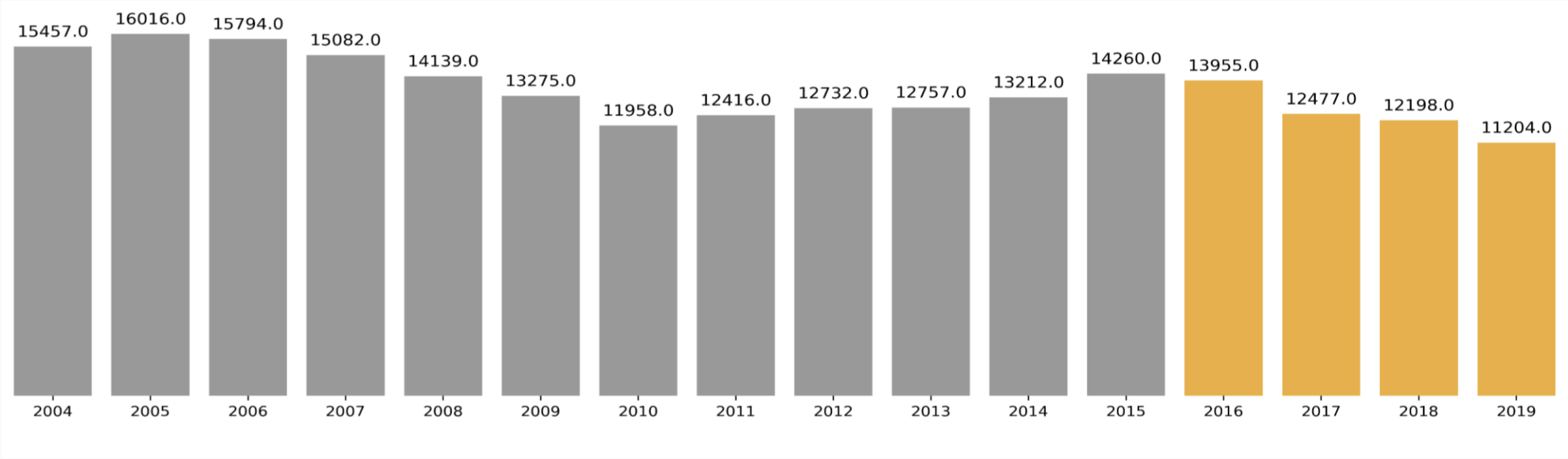
¿WHAT WE KNOW ABOUT CAR COLLISIONS?

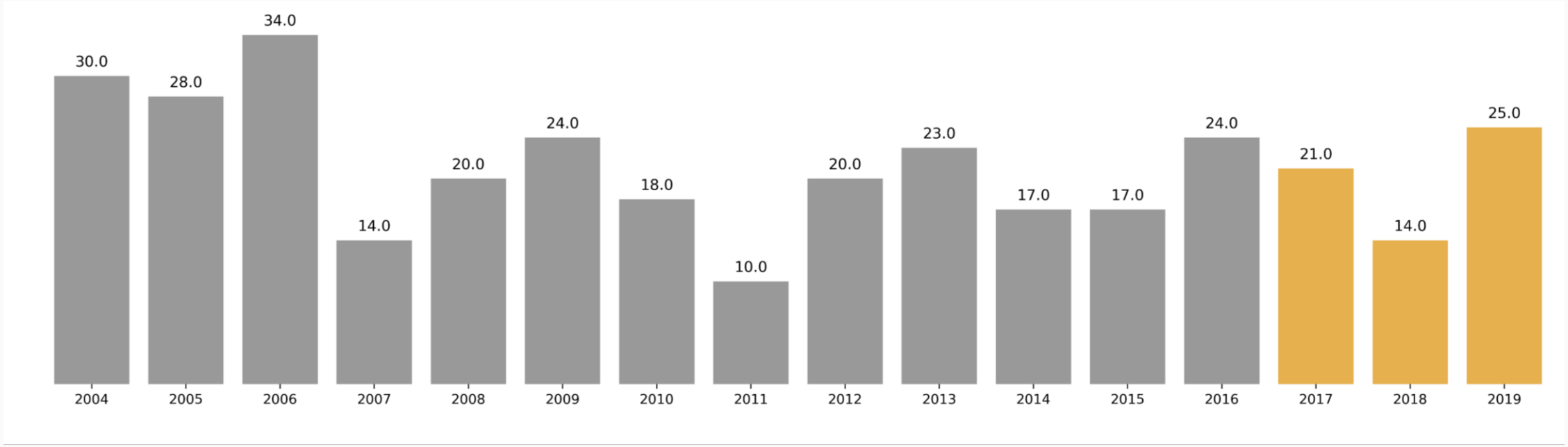
¿CAN WE PREDICT ITS DAMAGE?

The 2015 Vision Zero Action Plan states that traffic collisions are a leading cause of death for Seattle residents age 5-24. Older adults are also disproportionately affected, and as its population ages, this trend could grow. In 2013, there were 10,310 police-reported collisions in Seattle. 155 people were seriously injured and 23 were killed.



EVOLUTION OF CAR COLLISIONS IN SEATTLE FROM 2004 TO 2019.

