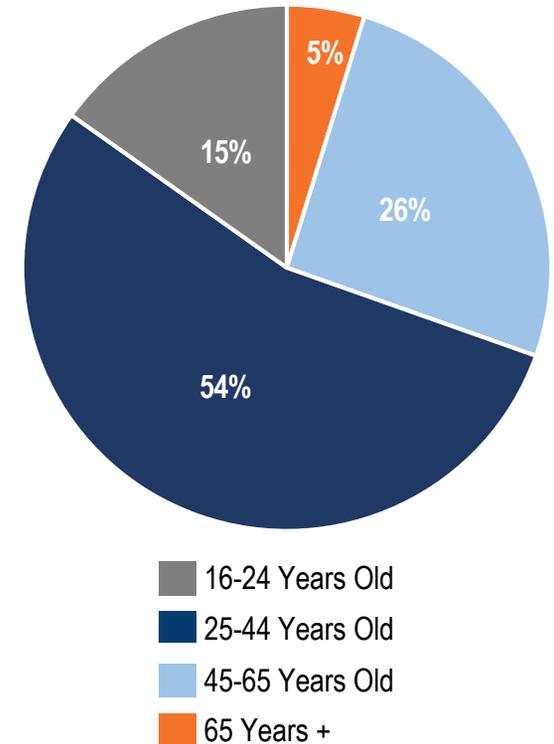


COMMUTING FROM CAMBRIDGE

AGE OF WORKER



PROPORTION OF LABOR FORCE



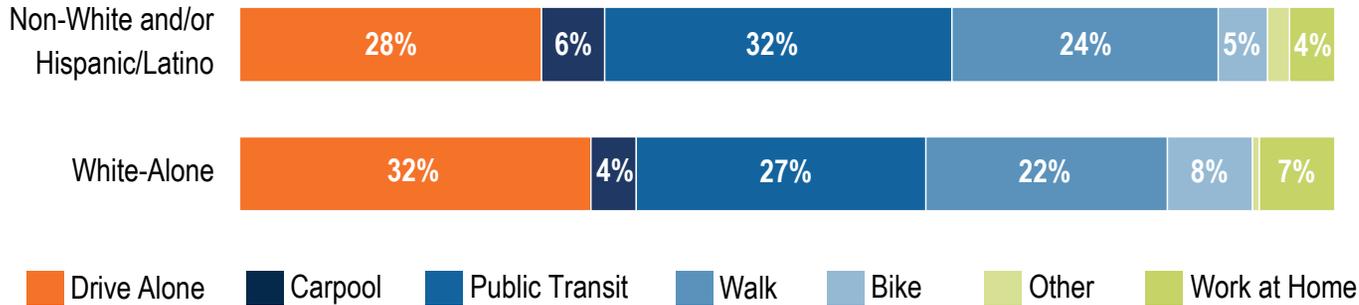
70%

of the Labor Force is between 16 and 44 years of age. Three in four within this age range commute by transit, walking, or biking, while 26% drive alone. One-fourth of the Labor Force is composed of 45-65 year olds, of whom nearly 43% drive alone and 48% use a

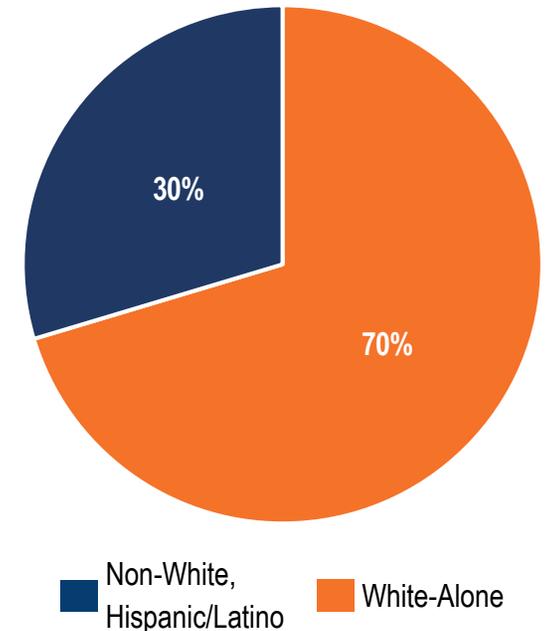
sustainable mode of transportation to work.

COMMUTING FROM CAMBRIDGE

MINORITY STATUS



PROPORTION OF LABOR FORCE



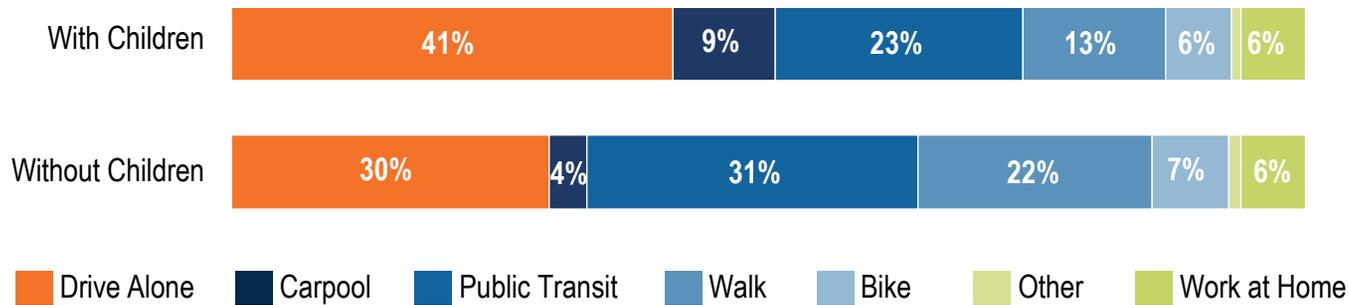
70%

of the Labor Force is White-Alone, of which nearly three in four commute to work by some mode of sustainable transportation. White-Alone and Non-White and Hispanic workers commute to work in similar fashions; yet, White residents drive alone to work or

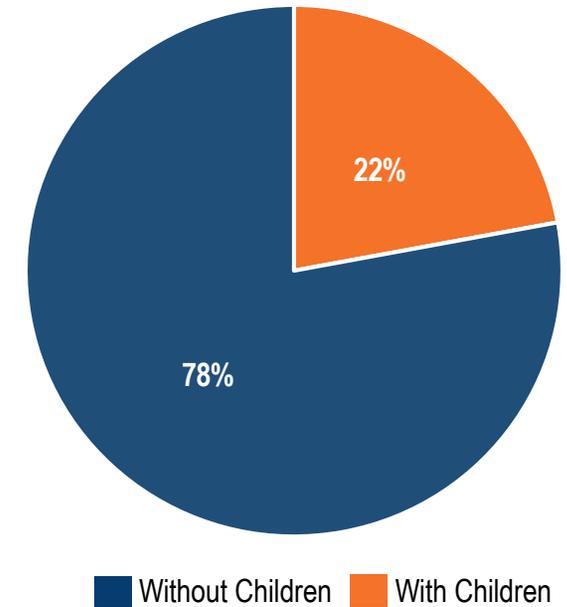
work at home more frequently than Non-White and Hispanic Labor Force members. What's more, Non-White and Hispanic Labor Force members are more likely to carpool (2%), take public transit (5%), or walk (2%) to work than White-Alone Labor Force members.

COMMUTING FROM CAMBRIDGE

PRESENCE OF CHILDREN UNDER 18



PROPORTION OF LABOR FORCE



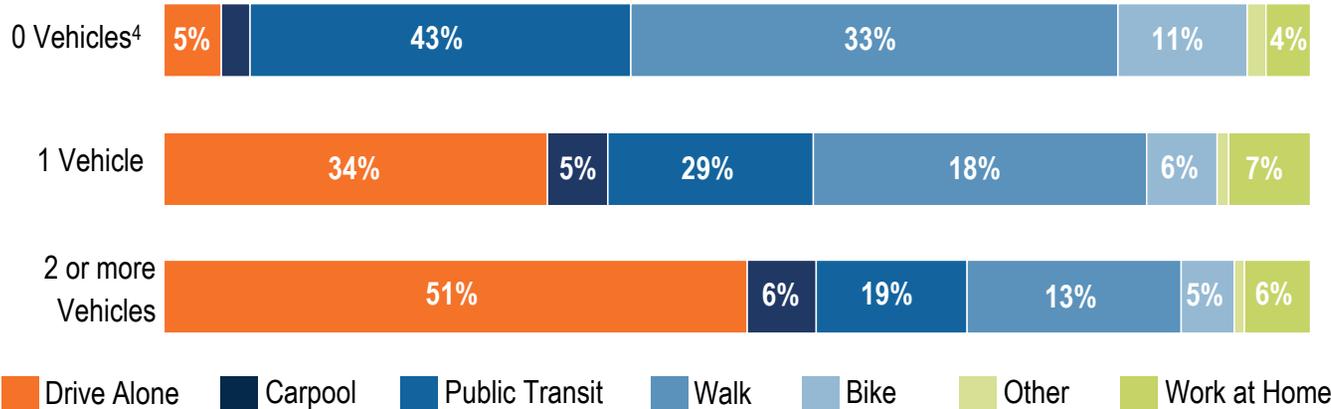
78%

of the Labor Force does not have a child under 18 living at home. Of this same group, only one in three commute to work by driving alone. Driving Alone is more common amongst the Labor Force with children at home, yet

