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Evaluation of Parking Demand at Valsad Railway Station

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Abstract: The world's fastest growing major economy is India. Gujarat is one of the fastest-growing states in India, with strong industrial and economic growth. A well-balanced transportation system is vital for the overall growth of any region. Gujarat also has a robust rail network, which complements this. Gujarat is the location of one of the busiest railroad lines that connects the political and commercial centres of Delhi and Mumbai. On the railway lines connecting Mumbai with Delhi and Ahmadabad with Mumbai, Valsad is one of the significant and crowded stations. Many residents of Valsad hold jobs in the neighbouring cities of Mumbai, Vapi, and Surat, among others. As a result, railroad is a popular means of transportation. The majority of these folks drive their two-wheelers or other vehicles from their residences to the railroad station, where they usually park them. People used to park their cars outside the parking lot during peak hours, such as early in the morning and late at night, when there was a significant demand for parking at the railway station. Because of this, adequate parking facilities are needed to prevent situations of this kind. According to field observations, there are not enough parking spaces at Valsad Railway Station. Because commuters used to park on the sides of the roads and on the sidewalks, there was constant traffic in and around the railway station area. As a result, Valsad Railway Station needs to evaluate parking demand. Inventory of parking spaces and a survey of parking utilisation by petrol were done to assess the parking demand licence plate technique. the demand exclusive parking surveys will be used to achieve clear situation of the existing parking state of affairs and future recommendation to ease the parking demand.
Keywords: Traffic Study, Parking problems, Parking demand, parking Survey, Traffic management.

I. INTRODUCTION

One of the economies in the world with the quickest growth rates is India. Congestion is a problem caused by growing urbanisation Planning and constructing new infrastructure for both public and private transportation will be crucial as the city expands. The characteristics of the city's traffic flow and parking availability are closely related. Parking issues are a result of unplanned development and transportation infrastructure. Lack of parking spaces has several detrimental implications, including reduced road capacity and air and noise pollution. In addition to these, it has economic repercussions due to lost time and fuel, decreased productivity, high energy consumption, and an increase in the number of unintentional deaths. Therefore, it is important to carefully design and organise all parking facilities in order to improve both the quality of life for citizens and the growth of the city. Increased mobility of the traffic flow rate has started as a result of the population's rapid rise. Despite the fact that shopping centres have their own parking lots, most people park on the street and only use underground parking when there is nowhere else to park.

II. LITERATURE REVIEW

A. Parking Study on Main Corridors in Major Urban Centre, 2012(T. Subramani)

Parking takes considerable street space leading to the lowering of the road capacity. Hence, speed will be reduced, Journey time and delay will also subsequently increase. The operational cost of the vehicle increases leading great economical loss to the community. According to the parking study on existing traffic condition on the road network it is must and required to remove on street parking system for efficient transportation system. Careless manoeuvring of parking and un-parking leads to accidents which are referred to as accidents. Common type of parking accidents occur while driving out a car from the parked area, careless opening of doors of parked cars, and while bringing in the vehicle to the parking lot for parking. They also cause pollution to the environment because stopping and starting of vehicle while parking and un-parking results are noise and fumes To reduce the parking of vehicles we can implement the following.

1) For short term measures pay and park method will be done at peak hours to control and regulate the parking.
2) For long term measures Off street parking have to be provided near CBD areas, within the radius of 1 Km.

B. Application of QGIS for Parking Study in Tirupati (Dr. K. Chandrasekhar Reddy and C. Siva Kumar Prasad)

For the parking study conducted following conclusions can be drawn:

On street parking can be provided for 11 streets

For 6 streets one side parking is quite adequate

For 5 streets it is rather impossible to provide the adequate parking even when the option of both side parking is excised.

C. Evaluating the Parking Demand at Park and Ride Facility at Putrajaya Public Transportation Terminal. (sharifah adibah alyia syed adnan , abdul azeez kadar hamsa)

The concept of the park and ride facility is a component of Travel Demand Management (TDM) strategy which can, eventually, increase the transit riderships. Generally, the increase in the utilization of the park and ride facility would increase public transport riderships. Hence, it is essential to evaluate the demand for park and ride facility in order to know the current usage of such facility as well as the travel pattern of the parking users. The findings showed that the park and ride facilities at Putrajaya public transport terminal namely "Putrajaya Sentral" has not reached to its maximum utilization rate. The parking demand at the two types of parking areas at the park and ride facility showed different parking occupancy. The parking demand at the surface parking was generally high as it was found that the parking spaces were fully occupied as early as 9.00 am reaching the highest occupancy rate of 95% on weekday. When compared with surface parking, the multi-storey parking showed lower parking occupancy, reaching not more than 50%. However, the parking demand at this facility was higher on weekday than weekend because of the users who parked at this facility were traveled for work and business purposes. The parking facility has recorded a parking duration of more than 9 hours. The parking demand at the multi-storey parking facility has revealed that the number of users who parked at this facility was lower than surface parking. Adequate measures should be taken to maximize the use of park and ride facility and in this case, the multi-storey parking to encourage commuters to shift from using private transport to public transport. Evidently, it will help to decrease the number of vehicles entering into the cities thereby achieving the universal goal and benefits of sustainable transportation.

