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## **FEMALE USERS AND LEVEL OF SAFETY AT LIGHT RAIL TRANSIT STATION, PETALING JAYA, SELANGOR**

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### **Abstract**

Public transportation is an important way of moving people or goods from one point to another point of destination. Light Rail Transit (LRT), Monorail, taxis and buses are currently a good choice for people, especially those who work at the city centre. Lately, the light rail transit was seen to be preferable by all, especially in the area with heavy traffic congestions. The increased number of vehicles heading to the city centre day by day causes the delay in traffic movement on the road. This can easily be seen especially in the morning when people are mobile to work and at the evening time after the working hour. Choosing the public transportation as LRT has helped much in reducing the congestions in many roads to the city centre. Apart from the intention to ensure the minimum road congestion, the other concern is the safety parameter. The safety level among the passengers must also become a priority matter especially for female users. Nowadays, the female users were seen to become more aggressive using the LRT to work, shopping, travelling short distances or for weekend sight-seeing. This is a good sign in the transportation sector as people had noticed that using the LRT would help to reduce mileage, cost, reduce stress, and promote a healthy lifestyle. This research will investigate the safety level among female users in using the LRT in selected destinations and to identify the unsafe location along the walking trails from or to LRT station.

**Keywords:** Female users; Light Rail Transit (LRT); Level of Safety; Location

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## INTRODUCTION

The light rail transit (LRT) is a common city rail transit track in develop countries, and it can be constructed in a variety of configurations. Based on some international practices, the train sub-surface tracks are normally located below the road level, and usually aligned with the road pattern. Practices at overseas shows that some independent alignment tracks were seen to have a design that followed under the building constructions, parks, water bodies, or other railways. Many aerial pathways aligned with the pattern of the road. LRT stations in some countries have easy ground level platforms where travellers can securely board and underground stations can be securely served as electric railcars emit dangerous fumes into the environment The design seems applied differently in Malaysia, where the train tracks were built at the independent land surface and were built in far distance from the major road. Some latest designs are to be found above the road level and aligned with the road pattern.

The main concern by the LRT passengers in all places, are the level of safety. Safety is a vital element that has always been highlighted in the research involving spaces. Previous research showed that female users are more worrying compared to male (Shamsul, 2019). Living in the urban areas have urged the public to choose the LRT and the percentage of female users using this public transport is growing. However, the number of female users potentially becoming the victims of crime are also increased. The hot spot crime near the area of transit rail is somewhat unpredictable. Based on a previous study by Siti and Aldrin (2011), the correlation between fear of crime (FOC) and gender was seen as significant even though the crime itself does not directly reflect the transport-related crime. Traditionally a high crime occurrence subscribes to the belief that the higher the crime rate in an area, the higher the chances of becoming a victim of crime in that area.

The transit system uses various methods to improve the safety of transit vehicles, including the use of surveillance cameras. The impression of poor infrastructure around the LRTs station, especially footpaths, poor designs and bus stop maintenance, inadequate security measures throughout the journey may risk female movement into the risk of criminal violence (Howie, 2000). Safety parameters specifically for female users in the Light Rail Transit should be discussed seriously, as cases involving them were often reported while using the public transportation. Special coach for female users may become part of safety indicators in the overall journey using the LRT, but this should extend to the time that they are walking from or to the LRT station. Bullied, robbed and sexual harassment are the most unwanted scene to happen while in a journey using the public transportation. Sexual harassment and other forms of sexual violence in public space could happen everywhere or even in LRT coach.

## **FEMALE USERS AND SAFETY CONCERNS AT LIGHT RAIL TRANSIT**

Safety is a big deal for a traveller where it begins from the starting point of their home, travels out to certain destinations until they are safely back home. The moment they are away, the risk of being victims seems to exist. Normally the violence towards female users is quite higher than the male users. Sexual harassment and other forms of sexual violence in public space are daily occurrences and become threatened to females. It can be happening anywhere on the street, in and around public transport, schools and workplaces, in public sanitation facilities, parks and many more. Specific awareness and information campaigns on trains, on platforms or at stations aiming to inform passengers that in the event of sexual harassment they may call certain phone numbers or use certain applications to seek help. This is also applied in Malaysia public transport too. The goal is to raise public awareness on the topic and increase civic courage.

In some countries the train company proposes separate female trainers on long-haul trains. Malaysia is seen to apply the same rules too and it is extended to the light rail transit. The safety of the females was not only to stop that privilege on the couch, but it has to be extended to ensure that they are safe to walk out from the LRT no matter day or night time.

