

Traffic Data Analysis

King St.

Northbound and Southbound



Town of Midland

Engineering Department

July 3rd, 2019

1.0 Introduction

A traffic count was conducted from June 24th, 2019 to July 2nd, 2019 on King St for both southbound and northbound 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 and raise safety awareness and help calm traffic by displaying speeds of vehicles approaching.

1.1 Location

The traffic trailer was placed on King St for both northbound and southbound directions. The trailer was placed at bottom of the hill 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
Northbound	658 King St, Midland, ON	16:00 on June 24 th , 2019 – 10:00 on June 28 th , 2019
Southbound	658 King St, Midland, ON	10:00 on June 28 th , 2019 – 07:00 on July 02 nd , 2019

1.2 Traffic Trailer

The traffic trailer used was model ATS-3 as shown in the Figure 1. The traffic trailer is set to show the speed of the approaching vehicle and display short messages depending on the speed. The data is collected and grouped into one-hour intervals. The traffic trailer uses radar to detect vehicles and collect data which can be challenging if the radar is blocked or the trailer is placed at the bottom of a hill and try to pick up the speed of vehicles uphill. Therefore, sensitivity of the radar needs to be adjusted accordingly to different situations.



Figure 1. Traffic Trailer

2.0 Speed Summary

The posted speed limit on King St is 50km/h; however, 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 northbound and southbound directions.

Table 2. Speed Summary

Direction	Average Speed (km/h)	Minimum Speed (km/h)	Maximum Speed(km/h)
Northbound	52.4	10	80
Southbound	53.9	10	80

