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The Influence of Vehicles Parking on the Roadside as Reduction of Lane Width on Traffic Performance

(Irian Jaya Island Street, Sumatra Island Street, and Kasintuwu Street, Poso City)

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Abstract:- The city of Poso is experiencing rapid economic growth, attracting many newcomers and developing various commercial facilities along its streets. This study analyzes traffic performance on three road sections in Poso City: Jl. Pulau Irian Jaya (District Road), Jl. Pulau Sumatera (National Road), and Jl. Kasintuwu (Provincial Road), focusing on the impact of on-street parking as a side friction and lane width reduction on road capacity and degree of saturation (DS). The methods used are MKJI 1997 and PKJI 2023. The study results indicate that road capacity decreases and DS increases significantly when using the PKJI 2023 method compared to MKJI 1997. Jl. Pulau Irian Jaya experienced an increase in DS from 0.372 to 0.410 (side friction) and from 0.874 to 0.94 (lane width reduction). Jl. Pulau Sumatera showed an increase in DS from 0.716 to 0.776 (side friction) and from 0.75 to 0.84 (lane width reduction). Meanwhile, Jl. Kasintuwu showed an increase in DS from 0.114 to 0.118 (side friction) and from 0.20 to 0.21 (lane width reduction). These results suggest that the PKJI 2023 method provides a more conservative estimate, indicating a more significant decline in traffic performance compared to MKJI 1997.

Keywords:- *Parked Vehicles, Side Obstacles, Lane Width Reduction, and Traffic Performance.*

I. INTRODUCTION

Traffic congestion on road sections, especially in developing countries like Indonesia, is becoming increasingly severe due to three main factors: the increasing ownership of vehicles (demand), the limited resources for the construction of highways and other transportation facilities (supply), and the suboptimal operation of existing transportation facilities (operational system). One significant factor is parking on the shoulder and roadway, which greatly affects vehicle movement and causes congestion, particularly around high-activity areas such as schools, offices, markets, and restaurants. Using the 1993 Indonesian Highway Capacity Manual (MKJI) and the 2023 Indonesian Highway Capacity Guidelines (PKJI), based on the problem background, the corridors of Jl. Pulau Irian Jaya, Jl. Pulau Sumatera, and Jl. Kasintuwu in the city of Poso are selected as case study locations for parking with the title: "The Influence of On-Street Parking as a Reduction of Lane Width on Traffic Performance (Case Study on Jl. Pulau Irian Jaya, Jl. Pulau Sumatera, and Jl. Kasintuwu in Poso City)." The objectives of this study are: To investigate the extent to which on-street parking contributes as a side obstacle that affects traffic performance. To compare traffic performance based on the 1997 MKJI and the 2023 PKJI for on-street parking and its impact on traffic performance.

II. LITERARTURE REVIEW

In Law Number 22 of 2009, traffic is defined as the movement of vehicles and people in road traffic space, while what is meant by road traffic space is infrastructure intended for the movement of vehicles, people and/or goods in the form of roads and facilities. supporter. There are four interrelated elements in road traffic operations, namely drivers, vehicles, roads and pedestrians (Putranto, 2016).

Humans in traffic act as drivers, passengers or pedestrians in various conditions. Vehicles function as a means of transporting passengers and goods, consisting of motorized and non-motorized vehicles. Based on Law no. 22 of 2009, types of motorized vehicles include: motorbikes, passenger cars, buses, goods cars, special cars and roads are routes planned for motorized and non-motorized vehicle users, used to flow traffic smoothly and support vehicle loads (Jiwangga, 2017).

- *Traffic Flow*

Traffic flow is traffic conditions based on the average traffic volume (LHR) during certain hours, such as during rush hour or heavy traffic. In the calculations, traffic flow is generally divided into two types, namely traffic flow under existing conditions and planned traffic flow.

$$FV = (FV_0 + FV_W) \times FFV_{SF} \times FFV_{CS} \quad (1)$$

- *Vehicle Classification*

According to the Dirjen Bina Marga (1997), the types of vehicles in this calculation are classified into 3 groups, the classification of vehicle types is as follows: Light Vehicle (LV), a two-axle four-wheeled motorized vehicle with an axle distance of 2.0 – 3.0 m (passenger cars, opelet, microbus, pikcup according to Bina Marga classification); Heavy Vehicles (HV), motorized vehicles with axle spacing of more than 3.50 m, usually with more than four wheels (including: buses, two-axle trucks, three-axle trucks, combination trucks

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according to the Bina Marga classification system); Motorcycle / Motorcycle (MC), a motorbike with two or three wheels (includes motorbikes and three-wheeled vehicles according to the Highways classification system) (Dirjen Bina Marga, 1997).

