

# Assessing Services for International Students in Tsukuba using GIS. A Case study of Tsukuba University, Japan

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## 1. Motivation

The time spent on accessing social service places has a significant impact on the time students at any university have for academic activities. The amount of time available for studies is crucial to their graduation. It is therefore important that the locations as well as the distance and travel times to the service areas are assessed to help students easily access these places and save on time for studies.

## 2. Introduction

One of the major problems faced by international students at the University of Tsukuba as they arrive and continue living at the university is the difficulty to find places where to obtain social services in the city. This is even more difficult for new students as they are unfamiliar with the places. Therefore, the objective of this study was to assess the social services available and establish their locations, walk-time, bicycle-time and driving-time from the University of Tsukuba dormitory areas. The study also attempted to find out the social service places that are mostly used and the factors influencing the choice of these places.

## 3. Study Area

The study areas were the dormitory areas at Tsukuba University: Ichinoya, Hirasuna and Oikoshi and Tsukuba City as a whole.

## 4. Methodology

The study was carried out through three steps: (1) administering questionnaires (36 Nos.) to students in the Ichinoya, Oikoshi and Hirasuna areas to collect information on the type of services places (for food and groceries; health; and school education) they access and the reasons for choosing these places; (2) creating a GIS data base for the locations of service places including the road network and administrative boundary for Tsukuba City; and (3) carrying out Network Analysis in ArcGIS to create distance, walk-time, bicycle-time and driving time sheds/zones from the dormitories to the service areas. Note that the travel times were calculated based on Google maps estimated travel times

## 5. Results and Discussion

*Food and Groceries* – the results revealed that most students access convenient stores and supermarkets for these services. The reason for choosing these service places was dominated by short distance and price. The widely used supermarkets are located within 1-3 km. The students can access convenient stores within 0-15 walking minutes while supermarkets can be accessed within 30 – 60 walking minutes. In terms of cycle time and drive time, access to the service areas is reduced to less than 30 minutes.

*Health Services* – The majority of the students indicated that they use the University Health Center for health services generally. The main reasons were price and short distance. Those that access services elsewhere were mainly because of specialized treatments and to a lesser extent language. The analysis showed that most other health service places could be found within 1-3 km and 3-6 km. The walking minutes to these places range from 15- 60 while bicycle and driving time would generally be under 30 minutes.

*School education and Child Care* – this service was mainly applicable to students in the Ichinoya family dormitory. The results indicated that most students prefer to take their children to cheap schools within a short distance. Most child care services are also found within 30 -60 walking minutes which can be accessed in less than 30 minutes by bicycle or car.

## 6. Conclusions

The study revealed that price and short distance highly influence the choice of places by students to access services. Therefore, this study was important as it has highlighted the locations and travel times to service areas and would therefore help students in deciding the places to go and how to save time for their studies.

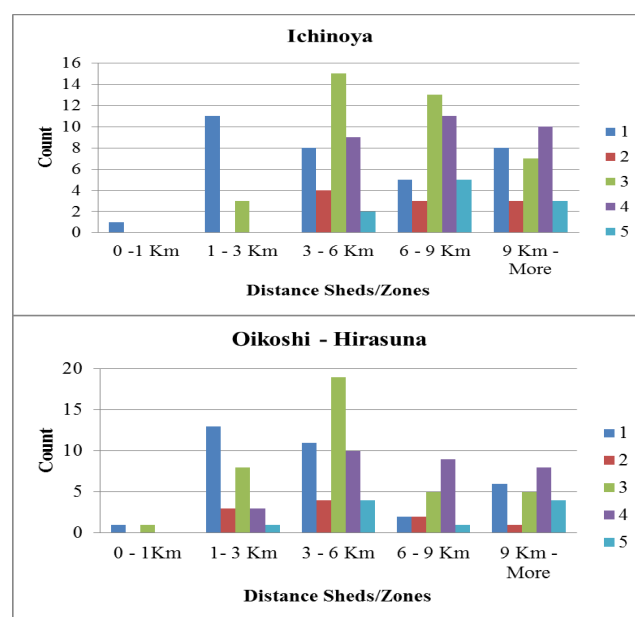
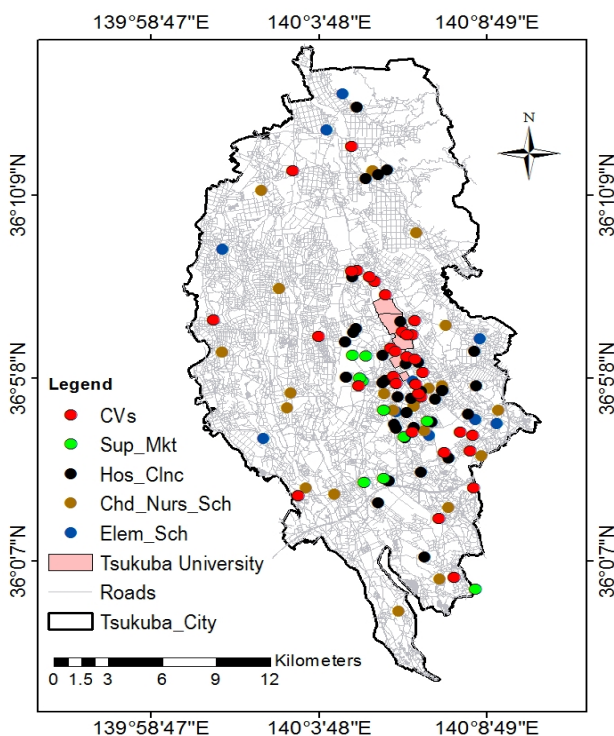


Figure 1: Service areas in Tsukuba and Distance Sheds Bar Charts. Note: CVs (Convenient Stores), Sup\_Mkt (Supermarket), Hos\_ClnC (Hospitals/Clinics), Chd\_Nurs (Childcare and Nursery) & Elem\_Sch (Elementary Schools)