



INSTITUTE OF EMERGING CAREERS

CAPSTONE PROJECT-2

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COHORT: 5

COURSE: DATA ANALYTICS

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SOFTWARE USED: PYTHON

Road Traffic Accidents Dataset



ABOUT THE DATASET

- ✓ 20 columns and 12k+ rows



- ✓ Road traffic accidents data for the period of 2017-2020

- ✓ Data about Addis Ababa City (capital of Ethiopia) accidents

- ✓ Population of the city at that time **4,794,000**



Dataset Source:

(<https://www.kaggle.com/datasets/saurabhshahane/road-traffic-accidents>)

Information We Have:

About accidents:

Days, weather conditions, surface conditions, lightning;

About Drivers:

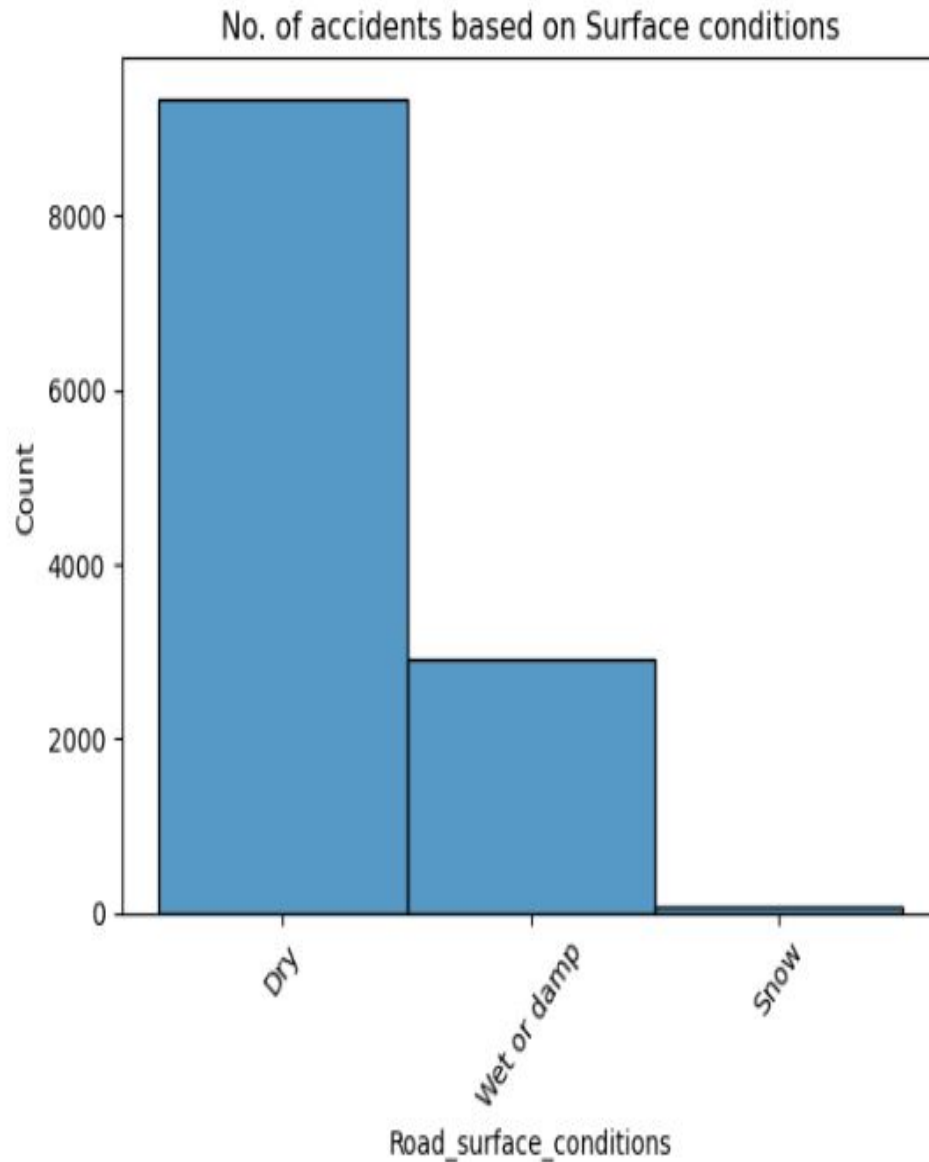
Age, gender, education, experience of driver;

About Vehicles:

