2020 Safe Roads Competiton

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Image Courtesy: City of Toronto

Executive Summary

- "Safety First" is a well-known motto, however, incidents still happen.

- Fatality is the most severe outcome of an unsafe incident on any road. Loss of life (fatality), accounted for 611 cases out of approx. 12000 cases reported during 2008 - 2018.

- In this analytical study, the data provided was drilled deep into top 3 age groups (20-24, 25-29, 55-59) which accounted for maximum fatal cases.

- Separating the grain from chaff, the causes were analyzed, and series of recommendations were generated, which included increase in penalty on drunk driving and reduction in allowable blood alcohol limit.

- Primary objective of this study is to prevent the most severe outcome i.e. Fatality; which is in line with "Vision Zero Roadmap".

- It is expected that after implementation of recommended corrective actions, there will be a cascading effect leading to a significant reduction in other less severe incidents.
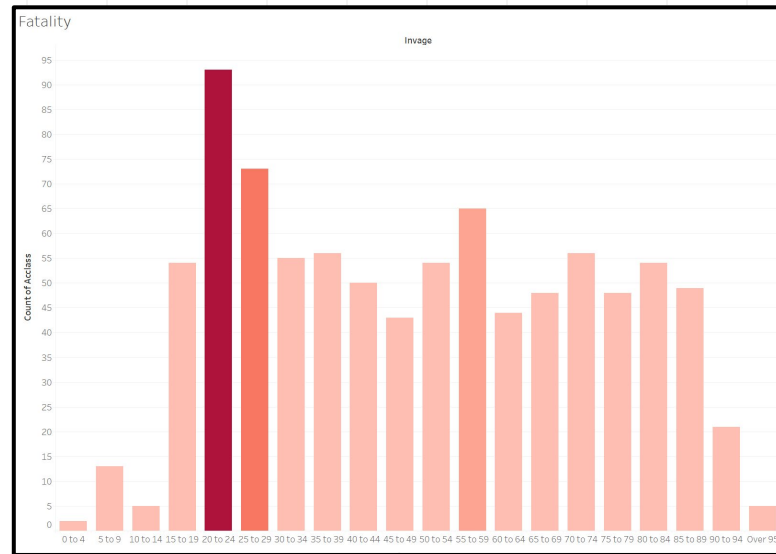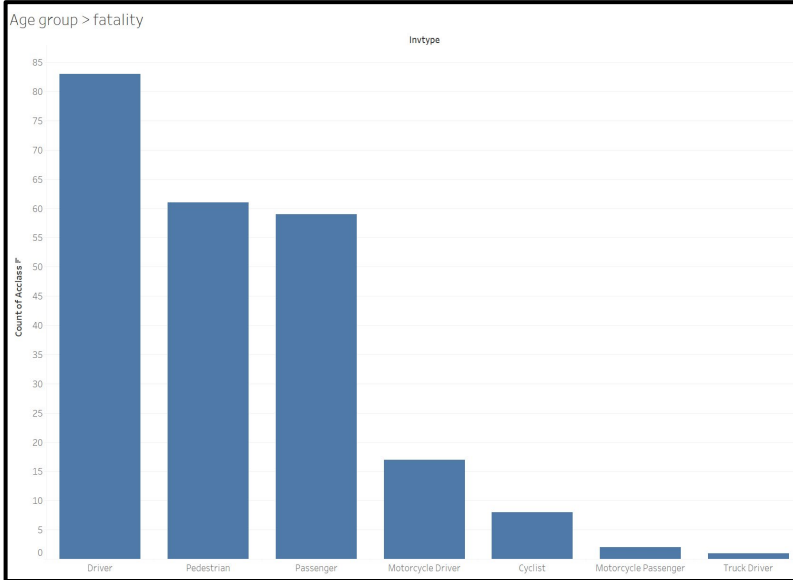
Analysis 1: No. of People injured vs. Age Group
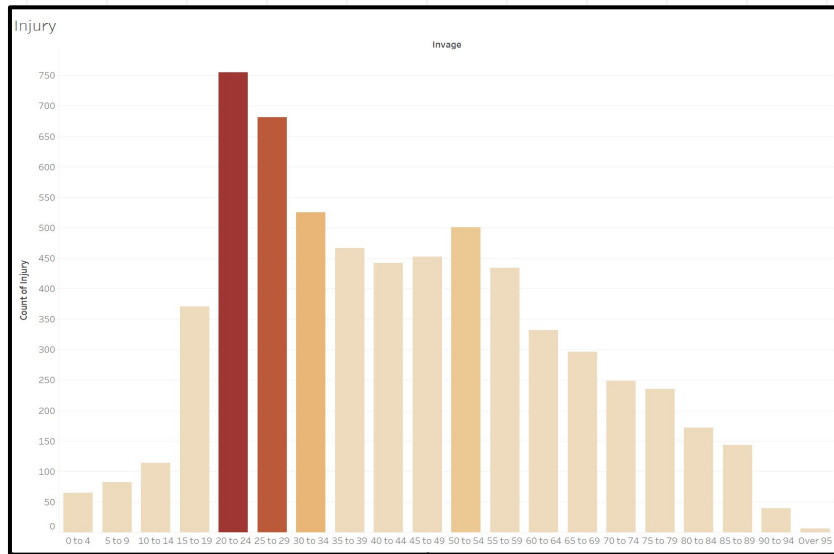
Injury

