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Feasibility Study of Pedestrian Facilities at Hebbal Ring Road Junction

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Abstract: ***Bangalore is rated to be one of the fastest growing cities in Asia with a current population of about 8.8 million and the life style of people and their commuting habits have undergone radical changes in case of an urban areas. This tremendous growth is making unsafely for vulnerable road users like pedestrians. In this study 50 m stretch of road at Hebbal ring road junction, Bangalore is selected to analyse the pedestrian facilities by conducting surveys like pedestrian volume count, questionnaire survey, and accident data. The objective of the study is to obtain the maximum pedestrian volume count at selected stretch for analyzing and to give necessary recommendations. From the study it is concluding that pedestrian volume is high during working days from questionnaire survey are suggesting for the construction of underpass hence there is a serious need of pedestrian facilities such as underpass or pedestrian signal.***
Keywords: Accidental data , Feasibility Study, Pedestrian Facilities, Quessionary survey,

I. INTRODUCTION

Bangalore city from last couple of decades life of the citizens and their lifestyle change drastically because of incredible developments. The volume of vehicles is getting raised it is competing with human population growth and this is becoming great reason for the traffic congestion and violation of rules and regulations with respect to the traffic. This is also cause a problem for the pedestrians. A pedestrian can be defined as a person who is walking on the road by foot. The safety of any pedestrian who is travelling or walking on or by the side of the road is very critical in these metropolitan cities particularly for the growing cities just like Bangalore to faster rate. However lot efficiency with reference to safety of any pedestrians in cities like Bangalore because of scarcity in availability of land. The reasons for this are improper or unplanned designing after cities and other facilities. However in summer weather conditions benefits will not you even use the facilities provided due to improper awareness about that provided facilities for might be because of carelessness too. In many other cases foot paths will be occupied by the vendors this can also be the reason for the pedestrians not using these facilities. And in many places the services of the facilities provided for the pedestrians might not be maintained properly. In order to take care of pedestrians Road users and citizens this type of situations there is a need of the day for providing proper pedestrian facilities from the point of safety of road users who are vulnerable for the accident.

II. LITERATURE REVIEW

Hitesh A. Patel, Amandeep Singh Bhalla, Hardik U. Patel (2016) The primary purpose of this literature is to make a provision of pedestrian safety at a few of specific intersections. In this paper case study of some of the vicinities of Visnagar, MN road, GD circle is carried out. In these places the pedestrian facility is provided with very poor safety measurements. A conclusion based on saying that new proper signals for the pedestrians at these interactions are provided neither God rails are installed which will safeguard the pedestrians. And they have carried on a study e of how to develop the pedestrian facilities and improve the safety facilities at these locations.

Rojas-Su rez, M S Orjuela-Abril, and G C Prada-Bot a (2019) Accident rate increases as the vehicle number increases and the chief usage of roadway must be by the walkers or the pedestrians. But this fact is not full filled as the vehicle traffic is given more importance. A study has been carried out about the characteristics of vehicle Road, determine the critical places and around sections with a highest demand of the the population that are considered the most for the pedestrian crossings. They have obtained the volume of vehicles in the form of numbers to arrive at the flow of vehicles that causes the chosen Road in the form of tables as well as graph. This helped the the research team in identifying the statistical data. Apart from this they have also obtained pedestrian accounts. And they have also conducted a survey about the opinions of the pedestrians and concluded that the motor vehicles are the main causes for pedestrian's accidents.

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Vinayaka, Divya K, Krupashree GM, Arjun P , Mohammed Luqman, Monika G (2020) The main purpose of this paper was to consider the pedestrian safety show the research team has taken a pedestrian chords I question every survey on the streets was carried out by using VISSIM software. The main approach was to give a considerable impact on the safety of the pedestrians. And it could also be utilised for making the decisions regarding making process to enhance the the pedestrian safety.

T. Subramani (2012) [1] This study tells that walking is an integral part of a human and it is the oldest and the most important mode of transportation for the human being. Since any pedestrian who is using the road or exposed tour is come accidents it becomes very important to take into the consideration of these pedestrians safety by providing facilities like signals guardrails secured crossings grade separations footpath etc. In this paper a case study has been carried out on a famous city in Tamilnadu that is Salem. 18 and conclusion has been drawn on how to enhance the safety of pedestrian in this locality.

Sudhir and Sameera kumar (2013) [2]English research the author writes that there is a possibility of underestimating the infrastructure needed for the pedestrians when compared with that of infrastructure needed for the motors. Or in other words importance is given to the motor is more than pedestrians. We have facing the situation where at least one Walker is killed in cities like Bangalore. In his research the author had put an effort to carry out the investigation on the design safety economy and the policy issues currently existing infrastructure of pedestrian.

Ashish Verma and Shirin Marry Anthony (July 2014) [3] In the heterogeneous structure of our country's both rural and urban areas the street vendors are not only inevitable but they are part of our daily life as they are able to provide the services to all the commuters with easily available at lesser cost goods. The whole purpose of the study carried out by the author in this paper is to explore the guidelines of pedestrian policy in Bangalore city that considers and also integrates the provision for the vendors on the street and also formulates proper strategies for study location and develop all purpose pedestrian pathways design guidelines.