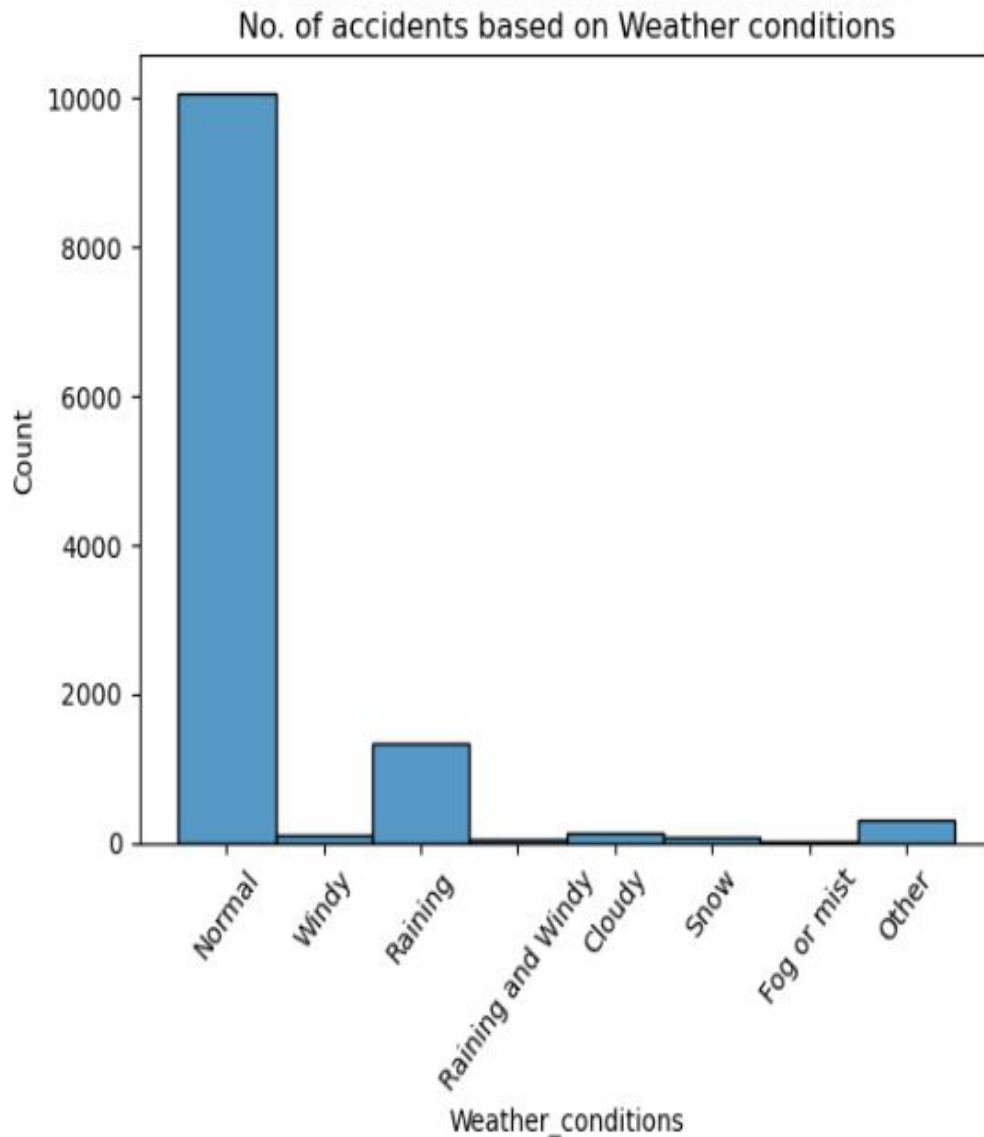
Years of service, etc.



