Capstone: Accident severity prediction

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Problem to be solved

Is it possible to predict the severity of accidents based on weather and road conditions?
If that is not the case, which variables can be used to predict car accidents severity?

Objective

- Build a model to predict car accident severity based on weather conditions and road conditions
- This will allow drivers to decide their best route and the level of alertness needed to drive safely
- A data-driven model will be constructed and presented.

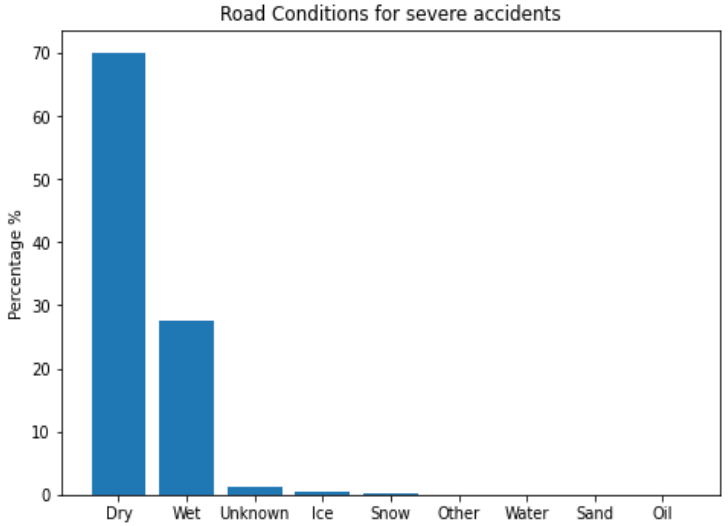
Dataset

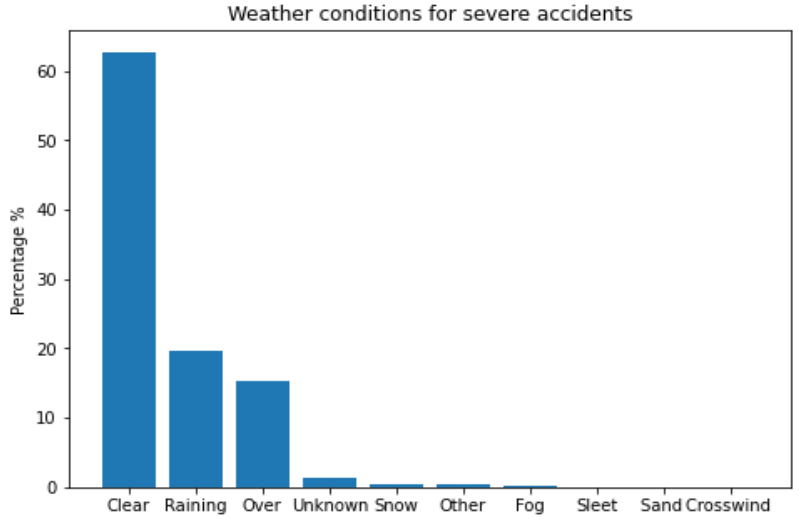
- Collisions registered in Seattle, Washington

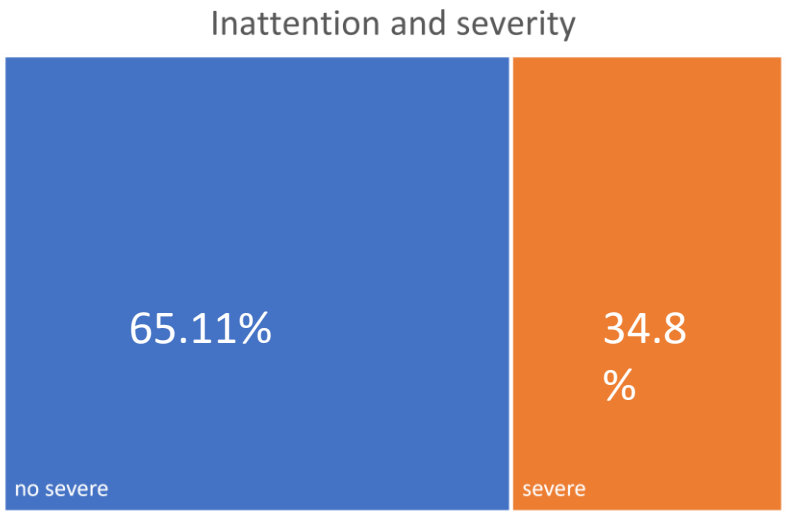
38 columns among them:

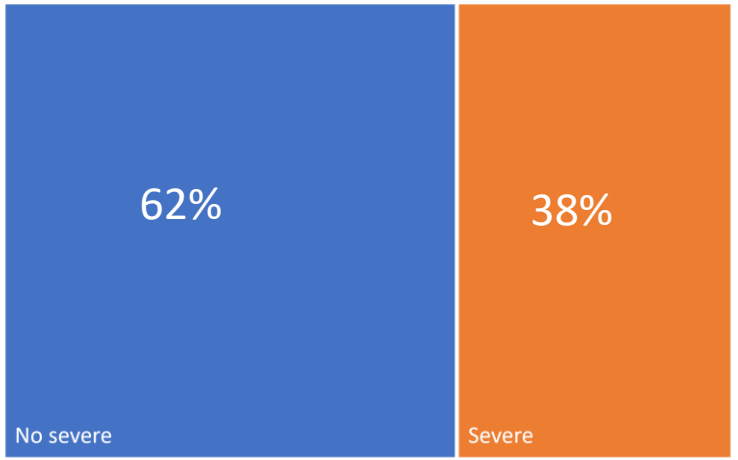
- Severity of the accident
- Number of vehicles involved in the collision
- Number of injuries
- Number of fatalities
- Whether the collision was due to inattention
- Whether the driver was under the influence of drugs or alcohol,
- Weather conditions during the time of collision
- Road and light conditions during the accident.

