

Recent Trends of Park Use at Tokyo Metropolitan Area

Yasuo Sumiyoshi, Kaoru Uchiyama

Yasuo Sumiyoshi, Director of Park Division, Construction Bureau, Tokyo Metropolitan Government, Nishishinjyuku 2-8-1, Shinjyuku-ku, Tokyo, 163-8001 Japan,
e-mail: Yasuo_Sumiyoshi@member.metro.Tokyo.jp

Kaoru Uchiyama, Nature Conservation Dept., Environmental Conservation Bureau, Tokyo Metropolitan Government, Nishishinjyuku 2-8-1, Shinjyuku-ku, Tokyo, 163-8001 Japan,
Tel +81-3-5320-5361, Fax +81-3-5388-1532

Abstract: Tokyo Metropolitan Government has studying its urban parks since 1982. Several parks are selected in each year, and the parks under study are increasing. The cost has already amounted more than 10 million yen. At 69 parks, the government counted the visitors' number of the monitoring day and interviewed age of visitors, their way of access, purposes of visit, their impressions of the parks and the requirements of the park management. The results were totaled at each park category. The categories were: A, famous park well facilitated; B, city park with wide, grassy open space; C, sports parks; D, natural forest parks in hilly area; E, historic garden parks with admission; and F, small parks. The density of visitors ranged from 1-200 persons per hectare, and 80% of parks had a density below 50 persons per hectare. The inducement sphere, 80% of visitors accessible, was ranged from 1-50km; the widest radius was observed at the parks with admission and the park at the city center. A frequent arrival of the visitors was observed 1-2 p.m. and the exit was 2-3 p.m. at the historical gardens (E type). The parks, less than 20 hectare, showed the increase in visitor numbers in proportion to the park area. B type park showed the increase of residence time in relation to the park area. Congestion had a bipolar effect on visitors' satisfaction: each park has its own comfortable visitor density.

INTRODUCTION

Since 1966 Tokyo Metropolitan Government has conducted studies of recreational use of parks in coordination with a nationwide survey carried out by the Ministry of Construction. The studies have been carried out by the Metropolitan Government assisted by the private companies since 1982. To assess trends of park use in Tokyo metropolitan area, the annual results were summarized and analyzed in 1989 and 1994.

This paper reviews the trends of studies of recreational use of urban parks in Tokyo since 1982 and shows the results of the analysis conducted in 1994.

TRENDS OF STUDIES ON PARK USE

Table 1 shows the history of park studies conducted since 1982 until 1998. A total of 69 metropolitan parks were investigated and more than a half of them were already investigated twice. Since 1990, we surveyed 6-10 parks in each year and per year and paid more than ten million yen including contract cost.

We investigated the number of visitors at the park entrances, which ranged a few to many depending to the park type, and interviewed a questionnaire in the park. The former task employed 60-310 individuals and the later employed 20-130.

The visitors were counted on a holiday in October since 1990 compared to two separate days, one weekday and one holiday, from 1982-1989. The annual visitors were estimated on the basis of the survey results in proportion to the data of the charged parks where we counted the exact visitors' numbers through the year.

The interview was conducted on a holiday in October. We asked age of respondents, group composition of visitors, means of transportation to access, time duration to reach the park, frequency of visits, reason for choice the park, purpose of visit, facilities used, impression of the park, and requirement of facilities and their image of the park.

RESULTS OF ANALYSIS

The analysis used the results of 46 parks surveyed from 1990-94. We summarize the some trends of park use in Tokyo metropolitan area.

The parks were categorized into six groups according to the factors, as the reason of establishment, park facilities, users' behavior and inducement spheres.

Type A involves well-known major parks with well facilitated (e.g., Hibiya Park, Ueno Park).

Type B involves multipurpose parks and scenic parks which have a large grassy open spaces or a wide recreational areas (e.g., Shakuji Park, Nogawa Park).

Type C involves sports parks with various sporting facilities (e.g., Komazawa Olympic Park).

Type D involves hilly parks and natural parks (e.g., Sakuragaoka Park).

Type E involves historical parks and Japanese-style gardens (Koishikawa-Korakuen Gardens).

