

# Car Accidents Analysis



# Our Team



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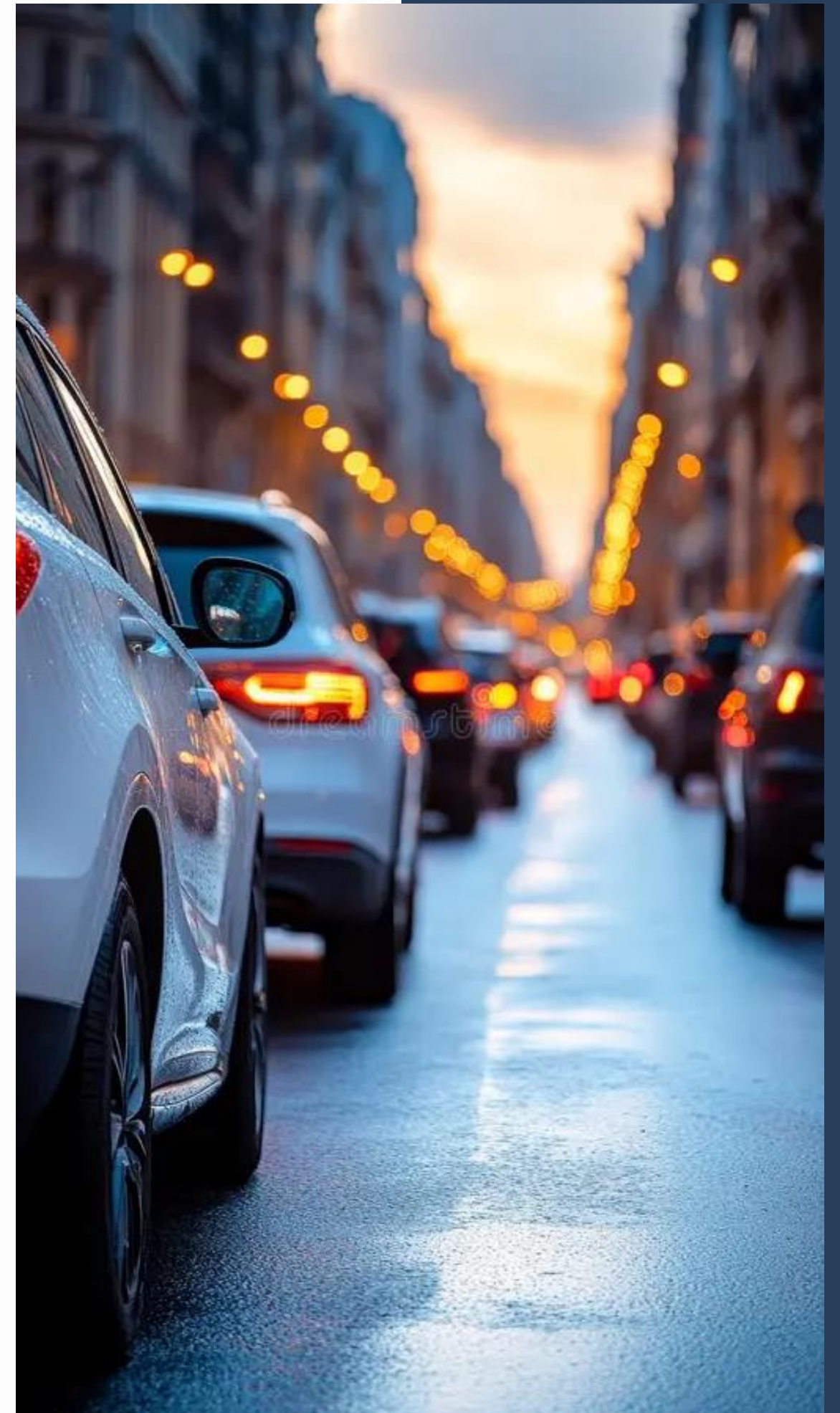


**Muhammed Megahed**



# Agenda

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# 01 Problem Statement

According to the Central Agency for Public Mobilization and Statistics (CAPMAS) in Egypt, road accident fatalities reached 5,260, while road traffic injuries increased from 71,016 in 2023 to 76,362 in 2024 (an increase of 7.5%).

In this project, we analyze car accident data from the United States as a model to uncover the main causes of accidents and explore ways to reduce them.



## 02 Project Objectives

The aim of this dashboard is to identify the main reasons behind car accidents, and to analyze how, when, and under what conditions they most frequently occur.

### Question 01

How has car accident data changed over the past few years?

### Question 02

Which factors, such as traffic, weather, lighting, and road conditions, contribute most to accidents?

### Question 03

How can this methodology be applied to Egyptian data to better understand local accidents?



## 03 Dataset Overview

- US Car Accidents (CSV)
- From Kaggle
- Time Range: from February 2016 to March 2023
- The data covers 49 States of the USA
- It contains approximately 7.7 million accident records

	LocationKey	WeatherKey	RoadFeaturesKey	AccidentDes	
	1	65315	1	1693918	
	1	65315	1	1693918	
	126	65315	1	1693918	
	3117	50857	1	3482557	
	212244	50600	1	1693921	
	212244	50600	1	1693921	
	115826	15301	1	1175310	2
	63131	50852	1	1693919	2
	123244	50860	1	3335749	2
	102000	40584	1	1693957	2
	102000	40584	1	1693957	4
	102000	40584	1	1693921	
	02000	40584	1	1693921	
	320	47546	1	1693920	
	56	62618	1	1693917	
	6	62618	1	1693917	
	6	62618	1	1693917	
		71395	1	2596103	
		60895	1	246097	
		62618	1		

# 04 Data Cleaning

Using Power Query

01

Loaded Data

02

Removed Duplicates & Irrelevant Records

03

Handled Missing Values

04

Created New Columns

05

Built Dimensional Tables

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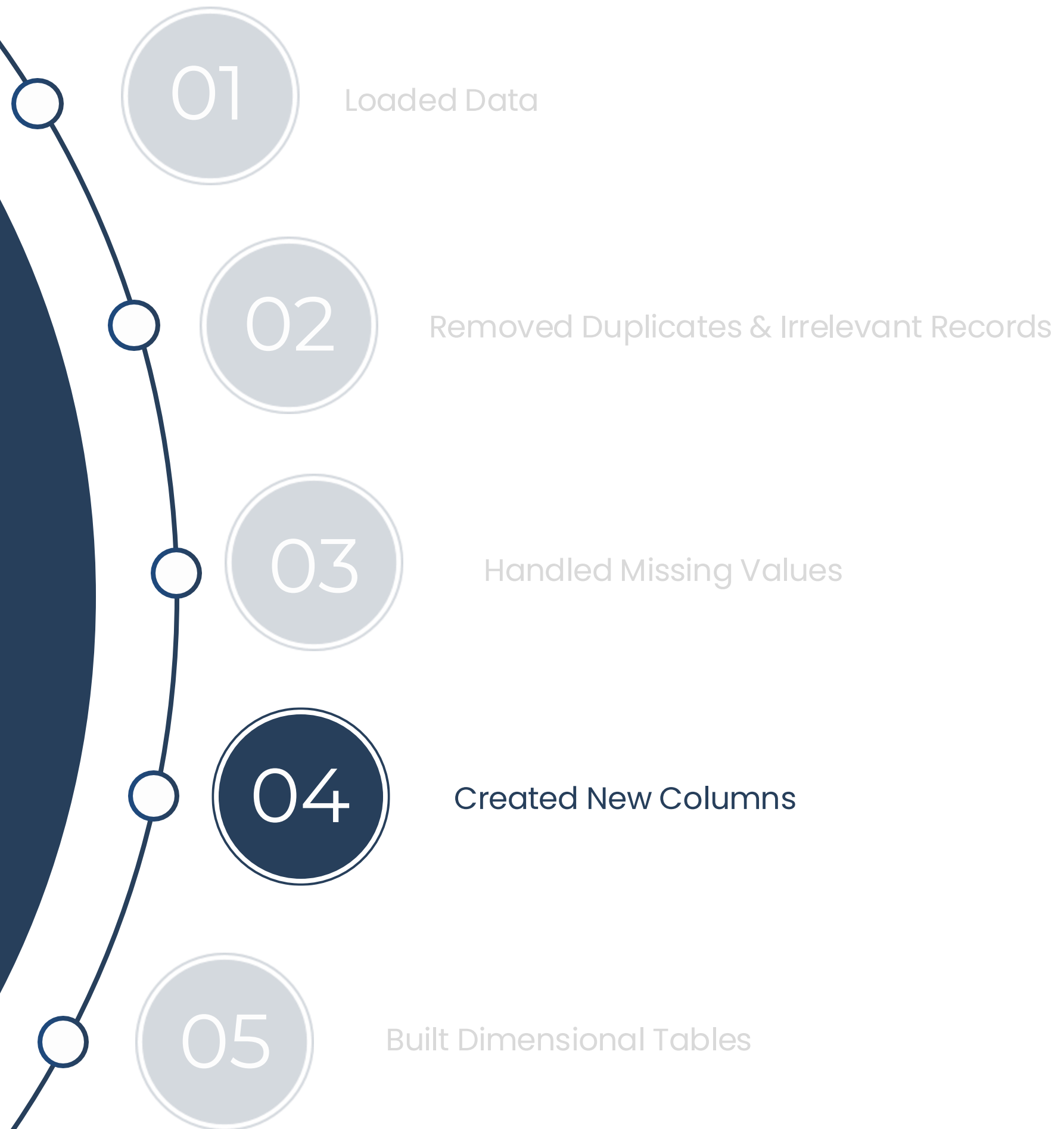
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# 04 Data Cleaning

Using Power Query





# 04 Data Cleaning

Using Power Query

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# Before

Query: `SELECT * FROM bronze.accidents WHERE YEAR(Start_Time) BETWEEN 2019 AND 2023 AND (IF('1'))`

