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THE
COMMONWEALTH OF MASSACHUSETTS
MASS TRANSPORTATION COMMISSION

# DEMONSTRATION PROJECT PROGRESS REPORT NO. 5

## TENTATIVE CONCLUSIONS

MTC

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# 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 is connection with highway, transportation, land use and urban renewal and development studies. The commission shall from time to time make such recommendations to the government and the general court for the coordination of highway and mass transportation program and for the development of integrated plants 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 onTransportation 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 in endeavoring to develop a practical way of implementing basic long-range federal policy objective 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. Dr. Joseph F. Maloney, Executive Director of the MTC, is responsible for all publications, reports, field studies and staff recommendations of the Commission.

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

DR. JOSEPH F. MALONEY
EXECUTIVE DIRECTOR

November 22, 1963

Mr. John C. Kohl
Assistant Administrator for Transportation
Housing and Home Finance Agency
1626 K Street, N. W.
Washington, D. C. 20410

Dear Mr. Kohl:

This Fifth Progress Report is submitted twelve months after the initiation of the first MTC-HHFA experiment, and ten months after the start of the large Boston and Maine Railroad experiment. Because of the urgent need to present comprehensive analyses in some depth for use by the General Court and the Governor, this Report contains preliminary staff conclusions and suggested criteria for a new comprehensive public transportation policy for the Commonwealth.

The analyses are based on a review of the experimental data on staff and consultant studies, and on discussions with responsible carrier officials.

The suggested criteria for a new comprehensive policy have also been discussed with responsible professional leaders in transportation, finance and public administration. The proposed approach is now undergoing intensive review by staff, consultants, elected officials and civic leaders. In addition, outside analysis and advice are being obtained.

The purpose of this formulation is to facilitate community discussion and not to prejudge the final conclusions and recommendations to be made by the full Mass Transportation Commission after the termination of the entire project.

We believe that the publication of this Fifth Progress Report and consequent community discussion - and possibly executive and legislative decisions - before the last experiment is terminated will give the final report greater depth and perspective, and more widespread utility in shaping public policy in the nation.

Very truly yours,

Joseph F. Maloney
Executive Director

JFM/d

# THE COMMONWEALTH OF MASSACHUSETTS

# MASS TRANSPORTATION COMMISSION

## PROGRESS REPORT NO. 5

## DEMONSTRATION PROGRAM

## TENTATIVE CONCLUSIONS
## STAFF REPORT

DR. JOSEPH F. MALONEY - - - - - - *Executive Director*

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.

# THE COMMONWEALTH OF MASSACHUSETTS

# MASS TRANSPORTATION COMMISSION

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# TENTATIVE POLICY RECOMMENDATIONS

The knowledge gained and principles established by the MTC Demonstration Project indicates that a fundamentally new comprehensive public policy for public transportation is required for the maintenance and improvement of highly valuable public transportation services throughout the Commonwealth. The adoption of such a policy would serve to strengthen the economic revitalization of the Boston region and the general welfare of the entire Commonwealth and would involve a considerably smaller governmental expense than that which would shortly follow from the continuation of the past 15-year trend of deterioration and decline of public transportation services.

An enlightened comprehensive public policy in public transportation should include:

1. Fundamental reorganization of basic public transportation institutions and services, including design of a more realistically defined Greater Boston urban region for public transportation purposes.

2. Relief from antiquated state taxes for private bus companies and school bus companies, coupled with local governmental assumption of some responsibility for the preservation and improvement of local public transportation services.

3. Purchase by the Commonwealth of vastly improved patterns of continued services from the Boston & Maine and New Haven Railroads for a definite but limited period not to exceed five years.

Briefly, the MTC demonstration experiments and the related specialized studies have proven:

1. The possibility of reversing recent trends and increasing public use of public transportation by selective service improvements and fare adjustments, and

2. The desirability and practicality of retaining and improving existing public transportation facilities as an efficient and beneficial use of public resources.

More particularly, the MTC experimental results to date have demonstrated that:

1. Continued railroad passenger volumes can be substantially increased by improved service patterns, with a consequent lessening of automobile congestion in the core of the urban region. (In October 1963, Boston & Maine passenger volume was 37 per cent higher than in October 1962, completely reversing an established annual attrition rate of eight per cent).

2. Rapid transit passenger volumes can be increased by effective marketing of parking spaces on and near rapid transit lines at a net increase of revenue for the transit company. (In October 1963, the MTA received additional net income in excess of $15,000 by virtue of selective price reduction at some parking lots).

3. Certain specialized bus services in and near the core of the urban region can be economically improved so as to meet significant public needs. Three MTA experiments are at, or soon will be near the break-even point. These are the MTA North Station-South Station downtown, increased frequency, bus service; the new Outer Circumferential bus service at a radius approximately five miles from the core center; and the Commonwealth-Boston College parallel local bus and express reserved right-of-way trolley experimental services.

4. Some private bus company service can be economically improved by new and extended routes and increased frequency. (The Service Bus Line new service between Linden Square, Malden and the rapid transit MTA station at Revere and the Short Line increased service between Milford and Boston will be substantially continued on a post-experimental basis).

This Fifth Progress Report includes a discussion of basic policy criteria, background materials and graphics, analyses of planning environment and experimental data in some detail.

The MTC Demonstration Project experiments will all be terminated by the end of March 1964. Since the analytical process is keeping pace with the production of experimental data, the final project report will be published shortly thereafter. The final report will contain a complete analysis of the experiments in full perspective, final conclusions and both policy and operational recommendations. An intervening report will analyze in some depth the history and problems of the bus industry in Massachusetts in the light of the Demonstration Project experiments and studies.

Thus, the MTC will continue to meet its planned schedule through the termination of the Demonstration Program.

## SUGGESTION CRITERIA FOR NEW COMPREHENSIVE POLICIES

### I: Integration of Segment of Existing Service and Initial Comprehensive Utilization

A new comprehensive public for public transportation should develop a fiscally sound, efficient and basic organization for the management and improvement of public transportation services. (Possible implementation of these recommendations in the form of draft legislation is now being prepared.)

1. A new approach is required to establish a management for public-owned transportation services of accepted,

unquestioned, reputation in respect to objectivity, effectiveness, competence and efficiency. More than a superficial remodeling of existing organization structure is essential.

2. Existing boundaries for transportation districts such as the MTA and the South Shore Transportation District should be abolished, and the boundaries of the Greater Boston, the Worcester, the Springfield and other urban regions should be more broadly and realistically defined for public transportation purposes.

3. Integration of modes and fragmented segments of service should be accomplished in these realistically defined urban regions. For example, there should be integration of the bus service now provided by the Eastern Massachusetts Street Railway Company with the bus and rapid transit service now provided by the MTA to provide better South Shore-Boston and North Shore-Boston service.

4. No additional governmental liability at either the state or local level should be imposed for public transportation capital or operational costs for bus and rapid transit services beyond those already authorized. Operational authority or authorities should be established that would be completely dependent upon operational revenues and revenue bonds for the acquisition of private bus companies. Such operational authority or authorities, however, would be eligible for the anticipated federal two-thirds capital grant for the "net project" cost for public transportation improvements.

5. In the case of the MTA district, reduction of existing local government assessment liability is probably essential for the restoration of public confidence and enthusiastic support for public transportation. It is anticipated that the 1963 total assessment on the 14 cities and towns for the MTA service may be approximately $20 million. It is believed that the 1964 assessment could be reduced, in accordance with the criteria described here, at an annual rate of $1 million a year for a period of ten years. Such an annual reduction of $1 million should be primarily shared by those communities which now bear a disproportionate share of the burden under the existing MTA assessment formula.

6. Reorganization of public and private operating companies should not jeopardize the continuation of existing service. Under reorganization, existing service should be guaranteed to continue for a minimum of three years, unless the patronage on such service falls so clearly below minimal standards that the logical necessity of the curtailment of the trip or route is beyond question. Obvious criteria for curtailment of existing service could include the following type of specific standards:

A. if there were less than an average of four passengers per revenue mile for local and feeder bus service for a period of 60 days

b. if there were less than 2.5 passengers per route revenue mile in inter-city service for a period of 60 days.

Duplicating services, of course, should be eliminated at any time, as long adequate service remained. Clear possibilities for achieving cost savings through eliminating duplication of services would arise from the integration of now-fragmented separate services.

7. Any restructuring of public transportation services should include provisions for maximum efficiencies arising from such integration. The type of efficiencies available from such integration include:

a. Better equipment utilization, achieved through more precise scheduling, eliminating "dead" time, operation of equipment through existing routes and routes that would be available, resulting in savings through increased productivity, reduced vehicle requirements and smaller capital and depreciation costs.

b. Elimination of duplicating services and routes would provide a direct saving in all operating costs without depriving the public of needed service.

c. Centralization of garage and repair facilities, including the centralization of the stocking of parts and supplies would eliminate much record keeping and the stocking of duplicate items at several locations.

d. Centralization of all records, personnel payroll and purchasing would eliminate much duplicate effort and would lead to substantial cost savings on purchases.

e. Planned standardization of vehicle types would eliminate stocking of parts for different makes, types and models of vehicles presently used.

f. Uniform procedures and practices, including scheduling, accounting, safety, hiring, training, handling of claims (personal injury), and other items incidental to the operation of a transit system would greatly improve efficiency.

g. Lower insurance costs (public liability). This is a major item of cost for all transportation companies; a consolidated operation would permit substantial savings through greater use of self-insurance.

8. All employees under labor union contracts with one of the integrated carriers employed for one year prior to the integration should be retained until retirement or dismissal for cause, at no less than the labor union contract wage schedules in effect one year prior to the company acquisition.

All other nonunion employees, including employees at the management level, at an annual salary of $10,000 a year or less, should similarly be retained until retirement or dismissal for cause.

Management employees at an annual salary greater than $10,000 should be retained for a least six months to permit a proper evaluation of their ability to contribute to the efficient management of the integrated operation. At the end of six months such management employees would either be retained at their pre-acquisition salary level or

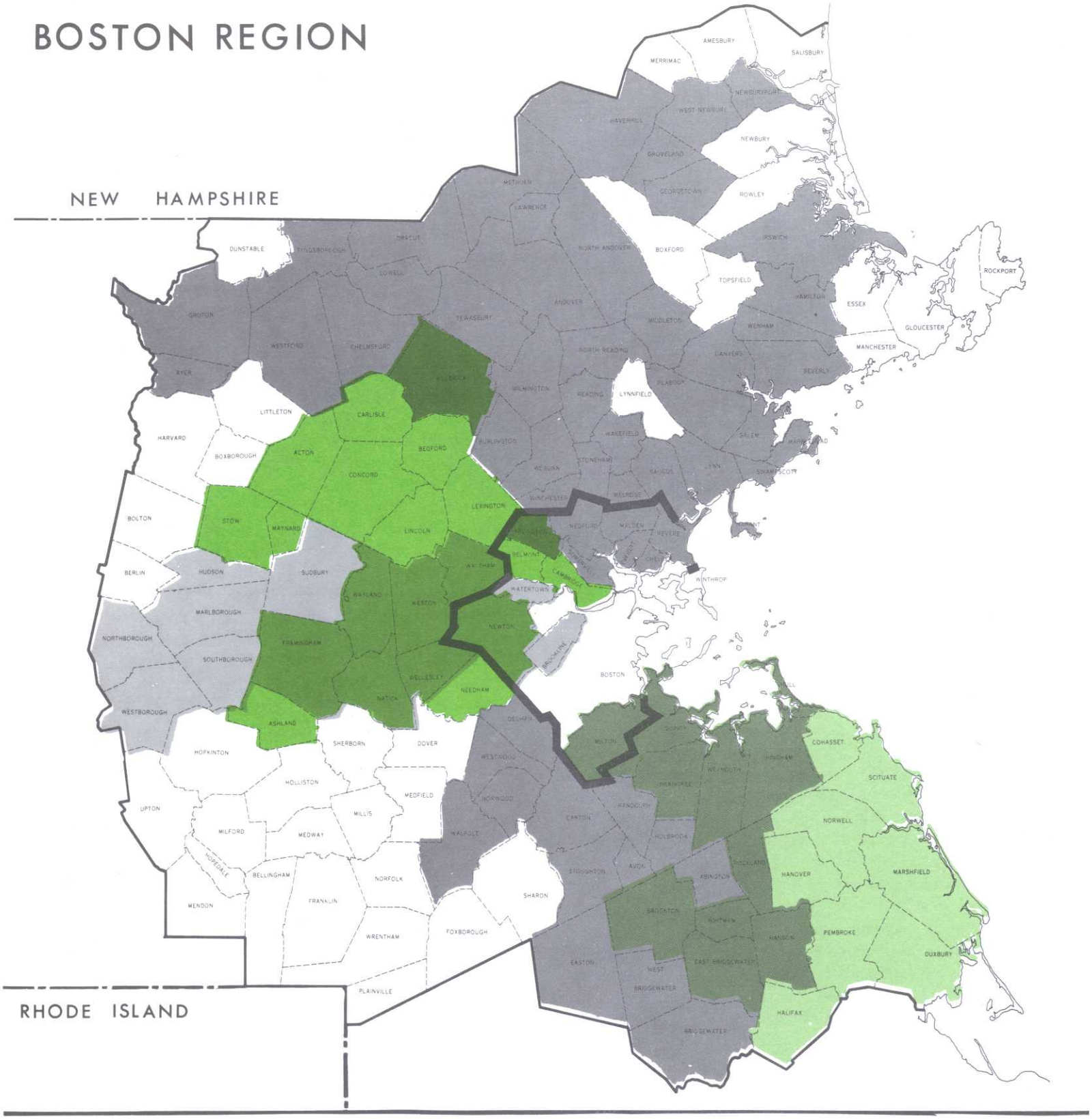


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**Figure A**

should receive reasonably generous separation allowances in proportion to their years of continued service; if such management employees have been in such service for 20 or more years they should be offered the option of retirement on a proportionate pension or acceptance of the established separation allowance.

All former employees who had retired prior to their company's acquisition or were eligible to retire at the time of acquisition under established policy, should receive full protection in respect to their pension. Actually, employees of several private bus companies now in precarious financial condition would thereby receive greater security in the protection of their pension rights and payments as a result of such integration.

9. An integrated public transportation system should never lose sight of an opportunity to render valuable community service whenever and wherever additional service can be provided without endangering the fiscal soundness of the entire operation. For example, integrated operations could permit unlimited off-peak bus patronage for residents 65 years of age and over for a low cost monthly pass, without adding to operational costs, while considerably enriching the lives of the respected elders of the community.

## II. **Modernization of State Laws and Procedures**

The public is well aware of the recent pattern of fare increases accompanied by cutbacks in service that characterizes most public bus service provided by private companies. Many private bus companies are near bankruptcy and as a result many communities which have recently experienced drastic reductions in service are now threatened with total loss of bus service. Not only is the continuation of service in danger, but so are the pension rights of many retired bus company employees, as well as job security and pension rights of thousands of present bus company employees.

1. The Commonwealth of Massachusetts should exempt mileage operated in the public service from fuel tax in order to gain maximum use of existing, limited highway funds. Many other states in the nation have long recognized that the continuation of substantial public transportation service by private bus companies provides significant fiscal assistance since it reduces the need for governmental capital and maintenance expenditures for construction of highway and street facilities. Therefore, in order to obtain the maximum efficiency from the use of highway funds, a number of states have granted exemption from the state fuel tax for those miles of passenger service operated in regularly scheduled public service and school service under contract with school districts or other municipal bodies.

2. The Commonwealth should exempt passenger vehicles to be operated in regularly scheduled service and exclusively in school contract service from the excise tax. Massachusetts is one of the few remaining states in the nation to continue to impose excise taxes on public transportation vehicles. In addition to being an unreasonable burden upon an already financially precarious public service, the continuation of such a tax retards replacement of fully depreciated and obsolete equipment and hence is a contributing factor to the comparative lack of efficiency and attractiveness of private public transportation service.

3. Public carriers should be exempt from all requirements to offer special reduced fares for school children, unless the carrier is reimbursed for the corresponding reduction in revenue.

It appears reasonable to require public carriers to provide special half-fare pupil tickets only if the Commonwealth and/or the community is willing to reimburse the public carrier for this special public service. The city of Worcester has long acknowledged this principle by making an annual payment for several years of $60,000 or more to the local bus company. Because the availability of good public transportation to and from school is an important element in the total education environment, the Commonwealth now reimburses school districts for the exclusive school bus services supplied under direct contract with the school district. The Commonwealth should also reimburse local communities and school boards at least half the amounts such localities might elect to pay the public carrier to supply the special fare for their school children. Such a new policy would be a blend of three basic principles:

a. Continuation of home rule or local control over the quality and standards, especially in fringe matters, in respect to local services,

b. Commonwealth sharing in what is basically an educational expense, an area where the state has long assumed a prime responsibility,

c. Enlightened public practice in achieving a more reasonable fiscal approach to preserve the continuity and improvement of another essential community service — public transportation.

Loss of revenue arising from compulsory special fares for children should not be permitted to remain an important factor in causing reductions in service and increases in fares for the general public.

The MTA is a special problem. The Commonwealth now actually expends very little in reimbursements for such transportation in the Metropolitan Transit District because the MTA is now required to supply student transportation service at half fare without reimbursement. Direct state reimbursement to the MTA for student half-fares would be equitable and sound public policy.

4. Private bus companies should receive a final disposition of their application for fare increases and service reductions from the Department of Public Utilities within a reasonable and sufficient period for study, hearing and decision-making by the Department.

Because of the serious financial difficulty on the part of so many bus companies in Massachusetts, disposition of all bus company applications within 60 days appears desirable.

The current delays by the Department of Public Utilities in several instances are not the fault of the Department, but rather reflect a lack of sufficient appropriations and staff. A wise comprehensive public policy in public transportation should therefore include necessary auxiliary measures such as further strengthening the Department of Public Utilities.

## III. Continuation and Improvement of Railroad Commuter Service

Long range solutions to railroad problems are more dependent upon inter-state freight factors than intra-state commuter service. The U. S. Department of Commerce is now completing studies of the possible impact of the various proposed mergers upon the freight operations of the New England railroads, as well as several other rail and air studies of the megalopolitan corridor between Washington, D. C. and Boston. Once the basic fundamental railroad problem of interstate freight has been settled and there has been a resolution in one form or another of the various merger proposals, the solution and long range planning for intra-state commuter service will be much clearer and easier to achieve.

In studying the railroad commuter problem of Massachusetts, the MTC staff is aware that all three railroads serving Massachusetts, the New Haven, the Boston & Maine, and the Boston and Albany division of the New York Central, are far more important to the continued economic vitality of the Commonwealth because of their freight services than their commuter passenger service. It is extremely difficult to arrive at a clear understanding of the ability of the New York Central to continue to supply vital freight service because of a continuation of the already rather limited commuter passenger service.

However, it is much more obvious that the Boston & Maine Railroad cannot reasonably be expected to continue bearing the burden of a very substantial net cash loss arising from a continuation of its Massachusetts commuter passenger service. Uncompleted cost studies being conducted by McKinsey and Company for the MTC indicate that even the freight service of the Boston & Maine Railroad is actually operating at or below the break-even point. A final and clear definition of the New Haven Railroad's East End passenger services and costs as a distinct unit and the impact of the East End passenger service on the Railroad as a whole are extremely difficult to delineate, because of the complications arising from the West End passenger service between Connecticut, Westchester County and New York City, the interstate passenger service between New York, Providence and Boston, and the apparent losses arising from the freight service.

### A. New Haven Railroad

One illustration of a key problem, the solution to which could not reasonably be anticipated from the MTC Demonstration Project, is the future use or abandonment of South Station for passenger service. The staff of the New Haven Railroad has long discussed the possibility of terminating its New York to Boston service and its main line commuter service at Back Bay and even possibly at Route 128. As with the New Haven Railroad, the separate South Station Terminal Corporation is now in reorganization. A separate proposed reorganization plan for this terminal corporation is now scheduled for submission to the federal courts in the near future.

The Boston Redevelopment Authority, the Boston Stadium Authority, and the Massachusetts Turnpike Authority, since the Turnpike Extension will end in the South Station area, are actively exploring the future use of South Station terminal building and adjacent real estate.

It now appears that *if* the New Haven Railroad continues to operate the New York to Boston passenger service for the next three years, it will continue operating into South Station. This may or may not be desirable, but it does appear reasonably probable.

**Old Colony — South Shore.** Any restoration of railroad type commuter service between the Old Colony and South Shore areas and the core of the Boston urban region must await the firmer establishment of the long range pattern of basic New Haven Railroad service. The immediate restoration of railroad type service for the Old Colony area alone would require a capital investment of between $12 and $15 million, an investment that could not be prudently amortized for less than a 12-year period. It appears imprudent to make such a long range commitment at this time, since the basic future of the New Haven Railroad is now in such grave doubt.

On the basis of complex cost studies now being made of the Boston & Maine Railroad, and an analysis of the pattern of passenger use of the Old Colony option area railroad service immediately prior to its discontinuance, the minimal operating deficit for operation of a Budd type rail commuter service between South Braintree and South Station, including capital costs, would be in excess of $3 million a year for twelve years, after which the operating deficit would be reduced to approximately $2.5 million a year.

However, if reasonably decent and modern equipment were available without initiating new substantial capital investments, the continuation of an existing service in the Old Colony option area would clearly be in the public interest. The determination to make a new capital investment of the magnitude of $15 million should await the completion of long range plans for the New Haven Railroad and the extension studies to be undertaken by the four-agency Boston Regional Planning Project. This ex-

tension study was originally scheduled to produce substantial information by this time. However, because of the unforeseen complexities arising from the rather novel administrative form of joint four-agency co-direction of the Boston Regional Planning Project insisted upon by the federal agencies as a condition of their continued participation in the Boston Regional Planning Project, this extension study was not started in sufficient time to produce any new information for inclusion in this report of the Demonstration Project. Governor Endicott Peabody is currently assisting all four agencies in developing a more effective organization of the complex inter-agency Boston Regional Planning Project.

*Continuation of Recently Improved New Haven Commuter Service*. On the assumption that the New Haven Railroad will continue to operate its interstate passenger service into South Station for the next two or three years, and therefore that the greater portion of the South Station terminal costs properly allocated according to ICC formulae to the so-called East End commuter service cannot be avoided by the termination of the commuter portion of the passenger service, the avoidable deficit for the railroad for the continuation of its East End commuter service at current levels of service and fares would be approximately $700,000 a year.

It would be to the advantage of the Railroad and the public if the Commonwealth were to provide for the continuation of the recently improved service within Massachusetts on the main line of the New Haven, by Commonwealth contractual purchase of such improved service at a cost of approximately $300,000 per year.

Rather than seek the long range continuation of the so-called branch line commuter service, it would be more prudent for the Commonwealth to seek the speedy extension of existing rapid transit service along New Haven rights of way pending the completion of appropriate rapid transit extensions. It would be prudent for the Commonwealth to continue this branch line commuter service on a short-term basis, by purchasing such improved service at the contractual price of approximately $300,000 to $400,000 a year.

*Proposed Rapid Transit Extension Along New Haven Right of Way*. An engineering study indicates that 3.6 mile extension of rapid transit service from Cook Street (a point between Newton Highlands and Eliot on the MTA Highland Branch) to Needham Highlands, Needham and Needham Junction could be accomplished for only $3 million to $3.5 million. This would involve the use of the existing New Haven right-of-way over the whole distance, double tracking, providing a third track for freight service, and electrifying the double track.

This extension would provide service to all stations on the New Haven's Needham Branch in Needham. Service to West Roxbury and intermediate stations could most practicably be provided by a proposed extension now under study by the MTA.

The Needham extension might be expected to carry 5,000 additional passengers each way on a normal weekday, based on the experience of the Highland Branch in increasing the number of riders over the previous rail service. At a 40c fare (the same as the Highland Branch but less than current rail fares), this extension would produce $4,000 in revenue per weekday or well over a million dollars per year. There would also be some additional Saturday and Sunday revenue.

An especially attractive feature of this extension is that it could be run at a comparatively modest increase in cost over the present MTA Highland Branch service. Because of improved efficiency in utilization of existing equipment. At present the Highland Branch must run with excess capacity beyond Cook Street in order to serve the nearer portions of the line. With the proposed extension in service, alternate trains could run to Riverside and Needham without adding many car miles or requiring capital costs for additional equipment. Since some decline in passenger volume on the Highland Branch has resulted from the 1961 fare increase and even more of a decline is anticipated on the opening of the Massachusetts Turnpike extension, it is entirely possible that the Needham traffic can be accommodated with no additional operating expense except for maintenance of way. In any event, if a greater-than-anticipated traffic requires additional service, there is no question that the line would have sufficient capacity to handle higher passenger volumes.

In short, it appears that a capital expenditure of some $3 million could go a long way toward solving Needham's transportation problems and, at the same time, through more effective utilization of equipment, would add approximately one million dollars per year to the MTA's revenue, with only a moderate increase in operating expenses.

### B. **Boston & Maine Railroad**

Preliminary findings arising from the cost and management studies of the Boston & Maine Railroad by the firm of McKinsey and Company for the MTC indicate that, apart from the MTC demonstration purchase price for increased service and fare experiments, the Boston & Maine is currently incurring an annual deficit approaching an average of $3 million from the continuation of its passenger service. This figure changes from year to year chiefly because of varying equipment payment schedules. Clearly this railroad cannot be requested to maintain this level of service and fares without simultaneously requesting the railroad management to be derelict in their duties to their stockholders, their employees and to the general welfare. There is no reasonable doubt that the Boston & Maine management must soon petition for immediate discontinuance of all its intra-state passenger service unless some form of relief from the net cash drain from the commuter service is quickly obtained. There are no substantial

reductions in net cash losses achievable through piecemeal or partial reductions from existing service on the pre-experimental 1962 level of service.

The Demonstration Project experiment with Boston & Maine service is now scheduled to terminate on January 4, 1964. (A 60 to 90 day extension of this experiment was under serious negotiation at the time of the preparation of this Fifth Progress Report, but no further extension beyond March, 1964 is possible because of both fiscal and time limitations inherent in this Demonstration Project.)

If the B&M were to immediately petition for total discontinuance of all its Boston passenger service, it is quite possible that the normal regulatory proceedings at both the state and federal levels might well preclude any actual reduction in service by the railroad in 1964 below the level maintained in 1962, prior to the initiation of the Demonstration Project experiment. A reasonable possibility is that in 1965, the Railroad might be allowed to reduce service to half the 1962 pre-experiment level; in 1966 the Railroad would be permitted to operate at half the 1965 level and that beginning in January 1967, the Railroad would be out of the intra-state passenger business. This is not a suggested time schedule because earlier termination of intra-state passenger service should be allowed if some substantial relief from the burden of the net cash loss arising from this service is not quickly provided. Under this hypothesis, the total net cash loss for the railroad for its passenger service for the next six years would be as follows:

| | |
|---|---|
| **1964** | **$2.6 million** |
| **1965** | **$1.7 million** |
| **1966** | **$1.1 million** |
| **1967** | |
| **1968** | |
| **1969** | |
| **Total** | **$5.4 million** |

If the Railroad were more successful before the regulatory bodies, it might receive permission to discontinue all its commuter service effective January 1, 1966 — one year earlier. From a practical point of view this would appear to be the best that the Railroad could reasonably anticipate.

| | |
|---|---|
| **1964** | **$2.6 million** |
| **1965** | **$1.7 million** |
| **1966** | **$ .5 million** |
| **1967** | |
| **1968** | |
| **1969** | |
| **Total** | **$4.8 million** |

If the Commonwealth of Massachusetts could persuade the Boston & Maine Railroad to continue the vastly improved service level currently in effect, by so amending its statutes so as to assure the Railroad that at the completion of five years it would be permitted to completely discontinue all its intra-state passenger service in Massachusetts without

TO RIVERSIDE

PROPOSED EXTENSION OF MTA HIGHLAND BRANCH TO NEEDHAM JCT.

Figure B

any procedural delay, with the realization that for the first year during which no such service were operated, there would still be a net cash loss from the transition, the six year total cash loss for the railroad without any payment from the Commonwealth would total $15.7 million.

| | |
|---|---|
| **1964** | **$3.5 million** |
| **1965** | **$2.8 million** |
| **1966** | **$2.7 million** |
| **1967** | **$2.6 million** |
| **1968** | **$2.5 million** |
| **1969** | **$1.6 million** |
| **1970** | |
| **Total** | **$15.7 million** |

It would be prudent for the Commonwealth to contract with the Boston & Maine Railroad for the purchase of the improved current level of service and fares at an annual purchase price of approximately $2.2 million, for a period of five years, the rate now being paid for participation in the Demonstration experiment, with the provision that at the end of five years there would be no Commonwealth procedural delays in the total discontinuance of the intra-state passenger service. This would reduce the net cash loss on the part of the Boston & Maine Railroad over the seven year period to approximately the same amount as would otherwise be incurred under the discontinuance timetables outlined above.

| | |
|---|---|
| **$15.7 million** | **$15.7 million** |
| **− 5.4 million** | **− 4.8 million** |
| **$10.3 million** | **$10.9 million** |

Therefore the payment by the Commonwealth of approximately $2.2 million a year for five years for a total payment of approximately $11 million would justify the management decision by the Boston & Maine Railroad to continue the present experimental level of service and fares. The annual payment would be renegotiated every year within the framework of the annualization of October 1963 intra-state passenger levels of service, fares and costs. Since passenger volume was 37 percent higher in October 1963 compared to October 1962, and since passenger revenue was 23 per cent higher in September 1963 than in September 1962, despite the August 1963 restoration of commuter fares to the pre-experiment level, it appears likely that there would be even further increases in Boston & Maine commuter passenger revenues. Thus, the maintenance of these levels of service and fares may be achieved at a reduction of the proposed maximum annual purchase price. If the communities assume responsibility for station parking, this possibility becomes more probable.

Since the Boston & Maine Railroad is currently carrying over 13,000 passengers a day each way, the continuation of this service would facilitate the continuation of trips to the core of the Boston urban region without the requirement of providing highway, street and parking facilities for an additional 10,000 automobiles a day.

The Philadelphia area has been purchasing such improved railroad commuter services for several years on precisely the same basis — that this is a more economic expenditure of public funds than would otherwise result from the additional entry of thousands of automobiles in the downtown each day. The reason for this Commonwealth action therefore is not the convenience of the commuter, but the most economic use of public funds.

### C. Boston and Albany Commuter Services

The New York Central Railroad, whose Boston & Albany division provides limited commuter services between Boston, Framingham and Worcester, declined to participate in the Demonstration Project. Because of the complications arising from the construction of the Turnpike Extension as well as the difficulty of isolating and segregating Boston & Albany passengers and costs from the Boston and Albany freight operations and the total New York Central operations, it is difficult to "price out" any policy criteria for the continuation of the Boston & Albany commuter service. It would probably be prudent to await the possible impact of the opening of the Massachusetts Turnpike Extension upon this Railroad's commuter passenger volume of service before attempting to determine the comparative utility of Commonwealth purchase of the continuation and/or improvement of this commuter service.

### D. Tax Relief and Crossing and Bridge Maintenance

It has long been argued, and with some merit, that the railroads in Massachusetts should receive some relief from property taxes and some state reimbursement for their expenses in maintaining grade crossings and highway bridges over railways. In 1961 the General Court adopted legislation authorizing limited tax relief for those railroads meeting certain qualifying conditions, including the maintenance of established levels of commuter service. The legislation has not been utilized because the railroads have chosen not to meet the qualifying conditions.

Legislative proposals along these same lines are being introduced for consideration at the 1964 session of the General Court. The MTC staff will cooperate with the Joint Special Legislative Recess Committee which is now reviewing this entire subject in preparation of its Report to be submitted to the General Court in January, 1964.

# *Chapter I.*

# MTC DEMONSTRATION PROGRAM

This fifth MTC Progress Report is submitted exactly one year after the start of the first MTC demonstration experiment. A number of experiments have reached or passed the breakeven point; others have been terminated and a substantial amount of firm data on costs and results has been obtained. As is indicated below, it is now clear that the MTC demonstration project will have a significant, lasting impact on public transportation in the Commonwealth and will be of value for transportation planning in the nation.

Approximately 60 per cent of the $5.4 million in project funds has been allocated to rail experiments with the Boston & Maine and the New Haven Railroads, 20 per cent to the Metropolitan Transit Authority for bus and parking experiments, 12 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 in December 1962. A month later thee large Boston & Maine experiment was initiated. Between January and the end of August eight bus company experiments were placed in operation. A number of these bus experiments were terminated by the end of November, 1963 because they had already yielded the desired data. The large New Haven rail experiment was begun in March and an MTA parking lot experiment was initiated in April. Finally, major experiments involving MTA bus lines and drive-in theaters used as parking lots began in June and September. At the end of November, two bus experiments and one drive-in theater experiment had been concluded.

As a result of analysis of the data by the staff of the Mass Transportation Commission and its consultants, a substantial amount of material on public transportation has been developed in the course of the experiments. While it would be premature to state that definitive solutions to mass transportation problems have been developed, it is fair to state that the program has clearly indicated that some of the simple "solutions" for transportation problems, including abandonment of rail services and more generally a continuation of policies aimed at eliminating passenger deficits by eliminating passenger service, have been proven overly pessimistic. The experiments have indicated that public transportation is by no means foredoomed to a steady irreversible attrition leading inevitably to museums inhabited by the stagecoach and horse-car. The hard data developed in the experiments with respect to market responses, pricing policies and costs will provide a more rational basis for evaluating the real costs of various levels of public transportation. Firm data can be fed into the broad context of social accounting to emerge with a feasible, realistic transportation program.

**MASS TRANSPORTATION DEMONSTRATION PROGRAM**

**Fiscal Progress as of 1 November 1963**

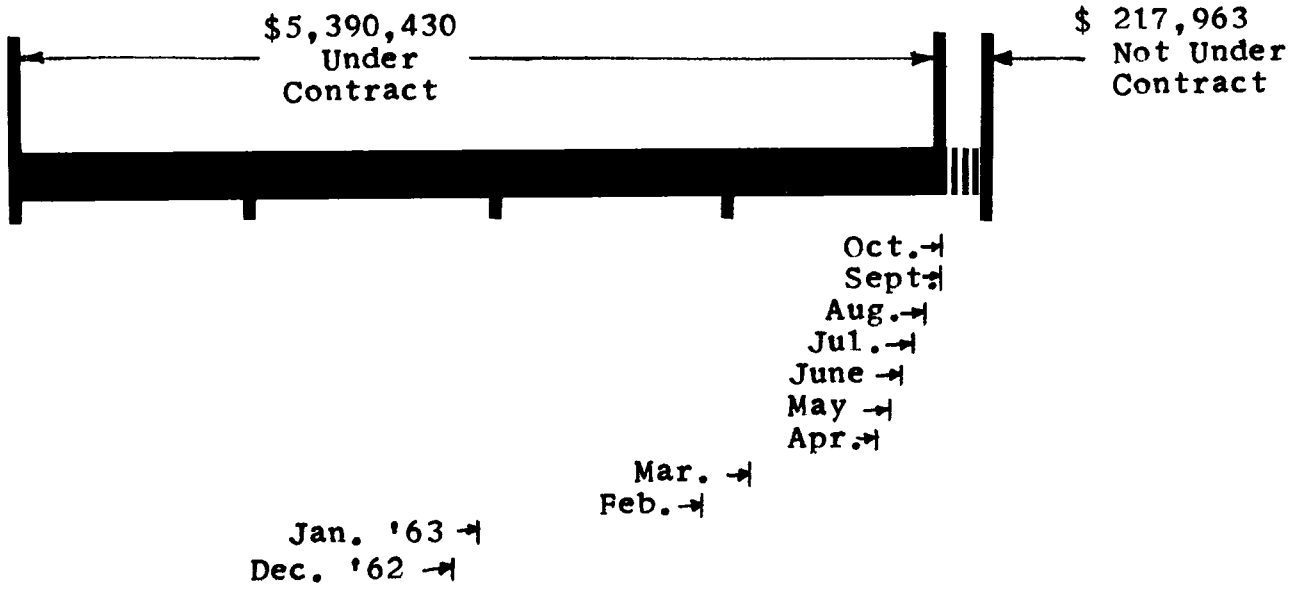


TABLE 1. FINANCIAL STATUS OF DEMONSTRATION PROGRAM — OCTOBER 31, 1963

| | Amount Not Under Contract | Proposed Contract | Under Contract | Estimated Revenue Credit Sept. 1962 | Revised Estimated Credit | Est. Net Cost | Revised Net Cost | Amount Paid to Date |
|---|---|---|---|---|---|---|---|---|
| RAILROADS: | | | | | | | | |
| Boston & Maine Railroad | | | $2,200,000 | | | | | $1,692,500 |
| New Haven Railroad | $300,000 | | 900,000 | | | | | 620,000 |
| Sub Total | $300,000 | | $3,100,000 | | | | | $2,312,500 |
| BUSES: | | | | | | | | |
| Eastern Mass. Street Railway | | | | | | | | |
| Lowell Project | | | 22,044 | $ 12,000 | $ 12,294 | $ 24,000 | $ 8,103 | 7,293 |
| Topsfield Project | | | 41,200 | | 17,000 | | 17,535 | 10,022 |
| Fall River Project | | | 61,400 | | 22,400 | | 38,861 | 13,074 |
| Lawrence Project | | | 50,400 | | | | 30,000 | 9,346 |
| Off Peak Fare Project | | | 110,000 | | 20,400 | | 110,000 | 38,549 |
| Johnson Bus Line (a) | | | 66,260 | 20,000 | 20,000 | 45,000 | 48,401 | 21,892 |
| Service Bus Line, Inc. | | | | | | | | |
| Revere Project | | | 17,506 | 12,500 | 12,500 | 6,000 | 7,711 | 5,519 |
| Lynnfield Community | | | 15,671 | 4,000 | 3,671 | 20,000 | 12,000 | 2,431 |
| Mass. Northeastern | | | 39,597 | 33,600 | 18,597 | 21,300 | 13,354 | 10,488 |
| Fitchburg and Leominster | | | 113,837 | 35,100 | 37,837 | 52,200 | 63,668 | 39,751 |
| Yellow Coach Lines, Inc. (b) | | | 50,028 | 8,600 | 17,028 | 24,000 | 31,229 | 12,553 |
| Brush Hill Trans. Co. | | | 27,091 | 8,800 | 8,091 | 20,000 | 14,293 | 6,899 |
| Barre Bus Company | | | 6,723 | 1,423 | 1,423 | 6,000 | 4,180 | 816 |
| The Short Line, Inc. | | | 34,800 | | 9,800 | | 25,000 | 7,592 |
| | 143,500 | | | | | | | |
| Sub Total | $143,500 | | $ 656,557 | | | | | $ 186,225 |
| MTA | | | | | | | | |
| Parking Lots | | | 60,200 | 50,000 | 10,070 | 35,000 | 58,014 | 40,668 |
| New service | | | 742,511 | 495,000 | 431,764 | 770,000 | 744,697 | 130,688 |
| | 105,539 | | | | | | | |
| Sub Total | $105,539 | | $ 802,711 | | | | | $171,356 |

| | | | | | |
|---|---|---|---|---|---|
| CONSULTANTS | | | | | |
| Systems Analysis & Research Corp. | | | 90,000 | | 49,500 |
| McKinsey and Co., Inc. | | | 135,000 | | 49,700 |
| Napolitan Associates | | | 10,000 | | 8,971 |
| Service Bureau | | | 10,000 | | |
| Transportation Survey | | $30,000 | | | |
| Sub Total | | $30,000 | $ 245,000 | | $ 108,171 |
| MTC Project Staff and Administration and Overhead | | 16,000 | 271,580 | | |
| TOTAL | $549,039 | $46,000 | $5,075,848 | | 159,651 |
| | | | | | $2,937,910 |

(a) The Short Line purchased Johnson Bus Line on May 1, 1963.
(b) Formerly Berkshire Street Railway contract.

