



U.S. Department  
of Transportation

**Federal Highway  
Administration**



# **Journey to Work Trends** in the United States and its Major Metropolitan Areas **1960-2000**

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16. Abstract <b>This report tracks trends in demographics, worker characteristics and journey-to-work commute in the United States and its large Metropolitan Statistical Areas (MSAs). The report is based on data from the decennial census published by the U.S. Census Bureau.</b>  <b>Chapters 1 and 2 look at the national trends in terms of population and workforce growth, the change in household structure, and outline some regional and state trends. Chapter 3 examines the demographics of the changes in relation to travel, focusing on the trends within the 49 metropolitan areas (not including San Juan, Puerto Rico) that have over 1,000,000 people in residence as reported in the 2000 Census. Chapter 4 examines the changes in place of work, residence location, and travel time. Chapter 5 looks at means of transportation and Chapter 6 looks at vehicle availability. The profile section includes a map of each of the 49 MSAs followed by a detailed profile sheet.</b>			
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# **Journey-to-Work Trends in the United States and its Major Metropolitan Areas, 1960 – 2000**

**Prepared for:  
US Department of Transportation  
Federal Highway Administration  
Office of Planning**

**Prepared by:  
Nancy McGuckin, Consultant  
Nanda Srinivasan, Cambridge Systematics, Inc.**

**FHWA-EP-03-058**

**Abstract:**

This report identifies and presents the changes that have occurred from 1960 to 2000 in population and demographics, worker characteristics, means of travel to work, time of travel to work, vehicle availability, and geographic flows in the United States and its major metropolitan areas. The data presented are based on the U.S. Bureau of the Census decennial population counts and sample data (Summary File 1 and Summary File 3), and the county-to-county worker flow and migration tables.

Chapter 1 of the report looks at the national trends in terms of population and workforce growth, the change in household structure, and outlines some regional and state trends. In Chapter 2 we examine the trends in large metro areas in demographics related to travel. Chapter 3 examines the demographics of the changes in relation to travel, focusing on the trends within the 49 metropolitan areas (not including San Juan, Puerto Rico) that have over 1,000,000 people in residence as reported in the 2000 Census. Chapter 4 examines the changes in place of work, residence location, and travel time. Chapter 5 looks at means of transportation and Chapter 6 looks at vehicle availability. The profile section includes a map of each of the 49 MSAs followed by a detailed profile sheet describing the change in travel characteristics seen from the census for that MSA.

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# ORGANIZATION OF THIS REPORT

In the chapters that follow, we first look at the national trends in terms of population and workforce growth, the change in household structure, and outline some regional and state trends. Chapter 3 examines the demographics of the changes in relation to travel, focusing on the trends within the 49 metropolitan areas (not including San Juan, Puerto Rico) that have over 1,000,000 people in residence as reported in the 2000 Census. Chapter 4 examines the changes in place of work, residence location, and travel time. Chapter 5 looks at means of transportation and Chapter 6 looks at vehicle availability. The profile section includes a map of each of the 49 MSAs followed by a detailed profile sheet.

The terms “metro area,” “metropolitan area” (MA), and “metropolitan statistical area” (MSA) are used interchangeably in this report. Exhibit A shows the long names of the metro areas, and the corresponding short names used in the report.

The United States Office of Management and Budget (OMB) defines metropolitan areas (MAs) according to published standards that are applied to Census Bureau data. MAs in this report are based on application of [1990 standards](#) (which appeared in the Federal Register on March 30, 1990) to 1990 decennial census data and to subsequent Census Bureau population estimates and special census data. This report uses the June 30, 1999 definition of MAs (new definitions were published by OMB on June 3, 2003, but are not used in this report).

The general concept of an MA is that of a core area containing a large population nucleus, together with adjacent communities having a high degree of economic and social integration with that core. The basic building block used in the 1999 definition is a county (except for the New England States where cities and towns are used as the building blocks). The core is usually a county/counties containing a city of population greater than 50,000 people OR a Census defined urbanized area. Outlying counties are added to the MA based on population density and commute behavior. Because the geographic grain size used in defining MSAs is large, it causes some difficulty in interpreting trends.

To analyze trends using a consistent geographic definition, all the data presented in this report use the June 1999 geographic definition of MSAs. Data for previous decades were obtained at the county level and aggregated to the June 1999 definition of MSAs. Therefore, the numbers presented in this report may not be the same as the numbers published in the previous versions of the report.

A metropolitan area is called a Consolidated Metropolitan Statistical Area (CMSA) if it meets requirements of an MSA, has a population of 1 million or more, if the component areas are recognized as primary metropolitan statistical areas (PMSA), and if local opinion favors the designation. For example, the Washington, D.C. CMSA incorporates the Washington, D.C. PMSA, Baltimore, MD PMSA, and Hagerstown, MD PMSA.

## Exhibit A Naming Conventions Used in this Report

Note: All data are sorted in the decreasing order of 2000 Population of MSA

<b>MSA Complete Name</b>	<b>MSA Shortened Name</b>	<b>2000 Population</b>
New York-Northern New Jersey-Long Island, NY-NJ-CT-PA CMSA	New York	21,199,865
Los Angeles-Riverside-Orange County, CA CMSA	Los Angeles	16,373,645
Chicago-Gary-Kenosha, IL-IN-WI CMSA	Chicago	9,157,540
Washington-Baltimore, DC-MD-VA-WV CMSA	Washington, DC	7,608,070
San Francisco-Oakland-San Jose, CA CMSA	San Francisco	7,039,362
Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD CMSA	Philadelphia	6,188,463
Boston-Worcester-Lawrence, MA-NH-ME-CT CMSA	Boston	5,819,100
Detroit-Ann Arbor-Flint, MI CMSA	Detroit	5,456,428
Dallas-Fort Worth, TX CMSA	Dallas	5,221,801
Houston-Galveston-Brazoria, TX CMSA	Houston	4,669,571
Atlanta, GA MSA	Atlanta	4,112,198
Miami-Fort Lauderdale, FL CMSA	Miami	3,876,380
Seattle-Tacoma-Bremerton, WA CMSA	Seattle	3,554,760
Phoenix-Mesa, AZ MSA	Phoenix	3,251,876
Minneapolis-St. Paul, MN-WI MSA	Minneapolis	2,968,806
Cleveland-Akron, OH CMSA	Cleveland	2,945,831
San Diego, CA MSA	San Diego	2,813,833
St. Louis, MO-IL MSA	St. Louis	2,603,607
Denver-Boulder-Greeley, CO CMSA	Denver	2,581,506
Tampa-St. Petersburg-Clearwater, FL MSA	Tampa	2,395,997
Pittsburgh, PA MSA	Pittsburgh	2,358,695
Portland-Salem, OR-WA CMSA	Portland	2,265,223
Cincinnati-Hamilton, OH-KY-IN CMSA	Cincinnati	1,979,202
Sacramento-Yolo, CA CMSA	Sacramento	1,796,857
Kansas City, MO-KS MSA	Kansas City	1,776,062
Milwaukee-Racine, WI CMSA	Milwaukee	1,689,572
Orlando, FL MSA	Orlando	1,644,561
Indianapolis, IN MSA	Indianapolis	1,607,486
San Antonio, TX MSA	San Antonio	1,592,383
Norfolk-Virginia Beach-Newport News, VA-NC MSA	Norfolk	1,569,541
Las Vegas, NV-AZ MSA	Las Vegas	1,563,282
Columbus, OH MSA	Columbus	1,540,157
Charlotte-Gastonia-Rock Hill, NC-SC MSA	Charlotte	1,499,293
New Orleans, LA MSA	New Orleans	1,337,726
Salt Lake City-Ogden, UT MSA	Salt Lake City	1,333,914
Greensboro-Winston-Salem-High Point, NC MSA	Greensboro	1,251,509
Austin-San Marcos, TX MSA	Austin	1,249,763
Nashville, TN MSA	Nashville	1,231,311
Providence-Fall River-Warwick, RI-MA MSA	Providence	1,188,613
Raleigh-Durham-Chapel Hill, NC MSA	Raleigh	1,187,941
Hartford, CT MSA	Hartford	1,183,110
Buffalo-Niagara Falls, NY MSA	Buffalo	1,170,111
Memphis, TN-AR-MS MSA	Memphis	1,135,614
West Palm Beach-Boca Raton, FL MSA	West Palm Beach	1,131,184
Jacksonville, FL MSA	Jacksonville	1,100,491
Rochester, NY MSA	Rochester	1,098,201
Grand Rapids-Muskegon-Holland, MI MSA	Grand Rapids	1,088,514
Oklahoma City, OK MSA	Oklahoma City	1,083,346
Louisville, KY-IN MSA	Louisville	1,025,598



## Executive Summary

The pattern of commutes in American is affected by worker characteristics, the supply and location of jobs and housing, and the time and convenience of various modes of commuting. This report explores the changes in these conditions and the changes in commute characteristics of U.S. workers by looking at the last forty years of data from the U.S. Decennial Census. First, a national overview is presented and then the metropolitan areas are analyzed.

The work trip is often the longest distance we travel, and our work location provides a sphere of activity that anchors some of our travel, either in stops we make between home and work or in trips we make around our workplace. The commute trip is so important in understanding people's daily travel that information about the commute has been included in the U.S. decennial census. Therefore, we have detailed demographic and geographic information on US residents' travel to work over a long period of time.

The U.S. Census started including questions about commuting in 1960, so with the 2000 Census we have 40 years of decennial data. Some of the changes that impact commuting trends are:

- Changes in family structure and workforce composition,
- Growth in area, population, and workers in suburban counties of major MSAs,
- Large increases in households with multiple vehicles, and
- Increases in private vehicle use and significant increases in commute times.

### **Household structure and workforce composition have changed dramatically.**

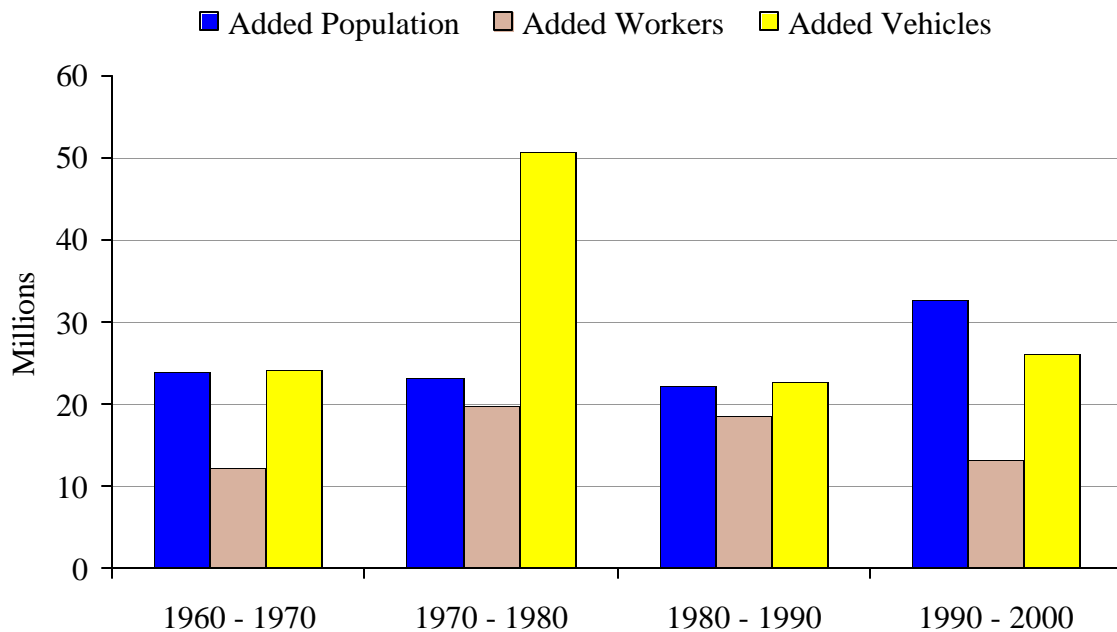
In 1960, over half (52 percent) of the family households consisted of married couple with children. In 2000, nuclear families with children account for just over a third (35 percent) of U.S. family households—eclipsed for the first time in history by single-person households.

The most dramatic change in the workforce is the inclusion of women—61 percent of women work today compared to just 38 percent in 1960. The shift from single-earner to dual-earner families fueled the rise in household income, and household vehicle ownership, and such phenomenon as the decline in multi-occupant vehicles and the rise in trip chaining.

However, the huge increase in workers in the U.S. may be near an end as the baby boomers age into retirement years. Between 1960 and 2000, the U.S. added 63.6 million workers, 1.2 new workers for every new person. In the most recent decade, 1990 – 2000, the number of workers being added to the labor force was less than previous decades (See Exhibit B).

The U.S. is an aging society—the baby boomers will begin to reach retirement age by 2010. Baby boomers may delay retirement just as they have delayed other major life stages (marriage, children, etc.), but eventually older workers will stop working.

## Exhibit B Added Population, Vehicles and Workers per Decade: 1960-2000



Immigration may be a source to fill the worker void left by retiring baby-boomers. The largest MSAs currently account for 81.4 percent of the total foreign-born population of the U.S. Policy decisions determine the amount of allowable immigration each year, but if trends continue foreign-born people will be a large factor in population and worker growth in the U.S. New immigrants to the U.S. are less dependent on auto travel than native-born people, but as they stay longer, their travel becomes more Americanized.

### **The added population and workers settled in suburban areas of major MSAs.**

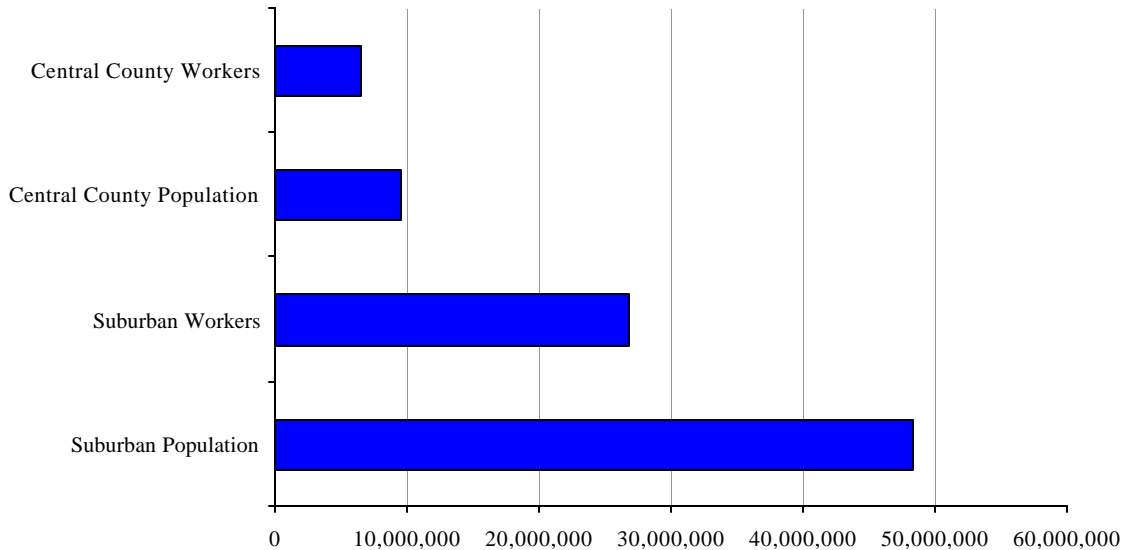
MSAs continue to grow in both area and population. The land area of the major metropolitan areas grew as fringe counties were adopted into the metro area, and both jobs and housing have grown outside the traditional urban centers (Exhibit C).

In 1960, there were 34 metro areas of over 1 million residents; in 1990, there were 39 areas with one million residents or more; in 2000, there were 49 large MSAs. Looking at the same metropolitan areas in 1960 and 2000 shows the growth of population and workers in suburban counties by far outpaced the growth in central counties.

On a national level, the decentralization of workers and jobs is taking place both relatively and absolutely to a much greater degree in the South and the West<sup>1</sup>—areas that are high growth with a lot of migrants and immigrants, added workers, and new housing development.

<sup>1</sup> “Costs of Sprawl—2000” TCRP Report 74, Transportation Research Board p. 3

**Exhibit C Added Number of People and Workers (Millions) – 39 MSAs with Population over a Million in 1960: 1960-2000**



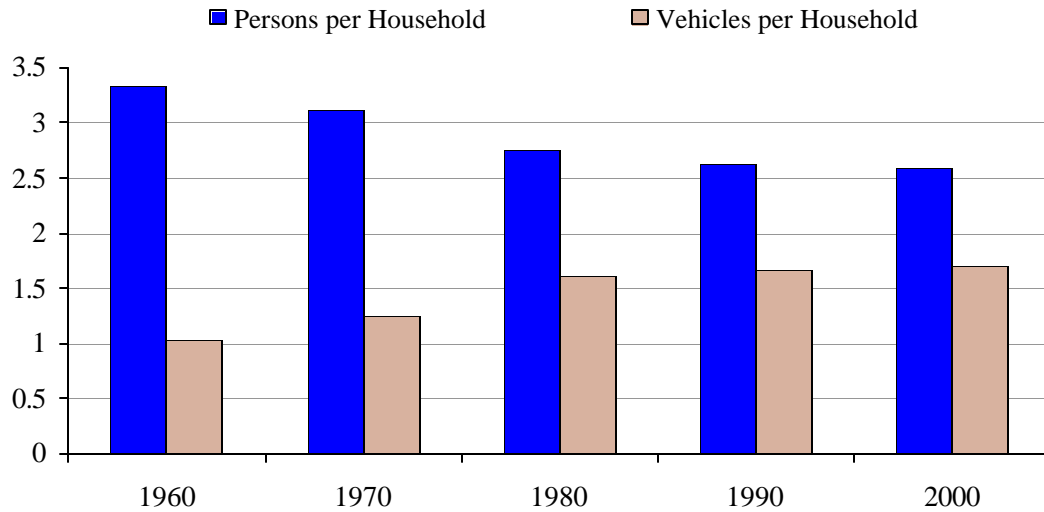
The 49 major metropolitan areas in the U.S. are the focus of this report and account for:

- 57% of the total population in the US.
- 59% of all workers.
- 54% of population over the age of 65.
- 56% of traditional families (married couples with children).
- 57% of all occupied housing units (or households).
- 53% of households with income in 1999 below poverty level.
- 69% of the households without vehicles. New York MSA alone accounts for one out of five households in the country without vehicles.

**While households have been getting smaller, the number of vehicles per household has increased.**

Average household size went from 3.3 in 1960 to 2.6 in 2000, a decline of over one-fifth. At the same time, vehicles per household rose from just over 1.0 to about 1.7, an increase of almost two-thirds (Exhibit D).

### Exhibit D Household Size and Auto-ownership: 1960-2000

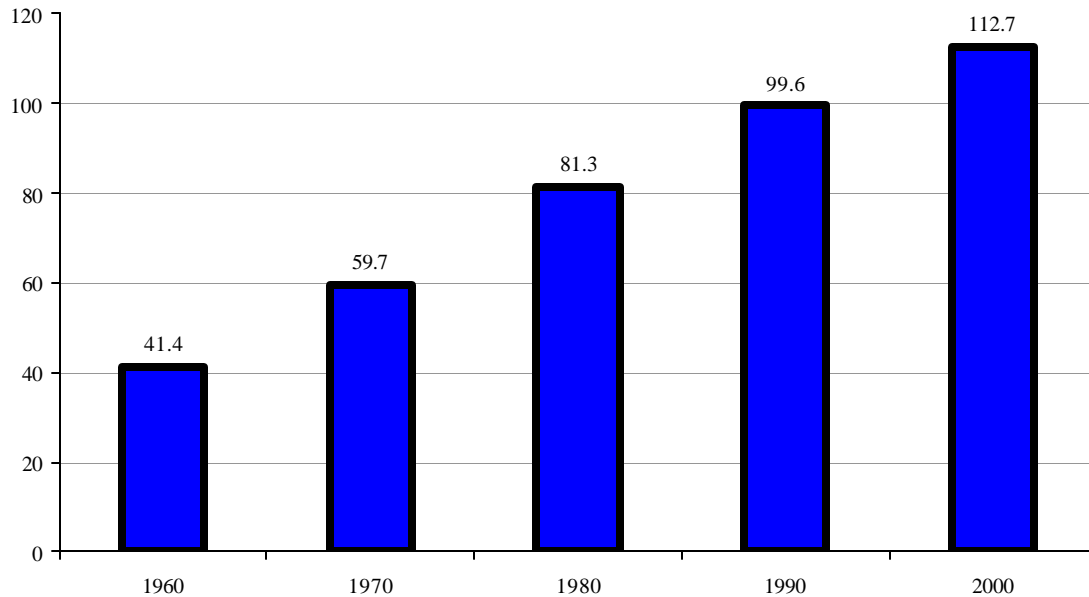


#### **The use of private vehicle as a means of travel to work has increased.**

The census shows that in 2000 three-quarters of commuters drove alone to work (75.7 percent), followed by carpooling (12.2 percent), transit (4.7 percent), work at home (3.3 percent) and walk (2.9 percent).

In 1960, 41 million commuters were in private vehicles; by 2000, 113 million workers commuted by private vehicle, nearly three times as many (See Exhibit E). Between 1990 and 2000, drove alone continued to increase, as carpools continued to drop. By 2000, the average vehicle occupancy for the commute trip was 1.08.

## Exhibit E Number of Workers Commuting by Private Vehicle: 1960-2000



The total number of workers increased in the 1990s but the number of workers using transit stayed about the same (6 million workers commute by transit). Therefore the proportion of commuters by transit, or the mode share for transit, has slightly declined.

African-Americans and Hispanics are more likely to take transit for commuting even for households where one or two vehicles are available for use. This may be due to the location of black and Hispanic households in central cities and older suburbs that have greater transit accessibility.

Work at home increased in the 1990s, and the nature of jobs usually conducted at home shifted. In the 1960s many people who worked at home were agricultural-based (farm) workers or professionals with home-based practices, in the 1990s the shift has been toward telecommuters who may work-at-home and in some other location.

### **The percent of workers with short commutes has declined and the percent of workers with long commutes has increased.**

The average commute increased by 2.1 minutes<sup>2</sup> between 1990 and 2000. This is much higher increase than the 40-second increase from 1980 to 1990. By examining the travel time distributions, we see a continued shift toward longer commutes.

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<sup>2</sup> Census reports will show an increase of 3.1 minutes between 1990 and 2000, however, changes in coding procedures between 1990 and 2000 have created confounding problems in direct comparisons. In 1990, travel time of 100 minutes or more was coded as 99 minutes, whereas in 2000 the top-code was 200 minutes. This coding change results in more accurate results in 2000. The value of 2.1 was obtained by re-calculating Census 2000 data using the same topcoding as 1990.

In 2000, 14 percent of workers traveled more than 45 minutes compared to 12 percent in 1990, and 29 percent commute less than 15 minutes, compared to 31 percent in 1990. Forty percent of the commuters in large metro areas travel over 30 minutes to work, one-way, on an average day.

The pressure of time is a major factor in the travel choices people make. In 2000, more workers are driving alone, more families are living and working in the suburbs and traveling on the highway system for part of their commute, and more workers are commuting over one hour to and from their jobs on an average day.

Changes in family structure, workforce characteristics, and vehicle availability have affected mode choice throughout the 70s and 80s. Over the years as automobiles became affordable and convenient as a means of transportation, more and more people became drivers. Commuters may have shifted to POV and then drove alone to save travel time as jobs and homes became more dispersed.

The 2000 Census shows large increases in travel time in all metropolitan areas, which suggests that workers may consider other modes if travel time can be shortened, may shift their work times (leading to peak-spreading), or may try or increase telecommuting.

# Chapter 1

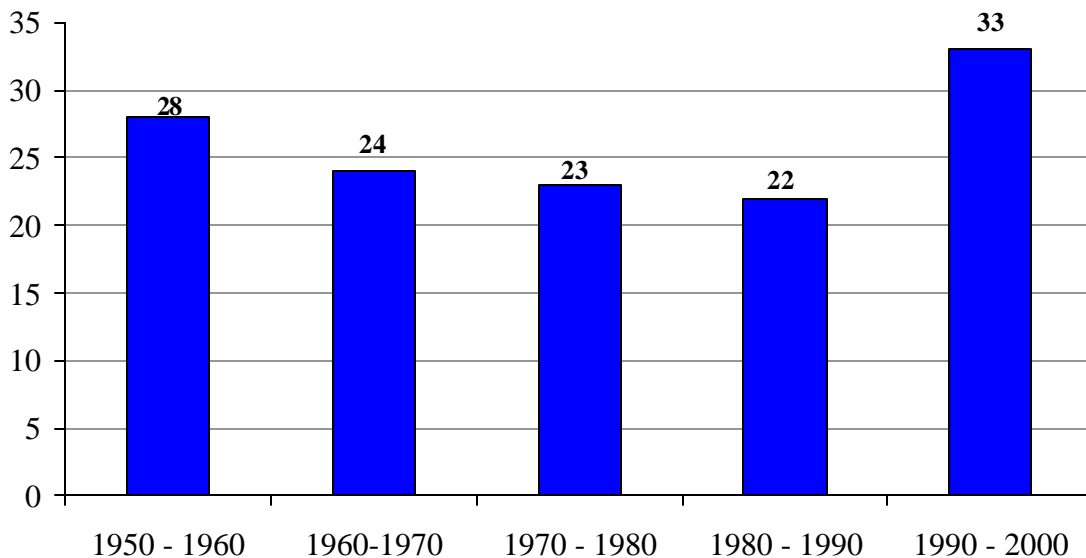
## NATIONAL SUMMARY

This chapter of the report presents a national overview of the decennial data on demographic and commuting characteristics of the American public. The national picture not only allows comparison of individual metro areas with the country as a whole, but also with broad strokes paints a clear picture of changes commuters in America have adapted to over the last forty years. Exhibit 1.1 shows the journey-to-work data from the 1960, 1970, 1980, 1990 and 2000 decennial census for the nation as a whole.

### Population

The U.S. population grew at an unexpected pace between 1990 and 2000, adding 32.7 million people (13.2 percent) over the ten-year period. This represents the largest numerical increase in population in any decade in American history. The previous record was the 28 million added between 1950 and 1960 at the apex of the baby boom. Exhibit 1.2 shows added population by decade starting from 1950.

**Exhibit 1.2 Added Population per Decade (millions): 1960-2000**



Decade	Added Population	Percent Change
1950 – 1960	28 million	18.4%
1960 – 1970	24 million	13.4%
1970 – 1980	23 million	11.4%
1980 – 1990	22 million	9.8%
1990 – 2000	33 million	13.2%

## Exhibit 1.1 National Summary Statistics: 1960-2000

DATA ITEM	1960	1970	1980	1990	2000	Percent Change				
						1960-70	70-80	80-90	1990-2000	1960-2000
<b>POPULATION</b>										
Total	179,323,175	203,211,926	226,545,805	248,709,873	281,421,906	13.3	11.5	9.8	13.2	56.9
Number of Households	53,022,121	63,444,750	80,389,673	91,993,582	105,539,122	19.7	26.7	14.4	14.7	99.0
Persons per Household	3.33	3.11	2.75	2.63	2.59	-6.6	-11.6	-4.4	-1.5	-22.2
Persons per Vehicle	3.27	2.57	1.75	1.63	1.58	-21.4	-32.1	-6.5	-3.3	-51.8
Households per Vehicle	0.97	0.80	0.62	0.60	0.59	-17.0	-22.8	-2.6	-2.0	-38.9
Urban Population (1)	125,268,750	149,646,029	167,050,992	187,051,543	222,360,539	19.5	11.6	12.0	18.9	77.5
Rural Population (1)	54,054,525	53,565,297	59,494,813	61,658,330	59,061,367	-0.9	11.1	3.6	-4.2	9.3
Percent Urban	69.86%	73.64%	73.74%	75.21%	79.01%					
<b>WORKERS</b>										
Total	64,655,805	76,852,389	96,617,296	115,070,274	128,279,228	18.9	25.7	19.1	11.5	98.4
Workers as Percent of Population	36.06%	37.82%	42.65%	46.27%	45.58%					
Worked in County of Residence	55,254,625	62,065,319	76,564,160	87,587,677	94,042,863	12.3	23.4	14.4	7.4	70.2
Worked Outside County of Residence	9,401,180	14,784,070	20,108,023	27,482,597	34,236,365	57.3	36.0	36.7	24.6	264.2
Workers per Household	1.22	1.21	1.20	1.25	1.22	-0.7	-0.8	4.1	-2.8	-0.3
Workers per Vehicle	1.18	0.97	0.74	0.76	0.72	-17.6	-23.5	1.4	-4.8	-39.1
<b>COMMUTING</b>										
Mean Travel Time to Work			21.7	22.4	25.5			3.2	13.8	na
Private Vehicle (2)	41,368,062	59,722,550	81,258,496	99,592,932	112,736,101	44.1	34.0	22.0	13.2	172.5
% Private Vehicle	69.5%	80.6%	85.9%	88.0%	87.9%					
Public Transit (3)	7,806,932	6,810,458	6,175,061	6,069,589	6,067,703	-16.6	-7.8	-2.0	0.0	-22.3
% Transit	12.6%	8.5%	6.2%	5.1%	4.7%					
Walked to Work	6,416,343	5,689,819	5,413,248	4,488,886	3,758,982	-11.3	-4.9	-17.1	-16.3	-41.4
% Walked	10.4%	7.4%	5.6%	3.9%	2.9%					
Other	4,401,718	1,944,418	1,590,628	1,512,842	1,532,219	-28.6	-24.3	-30.4	1.3	-65.2
% Other	6.8%	2.5%	1.6%	1.3%	1.2%					
Worked at Home	4,662,750	2,685,144	2,179,863	3,406,025	4,184,223	-42.4	-18.8	56.2	22.8	-10.3
% Worked At Home	7.5%	3.5%	2.3%	3.0%	3.3%					
<b>VEHICLES (4)</b>										
Total Household Vehicles (4)	54,766,718	79,002,052	129,747,911	152,380,479	178,344,236	44.3	64.2	17.4	17.0	225.6
Vehicles per Household	1.03	1.25	1.61	1.66	1.69	20.6	29.6	2.6	2.0	63.6
Vehicles per Person	0.31	0.39	0.57	0.61	0.63	27.3	47.3	7.0	3.4	107.5
Vehicles per Worker	0.85	1.03	1.34	1.32	1.39	21.4	30.6	-1.4	5.0	64.1
Households with 0 Vehicles	11,416,835	11,081,394	10,390,307	10,602,297	10,861,067	-2.9	-6.2	2.0	2.4	-4.9
% with 0 Vehicles	21.53%	17.47%	12.92%	11.53%	10.29%					
Households with 1 Vehicle	30,189,103	30,268,323	28,564,622	31,038,711	36,123,613	0.3	-5.6	8.7	16.4	19.7
% with 1 Vehicle	56.94%	47.71%	35.53%	33.74%	34.23%					
Households with 2 Vehicles	10,073,684	18,599,907	27,347,235	34,361,045	40,461,920	84.6	47.0	25.6	17.8	301.7
% with 2 Vehicles	19.00%	29.32%	34.02%	37.35%	38.34%					
Households with 3+ Vehicles	1,342,499	3,495,126	14,087,509	15,945,357	18,033,501	160.3	303.1	13.2	13.1	1243.3
% with 3+ Vehicles	2.53%	5.51%	17.52%	17.33%	17.09%					

(1) Urban and Rural definitions for 2000 based on 2000 definition of urbanized areas and clusters.

(2) Includes cars, trucks, and vans.

(3) Public Transit includes bus, streetcar, subway, railroad, ferryboat, and taxicab.

(4) Vehicles include automobile only for 1960 and 1970. For 1980 and 1990, Vehicles include cars, vans, and trucks of one ton capacity or less.



The Western region of the country grew fastest, adding 10 million people to the 53 million residents. The Southern region added 15 million and now is home to over 100 million of the country's people, 35.6 percent of the U.S. population, resides in the South. The Northeast grew by just 5.5 percent, and the Midwest added 7.9 percent to its population (see Exhibit 1.3).

**Exhibit 1.3 Added Population by Region of the Country: 1990-2000**

<b>Region</b>	<b>1990 Population</b>	<b>2000 Population</b>	<b>Added Population</b>	<b>Percent Change</b>
U.S. Total	248,709,873	281,421,906	37,712,033	13.2%
Northeast	50,809,229	53,594,378	2,785,149	5.5%
Midwest	59,668,632	64,392,776	4,724,144	7.9%
South	85,445,930	100,236,820	14,790,890	17.3%
West	52,786,082	63,197,932	10,411,850	19.7%

Every state experienced some population growth in the last decade--the first time in the 20<sup>th</sup> century that this happened. The growth was not evenly distributed; growth rates ranged from 66 percent increase in population in Nevada to less than 1 percent in North Dakota.

Some states that exhibited very high population growth rates between 1980 and 1990 seem to be slowing down; although California added over 4 million people to its population it grew by only 14 percent compared to 26 percent in the 1980s. Florida grew by a whopping 24 percent in the last decade, but that looks like a slowing trend compared to the 33 percent growth in population in Florida in the 80s.

On the other hand, some states have surfaced as new population magnets, such as Arizona, Colorado, Georgia and Washington, which each added over one million residents in the 90s. The eleven fastest growing states together add 14 million people, nearly 42 percent of the total added population in the country as a whole. Nevada has had the fastest growth rate for each of the previous four decades (see Exhibit 1.4).

**Exhibit 1.4 Fastest Growing States: 1990 - 2000**

<b>State</b>	<b>1990 Population</b>	<b>2000 Population</b>	<b>Added Population</b>	<b>Percent Change</b>
Nevada	1,201,833	1,998,257	796,424	66.3%
Arizona	3,665,228	5,130,632	1,465,404	40.0%
Colorado	3,294,394	4,301,261	1,006,867	30.6%
Utah	1,722,850	2,233,169	510,319	29.6%
Idaho	1,006,749	1,293,953	287,204	28.5%
Georgia	6,478,216	8,186,453	1,708,237	26.4%
Florida	12,937,926	15,982,378	3,044,452	23.5%
Texas	16,986,510	20,851,820	3,865,310	22.8%
Washington	4,866,692	5,894,121	1,027,429	21.1%
Oregon	2,842,321	3,421,399	579,078	20.4%
New Mexico	1,515,069	1,819,046	303,977	20.1%

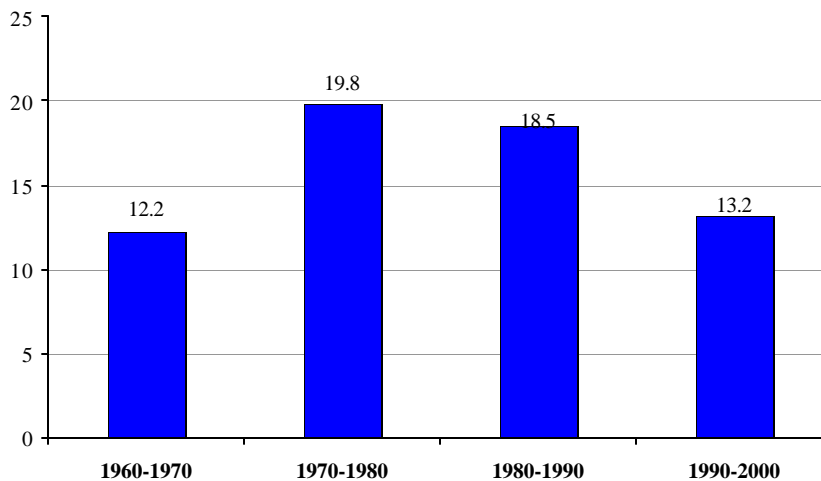
A national trend toward greater urbanization continued in the 1990s with over 80 percent of the population living in metropolitan areas, and almost three-fifths of the population of the country lives in a major metro area, an area with one million or more people. The total population within all metropolitan areas increased by 14 percent compared to 10 percent population growth in non-metropolitan areas. In 1960, there were only 34 metropolitan areas of 1 million or more; in 2000, there are 49 large metropolitan areas in the U.S. (San Juan, Puerto Rico is a metro area over one million, but is not included in this analysis).

## Workers

In 1960, 65 million people were counted as workers in the Census, by the year 2000 that number nearly doubled to 128 million workers. Over 45 percent of the people in the U.S. are workers—reflecting the large population segment (baby boomers) now in their working years, and especially the high participation of women in the workforce.

The large additions to the U.S. workforce seen every decade since 1960 may be near an end as the baby boomers move through their working years and into retirement. Whereas the 33 million people were added to the population total for the country in the last decade, only 13.2 million workers were added—one worker added for every 2.5 added people. This certainly reverses a trend since in the previous forty years (since 1960) the U.S. added nearly 64 million workers, or 1.2 added workers for every added person (see Exhibit 1.5).

**Exhibit 1.5 Added Number of Workers per Decade (Millions): 1960-2000**



The number of workers in the U.S. has doubled since 1960. Nearly every worker is a commuter. In 1960, 43 million workers commuted by private vehicle, compared to 97 million workers commuting by private vehicle in the year 2000. Households have also declined in size, but over the last forty years the average number of workers per household remained close to the same, about 1.2 workers per household. The growth in

percent of workers kept pace with population growth in most areas—16 metro areas added 20 percent to their populations and 12 of those metro areas added 20 percent to their worker count.

From the longer vantage point of history, the entrance of large numbers of women into the workforce in the 20<sup>th</sup> century is as profound a change as the move from farm to factory in the 19<sup>th</sup> century. From 1900 through 2000 at any time about 80 percent of adult men have earned a wage. One hundred years ago, only about 20 percent of women earned wages, whereas today about 70 percent do (see Exhibit 1.6).

**Exhibit 1.6 Trends in Worker Characteristics: 1960 and 2000**

<b>Workers</b>	<b>1960</b>	<b>2000</b>
National Total	64,655,805	128,279,228
% of Population	36.1%	45.6%
% Male	67.7%	53.2%
% Female	32.3%	46.7%
Inside Metro Areas *	29,033,438	75,067,972
% Inside Metro Areas*	44.9%	58.5%
Worked in County of Residence	55,254,625	94,042,863
Worked Outside County of Residence	9,401,180	34,236,365
% Working Outside County of Residence	14.5%	26.6%
% Commuting by POV	66.5%	75.7%
Number Commuting by POV	42,996,110	97,107,376

\* The list of metropolitan areas over one million has changed in the forty-year period from 34 to 49 areas.

Similar to the greater urbanization of population, workers are also more concentrated in the major metropolitan areas. In 2000, nearly 60 percent of all U.S. workers lived in these areas.

The nature of the U.S. workforce is important since a change in worker demographics can have a strong impact on commute behavior. Over the last 40 years a number of changes to the workforce have been noted<sup>1</sup>:

- Farm employment dropped to less than 10 percent of the labor force, and the demographic characteristics of farm laborers has shifted from African-American to Latino
- Occupations related to the service industries are the most common recorded by the census, such as managers, clerical, teachers, cashiers, etc.
- The share of personal consumer expenditures directed toward services (health care, higher education, restaurant meals, etc) had outstripped spending on manufactured items.

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<sup>1</sup> William H. Frey, Bill Abresch, Jonathan Yeasting; America by the Numbers, A Field Guide to the U.S. Population, The New Press, New York, 2001

- The growth of new-technology related industry will continue, but so will lower paid service jobs. The fast-growing fields in new technology will not necessarily dominate the U.S. economy in the next decade.
- In 2000, the tax penalty for working past retirement age was changed, and the proportion of people older than 65 who continue in the workforce is expected to rise.

The U.S. is also an aging society at the turn of the millennium—the same baby boomers that overflowed the school systems in the 1950s and 1960s now fill out the workforce and will begin to reach retirement age by 2010. A shift toward older workers occurs as this large population cohort moves through the years of employment—the civilian employed population aged 45 – 54 grew by 51 percent between 1990 and 2000 while the civilian employed population aged 25 – 34 declined by 13 percent in the same time period (see Exhibit 1.7).

**Exhibit 1.7 Number of People in the Civilian Labor Force by Age Group (millions): 1990-2000<sup>2</sup>**

	1990	2000
<b>Work Force Participation (in millions of workers)</b>		
Men in Labor Force, age 16+	69.0	75.2
Women in Labor Force, age 16+	56.8	65.6
<b>Age</b>		
Under 25	22.5	22.8
25 – 34	36.0	31.7
35 – 44	32.2	37.8
45 – 54	20.2	30.5
55 – 64	11.5	14.0
65+	3.5	4.2

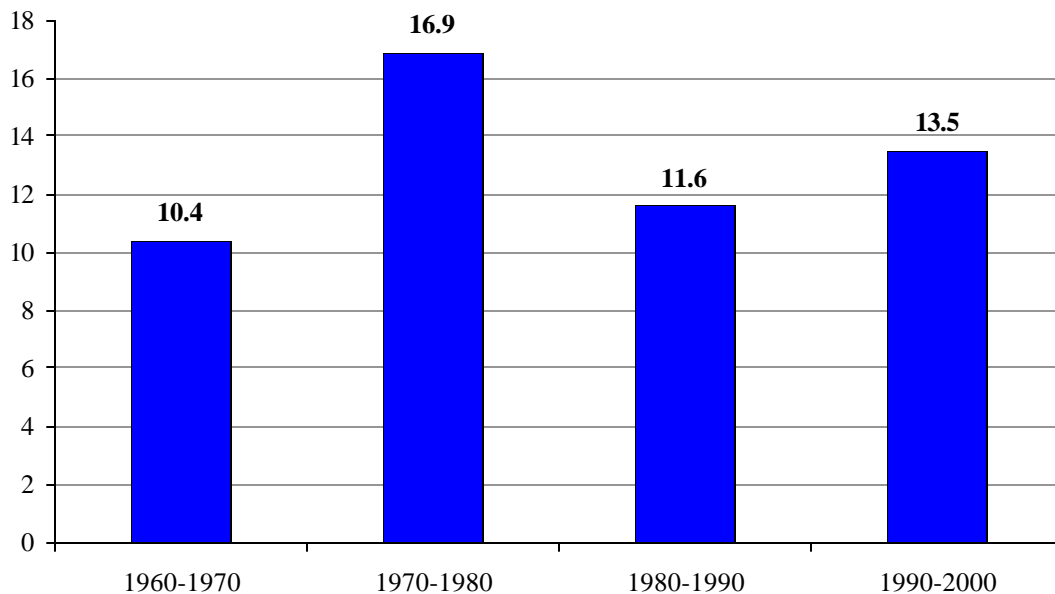
Immigration will undoubtedly be a factor in filling the worker void left by retiring baby-boomers. Policy decisions determine the amount of allowable immigration each year, but if trends continue foreign-born people will be a large factor in population and worker growth in the U.S. Immigrants are generally of working age and enter the work force directly, but come in with varying job skills. Therefore immigrants are employed at both the highest and lowest skill levels. Overall, new immigrants to the U.S. are less dependent on auto travel than native-born people, but as they stay longer they are likely to obtain an auto and travel the same as native-born Americans.

<sup>2</sup> Source: US Census Bureau; Statistical Abstract of the United States, 2001; Table no. 568. See Chapter 7 for the difference in definition of civilian labor force and worker.

## Households

The number of added households per decade since 1960 shows less of a distinct pattern than either population or workers. The largest increase was during the 1970s when the large population of baby boomers moved away from their parents and established their own households. In the 1980s, the number of added households slowed, followed by an increase during the last decade of the century. Older people who have been widowed are more likely today to live alone than to live with other family members. In the last 40 years, the average number of people in a household dropped from 3.4 (1960) to 2.7 (2000) persons per household. At the same time all the major contributors to household travel increased—vehicles, drivers, and workers. Exhibit 1.8 shows the added number of households per decade since 1960.

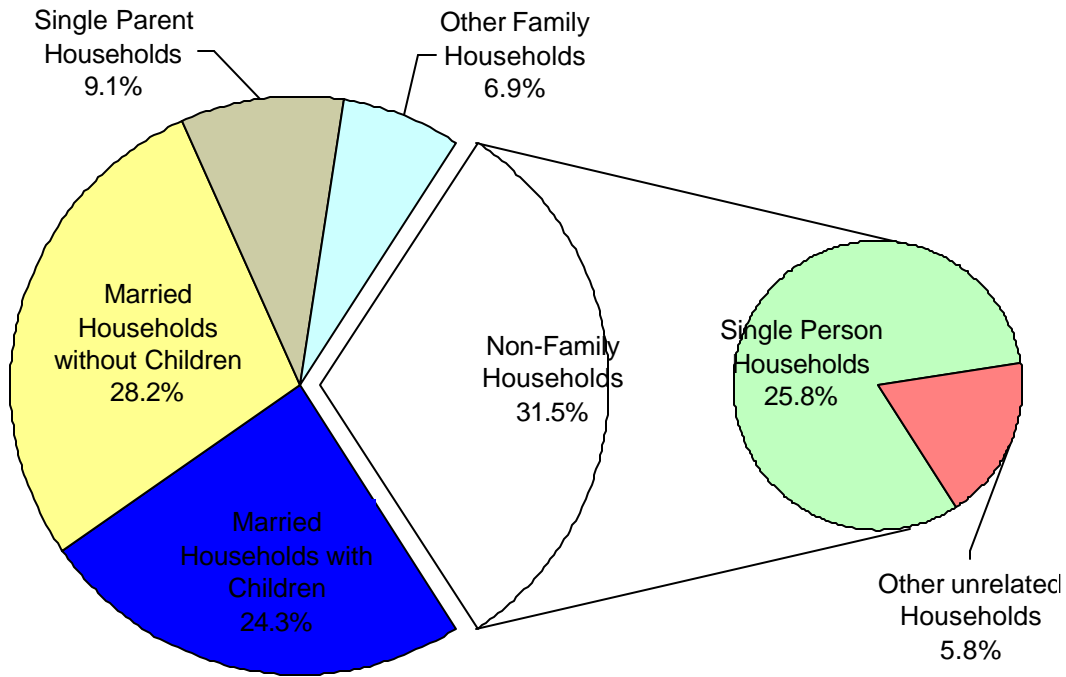
**Exhibit 1.8 Added Number of Households per Decade (Millions): 1960-2000**



Household composition is a major influence on household travel. In the U.S. Census the two major types of households are “family” and “non-family”. A family household is composed of at least two people related by birth, marriage, or adoption. A non-family household is either a person living alone or un-related people sharing the same home.

Married couples, with or without children, have become less common in the U.S.; the share of family households fell from 81 percent in 1970 to 68 percent in 2000. For the first time the proportion of single-person households (25.8 percent) is greater than the number of nuclear families (married couples with children are 24.3 percent). Non-family households were 19 percent of all households in 1970 and grew to 31.9 percent in 2000, accounting for nearly a third of all households. Non-family households are a mix of people living alone, unmarried couples, and people living with friends or roommates. Exhibit 1.9 displays the household composition shown by the 2000 Census.

