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## **Behavioural Observation of Human Stationary and Sustained Activities in Pedestrian Priority Streets of Johor Bahru**

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**Abstract:** Streets are considered to be major public spaces in the urban fabric. A pedestrian street is a street in which the carriageway space has been prioritised for pedestrian use. In Malaysia, due to enhancements of the streetscape and the promotion of the qualities of urban spaces, "pedestrianisation" has been suggested as a solution to recover space for pedestrian and non-traffic activities. A review of the literature has revealed that when people engage in a variety of activities, the streets become livelier. However, few empirical studies have addressed stationary and sustained activities in pedestrian streets. This research focused on pedestrian activities in Meldrum Walk and Segget Walk in Johor Bahru. Through behavioural observation, data on pedestrians of diverse age groups and genders, along with different types of activities and postures, were analysed. This study recommended that policy makers initiate conscious attempts to create diverse environments to attract a varied group of people to reside near pedestrian streets or attract visitors to frequent these streets. In addition, policy makers need to focus on interest groups, including children, senior citizens and/or disabled people, to make it easier for these groups to participate in activities in pedestrian streets.

**Keywords:** Human activity, Pedestrian street, Stationary and sustained pedestrian

### **INTRODUCTION**

Streets comprise the majority of public spaces and play a significant role in cities (Jacobs, 1961; Appleyard, 1981; Jacobs, 1993; Carmona, 2003), serving as a meeting place for various social groups and urban activities (Jacobs, 1993). Activities in addition to use and social interaction ensure vitality and lead to street liveliness (Robertson, 1993). Pedestrianisation is a popular strategy for separating pedestrians from vehicular traffic and it has been initiated to attract people back to a safe, comfortable and interesting pedestrian environment within city centres (Robertson, 1993). In pedestrian streets, the carriageway space is given over to pedestrian use. Put differently, by inviting leisurely walking and numerous social and economic activities, pedestrian streets enhance pedestrian activities and make city centres more pedestrian-friendly (Robertson, 1993).

A comprehensive review of the literature examines the evolution of pedestrianisation development in the United States and in some European countries, but there has been little work conducted relative to pedestrianisation in Asian countries (Yuen and Chor, 1998) and in Malaysia in particular (Ja'afar and Usman, 2009). Shamsuddin and Sulaiman (2002) and Ja'afar and Usman (2009) studied Malaysian streets, especially the traditional types.

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In Malaysia, how a street or *jalan* accommodates social activities and functions is central to its role in enhancing the image of the city and its identity (Shamsuddin and Sulaiman, 2002).

Behavioural observation was used in this study to examine the characteristics of pedestrian activities in pedestrian priority streets in Malaysia. Two pedestrian priority streets in the Johor Bahru city centre, namely, Meldrum Walk (Jalan Meldrum) and Segget Walk (Jalan Segget) were chosen as the study areas for this research.

## **AIM**

The major aim of this study is to characterise the behavioural patterns of pedestrians in pedestrian priority streets in Malaysia by identifying the different types of activities that take place in these streets, the characteristics of the pedestrians themselves and their activity postures.

## **Street Function in Urban Life**

Streets are the purest type of public space (Krier, 1979; Carmona, 2003) and are the most crucial parts of a city. They define the characteristics of urban areas (Shamsuddin, 2011) and determine the shape and structure of the city (Lynch, 1960) by providing space for social interactions and commercial exchanges and by symbolising the outdoors (Jacobs, 1993). Regarding the significance of the street, Jane Jacobs (1961) states that "Streets and their sidewalks... are [a city's] most vital organs". Many overlapping functions take place in streets (Shamsuddin, 2011).

A review of various studies has revealed that people rely on streets for functional, social and leisure activities (Mehta, 2006). Access and opportunities to socialise are two major street functions (Gehl, 1987) and people use the street to circulate, to reach different destinations and to interact in terms of meeting, shopping and greeting.