Aishwarya Fadnavis (Sept. 2015) [4] In this paper a study has been carried out by focusing the pedestrians crossing facilities like work pass and under pass and where aspects involved in this is facilities pedestrians will have a greater assertion to the roadway just like vehicles. At the same time it has to be kept in mind that in future the demand of four wheelers and the public transportation system will go on increasing and this needs a solution from now itself.

III.STUDY AREA

Due to the presence of heavy traffic in Hebbal ring road junction it is difficult to cross the road . There is no presence of any Underway or Cross ways in that area. I am doing the project in this study area to check whether there is an need to construct the crossways or Under ways.



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IV. METHODOLOGY

1) *Pedestrians' Survey:* The survey on the pedestrians was conducted during the daytime evening as well as afternoon intensity is at peak. Survey was carried out for two non working and three working days continuously. Two working days were Sunday and Tuesday & 3 working days were Monday Thursday and Friday. Collection of restaurants count was done in between 7:00 a.m. to 10:00 a.m. in the afternoon this was done between 1:00 p.m. and 2:00 p.m. and evening this survey was carried out between 4:00 p.m. and 8:00 p.m. This collected data is placed in the form of tables with reference to the route and the days. The total period of the pedestrians from working hours in the evening was then divided for every 30 minutes and then put in the form of table. The same table is presented in this report as below.
2) *Questionnaire Survey:* Opening from the pedestrians were collected to calculate the reasons for the difficulties which was faced by this industrious and this gave us the current situation after the selected junction. Precautionary part was carried out with the general citizens and the pedestrians who were crossing the roads by foot. Some of the questionnaires are listed below:

a) How often the road is being used by the pedestrians
b) The main Purpose or intention of walking
c) How difficult or easy it is while crossing the road
d) Any suggestions or changes that help in enhancing the age of walking

The selected pedestrians for the purpose of survey were professionals, age people, adults, student

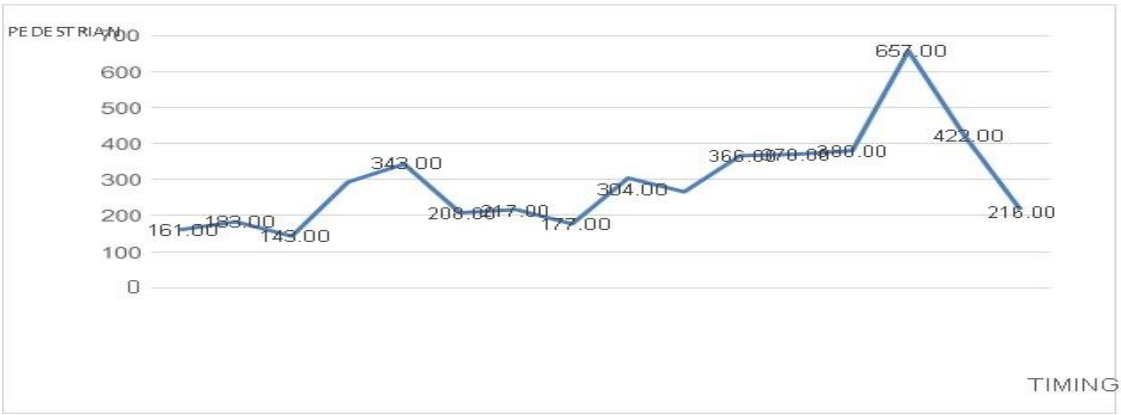
3) Accident data: since the walkers are born to collide with vehicles it is clearly evident that most of the pedestrian accidents happen that might be resulted in injury or even the casualties. The data of accidents walkers gathered from the police station located at Hebbal for the year between 2012 and 2017. The collected data was din analyzed and tabulated father as shown in the picture which contains the number of accidents number of injuries and casualties of these walkers. And at the end this data wall presented in the form of graph.
4) Study of pedestrian speed and LOS: a refugee area was chosen based on the observation and the waiting period at the refugee area was also collected. This refugee area for the queuing area was very much essential to take a decision the level of service for this area with respect to the average space required for the pedestrians. Level of service is categorized from A to F (i.e. LOS A, LOS B, etc). To obtain the estimate of this level of service the below mentioned parameters were needed.