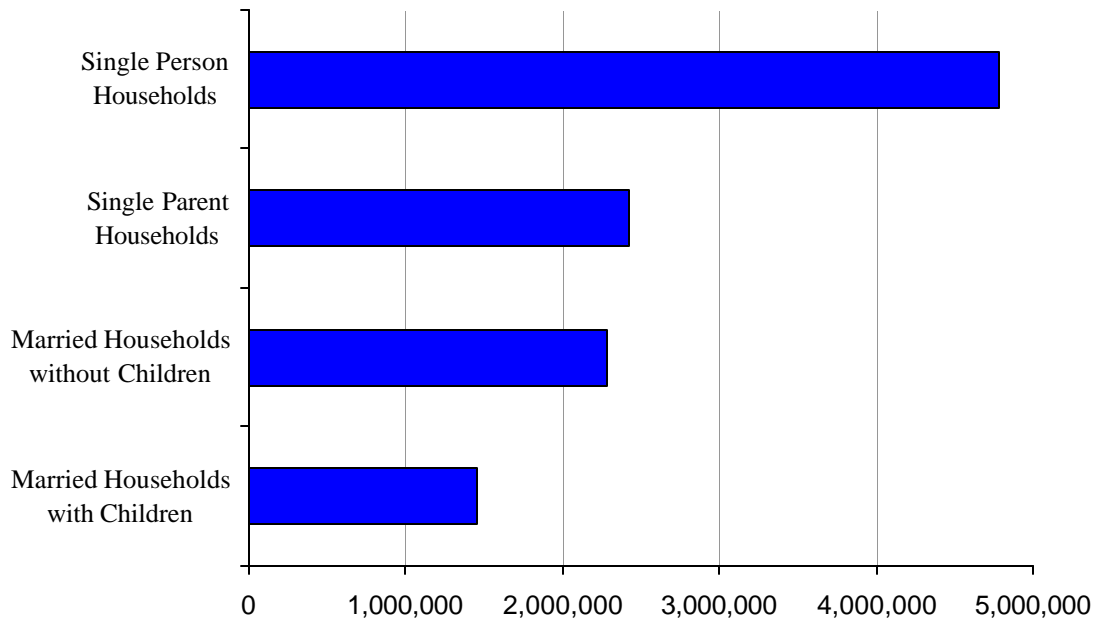
**Exhibit 1.9 Household Composition: 2000**



The change in households from a traditional nuclear family to more diverse and smaller arrangements adds to the number of people separately traveling to work. Average household size has declined from 3.14 people per household in 1970 to 2.59 in 2000. Large households have become much less common; the proportion of households with 5 or more people was 21 percent in 1970 and 11 percent in 2000.

The decade past saw a large increase in single-person households; almost 5 million of the 13.5 million added households were single-person. Another 2.4 million were single parent, 2.3 million were married without children, and only 1.5 million households added in the 90s were nuclear families (see Exhibit 1.10).

**Exhibit 1.10 Number of Added Households by Household Type: 1990 - 2000**



<b>Added 1990 – 2000</b>	<b>Number</b>
Married Households with Children	1,450,465
Married Households without Children	2,289,772
Single Parent Households	2,419,268
Single Person Households	4,782,610

### **Diversity Across the Nation**

Racial and ethnic diversity has grown in the U.S. over the last four decades. By far the biggest change in the U.S. demographic profile is the growth of traditionally “minority” populations. Nearly 70 million Americans identify themselves as something other than Non-Hispanic white alone, the largest number in the nation’s history.

The African-American population is still highly concentrated in the U.S.—in 64 percent of all counties only 6 percent of the population identifies themselves as African-American, but in 3 percent of all counties 50 percent or more of the county population is identified as African-American. The South had the highest proportion of African-Americans with 20 percent compared to 12 percent in the Northeast, 11 percent in the Midwest, and 6 percent in the West. In the South, the counties with majority African-American populations tend to be non-metropolitan, but concentrations of blacks in the Midwest and Western regions are in counties located within metropolitan areas or counties containing universities or military bases or both. In metropolitan areas the concentration tends to be in counties containing older central cities.

The Hispanic population grew at a staggering pace in the 90s, from 22 million to 35 million people who identify themselves as Hispanic (Hispanics can be of any race). Hispanics of any race now rival African-Americans as the largest minority group – 12.5 percent of the population identifies as Hispanic and 12.3 percent as Black alone (and not in combination with any other race).

The increase in Hispanic population is due to both birth rate and immigration; much of the growth is due to the relatively higher birth rate in Hispanic population. The number of Hispanic children has increased faster than any other racial/ethnic group, growing from 9 percent of the child population in 1980 to 16 percent in 2000.

### **Foreign-Born Residents**

The growing number of foreign-born residents is adding to the diversity of the U.S. In 1960, there were about 10 million foreign-born residents of the U.S. In 1990, there were 20 million; and by 2000, it was 30.1 million. In 1960, 95 percent of the foreign-born population considered themselves white--by 1990, 51 percent did.

One-third more immigrants entered the U.S. in the decade between 1990 and 2000 than in the previous decade, and altogether immigrants accounted for two out of five people added. The total number of foreign-born residents increased a striking 57 percent between 1990 and 2000 to 31.3 million people—triple the number in 1970. Nearly 22 million foreign-born residents immigrated to the U.S. since 1980, over 8.3 percent of the resident population (see Exhibit 1.11).

**Exhibit 1.11 Immigrants and Total Population Added: 1980-2000**

<b>Decade</b>	<b>Immigrants</b>	<b>Population Change</b>	<b>Immigrants as Percent of Population Increase</b>
1980-90	8,663,627	22,164,068	39.1
1990-00	13,178,276	32,712,033	40.3

In the 1990s the largest flows of immigrants (of any ethnicity) to the United States have settled in California, New York, Texas, Florida, Illinois, New Jersey, Massachusetts, and Virginia, as well as the District of Columbia. Three of those states, California, New York, and New Jersey, as well as the District of Columbia, have experienced high rates of international immigrants while simultaneously experiencing high rates of out-migration to other states, thereby changing the characteristics of the population beyond what simple growth or decline is measured.

A much higher proportion of immigrants live in the largest metropolitan areas—53 percent live in the eight metro areas with 5 million or more people compared to just one-quarter of the native-born population. In areas with between one and five million people, the proportions were not significantly different, and foreign-born people were



proportionately less likely to live in areas with less than a million in population or in non-metropolitan areas<sup>3</sup>.

Immigrants will probably continue to be an important addition to our population and workforce—as the baby boomers move out of their working years fewer and fewer workers are projected to maintain productivity and employment. Travel by new immigrants is different than travel by immigrants who have been here awhile, or native-born residents.

The acquisition of vehicles is especially interesting in the immigrant community. Nearly twenty percent of foreign-born persons live in poverty, and this impacts location and transportation choices. Newer immigrants are twice as likely not to have a vehicle than immigrants who have lived in the U.S. for ten years or more. The longer the immigrant family has been residing in the States, the more similar their characteristics of vehicle-ownership to native-born households. Still, even after a decade, immigrants are twice as likely to continue to be without a car than U.S.-born. Hispanic immigrants who have been in the U.S. for over a decade are more likely to be without a vehicle (11 percent). Exhibit 1.12 shows the proportion of zero-vehicle households for all immigrants compared to U.S.-born, and for Hispanic immigrants. 1990 Census Public Use Microdata Sample File (PUMS) data is shown since 2000 PUMS was unavailable when this report was written.

**Exhibit 1.12 Proportion of Households without Vehicles by Number of Years Resident in U.S.**

	<b>3 years or less</b>	<b>4-5 years</b>	<b>6-8 years</b>	<b>9-10 years</b>	<b>10 + years</b>	<b>US Born</b>
Hispanic	23.3	17.7	15.4	14.2	10.8	6.2
All	20.7	15.7	12.7	12.0	8.0	3.9

Source: 1990 Census PUMS data

In large cities, the cost of purchasing a vehicle may not be as much of an impediment as the cost of insurance, parking, and vehicle repairs. One out of five poor households own a vehicle fourteen years old or more<sup>4</sup>, and these older vehicles are less dependable, require more repairs, and may be used sparingly. Even people in households with no cars still make almost half of their trips (all purposes, not just commute trips) in a private vehicle, about a quarter of their trips are by walking, and one in six trips are by transit.

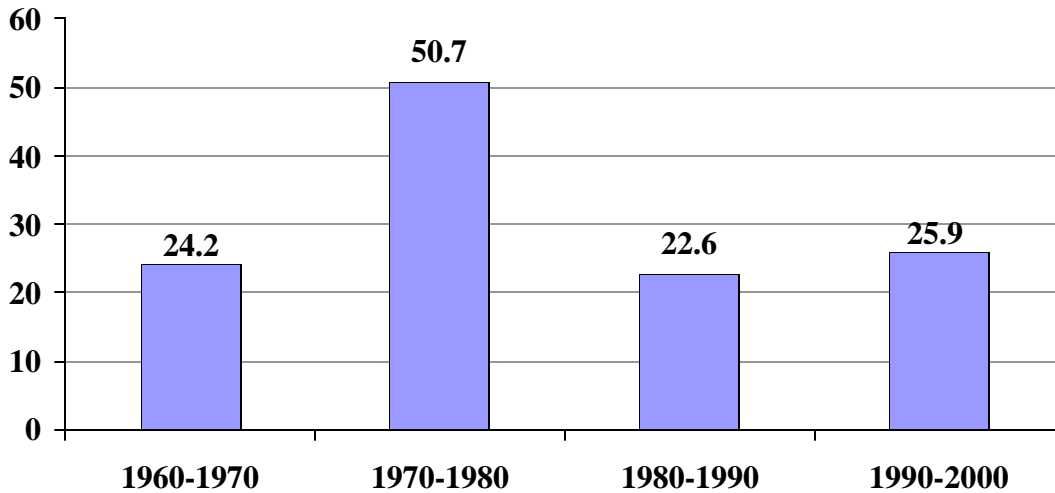
<sup>3</sup> Current Population Reports, P23-195, U.S. Census

<sup>4</sup> Source: 1995 NPTS

## Vehicle Availability

In the 40-year period between 1960 and 2000, 123.6 million vehicles were added, almost two vehicles added for every added worker. The number of vehicles has increased across the country about 15 percent since 1990; compared to 13 percent increase in population and 11 percent increase in workers. Exhibit 1.13 shows the added number of vehicles per decade.

**Exhibit 1.13 Added Number of Vehicles per Decade (Millions): 1960-2000**



The most dramatic change has been the astounding increase in households with two or more vehicles. In 1960, 11.4 million households had 2 or more vehicles; in 2000, 58.5 million households have 2 or more vehicles. Given the decline in household size an even more dramatic increase has been the increase in households with three or more cars. In 1960, very, very few households (only 1.3 percent) had three or more cars. In 2000, 17 percent have 3 or more vehicles (see Exhibit 1.14).

**Exhibit 1.14 Number of Households by Vehicles: 1960 and 2000**

Households with:	Number of Households	
	1960	2000
Zero-Vehicle	11,416,835	10,870,530
One Vehicle	30,189,103	36,126,041
Two Vehicle	10,073,684	40,463,699
Three or More	1,342,499	18,036,636

There are a number of factors pushing the increase in households with at least one vehicle. There is an increase in longevity of the auto fleet—this creates a large stock of viable used vehicles available at a reasonable price. The increasing affordability of cars means more low-income households can own one<sup>5</sup>.

<sup>5</sup> Alan Pisarski, “Commuting in America”, ENO Foundation, 1987

## Zero-Vehicle Households

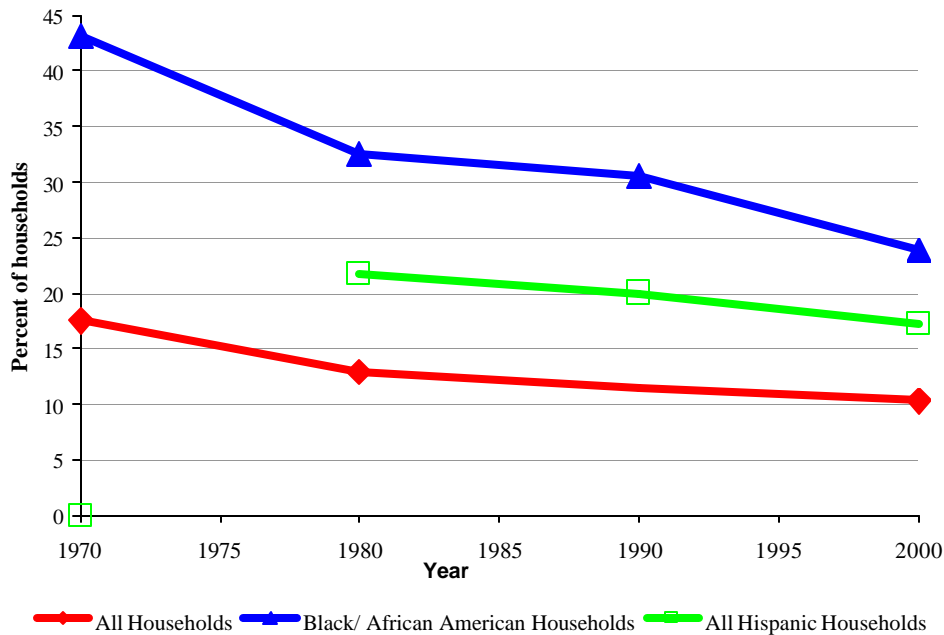
The proportion of households with no vehicle dropped to about 10 percent of all households for the first time in 2000. In absolute numbers, however, about the same number of households had no vehicle in 1960 as in 2000 (11.4 million and 10.9 million respectively). But with the decrease in household size, fewer people are affected. In 1960, 38 million people lived in zero-vehicle households, compared to only 28 million people in 2000. The likelihood of owning a vehicle varies by area and region of the country. The New York metro area alone accounts for one-fifth of the zero-vehicle households in the entire country (Exhibit 1.15).

**Exhibit 1.15 Percent of All Households without Vehicles, with and without New York CMSA: 1980-2000**

	1980	1990	2000
U.S. Total	13.1%	11.5%	10.3%
U.S. minus NY CMSA	10.8%	10.1%	8.8%

The likelihood of living in a household without a vehicle also varies dramatically by race and ethnicity. African-American and Hispanic households have consistently had fewer vehicles than white households, but the proportion without vehicles continues to decline (Exhibit 1.16).

**Exhibit 1.16 Percent of Households without Vehicles by Race of Householder: 1970-2000**

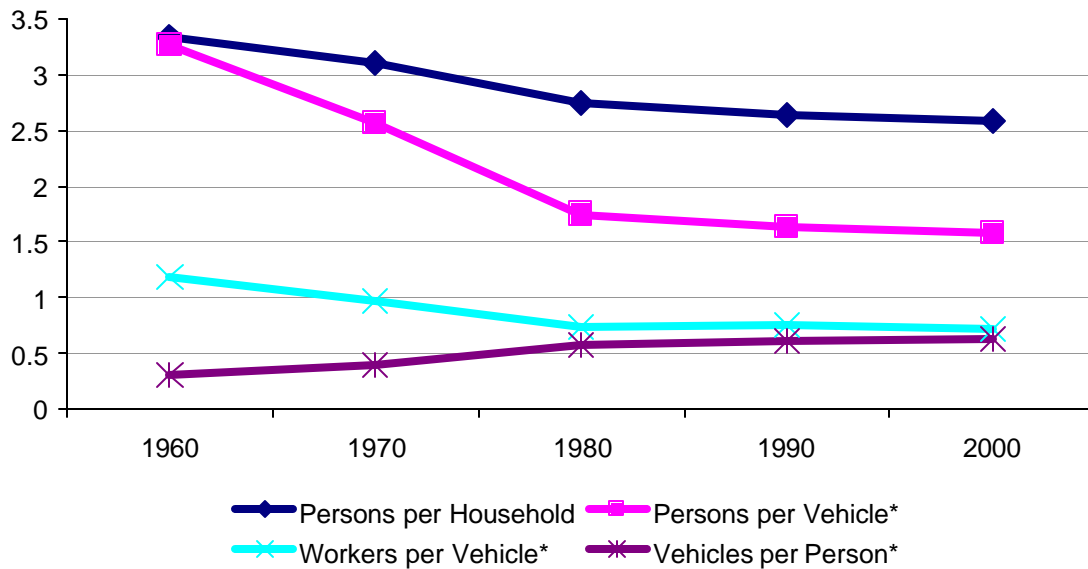


## Commuting Trends for the Nation and States

The journey-to-work data is obtained on the decennial census “long form” which allows only one answer to the question on the means of travel to work, so detail on multi-modal trips is missing. Information on travel for other purposes is also not obtained.

Between 1960 and 2000, the U.S. added 102 million households, 124 million vehicles and 64 million workers. The increase in households and vehicles far exceeded the increase in workers and population. Exhibit 1.17 shows some of the dramatic changes in travel-related characteristics of the U.S. population since 1960.

**Exhibit 1.17 Changes in Travel Variables: 1960 - 2000**



	1960	1970	1980	1990	2000
Persons per Household	3.33	3.11	2.75	2.63	2.59
Persons per Vehicle	3.27	2.57	1.75	1.63	1.58
Workers per Household	1.22	1.21	1.20	1.25	1.22
Workers per Vehicle	1.18	0.97	0.74	0.76	0.72
Vehicles per Person	0.31	0.39	0.57	0.61	0.63
Vehicles per Worker	0.85	1.03	1.34	1.32	1.39

In the majority of the country we may be close to saturating the vehicle availability for workers. However, as indicated above, some population groups, notably Hispanic immigrants and African-Americans living in central cities, have room to grow into vehicle ownership.

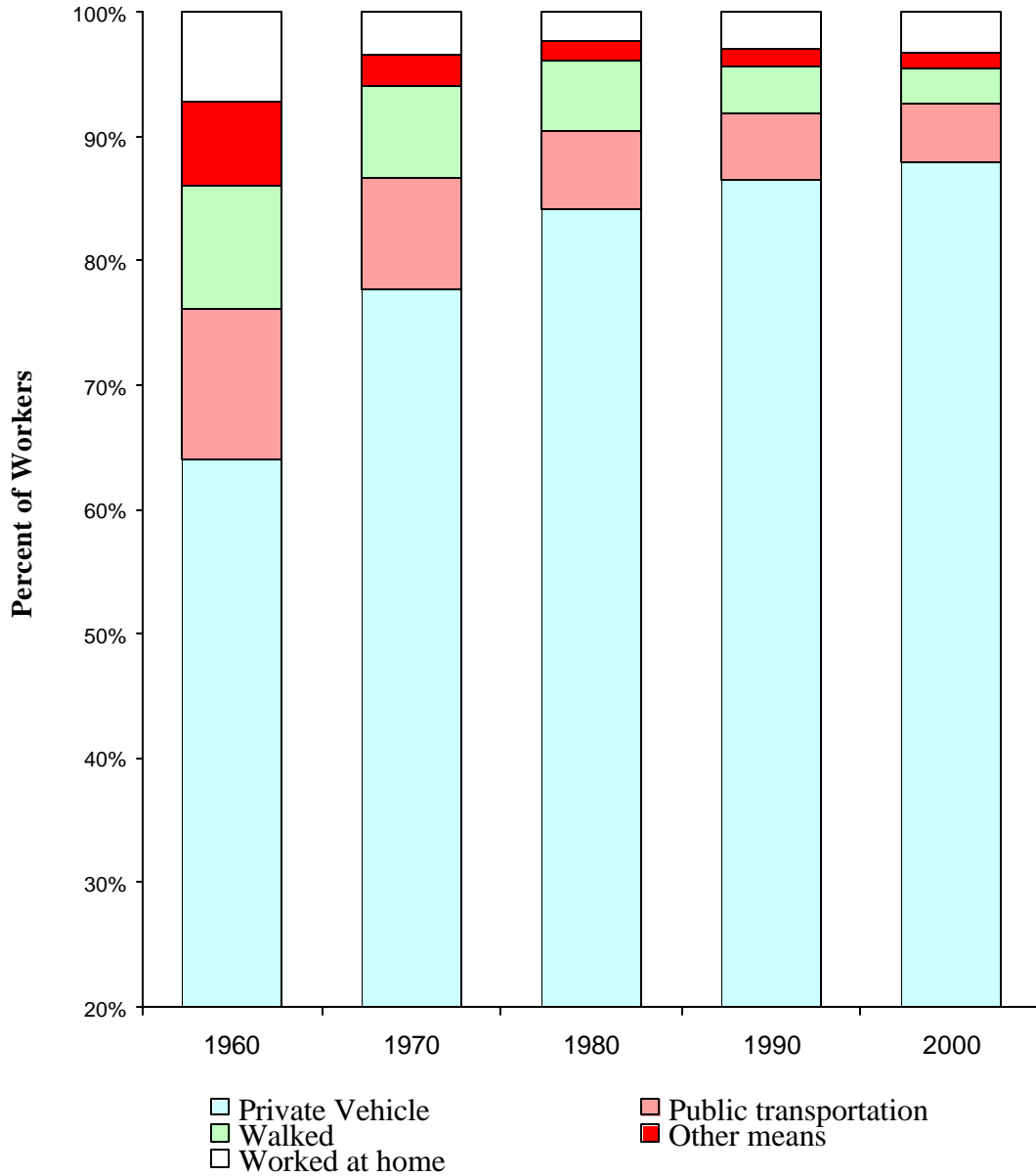
## Mode

In forty years between 1960 and 2000, almost two vehicles were added to the U.S. household-vehicle fleet for every added worker. Not surprisingly, the use of private vehicle as a means of travel to work has increased from 69 percent of all commuters to 88 percent (Exhibit 1.18). Exhibit 1.19 shows the number of private vehicle commutes in each decade since 1960, showing the increase from 41 million workers in private vehicles to 113 million workers in private vehicles.

In 2000, three-quarters of commuters drove alone to work, 12.2 percent reported carpooling, followed by transit (4.7 percent), work at home (3.3 percent) and walk (2.9 percent). With the total increase in number of workers, workers using transit stayed about the same (6 million workers commute by transit).

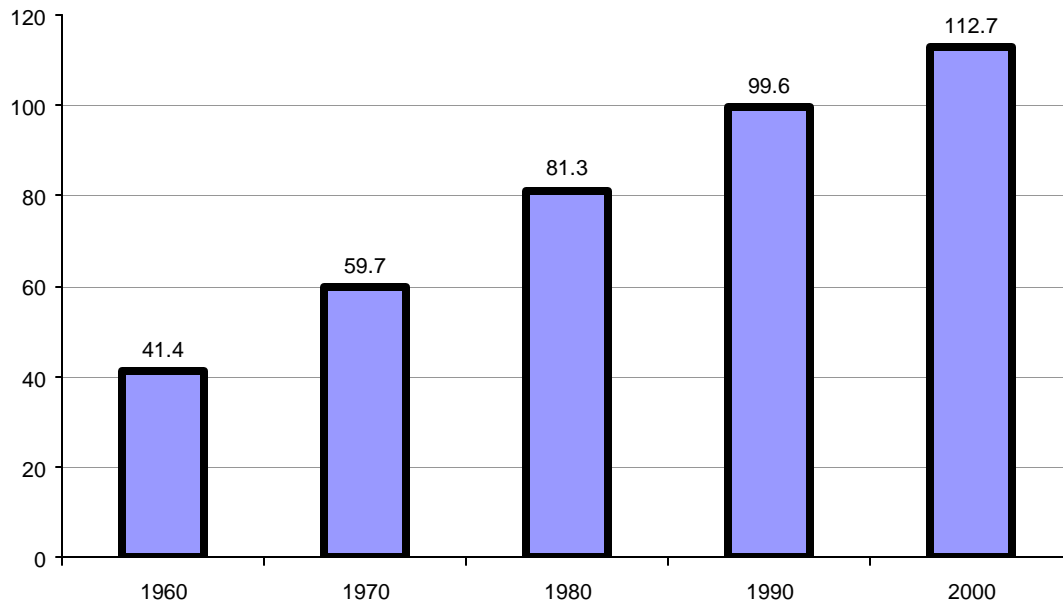
Nearly 13 million more workers drove alone in 2000 than did in 1990. One of the big surprises in 2000 is the continuing decline of carpools as a means of travel to work. According to the Census, the number of workers who usually carpool has increased but the proportion of carpooling as a share of total commuters has declined by 1.4 percent (see Exhibit 1.18). Average occupancy for private vehicle modes to work is just 1.08 persons per vehicle.

**Exhibit 1.18 Means of Transportation to Work: United States: 1960- 2000**



Percent of Workers by Mode	1960	1970	1980	1990	2000
Private Vehicle	64.0	77.7	84.1	86.5	87.9
Public transportation	12.1	8.9	6.4	5.3	4.7
Walked	9.9	7.4	5.6	3.9	2.9
Other means	6.8	2.5	1.6	1.3	1.2
Worked at home	7.2	3.5	2.3	3.0	3.3

**Exhibit 1.19 Number of Workers Commuting by Private Vehicle: 1960-2000**

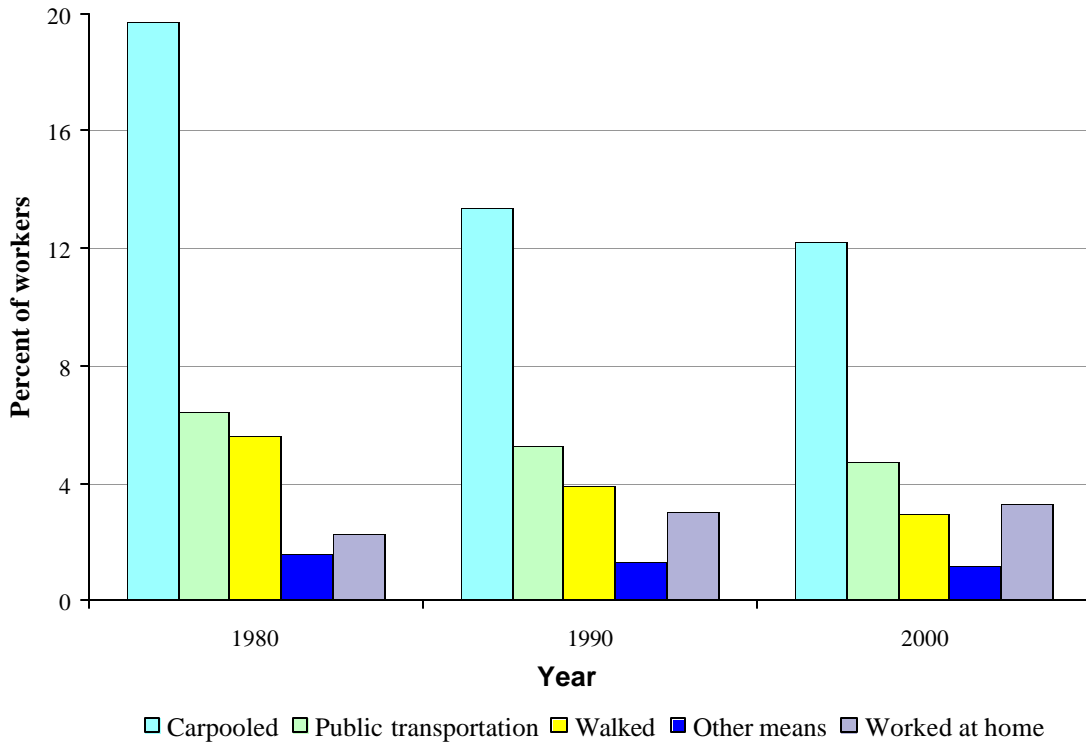


(in millions)	1960	1970	1980	1990	2000
Private Vehicle Commutes	41.4	59.7	81.3	99.6	112.7

*Transit*

The number of workers taking transit has remained stable since 1980 at about 6 million workers. However, transit commute shares for the U.S. have fallen from 6.2 percent in 1980 to 5.3 percent in 1990, and 4.7 percent 2000. Walk to work has declined both in the number and percent of commuters, whereas work at home showed an increase (see Exhibit 1.20).

**Exhibit 1.20 Percent of Workers who do Not Drive alone: 1960-2000**



<b>Commuting To Work</b>	<b>1980</b>	<b>1990</b>	<b>2000</b>
Drove Alone	64.4	73.2	75.7
Carpooled	19.7	13.4	12.2
Public transportation	6.4	5.3	4.7
Walked	5.6	3.9	2.9
Other means	1.6	1.3	1.2
Worked at home	2.3	3	3.3

A majority of U.S. transit trips are for non-work purposes, and non-work trips are not collected by the census. However, the 2001 National Household Travel Survey (NHTS is periodically conducted by the U.S. Department of Transportation)<sup>6</sup> indicates that 35 percent of transit trips are for “earning a living” while 65 percent are for other purposes. Thus, it is not inconsistent that local counts of transit boardings are increasing, while the number of commuters usually using transit to work remains constant (see Exhibit 1.21).

<sup>6</sup> <http://nhts.ornl.gov>



**Exhibit 1.21 U.S. Transit Ridership (APTA) and Transit Commuting (Census)  
Trends: 2000<sup>7</sup>**

<b>Year</b>	<b>Transit Ridership, APTA (Millions of Boardings)</b>	<b>Transit Commuters*, Decennial Census (# of Workers)</b>	<b>Total Commuters, Decennial Census (# of Workers)</b>	<b>Transit Commute Share, Decennial Census</b>
1980	8,567	6,007,728	96,617,296	6.2%
1990	8,799	5,890,155	115,070,274	5.1%
2000	9,363	5,867,559	128,279,228	4.6%

\* Transit commuters exclude taxicab commuters.

Because the decennial census obtains information about the workers “usual” commute, it doesn’t capture an actual day of travel, as does the NHTS. Because the NHTS includes both questions we can compare the two answers directly (Exhibit 1.22). People who say that they usually drive are very consistent in their commute behavior—99 percent of those who say they usually drove alone and 97 percent of those who usually drive with others are in private vehicles on any given work day. People who usually take transit, walk, or bike are less likely to be on that mode on any given work day.

**Exhibit 1.22 Mode of Travel on Travel Day for Workers Making a Commute Trip Compared to “Usual Mode”**

<b>“Usual” Mode is:</b>	<b>On Travel Day Took:</b>					
	<b>Single Occupant Vehicle</b>	<b>Drove with Others</b>	<b>Transit</b>	<b>Walked</b>	<b>Biked</b>	<b>No Report/ Other</b>
Drove Alone	90.0%	9.3%	0.2%	0.3%	0.1%	0.2%
Carpool	22.2%	74.8%	1.0%	1.4%	0.4%	0.3%
Transit	7.8%	9.7%	69.4%	10.1%	0.5%	2.5%
Walk	8.1%	9.2%	2.6%	79.5%	0.2%	0.4%
Bike	6.7%	8.4%	1.7%	6.1%	77.1%	0.0%

Overall, 4.6 percent of the respondents in NHTS said that they “usually” take transit to get to work. A bit more than two-thirds (69 percent) of those who said they usually take transit actually rode transit to work on the travel day, resulting in 3.7 percent of workers using transit on an assigned travel day.

<sup>7</sup> Source: CTPP Status Report, September 2002, “Transit Ridership and Transit Commuting Trends: Why are They Different?” by Chuck Purvis, MTC, Oakland, CA

## Work at Home

The character of working at home has changed dramatically over the last half century. The decline in home-based employment from 1960 to 1970 was presumably a result in the decline of family farm employment and the consolidation of formerly home-based professional occupations (doctors and lawyers) into group practices. But since 1980, “work at home” has increased. Home-based workers expanded from 2.2 million workers in 1980, to 3.4 million workers in 1990, to 4.2 million workers in 2000 (see Exhibit 1.23).

**Exhibit 1.23 Number and Percent of Workers who Work at Home: 2000**

Year	Number of Workers	Worked at Home	Percent
1980	96,617,296	2,179,863	2.3
1990	115,070,274	3,406,025	3.0
2000	128,279,228	4,184,223	3.3

As of 2000<sup>8</sup>, some of the characteristics of workers who usually work at home include:

- Half are self-employed and work exclusively at home
- One-third are in professional and service industries
- More often women than men (54 percent home workers compared to 46 percent non-home workers)
- Older than non-home workers (46 percent vs. 32 percent for 45 years and over)
- More likely to be white non-Hispanic
- Less likely to live in metropolitan areas

For transportation planners the problem is greater than capturing a reliable estimate of the size and composition of the home-based work force, but also to determine and track the amount of work done at home, and to understand trends in the amount and type of work performed at home rather than at another location.

## Travel Time

American workers are spending more time than ever getting to work. In 2000, the average travel time to work was 25 minutes and 30 seconds, an increase of over two minutes compared to 1990.<sup>9</sup> The overall increase in travel time between 1980 and 1990 was only 40 seconds, so this change between 1990 and 2000 is significantly larger.

In 2000, 15 percent of workers commuted more than 45 minutes to work, up from only 11 percent in 1980. On the other hand, only 28 percent of workers commuted less than 15 minutes, down from 34 percent in 1980. Workers who said they worked at home were not included in the category of 15 minutes or less. More detail on each of these topics for the largest metropolitan areas in the U.S. is provided in the following chapters.

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<sup>8</sup> U.S. Census Bureau, Current Population Reports, “Home-Based Workers in the United States: 1997,” December 2001

<sup>9</sup> Some of this difference is due to coding changes of very long trips between 1990 and 2000. See Chapter 7 for more information.

## Chapter 2

### METRO AREA TRENDS

This chapter summarizes the changes in demographic characteristics of population, households, workers in the large metropolitan areas of the U.S., or those with one million or more people. Exhibit 2.1 is a profile of the various commute characteristics comparing the nation, the 49 metropolitan areas of 1 million or more in population, and the rest of the country.

We used the 1993 Office of Management and Budget (OMB) definition (updated on June 30, 1999) to select the counties to include in metropolitan areas. In 1980, only 34 areas had 1 million or more residents, in 1990, 39 areas met the definition, in 2000, 49 metropolitan areas included one million or more in population. Allocating the counties in these 49 areas to the 1993 definition over the 1980 – 2000 time period ensures that we are comparing the same geographies across time, but this difference should be kept in mind since the numbers presented here for 1980 and even 1990 may differ from previously published data. Appendix A lists the county lists for each MSA.

Since one of the major forces of commute characteristics in the last forty years has been suburbanization of the MSA landscape, we separated the central counties from suburban counties for trend analysis. In the June 1999 definition, many MSAs had more than one central county. In order to keep the series of reports on Journey-to-Work Trends consistent, we decided to hold the central county definitions to the one county defined as ‘central’ in 1990 for 39 MSAs. In the remaining 10 MSAs, one county was chosen as the central county based on location of the “primary” downtown.

This report can only examine the characteristics of workers and flows at the county level. The use of full counties has great limitations. For instance, the designation of a county as “suburban” simply identifies counties within the MSA that surround the central county. The term “suburban” does not connote any specific land-use or development pattern. In fact, some suburban counties may have higher population density than the central county in the MSA. Also, because several MSAs included two or more stand-alone cities located in different counties (e.g. Washington, DC MSA includes Baltimore, MD), the suburban counties sometimes include these stand-alone cities. In addition, counties are large, and can include urbanized and rural areas. Further analysis at small geography is required to fully understand development and commuting patterns for each of the metro areas.

Discussions about journey-to-work characteristics and vehicle availability for the large metro areas are in Chapters 3 through 5. Since no single story emerges to tell the tale of how commute patterns have changed in U.S. metropolitan areas, Chapter 6 presents examples of worker flow data in general for all MSAs and in more detail for five selected areas.

**Exhibit 2-1 Journey to Work Profile: Summary Statistics (2000)**

<b>Demographics and Land Area</b>	<b>Travel Time</b>	<b>Journey to Work by Mode</b>
Area Population 281,421,906	Mean (in minutes)	National
% Inside 49 Metro Areas 57.39	Originating in:	% Drive Alone 75.70
% Remainder of Nation 42.61	Nation 25.50	% Carpooled 12.19
% Urban 79.01	49 Metro Areas 27.90	% Public Transit 4.73
% Rural 20.99	Remainder of Nation 22.40	% Walk 2.93
Total Households 105,539,122		% Bicycle 0.38
Persons Per Household 2.59		% Other 0.81
Median Household Income Nationwide \$41,994	<b>Commute Length</b>	% Work at Home 3.26
National Age Characteristics	National	Inside 49 Metro Areas
Median Age 35.30	% Less Than 15 Minutes 28.44	% Drive Alone 73.56
% 14 Years or Less 21.40	% 15 - 29 Minutes 34.93	% Carpooled 11.80
% 65 Years or More 12.40	% 30 - 39 Minutes 15.26	% Public Transit 7.40
Square Miles	% 40 - 59 Minutes 10.39	% Walk 2.87
National Total 3,536,338	% 60 Minutes or More 7.72	% Bicycle 0.40
% Inside 49 Metro Areas 10.88	% At Home 3.26	% Other 0.78
% Remainder of Nation 89.12	Inside 49 Metro Areas	% Work at Home 3.18
<b>Workers</b>	% Less Than 15 Minutes 22.73	Remainder of Nation
National Total 128,279,228	% 15 - 29 Minutes 34.74	% Drive Alone 78.70
% of Population 45.6	% 30 - 39 Minutes 17.49	% Carpooled 12.73
% Male 53.7	% 40 - 59 Minutes 12.69	% Public Transit 0.96
% Female 46.3	% 60 Minutes or More 9.17	% Walk 3.01
Inside 49 Metro Areas 75,067,972	% At Home 3.18	% Bicycle 0.36
% Inside 49 Metro Areas 58.5%	Remainder of Nation	% Other 0.86
Remainder of Nation 53,211,256	% Less Than 15 Minutes 36.50	% Work at Home 3.38
% Remainder of Nation 41.5%	% 15 - 29 Minutes 35.20	
<b>Household Vehicle Availability</b>	% 30 - 39 Minutes 12.13	<b>General Indicators</b>
National	% 40 - 59 Minutes 7.13	National
Total Vehicles 178,344,236	% 60 Minutes or More 5.66	Population/Sq. Mile 80
% 0 Vehicles 10.30	% At Home 3.38	Households/Sq. Mile 30
% 1 Vehicles 34.25	<b>Time Workers Leave Home</b>	Workers/Sq. Mile 36
% 2 Vehicles 38.36	National	Workers/Household 1.22
% 3+ Vehicles 17.10	5:00 AM - 6:59 AM 26.22	Vehicles/Household 1.69
Inside 49 Metro Areas	7:00 AM - 8:29 AM 40.31	Vehicles/Worker 1.39
Total Vehicles 97,334,931	8:30 AM - 9:59 AM 10.42	Inside 49 Metro Areas
% 0 Vehicles 12.14	All Other Departures 19.78	Population/Sq. Mile 420
% 1 Vehicles 34.83	Worked at Home 3.26	Households/Sq. Mile 155
% 2 Vehicles 37.41	Inside 49 Metro Areas	Workers/Sq. Mile 195
% 3+ Vehicles 15.62	5:00 AM - 6:59 AM 25.57	Workers/Household 1.25
Remainder of Nation	7:00 AM - 8:29 AM 40.63	Vehicles/Household 1.63
Total Vehicles 81,009,305	8:30 AM - 9:59 AM 11.76	Vehicles/Worker 1.30
% 0 Vehicles 7.88	All Other Departures 18.87	Remainder of Nation
% 1 Vehicles 33.49	Worked at Home 3.18	Population/Sq. Mile 38
% 2 Vehicles 39.61	Remainder of Nation	Households/Sq. Mile 14
% 3+ Vehicles 19.03	5:00 AM - 6:59 AM 27.15	Workers/Sq. Mile 17
	7:00 AM - 8:29 AM 39.86	Workers/Household 1.17
	8:30 AM - 9:59 AM 8.53	Vehicles/Household 1.77
	All Other Departures 21.08	Vehicles/Worker 1.52
	Worked at Home 3.38	

## Population Characteristics

Nearly 60 percent of all the people in the U.S. reside in one of the large metro areas, and nearly one-third of the population lives in the 10 largest areas. The major metro areas also account for:

- 53.6 percent of population over the age of 65
- 56.7 percent of traditional families (married couples with children) - but the number of these families is just 14 million nationwide
- 57.5 percent of all occupied housing units (or households)
- 53.3 percent of households with income in 1999 below poverty level

Major metropolitan areas as a group grew in both population and land area in the nineties--ten areas now have over 5 million people. New York MSA is home to 20 million people or 7.5 percent of the nation's total. Dallas-Ft. Worth grew by 29 percent in the decade adding 1.2 million people (see Exhibit 2.2). Many other metro areas that experienced rapid growth (25 percent or more in the decade) were in the South and the West.

International immigration was a more significant factor in the growth of cities than migration from rural or other metropolitan areas. The South was the only region with significant population gain as a result of internal migration. Unlike population growth by childbearing, many immigrants are of working age and add directly to the pool of workers where they settle.

**Exhibit 2.2 Largest Metropolitan Areas in 2000**

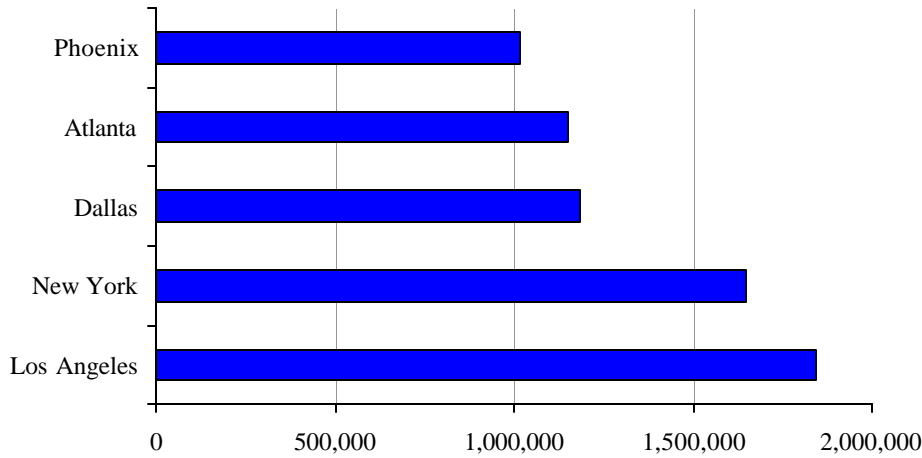
	<b>1990 Population</b>	<b>2000 Population</b>	<b>Added Population 1990-2000</b>	<b>Percent Change 1990- 2000</b>	<b>2000 Share of U.S. Total</b>
Total for Metro Areas of 5 million or more	75,874,152	84,064,274	8,190,122	10.8	29.9
New York	19,549,649	21,199,865	1,650,216	8.4	7.5
Los Angeles	14,531,529	16,373,645	1,842,116	12.7	5.8
Chicago	8,239,820	9,157,540	917,720	11.1	3.3
Washington, DC	6,727,050	7,608,070	881,020	13.1	2.7
San Francisco	6,253,311	7,039,362	786,051	12.6	2.5
Philadelphia	5,892,937	6,188,463	295,526	5.0	2.2
Boston	5,455,403	5,819,100	363,697	6.7	2.1
Detroit	5,187,171	5,456,428	269,257	5.2	1.9
Dallas	4,037,282	5,221,801	1,184,519	29.3	1.9

Three of the fastest growing large MSAs added over a million people—Dallas-Ft. Worth, Atlanta, and Phoenix. Las Vegas was the fastest growing MSA for the fourth decade in a row (see Exhibits 2.3 and 2.4).

**Exhibit 2.3 Population Change for the Ten Fastest Growing Metropolitan Areas:  
1990 – 2000**

<b>Name of MSA</b>	<b>1990 Population</b>	<b>2000 Population</b>	<b>Added Population 1990-2000</b>	<b>Percent Change 1990 - 2000</b>
Las Vegas	852,737	1,563,282	710,545	83.3%
Austin	846,227	1,249,763	403,536	47.7%
Phoenix	2,238,480	3,251,876	1,013,396	45.3%
Atlanta	2,959,950	4,112,198	1,152,248	38.9%
Raleigh	855,545	1,187,941	332,396	38.9%
Orlando	1,224,852	1,644,561	419,709	34.3%
West Palm Beach	863,518	1,131,184	267,666	31.0%
Denver	1,980,140	2,581,506	601,366	30.4%
Dallas	4,037,282	5,221,801	1,184,519	29.3%
Charlotte	1,162,093	1,499,293	337,200	29.0%
Portland	1,793,476	2,265,223	471,747	26.3%

**Exhibit 2.4 Five Metropolitan Areas with Largest Number of People Added:  
1990 - 2000**



Area	Population Added
Los Angeles	1,842,116
New York	1,650,216
Dallas	1,184,519
Atlanta	1,152,248
Phoenix	1,013,396

Seven of the ten metropolitan areas (CMSAs and MSAs) with the largest numerical gain in population were in the South and the West. New York, Chicago, and Washington, D.C. are the three metro areas not in this category. Two of the largest 49 MSAs lost in population: Pittsburgh, and Buffalo.

With the overall population growth in the U.S. since 1950, all major metro areas increased in population, but eight areas lost population in the central county during the last fifty years. St. Louis lost half of the residents in the central county, Washington, D.C. and Philadelphia lost nearly 30 percent (See Exhibit 2.5).

**Exhibit 2.5 Change in Central and Suburban Population: 1950-2000**

	<b>1950 CC Pop</b>	<b>2000 CC pop</b>	<b>Pct Change in CC</b>	<b>1950 Sub Pop</b>	<b>2000 Sub Pop</b>	<b>Pct Change in Sub</b>
St. Louis	856,796	348,189	-59.4	970,822	2,255,418	132.3
Washington, DC	802,178	572,059	-28.7	2,500,716	7,036,011	181.4
Philadelphia	2,071,605	1,517,550	-26.7	2,159,313	4,670,913	116.3
Boston	896,615	689,807	-23.1	3,375,312	5,129,293	52.0
New York	1,960,101	1,537,195	-21.6	13,061,922	19,662,670	50.5
Pittsburgh	1,515,237	1,281,666	-15.4	985,218	1,077,029	9.3
Detroit	2,435,235	2,061,162	-15.4	1,280,944	3,395,266	165.1
New Orleans	570,445	484,674	-15.0	199,745	853,052	327.1

Most of the population growth in the major metropolitan areas has occurred in the suburban counties. For example, Denver’s suburban population increased steadily from 1950 through 1990 with corresponding declines in the central county share. In 1950, the suburban counties’ share was about 40 percent, and in 1990 the share in suburban counties had increased to 75 percent. Only in the last decade, from 1990-2000, was there a significant increase in the central county population.

New Orleans had a similar half-century of ups and downs for central county population, but shows continuing declines in central population in the 90s (see Exhibits 2.5, 2.6 and 2.7).

