

# Quantifying modes of transportation in University of Tsukuba

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## 1. Motivation

Tsukuba is a city where busy areas such as the city center and the university have a fluent flow of people during the different times of the day between each other. In order to go from one point to another, people use the different modes of transportation available in the city. This study attempts to obtain a trend of which are the most current areas and mode of transportation used by people and how many people use these modes of transportation in order to reach different areas, considering as the starting point an area at the University of Tsukuba.

## 2. Introduction

In daily life, people use the different modes of transportation in order to reach places to satisfy their necessities and fulfill their responsibilities. So transportation is an intermediate good to reach other final good. In the area of the University of Tsukuba and their surroundings, we can recognize different places such as a commercial area, restaurant area, dormitory area, university area and city center area. Being aware about where these areas are located and the main features of each one, we will be able to identify a hub place which connects most of these areas, and calculating the flow of modes of transportation and people in different times during a day, we also will be able to recognize a trend of how many people and modes of transportation goes to each area in order to satisfied their daily life necessities and responsibilities.

## 3. Study Area

The fieldwork has been carried out in a crossroad in the area of the University of Tsukuba, which has been considered as the hub crossroad that links the areas of Sakura (restaurants and commercial), Ichinoya (university dorm), International Student Center, Tsukuba Library and Tsukuba Center. Every day, many people go across this crossroad in order to get from their place to one of the previously mentioned.



Surce: ArcGIS

## 4. Methodology

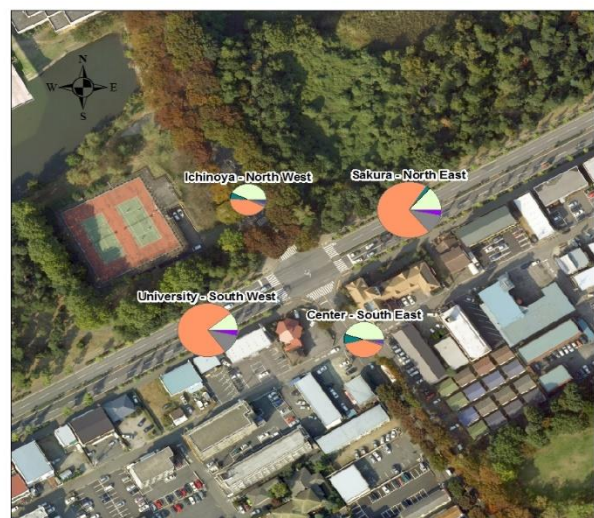
Recognition of the tendency of how many people and how many vehicles goes across the crossroad selected has been carried out by an empiric counting of the cars, bicycles, motorcycles, trucks, buses and other modes of transport and also the people who use these modes of

transportation during four periods of 30 minutes (First: 9.30-10hs. Second: 11.30-12hs. Third: 13.30-14hs. Fourth: 15.30-16hs). The field work has been performed in these four periods during two days. In addition, it was also considered which direction that each mode of transportation took after crossing the crossroad. This field work considers where people and modes of transportation went to, but not where they came from. After the data was collected a trend was calculated considering the average of both days in each period.

## 5. Results and Discussion

According with the survey data average, during the fourth period (15.30hs-16hs) is when most people and modes of transportation went across the crossroad: 659 vehicles and 731 people using them. And the less busy period was the first one (9.30-10hs) with 573 vehicles and 629 people using them. During the fourth period the most used mode of transportation was the car, and the area where most of the people went was the area of Sakura (North East). In contrast, the mode of transportation less used was the bus, and the area where less quantity of people went, was Ichinoya (North West).

Fourth Period (3.30 p.m - 4 p.m) - Average data of two days survey														
Areas	Bicycles		Motorbicycles		Cars		Bus		Trucks		Others		TOTAL	
	Vehicles	Person	Vehicles	Person	Vehicles	Person	Vehicles	Person	Vehicles	Person	Vehicles	Person	Vehicles	Person
Ichinoya (NW)	35	35	5	5	35	38	3	9	2	3	1	1	81	91
Center (SE)	45	45	9	9	40	44	2	5	2	3	2	4	100	110
Sakura (NE)	34	34	6	6	175	192	1	0	28	35	8	12	252	279
University (SW)	25	25	1	1	166	182	0	0	27	33	7	10	226	251
<b>TOTAL</b>	<b>139</b>	<b>139</b>	<b>21</b>	<b>21</b>	<b>416</b>	<b>456</b>	<b>6</b>	<b>14</b>	<b>59</b>	<b>74</b>	<b>18</b>	<b>27</b>	<b>659</b>	<b>731</b>



Modes of Transportation



Source: Arc GIS