A thorough review of a fair amount of literature has revealed that researchers largely scrutinise the access role of streets. This research, however, was focused on the social role of streets and observation of human (pedestrian) activities in pedestrian priority streets.

Focusing on the social role of streets, Jacobs (1993) states that "Sociability is a large part of why cities exist and streets are a major, if not the only, public place for that sociability to develop". Streets facilitate social contact, social awareness and social cohesion (Mehta, 2007). Put differently, streets provide opportunities for short-term, low-intensity contacts that constitute easy interactions with other people in a relaxed and relatively undemanding way (Gehl, 1987).

## **Pedestrian Street**

The explosive increase in vehicular traffic has relegated pedestrians to subways and seems to impede social interaction in streets. Pedestrianisation aims to separate pedestrians from vehicles, especially in downtown areas (Robertson, 1993). Pedestrianisation, which is considered a type of traffic limitation policy

(Yuen and Chor, 1998) has been suggested as a solution to retrieving space for pedestrians and non-traffic activities and improving the quality of life in urban environments.

Pedestrian streets came into use as urban commercial and recreational spaces in the second half of the 20th century (Gelber, 2003; Gehl and Gemzoe, 2004). Pedestrian-oriented streets focus mainly on pedestrians rather than vehicular use and they are designed to accommodate and serve a fair number of stationary (non-walking) and moving (walking) pedestrians. Sitting, standing, lingering and spending time are some of the common activities that occur in pedestrian streets in addition to walking.

### **Human Activities**

Human activities are specific behavioural manifestations of man's response to the environment and hence are affected by cultural, social, economic and climatic factors (Shamsuddin, 2011). Observing human activities is a means of identifying cultural differences in the use of a public space as well as determining the human activities that are distinctive to a place.

Human activities are key factors that contribute to the character of a place (Gehl, 1987; Carmona, 2003; Lang, 2005) and, in addition to form and meaning, are a component of a successful place (Canter, 1977; Montgomery, 1998). The presence of people and their engagement in human activities bring a sense of life into streets (Shamsuddin, 2011) and attract other people (Gehl, 1987), enhancing the vitality and diversity of the place (Jacobs, 1993; Montgomery, 1998).

Shamsuddin (2011) states that the vitality of city centres and the success of urban spaces depend on steady flows of people, a high degree of visibility and a mixture of types of activities of people of different age groups. In cities and towns in Malaysia, a sense of vitality through the existence of human activities on the street is the main reason for the uniqueness of historic townscapes in comparison with newer centres (Shamsuddin, 2011).

### **Activity Conditions**

Activities require a physical setting to take place and the choice of this setting depends on the ability of the environment to support such activities (Shamsuddin, 2011). Because people are the focal point of public places, scholars such as Whyte (1980) and Gehl (1987) define a series of conditions for people to feel comfortable and enjoy being in an area while engaging in various activities. Undoubtedly, pedestrians need to be able to move freely, as well as to stand and sit wherever they feel appropriate and natural. Opportunities to contribute to various urban activities and to experience the surroundings depend very much on how city spaces are designed to facilitate basic human activities under good conditions (Gemzoe, 2006).

### **Cultural and Microclimatic Conditions**

Human activities are highly varied, even when they are considered at the manifest level in the context of a given culture or among different cultures. Equally or even

more varied are the ways in which they are accomplished, in terms of location, time and who is included or excluded (Rapoport, 1977).

Climate also plays a significant role in influencing behaviour patterns. Accordingly, the townscape that responds to the climate will elicit unique behavioural responses and exhibit unique design features (Shamsuddin, 2011). Mehta (2006) asserts that according to the literature on the effects of environmental factors on human behaviour, a comfortable microclimate can be characterised in terms of sunlight, shading and wind, which are important in supporting outdoor activities. Hence, good microclimatic conditions, which may primarily be a result of artificial conditions changing the natural climate, become a necessity for supporting outdoor activities in open public spaces. According to Shamsuddin (2011), traditional spaces with distinctive behavioral character tend to possess unique urban spaces due to their specific climatic considerations.