2.1 Northbound Speed Analysis

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

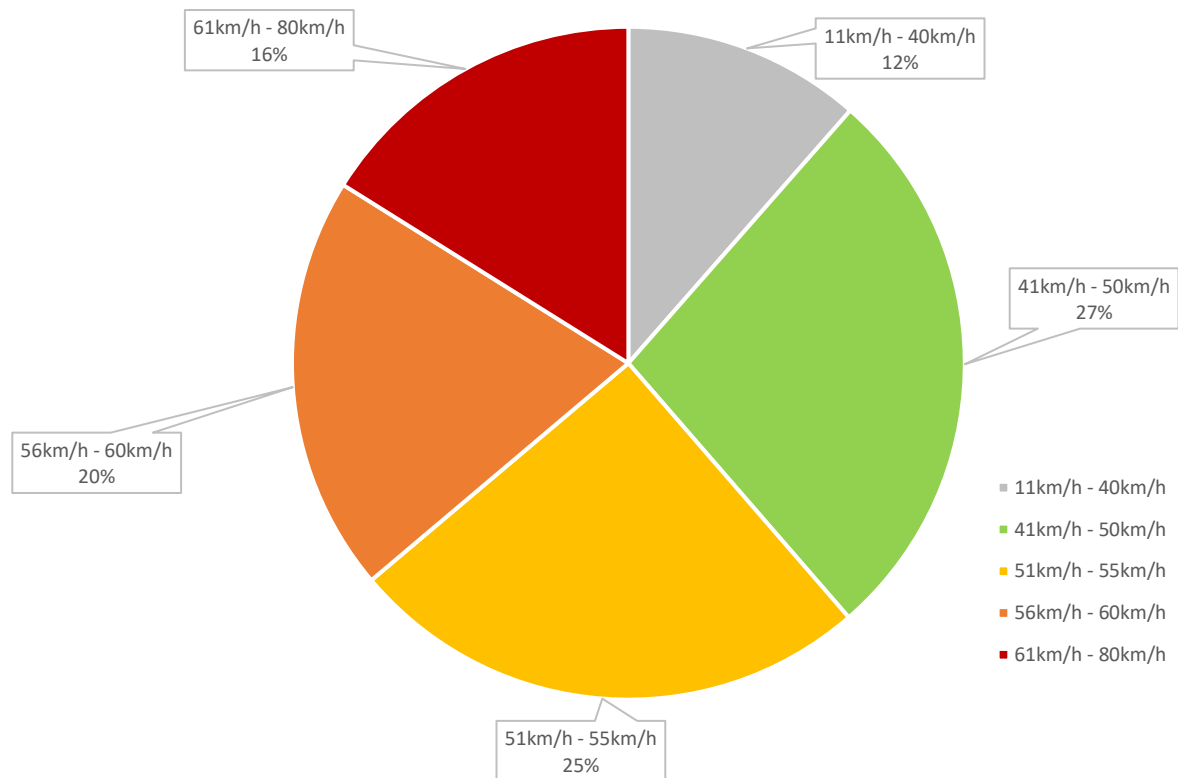


Figure 2. King St. Northbound

From this summary we can see that 39% of vehicles were travelling below the posted speed limit, 45% of vehicles were travelling between 51-60 km/h, and 16% 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 84% of vehicles were travelling within the accepted speed limit in the northbound direction. It is also noticed that there were more vehicles speeding around typical evening rush hour.

