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The Impact of Land Use on the Road's Level of Service Improvement of H. M. Sunan Road and Its Alternative

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***Abstract*—Infrastructure plays an essential role in economic growth and development. Transportation, particularly road infrastructure, is critical in driving economic growth and community welfare. An efficient transportation system is closely linked to land use, as people's mobility generates travel flows that must be adequately served. H. M. Sunan is a primary collector road located in Kepanjen District, Malang Regency. Traffic on H. M. Sunan is quite heavy because various land uses along this corridor affect road performance. The purpose of this study was to calculate the contribution of each land use and formulate alternative scenarios for improving road performance on this road. The analysis used is of land use contribution and traffic management analysis. The results showed that trade and service land use and industrial land use contributed the greatest to the corridor's total volume. On weekdays, the highest volume of land use is trade and services, which is 686 units of vehicles/day; on weekends, the highest volume of land use is trade and services, which is 693 units of cars/day. The most influential traffic management is priority management, which is achieved by widening the pedestrian path. The results show that the traffic management scenario in the form of widening the pedestrian path can reduce the degree of saturation by 0.24 in the peak hour on weekdays, which occurs at 06.01-07.00 am, and by 0.17 in the peak hour on weekends, which occurs at 4.01-5.00 pm.**

***Keywords*— Land use contribution; LOS improvement; traffic management.**

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I. INTRODUCTION

Infrastructure played an important role in efforts to strengthen the regional economy [1]. Good infrastructure is an essential component in the growth and development of a region. Transportation is one of several elements of infrastructure development. Transportation-related activities rise together with a region's economic and demographic development[2]. Good road infrastructure and an efficient transportation system drive economic growth and improve people's welfare. By enabling the adequate mobility of people and goods, road infrastructure contributes significantly to economic growth and welfare improvement [3]. Road infrastructure helps to eradicate hunger, reduce poverty, and enhance quality of life [4].

Transportation, especially road infrastructure, is closely related to land use. Land use is shaped by transportation and vice versa in this mutually reinforcing dynamic [5]. Because it shortens travel times, lessens reliance on cars, and promotes compact urban growth, the integration of land use planning and transportation is crucial for sustainable urban development [6]. In urban planning, land use is a complicated and multidimensional idea that is intimately related to environmental concerns and transportation networks [7].

In meeting their needs, people will tend to travel and cause mobility, resulting in the generation of attraction to each land use [8]. Every activity on land, otherwise known as land use, has the potential to create travel flows. Travel flows can arise from the movement from land use (generation) to destination land use (pull) which must be served through the provision of a good transportation system [9]. The flow of journeys is greatly influenced by land use, particularly in residential regions where more trips are made and in business and industrial areas where they are drawn [10]. Commercial and residential land uses also contribute to trip generation, with unique models established for different levels of metropolitan settings [11]. In addition, different land uses, such as hotels and convenience stores, have varied trip generation models based on criteria such as the number of rooms or floor size [12].

Population growth and increased mobility increase demand for good road infrastructure [13]. Urbanization and population growth significantly impact road infrastructure and transportation dynamics [14]. The need for transportation

infrastructure and vehicle movements has increased due to the growing population and the increasingly complicated activities of individuals living in metropolitan areas. In emerging nations, there is a strong correlation between the growth of the metropolitan regions and the number of roads, particularly in the suburbs. Road stock expansion and population growth, especially in the suburbs, are closely linked to urban sprawl [15]. Road capacity is impacted by increased transportation movements brought on by a growing population [16].

The increase in the number of vehicles can cause transportation problems, namely congestion due to limited road capacity[17]. Growing urban populations put more strain on infrastructure and transit lines, leading to traffic jams and possible social and economic issues [18]. Slower speeds, longer travel times, and longer lines of cars are all signs of road congestion, a pervasive urban issue [19]. Rapid population expansion, urbanization, inefficient public transportation, and rising private vehicle ownership all contribute to congestion, which impacts all forms of transportation and socioeconomic classes [20]. Congestion can arise due to several things, such as an increase in population, increased demand for transportation facilities, road crossings, and vehicles parking on the shoulder of the road [21]. Uncoordinated land use regulations, inadequate public transportation networks, and insufficient transportation infrastructure are significant causes of congestion [22]. Land use is a significant additional factor influencing trip generation [23]. Changes in land use in metropolitan corridors significantly impact road service levels and traffic generation [24]. Significant diversity in trip rates is expected throughout land use types since different land use types are linked to different kinds of activities. The thorough review emphasizes how crucial it is to take land use variables into account while creating trip-generation models [25].

