

MILITARY TRAIL & ELLESMERE ROAD:

AN ACCIDENT WAITING TO HAPPEN

Created By: Vallari Patel

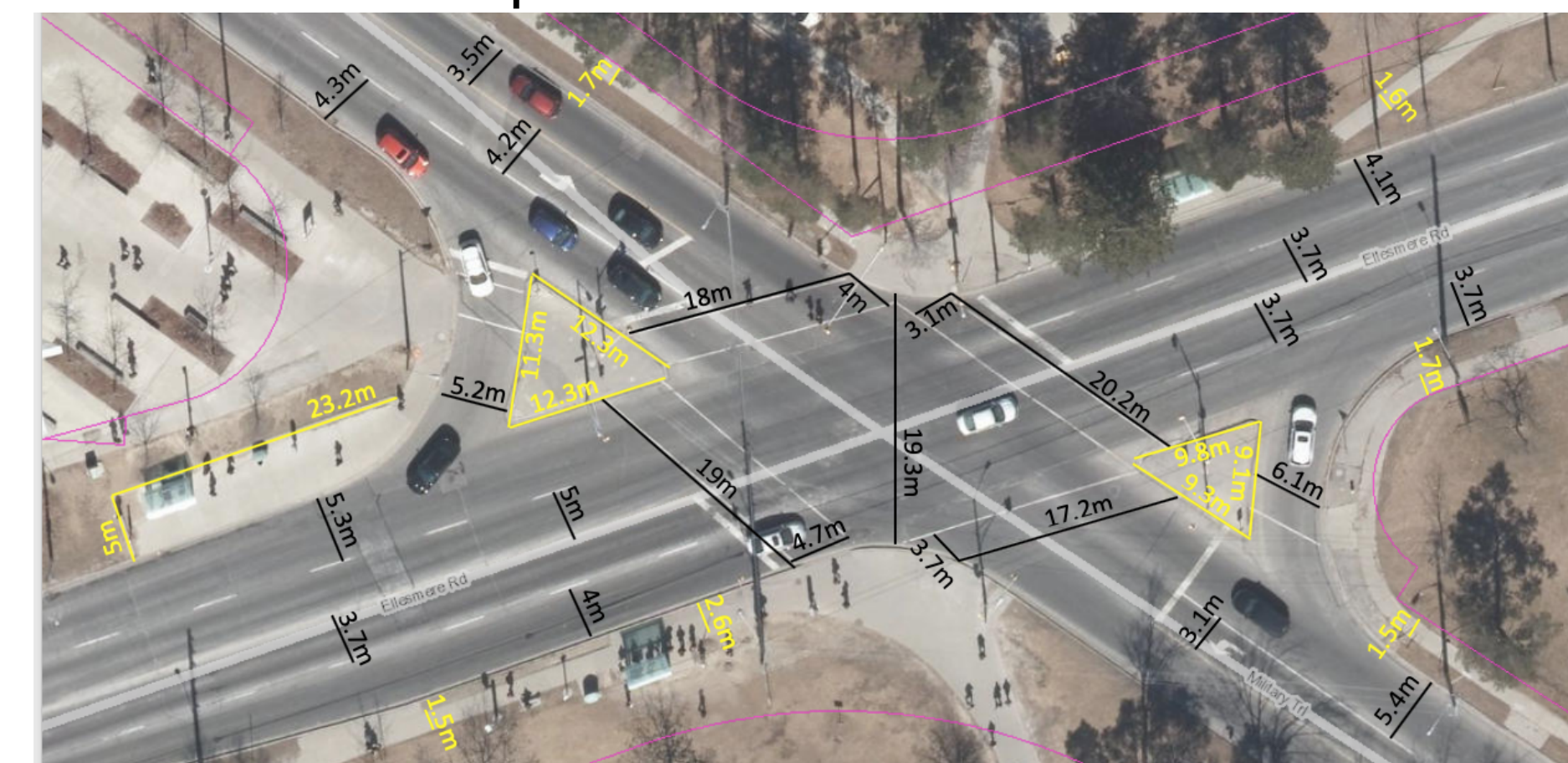
Introduction:

Target Area of Study:



The intersection is the heart of the University of Toronto Scarborough Campus (UTSC) and experiences a high volume of pedestrians in comparison to vehicle traffic. According to the City of Toronto's Vision Zero Road Safety Plan, pedestrians and cyclists are considered vulnerable road users.¹ The goal of this project is to push for changes in the physical environment of the intersection to create safe and equitable pedestrian infrastructure.

