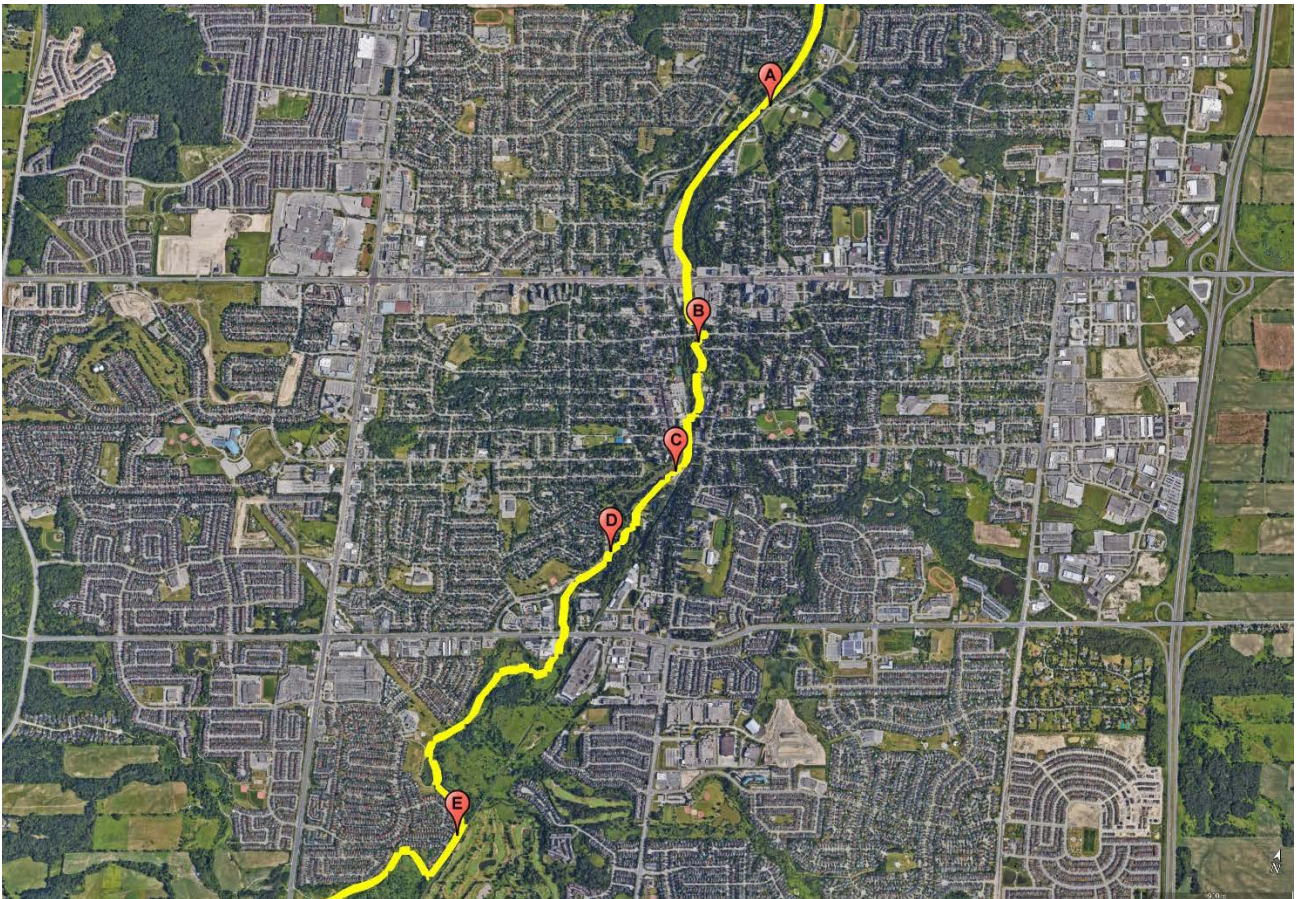


MEMORANDUM

TO: M. Kryzanowski, BES, MCIP, RPP, Manager, Transportation Services
FROM: P. Choi, C.E.T., Traffic Technologist
DATE: September 23, 2020
RE: Holland River Trail Counts Analysis

The objective of this memorandum is to provide data analysis on the Holland River Trail counts analysis.

