

## Analysis of traffic accident rates during the Covid-19 pandemic in Gorontalo City

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### ABSTRACT

Traffic accidents are something that everyone wants to avoid but sometimes there are still many traffic accidents that suddenly occur caused by poor road infrastructure or the negligence of each road user himself. The data used in this study is the number of the accident in 2018-2021 based on the number of accidents and the number of human victims (FK, SI, MI). The results of the analysis of the traffic accident rate show that the number of accidents in 2018 was 108 events with a percentage of 27%, in 2019 there were 158 events with a percentage of 39%, in 2020 there were 87 events with a percentage of 21% and in 2021 there were 55 events with a percentage of 13%. The most traffic accidents occurred in 2019 with the number of victims who died were 19 victims with a percentage of 11%, victims who suffered serious injuries as many as 1 with a percentage of the situation was 5% and victims who suffered minor injuries were 157 victims with a percentage of 88%. Whereas in 2020 the number of traffic accidents decreased with a total of 121 victims with the percentage of FK victims being 13%, SI victims being 3% and MI victims being 84%.

### INTRODUCTION

Traffic accidents are the main indicator of the level of road safety. In both developed and developing countries, road safety issues are a matter of great concern in order to reduce the number of accidents that occur. This becoming to the main indicator of the importance of understanding the characteristics of accidents (Simamora, 2011). Traffic accidents are something that everyone wants to avoid but sometimes there are still many traffic accidents that suddenly occur caused by poor road infrastructure or the negligence of each road user himself. Traffic accidents are something that often happens every year. One of the areas where traffic accidents often occur is in Gorontalo City. According to Gopos (2020) in 2019, the number of traffic accidents in Gorontalo increased by 158 cases. Of the 158 cases, 17 people died and 15 people suffered minor and serious injuries. Traffic accidents usually occur for several reasons, namely: 1) The lack of cautious while driving, usually caused by a sleepy driver, 2) Damaged and unrepaired road conditions, 3) Vehicle factors that cause frequent accidents include tire bursts, brakes not working

properly, and wornout equipment not being replaced. 4) Weather factors such as rainy weather that affects vehicle performance, smoky and foggy weather that can interfere with the driver's visibility. 5) Lack of road infrastructure.

In addition, traffic jam is also one of the main factors that cause the traffic accidents. The occurrence of traffic jam is a result of an imbalance in the existing traffic network, namely the accumulation of vehicles that causes traffic density on a certain road network to be high so that the existing traffic flow becomes stagnation and even stops (Indri, 2020). During this pandemic, the traffic jam in Gorontalo is reduced because people still spend a lot of time at home due to the implementation of the New Normal system. All employees including the company employees, teachers and students are still being sent home in accordance with government recommendations to suppress cases of Covid-19 transmission. This reduces the number of traffic accidents in Gorontalo City. According to the Head of Traffic at the Gorontalo Police, the number of traffic accidents in Gorontalo City during January-August

2020 decreased compared to the same period in 2019 with 52 cases.

## LITERATURE REVIEW

### Traffic Accidents

The definition of accident according to the Traffic and Road Transport Law no. 22 of 2009 is "Traffic Accident is an incident on the road that is unexpected and unintentional involving a Vehicle with or without other Road Users which results in human casualties and/or property loss."

### Traffic Accidents Classification

According to Putri (2014) the notion of a traffic accident is an unexpected, unplanned, and expected accident that occurs on the highway or as a result of the error of a human activity on the highway, which results in injury, illness, harm to humans, goods and the environment. While the victims of traffic accidents are humans who become victims of traffic accidents, based on the severity of the accident victims are divided into 3 types, namely: 1). The victim who dies (Fatally Killed), 2). The victims who seriously injured (Severely Injured), 3). The victims who has minor injuries (Minor Injuries). Traffic accidents influences by three main factors, namely human factors, vehicle factors, and road factors. There are also other factors such as environmental factors and weather factors that can also contribute to accidents.