### **AIM AND OBJECTIVES**

The aim of this research is to explore the level of safety among female users at the Light Rail Transit (LRTs) in selected stop-stations of Petaling District, Selangor. Two objectives were laid out to support the aim, that are:

- i) To study the perceptions of female users towards safety feelings.
- ii) To analyse the level of safety among the female users at night-time.

### **THE STUDY AREA**

The study area covers the light rail transit of Kelana Jaya stations in the Latitude 3 ° 6'45.24 "N and Longitude 101 ° 36'13.09" E by Google Earth. Figure 1 shows the routes of the Light Rail Transit transport flow at Kelana Jaya area.

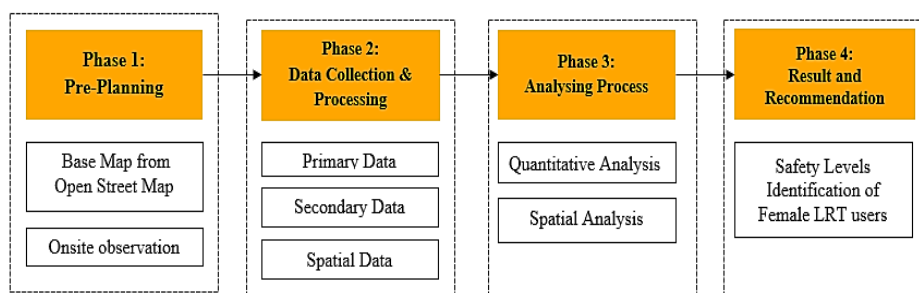
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 Female Users and Level of Safety at Light Rail Transit Station, Petaling Jaya, Selangor



**Figure 1:** Light Rail Transit  
 (LRT Corp, 2017, Source: Google)

## RESEARCH METHODOLOGY

This study comprises 4 phases that start with the initial study, followed with the data collection, the data processing and analysis, and finally the research findings. The core of this research is to check on the security and the safety level of the LRT users. The selected area is within the Kelana Jaya Light Rail Transit (LRT) station. The base map from the open street map is used to indicate the LRT transport route. This research uses the physical interview session around the LRT station. The questionnaire via google form was also used to get the number of feedback from the online respondents. Figure 2 shows the research methodology flowchart.



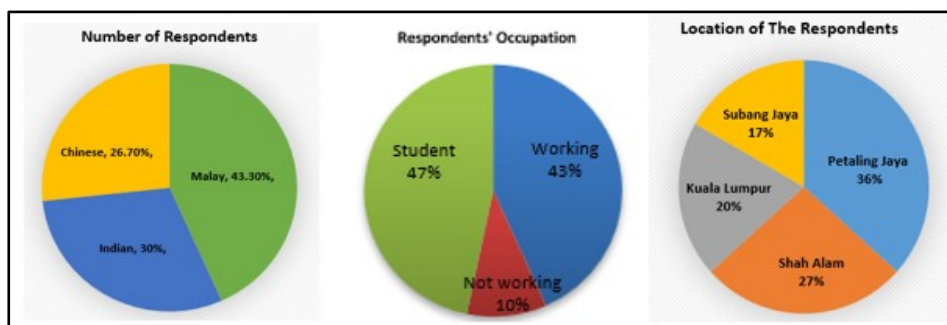
**Figure 2:** Research Methodology Flowchart

## **RESEARCH FINDINGS**

The benefits of light rail transit as optional public transport can be based on the user's perception towards their satisfaction when using the rail transit. Roughly 8 out of 10 rail passengers are satisfied with the ease of buying tickets at the train terminal, especially with the provision of information about the schedules and platform. A similar result was found for the rail passengers' satisfaction with 77% were confident with the security at the rail station. While 4 from 10 rail passengers are very satisfied with the facilities of public parking space. Besides from the respondents' satisfaction in using the rail transit and its facilities have shown some issues that there are people complain about their dissatisfaction with the quality of facilities and services like toilets, shop, café in train stations and somewhat larger proportion of passengers (36%) were dissatisfied with the cleanliness and maintenance of station facilities.