➢ *Road Capacity*

The equation for determining road capacity based on MKJI 1997 can be seen in the following equation:

$$C = Co \times FCw \times FCsp \times FCsf \times FC_{CS} \quad (2)$$

The equation for determining road capacity based on PKJI 2023 can be seen in the following equation:

$$C = C0 \times FCLJ \times FCPA \times FCHS \times FCUK \quad (3)$$

If the condition of the road segment being observed is the same as ideal conditions, then all capacity correction factors become 1, so that C = C0 Basic capacity.

III. RESEARCH METHODE

Data processing is carried out after making direct observations and then calculating the reduction in traffic lane width with the data that has been obtained. The data processing is as follows:

- Traffic volume data (Q)
- Analysis of Side Obstacle Class (SF)
- Capacity (C)
- Degree of Saturation (DS)

IV. RESULT AND DISCUSSSION

A. Traffic Survey Results Data

The following is a graph of the combination of total vehicle flows above in the survey carried out in 15 hours of observation.

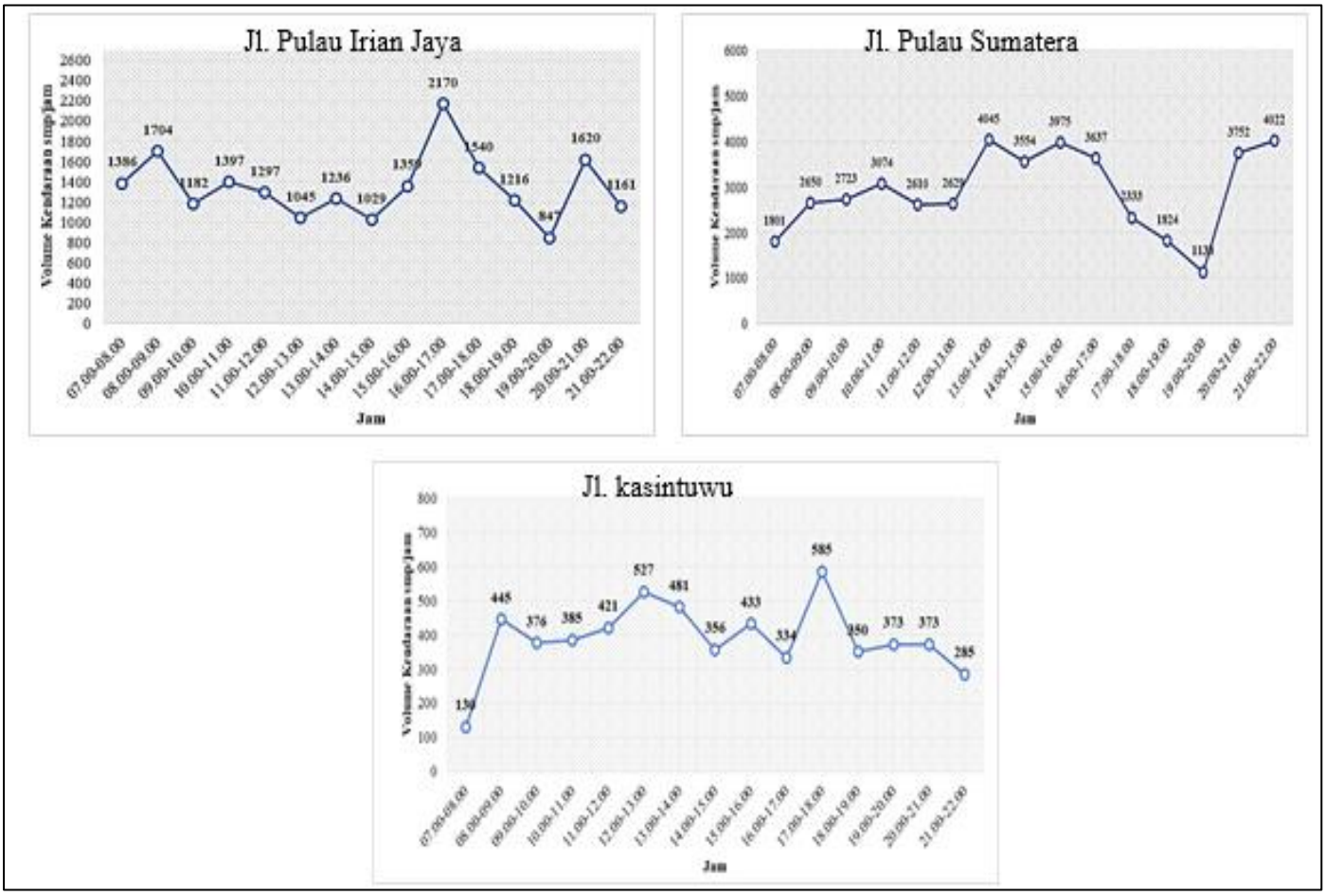

Fig 1 Traffic Volume Graph

This survey aims to find out where the peak hours are in the conditions of each section. Survey data was collected in the form of traffic volume, data collection was carried out for 15 hours, from 07.00 WIB - 22.00 WIB. In determining