

# Free the Footpaths: Urban Design Concepts to Improve Pathways; Case of Punjagutta

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**Abstract**—In India, Motorized vehicles predominate the road nomenclature. They account for the continuous cycle of road widening; construction of fly-over's and the result still leads nowhere. As Traffic continues to overwhelm Indian cities, people's lives are getting affected, Cities are more sprouted, air is becoming polluted, sidewalks are disrupted by driveways and walking around the cities is becoming tougher.

Urban India is highly biased towards motorized vehicles, making larger roads a core feature of the urban fabric, and hence yielding to the demands of smooth motorized vehicular transit. Neglected footpaths are turned into mere kerbs with all kinds of obstructions like unauthorized parking, signboards, and public toilets, stray animals, electrical poles. Due to which pedestrians are putting themselves and the motorist at risk by jay-crossing, and crossing at convenient locations.

According to Government of India (Times of India, TNN, 1<sup>st</sup> October 2018) data the number of fatalities shot up from 12,330 in 2014 to 20,457 in 2017 – a jump of nearly 66%. Tamil Nadu reported a maximum number of 3,507 pedestrians killed in road accidents last year, followed by Maharashtra and Telangana.

There calls for the need for further research in this area, to change the pedestrian landscape by not just providing infrastructure like sidewalks, zebra crossing, but a pedestrian system built to an explicit detail that draw stands from social equity, urban environment and place making for more walking and transit viable roads, by considering users perception through interviews and surveys.

## 1. INTRODUCTION

Road transport is the dominant mode of transport in India, both in terms of traffic share and in terms of contribution to the national economy. To meet the demand for road transport, the number of vehicles and the length of road network have increased over the years. A negative externality associated with expansion in road network, motorization and urbanization in the country is the increase in road accidents and road crash fatalities. Today, road traffic injuries are one of the leading causes of death, disabilities and hospitalization in the country imposing huge socio-economic costs.

Pedestrians are the common road users in India. Increasing traffic on roads has lead to major death fatalities of pedestrians. According to the data provided by Government of India Ministry of Road Transport and highways, Transport Research Wing, No of Pedestrians killed in Road Accidents in 2015 were 13,894 and the number increased to 15,746 in 2016.

According to Hyderabad Traffic Police out of 1209 cases registered for the year 2018 (up to 30<sup>th</sup> June), 430 cases were pedestrian's accidents. The guidelines for pedestrian facilities were first published in February, 1989. Urban Roads, Streets and Transport Committee approved the revised guild lines in September, 2011. In changing times the need to design an accessible pedestrian plan is the need of the hour for everyone, including those with disabilities and or using mobility aids.

The true definition of “inclusive roads” in Indian context should be a road which actively facilitates pedestrians, bicyclists, cycle rickshaws and also street vendors. It should be a road, where edges are equally important as the central tarred surface. Contrary to this feeling, urban transport investments have served mainly to increase the road capacity for automobiles, often at the expense of travel modes used by the poor. There has been little or no focus in urban transport plans to improve quality for non-motorized users e.g. pedestrians and cyclists (David, Hanmer, & Lovell, 2000, p. 63). Launched with a huge fanfare in the year 2005, Jawaharlal Nehru National Urban Renewal Mission (JNNURM) was one of its kinds reform linked programme for funding urban infrastructure in deficient Indian cities. After the launch of the JNNURM, the Ministry of Urban Development, Government of India (GoI) also announced the National Urban Transport Policy (NUTP) in 2006. The current discussions in India around need for NMT infrastructure have antecedents in the NUTP, 2006. NUTP (2006) had mentioned: “The Central Government would give priority to the construction of cycle tracks and pedestrian paths in all cities, under the National Urban Renewal Mission (NURM), to enhance safety and thereby enhance use of non-motorized modes. Cities would also be encouraged to explore the

possibility of a public bicycle program, where people can rent a bicycle for use in specially designated areas (p.13)

## 2. STUDY AREA

Accidental data of Panjagutta Jn., records 350 accidental injuries in 3 years. Pedestrian accidents alone accounts for 33% on an average. 42% of pedestrian accidents have occurred between 6-12pm. High accident rate in the evening is due to lack of visibility and motorist behavior.