A_ID	Source	Severity	Start_Time	End_Time	1.2_Start_Lat	1.2_Start_Lng	1.2_End_Lat	1.2_End_Lng
1 A-1000000	Source2	2	6/17/2021 7:28:33 AM	6/17/2021 8:43:18 AM	38.66325	-77.549522	null	null
2 A-1000001	Source2	3	6/17/2021 7:30:24 AM	6/17/2021 9:00:24 AM	38.870338	-77.299889	null	null
3 A-1000002	Source2	2	6/17/2021 7:36:20 AM	6/17/2021 8:50:51 AM	39.08672	-77.490891	null	null
4 A-1000003	Source2	3	6/17/2021 7:42:21 AM	6/17/2021 8:11:44 AM	38.871468	-77.295448	null	null
5 A-1000004	Source2	2	6/17/2021 6:31:03 AM	6/17/2021 8:34:49 AM	40.024529	-76.20298	null	null
6 A-1000005	Source2	2	6/17/2021 7:53:41 AM	6/17/2021 9:13:25 AM	38.762218	-78.633835	null	null
7 A-1000006	Source2	2	6/17/2021 7:56:48 AM	6/17/2021 9:11:36 AM	38.934689	-77.533043	null	null
8 A-1000007	Source2	2	6/17/2021 6:31:03 AM	6/17/2021 8:56:30 AM	40.1917	-76.575203	null	null
9 A-1000008	Source2	2	6/17/2021 7:59:43 AM	6/17/2021 9:14:24 AM	39.187359	-77.680023	null	null
10 A-1000009	Source2	2	6/17/2021 8:09:19 AM	6/17/2021 9:23:35 AM	38.86628	-77.323746	null	null
11 A-1000010	Source2	2	6/17/2021 6:31:03 AM	6/17/2021 9:25:53 AM	40.0745	-76.389374	null	null
12 A-1000011	Source2	2	6/17/2021 8:19:09 AM	6/17/2021 9:18:56 AM	38.930921	-76.979701	null	null
13 A-1000012	Source2	2	6/17/2021 6:31:03 AM	6/17/2021 9:01:55 AM	40.04039	-76.313164	null	null
14 A-1000013	Source2	2	6/17/2021 8:34:47 AM	6/17/2021 9:19:25 AM	38.925159	-77.022659	null	null
15 A-1000014	Source2	2	6/17/2021 8:34:09 AM	6/17/2021 9:18:46 AM	39.100056	-76.796149	null	null
16 A-1000015	Source2	2	6/17/2021 8:38:47 AM	6/17/2021 9:23:24 AM	38.670013	-77.255547	null	null
17 A-1000016	Source2	2	6/17/2021 8:45:38 AM	6/17/2021 10:08:14 AM	39.113617	-76.77774	null	null
18 A-1000017	Source2	2	6/17/2021 8:47:00 AM	6/17/2021 9:46:43 AM	40.187172	-77.208382	null	null
19 A-1000018	Source2	2	6/17/2021 8:57:40 AM	6/17/2021 9:27:16 AM	38.989773	-77.458771	null	null
20 A-1000019	Source2	2	6/17/2021 9:05:27 AM	6/17/2021 9:50:12 AM	40.233109	-76.078323	null	null
21 A-1000020	Source2	2	6/17/2021 9:31:14 AM	6/17/2021 10:00:58 AM	40.105656	-76.42849	null	null
22 A-1000021	Source2	2	6/17/2021 9:47:21 AM	6/17/2021 10:46:16 AM	40.105656	-76.42849	null	null
23 A-1000022	Source2	2	6/17/2021 10:03:53 AM	6/17/2021 11:17:57 AM	39.188599	-78.135345	null	null
24 A-1000023	Source2	3	6/17/2021 10:16:41 AM	6/17/2021 12:15:52 PM	38.374718	-77.462502	null	null
25 A-1000024	Source2	2	6/17/2021 10:39:21 AM	6/17/2021 11:52:42 AM	38.800644	-77.077316	null	null
26 A-1000025	Source3	2	6/17/2021 11:25:06 AM	6/17/2021 1:10:17 PM	40.596088	-77.862389	null	null
27 A-1000026	Source2	3	6/17/2021 11:46:22 AM	6/17/2021 1:04:52 PM	38.837208	-77.447021	null	null
28 A-1000027	Source2	3	6/17/2021 12:38:48 PM	6/17/2021 1:38:32 PM	38.946651	-76.859116	null	null
29 A-1000028	Source2	2	6/17/2021 12:47:00 PM	6/17/2021 4:25:58 PM	41.56785	-77.158848	null	null
30 A-1000029	Source2	3	6/17/2021 1:03:19 PM	6/17/2021 2:25:44 PM	40.809402	-76.106621	null	null
31 A-1000030	Source2	3	6/17/2021 1:11:08 PM	6/17/2021 1:53:40 PM	39.44202	-76.549358	null	null
32 A-1000031	Source2	3	6/17/2021 1:26:28 PM	6/17/2021 2:08:30 PM	38.631906	-77.292534	null	null
33 A-1000032	Source2	3	6/17/2021 1:28:57 PM	6/17/2021 8:04:52 PM	38.631906	-77.292534	null	null

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# After

Query: `Table.TransformColumnTypes(#"Reordered Columns",([{"ID", type text}, {"Severity", Int64.Type}, {"Start_Time", type datetime}, {"End_Time", type datetime}, {"Distance_mi", type number}, {"Description", type text}, {"Street", type text}, {"City", type text}])`

A_ID	Severity	Start_Time	End_Time	1.2_Distance_mi	A_Description	A_Street	A_City
1 A-1000000	2	6/17/2021 7:28:33 AM	6/17/2021 8:43:18 AM	0	Accident on VA-646 Aden Rd near Hershey Dr.	Aden Rd	Nokesville
2 A-1000001	3	6/17/2021 7:30:24 AM	6/17/2021 9:00:24 AM	0	Right hand shoulder blocked due to earlier accident on I-66 Westbound...	I-66 W	Fairfax
3 A-1000003	3	6/17/2021 7:42:21 AM	6/17/2021 8:11:44 AM	0	Right lane blocked due to accident on I-66 Westbound after VA-655...	I-66 W	Fairfax
4 A-1000009	2	6/17/2021 8:09:19 AM	6/17/2021 9:23:35 AM	0	Right hand shoulder closed due to accident on I-66 Westbound after V...	I-66 W	Fairfax
5 A-1000038	3	6/17/2021 4:20:17 PM	6/17/2021 5:37:59 PM	0	Left lane closed due to accident on I-66 Eastbound after US-50 Lee Jac...	I-66 E	Fairfax
6 A-1001721	3	6/16/2021 1:31:31 PM	6/16/2021 2:34:41 PM	0	Two lanes blocked and right hand shoulder blocked due to accident on...	I-66 E	Fairfax
7 A-1004669	2	6/15/2021 9:26:57 AM	6/15/2021 12:39:46 PM	0	Lane blocked due to accident on Bollinas Rd near Fresca Ave.	Bollinas Rd	Fairfax
8 A-1003408	3	6/15/2021 3:46:35 PM	6/15/2021 4:31:14 PM	0	Left lane blocked due to accident on I-66 Westbound at Exits 57A 57B...	Lee Jackson Memorial Hwy	Fairfax
9 A-1003418	3	6/15/2021 7:07:02 PM	6/15/2021 8:07:57 PM	0	Right lane closed due to accident on I-66 Westbound before US-50 Lee...	I-66 E	Fairfax
10 A-1006557	2	6/15/2021 11:39:44 AM	6/15/2021 12:24:17 PM	0	Two lanes blocked due to accident on US-50 Lee Jackson Memorial Hw...	I-66 E	Fairfax
11 A-1006558	2	6/15/2021 11:43:16 AM	6/15/2021 12:50:34 PM	0	Two lanes blocked due to accident on US-50 Lee Jackson Memorial Hw...	Lee Jackson Memorial Hwy	Fairfax
12 A-1006566	3	6/13/2021 3:15:39 PM	6/13/2021 3:59:34 PM	4.239999771	Left lane closed due to accident on I-66 Westbound from I-66 Exits 62...	I-66 E	Fairfax
13 A-1006964	3	6/12/2021 11:51:11 AM	6/12/2021 12:52:40 PM	0	One lane blocked due to accident on I-66 Eastbound at Exits 57A 57B...	I-66 W	Fairfax
14 A-1006977	3	6/12/2021 5:03:04 PM	6/12/2021 5:32:42 PM	0	Lane blocked due to accident on I-66 Westbound at Exit 60 VA-123 Ch...	I-66 E	Fairfax
15 A-1013212	2	6/8/2021 1:16:41 PM	6/8/2021 2:31:27 PM	0	Lane blocked due to accident on US-431 Northbound at CR-29.	County Road 133	Abbeville
16 A-1008213	2	6/11/2021 12:59:58 PM	6/11/2021 2:17:22 PM	0	Lane blocked due to accident on US-431 Northbound at Westpoint Cut...	US Highway 431 S	Abbeville
17 A-1008214	2	6/11/2021 1:03:50 PM	6/11/2021 2:18:37 PM	0	Lane blocked due to accident on AL-10 Eastbound at CR-133.	County Road 133	Abbeville
18 A-1003799	2	6/15/2021 6:58:30 AM	6/15/2021 7:55:49 AM	0	Accident on SC-28 Main St at SC-71.	N Main St	Abbeville
19 A-1000002	2	6/17/2021 7:36:20 AM	6/17/2021 8:50:51 AM	0	Accident on Commonwealth Ter at Leesmill Sq.	Lees Mill Sq	Leesburg
20 A-1000340	2	6/17/2021 6:22:59 AM	6/17/2021 7:38:20 AM	0	Restrictions due to accident on US-27 Northbound at Plantation Blvd.	US Highway 27	Leesburg
21 A-1000358	2	6/17/2021 3:08:29 PM	6/17/2021 4:44:00 PM	0	Lane blocked due to accident on CR-452 at Martin Dr.	County Road 452	Leesburg
22 A-1002037	2	6/16/2021 4:46:16 AM	6/16/2021 6:36:35 AM	0	Accident on CR-44 at Spring Ct.	County Road 44	Leesburg
23 A-1003406	2	6/15/2021 3:14:31 PM	6/15/2021 4:26:55 PM	0	Left lane blocked due to accident on VA-7 Harry Byrd Hwy Westbound...	Harry Byrd Hwy	Leesburg
24 A-1005115	2	6/14/2021 2:50:47 PM	6/14/2021 3:48:17 PM	0	Lane blocked due to accident on VA-7 Harry Byrd Hwy Westbound at C...	Harry Byrd Hwy	Leesburg
25 A-1000005	2	6/17/2021 7:53:41 AM	6/17/2021 9:13:25 AM	0	Right hand shoulder closed due to accident on I-81 Southbound at VA...	Mount Jackson Rd	Mount Jackson
26 A-1000006	2	6/17/2021 7:56:48 AM	6/17/2021 9:11:36 AM	0	Accident on US-50 John Mosby Hwy at Hutchinson Farm Dr.	Hutchinson Farm Dr	Chantilly
27 A-1005090	2	6/14/2021 8:17:55 AM	6/14/2021 9:17:39 AM	0	Accident on VA-659 Gum Spring Rd at Ticonderoga Rd.	Gum Spring Rd	Chantilly
28 A-1005091	2	6/14/2021 8:17:26 AM	6/14/2021 9:17:12 AM	0	Accident on VA-620 Braddock Rd at VA-659 Gum Spring Rd.	Braddock Rd	Chantilly
29 A-1006564	2	6/13/2021 2:45:26 PM	6/13/2021 3:15:01 PM	0	Two lanes blocked due to accident on VA-28 Sully Rd Southbound at ...	Willard Rd	Chantilly
30 A-1001722	4	6/16/2021 2:34:11 PM	6/16/2021 11:25:14 PM	7.179999828	Lane blocked due to accident on I-95 Northbound from Exit 80 MD-54...	Aberdeen Trwy	Aberdeen
31 A-1000008	2	6/17/2021 7:59:43 AM	6/17/2021 9:14:24 AM	0	Accident on VA-9 Charles Town Pike at VA-287 Berlin Tpke.	Berlin Tpke	Purcellville
32 A-1003368	2	6/15/2021 6:51:56 AM	6/15/2021 8:06:29 AM	0	Accident on VA-7 BR Main St at Hall Ave.	W Main St	Purcellville
33 A-1000015	2	6/17/2021 8:38:47 AM	6/17/2021 9:28:24 AM	0	Left hand shoulder blocked due to accident on I-95 Southbound after ...	I-95 N	Woodbridge