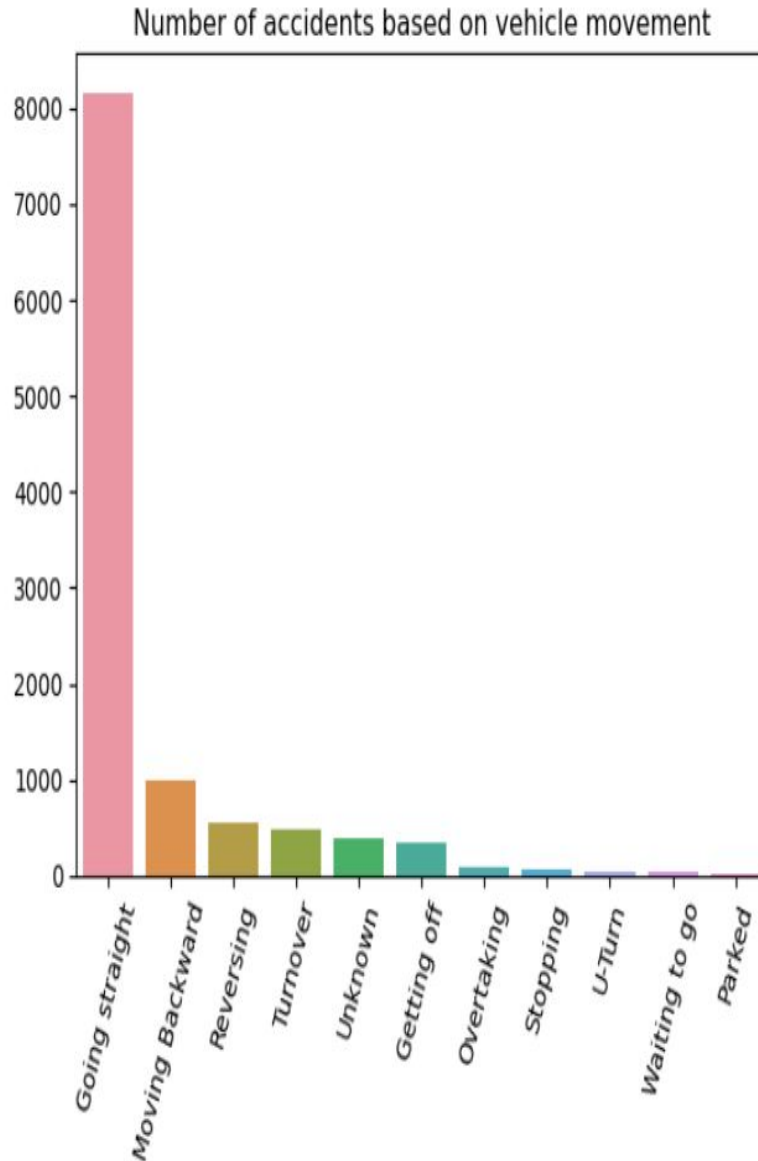
EXPLORATORY DATA ANALYSIS



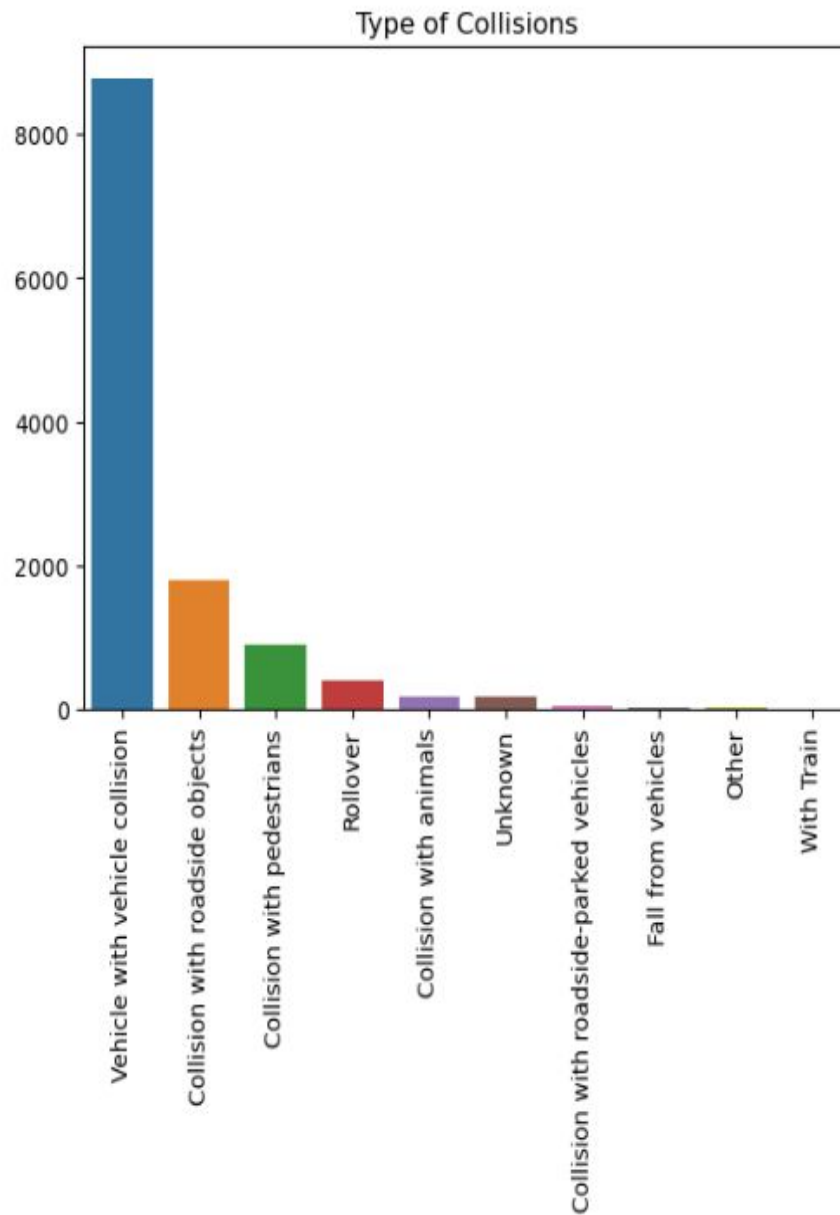
We observe that the largest number of accidents happen on a dry road surface followed by wet surface (due to rain). Since this pattern seems illogical, we must have a look at the weather conditions of the city.



Most accidents occurred during normal weather conditions followed by rainy weather. This must be because the city undergoes **8 months of non-rainy days** which is 2-3rd of the year. Hence, it is now clearly evident why the number of accidents during dry days is greater. But reason is yet to unfold...