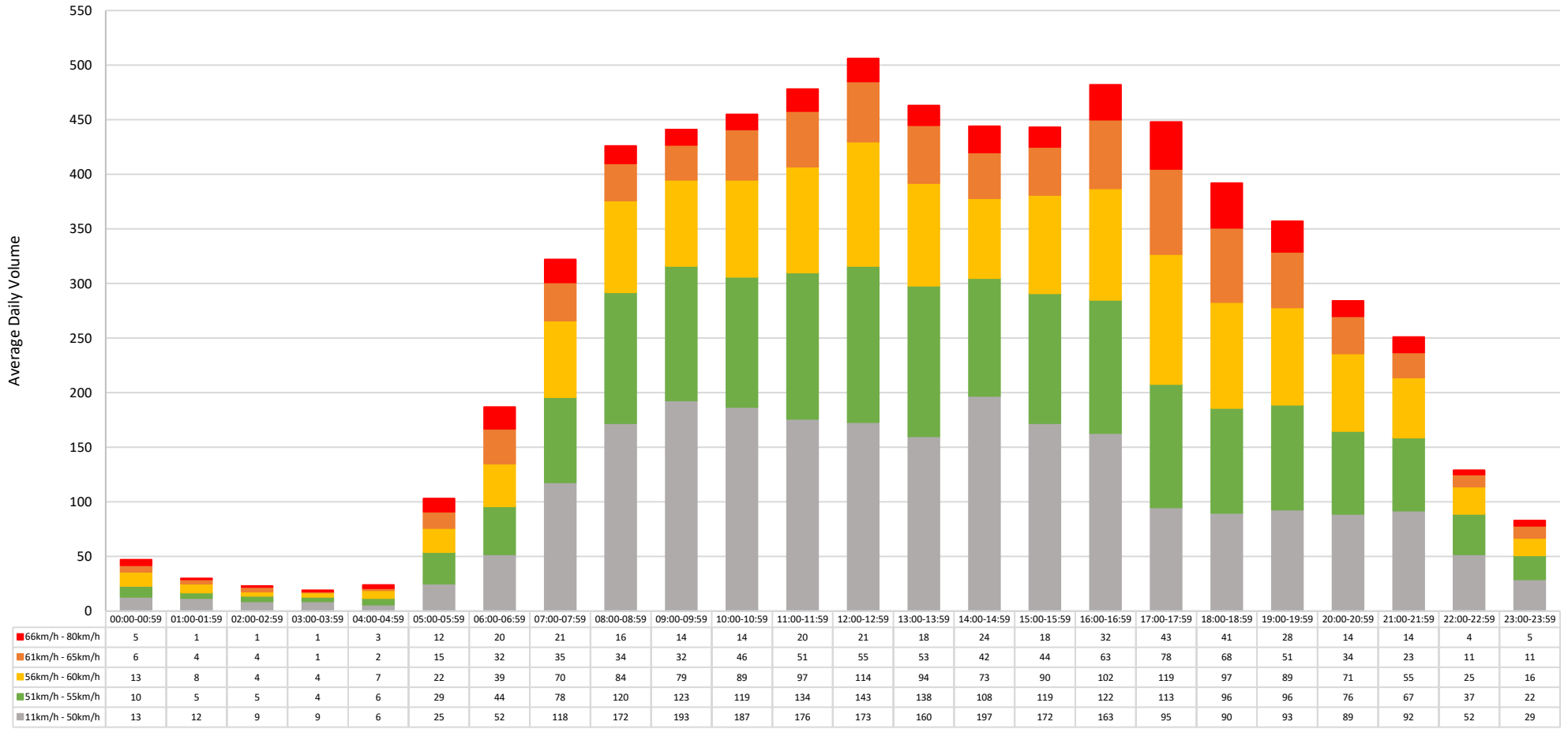


Figure 3. Speed by Hour Analysis for Northbound

From this summary we can see that 34% of vehicles were travelling below the posted speed limit, 48% of vehicles were travelling between 51-60 km/h, and 18% 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 82% of vehicles were travelling within the accepted speed limit in the northbound direction. It is also noticed that there were more vehicles speeding around typical evening rush hour.

2.2 Southbound Speed Analysis

Figure 4 to 6 are the speed summary for the southbound traffic.

