

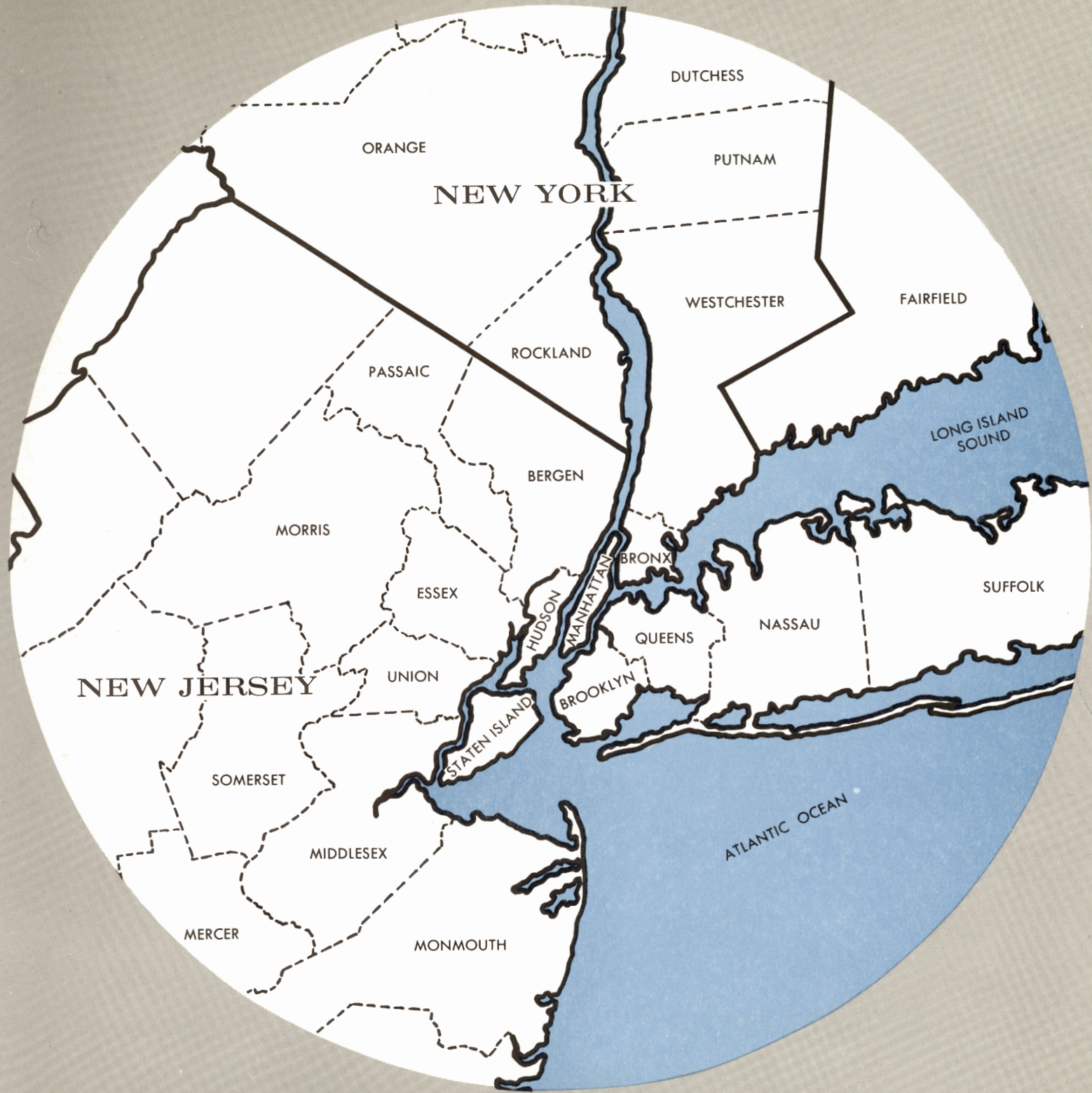
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# JOURNEY TO WORK

NEW YORK - NEW JERSEY TRANSPORTATION AGENCY

New Jersey State Library





DUTCHESS

ORANGE

PUTNAM

NEW YORK

WESTCHESTER

FAIRFIELD

PASSAIC

ROCKLAND

LONG ISLAND  
SOUND

BERGEN

MORRIS

BRONX

ESSEX

SUFFOLK

NEW JERSEY

UNION

HUDSON

MANHATTAN

QUEENS

NASSAU

BROOKLYN

STATEN ISLAND

SOMERSET

ATLANTIC OCEAN

MIDDLESEX

MERCER

MONMOUTH

*This study was undertaken to improve the future of transportation within the core of America's most vital urban area in accordance with the objectives of the United States Bureau of Public Roads, as outlined in its policy on urban planning for highways.*

## New York-New Jersey Transportation Agency

The New York-New Jersey Transportation Agency is a bi-state agency created by legislation enacted by the two States in the form of an interstate compact and approved by Congress in September, 1959. The Agency is responsible for the preparation and execution of plans for preserving and improving essential mass transportation services throughout the north Jersey-New York metropolitan area. In accordance with this responsibility, the Agency has surveyed and studied the origin, the destination and other characteristics of passenger travel in two States.

In May, 1961, the Agency initiated a survey of Journey-To-Work travel from the entire New York metropolitan region to Mid-Manhattan between Chambers and 60th Streets. This report is based on more than 200,000 replies received from questionnaires distributed to employees in Mid-Manhattan.

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FORTY-SECOND STREET MID-MANHATTAN ASSOCIATION  
FOURTEENTH STREET ASSOCIATION  
LEXINGTON-FIRST AVENUE ASSOCIATION  
PORT OF NEW YORK AUTHORITY  
THE BROADWAY ASSOCIATION  
THIRTY-FOURTH STREET-MIDTOWN ASSOCIATION  
TWENTY-THIRD STREET ASSOCIATION  
WEST SIDE ASSOCIATION OF COMMERCE

## Introduction

Urban growth is being shaped by two dominant trends which have given new dimensions to the problems of urban transportation. On the one hand, the proportion of the nation's population residing in urbanized areas is continuing its long-term increase. On the other hand, development within urban areas has tended strongly, during recent decades, in the direction of spatial dispersal of industry and population, often characterized as "urban sprawl". The trend toward spatial dispersion of population and economic activity together with large increases in urban population has intensified the problems of urban transportation. One of the most urgent of these problems is that of the daily rush-hour movement of people between their homes and their jobs.

Results of the 1960 census show a continuation of these trends in land use that are the cause of more and more workers having to go greater distances to reach their places of work. From 1950 to 1960 the suburban population of the nation's 168 standard metropolitan areas increased by 48 per cent. A considerable part of this increase in suburban population is accounted for by migration from the central city. A drastic shift to the suburbs occurred in the 23-county New Jersey-New York metropolitan area. The centrally located areas of Manhattan, Brooklyn, the Bronx and Hudson County lost 435,000 residents while the suburban counties gained 2,337,000.

The forces of dispersal have been with us a long time and are firmly rooted in the technology of our age. Each advance in the

technology of power and transportation from the steam engine, the electric motor, the gasoline engine, the diesel engine to the gas turbine has served to diminish the advantages of industrial location near the urban center. Similarly, advances in communications, the telephone, teletypewriter, radio, television, and microwave transmission have diminished the advantages of a central location for many activities. Advances in telecommunication of business data together with developments in the electronic computer promise further major shifts in the advantages of a central location. The forces of dispersal will continue to influence land-use patterns and thereby be a major determinant of urban transportation requirements.

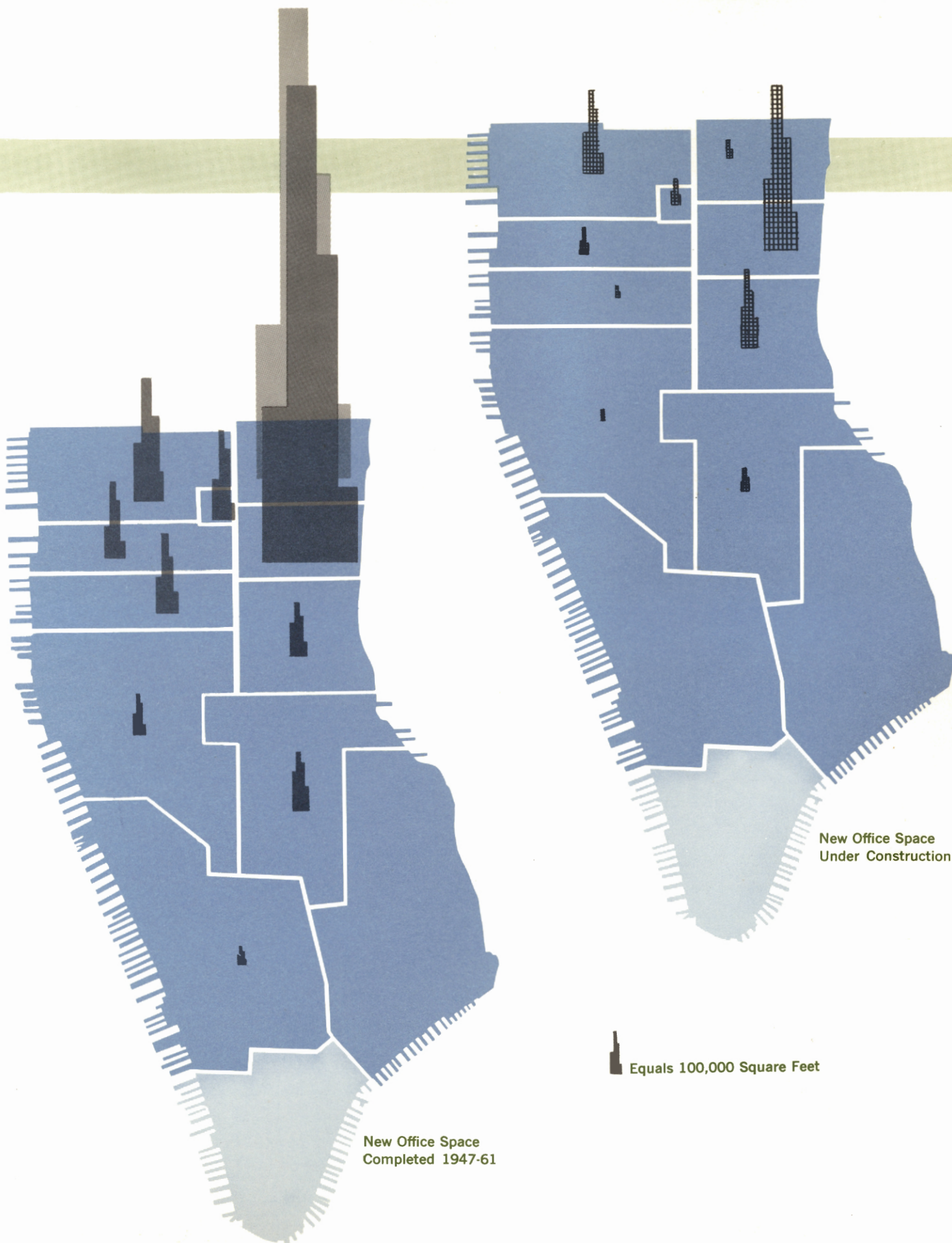
Dispersal of population has outpaced dispersal of many activities. For many economic, governmental and cultural activities a wide range of daily face-to-face contacts and visitations are essential. For these activities the advantages of a central location are paramount. Mid-Manhattan from Chambers Street to 60th Street represents the world's greatest concentration of headquarters offices, business advisory and advertising services, national associations and related activities. More than one-quarter of the nation's largest business corporations have their headquarters in this small area.

The continued expansion of these activities in the Mid-Manhattan central business district has been accompanied by a surge of new office building construction. From 1947-1961, a total of

35,132,000 square feet of new office space was built in Mid-Manhattan. This is more new office space than was built during the same period in the central business districts of all the other 22 major metropolitan areas in the United States combined. The dynamic expansion of the Mid-Manhattan central business district continues with over 10,000,000 square feet of new office construction scheduled for completion by the end of 1963. Most of the expansion in new office space has occurred north of 42nd Street, nearly two-thirds of the total on the upper East Side.

The vitality of the Mid-Manhattan central business district depends on ease of access from all parts of the New Jersey-New York metropolitan area. Safe, convenient and rapid mass transportation is essential to provide this access during the rush hours.

In order to take steps to maintain and improve mass transportation facilities and plan for the future, we must know more about employee transportation characteristics — where people come from, how, when and where they arrive in Mid-Manhattan, and the cost of journey-to-work trips. This report sets forth the principal findings of the first comprehensive survey of journey-to-work travel to the Mid-Manhattan central business district. The basic statistical data appear in the appendix.

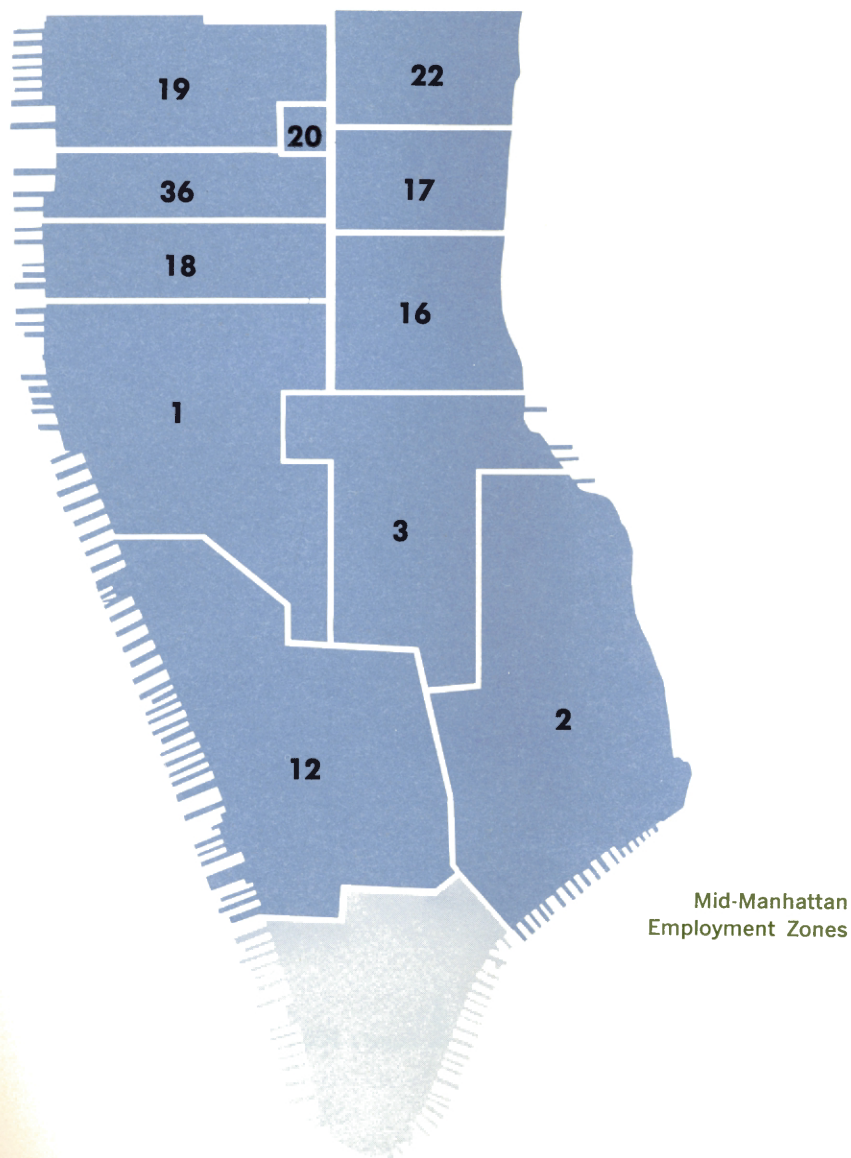


New Office Space Completed 1947-61

New Office Space Under Construction

█ Equals 100,000 Square Feet

## Summary



More than 1.5 million people work in the Mid-Manhattan area between Chambers and 60th Streets. Over 1.4 million go to work during the rush hours from 7:00 to 10:00 A.M., 62 per cent during the rush hour alone.

The huge volume of peak-hour travel makes mass transportation essential. Nearly 90 per cent of Mid-Manhattan workers use mass transportation for all or part of their journey-to-work trips. Thirty per cent of all workers from the suburban counties use the automobile to reach mass transportation facilities. Only 5.3 per cent of Mid-Manhattan workers use the automobile exclusively. Of the 80,000 workers who enter the central business district by automobile, nearly 65 per cent live in New York City.

The typical Mid-Manhattan worker who drives into the central business district spends three times as much for his trip as the user of mass transportation. On the average he saves about five minutes per trip.

As headquarters offices and related service industries expand in Mid-Manhattan, we must look forward to increases in peak-hour volumes. The peak-hour capacity of the mass transportation system must be expanded if Mid-Manhattan is to maintain its position as the nation's business capital.

Foremost among needed improvements are application of modern technology to expand the capacity of existing physical facilities, adequate vehicular parking at rail-transit stations and direct rail access to the upper East Side of Mid-Manhattan from New Jersey and Long Island. The latter could be accomplished by a station in the Long Island Rail tunnels under Park Avenue, providing access to the Lexington Avenue subway, and a transfer station in the Jersey Meadows where workers from Bergen, Rockland and Orange Counties could transfer from the Erie-Lackawanna to the Pennsylvania Railroad.

# The Mid-Manhattan Employment Center...

The Mid-Manhattan central business district provides jobs for 1,553,000 persons. Only three metropolitan areas in the entire country have a total labor force exceeding the number of workers employed in this 7.9 square-mile area of the nation's business capital.

More than half of these 1,553,000 workers are employed in the 3 square-mile area between 34th and 60th Streets. The rapidly growing area between 42nd and 60th Streets east of Park Avenue provides jobs for 376,550 people, or nearly 25% of Mid-Manhattan's total employment.