Allocation of Space:



Unlike most intersections that cross at 90 degrees, Military Trail and Ellesmere Road intersect diagonally. The majority of the public realm is dedicated to vehicles with wide lanes, leaving minimal space for pedestrians. The NW and SW bus stop areas require more space to handle the high transit ridership in the area. The sidewalks have a narrow width averaging 1.5m - 1.7m with no barriers. The pedestrian islands help vehicles smoothly merge with oncoming traffic but creates an unsafe crossing for pedestrians.

History of the Intersection:



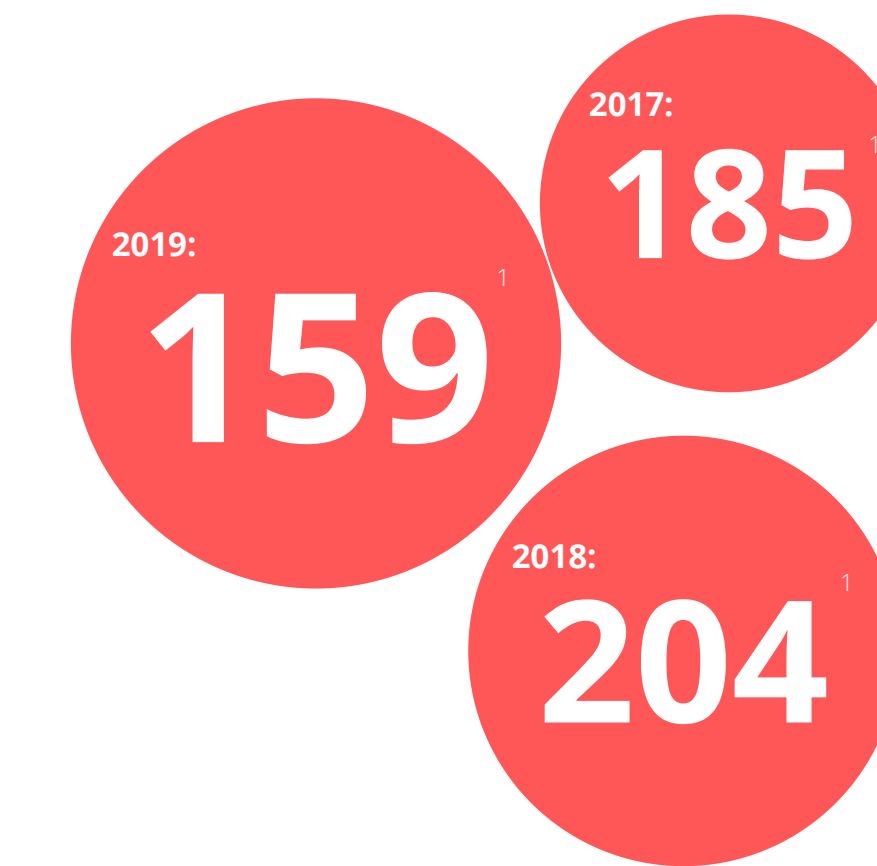
Since the activation of the intersection on September 9th, 1975, very little has changed over the past 44 years with the exception of lane markings added along Ellesmere Road and Military Trail in 1977; and the inclusion of pedestrian islands on the northwest and southeast corners in 1989.²

Area Demographics:

14,050
Undergraduate and Graduate Students

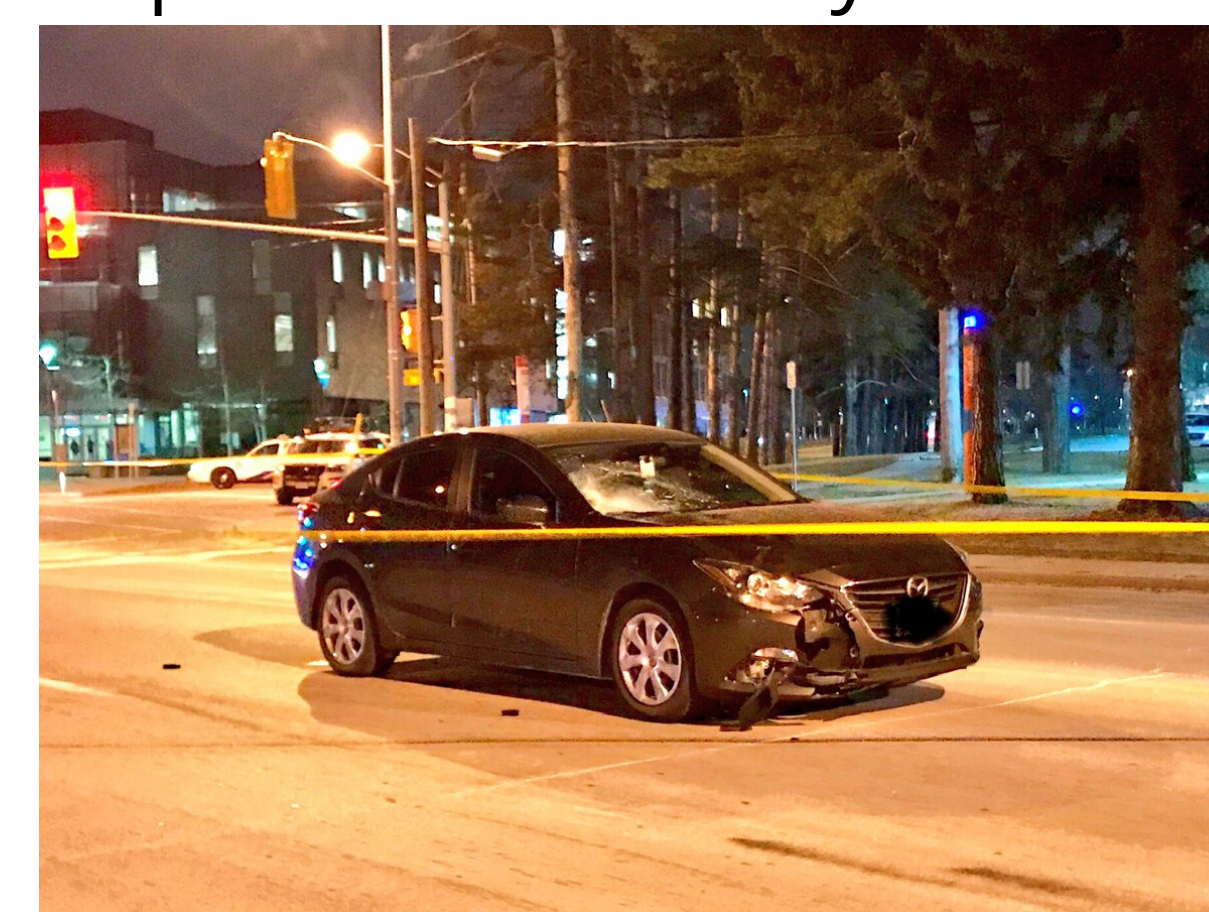
The UTSC Master Plan identified that the campus population was expected to be over 15,000 by 2030.³ However, from 2000 - 2010, campus enrollment had doubled from 5000 to 10,000, with enrollment figures at 14,050 in 2019,⁴ being close to the 2030 estimates.

Vision Zero Statistics:



Vehicle caused collisions with pedestrian and cyclist injuries has spiked in the past few years.¹ Redesigning roads will significantly help reduce the amount of serious injuries and fatalities. UTSC has an opportunity to lead by example and create a safer pedestrian environment in a suburban area.

