

Commuting, Non-Work Travel and the Changing City

An Analysis of Census 2000 Commuting Results
for New York City

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Summary

Analysis of recently released 2000 census data and other data on subway, bus and auto usage reveals a dual trend in bus and subway ridership:

- Bus and subway ridership for non-work trips – shopping, recreation and personal business – increased by a remarkable 62% in the 1990s.
- On the other hand, bus and subway ridership for commuting to work increased more slowly than employment (6.7% for transit commute trips vs. 8.1% for employment) so that transit's share of all commute trips declined slightly.
- As a result of these divergent trends in work versus non-work ridership growth, work trips now account for less than one-half of all subway and bus trips – dropping from 54.5% in 1990 to 44.1% in 2000.

The analysis also shows that:

- The proportion of New York City workers commuting by auto increased very slightly from 1990 to 2000 (from 32.6% to 32.9%), bringing almost to a halt a decades-old shift from transit to auto for commute trips. Nevertheless, due to job growth, the number of auto commuters increased by 9.1% from 1990 to 2000.
- Commutation times for New York City residents lengthened substantially, from 36.5 minutes in 1990 to 40.0 minutes in 2000.
- The proportion of New York City households owning a vehicle increased only marginally, from 44.1% in 1990 to 44.3% in 2000. Spurred by an increase in households, however, the number of households owning a car increased by 7.6% while the number without a car increased 6.8%.

Several important implications can be drawn from these data:

- The growth in non-work transit trips explains why transit ridership has continued to increase in 2002 despite falling employment in New York City in the last year.
- Non-work trips are now critical to public transportation ridership growth, presenting both challenge and opportunity to the city's transit system.
- Transit's mode share for work trips will be affected by the city's success in rebuilding lower Manhattan.
- Transit's mode share will also be affected by the transit system's ability to serve the diverse trip network created by the decentralization of jobs within New York City.

Introduction

New York City's transportation system experienced major changes in recent years. The Sept. 11, 2001 attacks destroyed a portion of the 1/9 subway line and the World Trade Center PATH station and led to restrictions on vehicular access to Manhattan. Other significant changes include opening of the subway connection between Queens Blvd. and the 63 Street tunnel, MetroCard fare incentives, added bus service, rerouting of trains due to Manhattan Bridge construction, the sharp drop in crime in the subway and the city generally, extensive subway station renovations, purchase of redesigned subway cars and dramatic improvements in subway and bus service reliability.

Coming decisions will continue to reshape the city's transportation infrastructure. The rebuilding of Lower Manhattan may create better connections among the area's numerous subway lines, ferry terminals, and the PATH. More ambitious proposals for Lower Manhattan include a bus terminal, an extension of the Long Island Railroad and moving West Street underground.

Outside of Lower Manhattan, major transportation projects being planned or under consideration include service on the Long Island Railroad to Grand Central, an extension of the 7 train to the Javits Center, better transit access to LaGuardia Airport, and the long-awaited Second Avenue subway. Actually under construction is a rail link to JFK Airport. In addition to these capital projects, the transit fare is likely to increase around the beginning of next year.

Only with a clear understanding of how well the city's transportation network serves city residents, suburban commuters and visitors – and how travel patterns and travel needs are changing – can effective decisions be made about these proposals.

The decennial census is among the most important of the host of information sources available to shed light on how and why people move about in New York City. The census provides a level of detail available from no other data source. It also includes a wealth of social and economic data that provide the context for understanding transportation patterns. Furthermore, it offers a unique opportunity to view trends that have progressed over the past several decades.

The census is by no means a sufficient data source, however. The census is conducted only once a decade, omitting important annual and monthly trend data. The census also focuses on journey to work travel, overlooking non-work trips that represent the majority of trips and have become increasingly important. Census data thus is best analyzed in conjunction with data from other sources.

This report analyzes 2000 census figures that were released in late May on the commuting practices of New York City residents and auto ownership of New York City households. Also considered are other data on subway and bus ridership, Manhattan-bound transit ridership and auto traffic to provide a more complete picture of the city's transportation patterns and trends.

This analysis is by nature preliminary, since the census released only county-level (borough-level in New York City) data in May, and only by place of residence (as opposed to workplace).¹ The public transportation commutation data does not as yet break out subway, bus and other modes. As detailed data are released over the next year, more in-depth analysis can be conducted.

