

Traffic Data Analysis

William St.

Northbound and Southbound



Town of Midland
Engineering Department

October 4, 2021

1.0 Introduction

A traffic count was conducted from September 23rd 2021 to October 7th 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	335 William St, Midland, ON	3:00pm on September 23 rd , 2021 – 7:00am on September 29 th 2021
Southbound	351 William St, Midland, ON	7:00am on September 29 th , 2021 – 10:00am on October 7 th , 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 102km/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	41.30
	08:00-08:59	40	40.33
	09:00-11:59	50	41.11
	12:00-12:59	40	42.83
	13:00-14:59	50	42.67
	15:00-15:59	40	40.33
	16:00-23:59	50	43.37
Southbound	00:00-07:59	50	45.88
	08:00-08:59	40	43.43
	09:00-11:59	50	43.78
	12:00-12:59	40	47.28
	13:00-14:59	50	47.50
	15:00-15:59	40	46.83
	16:00-23:59	50	47.00

Figure 2 represents when William St is 40km/hr for the community safety zone and shows that 32.4% of vehicles were travelling below the school times speed limit, 32.2% of vehicles were travelling between 41-50 km/h, and 35.5% 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 64.6% of vehicles were travelling within the accepted speed limit.

Figure 3 represents when William St is 50km/hr and shows that 72.2% of vehicles were travelling below the posted speed limit, 23.9% of vehicles were travelling between 51-60 km/h, and 12.3% 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 96.1% of vehicles were travelling within the accepted speed limit.

2.1 Northbound Speed Analysis

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

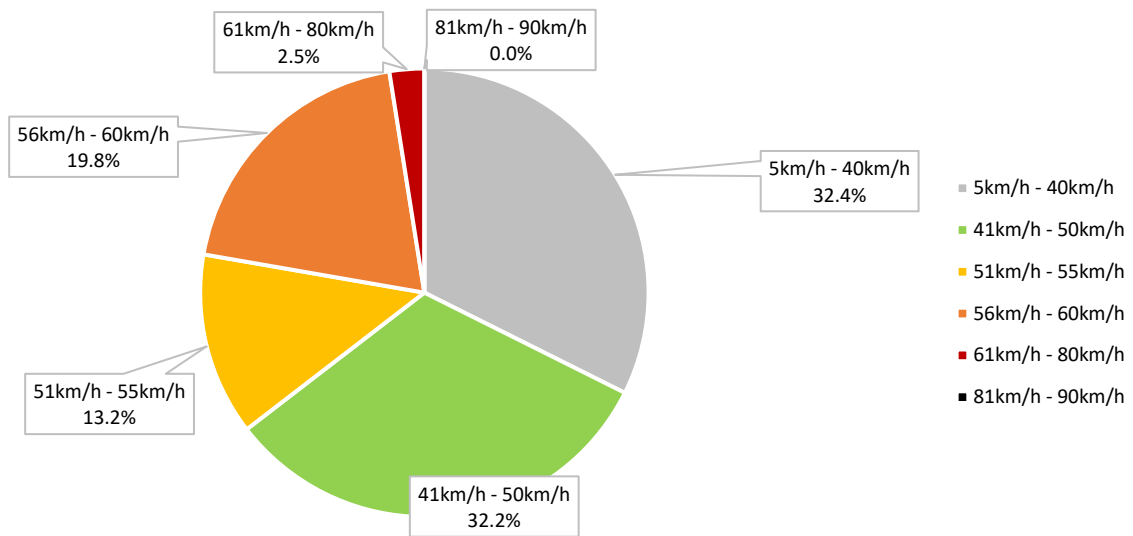


Figure 2. William St. Northbound (speed limit: 40km/h)