V. OBJECTIVES

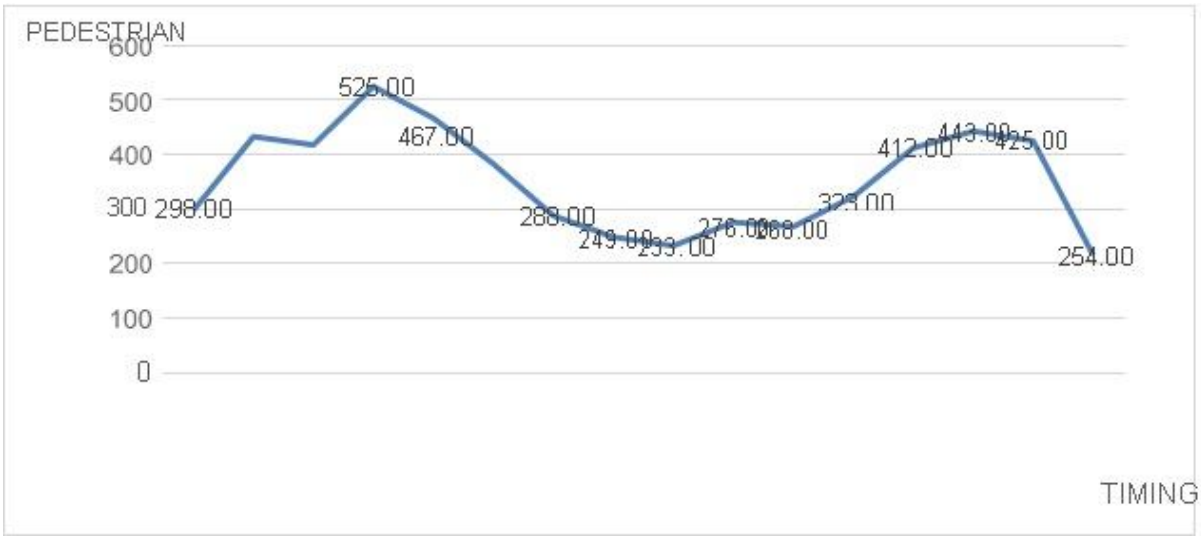
A. To accomplish a survey on the Pedestrians
B. To collect opinions of peoples through questionnaire survey.
C. To carry out an analysis about the accidents by using accident data from the previous years
D. To conduct study on speed of pedestrians & then find the average space required for the pedestrians that will be used to find level of service for the queuing area
E. Give some solutions respect to safety and comfort of the pedestrians based on the carried out field studies

VI. PEDESTRIAN VOLUME COUNT AT HEBBAL CIRCLE

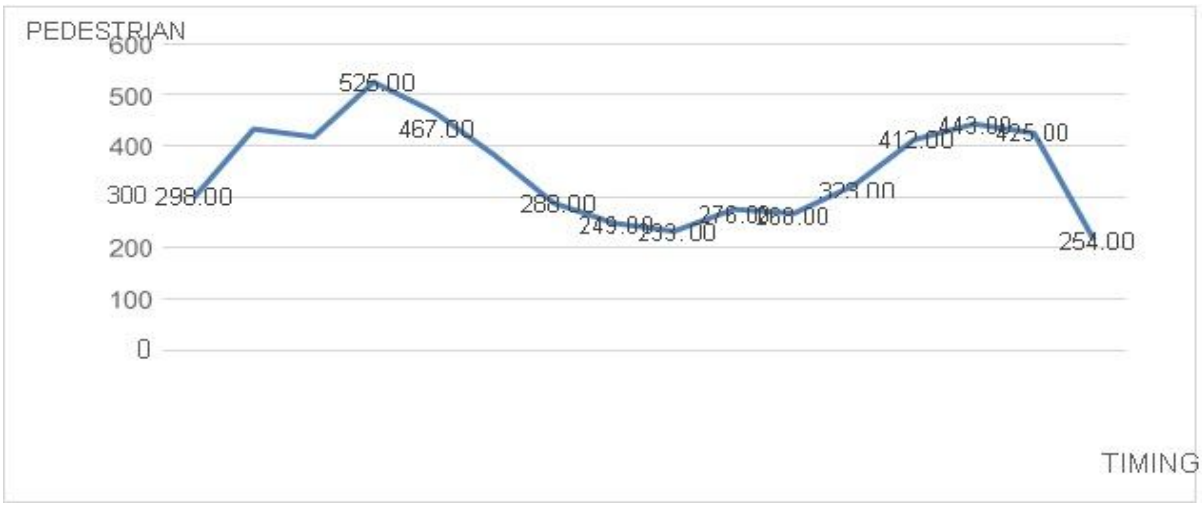
Pedestrian volume count on Monday K R Puram towards



