

# Accessibility to Urban Facilities among Rural Older Malaysians

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**Abstract:** This article discuss a computer-based mapping tool called a geographic information system (GIS), which can present the inter-spatial variations for certain accessibility indicators of older Malaysians in color-coded or symbol-coded thematic maps. This article also introduces the GIS and how it can help in profiling certain characteristics of older Malaysians. Types of Out-of-home activities and perceived barriers to town among the older persons were also been explored in this study. In conclusion, it is recommended for both government and Non-governmental Organization (NGO) should take initiatives to identify the most effective ways of ensuring that the outdoor environment is designed inclusively to improve the quality of life of the older persons.

**Key words:** Older Persons; Out-Of-Home Activities; Perceived Barriers To Town; Malaysia

## INTRODUCTION

The older persons stated in this study refer to the older Malaysians. Based on the Census, there are 28.25 million in Malaysia in year 2010 and 7.4% of the total population is older persons with aged 60 and above and this number will rise up to 9.9% by 2020, 11% by 2025 and 15% in year 2035(Malaysia Department of Statistics, 2000). Although time series table is manage to efficiently illustrate the number of older persons in Malaysia, inter-spatial variations have been more difficult to communicate and Geographical Information System (GIS) might playing a vital role in reducing the gap between the communication gap. Demers (2000) in his book had defined GIS as “a computer system for collecting, checking, integrating, and analyzing information related to the surface of the earth”. And the use of GIS analysis is refereed as the uses of modern digital computer to measure, compare, and describe the contents of the database for aggregation and reclassification purposes (Awad, 2009). There are several good reasons to believe that people can be understand better using thematic maps and a geographic information system. Thematic maps, because they are visual portrayals of certain data, may enhance the reader’ ability to understand and remember the relationships contained in the data. Good visual presentations might help us remember important points. In addition to thematic mapping, most GIS systems can act as an interactive spatial database, when a person clicks the mouse on a particular respondent in State A, all of the respondent’s attributes values (e.g., income, age, net worth, address etc) are displayed in a table or browser window on the screen next to the color-coded

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map. Then, the individual can click on another respondent to compare its attributes with those from State B. Such comparisons allow users to place the development status of a given country in a spatial context.

## **1. ACCESSIBILITY, BARRIERS AND AGEING**

Activities and access are important issues for an individual especially among older persons. Engaging in more out-of-home activities are important elements in the quality of life of older persons. With the advancing age, older persons could face more difficulty to do their desire activities resulting from the possible loss of physical functions, societal processes of differentiation, unfavorable environmental and technological conditions. Particularly, mobility is necessary to overcome spatial distances in order to be able to carry out-of-home activities. Therefore, a fundamental prerequisite is not only for the supply of essential commodities and consumer goods, but also for the participation in social relations and activities. Accessibility for older person is a relatively new issue in any country whether it is a developed or under-developed country. Accessibility was defined as the ease of reaching destinations (Sarason & Doris, 1979) or in a broader aspects, accessibility involves all efforts in ensuring a equal access for every citizen to participate and have the same choices as non-disabled community members to use the transportation, technology, infrastructure facilities by eliminating all physical barriers (see New World Bank Publication About Access and Bus Rapid Transit article). To be precise, a barrier is anything that prevents a person from fully participating in all aspects of society due to the physical barrier, cultural orsocial barrier, psychological or attitudinal barrier and economic barrier.

Cultural factors also impacting the participation of older person in out-of-home activities. For example, cultural of Israeli Arab was not allowed women venture unaccompanied out of the “safe” radius around the home. As a result unaccompanied women buy only in the neighborhood stores, not in the more distant supermarkets. In South East Asia region, the culture of shame has been a factor why the older people do not participate in out-of-home activities. Dueling with this matter, Komardjaja (2011) in his paper given the similar statement as below:

“In the culture of shame visible physical appearance is more significant than the invisible forces that control attitudes. In such a culture, it is not easy for disabled especially the older persons to be accepted”.

