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STUDY ON THE EFFECT OF NEW NORMAL POLICY ON ROAD RULE PERFORMANCE (CASE STUDY OF SALEMBA RAYA ROAD)

Muhammad Rifqi Aufa Shidqi[1*], Naufal Ardhita[2], Abdullah Ade Suryobuwono[3], Prima Widiyanto[4]
[1,2,3,4] Institut Transportasi dan Logistik Trisakti, Jakarta, Indonesia
*corresponding author: rifqiaufashidqi@gmail.com

Abstract: New Normal is a government policy to deal with the condition of Indonesia, which is undergoing the Covid-19 Pandemic. New Normal is in the sense that all community activities can be carried out normally but, still following a strict health protocol. In this study, researchers wanted to find out the impact of New Normal policy on the performance of roads. The case study that the researchers took was on the Salemba Raya Road. The data processing technique carried out was based on direct research in the field by doing Traffic Counting. The data were concluded, based on measured data.

Keywords: outbreak, new normal, performance of roads, traffic counting

I. Introduction

An outbreak is an infectious disease in a community where the number of sufferers increases significantly more than in the normal circumstances at certain times and regions and can cause havoc (Constitutions of Republic Indonesia No. 4 of 1984). Plague is a contagious disease that is prevalent everywhere (Indonesian General Dictionary, WJS Poerwodarminto, State Library Balai Pustaka 1976). Some kinds of outbreaks that have occurred in the world such as Ebola, which occurred in 2014-2016 in West Africa, Bird Flu originating from Mexico in 2009-2010, and the AIDS pandemic, which occurred in 1981 until now from Africa to the rest of the world. The current outbreak is the Covid-19 Pandemic (Corona Virus) which has spread throughout the world. The occurrence of the Covid-19 outbreak began in Wuhan in 2019. Coronavirus is a collection of viruses from the subfamily Orthocronavirinae in the Coronaviridae family and the order of Nidovirales[1] The Covid-19 outbreak in Indonesia originally occurred in March 2020 to the present. In this case the Government provides Large Scale Social Restrictions (PSBB) policy as a form to reduce the spread of Covid-19 Virus. As Large Scale Social Restrictions (PSBB) progressed, the economy of the Indonesian people deteriorated. Therefore the Government implements a new policy, namely the New Normal policy. A political lecturer at Gajah Mada University Sigit Pamungkas explained New Normal is a new way of life or a new way of carrying out life activities amid the unfinished Covid-19 pandemic. Sigit explained New Normal is

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needed to solve life's problems during Covid-19 (Andrian Habibi, 2020). The Large Scale Social Restrictions (PSBB) policy implemented by the Government has made some rules on roads removed, for example such as even odd restrictions. Since the Government implemented the New Normal, policies , the previously applied rules such as the even/odds regulations are no longer be in use. This condition has caused traffic congestion on several existing roads in DKI Jakarta, such as the Salemba road segment. The congestion on Salemba road section increases in the ratio of two-wheeled vehicles as well as the four-wheeled vehicles.

The performance of the roads has also declined due to heavy traffic in Jakarta. There is also the understanding of several other researchers; namely, the performance of a road section is a quantitative measurement that describes certain conditions that occur on a road section. Generally in assessing a road's performance can be seen from the capacity, degree of saturation (DS), average speed, and travel time[5]. The performance of roads is very influential on the smooth flow of traffic. Many factors can affect the smooth flow of traffic, one of which is the capacity. Capacity is defined as how capable a road to accommodate the number of vehicles. Factors that can affect a road's capacity are:

1. Road Conditions
    - Facilities provided
    - The width of the road
    - Shoulder width
    - Plan speed
2. Traffic conditions
    - Vehicle composition and type
    - Distribution of directions and lanes
3. Control condition
    - Control with APILL (number of stages, cycle time, green time / stage, coordination)
    - Control by priority (traffic on the main road)
    - Control with roundabouts (layout and round centerline)

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Road service improvement has several benchmarks, such as the following table

Road Type	Benchmark
Freeway - Roads - Weaving areas - Ramp	- Traffic density (vehicle / km / lane) - Travel speed (vehicle / hour) - Traffic volume (vehicle / hour)
Lane a lot	- Density (vehicle / km / hour) - Free speed (vehicle / hour)
Lane 2 lane	Delay (%)
The APILL intersection	Average stop delay (dt / vehicle)
Intersection does not APILL	Average total delay (dt / vehicle)
Arterial Path	Average travel speed (vehicle / hour)