Count Stations



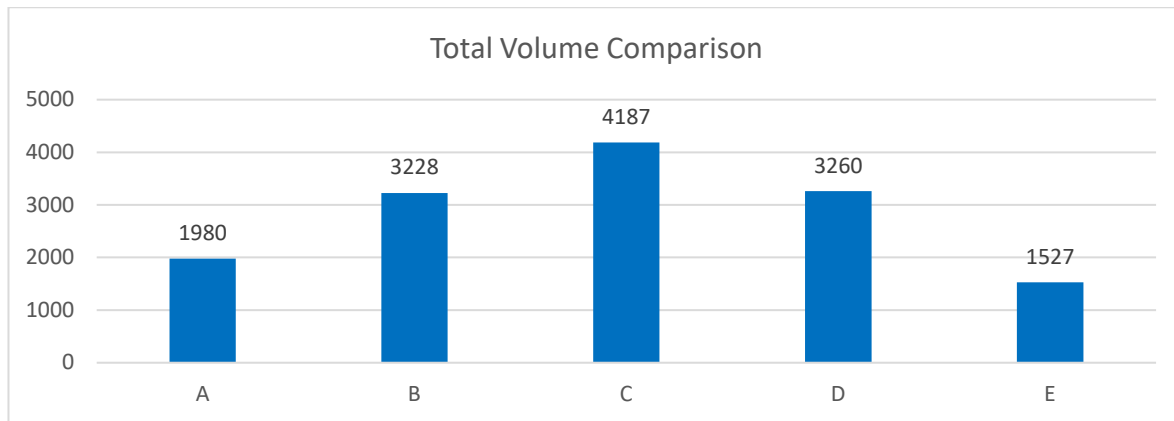
Five counters have been installed along the Holland River Trail on one weekday (Aug 20, 2020) and one weekend (Aug 21, 2020) between 6 am and 9 pm to collect trail user volume and their mode types.

The map above shows the Holland River Trail and the locations of count stations A, B, C, D, and E. The followings are details of the locations where the counters were installed:

- A: About 320m south of Bayview Pkwy and Elgin St
- B: About 50m south of Queen St and Concession St
- C: About 200m south of Water St and Doug Duncan Dr
- D: About 170m south of Cane Pkwy and Lorne Ave
- E: About 100m east of Kensit Ave and Jelley Ave

Total Volume

The graph below shows the weekday and weekend total volume of each location and comparison.



As the graph shows, location C has the highest volume, and there were similar volumes at location B&D and A&E. The location C volume was almost 3 times more than the volume at the location E. In location-wise, the volume increased in the centre of the town and decreased as it gets closer to the town limit.

