Analysis Of Traffic Accident Charachteristic In Rimbo Panjang-Bangkinang Road, Kampar District, Riau Province

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A R T I C L E   I N F O

A B S T R A C T

Objective. Kampar is a district in Riau Province which has 841.332 people. (BPS : 2019). As long as the society's growth over Kampar District, the need of transportation system is also increased, which makes accidents number increased every year. By the term of condition, some handling operations are needed to know the capacity and rank of accident-prone areas to reduce traffic accidents. This study used secondary data from local police agency by accidents data from 214-2018.

Research Method. Data were analyzed to count the accident-prone areas. The total numbers of accident rate was on Jalan Rimbo Panjang-Bangkinang with the total 53 accidents. There were 99 victims of whom 18 people wee died, 32 people were seriously injured and 49 were slightly injured. It observed by Blacks Spot and Black Site methods.

Results. Based on Accident rate, roads on Rimbo Panjang-Bangkinang were identify by Accident Rate 0,399. Sei Tiarap-Kampar Village on Accident Rate 0,233 and Penyesawan Village – Air Tiris by Accident Rate 0,233 And Clack Site 0,133 for Padang Mutung-Village-Penyesawan Village. 0,116 for Sei Tiarap – Kampar Village and 0,033 for Penyesawan-Air Tiris.

Conclusion. The conclusion is there are three accident-prone areas from thirteen locations, which makes handling and addition of facilities and infrastructure should be done, as well as development of traffic discipline of road users.

1. PENDAHULUAN

Traffic accidents which are one of the problems of transportation activities are the impacts that occur due to the movement of transportation. The balance between the driver, vehicle and traffic infrastructure are the three elements that determine the movement of transportation. If any of these elements is left behind, it will cause a traffic accident (Soehartono, 1990). Kampar Regency is one of the cities in Riau Province. Geographically, Kampar Regency is on the border between West Sumatra Province and Rokan Hulu Regency. According to the Central Bureau of Statistics for Kampar Regency (BPS, 2019) the total population corresponds to a family card of 841 332 people.

As the population in Kampar Regency increases, the need for transportation is also increasing, so that the number of accidents is increasing every year. One of the main roads in

Kampar Regency is the National Road section which is an arterial road, which is located on the western side, to the Provinces of West Sumatra, North Sumatra and Rokan Hulu Regency. Seeing this phenomenon, the study of accident-prone areas is useful for knowing where the locations are prone to traffic accidents. And it is useful for formulating ways to handle and prevent traffic accidents on Jalan Rimbo Panjang-Bangkinang.

2. STUDI LITERATUR

Pignataro (1973) states that most traffic accidents are caused by the behavior of drivers or pedestrians, road conditions, bad weather conditions and poor visibility. Carter and homburger (1978) state that an accident is an event in which the movement of traffic is due to errors in traffic shaping, namely vehicles, roads and environments. The definition of error can be seen as a condition that does not comply with applicable standards or regulations or human negligence, Priyanto (1997) states that the causes of traffic accidents can be examined from the system and as well as multicusuals that consider three factors, human, vehicle, road / environment. Hobbs (1979) classifies the factors that cause accidents into three groups, namely: a. Road user factor (human), b. Vehicle factor, c. Road and environmental factors Article 1 number 24 number 22 year (2009) states that a traffic accident is an incident on the highway that is unexpected and accidental involving a vehicle with or without other road users which results in human casualties and / or property loss. Kadiyali (1983) and O'flaherty (1997), state that road traffic accidents are as overtuning or skid collisions that occur on open roads and involve public traffic that causes injury, death, or damage to vehicles (material loss).