To find a capacity, the formula obtained: ***C = Co x FCW x FCSP x FCSF x FCCS*** (source: MKJI 1997). The smoothness of traffic is a thing that greatly affects the performance of a road section, because if a road condition of its traffic conditions can run well. The smooth flow of traffic is the state of traffic disruption in a road section (Menhub, 2006). Roads with smooth traffic will have high road performance. According to Law No. 14 of 1992 concerning Traffic and Road transportation, traffic is the movement of vehicles, people and animals on the road. Another factor that has an impact on traffic is the density of vehicles / traffic on a road section. The smoothness of traffic is determined based on the speed of a vehicle. The speed can be determined based on the formula: ***V = Mileage / Travel Time*** (source: MKJI 1997). Speed can also affect the free flow and the degree of saturation of a road. To find free flow can be done through the ***formula FV = (FVO + FVW) x FFVSF x FFVCS*** (source: MKJI 1997) and to determine the degree of saturation is a ***DS = Vehicle Volume / Road Capacity*** (source: MKJI 1997). The degree of saturation is the ratio between traffic volume and road capacity, where: MKJI 1997). The degree of saturation is the ratio between traffic volume and road capacity, where: MKJI 1997). The degree of saturation is the ratio between traffic volume and road capacity, where:[6]

1. If the degree of saturation> 0.8 indicates that traffic conditions are very high in the color Red

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2. If the degree of saturation> 0.6 indicates heavy traffic conditions in Green
3. If the degree of saturation <0.6 indicates low traffic conditions in Blue

II. Research methods

In this study, the writer wants to know the effect of the New Normal on the performance of the Salemba Raya Road Section. This research used quantitative methods of measurement data and used table analysis. This research was conducted based on the results of direct warming in the field.

The location of this research was conducted in the Senen - Salemba area with a road length of 2 kilometers and a road width of 10 meters. This observation was carried out by means of Traffic Counting when the New Normal conditions were applied by the policies of the Local Government and the researchers did it for 3 days. The population and sample in this study were based on the results of Traffic Counting data based on vehicle ratios conducted directly in the research[7]conducted directly in the field researchers can see directly the condition of the road and can directly measure the number of vehicles and vehicle speed.

III. Results and Discussion

From the direct observations of researchers on the condition of the Salemba Raya road section, researchers can produce a calculation of the ratio of the number of vehicles that pass through the Salemba-Senen and Senen-Salemba roads. From the ratio data obtained, researchers can also calculate the volume of vehicles, vehicle speed, road capacity, free flow, and degrees of exposure. The following are the results obtained;

Day 1 Vehicle Volume				Day 1 Vehicle Volume			
Time period	Senen - Salemba Road Section			Time period	Salemba - Senen Road Section		
	Motorcycle	Car	Bus / Truck		Motorcycle	Car	Bus / Truck
6.00 a.m - 7.00 a.m	3788	2588	26	6.00 a.m - 7.00 a.m	3907	3420	20
7.00 a.m - 8.00 a.m	3800	2680	64	7.00 a.m - 8.00 a.m	4023	3223	70
8.00 a.m - 9.00 a.m	3820	2790	52	8.00 a.m - 9.00 a.m	3949	3009	64
9.00 a.m - 10.00 a.m	3772	2640	45	9.00 a.m - 10.00 a.m	3839	2988	62
10.00 a.m. - 11.00 a.m	3760	1592	43	10.00 a.m. - 11.00 a.m	3910	2875	48
11.00 a.m-12.00 p.m	2458	1520	52	11.00 a.m-12.00 p.m	3109	2510	46
12.00 p.m - 13.00 p.m	2400	1498	56	12.00 p.m - 13.00 p.m	2761	2447	38
1.00 p.m. - 2.00 p.m.	2894	1847	52	1.00 p.m. - 2.00 p.m.	2427	2311	63
2.00 p.m - 3.00 p.m	2364	1921	75	2.00 p.m - 3.00 p.m	2981	2201	73
3.00 p.m - 4.00 p.m	3023	2053	82	3.00 p.m - 4.00 p.m	3517	1891	90
4.00 p.m - 5.00 p.m	4875	3610	48	4.00 p.m - 5.00 p.m	3501	2428	60
17.00 p.m - 18.00 p.m	4758	2176	40	17.00 p.m - 18.00 p.m	3747	2890	57
6.00 p.m - 7.00 p.m	4517	2064	44	6.00 p.m - 7.00 p.m	3653	2232	48
19.00 p.m - 20.00 p.m	3245	1893	71	19.00 p.m - 20.00 p.m	4090	1512	53
8.00 p.m - 9.00 p.m	3343	1258	53	8.00 p.m - 9.00 p.m	3968	1607	58
total	52817	32130	803	total	53382	37544	850