Pedestrian volume count on Monday Hebbal towards K R Puram



Pedestrian volume count on Monday Hebbal towards K R Puram

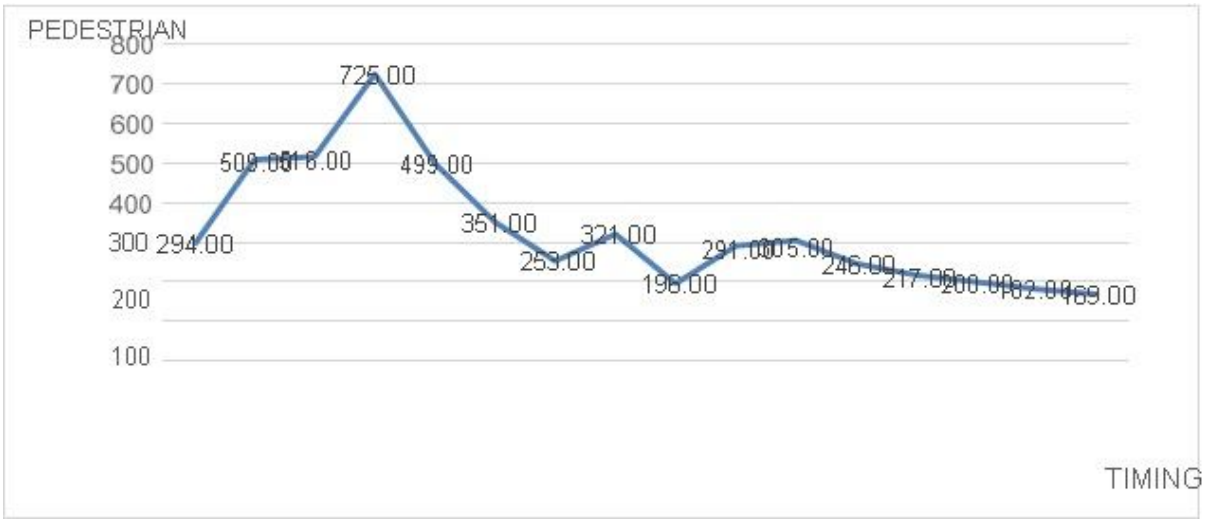


Pedestrian volume count on Thursday K R Puram towards

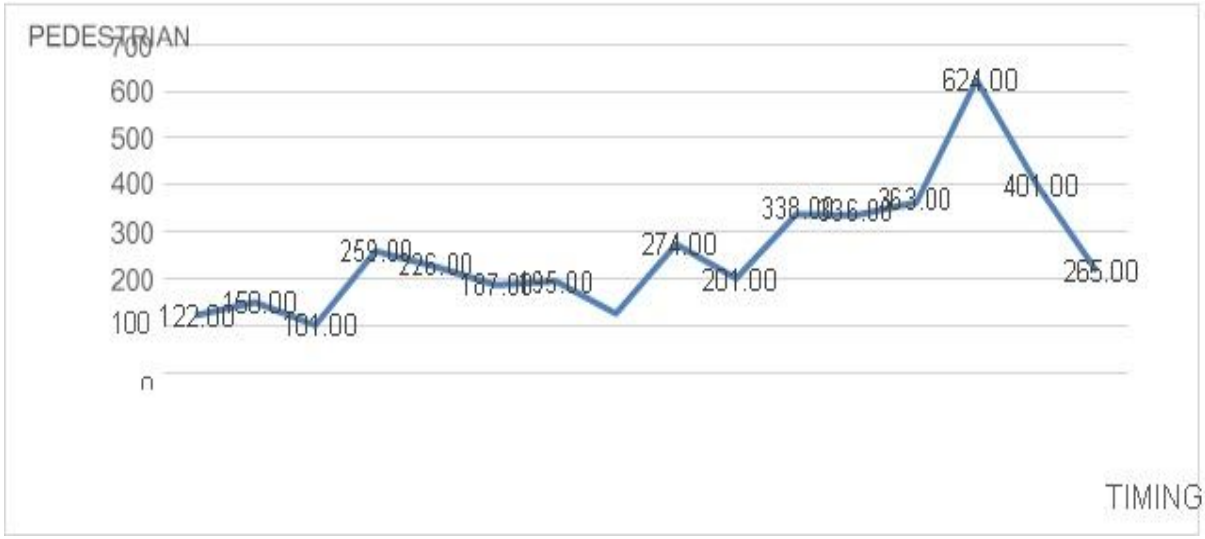


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Pedestrian volume count on Thursday K R Puram towards Hebbal



Pedestrian volume counts on Friday (K R Puram to Hebbal)



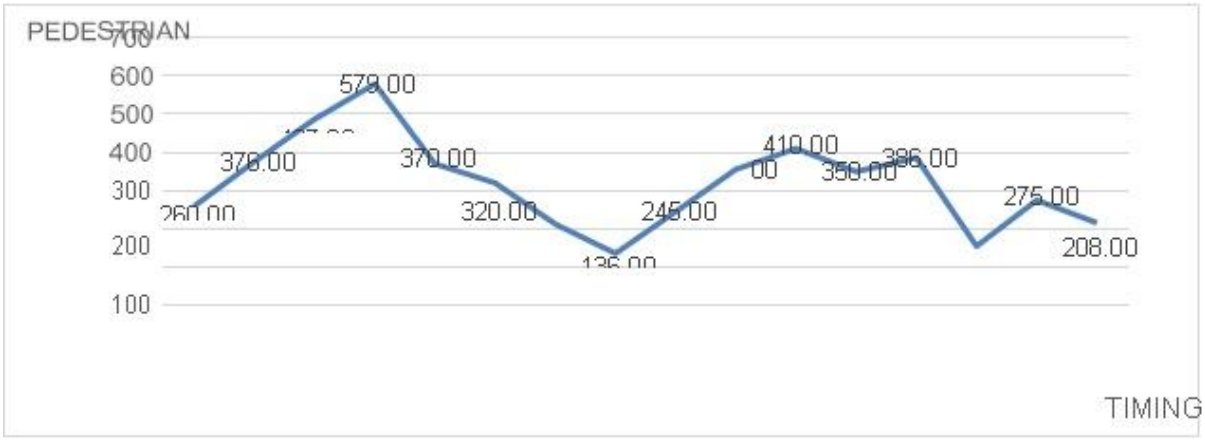
Pedestrian volume count on Friday Hebbal towards K R Puram