Factors Causing Traffic Accident

Hulbert (1981) concluded that from the recording of traffic accidents that have occurred, it cannot be separated from the problem of traffic accidents caused by drowsy drivers. Drowsiness is likely to be the cause of more than 20 to 30 percent of traffic accidents. He further stated that drowsiness due to driving fatigue has a major influence as a cause of traffic accidents caused by drivers. Law Number 22 of 2009 an accident is an unexpected event (there is no element of intent) and is not expected and results in both material loss and suffering for those who experience it. Traffic accidents can be caused by negligence of road users, unfit vehicles and roads or the environment. Meanwhile, according to data sourced from the Directorate General of Land Transportation, the percentage of each of the factors causing traffic accidents in Indonesia per year is human factor of 93.52%, vehicle factor of 2.76%, road factor of 3.23% and factor environment by 0.49%.

Accident Level

Traffic accidents are analyzed using existing data, which is stated in the vehicle traffic accident km / vehicle or the traffic accident data / vehicle / movement is outlined in the map movement to determine the distribution of accidents and then identify places where traffic accidents often occur and has a great chance to be managed effectively. Furthermore, a more in-depth analysis of the causes of traffic accidents is carried out which includes a map of the situation, movement of environmental and weather conditions**.** Subscriptions that have been made. Malkamah (1995). Hobbs (1995) the rate of traffic accidents is based on (1) population, (2) registered vehicles, (3) data on traffic accidents in cities and outside the city, (4) the number of vehicles per kilometer. Accidents per 10,000 people per year, per 10,000 vehicles, or per 100,000,000 km used.

1. **Accident Rate per Km (accident rate per mile)**
    These traffic accidents are dangerous is expressed as the number of traffic accidents of all types per km of each road

$$R = \frac{A}{L} \;\text{..} \; (1)$$

Where :
R = The total number of traffic accidents per km per year
A = The total number of traffic accidents that occur a year
L = The length of the road from the section of the road is controlled in km

2. **Accidents based on vehicle km traveled**

$$R = \frac{Cx100.000.000}{V} \text{..} \; (2)$$

Where :
R = accident rate per 100,000,000
C = Number of accidents (death or injury)
V = Vehicle - km traveled in a year

3. **The number of accidents for Spot on the highway can be calculated :**

$$R_{sp} = \frac{A \; x \; 1.000.000}{365 \; x \; L \; x \; V} \text{..} \; (3)$$

Where :
R_{sp} : Accident figures for spots
A : the number of accidents during the period analyzed (in accidents per million)
L : Length of road section (in Km)
V : Traffic volume
365 : Time of observation in a year

3. METODE RISET

Methods or work steps of research on locations for handling traffic accident-prone locations and providing input to reduce traffic accidents on Jalan Rimbo Panjang-Bangkinang. The purpose of this research method is to plan and determine the steps of research work from problem identification, data collection, data analysis to getting results from data analysis as well as conclusions and suggestions. Each step is interconnected from start to finish. So it is expected that this method can produce research that is clear and in accordance with the research objectives. The research will be conducted in Kampar Regency, namely on Jalan Rimbo Panjang-Bangkinang. Secondary data used in this study are data obtained from related agencies in order to obtain accurate and correct data to assist this research. The data obtained includes: traffic accident data obtained from the Traffic Police of the Kampar Police within a period of 5 years, from 2014 to 2018.

4. HASIL DAN PEMBAHASAN

Table l. The number of traffic accidents frequency for 5 years (2014-2018) of the Rimbo Panjang - Bangkinang road, Kampar district.

No.	Village	Km	years					Number of accident
			2014	2015	2016	2017	2018	
1	Rimbo Pan jang – D Sei Pinang	33 – 36	1	1	1	2	1	6
2	D. Sei Pinang – D. Bingkuang	36 – 37	0	1	0	0	2	3
3	D. Bingkuang – D. Sei Tarap	37 – 38	0	0	0	0	1	1
4	D. Sei Tarap – D. Kampar	38 – 40	0	1	0	1	5	7
5	D. Kampar – D. Pulau Rambai	40 – 42	2	0	0	1	1	4
6	D. Pulau Rambai – D. P. Mutung	42 – 45	1	1	1	2	1	6

7	D. P. Mutung – D. Penyesawan	45 – 48	2	4	3	3	0	12
8	D. Penyesawan – Air Tiris	48 – 55	1	2	3	0	1	7
9	Air Tiris – Batu Belah	55 – 56	1	1	0	0	0	2
10	Batu Belah – Bangkinang	56 – 60	0	2	1	0	2	5

From the table, it can be seen that the highest accident frequency of 53 accidents during five years was in P. Mutung - Penyesawan Village with 12 accidents, followed by Sei Tarap - Kampar Village with 7 accidents, then D.penyesawan village - Drain water with 7 accidents. incident.

