Road Accident Dashboard

Steps Covered:-

1. Requirement gathering from client.
2. Identify the Stakeholders of the Project.
3. Data cleaning as per the requirement.
4. Data Processing by adding some customized columns in data.
5. Data Analysis by Pivot Tables and Excel Functions.
6. Data Visualization to create charts and custom sheets to show the insights.
7. Report/ Dashboard creation from start to end.

1. Requirement gathering from client.

- Business Requirement:

  To conduct a comprehensive analysis of road accident data focusing on total casualties, vehicle type, road conditions, and accident factors to identify critical trends and safety improvement opportunities using key performance indicators (KPIs) and visualizations in Excel. This dashboard aims to help stakeholders understand accident patterns and plan targeted interventions for road safety enhancement.

- KPI's Requirements:

1. **Fatal Casualties**: The count of fatalities resulting from road accidents.
2. **Serious Casualties**: The number of individuals sustaining serious injuries in accidents.
3. **Slight Casualties**: The total count of minor injuries caused by road accidents.
4. **Casualties by Car**: The count and percentage of total casualties caused by cars.

- Charts’s Requirements:

1. **Casualties by Vehicle Type:**

   Objective: Identify the impact of different vehicle types on the total number of casualties.

   Chart Type: Tree Map.

2. **Casualties by Year - Monthly Trend Analysis:**

   Objective: Compare the monthly trends in casualties for the current year vs. the previous year.

   Chart Type: Line Chart.

3. **Casualties by Road Type:**

   Objective: Analyze the distribution of casualties based on different road types (e.g., single carriageway, dual carriageway, roundabout).

   Chart Type: Stacked Column Chart.

4. **Casualties by Road Surface:**

   Objective: Analyze the influence of road surface conditions (e.g., dry, wet, snowy) on the number of casualties.

   Chart Type: Treemap.

5. **Casualties by Location/Area:**

   Objective: Examine the distribution of casualties in rural vs. urban areas.

   Chart Type: Donut Chart.

6. **Casualties by Light Condition:**

   Objective: Compare the number of casualties under different lighting conditions (e.g., daylight, darkness).

   Chart Type: Donut Chart.

2. Identify the Stakeholders of the Project.

1. **Ministry of Transport:** Monitors road safety policies and evaluates interventions to reduce casualties.
2. **Road Transport Department:** Manages road conditions and vehicle regulations, using insights for infrastructure and safety improvements.
3. **Police Force:** Identifies accident-prone zones for deploying officers and enforcing regulations.
4. **Emergency Services:** Plans resource deployment and response strategies based on accident trends.
5. **Road Safety Corps:** Designs targeted safety campaigns and enforcement based on risk factors.

6. **Transport Operators:** Optimizes routes and enhances driver safety measures.

7. **Traffic Management Agencies:** Identifies congestion-prone areas for improved traffic flow.

8. **Public:** Benefits from enhanced road safety and awareness measures.

9. **Media:** Communicates road safety insights to raise public awareness.

10. **Data Analysts and Safety Researchers:** To delve deeper into the data, derive actionable recommendations, and propose new safety interventions or research studies for reducing accidents.

3. Key Insights

1. **Car Accidents Dominate Casualties:** Cars account for the majority of total casualties, highlighting a key risk area.

2. **High Casualties on Rural Roads:** Rural areas show a significantly higher number of casualties compared to urban roads.

3. **Fatal Accidents Occur Mostly at Night:** A significant portion of fatal accidents happens during nighttime due to poor visibility or fatigue.

4. **Significant Casualties on Single Carriageways:** Single carriageways see the highest percentage of road accidents, indicating the need for improved road safety measures.

5. **Monthly Spike in Casualties:** The trend indicates periodic spikes in accidents, suggesting specific months with higher risks.

4. Recommendations

1. **Implement Safety Measures for Cars:** Prioritize car-focused road safety campaigns and stricter regulations.

2. **Enhance Rural Road Infrastructure:** Invest in improving road conditions and safety features in rural areas.

3. **Boost Nighttime Safety:** Introduce reflective road markings, better street lighting, and awareness campaigns targeting nighttime driving.

4. **Target High-Risk Road Types:** Introduce safety measures such as speed limits and warning signs on single carriageways.

5. **Focus on Peak Months:** Deploy additional enforcement and safety measures during months with higher accident rates.

5. Conclusion

The analysis reveals that cars are the leading cause of casualties, with rural areas and nighttime accidents posing higher risks. Single carriageways are identified as key danger zones. To improve safety, focus on enhancing rural roads, increasing nighttime visibility, and enforcing stricter car safety measures, especially during high-risk months.