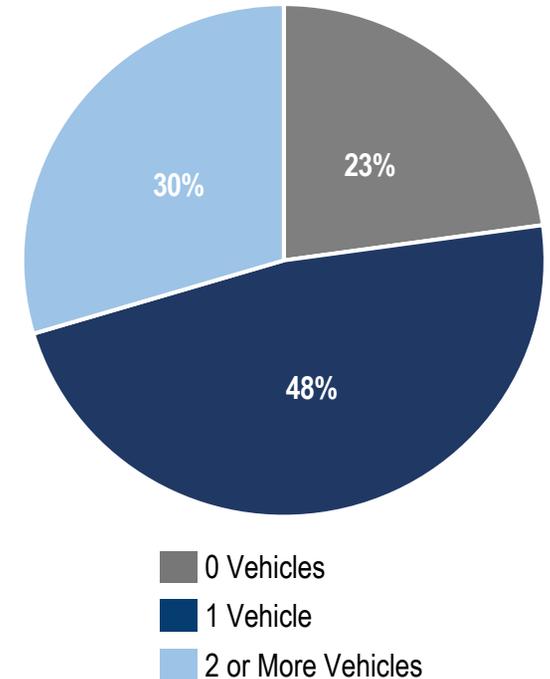
a majority still commute to work sustainably. People with children at home may be more likely to drive alone, as they may include an additional stop in their commute.

COMMUTING FROM CAMBRIDGE

VEHICLES AVAILABLE



PROPORTION OF LABOR FORCE



78%

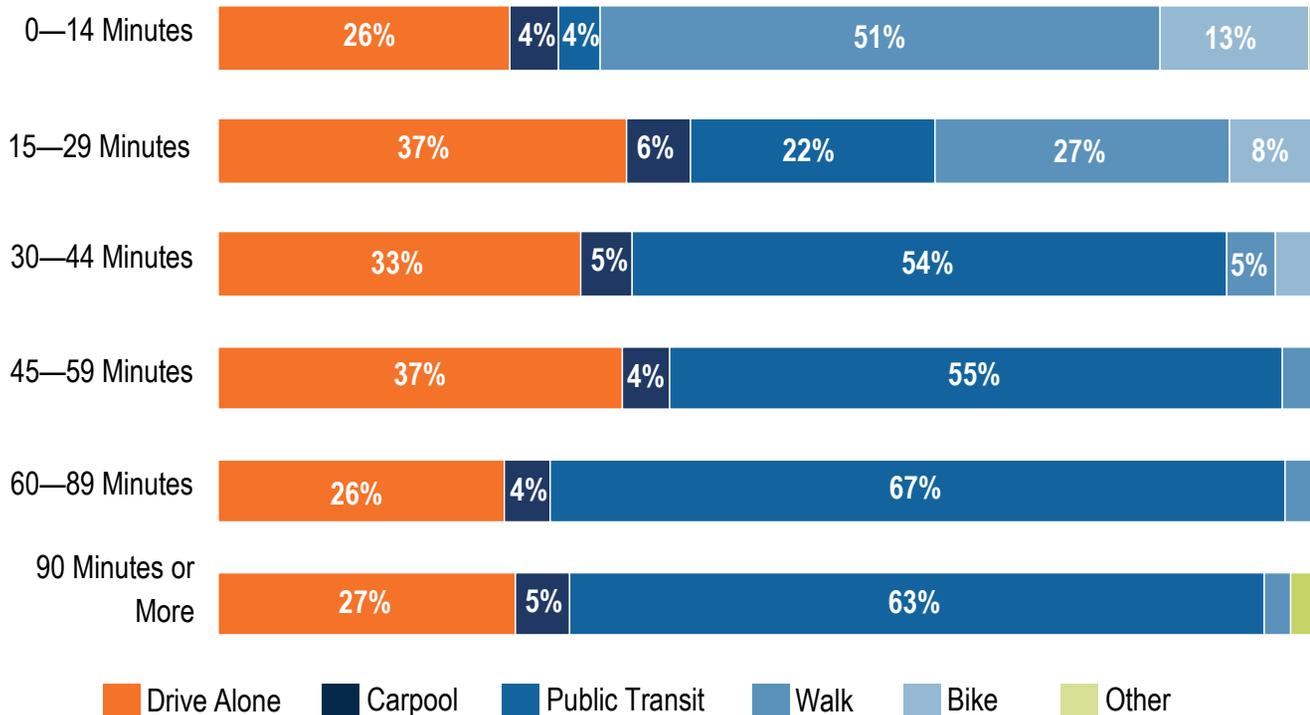
of the Labor Force has at least one vehicle available for use by their household. Those with more than one vehicle have the highest proportion of residents who drive alone to work. However, those with only one vehicle have a high proportion of residents who leave

their car at home and choose to walk to work. Public transit use, walking, and biking are key transportation methods for the 23% of the Labor Force without a vehicle available.

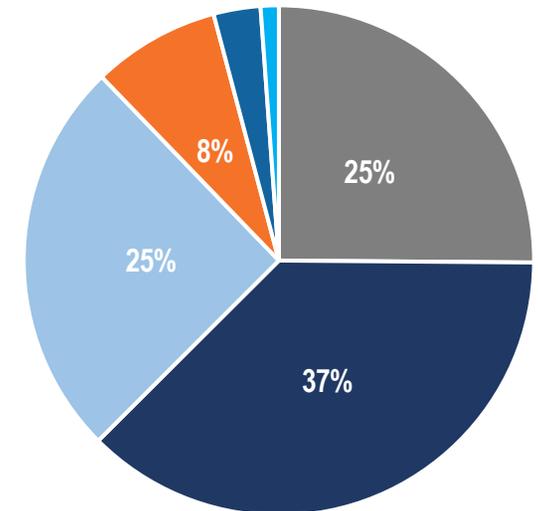
4. Reasoning for the proportion of workers who drive alone to work without an available vehicle remains inconclusive. See "About the Data" for discussion of this issue.

COMMUTING FROM CAMBRIDGE

TRAVEL TIME



PROPORTION OF LABOR FORCE



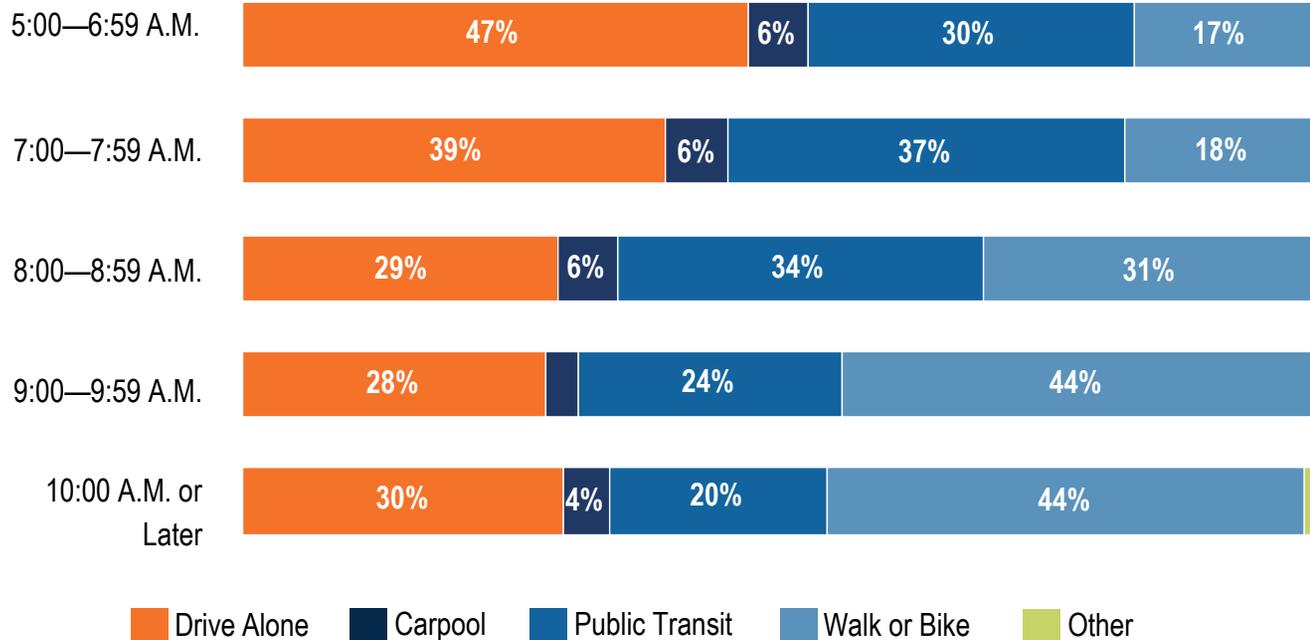
62%

of Labor Force workers spend up to 29 minutes commuting. Of this same group, 33% drive alone, while 67% travel sustainably. Public transportation is most popular amongst those with the