This report is based on the premise that a well-functioning transportation system is essential to the health and vitality of New York City, and further, that promoting the use of public transportation is desirable wherever possible. We thus assess how well public transportation is meeting the transportation needs of New York City residents, and in particular, how effectively public transportation is attracting trips in comparison to the private automobile.

A note on terminology: The census "public transportation" category includes subway, railroad, bus, ferry and taxi. We use the term "public transportation" when referring to census data for 2000 and earlier years. Somewhat arbitrarily, we use the term "transit" when referring to subway and bus only. "Transit" is thus a subset of "public transportation." Transit represents the vast majority of "public transportation" trips in New York City; in 1990, subway and bus accounted for 92 percent of the census "public transportation" classification.

¹ As a result, this analysis focuses on city residents' commutes, and does not discuss suburban residents' commutes into New York.

The New Census Data

The new census data are derived from the “long form” questionnaire, which collects detailed information on topics such as race, ethnicity, education, income, employment, and housing for individuals and households. Transportation questions on the long form concern means of transportation to work, travel time to work, and number of motor vehicles available to the household.²

For New York City, the new census results show:

- The proportion of New York City workers commuting by public transportation declined slightly over the last decade, from 53.4% in 1990 to 52.8% in 2000.
- The proportion of workers commuting by auto increased very slightly, from 32.6% to 32.9%.
- The proportion of workers walking to work declined from 10.7% to 10.4%, while those working at home increased from 2.4% to 2.9%.
- Commutation times lengthened substantially, from 36.5 minutes in 1990 to 40.0 minutes in 2000.
- The proportion of New York City households owning a vehicle increased very slightly, from 44.1% in 1990 to 44.3% in 2000.
- Spurred by an increase in households, the number of households owning a car increased by 7.6% while the number without a car increased 6.8%.
- The number of motor vehicles owned by households increased 7.4%. Nearly half the increase occurred among households that now own two or more automobiles.

In some ways, the 1990s saw a continuation of long-term trends. For example, the proportion of households owning a car has increased slowly since the question was first asked in the 1960 census. The number of autos owned by New York City households has grown more quickly, as the number of households increased and as households have added second and sometimes a third vehicle.

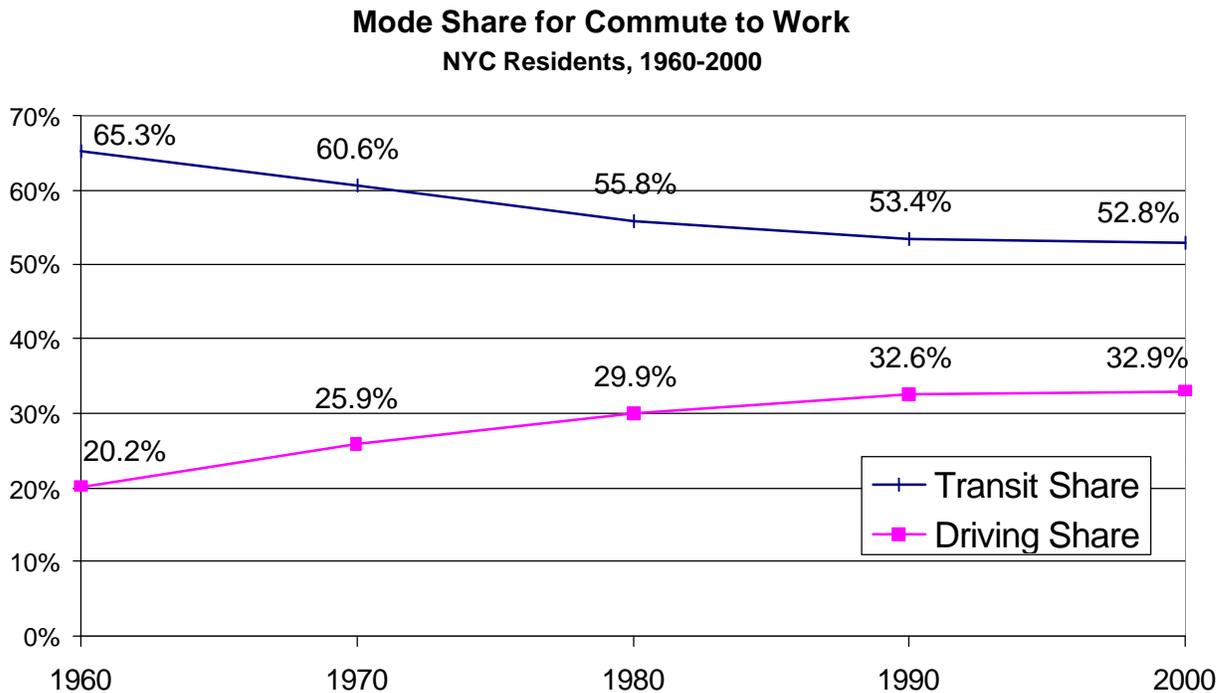
The 1990s also saw a sharp slowdown in the shift from public transportation to auto for commuting to work. Public transportation’s share of commute trips decreased by only a fraction of a percentage point in the 1990s, after having declined by 12 percentage points in the previous three decades (from 65.3% in 1960 to 53.4% in 1990).

