

Traffic Data Analysis

Yonge St.

Eastbound and Westbound



Town of Midland

Engineering Department

September 30th, 2019

1.0 Introduction

A traffic count was conducted from **September 3rd, 2019** to **September 15th, 2019** on **Yonge St.** for both eastbound and westbound directions. Vehicle speeds and traffic volumes were collected by a traffic trailer (model ATS-3). The purpose is to see if there are any speeding issue, raise safety awareness and help calm traffic by displaying speeds of approaching vehicles.

1.1 Location

The traffic trailer was placed on **Yonge St.** for both eastbound and westbound directions. The trailer was placed at the side of the road to record the speed and volume of vehicles passing by. Table 1 below shows the location of the traffic trailer and data collection period.

Table 1. Locations of Traffic Trailer

Direction	Location	Period
Eastbound	741 Yonge St., Midland, ON	8:00 am on September 3 rd , 2019 – 8:00 am on September 8 th , 2019
Westbound	Mundy's Bay Elementary School, Midland, ON	8:00 am on September 9 th , 2019 – 8:00 am on September 15 th , 2019

1.2 Traffic Trailer

The traffic trailer used was a model ATS-3 as shown in Figure 1. The traffic trailer is set to show the speed of approaching vehicles and display short messages depending on the speed. The traffic trailer uses radar to detect vehicles and collect data and grouped data into one-hour intervals.



Figure 1. Traffic Trailer

2.0 Speed Summary

The posted speed limit on **Yonge St.** is regularly 50 km/h. However, being in a school zone, the speed limit drops to 40 km/h on weekdays during 3 sequences:

1. 8:15 am – 9:00 am
2. 12:30 pm – 1:40 pm
3. 3:00 pm – 4:00 pm

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. below shows an overall speed summary of the data collected for eastbound and westbound directions.

The schedule on the traffic trailer was set accordingly to school times.

Table 2. Speed Summary

Direction	Time Period	Speed Limit (km/h)	Average Speed(km/h)
Eastbound	0:00 – 7:59	50	46.62
	*8:00 – 8:59	40	42.00
	9:00 – 11:59	50	42.90
	*12:00 – 13:59	40	42.50
	14:00 – 14:59	50	42.30
	15:00 – 15:59	40	41.30
	16:00 – 23:59	50	45.10
Westbound	0:00 – 7:59	50	48.47
	*8:00 – 8:59	40	41.20
	9:00 – 11:59	50	44.10
	*12:00 – 13:59	40	43.35
	14:00 – 14:59	50	43.40
	15:00 – 15:59	40	41.90
	16:00 – 23:59	50	47.54

*It is noticed that the traffic trailer is only able to collect data for one-hour intervals which could skew the average speed up when the speed limit is 40km/h. For example, the speed limit changes to 40km/h from 12:30 to 13:40; however, the best matched data can be downloaded from the traffic trailer is from 12:00 to 13:59. Therefore, the speed data collected during the 50km/h speed limit period (12:00-12:29 and 13:41-13:59) was also included in the 40km/h speed limit period.

2.1 Eastbound Speed Analysis

Figure 2, 3 & 4 below show the speed summary for the **Eastbound traffic**. Figure 2 and 3 below show the percentages and speed ranges for eastbound traffic during a speed limit of 40km/h and 50km/h respectively.