Type F involves small parks (e.g., Aoyama Park, Nakagawa Park).

Density of visitors

Density of visitors was calculated as the average density of visitors per park area at each hours. This indicates the congestion of the park of the day. As in Figure 1, 80% of parks showed a visitor density of under 50 persons/ha. Zoological park, botanical gardens and parks with cultural installation or sporting facilities showed much higher densities.

Conversely, as in Figure 2, the lower density was observed at Type D, hilly parks with large forest.

Inducement sphere

The inducement sphere was estimated by the radius of the area where 80% of respondents lived in and the induced distance was calculated as the average radius of the sphere.

Induced distance of each park is shown in Figure 3. Tokyo metropolitan parks had the distance ranged from 1 km to 50 km. The large inducement spheres were observed at the charged parks or park located in the city center. Figure 4 shows the frequency distribution of the inducement sphere of each park type. Type E parks, historical parks and Japanese gardens, had a larger inducement sphere, while other types had a sphere of less than 10 km.

Fluctuation of visitors' arrival, leaving and residence in the park

Figures 5-7 illustrate fluctuation of visitors entering, leaving and residence of each park type.

Type E displayed high concentrations of arrival during 13-14 o'clock and departure during 14-15 o'clock. In contrast, Type C, sports parks, showed a relatively gentle fluctuation for both arrival and departure due to the capacities of the facilities and also showed the gentle peak by the constant use.

Effect of park area to the visitors' number

Figure 8 shows the correlation between the annual number of visitors and park areas.

The greater annual number of visitors was observed at the larger park (Aoki 1984).

However, the large park, e.g. over 20 ha, especially well-known, major parks of Type A showed the inconsistent results. Because these parks were affected by the events held at the park and the location of the park on the annual visitors. And type D, hilly parks, showed the smaller number of visitors compared to the park area. As for the

smaller parks, i.e. less than 20 ha, the annual number of the visitors was related to the park area. (Fig.9)

Effect of park area to residence time

Figure 10 reveals a weak correlation between the average residence time of visitors and the park area. And Figure 11 demonstrates, different residence time at each park type.

Sports parks and gardens showed similar residence time in the park category, because of the similar behaviors at the park. Type B, multipurpose or scenic parks, showed the effect of park area on the residence time, because of the variety of visiting purposes. (Fig.12)

Relation of satisfaction and congestion

Satisfaction ratio was calculated as the percentage of respondents who stated satisfactions in the questionnaire. Congestion ratio was calculated as the percentage of respondents who stated the park to be congested. The level of satisfaction decreased at the weak congestion and at the overcrowded. The highest satisfaction was observed at 15% the congestion ratio. (Fig.13)

This suggests that some visitors are seeking tranquillity and relaxation, and some are enjoying a crowd.

REFERENCES (IN JAPANESE)

- Tokyo Metropolitan Government (1994): Report on a General Analysis of Studies of Recreational Use of Urban Parks. Parks Division, Bureau of Construction, Tokyo Metropolitan Government. 105 pp.

Aoki, Koichiro (1984): Utilization of Parks. Chikyusha. 212 pp.