² Wording of Census questions is found in Appendix A.

Finally, the 3.5-minute increase in commuting times is a reversal of the previous trend. In the previous decade, commuting times declined 1.8 minutes, from 38.3 minutes in 1980 to 36.5 minutes in 1990.

The chart below shows census commutation trends between 1960 and 2000. Detailed data are found in Appendix B.

The 2000 census also shows a surprising 1% decline in the number of workers commuting by public transportation between 1990 and 2000. As discussed below, given the substantial employment gains in the city commuting by public transportation surely increased in the 1990s, however.



Analysis and Findings

1. Commutation by public transportation increased by 6.7% for New York City residents in the 1990s, even as public transportation's share of commute trips declined slightly.

Census figures showing a 1% decline in the number of persons commuting by public transportation between 1990 and 2000 need to be adjusted to account for substantial gains in employment in the city. The census clearly undercounts employed New York City residents. It shows only 9,000 additional workers age 16 and over living in New York City in 2000 compared with 1990, a tiny gain of only 0.3%. The broadest measure of city employment, however, shows an 8.1% increase over the decade.³ While some differences in census counts of workers and employer-based job data can be explained by differences in methodology,⁴ methodological issues alone would not create differences of this magnitude.

Undercounting of workers in the census means that workers commuting by public transportation are also undercounted. A more reasonable figure for public transportation commutation can be estimated based on actual employment gains and the census-measured share of workers commuting by public transportation. This calculation yields an increase in the number of New York City residents commuting by public transportation of nearly 115,000, or 6.7% from 1990 to 2000.⁵

For autos, the re-estimated figure is an increase of nearly 95,000, or 9.1% from 1990 to 2000.⁶ Nearly one-half the increase in vehicles came among households that now own two or more vehicles. Workers in these households usually use an auto to commute to work.⁷

Why did transit commuting lose market share given the improvements in transit service quality and MetroCard fare incentives?

³ Source: Bureau of Economic Analysis Regional Accounts Data, Total Full-time and Part-time Employment, 1990 and 2000. Available: <http://www.bea.doc.gov/bea/regional/reis>

⁴ These census data are for workers living in New York City. Employer-based job data include employment of suburban commuters; they also double-count or triple-count persons who hold two or three jobs.

⁵ See the Appendix C for the methodology for this adjustment to census figures.

⁶ Gains in the auto's share of commute trips are consistent with the continuing growth of auto ownership in the city. The census shows a 7% increase in vehicles owned by city residents in the 1990s. This figure is substantiated by the trend in motor vehicle registrations. (See Schaller Consulting, "Mode Shift in the 1990s.")

⁷ In households with two or more autos, auto is used for 64% of trips between home and work by household members. This compares with 36% for households with one auto and 5% for household with no autos. Based on author's analysis of data from the 1997/98 Household Interview Survey conducted for the New York Metropolitan Transportation Council and North Jersey Transportation Planning Authority

One likely factor is travel times to work. Although 2000 census results do not yet break out commute times for public transportation versus the auto, previous census results and other surveys show that commute trips tend to be longer by public transportation than by auto. Travel time, along with parking costs, is a key factor in workers' choice of auto versus transit for work trips.⁸ Thus, to the degree workers can afford a car and can find affordable parking, they will tend to choose to drive to work.