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Day 2 Vehicle Volume				Day 2 Vehicle Volume			
Time period	Senen - Salemba Road Section			Time period	Salemba - Senen Road Section		
	Motorcycle	Car	Bus / Truck		Motorcycle	Car	Bus / Truck
6.00 a.m - 7.00 a.m	3658	2733	32	6.00 a.m - 7.00 a.m	3876	2997	42
7.00 a.m - 8.00 a.m	3868	2820	47	7.00 a.m - 8.00 a.m	4210	3036	44
8.00 a.m - 9.00 a.m	3877	2897	55	8.00 a.m - 9.00 a.m	4035	3156	47
9.00 a.m - 10.00 a.m	3321	2613	48	9.00 a.m - 10.00 a.m	3878	2874	53
10.00 a.m. - 11.00 a.m	3204	2410	50	10.00 a.m. - 11.00 a.m	3412	2543	51
11.00 a.m-12.00 p.m	2842	2011	38	11.00 a.m-12.00 p.m	3206	2409	56
12.00 p.m - 13.00 p.m	2423	1722	43	12.00 p.m - 13.00 p.m	3354	1940	50
1.00 p.m. - 2.00 p.m.	2279	1423	46	1.00 p.m. - 2.00 p.m.	2975	2032	41
2.00 p.m - 3.00 p.m	2470	1976	40	2.00 p.m - 3.00 p.m	2521	1879	45
3.00 p.m - 4.00 p.m	2589	2004	79	3.00 p.m - 4.00 p.m	2983	2010	49
4.00 p.m - 5.00 p.m	3373	2454	53	4.00 p.m - 5.00 p.m	3178	2644	55
17.00 p.m - 18.00 p.m	3948	2768	60	17.00 p.m - 18.00 p.m	2874	1876	58
6.00 p.m - 7.00 p.m	4231	2952	62	6.00 p.m - 7.00 p.m	3243	1477	62
19.00 p.m - 20.00 p.m	4012	1994	74	19.00 p.m - 20.00 p.m	2754	1531	53
8.00 p.m - 9.00 p.m	3892	1830	65	8.00 p.m - 9.00 p.m	2312	1332	46
total	49987	34607	792	total	48811	33736	752

Day 3 Vehicle Volume				Day 3 Vehicle Volume			
Time period	Senen - Salemba Road Section			Time period	Salemba - Senen Road Section		
	Motorcycle	Car	Bus / Truck		Motorcycle	Car	Bus / Truck
6.00 a.m - 7.00 a.m	3532	2986	29	6.00 a.m - 7.00 a.m	4103	3543	27
7.00 a.m - 8.00 a.m	3742	2645	53	7.00 a.m - 8.00 a.m	4424	3712	64
8.00 a.m - 9.00 a.m	3223	2765	47	8.00 a.m - 9.00 a.m	4361	3800	61
9.00 a.m - 10.00 a.m	3165	2343	44	9.00 a.m - 10.00 a.m	3942	3102	54
10.00 a.m. - 11.00 a.m	3219	2213	50	10.00 a.m. - 11.00 a.m	3513	2678	50
11.00 a.m-12.00 p.m	2976	1765	56	11.00 a.m-12.00 p.m	3005	2321	49
12.00 p.m - 13.00 p.m	3015	1967	50	12.00 p.m - 13.00 p.m	2989	1943	36
1.00 p.m. - 2.00 p.m.	2775	2046	62	1.00 p.m. - 2.00 p.m.	2344	1472	58
2.00 p.m - 3.00 p.m	2986	2223	70	2.00 p.m - 3.00 p.m	2543	1646	53
3.00 p.m - 4.00 p.m	3323	2765	69	3.00 p.m - 4.00 p.m	2767	1850	39
4.00 p.m - 5.00 p.m	3986	2906	51	4.00 p.m - 5.00 p.m	3501	2012	59
17.00 p.m - 18.00 p.m	4017	3124	39	17.00 p.m - 18.00 p.m	2134	1757	51
6.00 p.m - 7.00 p.m	4344	3442	40	6.00 p.m - 7.00 p.m	2324	1953	44
19.00 p.m - 20.00 p.m	3987	2546	42	19.00 p.m - 20.00 p.m	2042	1423	41
8.00 p.m - 9.00 p.m	3645	2228	37	8.00 p.m - 9.00 p.m	2115	1442	35
total	51935	37964	739	total	46107	34654	721

