

# STUDY ON VISITORS PARKING FACILITIES IN KULIM HOSPITAL

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**Keywords:** Parking, facilities, space management, providing comfort

**Abstract.** Parking facility is parts of business support in facilities management. It plays a major role in providing comforts and security in hospital. This study was conducted to find the need of parking in Hospital Kulim compound. Based on the standard specification by JKR, the number of visitor parking available are 116 spaces. It is comply with the JKR standard but not the actual visitor needs. It is cause by the increasing number of outpatient and other visitor. The numbers of parking needed are based on average 4 month observation. After the observation was carried out, it is found that an average of 175 parking spaces is needed each hour. Based on this calculation, it represents the actual scenario of Hospital Kulim visitor's parking area. Waiting time and illegal parking cause discomfort for the visitor. As conclusion, the numbers of parking provided by Hospital Kulim are insufficient with the visitors needs.

## INTRODUCTION

Hospital Kulim was inaugurated in 14.7.1990 by Dato' Sri Dr. Mahathir Mohamad. This is the first hospital build based on nucleus. The cost of this hospital is RM90 million. It can accommodate 314 bed, and can be increase up to 500 bed based on the current need. Medical services are an essential aspect of our lives. Thus, hospital created to meet the community needs and solving various problems related to health. Facilities are not limited to the physical facilities only, but it also involves the aspects of services. If the qualities of facilities services are not satisfactory, the visitor's satisfaction couldn't be achieved. This will affect the quality and productivity of life [4]. One of the facilities provided for hospital visitors is parking facilities. Parking lots exert a powerful undertow on local economies [9]. Due to rapid increase in the number of vehicles, the need for parking is on rise [8]. Parking provided are based on the demand of car user which are increasing every year. The development of transportation in Malaysia indirectly has increase the problem of insufficient parking space.

There are double increments of private vehicle [7]. There are relations between society mobility's and accessibility to facilities [1]. Parking around the hospital is restricted [16]. Parking policies at hospitals for patients, visitors and workers is a hotly debated issue, but has received little or no attention in the (health) economic literature [5]. The difficulties of finding parking space, especially during peak hours, which is afternoon and evening has cause inconvenient for visitors [10]. The driver has to park in that particular allocated slot without searching for a vacant space thus reducing the time for parking and making an efficient use of available space [8]. The attitude of visitors who doesn't obey the rules cause problem for others to goes in and out from the hospitals compound. This problem has occurred in Hospital Tengku Ampuan Rahimah Klang (HTAR) [10].

## **OBJECTIVES**

With increasing number of automobiles in recent days and lack of free parking space, especially in metros, the need for developing an automated car parking system which makes efficient use of space and avoids traffic congestion arises [8]. Based on this problem, the main objectives of this study are:-

1. To determine the number of parking space available with the total number of parking space needed.
2. Identify the number of parking needed
3. To determine whether the parking provided is sufficient with the parking space needed

## **SCOPE OF STUDY**

Hospital Kulim Hi-Tech has been selected as the case study. This selection is based on the informal observation and past experience in finding parking space.

## **LITERATURE**

Hospital parking policies for patients, visitors and workers is a hotly debated issue [13]. Development planning need to be undergo thoroughly. This is important to ensure the comfort for people during heavy traffic. A future planning should be carried out to cater for the population increment [6].

Parking space can be defined as a space where an automobile can be parked [11]. It is a planned space, provided to park vehicles. The development of our country has affected the growth of transportation population. The direct impact of this increment is the increasing of parking demand, especially in the urban area. (J.P.B.D Pahang online). The issue of parking is taken for granted, until you're circling the entire block for an elusive space. Even for transportation professionals and urban planners, parking tends to be little more than an afterthought. Duration process of parking activities has to be limit. In certain location, roadside parking may be allowed, but not in the pick hour. One of the disadvantages of parking based on time is the budget and enforcement. These disadvantages can be overcome by using parking meter [2].

The purpose of parking density research being carried out is not only to determine where the vehicle is parked, but it's involves the number of vehicles parked at any location (on and off road parking). The information regarding the number of vehicles parked in and outside the hospital is recorded in the questionnaire [12]. The supply of parking space is based on the number of space provided in the selected area. The parking demand is based on the desire to park the car to destination route. The study of supply and demand for consumption is often associated with desire to park the car close to destination, but it is constrain with the limited existing space.