A second likely explanation is the location of jobs. As the core of both the city's and region's transportation system, Manhattan is better served by transit than are other parts of the city. Yet despite having 64% of all jobs in the city in 1990, Manhattan accounted for only 46.5% of job growth from 1990 to 2000.⁹ The majority of job growth was in the other boroughs, principally Brooklyn and Queens, which accounted for 21% and 17%, respectively, of the citywide job increase. Many of these new jobs were in airport-related industries and health services. Job locations are often difficult to reach by transit and relatively easy to reach by auto. In addition, a small but growing minority of city residents "reverse commute" to burgeoning job centers in the suburbs. These reverse commutes are often very time-consuming if taken by transit.

2. Non-work travel by subway and bus grew by an astounding 62% in the 1990s, in contrast to the 6.7% increase in work-related trips by public transportation. Fewer than one-half of all transit trips are now for work trips.

While commute trips on public transportation grew by 6.7% in the 1990s, total transit ridership in the same period grew much more quickly. New York City Transit ridership figures show a 34% increase in total subway ridership in the 1990s while bus ridership increased 27%.¹⁰ The obvious conclusion is that people are making many more trips on transit for purposes other than commuting to work.

Non-work trips include a wide variety of trip purposes: social and recreational trips, trips to and from school, personal business, shopping and trips "serving passengers" such as adults transporting children or elderly parents.

The bulk of subway and bus ridership growth in the 1990s occurred in these non-work trips. Assuming as estimated above that public transportation commutation grew by

⁸ See Bruce Schaller, "Enhancing Transit's Competitiveness: A Survey Approach to Identifying Priorities," *Transportation Research Record 1669*, 2000. Available: <http://www.schallerconsult.com/pub/enhancef.htm>

⁹ Source: Bureau of Economic Analysis Regional Accounts Data, Total Full-time and Part-time Employment, 1990 and 2000.

¹⁰ For more on the growth in subway and bus ridership, see Schaller Consulting, "Mode Shift in the 1990s," August 2001. While bus ridership has grown more quickly than subway ridership since 1996, bus ridership had been falling earlier in the decade and so grew less quickly than subway ridership during the 1990s as a whole.

6.7%, the remaining transit ridership growth is in non-work trips. A reasonable estimate is that non-work transit trips increased by 62% in the 1990s.¹¹

The growth in non-work travel by subway and bus means that work trips now account for fewer than one-half of all transit trips. A 1997/98 regional travel survey found that 51.0% of subway and bus trips were for work-related purposes. Based on this figure, it can be estimated that work trips as a proportion of all bus and subway trips declined from 54.5% in 1990 to 44.1% in 2000.¹²

Why did non-work transit trips grow so substantially? The most likely explanation is that city residents are making more non-work trips overall, and that most of the growth is by bus and subway.

Several factors are likely contributors to this phenomenon:

- Improvements to the transit system

Subway and bus service has become more frequent and more reliable, particularly outside the rush hour, so it is a more convenient means of travel for non-work trips.

- Metrocard fare incentives

The Metrocard has lowered the price of non-work transit trips. Unlimited-ride Metrocards essentially reduce the fare on non-work transit trips to zero – people buy the cards to pay for their daily commutes, and can then use them for non-work trips at no additional cost. Even users of regular pay-per-ride Metrocards have benefited from free subway-bus transfers and buy-ten-get-one-free discounts.

¹¹ Work-related trips constitute 58.9% of subway trips and 34.3% of bus trips, according to the 1997/98 Household Interview Survey (HIS) conducted for the New York Metropolitan Transportation Council and North Jersey Transportation Planning Authority. The survey covered residents of the New York metropolitan area. Assuming an 8.1% increase in employment and the slight decline in public transportation mode share for commute trips seen in the Census, estimated public transportation work trips increased by 57.8 million (6.7%) between 1990 and 2000, and non-work trips increased 445.3 million (62.1%). Total subway and bus ridership was 2.08 billion in 2000. All figures used here are for “unlinked trips,” meaning that trips involving transfers between subway and bus are counted twice.

