



ISSN: 2230-9926

Available online at <http://www.journalijdr.com>

IJDR

International Journal of Development Research
Vol. 07, Issue, 07, pp.14090-14095, July, 2017



ORIGINAL RESEARCH ARTICLE

Open Access

ASSESSMENT OF PEDESTRIAN MOVEMENT SCENARIO AND STRATEGIES TO IMPROVE PEDESTRIAN MOVEMENT IN MYSORE CITY

¹Ehsan Amini and ²Setareh Oruji

¹Research Scholar in Urban and Regional Planning, University of Mysore, Mysore, India

²Ph.D. in development study, lecturer in Azad University

ARTICLE INFO

Article History:

Received 27th April, 2017

Received in revised form

19th May, 2017

Accepted 26th June, 2017

Published online 31st July, 2017

Keywords:

Pedestrian movement,
Central area of city,
Walking, pedestrian zone.

*Corresponding author:

Copyright ©2017, Ehsan Amini and Setareh Oruji. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Ehsan Amini and Setareh Oruji. 2017. "Assessment of pedestrian movement scenario and strategies to improve pedestrian movement in Mysore City", *International Journal of Development Research*, 7, (07), 14090-14095.

ABSTRACT

Nowadays according to increase number of vehicle and population in cities, traffic volume has increased sharply especially in centre area. Traffic volume has become an important issue in mobility pattern in the Central core of Mysore, as a famous city in India (city of palaces). Pedestrian movement is one of the considerable factors in urban planning and design, security of transportation system, flexibility of movement pattern. Since the Mysore is Hosts a significant population of tourists, it is necessary that pay more attention to pedestrian movement especially in central part of city. This paper tried to assess pedestrian situation, in Mysore with a focus on major roads in central core of city. The purpose of this paper is determine strategies for solve existing pedestrian movement issues that would be practicable to provide safe, friendly, accessible, vibrant and enjoyable streets and places for residents.

INTRODUCTION

Pedestrian movement is one of the most common and basic forms of transportation. Walking should be considered the primary form of transport, as it is the most sustainable and environmentally friendly mode. Areas like the Central core of City have a higher concentration of activity - both pedestrians and other road users- and so there is a need for more concentration to ensure safety. This is also true for pedestrians crossing busy roads, where traffic speeds are higher. Walking is actually the most vital mode of transportation upon which all societal activities depend. As a transportation mode, walking offers predictable travel times; continuous availability; ubiquitous and easily maintainable routes; reliable, free, non-polluting, non- energy-consuming service; and, for many, healthful, relaxing exercise. The pedestrian mode is gaining recognition as a basic building block in urban system design.

Pedestrian zone

Pedestrian zone: Happy and healthy living in towns is related to the extent that town's open green space system is enough for the requirements. Today, pedestrian zones have been achieved to increase rapidly disappearing open space and to provide comfortable and safe circulation for pedestrians. A pedestrian zone is simply an area where vehicles are restricted and reserved for pedestrians who are free to occupy the entire space. The zone entrances and exits are often designated with signage to make all users of the road aware when they are entering or exiting such an area.

Background of city

Mysore is one of the famous historical cities and second largest city in the state of Karnataka, India. Mysore is noted for its palaces, including the Mysore Palace and also some

heritage buildings. Most of the Mysore city's heritage buildings are located at the heart of the city. It lies at 140 kms southwest of Bangalore as Karnataka state capital and is well connected by rail and road to all parts of the country. Mysore city has grown rapidly in all directions and its area is around 128.42 km². Its populations in 2001 was about 7.86 lakhs. The population of the Mysore city was 8.87 lakhs in 2011. Mysore city is geographically located at 770 m above sea level between 12° 18' 26" North Latitude and 76° 38' 59" East Longitude.

has increased to 3679 in 2001. It has increased sharply to 6098 by 2011 which represented an increase of 40 percent.

Pattern of Pedestrian Movement in city

Mysore city is witnessing considerable pedestrian traffic especially in the CBD and palace areas. With the increase in the commercial activity in some of the important areas like DevrajUrs Road, Ramvilas Road etc., there is an increased demand for better pedestrian facilities.