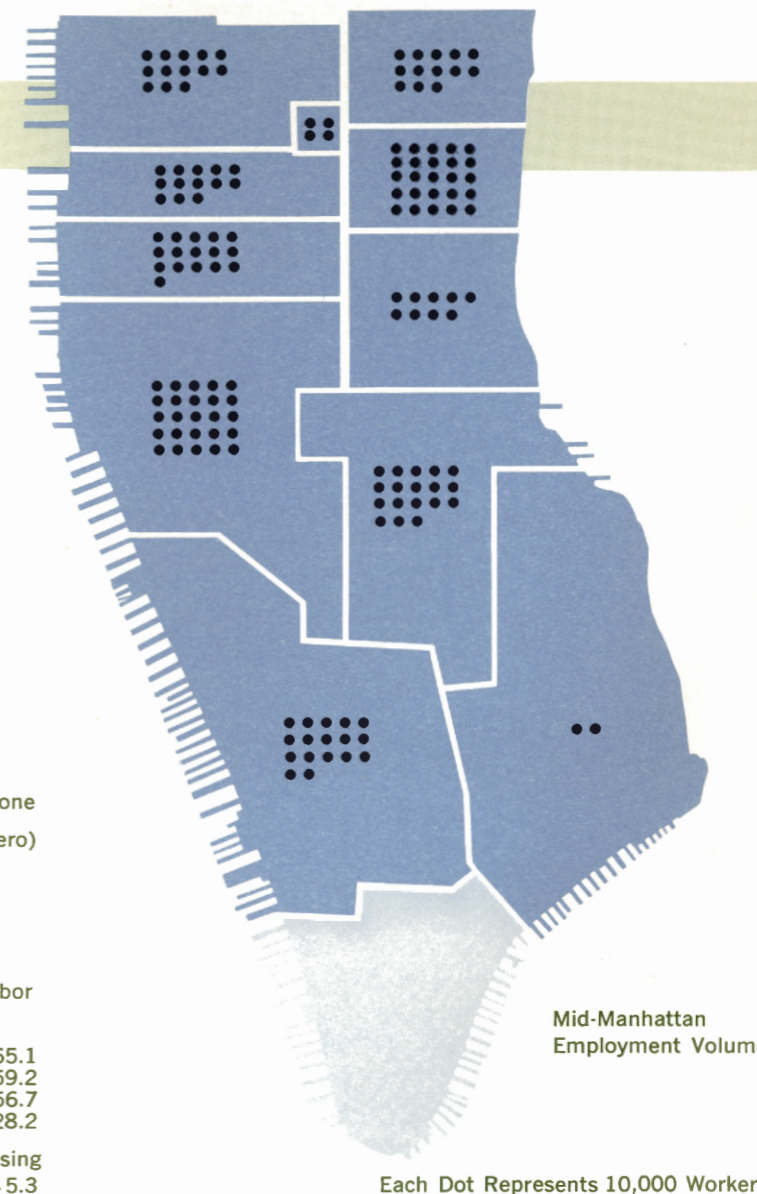
A striking characteristic of Mid-Manhattan is the large number of small business establishments. Two of every three workers are employed in establishments of fewer than 100 persons. Only 11.3 per cent are employed in establishments employing more than 1,000.

The large number of small business establishments reflects Mid-Manhattan's importance in light manufacturing and wholesale trade together with the numerous specialties — from consulting to printing — that serve the headquarters offices of the nation's business capital.

A third of the persons working in Mid-Manhattan are executive, administrative, or professional workers. More than 40 per cent are clerical employees and a quarter are laborers.

There are marked differences among the eleven employment zones in the distribution of the three major occupational groups, managerial, clerical and labor. Three of the employment zones have significantly high indices of managerial employment and correspondingly low indices of labor employment. Two of these employment zones, 17 and 22, are located in the upper East Side, above 42nd Street and east of Fifth Avenue. The third, zone 20, is the Rockefeller Center area and is adjacent to zones 17 and 22. These three employment zones are characterized by the large number of national business concerns that have located their headquarters offices here, by the concentration of advertising agencies on Madison Avenue and by mounting traffic congestion. Zone 16, on the East Side between 34th and 42nd Streets, has a moderate positive managerial index and a moderate negative labor index.

Four of the employment zones, 1, 2, 12 and 18, located south of Houston Street on the East Side and south of 41st Street on the West Side, show high labor indices and negative managerial and, with but one exception, negative clerical indices. These zones have a preponderance of light manufacturing, warehousing and wholesale trade. These are activities for which the central business district no longer has the strong attraction of former decades and which have increasingly tended toward expansion in the outlying counties and contraction in Mid-Manhattan. Two zones, 19 and 36, on the West Side above 41st Street and zone 3 between 26th and Houston Streets on the East Side can best be described as mixed or average.



The trend in new office building construction will strengthen the position of the upper East Side as an office center. Over two-thirds of the new office building construction during 1961-63 is concentrated in the four zones with a high managerial index. Zone 16, with 50 per cent more new office space in these two years than during the entire 1947-61 period, is likely to have a sizeable increase in managerial and clerical personnel. On the upper West Side, zone 19 continues to show strength in new office building construction. This zone is likely to lose its mixed character and become predominantly office oriented. If these trends persist, the division of Mid-Manhattan into office oriented activities and non-office oriented activities will become even more marked than it is today.

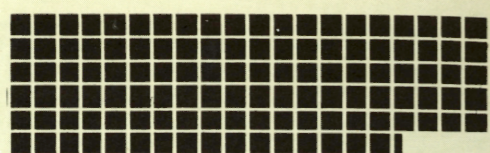
■ Equals 2,000 Workers

PLACE OF RESIDENCE OF WORKERS IN THE CENTRAL BUSINESS DISTRICT

MALE WORKERS IN THE CENTRAL BUSINESS DISTRICT BY PLACE OF RESIDENCE  
PER CENT OF TOTAL WORKERS

NEW YORK SECTOR

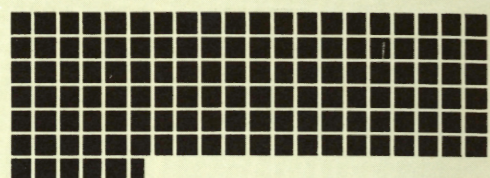
Bronx



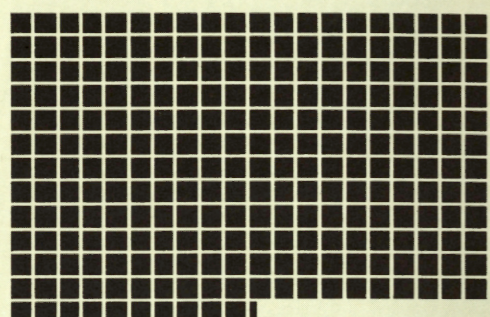
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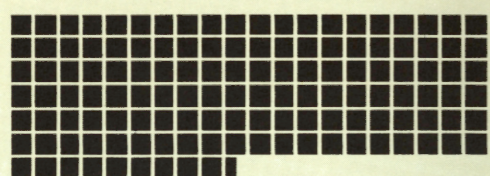
Brooklyn



Manhattan



Queens



Staten Island

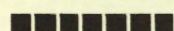


EAST OF NEW YORK CITY

Nassau



Suffolk



WEST OF NEW YORK CITY

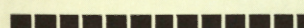
Bergen



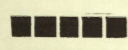
Essex



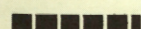
Hudson



Mercer-Morris-Passaic-Somerset



Middlesex-Monmouth



Union

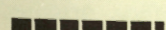


NORTH OF NEW YORK CITY

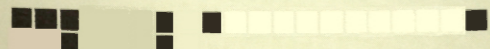
Dutchess-Orange-Putnam-Rockland



Fairfield



Westchester



Where Mid-Manhattan Workers Live

One-third of Mid-Manhattan workers live in that borough. Altogether 81 per cent live in the five boroughs of New York City. The outlying counties account for 19 per cent. The ten New Jersey counties in the metropolitan region account for 7.5 per cent, the counties to the east of New York City, 6.7 per cent and those to the north, 4.8 per cent.

Although only 19 per cent of Mid-Manhattan workers live outside of New York City, these outlying counties account for 36 per cent of administrative, executive and professional personnel but only 13 and 9 per cent of clerical workers and laborers respectively. Of the 651,708 clerical workers, only 81,769 live outside of New York City, with 13,479 of these living in Hudson County.

Occupational Distribution of Mid-Manhattan Workers

Occupation	New York City		Outside New York City	
	Number	%	Number	%
Executive	66,398	5.3	46,128	15.6
Professional	103,955	8.3	49,496	16.8
Administrative	124,414	9.9	62,139	21.1
Sales*	44,900	3.6	22,867	7.7
Clerical	569,939	45.3	81,769	27.7
Labor	347,016	27.6	32,774	11.1
	<u>1,256,622</u>	<u>100.0</u>	<u>295,173</u>	<u>100.0</u>

The five New York City boroughs together with Hudson County in New Jersey have markedly similar occupation profiles — relatively low percentages of executive, administrative and professional workers and correspondingly high percentages of clerical workers and laborers.

Typically, the other counties in the metropolitan region have occupation profiles with high percentages of executive, administrative and professional workers and correspondingly low percentages of clerical workers and laborers.

The five New York City Boroughs together with Hudson County in New Jersey are also similar in having a low percentage of male workers employed in Mid-Manhattan. Each of these areas has fewer male workers than female employed in Mid-Manhattan. The outlying counties have markedly high percentages of male workers.

Mid-Manhattan recruits most of its clerical workers and laborers from areas served by low-cost rail transit — the New York subways and the Hudson and Manhattan Railroad. The higher cost of journey-to-work trips from the suburban counties is a barrier to attracting workers for the lower paying jobs.

## The Journey-to-Work Trip

## The Role of Mass Transportation

7

Nearly 90 per cent of the workers in Mid-Manhattan use mass transportation for all or part of the journey-to-work trip. The dependence on mass transportation characterizes the journey from home to work for workers from all parts of the region.

**Importance of Mass Transportation  
Number and Percentage of Workers Using Mass Transportation  
For Part or All of the Journey-to-Work Trip**

Place of Residence	Number	Per Cent
Region	1,392,160	89.8
New York City	1,125,239	89.4
Outside New York City	266,921	90.4
New Jersey	106,803	92.2
North of New York City	66,344	88.3
Nassau-Suffolk	93,774	89.8

The percentage of New York City workers using mass transportation is below the regional figure because 14 per cent of Manhattan residents walk to work. This results in mass transportation usage for Manhattan residents of only 79 per cent compared to 96 per cent for residents of the Bronx, Queens, Brooklyn and Staten Island. For the other counties of the region, the percentage of workers using mass transportation ranges from 75 per cent for Dutchess-Orange-Putnam-Rockland Counties to 94 per cent for Essex, Hudson, Monmouth-Middlesex and Union Counties.

There is wide variation among the counties in the usage of the various modes of transportation. Subway usage ranges from 93 per cent for residents of the Bronx, Brooklyn, Queens and Staten Island to only 12 per cent by residents of Fairfield County.

More residents of Nassau and Suffolk Counties use the subway than any other mode of mass transportation. Nearly 70 per cent use the subway for part of the journey-to-work trip compared to 50 per cent using rail and about 22 per cent using bus.

In the other suburban counties rail has the greatest relative usage by residents of Fairfield, Middlesex-Monmouth, Suffolk, Union and Westchester Counties, with more than 50 per cent of the residents of these counties using rail service. More than 90 per cent of Fairfield County residents use the railroads. Among the suburban counties, Bergen and Hudson have the lowest rail usage with 8 and 3 per cent, respectively, of their residents using rail.

More than half of the residents of Bergen, Essex, Hudson, Mercer-Morris-Passaic-Somerset and Union Counties use bus service for all or part of their Mid-Manhattan work trips. More than eight of every ten workers from Bergen and Hudson Counties use a bus in reaching Mid-Manhattan. Only 4 per cent of Suffolk County residents use a bus.

## The Different Modes

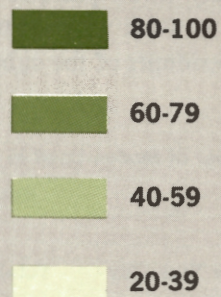
The New York City subway system serves the residents of the city as their principal means of transportation at the same time providing a distribution system within Mid-Manhattan for workers arriving from the suburban counties by rail, auto or bus. Nearly three workers out of four use the subway at some stage in their journey-to-work trips.

**Number and Percentage of Workers Using Each Mode of Transportation for Part or All of the Journey-to-Work Trip**

Mode of Transportation	Number of Workers	Percentage
Subway	1,107,588	72.5
Bus	491,199	32.2
Rail	138,784	9.1
H&M	21,633	1.4
Ferry	17,175	1.1
Auto	205,185	13.4
Taxi	30,283	2.0
Walk Only	71,585	4.7

Fewer than half as many workers use a bus as use the subway. Less than 10 per cent of Mid-Manhattan workers use the railroads. Because of the use of the private automobile to drive to the railroad station, the subway or bus stop, as well as for the entire trip to Manhattan, automobile usage surpasses rail usage.

**% of Commuters using H&M at least once For the Trip to Work**



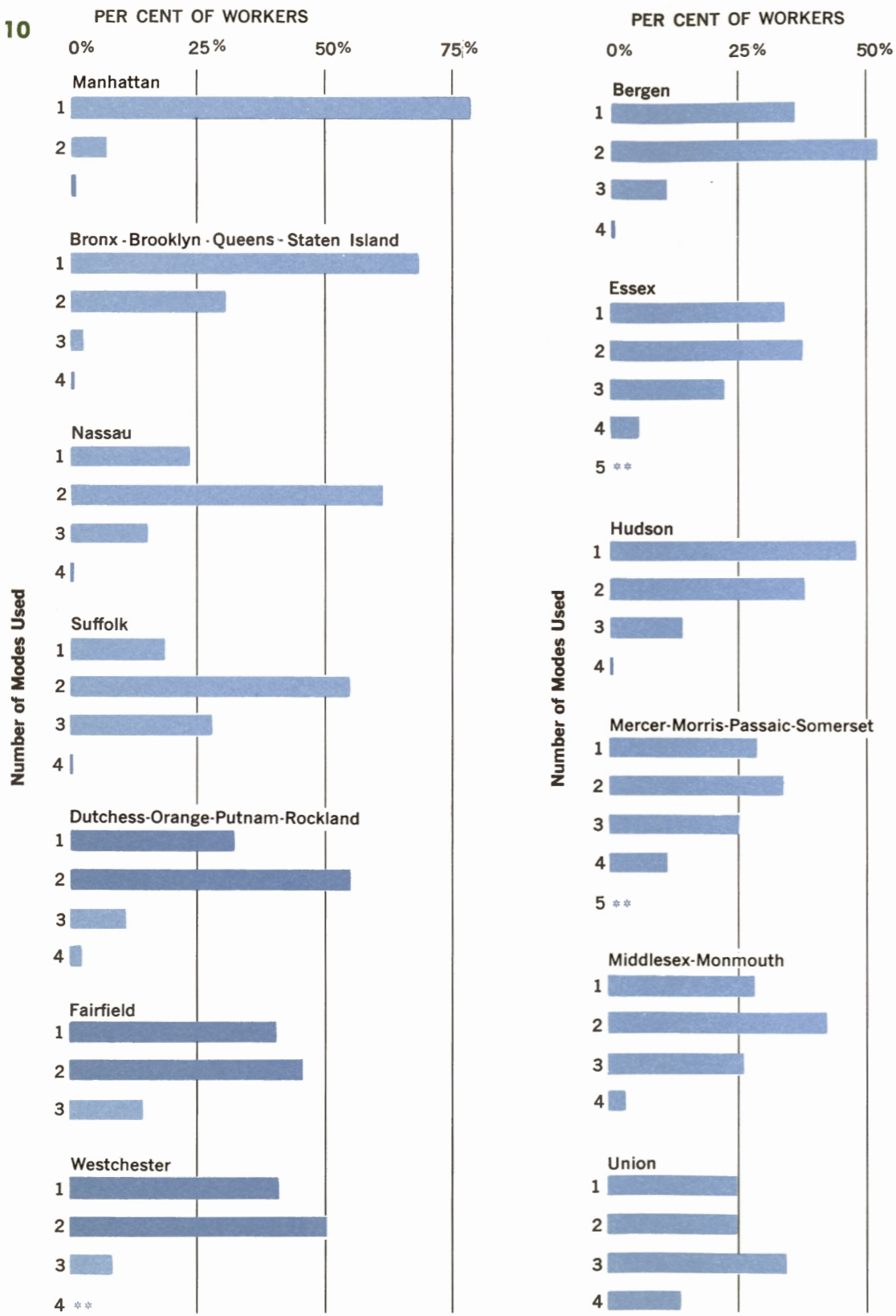
**% of Commuters using Subway at least once For the Trip to Work**

**% of Commuters using Bus at least once For the Trip to Work**

**% of Commuters using Railroad at least once For the Trip to Work**



PERCENTAGE DISTRIBUTION OF WORKERS  
BY NUMBER OF MODES OF TRANSPORT USED FOR THE JOURNEY TO WORK TRIP



\*\*less than 0.1 per cent

## Multi-Mode Journey-to-Work Trips

The majority of residents of the suburban counties use more than one mode while nearly three-quarters of New York City residents make the trip from home to work without transferring between modes. Sixty-eight per cent of the residents of the suburban counties use two or more modes.

Number of Modes Used in Making the Journey-to-Work Trip

Number of Modes Used	Residents of				
	New York City	Total	New Jersey	Outside New York City North of N.Y.C.	Nassau-Suffolk
1	72.0%	32.4%	36.1%	40.3%	22.9%
2	20.8	51.0	42.8	50.4	60.6
3	1.4	15.0	17.5	9.1	16.4
4	0.1	1.5	3.5	0.2	0.1
5		**	*		
Walk Only	5.7				
Total	100.0	100.0	100.0	100.0	100.0

\*less than 0.1 per cent    \*\*less than 0.01 per cent

Three or more modes are used by 16.5 per cent of the residents of the suburban counties. Nearly 21 per cent of the residents of New Jersey counties use three or more modes. Three times as many residents of New Jersey counties use four modes to reach Mid-Manhattan as all other counties combined.

Among the suburban counties, Hudson County has the largest percentage of workers (48 per cent) who make the trip from home to work without transferring between modes of transportation; Suffolk County, with only 18 per cent, has the lowest. For other counties in New Jersey, the percentage of workers using only one mode ranges from 36 per cent for residents of Bergen County to 26 per cent for residents of Union.

A substantial percentage of Mid-Manhattan workers from Westchester and Fairfield Counties make the journey-to-work trip without transferring between modes of transportation. Four out of ten workers from these counties use only one mode.

One worker in 7 from Union County and one in 8 from Mercer-Morris-Passaic-Somerset Counties use four modes. The only other county in the region with more than 5 per cent of its Mid-Manhattan workers using four modes of transportation is Essex County, also in New Jersey.



## Use of Different Route-Mode Combinations

An important consequence of the range of choice available to most workers from the suburban counties is that they use different mode combinations and different routes depending on their Mid-Manhattan destination. A difference in Mid-Manhattan destination of only a few blocks can make a substantial difference in the journey-to-work travel pattern of workers from the same community. The influence of place of work on the mode and route used for the journey-to-work trip is illustrated by the travel patterns of workers from Bergen and Nassau-Suffolk counties to firms at different locations in upper Mid-Manhattan.

