

Spatial Distribution of Public Signages for Pedestrians in Tsukuba Center

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Objective

To examine the spatial distribution of public signages for pedestrians in Tsukuba Center with the use of GPS and GIS technology.

Case Study Area

The case study area is the Tsukuba Center Block plus the pedestrian block extending from Kita to Minami Odori.

Methodology

Locations of public signages were generated on November 29, 30 and December 3, 2006 by using Differential GPS equipment. These GPS points were later downloaded using Kashmir 3D and subsequently uploaded in the ArcGIS for integration with other datasets. Based on their contents, each signage was classified according to their purpose and object of interest. Necessary transformation and geoprocessing was done to overlay the different GIS layers. GIS maps were prepared thereafter. (Figure 1 and 2)

Data Requirements

Features	Type	Source
Signages location	GPS points	Fieldwork
Tsukuba Center	GPS point	Fieldwork
Street map	lines	Zenrin
Pedestrian map	lines	Zenrin
Building map	polygons	Zenrin
Tsukuba station	polygon	Zenrin
Water	polygon	Zenrin

Spatial Analysis

A multiple concentric buffering by 100-meter interval was employed to analyze the spatial distribution of public signages in relation to distance from Tsukuba Center. A single GPS point for Tsukuba Center which was generated during the fieldwork served as the reference point (Figure 3).

Summary of Results and Conclusion

A total of 330 public signages were located within the study area. Notices obtained the highest number of signages followed by regulatory signages. In terms of object of interest, bicycle parking-related signages earned the highest percentage (29.1%). Eighty percent of the 330 signages are located within the 500 meter buffer zone. Contrary to what is expected, there are more signages within the 200-meter zone than within the 100-meter core zone. While dispersed across distance, there are numerous regulatory signages and maps in the 100-meter buffer zone as compared to any other zones whereas notices are located mainly in the 200-meter zone. In terms of object of interest, most of the signages in the 100 to 200-meter zone are bicycle parking-related. People prefer to park their bikes within these zones because of proximity and convenience from the train station, the bus/taxi terminal and shopping centers. Yet, government has to regulate the use of public space within these zones. In conclusion, the spatial and attributable characteristics of public signages are most likely related to the characteristics of the place where they are located as well as to the management of urban space.

CLASS * DISTANCE Crosstabulation

CLASS	Caution	DISTANCE					Total
		100	200	300	400	500	
Direction	10	11	8	6	5	3	38
Instruction	1	6			1	1	9
Map	11	3	2	3	7	26	
Notice	18	45	20	14	11	108	
Regulation	19	13	10	13	7	62	
Total	59	86	42	46	29	262	

OBJECT * DISTANCE Crosstabulation

OBJECT	Bicycle Parking	DISTANCE					Total
		100	200	300	400	500	
Buildings/Institutions /Landmarks	9	7	3	5	5	29	
Construction	1	13	12	8	1	35	
Garbage				3	2	5	
General Parking			1	3	4	8	
Motorbikes			3	4	3	10	
Others		3	1			4	
Park		2	4	1	1	8	
Pedestrian Facilities	2	6	7	9	4	28	
Pedestrian movement					1	1	
Public Transportation	7	3			3	10	
Residence				2		5	
School		1	3	8		12	
Skateboarding	1					1	
Tsukuba Center	3	2	1	1	3	10	
Total	59	86	42	46	29	262	

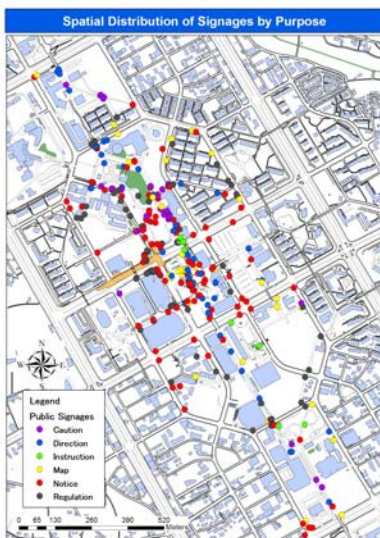


Fig 1: Spatial Distribution of Public Signages by Purpose

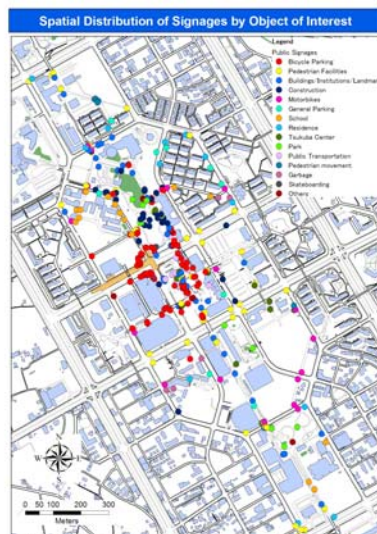


Fig 2: Spatial Distribution of Public Signages by Object of Interest

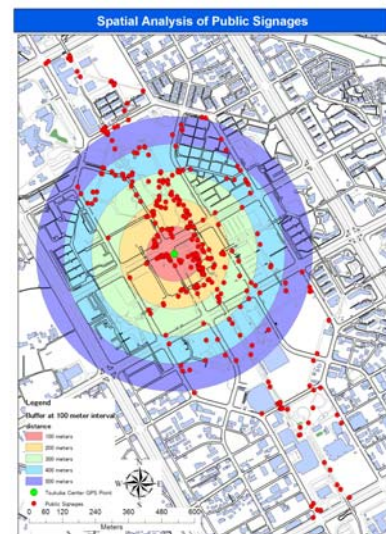


Fig 3: Multiple concentric 100-meter interval buffering method