Parking Master Plan

Appendix C
Parking Utilization

Existing Parking Utilization

Using the parking utilization data collected through the parking surveys, a complete review of the study area's existing parking utilization was undertaken.

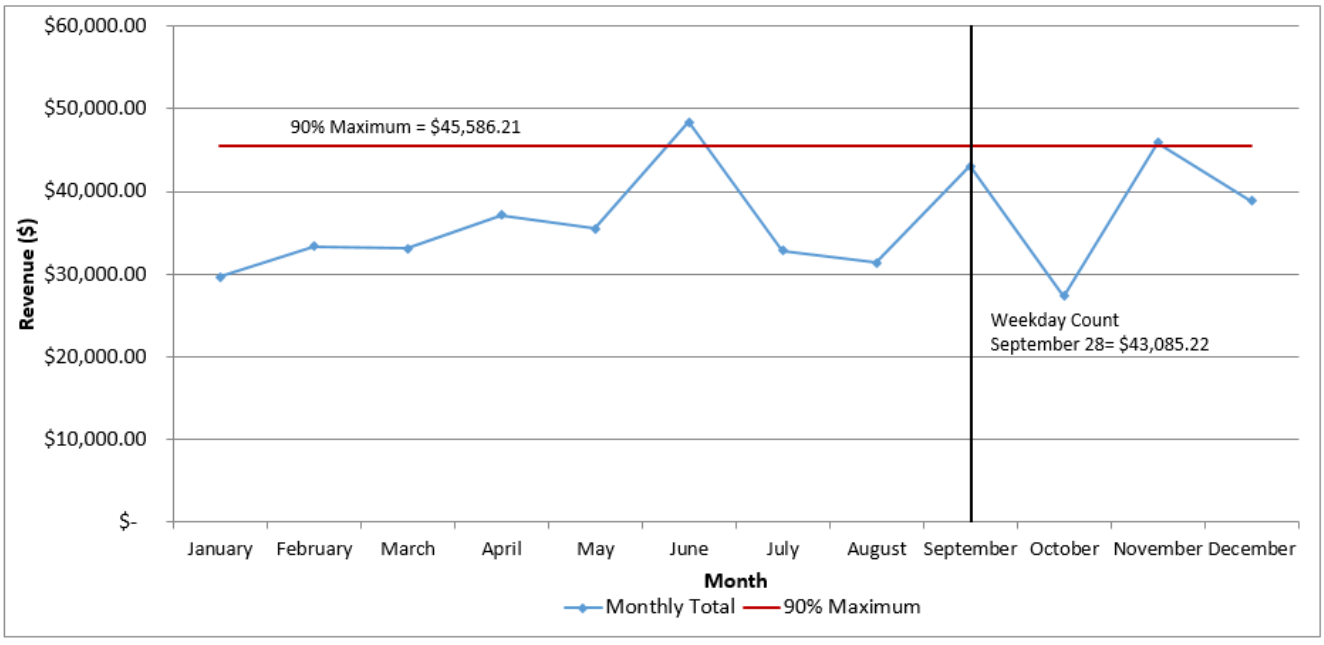
Seasonal Parking Adjustment Factor

Parking patterns are known to vary throughout the calendar year. For example, parking demand may be slightly lower during the winter months due to cold weather and heavy snow fall. Parking systems are generally designed to accommodate the 85th percentile peak annual parking demand. This ensures that the parking supply is sufficient to accommodate all but the highest parking demand experienced throughout the year. Parking systems are not designed to accommodate the peak annual parking demand since there would be excess parking capacity available during the remainder of the year.

To seasonally adjust the collected parking data, the Town of Whitby provided monthly parking revenue data for 2016. To determine the seasonal adjustment factor, the parking revenue collected during the months the utilization surveys were completed were compared to the 90th percentile parking revenue ($45,586.21). Error! Reference source not found. **C-1** displays the 2016 monthly parking revenues.

The summer period parking utilization surveys are assumed to be representative of typical summer time operations and were not adjusted. To determine the extent to which the parking patterns vary between summer and non-summer periods, the results are compared.

Exhibit C- 1: 2016 Monthly Parking Revenues



Based on the assessment of 2016 monthly parking revenues, a seasonal adjustment factor of 1.058 ($45,586.21 / $43,085.22) was applied to the non-summer parking demand data.

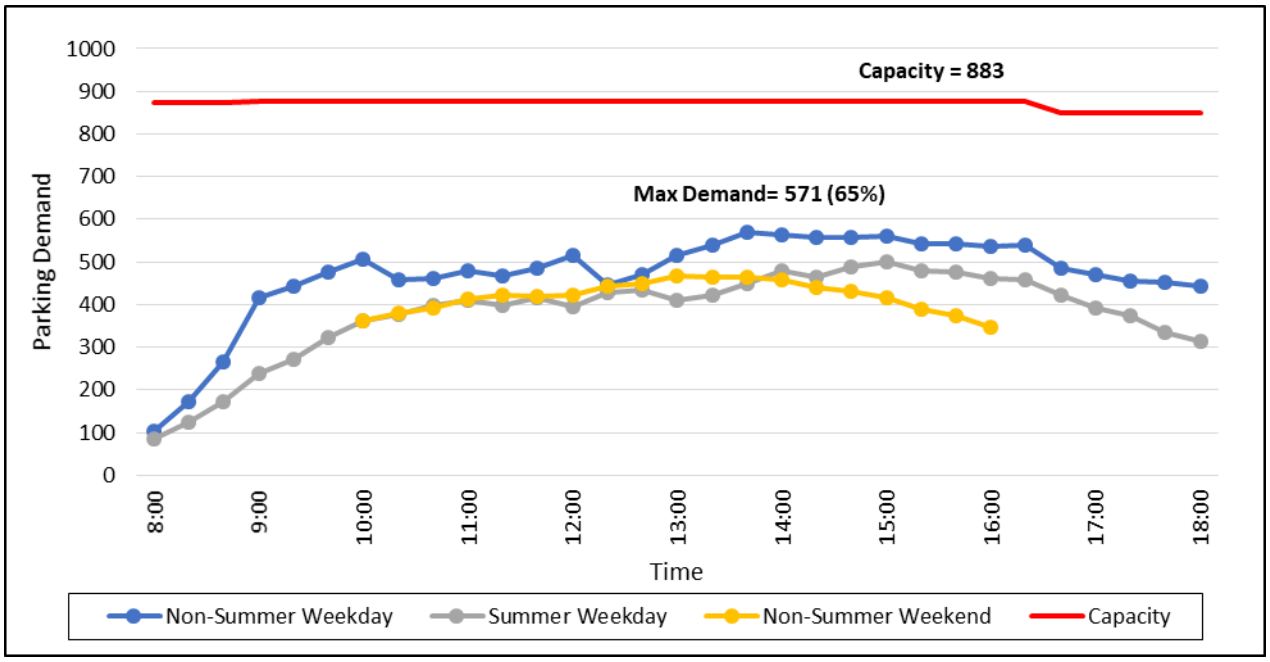
Error! Reference source not found. **C-1** shows very large fluctuations in monthly revenues, which are not typically observed when comparing consecutive months of data. If the calculated seasonal adjustment factor was applied during the non-summer weekend (conducted in October), the weekend demand would be increased by 67%, which is unrealistically large. In lieu of a realistic seasonal adjustment factor, a sensitivity assessment was conducted instead. To determine the impact day-to-day parking demand fluctuations have on the system's performance, the non-summer weekend parking performance was evaluated considering a 10% increase in observed parking demand.