SUMIYOSHI, UCHIYAMA: RECENT TRENDS OF PARK USE AT TOKYO METROPOLITAN AREA

Table 1. Investigations of recreational use in Tokyo Metropolitan Parks																			
NO.	Park	Area (ha)	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
1	Ueno Park	53.4	□										□						
2	Shiba Park	12.2						□					□						
3	Hibiya Park	16.2	□										□						
4	Inogashira Park	36.4			□								□						
5	Kyu-Shiba-rkyu Gardens	4.3									□								□
6	Daba Park	3.0																□	
7	Yokomicho Park	2.0											□						
8	Sanue Park	14.5			□						□								
9	Kiyosumi Gardens	8.1									□								□
10	Sayama Park	24.6					□						□						
11	Roka Koshu-en Gardens	6.6					□						□						
12	Koshikawa-Korakuen Gardens	7.1									□								□
13	Ryugien Gardens	8.8									□								□
14	Mukojima-Hyakkaen Gardens	1.1									□								□
15	Hama-rkyu Gardens	25.0									□								□
16	Koganei Park	77.0	□											□					
17	Toyama Park	18.7				□								□					
18	Kyu-Furukawa Gardens	3.1									□								□
19	Kitafuta Park	39.2			□										□				
20	Johoku-Chuo Park	21.2				□								□					
21	Jindai Botanical Park Jindai Greenery Information	45.9												□					
22	Shakujii Park	18.2						□					□						
23	Zenpukujii Park	7.9						□						□					
24	Zenpukujii Park	18.0							□					□					
25	Wadabori Park	17.3														□			
26	Musashino Park	23.0				□										□			
27	Meiji Park	5.7							□										□
28	Komazawa Olympic Park	41.3					□								□				
29	Mizumoto Park	72.5		□										□					
30	Higashi-Avase Park	15.9													□				
31	Ukima Park	11.7								□								□	
32	Shinozaki Park	23.9						□										□	
33	Yoyogi Park	54.1		□													□		
34	Ryonan Park	6.0						□										□	
35	Aoyama Park	3.8													□				
36	Seigyama Park	7.7												□					
37	Shikaze Park	15.5			□													□	
38	Akatuka Park	25.0							□				□						
39	Soshigaya Park	6.8														□			
40	Yumenoshima Park	43.3				□								□					
41	Tonogayato Gardens	2.1									□								□
42	Higashi-Yamato Park	18.2										□							
43	Sayama Sakai Scenic Road	7.7					□												□
44	Kameriko-Chuo Park	10.3								□						□			
45	Nogawa Park	39.7		□										□					
46	Higashiyama-shi Park	6.5										□							
47	Naganuma Park	32.0										□							
48	Toneri Park	47.2																□	
49	Tamaqawa-tsui Scenic Road	11.8																	□
50	Hikarigaoka Park	60.8								□						□			
51	Sakuragaoka Park	22.7										□							
52	Nakagawa Park	6.5												□					
53	Higashi-Shinjuku Park	10.3										□							
54	Komaba Park	24.1																	□
55	Takayama Park	24.4																	□
56	Higashiyamato-Minami Park	9.9										□							
57	Higashiyamato-Chuo Park	12.1										□							
58	Noyama-Kita Park	84.4												□					
59	Akuidai Park	11.8									□								□
60	Rinshomori Park	12.1											□						
61	Kasai Rinkai Park	79.6																	□
62	Musashino-Chuo Park	10.1											□						
63	Mizumi-Chuo Park	10.3										□							
64	Oyamada Park	38.0														□			
65	Hachikokuyama Park	22.7													□				
66	Fuchunomori Park	16.8																	□
67	Kiba Park	22.1																	□
68	Gunohara Park	6.0																	□
69	Senzoku Park	7.1								□									
Number of investigated parks			2	4	5	4	4	4	4	4	10	9	10	8	9	9	8	6	8
Investigated area (ha)			69.1	205.9	104.1	88.9	78.5	45.8	57.3	89.1	80.9	133.6	189.7	220.4	239.6	234.9	219.3	45.7	59.6
Number of investigators	Counting survey		134	220	117	126	133	145	160	130	64	99	167	154	310	278	207	89	94
	Questionnaire survey		31	110	44	35	24	26	24	27	58	52	61	102	81	128	100	34	47
Number of sheets			1205	2482	1658	1446	1139	1139	1145	1077	2265	2228	2385	2217	2024	2587	1884	1234	1587
Cost (million Yen)			3	5	4	5	5	6	6	9	12	14	16	17	18	17	16	11	14

