



To: The Glebe BIA From: Hassan Madhoun, P.Eng, ENV SP

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Reference: 2020 Glebe BIA Bank Street Research Project (Update)

1.0 INTRODUCTION

Stantec Consulting Ltd. (Stantec) was retained by The Glebe Business Improvement Area (BIA) to assist with the completion of a research project to better understand the potential impacts to traffic demands and travel patterns within the Glebe due to the proposed Bank Street Lane Reduction project, as well as the impacts of the Coronavirus (COVID-19).

2.0 BACKGROUND

The Glebe BIA initiated a research project to better understanding the impacts and long-term implications of the proposed Bank Street lane reduction project on mobility and access to the Glebe. As part of that effort, the Glebe BIA wanted to understand the change in traffic demands and travel patterns to and from the Glebe due to the increased adoption and acceptance of teleworking to support social distancing guidelines.

The research project aimed at providing additional insights answering the following questions:

- How have traffic volumes and travel patterns on Bank Street change since the Coronavirus outbreak?
- 2. Who is currently visiting the Glebe? Where are they generally coming from within the National Capital Region (NCR)?
- 3. How have commuter-based trips that typically pass through the Glebe change over the last few months?
- 4. With changes in travel behavior due to increased teleworking, what are the potential medium and long-term implications to travel patterns to and through the Glebe? How will that affect the proposed lane reduction on Bank Street?

3.0 METHODOLOGY

The research project utilized the *StreetLight* data to gain insights on transportation metrics. StreetLight is a cloud-based transportation analytics platform that utilizes cellular data to gain insights on transportation and mobility metrics.

StreetLight generates travel metrics by aggregating anonymized location-based data from millions of smartphone devices. This anonymized, aggregated data is collected from hundreds of mobile app partners in several categories (games, productivity, travel, communications), representing between 20-30% of the travelling population, depending on the corridor. That is, for every 100 travelers on a road, location data is collected from 20-30 via one or more apps. This location-based data stream can be used to understand



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where trips start, end, how fast travelers are moving, and what routes they use. By aggregating demand along key routes, it is possible generate information on total travel demand on each route. Trip purpose and traveler demographics are also possible by overlaying census demographics on the observed trip origins and destinations. Using this combination of sources, it is possible to get information on travel demand, origin-destination, trip purpose, and traveler demographics.

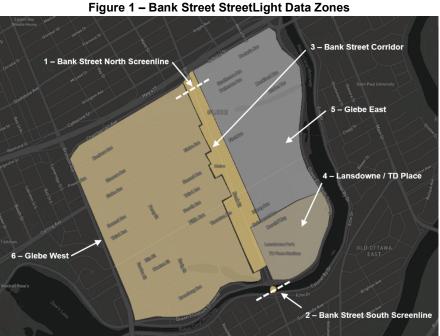
Historical average monthly travel data is available to 2016, although it is recommended that data be used starting in 2018 data since the collection methods and sample rates have changed over time. Recent data is typically summarized 2 to 4 weeks after it has been collected and processed (for example, early November data is typically made available in December 2020).

For this research project, the StreetLight Essentials package was used to obtain average monthly historical traffic data for the months of January through to October for the years 2019 and 2020. The Essentials package only reflects vehicular traffic datasets and does not include other modes of travel such as walking, cycling or transit. As a result, the analyzed data provides insights as to how people are travelling to or through the Glebe on Bank Street by automobile. Internal trips within the Glebe, which are likely to occur by walking or cycling, are not captured as part of this research project.

The following zones were coded within the StreetLight platform to query average monthly trip information:

- 1. Zone 1 Bank Street North Screenline
- 2. Zone 2- Bank Street South Screenline
- 3. Zone 3 Bank Street Corridor
- 4. Zone 4 Lansdowne / TD Place
- 5. Zone 5 Glebe West
- 6. Zone 6 Glebe East

Figure 1 illustrates the boundaries assigned within StreetLight.



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Zones 1 and 2 (Bank Street Screenlines) were assigned to capture and gauge total traffic travelling on Bank Street.

Zone 3 (Bank Street), Zone 4 (Lansdowne / TD Place), Zone 5 (Glebe East), and Zone 6 (Glebe West) were setup to capture trips destined to and from these zones.

4.0 DATA OUTPUTS

Monthly Traffic Volume Comparison

Average daily StreetLight data points were obtained, analyzed and compared for each month in 2019 and 2020. This included the total number of StreetLight data points traveling on Bank Street, as well as the proportion of trips destined to/from each of the study area zones (i.e. Zones 3 through to 6).

Average daily traffic volume comparisons for the months of January through to October are summarized in **Appendix A**.

The following observations were made based on the observed data:

- Relative traffic volumes on Bank Street increased in January and February of 2020 in comparison to 2019 levels for the same months.
- Traffic volumes in March 2020 and April 2020 decreased in comparison to 2019 levels (-17% in March 2020, and -41% in April 2020). The drop in overall traffic volumes coincides with the timing of the declaration of the state of emergency in Ottawa and the lockdown measures in response to the COVID-19 pandemic:
 - The proportion of trips on Bank Street destined to/from the Bank Street Corridor (Zone 3),
 Glebe East and Glebe West neighborhoods did not change during this period.
 - Trips destined to/from Lansdowne / TD Place significantly decreased during this period from an average of 14% of total trips on Bank Street down to 5 to 6% in March and April 2020.
- Traffic activity on Bank Street stabilized during the months of May, June and July of 2020 with traffic volume levels observed to be between -17% and -19% below 2019 levels:
 - During this period (May to July), trips destined to Lansdowne / TD Place remained consistent with earlier months with only 6% of total traffic on Bank Street destined to/from this zone.
- Overall traffic volumes on Bank Street were observed to rebound starting in August 2020 through to October 2020. During this period, relative traffic volumes on Bank Street were -5.7% below those in August 2019.
 - Trips destined to Lansdowne / TD Place rebounded to similar levels seen in 2019 with 12% of total traffic on Bank Street destined to/from this zone.



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- Traffic volumes in September 2020 were observed to rebound to 2019 levels (-0.8% change):
 - The proportion of trips destined to the Bank Street Corridor (Zone 3) increased from 13% in 2019 to 15% in 2020.
 - Pass-thru traffic volumes on Bank Street were observed to be consistent with 2019 levels (38%).
 - Trips destined to Lansdowne / TD Place (Zone 4) rebounded to similar levels seen in 2019 with 11% of total traffic on Bank Street destined to/from this zone.
- Traffic volumes in October 2020 were observed to be slightly below 2019 levels (-7.9% change):

Average Weekday and Weekend Traffic Profile

Hourly traffic volume profiles were developed to visualize any changes in overall travel demand and peak periods throughout a typical weekday and weekend for each month.

Average daily traffic profiles are included in Appendix B.

The following observations were made based on the observed data:

- Relative traffic volumes on Bank Street increased in January and February 2020 in comparison to 2019 levels.
- 2020 traffic volumes were significantly lower than 2019 levels for the months of March and April 2020.
- For the months of May 2020 to October 2020, early morning (6:00 am 9:00 am) and afternoon (3:00 pm 6:00 pm) traffic volumes were significantly lower than those in 2019. However, an increase in mid-day travel is observed during this period (11:00 am 3:00 pm).

This suggests that while average daily traffic volumes on Bank Street may have started to rebound to 2019 levels, the traffic demand profile over the course of the day has changed. The AM and PM peak periods associated with the morning and afternoon commuting trips have significantly decreased over the last few months due to the adoption of teleworking. While the traffic volumes during the day have increased, likely due to flexibility in schedules and the ability to complete errands and trips to nearby services in the middle of the day.

<u>Trip Purpose (September)</u>

Trip purpose data was reviewed and compared for the months of September 2019 and September 2020. This period was chosen as total traffic volume levels were comparable. In addition, this time period also captures the start of the school year and the end of the summer holiday period.



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Trips were categorized under the following categories:

Home-Based-Work (HBW); represents trips that originate from home and end at work. This trip type generally represents commuter traffic in the morning and afternoon peak periods.

Home-Based-Other (HBO); represents trips that originate form home but are destined to another location. This includes trips from home to grocery stores, shops, restaurants, or services.

Non-Home-Based (NHB); represents trips that do not originate at home and are destined to other areas. This could include trips that are made during the day from work to a restaurant or a doctor's office, for example.

Data points by trip purpose was collected for Zone 1 (Bank Street North Screenline) and Zone 2 (Bank Street South Screenline) to capture pass through trips on Bank Street.

Table 1 and **Figure 2** summarize the total trips observed on Bank Street by trip purpose for the month of September in 2019 and 2020.

September 2019 September 2020 % Change in **Trip Purpose Proportion of Proportion of Data Points Data Points** Volume **Total Trips Total Trips** 19,707 40% 44% 7.8% 21,236 Home-Based-Other 6,940 14% 5,648 12% -18.6% Home-Based-Work 22,113 45% 21,927 45% -0.8% Non-Home-Based Total 48.762 100% 48.813 100% 0.1%

Table 2 - Bank Street StreetLight Data Zones

As illustrated in **Table 1**, the total number trips passing through the Glebe on Bank Street is relatively unchanged between September 2019 and September 2020. However, the total number of Home-Based-Work (HBW) trips significantly decreased in 2020 with 18.6% less observed trips over the course of a day.

In contrast, Home-Based-Other (HBO) trips saw a significant increase in 2020 with 7.8%, while Non-Home-Based (NHB) was relatively unchanged.

It is worth noting that Home-Based-Work (HBW) trips makeup a small portion of the total travel population over the course of a day. That is, people travelling on Bank Street to commute to work were between 12% and 14% of all vehicle trips over the course of a day. While the number of Home-Based-Work (HBW) trips has declined in 2020 due to COVID-19 and the adoption of teleworking, they have been mostly replaced with Home-Based-Other (HBO) trips, mostly occurring during non-peak midday periods. This suggests that many employees who would normally be at the office during the middle of the day are instead working from home, and have the flexibility to make more retail or service trips during the middle of the day. That is, instead of traveling on Bank Street at 8:00 AM to get to work, people are now on the road at 12:00 PM for other trip



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purposes (shopping, recreation, dining). This indicates that while peak hour trips have declined as a result of fewer trips to and from work, travel demand has spread evenly over the course of the day with more traffic occurring in the midday peak period.

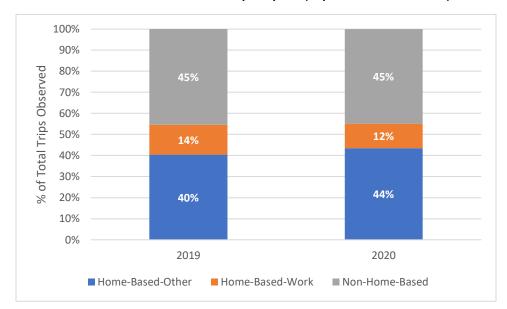


Table 1 - Bank Street Traffic Trip Purpose (September 2019 vs 2020)

Trip Origin-Destinations

The change in trip purpose shows that, while the total trip volumes along Bank Street are largely unchanged, the mix of travelers and trip purposes has changed since 2019. This can be further explored by examining trip origin points.

Appendix C illustrates the geographic areas of the National Capital Region that generated higher or fewer trips, on average, to the Glebe in 2020 as compared to 2019.

The maps show that traffic to and from the major office centers in downtown Ottawa and Gatineau have declined, but there are now more trips from nearby residential areas such as Overbrook and Alta Vista/Billings Bridge. For Zone 3 (Bank Street Corridor), a broad increase of trips from outlying residential suburbs within and outside of the Greenbelt was observed in 2020.

This is consistent with the finding that visitation to the Glebe is less comprised of office workers making trips during lunch or the evening hours (i.e. Non-Home-Based), and is more dependent on residents travelling from home for shopping, dining, and recreational trips in the middle of the day. It should be noted that COVID-19 traffic impacts are expected to be a short-term condition.



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Summary & Conclusions

1. How have traffic volumes and travel patterns on Bank Street change since the Coronavirus outbreak?

Overall vehicular traffic volumes on Bank Street decreased during the early months of the COVID-19 pandemic lockdowns (down by -41% in April 2020). Total vehicular traffic volumes were observed to bounce back to pre-pandemic levels by September.

While overall traffic volumes were observed to bounce back in September, a shift in travel patterns was observed. The traffic volume demand profile has shifted with less vehicular traffic observed during the AM Peak (6:00 am - 9:00 am) and PM Peak (3:00 pm - 6:00 pm) periods, indicative of the increased adoption of teleworking and decrease in commuting. Traffic demands were observed to shift to the midday, likely due to increased flexibility in work schedules and the ability to complete errands such as shopping, access to services, and other activities during the midday period.

2. Who is currently visiting the Glebe? Where are they generally coming from within the National Capital Region (NCR)?

Changes in trip origins to the Glebe vary depending on the area. Trips to the Bank Street Corridor (Zone 3), which represents the traditional main street merchant zone, were observed to increase from nearby residential neighbourhoods and outlying suburban areas including Kanata, Barrhaven, and Gatineau. Trips generally decreased from nearby areas such as Old Ottawa South, Carleton University, Carlington, Fisher Heights and Rideauview. This does not necessary suggest a reduction in total trips from nearby areas, rather it suggest that that less vehicle trips were made from those areas. It is likely that trips from nearby areas were completed by walking or cycling.

Trips to TD Place / Lansdowne (Zone 4) were observed to generally decrease from across the National Capital Region, particularly from downtown Ottawa and Hull. This is likely due to the closure of workplaces downtown and at Lansdowne, as well as the temporary cancellation of special events at TD Place. An increase of vehicle trips was observed from nearby residential areas to the east.

Trips to the Glebe East (Zone 5) and the Glebe West (Zone 6) vary drastically. Trips to the Glebe East, which is predominately residential, remained similar to 2019 levels, with the exception of significantly lower trips to/from Aylmer and more trips to/from downtown Ottawa.

Conversely, trips to the Glebe West (Zone 6), were observed to have less trips from outlying residential areas such as Kanata, Barrhaven, Findley Creek and Greely. A possible explanation for the distinction between Glebe East and Glebe West is the limitations placed on visitors to The Glebe Centre retirement home, which is located within Glebe West (Zone 6), during pandemic restrictions.