The route-mode patterns of Bergen County residents to four different locations in upper Mid-Manhattan are diagrammed on page 13. These charts show that to a place of work destination in the Times Square area, 90 per cent of the workers from Bergen County use the Lincoln Tunnel. The remaining 10 per cent cross the George Washington Bridge.

When the place of work is just south of the Coliseum only a third enter by way of the Lincoln Tunnel, two-thirds come into Mid-Manhattan via the George Washington Bridge; a negligible percentage use the H&M.

To place of work destinations in Rockefeller Center and the upper East Side, the division is more nearly 50-50 between use of the Lincoln Tunnel and the George Washington Bridge. To Rockefeller Center, 55 per cent enter Manhattan by way of the George Washington Bridge, 41 per cent via the Lincoln Tunnel and 4 per cent via the H&M. The pattern is almost identical to destinations in the Plaza area, east and north of Rockefeller Center.

Automobile usage from Bergen County varies considerably depending on which of these four locations in upper Mid-Manhattan is the place of work destination. For the Times Square area, only a small percentage of the workers drive. To the Coliseum area, 19 per cent of workers crossing the George

Washington Bridge drive into Mid-Manhattan; to Rockefeller Center, 20 per cent and to the Plaza area 25 per cent of workers crossing on the George Washington Bridge use their autos. The relative inaccessibility by mass transportation of the Plaza area to workers from Bergen County is indicated by the 14 per cent of workers using the Lincoln Tunnel and continuing cross-town by auto.

The percentage of Nassau-Suffolk workers who use rail as the principal journey-to-work mode is virtually the same for destinations in Rockefeller Center, the Grand Central Terminal area and the Grand Central Office Building area. However, 90 per cent of the train riders going to Rockefeller Center come into Penn Station compared to only 32 per cent of those with place of work destination in the Grand Central Terminal area and 48 per cent of those with place of work destination in the Grand Central Office Building area. The remaining train riders going to these three locations change to the subway on Long Island, most at Hunter's Point.

Only 53 per cent of Nassau-Suffolk workers with place of work destination in the Plaza area use the railroad as the principal mode of transportation compared to approximately 70 per cent using the train to the other three locations.

Seventy-eight per cent of workers from Nassau-Suffolk Counties with place of work in the Grand Central Terminal area transfer to a subway before entering Manhattan compared to 66 per cent for those with place of work in the Grand Central Office Building area, 61 per cent for the Plaza area and 37 per cent for Rockefeller Center.

From 95 to 100 per cent of the Nassau-Suffolk commuters coming into Penn Station use the subway to complete their journey-to-work trip except to the Grand Central Office Building area which is approximately six blocks from an east-west subway line. To this area, 25 per cent walk, 25 per cent take a bus and 50 per cent use the subway.

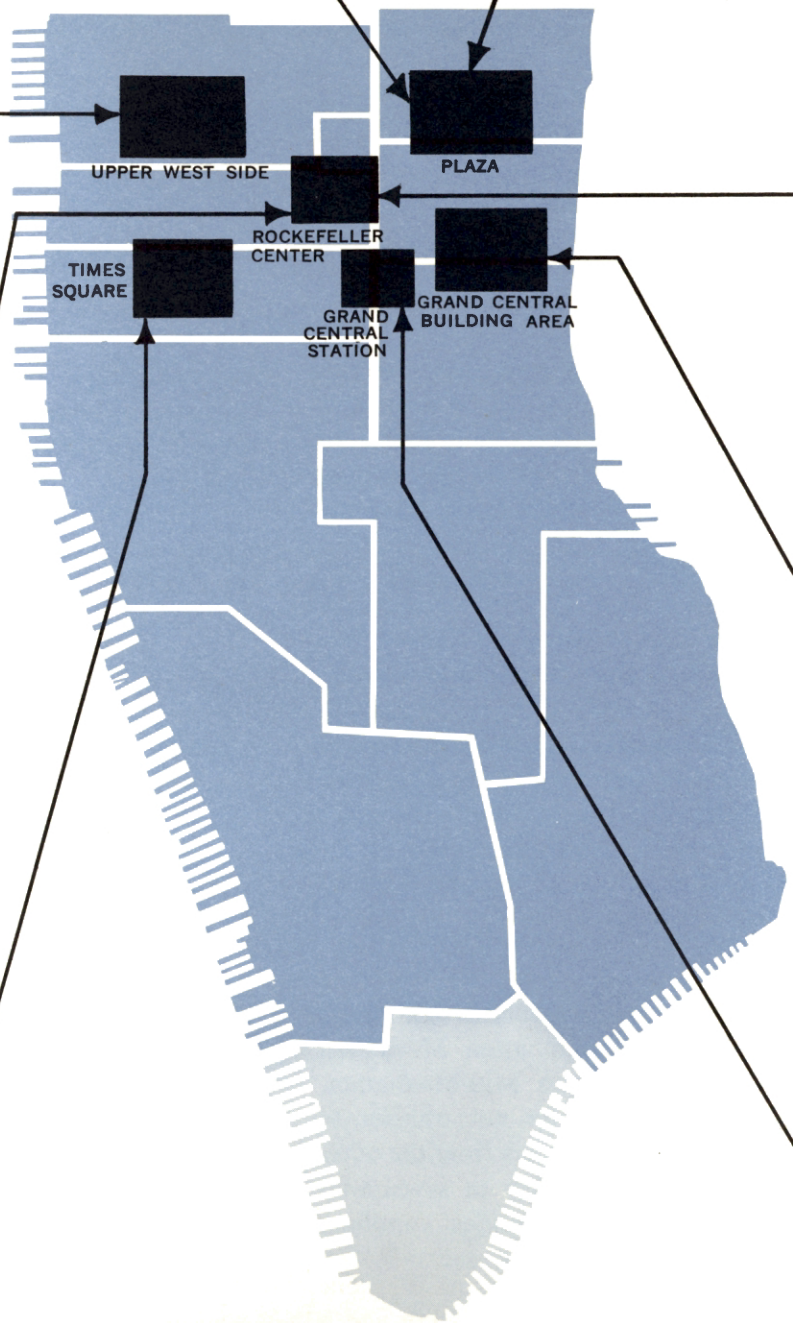
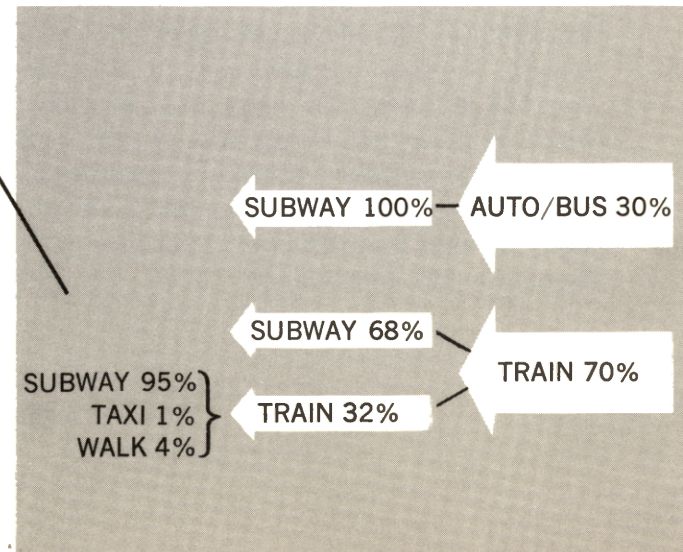
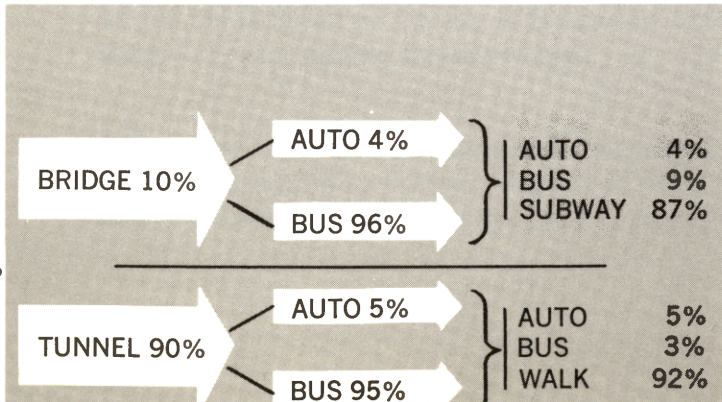
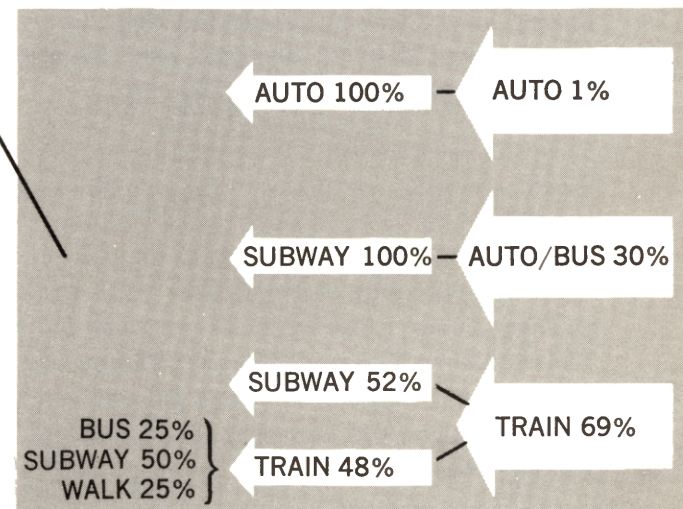
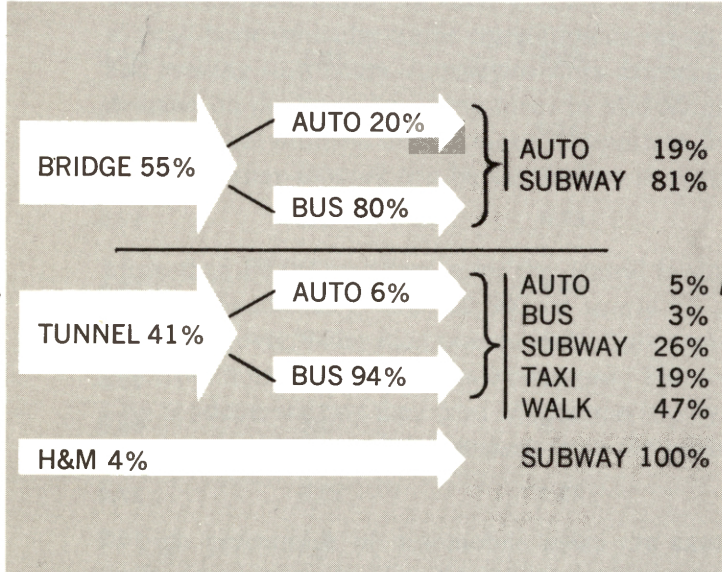
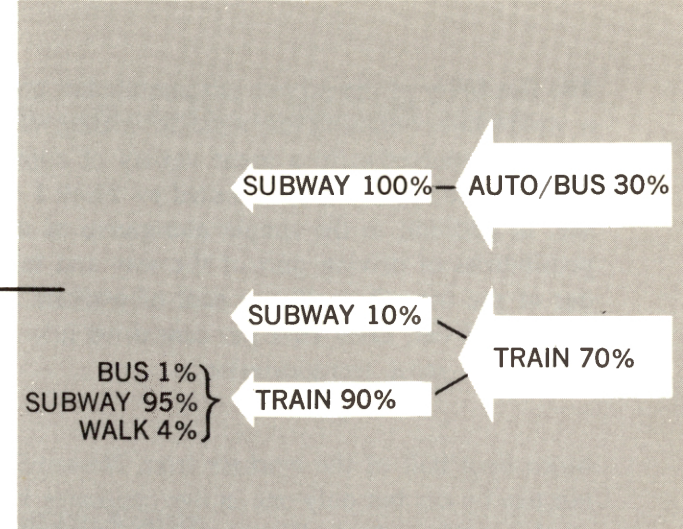
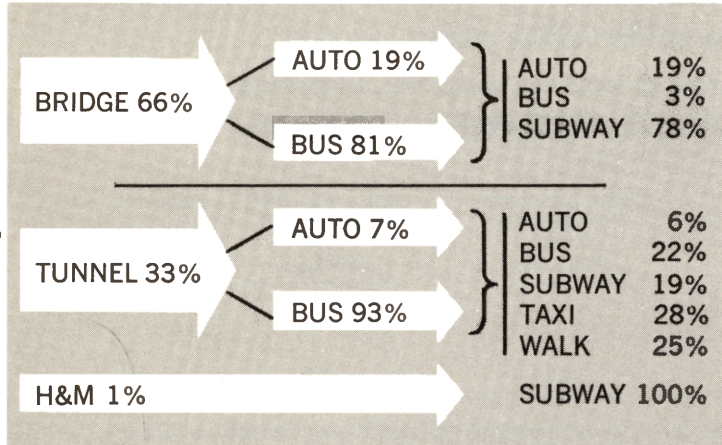
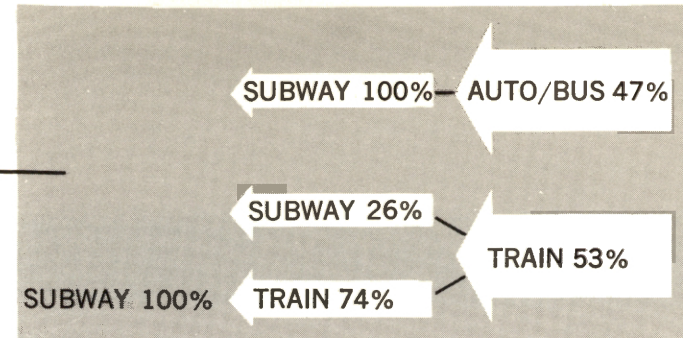
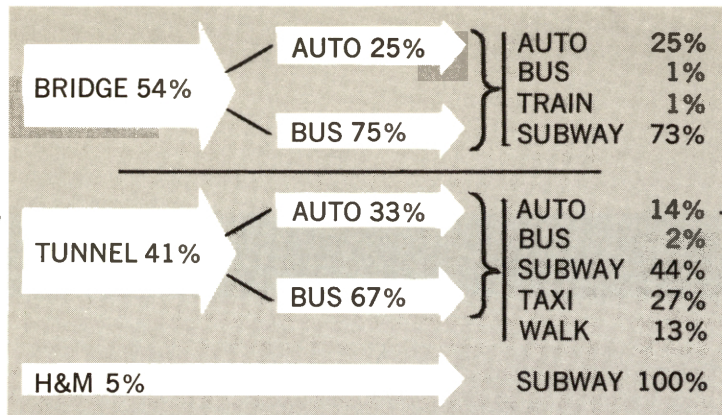
**BERGEN COUNTY**

**POINT OF DESTINATION EFFECT ON ROUTE-MODE COMBINATIONS**

**NASSAU COUNTY**

PERCENT TOTAL BERGEN TO THESE AREAS

PERCENT TOTAL NASSAU TO THESE AREAS



## The Automobile and Journey-to-Work Travel

The flexibility of the private automobile has given most workers in the suburban counties a wide choice of different ways of getting to Manhattan, using the automobile and mass transportation in a great variety of combinations. The choice facing most workers from the suburbs is not limited to "Shall I drive or use mass transportation?" There are, in addition to the simple alternative of driving or using mass transportation, the possibilities of driving part of the way and taking mass transportation for the remainder of the trip. Over 40 per cent of workers from the suburbs start their Mid-Manhattan trip by car. Only 10.1 per cent drive into the central business district. The others transfer to mass transportation.

More than half of the workers from Nassau-Suffolk Counties start their Mid-Manhattan trip by car but only one in five continues by car into Mid-Manhattan. Almost half of the workers from Westchester-Fairfield Counties start by car with one in four continuing all the way by car. In the New Jersey counties a decidedly lower percentage, slightly more than 25 per cent, start their trip by auto. Nearly one in three, however, continues into Mid-Manhattan by car.

There are wide variations in automobile usage among workers from the New Jersey counties. Less than 8 per cent of Hudson County residents start their Mid-Manhattan trip by auto. This is very close to the 6.6 per cent of New York City residents who use the automobile to begin their work trip to Mid-Manhattan. The other counties in New Jersey range from 25 per cent for Bergen to 49 per cent of workers from Mercer-Morris-Passaic-Somerset Counties starting their work trip by auto. The other counties in the region have high percentages of auto usage in starting the trip to work, ranging from a high of nearly 68 per cent for Suffolk to slightly more than 44 per cent for Westchester.

Proximity to Mid-Manhattan appears to be a factor in determining whether auto users transfer to mass transportation or continue by auto into Mid-Manhattan. More than two out of three auto users from Hudson continue by auto into Mid-Manhattan. Similarly more than 60 per cent of New York City auto drivers do not transfer to mass transportation. Typically a much smaller percentage of auto users from the other counties continue by car into Mid-Manhattan. Less than one worker in seven who starts by auto from Fairfield, Middlesex-Monmouth and Suffolk Counties continues by car into Mid-Manhattan.

### PERCENTAGE OF WORKERS USING THE AUTOMOBILE FOR PART OR ALL OF THE JOURNEY-TO-WORK TRIP

<u>Place of Residence</u>	<u>Auto 1st Mode Per Cent Of Total Workers</u>	<u>Auto Into CBD Per Cent Of Total Workers</u>	<u>Auto Into CBD Per Cent Using Auto 1st Mode</u>
Region	13.0	5.3	41.0
NEW YORK CITY	6.6	4.2	64.0
OUTSIDE NEW YORK CITY	40.7	10.1	25.0
EAST OF NEW YORK CITY	51.3	10.3	20.1
Nassau	48.7	10.5	21.5
Suffolk	67.6	9.1	13.5
WEST OF NEW YORK CITY	26.7	8.7	32.6
Bergen	25.1	10.8	42.8
Essex	27.4	8.1	29.6
Hudson	7.9	5.4	68.0
Mercer, Morris, Passaic, Somerset	49.2	13.5	27.4
Middlesex, Monmouth	46.2	6.1	13.2
Union	36.5	6.3	17.3
NORTH OF NEW YORK CITY	47.3	12.3	25.9
Dutchess, Orange, Putnam, Rockland	65.7	27.3	41.6
Fairfield	54.1	6.6	12.3
Westchester	44.3	12.3	27.8

# Differences in Automobile Usage



One of the serious transportation problems in the Mid-Manhattan central business district is vehicular congestion on the city streets. Workers who use the private automobile for their journey to work can contribute substantially to peak-hour vehicular traffic congestion on the city streets during the morning and evening rush hours. Journey-to-work drivers place an equally unnecessary demand on the limited parking space in Mid-Manhattan. Limitations of space in the central business district make it important that private automobile usage for the journey-to-work trip be kept as low as possible.

