

An overview of "Tokyo survey book 3: Visitors to Tokyo – Movement and de facto population in the Tokyo 40 km area (estimates and analysis)"

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This report analyzes Tokyo based on the weekday movement of people (overall estimates for half-hourly movement and de facto population). We analyzed the central attractive force of the city based on the movement of its people for private visits. This information can be used for many applications including ideas for resident-led urban development, accurate visitor-attraction strategies, suitable infrastructure construction, and basic data for disaster-resistant city planning.

Key point 1: Weekday movement (numbers of departures or arrivals) of all persons in the Tokyo 40 km area is estimated at 6.9 million trips*.

The area in this report is the Tokyo 40 km area – an area which is strongly linked socially and economically with central Tokyo (figure 1). The following results were produced from a study of total human movement and de facto population (Tokyo 40 km area, weekday, 2008) of residents, commuters, and students, as well as persons visiting Tokyo for shopping, dining, and other purposes, by combining data including Tokyo Metropolitan Area person-trips and national census data.

- Numbers of departures: 6.907 million trips / day
- Numbers of arrivals: 6.906 million trips / day
- Maximum de facto population: 2.793 million people (at 3:00 am)

* Trips are the units for indicating the movement of persons, and refer to the number of times that persons move from a starting point to a destination for a particular purpose.

Key point 2: There are also locations of high de facto population density in areas outside central Tokyo at 14:00.

In the estimate results, the wide distribution of human activity within the Tokyo 40 km area can be seen from the areas of high density de facto population which include not only central Tokyo but also the areas around Kawasaki Station and Yokohama Station (figure 2).

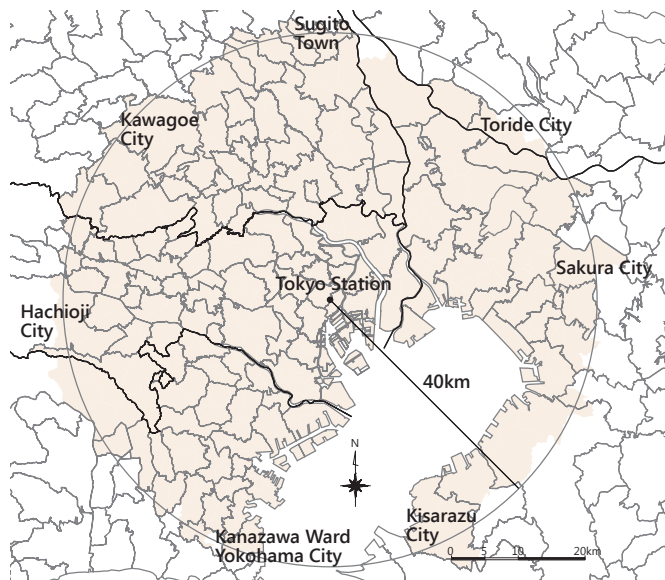


Figure 1. Tokyo 40 km area

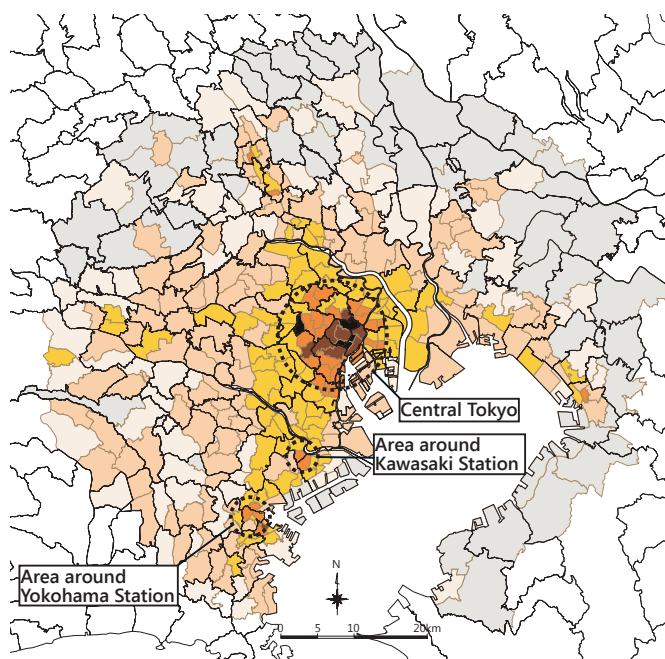
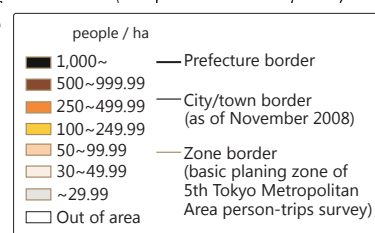


Figure 2. Weekday 14:00 de facto population density (Tokyo 40 km area, 2008)



Key point 3: The peak de facto population of central Tokyo reaches 10 – 20% above the daytime population level according to the national census.