Downtown Whitby Parking Utilization

A parking utilization analysis was conducted using the seasonally adjusted parking demand data to identify locations where parking operates at or near capacity. Parking systems are considered "effectively full" at an occupancy of approximately 85-90%, depending on lot size and other characteristics. This represents the point where finding a space is challenging for drivers, resulting in an increased likelihood of a driver having to search for an available parking space.

Error! Reference source not found.**C-2** shows the system wide Downtown Whitby parking occupancy. Note that the parking supply decreases between 4:30 p.m. and 6:00 p.m. since on-street parking is restricted on Dundas Street between Brock Street and Euclid Street / Henry Street and Mary Street between Brock Street and Byron Street.

Exhibit C- 2: System Wide Whitby Parking Utilization



Observations from the Downtown Whitby parking utilization results:

- The non-summer weekday period had the highest overall parking utilization (65% occupied), followed by summer weekday (56% occupied), and non-summer weekend (47% occupied);
- The non-summer weekday peak demand occurred at 1:40 p.m., summer weekday occurred at 3:00 p.m., and the non-summer weekend peak occurred at 2:00 p.m.; and
- Demand remained below the 85% effective capacity.

Although the results appear to indicate the overall Whitby parking system is considered sufficient to accommodate the observed parking demand it is important to note that the removing the unmetered on-street parking outside of the Downtown core results in a capacity of 731.

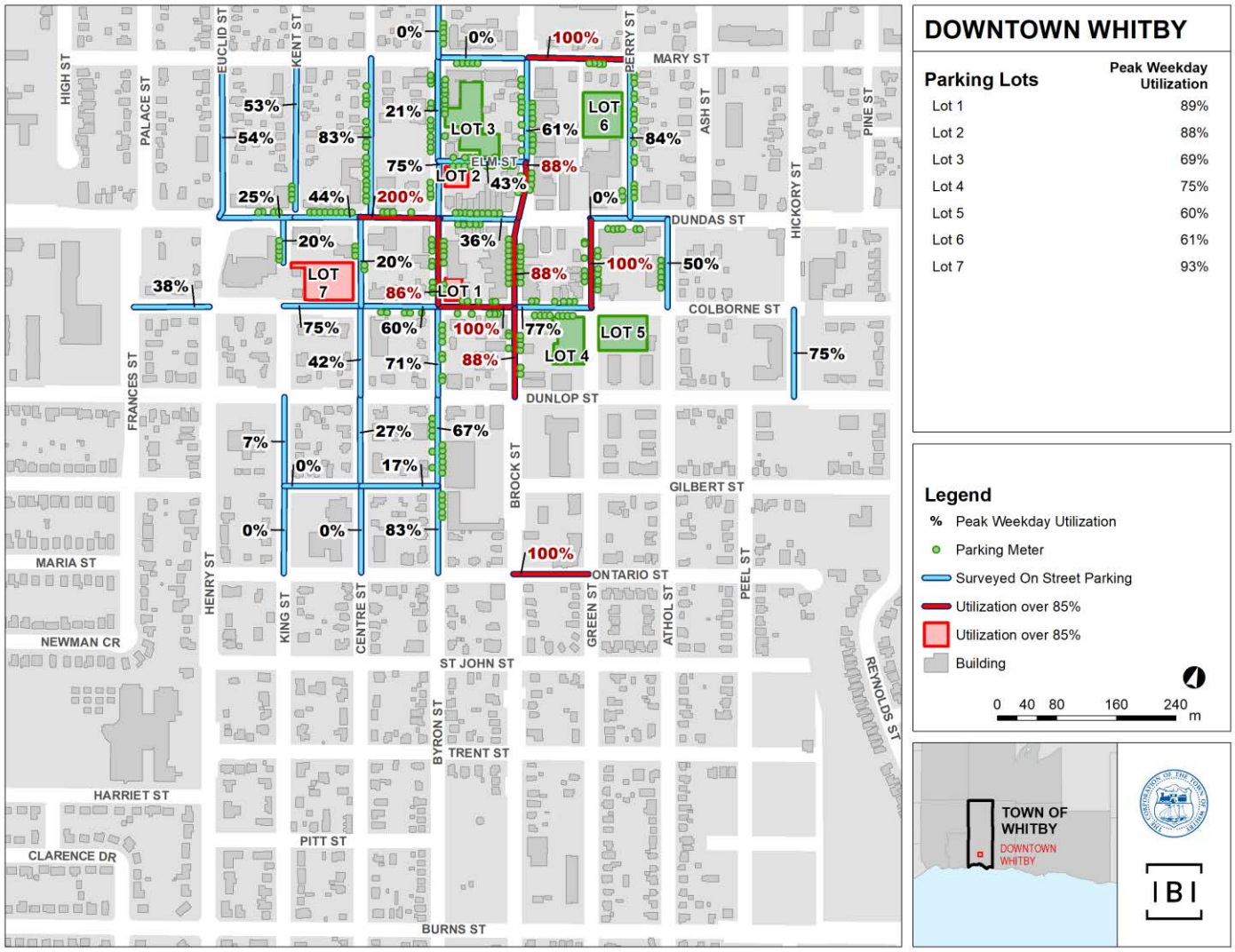
While sufficient parking opportunities may be available system wide, individual lots and street segments are observed to operate near or at capacity. **Error! Reference source not found.** geographically displays the lot-by-lot and street-by-street parking utilization observed during the period of peak parking demand for the system as a whole (1:40 p.m. to 2:00 p.m.).

