Problem Statement

The analysis aims to understand and address road safety challenges in Victoria state by examining and interpreting the road accident data. The primary objectives include identifying high-risk areas, determining contributing factors, and proposing data-driven recommendations for improving road safety measures. This analysis seeks to provide actionable insights to reduce the frequency and severity of road accidents, enhance emergency response strategies, and ultimately contribute to creating safer road environments for the residents of Victoria state.

Files Given

I have been provided four csv file documents.

Accident.csv	This is your main dataset with each row captured as an accident
Accident_Location.csv	This data set has details on the road type and location
Node.csv	This data set has location details
Data_Dictionary.csv	This is the data dictionary that may help you understand the various attributes within the data sets

Data Cleaning

In Accident.csv file, I checked the duplicates data and removed them, I also did check the null values or blank data which may be either missing text values or missing integers. There were many columns which were irrelevant too, I deleted the columns which were similar and irrelevant for visualizations.

In Accident Locations file, I did the data cleaning by removing the irrelevant columns and filled in the blank or missing text values like region name. I filled in the region name by looking at other columns.

In the Node file there were many missing values like numbers, I did that by calculating the average of the column and placing them in blank spaces.

Finally, after cleaning the data of all there, I combined the location and node file with the main value using the accident ID and Xlookup function.

Data Visualization

Finally, after the data cleaning, I upload the file on tableau. Then did the visualization based on the data and columns like:

- Total Accidents, Total deaths, Total Injured, Total Non-injured
- Severnity,
- Accidents in daytime or nighttime
- Accidents by region
- Accidents in light conditions
- Road Name with most accidents
- Accidents in each day of the week
- Accidents occurring in particular speed.

Result Outcomes

From the visualizations, we can state that the accidents have been increasing every year. The most accidents have occurred in day light or daytime. Most accidents occur at 60km/hr. The roads with the most accidents occurring are High, Princes, Monash, Springvale, Dandenong etc. The regions in which the most accidents have occurred are the Metropolitan Southeast and Metropolitan Northwest.

Based on the visualizations and analysis, here are some suggestions for potential improvements in road safety:

- Launch targeted awareness campaigns during daytime, focusing on specific regions like Metropolitan Southeast and Metropolitan Northwest.
- Emphasize safe driving practices, the importance of adhering to speed limits, and awareness of high-risk road sections.
- Collaborate with local authorities to assess and improve road infrastructure, especially on roads with the highest accident rates (e.g., High, Princes, Monash, Springvale, Dandenong).
- Consider implementing measures such as improved signage, road lighting, and traffic calming devices.
- Strengthen enforcement of speed limits, particularly in areas where accidents frequently occur at 60 km/hr.
- Consider implementing technologies like speed cameras to deter speeding and enhance compliance.
- Implement targeted road safety measures during daytime, considering the majority of accidents occur during this period.
- Evaluate the effectiveness of existing safety measures during different times of the day.
- Collaborate with emergency services to optimize response times in high-accident regions.
- Ensure that emergency services are well-equipped and trained to handle various accident severities.
- Provide training to drivers on defensive driving techniques and awareness of road conditions.