D. Parking Study on Major Corridor of Urban Area A Case Study of Ahmedabad City. (Kalrav N Desai and Vrundani Vaidya)

Parking takes considerable street space leading to the lowering of the road capacity. Hence, speed will be reduced, Journey time and delay will also subsequently increase. The operational cost of the vehicle increases leading great economical loss to the community. According to the parking study on existing traffic condition on the road network it is must and required to remove on street parking system for efficient transportation system.Careless maneuvering of parking and un-parking leads to accidents which are referred to as accidents. Common type of parking accidents occur while driving out a car from the parked area, careless opening of doors of parked cars, and while bringing in the vehicle to the parking lot for parking. They also cause pollution to the environment because stopping and starting of vehicle while parking and un-parking results are noise and fumes to reduce the parking of vehicles we can implement the following.

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E. Parking Evaluation: A Case Study Of Amul Dairy Road Anand. (Jaydipsinh P. Chudasama and Dr. L.B.Zala)

The following conclusions are drawn from the analysis of data.

Amul Dairy road is having mixed land use – parking lot, offices, restaurant, industry and residential. 2. Good right of way is 30 m. The traffic volume on Amul Dairy road is 5274 PCU/hr having directional split as 55/45 average. 3. Traffic composition shows maximum proportion of 2-wheelers (47%) followed by 3 wheelers (37%) and cars (9%) and other (7%). 4. Parking data analysis shows that short-term parkers are 85.26%, medium-parkers 12.16% and long-term parkers being only 2.58%. 5. Amul Dairy Road experiences problem of parking during peak hours only. 6. The parking demand on study zone 3 & 4 was 543 parking spaces during peak-hours when data was collected. Parking spaces available in zone -3 on Amul Dairy Road.

III. METHODOLOGY

The study incorporates both primary data collection through performing actual fact-finding surveys and secondary data collection from a variety of sources. Different places were visited during the initial data collection, and the on-site parking situation was observed. On-site parking conditions were really seen in action.

After conducting a reconnaissance survey and choosing a survey strategy, data collection formats were created. The parking lots were thoroughly surveyed both during and outside of peak times. The sizes of the automobiles that were readily available at the survey locations were measured. The availability of convenient parking and the necessary parking are determined by the actual demand.

A. Parking Space Inventory

Information is called on the current condition of parking facilities. This includes: 1. The location, condition, type, and number of parking spaces. 2. Time, hours of availability and any other restrictions.

B. Parking usage Survey

The parking space inventory identifies the available on-street parking in a location. The parking utilisation research is carried out to look into the demand for that space and the causes of that demand. The study area is broken up into blocks that are comfortably walkable in 30 minutes. An observer can count the number of parked cars in each of these parking lots at intervals of 30 minutes by walking around and writing down each car's licence plate number. Every vehicle that is observed once is believed to have remained for 30 minutes, twice for half an hour, and so on.

IV. STUDY AREA AND DATA COLLECTION

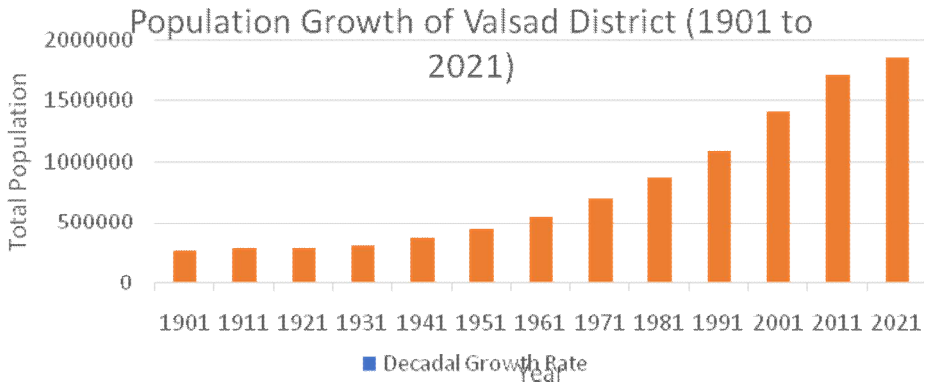
A. Parking Space Inventory

As of the 2011 India census, Valsad (metropolitan area) has a population of 170,060. Males constitute 51% of the population and females 49%. Valsad has an average literacy rate of 91.66%, higher than the national average of 74.04% male literacy is 94.62%, and female literacy is 88.58%.

Table: 4.1 population and density of Valsad

Name	Valsad
Population Census 01-03-1991	1087980
Population Census 01-03-2000	1410553
Population Census 01-03-2011	175678
Population Census 01-03-2021	2068435

Area: 3,008 km -Density: 567/km



(Figure 4.1: Increase in Population) Parking Usage Survey

V. CONCLUSIONS

1) The two- wheeler stopping parcels at area A (cleared out side of railroad station) and at B (right side of railroad station) is over utilized. Since, the stopping list esteem of both these stopping parts is over 0.8 for more than 12 hours of the day.