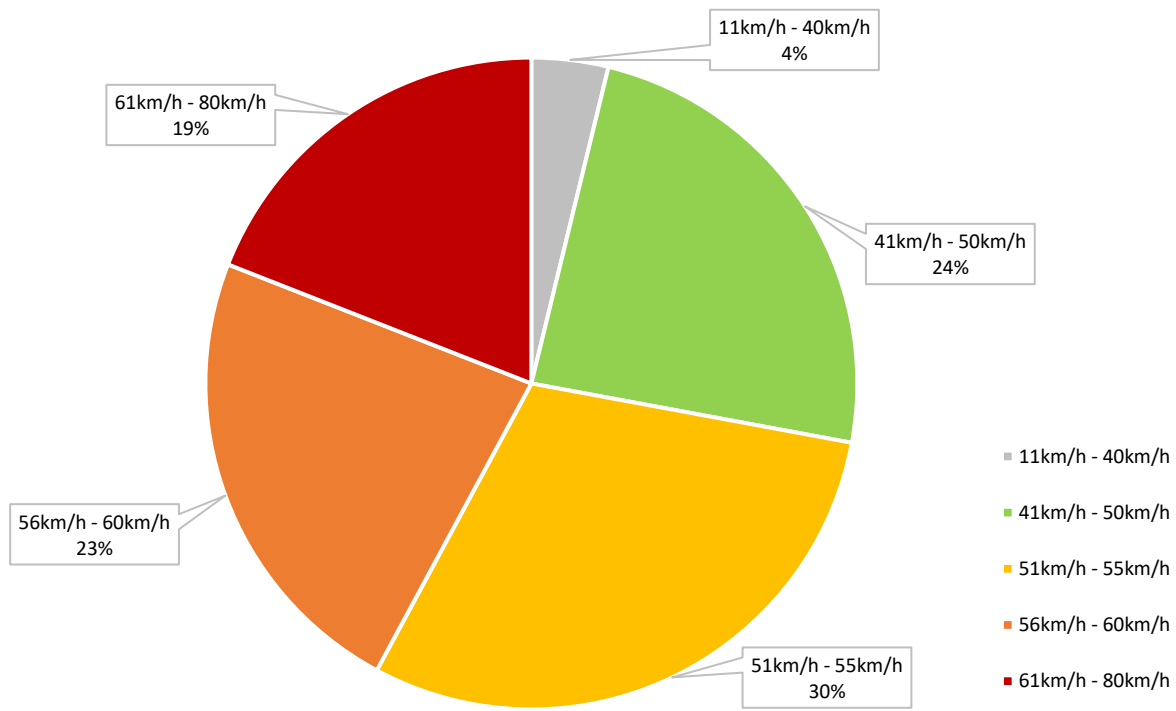


Figure 4. King St. Southbound

From this summary we can see that 28% of the vehicles were travelling below the posted speed limit, 53% of vehicles were travelling between 51-60 km/h, and 19% 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 81% of vehicles were driving within the accepted speed limit. It is also noticed that there were more vehicles speeding in the afternoon.

Furthermore, the traffic trailer detected that 43% of vehicles slowed down in northbound direction and 57% slowed down in southbound direction when approaching the trailer. These percentages could include the vehicles slowed down to make a turn; however, it also shows that the trailer is influencing traffic calming.