Importance of Safety:



Many individuals have claimed to see collisions at the intersection. In January of 2019, a UTSC student suffered life threatening injuries after being struck by a car at the intersection of Military Trail and Ellesmere with police stating that speed may have been a factor.^{5,6}

UTSC Camus Master Plan:

The UTSC Master Plan has identified Military Trail and Ellesmere Road as the campus core. The intersection is intended to be developed as a high density, mixed-use area with retail, residential, entertainment, and primarily academic uses.³ In conjunction with the Eglinton East LRT (EELRT), the plan aims to re-align Military Trail to solve the existing problems at the intersection. The EELRT plan is a part of official City of Toronto policy¹⁴ but has been postponed indefinitely by the current Progressive Conservative Provincial Government. Until funding is available for the EELRT, cost effective interim solutions must be implemented.



Figure 6: University of Toronto Scarborough Campus Master Plan. (Map of Future Land Use) (2011). Retrieved from https://www.utoronto.ca/about/sites/utsc.utoronto.ca/about/sites/docs/UTSC_Masterplan.pdf

Pedestrian Count at Military Trail and Ellesmere Road:

42,246
Total Pedestrians in 5 days

938
Average Pedestrians Per Hour

2443
Peak Point of Pedestrians Per Hour:
Tuesday January 21 12:00pm - 1:00pm

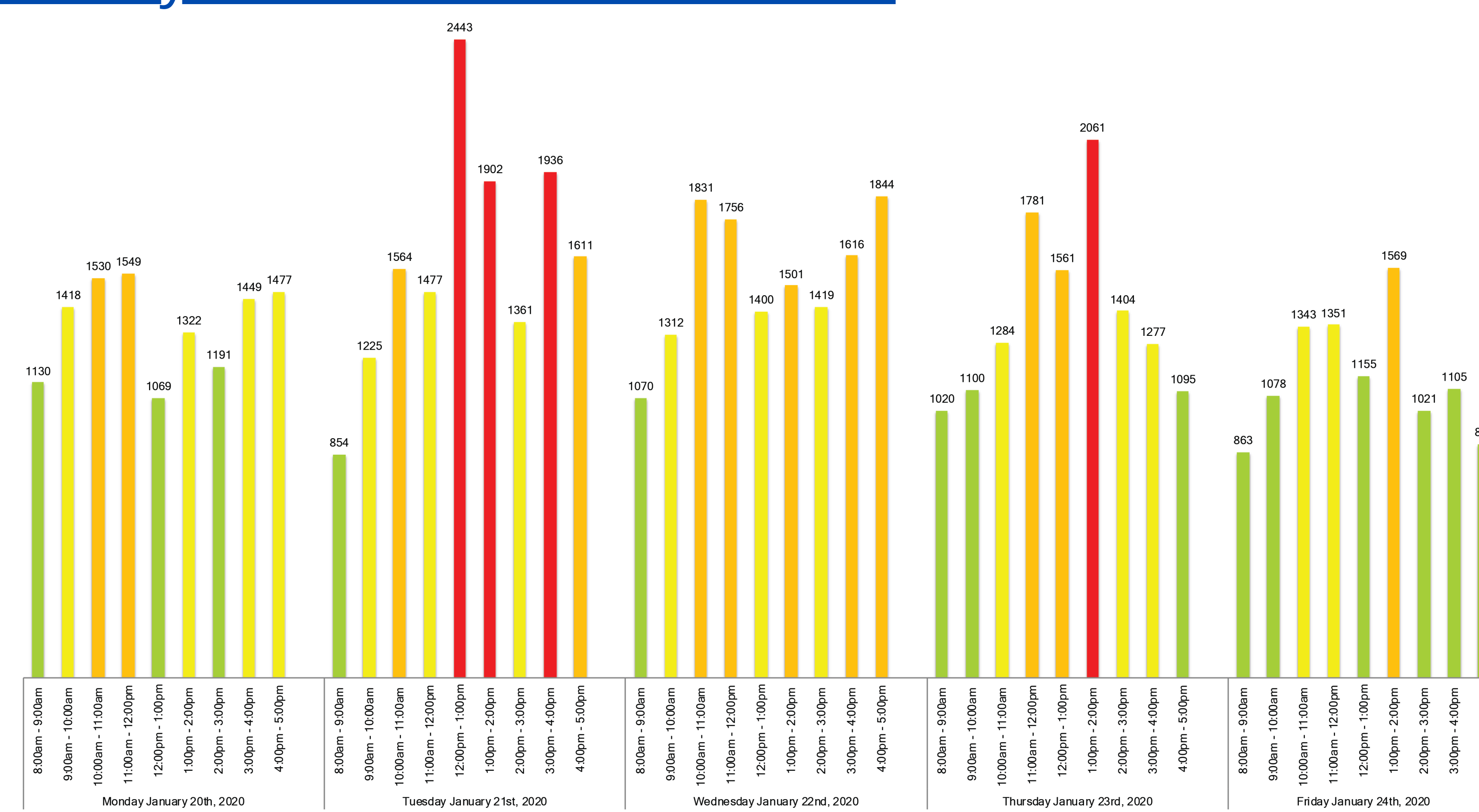


Figure 7: Vallari Patel. [Graph of Pedestrian Counts]. (2020).

High Transit Trips Per Day

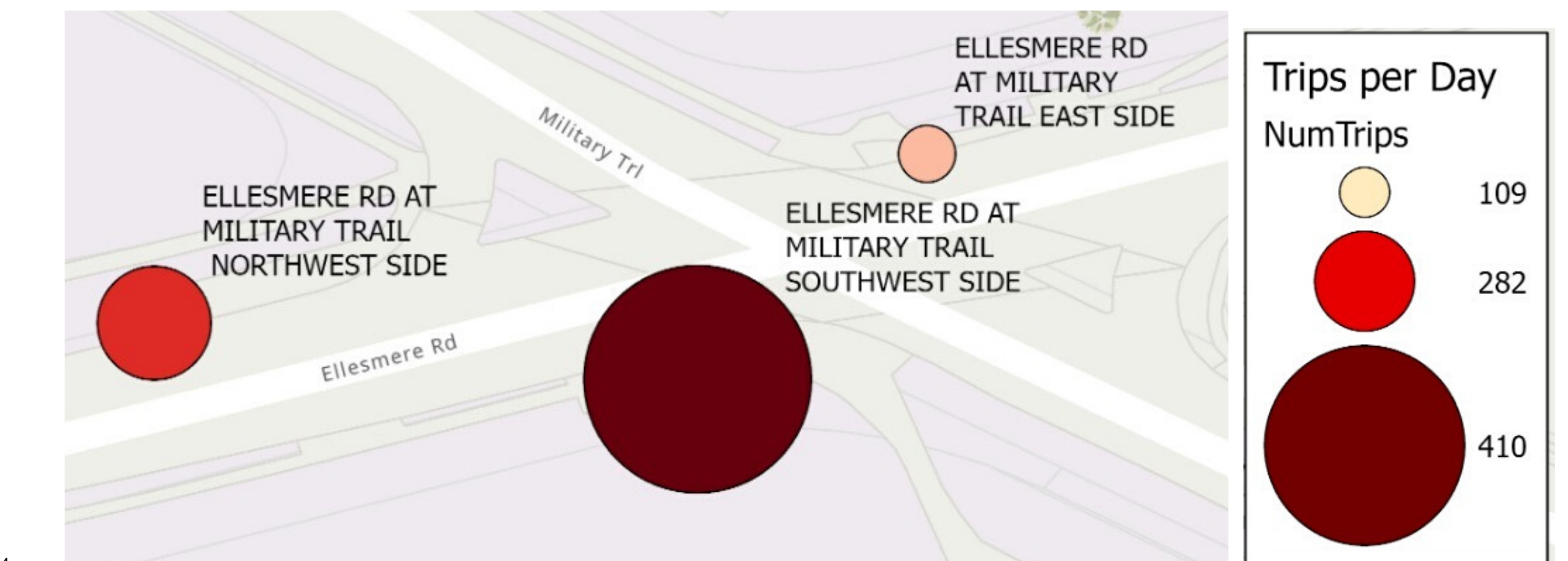


Figure 8: Alex Tabascio. [Map]. (2020).