Top 3 Age Groups	No. of People Injured
20-24	755
25-29	681
30-34	525

Analysis 2: No. of Fatalities vs. Age Group

Fatality

Top 3 Age Groups	No. of Fatalities
20-24	93
25-29	73
50-54	65

Analysis 3: Involvement Type in a Fatality

Age group > fatality

Invtype

Involvement Type	No. of Fatalities
Driver	83
Pedestrian	61
Passengers	59

- ➤ As per the criticality-based approach, fatality is more severe than an injury.
- ➤ Hence, it was imperative to drill deeper into fatality related aspects for the top 3 age groups (20-24, 25-29, 55-59).
- ➤ Diving further, the data revealed that "Involvement Type" in a fatal incident was maximum for "Driver", followed by "Pedestrian" and "Passengers".
- ➤ Further investigation about 83 cases of driver involvement revealed the following;
- 16 cases involved drunk driving
- 49 cases involved over speeding
- 12 cases from above involved both

Analysis 4: Analyzing Effects of Visibility & Road Condition on Fatality
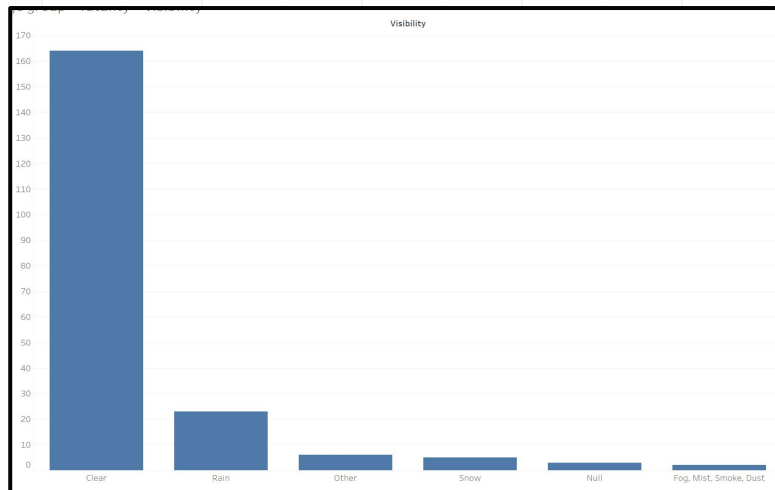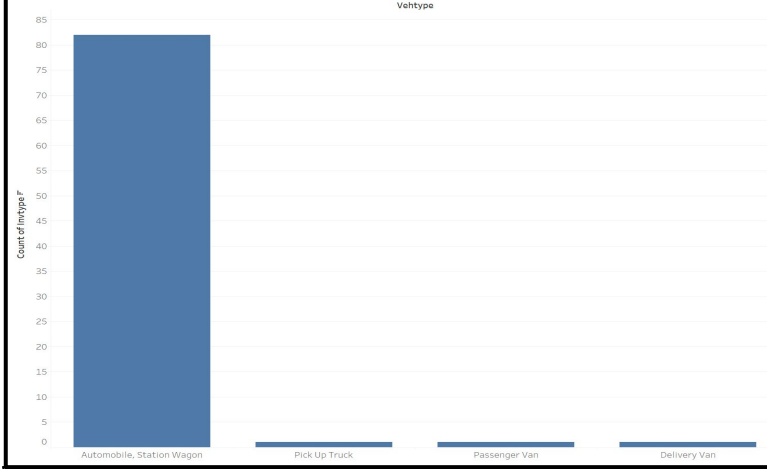