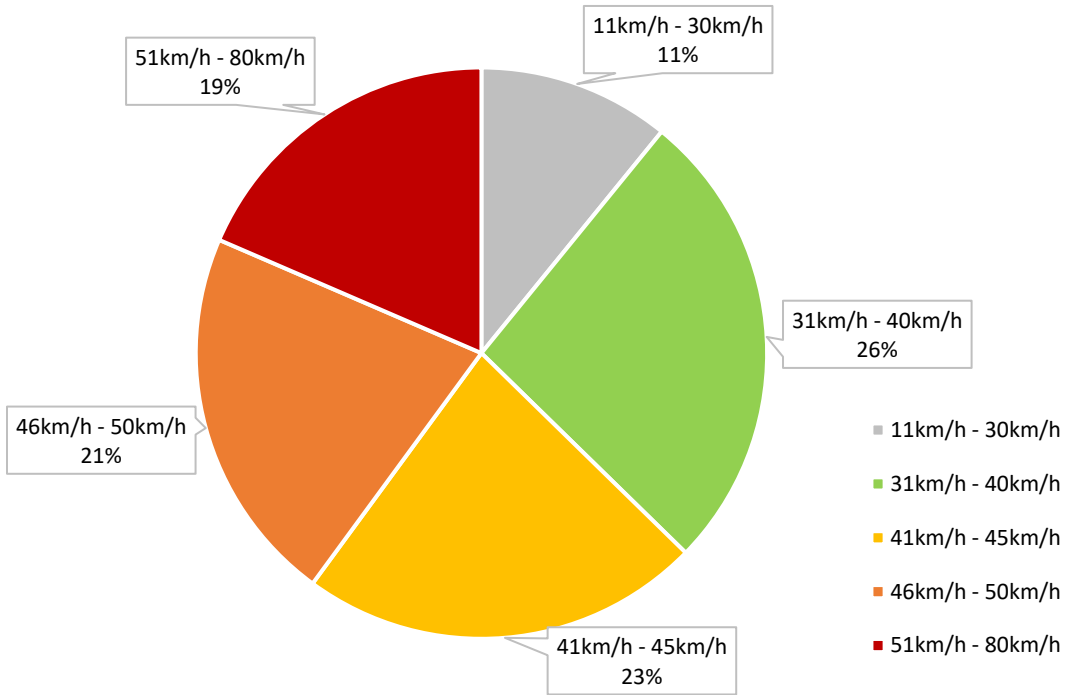


Figure 2. Yonge St. Eastbound Speed Breakdown (Speed Limit: 40 km/h)

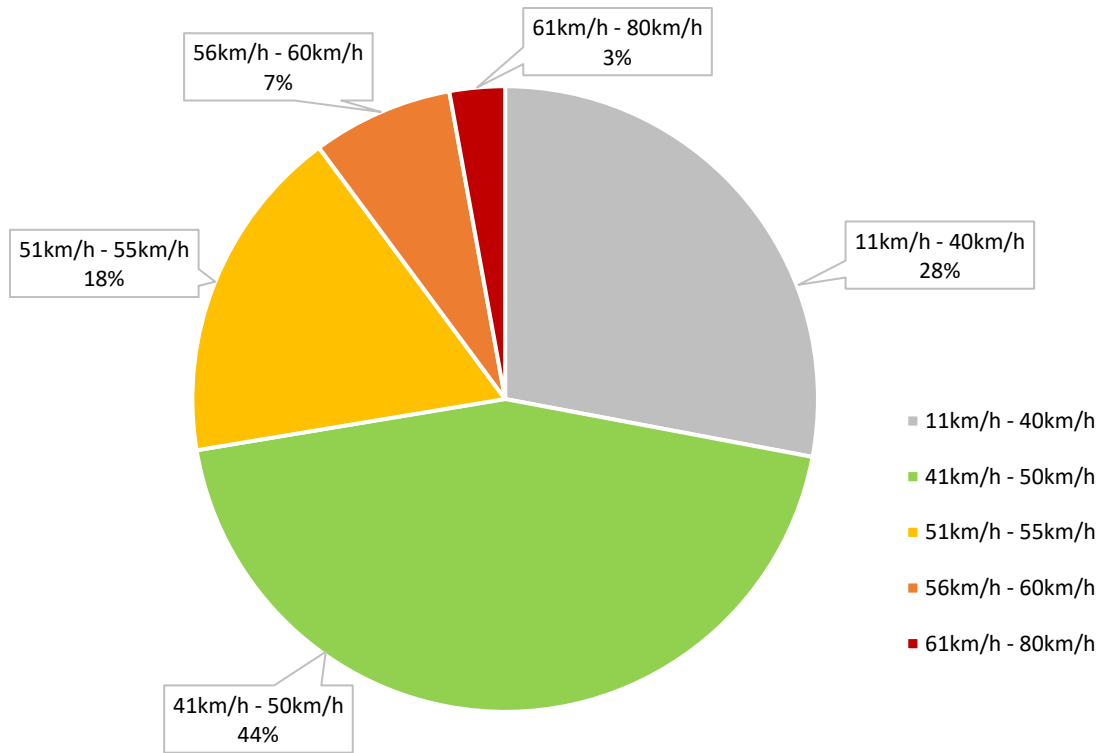


Figure 3. Yonge St. Eastbound speed Breakdown (Speed Limit: 50 km/h)

