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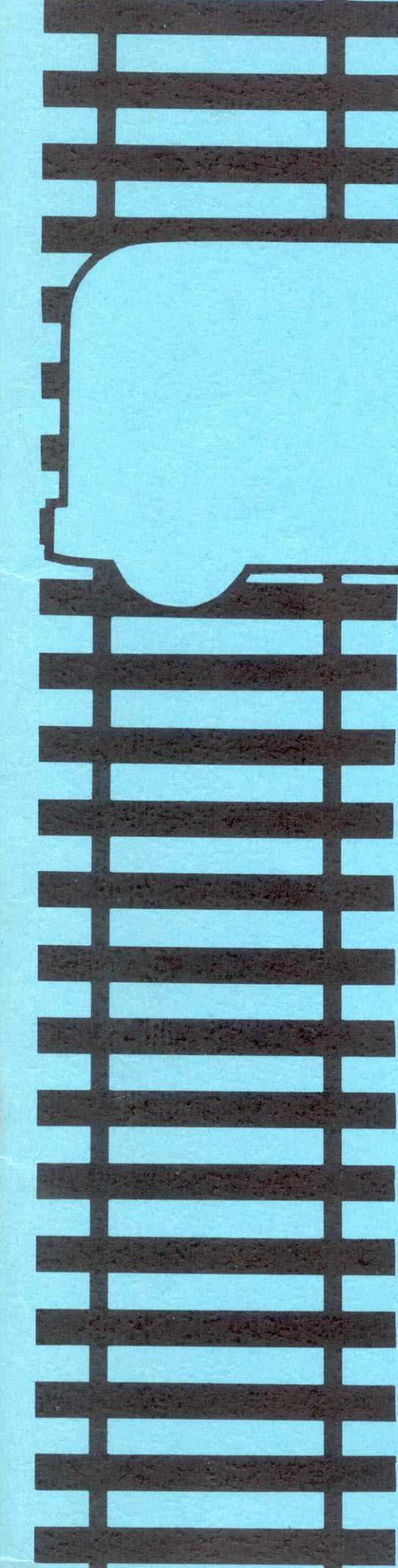
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COMMONWEALTH OF MASSACHUSETTS
MASS TRANSPORTATION COMMISSION

**DEMONSTRATION PROJECT
PROGRESS REPORT NO. 3**

MTA

THE MASS TRANSPORTATION COMMISSION

DEMONSTRATION PROGRAM

In the closing months of 1962 the Mass Transportation Commission of the Commonwealth of Massachusetts launched a \$5.4 million mass transportation demonstration program designed to produce basic answers regarding the future of mass transportation within the pattern of regional development. Two-thirds of this sum consists of a \$3.6 million Mass Transportation Demonstration Grant from the Office of Transportation of the Housing and Home Finance Agency and the remaining \$1.8 million was allocated to the MTC by the Massachusetts General Court. The demonstration program consists of a series of demonstration experiments in three major elements of mass transportation: commuter railroad, private buses and the Boston area's Metropolitan Transit Authority.

The MTC \$5.4 million mass transportation program was designed to produce actual operational data, tested in the field, for evaluating the practicality of reducing the overall cost of urban and metropolitan transportation by encouraging more extensive use of public transportation facilities.

Origins of the MTC

In 1959, the Governor and other political figures in Massachusetts, recognizing the necessity of obtaining coordination and cooperation in comprehensive planning for both public and private transportation, established a new state agency, the Mass Transportation Commission.

The Mass Transportation Commission is charged with the responsibility of investigating and studying the

. . . relationship of mass transportation facilities, land use and urban renewal and development to the economic needs and opportunities of the Commonwealth...with particular emphasis on the financial, legal, economic, technical and social problems. The commission shall study and plan for coordinating the highway program of the Commonwealth and the federal government with other mass transportation facilities. The commission shall work with appropriate federal agencies and agencies of the commonwealth in connection with highway, transportation, land use and urban renewal and development studies. The commission shall from time to time make such recommendations to the governor and the general court for the coordination of highway and mass transportation programs and for the development of integrated plans for mass transportation and land use as the commission may deem it advisable.

The MTC has 11 members. Six are *ex-officio* members from major state transportation agencies: the chairmen of the Metropolitan District Commission, the Metropolitan Transit Authority, the Massachusetts Turnpike Authority, the Massachusetts Department of Public Works, the Massachusetts Port Authority, and the Boston Traffic and Parking Commission. The other five are public members appointed for three-year terms by the Governor with the consent of the Executive Council. The statute provides that one such member must be experienced in railroad management and operation.

In addition to its statutory responsibilities, the MTC has become a *de facto* staff agency to the governor's office and the Massachusetts legislature. The MTC works closely with two joint legislative committees on Transportation and Metropolitan Affairs and a Special Legislative Recess Committee on Transportation.

In late May of 1961 the MTC and the legislative leadership agreed on a program for integrating the activities of the Commission with the studies by the two Joint Legislative Committees on Transportation and Metropolitan Affairs by means of a Special Joint Legislative Recess Committee on Transportation. The MTC staff serves as the staff of the Recess Committee. The joint efforts of the Committee and the Commission resulted in a report to the State Legislature in December of 1961 which recommended that the MTC undertake an integrated mass transportation demonstration and planning program.

With the support of the legislative and community leadership, in July 1962 the Massachusetts General Court appropriated the necessary funds for the Commission to initiate and undertake the proposed \$10.2 million integrated program. Both the demonstration and planning projects were designed with the advice of legislators. The entire program was geared to the legislative timetable to provide accurate guide lines to assist the General Court in arriving at effective solutions to urgent problems.

The MTC is endeavoring to develop a practical way of implementing basic long-range federal policy objectives contained in the President's transportation message of April 1962, in the Housing Act of 1961, and in public policy statements of the administrative and legislative leadership at the federal and state levels.



The Commonwealth of Massachusetts
Mass Transportation Commission
120 Tremont Street, Boston 8

June 25, 1963

Mr. John C. Kohl
Assistant Administrator for
Urban Transportation
Housing and Home Finance Agency
1626 K Street, N. W.
Washington 25, D. C.

Dear Mr. Kohl:

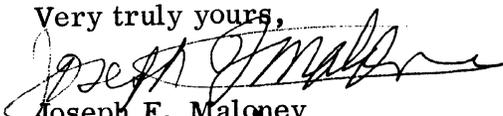
The Third Progress Report marks the completion of six months of transportation experiments in the program conducted by the Mass Transportation Commission, with the cooperation of the Office of Transportation of the Housing and Home Finance Agency. As of mid-June, experiments with two railroads, six bus companies and the Metropolitan Transit Authority were in progress. In addition, two bus experiments have been completed.

This Progress Report contains considerable material which should be of wide interest to all concerned with the future of public transportation. Among the more notable items included are (a) up-to-date information on the Boston and Maine lines indicating that passenger volume has continued to increase, (b) revenue figures indicating that total fares paid by new riders have off-set the overall experimental fare reduction, (c) a survey of Boston and Maine passengers, analyzing the diversion of new passengers from highway and other forms of public transportation, (d) an analysis of the terminated Lynnfield bus experiment, and (e) parking data survey information on the MTA parking lot experiment which offer grounds for concluding that this particular experiment has resulted in substantially increased use of rapid transit facilities.

In addition to presenting new material developed between mid-April and mid-June, this Report has been prepared as a self-contained, six-months' summary study incorporating much of the basic information presented in our first two Progress Reports.

As the contents of this report indicate, the Massachusetts Demonstration Experiment Program continues to provide useful information for the Commonwealth, the Office of Transportation and transportation planners throughout the nation.

Very truly yours,


Joseph F. Maloney
Executive Director

JFM:lb
Enclosure

**MASS TRANSPORTATION COMMISSION
COMMONWEALTH OF MASSACHUSETTS**

Robert G. Henderson	Chairman, Mass Transportation Commission
Ephraim A. Brest	Chairman, Massachusetts Port Authority
William F. Callahan	Chairman, Massachusetts Turnpike Authority
Thomas F. Carty	Commissioner, Traffic and Parking Commission of the City of Boston
Robert F. Murphy	Commissioner, Metropolitan District Commission
Jack P. Ricciardi	Commissioner, Department of Public Works
William J. Fitzgerald	Chairman, Metropolitan Transit Authority
Miss Lucy Carra	
Joseph Dragone	
Robert G. Davidson	
Michael J. Gormley	

**EXECUTIVE DIRECTOR
Dr. Joseph F. Maloney**

THE COMMONWEALTH OF MASSACHUSETTS
MASS TRANSPORTATION COMMISSION

PROGRESS REPORT NO. 3
DEMONSTRATION PROGRAM
June 1963

The preparation of this report has been financed in part through a mass transportation demonstration grant from the U. S. Housing and Home Finance Agency under the provisions of Section 103 (b) of the Housing Act of 1949, as amended by Section 303 of the Housing Act of 1961.

MASS TRANSPORTATION COMMISSION

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MTC DEMONSTRATION EXPERIMENT PROGRAM

The background of the Mass Transportation Commission Demonstration Program is summarized on the inside front cover of this report. Briefly, approximately 60 per cent of the project funds have been allocated to rail experiments with the Boston and Maine and the New Haven Railroads, 15 per cent to the Metropolitan Transit Authority for bus and parking experiments, eight per cent to private bus company experiments and the remainder to analysis, supervision and administration. The first experiment, a small scale private bus company operation, began in Lowell on December 6, 1962. A month later the large Boston and Maine experiment was initiated. Between January and mid-June eight bus company experiments were placed into operation of which two have been terminated. The large New Haven rail experiment was begun on March 11 and the MTA parking lot was initiated on April 1, 1963. The last major experiment, involving MTA bus lines began on June 22, 1963.

Progress Reports on the experiment program were published by the Mass Transportation Commission in February and April. The next Progress Report, an intensive analysis of a bus company experiment in the Berkshires, will be published in August.

MTC Demonstration Program

During the first six months of the Demonstration Program a substantial amount of material on public transportation has been developed in the course of the experiments and as a result of careful analysis of the data by the Mass Transportation Commission and its consultants. While it would be inaccurate to state that definitive solutions to mass transportation problems have been

developed, it would be fair to state that the program has clearly indicated that some of the simplistic panaceas peddled as "curealls" for the ills of the mass transportation industry have been proved valueless. More encouraging is the knowledge that public transportation is by no means foreordained to a steady irreversible attrition leading inevitably to the graveyard and museum inhabited by the stagecoach and horsecar. The immediate questions which confront the Mass Transportation Commission at this point in the program are concerned with the re-shaping of the experiments to produce a further body of information to guide decision-makers in Massachusetts and elsewhere in the nation. The hard data developed in the experiments will provide a more rational basis for evaluating the real costs to the firm providing various levels of public transportation. It will remain to fit these costs into the broader context of social accounting to emerge with a feasible, realistic transportation program.

Progress in the Demonstration Program

Federal funds for the Demonstration Program became available on October 5, 1962. Since October, the MTC has made rapid progress in securing contractual agreements from carriers. By mid-January 43 per cent of the \$5.4 million in Demonstration funds was under contract, largely as a result of the signing of the \$2.2 million B & M contract. By mid-January with final approval of the New Haven contract, the proportion had risen to almost 75 per cent.

By mid-April \$3.4 million in experiments with two major railroads, an experiment with the MTA and eight bus company experiments were initiated. In addition, \$225,000 in contracts with two consulting firms were under way; remaining elements of the program include possible experiments with three

bus companies and two consulting firms. Approximately 79 per cent of the \$5.4 million program was under contract by mid-April. In mid June virtually all of the carrier contracts and most of the consultant contracts had received final approval. Overall, almost \$5.0 million of the \$5.4 program was under contract in mid-June. This represents over 95 per cent of the total demonstration program.

The contracts which may be completed in July and August include:

1. bus experiments in the Fall River and Lawrence areas
2. bus experiments in the Worcester area
3. consultant contracts to survey mass transportation passengers (a survey of B & M passengers has already been completed)

A summary of the financial status of the Demonstration Program as of June 15, 1963 is contained in Table 1.

Significant improvements in the MTC operation of the program have been made since October:

- (1) The planning activities of the MTC have been substantially strengthened through the addition of professionally trained planners to the Project staff.
 - (a) Surveys to analyze commuter habits have been conducted by the MTC staff, and additional studies will be undertaken to determine the extent of passenger diversion from private automobiles and car pools and from other forms of public transportation, and to examine parking patterns at rail and transit stations. These surveys assist the Commission in evaluating the impact of the experiments and will be helpful in analyzing possible future changes in the design of the experiments.

TABLE 1 FINANCIAL STATUS OF DEMONSTRATION PROGRAM - JUNE 15, 1963

	Proposed Contract	Under Contract	Estimated Revenue Credit Sept. 1962	Revised Estimated Credit	Estimated Net Cost Sept. 1962	Revised Net Cost	Amount Paid To Date
<u>RAILROADS:</u>							
B & M RR		\$2,200,000					\$1,083,500
New Haven RR		<u>1,200,000</u>					<u>360,000</u>
Sub Total		\$3,400,000					\$1,443,500
<u>BUSES:</u>							
Eastern Mass. Street Railway (Lowell Project)		\$ 22,044	\$ 12,000	\$ 12,294	\$ 24,000	\$ 9,750.	\$ 4,967
Johnson Bus Line		66,260	20,000	20,000	45,000	46,260	14,986
Service Bus Line		17,506	12,500	12,500	6,000	5,006	3,327
Lynnfield Community		15,671	4,000	3,671	20,000	12,000	1,621
Mass. Northeastern		39,597	33,600	18,597	21,300	21,000	3,339
Fitchburg and Leominster		113,837	35,100	37,837	52,200	76,000	10,845
*Berkshire Street Railway		50,028	8,600	17,028	24,000	33,000	
Brush Hill Transportation Co.		27,091	8,800	8,091	20,000	19,000	
Barre Bus Company	\$ 7,425		1,425		6,000	5,300	
Saugus Transit,	13,300		13,300		0,000	4,000	
Worcester Bus Company	61,000		10,500		50,000	60,658	
Other Buses	<u>346,300</u>		<u>230,300</u>		<u>116,000</u>		
Sub Total	\$428,025	\$ 352,034					\$ 39,085
<u>MTA</u>							
Parking Lots			50,000		40,000	60,000	5,665
New service - buses		<u>819,000</u>	495,000	465,000	770,000	886,000	
Sub Total		819,000					5,665
<u>CONSULTANTS</u>							
Systems Analysis and Research Corp.		90,000					27,000
McKinsey and Co., Inc.		135,000					14,200
Napolitan Associates		10,000					5,981
Transportation Survey Consultant	<u>40,000</u>						
Sub Total	40,000	235,000					47,181
<u>Administration and Overhead</u>	<u>12,030</u>	<u>187,547</u>					<u>72,551</u>
Sub Total	12,030	187,547					72,551
TOTAL	480,055	4,993,581					1,607,982

Source: Mass Transportation Commission.

*Contract terminated with Berkshire Street Railway and a short duration contract entered into with Yellow Coach Lines, Inc. to maintain continuity for this experiment.

Trends in Mass Transportation

In recent years, passenger volume on public transportation carriers in the Boston region has fallen off sharply. Bus companies whose operation are in direct competition with private automobiles, were hurt badly; volume declined to as much as 85 per cent between 1949 and 1961.

The MTA and railroads also experienced major decreases in passenger volumes. Between 1949 and 1962 railroad inbound weekday passengers to North and South stations declined by 75 per cent, falling from 80,000 to only 21,000. Total MTA passenger volume declined from 433 million revenue passengers annually in 1946 to less than 185 million by 1962, a decrease of more than 50 per cent.

Despite its decline relative to the automobile in the total transportation picture, mass transportation remains the key element in journey-to-work traffic to the core area of the region. In the peak morning period, roughly between 7:00 A.M. and 9:00 A. M., the number of persons entering downtown Boston via public transportation carriers is still four times as large as the number entering via automobile.

The bunching of traffic into a brief span is one of the major problems plaguing public transportation. Equipment is fully utilized only 20 hours in the week and is either underutilized or completely idle in the remainder. For this reason, a key objective in the mass transportation demonstration experiment program is a test of methods of increasing off-peak traffic and thereby obtaining increased utilization of existing systems.

It might be pointed out that from the viewpoint of the carrier, off-peak travel may be the key to improved earnings. However, from the standpoint of most motorists and highway planners, mass transportation makes its primary contribution to traffic congestion through its peak service. The re-

removal of automobiles from the highways during the critical morning and evening rush hours, as a result of the commuter rail experiments, has relieved the strain on overloaded highways. The hard-pressed railroads have been understandably more concerned with off-peak service which relieves some of the burden on their finances.

The Mass Transportation Commission - H.H.F.A. \$5.4 million mass transportation Demonstration Program will provide actual operational data for evaluating the practicability of reducing the overall cost of urban and metropolitan transportation by encouraging more extensive use of public transportation facilities including off-peak as well as peak travel.

Transportation Decisions and the Experiment Program

The Boston region faces two imminent major transportation decisions which have a direct bearing on its future distribution of population and economic growth. In particular, the future of the region's core communities whose strength is closely correlated with a radial transportation system focusing on downtown Boston will be greatly affected by these choices:

- (1) With the prospect that the commuter railroads will petition for early termination of all commuter services, the region will be confronted with the alternatives of increased public support of commuter lines or outright abandonment. Realistic information on the relationship between passenger volumes, fares and service structures and railroad revenues and available alternatives is necessary before a prudent policy on railroad commutation can be formulated.
- (2) Basic decisions must be made about the future of the Metropolitan Transit Authority. Principal decisions involve possible extensions of rapid transit to suburban areas

either by means of extension of the MTA district or by establishment of special suburban transit districts.

These and other transportation problems which confront the region will help to determine the effectiveness of the large scale renewal activity now taking place in Boston and the smaller scale efforts in other core communities.

In the postwar period, the chief strength of core communities has been in non-manufacturing. Finance and insurance, wholesale activity business services, higher education and government have expanded or held their own. In contrast, population, retail sales and manufacturing jobs have declined substantially. Realistically, at best a leveling off of the rate of population decline and some decrease in retailing and manufacturing can be anticipated in the core communities in the next decade. Although qualitative changes such as increased construction of luxury moderate rental apartments and expansion of research and development functions may help to compensate for numerical losses in population and manufacturing jobs, most of the vital impetus to expansion in the core of the Boston region will probably continue to be the growth of non-manufacturing sectors of the economy. The growth of these non-manufacturing sectors is partially dependent on a mass transportation system which is capable of meeting needs for radial commutation from the suburbs providing adequately for intra-core travel. A viable core and more particularly a sound Boston Central Business District, based solely on private transportation is not feasible, not because multi-lane expressways may not be capable of transporting 500,000 to 600,000 employees and shoppers to central Boston, but because storage of more than 100,000 additional automobiles is physically impossible without leveling much of downtown Boston.

