Parking Analysis at Banyumanik 2 General Hospital, Semarang City

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Abstract. Vehicle movement will be hampered if the available parking space is insufficient to meet the needs of the facility itselfThe method taken in making this final assignment is to use quantitative methods.the total parking revenue in the Banyumanik 2 Hospital area, Semarang City at the time of the research, based on predetermined parking planning, resulted in an estimated parking levy of Rp. 888,000.00,- per 2 hours.This planning results in a total parking pattern of 46 cars and 153 motorcycles. total income during the research was IDR 668,000.00 per 2 hours. Based on parking planning during research with 46 car lots and 153 motorbikes, there is a total planned levy of IDR 888,000.00 per 2 hours.

Keywords: Parking planning, Retribution, Parking

1. Introduction

Parking is one of the infrastructure elements that cannot be separated from the overall road transportation system. With the increasing population of a city, there will be a rise in the need to engage in various activities. In carrying out travel activities, most residents in large cities use private vehicles, which indirectly necessitates an adequate amount of parking. [1]. The issue of parking space availability will greatly affect vehicle movement in areas with high activity. Vehicle movement will be hindered if the available parking space is no longer sufficient to meet the needs of the facility itself. Parking characteristics refer to the parking needs that can be assessed using a method based on the maximum difference between vehicle arrivals and departures (Maximum Accumulation). By understanding the parking characteristics of a particular area, one can determine the required parking space for land use, which includes parking accumulation, parking volume, parking duration, parking turnover, parking index, parking needs, and projected parking needs in the coming years [2]. BANYUMANIK 2 GENERAL HOSPITAL in Semarang City has adequate medical equipment facilities. This hospital is located in the Banyumanik District of Semarang City and is easily accessible to the community, both from within Semarang and from outside the city. The parking area at BANYUMANIK 2 GENERAL HOSPITAL is no longer sufficient to accommodate the number of visitors' vehicles, while the increasing number of patients with cars or motorcycles should be matched by an improvement in parking availability. However, the limited space does not allow for an expansion of the parking area, leading to many hospital visitors parking haphazardly, which can reduce the effectiveness of services. Based on the issues above, an analysis of the parking space needs at BANYUMANIK 2 GENERAL HOSPITAL must be conducted to determine the capacity of the hospital's parking area.

2. Methods

In conducting this research, the researcher employed a descriptive approach aimed at outlining and illustrating the nature of events occurring at the time the study was carried out, as well as examining the phenomena taking place at BANYUMANIK 2 General Hospital in Semarang City [3]. This method provides accurate information, making it beneficial for the advancement of science and applicable to various problems. The method used in the preparation of this final project is a quantitative method. For data collection, using Primary Data and Secondary Data. The data was obtained through field surveys and collaboration with the BANYUMANIK 2 GENERAL HOSPITAL in Semarang City. The steps for the survey plan involve making several observations that include the current parking conditions/situations, the available parking capacity, and the current parking configuration/layout.

