

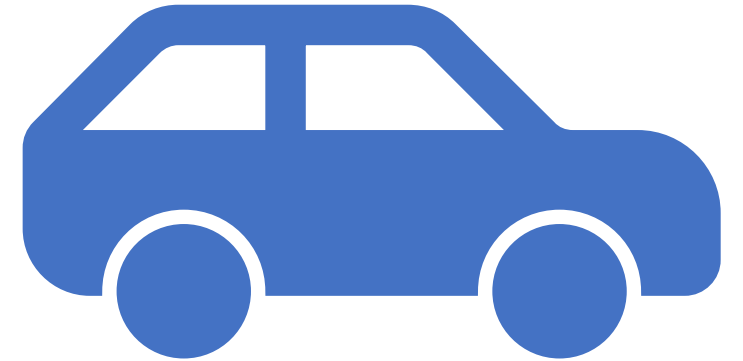
Data Visualization Final Project

Analyzing Traffic Collision Data: Enhancing Road Safety in Montgomery
County

Objective

The objective of the project is to analyze the Montgomery County Traffic Collision Dataset to:

- Identifying accident hotspots
- Enhancing road safety measuresEncourage new ideas to stop accidents from happening.



Overview

Our project has 172,105 records across 43 columns.

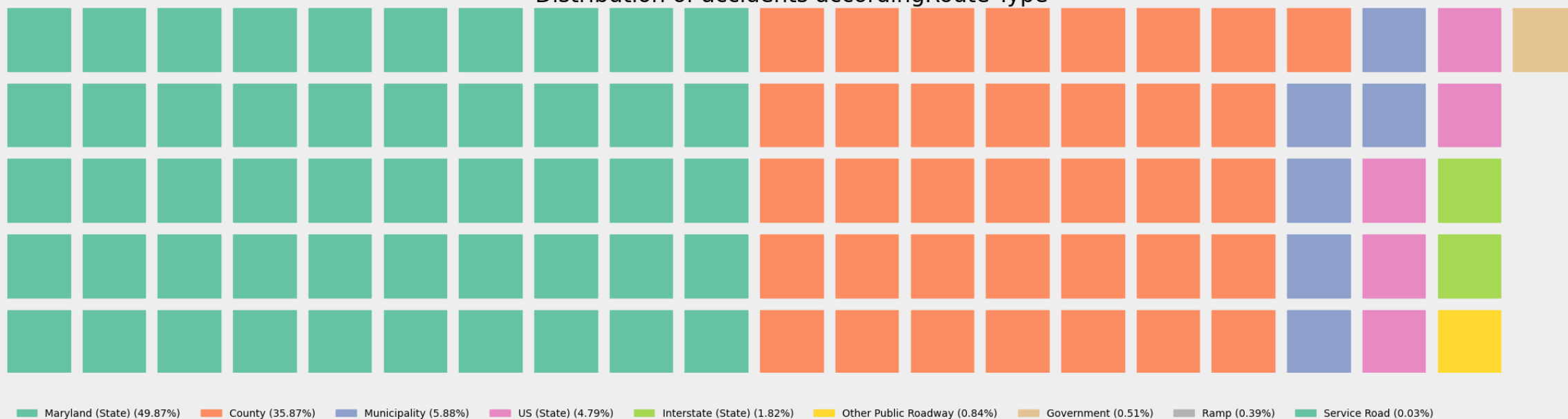


	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Report Num	Local Case Number	Agency Name	ACRS Rep	Crash Date/Time	Route Type	Road Name	Cross-Street	Cross-Street	Off-Road Location	Municipality	Related Non-Motorist	Collision Type	Weather
2	MCP30400	190026050	Montgome	Property D	05/31/2019 15:00					PARKING LOT OF 3215 SPARTAN RD			OTHER	CLEAR
3	EJ7885003	230034791	Gaithersbu	Property D	07/21/2023					MILL RD	N/A		STRAIGHT	CLEAR
4	MCP20090	230034583	Montgome	Property D	07/20/2023					D	N/A		STRAIGHT	CLEAR
5	MCP32010	230035036	Montgome	Property D	07/23/2023					NDING DR	N/A		STRAIGHT	CLEAR
6	MCP23290	230035152	Montgome	Property D	07/24/2023					Y RD	N/A		HEAD ON	CLOUDY
7	MCP29520	230032956	Montgome	Property D	07/11/2023						N/A		SAME DIR	CLEAR
8	MCP33510	230033282	Montgome	Property D	07/12/2023					RD	N/A		SAME DIR	CLEAR
9	EJ7869003	230032124	Gaithersbu	Injury Cras	07/05/2023					93 GREAT	N/A		SINGLE VE	CLEAR
10	MCP32440	230034697	Montgome	Property D	07/21/2023					N AVE (DC	N/A		SAME DIR	CLEAR
11	MCP28630	230034697	Property D		07/19/2023					HWY	N/A		SAME DIR	CLEAR
12	MCP24560	230034697	Property D		07/20/2023					ANEY RD	N/A		SAME DIR	CLEAR
13	MCP20090	230034697	Property D		07/20/2023					D	N/A		STRAIGHT	CLEAR
14	MCP93650	230034697	Injury Cras		06/24/2023						N/A	BICYCLIST	SAME DIR	CLEAR
15	EJ7886003	230034285	Property D		06/19/2023					IBERTY GAS STATION LOCATED AT E			SAME DIR	CLEAR
16	MCP29270	230032852	Montgome	Property D	07/10/2023					OR	N/A		SAME DIR	CLEAR
17	MCP22700	230033962	Montgome	Injury Cras	07/17/2023					TERRACE	N/A		HEAD ON	CLEAR
18	MCP33600	230046354	Montgome	Injury Cras	07/25/2023					D	N/A	BICYCLIST	SINGLE VE	CLEAR
19	MCP29480	230034678	Montgome	Injury Cras	07/21/2023						N/A		HEAD ON	CLEAR
20	MCP22030	230034143	Montgome	Property D	07/18/2023					PARKING LOT OF 2405 REEDIE DR (D			ANGLE ME	CLEAR
21	MCP27230	230035094	Montgome	Property D	07/23/2023					AVE	N/A		SAME DIR	CLEAR
22	MCP32070	230034789	Montgome	Property D	07/21/2023					RD	N/A		SINGLE VE	CLEAR
23	MCP30860	230034046	Montgome	Injury Cras	07/17/2023					ER CT	N/A		OPPOSITE	CLOUDY
24	MCP23610	230046471	Montgome	Property D	07/27/2023					E RD	N/A		STRAIGHT	CLEAR
25	MCP31260	230035266	Montgome	Injury Cras	07/24/2023 16:45	Maryland	(RIDGE RD - County			HAWKES RD	N/A		STRAIGHT	CLEAR
26	MCP12050	230034759	Montgome	Property D	07/21/2023 14:30	County	STONEYBF County			LA DUKE DR	N/A		SAME DIRE	CLEAR

