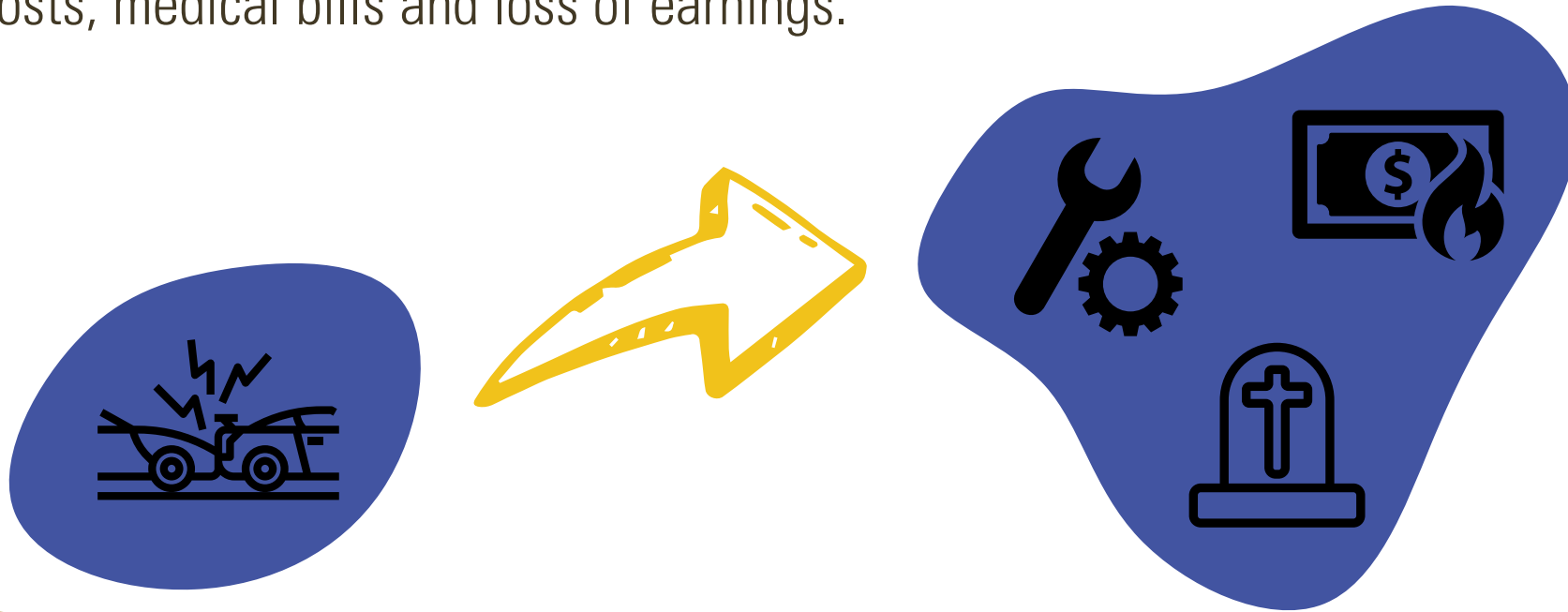# CAPSTONE PROJECT - CAR ACCIDENT SEVERITY
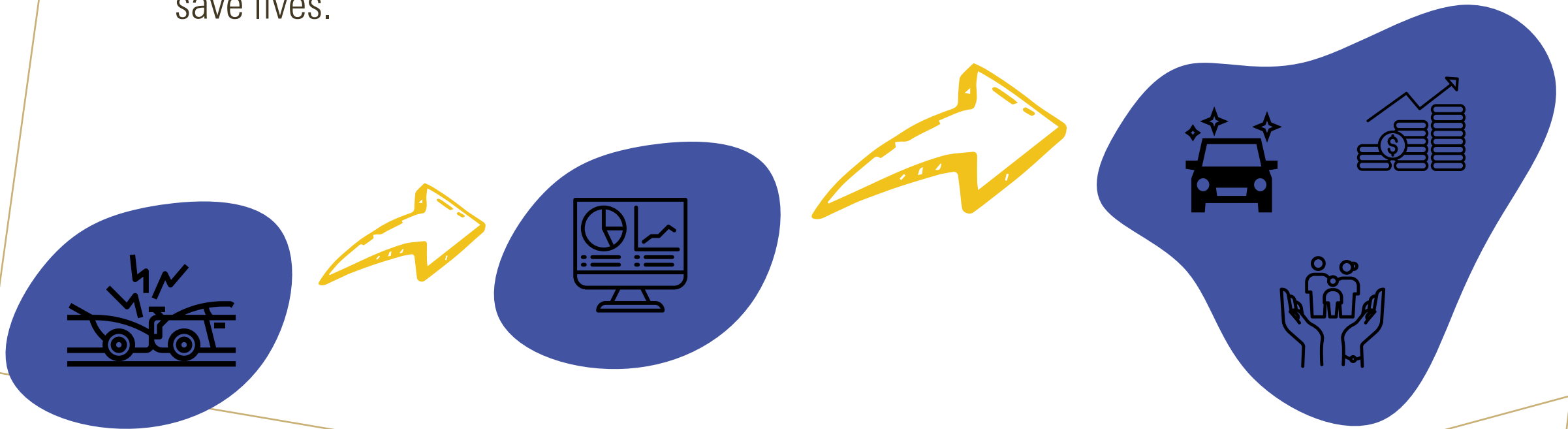
IMPORTANCE OF THIS STUDY