Pedestrian vol count on Tuesday(govt holiday) K R Puram towards Hebbal

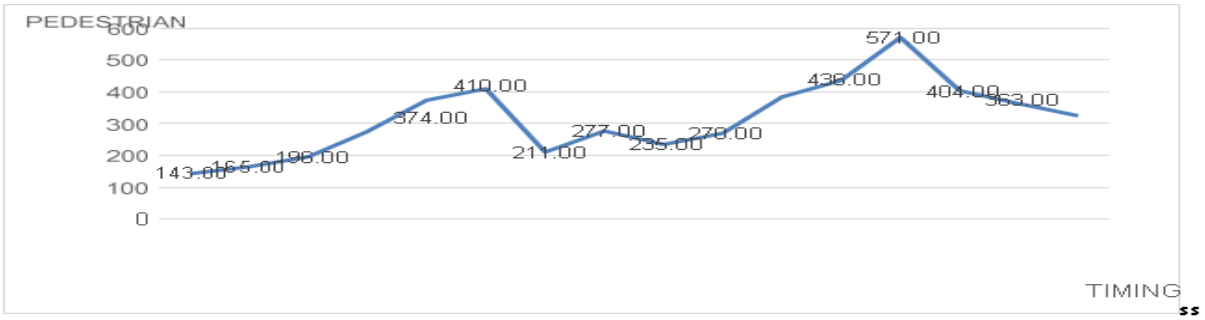


Pedestrian volume count on Sunday K R Puram towards Hebbal





Pedestrian volume count on Sunday Hebbal towards K R Puram



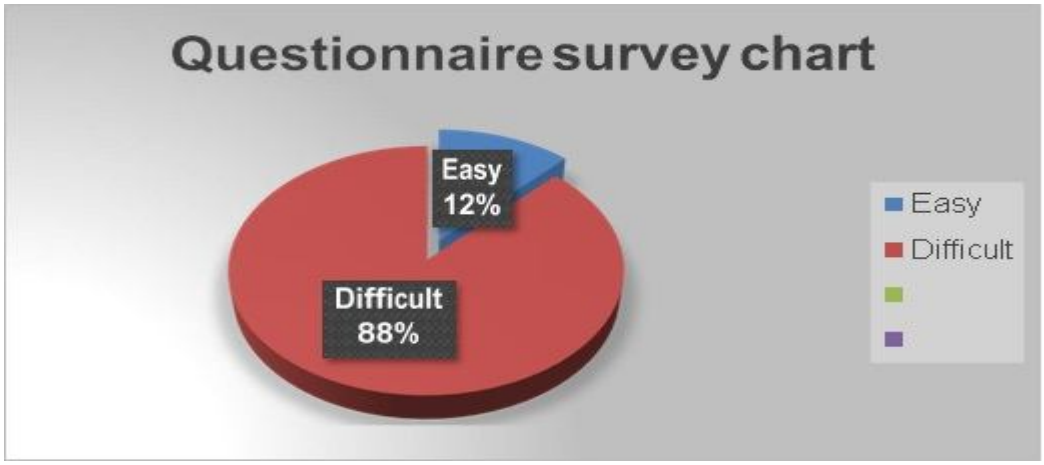
A. Questionnaire Survey

The opinions of pedestrian were taken through questionnaire survey. Total 90 questionnaires were taken and the details of which are tabulated. The opinions are presented in graphical manner.

B. Questionnaire Survey Respond

Type Of Pedestrian	Total	Easy In Crossing The Road	Difficulty In Crossing The Road	Underpass	Signal/Alarm
1.Professional					
Men	30	2	28	26	4
Women	25	4	21	20	5
2.Student	20	3	17	15	5
3.Local	15	2	13	13	2
Total	90	11	79	74	16

C. Questionnaire Survey Chart



VII. RESULT AND DISCUSSION

Results w.r.t Flow of Pedestrian (K R PURAM to HEBBAL)

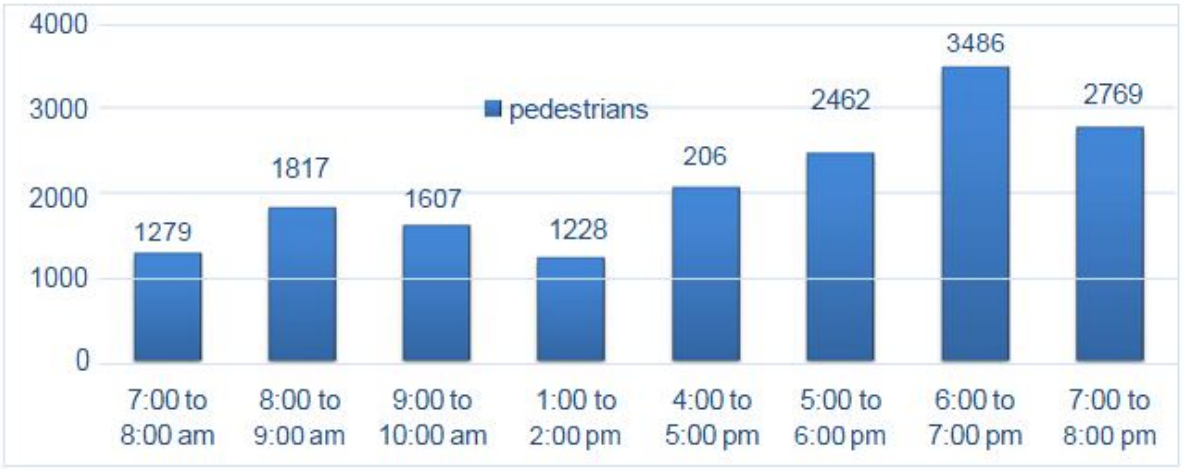


Figure 1 Flow of pedestrian per hour (K R Puram to Hebbal)

