An Analysis and Effect of Vehicle Pedestrian Interaction on Traffic Flow

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***Abstract*: Among the topics covered in this article are a functional classification of roads suitable for traffic management reasons, as well as the creation and implementation of various components such as signs, delineation, and junctions, to mention a few examples. In this part, we will examine the objectives of, as well as the process of developing a technique. We will also go through the many methods that may be used, as well as the design concepts that are used to create gadgets. The application of traffic management techniques is discussed via the use of case studies, with the emphasis put on the need of addressing routes or networks as a whole rather than simply concentrating on particular problem areas. Among the topics covered in the article are road travel trends in the past and predictions for the future, as well as several techniques for controlling travel demand management. It seems unlikely that these kinds of techniques will have a major effect on travel in Australia for the foreseeable future, despite the fact that they are widely recognized and should be encouraged. Here, we will address the important subject of traffic enforcement as well as the associated problems of education and encouragement that are discussed on this page. The ineffectiveness of traffic control will be magnified if it is not implemented un a logical way and enforced on a consistent basis. The enforcement of traffic rules must be seen as a critical component of effective traffic management strategies.**

***Keywords*: Vehicle Pedestrian Interaction, Traffic Flow, Traffic Control.**

Introduction

In, direction, all kinds of, such as walkers, bicycles, and automobiles, are all considered to be essential. His mission is to ensure the safe, orderly, and efficient flow of people and products, as well as to preserve and, to the extent feasible, improve and next to transportation infrastructure. Despite the fact that it is written in layperson's English, that assumes no prior understanding of the topic. Different Basic traffic features, including, cars addressed, as well as certain traffic volume and traffic flow factors that are important to traffic management. Having accurate information is critical for successful traffic management because it allows the practitioner to make better decisions. Road inventory and statistical techniques, as well as the most frequent kinds of traffic studies, such as traffic volume and composition, origin and destination, movement, travel time and delay, accidents, and parking, are all discussed in detail. Studies of "before and after" conditions, as well as projections of future traffic, are also addressed. The development of a categorization or hierarchy of all roads is required as a foundation for implementing traffic management methods in a rational manner. This is done to guarantee that the main function of each route is specified, agreed upon, and understood. In this paper, a functional categorization of roadways appropriate for traffic management purposes is presented, as well as the development cover different elements of, such as signage demarcation, and, junctions, to name a few examples. In this section, we will discuss the goals of, as well as method creating. We will also discuss the different strategies that may be employed, as well as the design principles devices. Using as examples, the implementation of traffic management methods is addressed, with the emphasis being placed on the need of addressing routes or networks as a whole rather than just focusing on individual issue areas. The article discusses past and anticipated future patterns in road travel, as well as different methods for managing travel demand management. For the time being, however, it is doubtful that these types of methods will have a significant impact on travel in Australia, despite the fact that they are well-known and should be promoted. On this page, we will discuss the critical topic of traffic enforcement, as well as the related issues of education and encouragement. If traffic control is not implemented in a rational manner and constantly enforced, it will be ineffective. The enforcement of traffic laws must be seen as an essential element of traffic management. (TRRL).

Road Traffic

Road traffic lights are one of the most essential tools in the control and operation of traffic flow. A significant effect is made on traffic capacity, traffic safety, economic efficiency, and environmental compatibility through the design and implementation of signalised junctions and signal programmes. According to statistics, signalised junctions are responsible for about 40 percent of all traffic accidents, nearly 80 percent of vehicle delays on metropolitan highways, and approximately 20 percent of vehicle emissions (WHO, 2016; FHWA, 2016; Kan et al., 2018).

The use of road traffic lights to regulate traffic is common in all nations. The design of signalised junctions and signal programmes has been the subject of much research and development in a number of different nations. A number of national guidelines each of which deals with signal timing procedures, methods, and optimization models tailored to a specific country, region, or circumstance. However, there is currently no worldwide standard for the regulation of road traffic signals. Despite the fact that there are substantial variations across nations, worldwide harmonisation and learning from one another has proven challenging so far due to the various languages spoken and the restricted accessibility of national laws for road traffic signal management systems.

It is the goal of this book to contribute to the worldwide exchange of information by summarising the practise of road traffic signal control in a number of nations and areas all over the world. An excellent group of national specialists from 16 nations have written individual studies that provide an extensive overview and comparison of worldwide practise in road traffic signal management. As a result, the book enables for an in-depth examination and comparison of international approaches. Individual rules' strengths and shortcomings may be discovered, and the findings can be utilised to enhance road traffic signal management systems and bring them into compliance with worldwide standards.