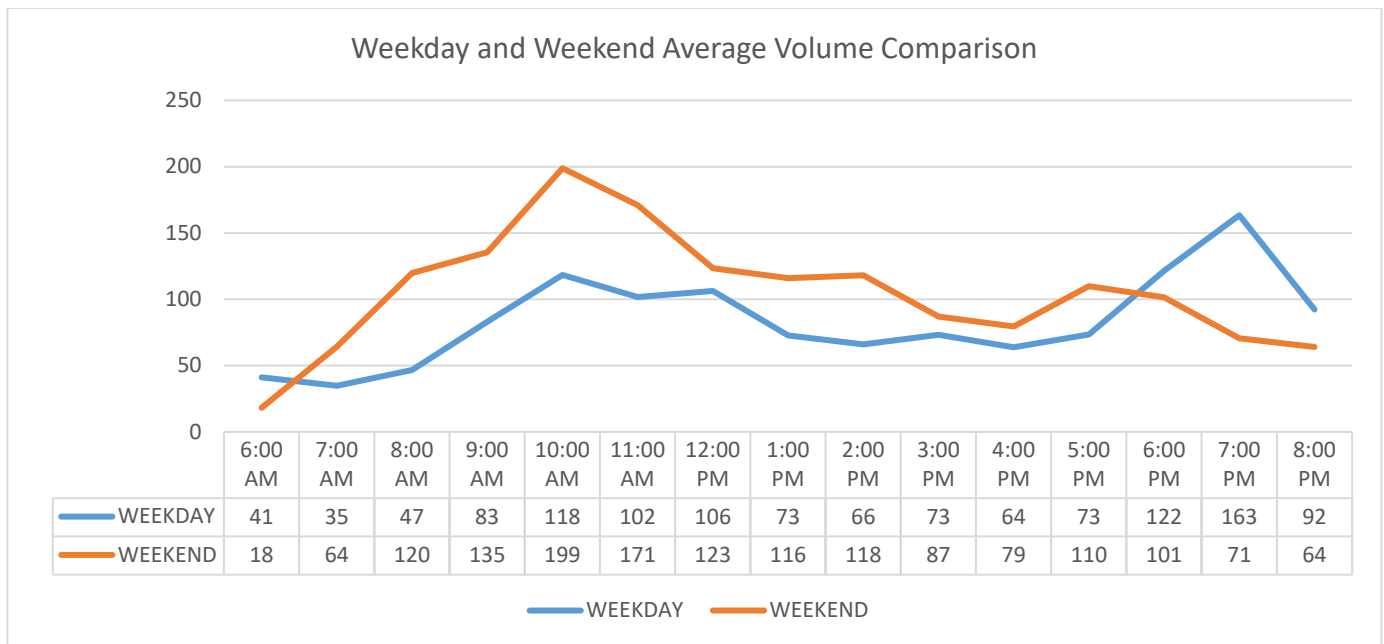
Weekday and Weekend Volume

The average weekday volume was 1,259 and the average weekend volume was 1,577, which means that there were about 25% more people enjoying the trail during the weekend compared to the weekday.

The table below shows the differences in total volume from each direction and location. The differences vary from 13% to 44%. It appears that there was much significant trail user volume increase on the north side of the Holland River trail on the weekend compared to the weekday than the south side of the trail. The location A volume raised 41% on the weekend, and the location E volume only increased by 17% compared to the weekday. It also demonstrates that the southbound volume increased more than northbound on the weekend from most locations except for location B.

Location	Description	Weekday	Weekend	Difference
A	NB	530	736	39%
	SB	293	421	44%
	Total	823	1,157	41%
B	NB	712	928	30%
	SB	730	858	18%
	Total	1,442	1,786	24%
C	NB	918	1,098	20%
	SB	981	1,190	21%
	Total	1,899	2,288	20%
D	NB	630	771	22%
	SB	798	1,061	33%
	Total	1,428	1,832	28%
E	NB	369	418	13%
	SB	334	406	22%
	Total	703	824	17%

The graph below shows the Weekday and Weekend Average Volume Comparison. For more details, Appendix A includes the graphs of weekday and weekend volume change from all locations.



As the graph shows, the peak hour of the weekday was 7 pm during the weekday, the second peak hour was 6 pm, and the third peak hour was 10 am on the weekday. It indicates that people used the trail more in the evening than other times of the weekday.

It also demonstrates that the peak hour of the weekend was 10 am, the second peak hour was 11 am, and the third peak hour was 9 am on the weekend. It means that trails users enjoyed the trail during the day more than in the evening on the weekend.

Directional Volume

Appendix B shows Weekday and Weekend Volume by Time from all locations and both directions. The interesting finding from the directional volume in the data is that the directional splits were not the same.

For example, 64 people were going northbound at location A at 11 am on the weekday, and only 28 people were going southbound at the same time. If 64 people who were going northbound were using the trail just for cycling, running, and walking, they would have returned to the south using the same trail and the southbound volume should have increased later on. However, the southbound volume increased just slightly, while the northbound volume consistently increased. It could mean that people are getting off the trails.