It is estimated that the actual number of people in central Tokyo during the hours of 13:00 – 14:00 (peak daytime de facto population hours) exceeds the daytime weekday population (nighttime population from the national census plus the excess inflow population of commuters and students) by 10 – 20%. If we assume that this ratio is unchanging, it will be possible to estimate the maximum de facto population for each national census year. The results of the person-trip study of the Tokyo Metropolitan Area conducted once every 10 years is used as basic data for purposes including measures to help people unable to return home after a disaster. Using the above method makes it possible to develop accurate policy measures based on the latest data.

Key point 4: The 23 wards of Tokyo can be classified into 3 groups according to the characteristics of de facto population fluctuation

by time of day.

The central 10 wards, including the 3 wards at the heart of Tokyo, have a convex curve distribution with a larger population during the day than at night. Sumida Ward and Meguro Ward have a generally flat distribution with little change according to the time of day. The remaining 11 wards have a concave curve distribution with a smaller population during the day than at night (table 1).

Key point 5: In addition to central Tokyo, other zones with large attraction power for private visits include the central areas of Yokohama City and Kawasaki City.

The study showed that in addition to central Tokyo, the central areas of Yokohama City and Kawasaki City are also zones with particularly large attraction to visitors coming for private visits from distances farther away, and that there are large numbers of zones which are able to meet the private-visit demands of nearby residents and workers located in the surrounding urban areas and Tokyo suburbs (figure 3).

Table 1. De facto population characteristics for the 23 wards

Shape of time variation graph	Height/depth of graph peak/valley	Convex graph area category 1	Convex graph area category 2	Wards					Graph shape sub-type		
				Maximum-minimum de facto population difference: x (people)	Maximum de facto population at work locations: y (people)	Maximum de facto population at locations of private visits: z (people)					
Convex curve	Excess daytime population inflow	$500,000 \leq x$	$500,000 \leq y$	$100,000 \leq z$	Chiyoda	Chuo	Minato			Convex curve 1	
		$200,000 \leq x < 500,000$	$200,000 \leq y < 500,000$	$100,000 \leq z$	Shinjyuku					Convex curve 2	
				$50,000 \leq z < 100,000$	Shibuya					Convex curve 3	
		$50,000 \leq x < 200,000$	$200,000 \leq y < 500,000$	$50,000 \leq z < 100,000$	Koto	Shinagawa					Convex curve 4
				$50,000 \leq z < 100,000$	Taito	Toshima					Convex curve 5
				$z < 50,000$	Bunkyo					Convex curve 6	
Flat	Little population change due to time of day	$x < 50,000$	—	—	Sumida	Meguro				Flat	
Concave curve	Excess daytime population outflow	$x < 50,000$	—	—	Arakawa					Concave curve 1	
		$50,000 \leq x < 200,000$	—	—	Ota	Nakano	Suginami	Kita	Itabashi	Katsushika	Concave curve 2
		$200,000 \leq x$	—	—	Setagaya	Nerima	Adachi	Edogawa			Concave curve 3

Notes: Indicates de facto or in transit population (total for all purposes) at peak time. "Private visits" indicates the total for shopping, dining/socializing/entertainment, tourism/outing/leisure, hospital visit, and other private purposes.