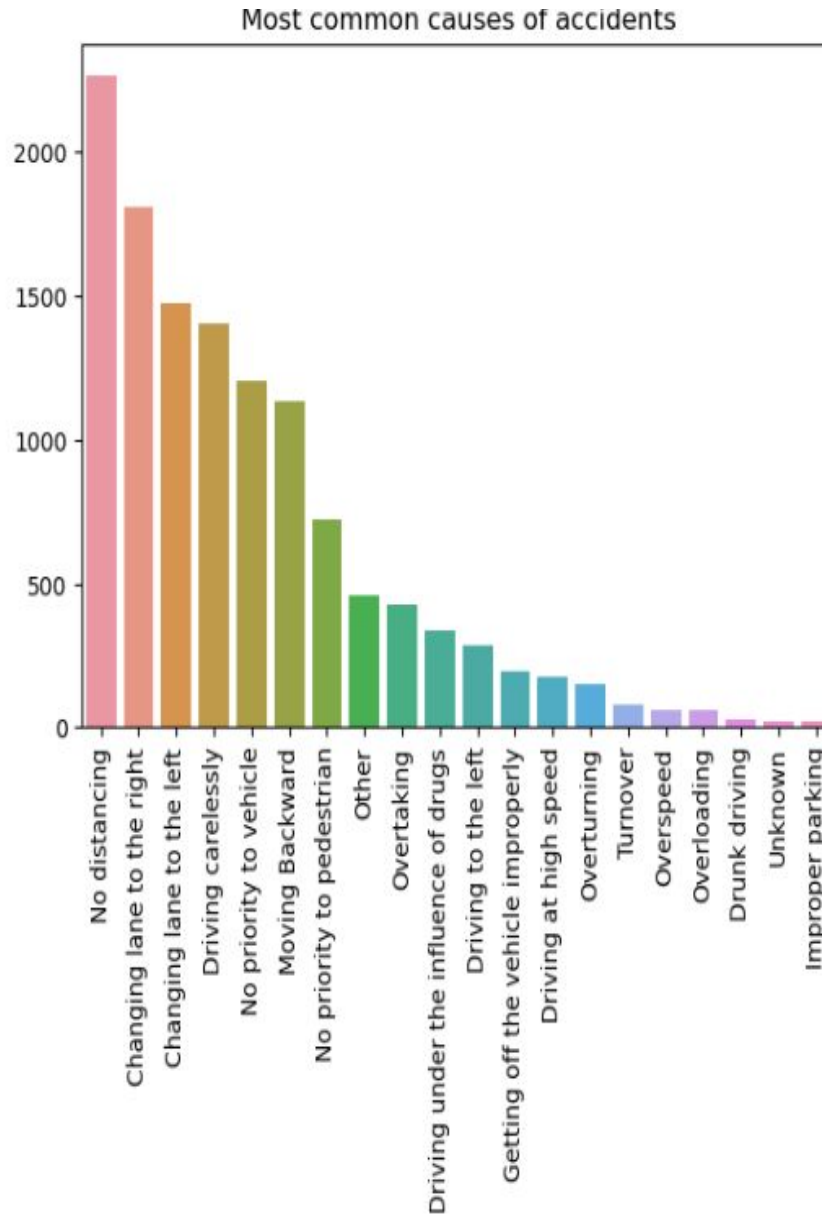


There seem to be various positions a vehicle might be moving through while involving into a collision. Amongst all, the straight going vehicles have the highest ratio followed by others which are comparatively very insignificant. **Reason's might include over-speeding, signal breaking, use of phone, inexperienced driver, etc.** We need to investigate the most common reasons yet.