Kepanjen Sub-district is the capital city of Malang Regency. Kepanjen Sub-district has the third highest population density in Malang Regency at 2,403 people/km2 and has increased every year [11]. Furthermore, based on the Malang Regency's 2010–2030 Regional Spatial Plan. Kepanjen Sub-district is the center of government and local activities such as trade or services, worship centers, health centers, regional-scale office centers and regional-national sports and arts centers. This causes the complexity of population mobilization every day to meet the needs of activities. The impact of the increase in population and mobility is an increase in traffic density on the main roads of Kepanjen Sub-district, including one of the H. M. Sunan Road Corridors in Kepanjen Sub-district.

The H. M. Sunan Road corridor is one of the main roads in the Kepanjen Sub-district, with a primary collector hierarchy. The H. M. Sunan corridor is one of the essential corridors in the development of Kepanjen Sub-district because this corridor connects the Kepanjen Sub-district Local Activity Center with the National Activity Center of Malang City. In addition, along the H. M. Sunan corridor, there are various land uses such as education in the form of elementary and high schools, and offices, and dominated by trade and services in the form of shops and kiosks where these land uses will affect transportation activities in the corridor. One of the leading causes of traffic exceeding road capacity is uncontrolled land use, especially commercial growth [26], [27]. In addition, some intersections can increase the density of solid transportation activities on the H. M. Sunan corridor.

Therefore, further study is needed to determine the effect of land use on traffic volume in the H. M. Sunan corridor and alternatives to improve road performance on H. M. Sunan so that it can be taken into consideration in making policies and directions for urban infrastructure development to solve urban transportation problems.

II. Materials and Method

This research used a quantitative approach. Quantitative research is research that uses measurements, calculations, formulas, and certainty of numerical data in planning, processes, building hypotheses, techniques, analyzing data and drawing conclusions [28]. This research consists of 2 stages, namely calculating the contribution of land use and knowing the traffic management on H. M. Sunan. The framework of this research method is shown in Fig 1.

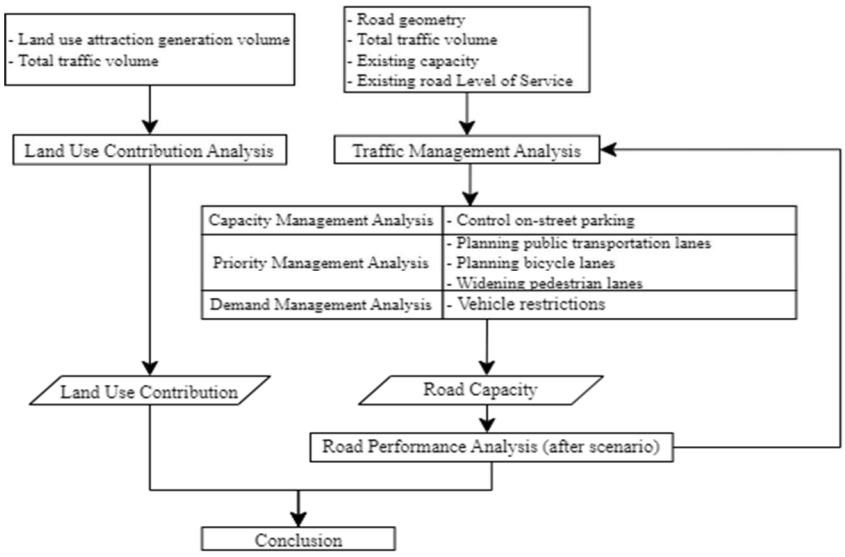

Fig. 1 Research Framework

Based on Fig 1, it is known that the stages of this study begin with a land use contribution analysis, where the volume of land use generation and total traffic volume are the main factors analyzed. Then, a traffic management analysis is conducted, including several components: capacity management, priority management, and demand management. This traffic management analysis results are then used to evaluate road capacity. After that, a road performance analysis considers scenarios after implementing traffic management strategies. This diagram systematically links the various elements of the analysis to evaluate and improve road performance through traffic management and land use planning.

