

## Usage of Public Bus in Brunei: A Demographic Analysis

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### ABSTRACT

This paper deals with the factors of demographic and socioeconomics characteristics as the determinant of the public transport usage in the developed country. Although in many parts of the world, the usage of their private vehicles for commuting purpose are due to lack of satisfaction they derive from the services of public transport that they used. To some country, the condition did not apply. This is mainly due to the demographic factor especially income. Therefore, the main objective of the paper is to analyse the demographics and socioeconomics attribute of Brunei public transport user and to measure the modes and frequency of public transport usage In Brunei Darussalam.

**KEYWORDS:** Demographic, Socioeconomics, Transport Service, Income, Bus Usage.

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### INTRODUCTION

A modern transport system which provides high quality of services has been a topical issue in transport modeling literature in many country. Evidently, the potential of influencing the current private car users to switch to public transport is still limited if the existing quality of public transport services cannot be made to compete with the car [3, 8, 12]. It is likely that it will also be necessary to take measures that reduce the attractiveness of car use, especially when their income level is higher [1].

Previous research has disentangled several factors that make public transport attractive to the current users. One of the finding had identified the factors of the public transport such as access to bus stops, waiting time, trip length, vehicle design, drivers' interaction with users and travel information will improve the satisfaction of users and thus increase the usage [10]. Another study found that travel time and fare have the largest influences on dissatisfaction, whereas frequency of service and seat availability were the largest sources of satisfaction [7].

### LITERATURE REVIEW

#### Bus Usage Factor

In research on customer satisfaction especially on the factor of bus usage, usually the measurements are made of the degree to which goods or services fulfill needs [8]. The transport system provides a service that fulfill travel needs and satisfaction should thus be defined as the degree to which it does this. In travel behavior research, travel is generally viewed as being instrumental for participation in activities in different places [4]. In assessing need fulfillment by means of self-reports, studies have elicited cognitive judgments of satisfaction with the transport system related to cost, travel time and punctuality [5]. But, also other factors may be important including for instance travel information [6, 14].

#### Income and Bus Usage

The broad relationships between income, car ownership and the demand for public transport are well documented. Despite this, the exact relationships and the correlation between all three factors and in particular between income and car ownership would appear to be only marginally clearer since the original demand for public transport publication [8]. They also concluded that as income is expected to increase the number of trips and their average journey length. It is likely that this additional travel will be split between increased public transport trips and increased car trips. This will again depend upon the level of car availability and assuming that public transport is perceived as good.

Travel demand due to the urbanization process will normally increase the number of private vehicle ownership [10]. This will in return reduce the usage of bus in the city centre. Many people tend to choose to

travel using their own vehicle as compared to the public transportation due to lots of hassle and unreliable condition of public transport that they have to went through [11].

The measure of service elasticity for a stage bus service have been found to be considerably greater on Sundays and in the evenings when the bus service levels are generally lower [11]. Similarly, the level of elasticity tend to be higher in rural than in metropolitan areas, where service levels are higher [4]. However, there is some evidence that bus demand is shown to be more service elastic in big cities (with populations of over 500,000) than small towns because of the competition from other public transport modes. It is also suggested that service is valued more highly in large cities due to higher income levels [6]. Thus, the objectives of the study is as follows:

1. To analyse the demographics and socioeconomic attribute of public transport user
2. To measure the mode and frequency of public transport usage