Exhibit 2.8 shows some of the demographic characteristics of the 49 major MSAs, including household size, vehicles per household, workers per household, and urban and rural share of population. Since the MSA definitions include full counties (which can be expansive), some of the major MSAs include significant rural populations. The urban and rural population estimates are based on the Census Bureau’s 2000 definitions: urban includes urbanized areas and urban clusters, rural area is the remainder in the MSA.

While average household size does not vary much between metro areas, vehicles per household and workers per household are more variable. For example, the Salt Lake City metro has the largest average household size and a high average in the number of workers and vehicles available. New York also is clearly different, with the lowest average number of vehicles per household in spite of similar household size and workers per household to the other areas. Metros in Florida (West Palm Beach, Miami, and Tampa) had fewer vehicles available and fewer workers per households, reflecting older retired populations.



**Exhibit 2.6 Percent Share of Population in Central and Suburban Counties:  
1960-2000**

MSA Name	1960			1970			1980			1990			2000		
	Area wide	% CC	% SC	Area wide	% CC	% SC	Area wide	% CC	% SC	Area wide	% CC	% SC	Area wide	% CC	% SC
New York	17,469,427	9.7	90.3	19,565,961	7.9	92.1	18,985,739	7.5	92.5	19,549,649	7.6	92.4	21,199,865	7.3	92.7
Los Angeles	7,751,616	77.9	22.1	9,972,037	70.5	29.5	11,497,568	65.0	35.0	14,531,529	61.0	39.0	16,373,645	58.1	41.9
Chicago	7,078,743	72.5	27.5	7,952,044	69.1	30.9	8,114,876	64.7	35.3	8,239,820	62.0	38.0	9,157,540	58.7	41.3
Washington	4,274,255	17.9	82.1	5,396,463	14.0	86.0	5,790,490	11.0	89.0	6,727,050	9.0	91.0	7,608,070	7.5	92.5
San Francisco	3,723,158	19.9	80.1	4,751,989	15.1	84.9	5,367,925	12.6	87.4	6,253,311	11.6	88.4	7,039,362	11.0	89.0
Philadelphia	5,073,747	39.5	60.5	5,673,378	34.3	65.7	5,649,290	29.9	70.1	5,892,937	26.9	73.1	6,188,463	24.5	75.5
Boston	4,676,312	16.9	83.1	5,224,303	14.1	85.9	5,336,186	12.2	87.8	5,455,403	12.2	87.8	5,819,100	11.9	88.1
Detroit	4,675,382	57.0	43.0	5,309,922	50.2	49.8	5,293,217	44.2	55.8	5,187,171	40.7	59.3	5,456,428	37.8	62.2
Dallas	1,782,133	53.4	46.6	2,432,706	54.6	45.4	3,046,084	51.1	48.9	4,037,282	45.9	54.1	5,221,801	42.5	57.5
Houston	1,581,137	78.6	21.4	2,181,315	79.9	20.1	3,119,831	77.2	22.8	3,731,131	75.5	24.5	4,669,571	72.8	27.2
Atlanta	1,312,474	42.4	57.6	1,763,626	34.5	65.5	2,233,324	26.4	73.6	2,959,950	21.9	78.1	4,112,198	19.8	80.2
Miami	1,268,993	73.7	26.3	1,887,892	67.2	32.8	2,643,981	61.5	38.5	3,192,582	60.7	39.3	3,876,380	58.1	41.9
Seattle	1,587,666	58.9	41.1	2,038,533	56.7	43.3	2,408,576	52.7	47.3	2,970,328	50.7	49.3	3,554,760	48.9	51.1
Phoenix	726,183	91.4	8.6	1,035,438	93.4	6.6	1,599,970	94.3	5.7	2,238,480	94.8	5.2	3,251,876	94.5	5.5
Minneapolis	1,646,709	51.2	48.8	2,026,715	47.4	52.6	2,198,190	42.8	57.2	2,538,834	40.7	59.3	2,968,806	37.6	62.4
Cleveland	2,825,417	58.3	41.7	3,098,513	55.6	44.4	2,938,277	51.0	49.0	2,859,644	49.4	50.6	2,945,831	47.3	52.7
San Diego	1,033,011	100.0	0.0	1,357,854	100.0	0.0	1,861,846	100.0	0.0	2,498,016	100.0	0.0	2,813,833	100.0	0.0
St. Louis	2,184,761	34.3	65.7	2,456,395	25.3	74.7	2,414,091	18.8	81.2	2,492,525	15.9	84.1	2,603,607	13.4	86.6
Denver	1,006,543	49.1	50.9	1,325,233	38.8	61.2	1,741,899	28.3	71.7	1,980,140	23.6	76.4	2,581,506	21.5	78.5
Tampa	820,443	48.5	51.5	1,105,553	44.3	55.7	1,613,603	40.1	59.9	2,067,959	40.3	59.7	2,395,997	41.7	58.3
Pittsburgh	2,689,414	60.6	39.4	2,683,853	59.8	40.2	2,571,223	56.4	43.6	2,394,811	55.8	44.2	2,358,695	54.3	45.7
Portland	1,024,165	51.0	49.0	1,264,790	44.0	56.0	1,583,467	35.5	64.5	1,793,476	32.6	67.4	2,265,223	29.2	70.8
Cincinnati	1,520,222	56.8	43.2	1,666,064	55.5	44.5	1,726,451	50.6	49.4	1,817,571	47.7	52.3	1,979,202	42.7	57.3
Sacramento	654,893	76.8	23.2	844,425	74.8	25.2	1,099,814	71.2	28.8	1,481,102	70.3	29.7	1,796,857	68.1	31.9
Kansas City	1,213,890	51.3	48.7	1,383,197	47.3	52.7	1,449,374	43.4	56.6	1,582,875	40.0	60.0	1,776,062	36.9	63.1
Milwaukee	1,420,631	72.9	27.1	1,574,526	66.9	33.1	1,570,275	61.5	38.5	1,607,183	59.7	40.3	1,689,572	55.6	44.4
Orlando	394,899	66.7	33.3	522,575	65.9	34.1	804,925	58.5	41.5	1,224,852	55.3	44.7	1,644,561	54.5	45.5
Indianapolis	1,070,294	65.2	34.8	1,248,333	63.5	36.5	1,305,911	58.6	41.4	1,380,491	57.7	42.3	1,607,486	53.5	46.5
San Antonio	749,279	91.7	8.3	901,220	92.1	7.9	1,088,710	90.8	9.2	1,324,749	89.5	10.5	1,592,383	87.5	12.5
Norfolk	727,024	42.1	57.9	1,056,027	29.2	70.8	1,200,998	22.2	77.8	1,443,244	18.1	81.9	1,569,541	14.9	85.1
Las Vegas	139,126	91.3	8.7	304,744	89.7	10.3	528,000	87.7	12.3	852,737	87.0	13.0	1,563,282	88.0	12.0
Columbus	935,532	73.0	27.0	1,125,646	74.0	26.0	1,214,297	71.6	28.4	1,345,450	71.5	28.5	1,540,157	69.4	30.6
Charlotte	702,383	38.7	61.3	840,347	42.2	57.8	971,391	41.6	58.4	1,162,093	44.0	56.0	1,499,293	46.4	53.6
New Orleans	987,695	63.5	36.5	1,144,130	51.9	48.1	1,303,800	42.8	57.2	1,285,270	38.7	61.3	1,337,726	36.2	63.8
Salt Lake City	558,539	68.6	31.4	683,913	67.1	32.9	910,222	68.0	32.0	1,072,227	67.7	32.3	1,333,914	67.3	32.7
Greensboro	724,458	34.0	66.0	838,521	34.4	65.6	951,170	33.3	66.7	1,050,304	33.1	66.9	1,251,509	33.6	66.4
Austin	301,261	70.4	29.6	398,938	74.1	25.9	585,051	71.7	28.3	846,227	68.1	31.9	1,249,763	65.0	35.0
Nashville	596,865	67.0	33.0	699,144	64.1	35.9	850,505	56.2	43.8	985,026	51.9	48.1	1,231,311	46.3	53.7
Providence	777,597	73.1	26.9	852,166	68.1	31.9	865,771	66.0	34.0	1,134,350	52.6	47.4	1,188,613	52.3	47.7
Raleigh	442,523	38.2	61.8	536,952	42.5	57.5	665,236	45.3	54.7	855,545	49.5	50.5	1,187,941	52.9	47.1
Hartford	847,157	81.4	18.6	1,034,993	78.9	21.1	1,051,606	76.8	23.2	1,157,585	73.6	26.4	1,183,110	72.5	27.5
Buffalo	1,306,957	81.5	18.5	1,349,211	82.5	17.5	1,242,826	81.7	18.3	1,189,288	81.4	18.6	1,170,111	81.2	18.8
Memphis	751,615	83.4	16.6	856,698	84.3	15.7	938,777	82.8	17.2	1,007,306	82.0	18.0	1,135,614	79.0	21.0
West Palm Beach	228,106	100.0	0.0	348,753	100.0	0.0	576,863	100.0	0.0	863,518	100.0	0.0	1,131,184	100.0	0.0
Jacksonville	522,169	87.2	12.8	612,277	86.4	13.6	722,252	79.1	20.9	906,727	74.2	25.8	1,100,491	70.8	29.2
Rochester	854,652	68.6	31.4	1,020,238	69.8	30.2	1,030,630	68.1	31.9	1,062,470	67.2	32.8	1,098,201	67.0	33.0
Grand Rapids	669,578	54.2	45.8	763,226	53.9	46.1	840,824	52.9	47.1	937,891	53.4	46.6	1,088,514	52.8	47.2
Oklahoma City	584,721	75.2	24.8	717,825	73.4	26.6	860,969	66.1	33.9	958,839	62.5	37.5	1,083,346	61.0	39.0
Louisville	788,103	77.5	22.5	904,897	76.8	23.2	953,850	71.8	28.2	948,829	70.1	29.9	1,025,598	67.6	32.4

**Notes:** Data for New York, Providence, Boston, and Hartford prior to 1990 are tabulated for NECMAS. The NECMA population is comparable to MSA populations for NY, Boston, and Hartford. However, population for Providence NECMA for 1990 was 24% less than MSA population.

Common geographies (based on June 1999 definition) were maintained for all MSAs

**Exhibit 2.7 Percent Change in population - MSA, Central, and Suburban Counties:  
1970-2000**

Name	1970-1980			1980-1990			1990-2000		
	Area-wide	CC	SC	Area-wide	CC	SC	Area-wide	CC	SC
New York	-3.0	-7.2	-2.6	3.0	4.1	2.9	8.4	3.3	8.9
Los Angeles	15.3	6.3	36.7	26.4	18.5	41.0	12.7	7.4	20.9
Chicago	2.0	-4.3	16.3	1.5	-2.8	9.6	11.1	5.3	20.6
Washington	7.3	-15.6	11.0	16.2	-4.9	18.8	13.1	-5.7	15.0
San Francisco	13.0	-5.1	16.2	16.5	6.6	17.9	12.6	7.3	13.3
Philadelphia	-0.4	-13.4	6.3	4.3	-6.1	8.7	5.0	-4.3	8.4
Boston	2.1	-11.6	4.4	2.2	2.1	2.3	6.7	3.9	7.0
Detroit	-0.3	-12.3	11.8	-2.0	-9.7	4.1	5.2	-2.4	10.4
Dallas	25.2	17.3	34.8	32.5	19.0	46.6	29.3	19.8	37.5
Houston	43.0	38.3	61.6	19.6	17.0	28.5	25.2	20.7	39.0
Atlanta	26.6	-2.9	42.2	32.5	10.0	40.6	38.9	25.7	42.6
Miami	40.0	28.2	64.2	20.7	19.1	23.3	21.4	16.3	29.3
Seattle	18.2	9.8	29.1	23.3	18.7	28.5	19.7	15.2	24.2
Phoenix	54.5	56.0	33.9	39.9	40.6	28.0	45.3	44.8	54.4
Minneapolis	8.5	-1.9	17.8	15.5	9.7	19.9	16.9	8.1	23.0
Cleveland	-5.2	-12.9	4.6	-2.7	-5.8	0.5	3.0	-1.3	7.2
San Diego	37.1	37.1		34.2	34.2		12.6	12.6	
St. Louis	-1.7	-27.2	6.9	3.2	-12.4	6.9	4.5	-12.2	7.6
Denver	31.4	-4.3	54.2	13.7	-5.0	21.0	30.4	18.6	34.0
Tampa	46.0	32.0	57.1	28.2	28.9	27.6	15.9	19.8	13.2
Pittsburgh	-4.2	-9.7	3.9	-6.9	-7.8	-5.6	-1.5	-4.1	1.8
Portland	25.2	1.1	44.2	13.3	3.8	18.5	26.3	13.1	32.7
Cincinnati	3.6	-5.5	15.0	5.3	-0.8	11.5	8.9	-2.4	19.2
Sacramento	30.2	24.1	48.6	34.7	32.9	39.0	21.3	17.5	30.3
Kansas City	4.8	-3.9	12.6	9.2	0.6	15.8	12.2	3.4	18.1
Milwaukee	-0.3	-8.5	16.3	2.4	-0.6	7.0	5.1	-2.0	15.7
Orlando	54.0	36.8	87.3	52.2	43.8	63.9	34.3	32.3	36.7
Indianapolis	4.6	-3.4	18.6	5.7	4.2	7.9	16.4	7.9	28.1
San Antonio	20.8	19.1	41.2	21.7	19.9	39.5	20.2	17.5	43.1
Norfolk	13.7	-13.3	24.9	20.2	-2.2	26.6	8.8	-10.3	13.0
Las Vegas	73.3	69.5	106.4	61.5	60.1	71.4	83.3	85.5	68.5
Columbus	7.9	4.3	18.0	10.8	10.6	11.3	14.5	11.2	22.7
Charlotte	15.6	14.0	16.8	19.6	26.5	14.7	29.0	36.0	23.5
New Orleans	14.0	-6.1	35.5	-1.4	-10.9	5.6	4.1	-2.5	8.2
Salt Lake City	33.1	35.0	29.2	17.8	17.3	18.9	24.4	23.8	25.8
Greensboro	13.4	9.9	15.3	10.4	9.5	10.9	19.2	21.2	18.2
Austin	46.7	42.0	60.0	44.6	37.4	63.1	47.7	40.9	62.1
Nashville	21.6	6.7	48.4	15.8	6.9	27.2	25.0	11.6	39.5
Providence	1.6	-1.5	8.3	31.0	4.4	82.8	4.8	4.2	5.4
Raleigh	23.9	31.9	18.0	28.6	40.5	18.8	38.9	48.3	29.6
Hartford	1.6	-1.1	11.7	10.1	5.4	25.4	2.2	0.6	6.6
Buffalo	-7.9	-8.8	-3.5	-4.3	-4.6	-2.9	-1.6	-1.9	-0.4
Memphis	9.6	7.6	20.0	7.3	6.3	11.9	12.7	8.6	31.6
West Palm Beach	65.4	65.4		49.7	49.7		31.0	31.0	
Jacksonville	18.0	8.0	81.3	25.5	17.9	54.6	21.4	15.7	37.6
Rochester	1.0	-1.4	6.5	3.1	1.7	6.1	3.4	3.0	4.1
Grand Rapids	10.2	8.1	12.5	11.5	12.6	10.3	16.1	14.7	17.6
Oklahoma City	19.9	8.0	52.9	11.4	5.4	23.0	13.0	10.1	17.7
Louisville	5.4	-1.4	28.1	-0.5	-2.9	5.6	8.1	4.3	16.9

### Exhibit 2.8 Demographic Ratios and Percent Urban/Rural Population: 2000

MSA	Average House- hold Size	Vehicles per Household	Workers per Household	Percent Urban Population	Percent Rural Population
New York	2.68	1.26	1.20	96.6	3.4
Los Angeles	3.00	1.71	1.27	98.2	1.8
Chicago	2.72	1.56	1.28	97.2	2.8
Washington	2.59	1.66	1.34	90.1	9.9
San Francisco	2.69	1.76	1.34	97.0	3.0
Philadelphia	2.58	1.51	1.21	93.2	6.8
Boston	2.54	1.58	1.31	91.3	8.7
Detroit	2.58	1.71	1.19	90.4	9.6
Dallas	2.70	1.74	1.33	91.2	8.8
Houston	2.80	1.68	1.27	92.0	8.0
Atlanta	2.68	1.80	1.37	88.5	11.5
Miami	2.66	1.51	1.15	99.5	0.5
Seattle	2.50	1.81	1.28	91.1	8.9
Phoenix	2.67	1.67	1.23	95.3	4.7
Minneapolis	2.56	1.77	1.40	87.9	12.1
Cleveland	2.47	1.67	1.18	89.2	10.8
San Diego	2.73	1.75	1.31	96.1	3.9
St. Louis	2.52	1.71	1.22	87.9	12.1
Denver	2.53	1.81	1.34	93.7	6.3
Tampa	2.33	1.54	1.05	94.2	5.8
Pittsburgh	2.37	1.55	1.09	82.9	17.1
Portland	2.56	1.78	1.28	87.7	12.3
Cincinnati	2.52	1.75	1.24	84.8	15.2
Sacramento	2.65	1.75	1.20	91.4	8.6
Kansas City	2.51	1.76	1.27	88.2	11.8
Milwaukee	2.51	1.61	1.24	92.2	7.8
Orlando	2.58	1.69	1.26	90.9	9.1
Indianapolis	2.50	1.77	1.26	86.7	13.3
San Antonio	2.78	1.67	1.25	88.7	11.3
Norfolk	2.60	1.74	1.32	91.4	8.6
Las Vegas	2.62	1.61	1.19	94.4	5.6
Columbus	2.45	1.74	1.27	86.8	13.2
Charlotte	2.55	1.80	1.31	78.7	21.3
New Orleans	2.59	1.45	1.13	93.5	6.5
Salt Lake City	3.04	1.97	1.49	97.9	2.1
Greensboro	2.44	1.84	1.24	68.6	31.4
Austin	2.57	1.73	1.38	84.6	15.4
Nashville	2.49	1.80	1.30	77.0	23.0
Providence	2.49	1.60	1.20	91.1	8.9
Raleigh	2.48	1.80	1.34	75.1	24.9
Hartford	2.49	1.69	1.25	85.9	14.1
Buffalo	2.42	1.48	1.11	88.0	12.0
Memphis	2.63	1.63	1.20	87.9	12.1
West Palm Beach	2.34	1.52	1.00	98.3	1.7
Jacksonville	2.54	1.68	1.24	88.9	11.1
Rochester	2.51	1.65	1.23	76.5	23.5
Grand Rapids	2.67	1.84	1.34	76.1	23.9
Oklahoma City	2.47	1.73	1.20	83.0	17.0
Louisville	2.44	1.69	1.20	87.4	12.6

## Exhibit 2.9 Median Age and Income: 1990-2000

MSA Name	Population	Median Age		Median Income	
	2000	1990	2000	1990	2000
New York	21,199,865	34.3	35.9	38,445	50,795
Los Angeles	16,373,645	30.7	32.3	36,711	45,903
Chicago	9,157,540	32.3	33.9	35,918	51,046
Washington	7,608,070	32.4	35.4	46,884	57,291
San Francisco	7,039,362	33.5	35.6	41,459	62,024
Philadelphia	6,188,463	33.6	36.4	35,797	47,528
Boston	5,819,100	33.2	36.1	40,666	52,792
Detroit	5,456,428	32.8	35.3	34,729	49,160
Dallas	5,221,801	30.5	32.1	32,825	47,418
Houston	4,669,571	30.5	31.9	31,488	44,761
Atlanta	4,112,198	31.4	32.9	36,051	51,948
Miami	3,876,380	35.5	36.5	28,503	38,632
Seattle	3,554,760	32.9	35.3	35,047	50,733
Phoenix	3,251,876	32.0	33.2	30,797	44,752
Minneapolis	2,968,806	31.6	34.2	36,565	54,304
Cleveland	2,945,831	34.2	37.2	30,332	42,215
San Diego	2,813,833	30.8	33.2	35,022	47,067
St. Louis	2,603,607	33.1	36.0	31,774	44,437
Denver	2,581,506	32.6	33.8	33,126	51,088
Tampa	2,395,997	38.5	40.0	26,036	37,406
Pittsburgh	2,358,695	36.9	40.0	26,501	37,467
Portland	2,265,223	33.8	34.7	31,071	46,090
Cincinnati	1,979,202	32.2	35.0	30,977	44,914
Sacramento	1,796,857	32.2	34.6	32,734	46,106
Kansas City	1,776,062	32.9	35.2	31,613	46,193
Milwaukee	1,689,572	32.7	35.5	32,359	46,132
Orlando	1,644,561	32.1	35.3	31,230	41,871
Indianapolis	1,607,486	32.3	34.6	31,655	45,548
San Antonio	1,592,383	30.3	32.7	26,092	39,140
Norfolk	1,569,541	29.7	33.6	30,841	42,448
Las Vegas	1,563,282	32.9	35.2	30,746	42,468
Columbus	1,540,157	31.5	33.6	30,668	44,782
Charlotte	1,499,293	32.7	34.3	31,125	46,119
New Orleans	1,337,726	31.8	34.8	24,442	35,317
Salt Lake City	1,333,914	27.5	28.6	30,882	48,594
Greensboro	1,251,509	33.9	36.0	29,254	40,913
Austin	1,249,763	29.3	30.9	28,474	48,950
Nashville	1,231,311	32.3	34.5	30,223	44,223
Providence	1,188,613	34.0	36.8	31,858	41,748
Raleigh	1,187,941	31.1	33.0	33,290	48,845
Hartford	1,183,110	34.3	37.3	41,440	52,188
Buffalo	1,170,111	34.7	38.0	28,084	38,488
Memphis	1,135,614	31.1	33.2	26,994	40,201
West Palm Beach	1,131,184	39.8	41.8	32,524	45,062
Jacksonville	1,100,491	31.9	35.3	29,514	42,439
Rochester	1,098,201	32.9	36.3	34,234	43,955
Grand Rapids	1,088,514	30.5	33.2	33,515	46,116
Oklahoma City	1,083,346	31.8	34.1	26,883	36,797
Louisville	1,025,598	33.7	36.5	27,599	40,821

Note: Median Income for 1989 was calculated using disaggregate data on income from 1990 SF 3 data. The "Pareto interpolation" method was used.

Exhibit 2.9 shows median age and income for 1990 and 2000. The areas with aging populations (ten areas' populations aged by three years or more in the decade) included northern cities of Cleveland, Washington, D.C., Pittsburgh, Buffalo, Rochester, and Hartford, CT, but also Jacksonville and Orlando. Norfolk had the largest shift, adding nearly four years to the median age of its population. Salt Lake City, plus four metros in Texas (Austin, Houston, Dallas, and Austin) are metros with younger populations, indicating both households with more children and economies that attract younger workers.

The top ten areas for median household income are San Francisco, Washington, D.C., Minneapolis, Boston, Hartford, Atlanta, Denver, Chicago, New York and Seattle. While many of the older northeastern cities have remained on the highest income list since the 80s, many new areas have been added in the 1990s, such as Atlanta and Denver and Seattle. Ten areas added over fifteen thousand dollars to their areas' median incomes; San Francisco and Austin adding over \$20,000, shown in Exhibit 2.10.

**Exhibit 2.10 Areas with Greatest Change in Median Income: 1990 - 2000**

<b>Area</b>	<b>Change in Median Income, 1990 - 2000</b>
San Francisco	\$ 20,565
Austin	\$ 20,476
Denver	\$ 17,962
Minneapolis	\$ 17,739
Salt Lake City	\$ 17,712
Atlanta	\$ 15,897
Seattle	\$ 15,686
Raleigh	\$ 15,555
Chicago	\$ 15,128
Portland	\$ 15,019

## **Worker Characteristics**

In the year 2000, about 75 million workers (58.5 percent of all workers) live in the 49 large MSAs, 20 million more workers than lived in the same MSAs in 1980 (a 35 percent increase). Exhibit 2.11a shows workers as percent of population for the large MSAs for the period of 1960-1980. This table is reproduced from the 1990 Journey-to-Work Trends Report. Exhibit 2.11b shows workers as percent of population for 1980, 1990, and 2000 using the June 1999 geographic definition of MSAs. Minneapolis, Denver, Austin, and Raleigh, NC all have over 50 percent of their population in the workforce in 2000.

The proportion of the population in the workforce is a function of the age mix, including the retirement population and the proportion of children. New Orleans, Miami, West

Palm Beach, and Los Angeles are at the other end of the scale, with less than 43 percent of the population working, generally indicating older, retired populations or a large number of households with children. Exhibit 2.12 shows the total number of workers for 1980, 1990, and 2000, along with percent change in number of workers living in the MSA for each decade.

Exhibit 2.13 shows the change in the average number of workers per household for 1980, 1990, and 2000. Workers per household can often be directly related to vehicles and income per household.

Exhibit 2.14 shows the workers by area of residence, whether central county or suburban, for 1980, 1990, and 2000, the number of central county workers for the same time period for each major MSA, and the percent change in workers in the central county. These data show large increases in the percent of workers who live in the suburban counties of major MSAs and large increases in the percent of workers who work outside the county of residence in each of the large metro areas. Because the geographic scale of analysis in this report is limited to counties, we cannot fully explore the development of the suburbs as loci of economic growth, the dispersal of workplaces and households, and suburb-to-suburb commuting.

Exhibit 2.15 shows the number of workers working in the central county (jobs) for 1980, 1990 and 2000, and the percentage change in jobs during each decade. From 1990 to 2000, fast growing areas such as Las Vegas, Phoenix, Austin, and Raleigh experienced more than 40 percent increase in central county jobs. During the same time, older MSAs such as Philadelphia, St. Louis, Norfolk, and Washington D.C. lost more than 10 percent of their central county jobs.

In addition to the demographic changes in the workforce, there have been changes in the geography of workplaces in the forty years since 1960. The separation between home and work has become greater. In 1960, only 14.5 percent of workers worked outside their county of residence, whereas in 2000, 26.6 percent of workers worked outside the county of residence. More analysis on place of work is presented in Chapter 6.

**Exhibit 2.11a Workers as Percent of Population: 1960-1980**

Area	Workers (Percent of Population)		
	1960	1970	1980
New York City	38.9	39.3	42.7
Los Angeles	38.0	38.3	45.1
Chicago	38.8	40.0	44.0
San Francisco	38.4	39.4	47.9
Philadelphia	37.4	38.8	41.9
Detroit	34.6	36.4	39.8
Boston		40.4	46.8
Washington, DC	41.0	43.2	51.0
Dallas	39.0	41.5	49.4
Houston	36.3	39.4	48.6
Miami	37.1	38.4	43.6
Atlanta	38.0	41.3	46.8
Cleveland	36.9	38.2	42.5
Seattle	37.3	38.4	46.7
San Diego	39.3	40.1	45.9
Minneapolis	37.8	40.6	49.5
St. Louis	36.5	37.3	42.6
Baltimore	37.5	39.6	44.6
Pittsburgh	33.8	35.5	40.3
Phoenix	35.2	37.8	43.7
Tampa	32.9	33.7	38.8
Denver	38.2	40.2	49.8
Cincinnati	35.6	37.0	41.7
Milwaukee	38.2	39.8	45.9
Kansas City	38.4	41.0	46.7
Sacramento	36.9	36.6	42.9
Portland	37.0	39.0	45.8
Columbus	36.9	38.9	44.7
San Antonio	35.3	37.1	41.9
Indianapolis	38.4	39.2	44.2
New Orleans	34.1	34.8	40.8
Buffalo	35.7	36.7	40.2
Providence		41.2	44.4
<b>Total</b>	<b>37.6</b>	<b>39.0</b>	<b>44.5</b>

Note: Data in the above table is NOT adjusted for geography. The numbers are reproduced from the 1990 Journey-to-Work Trends Report.

**Exhibit 2.11b Workers as Percent of Population: 1980-2000**

Name of MSA	Workers (Percent of Population)		
	1980	1990	2000
New York	42.8	47.4	44.0
Los Angeles	45.1	46.9	41.3
Chicago	44.1	47.6	46.1
Washington, DC	47.7	53.7	50.5
San Francisco	47.8	51.2	48.8
Philadelphia	41.5	47.3	45.5
Boston	46.3	50.6	49.8
Detroit	39.4	44.2	45.5
Dallas	49.1	50.5	48.4
Houston	48.5	47.4	44.6
Atlanta	46.3	52.1	50.1
Miami	43.5	46.2	42.4
Seattle	46.2	50.5	50.0
Phoenix	43.1	46.3	45.1
Minneapolis	49.2	53.0	53.7
Cleveland	42.3	44.8	46.7
San Diego	45.9	49.3	46.2
St. Louis	42.5	46.8	47.6
Denver	49.4	51.9	52.1
Tampa	38.4	44.2	44.4
Pittsburgh	39.7	42.8	44.8
Portland	44.5	48.0	48.8
Cincinnati	41.5	46.4	48.1
Sacramento	43.0	46.3	44.5
Kansas City	46.0	49.2	49.6
Milwaukee	45.8	48.1	48.3
Orlando	44.8	50.2	47.8
Indianapolis	44.1	49.5	49.5
San Antonio	41.9	43.7	43.9
Norfolk	45.6	49.9	48.4
Las Vegas	47.6	48.8	44.9
Columbus	44.3	49.3	50.5
Charlotte	48.5	52.0	50.1
New Orleans	40.6	41.4	42.6
Salt Lake City	42.2	44.7	48.2
Greensboro	47.9	52.4	49.5
Austin	47.6	51.0	52.0
Nashville	45.6	50.3	50.5
Providence	44.1	47.7	46.7
Raleigh	48.6	53.9	52.0
Hartford	48.5	51.6	48.4
Buffalo	40.3	44.7	44.5
Memphis	41.0	45.5	45.0
West Palm Beach	40.4	44.0	42.0
Jacksonville	43.1	49.0	48.0
Rochester	44.0	48.0	47.1
Grand Rapids	42.5	47.2	48.9
Oklahoma City	46.2	46.9	47.0
Louisville	41.8	46.7	48.1



**Exhibit 2.12 Total Workers Living in MSA: 1980-2000**

Name of MSA	Areawide			Decadal Percent Change	
	1980	1990	2000	1980-90	1990-2000
New York	8,133,936	9,271,089	9,319,218	14.0	0.5
Los Angeles	5,184,393	6,809,043	6,767,619	31.3	-0.6
Chicago	3,575,803	3,922,295	4,218,108	9.7	7.5
Washington, DC	2,760,794	3,611,094	3,839,052	30.8	6.3
San Francisco	2,563,329	3,200,833	3,432,157	24.9	7.2
Philadelphia	2,347,072	2,784,581	2,815,405	18.6	1.1
Boston	2,471,832	2,760,435	2,898,680	11.7	5.0
Detroit	2,085,116	2,294,108	2,482,457	10.0	8.2
Dallas	1,494,568	2,038,398	2,527,648	36.4	24.0
Houston	1,512,080	1,768,567	2,081,607	17.0	17.7
Atlanta	1,033,088	1,542,948	2,060,632	49.4	33.6
Miami	1,150,471	1,476,085	1,642,866	28.3	11.3
Seattle	1,113,261	1,499,734	1,776,224	34.7	18.4
Phoenix	688,912	1,036,017	1,466,434	50.4	41.5
Minneapolis	1,081,772	1,344,797	1,595,550	24.3	18.6
Cleveland	1,242,438	1,282,092	1,375,774	3.2	7.3
San Diego	854,600	1,230,446	1,299,503	44.0	5.6
St. Louis	1,026,288	1,166,023	1,238,964	12.9	6.3
Denver	859,989	1,026,847	1,346,025	19.4	31.1
Tampa	619,119	914,711	1,063,957	47.7	16.3
Pittsburgh	1,021,047	1,023,825	1,057,354	0.3	3.3
Portland	704,392	861,141	1,105,133	22.3	28.3
Cincinnati	716,583	844,125	951,709	17.8	12.7
Sacramento	472,640	685,945	799,989	45.1	16.6
Kansas City	666,940	778,624	881,258	16.7	13.2
Milwaukee	719,555	772,752	816,880	7.4	5.7
Orlando	360,312	614,382	786,243	70.5	28.0
Indianapolis	575,905	683,007	795,755	18.6	16.5
San Antonio	456,656	578,529	698,685	26.7	20.8
Norfolk	547,803	720,890	760,401	31.6	5.5
Las Vegas	251,501	416,025	702,535	65.4	68.9
Columbus	537,727	663,006	777,922	23.3	17.3
Charlotte	470,708	604,856	751,629	28.5	24.3
New Orleans	528,868	531,697	570,423	0.5	7.3
Salt Lake City	383,938	479,338	642,688	24.8	34.1
Greensboro	455,515	550,325	618,921	20.8	12.5
Austin	278,251	431,345	649,645	55.0	50.6
Nashville	387,660	495,717	621,221	27.9	25.3
Providence	381,643	540,872	555,540	41.7	2.7
Raleigh	323,005	461,516	617,475	42.9	33.8
Hartford	510,174	597,831	573,114	17.2	-4.1
Buffalo	500,364	531,122	520,350	6.1	-2.0
Memphis	384,793	458,534	511,111	19.2	11.5
West Palm Beach	233,303	380,260	475,572	63.0	25.1
Jacksonville	311,207	443,882	527,718	42.6	18.9
Rochester	453,387	509,733	516,814	12.4	1.4
Grand Rapids	357,673	442,228	531,924	23.6	20.3
Oklahoma City	397,394	450,122	509,262	13.3	13.1
Louisville	398,355	442,933	492,821	11.2	11.3

**Exhibit 2.13 Ratio of Workers and Households: 1980-2000**

Name	1980	1990	2000
New York	1.19	1.30	1.20
Los Angeles	1.25	1.39	1.27
Chicago	1.26	1.32	1.28
Washington, DC	1.34	1.45	1.34
San Francisco	1.25	1.37	1.34
Philadelphia	1.19	1.29	1.21
Boston	1.31	1.36	1.31
Detroit	1.14	1.20	1.19
Dallas	1.35	1.35	1.33
Houston	1.37	1.32	1.27
Atlanta	1.31	1.40	1.37
Miami	1.12	1.21	1.15
Seattle	1.23	1.30	1.28
Phoenix	1.20	1.22	1.23
Minneapolis	1.37	1.40	1.40
Cleveland	1.18	1.17	1.18
San Diego	1.27	1.39	1.31
St. Louis	1.20	1.24	1.22
Denver	1.32	1.31	1.34
Tampa	0.94	1.05	1.05
Pittsburgh	1.09	1.08	1.09
Portland	1.17	1.25	1.28
Cincinnati	1.18	1.24	1.24
Sacramento	1.13	1.23	1.20
Kansas City	1.25	1.28	1.27
Milwaukee	1.28	1.28	1.24
Orlando	1.22	1.32	1.26
Indianapolis	1.23	1.29	1.26
San Antonio	1.29	1.26	1.25
Norfolk	1.36	1.41	1.32
Las Vegas	1.26	1.26	1.19
Columbus	1.22	1.29	1.27
Charlotte	1.37	1.37	1.31
New Orleans	1.17	1.13	1.13
Salt Lake City	1.32	1.38	1.49
Greensboro	1.33	1.33	1.24
Austin	1.31	1.32	1.38
Nashville	1.28	1.32	1.30
Providence	1.23	1.27	1.20
Raleigh	1.37	1.38	1.34
Hartford	1.37	1.37	1.25
Buffalo	1.12	1.15	1.11
Memphis	1.21	1.25	1.20
West Palm Beach	1.00	1.04	1.00
Jacksonville	1.20	1.29	1.24
Rochester	1.25	1.29	1.23
Grand Rapids	1.24	1.32	1.34
Oklahoma City	1.23	1.22	1.20
Louisville	1.17	1.21	1.20

**Exhibit 2.14 Workers by Area of Residence: 1980-2000**

Name	1980			1990			2000		
	Areawide	% CC	% SC	Areawide	% CC	% SC	Areawide	% CC	% SC
New York	8,133,936	8.3	91.7	9,271,089	8.1	91.9	9,319,218	8.1	91.9
Los Angeles	5,184,393	65.1	34.9	6,809,043	60.4	39.6	6,767,619	57.0	43.0
Chicago	3,575,803	63.8	36.2	3,922,295	60.4	39.6	4,218,108	56.2	43.8
Washington, DC	2,760,794	10.7	89.3	3,611,094	8.4	91.6	3,839,052	6.8	93.2
San Francisco	2,563,329	13.1	86.9	3,200,833	11.9	88.1	3,432,157	12.2	87.8
Philadelphia	2,347,072	25.9	74.1	2,784,581	23.0	77.0	2,815,405	20.2	79.8
Boston	2,471,832	11.7	88.3	2,760,435	11.7	88.3	2,898,680	11.1	88.9
Detroit	2,085,116	40.5	59.5	2,294,108	35.9	64.1	2,482,457	33.3	66.7
Dallas	1,494,568	52.9	47.1	2,038,398	46.3	53.7	2,527,648	41.1	58.9
Houston	1,512,080	79.1	20.9	1,768,567	76.7	23.3	2,081,607	72.8	27.2
Atlanta	1,033,088	24.4	75.6	1,542,948	20.4	79.6	2,060,632	18.7	81.3
Miami	1,150,471	63.1	36.9	1,476,085	60.2	39.8	1,642,866	54.7	45.3
Seattle	1,113,261	56.2	43.8	1,499,734	53.7	46.3	1,776,224	51.3	48.7
Phoenix	688,912	95.6	4.4	1,036,017	96.2	3.8	1,466,434	95.9	4.1
Minneapolis	1,081,772	45.0	55.0	1,344,797	41.7	58.3	1,595,550	38.1	61.9
Cleveland	1,242,438	51.5	48.5	1,282,092	48.2	51.8	1,375,774	45.3	54.7
San Diego	854,600	100.0	0.0	1,230,446	100.0	0.0	1,299,503	100.0	0.0
St. Louis	1,026,288	16.4	83.6	1,166,023	13.6	86.4	1,238,964	11.4	88.6
Denver	859,989	28.2	71.8	1,026,847	22.5	77.5	1,346,025	20.7	79.3
Tampa	619,119	45.3	54.7	914,711	44.9	55.1	1,063,957	44.2	55.8
Pittsburgh	1,021,047	58.8	41.2	1,023,825	58.2	41.8	1,057,354	55.1	44.9
Portland	704,392	37.1	62.9	861,141	33.3	66.7	1,105,133	30.3	69.7
Cincinnati	716,583	51.8	48.2	844,125	47.3	52.7	951,709	41.9	58.1
Sacramento	472,640	72.0	28.0	685,945	70.3	29.7	799,989	67.0	33.0
Kansas City	666,940	43.4	56.6	778,624	39.2	60.8	881,258	35.3	64.7
Milwaukee	719,555	60.9	39.1	772,752	56.9	43.1	816,880	52.3	47.7
Orlando	360,312	61.9	38.1	614,382	58.0	42.0	786,243	55.9	44.1
Indianapolis	575,905	60.3	39.7	683,007	58.1	41.9	795,755	53.4	46.6
San Antonio	456,656	90.8	9.2	578,529	89.3	10.7	698,685	87.0	13.0
Norfolk	547,803	23.3	76.7	720,890	18.1	81.9	760,401	14.7	85.3
Las Vegas	251,501	90.4	9.6	416,025	89.2	10.8	702,535	89.9	10.1
Columbus	537,727	73.6	26.4	663,006	73.5	26.5	777,922	70.5	29.5
Charlotte	470,708	43.1	56.9	604,856	45.8	54.2	751,629	48.3	51.7
New Orleans	528,868	40.4	59.6	531,697	35.2	64.8	570,423	33.1	66.9
Salt Lake City	383,938	69.4	30.6	479,338	68.7	31.3	642,688	68.2	31.8
Greensboro	455,515	33.6	66.4	550,325	33.8	66.2	618,921	34.4	65.6
Austin	278,251	75.3	24.7	431,345	70.2	29.8	649,645	66.7	33.3
Nashville	387,660	58.1	41.9	495,717	52.8	47.2	621,221	46.0	54.0
Providence	381,643	65.2	34.8	540,872	51.1	48.9	555,540	49.7	50.3
Raleigh	323,005	47.1	52.9	461,516	51.4	48.6	617,475	54.8	45.2
Hartford	510,174	76.8	23.2	597,831	72.4	27.6	573,114	70.5	29.5
Buffalo	500,364	81.7	18.3	531,122	81.5	18.5	520,350	81.1	18.9
Memphis	384,793	84.7	15.3	458,534	82.8	17.2	511,111	78.8	21.2
West Palm Beach	233,303	100.0	0.0	380,260	100.0	0.0	475,572	100.0	0.0
Jacksonville	311,207	80.4	19.6	443,882	75.1	24.9	527,718	70.9	29.1
Rochester	453,387	69.8	30.2	509,733	68.1	31.9	516,814	66.8	33.2
Grand Rapids	357,673	54.8	45.2	442,228	54.9	45.1	531,924	53.4	46.6
Oklahoma City	397,394	67.6	32.4	450,122	62.5	37.5	509,262	59.9	40.1
Louisville	398,355	73.0	27.0	442,933	70.3	29.7	492,821	66.8	33.2

**Exhibit 2.15 Number of Workers Working in Central County (Jobs): 1980-2000**

Name of MSA	Central County Workers			Percent Change	
	1980	1990	2000	1980-90	90-2000
New York	677,228	754,148	753,114	11.4	-0.1
Los Angeles	3,373,977	4,115,248	3,858,750	22.0	-6.2
Chicago	2,281,356	2,369,624	2,371,161	3.9	0.1
Washington, DC	295,131	304,428	260,884	3.2	-14.3
San Francisco	336,627	382,309	418,553	13.6	9.5
Philadelphia	608,391	640,577	569,761	5.3	-11.1
Boston	287,984	324,109	320,979	12.5	-1.0
Detroit	843,481	822,620	827,311	-2.5	0.6
Dallas	790,120	943,146	1,038,779	19.4	10.1
Houston	1,196,293	1,356,196	1,515,593	13.4	11.8
Atlanta	252,028	315,366	385,442	25.1	22.2
Miami	726,152	887,996	899,323	22.3	1.3
Seattle	626,076	805,782	911,677	28.7	13.1
Phoenix	658,834	996,495	1,406,442	51.3	41.1
Minneapolis	486,820	561,081	607,567	15.3	8.3
Cleveland	639,901	617,552	622,876	-3.5	0.9
San Diego	854,600	1,230,446	1,299,503	44.0	5.6
St. Louis	168,199	158,499	140,747	-5.8	-11.2
Denver	242,856	231,503	278,715	-4.7	20.4
Tampa	280,154	410,950	470,753	46.7	14.6
Pittsburgh	600,456	595,405	582,362	-0.8	-2.2
Portland	261,334	286,600	335,182	9.7	17.0
Cincinnati	371,368	399,406	398,465	7.5	-0.2
Sacramento	340,105	482,321	536,310	41.8	11.2
Kansas City	289,506	304,852	310,789	5.3	1.9
Milwaukee	438,003	439,449	427,620	0.3	-2.7
Orlando	222,907	356,271	439,323	59.8	23.3
Indianapolis	347,080	396,584	424,598	14.3	7.1
San Antonio	414,720	516,606	607,860	24.6	17.7
Norfolk	127,689	130,549	112,083	2.2	-14.1
Las Vegas	227,263	371,128	631,236	63.3	70.1
Columbus	395,783	487,305	548,655	23.1	12.6
Charlotte	202,915	277,227	362,991	36.6	30.9
New Orleans	213,918	186,926	188,703	-12.6	1.0
Salt Lake City	266,384	329,238	438,627	23.6	33.2
Greensboro	153,243	185,853	213,079	21.3	14.6
Austin	209,396	302,909	433,064	44.7	43.0
Nashville	225,262	261,683	285,980	16.2	9.3
Providence	249,009	276,405	276,324	11.0	0.0
Raleigh	152,194	237,181	338,602	55.8	42.8
Hartford	392,068	432,836	403,863	10.4	-6.7
Buffalo	408,836	432,883	421,809	5.9	-2.6
Memphis	325,852	379,633	402,560	16.5	6.0
West Palm Beach	233,303	380,260	475,572	63.0	25.1
Jacksonville	250,332	333,152	374,292	33.1	12.3
Rochester	316,287	347,088	345,019	9.7	-0.6
Grand Rapids	196,123	242,899	284,236	23.9	17.0
Oklahoma City	268,507	281,207	305,058	4.7	8.5
Louisville	290,785	311,336	329,091	7.1	5.7

# Chapter 3

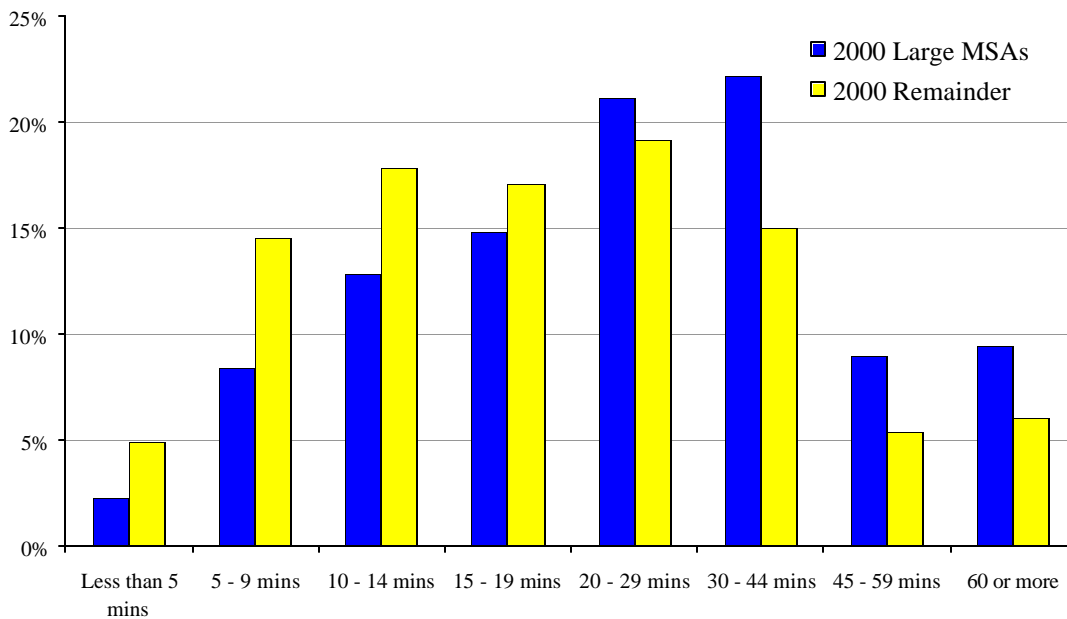
## TRAVEL TIME AND DEPARTURE TIME

### Travel Time

American workers are spending more time than ever getting to work. In 2000, the average travel time to work was 25 minutes and 30 seconds, and increase of over two minutes compared to 1990, after accounting for coding differences<sup>1</sup>. Ten million workers nationwide now travel 60 minutes or more to their jobs, and 6.7 million of them are workers in large MSAs.