The alternative to maintaining a balanced transportation system is mounting congestion and overloaded highways and parking lots, followed inevitably by a loss of vital non-manufacturing functions and other activities to suburban areas or other regions where easy automobile access is available.

The Federal government through the urban renewal program is committed to a large scale financial aid to preserve the nation's central cities. Moreover, it is anticipated that supplementary Federal aid will soon be available to protect the enormous social and capital investment in the core areas by ensuring that the mass transportation facilities needed to carry people from suburbs to central cities and to provide for adequate movement within congested core areas will be maintained, modernized and expanded.

Demonstration Experiments and the Regional Development Pattern

One of the principal aspects of the Boston region's development pattern is its complexity. There is considerable inter-weaving of residential subdivision in long-settled industrial communities, growing decentralization of development from urban centers in the Merrimack Valley and Brockton, overlapping with suburban movement out of Boston. Major renewal activities and large scale private investments in the City of Boston and other central cities are offering competition to the centrifugal attraction of suburban subdivisions, shopping centers and industrial parks. The Boston region's overall moderate growth in population, and urban and economic development should not be mistaken for stagnation. A number of changes are taking place in many areas on a scale and pace reminiscent of the development in the 18th and 19th centuries.

New expressways, and the suburban population and economic expansion in the territory between metropolitan areas have helped to blur the

boundaries between the various parts of the region. One aspect of this growing interdependence is increased travel between central cities and suburbs and between metropolitan areas.

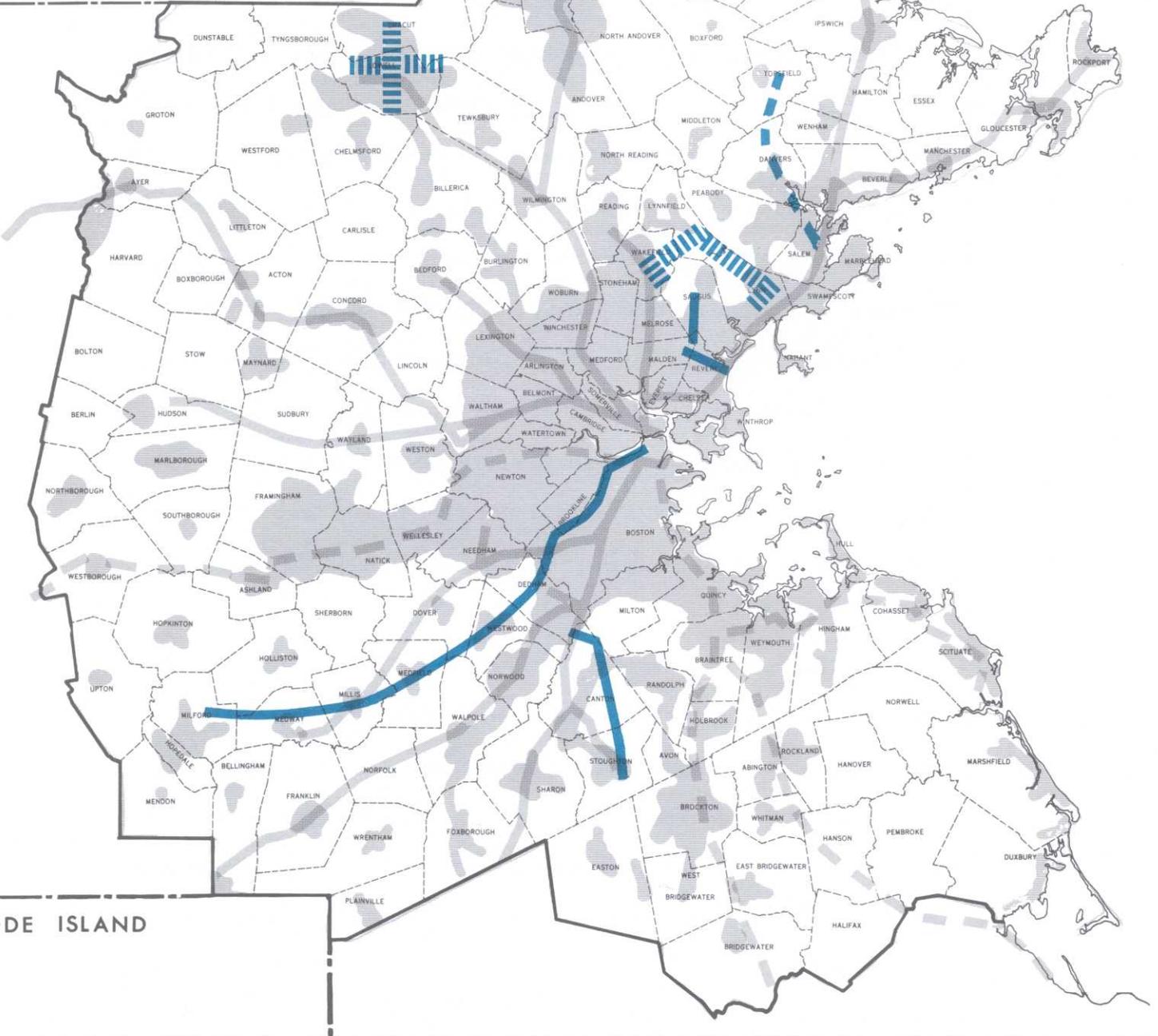
Most of this travel is accomplished through the use of private automobiles, partly because much of the newer urban development is located at points not easily accessible to fixed rail and transit facilities. Nevertheless, a major amount of travel is directed along traditional transportation corridors. The MTC demonstration experiments are for the most part concerned with attempts to recapture a larger share of this basic market for public transportation. For example, in addition to the five Boston and Maine lines and New Haven lines which converge on downtown Boston, one suburb-to-CBD bus route is now in operation and another is scheduled for the Boston area. Suburban-central city experiments have been designed for other parts of the state, in the Fitchburg-Leominster, Worcester and Pittsfield area.

For the most part urban development in the Boston region has followed radial lines, moving out of Boston in corridors along streetcar and railroad lines and highways. As can be seen on the accompanying map, with the exception of the South Shore area, each of the major development corridors is served by rail and or bus experiments. One bus experiment (Johnson Bus Lines), to the southwest of Boston, was deliberately designed to test mass transportation in a lightly populated area located between development corridors.

The construction of Route 128 has strengthened circumferential influences on the development of the region. Public transportation has not been able to respond adequately to this changing pattern but an effort has been made to test circumferential transportation needs in the experiment program. Two MTA bus experiments in the urban core and four bus experiments

BOSTON REGION

NEW HAMPSHIRE



RHODE ISLAND

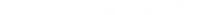
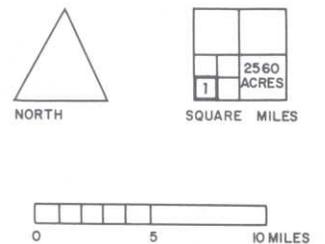
-  RAILROADS IN EXPERIMENT
-  RAILROADS NOT IN EXPERIMENT
-  BUS ROUTES IN EXPERIMENT
-  PROPOSED BUS EXPERIMENTS
-  COMPLETED BUS EXPERIMENT
-  URBAN AREAS, 1960

FIGURE 1



THE PREPARATION OF THIS MAP HAS BEEN FINANCED IN PART THROUGH AN URBAN PLANNING ASSISTANCE GRANT FROM THE U.S. HOUSING AND HOME FINANCE AGENCY UNDER THE PROVISIONS OF SECTION 701 OF THE HOUSING ACT OF 1954, AS AMENDED.

elsewhere in the region were designed to provide circumferential bus service linking with transit and rail stations.

Directions of Urban Growth.

Only a third of the region's land area had been developed in 1960. While continuous strip development along older roads tends to conceal the open character of most of the region, along new limited access expressways like Interstate 93, most of the adjacent territory is open and undeveloped. Urban growth has flowed in four principal directions:

1. Along the North and South Shores. North and south of Boston suburban growth has filled in many of the areas between long-established urban centers. Population growth has been far more marked in recent years along the residential south shore area beyond Quincy than in the mixed residential and industrial north shore. Two bus experiments and the experiments with the Boston and Maine lines are in operation on the north shore. One bus experiment was terminated in March.

2. South of Boston. Between Boston and Brockton and Providence, urban growth flows along two corridors. Development has been concentrated to a considerable extent in low-to-moderate income residential development. In addition to experiments on the New Haven Railroad, a bus experiment connecting a suburb of Brockton with Route 128 New Haven station and an MTA transit station is now in progress.

3. West of Boston. The territory to the west of Boston has been a principal axis of urban development. Substantial growth of middle-to-upper income housing and major expansion of electronics manufacturing has taken place in this broad corridor. The Boston and Maine experiment serves part of this area.

4. North of Boston. The northern quadrant of the region has been the scene of considerable population and economic expansion in the past decade. Development is proceeding along radial highways linking the Boston area to the substantial urban concentrations in the Merrimack Valley. Experiments with rail service between Boston and Merrimack Valley communities are proceeding on the New Hampshire and western divisions of the B & M. In addition, an inter-city bus experiment is in progress in the northeastern arc of the Valley, and an intra-city CBD-oriented bus experiment was recently completed in Lowell.

Mass Transportation and Car Ownership

Use of public transportation systems is closely correlated with population density and car ownership. To a degree, ridership on public transportation can also reflect traditional patterns. This is indicated by Figure 2, which indicates by community, the percentages of workers using the various forms of public transportation in 1959. The data for the map was secured from the 1960 census, which restricted its inquiry to work trips. More accurate and complete information on ridership will be available in the forthcoming year when the home interviews and traffic counts to be undertaken as information from the Regional Planning Study becomes available.

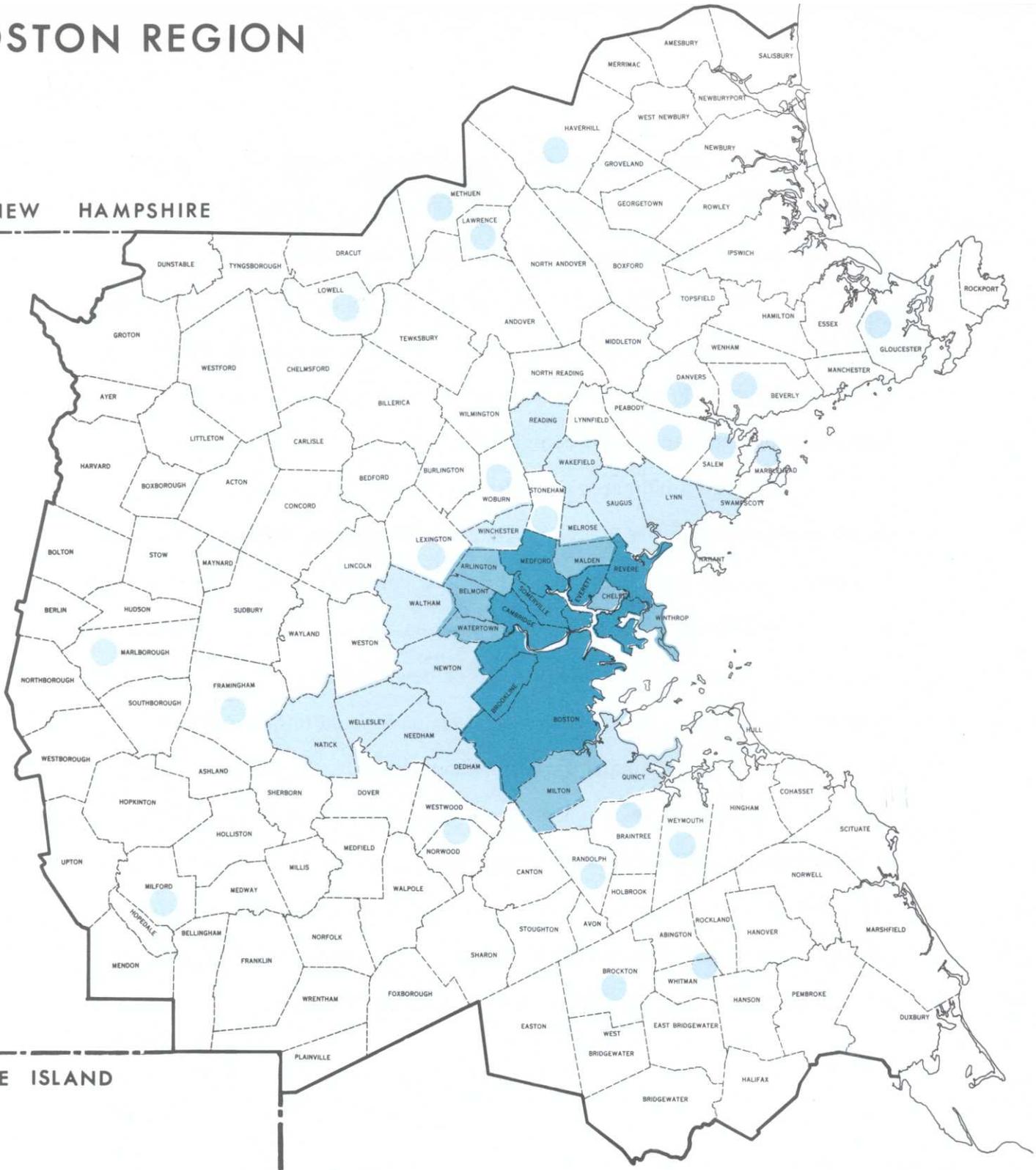
Figure 2 also indicates that journey-to-work mass transportation ridership is highest within the MTA district, particularly in communities served by rapid transit. Even in those communities, however, mass transportation accounts for less than 40 per cent of the total work trips. With the exception of Newton, mass transit ridership in all of the MTA communities exceeds 20 per cent of journey-to-work trips.

Outside the Boston area, transportation is even more strongly automobile oriented. However, a moderate amount of usage is apparent in the communities located within the western and northern urban corridors

BOSTON REGION

NEW HAMPSHIRE

RHODE ISLAND



MASS TRANSIT WORK TRIPS, 1959

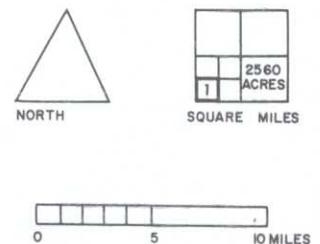
Workers using public transportation



Source: U. S. CENSUS, 1960

Word Searchable Version not a True Copy

FIGURE 2



THE PREPARATION OF THIS MAP HAS BEEN FINANCED IN PART THROUGH AN URBAN PLANNING ASSISTANCE GRANT FROM THE U.S. HOUSING AND HOME FINANCE AGENCY UNDER THE PROVISIONS OF SECTION 701 OF THE HOUSING ACT OF 1954, AS AMENDED.

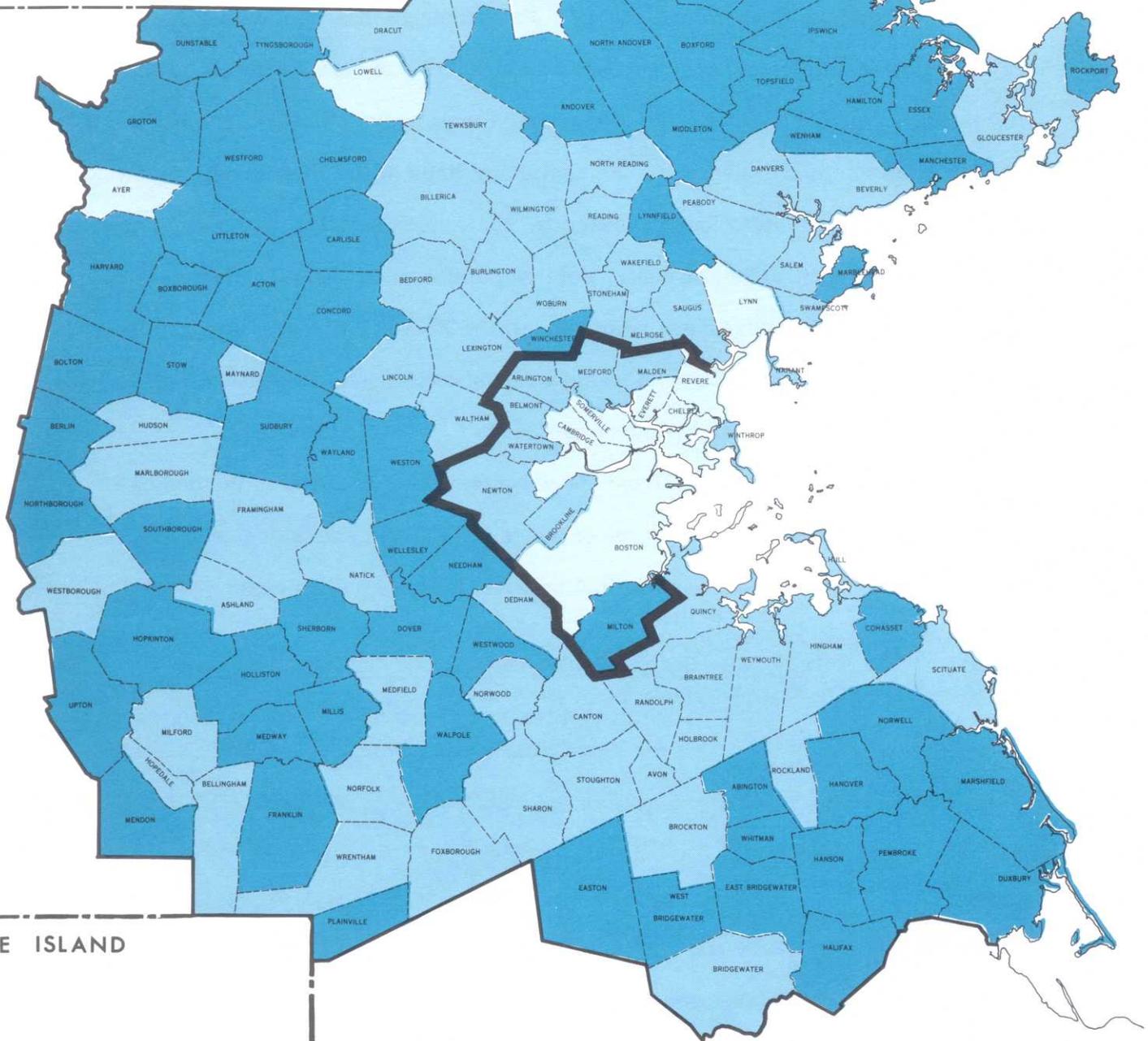
where commuter railroads have traditionally played a particularly significant role. A number of communities in this category are high income communities with substantial per capita automobile ownership.

Outside of the Boston area public transportation accounts for even a moderate percentage of total journey-to-work trips in a dozen older industrial centers. In most of these communities, local commutation via buses is supplemented by rail commuter travel.