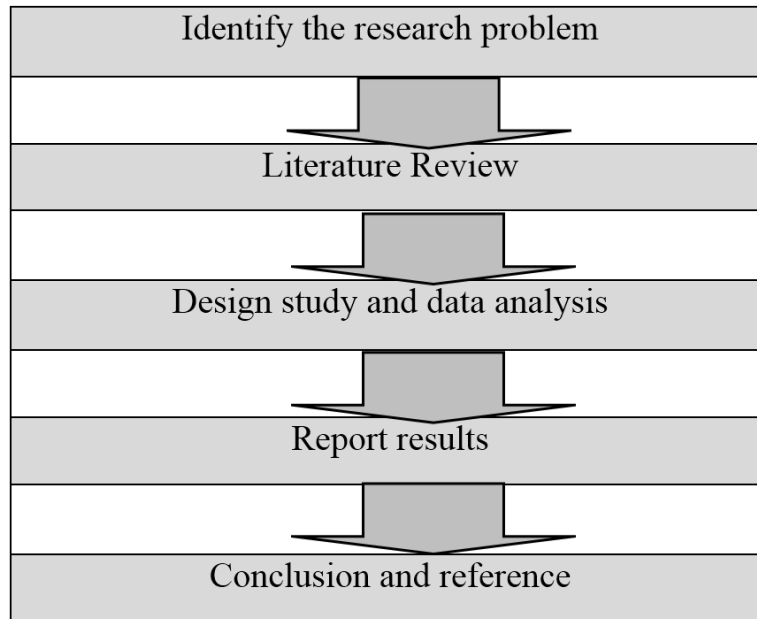
## RESULTS AND DISCUSSION

To examine the mode of frequency of public transport the study begin with an analysis of demographic and socioeconomic attributes of current stage bus users in Brunei. Data were collected through a set of questionnaire, which is personally administered to a set of bus users in Brunei city. This is consider as the most common tool to assess respondent information. A total sample of 40 respondents were randomly selected to complete the questionnaire given. Bus stops and terminal surround Brunei city were selected as a distributing point for the questionnnaire. The questionnaire was divided into two parts, which is demographic and socioeconomic [2].

The first section of the demographic part consists of respondent background such as age and marital status. Age was categorized into the following groups: 18-22, 23-27, 28-32, 38-42 and 43-47. While, there are two marital status categories recorded which are married and single.

Another part is socioeconomic which includes, items such as income, mode of transport, occupation and frequency of public transport. Income was categorized into the following groups: <BND500, BND501-BND1000, BND1001-BND1500 and >BND 1500. Mode of transport was measured by stating a three option to choose which consist of stage bus, taxi and private vehicle. Occupation was then categorized into government, private and self employment and lastly the frequency of public transport was measured trough a weekly usage [3].

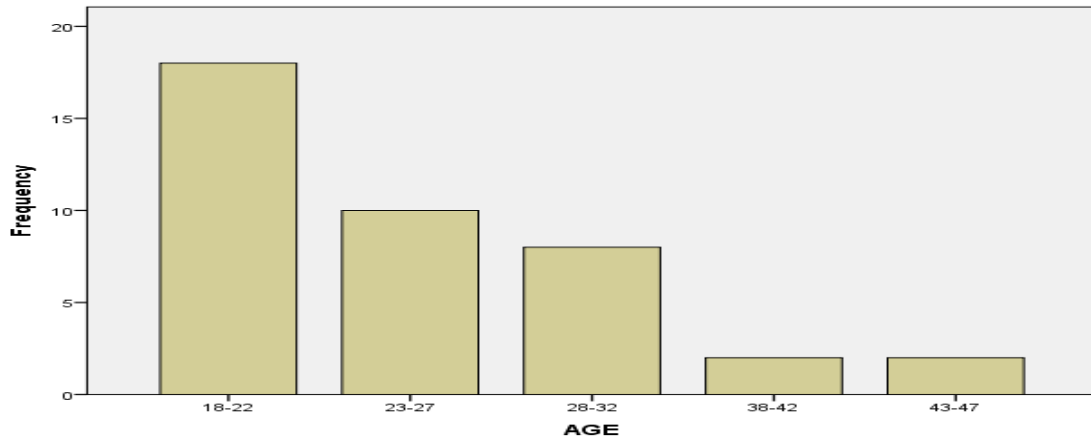
The data was collected by personal interview with public transport user as main target of the study. Details of Brunei public transport user data collection and the procedure of the data analysis are illustrated in Figure 1 [13].