A. Location

The location of this study is the H. M. Sunan Road corridor located in Kepanjen District, Malang Regency. This study location is selected based on several aspects, such as road length, road hierarchy, and use around the study area. It is known that H. M. Sunan has a road length of 850 meters with a primary collector road hierarchy. H. M. Sunan has various land uses: housing, offices, trade and services, education, health, and industry. The industrial land use on H. M. Sunan is the cigarette factory industry, which has a high pull compared to other land uses. The study location is shown in Fig. 2.

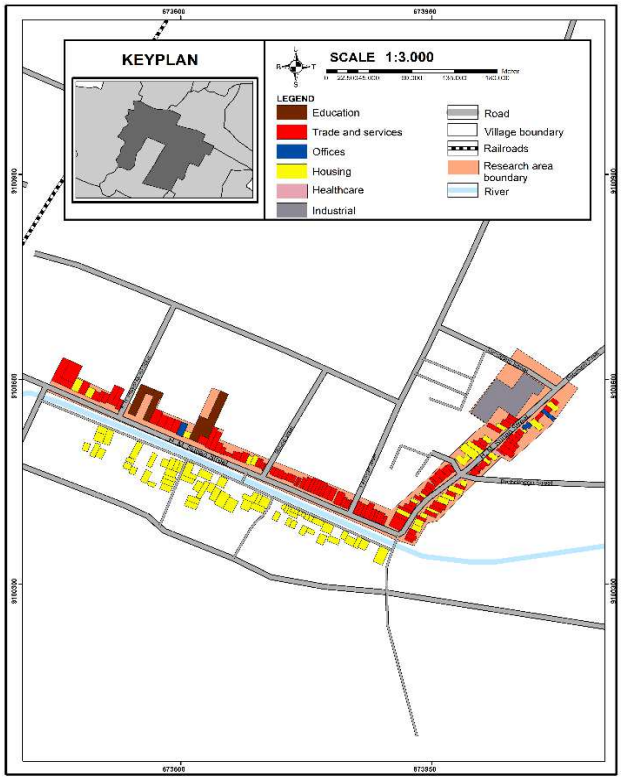

Fig. 1 Research Location

B. Land Use Contribution Analysis

Land use contribution analysis is used to assess the specific contribution of each land use type to road section performance. The data required is the movement volume of each land use type on a single day and the total volume of the road section. Land use contribution is calculated using the following formula [9]:

$$Contribution = \frac{Land\ use\ volume}{Total\ Volume} \text{ x } 100\% \quad (1)$$

C. Traffic Management Analysis

According to Law No. 22/2009, traffic management and engineering is a set of efforts and activities that include planning, procurement, installation, arrangement, and maintenance of road equipment facilities to realize, support, and maintain traffic security, safety, order, and smoothness. If traffic is less congested, traffic management will work better. Traffic management can be carried out to handle congestion problems to improve road performance. To improve road performance, traffic management can be done to deal with congestion problems. Three strategies can be used in traffic management, namely capacity management, priority management, and demand management [29]. To determine the level of service in H. M. Sunan, Kepanjen Subdistrict, Malang Regency, the calculation analysis results after applying alternatives are compared with those before the alternative. The flowchart of traffic management is shown in Fig 3.

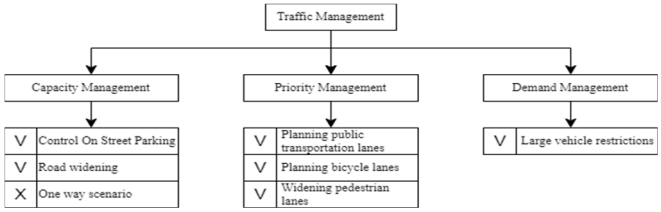

Fig. 3 Traffic Management Framework

1) Capacity Management Analysis of On-Street Parking Control: The function of traffic capacity management is to maintain or improve road service performance, reduce congestion, optimize infrastructure use, and improve transportation efficiency. On-street parking refers to parking vehicles along public roads or highways. [30]. On-street parking on the H. M. Sunan corridor is carried out on the shoulder of the road to reduce the width of the road benefits, which can reduce traffic flow and ultimately disrupt road function. Therefore, it is necessary to control on-street parking on the H. M. Sunan corridor. The scenario that will be carried out in this study is to calculate the road capacity simulation if on-street parking is carried out only on one side of the road shoulder on the H. M. Sunan corridor. Then a comparison of the calculation of the road performance level before and after the scenario is carried out. The flowchart of capacity management in the form of on-street parking control is shown in Fig 4 (A).

