

# ROAD ACCIDENT ANALYSIS DASHBOARD USING POWER BI.

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## **Abstract:**

An abstract for a road accident analysis dashboard would be a summary of the key features and functionalities of the dashboard. It should include information about the data sources used, the types of analysis performed, and the types of visualizations that are available.

## **Introduction:**

This Dashboard is a complete Dynamic and Interactive which will operated by few filters and slicers. The Data is about Road Accident details with a certain period of 2021 and 2022 in a certain area. I will do some Data Analysis Expression (DAX) measures and create a visualization using power bi and concluded with Results and Insights.

## **Requirement:**

- Clients wants to create a Road Accident Dashboard for year 2021 and 2022 so that they can have insights on the below requirements.

- Primary KPI- Total Casualties and Total Accidents values for Current Year (2022) and Year-on-Year growth.
- Primary KPI's-Total Casualties by Accident severity for Current Year and yoy growth.
- Secondary KPI- Total Casualties with respect to vehicle type for Current Year.
- Monthly Trend showing comparison of casualties for Current and Previous year.
- Casualties by Road type for Current Year.
- Current Year Casualties by Area/Location and by Day/Night.

### **Power Bi Functionalities:**

- ✓ Connect a raw data.
- ✓ Data Cleaning in Power Query.
- ✓ Data Preprocessing.
- ✓ Time Intelligence Function/ Calendar Data Table in Power bi.
- ✓ Data Modelling (Relationship between Multiple tables).
- ✓ YTD and YoY Growth calculations using DAX.
- ✓ KPI and Advanced KPI Generations.
- ✓ Creating Custom columns and measures in the report.
- ✓ Creating different charts and generating insights.

### **Process:**

#### **Step 1:** (Importing).

- ❖ Import a Data from Excel to Power bi and go through it.

## Step 2: (Data Cleaning)

- ❖ Replace the values Fetal to Fatal in Accident Severity column in Power Query Editor.

## Step 3: (Data Preprocessing)

- ❖ Use a Time Intelligence function.
- ❖ To Create a Calendar Table for determining YoY casualties.
  - Column 1:
    - ✓ Calendar\_Table = Calendar (Min (Data [Accident\_Date]), Max (Data [Accident\_date]))
  - Column 2:
    - ✓ Year= Year (Calendar\_Table '[Date]')
  - Column 3:
    - ✓ Month= Format ([Calendar\_Table '[Date]', "mmm")
  - Column 4:
    - ✓ Month\_no = month ([Calendar\_Table '[Date]')

## Step 4: (Data Modelling)

- ❖ There are Two Tables Data and Calendar\_Table.
- ❖ Create a Connection between Accident\_Date in Data table to Date in Calendar\_Table.
- ❖ Therefore, the date can be access at Date in Calendar\_Table.

## Step 5: (Visualization)

- ❖ First, I had imported the already done in Template design from ppt.

## 1.For-Total Casualties and YoY growth.

❖ Visualization-*By Card*.

❖ DAX Formula:

✓ CY\_Casualties = TOTALYTD (SUM (Data [No\_of\_Casualties]), Calendar\_Table'[Date]').

✓ PY\_Casualties =CALCULATE (SUM (Data [No\_of\_Casualties]), SAMEPERIODLASTYEAR (Calendar\_Table '[Date]')).

✓ YoY Casualties = (CY\_Casualties-PY\_Casualties) / PY\_Casualties

## 2. For- Total Accidents and YoY growth.

❖ Visualization- *By Card*.

❖ DAX Formula:

✓ CY\_Accidents = TOTALYTD (COUNT (Data [Accident\_Index]), Calendar\_Table'[Date]').

✓ PY\_Accidents = CALCULATE (Data [Accident\_Index]),  
○ SAMPLEPERIODLASTYEAR  
(Calendar\_Table'[Date]')).

✓ YoY Growth = (CY\_Accidents-PY\_Accidents)/PY\_Accidents.

## 3.For- Total Casualties by Accident Severity for Current Year.

❖ Visualization – *By Card*.

❖ Filters:

★ Here I used a Filter method for showing severity.

- ★ By using this filter, I would show the individual cards for Fatal, Serious, and Slight. These values are placed in filter option.
- ★ These values are shows with respect to CY\_Casualties.