Visibility	No. of Fatalities
Clear	164
Rainy	23
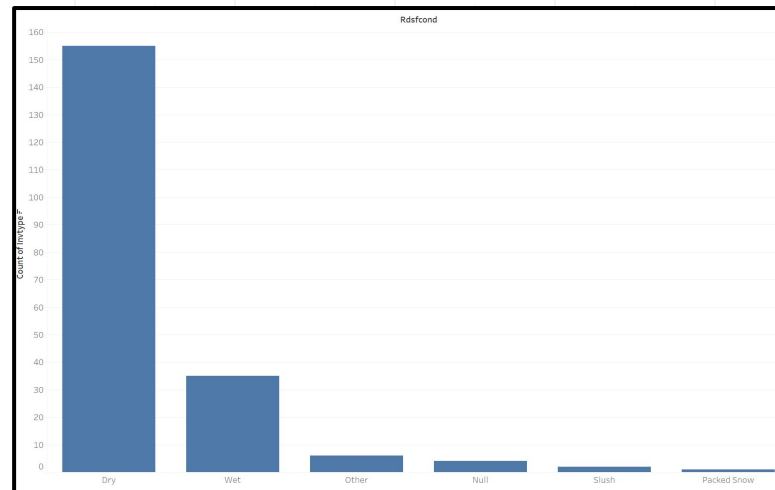
Road Condition	No. of Fatalities
Dry	155
Wet	35

Maximum fatalities were reported when:
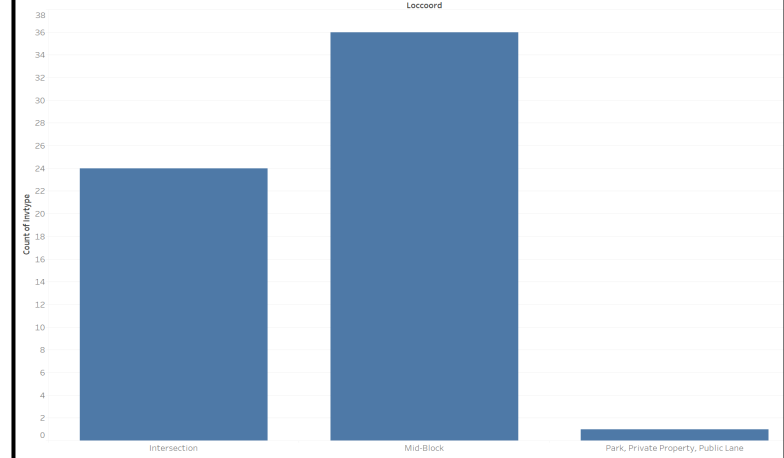
- Visibility was "Clear"
- Road condition was "Dry"

Analysis 5: Analyzing Effects of Vehicle Type & Road Location on Fatality

Age group > fatality > vehicle type

Vehicle Type	No. of Fatalities
Automobile & Station Wagon	82
Pickup Truck, Passenger van and delivery van	1 for each