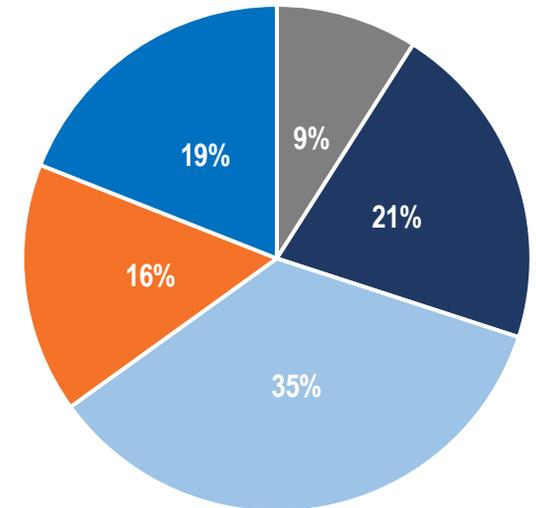
longest commute times (60 minutes or more). Driving alone is most popular amongst those whose commute takes 15-29 minutes and among those commuting 45-59 minutes.

COMMUTING FROM CAMBRIDGE

TIME LEAVING HOME



PROPORTION OF LABOR FORCE



65%

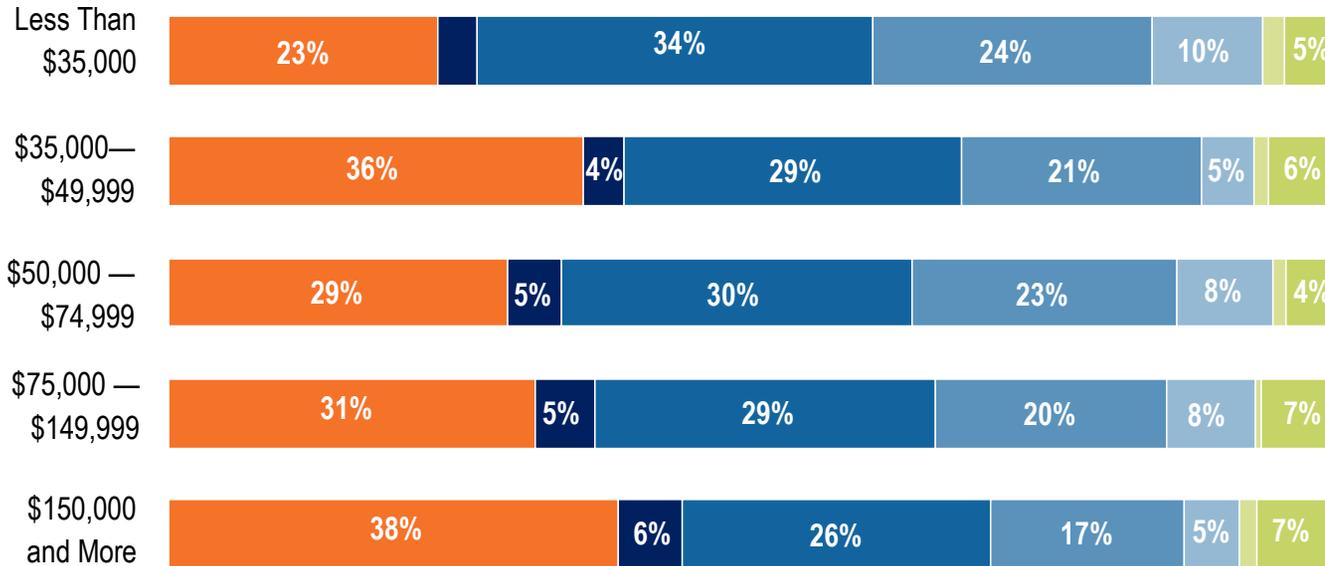
of the Labor Force leaves for work before 9:00 A.M. Of this same group, 35% drive alone, 35% take public transit, and 24% walk or bike. Of those leaving after 9:00 A.M., biking or walking are the most popular forms of

transportation at 44% combined. Those with the earliest departure times drive alone the most, perhaps due to either low traffic volumes at this time or needing to commute greater distances from home to the workplace.

- 5:00 A.M. — 6:59 A.M.
- 7:00 A.M. — 7:59 A.M.
- 8:00 A.M. — 8:59 A.M.
- 9:00 A.M. — 9:59 A.M.
- 10:00 A.M. or Later

COMMUTING FROM CAMBRIDGE

HOUSEHOLD INCOME



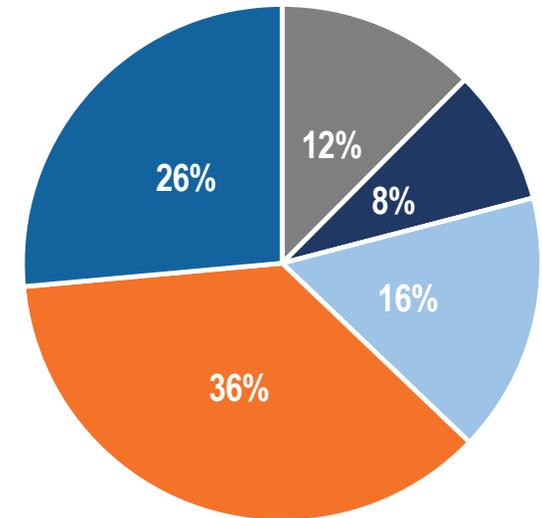
■ Drive Alone
 ■ Carpool
 ■ Public Transit
 ■ Walk
 ■ Bike
 ■ Other
 ■ Work at Home

62%

of the Cambridge Labor Force resides in a household earning more than \$75,000. Among this group, driving alone is the most popular mode of transportation at 34% of members, followed by public transit (28%) and walking

and biking combined (25%). The differences between this group and those earning less than \$75,000 are small in magnitude. 29% of those earning less than \$75,000 drive alone, while 31% take public transit, and 30% walk or bike.

PROPORTION OF LABOR FORCE



■ Less Than \$35,000
■ \$35,000—\$49,999
■ \$50,000—\$74,999
■ \$75,000—\$149,999
■ \$150,000 or More