Source: Mass Transportation Commission

# *Chapter II.*

# MASS TRANSPORTATION

In recent years, passenger volume on public transportation carriers in the Boston region has fallen off sharply. Bus companies whose operations are in direct competition with private automobiles, were hurt badly. Passenger volumes of some companies declined as much as 75 to 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 less than 20,000 per day. Total MTA passenger volume declined from 433 million revenue passengers annually in 1946 to less than 180 million by 1962, a decrease of more than 58 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 AM and 9:00 AM, 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. The magnitude of this problem can be illustrated through a comparison of MTA vehicle requirements as presented in Table 2. The table shows that current MTA schedules require 54 buses, five streetcars, three trackless trolleys and 32 rapid transit cars which are needed to handle passenger loads in one rush hour but not in the other. Since a round trip on the average route may take from thirty minutes to an hour, and since the peak commuting periods last two hours at most, these 84 vehicles must be maintained by the MTA for from one to four trips per day. If one calculates the value of buses at $25,000 each, and of rapid transit cars at $100,000 each, this extra equipment required to operate only two hours per day, a total of ten hours per week, represents a capital investment of $4.5 million.

For the MTA the problem of utilization affects buses in a different manner than other vehicles. For MTA buses, the excess requirement of 54 buses occurs in the morning primarily because school children travel to school precisely at the height of the morning rush hour. Fewer buses are required in mid-afternoon and evening since the same bus can be used to take home students at 2:30 and workers at 5:00.

TABLE 2—MTA VEHICLE REQUIREMENTS BY CLASS OF VEHICLE AND PERIOD OF THE DAY

| Type of Vehicle | Number Required Morning Rush Hour | Number Required During Off Peak | Number Required Afternoon Rush Hour | Number Required During Evening | Required AM Rush Period Only [a] | Required PM Rush Period Only [a] |
|---|---|---|---|---|---|---|
| Bus | 639* | 248 | 585 | 144 | 54 | — |
| P.C.C. Car | 244 | 109 | 249* | 42 | — | 5 |
| Trackless Trolley | 46 | 14 | 49* | 7 | — | 3 |
| Rapid Transit | 204 | 52 | 236* | 34 | — | 32 |
| Totals | 1133* | 423 | 1119 | 197 | 54 | 40 |

* Indicates maximum vehicle requirement by type during a given day.
[a] Excess of one rush hour requirement over the other.
Source: MTA Fall 1963 Timetables.

For rapid transit, trackless trolley, and street car lines, the problem of underutilized equipment occurs in the evening rush hour and is created by the tremendous demand for service between 5:00 and 5:15 PM. On a typical rapid transit line, the Harvard-Ashmont line, 24,000 passengers pass through South Station Under eastbound between 4:00 and 6:00 PM. Of these 24,000 passengers, 6,400 require service between 5:00 and 5:15 PM, this being by far the greatest demand of any 15 minute period during the rush hour. Thus 26 per cent of the total rush hour passengers require transportation during only 12 per cent of the rush hour period. The impact of this rush on all three rapid transit lines is to require 32 cars which for all practical purposes make only one trip per day.

These examples, though taken from MTA statistics, are representative of the equipment utilization problem, created by demands for service which is faced by the majority of public transportation carriers. The Boston & Maine Railroad, for example, requires 90 Budd cars during rush hours, but only 25 cars to operate mid-day schedules. The only exceptions to this general rule are a few private bus companies which operate parallel to passenger railroad rights-of-way and whose peak loads are absorbed by the railroad. The bus companies, under these circumstances, are able to operate at the same frequency of service all day, producing the ultimate in operating efficiency and economy.

However, for the majority of carriers, demands for service set by peak hour commuters establish equipment requirements and minimum cost levels. For this reason, a key objective in the mass transportation demonstration experiment program is to test methods of expanding off-peak ridership, thereby obtaining increased utilization of existing systems and increasing revenues.

From the viewpoint of the carrier, greater off-peak travel is the key to improved earnings. However, from the standpoint of most motorists and highway planners, mass transportation makes its primary contribution by relieving traffic congestion through its peak hour service. The removal of automobiles from the highways during the critical morning and evening rush hours, as a result of the commuter rail experiments, has helped prevent increased congestion for overloaded highways. The hard-pressed railroads have been understandably more concerned with obtaining maximum revenue from better utilization of existing facilities.

A. **Rail Trends**

Railroad commuter service in the Boston region has suffered a major decline in patronage since World War II. Passenger volume on the heavily traveled Boston and Maine system decreased by about 75 per cent. Volumes on the Boston & Albany declined substantially while service on the New Haven's Old Colony line, once the region's most traveled route, was entirely eliminated in 1959. However, volumes on the remaining lines of the New Haven, partly because of a shift of Old Colony passengers, exhibited much smaller postwar declines, ranging from ten per cent to 40 per cent. 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 of some 50 per cent.

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

TABLE 3. — BOSTON & MAINE RAILROAD PASSENGER TRENDS, BY LINE

| Line | Approximate Inbound Week-day Passengers 1948 | 1962 | Decrease |
|---|---|---|---|
| Eastern | 11,300 | 2,500 | 85 % |
| Reading | 10,200 | 3,300 | 70 |
| N. H. Division * | 15,600 | 4,000 | 70 |
| Fitchburg | 3,400 | 850 | 75 |
| Total | 40,500 | 10,650 | 75 % |

* Includes Western Division
Source: Boston & Maine

B. **Planning Environment**

Many of the major problems of the Boston region — as well as other urban areas of the nation — stem from the need to adjust to two trends. The first is suburbanization and decentralization. Although population and economic growth are proceeding at a slower pace in the region than in many other parts of the nation, nevertheless, between 1960 and 1980 a population expansion of almost 700,000 — equal to the present population of the City of Boston — is likely to occur in the region's suburbs. In addition, most of the region's economic growth (as well as its new automobile registrations) is also likely to be located in suburban areas. Meanwhile, major changes — many of them unfavorable for the older urban core areas — will be taking place in the Boston region's population and economic structure. Fundamental changes of this magnitude will create serious stresses in the field of transportation, land use, and municipal finance. Unless effective methods can be found to deal with these problems, they will approach crisis proportions long before 1980.

The region faces two imminent major transportation decisions:

a. With the prospect of early termination of all commuter services, following years of attrition of passenger schedules and constantly rising fares, the region is confronted with the alternatives of public support of commuter lines or outright abandonment. Therefore, realistic information on railroad revenues and costs and available alternatives is necessary before a prudent railroad commutation policy can be formulated. The Demonstration Project is supplying much of this needed material.

b. Basic decisions must be made about the future of the Metropolitan Transit Authority. A principal decision will involve possible extensions of rapid transit to suburban areas, either by means of extension of the MTA district or by establishment of other special public transportation districts and authorities. The reputation of the MTA management is clearly a critical factor in the choice of administrative approaches to mass transit extensions. Firm information is needed on construction and land-taking costs, on market potential, and on probable operating revenues and expenditures.

Another important decision involves a more efficient integration of MTA rapid transit and bus systems with the extensive private bus company services in the Boston region. In addition, comprehensive information is needed on the alternative consequences, for regional and local development, of construction of a highway-oriented transportation system versus a mixed transportation system with a strong mass transportation component.

As car ownership has become increasingly widespread it has become feasible for more of the population to exercise a choice among various modes of transportation. One factor determining this choice is the relative attractiveness or unattractiveness of transit and commuter railroads as compared to private automobiles. This choice is also available for many members of the low-to-middle income groups in the MTA district which provide the bulk of present MTA riders. However, the element of choice is even stronger among the middle-to-high income groups who would provide a large proportion of the market for suburban transit. It is clear that a realistic evaluation of transportation patterns required exploration of the psy-


**THE BOSTON REGION CORE**

**Figure 2**

chological factors and value systems which are an important determinant of transportation choice. For this and other reasons, the MTC has entered into a contract with Joseph Napolitan Associates to conduct in-depth interview to provide clearer insights into this area of personal choice.

Another field which has been remarkably neglected is the political and social factors which provide much of the framework for regional plans. Whether for reasons of misguided prudence or simple unawareness of the realistic environment, operating social and political factors have not been adequately considered in planning studies and activities. This is one reason why transportation and planning studies have frequently played only an inconsequential, marginal role in influencing political and economic decisions of major import to development.

### C. Need for Public Transportation

In the postwar period, the chief strength of the older core communities in the Boston region has been in non-manufacturing industries. 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 modern, 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 and 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 additional employees and shoppers to central Boston, but because storage of more than 100,000 additional automobiles is physically impossible without leveling much of the downtown area.

The alternative to maintaining a balanced transportation system is mounting congestion and overloaded highways and parking lots, followed inevitably by an even greater outward shift 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 large scale financial aid to preserve the nation's central cities. Moreover, it is anticipated that Federal aid will be made available to protect the enormous social and capital investment in the core areas by assisting in the financing of modern, expanded mass transportation facilities to carry people from suburbs to central cities and to provide for adequate movement within congested areas. The early enactment of the Urban Mass Transportation Act now before Congress would greatly facilitate more effective and efficient state and local transportation programs.

### D. Commuting to Work, 1960

One of the new features of the 1960 census was the introduction of questions relating to journey-to-work trips. Census data disclose that the Boston area is one of the nation's leaders in percentage of workers using public transportation for work trips, but that in other urban areas in Massachusetts, public transportation is only a minor component of the transportation pattern. In each metropolitan area ridership in the densely settled cities is substantially higher than in the suburban areas, but in Massachusetts' smaller cities, the differential between cities and suburbs is comparatively narrow.

TABLE 4. PERCENTAGE OF WORKERS USING PUBLIC TRANSPORTATION, BY RESIDENCE, 1960

| Workers living in: | S. M. S. A | City |
|---|---|---|
| Boston | 25.1% | 43.5% |
| Other major areas | | |
| Atlanta | 17.6 | 30.1 |
| Cleveland | 22.5 | 31.5 |
| Chicago | 31.9 | 43.1 |
| New York | 54.8 | 65.3 |
| San Francisco | 18.3 | 32.8 |
| Los Angeles | 8.0 | 13.1 |
| Detroit | 13.1 | 22.9 |
| Philadelphia | 27.5 | 43.8 |
| Providence, R. I. | 9.1 | 15.2 |
| Washington, D. C. | 23.7 | 41.6 |

Source: 1960 Census of Population, Place of Work and Means of Transportation to Work, 1960.

Table 4 compares ridership patterns in the five metropolitan areas which now operate rapid transit systems: New York, Boston, Chicago, Cleveland and Philadelphia. Boston's pattern resembles Philadelphia, and to a lesser extent, Chicago.

Table 4 also includes data for most of the nation's urban areas which are planning or studying construction of rapid transit systems: San Francisco, Los Angeles, Atlanta and Washington, D. C. With the exception of Los Angeles, each displays a substantial amount of journey-to-work ridership on its existing bus lines and other modes of public transportation. However, Los Angeles, an automobile-oriented area with one of the highest ratios of cars-to-people in the nation, exhibits percentages similar to a smaller urban area, as for example the Springfield-Holyoke area of Massachusetts.

Public transportation is considered particularly vital for much of the urban population, particularly persons too young or too old to work and low income wage earners.

This is the group from which a hard core of public transportation riders is drawn, the people for whom public transportation is a necessity. The 1960 census data does not include the non-workers in the data for the core, but it does reflect data for the families too poor to afford automobiles for each working member. These families constitute a substantial proportion of the population of large cities, particularly in low income areas with large amounts of female employment. Considering economically depressed and low income communities, it is interesting that the proportion of public transportation trips is quite low. Even in the Commonwealth's smaller central cities, only six to ten per cent of workers use public transportation to get to work.

The preservation and improvement of public transportation services is important to community welfare. For example, in 1959 four out of every five Massachusetts families (82 per cent) had family incomes under $10,000. These families should not be compelled to maintain two cars because of a lack of adequate public transportation services. Similarly, the nearly 500,000 residents 65 years of age and older and 400,000 adolescents should not be dependent upon family chauffering to avoid virtual "house arrest".

It must also be remembered that using public transportation has become an increasingly difficult problem in some Massachusetts areas; the decline of concentrated manufacturing activity in the center of these cities and the decentralization of industry, shopping and population to suburban areas have stimulated automobile travel and have shrunk the market for public transportation. The availability of good quality public transportation seems to be a significant factor in determining its size and share of the market. The wide disparity between public transportation use in transit-served cities like Boston where over two workers in five use public transportation to commute to work, and the smaller Massachusetts cities, appears to indicate a close link between public transportation use and availability.

At the present time, the true extent of the potential public transportation market in urban areas is as unknown as the social and economic impact of cutbacks in public transportation. A major task in regional transportation planning is to identify the extent of the potential public transportation market, and to indicate the results flowing from alternative choices, including further declines or abandonment of various forms of public transportation. This MTC demonstration project is illuminating many of these dark areas.

**E. Demonstration Experiments and the Regional Development Pattern**

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 the region's four 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 automobile travel is directed along traditional transportation corridors served by public transit lines. The MTC demonstration experiments are for the most part concerned with attempts to recapture a larger share of this basic radial corridor market for public transportation. For example, in addition to the five Boston & Maine lines and New Haven lines which converge on downtown Boston, two suburb-to-CBD bus routes are now in operation in the Boston area. Additional suburban-central city experiments in the Fitchburg-Leominster, Worcester and Pittsfield areas have been included in the Demonstration Project.

The bulk of the urban development in the Boston region has followed radial lines, moving out of Boston in corridors along former street-car lines and along railroad lines and highways. Each of the major development corridors is served by rail and or bus experiments.

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 Demonstration Project. Two MTA bus experiments in the urban core and four bus experiments elsewhere in the region were designed to provide circumferential bus service linking with transit and rail stations.

**F. 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 & Maine lines are in operation on the North Shore. A third 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 rapid transit station was concluded in November.

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 & 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 in Lowell was completed in March.

## G. **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 3, 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. These peak hour journey-to-work trips comprise about two-thirds of total ridership on public transportation carriers.

Figure 3 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 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.

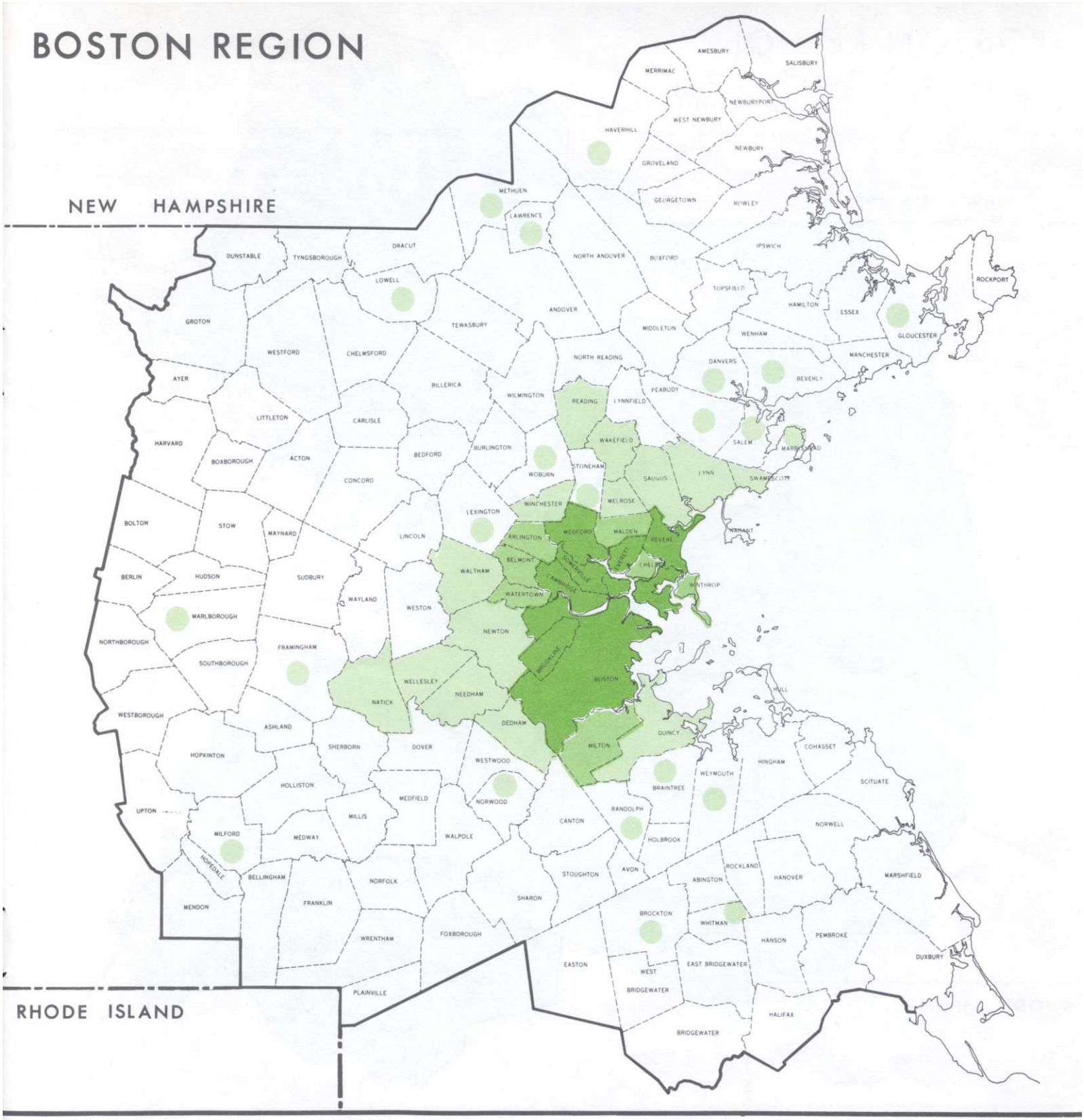
In most of the MTA district communities there are from three to five persons per automobile as shown on Figure 4. Outside the district, the proportion generally runs between two and three persons per automobile. However, automobiles are somewhat scarcer in relation to population in some of the older 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.

## H. **Public Transportation**

Historically, the Boston Region has been a leading innovator in each new technical phase of mass transportation. Early mass transit vehicles, such as the omnibus and the horse car, were first introduced in the Boston area between 1825 and 1850. In 1900 Boston's large urban street railway was the first to electrify, leading the way for the acceptance of electric railways in other parts of the country. However, the pace of these early advances was not maintained. To a large extent the present mass transit system is based on the speculative ventures of individual entrepreneurs at the turn of the century. The transit system did not grow out of a comprehensive rational plan based on prudent economic evaluation.

Each phase of mass transportation innovation and extension has left enduring effects on the region. The horse car and omnibus provided the basis for the first commuting suburbs for the wealthy, and the low-fare electric railway permitted people with lower incomes to live at some distance from their place of employment. Rapid transit made possible high-density residential, commercial, and industrial development in the region's core, and the self-powered bus made possible introduction of mass transportation to relatively low-density suburban areas.

The current transit service district of the Metropolitan Transit Authority covers an area of 123 square miles and services an average population density of 11,700 persons per square mile. By way of comparison, the Chicago Transit Authority serves a population density of 17,600 persons per square mile; in Philadelphia the transit service district serves a density of only 6,300 persons per square




MASS TRANSIT WORK TRIPS, 1959

Workers using public transportation

UNDER 10%

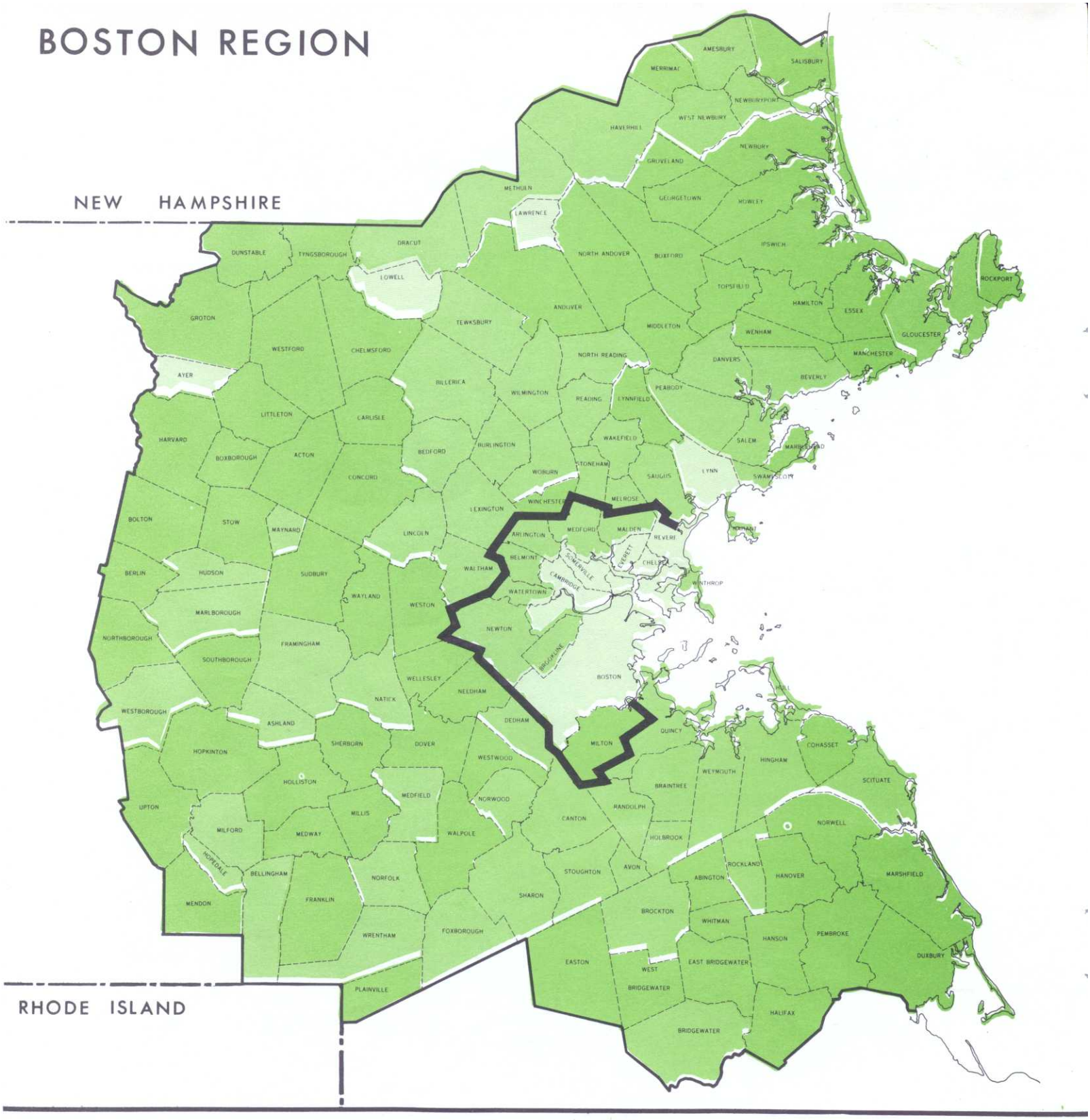
10% - 19%

20% - 29%

30% - 39%

Source: U.S. CENSUS, 1960

FIGURE 3




AUTOMOBILE OWNERSHIP PATTERNS, 1960

LESS THAN 2.5 PERSONS PER CAR

2.5 to 3.5 PERSONS PER CAR

MORE THAN 3.5 PERSONS PER CAR

M T A SERVICE DISTRICT

Figure 4

mile. In the Boston area, density in MTA communities ranges from 23,100 persons per square mile in Somerville to only 2,000 persons per square mile in Milton. Eight of the 14 communities in the district have an average density of over 7,000 persons per square mile.

The trend in transit passengers has shown a significant decline consistent with the pattern of decline in other rapid transit systems in the nation.

* Actual passenger figures unavailable. Figure shown represents combined surface and transit patronage and is subject to substantial overcounting.

In 1960 the MTA system carried 660,000 revenue* passengers per day on about 800 miles of routes.

A significant characteristic of the Boston Region railroad system is that, while most lines and branches radiate from downtown Boston, none of the lines effectively connect with each other. All trains to and from the north use North Station, and trains to and from the west and south use South Station. There is no rail passenger connection between the two stations and MTA service between the two stations was particularly inconvenient before the initiation of the demonstration experiment which provides five-minute bus service between the stations. Part of the problem arises from the fact that three separate railroad companies serve the region — the Boston & Maine, the New York Central (the Boston and Albany), and the New York, New Haven and Hartford Railroad.

The downward trend in commuters has been consistent over the past several years. In 1959 transportation patterns in the entire South Shore, including the heavily populated Quincy area, were disrupted by the abandonment of the Old Colony line of the New Haven Railroad. This discontinuance occurred concurrently with the opening of the six-lane Southeast Expressway, which serves the South Shore, and is responsible to a great extent for the congestion that has plagued the expressway since its opening day.

Only five major cities in the United States — Boston, New York, Chicago, Philadelphia and San Francisco — are served by commuter railroads. Boston ranks fourth, well behind larger regions in the number of commuter passengers. However, Boston's railroads rank second to New York in total route mileage of track in suburban service. Numerous main line and branch routes are a legacy from the nineteenth century when the economic prospects of the Boston Region stimulated railroad overexpansion. As a result, Boston has almost twice as many miles of line as Philadelphia but only half as many rail commuters. Instead of being concentrated along a few major axes of travel, Boston railroad passengers spread out in a diffuse pattern along numerous travel corridors.

The decline in Boston's rail commutation is somewhat more severe than declines in other railroad commuting centers, By 1962, prior to the inauguration of the Demonstration Project, only 18,000 weekday passengers were carried by the commuter railroads leading into Boston. By 1959 only seven per cent of person trips to downtown Boston were made by rail, compared to 11 per cent in 1950.

The financial conditions under which the railroads serving Boston are operating at the present time make it clear that railroad commuter service in the region is in a precarious position. The passenger trend was continuously downward prior to the startling reversal resulting from the MTC Demonstration Program.

## I. Cost Alternatives

A principal reason for formulating effective plans to maintain and improve public transportation systems is the high cost of the alternative of providing sufficient highways, parking facilities and maintenance services to accommodate the tremendous increase in automobile traffic. In the case of the railroads for example, cessation of commuter service would require 42,000 in-commuters per day — ten million per year — to shift to an alternative method of reaching Boston. A few might shift to buses, but some others — worn down by the tiring journey of going to work via automobile — might attempt to find work closer to home. This latter possibility is likely to be rather difficult because a high proportion of rail commuters are engaged in office occupations like business services, finance and insurance which are concentrated in downtown Boston and which heretofore have displayed little tendency to relocate to the suburbs. Others might share the burden by car pooling. This, however, is not a widespread phenomenon: on the average, only 1.3 persons-per-car are carried in in-commuting automobiles. Most former rail commuters would probably drive alone. It can probably be assumed, therefore, that discontinuance of rail commuter service would increase automobile traffic in the corridors leading to Boston by as much as 30,000 per day in both directions, with 70 per cent of this traffic occurring in the peak hours.

Judging by past experience, present knowledge and current trends, it is improbable that much additional capacity is now available or likely to be soon available on existing and planned in-town highways. With automobile traffic increasing at the rate of about 3.5 per cent annually, new in-town expressways like the Southeast Expressway and Central Artery are operating above design capacity. Not only are new highways used to the maximum shortly after being opened for traffic, but the total capacity of major expressways such as the planned Inner Belt will fall far short of anticipated traffic demand. To provide a rough order of magnitude comparison, it may be noted that the twelve-mile extension of the Massachusetts Turnpike will cost $147 million for construction and right-of-way costs and carry initially, an estimated 76,000 cars per day.

New construction, not only of highways but of parking facilities would be required to handle the 15,000 cars which would be added to the highways, if rail commuter service ceased. Moreover, large expenditures would also be required for new downtown parking facilities. The $10 million expended for the 1,500 car Boston Common Garage provides a general indication of the range of costs involved. Over and above these costs, there is the additional expenditure for such activities as street and highway maintenance and police protection.

Based on these general comparisons, it is probable that the Nassau County estimate that the per passenger cost is ten to twenty-five times higher on highways as compared to railroads has a good deal of validity. ("Better Rail Service for Nassau County", Summary, June 1963, Nassau County Planning Commission, P. IV.)

Thus far this discussion has been confined to the serious impact which would result if rail commuters service were discontinued. As compared to the MTA with its 170-180 million passengers per year, rail commuter service with 10 million passengers is a comparatively minor factor. Much of the present congestion on in-town highways and a good deal of the pressure for construction of expensive expressways has been generated by the tremendous decline experienced by the MTA between 1946 and 1962; in 1962 the MTA carried 250 million fewer revenue passengers than in 1946. Further declines on the MTA would add greatly to the strain on overtaxed streets, on in-town highway systems and on the demand for parking spaces. Any calculation of the need for maintaining and expanding public transportation must take into account the serious consequences of a further shift away from mass transportation added to anticipated year-to-year increases in automobile traffic.

J. **Problems of Coordination With Planning Project.**

In May 1962, the MTC designed and secured Federal agency approval of its $10.2 million planning and demonstration program as a coordinated integrated whole. The $5.4 million Demonstration Project was formulated to generate, as rapidly as possible, field-tested data and analysis for the $4.8 million Boston Regional Planning Project while the BRPP was designed not only to produce a long term comprehensive transportation and land use plan, but, also to provide inputs necessary for perspective for the demonstration experiments.

In the next few years there will doubtless be learned discussion on the administrative organization of comprehensive regional development planning projects. While there is no need for any detailed recapitulation of the comparatively slow progress of the BRPP in this report, it is necessary to state that the BRPP has long since abandoned its original work schedule. Six months after Federal agency approval of the application in the fall of 1962, the project was changed from a simple two agency (MTC and HHFA) organization of the type which has proven singularly successful in the case of the Demonstration Project to a complex administrative structure involving four agency co-direction (MTC, HHFA-URA, Bureau of Public Roads and Massachusetts Department of Public Works). This complex arrangement has proven to be totally unsatisfactory.

A satisfactory method to achieve a basic reorganization of the faltering Boston Regional Planning Project is now being developed with the cooperation of the Governor.

While the Boston Regional Planning Project is conducting basic traffic and land use studies, certain consultant contractual services, intended to provide information to guide the top level policy decisions, are not yet under way. These include studies of MTA management, transit extensions and technological developments. One unfortunate development is the delay in BRPP processing of the results of a special survey of public transportation passengers conducted in late 1962 and early 1963. In addition, consultant contracts for a fundamental population and economic base study, an in-depth study of consumer transportation market attitudes and for data processing had not received the required four-agency approval by the end of November, 1963.

In effect, the limited progress of the BRPP has meant that the anticipated BRPP in-puts for the demonstration program are not available. For this reason the demonstration project has been forced to adopt certain measures to make the Demonstration Project more of a self-contained unit. These steps included:

(1) employment of a planning section, consisting of two professional planners, to provide background and analytical materials;

(2) approval of a special Demonstration Project financed attitude survey to analyze the characteristics and motivations of users and non-users of public transportation;

(3) development of a preliminary comprehensive public transportation plan based on the results of the demonstration experiments, on a cost and revenue analysis and on demonstration program planning materials.

In brief, difficulties in integrating the planning and demonstration programs have been compensated for by appropriate action by the MTC in strengthening the self-sustaining character of the Demonstration Project.

# *Chapter III.*

# RAIL DEMONSTRATION EXPERIMENTS

The rail demonstration experiments have produced findings which were at least in some respects entirely unforeseen, and which can provide substantial help in finding a solution to urban transportation problems.

It appears from the results to date that frequent and properly scheduled service is a greater impetus to travel than reduced fares. On the New Haven Railroad, fares were reduced approximately ten per cent on all lines while at the same time service was increased on only two routes. Increases in patronage occurred only on the lines which received increased service. A further reduction of off-peak fares on the Boston-Providence route has failed to increase ridership significantly. Experience on the Boston & Maine is even more illustrative. During the first phase of the B&M experiment fares were reduced on all lines for an average of 30 per cent and train frequency and schedules substantially improved on all but the Bedford and Hudson branches. All the lines receiving service improvements showed immediate and continued gains in ridership, whereas no growth occurred on the Bedford and Hudson lines. In the second phase of the B&M experiment, commutation rates were returned to their pre-experiment level while service remained unchanged. Despite the increase in fares, not only did peak-hour ridership fail to decline, but actually increased. However, even lower off-peak fares on the B&M failed to generate any significant further increase in off-peak passenger volume.

## A. Boston & Maine Railroad

The B&M experiment has demonstrated that, contrary to some predictions, a substantial increase in rail passengers can be induced under the proper conditions. The response to the initial, well publicized, impact of approximately 70 per cent more service and 30 per cent lower fares was a reversal of a secular decline. From 1956 to 1962, the B&M's Boston passengers decreased from 14.4 million to 5.9 million, a 60 per cent loss in six years, representing an eight per cent annual decline. This pattern changed abruptly in the first week of the experiment, and by the end of October the increase had grown to over 32 per cent, and was still on its way upward.

The increase in passenger volume is not confined solely to peak-hour travel when highway traffic congestion adds to the relative attractiveness of rail travel. The numerical gain in the off-peak hours is only slightly smaller than that of the peak hours. Off-peak volume is up about 75 per cent in the peak period. The great increase in off-peak patronage is significant as it provides much needed revenue to offset the high costs created by previously underutilized men and equipment.

The second phase of the B&M experiment started August 1. The changes in fare structure initiated at that time consisted of restoring the fares paid by peak hour riders for multiple ride commutation tickets to substantially their former level and offering for the first time, reduced-fare, single-trip tickets good only for off-peak travel.

The substantial peak hour fare increase not only caused no decrease in peak hour riding, but in October the percentage increase over 1962 reached a new high. Unexpectedly, however, the reduction in off-peak fares effective in August brought no further increase in off-peak riding above the very substantial gain produced by the experiment in its first phase.

This inelasticity in passenger response appears to indicate that under current circumstances service improvement rather than fare level is the key to attracting and retaining passengers.

It is clear that there is also unsatisfied demand for rail service: prompt responses to isolated instances of changes in car assignment have been observed. The addition of a single car to a crowded train almost immediately has produced increases in travel which have absorbed the additional space. In short, contrary to historical pattern and recent assumptions, on a small scale, railroad commuting is responding to increased capacity in the manner characteristic of new highways.

The rail experiment must be evaluated in perspective. The B&M carries to Boston some 13,000 persons per day. This is probably not more than ten per cent of the total number arriving in Boston by automobile, but the peak hour load on the Boston & Maine is a much higher proportion of total peak hour travel.

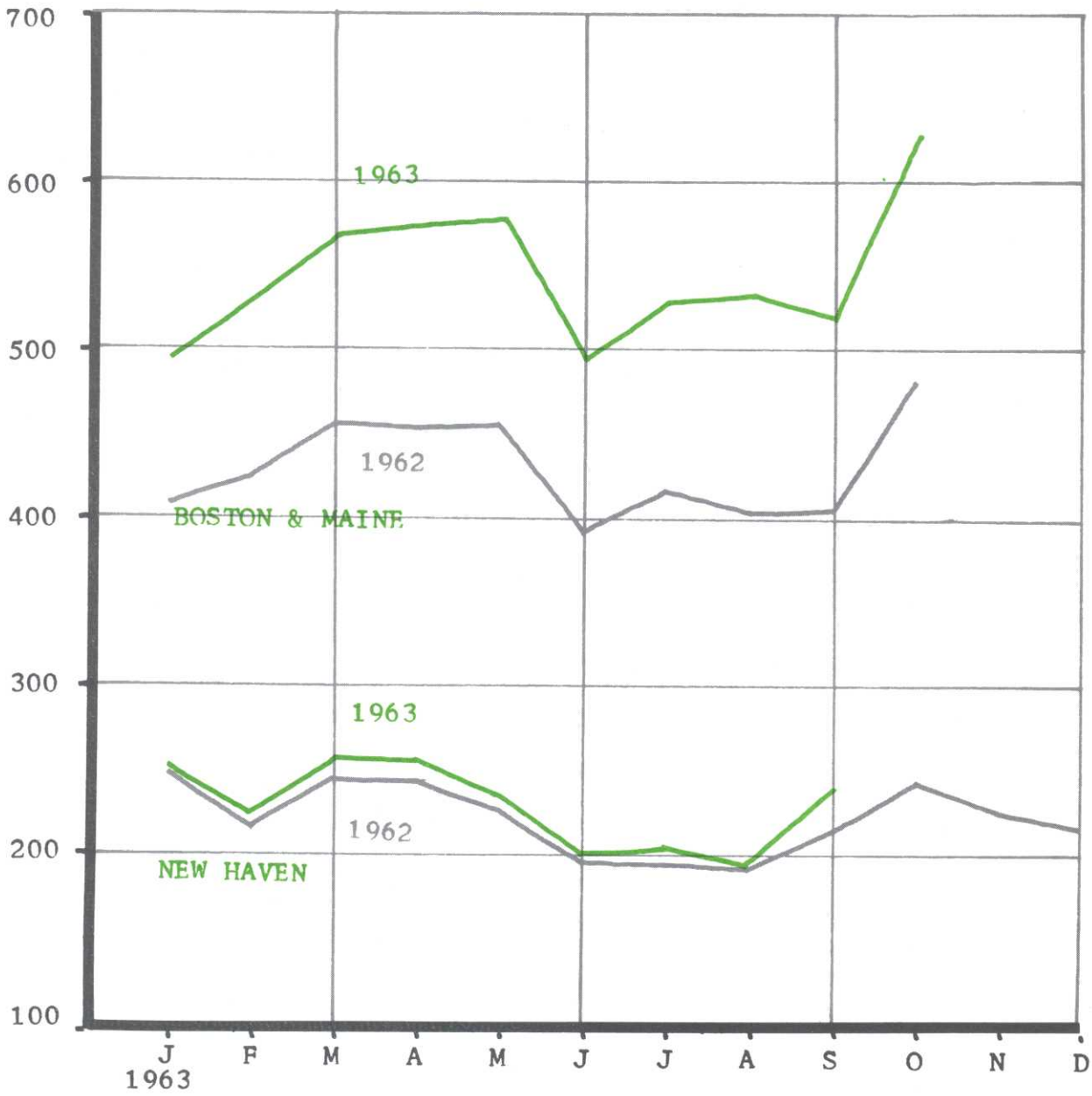
In performing this task, the B&M apparently experienced a long term recoverable loss of some $3 million annually on the basis of the results during the first phase of the experiment. Current indications are that the fare increase may have the effect of reducing this loss to between $2.0 and $2.5 million on an annual basis.