peak traffic flow for rush hour periods, the data obtained from enumeration for each arm is summed for every hour with a sum period of every 15 minutes according to the type of motorized vehicle without including non-motorized vehicles (UM). The summation according to this type of vehicle in units of vehicle/hour cannot be used to determine traffic flow during peak hours.

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B. Analysis of Side Obstacle Class (SF)

Table 1 Weighting of Side Obstacle Survey Results on the Jl. P. Irian Jaya

Interval 1 Hours	Vehicles Entering and Exiting the Road	Pedestrians	Slow Vehicle	Vehicle Stops	Weight With Parking	Weight without Parking
	0.7	0.5	0.4	1.0		
07.00-08.00	49	0	1.6	20	70.6	50.6
08.00-09.00	55.3	2.5	1.6	22	81.4	59.4
09.00-10.00	74.2	2.5	3.2	31	110.9	79.9
10.00-11.00	117.6	10.5	3.6	59	190.7	131.7
11.00-12.00	118.3	10	8.4	68	204.7	136.7
12.00-13.00	130.9	1.5	10	84	226.4	142.4
13.00-14.00	116.9	0	10	86	212.9	126.9
14.00-15.00	96.6	4	2.8	59	162.4	103.4
15.00-16.00	102.9	4	3.2	83	193.1	110.1
16.00-17.00	105	3.5	2.4	92	202.9	110.9
17.00-18.00	77.7	0.5	3.2	76	157.4	81.4
18.00-19.00	56.7	3	0.8	53	113.5	60.5
19.00-20.00	70.7	4.5	1.2	72	148.4	76.4
20.00-21.00	42.7	0.5	0.8	23	67.0	44.0
21.00-22.00	44.1	2	1.2	13	60.3	47.3
Rata-Rata	**83.91**	**3.27**	**3.60**	**56.07**	**146.84**	**90.77**