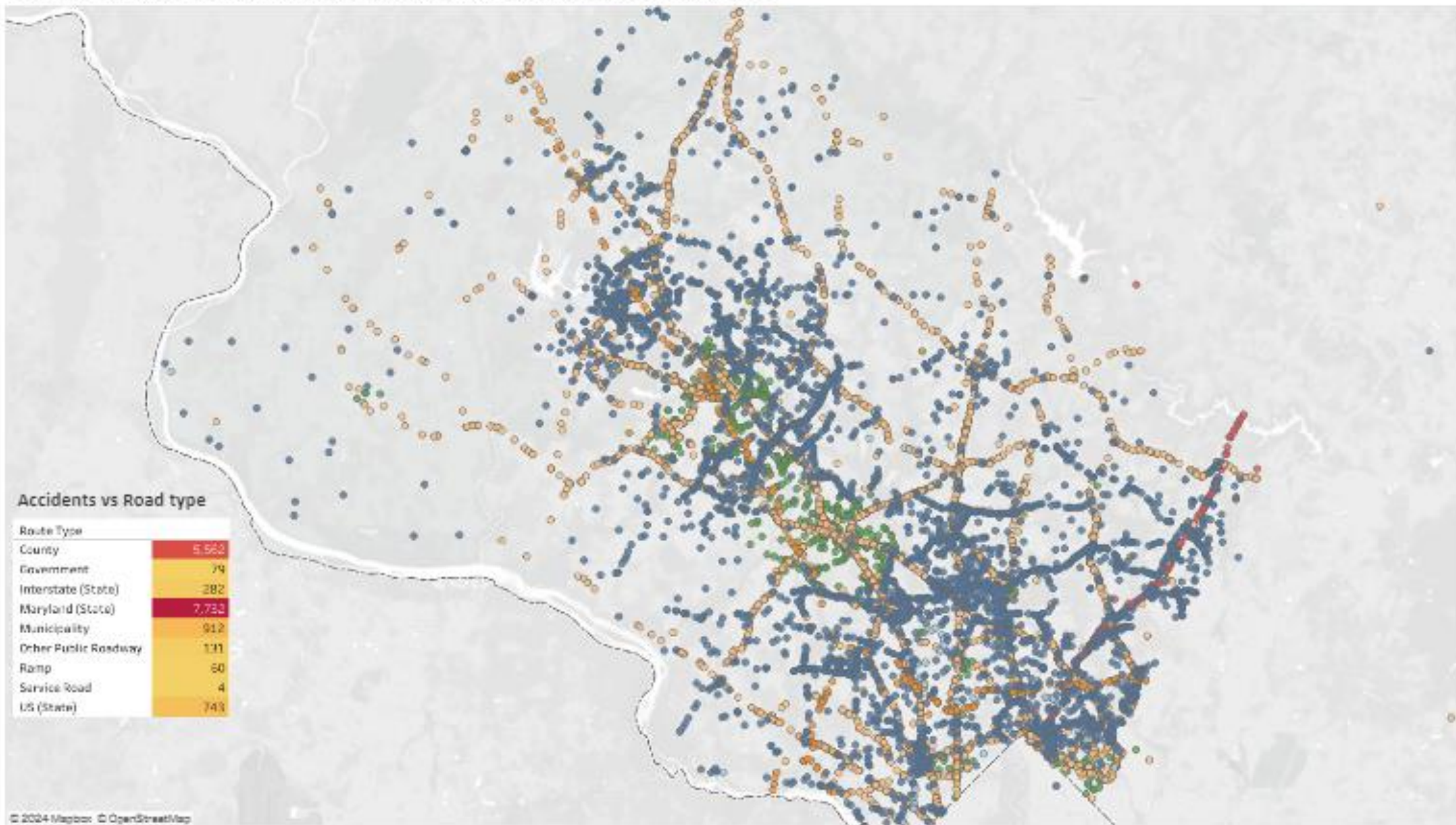
Variables

Route Type
Latitude
Longitude
Location
Crash Date/Time
Injury Severity
Speed Limit
Vehicle Year
Weather
Light
Driver At Fault
Related Non-motorist
Driver Distracted By
Driver Substance Abuse
Vehicle make

