Lacewood Dr and Parkland Dr

MicroTraffic Video Diagnostic Findings and Recommendations

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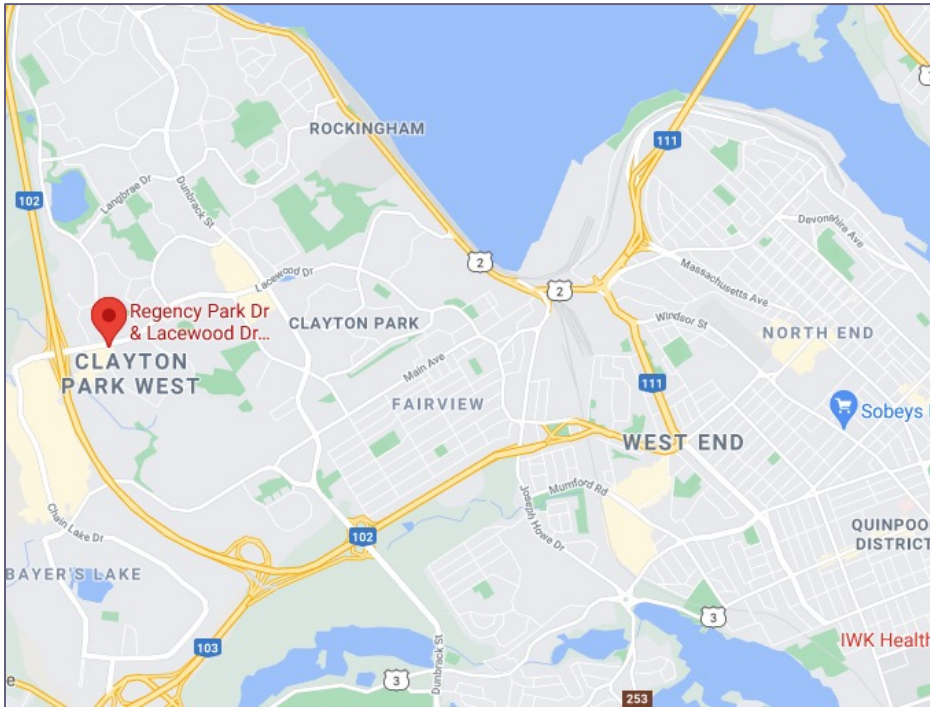
Intersection Overview

- Lacewood Dr and Parkland Dr is located in Clayton Park West, northwest of downtown Hamilton.
- Parkland runs parallel to Highway 102, providing access to Sherwood Heights. South of Lacewood, Parkland becomes Regency Park Dr.
- Lacewood Dr feeds east from Highway 102 and transitions to Titus St, Dutch Village Rd and Bayers Rd before connecting back into Highway 102 near the West End.
- The land use surrounding the intersection is mixed with commercial establishments (NW & SW quadrants), and multi-family residential (NE & SE quadrants).
- Video analytics indicates that the intersection is used by approximately 5 cyclists and 700 pedestrians (not including segments on the East/South crossings), as well as 22,000 vehicles (not including right turning vehicles) per day from 5:00-24:00. Note that the counts were completed in November when VRU volumes may be depressed.



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Lacewood Dr. Features:

- Two through lanes and a left turn auxiliary lane
- Right turn channelization islands
- 60 km/h posted speed limit
- Three signal heads EB and WB (one nearside each)
- Left turn signalization: protected/ permissive
- No reflective back plates on signals
- Sidewalks on both sides of the intersection with boulevard separation
- Nearside transit stop WB and farside transit stop EB

Lacewood Dr. Looking East

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Parkland Dr. Features:

- One through lane and a left turn auxiliary lane (receiving through lanes ~7m)
- Right turn channelization islands
- 50 km/h posted speed limit
- Three signal heads NB and SB (one nearside each)
- Left turn signalization: permissive only
- No reflective back plates on signals
- Sidewalks on both sides of the intersection with boulevard separation
- Nearside transit stop NB
- Hydro poles located <0.5m away from the roadway

