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PEDESTRIAN BEHAVIOUR AT TRANSIT TERMINALS

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ABSTRACT

ABSTARCT: As the location of our study is not a signalized junction and is controlled manually, there is a lot of pedestrian moving in irregular direction which will minimizes the safety of pedestrians and also increase the chance of queuing of vehicles which will a reason for increasing the Vehicular Operating Cost (V.O.C). So we, in our study location, studied various pedestrian behaviour characteristics like speed of pedestrians, factors affecting the pedestrians speed, angle of crosswalk of pedestrians for various age groups.
KEYWORDS: Pedestrian Crossing Behaviour, Un Signalized Mid-Block Crosswalk, Transit Terminals, Video Graphic Survey, Speed, Time of Travel and Crossing Angle.

1. INTRODUCTION:

The study about pedestrian is much more needed to improve in all types of pedestrian moving areas. The main basic flow parameters like Speed, Time of traveling and Angle of cross walk are main factors influencing the behaviour of pedestrian. By this study one can easily understand that, when the pedestrians are moving through a flow space at various densities. These can be done by video graphic survey.

Transit Terminals

A terminal is a notable travel centre point served by a few transport courses. Any area where cargo and travellers either begins, ends or is taken care of in the transportation procedure. Terminals are main and middle of the road areas in the developments of travellers and cargo.

Video Graphic Survey

Video Graphic Survey is nothing but a video is taken at the study location, from this video we can take the observations like time of travel, speed and angle of crosswalk etc…

Pedestrian behaviour

As all human being's behaviour isn't unique, the pedestrians are having different behaviour. Especially our pedestrian behaviour at Transit terminals is nothing but, the behaviour of pedestrian at transit terminals, in which they behave at our study location. Below definitions are some of the parameters which are in pedestrian behaviour studies.

- **Time of travel:**

The time of travel is defined as the time taken by the pedestrian to cross some particular distance, especially in our study the distance is taken as the 4mtrs and 5mtrs along and across the road respectively.

- **Speed:**

The meaning of pedestrian speed is the measure of travel required to travel a given distance. In this study the travel pace is given both for single people and also for the normal rate inside a unit, reported in meters per second.

S = meters/second (m/s).

- **Angle of crosswalk:**

Usually the pedestrians are moving in zig zag way at the transit terminals, and they cross the roads with different movements. It's especially depends on the behaviour of pedestrians. So we need to analyse the angle of crosswalk of pedestrians for better suggestion.

2. LITERATURE REVIEW

The following studies have been conducted for pedestrian behavioural studies.

Scott Anthony James and C.Micheal Walton.(2000)

The goal of this paper is to give confirmation of a suggested assessment approach for group of pedestrian developments at travel terminals.

Micheal G H bell and Sukuphull.(2008)

The study tried the explain of pedestrian to follow signals when intersection signalized crossing at junctions and stand-alone crossings (away from a junction). The study additionally explored walker view of wellbeing, level of sign clarity and confusion and different variables that impact levels of consistence at signalized intersections. The study additionally watched and recorded the genuine conduct of pedestrian who joined in the meetings. The intersection conduct of the general aggregate pedestrian population at every site was seen by a video recording.

Conclusion: This study concentrated on walker crossing conduct to look at the pedestrian consistence with signs under various intersection situations.

3. OBJECTIVES OF THE STUDY

The main Objectives of the study is to know the various Pedestrian behavioural characteristics like Time of Travelling, Speed and their Angle of Crosswalk. As our study location is very typical condition in Transportation,of those Characteristics which helps us to suggest for developing of our study location in transportation point of view.

Problem Statement: As per IRC distance of Bus Bay from intersection should be minimum of 75m. But in our study the Bus Bay is exactly at the study location (intersection). So, lot of pedestrian traffic, passengers boarding and alighting will be high due to no proper design of intersection, safety levels are low and traffic congestion and queuing of vehicles is high due to improper pedestrian traffic movement.

4. METHODOLOGY

Before settling on the suitable degree and standard of pedestrian facility, it is critical to evaluate the potential interest. The possible techniques for acquiring such gauges are manual count, videography survey, and attitude survey as takes after.

Manual count: Number the flow of pedestrian through an intersection, over a street, or along a street segment/footway physically utilizing manual noting and counting sheet. Manual checks need to fulfil the taking after conditions.