Distribution of accidents accordingRoute Type



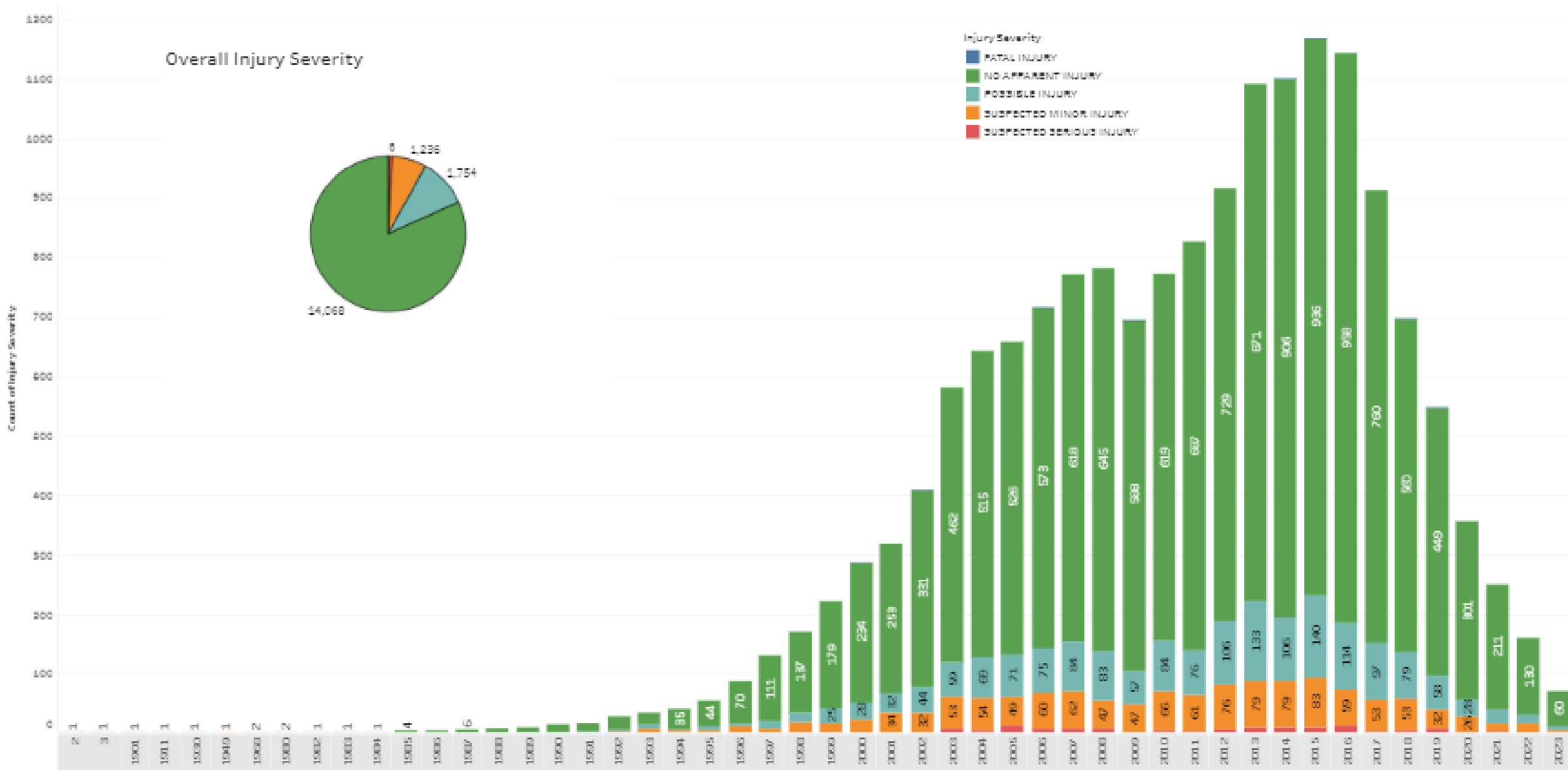
Eagle View on accidents occurring in Montgomery County between the years 2015 and 2023



Route Type

- County
- Government
- Interstate (State)
- Maryland (State)
- Municipality
- Other Public Roadway
- Ramp
- Service Road
- US (State)