Based on the results displayed in **Error! Reference source not found.**, the following conclusions may be drawn:

- Out of the 36 on-street segments that were surveyed, nine segments are operating above 85% capacity, with five operating at 100% capacity. Occupancies above 100% occurred due to illegal parking;
- Out of the seven off-street lots that were surveyed, Lots 1, 2, and 7 are operating above 85% capacity;
- The on-street parking demand on Dundas Street between Centre Street and Byron Street appears to be operating at 200% capacity. This is due to vehicles parking on the south side of the street where parking is not permitted.
- In general, higher parking demand was observed at on- and off-street facilities along Brock Street and the north-south roads that are south of Dundas Street; and

The unmetered parking supply in the residential areas surrounding the commercial core is not intended to serve the parking needs of nearby commercial establishments.

Exhibit C- 3: Downtown Whitby Peak Parking Utilization (Non-Summer Weekday 1:40 p.m. to 2:00 p.m.)



While **Error! Reference source not found.** displays the parking system's occupancy during the system wide peak period, individual lots may experience peak demand at various times. Error! Reference source not found. shows the maximum utilization for each Whitby off-street municipal lots and the time and period the peak demand was observed.

Exhibit C- 4: Whitby Off-Street Municipal Lot Peak Utilization

Off Street Lot	Capacity	Peak Demand	Peak Utilization	Time of Peak Demand	Survey Period
Lot 1	18	20	111%	2:00 - 2:20 p.m.	Non-Summer Weekend
Lot 2	25	29	116%	2:00 - 3:20 p.m.	Non-Summer Weekday
Lot 3	89	79	89%	6:00 - 6:20 p.m.	Non-Summer Weekday
Lot 4	76	66	87%	3:00 - 3:20 p.m.	Non-Summer Weekday
Lot 5	83	52	63%	11:40 a.m. - 1:20 p.m.	Non-Summer Weekday
Lot 6	82	63	77%	11:00 - 11:20 a.m.	Summer Weekday
Lot 7	81	96	119%	2:00 - 2:20 p.m.	Non-Summer Weekend

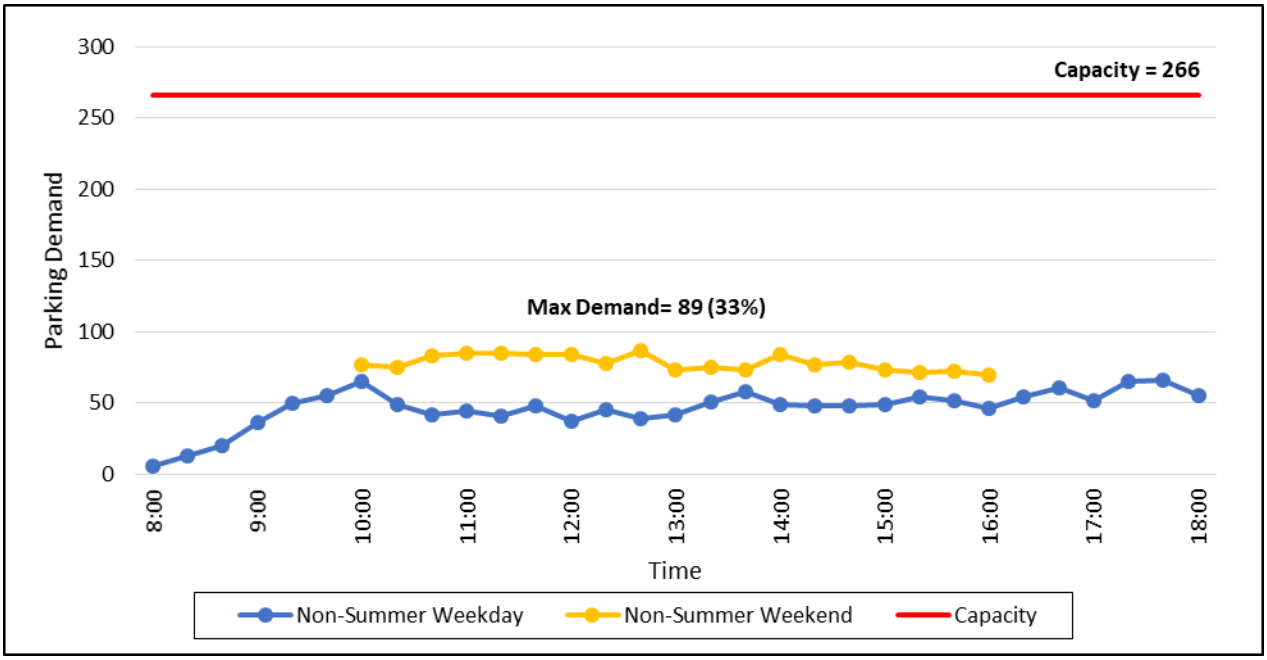
In general, Whitby's Downtown parking lots were observed to peak during the non-summer weekday period, which is consistent with the observed system wide period of peak demand. Lot 6 was observed to peak at 77% utilization at 11:00 a.m. during the summer weekday period. Given that operations are below the 85% effective capacity threshold, no operational issues are observed. Lot 1 and Lot 7, which are located within 200m of each other, were observed to operate over capacity at 2:00 p.m. during the non-summer weekend period. This suggests that an off-street parking supply expansion in close proximity would be beneficial.

It is noted that the inventory and analysis was completed prior to the loss of Municipal Lot 4 for redevelopment. The redistribution of vehicles previously parked in Municipal Lot 4 will increase the utilization of on-street parking and municipal lots in the area, such as Municipal Lot 5.

Downtown Brooklin Parking Utilization

Similar to Downtown Whitby, a parking utilization analysis was conducted for Downtown Brooklin. Error! Reference source not found. shows the system wide Downtown Brooklin parking occupancy.

Exhibit C- 5: System Wide Brooklin Parking Utilization



Some observations from the parking utilization results:

- The non-summer weekend period experienced higher demand than the non-summer weekday period;
- The peak parking demand of 89 vehicles (33% utilization) occurred at 12:40 p.m. during the weekend period; and
- The peak period parking demand operates below effective capacity.
- Brooklin Lot 9 operated under capacity at all times with a peak parking demand of 5 vehicles (7% utilization) observed during the summer. While three on-street segments operated above the 85% effective capacity threshold during the system wide peak, available on-street parking opportunities are available nearby.

Based on these results, the existing Brooklin parking system is considered sufficient to accommodate the observed parking demand.

Parking Turnover

On-street parking is intended to serve short term visitors to the Downtown core, and experience higher turnover rates than off-street parking. Currently, vehicles in Whitby are permitted to park up to 2 hours in metered on-street spaces and up to 3 hours in

unmetered spaces. Note that Baldwin Street in Downtown Brooklin is under the jurisdiction of the Ministry of Transportation. Daily parking opportunities are available at the off-street parking facilities for both core areas.