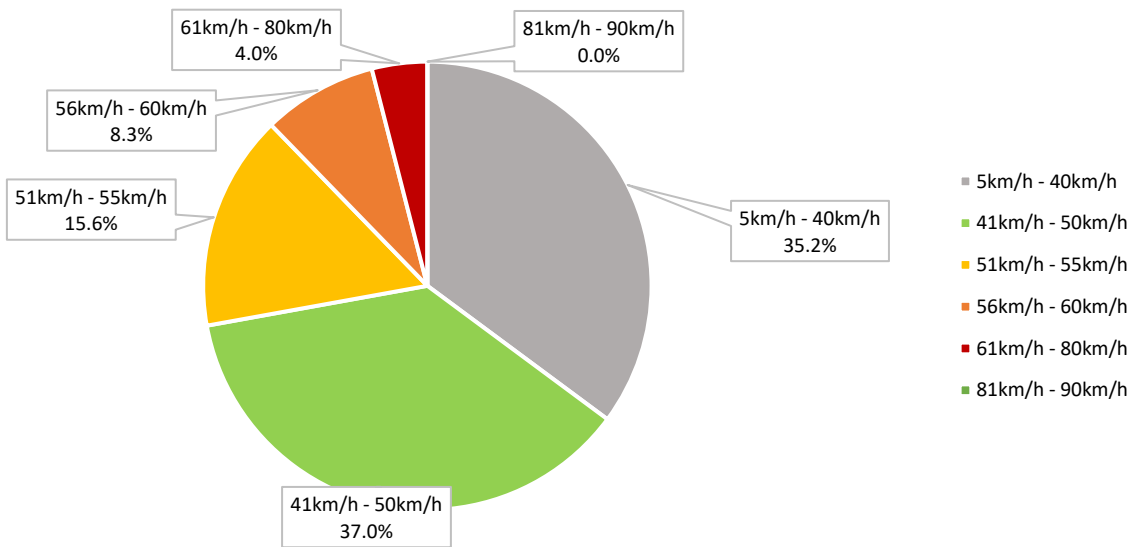


Figure 3. William St. Northbound (speed limit: 50km/h)

Figure 4 is the speed by hour graph in the northbound direction from September 29th to October 7th (weekday).