Many older persons avoid going out at certain times, which can be complicating the trip by darkness or by heavy traffic or by busy facilities (Tacken, 2003). All of these factors become a psychological barrier to older person and has serious consequences, including a decline in ability to perform out-of-home activities of daily living. Economic barrier also can influence the participation of older persons in out-of-home activities. Poverty among older people is major economic barriers that hamper them to be active outside of their home. Taking account of the fact that the normal retirement age in Malaysia is approximately 55 years, many older persons live in poverty because the income provision beyond retirement is inadequate (Caraher, 2000). The cost of transportation is the primary economic accessibility barrier to older persons. The limited availability and high cost of public transport impact significantly on their mobility pattern.

## **2. WHAT IS GPS AND WHAT DOES IT DO**

GPS is the shortened form of NAVSTAR GPS. This is an acronym for **NAV**igation **S**ystem with **T**ime **A**nd **R**anging **G**lobal **P**ositioning **S**ystem. In Short, The Global Positioning System (GPS) is a worldwide radio-navigation system formed from a constellation of 24 satellites and their ground stations. GPS was originally designed for military use at any time anywhere on the surface of the earth. Soon after the original proposal were made, it became clear that civilians could also use GPS, and not only personal positioning (as was intended for the military). The first two major civilian applications to emerge were marine navigation and surveying. With the technology of GIS, social scientists have applied it to human rather than military or marine navigation purposes and new terminology – GIS. Geographical (or geospatial) information system can be defined as a computerized tool used to integrate, analyze and display spatial data and thus, it enable the researchers to capture and record the coordinate of the respondents upon the interviewed session.

### **3. METHODOLOGY**

#### **3.1 Population and Sampling Method**

The study area is located in Kajang urban area, Selangor at latitude 2° 58" N and longitude 101° 46" E and the sample in this study is older Malaysians aged fifty and above and the sample are taken from the mini census collected by Institute of Gerontology, Universiti Putra Malaysia (UPM). The mini census covered whole Kajang area, both rural and urban with a total of 417 enumeration blocks (EBs). Of the 417, 59 enumeration blocks, which had located in the top left of the Kajang, Selangor are rural area. From the mini census, there are a total of 17,096 listing forms have been collected started from Jun to September, 2004 and Jun to July, 2005. Of the 17,096, 3,886 cases were identified as household with at least one older person (age 60 and above) and 5,614 cases as elderly household. Due to the finance and time constrains, the team have decided to select 1,000 respondents using proportionate sampling in considering the age group (3 cells), stratum (2 cells) and gender (2 cells). Hence, a list with 1,000 names was selected randomly using SPSS Version 13. When looking for the response rate, 821 completed questionnaires were used for further analysis with six drop out. However, this report only analyzed the rural samples as the objective of this study is focus on accessibility to urban facilities among rural older Malaysians.

#### **3.2 Enumeration Training**

Before the interview session, an enumerator training was conducted on 4<sup>th</sup> March 2006 in Meeting Room, Institute Gerontology. A total of 22 enumerators have gone through a five hours training conducted by research officers, focusing on their duties, responsibilities, wages, insurance, code of ethics, way to fill in the OMR questionnaire and GPS training. In details, most of the enumerators are UPM undergraduate students and the remaining are graduate students from UPM.