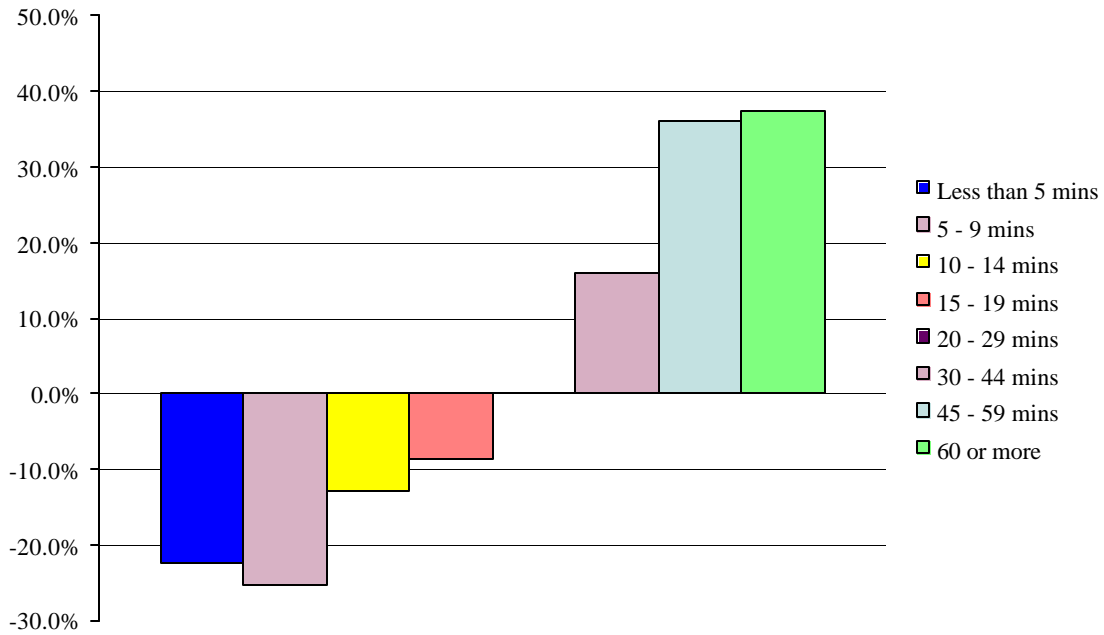
Workers in major metro areas had longer commutes than workers in the rest of the nation. Every one of the 49 metro areas of 1 million or more population saw increased travel time to work. In these large metro areas, 28.7 million commuters usually traveled over 30 minutes to work (see Exhibit 3.1). The change in travel time between 1990 and 2000 shows workers in major MSAs increasingly traveling 45 and even 60 minutes one-way to their places of employment (see Exhibit 3.2).

**Exhibit 3.1 Travel Time to Work - Large MSAs and Rest of the Nation: 2000**



<sup>1</sup> Some of the increase may be due to the coding of very long trips (those over 100 minutes). The real difference is considered to be just over two minutes. See Chapter 7 for more details.

**Exhibit 3.2 Change in Travel Time for Large MSAs: 1990-2000**



Change in Travel Time Indexed to Percent of Added Workers	Less than 5 mins	5 - 9 mins	10 - 14 mins	15 - 19 mins	20 - 29 mins	30 - 44 mins	45 - 59 mins	60 or more
	-22.3%	-25.3%	-12.8%	-8.5%	0.0%	16.1%	36.1%	37.5%

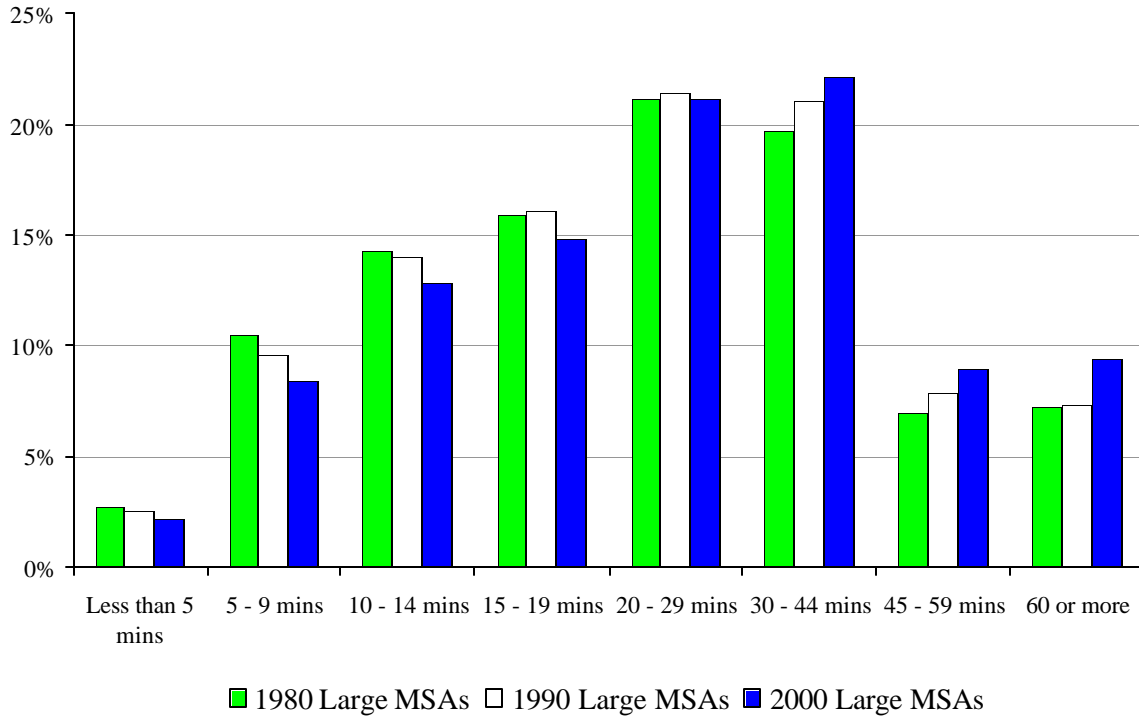
In 2000, the MSAs with the longest travel times after New York (34.0 minutes) are Washington, D.C. (31.7 minutes), Atlanta (31.2 Minutes), and Chicago (31.0 Minutes). Workers in Atlanta reported the largest increase in travel time since 1990, with an increase of 5.2 minutes. The average increase for all major metro areas was 3.1 minutes between 1990 and 2000--twenty of the larger MSAs showed an increase of greater than 3.1 minutes (see Exhibit 3.3 and Exhibit 3.5).

**Exhibit 3.3 Areas with a Greater than Average Increase in Travel Time (in minutes): 1990-2000**

<b>MSA Name</b>	<b>1990 Average Travel Time</b>	<b>2000 Average Travel Time</b>	<b>Change in Travel Time</b>
Atlanta	26.0	31.2	5.2
Miami	24.1	28.9	4.8
West Palm Beach	20.9	25.7	4.8
Raleigh	20.2	24.9	4.7
Charlotte	21.6	26.1	4.5
Boston	23.6	27.8	4.2
Orlando	22.8	27.0	4.2
New York	30.0	34.0	4.1
Jacksonville	22.6	26.6	4.0
Philadelphia	24.0	27.9	3.9
Austin	21.7	25.5	3.8
Tampa	21.8	25.6	3.8
Sacramento	21.8	25.6	3.8
Las Vegas	20.3	24.1	3.8
San Francisco	25.6	29.3	3.7
Denver	22.2	25.9	3.7
Providence	19.6	23.2	3.6
Seattle	24.1	27.7	3.6
Greensboro	18.8	22.4	3.6
Washington, DC	28.2	31.7	3.5
Dallas	24.1	27.5	3.4

A declining proportion of workers have short commutes (less than 15 minutes) in the large metro areas, and a greater proportion of workers are traveling 45 minutes and more (see Exhibit 3.4). Austin, Orlando, and Las Vegas all saw large shifts away from the shortest commutes (10 percentage points or more). As reflected in the average travel time, New York had the greatest proportion of workers traveling 60 minutes or more, 18.4 percent, followed by Chicago with 13.2 percent (see Exhibit 3.6).

**Exhibit 3.4 Travel Time to Work: 1980-2000**



Year	5 mins or less	5 - 9 mins	10 - 14 mins	15 - 19 mins	20 - 29 mins	30 - 44 mins	45 - 59 mins	60 or more
1980	2.7%	10.5%	14.3%	15.9%	21.2%	19.7%	7.0%	7.3%
1990	2.6%	9.6%	14.0%	16.1%	21.4%	21.1%	7.9%	7.4%
2000	2.2%	8.4%	12.8%	14.8%	21.2%	22.2%	9.0%	9.4%

The shift to drove alone as a commute mode in the 1980s may have deferred large increases in travel time during that decade, since driving is generally a faster mode than others. Suburbanization also saves travel time for first residents to new development since, although the distance may have increased for a commute, less congested and higher order facility types may be used. The increase in travel time during the 1990s may be a reflection of the shift to private vehicle and the continued dispersal of residences and jobs.

In 1980, 43.4 percent of commuters traveled less than 20 minutes one-way to their place of work, by 2000 only 38.2 percent did. Conversely, in 1980, 34.0 percent of commuters traveled more than 30 minutes one-way, by 2000, 40.6 percent did. In six large areas, 10 to 20 percent of workers travel 60 minutes or more one-way to their place of work (see Exhibit 3.6).



### Exhibit 3.5 Mean Travel Time to Work: 1990-2000

Name of MSA	Total Workers		Total Workers -Did Not Work at Home		Average Travel Time (in minutes)	
	1990	2000	1990	2000	1990	2000
National Total	115,070,274	128,279,228	111,664,249	124,095,005	22.4	25.5
New York	9,271,089	9,319,218	9,051,858	9,042,068	30.0	34.0
Los Angeles	6,809,043	6,767,619	6,622,941	6,526,168	26.4	29.1
Chicago	3,922,295	4,218,108	3,838,745	4,096,437	27.9	31.0
Washington, DC	3,611,094	3,839,052	3,514,395	3,704,993	28.2	31.7
San Francisco	3,200,833	3,432,157	3,089,268	3,292,677	25.6	29.3
Philadelphia	2,784,581	2,815,405	2,722,107	2,735,588	24.0	27.9
Boston	2,760,435	2,898,680	2,691,278	2,807,063	23.6	27.8
Detroit	2,294,108	2,482,457	2,253,594	2,425,776	23.1	26.1
Dallas	2,038,398	2,527,648	1,991,675	2,452,248	24.1	27.5
Houston	1,768,567	2,081,607	1,732,043	2,029,963	26.1	28.8
Atlanta	1,542,948	2,060,632	1,508,734	1,988,669	26.0	31.2
Miami	1,476,085	1,642,866	1,446,936	1,597,208	24.1	28.9
Seattle	1,499,734	1,776,224	1,446,175	1,701,619	24.1	27.7
Phoenix	1,036,017	1,466,434	1,005,946	1,412,735	23.0	26.1
Minneapolis	1,344,797	1,595,550	1,298,295	1,534,939	21.2	23.7
Cleveland	1,282,092	1,375,774	1,256,550	1,339,156	21.9	24.0
San Diego	1,230,446	1,299,503	1,169,161	1,242,321	22.2	25.3
St. Louis	1,166,023	1,238,964	1,137,946	1,203,672	23.2	25.5
Denver	1,026,847	1,346,025	988,832	1,282,540	22.2	25.9
Tampa	914,711	1,063,957	893,942	1,030,612	21.8	25.6
Pittsburgh	1,023,825	1,057,354	1,002,081	1,031,612	22.5	25.3
Portland	861,141	1,105,133	828,156	1,054,294	21.5	24.4
Cincinnati	844,125	951,709	825,666	925,726	22.4	24.3
Sacramento	685,945	799,989	664,607	767,710	21.8	25.6
Kansas City	778,624	881,258	756,935	851,197	21.5	22.9
Milwaukee	772,752	816,880	755,421	796,076	20.0	22.1
Orlando	614,382	786,243	602,100	763,736	22.8	27.0
Indianapolis	683,007	795,755	666,683	772,342	21.8	23.8
San Antonio	578,529	698,685	564,921	680,739	22.0	24.5
Norfolk	720,890	760,401	682,931	740,059	21.8	24.1
Las Vegas	416,025	702,535	409,557	686,059	20.3	24.1
Columbus	663,006	777,922	647,894	754,876	21.2	23.2
Charlotte	604,856	751,629	593,466	730,647	21.6	26.1
New Orleans	531,697	570,423	522,522	556,672	24.3	26.7
Salt Lake City	479,338	642,688	464,492	618,443	19.8	22.4
Greensboro	550,325	618,921	539,047	604,027	18.8	22.4
Austin	431,345	649,645	418,607	626,278	21.7	25.5
Nashville	495,717	621,221	482,975	601,234	22.7	25.8
Providence	540,872	555,540	531,460	543,921	19.6	23.2
Raleigh	461,516	617,475	450,723	596,100	20.2	24.9
Hartford	597,831	573,114	585,942	558,684	20.7	22.9
Buffalo	531,122	520,350	521,314	509,457	19.4	21.1
Memphis	458,534	511,111	451,644	499,982	21.8	24.6
West Palm Beach	380,260	475,572	370,090	456,118	20.9	25.7
Jacksonville	443,882	527,718	432,361	515,651	22.6	26.6
Rochester	509,733	516,814	497,134	501,901	19.8	21.1
Grand Rapids	442,228	531,924	429,764	515,495	18.3	20.7
Oklahoma City	450,122	509,262	438,861	494,818	20.3	22.0
Louisville	442,933	492,821	434,608	481,234	21.3	22.7

**Exhibit 3.6 Percent distribution of Workers who Did Not Work at Home by Travel Time to Work: 1980-2000**

MSA Name	Less Than 15 Minutes			15 - 29 Minutes			30 - 44 Minutes			45 - 59 Minutes			60 or more Minutes		
	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
New York	23.7	23.3	20.2	30.1	30.0	28.8	19.3	20.7	21.3	9.5	10.5	11.3	17.4	15.6	18.4
Los Angeles	27.7	24.5	22.4	38.0	35.3	34.9	20.5	22.2	22.6	7.2	8.5	9.0	6.7	9.5	11.1
Chicago	25.1	23.7	21.3	31.8	31.5	30.3	21.9	23.1	23.5	10.1	10.8	11.7	11.1	10.8	13.2
Washington, DC	20.9	20.0	17.7	34.5	33.8	32.1	24.7	24.7	24.9	10.6	11.6	12.4	9.3	9.9	12.8
San Francisco	27.4	25.9	22.2	37.5	39.2	34.0	20.2	21.4	22.0	7.8	7.6	10.0	7.1	5.9	11.8
Philadelphia	27.9	27.8	24.7	35.8	36.4	34.6	20.3	20.9	21.7	8.2	8.6	9.5	7.8	6.3	9.5
Boston	34.4	30.3	25.6	35.5	34.7	32.8	17.9	20.5	22.0	6.6	8.1	9.8	5.6	6.4	9.9
Detroit	27.5	26.9	24.5	40.7	40.5	38.2	21.0	21.0	22.1	6.6	7.0	8.6	4.2	4.6	6.6
Dallas	27.0	24.6	22.4	39.8	39.0	35.9	21.8	23.0	24.0	6.7	8.1	9.9	4.6	5.3	7.8
Houston	23.3	22.7	21.0	34.5	35.7	33.8	24.1	24.4	25.1	9.8	9.9	10.9	8.2	7.4	9.2
Atlanta	23.6	21.3	18.3	36.3	36.2	32.4	23.9	25.2	25.1	9.1	10.9	12.4	7.0	6.4	11.8
Miami	25.1	22.6	19.0	40.2	39.3	35.3	23.6	25.7	26.7	6.4	7.8	10.3	4.7	4.7	8.8
Seattle	28.4	26.0	23.4	40.3	39.8	36.6	20.3	22.8	22.2	6.0	7.2	8.7	5.0	4.3	9.1
Phoenix	30.5	27.5	23.8	39.9	39.3	37.0	20.6	22.1	24.1	5.0	6.8	8.8	4.0	4.4	6.3
Minneapolis	32.8	29.3	26.4	42.2	43.7	41.4	17.5	18.8	21.3	4.7	5.2	6.7	2.8	2.9	4.2
Cleveland	28.8	28.8	27.3	40.4	41.5	40.6	20.5	20.3	20.8	6.3	5.9	6.6	4.0	3.5	4.7
San Diego	34.5	25.4	24.7	42.6	36.1	40.7	16.3	21.4	21.6	3.4	8.8	6.7	3.2	8.2	6.4
St. Louis	27.1	32.3	24.9	38.8	46.3	37.9	22.6	14.9	23.1	7.2	3.3	8.4	4.3	3.1	5.6
Denver	28.5	27.9	24.0	41.7	41.7	38.1	20.8	20.9	23.7	5.3	5.8	8.2	3.7	3.7	6.0
Tampa	32.1	29.7	26.4	42.2	40.1	37.8	17.8	20.0	21.3	4.3	6.2	8.1	3.5	4.1	6.5
Pittsburgh	29.6	30.3	28.3	37.8	37.9	36.4	19.9	19.5	20.2	7.0	7.5	8.3	5.7	4.8	6.9
Portland	32.5	30.9	27.2	40.7	41.7	39.8	17.8	18.0	20.4	5.0	5.4	6.9	4.0	4.1	5.7
Cincinnati	27.5	26.9	25.7	41.9	42.5	41.1	20.8	20.7	21.7	5.8	6.1	6.9	4.0	3.7	4.6
Sacramento	34.7	30.0	26.8	43.1	41.8	38.8	15.4	18.6	21.0	3.6	5.3	6.6	3.2	4.3	6.7
Kansas City	30.0	28.7	28.0	42.2	42.6	41.9	19.7	20.3	20.6	4.8	5.2	5.8	3.3	3.1	3.7
Milwaukee	34.6	33.0	30.7	43.8	44.1	42.8	15.4	16.1	18.0	3.8	3.9	4.8	2.4	2.8	3.8
Orlando	32.2	25.9	21.1	42.1	40.0	38.1	18.1	23.1	25.8	4.0	7.2	8.8	3.7	3.8	6.2
Indianapolis	29.4	28.5	27.0	43.7	43.1	40.8	19.1	19.8	21.6	4.6	5.0	6.1	3.2	3.7	4.4
San Antonio	29.8	27.8	23.9	44.9	42.2	43.2	18.3	20.5	22.2	3.5	5.4	5.7	3.5	4.2	5.0
Norfolk	29.1	27.4	26.0	43.0	42.8	42.9	18.9	20.1	20.3	4.8	6.1	5.9	4.2	3.7	4.9
Las Vegas	35.5	31.1	24.4	47.7	48.3	45.2	11.7	13.7	20.9	1.8	2.6	4.2	3.3	4.4	5.2
Columbus	30.3	28.4	26.6	45.6	45.2	44.1	17.5	18.6	19.6	3.8	4.6	5.5	2.9	3.2	4.2
Charlotte	32.3	28.4	23.8	43.2	41.7	38.7	17.2	20.2	23.0	4.0	6.3	8.5	3.2	3.3	6.1
New Orleans	24.0	24.9	24.5	38.0	39.5	38.1	22.3	21.7	21.1	7.9	7.2	8.5	7.8	6.7	7.9
Salt Lake City	30.6	26.0	29.2	46.0	44.9	43.6	16.9	20.5	18.0	3.4	4.7	4.8	3.1	3.9	4.4
Greensboro	36.1	34.3	30.0	44.9	45.2	44.3	13.6	14.7	16.9	3.0	3.6	4.6	2.3	2.2	4.3
Austin	34.9	29.2	24.5	42.9	42.0	38.6	15.4	19.2	22.5	3.8	5.7	8.3	3.0	3.9	6.1
Nashville	27.6	26.6	23.9	41.6	41.5	38.6	19.8	20.7	23.0	6.1	6.9	8.8	4.8	4.3	5.7
Providence	39.5	36.9	32.2	41.6	40.7	39.9	13.0	14.3	16.3	3.1	4.2	5.4	2.8	3.8	6.2
Raleigh	33.3	30.7	24.7	44.5	44.5	40.4	15.6	17.6	22.3	3.7	4.7	7.4	2.9	2.5	5.2
Hartford	34.4	31.6	29.9	42.2	41.0	41.0	16.6	19.1	19.3	3.9	5.5	5.3	2.9	2.8	4.5
Buffalo	32.9	34.1	32.5	43.6	43.4	43.8	17.8	16.6	16.8	3.6	3.5	3.7	2.1	2.4	3.2
Memphis	26.2	25.5	22.9	43.3	45.4	43.4	22.0	21.3	23.2	4.5	4.5	6.1	3.9	3.3	4.4
West Palm Beach	34.5	30.4	25.2	41.9	42.2	39.4	16.5	19.3	22.1	3.4	4.7	6.8	3.7	3.4	6.5
Jacksonville	27.7	25.1	22.2	43.3	41.9	38.8	19.9	22.8	24.4	5.1	6.6	8.7	4.0	3.6	5.9
Rochester	35.1	34.0	33.6	42.2	43.1	42.7	15.8	15.6	15.6	4.0	4.5	4.6	2.8	2.8	3.6
Grand Rapids	40.1	38.4	34.9	44.4	43.6	42.9	11.3	12.2	14.8	2.4	3.3	4.1	1.9	2.5	3.3
Oklahoma City	31.8	31.1	30.2	42.3	44.3	43.4	18.9	17.5	18.3	4.0	4.3	4.4	3.0	2.8	3.7
Louisville	25.5	26.8	26.3	43.4	47.0	46.0	22.0	19.1	19.8	5.3	3.9	4.2	3.7	3.2	3.6
49 MSAs	27.9	26.2	23.5	37.7	37.4	35.9	20.0	21.1	22.2	7.1	7.9	9.0	7.4	7.4	9.5

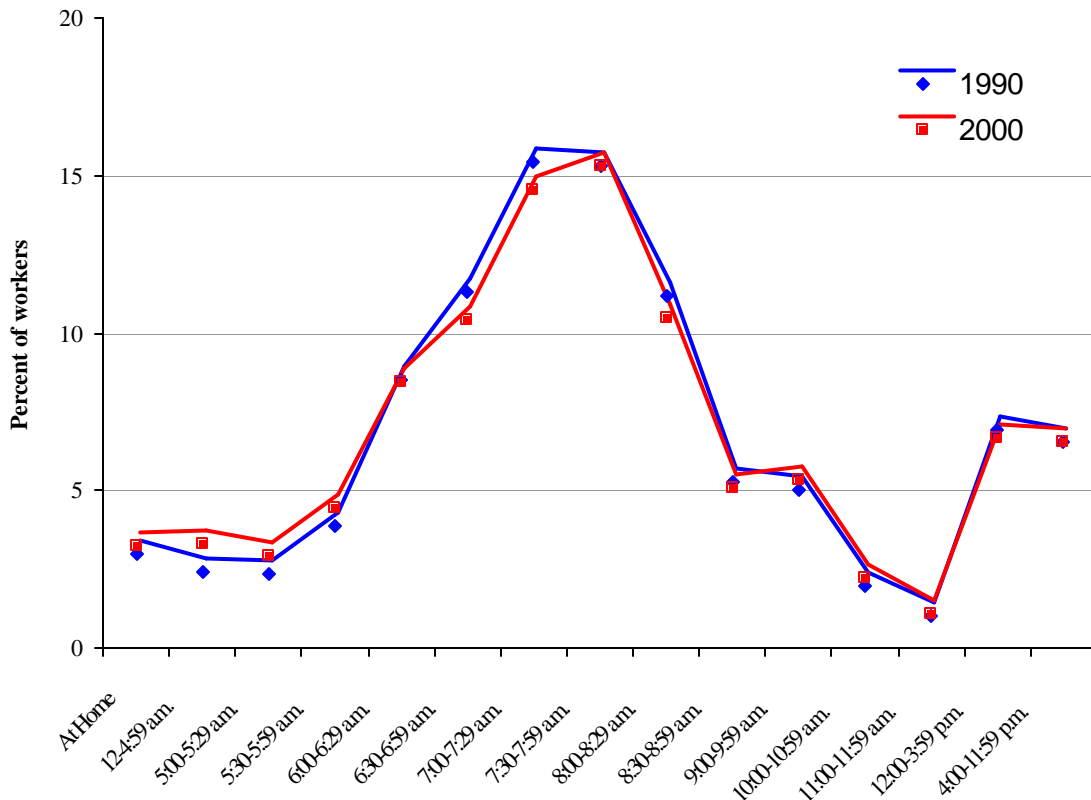
## Departure Time

The question on departure time for the commute trip was added in 1990, so trend analysis is limited. For both the U.S. as a whole and the 49 metro areas, the highest percent of workers leave between 7:00 and 7:59 a.m. (see Exhibit 3.7). With the apparent shift to longer commutes in the large MSAs we expected to see evidence of peak spreading. There is a slight shift to earlier departures from 1990 to 2000 for the nation as a whole, although the 49 largest MSAs had slightly later departure times than the rest of the nation (see Exhibit 3.8).

**Exhibit 3.7 Departure Times to work - US and Large MSA Comparison – Percent of Workers: 2000**

Departure time	49 MSAs	Nation
5:00 a.m. to 6:59 a.m.	25.6	26.2
7:00 a.m. to 7:59 a.m.	29.2	29.9
8:00 a.m. to 8:59 a.m.	17.2	15.5
9:00 a.m. to 9:59 a.m.	6.0	5.3
All other departures	18.9	19.8
Worked at home	3.2	3.3

**Exhibit 3.8 Departure Time to Work: 1990 - 2000**



The percentage of workers beginning their commute in each time period is shown in Exhibits 3.9 and 3.10 for the 49 major MSAs. The percent of workers leaving between 7:00 and 8:29 a.m. hovers around forty percent in the major metro areas—very little shift from the distribution in 1990. Some metro areas show later departure times than others. New York, Miami and West Palm Beach stand out as those with departure times later than the rest.

Not all workers are employed weekdays nine to five, and areas with different dominant employment sectors will see different distributions in departure times. For instance areas with high manufacturing employment and greater numbers of 24-hour shift coverage have different distribution than areas with greater focus on the service industry. Las Vegas exemplifies an extreme position, since the gambling/entertainment industry functions at all hours, leaving Las Vegas with the highest proportion (over 30 percent) of workers departing at times other than 5 – 9:59 a.m. Individual MSAs with shifting employment basis can assess the impact on transit planning and travel demand forecasting that changes in dominant employment sector may have.

### Exhibit 3.9 Departure Time to Work - Percent of Workers: 1990

MSA	Total, Did Not Work at Home	5:00 AM - 6:59 AM	7:00 AM - 8:29 AM	8:30 AM - 9:59 AM	All Other Departures
New York	9,051,858	20.3	47.5	15.9	16.3
Los Angeles	6,622,941	30.0	39.5	11.5	19.0
Chicago	3,838,745	29.3	40.6	10.1	19.9
Washington, DC	3,514,395	28.3	43.8	12.5	15.4
San Francisco	3,089,268	24.9	43.9	13.1	18.1
Philadelphia	2,722,107	22.8	46.3	12.8	18.2
Boston	2,691,278	23.8	45.8	12.6	17.8
Detroit	2,253,594	25.7	39.5	11.7	23.2
Dallas	1,991,675	25.4	47.3	9.9	17.4
Houston	1,732,043	30.8	43.5	9.2	16.5
Atlanta	1,508,734	24.8	46.9	11.6	16.7
Miami	1,446,936	22.0	46.3	14.6	17.2
Seattle	1,446,175	32.0	37.8	10.3	19.9
Phoenix	1,005,946	31.6	38.3	8.6	21.5
Minneapolis	1,298,295	26.9	43.6	9.6	20.0
Cleveland	1,256,550	24.4	42.8	11.5	21.3
San Diego	1,169,161	32.9	38.7	10.5	17.8
St. Louis	1,137,946	29.1	41.7	9.3	19.9
Denver	988,832	28.9	43.4	9.6	18.2
Tampa	893,942	24.6	45.5	11.6	18.4
Pittsburgh	1,002,081	25.3	42.0	11.8	20.9
Portland	828,156	26.8	43.7	9.7	19.8
Cincinnati	825,666	25.5	42.8	10.5	21.1
Sacramento	664,607	27.9	43.0	10.3	18.8
Kansas City	756,935	26.3	46.5	8.8	18.4
Milwaukee	755,421	29.5	39.6	8.5	22.5
Orlando	602,100	26.5	44.4	10.4	18.7
Indianapolis	666,683	27.5	43.9	8.6	19.9
San Antonio	564,921	27.2	44.7	9.3	18.8
Norfolk	682,931	33.9	37.8	10.2	18.2
Las Vegas	409,557	26.2	33.6	10.1	30.1
Columbus	647,894	24.8	44.3	10.3	20.6
Charlotte	593,466	27.3	44.8	8.9	19.0
New Orleans	522,522	28.9	42.2	11.0	18.0
Salt Lake City	464,492	25.6	42.5	10.6	21.3
Greensboro	539,047	27.9	45.1	8.6	18.4
Austin	418,607	21.3	48.7	11.2	18.8
Nashville	482,975	31.3	41.8	8.2	18.8
Providence	531,460	25.5	44.3	11.2	19.1
Raleigh	450,723	21.2	51.9	10.7	16.2
Hartford	585,942	26.7	45.6	10.7	17.0
Buffalo	521,314	21.3	43.1	13.1	22.5
Memphis	451,644	26.2	44.5	8.6	20.6
West Palm Beach	370,090	20.6	48.5	15.0	15.8
Jacksonville	432,361	28.4	43.4	10.3	17.9
Rochester	497,134	26.4	43.0	11.1	19.5
Grand Rapids	429,764	27.9	39.1	9.5	23.5
Oklahoma City	438,861	22.5	47.2	10.5	19.9
Louisville	434,608	24.7	42.4	10.8	22.2

**Exhibit 3.10 Departure Time to Work – Percent of Workers: 2000**

<b>MSA</b>	<b>Total, Did Not Work at Home</b>	<b>5:00 AM - 6:59 AM</b>	<b>7:00 AM - 8:29 AM</b>	<b>8:30 AM - 9:59 AM</b>	<b>All Other Departures</b>
New York	9,042,068	21.2	45.2	16.2	17.5
Los Angeles	6,526,168	27.7	38.8	12.4	21.1
Chicago	4,096,437	29.1	39.5	10.4	20.9
Washington, DC	3,704,993	27.4	42.5	13.8	16.3
San Francisco	3,292,677	23.3	42.7	15.5	18.5
Philadelphia	2,735,588	24.1	44.1	12.6	19.2
Boston	2,807,063	24.9	44.4	12.7	18.0
Detroit	2,425,776	26.0	39.4	11.5	23.1
Dallas	2,452,248	27.3	44.6	10.7	17.5
Houston	2,029,963	31.8	41.5	9.7	17.0
Atlanta	1,988,669	27.4	43.2	12.1	17.3
Miami	1,597,208	22.3	44.6	14.4	18.6
Seattle	1,701,619	30.3	36.4	12.1	21.2
Phoenix	1,412,735	32.6	35.9	9.0	22.4
Minneapolis	1,534,939	28.4	41.4	10.4	19.8
Cleveland	1,339,156	24.9	42.0	11.4	21.8
San Diego	1,242,321	32.0	37.7	11.5	18.9
St. Louis	1,203,672	29.2	40.9	9.5	20.5
Denver	1,282,540	29.8	41.8	10.7	17.6
Tampa	1,030,612	25.1	43.5	12.1	19.2
Pittsburgh	1,031,612	27.1	40.3	11.5	21.1
Portland	1,054,294	28.1	40.7	10.4	20.7
Cincinnati	925,726	26.1	41.8	10.5	21.6
Sacramento	767,710	27.8	41.7	11.1	19.4
Kansas City	851,197	27.0	44.8	9.7	18.5
Milwaukee	796,076	29.2	39.9	8.5	22.4
Orlando	763,736	24.7	43.1	11.6	20.6
Indianapolis	772,342	27.9	42.5	8.9	20.8
San Antonio	680,739	27.4	43.4	9.4	19.8
Norfolk	740,059	32.5	38.5	10.2	18.8
Las Vegas	686,059	27.8	32.4	9.6	30.3
Columbus	754,876	24.6	42.7	11.4	21.4
Charlotte	730,647	27.6	44.8	9.3	18.2
New Orleans	556,672	28.9	41.3	10.8	19.0
Salt Lake City	618,443	26.7	38.6	11.7	23.0
Greensboro	604,027	26.9	45.6	8.7	18.7
Austin	626,278	24.4	45.5	12.6	17.6
Nashville	601,234	31.7	40.3	8.7	19.3
Providence	543,921	25.8	41.9	11.4	20.9
Raleigh	596,100	23.0	48.5	12.3	16.1
Hartford	558,684	25.1	45.8	11.1	18.0
Buffalo	509,457	22.6	42.9	12.2	22.2
Memphis	499,982	27.4	42.6	8.9	21.1
West Palm Beach	456,118	21.3	47.2	14.8	16.7
Jacksonville	515,651	29.1	41.5	10.4	19.0
Rochester	501,901	25.9	42.6	11.1	20.4
Grand Rapids	515,495	26.3	39.0	9.2	25.4
Oklahoma City	494,818	23.4	45.5	10.5	20.6
Louisville	481,234	24.1	41.7	11.3	22.9

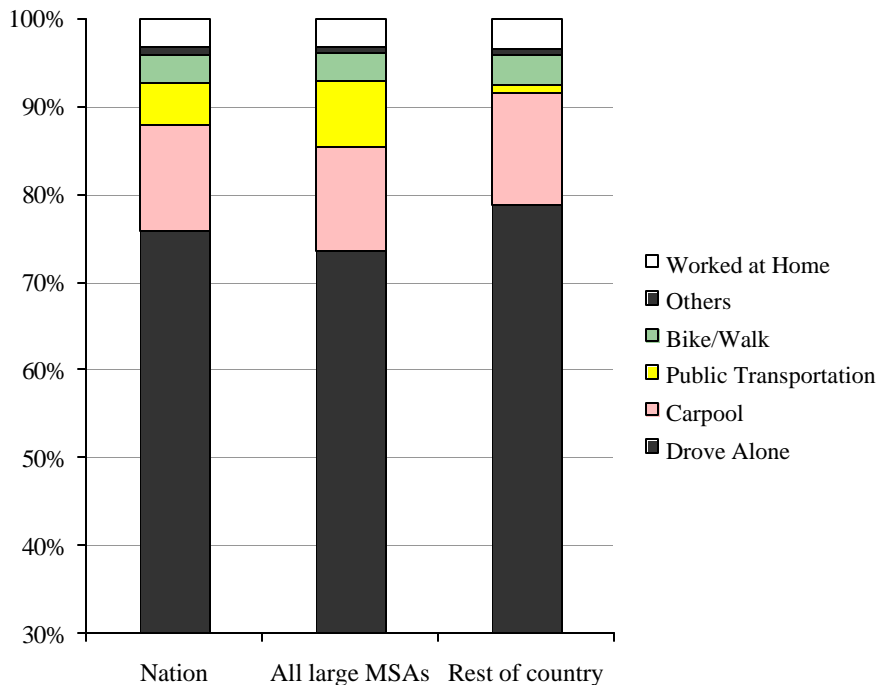
## Chapter 4

### MEANS OF TRAVEL TO WORK

The private vehicle, especially driven alone to work, is the mode of choice for most Americans living in the large metropolitan areas. In every major metro area, workers who drove alone to work increased in numbers and share in the last 40 years. However, transit as a commute mode is critical in the large metro areas. Nearly 7.5 percent of commuters in large metro areas use transit, compared to less than one percent in the rest of the country. Workers are less likely to drive alone to work in the large MSAs (73 percent compared to 79 percent in the rest of the country), but the percent of workers carpooling is about the same (12 percent). Exhibits 4.10 and 4.11 show percent of workers using different modes of transportation for 1990 and 2000.

Ninety-two percent of the nation's commuters who use public transit live in the large metropolitan areas. In most areas, the travel time by public transportation is almost twice the travel time by driving alone. For 2000, the average travel time by workers who drove alone was 24.1 minutes, while transit travel time was 47.7 minutes. Carpool travel times are close to drove alone at 28.5 minutes, on average. Exhibit 4.2 shows the mean travel time by mode for the 6 large MSAs with the highest number of transit commuters.

**Exhibit 4.1 Mode to work - United States, Large MSAs, and Rest of the Country: 2000**



**Exhibit 4.2 Mode of Travel by Average Travel Time to Work – 6 MSAs with the Largest Percent of Transit Commuters: 2000**

Mode	Workers who did not work at home	Travel time to work (minutes)				Mode to work (Percent of Workers)		
		All Modes	Drove alone	Carpool	Transit (including taxicab)	Drove alone	Carpool	Transit (including taxicab)
New York	9,042,068	34.0	28.0	33.1	52.2	56.3	9.4	24.9
Chicago	4,096,437	31.0	28.6	31.6	49.7	70.5	11.0	11.5
San Francisco	3,292,677	29.3	27.3	31.8	46.0	68.1	12.9	9.5
Washington, DC	3,704,993	31.7	29.7	34.8	47.1	70.4	12.8	9.4
Boston	2,807,063	27.7	26.4	28.3	43.9	73.9	8.8	9.0
Philadelphia	2,735,588	27.9	26.2	28.2	47.4	73.3	10.3	8.7

**Driving Alone and Carpooling**

Continuing a trend seen in previous decades, drove alone gained as the mode of choice for commuters in most of the 49 large metro areas (See Exhibit 4.12) with five exceptions: San Francisco, Seattle, Atlanta, Phoenix, and Portland, OR. Detroit has the highest drove alone share, 84.2 percent, and New York the lowest, with 56.3 percent (see Exhibit 4.3). Some of the trend to single occupant vehicles can be explained by the greater vehicle availability and by the smaller household size (many carpools include people from the same household).

Carpools, in most areas, lost market share to drove alone. In 1990, Las Vegas, Washington, D.C. and Los Angeles were the only metro areas with carpooling rates exceeding 15 percent. In 2000, the carpooling rate in Washington, D.C. declined significantly, from 15.5 percent to 12.8 percent, while drove alone increased from 66.1 percent to 70.4 percent. Over 15 percent of the workers in Los Angeles and Las Vegas used carpool to work, about the same as 1990. Atlanta, Seattle, and Phoenix were the only large MSAs to see significant increases in carpool use between 1990 and 2000. Phoenix had the highest percent of commuters using carpool in 2000 (15.3 percent) whereas Cleveland had the lowest multi- occupant commutes with 8.7 percent of workers using carpools.

**Exhibit 4.3 Areas with Highest and Lowest Percent of Workers by Mode: 2000**

Mode	Metropolitan Area	Highest	Metropolitan Area	Lowest
Drove Alone	Detroit	84.2	New York	56.3
Carpool	Phoenix	15.3	Cleveland	8.7
Public Transit	New York	24.9	Oklahoma City	0.6
Walk	New York	5.6	Charlotte	1.2
Work at home	Denver	4.7	Providence	2.1
Other	Phoenix	2.3	Buffalo	0.6



## Transit

New York/Northern New Jersey metro area had the largest transit share—nearly a quarter of the country’s transit trips are taken in New York (24.9 percent of workers). Other metros with large transit shares include Chicago (11.5 percent) San Francisco (9.5 percent), Washington, D.C. (9.4 percent), and Boston (9.0 percent). All of the metro areas whose worker population exceeded 2.5 million, with the exception of Los Angeles, had a transit mode share of 8 percent or above (See Exhibit 4.13). Of the remaining large metros, only Seattle, Portland, Pittsburgh and New Orleans exceeded 5 percent transit mode share for the journey-to-work. Oklahoma City had the lowest share of workers using transit with 0.6 percent.

In 28 of the 49 largest metro areas the proportion of transit riders declined. Transit had its sharpest decline in Atlanta (4.5% to 3.7%), Chicago (13.4% to 11.5%), and Philadelphia (10.2% to 8.7%). On the other hand, a few areas saw an increase in the proportion of workers who take transit, such as Portland (4.8 percent to 5.7 percent), Seattle (6.1 percent to 6.8 percent) and Las Vegas (2.0 percent to 4.1 percent).

In terms of number of workers using transit, Exhibit 4.4 displays five of the metro areas that experienced the largest increase, and Exhibit 4.5 five metro areas that experienced the greatest decrease in the numbers of workers using transit.

**Exhibit 4.4 Areas with Greatest Increase in Number of Workers Using Transit: 1990-2000**

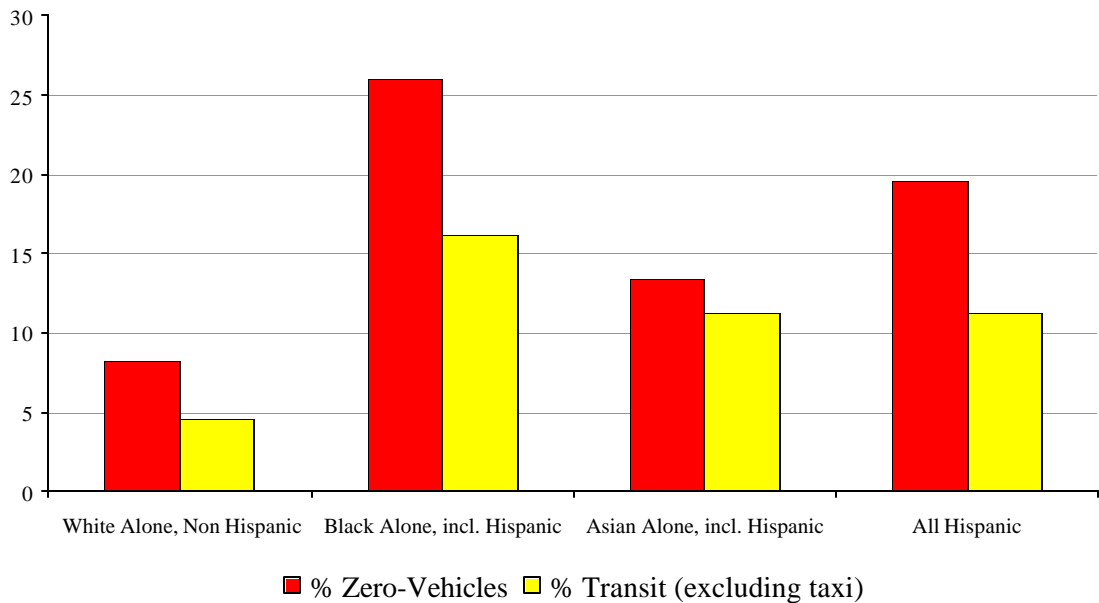
MSA	1990	2000	Change
Seattle	91,391	119,919	28,528
San Francisco	297,363	325,212	27,849
Boston	237,483	261,862	24,379
New York	2,297,445	2,320,155	22,710
Portland	41,023	63,126	22,103

**Exhibit 4.5 Areas with Greatest Decline in Number of Workers Using Transit: 1990-2000**

MSA	1990	2000	Change
Chicago	526,085	484,835	-41,250
Philadelphia	283,312	245,909	-37,403
Washington, DC	396,466	361,877	-34,589
Pittsburgh	76,199	65,345	-10,854
Cleveland	56,941	47,111	-9,830

The likelihood of using transit as a commute mode continues to vary by income, auto ownership, and race/ethnicity. Exhibit 4.6 shows the percent transit use and zero-vehicle households in the 49 largest MSAs by race and ethnicity.

**Exhibit 4.6 Transit Use and Vehicle Availability by Race/Ethnicity: 2000**



**Walk, Bike and Work at Home**

In most large metro areas in 2000, the proportion of workers walking to work hovered between two and three percent. Between 1990 and 2000, every large MSA experienced a decline in the proportion of workers who walked to work. New York has the highest percentage of people who walk to work, 5.6 percent, whereas Charlotte, NC has the lowest proportion of workers who walk, only 1.2 percent. Seven areas had over 100,000 workers who usually walked to their place of employment (Exhibit 4.7).

**Exhibit 4.7 Areas with 100,000 or more Walking Commuters: 2000**

MSA	Walk	Percent
New York	517,290	5.6
Los Angeles	173,497	2.6
Chicago	131,896	3.1
Boston	119,294	4.1
Washington, DC	114,425	3.0
San Francisco	111,662	3.3
Philadelphia	109,264	3.9

Bicycling to work is still a rare occurrence anywhere in the United States, whether in large metro areas or not. Only in two metro areas, both in California, does bicycle commuting exceed one percent: Sacramento and San Francisco. However, eight areas had more than 10,000 workers who usually biked to work (Exhibit 4.8).

**Exhibit 4.8 Areas with 10,000 or more Bicycle Commuters: 2000**

<b>MSA</b>	<b>Bicycle</b>	<b>Percent</b>
Los Angeles	42,887	0.6
San Francisco	38,588	1.1
New York	27,827	0.3
Phoenix	13,855	0.9
Chicago	13,077	0.3
Boston	11,141	0.4
Sacramento	10,909	1.4
Seattle	10,712	0.6

The percent of workers who usually worked at home increased in every large MSA except three: San Diego, Norfolk, and Jacksonville. Only in six MSAs did work at home exceed 4 percent: San Francisco, Seattle, Denver, Portland, Sacramento and West Palm Beach. Exhibit 4.9 shows the MSAs with four percent or more of workers working at home.

