



WASHINGTON-BALTIMORE SUBURBAN RAIL SUMMARY (COMMUTER RAIL, REGIONAL RAIL)

October 2003

Washington-Baltimore has both pre-auto and automotive era commuter rail lines. It is analyzed as an automotive era system because the level of service has been significantly expanded in recent years by the new line openings and service expansion.

The Washington-Baltimore commuter rail service area consists of 6.0 million people, spread over 1,800 square miles at an average population density of 3,300 per square mile. Approximately one percent of the urban land area is at pre-automobile population densities (above 15,000 per square mile), and public transport's share of urban travel is below three percent. In the Washington area, average public transport operating speeds are 20.0 miles per hour, below the 26.3 mile per hour average for automobiles.

The Washington central business district is the one of the nation's largest, with 350,000 jobs, while downtown Baltimore has 130,000 jobs.¹ This represents 19 percent of the metropolitan area's employment. Public transport's work trip market share to downtown Washington is approximately 40 percent, and 25 percent to downtown Baltimore. This compares to approximately seven percent outside the downtown areas.

Commuter rail service has been expanded in the Washington-Baltimore area over the past ten years. There are now five routes operating over nearly 200 miles with more than 50 stations. There are 0.03 stations per square mile of urban land (33 square miles per station). Annual ridership is approximately eight million, with daily ridership of 36,000. This is approximately 0.5 percent of travel in the area (Figure 18). All services terminate at stations on the periphery of the downtown areas (Camden Yards and Penn Station in Baltimore and Union Station in Washington). The commuter rail system is operated by government agencies, and receives operating subsidies. All capital costs are subsidized. Transfers can be made at these stations to subway services, light rail or buses. There is, however, no through running of commuter rail trains on subway routes.

¹ US Census Bureau, 1990.

The Washington-Baltimore area has had some of the most significant public transport improvements in the nation. They include a 100 mile subway in the Washington area, a single line subway in Baltimore, light rail lines in Baltimore and commuter rail expansions. Despite these improvements, public transport's share of travel is slightly below 1983 levels² and public transport's work trip market share dropped 20 percent during the last decade.³ At the same time, the peak hour travel times increased 23 percent in the Washington area and 21 percent in the Baltimore area.⁴

Commuter rail in Washington-Baltimore is also principally a downtown oriented system. Auto-competitive service is provided to the central business district from throughout the urban area. It is estimated that there are less than 100 daily passenger miles per square mile of commuter rail ridership that are not oriented to downtown.⁵ This compares to 75,000 daily vehicle miles of road travel per square mile (120,000 person miles) in the Washington-Baltimore area.



Figure 1

² Public transport's share of person miles dropped from 3.4 percent to 3.3 percent (estimated from National Public transport Database and Texas Transportation Institute data, assuming the national average vehicle occupancy rate of 1.6).1983 represents first data available in present format.

³ Calculated from US Census Bureau data.

⁴ Calculated from Texas Transportation Institute Travel Time Index.

⁵ 1990 data.

APPENDIX TABLES

Appendix Table A International Pre-Automobile Commuter Rail Systems						
	Tokyo	Osaka	Nagoya	Paris	London	Sydney
DEMOGRAPHICS						
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%
CENTRALIZATION						
% 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
PUBLIC TRANSPORT SYSTEM						
Public transport Market Share	56.7%	59.5%	24.6%	24.1%	17.1%	13.6%
Public transport/Auto Speed	1.6			1.5		
COMMUTER RAIL						
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
HIGHWAYS						
Traffic Density (Vehicle Miles/Sq.Mi.)	118,854			83,462		
Compared to Tokyo	0.0%			-29.8%		

EXTENT OF AUTO COMPETITIVE PUBLIC TRANSPORT SERVICE

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
DEMOGRAPHICS				
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%
CENTRALIZATION				
% 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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