Applied Data Science Capstone Project

The Severity of Car Accidents

Introduction

According to WHO (World Health Organization):

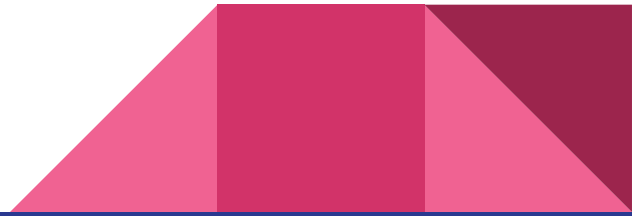
> *“Every year the lives of approximately 1.35 million people are cut short as a result of a road traffic crash. Between 20 and 50 million more people suffer non-fatal injuries, with many incurring a disability as a result of their injury.”*

So, This project aims to predict how severity of accidents can be reduced based on some factors.This project will be based on Settle city(a seaport city on the West Coast of the United States and The largest city in both the state of Washington and the Pacific Northwest region of North America) data

DATA:

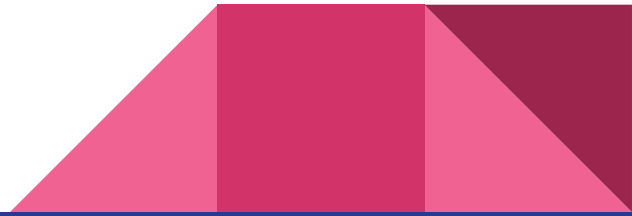
Collision data had been fetched from Seattle Department of Transportation Open Data Program in CSV format.

The dataset has 37 features and The dataset has total observations of 194673 with variation in number of observations for every feature.



Methodology

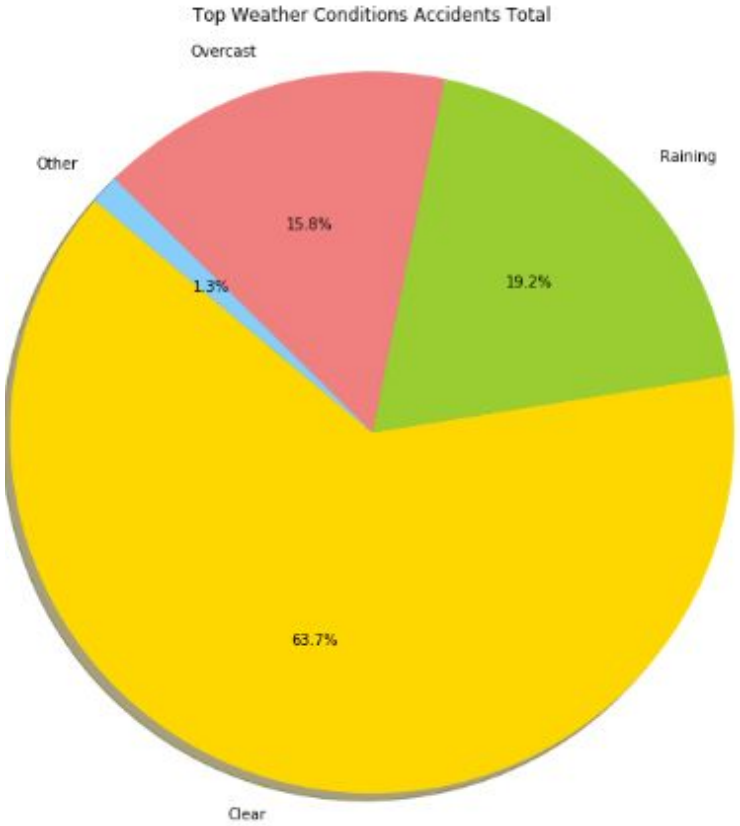
I will take every feature alone and start to analyze its values by total as I will make for every feature, except ‘SEVERITYCODE’, three data frames one for has the total of repeated times for each value in both types of accident 1 and 2. Then I will make another one for the type 1 and one for type 2.
After that, I analyze the results of each data frame of each feature.



