

Analysis of Road Accidents for Srinagar City

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ABSTRACT- The social, economic, and political policies of a nation are greatly influenced by transportation engineering. The country's financial activity is said to be influenced by the transport sector. The creation and assessment of road safety were accomplished in this study through the use of an RSPQ (Road Safety Perception Questionnaire) in two stages. The identification and choice of road safety dimensions make up the initial phase. The specifications and testing of conformity with traffic safety measures make up the second stage. First-stage research involved consulting, surveying, and interviewing a variety of road users to determine what causes accidents in the Srinagar city. With the assistance of Srinagar Police, the survey stretch was taken at the bypass. The second crew was based near Pampore, which is regarded as a hotspot for road deaths, 20 kilometres away. For this survey, graphs were created and data was obtained in order to analyse and assess the traffic study in Srinagar City. The field crew was careful not to direct the respondent during the survey so that they would provide information in accordance with their opinions. In addition to the previously mentioned lengths, other places, such as bus stops and gas stations, were used for the poll. Many road segments from Srinagar city were selected, and a thorough investigation was done to determine the reason of accidents. Results on the overall number of accidents, the unsafe acts, the types of accidents, the types of injuries, the types of vehicles involved, and the times of accidents were gathered. The data was examined during a four-year period, from 2016 to 2020. The findings were compiled and displayed graphically. A questionnaire survey was also performed among road users to get more in-depth information and to solicit their opinions on how to reduce the number of accidents on the road. Following careful study and interpretation of the results and an interview questions, it can be said that: -The year with the most mishaps was 2018-2019, trailed by 2017-2018, and the year with the fewest mishaps was 2019-2020.

KEYWORDS- Roads, Accidents, Kashmir, Road safety

I. INTRODUCTION

A. Introduction

The social, economic, and political policies of a nation are greatly influenced by industrial engineering. The country's economic performance is said to be influenced by the trucking industry. Even though roads are regarded as the

backbone of every nation's economic development, there are a few things to bear in mind while considering the transportation industry. One of the major causes of serious issues in the current global situation are road accidents. Traffic flow is one of the many causes of road accidents, which make up the top 10 primary causes of injury-related deaths and overall fatalities worldwide.[1]

According to the World Health Organization, the following statistics pertain to traffic accidents:

- About 1 million individuals every year die in traffic accidents.
- Every year, traffic accidents result in the injuries or disabilities of up to 60 million individuals.
- According to several studies and research, pedestrians account for more than half of accident casualties.
- According to the report, vehicle accidents cost the nation 4% of its GDP.
- Traffic safety measures including proper seat belt usage and following traffic laws can cut the danger of crash-related fatalities by 60%.
- Proper headgear use can cut fatalities and concussions by up to 46%.

Road accident deaths are rising alarmingly fast in emerging nations, and in many cases they are seen to be so detrimental that some disorders are thought to be less terrible than road crash losses. Almost 2.5 Lakh people lose their lives in traffic accidents each year, if we take a few south Asian nations into account. In India, the number of homicides due to traffic accidents leads the list by a significant margin compared to the number of lives due to other incidents.. According to a survey and yearly unintentional statistics data, India's roadways are turning into deathtraps, with almost 90,000 fatalities every kilometer. According to WHO's projection and research, the number of fatalities and injuries caused by accidents jumps from ninth to second place on the list of the most pressing health issues by 2021 [2].

Every single day, individuals, both men and women, are murdered or wounded on highways. Sometimes the highways that are thought of as a tether turn out to be so cruel that individuals and communities are torn apart as a result of people being unable to return home because of incidents on those routes. Because of how serious car accidents are, hundreds of individuals each year spend a lot of time in hospitals recovering from serious collisions, and a small number of them are no longer able to live, work, or play as normally as they once could [3].

B. Need of Study

- To research the various causes of accidents and recommend corrective actions at probable sites.
- To assess and research the current design features.
- To determine the amount of monetary and economic damages brought on by the incidents.
- To do the survey method for the before-and-after studies, as well as to put the improvise into practice and show it.

C. Objectives of Study

As Jammu and Kashmir is joined to the rest of the country via NH44, which travels through a rocky, hilly, and uneven terrain, road safety should be our nation's top concern. The fact that accidents occur on this stretch of road, also known as Killers Highway, makes it one of the deadliest road connections. As they result in significant financial losses and the loss of human life, road accidents are seen as a national and societal issue, primarily in this region, Jammu and Kashmir, where they frequently result in fatalities. Due to the tragic deaths caused by catastrophe stone discharge and major land sliding, it is well known that the change in weather is the main cause of concern on this stretch. There are additional elements, such as traffic habits, driver behavior, driver knowledge, and speed limit, which play to the causes of automobile accidents and cannot just be blamed to bad weather. The creation and assessment of road safety were accomplished in this study through the use of an RSPQ (Road Safety Perception Questionnaire) in two stages. Selection and identification of road safety characteristics make up the initial phase. The specifications and evaluation of conformity with the road safety precautions make up the second stage. ... In the first step, a variety of road users were canvassed regarding the reason for accidents in Srinagar. With the assistance of Srinagar Police, the survey stretch was taken at the bypass. The second crew was stationed near Pampore, which is regarded as a hotspot for traffic accidents, 20 kilometers away. For this assessment, graphs were plotted and data was obtained in order to analyze and assess the traffic study in Srinagar City. The field crew was careful not to direct the respondent during the research so that they would provide data that was compatible with their opinions. Other places, such as bus stops and gas stations, were used in addition to the previously mentioned sections to perform the poll.