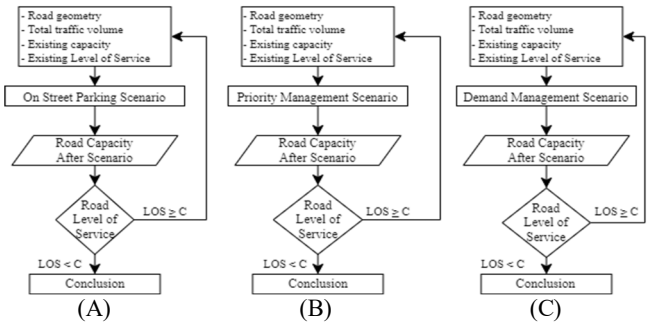

Fig. 4 Flowchart of Each Traffic Management

2) Priority Management Analysis: Priority management is preferred for public transport vehicles through the application of bus lanes and busways, as well as priorities for non-motorized vehicles such as bicycle lanes, pedestrian priorities, etc [31]. In the analysis of priority management in the form of public transportation lane planning, a traffic simulation model will be applied to evaluate the impact of scenarios of public transportation lanes, bicycle lanes, and pedestrian lane widening on overall traffic performance on the H. M. Sunan Road corridor, with evaluation criteria including road capacity improvement. The provisions for the selection of bicycle lanes according to the Ministry of Public Works and Housing related to the selection of bicycle lanes based on the hierarchy of H. M. Sunan, namely primary collectors, are type A, which is a type of protected bicycle lane either on the road body or off the road body [9]. The flowchart of priority management is shown in Fig 4 (B).

3) Demand Management Analysis of Heavy Vehicle Restrictions: As part of sustainable transportation policy, demand management is an effort to minimize the number of private vehicle trips (push) and encourage the development of public transport services (pull) to reduce congestion in cities [32]. Congestion occurs because movements occur at the exact location and time. Therefore, there are three ways to solve congestion problems: moving at the same time but at different locations (Location Shift), moving at the exact location but at different times (Time Shift), or moving at the exact area but at other times using various modes (mode shift). In applying demand management in the H. M. Sunan corridor, a scenario of heavy vehicle restrictions will be carried out at 06.01-09.00 am in West Indonesia Time and 4.01-8.00 pm in West Indonesia Time. The flowchart of demand management in the form of heavy vehicle restrictions is shown in Fig 4 (C).

III. Results and Discussion

The results and discussion section provides a comprehensive overview of the research's findings and analysis results. This section also serves as the basis for concluding.

A. Road's Characteristic

Road characteristics consist of several components, such as road status, class, geometrics, and other components affecting road capacity. H. M. Sunan Road is a district road and has a primary collector hierarchy. The road is six meters wide with a lane width of three meters each, giving it an FC_{LJ} value of 0.87. On both sides of this road are sidewalks with a width of 1.5 meters. The road type owned by H. M. Sunan is 2/2 UD with balanced direction separation so that the basic capacity (C_0) owned by the road is 2900, and the capacity adjustment factor related to direction separation (FC_{PA}) on the Road of H. M. Sunan corridor is 1.00. Existing side obstacles on H. M. Sunan are street vendor activities on the shoulder and on-street parking activities on both shoulders of the road, so it has an FC_{HS} of 0.90. Based on the characteristics of H. M. Sunan Road, the existing capacity is 2,044 vehicle unit/hour. The geometric attributes of H. M. Sunan Road are shown in Table 1. The existing condition of the road is shown in Fig 5.

TABLE I
CHARACTERISTIC OF H. M. SUNAN

Road Characteristic	H. M. Sunan
Road Type	2/2 UD
Effective road width (meters)	6
Lane width (meters)	3
Median	-
Pavement	asphalt
Roadside	1.5 meters
Sidewalk	1.5 meters
Road Length	850 meters

(A)

(B)

Fig. 5 Existing condition of H. M. Sunan

Traffic volume data on this corridor was obtained from previous research, namely calculating the number of vehicles crossing the H. M. Sunan Road corridor. Volume calculation data was obtained by conducting traffic counting twice, namely one weekday and one weekend (weekend). Vehicle counts were done from 06.00 am to 8.00 pm in West Indonesia Time. It can be seen that the traffic volume on H. M. Sunan weekdays has a peak hour from 06.01 to 07.00 am with a degree of saturation of 0.99, so it has a level of service E. The following is the traffic volume data on H. M. Sunan on weekdays contained in Table 2.