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3. How have commuter-based trips that typically pass through the Glebe change over the last few months?

Based on the Trip Purpose data analyzed for the months of September 2019 and September 2020, a 18.6% decrease in the Home-Based-Work (HBW) trip category was observed. These trips were replaced by Home-Based-Other (HBO) trips. This supports the travel demand pattern changes observed due to teleworking.

It is worth noting that Home-Based-Work (HBW) trips, which represent morning and afternoon workplace commuting trips, constitute a small portion of overall trips made over the course of a day. The proportion of HBW trips on Bank Street was estimated at 14% in September 2019, and 12% in September 2020.

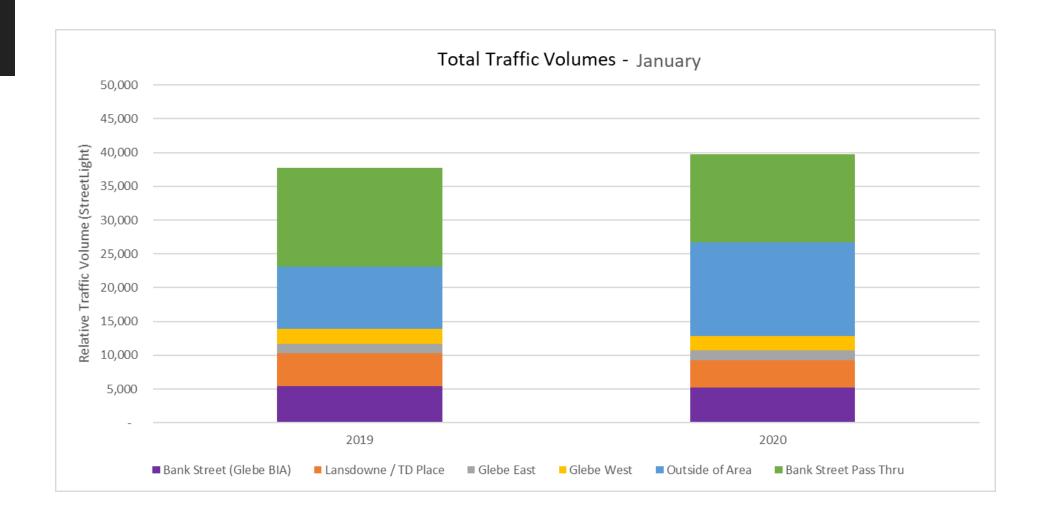
4. With changes in travel behavior due to increased teleworking, what are the potential medium and long-term implications to travel patterns to and through the Glebe? How will that affect the proposed lane reduction on Bank Street?

Moving forward, we expect a portion of the workforce to return to the office, while others will continue to work from home one or more days per week. As a result, it is likely that AM and PM peak hour traffic volumes, which coincide with the morning and afternoon commuting period, will be lower than 2019 levels.

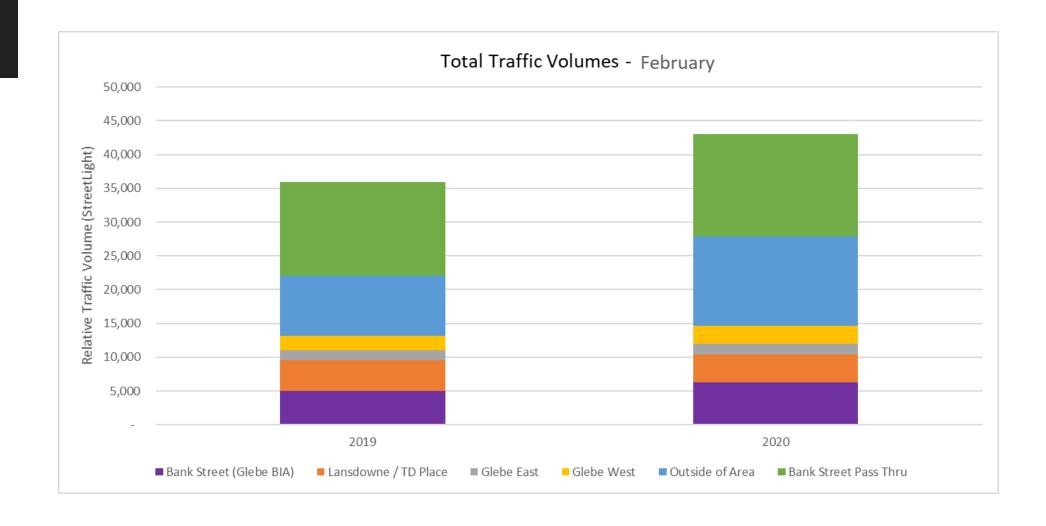
While a decrease in AM and PM peak hour traffic volumes is expected, it is anticipated that overall traffic demands on Bank Street will continue to grow due to urban development and intensification, particularly during the mid-day peak period. It is anticipated that the Bank Street corridor will continue to accommodate overall traffic daily traffic demands similar to pre-COVID conditions, however peak traffic demands will likely shift to the midday and weekend periods.

Appendix A: Monthly Traffic Volume Comparison

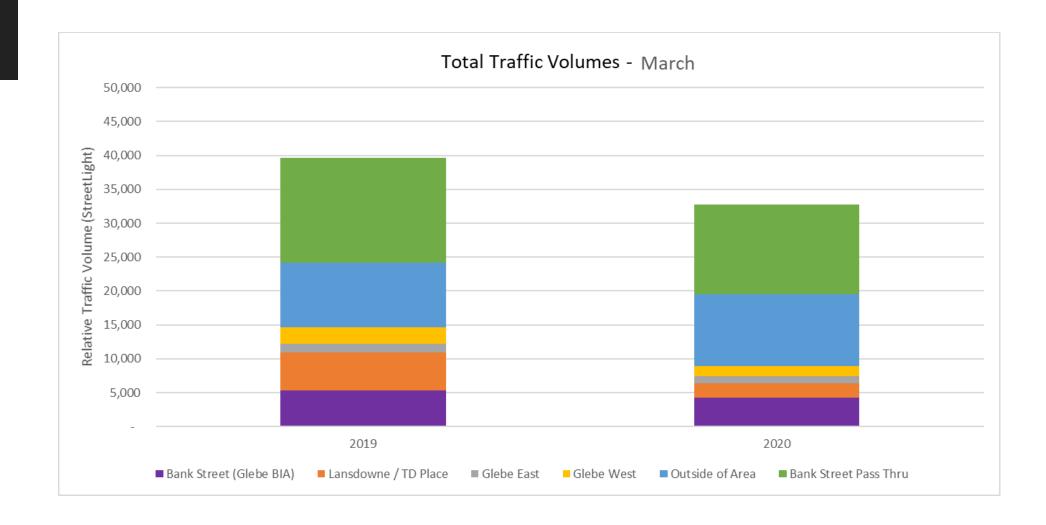
January	2019		2020		% Change
Bank Street Total Traffic Volumes	37,683	100%	39,704	100%	5.4%
Destinations					
Bank Street Corridor	5,404	14%	5,194	13%	-3.9%
Lansdowne / TD Place	4,892	13%	4,067	10%	-16.9%
Glebe East	1,409	4%	1,451	4%	3.0%
Glebe West	2,204	6%	2,164	5%	-1.8%
Outside of Area*	9,182	24%	13,803	35%	50.3%
Bank Street Pass Thru	14,592	39%	13,025	33%	-10.7%
* Denotes traffic destined to other areas through the	e Glebe (i.e Q	ED, Bronson)			



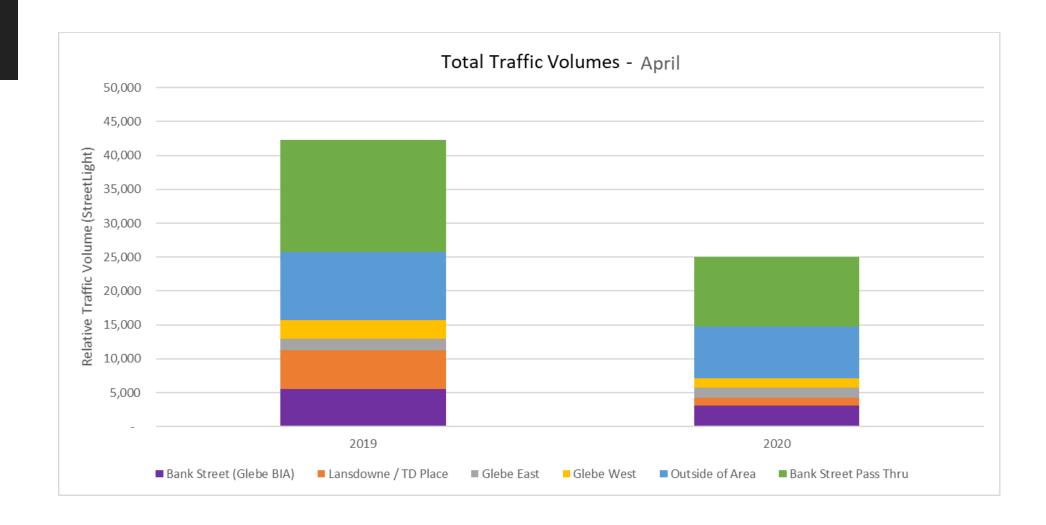
February	2019		2020		% Change
Bank Street Total Traffic Volumes	35,921	100%	43,043	100%	19.8%
Destinations					
Bank Street Corridor	5,009	14%	6,315	15%	26.1%
Lansdowne / TD Place	4,493	13%	4,125	10%	-8.2%
Glebe East	1,489	4%	1,588	4%	6.6%
Glebe West	2,191	6%	2,564	6%	17.0%
Outside of Area*	8,827	25%	13,330	31%	51.0%
Bank Street Pass Thru	13,912	39%	15,121	35%	8.7%
* Denotes traffic destined to other areas through the	e Glebe (i.e Q	ED, Bronson)			



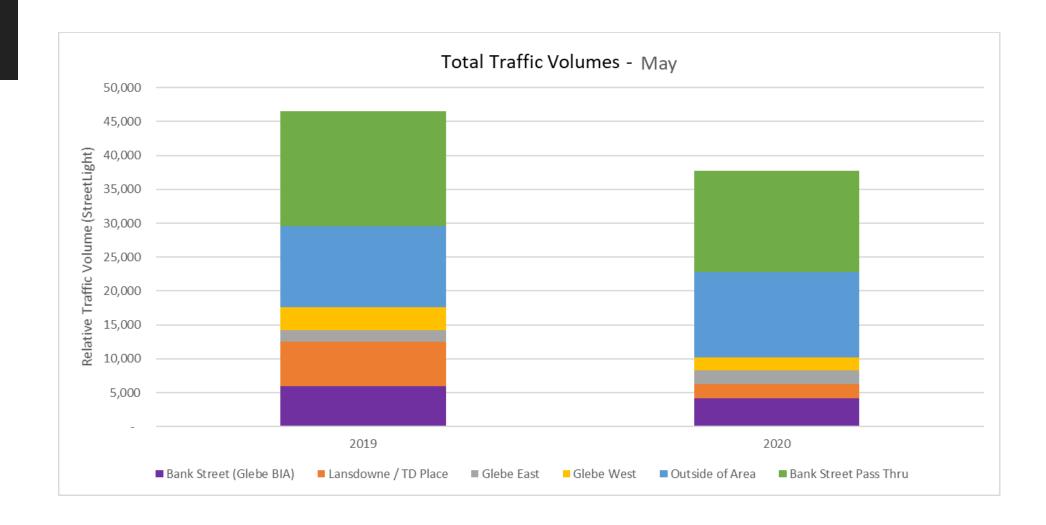
March	2019		2020		% Change
Bank Street Total Traffic Volumes	39,629	100%	32,788	100%	-17.3%
Destinations	,				
Bank Street Corridor	5,277	13%	4,249	13%	-19.5%
Lansdowne / TD Place	5,609	14%	2,126	6%	-62.1%
Glebe East	1,321	3%	1,041	3%	-21.2%
Glebe West	2,403	6%	1,537	5%	-36.0%
Outside of Area*	9,528	24%	10,608	32%	11.3%
Bank Street Pass Thru	15,491	39%	13,227	40%	-14.6%
* Denotes traffic destined to other areas through the	e Glebe (i.e Q	ED, Bronson)			



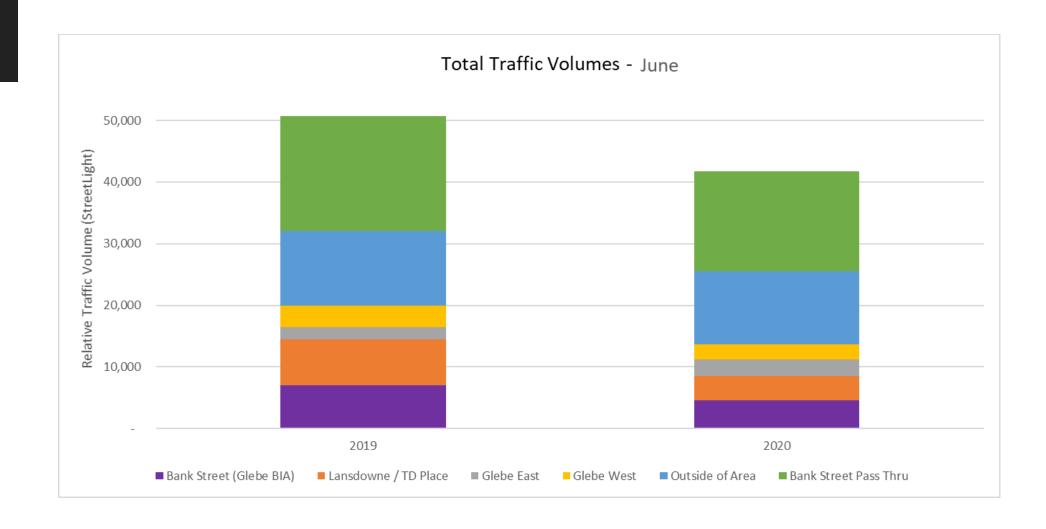
April	2019		2020		% Change
Bank Street Total Traffic Volumes	42,325	100%	24,987	100%	-41.0%
Destinations					
Bank Street Corridor	5,551	13%	3,085	12%	-44.4%
Lansdowne / TD Place	5,720	14%	1,138	5%	-80.1%
Glebe East	1,656	4%	1,485	6%	-10.3%
Glebe West	2,770	7%	1,364	5%	-50.8%
Outside of Area*	10,079	24%	7,644	31%	-24.2%
Bank Street Pass Thru	16,549	39%	10,271	41%	-37.9%
* Denotes traffic destined to other areas through the	e Glebe (i.e Q	ED, Bronson)			