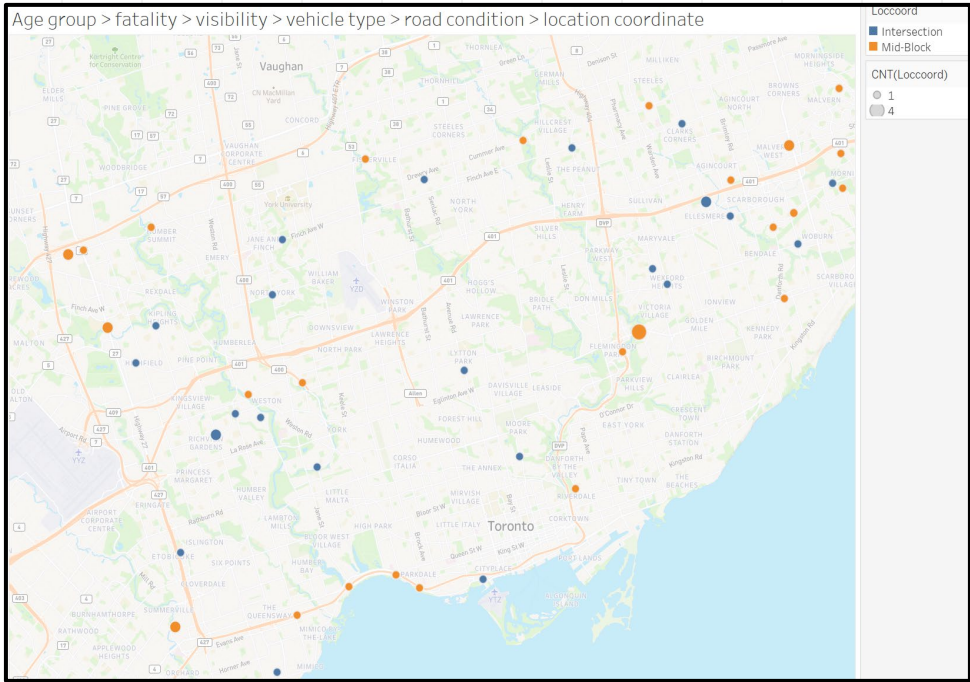Age group > fatality > visibility > vehicle type > road condition > Location

Location	No. of Fatalities
Mid-Block	36
Intersection	24
Park, Private Property	1

Maximum fatalities were reported when:

- Vehicle Type was "Automobile & Station Wagon"
- Location was "Mid Block"

Analysis 6: Analyzing Combined Effect of Major Factors on Fatality, Based on Geographic Locations

Age group > fatality > visibility > vehicle type > road condition > location coordinate

Loccoord
■ Intersection
■ Mid-Block

CNT(Loccoord)
○ 1
○ 4

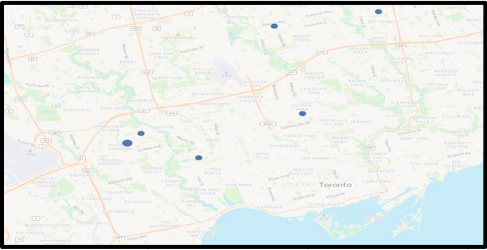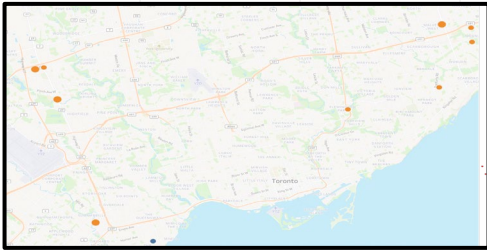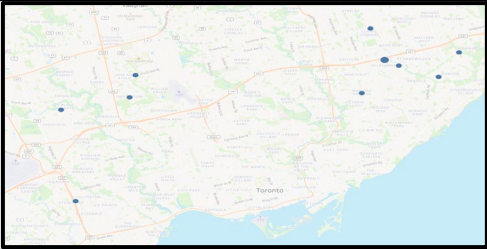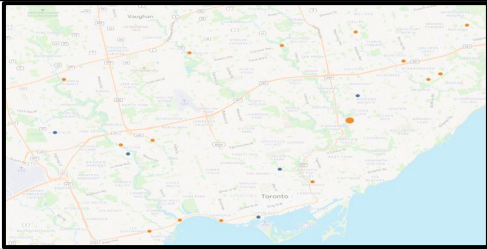➢ Effect of following major factors was considered on top 3 Age groups prone to fatality;
- Road Condition (Dry)
- Visibility (Clear)
- Vehicle Type (Station Wagon)
- Type of People Involved (Driver, Pedestrian, and Passenger)