Black Spot Identification Based on Accident Rate

Black Spot is a traffic accident prone point observed at the location (village / place) where the accident occurred. A road section can be said to be a black spot if it has the highest accident rate at a point in the road segment observed 9 Budi Latif (1994).

Table 2. Results of the accident rate calculation with the black spot for the road section of Rimbo Panjang - Bangkinang, Kampar Regency

| No | KM | Internode | Number of Accidents | | LHR | Accident Rate |
			Amount	Average		
1	33 – 36	Rimbo Pan jang – D Sei Pinang	6	1,2	16441	0,199
2	36 - 37	D. Sei Pinang – D. Bingkuang	3	0,6	16441	0,099
3	37 – 38	D. Bingkuang – D. Sei Tarap	1	0,2	16441	0,033
4	38 – 40	D. Sei Tarap – D. Kampar	7	1,4	16441	0,233
5	40 – 42	D. Kampar – D. Pulau Rambai	4	0,8	16441	0,133
6	42 – 45	D. Pulau Rambai – D. P. Mutung	6	1,2	16441	0,199
7	45 – 48	D. P. Mutung – D. Penyesawan	12	2,4	16441	0,399
8	48 – 55	D. Penyesawan – Air Tiris	7	1,4	16441	0,233
9	55 – 56	Air Tiris – Batu Belah	2	0,4	16441	0,066
10	56 – 60	Batu Belah – Bangkinang	5	1	16441	0,166

In table 2 it can be seen that the base value of the largest accident rate is found in the village of Padang Mutung 0.399 and Desa Penyesawan. 0.233, followed by the neighboring villages and Kampar villages. These villages are the areas with the highest accident rates among other villages. So the village can be said to be a blackspot.

Black Site Identification Based on Accident Rate

Black Site is an area prone to accidents which is reviewed on the observed road sections. A road section can be said that the Black site has an Accident Rate criterion of more than (0.003). If the Accident rate is less than the threshold, it can be said that the accident hazard level is less. (Abd.Kudus, 1997).

Table 3. Results of Accident Rate Calculation with the Black Site of Jalan Rimbo - Length of Bangkinang, District of Kampar (2014 - 2018)

| No | Internode | Number of Accidents | | LHR (SMP) | Long Road (KM) | Accident Rate |
		Amount	Average			
1	Rimbo Pan jang – D Sei Pinang	6	1,2	16441	3	0,066
2	D. Sei Pinang – D. Bingkuang	3	0,6	16441	1	0,099
3	D. Bingkuang – D. Sei Tarap	1	0,2	16441	1	0,033
4	D. Sei Tarap – D. Kampar	7	1,4	16441	2	0,116
5	D. Kampar – D. Pulau Rambai	4	0,8	16441	2	0,066
6	D. Pulau Rambai – D. P. Mutung	6	1,2	16441	3	0,066

7	D. P. Mutung – D. Penyesawan	12	2,4	16441	3	0,133
8	D. Penyesawan – Air Tiris	7	1,4	16441	7	0,033
9	Air Tiris – Batu Belah	2	0,4	16441	1	0,066
10	Batu Belah – Bangkinang	5	1	16441	4	0,041

From the table above, it can be seen that the accident rate calculation with the black site has the lowest accident rate of 0.066 in the village of Rimbo Panjang-Sei Pinang, followed by D. Bingkuang Sei Tarap 0.033.

From the table above, it can be seen that the accident rate calculation with the black site has the lowest accident rate of 0.066 in the village of Rimbo Panjang-Sei Pinang, followed by D. Bingkuang Sei Tarap 0.033.