- It is estimated that road traffic accidents cost the United States economy arround $810 billion per year, including costs due to property and vehicular damage, legal costs, medical bills and loss of earnings.
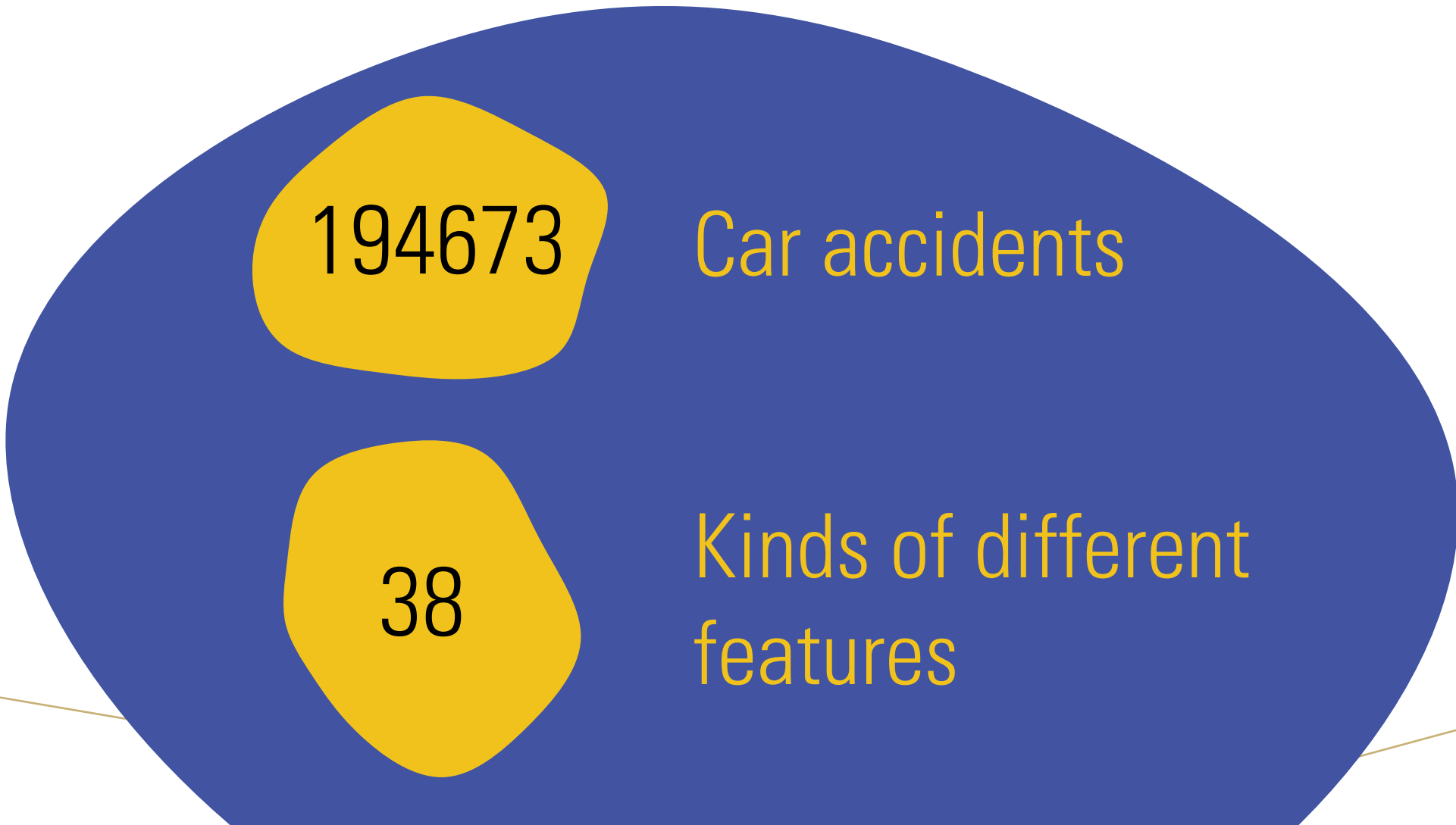
IMPORTANCE OF THIS STUDY