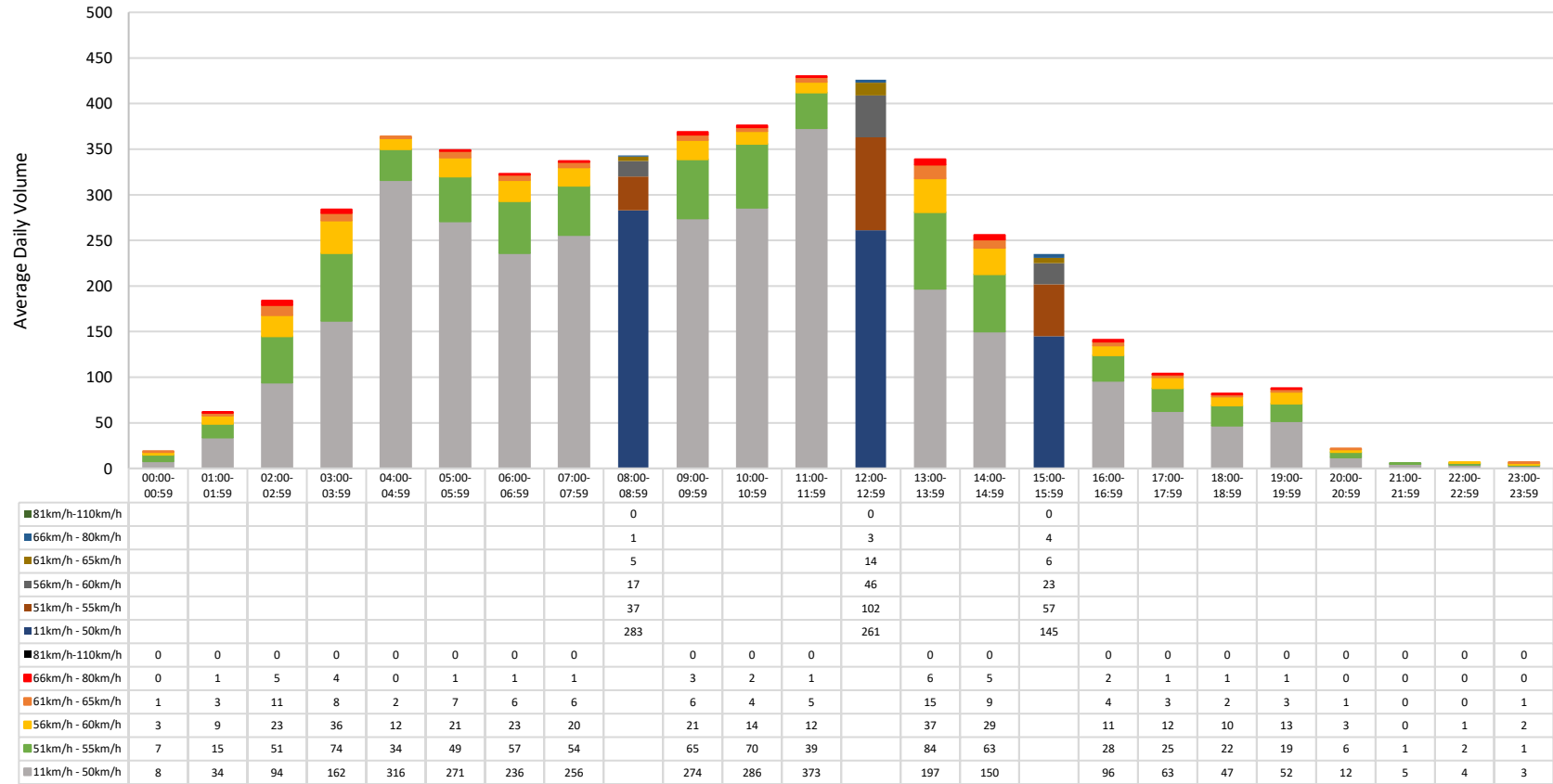


Figure 4. Speed by Hour Analysis for Northbound (weekday)

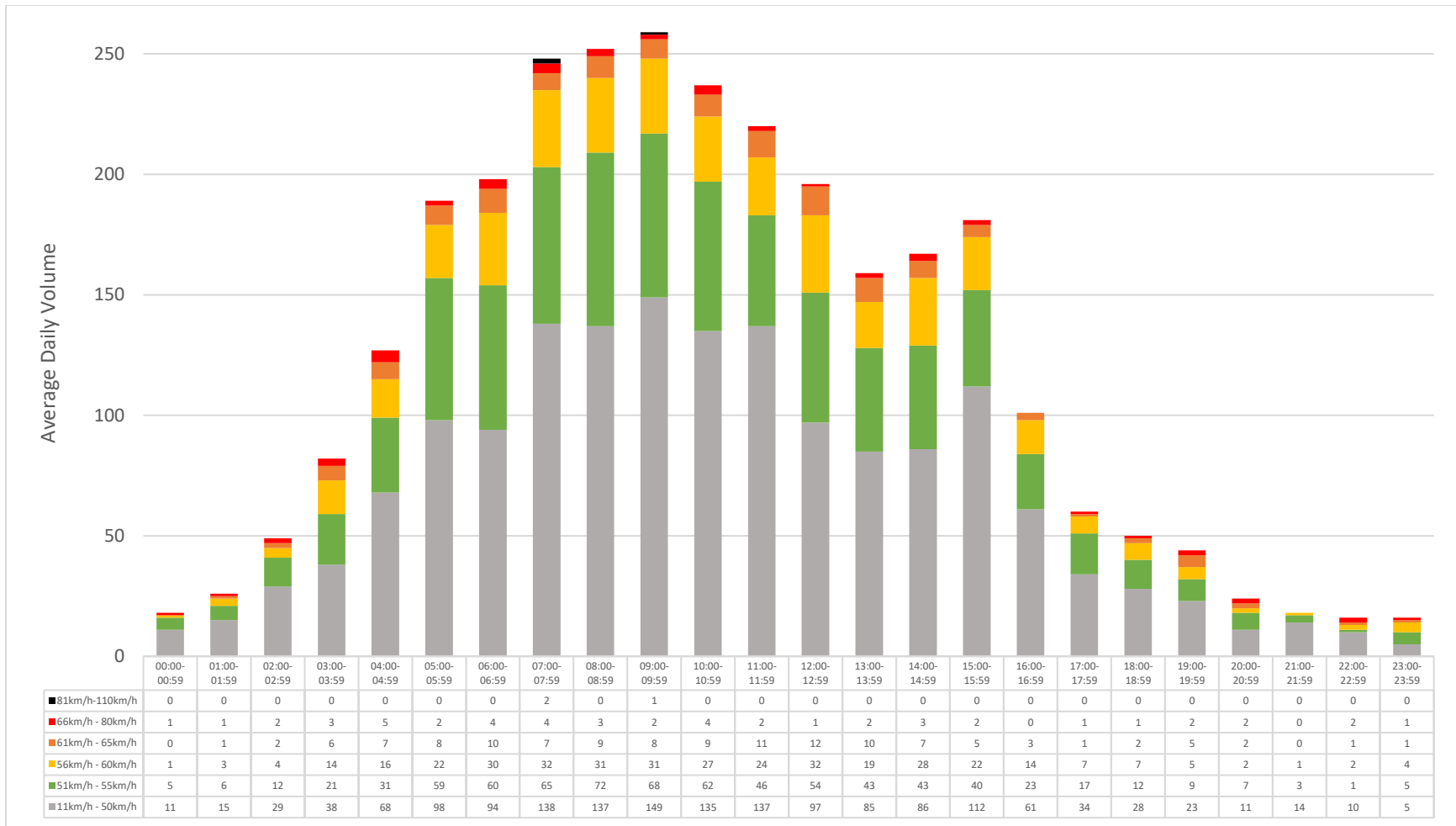


Figure 5. Speed by Hour Analysis for Northbound (weekend)

Figures 4 and 5 are the speed by hour graph for weekdays (September 29th and 30th and October 1st, 4th to 6th) and the weekend (October 2nd and 3rd) in the northbound direction.