TABLE II
TRAFFIC VOLUME OF H. M. SUNAN (WEEKDAY)

Time	$V_{Continuous}$ (pcu/h)	$V_{Environment}$ (pcu/h)	$V_{Landuse}$ (pcu/h)	V_{total} (pcu/h)	Capacity	DS	LOS
06.01-07.00	1627	114,7	276	2017.7	2044	0.99	**E**
07.01-08.00	1432	-90,8	119	1460.2	2044	0.71	**C**
08.01-09.00	1385	-17,5	64	1431.5	2044	0.70	**C**
09.01-10.00	1271	-57,1	90	1303.9	2044	0.64	**C**
10.01-11.00	1463	-43,8	101	1520.2	2044	0.74	**C**
11.01-12.00	1223	-27,0	95	1291.0	2044	0.63	**C**
12.01-13.00	1005	40,6	113	1158.6	2044	0.57	**C**
13.01-14.00	1217	-10,1	125	1331.9	2044	0.65	**C**
14.01-15.00	1191	31,8	120	1342.8	2044	0.66	**C**
15.01-16.00	1362	-11,0	163	1514.0	2044	0.74	**C**
16.01-17.00	1453	-71,2	194	1575.8	2044	0.77	**D**
17.01-18.00	1335	-28,8	50	1356.2	2044	0.66	**C**
18.01-19.00	1170	0,9	44	1214.9	2044	0.59	**C**
19.01-20.00	826	-14,6	36	847.4	2044	0.41	B

B. Land Use Characteristic

Land use in the H. M. Sunan corridor is classified into six types: housing, with 27 units; trade and services, with 85 units; education, with two units; offices, with three units; industry, in the form of a cigarette factory, with one unit; and health, in the form of a pharmacy, with one unit. Land use on the road of the H. M. Sunan corridor is dominated by trade and service land use, which accounts for 72% of the total land use. On weekdays, the highest volume of land use is trade and services at 686 vehicle units/day, followed by industrial land use at 535 vehicle units/day. Details of the volume of land use generation on the road of H. M. Sunan on weekdays are shown in Table 3.

TABLE III
THE VOLUME OF GENERATION AND ATTRACTION IN THE ROAD OF H. M. SUNAN (WEEKDAY)

Time	$V_{settlement}$ (pcu/h)	$V_{trade\&services}$ (pcu/h)	$V_{offices}$ (pcu/h)	$V_{education}$ (pcu/h)	$V_{industry}$ (pcu/h)	V_{health} (pcu/h)	V_{Total} (pcu/h)
06.01-07.00	4	20	0	60	189	0	273
07.01-08.00	6	20	2	60	27	1	116
08.01-09.00	7	41	2	3	11	1	65
09.01-10.00	5	68	2	3	11	2	91
10.01-11.00	5	82	4	3	5	2	101
11.01-12.00	6	61	3	3	22	1	96
12.01-13.00	6	75	1	3	27	1	113
13.01-14.00	4	68	3	38	11	0	124
14.01-15.00	6	48	2	25	38	1	120
15.01-16.00	10	55	1	5	92	1	164
16.01-17.00	3	48	0	48	92	2	193
17.01-18.00	4	41	0	5	0	1	51
18.01-19.00	4	34	0	0	5	1	44
19.01-20.00	3	25	0	0	5	1	34
Total	**73**	**686**	**20**	**256**	**535**	**15**	**1585**

C. Land Use Contribution to Total Volume

Land use contribution is calculated to determine the contribution of each land use to the total volume. The percentage result is obtained by dividing the total volume of each land use movement by the total volume. On weekdays, it is found that the volume of land use that contributes the most is at 06.01-07.00 am in West Indonesia Time. Industrial land use has the most significant influence on weekdays, 9.37%, which occurs at 06.01-07.00 am in West Indonesia Time. Details of land use contribution to total road volume on weekdays are shown in Table 4.