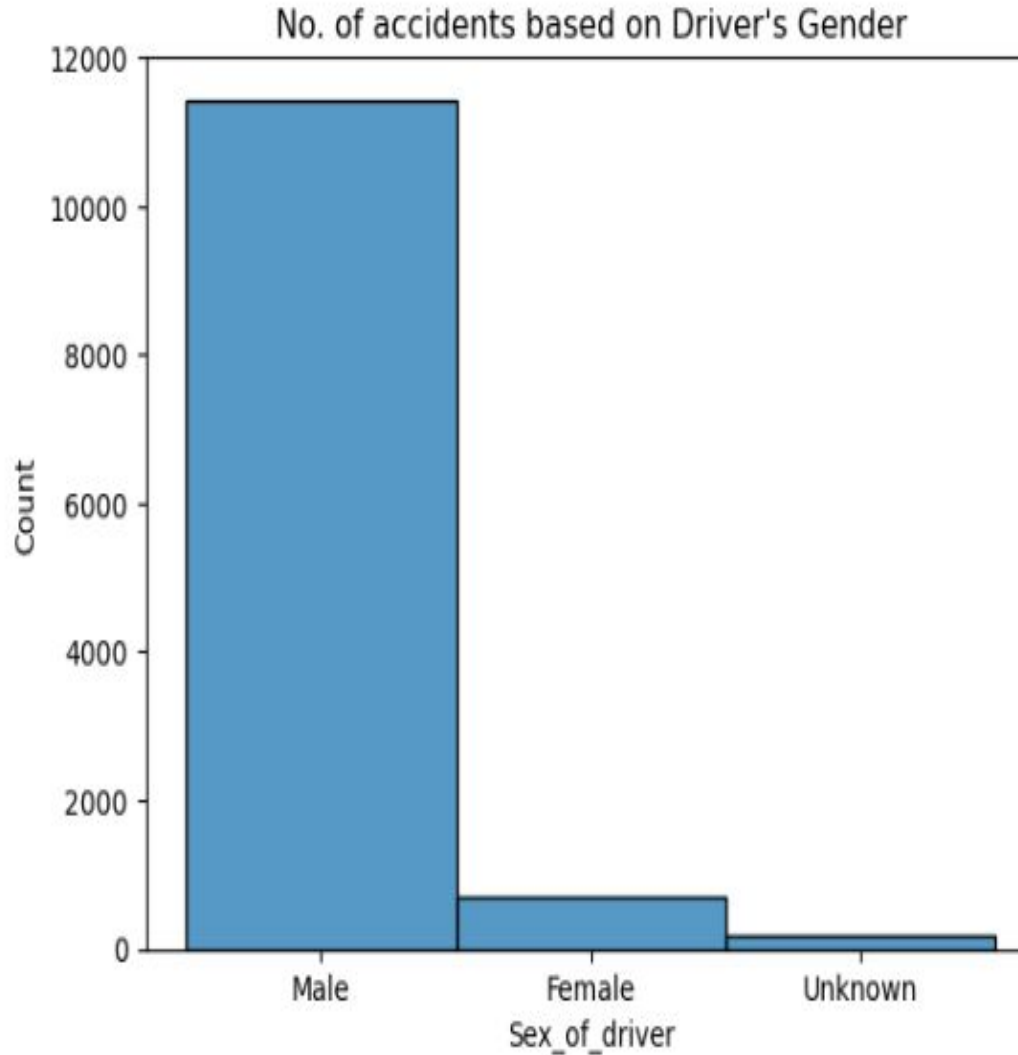


Among other ways, top 3 common ways of accidents include inter-vehicle collision, followed by collision with roadside objects, and lastly with pedestrians.

Sources tell:
2 cars to 1,000 people - one of the lowest rates of car ownership in the world.



Reasons are clearly indicating why the straight going cars undergo most of the accidents. 'No distancing' being the prime cause followed by change of lanes and careless driving, among others.

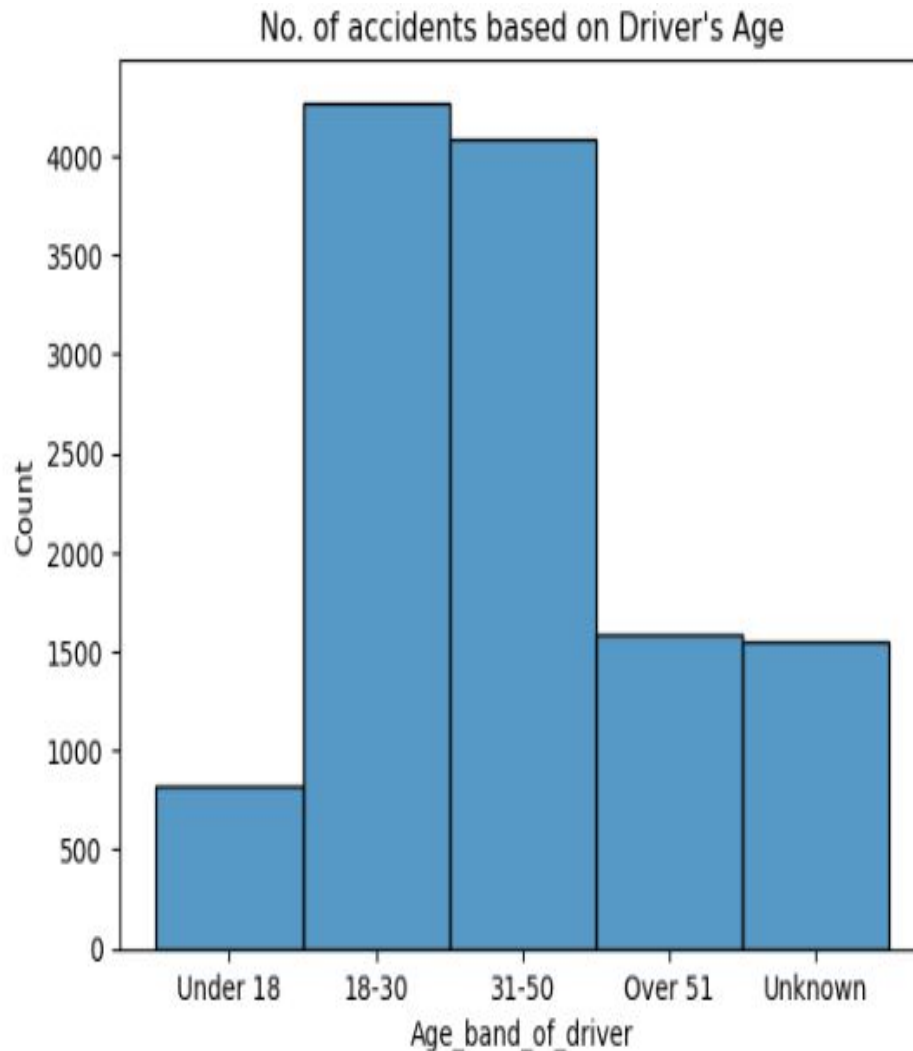


The reason for this could be:

1) Males drive while going to work and mostly females remain at home/housewives.

