

# Exploring Walkability Index: The Pallimukku Study Insights

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**Abstract** – There is a recent urge in the transportation sector during the past ten years. In the pursuit of Higher standard of living and to make travelling easier to their destinations, people started shifting from Non-motorized to Motorized Transport amenities. The ability to walk has been reduced in our cities even in remote areas, which has been a setback to our economy on the basis of healthy living and development. The study primarily details the walkability index values of specific midblock portions where there are greater pedestrian issues and also establishes the sufficiency of the walkway and its HCM 2000-based Level of Service (LOS). The hamlet of Kollam city, Pallimukku, study stretch was chosen because it provides a vivid picture of the severe traffic situation. Inadequate and incorrect pedestrian planning will result in numerous detrimental effects, such as needless deaths and injuries. Walkability is a crucial issue in growing cities, giving local authorities motivation to solve challenges related to walkability, assisting municipal planners in comprehending the breadth and depth of local pedestrian circumstances.

**Key Words:** Walkability Index, Motorized, Midblock Section, HCM, Level of Service.

## 1. INTRODUCTION

An area's walkability is a measure of its level of safety. Walkability, or the capacity to walk, has steadily declined in Asian cities as a result of the rise in motorized cars. An international analysis of the World Health "Our roads are particularly unsafe for pedestrians, cyclists, and motorcyclists who, without the protective shell of a car around them, are more vulnerable," the organization said after analyzing the causes of accidents and pertinent legislation. Although there are some incentives for them to do so, the majority of developing nations do not require pedestrian planning. Assisting municipal planners in comprehending the extent and degree of local pedestrian circumstances in comparison to other cities would be a good first step since it would enable them to pinpoint specific countermeasures and expenses related to enhancing pedestrian conditions.

### 1.1 Location Analysis

Pallimukku, a hamlet, in the outskirts of Kollam district is subjected to intense congestion issues during the peak hours. Since a railway crossing area is nearby and an intersection is being created there thus resulting in Chaos in the nearby area. Several Congestion pricing strategies

has been adopted there but the process ended up in vain. The Ministry of Urban Development (MOUD) method states that the walkability index depends on the accessibility of pedestrian facilities and walkways rating. The MOUD equation is used to determine the walkability index. Every zone will have a field walkability survey conducted. In each of the designated areas, pedestrians will be asked to rate the design elements on a 10-point scale, with 1 representing the lowest and 10 representing the highest. **Rashid (1)** in his study focuses on determines that in order to compute. We require scores for pedestrian facilities and a walkability index. Survey of pedestrian facilities for collecting pedestrian ratings that take into account the area's pedestrian amenities' usefulness and design. The city plan, a tape measure, or Google maps are used to determine the length of the city's main roadways and pathways.

## 1.2 LITERATURE REVIEW

**Minhas (2)** showed that According to the results, Jinja Central Business District's Walkability Index (WI), which takes into account the busiest eight chosen roads, is neutral at 51 on a scale of 100. This indicates that while there are certain places in Jinja City's central business district that are walkable, the majority of everyday excursions still call for a vehicle, bicycle, or public transportation. Large cars parked on both sides of the road, cyclists—and sellers who utilize the sidewalks for parking and waiting spaces were also recognized by the survey as significant roadblocks in Jinja City. A few kiosks have been placed along the market area and the walkways of certain main roadways, such Nizam Road. **Sungmin Lee (3)** showed that the audit-based school walkability index (WI) showed a positive correlation with children's before-school MVPA in both the subsample and the entire sample, as well as with active commuting to school among those who lived within 1.5 km of their schools. Children's before-school MVPA was significantly correlated with the GIS-based school WI, but there were no correlations with active school travel between the subsample and the entire sample.

## 2. STUDY OBJECTIVES

The study objectives are mentioned as below:

- (1) To formulate the pedestrian walkability Index
- (2) To check the adequacy of footpath in the study Locations based on IRC

(3) To calculate the Level of service for the footpaths in the study areas based on HCM

### 3. STUDY LOCATIONS

Areas with higher rate of pedestrian fatalities were chosen and studied. The study was focused on the Pallimukku main intersection area where the traffic from Kollam to Kottiyam and vice versa, kollam to temple road, kollam to gopalassery road etc were taken into consideration. A field walkability survey and the pedestrian interaction survey was carried out for the data collection. Many respondents were really worried about the present situation existing in the place.



Fig 1 Pedestrian Crossing neglecting the incoming traffic



Fig 2 Absence of Designated Footpaths

### 4. STUDY METHODOLOGY

The above step can be done in different stages

- (a) Pedestrian Walkability Index
- (b) Adequacy of Footpath
- (c) Pedestrian Level of Service (LOS)

#### (a) Pedestrian Walkability Index

The walkability survey that was conducted includes a pedestrian interview survey and a field walkability survey for facility evaluation. The travel and social features are recorded in a brief questionnaire. During busy hours, the interview was held at the chosen venue. For the pedestrian preferences survey, a sufficient sample size of thirty people was selected. In order to rate pedestrian facilities, a proforma form for pedestrian interviews was created. This is how the rating is done

Table -1 Pedestrian Facility Rating

SI NO	Ratings	Classification
1	0-1	Worse
2	1-2	Very poor
3	2-3	Good
4	3-4	Very Good

The Ministry of Urban Development technique (MOUD) can be used to determine the PWI by knowing the pedestrian facility rating, length of the stretch, and pedestrian volume. The equation is:

$$\text{Walkability Index} = [(W1 \times \text{Footpath Availability}) + (W2 \times \text{Pedestrian facility ratings})]$$

where W1 and W2 are weights, each of which is taken to be 50%.

### 5. DATA COLLECTION AND ANALYSIS

#### 5.1 Calculation of Pedestrian Walkability Index

The Ministry of Urban Development Method is the source of the methodology used to determine the walkability index. The stretch's length and the number of pedestrians counted for. The walkability index is computed in each of the chosen segments at intervals of roughly five minutes for an hour

Table 2 Data Collected and Analysis of Pedestrian walkability Index (Pallimukku Gopalassery Road).

SI NO	Parameters Considered	Average Facility Ratings	PWI = [(W1 x Availability of footpath) + (W2 x Pedestrian Facility rating)]	PWI value for study area
1	Footpath Surface	3.5	0.22	0.23
2	Continuity	3.2	0.23	0.23

3	Pedestrian Count	543		
4	Length of stretch (Km)	0.65		

**Table 3 Calculations for Speed, Flow and Density**

Time	Pedestrian Volume	Time	Speed	Density	Flow
8:00-8:15	145	7.54	1.234	8.564	6.245
8:15-8:30	154	8.34	1.34	8.256	6.543
8:30-8:45	156	8.32	2.34	9.346	6.489
8:45-9:00	167	7.36	3.214	7.543	6.235

As per HCM 2010, the footpath has

**LOS B (Based on Flow)**

**LOS C (Based on Pedestrian walkability Index)**

## 6. CONCLUSIONS

The above study shows that the pedestrians are at a greater risk and the Existing infrastructure needs to be redefined and more the transport planners have to open the gateway to further development thus reducing pedestrian fatality rates. **LOS B AND C** are indicators of the present study and the correction needs to be incorporated here.

## REFERENCES

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