Traffic control

Traffic control refers to the monitoring of the movement of people, commodities, or vehicles in order to guarantee efficiency and safety of the system. The flow of people and commodities from one place to another is referred to as traffic. The movement is usually accomplished along a predetermined facility or route, which is referred to as a guideway. All mobility, with the exception of foot movement, which is powered only by human effort, needs the use of some kind of vehicle. Traffic develops as a result of the need to transport people and commodities from one place to another. Thus, the movement is triggered by individuals making the choice to transfer themselves or other people from one place to another, either to engage in activities at the second location or to carry products to a location where their value is greater. When it comes to the functioning of all modes (for example, to keep aircraft flying), physical characteristics are important. As a traffic controller, one of the most difficult tasks is to accommodate the flow of traffic while maintaining safety and efficiency. For example, a railroad may be considered efficient if it is able to meet the travel needs of its clients while incurring the least amount of expense. If a less expensive option (for example, a trucking service) can fulfil the same client requirements at a lower cost, it will be seen as being inefficient. The second important reason for traffic control is safety, which is the regulation of traffic in order to minimize or eliminate accidents. The primary goal of traffic management is to regulate the flow of people and commodities in the most efficient and safe manner feasible. The twin goals, on the other hand, often clash or at the very least compete with one another. The safety of the travelling public is not only the responsibility of the traffic control community. The operators of almost every form of transportation are regulated by organizations that administer licensing processes, impose fines for improper operating methods, and compel operators to participate in ongoing training in order to maintain their certification.

What is an Automobile

Rather of being powered by human power, an automobile is one that is directed by a person. Automobiles come in a wide variety of shapes and sizes, including: cars, buses, trucks, motorcycles, and other similar vehicles. Benz Patent-Motorwagen was the name given to a three-wheeled vehicle developed by Karl Benz in 1885 and patented under the name of the same name. At the same time, two other German inventors, Gattieb Daimler and Wilhelm Maybach, submitted a patent application for a motorbike design. The first automobile accessible to the general public was the Model-T Ford, manufactured by Henry Ford in 1908. It was the world's first automobile to be produced in large quantities. It is the car that is directed by a human rather than being powered by a human being. Automobiles come in a wide variety of shapes and sizes, including: cars, buses, trucks, bikes, and other similar vehicles.

Types of Automobiles

1. Passenger vehicles, such as automobiles, buses, taxis, and so on. Vehicles for moving goods: trucks, tempos, containers, and so forth.
2. Special-purpose vehicle, such as an ambulance or a fire truck.
3. The following is arranged in order of load bearing capacity:

-Light motor vehicle (LMV): A vehicle that is not capable of carrying a lot of weight.

-Automobiles, Jeeps, and other similar vehicles

4. Medium-sized transport vehicles (MMVs) such as buses, taxis, and other similar vehicles.

Trucks, tractors, and other heavy motor vehicles (HMVs) are examples of heavy motor vehicles.

5. The number of wheels is determined by the following formula:

- Two-wheeled vehicle:

Automobiles such as motorcycles and scooters, among other things

Three-wheelers include the Autoriksha and others.

Automobiles, Jeeps, and other four-wheelers are examples of four-wheelers.

Trucks, buses, and other six-wheeled vehicles

Karl Benz developed the automobile in 1885, and it has been in use ever since. Benz Patent-Motorwagen was the name given to this three-wheeled vehicle that was patented in 1886. Another pair of German inventors, Gattieb Daimler and Wilhelm Maybach, submitted a patent application for a motorbike about the same time as Daimler and Maybach. However, the Model-T Ford, created by Henry Ford in 1908, was the first car to be manufactured in large quantities. It was also the first mass-produced automobile.

Impact of Vehicle Pedestrian Interaction on Traffic Flow

Pedestrians are an essential component of the urban transportation system, but they are also particularly dangerous at unprotected mid-block areas where there is mixed traffic. In mid-block sites that are not well-protected, certain cars may be required to yield to pedestrians who are already at a crossing point. Some people, on the other hand, are taking advantage of forced gaps to cross the road. As a result, pedestrians utilise the mid-block crossing with imposed spacing, which has the effect of decreasing the features of vehicle flow. When pedestrians enjoy comfortable walking facilities, the presence of pedestrian walkways has no direct impact on the features of vehicle traffic flow. The purpose of this research was to investigate the impact of a pedestrian crossing on the features of vehicle flow at a mid-block site under mixed traffic circumstances under investigation. The findings show that the pedestrian forced gap condition has a statistically significant impact on the characteristics of the vehicle. Using the findings of this

research, it may be possible to reduce the amount of time that motorists spend travelling by limiting the use of pedestrian forced gaps.