Table 2 Weighting of Side Obstacle Survey Results on the Jl. P. Sumatera

Interval 1 Hours	Vehicles Entering and Exiting the Road	Pedestrians	Slow Vehicle	Vehicle Stops	Weight With Parking	Weight without Parking
	0.7	0.5	0.4	1.0		
07.00-08.00	83.3	17.5	9.2	40	150	110
08.00-09.00	102.2	14.5	7.2	39	162.9	123.9
09.00-10.00	97.3	7	5.2	29	138.5	109.5
10.00-11.00	88.2	14	11.2	13	126.4	113.4
11.00-12.00	74.2	19.5	5.2	8	106.9	98.9
12.00-13.00	76.3	12	6.4	24	118.7	94.7
13.00-14.00	72.8	14	4	24	114.8	90.8
14.00-15.00	109.2	17.5	11.2	28	165.9	137.9
15.00-16.00	140	18	13.2	35	206.2	171.2
16.00-17.00	136.5	10.5	15.6	27	189.6	162.6
17.00-18.00	128.8	9	19.2	28	185	157
18.00-19.00	107.8	13.5	9.6	20	150.9	130.9
19.00-20.00	111.3	12.5	6.4	24	154.2	130.2
20.00-21.00	111.3	9.5	5.2	29	155	126
21.00-22.00	97.3	12	6	13	128.3	115.3
Rata-Rata	**102.43**	**13.40**	**8.99**	**25.40**	**150.22**	**124.82**

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Table 3 Weighting of Side Obstacle Survey Results on the Jl. Kasintuwu

Interval 1 Hours	Vehicles Entering and Exiting the Road	Pedestrians	Slow Vehicle	Vehicle Stops	Weight With Parking	Weight without Parking
	0.7	0.5	0.4	1.0		
07.00-08.00	49	1.5	0.4	0	50.9	50.9
08.00-09.00	53.2	0.5	0.4	1	55.1	54.1
09.00-10.00	53.9	1.5	0	1	56.4	55.4
10.00-11.00	37.1	2	0	1	40.1	39.1
11.00-12.00	44.1	0.5	0.4	1	46	45
12.00-13.00	56	3	0.8	0	59.8	59.8
13.00-14.00	51.8	1.5	0	1	54.3	53.3
14.00-15.00	24.5	1.5	0.8	1	27.8	26.8
15.00-16.00	65.1	1	2	2	70.1	68.1
16.00-17.00	61.6	2.5	0.8	4	68.9	64.9
17.00-18.00	56.7	2	1.2	2	61.9	59.9
18.00-19.00	32.9	2.5	0.8	0	36.2	36.2
19.00-20.00	52.5	2	0.4	1	55.9	54.9
20.00-21.00	39.2	1	0.8	0	41	41
21.00-22.00	29.4	2	1.2	1	33.6	32.6
Rata-Rata	**47.13**	**1.67**	**0.67**	**1.07**	**50.53**	**49.47**

C. Road Capacity

Based on geometric data and environmental conditions of the Jl. Irian Jaya Island, Jl. Sumatra Island, and Jl. Kasintuwu, Poso City, obtained survey results in the study area, so the Co, FCW/FCIJ, FCSP/FCPA, FCSF/FCHS, FCCS/FCUK values were obtained as follows:

➢ *Basic Capacity (Co)*

Basic capacity (Co) is obtained based on the number of lanes and lanes on the road section that is the object of this research, where the three road sections are 2-lane, 2-way undivided roads.

Table 4 Basic Capacity (Co)

Streets	Road Type	Basic Capasity (Co)	
		MKJI 1997	PKJI 2023
Jl. P Irian Jaya	2/2 TT	2900	2800
Jl. P Sumatera	2/2 TT	2900	2800
Jl. Kasintuwu	2/2 TT	2900	2800

➢ *Capacity Adjustment Factor for Traffic Lane Width*

The Capacity Adjustment Factor for Traffic Lane Width (FCW/FCIJ) is seen from the width of the traffic lane on the road in two situations, namely without parking as the lane width is reduced and when parking occurs at both edges of the lane the width of the traffic lane is reduced.

Table 5 Capacity Adjustment Factors for Traffic Lane Width (FCW/FCIJ)

Streets	Condition	Wc (m)	FCw/FC_{IJ}	
			MKJI 1997	PKJI 2023
Jl. P Irian Jaya	Parking on the road as a side barrier	9	1.25	1.25
	On-street parking as a reduction in lane width	4.9	0.56	0.56
Jl. P Sumatera	Parking on the road as a side barrier	11	1.34	1.34
	On-street parking as a reduction in lane width	7	1.25	1.25
Jl. Kasintuwu	Parking on the road as a side barrier	7	1	1
	On-street parking as a reduction in lane width	4,2	0.56	0.56

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➢ *Capacity Adjustment Factor for Direction Separation*

Adjustment factor for road direction distribution is based on the condition and distribution of traffic flow from both directions of the road without median barriers. From the traffic flow data, the SP direction separation in percent of the three road sections studied is 50-50 with a value of (FCsp/FCPA) = 1.00.