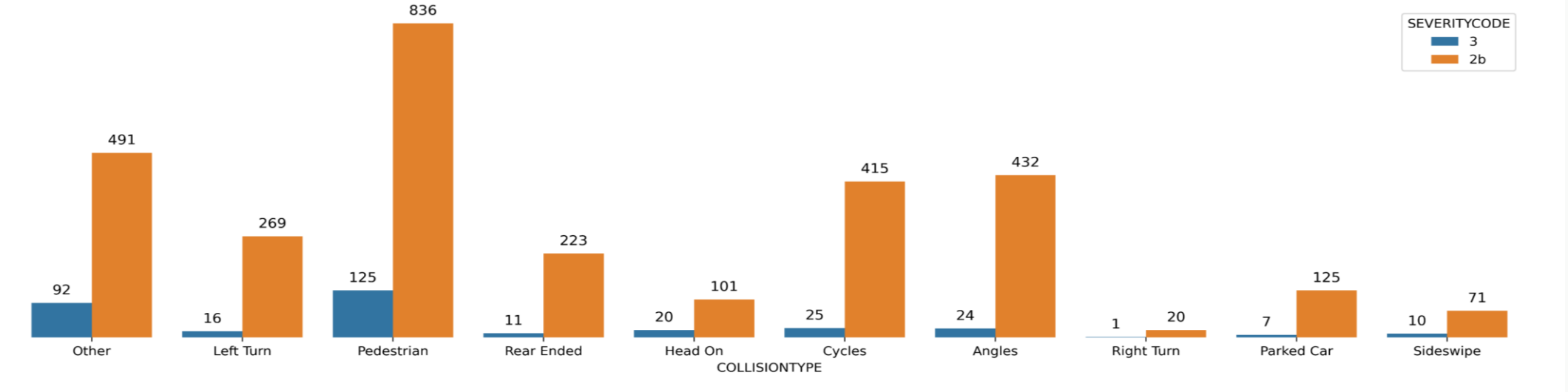
There is a downward tendency since 2016 for global collisions



EVOLUTION OF FATALITY COLLISIONS IN SEATTLE FROM 2004 TO 2019.

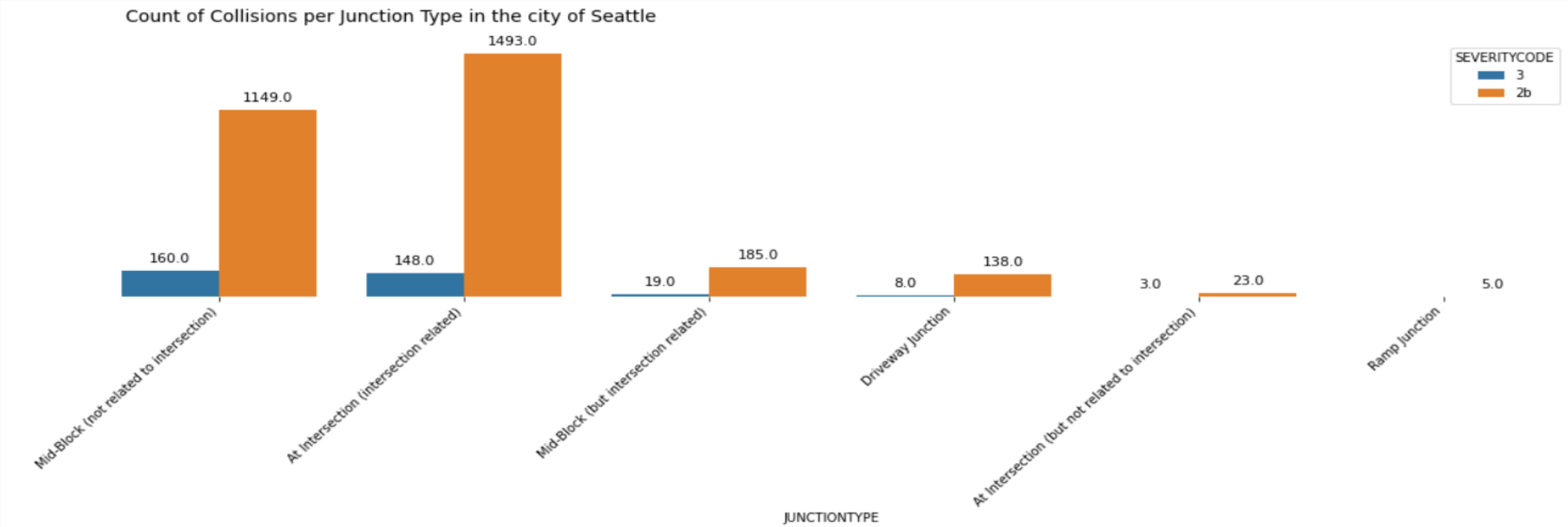
Despite there is a reduction in the number of global collisions since 2016, the number of fatalities and cases with serious injuries have no change for the same period.

On average, 21 families lost someone who loved because of the fatality of the accident and 675 people got injured.



