ACCIDENTS AND ROAD SAFETY

For FDS CW2

ROAD TRAFFIC AND ACCIDENTS RESULTING IN A CAUSALITY

INTRODUCTION

Road accidents is an issue of concern in every part of world we all know that some countries have high percentage of death and injuries happened in a road accident. There are several factors on which it is dependent, and every year government check the data based on these cases including every factor which is related an accident. In this project, STATS19 which is a data set released by government has been analysed. STATS19 is strongly associated with road crashes happened throughout in UK. In this report, data of accidents, vehicles and casualties will be examined and visualised to know the reason of these accidents and later come up with a conclusion by using proposed ideas that how these accidents can be reduced. All the ideas that will be discussed in this report to reduce accidents will have public interest so that public can be aware and do more safety measures on basis of what is going to be explained in this project ideas and accidents severity can be reduced.

EVALUATION OF DATA SETS

Evaluation on data sets and analysis is based on following factors which are in accidents and casualties data for 2016 which are as follow:

- Number of vehicle
- Place of accident
- Time of accident
- Speed of vehicle
- Speed limit of particular place
- Accident severity
- Vehicle Age

ETHICAL, REGULARITY AND PRIVACY ISSUES

- ETHICAL ISSUES: When dealing with big data it is important to keep ethical issues in place which is systemizing, defending and recommending concepts of right and wrong in relation to data.

- REGULARITY ISSUES: Regulatory Issue is a concern when dealing with data which is released by an authorized body to provide knowledge about some facts which can be helpful for other, it is important that human and organizational right would not be violated when working with this kind of data, in our project, the data provided is vast and released by UK government for which the regulatory laws should be in place while working on it without violation of any kind of knowledge.
- PRIVACY ISSUES: In big data projects, where dealing with huge amount of data which is related to big organizations and government bodies like in this one (UK government), data privacy is an issue which has to include proper handling and not sharing with false person as it includes huge data of a country including individuals data. There need to be consent, notice and legal use of data while working on it.

DATA VISUALISATIONS AND ANALYSIS

- In this part, we are required to come up with three ideas or questions which may help us and public to get an idea what are the major reasons of accidents and casualties on road using the road safety data on which this project is based on.

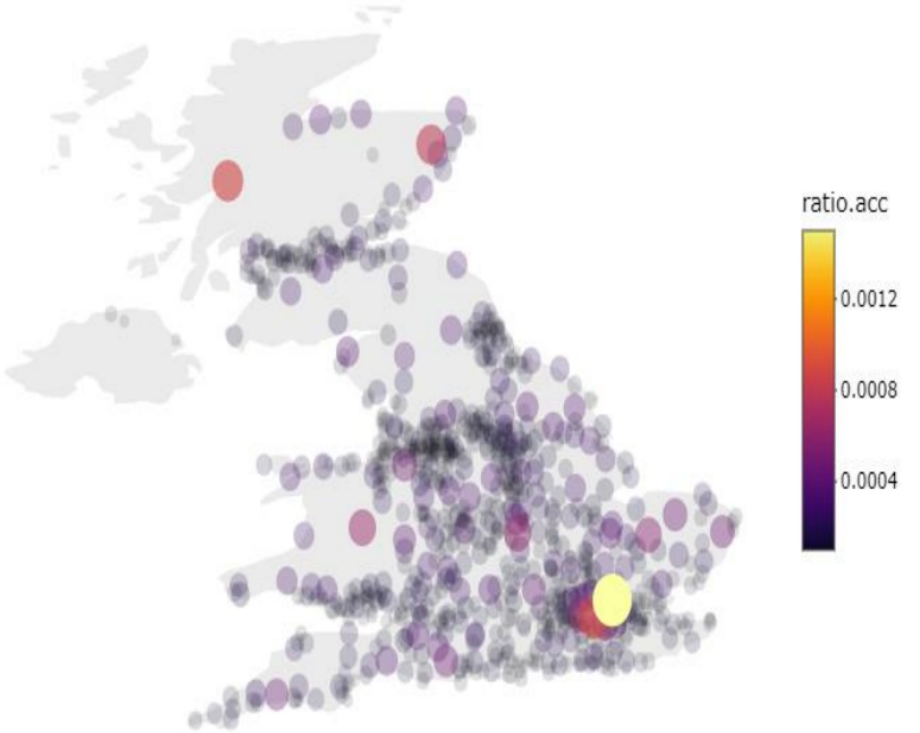
- IDEA 1: Analysis for pedestrians and cyclists, how vulnerable they have been in accidents. By (sg611 and ys331)

