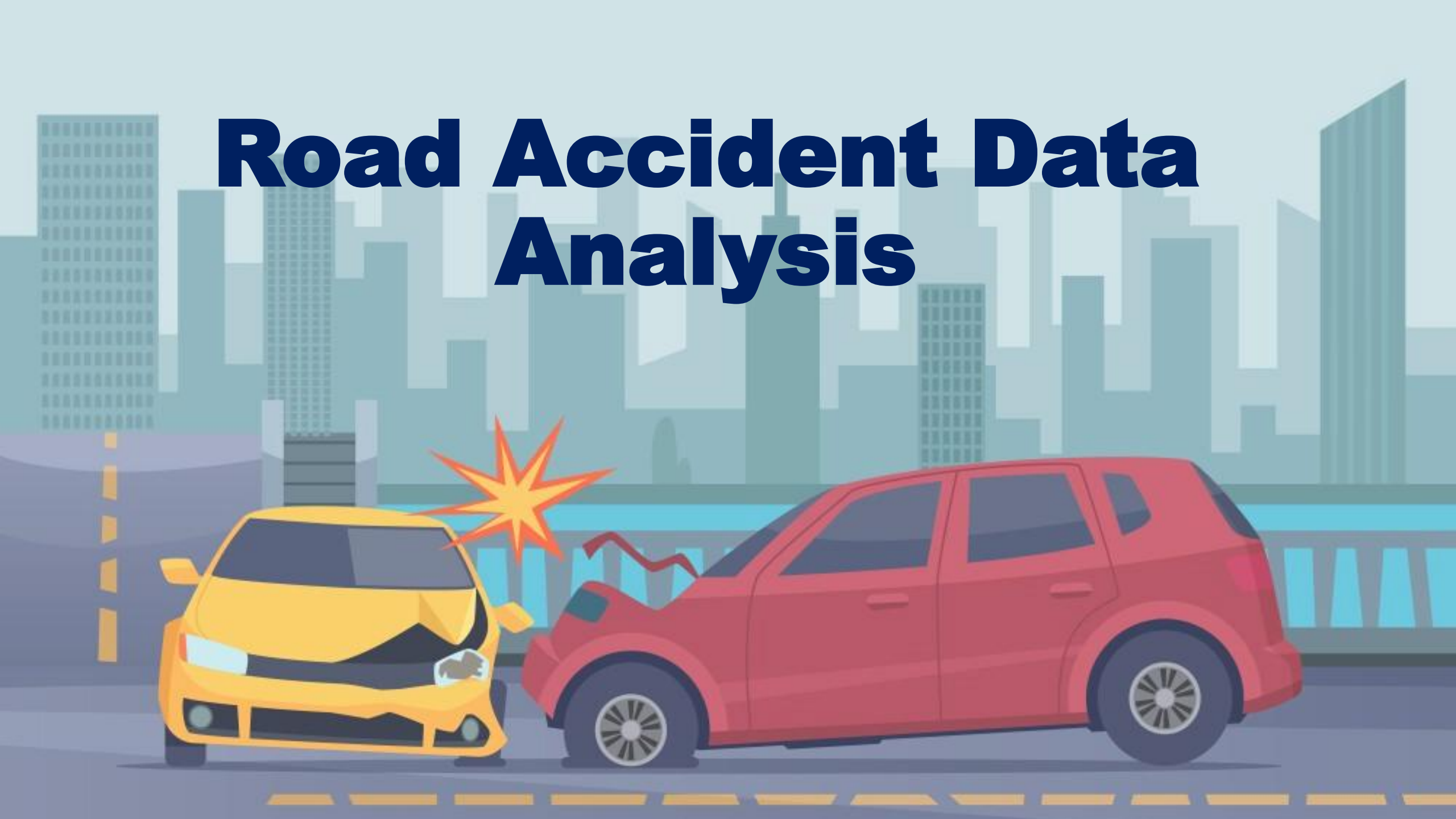
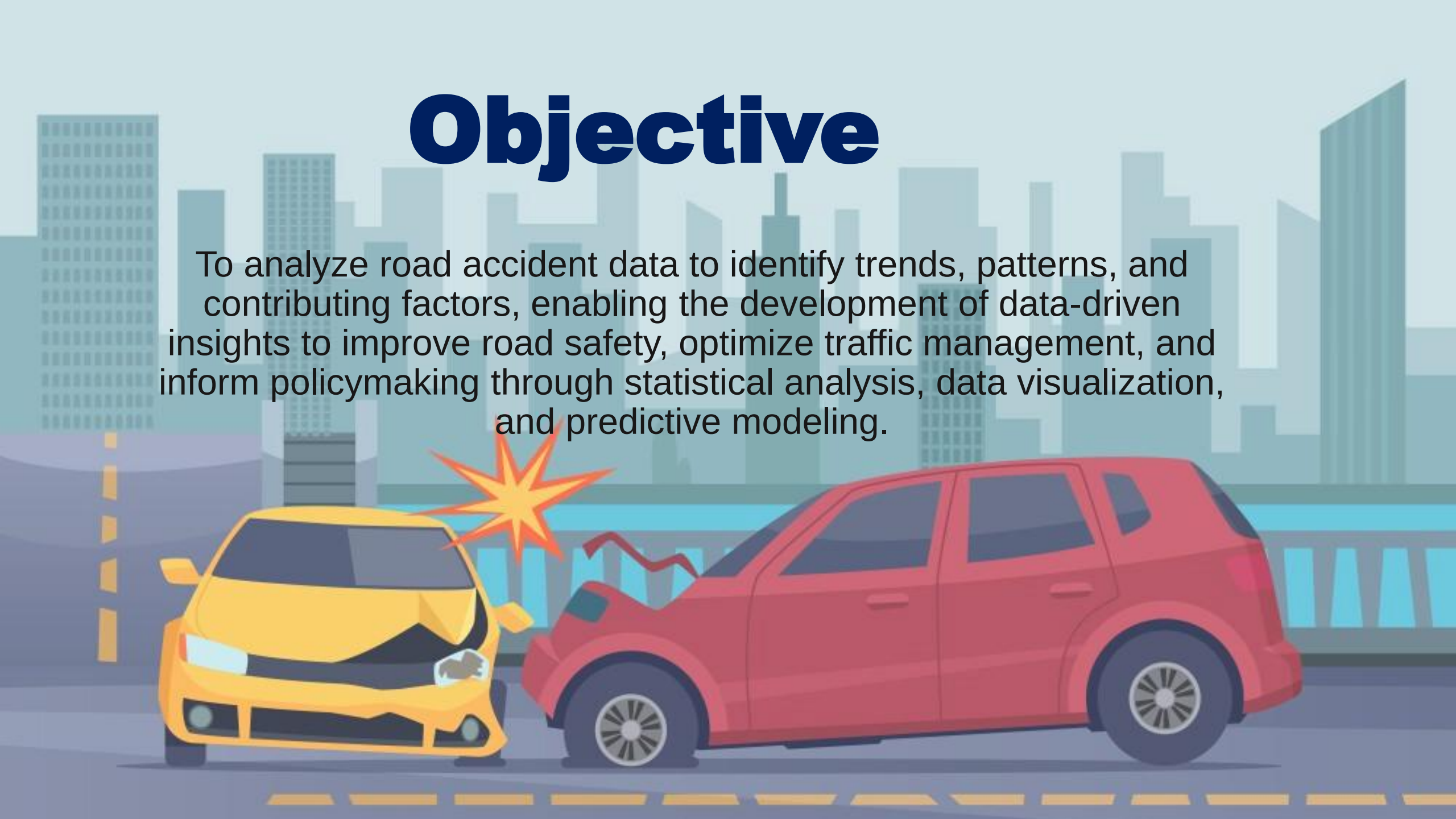
# Road Accident Data Analysis