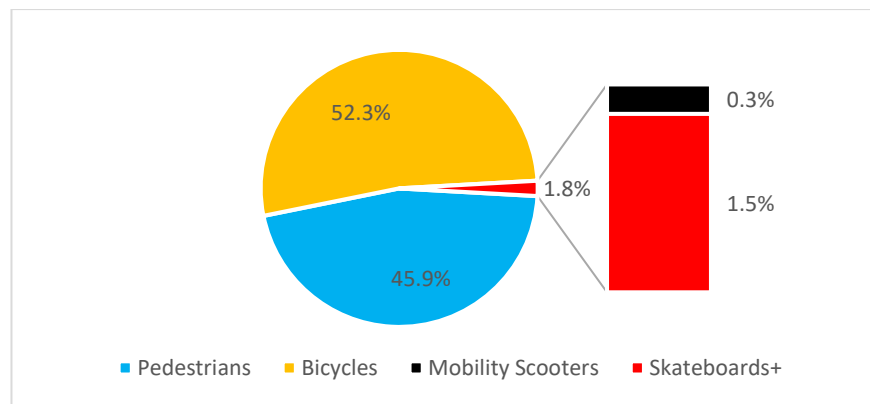
The table below shows how much volume is different from northbound to southbound. The most notable difference within all locations and directions is the location A northbound and southbound on the weekday. There were 81% more northbound users compared to the southbound volume on the weekday. The weekend counts also indicate that there was significantly greater volume in northbound on the weekend.

Location	Description	Weekday	Weekend
A	NB	530	736
	SB	293	421
	Difference	81%	75%
B	NB	712	928
	SB	730	858
	Difference	-2%	8%
C	NB	918	1,098
	SB	981	1,190
	Difference	-6%	-8%
D	NB	630	771
	SB	798	1,061
	Difference	-21%	-27%
E	NB	369	418
	SB	334	406
	Difference	10%	3%

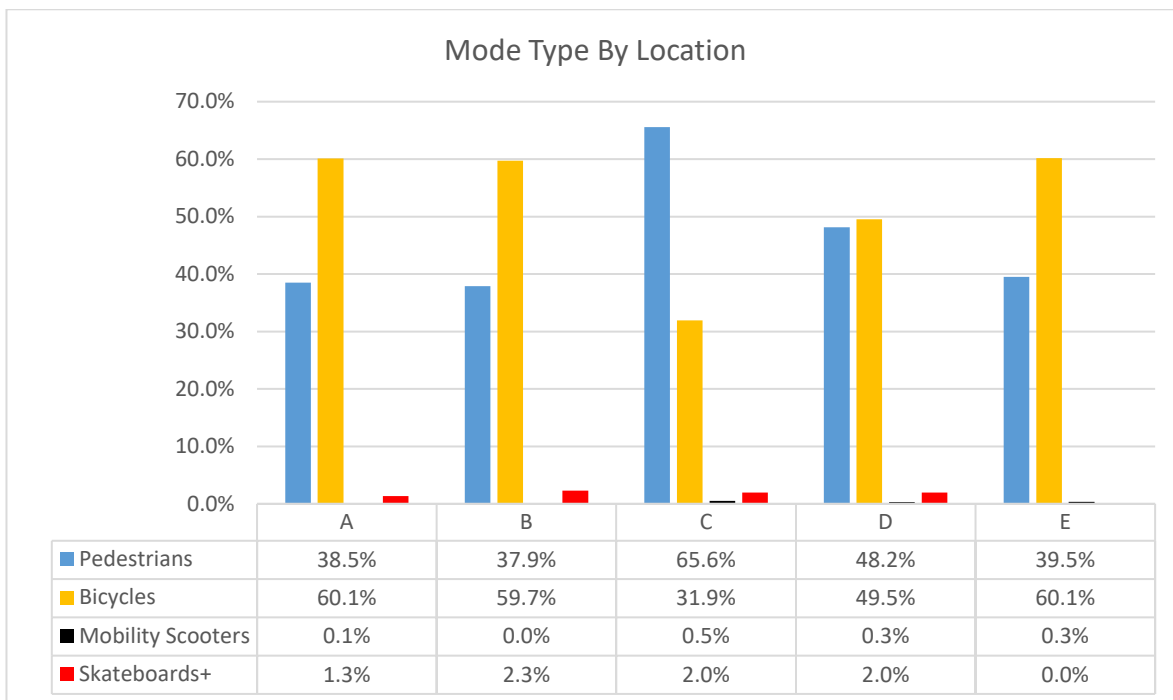
In location-wise, it demonstrates that 81-75% more people were going north from Davis Dr to the north town limit, 6-27% more people were going south from Water St to Mulock Dr, and 3-10% more people were going north from the south town limit to Mulock Dr.

