



## **BOSTON SUBURBAN RAIL SUMMARY (COMMUTER RAIL, REGIONAL RAIL)**

**October 2003**

The Boston commuter rail service area consists of 4.0 million people, spread over 1,700 square miles at an average population density of 2,300 per square mile. Public transport's share of travel is less than four percent. The average automobile travel speed of 32.5 miles per hour is well above that of public transport, at 18.3 miles per hour.

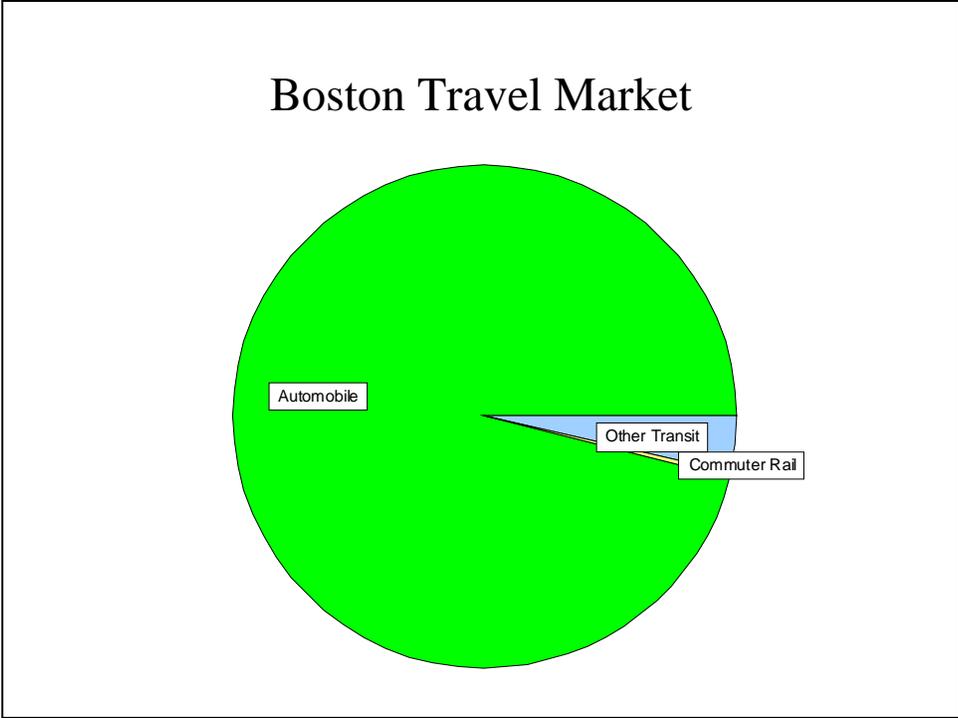
Approximately two percent of the urban land area is at pre-automobile population densities (above 15,000 per square mile), and 20 percent of the population lives at such densities (800,000). The Boston central business district is one of the nation's largest, with 280,000 jobs.<sup>1</sup> This represents 13 percent of the metropolitan area's employment. Further, downtown employment is declining. From 1960 to 1990, downtown employment declined approximately 15,000, while employment in the rest of the metropolitan area increased more than 700,000.<sup>2</sup>

Boston has the nation's third largest commuter rail ridership, with approximately 36 million boardings annually (135,000 daily), which is approximately 0.4 percent of travel in the area (Figure 14). There are more than 300 miles of route and 100 stations on 13 routes. There are 0.07 stations per square mile of urban land (one station per every 15 square miles). Most service terminates at North Station and South Station. Transfers can be made at these stations to subway and light rail services or buses. There is, however, no through running of commuter rail trains on light rail or subway routes, and no commuter rail trains run through the central business district. The commuter rail system is operated by a contractor (Amtrak), and receives operating subsidies. All capital costs are subsidized.

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<sup>1</sup> US Census Bureau, 1990.

<sup>2</sup> Calculated from Kenworthy & Laube.