### 1. *Boston & Maine Experiment Results Phase One*

During the first week of the Boston & Maine experimental program, which started on January 10, 1963, an initial surge of passengers yielded 13.2 per cent increase

**RAILROAD PASSENGERS CARRIED, 1962 and 1963**

**TOTAL PASSENGERS (000's)**




SOURCES: B & M HEAD COUNTS
NH TICKET SALES



**Figure 5**

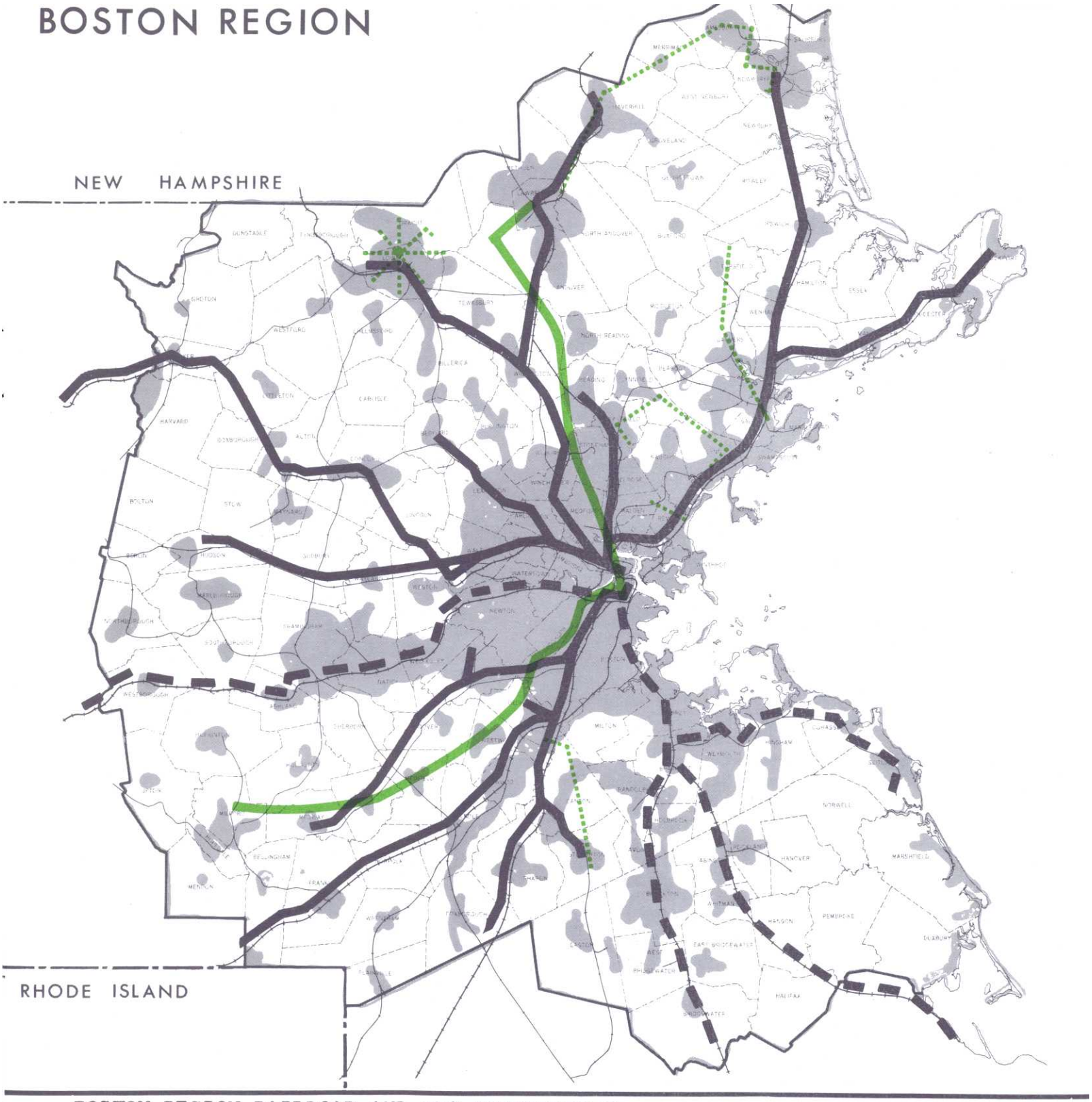



**Figure 6**

in passenger volume over the same week in 1962. By the end of January, the passenger volume on the B&M had increased to 24 per cent over January 1962. Commuters and occasional riders continued in large numbers to first test and then stay with the improved rail service through the winter months. The percentage growth over 1962 has increased at a slow but constant rate in almost every week. Essentially, during the winter months the railroad retained the new riders gained in January and February, and attracted some additional new customers each month.

During April and May it became obvious that passenger volumes had been nearly stabilized at a level substantially above 1962, and that passenger revenue for the whole period January-May, 1963 was only slightly below the corresponding months in 1962, despite the fare reductions. It was apparent that revenue would have to be substantially increased to maintain the higher service levels. Consequently, the decision was made by the MTC and the B&M to initiate a new fare structure. Effective August 1, 1963, all commutation rates were raised to approximately their 1962 level. At the same time, a new lower off-peak fare was established with the intent of better utilizing men and equipment in the off-peak hours and, in addition, encouraging a shift of some of the present peak riders to off-peak trains, thereby increasing peak capacity.

During July 1963, the last month under the first phase of the demonstration experiment, the total passenger volume on the B&M dropped in accordance with the normal seasonal pattern which primarily reflects vacations and loss of school traffic. However, as compared to 1962, passenger volumes increased more in July than in June on a percentage basis. Total passenger volume for the month of June 1963 were relatively low because June contained five Sundays and fewer week days as compared to previous months of 1963. Because of the varying number of business days in each month, percentage comparisons with comparable periods in 1962 are increasingly important.

a. *First Phase Results by Line*

i. Eastern Route

To the northeast, the B&M Eastern Route serves Lynn, Salem and Beverly (18) miles and then splits with a line to Rockport (35 miles from Boston) and a line to Newburyport (31.3 miles) and 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 has 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 these routes were reduced by 25 to 40 per cent.

The first station on the Eastern Route is not only relatively far out (Lynn 12 miles), but the first cities on this line are substantial urban areas in their own right generating considerable demand for commuter service to and from stations beyond. This provides an opportunity to offer intensive passenger service for travelers between stations as well as to and from the terminal in Boston, with the same crew and equipment.

A steady increase in off-peak passenger volume occurred on the Eastern Route. Total off-peak passenger volumes were about double the 1962 figure while total ridership increased by about 40 percent above 1962. Data from train audits also indicates a substantial increase in the number of inter-station riders (i.e. Beverly to Salem, etc.). A comparison of the February with the July train audit shows that while the total revenue passengers on the Eastern Route increased 2.4 percent since February (contrary to the seasonal decline on other routes), the inter-station volume increased by 43.6 percent over the same period. Increases in off-peak and inter-station travel are extremely significant to the railroad since they represent additional revenue from manpower and equipment which would otherwise be underutilized or idle.

The primary reason for the lack of a seasonal decline on the Eastern Route was the increased summer traffic to the resort areas on Cape Ann. There was not only an increase in commutation to summer homes in this area, but also more off-peak weekday, Saturday and Sunday traffic to Manchester, Gloucester and Rockport and to a lesser extent, Newburyport. This revenue increase which was primarily in one-way ticket sales, was particularly helpful in maintaining passenger volumes in the normally slower summer months.

ii. Reading Line

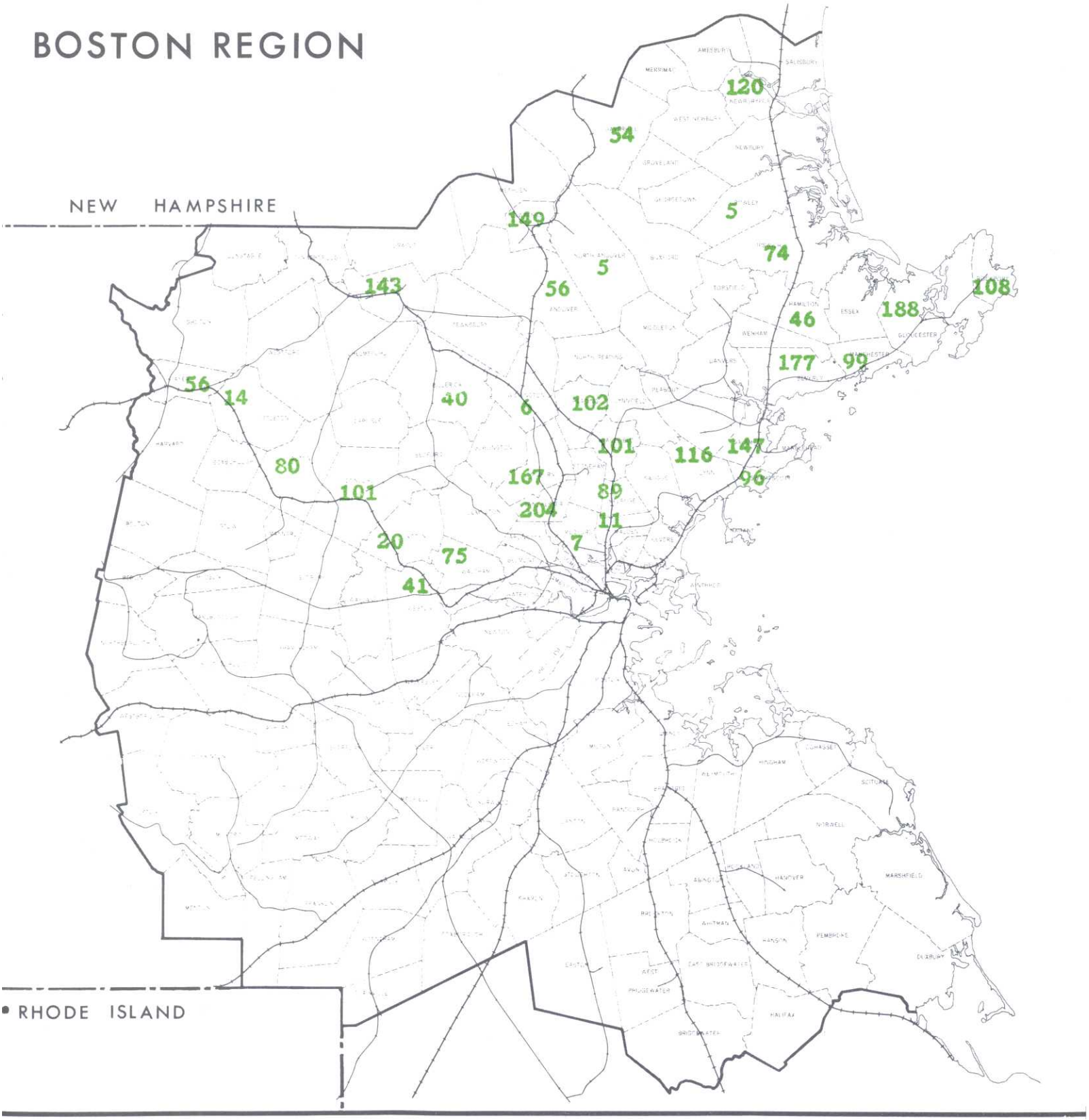
To the north, the B&M Reading Line (12 miles) serves six busy suburban stations in three towns. Service on this line was substantially doubled, resulting in half-hourly service increasing to a 15-minute headway in the rush hour. Rates during the first seven months were reduced 20 per cent on this route.

Passenger volumes on the heavily-traveled Reading line have been least responsive percentagewise to fare reductions and service increases. The percentage gain in ridership in July, 1963 on this line as compared to July, 1962 was about 19 per cent, the smallest increase of the five B&M routes.

Both peak hour and off-peak travel increased moderately during the first six months of the experiment. However, in July, off-peak ridership reached a new high of 43 per cent above July, 1962. Much of this July off-peak gain may be attributed to hot summer weather which had some impact on travel patterns on all routes.

iii. Western Route and New Hampshire Division

Service on the Western and New Hampshire Districts connecting Boston with Winchester, Woburn, Lowell, Law-




**NUMBER OF PASSENGERS USING**

**B & M LINES PER DAY:**

**INCREASE OVER 1962**

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**Figure 7**

## TABLE 5. BOSTON AND MAINE RAILROAD DEMONSTRATION PROJECT

**Monthly Summary Figures 1962 - 1963**

| Route Figures Include Inbound and Outbound | January | | | February | | | March | | | April | | | May | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1962 | 1963 | % Increase | 1962 | 1963 | % Increase | 1962 | 1963 | % Increase | 1962 | 1963 | % Increase | 1962 | 1963 | % Increase |
| Eastern Route | | | | | | | | | | | | | | | |
| Peak | 75594 | 86321 | 14.2 | 77139 | 91403 | 18.5 | 83827 | 99746 | 19.0 | 81837 | 99033 | 21.0 | 83526 | 101871 | 22.0 |
| Off Peak | 19757 | 36999 | 87.3 | 21096 | 42667 | 102.3 | 20623 | 44282 | 114.7 | 20718 | 43787 | 111.3 | 21148 | 42353 | 100.3 |
| Total | 95351 | 123320 | 29.3 | 98235 | 134070 | 36.5 | 104450 | 144028 | 37.9 | 102555 | 142820 | 39.3 | 104674 | 144224 | 37.8 |
| Reading Line | | | | | | | | | | | | | | | |
| Peak | 101091 | 112267 | 11.2 | 101364 | 113794 | 12.3 | 110083 | 125335 | 13.6 | 109024 | 125439 | 15.1 | 111676 | 128643 | 15.2 |
| Off Peak | 27572 | 35719 | 29.5 | 31821 | 39875 | 25.3 | 31993 | 42891 | 34.1 | 32300 | 42242 | 30.8 | 30985 | 40625 | 31.1 |
| Total | 128663 | 147986 | 15.0 | 133185 | 153669 | 15.4 | 142076 | 168226 | 18.4 | 141324 | 167681 | 18.7 | 142661 | 169268 | 18.7 |
| Western Route | | | | | | | | | | | | | | | |
| Peak | 34426 | 35110 | 2.0 | 35456 | 37297 | 5.2 | 39717 | 39862 | 0.7 | 38850 | 40049 | 3.1 | 37198 | 40915 | 8.1 |
| Off Peak | 15714 | 18199 | 15.8 | 15449 | 21037 | 36.2 | 16736 | 21189 | 26.6 | 16883 | 21491 | 27.3 | 17834 | 22981 | 28.9 |
| Total | 50140 | 53309 | 6.3 | 50905 | 58334 | 14.6 | 56453 | 61051 | 8.2 | 55733 | 61540 | 10.4 | 55032 | 63896 | 16.1 |
| N. H. Dist.—Lowell-Woburn | | | | | | | | | | | | | | | |
| Peak | 73784 | 87220 | 18.2 | 75156 | 89170 | 18.6 | 84357 | 98176 | 16.4 | 82866 | 99064 | 19.5 | 81438 | 97917 | 20.2 |
| Off Peak | 28039 | 38114 | 35.9 | 32143 | 43636 | 35.8 | 30389 | 44123 | 45.2 | 33149 | 46264 | 39.6 | 32032 | 45134 | 40.9 |
| Total | 101823 | 125334 | 23.1 | 107299 | 132806 | 23.9 | 114746 | 142299 | 24.0 | 116015 | 145328 | 25.3 | 113470 | 143051 | 26.1 |
| Fitchburg Division | | | | | | | | | | | | | | | |
| Peak | 26525 | 34972 | 31.8 | 26987 | 37212 | 37.9 | 30385 | 40290 | 32.6 | 30227 | 39401 | 30.4 | 30711 | 40752 | 32.7 |
| Off Peak | 5925 | 10966 | 85.1 | 6769 | 14270 | 110.8 | 7084 | 13899 | 96.2 | 7682 | 14242 | 85.4 | 7460 | 14318 | 91.9 |
| Total | 32450 | 45938 | 46.1 | 33756 | 51482 | 52.8 | 37469 | 54189 | 44.6 | 37909 | 53643 | 41.5 | 38171 | 55070 | 44.3 |
| All Lines | | | | | | | | | | | | | | | |
| Peak | 311420 | 355890 | 14.3 | 316104 | 368876 | 17.0 | 348369 | 403409 | 15.8 | 342804 | 402986 | 17.6 | 344549 | 410098 | 19.0 |
| Off Peak | 97007 | 139997 | 44.3 | 106568 | 161485 | 51.5 | 106825 | 166384 | 55.6 | 110732 | 168026 | 51.7 | 109459 | 165411 | 51.1 |
| Total | 408427 | 495887 | 21.4 | 422672 | 530361 | 25.5 | 455194 | 569793 | 25.2 | 453536 | 571012 | 25.9 | 454008 | 575509 | 26.8 |

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

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## BOSTON AND MAINE RAILROAD DEMONSTRATION PROJECT

| Route Figures Include Inbound and Outbound | June | | | July | | | August | | | September | | | October | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1962 | 1963 | % Increase | 1962 | 1963 | % Increase | 1962 | 1963 | % Increase | 1962 | 1963 | % Increase | 1962 | 1963 | % Increase |
| Eastern Route | | | | | | | | | | | | | | | |
| Peak | 75594 | 86321 | 14.2 | 77139 | 91403 | 18.5 | 83827 | 99746 | 19.0 | 81837 | 99033 | 21.0 | 83526 | 101871 | 22.0 |
| Off Peak | 19757 | 36999 | 87.3 | 21096 | 42667 | 102.3 | 20623 | 44282 | 114.7 | 20718 | 43787 | 111.3 | 21148 | 42353 | 100.3 |
| Total | 95351 | 123320 | 29.3 | 98235 | 134070 | 36.5 | 104450 | 144028 | 37.9 | 102555 | 142820 | 39.3 | 104674 | 144224 | 37.8 |
| Reading Line | | | | | | | | | | | | | | | |
| Peak | 99829 | 111522 | 11.7 | 101119 | 114389 | 13.1 | 97539 | 113860 | 16.7 | 98649 | 113112 | 14.7 | 110265 | 133993 | 21.5 |
| Off Peak | 24359 | 33505 | 37.5 | 26202 | 37488 | 43.1 | 26592 | 38282 | 44.0 | 27798 | 35009 | 25.9 | 32397 | 45129 | 39.3 |
| Total | 124188 | 145027 | 16.8 | 127321 | 151877 | 19.3 | 124131 | 152142 | 22.6 | 126447 | 148121 | 17.1 | 142662 | 179122 | 25.6 |
| Western Route | | | | | | | | | | | | | | | |
| Peak | 29262 | 32069 | 9.6 | 30466 | 33290 | 9.3 | 29532 | 33079 | 12.0 | 32093 | 36027 | 12.3 | 40301 | 45959 | 14.1 |
| Off Peak | 14994 | 19905 | 32.8 | 15176 | 22306 | 47.0 | 15367 | 21985 | 43.1 | 15408 | 22777 | 47.8 | 17683 | 27236 | 54.0 |
| Total | 44256 | 51974 | 17.4 | 45642 | 55596 | 21.8 | 44899 | 55064 | 22.6 | 47501 | 58804 | 23.8 | 57984 | 73195 | 26.2 |
| N. H. Dist.—Lowell-Woburn | | | | | | | | | | | | | | | |
| Peak | 72354 | 85265 | 17.8 | 73425 | 86926 | 18.4 | 70456 | 87705 | 24.5 | 71745 | 89801 | 25.2 | 83313 | 107283 | 28.8 |
| Off Peak | 27101 | 39434 | 45.5 | 29850 | 43337 | 45.2 | 30161 | 44093 | 46.2 | 27845 | 41270 | 48.2 | 31603 | 51225 | 62.1 |
| Total | 99455 | 124699 | 25.4 | 103275 | 130263 | 26.1 | 100617 | 131798 | 31.0 | 99590 | 131071 | 31.6 | 114916 | 158508 | 37.9 |
| Fitchburg Division | | | | | | | | | | | | | | | |
| Peak | 26086 | 34881 | 33.7 | 27456 | 36018 | 31.2 | 26586 | 35525 | 33.6 | 26773 | 37115 | 38.6 | 29443 | 44219 | 50.2 |
| Off Peak | 6136 | 12310 | 100.6 | 6434 | 12716 | 97.6 | 5865 | 13497 | 130.1 | 5961 | 13050 | 118.9 | 7020 | 18473 | 163.1 |
| Total | 32222 | 47191 | 46.5 | 33890 | 48734 | 43.8 | 32451 | 49022 | 51.1 | 32734 | 50165 | 53.3 | 36463 | 62692 | 71.9 |
| All Lines | | | | | | | | | | | | | | | |
| Peak | 299958 | 354130 | 18.1 | 312359 | 368160 | 17.9 | 303440 | 368142 | 21.3 | 305232 | 366960 | 20.2 | 348848 | 438507 | 25.7 |
| Off Peak | 91319 | 142657 | 56.2 | 101145 | 161602 | 59.8 | 100765 | 166345 | 65.1 | 97092 | 154747 | 59.4 | 110659 | 194182 | 75.5 |
| Total | 391277 | 496787 | 27.0 | 413504 | 529762 | 28.1 | 404205 | 534487 | 32.2 | 402324 | 521707 | 29.7 | 459507 | 632689 | 37.7 |

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

rence and Haverhill 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 and the New Hampshire route, receives half-hour off-peak and 15-minute peak hour service. Fares on these routes were reduced during these first seven months 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 and Western Routes, became a stop for New Hampshire route trains instead of Western Route trains.

Overall, increases on these B&M routes were moderate, running slightly behind the peak and off-peak gains in passenger volume for the five lines as a whole. The Western Route reached its highest percentage gain over 1962 under the initial fare structure for the month of July.

iv. Fitchburg Division

The Fitchburg Division connects Boston to the out-of-region industrial center of Fitchburg 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 during the first seven months of the experiment on this division and service on the line was increased from 20 trains a day to 36 trains a day. Service on the two branches of the Fitchburg Division serving Lexington and Bedford; Weston, Wayland, the Sudburys and Hudson was not increased although 21 per cent to 48 per cent fare reductions were offered through July. The lightly traveled Fitchburg Division as a whole displayed the largest percentage increases in ridership of any of the B&M divisions; July off-peak volume was 97 per cent above the 1962 level and peak volumes were up by 31 per cent.

2. *Boston & Maine Experiment Results — Phase Two*

On August 1, 1963, the demonstration project on the B&M entered its second phase. The B&M initiated a new fare structure which had been developed in cooperation with the MTC. Commutation rates were raised to about the same level as prior to the experiment but off-peak one way fares were further reduced below the initial experimental level. The fare changes are intended to test the price elasticity of commuter fares and to fit fares to cost and demand factors. The increased service, however, is being maintained as a constant so that the elasticity of fares can be more accurately measured.

The program of increased service and across-the-board fare reductions on the B&M produced substantial passenger increases in the first seven months of operation. The levelling off in passenger and revenue volume as the experiment progressed, however, indicated that the impact of the first phase of the program had already been fully tested.

The new fare structure tests the willingness of peak period commuters to pay fares close to their pre-demonstration levels for the improved quality of service provided in the experiment. At the same time, it will determine if lower fares in the off-peak periods, coupled with the continued improved service, does attract additional passengers at times when automobile travel is easiest.

The heaviest and most concentrated demand for commuter rail service occurs in the rush hours. The basic costs of the entire service are incurred in meeting this demand. Off-peak service constitutes a by-product which involves relatively little additional expense. Thus, these fare changes present a price structure that is calculated to reduce the cost to the railroad of commuter rail transportation.

The tariff revisions, developed with the assistance of Systems Analysis and Research Corporation, achieve the additional objective of restoring consistency to the patchwork pattern of fares resulting from increases in point to point fares on a piecemeal basis over many years. Differentials in the cost of 20-ride commuter tickets under the revised schedule are determined solely by the length of haul.

The rationale for determining the level of commuter fares was based upon the ownership costs of the self-propelled Budd Rail Diesel Cars (RDC) and a mileage cost which varies with the distance between stations. The carrying charges on a typical RDC run over $15,000 per year (1962 average was $14,700), which includes no return on original equity and nothing for eight cars then fully paid for. One hundred cars carry approximately 10,000 passengers in the peak period. Thus, 100 passengers require one car. Each passenger's share of the annual carrying charge is $150 or 60c per work day. Therefore, a constant of 30c per one way trip is established as a base for the regular commutation rate structure, in order that one inbound and one outbound passenger will pay 1/100th of the cost of ownership of the equipment. To this is added a rate per mile declining from 1.9c for the shorter distance to 1.7c for the great. This takes into account the significant impact of terminal costs on short hauls and the greater demand elasticity evidenced by the greater response to the demonstration project at greater distances, and follows this formula:

| Miles | Rate per Ride | Cost of 20-ride Ticket - $6.00 plus |
|---|---|---|
| 1-20 | 1.9c per mile | 38c per mile |
| 21-40 | 1.8c per mile | 36c per mile |
| 41 or more | 1.7c per mile | 34c per mile |

One way off-peak fares were set up on a zone basis and are generally below the cost per ride of a 20-ride ticket

TABLE 6. BOSTON & MAINE COMMUTER FARES AT SELECTED STATIONS

| Between Boston and: | Miles* | OFF-PEAK ONE WAY FARES (A) Prior To Experiment | (B) Phase I. | (C) Phase II. | PEAK ONE WAY FARES (A) Prior to Experiment | (B) Phase I. | (C) Phase II. | 20 RIDE COMMUTATION RATES (A) Prior To Experiment | (B) Phase I. | (C) Phase II. |
|---|---|---|---|---|---|---|---|---|---|---|
| Melrose | 6.8 | $ .57 | $ .50 | $ .50 | $ .57 | $ .50 | $ .55 | $ .436 | $ .349 | $ .435 |
| Winchester | 7.8 | .74 | .50 | .50 | .74 | .50 | .55 | .454 | .361 | .453 |
| Woburn | 9.7 | .74 | .50 | .50 | .74 | .60 | .60 | .492 | .385 | .490 |
| Lynn | 11.6 | .86 | .50 | .50 | .86 | .50 | .65 | .534 | .406 | .530 |
| Reading | 12.0 | .86 | .50 | .50 | .86 | .50 | .65 | .534 | .406 | .530 |
| Wilmington | 15.2 | 1.12 | .85 | .50 | 1.12 | .85 | .85 | .618 | .436 | .605 |
| Salem | 16.3 | 1.12 | .85 | .50 | 1.12 | .85 | .85 | .637 | .444 | .625 |
| Concord | 20.1 | 1.40 | .85 | .60 | 1.40 | .85 | .85 | .710 | .485 | .680 |
| Andover | 23.1 | 1.49 | .85 | .60 | 1.49 | .85 | .85 | .742 | .506 | .733 |
| Lowell | 25.4 | 1.64 | 1.10 | .65 | 1.64 | 1.10 | 1.10 | .791 | .536 | .770 |
| Lawrence | 26.4 | 1.64 | 1.10 | .65 | 1.64 | 1.10 | 1.10 | .791 | .536 | .788 |
| Haverhill | 33.3 | 1.77 | 1.10 | .75 | 1.77 | 1.10 | 1.10 | .844 | .576 | .844 ** |
| Newburyport | 37.3 | 2.06 | 1.10 | .75 | 2.06 | 1.10 | 1.10 | .964 | .610 | .964 ** |
| Fitchburg | 49.6 | 2.87 | 1.65 | .85 | 2.87 | 1.65 | 1.65 | 1.180 | .773 | 1.150 |

* 20-ride fares are computed on the basis of rounding fractional miles to the next higher whole mile.
** 20-ride fare as per formula was cut back to pre-demonstration level to avoid a fare increase.

Sources: Boston & Maine Railroad

with a minimum of 50c covering up to 20 miles, 60c for 21 to 25 miles, 65c for 26 - 30 miles, 75c for 31 - 40 miles and 85c for 41 - 50 miles. For the longest runs this means a saving of 26 per cent on the multiple ticket rate. These fares are good on any train arriving in Boston after 9:30 A.M. or any outbound train except between 4:30 and 6:30 P.M. and on all trains on Saturdays, Sundays and holidays.

Peak one-way fares were raised to 55c in the zone where the off-peak fare is 50c. The remainder of the peak one-way fares remained the same as the one-way fares as during the first seven months of the experiment. This fare is higher in every case than any commutation rate or the new off-peak fare.

3. *Impact of Fare Revision*

The first phase of the B&M experiment had included an average decrease in commuter fares of approximately 30 per cent; in the second phase commuter fares were restored substantially to the level, in effect, prior to the experiment. The change amounted to an average increase in fares of approximately 42 per cent.

After three months experience under the new fare structure, several facts became evident: (1) the increase in commutation rates to the pre-demonstration level did not discourage any of the new riders. Instead, peak hour passenger volume increased significantly in comparison to winter and spring 1963 and fall 1962 levels. (2) It appears that the increased frequency of service, rather than the decrease in fares, is the more critical factor in retaining the greater majority of the new commuters. However, it is probable that the railroad lost some new long-distance commuters because of the substantial fare increase that they experienced (as much as 40 per cent in terms of dollars required for the purchase of the 20-ride ticket). (3) The lower off-peak fares have, and are continuing to satisfy one objective, that of transferring some of the peak volume to off-peak hours, thereby providing more seats in the peak period. The lower off-peak rates have not, however, attracted a substantial number of new riders during this period. The off-peak percentage gains over 1962 have been running only about ten percentage points greater in September and October than in January through July 1963 period.

The most important result of the second phase of the experiment is the substantial increase in system revenue as compared to similar periods in 1962. In combination, the increase in commutation rates and the growth of peak hour passenger traffic has created a substantially greater cash flow for the railroad. At the same time the off-peak rates have attracted some occasional riders from the peak period, making possible operating cash savings which eventually may offset revenue losses from the lower fares.

It is important to note that the B&M is so close to operating at the maximum capacity of its fleet in the peak

periods that any additional substantial gains in peak riding will cause an increase in operating costs because of the need to move more seats per hour. Further, substantial gains in the off-peak period are possible with little or no change in operating costs.

The most encouraging fact about the second phase of the experiment, is that each week since August 1st, the total passenger volume has increased over the previous week, and that by the end of October it was at a substantially higher level than in the winter and spring months of 1963. At the present rate of growth, it is entirely possible that the capacity of the fleet, under the present operating methods, will be so close to capacity that further substantial passenger increases will not be possible in the peak periods with the equipment now available. However, the fact that full fleet utilization apparently has been approached suggests that an increase in capacity or other changes may be necessary if the passenger deficit is to be substantially further reduced.

To summarize, certain conclusions appear to be valid by the early results of the second phase of the rail experiment, namely:

a. Service improvement is a compelling stimulant to public patronage of this mode of mass transportation.

b. The level of fares is less influential in the long run than the level and quality of service. More revenue can be obtained from rail passengers with reasonable service than had been assumed. Thus there is hope that the rail deficit can be reduced by selective combinations of service and fare increases.

c. The number of passengers served by rail commuter service is sufficiently large to render cessation of this service an expensive and difficult problem for the Boston urban region.

d. The significant results of the second phase point to the desirability of continuing the experiment in modified form to test passenger response and for assessing the impact upon revenue of further revisions in the fare and service structure.

4. *Effect of Weather and Other Factors on Passenger Volume*

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 on Boston area highways on eight days, thereby increasing the number of people using train service. In general, bad weather results in a substantial increase in rail passenger volume. However, the fact that 1963 was a period of little snowfall tended to reduce B&M passenger levels as compared to 1962. On balance, therefore, differences in weather conditions between the winter of 1962 and 1963 did not significantly affect experiment results.

No significant differences in weather between 1962 and 1963 occurred in the spring months, but traffic patterns in July were somewhat different than in July, 1962, primarily because of extremely hot weather which resulted in the closing of many offices earlier in the day than usual. Early closing diverted some of the railroad's normal outbound peak riders to the off-peak period and is reflected in the July statistics shown in this report. August weather conditions were normal in comparison to past years, including 1962 and data for August are more directly comparable on a year-to-year basis.

5. *Passenger Train and Engine Crew Meetings*

On August 26, 27 and 28, the MTC staff conducted a series of informal meetings with B&M passenger train and engine crews for the purpose of reviewing with them the progress of the experiment, the reasons behind the fare change, and methods of maintaining better public understanding. Such meetings have proven to be most useful in providing complete information to all participants involved in experiments and are an integral part of each demonstration experiment. The enthusiastic cooperation of the railroad brotherhoods and management has been an important if unquantifiable factor in the success of the rail experiments.

6. *Revenue Analysis*

One of the primary objectives of the railroad demonstration project is to determine the true costs of providing commuter service. The second Mass Transportation Commission progress report (April, 1963) indicated that on the Boston & Maine Railroad's increased passenger revenues, resulting from a 19 per cent gain in passenger voltime over January, 1962 levels came within seven per cent of offsetting 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 & Maine Railroad was only 2.6 per cent below the level of February, 1962.

The further gains in passenger volumes which occurred in March, April, May and June resulted in the break-even point on the experiment fare reductions being reached. Revenues on the B&M Commuter lines in one seven-day week in June, 1963 were three percent above revenue levels the comparable week in June, 1962.

Year-to-year comparisons indicate that total July, 1963 commuter passenger revenues on the experiment lines on Boston & Maine were 6.1 per cent above the comparable 1962 period. Weekday revenues were up by 10.5 per cent, compensating for the July year-to-year 21.4 per cent decrease in weekend revenue.

Overall, revenue earned in the first phase of the seven month experiment was slightly higher — one per cent or

$20,000 above the totals for the seven comparable months of 1962. The Eastern line, with a $38,000 increase over 1962, was the outstanding performer in generating increased revenues.

September was the second month of the second phase of the experiment and the first month for which results are truly indicative of the impact of the higher fare structure. The increases for September brought passenger and revenue levels back to the high levels of the late spring.

Revenue passengers carried in September were up 143, 500, 37 per cent over September 1962. This exceeds both the 27 per cent year-to-year increase of the first phase experiment and the 30 per cent year-to-year increase which occurred in August.

Revenue passengers carried per weekday in September were 23,200 — an increase of 900 over August. This change was partly seasonal. Fall travel normally increases with the termination of the vacation season and the beginning of the new school year. Saturday travel followed the same pattern; Saturday daily passengers also returned to pre-summer levels. However, Sunday per-day passengers remained as low in September as in any month of the experiment.

Results by line showed no marked deviation from those in earlier months. The Eastern, Lowell and Fitchburg lines continue to exhibit the greatest year-to-year passenger increases. On a daily passenger basis, individual lines followed the overall Boston & Maine pattern for weekdays, Saturdays and Sundays.

September revenues were 23 per cent or $60,000 greater in 1963 than in 1962. In contrast, August 1963 revenue was only eight per cent above 1962 while total revenue in the first phase of the experiment was only one per cent above the comparable 1962 period.

With this increased patronage despite higher commuter fares, revenue earned per weekday rose $1,600 from August to September. This sizeable gain can be compared to an increase of only $400 per weekday in 1962. On the weekends, however, lower 1963 fares resulted in a decline from 1962 revenue levels on Saturdays and Sundays. This was the case in both August and September, indicating that thus far an insufficient number of additional week-end riders have been attracted to compensate for the fare reductions for the week-end off-peak period.

Revenue results by line indicate the impact of fare changes was felt throughout the railroads intrastate system. All lines experienced a year-to-year increase in weekday revenue earned, including, for the first time, the Western Line. On the weekends, only the Reading and Fitchburg lines did not show a year-to-year decrease in revenue earned. As the Reading line was not included in the off-peak fare reductions, it appears that only the Fitchburg line was able to generate sufficient additional business to make up for the lower fares.

*7. Comparison of B&M Revenue Passenger Volume by Community*

Table 8 shows the growth of revenue passenger (one-way) per day on each B&M route grouped by community. In terms of absolute numerical growth, Winchester with 204 new passengers per day and Gloucester with 188, are the leaders.

In ranking communities in terms of percentage growth, it is necessary to weigh the size of the absolute amounts involved so that insignificant numerical increases are not given too much weight because of a large percentage gain. Among those communities with significant percentage gains are Rockport (+ 144 per cent), Newburyport (+129 per cent), Gloucester (+ 110 per cent), Ayer (+ 112 per cent), Ipswich (85 per cent), Manchester (83 per cent), and Lynn (82 per cent). Figure 7 shows the absolute revenue passenger growth by community. As is indicated in Table 11, two-thirds of the passenger gains were derived from Boston & Maine stations located between ten and 26 miles front Boston. Approximately 20 per cent of the new passengers boarded at stations 30 to 50 miles from Boston.

TABLE 7

**BOSTON & MAINE RAILROAD DEMONSTRATION PROJECT**

**Increase in Passenger Head Count,
January through October 1963 vs. Comparable 1962 Months
Monday through Friday — Five Day Totals, Inbound and Outbound**

| 1962 | 1963 | Increase | Percent Change |
|---|---|---|---|
| January | January | | |
| 408,427 | 495,887 | 87,460 | 21.4% |
| February | February | | |
| 422,672 | 530,361 | 107,689 | 25.5 |
| March | March | | |
| 455,194 | 569,793 | 114,599 | 25.2 |
| April | April | | |
| 453,536 | 571,012 | 117,476 | 25.9 |
| May | May | | |
| 454,008 | 575,509 | 121,501 | 26.8 |
| June | June | | |
| 391,277 | 496,787 | 105,510 | 27.0 |
| July | July | | |
| 413,504 | 529,762 | 116,258 | 28.1 |
| August | August | | |
| 404,205 | 534,487 | 130,282 | 32.2 |
| September | September | | |
| 402,324 | 521,707 | 119,383 | 29.7 |
| October | October | | |
| 459,507 | 632,689 | 173,132 | 37.7 |

Total Weekday Increase, Monday through Friday, January through October: 1,193,290
Source: B&M Head Counts

between BOSTON and

LYNN • SWAMPSCOTT • SALEM

BEVERLY


# TIMETABLE

**Effective October 27, 1963**

**Eastern Standard Time**

**BOSTON AND MAINE RAILROAD**

# MONDAY – FRIDAY

(SEE OTHER SIDE FOR SATURDAY–SUNDAY–HOLIDAYS)

## FROM BOSTON

| Leave Boston | Lynn | Swamp-scott | Salem | Arrive Beverly |
|---|---|---|---|---|
| 7.05 | 7.22 | ..... | 7.29 | 7.33 |
| 7.20 | 7.38 | 7.41 | ..... | 7.52 |
| 7.55 | 8.12 | 8.15 | 8.20 | 8.25 |
| 8.10 | 8.28 | 8.31 | 8.39 | 8.43 |
| 8.30 | 8.48 | 8.51 | 8 57 | 9.04 |
| 9.00 | 9.18 | 9.21 | 9.27 | 9.32 |
| 9.30 | 9.48 | 9.51 | 9.57 | 10.02 |
| 10.00 | 10.18 | 10.21 | 10.27 | 10.32 |
| 10.30 | 10.48 | 10.51 | 10.57 | 11.02 |
| 11.00 | 11.18 | 11.21 | 11.27 | 11.32 |
| 11.30 | 11.48 | 11.51 | 11.57 | 12.02 |
| 12.00 | 12.18 | 12.21 | 12.27 | 12.32 |
| 12.30 | 12.48 | 12.51 | 12.57 | 1.02 |
| 1.00 | 1.18 | 1.21 | 1.27 | 1.32 |
| 1.30 | 1.48 | 1.51 | 1.57 | 2.02 |
| 2.00 | 2.18 | 2.21 | 2.27 | 2.32 |
| 2.30 | 2.48 | 2.51 | 2.57 | 3.02 |
| 3.00 | 3.18 | 3.21 | 3.27 | 3.32 |
| 3.30 | 3.48 | 3.51 | 3.57 | 4.02 |
| 3.55 | 4.13 | 4.16 | 4.22 | 4.27 |
| 4.15 | 4.33 | 4.36 | 4.42 | 4.46 |
| 4.30 | 4.48 | ..... | 4.55 | 5.00 |
| 4.45 | 5.03 | 5.06 | 5.11 | ..... |
| 5.00 | 5.18 | ..... | 5.24 | 5.28 |
| 5.03 | ..... | 5.23 | ..... | ..... |
| 5.15 | 5.33 | 5.36 | 5.42 | 5.49 |
| 5.30 | ..... | ..... | 5.52 | 5.57 |
| 5.32 | 5.51 | 5.54 | ..... | ..... |
| 5.45 | ..... | ..... | ..... | 6.10 |
| 5.50 | 6.07 | 6.10 | 6.16 | 6.20 |
| 6.05 | ..... | ..... | ..... | 6.32 |
| 6.10 | 6.28 | 6.31 | 6.37 | 6.42 |
| 6.35 | 6.52 | 6.55 | 7.01 | 7.06 |
| 7.00 | 7.18 | 7.21 | 7.27 | 7.32 |
| 7.30 | 7.48 | 7.51 | 7.57 | 8.02 |
| 8.00 | 8.18 | 8.21 | 8.27 | 8.32 |
| 8.30 | 8.48 | 8.51 | 8.57 | 9.02 |
| 9.00 | 9.18 | 9.21 | 9.27 | 9.32 |
| 9.30 | 9.48 | 9.51 | 9.57 | 10.02 |
| 10.00 | 10.18 | 10.21 | 10.27 | 10.32 |
| 10.30 | 10.48 | 10.51 | 10.57 | 11.02 |
| 11.00 | 11.18 | 11.21 | 11.27 | 11.32 |
| 12.10 | 12.28 | f12.31 | 12.32 | 12.42 |
| ..... | ..... | ..... | ..... | ..... |

## TO BOSTON

| Leave Beverly | Salem | Swamp-scott | Lynn | Arrive Boston |
|---|---|---|---|---|
| 5.58 | 6.03 | 6.09 | 6.12 | 6.30 |
| 6.18 | 6.23 | 6.29 | 6.32 | 6.50 |
| 6.38 | 6.43 | 6.49 | 6.52 | 7.10 |
| 6.58 | 7.03 | 7.09 | 7.12 | 7.30 |
| 7.13 | 7.18 | 7.24 | 7.27 | 7.45 |
| ..... | 7.29 | 7.35 | 7.38 | 7.57 |
| 7.34 | ..... | ..... | ..... | 8.00 |
| 7.43 | 7.48 | 7.54 | 7.57 | 8.15 |
| ..... | ..... | 8.07 | 8.10 | 8.27 |
| 8.02 | 8.07 | ..... | ..... | 8.30 |
| 8.07 | ..... | ..... | ..... | 8.33 |
| 8.13 | 8.18 | 8.24 | 8.27 | 8.45 |
| 8.32 | ..... | ..... | ..... | 8.58 |
| ..... | 8.39 | 8.45 | 8.48 | 9.05 |
| 8.54 | 8.59 | ..... | ..... | 9.23 |
| 9.00 | 9.05 | 9.11 | 9.14 | 9.32 |
| 9.30 | 9.35 | 9.41 | 9.44 | 10.02 |
| 10.00 | 10.05 | 10.11 | 10.14 | 10.32 |
| 10.30 | 10.35 | 10.41 | 10.44 | 11.02 |
| 11.00 | 11.05 | 11.11 | 11.14 | 11.32 |
| 11.30 | 11.35 | 11.41 | 11.44 | 12.02 |
| 12.00 | 12.05 | 12.11 | 12.14 | 12.32 |
| 12.30 | 12.35 | 12.41 | 12.44 | 1.02 |
| 1.00 | 1.05 | 1.11 | 1.14 | 1.32 |
| 1.30 | 1.35 | 1.41 | 1.44 | 2.02 |
| 2.00 | 2.05 | 2.11 | 2.14 | 2.32 |
| 2.30 | 2.35 | 2.41 | 2.44 | 3.02 |
| 3.00 | 3.05 | 3.11 | 3.14 | 3.32 |
| 3.30 | 3.35 | 3.41 | 3.44 | 4.02 |
| 4.00 | 4.05 | 4.11 | 4.14 | 4.32 |
| 4.15 | 4.20 | 4.26 | 4.29 | 4.47 |
| 4.45 | 4.50 | 4.56 | 4.59 | 5.17 |
| 5.00 | 5.05 | ..... | 5.12 | 5.29 |
| 5.24 | 5.29 | f 5.34 | 5.37 | 5.54 |
| 5.30 | 5.35 | 5.41 | 5.44 | 6.02 |
| 5.55 | 5.59 | ..... | e 6.06 | 6.23 |
| ..... | ..... | 6.15 | 6.18 | 6.35 |
| 6.30 | 6.35 | 6.41 | 6.44 | 7.02 |
| 7.00 | 7.05 | 7.11 | 7.14 | 7.32 |
| 8.00 | 8.05 | 8.11 | 8.14 | 8.32 |
| 8.07 | 8.12 | 8.18 | 8.21 | 8.38 |
| 9.00 | 9.05 | 9.11 | 9.14 | 9.32 |
| 10.00 | 10.05 | 10.11 | 10.14 | 10.32 |
| 11.00 | 11.05 | 11.11 | 11.14 | 11.32 |

# 50¢ TO BOSTON

FROM ALL ABOVE STATIONS ON TRAINS SHOWN IN RED

WYOMING • MELROSE

MELROSE HLDS.