#### **3.3 Instrument**

The instrument for data collection was in the form of questionnaire and written in English and Malay. The questionnaire was divided into five sections: respondent's backgrounds, activities of daily living (ADL), financial status, self rated health, perceived barriers to town (PBtT) and the last section determines the respondents' out-of-home-activities. Activities of daily living (ADL) among the respondent was assessed using ten statements covering the aspects of Feeding, Bathing, Grooming, Dressing, Bowels, ladder, Toilet Use), Transfer (Bed to chair and back), Mobility (On level surfaces and Mobility (Stair) from the Barthel ADL Index. The scores for each question were then totaled to obtain the total. The highest score possible was 100 and the lowest was zero. Greater score indicates higher capacity in doing their dairy routine job for an individual. Majority of the respondents has a high score of ADL, indicating that they are able to perform their daily activities. For financial status, the respondents are given five possible answers and each of them is required to give the most suitable answer of their present income adequacy using 5-point Likert-type scale. For the respondent who felt that the income is not adequate quoted as "1", "2" was quoted as "adequate for basic needs", "3" for "Adequate for most things but not all", "4" for "Adequate for all things needed" and "5" refers to "Adequate for all needed and enough to save". For health status, this study used a single item measure to determine the health status of the respondents. Each respondent are given five possible answers and each of them is required to select the most suitable answer of their present health status. For the respondent who felt that his/her health status is "Very good" quoted as "1", "2" was quoted as "Good", "3" for "Bad", "4" for "Very bad" and "5" refer to "Not sure".

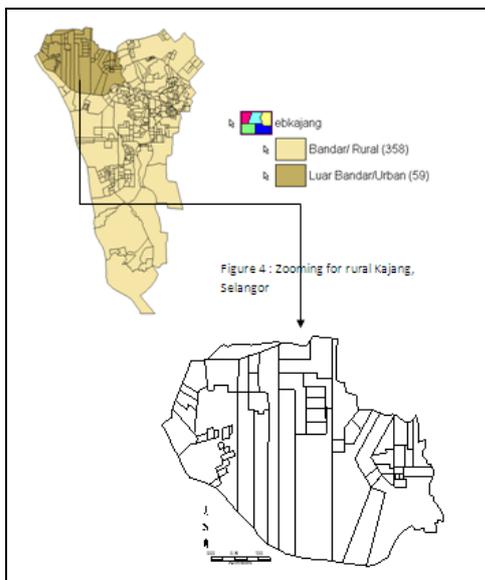
Perceived Barriers to Town (PBtT) is a self created instrument with 0.559 of Alpha Cronbach value. It consists of ten statement with dichotomous scale (yes or no) (Too crowded, Climatically Factors, Financial Problems, No Transport, Restricted by spouse orfamily members, No companion/s, Disability, Communication Barriers, Phobia in getting lost and the Cultural Barriers). Greater score of the score indicates that one might have greater barriers accessing to town. Out-of Home Activities refers to the frequency of visiting certain places within the respondents' living city per month. The study has identified twenty public facilities orplaces available in the study location. Respondents were asked the location one by

one by the trained enumerator the motives, duration (hours), with whom to visit the places. The greater the number of out-of-home activities indicates a better connection of social living lifestyle.