Walking has traditionally been the most common mode of human transportation. And it is for this reason that we regard pedestrians to be the Basic components of transportation. Walking was the sole method of transportation in the ancient world, and there was a great deal of pedestrian traffic at that time. It is swept away by two layers of abstraction. It is possible to evaluate the Basic flow characteristics such as movement and Compactness of pedestrian motion at the macroscopic level, and it is possible to monitor the routes taken by individual pedestrians while travelling at the microscopic level. As a result, it is obvious that the pedestrian has the ability to forge their own routes during their entire trip. When it comes to pedestrian crosswalks, there are several options available, including zebra crossings, when crossing the road in other locations, such as areas with heavy traffic, pedestrians prefer to cross in the middle of the block. However, there is no safety when compared to crossings that are signalised. In fact, numerous pedestrian crosswalks are being installed in these midblock areas of the city. The width of the crosswalk is determined by the demand for vehicle and pedestrian movements. Though there are some current guidelines for crossing width that have been published, these guidelines do not offer precise specifications for the necessary crosswalk width in relation to various pedestrian demand volumes and characteristics. Walking motion is restricted to one direction in unidirectional flow, while walking motion is restricted to both directions in bidirectional flow, allowing pedestrians to engage with one another.

Impact of Vehicle Pedestrian Interaction on Traffic Flow

Some researchers are presented in this article in order to better understand how people move about in the Akola metropolis. Because pedestrians are an essential component of the urban transportation system, they are particularly susceptible at unprotected mid-block areas when there is a high volume of traffic, as we have shown in previous studies Various pedestrian motions are described in the articles. In a similar vein, we are aware that pedestrians crossing midblock portions of metropolitan roadways in developing nations such as India is very frequent. It is always stated where pedestrians cross the road, even if there are no pedestrian crossing markings. Population growth in these regions has been increasingly fast in recent years as a result of the saturation of the city's population inside the city limits, and this has been linked to the expansion of large-scale industrial development in the farthest reaches of the city. Because of this, it is essential to pay attention to transportation issues and investigate the need for street lighting, improved geometric design, signals, highway marking, and other infrastructure improvements. To accomplish this, several locations around Akola city have been selected, including the road junction in Sindhi camp, the Post Office Road, and the intersection between station sites that see a high volume of traffic. The research will be split into two sections in this article, with the first portion concentrating mostly on a mid-block segment and the second section concentrating primarily on the junction stated before.

Walking has been the main mode of human movement in modern times. And it is for this reason that pedestrians are regarded to be the Basic components of transportation. A well-designed facility may be beneficial to pedestrians. Walking was the sole mode of transportation in ancient times due to the large number of people who walked wherever they wanted to go. As we all know, walking is a convenient method distances, and it also popular transit. As a result, the supply of the finest design spaces for human mobility, such as at movement for travelling to a hill station and touring the area, travelling for business purposes, and so on. In order to do this, the study of vehicular motion is very essential in all areas, and it is carried out on two levels, namely, the ground and the air (macroscopic level and microscopic level). On a macroscopic level, a study of Basic flow characteristics such as the Compactness of vehicular motion and the movement of the vehicle. At the macroscopic level, it is possible to track the routes taken by individual vehicles as they are travelling, respectively. According to the findings of the research, vehicles have the ability to create their own paths throughout their trip. After that, when it comes to vehicular crossing behavior, there are many different types of cross roads, such as intersections, that are available to assist vehicles in moving from one side of the road to the other side of the road, and they play an important mode signalized. However, at certain other locations, such as that where heavy traffic is present, vehicles opt to cross the road at the midblock. When compared to a signalized junction, there is no sense of safety here. A large number of vehicular cross roads are occurring in this midblock area as well. It is completely dependent on the vehicle travel motion and thus the road width must be specified. There are various manuals that have been produced regarding road width, but they do not offer a precise specification for the road width that is needed in each case. Unidirectional and bidirectional vehicular flow are the two kinds of vehicular flow that exist. In a unidirectional flow, vehicular motion is only carried out in one direction, while in a bidirectional flow, vehicular motion is carried out in both directions at the same time and interacts with the other vehicles. The safety of vehicles on the road most essential environments. While it comes to road safety, the conduct of vehicles when crossing restricted crossings is a significant concern. The study article is concerned with the development of vehicular motion that may be used to explain the interaction between vehicles at the cross section. The data on vehicle flow interaction at different junctions in Akola city was gathered for these experimental investigations, which will be discussed.