Figure 1: Study Areas

Drivers and those who maintain the sidewalk were asked to participate in the study's survey. They were instructed to do so anonymously and transparently so that accurate and crucial material on the authenticity of the responses could be gathered.

II. LITERATURE REVIEW

Results from a project relating to the linked operating and autonomous testing region in Upper Austria are reported by Neubauer and Schauer (2018) [4]. They employed a method in their study that exposed stakeholders' and participants' perspectives on mobile transportation systems. They explicitly use the earth café the way that the 47 workshop users (people involved in the life choice role since technology providers, the car industry, road and automotive operators, car suppliers, transshipment providers, as well as public servants answerable for infrastructure), as well as press conferences with 26 people. The necessity to handle wise to think in automated logistics management between the many parties is stressed in their discovery. It is also acknowledged that digitization is crucial for the effective deployment of technological solutions.

By mimicking and addressing platooning communication delays, Fernandes and Nunes (2012) [5]. The eight cars in the simulator testing got to a point where they were barely 60 inches [60 cm] away from one another. The findings of the replication test indicate that the suggested information review algorithms were practical and safe to use with collector cars.

III. METHODOLOGY

For the examination of traffic accidents, the current study is done in-depth on the chosen sections of NH-44 from Pampore to the flyover and its surrounding regions at Batamaloo and Lalchowk. The creation and assessment of road safety were accomplished in this study through the use of an RSPQ (Road Safety Perception Questionnaire) in two stages. Identification and selection of road safety dimensions make up the initial phase. The specifications and evaluation of conformity with traffic protective measures make up the second stage [6]. First-stage research involved consulting, surveying, and interviewing a variety of road users to determine what causes accidents in the Srinagar city. With the assistance of Srinagar Police, the survey leg was taken at the bypass. The second crew was set up near Pampore, which again is regarded as a hotspot for road deaths, 20 kilometers away. For this survey, graphs were constructed and data was obtained in order to analyze and assess the traffic study in Srinagar City. The field crew was careful not to direct the respondent during the survey so that they would provide data that corresponded with their opinions. In addition to the lengths, other places, such as bus stops and gas stations, were used for the poll [7] ...

During a period of four years, from 2016 to 2020, the NHAI and the relevant local traffic police agencies provide the data for the study of fatalities. We already know that the NHAI, the country's regulatory authority, has complete permission to build and maintain the nation's national highways [8] .

In order to precisely analyze road accidents, a survey of road users was carried out with the assistance of specialists [9] . Depending on the type of mishap, the reason of the mistake, the injury, the time of the accident, and the vehicle model involved in the collision different responses from the answers were recorded [10] .

Data from the NHAI and other sources was collated, tallied, and graphs were drawn based on the findings. These findings culminated in a conclusion [11].

IV. SIMULATION AND RESULTS

A. Total Accidents

The information gathered for this dissertation project is examined using a variety of criteria, such as the total number of accidents that occurred in Srinagar between 2016 and 2020(table 1).

Table 1: Total accidents in Srinagar city between 2016 and 2020

Year	Total Number of Accidents
2016-2017	81
2017-2018	92
2018-2019	97
2019-2020	56

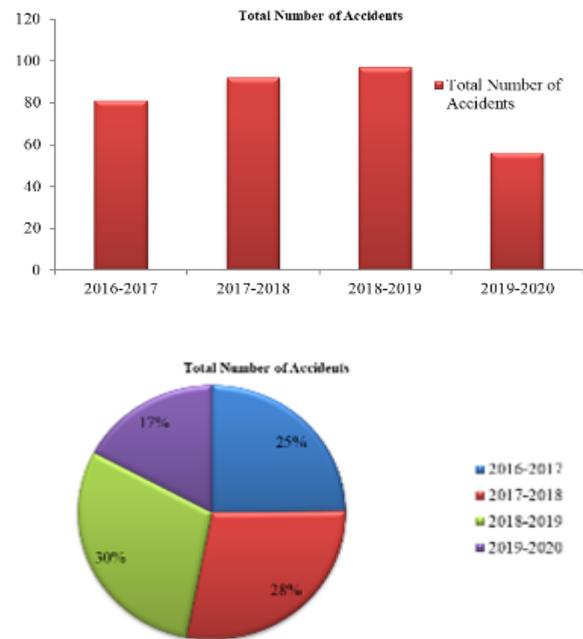


Figure 2: Graphically represent the total accidents in Srinagar city between 2016 and 2020

According to the statistics and visual interpretation, there were 81 accidents overall in 2016–2017, or 25% of all accidents throughout those four years. It is important to note that 92 incidents occurred in 2017–2018, accounting for 28% of all accidents. The quick development of roads may be to blame for the increase in accidents. The number of collisions accelerated more in the year 2018–2019, reaching 97, which is 30% of the complete accident rate, and it is evident from the line graph that the amount of accidents dramatically reduced in the following year, reaching 56, which is 17% of the total number of crashes.. The reason for the sudden draw down of accidents To understand why this is so was a little difficult for the 2019–2020 school year. To determine the precise cause of this, a number of specialists and statutory agencies were interviewed, and it was determined that COVID19's lockup was to blame.