After getting the vehicle volume above, then the road capacity can be calculated from the Salemba Raya road section. Road capacity is the maximum amount in each hour that each person or vehicle will be able to pass through a uniform point or section of a lane or lane for a specified period of time, according to previous conditions on the road body, traffic, and control (TRB, 2000)[8]. The capacity obtained in the Salemba Raya road section, based on the formula C = Co x FCW x FCSP x FCSF x FCCS. C = 1650 x 6 lanes x 1.05 x 1 x 1 x 1.04 = **10,810**. In this case it can be interpreted that the capacity of the Salemba Raya road section can accommodate 10,810 vehicles. From these data,

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the next thing that can be determined is the vehicle speed on the Salemba Raya Road. V = Mileage / Travel Time. MKJI uses travel speed as the main measure of performance of road segments. Travel speed is the average speed (km / hr) of traffic flow from the length of the road section divided by the average travel time of vehicles passing through the road segment[9].

VEHICLE SPEED DAY 1

Salemba - Senen								Senen - Salemba							
	HOLDING TIME (h)			Distance	SPEED (Km / h)				HOLDING TIME (h)			Distance	SPEED (Km / h)		
PERIOD OF TIME	MOTORCYCLE	CAR	BUS / TRUCK	(Km)	MOTORCYCLE	CAR	BUS / TRUCK	PERIOD OF TIME	MOTORCYCLE	CAR	BUS / TRUCK	(Km)	MOTORCYCLE	CAR	BUS / TRUCK
6.00 a.m - 7.00 a.m	0,08	0,13	0,16	2	25	15,38462	12,5	6.00 a.m - 7.00 a.m	0,052	0,069	0,078	2	38,46153846	28,98551	25,64102564
7.00 a.m - 8.00 a.m	0,09	0,15	0,19	2	22,22222222	13,33333	10,52631579	7.00 a.m - 8.00 a.m	0,05	0,066	0,075	2	40	30,30303	26,66666667
8.00 a.m - 9.00 a.m	0,11	0,16	0,18	2	18,18181818	12,5	11,11111111	8.00 a.m - 9.00 a.m	0,047	0,065	0,072	2	42,55319149	30,76923	27,77777778
9.00 a.m - 10.00 a.m	0,1	0,14	0,17	2	20	14,28571	11,76470588	9.00 a.m - 10.00 a.m	0,033	0,06	0,068	2	60,60606061	33,33333	29,41176471
10.00 a.m. - 11.00 a.m	0,061	0,078	0,15	2	32,78688525	25,64103	13,33333333	10.00 a.m. - 11.00 a.m	0,031	0,05	0,056	2	64,51612903	40	35,71428571
11.00 a.m-12.00 p.m	0,034	0,04	0,041	2	58,82352941	50	48,7804878	11.00 a.m-12.00 p.m	0,039	0,043	0,052	2	51,28205128	46,51163	38,46153846
12.00 p.m - 13.00 p.m	0,03	0,036	0,039	2	66,66666667	55,55556	51,28205128	12.00 p.m - 13.00 p.m	0,042	0,048	0,057	2	47,61904762	41,66667	35,0877193
1.00 p.m - 2.00 p.m	0,032	0,05	0,058	2	62,5	40	34,48275862	1.00 p.m - 2.00 p.m	0,033	0,038	0,05	2	60,60606061	52,63158	40
2.00 p.m - 3.00 p.m	0,04	0,052	0,05	2	50	38,46154	40	2.00 p.m - 3.00 p.m	0,034	0,043	0,057	2	58,82352941	46,51163	35,0877193
3.00 p.m - 4.00 p.m	0,052	0,062	0,068	2	38,46153846	32,25806	29,41176471	3.00 p.m - 4.00 p.m	0,037	0,048	0,062	2	54,05405405	41,66667	32,25806452
4.00 p.m - 5.00 p.m	0,049	0,056	0,062	2	40,81632653	35,71429	32,25806452	4.00 p.m - 5.00 p.m	0,085	0,112	0,132	2	23,52941176	17,85714	15,15151515
17.00 p.m - 18.00 p.m	0,044	0,051	0,059	2	45,45454545	39,21569	33,89830508	17.00 p.m - 18.00 p.m	0,088	0,095	0,138	2	22,72727273	21,05263	14,49275362
6.00 p.m - 7.00 p.m	0,04	0,048	0,055	2	50	41,66667	36,36363636	6.00 p.m - 7.00 p.m	0,093	0,1	0,104	2	21,50537634	20	19,23076923
19.00 p.m - 20.00 p.m	0,034	0,042	0,05	2	58,82352941	47,61905	40	19.00 p.m - 20.00 p.m	0,065	0,073	0,093	2	30,76923077	27,39726	21,50537634
8.00 p.m - 9.00 p.m	0,03	0,04	0,047	2	66,66666667	50	42,55319149	8.00 p.m - 9.00 p.m	0,059	0,064	0,078	2	33,89830508	31,25	25,64102564