The review areas should be deliberately chosen keeping in mind that end of the end the needful data should be collected. Points of interest of this manual tallying are that these are easy to set up and do, and adaptable to reaction watched changes sought after on location and impediments are that these are work concentrated likewise basic data can be accomplished and not point by point data.

Video study: Cameras are setup at the chose locales and video recording taken of pedestrian at the chosen perception periods. A reasonable vantage point for the camera is imperative. Such study produces a changeless record of pedestrian development and their association with vehicles. In it the record of conduct example is additionally gotten which helps in investigating the intersection troubles.

OBSERVATIONS

Time

Along road (4mtrs)

Description	gender	Male			Female		
	Age group/ category	Young	Middle	Old	Young	Middle	Old
Week data	Maximum	5.68	4.8	8.29	5.36	5.5	7.29
	Minimum	1.22	2.3	2.6	2.54	2.75	3.3
	Mean	3.2464	3.5836	4.7024	3.3911	3.771	4.9848
Weekend Data	Maximum	6.7	6.4	9.7	6.7	6.7	9.8
	Minimum	1.9	2.4	2.9	1.2	2.5	3.8
	Mean	3.3189	3.888	5.27	2.875	4.7368	6.145

Across road (5mtra)

Description	gender	Male			Female		
	Age group/ category	Young	Middle	Old	Young	Middle	Old
Week data	Maximum	6.9	9.2	11.4	14.15	19.57	13.23
	Minimum	3.3	2.4	3.6	3.6	3.04	4.27
	Mean	4.593	4.858	6.676	6.769	6.415	7.527
Weekend Data	Maximum	9.8	8	10.6	10.7	10.7	8.4
	Minimum	1.5	3.3	4.7	3.0	3.6	4.8
	Mean	5.8939	5.55	7.3	6.23	6.00	6.256

Speed

Along road (4mtrs)

Description	gender	Male			Female		
	Age group/ category	Young	Middle	Old	Young	Middle	Old
Week data	Maximum	1.42	1.2	2.07	1.34	1.375	1.8225
	Minimum	0.305	0.575	0.65	0.635	0.687	0.825
	Mean	0.8115	0.8959	1.1756	0.8477	0.9427	1.2462
Weekend Data	Maximum	1.675	1.6	2.425	1.675	1.675	2.45
	Minimum	0.475	0.6	0.725	0.3	0.625	0.95
	Mean	0.83	0.972	1.318	0.718	1.1842	1.5362

Across road (5mtrs)

Description	gender	Male			Female		
	Age group/ category	Young	Middle	Old	Young	Middle	Old
Week data	Maximum	1.38	1.84	2.28	2.83	3.914	2.658
	Minimum	0.66	0.48	0.72	0.72	0.608	0.854
	Mean	0.9186	0.9716	1.3352	1.3538	1.283	1.5054
Weekend Data	Maximum	1.96	1.6	2.12	2.14	2.14	1.68
	Minimum	0.3	0.66	0.94	0.6	0.72	0.96
	Mean	1.1787	1.11	1.46	1.246	1.2	1.2512

Cross Angles

Description	Gender	Male			Female		
	Age/ Angle	Young	Middle	Old	Young	Middle	Old
Week data	0-30	13	22	21	17	19	19
	30-60	7	4	3	9	4	4
	60-90	6	2	3	7	8	5
	Total	26	28	27	33	31	28
Weekend data	0-30	6	6	7	13	10	11
	30-60	16	18	18	16	17	18
	60-90	3	4	6	3	8	5
	total	25	28	31	32	35	34

5. CONCLUSION

By observing the above observations, we may conclude that the maximum time taken byold people of both age groups, and the maximum speed attained by young people in both crosswalk and sidewalk. And while coming to the Angle of Crosswalk in week day most of the people crossing road in-between 0-30 degrees, and where in weekend most of the people crossing in-between 30-60 degrees. This is because of at the weekend the traffic volume is high.

Whether the pedestrians observed the traffic condition or not before crossing the road directly related to their safety. 97.8% pedestrians looked before crossing, and the remaining 2.2% of pedestrians ignored looking before crossing. The proportion of children without looking before crossing was high, ranging from 5.3% to 14.8%, which was lower than the proportion of running, but this behaviour was more dangerous than running. The proportion of the adult and adult-child pairs who did not looking before crossing was low, only approximately 1%.

As the city of our study location is in developing city the traffic volume is low, but the pedestrians are more in number, there is no need to provide signals at the intersection but we should provide

- Foot path for walking
- The Bus Bay should be at 75m from the intersection.
- The Zebra-Crossing.