### ***Light Rail Transit in Daily Life Activity by Female Users***

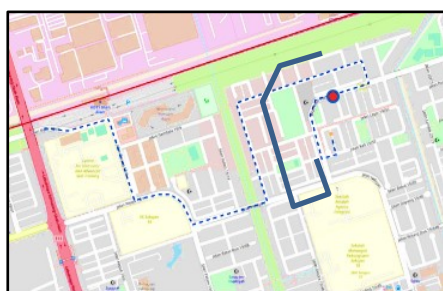
This analysis is to study the range of female users that use the Light Rail Transit (LRT) in daily life activity. Based on Figure 3, the major percentage of female users using the LRT is led by the Malays (43.3%), Indian (30%) and followed by Chinese (26.7%). From the interviews, female students become dominant in using the LRT to school, leading to 47%, while working females with 43% and the rest percentage is coming from the females who are not working. The study also found that the percentage by location is higher from Petaling Jaya, Shah Alam, Kuala Lumpur and Subang Jaya. These areas are in the buffer location of public and private higher institutions and so as the focus location of many offices that are also known as the place with higher traffic jams. Therefore, the choice of using the LRT is very much appreciated by these female users. In this research, the focused group would be the female worker as the idea is to look at their attitude in using the LRT at day and night-time with consistency of travelling time. The safety criteria for female workers who back home late from the office were the target group in this research.



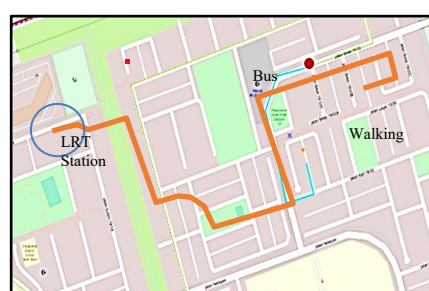
**Figure 3:** The respondents' background

***Female User Experience in using the LRT at Daytime.***

This analysis is to study the experience of a female user who is found to come from a far distance area and had to use both bus and LRT services. Figure.4 shows the sample of respondents walking to the bus stop from section 19 Shah Alam. The distance of the respondent's house is far away from the main connection to public transportation. Based on the image, it is shown that the respondent walks from her house to the bus stop to get a bus to arrive at the nearest LRT station. The time taken for the respondent to walk to the bus stop was around 10 minutes with the distance of 400m from her house. The respondent spent time walking to the bus stop and had to spend almost 20 minutes waiting for a bus, then continue using the LRT to reach her office. Figure 5 shows the overall journey from respondent's house to workplace that she had to go through every day. In response to this travelling pattern and respondent's behaviour, the awareness in selecting a suitable place to live should have become the most priority concerned to all working people who choose to use public transport to the workplace.



**Figure 4:** Walking distance to the bus stop.



**Figure 5:** Travel to LRT using bus.

***Female Users Experience in using the LRT at Night-time***

Next analysis is to identify the feelings of safety by the female users from the LRT to their house. The study focuses on night-time which is when the users are mostly heading home from the office. The questions are set up mostly to look at

respondents' feelings while walking out from the LRT to straight away to their home or to have another type of transportation before reaching home. The range of the feeling's safety is divided into three categories: safe, moderately safe or not safe. Final outcome to this analysis was to present a safe and unsafe location or hotspots-based location of each user who is using the LRT.

Table 1 shows that there are four modes of transport that the respondents have to continue with, after stepping down from the LRT, they have to continue with their own vehicle, taking a bus, taxi or walking to finally reach home. Based on the analysis, the results show different feelings according to each destination. The respondents who are using taxis and buses choose not to feel safe to travel in the night-time even though the distance is only less than 10 kilometres from the LRT. The feelings are about the same for the respondents who are using the bus. The night-time seemed to be not favourable by the female users. Those who are using their own vehicle reported feeling safe when the distance is less than 10 kilometres but not for those who have to drive more than that distance. This is shown by a respondent who had to travel to Sri Kembangan after using the Kelana Jaya LRT station. She claimed to be not feeling safe as she had to travel with her own car for another more than 19 km every night of weekdays. In summary, from the overall result of the analysis, it is shown that not feeling safe is dependent on the time attitudes and the distance taken. The night-time is also claimed to be not safe for the female users to use the taxi or even walking. Most of the female users are travelling alone when the questions were asked.

**Table 1: Level of safety by female users at night-time**

User's Location	Type of Transportation use after using the LRT	Travelling time after using the LRT	Time attitudes	Level of safety	Distance from the LRT to house (m)
Seri Kembangan	Own vehicle (car/motor)	More than 30 minutes	Night	Not Feeling Safe	19658.6
USJ 11, Subang Jaya	Own vehicle (car/motor)	30 minutes and less	Night	Feeling Safe	1212.1
Subang Jaya	Taxi	More than 30 minutes	Night	Not Feeling Safe	9369.7
Subang USJ 6	Bus	More than 30 minutes	Night	Feeling Safe	5706.9
Shah Alam Section 19	Walking	More than 30 minutes	Night	Not Feeling Safe	6369.4
Shah Alam Section 24	Own vehicle (car/motor)	30 minutes and less	Night	Feeling Safe	8785.9

**Analysis of Safety and Unsafety Location Experience by Female Users**

Next analysis is to locate the safety and unsafe zones according to the response rate by the female users. The LRT routes involved from the Shah Alam area which starts from Padang Jawa, straight to the Subang Jaya railway, then continues to Petaling Jaya and stops at Petaling station. This analysis involved thirty female users to analyze the safety and unsafety zone area by their location. The Inverse Distance Weighted from spatial interpolation analysis was used. Table 2 shows Feelings Attitude by Female User when travelling using LRT Feelings Attitude by Female User when travelling using Light Rail Transit.