Weather:

The Total:

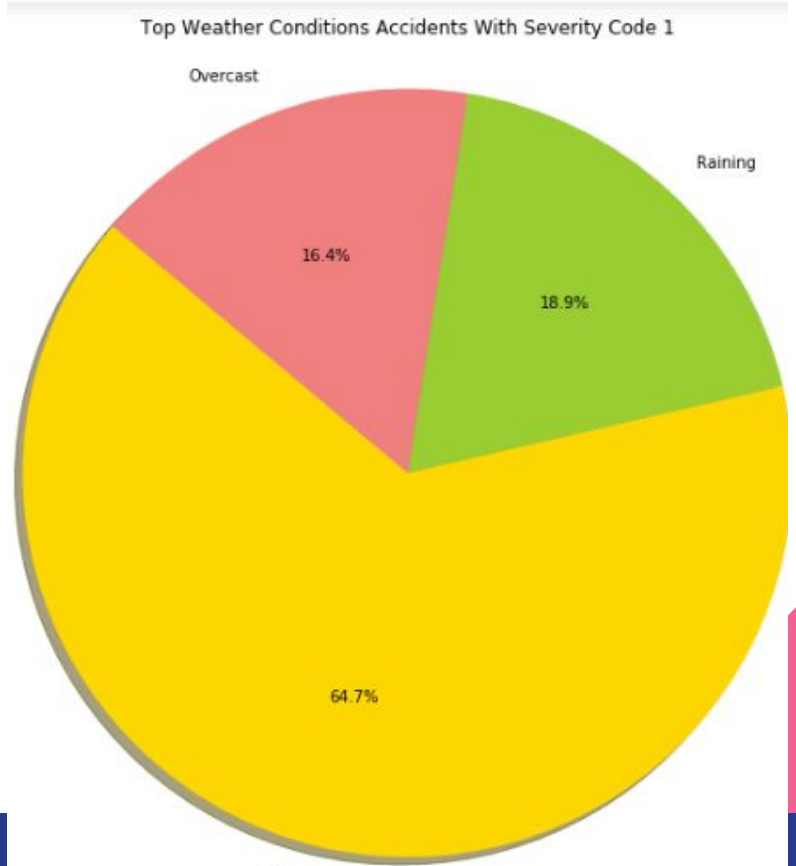
Below there is a data frame that has the count of every condition accident and a pie chart of its top elements.



Clear	68248
Raining	20619
Overcast	16951
Unknown	6896
Snowing	500
Other	435
Fog/Smog/Smoke	337
Sleet/Hail/Freezing Rain	71
Blowing Sand/Dirt	30
Severe Crosswind	13
Partly Cloudy	4