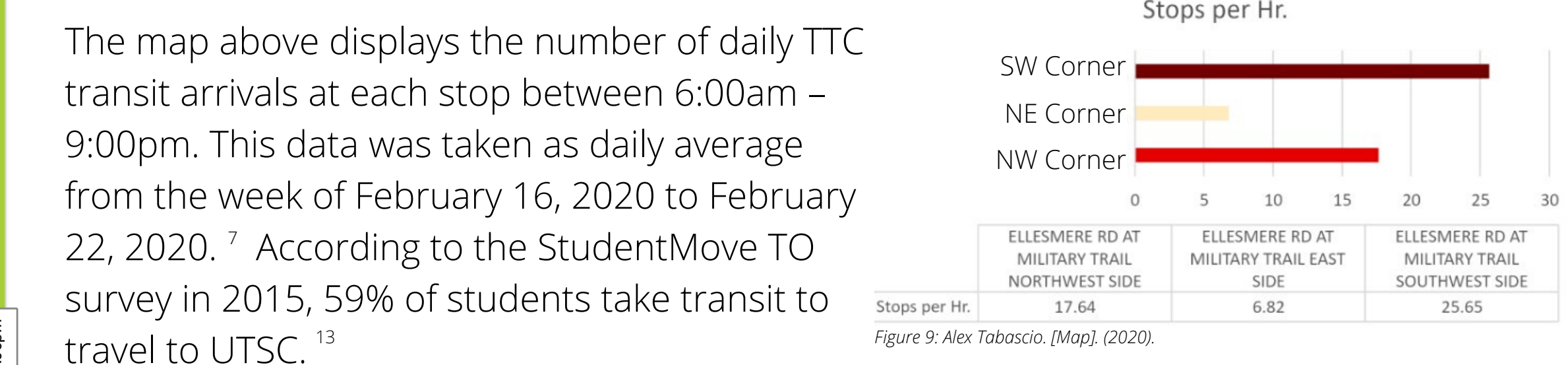


Figure 9: Alex Tabascio. [Map]. (2020).

The map above displays the number of daily TTC transit arrivals at each stop between 6:00am - 9:00pm. This data was taken as daily average from the week of February 16, 2020 to February 22, 2020.⁷ According to the StudentMove TO survey in 2015, 59% of students take transit to travel to UTSC.¹³

The intersection is a heavy transit node, with 50 transit stops an hour. The NE bus stop is also a transfer point for commuters who use Durham Regional Transit.

Interim Recommendations:

1 Signal Changes



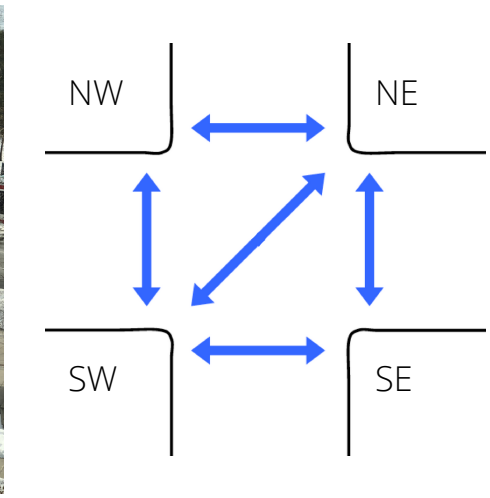
The installed signal cycle does not accommodate for vast volume of foot traffic, leaving pedestrians hurrying to clear the crosswalk and vehicles edging to continue.

Leading Pedestrian Intervals^{9, 12} allow pedestrians to cross with a 5 to 10 second head start before vehicles and can reduce vehicle pedestrian collisions up to 60%.⁹

No Right Turns on Red^{9, 12} for the NW & SE corners of the intersection.