COMMUTING WITHIN CAMBRIDGE

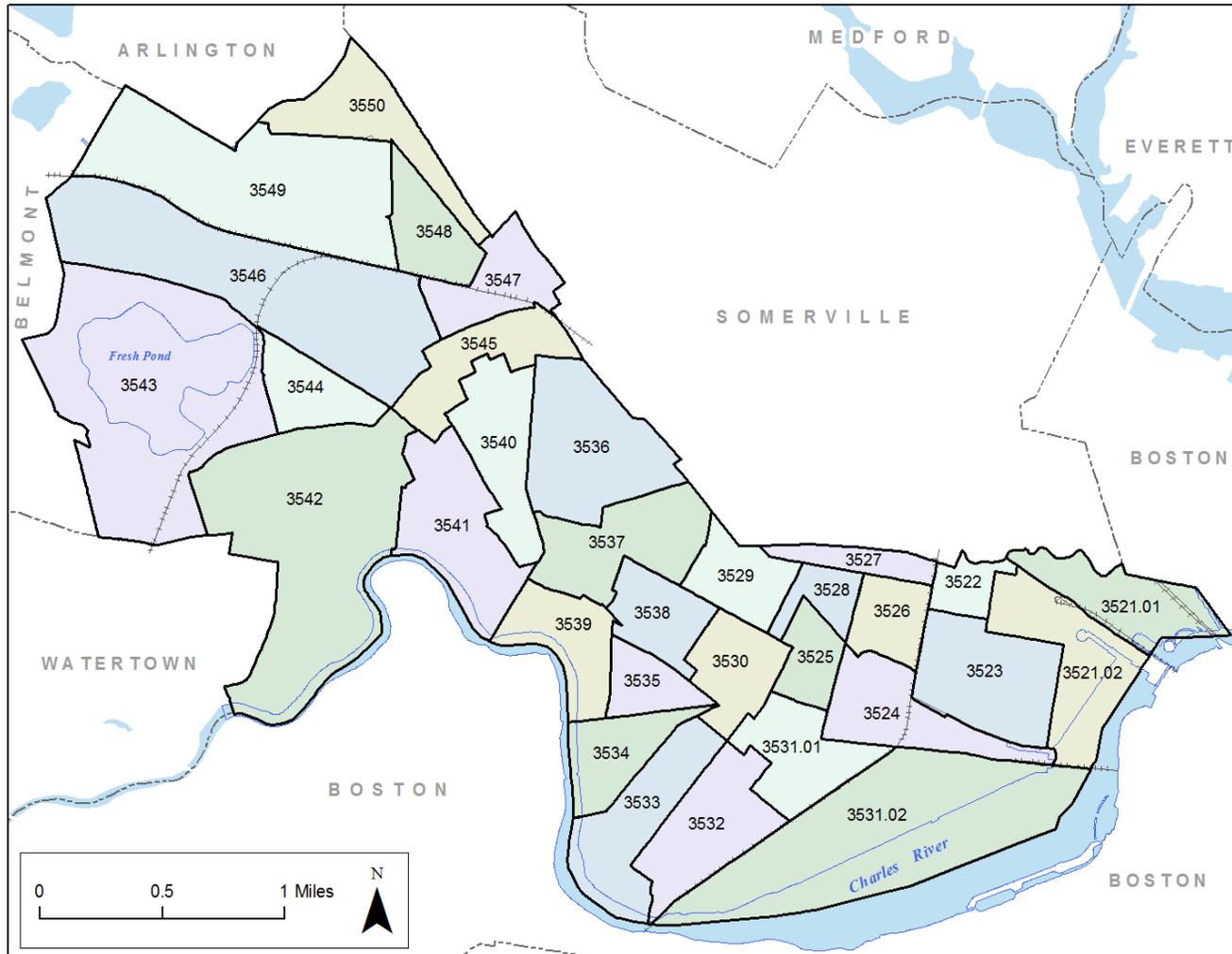
Photo by Gretchen Ertl 2015

Moving Forward | 2016 | Cambridge, Massachusetts | Community Development Department

COMMUTING IN CAMBRIDGE

Overview

2010 U.S. Census Boundaries for Cambridge



The Journey to Work dataset reports that nearly 26,000 Cambridge residents (or 44% of the total Labor Force) work in the city itself and comprise the Resident Labor Force. This number has grown slightly since 1990 (25,513) and 2000 (25,488). Of this group, nearly 23% (or 6,025) work in the census tracts located around Harvard Square, or Census Tracts 3536-3540. Census Tracts 3531.02 (18%), 3524 (9%), and 3536 (8%) have the highest proportions of residents among the Workforce within their boundaries, while Census Tracts 3525, 3526, and 3527 have the least at <1%. None of the 32 census tracts are home to a majority of residents who drive alone to work in Cambridge.

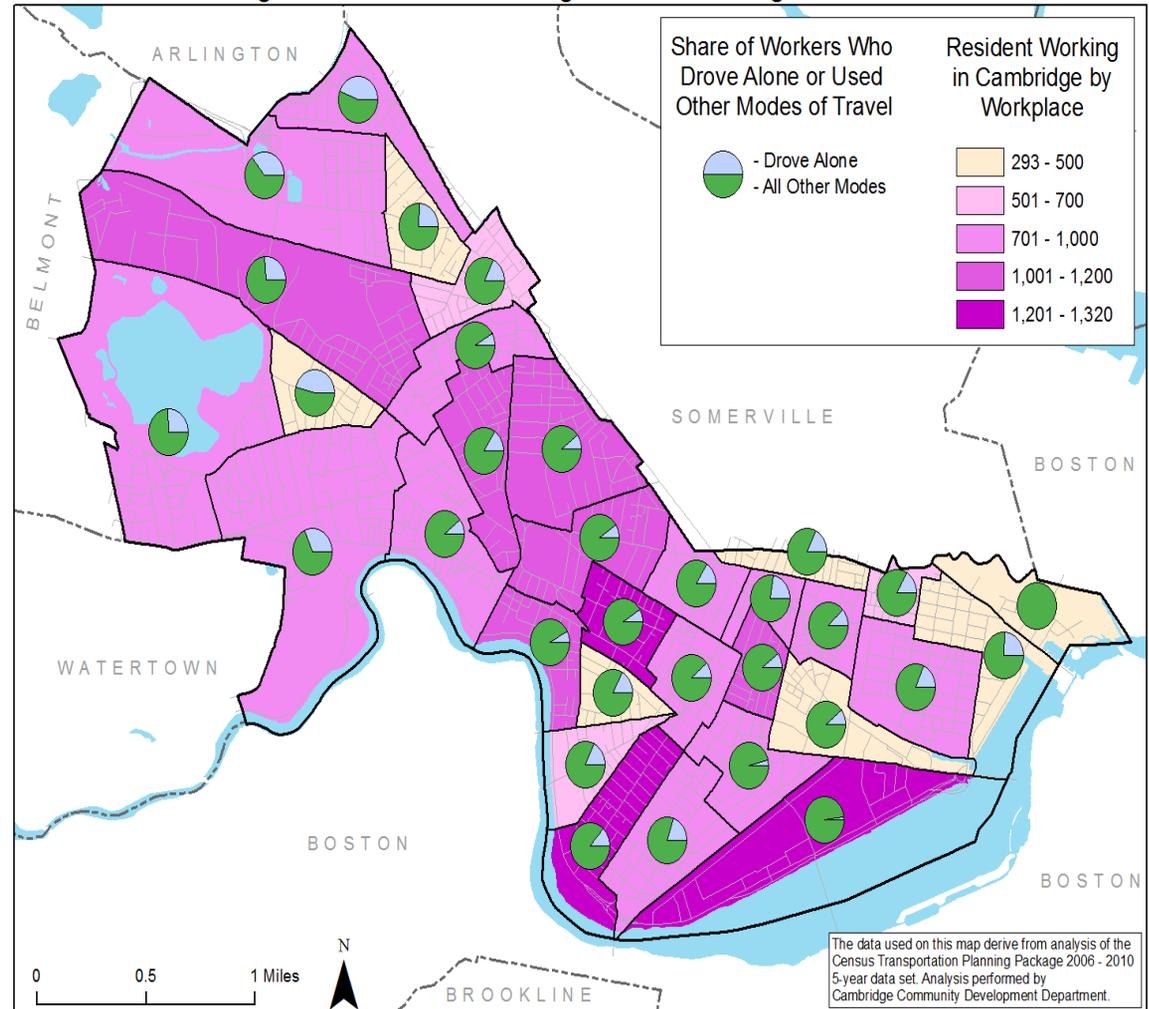
COMMUTING IN CAMBRIDGE

By the Numbers

Nearly half of employed Cambridge residents worked in the city in 2006-2010. Sustainable transportation modes are popular in this working group, such that:

- 103,506** People live in Cambridge⁵
- 58,620** Are employed
- 25,965** Of employed Cambridge residents also work in the city. Of these:
 - 41% (10,710)** Walk or bike
 - 16% (or 4,160)** Drive alone
 - 16% (or 4,050)** Take public transit
 - 13% (or 3,465)** Work at home

Cambridge Residents Commuting within Cambridge Who Drive Alone



The data used on this map derive from analysis of the Census Transportation Planning Package 2006 - 2010 5-year data set. Analysis performed by Cambridge Community Development Department.