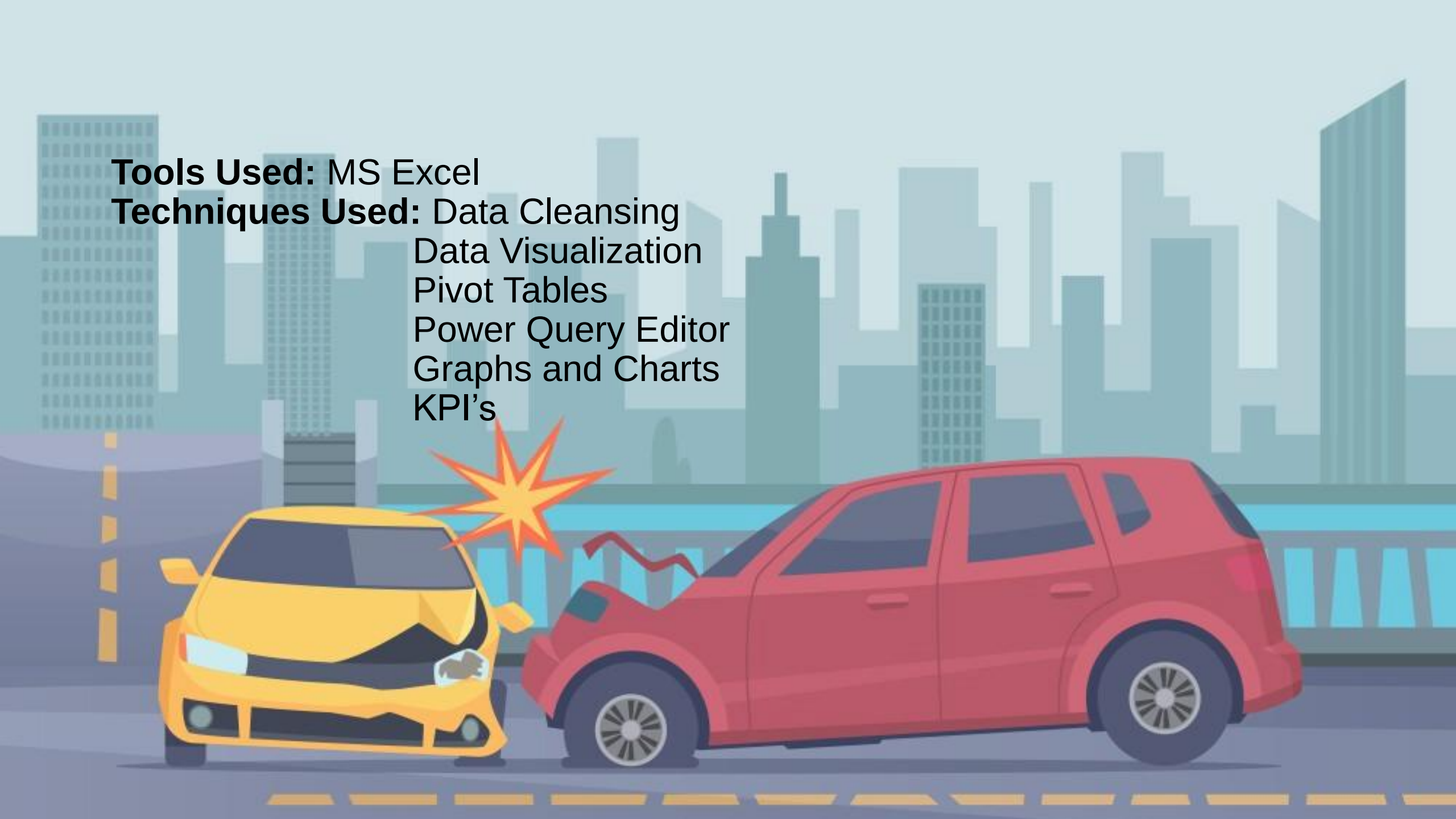


# Objective

To analyze road accident data to identify trends, patterns, and contributing factors, enabling the development of data-driven insights to improve road safety, optimize traffic management, and inform policymaking through statistical analysis, data visualization, and predictive modeling.