Accidents vs Year of the vehicle

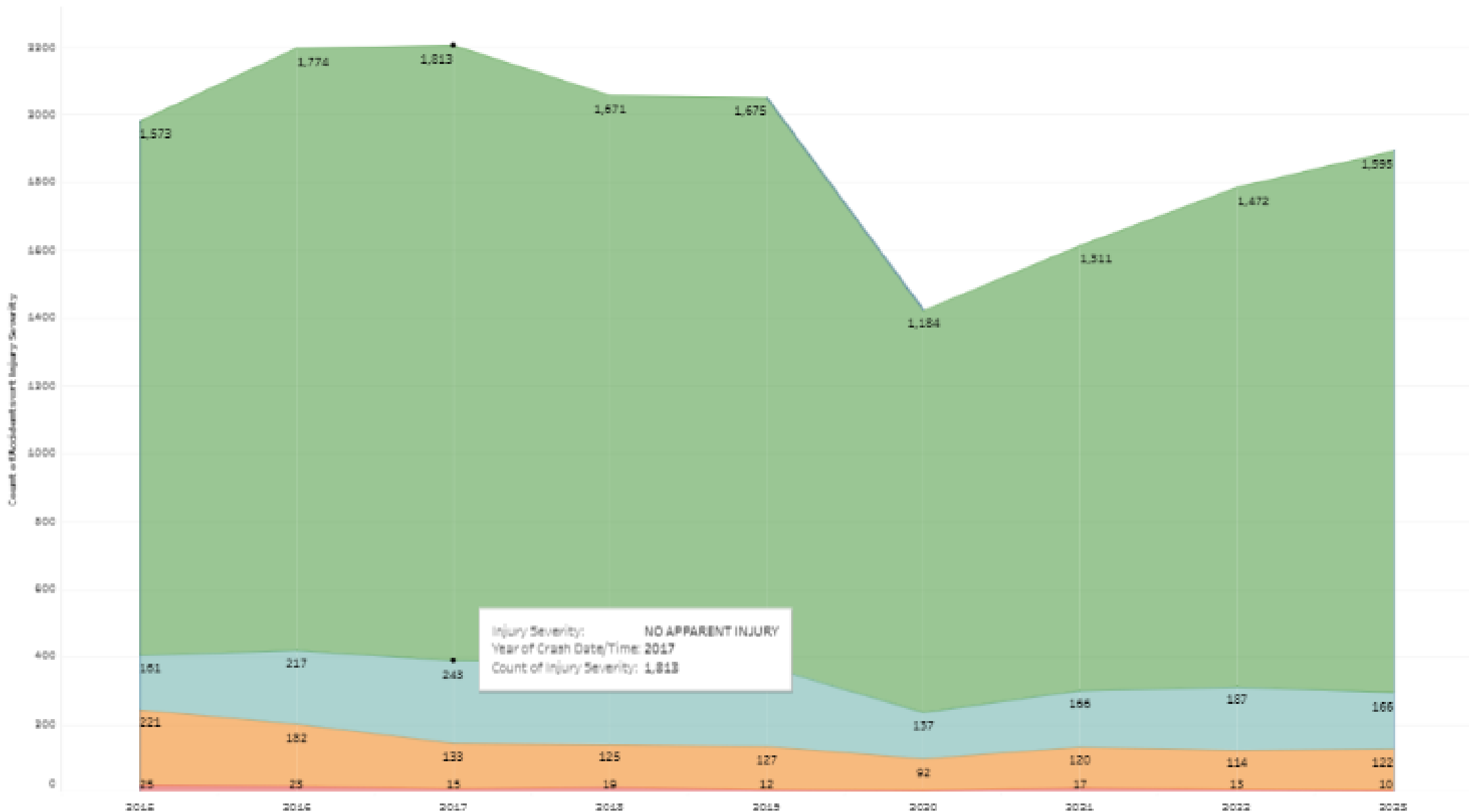




Smart Questions

- How many accidents does Montgomery County account for every year and how severe are they?
- Are drivers responsible for accidents?
- Is there a third party involvement in the accidents?
- Is there any reason behind the accident's occurrence?
- Does speed affect the severity of the accident?
- Are accidents based on weather conditions/age of the vehicle?
- Does the speed limit on the road affect the injury?

How many accidents does Montgomery county account for every year and how severe are they?



Injury Severity

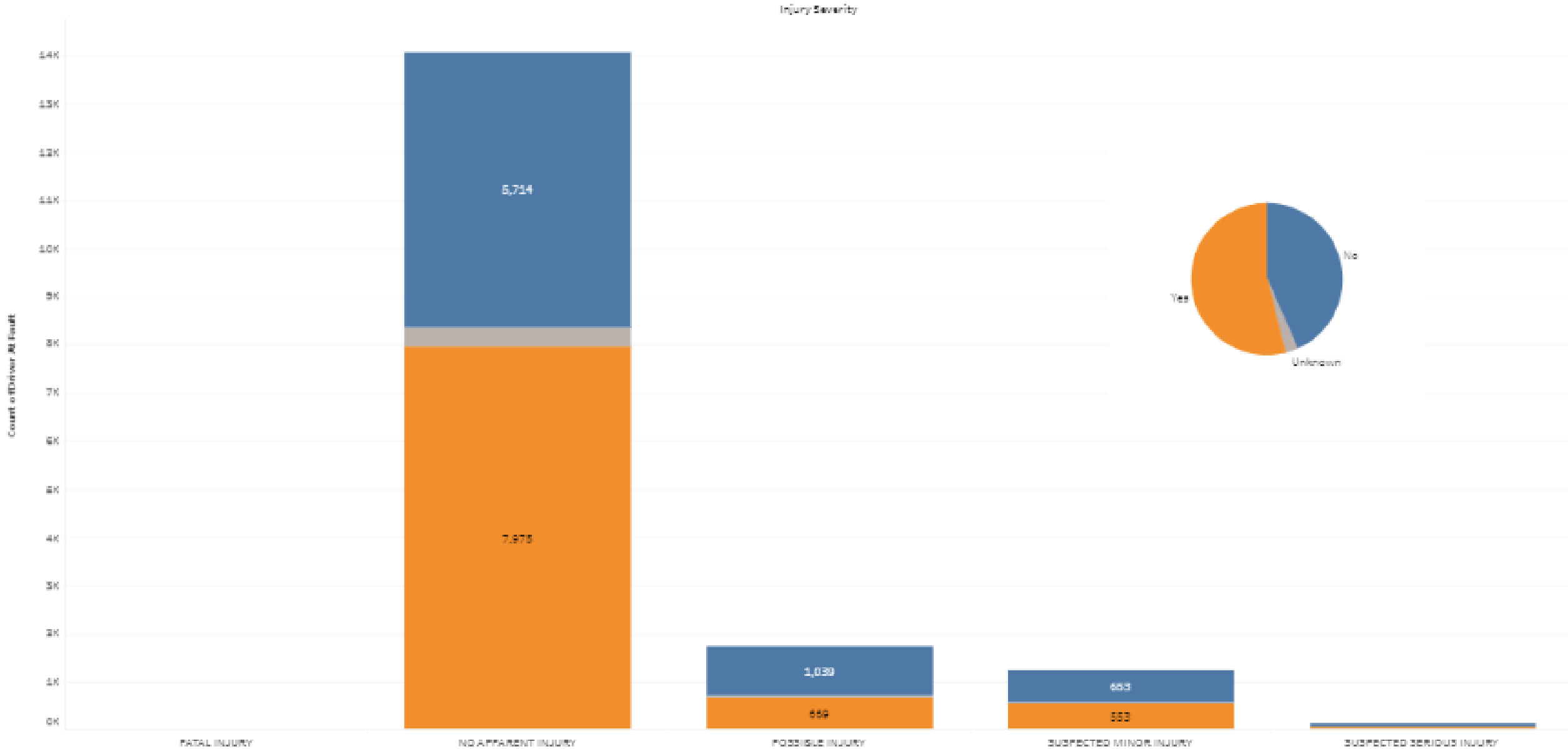
- FATAL INJURY
- NO APPARENT INJURY
- POSSIBLE INJURY
- SUSPECTED MINOR INJURY
- SUSPECTED SERIOUS INJURY