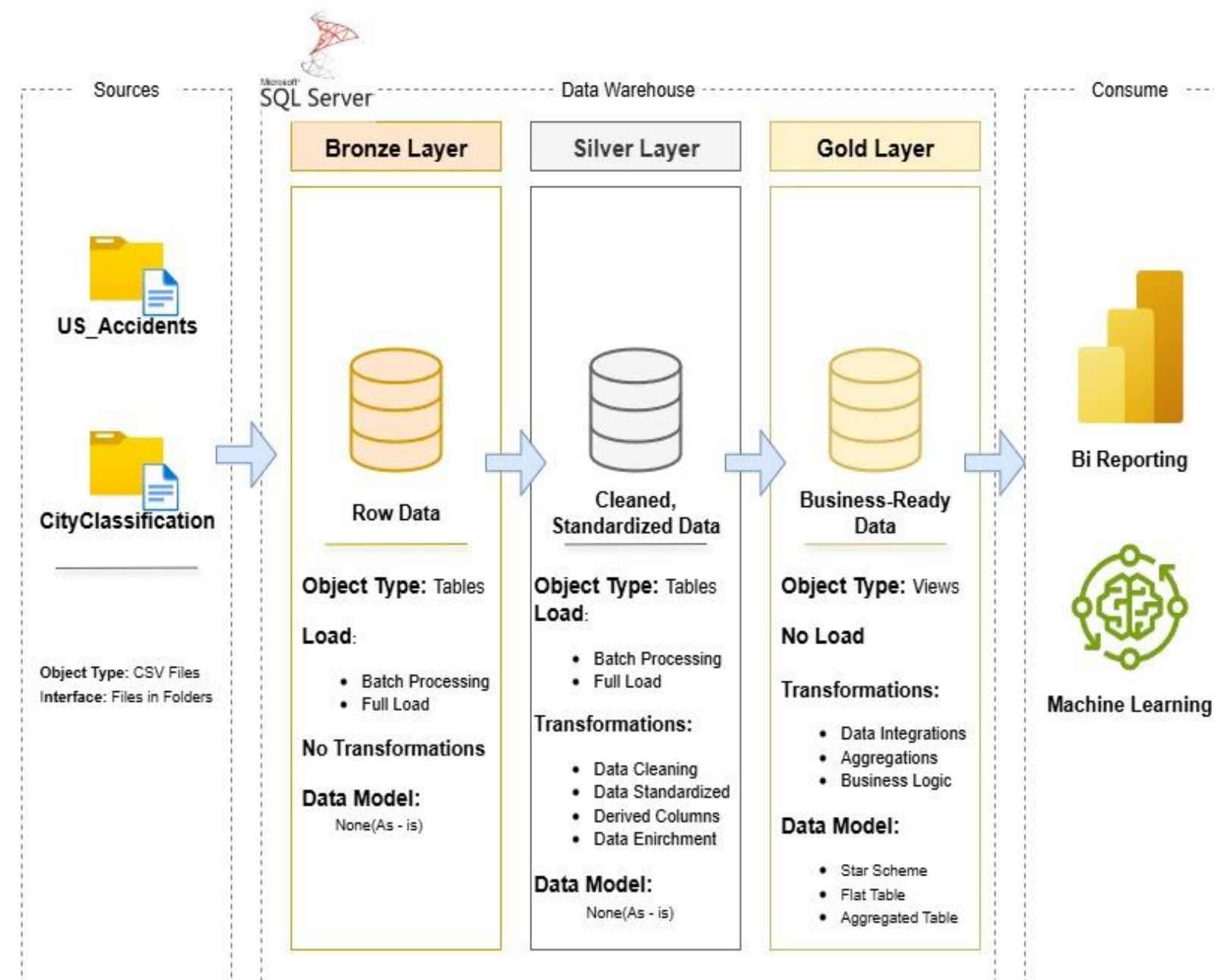
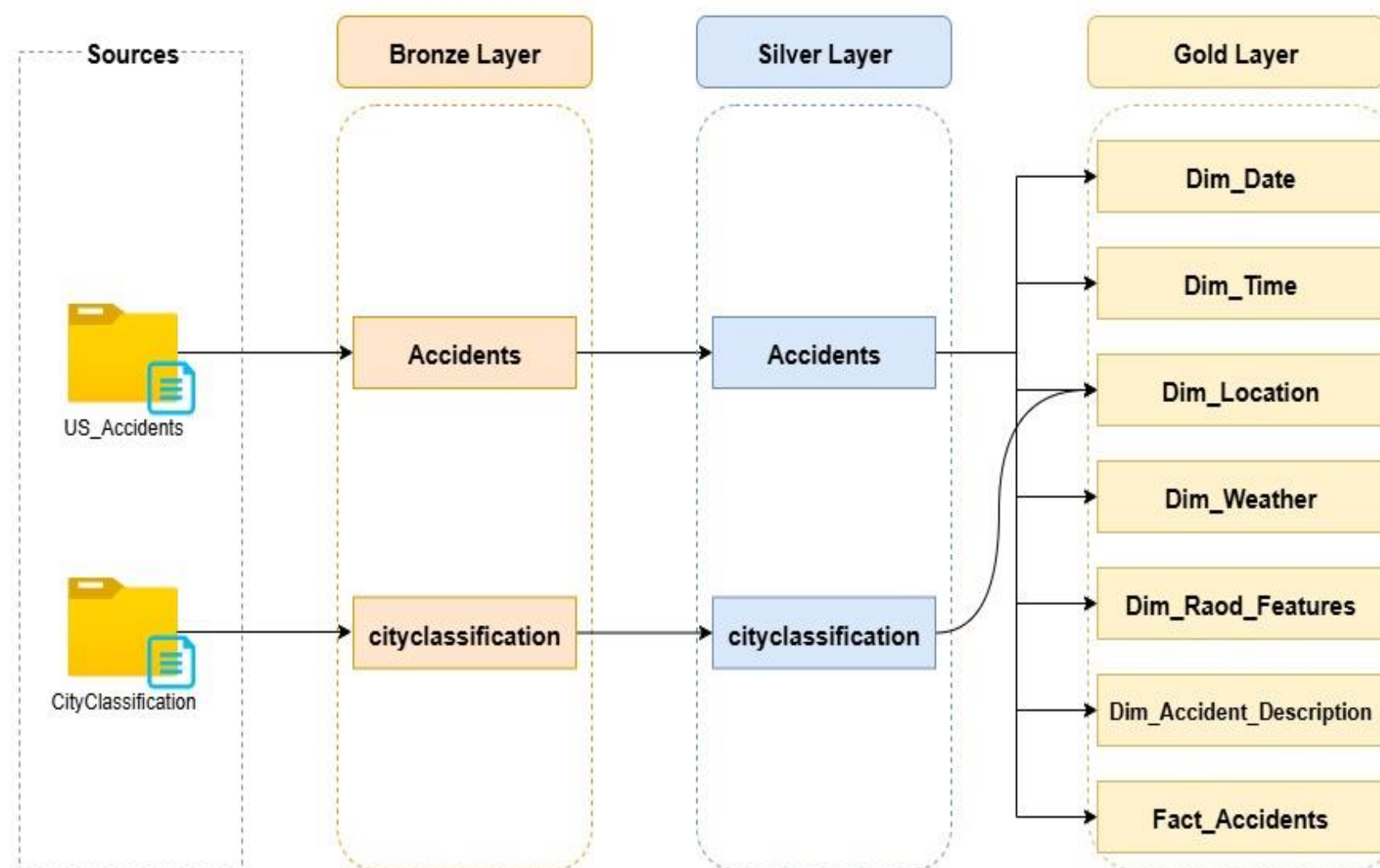
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# Data Cleaning

Using SQL

Data Flow Diagram



# Data Cleaning

## Using SQL

```
DDL_Bronze_Layer.sql...P-GJ4L9OJ\pc (59))*  X DDL_Bronze_Layer.s...P-GJ4L9OJ\pc (58))*
CREATE OR ALTER PROCEDURE bronze.load_bronze AS
BEGIN
    DECLARE @batch_start_time DATETIME, @batch_end_time DATETIME
    BEGIN TRY
        SET @batch_start_time = GETDATE();
        PRINT '=====';
        PRINT 'Loading Bronze Layer';
        PRINT '=====';

        PRINT '-----';
        PRINT 'Loading US Accidents File';
        PRINT '-----';

        PRINT '>> Truncating Table: bronze.accidents';
        TRUNCATE TABLE bronze.accidents;
        PRINT '>> Loading Date Into: bronze.accidents';
        BULK INSERT bronze.accidents
        FROM 'C:\DEPI Project\Database\US_Accidents_March23_UTF8.csv'
        WITH(
            FIRSTROW = 2,
            FIELDTERMINATOR = ',',
            ROWTERMINATOR = '\n',
            KEEPNULLS,
            TABLOCK
        )

        PRINT '-----';
        PRINT 'Loading US CityClassification File';
        PRINT '-----';

        PRINT '>> Truncating Table: bronze.cityclassification';
        TRUNCATE TABLE bronze.cityclassification;
        PRINT '>> Loading Date Into: bronze.cityclassification';
        BULK INSERT bronze.cityclassification
        FROM 'C:\DEPI Project\Database\CityClassification.csv'
        WITH(
            FIRSTROW = 2,
            FIELDTERMINATOR = ',',
            ROWTERMINATOR = '\n',
            KEEPNULLS,
            TABLOCK
        )

        SET @batch_end_time = GETDATE();
        PRINT '=====';
        PRINT 'Loading Bronze Layer is Completed';
        PRINT '>> Total Load Duration: ' + CAST(DATEDIFF(SECOND, @batch_start_time, @batch_end_time) AS NVARCHAR) + ' second';
        PRINT '=====';

    END TRY
    BEGIN CATCH
        PRINT '=====';
        PRINT 'ERROR OCCURED DURING LOADING BRONZE LAYER';
        PRINT 'Error Message: ' + ERROR_MESSAGE();
        PRINT 'Error Number: ' + CAST(ERROR_NUMBER() AS VARCHAR);
        PRINT 'Error Statue: ' + CAST(ERROR_STATE() AS VARCHAR);
        PRINT '=====';
    END CATCH;
END;

EXEC bronze.load_bronze
```

```
DDL_Gold_Layer.sql...P-GJ4L9OJ\pc (58))  X
    Visibility_mi,
    Wind_Speed_mph,
    Precipitation_in
FROM (
    SELECT DISTINCT
        State,
        CAST(Weather_Timestamp AS DATE) AS WeatherDate,
        DATEPART(HOUR, Weather_Timestamp) AS WeatherHour,
        Weather_Condition,
        Wind_Direction,
        Temperature_F,
        Humidity_Pct,
        Pressure_in,
        Visibility_mi,
        Wind_Speed_mph,
        Precipitation_in
    FROM silver.accidents
    WHERE Temperature_F IS NOT NULL AND Humidity_Pct IS NOT NULL AND Pressure_in IS NOT NULL AND Visibility_mi IS NOT NULL AND Wind_Speed
    AND Precipitation_in IS NOT NULL AND Weather_Condition IS NOT NULL
) t
GO

CREATE OR ALTER VIEW gold.Dim_Road_Features AS
SELECT
    DENSE_RANK() OVER (
        ORDER BY Amenity, Bump, Crossing, Give_Way, Junction, No_Exit,
        Railway, Roundabout, Station, Stop,
        Traffic_Calming, Traffic_Signal, Turning_Loop
    ) AS RoadFeaturesKey,
    Amenity,
    Bump,
    Crossing,
    Give_Way,
    Junction,
    No_Exit,
    Railway,
    Roundabout,
    Station,
    Stop,
    Traffic_Calming,
    Traffic_Signal,
    Turning_Loop
FROM (
    SELECT DISTINCT
        Amenity,
        Bump,
        Crossing,
        Give_Way,
        Junction,
        No_Exit,
        Railway,
        Roundabout,
        Station,
        Stop,
        Traffic_Calming,
        Traffic_Signal,
        Turning_Loop
    FROM silver.accidents
) t
GO

CREATE OR ALTER VIEW gold.Dim_Accident_Description AS
SELECT
    DENSE_RANK() OVER (ORDER BY Description) AS AccidentDescriptionKey,
    Description
FROM (
    SELECT DISTINCT
        Description
    FROM silver.accidents
) t
GO

CREATE OR ALTER VIEW gold.Fact_Accidents AS
SELECT
```