Parkland Dr. Looking North

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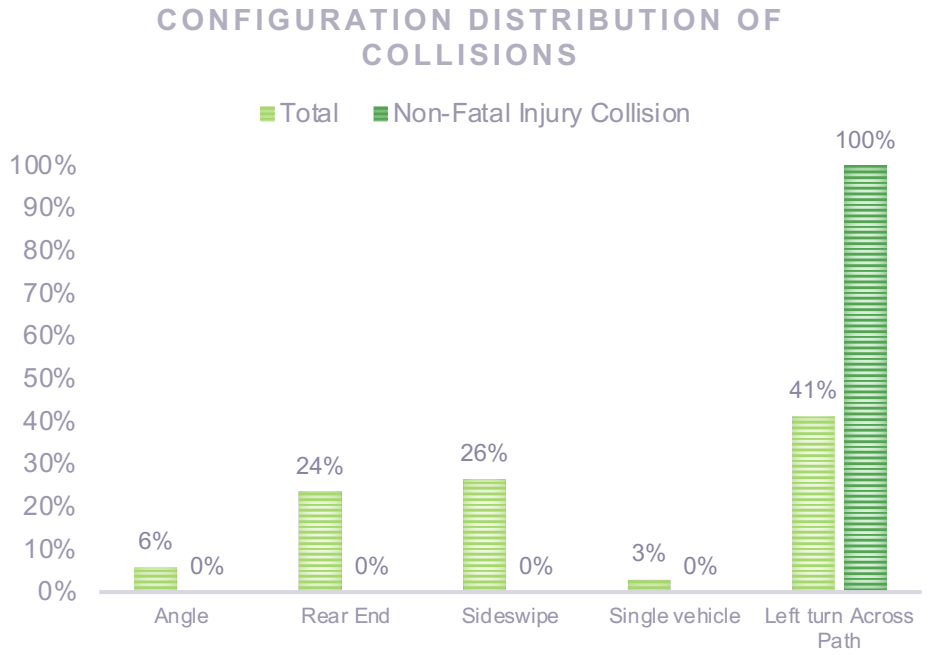
Collision Analysis

- The provided collision data included 34 collision records January 1, 2018 to April 12, 2021. Of the 34 records, 6% were classified as non-fatal injury collisions and 94% as property damage only collisions.
- The collisions were classified into the general descriptions shown in the adjacent figure based on the initial impact type and provided directional information.



The collision data revealed the following key points:

- Left turn across path collisions represent 41% of total collisions and 100% (2 events) of the non-fatal injury collisions. The directional distribution was 36%, 21%, 36% and 7% for Eastbound-left, Westbound-left, Southbound-left and Northbound-left respectively.
- Rear End collisions represent 24% of total collisions. 50% of these collisions were in the westbound direction.
- Sideswipe collisions represent 26% of total collisions. More than 50% of these collisions were in the southbound direction.

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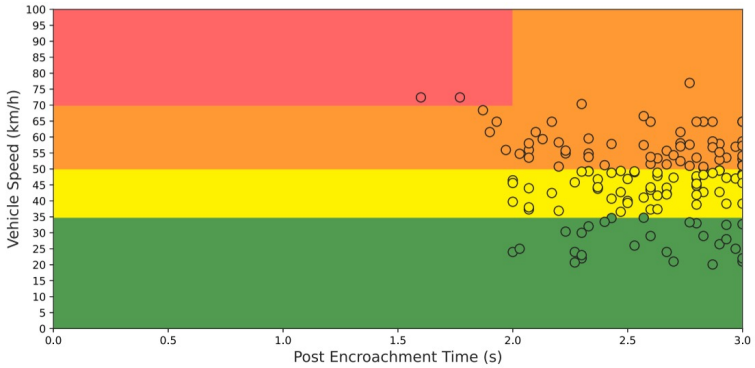
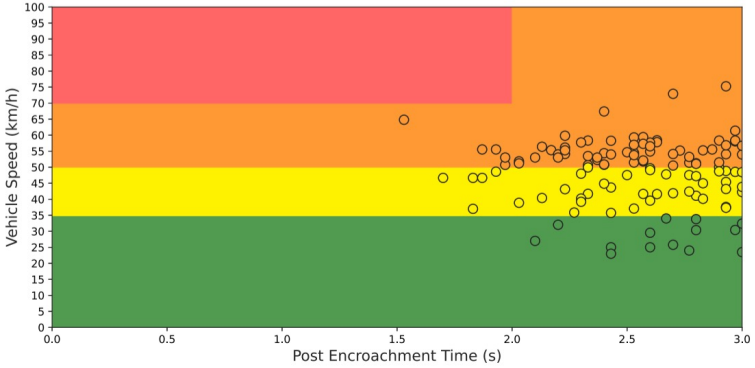
Video Conflict Analysis – VEH-VEH

