# 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 **I5 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`;

4



<	<					
Ī	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	
iai	d accident 1 ×	T ( 0 1 1	D 1	T	^	

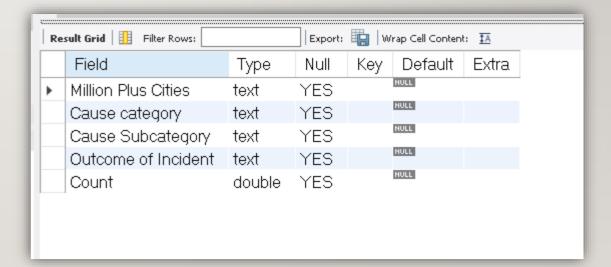
#### 2] Rename The Table

```
# 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
```

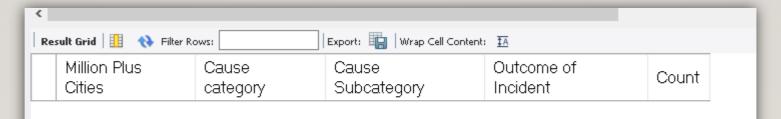




## 4] Check Null Values

```
# Chcek Null values in columns
12
13 •
     select * from road_accident
     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

```
-- 1] Top Cities with the Highest Incident Count
22
     select `Million Plus Cities`, count(*) as Highest_Incident_Count_cities
     from road_accident
24
                                                                               Million Plus Cities
                                                                                                Highest Incident_Count_cities
     group by `Million Plus Cities`
25
                                                                              Aara
                                                                                                191
26
     order by Highest_Incident_Count_cities desc;
                                                                               Ahmedabad
                                                                                                191
27
                                                                               Allahabad(Prayagraj)
                                                                                                191
                                                                               Amritsar
                                                                                                191
28
      -- Agra Incident Count
                                                                               Asansol Durgapur
                                                                                                191
     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)

```
-- 2] Distribution of "Minor Injury" Incident Outcomes Across Cities (Greater Than 15)
36 • Select `Million Plus Cities`, `Outcome of Incident`, count(*) AS incident_count
from road_accident

Where `Outcome of Incident`= "Minor Injury"
group by `Million Plus Cities`, `Outcome of Incident`
having incident_count > 15
order by `Million Plus Cities`, incident_count desc;
42
```



			<del>-</del>	
	Million Plus Cities	Outcome of Incident	incident_count	
•	Agra	Minor Injury	40	
	Ahmedabad	Minor Injury	40	
	Allahabad(Prayagraj)	Minor Injury	40	
	A Amritsar	Minor Injury	40	
	Asansol Durgapur	Minor Injury	40	
	Aurangabad	Minor Injury	40	
	Bengaluru	Minor Injury	40	
	Bhopal	Minor Injury	40	
Result 8 ×				

# 7] Top Cities for Each Specific Cause Category

```
43
      -- 3]Top Cities for Each Specific Cause Category
44 • ⊝
      with Rankcities as(
45
      select`Million Plus Cities`, `Cause category`,count(*) as Cities Each Cause Category,
46
      row number() over (partition by `Cause category` order by count(*) desc ) as rnk
47
      from road accident
48
      group by `Million Plus Cities` , `Cause category` )
49
      select `Million Plus Cities`, `Cause category`,Cities_Each_Cause_Category
50
      from Rankcities
51
      where rnk = 1;
```



Re	Result Grid   Filter Rows: Export: Wrap Cell Content: 🚻				
	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
```



Result Grid 🔢 🚷 Filter Rows:		Export: 📳   Wrap Cell Content: 🏗	
	Million Plus Cities	Cause category	City_wise_Distribution_Incident
•	Agra	Road Features	40
	Ahmedabad	Road Features	40
	Allahabad(Prayagraj)	Road Features	40
	Amritsar	Road Features	40
	Asansol Durgapur	Road Features	40
	Aurangabad	Road Features	40
	Bengaluru	Road Features	40
	Bhopal	Road Features	40

# 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;

72
```

		<u> </u>		
Result Grid   1				
	Cause category	Cause Subcategory	incident_count	
•	Traffic Control	Flashing Signal/Blinker	250	
	Traffic Control	Others	250	
	Traffic Control	Police Controlled	250	
Traffic Control		Stop Sign	250	
Traffic Control		Traffic Light Signal	250	
	Traffic Control	Uncontrolled	250	
	Junction	Four arm Junction	250	
	Junction	Others	250	
Result 12 ×				

# [1] 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
```



Re	sult Grid 🔠 🚷 Filter Rows:	Export: 📳   Wrap Cell Content: 🏗	
	Outcome of Incident	Total_count	output_percentage
•	Total number of Accidents	2000	20.94899
	Greviously Injured	1999	20.93851
	Minor Injury	1999	20.93851
	Persons Killed	1999	20.93851
	Total Injured	1550	16.23547

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

```
80 -- 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
```

Re	esult Grid 📗 🚷 Filter Rows:	Export: 识   Wrap Cel	
	Million Plus Cities	incident_count	city_rank
٠	Agra	191	1
	Ahmedabad	191	1
	Allahabad(Prayagraj)	191	1
	Amritsar	191	1
	Asansol Durgapur	191	1
	Aurangabad	191	1
	Bengaluru	191	1
	Bhopal	191	1
D-	Chandidarh	1.91	1

## 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

89     from road_accident

90     group by `Million Plus Cities`

91     order by incident_count asc

92     limit 5;

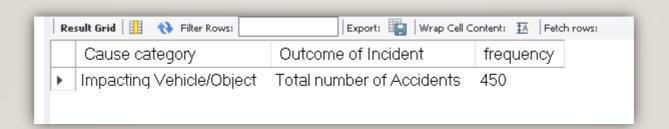
93
```

PCE	esuit ariu   HH 🕠 Filter Kows:	Expor
	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!