HAMILTON • WENHAM • IPSWICH

NEWBURYPORT

ANDOVER • LAWRENCE • HAVERHILL

LYNN • SWAMPSCOTT • SALEM

BEVERLY

MTC

FREQUENT SERVICE

SPECIAL FARES

**Fares**

| Between Boston and | One Way Unrestricted Fare (All Trains) | One Way Off-Peak Fare (Trains in Red) | Commutation | |
|---|---|---|---|---|
| | | | 20-ride | 12-ride |
| Lynn | $ .65 | $ .50 | $10.60 | $ 6.41 |
| Swampscott | .65 | .50 | 10.95 | 6.88 |
| Salem | .85 | .50 | 12.50 | 8.09 |
| Beverly | .85 | .50 | 13.25 | 8.90 |

**Use of tickets—**

One way unrestricted
Commutation—12 ride, 20 ride } Good on all trains

One way off-peak { Good on all trains arriving in Boston after 9.30 A.M. and on all trains from Boston except those leaving between 4.30 and 6.30 P.M. Good all day Saturday and Sunday.

The increased service and special fares are made available to Boston and Maine Railroad patrons under a grant from the U. S. Housing and Home Finance Agency and the Commonwealth of Massachusetts which is administered by the Mass Transportation Commission.

WEDGEMERE • WINCHESTER

WOBURN

MANCHESTER • GLOUCESTER

ROCKPORT

WILMINGTON • LOWELL

N. BILLERICA

WAKEFIELD • READING

GREENWOOD

Figure 8

TABLE 8

BOSTON & MAINE RAILROAD
TOTAL NUMBER OF ONE WAY PASSENGERS (Outbound) PER WEEK DAY

May 1962 vs. September 1963

| Station | Miles From Boston | Passengers Per Day (One Way) May 1962 | Passengers Per Day (One Way) Sept. 1963 | New Passengers Per Day (One Way) | Percent Increase (Decrease) |
|---|---|---|---|---|---|
| **EASTERN ROUTE** | | | | | |
| Lynn | 12 | 142 | 258 | 116 | 82% |
| Swampscott | 13 | 313 | 409 | 96 | 30 |
| Salem | 16 | 299 | 446 | 147 | 49 |
| Beverly | 18 | 449 | 579 | 130 | 29 |
| | | 1203 | 169 | 489 | 40% |
| **Newburyport** | | | | | |
| N. Beverly | 21 | 47 | 67 | 20 | 43% |
| Hamilton-Wenham | 23 | 143 | 189 | 46 | 32 |
| Ipswich | 28 | 87 | 161 | 74 | 85 |
| Rowley | 31 | 21 | 26 | 5 | 24 |
| Newburyport | 37 | 93 | 213 | 120 | 129 |
| | | 391 | 656 | 265 | 67% |
| **Rockport** | | | | | |
| Montserrat | 20 | 81 | 96 | 15 | 19% |
| Beverly Farms, Prides | 23 | 96 | 108 | 12 | 13 |
| Manchester | 25 | 119 | 218 | 99 | 83 |
| Gloucester, W. Gloucester | 32 | 171 | 359 | 188 | 110 |
| Rockport | 35 | 75 | 183 | 108 | 144 |
| | | 542 | 964 | 422 | 75% |
| **FITCHBURG DIVISION** | | | | | |
| Waltham | 10 | 130 | 205 | 75 | 58% |
| Weston (b) | 13 | 55 | 96 | 41 | 75 |
| Lincoln | 17 | 130 | 150 | 20 | 15 |
| Concord, W. Concord | 20 | 240 | 341 | 101 | 42 |
| S. Acton, W. Acton, Littleton | 25 | 109 | 189 | 80 | 73 |
| Ayer | 31 | 29 | 43 | 14 | 48 |
| N. Leominster, Shirley | 36 | 50 | 106 | 56 | 112 |
| Fitchburg | 45 | 28 | 38 | 10 | 36 |
| | 50 | 31 | 60 | 29 | 94 |
| | | 802 | 1228 | 426 | 53% |

| Station | Miles From Boston | Passengers Per Day (One Way) May 1962 | Passengers Per Day (One Way) Sept. 1963 | New Passengers Per Day (One Way) | Percent Increase (Decrease) |
|---|---|---|---|---|---|
| **NEW HAMPSHIRE ROUTE** | | | | | |
| W. Medford | 5 | 68 | 75 | 7 | 10% |
| Winchester, Wedgemere, Winchester Hlds. | 8 | 774 | 978 | 204 | 26 |
| Wilmington | 15 | 311 | 317 | 6 | 2 |
| N. Billerica, E. Billerica | 22 | 51 | 91 | 40 | 78 |
| Lowell | 25 | 494 | 637 | 143 | 29 |
| | | 1698 | 2098 | 400 | 24% |
| **Woburn Branch** | | | | | |
| Cross Street | 9 | 81 | 108 | 27 | 33% |
| Woburn | 10 | 503 | 643 | 140 | 28 |
| | | 584 | 751 | 167 | 29% |
| **WESTERN ROUTE** | | | | | |
| Salem Street | 17 | 12 | 20 | 8 | 67% |
| Andover, Shawsheen, Ballardvale | 23 | 277 | 325 | 48 | 17 |
| Lawrence | 26 | 364 | 513 | 149 | 41 |
| No. Andover | 28 | 39 | 44 | 5 | 13 |
| Haverhill, Bradford | 33 | 249 | 303 | 54 | 22 |
| | | 941 | 1205 | 264 | 39% |
| **READING** | | | | | |
| Malden | 5 | 29 | 40 | 11 | 38% |
| Melrose | 7 | 1228 | 1317 | 89 | 7 |
| Wyoming, Melrose Hlds. | | | | | |
| Wakefield, Greenwood | 10 | 875 | 976 | 101 | 12 |
| Reading | 12 | 831 | 933 | 102 | 12 |
| | | 2963 | 3266 | 303 | 10% |
| TOTAL ALL STATIONS | | 9,125 | 11,860 | 2,735 | 30% |

(a) Figures shown are 1/5 of total for five consecutive weekdays
(b) Combined total for Kendall Green and Hastings
Source: B&M Audits, MTC

TABLE 9

BOSTON & MAINE RAILROAD
REVENUE PASSENGER INCREASE BY STATION

| Miles From Boston | Station | Per Cent Increase | Passenger Increase |
|---|---|---|---|
| 5 | W. Medford | 10% | 7 |
| 5 | Malden | 38 | 11 |
| 7 | Melrose | 7 | 89 |
| 8 | Winchester | 26 | 204 |
| 9 | Cross Street | 33 | 27 |
| 10 | Waltham | 58 | 75 |
| 10 | Woburn | 28 | 140 |
| 10 | Wakefield | 12 | 101 |
| 12 | Lynn | 82 | 116 |
| 12 | Reading | 12 | 102 |
| 13 | Weston | 75 | 41 |
| 13 | Swampscott | 30 | 96 |
| 15 | Wilmington | 2 | 6 |
| 16 | Salem | 49 | 147 |
| 17 | Salem Street | 67 | 8 |
| 17 | Lincoln | 15 | 20 |
| 18 | Beverly | 29 | 130 |
| 20 | Montserrat | 19 | 15 |
| 20 | Concord | 42 | 101 |
| 21 | N. Beverly | 43 | 20 |
| 22 | N. Billerica | 78 | 40 |
| 23 | Andover | 17 | 48 |
| 23 | Hamilton-Wenham | 32 | 46 |
| 23 | Beverly Farms | 13 | 12 |
| 25 | S. Acton | 73 | 80 |
| 25 | Manchester | 83 | 99 |
| 25 | Lowell | 29 | 143 |
| 26 | Lawrence | 41 | 149 |
| 28 | N. Andover | 13 | 5 |
| 28 | Ipswich | 85 | 74 |
| 31 | Littleton | 48 | 14 |
| 31 | Rowley | 24 | 5 |
| 32 | Gloucester | 110 | 188 |
| 33 | Haverhill | 22 | 54 |
| 35 | Rockport | 144 | 108 |
| 36 | Ayer | 112 | 56 |
| 37 | Newburyport | 129 | 120 |
| 45 | N. Leominster | 36 | 10 |
| 50 | Fitchburg | 94 | 29 |

TABLE 10

**BOSTON & MAINE RAILROAD**
**RANKING OF PASSENGER INCREASES BY FIVE MILE INTERVALS**

| Miles From Boston | Passenger Increase | |
|---|---|---|
| 0–5 | 18 | |
| 6–7 ½ | 89 | |
| 8–10 | 547* | Winchester<br>Waltham<br>Woburn<br>Wakefield |
| 11–12½ | 218 | |
| 13–15 | 143 | |
| 16–17½ | 175 | |
| 18–20 | 246 | |
| 21–22½ | 60 | |
| 23–25 | 428* | Andover<br>Hamilton-Wenham<br>Beverly Farms<br>S. Acton<br>Manchester<br>Lowell<br>Lawrence |
| 26–27½ | 149 | |
| 28–30 | 79 | |
| 30–32½ | 207 | |
| 33–35 | 162 | |
| 36–37½ | 176 | |
| 38–40 | 0 | |
| 41–50 | 39 | |

Table 11

**BOSTON & MAINE RAILROAD**
**RANKING PASSENGER INCREASE BY MILE**

| Miles | Passengers | |
|---|---|---|
| 5 | 18 | |
| 6 | 0 | |
| 7 | 89 | |
| 8 | 204 | |
| 9 | 27 | 33% of Total Passenger Increase |
| 10 | 316 | |
| 11 | 0 | |
| 12 | 218 | |
| 13 | 137 | |
| 14 | 0 | |
| 15 | 6 | |
| 16 | 147 | |
| 17 | 28 | |
| 18 | 130 | |
| 19 | 0 | |
| 20 | 116 | |
| 21 | 40 | |
| 22 | 48 | |
| 23 | 106 | |
| 24 | 0 | 21% of Total Passenger Increase |
| 25 | 322 | |
| 26 | 149 | |
| 27 | 0 | |
| 28 | 79 | |
| 29 | 0 | |
| 30 | 0 | |
| 31 | 19 | |
| 32 | 188 | |
| 33 | 54 | |
| 34 | 0 | 21% of Total Increase in Passengers |
| 35 | 108 | |
| 36 | 56 | |
| 37 | 120 | |
| 45 | 10 | |
| 50 | 29 | |

65% of Total Passenger Increase: Miles 10–26

40% of Total Passenger Increase: Miles 16–26

## B. **New Haven Railroad**

### 1. *New Haven Railroad Experiment Results*

On March 11, 1963, a reduced-fare, increased-service Demonstration Experiment went into effect on the East End Commuter territory. This territory is made up of the main line from Boston to Providence, over which the through New York trains operate, and five suburban lines which branch off from the main line at various points. These branches consist of (1) a line to Needham Heights (13.6 miles from Boston), (2) Can extension of the Needham Branch from Needham Junction to West Medway (26.0 miles from Boston), (3) a line to Blackstone (36.6) miles from Boston), (4) a short branch to Stoughton (18.9 miles from Boston) and (5) a short branch line to Dedham (20.0 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 were offered.

The fare reduction on all of the East End lines was about ten per cent. Special reduced rate round trip tickets were offered from all stations in addition to reduced fares on all commutation books. The reduced fares did not apply to any stop south of Attleboro on the Providence route since the Demonstration Program is formally applicable only within Massachusetts. (All of the new trains as well as those trains operated previously run through to Providence, Rhode Island for operating convenience.)

The New Haven experiment offers interesting comparisons with the demonstration experiment on the Boston & Maine Railroad. Total monthly commuter passenger volume on the New Haven is about half the volume on the B&M. In the first six months of the experiment the overall increase in New Haven commuter patronage was comparatively small, although a moderate gain in off-peak passenger volume did occur. In no month of the new experiment did any of the six New Haven routes equal the peak hour gains registered by any of the five Boston & Maine Routes. However, the two New Haven lines, which offered increased off-peak hour service along with fare reductions, both experienced substantial gains in off-peak volume.

As with the B&M, the New Haven results for the month of August were a significant further improvement over the results of the previous months of the New Haven demonstration experiment. Both peak and off-peak ridership increased to the highest level over 1962. The largest gains were on the Providence route, with a 35 per cent increase in the off-peak period and a 9 per cent increase in the peak, for an overall gain of 16 per cent. The other routes showed smaller but encouraging increases.

In gauging this relatively limited response as compared to the B&M, three 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 comparatively limited amount of publicity for the New Haven experiment as compared to the greater interest generated by its predecessor, the larger and more dramatic B&M experiment; (3) the less attractive older equipment on the New Haven as compared to the B&M's modern Budd cars.

Effective September 8, 1963, the MTC revised its experiment with the New Haven Railroad to reflect the experience in the first six months. In general, fares were raised to their pre-experiment level and a new reduced off-peak fare on the same basis as is now in effect on the B&M was initiated on the main line between Boston and Attleboro. Increased service on the Needham line was eliminated, but increased service on the Attleboro line was retained. This new combination of service and fares on the route that has the greatest traffic potential is being tested to determine if it will result in substantial gains in off-peak traffic, thereby better utilizing the present equipment and manpower.

*2. New Haven Railroad Experiment Analysis*

The New Haven experiment was conducted primarily on the two connecting Boston lines: to Providence and Needham. No change was made in rush hour service on these routes but off-peak frequency was increased to an approximate hourly pattern on the Providence line and was made slightly more frequent on the Needham line. Precise regularity of interval, making reference to a timetable unnecessary, is desirable in public transportation service but, unfortunately, the exigencies of railroad scheduling did not permit a precisely even hourly interval between trains on the Providence line or a half-hourly frequency to Needham. Nevertheless, the off-peak improvements described above helped to achieve a modest but definite increase in off-peak patronage. At the same time a fare decrease was offered not only on these two lines but also on all of the other New Haven lines into Boston. This fare decrease was only about ten per cent, much smaller than on the B&M, and had no measurable effect on passenger volumes, either in its initiation in March or its withdrawal in September. No change at either time was apparent in the peak-hour riding on either the Providence or the Needham lines. A small increase in passenger volumes occurred on the Blackstone line, where no service improvement was made, seemed to be a result of lower fares, but the evidence from other New Haven and all B&M lines suggested that the gain was due to other causes. Most likely the increase was a by-product of the publicity generated by the demonstration project as a whole. It may be further evidence that significant response can be achieved along the lines of the Hawthorne-Western Electric experiment where worker output continued to rise throughout a program of applied incentive and disincentive conditions.

TABLE 12.

**NEW HAVEN RAILROAD**
**INCREASE IN PASSENGER HEAD COUNTS**
**April through October 1963 to 1962**
**(Monday through Friday — 5 Day Totals)**

| 1962 | 1963 | | |
|---|---|---|---|
| **April** 250,361 | **April** 256,685 | Increase 6,324 | % Change + 2.5 |
| **May** 255,503 | **May** 265,747 | 10,244 | + 4.0 |
| **June** 210,121 | **June** 216,166 | 6,045 | + 2.9 |
| **July** 212,123 | **July** 222,161 | 10,038 | + 4.7 |
| **August** 204,447 | **August** 226,126 | 21,629 | + 10.6 |
| ***September** 72,488 | ***September** 80,211 | 7,723 | + 10.7 |
| **October** 244,052 | **October** 270,579 | 26,527 | + 10.9 |
| | | *80,807 | |

Total Passenger Increase April through October 1963 vs. 1962 Excluding Month *September — Total 80,807.
September Figures Not Available from New Haven Railroad, Providence Line Only as Shown.
Source: New Haven Head Counts — Inbound-Outbound

The only substantial increases in travel on the New Haven occurred on lines where service improvements were made, i.e. on off-peak travel on the Needham and Providence lines. In contrast, limited fare changes had little effect.

The Needham line is apparently too short to render conventional rail service attractive. The number of passengers counted during the off-peak period was so small that the increase, although substantial in percentage terms, represented a number so small as to be mathematically unreliable. This would seem to be further borne out by the fact that the withdrawal of the experimental service in September caused very little diminution in riding, indicating that New Haven passengers are a hard core group, a passenger market not easily susceptible to growth incentives. To achieve any substantial increase in rail passengers in the corridor, a much different rail service would be required. Such a drastically improved rail service would result from the much discussed extension of rail rapid transit service to Needham from the rapid transit service now provided by the MTA.

The Blackstone line of the New Haven enjoys three round trips of peak hour service and one and one-half off-peak round trips. No additional service was provided on this line during the demonstration experiments, but fare reductions were in effect for the first six months, then

## 13 New Haven Railroad Demonstration Project

### Monthly Summary Figures — 1962-1963

| Route Figures Include Inbound and Outbound | April 1962 | April 1963 | April % Change | May 1962 | May 1963 | May % Change | June 1962 | June 1963 | June % Change | July 1962 | July 1963 | July % Change | August 1962 | August 1963 | August % Change |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PROVIDENCE | | | | | | | | | | | | | | | |
| Peak | 58,687 | 58,360 | – 0.6 | 58,533 | 60,218 | + 3.0 | 48,721 | 49,808 | + 2.2 | 50,322 | 51,238 | + 1.8 | 47,846 | 51,893 | + 8.5 |
| Off-Peak | 27,171 | 30,987 | +14.0 | 26,220 | 31,067 | +18.0 | 21,466 | 24,640 | +14.8 | 21,482 | 26,020 | +21.1 | 20,485 | 27,584 | +34.7 |
| Total | 85,858 | 89,347 | + 4.0 | 84,753 | 91,285 | + 8.0 | 70,187 | 74,448 | + 6.1 | 71,804 | 77,258 | + 7.6 | 68,331 | 79,477 | +16.3 |
| NEEDHAM | | | | | | | | | | | | | | | |
| Peak | 73,635 | 72,572 | – 1.0 | 76,373 | 75,335 | – 1.4 | 66,225 | 63,349 | – 4.3 | 67,068 | 63,830 | – 4.8 | 63,303 | 64,422 | + 1.8 |
| Off-Peak | 12,651 | 15,049 | + 2.4 | 12,718 | 15,400 | + 21.0 | 10,012 | 12,307 | +32.9 | 10,220 | 12,863 | +35.6 | 10,279 | 13,392 | +30.7 |
| Total | 86,286 | 88,221 | + 2.2 | 89,091 | 90,735 | + 2.0 | 76,237 | 76,656 | + 0.5 | 77,288 | 77,693 | + 0.5 | 73,552 | 77,814 | + 5.8 |
| WEST MEDWAY | | | | | | | | | | | | | | | |
| Peak | 1,204 | 1,051 | – 13.0 | 1,281 | 1,146 | – 10.5 | 1,105 | 941 | – 14.8 | 1,277 | 976 | – 23.6 | 1,113 | 964 | – 13.4 |
| Off-Peak | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— |
| Total | 1,204 | 1,051 | – 13.0 | 1,281 | 1,146 | – 10.5 | 1,105 | 941 | – 14.8 | 1,277 | 976 | – 23.6 | 1,113 | 964 | – 13.4 |
| BLACKSTONE | | | | | | | | | | | | | | | |
| Peak | 29,510 | 29,864 | + 1.0 | 29,808 | 29,604 | – 0.7 | 24,053 | 25,094 | + 4.7 | 22,936 | 24,849 | + 8.3 | 23,145 | 26,103 | + 12.8 |
| Off-Peak | 9,994 | 9,463 | – 5.3 | 13,172 | 12,954 | – 1.7 | 6,016 | 5,913 | – 1.7 | 6,823 | 6,918 | + 1.4 | 6,282 | 6,557 | + 4.4 |
| Total | 39,504 | 39,327 | – 0.4 | 42,980 | 42,558 | – 1.0 | 30,069 | 31,007 | + 3.1 | 29,759 | 31,757 | + 6.8 | 29,427 | 32,660 | + 11.0 |
| DEDHAM | | | | | | | | | | | | | | | |
| Peak | 9,083 | 9,065 | – 0.2 | 9,086 | 9,640 | + 6.0 | 8,517 | 8,131 | – 4.5 | 7,841 | 7,868 | + 0.3 | 7,484 | 7,587 | + 1.4 |
| Off-Peak | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— |
| Total | 9,083 | 9,065 | – 0.2 | 9,086 | 9,640 | + 6.0 | 8,517 | 8,131 | – 4.5 | 7,841 | 7,868 | + 0.3 | 7,484 | 7,587 | + 1.4 |
| STOUGHTON | | | | | | | | | | | | | | | |
| Peak | 28,426 | 29,674 | + 4.4 | 28,312 | 30,383 | + 7.0 | 24,006 | 24,983 | + 4.1 | 24,154 | 26,609 | + 10.2 | 24,590 | 27,624 | + 12.3 |
| Off-Peak | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— |
| Total | 28,426 | 29,674 | + 4.4 | 28,312 | 30,383 | + 7.0 | 24,006 | 24,983 | + 4.1 | 24,154 | 26,609 | + 10.2 | 24,590 | 27,624 | + 12.3 |
| TOTAL | | | | | | | | | | | | | | | |
| Peak | 200,545 | 200,586 | + 0.2 | 203,393 | 206,326 | + 1.4 | 172,627 | 172,306 | – 0.2 | 173,598 | 175,370 | + 1.0 | 167,481 | 178,593 | + 6.6 |
| Off-Peak | 49,816 | 56,099 | + 13.0 | 52,110 | 59,421 | + 14.0 | 37,494 | 43,860 | + 17.0 | 38,525 | 46,801 | + 21.5 | 37,016 | 47,533 | + 28.4 |
| Total | 250,361 | 256,685 | + 2.5 | 255,503 | 265,747 | + 4.0 | 210,121 | 216,166 | + 2.9 | 212,123 | 204,497 | + 4.7 | 222,161 | 226,126 | + 10.6 |

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

# NEW HAVEN RAILROAD DEMONSTRATION PROJECT

## MONTHLY SUMMARY FIGURES — 1962-1963

| Route Figures Include Inbound and Outbound | September 1962 | September 1963 | September % | October 1962 | October 1963 | October % |
|---|---|---|---|---|---|---|
| PROVIDENCE | | | | | | |
| Peak | 50741 | 51865 | + 2.2 | 58615 | 60794 | + 3.7 |
| Off-Peak | 21747 | 28346 | + 30.3 | 24459 | 35525 | + 45.2 |
| Total | 72488 | 80211 | + 10.7 | 83074 | 96319 | + 15.9 |
| NEEDHAM | | | | | | |
| Peak | | | | 72717 | 74949 | + 3.1 |
| Off-Peak | | | | 13763 | 13645 | – 0.9 |
| Total | | | | 86475 | 88594 | + 2.5 |
| WEST MEDWAY | | | | | | |
| Peak | | | | 1131 | 1111 | – 1.8 |
| Off-Peak | | | | —— | —— | —— |
| Total | | | | 1131 | 1111 | – 1.8 |
| BLACKSTONE | | | | | | |
| Peak | | | | 29239 | 33449 | + 14.4 |
| Off-Peak | | | | 8729 | 9841 | + 12.8 |
| Total | | | | 37968 | 43290 | + 14.0 |
| DEDHAM | | No Statistics Available From New Haven Railroad | | | | |
| Peak | | | | 7475 | 9118 | + 22.0 |
| Off-Peak | | | | —— | —— | —— |
| Total | | | | 7475 | 9118 | + 22.0 |
| STOUGHTON | | | | | | |
| Peak | | | | 27929 | 32147 | + 16.8 |
| Off-Peak | | | | —— | —— | —— |
| Total | | | | 27929 | 32147 | + 16.8 |
| TOTAL | | | | | | |
| Peak | | | | 197101 | 211568 | + 7.3 |
| Off-Peak | | | | 46951 | 59011 | + 25.7 |
| Total | | | | 244052 | 270579 | + 10.9 |

withdrawn. A small increase in patronage soon appeared, and apparently was not deterred by the return to higher fares in the second phase of the experiment. Even with this increase, volume is less than 1,000 riders per day.

The Boston and Providence line, where substantial improvement in off-peak service was offered, carried substantially increased volume on its off-peak trains, and, contrary to the experience on the B&M, a greater increase appeared promptly upon the application of the new low off-peak fares in September. More than 2,000 passengers per day are brought into Boston on this line, a volume which makes its continuance important to the solution of the general urban transport problem. Moreover, this line has further importance as a substitute, by automobile feeder, for other lines. This is especially true at the station at the circumferential Route 128, where a large parking lot is available to passengers driving from a wide area.

*3. New Haven Railroad Audits*

On the New Haven Line audits were made during the weeks of April 1 and June 24 (6-day weeks).

The total number of passengers carried on the East End Intrastate service for the week in June was 52,000 compared to 63,000 for the week in April, a decline of 18 per cent. This is slightly more than the normal seasonal decline, because the April audit was made during the first week of the month, while the June audit came during the last week of the month, when the students no longer used the trains. There were 4,200 pupil tickets collected in April as against 600 in June.

Of the total intrastate volume on the East End, the passengers carried were divided as follows:

| Line | Per Cent Total April Passengers | Per Cent Total June Passengers |
|---|---|---|
| Providence* | 39.2 % | 37.4 % |
| Blackstone | 14.7 | 13.2 |
| Stoughton | 10.6 | 11.5 |
| Dedham | 3.2 | 3.3 |
| Needham | 32.5 | 33.0 |
| West Medway | 0.4 | 0.4 |

* Attleboro last stop in Massachusetts on Providence line, but all trains run through to Providence for operating covenience.

Only three lines offered off-peak service, Providence, Blackstone and Needham. The travel on these lines was divided as follows:

| Line | April Peak | Off-Peak | June Peak | Off-Peak |
|---|---|---|---|---|
| Providence | 55.6 % | 44.4 % | 61.5 % | 38.5 % |
| Blackstone | 76.0 | 24.0 | 79.0 | 21.0 |
| Needham | 78.5 % | 21.5 % | 79.2 % | 20.8 % |

Source: NH Train Audits

The Stoughton Branch which has two peak hour trains which bring in over 800 persons per day into Boston. Of these, however, 600 board the train at main line stations, and for that reason this branch is not a significant factor in the region's transportation pattern.

Stoughton Line — Between Boston and

| | Miles | % Total Passengers |
|---|---|---|
| Hyde Park | 8.5 | 1.7 |
| Readville | 12.0 | 1.2 |
| Route 128 | 16.0 | 27.3 |
| Canton Jct. | 15.0 | 32.5 |
| Can ton | 16.0 | 5.5 |
| Stoughton | 19.0 | 32.0 |

Blackstone Line — Between Boston and

| | Miles | % Total Passengers |
|---|---|---|
| Hyde Park | 8.5 | 1.2 |
| Readville | 10.0 | 1.2 |
| Endicott | 11.0 | 20.5 |
| Rust Craft | 11.5 | 2.3 |
| Islington | 13.0 | 5.6 |
| Norwood | 14.5 | 11.0 |
| Norwood Ctr. | 15.0 | 24.8 |
| Plimptonville | 18.0 | 1.5 |
| Walpole | 19.5 | 8.9 |
| Norfolk | 23.5 | 3.5 |
| Franklin | 28.0 | 12.7 |
| Blackstone | 37.0 | 5.7 |

Dedham Line — Between Boston and

| | Miles | % Total Passengers |
|---|---|---|
| Mount Hope | 6.5 | 9.9 |
| Hyde Park | 8.5 | 46.0 |
| Readville | 10.0 | 14.5 |
| East Dedham | 11.0 | 11.9 |
| Stone Haven | 11.5 | 5.1 |
| Dedham | 12.0 | 12.4 |

Needham Line — Between Boston and

| | Miles | % Total Passengers |
|---|---|---|
| Roslindale | 6.5 | 14.6 |
| Bellevue | 7.5 | 9.3 |
| Highlands | 8.0 | 7.7 |
| West Roxbury | 8.5 | 13.2 |

| | | |
|---|---|---|
| Birds Hill | 11.0 | 20.8 |
| Needham Jct. | 12.0 | 16.0 |
| Needham | 13.0 | 13.0 |
| Needham Hts. | 14.0 | 5.5 |

West Midway Line — Between Needham Jct. and

| | **Miles from Boston** | **% Total Passengers** |
|---|---|---|
| Charles River | 16.0 | 7.2 |
| Dover | 19.5 | 13.0 |
| Farm Street | 20.5 | 11.8 |
| Medfield Jct. | 21.5 | 10.3 |
| Cliquot | 23.5 | 5.7 |
| Millis | 24.0 | 10.7 |
| Medway | 27.0 | 14.5 |
| West Medway | 28.0 | 26.3 |

(a) Hyde Park and Readville are common to:

Providence Line
Blackstone Line
Stoughton Line
Dedham Line

(b) Route 128 is common for

Proyidence Line
Stoughton Line

Hyde Park traffic is 5.7 % of the 4 lines serving Hyde Park.

Readville traffic is 2.4 % of the 4 lines serving Readville.

Route 128 traffic is 20.0 % of the 2 lines serving Route 128 Station.

The average distance travelled one way per passenger is:

| | | | | | | |
|---|---|---|---|---|---|---|
| Providence Line | 19.7 | miles | of | 44.0 | Route | Miles |
| Stoughton Line | 15.3 | " | " | 19.0 | " | " |
| Blackstone Line | 17.8 | " | " | 37.0 | " | " |
| Dedham Line | 9.4 | " | " | 12.0 | " | " |
| Needham Line | 10.1 | " | " | 14.0 | " | " |
| West Medway Line | 23.6 | " | " | 26.0 | " | " |

It was expected that the Providence Line with 13 inbound and 16 outbound off-peak trains would show a greater percentage of passengers during off-peak periods than would the Blackstone Line with only one inbound and three outbound off-peak trains, but this was not the case. Likewise, the Needham Line with 11 inbound and 12 outbound trains handled a disappointingly small proportion of the total patronage on these trains. It was for this reason that the eight off-peak trains on the Needham Line that were added during the first demonstration were discontinued in the second phase of the New Haven experiment.

The distribution of passengers travelling between Boston and outlying points (either way) on the various lines is as follows:

Providence Line — Between Boston and

| | Miles | % Total Passengers |
|---|---|---|
| Hyde Park | 8.5 | 3 (a) |
| Readville | 10.0 | 2 (a) |
| Route 128 | 12.0 | 15 (b) |
| Canton Jct. | 15.0 | 8.5 |
| Sharon | 18.5 | 23 |
| East Foxboro | 23.0 | 1.9 |
| Mansfield | 25.0 | 15.7 |
| Attleboro | 32.0 | 11.6 |
| (Providence)* | 44.0 | 16.5 |

* Beyond Demonstration Area: shown for information purposes.

**C. New York Central, Boston & Albany Division**

The Boston & Albany line to the west of Boston has maintained substantially the same service and fare structure over the past year. Data comparing the first week of each month with a similar period of a year ago indicates that without the impetus of a demonstration experiment involving service and/or fare changes, patronage has continued downward. A similar trend had been evident on the two other Boston railroads prior to the initiation of the MTC demonstration experiments.

TABLE 14.

NEW YORK CENTRAL RAILROAD TRENDS ON BOSTON & ALBANY DIVISION

| First Week of: | Percent Decline from Passenger Volume During Same Week Last Year on NYC Boston Commuter Trains |
|---|---|
| January | 4.3 % |
| February | 5.5 |
| March | 8.1 |
| April | 6.0 |
| May | 5.7 |
| June | 2.8 |
| July | 17.5 * |
| August | 5.3 |

* The July figure is distorted by the influence of July 4th which differs in different years by falling on a different day of the week.
Source: B&A.

# *Chapter IV.*
# METROPOLITAN TRANSIT AUTHORITY DEMONSTRATION EXPERIMENTS

The MTC in conjunction with the Metropolitan Transit Authority has designed a series of ten experiments involving MTA bus lines and parking lots. Five experimental bus lines have been in operation since June 24, 1963 and four additional bus experiments began operation on September 3. For all of these routes at 10c fare was established.

A. *Bus Experiments*

1. Experiments starting June 1963
   For convenience numbers have been assigned to the experimental bus routes as follows:

   E-2 A new bus route from North Station to the Massachusetts Institute of Technology serves, in addition to MIT, a number of manufacturing and research plants and the Massachusetts General Hospital. This route was designed to provide a convenient connecting service for commuters using trains in and out of the North Station. This experiment will be terminated on December 28. The service operates every 15 minutes during the day. Average September weekday passengers: 440.

   E-3 A new bus route from Dudley Station to Sullivan Square operated over a circumferential route at a radius of three miles from downtown Boston. This route, and its companion E-5, crossed eight rapid transit radials in each direction. In addition to this connecting service, it provided a substantial crosstown ride at a 10c fare. Previously trips between many locations were only possible by traveling downtown and out again via a different rapid transit radial route. The circumferential bus routes provided more direct crosstown service with no change of vehicle. This experiment was terminated on November 23. The service operated every 10 minutes in rush hours and every 15 minutes during the day. Average September weekday passengers: 5,500.

   E-4 Experimentally increased frequency of service was added to an already established suburban feeder route from Elm Street in Medford to Sullivan Square rapid transit station. This experiment was terminated on November 23. Where previously this route had operated on a five-minute frequency in rush hours and on a ten-minute frequency in midday, service was added to provide a five-minute headway throughout the day. Average September weekday passengers: 770.

   E-5 A new bus route from Ashmont Station to Harvard Square operates over a circumferential route at a radius of five miles from downtown Boston. The service operates every 10 minutes in rush hours and every 15 minutes during the day. A revision of the length and frequency of this circumferential service goes into effect on December 28. Average September weekday passengers: 5,500.

   E-7 The previously established downtown route between North and South Stations in Boston had operated on a five-minute frequency in rush hours and a 25-minute midday frequency. This was changed to a five-minute frequency all day for the period between June 24, 1963 and December 28, 1963. On December 28 the experimental pattern will be modified to provide a frequency of four minutes in rush hours and eight minutes in midday. Average September weekday passengers: 1,070.

In evaluating MTA experiment results, the 3.4 per cent systemwide decline in MTA passenger revenues between the first half of 1962 and 1963 must be taken into consideration. Unfortunately, this overall system decline cannot be precisely isolated for individual bus lines or corridor groupings of bus routes. Past records indicate, however, that declines on the bus components of the system were usually greater than decreases in rail transit ridership. As indicated below, two of the experimental routes on which patronage increased by only three per cent were terminated at the end of November. The MTA has generously agreed to keep records of passengers carried after the termination of these experiments. It will be important to note what passenger decline is experienced when service returns to pre-experiment levels on these routes. With the addition of post-experiment passenger level data, it may be possible to establish an annual MTA passenger decline percentage for bus routes separate from trends in rapid transit patronage.

Passenger counts for the first fourteen weeks of operation on Routes E-2 through E-7 are shown in Table 15. All routes, with the exception of E-4 (Elm Street-Sullivan Square) have shown a fairly steady growth in the absolute number of passengers carried each week. It is also clear that a substantial number of persons (about 6,700) are taking advantage of these new and increased bus services.