Table 1. Distribution of Land use Pattern during 1991, 2001 and 2011

LAND USE	1991		2001		2011	
	Area in hectares	(%)	Area in hectares	(%)	Area in hectares	(%)
Residential	3057.87	40.4	3679.17	39.9	6,097.87	43.45
Commercial	182.41	2.41	278.47	3.02	344.07	2.45
Industrial	1014.24	13.4	1243	13.48	1855.05	13.22
Park and open spaces	415.53	5.49	1241.06	13.47	1180.78	8.41
Public and semi public	856.81	11.32	826.20	8.96	2689.87	7.52
Traffic and transportation	1530.45	20.22	1484.58	16.1	2,380.56	16.96
Public utility	37.08	0.49	47.02	0.51	178.95	1.27
Water sheet	182.41	2.41	186.26	2.02	43.45	0.31
Agriculture	282.32	3.73	209.31	2.27	898.99	6.41
Total	7569	100	9221	100	15669	100

Source: Mysore Urban Development Authority, Mysore

Table 2. Traffic Volume of Pedestrian and Vehicles at Peak Hours in KR Circle & Harding Circle (10am to 11 am & 6pm to 7pm) (2011)

S. No.	Location	Peak Hour Pedestrian Volume	Peak Hour vehicles Volume
1	KR Circle	Sayaji Rao Road	11,000
		KR Hospital Road	8,500
		Hunsur Road	1,200
		SH-88	10,567
2	Harding Circle	(Towards Chamraj Circle)	1,367
		SH-17	
		(Towards Zoo)	2,451
		Double Road/	
		Dasara Exhibition Road	1,456
3		SH-17 (From Hotel Siddartha)	6,589
		Sayaji Rao Road	12,227
		Palace Road	8,543
		KD Road	10,107
		Ramvilas Road	3,732
		Pulkeshi Road	6,296
		Vishwanava Double Road	6,296
		DevrajUrs Road	12,068
			3,511

Source: Mysore city corporation (MCC)

Central area of Mysore city

Central area of city includes different types of attractive land use like historical urban texture (Mysore palace, Gandhi square and etc.), main commercial and cultural unites, main offices and etc. so there is traffic congestion issue from both pedestrians and vehicles. The traffic congestion is because of rapid growth of vehicles and pedestrian movements in the Central area. In addition to what was said during famous festivals in central area, city receives a large number of tourists.

City Land Use

The total area for Mysore Mysuru city as per MUDA has shown an increase to 9221 hectares in 2001 from 7569 Hectares in 1991, representing a growth of 22 percent. As per MUDA, the total area is 15669 hectares by 2011, representing a significant increase of around 70 percent over the total area in 2001. The residential area in 1991 is 3058 hectares which

The footpaths in many locations, especially in the commercial areas are occupied or encroached upon by vendors and hawkers resulting in spilling over of the pedestrians to the roads. The household survey reveals that 23 percent of the total trips are walk trips. Lack of footpath is evident in 25 percent of the roads.

Traffic volume in major locations of city

Below table gives the peak hour pedestrian at major locations. From the analyzed data, it is observed that the pedestrian traffic is highest along sayaji Rao Road followed by DevrajUrs Road. It is also observed that the pedestrian traffic is at its peak during holidays / weekends at Sayaji Rao, DevrajUrs Road and palace Road. The volume of pedestrian traffic is highest between 10 AM and 11 AM in the morning and between 6 PM and 7 PM in the evening. Footpath facilities have been provided by MCC. However, the footpaths in many locations, especially in the commercial areas are occupied or encroached upon by vendors and hawkers on the roads.

Table 3. Trip Distribution by Purpose in major roads (%)

Name of Road	Good Delivery	Return Home	Religious	Health	Shopping	Recreation	Social	Business	Education	work
Mahadevpura	30	13	6	1	1	0	4	15	2	28
T.Narsipura	24	10	3	3	2	9	16	12	2	19
KRS	30	9	6	2	1	1	4	3	14	30
H.D Kote	34	24	8	0	10	3	2	5	4	10
Nilgiri	17	14	13	2	3	13	10	6	4	16
Bangalore	9	19	10	3	3	9	6	21	3	17
Hunsur	24	15	8	4	3	4	6	11	5	20
Vishwamanava	20	13	7	3	5	7	9	10	4	22

Source: Mysore city corporation (MCC)

Table 4. Guidelines for Provision of Footpath

Land Use	Footpath Revision	
	New Roads Preferred	Existing Roads Preferred
Commercial and Industrial Residential (on Arterials) Residential (on Collectors) Residential (on Local Streets)	Have to prepare on both sides with required facilities	Minimum On both side for commercial and arterial road. On one side for collector and local street
		Existing Roads Preferred Minimum Develop the roads with lack of facilities on both sides Providing essential facilities in commercial an arterial road on both side and in collector and local at least on one side

Source: JNNURM



Figure 1. Pedestrian Condition at Sayyaji Rao Road



Figure 2. Ashoka Road & Harding Circle toward Nazaraabd Circle

This in turn results in vehicle-pedestrian conflicts. At many places the footpaths are narrow. Most of the footpaths do not have proper surface which forces pedestrians to walk on roads. Zebra crossings have generally not been provided on busy roads. Heavy pedestrian traffic is observed in the core areas of the Mysuru city.