A complete review of Whitby's and Brooklin's on-street parking turnover and duration was undertaken for the summer weekday, non-summer weekday, and non-summer weekend periods. Parking turnover and duration data was collected during the parking utilization surveys.

Whitby Metered On-Street Parking Turnover

The parking duration data was collected for the following number of unique vehicles (originally parked vehicles that do not park again elsewhere):

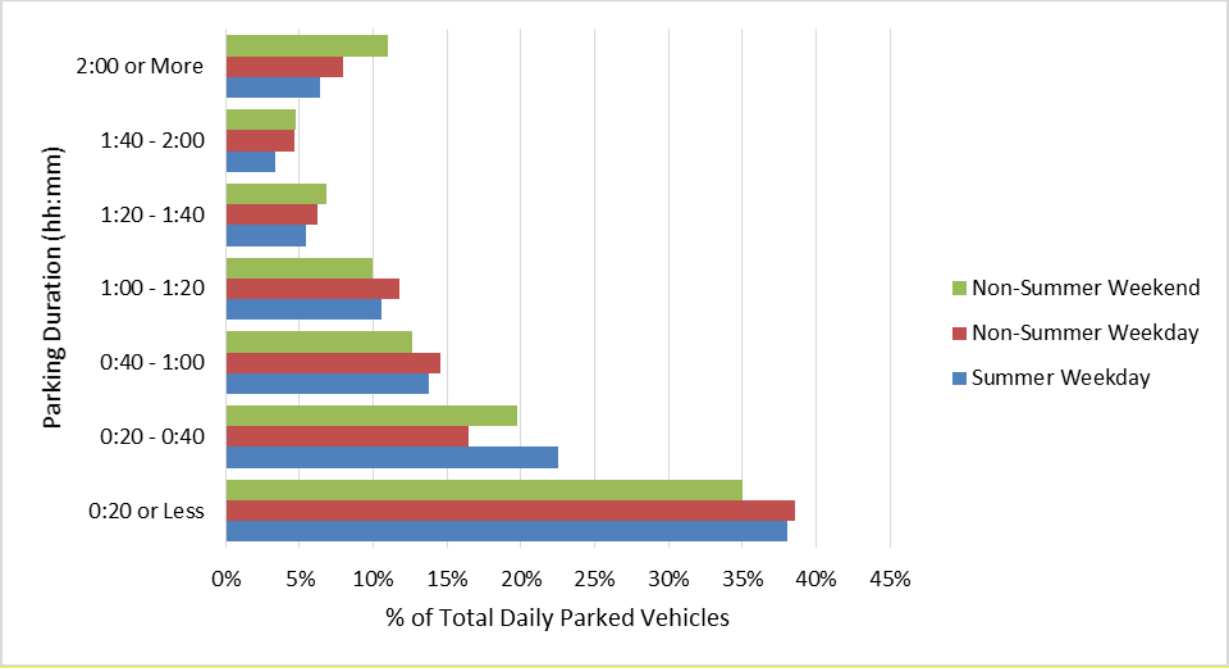
1,222 vehicles during the summer weekday period;

1,212 vehicles during the non-summer weekday period; and

845 vehicles during the non-summer weekday period.

The on-street parking turnover assessment results for Whitby's metered parking supply is displayed in **Error! Reference source not found.**.

Exhibit C- 6: Metered On-Street Parking Duration



Considering **Error! Reference source not found.,** the following observations are made:

- As a general trend, an inverse relationship is observed between the parking duration and the proportion of vehicles. In other words, as the parking duration increases, the proportion of vehicles is observed to decrease;

- Most vehicles parked for less than 20 minutes, representing 38%, 39%, and 35% of the total vehicles parked during the summer weekday, non-summer weekday, and non-summer weekend periods, respectively. Shorter on-street parking durations tend to benefit local establishments since it results in higher turnover and a greater number of daily vehicles parked;

- A significant portion of vehicles parked for more than 2 hours, exceeding the maximum metered on-street parking duration. This represents 6%, 8%, and 11% of the total vehicles parked during the summer weekday, non-summer weekday, and non-summer weekend periods, respectively.

The following streets were observed to have vehicles exceed the 2-hour maximum duration during all three periods:

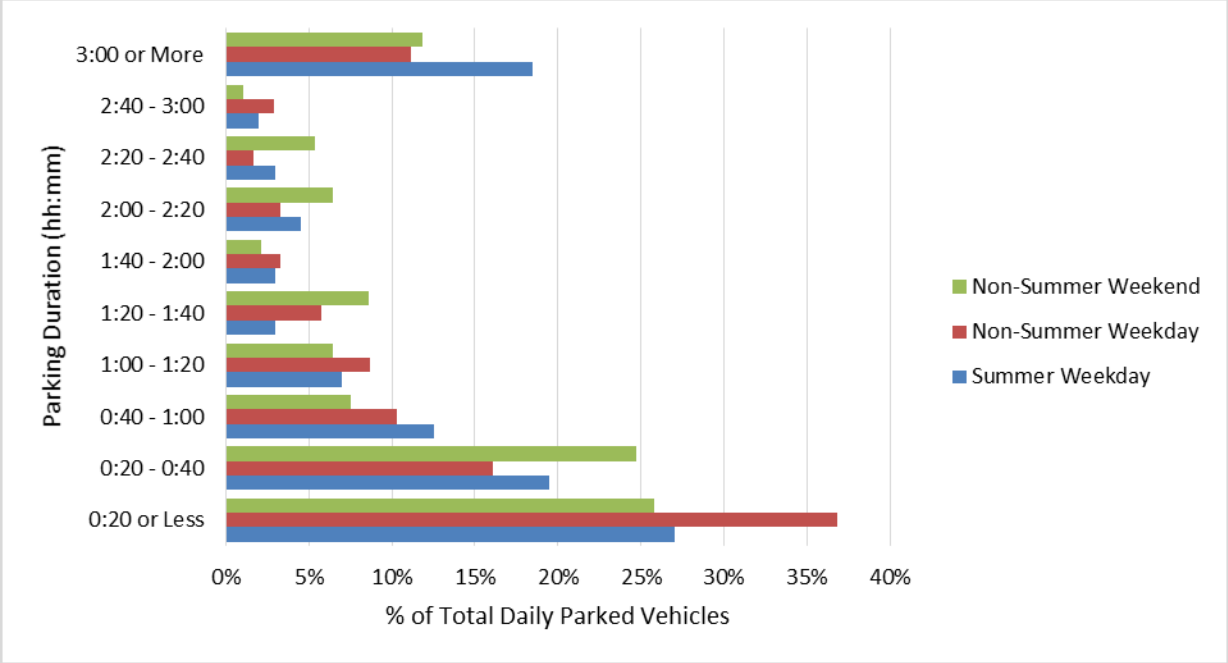
- Byron Street between Ontario Street and Dunlop Street;
- Byron Street between Colborne Street and Dundas Street;
- Brock Street between Colborne Street and Mary Street;
- Green Street between Colborne Street and Dundas Street;
- Perry Street between Dundas Street and Mary Street;
- Dundas Street between Byron Street and Brock Street;
- Colborne Street between Byron Street and Green Street; and
- Elm Street between Brock Street and Byron Street.