**Figure 1: Design illustration of research process**

SPSS software was used for data input and analysis. Descriptive analysis was conducted to analyse the demographic and socioeconomic attributes as well as the modes and frequency of public transport in Brunei. Descriptive statistics are brief description coefficient was used in this study. The analysis was used to summarize and describe the property of samples data that had been collected from this survey.

Firstly, Figure 2 showed Brunei public transport user consist of primarily individual between the age of 18 to 22 years. This was then followed by the range of age between 23 to 27, 28 to 32, 38 to 42 and 43 to 47.



**Figure 2: Age**

This result indicated majority public transport user in Brunei is young and from adult category as 45%, 25% and 20% for range between 18 to 22, 23 to 27 and 28 to 32 (refer to Table 1). At the same time, senior citizen was the minority user with the 5% for both range of age between 38 to 42 and 43 to 47. The charts debunks the myth that senior citizen switch from public transport to other mode. Brunei has majority young public transport user due to low income earner.

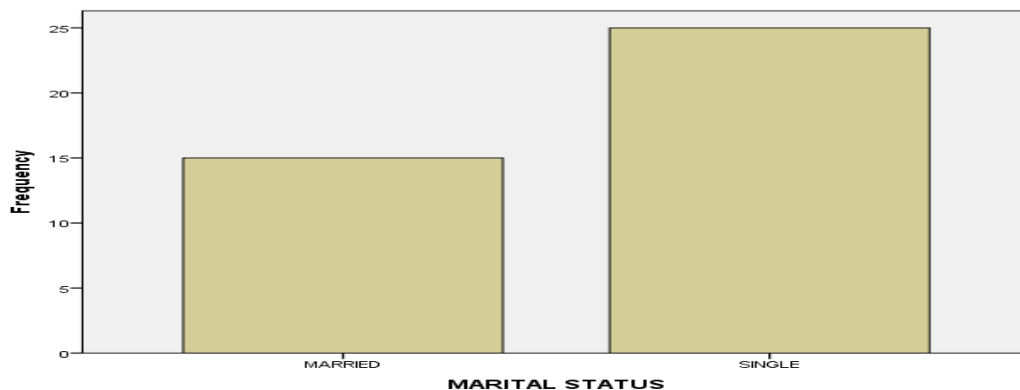
**Table 1: Frequency table for age analysis**

Age	Frequency	Percent	Valid Percent	Cumulative Percent
18-22	18	45.0	45.0	45.0
23-27	10	25.0	25.0	70.0
28-32	8	20.0	20.0	90.0
38-42	2	5.0	5.0	95.0
43-47	2	5.0	5.0	100.0
<b>Total</b>	<b>40</b>	<b>100.0</b>	<b>100.0</b>	

Second, marital status showed that public user in Brunei primarily was single by 62.5% (25 frequencies) compared to 37.5% (15 frequencies) married user as shown in Table 2 and Figure 3. This finding was support by Borneo Bulletin reported that majority user of public transport in Brunei was migrant workers who mostly are single that usually go to the city in the weekends to hang out with their friends.

**Table 2: Frequency table for marital status analysis**

Marital Status	Frequency	Percent	Valid Percent	Cumulative Percent
Married	15-25	37.5	37.5	37.5
Single	25	62.5	62.5	100.0
<b>Total</b>	<b>40</b>	<b>100.0</b>	<b>100.0</b>	