B. According to Cause of Accident

Road accidents can occur for a variety of causes, as was already noted. It may be the result of drunk driving, excessive speeding, a driver losing control of a car, a vehicle that isn't fit for the road, or any other flaws in the way the road was designed. The data gathered for this thesis study is studied based on a variety of factors, including the reasons behind accidents that occurred along the length from Pampore to the bypass, the bypass to Lalchowk, and the Lalchowk to Batamaloo.

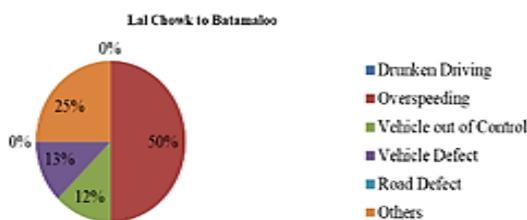
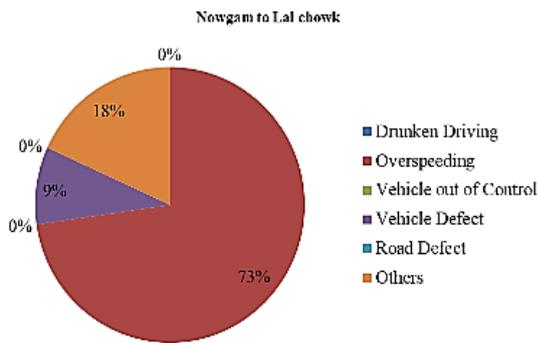
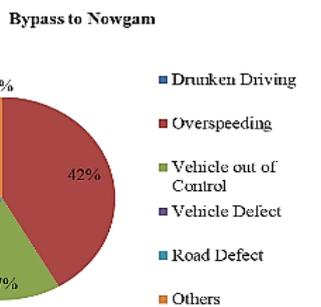
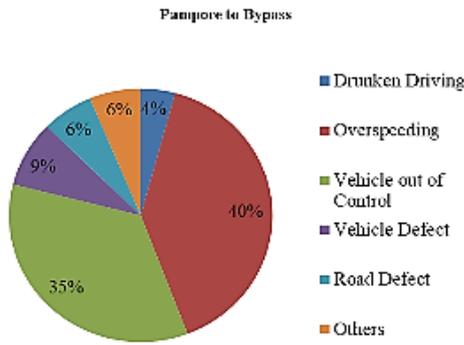
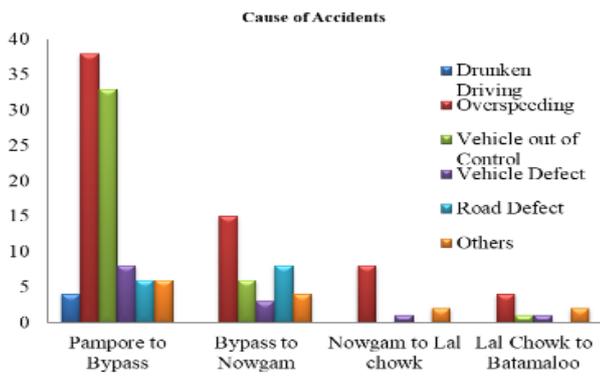


Figure 3: Graphically represent the cause of accidents

It was observed that the majority of incidents on the Pampore bypass section were caused by due to an accidental and uncontrollable vehicles. Also, a variety of road and vehicle flaws were discovered as collision causes.

Throughout this stretch, there were surprisingly few accidents caused by drunk driving. The majority of accidents on the bypass to Nowgam section were caused by 20ec and uncontrollable vehicles. Also, a variety of road and vehicle flaws were discovered as accident causes. The majority of accidents on the Nowgam to Lal Chowk section were caused by excessive speed. The majority of incidents on the Lal Chowk to Batamaloo section were caused by racing.

C. According to Nature of Accident

According to the accident's nature, it may be the result of a car flipping, a head-on mishap, a rear-end colliding, a hit-and-run, a side colliding, a vehicle slipping, or a right turn crash.

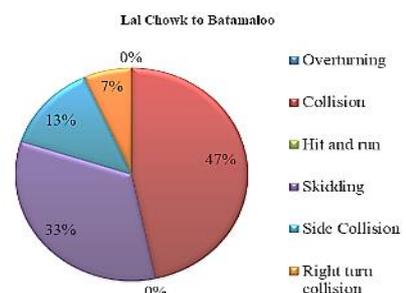
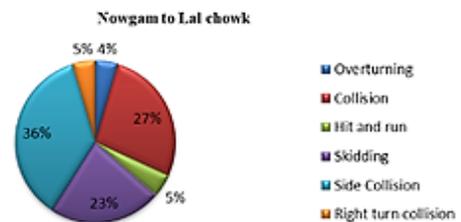
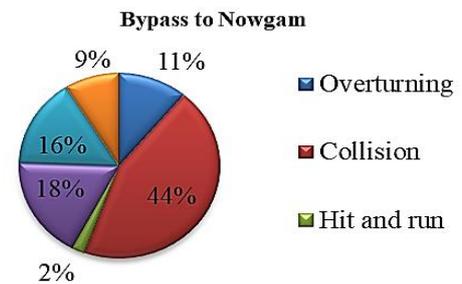
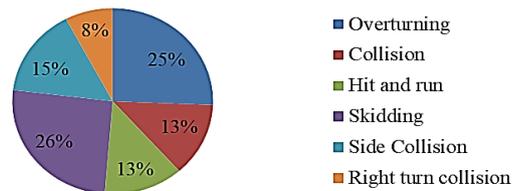
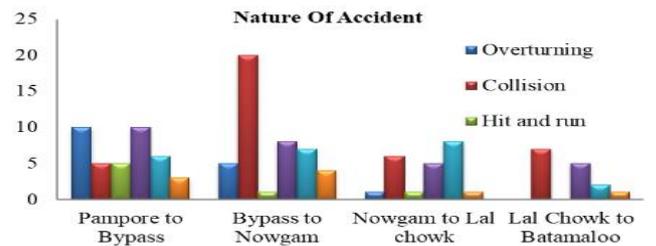


Figure 4: Graphically represent the nature of accidents

It is evident from the aforementioned data that many more crashes occur at the Pampore to bypass section as a result of flipping and sliding than at other locations. There are more collision-related accidents on the bypass to Nowgam. Most accidents in the Nowgam to Lal Chowk area are caused by side collisions. There are more collision-related deaths between Lal Chowk to Batamaloo..