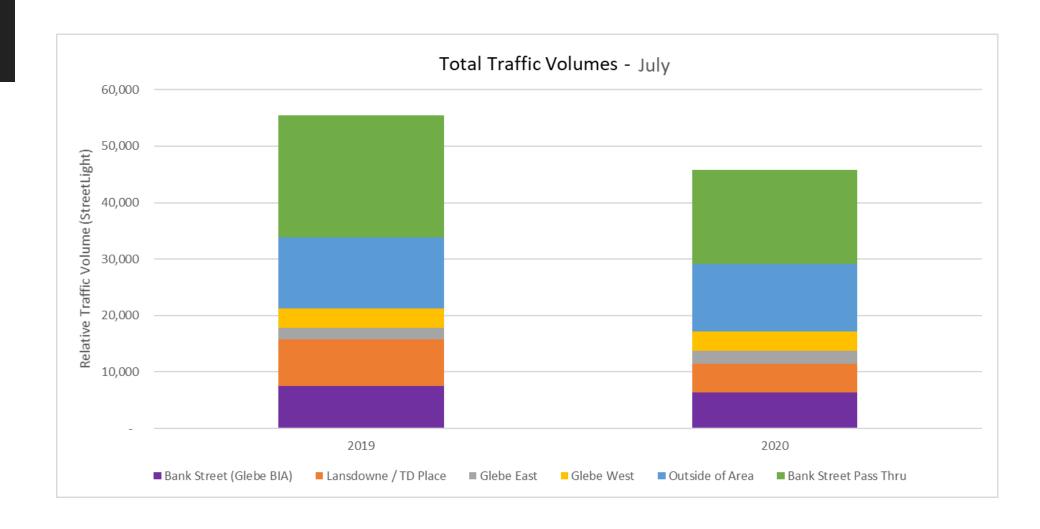
May	2019		2020		% Change
Bank Street Total Traffic Volumes	46,571	100%	37,709	100%	-19.0%
Destinations					
Bank Street Corridor	5,973	13%	4,101	11%	-31.3%
Lansdowne / TD Place	6,497	14%	2,131	6%	-67.2%
Glebe East	1,757	4%	1,999	5%	13.8%
Glebe West	3,343	7%	1,978	5%	-40.8%
Outside of Area*	11,972	26%	12,558	33%	4.9%
Bank Street Pass Thru	17,029	37%	14,942	40%	-12.3%
* Denotes traffic destined to other areas through the	e Glebe (i.e Q	ED, Bronson)			



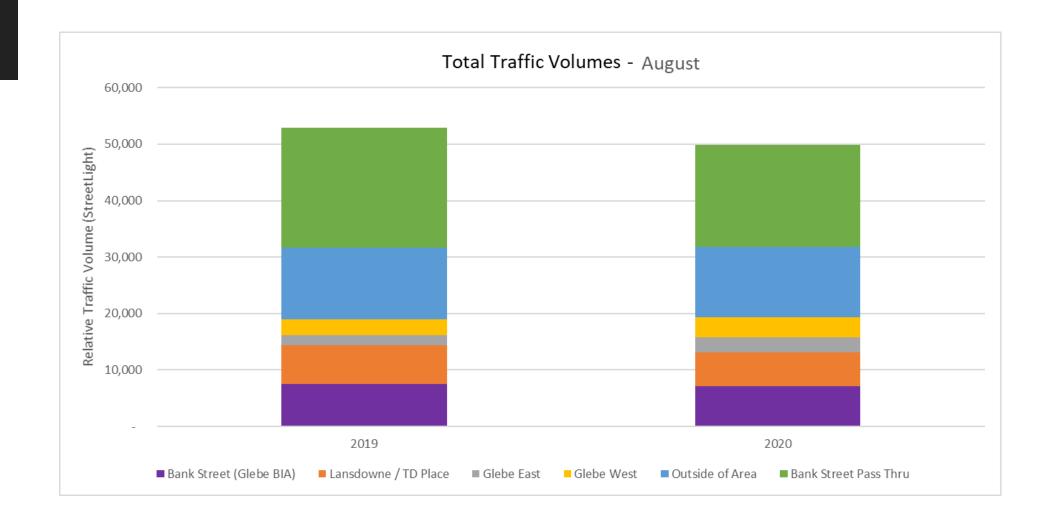
June	2019		2020		% Change
Bank Street Total Traffic Volumes	50,753	100%	41,788	100%	-17.7%
Destinations	,				
Bank Street Corridor	6,956	14%	4,599	11%	-33.9%
Lansdowne / TD Place	7,472	15%	3,905	9%	-47.7%
Glebe East	2,013	4%	2,758	7%	37.0%
Glebe West	3,492	7%	2,426	6%	-30.5%
Outside of Area*	12,108	24%	11,823	28%	-2.4%
Bank Street Pass Thru	18,712	37%	16,277	39%	-13.0%
* Denotes traffic destined to other areas through the	e Glebe (i.e Q	ED, Bronson)			



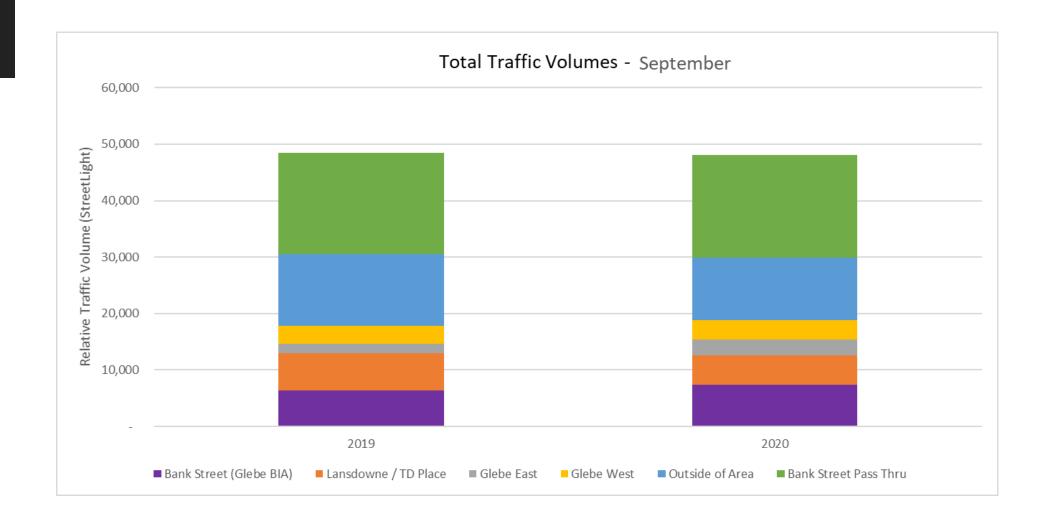
July	2019		2020		% Change
Bank Street Total Traffic Volumes	55,447	100%	45,831	100%	-17.3%
Destinations					
Bank Street Corridor	7,464	13%	6,435	14%	-13.8%
Lansdowne / TD Place	8,327	15%	5,028	11%	-39.6%
Glebe East	1,976	4%	2,320	5%	17.4%
Glebe West	3,490	6%	3,381	7%	-3.1%
Outside of Area*	12,554	23%	11,921	26%	-5.0%
Bank Street Pass Thru	21,636	39%	16,746	37%	-22.6%
* Denotes traffic destined to other areas through the	e Glebe (i.e Q	ED, Bronson)			



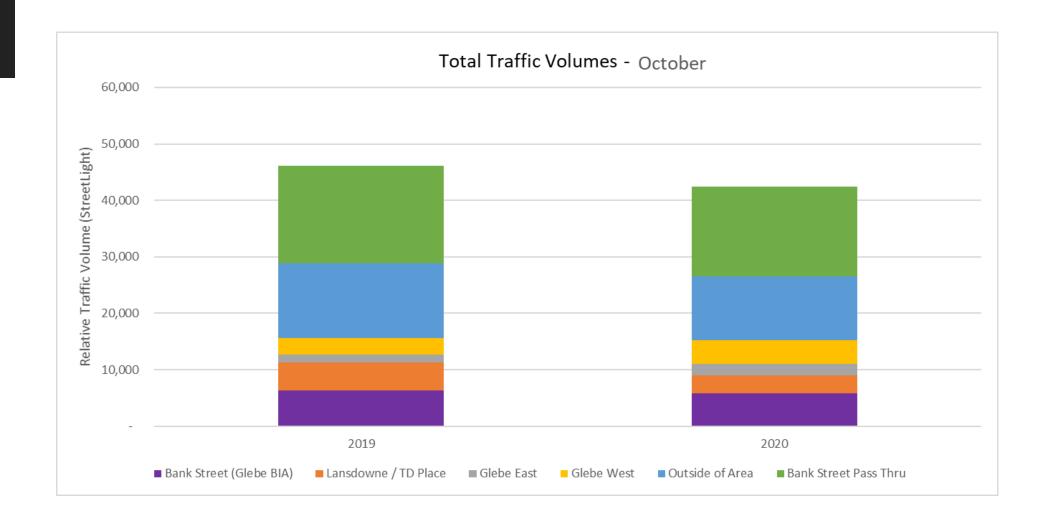
August	2019		2020		% Change
Bank Street Total Traffic Volumes	52,917	100%	49,889	100%	-5.7%
Destinations					
Bank Street Corridor	7,484	14%	7,094	14%	-5.2%
Lansdowne / TD Place	6,936	13%	5,969	12%	-13.9%
Glebe East	1,763	3%	2,776	6%	57.5%
Glebe West	2,745	5%	3,531	7%	28.6%
Outside of Area*	12,734	24%	12,471	25%	-2.1%
Bank Street Pass Thru	21,255	40%	18,048	36%	-15.1%
* Denotes traffic destined to other areas through th	e Glebe (i.e Q	ED, Bronson)			



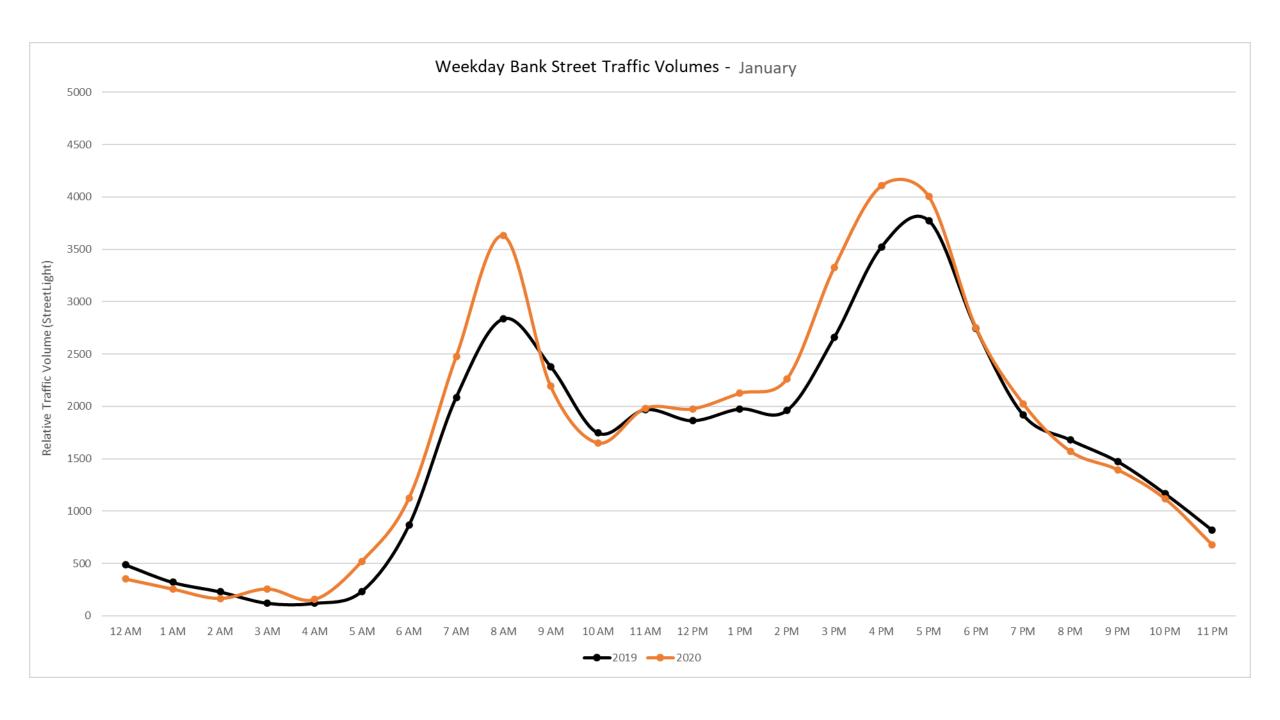
September	2019		2020		% Change
Bank Street Total Traffic Volumes	48,478	100%	48,079	100%	-0.8%
Destinations					
Bank Street Corridor	6,427	13%	7,444	15%	15.8%
Lansdowne / TD Place	6,592	14%	5,168	11%	-21.6%
Glebe East	1,647	3%	2,740	6%	66.4%
Glebe West	3,101	6%	3,448	7%	11.2%
Outside of Area*	12,768	26%	11,056	23%	-13.4%
Bank Street Pass Thru	17,943	37%	18,223	38%	1.6%
* Denotes traffic destined to other areas through th	e Glebe (i.e Q	ED, Bronson)			