Whitby Unmetered On-Street Parking Turnover

The parking survey included 200 unique vehicles during the summer weekday period, 242 unique vehicles during the non-summer weekday period, and 93 vehicles during the non-summer weekday period.

The on-street parking turnover assessment results for Whitby's unmetered parking supply is displayed in Error! Reference source not found..

Exhibit C- 7: Unmetered On-Street Parking Duration



Considering Error! Reference source not found., the following observations are made:

- Similar to metered parking, an inverse relationship is observed between the parking duration and the proportion of vehicles parked in unmetered spaces;
- In general, vehicles in unmetered spaces are parked for longer than vehicles in metered spaces. This is because the maximum duration of an unmetered space is greater than the maximum duration of a metered space;
- The majority of vehicles parked for less than 20 minutes, representing 27%, 37%, and 26% of the total vehicles parked during the summer weekday, non-summer weekday, and non-summer weekend periods, respectively;
- Unmetered parking experiences lower demand compared to metered parking. This is because metered parking spaces are located closer to commercial buildings in the Downtown core, which is more desirable than parking in residential neighbourhoods;
- A significant portion of vehicles parked for more than 3 hours, exceeding the maximum unmetered on-street parking duration. This represents 19%, 11%, and 12% of the total vehicles parked during the summer weekday, non-summer weekday, and non-summer weekend periods, respectively.

The following streets were observed to have vehicles exceed the 3-hour maximum duration during all three periods:

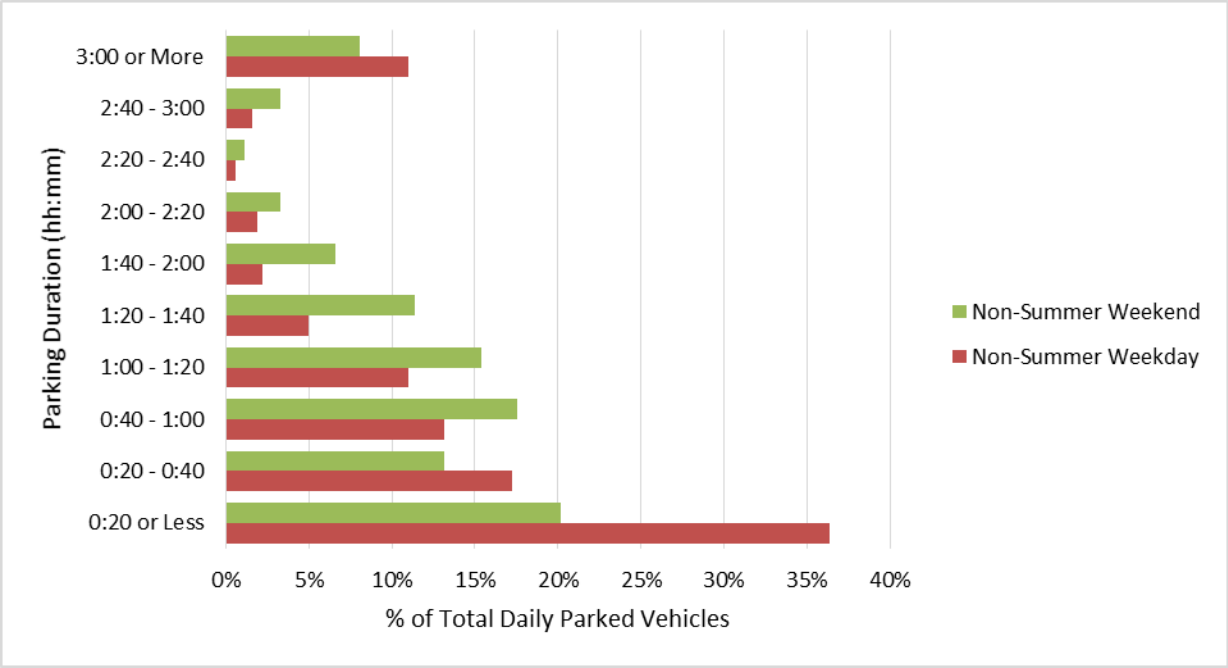
- Euclid Street between Dundas Street and Mary Street;
- Kent Street between Dundas Street and Mary Street; and
- Centre Street between Gilbert Street and Dunlop Street.

Brooklin On-Street Parking Turnover

The parking survey included a total of 319 unique vehicles during the summer weekday period and 273 vehicles during the non-summer weekday period.

The on-street parking turnover assessment results for Brooklin’s on-street parking system is shown in Error! Reference source not found..

Exhibit C- 8: Brooklin On-Street Parking Duration



Considering Error! Reference source not found., the following observations are made:

- An inverse relationship is observed between the parking duration and the proportion of vehicles parked in on-street spaces;
- The most vehicles parked for less than 20 minutes, representing 36% and 20% of the total vehicles parked during the non-summer weekday and non-summer weekend periods, respectively. As stated previously, shorter parking durations benefit local establishments due to the greater turnover rate;
- A significant number of vehicles were parked for more than 3 hours, which represents 11% and 8% of all vehicles parked during the non-summer weekday and non-summer weekend periods, respectively. Currently, there is no maximum duration for on-street parking along Baldwin Street; and
- In the event on-street paid parking operations are implemented, a maximum parking duration consistent with Downtown Whitby is recommended.