➢ *Capacity Adjustment Factor for Side Resistance*

After weighting the results of the side obstacle survey which then became a reference in determining the side obstacle class, the researcher then determined the value of the capacity adjustment factor for side obstacles (FCSF/FCHS) based on the average effective shoulder width Ws (m) in the absence of parking and when parking occurs.

Table 6 Capacity Adjustment Factor for Side Resistance (FCSF/FCHS)

Streets	Condition	Side Obstacle Class	Ws (m)	FC_{SF}/FC_{HS}	
				MKJI 1997	PKJI 2023
Jl. P Irian Jaya	Parking on the road as a side barrier	Very Low	1	1.01	0.96
	On-street parking as a reduction in lane width	Low	≤ 0.5	0.96	0.92
Jl. P Sumatera	Parking on the road as a side barrier	Low	1.5	0.99	0.97
	On-street parking as a reduction in lane width	Low	1	0.98	0.94
Jl. Kasintuwu	Parking on the road as a side barrier	Very Low	1.5	0.97	0.97
	On-street parking as a reduction in lane width	Very Low	1.5	0.97	0.97

➢ *Capacity Adjustment Factor for City Size*

The population of Poso City according to the results of the population census (Central Statistics Agency of Poso Regency) is 48,852 people. So the city size adjustment factor (FCCS/FCUK) is below the one million population figure with a value = 0.86.

Table 7 Calculation of Capacity on Sections when Parking as a Side Obstacle and when Parking as a Reduction in Lane Width based on MKJI 1997

Streets	Condition	MKJI 1997					
		Co	FC_W	FC_{SP}	FC_{SF}	FC_{CS}	(C)
Jl. P Irian Jaya	Parking on the road as a side barrier	2900	1.25	1	1.01	0.86	**3148.68**
	On-street parking as a reduction in lane width	2900	0.56	1	0.95	0.86	**2859.5**
Jl. P Sumatera	Parking on the road as a side barrier	2900	1.34	1	0.99	0.86	**3308.54**
	On-street parking as a reduction in lane width	2900	1.25	1	0.98	0.86	**3055.15**
Jl. Kasintuwu	Parking on the road as a side barrier	2900	1	1	0.97	0.86	**2419.18**
	On-street parking as a reduction in lane width	2900	0.56	1	0.97	0.86	**1354.74**

Then the calculation of the existing capacity on each road section studied when there is no on-street parking and when there is on-road parking based on PKJI 2023 is as follows:

Table 8. Calculation of Capacity on Sections when Parking as a Side barrier and when Parking as a Reduction in Lane Width based on PKJI 2023

Streets	Condition	PKJI 2023					
		Co	FC_{IJ}	FC_{PA}	FC_{HS}	FC_{UK}	(C)
Jl. P Irian Jaya	Parking on the road as a side barrier	2800	1.25	1	0.96	0.86	**1340.77**
	On-street parking as a reduction in lane width	2800	0.56	1	0.92	0.86	**1240.6**
Jl. P Sumatera	Parking on the road as a side barrier	2800	1.34	1	0.97	0.86	**3129.92**
	On-street parking as a reduction in lane width	2800	1.25	1	0.94	0.86	**2829.4**
Jl. Kasintuwu	Parking on the road as a side barrier	2800	1	1	0.97	0.86	**2335.76**
	On-street parking as a reduction in lane width	2800	0.56	1	0.97	0.86	**1308.03**

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG1525

➢ *Degree of Saturation*

Based on data and calculation analysis, the value of the degree of saturation was obtained when there was no parking on the road on the Jl. P. Irian Jaya, Jl. P. Sumatra , and Jl. Kasintuwu Poso City as follows:

Table 9 Value of Degree of Saturation (DS) when there is no Parking on the Road

Streets	SMP/Hours (Q)	(C)		DS (Q/C)	
		MKJI 1997	PKJI 2023	MKJI 1997	PKJI 2023
Jl. P Irian Jaya	1171.3	3148.68	2859.5	0.37	0.41
Jl. P Sumatera	2370	3308.54	3055.15	0.71	0.77
Jl. Kasintuwu	275.9	2419.18	2335.76	0.11	0.12