- It´s important to understand the factors influencing the severity of road traffic accidents, in order people and the government can devise strategies to mitigate accident severity, and in order to decrease the incidence of accidents and potentially save lives.
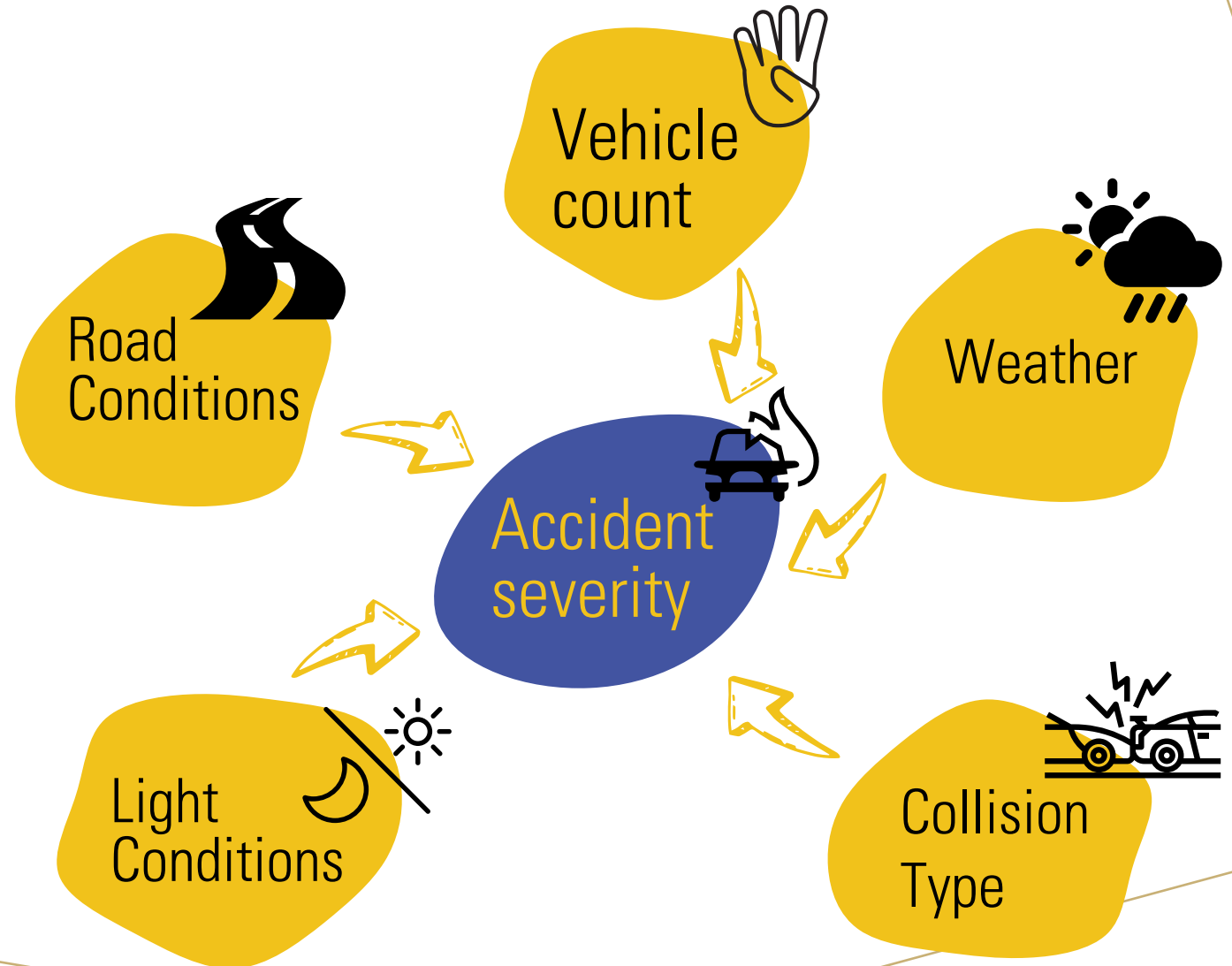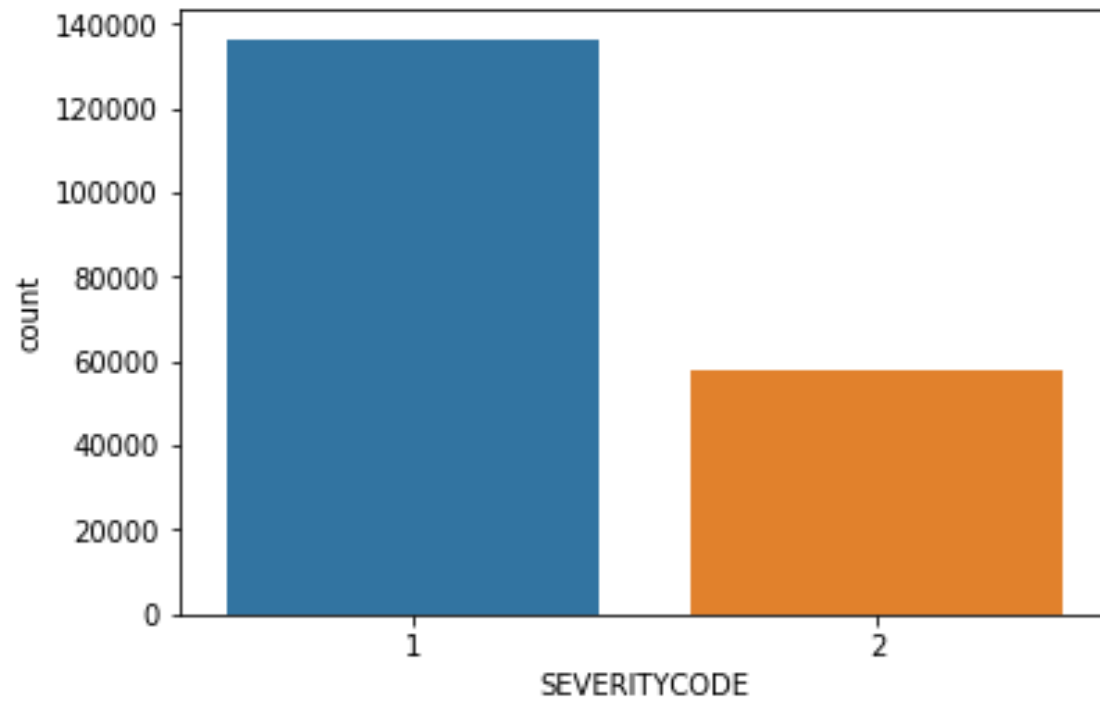
DATA ACQUISITION AND CLEANING