Off road parking location are either on the road surface or in the garage. The choice of the parking space design for off road parking depends on the land value and the frequency of facilities usage. The land value is very high, especially in the urban area. This is where the multi storey parking space is constructed. During development period, planning of parking allocation is important. The study of parking allocation are based on the regulation, traffic and forecasting the need of parking in the long and short term.

The vehicles parked in the parking area gave significant impact on the environment in the surrounding area. Noise and smoke produced from vehicle in the parking area. It is become source of discomfort to visitors, staff and patients. During design period, overall building layout design is related to the aesthetic value. Unfortunately the effect of parking design does not consider the aesthetic of surrounding environment. Most of new parking proposals are not considering the aesthetic and environmental value [16]. In order to reduce the parking problem,

public transportation is strongly suggested; unfortunately most of public transportation is not efficient. This is because their services are not effective in term of schedule, route, quality, comfortable, inadequate and sometimes dirty. The inappropriate location leads to unpopular use of public transportation. The risk of caught in a traffic jam, especially in peak hours has lower the interest of people to use the public transport [3].

JKR standard for parking has been developed as a guideline. It is a guide, to calculate a minimum parking space requirement for buildings, houses etc. As for our study, which is parking facilities for hospital, according to JKR standard for parking, the car park was built according to the specifications laid down construction method of the car compartment ¼ patient beds, an additional 1 car compartment / 1 doctors and other professional staff, additional 1 car compartment / 3 employees, plus 20% of motorcycle compartments and space lay-bay for taxi..

## **METHODOLOGI**

This research is carried out using qualitative and quantitative method. Qualitative method is carried out by using observations, and interviews. As for quantitative method, questionnaires will be distributed. This method is carried out to acknowledge the efficiency of parking provided in Kulim Hospital. This area is small and congestion due to drivers who is driving slowly to find a parking spot at certain time. Observation is carried out by visiting the case study location. It is to achieve the objectives of the research study. The observation is to determine the number of vehicles in the hospital area. This observation is carried out based on selected time frame. Questionnaire needed to collect related data, such as types of vehicle, destination, duration of parking and range of walking distance from the parking space to destination. Sampling is carried out by distributing questionnaire to the respondent [10]. Interview is carried out by interviewing the respondent in the parking area. It is carried out when the vehicle reach or leaving the parking space. The number of respondent determine after the interview conducted. Visitor and staff are among the selected candidate for the interview.

## **Data analysis**

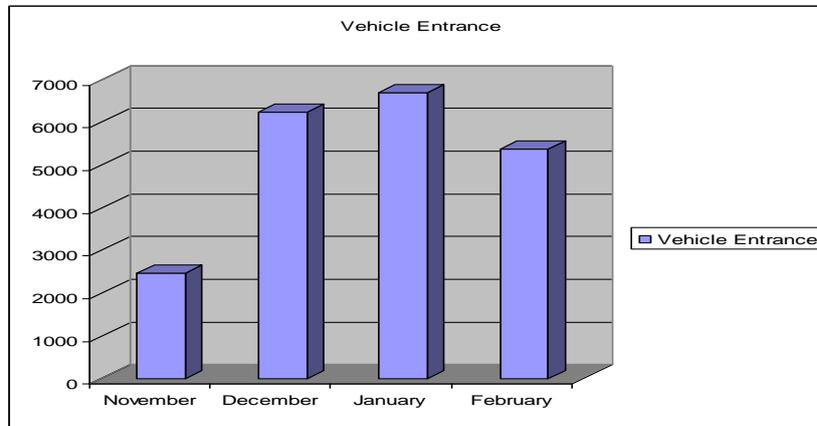
Based on the research, data is gain from Thursday to Monday, in 4 month starting from November 2012. Observation data started at 8.00 am and 6.00 pm. The study area is focusing on visitor parking area (refer table 2).

