

# Traffic Data Analysis

William St.

Northbound and Southbound



Town of Midland

Engineering Department

May 14<sup>th</sup>, 2021

**Contents:**

1.0 Introduction ..... 3

    1.1 Location..... 3

    1.2 Traffic Trailer ..... 3

2.0 Speed Summary ..... 4

    2.1 Northbound Speed Analysis..... 5

    2.2 Southbound Speed Analysis..... 8

3.0 Traffic Volume..... 11

    3.1 Northbound Volume by Hour ..... 12

    3.2 Southbound Volume by Hour ..... 13

4.0 Conclusion..... 14

**Figures:**

Figure 1 Traffic Trailer ..... 3

Figure 2 William St. Northbound (speed limit: 40km/h) ..... 5

Figure 3 William St. Northbound (speed limit: 50km/h) ..... 5

Figure 4 Speed by Hour Analysis for Northbound Weekdays..... 6

Figure 5 Speed by Hour Analysis of Northbound Weekends..... 7

Figure 6 William St. Southbound (speed limit: 40km/h) ..... 8

Figure 7 William St. Southbound (speed limit: 50km/h) ..... 8

Figure 8 Speed by Hour Analysis for Southbound (weekday)..... 9

Figure 9 Speed by Hour Analysis for Southbound (weekend) ..... 10

Figure 10 Total Volume per Day (Northbound) ..... 11

Figure 11 Total Volume per Day (Southbound) ..... 12

Figure 12 Average Volume by Hour from May 13<sup>th</sup> to May 14<sup>th</sup> and from May 17<sup>th</sup> to May 18<sup>th</sup>  
(Northbound) ..... 12

Figure 13 Average Volume by Hour from May 15<sup>th</sup> to May 16<sup>th</sup> (Northbound) ..... 13

Figure 14 Volume by Hour from May 5<sup>th</sup> to May 7<sup>th</sup> and May 10<sup>th</sup> to May 11<sup>th</sup> (Southbound) ..... 13

Figure 15 Average Volume by Hour from May 8<sup>th</sup> to May 9<sup>th</sup> (Southbound) ..... 14

**Tables:**

Table 1 Locations of Traffic Trailer..... 3

Table 2 Speed Summary ..... 4

Table 3 Volume Summary ..... 11

## 1.0 Introduction

A traffic count was conducted from May 5<sup>th</sup>, 2021 to May 19<sup>th</sup>, 2021 on William St for both northbound and southbound directions. Vehicle speeds and traffic volume were collected by a traffic trailer (model ATS-3). The purpose is to see if there is any speeding issue around the Sacred Heart Catholic school zone and raise safety awareness and help calm traffic by displaying speeds of vehicles approaching.

## 1.1 Location

The traffic trailer was placed on William St between sidewalks and curbs to record the speed and volume of vehicles entering the Sacred Heart Catholic school zone for both directions. Table 1 below shows the location of the traffic trailer and data collection period.

**Table 1 Locations of Traffic Trailer**

Direction	Location	Period
Northbound	351 William St, Midland, ON	12:00 AM on May 13 <sup>th</sup> , 2021- 7:00 AM on May 19 <sup>th</sup> , 2021
Southbound	350 William St, Midland, ON	09:00am on May 5 <sup>th</sup> , 2021 – 08:00am on May 11 <sup>th</sup> , 2021

## 1.2 Traffic Trailer

The traffic trailer used was model ATS-3 as shown in the Figure 1. The traffic trailer is set to display the speed of the approaching vehicle and display short messages depending on the speed. The traffic trailer uses radar to detect vehicles and group collected data into 1-hour intervals. The speed limit in this community safety zone changes at different time of a day according to school times. Therefore, the challenge was to change the settings on the trailer to correspond this schedule.



**Figure 1 Traffic Trailer**

## 2.0 Speed Summary

The posted speed limit on William St is 50km/h; however, the traffic trailer was placed in a community safety zone where the speed limit will change to 40km/h during school times (08:00 to 9:00, 11:45 to 13:00, and 15:00 to 16:00 on weekdays).

Table 2 shows an overall speed summary for northbound and southbound directions. The traffic trailer detected that the maximum speed was 78km/h and 90km/h for northbound and southbound directions, respectively. Generally, it is accepted that vehicles that are travelling up to 10km/h above the posted speed limit are not considered to be speeding.

**Table 2 Speed Summary**

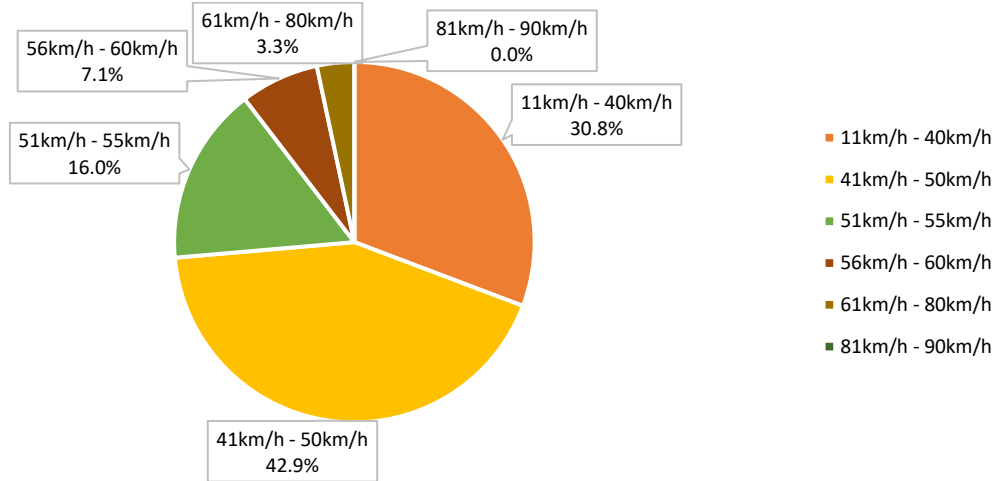
Direction	Time Period	Speed Limit (km/h)	Average Speed (km/h)
Northbound	00:00-07:59	50	44.9
	08:00-08:59	40	42.4
	09:00-11:59	50	43.0
	12:00-12:59	40	43.4
	13:00-14:59	50	43.3
	15:00-15:59	40	43.3
	16:00-23:59	50	44.8
Southbound	00:00-07:59	50	50.8
	08:00-08:59	40	48.4
	09:00-11:59	50	48.0
	12:00-12:59	40	48.0
	13:00-14:59	50	47.9
	15:00-15:59	40	48.5
	16:00-23:59	50	49.9