Fig. 1 Density of visitors

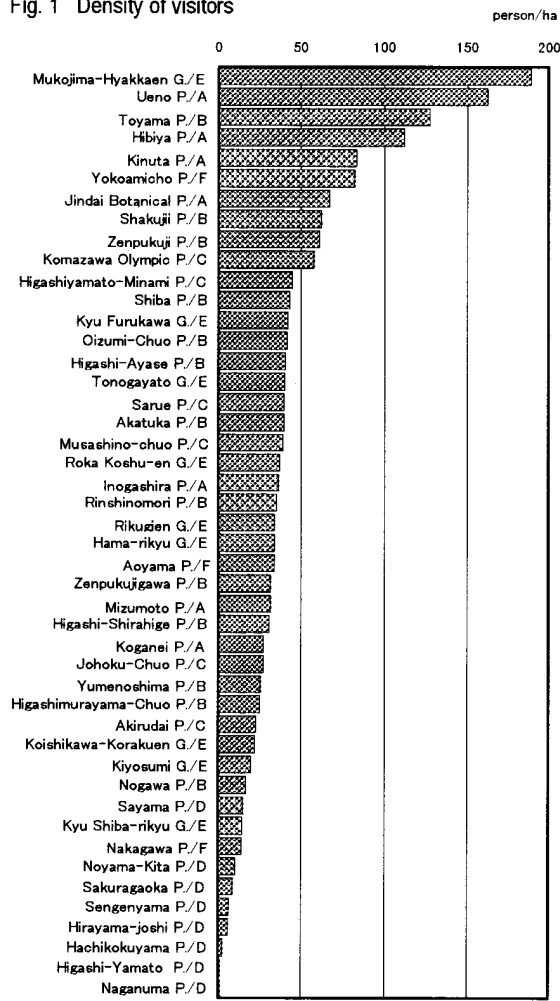


Fig. 3 Inducement sphere

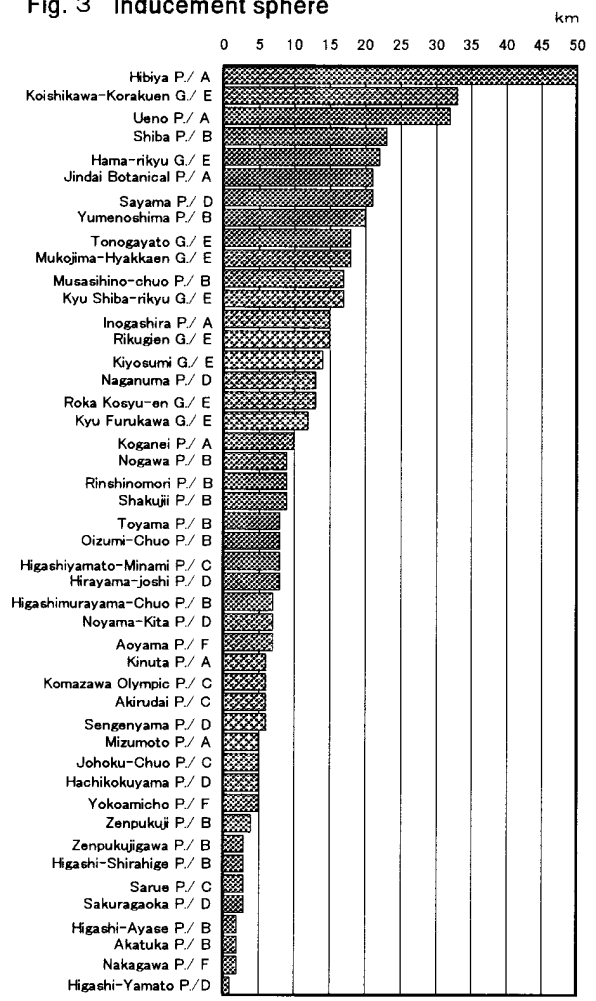


Fig. 4 Density of visitors

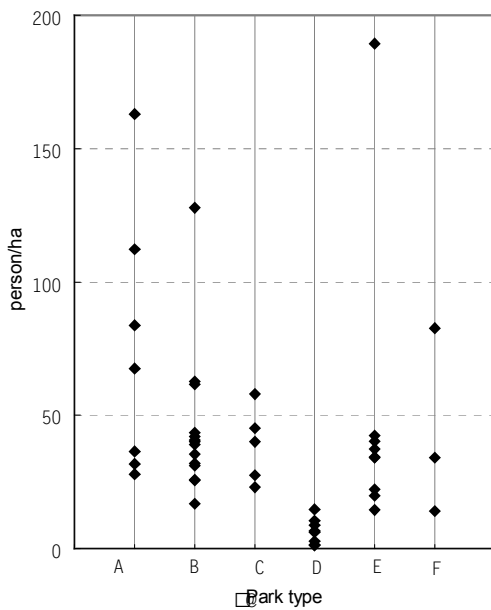


Fig. 4 Distribution of Inducement sphere by park type