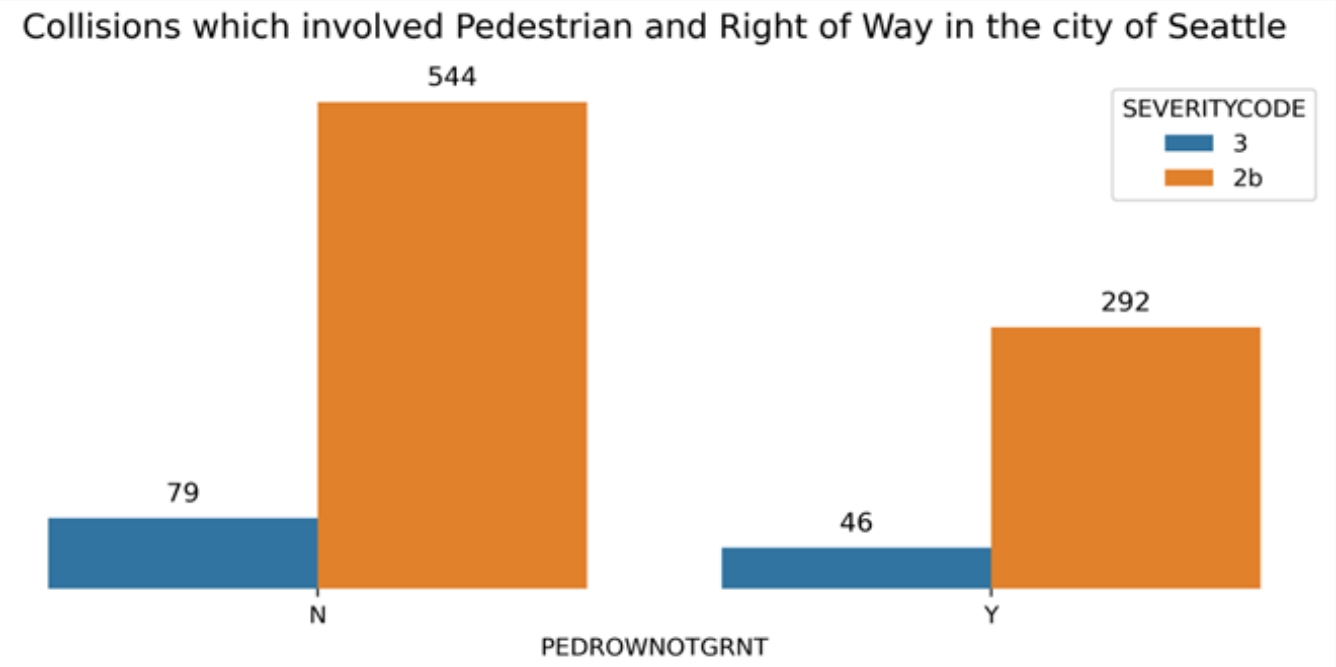
WHAT ARE THE MOST COMMON TYPE OF COLLISION?

The first type of collision which cause a serious injured or fatality involve a pedestrian.
Also, bicycles occupied the 3rd position. Let us see the collision address type and the category of junction at which collision took place.



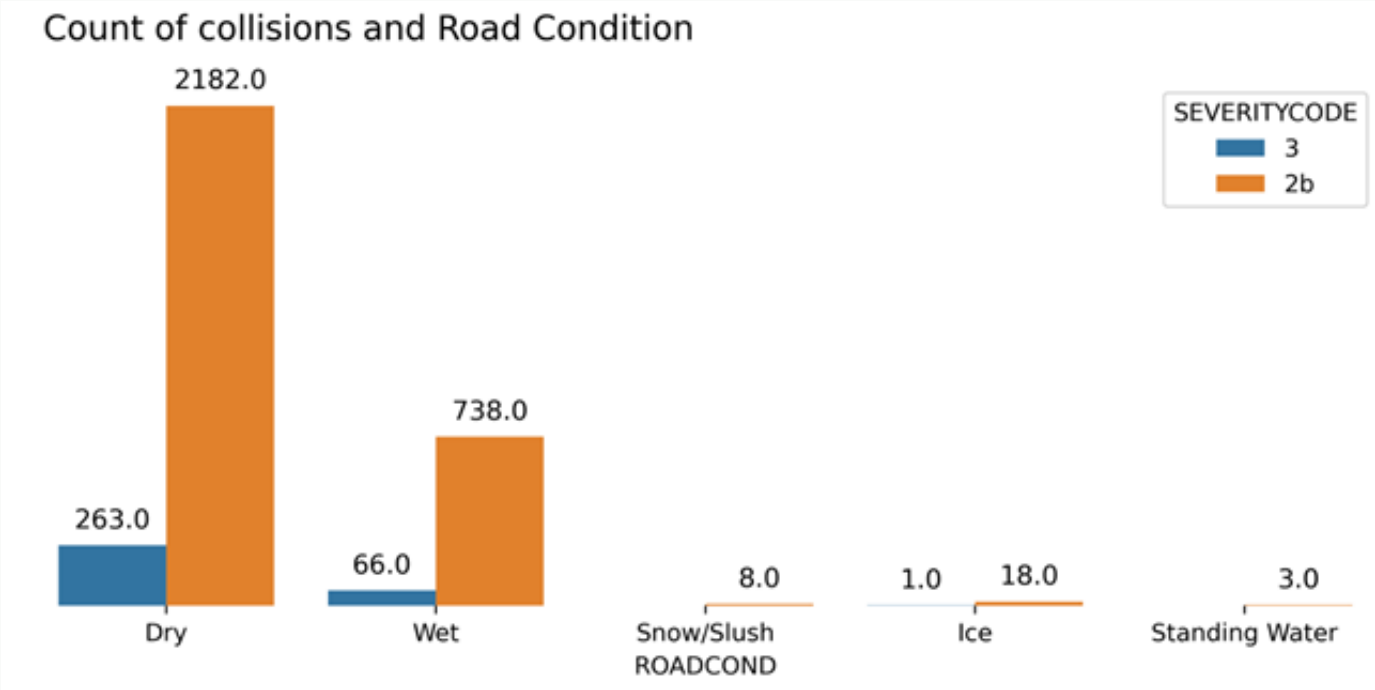
WHERE OCCUR THOSE COLLISIONS?