- IDEA 2:Highest accidental region (Top 3) and Correlation of highest contributing factors with speed limit. Also, Compare them over the years with respect to speed limit? Has the road safety improved? (By mb331 and kbm11)

IDEA 1: Analysis for pedestrians and cyclists, how vulnerable they have been in accidents.

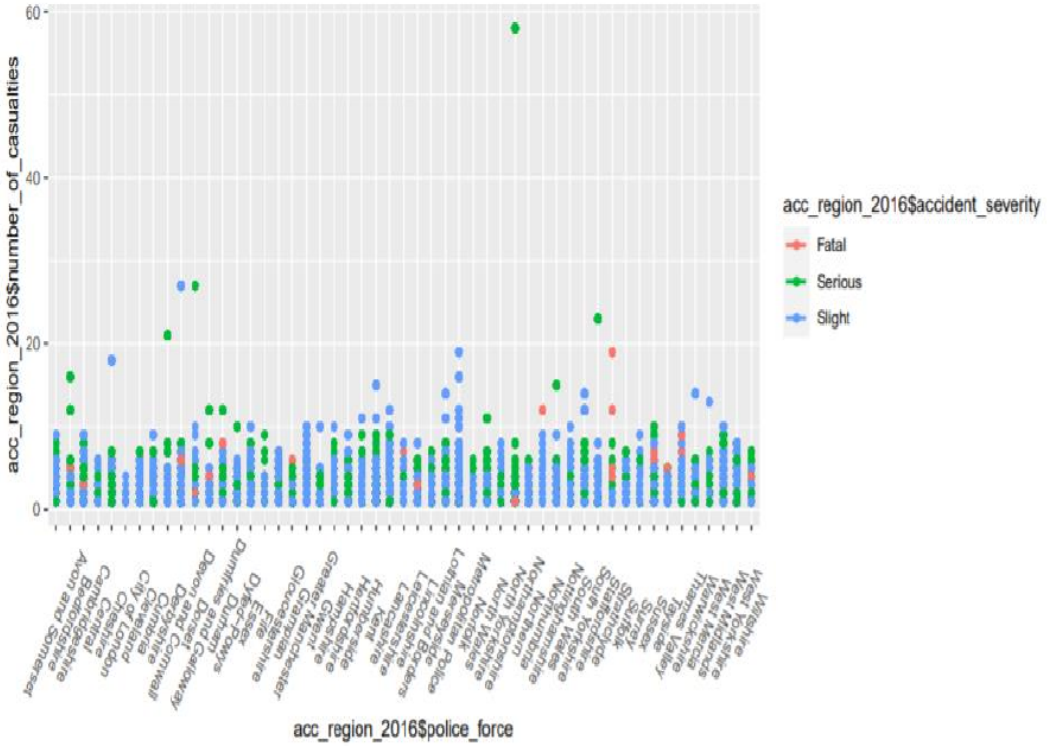
As we are aware, most vulnerable road users to accidents are cyclists and pedestrians with more chances of severity during the accident, the reason is no protection while using the road. A speed limit of 40 and less than 40 is taken because those are the only roads which is used by pedestrians and cyclists.

From the plot above, it can be seen where and how badly pedestrians and cyclists are prone to accidents. Most of the incidents happened in midlands and south of England where more strict measures need to be taken in place for more safety of these users.



