



OSAKA-KOBE-KYOTO SUBURBAN RAIL SUMMARY (COMMUTER RAIL, REGIONAL RAIL)

October 2003

Osaka-Kobe-Kyoto (Osaka), with 15,250,000 million people, is the second largest urban area in Japan, and is approximately the same size as the Los Angeles commuter rail service area (Los Angeles and Riverside-San Bernardino urban areas). Osaka is dense, at 14,500 per square mile, covering 1,100 square miles, similar to the size of Minneapolis-St. Paul, Paris or Buenos Aires. Like Tokyo, approximately 73 percent of the population lives in areas with more than 15,000 per square mile, and these areas constitute 43 percent of the developed land area.

Osaka has the second highest public transport ridership in the automotive world, at nearly six billion annual trips, two-thirds the total of all public transport systems in the United States. Osaka's public transport market share is greater than that of any high-income urban area other than Hong Kong, at 59.5 percent.¹ Also like Tokyo, most public transport ridership is on private commuter rail lines, which carry 3.6 billion rides annually, more than all of the public transport in Paris, London or New York. Commuter rail carries more than one-quarter of all travel in the Osaka area (Figure 5).

Osaka has more than 1,000 miles of commuter rail routes with nearly 1,000 stations on more than 30 lines. Some of these routes operate onto city subway lines, while others penetrate the Osaka Loop. The commuter rail lines interface with subway systems in Osaka, Kobe and Kyoto. In addition, the private railroad companies provide a dense network of connecting services, estimated at more than 2,500 buses (this is more than all the buses in the Chicago metropolitan area). There are, in addition, conventional city bus systems. The commuter rail system is privately owned, and operates without either capital or operating subsidy.

¹ Calculated from International Union of Public Transport *Millennium Cities Database*, for 1995. Hong Kong has a public transport market share of 73.2 percent.

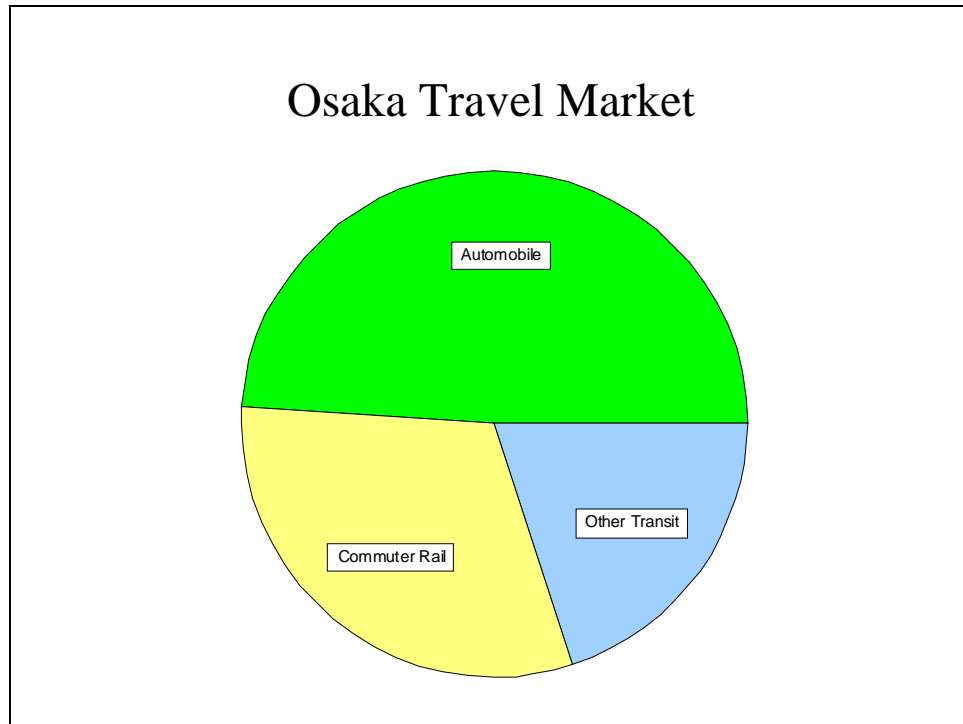


Figure 1

There are 1.01 commuter rail station per square mile, which makes the Osaka system considerably more dense in access than even Tokyo.

Like Tokyo, most of the commuter rail system was constructed before the urban expansion that followed World War II, when Osaka-Kobe-Kyoto housed approximately two-thirds fewer people. Commuter rail ridership very dense, at 3.3 million per line mile annually, second to Tokyo among automotive urban areas.

Osaka has the world's third largest core central business district, at 1.3 million jobs. This represents 16 percent of metropolitan area employment. Like Tokyo, Osaka has a commuter rail loop around its central area (the Osaka Loop), inside of which are 1.5 jobs. The rate of job loss in the central business district has been nearly double that of the suburbs.²

A number of commuter rail services penetrate the loop, including some services that share tracks with the metro system. But, similar to Tokyo, public transport's market share is dropping. From 1975 to 1998, public transport's share of trips dropped nearly 20 percent in Osaka-Kobe-Kyoto.³

The keys to Osaka's commuter rail success would appear to be the same as in Tokyo --- faster public transport travel speeds, the expansive, coordinated system and the fact that most of the urban form was established before broad automobile ownership was achieved.

² Calculated from Japan Statistical Bureau data.

³ Calculated from Japan Ministry of Transport data..

Like Tokyo, the success of commuter rail in Osaka results from the extensiveness of pre-automobile development (the result of reaching high-automotive status late), the extensive commuter rail system and connecting bus systems, the higher public transport system speeds and the high service frequency. These factors combine to make public transport competitive with the automobile throughout the urban area.

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.

<p><u>The Public Purpose</u> WENDELL COX CONSULTANCY <u>Demographia</u></p> <p>P. O. Box 841 - Belleville, IL 62269 USA Telephone: +1.618.632.8507 - Facsimile: +1.810.821.8134</p> <p><i>To facilitate the ideal of government as the servant of the people by identifying and implementing strategies to achieve public purposes at a cost that is no higher than necessary.</i></p>
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