Nh-65 (old nh-9): Panjagutta junction to public gardens  
Nh-65 (old nh-9): Panjagutta junction to public gardens:

NH-65 is a National Highway, a major transit point for to &fro traffic with heavy bus flow with Lane Length 4.06 and Right- of – Way is 36

Panjagutta junction is Located in the center of Hyderabad a commercial and residential area in Hyderabad, India. This area contains business centres, shopping malls and jewellery shops. The stretch has 5 inter junctions at Khairatabad, Lakdikapul, Chintal Basti junction, Ravindra Bharathi Jnc, Public Garden Junction.

Travel lanes are not constant and vary at different junctions; change in the width of the travel lanes decreases the free flow of the traffic on roads and is leading to traffic jams at peak hours. The variation of the travel lanes give freedom to motorist and vehicles to maneuver at their will which results in more accidents and inconvenience to other road users.

**Table 1: Difference in Travel Lanes of all the Roads in the Study Area**

Road	Minimum Travel Lane in (mts)	Maximum Travel Lane in (mts)	Difference
NH-65	9	13	4

Source: Primary Survey, 2018, Author

## 3. FOOT PATHS

The footpaths on these roads are paved with interlocked stones, Shabad tiles, and cover slabs over drains. There is no uniform connectivity of the footpath in all of the site areas. The existing footpaths are occupied by illegal parking. Due to the absence of footpaths people are walking on these busy roads. The width of the footpath varies from place to place. Existing footpaths have barriers, electric poles, transformers, maintenance boxes and trees on them which obstruct free moment of pedestrians. In the entire road network the footpaths are not continuously leveled and objection free for pedestrians Amenities like drinking water and public toilets are nowhere to be seen on the sides of the footpaths within the site at some places the kerb and height of the footpath is more than 150 mm. Most of the footpaths are either occupied by Hawkers or used as parking.

**Table 2: Width of Footpath in Study Area**

Road	Minimum Footpath Width (mts)	Maximum Footpath Width in (mts)	Avg Width
NH-65	0.5	4	2.25

Source: Primary Survey, 2018, Author

## 4. INTERSECTIONS

Intersections are the points of conflicts for Vehicles, Pedestrians and Non Motorised traffic, Khairatabad Jn., is manually operated signal as they carry more traffic load throughout the day.

## 5. PEDESTRIAN CROSSING FACILITIES

Pedestrians are observed to be crossing the roads mostly at inter junctions, close to the bus stop, commercial centers, at 'U' turns and point of change of travel modes.

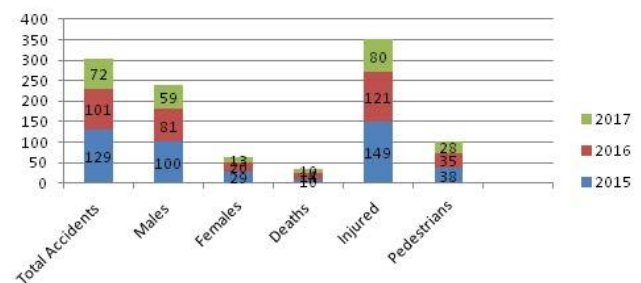
Since the roads are not pedestrian friendly pedestrians generally cross the road at wherever they want to which leads to accidents and causes injury or traffic jams

The median constructed by the HMR has gave less access points for the pedestrians to cross the road but people are climbing the median at major pedestrian points and crossing the roads.

Cross markings at the inter junctions and zebra crossings on roads are not maintained properly.

The stop line which is present in front of the zebra crossing for vehicles to stop before it is not followed strictly.

The pedestrian crossings and existing facilities are not designed considering physically challenged so all the existing facilities are not useless for them.