Result w.r.t Flow of Pedestrian (Hebbal To K R PURAM)

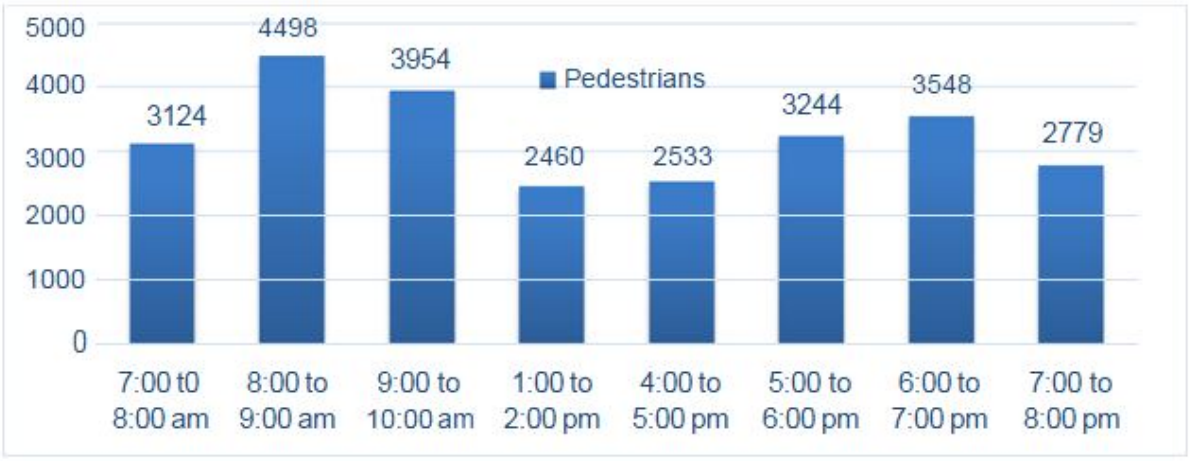
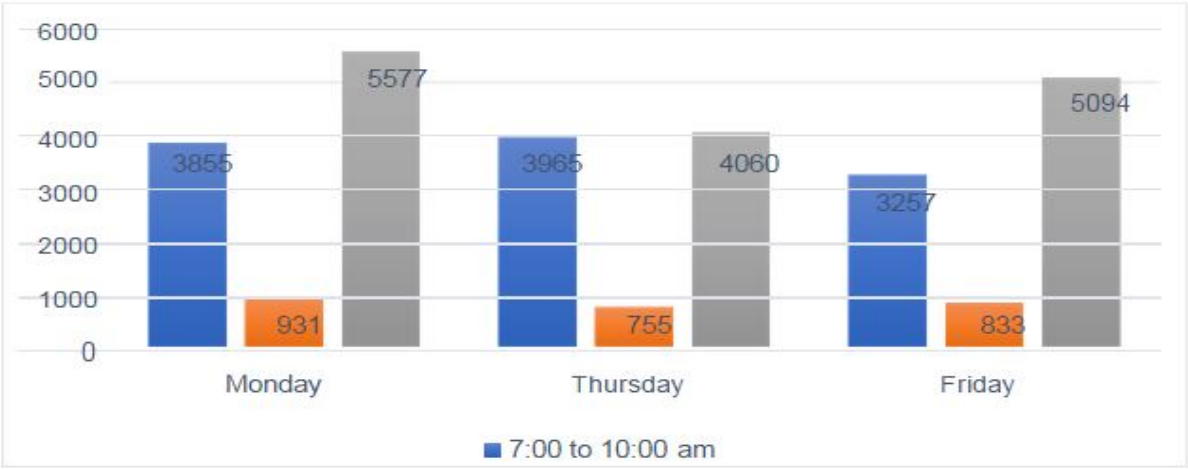


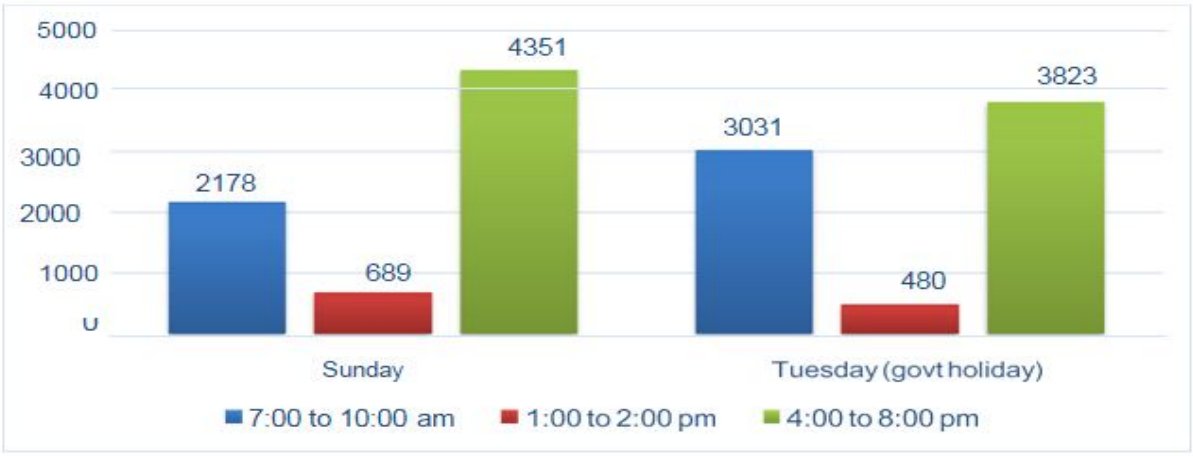
Figure 2 Flow of pedestrian per hour (Hebbal to K R Puram)