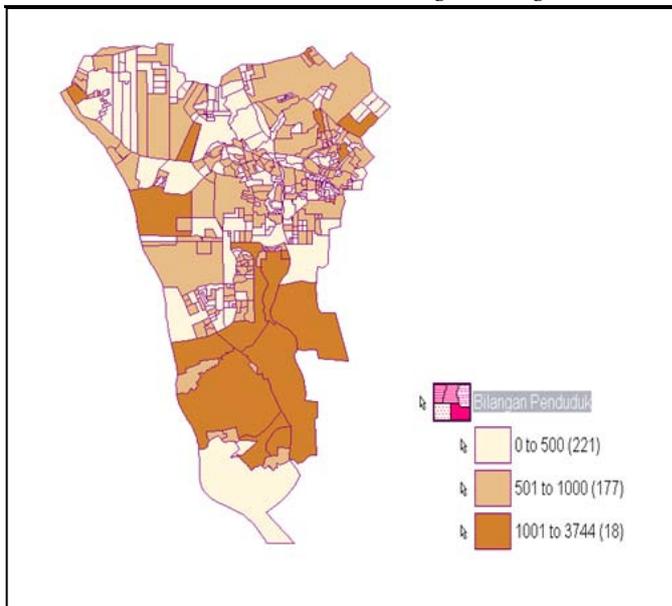
## 4. RESEARCH FINDINGS

### 4.1 Mapping

The research findings start with some graph presentations taken from the GeoMedia Version 6.0 software to show the location of the study. It then shows the exact location for each respondent and certain selected variable. This followed by description of the respondent's background, also the findings related with respondents' financial status, health status, perceived to town barriers and out-of-home activities. Later, the public facilities in Kajang Town were also been pin-point in this study to show the mobility pattern among the Kajang elderly. Figure 1 shows the location of Selangor. The same Figure shows that there are a lot of sub-districts in Selangor state with its own boundaries. Kajang, which is located at the right-bottom of the Selangor state, was chosen in this study. Figure 2 shows the distribution of the population in the study area by using the enumeration block with year 2000 census that provided by the Department Statistics, Malaysia. The darker the shading indicates higher density of population within the EB. It is clearly found that the distribution of the residents is varied by its location. In general, the high density of population is located in the bottom of the Kajang map. Further analysis found that there are 18 EBs with population more than 1,000 residents while 221 EBs with residents less than 500 residents. It is not worthy that the area for each EB is not the same and thus, a smaller EB with residents more than 500 is definitely more crowded than a bigger EB with the same amount of residents. Obviously, the centre of Kajang, which is the town area, is more crowded compared to other areas. By applying the GIS into the population mapping, it is clearly seen that the aging effect is more pronounced in rural areas than urban locations due to migration of young people to urban area or other country. Therefore, the rural areas are aging more rapidly due to the loss of younger population to the city. The quick growth of the urban areas slows down the rate of aging although the absolute number of older persons residing in the location has increased over years. The proportion of population age 60 years and above in a given community is influenced by the local fertility and mortality changes which is derived from the external flows of in-migrants and out-migrants of different ages. This change would result in ageing in place. Ageing in place refers to the process of change which accrue from births, individual ageing and deaths within a given area and net migration as the summation of changes arising from external flows. Therefore demographic ageing must also take into consideration the geographical and spatial issue of population distribution.



**Figure 1. Kajang Map by Stratum**



**Figure 2. Distribution of Kajang Population, Year 2000**

#### 4.2 Profile of the Respondents

A total of 253 older persons were interviewed and it covers three main ethics in Malaysia. They were Malay: Chinese: Indian; 6:2:2 respectively. The mean age of the respondent is 56 years. Fifty-one (51.0%) percent were males and forty-nine (49.0%) were females. Majority of the respondents (88.1%) were married and the remaining were either widow or widower (11.5%) or single (0.4%). The widowhood of older persons is high compared to the rest of the population as it might cause of the longer life expectancy factor and marital dissolution also takes place with the death of either spouse among older couples. Since female can live longer than men, this results a larger proportions and numbers of widowed females in this study. The older persons in this study were born more than half decade ago and that was the time before Malaysia gains her independence. They have less opportunity in receiving formal education and thus, the education level attained by these respondents was relatively low. About 25.0% of the respondents reported they never attended school. Three out of every ten female respondents never have formal schooling compare to every two out of ten for male respondents. Majority of the respondents has a high score of ADL, indicating that they are able to perform their daily activities. Plus, if we look into the Table 2, about 91 percent of them have a full score for ADL. It calls that age is crucial in determining how good of a person's ADL and, in fact, the overall median age of the respondent in this study is still considered young-old age group.