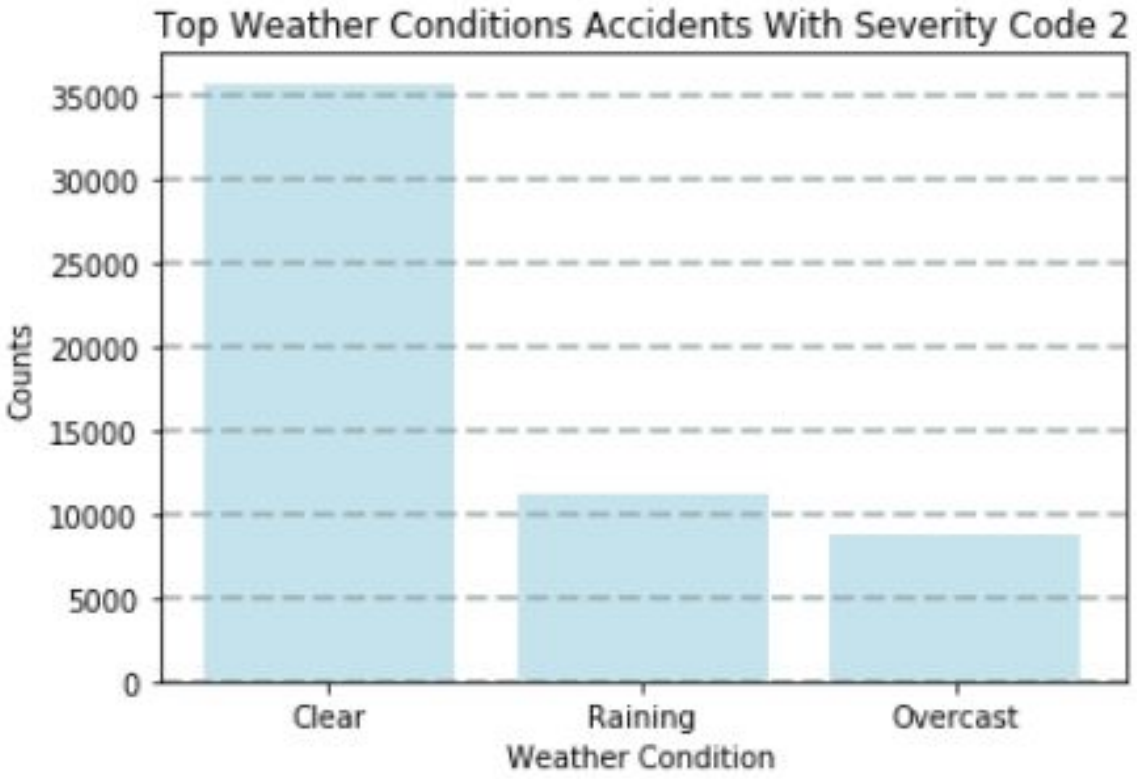
Weather with The 1 severity code count:

Clear	32440
Raining	9451
Overcast	8212
Unknown	6084
Snowing	331
Other	319
Fog/Smog/Smoke	150
Sleet/Hail/Freezing Rain	43
Blowing Sand/Dirt	15
Severe Crosswind	6
Partly Cloudy	1

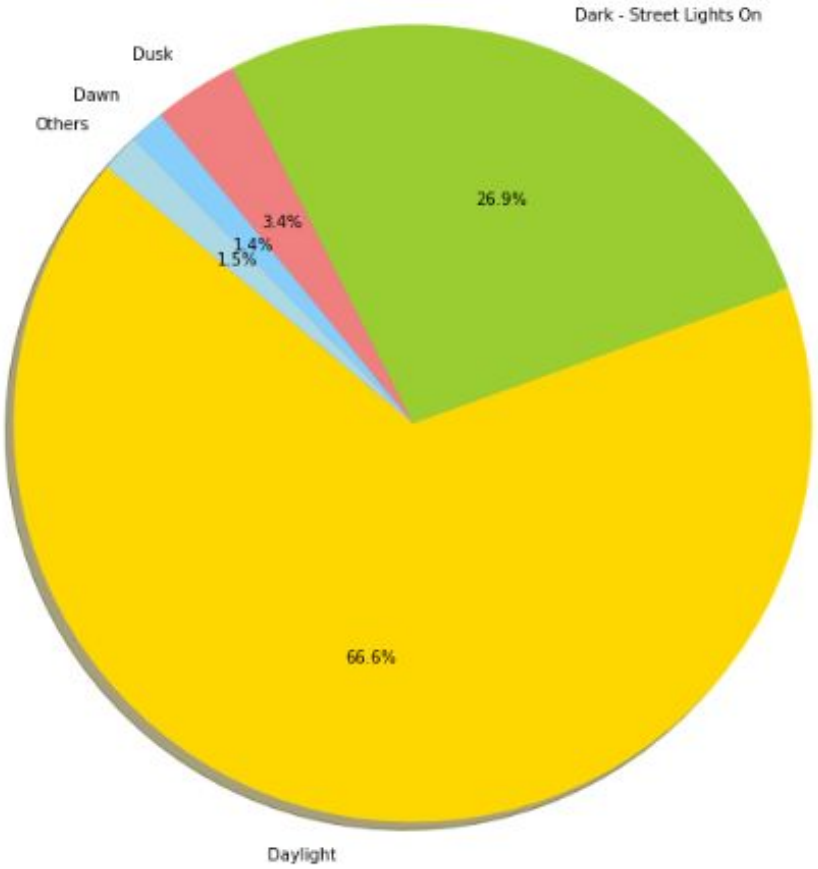


Weather with The 2 severity code count:

Clear	35808
Raining	11168
Overcast	8739
Unknown	812
Fog/Smog/Smoke	187
Snowing	169
Other	116
Sleet/Hail/Freezing Rain	28
Blowing Sand/Dirt	15
Severe Crosswind	7
Partly Cloudy	3



The light conditions



The total:

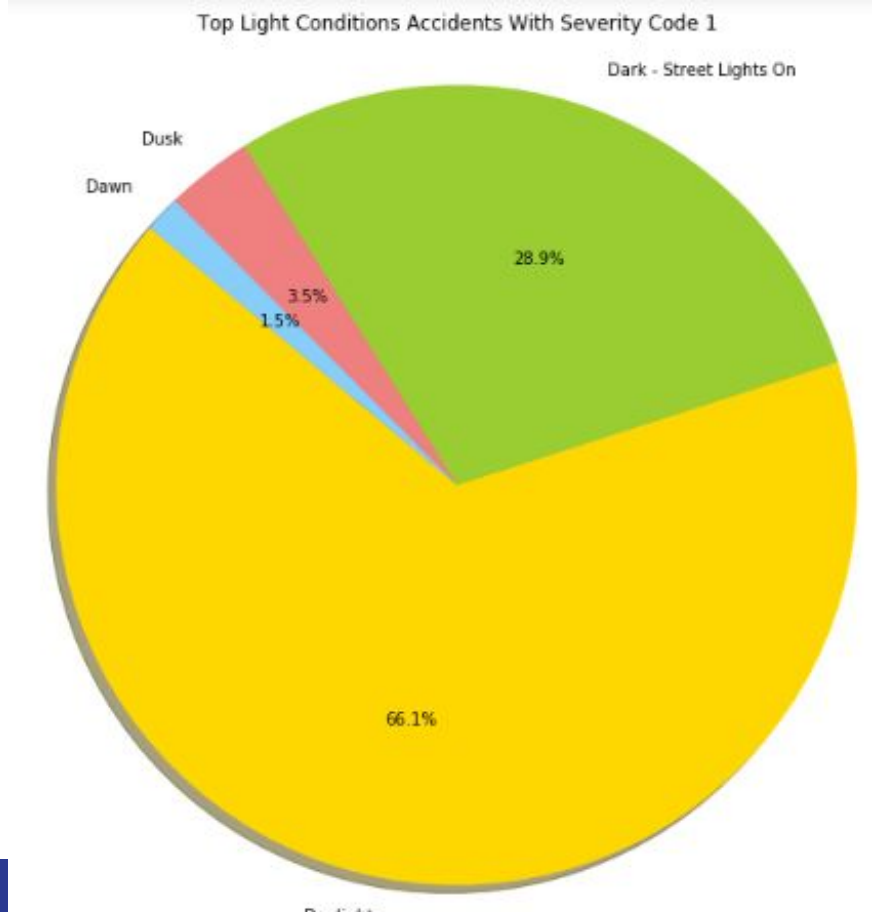
Below there are :

- A data frame has the total number of accidents occured in every light condition.
- A pie chart shows the percentages of top conditions.