Month Vs Total Accidents

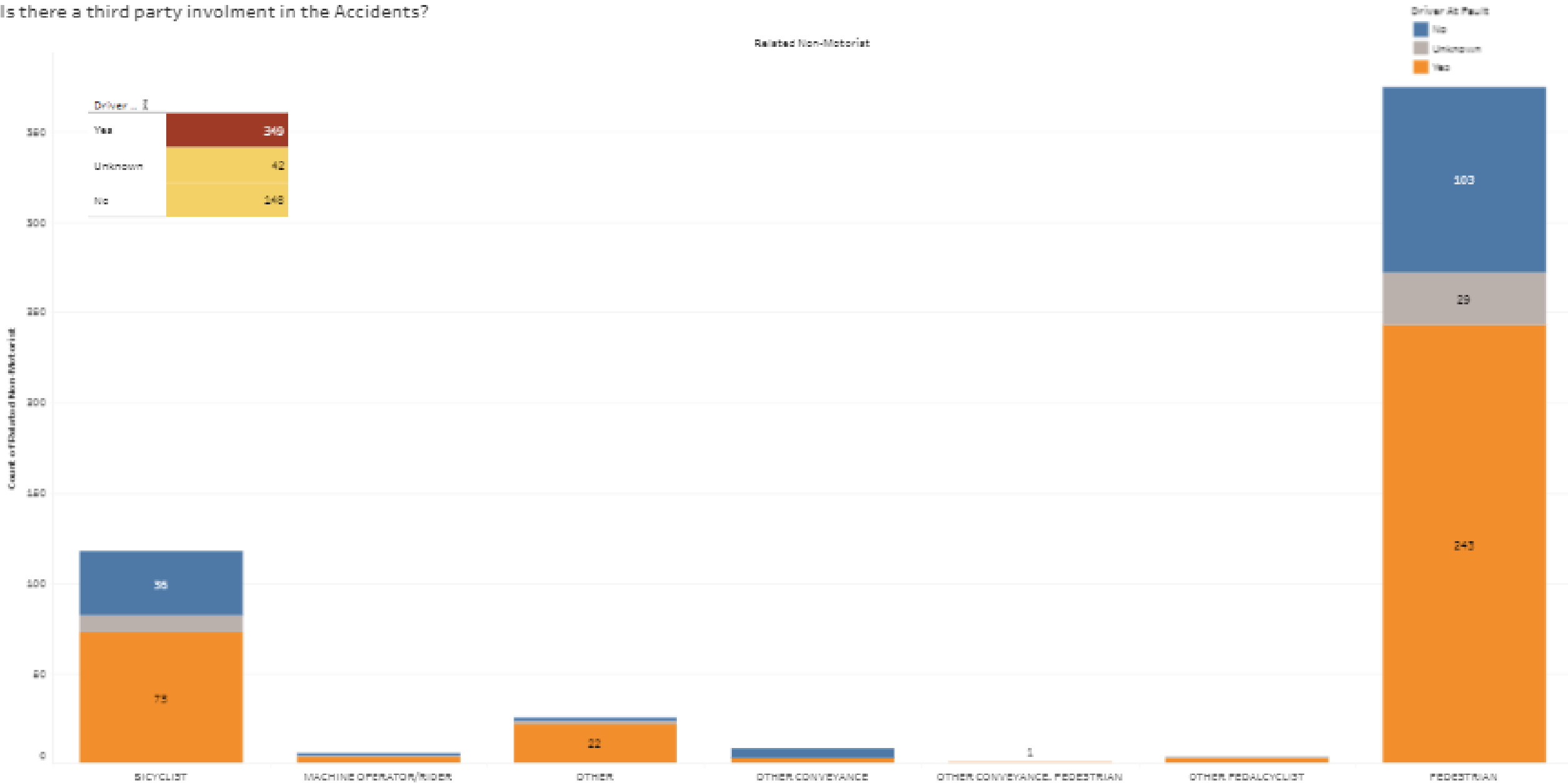
Year of Cra..	Total
2015	1,982
2016	2,196
2017	2,204
2018	2,057
2019	2,050
2020	1,425
2021	1,614
2022	1,786
2023	1,896