**Table 1  
Profile of the Respondents**

	Male (n=129)		Female (n=124)	
	n	%	n	%
<b>Age group</b>				
50-60	93	36.8	84	33.2
61-70	28	11.1	27	10.7
71 and above	8	3.2	13	5.1
<b>Ethnicity</b>				
Malay	87	34.4	58	22.9
Chinese	22	8.7	31	12.3
Indian	20	7.9	35	13.8
<b>Educational Attainment</b>				
Never to school	21	8.3	43	17.0
Primary School	65	25.7	55	21.5

Secondary School	39	15.4	24	9.5
Diploma Level / STPM	4	1.6	2	1.0
University Level	21	8.3	43	17.0
<b>House Ownership</b>				
Own	84	33.2	20	7.9
Others	45	17.8	104	42.1
<b>Types of House</b>				
Landed	67	26.5	61	24.1
High Rise	62	24.5	63	24.9

**Table 2**  
**Cross-Tabulation Results of Self-Rated Health Status By Gender**

			Gender		Total
			Male	Female	
<b>Self Reted Health</b>	Very bad	Count	2	4	6
		% with Gender	1.6%	3.2%	2.4%
	Bad	Count	31	20	51
		% with Gender	24.0%	16.1%	20.2%
	Good	Count	81	88	169
		% with Gender	62.8%	71.0%	66.6%
	Very Good	Count	15	12	27
		% with Gender	11.6%	9.7%	10.7%
<b>Total</b>	Count	129	124	253	
	% with Gender	100.0%	100.0%	100.0%	

When studying the financial status of the older persons, the present study did not record the exact level of income from the respondents due to two main reasons. The first and the most pragmatic one, was that the survey was conducted in MPKj (Municipality Council Kajang) area where the range of income of individual households is not as wide as that of Malaysia society as a whole. Second, although poverty exists in objective terms, it is perceived divergently by individuals (Pandey & Singh, 1989). In this study, the respondents are given five possible answers and each of them is required to give the most suitable answer of their present income adequacy using 5-point Likert-type scale. The study revealed that about 15.0% of the total respondents answered inadequate income adequacy and most of them are from “Young-Old” age group and Malay respondents. Self perceived health among the respondents is quite positive considering 90.0% of the respondents rated their own health as “good” and “very good.” Only a small fraction (2.4%) rated themselves in poor health condition. The finding of this study was consistent with Malaysia previous study (Aizan, Jariah & Chai, 2004). The study used to compare the physical status of older Malaysians using two different studies among older Malaysian (Chen, Andrews, Josef, Chan and Arokiasamy, 1986) sponsored by the World Health Organization (WHO) in 1984 and the IRPA project entitled Perception of Needs and Problems of the Elderly study in 1999. Aizan, Jariah & Chai (2004) found that older person today are more functional as the percentage of elderly who cannot perform specific tasks of daily living goes down. Both studies recorded the number and percentage of elderly who are unable to perform activities of daily living. To note, those who have experienced poorer health rated their financial status more insufficiently than those who have better health. Male have a bigger percentage compared to male in perceiving both in “Bad” and “Very Bad” health status. A reverse pattern was observed while female have a bigger percentage compared to male in perceiving both in “Good” and “Very Good” health status. Figure 5 covers the major public facilities in Kajang Town. This study only took one reference point for each public facility instead of the exact area of the place. However, each of the point was taken about 3 meters in front or the entrance of the building.

For perceived barriers to town, the study found that the three main reasons the older rural residents reluctant to town is because of (1) the town is crowded, (2) the town is hot/humid and (3) financial factors. Further analysis also found that PBtT marked a significant negative correlation with ADL age ( $r = -0.18, p < 0.05$ ), which clearly showed their physical status will influence the perception of PBtT directly, or verse

vice. Again, older female tends to have higher score in this matter than male ( $t = 2.24, p < 0.05$ ). Besides, there is also a significant difference between the perceived income adequacy and PBtT ( $\chi^2 = 54.721, p < 0.01$ ). In short, perceived poor older female tends have more barriers to town than other groups. When looking into Out-of-Home Activities, the study has identified few public facilities or places available in the study location and with greater the number of out-of-home activities indicates a better connection of social living lifestyle. When asked whether the respondent go out-of-home to the certain location/s or not, about forty percent of the respondent never out-of-home for the locations mention. For those who go out during the study period, shopping complex, market and hospital are the top three highest places that urban elderly assess to town (Figure 5). As predicted, older male have a higher mean of out-of-home compared to older female ( $t = 2.73, p < 0.01$ ).

