

# The spatial analysis of the distribution of hot drink service in University of Tsukuba

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## 1. Motivation and Introduction

In winter, hot drink services take an important role in daily life. Nowadays there is an increased demand for hot drinks in the cold weather. Therefore, the purpose of this study is to detect the spatial distribution of hot drink services in the central area of the University of Tsukuba.

## 2. Study Area

The Main Study Area: Administration Center, Central Library Area, International Student Center Division of International Students Area, Art and Sport Science Area, Hirasuna Residence Hall, Oikoshi Residence Hall, Medical Sciences Area and Ichinoya Residence Hall. In this study, the central area considered as the most vital study area (Figure 1).

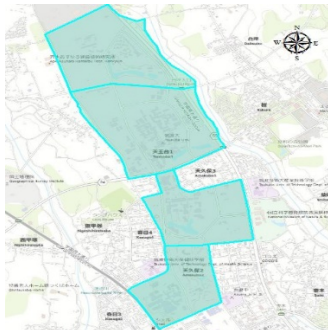


Figure1.Study Area

## 3. Methodology

Generally, the hot drink services were divided into three categories: coffee shops, convenience stores and vending machines. Firstly, the coffee shops, vending machines and convenience stores were obtained as the suitable points by manual GPS-processor during the field survey. The description of hot drink (including

goods, number, kind and location etc.) was recorded. Besides, getting the fieldwork data to create the distribution map of hot drink service analyzed the spatial information of hot drink service by ArcGIS. Processing by network analysis, the hot drink service area (100m, 200m, 350m and 500m service area) can be shown.

## 4. Result and Discussion.

In total, 50 points were captured in the University of Tsukuba (Table 1). Establishing the hot drink service area by network analysis, the hot-drink service points as the facilities, the hot drink service area was mapped (Figure2). The distances of facilities to any building in the study area were measured through finding the closest facility. The time that people taken from hot drink service to any building in the study area was estimated. People could find a closest way between the location of hot drink service and any building in the campus (Figure 3). In addition, the greater number of hot drink service are located in the central area of the university where there is a high daily mobility of students (Figure 4). Mapping the spatial distribution of hot drink service in the University of Tsukuba would make enormous contribution to construct the facilities of campus and promote the improvement of the level of campus life service.

TYPE	Vending machine	Convenience store	Coffee shop
Point	38	3	9
Number	62	3	9

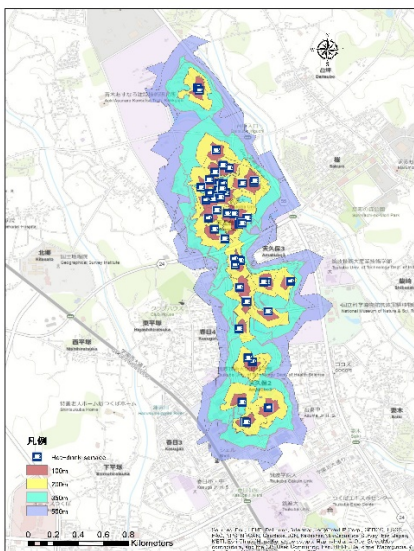


Figure2.Service Area

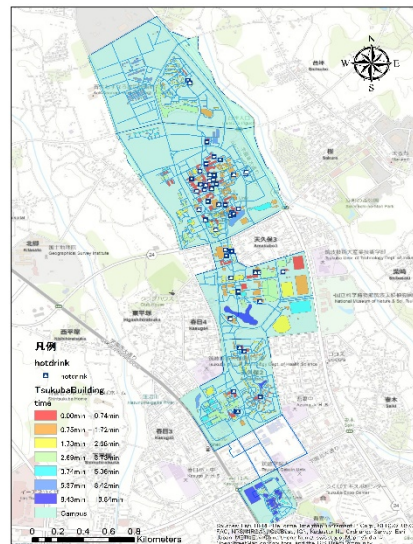


Figure3. The closest facility

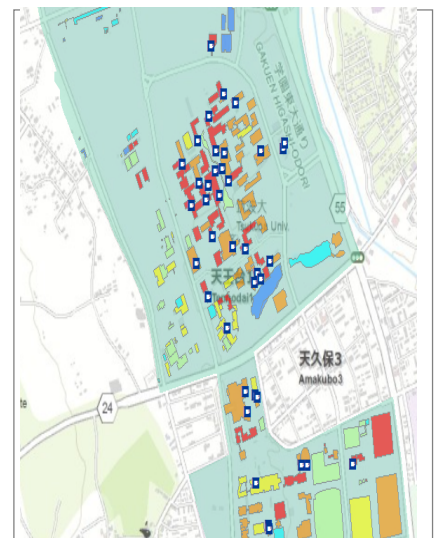


Figure4.The central area of Campus