**Exhibit 4.9 Areas with Four Percent or More Workers Working at Home: 2000**

<b>MSA</b>	<b>Total Workers</b>	<b>Worked at Home</b>	<b>Percent</b>
Portland	1,105,133	50,839	4.6
San Diego	1,299,503	57,182	4.4
Seattle	1,776,224	74,605	4.2
West Palm Beach	475,572	19,454	4.1
San Francisco	3,432,157	139,480	4.1
Sacramento	799,989	32,279	4.0

**Exhibit 4.10 Means of Transportation to Work: 1990**

MSA	Total Workers	% Drove Alone	% Car-pool	% Bus/Street car	% Sub-way /Rail	% Walk	% Taxi	% Motor-cycle	% Bike	% Other	% Work at Home
New York	9,271,089	55.4	10.4	7.2	16.7	6.2	0.7	0.1	0.2	0.7	2.4
Los Angeles	6,809,043	72.3	15.5	4.5	0.0	2.9	0.0	0.5	0.7	0.8	2.7
Chicago	3,922,295	67.6	12.0	6.7	6.4	4.1	0.3	0.1	0.2	0.6	2.1
Washington, DC	3,611,094	66.1	15.5	6.2	4.5	3.9	0.3	0.1	0.2	0.6	2.7
San Francisco	3,200,833	68.3	13.0	6.3	2.8	3.6	0.1	0.5	1.1	0.8	3.5
Philadelphia	2,784,581	69.1	12.1	6.1	4.0	5.3	0.1	0.1	0.3	0.6	2.2
Boston	2,760,435	71.9	10.8	4.1	4.3	5.2	0.2	0.1	0.4	0.6	2.5
Detroit	2,294,108	82.8	10.1	2.1	0.0	2.4	0.1	0.0	0.2	0.4	1.8
Dallas	2,038,398	78.6	13.9	2.2	0.0	1.9	0.1	0.2	0.1	0.7	2.3
Houston	1,768,567	76.1	14.6	3.6	0.0	2.3	0.1	0.2	0.3	0.8	2.1
Atlanta	1,542,948	77.9	13.0	3.4	1.0	1.5	0.1	0.1	0.1	0.7	2.2
Miami	1,476,085	75.3	14.5	3.6	0.6	2.3	0.1	0.2	0.5	0.9	2.0
Seattle	1,499,734	73.1	12.1	5.6	0.0	3.6	0.1	0.4	0.5	1.0	3.6
Phoenix	1,036,017	74.9	14.5	1.9	0.0	2.7	0.1	0.7	1.4	0.8	2.9
Minneapolis	1,344,797	75.9	11.3	5.1	0.0	3.3	0.1	0.1	0.4	0.4	3.5
Cleveland	1,282,092	79.5	10.3	4.1	0.3	3.0	0.1	0.1	0.1	0.5	2.0
San Diego	1,230,446	70.9	13.8	3.2	0.0	4.5	0.1	0.7	0.9	1.0	5.0
St. Louis	1,166,023	79.6	12.2	2.8	0.0	2.1	0.1	0.1	0.1	0.5	2.4
Denver	1,026,847	75.0	12.5	3.9	0.0	3.4	0.1	0.2	0.7	0.6	3.7
Tampa	914,711	78.8	13.3	1.3	0.0	2.3	0.1	0.4	0.7	0.8	2.3
Pittsburgh	1,023,825	72.0	12.7	7.2	0.2	5.0	0.1	0.1	0.1	0.5	2.1
Portland	861,141	73.8	12.7	4.6	0.1	3.4	0.1	0.3	0.6	0.6	3.8
Cincinnati	844,125	79.0	11.7	3.4	0.0	3.0	0.1	0.1	0.1	0.5	2.2
Sacramento	685,945	75.2	13.7	2.1	0.2	2.7	0.0	0.5	1.8	0.6	3.1
Kansas City	778,624	79.8	12.6	2.0	0.0	1.9	0.1	0.1	0.1	0.6	2.8
Milwaukee	772,752	77.2	10.9	4.8	0.0	4.0	0.1	0.1	0.3	0.4	2.2
Orlando	614,382	78.0	13.4	1.3	0.0	3.4	0.1	0.4	0.6	0.7	2.0
Indianapolis	683,007	79.7	12.9	1.8	0.0	2.3	0.1	0.1	0.1	0.5	2.4
San Antonio	578,529	74.5	14.9	3.6	0.0	3.6	0.0	0.2	0.2	0.8	2.4
Norfolk	720,890	72.7	14.3	2.0	0.0	3.6	0.1	0.3	0.5	1.2	5.3
Las Vegas	416,025	74.3	15.8	1.8	0.0	3.7	0.2	0.8	0.8	1.2	1.6
Columbus	663,006	79.5	11.4	2.7	0.0	3.3	0.1	0.1	0.2	0.5	2.3
Charlotte	604,856	78.8	14.5	1.7	0.0	2.1	0.1	0.1	0.1	0.7	1.9
New Orleans	531,697	70.9	15.4	6.7	0.0	3.1	0.3	0.2	0.5	1.2	1.7
Salt Lake City	479,338	76.3	14.0	2.9	0.0	2.3	0.0	0.3	0.5	0.5	3.1
Greensboro	550,325	79.3	14.5	0.9	0.0	2.3	0.1	0.1	0.1	0.6	2.0
Austin	431,345	74.9	14.5	3.0	0.0	2.9	0.1	0.4	0.5	0.6	3.0
Nashville	495,717	79.1	13.8	1.6	0.0	1.9	0.1	0.1	0.1	0.6	2.6
Providence	540,872	78.6	12.3	2.0	0.5	3.9	0.1	0.1	0.2	0.6	1.7
Raleigh	461,516	77.4	14.2	1.6	0.0	3.0	0.1	0.2	0.4	0.7	2.3
Hartford	597,831	78.9	11.4	3.4	0.0	3.4	0.0	0.1	0.2	0.5	2.0
Buffalo	531,122	77.1	11.2	4.1	0.4	4.4	0.2	0.1	0.2	0.5	1.8
Memphis	458,534	78.1	13.7	2.7	0.0	2.9	0.1	0.1	0.1	0.8	1.5
West Palm Beach	380,260	79.4	12.8	0.9	0.2	2.0	0.2	0.4	0.6	0.9	2.7
Jacksonville	443,882	76.2	14.3	1.9	0.0	2.6	0.2	0.3	0.7	1.2	2.6
Rochester	509,733	77.7	11.7	3.0	0.0	4.4	0.1	0.0	0.2	0.4	2.5
Grand Rapids	442,228	82.6	10.2	0.9	0.0	2.6	0.1	0.1	0.2	0.5	2.8
Oklahoma City	450,122	80.3	13.3	0.5	0.0	2.1	0.1	0.2	0.2	0.7	2.5
Louisville	442,933	79.4	12.8	3.2	0.0	2.0	0.1	0.1	0.1	0.5	1.9

**Exhibit 4.11 Means of Transportation to Work: 2000**

MSA	Total Workers	% Drove Alone	% Car-pool	% Bus/Streetcar	% Subway/Rail	% Walk	% Taxi	% Motorcycle	% Bike	% Other	% Work at Home
New York	9,319,218	56.3	9.4	6.8	17.1	5.6	0.8	0.0	0.3	0.7	3.0
Los Angeles	6,767,619	72.4	15.2	4.3	0.3	2.6	0.1	0.2	0.6	0.8	3.6
Chicago	4,218,108	70.5	11.0	4.6	6.6	3.1	0.3	0.0	0.3	0.7	2.9
Washington, DC	3,839,052	70.4	12.8	4.1	5.0	3.0	0.3	0.1	0.3	0.6	3.5
San Francisco	3,432,157	68.1	12.9	5.7	3.5	3.3	0.1	0.4	1.1	0.9	4.1
Philadelphia	2,815,405	73.3	10.3	5.3	3.3	3.9	0.1	0.1	0.3	0.6	2.8
Boston	2,898,680	73.9	8.8	3.2	5.5	4.1	0.2	0.1	0.4	0.6	3.2
Detroit	2,482,457	84.2	9.3	1.7	0.0	1.8	0.1	0.0	0.2	0.4	2.3
Dallas	2,527,648	78.8	14.0	1.6	0.1	1.5	0.1	0.1	0.1	0.8	3.0
Houston	2,081,607	77.0	14.2	3.1	0.0	1.6	0.1	0.1	0.3	0.9	2.5
Atlanta	2,060,632	77.0	13.6	2.4	1.1	1.3	0.2	0.1	0.1	0.8	3.5
Miami	1,642,866	76.6	13.4	3.2	0.5	1.8	0.1	0.1	0.5	0.9	2.8
Seattle	1,776,224	71.6	12.8	6.2	0.0	3.2	0.1	0.2	0.6	1.1	4.2
Phoenix	1,466,434	74.6	15.3	1.9	0.0	2.1	0.1	0.4	0.9	0.9	3.7
Minneapolis	1,595,550	78.3	10.0	4.4	0.0	2.4	0.1	0.1	0.4	0.4	3.8
Cleveland	1,375,774	82.3	8.7	3.1	0.3	2.1	0.1	0.0	0.2	0.5	2.7
San Diego	1,299,503	73.9	13.0	3.1	0.2	3.4	0.1	0.3	0.6	1.0	4.4
St. Louis	1,238,964	82.6	9.9	2.1	0.2	1.6	0.1	0.1	0.1	0.5	2.8
Denver	1,346,025	75.6	11.5	4.2	0.1	2.4	0.1	0.1	0.7	0.6	4.7
Tampa	1,063,957	79.7	12.4	1.2	0.0	1.7	0.1	0.2	0.6	0.8	3.1
Pittsburgh	1,057,354	77.4	9.7	6.0	0.1	3.6	0.1	0.0	0.1	0.5	2.4
Portland	1,105,133	73.1	12.1	5.1	0.5	3.0	0.0	0.1	0.8	0.6	4.6
Cincinnati	951,709	81.4	10.0	2.8	0.0	2.3	0.1	0.1	0.1	0.5	2.7
Sacramento	799,989	75.3	13.5	2.4	0.3	2.2	0.1	0.2	1.4	0.7	4.0
Kansas City	881,258	82.8	10.4	1.2	0.0	1.4	0.1	0.1	0.1	0.6	3.4
Milwaukee	816,880	80.1	9.9	3.9	0.0	2.8	0.1	0.1	0.2	0.4	2.5
Orlando	786,243	80.6	12.1	1.6	0.0	1.3	0.1	0.2	0.4	0.8	2.9
Indianapolis	795,755	82.8	10.5	1.2	0.0	1.7	0.1	0.1	0.2	0.6	2.9
San Antonio	698,685	76.2	14.7	2.8	0.0	2.4	0.1	0.1	0.1	1.0	2.6
Norfolk	760,401	78.9	12.1	1.7	0.0	2.7	0.1	0.1	0.3	1.4	2.7
Las Vegas	702,535	74.5	15.0	3.9	0.0	2.4	0.1	0.4	0.5	0.9	2.3
Columbus	777,922	82.0	9.6	2.2	0.0	2.4	0.1	0.0	0.2	0.4	3.0
Charlotte	751,629	80.9	12.9	1.3	0.0	1.2	0.1	0.1	0.1	0.6	2.8
New Orleans	570,423	73.0	14.6	5.2	0.0	2.7	0.3	0.1	0.6	1.0	2.4
Salt Lake City	642,688	77.2	13.1	2.7	0.3	1.8	0.0	0.1	0.4	0.6	3.8
Greensboro	618,921	81.2	13.1	0.7	0.1	1.6	0.1	0.1	0.1	0.7	2.4
Austin	649,645	76.5	13.7	2.5	0.0	2.1	0.1	0.2	0.6	0.8	3.6
Nashville	621,221	80.7	12.8	0.9	0.0	1.5	0.1	0.1	0.1	0.7	3.2
Providence	555,540	80.7	10.6	1.7	0.7	3.3	0.1	0.0	0.2	0.6	2.1
Raleigh	617,475	78.5	12.9	1.5	0.0	2.3	0.2	0.1	0.4	0.7	3.5
Hartford	573,114	82.5	9.0	2.7	0.1	2.5	0.0	0.0	0.2	0.5	2.5
Buffalo	520,350	81.7	9.4	3.1	0.3	2.7	0.2	0.0	0.2	0.3	2.1
Memphis	511,111	80.9	13.0	1.6	0.0	1.3	0.1	0.1	0.1	0.7	2.2
West Palm Beach	475,572	79.6	11.9	1.1	0.2	1.4	0.2	0.1	0.5	0.9	4.1
Jacksonville	527,718	80.3	12.6	1.3	0.0	1.7	0.2	0.2	0.5	1.0	2.3
Rochester	516,814	81.8	9.1	1.9	0.0	3.5	0.1	0.0	0.2	0.5	2.9
Grand Rapids	531,924	84.0	9.2	0.7	0.0	2.1	0.1	0.0	0.2	0.6	3.1
Oklahoma City	509,262	81.8	12.0	0.5	0.0	1.7	0.1	0.1	0.2	0.8	2.8
Louisville	492,821	82.0	10.9	2.2	0.0	1.7	0.0	0.0	0.2	0.6	2.4

**Exhibit 4.12 Commutes by Private Vehicle: 1980-2000**

MSA	1980 (Percent of all workers)			1990 (Percent of all workers)			2000 (Percent of all workers)		
	Total Workers	Drove Alone	Carpool	Total Workers	Drove Alone	Carpool	Total Workers	Drove Alone	Carpool
New York	8,133,936	48.7	15.2	9,224,432	55.7	10.5	9,319,218	56.3	9.4
Los Angeles	5,184,393	70.2	17.1	6,725,350	73.2	15.6	6,767,619	72.4	15.2
Chicago	3,575,803	59.1	17.0	3,911,520	67.8	12.0	4,218,108	70.5	11.0
Washington, DC	2,760,794	56.5	23.0	3,597,893	66.3	15.5	3,839,052	70.4	12.8
San Francisco	2,563,329	62.9	16.4	3,144,537	69.5	13.2	3,432,157	68.1	12.9
Philadelphia	2,347,072	60.2	18.2	2,772,129	69.4	12.2	2,815,405	73.3	10.3
Boston	2,471,832	60.6	19.7	2,746,194	72.3	10.8	2,898,680	73.9	8.8
Detroit	2,085,116	74.7	16.9	2,289,079	83.0	10.2	2,482,457	84.2	9.3
Dallas	1,494,568	71.1	20.7	2,031,707	78.9	14.0	2,527,648	78.8	14.0
Houston	1,512,080	69.4	22.5	1,759,955	76.4	14.6	2,081,607	77.0	14.2
Atlanta	1,033,088	68.5	20.3	1,539,743	78.1	13.0	2,060,632	77.0	13.6
Miami	1,150,471	69.7	19.1	1,464,824	75.9	14.6	1,642,866	76.6	13.4
Seattle	1,113,261	64.0	18.9	1,480,537	74.0	12.3	1,776,224	71.6	12.8
Phoenix	688,912	69.8	19.3	1,014,066	76.6	14.8	1,466,434	74.6	15.3
Minneapolis	1,081,772	62.9	20.1	1,337,986	76.2	11.4	1,595,550	78.3	10.0
Cleveland	1,242,438	70.5	16.2	1,279,575	79.7	10.4	1,375,774	82.3	8.7
San Diego	854,600	63.8	17.4	1,211,239	72.0	14.0	1,299,503	73.9	13.0
St. Louis	1,026,288	67.2	21.4	1,163,764	79.8	12.2	1,238,964	82.6	9.9
Denver	859,989	65.3	20.2	1,017,398	75.7	12.6	1,346,025	75.6	11.5
Tampa	619,119	71.9	18.5	904,463	79.7	13.4	1,063,957	79.7	12.4
Pittsburgh	1,021,047	61.4	19.7	1,022,095	72.1	12.7	1,057,354	77.4	9.7
Portland	704,392	65.4	18.4	852,839	74.5	12.9	1,105,133	73.1	12.1
Cincinnati	716,583	69.4	18.7	842,701	79.1	11.7	951,709	81.4	10.0
Sacramento	472,640	68.9	17.8	670,322	77.0	14.0	799,989	75.3	13.5
Kansas City	666,940	68.9	21.6	777,117	80.0	12.6	881,258	82.8	10.4
Milwaukee	719,555	65.5	19.1	769,694	77.5	11.0	816,880	80.1	9.9
Orlando	360,312	69.5	20.0	607,993	78.8	13.6	786,243	80.6	12.1
Indianapolis	575,905	70.6	20.9	681,418	79.9	12.9	795,755	82.8	10.5
San Antonio	456,656	66.8	20.0	576,304	74.8	14.9	698,685	76.2	14.7
Norfolk	547,803	60.3	23.2	715,227	73.3	14.4	760,401	78.9	12.1
Las Vegas	251,501	71.1	18.9	409,578	75.4	16.1	702,535	74.5	15.0
Columbus	537,727	70.7	18.2	660,853	79.7	11.5	777,922	82.0	9.6
Charlotte	470,708	68.9	23.3	603,419	78.9	14.5	751,629	80.9	12.9
New Orleans	528,868	61.9	21.1	527,637	71.5	15.5	570,423	73.0	14.6
Salt Lake City	383,938	66.1	22.2	475,406	76.9	14.1	642,688	77.2	13.1
Greensboro	455,515	70.8	22.5	549,038	79.5	14.6	618,921	81.2	13.1
Austin	278,251	67.6	21.1	427,290	75.6	14.7	649,645	76.5	13.7
Nashville	387,660	68.8	22.3	494,704	79.3	13.9	621,221	80.7	12.8
Providence	381,643	65.6	21.6	539,646	78.8	12.4	555,540	80.7	10.6
Raleigh	323,005	65.6	24.1	458,694	77.9	14.3	617,475	78.5	12.9
Hartford	510,174	67.1	20.6	596,321	79.1	11.5	573,114	82.5	9.0
Buffalo	500,364	66.6	18.6	529,710	77.3	11.2	520,350	81.7	9.4
Memphis	384,793	69.2	19.9	457,651	78.3	13.7	511,111	80.9	13.0
West Palm Beach	233,303	70.7	20.0	376,627	80.1	12.9	475,572	79.6	11.9
Jacksonville	311,207	66.2	21.9	439,617	77.0	14.5	527,718	80.3	12.6
Rochester	453,387	64.9	21.1	508,363	77.9	11.8	516,814	81.8	9.1
Grand Rapids	357,673	73.1	18.2	441,079	82.8	10.2	531,924	84.0	9.2
Oklahoma City	397,394	72.6	20.3	448,060	80.7	13.4	509,262	81.8	12.0
Louisville	398,355	69.0	21.5	442,233	79.6	12.8	492,821	82.0	10.9

**Exhibit 4.13 Transit and Walk Commutes: 1980-2000**

MSA Area	1980 (Percent of all workers)			1990 (Percent of all workers)			2000 (Percent of all workers)		
	Total Workers	Transit	Walk	Total Workers	Transit	Walk	Total Workers	Transit	Walk
New York	8,133,936	26.2	7.4	9,224,432	24.7	6.2	9,319,218	24.9	5.6
Los Angeles	5,184,393	5.1	3.5	6,725,350	4.6	3.0	6,767,619	4.7	2.6
Chicago	3,575,803	16.2	5.7	3,911,520	13.4	4.1	4,218,108	11.5	3.1
Washington, DC	2,760,794	12.5	5.1	3,597,893	11.0	3.9	3,839,052	9.4	3.0
San Francisco	2,563,329	11.2	4.4	3,144,537	9.3	3.7	3,432,157	9.5	3.3
Philadelphia	2,347,072	12.4	6.5	2,772,129	10.2	5.3	2,815,405	8.7	3.9
Boston	2,471,832	9.4	7.7	2,746,194	8.6	5.2	2,898,680	9.0	4.1
Detroit	2,085,116	3.4	3.3	2,289,079	2.3	2.4	2,482,457	1.8	1.8
Dallas	1,494,568	3.4	2.2	2,031,707	2.3	1.9	2,527,648	1.8	1.5
Houston	1,512,080	2.9	2.7	1,759,955	3.8	2.3	2,081,607	3.3	1.6
Atlanta	1,033,088	7.0	2.0	1,539,743	4.5	1.5	2,060,632	3.7	1.3
Miami	1,150,471	4.9	3.2	1,464,824	4.4	2.3	1,642,866	3.9	1.8
Seattle	1,113,261	7.5	4.9	1,480,537	5.8	3.7	1,776,224	6.8	3.2
Phoenix	688,912	1.9	3.4	1,014,066	2.1	2.7	1,466,434	2.0	2.1
Minneapolis	1,081,772	8.4	5.1	1,337,986	5.2	3.3	1,595,550	4.5	2.4
Cleveland	1,242,438	7.6	3.7	1,279,575	4.4	3.0	1,375,774	3.4	2.1
San Diego	854,600	3.3	9.9	1,211,239	3.3	4.6	1,299,503	3.4	3.4
St. Louis	1,026,288	5.6	3.3	1,163,764	2.9	2.2	1,238,964	2.4	1.6
Denver	859,989	5.8	4.7	1,017,398	4.0	3.4	1,346,025	4.3	2.4
Tampa	619,119	1.7	3.4	904,463	1.5	2.3	1,063,957	1.4	1.7
Pittsburgh	1,021,047	10.4	6.6	1,022,095	7.5	5.1	1,057,354	6.2	3.6
Portland	704,392	7.2	4.5	852,839	4.8	3.4	1,105,133	5.7	3.0
Cincinnati	716,583	5.6	4.0	842,701	3.5	3.0	951,709	2.9	2.3
Sacramento	472,640	3.4	3.6	670,322	2.4	2.7	799,989	2.7	2.2
Kansas City	666,940	3.8	2.8	777,117	2.1	1.9	881,258	1.3	1.4
Milwaukee	719,555	7.1	5.7	769,694	4.9	4.0	816,880	4.0	2.8
Orlando	360,312	1.6	4.7	607,993	1.4	3.4	786,243	1.7	1.3
Indianapolis	575,905	3.0	3.1	681,418	1.9	2.3	795,755	1.3	1.7
San Antonio	456,656	4.5	5.4	576,304	3.6	3.6	698,685	2.9	2.4
Norfolk	547,803	4.5	6.6	715,227	2.2	3.7	760,401	1.9	2.7
Las Vegas	251,501	2.0	3.9	409,578	2.1	3.7	702,535	4.1	2.4
Columbus	537,727	4.2	4.3	660,853	2.8	3.3	777,922	2.3	2.4
Charlotte	470,708	2.6	3.1	603,419	1.8	2.1	751,629	1.4	1.2
New Orleans	528,868	10.1	3.9	527,637	7.0	3.1	570,423	5.6	2.7
Salt Lake City	383,938	4.9	3.5	475,406	3.0	2.3	642,688	3.0	1.8
Greensboro	455,515	1.6	2.6	549,038	1.1	2.3	618,921	0.9	1.6
Austin	278,251	2.9	4.1	427,290	3.2	2.9	649,645	2.6	2.1
Nashville	387,660	3.5	2.8	494,704	1.7	1.9	621,221	1.0	1.5
Providence	381,643	4.5	6.3	539,646	2.6	3.9	555,540	2.5	3.3
Raleigh	323,005	2.7	4.3	458,694	1.8	3.0	617,475	1.7	2.3
Hartford	510,174	5.3	4.8	596,321	3.5	3.4	573,114	2.8	2.5
Buffalo	500,364	6.6	5.9	529,710	4.7	4.4	520,350	3.5	2.7
Memphis	384,793	4.6	4.3	457,651	2.8	2.9	511,111	1.7	1.3
West Palm Beach	233,303	1.9	3.2	376,627	1.4	2.0	475,572	1.4	1.4
Jacksonville	311,207	4.5	3.8	439,617	2.1	2.6	527,718	1.5	1.7
Rochester	453,387	4.9	6.3	508,363	3.1	4.4	516,814	2.0	3.5
Grand Rapids	357,673	1.5	4.1	441,079	1.0	2.7	531,924	0.8	2.1
Oklahoma City	397,394	1.1	2.8	448,060	0.7	2.1	509,262	0.6	1.7
Louisville	398,355	4.5	2.7	442,233	3.2	2.0	492,821	2.2	1.7





# Chapter 5

## VEHICLE AVAILABILITY

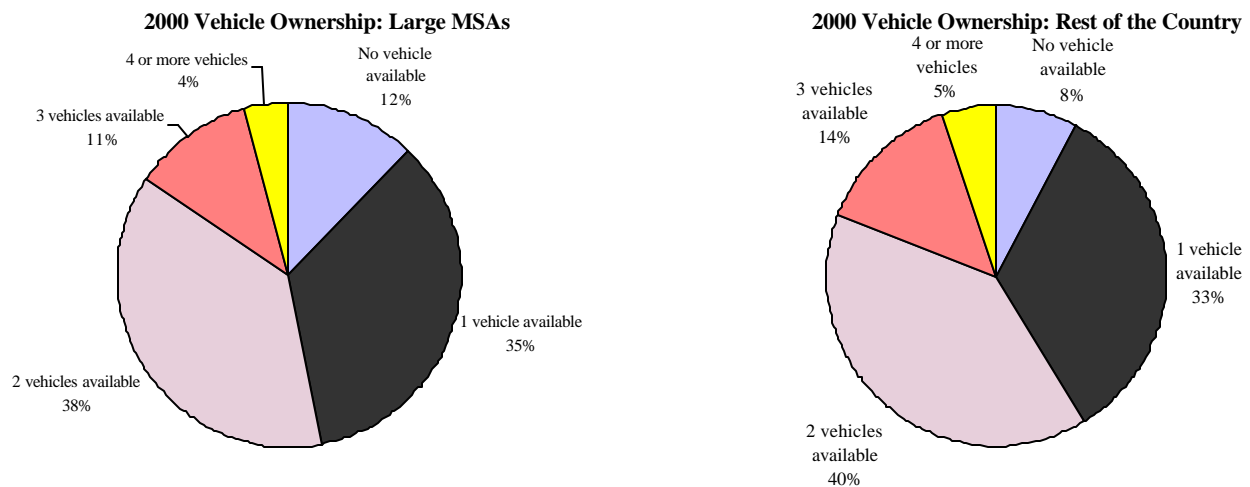
In 2000, the Census Bureau collected household vehicle data in eight categories--the lowest category was zero and the highest category was seven or more vehicles. The analysis of total vehicles and changes in relative household shares of vehicle availability is useful in understanding mode choice decisions.

Between 1990 and 2000, 13.5 million new households and 13.2 million new workers were added in the U.S. but twice as many household vehicles were added (26 million vehicles). Overall, the growth in vehicles has been in the households with multiple vehicles available. In 2000, 40.5 percent of households had two vehicles available, and 18 percent of households had three or more vehicles available compared to just 10.0 and 1.3 percent in 1960 respectively.

### Large MSAs vs Rest of Country

Although the percent has changed, the total number of zero-vehicle households remained nearly the same over the last 40 years—11.3 million households had no vehicle in 1960, and 10.9 million households had no vehicle in 2000. Large MSAs have always had more zero-vehicle households than the remainder of the country—in the 2000 Census, 12 percent of households in large MSAs were without a vehicle versus just 8 percent in the remainder of the country (see Exhibit 5.1).

**Exhibit 5.1 Households by Vehicles Available - Large MSAs and Rest of the Country: 2000**



## Vehicle Growth vs Population Growth

Seven of the large MSAs added more than one and one-half vehicle for every person 16 and over added to the population in the 1990s (see Exhibit 5.2). Hartford and Cleveland added more than 2 vehicles for every added driving-age person. The growth in the number of vehicles exceeded the growth in driving-age adults in twenty-one of the large MSAs. Two areas, Buffalo and Pittsburgh, added vehicles even though they lost population.

**Exhibit 5.2 Growth in Vehicles Compared to Population: 1990-2000**

MSA	Added People (Age 16 and Over)	Added Vehicles	Ratio of Vehicles added for Every Person Added: 1990-2000
Hartford	1,992	15,757	7.9
Cleveland	60,724	150,199	2.5
Detroit	186,132	354,084	1.9
St. Louis	92,552	150,508	1.6
Philadelphia	183,914	293,298	1.6
Boston	218,709	330,527	1.5
Milwaukee	67,066	98,579	1.5

Exhibit 5.3 shows the metropolitan areas with the highest and lowest values for zero, one, two, and three or more vehicles per household. New York stands out with 28.7 percent of the households with no vehicle—in fact, one-fifth of the country’s zero-vehicle households are in New York. Salt Lake City, with a large average household size and large number of workers per household is the metro area with the lowest percent of it’s households having no vehicle.

**Exhibit 5.3 Areas with Highest and Lowest Vehicle Availability: 2000**

Households with	MSA	Highest	MSA	Lowest
Zero-vehicles	New York	28.7	Salt Lake City	5.80
One Vehicle	Tampa	44.2	Salt Lake City	28.1
Two Vehicles	New York	28.0	Grand Rapids	43.6
Three or more vehicles	Salt Lake City	24.4	West Palm Beach	9.60

Exhibit 5.4 shows the number of households in three vehicle ownership categories (zero, one, two, and three and more) for 1980, 1990 and 2000, and Exhibit 5.5 shows the average vehicle availability for 1990 and 2000 for the major MSAs. Exhibit 5.6 shows the percent of households in each of the vehicle availability categories. Within the large MSAs there is a difference between households located in the central county and those in suburban counties. Exhibits 5.6 and 5.7 show the percent of households in the central or in suburban counties by vehicle availability category. Exhibit 5.8 shows the percent change in relative shares between 1990 and 2000 in central and suburban counties.

### Exhibit 5.4 Number of Households by Vehicles Available: 1980 - 2000

MSA	0 Vehicle Households			1 Vehicle Households		
	1980	1990	2000	1980	1990	2000
New York	2,590,367	2,074,032	2,216,217	2,348,895	2,279,212	2,506,498
Los Angeles	710,171	436,773	537,885	1,521,737	1,649,594	1,863,807
Chicago	708,001	486,693	450,547	1,099,715	1,051,228	1,192,183
Washington, DC	437,980	329,327	343,841	747,539	805,066	974,281
San Francisco	346,455	241,975	253,425	730,311	754,819	842,057
Philadelphia	567,943	368,303	355,220	744,681	755,717	826,723
Boston	433,929	279,997	272,748	774,725	717,044	797,053
Detroit	311,861	229,668	181,816	646,692	630,551	723,222
Dallas	178,339	95,893	115,724	367,029	525,586	678,023
Houston	231,092	110,952	127,166	388,897	495,581	598,310
Atlanta	140,951	97,661	110,401	251,895	328,864	478,587
Miami	275,895	165,276	172,514	450,209	490,145	587,659
Seattle	151,018	87,916	107,574	300,090	362,043	455,180
Phoenix	106,393	60,913	82,820	216,553	332,371	463,686
Minneapolis	120,689	86,448	91,562	276,270	299,963	359,475
Cleveland	193,396	134,639	117,223	389,208	374,946	412,898
San Diego	112,307	70,337	79,978	244,886	302,648	346,500
St. Louis	173,713	101,628	91,446	307,130	315,397	348,086
Denver	98,626	60,025	70,291	213,726	259,600	328,956
Tampa	180,368	79,324	81,670	312,043	385,903	446,199
Pittsburgh	214,207	151,751	125,087	375,351	353,498	357,546
Portland	97,743	58,647	68,456	206,318	223,332	286,801
Cincinnati	120,184	78,140	73,712	207,902	214,373	248,409
Sacramento	84,671	42,533	51,715	143,422	181,569	229,814
Kansas City	94,556	52,215	50,455	181,754	200,952	232,951
Milwaukee	103,276	80,636	75,838	212,603	203,803	233,306
Orlando	56,584	30,993	38,938	118,815	173,307	236,263
Indianapolis	80,617	46,569	44,834	163,697	179,626	214,288
San Antonio	66,229	45,746	50,367	126,287	167,614	202,271
Norfolk	77,724	50,262	50,009	147,293	170,586	191,713
Las Vegas	38,121	25,839	52,766	75,345	129,800	233,733
Columbus	76,141	46,034	46,043	160,258	173,080	212,774
Charlotte	55,044	38,132	37,877	109,273	133,933	186,381
New Orleans	125,038	84,962	77,462	169,464	174,478	195,432
Salt Lake City	36,575	21,096	24,860	88,160	102,370	121,257
Greensboro	56,090	36,432	35,707	105,901	123,975	159,797
Austin	40,071	23,352	28,048	75,607	124,374	168,160
Nashville	48,170	31,043	31,345	101,569	121,005	157,625
Providence	72,552	48,802	52,755	125,064	148,765	167,821
Raleigh	38,571	26,881	29,254	78,526	107,882	150,826
Hartford	57,698	45,128	44,777	131,580	135,625	152,303
Buffalo	103,479	75,282	67,219	187,121	171,729	179,320
Memphis	68,291	48,400	44,073	114,990	127,408	156,601
West Palm Beach	83,642	29,875	37,659	111,499	161,277	209,426
Jacksonville	60,271	32,792	32,606	99,078	122,538	154,319
Rochester	67,502	43,444	41,819	144,051	134,403	147,077
Grand Rapids	42,675	23,658	24,206	101,200	104,864	124,259
Oklahoma City	52,172	25,128	28,278	108,202	128,427	153,880
Louisville	62,653	42,460	39,079	116,507	120,819	142,898
All areas	10,250,041	6,984,012	7,265,312	16,419,068	17,731,690	20,836,634

### Exhibit 5.4 Number of Households by Vehicles Available: 1980 - 2000

MSA	2 Vehicle Households			3+ Vehicle Households		
	1980	1990	2000	1980	1990	2000
New York	1,687,924	1,936,053	2,162,171	626,768	869,289	850,378
Los Angeles	1,355,443	1,835,083	1,987,151	838,323	979,270	958,264
Chicago	886,782	1,033,599	1,203,511	308,648	397,579	455,970
Washington, DC	690,643	914,002	1,061,279	308,938	442,646	492,460
San Francisco	666,773	853,276	953,053	398,667	479,738	508,623
Philadelphia	616,995	750,380	838,550	234,168	285,742	300,226
Boston	587,359	742,105	855,329	208,420	286,280	295,398
Detroit	662,989	720,534	825,177	313,480	335,656	351,582
Dallas	410,879	628,964	809,893	252,667	257,588	303,124
Houston	408,472	537,950	670,166	226,395	194,292	243,759
Atlanta	286,166	439,390	625,438	165,013	236,663	290,445
Miami	309,337	412,991	502,341	116,079	152,385	168,705
Seattle	312,042	451,179	545,646	209,955	254,223	283,993
Phoenix	196,556	329,710	476,459	125,350	123,720	171,285
Minneapolis	287,140	398,387	485,428	141,473	175,372	200,150
Cleveland	376,585	403,092	448,177	159,298	181,736	188,501
San Diego	221,374	343,476	391,670	141,779	170,942	176,529
St. Louis	316,189	369,001	402,654	135,108	156,093	170,233
Denver	230,102	306,092	404,028	156,263	159,559	199,943
Tampa	194,192	303,924	372,603	77,455	100,330	108,844
Pittsburgh	295,460	325,816	356,954	104,189	116,183	126,913
Portland	203,345	273,528	347,046	129,885	135,595	164,172
Cincinnati	219,641	261,301	301,232	101,508	125,323	144,777
Sacramento	141,501	219,222	262,681	96,714	113,124	121,088
Kansas City	198,946	247,916	288,323	100,959	107,376	122,739
Milwaukee	194,731	226,481	253,671	73,460	90,538	95,661
Orlando	103,958	189,243	259,472	47,880	71,732	90,575
Indianapolis	178,470	210,028	257,867	81,896	93,591	112,666
San Antonio	122,832	173,590	220,317	69,666	71,552	86,991
Norfolk	145,624	204,720	231,532	60,058	85,568	104,405
Las Vegas	67,058	122,157	223,084	43,193	52,694	78,788
Columbus	163,143	205,491	248,031	71,889	88,893	103,909
Charlotte	131,169	174,108	241,354	68,581	94,497	109,681
New Orleans	144,109	159,112	175,864	55,799	51,271	56,821
Salt Lake City	104,304	146,243	180,480	77,600	77,822	105,443
Greensboro	128,800	159,053	195,901	76,563	95,333	107,346
Austin	76,653	130,764	201,865	44,322	47,505	73,782
Nashville	111,654	153,180	198,452	58,514	70,603	92,147
Providence	102,563	159,222	176,050	39,595	70,480	65,438
Raleigh	89,003	133,225	193,465	46,355	66,518	87,552
Hartford	139,853	173,470	186,726	60,811	80,907	73,601
Buffalo	136,917	156,952	168,285	46,730	57,840	53,895
Memphis	107,644	134,363	159,588	49,306	55,279	63,940
West Palm Beach	71,960	133,938	181,457	28,563	40,468	45,633
Jacksonville	89,139	136,736	176,857	39,081	51,460	61,802
Rochester	127,706	154,888	169,238	47,864	63,354	61,939
Grand Rapids	111,131	142,750	172,664	54,341	62,639	74,918
Oklahoma City	118,991	150,633	171,530	72,956	63,587	71,076
Louisville	124,927	139,436	160,693	57,309	63,649	69,380
All areas	14,655,174	18,906,754	22,381,403	7,049,834	8,504,484	9,345,490

**Exhibit 5.5 Average Vehicles Available in Households: 1990-2000**

<b>MSA</b>	<b>1990</b>	<b>2000</b>
New York	1.28	1.26
Los Angeles	1.77	1.71
Chicago	1.50	1.56
Washington, DC	1.66	1.66
San Francisco	1.76	1.76
Philadelphia	1.49	1.51
Boston	1.57	1.58
Detroit	1.68	1.71
Dallas	1.75	1.74
Houston	1.65	1.68
Atlanta	1.83	1.80
Miami	1.50	1.51
Seattle	1.85	1.81
Phoenix	1.66	1.67
Minneapolis	1.76	1.77
Cleveland	1.64	1.67
San Diego	1.78	1.75
St. Louis	1.68	1.71
Denver	1.80	1.81
Tampa	1.52	1.54
Pittsburgh	1.47	1.55
Portland	1.78	1.78
Cincinnati	1.72	1.75
Sacramento	1.80	1.75
Kansas City	1.73	1.76
Milwaukee	1.60	1.61
Orlando	1.70	1.69
Indianapolis	1.73	1.77
San Antonio	1.64	1.67
Norfolk	1.69	1.74
Las Vegas	1.67	1.61
Columbus	1.72	1.74
Charlotte	1.82	1.80
New Orleans	1.41	1.45
Salt Lake City	1.90	1.97
Greensboro	1.85	1.84
Austin	1.67	1.73
Nashville	1.77	1.80
Providence	1.66	1.60
Raleigh	1.79	1.80
Hartford	1.74	1.69
Buffalo	1.48	1.48
Memphis	1.58	1.63
West Palm Beach	1.54	1.52
Jacksonville	1.65	1.68
Rochester	1.66	1.65
Grand Rapids	1.80	1.84
Oklahoma City	1.74	1.73
Louisville	1.68	1.69

**Exhibit 5.6 Vehicle Ownership in Central County: 2000**

MSA	Total Households	Percent of Total Households			
		No Vehicle	1 Vehicle	2 Vehicles	3 or more
New York	738,644	77.5	20.2	1.8	0.5
Los Angeles	3,133,774	12.6	37.0	34.5	16.0
Chicago	1,974,181	19.1	40.4	30.3	10.2
Washington, DC	248,338	36.9	43.5	15.5	4.1
San Francisco	329,700	28.6	42.0	22.1	7.3
Philadelphia	590,071	35.7	42.0	18.0	4.2
Boston	278,722	33.2	44.7	17.7	4.4
Detroit	768,440	13.8	39.0	34.0	13.2
Dallas	807,621	8.1	40.3	38.1	13.6
Houston	1,205,516	8.7	38.9	38.8	13.6
Atlanta	321,242	15.2	38.2	34.0	12.6
Miami	776,774	14.3	38.8	33.9	13.0
Seattle	710,916	9.3	35.4	37.5	17.8
Phoenix	1,132,886	7.0	38.7	40.1	14.3
Minneapolis	456,129	10.7	36.5	39.2	13.6
Cleveland	571,457	13.7	40.0	34.5	11.8
San Diego	994,677	8.0	34.8	39.4	17.7
St. Louis	147,076	25.2	45.8	22.6	6.5
Denver	239,235	13.9	43.1	31.5	11.5
Tampa	391,357	8.1	39.9	39.7	12.3
Pittsburgh	537,150	16.2	39.4	34.3	10.0
Portland	272,098	12.7	38.4	35.2	13.7
Cincinnati	346,790	13.5	36.9	34.8	14.8
Sacramento	453,602	8.7	37.1	38.2	16.0
Kansas City	266,294	10.8	38.3	36.8	14.1
Milwaukee	377,729	16.3	41.5	32.4	9.8
Orlando	336,286	7.3	37.7	41.3	13.7
Indianapolis	352,164	9.7	40.0	36.8	13.6
San Antonio	488,942	9.6	37.2	38.6	14.6
Norfolk	86,210	17.0	41.4	31.0	10.6
Las Vegas	512,253	9.5	40.2	37.6	12.7
Columbus	438,778	8.6	38.4	39.2	13.8
Charlotte	273,416	6.9	36.2	42.0	14.9
New Orleans	188,251	27.3	42.3	24.2	6.2
Salt Lake City	295,141	6.3	29.4	41.3	23.0
Greensboro	168,667	7.8	34.9	39.2	18.1
Austin	320,766	6.8	39.3	40.3	13.5
Nashville	237,405	8.7	40.5	36.9	13.8
Providence	239,936	14.1	39.0	34.7	12.2
Raleigh	242,040	4.9	32.1	44.7	18.4
Hartford	335,098	11.2	34.7	39.5	14.5
Buffalo	380,873	15.1	38.6	35.3	11.0
Memphis	338,366	11.2	38.6	36.3	13.9
West Palm Beach	474,175	7.9	44.2	38.3	9.6
Jacksonville	303,747	9.1	38.4	39.5	13.0
Rochester	286,512	11.5	36.2	39.3	13.0
Grand Rapids	212,890	7.0	33.7	42.5	16.8
Oklahoma City	266,834	7.8	39.7	38.4	14.0
Louisville	287,012	11.3	37.5	37.7	13.5

**Exhibit 5.7 Vehicle Ownership in Suburban Counties: 2000**

MSA	Total Households	Percent of Total Households			
		No Vehicle	1 Vehicle	2 Vehicles	3 or more
New York	6,996,620	23.5	33.7	30.7	12.1
Los Angeles	2,213,333	6.5	31.9	41.0	20.6
Chicago	1,328,030	5.5	29.7	45.6	19.2
Washington, DC	2,623,523	9.6	33.0	39.0	18.4
San Francisco	2,227,458	7.1	31.6	39.5	21.8
Philadelphia	1,730,648	8.3	33.4	42.3	15.9
Boston	1,941,806	9.3	34.6	41.5	14.6
Detroit	1,313,357	5.8	32.3	42.9	19.1
Dallas	1,099,143	4.6	32.1	45.7	17.6
Houston	433,885	5.2	29.7	46.7	18.4
Atlanta	1,183,629	5.2	30.1	43.6	21.1
Miami	654,445	9.4	43.7	36.5	10.4
Seattle	681,477	6.1	29.9	40.9	23.1
Phoenix	61,364	6.6	41.0	36.5	15.8
Minneapolis	680,486	6.3	28.4	45.0	20.3
Cleveland	595,342	6.6	30.9	42.1	20.4
San Diego	0				
St. Louis	865,343	6.3	32.4	42.7	18.6
Denver	763,983	4.9	29.5	43.0	22.6
Tampa	617,959	8.1	46.9	35.1	9.8
Pittsburgh	429,350	8.8	33.9	40.3	17.0
Portland	594,377	5.7	30.7	42.3	21.4
Cincinnati	421,340	6.4	28.6	42.9	22.2
Sacramento	211,696	5.8	29.1	42.2	22.9
Kansas City	428,174	5.1	30.6	44.4	19.9
Milwaukee	280,747	5.1	27.3	46.8	20.8
Orlando	288,962	5.0	37.9	41.8	15.4
Indianapolis	277,491	3.9	26.5	46.2	23.4
San Antonio	71,004	4.8	28.4	44.7	22.0
Norfolk	491,449	7.2	31.7	41.7	19.4
Las Vegas	76,118	5.4	36.3	40.1	18.2
Columbus	171,979	4.9	25.7	44.3	25.1
Charlotte	301,877	6.3	28.9	41.9	22.9
New Orleans	317,328	8.2	36.5	41.1	14.2
Salt Lake City	136,899	4.6	25.1	42.9	27.4
Greensboro	330,084	6.8	30.6	39.3	23.3
Austin	151,089	4.1	27.9	48.0	20.1
Nashville	242,164	4.4	25.4	45.7	24.5
Providence	222,128	8.5	33.4	41.8	16.3
Raleigh	219,057	8.0	33.4	39.0	19.7
Hartford	122,309	5.9	29.4	44.4	20.3
Buffalo	87,846	11.1	36.8	38.6	13.5
Memphis	85,836	7.1	30.1	43.0	19.8
West Palm Beach	0				
Jacksonville	121,837	4.1	31.0	46.6	18.3
Rochester	133,561	6.7	32.4	42.5	18.4
Grand Rapids	183,157	5.0	28.7	44.9	21.4
Oklahoma City	157,930	4.7	30.3	43.7	21.3
Louisville	125,038	5.3	28.2	42.0	24.5

**Exhibit 5.8 Change in Percent of Households by Vehicle Availability: 1990-2000**

Name of MSA	Central County				Suburban Counties			
	0 VEH	1 VEH	2 VEH	3+ VEH	0 VEH	1 VEH	2 VEH	3+ VEH
New York	-0.4	0.0	0.1	0.2	0.0	0.6	0.8	-1.4
Los Angeles	1.4	1.2	-0.5	-2.1	1.1	1.5	-0.4	-2.2
Chicago	-3.1	1.7	1.2	0.2	-0.8	-0.1	0.9	-0.1
Washington, DC	-0.5	2.2	-1.0	-0.7	-0.9	1.7	0.0	-0.8
San Francisco	-2.1	0.4	1.1	0.7	-0.2	0.6	0.5	-0.9
Philadelphia	-2.4	1.5	0.4	0.4	-0.6	0.6	0.9	-1.0
Boston	-3.3	2.7	0.6	0.0	-1.1	0.2	1.9	-1.0
Detroit	-6.2	3.3	2.9	-0.1	-0.7	1.2	0.8	-1.4
Dallas	-0.1	2.0	-0.5	-1.4	-0.2	0.2	1.3	-1.3
Houston	-0.2	0.1	-0.1	0.2	-1.1	-1.3	2.2	0.2
Atlanta	-4.2	2.8	3.3	-1.9	-0.5	1.9	1.0	-2.5
Miami	-1.7	1.6	0.7	-0.6	-1.0	-0.2	1.8	-0.6
Seattle	0.3	2.6	-0.4	-2.5	0.0	0.2	0.6	-0.8
Phoenix	-0.2	-0.6	1.0	-0.3	-1.8	2.2	0.3	-0.8
Minneapolis	-1.1	2.4	0.1	-1.4	-0.5	-0.6	1.7	-0.5
Cleveland	-3.2	2.4	1.3	-0.5	-0.9	0.2	1.5	-0.8
San Diego	0.1	0.7	0.7	-1.5				
St. Louis	-4.0	2.8	0.8	0.4	-0.6	1.0	-0.2	-0.2
Denver	-2.2	0.7	1.6	-0.2	0.3	-0.1	0.7	-0.9
Tampa	-0.6	1.4	0.6	-1.4	-1.3	-1.0	2.7	-0.4
Pittsburgh	-3.1	0.5	2.7	0.0	-2.7	-1.2	2.2	1.8
Portland	-1.0	1.1	0.1	-0.3	0.0	1.0	0.3	-1.3
Cincinnati	-2.0	2.3	-0.3	0.0	-1.2	0.1	1.0	0.1
Sacramento	0.3	2.5	-0.6	-2.2	0.0	1.2	1.5	-2.7
Kansas City	-1.9	1.5	0.7	-0.4	-0.6	0.2	0.4	0.0
Milwaukee	-2.2	2.7	-0.1	-0.3	0.0	1.5	0.7	-2.2
Orlando	-0.2	0.8	0.4	-1.0	-0.7	0.2	1.4	-0.8
Indianapolis	-1.5	1.4	-0.3	0.4	-1.3	-0.3	2.7	-1.0
San Antonio	-0.8	-0.1	1.2	-0.3	-1.6	-2.0	3.2	0.5
Norfolk	-0.7	-0.2	0.3	0.6	-1.0	0.1	-0.4	1.2
Las Vegas	1.2	0.3	1.2	-2.7	0.8	1.1	-0.7	-1.3
Columbus	-1.6	2.4	0.1	-0.9	-0.8	-1.4	1.6	0.5
Charlotte	-2.0	2.8	1.9	-2.7	-2.1	1.1	2.9	-1.8
New Orleans	-4.2	2.6	1.6	0.0	-0.9	1.1	-0.3	0.2
Salt Lake City	-0.4	-1.7	0.1	2.1	0.0	-0.4	-1.3	1.8
Greensboro	-1.8	3.0	0.8	-2.0	-1.5	1.7	1.0	-1.2
Austin	-1.0	-1.8	1.8	0.9	-1.5	-3.0	3.8	0.7
Nashville	-1.7	2.6	-0.6	-0.3	-1.2	0.2	1.0	0.0
Providence	0.6	1.6	0.0	-2.3	-0.6	1.5	1.6	-2.5
Raleigh	-1.4	0.4	2.5	-1.4	-1.8	0.6	1.4	-0.3
Hartford	-0.7	2.3	1.0	-2.6	0.0	1.9	0.6	-2.5
Buffalo	-1.9	1.4	1.7	-1.1	-2.0	-0.3	3.0	-0.7
Memphis	-2.7	2.6	0.1	-0.1	-3.0	1.2	3.1	-1.2
West Palm Beach	-0.2	0.0	1.6	-1.4				
Jacksonville	-1.8	1.4	1.0	-0.5	-1.4	-0.7	3.1	-1.1
Rochester	-1.2	1.6	1.3	-1.7	-0.4	-0.1	0.9	-0.4
Grand Rapids	-0.9	0.7	0.2	0.1	-1.0	-0.8	1.6	0.1
Oklahoma City	0.0	2.1	-1.2	-0.9	-0.4	0.3	0.3	-0.2
Louisville	-2.1	2.4	1.0	-1.3	-1.5	0.7	0.4	0.4



## Chapter 6

# PLACE OF WORK AND COMMUTING FLOWS

This section provides an exploratory analysis for place of work and worker flow changes for major MSAs from 1990 – 2000, specifically the growth in suburban commuting. The data on place of work were obtained in the decennial census from individuals who worked during the reference week and include civilian workers and members of the Armed Forces. People who were absent from work due to vacation or illness are not included; and people who were working “out of town” had their place of work coded to the temporary workplace location.