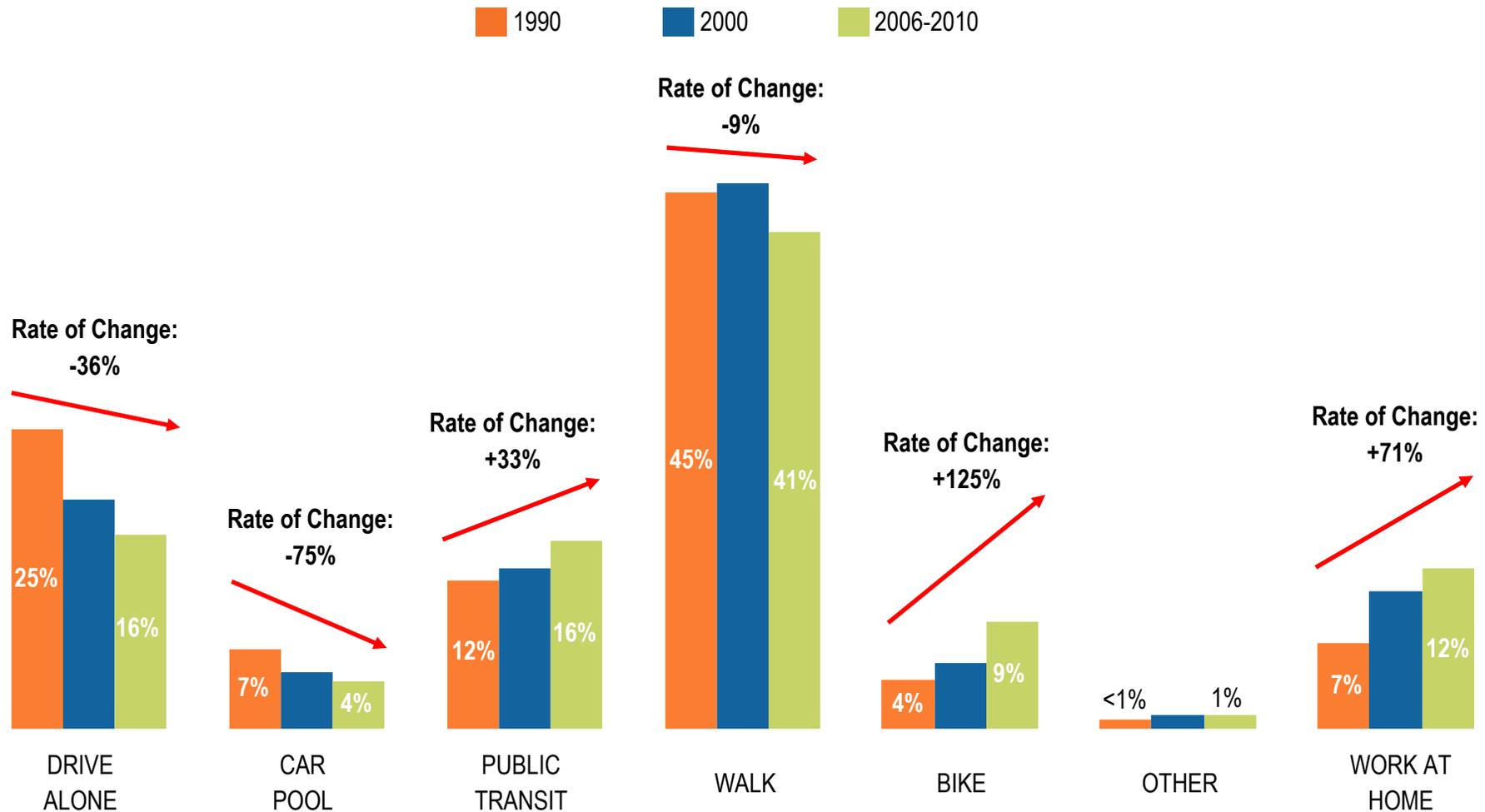
Map prepared by Ian Jakus on July 29, 2014. Updated August 17, 2015.

5. Total population is from the 2006-10 American Community Survey five-year dataset, which differs from other sources.

COMMUTING IN CAMBRIDGE

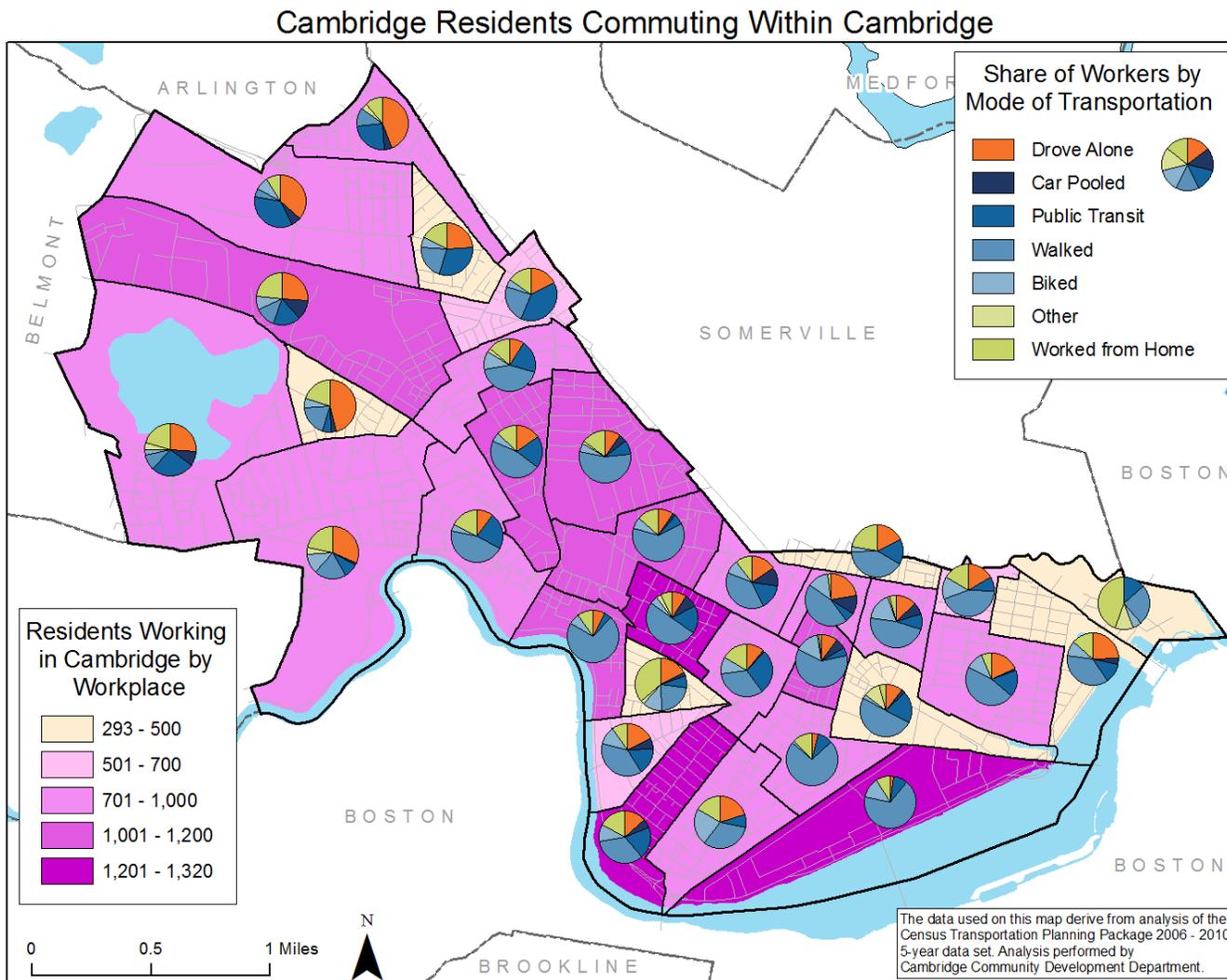
Modes of Transportation

CHANGE IN MODES OF COMMUTING SINCE 1990



COMMUTING IN CAMBRIDGE

Mode of Transportation

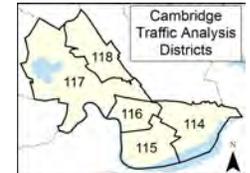


Nearly 16% (or 4,100+) of the 26,000 residents employed in the city's boundaries drive alone to work. Not only is this the lowest proportion of people driving alone between the Workforce, Labor Force, and Resident Labor Force, but Cambridge residents working in the City also demonstrate the highest proportion of workers who walk (41%) or bike (9%). In comparison to all other methods of transportation, driving alone is more popular in the northwestern-most census tracts, such as 3544 and 3550. Yet, overall, the data demonstrate an increase in sustainable transportation use across the city. At 16%, public transit use is not as popular as it is in other working groups, perhaps because of the close proximity of home to workplace or 13% of the Resident Labor Force work at home.