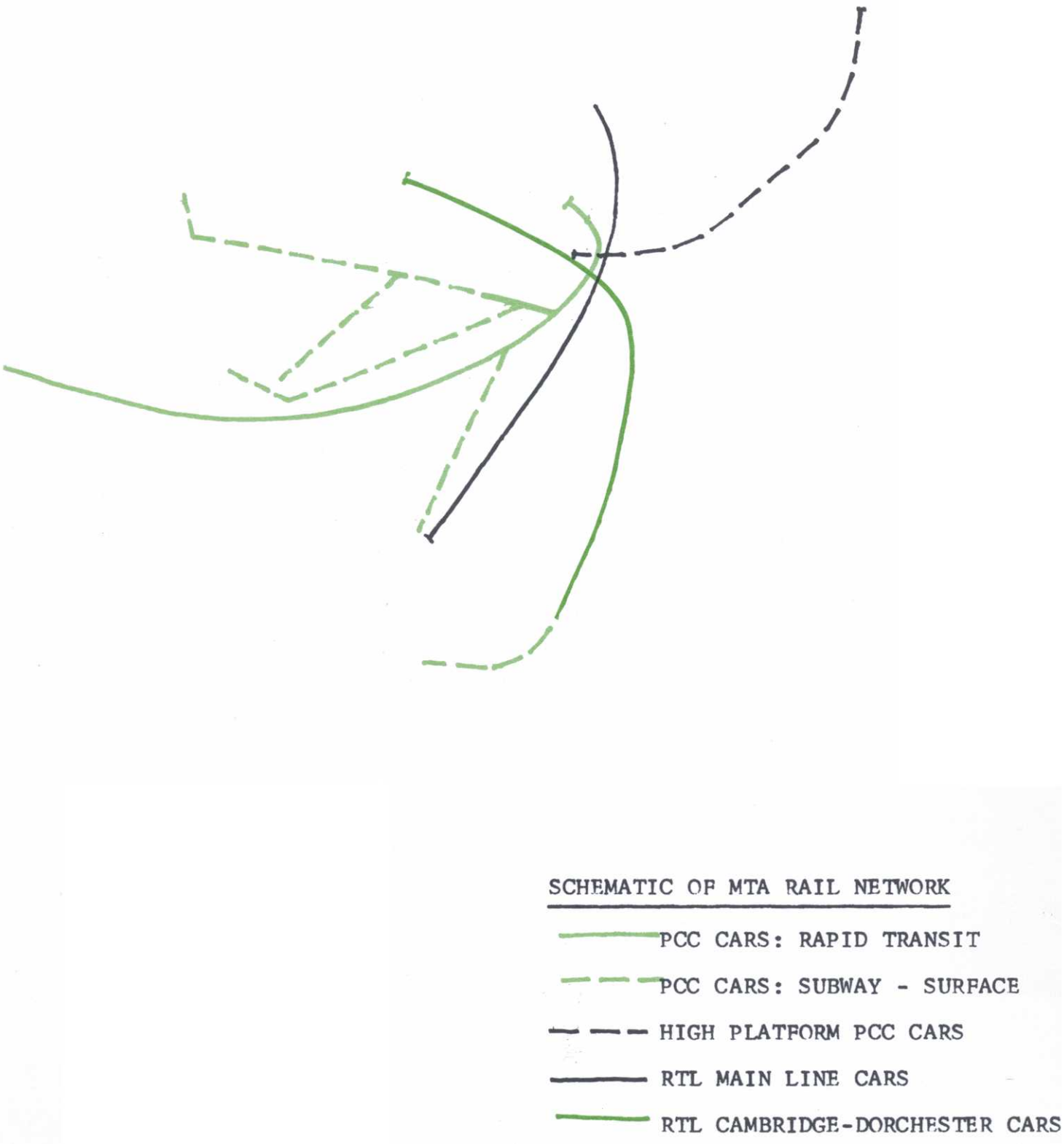



**Figure 9**

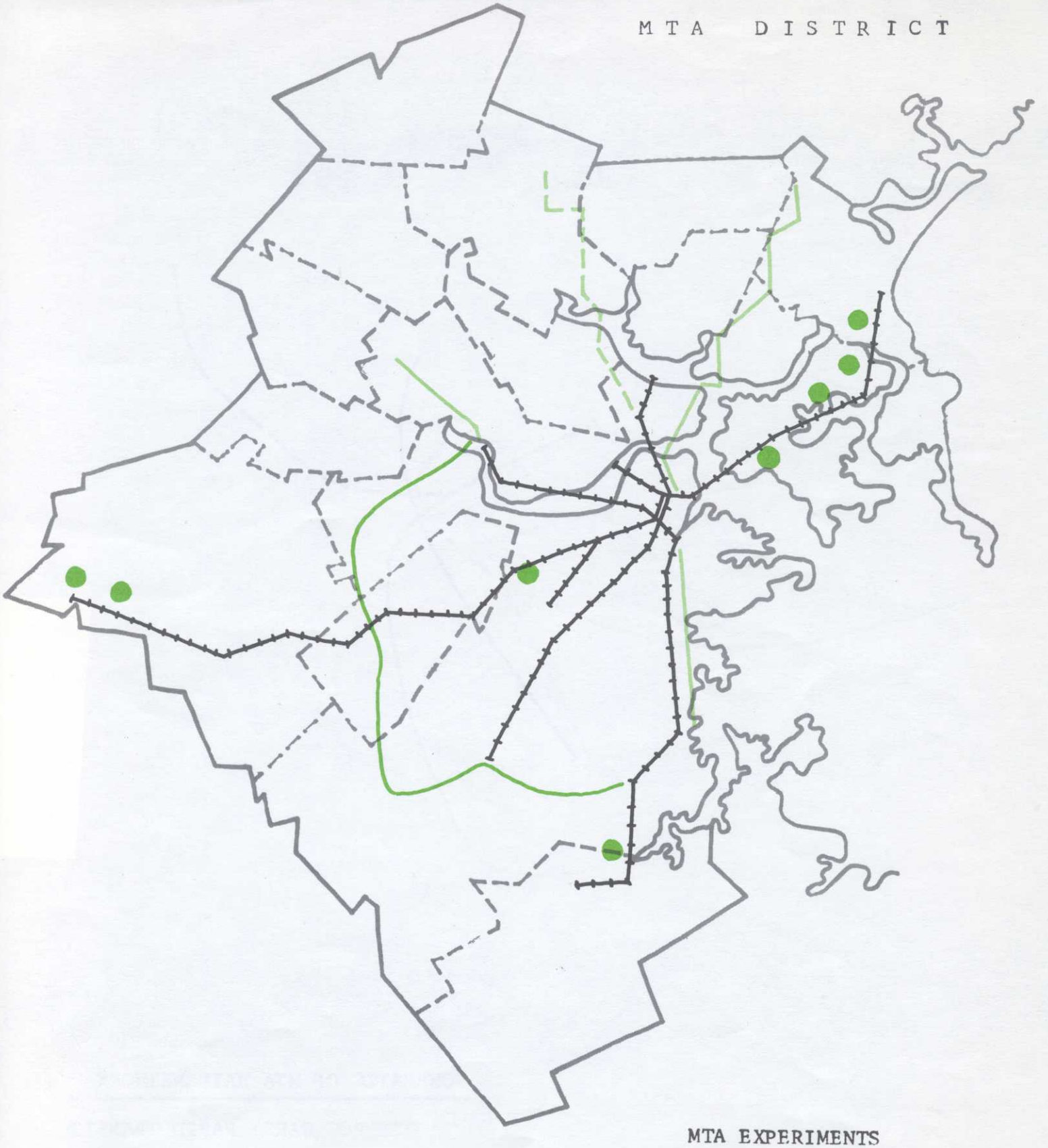



Figure 10

TABLE 15

MTA BUS DEMONSTRATION EXPERIMENTS

Passenger Fares Monday through Friday

| Week Ending | E-2 | E-3 | E-4 | E-5 | E-7 | Total Five Days |
|---|---|---|---|---|---|---|
| 6-28-63 | 685 | 18,903 | 7,015 | 17,727 | 4,424 | 48,753 |
| 7- 5-63* | 773 | 16,952 | 4,710 | 15,816 | 3,704 | 41,594 |
| 7-12-63 | 1,552 | 21,245 | 4,957 | 21,426 | 4,410 | 53,589 |
| 7-19-63 | 1,586 | 22,550 | 5,220 | 23,717 | 4,764 | 57,838 |
| 7-26-63 | 1,787 | 23,904 | 5,485 | 25,215 | 5,803 | 62,914 |
| 8- 2-63 | 1,907 | 24,245 | 4,941 | 24,617 | 5,971 | 61,680 |
| 8- 9-63 | 1,934 | 24,921 | 5,095 | 25,927 | 5,989 | 63,864 |
| 8-16-63 | 1,900 | 24,632 | 5,404 | 25,408 | 5,567 | 62,914 |
| 8-23-63 | 2,076 | 26,075 | 5,728 | 27,033 | 5,402 | 66,316 |
| 8-30-63 | 2,075 | 25,100 | 5,612 | 26,154 | 5,477 | 64,419 |
| 9- 6-63* | 1,656 | 20,731 | 3,362 | 20,890 | 4,370 | 51,010 |
| 9-13-63 | 2,158 | 26,721 | 3,973 | 26,631 | 3,749 | 63,232 |
| 9-20-63 | 2,352 | 26,985 | 3,572 | 23,890 | 5,564 | 62,363 |
| 9-27-63 | 2,189 | 27,776 | 3,881 | 27,491 | 5,352 | 66,689 |
| Average Weekday | 440 | 5,500 | 770 | 5,500 | 1,070 | 13,300 |

E-2 Route from North Station to MIT and return
E-3 "Inner-circumferential" Route from Sullivan to Dudley Street Station
E-4 Route for Sullivan Square to Elm Street, Medford
E-5 "Outer-circumferential route from Harvard Square to Ashmont Station
E-7 Route from North Station to South Station
* Week includes a holiday
Source: MTA – Based on unaudited daily receipts

## M.T.A EXPERIMENTS

MTC staff conducted extensive interviews on each of the MTA experimental routes during the month of October.

Passengers were interviewed as they rode on the experimental buses. Answers were recorded by the interviewer by circling code references on a standardized interview form. This technique permitted both rapid collection and rapid scoring of interview data. A sample form showing how responses were entered is presented in Figure 11.

Results obtained on MTA experimental routes to date have been as follows:

Route E-2 (North Station-MIT) was established as the result of numerous suggestions from persons in the area serviced, but has so far been utilized by only a small number of regular daily riders. The average number of riders during the summer months per round-trip, was less than seven and most of the riders were concentrated in a few trips in the morning and evening rush hours. On one typical day (August 19) the twenty-five round trips on this route, between 9:30 a.m. and 3:30 p.m., carried only fourteen passengers. In other words, three out of four one-way trips ran empty. It had been anticipated that the opening of the school year in September might produce a substantial increase in the number of riders using

**Sample Interview Form Used On MTA - MTC Bus Routes**

MASS TRANSPORTATION COMMISSION
MTA-Bus-Commonwealth Ave.

Date October 16 Time Started 8:05 Finished 8:25

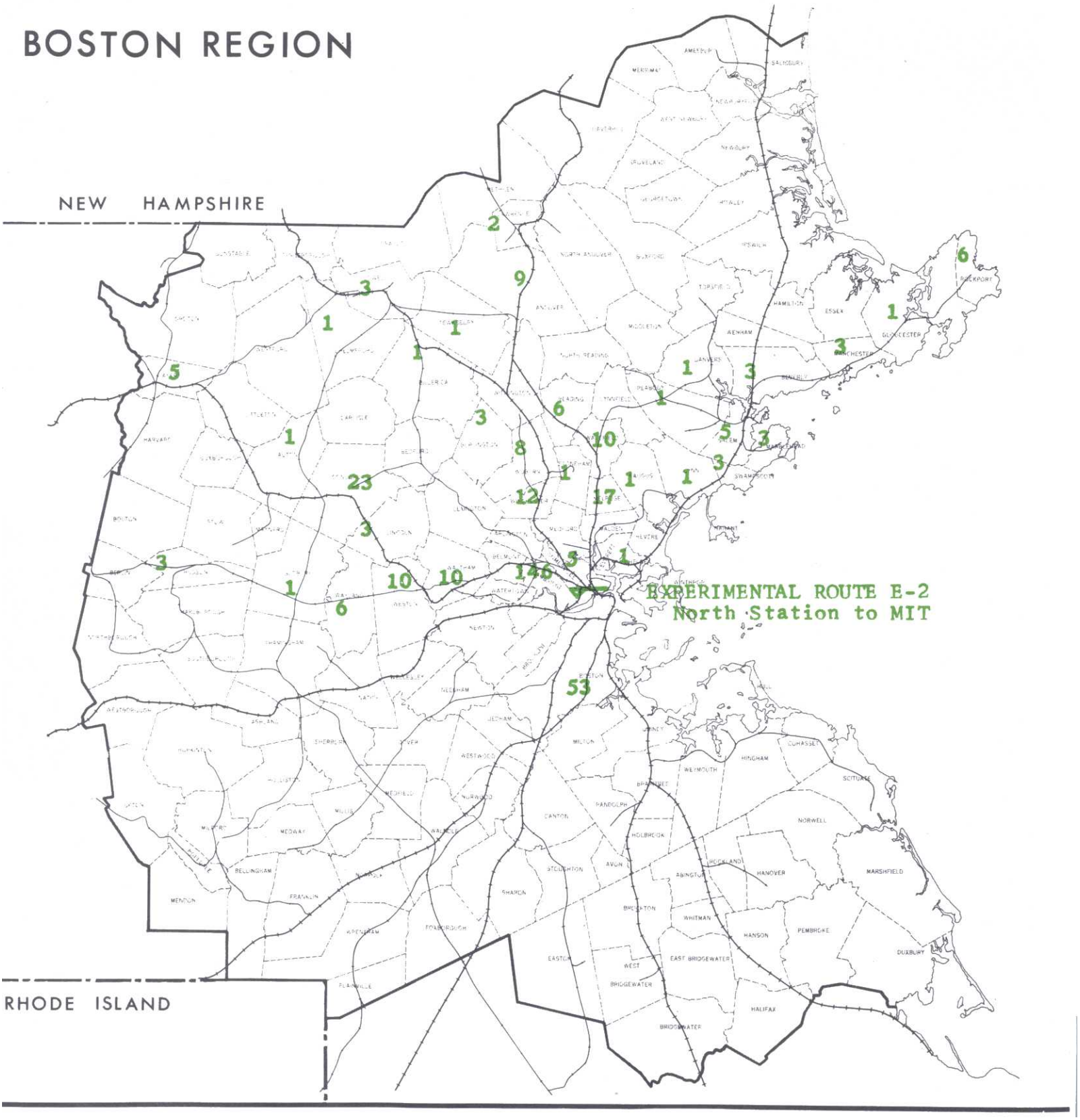
Direction (In) Out Total Passengers 47 John Doe

Bus No. 2371 Total Interviewed 9 Interviewer

| Sex | Age | Boarded at / Alight at | Purpose of trip | How was trip made last Fall | Do you prefer street car or bus | Why do you prefer bus or street-car | How often does bus run | Do you think MTA service is faster sinc bus service began |
|---|---|---|---|---|---|---|---|---|
| (M) F | Un 20 / 20-40 / (40-65) / Ov 65 | B.C. / * * * * / Blanford | Wo Sch / (Sh) Rec / Vi / Hosp | Walk / Car / Car Pool / (MTA) | No pref / P.C.C. / (Bus) | Speed / Comfort / (Convenience) / No warrant | 5 | (Yes) / No |
| (M) F | Un 20 / (20-40) / 40-65 / Ov 65 | Work St. / * * * * / Pankard | (Wo) Sch / Sh Rec / Vi / Hosp | Walk / (Car) / Car Pool / MTA | No pref / P.C.C. / (Bus) | (Speed) / Comfort / Convenience / No warrant | 5 | (Yes) |
| | Un 20 / 20-40 | | Wo Sch / Sh Rec | Walk / Car | No Pref / P.C.C | Speed / Comfor | | |

Figure 11

*Word Searchable Version not a True Copy*




**DISTRIBUTION OF PASSENGERS USING MTA EXPERIMENTAL ROUTE E-2 BY TOWN OF RESIDENCE**

**Figure 12**

*Word Searchable Version not a True Copy*

this newly established route. However, as shown in Table 15, September riding increased by only about ten passengers a day. The 400 passengers who find this service convenient concentrate their travel entirely in the traditional morning and evening rush hours. As indicated above, MTA bus requirements in the morning rush hour already call for 54 more buses than the evening rush hour. And the rush hours require 350 buses above the 240 buses required during off-peak periods. The immediate key to operating efficiency clearly lies in improving off-peak utilization of the fleet not in adding to the imbalance. As shown in Table 16, the revenue from this new bus route in September, which improved somewhat over July and August, was only 17 per cent of the cost of operating this route. This route experiment will be concluded December 28th.

Interview data obtained from riders on Route E-2 was as follows:

| | | | |
|---|---|---|---|
| Total Passengers | | 401 | |
| Total Interviews | | 257 or 65% of sample | |
| | Figures shown are projected to 100% | | |
| Sex: — | Male | 232 | 58 % |
| | Female | 169 | 42 % |
| Age:— | Under 20 | 0 | |
| | 20 - 40 | 224 | 56 % |
| | 40 - 65 | 132 | 33 % |
| | Over 65 | 45 | 11 % |
| "How did you make this trip before the introduction of this experimental route?" | | | |
| | Other MTA Route | 236 | 59% |
| | Car | 60 | 23 % |
| | Taxi | 5 | 2% |
| | Walk | 45 | 11 % |
| "How often do you use this experimental bus?" | | | |
| | Frequency of Use:— | | |
| | 1 day of week | 64 | 16 % |
| | 2—3 day week | 41 | 10 % |
| | 4—5 day week | 296 | 75 % |
| "Is this route used for train connection?" | | | |
| | Yes | 236 | 59 % |
| | No | 162 | 41 % |
| "Did you use B&M train in 1962?" | | | |
| | Yes | 96 | 24 % |
| | No | 300 | 76 % |
| If No, "How did you make this trip last year?" | | | |
| | Car | 85 | 28 % |
| | Bus | 105 | 35 % |
| | No reply | 70 | 23 % |
| | Car Pool | 40 | 14 % |
| "Did this route start you using train?" | | | |
| | Yes | 124 | 31 % |
| | No | 276 | 69 % |

The age statistics show that few, if any, MIT students have found this new service convenient. It is also interesting to note that apparently about 60 motorists have been induced to leave their cars at home by this service. At the same time, 59 per cent of the riders previously used some other MTA route to make this trip. Passengers were also asked to name their home community. 199 (50 per cent) named Cambridge or Boston, while 202 (50 per cent) named one of thirty-three cities or towns located along B&M commuter lines. This distribution is presented in Figure 14. It is apparent that a majority of passengers were not MIT students, but workers at nearby industries.

For the 124 passengers who were induced to use B&M trains as a result of the introduction of E-2 service, discontinuance of the bus service will probably mean their loss as railroad passengers. A case might be made for running one MTA bus over the E-2 route at 30 minute intervals for a few trips during rush hours in order to accommodate these passengers.

Routes E-3 (Inner Circumferential) and E-5 (Outer Circumferential) test the demand for through circumferential bus service. Route E-3 carried 16 per cent of all riders on MTA lines between Sullivan Square and Dudley Station. However, traffic along this corridor increased by less than two per cent, which means that as much as 90 per cent of those riding on Route E-3 buses may have been diverted from other parallel MTA routes.

An interview of 756 riders on Route E-3 yielded the following additional information:

| | | | |
|---|---|---|---|
| Total Passengers | | 5000 | |
| Total Interviews | | 756 or 15% of sample | |
| | Figures shown are projected to 100% | | |
| Sex: | Male | 2500 | 52 % |
| | Female | 2400 | 48 % |
| Ages: | Under 20 | 0 | |
| | 20—40 | 1450 | 29 % |
| | 40—65 | 3300 | 66 % |
| | Over 65 | 220 | 4 % |
| Purpose of Trip: | | | |
| | Work | 2700 | 54 % |
| | Shopping | 500 | 10 % |
| | School | 150 | 3 % |
| | Recreation | 250 | 5 % |
| | Visit | 850 | 17 % |
| " How often do you use this experimental bus?" | | | |
| | 1 day week | 350 | 7 % |
| | 2—3 day week | 950 | 19 % |
| | 4—5 day week | 3160 | 63 % |
| "Did you ride another bus along this route last Spring?" | | | |
| | Yes | 3800 | 76 % |
| | No | 1200 | 24 % |
| If "No", "What was your previous, method of travel?" | | | |
| | Another MTA Service | 900 | 75 % |
| | Car | 190 | 16 % |
| | Walk | 72 | 6 % |
| | New resident | 24 | 2 % |

From this it can be seen that only 262 new passengers were attracted by this service

"How far is it from your house to the bus stop?"

| | | |
|---|---|---|
| One block or less | 2550 | 51 % |
| Three blocks or less | 4300 | 86 % |
| Five blocks or less | 4650 | 93 % (Cumulative) |

It is interesting to have this measure of the strictly local origin of passengers on this crosstown service. The distance traveled from home to MTA Parking Lots is naturally much greater, since an automobile is involved. For passengers walking to the bus stop, a five block radius encompasses all but seven per cent of those who use the service.

Regularly scheduled and dependable service is vital in attracting new transit riders. In August, Route E-3 service operated on schedule and attracted 27, 234 additional

TABLE 16. STATISTICAL SUMMARY OF RESULTS TO DATE ON MTA EXPERIMENTAL ROUTES

| Route | Gross Cost of Experimental Service in the Month | Gross No. of Passengers Carried On Experimental Buses | Percent of Total Corridor Passengers Riding the Experimental Buses | Total Monthly Passengers through Corridor in 1962 | Total Monthly Passengers through Corridor in 1963 | Increase in Monthly Passengers through Corridor over 1962 | Percent Increase in Monthly Passengers through Corridor over 1963 | Increase in Revenue As a Percent of Operating Cost |
|---|---|---|---|---|---|---|---|---|
| E-2 | | | | | | | | |
| July | $ 5,669 | 6,937 | 100% | No | 6,937 | 6,937 | Not | 12 % |
| August | 5,671 | 8,766 | | Service | 8,766 | 8,766 | Applicable | 15 |
| September | 5,181 | 8,815 | | | 8,816 | 8,816 | | 17 |
| October | 5,907 | 10,891 | | | 10,891 | 10,891 | | 18 |
| E-3 | | | | | | | | |
| July | 26,315 | 99,128 | 16 | 619,205 | 630,231 | 11,025 | 2 % | 4 |
| August | 26,226 | 110,446 | 17 | 613,409 | 640,643 | 27,234 | 4.4 | 11 |
| September | 23,531 | 106,963 | 16 | 657,127 | 665,058 | 7,931 | 1.2 | 3 |
| October | 26,942 | 134,607 | 17 | 783,141 | 799,956 | 16,815 | 2.1 | 6 |
| E-4 | | | | | | | | |
| July | 7,916 | 23,336 | 20 | 111,563 | 115,005 | 3,442 | 3.0 | 4 |
| August | 7,906 | 23,816 | 20 | 110,668 | 116,501 | 5,813 | 5.0 | 7 |
| September | 7,202 | 15,620 | 14 | 104,704 | 109,378 | 5,034 | 4.5 | 7 |
| October | 8,289 | 19,008 | 15 | 125,126 | 127,340 | 2,214 | 1.7 | 3 |
| E-5 | | | | | | | | |
| July | 37,816 | 100,943 | 40 | 188,421 | 251,881 | 63,460 | 34 | 17 |
| August | 37,792 | 114,368 | 43 | 194,550 | 264,309 | 69,759 | 36 | 18 |
| September | 34,299 | 104,666 | 32 | 269,159 | 331,727 | 62,568 | 23 | 18 |
| October | 39,470 | 129,673 | 32 | 324,624 | 401,143 | 70,519 | 22 | 18 |
| E-7 | | | | | | | | |
| July | 4,980 | 22,263 | 33 | 38,045 | 67,059 | 29,014 | 76 | 58 |
| August | 5,050 | 24,823 | 34 | 39,993 | 72,293 | 32,300 | 81 | 64 |
| September | 4,407 | 20,020 | 28 | 40,999 | 70,825 | 29,826 | 72 | 68 |
| October | 5,069 | 25,433 | 32 | 48,096 | 80,021 | 31,925 | 67 | 63 |

Source: MTA, MTC

riders during the month. However, in September, with the opening of schools and the end of summer vacations, traffic congestion all along Route E-3 increased markedly, especially in Harvard Square, and it became almost impossible to maintain scheduled headways, especially during rush hours. None of several attempted remedies proved successful since the basic cause was automobile congestion over which the MTA has no control. Under these operating conditions, printed schedules became, meaningless.

Combined with the difficult operating conditions was the fact that new revenue generated by Route E-3 dropped to only three per cent of the cost of service. Since uniform operating patterns could not be maintained, this experiment was terminated November 23.

Route E-5 (Outer Circumferential) carried approximately 5,000 riders daily in September and early October, which represented 32 per cent of the persons travelling by MTA along its route. At the same time, revenues on E-5 and related corridor lines increased by 23 per cent. As expected, September riding on all MTA routes increased over August, with the result that the increase in number of passengers on E-3, while remaining numerically constant, decreased in percentage since it is a smaller proportion of the greater total number of MTA riders. The average number of riders per round trip was 62, but due to the great length of Route E-5 (a round trip takes two hours and twenty minutes), the 23 per cent increase in revenue represented only 18 per cent of the cost of the new service. Two hundred and twenty-six riders per round trip would be required to meet the cost of the service. Staff interviews with passengers on Route E-5 buses produced the following additional information:

| | | | |
|---|---|---|---|
| Total Passengers | | 5200 | |
| Total Interviews | | 846 or 16 % of sample | |
| Figures shown are projected to 100% | | | |
| Sex: | Male | 2340 | 45 % |
| | Female | 2860 | 55 % |
| Age: | Under 20 | 260 | 5 % |
| | 20—40 | 1250 | 24 % |
| | 40—65 | 2560 | 49 % |
| | Over 65 | 1200 | 23 % |

Of people interviewed, 90% walked from their home to the bus stop.

Purpose of Trip:

| | | |
|---|---|---|
| Work | 3280 | 63 % |
| Shopping | 364 | 7 % |
| School | 418 | 8 % |
| Recreation | 364 | 7 % |
| Visit | 780 | 15 % |

Of people interviewed

13 % or 340 people formerly used their car for trip which they now make on the bus.

44 % or 1150 people formerly used other buses operating over the same route.

43% or 1120 people formerly traveled to Park Street and then traveled outbound on another rapid transit or streetcar line.

Of people interviewed only

8 % or 208 people traveled between Reservoir and Harvard Square, a distance which is 23% of the present route or 92% of the fares were collected over 77% of the route.

The data assembled on Route E-3 and E-5, suggest a general principle: As distance from the city center increases, circumferential bus service becomes more attractive to a larger number of people. This is true for two reasons. First, as the distance from downtown increases, traffic congestion decreases, permitting higher bus operating speeds. Second, as distance from downtown increases, the time required to travel downtown on rapid transit, and back out to the perimeter on another transit line increases while, for a given length of journey, the bus travel time decreases until a point, apparently about five miles from downtown Boston, when circumferential bus service becomes faster than rapid transit for many destinations. The portion of Route E-5 (Reservoir — Harvard Square) which has not been successful, is precisely that portion where the route becomes less than five miles from Boston as it approaches Harvard Square, three miles from downtown.

On the basis of the data assembled on Route E-5, the decision has been made to modify this experiment effective with the MTA December 28 schedule change. The E-5 designation will be discontinued. A new service, designated E-6, will operate from Reservoir to Ashmont on an 18 minute headway. The MTA has agreed to mesh this service with their regular Reservoir-Arborway service on the same headway, thus providing nine minute frequency between Reservoir and Arborway. Off-peak schedules will be coordinated in a similar manner. Route E-6 will cover 77 per cent of Route E-5 and by offering service coordinated with other MTA routes, should produce almost as much revenue as the present Route E-5, while reducing the cost by 25 per cent. If this anticipated result materializes, revenue would rise to 40 per cent of cost, a figure which equals the cost/income ratio of the MTA's Reservoir — Arborway route. If this level of income is achieved the MTA may be able to continue Route E-6 service as a part of its regular schedules.

On Route E-4 (Elm Street, Medford — Sullivan Square) off-peak headways were experimentally increased to five minutes from the ten minute frequency previously in effect. This doubling of mid-day service produced only a five per cent increase in riding and earned seven per cent of the cost of the service. Passenger characteristics as developed from interviews which were conducted at all time periods during the day, both peak and off-peak, were as follows:

| | | | |
|---|---|---|---|
| Total Passengers | | 7500 | |
| Total Interviews | | 518 or 14% of sample | |
| Figures shown are projected to 100% | | | |
| Sex: — | Male | 3750 | 50 % |
| | Female | 3750 | 50 % |
| Age: — | Under 20 | 525 | 7 % |
| | 20—40 | 3000 | 40 % |
| | 40—65 | 3830 | 51 % |
| | Over 65 | 150 | 2 % |
| Purpose of Trip: | | | |
| | Work | 4950 | 66 % |
| | Shopping | 1350 | 18 % |
| | School | 525 | 7 % |
| | Recreation | 150 | 2 % |
| | Visit | 300 | 4 % |
| Mode of travel prior to introduction of the experimental service. | | | |
| | MTA | 6600 | 88 % |
| | Car | 627 | 8 % |
| | Walk | 124 | 2 % |

Due to the very minor increase in riding produced by doubling the off-peak service on this route, Route E-4 was terminated as an experimental service November 23 and the MTA returned to its previous schedule of service along this route. The MTA will continue to keep data to determine whether this change altered riding levels by more or less than the five per cent increase produced during the experiment.

The results on Route E-4 can be compared with the results on Route E-7 (North Station — South Station) where the frequency on this short downtown route was also increased to provide service every five minutes in mid-day. The result was a 72 per cent increase in the total daily patronage on the North Station — South Station route. The revenue increase represented 68 per cent of the cost of the additional service. When the revenue and cost for all trips operated on this route, both off-peak and peak are compared, a ratio of 90 percent is obtained. Passenger characteristics are as follows:

| | | | |
|---|---|---|---|
| Total passengers | | 1070 | |
| Total interviews | | 370 or 35 % of sample | |
| Figures shown are projected to 100 %. | | | |
| Sex: | Male | 552 | 51 % |
| | Female | 518 | 49 % |
| Age: | Under 20 | 9 | 1 % |
| | 20—40 | 564 | 53 % |
| | 40—65 | 484 | 45 % |
| | Over 65 | 14 | 1 % |
| Purpose of Trip: | | | |
| | Work | 833 | 78 % |
| | Shopping | 58 | 5 % |
| | School | 14 | 1 % |
| | Recreation | 50 | 5 % |
| | Visit | 60 | 6 % |
| Mode of travel prior to introduction of the experimental service. | | | |
| | MTA | 723 | 67 % |
| | Car | 81 | 8 % |
| | Walk | 191 | 18 % |

The high proportion of persons who formerly walked in discussed below

| | | |
|---|---|---|
| Times per week trip is made | | |
| 1 day week | 49 | 5 % |
| 2-3 day week | 32 | 3 % |
| 4-5 day week | 915 | 86 % |
| Is train connection made? | | |
| Yes | 353 | 96 % |
| Did you use train in 1962? | | |
| Yes | 300 | 81 % |
| No | 53 | 15 % |

One tentative conclusion as to why a five-minute headway produced comparatively little improvement in patronage on one line and a substantial improvement on another becomes apparent upon consideration of the different characteristics of the two lines. Route E-4 (Elm Street, Medford) was a radial bus feeder four miles in length serving a suburban residential neighborhood north of Boston. Prior to the experiment the off-peak headway had been 10 minutes. The lack of improvement in patronage when the frequency was doubled suggests that persons anticipating up to a thirty-minute trip to Boston were relatively indifferent to a five-minute wait at the bus stop when this wait formed part of a much longer trip to the center city. Further, the number of persons traveling from the suburbs to downtown in mid-day is relatively small. A ten-minute headway on this route may be sufficient to attract a near maximum number of passengers.

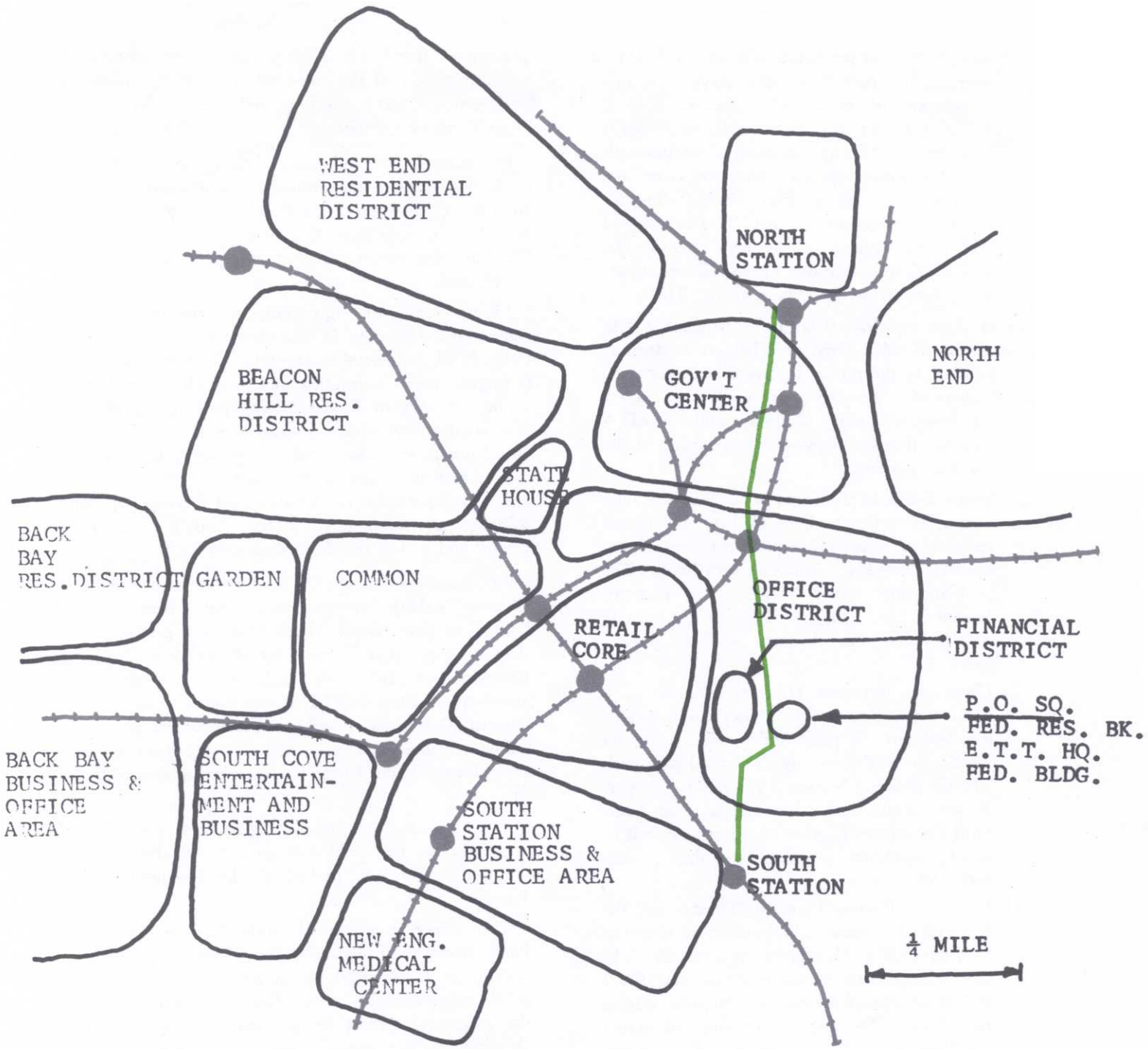
Route E-7 (North Station — South Station) is a bus route one mile in length connecting Boston's two railroad terminals via the downtown business district. From the downtown business district to either railroad terminal is a ten-minute walk, and during rush hours large numbers of hardy Bostonians walk to and from each terminal. Moreover, a large number of persons circulate in this area throughout the entire day. The previous North Station headway of 25 minutes may have attracted little or no patronage because one could frequently walk to either train station before a bus was available. In contrast, with a five-minute headway, buses are visible nearly continuously and apparently attract many "impulse" riders, among whom are the 191 persons interviewed who previously walked.

This experiment will be modified as of December 28. In order to accommodate potential patrons who are currently turned away from packed rush-hour buses, peak hour headways will be reduced from five minutes to four minutes. At the same time the off-peak schedule will be operated with three buses instead of six, but due to an improved pattern of equipment utilization (based on a round trip in 24 minutes, instead of 30 minutes) off-peak service will operate every eight minutes. It is anticipated that this modification of schedule will result in a cost/revenue ratio in excess of 100 per cent and that this improved service will be continued on a regular basis by the MTA after the termination of the experiment.

2. *Experiments Starting September 1963.*

An additional bus experiment designed to provide improved equipment utilization is designated:

E-9 Experimental rush hour bus service was begun on September 3 between Boston College and Kenmore Square, paralleling the existing streetcar service on Commonwealth Avenue. In an attempt to alleviate rush hour delays




**NORTH STATION - SOUTH STATION EXPERIMENTAL ROUTE IN BOSTON C.B.D., SHOWING GENERALIZED LAND USE AREAS AND RAPID TRANSIT SYSTEM AND STATIONS.**

**Figure 13**

caused by the present zoned fare collection system, this rush hour bus service permits segregation of local and downtown bound riders, with an anticipated time savings for both groups. During the hours when this rush hour bus service operates, only 30c fares (the through fare) are accepted on the streetcar. Local 10c riders use the bus. This experiment will be terminated on December 28, but the MTA will then continue the experimental pattern. Average weekday passengers: 3,600.

A series of three experiments began on September 3 to test the feasibility of using Drive-In Theaters as daytime parking lots linked to downtown by frequent bus service. Drive-In Theaters were selected at major highway intersections, north, west, and south of Boston and the MTA contracted with the theater operators to permit use of the theater for daytime parking.

E-8 Route E-8 links the Fresh Pond Drive-In Theater in West Cambridge with the rapid transit terminal at Harvard Square. Express buses operate every five minutes in rush hours. The park-and-ride round trip fee to Harvard Square is 55c. This experiment will terminate on December 28. Average weekday passengers: 56.

E-10 Using the Neponset Drive-In Theater as a parking terminal, express buses carry passengers between this point and South Station via the Southeast Expressway. The total park-and-ride fee to South Station is $1. Buses will operate on five-minute headways during rush hours until December 28, when the headways will be slightly modified. Average weekday passengers: 60.

E-11 From the Revere Drive-In Theater on the Northeast Expressway, buses operated non-stop to a terminal at Haymarket Square. On E-11 the park-and-ride round trip fare was $1.00 and buses operated every five minutes during rush hours. The experiment was terminated on November 28. Average weekday passengers: 21.

The use of these three Drive-In Theaters as commuter parking lots added 4,500 parking spaces to the 5,800 existing MTA parking spaces, an instant increase of 75 per cent in the number of available MTA parking spaces, without any incremental MTA capital expenditures.

The drive-in theaters are located on major arteries. Inbound traffic moves quite freely beyond the theaters but between the three theaters and downtown Boston traffic congestion is extremely heavy during peak hours and heavy in other daylight hours. The total driving and downtown parking time required from the theaters to downtown Boston is greater that the automobile-bus combination of the Neponset and Revere Theaters or even than the car-bus-transit combination offered by the Fresh Pond experiment.