Figure 2 below shows that 30.8% of vehicles were travelling below the school times speed limit, 42.9% of vehicles were travelling between 41-50 km/h, and 26.4% of vehicles were travelling above 50km/h. When we consider the accepted speed limit is 10km/h over the school times speed limit, we find that a total of 73.7% of vehicles were travelling within the accepted speed limit.

Figure 3 below shows that 66.4% of vehicles were travelling below the posted speed limit, 28.2% of vehicles were travelling between 51-60 km/h, and 5.2% of vehicles were travelling above 60km/h. When we consider the accepted speed limit is 10km/h over the posted speed limit, we find that a total of 94.6% of vehicles were travelling within the accepted speed limit.

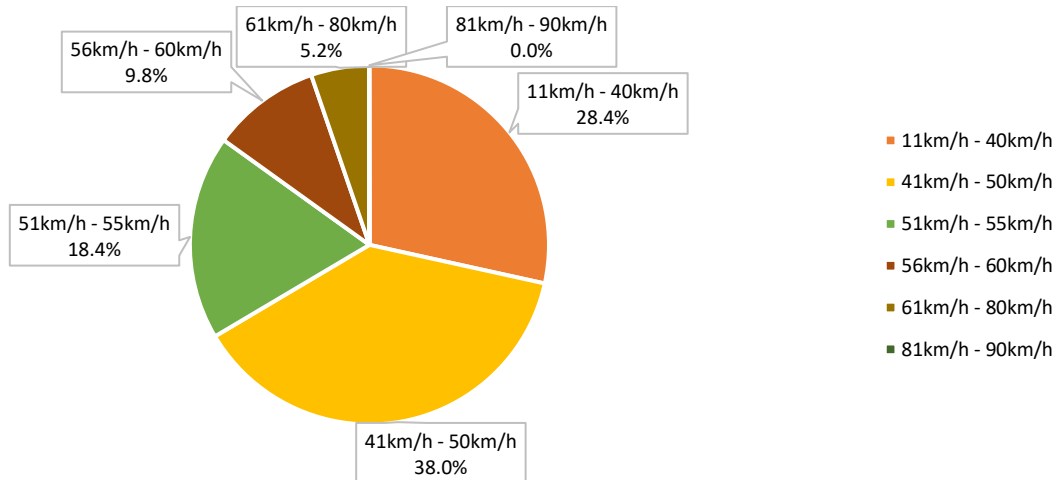
## 2.1 Northbound Speed Analysis

Figure 2 and 3 below are the speed summary for the northbound traffic.



**Figure 2 William St. Northbound (speed limit: 40km/h)**

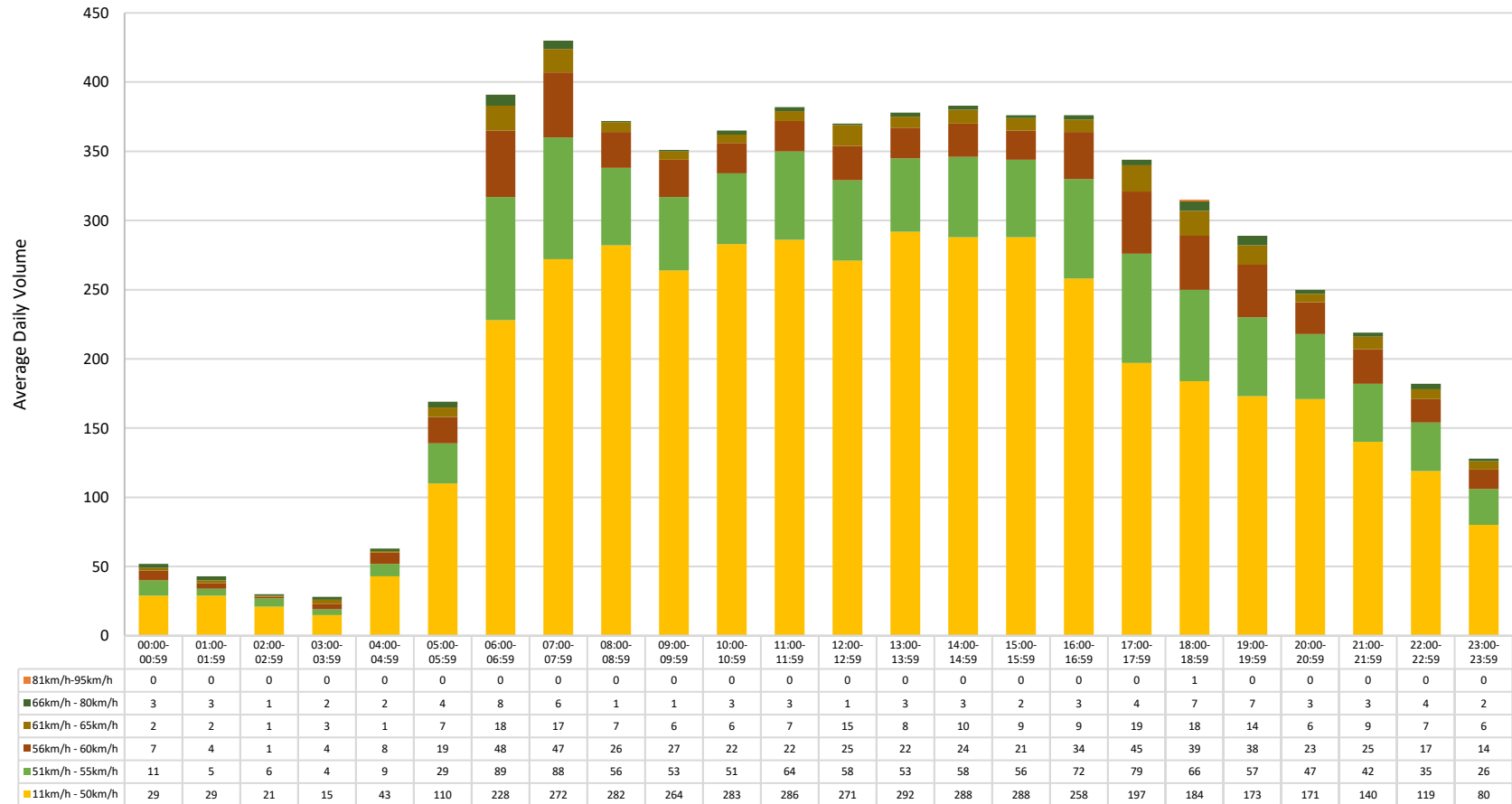
Figure 2 above shows that 30.8% of vehicles were travelling below the school times speed limit, 42.9% of vehicles were travelling between 41-50 km/h, and 26.4% of vehicles were travelling above 50km/h. When we consider the accepted speed limit is 10km/h over the school times speed limit, we find that a total of 73.7% of vehicles were travelling within the accepted speed limit.