D. According to Type of Injury

Road accidents may be divided into four categories based on the kind of injuries they cause and the severity of those injuries. They fall under the categories of deadly, grave, minor, and non-injury.

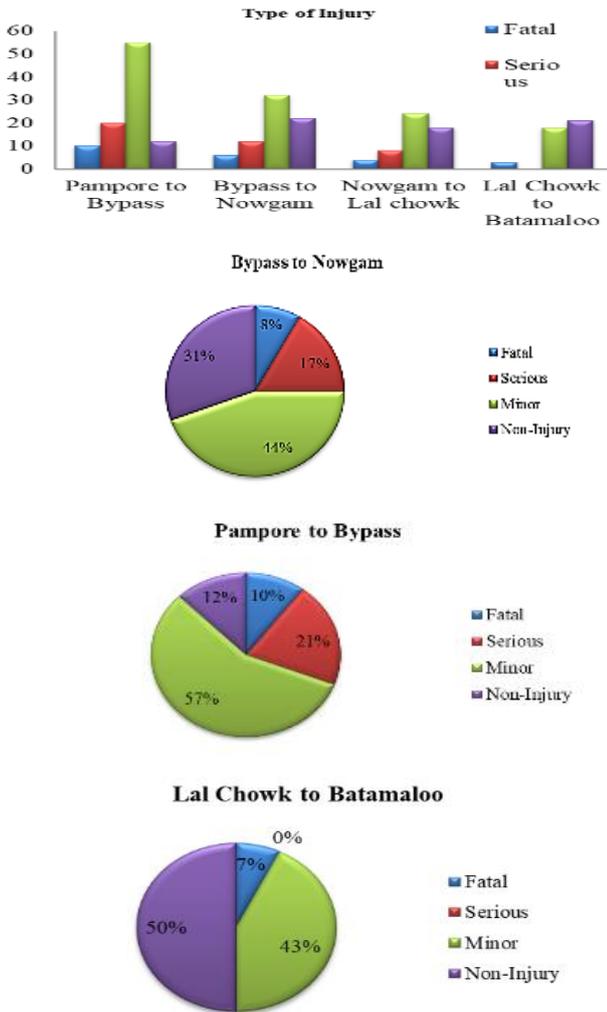


Figure 5: Graphically represent the type of injury

The preceding data makes it quite evident that there are far fewer fatal occurrences than there are of the other three categories of diseases. In comparison to other other stretch, minor injuries appear to be more common, followed by major and non-injuries.

E. According to Type of Vehicle Involved.

Due to the importance of vehicle type in an accurate study of traffic accidents, this group of factors that leads to accidents is likewise of Significant Importance.

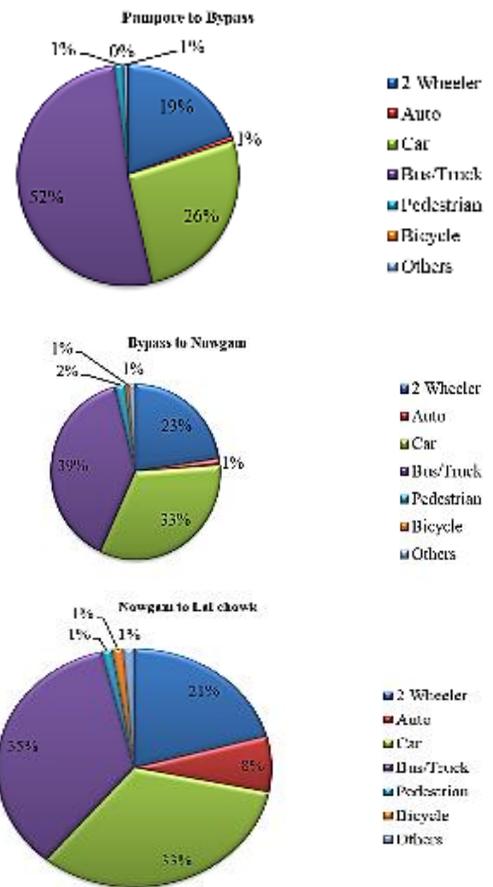
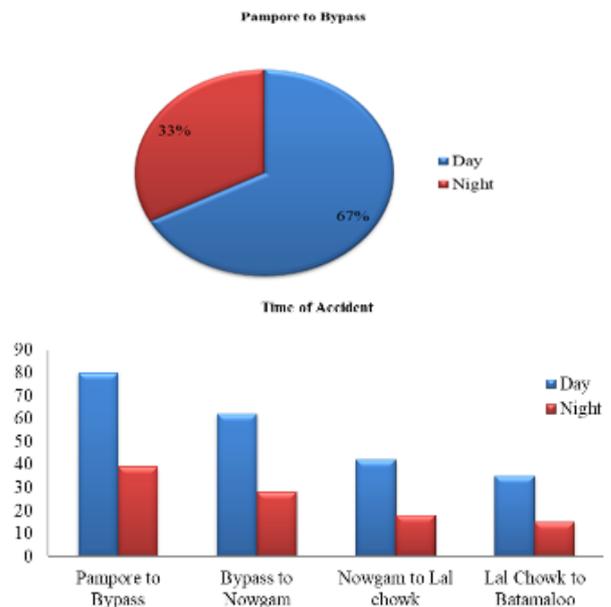