Research on Traffic Accident Prone Locations
The road is not wide enough

Based on the results of the research and discussion, an analysis of the locations prone to traffic accidents has been carried out by researchers at the accident-prone location of the Rimbo Panjang - Bangkinang route. the following:

The road is not wide enough

In the physical condition the road is relatively narrow, where the width of the road is only 6 meters 36 cm. Jalan Rimbo Panjang - Bangkinang, Kampar Regency is a trans-Sumatra road that goes to West Sumatra, North Sumatra, upstream Rokan Regency. The arrangement of the road bodies is separated using road markings for safety with the width of the road being 7 meters with the predetermined standard for class arterial roads

Broken roads

On the road conditions on the Rimbo Panjang - Bangkinang road section, some of the roads were damaged at several points so that it became a cause of traffic accidents.

Figure 1. Traffic Accident Blackspot Area of Kampar District Km 38 Sei tarap village
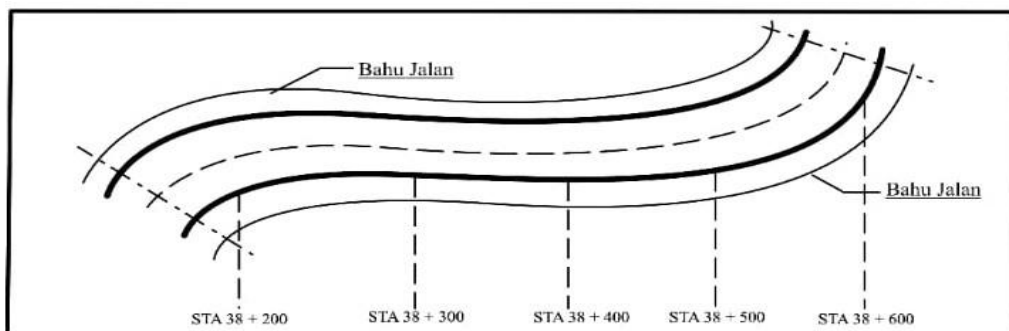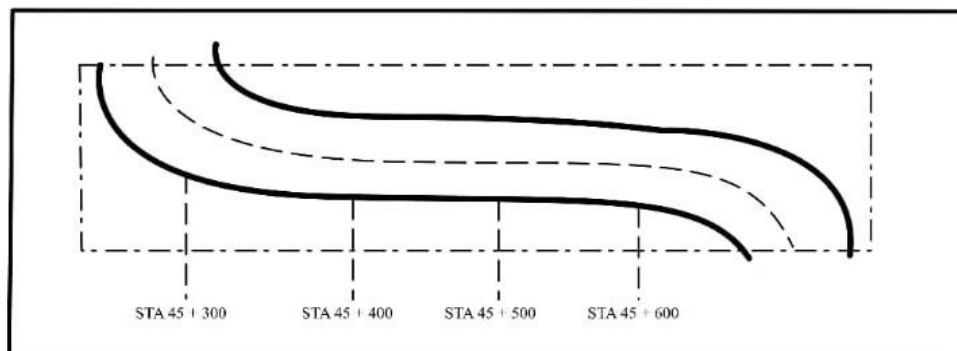
Location Description

From the location above, it can be seen that there is a bend in front and there are trees blocking the view. The width of the road is only 6 meters 36 cm, which is less than the minimum road width requirement of 7 meters. There are warning signs that are prone to accidents, indicating that the area has frequent accidents.

Figure 2. Image of Traffic Accident Blackspot Area in Kampar Regency km 45 Padang Village Mutung
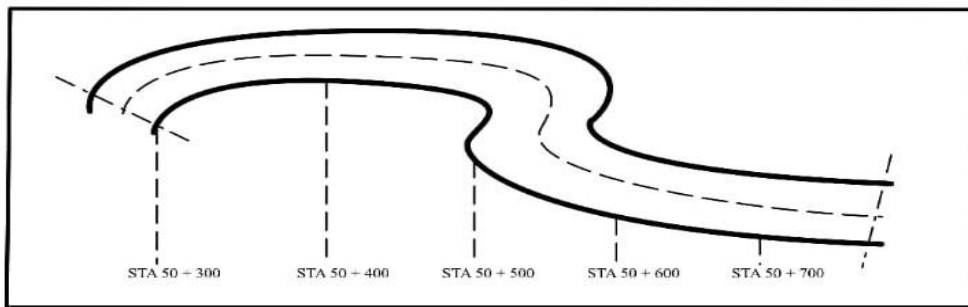

