A study on the Causes of Road Accidents.

Driving is a fact of life for many Canadians, with the average Canadian driving about 50 km a day[1](#fn1). Studying road accidents is important as it allow us to understand their causes and develop policies and road safety measures to reduce accidents, especially those lead to bodily injuries.

Our group intend to unfold the possible cause of accidents using UK data from 2021 to 2022[2](#fn2) by examining the below factors.

* Weather condition (Fine no high winds, Fine + high winds, Fog or mist, Raining + high winds, Raining no high winds, Snowing + high winds, Snowing no high winds, other)
* Road condition (Dry, Wet or damp, Frost or ice, Snow, Flood over 3cm deep)
* Lighting condition (Daylight, Darkness – lights lit, Darkness – no lighting, Darkness – lighting unknown, Darkness – lights unlit)
* Urban or Rural area
* Road type (Dual carriageway, One way street , Roundabout, Single carriageway, Slip road)
* Accident severity (Slight “Minor”, Serious, Fatal)

Before the study, our group hypothesized that:

* Poor weather conditions, such as snow, rain and fog will lead to an increase in the number and severity of accidents.
* Urban areas will generally have a higher number of accidents compared to rural areas
* Single-carriageway roads, where vehicles travel in opposite direction without a median, will have a higher incidence of casualties compared to multi-carriageway roads
* Poor lighting conditions, such as nighttime and unlit roads, will lead to a higher number of accidents
* Poor road conditions, where the surface is covered with ice or snow, will lead to an increase in the number of accidents
* Minor (slight severity) accidents occur more frequently then serious or fatal accidents.

Having set our expectation, our group began analyzing the data.

First, we found that accident tend to occur most during the month of October and November each year, as seen on the heatmap.

A chart of a month

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In addition, there is an upward trend from February to November, then in December, accidents tend to decrease, as seen on our line graph.

**Year 2021**: Overall, we see accidents mostly happen during month of November and lowest in February.

**Year 2022**: Overall, we see accidents mostly happen during month of November and lowest in December.

A line graph with numbers and a line

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A line graph with blue line

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When comparing weather condition to the severity of the accidents, to our surprise, we found that most accidents occur in almost perfect weather.

A graph with green and orange bars

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As expected, accidents occur more in urban areas compared to rural areas due to their congested nature.

A graph with blue rectangles

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Our finding also confirmed that single-carriageway roads, where there is no median between traffic traveling in opposite direction, have more casualties than other types of road types.

A graph with blue squares

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Another surprise was that most accidents occur during daylight, as opposed to nighttime and on unlit roads.

A graph with blue squares

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Our data also revealed that most accidents happen on dry road, as opposed to the icy or snowy road surface we were expecting. A graph with blue bars

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Finally, our data confirm that minor accidents happen the most, compare to serious and fatal accidents.

In conclusion,

Most accidents happen in good weather, with good lighting and good road conditions, and on single-carriageway road where there is no median to protect traffic traveling in opposite direction.

Accidents happen most in urban areas where drivers have more to look out for, such as traffic signs and signals, surrounding vehicles, pedestrians and cyclists.

These findings leads us to think that driver distraction is the primary factor in accidents.