From the results of the analysis above, the capacity value of Jl. Irian Jaya Island when parking as a side barrier is 3148.68 PCU/hour based on MKJI 1997 and 2859.50 PCU/hour based on PKJI 2023, traffic flow is 1171.3 PCU/hour. From the capacity and traffic flow data, the saturation degree value was obtained at 0.372 in the 1997 MKJI and 0.410 in the 2023 PKJI.

Rated capacity Jl. Sumatra Island when parking as a side barrier is 3308.54 PCU/hour based on MKJI 1997 and 3055.15 PCU/hour based on PKJI 2023, traffic flow is 2370.0 PCU/hour. From the capacity and traffic flow data, the saturation degree value was obtained at 0.716 in the 1997 MKJI and 0.776 in the 2023 PKJI.

Rated capacity Jl. Kasintuwu when parking as a side barrier is 2419.18 PCU/hour based on MKJI 1997 and 2335.76 PCU/hour based on PKJI 2023, traffic flow is 275.9 PCU/hour. From the capacity and traffic flow data, the saturation degree value was obtained at 0.114 in the 1997 MKJI and 0.118 in the 2023 PKJI.

Table 10 Value of the Degree of Saturation (DS) when there is Parking on the Road

Streets	SMP/Jam (Q)	(C) SMP/Jam		DS (Q/C)	
		MKJI 1997	PKJI 2023	MKJI 1997	PKJI 2023
Jl. P Irian Jaya	1171.3	1340.77	1240.6	0.87	0.94
Jl. P Sumatera	2370	3129.92	2829.4	0.75	0.84
Jl. Kasintuwu	275.9	1354.74	1308.03	0.2	0.21

From the results of the analysis above, the capacity value of Jl. Irian Jaya Island when parking as a reduction in lane width is 1340.7 PCU/hour based on MKJI 1997 and 1213.63 PCU/hour based on PKJI 2023, traffic flow is 1171.3 PCU/hour. From the capacity and traffic flow data, the saturation degree value was obtained at 0.874 in the 1997 MKJI and 0.94 in the 2023 PKJI.

Rated capacity Jl. Sumatra Island when parking as a side barrier is 2961.63 PCU/hour based on MKJI 1997 and 2829.40 PCU/hour based on PKJI 2023, traffic flow is 2370.0 PCU/hour. From the capacity and traffic flow data, the saturation degree value was obtained at 0.75 in the 1997 MKJI and 0.84 in the 2023 PKJI.

From the capacity value of Jl. Kasintuwu when parking as a side barrier is 1354.74 SMP/hour based on MKJI 1997 and 1308.03 SMP/hour based on PKJI 2023, traffic flow is 275.9 SMP/hour. From the capacity and traffic flow data, the saturation degree value was obtained at 0.20 in the 1997 MKJI and 0.21 in the 2023 PKJI.

The results of this analysis show that the higher the traffic flow, the higher the value of the degree of saturation. If the value of the degree of saturation falls within a level of service that is less stable then an effort is needed to reduce the value of the degree of saturation.

➢ *Level of Service (LOS)*

The performance of the three road sections studied can be seen based on the level of service which refers to the DS value in the results of the 1997 MKJI road capacity analysis which can be seen in the following table:

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG1525

Table 11 Determination of Road Performance based on DS MKJI 1997 Values

Streets	Condition	DS MKJI 1997	Service Level
Jl. P Irian Jaya	Parking on the road as a side barrier	0.37	B
	On-street parking as a reduction in lane width	0.87	E
Jl. PSumatera	Parking on the road as a side barrier	0.71	C
	On-street parking as a reduction in lane width	0.77	D
Jl. Kasintuwu	Parking on the road as a side barrier	0.11	A
	On-street parking as a reduction in lane width	0.2	A