Sufficient facilities, particularly for crossing, have not been provided for pedestrians. The major issues which has described in this paragraph tried to show in picture s from sayaji Rao Road below. Existing footpath in Albert road has fair condition but in Ashoka Road toward big clock tower lack of footpath according to figures is evident. Non-existence of appropriate surface is evident.



Figure 3. Bangalore Nilgiri Road & Jagan Mohan Palace Road

In Bangalore-Nilgiri Road in front of main gate of palace footpath condition is fair but in other side of street, there is not footpath which has to be provided. Footpath condition in this area has high importance as has located in front of main gate of the most important historical land mark; palace which is the most tourist populated area. According to figures lack of appropriate footpath with required facility is observed in street which has linked to Jagan Mohan Palace. Existing of so many hawkers and vendors in Irwin Road cause to conflict between vehicles and pedestrians in Mysuru city. Inappropriate surface and lack of required width of footpath made major issues which have to improve. Inappropriate surface condition of footpath, existence of unshaped trees in the middle of the pavement which doesn't have shadow, park of vehicles in footpath according to figures which make distribution and non-existence of appropriate lighting along the footpath is evident.

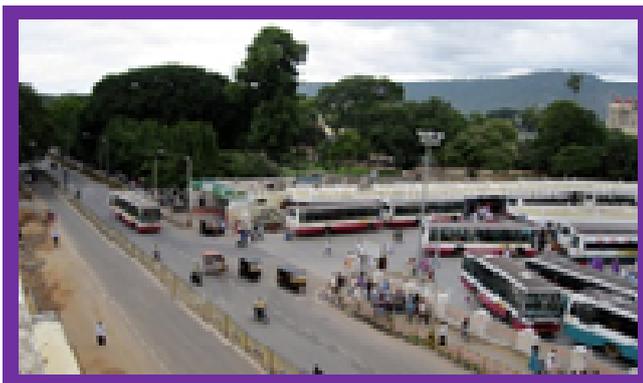


Figure 4. Mysuru city Bus Stand

Unidentified entrances for bus stand that cause to conflict with pedestrian behaviour and discontinue pedestrian footpath which force people to flow to roads are evident.



Figure 5. Suburban Bus Stand

In Suburban Bus Stand's footpath conflict between vendors and autos, bikes and bicycles which are crossing through footpath is observed. Discontinue footpath without shady trees, adequate lighting and required width also provoked the existing issue.



Figure 6. KR Circle

At signalized junctions, there are no pedestrian phases in the signal cycle, making it difficult for pedestrians to cross over. At priority junctions, the zebra crossings are not provided and adequate signals for the vehicles to stop over are not given. At signalized junctions, there are free left turns for vehicles which make it difficult for pedestrians to cross over.

Purpose wise distribution of trips in major roads in mysuru city

At locations such as HD Kote Road, KRS Road, and Mahadevpura Road, The goods delivery trips are large in number due to the large industrial units on these roads. The Bangalore road has work, business recreation and return trips at 17 percent, 21 percent, 12 percent and 19 percent respectively. Similarly the H.D. Kote and KRS road the majority portion is belonging to goods delivery trip of 34 percent and.

Table 5. Minimum Footpath Dimensions

Location	Zone					Total
	Kurb	Street Furniture and Greening Zone Width	Through Zone Width	Building Frontage Zone Width		
Arterial Road in Pedestrian Districts Alongside parks, schools and other major pedestrian generators	0.15m	1.7m	2.4m	0.75m for dead areas and increase to 1m for shopping frontages		5.00m
Local roads in pedestrian districts Commercial / industrial areas outside the CBD	0.15m	1.7m	1.8m	0.45m for dead areas and increase to 1m for shopping frontages		4.1m
Collector Roads	0.15m	0.9m	1.8m	0.15m		3.0m
Local roads in Residential Areas	0.15m	0.9m	1.5m	0.15m		2.7m
Absolute Minimum	0.15m	0.0m	1.5m	0.15m		1.65m

Source: Compiled by author

The Mahadevapura road has work trip in 26 percent and good trip in 30 percent. The T.Narasipura road, Niligir road and Hunsur road are also reflecting the similar trip characteristics. It shows regional trip is more along this transport corridors. Magnitude of these trips which is regularly merging with urban traffic needs planning strategies to reduce their impact on Mysore city traffic.