Mode Type Volume

The graph below shows the Total Mode Type from all locations. In general, the bicycle volume was greater than any other modes including pedestrians. There were only 0.3% of mobility scooter users within the whole counts.



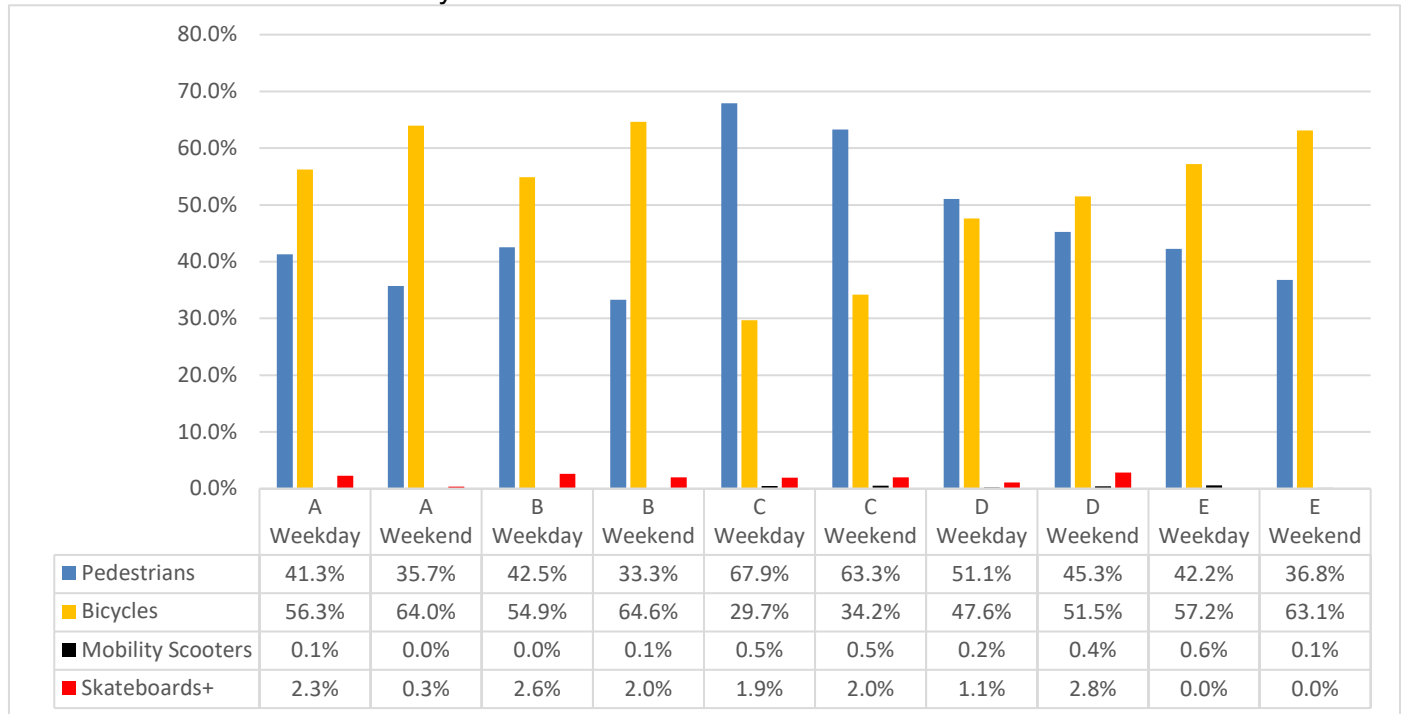
The graph below shows the Mode Type by Location. It shows that the cyclist volume was greater than pedestrians from most of the locations except for the location C.