COMMUTING IN CAMBRIDGE

Resident Labor Force By TAD

TAD 114 TAD 115 TAD 116 TAD 117 TAD 118



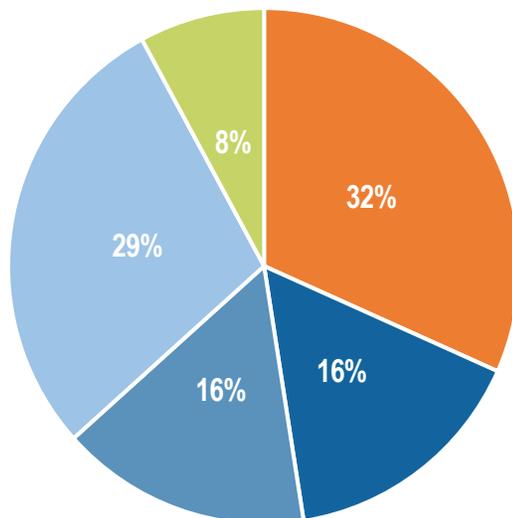
HOME LOCATION OF RESIDENT LABOR FORCE MEMBERS BY TAD



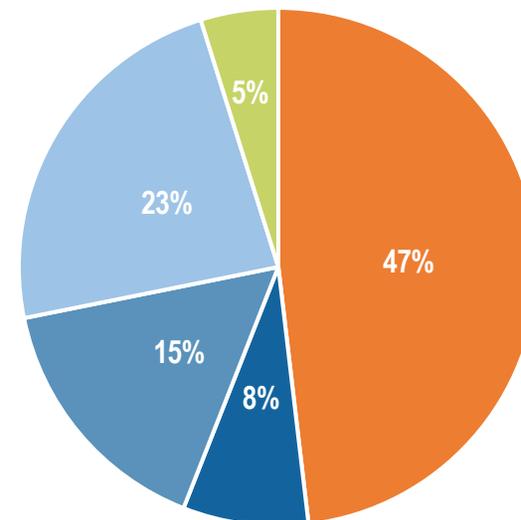
WORKPLACE LOCATION OF RESIDENT LABOR FORCE MEMBERS BY TAD



DRIVING ALONE BY TAD OF DESTINATION



TRANSIT USE BY TAD OF DESTINATION

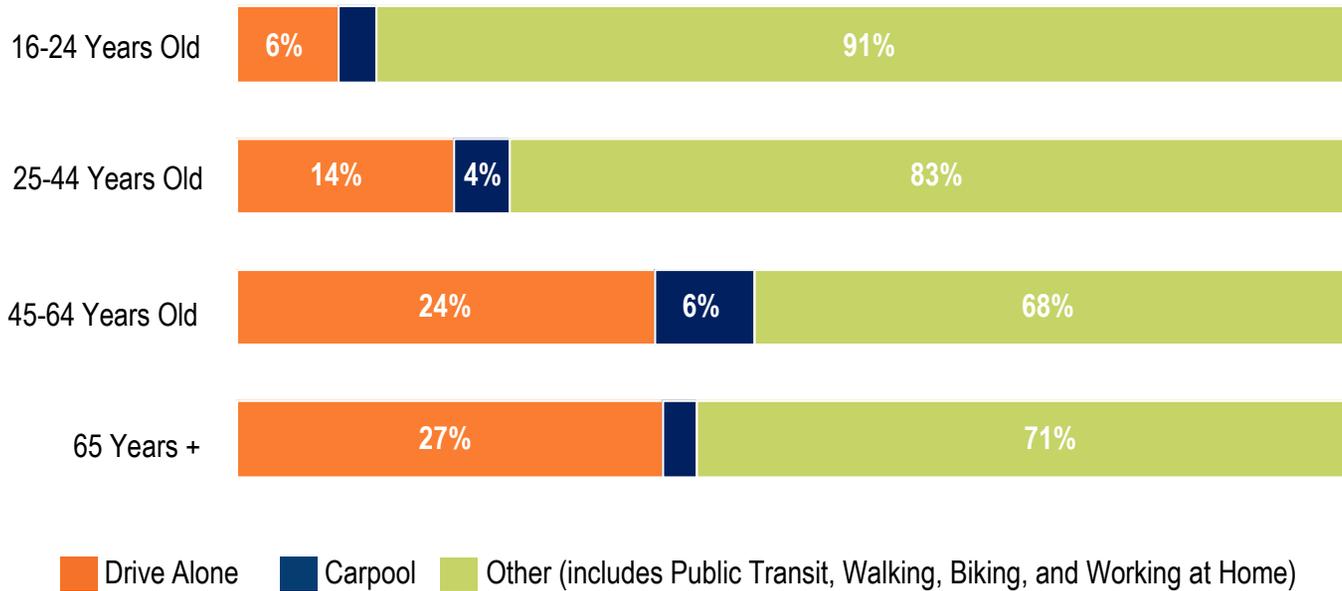


Note: the above pie charts compare all residents who drive alone or take public transit to each TAD of workplace location. For example, 32% of all those who drive alone work in TAD 114.

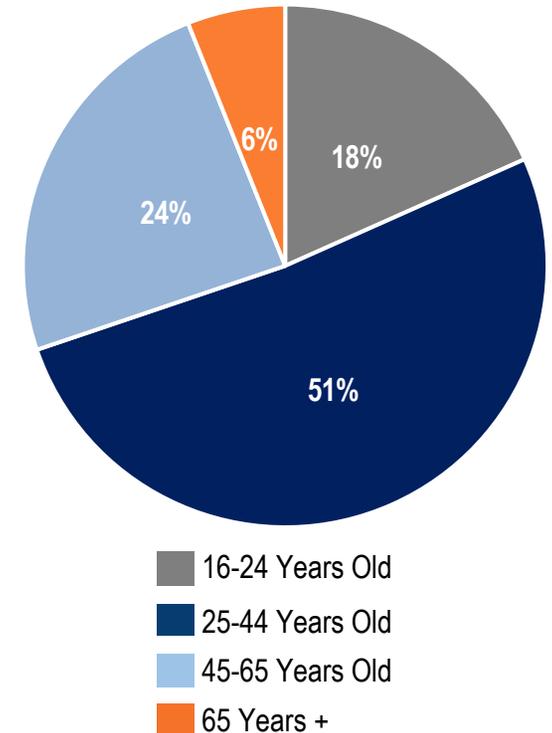
COMMUTING IN CAMBRIDGE

Age of Worker

AGE OF WORKER



PROPORTION OF RESIDENT LABOR FORCE



69%

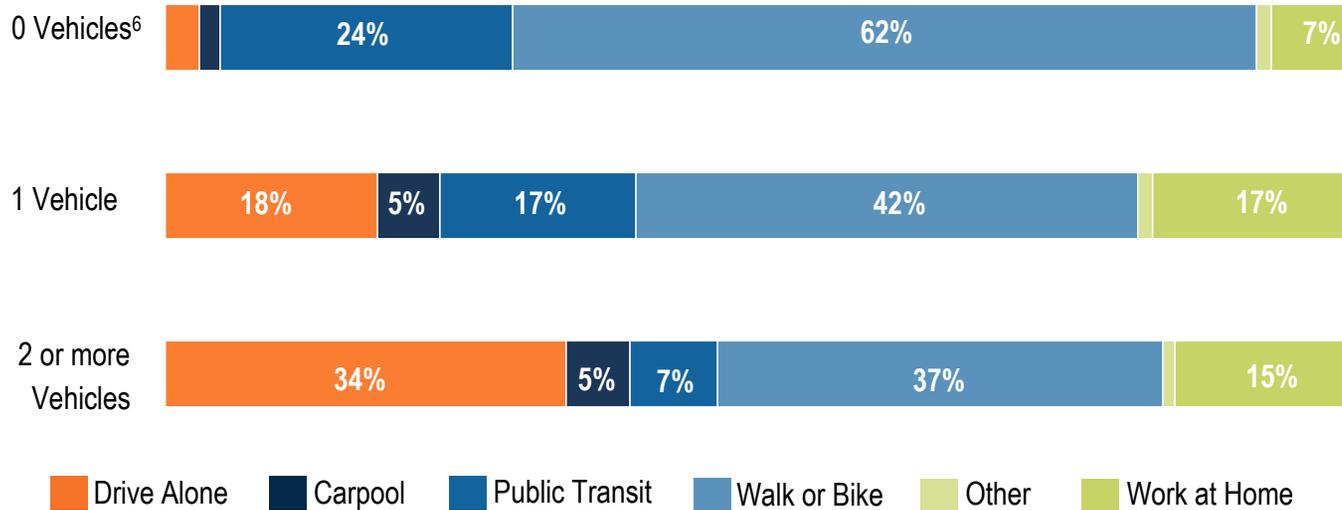
of those both living and working in Cambridge are between 16 and 44 years old. Among this group, 85% commute to work by transit, walking, or biking, or work at home; only 12% commute by driving alone. Of those older than 45 years

of age living and working in Cambridge, 68% commute by sustainable transportation, while 26% commute by driving alone.