TABLE IV
CONTRIBUTION OF LAND USE VOLUME TO TOTAL VOLUME (WEEKDAY)

Time	$V_{Land\ use}$	V_{Total}	Land use contribution (%)	Contribution per land use to Total Volume (%)					
				Settlement	Trade Services	Office	Edu cation	Industry	Health
06.00-07.00	**273**	**2017.7**	**13.53**	**0.20**	**0.99**	**0.00**	**2.97**	**9.37**	**0.00**
07.01-08.00	116	1460.2	7.95	0.41	1.37	0.14	4.11	1.85	0.07
08.01-09.00	64	1431.5	4.54	0.49	2.86	0.14	0.21	0.77	0.07
09.01-10.00	90	1303.9	6.97	0.38	5.22	0.15	0.23	0.84	0.15
10.01-11.00	101	1520.2	6.64	0.33	5.39	0.26	0.20	0.33	0.13
11.01-12.00	95	1291.0	7.43	0.46	4.73	0.23	0.23	1.70	0.08
12.01-13.00	113	1158.6	9.76	0.52	6.47	0.09	0.26	2.33	0.09
13.01-14.00	123	1331.9	9.32	0.30	5.11	0.23	2.85	0.83	0.00
14.01-15.00	119	1342.8	8.93	0.45	3.57	0.15	1.86	2.83	0.07
15.01-16.00	163	1514.0	10.84	0.66	3.63	0.07	0.33	6.08	0.07
16.01-17.00	192	1575.8	12.26	0.19	3.05	0.00	3.05	5.84	0.13
17.01-18.00	50	1356.2	3.75	0.29	3.02	0.00	0.37	0.00	0.07
18.01-19.00	44	1214.9	3.62	0.33	2.80	0.00	0.00	0.41	0.08
19.01-20.00	36	847.4	4.01	0.35	2.95	0.00	0.00	0.59	0.12
Total	**1.580**	**19366.1**	**8.18**						

D. Traffic Management

Traffic management can be carried out to deal with congestion problems and improve road performance. To determine the level of service in H. M. Sunan, Kepanjen Subdistrict, Malang Regency, the calculation analysis results after applying alternatives are compared with those before the alternative. The traffic management checklist table on the road of H. M. Sunan is shown in Table 5.

TABLE V
TRAFFIC MANAGEMENT CHECKLIST ON THE ROAD OF H. M. SUNAN

Management		Information	Reasons
Capacity	Control of *On-Street Parking*	√	Controlling on-street parking can be conducted by limiting the location and space of parking, which was initially on both sides of the road shoulder, to only the shoulder of the road with signage-allowed Parking so that side obstacles can be reduced.
	Road widening	√	There is still room for geometric widening with scenario calculations (Calculations have been made).
	One way	X	H. M. Sunan has a 2/2 UD type, which can limit movement patterns in commercial areas and further studies are needed for one-way road scenarios.
Priority	Public transportation lanes	√	It can be conducted to reduce the use of private vehicles, but no public transportation passes through the corridor.
	Bicycle lanes	√	It can be conducted to reduce the use of private motorized vehicles, but further studies are needed to plan special bicycle lanes.
	Addition of pedestrian paths	√	The corridor already has a pedestrian path, which can be widened to reduce the use of private motorized vehicles.
Demand	Heavy vehicle restrictions at certain hours	√	It can be conducted to reduce the use of heavy vehicles on road corridors, thereby decreasing traffic volume capacity.

E. Traffic Management Recapitulation

The research has produced several traffic management scenarios to overcome congestion and improve transportation efficiency in urban areas. The scenario calculations that have been carried out provide a comprehensive picture of various traffic management scenarios that can be applied to overcome congestion problems. Based on calculations on weekdays, it can be seen that the degree of saturation decreases significantly in the pedestrian lane widening scenario assuming on-street parking is eliminated. The degree of saturation in the pedestrian lane widening scenario decreases by 0.24. A recapitulation of the degree of saturation from each scenario that has been applied on H. M. Sunan on weekdays is shown in Table 6.