More than 80,000 workers enter the central business district by private automobile. Significantly, over 50,000 or nearly 65 per cent live in New York City. Moreover, more than one-quarter of all workers using a private automobile from home to work live in Manhattan. Three out of every five New York City residents starting their Mid-Manhattan trip by auto drive all the way compared to one in four of the workers from the other counties of the region.

A high percentage of automobile users are executives, administrators and professional workers. New York City workers who drive into Mid-Manhattan have an occupation profile that is completely different from that of the New York City users of mass transportation.

The typical New York City worker driving into Mid-Manhattan spends three times as much for his journey-to-work travel as the user of mass transportation. On the average he saves about five minutes each way.

**New York City Residents  
Occupation Distribution of Workers Using the Automobile Into Mid-Manhattan  
and of Workers Using Other Means of Transportation**

Occupation	N.Y.C. Residents, Using Other Than Automobile Into CBD	N.Y.C. Residents Using Automobile Into CBD by Borough				
		Total N.Y.C.*	Manhattan	Brooklyn	Queens	Bronx
Executive	4.5%	22.6%	19.4%	25.6%	25.0%	24.0%
Professional	8.1	12.3	20.4	6.5	5.6	7.6
Administrative	9.6	16.4	13.8	17.8	22.1	13.1
Sales**	3.4	8.0	5.0	10.6	10.8	8.8
Clerical	46.2	25.1	27.3	21.8	23.3	25.9
Labor	28.2	15.6	14.1	17.7	13.2	20.6
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

\*Includes Staten Island  
\*\*Other than clerical

## Travel Time and Cost

Mid-Manhattan workers spend \$1,000,000 and 2,750,000 hours each work day traveling between home and place of work. The average worker spends 65 cents and an hour and 44 minutes traveling to and from his daily work. The average New York City resident working in Mid-Manhattan spends 42 cents and an hour and thirty-two minutes daily while the average worker living outside New York City spends \$1.57 and two hours and 34 minutes traveling to and from work.

The average cost of the daily journey-to-work trip ranges from 36 cents for residents of Manhattan to \$2.46 for residents of Fairfield County. Manhattan residents with an average daily travel time of 1 hour and 2 minutes also spend the least time in daily travel, while Suffolk residents, with an average of 3 hours and 28 minutes spend the most time in commuting to and from work.

The variation in amount spent daily by residents of the same county is one of the striking features of journey-to-work travel. Although 86 per cent of Manhattan residents spend less than 45 cents, nearly 2.0 per cent spend more than \$1.75 daily. More than 2,500 residents of New York City spend in excess of \$3.25 daily for their trip to work. These 2,500 workers represent 25 per cent of all Mid-Manhattan workers whose daily travel cost exceeds \$3.25. Hudson County, with an average travel time of 1 hour and 50 minutes and an average cost of 88 cents, is the only county outside of New York City with daily travel time of less than two hours and cost of less than one dollar.

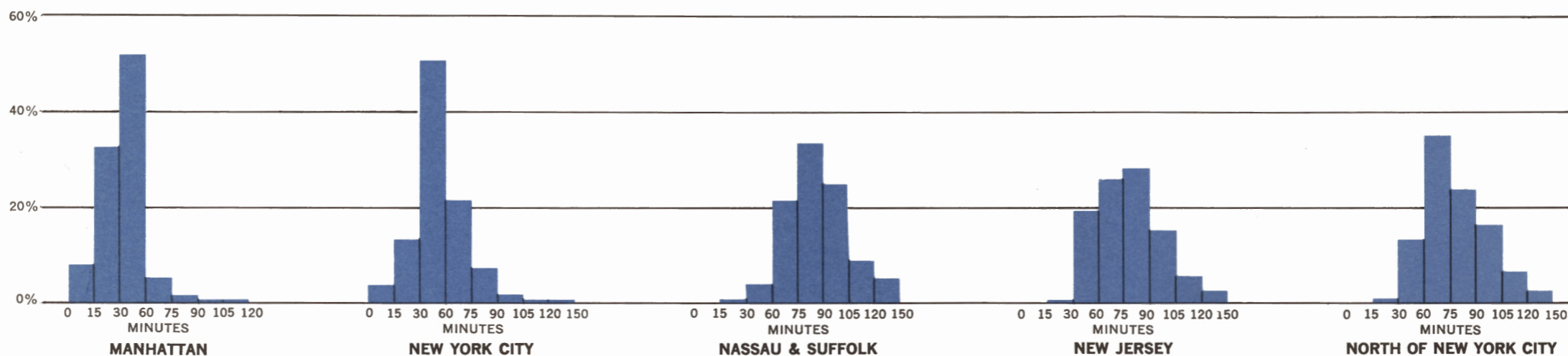
The wide variations in travel time and cost of workers from the same part of the New Jersey - New York metropolitan area is one of the striking features of the frequency distribution on page 17. The range in cost is from zero to over \$3.25 even for workers living in Manhattan. One-way travel time for workers living in New York City ranges up to 3-1/2 hours, as it does for most (99.99%) journey-to-work travel from the suburban counties.

The frequency distributions of travel time and cost indicate the differences in cost and travel time among the various parts of the region. Over 70 per cent of Manhattan and 65 per cent of all New York City residents working in Mid-Manhattan spend between 15 and 44 cents a day for journey-to-work transportation. Slightly more than 40 per cent of New Jersey residents spend between 75 cents and \$1.24.

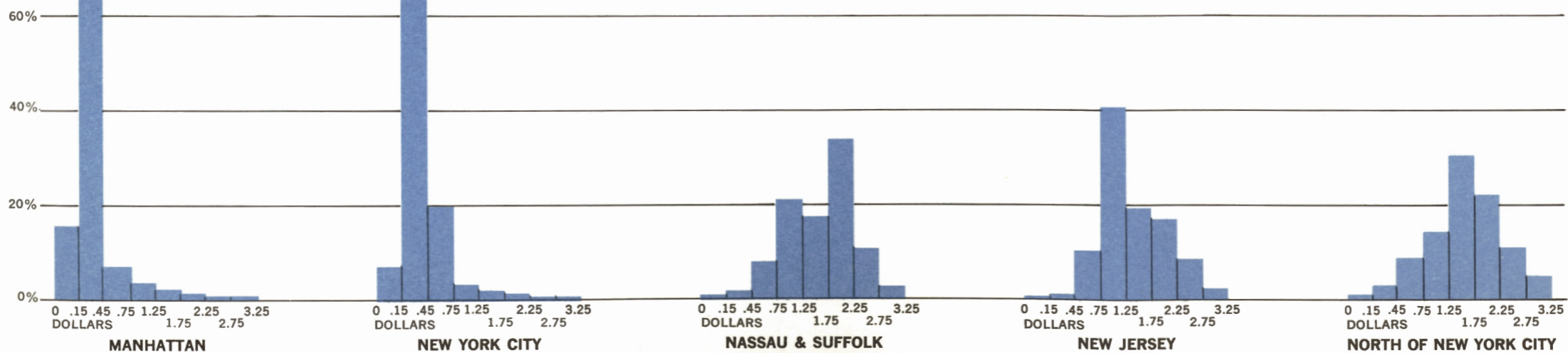
### AVERAGE TRAVEL TIME AND DAILY COST FOR WORKERS FROM PLACE OF RESIDENCE TO MID-MANHATTAN

Place of Residence	Average Travel Time (Minutes)	Average Daily Cost (Dollars)
<b>NEW YORK CITY</b>		
Bronx	57	.44
Brooklyn	53	.41
Manhattan	31	.36
Queens	55	.54
Staten Island	86	.72
<b>EAST OF NEW YORK CITY</b>		
Nassau	81	1.57
Suffolk	104	1.98
<b>WEST OF NEW YORK CITY</b>		
Bergen	72	1.24
Essex	76	1.65
Hudson	55	.88
Mercer-Morris-Passaic-Somerset	87	1.95
Middlesex-Monmouth	93	2.22
Union	78	1.86
<b>NORTH OF NEW YORK CITY</b>		
Dutchess-Orange- Putnam-Rockland	91	2.06
Fairfield	92	2.46
Westchester	70	1.50

PERCENTAGE DISTRIBUTION OF WORKERS BY TRAVEL TIME TO WORK



PERCENTAGE DISTRIBUTION OF WORKERS BY DAILY ROUND-TRIP COST



## The Peak Hour

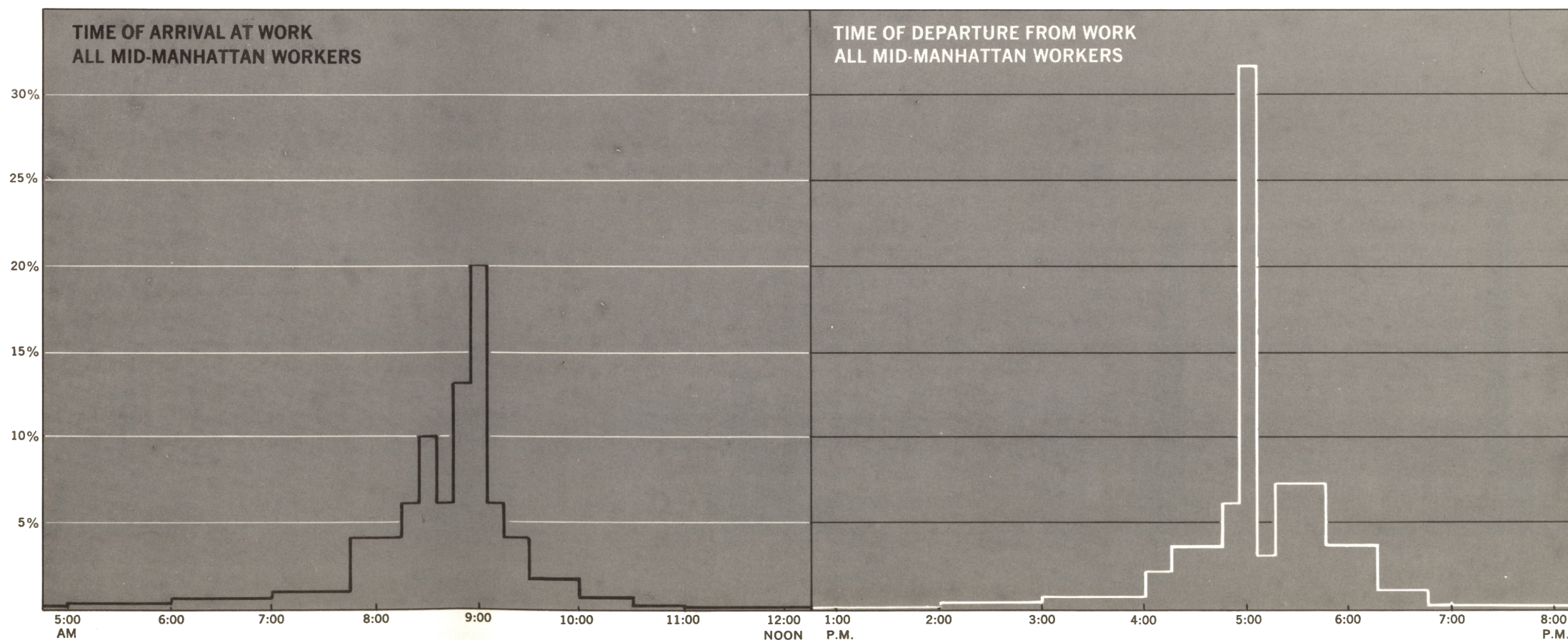
Each weekday morning between the hours of 7:00 and 10:00, 1,430,000 people go to work in Mid-Manhattan. This huge volume of individual travel trips converging in a 7.9 square-mile area during peak periods establishes the capacity requirements for the physical facilities. During the morning rush hour (8:15-9:14), 62% of the total number of workers arrive at their places of employment. During the evening rush hour (4:45-5:44), the same percentage depart from their places of employment. The severity of the peaking problem can best be appreciated by examining the critical ten-minute periods. Between 8:55 and 9:04, 20% of the workers in Mid-Manhattan arrive at their jobs, while 32% depart during the period 4:55-5:04.

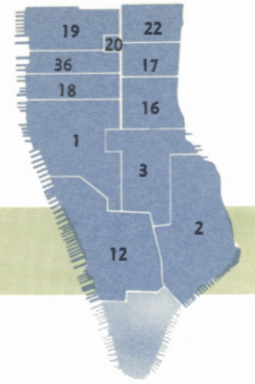
The evening peak is significantly higher than the morning peak in every employment zone in Mid-Manhattan. In all zones, the ten-minute evening peak periods occur at the same time (4:55-5:04) and range from 22% to 39%. The morning peaks are much lower in all zones and show greater variation. Zones 1, 2, 12 and 18, which are characterized by light manufacturing, wholesaling and warehousing activities, experience relatively moderate peak periods ranging from approximately 13% to 24%. Zones 3, 19 and 36, which represent

a mixture of office buildings, light manufacturing and wholesaling activities, have morning peaks ranging from 16% to 20%. The areas dominated by headquarters offices and service industries (zones 16, 17, 20 and 22) have morning peaks ranging from 23% to 27% occurring at exactly the same times (8:55 to 9:04).

Employment zone 17 experiences the sharpest rush-hour peaks with 27% of the workers arriving during the period 8:55-9:04 and 39% departing between 4:55 and 5:04.

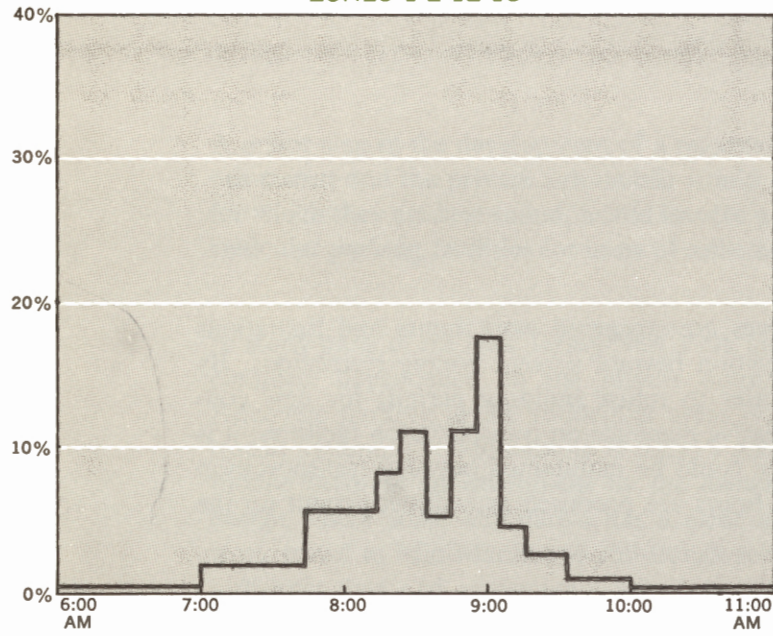
It is important to note that headquarters offices and service industries, which give rise to the sharpest rush-hour peaks, are the activities which are expanding most rapidly in Mid-Manhattan. Light manufacturing and wholesaling activities, which create lower peaks of longer duration, are declining. As professional, administrative and clerical functions continue to expand, we must look forward to experiencing greater peaks, with all the associated problems of congestion. The aggravation of present peaks in zones 16, 17 and 19 appears likely to result from present and projected office building construction in those areas.