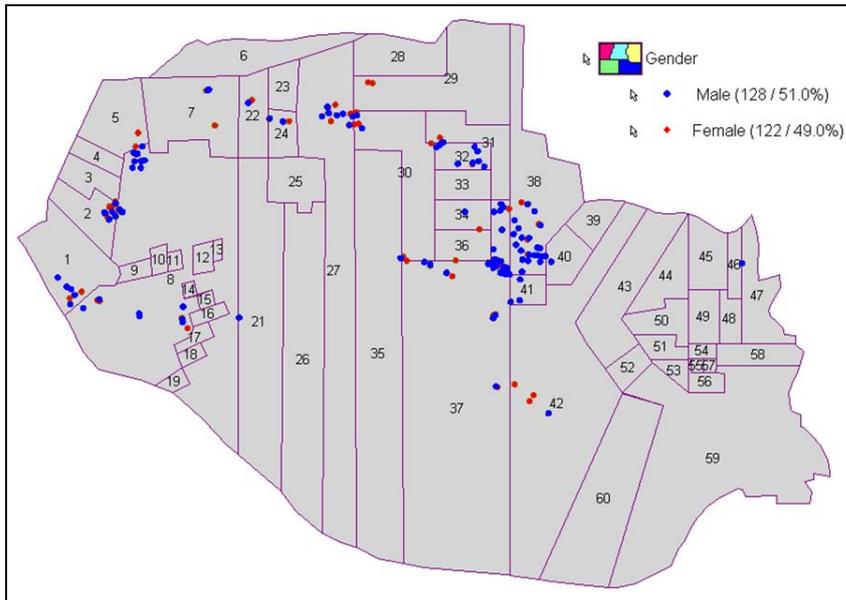


Figure 3. Distribution of the Respondents by Gender

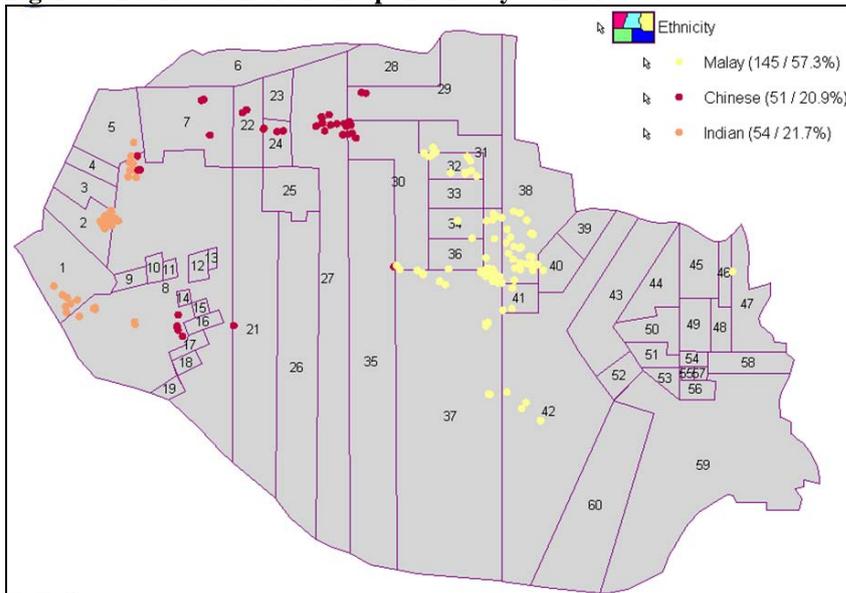
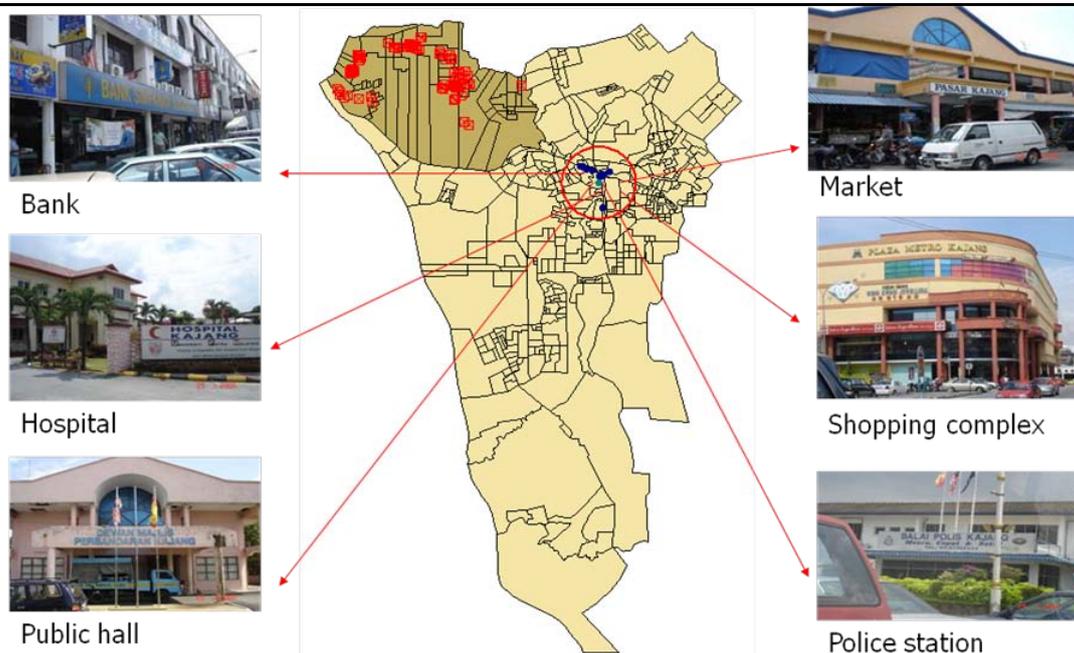


Figure 4. Distribution of the Respondents by Ethnicity



**Figure 5. The Major Public Facilities in Kajang Town**

## **CONCLUSIONS AND RECOMMENDATIONS**

Accessibility for older person is a relatively new issue in any country and it refers to the access to transportation, election access, access to water supply and sanitation, technology access, appropriate sources of communication to ensure information and an infrastructure that breaks down all physical barriers preventing equal access for all members of a community. In this study, a barrier is anything that prevents a person with a disability from fully participating in all aspects of society because of their disability, including a physical barrier, cultural or social barrier, psychological/attitudinal barrier and economic barrier. The sample in this study was targeted for older persons who reside in rural Kajang, Selangor and it aims to examine their accessibility pattern to urban facilities. A total of 253 older persons were interviewed and it covers three main ethics in Malaysia with mean age of 56. The distribution of the respondents was about equally distributed in terms of gender. Majority of them (88.1%) was married and less educated. Sample is fairly homogenous in terms of their ADL and SRH. Study found that there are significant relationships between age, Perceived Barriers to Town and the number of Out-of-Home activities. Barriers especially the climatically factors, too crowded, no transport prevent the older persons from experiencing and practicing healthy ageing. In short, there is an urgent need for barrier free environment to create a healthy city for the older persons, now and in future. Looking at accessibility, accommodations need to be made to allow for individual mobility, regardless of functional impairments. Last, it is important to ensure that the urban areas are safe, welcoming, accessible and legible otherwise older persons can become effectively housebound. Since getting outdoors has many benefits in psychologically, socially and physically, it is recommended for both government and NGO take initiatives to identify the most effective ways of ensuring that the outdoor environment is designed inclusively to improve the quality of life of the older persons.

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