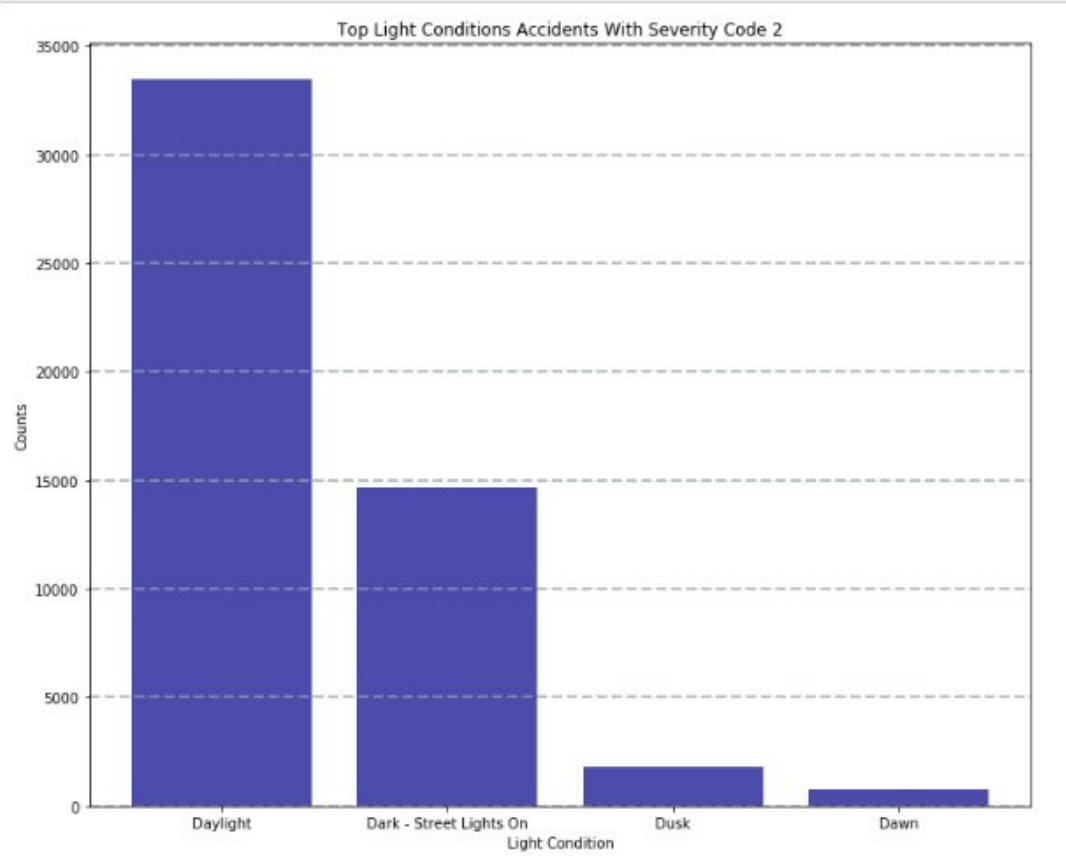
Daylight	71980
Dark - Street Lights On	29104
Unknown	6087
Dusk	3713
Dawn	1564
Dark - No Street Lights	838
Dark - Street Lights Off	683
Other	128
Dark - Unknown Lighting	7

Light with The 1 severity code count:

Daylight	33452
Dark - Street Lights On	14653
Unknown	5482
Dusk	1775
Dawn	740
Dark - No Street Lights	504
Dark - Street Lights Off	367
Other	76
Dark - Unknown Lighting	3