# Data Cleaning

Using Python

```
road_features = [
    "Amenity", "Bump", "Crossing", "Give_Way", "Junction", "No_Exit", "Railway",
    "Roundabout", "Station", "Stop", "Traffic_Calming", "Traffic_Signal",
    "Turning_Loop", "Sunrise_Sunset", "Civil_Twilight", "Nautical_Twilight",
    "Astronomical_Twilight"
]

dim_road_features = Fact_Accident_with_WeatherID_LocationID[road_features].drop_duplicates().reset_index(drop=True)

# 2 Add surrogate key (road_features_ID starts at 3001 like in Power Query)
dim_road_features.insert(0, "road_features_ID", range(3001, 3001 + len(dim_road_features)))

# 3 Merge fact table with DimLocation to replace details with road_features_ID
Fact_Accident_with_WeatherID_LocationID_road_features_ID = Fact_Accident_with_WeatherID_LocationID.merge(dim_road_features, on=road_features, how="left")

# 4 Drop location details from fact table (keep only Location_ID as FK)
# fact_with_location_ID = fact_with_location_ID.drop(columns=location_cols)
Fact_Accident_with_WeatherID_LocationID_road_features_ID.head()
```

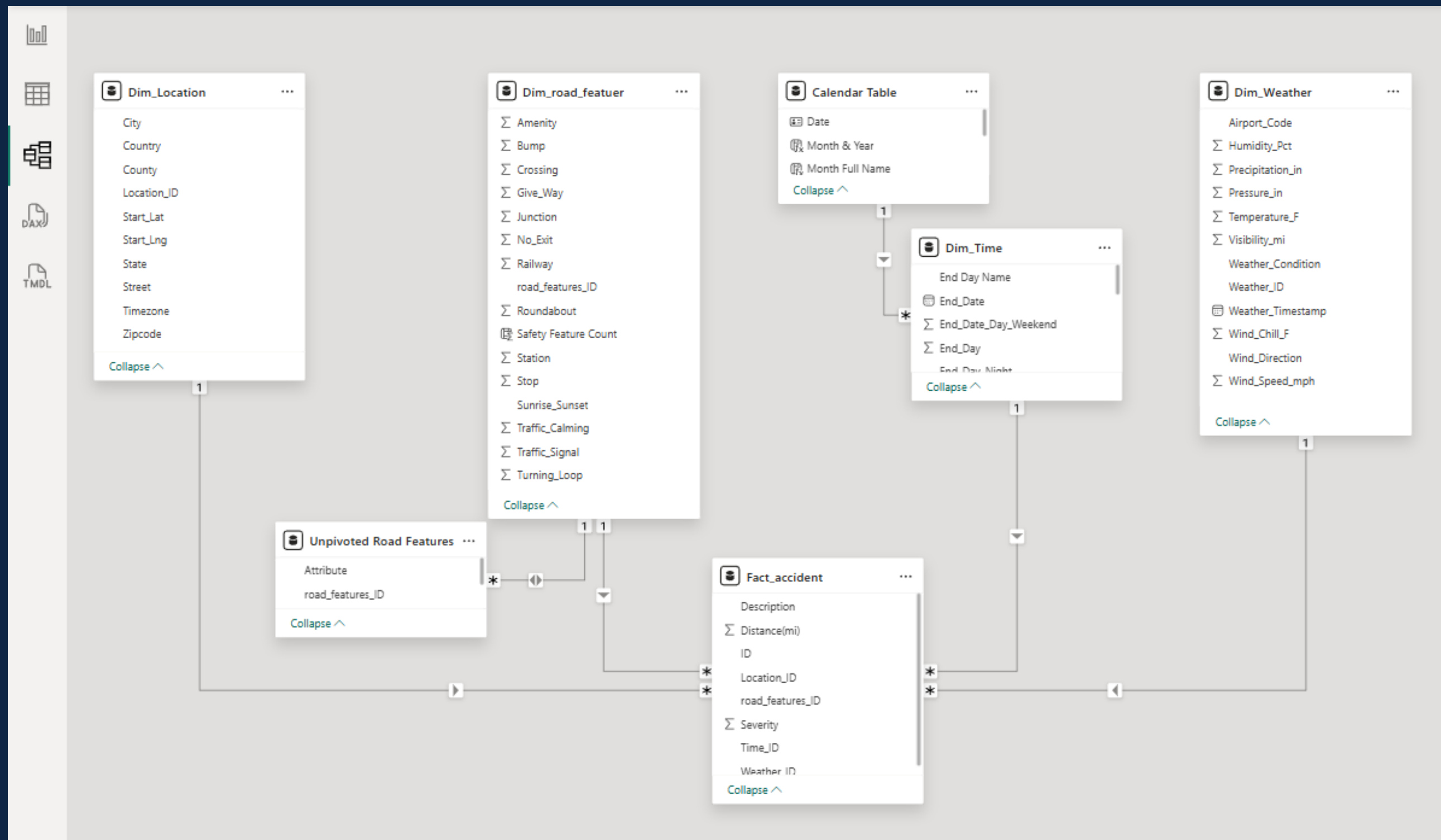
```
weather_cols = [
    "Airport_Code", "Weather_Timestamp", "Temperature_F", "Wind_Chill_F",
    "Humidity_Pct", "Pressure_in", "Visibility_mi", "Wind_Direction",
    "Wind_Speed_mph", "Precipitation_in", "Weather_Condition"
]

dimweather = df[weather_cols].drop_duplicates().reset_index(drop=True)

# 2 Add surrogate key (Weather_ID starts at 1001 like in Power Query)
dimweather.insert(0, "Weather_ID", range(1001, 1001 + len(dimweather)))

# 3 Merge fact table with DimWeather to replace details with Weather_ID
fact_with_weather_ID = df.merge(dimweather, on=weather_cols, how="left")
```

# 05 Data Modeling





# 06 Dax



= Divide(

= if(

- Measures>
- Accident Severity Index (ASI)
  - Accidents Previous Year
  - Accidents Prior Period
  - ASI Previous Year
  - ASI Prior Period
  - ASI YoY Change (%) Numeric
  - ASI YoY Change (%) Numeric oval
  - ASI YoY Change (Value)
  - ASI YoY Indicator Arrow
  - Average Affected Distance (mi)
  - Avg Distance Prior Period
  - Avg Distance YoY Change (%) Numeric
  - Avg Distance YoY Change (%) Numeric oval
  - Avg Distance YoY Change (Value)
  - Avg Distance YoY Indicator Arrow
  - Fatal Accident %
  - Fatal Accidents

= Calculate(

= Average(

# 07 Sample Visuals

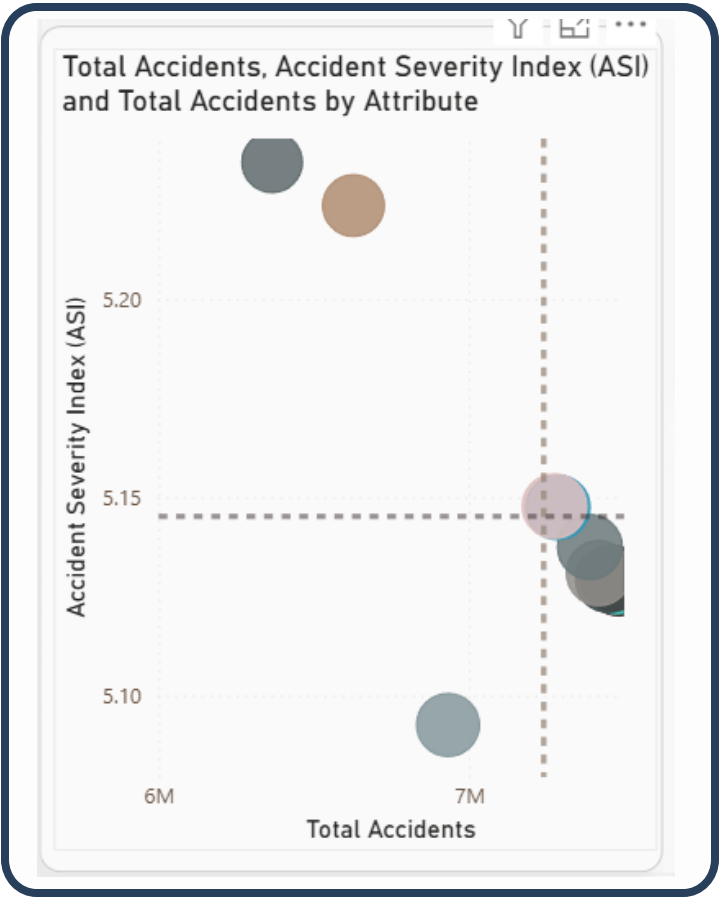
## 1) Table:

Showing the effect of different road features and distance on the number of accidents, and Accident Severity Index (ASI)

Feature	Accidents	ASI	Distance
Amenity	7,390,397.00	5.14	0.53
Bump	7,480,534.00	5.13	0.52
Crossing	6,628,206.00	5.22	0.58
Give_Way	7,448,797.00	5.13	0.53
Junction	6,933,051.00	5.09	0.51
No_Exit	7,464,873.00	5.13	0.52
Railway	7,419,423.00	5.13	0.53
Roundabout	7,483,716.00	5.13	0.52
Total	7,483,959.00	5.13	0.52