Location A & E had the highest percentage of cyclist volume, which is 60%. On the other hand, the pedestrian volume was 66% at location C while there was only 32% bicycle volume. Location D had the most balanced percentage of trail users between cyclists and pedestrians.

Mode Type in Weekday and Weekend

The graph below shows what type of mode was used on each location on the weekday and weekend. As well, the table below demonstrates the pedestrians and bicycles percentage differences between weekend and weekday.



Location	Mode	Weekday	Weekend	Weekend - Weekday
A	Pedestrians	41.3%	35.7%	-5.6%
	Bicycles	56.3%	64.0%	7.7%
B	Pedestrians	42.5%	33.3%	-9.2%
	Bicycles	54.9%	64.6%	9.8%
C	Pedestrians	67.9%	63.3%	-4.6%
	Bicycles	29.7%	34.2%	4.5%
D	Pedestrians	51.1%	45.3%	-5.8%
	Bicycles	47.6%	51.5%	3.9%
E	Pedestrians	42.2%	36.8%	-5.5%
	Bicycles	57.2%	63.1%	5.9%

To compare the type of mode in the weekday and weekend, there was an average of 6.3% of cyclist volume increased in the weekend and an average of 6.1% of pedestrian volume declined on the weekend compared to the weekday.

Location B had the most dramatic change in bicycle percentage from 54.9% to 64.6% on the weekend. On the other hand, the pedestrian percentage dropped 9.2% compared to the weekday.

Appendix C has the graphs showing the weekday and weekend mode type by time from all locations.

Conclusion

The Holland River Trail count study analysis demonstrates the following information.

- the total trail user volume increases in the centre of the town,
- 25% more people were using the trail in the weekend compared to the weekday,
- the trails were mainly being used in the evening on the weekday and day time in the weekend,
- bicycle volume in the Holland River Trail was greater than other modes, and
- the cyclist percentage in trail users increased in the weekend.

Should you have any questions regarding the above, please contact the undersigned.