194673 Car accidents

38 Kinds of different features

DATA ACQUISITION AND CLEANING

- We will work with five of the most important features in this study and one predicted lable

Vehicle count

Road Conditions

Weather

Accident severity

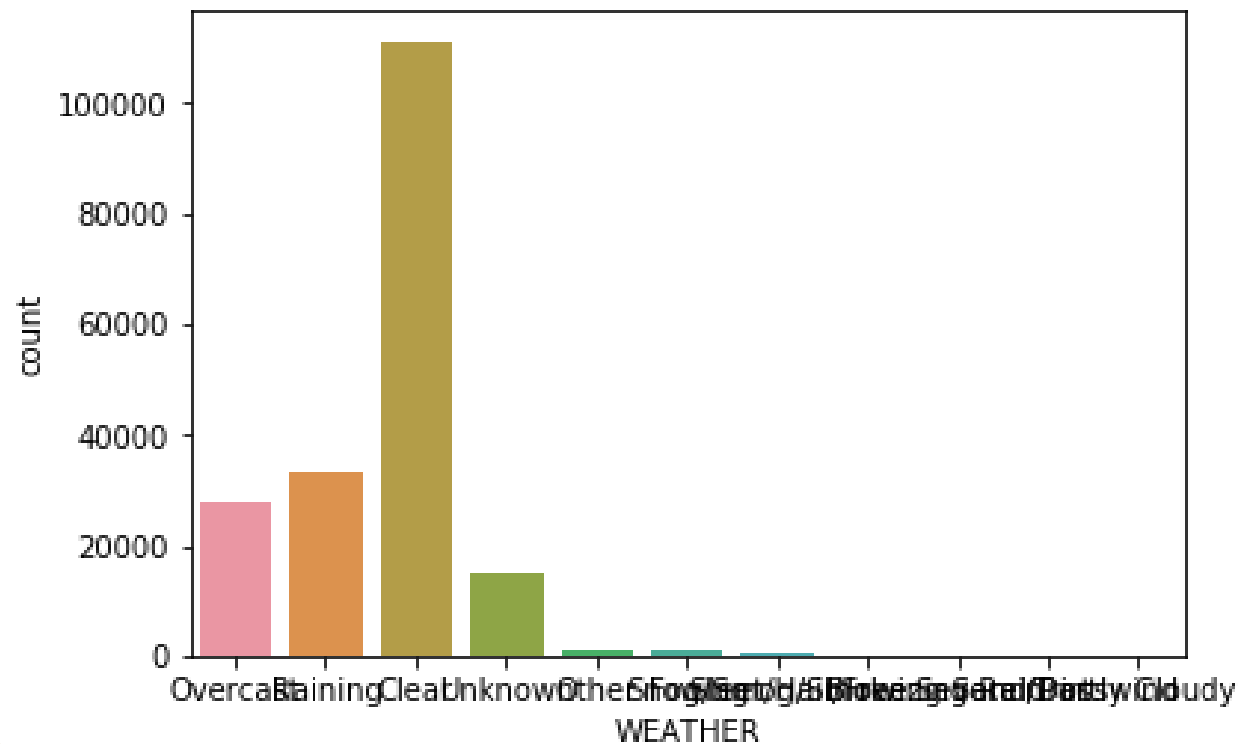Light Conditions

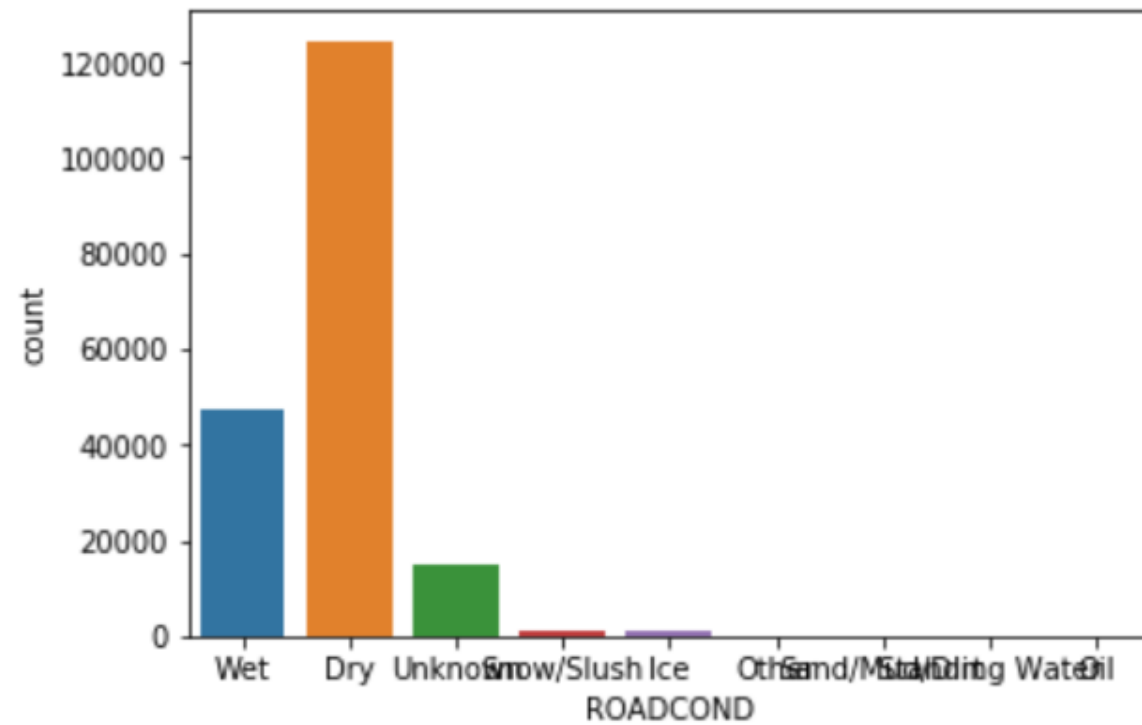Collision Type

SEVRITY COUNT

- 1 means property **damage**