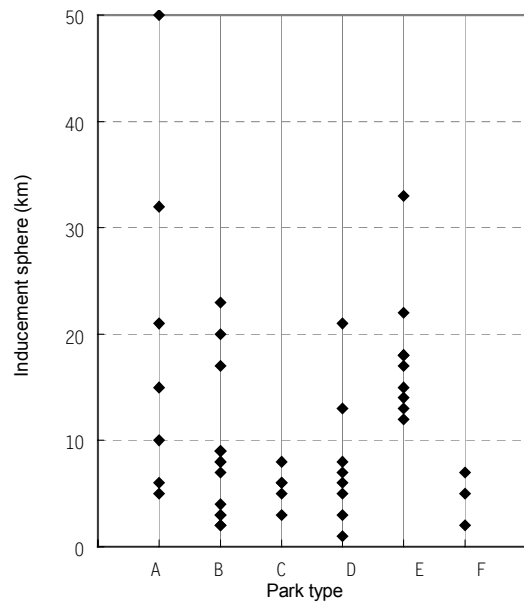


Fig. 5 Fluctuation of visitors' arrival

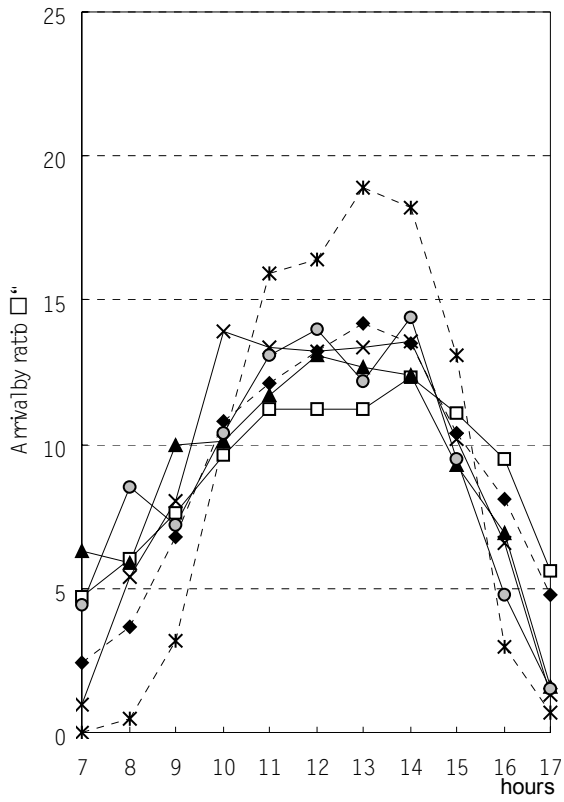


Fig. 7 Fluctuation of park visitors

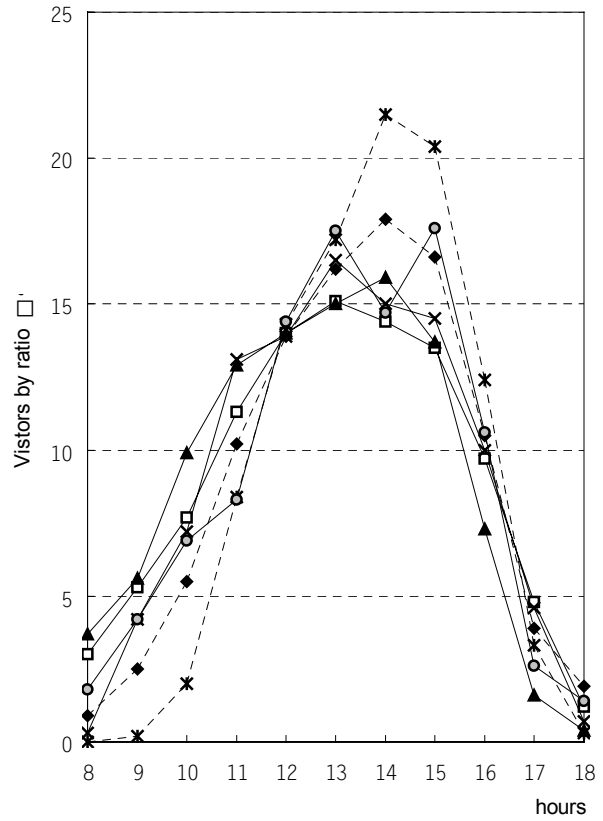


Fig. 6 Fluctuation of visitors leaving

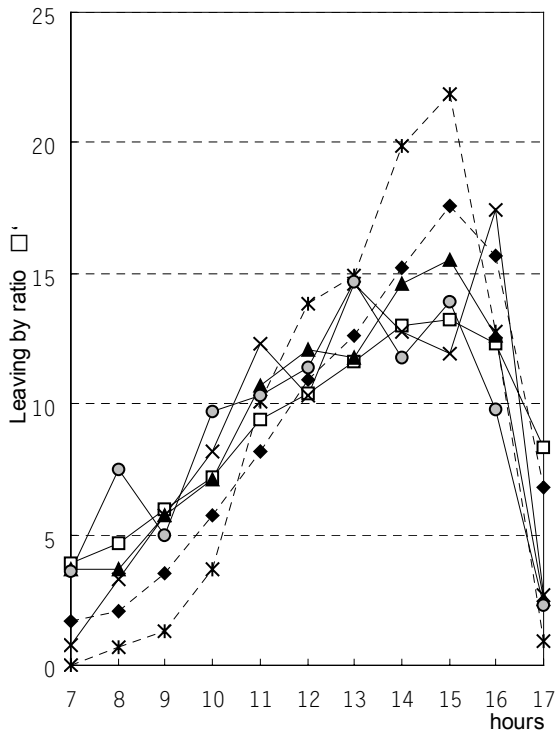