Injury Severity: NO APPARENT INJURY
Year of Crash Date/Time: 2017
Count of Injury Severity: 1,813

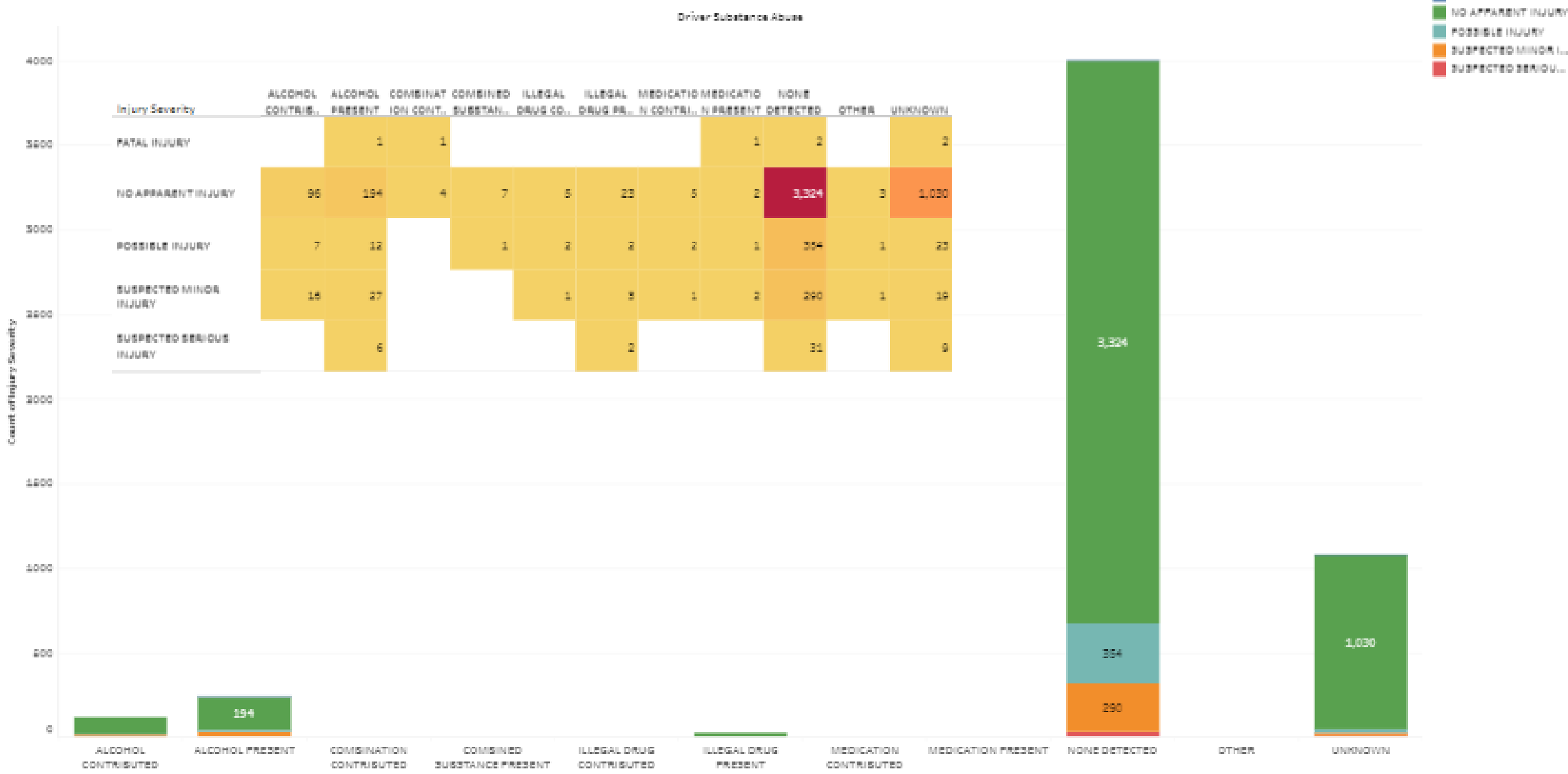
Are Drivers responsible for the Accidents?