**Tools Used:** MS Excel
**Techniques Used:** Data Cleansing
Data Visualization
Pivot Tables
Power Query Editor
Graphs and Charts
KPI’s



# Dataset Description:

The dataset contains road accident data from the UK. It comprises 307,973 rows and 18 columns. The details of the dataset are as follows:

| Accident_Index | Accident Date | Month | Year | Day_of_Week | Junction_Control | Junction_Detail | Accident_Severity | Latitude | Light_Conditions | Local_Authority_(District) | Carriageway_Hazards |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 200901BS70001 | 01-01-21 | Jan | 2021 | Thursday | Give way or uncontrolled | T or staggered junction | Serious | 51.512273 | Daylight | Kensington and Chelsea | None |
| 200901BS70002 | 05-01-21 | Jan | 2021 | Monday | Give way or uncontrolled | Crossroads | Serious | 51.514399 | Daylight | Kensington and Chelsea | None |
| 200901BS70003 | 04-01-21 | Jan | 2021 | Sunday | Give way or uncontrolled | T or staggered junction | Slight | 51.486668 | Daylight | Kensington and Chelsea | None |
| 200901BS70004 | 05-01-21 | Jan | 2021 | Monday | Auto traffic signal | T or staggered junction | Serious | 51.507804 | Daylight | Kensington and Chelsea | None |
| 200901BS70005 | 06-01-21 | Jan | 2021 | Tuesday | Auto traffic signal | Crossroads | Serious | 51.482076 | Darkness - lights lit | Kensington and Chelsea | None |
| 200901BS70006 | 01-01-21 | Jan | 2021 | Thursday | Give way or uncontrolled | T or staggered junction | Slight | 51.493415 | Daylight | Kensington and Chelsea | None |
| 200901BS70007 | 08-01-21 | Jan | 2021 | Thursday | Give way or uncontrolled | T or staggered junction | Serious | 51.480177 | Daylight | Kensington and Chelsea | None |
| 200901BS70008 | 02-01-21 | Jan | 2021 | Friday | Auto traffic signal | Crossroads | Slight | 51.491957 | Daylight | Kensington and Chelsea | None |
| 200901BS70009 | 07-01-21 | Jan | 2021 | Wednesday | Give way or uncontrolled | T or staggered junction | Slight | 51.49646 | Daylight | Kensington and Chelsea | None |
| 200901BS70010 | 10-01-21 | Jan | 2021 | Saturday | Auto traffic signal | Crossroads | Slight | 51.48115 | Daylight | Kensington and Chelsea | None |
| 200901BS70011 | 07-01-21 | Jan | 2021 | Wednesday | Auto traffic signal | Crossroads | Slight | 51.482076 | Darkness - lights lit | Kensington and Chelsea | None |
| 200901BS70012 | 16-01-21 | Jan | 2021 | Friday | Auto traffic signal | Crossroads | Slight | 51.494995 | Darkness - lights lit | Kensington and Chelsea | None |
| 200901BS70015 | 12-01-21 | Jan | 2021 | Monday | Data missing or out of range | Not at junction or within 20 metres | Slight | 51.498778 | Daylight | Kensington and Chelsea | None |
| 200901BS70016 | 09-01-21 | Jan | 2021 | Friday | Give way or uncontrolled | T or staggered junction | Slight | 51.506187 | Daylight | Kensington and Chelsea | None |
| 200901BS70017 | 17-01-21 | Jan | 2021 | Saturday | Give way or uncontrolled | T or staggered junction | Slight | 51.493077 | Daylight | Kensington and Chelsea | None |
| 200901BS70019 | 25-01-21 | Jan | 2021 | Sunday | Auto traffic signal | Crossroads | Serious | 51.482076 | Darkness - lights lit | Kensington and Chelsea | None |
| 200901BS70020 | 26-01-21 | Jan | 2021 | Monday | Give way or uncontrolled | Crossroads | Slight | 51.488673 | Darkness - lights lit | Kensington and Chelsea | None |
| 200901BS70021 | 26-01-21 | Jan | 2021 | Monday | Data missing or out of range | Not at junction or within 20 metres | Slight | 51.482363 | Darkness - lights lit | Kensington and Chelsea | None |
| 200901BS70023 | 19-01-21 | Jan | 2021 | Monday | Give way or uncontrolled | T or staggered junction | Slight | 51.49391 | Daylight | Kensington and Chelsea | None |
| 200901BS70024 | 27-01-21 | Jan | 2021 | Tuesday | Data missing or out of range | Not at junction or within 20 metres | Slight | 51.509296 | Darkness - lights lit | Kensington and Chelsea | None |
| 200901BS70025 | 21-01-21 | Jan | 2021 | Wednesday | Give way or uncontrolled | T or staggered junction | Slight | 51.50228 | Darkness - lights lit | Kensington and Chelsea | None |
| 200901BS70026 | 22-01-21 | Jan | 2021 | Thursday | Give way or uncontrolled | T or staggered junction | Slight | 51.507588 | Darkness - lights lit | Kensington and Chelsea | None |
| 200901BS70027 | 31-01-21 | Jan | 2021 | Saturday | Auto traffic signal | Crossroads | Serious | 51.488585 | Daylight | Kensington and Chelsea | None |
| 200901BS70028 | 03-02-21 | Feb | 2021 | Tuesday | Give way or uncontrolled | T or staggered junction | Slight | 51.528344 | Daylight | Kensington and Chelsea | None |
| 200901BS70030 | 31-01-21 | Jan | 2021 | Saturday | Give way or uncontrolled | T or staggered junction | Slight | 51.499201 | Darkness - lights lit | Kensington and Chelsea | None |
| 200901BS70031 | 31-01-21 | Jan | 2021 | Saturday | Give way or uncontrolled | T or staggered junction | Serious | 51.517081 | Daylight | Kensington and Chelsea | None |
| 200901BS70032 | 29-01-21 | Jan | 2021 | Thursday | Auto traffic signal | Crossroads | Slight | 51.48944 | Daylight | Kensington and Chelsea | None |
| 200901BS70033 | 31-01-21 | Jan | 2021 | Saturday | Give way or uncontrolled | Crossroads | Slight | 51.494521 | Daylight | Kensington and Chelsea | None |
| 200901BS70035 | 29-01-21 | Jan | 2021 | Thursday | Auto traffic signal | Crossroads | Slight | 51.508624 | Daylight | Kensington and Chelsea | None |
| 200901BS70036 | 31-01-21 | Jan | 2021 | Saturday | Auto traffic signal | Crossroads | Slight | 51.491173 | Darkness - lights lit | Kensington and Chelsea | None |