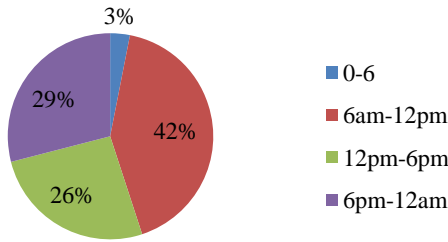
Source: Transport Department, Govt. of Telangana

**Graph 1: Accidental Data of Panjagutta Junction**

## Inference

Over the past 3 years the total injured people at the junction are 350 and out of this the pedestrian accidents alone are recorded as 33 on an average.

**TIMEWISE PEDESTRIAN ACCIDENTS**

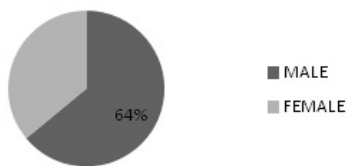


Source: Primary Survey, 2018, Author  
**Graph 2: Pedestrian Accident Data of Panjagutta Junction**

**Inferences:**

42% of pedestrian accidents occurred between 6-12 pm. High accident rate is seen in the evening is due to lack of visibility and motorist behavior. Absence of pedestrian pathways are another cause for high accident rates.

**SEX RATIO**

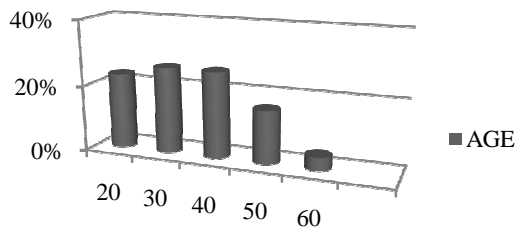


Source: Primary Survey, 2018, Author  
**Graph 3: Pedestrian Sex Ration Analysis of Panjagutta Junction**

**Inferences:**

Woman and girls do not like to walk on roads as they find roads unsafe for them. Only 36% pedestrians are woman and major pedestrians are males.

**PEDESTRIAN AGE**

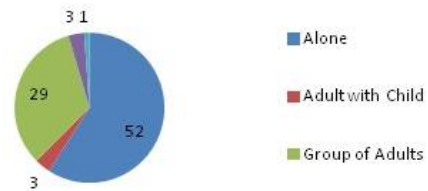


Source: Primary Survey, 2018, Author  
**Graph 4: Pedestrian Age-Wise Analysis of Panjagutta Junction**

**Inferences:**

Age groups from 10-40 contribute 75% of total pedestrians on road. Most of the pedestrians are either student or employee. People above age 50 don't feel safe on walking on roads.

**PEDESTRIAN GROUP**



Source: Primary Survey, 2018, Author  
**Graph 5: Pedestrian Group-Wise Analysis of Panjagutta Junction**

**Inferences:**

52% of the people travel alone and 47% of pedestrians walk in groups which includes a mixture of adults and children.

**MODE OF TRANSPORT**

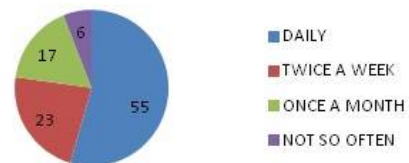


Source: Primary Survey, 2018, Author  
**Graph 6: Mode of Transport Analysis of Panjagutta Junction**

**Inference:**

Most of the pedestrians commute by public transport, whereas 77% use public transport and 15% use private services. Private services include cabs, setwin etc.

**FOOTPATH USAGE**

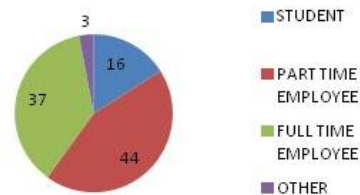


Source: Primary Survey, 2018, Author  
**Graph 7: Footpath Useage Analysis of Panjagutta**

**Inference:**

55% of people use the existing footpath facilities daily.