## 2) Bubble Chart:

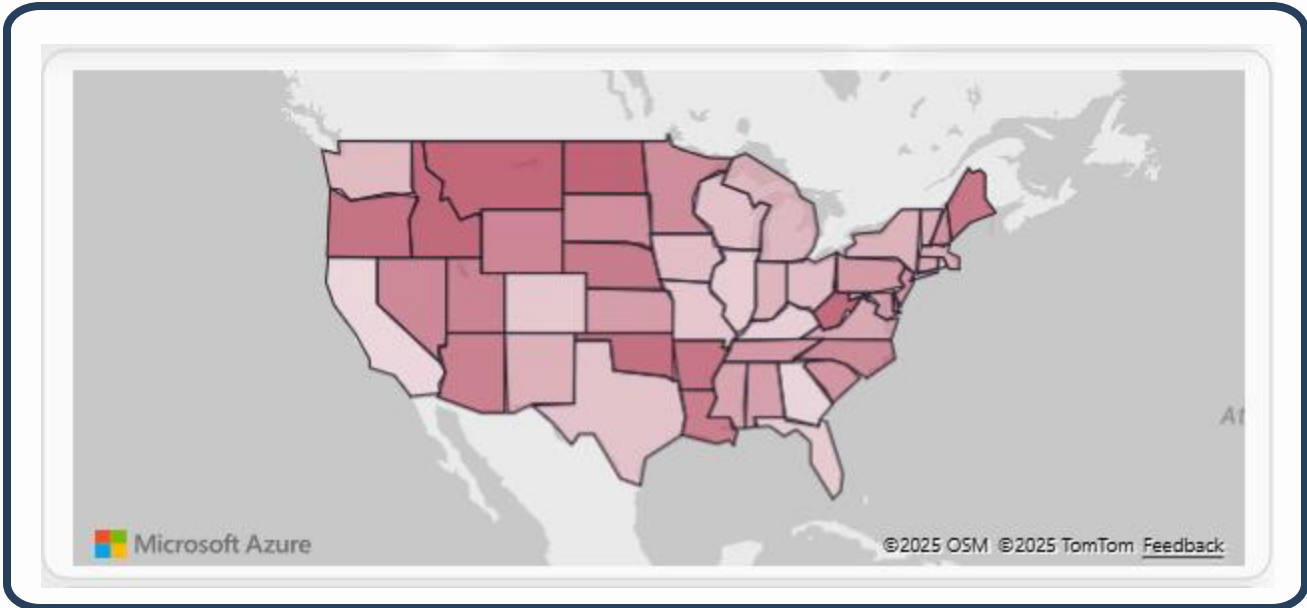
Showing Total accidents, Accident Severity Index (ASI), and total accidents by road feature



# 07 Sample Visuals

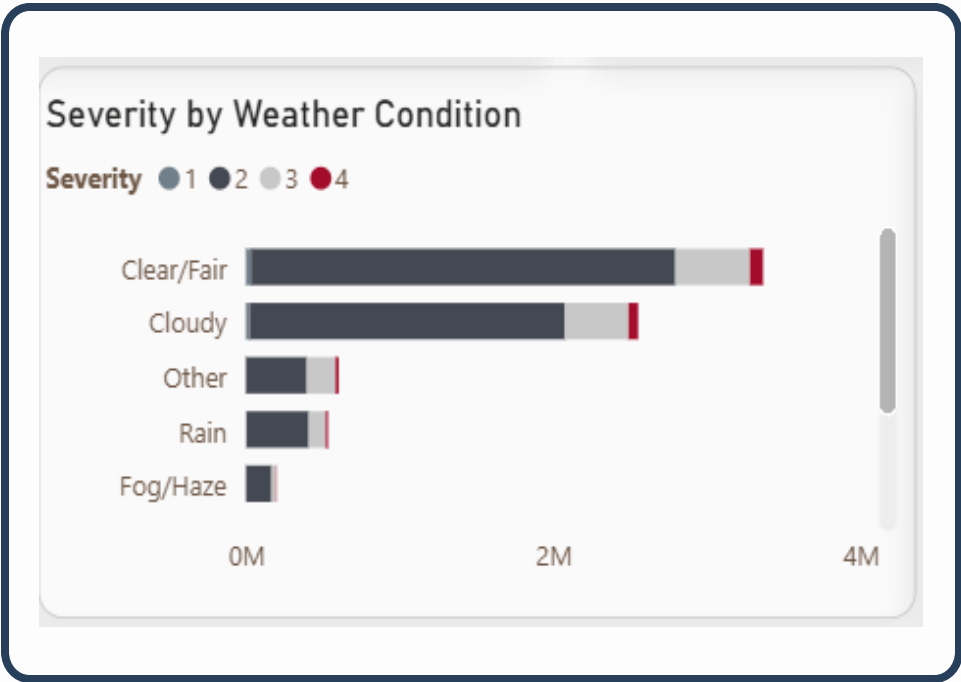
## 3) Map:

Showing number of accidents in each country



## 4) Bar Chart:

Showing Accidents Severity by different weather Conditions





# 9. Dashboard & Reports

Year: 2 Selected X

Months: All

Time Segment: All

State: All

County: All

City: All

Filters 1



Home

Total Accidents  
**1,925,850**  
▲ 27.3%

Fatal Accidents  
**46K**



Serious Injuries %  
**0.04**



Slight Injuries  
**2M**



No Injuries  
**37K**



Weather Conditions

Road Features

Severity Analysis

Deep-Dive Time

Hotspot Focus

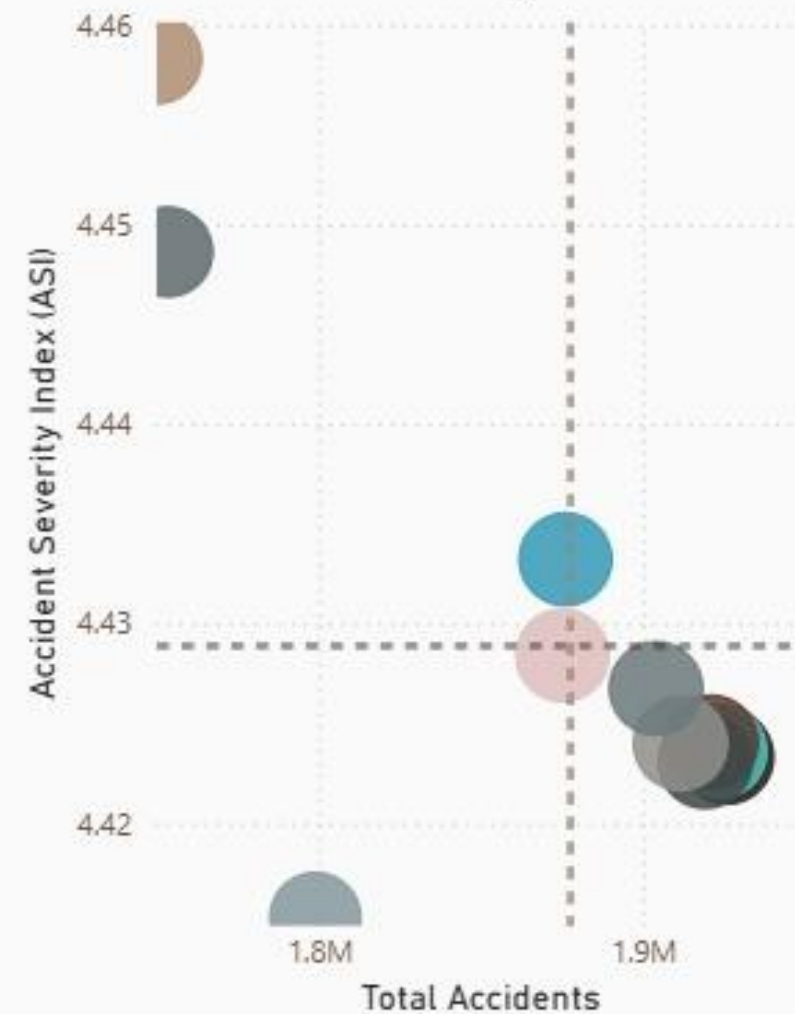
AI Analysis

Recommendations

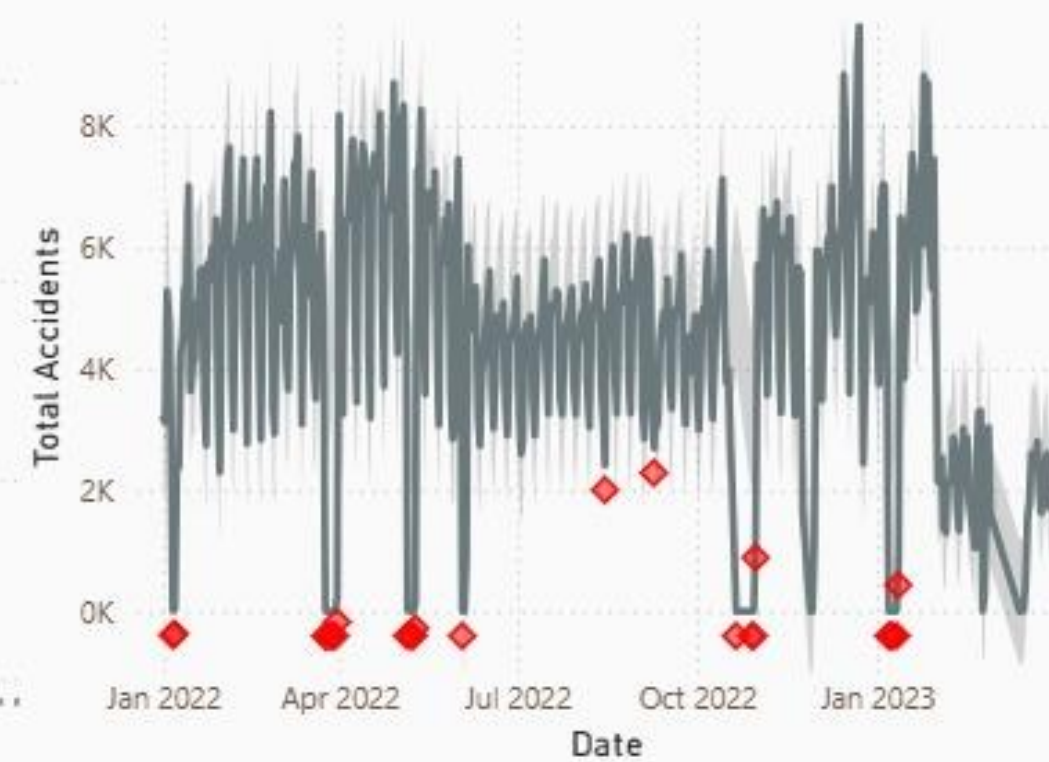
Do You Have Any  
Question? Click Me



Total Accidents, Accident Severity Index (ASI) and Total Accidents by Attribute



Total Accidents and Accident Severity Index (ASI) by Date

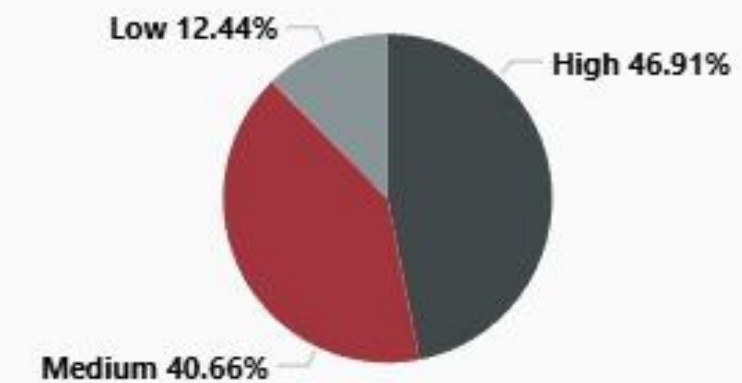


Weekend Intensity Ratio Numeric

**0.63**



Accidents by Humidity Category



Year: 2 Selected ✕

Months: All

Time Segment: All

State: All

County: All

City: All

Filters 1



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Do You Have Any  
Question? Click Me