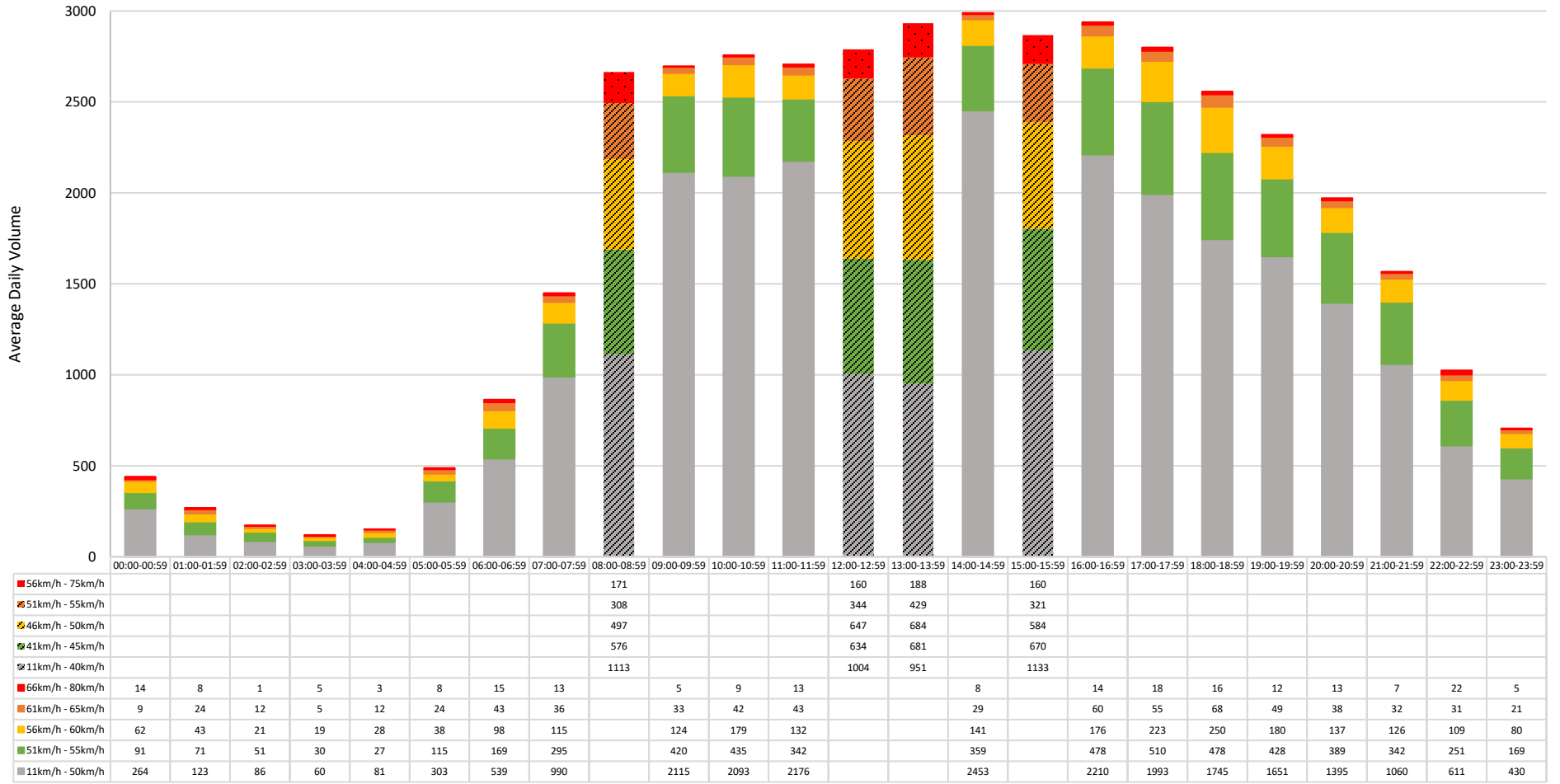


Figure 4. Speed by Hour Analysis for Eastbound (Weekday)