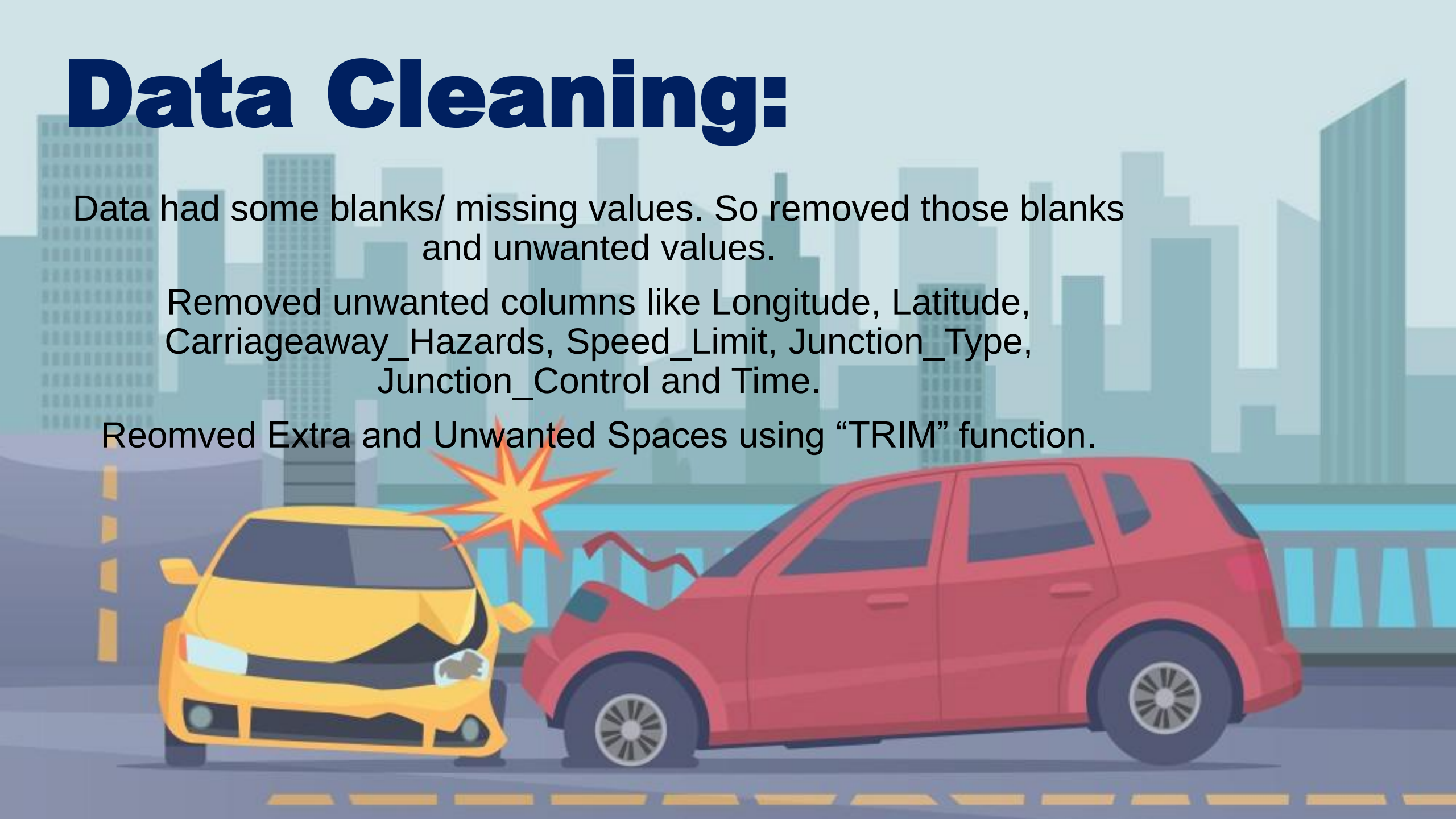
**Accident_Index =** unique accident case number
**Accident date =** date of accident occurred
**Junction_Control =** how the traffic is controlled at that junction (Give way or uncontrolled , Auto traffic signal )
**Junction_Detail =** type of junction (Crossroads , T or staggered junction, …)
**Accident _Severity =** intensity of the accident (slight, serious, …)
**Latitude =** geographical conditions of the area
**Light_Conditions =** conditions of the light in the area (Daylight, Darkness - lights lit , …)
**Local_Authority (District) =** Authority of Administration where the accident took place (Kensington and Chelsea, Westminster , …)
**Longitude =** geographical conditions of the area
**Number_of_Casualities =** no of accidents took place on that place in that area
**Number_of_vehicles =** no of vehicles
**Police_Force =** type of police (Metropolitan Police, Warwickshire, …)
**Road_Surface_Conditions =** condition of the roads (Dry, Wet or damp, …)
**Road_Type =** type of roads (One way street, Single carriageway, …)
**Speed_limit =** maximum limit of the speed for the vehicles
**Urban_or_Rural_Area =** type of area (Urban, Rural, …)
**Weather_Conditions =** climate in the area (Fine no high winds, Raining no high winds, …)
**Vehicle_Type =** type of vehicles (car, taxi, bike, …)

# Data Cleaning:

Data had some blanks/ missing values. So removed those blanks and unwanted values.