Figure 3 indicates the pattern of automobile ownership as compared to population in the Boston region. In most of the MTA district communities there are from three to five persons per automobile. Outside the district, the proportion generally runs between two and three persons per automobile. However, automobiles are somewhat scarcer in relation to population in some of the older industrial cities located in outlying portions of the region, especially Lawrence and Lowell. In a few outlying semi-rural and resort towns where mass transportation service is limited or non-existent (especially on the South Shore), one car is registered for every two persons. The most prominent exception to this overall outlying pattern is Ayer, to the northwest of Boston. Ayer is the site of a considerable transient military population attached to Fort Devens.

BOSTON REGION

NEW HAMPSHIRE



RHODE ISLAND

AUTOMOBILE OWNERSHIP PATTERNS, 1960

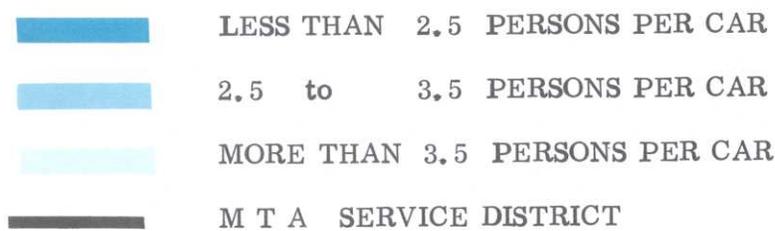
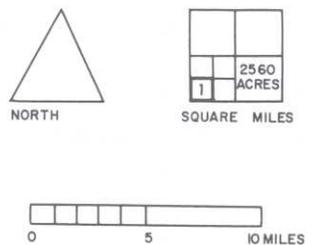


FIGURE 3



RAIL EXPERIMENTS

Railroad commuter service in the Boston region has suffered a major decline in patronage since World War I. Passenger volume on the heavily traveled Boston and Maine line decreased by about 75 per cent. Service on the New Haven's Old Colony line, once the region's most traveled route, has been entirely eliminated but volumes on the remaining lines of the New Haven, partly because of a shift of Old Colony passengers, show much smaller declines, ranging from ten per cent to 40 per cent. Details are shown on Table 2. In an effort to offset declining passenger volumes, all the Boston railroads have applied for and received substantial fare increases during the period, amounting in general to an increase in price of some 50 per cent.

The experiments with railroad suburban services involved in the demonstration program provide a variety of services in different areas designed to test public acceptance of a wide range of service and rate patterns.

Table 2.- Boston and Maine Railroad Trends, by Line

<u>Line</u>	<u>Approximate Inbound Week-day Passengers</u>			<u>Distance from Boston (miles)</u>		<u>No. of Sta.</u>
	<u>1948</u>	<u>1962</u>	<u>Decrease</u>	<u>1st Sta.</u>	<u>Last Sta.</u>	
Eastern	11,300	2,500	85%	12	37	16
Reading	10,200	3,300	70	6**	12	6**
N. H. Division*	15,600	4,000	70	7**	33	15**
Fitchburg	3,400	850	75	10**	50	13**
Total	<u>40,500</u>	<u>10,650</u>	<u>74%</u>			

* Includes Western Division

**Disregarding stations which receive only token service.

Boston and Maine Experiment Results

Total passenger volume on the Boston and Maine commuter lines edged up slightly in May, despite predictions that the advent of warm spring weather would diminish commuter rail ridership. Volume in May was almost 27 per cent above May, 1962. Off-peak volume was 51 per cent above the previous year. The small April-to-May increase, however, was due to a gain in peak riders. Overall, the Boston and Maine carried over 600,000 more passengers in the first five months of 1963 than in the comparable 1962 period. Results vary significantly on the various experiment lines with the B & M Eastern and Fitchburg Divisions, showing the largest percentage gains and the Western and Reading lines proving least responsive to the experiment stimuli.

By Line: Eastern Route

To the northeast, the B & M Eastern Route serves Lynn and Salem to Beverly, (18 miles) and Cape Ann to Rockport (35 miles from Boston) and beyond Newburyport (37.3 miles) to Portsmouth, New Hampshire. Service on this line was approximately doubled under the experiment; a regular half-hourly pattern is maintained to Beverly, and since trains continue alternately to Rockport and Newburyport, each line provides hourly service. In the rush hours, service was again doubled resulting in an approximate 15-minute headway to Beverly and half-hourly beyond.

Fares on this line have been reduced from 25 per cent to 40 per cent. The first and third stations on the Eastern Route are not only relatively far out (Lynn 12 miles and Salem 16 miles) but are cities in their own right with substantial demand for commuter service to and from the station beyond. This provided an opportunity to offer intensive passenger service for travelers from Boston to Lynn or Salem and regular service to points beyond Lynn or Salem with the same crew and equipment.

The MTC experiment on the Eastern Route was designed to test the attractiveness of providing high frequency reduced fare service on a long haul line which suffered a massive 85 per cent decline in passenger volume between 1949 and 1962.

A steady increase in off-peak passenger volume occurred on the Eastern Route where total off-peak passenger volumes have more than doubled the May, 1962 figure and total ridership increased by 37.8 per cent. Data on passenger usage also indicates an increase in the number of riders between railroad stations, i.e., Beverly to Salem. Increases in off-peak travel are extremely significant to the financial picture of the railroad since it represents additional revenue from manpower and equipment which would otherwise be underutilized or idle.

Reading Line

To the north, the B & M Reading line (12 miles) serves six busy suburban stations in three towns. Service on this line was substantially doubled, resulting in half-hourly service increasing to a 15-minute headway in the rush hour. Rates were reduced 20 per cent to 25 per cent.

Passenger volumes on the heavily traveled Reading line have proven least responsive percentagewise to fare reductions and service increases. The percentage gain in May, 1963 ridership on this line as compared to May, 1962 was 18.7 per cent, the second smallest of the five B & M routes.

While peak hour travel has increased moderately, the relatively minor rise in off-peak travel on the Reading line is particularly noteworthy. Possibly because of the shortness of the rail trip, and the comparative ease of off-peak automobile travel, the Reading line has attracted relatively few new passengers.

Western Route and New Hampshire Division

Service on the Western and New Hampshire routes, connecting Boston with Lowell, Lawrence and Haverhill, manufacturing centers in the Merrimack Valley, was increased to an hourly basis in off-peak periods and approximately half-hour service in peak periods. Winchester, which is located at the junction of the Woburn branch, receives half-hour off-peak and 15-minute peak hour service. Fares on this route were reduced by approximately 30 per cent.

Data on passenger volumes for these two major B & M routes are considered as a single entity because of tradeoff of Wilmington passengers: under the experiment Wilmington, a heavily used station located at the junction of the New Hampshire Routes, became a stop for New Hampshire route trains instead of Western Route trains. For this reason, the May, 1963, 16 per cent increase on the Western Route was the smallest of the B & M experiment lines.

Overall, increases in these B & M routes to the Merrimack Valley have been moderate, running slightly behind the peak and off-peak gains in passenger volume for the five lines as a whole.

The Fitchburg Division

The Fitchburg Division connects Boston to the out-of-region industrial center 50 miles from North Station. En route this line services a number of western and northwesterly suburbs in the Boston region. Fares were reduced from 25 per cent to 35 per cent on this division and service on the line was increased from 20 trains a day to 36 trains per day. Service on the two branches of the Fitchburg Division serving Lexington, Weston, Wayland, the Sudburys and Hudson was not increased although 21 per cent to 48 per cent fare reductions were offered. The lightly traveled Fitchburg Division as a whole displayed the largest percentage increases in ridership of any of the B & M divisions; off-peak

BOSTON AND MAINE RAILROAD DEMONSTRATION PROJECT

Table 3.

Monthly Summary Figures 1962 - 1963

Route Figures Include Inbound & Outbound	<u>January</u>			<u>February</u>			<u>March</u>		
	1962	1963	% Change	1962	1963	% Change	1962	1963	% Change
Eastern Route									
Peak	75594	86321	14.2	77139	91403	18.5	83827	99746	19.0
Off Peak	19757	36999	87.3	21096	42667	102.3	20623	44282	114.7
Total	95351	123320	29.3	98235	134070	36.5	104450	144028	37.9
Reading Line									
Peak	101091	112267	11.2	101364	113794	12.3	110083	125335	13.6
Off Peak	27572	35719	29.5	31821	39875	25.3	31993	42891	34.1
Total	128663	147986	15.0	133185	153669	15.4	142076	168226	18.4
Western Route									
Peak	34426	35110	2.0	35456	37297	5.2	39717	39862	0.7
Off Peak	15714	18199	15.8	15449	21037	36.2	16736	21189	26.6
Total	50140	53309	6.3	50905	58334	14.6	56453	61051	8.2
N.H. Dist.--Lowell-Woburn									
Peak	73784	87220	18.2	75156	89170	18.6	84357	98176	16.4
Off Peak	28039	38114	35.9	32143	43636	35.8	30389	44123	45.2
Total	101823	125334	23.1	107299	132806	23.9	114746	142299	24.0
Fitchburg Division									
Peak	26525	34972	31.8	26987	37212	37.9	30385	40290	32.6
Off Peak	5925	10966	85.1	6769	14270	110.8	7084	13899	96.2
Total	32450	45938	46.1	33756	51482	52.5	37469	54189	44.6
All Lines									
Peak	311420	355890	14.3	316104	368876	17.0	348369	403409	15.8
Off Peak	97007	139997	44.3	106568	161485	51.5	106825	166384	55.6
Total	408427	495887	21.4	422672	530361	25.5	455194	569793	25.2

Source: Trainmen's Head Counts: Boston and Maine Railroad

BOSTON AND MAINE RAILROAD DEMONSTRATION PROJECTMonthly Summary Figures - Monday-Friday inclusive - 1962-1963**SECOND QUARTER**

Route Figures Include Inbound and Outbound	<u>April</u>			<u>May</u>		
	1962	1963	% Change	1962	1963	% Change
Eastern Route						
Peak	81837	99033	21.0	83526	101871	22.0
Off Peak	20718	43787	111.3	21148	42353	100.3
Total	102555	142820	39.3	104674	144224	37.8
Reading Line						
Peak	109024	125439	15.1	111676	128643	15.2
Off Peak	32300	42242	30.8	30985	40625	31.1
Total	141324	167681	18.7	142661	169268	18.7
Western Route						
Peak	38850	40049	3.1	37198	40915	8.1
Off Peak	16883	21491	27.3	17834	22981	28.9
Total	55733	61540	10.4	55032	63896	16.1
N.H. Dist.--Lowell-Woburn						
Peak	82866	99064	19.5	81438	97917	20.2
Off Peak	33149	46264	39.6	32032	45134	40.9
Total	116015	145328	25.3	113470	143051	26.1
Fitchburg Division						
Peak	30227	39401	30.4	30711	40752	32.7
Off Peak	7682	14242	85.4	7460	14318	91.9
Total	37909	53643	41.5	38171	55070	44.3
All Lines						
Peak	342804	402986	17.6	344549	410098	19.0
Off Peak	110732	168026	51.7	109459	165411	51.1
Total	453536	571012	25.9	454008	575509	26.8

Source: Trainmen's Head Counts: Boston and Maine Railroad.

volume was 92 per cent above the 1962 level and peak volumes were up by 44 per cent.

Boston and Maine Railroad Parking Lots

During the week of April 1 - 5, during the hours of 10:00 AM to 3:00 PM, a week of generally sunny and mild weather, MTC personnel surveyed parking lots on all of the outlying B & M rail stations. Separate tabulations were made for lots at the stations and nearby lots. In most cases, parking was free of charge.

In only 11 of the 48 major B & M stations was there 100 per cent utilization of parking spaces. Vacancies ranging from 25 per cent to 97 per cent were observed in the remaining lots.

A special tabulation was made of the relationship between available parking spaces at the lots and passenger volumes at the stations. It was found that total parking spaces amounted to 38.4 per cent of the total number of daily inbound passengers boarding trains at the stations. These figures indicate that in most stations the bulk of passengers arrive via car pools, are delivered in family cars, walk or use public transportation. Further surveys of parking and passenger habits to be conducted by MTC personnel and consultants have shed further light on the relationship between railroad parking spaces and station passenger volumes.

Weather and Other Factors

The winter of 1963 was extremely mild as compared to 1962. On only a few occasions in the January-March months were B & M trains delayed because of storms. Despite the lack of snow in 1963, serious icing conditions occurred in the Boston area highways on eight days, thereby increasing the number of people using train service. In general, this bad weather results in a substantial increase in rail passenger volume. The fact that 1963 was a period of little snow-

fall tended to reduce B & M passenger levels as compared to 1962.

Two major causes of sudden changes in passenger volume in the winter months of both 1963 and 1962 were special events at the Boston Garden, and public school vacations. For example, during the week ending February 27, 1963, the B & M rail volume reached its highest weekly total of 154,000 passengers (Monday through Friday total), because of the coinciding of school vacations and the Ice Follies at the Boston Garden. In 1962, the same combination of stimuli to rail passenger volumes occurred so that the volumes of the two years can be compared without obtaining a distorted picture.

Survey of Commuter Patterns on Boston and Maine Railroad

In late April, 1963, the MTC employed a firm specializing in public opinion polling to conduct a special survey of riders on selected lines of the Boston and Maine Railroad.¹ Specifically, the survey sought to determine:

1. The number of new commuters attracted since implementation of the MTC experiment.
2. How new riders previously traveled to Boston.
3. What effect, if any, increased train commuter service had on other forms of mass transportation service.
4. What form of public transportation, if any, commuters used to reach their eventual destination when they arrived in Boston.
5. What form of transportation, public or private, commuters used to get from their homes to the train station in order to board a commuter train to Boston.

Between April 22 and April 27, 1962, 9,825 passenger interviews were conducted on 116 separate trains. Approximately 9,300 interviews were conducted with week-day riders, representing about 75 per cent of average daily commuter passenger volume on the B & M.

Interviews were conducted only on inbound trains. Interviewers boarded

1/ Joseph Napolitan Associates, Inc.

trains at the point of origin (except interstate trains which were boarded at the first Massachusetts station) and distributed a questionnaire to all riders. One side of the questionnaire carried a request for commuter assistance; the other carried the actual questions. One interviewer was assigned to each railroad car, and circulated through the car, assisting commuters who needed assistance, and collecting the questionnaires when they were completed. Conductors on the railroad had been informed of the survey and were co-operative with and helpful to the interviewers. An estimated five per cent of riders refused to answer, a figure which did not affect the validity or the accuracy of the sampling.

Results

The survey revealed that:

- a. 25.5 per cent of all riders interviewed stated they are riding the train more often than they were prior to implementation of the current plan.
- b. 71.7 per cent stated that they are riding the train the same number of days per week as they did prior to the experiment.
- c. 2.8 per cent stated that they are riding the train less often than they were before.
- d. 20.3 per cent of riders said increased service was chiefly responsible for their taking the train more often.
- e. 41.0 per cent said lower fares was the chief determinant in their decision to take the train more often.
- f. 17.7 per cent said their decision to use the train was due to a combination of increased service and lower fares, and refused to set a priority on either.
- g. 1.3 per cent said they take the train more often now because traveling by automobile, including parking, is becoming more difficult.
- h. 1.1 per cent cited the comfort, convenience and cleanliness of the B & M

trains as the chief factors in their decision to ride the train more often.

- i. 9.4 cent cited personal reasons for their increased patronage.
- j. 9.2 per cent would not answer the question.

Thus twice as many riders say they are riding the train more often because fares are lower than say they are riding more often because of increased service. There was very little difference between the week-day rider and Saturday rider on this question.

Reason	<u>Week-Day</u>	<u>Saturday</u>
Increased service	20.1%	23.3%
Lower fares	41.7	33.3
Inseparable combination of increased service and lower fares	17.5	20.8
Traffic, parking, etc.	1.3	.6
Comfort, cleanliness, convenience, etc.	.9	3.2
Personal reasons	9.3	9.4
Would not answer	9.2	9.4

The Saturday rider seems to be somewhat less concerned than the week-day rider about lower fares, and places more emphasis on increased service and such other factors as comfort, cleanliness and convenience.

Riders who used the trains more often were asked what method of transportation they previously had used to get to Boston. The results clearly indicated that the experiment drew most of its patrons from private automobiles.

- 1. 55.2 per cent said they had used their own car to drive to Boston.
- 2. 15.3 per cent said they had been members of a car pool.
- 3. 12.4 percent said they had used the bus to get to Boston.
- 4. 17.1 per cent would not answer the question.

Thus, nearly three-quarters of all new train riders previously commuted to Boston by car.

Only 12.4 per cent of those who responded to the question said they formerly rode the bus.

There were some noteworthy exceptions to this overall response, however.

1. 19.5 per cent of new train riders on the Woburn line are former bus riders.
2. 23.6 per cent on the Melrose Highlands line are former bus riders.
3. 21.6 per cent on the Beverly line previously rode the bus.

On the other hand, less than 10 per cent of new train riders on the Haverhill line, the Fitchburg line, and the Rockport line are former bus riders. Percentage-wise, the number of new train commuters who deserted the bus to ride the train is considerably lower among week-day riders than it is among Saturday riders.

Getting to the station

All persons interviewed were asked this question:

"How did you get to the station today to catch this train?"

Nearly 62 per cent of all commuters got to the station in their own car, with 40.8 per cent driving themselves and parking the car, and 21.1 per cent being driven by their wife or other member of the family who then presumably had use of the family car throughout the day. Walking ranks second to the family car as a means of getting to the station, with 27.9 per cent -- or almost one commuter in three -- getting to the station by foot. Taxis (4.9%), busses (2.5), and car pools (1.5) are well down the list, but it is interesting to note that twice as many persons get to the station by taxi as by bus. Nearly four times as many persons take a taxi on Saturday as during the week, and not as many drive their car to the station and leave it there, and the use of car pools drops to less than one per cent.

<u>Method</u>	<u>Week-day</u>	<u>Saturday</u>
Own car, parked at station	41.8%	25.0%
Walked	27.8	29.9

<u>Method</u>	<u>Week-day</u>	<u>Saturday</u>
Bus	2.4%	4.1%
Taxi	4.2	15.3
Driven to station by member of family	20.9	23.4
Car pool	1.6	.8
Would not answer	1.3	1.5

The weather was rainy or drizzly on three days and clear on three other days the survey was taken. As could be expected, it was found that on the clear days more train riders walked to the station, and on rainy days more people drove their own car to the station, or used a bus or taxi.

Reaching Eventual Destination

All riders were asked how they reached their eventual destination when they arrived in Boston. Here are the results:

- 44.1 per cent walk.
- 37.7 per cent use the MTA subway.
- 10.1 per cent use the MTA bus.
- 5.4 per cent use a taxi.