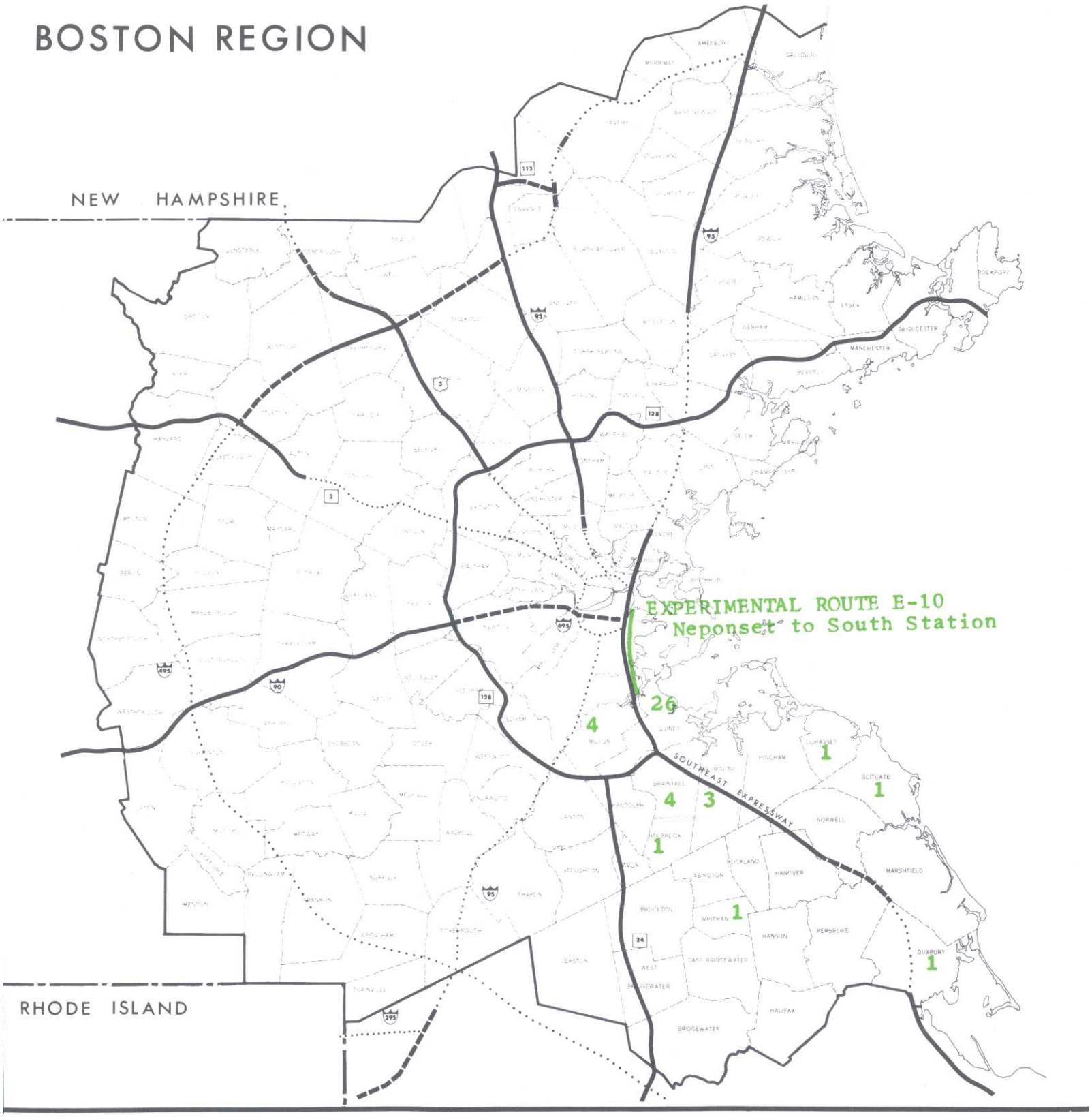
For example, the minimum of four and one-half miles of driving through the normally heavily congested traffic from the Fresh Pond Theater in Cambridge to the downtwon area requires 35 to 40 minutes during the peak hours. The bus-rapid transit combination requires only 30 minutes travel time.

Moreover, the drive-in parking lot experiments permit a considerable reduction in commuting cost. In the case of Fresh Pond, for example, the total ninety-five cents park-bus-rapid transit round-trip fare is much lower than the average downtown Boston all-day parking fee of $1.75. The combination of the savings in both travel time and out-of-pocket expenses should *theoretically* offer a strong inducement for many present motorists to use the new public transportation combination and thereby help reduce traffic pressures on major arteries leading to downtown Boston and within the downtown area itself.

As shown in Table 17, the results of the Drive-In Theater parking lot experiments have been extremely limited to date. None of the three lots produced more than three per cent of their cost. Response at the Revere Drive-In was particularly small, presumably due to the existence, as a result of MTC experiments with the B&M, Eastern Mass., and Service Bus companies, of excellent public transportation services throughout the north shore area. Experimental Route E-11 was terminated November 23.

The number of persons parking at Fresh Pond Drive-In in Cambridge was somewhat greater and about equal to the number of cars parked at the Neponset Drive-In Theater.

The minor response at both Neponset and Fresh Pond, when contrasted with the 60 per cent increase in parking at MTA rapid transit parking lots, suggests that public transportation, to be effective in competition with the automobile, must be not only cheaper, which the Drive-In theater services were, but faster, which rail rapid transit is, than a comparable trip by auto. There is little or no incentive to leave a stream of traffic, park, and enter a vehicle which returns to the same stream of traffic. Not far from Neponset, at Columbia Station, is a rapid transit parking lot with several hundred spaces which is always filled almost to capacity. Both parking systems cater to motorists on the Southeast Expressway, but the rapid transit lot plays a much more effective role. It appears imperative that rapid transit extensions be designed to provide travel which is significantly faster than comparable automobile trips downtown. Such a design, in order to have maximum success, should include a provision for one or more express tracks.




**NORTH STATION - SOUTH STATION EXPERIMENTAL ROUTE IN BOSTON C.B.D., SHOWING GENERALIZED LAND USE AREAS AND RAPID TRANSIT SYSTEM AND STATIONS.**

**Figure 13**

TABLE 17. STATISTICAL SUMMARY OF RESULTS TO DATE ON MTA EXPERIMENTAL ROUTES

| Route | Gross Cost of Experimental Service in the Month | Gross No. of Passengers Carried On Experimental Buses | Percent of Total Corridor Passengers Riding the Experimental Buses | Total Monthly Passengers through Corridor in 1962 | Total Monthly Passengers through Corridor in 1963 | Increase in Monthly Passengers through Corridor over 1962 | Percent Increase in Monthly Passengers through Corridor over 1963 | Increase in Revenue As a Percent of Operating Cost |
|---|---|---|---|---|---|---|---|---|
| E-8 | | | | | | | | |
| Sept. | $ 6,563 | 1,285 | NA | No Service | 1,285 | 1,285 | NA | 3% |
| E-9 | | | | | | | | |
| Sept. | 13,143 | 86,370 | 12% | 682,270 | 690,065 | 7,795 | 1% | 6 |
| E-10 | | | | | | | | |
| Sept. | 15,306 | 1,366 | NA | No Service | 1,366 | 1,366 | NA | 3 |
| E-11 | | | | | | | | |
| Sept. | 13,325 | 500 | NA | No Service | 500 | 500 | NA | 1 |

Source: MTA-MTC

Route E-8 (Fresh Pond Drive-In) will be terminated on December 28.

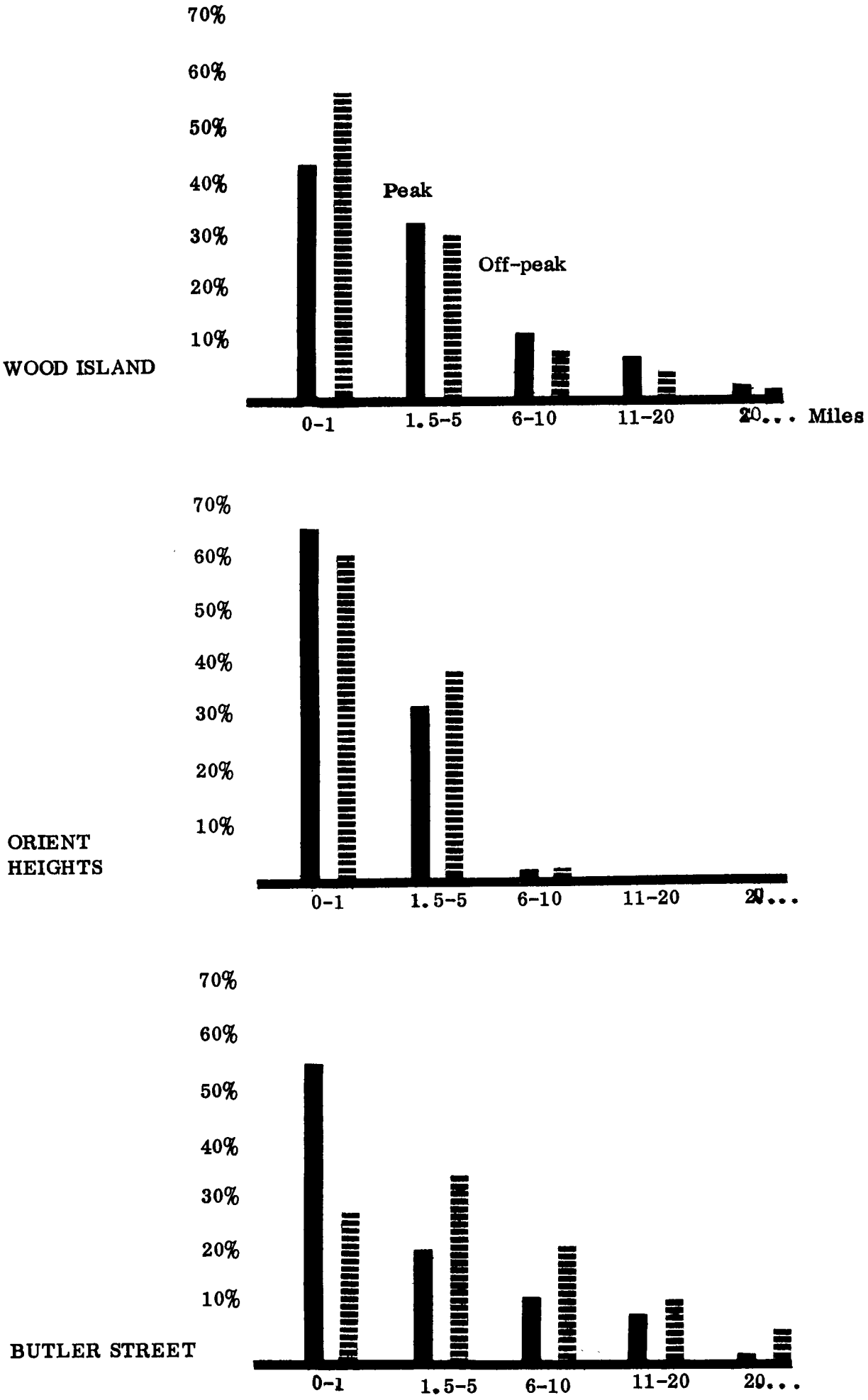
Interviews with passengers using the Neponset Drive-In produced the following information:

| | | |
|---|---|---|
| Total passengers | 46 | |
| Total Interviews | 46 or 100 % of sample | |
| Sex: Male | 23 | 50 % |
| Female | 23 | 50 % |
| Purpose of Trip: | | |
| Work | 46 | 100 % |
| Mode of Travel Prior to Introduction of this Service | | |
| Car | 46 | 100 % |
| "How often do you use this service ?" | | |
| 1 day/week | 2 | 4 % |
| 2-3 days/week | 11 | 25 % |
| 4-5 days/week | 32 | 71 % |
| "How did you first hear of the experimental Drive-In Theater Service?" | | |
| Radio | 4 | 9 % |
| T. V. | 1 | 2 % |
| Newspaper | 37 | 80 % |
| Signs | 2 | 4 % |
| " What do you like about this new service?" | | |
| Very Convenient | 15 | 33 % |
| Fast Service | 4 | 9 % |
| No Expressway Driving Worries | 13 | 28 % |
| Economy | 3 | 7 % |
| Courteous Personnel | 2 | 4 % |
| Overall Enthusiasm | 8 | 17 % |
| " What don't you like about this new service?" | | |
| " No complaints" | 27 | 75 % |
| No answer | 9 | 25 % |
| Too far off expressway | 2 | |
| "Do you plan to continue to use this service?" | | |
| Yes | 40 | 87 % |
| Undecided | 6 | 13 % |

Route E-10 (Neponset Drive-In Theater) will be continued until March 28th.

Route E-9 (Boston College-Kenmore) has produced some very interesting results. It will be recalled that this experiment anticipated few, if any, additional passengers, but sought rather to move an existing passenger load more efficiently by segregating local and through riders. This has been largely accomplished and in addition, perhaps due to the improved service, passengers have increased by one per cent. Running times on the street car line vary greatly according to the time of day and the individual operator, but in general, street car running times have been reduced by from two to 14 minutes per round trip.

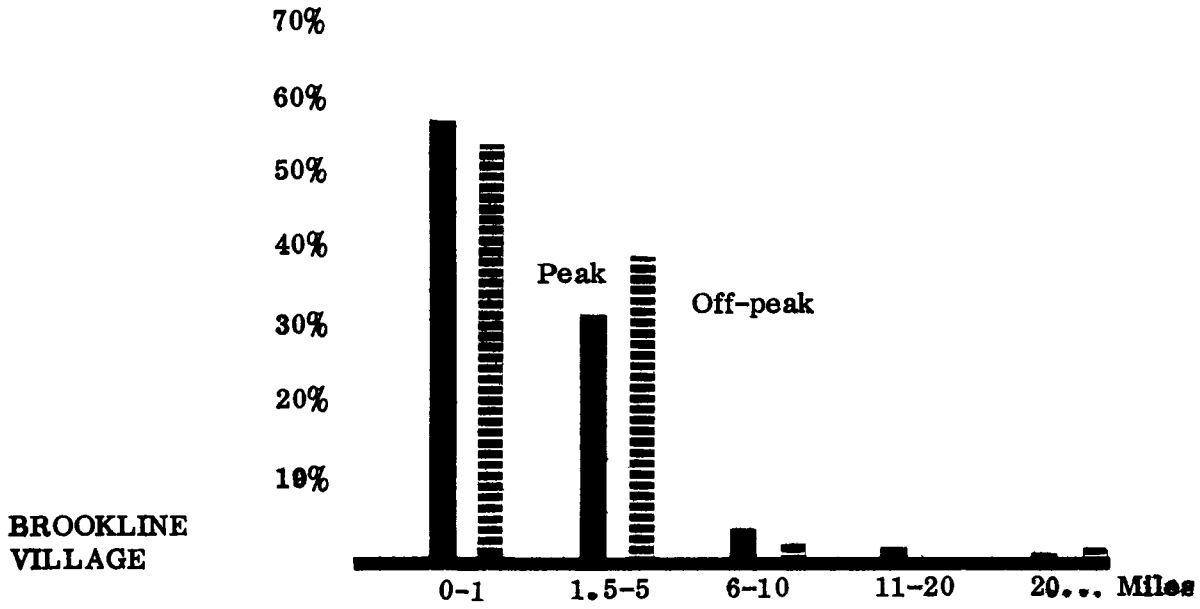
This result will permit the present street car headway to be operated with six fewer cars, which will justify the nine buses required to operate local service. MTC sponsorship of this service will terminate December 28, but the MTC Board of Trustees have voted to continue this service for an additional three months. There is considerable likelihood that this route will continue as a regular part of MTA services.

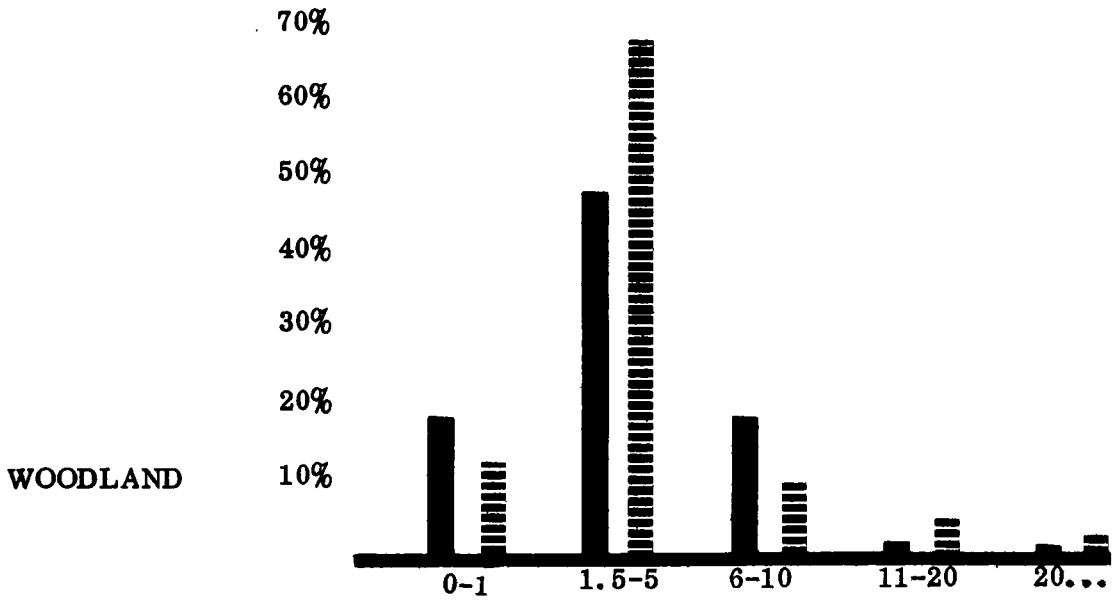


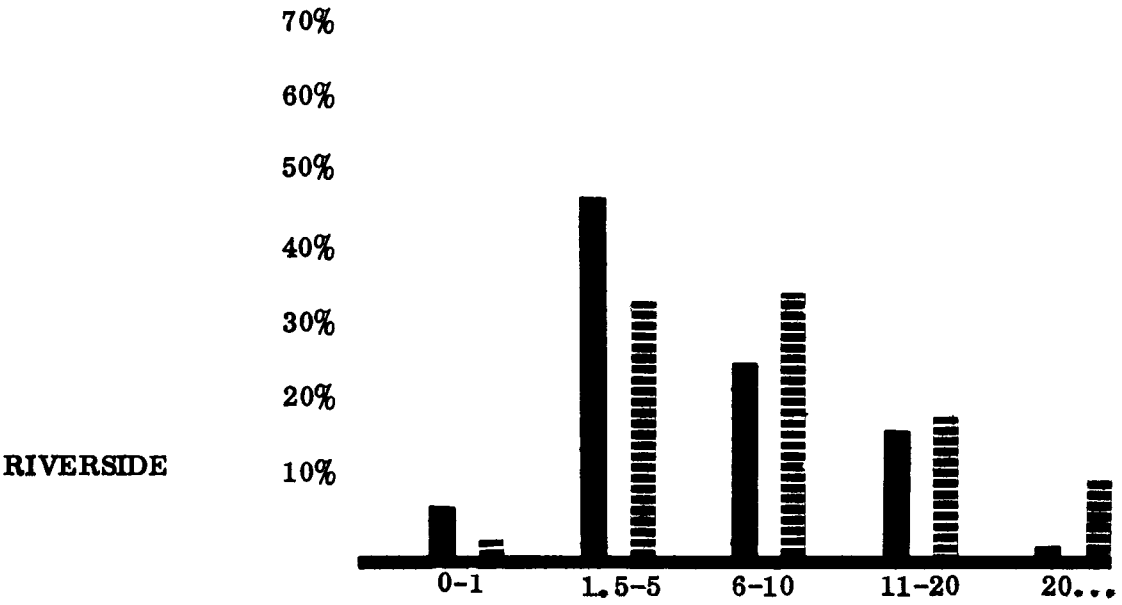

**DISTANCES TRAVELED TO MTA STATIONS**
**Source: MTC Survey, Spring 1963**



Figure 15




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



Figure 16

Interviews with passengers on Route E-9 provide further insight into passenger preferences:

| | | Size of Samples | |
|---|---|---|---|
| Total Passengers | | 3600 | 30 % |
| Total Interviews | | 1039 | |
| Figures shown are projected to 100% | | | |
| Sex: | Male | 1470 | 41% |
| | Female | 2130 | 59 % |
| Age: | Under 20 | 610 | 17 % |
| | 20—40 | 1365 | 38 % |
| | 40—65 | 1505 | 42 % |
| | Over 65 | 110 | 3 |
| Purpose of Trip: | | | |
| Work | | 1980 | 55 % |
| Shopping | | 252 | 7 % |
| School | | 1100 | 30 % |
| Recreation | | — | — |
| Visit | | 278 | 8 % |
| Mode of travel prior to introduction of experimental service | | | |
| MTA | | 3060 | 86 % |
| Car | | 254 | 7 % |
| Walk | | 146 | 4 % |
| "Which service do you prefer?" | | | |
| Bus | | 3450 | 96 % |
| P.C.C. | | 110 | 3 % |
| No Preference | | 36 | 1 % |

It should be borne in mind that these interviews were made on board the buses. Interviews with street car riders would presumably produce different results.

| | | |
|---|---|---|
| "If bus is preferred, why?" | | |
| Speed | 1115 | 31 % |
| Comfort | 278 | 8 % |
| More Seating | 2052 | 57 % |
| No Warrant | 110 | 3 % |
| "Do you feel MTA services are faster since the introduction of this bus service?" | | |
| Yes | 3356 | 93 % |
| No | 254 | 7 % |

The answers reveal the importance placed by patrons on the availability of seating as well as their belief that elimination of warrants has speeded up MTA services.

A combined summary of interview results for all MTA experiments is presented in Table 17. This comparison confirms that downtown oriented routes attract primarily adult male riders traveling five days a week to work, while suburban routes have a higher proportion of mature women riders who ride two or three days per week to go shopping or visiting. In addition, routes located in school and university areas outside the core city, naturally have a moderate proportion of student riders.

A companion purpose of the MTA experiments has been to provide information as to the most effective method of distributing timetable information to potential patrons. For this purpose four different methods have been used to publicize timetable information on separate MTA routes.

Patrons were interviewed on their preference as well as on their knowledge of the schedules. Preliminary evidence indicates that signs at every bus stop are more effective than printed cards, though both may be more effective than either alone, and that easily memorized headways of every ten minutes or every quarter hour, are more important than very frequent service.

These tentative hypotheses will be explored further in a proposed "timetable saturation" experiment in which all bus lines emanating from Ashmont terminal will receive

**TABLE 18. RESULTS OF INTERVIEWS OF PASSENGERS ON SEVEN MTA EXPERIMENTAL ROUTES**

| | E-2 | E-3 | E-4 | E-5 | E-7 | E-9 | E-10 | Greater Boston U.S. Census, 1960 |
|---|---|---|---|---|---|---|---|---|
| Sex: | | | | | | | | |
| % Female | 42 | 48 | 50 | 55 | 49 | 59 | 50 | 53 |
| Age: | | | | | | | | |
| % Under 20 | 0 | 0 | 7 | 5 | 1 | 17 | Not | |
| % 20–40 | 56 | 29 | 40 | 24 | 53 | 38 | Included | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| % 40–65 | 33 | 66 | 51 | 49 | 45 | 42 | in |
| % Over 65 | 11 | 4 | 2 | 23 | 1 | 3 | Survey |
| Purpose of Trip | | | | | | | |
| % Work | | 54 | 66 | 63 | 78 | 55 | 100 |
| % Shopping | Not | 10 | 18 | 7 | 5 | 7 | — |
| % School | Included | 3 | 7 | 8 | 1 | 30 | — |
| % Recreation | in | 5 | 2 | 7 | 5 | — | — |
| % Visit | Survey | 17 | 4 | 15 | 6 | 8 | — |
| Mode of travel prior to the introduction of the experimental service. | | | | | | | |
| % MTA | 59 | 75 | 88 | 86 | 67 | 86 | — |
| % Car | 23 | 16 | 8 | 14 | 8 | 7 | 100 |
| % Walk | 11 | 6 | 2 | — | 18 | 4 | — |
| Times per week trip is made | | | | | | | |
| % Once a week | 16 | 7 | 8 | Not | 5 | Not | 4 |
| % 2–3 days/week | 10 | 19 | 15 | Included | 3 | Included | 25 |
| % 4–5 days/ week | 75 | 63 | 77 | in | 86 | in | 71 |
| | | | | Survey | | Survey | |

Source: MTC

TABLE 19. VOLUME IN MTA PARKING LOTS

October 1962 vs. October 1963

| | Cars Oct. 1962 | Cars Oct. 1963 | Increase (Decrease) | % Change | Oct. '63 % Utilization |
|---|---|---|---|---|---|
| Riverside Line | | | | | |
| * Riverside | 5,129 | 12,850 | 7,721 | +140 % | 32 % |
| * Woodland | 6,933 | 8,964 | 2,031 | + 29 | 102 |
| Waban | 694 | 782 | 88 | + 13 | 81 |
| Eliot | 946 | 1,092 | 146 | + 15 | 83 |
| Chestnut Hill | 661 | 925 | 264 | + 40 | 73 |
| *Brookline Village | 2,031 | 3,987 | 1,956 | +196 | 133 |
| | 16,394 | 28,600 | 12,206 | + 75 % | 53 % |
| Revere Line | | | | | |
| Wonderland | 8,622 | 7,024 | (1,598) | – 19% | 60 % |
| Ocean Avenue | 3,196 | 1,955 | (1,241) | – 38 | 48 |
| * Beachmont | 1,389 | 4,570 | 3,181 | + 230 | 132 |
| * Suffolk Downs | 1,025 | 2,547 | 1,522 | + 148 | 60 |
| * Orient Heights | 2,894 | 4,954 | 2,060 | + 71 | 103 |
| * Wood Island Park | 4,053 | 9,359 | 5,306 | + 130 | 70 |
| | 21,179 | 30,409 | 9,230 | + 43 % | 73 % |
| Mattapan Line | | | | | |
| * Butler Street | 2,445 | 7,435 | 4,990 | +240 % | 116 % |
| Milton | 682 | 635 | (47) | – 7 | 86 |
| Mattapan | 3,459 | 3,615 | 156 | + 5 | 90 |
| | 6,586 | 11,685 | 5,099 | + 78 % | 100 % |
| Total Net Change on Projected Related Lines | 44,159 | 70,694 | 26,535 | + 60 % | 67 % |
| Average Daily Cars (Approximate) | 1,840 | 2,945 | 1,105 | | |

* MTC Reduced Fee Lots

Source: MTA, MTC

special timetables. Results will be presented in the next Progress Report.

B. **MTA Parking Lot Experiments**

The results of the MTA reduced fee, parking lot experiments for the month of October indicated a total increase of 26,500 cars over October 1962, for parking lots on experiment-related MTA rapid transit lines. Eight of the 15 MTA parking lots located on three MTA transit lines are included in the experiment. There are a total of 3,500 parking spaces on the eight experimental lots as compared to 1,000 spaces on the remaining seven lots. As of October 1963 patronage at the eight lots had increased by a daily total of 1,100 cars over October 1962, which more than compensated for the 100 car decrease at the other seven parking lots.

The October gain was the largest monthly increase since the introduction of the reduced parking fees in April 1963. In the year prior to the experiment, while parking fees remained constant at 35c, MTA parking volume had fallen by more than 16 per cent. The change to a 10c fee has not only reversed this downward trend in patronage, but also has created a 60 per cent net increase in the number of cars parked at the 15 MTA lots.

This result strongly suggests that public transportation service is capable of competing with the private automobile if it can be clearly cheaper, and faster than comparable trips by car.

October parking lot revenue was $15,000 higher than October 1962. This was three times higher than the $5,100

cost of the parking lot experiment. October was the second consecutive month in which the total gross revenue from MTA parking lots exceeded the monthly cost of the contract.

Gross revenue figures are based on a ratio of 1.3 passengers per car, a ratio established on the basis of several hundred interviews with MTA parking lot patrons. Further evidence to support this assumption was developed independently by Norman A. Abend under contract with the Bedford Planning Board. Mr. Abend, in data covering 2800 commuters at five Route 128 industries, also found a ratio of 1.3 passengers per car. ("Investigation of the Traffic Problem in the Route 62 and 3 Industrial Area, for Town of Bedford Planning Board", by Norman A. Abend, June 1963, p. 25.)

The extent to which loss in parking revenue from reduced experiment fees is more than offset by the increase in fare box income from new riders is illustrated by examination of a typical case, Brookline Village. A reduction in parking fee from 35c to 10c resulted in a per space loss of 10c to the MTA, since the MTA receives 40 per cent of the gross parking income from the parking lot operator. However, for the same parking space, each additional car parked represents 1.3 new riders who each pay

## TABLE 20. ESTIMATED CHANGE IN MTA GROSS INCOME PARKING LOTS

| | October 1962 vs. October 1963 | | | | | |
|---|---|---|---|---|---|---|
| | No. of Cars Oct. 1962 | Park & Ride Rate 1962 | Gross Income Oct. 1962(a) | No. of Cars Oct. 1963 | Park & Ride Rate 1963 | Gross Income Oct. 1963(a) |
| Riverside Line | | | | | | |
| * Riverside | 5,129 | $1.15 | $ 7,129 | 12,850 | $ .90 | $14,649 |
| * Woodland | 6,933 | 1.15 | 9,637 | 8,964 | .90 | 10,219 |
| Waban | 694 | 1.15 | 965 | 782 | 1.15 | 1,087 |
| Eliot | 946 | 1.15 | 1,315 | 1,092 | 1.15 | 1,518 |
| Chestnut Hill | 661 | 1.15 | 919 | 925 | 1.15 | 1,286 |
| * Brookline Village | 2,031 | $ .95 | 2,295 | 3,987 | $ .70 | 3,509 |
| | 16,394 | | $ 22,260 | 28,600 | | $32,268 |
| Revere Line | | | | | | |
| Wonderland | 8,622 | $ .75 | $ 7,501 | 7,024 | $ .75 | $ 6,111 |
| Ocean Avenue | 3,196 | .75 | 2,780 | 1,955 | .75 | 1,701 |
| * Beachmont | 1,389 | .75 | 1,208 | 4,570 | .50 | 2,833 |
| * Suffolk Downs | 1,025 | .75 | 892 | 2,547 | .50 | 1,579 |
| * Orient Heights | 2,894 | .75 | 2,518 | 4,954 | .50 | 3,071 |
| * Wood Island Park | 4,053 | $ .75 | 3,526 | 9,359 | $ .50 | 5,803 |
| | 21,179 | | $ 18,425 | 30,409 | | $ 21,098 |
| Mattapan Line | | | | | | |
| * Butler Street | 2,445 | $ .75 | $ 2,127 | 7,435 | $ .50 | $ 4,610 |
| Milton | 682 | .75 | 593 | 635 | .75 | 552 |
| Mattapan | 3,459 | $ .75 | 3,009 | 3,615 | $ .75 | 3,145 |
| | 6,586 | | $ 5,729 | 11,685 | | $ 8,307 |
| TOTAL | 44,159 | | $46,414 | 70,649 | | $61,673 |
| | | Increase in Gross Income — October | | $15,259 | | |
| | | Contract Cost — October | | $ 5,026 | | |

(a) Calculated at the rate of 1.3 passengers per car

* MTC Reduced Fee Lots

Source: MTA, MTC

## TABLE 21. VACANCIES IN MTA PARKING LOTS

| | Rated No. of Spaces | Daily Average No. of Cars Parked Oct. 1962 | Vacancies Remaining Oct. 1962 | Daily Average No. of Cars Parked Oct. 1963 | Increase (Decrease) | Vacancies Remaining Oct. 1963 |
|---|---|---|---|---|---|---|
| Riverside Line | | | | | | |
| * Riverside | 1,600 | 205 | 1,395 | 514 | 309 | 1,086 |
| * Woodland | 353 | 285 | 68 | 360 | 75 | 30 |
| Waban | 42 | 30 | 12 | 51 | 21 | 0 |
| Eliot | 57 | 41 | 16 | 62 | 21 | 0 |
| Chestnut Hill | 55 | 28 | 27 | 46 | 18 | 9 |

| | | | | | | |
|---|---|---|---|---|---|---|
| * Brookline Village | 130 | 81 | 49 | 160 | 79 | 0 |
| | 2,237 | 670 | 1,567 | 1,193 | 523 | 1,125 |
| Revere Line | | | | | | |
| Wonderland | 480 | 346 | 134 | 290 | (56) | 1,086 |
| Ocean Avenue | 175 | 139 | 36 | 85 | (54) | 30 |
| * Beachmont | 150 | 60 | 90 | 198 | 138 | 0 |
| * Suffolk Downs | 185 | 45 | 140 | 112 | 67 | 0 |
| * Orient Heights | 209 | 115 | 113 | 216 | 101 | 9 |
| * Wood Island Park | 540 | 162 | 378 | 374 | 212 | 0 |
| | 1,739 | 867 | 891 | 1,275 | 408 | 1,125 |
| Mattapan Line | | | | | | |
| * Butler Street | 285 | 106 | 179 | 322 | 216 | 0 |
| Milton | 32 | 30 | 2 | 28 | (2) | 4 |
| Mattapan | 200 | 138 | 37 | 157 | 19 | 43 |
| | 517 | 274 | 218 | 507 | 233 | 47 |
| TOTAL — Three Lines | 4,493 | 1,811 | 2,676 | 2,975 | 1,164 | 1,670 |

* These lots reduced to 10¢ in 1962. All other lots 35¢.
Source: MTA, MTC

60c at the fare box for a round trip, for a total fare box revenue of 78c per car. At Brookline Village an increase of only ten additional cars covered the loss in parking income from 78 cars which originally used the lot. Thus, the breakeven point at Brookline Village was a 13 per cent increase in cars parked. Any increase in patronage in excess of that figure produces additional revenue for the MTA. The number of cars parked at the lot increased by 80 per cent indicating that at Brookline Village, as at other lots, the experiment has generated a substantial increase in total MTA revenues.

In addition to increasing the average daily number of cars parked at MTA lots, the 10c fee has produced a definite movement of cars from 35c lots to nearby 10c parking lots. For example, at the same time that a total of 410 cars parked were added to lots along the Revere line, 110 cars shifted from the Wonderland and Ocean Avenue lots to take advantage of the 10c fee at the Beachmont lot.

1. *Modification of Experiment*

MTC staff have developed with MTA representatives a proposed modification of the parking lot experiment designed to take advantage of the tendency of some drivers to shift from one lot to another on the basis of fee schedules. This revision involves raising the experimental reduced fee at lots now operating at full capacity and reducing the fee at lots where vacancies still exist. The objective is to determine if virtually complete utilization of all MTA parking spaces can be achieved. The present and proposed parking fees for each lot on the three experiment lines are shown in Table 22.

2. *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 this 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.

**Table 22**

**PROPOSED MODIFICATION OF MTA PARKING LOT FEES**

| Name of Lot | Rated Number of Spaces | Vacancies Average Weekdays | Present Fee | Proposed Fee |
|---|---|---|---|---|
| Riverside Line | | | | |
| Riverside | 1,600 | 1,086 | 10¢ | Free |
| Woodland | 353 | 30 | 10¢ | 20¢ |
| Waban | 42 | — | 35¢ | 35¢ |
| Elliot | 57 | — | 35¢ | 35¢ |
| Chestnut Hill | 55 | 9 | 35¢ | 35¢ |
| Brookline Village | 130 | — | 10¢ | 20¢ |
| Revere Line | | | | |
| Wonderland | 480 | 190 | 35¢ | 20¢ |
| Ocean Avenue | 175 | 90 | 35¢ | 20¢ |
| Beachmont | 150 | 10 | 10¢ | 20¢ |
| Suffolk Downs | 185 | 8 | 10¢ | 10¢ |
| Orient Heights | 209 | 44 | 10¢ | 10¢ |
| Wood Island Park | 540 | 166 | 10¢ | 10¢ |
| Mattapan Line | | | | |
| Butler Street | 285 | — | 10¢ | 20¢ |
| Milton | 32 | 4 | 35¢ | 35¢ |
| Mattapan | 200 (a) | 43 | 35¢ | 25¢ |

(a) A portion of original 290 spaces no longer available due to other MTA use.

Source: MTA, MTC

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 Framingram 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.

The general pattern is that the farther lots are from downtown, the more attractive they are to patrons living at a greater distance from the lot.

3. *Vacancies and Revenue*

There are a total of 5,800 parking spaces at MTA lots. At the end of October the success of the reduced fee parking experiment reduced the number of vacant spaces at MTA lots on an average weekday from 2,800 vacancies. to 1,700 vacancies. Remaining vacant parking spaces are distributed as follows:

| | |
|---|---|
| Riverside | |
| Woodland | 30 |
| Chestnut Hill | 9 |
| Wonderland | 190 |
| Ocean Avenue | 90 |
| Beachmont | 10 |
| Suffolk Downs | 8 |
| Orient Heights | 44 |
| Wood Island Pk. | 166 |
| Milton | 4 |
| Mattapan | 43 |
| Everett-Allen | 20 |
| Everett-Kelley | 60 |

Extrapolated on an annual basis, the total increase of 1,100 cars daily achieved to date on the 15 MTA lots represents a net increase of approximately $180,000 in MTA revenues. However, if all vacant spaces, except those at Riverside, could be filled on weekdays, a further additional net increase of $100,000 per year would be added to MTA revenues, and, if Riverside could be filled, a final additional net revenue $315,000 per year would be earned, for a total net additional MTA revenue of $600,000 per year. These income estimates, based on full utilization of 1,500 existing MTA parking spaces at outlying lots, can be compared with the $10 million cost of construction of the 1500-space Boston Common Underground garage recently completed in downtown Boston.

4. *Expansion of Existing Lots*

In addition to filling existing space at parking lots, there is the possibility of adding to the number of spaces available at five locations along the Revere line. Since auto commuters in this North Shore sector are faced with a 50c daily tunnel or bridge toll, there is special financial incentive to use a lower cost park and ride arrangement. In this connection, MTA lots on the Revere line have already exhibited a greater percentage increase in parking use than have lots on the Riverside line. Additional space for parking might be acquired at the following stations:

| Station | Approximate Number Additional Spaces |
|---|---|
| Airport | 200 |
| Wood Island | 200 |
| Suffolk Downs | 100 |
| Beachmont | 100 |
| Wonderland | 400 |

MTC and MTA staff have discussed the possibility of acquiring and improving sites which could be readily made available to provide additional parking spaces. If all of the suggested areas could be acquired, the MTA would control about 1,000 additional parking spaces of which 600 are now used for free parking and 400 are not now available. If these spaces could be filled on the basis of the proposed fee schedule, the MTA would gain $77,000 in added annual revenue.

5. *Automatic Parking Gates*

A further improvement in MTA parking lot income might be made through the use of automatic coin operated parking gates at smaller lots where the number of cars parked per hour does not produce enough revenue to pay the wages of a parking attendant. There are three such parking lots of about 50 spaces each on the Riverside Line: Waban, Elliot, and Chestnut Hill.

Currently the lessee stations an employee at these lots during a few hours in the morning when a majority of the parkers arrive. During the remainder of the day, parking is free, as there is no attendant on duty. This system succeeds in collecting less than half of the potential revenue.

TABLE 23—SMALLER MTA PARKING LOTS

| Name of Lot | Lessee | No. of Spaces | Monthly Occupancy Goal[a] | Observed Monthly Occupancy[b] | Parking Fees Collected[c] |
|---|---|---|---|---|---|
| Chestnut Hill | Metro | 50 | 1150 | 1008 | 565 |
| Eliot | Parking | 54 | 1242 | 987 | 758 |
| Waban | Inc. | 48 | 1104 | 882 | 563 |
| | | 152 | 3496 | 1977 | 1886 |
| | | | x .25 | x .25 | x .35 |
| | | | $ 874 | $ 494 | $ 659[d] |
| Cost of Parking Control Equipment | | | | $2,815 per lot x 3 | |
| | | | | $8,445 for three lots | |

At present rate of occupancy, 36 months would be required for amortization

a Number of spaces times 23 days.
b Based on the average of three field observations in September, 1963. The figure shown is a minimum since it assumes only one car per space per day.
c Based on monthly report by Lessee.
d Of $659 collected, 40 per cent, or $264 is paid to MTA as rent under present contract.

Source: MTA, MTC.

As shown in Table 23, if coin operated parking gates costing $3,000 to $4,000 were installed, the cost of the equipment might be amortized in approximately 14 to 33 months. Thereafter, the MTA could gross about $7,000 in new parking income per year from these three lots.

The Chicago Transit Authority, which has installed automatic parking gates of this type at all pay parking lots throughout its system is optimistic about their use. Revenue has increased because collection is on a 24-hour per day basis, and the CTA indicates that use of paid employees to collect parking fees would be many times more expensive than the cost of maintaining automatic gates.