Figure 2 above shows the speed summary for Eastbound traffic during school times with an altered speed limit of 40 km/h. From this summary we can see that **37%** of vehicles were travelling below the school times speed limit, **44%** of vehicles were travelling between 41-50 km/h, and **19%** 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 **81%** of vehicles were travelling within the accepted speed limit.

Figure 3 above shows the speed summary for Eastbound traffic during the posted 50km/h speed limit period. From this summary we can see that **72%** of vehicles were travelling below the posted speed limit, **25%** of vehicles were travelling between 51-60 km/h, and **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 **97%** of vehicles were travelling within the accepted speed limit and a total of **72%** of vehicles were travelling below the posted 50 km/h limit.

2.2 Westbound Speed Analysis

Figure 5, 6 & 7 below show the speed summary for the **Westbound traffic**. Figure 5 and 6 below show the percentages and speed ranges for eastbound traffic during a speed limit of 40km/h and 50km/h respectively.

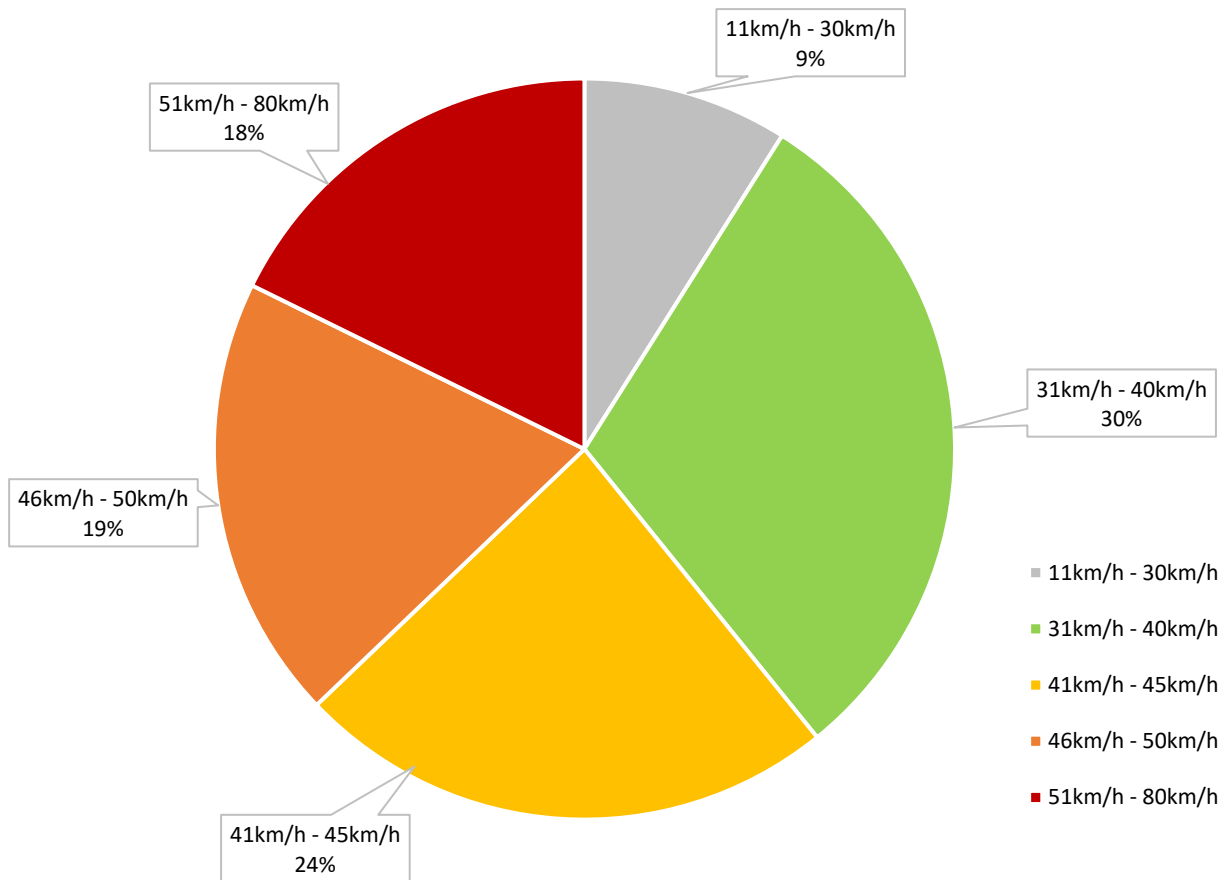


Figure 5. Yonge St. Eastbound Speed Breakdown (Speed Limit: 40 km/h)

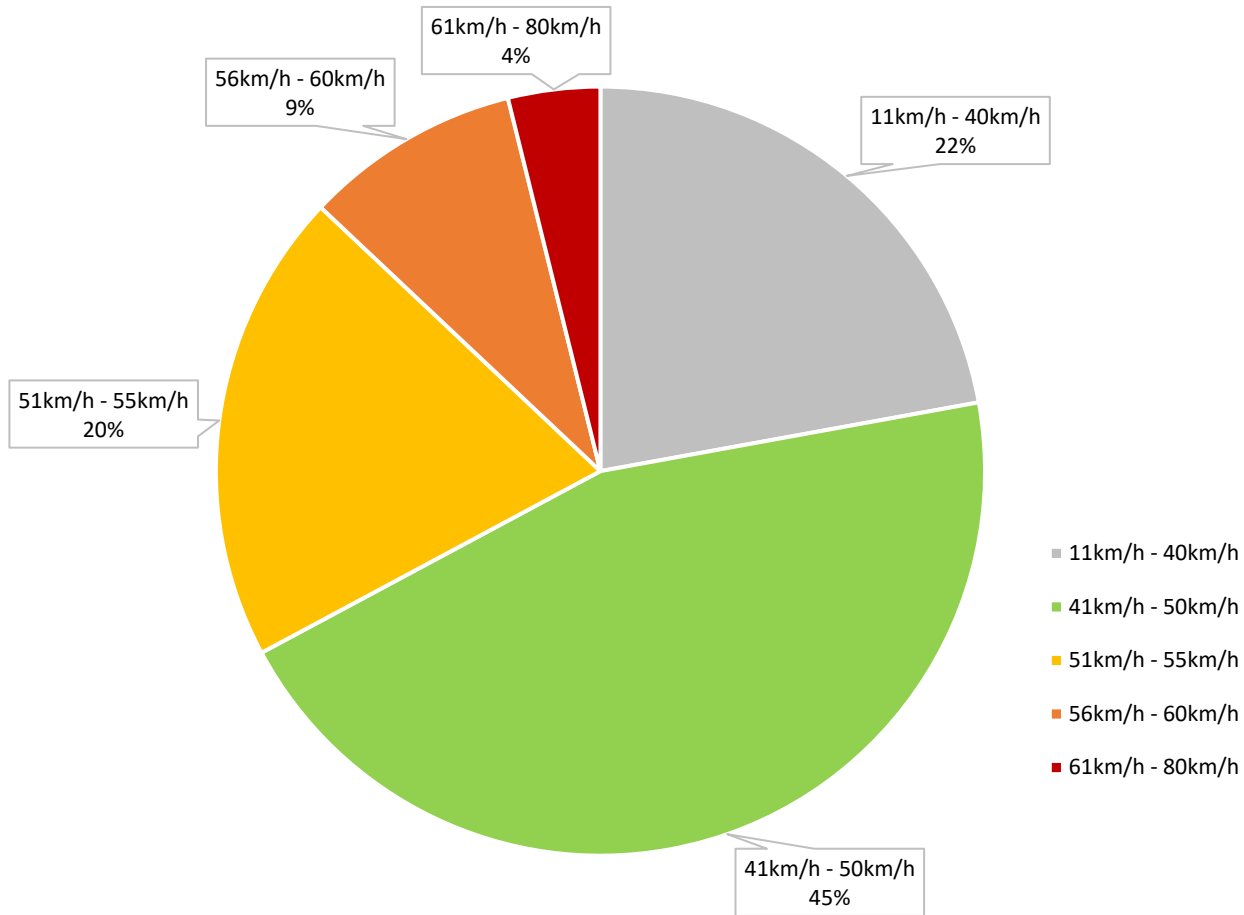


Figure 6. Yonge St. Westbound Speed Breakdown (Speed Limit: 40 km/h)