Existing Parking Summary

Based on the existing conditions findings, the following conclusions are drawn:

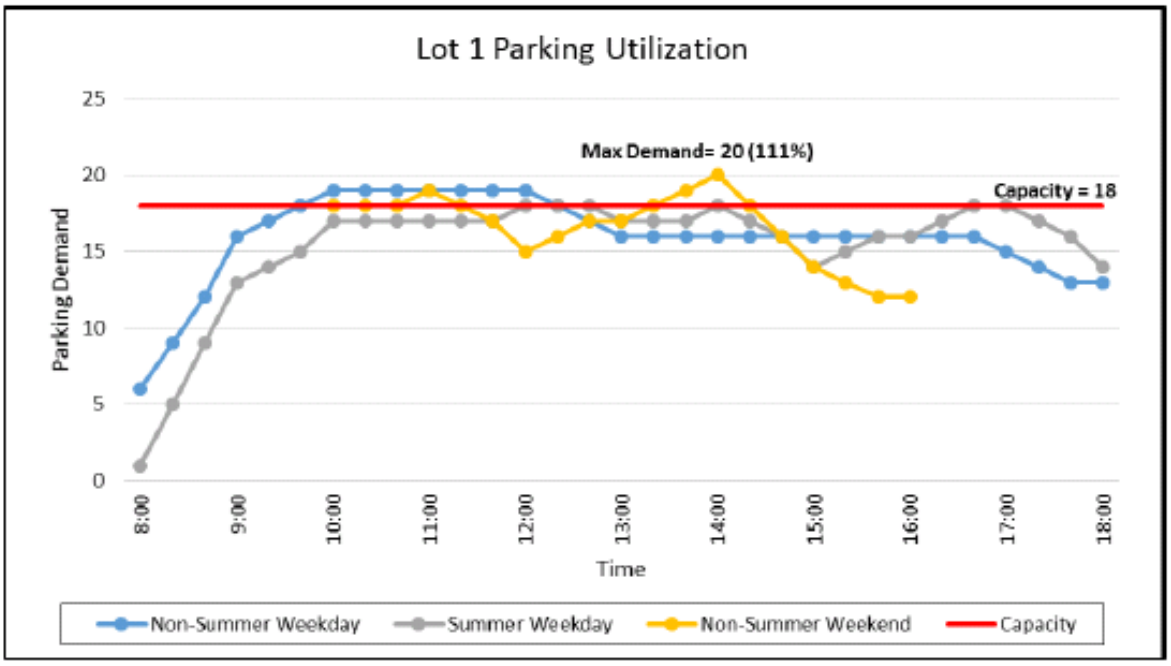
Parking inventory and utilization surveys were completed for the Downtown Whitby and Brooklin study areas during the summer weekday and non-summer weekday and weekend periods. The Whitby parking system experienced a peak parking demand of 570 vehicles (65% utilization) which occurred at 1:40 p.m. during the non-summer weekday period.

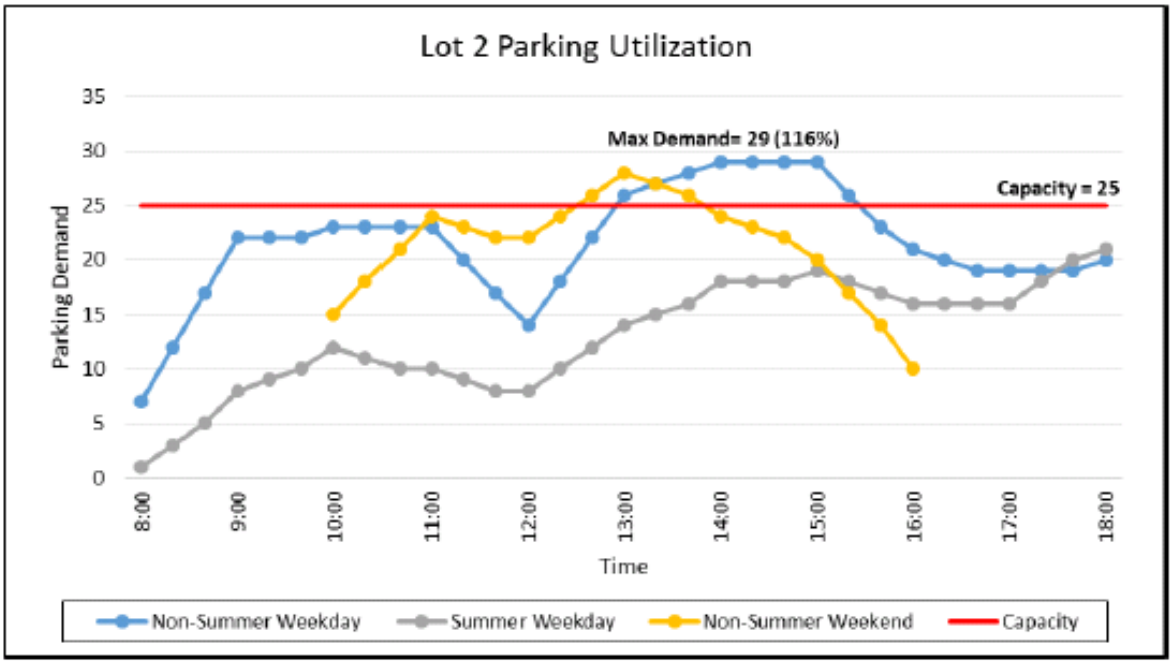
While sufficient parking opportunities are provided system wide in Whitby, Municipal Lots 1, 2, and 7 and several street segments were observed to operate near or at capacity over a few hours. A parking supply expansion in close proximity to Lot 7 (Whitby Public Library) would be beneficial, given that there are no additional available parking opportunities within 300-400 metres (which is a typically acceptable walking distance to find parking opportunities).

The Brooklin parking system experienced a peak parking demand of 89 vehicles (33% utilization) which occurred at 12:40 p.m. during the non-summer weekend period. While, three on-street segments operated above 85% capacity, parking opportunities were available nearby.

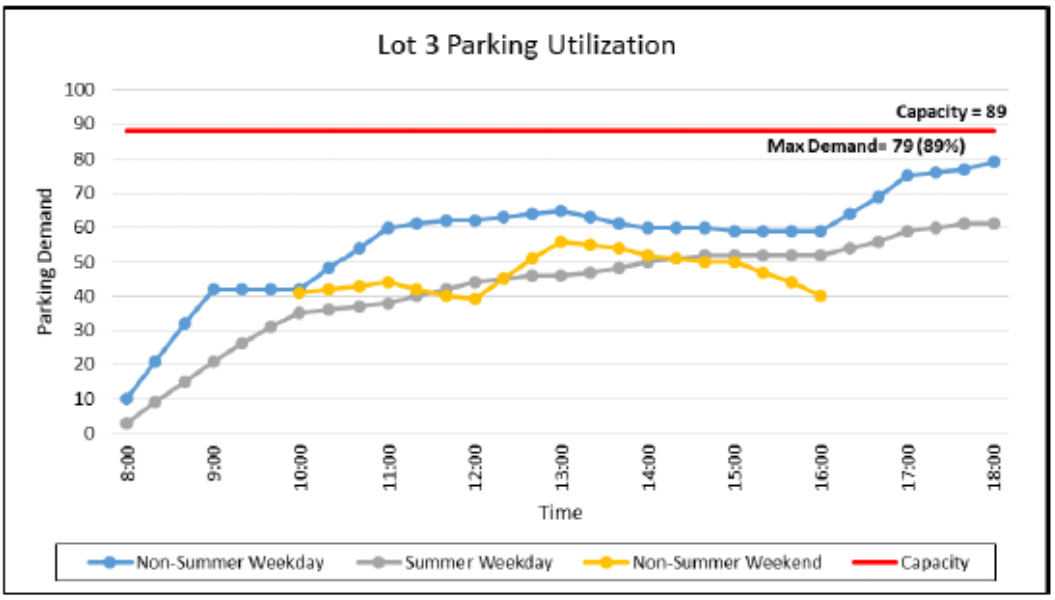
The turnover surveys revealed an inverse relationship between parking duration and the proportion of vehicles parked in on-street spaces, which is expected. In Whitby, a significant number of vehicles park for longer than the maximum permitted duration.