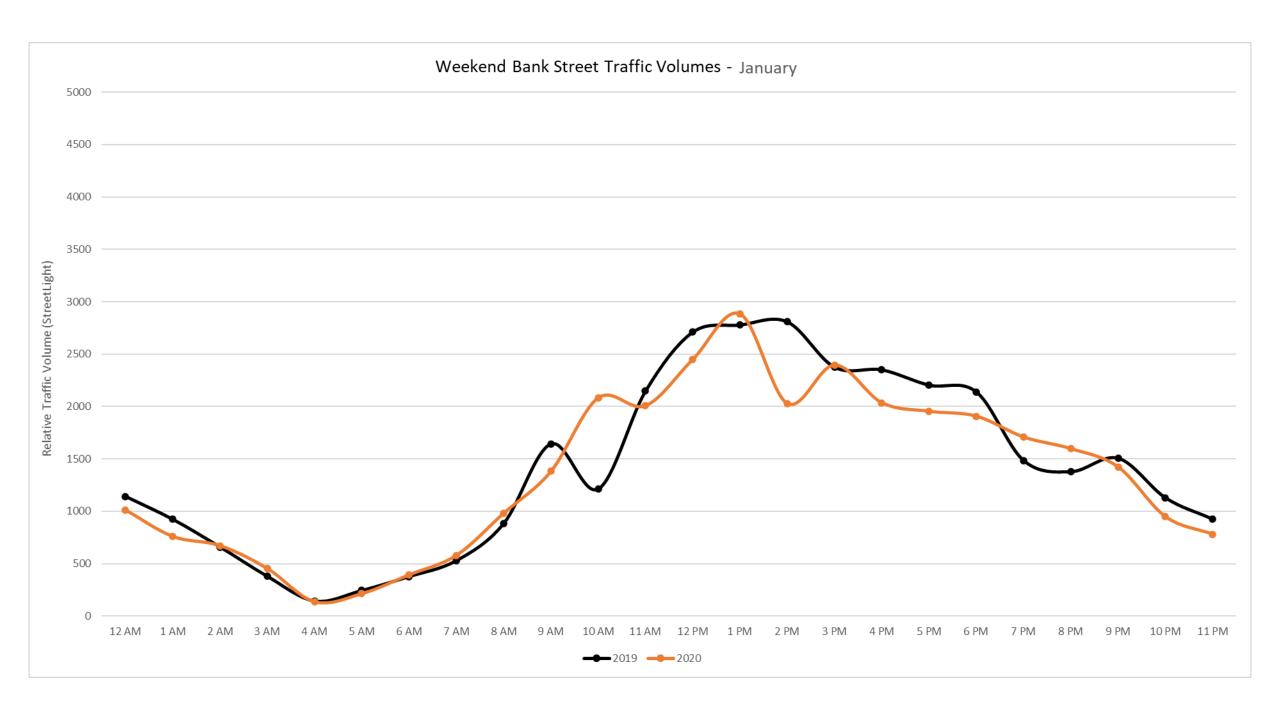


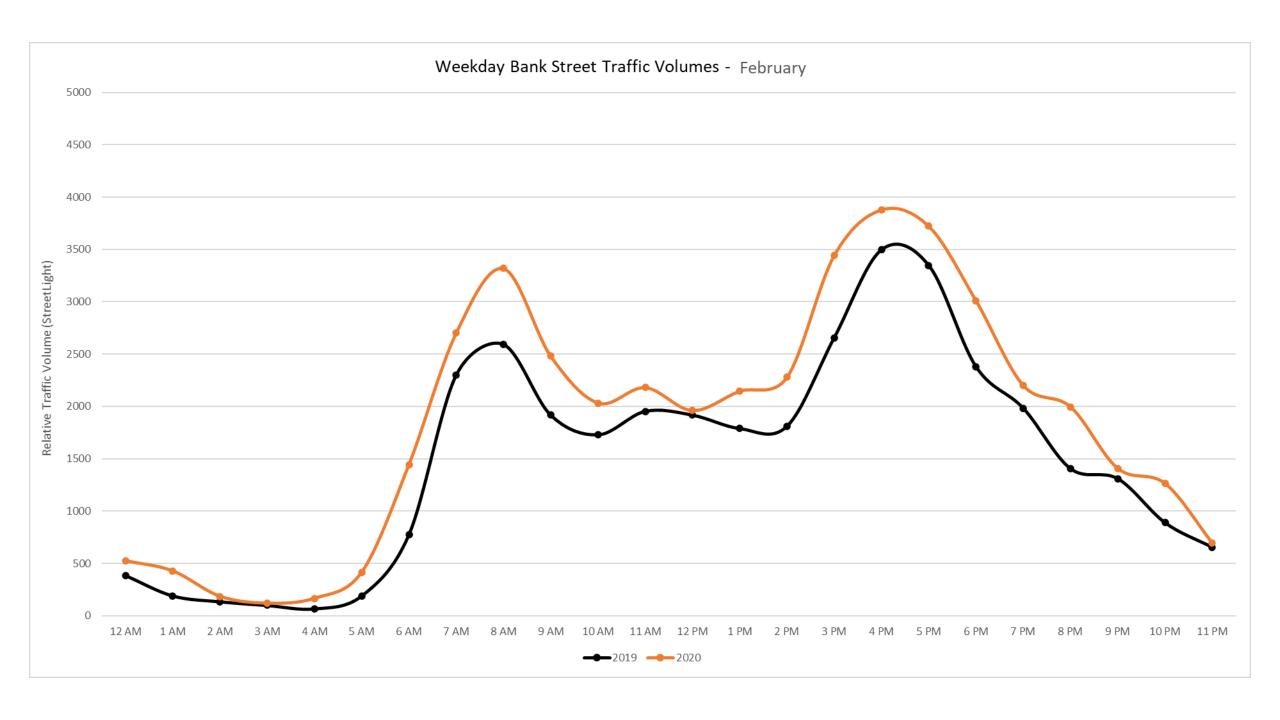
October	2019		2020		% Change
Bank Street Total Traffic Volumes	46,089	100%	42,444	100%	-7.9%
Destinations					
Bank Street Corridor	6,330	14%	5,877	14%	-7.2%
Lansdowne / TD Place	4,913	11%	3,124	7%	-36.4%
Glebe East	1,461	3%	2,012	5%	37.7%
Glebe West	2,929	6%	4,167	10%	42.3%
Outside of Area*	13,222	29%	11,374	27%	-14.0%
Bank Street Pass Thru	17,234	37%	15,890	37%	-7.8%
* Denotes traffic destined to other areas through th	e Glebe (i.e Q	ED, Bronson)			

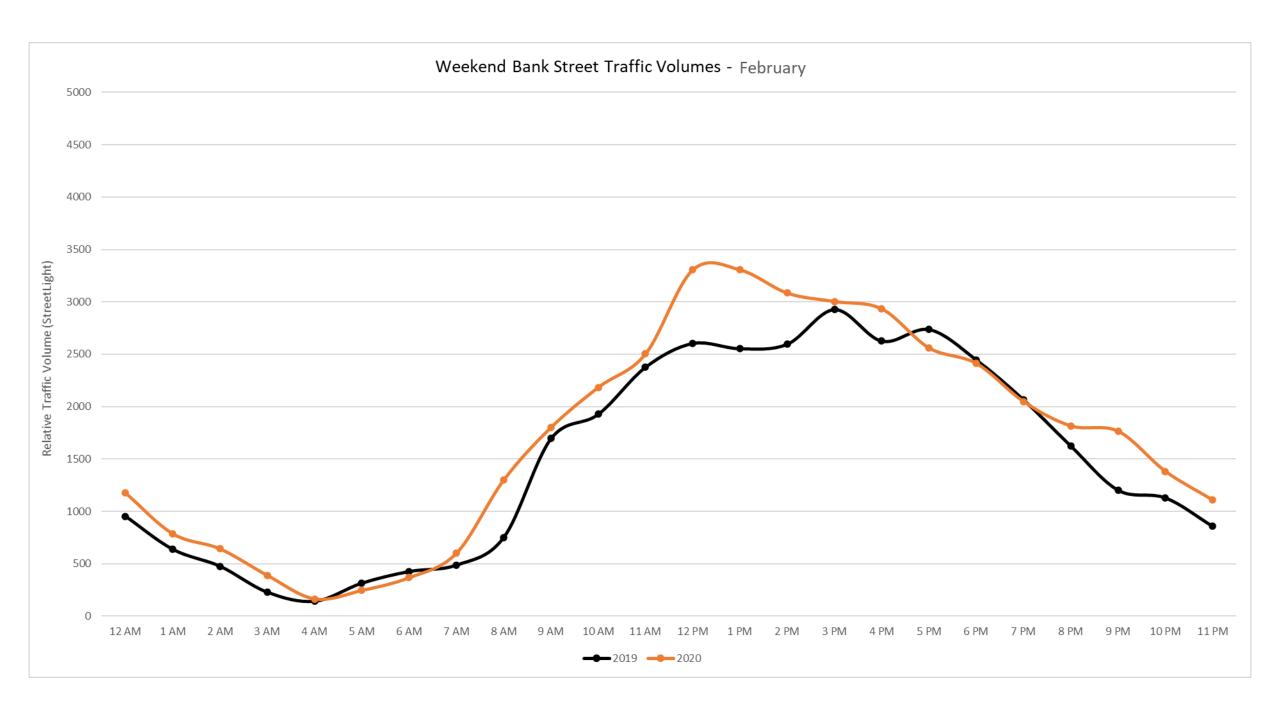


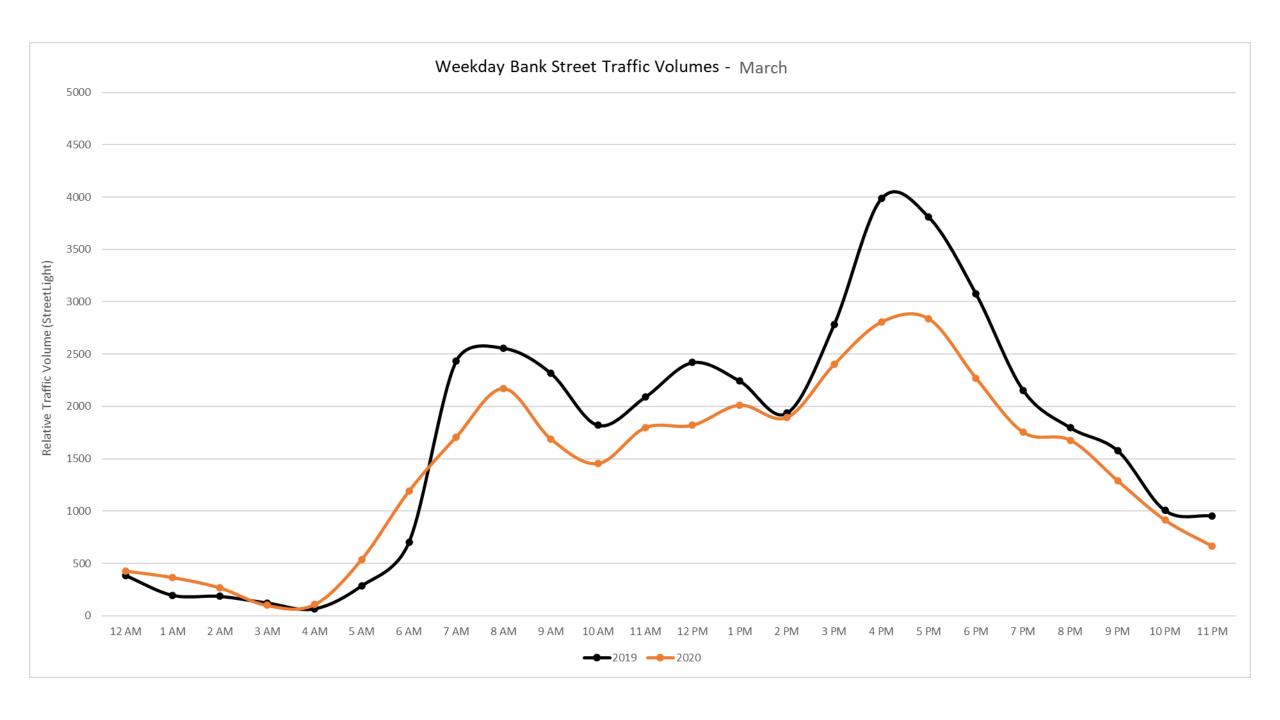
Appendix A: Average Daily Traffic Profiles