## METHOD

### Research Flow Concept

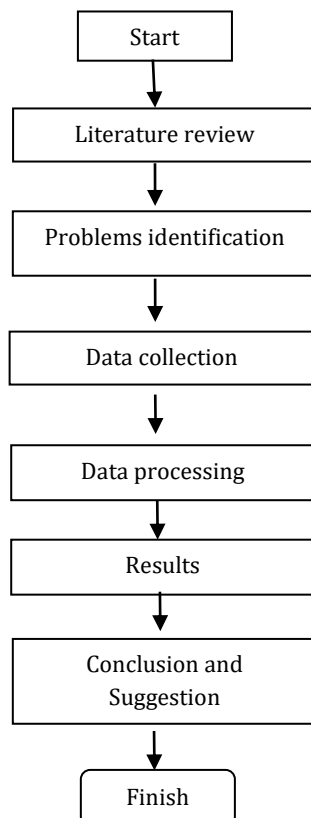


Figure 1. Research of Flow Chart

## Research Stages

The first step is a preliminary study, followed by identification of problems followed by setting research objectives and reviewing the literature, collecting data, namely secondary data obtained from data from relevant agencies, this aims to determine the parameters that will be used in this study. In this study, accident data were obtained from the Gorontalo City Traffic Office data.

### Location

This study was conducted in the Gorontalo City area during the pandemic, because according to surveys and data obtained during the pandemic the traffic accident rate decreased due to the lack of road users during the pandemic which result the absent of traffic jam.

## RESULTS AND DISCUSSIONS

### Based on Number of Traffic Accident Cases

The incidence of traffic accidents in Gorontalo City in 2018 to 2019 has increased and in 2019 to 2021 it has begun to decrease. The increase and decrease of numbers can be caused by vehicle ownership which continues to increase every year and is accompanied by the development of roads and facilities that support road users in driving. The total number of traffic accidents that occurred between 2018-2019 was 408 cases.

Table 1. Number of Traffic Events

No.	Year	Number of Traffic Cases	Percent
1	2018	108	27%
2	2019	158	39%
3	2020	87	21%
4	2021	55	13%
Total		408	100%

(Source: Gorontalo City Traffic Data)

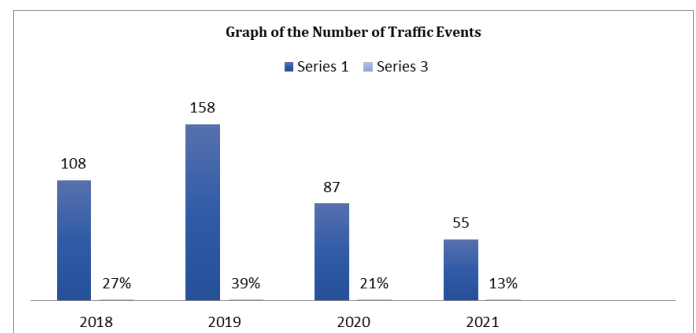


Figure 2. Graph of the Number of Traffic Events

Based on the graph above, it can be seen that in 2018 the number of traffic accidents cases reached 108 cases or 27%. Then it increased in 2019 with 158 cases or 39%. Then it fell back in 2020 with the number of victims 87 or 21%. This is because in 2020 Indonesia began to implement restrictions, namely (PSBB) to reduce the transmission rate of the corona virus so as to reduce traffic

accidents. Then in 2021 traffic accidents have decreased with the number of victims 55 or 13%.