Sincerely,

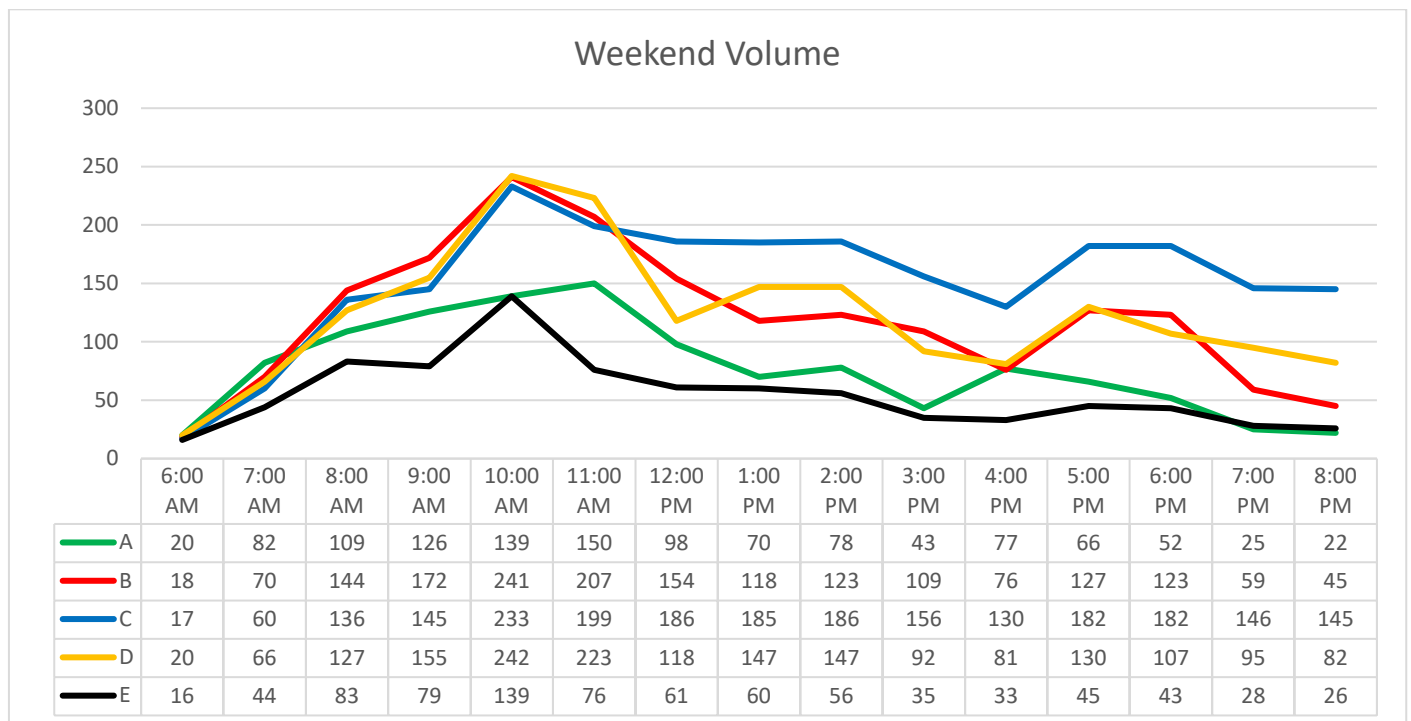
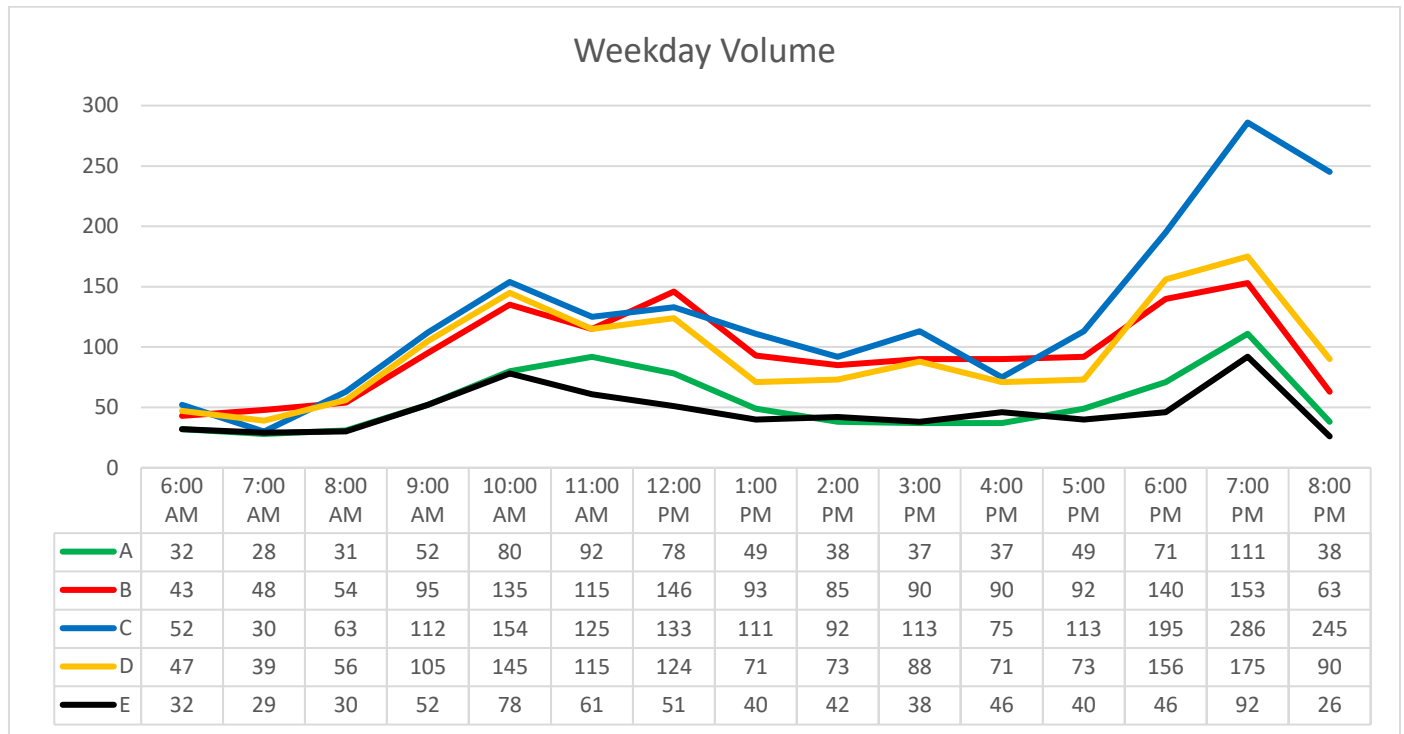
ENGINEERING SERVICES