VEHICLE SPEED DAY 2

Salemba - Senen								Senen - Salemba							
	HOLDING TIME (h)			Distance	SPEED (Km / h)				HOLDING TIME (h)			Distance	SPEED (Km / h)		
PERIOD OF TIME	MOTORCYCLE	CAR	BUS / TRUCK	(Km)	MOTORCYCLE	CAR	BUS / TRUCK	PERIOD OF TIME	MOTORCYCLE	CAR	BUS / TRUCK	(Km)	MOTORCYCLE	CAR	BUS / TRUCK
6.00 a.m - 7.00 a.m	0,076	0,113	0,12	2	26,31578947	17,69912	16,66666667	6.00 a.m - 7.00 a.m	0,048	0,051	0,059	2	41,66666667	39,21569	33,89830508
7.00 a.m - 8.00 a.m	0,082	0,121	0,14	2	24,3902439	16,52893	14,28571429	7.00 a.m - 8.00 a.m	0,051	0,059	0,062	2	39,21568627	33,89831	32,25806452
8.00 a.m - 9.00 a.m	0,092	0,127	0,162	2	21,73913043	15,74803	12,34567901	8.00 a.m - 9.00 a.m	0,043	0,049	0,053	2	46,51162791	40,81633	37,73584906
9.00 a.m - 10.00 a.m	0,084	0,1	0,11	2	23,80952381	20	18,18181818	9.00 a.m - 10.00 a.m	0,049	0,053	0,058	2	40,81632653	37,73585	34,48275862
10.00 a.m. - 11.00 a.m	0,044	0,05	0,069	2	45,45454545	40	28,98550725	10.00 a.m. - 11.00 a.m	0,04	0,044	0,049	2	50	45,45455	40,81632653
11.00 a.m-12.00 p.m	0,037	0,046	0,052	2	54,05405405	43,47826	38,46153846	11.00 a.m-12.00 p.m	0,036	0,04	0,052	2	55,55555556	50	38,46153846
12.00 p.m - 13.00 p.m	0,033	0,042	0,059	2	60,60606061	47,61905	33,89830508	12.00 p.m - 13.00 p.m	0,033	0,036	0,057	2	60,60606061	55,55556	35,0877193
1.00 p.m - 2.00 p.m	0,035	0,044	0,05	2	57,14285714	45,45455	40	1.00 p.m - 2.00 p.m	0,039	0,047	0,05	2	51,28205128	42,55319	40
2.00 p.m - 3.00 p.m	0,047	0,043	0,049	2	42,55319149	46,51163	40,81632653	2.00 p.m - 3.00 p.m	0,043	0,051	0,057	2	46,51162791	39,21569	35,0877193
3.00 p.m - 4.00 p.m	0,05	0,04	0,044	2	40	50	45,45454545	3.00 p.m - 4.00 p.m	0,048	0,055	0,062	2	41,66666667	36,36364	32,25806452
4.00 p.m - 5.00 p.m	0,055	0,058	0,061	2	36,36363636	34,48276	32,78688525	4.00 p.m - 5.00 p.m	0,053	0,06	0,07	2	37,73584906	33,33333	28,57142857
17.00 p.m - 18.00 p.m	0,048	0,051	0,058	2	41,66666667	39,21569	34,48275862	17.00 p.m - 18.00 p.m	0,064	0,071	0,079	2	31,25	28,16901	25,3164557
6.00 p.m - 7.00 p.m	0,046	0,05	0,054	2	43,47826087	40	37,03703704	6.00 p.m - 7.00 p.m	0,079	0,086	0,092	2	5	23,25581	21,73913043
19.00 p.m - 20.00 p.m	0,043	0,048	0,052	2	46,51162791	41,66667	38,46153846	19.00 p.m - 20.00 p.m	0,06	0,064	0,072	2	33,33333333	31,25	27,77777778
8.00 p.m - 9.00 p.m	0,038	0,042	0,048	2	52,63157895	47,61905	41,66666667	8.00 p.m - 9.00 p.m	0,051	0,057	0,062	2	39,21568627	35,08772	32,25806452