2) The for wheeler stopping parcel at area B (left of railroad station) is underutilized of the stopping record esteem is 0.8 for as it were six hours of the day.
3) Stopping turnover esteem of both two wheelers stopping parcel is exceptionally tall 2.64 for parcel B and 2.41 for part A subsequently arrangement of extra stopping office may demonstrate financially practical.
4) The higher stopping charges of the four wheeler leads to unlawful stopping of four wheeler on the stopping of the railroad station. Which leads to activity stick circumstance adjacent railroad station .Reduction in stopping charges may be valuable to ease unlawful stopping of four wheelers and appropriate utilization of introduced capacity.
5) The Multi-storyparkingrecommendedforprovidetheeasyaccessibilityandmobility.
6) By providing multi story parking of G+3 and Basement1&2,we can fulfil the request of Two Wheelers stopping up-to year 2028 additionally fulfil the request of Four- Wheelers stopping up to year 2027.

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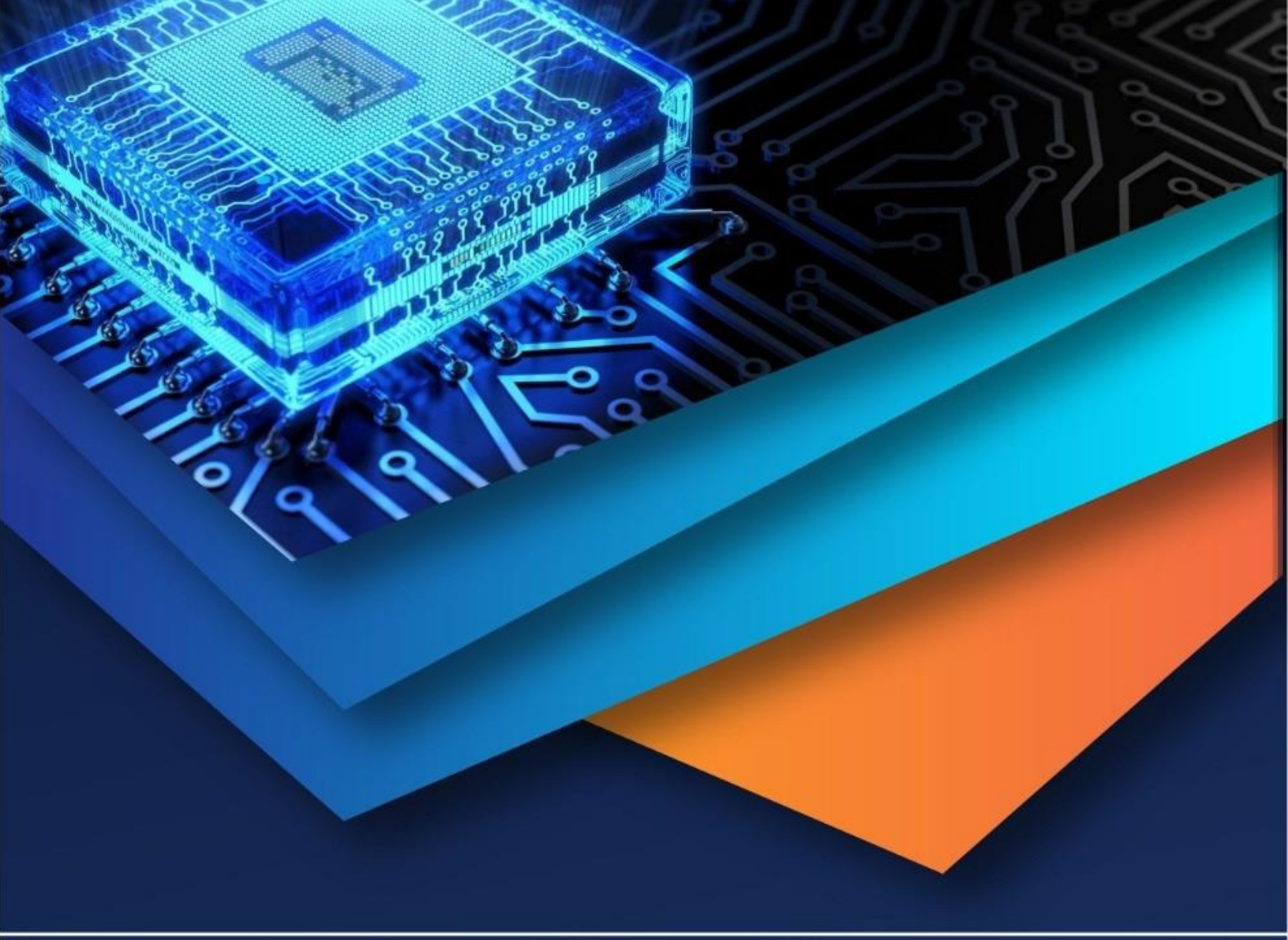

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