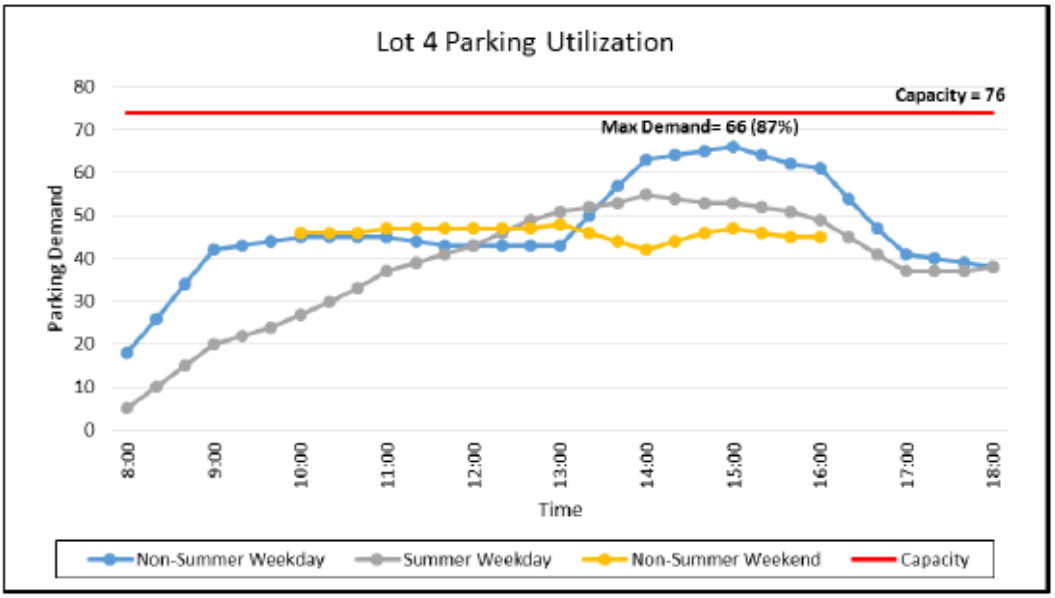
Appendix C-1 Parking Utilization Graphs





Appendix C – Parking Utilization





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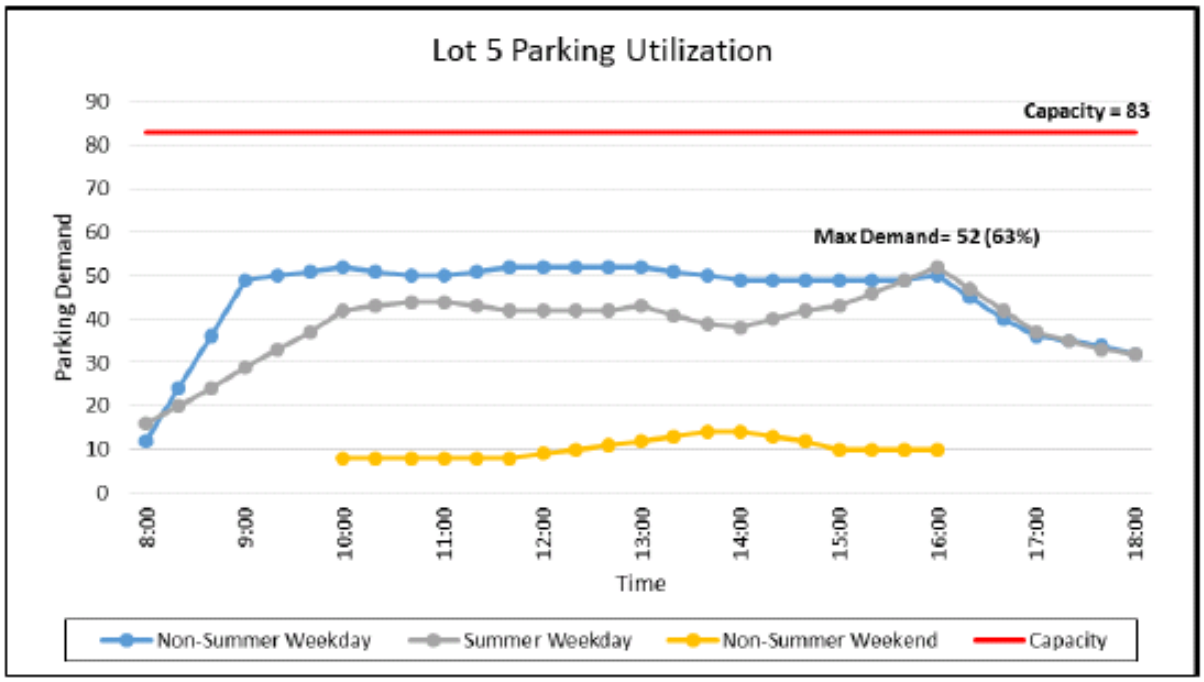