The first type of collision which cause a serious injured or fatality involve a pedestrian.
Also, bicycles occupied the 3rd position. Let us see the collision address type and the category of junction at which collision took place.



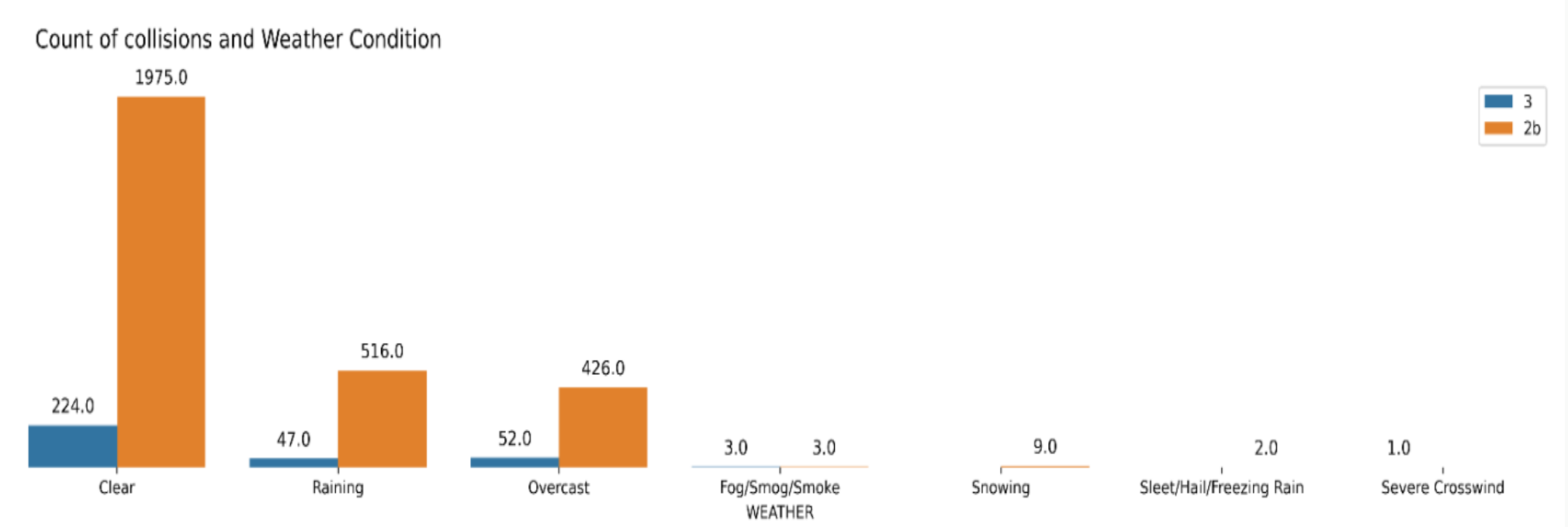
IS IT ALWAYS GRANTED THE PEDESTRIN RIGHT OF WAY?

According to the Washington State Department of Transportation drivers and bicyclists must yield to pedestrians on sidewalks and in crosswalks. But every pedestrian crossing a roadway at any point other than within a marked crosswalk or within an unmarked crosswalk at an intersection shall yield the right of way to all vehicles upon the roadway. From the graph we can say that the most cases occurs when the pedestrian right of way is not granted. We need a deeper analysis to understand if the collision is due to inattention of the pedestrian when crossing the street.



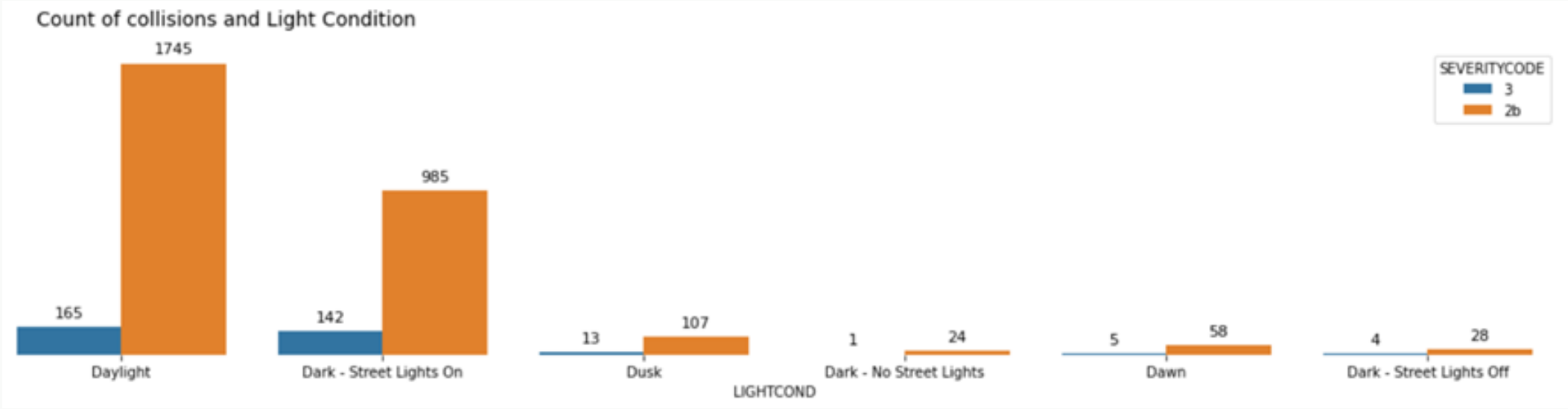
WHAT ABOUT ROAD CONDITION?