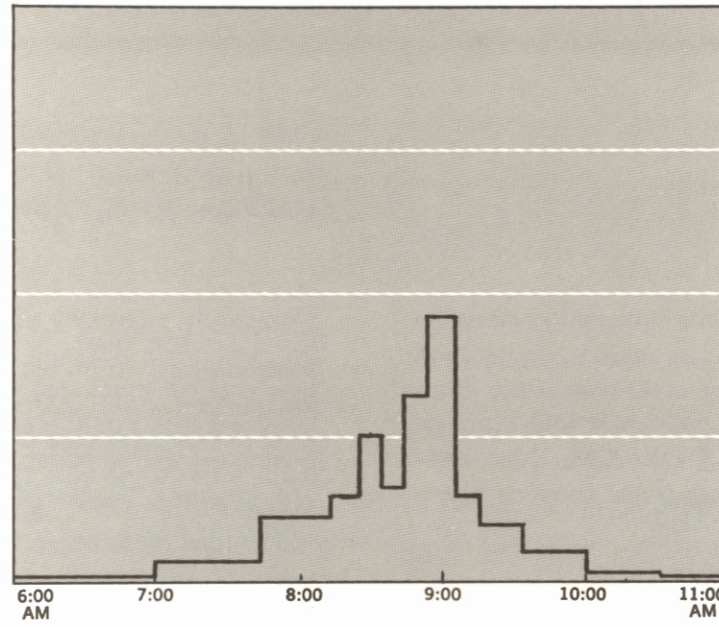


**ARRIVAL**

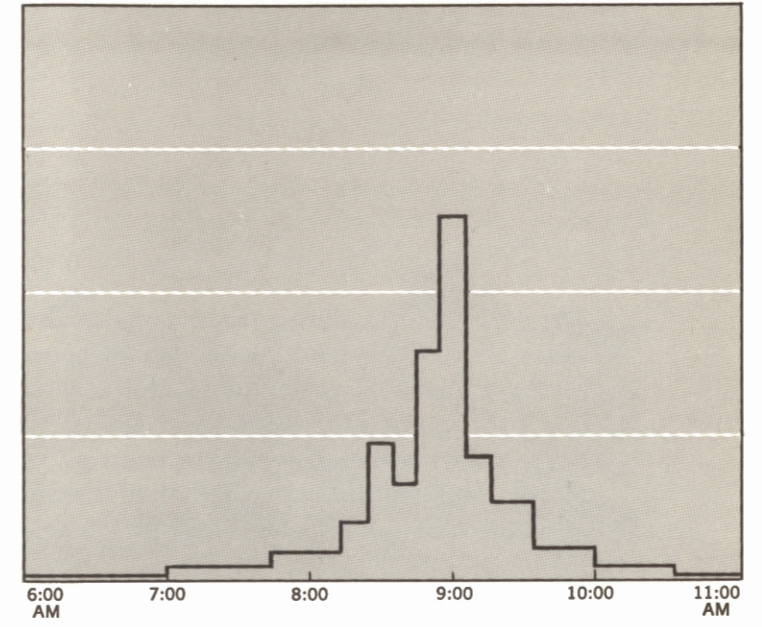
WORKERS IN ZONES 1-2-12-18



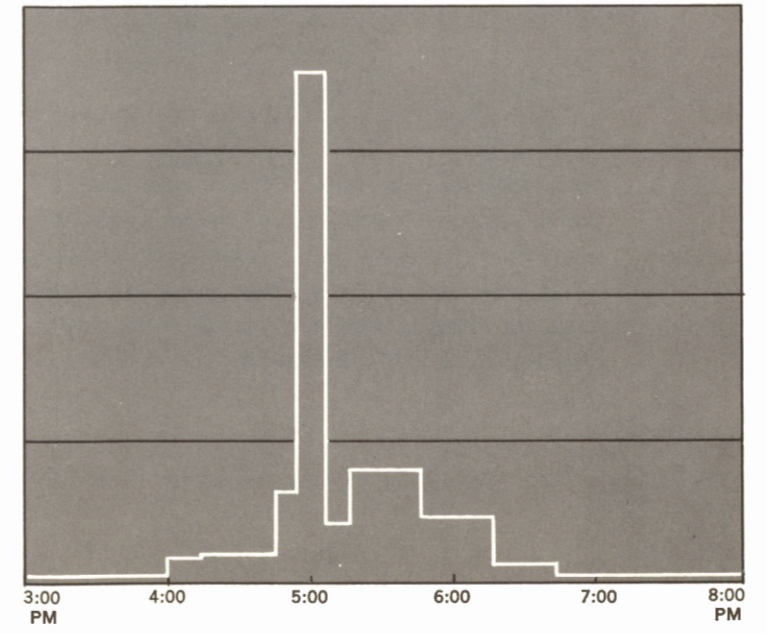
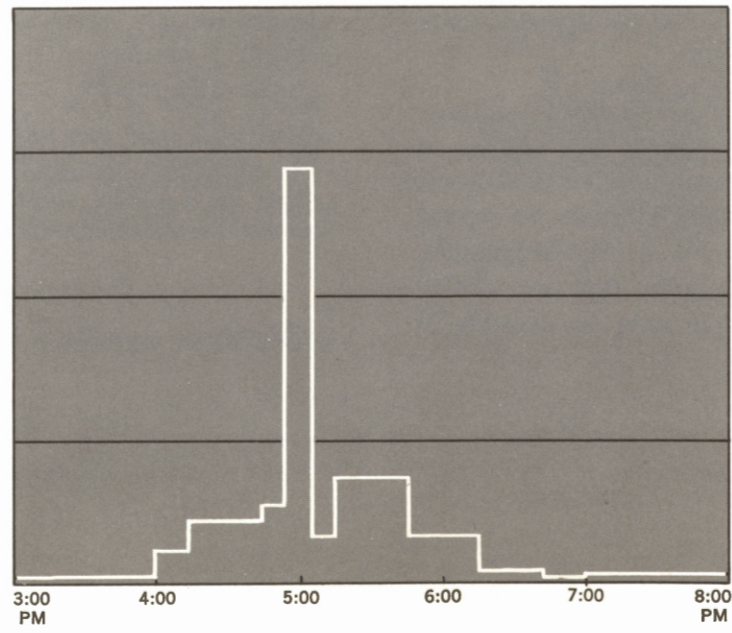
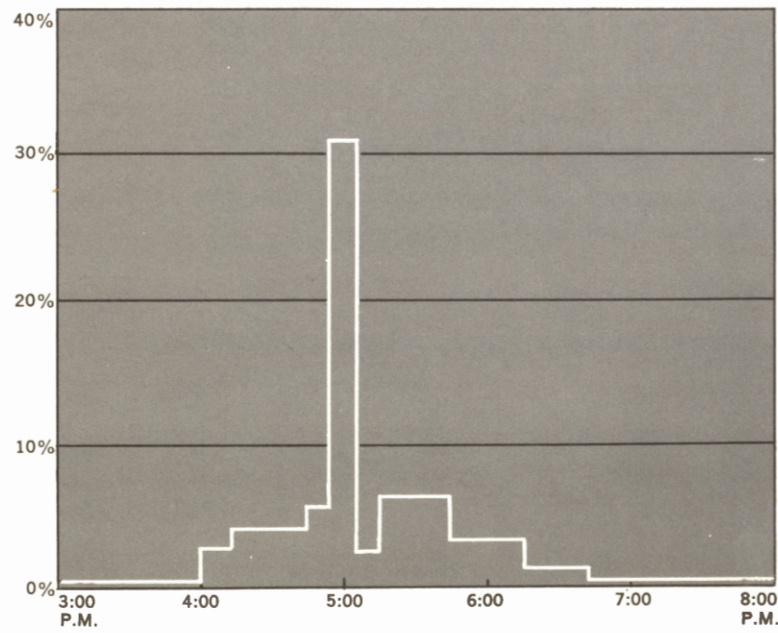
WORKERS IN ZONES 3-19-36



WORKERS IN ZONES 16-17-20-22



**DEPARTURE**



## Some Planning Implications

The great increase, during recent decades, in automobile ownership and usage in the 23-county region has not lessened dependence on mass transportation for the journey-to-work trip to Mid-Manhattan. There is no reasonable alternative for transporting the nearly 1,400,000 workers who enter Mid-Manhattan five days a week between the hours of 7:00 and 10:00 A.M. Even automobile users find mass transportation essential on days when snow or heavy rains interfere with vehicular traffic.

If Mid-Manhattan is to continue as the nation's business capital, the region's mass transportation system must keep pace with other technological development. New York must have the best transportation system technology makes possible if it is to continue in a position of national and world pre-eminence.

Mass transportation has always been handicapped by rush-hour peaks. These peaks, however, have become even more highly accentuated by the loss of off-peak ridership to the private automobile. The outlook is for the peak hours to become even more accentuated as the office function continues to expand and manufacturing and warehousing continue to decline in Mid-Manhattan. The high cost of providing major transportation facilities that are used to capacity only a few hours each work day is bound to raise the question of finding less costly alternatives.

Commonly suggested alternatives are staggered work hours and limitations on new office building construction beyond present zoning restrictions. By empowering municipal authorities to refuse building permits for new construction that would place excessive demands on transportation facilities, it is contended that a better balance could be maintained between transportation and land use. Staggered work hours are proposed as a direct assault on the rush-hour peaks.

Both proposals are questionable substitutes for adequate transportation. They would attempt to alleviate the transportation problem by indirect action that could have serious unforeseen repercussions. They might impair, for many businesses, the advantages of a Mid-Manhattan location. During the past decade a number of large business firms have relocated their headquarters offices in the suburbs, strongly suggesting that the advantages of a Mid-Manhattan location are no longer as one-sided as in former years. These advantages can no longer be taken for granted. Adequate mass transportation, on the other hand, would enhance the advantages of a Mid-Manhattan location and insure the continued vitality of the Mid-Manhattan business center.

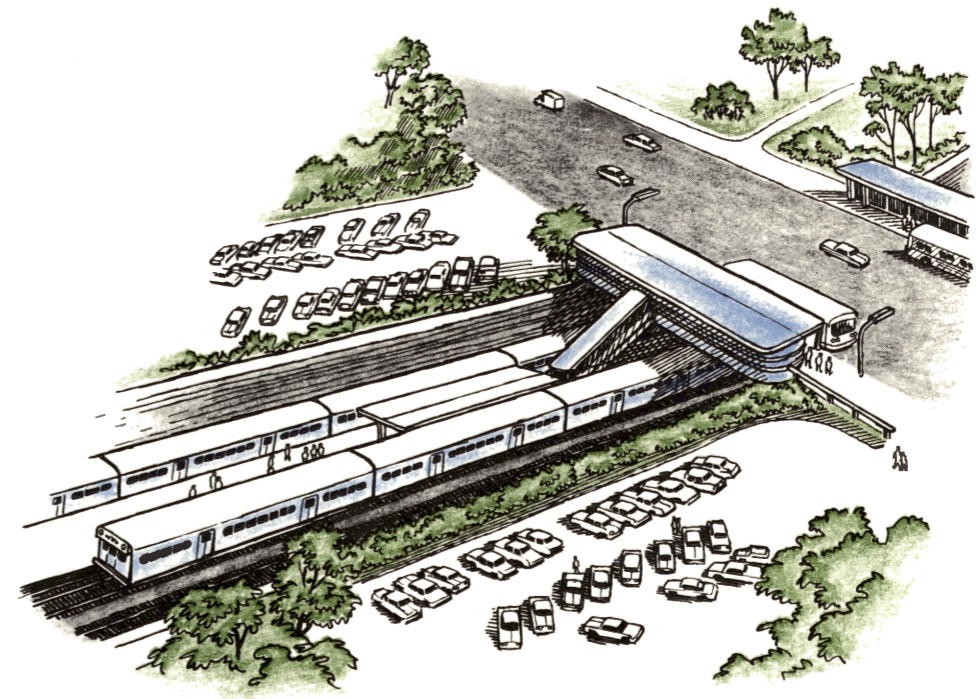
## Automobile vs. Rail-Transit

A major step in the development of a regional transportation system, in which rail-transit and the private automobile would perform the transportation tasks for which they are best suited, would involve a program for providing adequate vehicular parking facilities for users of rail-transit.

In many parts of the New Jersey-New York metropolitan area there is virtually complete dependence on the private automobile for local transportation. Adequate parking in the residential areas is an essential adjunct to the rail-transit system. The automobile is today's general purpose vehicle. The automobile involves an investment by the owner and it will be used for travel except where some alternative has a clear advantage. For most journey-to-work travel to Mid-Manhattan rail-transit service, if modernized, would have a distinct time and convenience advantage over alternative means. However, without adequate parking the rail-transit system is, for practical purposes, inaccessible.

Automobile parking is of such vital importance for an adequate rail-transit system, it can no longer be left entirely to the local village or city. It is a regional problem which should be supported by a program of state and federal grants-in-aid. Because most of the region's rail-transit system was built prior to the advent of the automobile, many stations do not have available sufficient adjacent land to provide needed parking facilities. Moreover, they are poorly located for vehicular access.

Station relocation may become an integral part of a program of providing adequate parking.



## Expansion of Peak-Hour Capacity

The peak-hour capacity of the mass transportation system must be expanded. This requires modernization of the region's rail-transit facilities. The recently announced plans of the Port Authority for the Hudson and Manhattan Railroad indicate the nature of the problem. Here is an essential link in the regional rail-transit system which in 1961 carried only 27 per cent as many passengers as in 1927 and, yet, is inadequate for today's prospective peak-hour loads. The Port Authority has announced its intention of installing new power and signalling systems, upgrading track and roadbed and increasing the capacity of the lower Manhattan terminal by extending the length of platforms from 350 to 500 feet, the number of tracks from five to seven and the curve radii of entrance and exit tracks from 90 to 150 feet. The rush-hour capacity of the terminal will thereby be substantially increased.

Only by the use of the best modern technology can the rail-transit system handle the rush-hour volumes that characterize Mid-Manhattan journey-to-work travel. And, only by such measures can the existing rail-transit system be preserved and its potential capacity utilized to the maximum extent possible.

## Access to the Upper East Side

The increasing importance of the upper East Side, from 34th to 60th Streets, as the dominant employment center in Mid-Manhattan should give a high priority to improving access to this area. Workers from New Jersey have no direct access to the upper East Side except by automobile. Riders of the H&M, the railroads and the suburban bus services must transfer, on entering Manhattan, to the subway or city bus. Often a second transfer must be made to reach their place of work on the East Side.

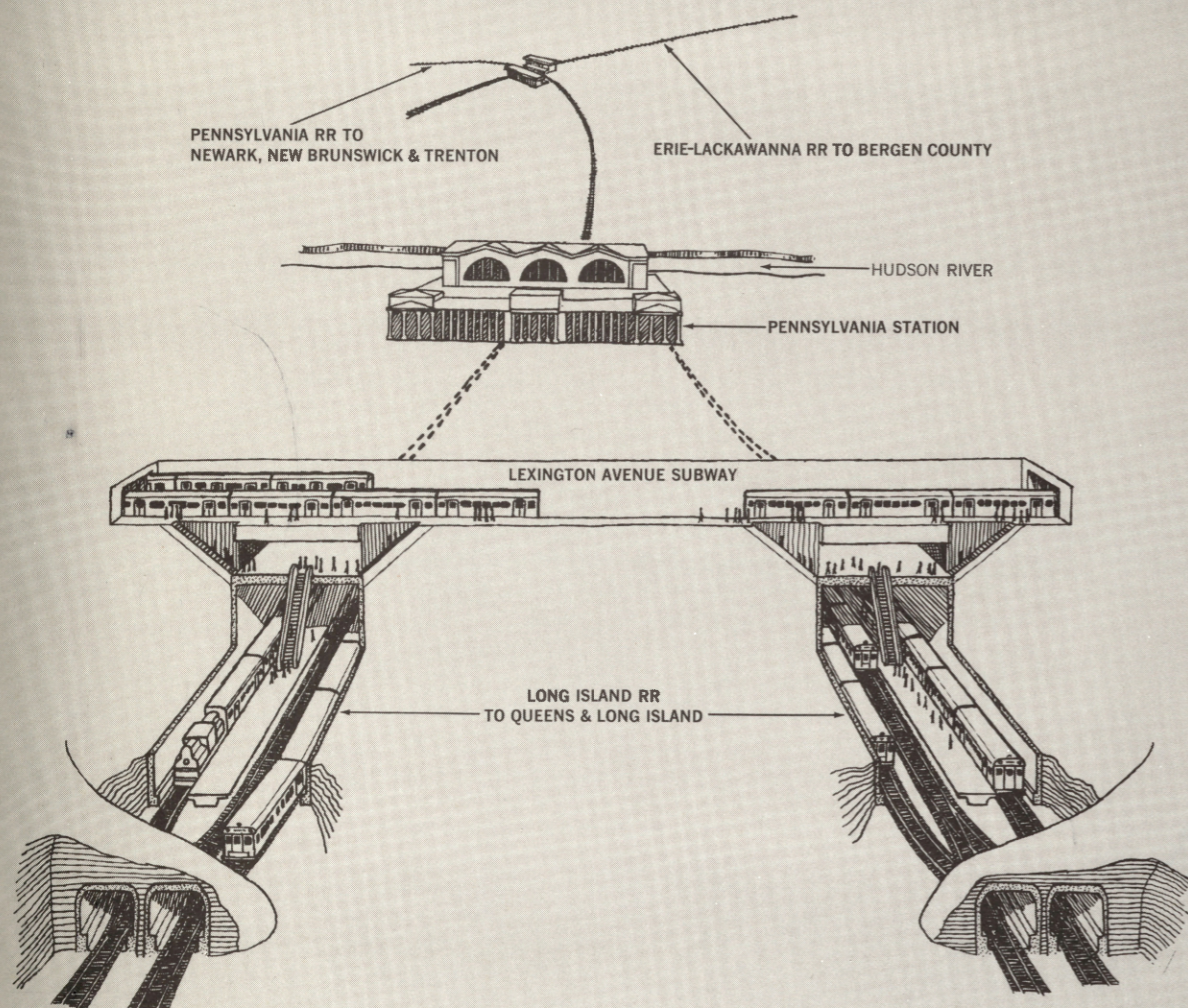
Rail users from Nassau and Suffolk Counties also have no direct access to this area. They must transfer to the subway on Long Island or come into Penn Station and back-track to the East Side, taking the subway or city busses. Workers from Nassau County do have the option of driving or taking a bus to the subway in Queens and coming directly into the upper East Side.

The only workers in the region with direct rail access to the principal employment center in Mid-Manhattan are residents of Westchester, Fairfield, Putnam and Dutchess Counties.

The relative inaccessibility of the upper East Side is reflected in the number of transport modes used to get to places of work in this area as compared to other parts of Mid-Manhattan.

### Accessibility of the Upper East Side Per Cent of Workers Using More Than Two Modes

Workers From	To Upper East Side	To Other Parts of CBD
New Jersey	22.9	20.1
Nassau-Suffolk	22.3	13.5
North of New York City	8.0	10.1



Access to the upper East Side can be appreciably improved for residents of Nassau-Suffolk and New Jersey by constructing a railroad station in the Long Island Rail tunnels under Park Avenue, providing access to the Lexington Avenue subway. By allowing trains of the Pennsylvania Railroad to extend their operation as far as Queens, workers from New Jersey as well as those from Nassau, Suffolk and some parts of Queens would have greatly improved access to the upper East Side.

Nearly 75,000 workers would have greatly improved mass transportation to the upper east side. The daily movement of workers from New Jersey to the upper east side is nearly 40,000 and from Nassau and Suffolk Counties 35,000. In addition some of the 82,000 workers from Queens who work in the upper East Side would use this service.

By building a transfer station in the Meadows, workers from Bergen, Rockland and Orange Counties could transfer from the Erie-Lackawanna to the Pennsylvania Railroad and thereby have available a more direct route to the upper East Side.

In addition to providing needed improved access to the upper East Side, congestion would be reduced or additional capacity made available on existing transit facilities, particularly from Long Island. Some relief would be provided for the acute problem at Grand Central Terminal.



Appendix

## Sample Design and Survey Procedures

A stratified random sample of Mid-Manhattan business firms was selected using stratification by postal zone and size of firms. Business firms within each postal zone were grouped into nine size groups and a simple random sample of firms selected from each size group within each postal zone. Questionnaires were distributed to all employers in the selected firms who in turn distributed them to their employees and later returned them to the Agency. The survey period extended from July 1, 1961 to June 30, 1962.

When the questionnaires were returned, a random subsample was selected depending on the size of firm. The sampling ratios used in the sample of firms and the sampling ratios used in selecting the subsample of questionnaires are shown below.

Sample of Business Establishments			
Firm Size by No. of Employees	Sampling Ratio for Firms	No. Firms in Sample	Sampling Ratio for Employees
1000 & up	100	136	25
500-999	100	117	50
250-499	50	143	75
100-249	10	134	100
50-99	4	175	100
20-49	3	257	100
10-19	2	203	100
4-9	2	362	100
1-3	2	990	100

The main office of firms with more than one establishment was included in the size group appropriate for the number of employees at the main office. The other establishments were sampled in the size groups appropriate to the number of employees in each establishment.

Firms in the larger size groups 6-9 were contacted by phone while those in the smaller size groups were contacted by mail. As the survey progressed, it was found that the returns from the smaller firms were unsatisfactory. An outside survey firm was retained to personally contact all smaller firms, bringing the response rate up, from below 15 per cent, to over 60 per cent.