### Accidents in Adverse Weather

**969K**

accident rate at adverse weather

**50.32%**



### Accident Count High Pressure

**404K**

accident rate at high pressure

**20.96%**



### Accident At High Wind Speed

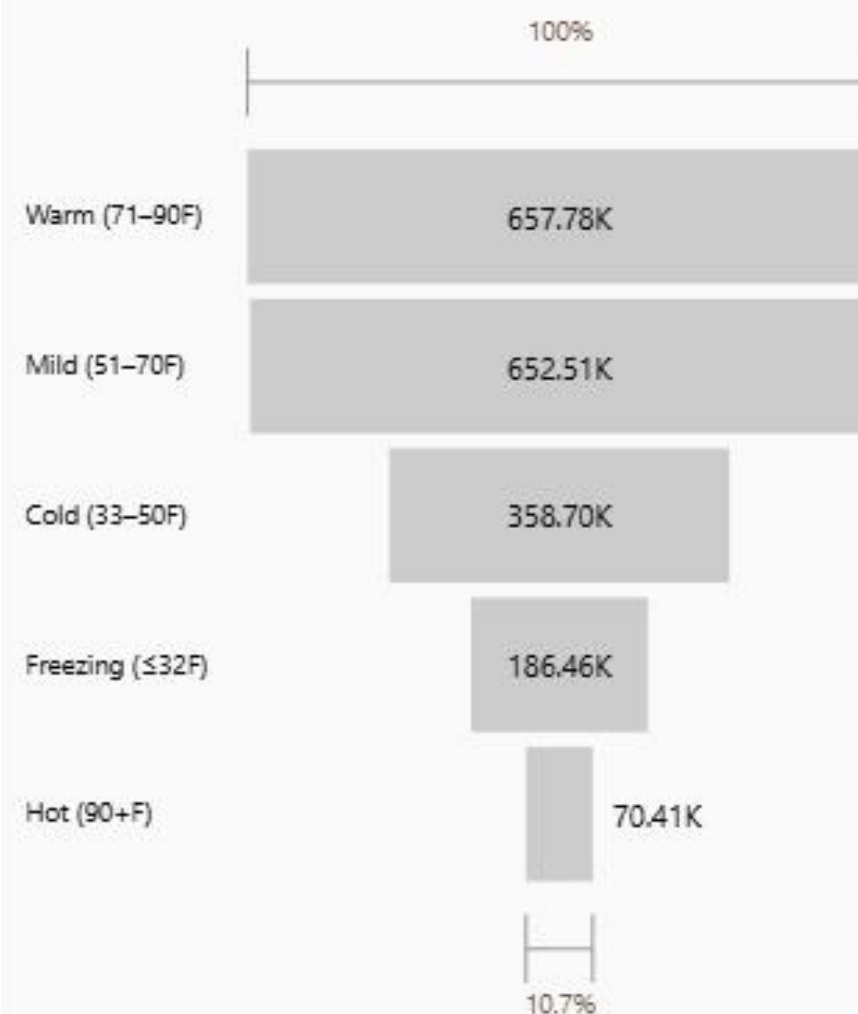
**603K**

accident rate at high wind speed

**31.33%**



### Accidents by Temperature Category



### Total Accidents by Season and Avg visibility

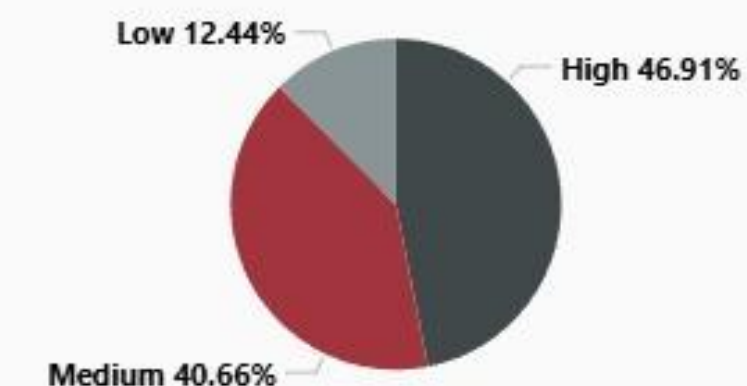


Fair  
942,411.00  
Total Accidents

Cloudy  
267,075.00  
Total Accidents

Mostly Cloudy  
350,504.00

### Accidents by Humidity Category





Year: 2 Selected ✕

Months: All

Time Segment: All

State: All

County: All

City: All

Filters 1

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Do You Have Any  
Question? Click Me

Total Accidents

1,925,850

▲ 27.3%



Accident Severity Index (ASI)

4.42

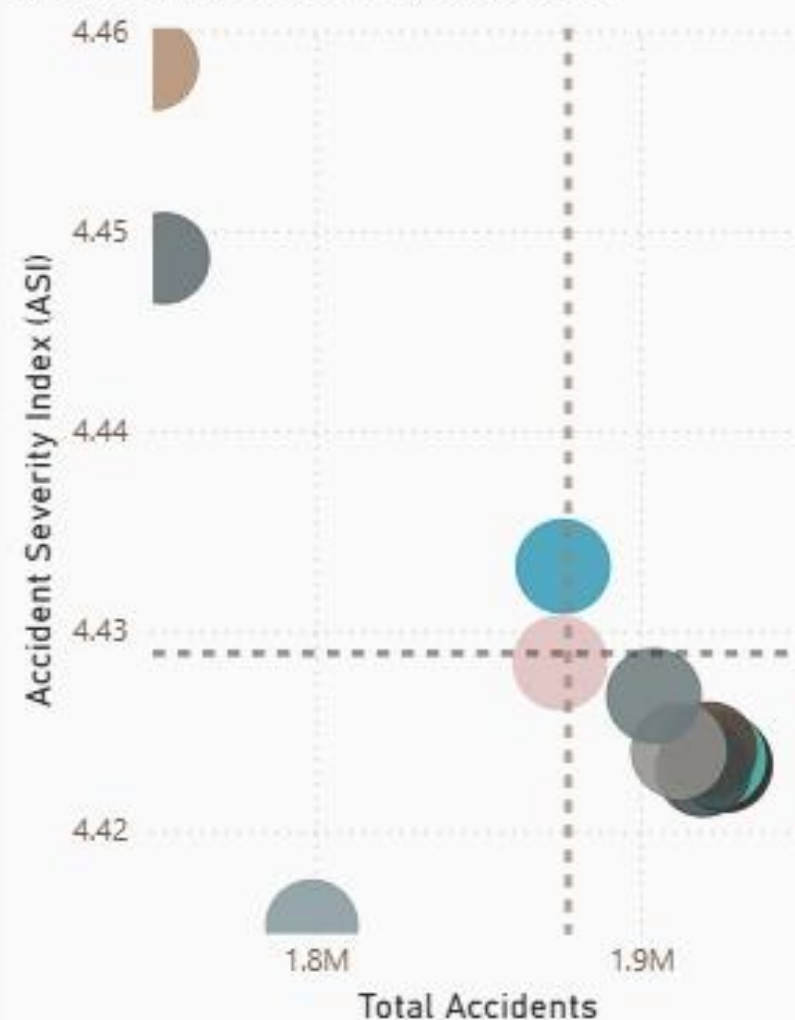
▼ -6.0%



Average Affected Distance (mi)

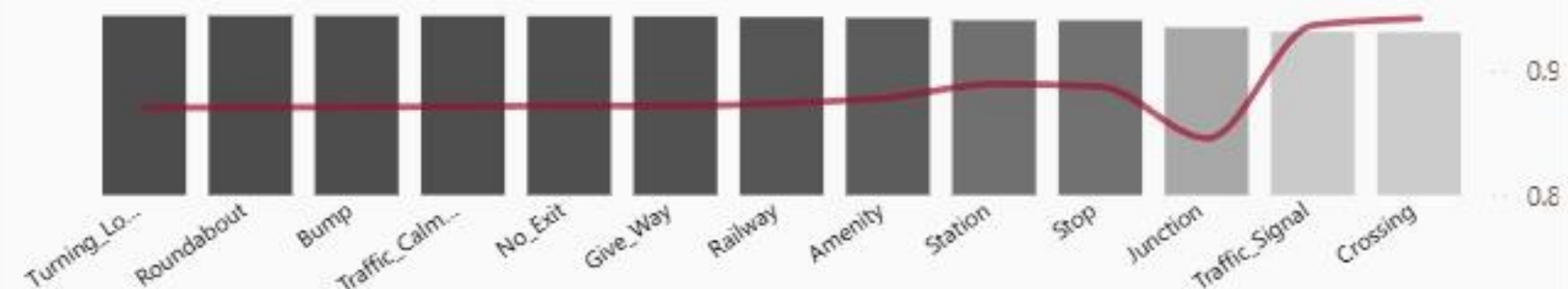
0.87

▲ 34.29%

Total Accidents, Accident Severity Index (ASI)  
and Total Accidents by Attribute

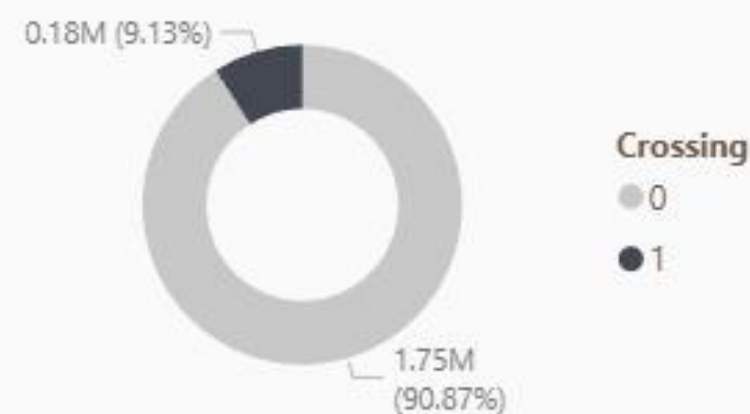
Total Accidents and Average Affected Distance (mi) by Attribute

● Total Accidents ● Average Affected Distance (mi)



Crossing

Total Accidents by Crossing



Feature	Accidents	ASI	Distance
Amenity	1,904,098.00	4.43	0.88
Bump	1,924,757.00	4.42	0.87
Crossing	1,750,076.00	4.46	0.94
Give_Way	1,919,279.00	4.42	0.87
Junction	1,798,955.00	4.42	0.85
No_Exit	1,921,104.00	4.42	0.87
Railway	1,911,625.00	4.42	0.87
Roundabout	1,925,788.00	4.42	0.87
Station	1,876,157.00	4.43	0.89
<b>Total</b>	<b>1,925,850.00</b>	<b>4.42</b>	<b>0.87</b>

Year: 2 Selected ✕

Months: All

Time Segment: All

State: All

County: All

City: All

Filters 1

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Question? Click Me

Fatal Accidents

46K

2.39%

Serious Injuries %

0.04

3.88%

Slight Injuries

2M

91.82%

No Injuries

37K

1.91%

## Severity by Weather Condition

Severity 1 2 3 4

## Severity Over Years, Months

Severity 1 2 3 4

## Top 5 Most repeated Accident Description

- | A crash has occurred causing no to minimum delays. Use ...
- | A crash has occurred with minimal delay to traffic. Prepar...
- | A crash has occurred. Prepare to slow or move over for w...
- | Accident
- | An unconfirmed report of a crash has been received. Use ...