Location Description :

From the above location, we can see that there is a bend in front and the width of the road is only 6 meters 30 cm, which is less than the minimum road width requirement of 7 meters. The area has accident-prone signs indicating frequent accidents in the area

Figure 3. Traffic Accident Prone Areas in Kampar District Km 50, Penyesawahan Village

STA 50 + 300   STA 50 + 400   STA 50 + 500   STA 50 + 600   STA 50 + 700

Location Description :

From the location above, it can be seen that there is a sharp turn and can endanger road users if not careful. And the width of the road is only 6 meters 30cm, which is less than the minimum road width requirement of 7 meters.

Traffic Accident Prevention and Management Efforts

From the results of research conducted in the field that accidents are caused by drivers that can cause certain types of accidents, such as a single accident, one of the causes of accidents due to vehicle drivers without taking into account the conditions around them. And here are the efforts to prevent and overcome traffic accidents.

Traffic Engineering

Observation and research for traffic sign lighting, especially at potential accident-prone locations. Determination and installation of traffic signs, road markings / zebra cross / and city planning as well as the need for road widening to meet the determined standards and speed limits in accident-prone areas.

Good cooperation with agencies related to traffic problems. It is necessary to add a safety fence and bend signs for bends and inclines. If the road has a hole in it, it should be repaired by the relevant agency so that the trip becomes safer and more comfortable and avoids accidents.

On straight roads and bends to reduce traffic accidents by installing speed restriction signs and bend signs (Delineator) if necessary on broken bends that are obstructed by the view of trees or weeds.

Education

Providing counseling to people in Kampar Regency through mass media such as radio, billboards and so on. Making and installing banners and appeals to students, students and all levels of society.

Humans as drivers need to improve their ability to drive their vehicles and knowledge of road traffic discipline and awareness of personal safety by using helmets for motorcyclists and to use safety belts for car drivers. In addition, there is guidance on traffic, such as obeying traffic signs, not driving a vehicle above the recommended speed limit.

The Role of the Traffic Police

For authorized officers who are in the jurisdiction of the Kampar Police to always control the space and take action against motorists who violate the existing Traffic laws and take strict and wise sanctions in accordance with existing regulations so as to create an orderly, safe, traffic condition. comfortable and in control

5. KESIMPULAN DAN SARAN

The rate of traffic accidents on Jalan Rimbo Panjang Bangkinang (Km 33 - Km 60) Kampar Regency was 53 traffic accidents, where 18 people died, 32 people seriously injured and 49 people slightly injured. From the results of the analysis that I have done, it shows that the

Rimbo Panjang - Bangkinang road section has found blackspots in the area of Padang Mutung Village - Penyesawan Village, Sei Tarap Village - Kampar Village and Penyesawan Village - Drain Water And for Accident Rate based on Black Site is Padang Mutung Village - Penyesawan Village with an Accident Rate of 0.133. Efforts that need to be made to reduce accidents in the Rimbo Panjang - Bangkinang area are to repair damaged roads and install signs where needed. And for drivers who cross it, they should always be careful in driving and always check the feasibility of their vehicle

To reduce the number of accidents, it is necessary to maintain road structures and road equipment. Take preventive and repressive measures against all traffic violations that endanger traffic accidents, including vehicle equipment, vehicle speed regulations and vehicle load restrictions. For drivers to always check the vehicle before traveling. It is necessary to install dangerous warning signs and with the installation and maintenance of warning signs, command signs, prohibition signs, and directional signs and traffic signs with quality, dimensions and requirements according to road standards and must be installed properly.

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