Most of the time the road condition is dry, so it seems that this feature is not the main cause of collisions. For fatality cases, 20% of them occur under wet road.



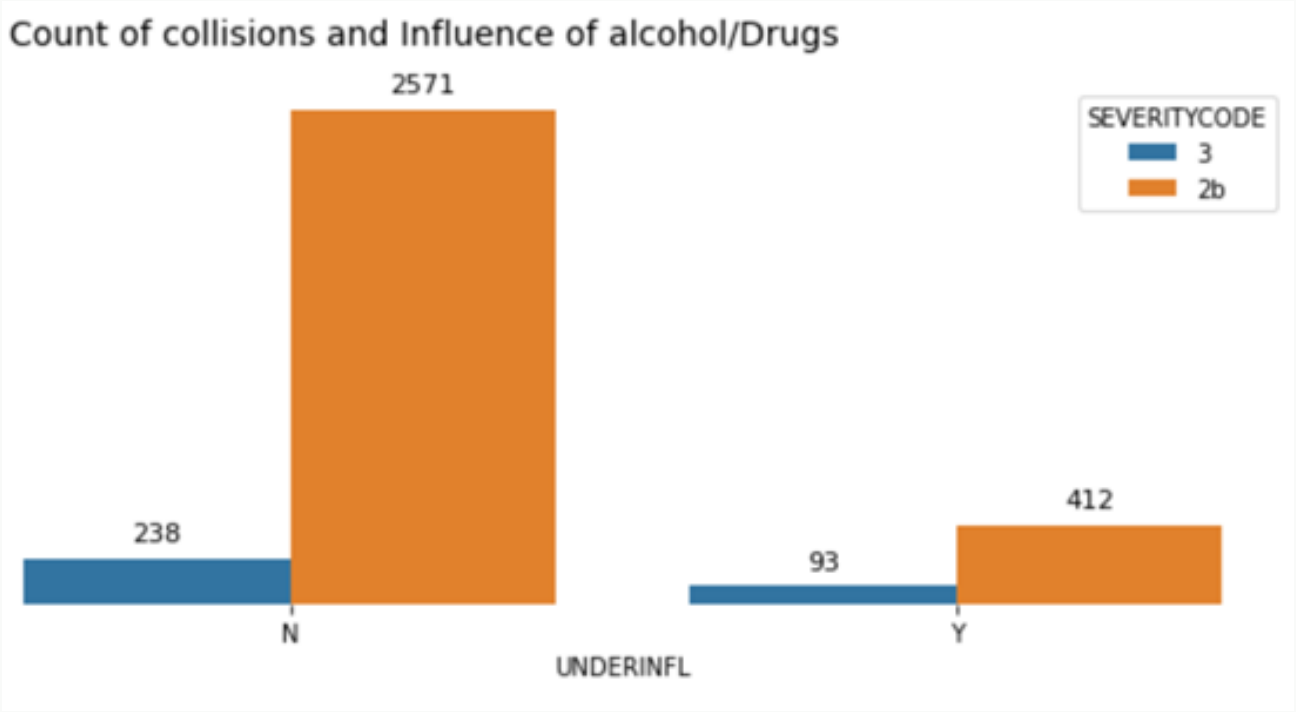
ARE THE WEATHER RELATED TO COLLISIONS?

In most cases the collisions occur under clear weather. It makes sense because we see this tendency under dry road. For fatality cases, 30% of them occur under raining or overcast condition.



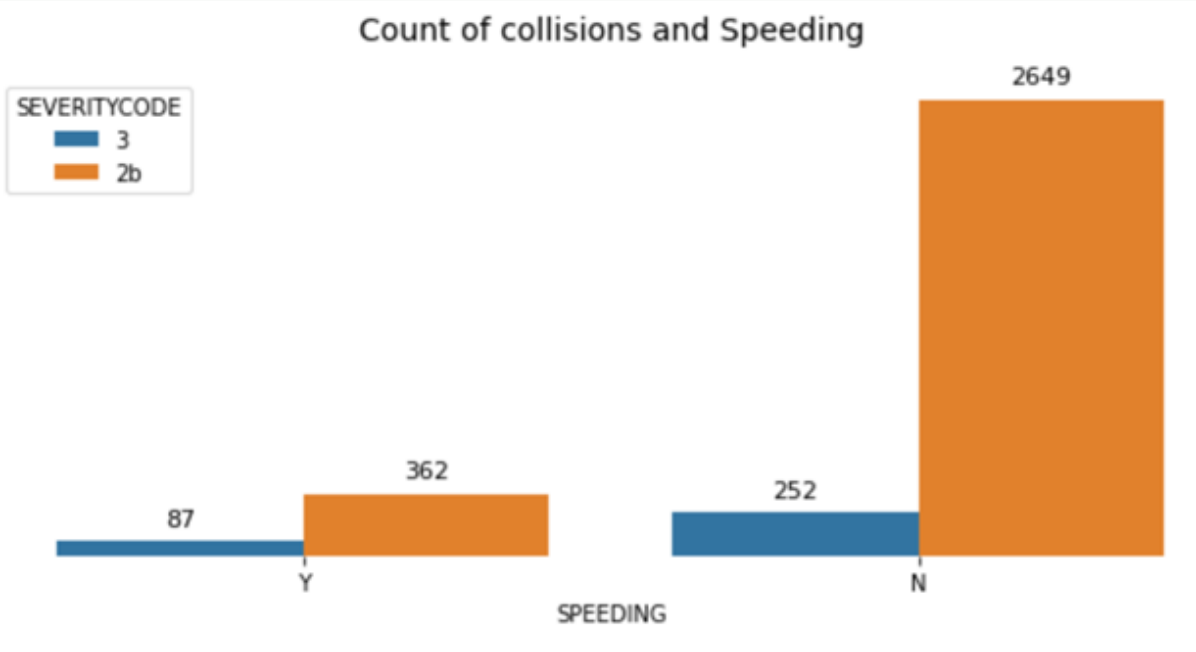
DO MOST CASES OCCUR AT NIGHT WITHOUT LIGHT?