Figure 6: Graphically represent the type of vehicle

The data shows that trucks and buses account for the greatest number of fatalities over the whole span. Following that, the automobile notices a considerable number of accidents. 2 Wheelers have a role in the mishaps as well. Autos and bicycles contribute very little to traffic accidents.

F. According to Time of Accidents

The analysis of unintentional research heavily depends on time. Day and night are the two main categories into which time may be divided, as is common knowledge.



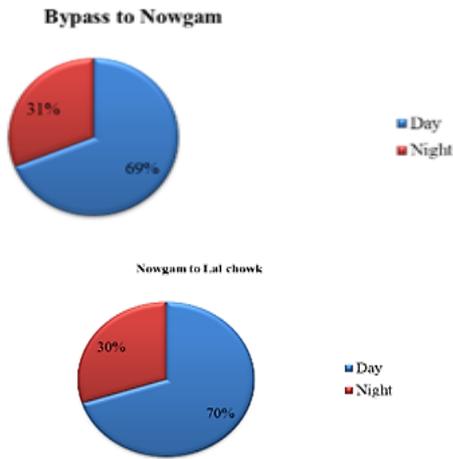


Figure 7: Graphically represent the time of accident

From the graphic, it can be seen that throughout all time spans, more accidents are caused during the day than at night. The fact that fewer automobiles are on the road at night versus during the day might be contributing to this.

G. Questionnaire Survey

Q1: - Do you believe that a road survey is necessary to provide good results and the best alignment on bends to reduce the number of accidents on the road?

The majority of drivers were of the opinion that a thorough preparatory and extensive study should be conducted to determine the optimal alignment of the road on curves in order to prevent collisions at the bends, which would eventually lower the likelihood of traffic accidents, as shown in the figure. Of of 90 people, 55 believed that a thorough, preliminary study should be conducted to determine the optimal route for the road, 28 disagreed, and 7 did not respond.. According to the data, 61% of users believed that a thorough exploratory and extensive poll should be conducted to determine the ideal alignments of the road, 31% disagreed, and the remaining 8% did not respond to the question.

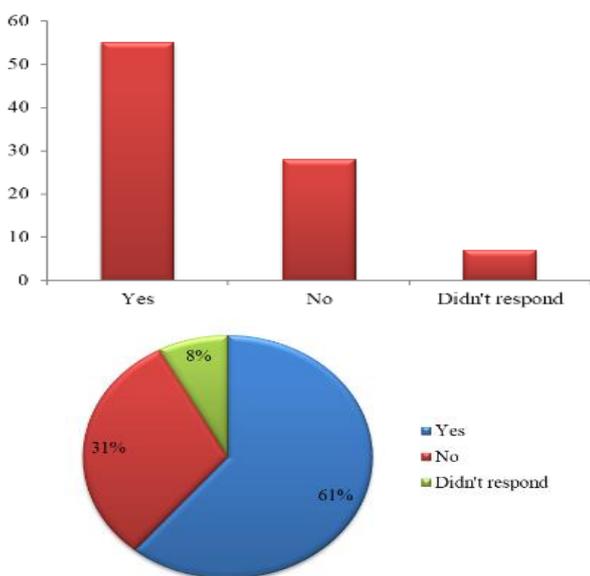


Figure 8: Questionnaire response for Curve Alignment

Q2:- Do you believe that a wider road will assist to reduce accident?

The majority of road users, as shown in the graph, believed that road widening would reduce the frequency of accidents. Of of 90 people, 58 believed that road widening would reduce the frequency of accidents, 23 disagreed, and three did not respond to the question. In terms of percentage, as shown from the graphs, 65% of users believed that expanding roads would reduce the frequency of accidents, 32% disagreed, and the remaining 3% did not respond to the question.

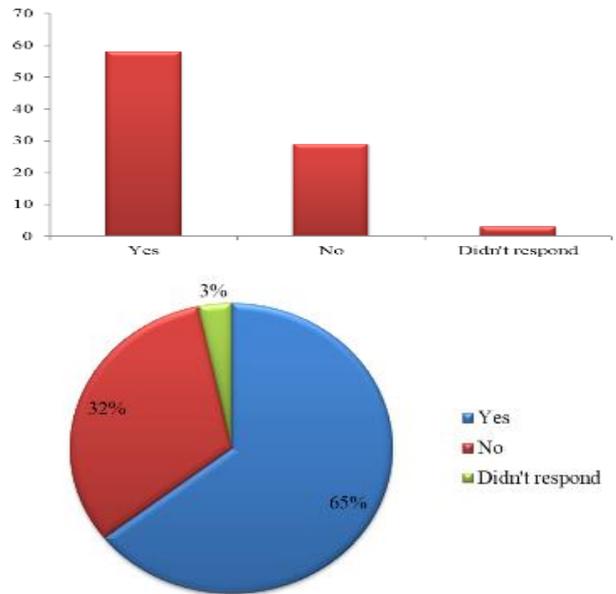


Figure 9: Questionnaire response for road widening

Q3: - Do you believe that the primary issue relating to auto accidents is casual driving?