**Figure 3 William St. Northbound (speed limit: 50km/h)**

Figure 3 above shows that 66.4% of vehicles were travelling below the posted speed limit, 28.2% of vehicles were travelling between 51-60 km/h, and 5.2% of vehicles were travelling above 60km/h. When we consider the accepted speed limit is 10km/h over the posted speed limit, we find that a total of 94.6% of vehicles were travelling within the accepted speed limit.

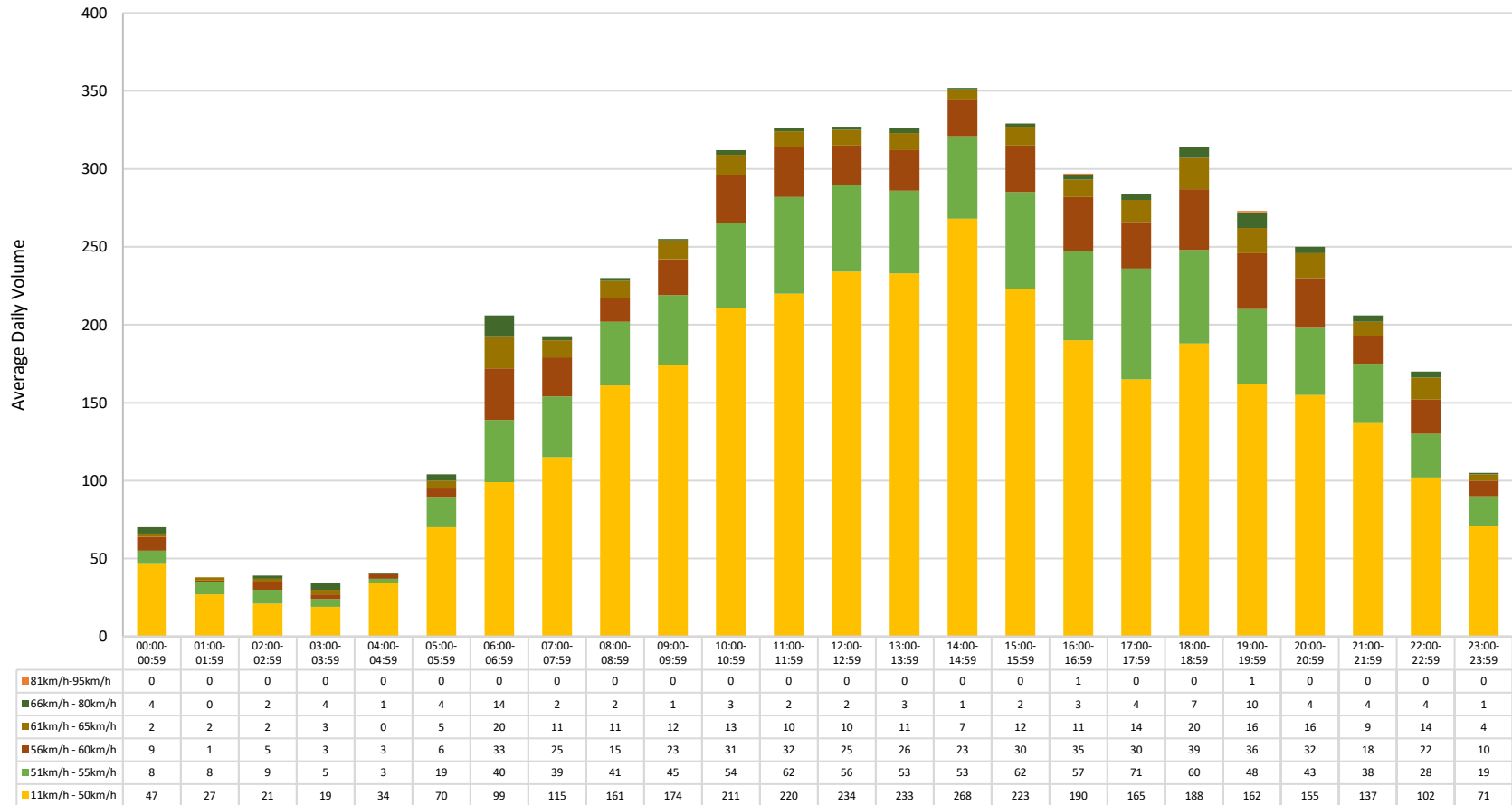
Figure 4 is the speed by hour graph in the northbound direction from May 13<sup>th</sup> to May 14<sup>th</sup> and from May 17<sup>th</sup> to May 18<sup>th</sup> (weekdays)



**Figure 4 Speed by Hour Analysis for Northbound Weekdays**

Figure 4 above is the speed by hour graph used to determine the time where most speeding occurs. The data shows that speeding was consistent throughout the day and into the evening, being between 6:00am to 10:00pm. The data shows that most of the speeding occurs during typical morning and evening commute time, which are 6:00am to 9:00am and 5:00pm to 7:59pm.