Removed unwanted columns like Longitude, Latitude, Carriageaway_Hazards, Speed_Limit, Junction_Type, Junction_Control and Time.

Reomved Extra and Unwanted Spaces using “TRIM” function.

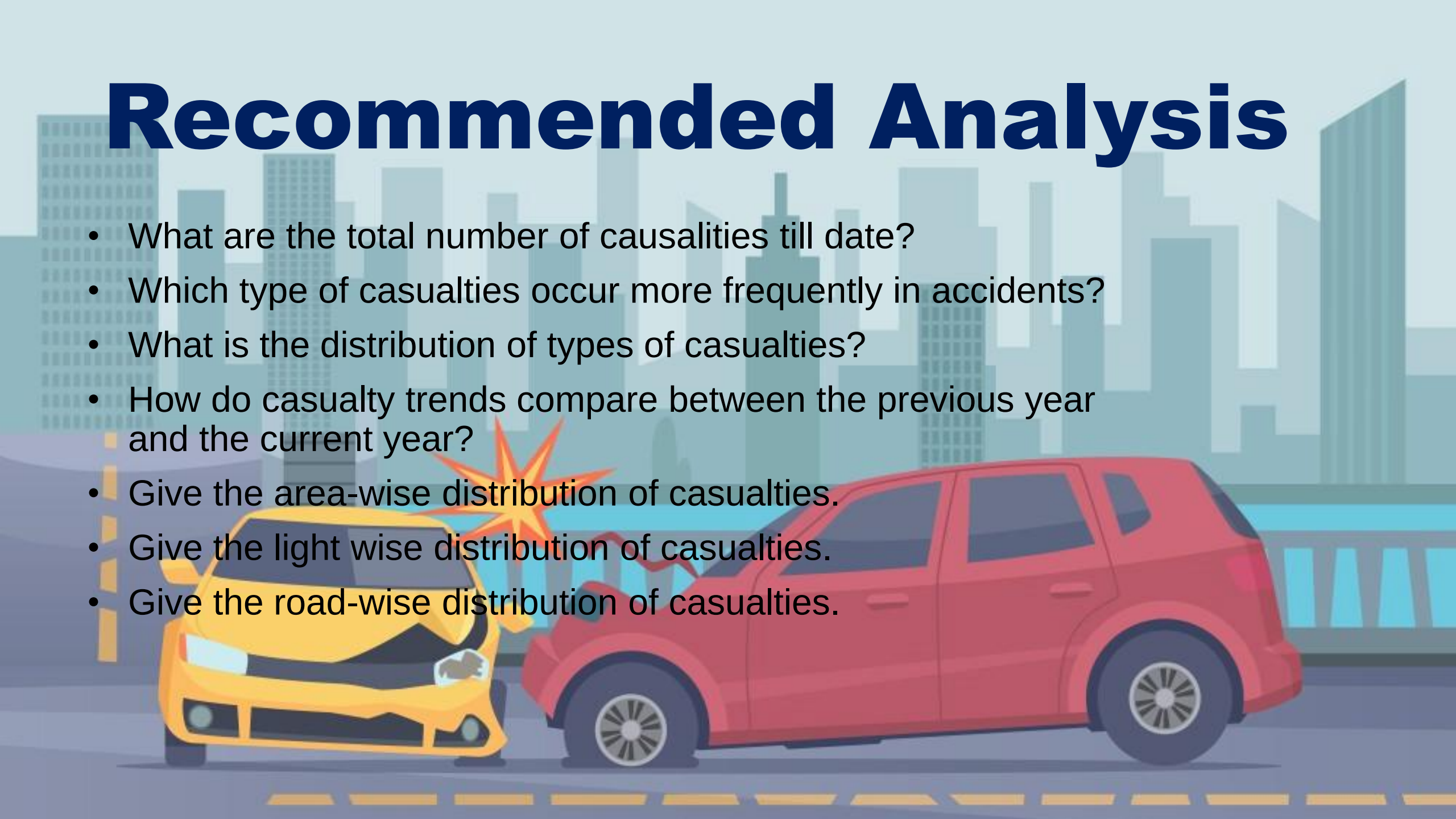


# Data Preprocessing

- Extracted “Month”, “Year”, “Day_of_Week” using “Accident_date” column.

# Recommended Analysis

- What are the total number of causalities till date?
- Which type of casualties occur more frequently in accidents?
- What is the distribution of types of casualties?
- How do casualty trends compare between the previous year and the current year?
- Give the area-wise distribution of casualties.
- Give the light wise distribution of casualties.
- Give the road-wise distribution of casualties.