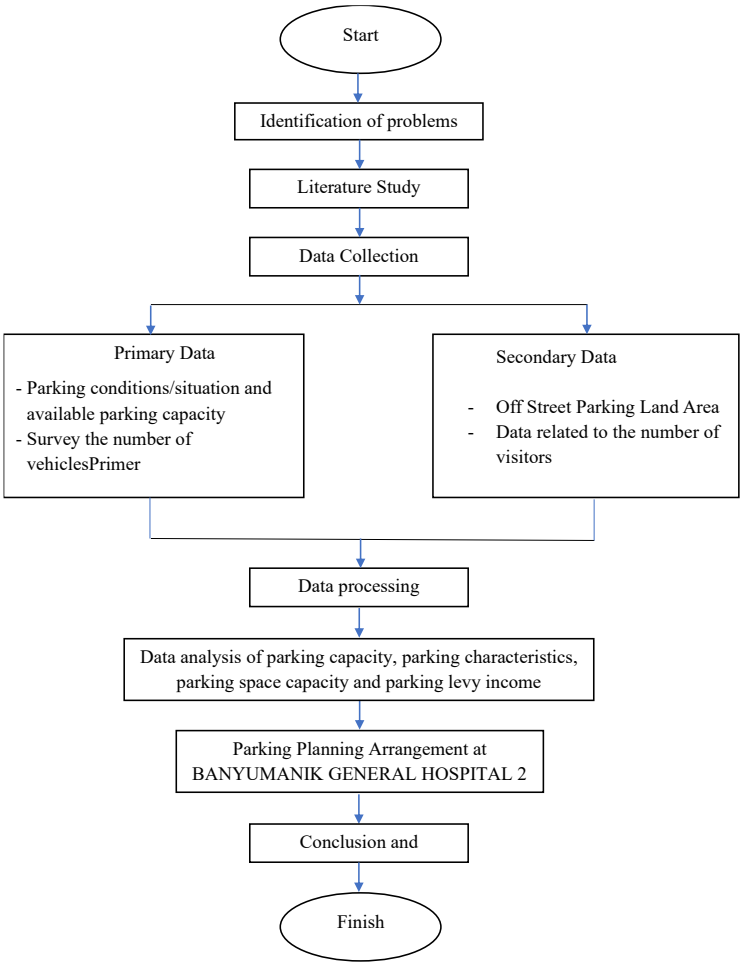

Figure 1. Flow chart

3. Results and Discussion

1) Based on Survey Time

According to the calculation data above and Semarang City Regional Regulation Number 13 of 2023 concerning Public Service Levy, a parking levy is used at a rate for 2 (two) wheeled vehicles IDR 2000,- while for 4 (four) wheeled vehicles IDR. 3000,- then the parking income results are as follows [4]:

a) Stage 1 Parking Levy at 10.00 – 12.00 WIB (Noon)

Table 1. Phase 1 Parking fees at 10.00 – 12.00 WIB (Afternoon)

AFTERNOON					
No	Day/date	Vehicle Type	Number of vehicles (vehicles/hour)	Parking Fee (Rp)	Income Per 2 hours (Rp)
1	Tuesday, 27 August 2024	4 wheels	36	Rp3.000,00	Rp216.000,00
		2 wheels	79	Rp2.000,00	Rp316.000,00
2	Thursday, 29 August 2024	4 wheels	37	Rp3.000,00	Rp222.000,00
		2 wheels	70	Rp2.000,00	Rp280.000,00
3	Saturday, 31 August2 024	4 wheels	32	Rp3.000,00	Rp192.000,00
		2 wheels	38	Rp2.000,00	Rp152.000,00
4	Tuesday, 3 September 2024	4 wheels	31	Rp3.000,00	Rp186.000,00
		2 wheels	70	Rp2.000,00	Rp280.000,00
5	Thursday, 5 September 2024	4 wheels	30	Rp3.000,00	Rp180.000,00
		2 wheels	57	Rp2.000,00	Rp228.000,00
6	Saturday, 7 September 2024	4 wheels	18	Rp3.000,00	Rp108.000,00
		2 wheels	40	Rp2.000,00	Rp160.000,00
Total income					Rp2.520.000,00

Based on table 3.1, the total parking revenue in the survey location area at 10.00 – 12.00 WIB shows an estimated parking levy of IDR. 2,520,000.00,-per 2 hours.

b) Stage 2 Parking Levy at 17.00 – 19.00 WIB (evening)

Table 2. Stage 1I Parking fees at 17.00 – 19.00 WIB (night)

