

REVIEW ON PARKING ACCUMULATION SURVEY OF ON-STREET AND OFF-STREET PARKING LOTS

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Abstract

The speed of development leads to higher urban economic growth, people's income as well as improvement in the living standards. There has been an increase in rate of personal vehicle usage in the urban areas as a result of this fast-growing economy. Providing suitable parking is a challenge for engineers and traffic planners in the face of increasing vehicle traffic. It is essential to carry out traffic studies for facility design or parking pricing planning. The purpose of parking study is to collect data regarding availability of parking space, assessment of the existing parking conditions, extent of its usage, parking behavior, parking demand based on the on-street and off-street parking, revenue, and parking base fares. To get to a conclusion various parking parameters such as Parking accumulation, parking volume, Parking load, average parking duration and Parking index need to be calculated to understand the result.

Keywords: Parking, Parking Accumulation Survey, License plate method, Parking parameters.

1. INTRODUCTION

Parking surveys are conducted to collect the parking statistics such as parking accumulation, parking volume, parking load, average parking duration, parking turnover etc. There are 3 most common methods of parking survey viz. in-out survey, fixed period sampling and license plate method of survey. These survey methodologies & definitions are briefly elaborated below.

In-out Survey

This is a simplest form of Parking Survey where only vehicles entering and exiting the lot are counted at specific intervals of time. In addition to this, number of vehicles parked before the start of survey and at the end of survey is also enumerated so as to arrive at total parking volume. Time interval is decided based on the objective whether hourly estimation is required, or 15-minute data is required.

Advantages

1. Labour requirement is very less.
2. Suitable for uncontrolled parking spaces.

Disadvantages

1. Parking duration for each vehicle/group of vehicles cannot be ascertained.
2. Parking Accumulation can be estimated but Parking duration and Turnover cannot be obtained.
3. As duration is not known, base fares cannot be decided on this survey.

Fixed Period Survey

For rapid survey purposes, a fixed period sampling can also be performed. In this type, number of vehicles parked in a lot are observed and recorded at fixed intervals of time. Thus, total accumulation during the survey duration can be estimated.

Advantages

This type of survey is useful for on street parking or uncontrolled parking spaces.

Disadvantages

1. Essential parking parameters other than accumulation cannot be estimated.
2. Total accumulation figure may also be erroneous as vehicles parked for shorter duration (than fixed period) are missed in this survey.

License Plate Method of Survey

In this survey, license plate of each vehicle entering the parking bay and exiting the parking bay is noted along with the time of entry/exit. This gives information of parking duration of each vehicle. This method can further be enhanced in organized parking lots where parking bay can also be noted down along with the license plate and time. This will give the data regarding the duration for which a particular vehicle was using a particular parking bay.

Advantages

1. Results are most accurate and realistic data can be obtained.

2. All parking characteristics can be computed with this survey.
3. Decision on base fare can be optimized.

Disadvantages

1. Requires a lot of labour and analysis may be time consuming.
2. This method cannot be used for uncontrolled parking lots

Ease of Use

Below are some of the parking characteristics:

1. Parking Volume
2. Parking load
3. Average Parking Duration
4. Parking Accumulation
5. Parking Index

2. LITERATURE REVIEW

The study of parking spaces helps to understand the efficiency of the parking places at a location. Mohammad Nazim et al. June 2020. This Parking study was done by collecting data and calculating the parking statistics such as occupancy, accumulation, parking volume, duration of parking, parking load. The study was conducted in Noida of Gautam Budh Nagar which included three parkings. The data collection method used for the analysis was License plate method. It was concluded that the parking facility that was provided was satisfactory based on the result obtained. Er. Gurpreet Singh et al 2016. This paper presents research on the parking characteristics of Area 17 in Chandigarh with the aim of determining the adequacy of the current parking space and the future need for additional parking. The issues are discussed in detail and suitable solutions are given to minimize parking problems in the study area. For research purposes, Area 17 of Chandigarh city has been divided into different parking lots. The survey was conducted by changing the number of registered vehicle methods, focusing on cumulative and duration survey methods. Various parameters of parking like peak accumulation i.e., before and after lunch, parking volume, parking load, vehicle per space and vehicle share in total accumulation, parking average duration in various lots are computed and recorded. The results and recommendations of this study will help the government to solve the parking problem in Area 17 in Chandigarh and thus provide residents with free parking in Area 17 in the coming years. LB Zala et al 2012, in this paper the existing parking facilities are studied to check if they are sufficient to meet the parking demand. Amul dairy road is the prominent areas in the Anand city. The road is occupied with high volume of fast- and slow-moving vehicles. The survey was carried out using number plate registration technique and it was concluded that the Amul dairy road experiences a problem of parking during the peak hours. Development of a certain area leads to increase in vehicles which leads to parking issues, Ninad Gore et al, this paper studies the impact that is caused on the pedestrian's movement due to the on-street parking. The pedestrian flow data was collected in the CBD areas of three metropolitan cities of Gujarat. This survey revealed that due to on street parking there was

reduction in the walking speed of the pedestrians comparing similar densities. Improvement in infrastructure of a city leads to the overall development of the city, Janak Parmar et al, studied the parking characteristics in the city of Delhi. Parking surveys were conducted in nine parts, mainly in the commercial areas. The on street and off-street parking characteristics are analyzed based on the parking statistics such as parking accumulation, parking occupancy, parking load etc. It was observed that some areas have sufficient parking facilities but due to poor parking management, lack of signs there was congestion. Observing the results of the study, several guidelines have been suggested for optimal use of the available space.

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