TABLE VI
RECAPITULATION OF SATURATION DEGREE OF ALL SCENARIOS (WEEKDAY)

Time	Existing DS	Degree of Saturation after Scenario				
		Control of street parking	Planning of Special Public Transportation Lanes	Bicycle Lane Planning	Pedestrian Lane Widening	Heavy Vehicle Restrictions
06.01-07.00	0.99	0.94	0.94	0.94	0.75	0.96
07.01-08.00	0.71	0.68	0.68	0.68	0.55	0.68
08.01-09.00	0.70	0.66	0.66	0.66	0.53	0.67
09.01-10.00	0.64	0.60	0.60	0.60	0.49	0.64
10.01-11.00	0.74	0.70	0.70	0.70	0.57	0.74
11.01-12.00	0.63	0.60	0.60	0.60	0.48	0.63
12.01-13.00	0.57	0.54	0.54	0.54	0.43	0.57
13.01-14.00	0.65	0.62	0.62	0.62	0.50	0.65
14.01-15.00	0.66	0.62	0.62	0.62	0.50	0.66
15.01-16.00	0.74	0.70	0.70	0.70	0.57	0.74
16.01-17.00	0.77	0.73	0.73	0.73	0.59	0.75
17.01-18.00	0.66	0.63	0.63	0.63	0.51	0.64
18.01-19.00	0.59	0.56	0.56	0.56	0.45	0.57
19.01-20.00	0.41	0.39	0.39	0.39	0.32	0.40

The calculation of each scenario was also done on weekends. Based on the calculation on weekends, it can be seen that the degree of saturation decreases significantly in the pedestrian lane widening scenario, assuming that on-street parking is eliminated. The degree of saturation in the pedestrian lane widening scenario decreases by 0.17 during peak hours on weekends. Table 7 recapitulates the degree of saturation of each scenario implemented on H. M. Sunan on weekends.

TABLE VII
RECAPITULATION OF SATURATION DEGREE OF ALL SCENARIOS (WEEKEND)

Time	Existing DS	Degree of Saturation after Scenario				
		Control on street parking	Planning of Special Public Transportation Lanes	Bicycle Lane Planning	Pedestrian Lane Widening	Heavy Vehicle Restrictions
06.01-07.00	0.44	0.42	0.42	0.42	0.34	0.43
07.01-08.00	0.41	0.39	0.39	0.39	0.32	0.41
08.01-09.00	0.41	0.39	0.39	0.39	0.32	0.40
09.01-10.00	0.50	0.47	0.47	0.47	0.38	0.50
10.01-11.00	0.52	0.50	0.50	0.50	0.40	0.52
11.01-12.00	0.55	0.52	0.52	0.52	0.42	0.55
12.01-13.00	0.54	0.51	0.51	0.51	0.41	0.54
13.01-14.00	0.56	0.53	0.53	0.53	0.43	0.56
14.01-15.00	0.60	0.56	0.56	0.56	0.45	0.60
15.01-16.00	0.59	0.56	0.56	0.56	0.45	0.59
16.01-17.00	0.70	0.66	0.66	0.66	0.53	0.67
17.01-18.00	0.57	0.54	0.54	0.54	0.44	0.56
18.01-19.00	0.53	0.50	0.50	0.50	0.40	0.52
19.01-20.00	0.52	0.49	0.49	0.49	0.39	0.50

IV. CONCLUSION

H. M. Sunan has characteristics as a district road with a width of 7 meters and an existing capacity of 2,044 vehicle units/hour, which is affected by side obstacles such as street vendor activities and parking on the shoulder of the road. Land use in this road corridor, especially for industry, contributes significantly to traffic volume, which requires effective traffic management to overcome congestion. This study shows that control of on-street parking aims to reduce traffic obstacles by implementing parking restrictions. Public transportation route planning is also a focus, with efforts to improve the accessibility and efficiency of public transportation to reduce dependence on private vehicles. In addition, special bicycle lane planning is implemented to encourage the use of bicycles as an environmentally friendly transportation alternative. The widening of pedestrian lanes is intended to improve the comfort and safety of pedestrians, thereby encouraging more people to walk. Heavy vehicles are restricted on certain roads to reduce road damage and improve traffic flow. The results of the study show that the traffic management scenario in the form of widening pedestrian lanes can reduce the degree of saturation the most, namely by 0.24 at peak hours on weekdays, which occur at 06.01-07.00 am in West Indonesia Time and by 0.17 at peak hours on weekends, namely at 4.01-5.00 pm West Indonesian Time.

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