# Data Analysis

- **What are the total number of causalities till date?**

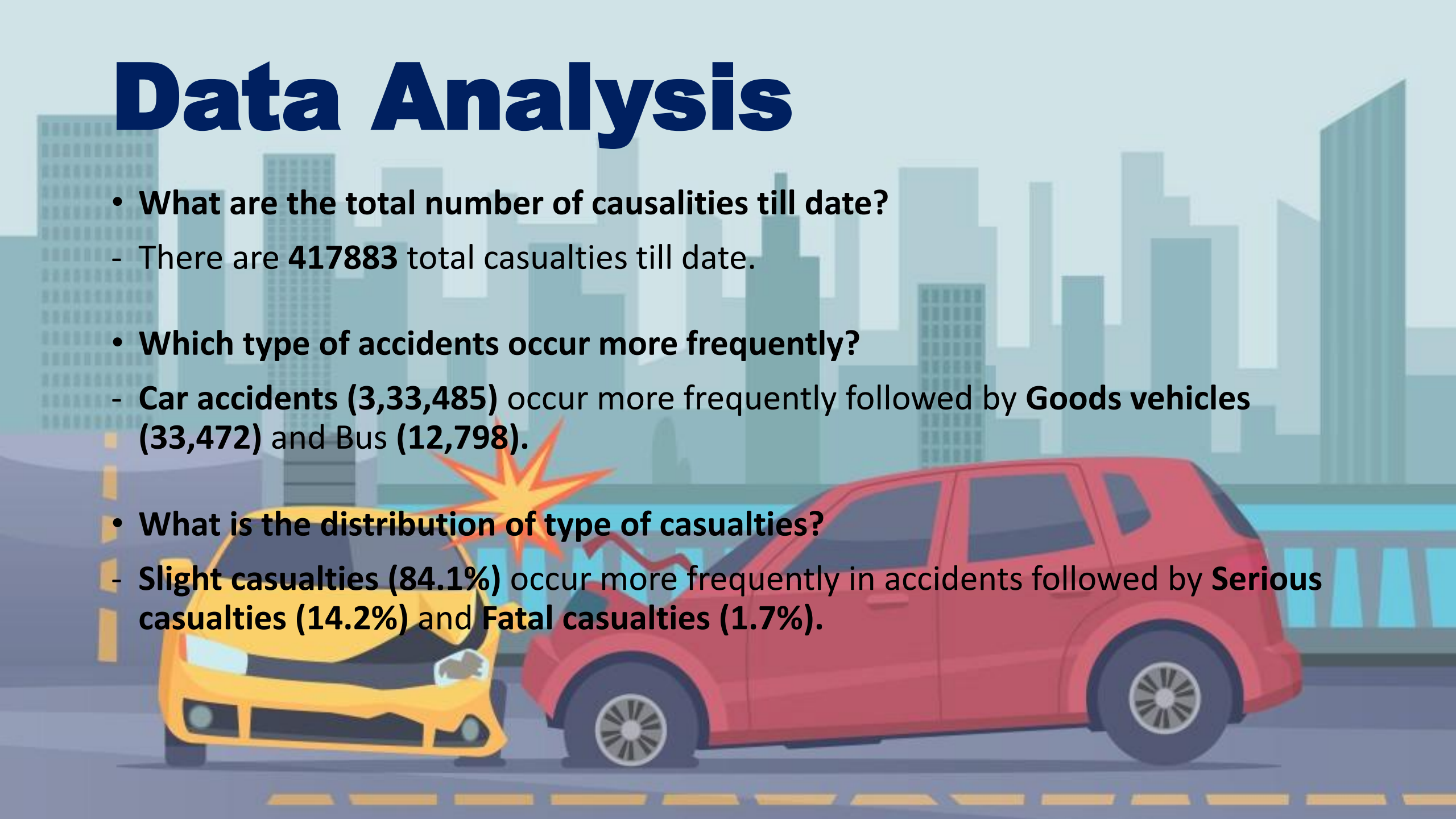
- There are **417883** total casualties till date.

- **Which type of accidents occur more frequently?**

- **Car accidents (3,33,485)** occur more frequently followed by **Goods vehicles (33,472)** and Bus **(12,798).**

- **What is the distribution of type of casualties?**

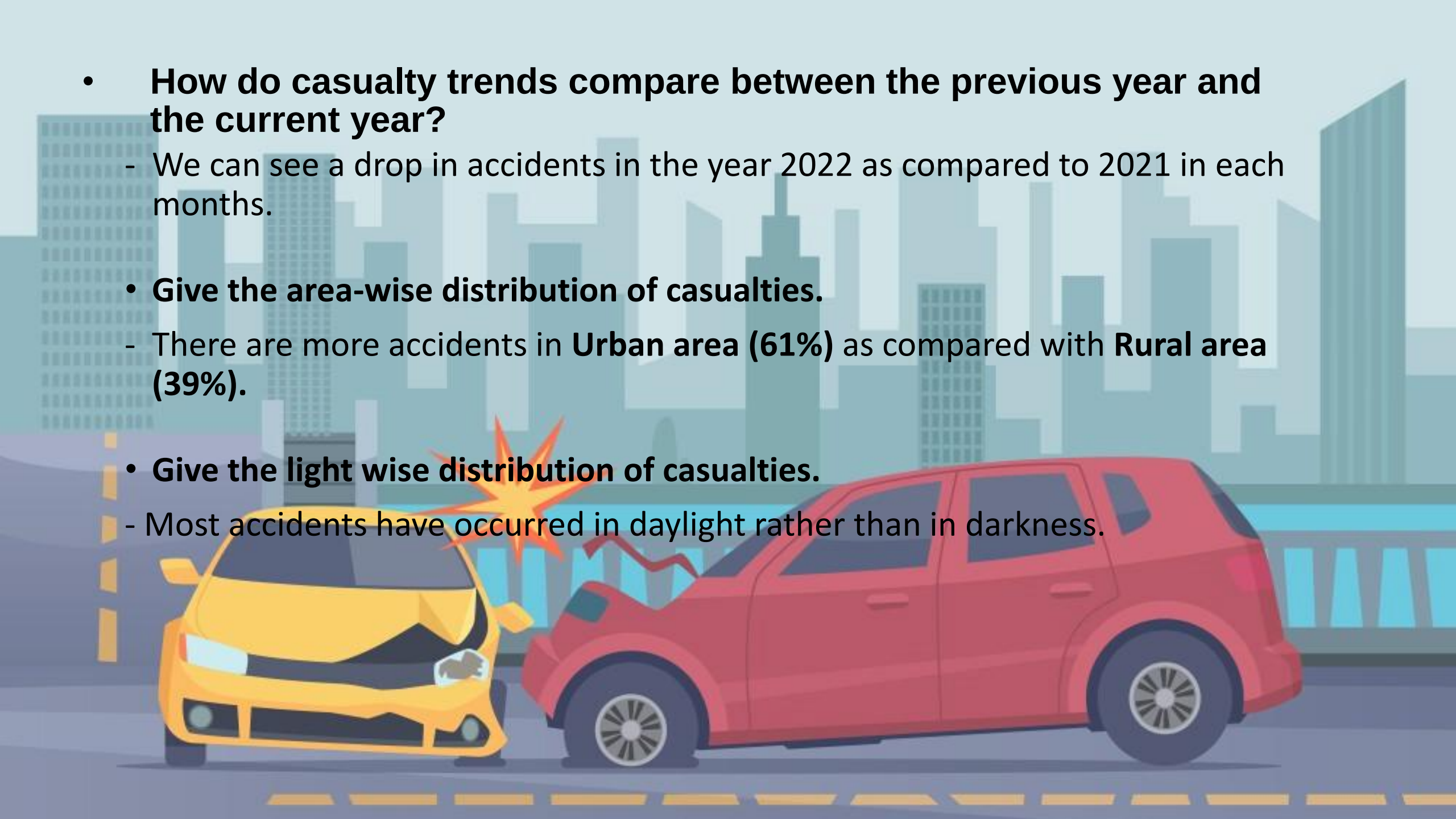
- **Slight casualties (84.1%)** occur more frequently in accidents followed by **Serious casualties (14.2%)** and **Fatal casualties (1.7%).**