Pedestrian Mobility Plan

There wasn't worth considering about Quality movement of pedestrians and respective released facilities. By considering the fact every person in a city would be as a pedestrian at some stage of his trip and the importance of create better and safe mobility for pedestrian revision has to be considered. So improvement and facilitated pedestrian has to be precedence in planning strategies of traffic & transport system of the city. Lack of appropriate pedestrian footpath is evident in majority part of city especially in core area and CBD. This issue as a critical urban issue forced pedestrians to walk on carriageway which won't be secure and safe for them. So necessity improvement of existing condition is feeling.

Planning Guidelines

The appropriate planning for pedestrian facilities in Mysore has to consider integrated approach to land use, Transport Corporation, support pedestrians in such as friendly and secure environment. The planning of pedestrian facilities should consider all types of footpath users such as old people, Childs, disables. To ensure better walk ability, it is recommended that a continuous network of pedestrian walkways be formed through provision of sidewalks on primary arterials, sub arterials and collectors on both sides of the road or at least on one side of local roads to ensure that the pedestrian network is continuous wherein the pedestrians can walk from one place to another without obstacles to the pedestrians. The following guidelines are recommended for achieving this objective. In addition, in view of high pedestrian volumes in Mysore, the following minimum footpath's dimensions are recommended for providing adequate level of service.

Pedestrian Grade separated facility

On analysing the pedestrian and vehicular movement at various locations in Mysore, it is proposed to have a pedestrian grade separated facility at the most crowded and congested locations for prevent of pedestrian and vehicle confliction as below:

- KRS Circle
- Harding Circle
- Gun House Circle
- Palace Road
- Zoo
- Ramvilas Road
- Pulkeshi Road
- Vishwanava Double Road
- Devraj Urs Road

Strategies for providing pedestrian facilities

A significant portion of the trips, 23 percent are made completely by walk. A comprehensive walking network is necessary for having an environment conducive to walking. If government and owner of private land have collaboration with each other, have a significant and continues footpath along all major roads and streets to provide safety and pleasant space for people would be possible. The following is suggested for the installation and maintenance of footpaths:

- Foot path is to be constructed on all major roads, arterial roads, sub-arterial roads and collector streets.
- Width of 1.5 meters would be suitable in major parts of the Mysore city but in commercial area which has are more crowded, needs more space for footpath. It is required to consider some space for visitors of shops while they are standing in front of shops. Suitable width for commercial area varies from 2 meters to 3 meters, depend on the condition.
- Any encroachment such as vendors, hawkers on footpaths has to be removed. Any further obstruction like trees in the middle of footpath, etc. has to be relocated.
- The footpath design should be usable for all types of people like old people, children, and women and disable people. So it has to have suitable height for kids, parapet for blind people and ramp for disable persons.
- At signalized intersections, pedestrian zebra crossings must be clearly marked.
- Footpaths at all busy intersections must be provided with handrails to enforce pedestrian cross at zebra crossings.
- Footpath has to facilities with lighting to be usable through night and with shady trees for be usable in rainy and sunny days.

- Improving surface of roads to make them useable for pedestrians.

REFERENCES

Christchurch city council, 2001, Pedestrian Strategy for Christchurch City “A Step in the Right Direction”, This strategy has been prepared jointly by the Environmental Policy and Planning and City Streets Units of the Christchurch City Council.

Ehsan Amini, received Bachelor of Civil Engineering degree from Azad University, Iran in 2008, M. Tech. degree in Urban and Regional Planning from Institute of Development Studies, University of Mysore, India in 2012. Presently, working Ph.D. Research Scholar in Urban & Regional Planning in School of Planning and Architecture, University of Mysore, Mysore.

Erlangung des Doktorgrades and Thomas Liebig 2013. “Pedestrian Mobility Mining with Movement Patterns”, Dissertation Report, University of Bohn, Germany.

International transport forum, 2011, Pedestrian Safety, Urban Space and Health.

Mysore city Corporation, Dec 17, 2009. Action Plan for Solid Waste Management, Published by: kbb84

Mysore Urban Development Authority (MUDA)

Setareh Oruji, B. Architecture (Shiraz, Iran), M.A.,MUD (Mysore, India), Ph.D. in development study, Institute of Development Studies, University of Mysore, Mysore, Karnataka, India. She is working as lecturer in Azad University.

Setareh Oruji, Ehsan Amini, 2015, Planning Strategies for Traffic Management in Central Business District (Gandhi Square in Mysore City); an Urban Design Study, International Journal of Scientific & Engineering Research, Volume 6, Issue 2, February-2015

Urban Form of Mysore, <http://shodhganga.inflibnet.ac.in/bitstream/10603/38438/10/chapter%204.pdf>,