One of the strengths of decennial census data is the availability of journey-to-work flows at a very detailed level of geography. However, at the time of this report only the county-to-county worker flows were available. Due to the difficulties of reconciling geographic definitions over time for New York, Boston, Providence, and Hartford, these areas were not included.

### Overall Trends

No over-arching pattern of growth existed for all of the major MSAs—some were fast growing, some slow; some were sprawling, some retained centrality of employment centers; the very large and the smaller MSAs had some things in common and some differences. No single analysis or one story told the tale of what is happening in our major metropolitan areas, except for the huge growth in suburban commuting.

In some cases the growth of population, workers, and jobs in suburban counties may simply reflect the fact that central counties were saturated and new development to accommodate growth was built in less dense areas. The workers who commute to suburban locations often are commuting within their own suburban county. Most areas, except for West Palm Beach and San Diego, saw no change or a small decline in the proportion of workers who counter-commute (live in the Central area and work in a Suburban area).

Some older, established areas saw large declines in central-to-central commutes and traditional commutes from suburban areas to central, notably Philadelphia and St. Louis. Regardless of these declines, every MSA had a large proportion of the workers in the MSA commuting to the Central County, ranging from 96.5 percent in San Diego (where the central county is the entire MSA) to 31.2 percent for Denver.

Exhibits 6.1 and 6.2 show the change in central-to-central, central-to-suburban, suburban-to-central, and suburban-to-suburban work commutes between 1990 and 2000. Only two areas lost workers, Los Angeles had approximately 41,000 fewer workers in 2000 than in 1990<sup>1</sup>, and Buffalo lost about 11,000.

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<sup>1</sup> Some analysts in California and Los Angeles have conveyed their concern to the Census Bureau that this decrease in total workers from decennial census results are inconsistent with local knowledge and have asked the Census Bureau to conduct further research.

**Exhibit 6.1 Journey to Work Flows, Share of Commuters: 1990-2000**

MSA	1990 Total Workers	2000 Total Workers	Percent change in workers	Central - Central County			Central - Suburban County		
				1990	2000	Change	1990	2000	Change
Los Angeles	6,809,043	6,767,619	-0.6	56.9	52.8	-4.0	3.0	3.6	0.5
Chicago	3,922,295	4,218,108	7.5	54.8	49.3	-5.5	5.3	6.5	1.2
Washington, DC	3,611,094	3,839,052	6.3	6.6	5.0	-1.6	1.8	1.7	0.0
San Francisco	3,200,833	3,432,157	7.2	9.6	9.4	-0.2	2.2	2.7	0.5
Philadelphia	2,784,581	2,815,405	1.1	18.4	15.3	-3.2	4.2	4.6	0.4
Detroit	2,294,108	2,482,457	8.2	27.6	24.9	-2.7	8.0	8.1	0.2
Dallas	2,038,398	2,527,648	24.0	41.9	35.8	-6.1	3.8	4.7	0.9
Houston	1,768,567	2,081,607	17.7	73.2	68.1	-5.1	2.5	3.7	1.2
Atlanta	1,542,948	2,060,632	33.6	14.3	12.9	-1.4	5.8	5.4	-0.3
Miami	1,476,085	1,642,866	11.3	57.2	50.1	-7.1	2.1	3.7	1.5
Seattle	1,499,734	1,776,224	18.4	50.1	47.8	-2.2	3.1	3.0	-0.1
Phoenix	1,036,017	1,466,434	41.5	94.4	94.2	-0.1	0.5	0.5	0.1
Minneapolis	1,344,797	1,595,550	18.6	35.6	31.6	-3.9	5.7	6.0	0.3
Cleveland	1,282,092	1,375,774	7.3	44.7	41.1	-3.6	2.8	3.6	0.8
San Diego	1,230,446	1,299,503	5.6	96.6	96.5	-0.1			
St. Louis	1,166,023	1,238,964	6.3	8.9	6.7	-2.3	4.6	4.6	0.0
Denver	1,026,847	1,346,025	31.1	15.3	13.1	-2.1	7.0	7.3	0.2
Tampa	914,711	1,063,957	16.3	40.9	39.5	-1.4	2.3	3.0	0.7
Pittsburgh	1,023,825	1,057,354	3.3	54.3	50.8	-3.5	2.8	3.3	0.5
Portland	861,141	1,105,133	28.3	26.9	23.8	-3.1	6.0	6.2	0.2
Cincinnati	844,125	951,709	12.7	42.2	35.3	-6.9	4.2	5.8	1.6
Sacramento	685,945	799,989	16.6	61.9	56.7	-5.3	5.4	7.3	1.9
Kansas City	778,624	881,258	13.2	31.2	26.5	-4.7	7.4	8.3	0.9
Milwaukee	772,752	816,880	5.7	49.0	42.3	-6.8	7.0	9.0	2.0
Orlando	614,382	786,243	28.0	51.7	47.9	-3.8	4.8	6.5	1.7
Indianapolis	683,007	795,755	16.5	53.2	46.3	-7.0	3.8	6.1	2.3
San Antonio	578,529	698,685	20.8	86.8	83.3	-3.6	0.6	1.4	0.8
Norfolk	720,890	760,401	5.5	14.0	9.8	-4.2	3.7	4.4	0.7
Las Vegas	416,025	702,535	68.9	87.0	88.3	1.3	1.1	0.4	-0.7
Columbus	663,006	777,922	17.3	70.0	65.4	-4.6	1.8	3.2	1.4
Charlotte	604,856	751,629	24.3	42.8	43.8	1.0	1.9	2.9	1.0
New Orleans	531,697	570,423	7.3	28.5	25.9	-2.7	6.1	6.7	0.6
Salt Lake City	479,338	642,688	34.1	63.9	64.0	0.0	2.5	1.6	-0.8
Greensboro	550,325	618,921	12.5	30.4	30.2	-0.1	2.4	3.0	0.7
Austin	431,345	649,645	50.6	66.7	60.9	-5.8	2.1	4.5	2.4
Nashville	495,717	621,221	25.3	48.4	40.1	-8.3	3.5	5.0	1.5
Raleigh	461,516	617,475	33.8	43.6	44.1	0.5	6.3	8.8	2.5
Buffalo	531,122	520,350	-2.0	77.1	76.3	-0.8	2.4	2.7	0.2
Memphis	458,534	511,111	11.5	79.9	75.0	-4.9	1.8	2.2	0.4
West Palm Beach	380,260	475,572	25.1	90.2	88.7	-1.5			
Jacksonville	443,882	527,718	18.9	70.9	66.2	-4.7	2.3	3.0	0.7
Rochester	509,733	516,814	1.4	65.8	63.6	-2.3	1.6	2.4	0.8
Grand Rapids	442,228	531,924	20.3	50.9	48.6	-2.2	2.3	3.0	0.7
Oklahoma City	450,122	509,262	13.1	58.9	55.6	-3.3	2.3	3.2	0.9
Louisville	442,933	492,821	11.3	65.6	61.6	-4.0	2.6	3.1	0.5

**Exhibit 6.1 Journey to Work Flows, Share of Commuters: 1990-2000**

MSA	Suburban-Central County			Suburban - Same Suburban County			Suburban - Different Suburban County		
	1990	2000	Change	1990	2000	Change	1990	2000	Change
Los Angeles	6.3	5.9	-0.4	30.0	32.9	3.0	2.7	3.2	0.5
Chicago	10.1	10.4	0.3	23.9	25.8	1.9	4.8	6.5	1.8
Washington, DC	13.2	12.1	-1.1	45.7	45.4	-0.3	31.2	33.9	2.7
San Francisco	7.8	7.4	-0.4	64.1	62.4	-1.7	14.9	16.7	1.8
Philadelphia	8.4	7.8	-0.7	48.6	49.7	1.1	15.6	17.6	1.9
Detroit	9.2	8.8	-0.5	43.7	44.1	0.4	9.5	11.9	2.4
Dallas	14.1	16.4	2.4	34.5	35.6	1.1	3.8	5.4	1.6
Houston	9.4	11.9	2.6	12.7	13.5	0.8	0.7	0.9	0.3
Atlanta	21.3	20.5	-0.8	37.3	37.9	0.7	18.9	20.5	1.5
Miami	5.2	7.0	1.8	31.9	34.4	2.5			
Seattle	10.0	11.6	1.6	33.3	33.5	0.2	1.8	2.2	0.5
Phoenix	0.8	1.4	0.6	2.8	2.5	-0.4			
Minneapolis	15.8	17.5	1.7	28.4	28.0	-0.4	12.6	14.6	2.0
Cleveland	11.4	12.1	0.6	34.0	35.1	1.1	4.4	5.5	1.1
San Diego									
St. Louis	17.5	13.9	-3.7	51.7	53.9	2.2	15.4	19.1	3.7
Denver	20.6	18.1	-2.6	40.8	41.1	0.3	14.3	17.9	3.6
Tampa	5.5	7.5	2.0	45.2	43.3	-1.9	3.0	3.6	0.6
Pittsburgh	10.0	11.5	1.5	27.0	27.8	0.8	2.2	3.1	0.9
Portland	16.2	14.6	-1.7	41.4	44.3	2.9	7.3	9.0	1.7
Cincinnati	17.8	17.5	-0.3	24.1	26.3	2.2	7.5	10.7	3.2
Sacramento	8.5	9.0	0.5	17.9	20.0	2.1	0.7	1.1	0.4
Kansas City	15.1	14.1	-1.0	33.0	35.8	2.8	11.0	12.9	1.9
Milwaukee	12.0	12.7	0.6	26.6	28.8	2.2	2.5	3.6	1.1
Orlando	16.1	17.2	1.1	23.4	23.7	0.4	0.7	1.3	0.6
Indianapolis	16.6	18.8	2.2	21.1	21.8	0.6	2.1	3.6	1.4
San Antonio	3.4	4.7	1.3	5.7	5.9	0.2	0.8	1.1	0.3
Norfolk	14.8	13.9	-0.9	41.8	41.6	-0.2	22.4	26.6	4.2
Las Vegas	1.7	2.0	0.3	8.6	7.6	-1.0	0.0	0.0	0.0
Columbus	10.3	13.0	2.7	14.1	13.8	-0.2	0.7	0.9	0.2
Charlotte	12.0	14.1	2.1	35.3	30.3	-5.0	3.6	3.8	0.2
New Orleans	17.6	15.8	-1.8	37.8	39.9	2.1	7.3	8.6	1.3
Salt Lake City	5.8	6.3	0.5	19.6	19.6	0.0	4.9	4.9	0.0
Greensboro	8.9	9.7	0.9	46.7	43.3	-3.4	6.9	8.0	1.2
Austin	14.2	16.1	2.0	13.2	15.0	1.7	0.6	0.8	0.2
Nashville	17.4	20.0	2.6	25.5	27.8	2.2	2.2	3.7	1.5
Raleigh	6.4	8.9	2.5	32.7	26.7	-6.0	5.7	6.2	0.5
Buffalo	4.6	5.9	1.3	13.4	12.5	-0.9		0.0	
Memphis	8.6	10.7	2.1	7.8	8.7	0.9	0.1	0.2	0.1
West Palm Beach									
Jacksonville	10.3	12.3	1.9	12.7	14.5	1.8	0.2	0.4	0.2
Rochester	9.5	10.2	0.7	18.5	18.7	0.2	1.6	2.0	0.3
Grand Rapids	7.7	8.1	0.3	30.4	29.6	-0.8	5.0	6.8	1.8
Oklahoma City	17.3	17.6	0.3	17.6	19.2	1.6	1.1	1.7	0.5
Louisville	12.1	13.3	1.2	13.1	13.9	0.8	3.0	4.2	1.2

**Exhibit 6.2 Changes in Commuter Flows: 1990-2000**

MSA	C-C Workers	C-S Workers	C-Outside MSA	S-C	S-S (Same County)	S-S (Different County)	S-Outside MSA
Los Angeles	-295,904	35,963	3,443	-27,122	187,646	35,269	19,281
Chicago	-69,800	68,132	3,205	43,349	152,734	88,484	9,709
Washington, DC	-46,168	2,631	-7	-12,074	93,020	175,699	14,857
San Francisco	14,609	21,020	615	4,089	89,920	95,489	5,582
Philadelphia	-83,500	12,586	98	-16,187	46,238	59,444	12,145
Detroit	-15,010	18,975	726	5,951	92,847	76,695	8,165
Dallas	50,286	42,262	3,085	128,663	197,050	58,268	9,636
Houston	122,384	32,479	4,534	82,550	57,394	7,703	5,996
Atlanta	44,561	22,815	2,700	94,021	206,534	129,362	17,691
Miami	-21,080	28,535	3,872	37,759	94,217		23,478
Seattle	98,739	7,239	-83	56,226	95,100	13,453	5,816
Phoenix	404,084	2,861	3,002	11,630	6,789		2,051
Minneapolis	26,291	19,135	1,060	66,551	65,250	63,793	8,673
Cleveland	-7,752	14,098	-1,022	19,289	47,017	19,637	2,415
San Diego	65,632		3,425				
St. Louis	-21,701	3,647	302	-32,617	64,661	56,701	1,948
Denver	20,122	25,450	1,640	31,256	134,136	94,267	12,307
Tampa	46,039	11,295	2,469	29,628	47,246	10,928	1,641
Pittsburgh	-19,111	6,549	-481	18,996	17,785	10,156	-365
Portland	30,880	16,716	986	21,310	132,906	36,661	4,533
Cincinnati	-20,153	19,375	-163	16,463	47,263	38,535	6,264
Sacramento	28,540	21,632	3,817	13,923	36,849	3,970	5,313
Kansas City	-9,501	15,230	208	6,302	58,652	27,974	3,769
Milwaukee	-33,727	19,822	2,076	10,598	29,745	9,895	5,719
Orlando	59,216	21,281	2,555	36,349	42,982	5,696	3,782
Indianapolis	4,643	22,621	750	36,278	28,958	13,922	5,576
San Antonio	79,415	6,292	5,547	13,128	8,519	3,095	4,160
Norfolk	-26,249	7,076	707	-773	15,330	40,636	2,784
Las Vegas	258,552	-1,927	3,483	7,102	17,756	-8	1,552
Columbus	44,291	13,245	3,814	33,085	14,478	2,628	3,375
Charlotte	70,555	10,288	4,921	33,672	14,136	6,444	6,757
New Orleans	-4,246	5,970	53	-3,361	26,638	10,496	3,176
Salt Lake City	104,750	-1,369	6,008	12,515	32,010	7,961	1,475
Greensboro	19,930	5,683	1,613	11,363	10,943	11,853	7,211
Austin	107,989	20,157	2,009	43,744	40,056	2,739	1,606
Nashville	8,968	13,819	1,510	37,706	45,952	12,332	5,217
Raleigh	71,205	25,271	4,945	25,324	13,994	11,791	3,429
Buffalo	-12,560	908	578	6,412	-6,104		-6
Memphis	16,960	2,996	2,971	15,481	8,924	323	4,922
West Palm Beach	78,711		16,601				
Jacksonville	34,685	5,673	782	18,888	20,282	1,259	2,267
Rochester	-7,027	4,179	779	4,527	2,584	1,802	237
Grand Rapids	33,806	5,786	1,745	8,750	23,231	13,947	2,431
Oklahoma City	18,024	5,922	-95	11,759	18,483	3,252	1,795
Louisville	13,060	3,780	915	12,068	10,668	7,614	1,783

**Exhibit 6.3 Place of Work - Workers Living in Central Counties: 1990**

MSA	Total Workers	Work in Central County		Work in Suburban County		Work Outside MSA	
		Number	Percent	Number	Percent	Number	Percent
Los Angeles	4,115,248	3,872,310	94.1	206,638	5.0	36,300	0.9
Chicago	2,369,624	2,147,598	90.6	206,035	8.7	15,991	0.7
Washington	304,428	236,734	77.8	64,526	21.2	3,168	1.0
San Francisco	382,309	307,400	80.4	71,702	18.8	3,207	0.8
Philadelphia	640,577	513,167	80.1	117,316	18.3	10,094	1.6
Detroit	822,620	633,415	77.0	182,588	22.2	6,617	0.8
Dallas	943,146	855,094	90.7	77,736	8.2	10,316	1.1
Houston	1,356,196	1,294,782	95.5	44,480	3.3	16,934	1.2
Atlanta	315,366	221,309	70.2	88,976	28.2	5,081	1.6
Miami	887,996	844,722	95.1	31,561	3.6	11,713	1.3
Seattle	805,782	750,970	93.2	45,910	5.7	8,902	1.1
Phoenix	996,495	977,648	98.1	4,890	0.5	13,957	1.4
Minneapolis	561,081	478,582	85.3	76,518	13.6	5,981	1.1
Cleveland	617,552	573,657	92.9	35,887	5.8	8,008	1.3
San Diego	1,230,446	1,187,997	96.6	0	0.0	42,449	3.4
St. Louis	158,499	104,181	65.7	53,087	33.5	1,231	0.8
Denver	231,503	156,628	67.7	72,165	31.2	2,710	1.2
Tampa	410,950	373,741	90.9	20,980	5.1	16,229	3.9
Pittsburgh	595,405	555,766	93.3	28,546	4.8	11,093	1.9
Portland	286,600	231,766	80.9	52,065	18.2	2,769	1.0
Cincinnati	399,406	356,399	89.2	35,458	8.9	7,549	1.9
Sacramento	482,321	424,777	88.1	36,800	7.6	20,744	4.3
Kansas City	304,852	242,909	79.7	57,715	18.9	4,228	1.4
Milwaukee	439,449	378,890	86.2	54,012	12.3	6,547	1.5
Orlando	356,271	317,493	89.1	29,608	8.3	9,170	2.6
Indianapolis	396,584	363,631	91.7	25,815	6.5	7,138	1.8
San Antonio	516,606	502,381	97.2	3,304	0.6	10,921	2.1
Norfolk	130,549	100,821	77.2	26,673	20.4	3,055	2.3
Las Vegas	371,128	361,948	97.5	4,715	1.3	4,465	1.2
Columbus	487,305	464,102	95.2	11,747	2.4	11,456	2.4
Charlotte	277,227	258,943	93.4	11,456	4.1	6,828	2.5
New Orleans	186,926	151,738	81.2	32,274	17.3	2,914	1.6
Salt Lake City	329,238	306,533	93.1	11,823	3.6	10,882	3.3
Greensboro	185,853	167,220	90.0	13,149	7.1	5,484	3.0
Austin	302,909	287,911	95.0	9,124	3.0	5,874	1.9
Nashville	261,683	239,898	91.7	17,331	6.6	4,454	1.7
Raleigh	237,181	201,227	84.8	28,985	12.2	6,969	2.9
Buffalo	432,883	409,439	94.6	12,976	3.0	10,468	2.4
Memphis	379,633	366,238	96.5	8,085	2.1	5,310	1.4
West Palm Beach	380,260	343,100	90.2	0	0.0	37,160	9.8
Jacksonville	333,152	314,868	94.5	10,271	3.1	8,013	2.4
Rochester	347,088	335,539	96.7	8,002	2.3	3,547	1.0
Grand Rapids	242,899	224,893	92.6	10,186	4.2	7,820	3.2
Oklahoma City	281,207	265,081	94.3	10,468	3.7	5,658	2.0
Louisville	311,336	290,564	93.3	11,689	3.8	9,083	2.9

**Exhibit 6.4 Place of Work - Workers Living in Central Counties: 2000**

MSA	Total Workers	Work in Central County		Work in Suburban County		Work outside MSA	
		Number	Percent	Number	Percent	Number	Percent
Los Angeles	3,858,750	3,576,406	92.7	242,601	6.3	39,743	1.0
Chicago	2,371,161	2,077,798	87.6	274,167	11.6	19,196	0.8
Washington, DC	260,884	190,566	73.0	67,157	25.7	3,161	1.2
San Francisco	418,553	322,009	76.9	92,722	22.2	3,822	0.9
Philadelphia	569,761	429,667	75.4	129,902	22.8	10,192	1.8
Detroit	827,311	618,405	74.7	201,563	24.4	7,343	0.9
Dallas	1,038,779	905,380	87.2	119,998	11.6	13,401	1.3
Houston	1,515,593	1,417,166	93.5	76,959	5.1	21,468	1.4
Atlanta	385,442	265,870	69.0	111,791	29.0	7,781	2.0
Miami	899,323	823,642	91.6	60,096	6.7	15,585	1.7
Seattle	911,677	849,709	93.2	53,149	5.8	8,819	1.0
Phoenix	1,406,442	1,381,732	98.2	7,751	0.6	16,959	1.2
Minneapolis	607,567	504,873	83.1	95,653	15.7	7,041	1.2
Cleveland	622,876	565,905	90.9	49,985	8.0	6,986	1.1
San Diego	1,299,503	1,253,629	96.5			45,874	3.5
St. Louis	140,747	82,480	58.6	56,734	40.3	1,533	1.1
Denver	278,715	176,750	63.4	97,615	35.0	4,350	1.6
Tampa	470,753	419,780	89.2	32,275	6.9	18,698	4.0
Pittsburgh	582,362	536,655	92.2	35,095	6.0	10,612	1.8
Portland	335,182	262,646	78.4	68,781	20.5	3,755	1.1
Cincinnati	398,465	336,246	84.4	54,833	13.8	7,386	1.9
Sacramento	536,310	453,317	84.5	58,432	10.9	24,561	4.6
Kansas City	310,789	233,408	75.1	72,945	23.5	4,436	1.4
Milwaukee	427,620	345,163	80.7	73,834	17.3	8,623	2.0
Orlando	439,323	376,709	85.7	50,889	11.6	11,725	2.7
Indianapolis	424,598	368,274	86.7	48,436	11.4	7,888	1.9
San Antonio	607,860	581,796	95.7	9,596	1.6	16,468	2.7
Norfolk	112,083	74,572	66.5	33,749	30.1	3,762	3.4
Las Vegas	631,236	620,500	98.3	2,788	0.4	7,948	1.3
Columbus	548,655	508,393	92.7	24,992	4.6	15,270	2.8
Charlotte	362,991	329,498	90.8	21,744	6.0	11,749	3.2
New Orleans	188,703	147,492	78.2	38,244	20.3	2,967	1.6
Salt Lake City	438,627	411,283	93.8	10,454	2.4	16,890	3.9
Greensboro	213,079	187,150	87.8	18,832	8.8	7,097	3.3
Austin	433,064	395,900	91.4	29,281	6.8	7,883	1.8
Nashville	285,980	248,866	87.0	31,150	10.9	5,964	2.1
Raleigh	338,602	272,432	80.5	54,256	16.0	11,914	3.5
Buffalo	421,809	396,879	94.1	13,884	3.3	11,046	2.6
Memphis	402,560	383,198	95.2	11,081	2.8	8,281	2.1
West Palm Beach	475,572	421,811	88.7			53,761	11.3
Jacksonville	374,292	349,553	93.4	15,944	4.3	8,795	2.3
Rochester	345,019	328,512	95.2	12,181	3.5	4,326	1.3
Grand Rapids	284,236	258,699	91.0	15,972	5.6	9,565	3.4
Oklahoma City	305,058	283,105	92.8	16,390	5.4	5,563	1.8
Louisville	329,091	303,624	92.3	15,469	4.7	9,998	3.0

Exhibit 6.3 and 6.4 show the place of work in 1990 and 2000 for workers who lived in the central county. St. Louis, Denver and Norfolk have significant counter-commutes from the central county. As mentioned earlier, St. Louis saw a decline in traditional commutes from central to downtown.

Exhibits 6.5 and 6.6 show the place of work in 1990 and 2000 for workers living in suburban counties.

**Exhibit 6.5 Place of Work - Workers Living in Suburban Counties: 1990**

MSA	Work in Central County		Work in the Same Suburban County		Work in another Suburban County		Work Outside MSA	
	Number	pct.	Number	pct.	Number	pct.	Number	pct.
Los Angeles	429,013	15.9	2,040,222	75.7	181,485	6.7	43,075	1.6
Chicago	395,014	25.4	936,279	60.3	187,630	12.1	33,748	2.2
Washington, DC	478,418	14.5	1,649,177	49.9	1,126,011	34.1	53,060	1.6
San Francisco	248,517	8.8	2,052,514	72.8	477,256	16.9	40,237	1.4
Philadelphia	234,717	10.9	1,354,086	63.2	435,215	20.3	119,986	5.6
Detroit	211,457	14.4	1,002,549	68.1	219,040	14.9	38,442	2.6
Dallas	286,827	26.2	703,704	64.3	77,689	7.1	27,032	2.5
Houston	165,639	40.2	224,373	54.4	11,683	2.8	10,676	2.6
Atlanta	328,035	26.7	575,032	46.8	292,080	23.8	32,435	2.6
Miami	77,285	13.1	471,595	80.2	0	0.0	39,209	6.7
Seattle	150,353	21.7	499,955	72.0	26,428	3.8	17,216	2.5
Phoenix	8,288	21.0	29,172	73.8	0	0.0	2,062	5.2
Minneapolis	212,741	27.1	382,095	48.8	169,500	21.6	19,380	2.5
Cleveland	146,681	22.1	435,416	65.5	56,574	8.5	25,869	3.9
San Diego								
St. Louis	204,594	20.3	603,401	59.9	180,131	17.9	19,398	1.9
Denver	211,991	26.7	419,295	52.7	146,510	18.4	17,548	2.2
Tampa	49,923	9.9	413,211	82.0	27,438	5.4	13,189	2.6
Pittsburgh	102,685	24.0	276,059	64.4	22,977	5.4	26,699	6.2
Portland	139,911	24.4	356,283	62.0	62,955	11.0	15,392	2.7
Cincinnati	150,232	33.8	203,166	45.7	63,651	14.3	27,670	6.2
Sacramento	58,235	28.6	122,931	60.4	4,939	2.4	17,519	8.6
Kansas City	117,574	24.8	257,168	54.3	85,903	18.1	13,127	2.8
Milwaukee	92,738	27.8	205,271	61.6	19,411	5.8	15,883	4.8
Orlando	98,620	38.2	143,569	55.6	4,453	1.7	11,469	4.4
Indianapolis	113,041	39.5	144,145	50.3	14,548	5.1	14,689	5.1
San Antonio	19,499	31.5	32,794	53.0	4,454	7.2	5,176	8.4
Norfolk	106,404	18.0	301,151	51.0	161,415	27.3	21,371	3.6
Las Vegas	7,090	15.8	35,667	79.4	8	0.0	2,132	4.7
Columbus	68,171	38.8	93,163	53.0	4,511	2.6	9,856	5.6
Charlotte	72,408	22.1	213,698	65.2	21,771	6.6	19,752	6.0
New Orleans	93,705	27.2	201,095	58.3	38,676	11.2	11,295	3.3
Salt Lake City	27,761	18.5	93,869	62.5	23,574	15.7	4,896	3.3
Greensboro	48,894	13.4	256,894	70.5	37,949	10.4	20,735	5.7
Austin	61,094	47.6	57,125	44.5	2,614	2.0	7,603	5.9
Nashville	86,320	36.9	126,507	54.1	10,774	4.6	10,433	4.5
Raleigh	29,535	13.2	151,082	67.3	26,368	11.8	17,350	7.7
Buffalo	24,279	24.7	71,347	72.6	0	0.0	2,613	2.7
Memphis	39,259	49.8	35,675	45.2	621	0.8	3,346	4.2
West Palm Beach								
Jacksonville	45,795	41.4	56,426	51.0	1,017	0.9	7,492	6.8
Rochester	48,348	29.7	94,258	58.0	8,324	5.1	11,715	7.2
Grand Rapids	34,096	17.1	134,382	67.4	22,175	11.1	8,676	4.4
Oklahoma City	77,876	46.1	79,162	46.9	5,154	3.1	6,723	4.0
Louisville	53,506	40.7	57,935	44.0	13,323	10.1	6,833	5.2



**Table 6.6 Place of Work - Workers Living in Suburban County: 2000**

MSA	Work in Central County		Work in the same Suburban County		Work in different Suburban County		Worked outside MSA	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Los Angeles	401,891	13.8	2,227,868	76.6	216,754	7.5	62,356	2.1
Chicago	438,363	23.7	1,089,013	59.0	276,114	14.9	43,457	2.4
Washington, DC	466,344	13.0	1,742,197	48.7	1,301,710	36.4	67,917	1.9
San Francisco	252,606	8.4	2,142,434	71.1	572,745	19.0	45,819	1.5
Philadelphia	218,530	9.7	1,400,324	62.4	494,659	22.0	132,131	5.9
Detroit	217,408	13.1	1,095,396	66.2	295,735	17.9	46,607	2.8
Dallas	415,490	27.9	900,754	60.5	135,957	9.1	36,668	2.5
Houston	248,189	43.8	281,767	49.8	19,386	3.4	16,672	2.9
Atlanta	422,056	25.2	781,566	46.7	421,442	25.2	50,126	3.0
Miami	115,044	15.5	565,812	76.1	0	0.0	62,687	8.4
Seattle	206,579	23.9	595,055	68.8	39,881	4.6	23,032	2.7
Phoenix	19,918	33.2	35,961	59.9	0	0.0	4,113	6.9
Minneapolis	279,292	28.3	447,345	45.3	233,293	23.6	28,053	2.8
Cleveland	165,970	22.0	482,433	64.1	76,211	10.1	28,284	3.8
San Diego			0			0.0	0	0.0
St. Louis	171,977	15.7	668,062	60.8	236,832	21.6	21,346	1.9
Denver	243,247	22.8	553,431	51.9	240,777	22.6	29,855	2.8
Tampa	79,551	13.4	460,457	77.6	38,366	6.5	14,830	2.5
Pittsburgh	121,681	25.6	293,844	61.9	33,133	7.0	26,334	5.5
Portland	161,221	20.9	489,189	63.5	99,616	12.9	19,925	2.6
Cincinnati	166,695	30.1	250,429	45.3	102,186	18.5	33,934	6.1
Sacramento	72,158	27.4	159,780	60.6	8,909	3.4	22,832	8.7
Kansas City	123,876	21.7	315,820	55.4	113,877	20.0	16,896	3.0
Milwaukee	103,336	26.5	235,016	60.4	29,306	7.5	21,602	5.5
Orlando	134,969	38.9	186,551	53.8	10,149	2.9	15,251	4.4
Indianapolis	149,319	40.2	173,103	46.6	28,470	7.7	20,265	5.5
San Antonio	32,627	35.9	41,313	45.5	7,549	8.3	9,336	10.3
Norfolk	105,631	16.3	316,481	48.8	202,051	31.2	24,155	3.7
Las Vegas	14,192	19.9	53,423	74.9	0	0.0	3,684	5.2
Columbus	101,256	44.2	107,641	47.0	7,139	3.1	13,231	5.8
Charlotte	106,080	27.3	227,834	58.6	28,215	7.3	26,509	6.8
New Orleans	90,344	23.7	227,733	59.7	49,172	12.9	14,471	3.8
Salt Lake City	40,276	19.7	125,879	61.7	31,535	15.5	6,371	3.1
Greensboro	60,257	14.8	267,837	66.0	49,802	12.3	27,946	6.9
Austin	104,838	48.4	97,181	44.9	5,353	2.5	9,209	4.3
Nashville	124,026	37.0	172,459	51.4	23,106	6.9	15,650	4.7
Raleigh	54,859	19.7	165,076	59.2	38,159	13.7	20,779	7.5
Buffalo	30,691	31.1	65,243	66.2	0	0.0	2,607	2.6
Memphis	54,740	50.4	44,599	41.1	944	0.9	8,268	7.6
West Palm Beach		0.0	0	0.0	0	0.0	0	0.0
Jacksonville	64,683	42.2	76,708	50.0	2,276	1.5	9,759	6.4
Rochester	52,875	30.8	96,842	56.4	10,126	5.9	11,952	7.0
Grand Rapids	42,846	17.3	157,613	63.6	36,122	14.6	11,107	4.5
Oklahoma City	89,635	43.9	97,645	47.8	8,406	4.1	8,518	4.2
Louisville	65,574	40.1	68,603	41.9	20,937	12.8	8,616	5.3

## Case Studies

A more detailed analysis and a longer time frame (going back to the 1970 census or earlier where possible) was used to examine a few MSAs to illustrate different patterns of development and commuting changes. Analyzing these MSAs and the county-to-county worker flow was a challenge, especially from a national perspective. Local knowledge of housing and development patterns, and intricate familiarity with infrastructure and location differences was not available.

These county-level data allow examination of how employment and residential patterns in regions are changing, such as the diffusion or centrality of regional employment centers and residential shifts to outer counties. Because county-size, especially in the Western States, can be very large, county level analysis is limited. The example areas are:

- Atlanta,
- Chicago,
- Portland,
- Minneapolis, and
- Denver

These areas were selected to examine a range of development patterns, growth scenarios, and transit availability. Based on guidance received from local (MPO) planners each of the MSAs was divided into one central county, a few suburban counties, and a few outlying ex-urban counties. To make comparisons relevant and to limit the impact of changing definitions of what is a central county, we picked the same central county as in 1990 for the example areas. This classification scheme offers just one possible way to examine local area flows at the county level, and is shown at the end of this chapter (Exhibit 6.43).

Exhibit 6.7 shows the residential density and percent of zero-vehicle households in the central suburban, and ex-urban counties of the selected areas. Chicago has the highest density in both central and suburban counties, whereas Portland has the lowest in both central and suburban counties.

**Exhibit 6.7 Population Density and Percent Households with Zero-Vehicle: 2000**

	Population Density			Percent of Households with Zero- vehicles		
	Central	Suburban	Ex-urban	Central	Suburban	Ex-urban
Atlanta	1542.5	770.6	197.1	15.2	5.2	5.2
Chicago	5683.7	914.6	186.8	19.1	5.4	6.1
Denver	3625.1	424.5	45.3	13.9	4.8	5.6
Minneapolis	2003.9	676.4	100.4	10.7	6.8	3.9
Portland	1518.4	302.4	163.6	12.7	5.4	6.6

Like nearly all of the large MSAs the percent of residents in the central county in the example areas declined from 1980 to 2000, while the share of suburban and ex-urban population increased. For these areas, we examined the number of workers living and the number of jobs (workers working) in the central, suburban, and ex-urban areas. As shown in Exhibit 6.8, all five areas had an increase of 6-8 percent in the suburban share of resident workers, suggesting a continued decentralization. In 4 of the 5 MSAs, the suburban worker population accounts for more than half of the total worker population.

**Exhibit 6.8 Population and worker distributions in Selected MSAs: 1980 – 2000**

MSA Name		Workers			Jobs		
		1980	1990	2000	1980	1990	2000
Atlanta	Area wide	1,033,088	1,542,948	2,060,632	1,011,212	1,583,146	2,120,887
	Central	24.4	20.4	18.7	43.8	36.1	33.8
	Suburban	68.9	72.8	73.1	51.6	59.5	61.2
	Ex-urban	6.7	6.8	8.2	4.6	4.4	4.9
Chicago	Area wide	3,575,803	3,922,295	4,218,108	3,535,802	3,949,498	4,263,429
	Central	63.8	60.4	56.2	69.5	65.1	59.9
	Suburban	31.8	35.1	38.8	26.9	31.2	36.2
	Ex-urban	4.4	4.5	5.0	3.6	3.7	3.9
Denver	Area wide	859,989	1,026,847	1,346,025	843,345	1,038,584	1,366,376
	Central	28.2	22.5	20.7	46.0	36.4	31.8
	Suburban	65.6	71.4	72.9	48.8	58.2	63.0
	Ex-urban	6.1	6.0	6.4	5.2	5.4	5.2
Minneapolis	Area wide	1,081,772	1,344,797	1,595,550	1,062,619	1,361,205	1,628,481
	Central	45.0	41.7	38.1	53.4	51.9	49.6
	Suburban	46.7	49.2	51.0	41.4	42.4	43.8
	Ex-urban	8.3	9.0	10.9	5.2	5.7	6.7
Portland	Area wide	704,392	861,141	1,105,133	689,559	860,743	1,107,079
	Central	37.1	33.3	30.3	50.0	43.9	39.0
	Suburban	45.5	49.4	52.3	33.7	39.8	45.0
	Ex-urban	17.4	17.3	17.4	16.3	16.3	16.0

Exhibit 6.9 lists the worker/job ratio by area type for each of the five areas. In 1980, the calculation of jobs in our analysis are based on the count of workers living and working in the same MSA, while the calculations for 1990 and 2000 reflect all workers working in the MSA regardless of place of residence. This means that a small percent of jobs (ranging from about 1/2 percent to 1 percent) held by workers from outside the region are not included in the 1980 numbers, since the tabulation of all counties in the U.S. to find these workers was beyond the scope of our needs.

The ratio of total jobs to total workers gives an idea of which areas will be importers of commuters, and which will be exporters. If the central area has 500,000 jobs and only 300,000 workers living in the same county we know that a large number of commuters into the county will be needed to fill those jobs.

Of course, not every worker who lives in the central area will be working in the central area, since the pool of jobs in an area may not fit the kind of workers who live there. The kind of workers and kinds of jobs available, as well as the number of jobs and workers in

an area, affect the potential number of commuters between the areas. Understanding which areas are increasing the potential flows in or out and which are in balance between resident workers and jobs is helpful in tracking trends.

Suburban and ex-urban areas have made rapid gains in terms of both the number of jobs and the number of resident workers. Despite this trend, the central county remains a core-commuting destination in Chicago and Minneapolis, but has fewer jobs than suburban areas in Atlanta, Denver, and Portland. In four of the five MSAs the central county grew jobs between 1990 and 2000, but in Chicago the number of jobs remained about the same.

In Chicago, Portland and Denver, the suburban areas attracted more jobs than workers from 1990 to 2000, and the worker flows in those areas, especially Chicago, show a growth in reverse commutes. Between 1990 and 2000, Chicago area saw 40,000 more commutes from the suburbs to the central county (Cook County), but 67,000 more commutes from Cook County to jobs in the suburbs. More detail about the jobs/worker balance is given in the discussion for each area.

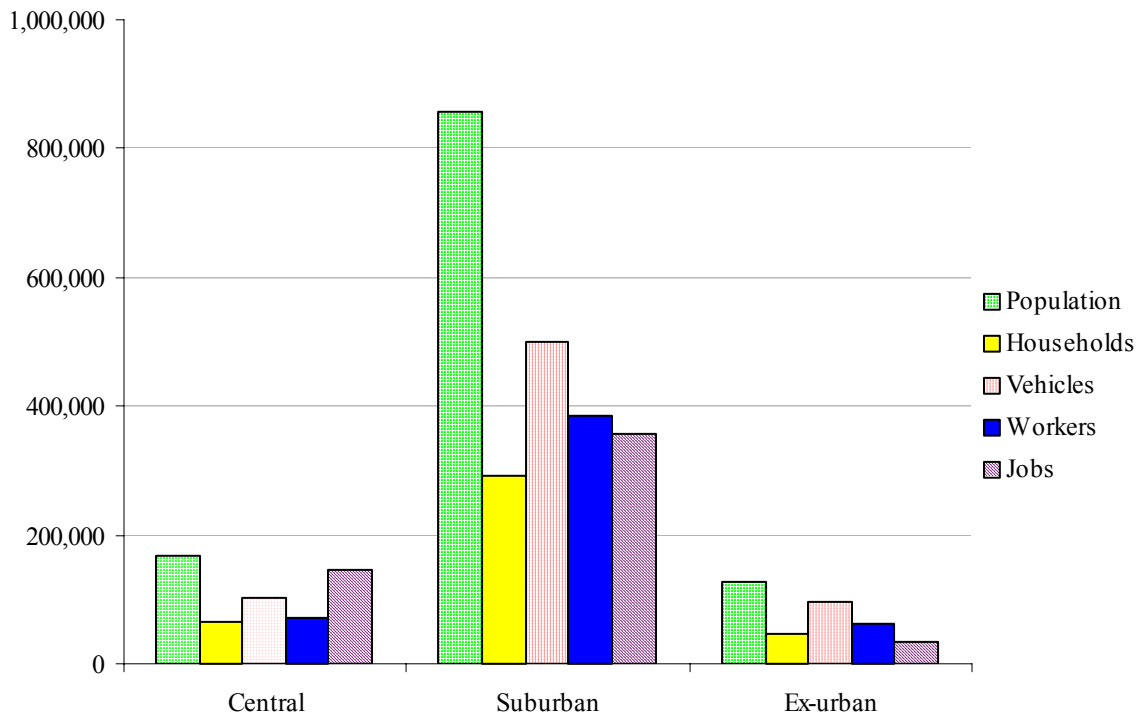
**Exhibit 6.9 Jobs (workers by place of work) and Workers (workers by place of residence): 1990-2000**

MSA	Area	1990			2000		
		Jobs	Workers	Jobs/ worker Ratio	Jobs	Workers	Jobs/ worker Ratio
Atlanta	Central	571,384	315,366	1.81	717,702	385,442	1.86
	Suburban	942,712	1,123,041	0.84	1,298,680	1,507,084	0.86
	Ex-Urban	69,050	104,541	0.66	104,505	168,106	0.62
Chicago	Central	2,572,353	2,369,624	1.09	2,554,118	2,371,161	1.08
	Suburban	1,232,014	1,377,402	0.89	1,542,547	1,636,219	0.94
	Ex-Urban	145,131	175,269	0.83	166,764	210,728	0.79
Denver	Central	378,315	231,503	1.63	434,201	278,715	1.56
	Suburban	604,344	733,409	0.82	860,563	981,100	0.88
	Ex-Urban	55,925	61,935	0.90	71,612	86,210	0.83
Minneapolis	Central	706,563	561,081	1.26	807,036	607,567	1.33
	Suburban	576,615	662,139	0.87	712,615	814,512	0.87
	Ex-Urban	78,027	121,577	0.64	108,830	173,471	0.63
Portland	Central	377,845	286,600	1.32	431,749	335,182	1.29
	Suburban	342,827	425,521	0.81	498,640	577,719	0.86
	Ex-Urban	140,071	149,020	0.94	176,690	192,232	0.92

## Atlanta

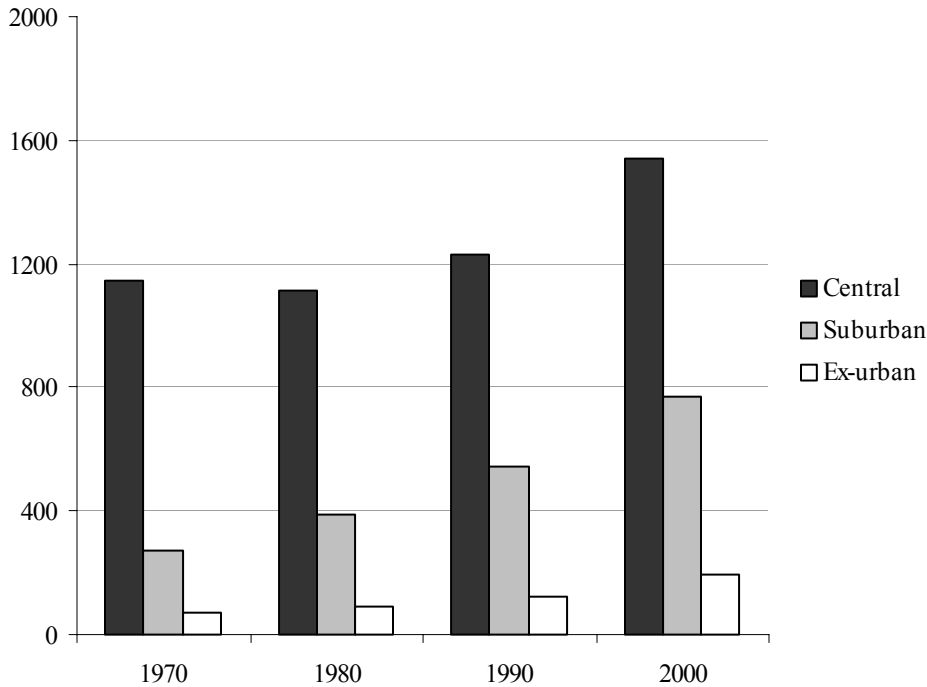
Atlanta illustrates a fast-growing southern city with highway-oriented development and growing diversity. The Atlanta MSA was one of the fastest growing MSA in the country in both workers and population. In the twenty years between 1980 and 2000 it nearly doubled in population from 2.2 million to 4.1 million people. Seventy-eight percent of the population, one and a half million people, went to the suburban counties while 12 and 10 percent more people live in central and ex-urban areas, respectively. Exhibit 6.10 shows the added population, vehicles and workers in the three areas types.