Data Exploration

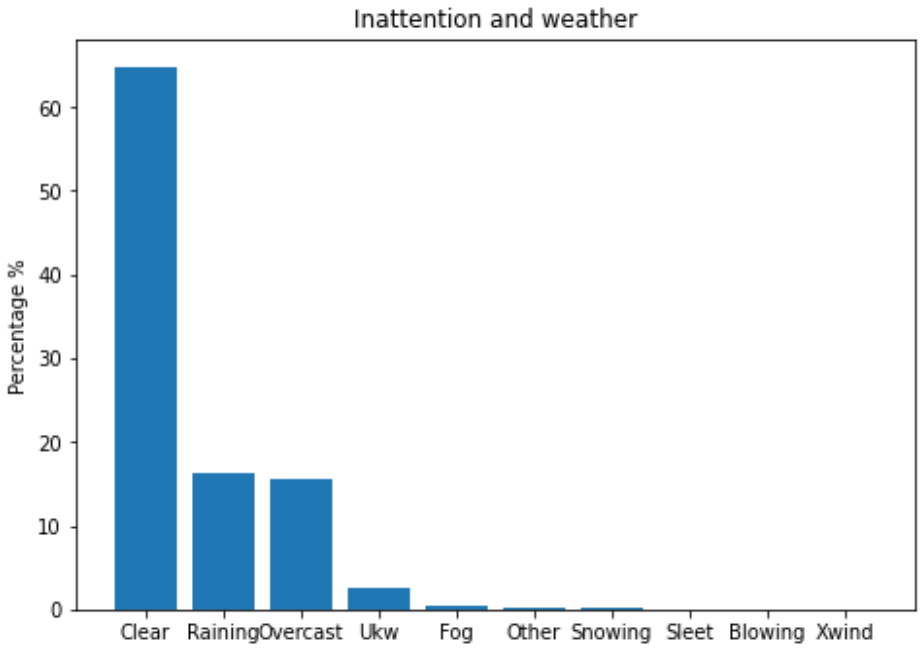


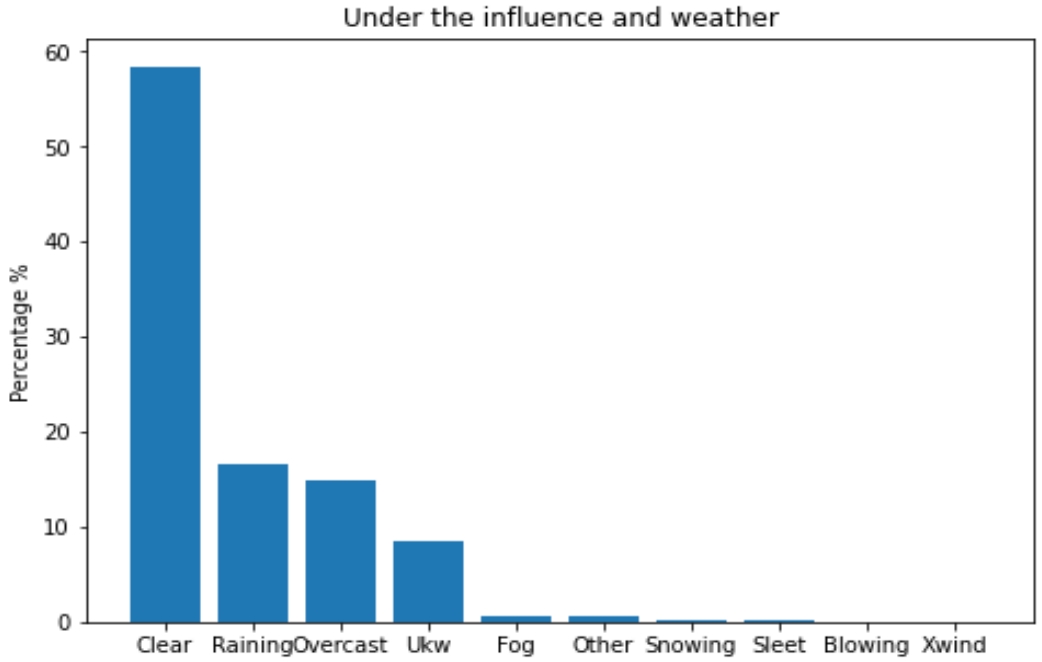






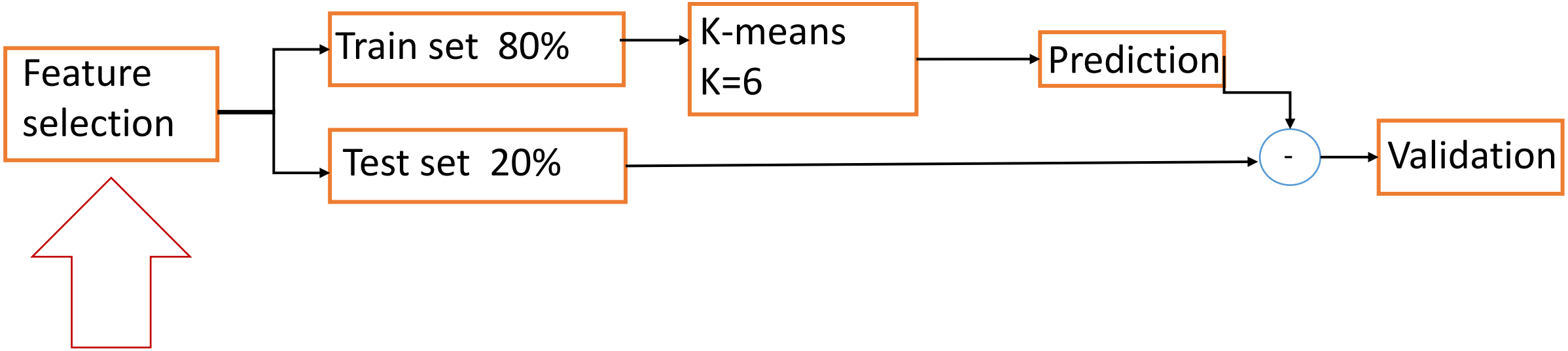
Data exploration (2)





The weather doesn’t seem to be the main cause of severe accidents

Data analysis



‘INATTENTIONIND’, ‘UNDERINFL’, ‘LIGHTCOND’, ‘ROADCOND’ and ‘WEATHER’

Y = ‘SEVERITYCODE’

Validation

Model	Jaccard score	F1-score
K-means	0.69	0.60
Decision Tree	0.70	0.58
Support Vector Machine	0.70	0.58

Conclusion

- The weather is not the only feature used to predict car accident severity
- The *k-means* model implemented to predict the severity of car crash depending on weather, road conditions, light conditions and whether the driver was distracted or under the influence of drugs or alcohol yielded a good precision