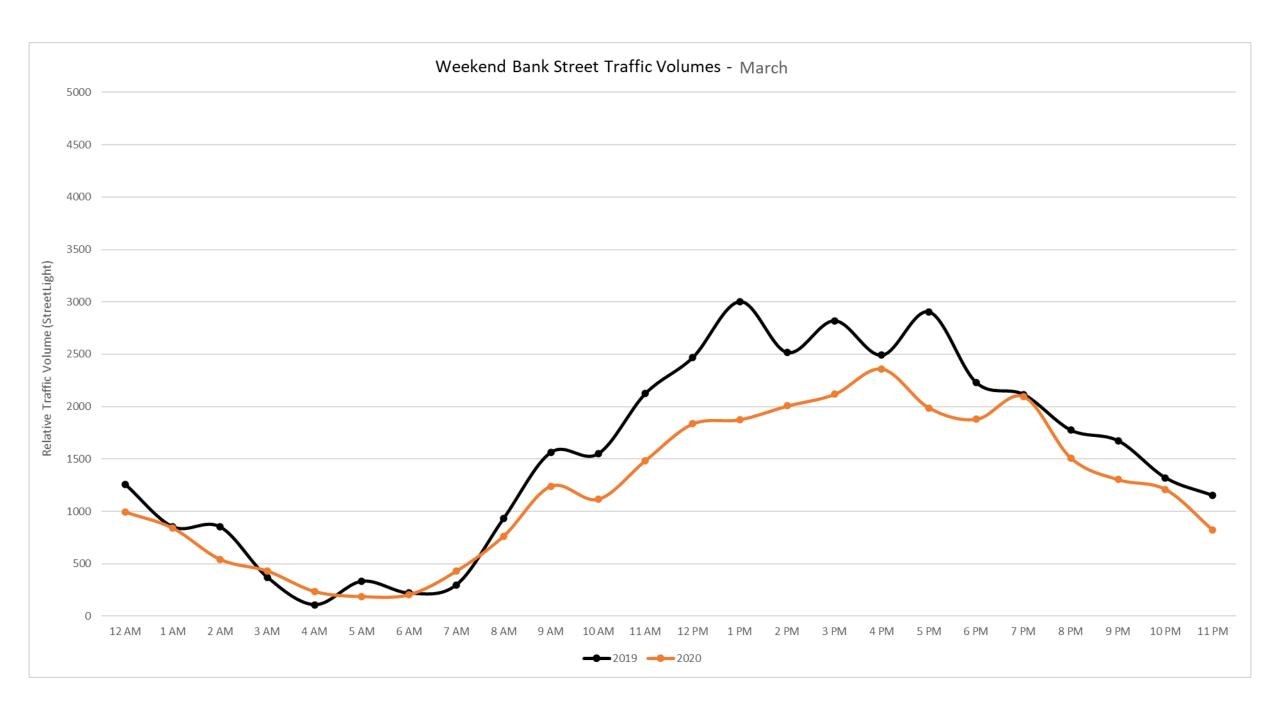


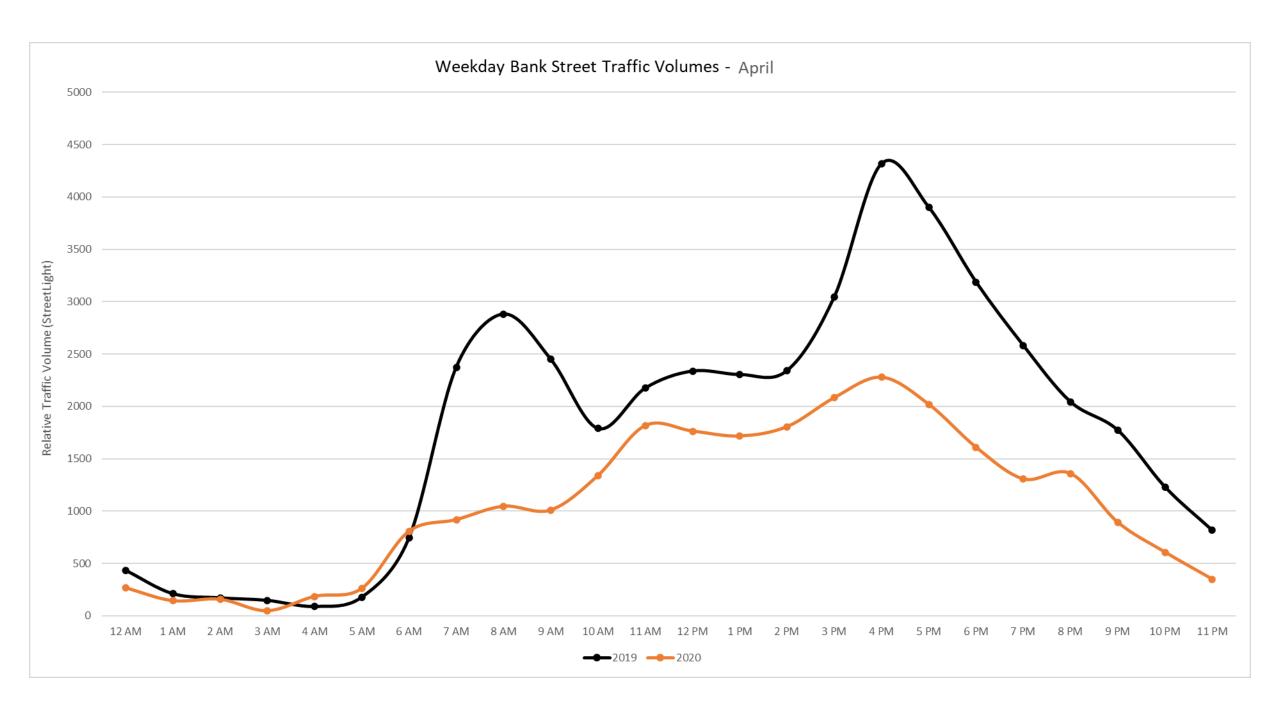


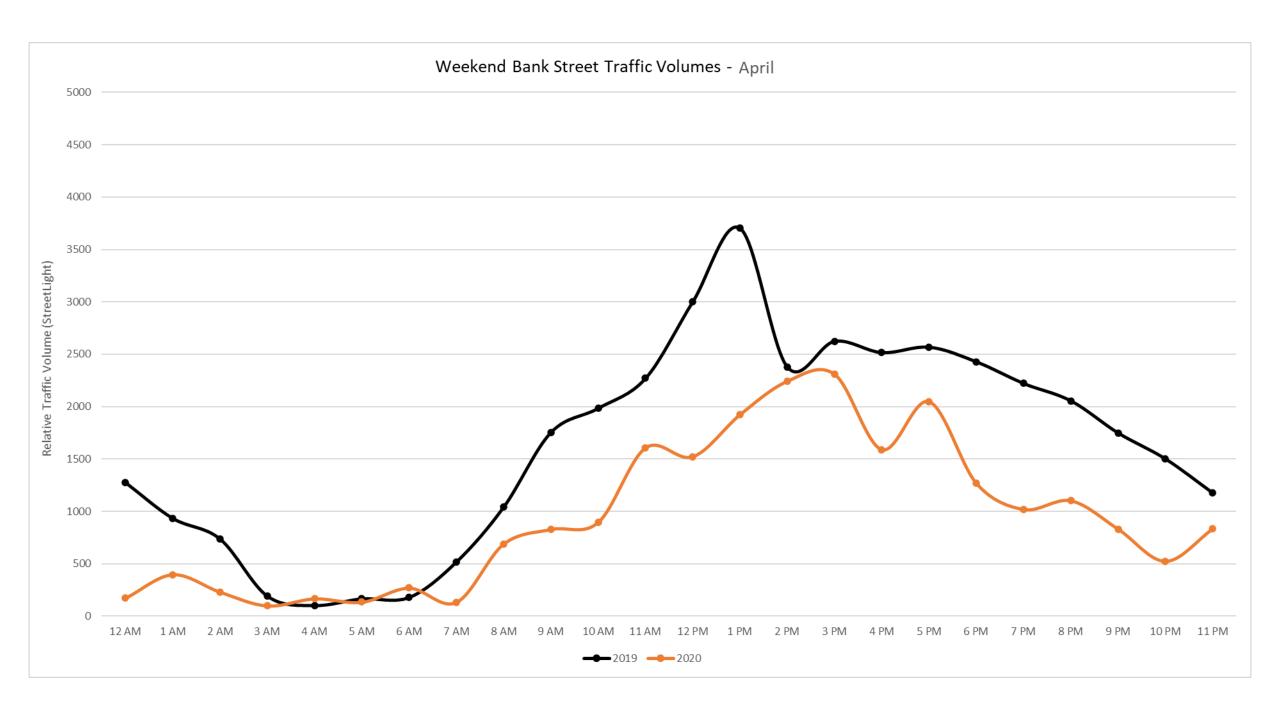


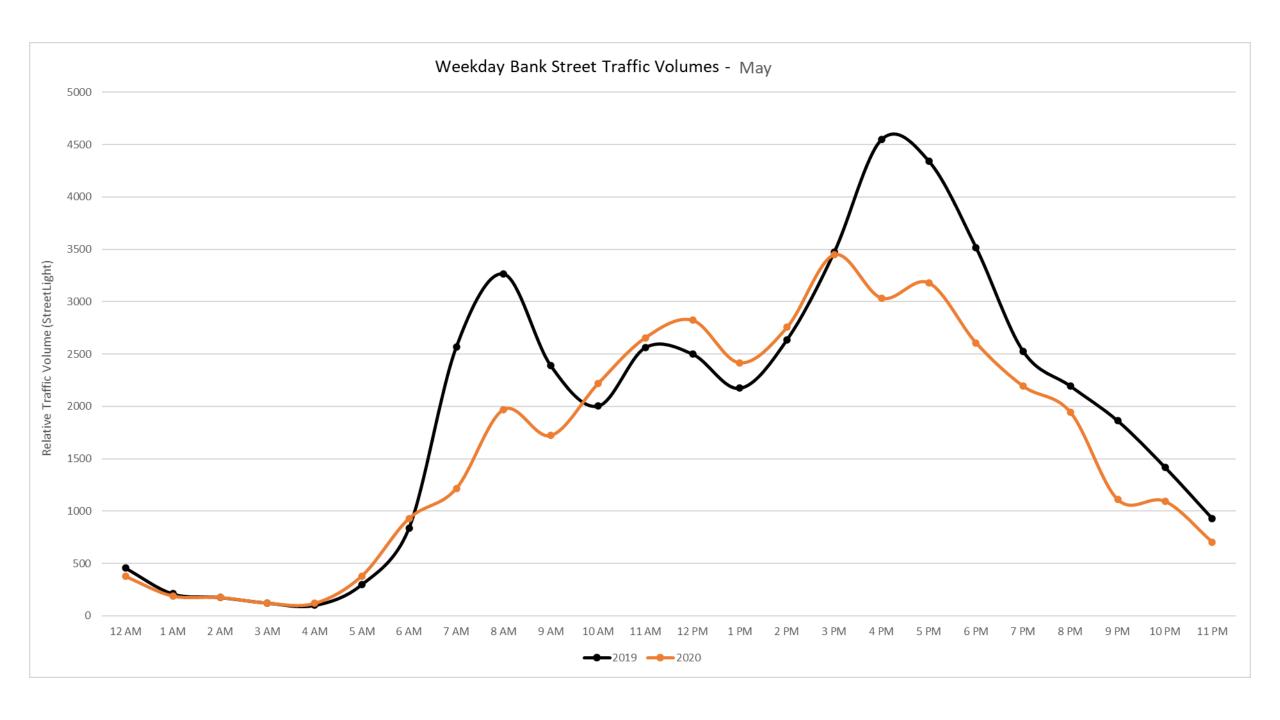


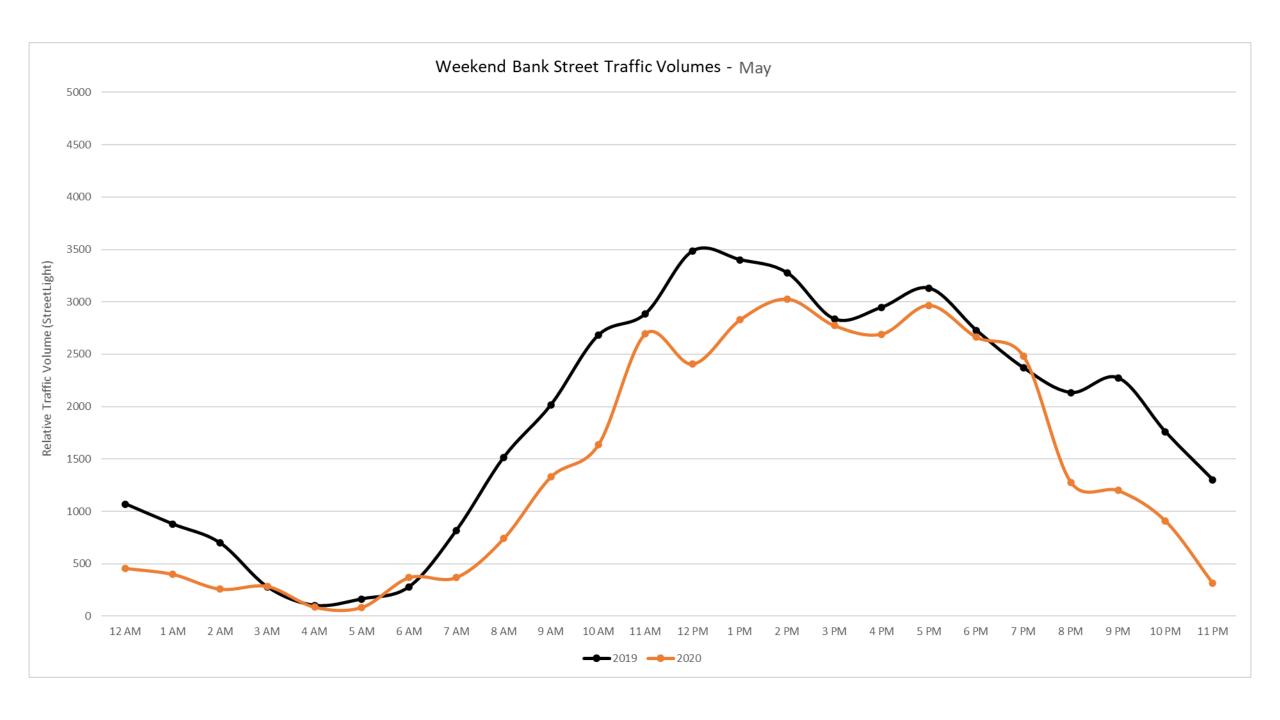


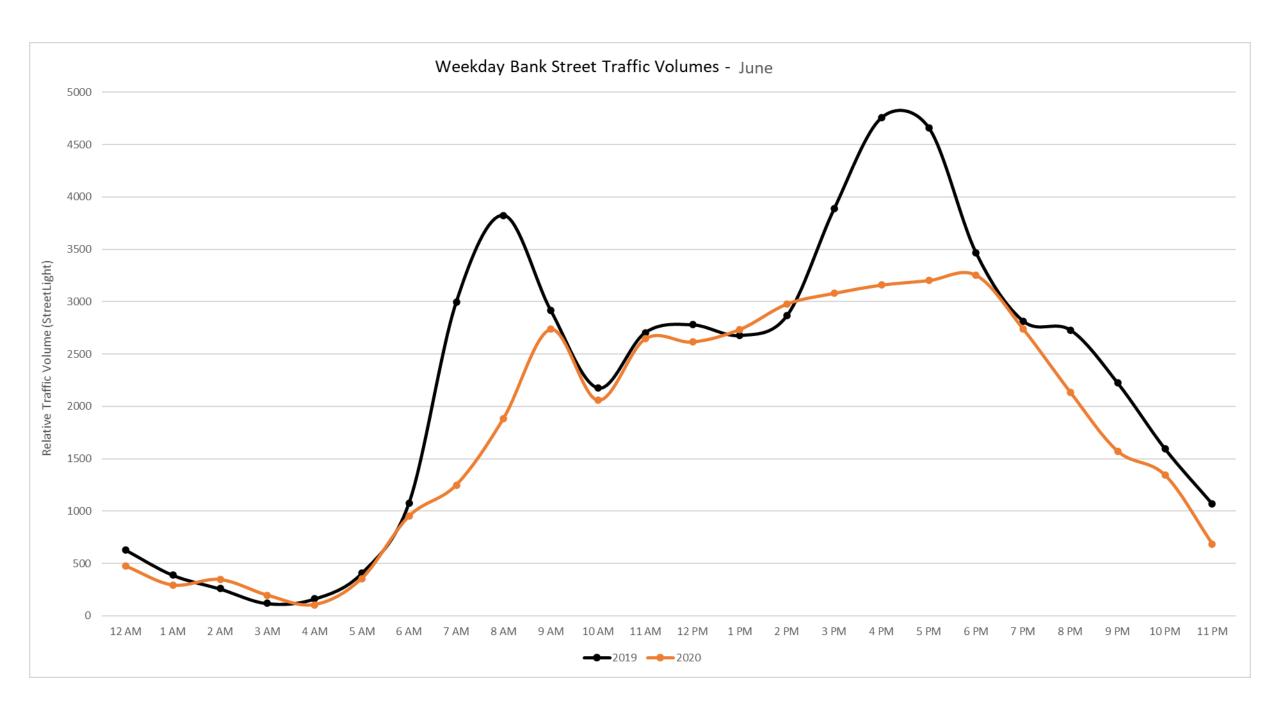