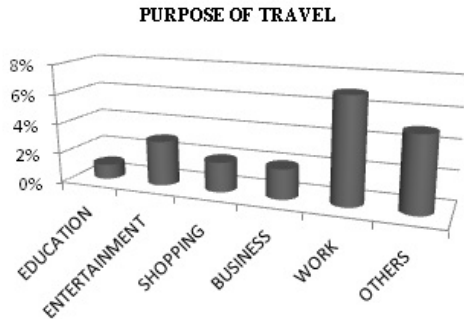
**OCCUPATION**



Source: Primary Survey, 2018, Author  
**Graph 8: Occupation Pattern Analysis of Panjagutta Junction**

**Inference:**

Working class and students contribute 81% of the total pedestrian activity. Others include housewives, retired and old people, business man etc.

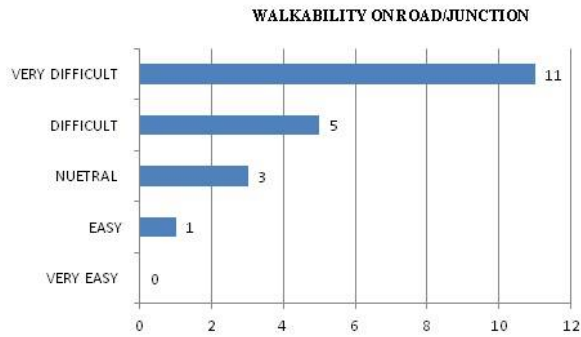


Source: Primary Survey, 2018, Author

**Graph 9: Purpose of Travel Analysis of Panjagutta Junction**

**Inference:**

The major junctions Panjagutta, has mixed pedestrian activity with students and working class (employees).

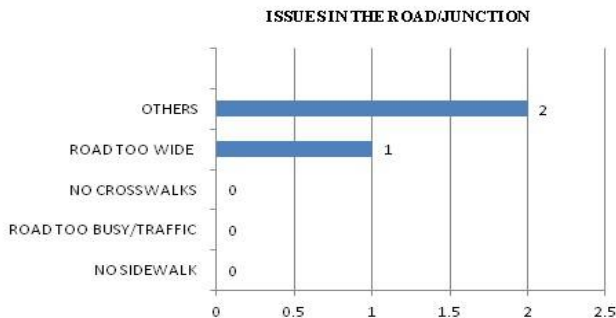


Source: Primary Survey, 2018, Author

**Graph 10: Walk ability Analysis of Panjagutta \**

**Inference**

Walkability at all the Roads/junctions are not easy for pedestrians and 40% of the pedestrains feel that it is very difficult to cross the road.



Source: Primary Survey, 2018, Author

**Graph 11: Issues at Panjagutta Junction**

**Inferences:**

The major issues pedestrians find on roads are the existing roads are filled with traffic.

There are no crosswalks for pedestrians to cross safely.

Punjagutta roads are difficult to cross due to dense traffic.

The junction does not have a clear path way for pedestrians thus, pedestrians try to cross the road wherever they get the chance.

Zebra crossing at the junctions are not visible and must be repainted.

There is no pedestrian crossing time limit provided at the junction, this makes the pedestrian movement more uncomfortable.