VEHICLE SPEED DAY 3

Salemba - Senen								Senen - Salemba							
	HOLDING TIME (h)			Distance	Km / h				HOLDING TIME (h)			Distance	SPEED (Km / h)		
PERIOD OF TIME	MOTORCYCLE	CAR	BUS / TRUCK	(Km)	MOTORCYCLE	CAR	BUS / TRUCK	PERIOD OF TIME	MOTORCYCLE	CAR	BUS / TRUCK	(Km)	MOTORCYCLE	CAR	BUS / TRUCK
6.00 a.m - 7.00 a.m	0,07	0,071	0,08	2	28,57142857	28,16901	25	6.00 a.m - 7.00 a.m	0,05	0,057	0,063	2	40	35,08772	31,74603175
7.00 a.m - 8.00 a.m	0,08	0,088	0,092	2	25	22,72727	21,73913043	7.00 a.m - 8.00 a.m	0,06	0,07	0,082	2	33,33333333	28,57143	24,3902439
8.00 a.m - 9.00 a.m	0,088	0,094	0,11	2	22,72727273	21,2766	18,18181818	8.00 a.m - 9.00 a.m	0,057	0,06	0,069	2	35,0877193	33,33333	28,98550725
9.00 a.m - 10.00 a.m	0,06	0,07	0,08	2	33,33333333	28,57143	25	9.00 a.m - 10.00 a.m	0,049	0,052	0,06	2	40,81632653	38,46154	33,33333333
10.00 a.m. - 11.00 a.m	0,04	0,048	0,053	2	50	41,66667	37,73584906	10.00 a.m. - 11.00 a.m	0,04	0,043	0,051	2	50	46,51163	39,21568627
11.00 a.m-12.00 p.m	0,038	0,045	0,05	2	52,63157895	44,44444	40	11.00 a.m-12.00 p.m	0,033	0,038	0,043	2	60,60606061	52,63158	46,51162791
12.00 p.m - 13.00 p.m	0,033	0,038	0,042	2	60,60606061	52,63158	47,61904762	12.00 p.m - 13.00 p.m	0,037	0,041	0,05	2	54,05405405	48,78049	40
1.00 p.m - 2.00 p.m	0,039	0,044	0,051	2	51,28205128	45,45455	39,21568627	1.00 p.m - 2.00 p.m	0,04	0,047	0,056	2	50	42,55319	35,71428571
2.00 p.m - 3.00 p.m	0,035	0,04	0,047	2	57,14285714	50	42,55319149	2.00 p.m - 3.00 p.m	0,046	0,051	0,064	2	43,47826087	39,21569	31,25
3.00 p.m - 4.00 p.m	0,04	0,043	0,049	2	50	46,51163	40,81632653	3.00 p.m - 4.00 p.m	0,051	0,059	0,07	2	39,21568627	33,89831	28,57142857
4.00 p.m - 5.00 p.m	0,45	0,05	0,06	2	4,444444444	40	33,33333333	4.00 p.m - 5.00 p.m	0,06	0,067	0,076	2	33,33333333	29,85075	26,31578947
17.00 p.m - 18.00 p.m	0,39	0,042	0,05	2	5,128205128	47,61905	40	17.00 p.m - 18.00 p.m	0,063	0,07	0,084	2	31,74603175	28,57143	23,80952381
6.00 p.m - 7.00 p.m	0,033	0,039	0,043	2	60,60606061	51,28205	46,51162791	6.00 p.m - 7.00 p.m	0,07	0,076	0,08	2	28,57142857	26,31579	25
19.00 p.m - 20.00 p.m	0,035	0,04	0,049	2	57,14285714	50	40,81632653	19.00 p.m - 20.00 p.m	0,063	0,072	0,079	2	31,74603175	27,77778	25,3164557
8.00 p.m - 9.00 p.m	0,034	0,035	0,048	2	58,82352941	57,14286	41,66666667	8.00 p.m - 9.00 p.m	0,051	0,06	0,068	2	39,21568627	33,33333	29,41176471