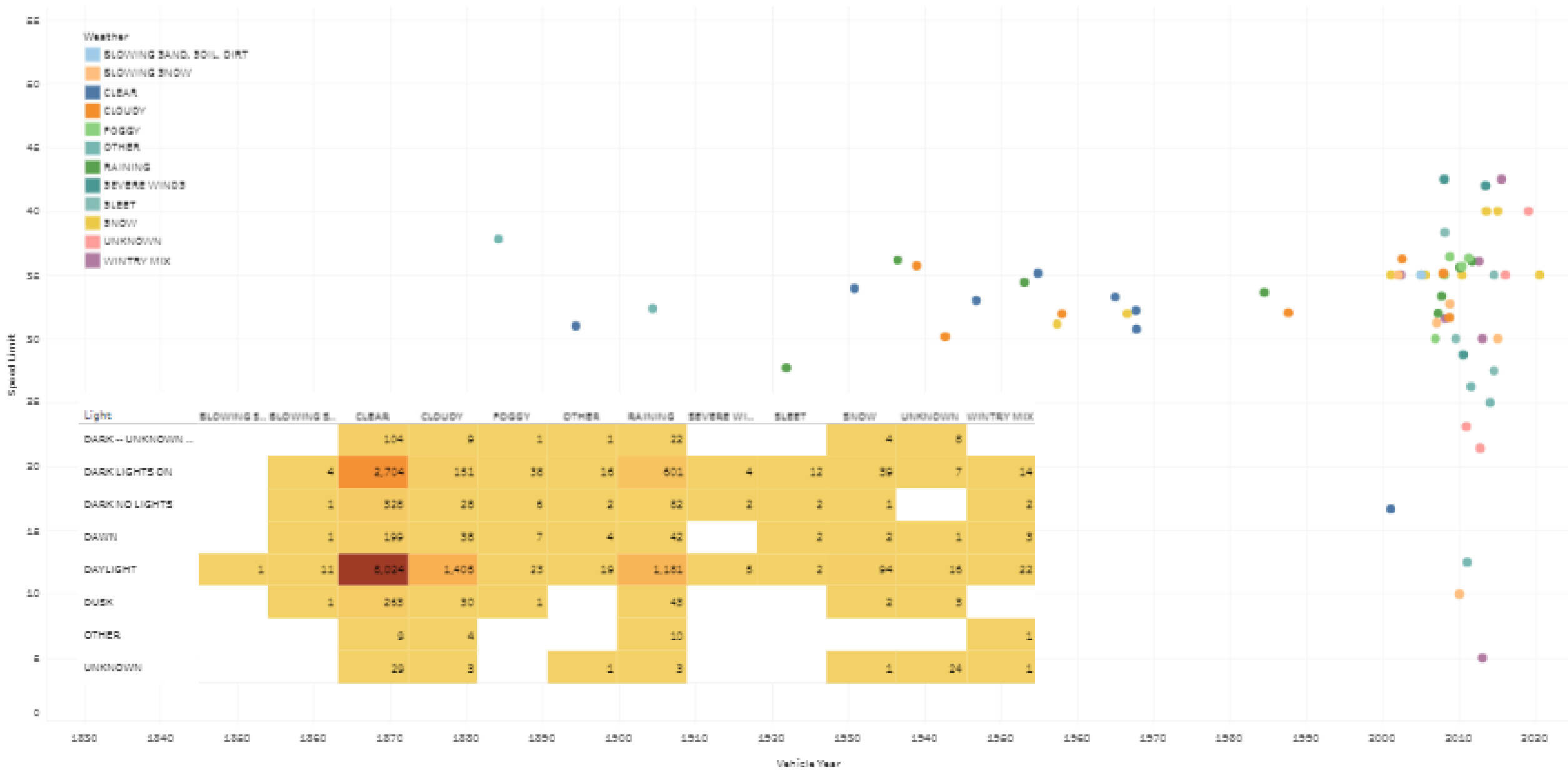
Is there a third party involment in the Accidents?



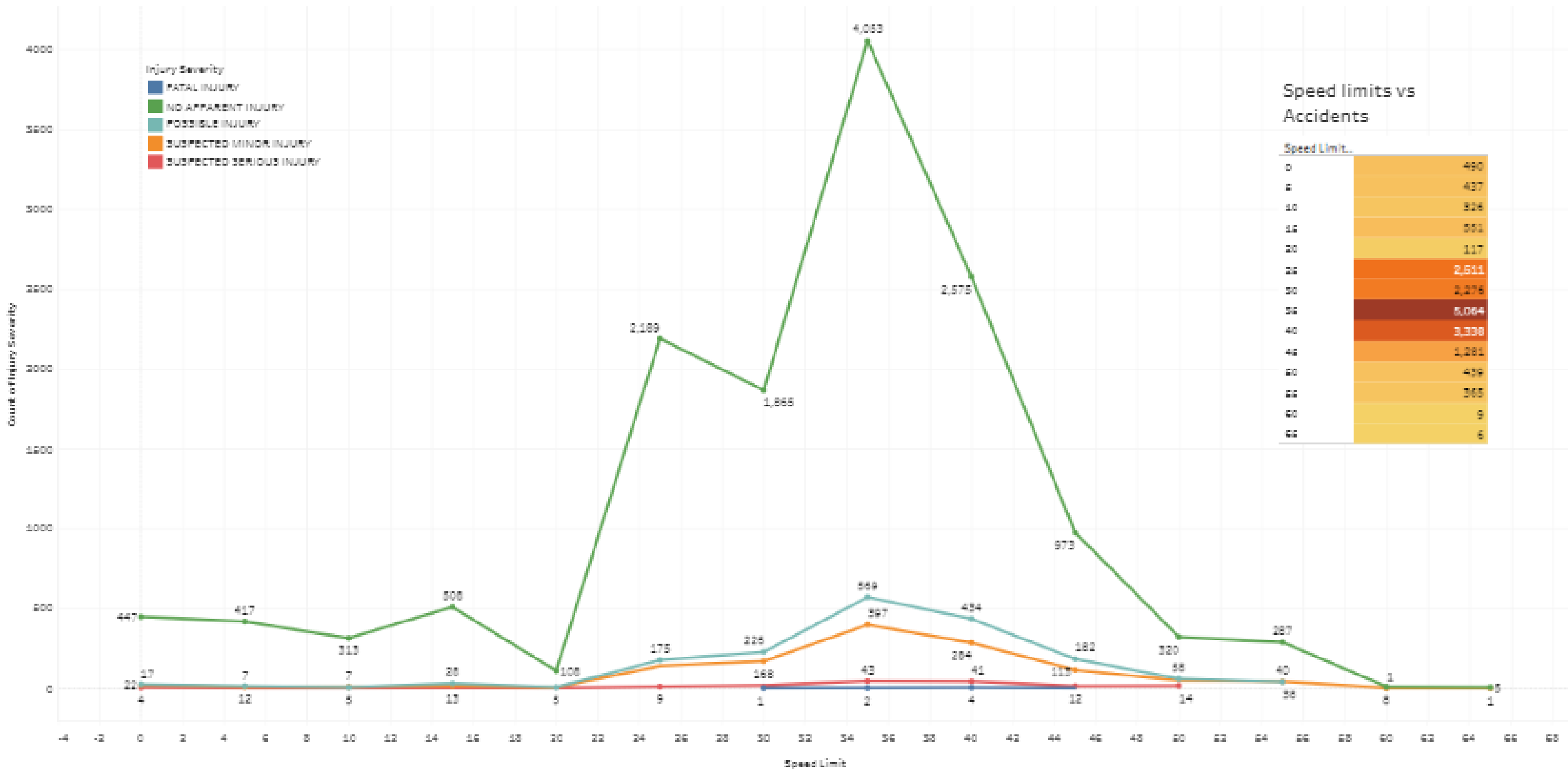
Is there any reason behind the accidents occurrence?