Restrict right turns on red^{9, 12} for the SW & NE corners of the intersection during peak hours (8:00am to 6:00pm) on weekdays. This does not apply to buses who need to access the bus loop.

2 Widen Crosswalks & Sidewalks



Widening the crosswalks will help reduce the amount of pedestrians that overflow and are forced to walk closely beside cars.

Widening sidewalk to 2.1m - 3.7m.^{8, 9}

3 Pedestrian Priority Phase (PPP) or Scramble

Painting a diagonal crosswalk from the northeast corner (parking lot) to the southwest corner will help relieve the pressure in the northwest corner (IC). A PPP will allow all pedestrians to cross at once before vehicles are allowed to enter the intersection.

3 Lane Diet



Narrowing down lanes^{9, 12} to 3m - 3.4m will help slow down cars, increase driver's peripheral vision, and leave more space for pedestrians.

5 Lighting

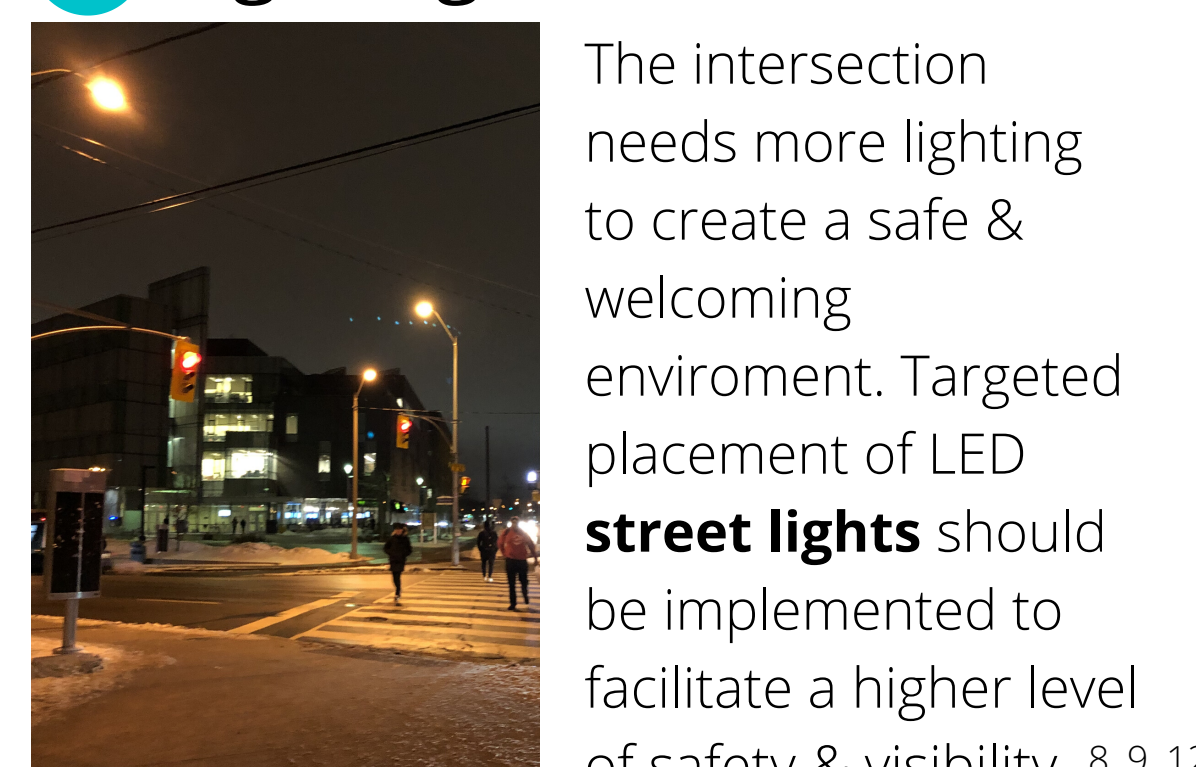


Figure 13: Vallari Patel. [Photograph]. (2020).