**Picture 1: Absence of zebra crossing**



**Picture 2: Uncontrolled pedestrian movement at the junction**



**Figure 1: Panjagutta Junction**



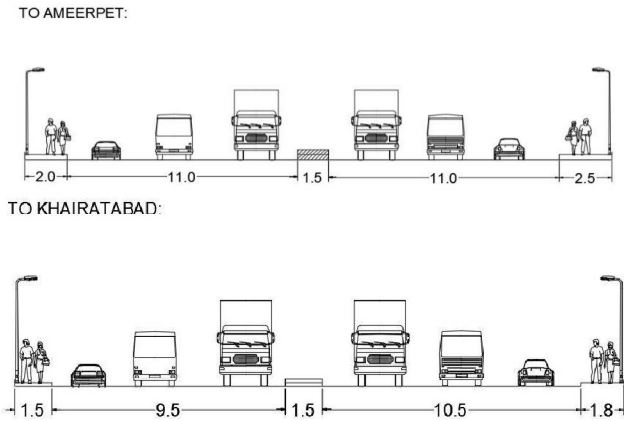


Figure 2: Cross sections at Panjagutta Junction

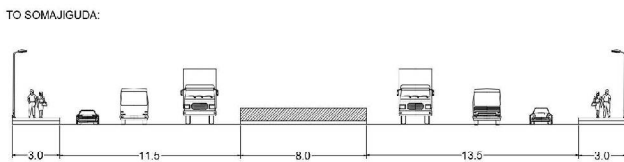


Figure 3: Cross sections at Panjagutta Junction



Picture 3: Panoramic view of Panjagutta Junction



Picture 4: Pedestrian movement at the Panjagutta Junction

Table 3: Site Analysis of NH-65 & Khairatabad Roads

Sr. no	Criteria		NH-65
1	Pavement	Markings	Zebra Crossing at JNC, No Crossing for some medians that are present in Bus Bay
2	Footpaths	Transformers	6
		RMU	8
		Hawking	4
		Trees and Grating	81
		Electric Pole	45
		Bus Stops	7
		Street Lights	87
		Signal Poles	7
3	Storm Water Inlets		10

4	Parking		-Commissioners Office
5	Traffic Flow		2 ways
6	Travel Lanes		3 lane up to Assembly – Nampally route
7	Encroachment		5
8	Public Toilets		2

Source: Primary Survey, 2018, Author

## 6. SUGGESTIONS

Based on the issues identified by the site analysis and visual observations, the Suggestions are given on the following aspects:

### Continuity

The continuity of the footpath facility is very important for pedestrians with disability and old age, frequent kerb cuts along the street both impede traffic flow and create more conflict points between vehicles and pedestrians, thus reducing the effectiveness of the footpaths.

Provision of kerb ramps is essential for continuity of the footpaths.

The kerb ramps should not exceed a height of more than 150 mm from the road level

### At Junctions and Crossings

The zebra crossing and pedestrian walkable facilities should be highlighted by using bright colors of pavers.

Raised crossings, where the car lanes are raised by ramps of slope and brought to the level of the footpaths.

Pedestrians must be given the shortest route to cross the road, therefore the most preferred point form them is at grade intersection.

Minimum of 3 m wide pedestrian crossing must be provided at all road crossings.

A zebra crossing should always be provided with stop line as per IRC.

A signalized intersections should allow exclusive time slots for movement of cross pedestrian traffic.

A minimum of 12 seconds crossing time should be provided so than a person on wheelchair can cross the road easily.

At mid-block crossings pelican signals can be used by the pedestrians.

### Footpath Pavers

Footpath pavers are crucial for people with low vision and physically challenged as they help them to walk on the footpath without colliding with the street amenities.

The pavement should have a combination of guide blocks and warning blocks for safe movement of the pedestrians.

The blocks should be placed logically providing a continuous safe path for the blind persons.

The blocks should be 3 x 3 feet and have different textures on them.

### **Multi Functional/Utility Zones**

Multi-functional/utility zone consists of tree plantings, plantings for storm water, hawkers' zones, parking zones, auto rickshaw stands, street furniture, bus stops, public toilets, dust buns, street lights and signage.

All the service boxes, street lights, pedestrian signals etc. must be placed in a straight line without obstructing the pedestrian flow.

Use of new design in street utilities will reduce the obstacles on the footpaths clearing the blockages.

### **Lighting**

Concentrated lighting is especially required where congregation of pedestrian is expected i.e. at bus stops, near cross walks, near street furniture,

Lighting should be accentuated at all accident prone areas and hazard prone areas.

Good lighting helps in increasing the visibility at night and also increases personal security for vulnerable groups such as elderly and women (including disabilities).

White lighting of 25-40 lux for footpaths and 80 lux at crossings is recommended as per IRC.

The street lights should always be directed downwards at all times.

## **7. CONCLUSIONS**

The probable outcome of the study is to suggest a good pedestrian environment for a positive community which have vested interest in physical and mental well being of the society.

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