



LONDON SUBURBAN RAIL SUMMARY (COMMUTER RAIL, REGIONAL RAIL)

October 2003

With 12.2 million people and a population density of 7,600 per square mile, London has the continent's second largest public transport system, which carries an estimated 19 percent¹ of travel in the area. Commuter rail represents approximately 20 percent of public transport travel, or four percent of overall travel (Figure 8). However, unlike the Japanese urban areas and Paris commuter rail lines do not operate through the central city. Virtually all lines end at intercity railroad stations (such as King's Cross or Waterloo) on an inner metro loop (the "Circle Line"), and there is no through running of commuter rail trains onto the metro lines. London has nearly 2,000 miles of commuter rail, which is served by more than 700 stations on more than 40 lines. There are 0.47 commuter rail stations per square mile (one for each 2.1 square miles) of developed land. Average service frequencies are higher than Paris, but well below that of Paris, at from 15 to 50 percent with five minute frequencies off-peak. Services are operated under competitive contract by private carriers, which receive operating subsidies. There are also capital subsidies.

The principal destination served is the central business district, which contains 1.3 million jobs. Like Paris, however, central business district employment has fallen. The loss was more than 250,000 from 1961 to 1991.² This represents 21 percent of metropolitan area employment. Annual commuter rail ridership is 580 million, approximately equal to all of the public transport ridership in the Chicago area.

¹ Estimated from UK Government Statistical Office data.

² Calculated from Kenworthy & Laube.



Figure 1

Like Paris, the London commuter rail system operates considerably lower service frequencies and does not provide the extent of regional connectivity as the Japanese systems. As a result, a somewhat lower level of automobile competitive service is provided from the suburbs to the core, while little service is provided between suburban origins and destinations.

Public transport's ability to serve trips within the suburbs is particularly hampered by London's urban form, which was imposed upon the area by government. Starting in the 1930s, London established a "green belt" approximately 10 miles wide outside what is now the Greater London Authority³ (an area of 620 square miles and 7.1 million population). As a result, the suburban expansion that would have occurred adjacent to the central city occurred farther from the city. Suburban London is thus virtually wholly composed of "leap frog" developments spread over 3,000 square miles, of which approximately 1,000 square miles is urbanized. This "hyper-sprawl" is even more difficult for public transport to serve with respect to suburban trips than the typical sprawl pattern of virtually all other urban areas in North America, Western Europe and Japan.

³ Because of its unconventional urban form, much data on the London area is limited to the Greater London Authority, which represents less than 60 percent of the urban area population. This analysis considers the entire London urban area, which includes the suburbs that extend far beyond the Green Belt.

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
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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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