IDEA 2: Highest accidental region (Top 3) and Correlation of highest contributing factors with speed limit. Also, Compare them over the years with respect to speed limit? Has the road safety improved?

- In this idea we have plotted a gg plot to see where are most highest taking place and on what seep limit and what was the severity of accidents, is it fatal, serious or slight.
- According to the above plot, the top three regions with highest accidental count are North Yorkshire, Devon and Cornwall and Derbyshire.

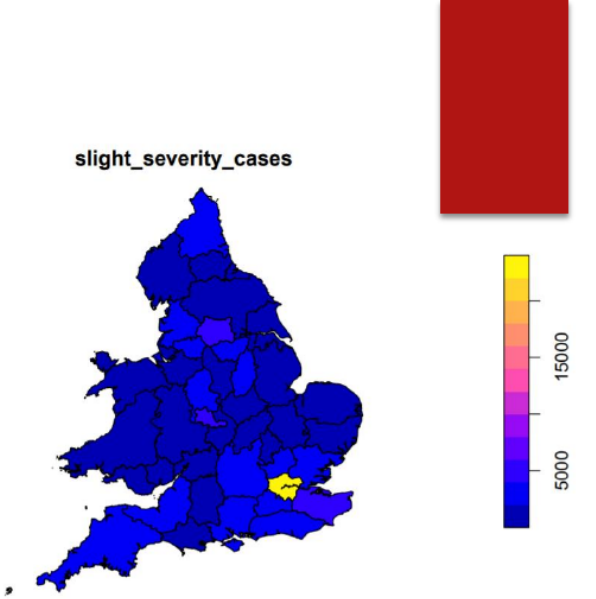


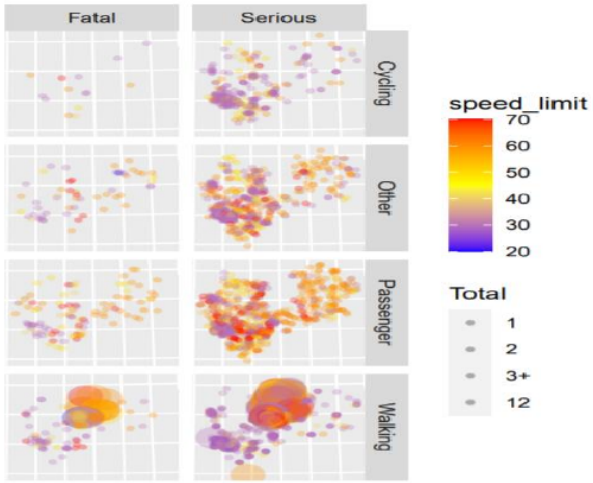
OTHER ANALYSIS

Some basic plots giving the ideas about fatal and serious accidents happened in 2016 involving passengers, cyclists, pedestrians and other with a heat map and on different speeds.

Most vulnerable and people involved in accidents are Walking and passengers on a speed more than 40 mph.

Another plot for country wide map showing which place has more severity of the cases in 2016 is below:





CONCLUSION

After thoroughly considering and evaluating all the data sets from the stats19 for 2016 and 2020, it can be concluded that road safety has been increased over the years. According to the stats, pedestrians and cyclists appeared to be the most prone to accidents among the others which has gradually improved as the accidents rate appeared to be minimum. With more safety measures on road by the public and government, the rate of accidents or at least severity can be reduced.

FUTURE SCOPE

- From all the analysis done so far there are many things which can be done using this data or different data from stats19. There are several factors need to be focused on to extract more helpful information and can be more beneficial for public to improve road safety. Several Future Scope :

- Age factor need to be considered by comparing severity of accidents.
- Accidents are more fatal when young drivers are on road- could be a reason they have lack of experience in driving
- Data for round abouts and junctions should be analysed because they are most critical points on road.
- For public interest, more strict laws and measures need to be imposed to road more safe.
- Analysing top 10 prone areas and examine their numbers and imposing more careful road rules in those areas.