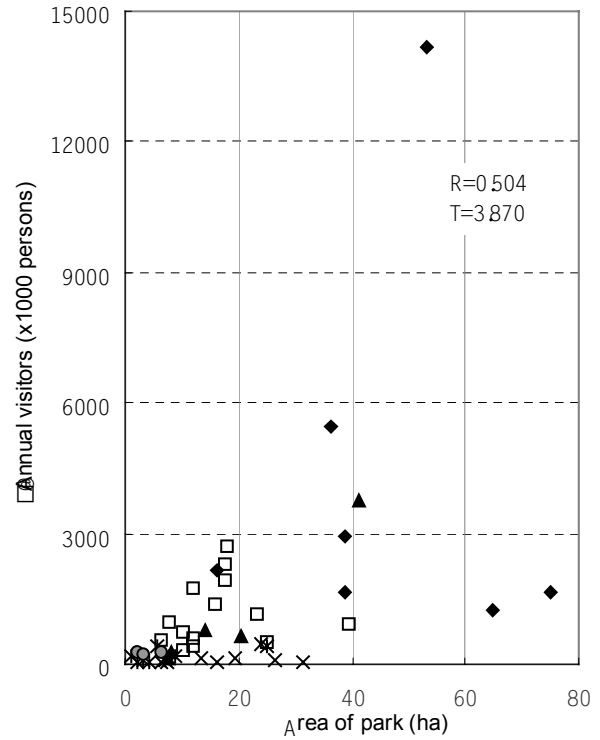


Fig.8 Relationship between visitors' number and park area



--◆-- Park type A □-- B
 --▲-- C --×-- D
 --*-- E --○-- F

◆ Park type A □ B
 ▲ C × D
 * E ○ F

Fig. 9 Correlation between visitors' number and park area (smaller than 20ha)