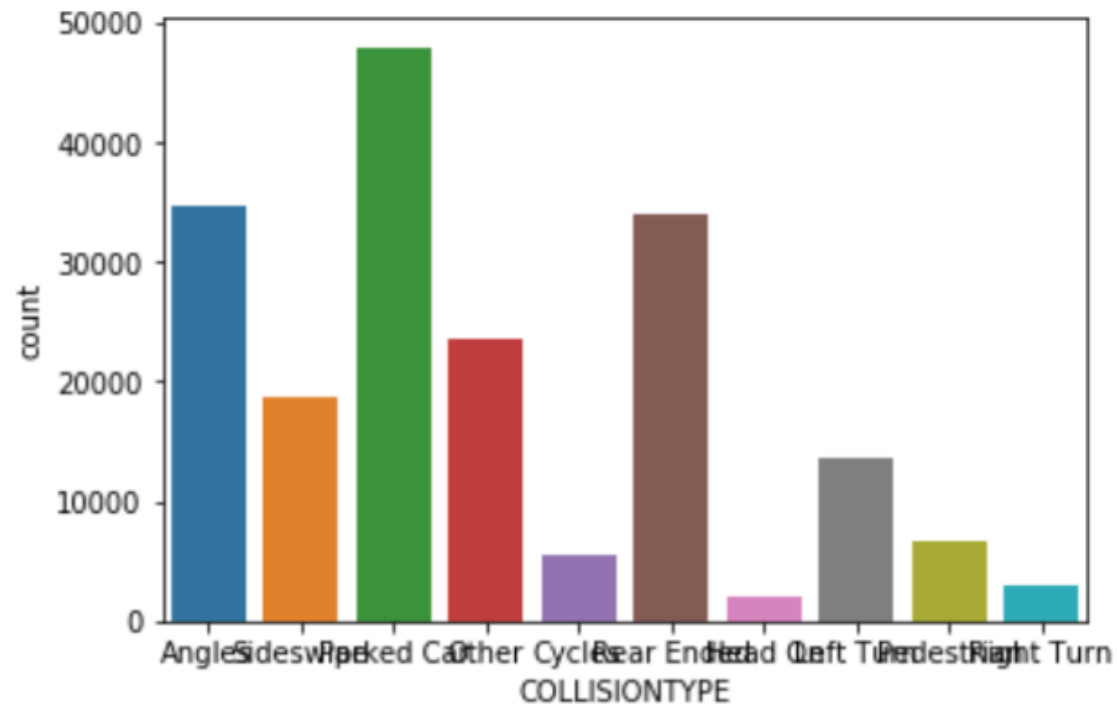- 2 means **injury**

WEATHER CONDITIONS

Most accidents occurred during **clear skys**, **raining** and **overcast**.
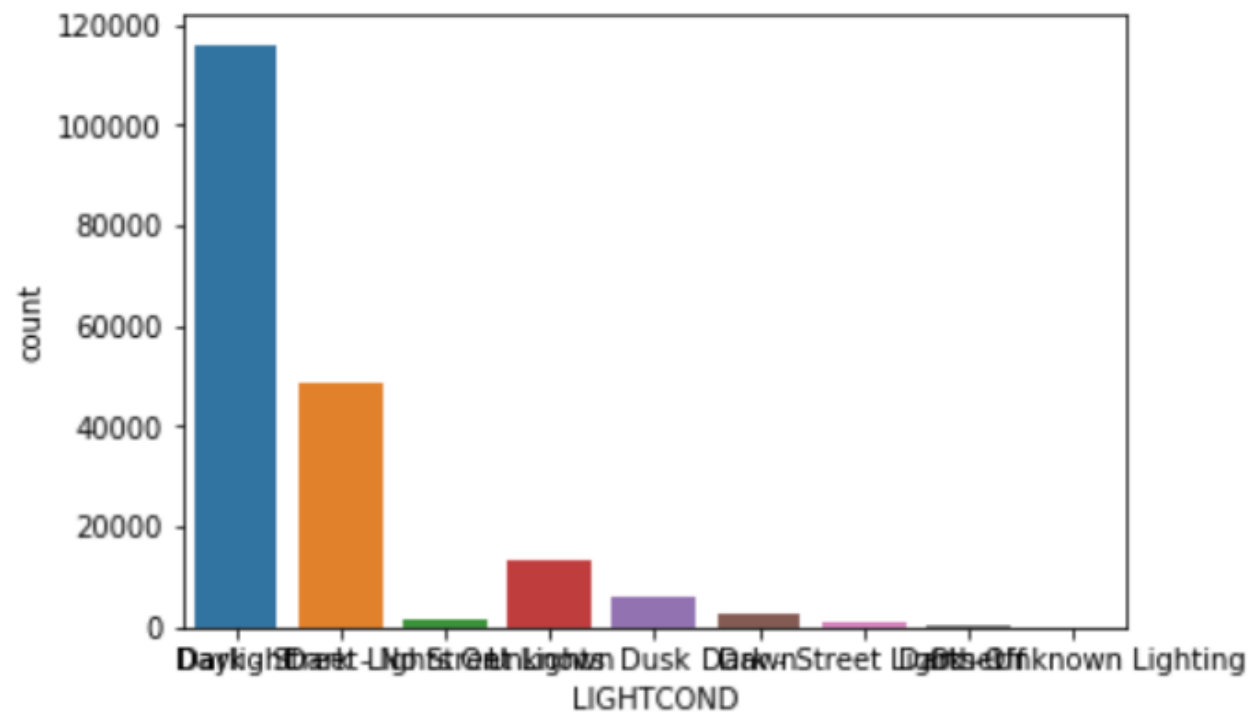
ROAD CONDITIONS