- Through vehicle vs through vehicle and left-turning vehicle vs through vehicle from left configurations were measured, but no conflicts were detected during the 74-hour analysis period. These conflict types require a signal violation, which are typically infrequent events.
- Several left turn across path (LTAP) conflicts were detected during the 74-hour analysis period, as follows:
  - 59 North-Left vs South-Through conflicts
  - 34 South-Left vs North-Through conflicts
  - 143 East-Left vs West-Through conflicts
  - 120 West-Left vs East-Through conflicts
- The signalization is protected/permissive for WB/EB left turn movements and permissive only for NB/SB left turn movements.
- Although a lower number of conflicts were detected for the NBL and SBL movements, is it estimated that nearly 600 and 750 high-risk LTAP events occur annually for these movements, respectively.



East-left vs West-through (above) and West-Left vs East-through (below) conflict data shows several conflicts occurring with through vehicle speeds exceeding the 60 km/h posted speed limit (up to 75 km/h).

At impact speeds above 60 km/h, opposing drivers have a >65% chance of a severe injury (MAIS 3+), which increases to >90% at 75 km/h.



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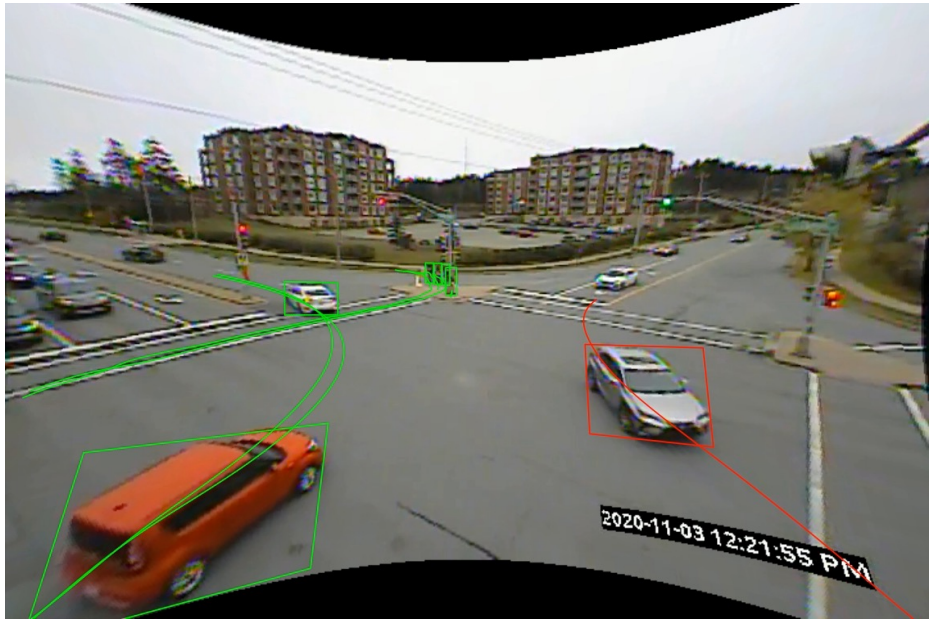
Video Conflict Analysis – VEH-VEH

West-Left vs East-Through: PET = 1.5s, vehicle speed = 65 km/h



North-Left vs South-Through: PET = 2.3s, vehicle speed = 50 km/h

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Video Conflict Analysis – VEH-VRU

- Right hook conflicts and near-side conflicts were not measured due to camera placement and limited approach view.
- No cyclist conflicts were detected during the 74-hour analysis period. However, the video collection occurred in November and the 24-hour cyclist counts indicate a very low volume of cyclists crossing the intersection.
- Several pedestrian left-hook conflicts were detected during the 74-hour analysis period, as follows:
  - 6 North-Left Hook conflict
  - 2 East-Left Hook conflicts
  - 1 South-Left Hook conflict
  - 4 West-Left Hook conflicts

Pedestrian North-Left Hook conflict data show conflicts occurring with through vehicle speeds >20 km/h. At impact speeds of 20 km/h, pedestrians have a 10% chance of a severe injury (MAIS 3+).