Figure 5 is the speed by hour graph in the northbound direction from May 15<sup>th</sup> to May 16<sup>th</sup> (weekend)

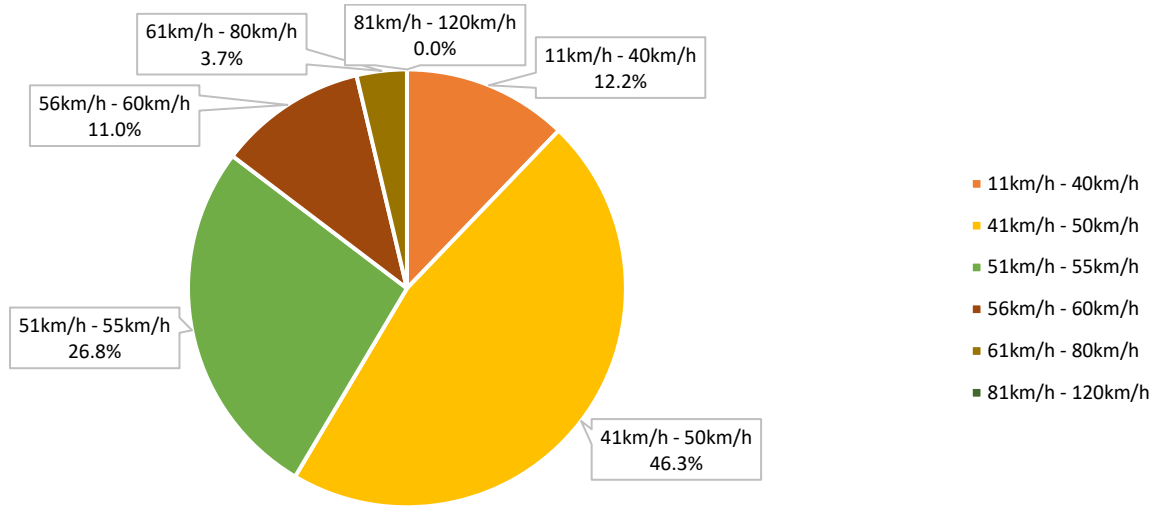


**Figure 5 Speed by Hour Analysis of Northbound Weekends**

Figure 5 above is the speed by hour graph used to determine the time where most speeding occurs. The data shows that speeding was consistent throughout the day and into the evening, being between 6:00am to 10:00pm. The data shows that most of the speeding occurs during typical morning and evening commute time, which are 6:00am to 9:00am and 6:00pm to 8:59pm.

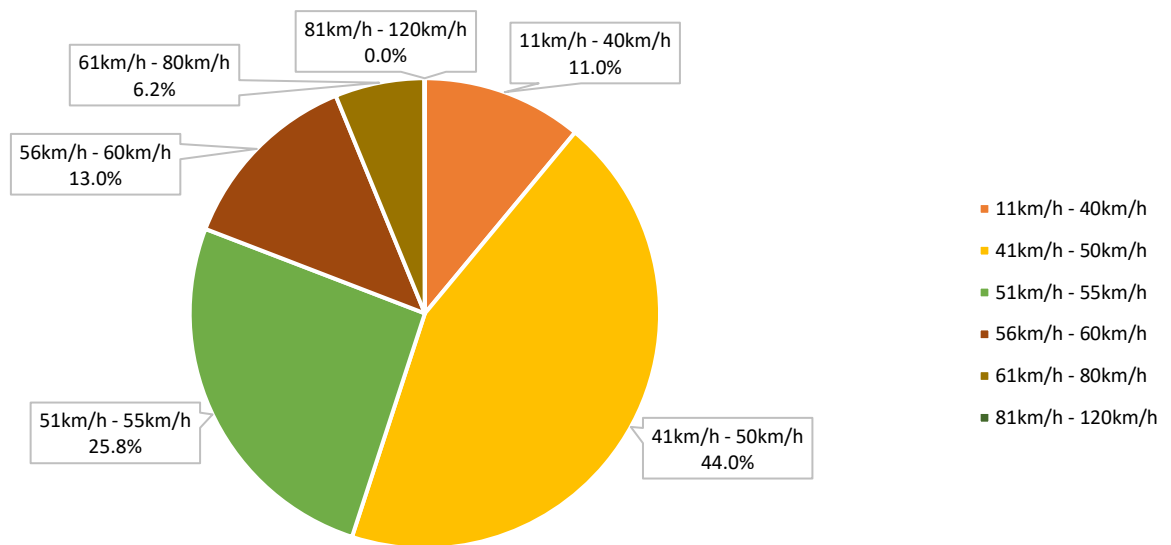
## 2.2 Southbound Speed Analysis

Figure 5 and 6 below are the speed summary for the southbound traffic.



**Figure 6 William St. Southbound (speed limit: 40km/h)**

Figure 6 above shows that 12.2% of vehicles were travelling below the school times speed limit, 46.3% of vehicles were travelling between 41-50 km/h, and 41.5% of vehicles were travelling above 50km/h. When we consider the accepted speed limit is 10km/h over the school times speed limit, we find that a total of 58.5% of vehicles were travelling within the accepted speed limit.