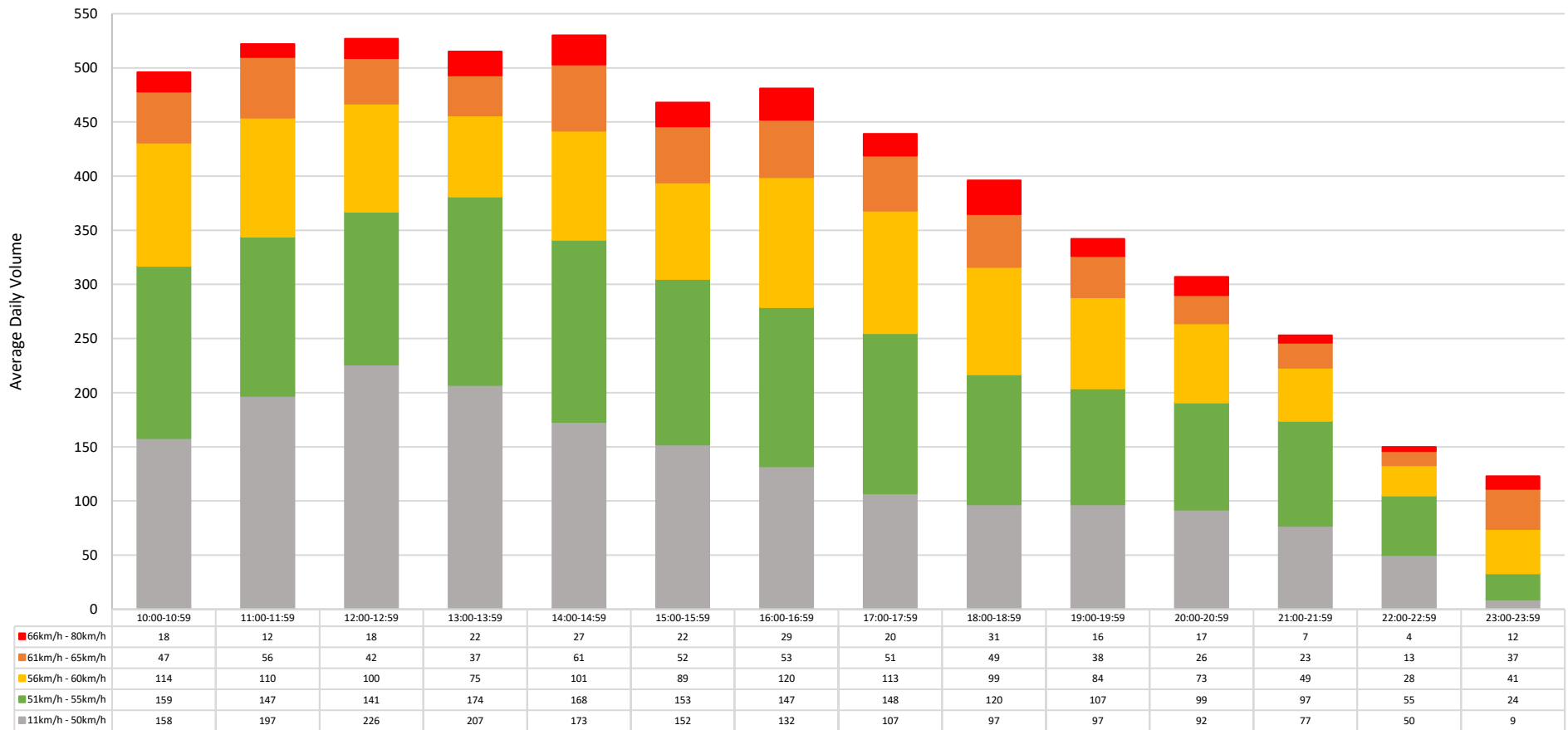


Figure 5. Speed by Hour Analysis for Southbound (June 28th, 2019)