The intersection needs more lighting to create a safe & welcoming environment. Targeted placement of LED street lights should be implemented to facilitate a higher level of safety & visibility.^{8, 9, 12}

4 Eliminating the Islands & Adjusting the Curb Radii

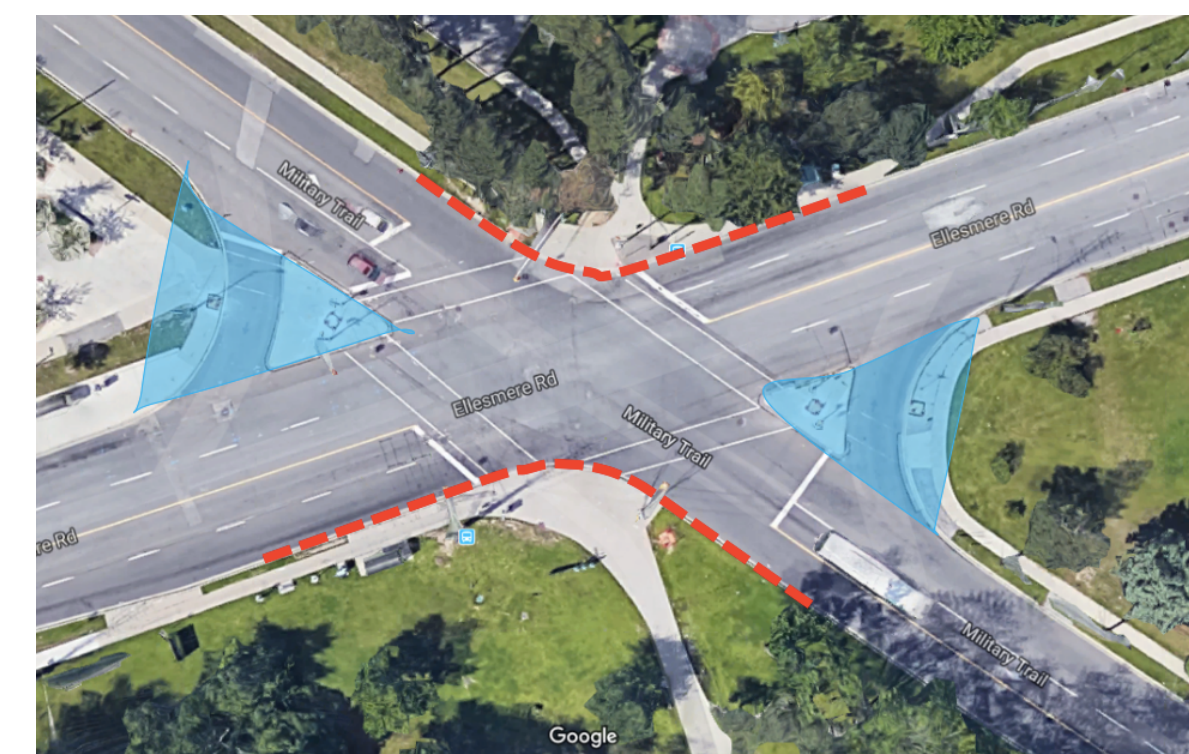


Figure 14: Google Maps Street View. [Map]. (2020).

Eliminating the Islands as they were observed to be primarily used as unofficial drop-off "zones". This will limit the amount of pedestrian exposure to vehicles and increase space for pedestrians when crossing.

Reducing Curb Radii⁹ to 0.6m will help slow down vehicles to 24km/h when turning and stop cars from edging forward while pedestrians are crossing. The NE and SW curb radii are large, allowing cars to make turns at higher speeds.

6 Bus Stop Waiting Areas



Figure 15: Vallari Patel. [Photograph]. (2020).

The current space allocated for bus stops is often crowded, it cannot handle the capacity of transit riders, and there is limited seating.

Enlarge & Enhance¹⁰ the bus stop waiting areas to 1.8m - 3m wide and 35m long.

Shelter sizes should be larger and weather protected.⁸

Street Furniture^{8, 9} will help create a vibrant and welcoming environment.

Acknowledgements:

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