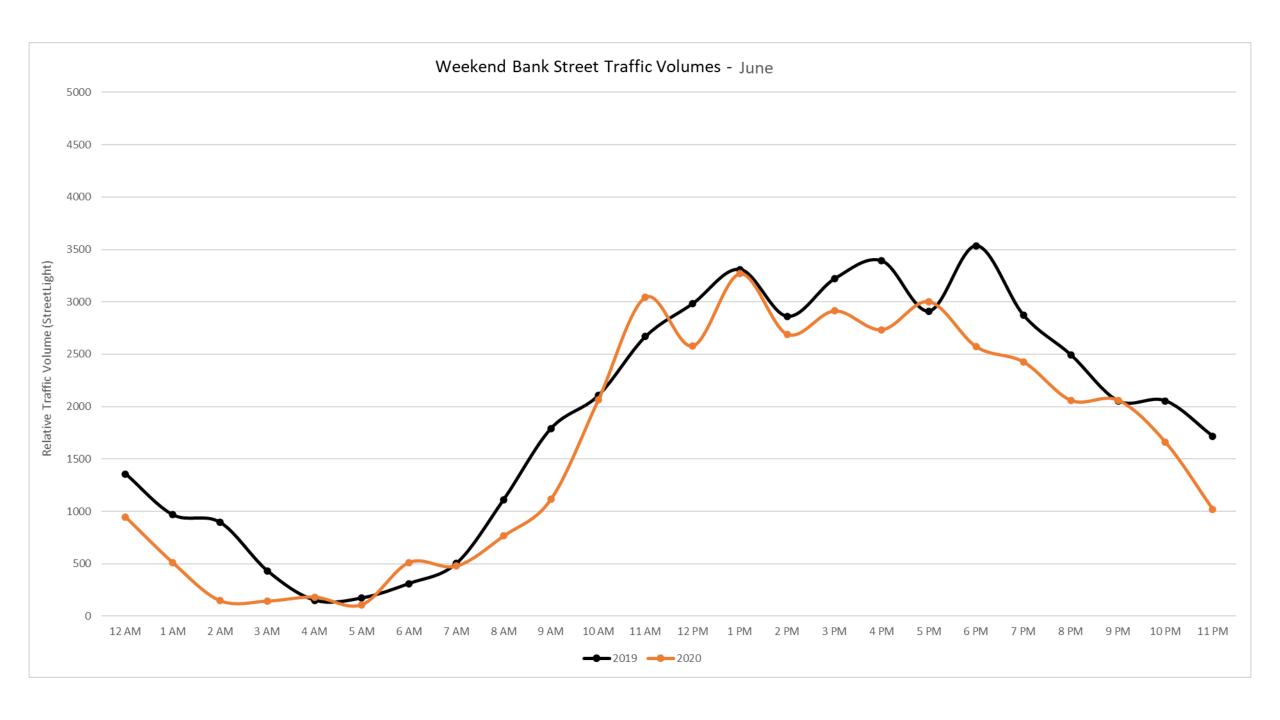


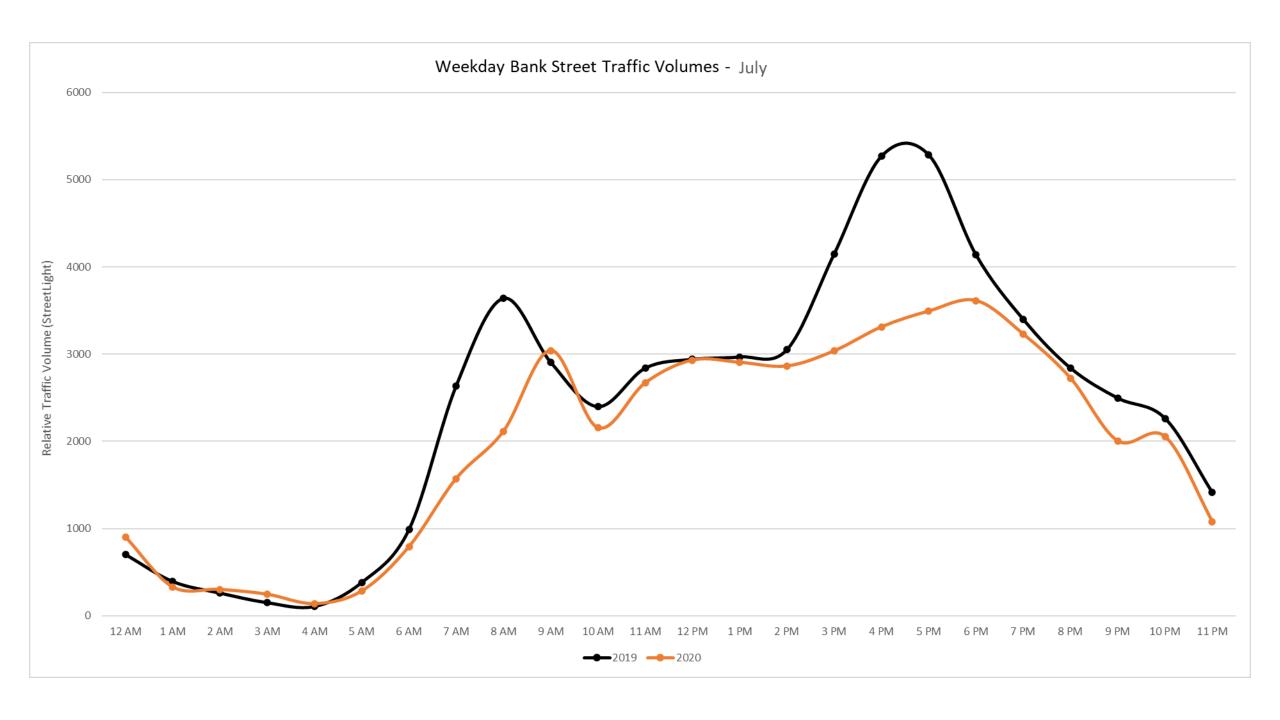


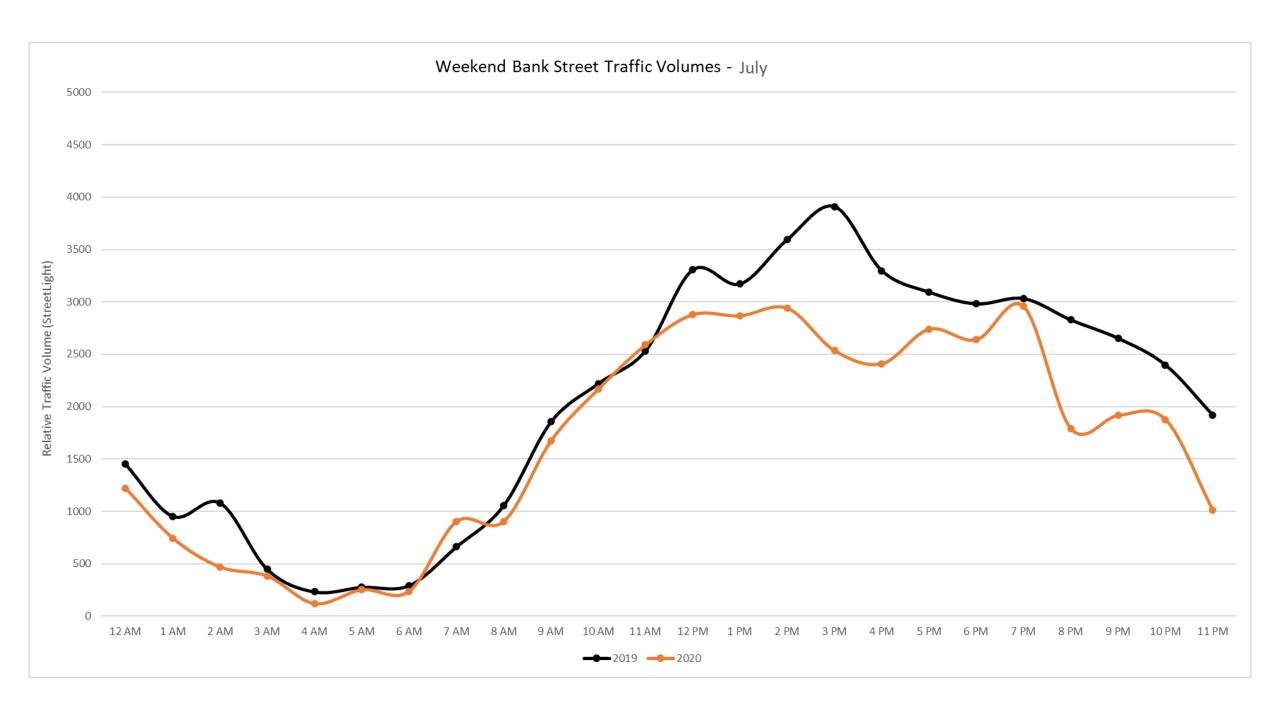


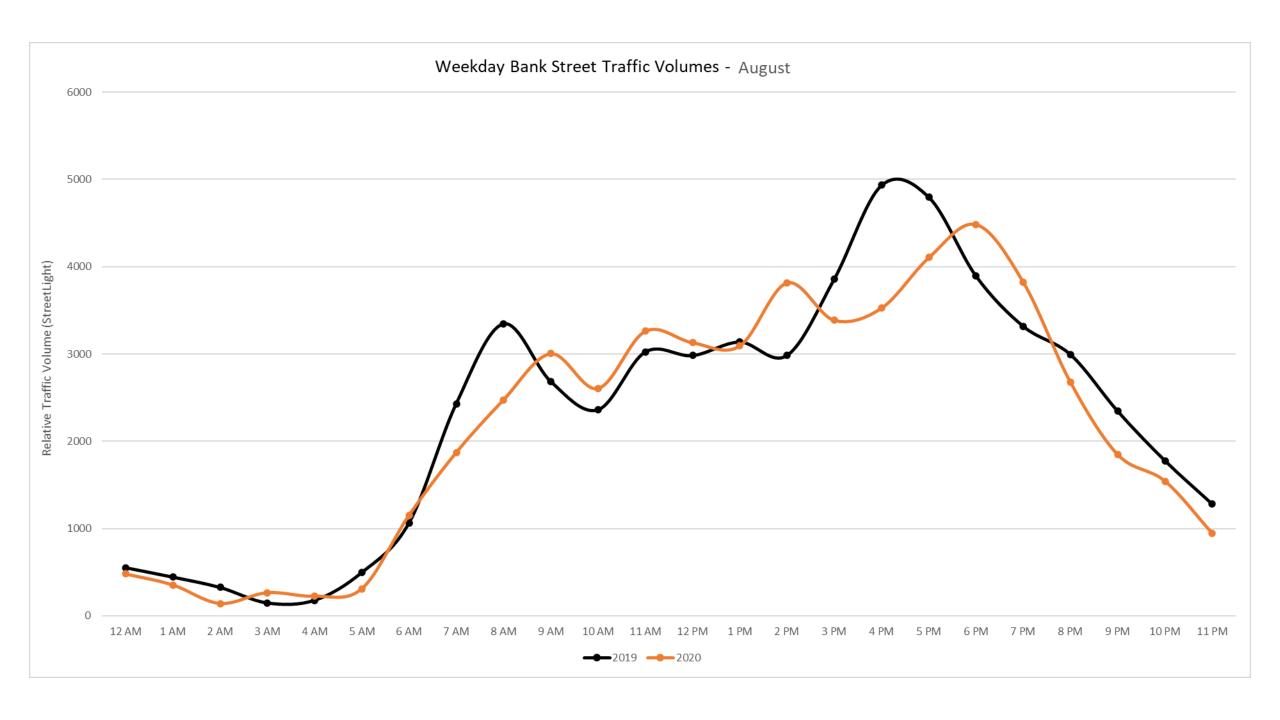


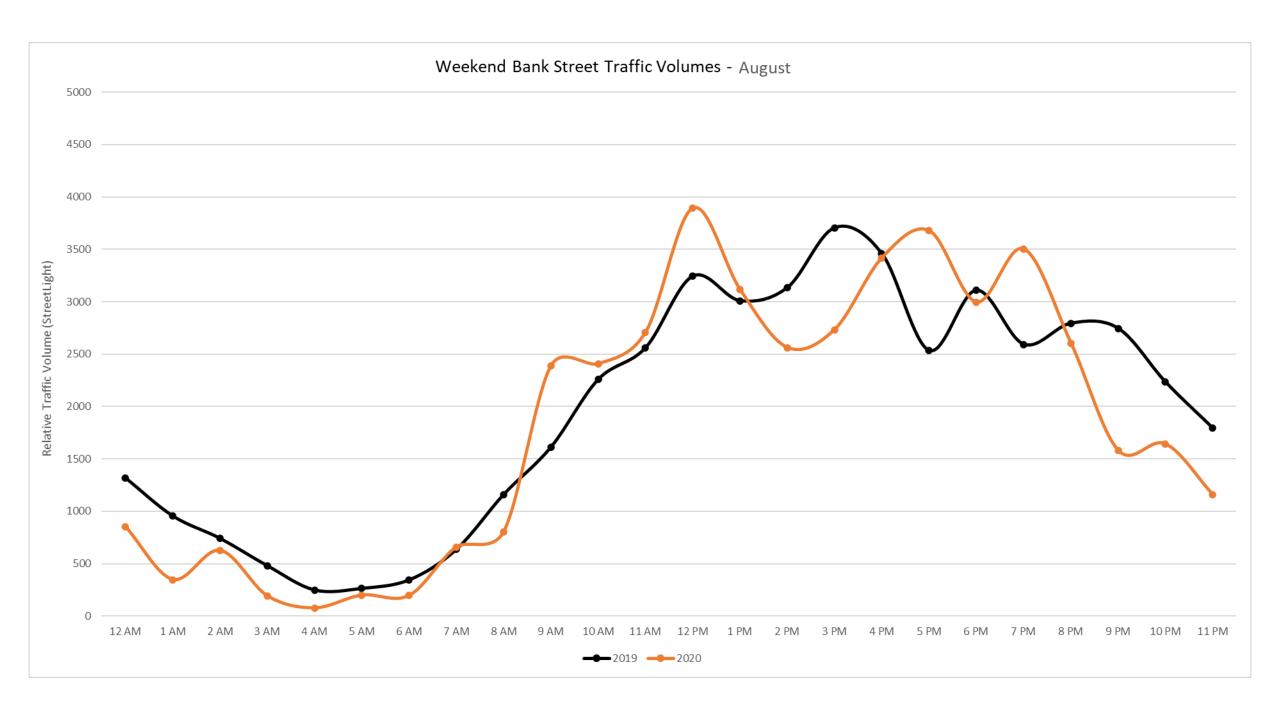


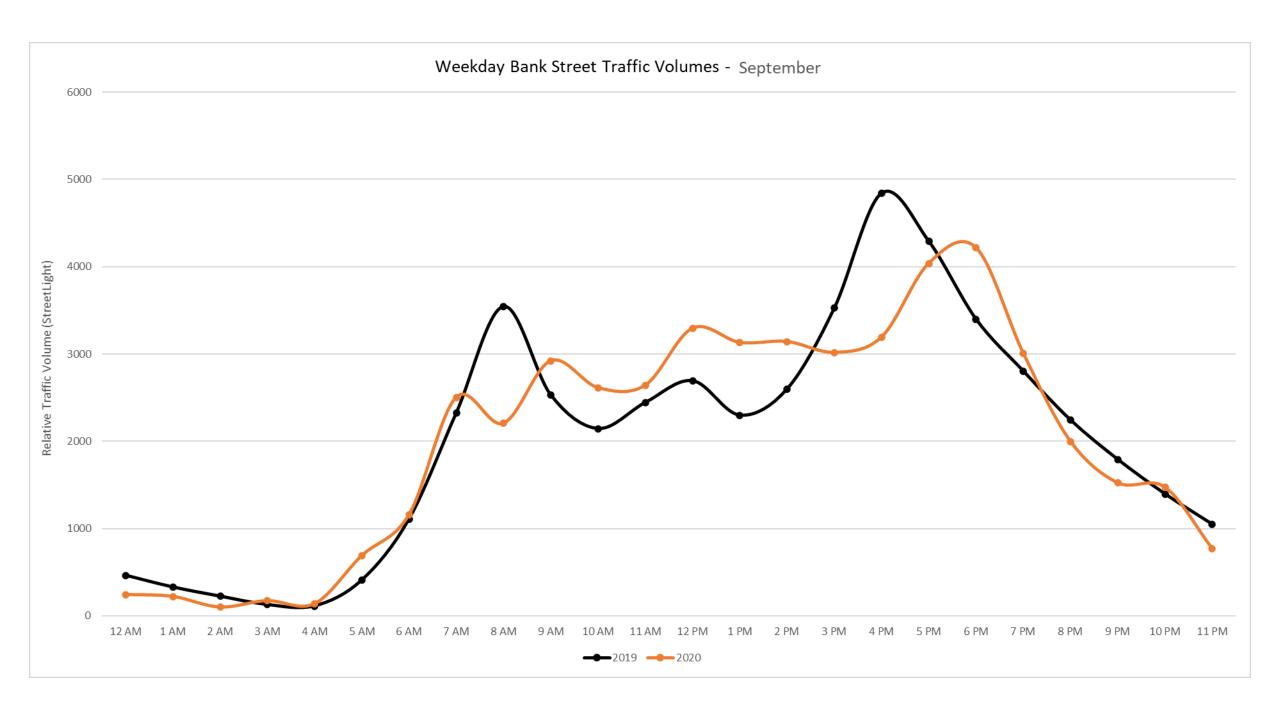


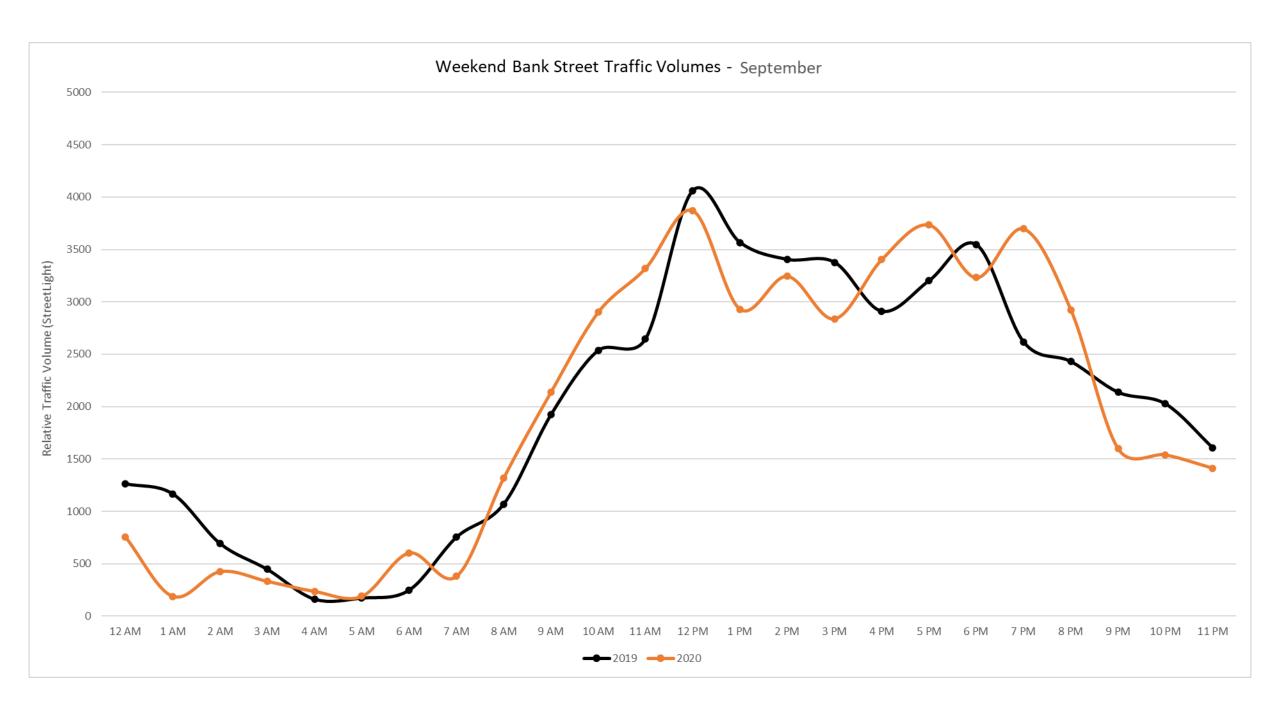