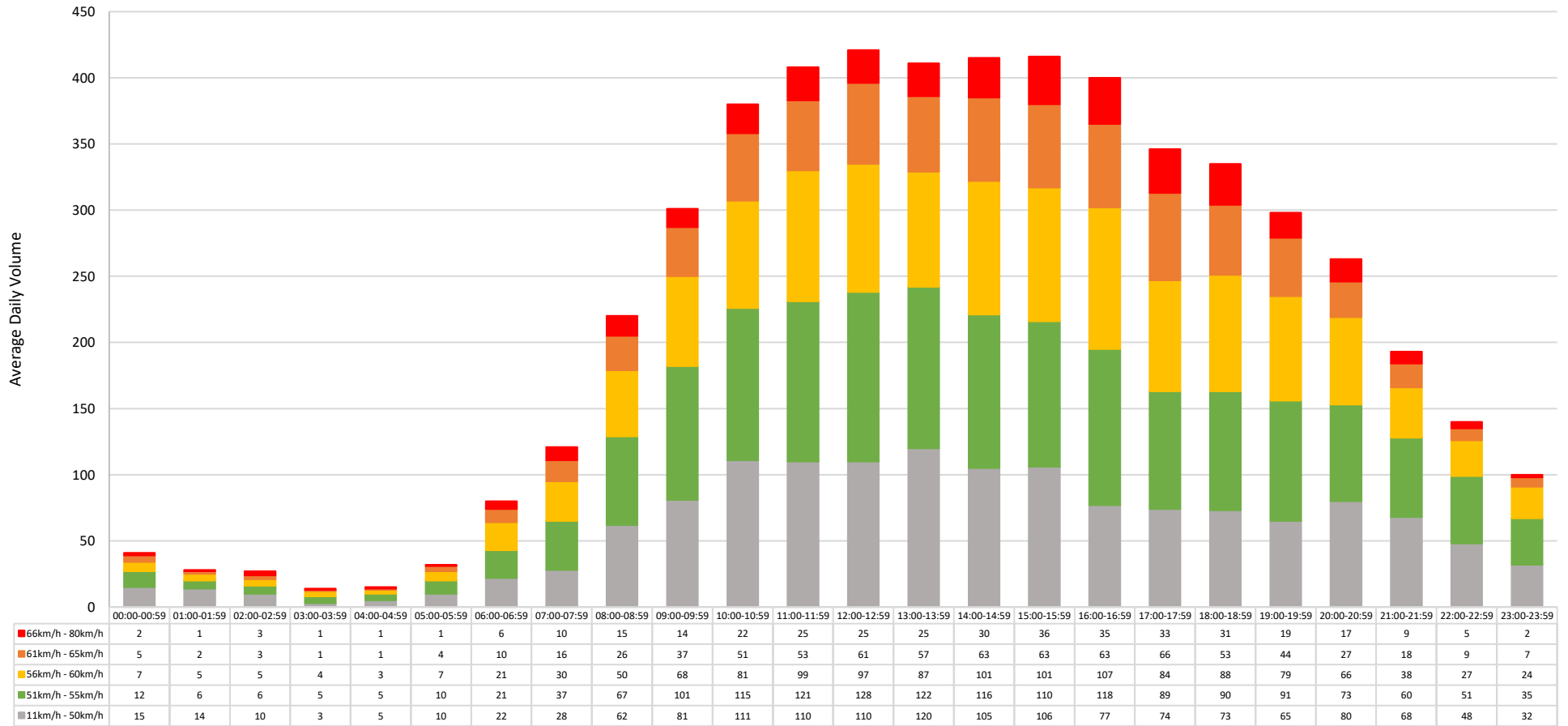


Figure 6. Speed by Hour Analysis for Southbound (June 29th to July 1st, 2019)

3.0 Traffic Volume

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

Table 3. Volume Summary

Direction	Period	Average Daily Traffic Volume
Northbound	June 25 th to June 27 th (Tuesday to Thursday)	6,825
Southbound	June 29 th to July 1 st (Saturday to Monday)	5,416

Unfortunately, the trailer was only placed in the southbound of King St from 10:00 to 23:59 on June 28th (Friday) which cannot represent the average traffic volume on a weekday. By comparing to the average volume in northbound direction on a weekday, it can be predicted that the volume on a weekday in southbound direction should be around 6,800 to 7,300. In addition, July 1st is a statutory holiday, therefore it is considered as a long weekend in northbound direction.

3.1 Northbound Volume by Hour

The data collected for three full days (June 25th to June 27th) is used to analyze the average traffic volume at different time of a day (Figure 7). From the graph, King St has peak traffic during the typical rush hour and noon hour and slightly less traffic in the afternoon.

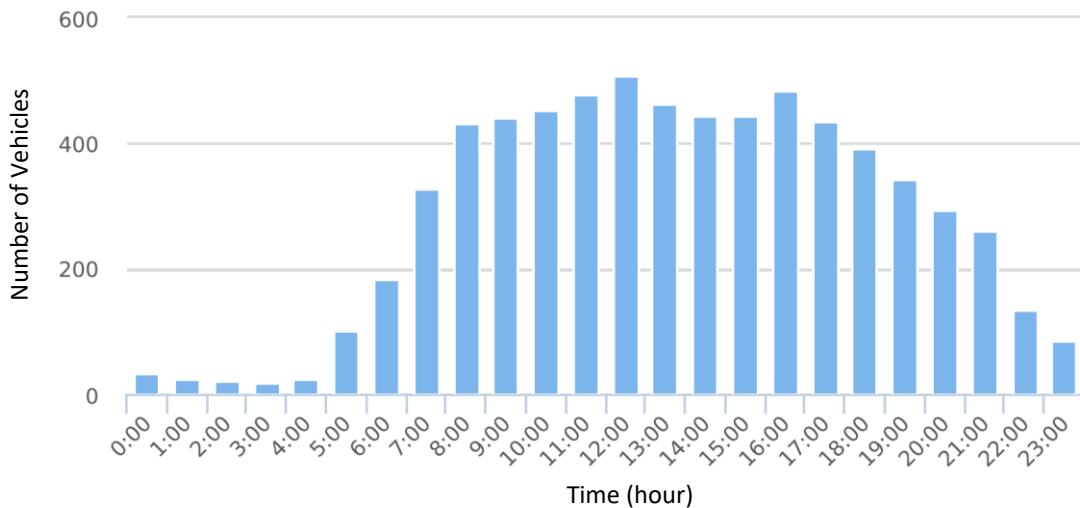


Figure 7. Average Volume by Hour from June 25th to June 27th (Northbound)

3.2 Southbound Volume by Hour

The data collected from June 29th to July 1st (weekends) are used to analyze the average traffic volume at different time of the day as shown in Figure 8.