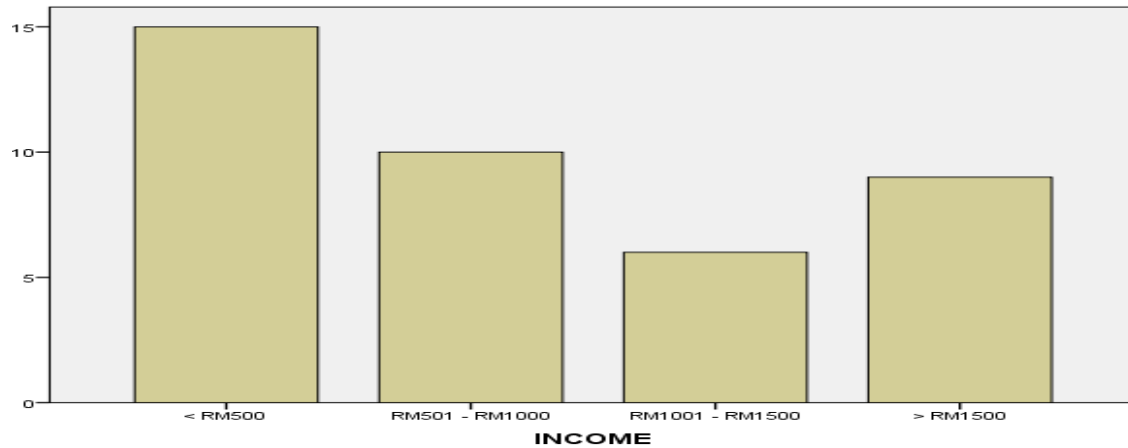


**Figure 3: Marital status**

Third, income of Brunei Public transport user report a wide range (refer to Table 3 and Figure 3). The income less than BND500 are reported by 37.5% of public transport user; 25% from BND 501 to BND 1000, 15% from BND 1001 to BND 1500 and 22.5% from more BND 1500. All income is in Brunei Dollar 2016. The trend of income show as expected, where people of low income use public transport more compared to higher income group.

**Table 3: Frequency table for income analysis**

Income (RM)	Frequency	Percent	Valid Percent	Cumulative Percent
< 500	15	37.5	37.5	37.5
501-1000	10	25.0	25.0	62.5
1001-1500	6	15.0	15.0	77.5
> 1500	9	22.5	22.5	100.0
<b>Total</b>	<b>40</b>	<b>100.0</b>	<b>100</b>	



**Figure 4: Income**

Next, Figure and Table 4 confirmed that those who are working in private sector depend more on stage bus (62.5%) as compared to those who work in government sector (32.5%) and self-employed (5%). Occupation in this analysis refers to user usual primary activity and does not refer to the purpose of the trip being taken.

**Table 4: Frequency table for occupation analysis**

Occupation	Frequency	Percent	Valid Percent	Cumulative Percent
Government	13	32.5	32.5	32.5
Private	25	62.5	62.5	95.0
Self employment	2	5.0	5.0	100.0
<b>Total</b>	<b>40</b>	<b>100.0</b>	<b>100.0</b>	

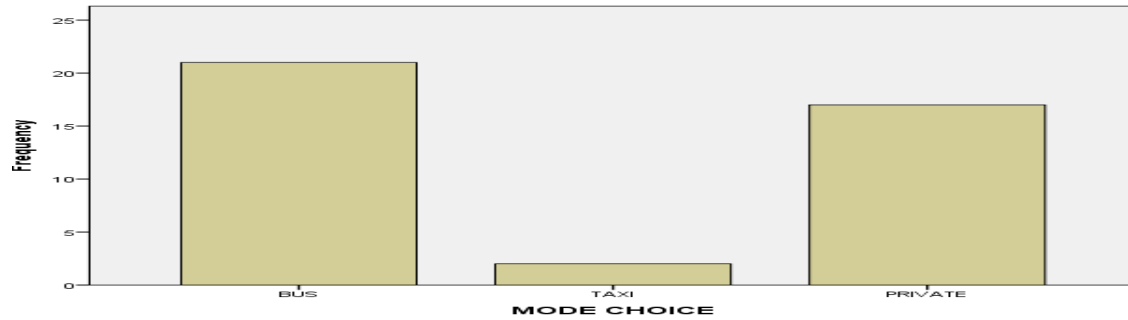


**Figure 5: Occupation**

Furthermore, with the available public transport riders in Brunei, (refer to Table and Figure 5) showed bus was the primary choice by 52.5%. This is followed by private transport which account up to 42.5% and the least mode of transport chosen is taxi which account up to only 5%. One of the possible reason to this is the low income earn that makes bus usage attractive to them.