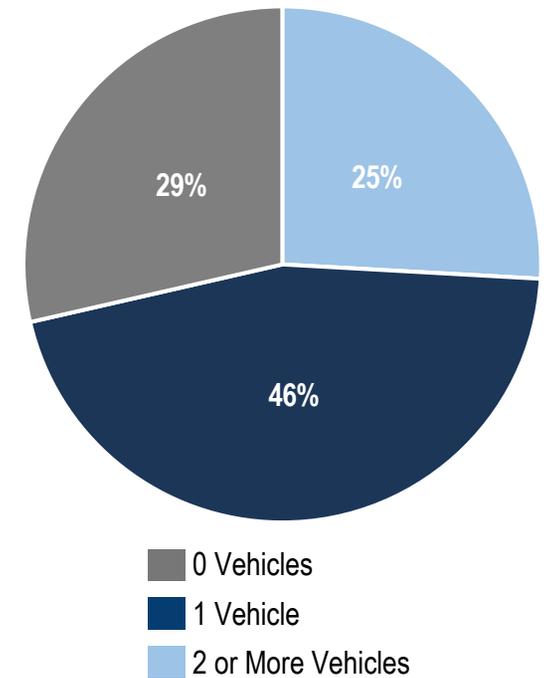
COMMUTING IN CAMBRIDGE

Vehicles Available

VEHICLES AVAILABLE



PROPORTION OF RESIDENT LABOR FORCE



72%

of the Resident Labor Force have at least one vehicle available at their household. 24% of this same group drive alone. Regardless, walking and biking are the most popular forms of transportation to work (40% combined) for those with at least one vehicle present.

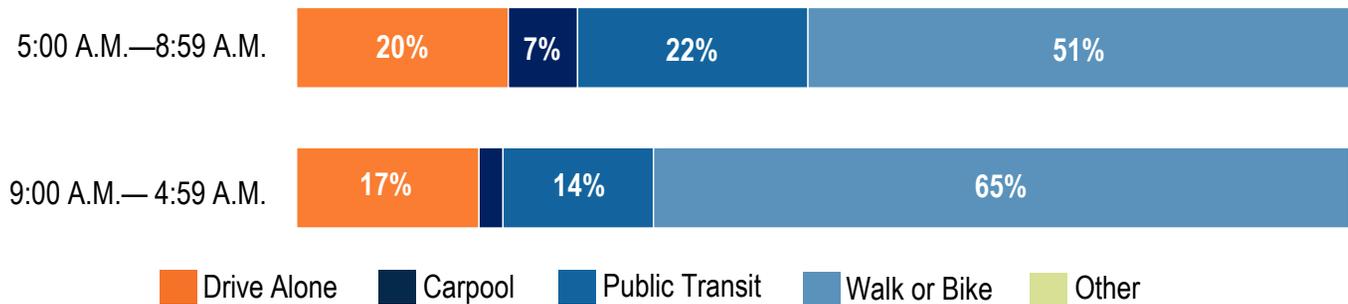
Public transit use is low in this group, at only 13%, but is more popular (at 24%) among those without a vehicle present.

6. Reasoning for the proportion of workers who drive alone to work without an available vehicle remains inconclusive. See "About the Data" for discussion of this issue.

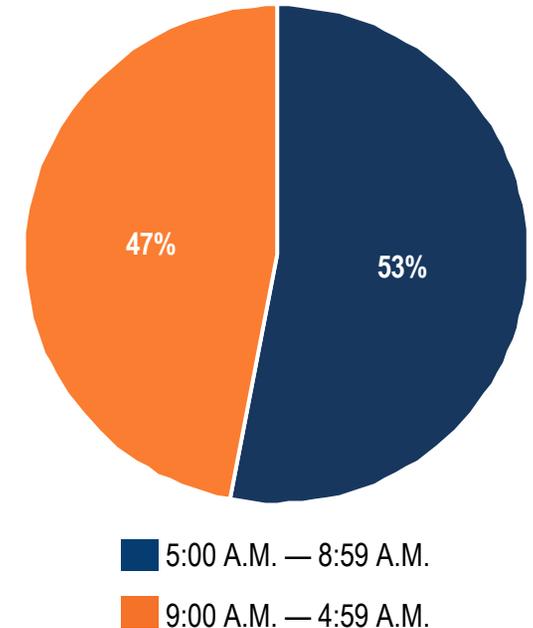
COMMUTING IN CAMBRIDGE

Time Leaving Home

TIME LEAVING HOME



PROPORTION OF RESIDENT LABOR FORCE



47%

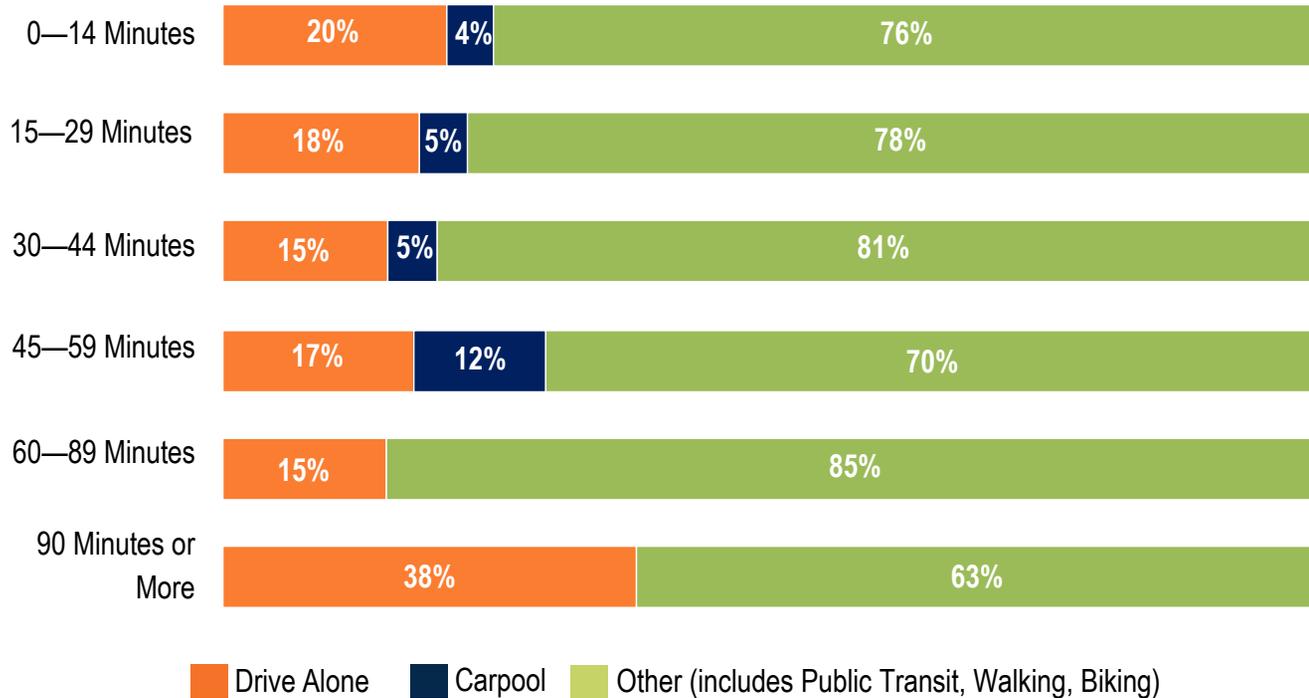
of the Resident Labor Force leave for work at 9:00 A.M. or later. Among this same group, walking and biking are the two most popular modes of transportation at 65%. Those with earlier departure times also include a majority (51%)

of workers who either walk or bike. Public transit use is less popular than driving alone for those who leave for work between 9:00 A.M. and 4:59 A.M.