Impact of Vehicle Pedestrian Interaction on Traffic Flow

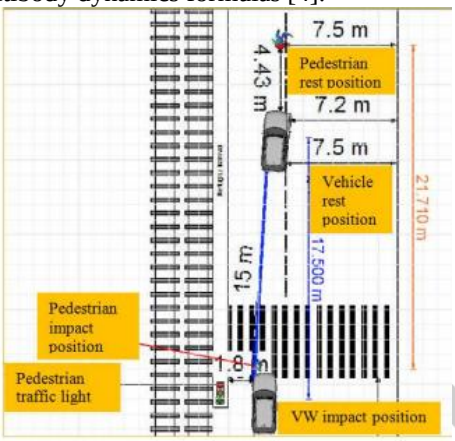
There have been many studies conducted to better comprehend pedestrian movement, and all of the research have relied only on basic diagrams. These investigations provide the groundwork for characterizing pedestrian traffic. Several experiments have been carried out in order to better understand pedestrian movement, and some field observations have been carried out in order to depict basic diagrams. A number of locations in and around Delhi have been selected for this purpose. Aim of the experiment is to determine whether or not the pedestrian basic diagram differs in various places. Based on this research, it has been discovered that basic schematics vary in various parts of the city of Delhi.

Walking has traditionally been the most common mode of human transportation. And it is for this reason that we regard pedestrians to be the Basic components of transportation. Walking was the sole method of transportation in the ancient world, and there was a great deal of pedestrian traffic at that time. Taking a stroll should be the starting point and ending point of any form of transportation connected with travel and excursions. Short distances may be travelled efficiently by foot, which is an excellent mode of

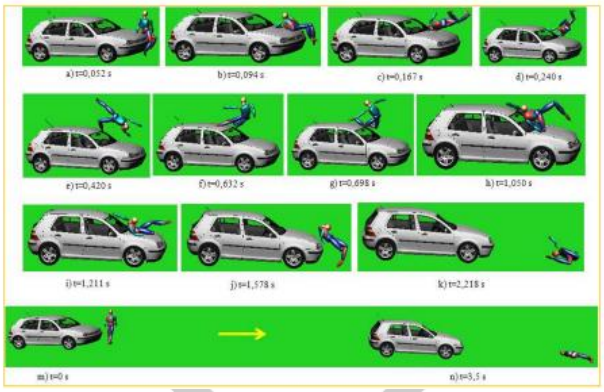
transportation. For many people in Indian cities and other nations, walking is the most convenient mode of transportation. By removing two levels of abstraction, it is washed away. Using the macroscopic level, it is feasible to assess the basic flow characteristics of pedestrian motion, such as the rate and Compactness of movement, and the microscopic level, it is possible to monitor the routes followed by individual pedestrians while travelling. As a consequence, it is clear that the pedestrian has the capacity to devise their own paths throughout the duration of their journey. When compared to crossings that are signalised, there is no sense of security at this crossing. The city is in the process of installing a large number of pedestrian crosswalks in these midblock neighborhoods.

Material and Methodology

Computed-based collision reconstruction techniques were used in combination with the PC-Crash software, version 10.1, to assist with the reconstruction of the kinematics characteristics that were specific to this traffic accident. It is feasible to simulate complex accidents using PC-Crash by employing multibody dynamics formulas [4].

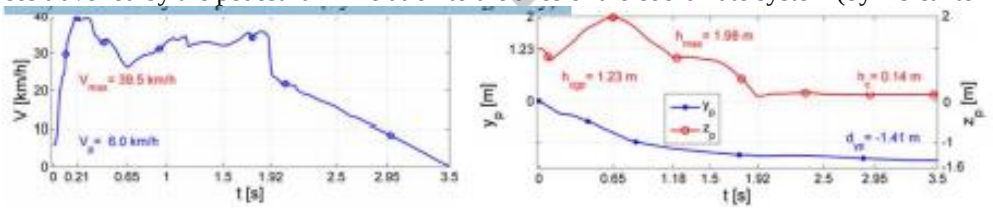


It separates the impact position of a motor vehicle from its final position measured in relation to the vehicle's center of gravity, and 21.71 m separates the impact position of a pedestrian from her last known position measured in relation to the pedestrian's canter of gravity (both measured in relation to the pedestrian's Centre of gravity).