NIGHT					
No	Day/date	Vehicle Type	Number of vehicles (vehicles/hour)	Parking Fee (Rp)	Income Per 2 hours (Rp)
1	Tuesday, 27 August 2024	4 wheels	30	Rp3.000,00	Rp180.000,00
		2 wheels	104	Rp2.000,00	Rp416.000,00
2	Thursday, 29 August 2024	4 wheels	28	Rp3.000,00	Rp168.000,00
		2 wheels	103	Rp2.000,00	Rp412.000,00
3	Saturday, 31 August2 024	4 wheels	25	Rp3.000,00	Rp150.000,00
		2 wheels	40	Rp2.000,00	Rp160.000,00
4	Tuesday, 3 September 2024	4 wheels	42	Rp3.000,00	Rp252.000,00
		2 wheels	95	Rp2.000,00	Rp380.000,00
5	Thursday, 5 September 2024	4 wheels	35	Rp3.000,00	Rp210.000,00
		2 wheels	98	Rp2.000,00	Rp392.000,00
6	Saturday, 7 September 2024	4 wheels	24	Rp3.000,00	Rp144.000,00
		2 wheels	56	Rp2.000,00	Rp224.000,00
Total income					Rp3.088.000,00

Based on table 3.2, the total parking revenue in the survey location area at 17.00 – 19.00 WIB shows an estimated parking levy of IDR. 3,088,000.00,-per 2 hours.

Based on the summary of tables 3.1 and 3.2, the highest levies were obtained in stage II during the research, namely 17.00 – 19.00 WIB in table 4.69.

Table 3. Highest Parking Fees During Research

No	Vehicle Type	number of vehicles	Parking Fee (Rp)	Income Per 2 hours (Rp)
1	4 wheels	42	Rp3.000,00	Rp252.000,00
2	2 wheels	104	Rp2.000,00	Rp416.000,00
Total income				Rp668.000,00

Based on table 3.3, the highest total parking income at the time of the survey was at Banyumanik 2 Hospital, Semarang City, namely IDR 668,000.00 per 2 hours.

2) Based on Parking Planning

Based on research and analysis carried out for 2 (two) weeks on Tuesday, Thursday and Saturday during visiting hours using 2 (two) stages, namely stage I at 10.00 – 12.00 WIB (noon) and stage II at 17.00 – 19.00 WIB. So a parking space plan is used where there are 46 car parking lots and 153 motorbike parking lots as shown in attachment No.02. In planning this parking levy, a car parking fee of IDR is used. 3,000,- while motorbikes are IDR 2,000,- with a parking turnover rate of 1.00 plots/hour/vehicle for 2 hours/day.

Table 4. Retributions Based on Parking Planning

No	Vehicle Type	number of vehicles	Parking Fee (Rp)	Income Per 2 hours (Rp)
1	4 wheels	46	Rp3.000,00	Rp276.000,00
2	2 wheels	153	Rp2.000,00	Rp612.000,00
Total income				Rp888.000,00

Based on table 3.4, the total parking revenue in the Banyumanik 2 Hospital area, Semarang City at the time of the research, based on predetermined parking planning, resulted in an estimated parking levy of Rp. 888,000.00,- per 2 hours.

4. Conclusion

From the analysis and discussion, the researchers can draw the following conclusions:

a) The parking planning determination, based on the survey conducted, suggests adding a ramp building with the first floor designated for cars and motorcycles, and the second floor specifically for motorcycles, located next to the cafeteria of RSU Banyumanik 2 in Semarang City. This planning results in a total parking pattern of 46 cars and 153 motorcycles.
b) The highest parking revenue occurs in phase II from 5:00 PM to 7:00 PM, with 42 cars on Tuesday, September 3, 2024, and 104 motorcycles on Tuesday, August 27, 2024, resulting in total revenue during the study of Rp 668,000.00 for every 2 hours. Based on the parking planning during the study, with 46 car spaces and 153 motorcycle spaces, the total planned revenue amounts to Rp 888,000.00 for every 2 hours. With this planning, the estimated existing revenue is expected to increase.

From this research, the author has several recommendations, including:

a) The parking management is expected to implement good technical management recommendations in managing parking.
b) The addition of parking attendants is necessary during peak times to provide better service for parking users.

c) Parking users need to be disciplined in occupying the designated parking slots/spaces.
d) There is a need for the construction of a two-level parking ramp to support the comfort of parking space requirements at Banyumanik 2 Hospital in Semarang City.
e) Further research is needed on the acceptable Parking Space Unit value that can provide comfort for parking users without compromising efficiency factors.

References

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