Figure 5 above shows the speed summary for Westbound traffic during school times with an altered speed limit of 40 km/h. From this summary we can see that **39%** of vehicles were travelling below the school times speed limit, **43%** of vehicles were travelling between 41-50 km/h, and **27%** 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%** of vehicles were travelling within the accepted speed limit.

Figure 6 above shows the speed summary for Westbound traffic during the posted 50km/h speed limit period. From this summary we can see that **67%** of vehicles were travelling below the posted speed limit, **29%** of vehicles were travelling between 51-60 km/h, and **13%** 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 **87%** of vehicles were travelling within the accepted speed limit and a total of **67%** of vehicles were travelling below the posted 50 km/h limit.

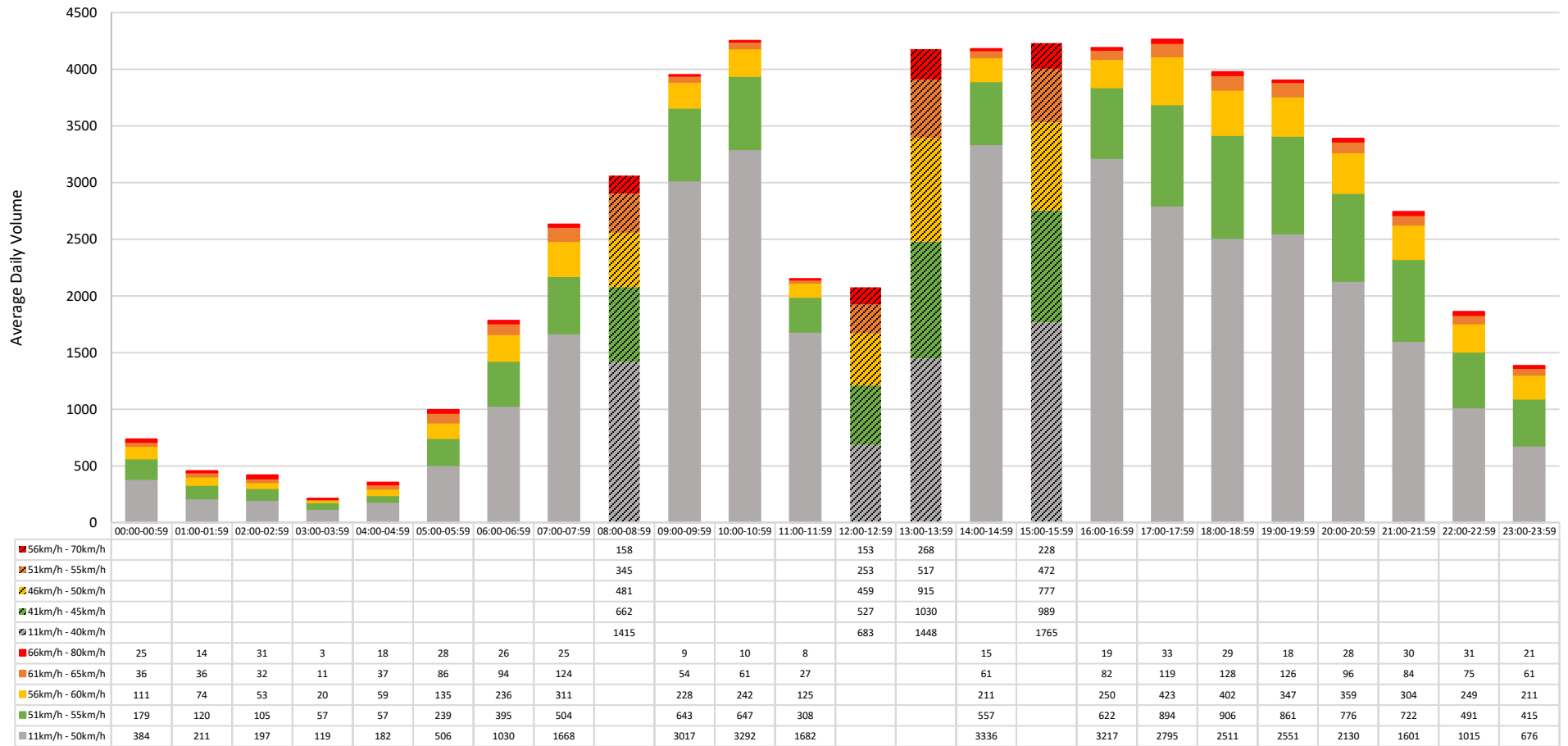


Figure 7. Speed by Hour Analysis for Westbound (Weekday)

3.0 Traffic Volume