After completion of the survey, a survey research firm was retained to test the sample for possible non-response bias and, if necessary, to conduct a follow-up

survey to evaluate the effect of non-response on the survey results. It was found that, typically, a higher percentage of suburban county residents answered the questionnaires than residents of New York City and, in particular, a higher percentage of rail riders than non-rail riders. There was also considerable non-reporting by Spanish speaking residents of Manhattan. Additional surveys were conducted to remove these sources of bias.

All non-commercial establishments were included in the survey. When the questionnaires were returned, a random subsample was selected equal to 10 per cent of the number of employees.

Estimates of the total number of workers were made using the sampling ratios and the total number of employees in the sample firms. These weighting factors were modified in some instances, to incorporate the results of the non-response surveys.

The sample design included a replication of firms to make possible calculation of the sampling errors. However, the analysis of nonresponse indicated that nonresponse errors were more important than sampling errors. Accordingly emphasis was placed on evaluating the effects of nonresponse. Because of sampling errors, counties have been grouped in some tables so as to give a minimum population of Mid-Manhattan workers greater than 10,000.

## The Cordon Line

The Mid-Manhattan Central Business District consists of the area between 60th Street on the north and Chambers, Church, Worth and Catherine Streets on the south. Thus the cordon consists of these streets and the points at which the bridges and tunnels enter Mid-Manhattan.

## Occupation Index

The occupation index is the percentage that each employment zone differs from the occupational distribution for the entire CBD. For example, the occupation index for employment zone 1 is  $\frac{32.28\% - 24.38\%}{24.38\%} = 32.4$ , where 32.28 is the percentage of workers in employment zone 1 who are laborers and 24.38 is the corresponding percentage for the entire Mid-Manhattan area.

### CONSTRUCTION OF OFFICE BUILDINGS WITHIN THE CENTRAL BUSINESS DISTRICT OF MANHATTAN

Employment Zone	COMPLETED 1947 - 1961			Percentage By Employment Zone	FOR COMPLETION 1962 - 1963			Percentage Of 1947 - 61
	Competitive	Non- Competitive*	Total		Competitive	Non- Competitive	Total	
1	303,000	578,000	881,000	2.5%	—	125,000	125,000	14.2%
3	201,000	1,185,000	1,386,000	4.2	—	668,000	668,000	48.2
12	—	206,000	206,000	0.6	—	—	—	—
16	1,215,000	52,000	1,267,000	3.6	1,895,000	—	1,895,000	149.6
17	10,432,000	1,120,000	11,552,000	32.8	3,922,000	120,000	4,042,000	35.0
18	1,560,000	240,000	1,800,000	5.1	160,000	—	160,000	8.9
19	1,562,000	1,409,000	2,971,000	8.4	1,700,000	460,000	2,160,000	72.7
20	2,175,000	—	2,175,000	6.2	700,000	—	700,000	32.2
22	8,890,000	2,289,000	11,179,000	31.8	303,000	—	303,000	2.7
36	1,446,000	269,000	1,715,000	4.8	717,000	—	717,000	41.8
<b>Totals</b>	<b>27,784,000</b>	<b>7,348,000</b>	<b>35,132,000**</b>	<b>100.0</b>	<b>9,397,000</b>	<b>1,373,000</b>	<b>10,770,000</b>	<b>30.7</b>

\* Non-competitive space consists of buildings wholly owner occupied.

\*\* New Manhattan Office Building Construction During this Period was 45,855,000 Square Feet.

Source: The Real Estate Board of New York; Office Building Construction, Manhattan 1947-63

### PLACE OF RESIDENCE AND SEX OF WORKERS IN THE CENTRAL BUSINESS DISTRICT

REGION	Total Number of Workers	Per Cent of Total Workers	Males		Females	
			Per Cent	Per Cent	Per Cent	Per Cent
<b>REGION</b>	<b>1,553,608</b>	<b>100.00</b>	<b>852,620</b>	<b>54.88</b>	<b>700,988</b>	<b>45.12</b>
<b>NEW YORK CITY</b>	<b>1,258,066</b>	<b>80.98</b>	<b>626,014</b>	<b>49.76</b>	<b>632,052</b>	<b>50.24</b>
Bronx	233,265	15.01	117,729	50.47	115,536	49.53
Brooklyn	251,036	16.16	131,668	52.46	119,368	47.55
Manhattan	500,723	32.23	234,338	46.80	266,385	53.20
Queens	259,393	16.70	132,628	51.14	126,765	48.87
Staten Island	13,649	0.88	9,758	71.49	3,891	28.51
<b>OUTSIDE NEW YORK CITY</b>	<b>295,542</b>	<b>19.02</b>	<b>224,523</b>	<b>75.97</b>	<b>71,019</b>	<b>24.03</b>
<b>EAST OF NEW YORK CITY</b>	<b>104,751</b>	<b>6.74</b>	<b>86,179</b>	<b>82.27</b>	<b>18,572</b>	<b>17.73</b>
Nassau	90,503	5.82	74,113	81.90	16,390	18.11
Suffolk	14,248	0.92	12,057	84.63	2,191	15.38
<b>WEST OF NEW YORK CITY</b>	<b>115,682</b>	<b>7.45</b>	<b>79,393</b>	<b>68.63</b>	<b>36,289</b>	<b>31.37</b>
Bergen	45,445	2.93	32,221	70.90	13,224	29.10
Essex	13,753	0.89	10,337	75.16	3,416	24.84
Hudson	25,073	1.61	11,448	45.67	13,625	54.34
Mercer-Morris-Passaic-Somerset	10,178	0.65	8,178	80.35	2,000	19.65
Middlesex-Monmouth	11,085	0.71	9,167	82.70	1,918	17.30
Union	9,070	0.58	6,928	76.39	2,142	23.62
<b>NORTH OF NEW YORK CITY</b>	<b>75,109</b>	<b>4.83</b>	<b>59,667</b>	<b>79.44</b>	<b>15,442</b>	<b>20.56</b>
Dutchess-Orange-Putnam-Rockland	4,591	0.30	3,558	77.50	1,033	22.50
Fairfield	12,854	0.83	12,138	94.44	716	5.57
Westchester	56,278	3.62	42,766	75.99	13,512	24.01

**JOB CLASSIFICATION OF MID-MANHATTAN WORKERS BY PLACE OF RESIDENCE**  
**Percentage of Workers**

REGION	JOB CLASSIFICATION							Total
	Executive	Professional	Administrative	Clerical	Sales Clerical	Sales	Labor	
REGION	7.25	9.89	12.02	39.56	2.44	4.37	24.47	100.0
NEW YORK CITY	5.29	8.28	9.90	42.64	2.71	3.57	27.61	100.0
Bronx	0.94	6.21	7.56	46.91	3.06	2.31	33.01	100.0
Brooklyn	3.11	6.86	9.00	45.10	1.70	4.07	30.16	100.0
Manhattan	7.49	9.77	9.94	38.19	3.18	3.31	28.11	100.0
Queens	5.33	8.48	12.75	46.36	2.57	4.85	19.66	100.0
Staten Island	1.19	12.84	13.81	34.47	1.60	2.43	33.64	100.0
OUTSIDE NEW YORK CITY	15.63	16.77	21.01	26.43	1.31	7.75	11.10	100.0
EAST OF NEW YORK CITY	18.01	16.10	19.92	23.33	1.01	8.01	13.62	100.0
Nassau	19.02	15.34	19.63	23.08	0.93	8.45	13.54	100.0
Suffolk	11.56	20.93	21.73	24.88	1.52	5.21	14.17	100.0
WEST OF NEW YORK CITY	9.25	16.39	20.88	31.31	1.84	7.87	12.46	100.0
Bergen	8.45	15.40	25.12	29.06	1.88	8.07	12.01	100.0
Essex	16.75	20.22	17.76	27.52	2.36	7.23	8.16	100.0
Hudson	2.89	9.49	8.69	51.65	2.15	3.54	21.58	100.0
Mercer-Morris-Passaic-Somerset	9.66	19.62	26.12	21.98	1.97	12.26	8.39	100.0
Middlesex-Monmouth	9.51	23.03	26.48	18.65	1.16	12.38	8.79	100.0
Union	16.64	21.26	25.81	20.49	0.89	8.52	6.37	100.0
NORTH OF NEW YORK CITY	22.13	18.28	22.89	23.25	0.76	7.19	5.50	100.0
Dutchess-Orange-Putnam-Rockland	14.20	15.79	23.00	30.15	0.26	6.12	10.48	100.0
Fairfield	34.08	14.59	37.63	5.22	0.57	7.10	0.81	100.0
Westchester	20.15	19.15	19.03	27.24	0.85	7.45	6.14	100.0

**JOB CLASSIFICATION OF MID-MANHATTAN WORKERS BY EMPLOYMENT ZONE**  
**Percentage of Workers**

Employment Zone	JOB CLASSIFICATION							Total
	Executive	Professional	Administrative	Clerical	Sales Clerical	Sales*	Labor	
1	5.99	5.83	11.38	35.71	4.48	4.30	32.31	100.0
2	9.93	1.59	6.61	17.61	2.49	4.75	57.02	100.0
3	5.90	7.20	12.45	46.06	1.34	2.79	24.26	100.0
12	7.14	7.72	10.85	31.78	0.52	3.16	38.83	100.0
16	6.94	12.03	13.86	43.32	1.00	5.32	17.52	100.0
17	10.08	15.55	11.28	45.62	1.93	4.98	10.56	100.0
18	6.74	5.03	9.40	28.71	0.82	7.81	41.49	100.0
19	5.57	11.89	13.81	46.47	5.12	1.86	15.28	100.0
20	7.77	16.61	14.78	45.08	3.75	3.50	8.51	100.0
22	7.84	15.34	15.13	43.51	4.36	3.87	9.95	100.0
36	7.49	10.30	13.55	38.60	1.59	5.36	23.10	100.0
Total CBD	7.24	9.92	12.08	39.55	2.44	4.36	24.41	100.0

\*Other than clerical

PERCENTAGE DISTRIBUTION OF MID-MANHATTAN WORKERS, BY PLACE OF RESIDENCE BY EMPLOYMENT ZONE

REGION	Employment Zone											TOTAL
	1	2	3	12	16	17	18	19	20	22	36	
NEW YORK CITY	17.07	1.66	12.32	11.48	5.79	14.55	10.47	8.44	2.19	8.04	7.99	100.0
Bronx	18.66	0.90	15.77	12.08	5.07	13.25	12.29	7.03	1.46	6.13	7.36	100.0
Brooklyn	17.92	1.80	14.63	18.50	6.19	9.70	12.78	4.85	1.49	4.49	7.65	100.0
Manhattan	16.66	2.21	9.93	7.50	5.88	16.70	8.80	11.71	2.55	10.12	7.94	100.0
Queens	15.65	1.12	11.57	11.03	6.06	16.39	9.89	7.14	2.87	9.34	8.94	100.0
Staten Island	16.17	2.35	12.37	27.03	2.70	12.20	8.95	3.35	1.90	5.11	7.87	100.0
OUTSIDE NEW YORK CITY	12.93	0.34	8.79	9.80	5.73	22.26	9.17	7.54	4.23	9.00	10.21	100.0
EAST OF NEW YORK CITY	13.77	0.47	9.43	12.15	6.59	19.55	10.09	6.56	4.24	7.64	9.51	100.0
Nassau	13.82	0.54	9.19	12.60	6.34	19.76	10.01	6.38	4.12	7.75	9.49	100.0
Suffolk	13.49	—	10.92	9.23	8.15	18.28	10.57	7.71	5.00	6.97	9.68	100.0
WEST OF NEW YORK CITY	14.15	0.41	8.69	9.87	5.17	18.54	9.46	9.25	4.23	8.13	12.10	100.0
Bergen	14.66	0.08	8.58	6.94	5.75	18.09	8.67	12.68	4.51	8.97	11.07	100.0
Essex	16.40	0.17	6.57	12.57	4.62	17.89	11.26	7.29	3.42	9.33	10.48	100.0
Hudson	15.06	1.63	11.34	12.46	3.61	15.37	9.54	6.48	2.59	5.39	16.53	100.0
Mercer-Morris-Passaic-Somerset	8.81	—	7.78	8.41	7.68	21.26	9.23	7.39	6.68	10.92	11.84	100.0
Middlesex-Monmouth	15.67	—	7.80	11.04	5.33	18.87	13.28	7.05	3.48	7.47	10.01	100.0
Union	12.54	—	6.87	13.69	4.31	24.69	4.31	7.64	6.78	7.52	11.65	100.0
NORTH OF NEW YORK CITY	9.45	0.08	8.14	6.49	5.45	31.93	7.51	6.30	4.23	12.29	8.13	100.0
Dutchess-Orange-Putnam-Rockland	9.71	—	14.14	4.07	6.01	18.69	10.15	7.93	4.73	6.49	18.08	100.0
Fairfield	6.67	—	8.35	2.89	3.52	36.08	2.96	7.33	6.29	19.97	5.94	100.0
Westchester	10.07	0.11	7.43	7.55	5.61	32.54	8.50	6.03	3.72	10.60	7.84	100.0

PERCENTAGE OF WORKERS USING EACH MODE OF TRANSPORTATION AT LEAST ONCE FOR THE JOURNEY TO WORK TRIP

MODES	TOTAL	New York City	Bronx B'klyn Queens S.I.	Outside of NYC	East of NYC	Nassau	Suffolk	West of NYC	Bergen	Essex	Hudson	Mercer Morris Passaic Somerset	Middlesex Monmouth	Union	North of NYC	Dutchess Orange Putnam Rockland	Fairfield	Westchester
SUBWAY	72.5	76.8	93.4	48.2	69.4	68.5	73.7	40.5	50.4	31.8	25.5	36.5	44.5	45.6	28.9	40.0	11.8	32.0
BUS	32.2	29.4	27.9	41.5	21.7	24.4	3.8	72.1	83.6	66.2	83.7	51.9	42.2	51.6	20.7	30.2	10.1	22.4
RAILROAD	9.1	0.8	1.4	43.9	49.8	47.6	62.8	21.2	8.0	34.7	2.5	43.9	53.0	54.9	67.8	28.4	91.2	65.7
HUDSON & MANHATTAN	1.4	**	0.1	7.3	—	—	—	18.3	6.1	31.3	35.5	28.0	7.7	14.3	0.5	8.2	—	—
FERRY	1.1	1.1	1.8	1.3	—	—	—	3.2	1.7	2.9	1.8	7.7	2.3	10.9	0.1	1.0	—	—
AUTO	13.4	6.7	8.1	41.3	51.5	48.7	67.7	27.0	25.3	27.5	8.4	49.1	47.2	36.6	47.9	70.7	54.8	44.4
TAXI	2.0	1.8	1.0	2.7	1.3	1.3	1.5	3.8	2.1	2.9	3.7	2.7	4.1	15.4	3.0	3.6	4.7	2.5
WALK ONLY	4.7	5.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Number of Modes Used		Number of Modes Used For The Journey To Work Trip																
1	64.5	72.0	67.9	32.4	22.9	23.7	18.2	36.0	35.7	34.1	48.3	29.0	28.0	25.7	40.4	32.5	40.0	41.0
2	26.5	20.7	29.6	51.1	60.6	61.6	54.3	42.9	52.3	37.6	38.3	33.9	42.7	25.6	50.3	54.5	45.8	51.1
3	4.1	1.5	2.4	15.0	16.4	14.6	27.4	17.6	11.0	22.7	13.2	25.3	25.9	34.9	9.1	10.8	14.2	7.9
4	0.3	0.1	0.1	1.5	0.1	0.1	0.1	3.5	1.0	5.6	0.2	11.8	3.4	13.8	0.2	2.2	—	**
5	—	—	—	**	—	—	—	**	—	**	—	**	—	—	—	—	—	—
Walk only	4.6	5.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

\*\*less than 0.1%

**FREQUENCY DISTRIBUTIONS OF TRAVEL TIME FROM PLACE OF RESIDENCE**  
**PERCENTAGE OF WORKERS FROM RESIDENT COUNTY TRAVELING WITHIN VARIOUS TRIP TIME INTERVALS**

REGION	Average Travel Time One-Way Minutes	Under	15 m.	30 m.	1 hr.	1 hr. 16 m.	1 hr. 30 m.	1 hr. 45 m.	2 hr.	2 hr. 30 m.	3 hr.	3 hr. 30 m.
		15 m.	29 m.	59 m.	1 hr. 15 m.	1 hr. 29 m.	1 hr. 44 m.	1 hr. 59 m.	2 hr. 29 m.	2 hr. 59 m.	3 hr. 29 m.	and Over
REGION	51.9	2.73	11.54	43.02	22.35	11.64	5.66	1.87	1.02	0.13	0.04	—
NEW YORK CITY	45.7	3.39	14.23	50.41	21.28	7.42	2.35	0.56	0.31	0.04	0.01	—
Bronx	56.5	0.22	0.84	49.70	33.33	11.96	3.04	0.60	0.29	0.02	—	—
Brooklyn	53.4	0.16	1.89	49.27	35.64	9.95	2.21	0.48	0.31	0.04	0.05	—
Manhattan	31.0	8.23	33.01	51.81	5.24	0.92	0.48	0.22	0.09	—	—	—
Queens	55.3	0.14	2.33	51.89	28.30	12.11	3.76	0.89	0.48	0.09	0.01	—
Staten Island	86.0	—	0.32	3.20	11.94	34.63	35.48	8.20	5.96	0.27	—	—
OUTSIDE NEW YORK CITY	77.4	—	0.44	12.60	26.75	29.03	19.27	7.24	3.97	0.52	0.17	0.01
EAST OF NEW YORK CITY	83.9	—	0.20	3.70	21.34	33.48	25.13	9.62	5.66	0.53	0.34	—
Nassau	80.7	—	0.23	4.18	24.45	37.16	23.98	6.80	2.68	0.19	0.33	—
Suffolk	104.2	—	—	0.69	1.70	10.19	32.41	27.45	24.51	2.64	0.41	—
WEST OF NEW YORK CITY	73.2	—	0.73	19.44	26.42	28.33	15.80	5.91	2.95	0.38	0.04	*
Bergen	72.2	—	0.38	14.29	32.64	33.89	14.01	4.07	0.61	0.11	—	—
Essex	76.3	—	0.10	7.19	33.03	36.93	18.71	2.17	1.84	0.03	—	—
Hudson	54.9	—	2.59	56.33	27.00	11.22	2.01	0.53	0.21	0.09	0.02	—
Mercer-Morris-Passaic-Somerset	87.2	—	—	5.10	10.28	26.86	35.32	16.63	4.75	0.93	0.13	—
Middlesex-Monmouth	93.4	—	0.08	1.50	8.10	24.96	28.53	17.79	18.15	0.79	0.08	0.02
Union	77.8	—	0.11	2.90	25.32	43.70	20.31	6.40	1.23	0.03	—	—
NORTH OF NEW YORK CITY	75.6	—	0.31	13.56	34.85	24.00	16.91	6.15	3.30	0.76	0.15	0.01
Dutchess-Orange-Putnam-Rockland	91.2	—	—	5.56	21.65	16.27	21.04	10.06	15.07	8.15	2.16	0.04
Fairfield	91.9	—	0.09	0.16	9.21	29.17	38.47	16.44	5.95	0.51	—	—
Westchester	70.1	—	0.14	17.44	42.60	23.60	11.58	3.25	1.34	0.03	0.02	—