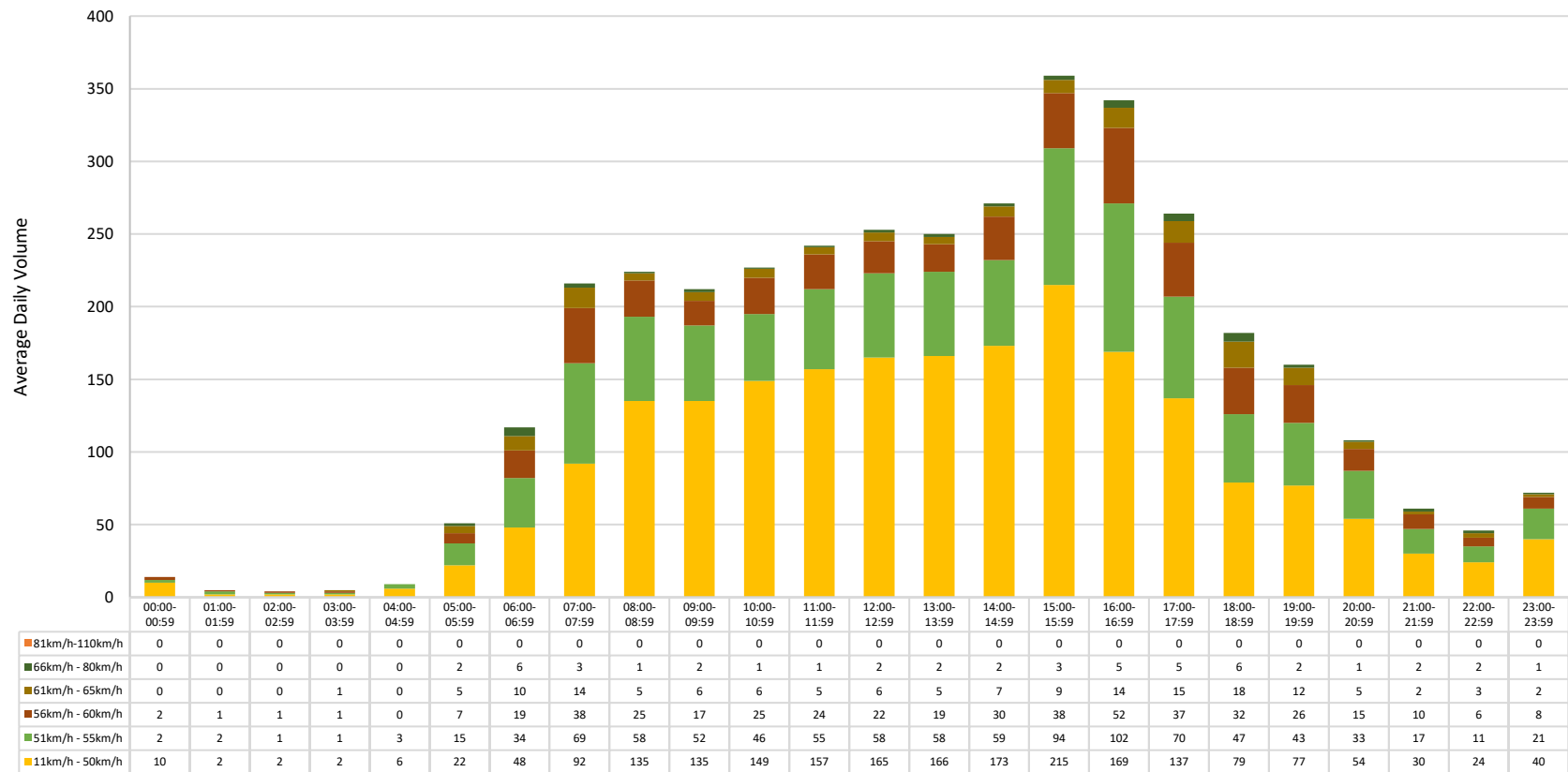


**Figure 7 William St. Southbound (speed limit: 50km/h)**

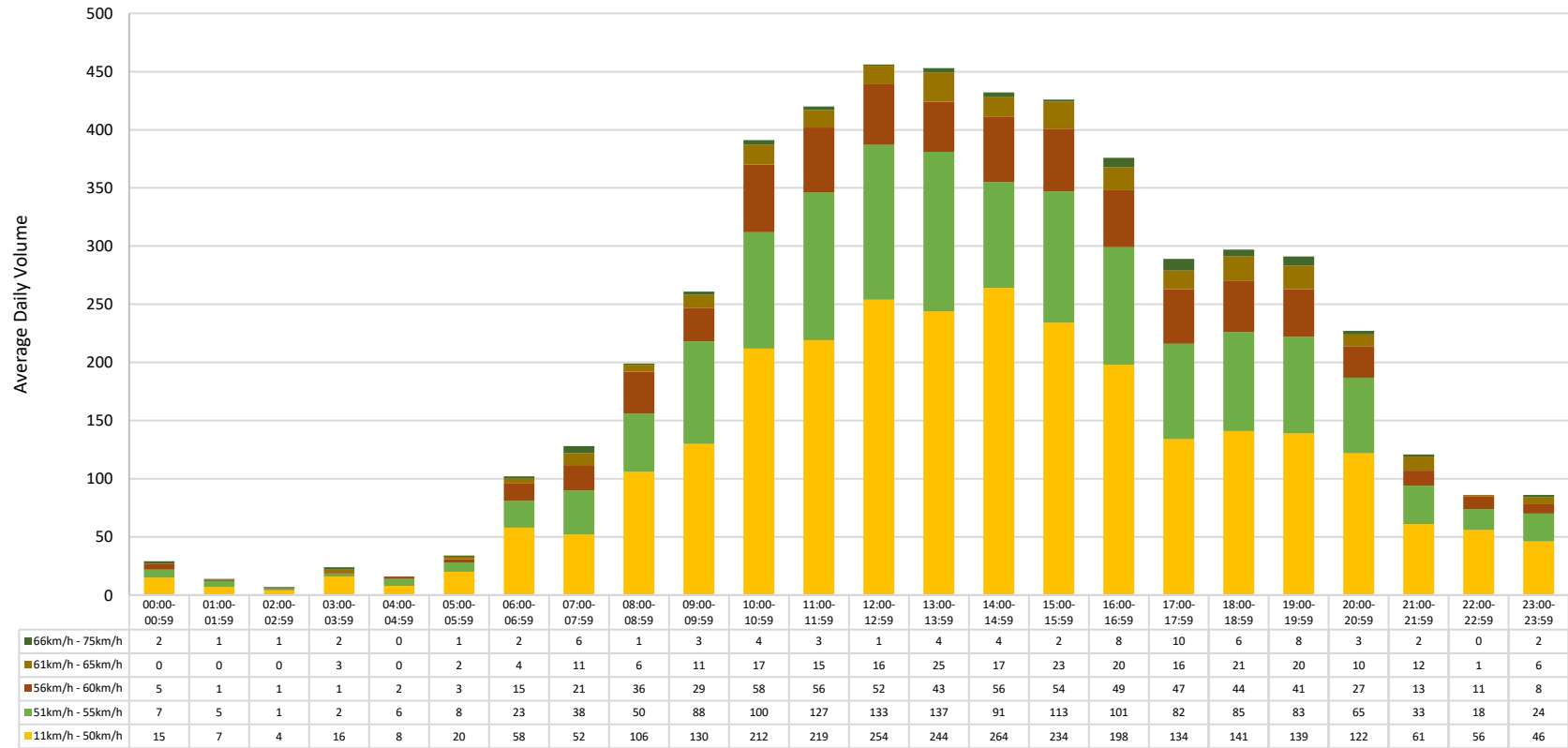


Figure 7 above shows that 55% of vehicles were travelling below the posted speed limit, 38.8% of vehicles were travelling between 51-60 km/h, and 6.2% of vehicles were travelling above 60km/h. When we consider the accepted speed limit is 10km/h over the posted speed limit, we find that a total of 93.8% of vehicles were travelling within the accepted speed limit.

Figure 8 and 9 below are the speed by hour graph for weekdays (May 5<sup>th</sup>-May 7<sup>th</sup> and May 10<sup>th</sup>-May 11<sup>th</sup>) and the weekend (May 8<sup>th</sup>-May 9<sup>th</sup>) in the southbound direction.



**Figure 8 Speed by Hour Analysis for Southbound (weekday)**



**Figure 9 Speed by Hour Analysis for Southbound (weekend)**

Figure 8 (weekday) and Figure 9 (weekend) above are the speed