Table 3. shows the average daily volume on **Yonge St.** for Eastbound and Westbound directions. Only the days when the traffic trailer was placed there for the full 24 hours are used in traffic volume analysis.

Direction	Period	Average Daily Traffic Volume
Eastbound	Sept 4 th to Sept 8 th (Wed – Sun)	7,278
Westbound	Sept 10 th to Sept 15 th (Tues - Sun)	8,902

Being an arterial street in Midland, **Yonge St.** sees high traffic volumes daily at many times during the day. Average traffic volumes were greater in the **Westbound** direction. Traffic volumes decrease slightly during the weekend but are still relatively close to the daily average.

3.1 Eastbound Volume by Hour

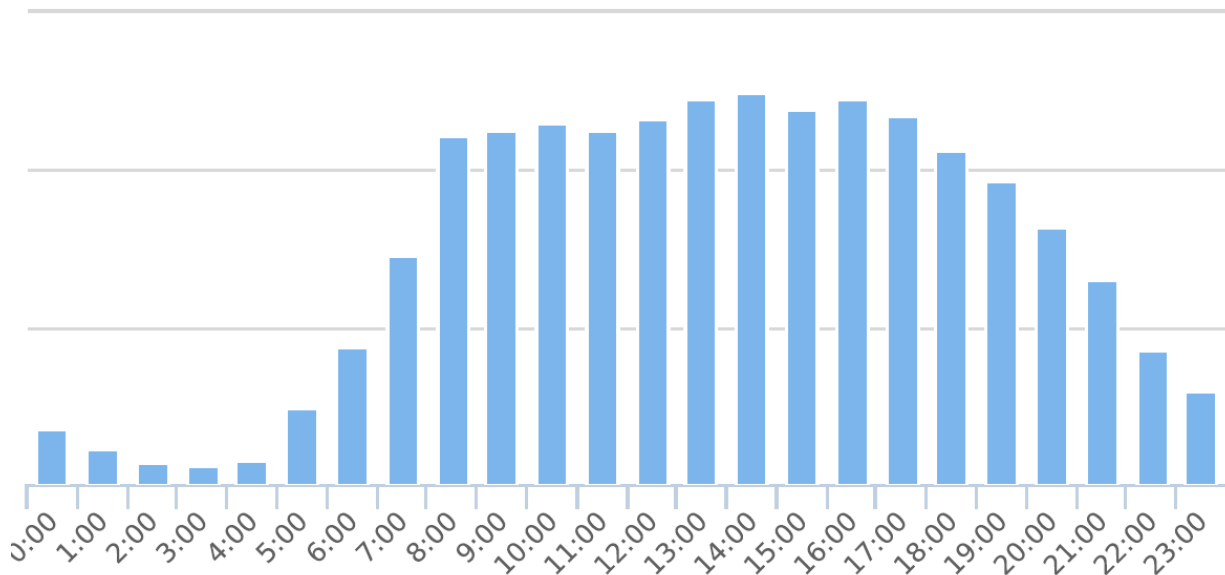


Figure 8. Average Volume by Hour (Eastbound)

The data collected from **September 3rd to September 8th** is used to analyze the average traffic volume at different times of day in the eastbound direction (Figure 8). From the graph, Yonge St. traffic volumes follow a normal curve with a slight increase in volumes during the morning rush hour (8 am & 9 am).