Most cases occur under daylight and at night with streets lights on.



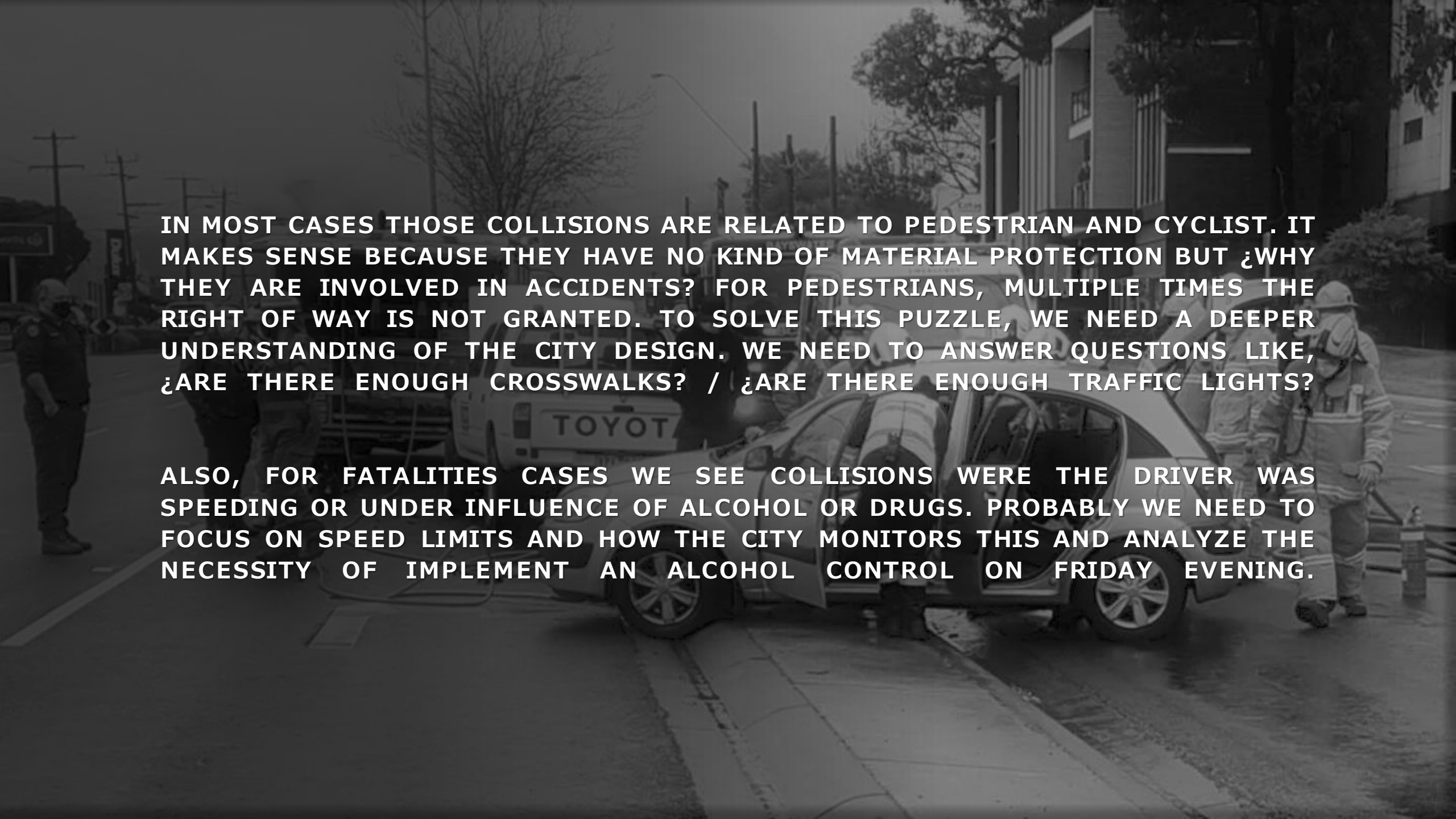
DO WE DRIVE UNDER INFLUENCE OF ALCOHOL OR DRUGS?

The 28% of cases which lead on fatality were related to a driver under influence of alcohol or drugs.



DO WE EXCEED SPEED LIMIT?