2.2 Southbound Speed Analysis

Figures 6 and 7 below are the speed summary for the southbound traffic.

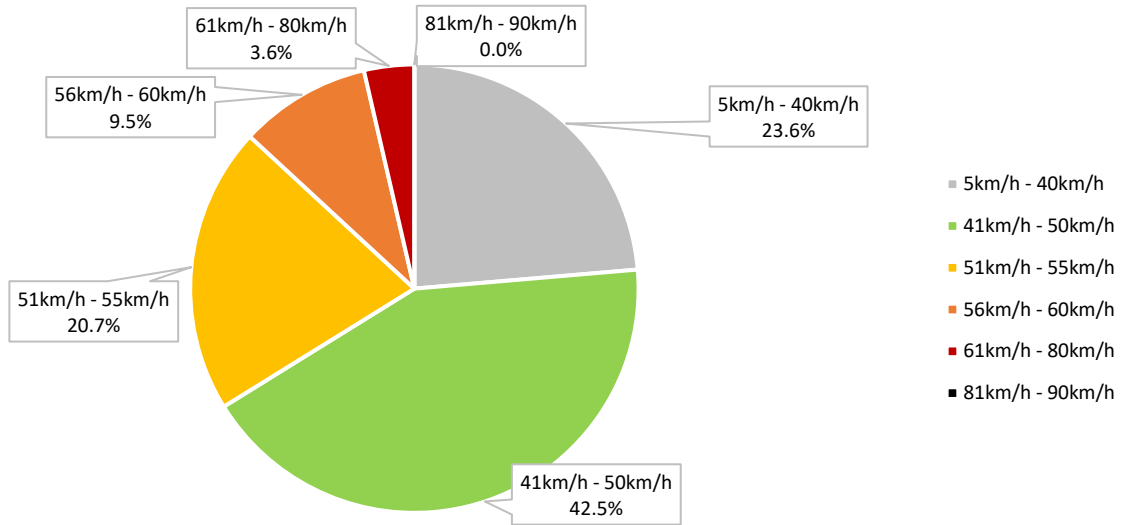


Figure 6. William St. Southbound (speed limit: 40km/h)

Figure 6 above shows that 23.6% of vehicles were travelling below the school times speed limit, 42.5% of vehicles were travelling between 41-50 km/h, and 33.8% 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 66.1% of vehicles were travelling within the accepted speed limit in the community safety zone.

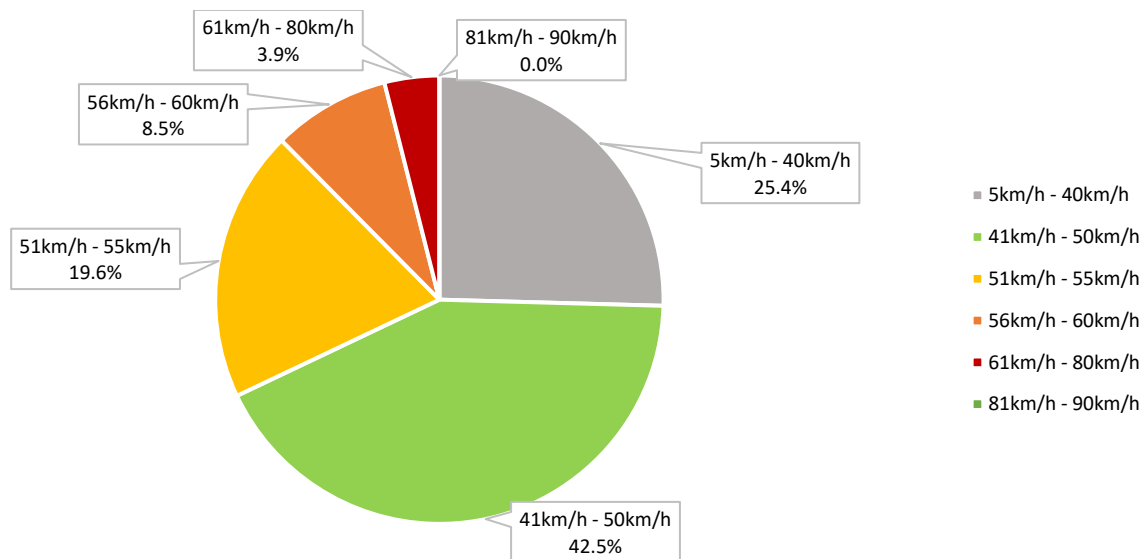


Figure 7. William St. Southbound (speed limit: 50km/h)

Figure 7 above shows that 67.9% of vehicles were travelling below the posted speed limit, 28.1% of vehicles were travelling between 51-60 km/h, and 3.9% 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 96% of vehicles were travelling within the accepted speed limit.