3.2 Westbound Volume by Hour

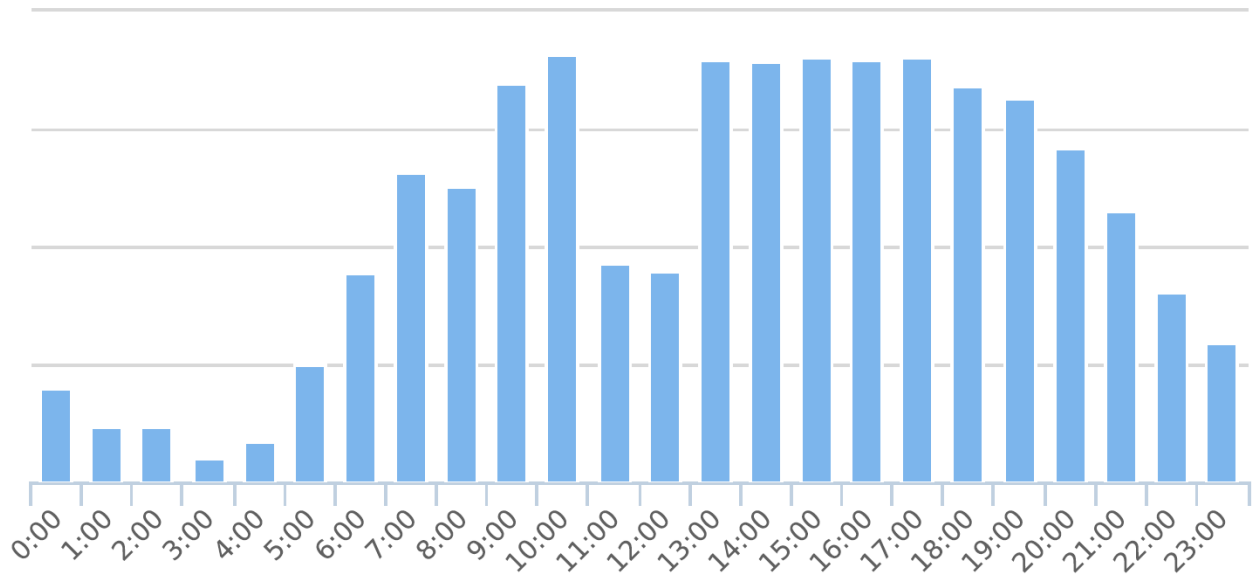


Figure 9. Average Volume by Hour (Westbound)

The data collected from **September 9th to September 15th** is used to analyze the average traffic volume at different times of day in the westbound direction (Figure 9). From the graph, Yonge St. traffic volumes dip drastically at noon hour. Otherwise, the traffic volumes follow a normal curve closely.

4.0 Conclusion

The traffic study conducted on **Yonge St.** for both Eastbound and Westbound directions was successfully carried out from September 3rd to September 15th, 2019. We can observe different trends during school schedule speed alterations and the regular 50 km/h posted speed limit times. During 40 km/h periods, more drivers exceed the accepted speed limit than during 50km/h posted speed times:

Eastbound: **19%** over 50km/h @ 40 limit ; **3%** over 60km/h @ 50 limit

Westbound: **27%** over 50km/h @ 40 limit ; **13%** over 60km/h @ 50 limit

Drivers exceed the speed limit more often during the reduced school speeds in both Eastbound and westbound directions. In addition, drivers exceed the speed limit more consistently in the westbound direction.

An important statistic to look at is the number of drivers travelling over 50km/h in both circumstances and comparing to see if the school zone schedule has an impact on traffic:

Eastbound: **19%** over 50km/h @ 40 limit ; **28%** over 50km/h @ 50 limit → Increase of **9%**

Westbound: **27%** over 50km/h @ 40 limit ; **33%** over 50km/h @ 50 limit → Increase of **6%**

From the data we can see that traffic is calmed and slowed by **6%-9%** on Yonge Street during school schedule reduced speeds.