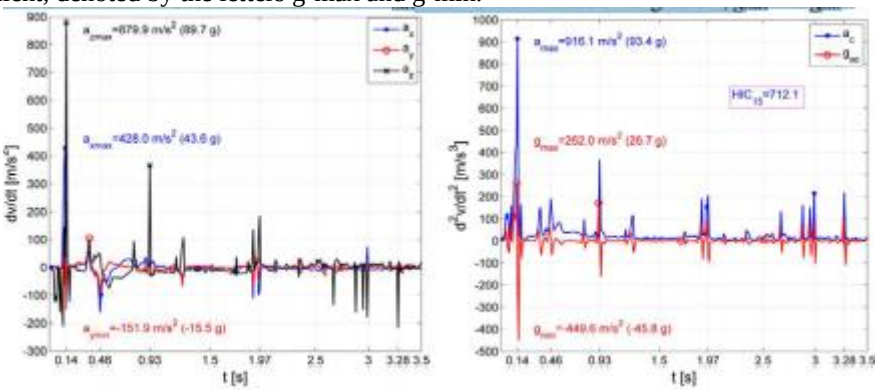
Pedestrian kinematics and biomechanics

To illustrate what was learned about pedestrian biomechanics via computer reconstruction of the accident, we provide the findings acquired from the computer simulation of the collision below. Figure depicts the pedestrian's movement , while figures 10 and 11 depict the distances travelled by the pedestrian in relation to the axes of the coordinate system (by his canter of gravity).



It follows that, after being propelled into the air, the pedestrian collides with the car, which absorbs a significant amount of extra energy as a result of the impact, due to the fact that the pedestrian's movement increases from this point on. Figure shows that the pedestrian fell to the ground on the road at the period t=1.92 s, which corresponds to the moment when the height zp is at its smallest. This results in the pedestrian falling on the road from this moment onward and until the person comes to a full stop (at time=3.5 s). Following the results of figure, the pedestrian's fall on the road lasts for a total of 1.58 seconds, with the distance travelled during this time being dg =5.31 metres. Between the initial vehicle-pedestrian accident and the pedestrian's arrival on the road, 1.92 seconds had passed. In this length of time, da=16.4 metres have been covered in terms of distance travelled. It is shown in figure 11 that the pedestrian has travelled dxp=21.71 metres in the direction of the Ox axle, which is the same distance as that shown in for the same person travelling in the other way. It shows the values of the head's accelerations and decelerations along the three coordinate axes (axe, ay, and az), while depicts the. Aside from that, the along each of their respective three axes are shown

in figure in both absolute and relative terms. Figure depicts the greatest, denoted by the letter a max, as well as the maximum and lowest values of its gradient, denoted by the letters g-max and g-min.



For example, the longitudinal acceleration of the head axe is more than the maximum allowed acceleration but the lateral acceleration is less than the maximum tolerated acceleration of a human person. Consequently, the pedestrian's head is exposed to accelerations that are higher than those that are permissible for him or her. In the HIC15 criteria has a value more than the maximum allowed value (712.1>700), indicating that the situation is more serious than it might be otherwise. Also well acknowledged is the fact that the greatest level of tolerance accessible for people aged six and above is HIC15=700, which is the highest degree of tolerance currently available for humans]. Moreover, as shown by the results of the traffic accident, surpassing the tolerance level justifies the trauma sustained by the pedestrian's head during the collision. Exceeding the tolerance threshold is unacceptable (paragraph 2.1). According to what is known in the specialized literature is the most often used criteria to evaluate the severity of head injuries, and it may be expressed as the relation.

$$\mathrm{HIC} = \left[\left(\frac{1}{t_2 - t_1} \int_{t_1}^{t_2} a_{rez} \mathrm{d}t \right)^{2.5} \cdot (t_2 - t_1) \right]_{\max}$$

In which t1 and t2 denote the upper and lower bounds of the time span under consideration, respectively, and arez denotes the instantaneous linked. in which t1 and t2 denote the upper and lower bounds of the time span under consideration, respectively. With HIC15, the risk of skull fracture is associated with the time interval t2-t1=15 ms and is indicated as such. On the right side of it can see the contact forces acting on the pedestrian's thorax (torso). It can be seen in that the rib fractures occur in the thorax area as a consequence of the contact force (the resultant thorax force) being more than the permissible limit (7186.1>6600 N. [6]).

Empirical Observation: data collection, decoding

In addition to the interactions with other pedestrians' movements, the geometry of road facilities and alternative routes that pedestrians must select from while travelling in several directions are also factors that influence pedestrian mobility. The pedestrian movement may be unidirectional, bidirectional, or multidirectional depending on the environment. When travelling in heavy traffic, they do not like to go on very clear paths or lanes, but they may do so in certain circumstances. A number of tests were carried out at junctions and in the middle of a block. It was decided to perform the first experiment on disrupted pedestrian movement in Patel Nagar and Delhi to investigate the effect of motorised vehicles on pedestrians.