Figures 8 and 9 below are the speed by hour graph for weekdays (September 24th, 27th, 28th, 29th and 30th) and the weekend (September 25th and 26th) in the southbound direction.

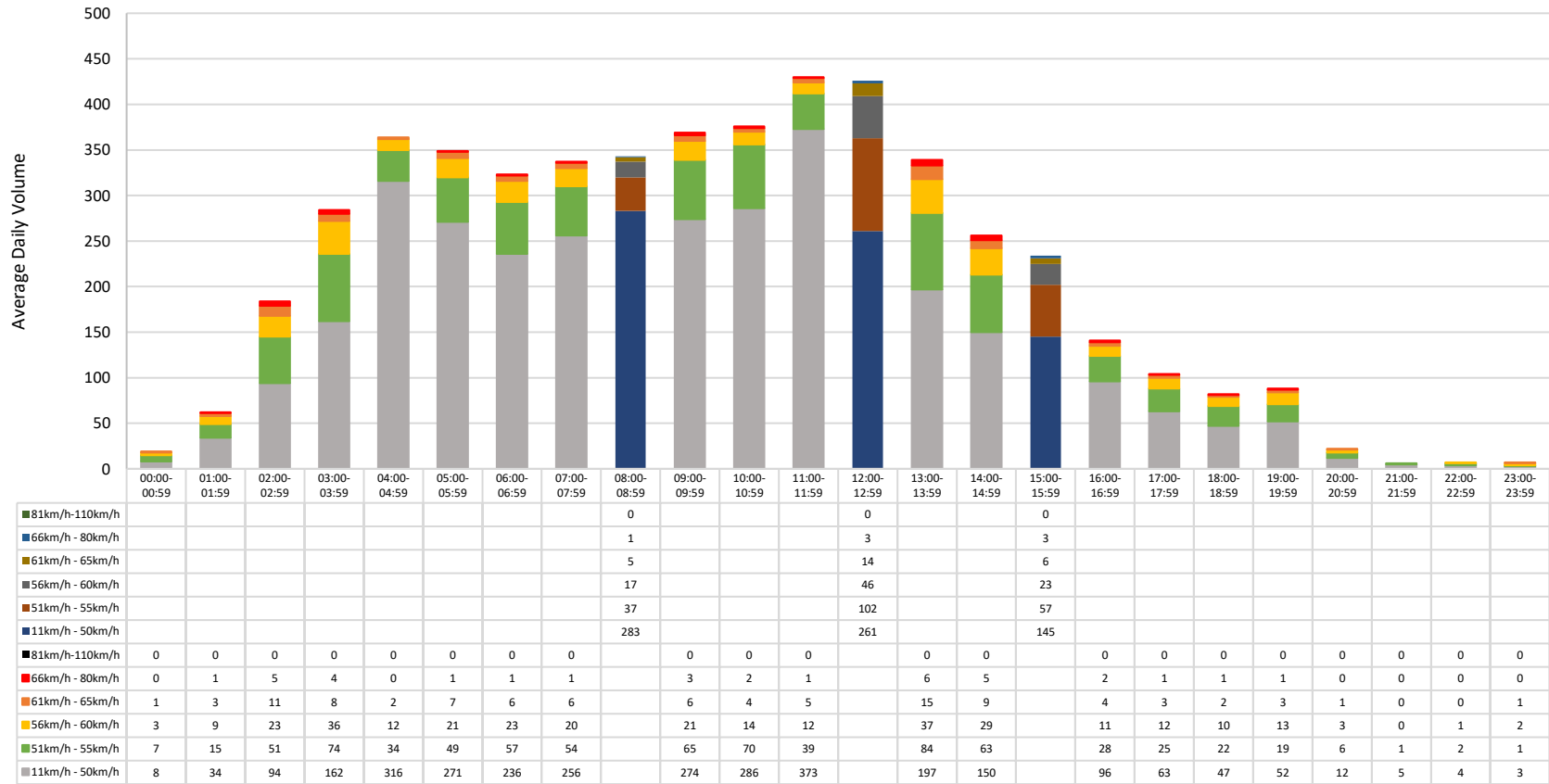


Figure 8. Speed by Hour Analysis for Southbound (weekday)

