

# REGULATORY AFFAIRS OF ROAD ACCIDENT DATA 2020

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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.

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# PROJECT OVERVIEW

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- 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

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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

## I] Import & View Table

```
1 • create database rc;  
2 • use rc;  
3 • SELECT * FROM `regulatory affairs of road accident data 2020 india`;  
4
```



Result Grid   Filter Rows:   Export:   Wrap Cell Content:					
	Million Plus Cities	Cause category	Cause Subcategory	Outcome of Incident	Count
▶	Agra	Traffic Control	Flashing Signal/Blinker	Grievously 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	Grievously 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	Grievously Injured	0
	Agra	Traffic Control	Police Controlled	Minor Injury	0
	Agra	Traffic Control	Police Controlled	Persons Killed	0
	Agra	Traffic Control	Police Controlled	Total Injured	0
	Agra	Traffic Control	Police Controlled	Total number of Accidents	0

## 2] Rename The Table

```
17 # 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
```



Result Grid						
Filter Rows:		Export:		Wrap Cell Content:		
	Field	Type	Null	Key	Default	Extra
▶	Million Plus Cities	text	YES		NULL	
	Cause category	text	YES		NULL	
	Cause Subcategory	text	YES		NULL	
	Outcome of Incident	text	YES		NULL	
	Count	double	YES		NULL	



## 4] Check Null Values


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



Result Grid					
Filter Rows:		Export:		Wrap Cell Content:	
	Million Plus Cities	Cause category	Cause Subcategory	Outcome of Incident	Count


## 5] Top Cities with the Highest Incident Count

```
22 -- 1] Top Cities with the Highest Incident Count
23 • select `Million Plus Cities`, count(*) as Highest_Incident_Count_cities
24 from road_accident
25 group by `Million Plus Cities`
26 order by Highest_Incident_Count_cities desc;
27
28 -- Agra Incident Count
29 • Select `Million Plus Cities`, count(*) AS incident_count
30 from road_accident
31 where `Million Plus Cities` = "Agra"
32 group by `Million Plus Cities`;
33
```



Million Plus Cities	Highest_Incident_Count_cities
Agra	191
Ahmedabad	191
Allahabad(Prayagraj)	191
Amritsar	191
Asansol Durgapur	191
Aurangabad	191
Bengaluru	191
Bhopal	191
Chandigarh	191

Result 7 x



Million Plus Cities	incident_count
Agra	191

## 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
```



	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 x



## 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;
```



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

```
53  -- 4] Most Common Outcome of Incidents Across All Cities
54 • select `Outcome of Incident` , count(*) as outcome_count
55 from road_accident
56 group by `Outcome of Incident`
57 order by outcome_count desc
58 limit 1 ;
59 # if i get multiple output then i will use rank function to get only one outcome
60
```



Result Grid			Filter Rows:	Export:
	Outcome of Incident	outcome_count		
▶	Total number of Accidents	2000		

## 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

```
67  -- 6] Total Incident Count by Cause Category and Subcategory
68 • select `Cause category`, `Cause Subcategory`, count(*) as incident_count
69  from road_accident
70  group by `Cause category`, `Cause Subcategory`
71  order by incident_count desc;
72
```



Result Grid			
Filter Rows:		Export:	Wrap Cell Content:
	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 x

## 11] Percentage of Each Outcome Type in Total Incidents

```
73  -- 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
```



Result Grid     Filter Rows: <input type="text"/>   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



## I 2] 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
```



Result Grid			
Filter Rows:		Export:	Wrap Cell
	Million Plus Cities	incident_count	city_rank
▶	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
	Chandigarh	191	1

### 13] Identify Cities with the Lowest Number of Incidents

```
87  -- 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
```



Result Grid			Filter Rows:	Export
	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;
```



Result Grid				Filter Rows:		Export:	Wrap Cell Content:	Fetch rows:
	Cause category	Outcome of Incident	frequency					
▶	Impacting Vehicle/Object	Total number of Accidents	450					

# SUMMARY

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- 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**.

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