# Research on the multi-functionalization of transportation nodes for effective use of urban space (Research period: FY 2019–)

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*Keywords: Walkable, transportation node, environmental space, station characteristics,* surrounding area *characteristics*

## 1. Introduction

In recent years, the formation of walkable spaces that are comfortable and make people want to walk has been emphasized. It is thought that the upgrading and multi-functionalization of transportation nodes that are core areas of a city, especially pedestrian spaces and green spaces within them (environmental space[1]), will also contribute to the realization of an integrated urban structure.

Therefore, in order to study the concept of securing the area (Figure 1) and other aspects of a transportation node, observation and analyses were conducted on the usage of the plaza in front of train stations with different characteristics, focusing on the environmental space.

## 2. Observation and analysis in the environmental space

Field observations were conducted at Musashi-Koyama Station and Nishi-Koyama Station (Table) on the Tokyu Meguro Line, which are stations with a similar number of passengers, plaza area in front of the train station, and environmental space area, but differ in other station characteristics (percentage of commuter pass users) and surrounding area characteristics (land use), for comparison.

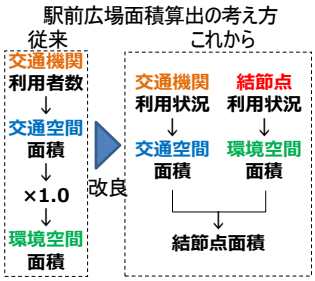


Figure 1: An example of the examination

| | Musashi-Koyama Station | Nishi-Koyama Station |
|---|---|---|
| Number of passengers using the station | Approximately 54,000 persons/day Commuter pass: Approximately 55% Non-commuter pass: Approximately 45% | Approximately 37,000 persons/day Commuter pass: Approximately 68% Non-commuter pass: Approximately 32% |
| Plaza area in front of the train station | Approximately 3,800 m$^2$ | Approximately 2,700 m$^2$ |

Table: Outline of Musashi-Koyama Station and Nishi-Koyama Station

(1) Average staying time

The staying time at Musashi-Koyama Station is long especially during daytime and early evening.

The staying time of multiple persons is long at Musashi-Koyama Station (Figure 2).

(2) Ratio of passengers using trains among users of the plaza in front of the station

At Musashi-Koyama Station, the ratio of users of the plaza in front of the station other than train passengers is high in the afternoon (Figure 3).

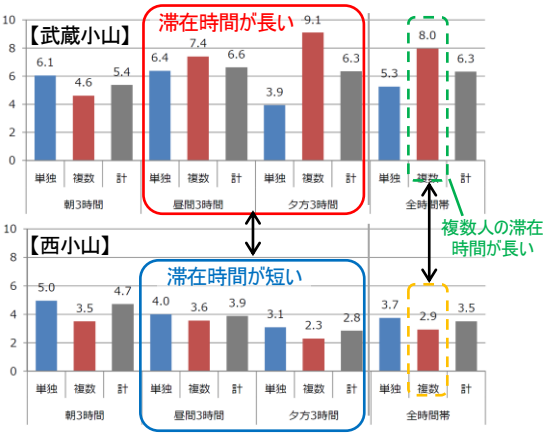


Figure 2: Average staying time

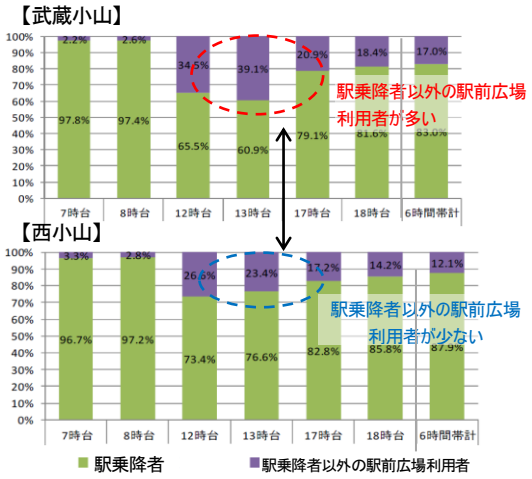


Figure 3: Composition of users of the plaza in front of the station

## 3. Future studies

This study revealed that even for stations of a similar size, there are differences in the number of people using the environmental space and how they use it, depending on the station characteristics and surrounding area characteristics. In the future, transportation nodes will be categorized based on the characteristics of train stations and surrounding urban areas to examine the planning and design methods for transportation nodes, including

transportation spaces, as well as the ideal environmental space.

☞ Reference
1) Station Plaza Planning Guideline (Japan Transportation Planning Association, 1998)