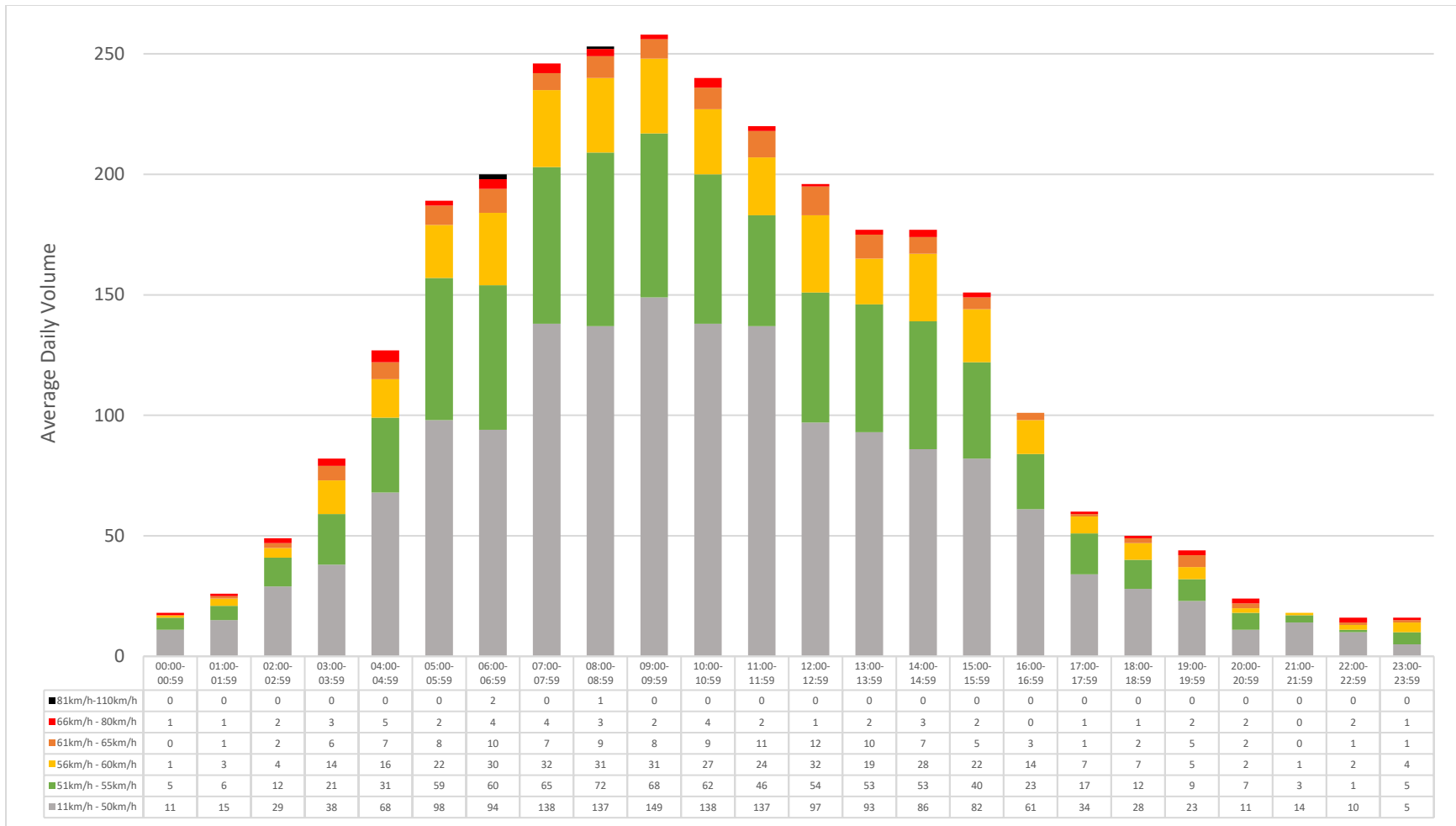


Figure 9. Speed by Hour Analysis for Southbound (weekend)

Furthermore, the traffic trailer detected that there were 66.2% of vehicles slowed down in the northbound direction and 66.2% 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.

Table 3. Volume Summary

Direction	Period	Average Daily Traffic Volume
Northbound	September 29 th and 30 th , October 1 st , 4 th , 5 th , and 6 th (weekday)	4810.8
Northbound	October 2 nd and 3 rd (weekend)	5461.0
Southbound	September 23 rd , 24 th , 27 th , 28 th and 29 th (Weekday)	4984.2
Southbound	September 25 th and 26 th (Weekend)	2875.0

3.1 Northbound Volume by Hour

Figure 10 shows the average volume of vehicles travelling northbound on William St on September 29th and 30th, October 1st, 4th, 5th, and 6th (weekday). It is noticed that the peak traffic occurs at typical morning and evening rush hours on a weekday in the northbound direction with a spike around 4am.