**Table 2:** Feelings Attitude by Female User when travelling using LRT

Maximum of Distance (m)	Buffering Distance (m)	Distance of Location(m)	Passenger's Location	Feeling of Attitude	Class
4432	1330	12749.5	Taman Maya Jaya, Petaling	Not Feeling Safe	1
4432	1330	15287.9	SS 4, Petaling	Not Feeling Safe	1
4432	1330	9369.7	SS 4, Petaling	Not Feeling Safe	1
4432	1330	8898.02	Taman Sea, Petaling	Moderately Feeling Safe	2
4432	1330	7776.3	SS 2, Petaling	Not Feeling Safe	1
4432	1330	7776.3	USJ 11 Subang Jaya	Moderately Feeling Safe	2
4432	1330	10219.9	USJ19, Subang Jaya	Feeling Safe	3
4432	1330	6593.8	Kota Kemuning, Shah Alam	Moderately Feeling Safe	2
4432	1330	11169.1	Sek 7, Shah Alam	Not Feeling Safe	1
4432	1330	11169.1	Sek 19, Shah Alam	Not Feeling Safe	1
4432	1330	13717.3	Subang Bestari, Shah Alam	Not Feeling Safe	1
4432	1330	13109.6	Sek 13, Shah Alam	Moderately Feeling Safe	2
4432	1330	7903.6	Glenmarie, Shah Alam	Moderately Feeling Safe	2
4432	1330	9658.6	Bukit Jalil	Not Feeling Safe	1
4432	1330	3939.7	Kuala Lumpur	Not Feeling Safe	1
4432	1330	1263.1	Sri Petaling	Not Feeling Safe	1
4432	1330	1653.2	Seri Kembangan	Not Feeling Safe	1



<b>Maximum of Distance (m)</b>	<b>Buffering Distance (m)</b>	<b>Distance of Location(m)</b>	<b>Passenger's Location</b>	<b>Feeling of Attitude</b>	<b>Class</b>
4432	1330	3286.6	Taman Universiti, Petaling	Not Feeling Safe	1
4432	1330	555.2	SS 5, Petaling	Not Feeling Safe	1
4432	1330	386.9	Sek 51A, Petaling	Moderately Feeling Safe	2
4432	1330	5393.5	Dataran Prima, Petaling	Moderately Feeling Safe	2
4432	1330	438.35	Taman Jaya, Petaling	Moderately Feeling Safe	2
4432	1330	1212.1	Damansara, Petaling Jaya	Not Feeling Safe	1
4432	1330	6369.4	Subang Jaya, USJ 6	Feeling Safe	3
4432	1330	1293.6	Subang, SS 17	Not Feeling Safe	1
4432	1330	1299.2	Subang Jaya	Not Feeling Safe	1
4432	1330	8143.3	Pantai Dalam, KL	Not Feeling Safe	1
4432	1330	5706.9	Shah Alam	Feeling Safe	3
4432	1330	8785.9	Shah Alam	Moderately Feeling Safe	2
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4432	1330	1653.2	Seri Kembangan	Not Feeling Safe	1
4432	1330	3286.6	Taman Universiti, Petaling	Not Feeling Safe	1
4432	1330	555.2	SS 5, Petaling	Not Feeling Safe	1
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4432	1330	5393.5	Dataran Prima, Petaling	Moderately Feeling Safe	2
4432	1330	438.35	Taman Jaya, Petaling	Moderately Feeling Safe	2
4432	1330	1212.1	Damansara, Petaling Jaya	Not Feeling Safe	1
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4432	1330	1299.2	Subang Jaya	Not Feeling Safe	1
4432	1330	8143.3	Pantai Dalam, KL	Not Feeling Safe	1
4432	1330	5706.9	Shah Alam	Feeling Safe	3
4432	1330	8785.9	Shah Alam	Moderately Feeling Safe	2

The feeling attitudes were divided into three categories which is class one for not feeling safe, class two for moderately feeling safe and class three is for the passenger that is feeling safe while in the journey to LRT facility. Fifteen of the female passengers chose class one for their route to the LRT, while nine moderately feeling safe and only five feeling safe. This shows that the feeling attitude by the consumers was affected by their travel distance journey.