Result Of Pedestrian Flow On Working Days



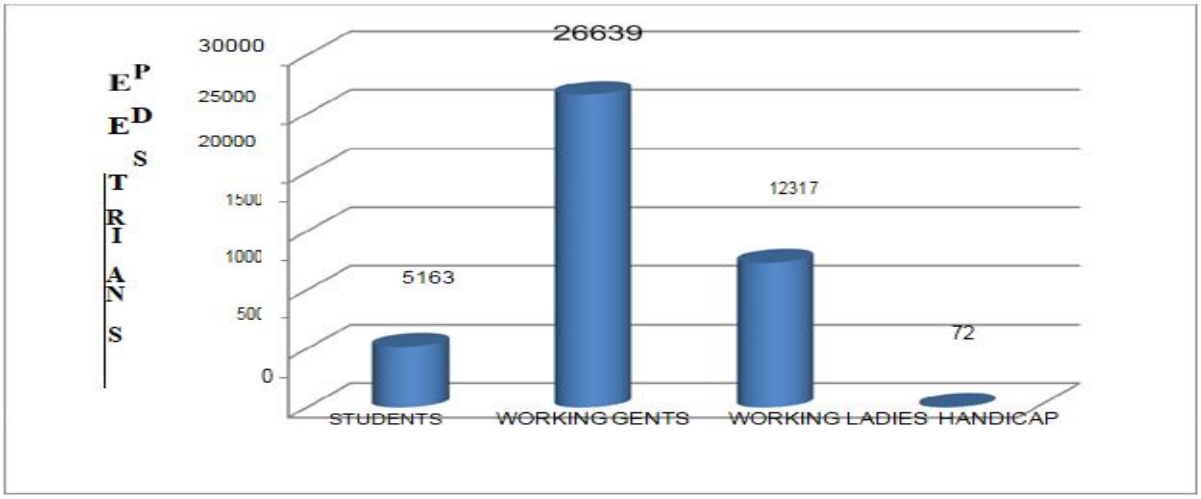
Total Pedestrians Flow on Working Days

Result Of Pedestrian Flow On Non-Working Days



Total Pedestrians Flow on Non-Working Days

Result of Nature of Pedestrian Flow at The intersection



Nature of pedestrians

VIII. DISCUSSIONS

1) From the result obtained, the maximum morning peak hour of pedestrian flow is from Hebbal towards KR Puram at 8:00 to 9:00 am which is 4498 numbers, considering all the working and non-working days.
2) During noon hour, the maximum peak hour of pedestrian flow is from Hebbal towards KR Puram at 1:00 to2:00pm which is 2460 numbers.
3) In evening the maximum peak hour of pedestrian flow is from Hebbal towards KR Puram at
4) 6:00 to 7:00pm which is 3548 numbers.
5) Questionnaire Survey was conducted to collect detail information of possible public needs. The survey indeed helped in bringing up public's important views. From the data collected, it was noticed that the number of people having difficulty crossing the road were more in number. The percentage of people suggesting for Underpass were 82% and people suggesting for pedestrian signals were18%.
6) From the accident data collected(2016-2021) ,it was clear that the accidents occurred more during the year between 2021 &2022.
7) The estimation of level of service (LOS) is done by calculating pedestrian speed, refugee area and estimating average pedestrian space. From the data calculated at morning, noon & evening, the average pedestrian space was found to be less, ie. 0.038 m^2/ped 0.2 m^2/ped. The HCM states that if the LOS is less than 0.2 m per pedestrian than it is categorised as LOS F.

IX. CONCLUSION & RECOMMENDATION

A. *Conclusion*

1) From the experiment investigation the average pedestrian observed during working days are 1057 ped /hr and on non-working days are 815 ped/hr.
2) The peak flow is observed during 8am to 9am in the morning hours and 6pm to 7pm in the evening hours.
3) The study concludes that maximum pedestrian flow from Hebbal towards KR Puram.
4) The study can be concluded projecting a serious need of pedestrian facilities such as underpass or pedestrian signal.