#### **4.For – Total Casualties with respect to Vehicle type for Current Year.**

❖ Visualization – *Multi row card.*

❖ Groups:

- ★ Here I used group method for show vehicle type.
- ★ Here lot of vehicles in the data. So, I would group under the categories of
  - Bike
  - Car
  - Bus
  - Van
  - Others
- ★ Then, these values are total Accident by these vehicles and CY\_Casualties.

#### **5.For – Monthly Trend Comparison of 2021 and 2022:**

❖ Visualization – *By Area Chart.*

- ✓ X-axis -> Month
- ✓ Y-axis -> No\_of\_Casualties
- ✓ Legend -> Date -> Data Hierarchy.

★ Here I will show the CY and PY Casualties in Monthly trend.

## **6.For - Urban and Rural Areas with respect to CY\_Casualties.**

❖ Visualization – ***By Donut chart.***

✓ Legend -> Urban and rural Area.

✓ Values -> CY\_Casualties.

★ Here I will show the Urban and Rural area accidents with respect to CY\_Casualties.

## **7.For – Day and Night with respect to CY\_Casualties.**

❖ Visualization – ***By Donut Chart.***

❖ Group function:

★ Here there are many types in that column. So I used group function and get together.

★ The Groups are,

➤ Day

➤ Night

✓ Legend -> Day and Night group

✓ Values -> CY\_Casualties.

★ Here I will show the Day and Night accidents with respect to CY\_Casualties.

## **8.For – Road type with respect to CY\_Casualties.**

❖ Visualization – ***By Bar Chart.***

- ✓ X- axis -> CY\_Casualties.
- ✓ Y-axis -> Road type.

## 9.For – Location with respect to CY\_Casualties.

### ❖ Visualization – *By Map Chart.*

- ✓ Latitude -> Latitude
- ✓ Longitude -> Longitude
- ✓ Location -> Local Authority Discrete.
- ★ Here I will show the location which area shows high and low accidents with respect to CY\_Casualties.

## 10.For – Weather Condition.

### ❖ Visualization – *Slicers*


- ★ I convert type into 4 groups. There are Rain, Fine, Snow Fog, and other.
- ★ I choose dropdown for selecting.
- ★ We will choose as per the category we want.

## 11.For – Road Surface.

### ❖ Visualization – *Slicers.*

- ★ I convert the types into 3 groups. There are Dry, Wet, and Snow.
- ★ And placed in slicers.
- ★ I choose dropdown for selecting.