6. *Parking Meter Lots*

In addition to the lots shown in Table 23, there are four relatively small parking areas along the Riverside line which are in theory controlled by parking meters. According to existing contracts, these meters are maintained by the lessees. However, due to vandalism over the past few years, all of the parking meter heads have been removed. A recent count showed none of 46 meters in operating condition. At $85 per meter head, the cost of replacing damaged meters exceeds the potential revenue to the lessee, especially if the new meter is smashed within a few weeks. As a result, parking is now free, but this is at best an uncertain benefit since the lots are not policed or maintained.

Table 24 presents a statistical summary of these four small parking meter locations.

TABLE 24—SMALL METERED MTA PARKING LOTS
(ALL LOCATED IN BROOKLINE)

| Name of Lot | Lessee | No. of Spaces | No. of Meters | Meters Working | Average Weekday Cars Parked |
|---|---|---|---|---|---|
| Longwood | Metro Parking Inc. | 19 | 17 | 0 | 19 |
| Brookline Hills | Metro Parking Inc. | 16 | 12 | 0 | 16 |
| Beaconsfield | Metro Parking Inc. | 20 | 17 | 0 | 22 |
| Brookline Village | Sawyer* | 17 | — | — | 17 |
| | | 72 | 46 | 0 | 74 |

72 Spaces represents one per cent of total MTA Parking Spaces.
* See explanation in text.
Source: MTA, MTC.

In order to provide some degree of supervision and maintenance (such as snow removal) and to clarify the MTA parking policy at these locations, these lots might be turned over to the town in which they are located. Lessees might be willing to relinquish responsibility for these lots since they produce no revenue.

Of the six small lots listed, Brookline Village requires a brief explanation. This lease covers 130 spaces. Of these 113 are located on the south side of the Riverside line and access is controlled by an agent. However, the remaining 17 spaces are located on the north side of the line and consist of meterless diagonal parking immediately adjacent to metered parking spaces owned by the Town of Brookline. The location is such that for the agent on the other side of the tracks control is almost impossible. It would be desirable, if the Town of Brookline would assume responsibility, to install two or four hour meters to encourage the use of these few spaces by shoppers, with the remaining spaces in the large lot reserved for use by all day parkers.

If all of the foregoing suggestions were carried out over the next few months, the improvement seen thus far in use of MTA parking lots could continue until all, or nearly all of available spaces are filled to capacity. The growth of "park-and--ride" revenue as a result of the MTC experiments has been one of the few encouraging aspects of an otherwise bleak MTA financial picture. Clearly every effort should be made to encourage this growth.

# *Chapter V.*

# BUS DEMONSTRATION EXPERIMENTS

The facts developed by the Mass Transportation Commission bus experiments as part of the Demonstration Project are highly varied and might at first glance appear to be mutually contradictory. Consideration of the circumstances, however, shows it clear pattern of proven results.

**A. Feeder Service**

The MTC experiments indicated clearly that bus service operated as a feeder to rail or rapid transit service was attractive to passengers only in it very limited area. In the densely populated, partly industrialized area closely surrounding the downtown areas, such service will carry passengers. This was indicated by the Service Bus Line experiment. In this experiment a new bus service running on it 30-minute headway through a suburban area about four miles from downtown, feeding a rapid transit line, carried over a hundred passengers each way immediately, and this number grew steadily to over 200. Revenue at the existing 10¢ fare fails to cover cost completely, but the gap between cost and revenue is small compared with the benefits of keeping over 150 automobiles out of Boston.

In the outer suburbs, however, the results experimental so far indicate little market potential for bus service to raiload stations. The two outstanding examples of this are the Brush Hill Transportation Company's experiment at Stoughton and the Eastern Massachusetts Street Railway Company's experiment at Topsfield, roughly 20 miles south and north, respectively, of the downtown area. At Stoughton an hourly service of buses, leaving on the half-hour, connected to a rail service. Alternate service on the hour connecting to rapid transit, which had existed prior to the service, was continued. Stoughton has two peak-hour trains. Topsfield, on the other hand, has had no public transportation for several years. Here, an hourly express bus service connecting rail service was established. In neither case were is many as ten passengers per day carried in one direction although in both cases, the rail services themselves were heavily patronized.

A similar result appeared from two other services still farther out, one operated by Massachusetts Northeastern Transportation Company between Amesbury and rail service at Newburyport, and the other by Fitchburg-Leominster Street Railway Company between Ashby-Townsend and rail service at Fitchburg.

**B. Suburban Service**

One long haul (33 mile) route operating through relatively less densely populated suburbs has demonstrated a strong ability to attract passengers. The Johnson Bus Line, later merged with the Short Line and operating under the latter name, serves the towns of Medfield, Millis, Medway, and Milford, among others. Its existing service was improved by the addition of seven daily new round trips, resulting in hourly frequency. Response in the form of increased passenger volume was immediate and is still growing. Revenue has so nearly equaled cost that the company, with minor adjustments, is continuing the service even after the end of the experiment.

Another bus of comparable length, however, operated over a super-highway on an hourly frequency in competition with a parallel hourly train service, demonstrated very little ability to attract passengers. The fare was the same as rail service, but the ratio of rail to bus passengers was on the order of 20 to 1.

Short haul suburban bus experiments in the Boston area were not easily arranged because of the prohibition against through bus movements from nearby communities to downtown Boston. One of the MTA experiments, however, approximated such a service. Two drive-in movie theaters were adapted for use as MTA parking lots and highway express buses were operated to downtown. The results so far indicate no substantial public response. Such a device apparently has little appeal as compared to parking at rapid transit stations.

In the smaller metropolitan areas the suburban bus experiments evoked very little response. These experiments include the Barre Bus Company service at Worcester, the Short Line service at Worcester, and the Fitchburg-Leominster service to West Townsend and Ashby.

A fare experiment in the Boston suburban area provided further evidence that fare levels are not a controlling influence on bus patronage. A special reduction in off-peak fares was offered by the Eastern Massachusetts Street Railway Company effective August 1st, simultaneously with similar cuts in rail fares. As with the railroad, the results so far are negligible.

**C. Smaller Urban Areas**

In the urban areas other than Boston, although the suburban services, as indicated above, attracted few new

**1.** YELLOW COACH COMPANY

a. New Service to Francis Plaza Housing for the Elderly, Pittsfield
b. Increased Service to Mahconah 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 Lunenburg and Townsend (Concluded)
c. New Service from the Fitchburg Railroad Station to Ashby Center (Concluded)
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 (Concluded)
b. New Service from Amesbury to the Western Electric Plant in North Andover (Concluded)
c. Route extension to a new housing project in Newburyport (Concluded)
d. New service on State Street, Newburyport (Concluded)
e. Increased Service from Amesbury to Newburyport (Concluded)

**5.** EASTERN MASSACHUSETTS STREET RAILWAY COMPANY

a. New Service from Topsfield to Salem (Concluded)
b. Fall River: Increased Service
c. Off-Peak Reduced Fare Experiment on local routes within a 1½ mile radius of downtown Lowell (Concluded)
d. Lawrence to Boston: New Service

**6.** LYNNFIELD COMMUNITY, INC.

a. Increased Service from Wakefield to Lynn (Concluded)

**7.** SERVICE BUS LINE, INC.

a. New Service from Linden Square to Revere Beach M.T.A. Station (Concluded)

**9.** BRUSH HILL TRANSPORTATION COMPANY

a. New Service from Stoughton to the New Haven Railroad Route 128 Station (Concluded)

**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

## BUS DEMONSTRATION PROJECTS

PROJECTS IN PROGRESS
PROJECTS CONCLUDED

10 0 10 20 30 40
SCALE IN MILES

Figure 17

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passengers, there was a very definite response to main-line service improvements.

Most notable of these was the Fitchburg-Leominster Street Railway Company's experiment #5 and #6, by which frequency along the company's principal route was increased and small route extension arranged to serve a residential area. The afternoon frequency on this route was increased to a 10-minute headway instead of 20-minute, and evening trips were added to provide half-hourly instead of hourly service. Some 300 additional passengers were carried in both directions on a typical weekday. Since the volume before the experiment was less than 3,000, this is better than a ten per cent increase. Measure of revenue plus lack of response on Saturdays indicates that a very large part of this response comes from pupils.

The service of the Massachusetts Northeastern Transportation Company between Amesbury and Newburyport was increased to a lesser degree, so as to improve rush hour service and fill out an hourly pattern through the day.

Response amounted to a 20 per cent increase in patronage, producing revenue amounting to some 28 per cent of the contract cost, perhaps half of the true incremental cost. The increase expressed in number of passengers is only some 35 passenger trips per day. This could not have kept more than ten to fifteen automobiles off the highway.

Massachusetts Northeastern experiment #3 represented a very modest improvement in downtown services which produced the rather surprising result of a 32 per cent increase in revenue, representing some ten or twelve trips. Incremental costs have yet to be measured and therefore their relationship to the additional approximate $3.50 daily revenue is not yet known.

Improved service in Fall River, on the other hand, has apparently produced little response.

In the Pittsfield-North Adams area, the early reports of the Berkshire Street Railway Company seemed to indicate a significant demand for the new service, but the more recent reports of the Yellow Coach Lines, the successor company, indicates no substance to these reports.

## D. **Specialized Services**

Service tailored to the needs of workers at industrial plants produced minimal response in every case. Results of the Fitchburg-Leominster service at three plants in Fitchburg and Mass Northeastern service at the Western Electric plant at North Andover all indicated that a bus waiting at the plant door when workers come off duty has little appeal to the industrial worker.

New services to a shopping center in Fitchburg, however, proved more attractive. Well over a hundred passengers provided revenue which met approximately 50 per cent of the cost.

In general, it can be said of the experiments in smaller urban areas that carefully planned increases in frequency and modest route extensions can provide a public service of proven utility for many new passengers, but fare box revenue will probably not meet the experimental cost. In the Boston area it is clear from the Short Line experiment to Milford that there are suburban areas of moderate density where rail service cannot reasonably be maintained, but a well operated bus service can provide attractive suburban service.

In general, the relative capabilities and attractiveness of bus, rapid transit, and rail commuter service and the type of market suitable for each has become a little clearer as a result of the demonstration experiments.

## E. **Eastern Massachusetts Street Railway Company**

### *1. City of Lowell — Reduced Off-Peak Fare Experiment*

This first experiment of the entire Demonstration Project began on December 10, 1962 and terminated as planned on March 8, 1963. Its purpose was to test the effect of a reduced off-peak fare from 25¢ to 10¢ within a 1.5 mile radius of the central business district. The experimental routes in Lowell operated through densely populated, low income urban areas which in theory provide an excellent market for public transportation.

Off-peak riding increased by 800 passengers per day on experiment buses. However, because each passenger was 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. Even 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 above the base period. Surveys conducted by the MTC staff indicated that the increase in off-peak patronage was derived mainly from increased frequency of use of former bus riders. MTC Progress Report No. 2 discussed this experiment in detail.

### *2. Fall River Local Service Experiment*

This experiment involving increased service on certain routes in the City of Fall River began on Sunday, August 11, 1963.

For the past year the City of Fall River has experienced substantial disruption in traffic flow due to the construction through the city of Interstate 195. The construction of I-195 severed existing bus routes, necessitating frequent

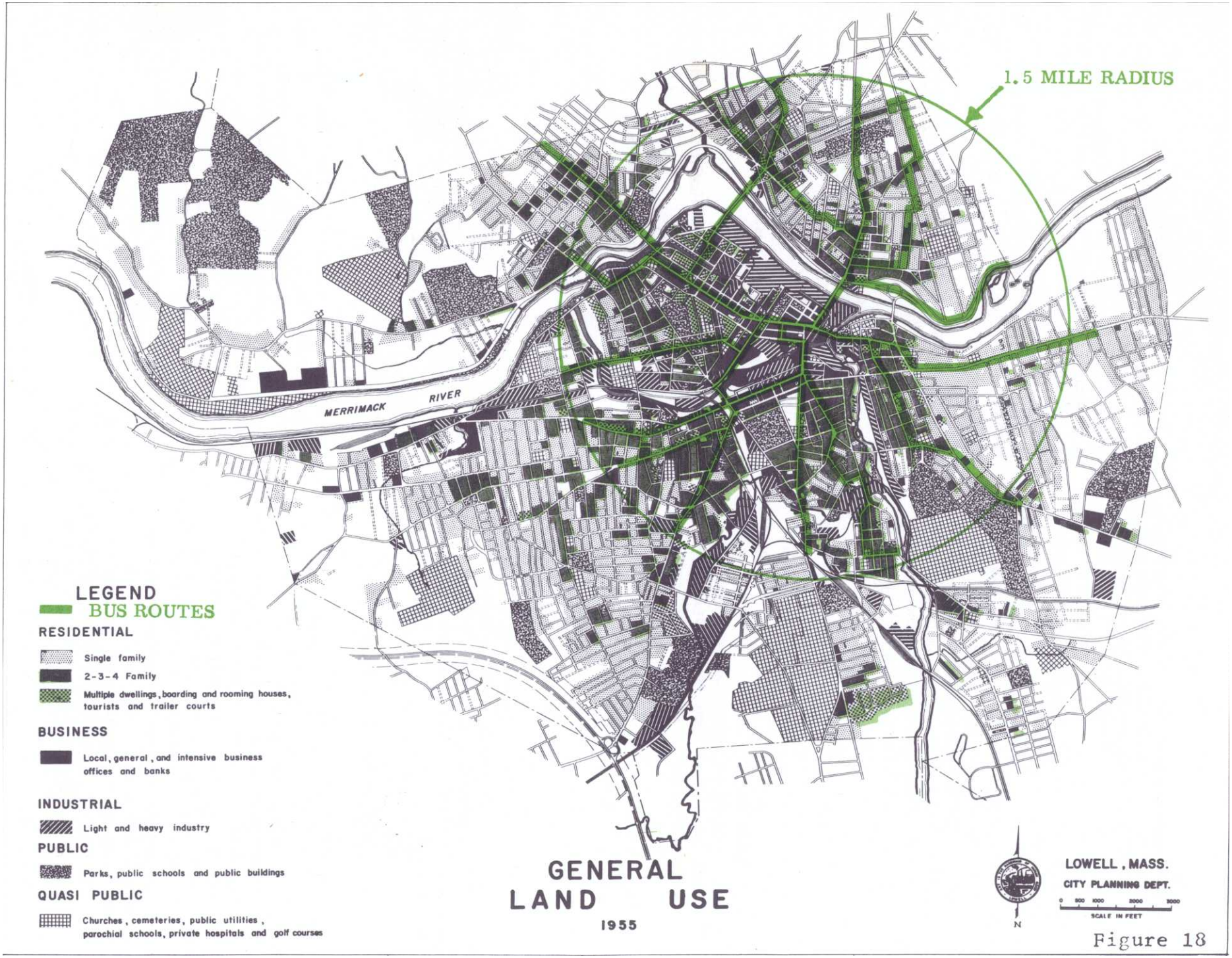



Figure 18

detours and causing considerable confusion. Partly as a consequence, there has been a steady decline in passengers during the past year in Eastern Massachusetts' Fall River operation.

This experiment will help to determine if the number of riders on the existing bus service can be maintained and increased by substantially increasing the number of trips in and out of the downtown business district, in spite of disruptions from highway construction. The experiment may also help to remove a number of automobiles from the unusually heavily congested downtown streets. As part of the experiment a common loading point in downtown Fall River has been established along with a special Sunday bus service.

Increased weekday service has been established on five bus routes and a one hour service from 10:00 a.m. to 6:00 p.m. on Sunday has been reinstituted on four bus routes.

Results during the summer months indicate that the increased service did not attract many additional riders. Fall results, however, are more encouraging, although sufficient firm data is not yet available for tentative conclusion.

### 3. *Off-Peak Fare Reduction Experiment*

In cooperation with the Eastern Massachusetts Street Railway the MTC devised a reduced fare program to place the bus company on equal rate basis with the B&M railroad line with which it competes. The off-peak fares were reduced on all segments of the company's North Shore Division operations that parallel B&M service to match the lower B&M off-peak fares forth going into effect on August 1, 1963.

### 4. *Lawrence-Boston Express Service Experiment*

An express bus service experiment from Lawrence to Boston via Interstate 93 began on August 19, 1963.

This project has three significant aspects: first, it provides an opportunity to test the market response of the express bus service from one major city within the Greater Boston sphere, Lawrence (1960 population 70,900), to Boston; secondly, it tests the attraction of high-speed bus service over an interstate highway to a central city; and, third since it provides an alternate means of transportation from Lawrence, the new service offers the opportunity of measuring the comparative acceptability of express bus service as compared to rail service included in the Boston and Maine Demonstration Project. In addition to serving people from the City of Lawrence, part of the route also services the industrialized Shawsheen section of Andover.

The impact of the reduced off-peak fare schedule are being measured primarily by interview results. The surveys conducted to date indicate off-peak riding is up about 25 per cent over 1962. Surprisingly, the new passengers are diverted about equally from train and automobile (former mode of travel-car 45 per cent; train 47 per cent; new trip 6 per cent; other bus routes 3 per cent). The increased ridership has not yet reached a sufficiently high level, however, to offset the loss in revenue due to the fare reductions.

The terminal point in Boston for this route is Park Square, a central point for both shopping and employment.

This Park Square terminal point gives the bus route a distinct advantage over the rail service, which terminates about a mile and one-half from central Boston at North Station. However, the fact that the bus trip requires over an hour while the train trip is only half an hour tends to reduce the relative advantage of center-to-center service.

Hourly service is offered from Lawrence, leaving Lawrence at 7:10 a.m. to 5:10 p.m. daily except Sunday. Hourly service is also offered from Boston, leaving Boston at 8:30 a.m. to 6:30 p.m. daily, except Sunday.

Patronage on the Lawrence-Boston route has increased at a slow but steady pace as can be seen from the statistics presented below:

TABLE 25

**EASTERN MASSACHUSETTS STREET RAILWAY COMPANY**
**RESULTS OF LAWRENCE-BOSTON BUS EXPERIMENT**

| Period | Total Revenue | Total Operating Cost |
|---|---|---|
| September 1–30 | $1,581.00 | $8,052.00 |
| October 1–31 | 2.165.00 | 9,059.00 |

Source: Eastern Mass. Street Railway

Interview results on this route indicate that 56 per cent of these riders formerly used train service, 32 per cent formerly drove to Boston and 12 per cent formerly traveled via the Lawrence to Everett Station, Eastern Mass. bus route.

### 5. *Topsfield — Salem Experiment*

This was the second experiment the Commission instituted with the Eastern Massachusetts Street Railway Company. The experiment began on June 24, 1963. It provided service from the Topsfield Fair Grounds to the Boston & Maine Railroad Station in Salem.

Topsfield is an upper income community located approximately twenty miles from Boston and residents can

use relatively uncongested expressways to downtown Boston. During the course of the experiment it appeared it might be made more attractive if the service operated directly from Topsfield Center to the Railroad Station in Salem. Consequently, Eastern Massachusetts Street Railway Company applied for and received permission on September 24, 1962, from the Department of Public Utilities to extend this operation into Topsfield Center. The results since that time have been studied closely. However, little additional patronage developed. The experiment was therefore terminated on November 17, 1963.

It appears evident that a connecting bus-rail service from an upper income community which enjoys good highway access to a metropolitan area, is not sufficiently attractive to divert automobile travelers.

TABLE 26

**EASTERN MASSACHUSETTS STREET RAILWAY COMPANY**
**RESULTS OF TOPSFIELD-SALEM EXPERIMENT**

| Period | Total Revenue | Total Operating Cost |
|---|---|---|
| June 24–July 31 | $105 | $4,452 |
| August 1–31 | 97 | 3,607 |
| September 1–30 | 74 | 3,298 |
| October 1–31 | 210 | 3,793 |

Source: Eastern Mass. Street Railway

F. Fitchburg and Leominster Street Railway Company

A series of six bus experiments in the Fitchburg and Leominster area were initiated on March 11, 1963. Effective September 1, 1963 two projects were concluded because of static low response. The six experiments and their most recent results are as follows:

1. *Project 1* – A new service from Upper Common in Fitchburg to the Fitchgate Shopping Center operating daily, except Sunday, provides a significant mass transportation experiment to an outlying, automobile-oriented shopping center.

Patronage on this route showed a slow but steady growth until the unusually hot July weather affected the normal flow of shoppers to Fitchgate. However, by October the revenue had reached a new high and continued to show strength in November. In November revenue was more than half the operating cost.

**PROJECT 1.**

| | Total Revenue per Month | Total Operating Cost per Month | Average No. Passengers per Day |
|---|---|---|---|
| March (11–31) | $234 | $ 797 | 88 |
| April | 480 | 1,149 | 131 |
| May | 522 | 1,156 | 131 |
| June | 536 | 1,117 | 136 |
| July | 492 | 1,162 | 93 |
| August | 603 | 1,218 | 131 |
| Sept. | 599 | 1,081 | 159 |
| Oct. | 760 | 1,171 | 196 |

It will be noted that there was a 50 per cent increase in the average number of passengers per day in October over the levels of April and May.

2. *Projects 2 and 3* – Both of these projects involved new service from Fitchburg to the residential suburbs of Ashby (2) and Lunenberg-Townsend (3). These experimental routes were concluded, effective September 1, 1963, as it was evident that little additional information could be gained from their continued operation.

The objective of both experimental routes was to test the advisability of operating service between small suburban residential areas and a small metropolitan area. The results definitely indicate that in areas such as these regularly scheduled service is not practical from a financial standpoint. The revenue on Project 2 covered only about ten per cent of the cost and on Project 3 only about 15 per cent of the cost.

Surveys conducted on these routes indicate that most people drive their own car or ride in car pools from the towns served to various destinations in the metropolitan Fitchburg area. In addition, very few people used the service as a connecting line in journeys to points on the Boston & Maine Railroad.

**PROJECT 2.**

| | Total Revenue per Month | Total Operating Cost per Month | Average No. Passengers per Day |
|---|---|---|---|
| March (11-31) | $209 | $1,711 | 40 |
| April | 300 | 2,472 | 34 |
| May | 287 | 2,472 | 36 |
| June | 236 | 2,377 | 31 |
| July | 258 | 2,472 | 33 |
| August | 238 | 2,567 | 29 |

**PROJECT 3.**

| | Total Revenue per Month | Total Operating Cost per Month | Average No. Passengers per Day |
|---|---|---|---|
| March (11-31) | $101 | $ 730 | 23 |
| April | 192 | 1,054 | 28 |
| May | 169 | 1,054 | 25 |
| June | 130 | 1,013 | 21 |
| July | 154 | 1,054 | 24 |
| August | 137 | 1,095 | 18 |

3. *Project 4* – is new service to and from various industrial plants in the Greater Fitchburg area. Approximately 3,000 people are employed in these plants (Crocker Burbank Company, Asher Pants Company, Hedstrom Union Company and Alcon Plastics). The revenues in this experiment are meeting more than one-half the operating costs.

**PROJECT 4.**

| | Total Revenue per Month | Total Operating Cost per Month | Average No. Passengers per Day |
|---|---|---|---|
| March (11-31) | $ 56 | $142 | 23 |
| April | 122 | 209 | 30 |
| May | 101 | 209 | 22 |
| June | 98 | 190 | 28 |
| July | 100 | 209 | 25 |
| August | 114 | 209 | 29 |
| Sept. | 107 | 190 | 30 |
| Oct. | 154 | 219 | 38 |

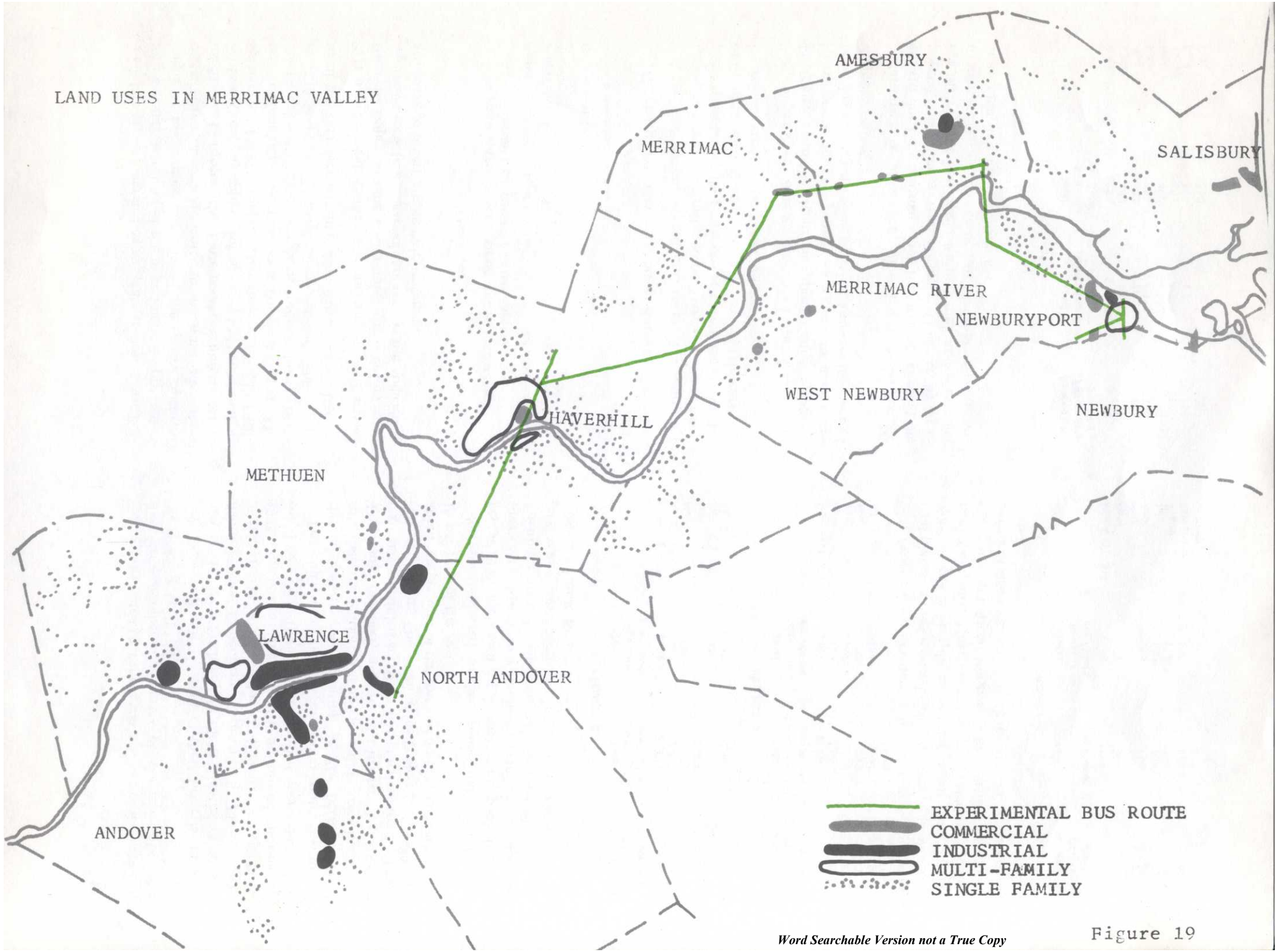





Figure 19

4. *Project 5* – This is increased service from Fitchburg to Leominster and return. This test involves a virtual doubling of the frequency between 1:00 p.m. and 6:00 p.m. on the busiest route of Fitchburg and Leominster operation.

5. *Project 6* – This is an extension of the above route. There is no additional charge for travel on the extension for passengers traveling from downtown Fitchburg and Leominster.

TABLE 27

**FITCHBURG AND LEOMINSTER STREET RAILWAY COMPANY**

**COMPARISON OF 1962 AND 1963 REVENUE ON PROJECTS 5 AND 6**

| | 1962 | 1963 | % Change |
|---|---|---|---|
| March (11–31) | $ 8,536 | $ 8,847 | + 3.6 |
| April | 11,435 | 12,522 | + 9.5 |
| May | 11,159 | 12,188 | + 9.2 |
| June | 10,942 | 10,913 | – 0.3 * |
| July | 8,755 | 9,479 | + 8.3 |
| August | 10,438 | 11,368 | + 8.9 |
| | 9,229 | 10,292 | + 11.5 |
| | 11,240 | 12,656 | + 12.6 |

* Revenue decline in 1963 primarily due to the fact that school closed earlier in June 1963 than in June, 1962.

Source: Fitchburg and Leominster Street Railway Company

G. Massachusetts Northeastern Transportation Company

All Massachusetts Northeastern Transportation Company experiments began on March 11, 1963. Under these experiments, the Company operated five bus routes, two from the large Western Electric Plant in North Andover, one to downtown Haverhill, one to Amesbury; two local routes in Newburyport (pop. 14,000) and one between Amesbury and Newburyport.

The routes are as follows:

1. *Projects 1 and 2* – New Service from Haverhill to the Western Electric Plant in North Andover and new service from Amesbury to the Western Electric Plant in North Andover was provided Monday through Friday only. Response on these routes was limited: additional revenues received in July covered only 9.12 per cent of the costs of the added service, so these experiments were terminated on September 1.

MTC staff conducted passenger interviews and discussions with supervisory and union personnel at the Western Electric Plant to determine the reasons for the negligible results. Invariably, the answer received was that car pools were far cheaper and more convenient than the experimental bus service.

It seems probable, therefore, that a large suburban industrial plant with excellent parking facilities and easy access does not provide the market to support this type of public transportation.

TABLE 28

**MASSACHUSETTS NORTHEASTERN TRANSPORTATION COMPANY**

**PASSENGER TRENDS BY PROJECT**

**March 11, 1963 through August 31, 1963**

**Projects 1 and 2**

| Period | 1962 | 1963 | % Change |
|---|---|---|---|
| 3/11–3/31 | $341 | $349 | + 2.3 |
| 4/ 1–4/30 | 503 | 502 | N.C. |
| 5/ 1–5/31 | 490 | 431 | – 12.0 |
| 6/ 1–6/30 | 465 | 386 | – 17.0 |
| 7/ 1–7/31* | 193 | 246 | + 27.5 |
| 8/ 1–31 | 417 | 471 | + 13.0 |

* Service did not operate week of July 15 and July 22, 1963 – Plant on vacation.

**Project 3**

| Period | 1962 | 1963 | % Change |
|---|---|---|---|
| 3/11–3/31 | $247 | $271 | + 9.7 |
| 4/ 1–4/30 | 285 | 401 | + 40.7 |
| 5/ 1–5/31 | 345 | 373 | + 8.1 |
| 6/ 1–6/30 | 266 | 289 | + 8.6 |
| 7/ 1–7/31 | 148 | 274 | + 85.1 |
| 8/ 1–31 | 189 | 348 | + 85.0 |

**Projects 4 and 5**

| Period | 1962 | 1963 | % Change |
|---|---|---|---|
| 3/11–3/31 | $ 793 | $ 888 | + 12.0 |
| 4/ 1–4/30 | 1,319 | 1,584 | + 21.0 |
| 5/ 1–5/31 | 1,282 | 1,601 | + 24.9 |
| 6/ 1–6/30 | 1,271 | 1,504 | + 18.3 |
| 7/ 1–7/31 | 1,110 | 1,304 | + 17.5 |
| 8/ 1–31 | 1,232 | 1,558 | + 26.0 |

Source: Massachusetts Northeastern Transportation Company

2. *Project 3* – This experiment provided an extension of an existing route in Newburyport to a new housing area composed of both single family moderate income dwellings and apartment units for the elderly. In addition two daily round-trips were added to the schedule to provide hourly frequency on the route.

Month to month results of this experiment have varied greatly, primarily because of fluctuations in ridership by school children. Evidently this route is more suited to a school bus operation rather than as a frequent service public route. The experiment was terminated on November 9.

3. *Projects 4 and 5* – Project 4 was a new local service in Newburyport and Project 5 was an increased service between Amesbury and Newburyport. These two projects are reported as a unit because for a time, the two routes were covered by the same bus preventing a detailed breakdown of passengers and revenue. The results are combined in this report for consistency.

Because the response to the new local service on State Street, Newburyport (Project 4) was relatively minor, the experiment was concluded on September 1, 1963. The results probably indicate that new bus routes in older

residential areas in a small city (1960 pop. 14,000) find it difficult to attract substantial numbers of new riders. Residents who have adopted auto transportation for their everyday needs are apparently reluctant to utilize a new bus service.

The service added to the Amesbury-Newburyport line (Project 5) was designed to provide convenient connections with Boston & Maine trains to and from Boston, and to provide a more attractive frequency between the terminal points. Results to date indicate that the increased frequency has resulted in a modest increase in patronage but few passengers have taken advantage of the rail connections. The increased revenue covered on the Amesbury-Newburyport route covered 21 per cent of the cost of the increased service.

Project 5 did not result in significant increases in ridership and was terminated on November 9, 1963. This project provided further evidence that bus-rail connector service can not be effectively used to divert highway users to public transportation. The bulk of additional riders attracted to this route were shoppers or local workers attracted by the increased frequency of service.

**H. Barre Bus Company**

The Barre Bus Company experiment, the smallest of the project experiments, began on July 1, 1963. It consists of providing a link between communities of suburban Rutland and Holden and downtown Worcester, and an improvement in service to the Veterans Hospital and the Massachusetts State Sanitarium in Rutland. Results for the first four weeks of the experiment compared with the same period in 1962 in terms of passenger volume were comparatively minor partly because a fare increase effective in April 1963 offset some of the effect of this increased service. October figures, however, were of a larger dimension. The increased revenue in October covered two-thirds of the cost of the increased service.

TABLE 29

**BARRE BUS COMPANY**

| Period | Revenue 1963 | Revenue 1962 | Revenue Increase | % |
|---|---|---|---|---|
| July 1–27 | $1,026 | $ 912 | $114 | +12.5 |
| July 29–August 31 | 1,394 | 1,109 | 285 | +25.7 |
| Sept. 3–Sept. 28 | 1,092 | 1,026 | 66 | + 6.4 |
| Sept. 30–Oct. 26 | 1,249 | 896 | 352 | +39.4 |

Note: Revenue has no direct relationship to passengers, as ticket book sales are recorded as revenue on the day sold, not the day used.

Source: Barre Bus Company

**I. Service Bus Lines, Inc.**

The experimental service started December 17, 1962, providing a new direct link from the Linden Square area (Malden) to the MTA Revere Beach Station.

This new service produced major positive results, carrying approximately 2,400 passengers per week. It has accomplished its purpose and was terminated as of November 17, 1963. As a result of the experiment, Mr. J. A. Anzuoni, owner of this company, has advised the MTC that the company will continue most of this new service, eliminating only some of the more lightly patronized trips.

A number of anticipated alterations give further promise of developing the experiment into regular service on a sound fiscal basis. First, as mentioned above, poorly patronized trips may be cut, in particular some of the Saturday service. Secondly, Service Bus Line is planning to increase the adult fare from 10¢ to 15¢. Operation at the 10c fare level is not viable. On October 16th, Service Bus acquired the operating rights in Saugus from Saugus Transit. Acquisition of these rights opens the way to extension of the present route into Saugus – an action long urged by the MTC staff.

This MTC experiment has resulted in a permanent addition to public transportation service in the Boston area as well as proving that a vigorous public response can be secured for a good bus feeder service linking a densely settled, moderate income, inner suburban area to a rapid transit line leading to the downtown area. In this connection, it should be noted that both the bus and the rail transit in question provide frequent service at a combined one-way fare of 30¢. This fare compares favorably with the costs of traveling downtown by automobile, including, in this case, a 25¢ bridge or tunnel toll each way.

TABLE 30

**SERVICE BUS LINE, AVERAGE WEEKDAY PASSENGERS**

| Period | Linden to Revere | Revere to Linden | Total |
|---|---|---|---|
| Dec. 17–31 | 155 | 105 | 260 |
| January | 170 | 160 | 330 |
| February | 160 | 196 | 356 |
| March | 180 | 195 | 375 |
| April | 180 | 197 | 377 |
| May | 205 | 212 | 417 |
| June | 222 | 196 | 418 |
| July | 186 | 180 | 366 |
| August | 188 | 192 | 380 |
| September | 207 | 220 | 427 |
| W/E October 4 | 222 | 238 | 460 |
| W/E October 11 | 238 | 240 | 478 |
| W/E October 18 | 226 | 233 | 459 |

Source: Service Bus Lines

The MTC staff conducted an intensive program of passenger interviews, covering the full schedule between October 15 and 16. The sample of 42 per cent of the 455 total passengers at the time showed that 71 per cent used the service to make a connection with the MTA rapid transit. Sixty per cent used the service daily. The survey yielded interesting findings concerning the composition of the patronage: male, 31 per cent; female, 69 per cent under 20 years old, six per cent; 20 to 40 years, 34 per cent; 40 years through 65 years of age, 56 per cent; over 65 years old, 4 per cent. Clearly, the largest single group are women aged 40 through 65.

## J. Berkshire Street Railway Company (Yellow Coach Lines)

TABLE 31

**BERKSHIRE STREET RAILWAY COMPANY EXPERIMENTS (YELLOW COACH)**

**Project 1**

New Service — Park Square — Francis Plaza Housing Development (6 trips per day - Less than 2 miles per trip)

| | March (11-31) | April | May |
|---|---|---|---|
| Bus miles | 18.00 | 233,33 | 141.67 |
| Cost | $89.00 | $115.00 | $70.00 |
| Revenue | $47.00 | $135.00 | $77.00 |
| % of Cost Recovered | 53 % | 118 % | 111 % |
| Number of Days | 18 | 24 | 16 |
| Approx. Passengers per day | 15 | 28 | 24 |

**Project 2**

Increased Service — Park Sq. — Wahconah Hts. & Wilson Park Housing Dev. (5 new trips per day added to 12 existing. 6 miles per trip. Also extension of existing trips).

| | | | |
|---|---|---|---|
| Bus miles | 540 | 522 | 252 |
| Increased Cost | $266.00 | $257.00 | $124.00 |
| Increased Revenue | $835.00 | $785.00 | $346.00 |
| % of Increased Cost Recovered | 312 % | 306 % | 280% |
| Number of Days | 18 | 24 | 17 |
| Approx. Add'l Pass. Per day | 200 | 140 | 90 |

NOTE: Irregularity of service led to reduction in both cost and patronage.

**Project 3**

Increased Service — Park Sq. — Green Ridge Housing Development (5 new trips per day added to existing 3. 6.5 miles per trip)

| | | | |
|---|---|---|---|
| Bus miles | 585 | 767 | 487.5 |
| Increased Cost | $288.00 | $377.00 | $240.00 |
| Increased Revenue | $503.00 | $598.00 | $364.00 |
| % of Increased Cost Recovered | 175 % | 158 % | 152. % |
| Number of Days | 18 | 24 | 17 |
| Approx. Add'l Pass. Per day | 120 | 110 | 90 |

NOTE: Irregularity of service led to reduction in both cost and patronage.

**Project 4**

Increased Service — North Adams — Adams and North Adams — Williamstown (10 new trips per day. 26.4 miles per trip)

| | | | |
|---|---|---|---|
| Bus Miles | 4752 | 5775 | 1601 |
| Increased Cost | $2338.00 | $2842.00 | $ 788.00 |
| Increased Revenue | $1851.00 | $2441.00 | $1158.00 |
| % of Increased Cost Recovered | 79 % | 79 % | 147 % |
| Number of Days | 18 | 24 | 9 |

Source: MTC staff based on company invoices

This bus demonstration experiment has been transferred from the Berkshire Street Railway Company to Yellow Coach Lines. Figures received for the operation of the Berkshire Company between March 11 (when the experiment began) and May 31 (after which the transfer to Yellow Coach Lines was made) indicated the unique result that the 80 per cent revenue credit customarily retained by the MTC was so great that only a relatively small payment must be made for experimental services. However, subsequent reports of lower volumes of traffic by Yellow Coach Lines indicate that a thorough review of the earlier data submitted by Berkshire is in order. Such a review is now being conducted by the MTC staff and consultants.