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From the data table above it can be concluded that within a distance of 2 kilometers in Salemba Senen the rate of speed of each vehicle, motorbike, car, bus / truck that pass every hour can change.. The highest motor speed on the first day on the Salemba-Senen road section obtained at 12.00 - 13.00 with an average speed was **67 Km / h** While during 10:00 - 11:00 with an average speed was **64 Km / h**. On the second day, the traffic flow on the Salemba-Senen road section obtained at 12.00 - 13.00 was within an average speed of **61 Km / h**, while on the Senen-Salemba road section obtained at 12.00 - 13.00 with an average speed of **61 Km / h**, and on the third day the highest average speed for motorcycles on the Salemba-Senen road section is at 12.00 - 13.00 with an average speed of **61 Km / h** on the Senen-Salemba road section obtained at 11.00-12. 00 with an average speed of **61 Km / h**. For cars, the highest average speed on the first day on the Salemba-Senen road section is obtained at 12.00 - 13.00 with an average speed of **55 Km / h** on the Senen-Salemba road section the highest average speed is at 13.00 - 14.00 with an average speed of **53 Km / h**, on the second day on the Salemba-Senen road section obtained at 12.00 - 13.00 with an average speed of **48 Km / h** on the Senen-Salemba road section obtained at 12.00 - 13.00 with an average speed of **56 Km / h**, then on the third day the highest average speed for cars on the Salemba-Senen road section is obtained at 12.00 - 13.00 with an average speed of **61 Km / h** on the Senen-Salemba road the highest speed is found in hours 11.00 - 12.00 with an average speed of **53 Km / h**. For buses / trucks on the first day, the highest average speed on the Salemba-Senen road section is obtained at 12.00 - 13.00 with an average speed of **51 Km / h** on the Senen-Salemba road section obtained at 11.00 - 12.00 with an average speed **38 Km / h**. On the second day, the highest average speed on the Salemba-Senen road section was obtained at 15.00 - 16.00 with an average speed of **45 Km / h** on the Senen-Salemba road section obtained at 10:00 - 11:00 with an average speed of **41 Km / h**. On the third day, the highest average speed for buses / trucks on the Salemba-Senen road section was obtained at 12.00 - 13.00 with an average speed of **48 Km / h** on the Senen-Salemba road section obtained at 11.00 - 12.00 with an average speed of **46 Km / h**. Therefore, it can be concluded that at 11:00 to 14:00 the Salemba Raya road segment is tenuous. After determining the following speed is the calculation of the Free Flow of the Salemba Raya road section. Following is the formula of Free Flow FV = (FVO + FVW) x FFVSF x FFVCS. FV = (51 + 2) x 1.02 x 1.03 = 55.6818. It can be interpreted

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that the free flow on the Salmeba Raya road section with the number 55.6818. According to the Indonesian Road Capacity Manual (1997), free flow velocity is a theoretical average speed (km / h) of traffic at a density equal to zero, ie no vehicles pass. Free flow speed is the speed (km / hr) of a vehicle that is not affected by other vehicles (ie the speed at which the driver feels comfortable traveling, in geometric conditions, the environment and existing traffic control, on road segments where there are no other vehicles) Following is the formula of Free Flow FV = (FVO + FVW) x FFVSF x FFVCS. FV = (51 + 2) x 1.02 x 1.03 = 55.6818. It can be interpreted that the free flow on the Salmeba Raya road section with the number 55.6818. According to the Indonesian Road Capacity Manual (1997), free flow velocity is a theoretical average speed (km / h) of traffic at a density equal to zero, ie no vehicles pass. Free flow speed is the speed (km / hr) of a vehicle that is not affected by other vehicles (ie the speed at which the driver feels comfortable traveling, in geometric conditions, the environment and existing traffic control, on road segments where there are no other vehicles) Following is the formula of Free Flow FV = (FVO + FVW) x FFVSF x FFVCS. FV = (51 + 2) x 1.02 x 1.03 = **55.6818**. It can be interpreted that the free flow on the Salmeba Raya road section with the number 55.6818. According to the Indonesian Road Capacity Manual (1997), free flow velocity is a theoretical average speed (km / h) of traffic at a density equal to zero, ie no vehicles pass. Free flow speed is the speed (km / hr) of a vehicle that is not affected by other vehicles (ie the speed at which the driver feels comfortable traveling, in geometric conditions, the environment and existing traffic control, on road segments where there are no other vehicles) It can be interpreted that the free flow on the Salmeba Raya road section with the number 55.6818. According to the Indonesian Road Capacity Manual (1997), free flow velocity is a theoretical average speed (km / h) of traffic at a density equal to zero, ie no vehicles pass. Free flow speed is the speed (km / hr) of a vehicle that is not affected by other vehicles (ie the speed at which the driver feels comfortable traveling, in geometric conditions, the environment and existing traffic control, on road segments where there are no other vehicles) It can be interpreted that the free flow on the Salmeba Raya road section with the number 55.6818. According to the Indonesian Road Capacity Manual (1997), free flow velocity is a theoretical average speed (km / h) of traffic at a density equal to zero, ie no vehicles pass. Free flow speed is the speed (km / hr) of a vehicle that