¹² See previous footnote. The 1990 and 2000 estimates are based on the 1997/98 survey result and the estimated 6.7% change in commute trips by transit during the 1990s.

- Decline in crime

With the drop in crime citywide, people feel safer going out at night and may be making more trips overall. They also feel safer using the subway, especially at less crowded off-peak times.

- Increased urban amenities

For many years, the outer boroughs had a disproportionately low share of basic urban amenities such as supermarkets, retail stores, and cinemas. Studies also show that residents of the outer boroughs tend to make fewer trips than their counterparts in Manhattan and the suburbs.¹³ A plausible explanation is that residents of the outer boroughs traveled less because, with the lack of amenities, there were fewer places to go. In recent years, however, more amenities have been available in the outer boroughs and their availability may be encouraging residents to travel more.

In sum, New Yorkers seem to be traveling more and making more total non-work trips. Improvements in both the transit system and in the overall vitality of the city have led people to go more places, more often.

¹³ The average New Yorker made 2.8 trips per day in 1997/98 compared with 3.4 for suburban residents. Differences between city and suburban trip rates are true for virtually all demographic groups – employed persons as well as those not working, households with automobile(s) as well as those without, lower income as well as higher income persons. For trip rates by county throughout the metropolitan region, see New York Metropolitan Transportation Planning Council and North Jersey Transportation Planning Authority, “Travel in the New York-New Jersey Metropolitan Area,” April 2000. Available: <http://www.schallerconsult.com/pub/rthis.pdf>

Implications

Census 2000 and other data reveal dual trends with regard to the city's transit system. On the one hand, transit usage for non-work trips – shopping, recreation and personal business – has increased dramatically. On the other hand, transit commuting increased more slowly than employment so that transit's share of all commute trips declined slightly. It is important to consider the implications of these trends.

1. The growth of non-work trips explains why transit ridership has continued to increase in 2002 despite falling employment.

New York City employment fell 3.6% in the first quarter of 2002,¹⁴ yet transit ridership continued to grow. The growth in non-work transit ridership explains this unusual pattern. Ridership gains over the past year have been much stronger for the types of travel less associated with work trips, namely, bus ridership and weekend subway ridership:

- Weekday subway ridership (about one-half of which are work-related) fell 1.8% in the first quarter of 2002 compared with a year earlier.
- By contrast, weekend subway ridership (primarily non-work trips) continues to grow, up 3.0% over the past year.
- Bus ridership is up 4.4% on weekdays and 7.1% on weekends.¹⁵

2. Non-work travel is now critical to public transportation ridership growth. Growth in non-work travel presents both challenge and opportunity to the city's transit system.

Until the mid-'90s, subway ridership followed economic cycles while bus ridership declined through both good and bad economic periods. Transit ridership and revenues are now less subject to economic downturns but more dependent on transit's ability to attract new non-work travel.

This is an important development that should broaden the focus of travel analysis. Historically, collection and analysis of travel data has focused on work trips. Travel surveys often do not even collect weekend travel data since relatively few work trips take place on weekends. Transit studies often are even more narrowly focused, emphasizing Manhattan-bound peak-hour commuting.

¹⁴ Bureau of Labor Statistics nonfarm employment for January-March 2002 compared with the same months in 2001. Available: <http://146.142.4.24/cgi-bin/surveymost?r2>

¹⁵ Source: New York City Transit, "Summary of Operating Performance," May 2002.

The huge increase in non-work trips needs to be better measured and understood. It is important to know when and where the gains in transit ridership have occurred, why the transit system has been able to attract these trips, and how transit can continue to attract these trips.

Growth in non-work trips by transit is also a welcome opportunity for the transit system to utilize its infrastructure more fully during off-peak hours when spare capacity sometimes (but no longer always) exists.

It is essential that the trend toward non-work trips be included in discussions about future changes to the city's transportation system. Strategies for expansion of the transit system and other major investments should be evaluated in terms of how they will serve residents' non-work travel needs as well as work trips. The next transit fare increase should be structured to take into account the needs and price sensitivities of both discretionary non-work travelers and traditional commuters.

3. Transit's mode share for work trips will be affected by the city's success in rebuilding lower Manhattan as an attractive office center.