2) There is larger population of males in the city than females.

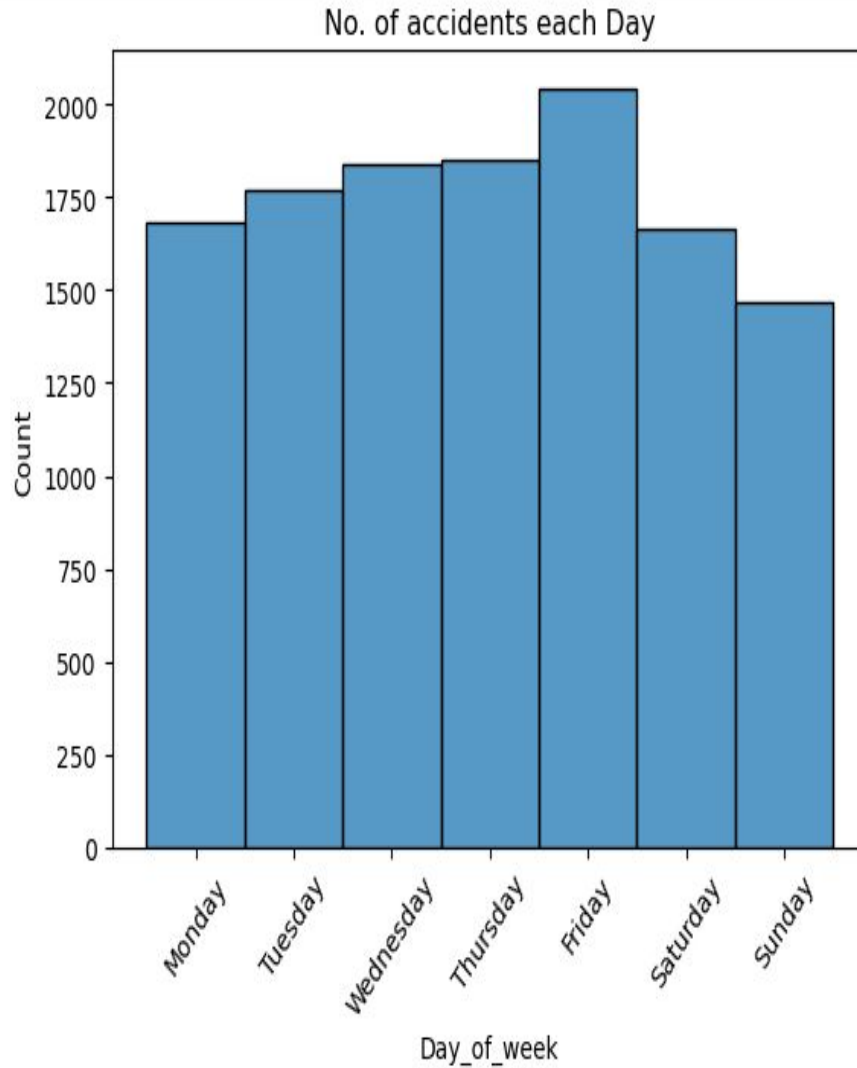
3) Males are poorer driver than females.