Most accidents occurred during **dry** and **wet** roads.

COLLISION TYPE
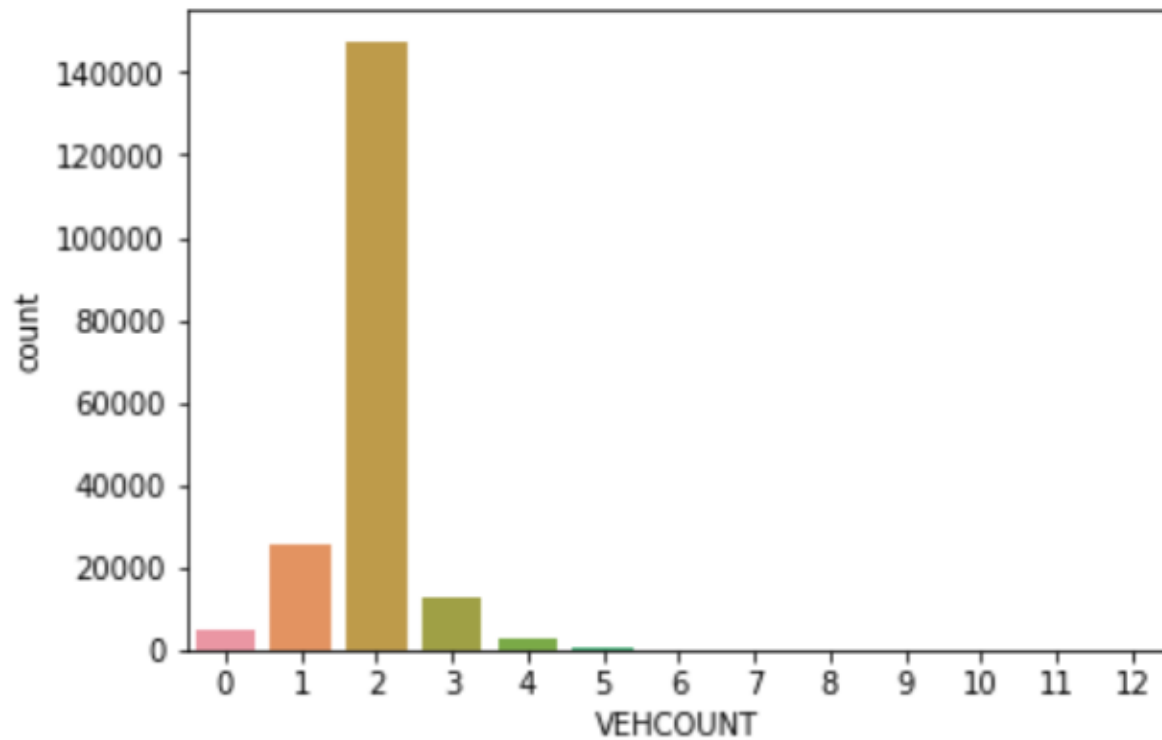

Most accidents occurred were **angles**, **side crash**, and **rear ended**.

