Report On Road Safety Analysis By Smartinternz

INTRODUCTION:-

Overview: Vehicular accidents are a major concern worldwide, resulting in countless deaths, injuries, and economic losses. This project aims to analyze road accident data to gain insights into the factors contributing to these incidents. By understanding the patterns and trends associated with accidents, we can develop strategies to improve road safety and prevent future tragedies. Traffic accidents are a global threat, causing devastating consequences. Data visualization offers a powerful tool to analyze these accidents and gain insights that can improve road safety. This project delves into the world of road accidents using data visualization techniques.

Purpose: The purpose of data visualization in road safety and accident analysis is to transform complex datasets into clear and understandable formats. By using charts, graphs, and interactive elements, data visualization helps us uncover hidden patterns and trends in accident data. This allows us to identify high-risk factors like specific locations, times of day, or driver behaviors. These insights can then be effectively communicated to a broad audience, raising awareness about road safety issues and informing decision-makers on how to allocate resources and implement targeted interventions to create a safer driving environment.

Technical Architecture: The technical architecture for a road safety and accident analysis project can be layered, with each layer building upon the previous one. The Data Acquisition layer focuses on gathering data from various sources. This could involve connecting to government databases containing accident reports, partnering with traffic authorities for real-time accident information, or even integrating with public datasets on weather conditions or road infrastructure. The Data Storage layer handles the process of receiving and storing the collected data. It might involve setting up data pipelines to transfer information from various sources into a central storage system, potentially a cloud-based data warehouse. Data cleaning and pre-processing steps might also be included here to ensure data quality and consistency.

Visualization and Reporting: This layer focuses on transforming the analyzed data into clear and insightful visualizations. Interactive dashboards or reports can be created using specialized software to effectively communicate findings to stakeholders. This layer might also involve tailoring visualizations for different audiences, such as policymakers or the general public.

PROBLEM UNDERSTANDING:-

Problem Statement: Despite ongoing efforts to improve road safety, traffic accidents remain a significant public health concern worldwide. These accidents cause devastating consequences, leading to numerous fatalities, injuries, and immense economic burdens. The current challenge lies in effectively identifying and mitigating the factors contributing to these accidents. This Road Safety Analysis project aims to bridge this gap by leveraging data analysis and visualization techniques. By transforming raw data into actionable insights, we can create a data-driven approach to improving road safety.

Business Requirements: The Road Safety Analysis project requires several key functionalities to achieve its goals. The project needs the ability to gather comprehensive accident data from reliable sources. This might involve establishing connections with government databases, traffic authorities, or public datasets. The project requires tools and techniques to analyze the collected data. Statistical software for identifying trends and correlations, data visualization tools for creating impactful visuals, and potentially even machine learning capabilities for complex analysis are necessary. The project needs a system to generate clear and concise reports and visualizations. Interactive dashboards or reports tailored for different audiences (policymakers, public) are essential for effectively communicating the findings and raising awareness.

Literature Survey: A thorough literature survey is a vital first step for your Road Safety Analysis Project. This survey will delve into existing research on road accidents to gain valuable context and insights. The survey will examine existing theories that explain driver behavior and accident causation. This could involve exploring theories like social cognitive theory, which focuses on social influences and personal beliefs on behavior, or risk homeostasis theory, which suggests drivers adjust their behavior to maintain a perceived level of risk. Understanding these frameworks will provide a foundation for interpreting your own analysis.By examining past research, theoretical foundations, and current practices, the literature survey will lay the groundwork for your own road safety analysis project. It will help you identify potential areas of focus and ensure your research builds upon existing knowledge to make a meaningful contribution to the field. The literature survey will explore current policies and programs aimed at improving road safety. This could involve researching successful initiatives in your chosen region or globally, encompassing areas like distracted driving campaigns, infrastructure improvements, or technological advancements in vehicles and traffic management systems.

DATA COLLECTION:-

Collect the Data: Obtaining high-quality data is essential for a successful road safety analysis project. Many government transportation departments or traffic police agencies maintain databases containing accident reports. The data should be specific enough to pinpoint the location of the accident. Ideally, it would include address information, intersection details, or highway mile marker for precise geospatial analysis. Date and time data allow for analysis of trends across different days, weeks, or times of day. This can help identify patterns related to factors like rush hour commutes or nighttime driving. The weather conditions like rain, snow, or fog that might impact visibility or road conditions. By collecting and analyzing this comprehensive data, you can gain valuable insights into the factors contributing to road accidents in your chosen area. This data can then be used to develop targeted interventions and improve overall road safety.

Connect the Data for Visualization: There are several ways to connect your data to Qlik Sense for visualization, depending on the source of your data. The first one is Uploading Files that is CSV, TXT, Excel, XLSX etc. After connecting your data, you can utilize Qlik Sense's data transformation features to clean, reshape, and manipulate the data to prepare it for visualization. For complex analyses, you can create data models within Qlik Sense to establish relationships between different data sets (e.g., connecting accident data with geographical location data).

Process to Connect the Datasets:-

➤ In Qlik Sense, navigate to the "Data" tab in the top menu.

➤ Click on "Add data" and choose "From file."

➤ Browse and select your data file (e.g., CSV file containing road accident data).

➤ Qlik Sense will launch a data preview window. You can define data types for each column and choose relevant delimiters (e.g., commas or tabs) if applicable.

➤ Once satisfied, click "Load" to import the data into Qlik Sense.

DATA PREPARATION:-

Prepare the Data for Visualization: Before implementing the actual visualization of the datasets its very important to clean the data. Data cleaning, also known as data cleansing, is a crucial step in the machine learning (ML) pipeline. It involves identifying and correcting errors, inconsistencies, and missing data from your dataset to ensure the quality and reliability of your machine learning models.

Data Visualizations:-