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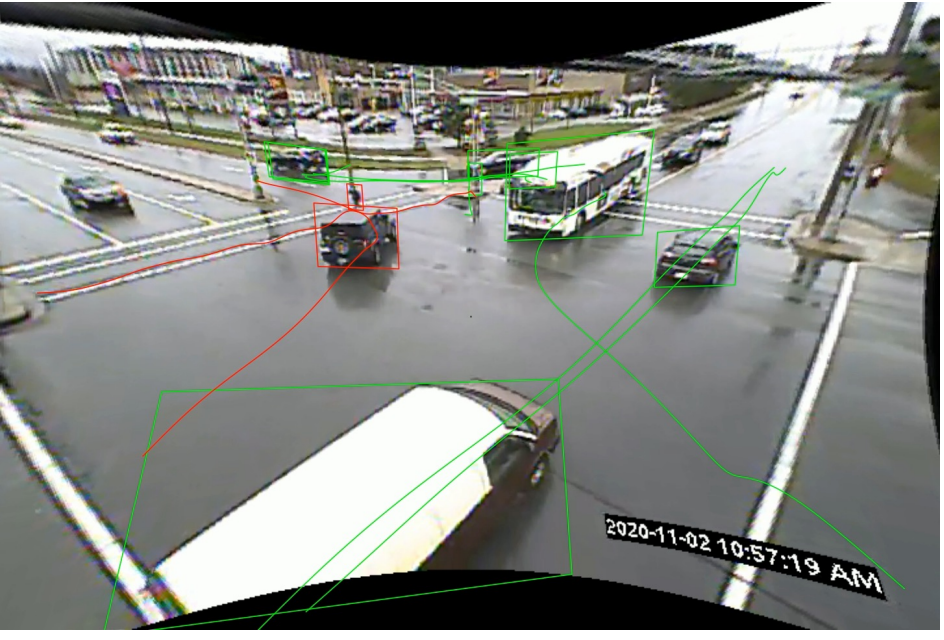
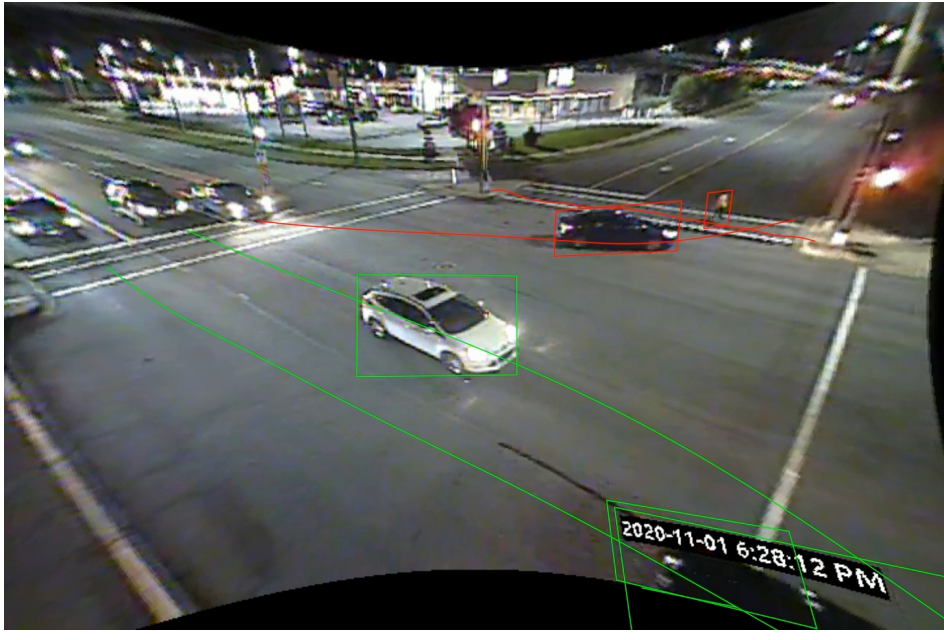
- On multiple occasions, the left turning driver did not notice the crossing pedestrian until they initiated their left turn movement. As vehicles eventually yield to the right-of-way pedestrian, they become exposed to a potential conflict with oncoming through vehicles.
- Drivers do not give crossing pedestrians much space or separation.