➢ Analysis of above combinations revealed following insights;

Location	No. of Cases	No. of People Involved
Mid-Block (Orange Dots)	28	36
Intersection (Purple Dots)	22	24

Analysis 7: Analyzing Combined Effect of Traffic Control / No Traffic Control with Daylight / No Daylight on Fatality

	Traffic Control (Blue Dots → Intersection)		No Traffic Control (Orange Dots → Mid Block)	
Daylight		Fatality: 6 cases / Speeding: 2 people		Fatality: 11 cases / Speeding: 10 people
	7 nos. people involved in 6 cases of fatality.		*15 nos. people involved in 11 cases of fatality. 1 case was at an intersection.*	
Dusk/ Dark		Fatality: 9 cases / Speeding: 3 people		Fatality: 23 cases / Speeding: 21 people
	9 nos. people involved in 9 cases of fatality.		*27 nos. people involved in 23 cases of fatality. 5 cases happened at an intersection.*	

Insights for Road Safety
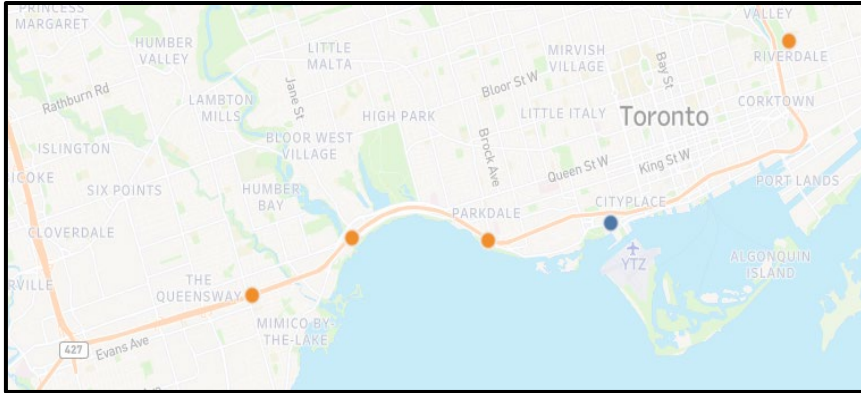
Gardiner Expressway had a significant pattern:
- All fatal accidents happened during evening time.
- All fatal accidents were due to over-speeding.
- To mitigate the above risk, installation of a better lighting system, and warning signs for drivers is recommended.
- Speeding camera should be used on this stretch to enhance traffic control.

Insights related to top 3 age groups prone to fatality:
- Drunk Driving contributed to more than 20% of driver related fatalities.
- Speeding contributed to more than 50% of driver related fatalities.
- Since the "type of involvement" in a fatality is maximum "Driver" related, it is considered as the main cause of fatalities.
- Contributing factors to main cause are : Drunk Driving and Over Speeding.
- The effect being loss of life on part of Passengers and Pedestrians in addition to Driver.

Recommendations

➢ Since the "type of involvement" in a fatality is maximum "Driver" related, following preventive measures are recommended:

• Zero tolerance on drunk driving
• Reducing the allowable blood alcohol limit while driving
• Impounding the vehicle for a greater number of days

➢ As part of increased monitoring, install speeding cameras at locations where maximum fatalities are being reported, especially in Scarborough and in Toronto & East York region.

➢ Install flashing yellow beacons ahead of mid block to warn the road users

➢ Social media, if utilized properly, will help to raise people's vigilance related to consequences of disobeying traffic rules.

➢ Explore the concept of "Blood Money" payment by driver, incase, found guilty of causing fatality.

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