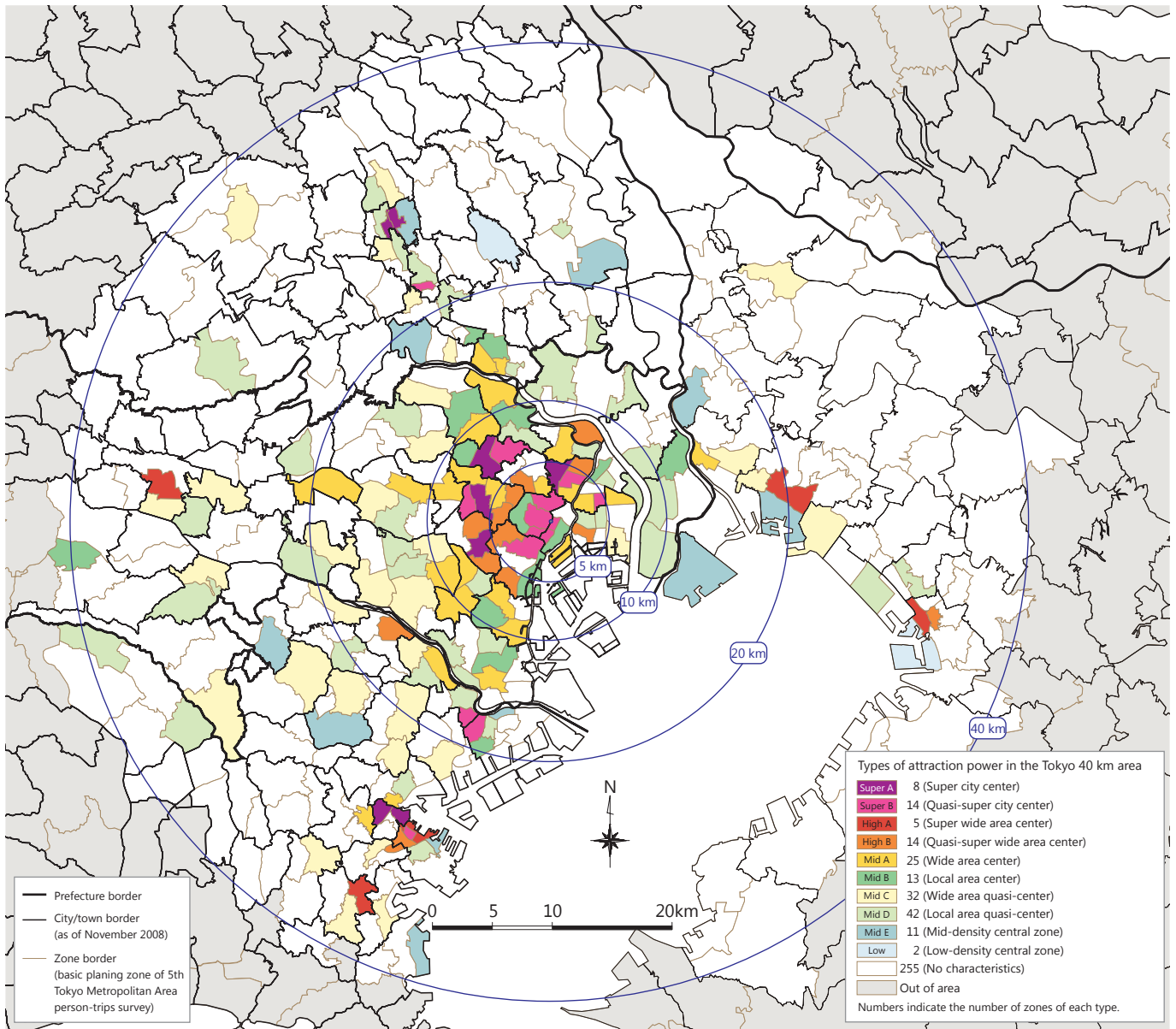


Figure 3. Attraction power for private visits of the city (weekday, 2008)