### Human Activities Classification

Examining all the activities in which people engage in public spaces is crucial to characterising the qualities of urban spaces (Shamsuddin, 2011). Many attempts have been made to classify such activities. Table 1 shows how Chapin and Brail (1969), Francis (1991) and Gehl (2002) categorise human activities in public spaces.

Table 1. Activity Classifications

	Chapin and Brail (1969)	Francis (1991)	Simon (2000)	Gehl (2002)
<b>Activity Grouping</b>	Work related	Travel	Movement	Traffic
	Socialising	Shopping	Rest	Commercial
	Home working	Interaction	Encounter	Leisure
	Recreation/relaxation			

Gehl (1987) identifies three categories of human activities in public places, namely, necessary activities that occur regardless of the physical environment, optional activities that can be accomplished under proper conditions and social activities, which are fostered by high-quality spaces.

Mehta (2006) categorises human activities in public spaces in three main groups based on the characteristics and features of the activities, i.e., stationary and sustained activities, lingering activities and social activities and provided the following definitions:

1. Stationary and sustained activities are defined as standing, sitting, or lying down in one place in the outdoors for more than 15 seconds.
2. Lingering activities are those involving a person starting to move around in the outdoors within a 50- to 60-foot street length for more than 15 seconds. These type of activities need to be observed through direct observation, which is not used in this study.
3. Social activities are defined as activities involving two or more persons engaged in stationary and sustained or lingering activities and interacting with each other either actively or passively. Data related to stationary and

sustained activities and social activities are gathered by walk-by observation.

4. Due to the methodology used in this study, only stationary and sustained activities and their social status were assessed during data collection.

## RESEARCH METHODOLOGY

To establish the routines of local people over the course of a day from early morning until night and to discriminate activity spots and pattern of activities, observation is utilised as the main data collection method for studies of this type. This includes observing what activities people engage in, where, when, how and with whom (Shamsuddin, 2011).

Walk-by observation was the main method employed to collect and record data on peoples' stationary and sustained activities. During each observation, one of the researchers walked slowly in each study area and recorded the total number of stationary and sustained activities, the people involved, their locations and their postures. Three observations were conducted during the daytime and three during the night. Observations were conducted between 10:00 AM and 10:00 PM (once every couple of hours) in each day. For each street, data were collected on Fridays and Sundays (weekend days) and Thursdays (weekdays) in March 2010.

### Study Areas

Meldrum Walk and Segget Walk, the two streets in Johor Bahru that were recently pedestrianised, are selected as study areas in this research. These streets are located in the Johor Bahru city centre. As the capital of the state of Johor, Johor Bahru is known as the southern gateway to Peninsular Malaysia (refer to Figure 1).

### Segget Walk

As with many rivers in Malaysian cities, the primitive character of the Segget River (Sungai Segget) in Johor Bahru has changed over the years. In the past, the river was neglected and its pollution level gradually increased (Shamsuddin, 2011). Because the river is located very close to the southern entry point to Peninsular Malaysia, it needed to be upgraded. Therefore, covering of the river was completed in 2005 and Segget Walk developed into a pedestrian walkway. This contrivance has led to the elimination of the terrible stench emitted by the river (*New Straits Times*, 2008). Now, due to its recent development (Legaran Segget), the main character of the river as a prominent feature of the city in terms of its strategic location has disappeared and it has turned into a major sewer system with a paved public square above it (Shamsuddin, 2011). A section of Segget Walk located between Jalan Ungku Puan and Pasar Seni was selected for this study. People usually use this area for walking, but some indulge in other activities such as sitting, eating and resting.