On Saturday, perhaps because these are non-business riders who may be traveling to more remote sections of the city, the number of MTA subway riders almost doubles, and the number who walk to their destination is reduced by half.

<u>Method</u>	<u>Week-day</u>	<u>Saturday</u>
Walk	45.5%	20.2%
MTA subway	36.1	66.2
MTA bus	10.5	3.0
Taxi	5.2	7.1

1. 25.5 per cent of all riders interviewed said they are riding the train more

often than they were a year ago.

2. 41.0 per cent of the new riders stated that lower fares is the chief reason why they are riding the train more often. This compares with 20.3 per cent who credit increased service and 17.7 per cent who indicated an inseparable combination of these two factors is responsible for their increased patronage.
3. 70.5 per cent of these new riders previously commuted to Boston by automobile. Only 12.4 per cent are former bus riders.
4. 61.9 per cent of all riders interviewed get to their local station in their own car -- 40.8 per cent parking the car at the station, and 21.1 per cent being driven to the station by another member of their family.
5. Nearly half of the riders interviewed walk to their eventual destination after they reach Boston, and more than one-third use the MTA subway.

Peak and Off-Peak Differences

The survey results were analyzed to determine the differences, if any, between commuter habits of inbound train riders during the morning peak hours (before 9:30 a.m.) and the hours after 9:30 a.m. considered here as the off-peak hours. Saturday and evening trains were excluded from this comparison.

It should be noted that five times as many interviews were conducted with riders during peak hours than were conducted in off-peak hours; the totals are 7,601 in the morning peak hours, 1,656 in the off-peak hours.

There are some significant differences in commuter habits between peak and off-peak riders.

Reason for Increased Patronage

Increased service is a greater attraction to off-peak riders than it is to peak-hour riders; lower fares was cited more often as the reason for increased patronage by peak riders. Here are the tabulations:

	<u>Peak</u>	<u>Off-Peak</u>
Increased service	18.3%	26.0%
Lower fares	43.4	34.4
Combination	16.4	21.1
Parking problems	1.5	.8
Comfort, convenience	1.2	.6
Personal reasons	10.3	6.9
No answer	8.9	10.2

Previous Method of Transportation

Among both groups, the chief previous method of transportation to Boston was the automobile. On a percentage basis, more of the off-peak riders formerly rode busses instead of trains. (This reflects the response in the previous question when increased service was cited as an important reason for increased patronage.)

	<u>Peak</u>	<u>Off-Peak</u>
Own car, parked at station	43.7	30.9
Walked	26.4	33.1
Bus	1.8	7.1
Taxi	2.5	12.7
Driven to station by member of family	22.3	12.9
Car pool	1.8	.5
No answer	1.5	2.8

Reaching Eventual Destination in Boston

Twice as many peak-hour riders walk to their eventual destination after arriving in Boston by train; substantially more off-peak riders use the subway to reach their eventual destination. And twice as many off-peak riders take a

taxi to their destination.

	<u>Peak</u>	<u>Off-Peak</u>
Walk	50.2%	24.5%
MTA subway	32.5	52.5
MTA bus	11.3	7.2
Taxi	4.0	10.1
No answer	2.0	5.7

This type of ridership survey will be extended to other carriers involved in the experiment during the summer and fall. Additional sample surveys of Boston and Maine commuters will also be conducted to determine the impact of subsequent changes in the experiment program.

REVENUE AND ANALYSIS

One of the primary objectives of the railroad demonstration project is to determine the real cost of providing commuter service. The second Mass Transportation Commission progress report (April, 1963) indicated that on the Boston and Maine Railroad's increased passenger revenues, resulting from a 19 per cent gain in passenger volume over January, 1962 levels came within seven per cent of off-setting the cost of slashing rail fares. The 23 per cent increase in passenger volume in February, 1963 over February, 1962 levels was nearly sufficient to offset fare reductions: Total February commuter passenger revenue for the Boston and Maine Railroad was only 2.6 per cent below the level of February, 1962.

As a result of the further gain in passenger volumes which occurred in March, April and May the break-even point of the experiment fare reductions has been reached. Revenues on the B & M commuter lines in one seven-day week in May, 1963 were only 0.1 per cent below revenue levels the comparable week in May, 1962.

Table 4 Changes in Revenue Earned 1963 over/(under) 1962

<u>Line</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>
Eastern	(1.3)	2.1	2.6	0.9	4.1
Reading	(5.7)	(8.1)	(4.7)	(0.1)	(0.1)
Western	(25.0)	(20.2)	(21.9)	(21.8)	(14.2)
Lowell	6.3	7.0	10.4	5.6	7.6
Woburn	(7.4)	(4.3)	(2.2)	(3.4)	(7.8)
Fitchburg	2.7	18.4	12.1	10.6	14.5
Sub-Total	(5.9)	(2.4)	(1.9)	(2.4)	0.0
Bedford & Hudson	(21.1)	(10.9)	(20.5)	(24.7)	(21.0)
Total	(6.3)	(2.6)	(2.4)	(3.0)	(0.1)

Source: McKinsey Reports and B & M Audits

The outstanding performer of the Boston and Maine Railroad lines was Fitchburg, the smallest in terms of scale of revenues of the five principal lines in the experiment. In contrast, both the Western and Reading lines remained substantially below 1962 levels in February. However, May revenues on the Reading line were equal to May, 1962 revenues while the Western route remained ten per cent below 1962.

On a percentage basis, more striking gains were made on weekends than on weekdays, a trend which is in line with the overall effect of the rail experiments in producing larger percentage increases in off-peak periods. Week-day volume is still almost ten times larger than on weekends. However, in February, 1962 twelve times as many commuter passengers rode the Boston and Maine Railroad weekdays as compared to weekends, but in February, 1963 the ratio had declined to less than ten to one.

Table 5 Change in Revenue Passengers 1963 over/(under) 1962

<u>Line</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>
Eastern	29.3%	36.5%	37.9%	39.3%	37.8%
Reading	15.0	15.4	18.4	18.7	18.7
Western	6.3	14.6	8.2	10.4	16.1
Lowell-Woburn	23.1	23.9	24.0	25.3	26.1
Fitchburg	46.1	52.5	44.6	41.5	44.3
Total	21.4	25.5	25.2	25.9	26.8

Source: B & M Head Counts

Trends in weekend passenger volumes were generally in line with year-to-changes in weekday volumes. The least impressive increase occurred on the Reading line and the largest gains were registered by the Fitchburg and Eastern lines.

BOSTON AND MAINE RAILROAD

Table 6

Audit Comparison

One 7 day week of May 1963 vs. week of May 1962

<u>Route</u>	1963 <u>Revenue Passengers</u>			1963 <u>Total Revenue</u>		
	In Thousands			In Thousands		
	<u>1962</u>	<u>1963</u>	<u>% Change</u>	<u>1962</u>	<u>1963</u>	<u>% Change</u>
Eastern Route						
Mass Intrastate	24.1	34.7	+ 43.8	19.0	19.9	+ 4.1
Inter & N.H. Intra	.6	.5	- 17.6	.8	17.0	- 9.8
Total	24.7	35.1	+ 42.4	19.9	20.6	+ 3.5
Reading Line						
Mass Intra	30.8	37.1	+ 20.4	15.1	15.1	- 0.1
Western Route						
Mass Intra	12.8	14.7	+ 14.8	11.8	10.1	- 14.2
Inter & NH, Me, Intra	1.2	1.2	+ 3.6	2.8	2.9	+ 6.3
Total	14.0	15.9	+ 13.8	14.6	13.1	- 10.4
N. H. District						
Woburn Intra	13.9	15.4	+ 10.4	6.8	6.3	- 7.8
N. H. District						
Lowell Intra	9.3	14.1	+ 51.7	7.7	8.2	+ 7.6
Inter & NH, VT. Intra	3.4	3.2	- 6.8	8.7	8.6	- 2.2
Total	12.7	17.3	+ 36.0	16.4	16.8	+ 2.4
Fitchburg Div.						
Mass Intra	8.9	13.5	+ 50.9	7.3	8.4	+ 14.5
Lex. Br.	1.5	1.5	+ 0.5	.8	.7	- 19.7
Hudson Br.	1.6	1.7	+ 5.7	1.0	.8	- 22.6
Conn. River	1.6	1.8	+ 12.5	6.5	6.7	+ 3.4
System Total	109.7	139.3	+ 27.0	88.5	88.4	- 0.1

Overall, revenues on the Boston and Maine railroad experiment commuter lines in February, 1962 were 2.4 per cent below the February, 1962 level. However, revenues from weekend passengers were actually 9.7 per cent above February, 1962. In contrast, weekday passenger revenues on the experiment lines were 3.2 per cent below the previous year.

Table 7

CHANGE IN REVENUE EARNEDFebruary 1963 and 1962

(Thousands of Dollars)

<u>Line</u>	Revenues Earned		1963 over/ (under 1962)
<u>Weekdays</u>	<u>1963</u>	<u>1962</u>	
Eastern	\$ 72.6	\$ 72.5	0.1%
Reading	55.4	60.5	(8.4)
Western	33.3	43.1	(22.7)
Lowell-Woburn	51.8	51.4	0.7
Fitchburg	<u>32.4</u>	<u>28.0</u>	<u>15.7</u>
Sub-total	<u>\$ 251.2</u>	<u>\$ 261.9</u>	<u>(4.1)%</u>
Bedford and Hudson	<u>5.7</u>	<u>6.4</u>	<u>(10.9)</u>
Total	\$ 251.2	\$ 261.9	(4.1)%
<u>Weekends</u>			
Eastern	\$ 10.3	\$ 8.7	18.4%
Reading	3.9	4.0	(2.5)
Western	7.8	8.4	(7.1)
Lowell-Woburn	7.9	7.1	16.7
Fitchburg	<u>5.0</u>	<u>3.6</u>	<u>38.9</u>
Sub-total	\$ 34.9	\$ 31.8	9.7%
Bedford and Hudson	<u>*</u>	<u>*</u>	<u>*</u>
Total	<u>34.9</u>	<u>31.8</u>	<u>9.7%</u>
Total Month	\$ 286.1	\$ 293.7	(2.6)%

* - No scheduled service

The table indicates that in terms of dollar volume the amounts involved in the revenue differences on the Boston and Maine Railroad lines are relatively small. February year-to-year changes in line revenues range from \$100 (Eastern-weekdays) to a maximum of \$9,800 (Western weekdays). Overall, the February, 1963 decrease in Boston and Maine Railroad's commuter revenues as compared to February, 1962 was less than \$7,000.

The major sources of revenue declines as compared to 1962 were:

- (1) The Western line (-\$10,400.)
- (2) The Reading line (-\$ 5,200.)

The principal sources of revenue increases were:

- (1) The Fitchburg line (+\$3,800.)
- (2) The Eastern line (+\$ 1,700.)

New Haven Railroad

On March 11, 1963, a \$1.2 million reduced-fare, increased-service Demonstration Project went into effect on the East end commuter operation of the New Haven Railroad. The East End commuter territory is made up of the main line Boston to Providence route, over which through New York trains operate, and five branch line operations which divert from the main line at various points. These branches consist of (1) a line to Needham Heights (13.6 miles from Boston), and (2) an extension of the Needham branch from Needham Junction to West Medway (26.0) miles from Boston), and (3) a line to Blackstone (36.6 miles from Boston) and a short branch off the main line to Stoughton (18.9 miles from Boston).

Eight new round trips were added between Boston and Providence, all during the off-peak hours. On the line to Needham service was improved with the addition of four off-peak round trips. Service on the remaining New Haven lines was not increased, but fare reductions are offered.

The fare reduction on all of the East End lines is about ten per cent. Special reduced rate round trip tickets are now offered from all stations in addition to reduced fares on all commutation books. The reduced fares do not apply to any stop west of Attleboro on the Providence route as the Demonstration Program is effective only within Massachusetts. (The new trains go through to Providence, R. I., for operating convenience.)

The New Haven experiment offers interesting comparisons with the demonstration experiment on the Boston and Maine Railroad. Total monthly commuter passenger volume on the New Haven is running about half the volume on the B & M. In the first two months of the experiment the overall increase in New Haven commuter patronage was extremely small, although a moderate gain in off-peak passenger volume has occurred. In the second

NEW HAVEN RAILROAD

DEMONSTRATION PROJECT

Monthly Summary Figures - April and May 1963

	<u>April</u> <u>1962</u>	<u>April</u> <u>1963</u>	<u>%</u> <u>Change</u>	<u>May</u> <u>1962</u>	<u>May</u> <u>1963</u>	<u>%</u> <u>Change</u>
Providence						
Peak	58687	58360	- 0.6	58533	60218	+ 3.0
Off Peak	27171	30987	+14.0	26220	31067	+18.0
Total	85858	89347	+ 4.0	84753	91285	+ 8.0
Needham						
Peak	73635	72572	- 1.0	76373	75335	- 1.4
Off Peak	12651	15649	+ 2.4	12718	15400	+21.0
Total	86286	88221	+ 2.2	89091	90735	+2.0
West Medway						
Peak	1204	1051	-13.0	1281	1146	-10.5
Off Peak	--	--	---	--	--	---
Total	1204	1051	-13.0	1281	1146	-10.5
Blackstone						
Peak	29510	29864	+ 1.0	29808	29604	- 0.7
Off Peak	9994	9463	- 5.3	13172	12954	- 1.7
Total	39504	39327	- 0.4	42980	42558	- 1.0
Dedham						
Peak	9083	9065	- 0.2	9086	9640	+ 6.0
Off Peak	--	--	---	--	--	---
Total	9083	9065	- 0.2	9086	9640	+ 6.0
Stoughton						
Peak	28426	29674	+ 4.4	28312	30383	+ 7.0
Off Peak	--	--	---	--	--	---
Total	28426	29674	+ 4.4	28312	30383	+ 7.0
Total						
Peak	200545	200586	+ 0.02	203393	206326	+ 1.4
Off Peak	49816	56099	+13.0	52110	59421	+14.0
Total	250361	256685	+ 2.5	255503	265747	+ 4.0

Source: New Haven Railroad, Trainmen's Head Counts.

month of the new experiment none of the six New Haven routes equalled the peak hour gains registered by any of the five Boston and Maine Routes in the second month of the B & M experiment. However, the two New Haven lines, which offer increased peak hour service along with fare reductions, both experienced significant gains in off-peak volume.

In gauging this relatively limited response, five factors should be borne in mind: (1) the New Haven railroad's lesser fare reductions and service increases as compared to the B & M experiment; New Haven fares are substantially higher than fares for comparable distances on the B & M; (2) the absence of the very large volume Old Colony route from the New Haven experiment; (3) the comparatively limited amount of publicity for the New Haven experiment as compared to the great interest generated by its predecessor; (4) the less attractive older equipment on the New Haven as compared to the B & M's modern Budd cars. Despite these factors, however, the trend is upward; April-to-May gains occurred on most New Haven experiment lines and on the East End system as a whole.

New York Central, Boston and Albany Branch

In order to compare trends in passenger volume between the Boston and Albany line with rail lines included in the experiment arrangements have been made with the New York Central to secure passenger data on a regular basis. Data on passenger volumes for January and February indicate that the secular decline evident for some years on the B & A, and characteristic of the Boston region's other commuter railroads prior to the experiment, has continued. The total number of B & A passengers in January was 4.3 per cent below January 1962, while February volumes were 5.5 per cent lower.

Bus Company Experiments

By 1961 most of the lines in the Commonwealth had lost more than half of their 1949 passenger volumes. The most seriously affected was

Berkshire Street Railway where the 1961 passenger volume was only 16 per cent of the 1949 level. Despite increases in fares, all bus lines declined in revenues except Brush Hill, which was able to develop a considerable charter service.

Although there are notable exceptions, most of the lines are in severe financial difficulties. None of them were in a position to finance substantial experiments in increased service and reduced fares.

The various elements of the bus demonstration project described below include considerable variety. Departures from local patterns such as operation of bus lines over superhighways are included. Areas of moderate volume where rail commuter transportation has proved unfeasible are tested for bus substitution by greatly improved service. Both rail and rapid transit services are fed and extended by improved feeder bus service. Experiments are for areas of heavy density near central cities, along with experiments with special off-peak fare service and fares on suburban runs. The results should clearly demonstrate which of these changes, if any, will induce passengers to utilize bus transportation.

Bus company results to date have presented a mixed pattern. Two experiments have already been terminated on the basis of limited public response. Others are still producing far less revenue than the amount needed to offset experiment costs. In other instances, however, bus company experiments have approached or exceeded the break even point.

Completed Bus Experiments:Lynnfield Community, Inc.

Public response to the Lynnfield Community demonstration project, which began on January 14, 1963, was initially limited and did not materially improve in February and March. As a result the experiment was terminated on March 23, 1963, after three months of operation

Table 9 - Lynnfield Community Revenues

<u>Month</u>	<u>1962 Revenue</u>	<u>1963 Revenue</u>	<u>Increase</u>	<u>Increase Per Day</u>
January 14-31	\$1,734.00	\$1,905.65	\$ 171.65	\$ 17.29
February	2,666.00	2,801.30	135.30	5.60
March	2,824.30	2,986.50	162.20	6.01

This demonstration experiment appears to indicate that no significant contribution to the urban transportation problem may be made via this type of bus-rail coordination. The increase in passengers during the experiment amounted to less than 30 riders per day, in both directions, on 22 trips.

In spite of the increase in efficiency which the added trips permitted, even if only incremental direct costs are considered, the increased revenue represented only a small fraction of the increased cost.

The experiment service consisted of six round trips Monday through Friday and four round trips on Saturday. Each round trip covered 21 1/2 miles and required 1 1/2 hours to complete. No increase required in the number of buses allocated was necessary nor was there any increase in dead head time since the positioning trips for the new schedule replace other positioning trips that were previously necessary.

The incremental cost for the new service was estimated at \$8,300 per year or \$121 per day. As noted in Table 9, maximum daily revenues, which were achieved in the first week of the experiment, amounted to \$17, about one-thirteenth of the estimated daily incremental cost.

Planning Environment for the Lynnfield Experiment

The Lynnfield Community Experiment was primarily designed to provide a link between a high quality residential area in Lynnfield with the B & M Station in Lynn and to a lesser extent, with the B & M Station in Wakefield. The route traversed by the experiment traversed census tracts with a total population of 63,000, half the combined population of the three communities in the Lynnfield experiment area (Lynn, Wakefield and Lynnfield).

In Lynn the bus passed through a high density, multi-family, low income district in Lynn to a low density, single family, high income area in Lynnfield. The bus route then connected to the Wakefield Station, which is surrounded by an area of single and multi-family housing in moderately high density where median family incomes run slightly above the state median.

The bus was mainly suburban in nature; the line could not pick up and deliver passengers within the areas within Lynn.