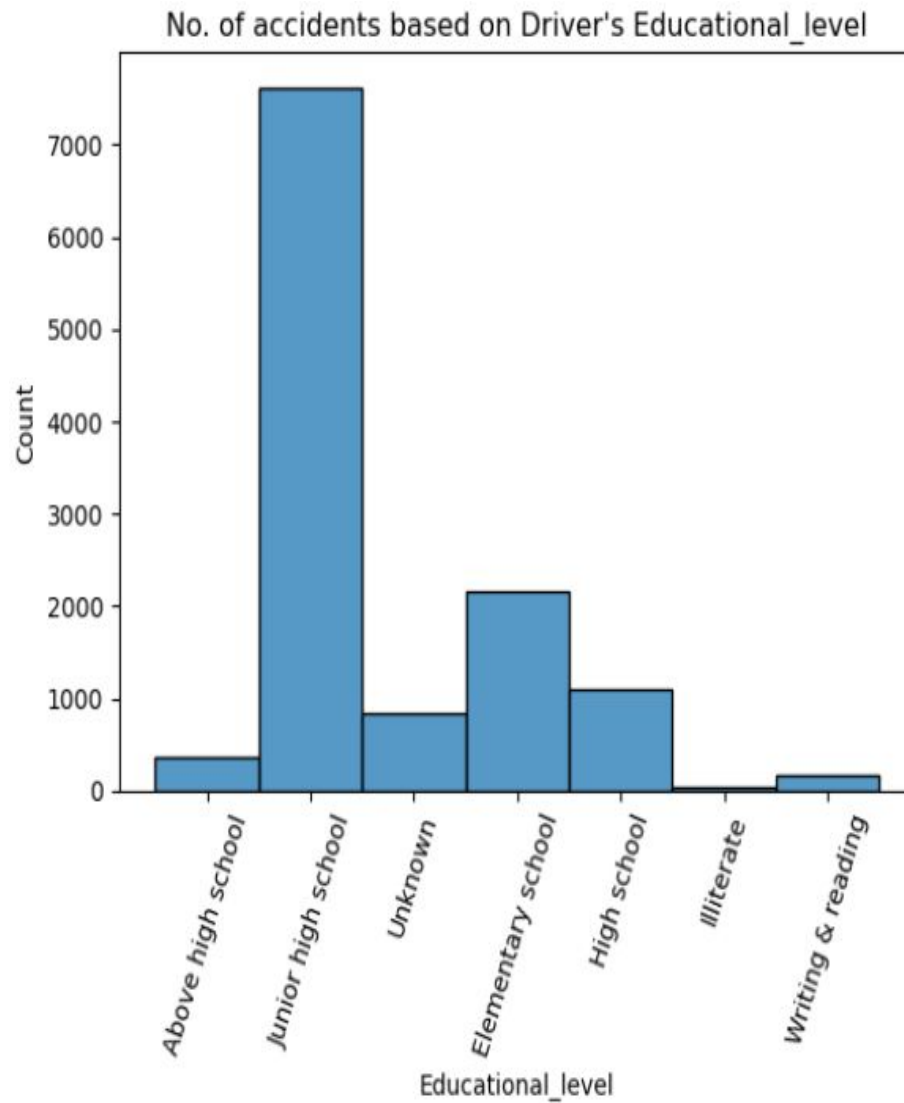
❑ Since very less number of children under-18 are allowed by their homes to drive, we see very minimum accidents in that group.

❑ As for 'over 51' group, it is understood that old-aged people drive more cautiously and at low speed hence they remain safer.

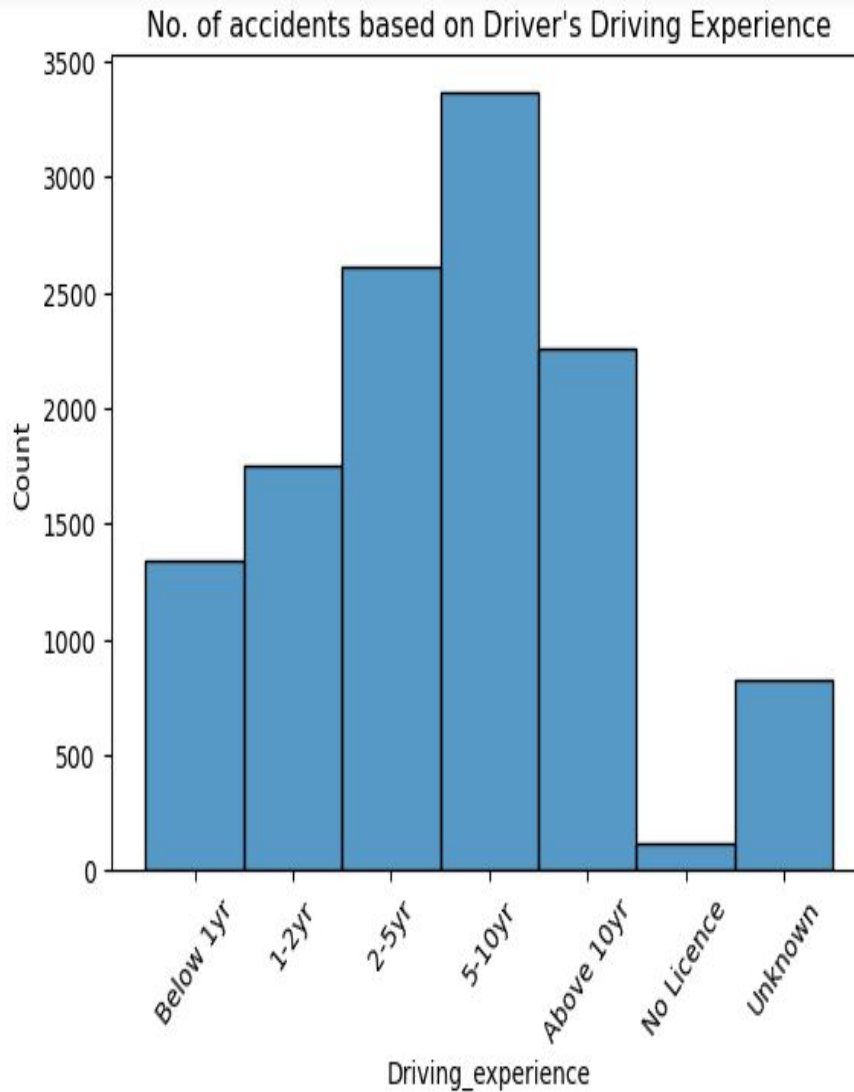
❑ Lastly, in the addis ababa city, there is largest amount of population in the age group 18-51, which is why they tend to be involved in more accidents in which the 18-30 ones are more rigorous, less careful while on road.