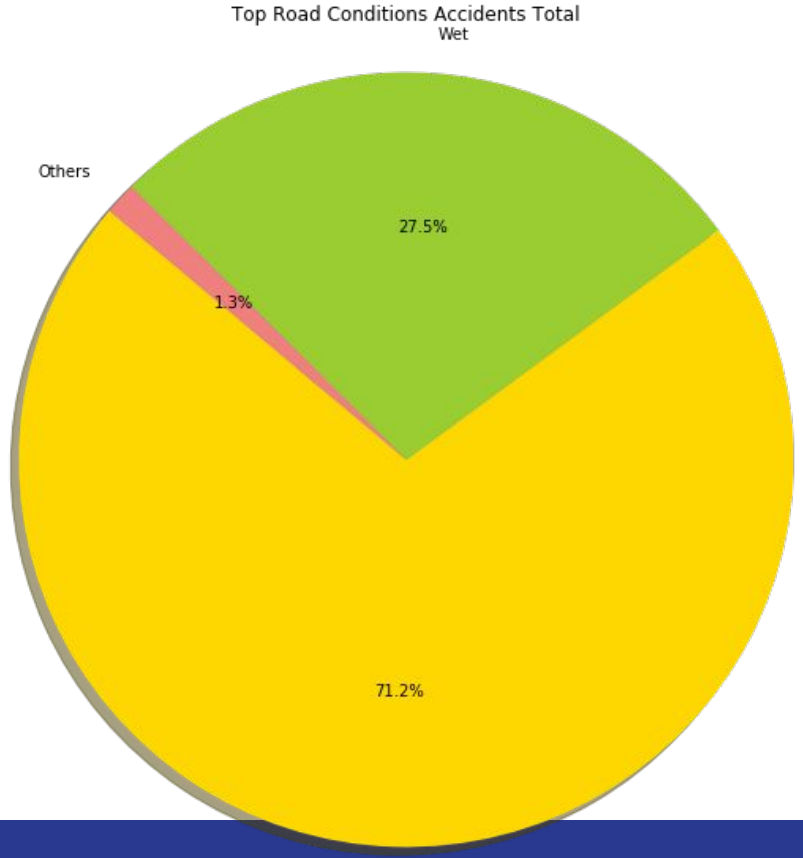
Light with The 2 severity code count:



Daylight	38528
Dark - Street Lights On	14451
Dusk	1938
Dawn	824
Unknown	605
Dark - No Street Lights	334
Dark - Street Lights Off	316
Other	52
Dark - Unknown Lighting	4

Road

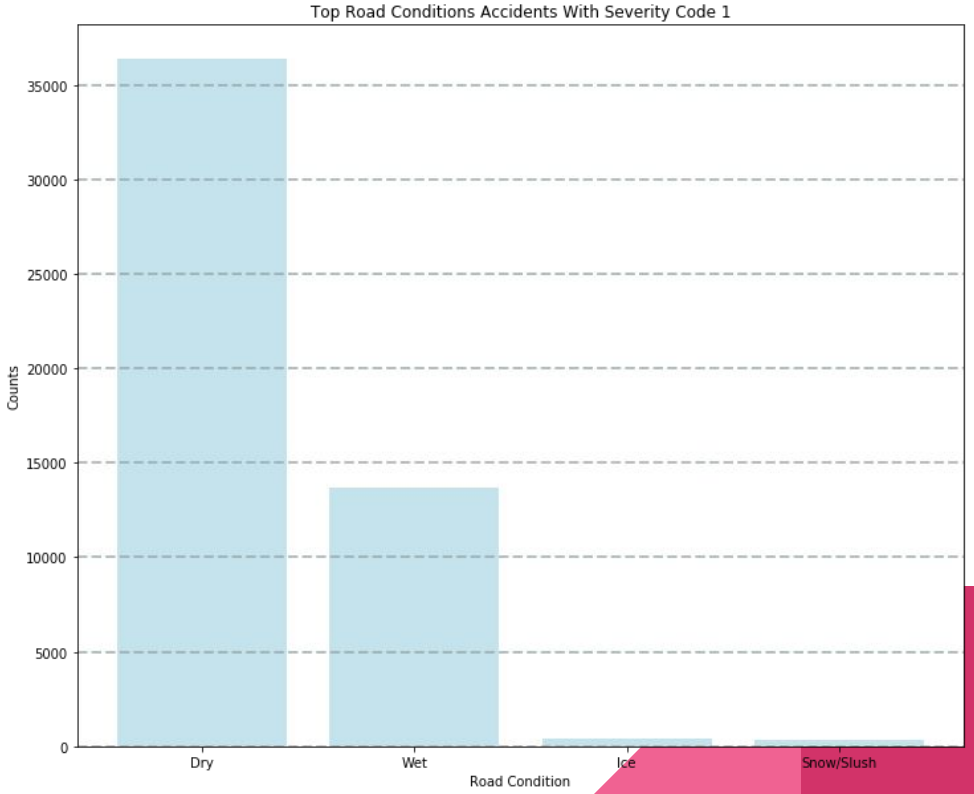
- A data frame has the total number of accidents occured in every light condition.
- A pie chart shows the percentages of top conditions.