Public transportation carries the large majority of workers bound for the Manhattan business district but carries a much smaller proportion of workers headed elsewhere. Maintaining Manhattan's share of regional employment is critical to maintaining transit's share of work trips.

Bringing a magnetic mix of uses into Lower Manhattan, as many urban planners propose – including shopping, dining, and entertainment – could prove to be as much of a boon for transit as the redevelopment of office space. Mixed use development would place an attractive collection of non-work activities at one of the most transit-accessible locations in the city. Such development could prove to be a significant generator of non-work transit ridership.

4. Transit faces challenges in serving the diverse trip network created by the decentralization of jobs.

Census data released later this year will show more clearly the origins and destinations of work trips and transit's share of those trips. The journey to work data will point up major areas of employment growth and how well transit is currently serving those trips. This analysis will help transit planners identify underserved destinations and identify needed new or expanded services.

Serving decentralized employment centers is obviously more difficult than serving a concentrated mass of jobs such as found in the Manhattan business district. The new jobs may not be near any subway lines. Workers often need to transfer between bus and subway to reach their place of employment. Under these conditions, coordination of bus and subway services and consistency in scheduling and operations becomes critical. New technologies, such as global positioning systems, can play a vital role in operating reliable bus service.

As another example, better integration between the city transit system and PATH is needed to help city residents reach growing job sites in Jersey City and beyond. This should be an integral part of the Lower Manhattan rebuilding effort.

It will be particularly important to understand the 3.5-minute increase to travel times to work. Even in 1990, commute times were relatively long for New York City residents although they had declined in the 1980s. Since lengthy commutes tend to lead to decentralization of jobs and population, addressing this issue is particularly important to the continued attractiveness of New York City as a place to live and do business.

Appendix A. Census Transportation-Related Long Form Questions

24a. How did you usually get to work LAST WEEK?

If the person usually used more than one method of transportation during the trip, mark the one used for most of the distance.

- Car, truck, or van – *Continue with 24b*
- Bus or trolley bus
- Streetcar or trolley car
- Subway or elevated
- Railroad
- Ferryboat
- Taxicab
- Motorcycle
- Bicycle
- Walked
- Worked at home – *(Skip questions 24b, 25a, 25b)*
- Other method

(Skip to 25a except where noted)

24b. How many people, including yourself, usually rode to work in the car, truck, or van LAST WEEK?

- Drove alone
- 2 people
- 3 people
- 4 people
- 5 or 6 people
- 7 or more people

25a. What time did you usually leave home to go to work last LAST WEEK?

(Blanks to fill in time, and check boxes for am/pm)

25b. How many minutes did it usually take you to get from home to work LAST WEEK?

(Blanks to fill in no. of minutes)

...

44. How many automobiles, vans, and trucks of one-ton capacity or less are kept at home for use by members of your household?

(Blanks to fill in no. of vehicles)

Appendix B. Commuting and Auto Ownership 1960-2000

1960		1970	
All Workers	3,234,041	All Workers	3,106,170
Private Automobile or Car Pool	611,134	Private Auto	803,626
Railroad	36,207	Driver	667,812
		Passenger	135,814
Bus or Streetcar	431,719	Bus or Streetcar	461,271
Subway or Elevated	1,506,058	Subway, elevated, or railroad	1,421,364
Walked to Work	305,688	Walked to Work	297,132
Worked At Home	68,694	Worked At Home	57,146
Other Means	63,357	Other	65,631
Not Reported	211,184		
Total Reported	3,022,857	Total Transit	1,882,635
Total Transit, Reported	1,973,984	Total Driving	803,626
Transit Share*	65.3%	Transit Share	60.6%
Driving Share*	20.2%	Driving Share	25.9%

*Not reported allocated to transit/driving by share of reported means to work

1980		1990	
Workers 16 years and over	2,824,989	Workers 16 years and over	3,183,088
Private Vehicle	846,047	Car, truck, or van	1,036,654
Drove alone	567,774	Drove alone	765,151
Carpooled	278,273	Carpooled	271,503
Public Transportation	1,576,976	Public Transportation (incl. taxi)	1,701,192
Bus or streetcar	384,393	Bus/trolley/streetcar	411,415
Subway, elevated, or railroad	1,157,634	Subway/elevated/railroad/ferry	1,239,681
Walked Only	320,308	Walked	340,077
Other Means	33,166	Other Means	28,346
Worked at Home	48,492	Worked At Home	76,819
Transit Share	55.8%	Transit Share	53.4%
Driving Share	29.9%	Driving Share	32.6%