The majority of drivers were, according to the figure, of the belief that distracted driving is the main cause of traffic mishaps. Of of 90 people, 65 said that distracted driving was the main issue relating to automobile accident, 20 disagreed, and 5 did not respond to the question. According to the graphics, 72% of users believed that multitasking was the biggest issue relating to car accidents, 22% disagreed, and the other 6% did not respond to the question.

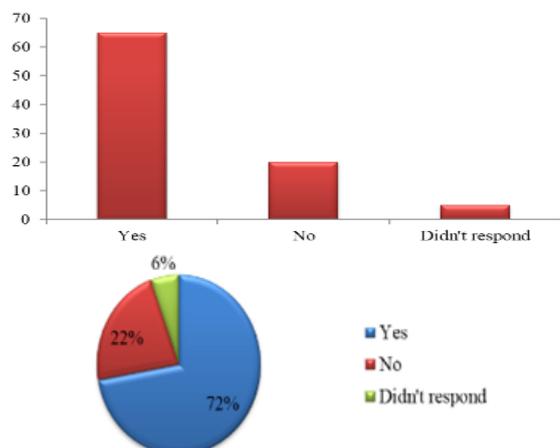


Figure 10: Questionnaire response for distracted driving

Q4: - Do you believe that drugged drivers are a big worry in relation to traffic accidents?

The majority of those who use the roads were, according to the data, of the opinion that drugged-driving accidents are a big worry. In a survey of 90 people, 65 said that drugged driving was a major cause for worry in terms of traffic accidents, 20 disagreed, and 5 didn't respond to the question. According to the data, 72% of users agreed that drivers under the influence of drugs are a big worry when it comes to traffic accidents, 22% disagreed, and the other 6% did not respond to the question.

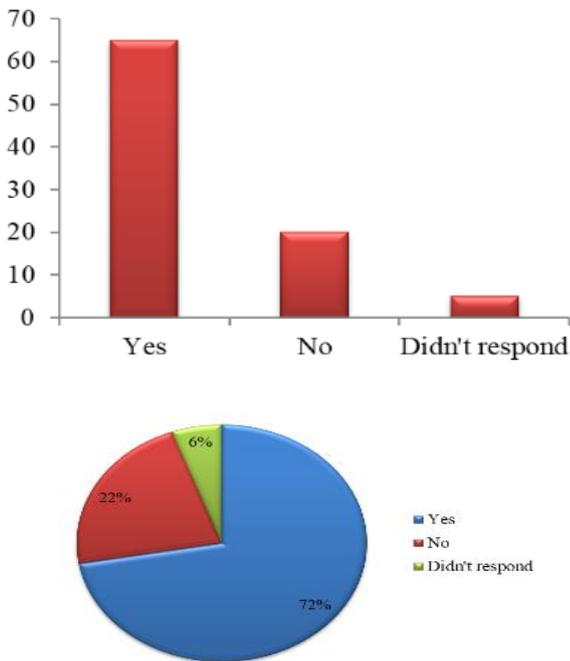


Figure 11: Questionnaire response for Drug Influence

Q4: - Do you believe that severe weather, including ice, snow, and other climatic conditions, is the main cause of fatalities?

The majority of drivers believed that difficult weather changes including ice, snow, and other climatic influences were to blame for the majority of deaths, as seen in the graph. Of 90 people, 55 believed that extreme weather, including ice, snow, and other climatic influences, were to blame for the majority of fatalities, while 28 disagreed, and 7 didn't respond at all. According to the graphics, 61% of users believed that severe weather, such as ice, snow, and other climatic circumstances, caused the majority of fatalities, while 31% disagreed, and the other 8% did not respond to the question.

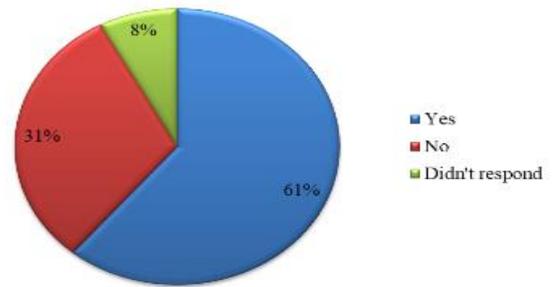
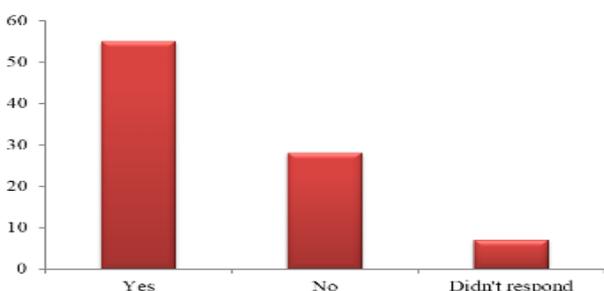


Figure 12: Questionnaire response for harsh weather

Q5: - Do you believe that poor road conditions including potholes, mud pumps, and other paving flaws contribute to traffic accidents?

The majority of road users, as shown in the figure, believed that poor road conditions, such as potholes, mud pumps, and other pavement flaws, cause accidents. Of 90 people, 80 believed that poor road conditions such as potholes, mud pumping, and some other concrete flaws cause traffic accidents, while just 10 disagreed. According to the graphics, 89% of users believed that poor road conditions such as potholes, mud drainage, and other pavement flaws cause traffic accidents, while 11% disagreed.