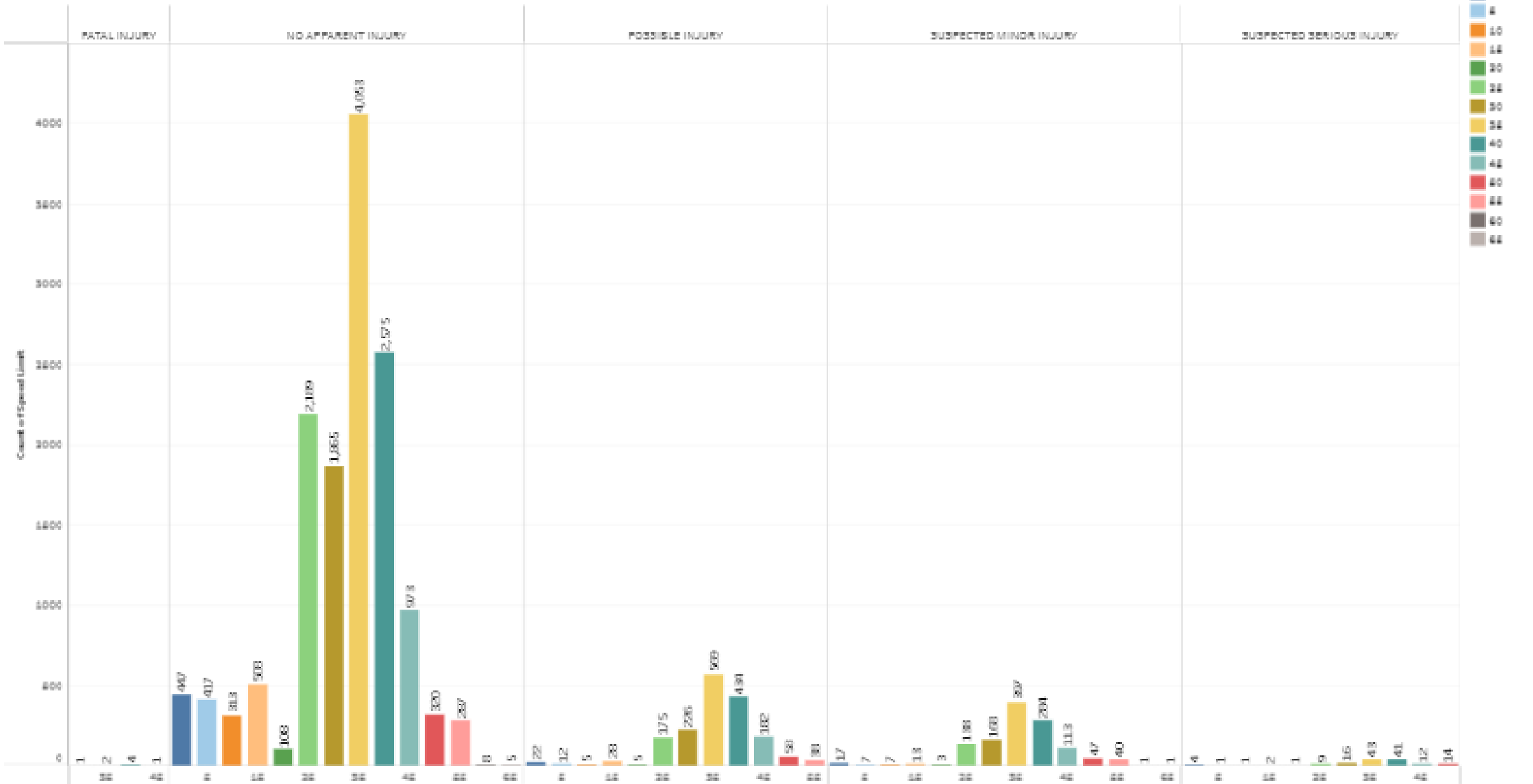
Are accidents based on the weather conditions and age of the vehicle?



Does the speed limit on road affect the severity of an accident?



Does the speed limit on the road affect the rate of the injury?



Challenges:

- Limited utilization of available data rows.
- Presence of numerous null values hindering analysis depth.

Future Directions:

Integration of Machine Learning:

- Opportunity to leverage predictive capabilities for forecasting and anomaly detection.
- Potential for deeper insights and more flexible analysis.

Lessons Learned:

- Importance of effective data preprocessing.

Conclusion

In conclusion, our analysis reveals that the accidents are attributed to 3rd parties, particularly pedestrians. Furthermore, these accidents predominantly occur during daylight hours and within speed limits of 35. Notably, 2017 emerges as the year with the highest frequency of accidents. Additionally, it's notable that most accidents result in no apparent injuries.



Thank you