2000	
Workers 16 years and over	3,192,070
Car, truck, or van	1,049,396
Drove alone	794,422
Carpooled	254,974
Public transportation (incl. cab)	1,684,850
Walked	332,264
Other means	33,409
Worked at home	92,151
Transit Share	52.8%
Driving Share	32.9%

Source: U.S. Census

Auto Ownership in New York City, 1960-2000

	Number of Households				
	1960	1970	1980	1990	2000
No vehicle	1,527,278	1,630,739	1,636,988	1,575,217	1,682,946
1 vehicle	1,018,047	1,015,111	902,529	887,309	955,155
2 vehicles	90,054	171,166	211,518	282,593	305,267
3+ vehicles	19,395	19,856	37,495	74,282	78,210
Total Households	2,654,445	2,836,872	2,788,530	2,819,401	3,021,588
% w/o vehicle	57.5%	57.5%	58.7%	55.9%	55.7%
Total Vehicles	1,261,711	1,422,510	1,448,434	1,695,913	1,821,979
Veh. Per Household	0.48	0.50	0.52	0.60	0.60

Source: U.S. Census

Appendix C. Adjusting the Growth of Commutation by Public Transportation in the 1990s as Measured by the Census

Census figures showing a 1% decline in the number of persons commuting by public transportation between 1990 and 2000 need to be adjusted to account for substantial gains in employment in the city.

The census shows less commutation by public transportation only because it shows a very small (0.3%) increase in the number of resident workers. Undercounting of workers in the census means that workers commuting by public transportation are also undercounted. A more reasonable figure for public transportation commutation can be estimated based on actual employment gains and the census-measured share of workers commuting by public transportation.

The calculation is as follows. The 1990 census showed 3,183,088 workers age 16 and over living in the city. Increase this number by 8.06% for the 1990-2000 BEA employment increase. Then apply the 2000 public transportation mode share from the census (52.782%), producing an estimate of 1,815,513 workers commuting by public transportation. This figure is 6.7% higher than the 1990 census figure of 1,701,192.

This calculation presumes that the proportion of jobs in the city held by city residents (and conversely by suburban commuters) was the same in 2000 as in 1990, so that the number of workers living in the city increased at the same rate as the number of jobs in the city. The calculation also assumes that the rate of multiple job holding did not change in the 1990s. Finally, it assumes that the share of workers using public transportation is accurately captured by the census.

While none of these assumptions is likely to be exactly borne out when additional data are published, the estimated 6.7% increase in public transportation commutation appears reasonable given that the figure is slightly below the rate of job growth citywide.

Another way to assess the reasonableness of the 6.7% figure is to examine hub-bound subway ridership and Manhattan employment trends. Hub-bound ridership refers to trips entering Manhattan across the East River or across 60 Street in Manhattan. New York City Transit takes hub-bound subway ridership counts each fall. To compare with employment trends, we can focus on the morning rush hour (7-9 a.m.) when the large majority of subway riders are work-bound commuters.

Hub-bound subway ridership increased 8% from 1990 to 2000. This is probably about the same as Manhattan employment increases over the period. BEA annual employment data show a 6% increase in Manhattan employment from 1990 to 2000. The increase between the fall of 1990 and the fall of 2000 is likely to be about two

percentage points higher than the BEA annual figures, however, because employment fell throughout 1990 and grew throughout 2000.¹⁶ Thus, the change in hub-bound subway ridership appears to closely match the change in Manhattan employment. It would be reasonable to expect employment in the rest of the city to somewhat outpace subway ridership to work, given that the subway system is less likely to serve employment locations outside the Manhattan hub.

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Schaller Consulting serves government, business and non-profit groups seeking to satisfy customer needs in all forms of urban transportation including bus, subway, paratransit, taxicab, livery and auto.

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¹⁶ This estimate is based on nonfarm employment, which is not as broad a measure of employment as the BEA data, but unlike BEA data are available on a monthly basis.