**Exhibit 6.10 Atlanta - Added People, Workers, Jobs: 1990-2000**



In the last 40 years, the population density of the central county in Atlanta has continued to grow, as has the density of suburban areas. Ex-urban areas have shown a modest increase in density (see Exhibit 6.11).

**Exhibit 6.11 Atlanta - Changes in Population Density: 1970-2000**



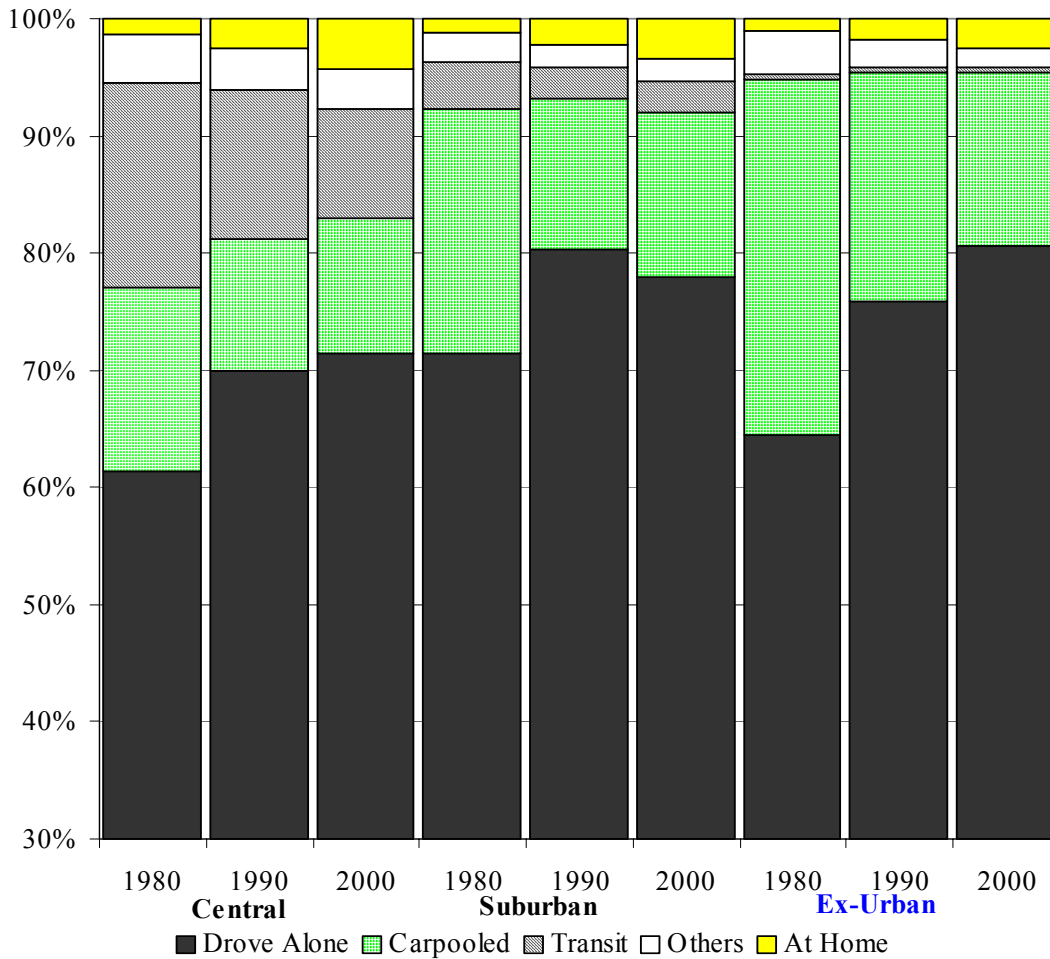
Not surprisingly, given the immense population and worker growth in Atlanta, travel time for commuters grew dramatically. From 1990 to 2000, workers in Atlanta experienced the highest increase in travel time (5.2 minutes compared to 3.4 minutes in the nation as a whole). From 1980 to 2000, the percent of workers with short commutes reduced drastically in the suburban and ex-urban areas, while the percent of workers with longer commutes increased dramatically in all three areas. In 1980, one in three of the ex-urban workers commuted less than 15 minutes to work, by 2000, one in three workers living in ex-urban areas commuted more than 45 minutes for work.

**Exhibit 6.12 Atlanta - Short and Long Commutes: 1980-2000**

	Commutes less than 15 minutes			Commutes longer than 45 minutes		
	1980	1990	2000	1980	1990	2000
Central	21.2	21.8	19.8	15.8	14.6	19.1
Suburban	23.5	20.7	17.7	15.9	17.4	24.8
Ex-urban	33.5	26.5	20.2	19.2	23.3	30.4

From 1980 to 2000 the percent of workers driving alone to work increased irrespective of location of residence (See Exhibit 6.13). However, central county workers in Atlanta are still more likely to use transit than workers in other areas. Another interesting feature in Atlanta has been the slight increase between 1990 and 2000 in the number of central and suburban workers who carpooled to work; and the relative stability of percent of suburban workers using transit for commute. The number and percent of workers who work at home is also on the rise, especially in Fulton County.

**Exhibit 6.13 Atlanta - Means of Transportation to Work: 1980-2000**



From 1990 to 2000, the number of workers who worked in the Atlanta MSA grew 31 percent, from 1.6 million to 2.1 million. The central county in Atlanta (Fulton County) added twice as many jobs as workers living in the county. The central county added jobs at twice the pace of resident workers living in the county. However, the suburban counties still added two-thirds of the total jobs added to the MSA between 1990 and 2000.

In the 90s Atlanta added twice as many jobs as workers in the central county, compared to the overall slight increase in jobs over workers. Job growth in suburban counties was high; almost one added job per added resident, whereas ex-urban areas seemed to slow their job growth compared to the growth in population and workers (see Exhibit 6.14).

About 94,000 more commuters traveled to the central county in Atlanta in 2000 than in 1990, 88,366 (94 percent) of these new commuters lived in suburban counties and 5,655 (six percent) in ex-urban. The suburban-to-suburban flows grew by over a quarter of a million commuters, and ex-urban-to-suburban commutes rose by 33,802 (see Exhibit 6.15).

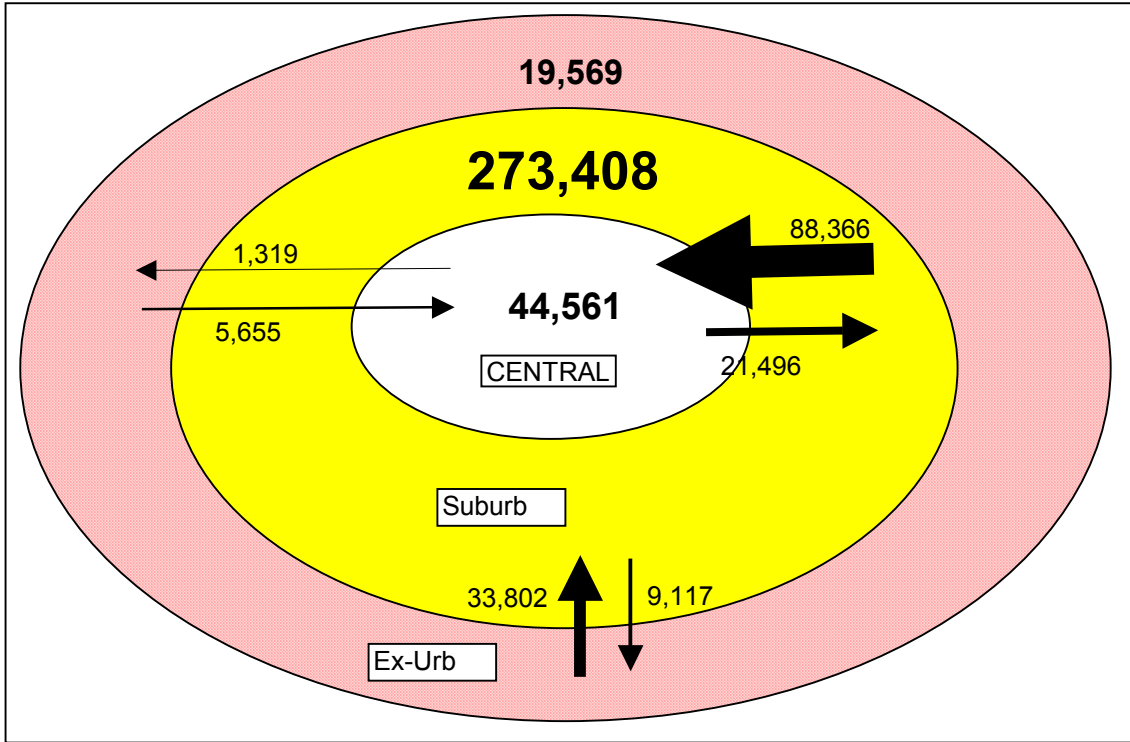
**Exhibit 6.14 Atlanta - Added Jobs and Workers: 1990 - 2000**

	<b>Added Jobs</b>	<b>Added Workers</b>	<b>Newly Added Jobs/Worker</b>
Area-wide	537,741	517,684	1.04
Central	146,318	70,076	2.09
Suburban	355,968	384,043	0.93
Ex-Urban	35,455	63,565	0.56

From 1970-2000, one of the biggest changes in the worker flow patterns in Atlanta has been the huge increase in the number and percent of workers commuting between suburban residence and suburban place of work. More than half of the commuting flows are from the suburbs to the suburbs. However, the central county still remains a core commuting destination in 2000, accounting for more than one-third of all worker flows into the region (see Exhibit 6.16).

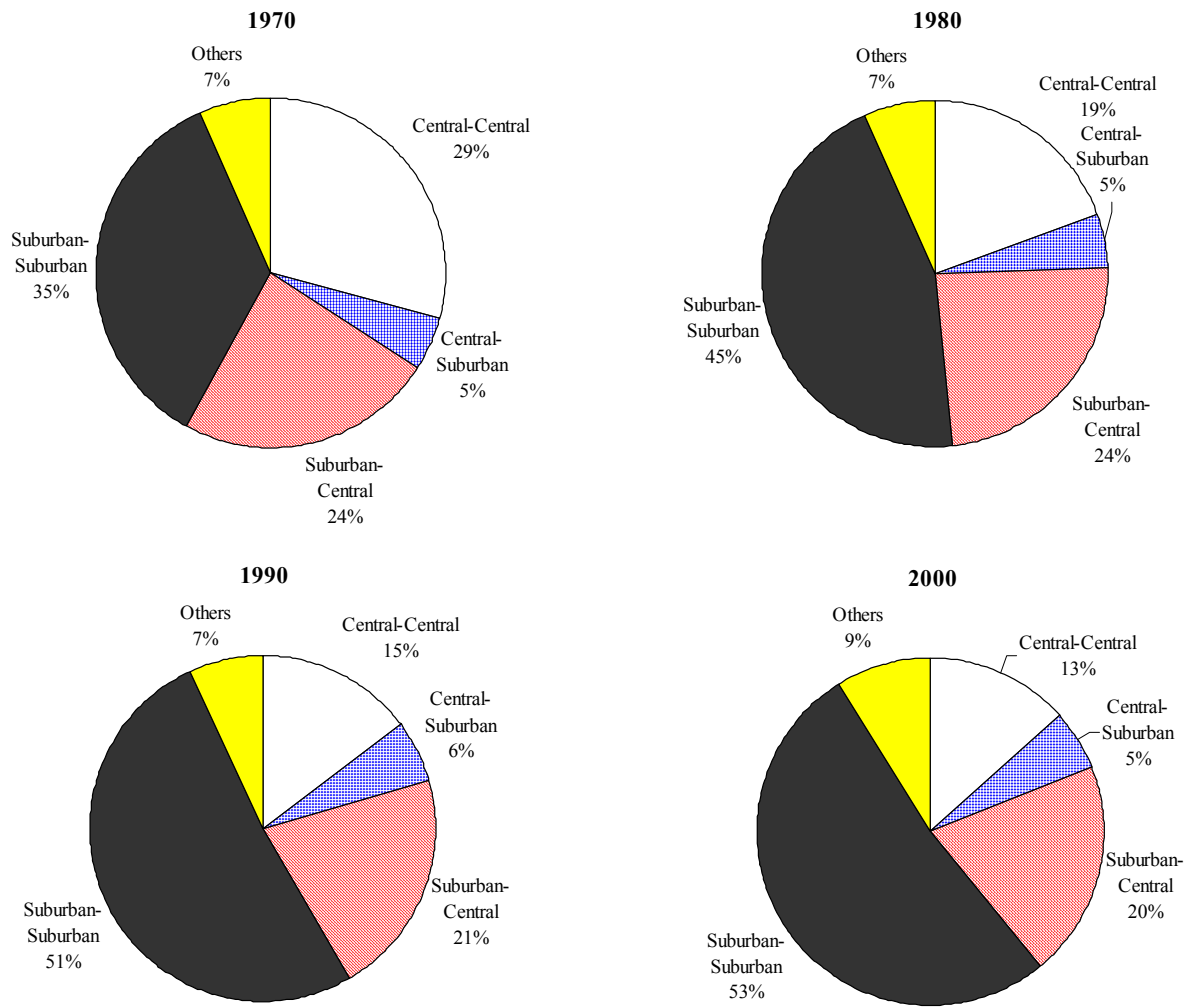


**Exhibit 6.15 Atlanta - Changes in Journey to Work Flows Between Central-Suburban-Ex-urban areas in Atlanta: 1990-2000**



*Note: Font sizes and thickness of arrows are approximately sized to represent the magnitude in change of commuter flows.*

**Exhibit 6.16 Atlanta - Worker Flow by Area Type: 1970-2000**

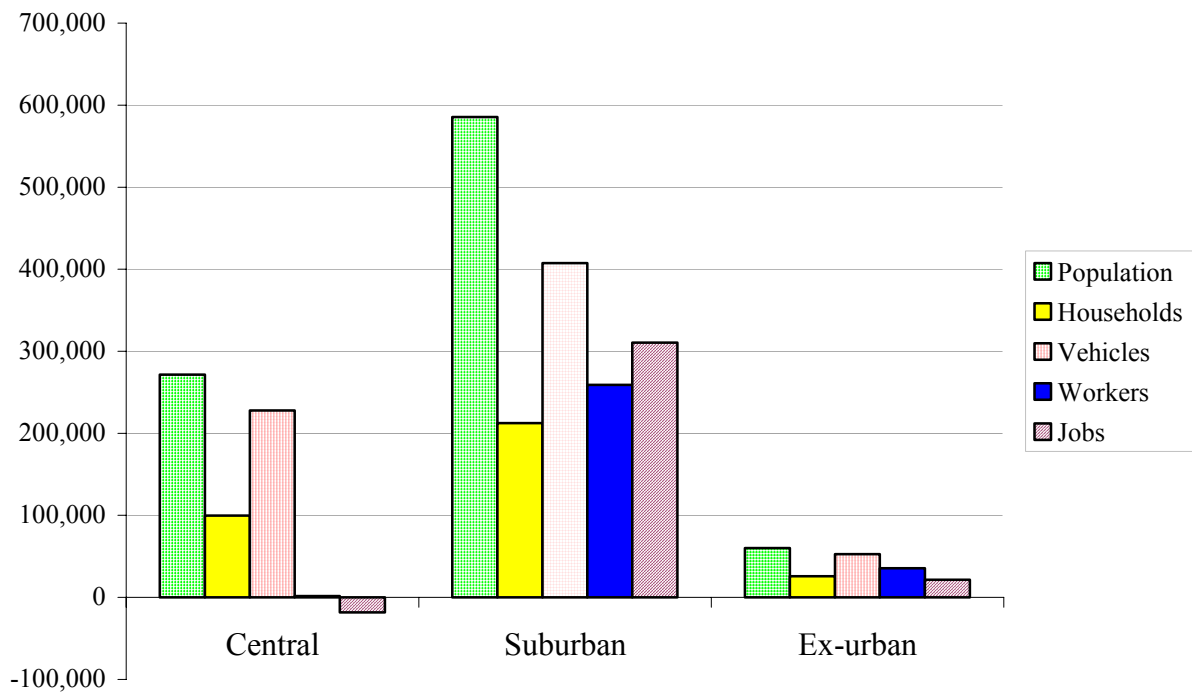


## Chicago

Chicago illustrates a medium-growth northern/mid-western city with a traditional development pattern of a strong central core and historic development along rail/transit lines. The population growth in the central county (Cook County) outpaces job growth, much of it coming from new migration.

Nearly a million people were added to the Chicago MSA between 1990 and 2000 (917,720) and, unlike many central counties, Cook County continued to grow in population. Chicago is unique among the five MSAs selected because of its development as a truly central city surrounded by lower density suburbs. Cook County is one of the most highly populated counties in the nation, and is the place of residence for 59 percent of the Chicago MSA population. However, between 1990 and 2000 Cook County accounted for only about one-third of the added population, and only kept its number of workers and actually lost jobs (see Exhibit 6.17).

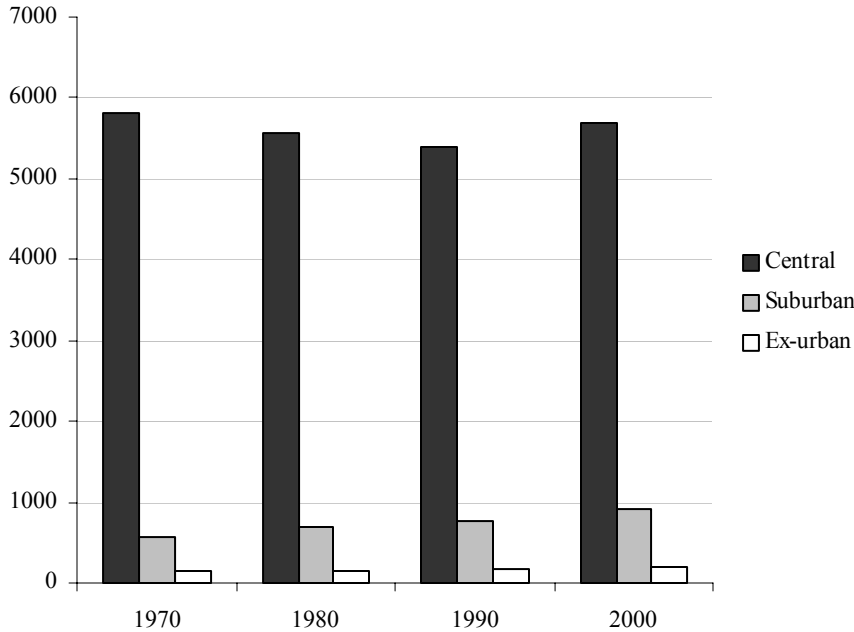
**Exhibit 6.17 Chicago - Added Population, Workers, and Jobs: 1990-2000**



Added Population, workers, vehicles and households: 1990-2000					
	Population	Households	Vehicles	Workers	Jobs
Central	271,674	99,547	227,640	1,537	-18,235
Suburban	585,706	212,695	407,533	258,817	310,533
Ex-urban	60,340	25,632	52,582	35,459	21,633
Total	917,720	337,874	687,755	295,813	313,931

Cook County, the central county in Chicago MSA, has the sixth highest population density (5,572 people/square mile) of all the 49 largest MSAs. The surrounding suburban counties are much less dense, less than one-seventh of the density of Cook County.

**Exhibit 6.18 Chicago - Population Density: 1970-2000**



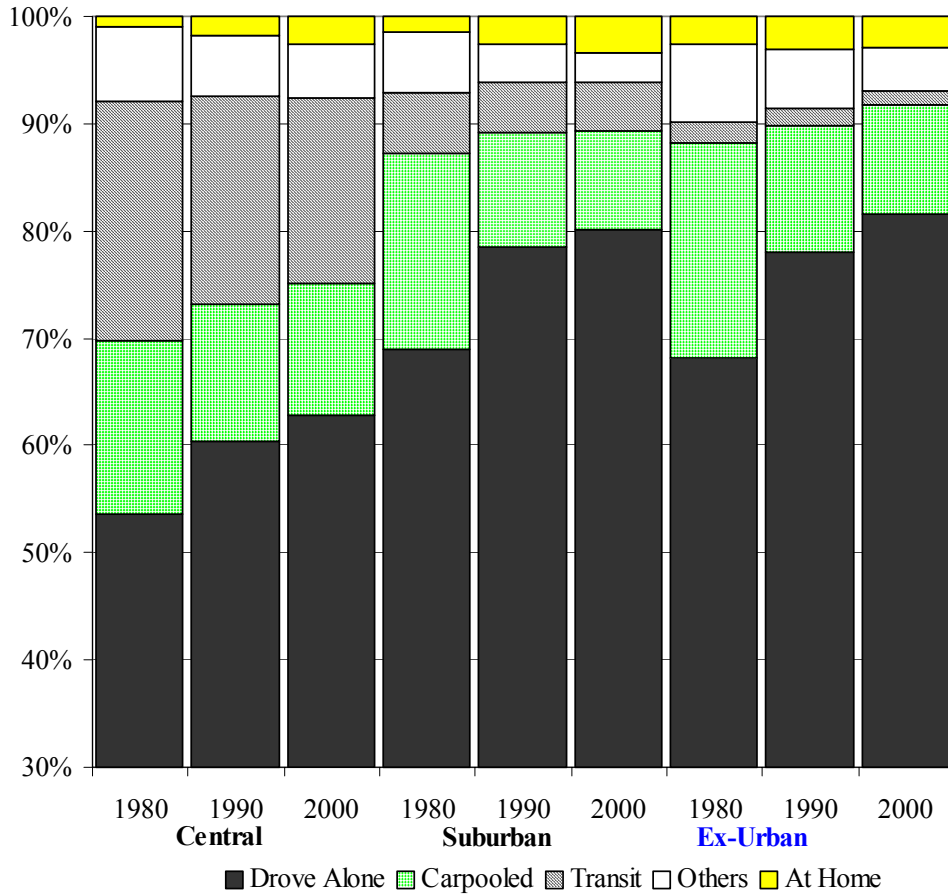
Travel time to work in Chicago MSA increased by 3.1 minutes from 1990 to 2000. Similar to all large MSAs the percent of workers with short commutes declined while long commutes increased from 1980-2000, with the suburban and ex-urban areas showing the highest change (see Exhibit 6.19).

**Exhibit 6.19 Chicago - Short and Long Commutes: 1980-2000**

	Commutes less than 15 minutes			Commutes longer than 45 minutes		
	1980	1990	2000	1980	1990	2000
Central	20.8	19.8	17.6	24.2	23.9	27.2
Suburban	31.0	28.1	24.8	16.9	18.8	22.5
Ex-urban	45.7	42.3	36.3	7.7	12.3	17.7

Exhibit 6.20 shows the percent of workers by mode to work from 1980-2000. From 1980 to 2000, percent of workers driving alone to work increased irrespective of location of residence. More than one-fifth of the central county workers still use transit. From 1980 to 2000, carpooling from suburban and ex-urban areas declined substantially.

**Exhibit 6.20 Chicago - Means of Transportation to work: 1980 – 2000**



Relative to population growth, there was little worker or job growth in the Chicago MSA during the last decade. Most of the job growth took place in the suburban and ex-urban areas. The suburban counties accounted for 99 percent of the added jobs area-wide.

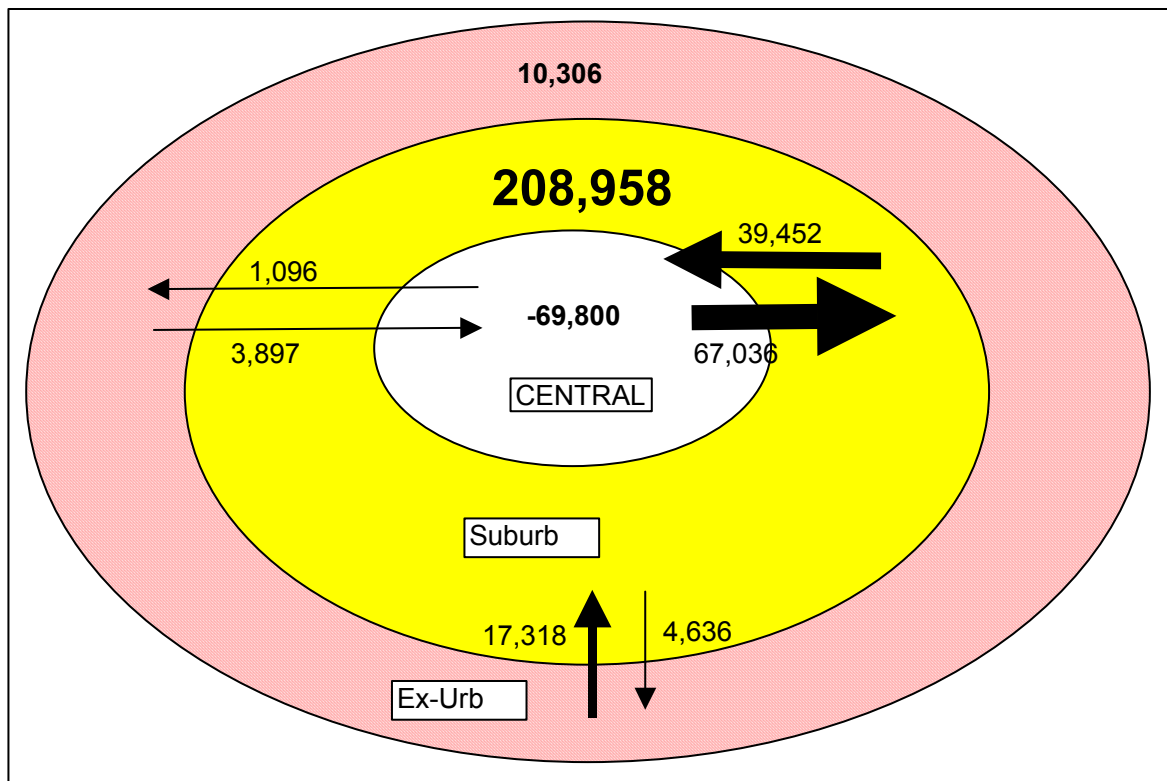
The Chicago MSA overall is adding slightly more jobs than workers, which means some commuters are flowing in from out of the MSA. Chicago gained over 270,000 people but only added 1,500 workers (see Exhibit 6.21). If the population in Cook County is aging and leaving the labor force, and immigrants to the city are younger and have children, then this can be a reasonable result.

**Exhibit 6.21 Chicago: Added Jobs and Workers: 1990-2000**

Chicago	Added Jobs	Added Workers	Added Jobs/Worker
Area-wide	313,931	295,813	1.06
Central	-18,235	1,537	-11.86
Suburban	310,533	258,817	1.20
Ex-Urban	21,633	35,459	0.61

The central county lost nearly 70,000 commuters but added nearly the same amount in reverse commutes to the suburban counties. Altogether, commutes to suburban jobs increased by 275,000 workers. The traditional movement from suburban counties to central gained just 43,000 commuters--39,432 from suburban counties and 3,897 from ex-urban counties. Ex-urban counties also sent 17,318 workers to jobs in the suburban areas and received 5,732 commuters from the central and suburban counties (see Exhibit 6.22).

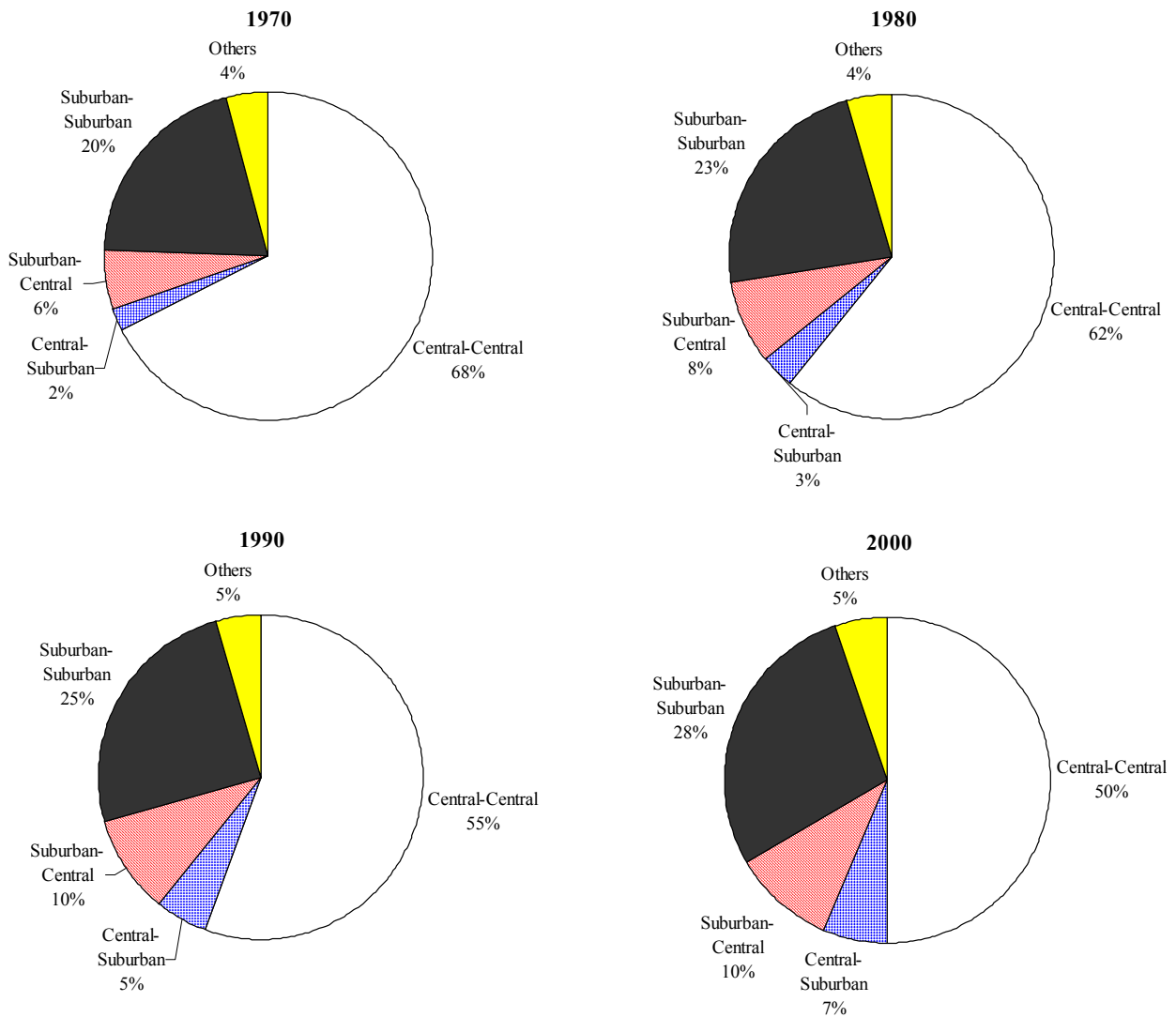
**Exhibit 6.22 Chicago - Changes in Journey-to-Work Flows Between Central-Suburban-Ex-urban areas: 1990-2000**



*Note: Font sizes and thickness of arrows are approximately sized to represent the magnitude in change of commuter flows.*

In 1970, Chicago had a traditional pattern of people who lived in the central county and worked in the central county. However, the later decades saw a shift to more suburban-to-suburban and reverse commutes. In 2000, both DuPage and Lake County are no longer just bedroom communities for Cook County. Both now import more commuters than they export. Because DuPage County is geographically centered in the region, it has generally lower average travel time, and a small increase in the travel time from 1990 to 2000, compared to other parts of the region<sup>1</sup>.

**Exhibit 6.23 Chicago – Worker Flow by Area Type: 1970 – 2000**



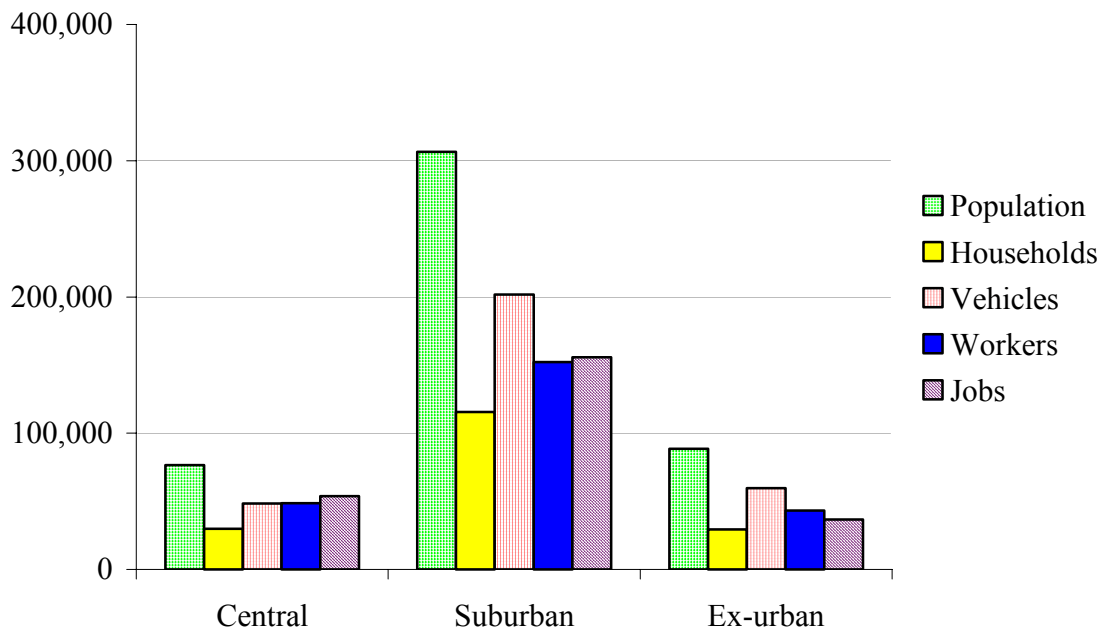
<sup>1</sup> Siim Soot, Joseph DiJohn, Ed Christopher “Chicago-Area Commuting Patterns: Emerging Trends,” March 2003

**Portland**

Portland illustrates a new type of city pattern in the Pacific Northwest, with a strong emphasis on urban growth boundary and encouragement of higher-density development. Unlike the traditional cities of the North and East, the central county of Portland was never a high-density core, similar to Atlanta but only about one-quarter of the density of Cook county in Chicago.

From 1990 to 2000, Portland added close to half a million people to its population base. The suburbs added a major portion of the new population. Unlike any of the other illustrative MSAs, vehicle growth in Portland’s central county was modest, just keeping pace with workers. The growth in vehicles outpaced the increase in households and workers in the suburban and ex-urban counties, but not to the degree found in other MSAs. While suburban Portland added 4 vehicles for every three added workers, the central county added one vehicle per added worker.

**Exhibit 6.24 Portland - Added People, Workers and Jobs: 1990-2000**

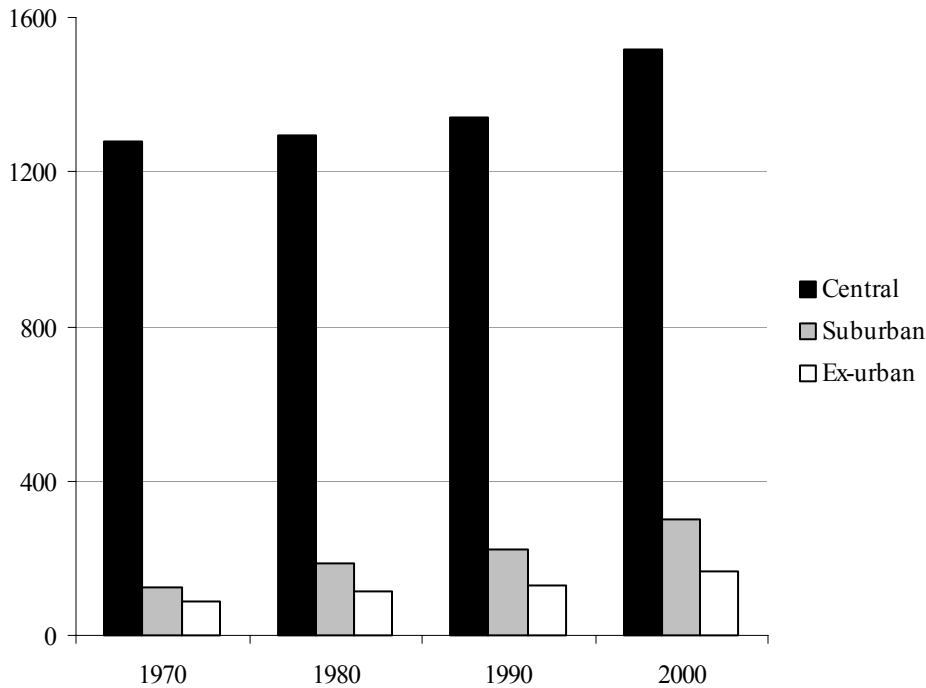


Change in numbers from 1990				
	Population	Households	Vehicles	Workers
Central	76,599	29,778	48,393	48,582
Suburban	306,517	115,616	201,739	152,198
Ex-urban	88,631	29,289	59,643	43,212
Total	471,747	174,683	309,775	243,992



Exhibit 6.25 shows the population density in Portland from 1970 to 2000. From 1990 to 2000, the population density in the Multnomah County (Central county) rose by about 176 persons per square mile (ppsm), while the suburban density grew by just 79 ppsm. Although the suburbs added most of the new population in the last decade, the Central County gained in density at more than twice the rate of the suburban county. The density in the Central County for 2000 is five times the density in the suburban counties, and more than 9 times the density in the ex-urban counties.

**Exhibit 6.25 Portland - Population Density: 1970-2000**



The average travel time in Portland MSA increased less than 3 minutes (from 21.5 minutes to 24.4 minutes) in the 90s, the smallest increase of the five selected MSAs. There is a noticeable decrease in the percent of workers with short commutes in the central and ex-urban counties from 1980 to 1990 when compared to 1980 to 1990. Percent of longer commuters increased in all three areas (see Exhibit 6.26).

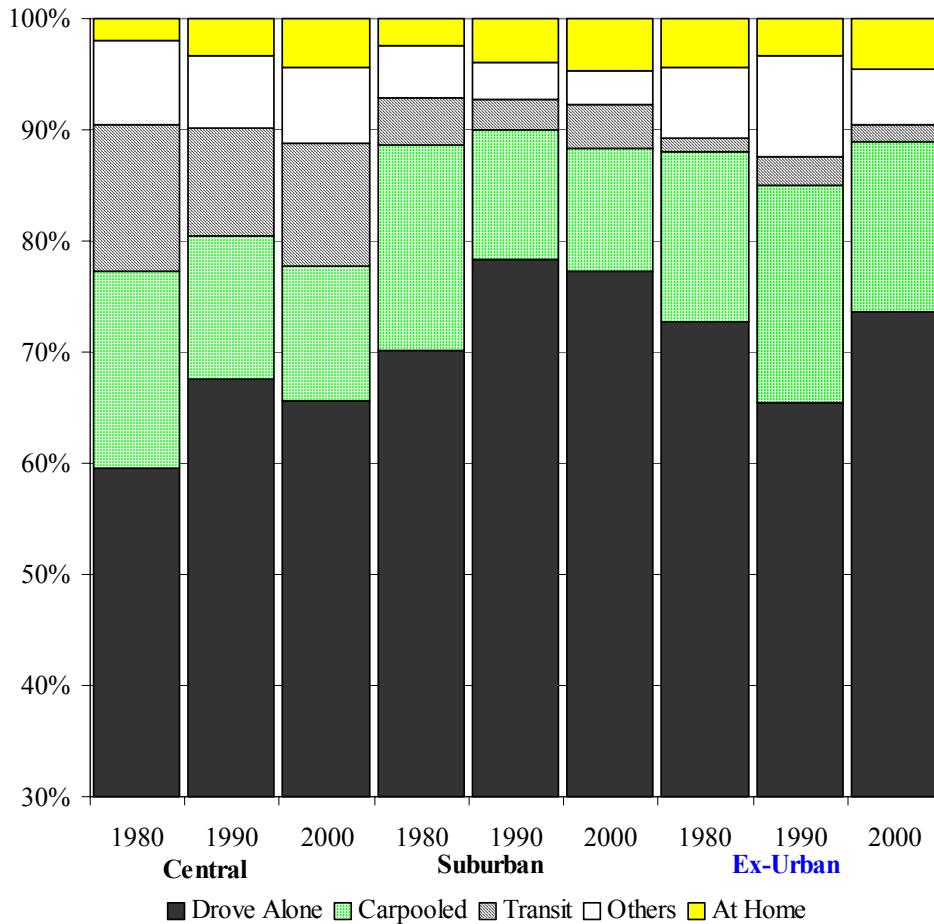
**Exhibit 6.26 Portland - Short and Long Commutes: 1980-2000**

	Commutes less than 15 minutes			Commutes longer than 45 minutes		
	1980	1990	2000	1980	1990	2000
Central	29.6	29.2	25.5	7.5	8.0	10.8
Suburban	30.9	28.9	26.0	10.5	10.1	13.2
Ex-urban	43.2	40.3	33.8	8.2	10.3	13.9

Exhibit 6.27 shows the percent of workers by mode to work from 1980 to 2000. Portland is the one of the few large MSAs that showed an increase in percent of workers using transit from 1990 to 2000. Both central and suburban areas showed an increase in transit while the ex-urban areas showed an increase in drove alones. Portland's light rail system, MAX, was just in its infancy in 1990. The length of fixed guideway directional route was 30.2 miles in 1990, compared to 65 miles in 2000. Rail revenue hours have tripled (300 percent increase) between 1990 and 2000, while bus revenue hours have increased only 30 percent. This investment in transit may be the reason transit commutes increased during the 90s.

Portland is also one of the few MSAs that had significant growth in work at home in all area types, not just the central county. Possibly the type of employment, the size, or the proportion of telecommuters made this area different than other MSAs.

**Exhibit 6.27 Portland – Means of Transportation to Work: 1980-2000**



The proportion of job growth that went to the suburban counties was the lower in Portland than the other example areas—just over 60 percent of the added jobs and workers for the entire MSA went to suburban areas, whereas 22 percent went to the central county. There is a balance of added jobs per added worker in all three area types not seen in the other MSAs that have been examined (see Exhibit 6.28).

**Exhibit 6.28 Portland: Added Jobs and Workers: 1990-2000**

	<b>Added Jobs</b>	<b>Added Workers</b>	<b>Added Jobs/Worker</b>
Portland	246,336	243,992	1.01
Central	53,904	48,582	1.11
Suburban	155,813	152,198	1.02
Ex-Urban	36,619	43,212	0.85

From 1970 to 2000, the percent of central-to-central county flows in Portland decreased by more than 5 percent every decade, whereas the suburban-to-suburban flows increased about 5 percent every decade. The change in other commute patterns remained more or less steady in terms of percent of all worker flows into or out of central, suburban, and ex-urban counties. Exhibit 6.29 shows the proportion of workers by their commute flows from 1970 – 2000.

**Exhibit 6.29 Portland –Worker Flows by Area Type: 1970-2000**

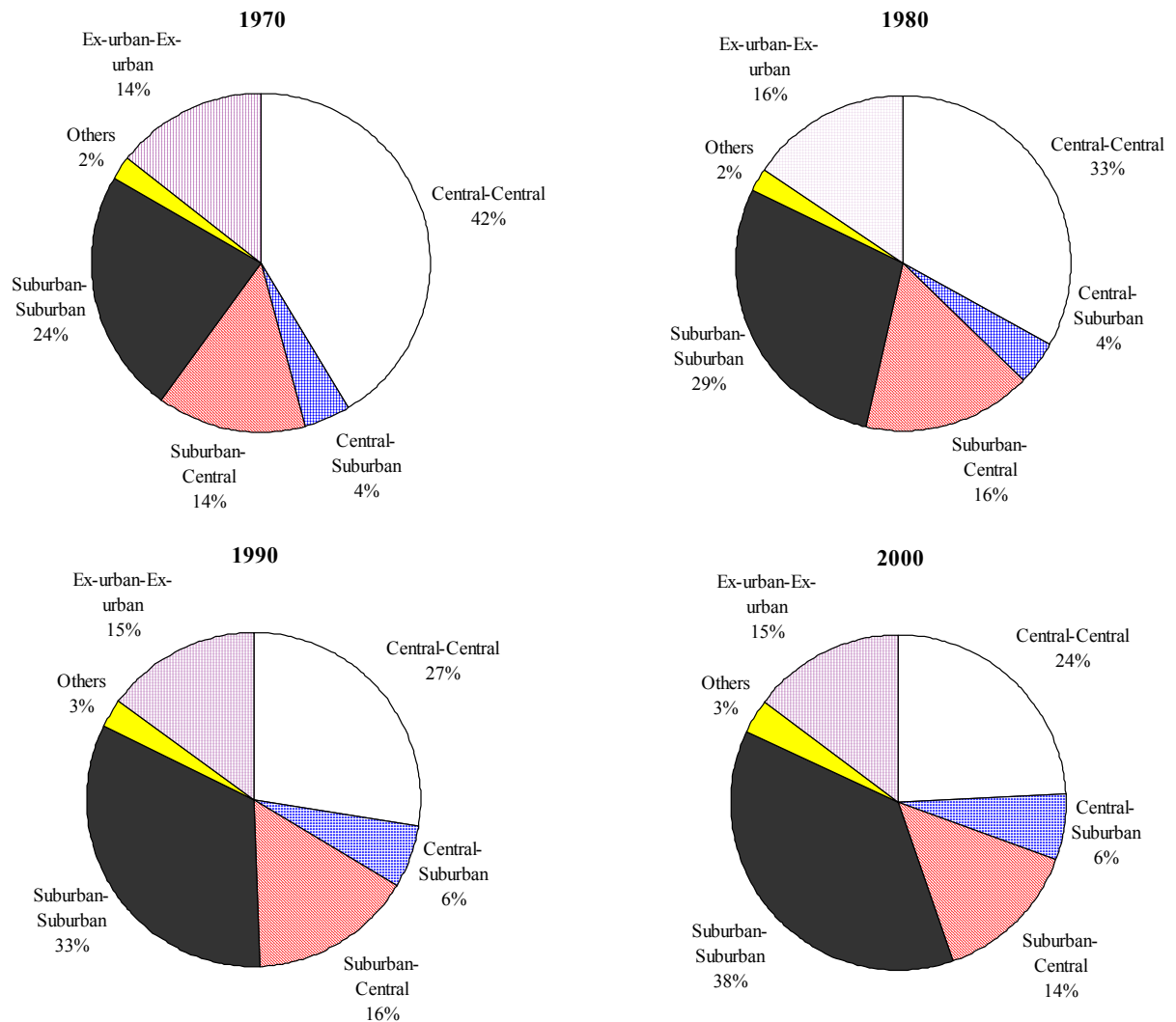
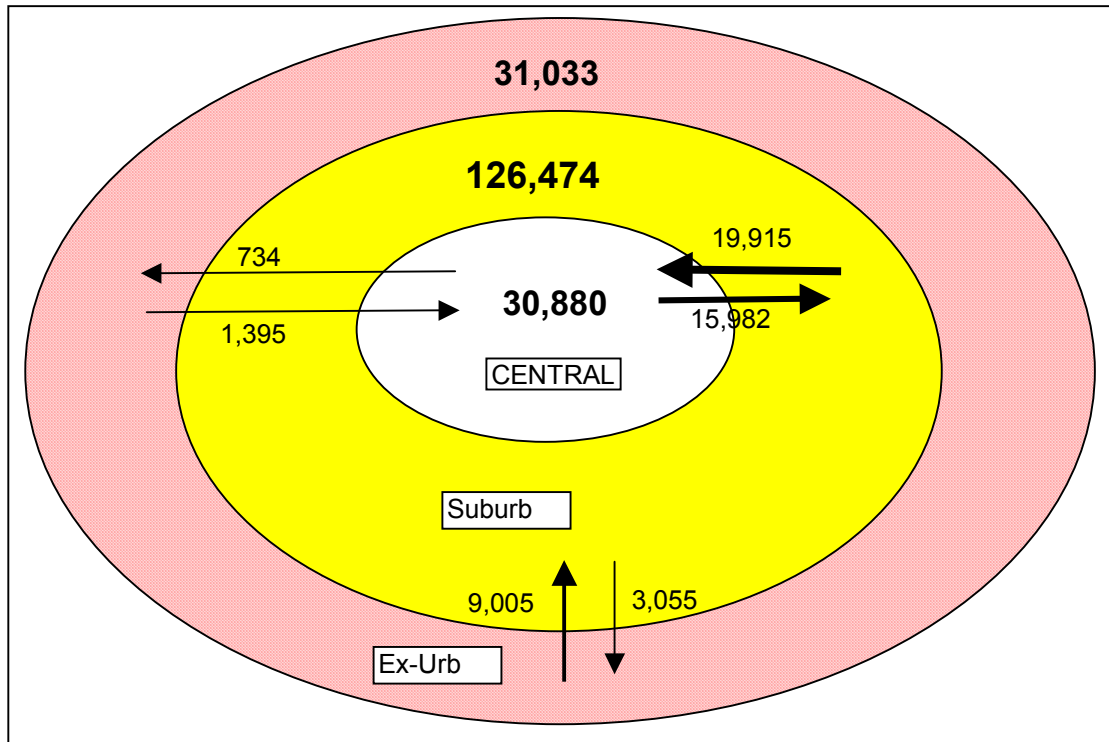


Exhibit 6.30 shows the change in worker flows from 1990 to 2000. The biggest increase in commutes was for suburban-to-suburban counties, even though the increase is not as dramatic as Chicago or Atlanta.