Experiment on pedestrian movement:

An carried out in order to establish the basic diagrams between the movement and Compactness of walking people. In this context, it should be noted that many investigations, such as the German pedestrians in Sayfried et al., have been conducted prior to this examination of the basic studies (2005). The importance of site selection cannot be overstated, and each place was carefully examined, with the results of a questionnaire survey being very beneficial in the experimental setting. According site scenario depicts the Patel Nagar Rotary Intersection in Delhi, India:

Figure: site scene of intersection at Patel Nagar

3.2 Experimental set up

At each of four corners 's trial road segment, which is 19 x 8.5 metres in size, were range rods installed to frame the area. This depicts the situation. In order to make it easier to keep track of entrance and departure times, the pedestrian crossing has a bi-directional flow, as seen below. Because the data will only be collected during peak hours, it should provide extremely positive results in the next stages.

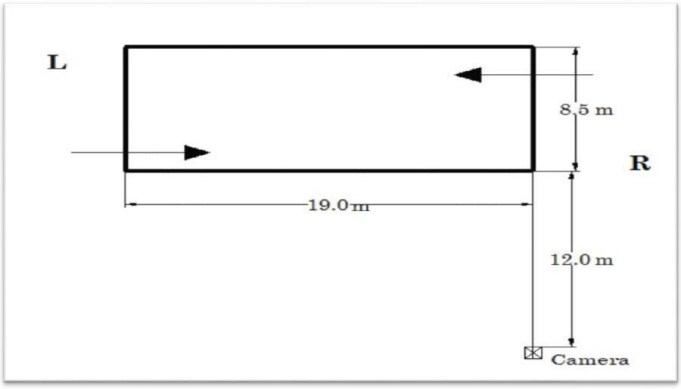


Figure sketch of the experimental road section of Patel Nagar, Delhi.

Each set is 20m in length and is split into three parts, each of which is 6.67m in length and is used to monitor the behavior of pedestrians crossing the street. For each 6.67m portion, six observers tallied pedestrian activity. They were positioned opposite to one another for each 6.67m section. The human count technique is less precise than the automated method, despite the fact that it provides us with information on crowded pedestrian crosswalks and how they vary from one location to another.

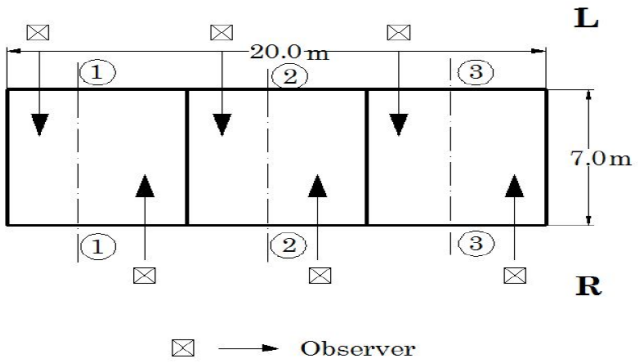
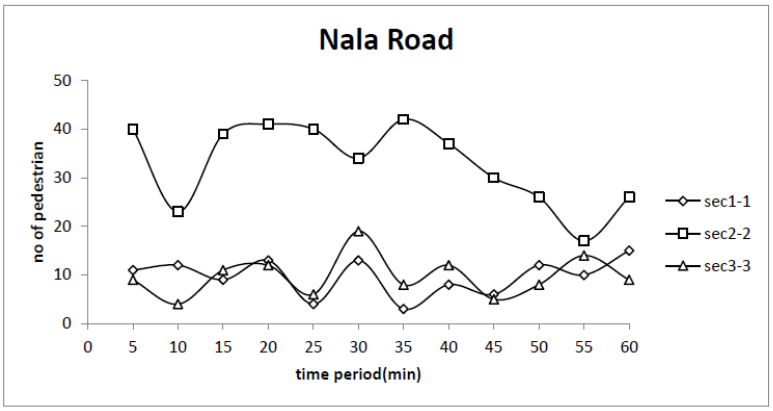
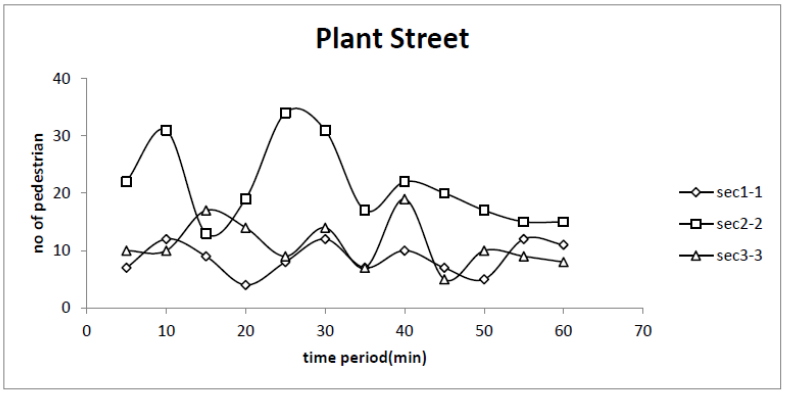


Figure neat sketch of daily market section.