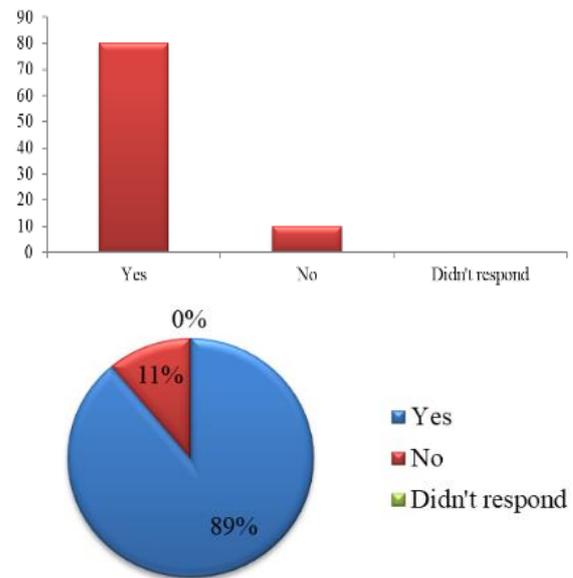


Figure 13: Questionnaire response for Bad Road Conditions

Q6:- Do you believe that car defects are a significant factor in causing traffic accidents?

The majority of drivers were of the opinion that car defects are a major contributing factor to crashes, as seen in the graph. Of 90 people, 80 believed that car defects were a significant factor in the causes of traffic accidents, while only 10 disagreed. According to the graphics, 89% of users believed that car defects were a significant factor in the causes of traffic accidents, whereas 11% disagreed.

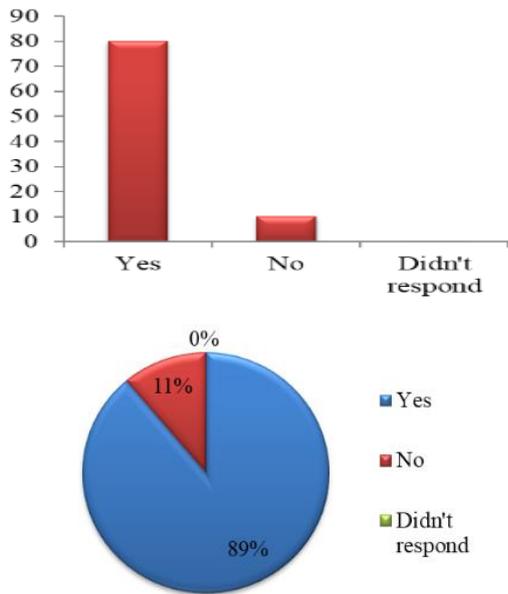


Figure 14: Questionnaire response for vehicle defect

Q7: - Do you believe that going the wrong way on the road increases the risk of fatalities?

Figure shows that the majority of road users believe that driving in the incorrect direction increases the risk of deaths. Of of 90 people, 80 believed that driving the wrong way contributed to traffic deaths, while just 10 disagreed. According to the data, 89% of users believed that driving the wrong way adds to traffic deaths, while 11% disagreed.

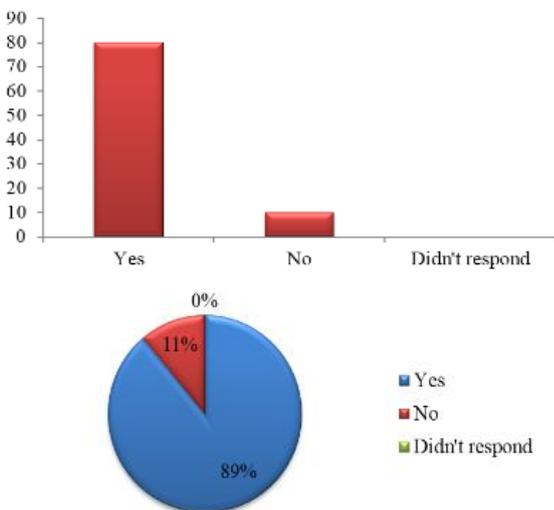


Figure 15: Questionnaire response for wrong way driving

Q8: - Do you believe that traffic signs and signals will lessen the likelihood of accidents on the road?

The majority of drivers were of the opinion that traffic signs and signals would lessen the likelihood of accidents, as seen in the graph. Of of 90 people, 59 believed traffic signs and signals would lower the likelihood of accidents, 26 disagreed, and the other ten did not respond. As can be seen from the figures, 66% of users believed that traffic signs and signals would lower the likelihood of accidents, while 29% disagreed.

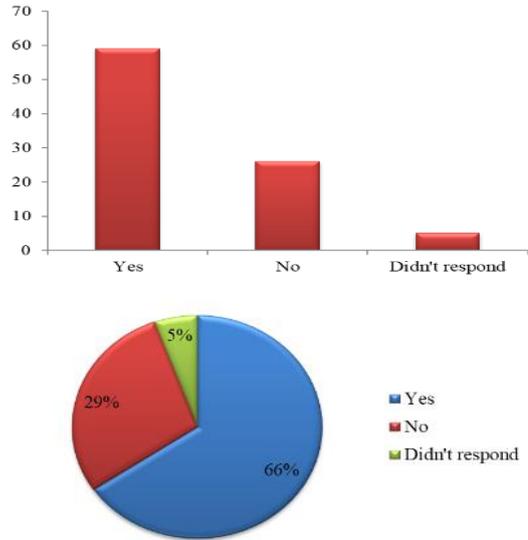


Figure 16: Questionnaire response for Signs and Signals

Q9: - Do you believe that young drivers have a part in traffic accidents?