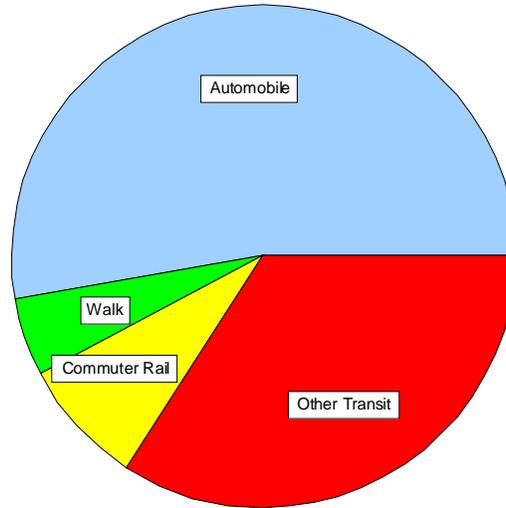
**Figure 1**

Commuter rail in Boston is also principally a downtown oriented system. Auto-competitive service is provided to the central business district from throughout the urban area. Commuter rail carries eight percent of commuters (Figure 15). Outside downtown, commuter rail's work trip market share is approximately 0.4 percent. It is estimated that there are approximately 400 daily passenger miles of commuter rail ridership not oriented to downtown.<sup>3</sup> This compares to 43,000 daily vehicle miles per square mile (70,000 person miles) of road travel in the Boston area.

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<sup>3</sup> 1990 data.

## Boston CBD Work Trip Market Share



**Figure 2**

### APPENDIX TABLES

Appendix Table A  
International Pre-Automobile Commuter Rail Systems

	Tokyo	Osaka	Nagoya	Paris	London	Sydney
<b>DEMOGRAPHICS</b>						
Population (000)	31,200	15,250	8,050	9,650	12,230	3,539
Urban Area (Square Miles)	2,030	1,050	1,090	1,060	1,600	811
Population Density	15,369	14,524	7,385	9,104	7,644	4,365
Gross Product/Capita 1999	\$28,327	\$25,376	\$28,535	\$32,343	\$27,365	\$25,643
Compared to Tokyo	0.0%	-10.4%	0.7%	14.2%	-3.4%	-9.5%
<b>CENTRALIZATION</b>						
% Population >15,000 Density	71%	70%	24%	56%	23%	1%
% Land >15,000 Density	46%	43%	9%	18%	8%	0%
Core Population Share	26%	17%	27%	22%	59%	15%
Suburban Population Share	74%	83%	73%	78%	41%	85%
CBD (Downtown) Employment Share	16%	18%	13%	17%	16%	11%
Outside CBD Employment Share	84%	82%	88%	83%	84%	89%

Employment in CBD (000)	2,434	1,380	500	891	1,099	175
<b>PUBLIC TRANSPORT SYSTEM</b>						
Public transport Market Share	56.7%	59.5%	24.6%	24.1%	17.1%	13.6%
Public transport/Auto Speed	1.6			1.5		
<b>COMMUTER RAIL</b>						
Commuter Rail Market Share	39.5%	36.4%	12.0%	7.2%	3.7%	5.6%
Compared to New York	59.9	53.3	18.2	11.0	5.6	8.5
Miles of Route	1,779	1,095	528	1,012	2,260	1,273
Stations	1,243	1,065	843	540	940	306
Station Density	0.61	1.01	0.77	0.51	0.59	0.38
Operating Subsidy?	No	No	No	Yes	Yes	Yes
Capital Subsidy	No	No	No	100%	100%	100%
Share with Freight?	No	No	No	Little	Little	Little
<b>HIGHWAYS</b>						
Traffic Density (Vehicle Miles/Sq.Mi.)	118,854			83,462		
Compared to Tokyo	0.0%			-29.8%		
<b>EXTENT OF AUTO COMPETITIVE PUBLIC TRANSPORT SERVICE</b>						
Within Core	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH
Suburbs to Core	HIGH	HIGH	HIGH	MIDDLE	MIDDLE	MIDDLE
Within Suburbs	HIGH	HIGH	HIGH	LOW	NIL	NIL

Appendix Table B  
United States Pre-Automobile Commuter Rail Systems

	New York	Chicago	Boston	Philadelphia
<b>DEMOGRAPHICS</b>				
Population (000)	20,253	8,307	4,032	5,149
Urban Area (Square Miles)	4,711	2,123	1,736	1,799
Population Density	4,299	3,913	2,323	2,862
Gross Product/Capita 1999	\$43,805	\$39,384	\$40,301	\$36,025
Compared to Tokyo	54.6%	39.0%	42.3%	27.2%
<b>CENTRALIZATION</b>				
% Population>15,000 Density	44%	24%	20%	22%
% Land>15,000 Density	5%	4%	2%	3%