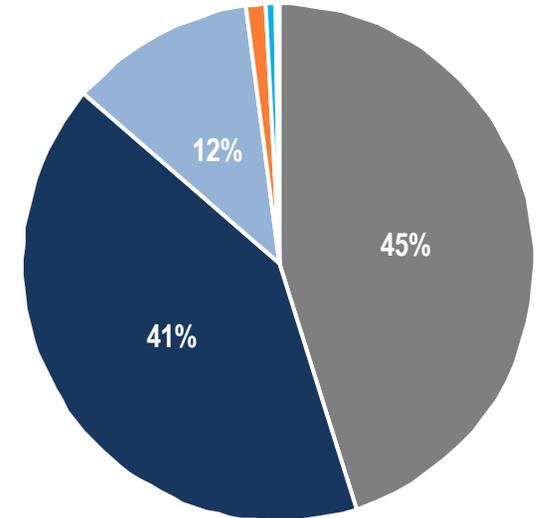
COMMUTING IN CAMBRIDGE

Travel Time

TRAVEL TIME



PROPORTION OF RESIDENT LABOR FORCE



- 0-14 Minutes
- 15-29 Minutes
- 30-44 Minutes
- 45-59 Minutes
- 60-89 Minutes
- 90 Minutes or More

86%

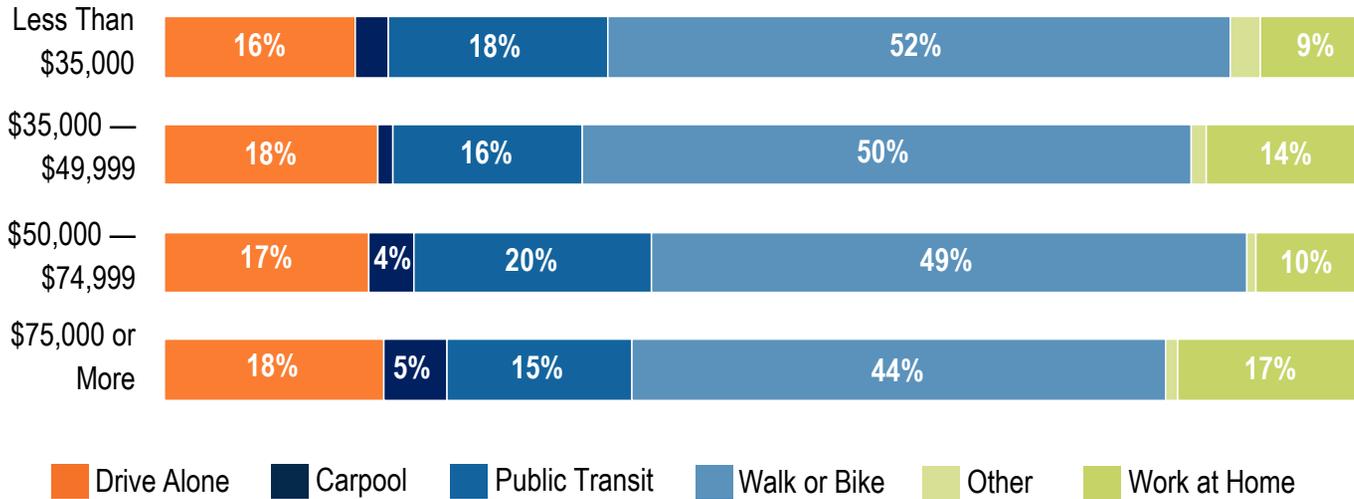
of the Resident Labor Force who do not work at home spend 30 minutes or less traveling to work. Of this same group, 77% either take public transit, walk, bike, or work at home, 19% drive alone, and 4% carpool. Of the 13% of the Resident Labor Force

spending between 30 and 59 minutes traveling, slightly more (79%) use a sustainable mode of transportation, while only 15% drive alone. Less than 1% spend upwards of an hour commuting to work within the city's Resident Labor Force.

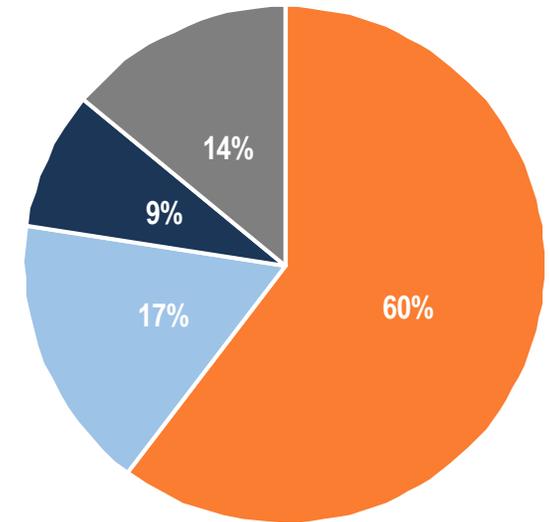
COMMUTING IN CAMBRIDGE

Household Income

ANNUAL HOUSEHOLD INCOME



PROPORTION OF RESIDENT LABOR FORCE



- Less Than \$35,000
- \$35,000—\$49,999
- \$50,000—\$74,999
- \$75,000—\$149,999

77%

of those both living and working in Cambridge earn more than \$50,000 a year. Among this group, walking or biking are the most popular modes of transportation at 45%, followed by driving alone (18%) and public transport (16%).

Working at home is also popular amongst this group at 15%. For those earning less than \$50,000 a year (24%), 51% walk or bike to work, 17% take public transit, and 16% drive alone.



CONCLUSION & REFERENCES

Photo by Gretchen Ertl 2015

Moving Forward | 2016 | Cambridge, Massachusetts | Community Development Department

CONCLUSION

Moving Forward provides a comparison over time of the shifting commuting trends within the City of Cambridge, Massachusetts from 1990-2010. By comparing Decennial Census data and 2006-2010 five-year estimates released from the Census Transportation Planning Products Program, this report highlights a decrease in single occupancy vehicle use among three groups of workers: those working in Cambridge, Cambridge residents working anywhere, and Cambridge residents working in the City. Simultaneously, the data show an increase in sustainable transportation — such as carpooling, public transit, walking, and biking — across all three groups.

From 1990 to 2010, Cambridge residents who also work in the city decreased their single occupancy vehicle use by 36%. Totaling just over 4,000 workers, this group experienced the steepest decline in drive alone figures across all three groups of workers. What's more, since 1990, the proportion of Cambridge residents who bike to work throughout the city has more than doubled. Public transportation use has increased in each working group by at least one-fifth. Of all the 115,000+ workers in Cambridge, nearly 59,000 use a mode of sustainable transportation, marking 9% growth since 1990.

These numbers point to the city's successful efforts to enact policies and build sustainable transportation systems for its Workforce, Labor Force, and Resident Labor Force. More can still be done to further develop a sustainable transportation future in Cambridge.

Through continued mutual engagement between City planners, regional and state entities, businesses, developers, politicians, and community stakeholders, through directed efforts to promote carpooling, public transit, biking, and walking over single occupancy vehicle use, through increased awareness and innovative transportation policy and infrastructure, the City of Cambridge and the City of Cambridge Community Development Department aspire to foster a safe, environmentally conscious transportation culture — we aspire to move our community forward.

REFERENCE LIST

Note: Tables include all workers 16 years old and above unless otherwise noted.

WORKFORCE: WORKING IN CAMBRIDGE

Age of Worker by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B202202

Household Income in the past 12 Months by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B203200*

Minority Status by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B203200

Presence of Children by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B203206*

Time Arriving by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B202216

Total Workers: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B302100*

Travel Time by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B202213

Vehicles Available by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B203204*

LABOR FORCE: CAMBRIDGE RESIDENTS WORKING ANYWHERE

Age of Worker by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B102203

Household Income in the past 12 Months by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B103200*

Minority Status by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B102201

Presence of Children by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B103200*

Total Workers: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table A302100

Time Leaving Home by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B102216C

Travel Time by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B102217

Vehicles Available by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B103206*

REFERENCE LIST

Note: Tables include all workers 16 years old and above unless otherwise noted.

CAMBRIDGE RESIDENTS WORKING IN CAMBRIDGE

Age of Worker by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table 302200C

Household Income in the Past 12 Months by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B303201*

Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B302103

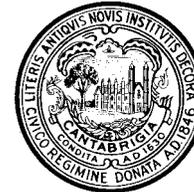
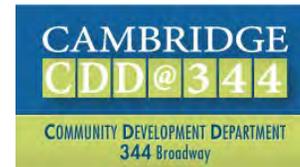
Total Workers: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B302100

Time Leaving Home by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B302201

Travel Time by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B302202C

Vehicles Available by Means of Transportation: Census Transportation Planning Products (CTPP), 2006-2010 multi-year estimates, Table B303202*

*Table includes data from workers residing in households only; workers residing in group quarters, such as dormitories, are excluded.



Cambridge Community Development Department

City Hall Annex 344 Broadway St.
Cambridge, Massachusetts
02139

Primary Contact

Cliff Cook, Planning Information Manager
City of Cambridge Community Development Department
ccook@cambridgema.gov
617/349-4656