- **How do casualty trends compare between the previous year and the current year?**
  - We can see a drop in accidents in the year 2022 as compared to 2021 in each months.

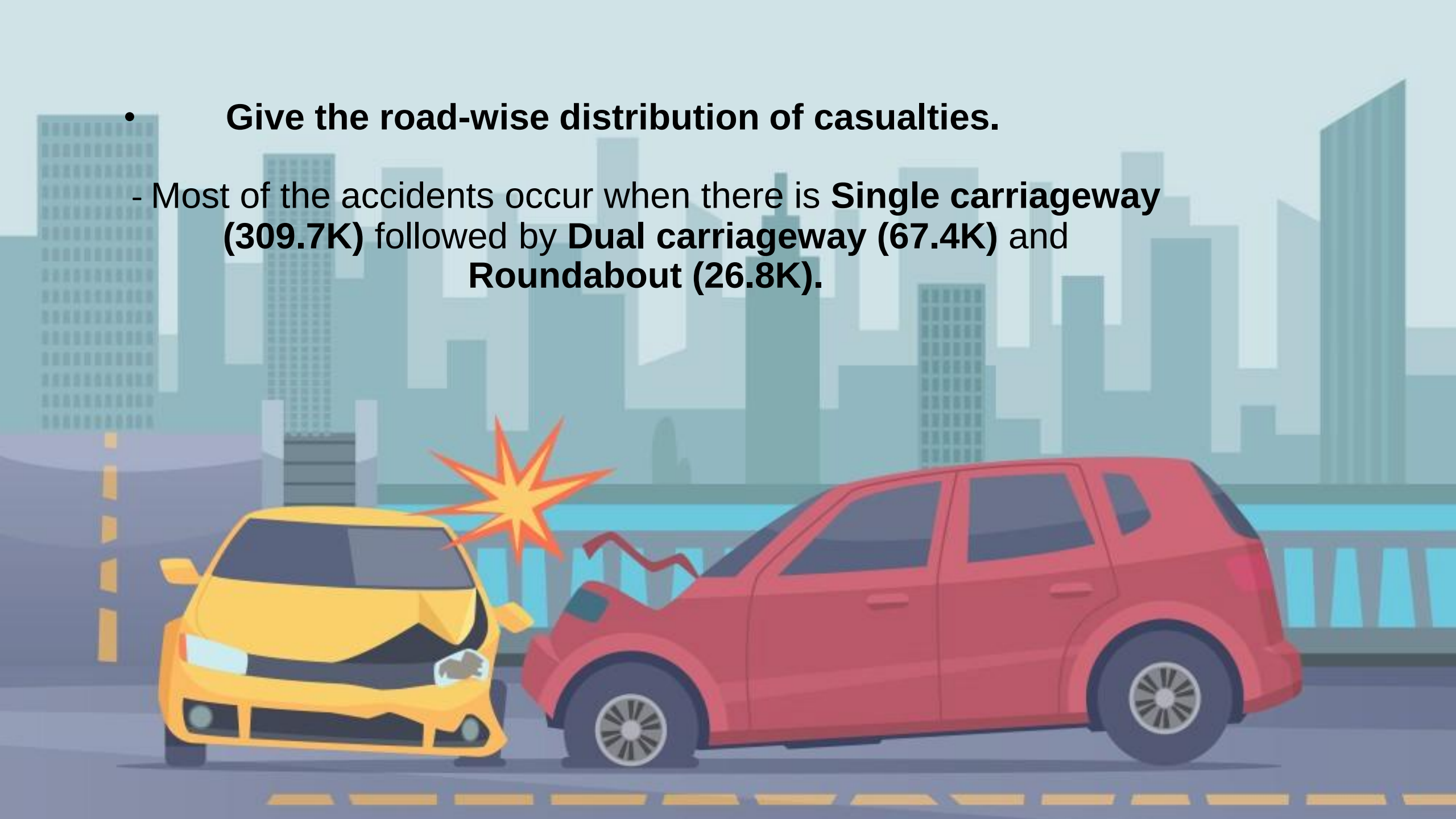
- **Give the area-wise distribution of casualties.**
  - There are more accidents in **Urban area (61%)** as compared with **Rural area (39%).**

- **Give the light wise distribution of casualties.**
  - Most accidents have occurred in daylight rather than in darkness.