Table 12 Determination of Road Performance based on DS PKJI 2023 Values

Streets	Condition	DS PKJI 2023	Service Level
Jl. P Irian Jaya	Parking on the road as a side barrier	0.41	B
	On-street parking as a reduction in lane width	0.94	E
Jl. PSumatera	Parking on the road as a side barrier	0.75	D
	On-street parking as a reduction in lane width	0.84	E
Jl. Kasintuwu	Parking on the road as a side barrier	0.12	A
	On-street parking as a reduction in lane width	0.21	B

From the previous analysis, it can also be seen that the DS figure is high when the capacity of the road section is reduced due to the road body being used as a parking area, where the two conditions have differences in the capacity value when there is parking on the road and when there is no parking on the road, and Likewise, with the characteristics or performance of traffic on the three sections, these two conditions produce different traffic performance, so that parking vehicles for light vehicles (LV) and heavy vehicles (HV) as side obstacles influence traffic performance on the three sections. This, and the presence of parking activities on the road also causes a reduction in the effective lane width used for traffic on these three sections, resulting in changes in traffic performance on these three sections.

Apart from that, the results of the traffic performance analysis above also show that there is a slight difference in traffic performance resulting from the two methods, where after comparing traffic performance based on MKJI 1997 and PKJI 2023 for vehicles parked on the road, it shows that there are differences value of the degree of saturation, but the characteristics do not show a significant difference, because from the results of the analysis only Jl. Kasintuwu experienced changes in traffic characteristics or performance when there were vehicle parking activities on the road, which in the 1997 MKJI resulted in high speed flow conditions, the driver could choose the desired speed without obstacles, but in the 2023 PKJI resulted in slightly different conditions, where The traffic flow is stable, but the operating speed begins to be limited by traffic conditions, the driver has the freedom to choose the speed.

- *Road Characteristics*

From the results of the analysis above, it shows that the performance of several road sections in conditions without parking and with parking produces different traffic performance. The traffic performance on these sections when there is no parking activity for light vehicles (LV) or heavy vehicles (HV) shows high speed flow conditions, the driver can choose the desired speed without obstacles, but when there are vehicle parking activities on the road, the traffic performance on the road changes, but is still stable, but the operating speed begins to be limited by traffic conditions, the driver has freedom to choose speed.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG1525