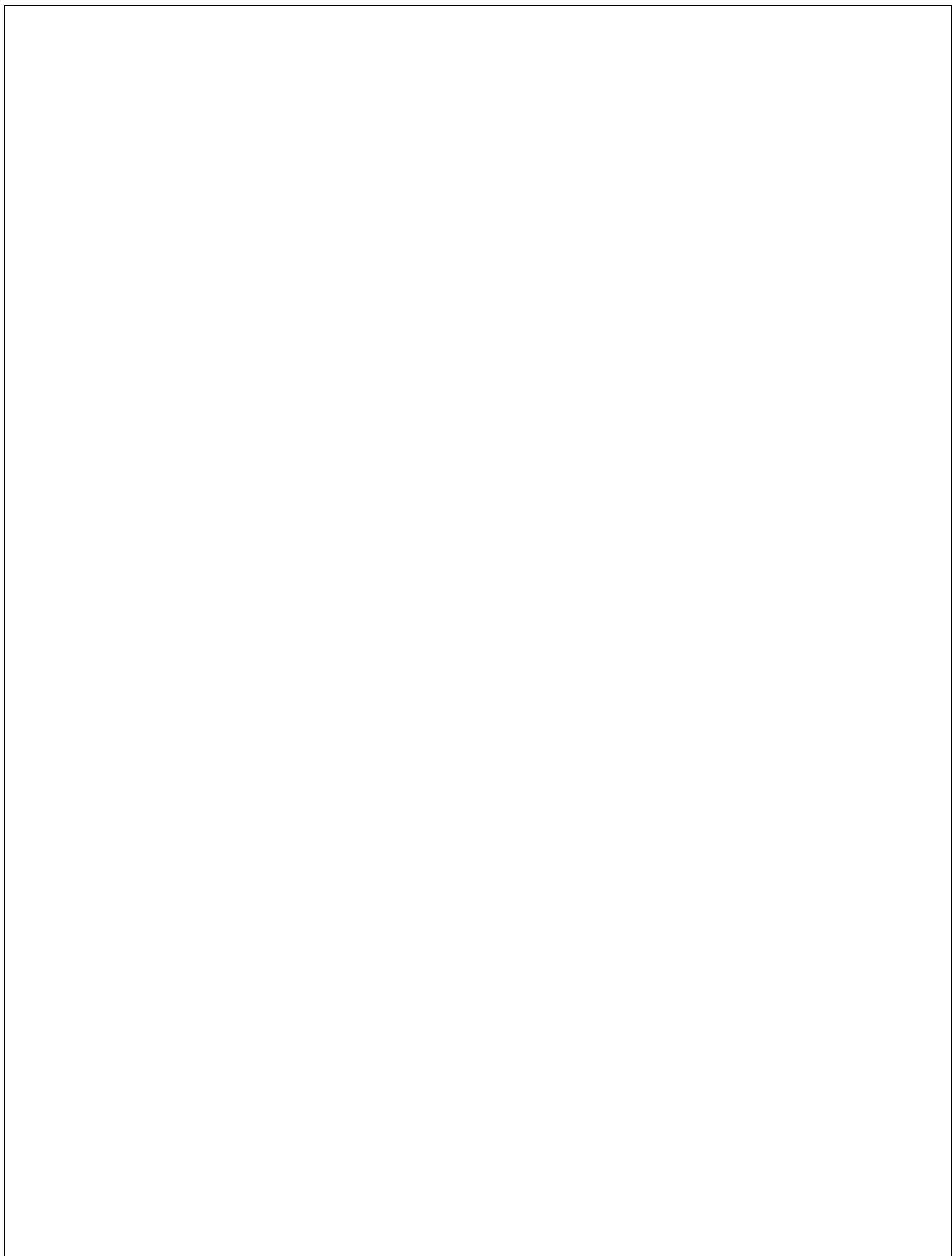
## **RESULTS:**

 We select which type of road surface and weather condition then we can see the changes in all categories.

## **INSIGHTS:**

- ◆ If you can see from Causality by Urban and rural area donut chart, Urban area they are causing a greater number of casualties and more no of accidents. So, government need to focus on urban areas.
- ◆ In Day and Night Conditions, more no of accidents happen in daytime and less in night.
- ◆ In Road type, the slip road carries nothing, but single carriage way has caused like more than 50 percentage of accidents.





# ROAD ACCIDENT ANALYSIS

Road\_Surface

All

Weather\_Conditions

All

Total CY Casualtiess

195.7K

-11.9%

Total CY Accidents

144.4K

-11.7%

CY Fatal Casualtiess

2.9K

-33.3%

CY Serious Casualtiess

27.0K

-16.2%

CY Slight Casualtiess

165.8K

-10.6%

## Casualty based on Vehicle type

Agirculture

399

Bike

15610

Bus

6573

Car

155804

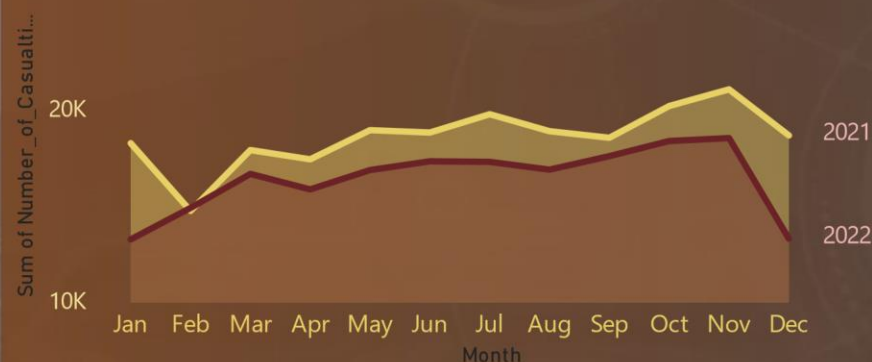
Other

1446

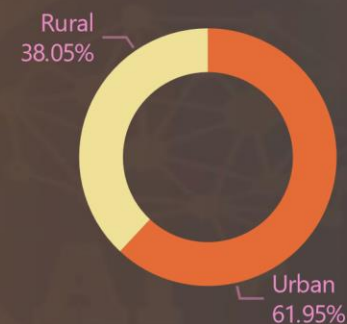
Vans

15905

## CY Causalities VS PY Causalities



## Urban - Rural



## Casualties by location



## Causalities by Road\_Type



## Casualties by day/light