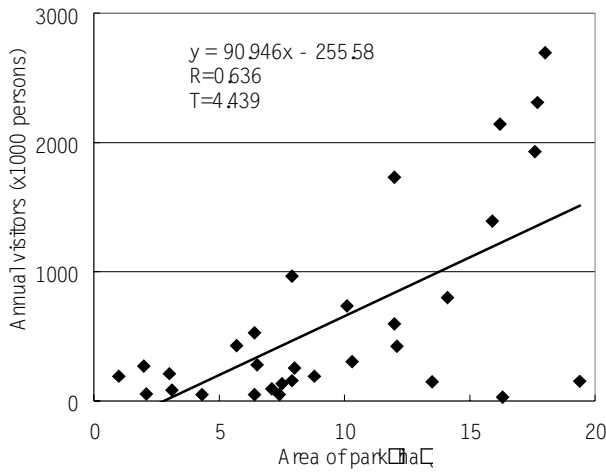


Fig. 12 Correlation between average residence time and park area (type B park)

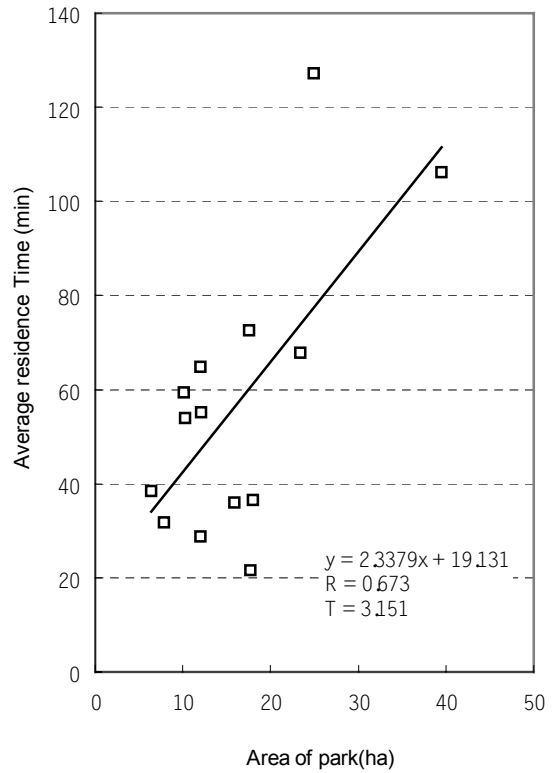
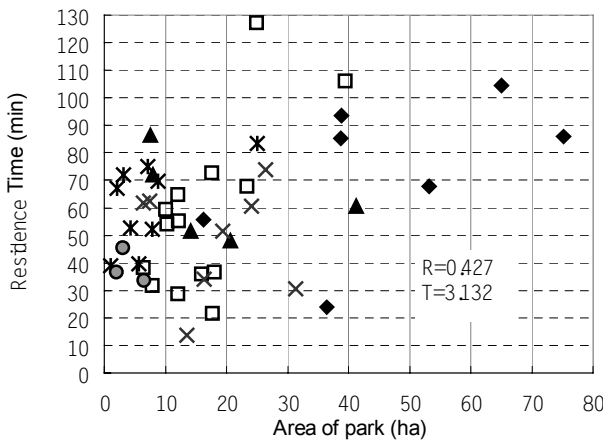


Fig. 10 Relationship between average residence time and park area



- ◆ Park type A
- ▲ C
- ✕ E
- B
- ✕ D
- F

Fig. 11 Average residence time by park type

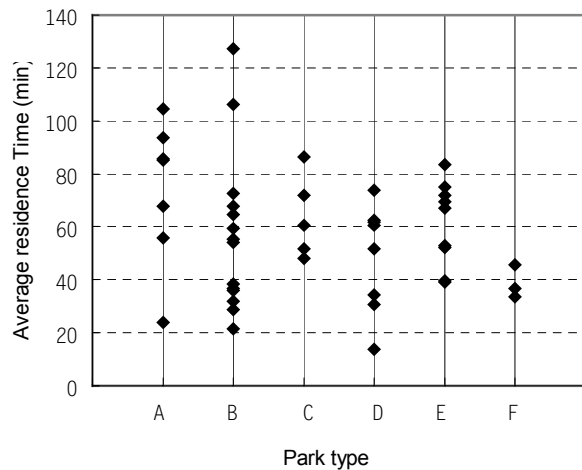


Fig. 13 Relationship between satisfaction of visitor and congestion