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is not affected by other vehicles (ie the speed at which the driver feels comfortable traveling, in geometric conditions, the environment and existing traffic control, on road segments where there are no other vehicles)[10]. Furthermore, from the data obtained by researchers in the form of vehicle volume and the capacity of the road researcher, the degree of saturation of the Salemba Raya road is calculated. The degree of saturation (DS) is one indicator of traffic performance. The degree of saturation is the ratio between traffic volume (Q) and road capacity (C)[11]. Saturation Degrees Calculation as follows, ***Ds = V / C***.

Senen - Salemba Road Section Day 1

Transportation type	Saturation Degree (Ds)
Motorcycle	4,885938945
Car	2,972244792
Bus / Truck	0,074283071
TOTAL:	7,932466808

Salemba - Senen Road Section Day 1

Transportation type	Saturation Degree (Ds)
Motorcycle	4,938205365
Car	3,473080481
Bus / Truck	0,078630897
TOTAL:	8,489916743

Senen - Salemba Road Section Day 2

Transportation type	Saturation Degree (Ds)
Motorcycle	4,624144311
Car	3,201387604
Bus / Truck	0,073265495
TOTAL:	7,89879741

Salemba - Senen Road Section Day 2

Transportation type	Saturation Degree (Ds)
Motorcycle	4,515356152
Car	3,120814061
Bus / Truck	0,069565217
TOTAL:	7,70573543

Senen - Salemba Road Section Day 3

Transportation type	Saturation Degree (Ds)
Motorcycle	4,804347826
Car	3,511933395
Bus / Truck	0,068362627
TOTAL:	8,384643848

Salemba - Senen Road Section Day 3

Transportation type	Saturation Degree (Ds)
Motorcycle	4,515356152
Car	3,20573543
Bus / Truck	0,066697502
TOTAL:	7,787789084

From the data table above it can be concluded that the degree of saturation on the first day on the Senen-Salemba road section is 7.89 where the traffic conditions are very high, while on the Salemba-Senen road segment the degree of saturation is 8.4 where the traffic conditions are also very high. On the second day, the degree of saturation on the Senen-Salemba road section was 7.8 where the traffic conditions were very high, and on the Salemba-Senen road segment the degree of saturation were 7.7 where the traffic conditions were also very congested. On the third day the degree of saturation on the Senen-Salemba road section was 8.3 where the traffic conditions were classified as very high, while on the Salemba-Senen road segment the degree of saturation was 7.78 where the traffic conditions were very high.

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IV. Conclusions and recommendations

Salemba Raya road segment is a road that is packed with vehicles, whether motorcycles, cars, buses, and trucks. The capacity of the Salemba Raya road section is 10,810 where there are Salemba-Senen road sections and Senen-Salemba road sections with 4 lanes of each segment. With a road capacity of 10,810, the Salemba road segment is still not enough to accommodate the volume of vehicles that cross the road, so that the traffic density conditions on the Salemba Raya road are classified as very high. Thus, the conditions that are classified as dense can affect vehicle speed and saturation levels resulting in higher degrees.

Suggestion

With the inadequate road capacity to accommodate the volume of vehicles passing through the road, it is necessary to limit the number of vehicles that pass through the Salemba Raya road section and the need for traffic engineering through these roads.

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