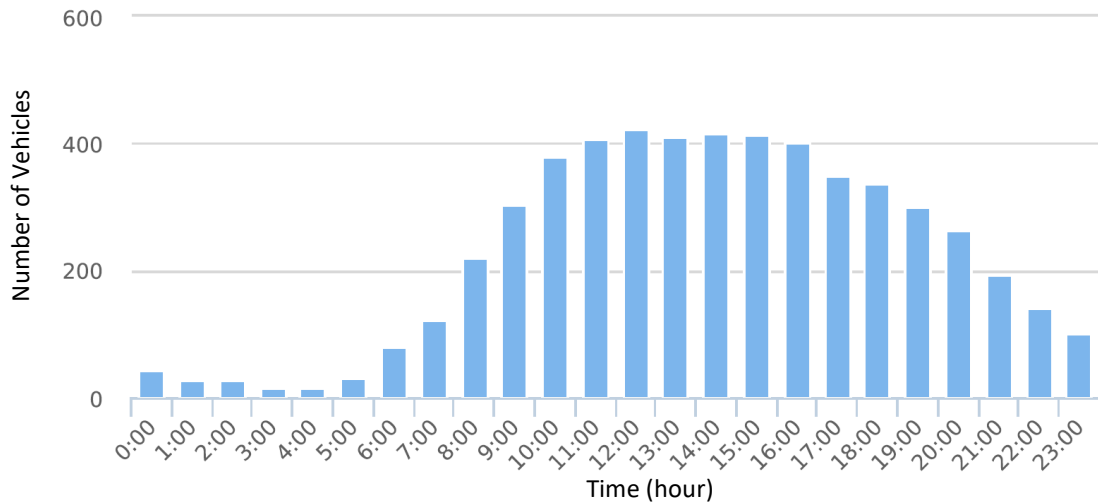


Figure 8. Average Volume by Hour on June 29th to July 1st (Southbound)

As shown in Figure 8, the traffic on the weekend in the southbound direction has a similar pattern as the traffic on a weekday in the northbound direction.

4.0 Comparison of 2018 and 2019

There was a traffic study conducted in 2018 at 565 King St, Midland, ON from 13:00 on August 22nd, 2018 to 13:00 on August 24th, 2018. The traffic counter used to collect volume and speed of vehicles was a Mini TRS. As stated in the 2018 traffic report, there was a total of 19% of vehicles travelling over 60km/h in northbound and southbound directions. From the data collected in 2019, there was 18% vehicles travelling over 60 km/h in northbound direction and 19% of vehicles travelling over 60km/h in southbound direction. Therefore, the percentages of speeding vehicles in 2019 is same as in 2018. Furthermore, the total daily volume on King St was about 16,000 on August 23rd, 2018 (Wednesday). In 2019, the average daily volume in northbound direction was around 6,800 on a weekday. By assuming the daily volume in southbound direction is around 7,000 on a weekday, the total daily volume on King St is approximately 13,800 in 2019. The difference in volume in 2018 and 2019 could due to that the data was collected at different time of a year. Another possible reason of this discrepancy is that the equipment used to collect data were different.

5.0 Conclusion

The traffic study conducted on King St for both northbound and southbound directions was successfully carried out from June 24th to July 2nd, 2019. From the speed analysis, it was determined that 82% of vehicles travelling in the northbound direction were travelling within the accepted speed limit. It was also determined that 81% of vehicles travelling in the southbound direction were travelling within the accepted speed limit.

In addition, from the volume analysis, it was determined that the peak traffic hours were at the typical rush hour and noon for northbound direction on a weekday. The southbound traffic was monitored over the weekend and it was noted that it has a similar pattern as the northbound direction. Finally, the analyzed results in 2019 was also compared to the traffic study conducted in 2018. It was found that the percentage of speeding vehicles was similar, but the volume of traffic in 2018 is slightly larger than in 2019.