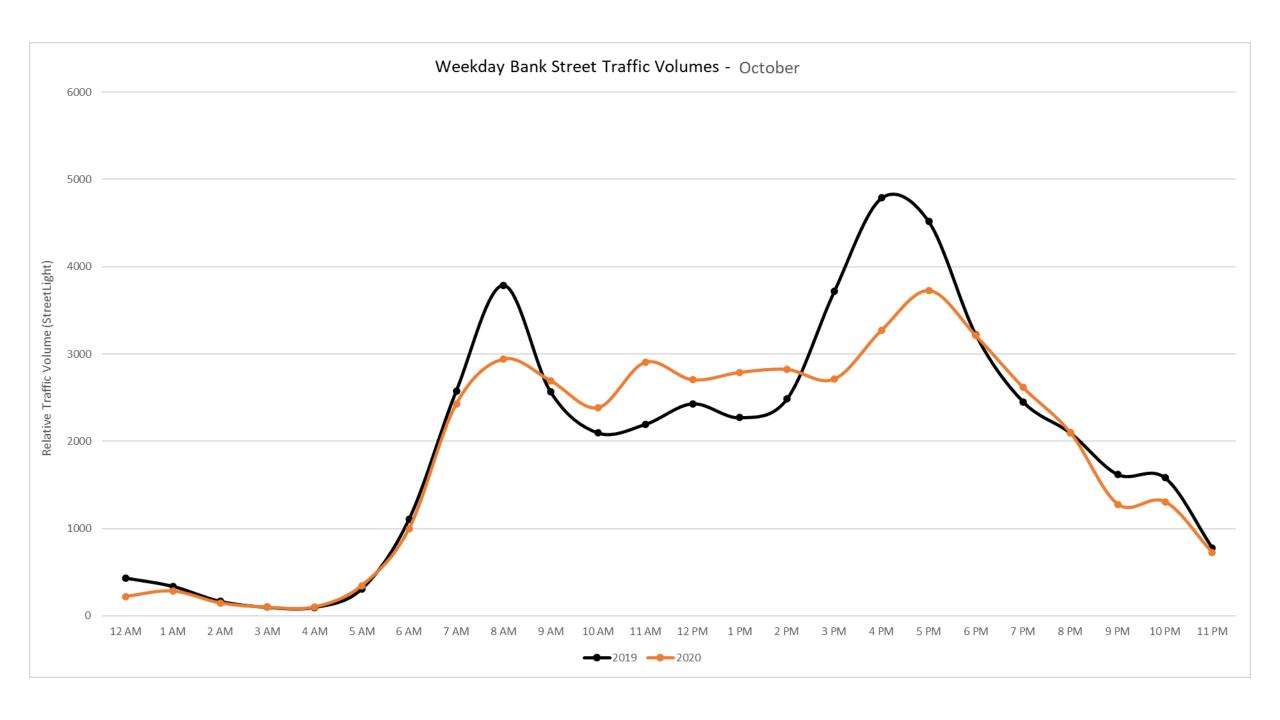


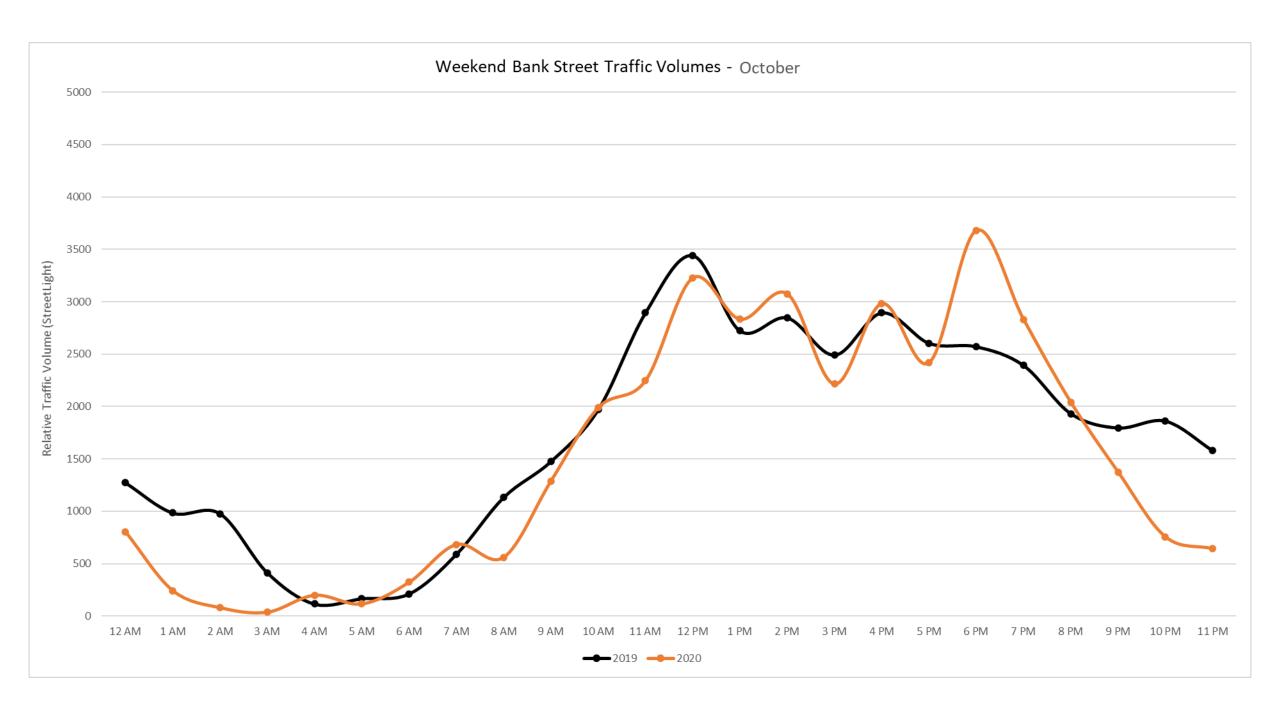






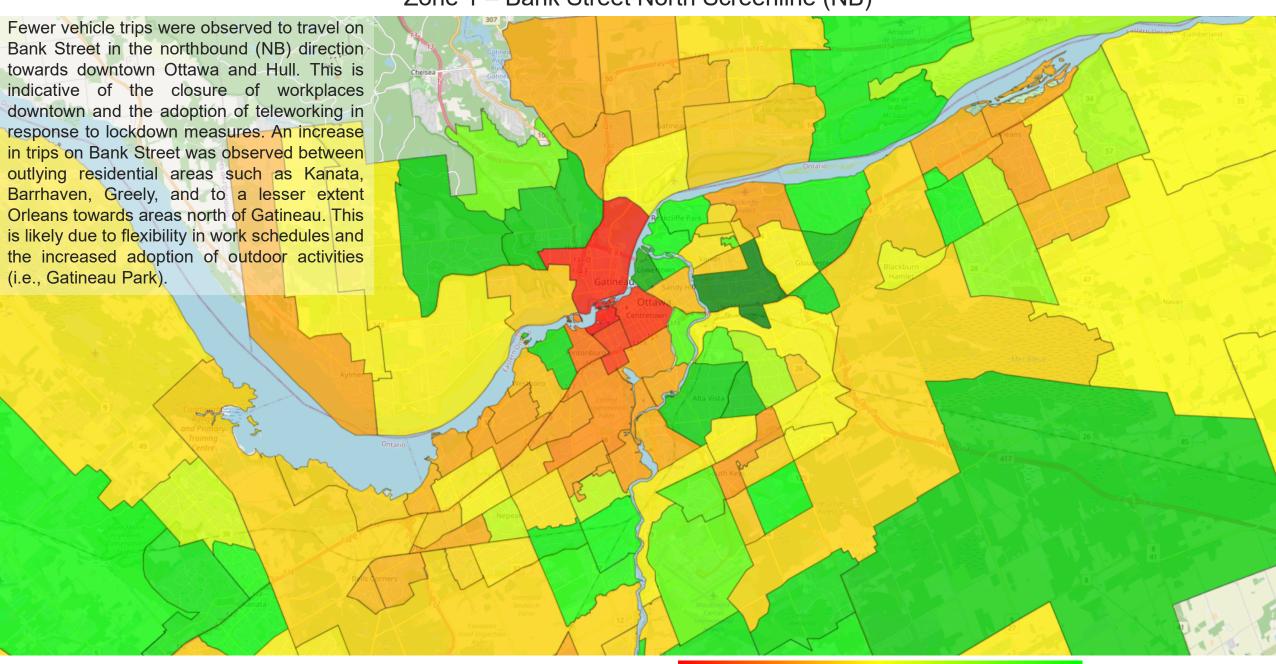




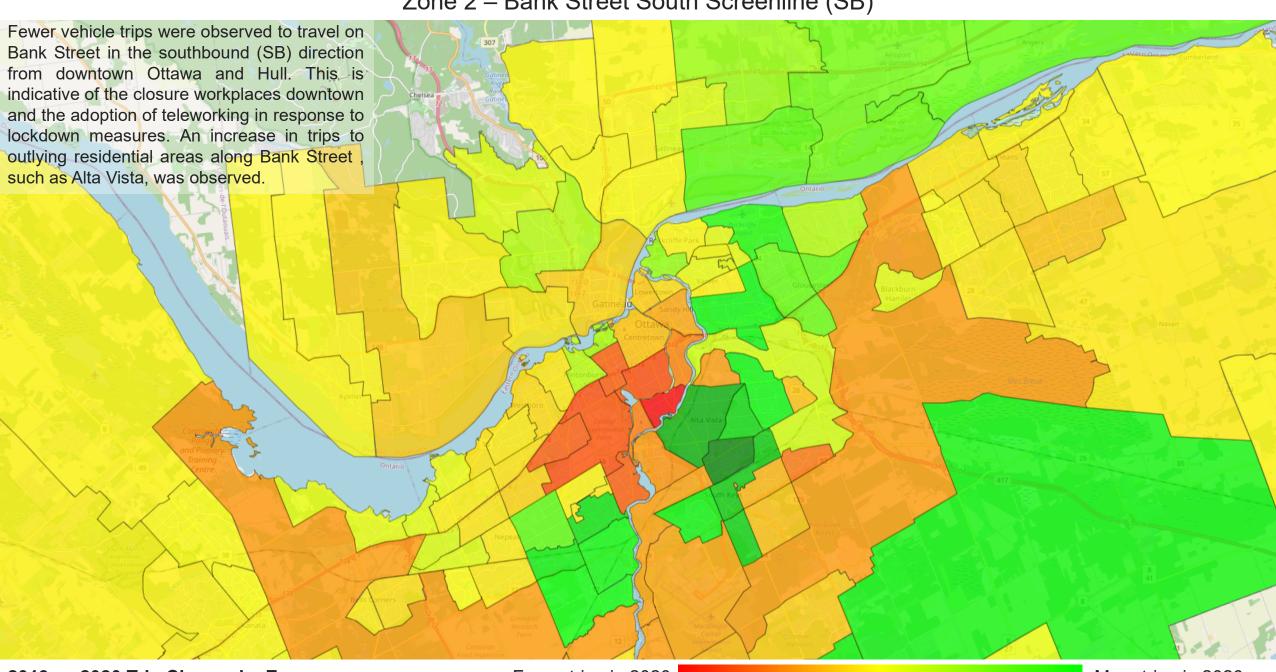


Appendix C: Origin-Destination Heatmaps

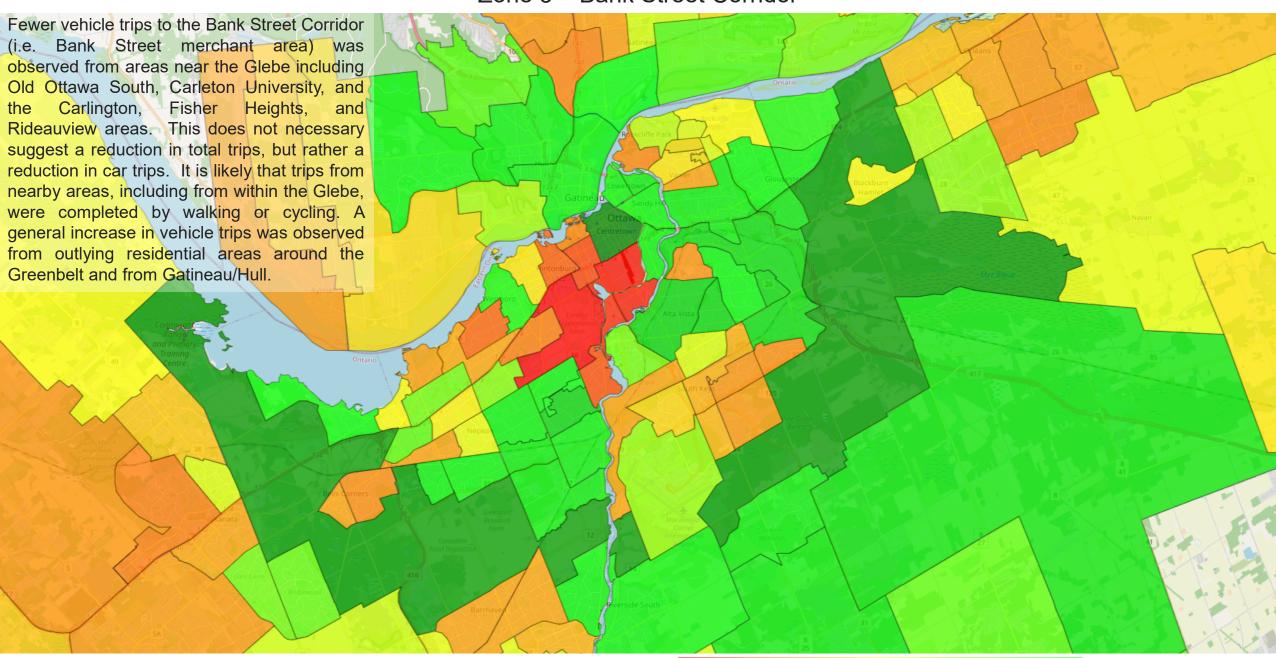