Core Population Share	40%	35%	15%	29%
Suburban Population Share	60%	65%	85%	71%
CBD (Downtown) Employment Share	19%	13%	13%	14%
Outside CBD Employment Share	81%	87%	87%	86%
Employment in CBD (000)	1,733	485	280	351

#### PUBLIC TRANSPORT SYSTEM

Public transport Market Share	9.0%	3.6%	3.8%	2.9%
Public transport/Auto Speed	0.9	0.8	0.6	

#### COMMUTER RAIL

Commuter Rail Market Share	0.7%	0.5%	0.4%	0.3%
Compared to New York	1.0	0.7	0.6	0.4
Miles of Route	979	333	328	304
Stations	404	250	116	176
Station Density	0.09	0.12	0.07	0.10
Operating Subsidy?	Yes	Yes	Yes	Yes
Capital Subsidy	100%	100%	100%	100%
Share with Freight?	Little	Little	Little	Little

#### HIGHWAYS

Traffic Density (Vehicle Miles/Sq.Mi.)	63,312	57,968	43,350	57,168
Compared to Tokyo	-46.7%	-51.2%	-63.5%	-51.9%

#### EXTENT OF AUTO COMPETITIVE PUBLIC TRANSPORT SERVICE

Within Core	HIGH	HIGH	HIGH	HIGH
Suburbs to Core	MIDDLE	MIDDLE	MIDDLE	MIDDLE
Within Suburbs	NIL	NIL	NIL	NIL

Appendix Table C  
United States Automobile Era Commuter Rail Systems and Lines

	Washington- Baltimore	Los Angeles	San Diego	Miami	Dallas-Fort Worth	Seattle
DEMOGRAPHICS						
Population (000)	6,010	14,000	2,674	4,919	4,146	2,712
Urban Area (Square Miles)	1,840	2,299	782	1,116	1,407	954
Population Density	3,266	6,090	3,419	4,408	2,947	2,843
Gross Product/Capita 1999	\$41,316	\$33,486	\$34,495	\$31,261	\$40,306	\$38,928
Compared to Tokyo	45.9%	18.2%	21.8%	10.4%	42.3%	37.4%

## CENTRALIZATION

% Population>15,000 Density	10%	23%	3%	7%	2%	2%
% Land>15,000 Density	1%	6%	2%	2%	0%	0%
Core Population Share	20%	26%	46%	7%	29%	21%
Suburban Population Share	80%	74%	54%	93%	71%	79%
CBD (Downtown) Employment Share	19%	2%	6%	2%	6%	12%
Outside CBD Employment Share	81%	98%	94%	98%	94%	88%
Employment in CBD (000)	444	167	73	41	112	171

## PUBLIC TRANSPORT SYSTEM

Public transport Market Share	3.3%	1.4%	1.5%	1.3%	0.5%	1.8%
Public transport/Auto Speed	0.8	0.4	0.5			

## COMMUTER RAIL

Commuter Rail Market Share	0.05%	0.02%	0.02%	0.03%	0.01%	0.01%
Compared to New York	0.08	0.03	0.03	0.04	0.02	0.01
Miles of Route	191	415	43	71	35	34
Stations	56	48	9	19	9	7
Station Density	0.03	0.02	0.01	0.02	0.01	0.01
Operating Subsidy?	Yes	Yes	Yes	Yes	Yes	Yes
Capital Subsidy	100%	100%	100%	100%	100%	0%
Share with Freight?	Yes	Yes	Yes	Yes	Yes	Yes

## HIGHWAYS

Traffic Density (Vehicle Miles/Sq.Mi.)	74,798	104,970	85,687	109,613	68,077	60,936
Compared to Tokyo	-37.1%	-11.7%	-27.9%	-7.8%	-42.7%	-48.7%

## EXTENT OF AUTO COMPETITIVE PUBLIC TRANSPORT SERVICE

Within Core	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH
Suburbs to Core	MIDDLE	MIDDLE	MIDDLE	MIDDLE	MIDDLE	MIDDLE
Within Suburbs	NIL	NIL	NIL	NIL	NIL	NIL

Note: Washington-Baltimore CBD data is for Washington and Baltimore.

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