The majority of drivers were of the opinion that young drivers are a contributing factor in traffic accidents, as seen in the graph. Of of 90 people, 80 believed that juvenile vehicles increase to traffic accidents, while just 10 disagreed. As can be seen from the graphs, 89% of users believed that young drivers increase to traffic accidents, whereas 11% disagreed.

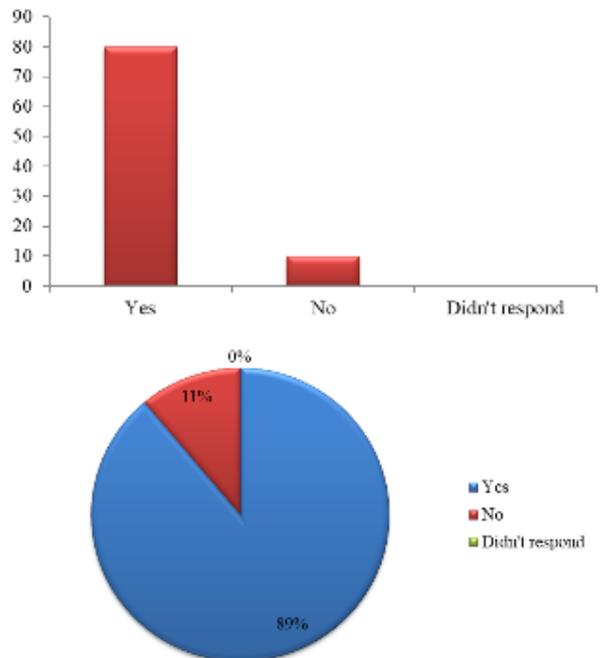


Figure 17: Questionnaire response for Teenage Driving

Q10: - Do you believe that animals crossing the road cause fatalities?

On the graph, it can be seen that the majority of drivers agreed that animal crossings increase the risk of accidents. Of of 90 people, 55 believed that animal crossings increase

the risk of traffic accidents, 28 disagreed, and 7 did not respond to the question. As can be seen from the graphs, 61% of users believed that animal crossings contributed to road deaths, 31% disagreed, and the rest 8% did not respond to the question.

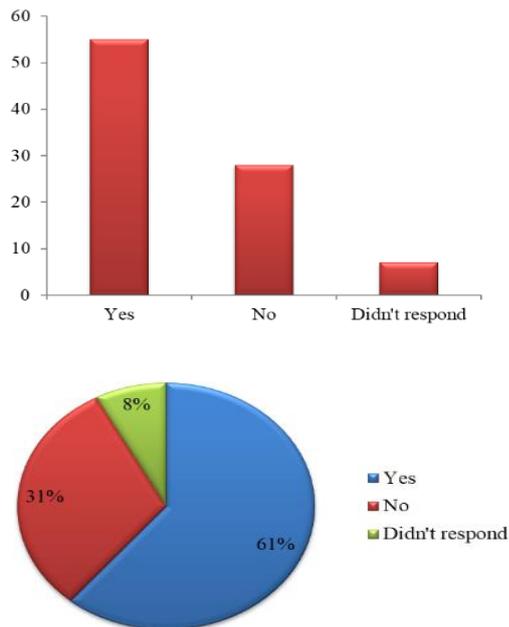


Figure 18: Questionnaire response for Animal Crossing

V. CONCLUSION AND FUTURE SCOPE

All types of road users were included in the survey and data analysis for this study on the various road segments in Srinagar city and its environs. Many elements were investigated, including accident causes, injury types, collision types, and different corrective actions aimed at reducing road accidents. A thorough investigation was done for the reason of the incidents on many road sections outside Srinagar city. Findings on the overall number of accidents, the causes of accidents, the types of accidents, the types of injuries, the types of vehicles involved, and the times of the incidents were gathered.. The data was examined during a four-year period, from 2016 to 2020. The findings were compiled and displayed graphically. A questionnaire survey was also performed among road users to get more in-depth information and to solicit their opinions on how to reduce the number of accidents on the road. Following a thorough study, translation, and interview questions, it is possible to draw the following conclusions:

- The year 2018-2019 had the most accidents overall, followed by 2017-2018 and 2019-2020 with the fewest accidents.
- The two factors that contributed to the greatest amount of accidents were excessive velocity and out-of-control vehicles, followed by vehicle flaws and other road faults.
- Car accidents accounted for the majority of mishaps, which were closely followed by side collisions on the

bypass-Nowgam length and side encounters in the Pampore-Bypass stretch.

- That the number of fatal injuries was bigger on all segments than on Pampore to the detour stretch, when the type of injury was mild.
- Bus/Trucks were the primary kind of vehicle used in road accidents, with cars and two-wheelers coming in second and third.
- As contrast to nighttime, the number of injuries was highest during the day.

In this study, a questionnaire survey was performed for the investigation of road deaths in Srinagar City. The analysis of the road was done on many factors that are described in the preceding parts. In the hereafter, more accurate findings, more users on the road, different localized users along the road, and a changes in the position of the assessment sections are all possible. For a more thorough examination, more years might be used. Road users are advised and instructed to reduce accidents.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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