\*Less than 0.01

**DAILY ROUND-TRIP COST**  
**PERCENTAGE OF WORKERS BY COST INTERVALS**

REGION	Average Daily Cost \$	\$0.00 to	\$0.15 to	\$0.45 to	\$0.75 to	\$1.25 to	\$1.75 to	\$2.25 to	\$2.75 to	\$3.25
		0.14	0.44	0.74	1.24	1.74	2.24	2.74	3.24	& Over
REGION	.65	5.56	53.12	17.93	8.27	5.76	5.69	2.19	0.76	0.72
NEW YORK CITY	.42	6.83	65.67	20.11	3.53	1.90	1.23	0.32	0.19	0.22
Bronx	.44	0.71	70.04	22.37	3.88	1.29	0.87	0.16	0.37	0.31
Brooklyn	.41	0.88	75.10	19.42	1.86	1.43	0.80	0.20	0.24	0.07
Manhattan	.36	15.56	70.89	6.91	2.73	1.93	1.30	0.39	0.13	0.16
Queens	.54	1.21	45.65	42.42	5.11	2.81	1.89	0.42	0.09	0.40
Staten Island	.72	4.03	7.30	57.69	27.60	2.53	0.43	0.33	0.07	0.02
OUTSIDE NEW YORK CITY	1.57	0.35	1.38	8.94	27.81	21.65	24.04	9.91	3.13	2.79
EAST OF NEW YORK CITY	1.62	0.49	1.83	7.91	21.97	17.83	34.42	10.67	2.77	2.11
Nassau	1.57	0.33	1.98	8.55	23.47	19.75	34.04	7.46	2.27	2.15
Suffolk	1.98	1.51	0.85	3.82	12.41	5.68	36.85	31.01	5.97	1.90
WEST OF NEW YORK CITY	1.43	0.15	0.27	9.71	41.10	19.70	16.57	8.20	2.06	2.24
Bergen	1.24	0.09	0.18	7.78	58.48	20.91	7.10	3.57	0.64	1.25
Essex	1.65	0.05	0.54	0.40	20.91	38.93	29.79	6.08	1.09	2.21
Hudson	.88	0.11	0.31	29.32	63.85	4.04	1.46	0.38	0.47	0.06
Mercer-Morris-Passaic-Somerset	1.95	0.85	0.60	3.05	11.87	23.33	27.37	20.78	5.79	6.36
Middlesex-Monmouth	2.22	—	0.05	0.24	1.55	12.57	42.07	30.41	8.06	5.05
Union	1.86	0.03	0.05	0.08	6.74	31.65	45.27	14.11	1.67	0.40
NORTH OF NEW YORK CITY	1.72	0.50	2.60	9.10	13.76	30.22	22.06	11.69	5.41	4.66
Dutchess-Orange-Putnam-Rockland	2.06	0.22	0.30	1.18	11.11	28.31	22.10	16.81	15.03	4.94
Fairfield	2.46	0.09	0.09	0.08	2.17	2.53	36.68	34.88	12.25	11.23
Westchester	1.50	0.61	3.25	12.03	16.95	37.37	18.80	5.56	2.70	2.73

**TIME OF ARRIVAL AT PLACES OF WORK  
IN THE MID-MANHATTAN CENTRAL BUSINESS DISTRICT**

Time	Minutes in Period	Per Cent of Workers	Per Cent of Workers per 10 Minute Interval
12:00 - 12:59 A.M.	60	.17	.03
1:00 - 1:59	60	.02	*
2:00 - 2:59	60	.02	*
3:00 - 3:59	60	.03	*
4:00 - 4:59	60	.12	.02
5:00 - 5:59	60	.55	.09
6:00 - 6:59	60	1.42	.23
7:00 - 7:44	45	5.26	1.17
7:45 - 8:14	30	11.79	3.93
8:15 - 8:24	10	6.25	6.25
8:25 - 8:34	10	10.25	10.25
8:35 - 8:44	10	5.83	5.83
8:45 - 8:54	10	13.15	13.15
8:55 - 9:04	10	19.98	19.98
9:05 - 9:14	10	6.24	6.24
9:15 - 9:29	15	5.75	3.83
9:30 - 9:59	30	5.15	1.72
10:00 - 10:29	30	1.82	.61
10:30 - 10:59	30	.70	.23
11:00 - 11:29	30	.66	.22
11:30 - 11:59	30	.37	.12
12:00 - 12:59 P.M.	60	.30	.05
1:00 - 1:59	60	.22	.04
2:00 - 2:59	60	.29	.05
3:00 - 3:59	60	1.18	.20
4:00 - 4:59	60	.72	.12
5:00 - 5:59	60	.54	.09
6:00 - 6:59	60	.20	.03
7:00 - 7:59	60	.18	.03
8:00 - 8:59	60	.04	*
9:00 - 9:59	60	.05	*
10:00 - 10:59	60	.13	.02
11:00 - 11:59	60	.62	.10

\*less than .01 per cent.

**TIME OF DEPARTURE FROM PLACES OF WORK  
IN THE MID-MANHATTAN CENTRAL BUSINESS DISTRICT**

Time	Minutes in Period	Per Cent of Workers	Per Cent of Workers per 10 Minute Interval
12:00 - 12:59 A.M.	60	1.16	.19
1:00 - 1:59	60	.39	.07
2:00 - 2:59	60	.21	.04
3:00 - 3:59	60	.08	.01
4:00 - 4:59	60	.05	*
5:00 - 5:59	60	.07	.01
6:00 - 6:59	60	.08	.01
7:00 - 7:59	60	.21	.04
8:00 - 8:59	60	.63	.11
9:00 - 9:59	60	.09	.02
10:00 - 10:59	60	.02	*
11:00 - 11:59	60	.03	*
12:00 - 12:59 P.M.	60	.12	.02
1:00 - 1:59	60	.30	.05
2:00 - 2:59	60	.70	.12
3:00 - 3:59	60	2.23	.37
4:00 - 4:14	15	3.62	2.41
4:15 - 4:44	30	10.58	3.53
4:45 - 4:54	10	5.91	5.91
4:55 - 5:04	10	31.61	31.61
5:05 - 5:14	10	3.28	3.28
5:15 - 5:44	30	21.04	7.01
5:45 - 6:14	30	10.79	3.60
6:15 - 6:44	30	2.65	.88
6:45 - 6:59	15	.24	.16
7:00 - 7:59	60	1.49	.25
8:00 - 8:59	60	.67	.11
9:00 - 9:59	60	.61	.10
10:00 - 10:59	60	.33	.06
11:00 - 11:59	60	.81	.14

\*less than .01 per cent.

**TIME OF ARRIVAL AT PLACES OF WORK IN MAJOR MID-MANHATTAN EMPLOYMENT ZONES  
MORNING PEAK PERIOD**

Time	Minutes in Period	Zones 16, 17, 20, 22		Zones 3, 19, 36		Zones 1, 2, 12, 18	
		Per Cent of Workers	Per Cent of Workers Per 10 Minute Interval	Per Cent of Workers	Per Cent of Workers Per 10 Minute Interval	Per Cent of Workers	Per Cent of Workers Per 10 Minute Interval
6:00 - 6:59 A.M.	60	.80	.13	1.36	.23	1.97	.33
7:00 - 7:44	45	2.87	.64	5.10	1.13	7.39	1.64
7:45 - 8:14	30	5.68	1.89	12.44	4.14	16.45	5.48
8:15 - 8:24	10	4.37	4.37	5.91	5.91	8.07	8.07
8:25 - 8:34	10	9.26	9.26	10.18	10.18	11.15	11.15
8:35 - 8:44	10	6.51	6.51	6.20	6.20	5.02	5.02
8:45 - 8:54	10	15.66	15.66	12.80	12.80	11.36	11.36
8:55 - 9:04	10	25.14	25.14	17.96	17.96	17.24	17.24
9:05 - 9:14	10	8.61	8.61	5.91	5.91	4.51	4.51
9:15 - 9:29	15	7.74	5.16	6.15	4.10	3.82	2.55
9:30 - 9:59	30	6.77	2.25	5.30	1.77	3.53	1.17
10:00 - 10:29	30	1.88	.62	2.46	.82	1.30	.43
10:30 - 10:59	30	.60	.20	.68	.22	0.79	.26
Per Cent During Peak Period		95.89		92.45		92.60	
Total		100.00		100.00		100.00	

**TIME OF DEPARTURE FROM PLACES OF WORK IN MAJOR MID-MANHATTAN EMPLOYMENT ZONES  
EVENING PEAK PERIOD**

Time	Minutes in Period	Zones 16, 17, 20, 22		Zones 3, 19, 36		Zones 1, 2, 12, 18	
		Per Cent of Workers	Per Cent of Workers Per 10 Minute Interval	Per Cent of Workers	Per Cent of Workers Per 10 Minute Interval	Per Cent of Workers	Per Cent of Workers Per 10 Minute Interval
3:00 - 3:59 P.M.	60	1.64	.27	2.38	0.40	2.60	.43
4:00 - 4:14	15	2.55	1.70	3.65	2.43	4.50	3.00
4:15 - 4:44	30	5.68	1.89	13.36	4.45	12.65	4.22
4:45 - 4:54	10	6.26	6.26	5.69	5.69	5.76	5.76
4:55 - 5:04	10	35.16	35.16	28.75	28.75	30.69	30.69
5:05 - 5:14	10	4.04	4.04	3.24	3.24	2.67	2.67
5:15 - 5:44	30	23.68	7.89	21.20	7.07	18.70	6.23
5:45 - 6:14	30	12.40	4.13	10.13	3.38	9.92	3.31
6:15 - 6:44	30	2.64	.88	2.31	0.77	2.91	.97
6:45 - 6:59	15	0.30	.20	0.15	0.10	0.27	.18
7:00 - 7:59	60	1.17	.20	1.50	0.25	1.75	.29
Per Cent During Peak Period		95.52		92.36		92.42	
Total		100.00		100.00		100.00	

# NEW YORK CITY

## BRONX

Mode Before Crossing Cordon	Mode Used Entering Mid-Manhattan	Mode After Crossing Cordon
AUTO 13,371	AUTO 8,081	AUTO 7,932
		TAXI 13
		BUS 128
		SUBWAY 8
BUS 41	BUS 41	BUS 41
SUBWAY 5,014	SUBWAY 5,014	SUBWAY 4,913
		TAXI 5
		BUS 96
RAIL 235	RAIL 235	RAIL 204
		BUS 31
BUS 42,305	BUS 499	BUS 338
		BUS 143
		SUBWAY 18
SUBWAY 41,427	SUBWAY 41,427	SUBWAY 40,289
		TAXI 74
		BUS 1,064
RAIL 379	RAIL 379	RAIL 307
		TAXI 2
		BUS 14
		SUBWAY 56
AUTO & BUS 72	RAIL 69	RAIL 69
	SUBWAY 3	SUBWAY 3
RAIL 3,041	RAIL 2,878	RAIL 2,471
		TAXI 5
		BUS 229
		SUBWAY 173
BUS 24	BUS 24	BUS 24
SUBWAY 139	SUBWAY 139	SUBWAY 139
SUBWAY 170,647	SUBWAY 170,647	SUBWAY 165,540
		TAXI 343
		AUTO 121
		BUS 4,643
TAXI 3,829	RAIL 12	RAIL 9
		BUS 3
BUS 6	BUS 6	BUS 6
SUBWAY 3,811	SUBWAY 3,811	SUBWAY 3,451
		AUTO 194
		BUS 29
		SUBWAY 137

## BROOKLYN

Mode Before Crossing Cordon	Mode Used Entering Mid-Manhattan	Mode After Crossing Cordon
AUTO 14,835	AUTO 9,554	AUTO 9,372
		BUS 123
		SUBWAY 54
		TAXI 5
SUBWAY 5,188	SUBWAY 5,188	SUBWAY 5,176
		BUS 12
RAIL 7	SUBWAY 7	SUBWAY 7
BUS 86	7 BUS	7
	14 SUBWAY	14
	65 AUTO	65
BUS 40,155	BUS 824	BUS 683
		BUS 129
		SUBWAY 4
		TAXI 8
SUBWAY 39,331	SUBWAY 39,331	SUBWAY 38,928
		BUS 369
		TAXI 34
SUBWAY 194,945	SUBWAY 184,576	SUBWAY 188,700
		BUS 5,127
		SUBWAY 35
		TAXI 550
		AUTO 164
BUS 369	BUS 369	BUS 369
RAIL 13	RAIL 9	RAIL 9
	SUBWAY 4	SUBWAY 4
TAXI 1,088	SUBWAY 1,085	SUBWAY 1,068
		BUS 8
	9 BUS	9
	AUTO 3	AUTO 3

## MANHATTAN

Mode Before Crossing Cordon	Mode Used Entering Mid-Manhattan	Mode After Crossing Cordon
WALK 71,585	WALK 1,321	WALK 70,264*
		1,321
AUTO 22,801	AUTO 18,021	AUTO 17,705
		BUS 8
		BUS 119
		SUBWAY 169
		TAXI 28
BUS 14	BUS 14	BUS 14
SUBWAY 437	SUBWAY 437	SUBWAY 437
BUS 26	SUBWAY 26	SUBWAY 26
BUS 156,195	BUS 77,745	BUS 67,836*
		SUBWAY 7,403
		TAXI 2,506
BUS 67,514	BUS 67,514	BUS 66,626
		SUBWAY 376
		TAXI 512
AUTO 122	AUTO 122	AUTO 122
SUBWAY 10,742	SUBWAY 10,742	SUBWAY 10,356
		BUS 150
		TAXI 236
SUBWAY 68	BUS 68	BUS 68
RAIL 4	RAIL 4	RAIL 4
SUBWAY 239,047	SUBWAY 190,491	SUBWAY 181,053
		AUTO 25
		BUS 8,478
		TAXI 786
		BUS-TAXI 149
BUS 357	BUS 357	BUS 357
RAIL 121	RAIL 121	RAIL 119
		TAXI 2
H & M 217	H & M 217	H & M 217*
TAXI 10,757	TAXI 6,621	TAXI 5,998*
		SUBWAY 623
TAXI 4,136	TAXI 3,009	TAXI 3,009
	80 AUTO	80
	576 BUS	576
	471 SUBWAY	471

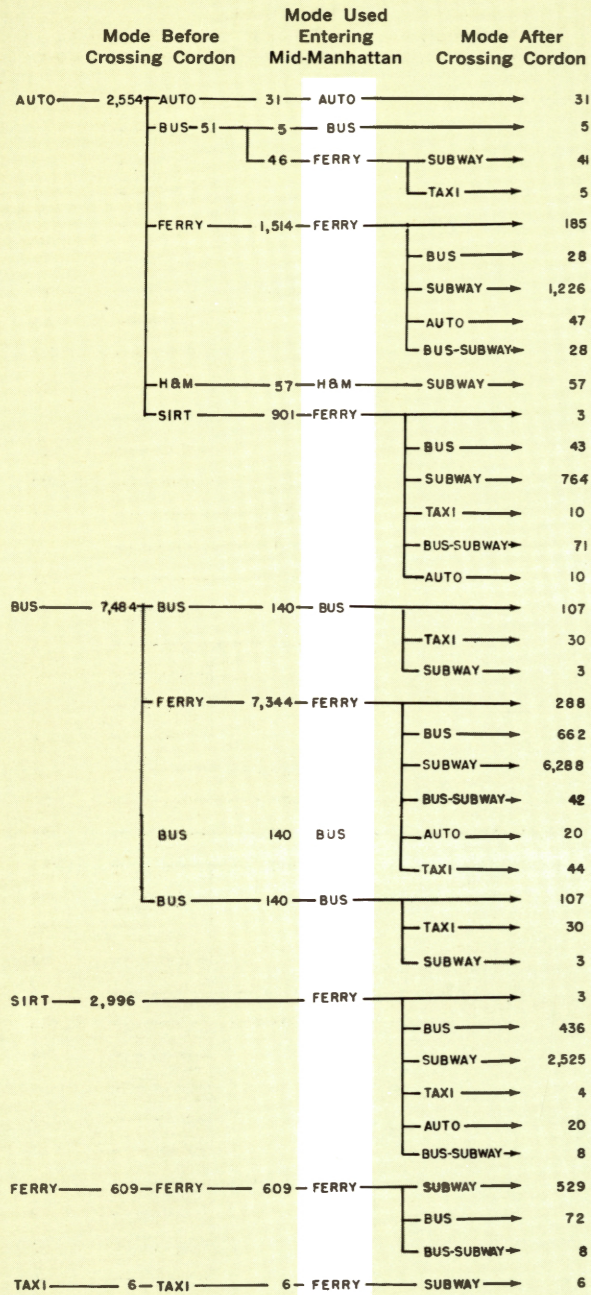
\* RESIDENCE WITHIN MID-MANHATTAN CENTRAL BUSINESS DISTRICT

## QUEENS

Mode Before Crossing Cordon	Mode Used Entering Mid-Manhattan	Mode After Crossing Cordon
AUTO 29,167	AUTO 12,985	AUTO 12,706
		TAXI 10
		BUS 111
		SUBWAY 158
BUS 249	BUS 249	BUS 177
		SUBWAY 72
SUBWAY 14,900	SUBWAY 14,900	SUBWAY 14,427
		TAXI 89
		BUS 384
RAIL 1,033	RAIL 769	RAIL 152
		TAXI 3
		BUS 361
		SUBWAY 253
	264 SUBWAY	264
TAXI 701	BUS 2	BUS 2
	SUBWAY 616	SUBWAY 606
		BUS 10
RAIL 78	RAIL 78	RAIL 5
		TAXI 67
		BUS 4
		SUBWAY 2
	5 SUBWAY	5
AUTO & BUS 177	SUBWAY 177	SUBWAY 177
BUS & SUBWAY 385	AUTO 385	AUTO 385
BUS 100,799	BUS 4,723	BUS 4,287
		TAXI 146
		BUS 267
		SUBWAY 23
	AUTO 5	AUTO 5
SUBWAY 95,643	SUBWAY 95,643	SUBWAY 93,623
		TAXI 150
		AUTO 60
		BUS 1,790
		H & M 20
RAIL 413	RAIL 413	RAIL 247
		TAXI 8
		BUS 10
		SUBWAY 148
	15 SUBWAY	15
SUBWAY 122,569	SUBWAY 122,420	SUBWAY 118,598
		TAXI 59
		AUTO 25
		BUS 3,736
BUS 142	BUS 142	BUS 142
RAIL 7	RAIL 7	BUS 2
		SUBWAY 5
RAIL 5,595	RAIL 5,184	RAIL 3,189
		TAXI 23
		BUS 201
		SUBWAY 1,771
	411 SUBWAY	411

