Road Accident Analysis Project Documentation

Overview:

The Road Accident Analysis Project aims to comprehensively examine and analyse a dataset containing information on road accidents, with a focus on casualties. The dataset encompasses various key parameters such as date, region, vehicle type, time of day, and road type. Through a systematic exploration of this data, our goal is to derive valuable insights and patterns that can contribute to a deeper understanding of the factors influencing road accidents.

Steps in Project:

- Requirement Gathering
- Stakeholders in Project
- Raw Data Overview
- Connecting Data with Power BI
- Data Cleaning
- Data Processing
- Data Modelling
- Background Design in PowerPoint
- Data Visualization/ Charts Design
- Report/ Dashboard Building
- Insights

Requirements:

Client wants to create a Road Accident Dashboard for year 22021 and 2022 so that they can have insight on the below requirements.

- Primary KPI - Total Casualties and Total Accident values for the Current Year and YoY growth
- Primary KPIs - Total Casualties by Accident Severity for Current Year and YoY growth
- Secondary KPIs - Total Casualties concerning vehicle type for the Current Year
- Monthly trend showing comparison of casualties for the Current Year and Previous Year
- Casualties by Road Type for the Current Year
- Current Year Casualties by Area/ Location & by Day/Night
- Total Casualties and Total Accidents by Location

Stakeholders:

➢ Ministry of Transport
➢ Road Transport Department
➢ Police Force
➢ Emergency Services Department
➢ Road Safety Corps
➢ Transport Operators
➢ Traffic Management Agencies
➢ Public
➢ Media

Goal:

The primary goal of this project is to enhance road safety by leveraging data-driven insights from the road accident dataset The derived insights will empower stakeholders, including government agencies, law enforcement, emergency services, and transport operators, to implement targeted measures and policies for reducing accidents, mitigating casualties, and improving overall traffic management. Through collaboration with the public, media, and relevant authorities, the ultimate objective is to foster a safer road environment for all.

Insights:

- ➢ **Current Year (CY) Casualties:**
    - Total Casualties: 169.4K
    - Decrease: -11.17% compared to the previous year

- ➢ **Current Year (CY) Accidents:**
    - Total Accidents: 125.4K
    - Decrease: -11.15% compared to the previous year

- ➢ **Current Year (CY) Fatal Casualties:**
    - Total Fatal Casualties: 2567
    - Decrease: -30.98% compared to the previous year

- ➢ **Current Year (CY) Serious Casualties:**
    - Total Serious Casualties: 23.9K
    - Decrease: -14.97% compared to the previous year

- ➢ **Current Year (CY) Slight Casualties:**
    - Total Slight Casualties: 143K
    - Decrease: -10.04% compared to the previous year

➢ **Casualties By Vehicle Category:**

- Agricultural Vehicles: 348.
- Bike (Motorcycles): 13,627
- Car: 134,763
- Bus: 5,680
- Van: 13,751
- Other Vehicles: 1,254

➢ **CY (Current year) vs PY (Previous year) Monthly trend**
- Upon observing the area chart, a discernible decrease in casualties is evident when comparing the current year (CY) to the previous year (PY). Notably, the data highlights a peak in accidents during the last year's September, with a total of 16,965 incidents recorded, marking the highest point for that year. In contrast, during the current year, the highest number of accidents occurred in June, totalling 15,829,
- The overall trend indicates a reduction in casualties towards the end of the current year

➢ **CY (current year) Casualties by Urban/Rural**
- In the current year, casualties are predominantly concentrated in urban areas, constituting approximately 62.25% of the total, with around 105,466 incidents.
- In contrast, rural areas account for approximately 37.75% of casualties, totalling around 63,957 incidents.

➢ **Current year Casualties by Day/night**
- In the current year, the majority of Casualties occurred during the day, accounting for approximately 75.31% of the total, with around 127,589 incidents.
- Conversely, nighttime saw around 41,834 incidents, constituting approximately 24.69% of the total casualties.

➢ **CY Casualties by Road type**
  - In the current year, the majority of Casualties occurred in the Single carriageway 125513

➢ **CY Casualties by City:**

  In the current year, the highest number of casualties is concentrated in the following top 5 cities:

  1 Birmingham: 4,096 casualties
  2 Leeds: 2,764 casualties
  3 Cornwall: 2,092 casualties
  4 Bradford: 2,089 casualties
  5 Liverpool: 2,077 casualties

Recommendations:

1. **Urban Safety Emphasis:**
   - Prioritize safety measures in urban areas, where 62.25% of casualties occurred, through improved infrastructure and awareness campaigns.

2. **Daytime Focus:**
   - Concentrate efforts on daytime safety, given that 75.31% of casualties happen during daylight hours, including visibility and education initiatives.

3. **Car-Specific Initiatives:**
   - Tailor safety campaigns for car users (134,763 casualties), emphasizing defensive driving and adherence to speed limits.

4. **City-Specific Interventions:**
   - Implement targeted interventions in high-casualty cities (e.g., Birmingham, Leeds) with localized awareness, enforcement, and infrastructure improvements.

5. **Continuous Monitoring:**
    - Maintain vigilance on decreasing trends observed towards the end of the year, adapting strategies for sustained positive outcomes.

6. **Agricultural Vehicle Safety:**
    - Introduce specific safety measures for agricultural vehicles, considering their unique characteristics.

7. **Road Type Analysis:**
    - Address factors contributing to accidents on single carriageways, focusing on infrastructure enhancements, stricter enforcement, and education.

These succinct recommendations aim to guide stakeholders in effective and targeted interventions to reduce casualties and enhance overall road safety.

Conclusion:

In conclusion, the presented insights reveal a positive trajectory with a notable decrease in casualties and accidents compared to the previous year. Targeted measures in urban areas, during daytime, and for specific vehicle categories can further enhance road safety, and continuous monitoring of trends remains essential for sustained improvement. Stakeholders are encouraged to implement these recommendations to build on the progress achieved and prioritize the safety of road users.