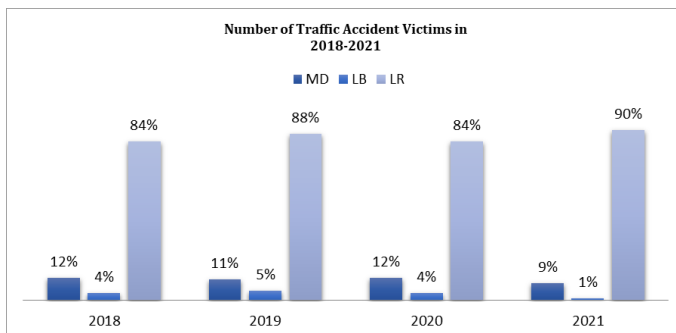
### Victims of Traffic Accidents (FK, SI, MI)

Traffic accident victims in 2018 to 2021 showed that the number of deaths, serious injuries and minor injuries increased from 2018 to 2019 and in 2020 there was a decrease in the number of accidents until 2021, where in 2018 the accident victims were as many as 127 people with Death Victims (FK), namely 15 people, Serious Injury (SI) victims 5 people and Minor Injury Victims (MI), in 2019 the number of accident victims became 177 people with FK Victims 19 people, SI victims 1 person and MI victims are 157 people, in 2020 the number of accident victims is 121 with FK victims are 16 people, SI victims are 4 and minor injuries (MI) are 101 people. Whereas in 2021 the number of accident victims is 77 people with FK victims being 7, SI victims being 1 and MI victims being 69.

**Table 2.** Number of Traffic Accident Victims

No.	Year	FK	SI	MI	Total Victims
1	2018	15 (12%)	5 (4%)	107 (84%)	127
2	2019	19 (11%)	1 (5%)	157 (88%)	177
3	2020	16 (13%)	4 (3%)	101 (84%)	121
4	2021	7 (9%)	1 (1%)	69 (90%)	77

(Source: Gorontalo City Traffic Traffic Data)



**Figure 3.** Number of Traffic Accident Victim in 2018-2021

Based on the graph above, it can be seen that the victims of traffic accidents in 2018 with victims of Death (FK) as many as 12%, victims of Serious Injury (SI) is 4% and victims of Minor Injury (MI) around 84%. Then in 2019 the victims of traffic accidents who died decreased to 11%, but for victims who suffered serious injuries increased by 5% and victims who suffered minor injuries as much as 88%. In 2020 the number of victims who died was 13%, for victims who suffered serious injuries was 3% and victims suffered minor injuries was 84%. In 2021, 9% of victims died due to traffic accidents, 1% of victims who suffered serious injuries and 90% of victims who suffered minor injuries. Based on the graph, it can be seen that in the last 4 years the most victims were victims who suffered minor injuries

due to traffic accidents with an average percentage of 86.5%.

### CONCLUSIONS

Based on the several analyzes of the level of traffic accidents in Gorontalo City, it can be concluded that: 1) The number of accidents in 2018 was 108 events with a percentage of 27%, in 2019 there were 158 events with a percentage of 39%, in 2020 there were 87 events with a percentage of 21% and in 2021 there were 55 events with a percentage of 13%. 2) The most traffic accidents occurred in 2019 with the number of victims who died were 19 victims with a percentage of 11%, victims who suffered serious injuries as many as 1 with a percentage of the situation was 5% and victims who suffered minor injuries were 157 victims with a percentage of 88%. Whereas in 2020 the number of traffic accidents decreased with a total of 121 victims with the percentage of FK victims being 13%, SI victims being 3% and MI victims being 84%. This is due to the fact that in 2020 the Indonesian government implemented social restrictions or PSBB to suppress the spread of the corona virus, thereby reducing congestion on the streets.

### Acknowledgements

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### Author's Contributions

The researchers have conducted a literature survey, collected, analyzed data, and written a manuscript in accordance with the existing format. The data obtained comes from the data of the Indonesian National Police for the Gorontalo Region who experienced traffic accidents from 2018-2021.

### Conflict of Interest

The Gorontalo Regional Police or known as POLDA Gorontalo is the tasks executor of the Indonesian police in Gorontalo Province. The Gorontalo Regional Police is classified as type A Regional Police, so that it is being led by a regional police chief with a two-star rank or known as Police General Inspector.

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