Dry	76368
Wet	29449
Unknown	6850
Ice	670
Snow/Slush	538
Other	78
Standing Water	67
Oil	43
Sand/Mud/Dirt	41

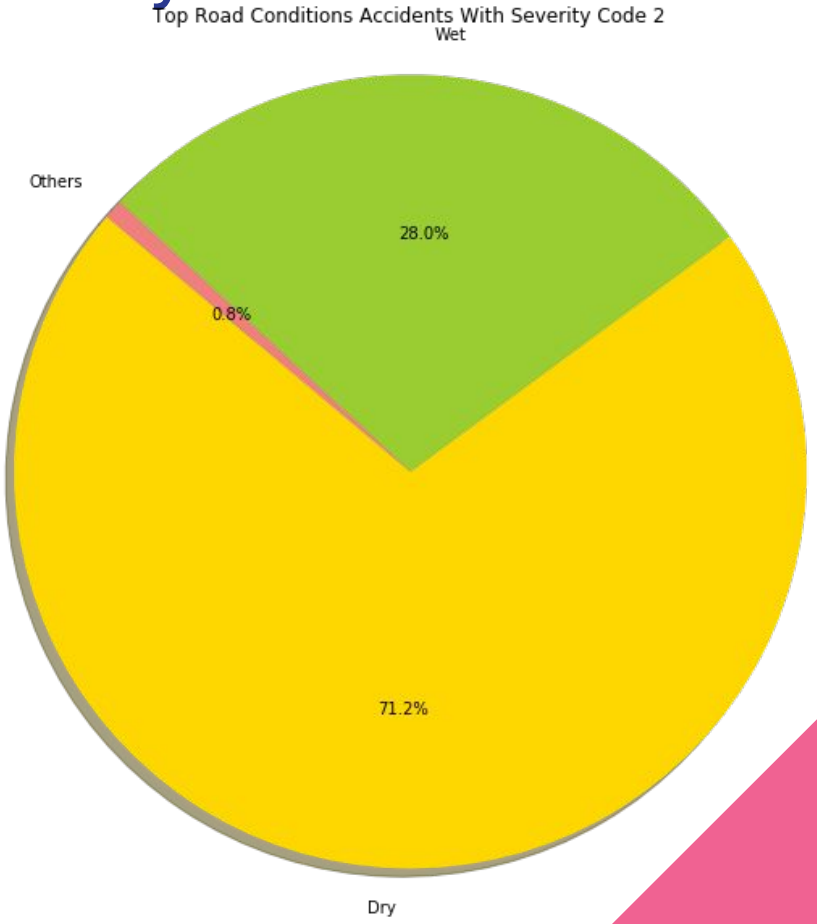
Road with The 1 severity code count:

Dry	36364
Wet	13707
Unknown	6103
Ice	397
Snow/Slush	372
Standing Water	37
Other	35
Oil	19
Sand/Mud/Dirt	18



Road with The 1 severity code count:

Dry	40004
Wet	15742
Unknown	747
Ice	273
Snow/Slush	166
Other	43
Standing Water	30
Oil	24
Sand/Mud/Dirt	23



Results:

1. **Weather:**

The probability of 2 is higher in:

- Clear: 4.9%
- Raining:8.3%
- Overcast :3.1%
- Fog/Smog/Smoke:10.9%

The probability of 1 is higher in:

- Snowing: 32.4%
- Sleet/Hail/Freezing Rain:21.1%

2.Light:

The probability of 2 is higher in:

- Dawn:5.4%
- Daylight:7%
- Dusk: 4.4%

The probability of 1 is higher in:

- Streets-Lights on:0.8%
- Streets-Lights off:7.4%
- No Streets Lights: 20.3%

3.Road:

The probability of 2 is higher in:

- Dry:4.8%
- Oil:11.6%
- Wet:6.9%
- Sand/Mud/Dirt:12.2%

The probability of 1 is higher in:

- Ice: 18.5%
- Snow/Slush:38.3%
- Standing Water: 10.4%