

A Review of Accessible Education Resources in Taipei City

Prepared by To-Hong WU

1. INTRODUCTION

Education is a global issue that concerns all family across different countries and time span. Parents always put the investment in children's education in the top of the list. It is so important that almost every country has the compulsory education policy which is usually between 9 to 12 years, throughout primary, middle and high schools. In order to carry out this compulsory obligation of their citizens, governments use the *school districts* to assign children to schools within each of the districts. However, considering the unevenly distributed socio-economic status of communities, there are usually good school district which parents are more inclined to send their kids to.

1.1 The Problem

There are lots of studies regarding children's education, from recognition to development, to the extent how the quality of education would effect the achievement in the future.

This study focuses on the education resources that can be adequately accessed by the neighborhoods. This study uses neighborhoods in Taipei City, Taiwan as a case study to examine if a gap exists among neighborhoods, regarding the accessibility to education resources.

1.2 Where to leverage Foursquare Places API

This study uses Foursquare Places API to collect the education resources (venues) that are accessible within a distance of each neighborhood.

1.3 Targeted Audience

The Government

Schools and libraries are important infrastructures that governments set up a budget for. However, it is difficult to measure the return on this investment, that is, the social benefit (in contrary to financial benefits) of schools and libraries, or where the government should put more resources. This study provides an example of good reference about where needs more attention from the government.

The parents

Many family would select a good spot to live in, and accessibility to education resources is always one of the most important feature when making such decision.

1.4 Quick facts of Taipei City, Taiwan

Taipei locates in East Asia and is the political and social-economic capital of Taiwan, where the Taiwan Government resides. Taipei City has a land area of 271.8 square kilometers (about the same size as Orlando, Florida), population of 2.6 million (close to the figure of Chicago), and a population density almost the same as New York City. The GDP (PPP) of Taipei City is estimated to be \$300 billion, slightly higher than Atlanta.

Chinese Mandarin is the official language, which is why in the rest of this study you will see Chinese characters, which this study will try to convert into English for better reading.

The old town of Taipei City was built in the end of 19th century, locating at southwestern side of current Taipei City. It is also where the Taipei Main Station locates. In this study you will see the old town is where most education resources are at.

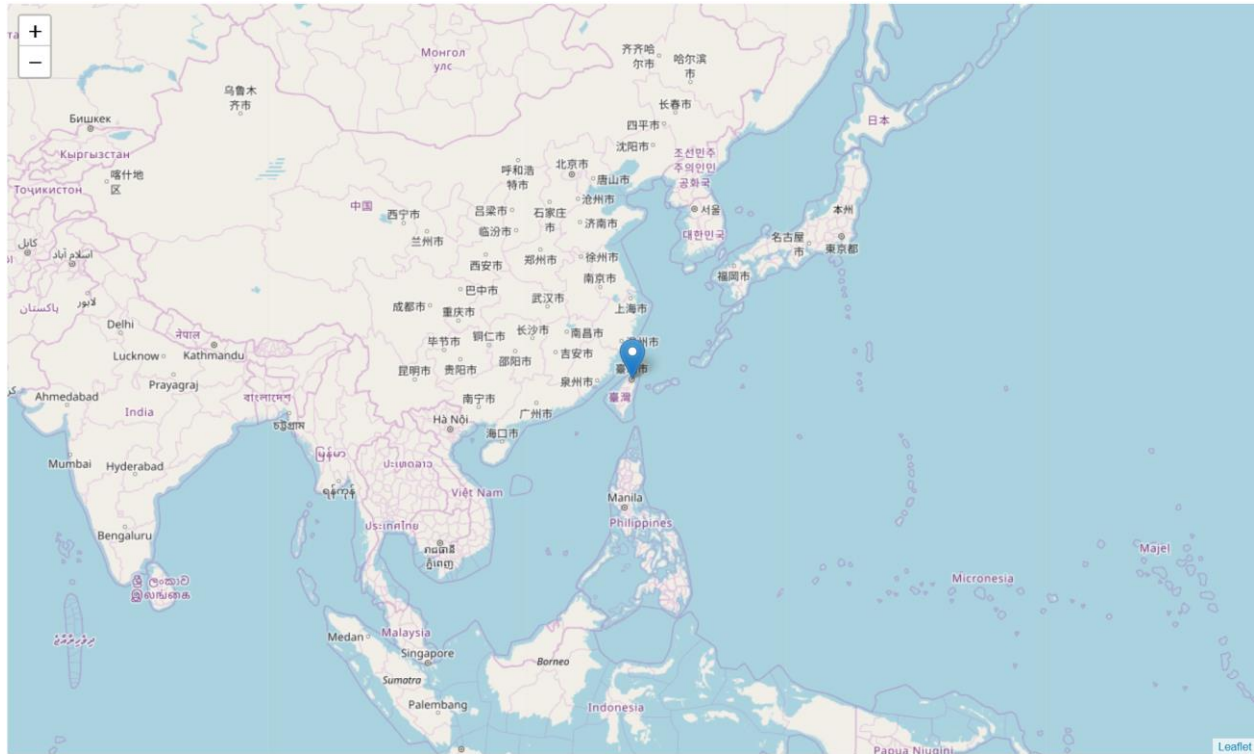


Figure 1. The location of Taipei City

2. METHODOLOGY

This study will collect the data of accessible education resources of each neighborhood in Taipei. By using K-means clustering, this study will divide the neighborhoods into 5 clusters and identify the cluster(s) which has a relatively weak accessibility to education.

The study will be carried out as follows:

2.1 Study of accessible education resources

This section will directly use K-means clustering on accessible education resources of each neighborhoods. The result will be a geometrical distribution of the clusters.

2.2 Study of accessible education resources per capita

The allocation of resources should take the population who will receive them into consideration. A more denser neighborhood should enjoy more resources. Following previous section, this section will calculate the accessible education resources per capita and remake the clustering model. The result should show where the per capita resources are distributed.

2.3 Study of accessible education resources per capita, taking socio-economic status into consideration

Some wealthier communities don't necessarily locate in the central part of the city. However this doesn't mean that kids from that community would have less access to education. Given that this study is aiming at providing a reference for policy making in regards of the allocation of education resources, the socio-economically weaker neighborhoods should be taken into account and given a priority in the resources.

In this section both socio-economic status and education resources will be used as variables to run the K-means clustering model, in order to identify the neighborhoods in need of the most help, that is, where the government budget could have the best return of social benefit.

2.4 Operational Definition of terms

Term	Definition
Education Resources	Venues acquired on Foursquare Places API. The categories of the venues limit to School, Library and Museum. Given that the compulsory education in Taipei is 9 years, this study will only consider the subcategories of Middle School, Elementary School and Preschool.
Accessible Education Resources	The education resources within a distance of 1,500 meters from the geometry center of a neighborhood.
Accessible Education Resources per capita	The accessible education resources divided by the number of population who are under 15 years old, due to the 9 years of compulsory education.
Socio-economic status	The median value of the household income of each neighborhood