## K. Brush Hill Transportation Company

This experimental service started April 22, 1963 and provided frequent connecting service from Stoughton area to the New Haven Railroad Station located on Route 128. This experiment was concluded on November 2, 1963 since the results showed that the connecting rail-bus service was not attractive to commuters.

Competition with an alternative service was an important factor in the limited response. Stoughton area travelers have available a direct bus service to the Mattapan MTA station from which passengers can reach downtown Boston points via rapid transit. This combined MTA bus service is less expensive to the rider than the combination of bus-New Haven Railroad service.

TABLE 32

**BRUSH HILL TRANSPORTATION COMPANY**
**AVERAGE WEEKDAY PASSENGERS Stoughton-Canton**

| Period | Passengers / Weekday |
|---|---|
| April 22-30 | 6 |
| May | 10 |
| June | 12 |
| July | 16 |
| August | 20 |
| W / E * Sept. 6 | 20 |
| W / E Sept. 13 | 13 |
| W / E Sept. 20 | 14 |
| W / E Sept. 27 | 10 |

* Week Ending

TABLE 33

**BRUSH HILL TRANSPORTATION COMPANY**
**PASSENGER REVENUES**

Stoughton Feeder Services

| Period | Canton (rail) | '63 Revenue Mattapan (MTA) | Total | '62 Rev. Mattapan (MTA) | Revenue Increase (Decrease) | Contract Cost |
|---|---|---|---|---|---|---|
| Apr. 22–30 | $11 | $ 815 | $ 827 | $ 897 | $ (70) | $ 736 |
| May | 60 | 2,874 | 2,934 | 2,830 | 104 | 2,376 |
| June | 67 | 2,714 | 2,781 | 2,857 | (76) | 2,261 |
| July | 83 | 2,611 | 2,694 | 2,754 | (60) | 2,376 |
| August | 94 | 2,943 | 3,037 | 2,848 | 189 | 2,450 |
| September | 63 | 2,522 | 2,585 | 2,513 | 72 | 2,187 |

**L. Johnson Bus Lines, Inc.**

The experiment with this firm started on January 2, 1963, and involves increased service between Milford and Boston. A total of seven additional round-trips were added to provide approximately an hourly pattern of service and also a late departure from Boston at 11:30 p.m.

This experiment is scheduled to conclude at the end of December, but because of the highly encouraging passenger response the company management has informed the MTC staff that it will continue the service after the termination of the experiment.

The experiment has been clearly successful in demonstrating that better utilization of available equipment can be coupled with more frequent service to the public at a profit to the operator.

TABLE 34

**JOHNSON BUS LINES, INC.**
**REVENUE 1962 vs. 1963**

| Period | 1962 | 1963 | Increase | % Increase |
|---|---|---|---|---|
| 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 |
| May | 8,532 | 10,096 | 1,564 | + 18.3 |
| June | 8,094 | 9,415 | 1,321 | + 16.3 |
| July | 10,003 | 7,777 | 2,226 | + 28.6 |
| August | 1,906 | 8,158 | 1,748 | + 21.4 |
| September | 10,388 | 8,063 | 2,322 | + 28.8 |

Source: Short Line, Inc.

**M. The Short Line, Inc., (Uxbridge-Worcester)**

A demonstration experiment providing service on a portion of the Short Line route between Uxbridge and Worcester began on July 15th. Six new round trips on Saturdays were 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 being served by this bus route. These communities include Millbury, Saundersville, Farnumsville, Northbridge, Whitinsville, Uxbridge and Worcester.

While the daily inbound passenger count as shown below has increased slightly since July, this appears to be a seasonal trend rather than an actual increase in ridership. As of mid-November the slight amount of new revenue was falling far short of meeting the increased operating cost of $115 per week.

TABLE 35

**THE SHORT LINE, INC.**

**Uxbridge-Worcester Average Weekday Head Counts Taken at Worcester City Line**

| Period | Inbound Count |
|---|---|
| July 15-31 | 84 |
| August | 93 |
| September | 92 |
| W / E October 4 | 86 |
| W / E October 11 | 98 |
| W / E October 18 | 97 |
| W / E October 25 | 94 |

Source: Short Line, Inc.

**N. Saugus Transit Company**

On October 10, 1963 the Department of Public Utilities approved the transfer of operating rights in Saugus from Saugus Transit Company to Service Bus Lines. While a notification of the experiment involving a combination of Saugus Transit Company and Service Bus Line, Inc., had been approved by the HHFA Office of Transportation, the delay in obtaining the necessary DPU approval of the transfer of operating rights precluded the implementation of this proposed modified experiment. As noted in the previous paragraph on Service Bus Line, Inc., some of the bus service recommended in the MTC proposal may shortly be initiated by the Service Bus Line, Inc.

# *Chapter VI.*

# COMMUNITY RELATIONS

It was recognized by the HHFA and the MTC that a sound community relations program was an integral part of the various experiments that were to be conducted. Not only did each experiment have to be designed to produce useful data, but the public had to be informed about the experiments.

The amounts allocated for advertising under the MTC program varied with each contract and with the forms of transportation. On the whole, the amounts were small and it is now apparent that more advertising would undoubtedly have further increased patronage.

For reasons of economy, the MTC placed great reliance upon "free advertising" for publicity. The Boston & Maine experiment was so massive, startling and dramatic that it received extensive coverage. A new wave of publicity was created as results were published periodically. In the interim, sustained interest has been created by the commuters themselves through an informal person-to-person informational campaign. In addition, the MTC conducted an extensive community relations program in the Boston region as shown on Figure 20, and other parts of the Commonwealth. Over 30 sessions with local officials and interested citizens were held to provide a broader understanding of the nature, objectives and results of the program.

MTC–COMMUNITY MEETINGS HELD
IN THE BOSTON PERIPHERY

| *Community Organization* | *Place Held* | *Date* (1963) |
|---|---|---|
| South Shore Transportation Committee | Neighborhood Club Quincy, Mass. | Jan.15 |
| Laman Club | Andover, Mass. | Jan. 17 |
| Investment Bankers Association | Museum of Science Boston, Mass. | Feb. 5 |
| Chamber of Commerce Norwood | Norwood High School Norwood, Mass. | Feb. 5 |
| New Bedford Standard Times | New Bedford, Mass. | Feb. 13 |
| | and MTC, 120 Tremont St. Boston, Mass. | Feb. 20 |
| Hamilton-Wenham-Ipswich Area | Hamilton, Mass. | Mar. 13 |
| Gloucester-Rockport Area | Gloucester Chamber of Commerce, Gloucester, Mass. | Apr. 9 |
| Sudbury Transportation Committee | Sudbury High School Sudbury, Mass. | Apr. 25 |
| Lynnfield Area | Town Hall Lynnfield, Mass. | Apr. 17 |
| Beverly-Manchester-Salem Area | Town Hall Beverly, Mass. | Apr. 23 |
| Newburyport-Amesbury-West Newburyport Area | Newburyport Rotary, Newburyport, Mass. | May 7 |
| Concord Area | Concord News Office | May 21 |
| Nashua Rotary Club | Nashua Country Club | June 10 |
| New England Council | Cape Cod, Mass. | June 13 |
| Topsfield-Boxford Area | Town Hall Topsfield, Mass. | July 7 |
| Stoughton Area | Stoughton | July 11 |
| Canton Transportation Committee | Board of Selectmen, Canton, Mass. | Sept. 17 |
| Swampscott Trans. Com. Lynn-Marblehead | Town Hall Swampscott, Mass. | Oct. 26 |
| Holy Name Society | Brookline, Mass. | Oct. 27 |
| Kiwanis Club | Brookline, Mass | Dec. 3 |

With the preparation of this fifth Progress Report, preliminary conclusions from the pertinent experiments have now emerged and these form the basis of a new series of meetings to review the results with community leaders to help them determine appropriate community action.

**Timetables**

Timetables have traditionally been deemed an integral element of all forms of transportation. Unfortunately in mass transportation, public distribution of timetables has been largely discarded as an unnecessary cost item causing more clutter than benefit. Railroads searching for ways of decreasing costs have been steadily curtailing timetable production.

The MTC staff has conducted several minor experiments in timetable preparation and distribution and in testing the impact on current patrons and in attracting new riders. These were conducted on the Boston & Maine and the MTA.

1. *Boston & Maine Railroad*

After Labor Day an intensive timetable advertising program was initiated. Eight pocket-size route timetables were designed by the MTC for the primary Boston & Maine routes.

For the Eastern Route serving Beverly-Newburyport and Rockport three separate timetables were distributed in the following communities:

| *Communities* | *Quantities* |
|---|---|
| Lynn-Swampscott-Salem-Beverly | 10,000 |
| Hamilton-Wenham-Ipswich-Newburyport | 7,000 |
| Manchester-Gloucester-Rockport | 10,000 |

For the Reading Route serving Reading, Wakefield and Melrose two timetables were designed.

| *Communities* | *Quantities* |
|---|---|
| Wakefield-Reading-Greenwood | 7,000 |
| Wyoming-Melrose-Melrose Highlands | 7,000 |

For the New Hampshire Route serving Lowell-Woburn two timetables were produced:

| *Communities* | *Quantities* |
|---|---|
| Wilmington-Lowell-North Billerica | 10,000 |
| Wedgemere-Winchester-Woburn | 7,000 |

For the Western Route one timetable in 10,000 copies was designed for Andover, Lawrence and Haverhill.

The primary aim in distributing these timetables was to reach potential patrons. To facilitate the program, letters were sent to all the Chambers of Commerce and Business Associations, requesting their assistance. Most replied by offering to mail timetables to their members. In addition, special inexpensive easels were produced to dispense timetables in banks, town offices, stores and other key locations in the surrounding communities. The MTC staff distributed 68,000 timetables in all the major Boston & Maine communities within one week. At the same time, the Boston & Maine public relations staff distributed a news story on the new timetable to all local newspapers and B&M staff made personal visits to most of the local editors.

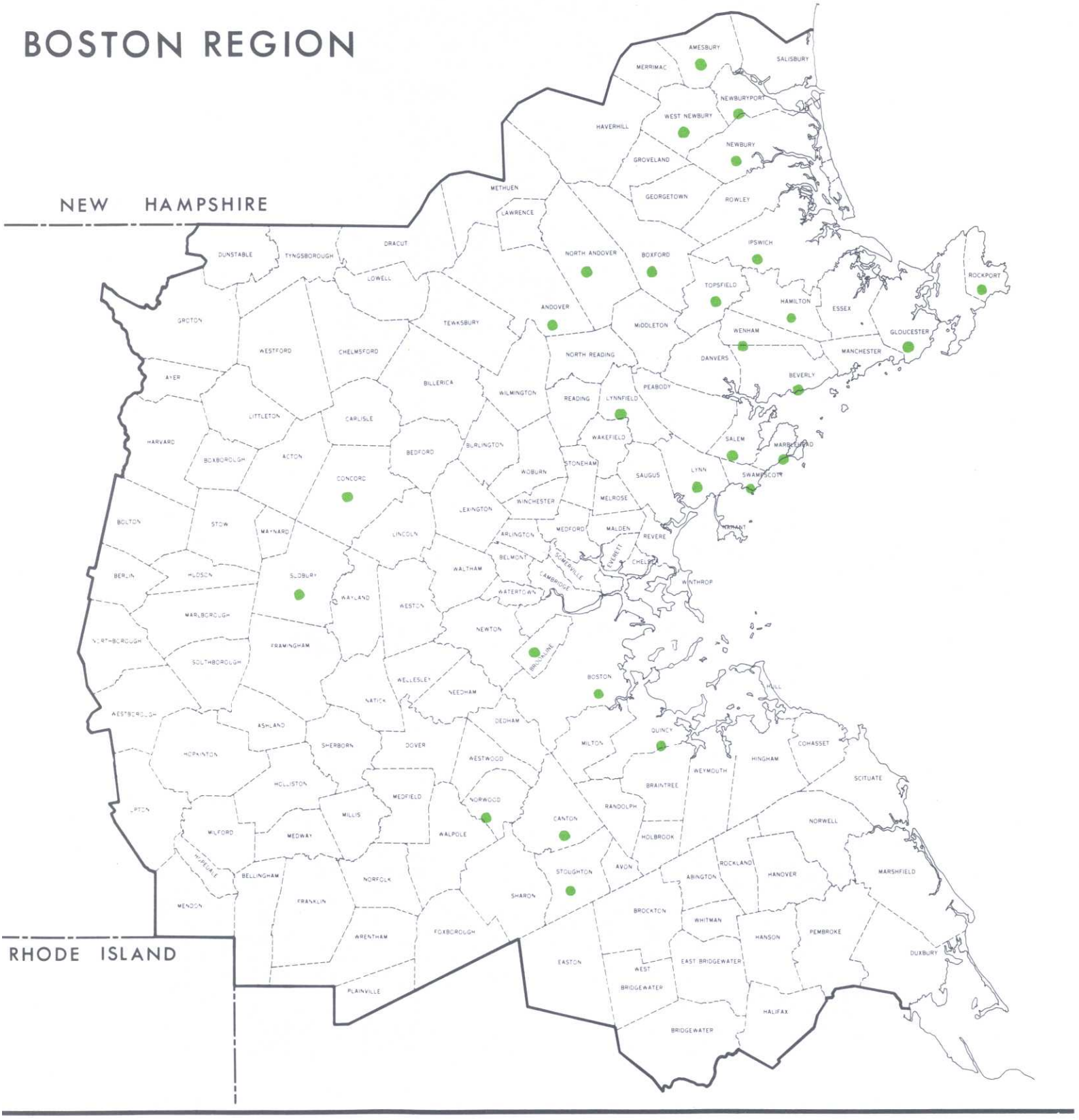
These efforts have been well received and the MTC office has received many letters and requests asking for more timetables. Consequently with the normal schedule change of October 28, 100,000 more route timetables were produced and distributed by the MTC. These timetables have served as effective advertising in alerting the public to the B&M experiments. Further, their distribution focused the attention of elected officials, town offices and civic leaders on the MTC Demonstration Project and its importance to the community.

2. *Metropolitan Transit Authority*

The first six MTA contracts made no mention nor allowance for an advertising budget. However, on the basis of experience and in consequence of suggestions made at the July MTC Technical Conference, the last four MTA contracts contained a total advertising budget of $8,500.

Special MTA route timetables were designed by the MTC staff and distributed in the buses on the experimental routes. Some 135,000 timetables were produced and used on eight separate MTA routes in the demonstration. It now appears that the cost of careful preparation and distribution of timetables can be more than offset by increased patronage and is well worth the small investment required.

| Carrier | Total Amount of Contract | Advertising Budget |
|---|---|---|
| Berkshire St. Railway Co. | $ 50,028 | $ 500 |
| Yellow Coach Lines, Inc. | 38,675 | 380 |
| Barre Bus Co. | 6,723 | 75 |
| Brush Hill Trans. Co., Inc. | 27,100 | 275 |
| Eastern Mass. Street Railway Company | | |
| 1. Lowell Experiment | 22,044 | 200 |
| 2. Topsfield Experiment | 41,200 | 400 |
| 3. Fall River Experiment | 61,400 | 600 |
| 4. Lawrence Experiment | 50,400 | 500 |
| 5. Reduced Fare Experiment | 105,000 | 2,000 |
| Fitchburg-Leominster St. Railway Co. | 113,837 | 1,130 |
| Lynnfield Community, Inc. | 39,598 | 400 |
| Johnson Bus Lines, Inc. | 66,260 | 660 |
| Mass. Northeastern Trans. Co. | 39,598 | 400 |
| Short Line | 38,400 | 385 |
| Service Bus Line, Inc. | 17,500 | 175 |
| Boston & Maine Railroad | 2,200,000 | 20,000 |
| New York, New Haven & Hartford Railroad | 600,000 (6 mos.)<br>300,000 (rev.) | 2,000<br>4,000 |
| Metropolitan Transit Authority | | |
| 1. M.I.T.–North Station | 51,750 | — 0 — |
| 2. North Station–South Station | 42,750 | — 0 — |
| 3. Inner Circumferential | 234,000 | — 0 — |
| 4. Outer Circumferential | 335,250 | — 0 — |
| 5. Fellsway | 81,750 | — 0 — |
| 6. Fresh Pond | 49,595 | 1,000 |
| 7. Revere Drive-In | 98,314 | |
| 8. Neponset Drive-In | 125,767 | 7,500 |
| 9. Boston College | 96,658 | |
| 10. Parking Lot Experiment | 60,200 | — 0 — |

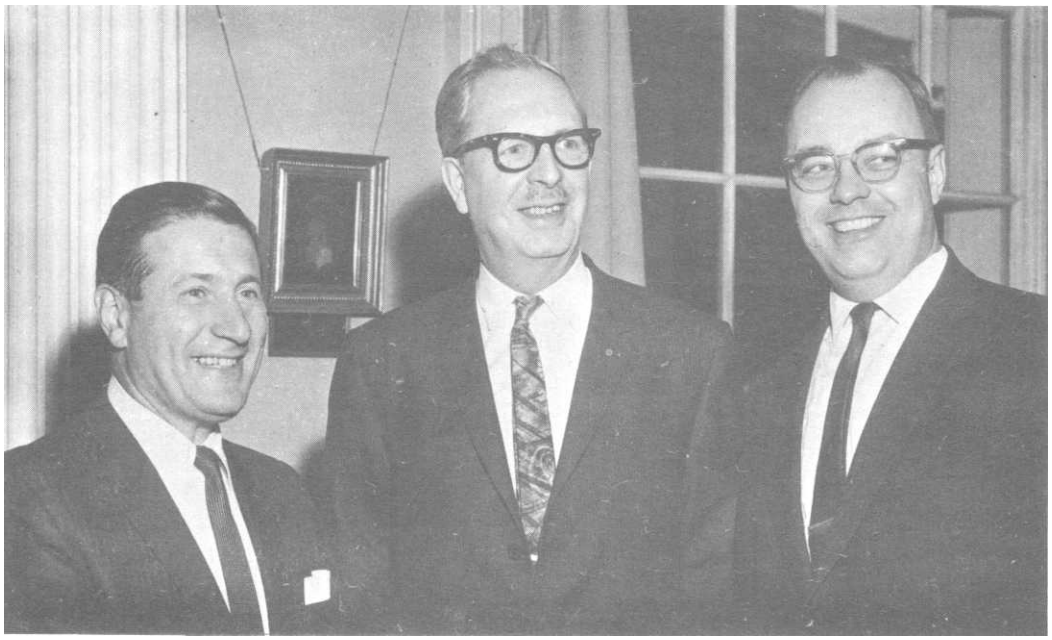



**COMMUNITY MEETINGS HELD BY MTC IN THE BOSTON REGION**



**Figure 20**

THE COOPERATION OF SENATOR EDWARD M. KENNEDY AND GOVERNOR ENDICOTT PEABODY IN LENDING THEIR SUPPORT FOR THE MTC DEMONSTRATION PROGRAM HAS HELPED SPREAD PUBLIC APPRECIATION AND UNDERSTANDING FOR THE PROGRAM. SENATOR KENNEDY AND MTC EXECUTIVE DIRECTOR DR. JOSEPH F. MALONEY ARE DOWN HERE AT THE INAUGURATION OF THE FALL RIVER EXPERIMENTAL SERVICE.



PICTURED LEFT TO RIGHT IS SENATOR MARIO UMANA, CHAIRMAN OF THE SPECIAL LEGISLATIVE RECESS COMMITTEE ON TRANSPORTATION, J. W. SPOONER, MEMBER OF PARLIAMENT AND MINISTER OF MUNICIPAL AFFAIRS FOR THE PROVINCE OF ONTARIO, CANADA, AND DR. JOSEPH F. MALONEY, EXECUTIVE DIRECTOR OF THE MASS TRANSPORTATION COMMISSION. THE HONORABLE MR. SPOONER ADDRESSED THE MASSACHUSETTS SENATE, AT THE INVITATION OF ITS PRESIDENT, JOHN E. POWERS. MR. SPOONER HEADED A SEVEN-MAN DELEGATION FROM CANADA, WHO INSPECTED FIRST HAND THE MASS TRANSPORTATION COMMISSION'S HIGHLY SUCCESSFUL TRANSPORTATION EXPERIMENTS. MR. SPOONER COMMENTED "THAT TORONTO AND OTHER METROPOLITAN AREAS IN CANADA FACE MANY OF THE SAME TRANSPORTATION PROBLEMS TODAY THAT YOUR OWN MTC IS RESOLVING BY VARIOUS EXPERIMENTS. WE HAVE LEARNED A GREAT DEAL BY OUR VISIT AND WE PLAN TO INCORPORATE MANY OF THE IDEAS THAT YOU HAVE DEVELOPED IN OUR TRANSPORTATION PROGRAMMING."

# *Chapter VII.*

# MTC TECHNICAL CONFERENCE

On July 17, 1963 the MTC conducted a technical conference with HHFA officials, representatives of carriers participating in the experiments, planning project staff and others. Materials on the progress and problems of the demonstration program were presented by MTC staff and consultants.

The effects of the conference will be manifest in subsequent progress reports.

A list of those in attendance follows:

**Commissioners, MTC**

Thomas F. Carty, Commissioner, Traffic and Parking Commission of the City of Boston, Ex Officio Member.
Robert G. Davidson, Public Member
Joseph R. Dragone, Public Member
William J. Fitzgerald, Chairman, Metropolitan Transit Authority
Michael J. Gormley, Public Member
Robert G. Henderson, Chairman
Patrick Gilbert Sullivan, representing Commissioner Robert F. Murphy, Metropolitan District Commission, Ex Officio Member

**Staff, MTC**

Dr. Joseph F. Maloney, Executive Director
Ernest K. Bloss
Stephen R. Brockman
John J. Coffey
Edward Dana, Special Consultant (former General Manager, MTA)
Gordon H. Fay
William E. Griswold
Edward L. Hefron
Lloyd R. Higgs
Philip D. Jonas, Special Consultant
Thomas E. Kristopeit
Dr. Melvin R. Levin
Ann Wood

**Representatives of Public Agencies**

David M. Brackman, Department of Public Utilities
William R. McGrath, Boston Redevelopment Authority

**Representatives of Housing and Home Finance Agency**

John Nolen, Jr.
Terry J. Owens
Merlin Smelker

**Representatives of Consultants to MTC**

Guy Chamberlin, McKinsey & Company, Inc.
R. S. Hall, McKinsey & Company, Inc.
J. Richard Tomlinson, McKinsey & Company, Inc.
Herbert E. Bixler, Systems Analysis & Research Corp.
John Moore, Systems Analysis & Research Corp.
William R. Pokross, Systems Analysis & Research Corp.

**Representatives of Railroads**

Herbert H. Harwood, New York Central
C. H. Goodwin, New York, New Haven and Hartford Railroad
S. B. Hitchings, Boston & Maine Railroad
F. R. Spofford, Boston & Maine Railroad

**Representatives of Bus Companies**

George Anzuoni, Plymouth & Brockton St. Railway Co.
John Anzuoni, Service Bus Line
Henry Bowen, Fitchburg & Leominster St. Railway Co.
Charles K. Gibson, Eastern Mass. Street Railway Co.
E. M. Kahoe, Eastern Mass. Street Railway Co.
James McCusker, Service Bus Line
J. Arthur Ollis, Mass. Northeastern Transportation Co.
Peter C. Snell, The Short Line

**Representatives of Metropolitan Transit Authority**

J. Willard Burditt
William J. Collins
Joseph J. Cass
J. A. Emerson
William J. Fitzsimons
Joseph F. McDonald
Michael J. Powell
Joseph W. Shone
C. A. Waelde

**Staff, Boston Regional Planning Project**

Richard S. Bolan
Donald M. Graham
Robert Keith

# *Chapter VIII.*

# CHRONOLOGY OF MASS TRANSPORTATION COMMISSION DEMONSTRATION PROJECT

1961 7 December

Combined MTC staff and Joint Special Legislative Committee on Transportation proposal for a Mass Transportation Demonstration Grant presented to MTC. Commission votes to apply to the HHFA for demonstration grant.

1962 July

Revised application submitted by MTC to Office of Transportation–HHFA, Washington.

27 July

Massachusetts General Court votes first matching funds for Demonstration Program ($1.8 million to be matched by Federal grant of $3.6 million.)

9 October

MTC receives formal notice from HHFA of approval of application for Demonstration Program. Commission votes to accept Mass Transportation Demonstration Grant of $3.6 million.

18 November

Boston & Maine Railroad contract signed; experimental service to begin on January 6, 1963.

27 November

Systems Analysis Research Corporation retained to supervise and evaluate and report on the railroad, MTA and bus demonstration projects.

10 December

Eastern Massachusetts Street Railway Company begins reduced fee, off-peak experiment within a 1.5 mile radius of downtown Lowell.

17 December

Service Bus Line, Inc. begins new service from Malden to Revere Beach.

31 December

As of end of 1962, contracts with four major carriers (Boston & Maine Railroad, Service Bus Company, Eastern Massachusetts Street Railway Company, Johnson Bus Company) had been signed for a total of $2,288,000.

1963 2 January

Johnson Bus Line begins increased service experiment between Boston and Milford.

7 January

Boston & Maine Railroad commences new service, 21.4 per cent increase in passenger service during first month of experiment operation.

14 January

Lynnfield Community, Inc. begins increased service from Wakefield to Lynn.

28 January

McKinsey and Company retained to develop data on costs of railroad commuter service to determine from operational experiments the gains and losses in commuter traffic and revenues and the costs associated with varying levels of service and fare structures.

15 February

Progress Report No. 1 issued.

9 March

Eastern Massachusetts Street Railway Company Lowell experiment terminated.

11 March

New Haven Railroad inaugurates new experimental service.

11 March

Berkshire Street Railway Company begins experimental routes and increased service in Pittsfield, Williamstown, Adams and North Adams.

11 March

Fitchburg & Leominster Street Railway Company begins six experiments in Fitchburg, Leominster, Ashby, Townsend and Lunenburg.

11 March

Mass. Northeastern Transportation Company begins new service, route extensions and increased service in the Merrimac Valley area.

23 March

Lynnfield Community's increased service experiment from Wakefield to Lynn terminated.

1 April

MTA begins reduced fee experiment at parking lots.

10 April

Progress Report No. 2 issued.

18 April

First Napolitan contract signed.

22 April

Brush Hill Transportation Company begins new service from Stoughton to Route 128 New Haven Station.

1 May
Johnson Bus Line experiment transferred to The Short Line, Inc.

1 June
Contracts with seven additional carriers negotiated bringing total to eleven amounting to $4,964,000. (Fitchburg and Leominster Street Railway Company, Mass. Northeastern Transportation Company, Lynnfield Community, Inc., Berkshire Street Railway Company, New Haven Railroad, Metropolitan Transit Authority, Brush Hill Transportation Company).

5 June
Berkshire Street Railway Company experiments terminated.

5 June
Yellow Coach Line, Inc. continues new and increased service experiments in Pittsfield, Adams, North Adams and Williamstown, heretofore provided by Berkshire Street Railway Company.

24 June
Eastern Massachusetts Street Railway Company begins new service from Topsfield to Salem.

25 June
Progress Report No. 3 issued.

26 June
MTA begins new service from North Station to MIT and East Cambridge; inner circumferential route from Dudley Station to Sullivan Square; extends service from Sullivan Square to Medford; outer circumferential from Ashmont to Harvard Square and increased service from North Station to South Station.

1 July
Barre Bus Company begins experiment: increased service from Rutland and Holden to Worcester

15 July
The Short Line begins experimental service from Worcester to Uxbridge

17 July
Technical Conference at Parker House, Boston, Progress Report discussions on:

1. Boston & Maine Railroad experiment
2. MTC-Napolitan Commuter Passenger Survey
3. MTA Parking Experiments, MTA Bus Experiments
4. Private Bus Experiments Community Relations
5. Planning Inputs and Planning Liaison

23 July
Service Bureau Corporation retained to compile passenger and revenue audits from material supplied by New Haven Railroad.

1 August
Eastern Massachusetts Street Railway Company begins fare reductions experiment.

1 August
Revision in Boston & Maine Railroad experiment, fares returned to just below pre-experiment level for commuters and fares for off-peak commuters were further reduced. Service frequency remains unchanged.

11 August
Eastern Massachusetts Street Railway Company begins increased service in Fall River.

19 August
Eastern Massachusetts Street Railway Company begins new service from Boston to Lawrence.

31 August
Fitchburg and Leominster Street Railway Company experiments to Ashby and Townsend terminated.

31 August
Mass. Northeastern Transportation Company new service experiments terminated.

3 September
MTA begins drive-in theater parking lot experiments with express service and new bus service between Boston College and Kenmore Square.

18 September
Progress Report No. 4 issued.

2 November
Brush Hill Transportation Company experiment terminated.

4 November
Joseph Napolitan & Associates retained to conduct a survey to determine factors which influence the public's choice of mode of transportation.

9 November
Mass. Northeastern terminates three Newburyport area experimental routes.

17 November
Service Bus to terminate MTC experimental route from Linden Square to Revere Beach; company plans to continue most of route.

17 November
Eastern Mass. terminates Topsfield to Salem experimental route.

23 November
MTA terminates Inner Circumferential Route E-3.

23 November
MTA terminates Elm Street, Medford to Sullivan Square Route E-4.

28 November
MTA terminates Revere Drive-In Theater Experiment, E-11.

# MTC STAFF

**MASS TRANSPORTATION COMMISSION**
**Regular and Demonstration Project Staffs**

**Executive Director — Dr. Joseph F. Maloney**

Dr. Maloney is responsible for the basic organization, direction and supervision of all the activities of the Commission and represents the Commission before all executive boards, regulatory agencies, legislative bodies and the general public.

As the Commission's first Executive Director, and as Secretary to the Joint Special Legislative Recess Committee on Transportation, he is the chief author, designer and negotiator of the $5.4 million Demonstration Project, as well as for the originally approved $4.8 million Boston Regional Planning Project.

Dr. Maloney received his Ph.D. from Fordham University in 1955, where he was a member of the faculty for ten years, teaching courses in national, state and local government, politics and administration. He has also taught at Hunter College, Queens College, Hofstra College and Northeastern University. Prior to joining the MTC, Dr. Maloney was on leave from his professorial post at Fordham to serve as a Special Assistant to the Governor of Massachusetts under a special grant from a national foundation. He is currently looking forward to completing his personal contractual commitment for two books, now in progress, one a specialized work tentatively titled "Executive Leadership: A Comparative Study of Three Governors," and the other a text in state and local government.

In addition to being the chief author or editor of all the published reports of the Commission and the Recess Committee, Dr. Maloney is the author of "The Lonesome Train in Levittown," a case study in public administration published by the University of Alabama in the Inter-University Case Program series, and included in *State and Local Government: A Case Book,* published by the University of Alabama Press. He also wrote "The Massachusetts Approach to Regional Transportation Planning," published in the October 1962 *Traffic Quarterly,* and several other articles and monographs.

**Planning Coordinator — Dr. Melvin R. Levin**

Dr. Levin assists the Executive Director in various assignments, including the planning portions of the Demonstration Program, preparation of Progress Reports and representing the Commission at technical planning conferences.

Dr. Levin received his Ph.D. from the University of Chicago in 1956, was a planning consultant, specializing in regional planning, for six years prior to joining the project staff and has been a lecturer in economics at the University of Kansas City. The author of a number of technical articles dealing with planning, economics and transportation, he directed research on the MTC-sponsored *Boston Regional Survey,* due for publication in early 1964. He is currently writing a book on regional planning in the sixties and is the principal author of *Industrial Land Needs in The Boston Region Through 1980,* a monograph jointly sponsored by The Greater Boston Economic Study Committee and The Federal Reserve Bank of Boston.

**Project Officer for Planning — Thomas E. Kristopeit**

Mr. Kristopeit assists Dr. Levin and Dr. Maloney in preparing planning research and analysis. He has a major responsibility for the design, graphics and production of Progress Reports and other MTC publications. He also serves as technical liaison to planning agencies working with or seeking assistance from MTC.

Mr. Kristopeit received a Bachelor's Degree from the University of Notre Dame in 1959 and a Master's Degree in city and regional planning from the Graduate School of Design, Harvard University, in 1961. Prior to joining the MTC Demonstration Project, he served on the staff of both community planning agencies and private consultants. He is currently working on a planning study of the Demonstration Project.

**Special Counsel — John J. Coffey, Esq.**

Mr. Coffey is a former Assistant Attorney General and graduate of Boston College Law School.

Mr. Coffey has general charge and control of the legal business of the Commission and acts as legal representative and legislative counsel.

**Senior Project Officer for Legal Administration — James F. Ross, Esq.**

Mr. Ross assists in the formulation, negotiation, interpretation and administration of contracts, and assists in liaison activities with Federal and State officials and agencies.

Mr. Ross is a graduate of Boston College Law School and has been a practicing attorney at law in Massachusetts since 1953. He formerly was an Assistant Counsel to the Massachusetts Senate.

**Assistant to the Planning Coordinator — Helen Chin**

Miss Chin assists the Planning Coordinator in preparing Reports and in the cataloguing and maintenance of library materials.

Miss Chin received an A.A. Degree in Commerical Science, a Bachelor's Degree in Public Relations and Master's Degree in Adult Education, all at Boston University.

**Senior Project Officer for MTA and Bus — Lloyd R. Higgs**

Mr. Higgs performs duties relating to supervising of the control portions of the MTA and bus experiments in the Demonstration Projects. He assists in analysing the results of experiments conducted for the carriers and the work of consultants.

Mr. Higgs has had a long and distinguished career in the transportation industry. Starting as a night ticket agent while still a student at Vanderbilt University, he advanced through various positions to Vice-President and General Traffic Manager of Greyhound Lines (Central and Eastern group of Companies). He has served as consultant to bus lines, (City-Commuter-Inter-City), air lines, railroads and marine transportation (Passengers).

**Senior Project Officer for Railroad — Ernest K. Bloss**

Mr. Bloss performs duties relating to the supervising of the control portions of the railroad experiments in the Demonstration Project, and assists in analyses of the results of experiments conducted by the carriers and the work of consultants. He is a former Director of Research for the Boston and Maine Railroad (retired).

**Associate Project Officer — Gordon H. Fay**

Mr. Fay is responsible for the operation of all rail, bus and MTA demonstration projects. This includes the planning of experimental rail and bus schedules; the supervision for the MTC of train operation and car assignments on the B&M; the formation and supervision of all surveys of riding habits and attitudes on experimental routes; analysis of experimental project data; and, general supervision of all field men.

Mr. Fay received his Bachelor's Degree from Brown University in 1961, and a Certificate in Transportation from Yale University in 1962. He was formerly Division Superintendent of Edaville Railroad.

**Associate Project Officer — William E. Griswold**

As Associate Project Officer, Mr. Griswold is responsible for the eleven MTA experimental bus routes and the MTA reduced fee parking lot experiment. He carries out all relevant data analysis, and is in constant contact with MTA officials regarding improvements to experimental routes and existing services. He is a member of the MTA's parking lot committee which is engaged in a thorough review of MTA parking policies and practices.

After graduating from Oberlin College, Mr. Griswold served for two years as the Assistant to the Field Director with the American Friends Service Committee first in Tunis and later in Oujda, Morocco. His duties included supervision of customs clearance and trans-shipment of food, clothing and medicines for refugees from the war in Algeria.

On his return to this country, he was appointed Governor's Representative to the MTA. His work includes "A proposal for eliminating the MTA deficit" which applies some of the techniques used by European transportation companies to MTA problems.

**Associate Project Officer — James M. Geary**

Mr. Geary has worked under the general direction of the Executive Director on the Demonstration Program supervising all field checks of bus carriers' compliance with their required schedules. Presently he is working with the Executive Director on gathering information and studies for future legislative proposals.

Mr. Geary has an extensive background in various supervisory positions in the transportation industry. Prior to joining the MTC in 1961, he had been employed by the Eastern Massachusetts Street Railway Company for 20 years. In those years he held supervising positions ranging from inspector to foreman and, finally, Divisional Superintendent.

**Associate Project Officer — Chester Cwalina**

Mr. Cwalina is responsible for compilation and computation of the various statistical reports of the progress of the Demonstration Project Experiment. He was formerly an accountant with the Boston and Maine Railroad, and a fiscal control officer for a private aviation company.

**Project Officer for Community Relations — Ann Wood**

Miss Wood works under the general direction of the Executive Director, assists in the dissemination of information to the public concerning the Demonstration Project and maintains a community relations program for the Commission. She formerly was a Special Assistant to the Chairman of the Board of Northeast Airlines.

**Associate Project Officer for Liaison — Stephen R. Brockman**

Mr. Brockman assists the Executive Director in maintaining liaison with the communities in which demonstration experiments occur and in the preparation of progress reports and a final report of the demonstration experiments.

Mr. Brockman is a graduate of Boston University School of Public Relations and Communications.

**Associate Project Officer for Community Relations — Richard Chmielinski**

Mr. Chmielinski assists the Project Officer for Community Relations in the dissemination of information to the public concerning the Demonstration Project and in maintaining a program for community relations in conjunction with the project and in cooperation with the Planning Project Liaison Officer. He has an extensive background in journalism and public relations in Massachusetts.

**Fiscal Officer — Edmund I. Mangini, Jr.**

Mr. Mangini maintains all accounts, books, and records in conjunction with the Commission's Demonstration Project, performs all related fiscal and accounting duties in strict accord with state and HHFA rules, regulations and procedures, and prepares project fiscal reports. He formerly was in the Accounting Department of the Boston Redevelopment Authority.

**Senior Executive Aide — Alice M. Straleau**

As the Senior Executive Aide, Miss Straleau coordinates and expedites the complex paper flow arising from the Demonstration Project, freeing the other members of the professional staff of the Commission from much administrative detail, and also serves as the Secretary to the Executive Director. Miss Straleau received her Master's Degree in Government and Public Administration from Boston University.

# WE NEED YOUR HELP

## FOR ONE MINUTE!

In order to provide better public transportation service for you, the Mass Transportation Commission is conducting a survey to determine the travel patterns and opinions of Massachusetts residents.

Will you take a minute of your time to answer the questions on the back of this card?

Your co-operation will be greatly appreciated — and will help us provide the kind of public transportation service that will best suit your needs.

Thanks!

MASS TRANSPORTATION COMMISSION



MASS TRANSPORTATION COMMISSION

120 Tremont Street, Boston, Mass., 02114

MTA Bus Service

Please answer all questions.

1. I boarded bus at ..... to go to .....

2. How many days a week did you take the bus last year (1962)? (Please check one.)

   1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ Occasionally ☐

3. How many days a week do you take this bus now? (Please check one.)

   1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ Occasionally ☐

4. If you are using this service more often now, why? (Please check only one.)

   Increased service ☐ Less costly ☐ Other (specify) .....

5. If you are taking this bus MORE OFTEN than you were last year, what form of transportation did you previously use?

   Own car ☐ Car pool ☐ MTA Rapid Transit ☐ Taxi ☐ Walk ☐ Train ☐

6. When you leave this bus, how will you get to your eventual destination?

   Walk ☐ MTA Subway ☐ MTA Bus ☐ Taxi ☐

7. Can you give us the name and address of any person who uses his automobile each day to travel to the same area of the city you reach by this bus, and who might be willing to answer a similar questionnaire?

   Name ..... Address .....

8. In order to provide better public transportation for Massachusetts residents, the Mass Transportation Commission is conducting a major survey of travel patterns and opinions. To assist us, would you be willing to spend 30 minutes of your time, day or evening, at your place of business or in your home for a pre-arranged appointment made at your convenience. YOUR HELP WOULD BE OF SERVICE TO THE COMMONWEALTH. All interviews will be conducted by official MTC survey personnel.

   YES! — I am willing to assist the Mass Transportation Commission in its travel survey, and will be glad to be interviewed. I understand that all survey results will be confidential, and that the interview will be made at my convenience by appointment.

Name ..... Address .....

Telephone: Home ..... Work .....

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To be completed by interviewer: Route ..... Direction ..... Weather .....

*Word Searchable Version not a True Copy*