by hour graphs used to determine the time where most speeding occurs. The data shows that speeding was relatively consistent from 6:00am to 7:00pm on weekdays and from 10:00am to 7:00pm. On the weekdays, there was an increase in speeding from 3:00pm to 6:00pm. On the weekend, there was an increase in speeding from 1:00pm until 4:00pm.

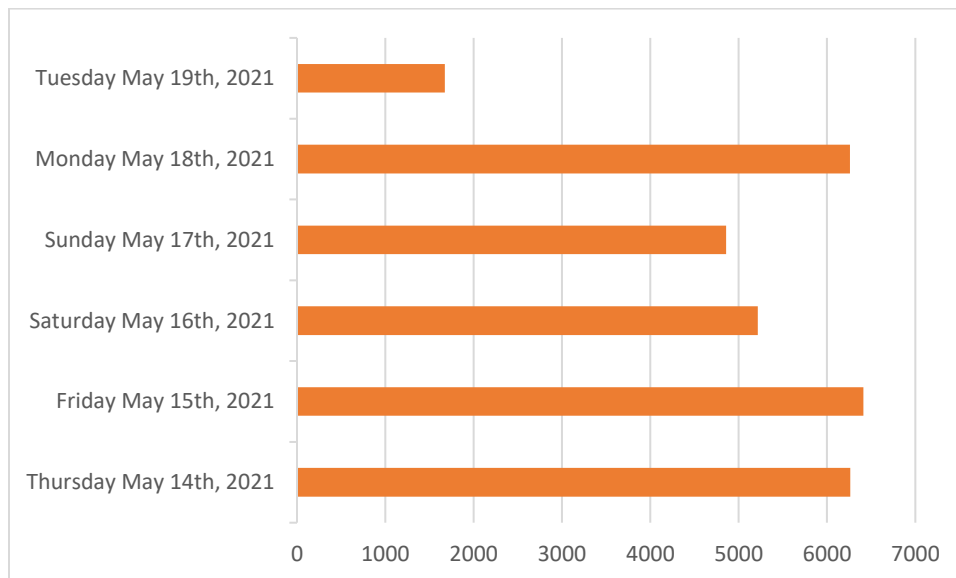
Furthermore, the traffic trailer detected that there were 60% of vehicles slowed down in the northbound direction and 57.7% slowed down in the southbound direction when approaching the trailer. These percentages could include the vehicles slowed down to enter driveways or make a turn; however, it also shows that the trailer is influencing traffic calming. It appears that some drivers are not slowing down when entering the community safety zone during school times. If so, alternative measures could be taken to further calm traffic during these times.