Instead another bus company served the Lynn area which, by reason of low incomes and high densities, its substantial proportion of elderly people and a large proportion of journey-to-work public transit users, provides a sizable market for bus transportation.

In effect, the Lynnfield experiment proved that in this suburban area virtually all commuter train riders preferred to travel between residence and station via automobile, a finding which is closely correlated with the results of the B & M commuter passenger survey.

1. YELLOW COACH COMPANY

- a. New Service to Francis Plaza Housing for the Elderly, Pittsfield
- b. Increased Service to Waconah and Wilson Park Housing Developments, Pittsfield
- c. Increased Service to Green Ridge Park Housing Development, Pittsfield
- d. Increased Service between Adams, North Adams and Williamstown

3. FITCHBURG AND LEOMINSTER STREET RAILWAY COMPANY

- a. New Service from downtown Fitchburg to the Fitchgate Shopping Center
- b. New Service from the Fitchburg Railroad Station to Luenburg and Townsend
- c. New Service from the Fitchburg Railroad Station to Ashby Center
- d. New Service to Industrial plants
- e. Increased Service between Fitchburg and Leominster
- f. Extension of Fitchburg and Leominster route in Fitchburg

4. MASSACHUSETTS NORTHEASTERN TRANSPORTATION COMPANY

- a. New Service from Haverhill to the Western Electric Plant in North Andover
- b. New Service from Amesbury to the Western Electric Plant in North Andover
- c. Route extension to a new housing project in Newburyport
- d. New Service on State Street, Newburyport
- e. Increased Service from Amesbury to Newburyport

5. EASTERN MASSACHUSETTS STREET RAILWAY COMPANY

- a. New Service from Topsfield to Salem
- b. Fall River: Increased Service
- c. Off-Peak Reduced Fare Experiment on local routes within a 1 1/2 mile radius of downtown Lowell
- d. Lawrence to Boston: New Service

6. LYNNFIELD COMMUNITY, INC.

- a. Increased Service from Wakefield to Lynn

7. SERVICE BUS LINE, INC.

- a. New Service from Linden Square to Revere Beach M. T. A. Station
- b. Increased Service from Saugus to Linden Square.

9. BRUSH HILL TRANSPORTATION COMPANY

- a. New Service from Stoughton to the New Haven Railroad Route 128 Station

2. BARRE BUS COMPANY

- a. Increased Service from Rutland and Holden to Worcester

8. SHORT LINE, INC.

- a. Increased Service - Milford to Boston
- b. Increased Service - Worcester to Uxbridge



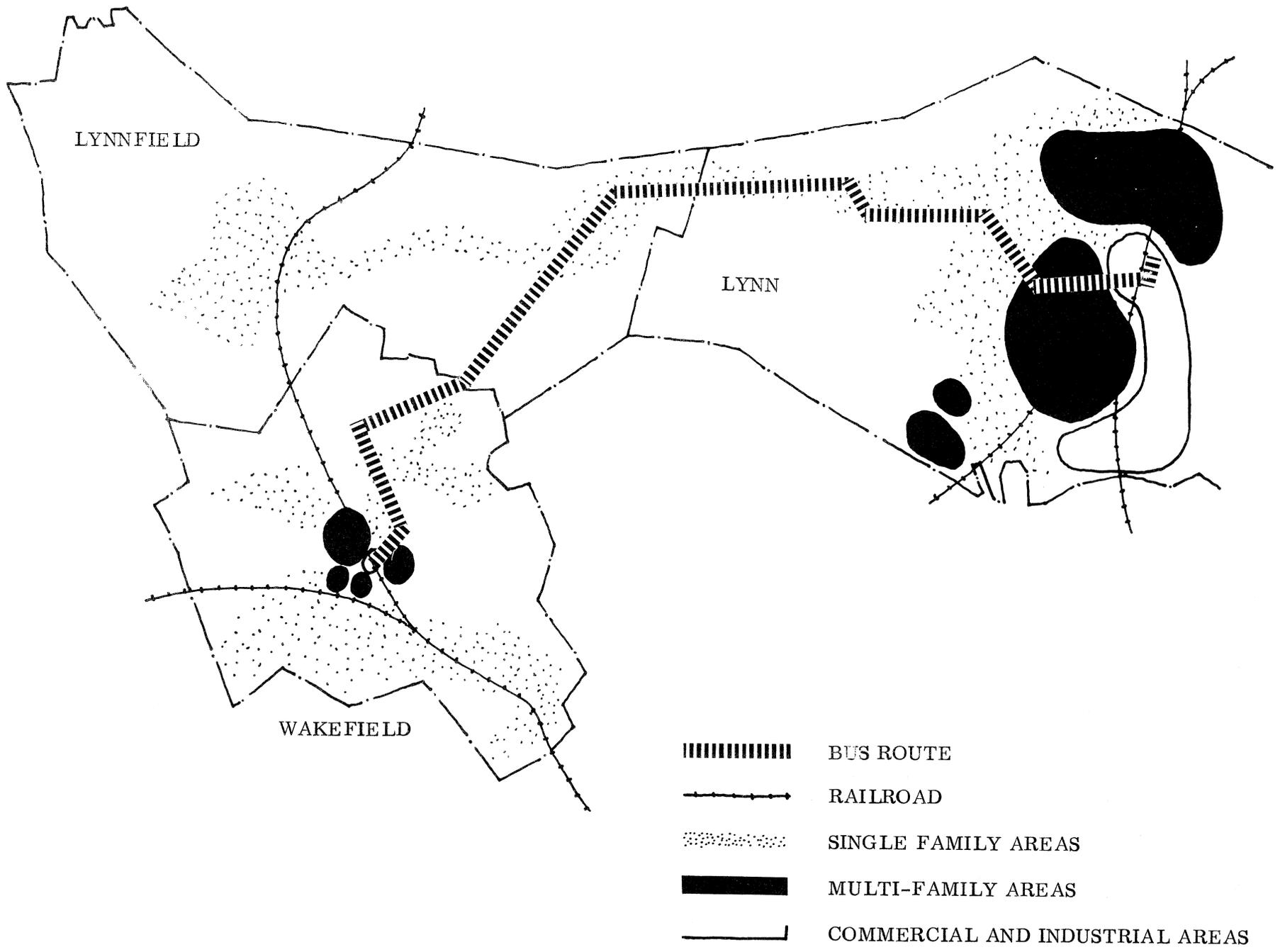
THE COMMONWEALTH OF MASSACHUSETTS

MASS TRANSPORTATION COMMISSION
DIVISION OF TRANSPORTATION PLANNING

BUS DEMONSTRATION PROJECTS

- COMPLETED DEMONSTRATION PROJECT
- PROJECT IN PROGRESS
- CONTRACT UNDER NEGOTIATION





Planning Characteristics, Lynnfield Experiment Area

(Figures rounded to nearest hundred)

	LYNN		LYNNFIELD	WAKEFIELD	
	<u>TOTAL</u>	<u>/a</u> <u>EXPER.</u>		<u>TOTAL</u>	<u>/a</u> <u>EXPER.</u>
1. Population 1960	94,500	34,200	8,400	24,300	20,000
2. Per cent Change 1950-1960	-5.3	-26.6	113.9	23.7	24.9
3. Same Residence 1955	48,400	17,500	3,900	13,000	10,500
4. Median Family Income	5,100	5,500	9,400	6,700	7,300
5. Population Age 65 and over	13.5%	14.5%	6.7%	11.1%	10.3%
6. Labor Force	39,200	15,000	3,100	9,900	8,000
7. Automobile to Work	22,600	8,500	2,600	6,600	5,300
8. Public Transportation to work	5,200	2,000	100	1,100	700
9. Walk to work	6,200	2,300	100	1,100	1,100
10. Total Housing Units	32,600	12,600	2,400	7,200	5,800
11. Apartment Units	6,700	3,500	---	300	300
12. Deteriorated Units	4,200	1,800	100	500	400
13. Gross Pop. Density/Sq. Mile	8,400	14,000	800	3,100	3,000 ^b

a. Census tracts traversed by experiment bus route

b. Estimated

Source: U. S. Census

Passenger Survey

A survey of Lynnfield, Inc. bus riders sheds further light on the limited impact of the experiment. All of the riders in the five per cent sample lived within two blocks of the route, a locational relationship virtually identical with the Lowell bus experiment. Approximately three-fourths of the riders were middle-aged women shoppers who use the bus between one and four times per week. Only a third of the respondents stated that they used the bus more frequently as a result of the experiment.

Eastern Massachusetts Street Railway Company: Lowell

The off-peak fare reduction of the Eastern Massachusetts Street Railway Company at Lowell, the first and briefest of the MTC bus experiments, began on December 10th, 1962, and ended 13 weeks later on March 8, 1963.

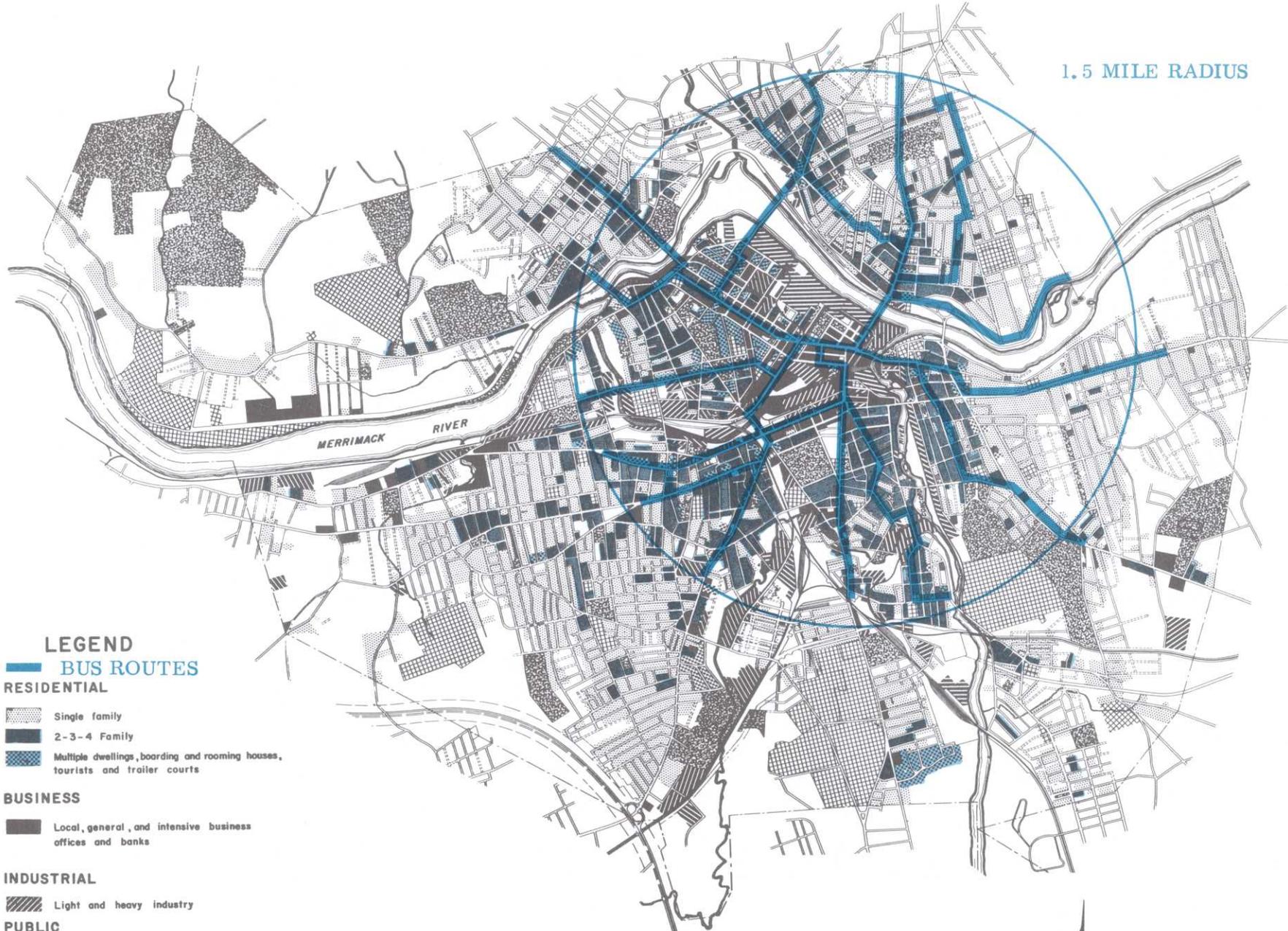
The Eastern Massachusetts Street Railway Company operates 16 bus routes serving downtown Lowell, and centering on Kearney Square. The regular fare is 25¢. School children ride for 12 1/2¢.

As in most transit operations, patronage declines on these routes during the middle of the day, between the morning and afternoon rush hour peaks. A test of the extent of peaking on seven of the 16 lines was made by checking revenue collection on Thursday, August 14, 1962. It was found that fares collected between 10:00 AM and 3:00 PM, five of the 12 hours in which the buses operate represented only 35 percent of average daily revenue. The experiment was designed to determine if a drastic fare reduction would induce greatly increased off-peak patronage and thus help the bus company to achieve greater public use of its equipment.

The project established an experimental fare of 10¢ for rides beginning between the hours of 10:00 AM and 3:00 PM. In order to keep the administration and fare collection as simple as possible, no transfers were issued and through rides from one side of the square to the other required a second 10¢ fare. Thus, any ride between Kearney Square and points approximately 1 1/2 miles out cost 10¢ if the passenger's trip began between 10:00 AM and 3:00 PM.

Runs previously operated in the center of Lowell were left entirely unchanged so that there was no additional vehicle-operating cost as a result of the experiment; vehicles and crews primarily needed for rush hour service would be available during the hours of the experiment (10:00 AM - 3:00 PM)

1.5 MILE RADIUS



LEGEND

BUS ROUTES

RESIDENTIAL

- Single family
- 2-3-4 Family
- Multiple dwellings, boarding and rooming houses, tourists and trailer courts

BUSINESS

- Local, general, and intensive business offices and banks

INDUSTRIAL

- Light and heavy industry

PUBLIC

- Parks, public schools and public buildings

QUASI PUBLIC

- Churches, cemeteries, public utilities, parochial schools, private hospitals and golf courses

**GENERAL
LAND USE
1955**



LOWELL, MASS.
CITY PLANNING DEPT.
SCALE IN FEET
0 500 1000 2000 3000

FIGURE 6

at minimal incremental cost.

The fare reduction for the experiment was a substantial 60 per cent, from 25¢ down to 10¢. The only complications in the fare schedules were pupil's fares (required by law to be set at half fare) and a very small number (less than two per cent) of 10¢ transfers previously offered to passengers using two runs for their ride through the downtown area.

With each passenger paying only 10¢, a 150 per cent increase in the number of off-peak passengers was required to equal the revenue from the former 25¢ fare. However, in the busy pre-Christmas shopping season this 150 per cent figure was never approached. During the last five weeks of the experiment the increase in passenger volume levelled off at between 75 per cent to 80 per cent. Overall, the experiment cost approximately \$600 per week, a \$150 decrease from the original cost estimate of \$750 which was made at the time the contract was signed.

Off-peak volumes increased by over 800 passengers per day on the experiment buses. A special survey conducted by the MTC in late February and early March on the experiment routes indicated that most of this increase in off-peak patronage was derived from increased frequency of use of former bus riders.

MTC Lowell Bus Demonstration Passenger Survey

A passenger survey was conducted by MTC personnel on buses in Lowell on Tuesday, February 26th, and Friday, March 1, 1963.

The fare reduction attracted 14.9 per cent more bus riders, most of whom previously had driven autos or walked and some who had used car pools or taxis. More significant was the fact that 63 per cent of the regular-previous riders indicated that they rode more frequently during the experiment.

Characteristics and Habits of Riders

Three rider characteristics are significant: 69 per cent of all riders were female; over 50 per cent were on shopping trips; and 70 per cent of the riders were over 40 years old.

Most new riders had either walked or driven autos before the experiment. Of the regular riders, two-thirds rode at the same time and two-thirds also rode more often.

Over 50 per cent of the riders used the bus daily, 26 per cent weekly and almost 20 per cent occasionally. While over 50 per cent only walked one block to the bus, almost 90 per cent of all riders lived within two blocks of the bus. Half were on shopping trips but one-fourth were going to work. Thus, shopping and working are the reasons for riding the bus for over 75 per cent of the riders. Medical, entertainment and (miscellaneous) other trips account for less than 10 per cent of all trips.

A meeting conducted in Lowell with the city and Chamber of Commerce officials afforded further indications of the minimal impact of the program. Traffic officers reported no appreciable change in traffic congestion. Since 20,000 automobiles park in or pass through downtown Lowell on a typical business day, 400 bus passengers, most of them previous bus riders, did not materially reduce CBD traffic volumes in off-peak periods.

The effect on downtown retail trade was also minor. Some stores reported some indication that shopping hours were affected by the experiment, suggesting the possibility that the additional off-peak riders were to a great degree the same customers who formerly rode in the rush hour.

Since the MTC survey indicated that most of the increase in passenger volume was derived from increased frequency of use of bus riders rather than from former automobile riders, the experiment may have added a maximum

of 100 to 150 shoppers to the estimated 12,000 shoppers in downtown Lowell on a typical shopping day, or a maximum possible increase in retail volume of little more than one per cent. Since detailed reports of commercial activity in Lowell are not available, and downtown retail volume was adversely affected by the opening of a new suburban shopping center which opened just before Thanksgiving Day, it is difficult to determine the precise effect of this experiment on retail trade patterns but it was obviously quite small.

An analysis of the response of the various routes was made by the MTC. In general, the results are closely correlated with the highest residential population density. Approximately 90 per cent of the bus riders on the experimental routes interviewed by the MTC walked two blocks or less to the bus.

Planning Environment for the Experiment

The Lowell area has been hard hit by severe losses in cotton textile employment, partially compensated by gains in electronics and non-manufacturing employment. The unemployment rate in the Lowell area has exceeded nine per cent for some years and in 1961 it was designated as a persistent labor surplus area by the Area Redevelopment Administration. Unemployment in February, 1963 stood at ten per cent.

Table 10. Lowell SMA and City of Lowell Employment,* 1950-1961
(000's)

	Lowell SMA			City of Lowell		
	1961	1950	% Change	1961	1950	% Change
Total Manufacturing	20.7	27.7	- 25.3%	18.4	19.0	- 5.2
Textiles	4.9	12.5	- 60.8%	3.1	9.4	- 67.0%
Electronics	4.5	0.4	+1025.0%	4.7	0.6	+ 583.3
Other	11.3	9.8	+ 15.3%	10.6	9.0	+ 17.8%
<u>Total Non-Mfg.</u>	20.9	16.0	+ 30.6%	11.4	11.6	- 1.7%
<u>Total Unemployed</u>	4.6	6.9	- 33.3	N.A.	N.A.	N.A.