As shown in Figure 6, there are three classes used to classify the safety area, average safety area and not safety area and these were differentiated by colours which are from the blue to orange and the red zone area. The location for each user was represented by the colour and the percentage of hot spot area on a

map. The location for each user was represented by the colour and the percentage of hot spot area on a map. First class is the blue range of 1-2.25 meant for the safety zone area. Second class was indicated with yellow colour and ranged from 2.25 – 2.58, which is the average level of zone area. Finally, the hot spot area indicated by red colour and ranging from 2.58 – 3 class range. It means the area are in a red zone which is not safe. From the observation, there are two areas in the third class which are in the red zone. The hot spot of crime is its counterpart, in both Section 19 and Sri Kembangan areas with an analysis of 90 percent shown as unsafe areas. Spotted areas around Section 19, Section 18 and Section 15 are in the range of unsafe zone areas.

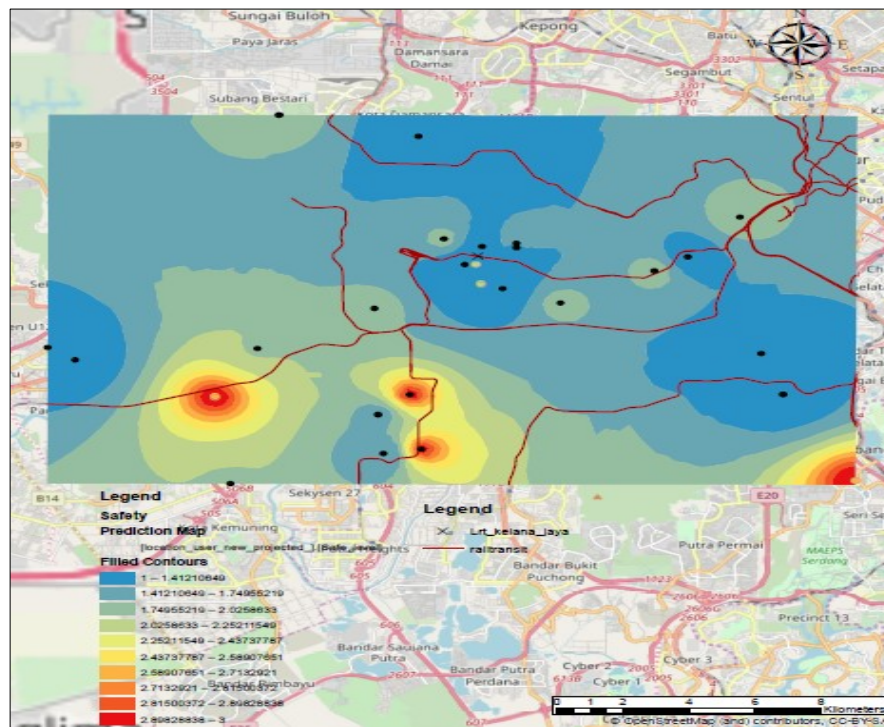


Figure 6: The not feeling safe zone by female users.

The indication of unsafe here is referring to the area that is too far from the service station. The respondents around this area needed to get to the LRT exchange station and the area was found to have been relatively closed to the manufacturing industry and away from the public's attention. In fact, it is found at the front of the entrance to the station that there is construction work and far away from the public settlements. The respondents feel unsafe as they have to

walk alone for a longer distance with lack of safety measures to the main LRT station. The design and the maintenance of the bus stop locations with lack of lighting, shows the inadequate security measures and this seems to contribute to the safety risk for females to walk near the LRT. As is the case with users from the Seri Kembangan area, their routes are much longer. Figure 1.6 shows the Safety analysis according to the respondents' locations. The red colour indicates most of the respondents complain about the feeling of not being safe after using the LRT service and while heading to their home by walking or using another public transport such as bus or taxi.

## CONCLUSION

The Light Rail Transit could become the first chosen transport services by the public if the important issues such as safety and facilities are well tackled. This research has exposed the percentage of safety and satisfaction towards facilities that have always become the priority concerned by the female users while using the train, walking near the station and surrounding area. The cases involving female passengers have seemed to increase lately where the safety measures should be seriously managed. The lack of facilities for passengers such as proper bus stop, lamp post, less safety guard and improper pedestrian pavement will reduce the interest of the public to use the LRT.

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