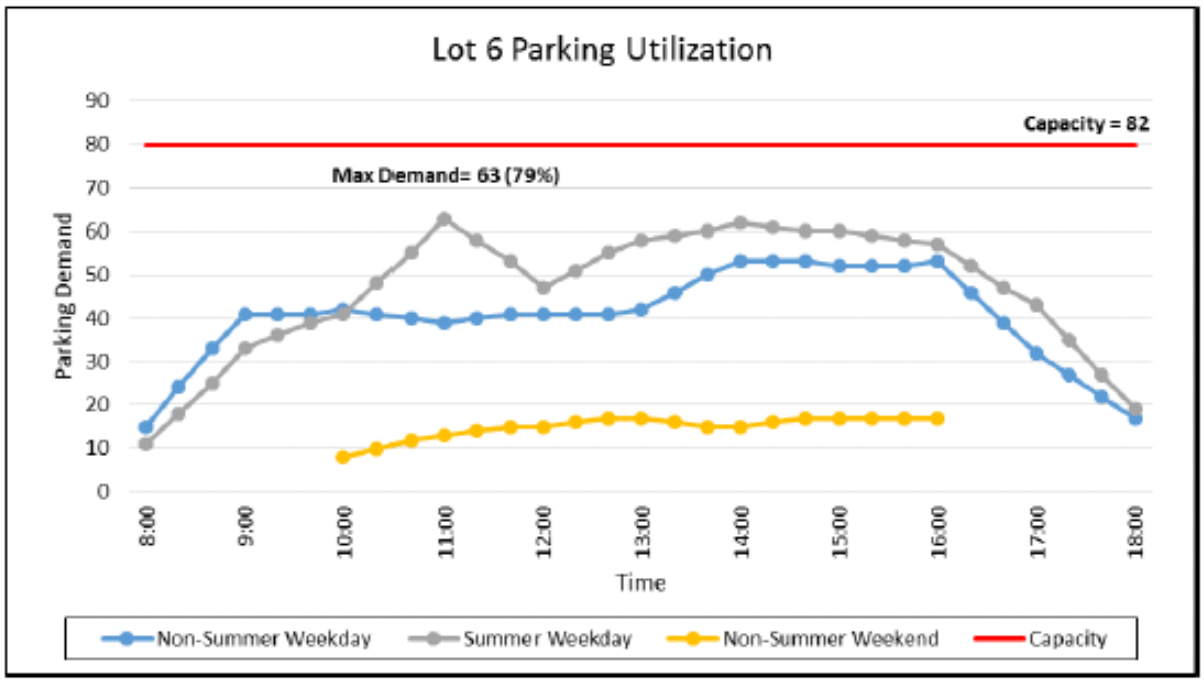

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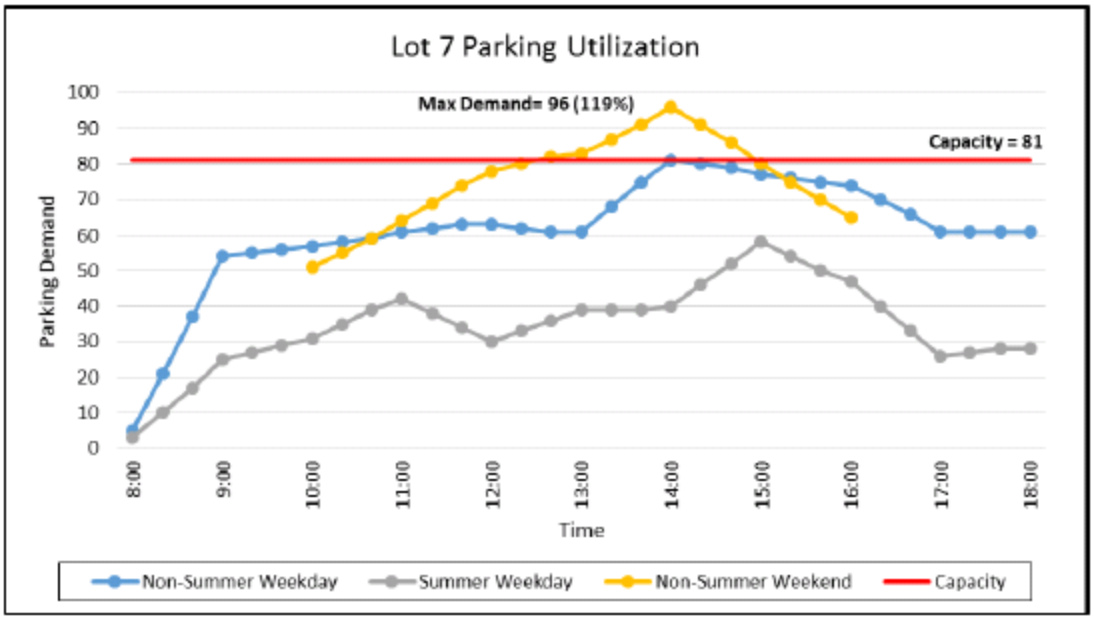

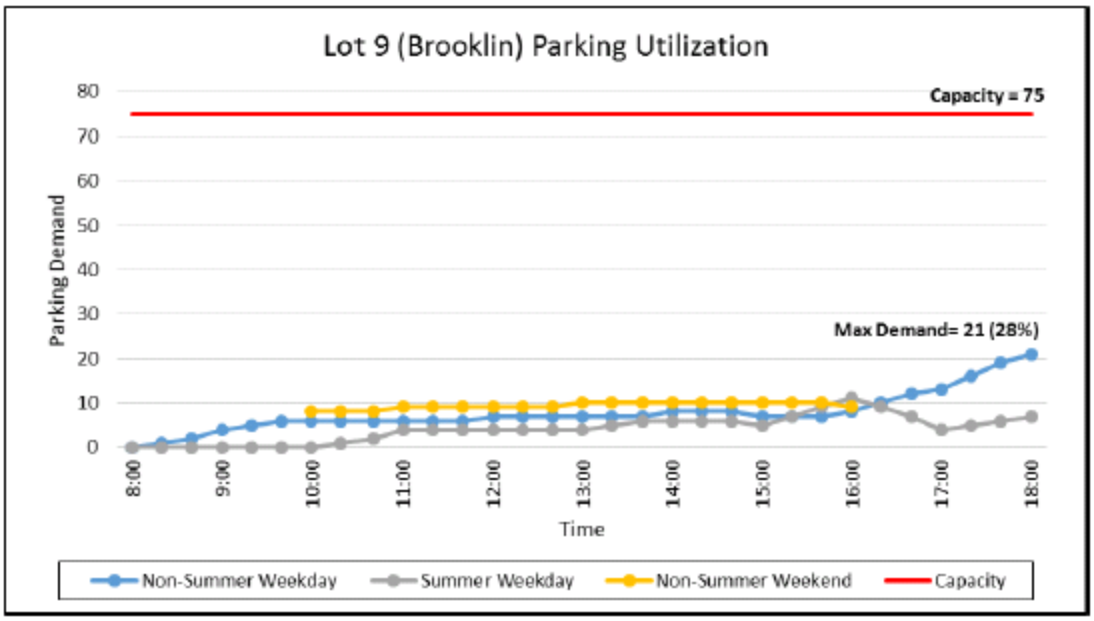

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