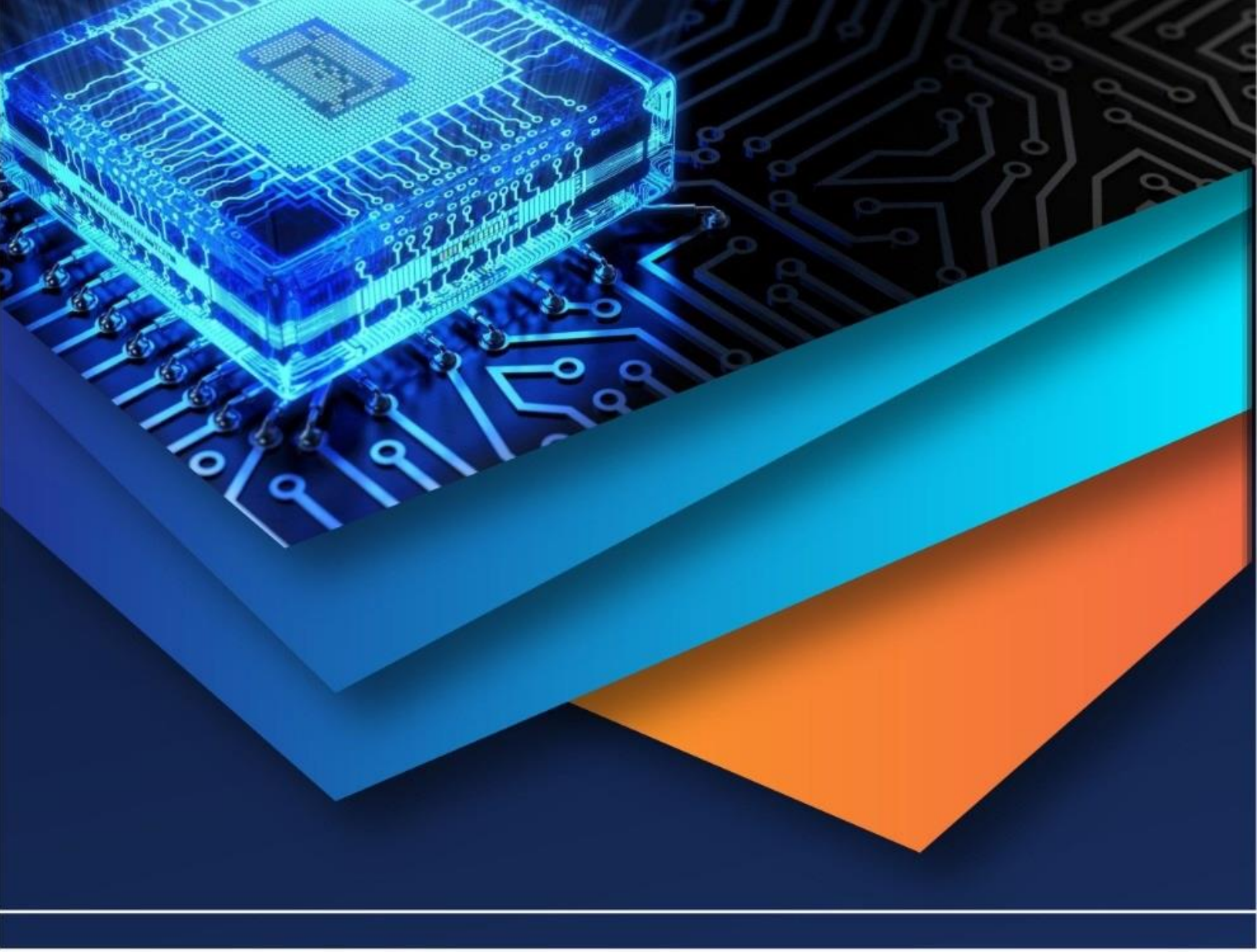
B. *Recommendation*

1) From the study the possible recommendation for pedestrian, safety and comfort will be either a pedestrian signal, pedestrian underpass or pedestrian skywalk.
2) In the particular junction has there having an flyover above the junction we can not provide the skywalk and from the utility point of the entire space we can provide underpass as it is directed from the pedestrian survey so we are providing an underpass. A recommendation width and height of underpass is 4.8m and 2.75m as per the IRC guidelines 103-2012.
3) The actual distance between temple to park is approximate 68m which can be utilised for building an underpass.

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REFERENCES

[1] T. Subramani (2012) "Study on existing pedestrian traffic and facility study on major roads in Salem and suggestions for its improvement" International Journal of Modern Engineering Research (IJMER), Vol.2, and ISSN2249-6645.
[2] Sudhir and Sameera Kumar (2013) "Pedestrians at cross road" Bangalore Traffic, World Transport Policy and Practice,Vol.2.
[3] Ashish Verma and Marry Anthony (2014) "Integration of street vendor's n footpath design guidelines for an Indian city" Transportation Research Record Journal of The Transportation Research Board 1 (1934):1-14 January 2005.
[4] Aishwarya Fadnavis (2015) "Success and Failures of crossing facilities for pedestrians" International Journal of Research in Engineering and Technology eISSN: 2313- 1163|PISSN:2321-7308.
[5] Principles of Highway Engineering –Kadiyali L R
[6] Traffic Engineering and Transportation Planning – Kadiyali L R [7].
[7] Highway Engineering-Khanna S K and Justo
[8] "Study on Existing Pedestrian Traffic and Facility Study on Major Roads in Salem and Suggestions for its Improvement"
[9] "Pedestrians at Cross Roads ;a Case Study of Bangalore"
[10] " Integration of Street Vendors in Footpath Design Guidelines for an Indian City" ; . "Success and Failures of Crossing Facilities for Pedestrian"



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