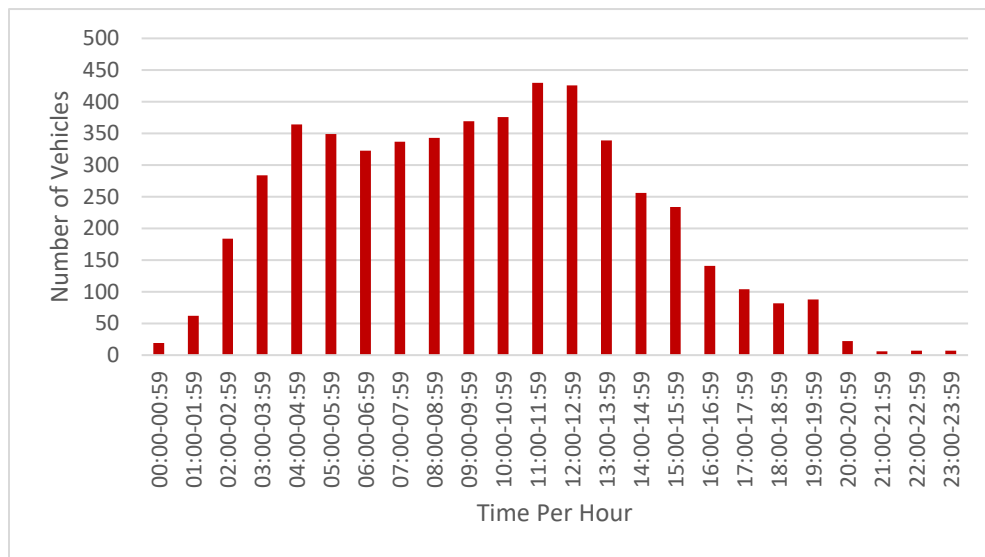


Figure 10. Average Volume by Hour on September 29th and 30th, October 1st, 4th, 5th, and 6th (weekday)

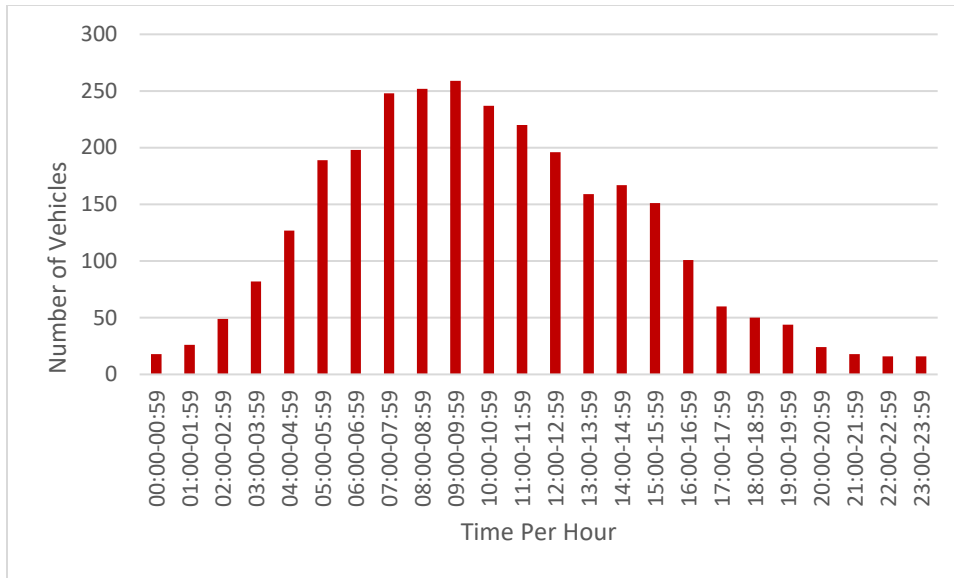


Figure 11. Average Volume by Hour on October 2nd and 3rd (weekend)

Figure 11 shows the average traffic volume on the weekend from October 2nd and 3rd. 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 at 9am and decrease in the late morning and afternoon.

3.2 Southbound Volume by Hour

The data collected between September 23rd to 24th and from the 27th to the 29th is used to analyze the traffic volume by hour on a weekday in the southbound direction as shown in Figure 12. The school hours at the Sacred Heart Catholic School is from 08:45 to 15:00, and it appears that the peak traffic in the southbound direction occurs at 11 and 12pm and has a spike at 4am.