Pedestrian North Left-Hook: T2 = 2.4s, vehicle speed = 17 km/h



Pedestrian East Left-Hook: T2 = 2.9s, vehicle speed = 23 km/h

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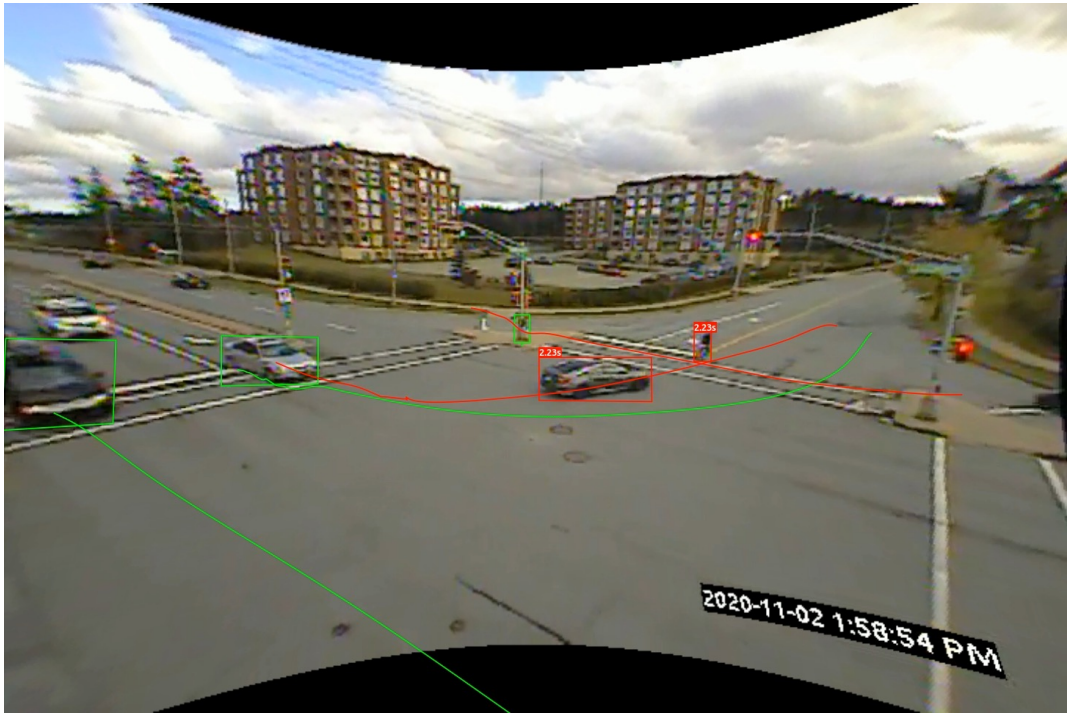
Video Conflict Analysis – VEH-VRU



Pedestrian West Left-Hook: T2 = 2.2s, vehicle speed = 11 km/h

Key Issues and Recommendations

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Key Issue	Recommendation
Left Turn Across Path (LTAP): • LTAP collisions make up 41% of all collisions and 100% of non-fatal injury collisions (these events primarily involve Eastbound-Left and Southbound-Left vehicles). • 356 LTAP conflicts were detected during the 74-hour analysis period, with several occurring at vehicle speeds exceeding posted speed limits. • Left turn signalization is permissive/protected for WBL/EBL and permissive only for NBL/SBL. Left turning drivers are required to select adequate gaps in oncoming traffic during permissive phases.	The historical collision count is low but the conflict count for LTAP is high, and there were a few concerning LT vs ped collisions. This may be an opportunity to proactively install protected left turns based on surrogate safety before the crash data escalates.
Pedestrian Safety: • Approximately 700 pedestrians crossed the intersection in a day (in November). • Right-hook conflicts at the channelization islands were not measured but several left-hook conflicts were detected. • Many conflict clips indicate that permissive left turning drivers did not initially observe pedestrians crossing with the right-of-way and encroached on their crossing area. • General improvements to pedestrian visibility at the crossing would be valuable, especially considering the large volumes of pedestrians and surrounding multi-family residential and commercial areas.	Implement zebra crossing strips Implement left turn traffic calming by extending centerlines with vertical delineators. These can go up to the crosswalk and also be placed at inside edge of crosswalk to constrain left turn radius. Consider LPIs for movements that are not coverted to protected left.

Key Issues and Recommendations

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Key Issue	Recommendation
Rear Ends: 50% of rear end collisions were recorded in the Westbound direction.	High friction surface treatment may be considered for locations or approaches with elevated rear-end crash frequency.
Lane Designation (NB/SB): • There are no signs indicating the lane designation for NB and SB vehicles (only pavement markings specify one left turn and one through lane). The receiving lane is >7m in width and unfamiliar drivers may mistake the cross section for two through lanes. • 50% of sideswipe collisions were in the Southbound direction, unclear lane designations may influence these trends.	Add side mounted or overhead lane use designation signs.

Note that the intersection recommendations have been looked at in isolation and will require further analysis by the municipality to determine complete network impacts.