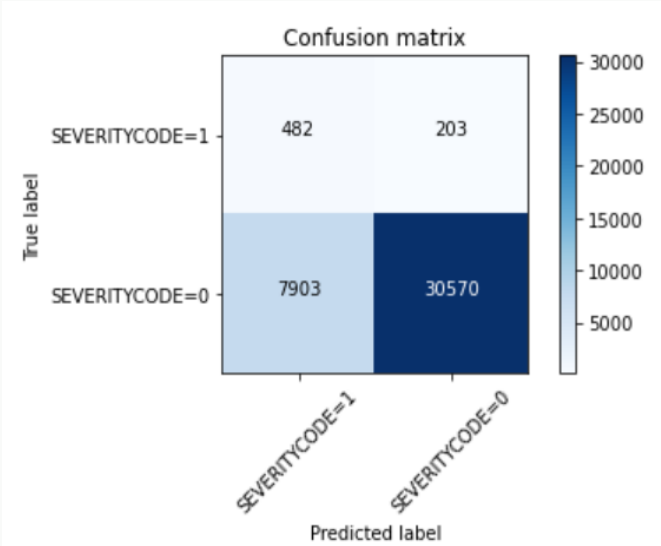
The 30% of cases which lead on fatality were related to speeding.



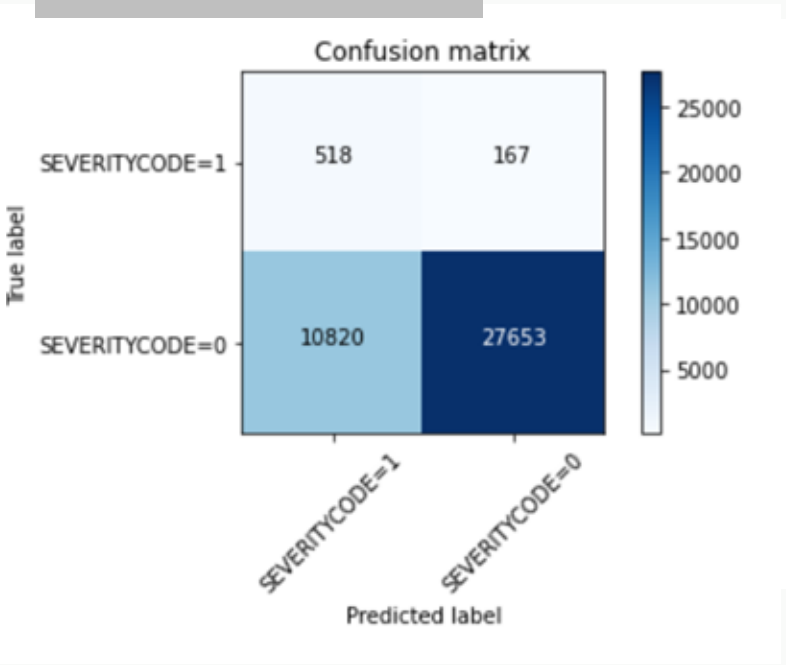
IN MOST CASES THOSE COLLISIONS ARE RELATED TO PEDESTRIAN AND CYCLIST. IT MAKES SENSE BECAUSE THEY HAVE NO KIND OF MATERIAL PROTECTION BUT ¿WHY THEY ARE INVOLVED IN ACCIDENTS? FOR PEDESTRIANS, MULTIPLE TIMES THE RIGHT OF WAY IS NOT GRANTED. TO SOLVE THIS PUZZLE, WE NEED A DEEPER UNDERSTANDING OF THE CITY DESIGN. WE NEED TO ANSWER QUESTIONS LIKE, ¿ARE THERE ENOUGH CROSSWALKS? / ¿ARE THERE ENOUGH TRAFFIC LIGHTS?

ALSO, FOR FATALITIES CASES WE SEE COLLISIONS WERE THE DRIVER WAS SPEEDING OR UNDER INFLUENCE OF ALCOHOL OR DRUGS. PROBABLY WE NEED TO FOCUS ON SPEED LIMITS AND HOW THE CITY MONITORS THIS AND ANALYZE THE NECESSITY OF IMPLEMENT AN ALCOHOL CONTROL ON FRIDAY EVENING.