LIGHT CONDITIONS

Most accidents occurred by **day**, **night** and **dusk**.
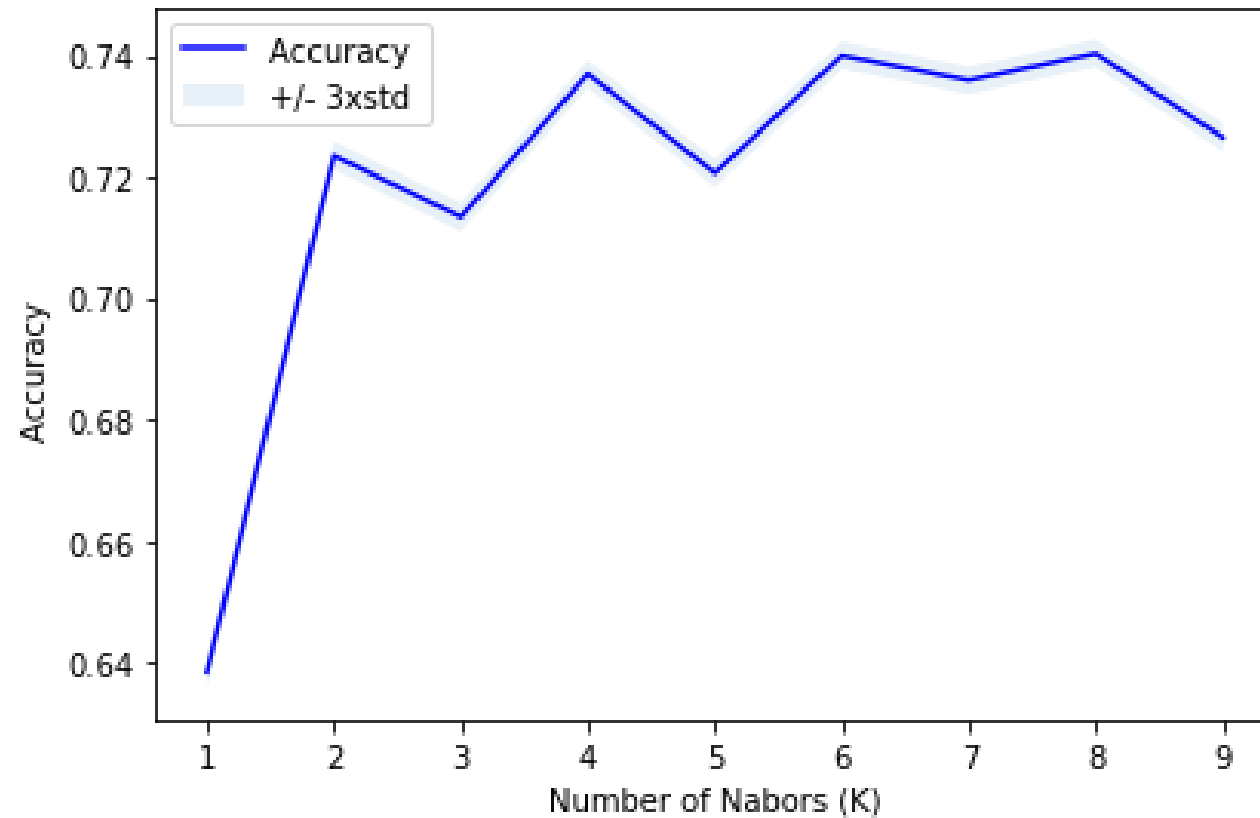
VEHICLE COUNT

Most accidents envolved **two**, **one** or **three** cars.

THE DATA FRAME

	SEVERITYCODE	WEATHER	ROADCOND	COLLISIONTYPE	LIGHTCOND	VEHCOUNT
0	2	3	2	2	1	2
1	1	2	2	5	2	2
2	1	3	1	1	1	3
3	1	1	1	4	1	3
4	2	2	2	2	1	2

CLASSIFICATION MODEL

CLASSIFICATION MODEL

Method	Accurancy	Jaccard Score	F-1 Score
KNN	0,74	0,74	0,70
Decision Tree	0,75	0,75	0,71
SVM	0,75	0,75	0,71
Log Reg	0,72	0,72	0,66

DISCUSSION

As we can see the model preforms best at K=8. And, we also can affirm, based on the classification model table, that both decision tree and SVM (support vector machine) preform well, with an accuracy over 75%.

Although, decision tree had a much faster processing time, making it the best choice to use in this study.

CONCLUSION

This study allowed important insights to be taken, based on the data and factors analyzed. With the factors considered it is evident the importance of the care that the city must take in correctly signaling streets and avenues, ensuring adequate lighting and encouraging drivers to pay attention to conditions climate change.