## Severity by Wind Direction



## Severity by Light Condition





Year: 2 Selected X

Months: All

Time Segment: All

State: All

County: All

City: All

Filters 1



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Do You Have Any  
Question? Click Me



Total Accidents

1,925,850

▲ 27.3%



Weekend Intensity Ratio Numeric

0.63

▲ 0.03



Peak Hour Ratio %

0.35

▲ 0.00



### Total Accidents and Seasonal Trend Analysis by Month Name



Month Name	Friday	Monday	Saturday	Sunday	Thursday	Tuesday	Wednesday
April	61,558.00	41,383.00	36,739.00	21,965.00	44,757.00	43,399.00	44,046.00
August	36,068.00	33,334.00	23,349.00	20,228.00	34,098.00	39,346.00	39,698.00
December	56,750.00	31,791.00	38,691.00	22,922.00	53,231.00	37,340.00	38,528.00
February	58,890.00	46,340.00	29,466.00	25,263.00	59,669.00	52,516.00	55,242.00
January	69,617.00	74,007.00	50,577.00	51,764.00	58,654.00	70,244.00	64,520.00
July	41,135.00	25,743.00	27,934.00	24,085.00	31,416.00	29,426.00	29,977.00
June	25,064.00	28,959.00	16,148.00	14,848.00	39,117.00	28,415.00	40,802.00
March	42,027.00	32,734.00	25,445.00	21,447.00	43,194.00	43,205.00	46,762.00
May	34,272.00	35,659.00	20,226.00	21,478.00	40,529.00	42,247.00	44,459.00
November	30,397.00	25,047.00	19,700.00	15,941.00	31,157.00	36,817.00	35,611.00







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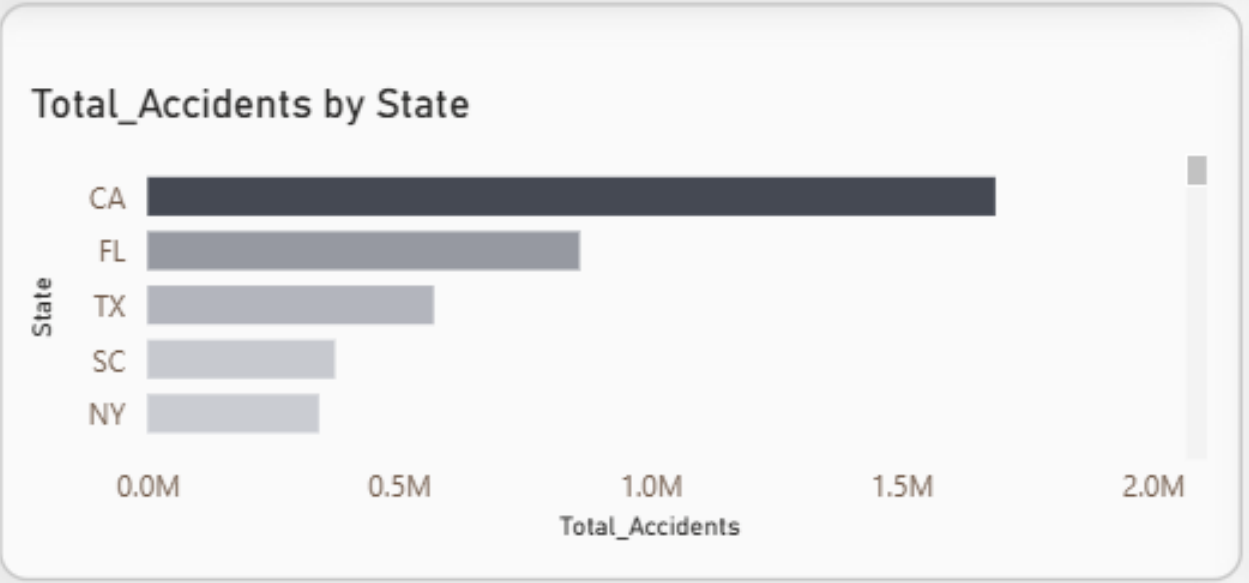
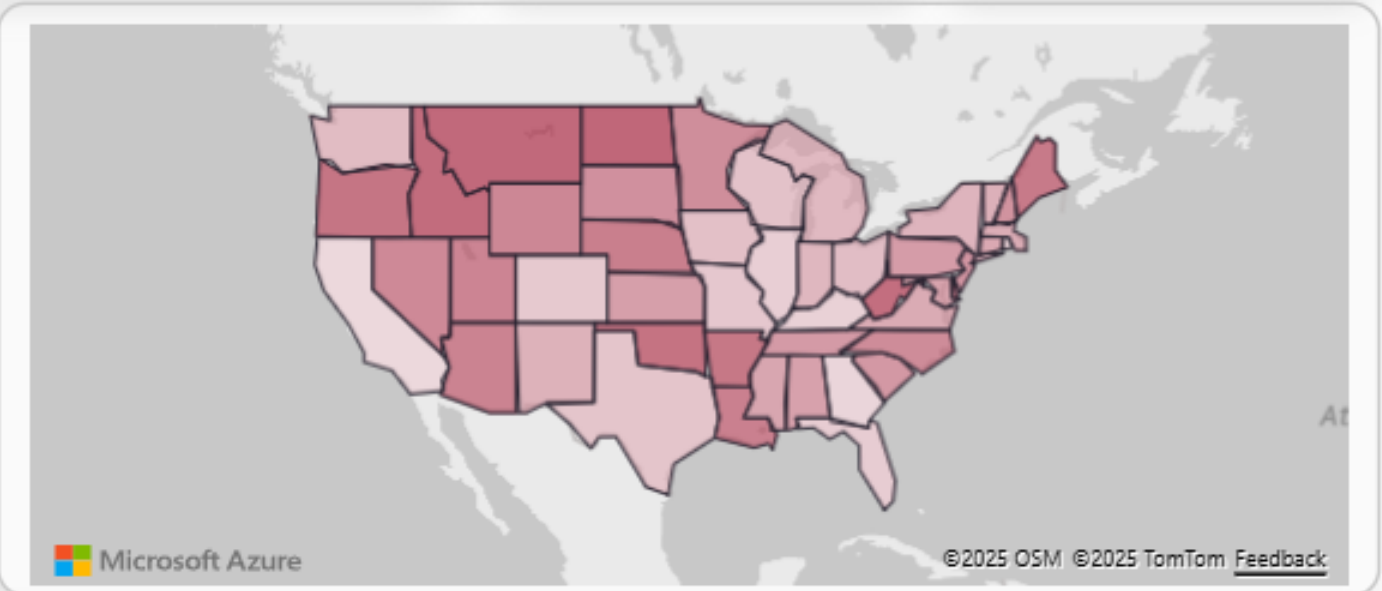
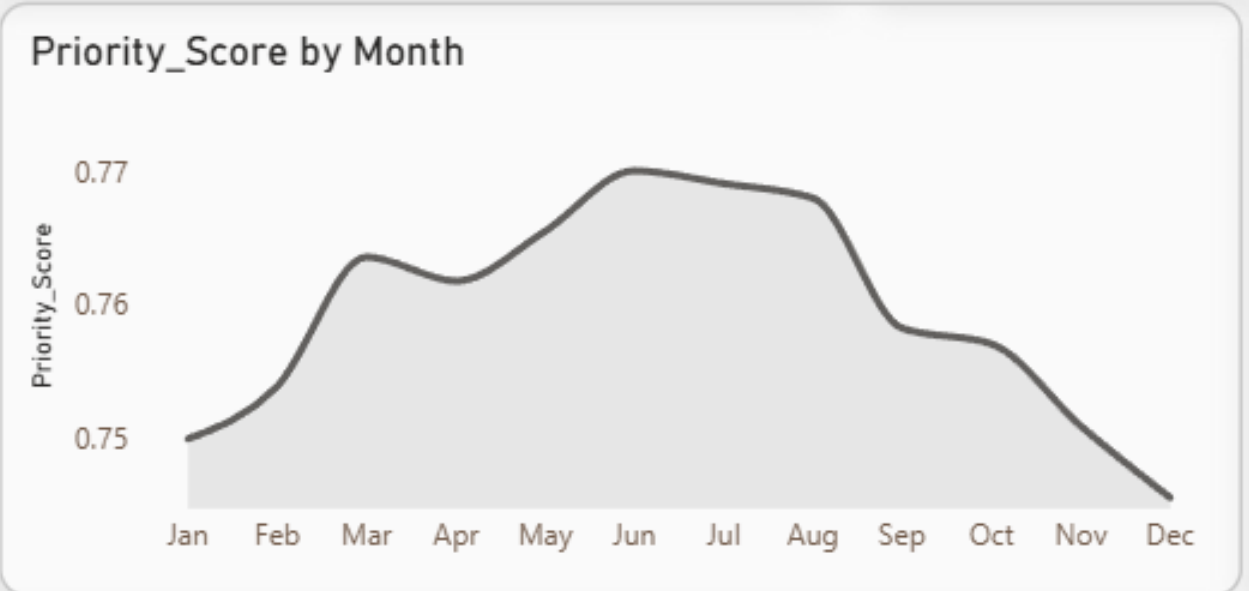
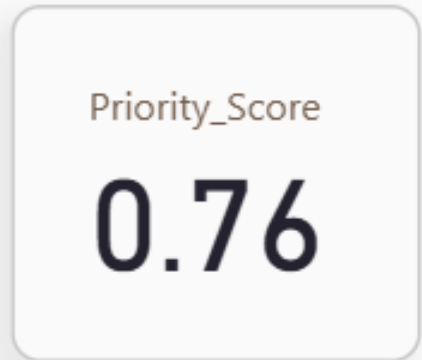
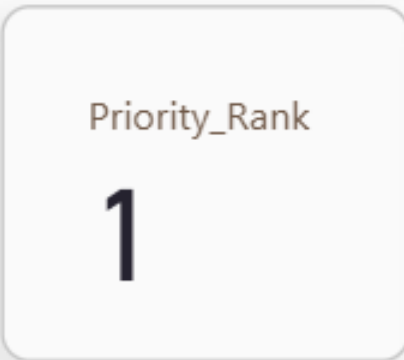
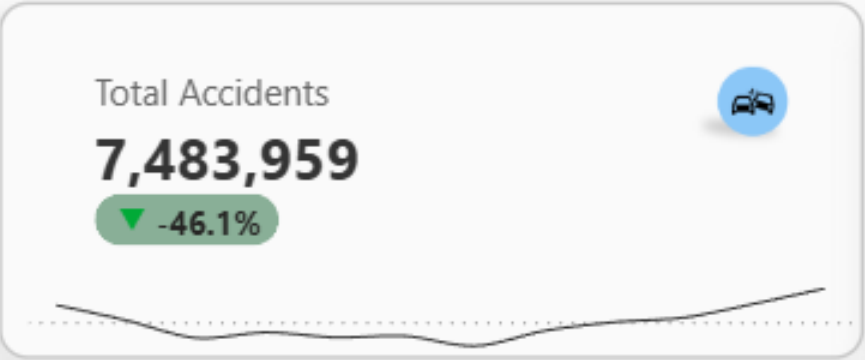
Deep-Dive Time

Hotspot Focus

AI Analysis

Recommendations

Do You Have Any Question? Click Me



State	Total_Accidents	Severe_Accidents	Severity_Index	Priority_Score	Priority_Rank
CA	1,687,115	278,376	0.17	0.21	1
GA	165,290	72,674	0.44	0.15	2
RI	16,434	7,632	0.46	0.14	3
KY	31,702	13,509	0.43	0.13	4
IL	167,054	61,197	0.37	0.13	5
FL	859,877	115,128	0.13	0.12	6
CO	88,596	32,894	0.37	0.12	7
MO	72,900	27,186	0.37	0.12	8
Total	7,483,959	1,457,139	0.19	0.76	1

Years: All

Months: All

Time Segment: All

State: All

County: All

City: All

Filters 0



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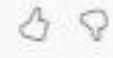
AI Analysis

Recommendations

Do You Have Any  
Question? Click Me

## Key influencers

## Top segments

What influences  
Severity to

Increase



When...