Zone 1 – Bank Street North Screenline (NB)



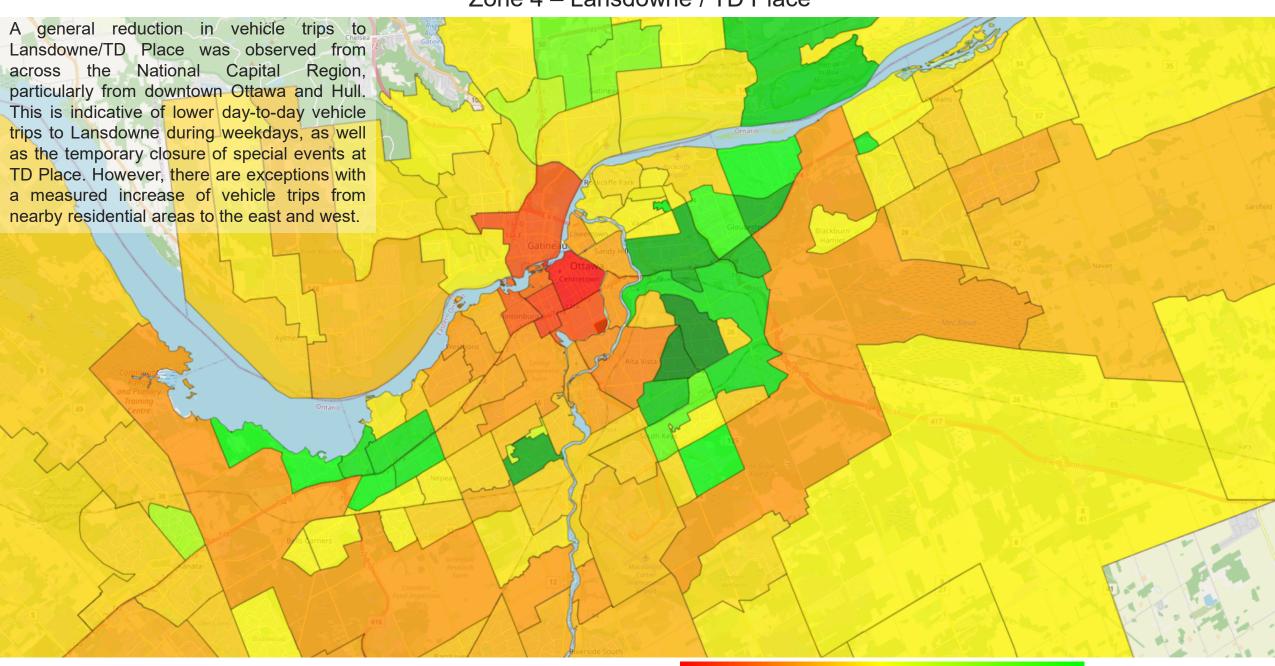
Zone 2 – Bank Street South Screenline (SB)



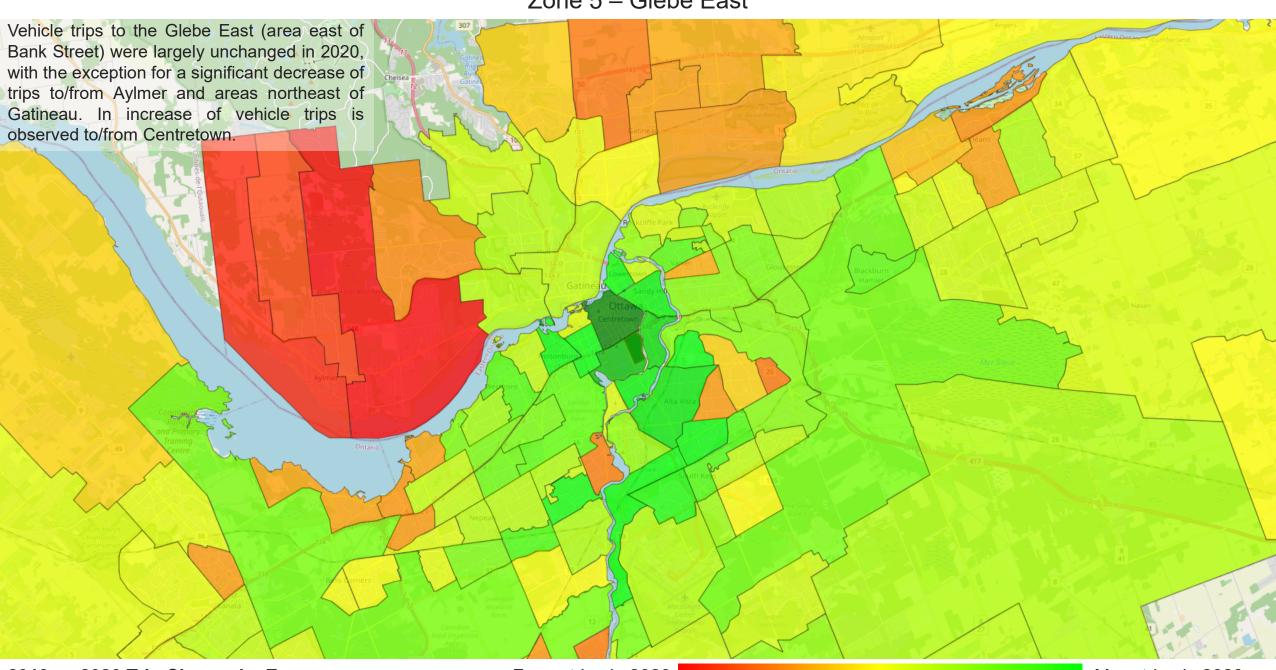
Zone 3 – Bank Street Corridor



Zone 4 – Lansdowne / TD Place



Zone 5 – Glebe East



Zone 6 – Glebe West

