**Power BI Project for Road Crash Data Analysis**

**Project Overview**

Developed a comprehensive road crash data analysis dashboard using Power BI. The objective was to gain insights into crash patterns, contributing factors, and severity to aid in improving road safety measures.

**Project Requirements**

* **Primary KPIs**:

Total casualties and total accidents for the current year, with year-on-year growth comparison.

Total casualties by accident severity for the current year, with year-on-year growth comparison.

* **Secondary KPI:**

Total casualties with respect to vehicle type for the current year.

* **Additional Visualizations:**

Monthly trend comparison of casualties between the current year and the previous year.

Casualties by road type for the current year.

Casualties by area/location and by day/night for the current year.

Total casualties and total accidents by location.

**Data Processing and Challenges Overcome**

* **Data Source and Cleaning:**

1. Collected road crash data from reliable sources and obtained it in CSV format.
2. Imported the CSV data into Power BI and performed initial data cleaning, checking for duplicates, and handling missing values.

* **Data Filtering and Transformation:**

1. Utilized Power BI's filtering options to refine the data and remove unnecessary columns.
2. Created calculated columns and measures within Power BI to derive key metrics and indicators required for the analysis.

* **Overcoming Challenges:**

1. Faced challenges in data consistency and accuracy, requiring careful verification and cross-referencing with additional sources.
2. Dealt with data quality issues, such as inconsistencies in naming conventions and variations in data formats.
3. Addressed these challenges by implementing data validation techniques, manual verification, and data transformations within Power BI.

* **Automatic Refresh:**

1. Implemented an automatic data refresh mechanism in Power BI to ensure the dashboard remains up-to-date with the latest data.
2. Configured a scheduled refresh in Power BI, connecting to the data source to fetch and update the data at regular intervals.

**Data Visualization and Insights**

Utilized a variety of Power BI visualizations to present the analysis findings, including:

* **Power BI cards**: Used to display key metrics such as total casualties, total accidents, and year-on-year growth percentages.
* **Slicers**: Implemented interactive slicers to enable users to filter the data by accident severity, vehicle type, road type, and other relevant dimensions.
* **Geographic Visualizations**: Employed maps and geospatial visualizations to showcase the distribution of casualties by location, allowing for the identification of high-risk areas.
* **Bar Charts**: Utilized bar charts to compare casualties across different categories, such as road type or time of day.
* **Line Charts**: Created line charts to illustrate the monthly trend of casualties, comparing the current year with the previous year.
* **Donut Charts**: Implemented donut charts to visualize the proportion of casualties by different attributes, such as urban/rural areas or day/night conditions.