Figure 1. Study Areas in Relation to the Old City Centre in Johor Bahru  
Source: Majlis Bandaraya Johor Bahru (2004)

### Meldrum Walk

Jalan Meldrum was named after Dato' Meldrum (1821–1904), a Scotsman who set up a sawmill at the mouth of the Sungai Segget (close to the present Customs Complex at the Jalan Sawmill). Logging was a primary industry of Johor Bahru at the time. Jalan Meldrum is situated at the centre of an area once known as Wong Ah Fook village, where several roads are named after Meldrum's sons, Siew Nam, Siew Koon and Siew Chin. Meldrum Walk was designed as a pedestrian mall and provides an attractive landscaped passageway for the benefit of the locals and tourists alike. Here, visitors can relax at sidewalk cafes and be entertained by street artists or cultural performances. The section of Meldrum Walk selected for observation in this study is located between Jalan Siew Nam and Jalan Siew Chin.

The pedestrianisation of Jalan Meldrum includes the narrowing of this two-way street into a single-lane street with an accompanying pedestrian mall and outdoor cafes.

Data related to Jalan Meldrum and Jalan Segget are summarised in Table 2. A check mark (✓) indicates the existence of the stated characteristic.

## RESULT AND DISCUSSION

### Pedestrians' Personal Characteristics

Among the researchers concerned with public spaces, Jane Jacobs (1961), Gehl (1987) and Alan Jacobs (1993) emphasise the importance of attention to people and their social structures, which directly influence activities and behaviours. This

attention requires identifying activities and simultaneously recognising the walking and stationary pedestrians participating in these activities.

Table 2. Summary of Information and Current Conditions

Summary Information	Meldrum Walk	Segget Walk
Year of pedestrianisation	2005	2005
<b>Uses along street frontage</b>		
Offices	✓	–
Shops	✓	–
Restaurants/food courts	✓	✓
Entertainment places	–	–
<b>Pedestrian usage:</b>		
Daytime peak density (pedestrian/sq m)	0.058	0.021
Nighttime peak density (pedestrian/sq m)	0.085	0.026
<b>Access to transport facilities (within 200 meters)</b>		
Bus stops	✓	✓
Taxi stands	✓	✓
Public car parks	✓	✓
<b>Street events</b>	✓	–
<b>Pedestrian facilities</b>		
Covered streets	–	–
Public seats/rest areas	–	✓

Of 3,045 persons observed performing stationary and sustained activities in this survey, males constituted the majority of users (79.5%) in both streets, while only 20.5% were females. The distribution of ages of persons observed indicated that both study areas attract various age groups. In fact, substantial proportions of the pedestrians in Segget (53.3%) and Meldrum (36.8%) Streets were young, although children constituted the lowest proportion of all. In terms of racial backgrounds, Malays clearly dominated the number of pedestrians observed in Segget Walk (55%), while Chinese constituted the majority of pedestrians (63%) in Meldrum Walk.

#### Stationary and sustained pedestrians

In Jalan Meldrum, 76% of the people were observed to be engaged in stationary and sustained activities and in Jalan Segget, 24% of the people were observed to be engaged in stationary and sustained activities. In Meldrum Walk, the majority of sustained activities were observed on weekends, while in Jalan Segget, the majority of sustained activities were observed on weekdays. Density, i.e., the average presence of people per square metre, is an indicator of how active an area is. The average density of pedestrian streets in the Johor Bahru city centre is 0.037 persons per square metre (Table 3).

Table 3. Density on Different Days

Street	Number of People Observed						Total Area (m <sup>2</sup> )
	Friday		Weekend		Weekday		
	Fr.	Density	Fr.	Density	Fr.	Density	
Meldrum	749	0.05	938	0.06	638	0.05	2413
Segget	227	0.02	233	0.02	260	0.02	2271

Fr. = Frequency

In Meldrum Walk, observations revealed that the majority of pedestrians were engaged in stationary and sustained activities on weekends and it revealed the optional (leisure) characteristics of the activities. In fact, during the weekends the area is livelier than at any other time of the week because people seemingly have more free time to patronise the area (refer to Table 4).