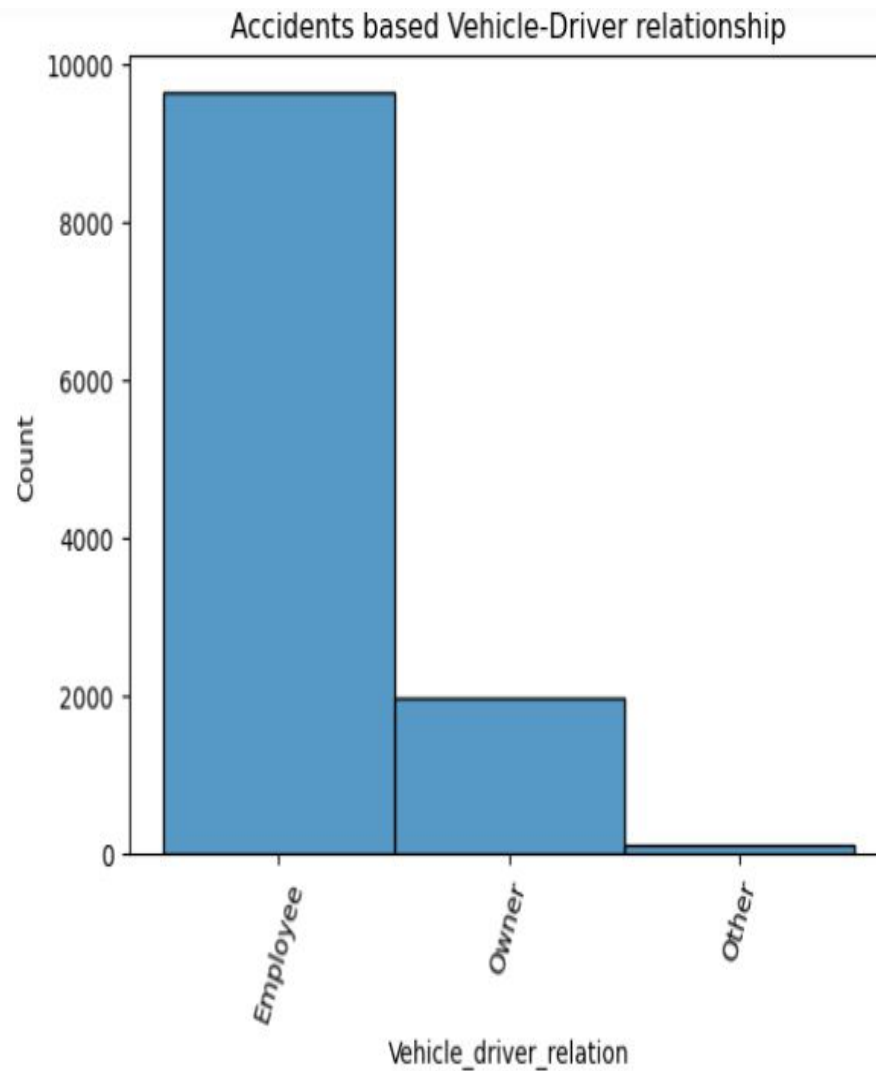
While we observe a large number of accidents happening during weekdays, (which could be due to workplace rush or school), the greatest number occur on Friday. One reason might be people rushing to home for family gatherings, parties, outings schdeuled for a weekend.



Junior high school involves the most in road accidents due to their being inexperienced, and unlearnt techniques or they're not even licensed.



We see a normal distribution for the driver's experience data who has undergone accidents. Until 10 years, we see that the more the Driver's experience increases, the more number of accidents occur. This might be because more people from age-group 5-10yr drive on roads, while the least no. of people with no license seem to drive.



Employees drive more carelessly since it is not 'their car' while the car owners take more precautions into consideration.

RECOMMENDATIONS

- ☐ Children under the age of 18 shouldn't be permissible to drive atleast until they get their license.
- ☐ Adults from age group 18-51 must be given proper training regarding driving precautions and also be imposed strong penalties upon rule breaking.
- ☐ More traffic police should be put on-duty during working hours on week-days to avoid chaos and collisions; and during evening hours over the weekend.
- ☐ Employees should be imposed heavy fines from owners upon any damages to the vehicle so then they remain more vigilant while driving.
- ☐ Alarm systems should be installed in cars which will notify and automatically apply break when car get closer to certain distance to another car to prevent car-to-car collision.
- ☐ Use of indicators should be encouraged while changing lanes.
- ☐ Since there is quite a handful of count in the unknown categories of each analysis, it is recommended to improvise the data collection sources.



Thank
you