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Agenda

Introduction

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Executive Summary

- Background Analysis
- ✓ Daylight Savings Time Analysis
 ✓ Insights

Recommendations

















Executive Summary

Goal:

Our objective is to offer meaningful insights about traffic collisions in Toronto and identify key factors contributing to those collisions and fatalities.

Data sources:

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- Toronto Police
- Geotab ITS
- City of Toronto-Open Portal

Recommendations:

Insights regarding high-risk divisions, intersections, and variables that contribute to fatality













 \triangleleft All injuries have a downward trend

\checkmark Fatal injuries are increasing





√ Collisions by District (2017-2021)



- Etobicoke and Toronto-East York had higher number of collisions overall
- However, Scarborough had much higher than average fatal collisions











() Recommendation



 \triangleleft Neighborhoods clustered according to the collision risk

Top 3 Neighborhoods by Collision Risk (colored Red):

- Wexford/Maryvale
- West Humber-Clairville
- High Park-Swansea















Major Streets:

- Yonge St ٠
- Steeles Ave E & W ٠
- Eglinton Ave E ٠

Intersections with prior fatalities:

- Steeles Ave E / Bluffwood Dr ٠
- Steeles Ave W / Humber River E Branch ٠
- Eglinton Ave W / Castle Knock Rd ٠

We have marked all the risky intersections on these streets with red dots



Further studies









Insights

DST Analysis

Visibility:

• 86.82% of collisions happened in clear conditions



Environment VS number of incidents

Daylight vs. Others:

- Highest during daylight conditions
- Majority of KSI collisions occur during 6 pm 9 pm

DST Analysis

Analyzing KSI Collisions two weeks prior to and after DST observation (2014-2021)

No. of KSI collisions two weeks ٠ before and after DST change for March and November

- March increased KSI • collisions after DST observation
- November no. of • KSI collisions remain about the same before and after



Fig: KSI Collisions 2 weeks before and after DST change (Mar and Nov) by year.









Insights





DST Analysis

- Analyzing the immediate impact of DST Time Change on KSI Collision
- KSI Collisions on the Monday following DST time change are higher for both March and November compared to the average for Mondays
- Exhibits a relationship between no. of collisions and DST time change
- Monday on March shows a more pronounced increase from the average
- The total number of increased after March DST observation



Fig: KSI collisions on the Monday following DST change (Mar and Nov) compared to Mondays avq.









Insights





No. Collisions on Monday after DST vs Avg No. Collision on Mondays

ML Model Insights

Key Features of Collisions resulting in Fatalities - Based on KSI Dataset.

Features	Values
Impact Type	Approaching, Cyclist Collisions, Pedestrian Collisions
Truck	Collisions involving Trucks
Divisions	Divisions 42, 23, 22

Key Features of Collisions resulting in Major Injuries- Based on All Collisions Dataset

Features	Values
Involvement Type	Pedestrians, Cyclists
Passengers Involved	Passengers involved in the collision
Impact Type	SMV Other
Divisions	Divisions 42, 23, 22
Hour	After 4:30 pm, especially after 7:30 pm.







Recommendation

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Recommendations & further studies

- D 42, D 23, D 22 are high collision zones even during daylight. Need more speed limiting roads and laws
- Summer months have higher fatalities, especially after DST. Need more public awareness programs regarding summer driving especially in highly populated areas like Downtown and Etobicoke
- Increase enforcement and public awareness of traffic laws on specific intersection with high school concentration. Specific intersections are:
 - Steeles Ave E / Bluffwood Dr
 - Steeles Ave W / Humber River E Branch
 - Eglinton Ave W / Castle Knock Rd
- Collisions involving pedestrians and/or trucks proved to be more fatal.





Analysis



Insights





Thank You