On Fridays and weekdays, the total number of people participating in stationary and sustained activities in the mornings and afternoons was half of that in the evenings and at night. In essence, during weekdays, from morning until night, the number of people engaged in stationary and sustained activities in the area increased regularly. The last observation (at 9:30 PM) recorded the highest number, 250% of the first observation (at 11:30 AM) (refer to Figure 2).

On the other hand, based on the observations made, Segget Walk appears to be more popular during weekdays (refer to Table 4). Indeed, on Fridays and weekends, people do not utilise the area more than on weekdays because on Fridays, Muslim Friday prayers impact the townscape as Muslims congregate in the mosque and its precinct, as expected (Shamsuddin, 2011). Therefore, male Muslims were recorded and observed more in Segget Walk. Others observed were primarily Indians in the vicinity of the Indian temple located at Jalan Ungku Puan.

Based on weekday observations in Segget Walk, the total number of people participating in stationary and sustained activities in the mornings and afternoons was almost 37%, but this figure doubled in the evenings and at night (63%). Moreover, the number of stationary pedestrians started to dwindle after 9:00 PM because the area is deficient in nightlife and proper lighting. Commercial units such as kiosks and stalls that commence their activities in the evenings were not sufficiently active in the Segget area.

This circumstance may be attributed to the necessary activities of people in these areas and the lack of attractions to draw them to come and stay in Segget Walk during their free time. In terms of usage, there are no notable differences for the different daytime, evening and night-time hours.

### Stationary and sustained activities in pedestrian streets

During this study, 79.9% of the total observed activities occurred in Jalan Meldrum and the other 20.1% occurred in Jalan Segget. Eating, talking and people watching were the main activities that took place in both Meldrum Walk (88.7%) and Segget Walk (70.8%) (refer to Figure 3 and Figure 4).

A great number of people were actually sitting rather than standing or lying down on the benches in Jalan Meldrum (76.9%) and Jalan Segget (69.4%).



Other activities in Meldrum Walk consisted of cooking, serving food, washing or cleaning, betting and loudly announcing bet results, sleeping and hugging. In Segget Walk, preparing vendor stalls, waiting, sleeping, cooking or serving food and using public phones occurred.

Table 4. Number of People Engaged in Some Type of Stationary and Sustained Activities

Street	Jalan Meldrum					Total	Jalan Segget				
	Time	Day	Avg.	Evening	Avg.		Day	Avg.	Evening	Avg.	Total
Friday		244	81	505	168	749	93	31	134	45	227
		33%		67%			41%		59%		
Weekend		392	131	546	182	938	95	32	138	46	233
		42%		58%			41%		59%		
Weekday		217	72	421	140	638	96	32	164	55	260
		34%		66%			37%		63%		

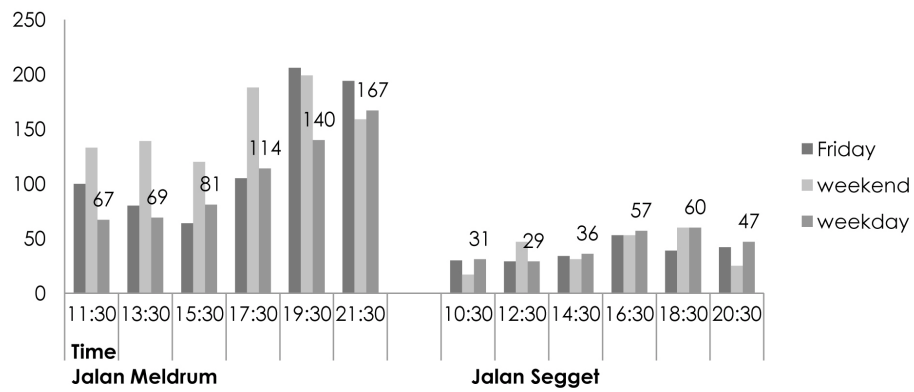


Figure 2. Number of People Engaged in Some Types of Stationary and Sustained Activities during Different Hours