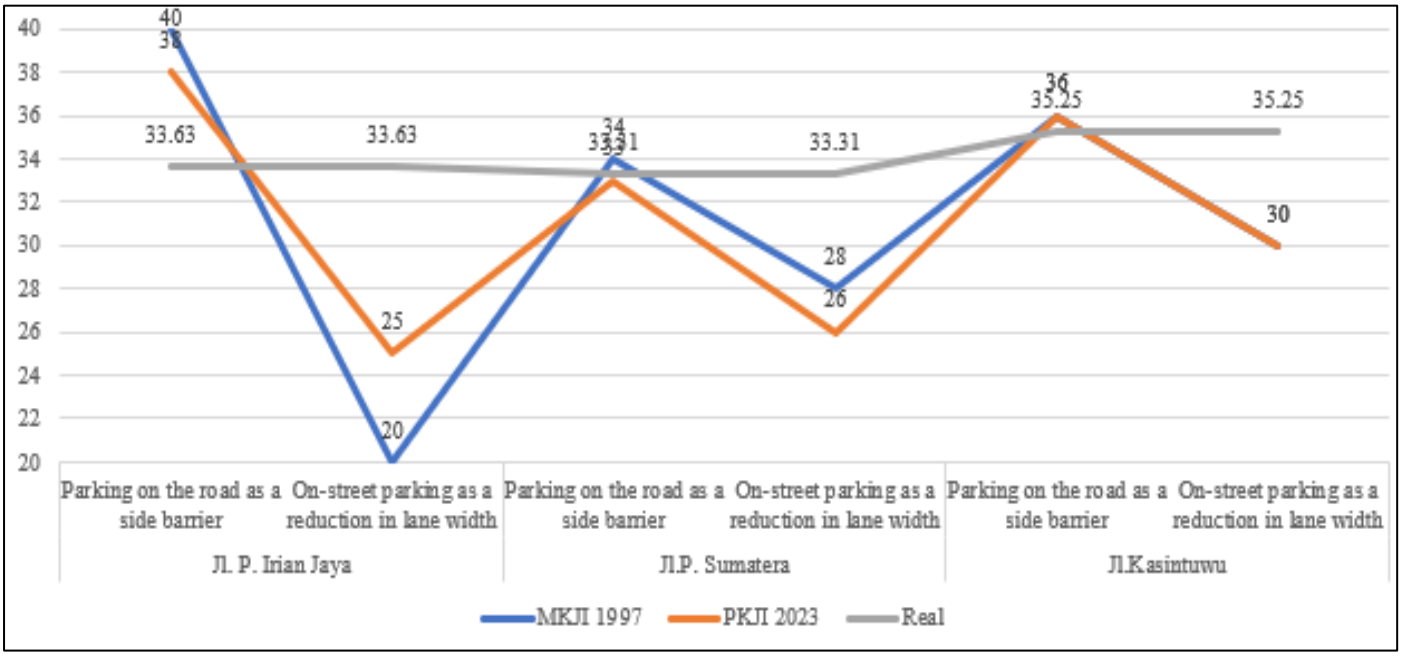

Fig 2 Comparative Graph of MKJI 1997 and PKJI 2023

From the previous analysis, it can also be seen that the DS figure is high when the capacity of the road section is reduced due to the road body being used as a parking area, where the two conditions have differences in the capacity value when there is parking on the road and when there is no parking on the road, and Likewise, with the characteristics or performance of traffic on the three sections, these two conditions produce different traffic performance, so that parking vehicles for light vehicles (LV) and heavy vehicles (HV) as side obstacles influence traffic performance on the three sections. This, and the presence of parking activities on the road also causes a reduction in the effective lane width used for traffic on these three sections, resulting in changes in traffic performance on these three sections.

Apart from that, the results of the traffic performance analysis above also show that there is a slight difference in traffic performance resulting from the two methods, where after comparing traffic performance based on MKJI 1997 and PKJI 2023 for vehicles parked on the road, it shows that there are differences the value of the degree of saturation, but the characteristics do not show significant differences, because from the results of the analysis the three road sections experienced changes in traffic characteristics or performance when there were vehicle parking activities on the road, which in the 1997 MKJI resulted in high speed flow conditions, field speed has a significant difference with the speed contained in the calculation, however in PKJI 2023 it produces slightly different conditions, where the traffic flow is stable, but the operating speed begins to be limited by traffic conditions, the field speed has an almost significant similarity to the existing speed on calculations.

V. CONCLUSION

Based on the results of data analysis that researchers have presented and discussed systematically in the previous chapter, it can be concluded that: The influence of vehicles parking on the road as side obstacles and parking on the road as a reduction in lane width on several roads in Poso City shows a decrease in traffic performance. significant cross. This can be seen from changes in the value of the Degree of Saturation (DS) and level of service (Level of Service) using the PKJI 2023 method as follows: the Jalan Pulau Irian Jaya section causes the performance of the road section to decrease with a DS value of 0.41 to 0.94 with a level of service category B to E, while for roads on the island of Sumatra also decreased the performance of road sections with a DS value of 0.75 to 0.84 with service levels in category D to E., and for the Kasintuwu road section also experienced a decrease in the performance of road sections with a value DS 0.12 to 0.21 with service level category A to B. From these data, it can be concluded that the presence of parked vehicles on the road significantly reduces the performance of the road section, causing an increase in the DS value and a decrease in the level of service on the road section studied. Comparison of vehicle traffic performance based on MKJI 1997 and PKJI 2023 shows that there are significant differences on the three road sections analyzed:, namely for Jalan Pulau Irian Jaya according to MKJI 1997 DS 0.37; PKJI 2023 DS 0.41, for Sumatra Island Roads according to MKJI 1997 DS 0.71; PKJI 2023 DS 0.75 while for Jalan Kasintuwu according to MKJI 1997 DS 0.11; PKJI 2023 DS 0.12. By looking at the relationship between the degree of saturation and speed, the speed produced by the PKJI 2023 method is close to the speed observed in the field, indicating that PKJI 2023 provides a more accurate estimate of actual traffic conditions compared to MKJI 1997.

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