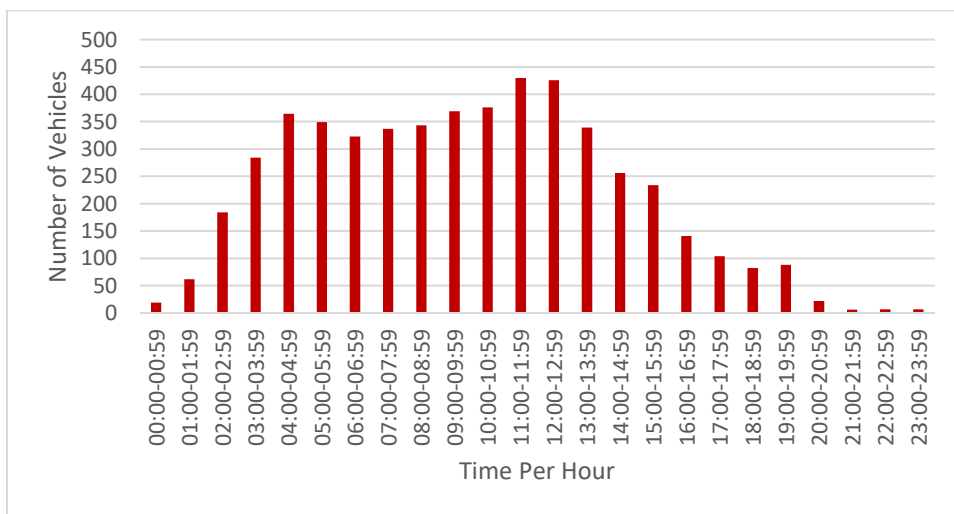


Figure 12. Volume by Hour on September 23rd to 24th and from the 27th to the 29th (Weekday)

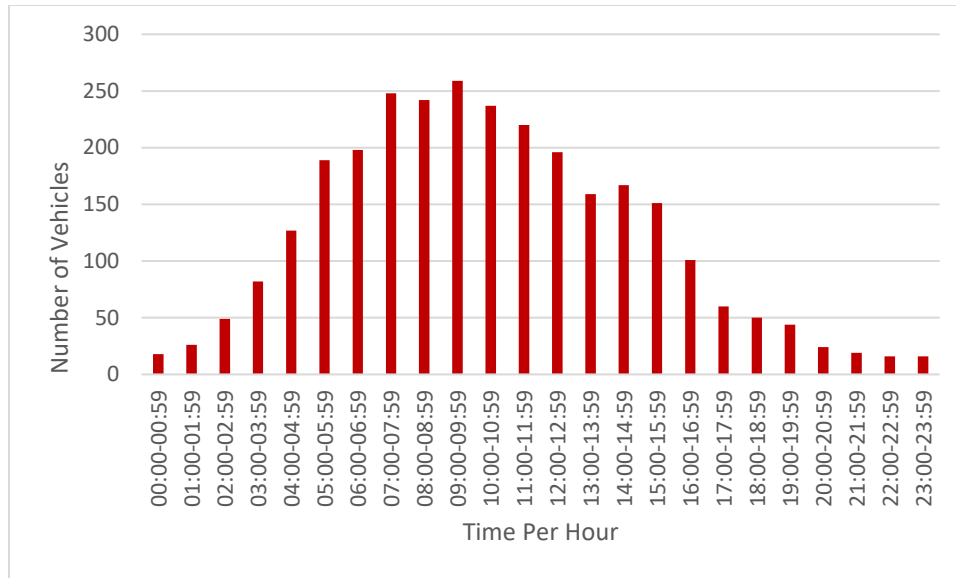


Figure 13. Average Volume by Hour on September 25th and 26th (Weekend)

Figure 13 shows the average traffic volume on the weekend from September 25th and 26th. 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 at 9am and decrease in the late morning and afternoon.

4.0 Conclusion

The traffic study conducted on William St was successfully carried out from September 23rd to October 7th, 2021, for northbound and southbound directions. From the speed analysis, when the posted speed limit is 50km/h, there were 96.1% of vehicles travelling within the accepted speed limit in the northbound direction. It was also determined that during the 50km/h speed limit period, 96% of vehicles travelling in the southbound direction were within the accepted speed limit. In addition, during school times, 64.6% of vehicles driving northbound were travelling within the accepted speed limit. It was also determined that during school times, 66.1% 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 the morning in the southbound and northbound directions.