<b>Month</b>	<b>Observation Date</b>		
November	28/11/12	30/11/12	30/12/12
December	3/12/12	13/12/12	15/12/12
January	10/1/13	11/1/13	12/1/13
February	17/2/13	18/2/13	19/2/13

Table 2: Observation Date

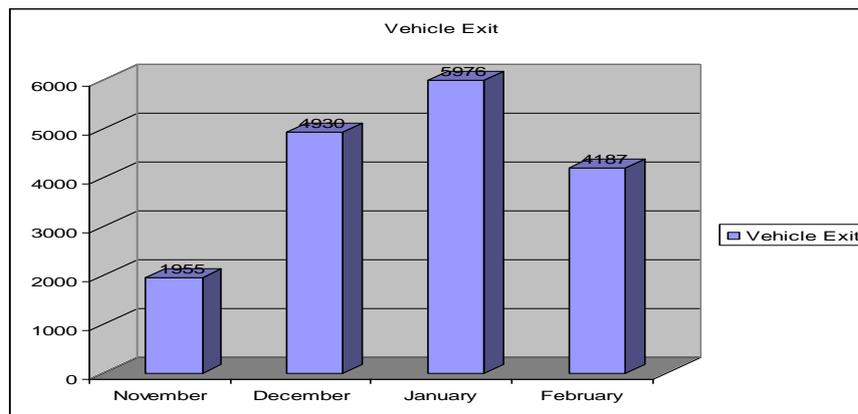
## Data collection

Based on the observation, the vehicle entrance on January are the highest compare to the rest of the month, which is 6699. In November the vehicle entrance is only 2469. This shows that the number of vehicle entrance is not consistently high every month.



Graph 1: Vehicle Entrance

The observation for vehicle exit of Kulim Hospital shows similarity with the entrance. January observation shows vehicle exit, 5976 numbers. The number or exit vehicle, are parallel with number of entrance for each observation session (refer Graph 2).



Graph 2: Vehicle Exit

## Result

Based on the findings, it is found that the parking provided is not enough for the visitor needs. This is obvious during peak hour such as visiting hour. In order to answer the first objective, observation and calculation based on JKR standard has been carried out. The total Number of 314 unit bed is available in Hospital Kulim. According to the calculation based on visitor's bed, the parking space provided should be 79 units. Based on observation, Hospital Kulim has the total number of 116 for car and 244 for motorcycle parking. According to the theory, visitor's parking provided for Hospital Kulim is more than enough, because based on the calculation they should provide only 79 parking spaces instead of 116 parking spaces currently available.

Identify the number of parking needed is the second objective. The total numbers of parking space needed are 175 per hour. This calculation made based on the average car entrance for 4 month. The observation was carried out for 3 day, each month. Each days, 10 hours of car entrance observation has been being carried out.

Objective 3 is to determine whether the parking provided is sufficient with the parking space needed. Based on the calculation the parking space available are not enough for the visitor needs. The parking provided are 116 spaces, and the overall car entrance are 175 per hour in four month. Unfortunately based on the observation and interview, it is found that most of the time there are not enough parking space especially during peak hour, which is visiting hour.

### **Discussion**

Transportation is critical to the social, environmental, and economic health of every metropolitan area, decisions to change this system must be considered with knowledge of the likely impacts of proposed actions and the consequences if no decision is made [14]. Based on research done, it is concluding that the parking demands are not in line with parking supply. As a result, visitors were facing with difficulties to find a parking spot, during peak hour. They have to wait for a parking spot. This will cause congestion and wasting visitor's valuable time.

Multi storey car park is one of the alternative parking for high market value area. Multi storey car park with a large capacity, designed to accommodate the optimum number of vehicles between 500 and 750 vehicles [15]. The operations of multi storey parking are by machine, parking attendant or the combine of both.

Lack of parking is often associated with increased use of private vehicles. Carpooling will reduce congestion and parking place while reducing air pollution and noise terms. Employees or consumers who are heading to the same destination can share a vehicle to avoid the occurrence of inadequate parking

### **Conclusion**

In general, study for the lack of parking area is due to the excessive number of vehicles. The study of parking facilities at the hospital is based on number of patients' bed and the total number of parking lots. Number of vehicle entering and exit will increase in certain days, which is Sunday and Monday, where the outpatient will come for their check-up with the physician. Some of the patient parks their car for days, since they went to the hospital themselves during hospital admission. At the same time the visitor for other admitted patient will also compete for parking. This is causing problem such as blocking other's car, parking in unauthorized area and waiting for hour, to park their car. The overall phenomena shows that the parking provided are insufficient with the visitor's need.

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