### 3.0 Traffic Volume

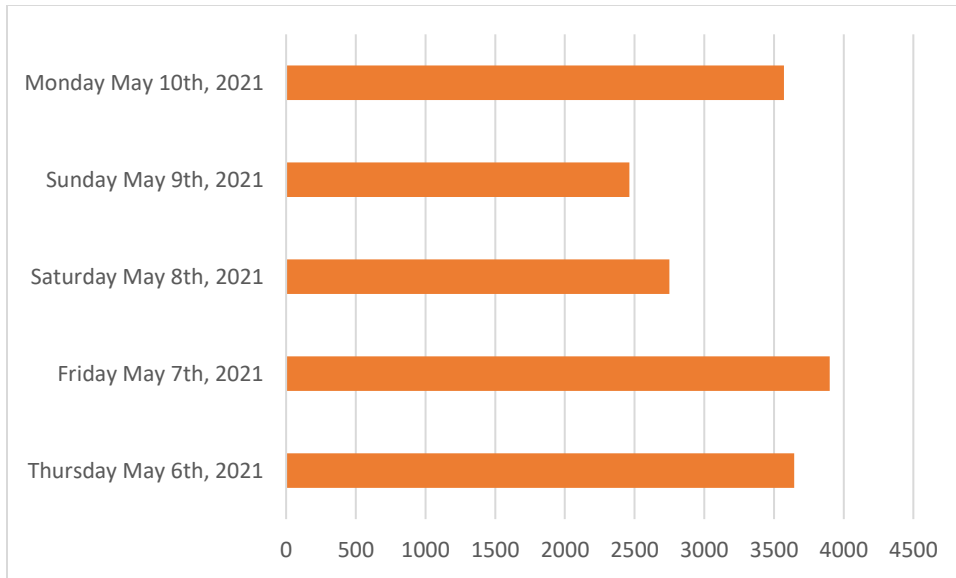
Only the days when the traffic trailer was placed there for the full 24 hours are used in the traffic volume analysis. The average number of vehicles on William St daily are shown in Table 3. It appears that there was more traffic in the northbound direction than in the southbound direction.

**Table 3 Volume Summary**

Direction	Period	Average Daily Traffic Volume
Northbound	May 13 <sup>th</sup> to May 19 <sup>th</sup>	5,272
Southbound	May 5 <sup>th</sup> to May 7 <sup>th</sup> and May 10 <sup>th</sup> to May 11 <sup>th</sup> (weekday)	3,129
Southbound	May 8 <sup>th</sup> to May 9 <sup>th</sup> (weekend)	2,588



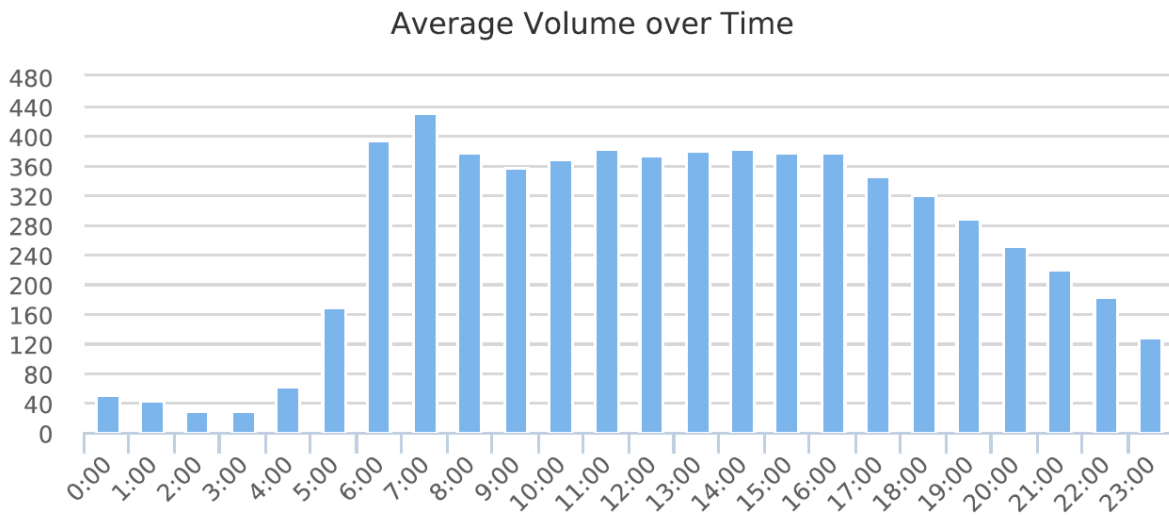
**Figure 10 Total Volume per Day (Northbound)**



**Figure 11 Total Volume per Day (Southbound)**

### 3.1 Northbound Volume by Hour

Figure 12 shows the average volume of vehicles travelling northbound of William St from May 13<sup>th</sup> to May 14<sup>th</sup> and from May 17<sup>th</sup> to May 18<sup>th</sup>. It is noticed that the peak traffic occurs at typical morning rush hours on a weekday in the northbound direction.



**Figure 12 Average Volume by Hour from May 13<sup>th</sup> to May 14<sup>th</sup> and from May 17<sup>th</sup> to May 18<sup>th</sup> (Northbound)**

Figure 13 shows the average volume of vehicles travelling northbound of William St from May 15<sup>th</sup> to May 16<sup>th</sup>. It is noticed that the peak traffic occurs at typical evening rush hours on a weekday in the northbound direction.

Average Volume over Time

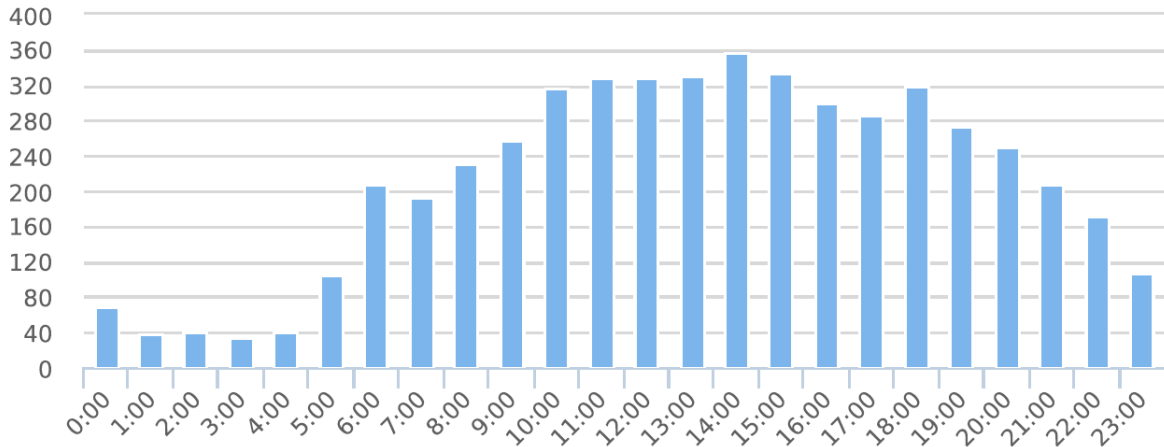


Figure 13 Average Volume by Hour from May 15<sup>th</sup> to May 16<sup>th</sup> (Northbound)

### 3.2 Southbound Volume by Hour

The data collected from May 5<sup>th</sup> to May 7<sup>th</sup> and May 10<sup>th</sup> to May 11<sup>th</sup> is used to analyze the traffic volume by hour on a weekday in the southbound direction as shown in Figure 14. The school hours at the Sacred Heart Catholic School are from 08:45 to 15:00, and it appears that the peak traffic in the southbound direction occurs during when school starts and ends.

