

## **Need Analysis of Puri Pati Market Parking Area**

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***Abstract.** Puri Market, which is located on Jalan Colonel Sunandar, precisely in the center of Pati Regency, is a traditional market which is the basis for the people of Pati to sell and buy all life-sustaining needs. This needs to be taken into account considering that the existence of an activity center must have as few parking areas as possible. Therefore, this study was carried out with the aim of providing recommendations for parking characteristics, parking space capacity and planning the most optimal parking layout for Puri Pati Market. Conditions are reviewed on 1 weekend and 3 weekdays. From 06.00 to 12.00. With the current existing motorbike parking space capacity of 280 SRP at Puri Pati Market, it can still meet existing parking needs. From the calculations that have been carried out, it is known that the need for motorbike parking space at Puri Pati Market is 345 SRP.*

**Keywords:** Market, Parking Space Capacity, SRP.

### **1. Introduction**

Puri Market which is located on Jalan Kol. Sunandar, precisely in the center of Pati Regency, is a traditional market which is the basis for the people of Pati to sell and buy all life-sustaining necessities. This needs to be taken into account considering that the existence of an activity center must have as few parking areas as possible. The inconvenience for users of the parking lot at Puri Market is caused by several sellers carrying out buying and selling activities in the parking area and the lack of available parking space, which causes traffic jams in front of Jalan Puri Pati Market. The movement of vehicles around the road is unstable due to activity on the road which is caused by vehicles parking on the road due to lack of parking space and traders selling on the side of the road which will also cause traffic jams.

According to Law of the Republic of Indonesia no. 22 of 2009 [1]. concerning road traffic and transportation article 1 paragraph 15 which states that, parking is "the state of a vehicle stopping or not moving for a while and left by the driver" whereas according to the Ministry of Transportation number 4 of 1994 [2] , parking is the state of not moving a vehicle that is not moving. temporary. Apart from this definition, there are opinions from experts regarding the meaning of parking, including, [3] parking

is "a place to place by stopping transport/goods vehicles (motorized or non-motorized) for a certain period of time in a certain place".

Market activity and heavy traffic flow causes an increase in the volume of vehicles entering and leaving Puri Market at certain hours, making it difficult for many vehicles to find a parking space. Parking areas are one of the transportation infrastructures that must be well organized and managed in order to meet the needs for parking spaces, off street parking areas. Based on these conditions, it is necessary to improve and analyze the need for available parking space so that it becomes even better. It is hoped that this research can provide input to parking managers so that traffic jams do not occur frequently and provide comfortable and safe parking facilities for visitors.

## **Methods**

### *1.1. Types of Research*

This type of research is descriptive research. The descriptive method can be interpreted as a problem-solving procedure that is investigated by describing the condition of the subject or object in the research, which can be people, institutions, society and others which are currently based on visible facts or what they are.

The research method used in this research is the method from the Director General of Land Transportation 1996.

### *1.2. Time and Location of Research*

This research was conducted at Puri Pati Market for four days, from 06.00-12.00.

### *1.3. Data Collection Techniques*

used in this research is divided into two, namely:

1. Primary data, namely data resulting from direct observations in the field consisting of data on the number of motorbikes and passenger cars entering and exiting the parking location along with the exit and entry times in one day. This data was obtained by recording at the observation point.

2. Secondary data is data obtained from citing existing information data in collaboration with management agencies or sources deemed to be of interest to be used as input and reference material. Secondary data required includes:

- a. Measurement of the parking area of Puri Pati Market obtained from the management or related agencies.

- b. Measurement of parking slots to obtain actual parking capacity, and other necessary measurements.

### *1.4. Data Analysis Techniques*

Primary data is the number of vehicles in a day and the number of parking spaces available and secondary data is a floor plan of the parking space in the Puri Pati market. Calculated using the equation from the Directorate General of Land Transportation 1996 produces problems namely parking capacity, movement patterns and parking arrangement. Data processing using a computer.

## **2. Results and Discussion**

### *2.1 Analysis of Parking Space Needs*

The dynamic capacity of this parking space depends on the average duration or length of time vehicles are parked. The shorter the duration, the greater the dynamic capacity of the parking space or conversely, the longer the duration, the less the dynamic capacity of the parking space and it is also known that the static capacity (space) of 2-wheeled vehicles is 280 and 100 for 4-wheeled vehicles.