*Covered employment

Source: Mass. Division of Employment Security.

The Lowell area labor force remained unchanged in size in the 1950-1960 decade while total population increased by fully 18 per cent, mainly as a result of an influx of suburban residents from the adjoining Boston metropolitan area. A substantial amount of net migration of labor and considerable out-commuting to jobs in other areas is clearly in evidence and has helped to alleviate the area's employment problems. Local job gains combined with net out-commutation and net out-migration enabled the Lowell area to decrease its unemployment rate from a severe 13 per cent in 1950 to 10 per cent in February, 1963.

The changing employment structure of the metropolitan area has had a major impact on journey-to-work patterns and on the Lowell Central Business District. Most of the area's textile employment losses occurred in mills located near downtown Lowell while jobs in new electronics plants are located in outlying areas of Lowell and its suburbs or near Route 128.

In early 1963 it was estimated that total job losses in downtown Lowell textile mills since 1950 were between 8,000 and 10,000, this represents a loss of well over half the 1950 "captive market" of downtown employees who shop in the CBD before and after work and during lunch hours. Since 1930, 1.6 million square feet of textile mill space near downtown Lowell, a third of the 1930 total of nearly five million square feet of mill space has been razed for reuse as parking lots or for other purposes. Moreover, CBD job losses in textiles and other industries are still continuing; in the past three years downtown Lowell has experienced a loss of over 1,000 jobs in textiles and other manufacturing. Total employment in and near the downtown area is now probably less than 5,000.

Economic Change and Mass Transportation

The outward movement in the location of manufacturing employment

helped to further reduce the already limited role of mass transportation in Lowell in the general transportation pattern. In 1960 only eight per cent (2,400) of Lowell's 35,000 employed residents journey-to-work via public transportation. However, in the census tracts traversed by experiment buses, a larger proportion of the population use mass transit since the percentage of household without cars runs at about half, considerably higher than the one-in-three ratio in the city as a whole.

Although figures on total off-peak volumes are not available, overall, the approximately 400 added riders on the bus experiment routes probably represented less than a one per cent increase in Lowell's total mass transportation ridership volume. However, they were a substantially more important factor in the tracts traversed by experiment buses and the increase which resulted from the experiment was undoubtedly overshadowed by attrition in total bus ridership in the city due partly to continuing losses in CBD jobs and secondarily to suburban retail competition.

From the standpoint of retail trade volumes, the Lowell Central Business District, has retained considerable strength in the past two decades, partly by virtue of its insulation from direct competition. Up to late November, 1962 no major regional shopping center provided serious competition for downtown Lowell. Mill outlets, discount centers located in former textile factories, were a less significant factor in the Lowell area trade pattern than is the case with a number of other New England textile communities.

The area retail pattern has changed radically: shortly before the experiment was initiated a large 15-acre shopping center containing a 120,000-square-foot department store was opened approximately three miles

from downtown Lowell. This center clearly poses a serious threat to the CBD and undoubtedly diminished the impact of the experiment. Viewed against this backdrop of a recent, major alteration in the retail pattern, the addition of a maximum of 150 shoppers each day to downtown Lowell represents a peripheral input to the CBD economy.

In determining the future need for mass transportation to downtown Lowell, long range plans to increase the CBD parking space: retail space ratio from the current 1:4 to a future 1:1 should be noted. At present the ratio is virtually the reverse of the relationship found in many suburban shopping centers. If these long range plans are effectuated, a sizable increase in parking space over and above the present 3,000 spaces (2,000 off-street, 1,000 on-street), may enhance the relative competitiveness of the CBD with suburban shopping centers but it will probably further weaken the market for public transportation.

Social and Demographic Patterns

One of the reasons for the design of the experiment was the special nature of the area traversed by the bus routes. Incomes in the Census Tracts in the central parts of Lowell are lower than the city as a whole. In 1959, median family income in the city was \$5,900 as compared to \$6,300 in the state and \$6,600 in the city of Boston. In only one of the 17 census tracts included in the experiment area did the 1959 income level exceed \$6,000.

Housing patterns in the Lowell experiment area reflect the relatively low income levels. Most of the city's substandard housing is located on or near the bus routes included in the experiment. Rental levels are low, averaging less than \$44 per month per apartment in the census tracts traversed by the experimental routes. Most of the housing along the bus routes is multi-

family, two and three story wooden tenements. Only about 36 per cent of the dwellings are single family, owner occupied homes in the experiment area as compared to 65 per cent in outlying census tracts.

As can be anticipated, population densities along the routes are high, running at about 15 people per gross acre as compared to only seven people per gross acre in outlying census tracts. Because of this high density, 70 per cent of the city's population live within the 1.5 mile radius covered by the experiment and fully 54 per cent live within two blocks of the bus routes, the source of 90 per cent of bus riders on the experiment routes.

Because of its traditional emphasis on female-employing industries and an accompanying net outmigration of working age males, females outnumber males in Lowell by a wide margin. In 1960 there were 5,000 more women than men in this city of 92,000.

All of this imbalance is found in the over 35 age brackets, and especially in the over 65 age group. This predominance of females in the employed population is particularly marked in the census tracts served by experiment buses. In theory, large numbers of working women and a disproportion of middle-aged and older females should provide a good market for mass transportation.

However, the outward movement of manufacturing has converted many former female mass transit customers into automobile riders. It is known, for example, that the initial hesitations on the part of management of suburban electronics plants concerning the ability of female labor to commute in the absence of good mass transportation no longer exists. For the most part, the chartered buses and other company sponsored vehicles used to transport women to these plants have been discontinued. If retail

trade in the area becomes suburbanized, a substantial and increasing proportion of female shoppers, as well as female employees, the bulk of the experiment bus riders, may find their way to suburban shopping facilities.

Experiments in Progress:Berkshire Street Railway Company - Yellow Coach Lines

Operation of the demonstration project service of the Berkshire Street Railway Company commenced on March 11th, but was not operated by the carrier in accord with the contract schedules.

The initial results of the demonstration experiment were extremely encouraging and the MTC has arranged to maintain continuity of service for the experiment by entering into a new 60-day contract for the same service with Yellow Coach Lines, after it had received a temporary license from the Department of Public Utilities, the state regulatory agency. The Berkshire bus developments will be the subject of a special progress report to be issued in the late summer.

Brush Hill Transportation Company

The Brush Hill Transportation Company experiment began on April 22, 1963, providing a feeder service between Stoughton and the Route 128 Station of the New Haven Railroad in Canton.

The purpose of this experiment is to determine if a new bus linkage from improved rail service to a branch line community could attract a substantial number of patrons.

The town of Stoughton, whose population increased from 13,750 in 1955 to 16,330 in 1960, is served by a branch line of the New Haven Railroad. The only passenger service on this branch consists of two trains to Boston in the morning and two trains out at night. Prior to the bus company experiment, Brush Hill provided service hourly on the hour during the day to the MTA's Mattapan rapid transit station. The demonstration project buses provide hourly service approximately on the half hour to the railroad station at Route 128, where train

service to Boston (and also to Providence and points south) is available. In addition to a test of the response to improved service, this experiment also provides a test of the choice of passengers between alternative public transportation modes.

There has been limited response to the bus service between Stoughton and the Route 128 station partly because this experiment initially received little public attention, a deficiency which is being remedied with the assistance of the MTC staff.

At present most passengers apparently prefer to remain on the bus to the Mattapan station where a lower fare to downtown Boston is available.

Eastern Massachusetts Street Railway Company - Topsfield

A bus project to be conducted by the Eastern Massachusetts Street Railway Company to link the town of Topsfield with Boston and Maine service at the Salem Railroad Station commenced on June 24th.

The purpose of this experiment is to determine whether an express bus extension of an expanded reduced fare train service can be made attractive to residents of a new suburban community consisting largely of high income, two-car families.

Topsfield is over 20 miles from Boston. The population has more than doubled from 1950 to 1960 (1,412 to 3,351) and the new homes are mainly owned by Boston commuters.

The combined bus-rail service faces stiff competition: Route 1, the highway between Topsfield and Boston, is a multiple lane, divided road which offers a choice of bridge or tunnel access to Boston's central artery. However, Route 1 is generally heavily congested in rush hour periods.

Prior to the experiment there was virtually no direct public transportation

from Topsfield to Boston, but Salem, 10.6 miles away, is served by the improved demonstration project service of the Boston and Maine Railroad. Trains from Salem to Boston leave every half hour.

An hourly bus service is provided which leaves Topsfield at 7:30 AM to 8:30 PM. The buses operate over limited access highways for a substantial portion of the trip, with virtually no stops, and make immediate connections with trains at Salem. Boston-bound passengers ride the bus for about a half hour and ride the train for approximately another half hour.

Fitchburg and Leominster Street Railway Company

A series of six experiments in the Fitchburg and Leominster area was initiated by the Fitchburg and Leominster Street Railway Company on March 11th, 1963. Project #1, a new service to the Fitchgate Shopping Center, carried about 135 passengers per day in May, and passenger volumes increased almost nine per cent in May over April. This new service provides a significant mass transportation component in a territory designed for and up to now monopolized by the automobile. Figures for this project indicate that May revenues were equal to about one-half the cost of operation. This experiment could conceivably reach the breakeven point in the fall, if the current growth trend continues.

Although total revenues increased by almost 19 per cent in May, 1963 as compared to May 1962, passenger volumes on Project #2, new service to Lunenburg and Townsend and Project #3, new service to Ashby declined by approximately four per cent and 12 per cent respectively in May over April. This new service was provided to test the feasibility of attracting substantial numbers of riders to bus service between a central city and its expanding suburbs and also to better integrate the bus service with service provided by the Boston and Maine rail project.

Passenger volumes on Project #4, new bus service to industrial plants declined by 17 per cent in May over April. Part of this decline can be attributed to the advent of spring weather conducive to automobile usage and to the fact that some employees are on vacation schedules. Plants served by this new bus route are Crocker Burbank, Asher Pants and Hedstrom Union, with a total employment of approximately 3,000.

Passenger volumes increased substantially on Project #5 which has met with a much more vigorous response than the other projects. This test involves a virtual doubling of the frequency on the busiest main line of Fitchburg and Leominster's operations. Revenue in May reached a point approximately nine per cent over the May, 1962 level. Overall, total experiment revenues amounted in May to about a third of total experiment cost.

Table 11

Passenger Trends

Fitchburg and Leominster Railway Co.

March 11, 1963 through May 31, 1963

<u>Period</u>	<u>1/ 1962</u>	<u>2/ 1963</u>	<u>% Increase</u>
3/11 - 3/31	8,536.	9,447.	+ 10.7%
4/ 1 - 4/30	11,435.	13,618.	+ 19.1%
5/ 1 - 5/31	11,159.	13,267.	+ 18.9%

1. 1962-Represents one project Route #5 Main Line Service between Fitchburg and Leominster. As all other project routes are new service there was no revenue in 1962.
2. 1963-Represents revenue received on all project routes including all new service and both old and new trips on the increased service, project #5.

Source: Fitchburg and Leominster Railway Co.

Johnson Bus Lines

The Johnson Bus Lines experiment began on January 2, 1963. In this experiment, low density communities to the southwest of Boston are served with increased frequency, particularly the towns on the Blackstone and West Medway lines of the New Haven Railroad. Buses operate on a 33-mile route reaching from Milford into Boston. The low population density of this area would not support intensive transit service, but should theoretically offer a good area for bus service.

Since the start of this experiment, the (incremental) costs incurred by Johnson have been lower than the average for other bus companies because of greater utilization.

However, total experiment revenues in April amounted to only a third of the cost of the experiment. Table 12 indicates that the increase in revenues in April resulting from the 17 per cent gain in ridership totalled \$1,507. per month as compared to the gross monthly experiment cost of \$5,521.

Table 12

Passenger Trends

Johnson Bus Lines

Revenue Compared with Comparable Periods in 1962

<u>Period</u>	<u>1962</u>	<u>1963</u>	<u>Increase</u>	<u>% Increase</u>
January	\$8,485.	\$ 9,851.	\$ 1,366.	+ 16%
February	7,269.	8,999.	1,730.	+ 24%
March	8,736.	10,130.	1,394.	+ 16%
April	8,742.	10,250.	1,507.	+ 17%

Source: Johnson Bus Lines

Massachusetts Northeastern Transportation Company

The Massachusetts Northeastern Transportation Company experiment was begun on March 11, 1963. Under this experiment the Company provides five bus routes, one between industrial plants and downtown Haverhill (pop. 46,000), one between Haverhill and Newburyport (pop. 14,000) and three within the Newburyport area. As indicated in Table 13, there has been an encouraging increase in revenue figures over the corresponding periods in 1962. The 9.3 per cent increase for the three weeks in March was followed by gains of 18 per cent for the months of April and May. However, no appreciable change occurred between April and May. In May 1963 total revenues from the experimental routes amounted to about 12 per cent of the approximately \$2,000 monthly cost of the experiment. However, results vary substantially on the project lines with one, the Haverhill-Newburyport route showing a revenue increase of over 55 per cent over May 1962.

Table 13

Passenger Trends

Massachusetts Northeastern Transportation Co.

March 11, 1963 through May 31, 1963

<u>Period</u>	<u>1962</u>	<u>1963</u>	<u>% Increase</u>
3/11 - 3/31	\$ 1,381.	\$ 1,509.	+ 9.3%
4/ 1 - 4/30	2,108.	2,487.	+18.0%
5/ 1 - 5/31	2,118.	2,404.	+18.2%

Source: Massachusetts Northeastern Transportation Co.

The MTC staff will interview a representative sample of persons utilizing parking facilities at major industrial plants in the area to explore the feasibility of increasing patronage on the experiment bus service.

Service Bus Line, Inc.

The Service Bus Line experiment began on December 17, 1962 serving a densely populated low-to-moderate income area between the city of Malden and the city of Revere adjacent to East Boston. The experiment provides a new three mile service with a 30-minute frequency to connect with an MTA transit station. The new route extends public transportation to a section of the metropolitan area formerly served by a slow bus service involving two changes and extra fares. It also helps to generate additional revenue for the M.T.A.

The area served by this experiment is experiencing considerable new home construction with a sharp increase in population having been noted during the past few years.

Under the experiment, fares have been reduced to 10¢, 5¢ lower than the regular fare on the Company's existing routes. Passengers pay an additional 20¢ for an MTA transit ride to downtown Boston and other points. With a 30¢ total fare for this combined bus company - MTA service it is identical with the combined MTA bus-MTA transit fare.

Considering that this is an entirely new bus route, the rate of passenger increases as illustrated in Table 14 is extremely encouraging. Total volume has almost doubled since the initial weeks of the experiment. As of May, revenues were running at about two-thirds of the monthly cost of the experiment.

This project may indicate the feasibility of providing good feeder bus service to linking with rapid transit lines in densely populated area.

Table 14

Passenger TrendsService Bus-Line, Inc.Four-week Intervals

December 17, 1962 through May 25, 1963

12/17 - 1/5* ¹ /	3689
1/7 - 2/7	7680
2/4 - 3/2*	7245
3/4 - 3/30	8549
4/1 - 4/27	8973
4/29-5/25	8964

Weekly count of passengers carried between Revere Beach Station and Linden Square both directions (new service).

*Excluding holidays - December 25, January 1 and February 22.

1-Three weeks only.

Source: Service Bus Company - daily counts taken from drivers' daily reports.

Four Proposed Bus Experiments:Barre Bus Company

The MTC has entered into a contract with the Barre Bus Company for a bus service experiment to begin on July 1. This improved service links the the suburban communities of Rutland and Holden with downtown Worcester. In addition, it provides improved service to the U.S. Veterans Hospital and the Massachusetts State Sanitarium in Rutland.

Eastern Massachusetts Street Railway Company - Fall River

HHFA approval has been requested by the MTC for a proposed contract with the Eastern Massachusetts Street Railway Company for an experiment with increased service on certain routes in the city of Fall River.

For the past year, the city of Fall River (1960 population 100,000) has experienced a great upheaval in traffic flow due to the construction through the city of Interstate 195. This construction work split existing bus routes in several places, necessitating frequent detours and causing confusion to the public. Partly as a consequence, Eastern Mass. has experienced a steady decline in passengers during the past year on its Fall River operation.

This proposed experiment is being developed with the purpose of testing the feasibility of attracting a greater number of riders to the existing bus service in the city by substantially increasing the number of trips in and out of the downtown business district. With an increased number of trips made available, a test will be conducted to determine if a substantial number of automobile passengers can be diverted from downtown streets already abnormally congested because of the construction of Interstate 195 through the heart of downtown Fall River. Thus this experiment will test the consequences of the adoption of a policy of increasing bus service in a city which is substantially disrupted by highway construction.

To further enhance the attractiveness of the improved service, Eastern Mass. will initiate a common loading point system in downtown Fall River. While this will necessitate a slightly longer distance on some routes because of one-way streets, its advantages far outweigh any added travel time. Buses for all routes will be available at a single location.

Another novel feature of the proposed Fall River experiment is the institution of a coordinated Sunday bus service. Only rarely in recent years has a well-designed Sunday bus service been instituted at the same time other major changes are being made in weekday service.

Saugus Transit Company

HHFA has approved a demonstration project to be conducted by the Saugus Transit Company involving a linkage to the Service Bus Line's Revere experiment. The latter connects local dormitory suburbs to an MTA station. Service under this experiment will begin as soon as approval for this new route has been granted by the Massachusetts Department of Public Utilities.

Short Line, Inc.

HHFA approval has been requested for a proposed project with the Short Line, Inc. for a demonstration project involving increased service on a portion of the Short Line route between Uxbridge and Worcester. Six new round trips on week days and five new round trips on Saturdays will be added to provide hourly service between the two points.

Worcester (1960 population - 187,000) is the major location of employment, shopping and schools for the communities served by this bus route. In addition to Worcester these communities are Millbury, Saundersville, Farnumsville, Northbridge, Whitinsville and Uxbridge.

MTA Demonstration Experiments

The MTC has designed a series of demonstration experiments involving MTA bus lines and parking lot fees to link with the MTA's efficient rapid transit system. The parking lot experiments were begun on the first of April, while the bus experiments began on June 24, 1963.

Two bus experiments provide circumferential bus routes which make possible a substantial bus ride for a single 10¢ fare. Cross movement in outlying parts of Boston has been made easier without the necessity of traveling into the center of the city via transit or paying multiple bus fares.

In addition, the service on one existing MTA route, from the North Station to the South Station, has been increased and a new route has been established from North Station to the research, educational and industrial complex in the M.I.T. area. Both of these routes add to the attractiveness of the improved B & M and New Haven rail service.