**Table 5: Frequency table for mode choice analysis**

Mode Choice	Frequency	Percent	Valid Percent	Cumulative Percent
Bus	21	52.5	52.5	52.5
Taxi	2	5.0	5.0	57.5
Private	17	42.5	42.5	100
Total	40	100.0	100.0	

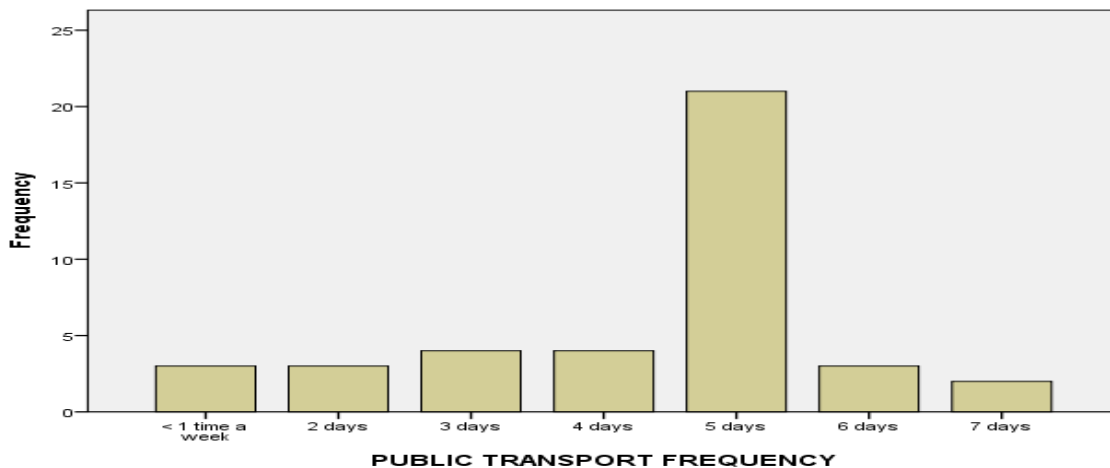


**Figure 5: Mode choice**

Lastly, Table and Figure 6 showed the frequency of transport usage in a week by public transport user in Brunei. Majority of the user use public transport 5 days in a week (52.5%). While, other rider use public transport from 3 to 4 days in a week (10%) 7.5% of user will use public transport for 2 days and 6 days and only 5% will used the public transport for 7 days. The result indicate that most public transport trips are taken by regular riders.

**Table 6: Frequency table for public transport frequency analysis**

Public Transport Frequency	Frequency	Percent	Valid Percent	Cumulative Percent
<1 time	3	7.5	7.5	7.5
2 days	3	7.5	7.5	15.0
3 days	4	10.0	10.0	25.0
4 days	4	10.0	10.0	35.0
5 days	21	52.5	52.5	87.5
6 days	3	7.5	7.5	95.0
7 days	2	5.0	5.0	100.0
Total	40	100.0	100.0	



**Figure 6: Public transport frequency**

## CONCLUSION

This study explore the characteristics of stage bus users in Brunei from demographic and socioeconomics perspective. Although it is agreed that attractiveness of the public transport act as a contributing factors, age and income had influences public bus usage among the society even in developed country like Brunei. Most of the active public transport in Brunei are among the younger age group which is consider as active users with lower income. The usage of public transport among the senior citizen is less due to the fact that car ownership is affordable to them. This was further confirm with high percentage of public transport usage were reported to be among single women as compared to married women. Those with more the BND 1500 tend to reduce their dependency on public transport usage as owning a car is more attractive to them. Analysis on the employment catageory and the usage of public transport found that the private sector workers depend more on public transport as compared to the government sector. Last but not least, among the public transport provision in Brunei city, majority of the users choose to travel by bus due to its cheap price and the reliability to commute on daily trips.

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