Table 1 Motorcycle Parking Space Requirements

No	Day, Date	Space Capacity (existing)	Survey duration (hours)	Average duration (hours)	Dynamic Capacity motorcycle)
1	Sunday, August 20, 2023	280	6	0,99	1696
2	Monday, August 21, 2023	280	6	0,99	1696
3	Wednesday, 23 August 2023	280	6	0,89	1887
4	Thursday, 24 August 2023	280	6	0,98	1714

Source: Analysis results, 2023

Table 2 Car Parking Space Requirements

No	Day, Date	Space Capacity (existing)	Survey duration (hours)	Average duration (hours)	Dynamic Capacity motorcycle)
1	Sunday, August 20, 2023	100	6	0,85	705
2	Monday, August 21, 2023	100	6	0,93	645
3	Wednesday, 23 August 2023	100	6	0,85	705
4	Thursday, 24 August 2023	100	6	0,87	689

Source: Analysis results, 2023

It can be seen in tables 1 and 2 that the largest dynamic capacity based on average duration for motorbikes was on Wednesday, 23 August 2023, which was 1887. And the largest dynamic capacity based on average duration for cars was on Sunday, 20 August 2023, which was 705 .

The number of dynamic parking spaces currently needed can be calculated in several ways, including: Formula Approach Calculation example:

Parking space requirements (Z) [4]

$$Z = (\text{Parking Volume (motorcycle)} \times \text{Average Duration (hours)}) / (\text{Survey Length (hours)})$$

$$Z = (126 \times 0.99) / 6 = 20.8 \approx 21$$

From the results of calculations using this formula, a recapitulation of parking space requirements (Z) in the Puri Pati market is obtained, as shown in table 3

Table 3 Motorbike Parking Space Requirements

No	Day, Date of Survey	(hour) Volume	Parking (Motorcycle	Average duration (hours)	Requirement Parking space (z)
1	Sunday, August 20, 2023	6	126	0.99	21
2	Monday, August 21, 2023	6	59	0,99	10
3	Wednesday, 23 August 2023	6	80	0,89	12

4	Thursday, 24 August 2023	6	70	0,98	11
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Source: Analysis results, 2023

Table 4 Car Parking Space Requirements

No	Day, Date of Survey	(hour) Volume	Parking (Car)	Average duration (hours)	Requirement Parking space (z)
1	Sunday, August 20, 2023	6	14	0,85	2
2	Monday, August 21, 2023	6	9	0,93	1
3	Wednesday, 23 August 2023	6	10	0,85	1
4	Thursday, 24 August 2023	6	10	0,87	1

Source: Analysis results, 2023

Tables 4.23 and 4.24 above show that the greatest need for parking space for motorbikes at Puri Pati market occurred on Sunday, 23 August at 21 SRP and the greatest need for parking space for cars occurred on Sunday, 23 August 2023 at 2 SRP.

According to the Directorate General of Land Transportation 1996, for the market center the SRP requirement for the number of visitors to Puri Pati market with a total of 2800 has a minimum total parking unit. [5]. *Traffic and Engineering, Second Edition*

$$\text{Total KRP} = 313 + (2800 - 1500) / (3000 - 1500) \times (350 - 313) = 345 \text{ SRP}$$

$$\text{Total KRP} = 270 + (2800 - 1500) / (3000 - 1500) \times (300 - 270) = 296 \text{ SRP}$$

Based on the minimum requirements for the size of the required parking space at the market center from the Directorate General of Land Transportation 1996, the motorbike parking space available at the Puri Pati market meets the minimum requirement for motorbike parking space of 345 SRP because with the number of traders and visitors ranging between 1500-3000 people then KRP required is between 313-350 SRP. And the available car parking meets the requirements between 270-300 SRP.

### 3. Conclusion

It can be seen in tables 1 and 2 that the largest dynamic capacity based on average duration for motorbikes was on Wednesday, 23 August 2023, which was 1887. And the largest dynamic capacity based on average duration for cars was on Sunday, 20 August 2023, which was 705.

Tables 3 and 4 above show that the greatest need for parking space for motorbikes at Puri Pati market occurred on Sunday, 23 August at 21 SRP and the greatest need for parking space for cars occurred on Sunday, 23 August 2023 at 2 SRP.

Based on the data analysis carried out, the available parking capacity and parking space requirements can be determined by analyzing the number of parked vehicles against the number of available parking spaces. If the parking space requirement is greater than the available parking capacity, it means that the number of available parking spaces is insufficient. If the parking space requirement is smaller than the available parking capacity, it means that the number of available parking spaces is still able to accommodate vehicles that will be parked in the parking area.

The largest parking space requirement based on the (Z) formula approach is determined as the value of parking space requirements that must be met by the parking management. If the need for parking space is determined based on the results of research in the field, then the value of the need for parking space taken is at the time of maximum accumulation.

**References**

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