Average Volume over Time

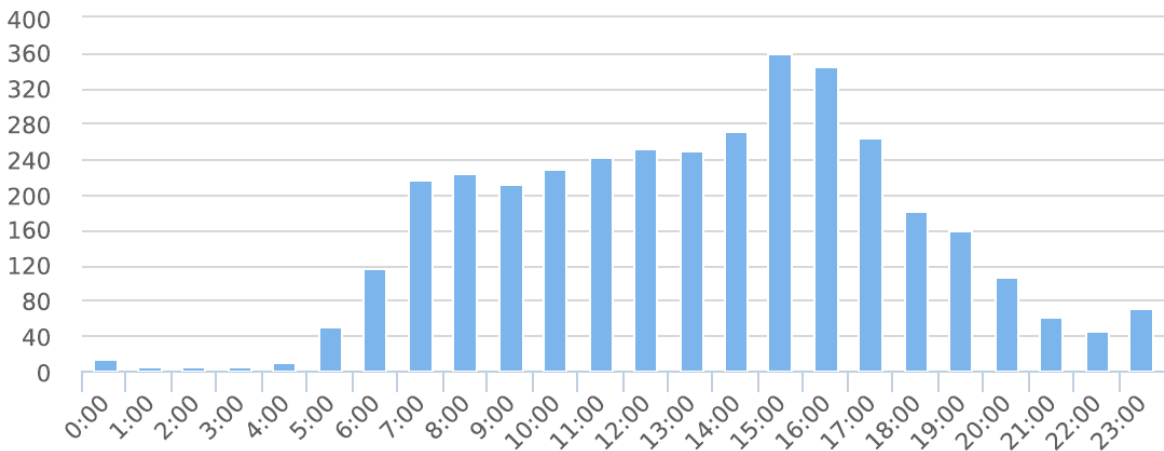
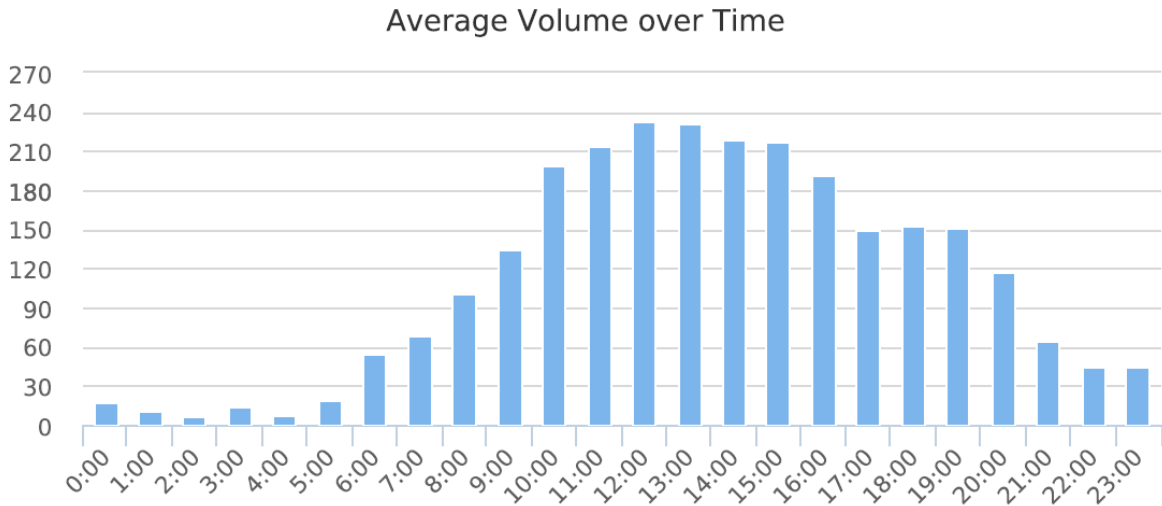


Figure 14 Volume by Hour from May 5<sup>th</sup> to May 7<sup>th</sup> and May 10<sup>th</sup> to May 11<sup>th</sup> (Southbound)

Figure 15 shows the average traffic volume on the weekend from May 8<sup>th</sup> to May 9<sup>th</sup>. It is noticed that the traffic volume pattern is quite different from a weekday. The volume of the traffic on the weekend continues to increase, peak around noon, and decrease in the afternoon.



**Figure 15 Average Volume by Hour from May 8th to May 9th (Southbound)**

#### **4.0 Conclusion**

The traffic study conducted on William St was successfully carried out from May 5<sup>th</sup> to May 19<sup>th</sup>, 2021, for northbound and southbound directions. From the speed analysis, when the posted speed limit is 50km/h, there were 94.6% of vehicles travelling within the accepted speed limit in the northbound direction. It was also determined that during the 50km/h speed limit period, 93.8% of vehicles travelling in the southbound direction were within the accepted speed limit. In addition, during school times, 73.7% of vehicles driving northbound were travelling within the accepted speed limit. It was also determined that during school times, 58.5% of vehicles travelling southbound were within the accepted speed limit.

Furthermore, from the traffic volume analysis, it was observed that the traffic volume on William St has peak traffic volume during typical rush hours for both directions on a weekday. On the weekend, the peak traffic occurs during noon in the southbound direction.