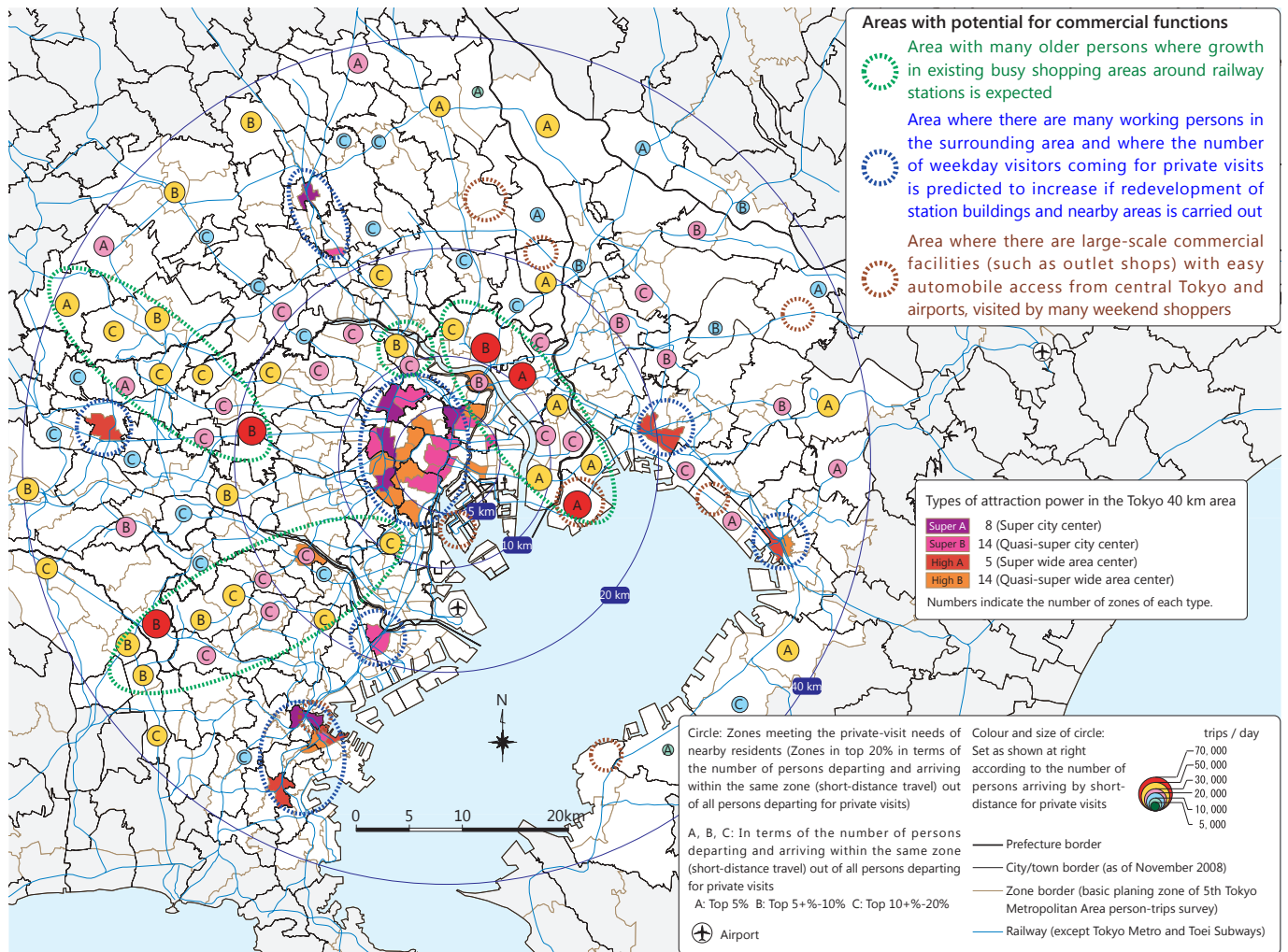
Notes: "Private visits" indicates the total for 4 private purposes (shopping, dining/socializing/entertainment, tourism/outing/leisure, and hospital visit).

Key point 6: Expectations for multipolarization of commercial functions in the Tokyo 40 km area

It is thought that as a result of changes in elderly residential areas and the numbers of working persons, commercial functions will become increasingly multipolar as urban development to meet the needs of elderly persons and working persons (including redevelopment of railway station buildings and expansion of existing busy shopping areas next to stations) is carried out in the future (figure 4).

Key point 7: Total 1.3 times more visits than persons working in offices

Estimate results show that the number of persons visiting offices in the city center business districts and sub-center districts is 1.3 times the number of persons working in these offices. By using this primary unit, it is possible to predict the number of total office visitors based on the expected number of employees at the offices which will be created through redevelopment (table 2).



Note: "Private visits" indicates the total for 4 private purposes (shopping, dining/socializing/entertainment, tourism/outing/leisure, and hospital visit)

Figure 4. Urban structure of Tokyo 40 km area according to attraction power for private visits

Table 2. Number of arrivals (primary unit) in the city center business districts and sub-center districts (weekday, 2008)

Total of the city center business districts and sub-center districts		Business category (six categories)					
		Education, learning support	Medical, health care and welfare	Business category where facilities are primarily offices and bank-related	Government, compound services	Real trade, eating and drinkings services, living-related and personal services, amusement services	Accommodations
Number of arrivals per employee (primary unit) A ÷ B (trips / person · day)		B: Number of employees (people)					
Total number of employees: 3.271 million people Total number of arrivals: 7.148 million trips / day		70,787	73,734	2,332,372	106,627	629,359	30,951
Destination facility (six categories)	Schools, educational facilities, kindergartens, nursery schools	400	5.7				
	Medical, welfare, and social service facilities	197		2.7			
	Private offices, companies, banks	3,115		1.3			
	Government offices	230			2.2		
	Retail stores, restaurants (supermarkets, department stores, shopping centers, and other commercial facilities)	1,540				2.4	
	Lodging facilities, hotels	76					2.5