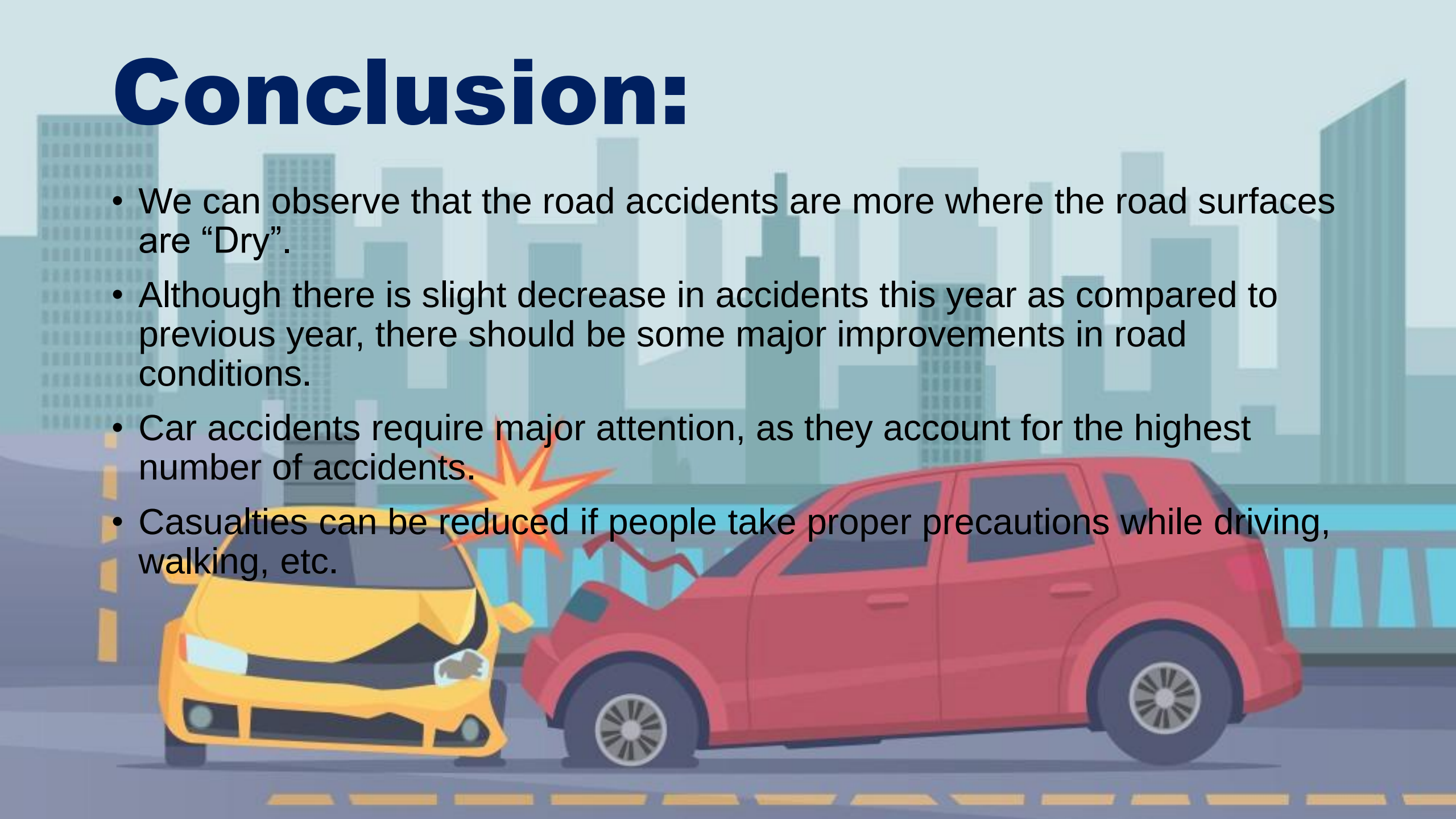
- **Give the road-wise distribution of casualties.**

- Most of the accidents occur when there is **Single carriageway (309.7K)** followed by **Dual carriageway (67.4K)** and **Roundabout (26.8K).**



# Conclusion:

- We can observe that the road accidents are more where the road surfaces are “Dry”.
- Although there is slight decrease in accidents this year as compared to previous year, there should be some major improvements in road conditions.
- Car accidents require major attention, as they account for the highest number of accidents.
- Casualties can be reduced if people take proper precautions while driving, walking, etc.



# Dashboard:


Road Accident Dashboard
Total Casualties 417883
Fatal Casualties
7135
1.7%
Serious Casualties
59312
14.2%
Slight Casualties
35143
84.1%
Car Casualties
33348
79.8%
333485
33472
12798
33672
92
4364
CY Casualities vs PY Casualities Monthly Trend
2021 Casualities
2022 Casualities
30000
20000
10000
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
CY Casualitites by Road Type
Single carriageway 309.7K
Dual carriageway 67.4K
Roundabout 26.8K
One way street 7.4K
Slip road 4.7K
(blank) 1.9K
CY Casualitites by Road Surface
Wet, 115261
Dry, 279445
Snow, 22781
Casualities by Location/ Area
Rural 39%
Urban 61%
Rural
Urban
Casualities by Light Condition
112.9K
305.0K
Dark
Daylight
Filter Panel
Accident Date
All Periods
YEARS
2021
2022
Urban_or_Rural...
Rural
Urban

# Thank You.