REGULATORY AFFAIRS OF ROAD ACCIDENT DATA 2020

Road safety is a critical concern in urban areas, especially in cities with high traffic density. Analyzing accident data helps in identifying trends, causes, and outcomes of incidents, allowing authorities to implement effective safety measures. This project focuses on understanding the distribution of road accident outcomes, particularly minor injuries, across various cities. By analyzing this data, we can gain insights into which cities experience higher incidents of minor injuries and assess the impact of different cause categories on road safety.

-- by Priya Rajurkar

PROJECT OVERVIEW

- This project aims to analyze the distribution of incidents across various cities, focusing
 only on those where the count exceeds 15 cases. By filtering and ranking cities based on
 their incident frequency, we can identify areas with a higher occurrence of minor injuries
 and assess the underlying factors contributing to these accidents. Understanding these
 patterns is essential for recognizing high-risk urban zones and addressing road safety
 concerns effectively.
- Using SQL-based data analysis, the project extracts meaningful insights from road
 accident records, categorizing incidents by city and cause. This structured approach
 allows us to pinpoint cities with frequent minor injury cases and examine which cause
 categories are most prevalent. The findings can help policymakers, traffic authorities, and
 urban planners develop targeted safety measures to reduce road accidents and improve
 overall traffic management.

TECHNOLOGY USED

This project primarily utilizes **SQL** for querying and analyzing road accident data. SQL is used to extract meaningful insights by filtering, grouping, and ranking cities based on the number of incidents. Various SQL functions such as COUNT(), GROUP BY, ORDER BY, and conditional filtering help in identifying trends related to minor injuries across different cities. Through these queries, we can determine which cities report the highest number of minor injury incidents and analyze the contributing factors. Additionally, **Excel** is used for an initial overview of the dataset, specifically to check the structure and available columns. This helps in understanding the data before writing SQL queries for analysis. Lastly, PowerPoint is utilized to present findings in a visually structured format, making it easier to communicate insights, trends, and recommendations effectively. By leveraging these technologies, the project ensures a systematic approach to data analysis and presentation.

QUIRES

1] Import & View Table

- 1 create database rc;
- 2 use rc;
- 3 SELECT * FROM`regulatory affairs of road accident data 2020 india`;



| < | | | | | |
|--|------------------------|-------------------|-------------------------|---------------------------|-------|
| Result Grid 🔢 \infty Filter Rows: Export: 🔛 Wrap Cell Content: 🏗 | | | | | |
| | Million Plus Cities | Cause category | Cause Subcategory | Outcome of Incident | Count |
| • | Agra | Traffic Control | Flashing Signal/Blinker | Greviously Injured | 0 |
| | Agra | Traffic Control | Flashing Signal/Blinker | Minor Injury | 0 |
| | Agra | Traffic Control | Flashing Signal/Blinker | Persons Killed | 0 |
| | Agra | Traffic Control | Flashing Signal/Blinker | Total Injured | 0 |
| | Agra | Traffic Control | Flashing Signal/Blinker | Total number of Accidents | 0 |
| | Agra | Traffic Control | Others | Greviously Injured | 175 |
| | Agra | Traffic Control | Others | Minor Injury | 91 |
| | Agra | Traffic Control | Others | Persons Killed | 373 |
| | Agra | Traffic Control | Others | Total Injured | 266 |
| | Agra | Traffic Control | Others | Total number of Accidents | 470 |
| | Agra | Traffic Control | Police Controlled | Greviously Injured | 0 |
| | Agra | Traffic Control | Police Controlled | Minor Injury | 0 |
| | Agra | Traffic Control | Police Controlled | Persons Killed | 0 |
| iad_ | accident 1 × | T (| D P O I II I | T 1 11 ' 1 | 0 |

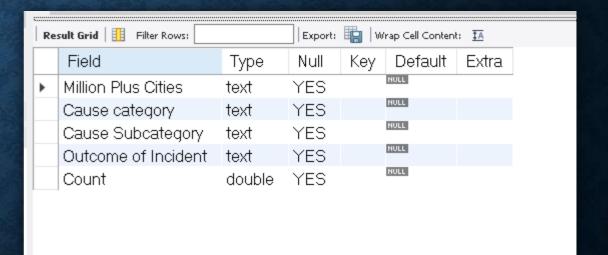
2] Rename The Table

```
# Rename Table name
18 • rename table `regulatory affairs of road accident data 2020 india` to `road_accident`;
19 • select * from road_accident;
20
```