Furthermore, these three sites are about 500 meters away from one another. The flow is split into three equal sections, with each section having a different flow rate as shown in the graphs. According to the graph, the centre of the segment has a greater flow rate than the other two parts, which makes sense.





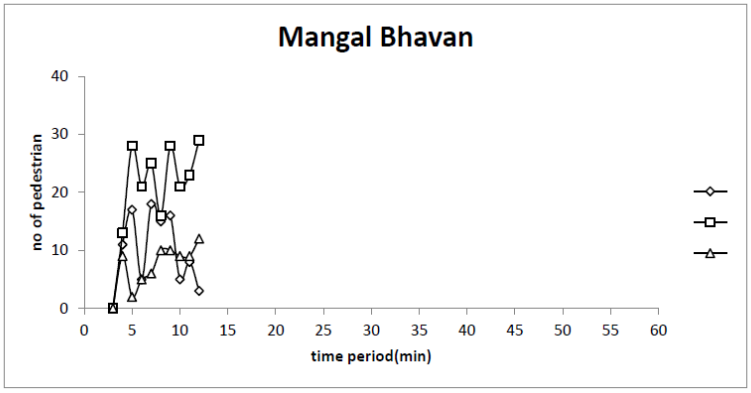


Figure: flow diagram of undisturbed pedestrians (a) Nala Road, (b) Plant Street and (c) Mangal Bhavan-Delhi Patel Road
When it came to foot traffic, most people chose to walk in the canter portion of the route, and demand varied from one place to another in various directions and at different times of day. crossing the greatest amount of crosswalk activity occurring in the canter of the section, which is consistent with this finding. also crossing the greatest amount of crosswalk activity occurring in the canter of the section, which is consistent with this finding. When traversing a stretch of road in the field, it was noticed that were occurring as vehicle crossed segment. Several additional rates were measured, in addition to the 483 ped/ reported.

Results and Discussions

When it comes to comparing basic schematics across cultures, U Chattaraj and colleagues (2009) are the go-to people. Hypothesis testing is also used to demonstrate the differences between the disrupted and undisturbed pedestrian flow patterns. The statistical findings have been obtained via the use of regression analysis. The manual count technique is used to determine the pedestrian traffic, which is done every 5 minutes. It is observed that the pedestrian movement changes from part to section and from location to location as a result of this observation. The total amount of information gathered is determined by the duration of the counting period, the kind of count being conducted, the number of crosswalks seen.

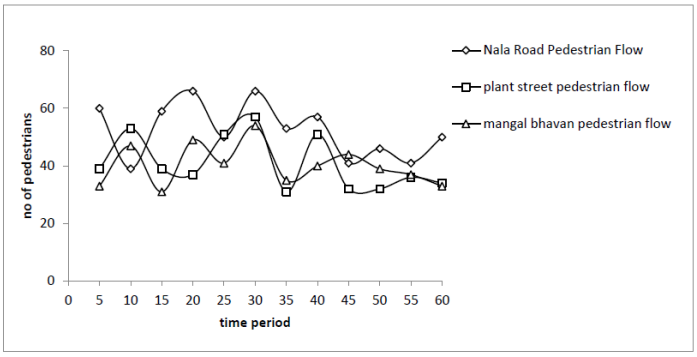


Fig: uninterrupted ordinary cross walk
The recorded-on piece of paper. depicts uninterrupted movement, indicating that the effect of the car was missing. Furthermore, the three parts are separated by 400m to 500m. For each 5-minute period, a graph was created to depict how many pedestrians were crossing the road and how long it took them.

4.1 Flow-Compactness relation:

When it comes to pedestrian traffic, the flow and Compactness relationship is quite similar to that of vehicle traffic. Furthermore, it may be represented as,

$$q = u*k$$

q – Flow (ped/s)

u – Speed (m/s)

k – Density (ped/m)

This results in a perfect situation when there is no traffic, i.e., when there are no vehicles or pedestrians on the road. Because of the presence of a car or a pedestrian on the road, this is not feasible in practice. Furthermore, the relationship between pedestrian flow characteristics is shown in order to identify the basic distinctions between them. Normal representations of flow-Compactness are represented by a parabolic curve.