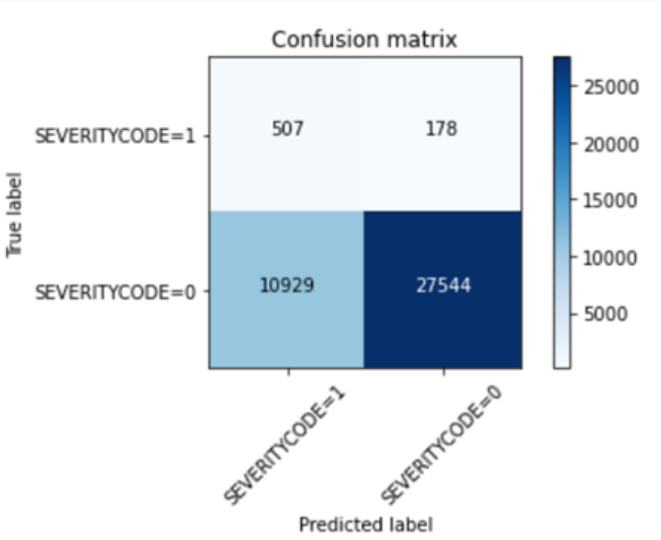
UPSAMPLING



DOWNSAMPLING

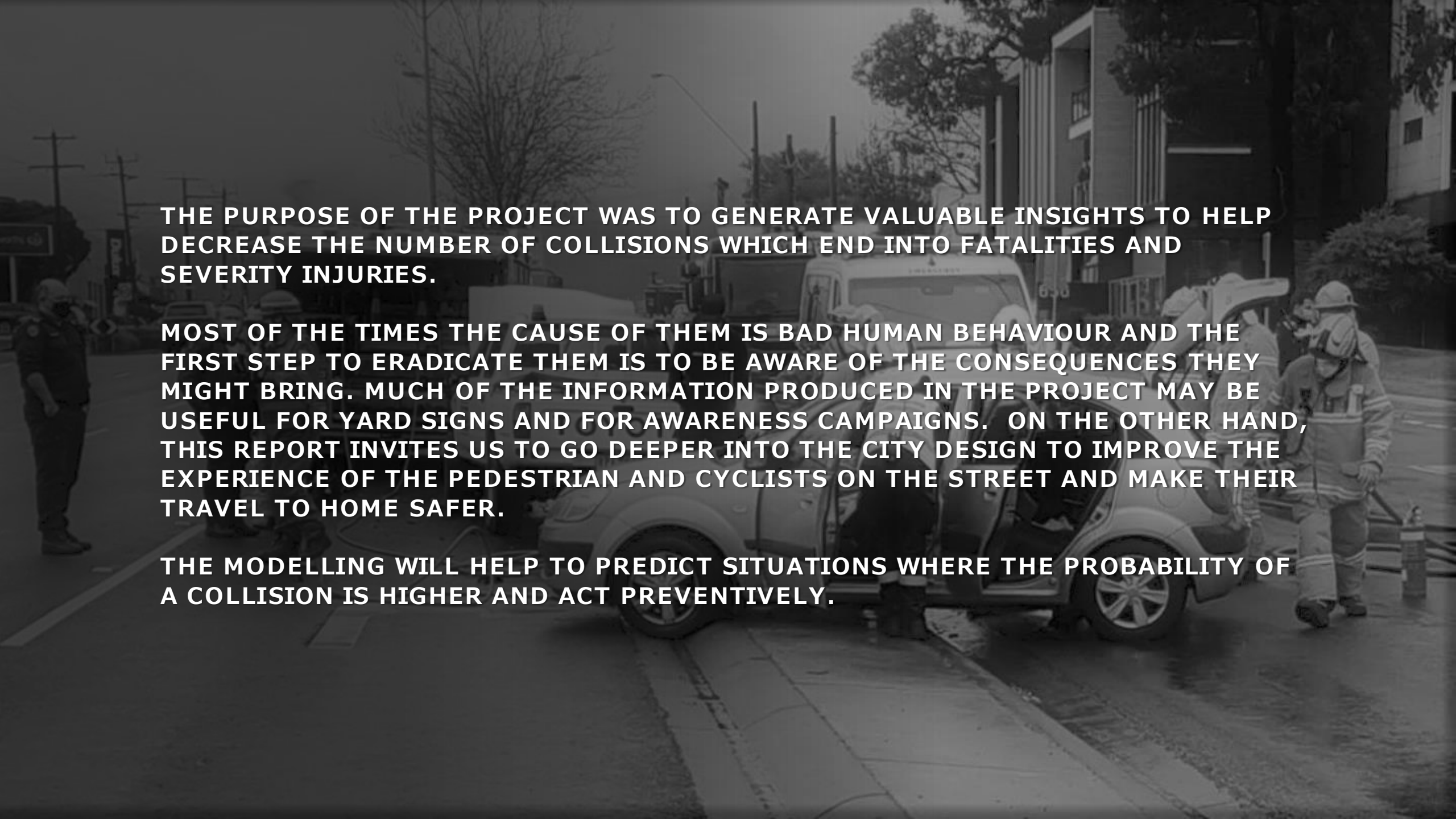


SMOTE



¿CAN WE PREDICT THE SEVERITY OF THE COLLISION?

Regarding modelling selection, we generate three different models. According to the confusion matrix charts we can conclude that the best performance we obtain under the downsampling model. Nevertheless, we need to improve the model because for both SEVERITYCODES, approximately 25% of entrances were predicted wrong.



THE PURPOSE OF THE PROJECT WAS TO GENERATE VALUABLE INSIGHTS TO HELP DECREASE THE NUMBER OF COLLISIONS WHICH END INTO FATALITIES AND SEVERITY INJURIES.

MOST OF THE TIMES THE CAUSE OF THEM IS BAD HUMAN BEHAVIOUR AND THE FIRST STEP TO ERADICATE THEM IS TO BE AWARE OF THE CONSEQUENCES THEY MIGHT BRING. MUCH OF THE INFORMATION PRODUCED IN THE PROJECT MAY BE USEFUL FOR YARD SIGNS AND FOR AWARENESS CAMPAIGNS. ON THE OTHER HAND, THIS REPORT INVITES US TO GO DEEPER INTO THE CITY DESIGN TO IMPROVE THE EXPERIENCE OF THE PEDESTRIAN AND CYCLISTS ON THE STREET AND MAKE THEIR TRAVEL TO HOME SAFER.

THE MODELLING WILL HELP TO PREDICT SITUATIONS WHERE THE PROBABILITY OF A COLLISION IS HIGHER AND ACT PREVENTIVELY.