3] Check Data-Types

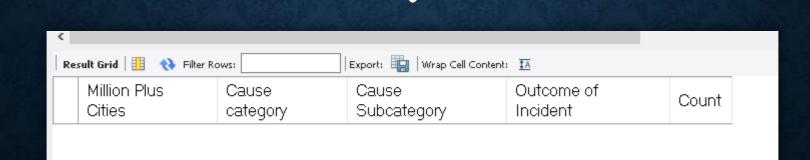
```
9 # Chcek Data Types
10 • describe road_accident;
11
```





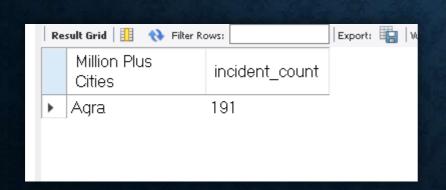
4] Check Null Values

```
# Chcek Null values in columns
12
     select * from road_accident
13 •
     where `Million Plus Cities` is null or `Cause category` is null or `Cause Subcategory` or
14
     `Outcome of Incident` is null or TRIM(`Count`) is null;
15
16
     -- OR
     select * from road_accident
17 •
     where `Million Plus Cities` = ' ' or `Cause category` = ' ' or `Cause Subcategory` or
18
     `Outcome of Incident`= ' ' or `Count` = ' ';
19
20
```



5] Top Cities with the Highest Incident Count

```
22
      -- 1] Top Cities with the Highest Incident Count
      select `Million Plus Cities`, count(*) as Highest Incident Count cities
23 •
24
      from road_accident
                                                                                 Million Plus Cities
                                                                                                  Highest Incident_Count_cities
      group by `Million Plus Cities`
25
                                                                                                 191
                                                                                l Aara
26
      order by Highest_Incident_Count_cities desc;
                                                                                Ahmedabad.
                                                                                                 191
27
                                                                                Allahabad(Prayagraj)
                                                                                                 191
                                                                                Amritsar.
                                                                                                 191
28
      -- Agra Incident Count
                                                                                Asansol Durgapur
                                                                                                 191
29 •
      Select `Million Plus Cities`, count(*) AS incident_count
                                                                                Aurangabad
                                                                                                 191
      from road_accident
30
                                                                                Bengaluru
                                                                                                 191
      where `Million Plus Cities` = "Agra"
                                                                                Bhopal
                                                                                                 191
31
                                                                                Chandidarh
                                                                                                 191
32
      group by `Million Plus Cities`;
                                                                              Result 7 🗶
33
```



6] Distribution of "Minor Injury" Incident Outcomes Across Cities (Greater Than 15)

```
35 -- 2] Distribution of "Minor Injury" Incident Outcomes Across Cities (Greater Than 15)
36 • Select `Million Plus Cities`,`Outcome of Incident`,count(*) AS incident_count
37    from road_accident
38    where `Outcome of Incident`= "Minor Injury"
39    group by `Million Plus Cities`,`Outcome of Incident`
40    having incident_count > 15
41    order by `Million Plus Cities`,incident_count desc;
42
```



| | LABORA GLESSON | | |
|-----|----------------------|---------------------|----------------|
| | Million Plus Cities | Outcome of Incident | incident_count |
| • | Agra | Minor Injury | 40 |
| | Ahmedabad | Minor Injury | 40 |
| | Allahabad(Prayagraj) | Minor Injury | 40 |
| | Amritsar | Minor Injury | 40 |
| | Asansol Durgapur | Minor Injury | 40 |
| | Aurangabad | Minor Injury | 40 |
| | Bengaluru | Minor Injury | 40 |
| | Bhopal | Minor Injury | 40 |
| Res | ult 8 🗙 | | |

7] Top Cities for Each Specific Cause Category

```
-- 3]Top Cities for Each Specific Cause Category

44    with Rankcities as(

select`Million Plus Cities`, `Cause category`,count(*) as Cities_Each_Cause_Category,

row_number() over (partition by `Cause category` order by count(*) desc ) as rnk

from road_accident

group by `Million Plus Cities`, `Cause category`)

select `Million Plus Cities`, `Cause category`,Cities_Each_Cause_Category

from Rankcities

where rnk = 1;
```