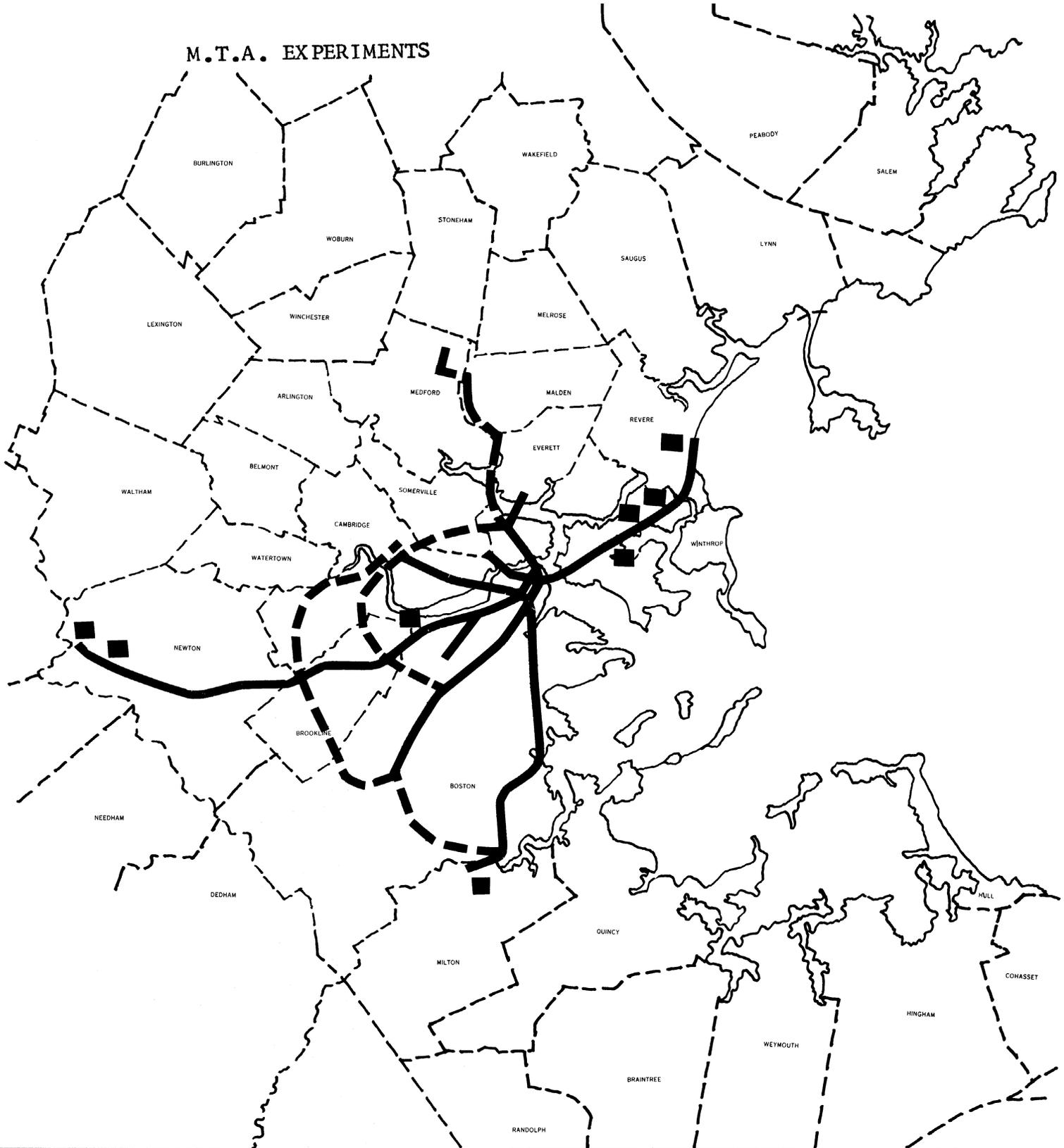
An increased service is also provided for the bus route between Sullivan Square and the Medford-Stoneham line via a multi-lane highway. The headways have been reduced from eleven minutes to five minutes in midday (9:17 a.m. to 4:00 p.m.), from twenty minutes to ten minutes from 7:00 to 9:00 p.m., and from thirty minutes to ten minutes after 9:00 p.m. This line provides feeder service to rapid transit from a densely populated suburban area.

MTA Parking Lot Experiments

On April 1, 1963, parking fees at eight MTA rapid transit parking lots were reduced from 35¢ down to 10¢. When the initial results became available, it appeared that the experiment had achieved a significant impact.

In May, 1963 as compared to May, 1962, percentage gains in patronage at the eight lots varied from ten per cent at Woodland to increases of more than 100 per cent at Wood Island Park, Butler Street, Suffolk Downs and Beachmont.

M.T.A. EXPERIMENTS

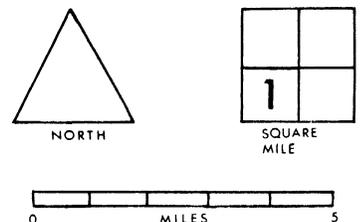


M T A EXPERIMENTS

-  RAPID TRANSIT LINES
-  INCREASED BUS SERVICE
-  NEW BUS SERVICE
-  REDUCED FEE PARKING LOTS

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FIGURE 7



The overall increase for the month of May for eight lots as compared to May, 1962 was an encouraging 63 per cent. In contrast patronage losses occurred at most MTA lots not included in the experiment.

If the trends established in this parking experiment continue, the MTA will receive substantial additional revenues, and rush hour congestion on roads leading to downtown Boston will be reduced by the equivalent of several lanes of highway.

During May, the second month of the MTC-MTA parking lot demonstration, the trend established during the month of April continued: although some commuters switched from lots charging 35¢ to lots offering the new 10¢ rate, the loss in patronage at higher priced parking lots was more than offset by the gain at lower priced locations. Overall, the number of cars parked at all MTA lots in May, 1963 rose 17 per cent over May, 1962, primarily because of the major gains at experimental parking lots. This gain would have been even higher had it not been for the almost total vandalization of parking meters at three of the lots which caused an important loss in revenue. The number of cars parked at all MTA lots in May, 1963 was 79,302 compared with 66,870 in May, 1962. In producing this total an increase of 18,000 automobiles at the eight experiment lots was partially off-set by a reduction of 6,000 cars on other lots located on the Riverside, Revere and Ashmont-Mattapan lines. At the rate of 1.3 persons per car, this net increase in cars parked represents a gain of over 17,000 additional one-way rapid transit fares per month.

The following table compares parking at project-related MTA lots in May, 1963 with May of 1962:

Table 15

Volume in MTA Parking Lots

May 1962 vs. May 1963

* MTC REDUCED FEE LOTS

	Cars May <u>1962</u>	Cars May <u>1963</u>	Increase (Decrease)	% Change	May 1963 <u>% Utilization</u> ^a
Riverside Line					
*Riverside	7,853	10,175	2,197	+ 25%	25%
*Woodland	7,595	8,456	861	+ 10	96
Waban	695	520	(175)	- 25	50
Elliot	972	713	(259)	- 27	50
Chestnut Hill	713	648	(65)	- 10	46
Beaconsfield ^b	63	6	(57)	- 99	1
Brookline Hills ^b	25	3	(22)	- 88	1
*Brookline Village	2,073	3,824	1,769	+ 85	114 ^c
Longwood ^b	<u>58</u>	<u>0</u>	<u>(58)</u>	<u>-100</u>	0
	19,867	24,220			
Net Change:			+4,191	+ 22%	
Revere Line					
Wonderland	9,424	6,392	(3,032)	- 32%	53%
Ocean Avenue	3,795	1,724	(2,071)	- 55	40
*Beachmont	1,608	4,228	2,620	+162	112 ^c
*Suffolk Downs	1,120	2,280	1,160	+104	51
*Orient Heights	2,885	4,572	1,687	+ 59	88
*Wood Island Pk.	<u>4,012</u>	<u>8,755</u>	<u>4,743</u>	<u>+117</u>	103 ^c
	22,844	27,951			
Net Change:			+5,107	+ 22%	
Ashmont-Mattapan Line					
Ashmont (estimate)	Not available				
Cedar Grove	543	37	(506)	- 93	5%
*Butler Street	2,352	5,880	3,528	+150	83
Milton	676	503	(173)	- 25	67
Central Avenue	436	356	(80)	- 18	70
Mattapan	<u>3,300</u>	<u>3,784</u>	<u>484</u>	<u>+ 15</u>	52
	6,707	10,560			
Net Change:			+ 3,253	+ 48%	
Total net change eight experiment lots			+18,612	+ 63%	
<u>Total Net Change</u> - Project Related Lines ^a			+13,313	+ 27%	

Source: (see next page)

Source: MTA, MTC

- a) Theoretical capacity rated at 300 occupancies per space per year or 25 occupancies per month.
- b) Nearly all parking meters at these locations have been vandalized and are inoperative and thus the reported decrease is much greater than the actual decrease.
- c) Parking in excess of capacity due to more than one occupancy per day.
- d) Three MTA lots at Lechmere, Sullivan Square and Forest Hills which changed by only one per cent are not included in tabulation.

In the past two years, (1961 and 1962), parking in May has risen by about 2,500 cars over April as motorists returned to a "park-and-ride" combination. This trend was repeated in May but the increase was about four per cent greater than in 1962. Especially significant was the improvement on the Riverside line where in 1962 parking had decreased by about 400 cars from April to May, while this year parking increased by about 400 cars in the two-month period.

Table 15 presents comparisons of parking volume between March, 1963 and April and May of 1962. Analysis of changes from this pre-experiment base month provides confirmation of the year-to-year changes from comparable months of 1962. March is also a more accurate base for evaluating trends on the Riverside and Woodland lots since replacement of the Grove Street bridge over Route 128 in May of 1962 apparently resulted in a shift in about 2,000 cars per month from Riverside to Woodland.

Table 16 Changes in MTA Parking- Demonstration Lots

	March, April and May, 1963 ^a		
<u>Location</u>	<u>March</u>	<u>April</u>	<u>May</u>
Riverside	7,673	10,175 34% ^b	10,050 32% ^b
Woodland	6,546	8,200 22%	8,456 29%
Brookline Village	2,269	3,440 51%	3,842 65%
Butler Street (Lot paved May 3rd)	2,245	4,782 113%	5,880 160%
Wood Island Park	3,458	7,793 128%	8,755 150%
Orient Heights	2,631	4,263 62%	4,572 74%
Suffolk Downs	787	1,894 134%	2,280 190%
Beachmont	1,450	3,772 160%	4,228 190%
Total	27,059	44,309 64%	48,036 78%

a) Reduced parking fees introduced April 1, 1963

b) Percentage increases computed from March base.

Source: MTA, MTC

It is interesting to note that there was almost no change in parking volume at the eight demonstration lots from May, 1962 (27,146) to March, 1963 (27,059), but the introduction of the reduced 10¢ parking fee in April, 1963 produced a dramatic increase of 63% when compared with both the same month a year ago or the last pre-experiment month.

At Butler Street, the increase in May corresponds almost exactly with the

blacktop surfacing of 50 spaces which was completed by the MTA Engineering Department on May 3rd. Also, although patronage at the Butler Street lot has increased by 3,600 cars per month, there has apparently been little or no attrition at the nearby Columbia Road parking lot. Another interesting point is the 15 per cent increase in patronage at the Mattapan lot where the parking fee has not been reduced.

The most substantial increases have taken place along the Revere line. Motorists in this area driving to Boston must pay 50¢ in tunnel tolls, a cost equal to the total "park-and-ride" fee. Major increases in patronage occurred at Wood Island Park, Suffolk Downs, and Beachmont. A more conservative gain was registered at Orient Heights. It seems likely that the relatively long walk from the station to the Orient Heights parking area may make this location less attractive to motorists.

Table 17 presents a comparison of the gross income from MTA park-and-ride patrons in May, 1962 and May, 1963. May, 1963 gross income from patrons for all parking lots on the reduced fee project lines was only about \$700 lower despite the lower parking fees on the eight experiment lots.

On the Riverside line, gross income in May, 1963 is only \$200 lower than in May, 1962. If the vandalized, inoperative parking meters at the Beaconsfield Brookline Hill and Longwood lots were restored to working order, it is probable that the gross May income on this line would actually be greater despite the lower parking fee lots than income in May, 1962.

On the Revere line, an additional ten per cent in parking patronage would be necessary to bring May, 1963 income up to the level of May, 1962.

It is especially interesting to note that the gross income on the Ashmont-

Mattapan line was actually greater in May, 1963 under the lower parking rate than it was in May, 1962. This is primarily because of the sizable income gain from increased MTA transit patronage at the reduced-fee Butler Street lot.

On the basis of the May, 1963 data, total parking patronage must be increased by only an additional five per cent to raise gross income from parking fees and transit fares to 1962 revenue levels.

Table 17 Estimated Change in MTA Parking Lot Gross Income

May, 1962 - May, 1963

Parking lots - Riverside line	No. of	Park and	Gross	No. of	Park and	Gross
	Cars	Ride	Income	Cars	Ride	Income
	May	Rate	May	May	Rate	May
	1962	1962	1962 ^a	1963	1963	1963 ^a
*Riverside	7,853	\$1.15	\$10,916	10,050	\$.90	\$11,457
*Woodland	7,595	1.15	10,557	8,456	.90	9,638
Waban	695	1.15	966	520	1.15	723
Elliot	972	1.15	1,351	713	1.15	991
Chestnut Hill	713	.95	806	648	.95	732
Beaconsfield	63	.95	71	6	.95	7
Brookline Hills	25	.95	28	3	.95	4
*Brookline Village	2,073	.95	2,342	3,824	.70	3,365
Longwood	58	.95	65	0	.95	0
Total	20,047		\$27,102	24,220		\$26,917
Parking lots -Revere line						
Wonderland	9,424	.75	8,198	6,392	.75	5,562
Ocean Avenue	3,795	.75	3,121	1,724	.75	1,500
*Beachmont	1,608	.75	1,398	4,228	.50	2,621
*Suffolk Downs	1,120	.75	974	2,280	.50	1,414
*Orient Heights	2,885	.75	2,510	4,572	.50	2,834
*Wood Island Park	4,012	.75	3,940	8,755	.50	4,428
Total	22,844		\$20,141	27,951		\$18,359
Parking lots - Ashmont - Mattapan line						
Ashmont - Not available						
Cedar Grove	543	.75	472	37	.75	32
*Butler Street	2,352	.75	2,046	5,880	.50	3,645
Milton	676	.75	588	503	.75	438
Central Avenue	436	.75	379	356	.75	210
Mattapan	3,300	.75	2,871	3,784	.75	3,292
Total	7,307		\$ 6,356	10,560		\$ 7,616
MTC Parking Experiment						
Project Lines -						
Total	50,198		\$53,599	62,731		\$52,892

a) Calculated at the rate of 1.3 passengers per car

Source: MTA-MTC

Interviews with Patrons at "Park-and-Ride" Stations

In late May and early June, MTC staff members conducted extensive survey-interviews at each of the eight demonstration parking lots. More than ten per cent of the daily "park-and-ride" patrons were interviewed along with a roughly equal sample of persons arriving at the stations by bus and on foot. Interview results were divided into "peak" or rush hour commuters, and "off-peak" with 9:30 a.m. set as the arbitrary peak limit for inbound passengers.

As a result of this survey it is possible to develop a profile of the typical peak hour and off-peak hour user of MTA parking lots.

The typical inbound rush hour "park-and-ride" commuter is a male, who drives about four miles to an MTA parking lot. He uses the parking lot Monday through Friday, his destination is downtown Boston, and he is on his way to work.

The typical off-peak hour MTA parking lot patron is a female, who drives about three miles to an MTA parking lot. She uses the parking lot about one day a week, her destination is downtown Boston and she is on a shopping trip. On the Revere line, there is also a pattern of "park-and-ride" commuting by men working in downtown Boston on shifts other than the usual nine to five pattern.

The survey also covered commuters arriving at MTA stations by bus and on foot. A similar pattern of men traveling downtown to work, and women traveling downtown for shopping is indicated. "Walk-in" passengers in the sample walked four blocks to the station, on the average.

In terms of distance traveled to MTA parking lots, the average reported by parkers at Riverside was higher than at other lots; off-peak patrons at the Riverside lot drove an average of ten miles to the lot with definite groupings at seven and ten miles, indicative of substantial patronage from the Wellesley and Framingham areas.