**Exhibit 6.30 Portland - Changes in Journey-to-Work Flows Between Central-Suburban-Ex-urban areas: 1990-2000**



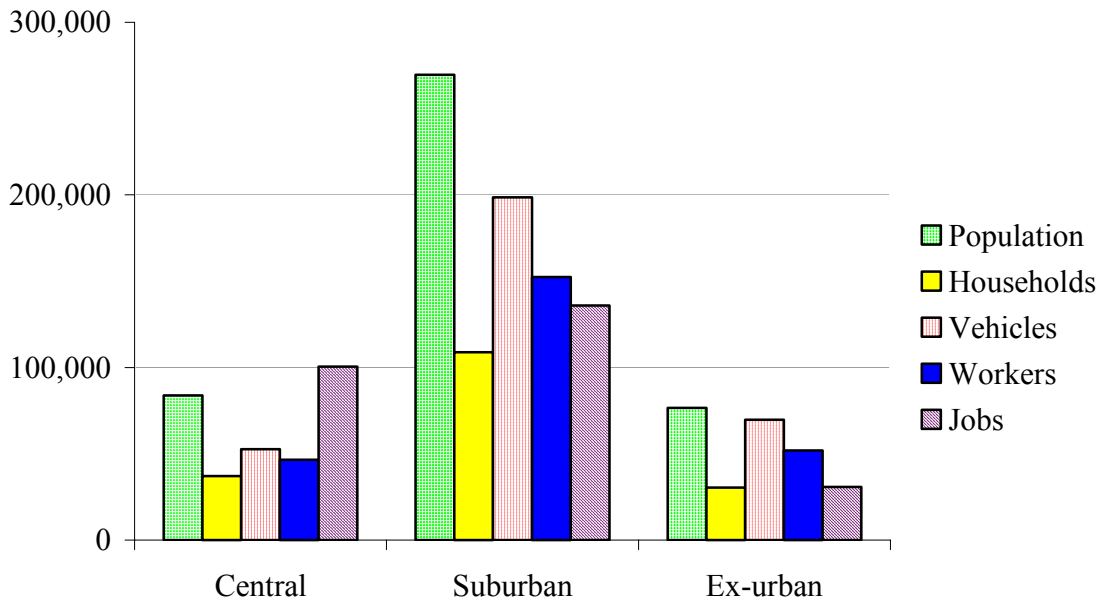
*Note: Font sizes and thickness of arrows are approximately sized to represent the magnitude in change of commuter flows.*

## Minneapolis

The population of the Minneapolis MSA increased from 2.2 million in 1980 to 3.0 million in 2000 (a 35 percent increase). In 1980, 49 percent of the population in Minneapolis was workers, by 2000, 52 percent of the area population were in the workforce.

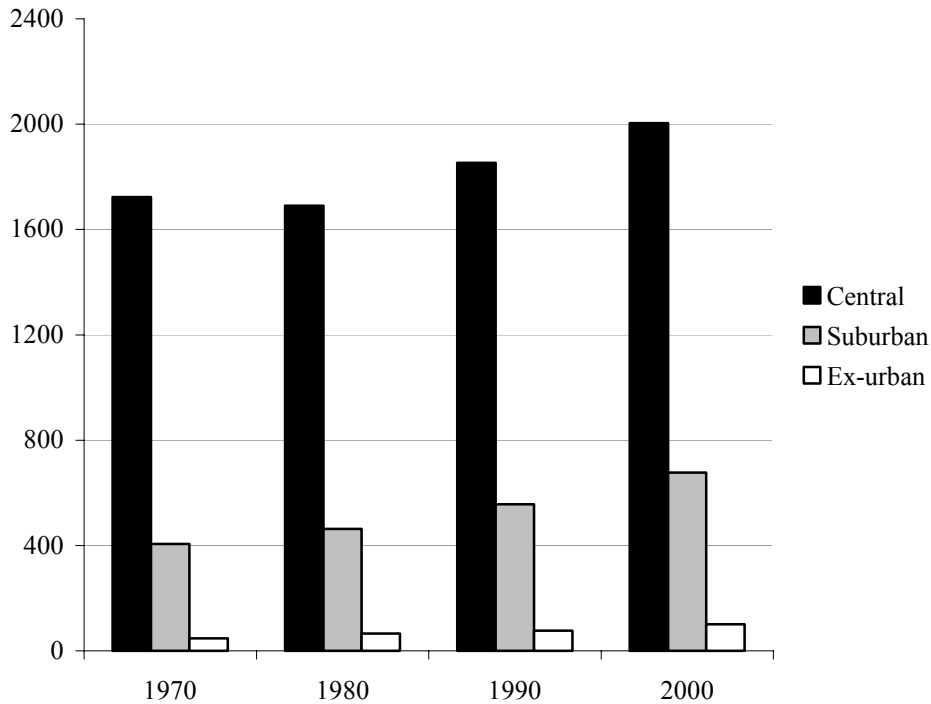
The central county in the Minneapolis MSA (Hennepin County was selected to represent the central county, although significant employment is found in the close-in suburban counties.) Because St. Paul portion of the MSA is located in Ramsey county (selected as suburban county), a significant portion of the population in the MSA will appear to be suburban. Exhibit 6.31 shows the added population, households, and workers from 1990 to 2000.

**Exhibit 6.31 Minneapolis - Added People, Workers and Jobs: 1990-2000**



The central county in Minneapolis has experienced increasing density, especially since 1980, while the suburban and ex-urban counties have showed a steady increase in population density (see Exhibit 6.32).

**Exhibit 6.32 Minneapolis - Changes in Population Density: 1970 - 2000**



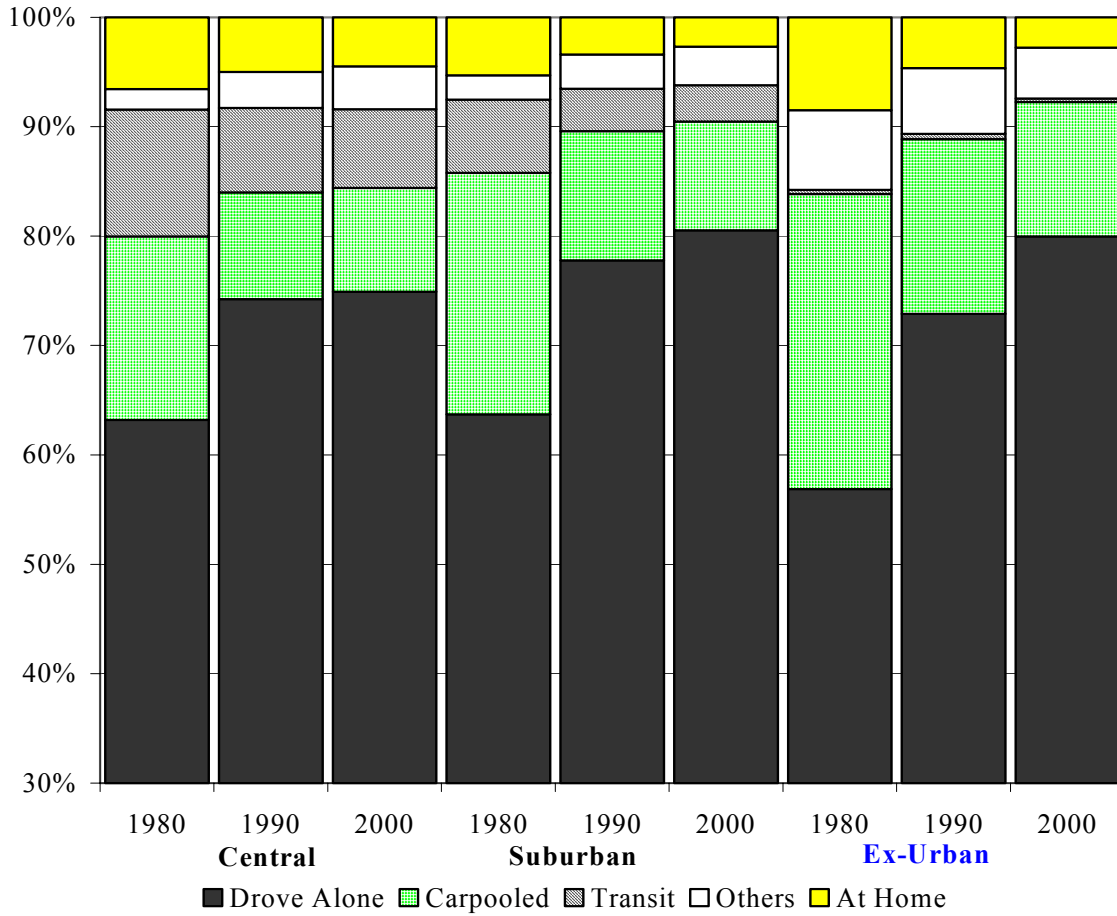
One astounding characteristic of the commute patterns for Minneapolis area is the percent of workers with very long commutes. A high proportion of workers who live in ex-urban areas commuted more than 45 minutes—one out of five in 1980 and one out of four in 2000. This percentage is greater than for any of our example areas except Atlanta, where 30 percent of the ex-urban workers had long commutes. These data indicate a very wide commuter shed for the Minneapolis region.

**Exhibit 6.33 Minneapolis - Short and Long Commutes: 1980-2000**

	Commutes less than 15 minutes			Commutes Longer than 45 Minutes		
	1980	1990	2000	1980	1990	2000
Central	31.5	28.9	26.2	5.8	5.8	7.4
Suburban	32.7	28.8	26.1	7.1	7.6	10.5
Ex-urban	40.9	34.1	28.6	20.0	21.8	25.2

About 75 percent of the workers who live in the central drove alone share, which may have stabilized, whereas workers in suburban and ex-urban counties continue to increase the share of drove alone (see Exhibit 6.34).

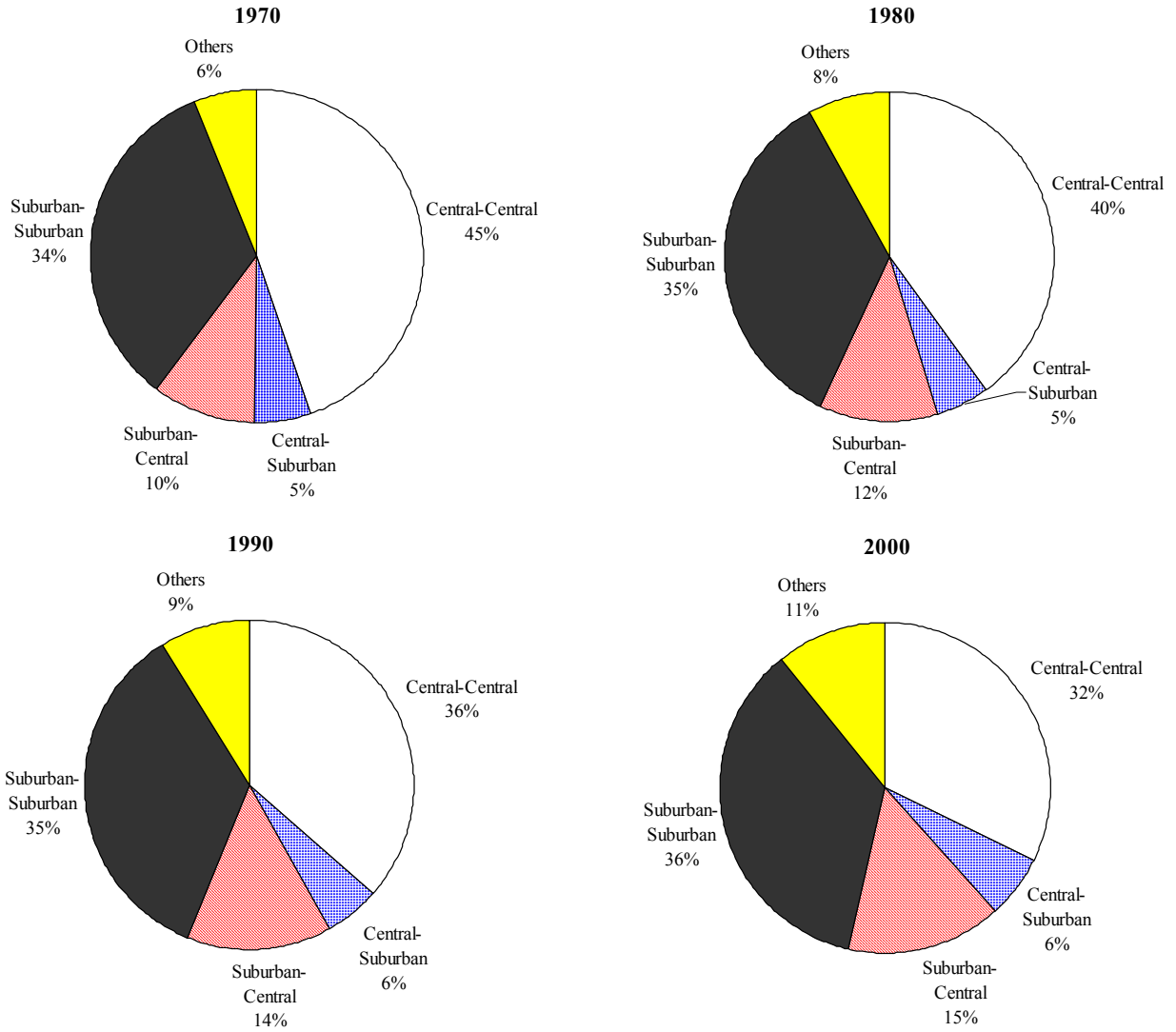
**Exhibit 6.34 Minneapolis: Means of Transportation to Work: 1980 – 2000**



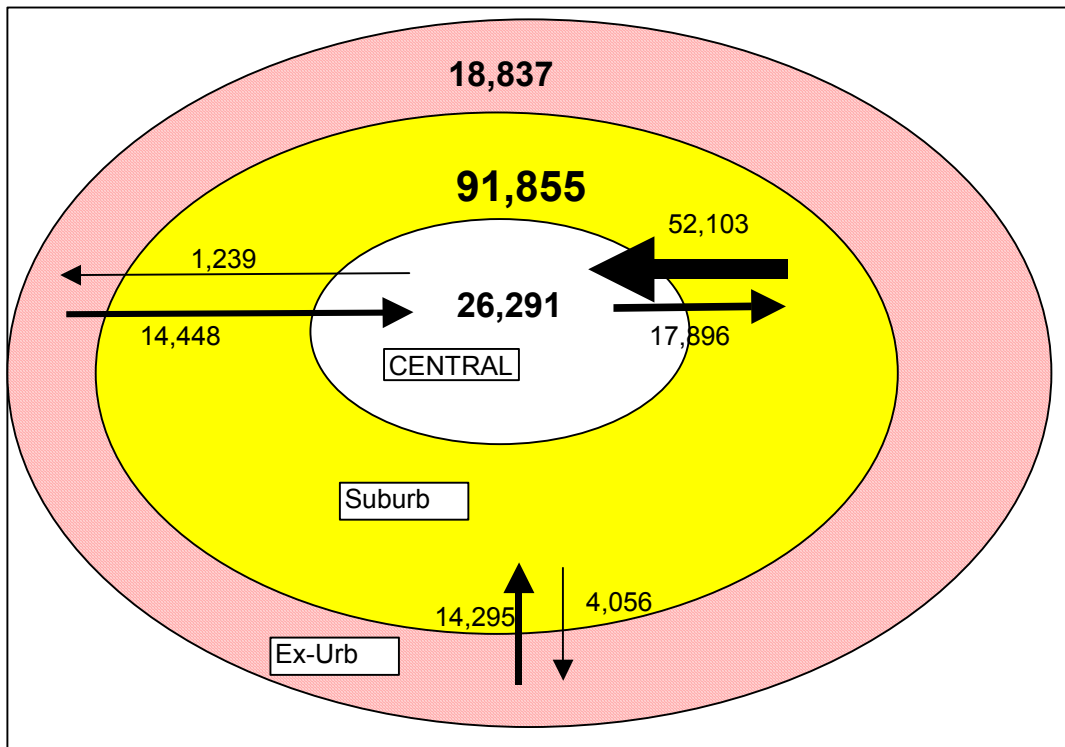
The worker flow data shows that the ex-urban to ex-urban flows are greater in Minneapolis than in other areas, 18.8 thousand more workers live and work in ex-urban areas, and 14.4 thousand more live in ex-urban areas and commute to suburban counties (see Exhibit 6.35 and 6.36).



**Exhibit 6.35 Minneapolis - Worker Flows by Area Type: 1970 – 2000**



**Exhibit 6.36 Minneapolis - Changes in Journey-to-Work Flows Between Central-Suburban-Ex-urban areas: 1990-2000**

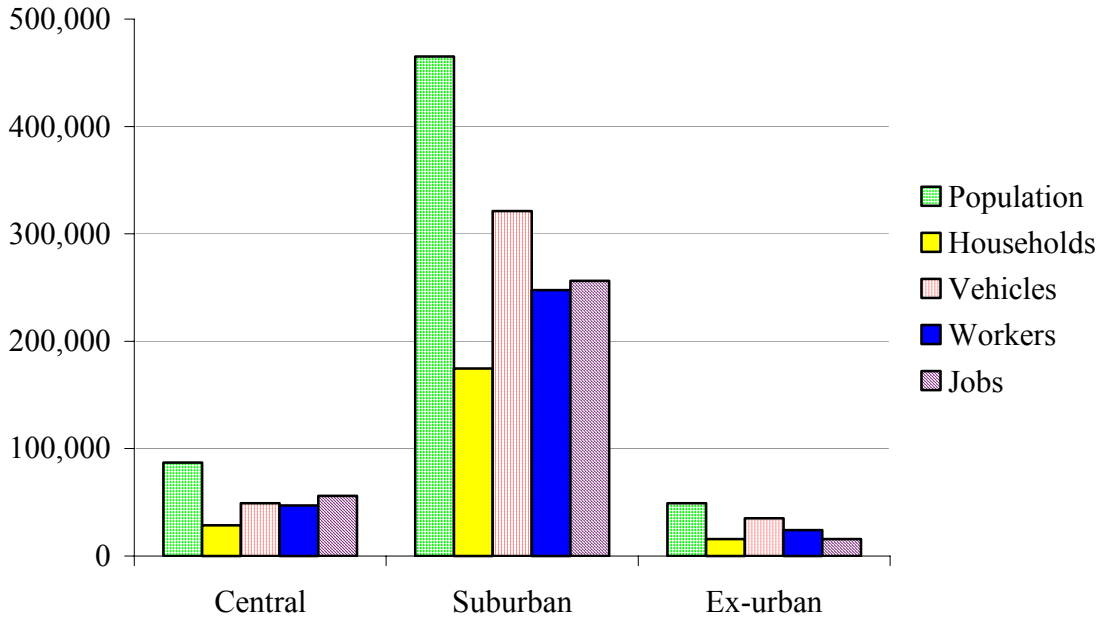


*Note: Font sizes and thickness of arrows are approximately sized to represent the magnitude in change of commuter flows.*

**Denver**

Denver is a fast-growing western city with low-density development and a proportionately burgeoning ex-urban area. The Denver MSA added over 300,000 jobs and workers between 1990 and 2000, half the amount of the added population of 600,000 people. Seventy-eight percent of the added jobs went to suburban counties, and another 17 percent to central (see Exhibit 6.37).

**Exhibit 6.37 Denver - Added People, Workers, and Jobs: 1990-2000**



Denver	Added Jobs	Added Workers	Added Jobs/Worker
Area-Wide	327,792	319,178	1.03
Central	55,886	47,212	1.18
Suburban	256,219	247,691	1.03
Ex-Urban	15,687	24,275	0.65

After decades of decline, the central county in Denver showed an increase in density between 1990 and 2000 (see Exhibit 6.38). The suburban areas show a small increase in density, and the ex-urban areas are sparsely populated.

**Exhibit 6.38 Denver - Population Density: 1970 - 2000**

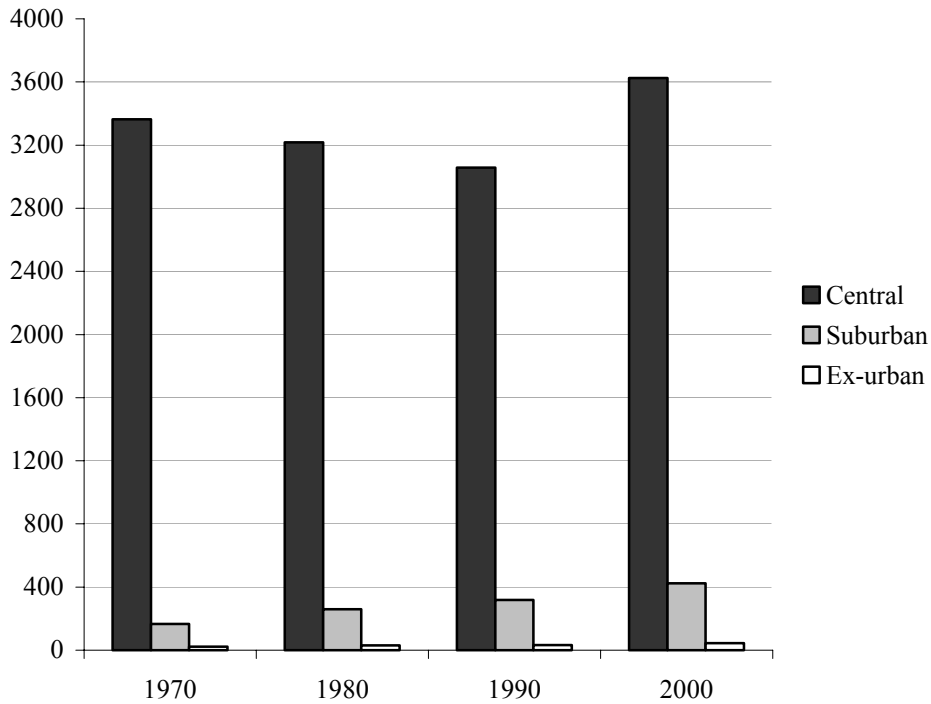
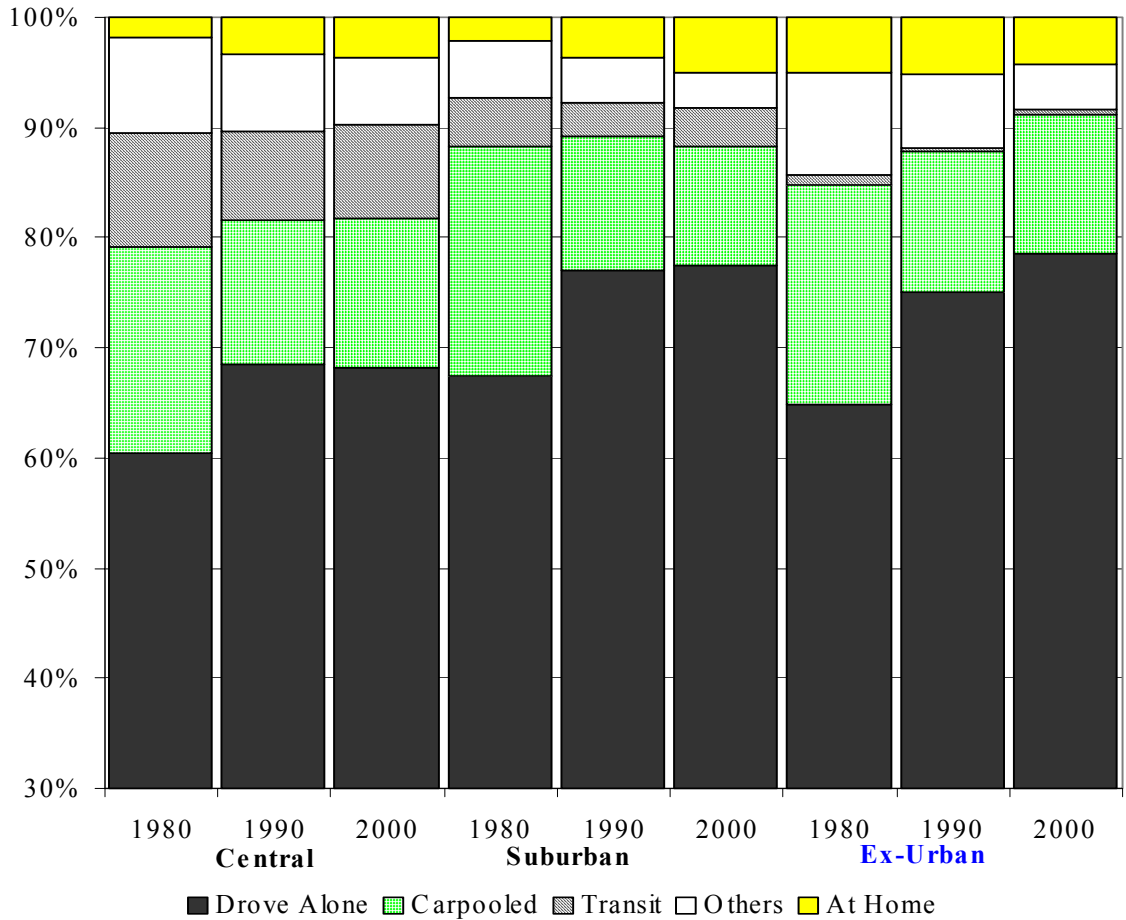


Exhibit 6.39 shows the percent of workers by mode to work from 1980 to 2000. The percent of workers who drove alone to work increased appreciably across all areas from 1980-1990 at the expense of carpools. From 1990 to 2000, the mode shares remained almost the same across the region.

**Exhibit 6.39 Denver - Means of Transportation to Work: 1980 – 2000**



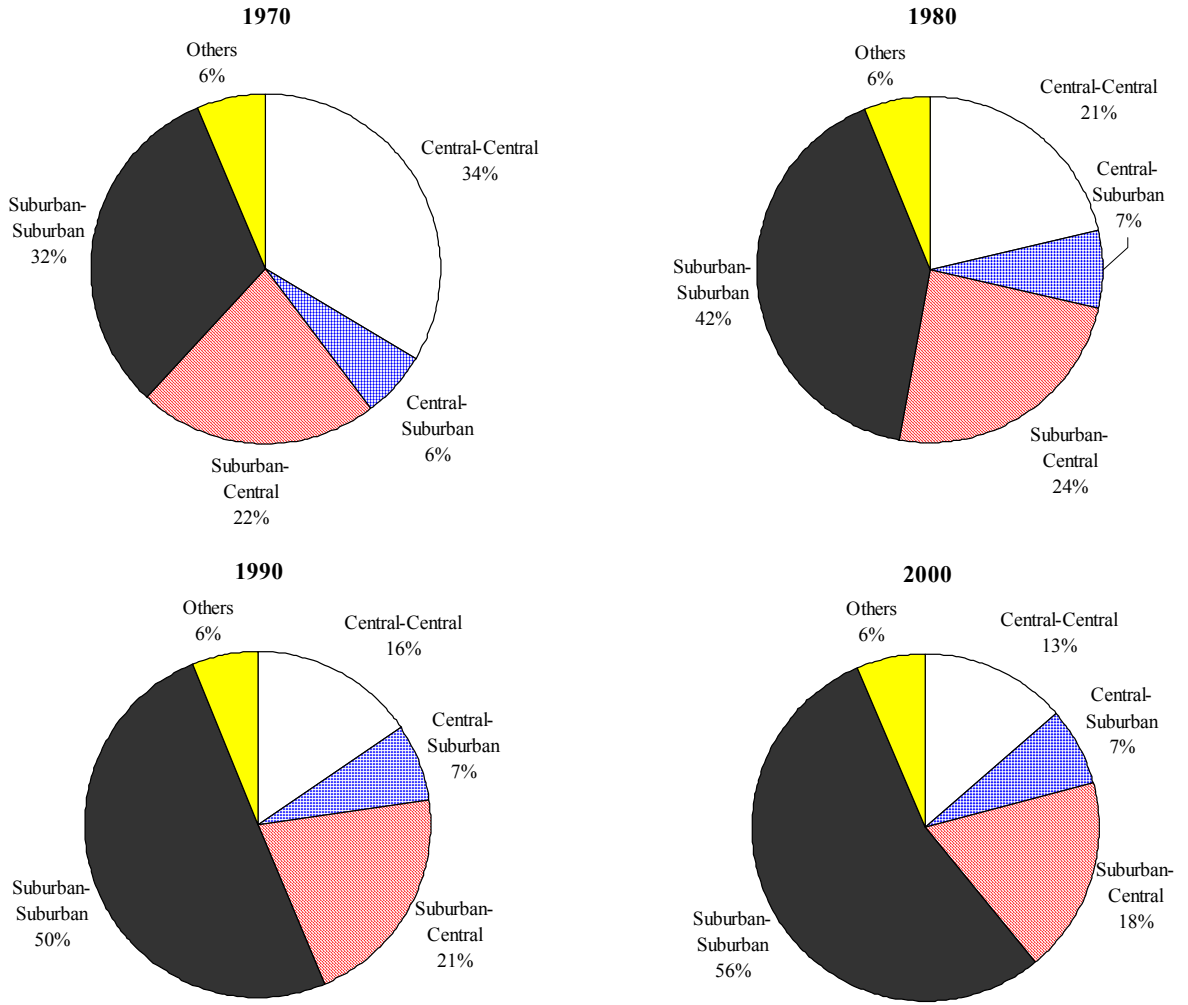
Compared to the four other example areas, workers in Denver tend to have shorter commutes, with only 14 percent of workers in ex-urban counties commuting more than 45 minutes (compared to 30 percent in Atlanta and 25 percent in Minneapolis). The overall change in workers with short and long commutes has remained rather steady since 1980.

**Exhibit 6.40 Denver - Short and Long Commutes: 1980-2000**

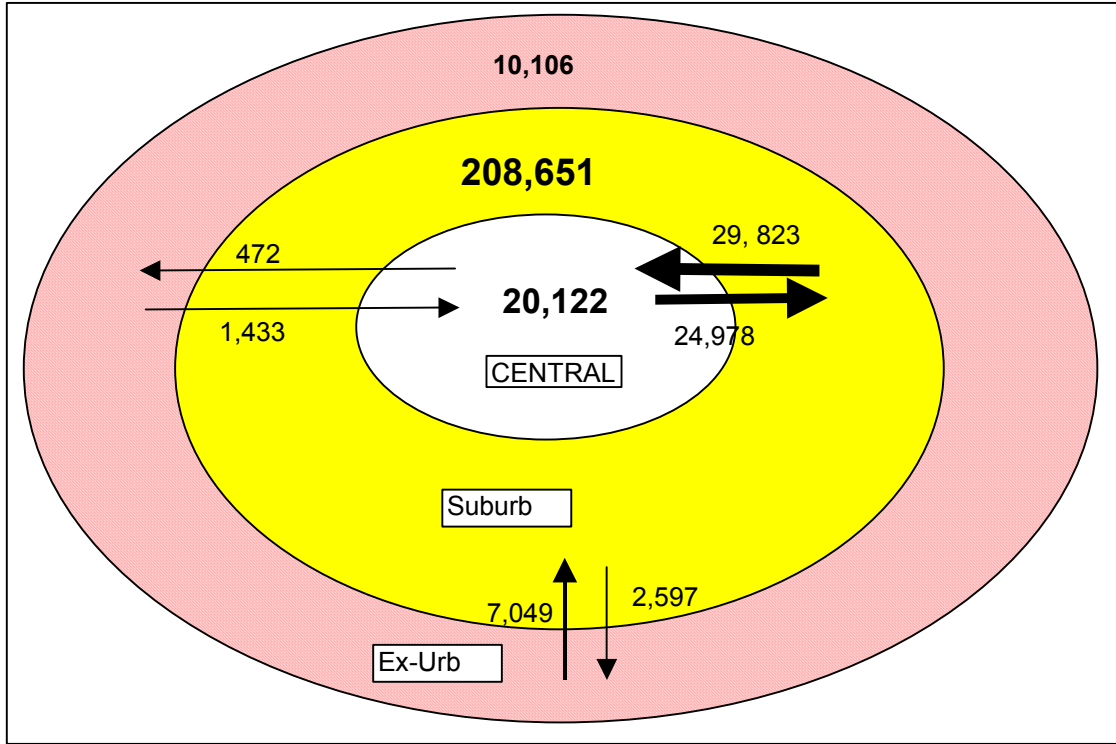
	Commutes less than 15 minutes			Commutes Longer than 45 Minutes		
	1980	1990	2000	1980	1990	2000
Central	29.1	28.7	24.6	6.1	7.0	11.6
Suburban	26.5	26.2	22.7	10.1	10.2	15.1
Ex-urban	47.4	46.0	36.4	9.9	10.0	13.7

The biggest change in Denver since the 1970s has been the huge increase in the suburban-to-suburban commutes by workers (see Exhibit 6.41). Since 1990, over 200,000 more workers who live in the suburban counties commute to jobs in the suburban counties (Exhibit 6.42).

**Exhibit 6.41 Denver – Worker Flows by Area Type: 1970-2000**



**Exhibit 6.42 Denver - Changes in Journey-to-Work Flows Between Central-Suburban-Ex-urban areas: 1990-2000**



*Note: Font sizes and thickness of arrows are approximately sized to represent the magnitude in change of commuter flows.*

**Exhibit 6.43 County Classifications for 5 Selected MSAs**

MSA Name	County Name	Flag
Atlanta, GA MSA	Barrow County	Ex-urban
	Bartow County	Ex-urban
	Carroll County	Suburban
	Cherokee County	Suburban
	Clayton County	Suburban
	Cobb County	Suburban
	Coweta County	Suburban
	DeKalb County	Suburban
	Douglas County	Suburban
	Fayette County	Suburban
	Forsyth County	Suburban
	Fulton County	Central
	Gwinnett County	Suburban
	Henry County	Suburban
	Newton County	Ex-urban
	Paulding County	Ex-urban
	Pickens County	Ex-urban
	Rockdale County	Suburban
	Spalding County	Suburban
Walton County	Ex-urban	
Chicago--Gary--Kenosha, IL--IN--WI CMSA	Cook County	Central
	DeKalb County	Ex-urban
	DuPage County	Suburban
	Grundy County	Ex-urban
	Kane County	Suburban
	Kendall County	Ex-urban
	Lake County	Suburban
	McHenry County	Suburban
	Will County	Suburban
	Lake County	Suburban
	Porter County	Suburban
	Kankakee County	Ex-urban
	Kenosha County	Ex-urban
Denver--Boulder--Greeley, CO CMSA	Denver County	Central
	Boulder County	Suburban
	Adams County	Suburban
	Arapahoe County	Suburban
	Douglas County	Suburban
	Jefferson County	Suburban
	Weld County	Ex-Urban
Minneapolis--St. Paul, MN--WI MSA	Anoka County, MN	Suburban
	Carver County, MN	Suburban
	Chisago County, MN	Ex-urban
	Dakota County, MN	Suburban
	Isanti County, MN	Ex-urban
	Ramsey County, MN	Suburban
	Scott County, MN	Suburban
	Sherburne County, MN	Ex-urban
	Washington County, MN	Suburban
	Wright County, MN	Ex-urban
	Pierce County, WI	Ex-urban
	St. Croix County, WI	Ex-urban
Hennepin County, MN	Central	
Portland--Salem, OR--WA CMSA	Clackamas County, OR	Suburban
	Columbia County, OR	Suburban
	Multnomah County, OR	Central
	Washington County, OR	Suburban
	Yamhill County, OR	Ex-urban
	Clark County, WA	Suburban
	Marion County	Ex-urban
Polk County	Ex-urban	



## Chapter 7

# BACKGROUND INFORMATION FOR DATA USED IN THIS REPORT

The decennial Census is a vital source of information on the commuting characteristics of the nation. For the last 40 years the Census has consistently collected information on:

- Demographic characteristics such as population, households, workers, and vehicles
- Economic characteristics such as income, earnings, and poverty
- Journey to work information such as travel time to work, departure time, mode, and vehicles available

These data allows us to track trends and identify changes in commuting behavior, to link demographic characteristics of households and workers to mode of travel to work, vehicle availability, and other related characteristics of U.S. commuters. We also obtain geographic flows of workers from place of residence to place of work.

The analysis in this report addresses the trends in the nation, the states, and in the 49 largest Metropolitan Statistical Areas (MSAs) which are those with a population of over one million residents. MSA-level analysis includes the Census years 1980, 1990 and 2000 (the geographic changes to metropolitan areas complicates the trends prior to 1980). Between 1980 and 1990 six metro areas were added to the largest group of those over one million in population. Between 1990 and 2000 ten areas were added to the largest group.

### Sources and Limitations of the Data

All of the demographic and travel data presented in this report are from the U.S. decennial census, unless otherwise indicated. Even though the census collected these data, changes in methods, geography and coding in the decades between 1960 and 2000 may inhibit direct comparison of the data.

### Changes in Geography

The United States Office of Management and Budget (OMB) defines metropolitan areas (MAs) according to published standards that are applied to Census Bureau data. The general concept of an MA is that of a core area containing a large population nucleus, together with adjacent communities having a high degree of economic and social integration with that core. MAs in this report are based on application of [1990 standards](#) (which appeared in the Federal Register on March 30, 1990) to 1990 decennial census data and to subsequent Census Bureau population estimates and special census data. This report uses the June 30, 1999 definition of MAs (new definitions were published by OMB on June 3, 2003, but are not used in this report). A metropolitan area is called a Consolidated Metropolitan Statistical Area (CMSA) if it meets requirements of an MSA,

has a population of 1 million or more, if the component areas are recognized as primary metropolitan statistical areas (PMSA), and if local opinion favors the designation. For example, the Washington, D.C. CMSA incorporates the Washington, D.C. PMSA, Baltimore, MD PMSA, and Hagerstown, MD PMSA.

Metro Area Definitions for all data (except 1990 Median income, and 1990 Median age) for the Census years 1980, 1990, and 2000 will use the June 1999 definitions of MSAs; therefore comparisons will be valid and straightforward. 1990 Median age and 1990 median income values are based on Census Bureau's published values using June 30, 1993 definition of MSAs.

The 1990 data for MSAs were prepared using county level data from 1990 Summary File 3 files, and then aggregating the data for 1999 geographic definitions: Central Counties are the same as those defined in the 1990 Journey to Work Trends Report. That report included a designated central county for 39 metropolitan areas. For the ten MSAs that were not included in the 1990 report, ONE County was selected based on the primary downtown area.

For the New England area counties are not a basic geographic component. When possible we use NECMAs, or county-based metro areas, and the central county is designated as central county when the NECMA has a city designated as central city in it. Making the geography as comparable as possible is done on a case-by-case basis for the New England area.

For more information on the June 30, 1999 definition for MSA geography, please refer to the Census Bureau website at:

<http://www.census.gov/population/www/estimates/metroarea.html>

## **Mode to Work**

Public transportation (transit) includes bus or trolley bus, streetcar or trolley car, subway or elevated, railroad, ferryboat, and taxicab.

## **Travel Time to Work**

In the 1990 Census (including the CTPP data), the maximum travel time assigned to any worker was 99 minutes. Workers who reported travel times of 100 minutes or more were coded to 99 minutes in 1990. The maximum travel time was increased to 200 minutes for Census 2000, thus the 2000 data are more accurate because they include the actual value for these long trips. The impact of this coding change is that increases in travel time between 1990 and 2000 are somewhat over-stated. At the national level, the Census Bureau estimates that about 29% (0.9 minutes) of the 3.1-minute increase in average travel time is attributable to the coding change.

The state-wide difference between the average travel time for workers for 2000 for top codes of 99 minutes and 200 minutes is anywhere from 0.7 to 1.7 minutes (the State of Louisiana). Nationally, average travel time is 24.6 minutes using a top code of 99 minutes. That means the national average of reported travel time increased by 2.2 minutes from 1990, rather than 3.1 minutes.

The story of increasing commute time in the last decade remains the same, regardless of the issue of coding changes. From 1980 to 1990, 9 states and the District of Columbia showed a decrease in average travel time and of the remaining 41 states only 12 showed an increase in average travel time over one minute. Using the same top code in 2000 (99 minutes), every state showed an increase in travel time of more than one minute.

## **Number of jobs, Employed persons, and Workers at work**

In examining decennial-census based counts of workers, it is important to understand definitional differences between workers and employed population and the differences between total employment (jobs) and workers-at-work. A general rule-of-thumb should be that total employment should be 7 to 9 percent higher than the Census 2000 count of workers-at-work. Two percent of the difference can be attributed to weekly absenteeism (see Item 2a), and six percent of the difference can be attributed to workers with multiple jobs (see Item 2c). These are general estimates based on national figures, and the exact measures for each MSA may be different.

### ***1. Employed persons versus Workers-at-work***

"Workers," as used in Journey-to-work and CTPP, refers to all those persons 16 years or older who were at-work in the reference week (including people in the Armed Forces).

"Employed" is defined as all persons 16 years or older who were:

- a. At work (except in the Armed Forces).
- b. With a job but not at work for the whole week (due to illness, personal business, vacation etc.)

The Census Bureau considers the terms "employed" and "civilian employed" as exactly the same. People who volunteered to work (without pay), and people who worked for the armed forces are excluded from "Employed."

Exhibit 7.1 shows all persons 16 years of age and older, workers, total workers, civilian employed population, and people working in the armed forces for the nation from the decennial Census.

### Exhibit 7.1 Employed population versus Workers: 2000

Category	United States
Total Population: 16 years or older	217,168,077
Total population in the labor force	138,820,935
Total Workers	128,279,228
Civilian Employed	129,721,512
Armed Forces	1,152,137
Civilian Employed + Armed Forces	130,873,649

#### 2. Reconciling Total Employment (jobs) and Workers-at-work

The decennial census based data for workers are derived from the long form question, "At what location did this person work LAST WEEK?"

If the person worked at more than one location they are instructed to print where they worked most last week. Thus, these data are tagged to a particular reference week. People are not being asked their usual workplace location. Also, the Census asks for ONLY ONE job. People with multiple jobs can write in information about only one job on the Census form.

There are three main adjustments that are needed to make TOTAL EMPLOYMENT (JOBS) data comparable to census workers-at-work data:

##### a. Weekly absenteeism adjustments

The Census reports only workers (full-time or part-time) who worked in any time during the week prior to the survey. An adjustment must be made to reflect workers who may not work every day or who may not go to work on an occasional day due to illness, vacation, personal business or other reasons. The FHWA publication "Transportation Planner's Handbook on Conversion Factors for the Use of Census Data" notes that studies by local agencies suggest that the typical WEEKDAY absenteeism factor is in the range of 15-20 percent.

One way to calculate absenteeism for you area is to compare the values for "Civilian Employed" + "Armed Forces" with "Total Workers."

$$\text{Absenteeism factor} = \frac{(\text{Civilian Employed} + \text{Armed Forces}) - \text{Total Workers}}{\text{Total Workers}} * 100$$

Using the values from Table 1, the national average for WEEKLY absenteeism is about 2 percent. This procedure can be used to calculate weekly absenteeism factors for all geographies (eg: state, county, place, tract, or block group).

b. Seasonal fluctuations in employment adjustments

Both the labor force, and employment opportunities fluctuate with different seasons. The decennial census does not measure any “typical” week in the year – the reference week may be anytime between March-April 2000.

c. Multiple jobholding adjustments

In May 2001, 7.8 million persons worked at multiple jobs in the United States, a figure representing 5.7 percent of all workers<sup>1</sup>. The percent of workers holding multiple jobs varies based on geographic location, cost of living etc.

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<sup>1</sup> US DOL, Bureau of Labor Statistics Publication “Labor month in review” Vol. 125, No.11, November 2002.