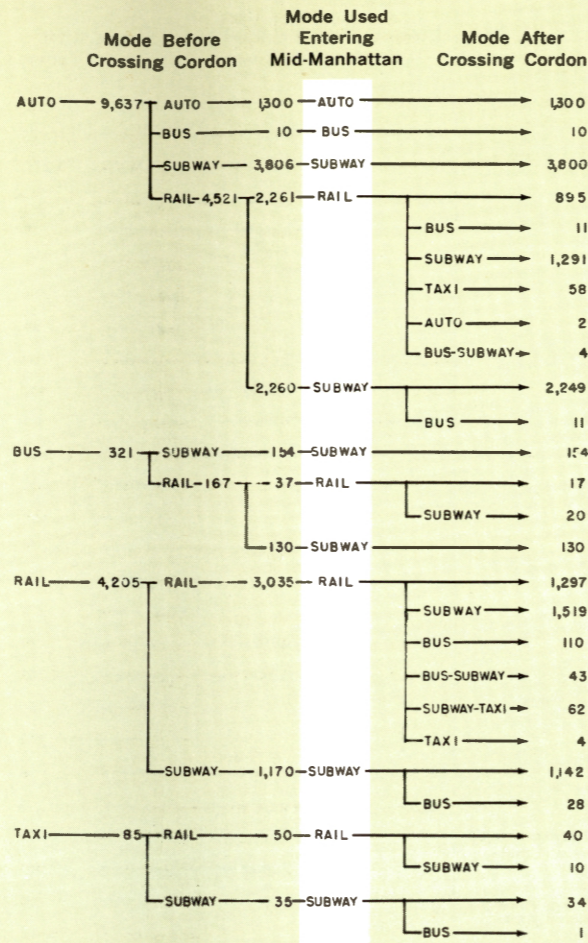
# NEW YORK CITY

## STATEN ISLAND



# NASSAU and SUFFOLK

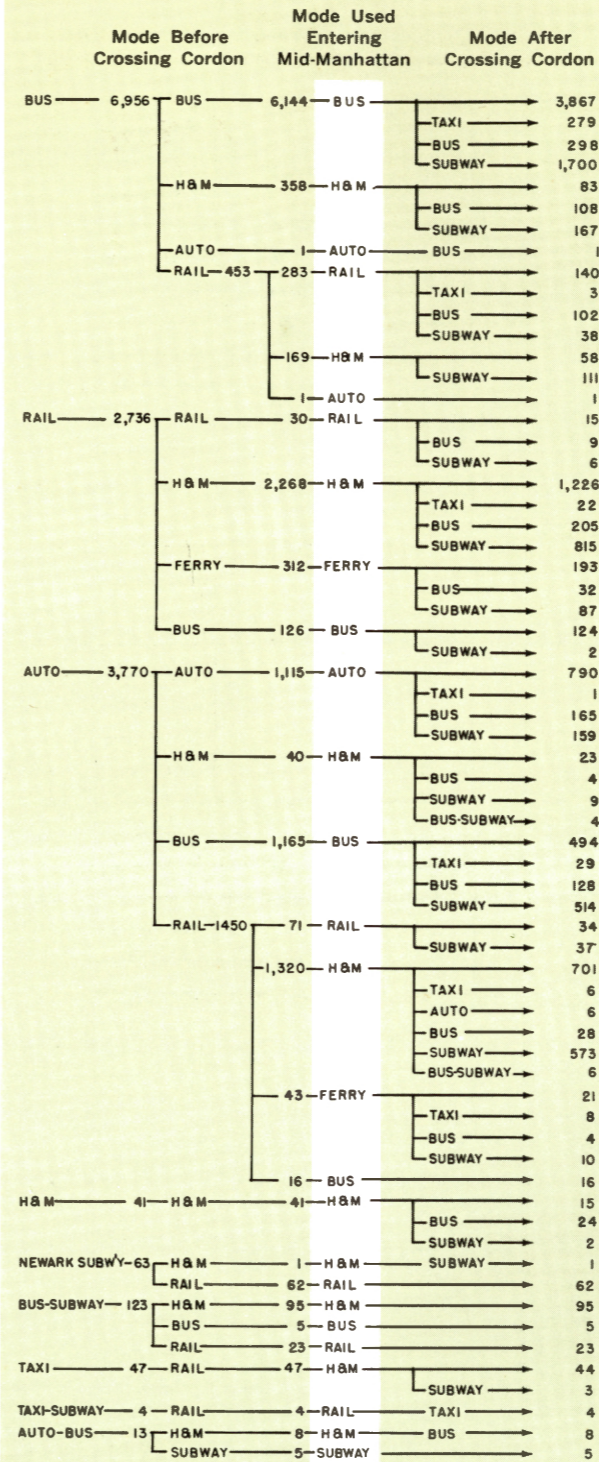
## SUFFOLK



See page 11 for Nassau Diagram

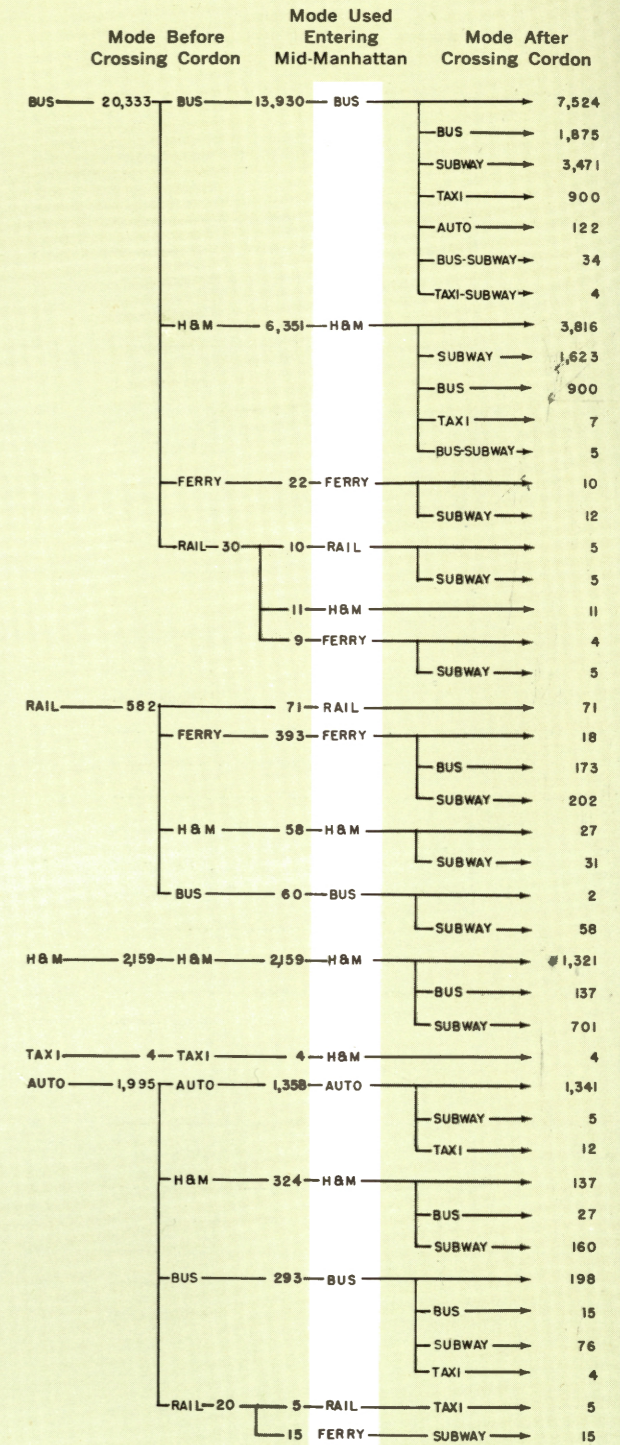
# NEW JERSEY

## ESSEX



See page 11 for Bergen Diagram

## HUDSON



# NEW JERSEY

## MERCER-MORRIS-PASSAIC-SOMERSET

Mode Before Crossing Cordon	Mode Used Entering Mid-Manhattan	Mode After Crossing Cordon	Count	
AUTO	AUTO	AUTO	1,086	
	TAXI	TAXI	20	
	BUS	BUS	89	
	SUBWAY	SUBWAY	175	
FERRY	FERRY	FERRY	1	
H&M	H&M	H&M	11	
	SUBWAY	SUBWAY	2	
BUS-1,357	BUS	BUS	632	
	TAXI	TAXI	97	
	BUS	BUS	87	
	SUBWAY	SUBWAY	531	
	AUTO	AUTO	2	
	SUBWAY	SUBWAY	8	
SUBWAY	SUBWAY	SUBWAY	26	
RAIL-2,227	RAIL	RAIL	81	
	TAXI	TAXI	33	
	BUS	BUS	125	
	SUBWAY	SUBWAY	309	
	H&M	H&M	436	
	TAXI	TAXI	1	
	BUS	BUS	177	
	SUBWAY	SUBWAY	558	
	FERRY	FERRY	31	
	TAXI	TAXI	2	
	BUS	BUS	130	
	SUBWAY	SUBWAY	261	
	BUS	BUS	18	
	TAXI	TAXI	16	
	SUBWAY	SUBWAY	49	
BUS	BUS	BUS	1,653	
	TAXI	TAXI	100	
	BUS	BUS	171	
	SUBWAY	SUBWAY	877	
	BUS-SUBWAY	BUS-SUBWAY	4	
	SUBWAY	SUBWAY	133	
RAIL	RAIL	RAIL	6	
	SUBWAY	SUBWAY	4	
	H&M	H&M	6	
	FERRY	FERRY	14	
	SUBWAY	SUBWAY	1	
	AUTO	AUTO	1	
	BUS	BUS	2	
RAIL	RAIL	RAIL	42	
	TAXI	TAXI	4	
	SUBWAY	SUBWAY	65	
	H&M	H&M	928	
	BUS	BUS	93	
	SUBWAY	SUBWAY	637	
	FERRY	FERRY	122	
	TAXI	TAXI	4	
	BUS	BUS	160	
	SUBWAY	SUBWAY	56	
	BUS	BUS	83	
	SUBWAY	SUBWAY	4	
	SUBWAY	SUBWAY	4	
TAXI	RAIL	H&M	BUS-SUBWAY	1
AUTO-BUS	BUS	BUS	SUBWAY	1
	SUBWAY	SUBWAY	SUBWAY	8

## MIDDLESEX-MONMOUTH

Mode Before Crossing Cordon	Mode Used Entering Mid-Manhattan	Mode After Crossing Cordon	Count
AUTO	AUTO	AUTO	636
	BUS	BUS	34
	SUBWAY	SUBWAY	6
H&M	H&M	H&M	71
	SUBWAY	SUBWAY	88
BUS	BUS	BUS	533
	TAXI	TAXI	15
	BUS	BUS	69
	SUBWAY	SUBWAY	441
SUBWAY	SUBWAY	SUBWAY	6
RAIL	RAIL	RAIL	1,199
	TAXI	TAXI	55
	BUS	BUS	82
	SUBWAY	SUBWAY	1,394
	H&M	H&M	124
	BUS	BUS	5
	SUBWAY	SUBWAY	70
	FERRY	FERRY	33
	BUS	BUS	20
	SUBWAY	SUBWAY	244
TAXI	RAIL	RAIL	4
	SUBWAY	SUBWAY	5
BUS	BUS	BUS	1,387
	TAXI	TAXI	84
	AUTO	AUTO	100
	BUS	BUS	277
	SUBWAY	SUBWAY	1,442
H&M	H&M	H&M	23
AUTO	AUTO	AUTO	6
RAIL	RAIL	RAIL	68
	AUTO	AUTO	1
	BUS	BUS	5
	SUBWAY	SUBWAY	64
	H&M	H&M	37
	BUS	BUS	14
	SUBWAY	SUBWAY	4
	FERRY	FERRY	27
	AUTO	AUTO	1
RAIL	RAIL	RAIL	798
	TAXI	TAXI	18
	BUS	BUS	250
	SUBWAY	SUBWAY	699
	TAXI-SUBWAY	TAXI-SUBWAY	6
	H&M	H&M	66
	BUS	BUS	10
	SUBWAY	SUBWAY	383
	FERRY	FERRY	67
	TAXI	TAXI	31
	BUS	BUS	15
	SUBWAY	SUBWAY	51
AUTO-BUS	FERRY	FERRY	7
	BUS	BUS	3
	SUBWAY	SUBWAY	4

## UNION

Mode Before Crossing Cordon	Mode Used Entering Mid-Manhattan	Mode After Crossing Cordon	Count	
AUTO	AUTO	AUTO	559	
	BUS	BUS	3	
	SUBWAY	SUBWAY	7	
	TAXI	TAXI	4	
RAIL-1,925	RAIL	RAIL	286	
	BUS	BUS	16	
	SUBWAY	SUBWAY	328	
	TAXI	TAXI	44	
	H&M	H&M	167	
	BUS	BUS	7	
	SUBWAY	SUBWAY	167	
	TAXI	TAXI	40	
	FERRY	FERRY	49	
	BUS	BUS	25	
	SUBWAY	SUBWAY	788	
	TAXI	TAXI	4	
	BUS	BUS	4	
H&M	H&M	H&M	115	
	BUS	BUS	3	
	SUBWAY	SUBWAY	10	
BUS	BUS	BUS	469	
	SUBWAY	SUBWAY	97	
	TAXI	TAXI	122	
TAXI	RAIL	H&M	SUBWAY	5
	SUBWAY	SUBWAY	5	
BUS	BUS	BUS	1,320	
	BUS	BUS	329	
	SUBWAY	SUBWAY	903	
	TAXI	TAXI	126	
	AUTO	AUTO	5	
	BUS-SUBWAY	BUS-SUBWAY	6	
	RAIL	RAIL	10	
	SUBWAY	SUBWAY	236	
	H&M	H&M	267	
	BUS	BUS	2	
	SUBWAY	SUBWAY	102	
	FERRY	FERRY	6	
	BUS	BUS	2	
	SUBWAY	SUBWAY	116	
H&M	H&M	H&M	8	
RAIL	RAIL	RAIL	119	
	BUS	BUS	230	
	SUBWAY	SUBWAY	179	
	H&M	H&M	209	
	BUS	BUS	2	
	SUBWAY	SUBWAY	415	
	FERRY	FERRY	121	
	BUS	BUS	149	
	SUBWAY	SUBWAY	773	
	TAXI	TAXI	3	
	BUS	BUS	108	

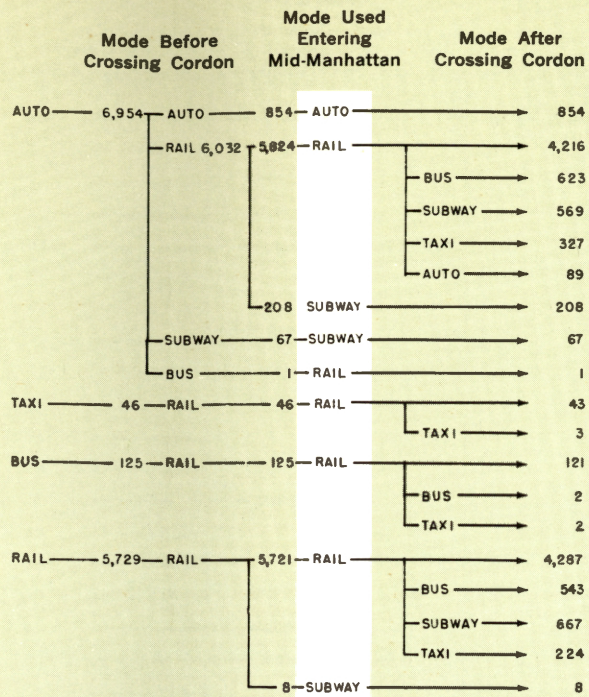
# NEW YORK and CONNECTICUT

## DUTCHESS-ORANGE-PUTNAM-ROCKLAND

Mode Before Crossing Cordon	Mode Used Entering Mid-Manhattan	Mode After Crossing Cordon	Count	
AUTO	AUTO	AUTO	1,143	
	BUS	BUS	52	
	SUBWAY	SUBWAY	61	
BUS	BUS	BUS	212	
	TAXI	TAXI	3	
	BUS	BUS	3	
	SUBWAY	SUBWAY	15	
SUBWAY	SUBWAY	SUBWAY	725	
RAIL-802	RAIL	RAIL	632	
	TAXI	TAXI	2	
	AUTO	AUTO	2	
	BUS	BUS	18	
	SUBWAY	SUBWAY	21	
	H&M	H&M	48	
	SUBWAY	SUBWAY	63	
	FERRY	FERRY	9	
	SUBWAY	SUBWAY	2	
	BUS	BUS	5	
TAXI	RAIL	H&M	SUBWAY	121
	SUBWAY	SUBWAY	35	
	FERRY	FERRY	2	
BUS	BUS	BUS	160	
	BUS	BUS	4	
	SUBWAY	SUBWAY	163	
	SUBWAY	SUBWAY	509	
	AUTO	AUTO	3	
	BUS	BUS	2	
RAIL	RAIL	RAIL	12	
RAIL	RAIL	RAIL	96	
	BUS	BUS	4	
	SUBWAY	SUBWAY	99	
	H&M	H&M	99	
	SUBWAY	SUBWAY	9	
	FERRY	FERRY	18	
	TAXI	TAXI	3	
	BUS	BUS	6	
	SUBWAY	SUBWAY	2	
AUTO & BUS	SUBWAY	SUBWAY	222	
	RAIL	RAIL	6	

# NEW YORK and CONNECTICUT

## FAIRFIELD



## WESTCHESTER