Parking at the nearby Woodland lot was more clearly local in origin. On

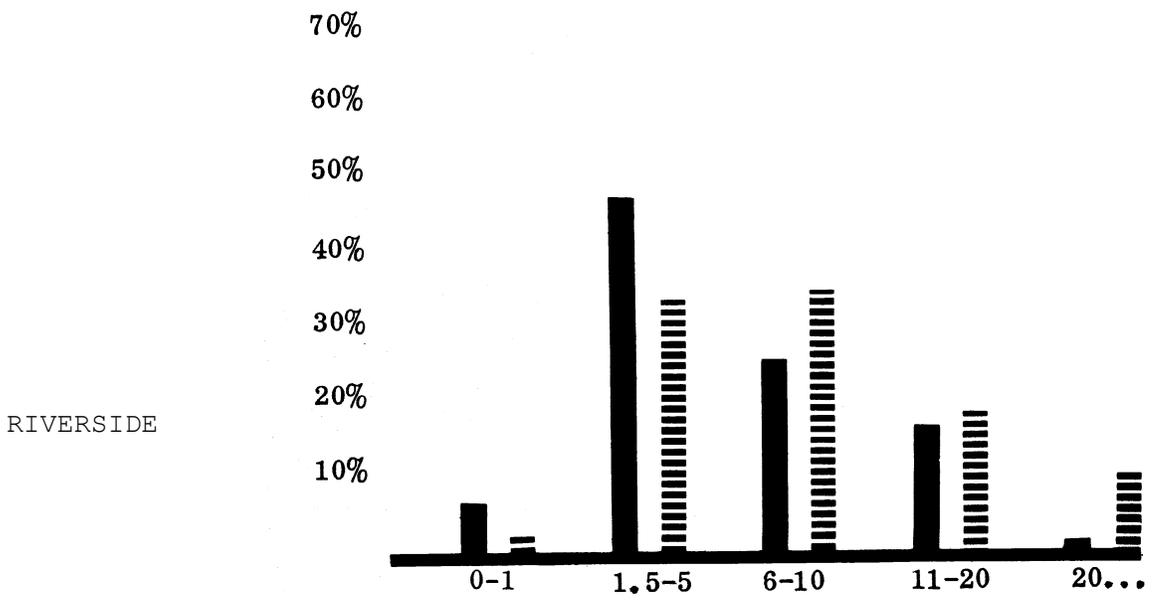
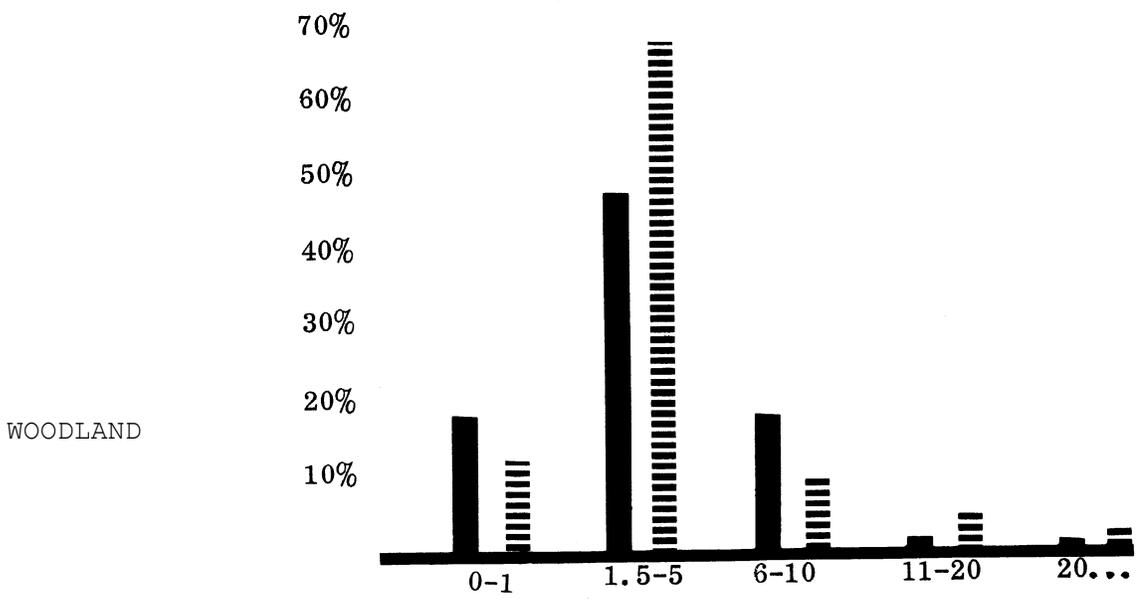
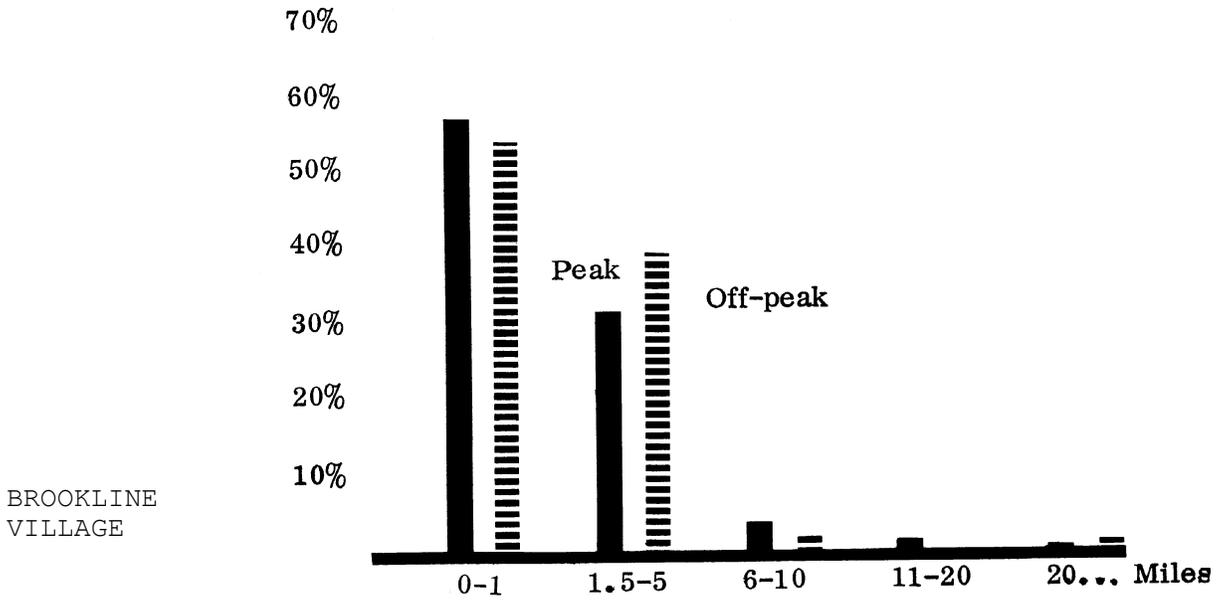
the average passengers interviewed at Woodland reported driving two to five miles to the lot. At Brookline Village the majority of parkers drove two miles or less to the MTA lot.

At the Butler Street lot, there was a wide range in the distance driven to the MTA lot with trips ranging from two miles to as much as 30 miles.

On the Revere line the lots at Beachmont and Suffolk Downs showed a wide divergence in driver origins with trips ranging from two to 20 miles. There was a grouping of drivers at two miles which probably originates from Saugus.

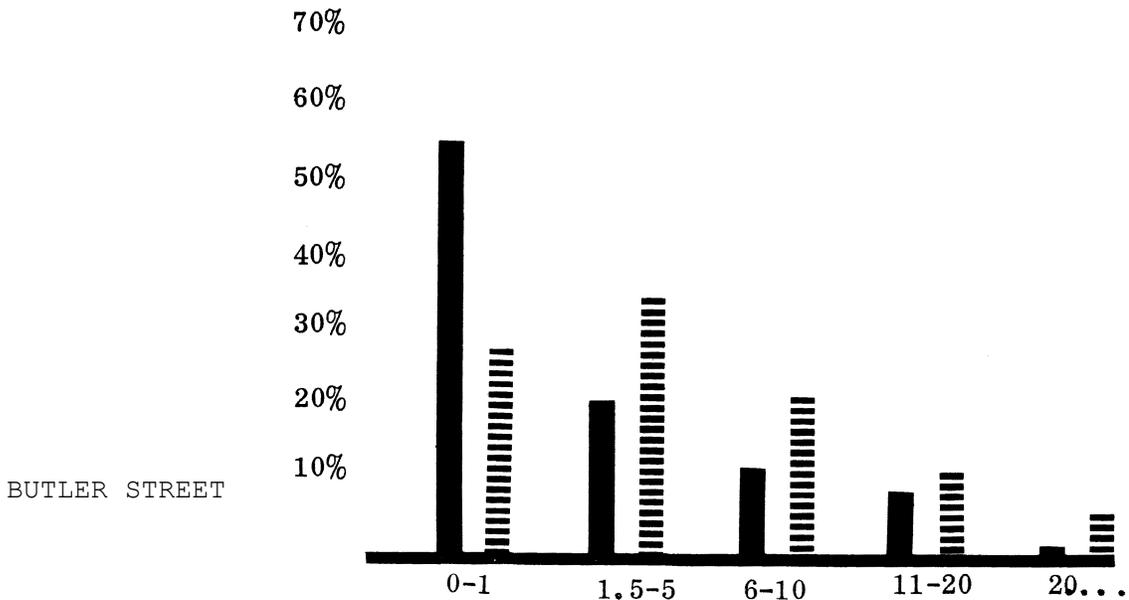
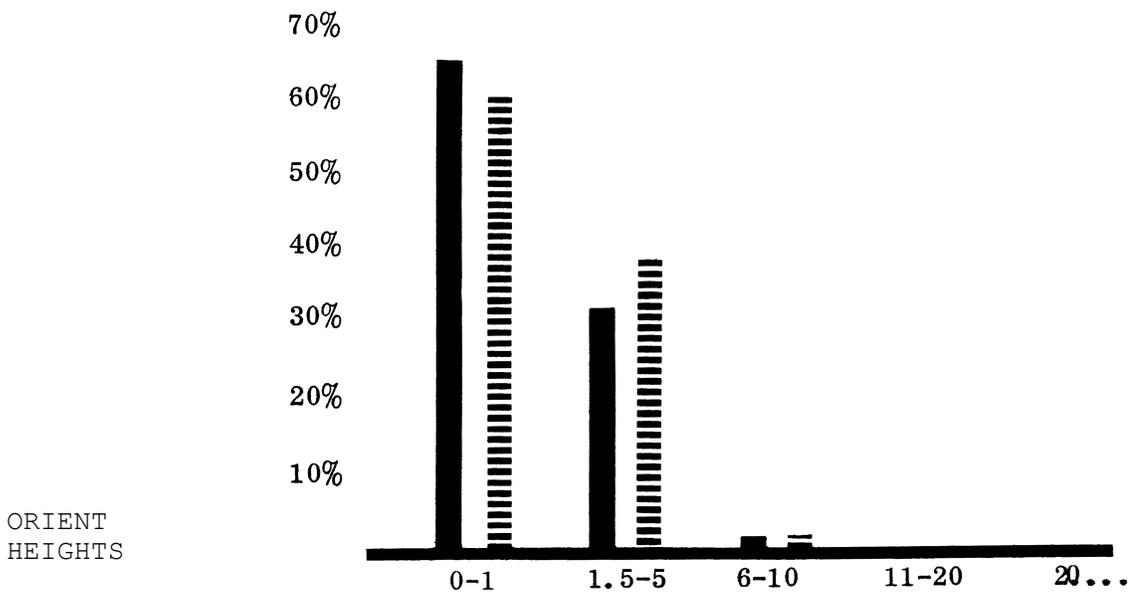
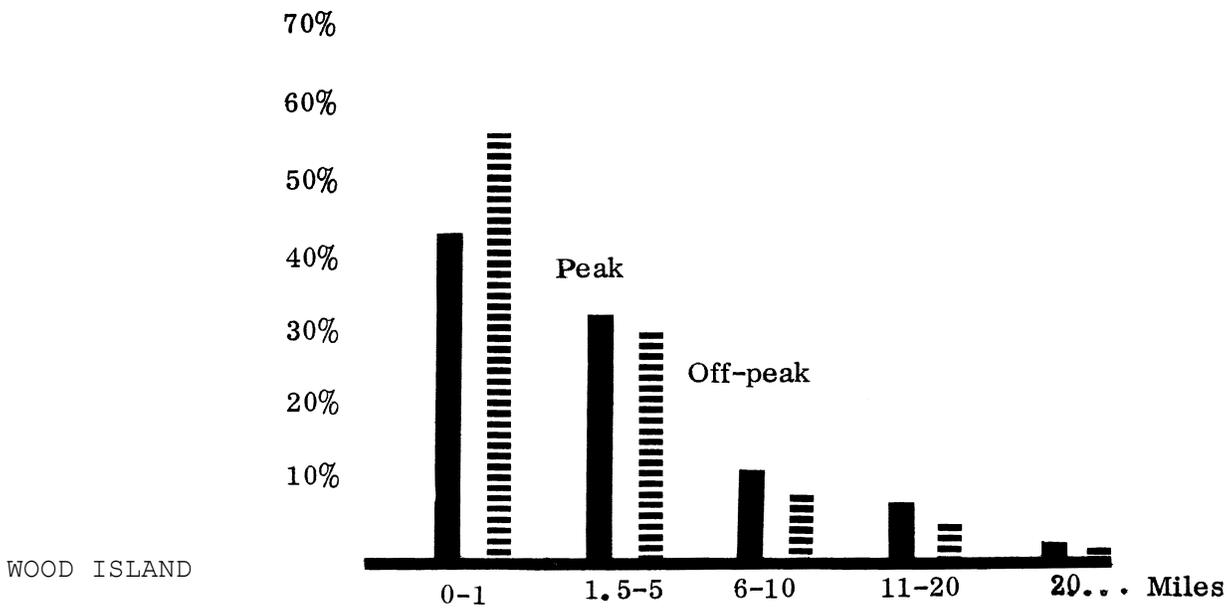
Parking at Orient Heights was more local in origin; most parkers traveled one or two miles to the lot. These passengers presumably drive from Winthrop and Revere.

At Wood Island Park a wide range in distance traveled was reported: two to 30 miles. Apparently, patrons from outlying communities tend to bypass the lot at Orient Heights in preference for Wood Island Park. This would seem to be due to the relatively convenient access to Wood Island Park from the McClellan Highway as compared to the lot at Orient Heights.



DISTANCES TRAVELED TO MTA STATIONS
Source: MTC Survey, Spring 1963

FIGURE 8



DISTANCES TRAVELED TO MTA STATIONS
 Source: MTC Survey, Spring 1963

FIGURE 9



Riverside Station

ENTRANCE
← MTP →
RAPID TRANSIT
TO BOSTON
PARKING



"Service is good
but the ride is rough."



M. T. A. Experiment
Parking Lot

"I like the service very much."



Woodland Station



"No saving with reduced parking fee
Government is paying the difference."

Community Relations and Liaison Program

The MTC is conducting a continuing community relations program utilizing the full resources of the mass media to keep the public informed of the progress of the demonstration program.

More than 40 news releases have been issued since November, 1962. These releases have received wide coverage by all media, including radio, television, daily and weekly newspapers and periodicals.

A number of formal and informal meetings at the local level have been conducted during the course of the demonstration program to maintain a two-way flow of communication between the MTC and the communities within the experiment area.

Up to the end of June, seven area conferences have been sponsored by the MTC in the communities in the Boston and Maine Railroad area: Hamilton, Gloucester, Rockport, Newburyport, Beverly, Salem and Lynn.

In addition, five local meetings have been conducted in Westwood, Medfield, Milford, Medway and Millis with respect to bus company experiments.

The MTC has also maintained close liaison with a number of transportation agencies in other parts of the country to exchange and share new ideas and techniques, and to keep these agencies up to date on the progress of the program.

The MTC has also maintained technical liaison with the staff of the Boston Regional Planning Project to ensure that the results of the Demonstration Program are available in ample time to assist in guiding the Planning Program, and to attempt to secure planning materials from the Planning Project before the conclusion of the Demonstration Program.

The MTC has worked closely with community transportation committees in the Boston Region, including some committees which have been created as a

consequence of the Demonstration Program. Some transportation committees, of which the committee in Canton on the New Haven line is an outstanding example, have indicated their intention of pressing for a unified multi-community transportation policy aimed at continuing commuter rail service.

METHODS OF SECURING EXPERIMENT RESULTS

1. Railroads

Boston and Maine RailroadTrainmen Counts

A count of passengers by each train (inbound, before train arrives at North Station) (outbound, when train leaves North Station) by trainmen is maintained on a daily basis by the company

Train Audits

The Boston and Maine lines are grouped into four groups, each group is being audited in rotation, with the result that each group is audited once every four weeks. The audits will provide full details, by stations and lines for number of passengers and revenues.

New Haven RailroadTrainmen Counts

A count of passengers by each train (inbound, before train arrives at South Station) (outbound, when train leaves South Station) by trainmen is maintained on a daily basis by the Company.

2. Bus Companies

Berkshire Street Railway Company - Yellow Coach Lines

A daily count of total revenues for each month of operation is maintained by the Company. During one week each month, the Company records passengers handled and between points travelled and revenue taken in by individual trips. These counts are spot-checked by MTC staff during the experimental period.

Brush Hill Transportation Company

A daily count of total revenues each month of operation is maintained by the Company. During one week each month, the Company records passengers handled and between points travelled and revenue taken in by individual trips. These counts are spot-checked by MTC staff during the experimental period.

Eastern Massachusetts Street Railway Company

A count of passenger and fare revenues by routes and by trips is maintained on a daily basis by the Company, and is spot-checked by MTC staff during the experimental period.

Fitchburg and Leominster Street Railway Company

A count of passenger and fare revenues by routes and by trips is maintained on a daily basis by the Company, and is spot-checked by MTC staff during the experimental period.

Johnson Bus Lines

A count of passengers by sections of the route and by trips is maintained by the Company for one day of each calendar week, varying the day from week to week. These counts are spot-checked by MTC staff during the experimental period.

Massachusetts Northeastern Transportation Company

A daily count of total revenues each month of operation is maintained by the Company. During one week each month, the Company records passengers handled and between points travelled and revenue taken in by individual trips. These counts are spot-checked by MTC staff during the experimental period.

Service Bus Line, Inc.

A count of passenger and fare revenues by routes and by trips is maintained on a daily basis by the Company, and is spot-checked by MTC staff during the experimental period.

CONSULTANT SERVICES

To provide necessary technical assistance in conducting complex portions of the demonstration project the MTC is employing three consulting firms. These firms assist the MTC staff in such areas as formulation of experiments, contract negotiations with carriers, analysis of operating results, evaluation of cost accounting methods and field surveys of passengers.

1. In December, 1962 the MTC engaged the firm of Systems Analysis and Research Corporation to assist the MTC in supervising, evaluating and reporting on the railroad, Metropolitan Transit Authority and bus demonstration project. SARC is to:

- (a) Review and analyze data respecting present service and revenue patterns for the participating railroads and bus companies and the MTA;
- (b) Assist in analysis, negotiation and inspection of the demonstration experiments and identify and recommend the specific information which each participating railroad and bus company and the MTA should obtain to permit adequate control of the experiments and to help in measuring the results;
- (c) Determine the costs of the demonstration services provided by the participating bus companies and the MTA;
- (d) Analyze and evaluate the results of the bus and MTA demonstration experiments.

2. In February, 1963 the MTC employed the management consulting firm of McKinsey & Company, Inc. to render professional advice and assistance in connection with the railroad demonstration phase of the Commission's program. McKinsey and Co. will assist the MTC in developing a more precise

knowledge of the costs of railroad commuter service than can be determined from the ICC system of cost allocation to passenger and freight service. The firm will also help the MTC in determining from the experiments, the gains and losses in commuter traffic and revenues and the costs associated with varying levels of service and fare structure; McKinsey will also assist in developing analytical tools and methods to predict and measure the costs of commuter train operation over specific routes under varying service conditions and fares.

McKinsey & Company, Inc. is undertaking the following projects for the MTC:

- (a) Analyze the effect of past changes in frequency of service, fare increase, and other service conditions on the level of passenger traffic as a base against which to measure and correlate the results of the railroad experiments.
- (b) Identify from the records of each of the railroads participating in the program, the costs assignable to commuter service and those costs that could be avoided if commuter service were discontinued.
- (c) Identify for the Boston and Albany branch of the New York Central Railroad, to the extent records are available to the MTC, the costs assignable to commuter service and those costs that could be avoided if commuter service were discontinued.
- (d) Determine the variability in commuter service costs as a guide to identifying the incremental costs involved in providing varying levels of service on specific routes.
- (e) Establish a basis for predicting the effect on costs of variations in the level or frequency of service.

3. In April, 1963 the MTC engaged the firm of Joseph Napolitan Associates, Inc. to survey Boston and Maine commuter passengers. Results of the survey have been reported above in the Analysis of the B & M Experiment.



"There should be more frequent service."



"Always liked Riverside."



"I'm new to Boston.
I think the service
is excellent. It's
better than New York."



"I think this service
is terrible."



"The service is good but
we need cleaner cars."



"Excellent direct service
to Boston."