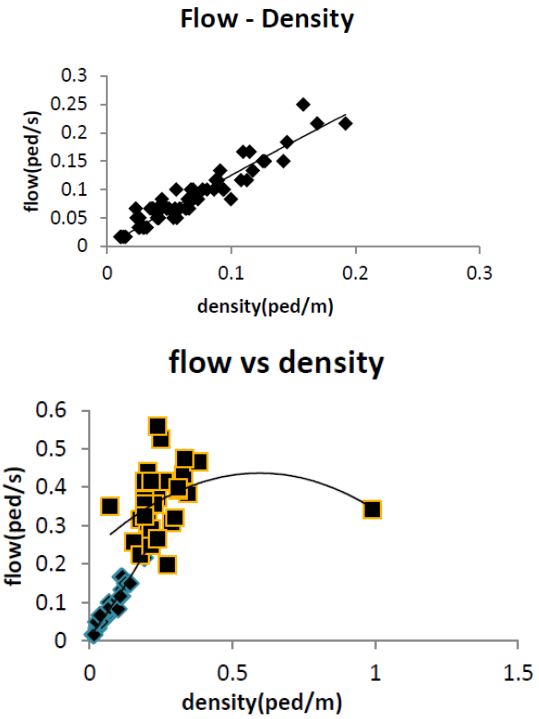


Figure: important associations amid movement and compactness

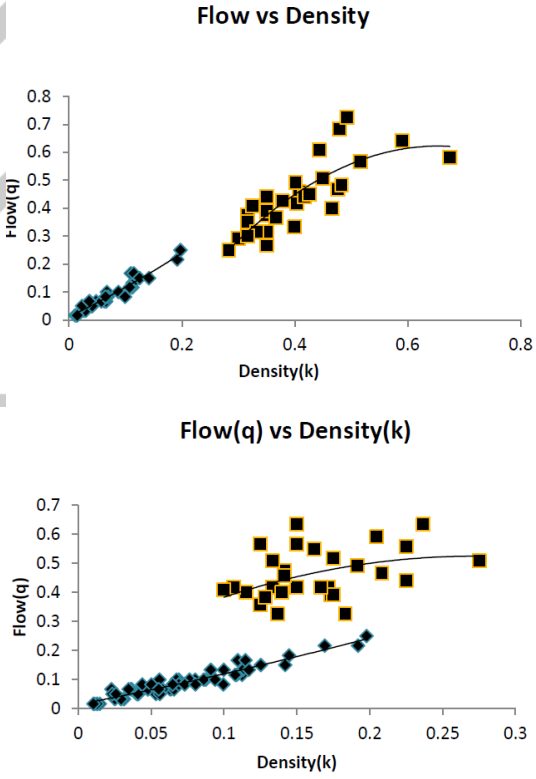


Figure: important associations among flow and thickness

Increasing the movement of a fluid causes it to rise until it reaches a certain limit, at which point it starts to fall. Therefore, when the flow movement and Compactness are at their optimum values, the flow is operating at its full potential. The value of r2 was determined with the use of regression statistics, and it was discovered to be equal to 0.9112 (regression coefficient). It was found that the results of the test were statistically significant since the p value was less than 0.05, which indicates that the findings were significant.

Conclusion and Future Work

There were at various (including Delhi's everyday movement of unsettled traffic, the motor traffic, draw of movement s, pedestrian trajectory. results of this study were presented in a report. The video camera was used to capture the entrance and departure times of each pedestrian stream in order to determine the movement and flow of a specific pedestrian stream. This information was used to evaluate the information on crossings gathered from a variety of different sources. When estimating pedestrian flow, the hand

count technique was used, and the undisturbed data from this study is very helpful for comparing assessing differs the. When the difference between the two hypotheses is found, for example, this is an example of this.
It was necessary to collect and analyse data for this thesis, which was gathered through two different kinds of field investigations. At the most basic level conceivable, this experiment was intended to investigate the connection between movement, flow, and Compactness. It was also possible to monitor the distance headway movement of pedestrians when they were going about on foot in this experiment. Yet another kind of information gathering involves the collection of an approximate data set that is used to determine the direction of pedestrian movement, as well as the details of pedestrian volume count over time, for purposes of determining the direction of pedestrian movement, among other things.
It is possible that pedestrian crossings at junctions will be safer and more convenient if pedestrian safety measures are included into the road geometry design. As stated in the short, the following are some of the most important reasons for taking pedestrian safety into consideration: As a consequence of my efforts, pedestrians' susceptibility to vehicle traffic has been lessened to a certain extent. The construction of sidewalks, the installation and upgrading of, construction of, elevated, improved designated, and improvement of the of public transportation routes are all examples of interventions that will be undertaken. The maximum movement of the vehicle should be reduced. Some examples of such interventions include slowing down traffic in specific areas, putting in place movement control devices at junctions, and reducing the overall movement limit.

Reference

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