...the average of Severity  
increases by

State is GA

0.32

Weather\_Condition is  
Overcast

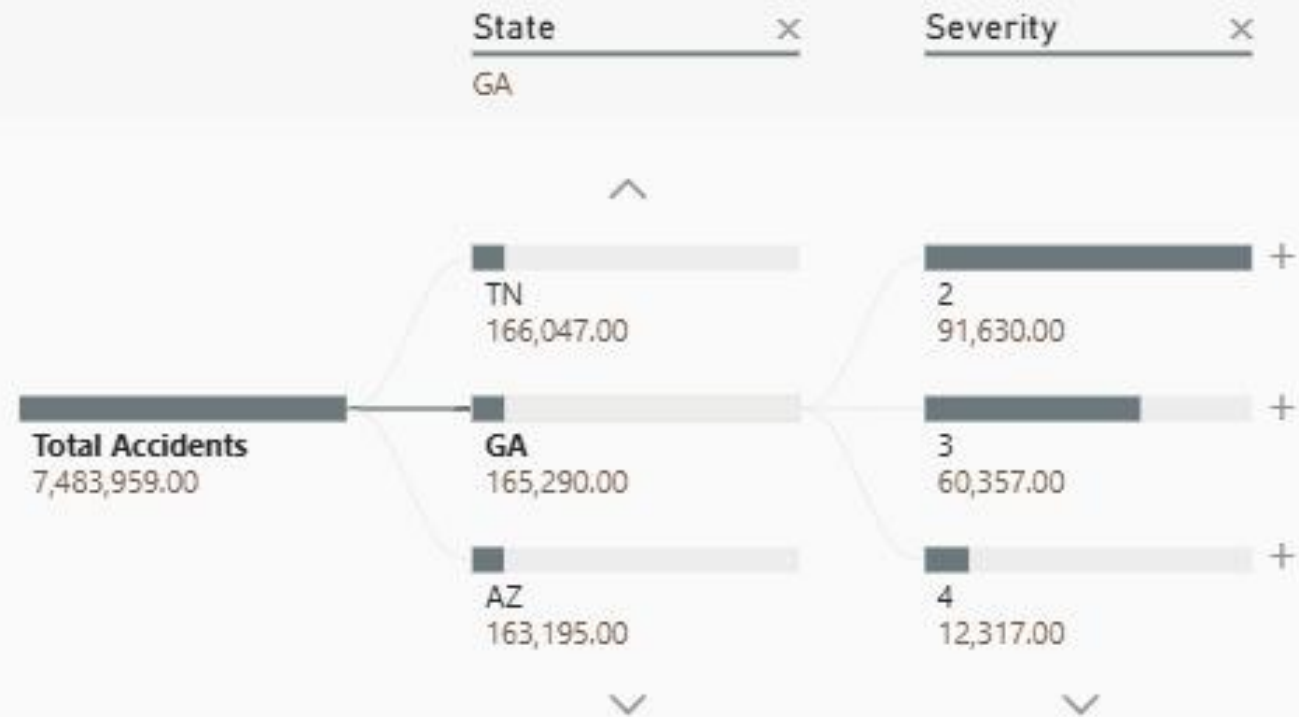
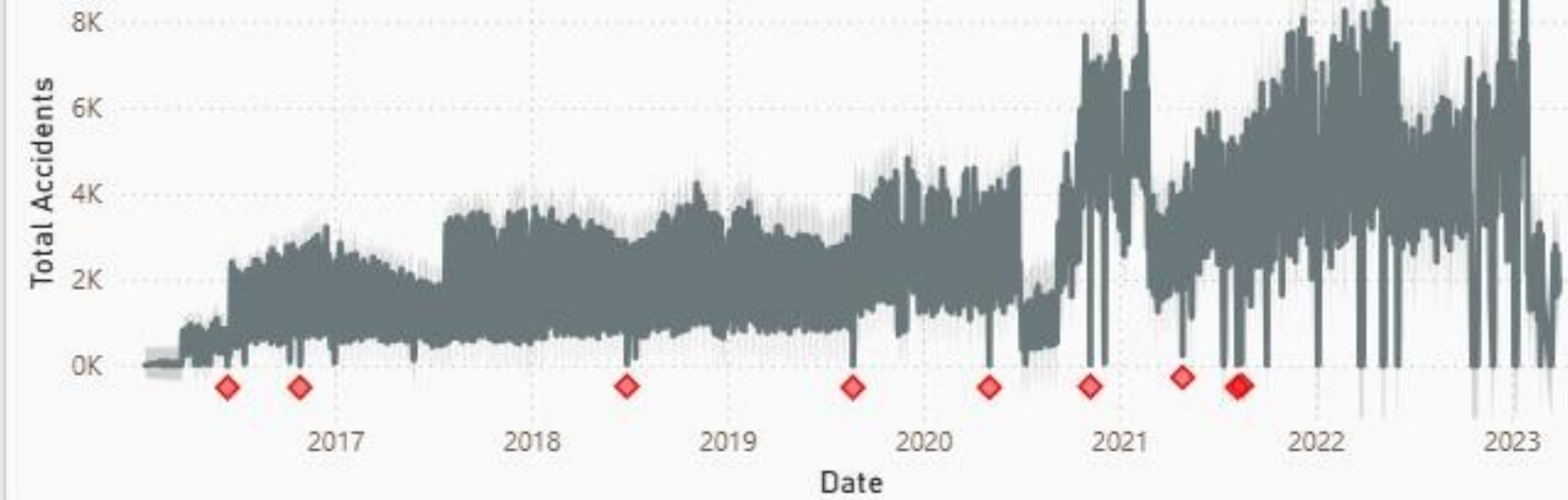
0.23

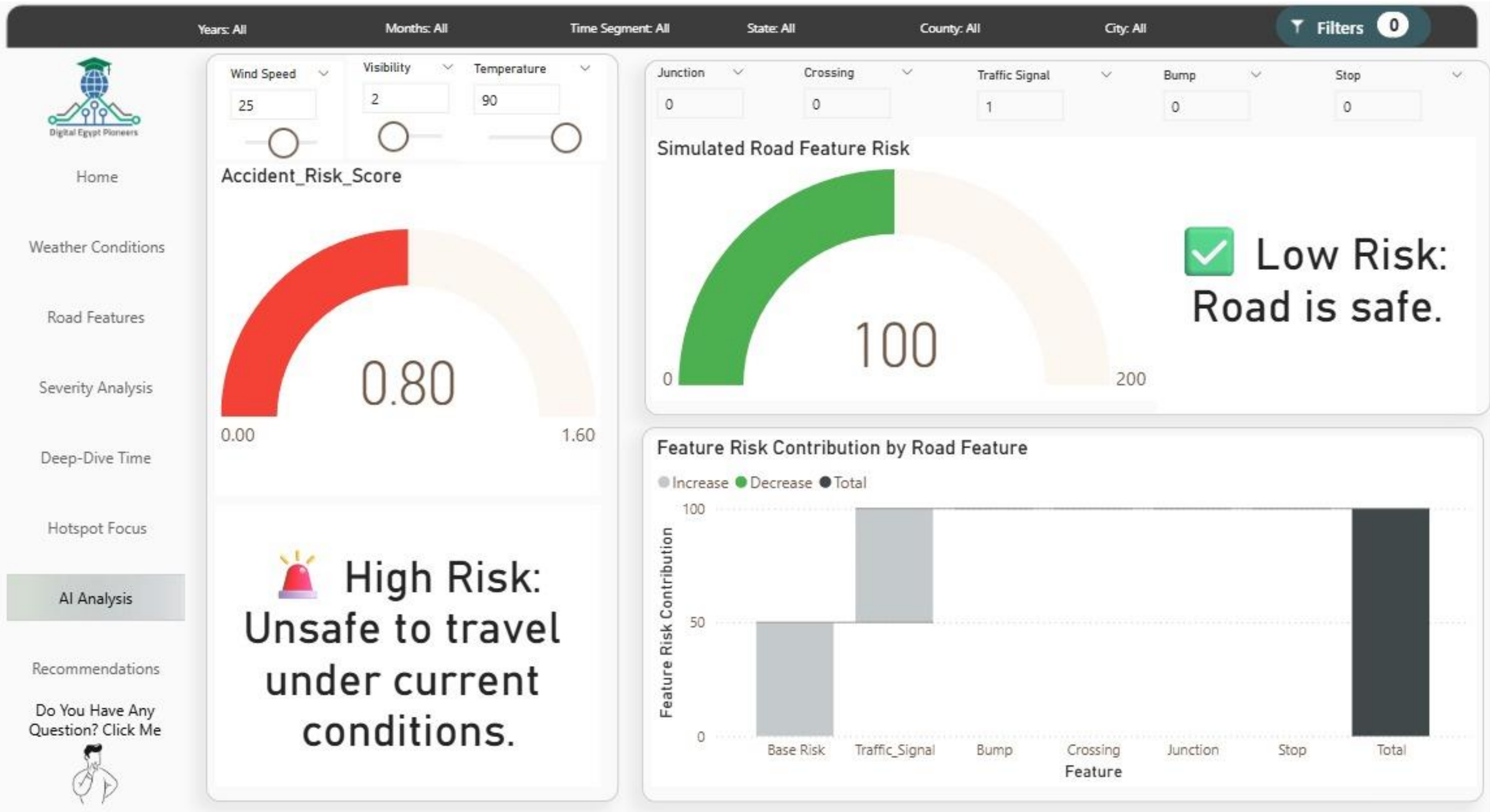
Weather\_Condition is Clear

0.17

Severity Increased the most (by 0.31) when State was GA. 3 other factors also caused Severity to Increase, explore them in the key influencers visual.

## Total Accidents and Accident Severity Index (ASI) by Date







# 09 Key Results

**California (CA)** has the highest number of Accidents

1.6M  
Accidents

followed by **Florida (FL)** and **Georgia (GA)**.

Accidents Severity:

97.67%

Slight Injuries

2.58%

Fatal Injuries

**Fair** is the most common weather

1.3M  
Accidents

- **Rain, Cloudy, and Clear** conditions show higher severity.

Road Features:

94.57%

No Crossing

7.3M

Accidents at  
Junctions

# 09 Key Results

- Accidents peak in **December, January, and November**
- **Tuesday** has the highest number of accidents, especially in **December**.

3M

Accidents  
during day

2M

Accidents At  
Night

# 10 Recommendation



## Focus on California

Allocate resources, awareness campaigns, and infrastructure reviews.



## Prioritize Seasonal & Weekly Safety

Increase alerts in December, January, November, and focus on Tuesdays.



## Review Road Infrastructure

Assess high-accident junctions and no-crossing areas to improve safety.





**THANK YOU!**