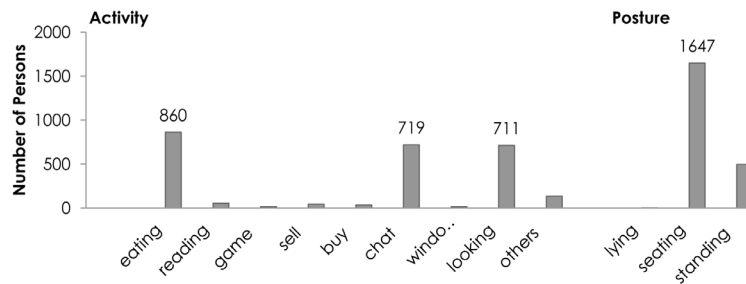


Figure 3. Various Stationary and Sustained Activities and Postures in Jalan Meldrum

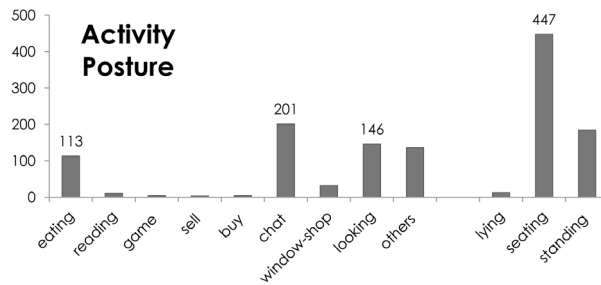


Figure 4. Jalan Segget Activities and Postures

**Social status of stationary and sustained pedestrians**

In both study areas, the majority of pedestrians participated in groups rather than engaging in activities individually (Figure 5). A higher degree of socialising occurred in Meldrum Walk than in Segget Walk and the people in Meldrum Walk spent more time engaged in optional and social activities.

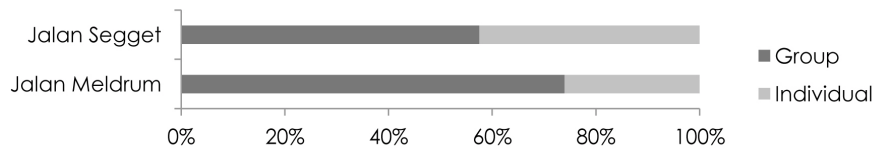


Figure 5. Social Status of the Activities Observed

**CONCLUSION**

The Johor Bahru local authority has converted the Segget River and Meldrum Street into pedestrian-friendly public spaces to entice pedestrians to walk, stay and engage in various activities in these areas.

Studying the recent pedestrianisation phenomenon in the Johor Bahru city centre is an attempt to understand pedestrian-priority street characteristics as a new trend in activity settings for pedestrians and to observe their behavioural

patterns. A livelier and more vibrant pedestrian street offers greater opportunities for optional and social activities.

In the context of Malaysia, during the daytime when people are involved with their business and daily tasks, their activities have fewer optional and social characteristics, but due to cultural values and microclimatic considerations in this tropical country, night time activities are more popular.

A need exists for very serious efforts to be made to promote the street environment conditions that support a mixture of types of activities and people of different age groups.

Based on the results of this study, the following recommendations are made:

1. Creating a more vibrant environment would attract different groups of people to reside in or visit the pedestrian streets of the city centre. People do not need to go to the city centre of Johor Bahru because the suburban areas are also developed and offer many shopping opportunities. Thus, offering a wider range of activities and attractions besides walking, working and shopping activities for all users is recommended, especially during the evening and at night, when patronising the urban space is more popular.
2. Decision makers and developers should also focus on children, teenagers and other special groups, such as seniors and disabled people, to make it easier for these groups to utilise the pedestrian streets, which offer them varied opportunities to stay and relax.

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