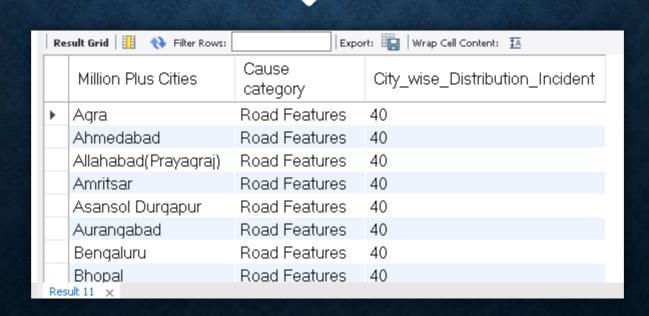
| Result Grid III Filter Rows: Export: III Wrap Cell Content: IA | | | | |
|--|------------------------|--------------------------|----------------------------|--|
| | Million Plus Cities | Cause category | Cities_Each_Cause_Category | |
|) | Agra | Impacting Vehicle/Object | 36 | |
| | Khozikode | Junction | 30 | |
| | Ahmedabad | Road Features | 40 | |
| | Agra | Traffic Control | 30 | |
| | Agra | Traffic Violation | 30 | |
| | Agra | Weather | 25 | |

8] Most Common Outcome of Incidents Across All Cities



9] City-wise Distribution of Incident Causes

```
61 -- 5] City-wise Distribution of Incident Causes
62 • select `Million Plus Cities`, `Cause category`, count(*) as City_wise_Distribution_Incident
63    from road_accident
64    group by `Million Plus Cities`, `Cause category`
65    order by City_wise_Distribution_Incident desc;
66
```



10] Total Incident Count by Cause Category and Subcategory

```
-- 6] Total Incident Count by Cause Category and Subcategory

select `Cause category`, `Cause Subcategory`, count(*) as incident_count

from road_accident

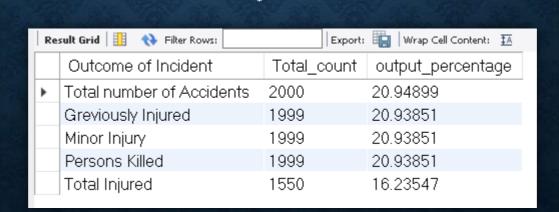
group by `Cause category`, `Cause Subcategory`

order by incident_count desc;
```



11] Percentage of Each Outcome Type in Total Incidents

```
-- 7] Percentage of Each Outcome Type in Total Incidents
74 • select `Outcome of Incident`, count(*) as Total_count,
75 (count(*) * 100.0 / sum(count(*)) over()) as output_percentage
76 from road_accident
77 group by `Outcome of Incident`
78 order by output_percentage desc;
79
```



12] City with the Highest Incidents for a Specific Cause Category

```
-- 8] City with the Highest Incidents for a Specific Cause Category
81 • select `Million Plus Cities`, count(*) as incident_count,
82 rank () over (order by count(*) desc) as city_rank
83 from road_accident
84 group by `Million Plus Cities`
85 order by city_rank;
86
```



13] Identify Cities with the Lowest Number of Incidents

```
-- 9] Identify Cities with the Lowest Number of Incidents

88 • select `Million Plus Cities`, count(*) as incident_count

from road_accident

group by `Million Plus Cities`

order by incident_count asc

limit 5;

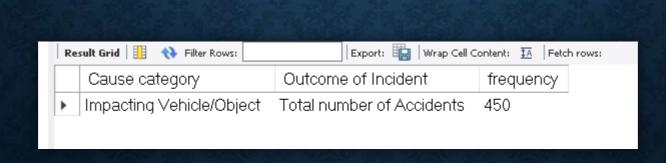
93
```



| KE | suit aria HH | lexpo |
|-------------|----------------------|----------------|
| | Million Plus Cities | incident_count |
| > | Gwalior | 188 |
| | Agra | 191 |
| | Ahmedabad | 191 |
| | Allahabad(Prayagraj) | 191 |
| | Amritsar | 191 |
| | - | |

14] Find the Most Frequent Cause-Outcome Pair Across Cities

```
95 -- 10] Find the Most Frequent Cause-Outcome Pair Across Cities
96 • select `Cause category`, `Outcome of Incident`, count(*) as frequency
97 From road_accident
98 group by `Cause category`, `Outcome of Incident`
99 order by frequency desc
100 limit 1;
```



SUMMARY

- •This project analyzed road accident data to examine the distribution of incidents across cities.
- Using SQL, we identified cities with more than 15 minor injury cases and ranked them based on incident count.
- •The study highlighted high-risk cities and provided insights into the most common causes of minor injuries.
- •Findings from the analysis can help policymakers and traffic authorities implement targeted road safety measures.
- •The results have been presented in a structured format to support data-driven decision-making.

- Thank you for your time and attention!
- •Feel free to ask any questions or share your thoughts.
- Looking forward to discussions and insights!