P. Choi, C.E.T.
Traffic Technologist

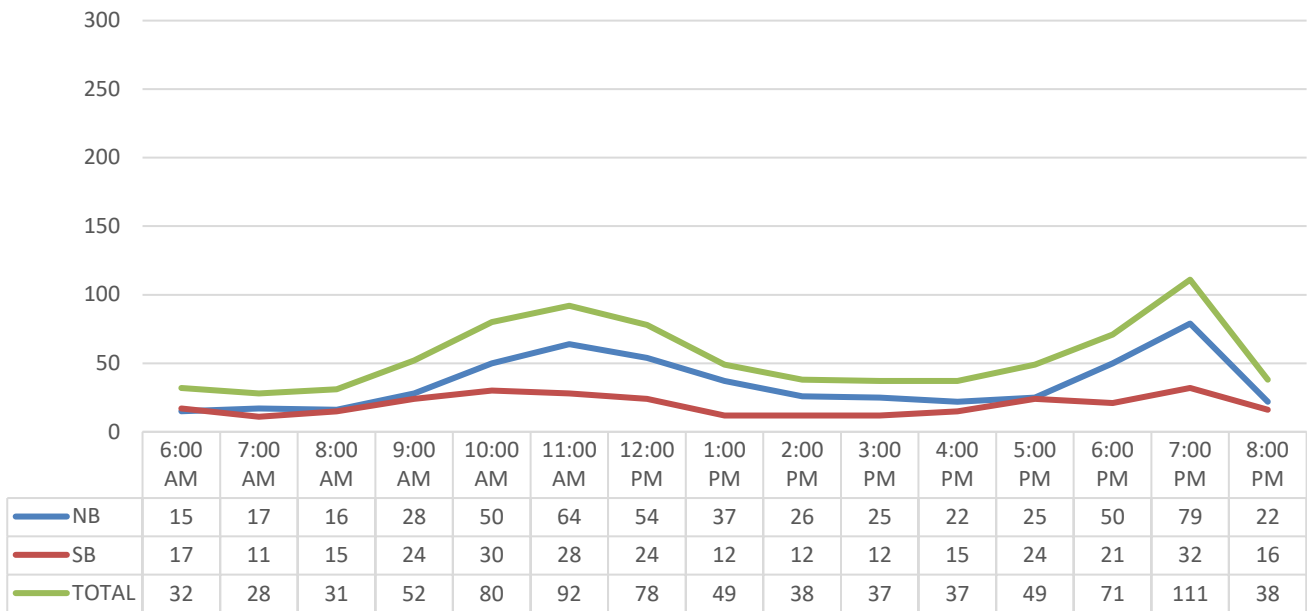
PC008M

Appendix A: Weekday and Weekend Volume by Time – All Direction

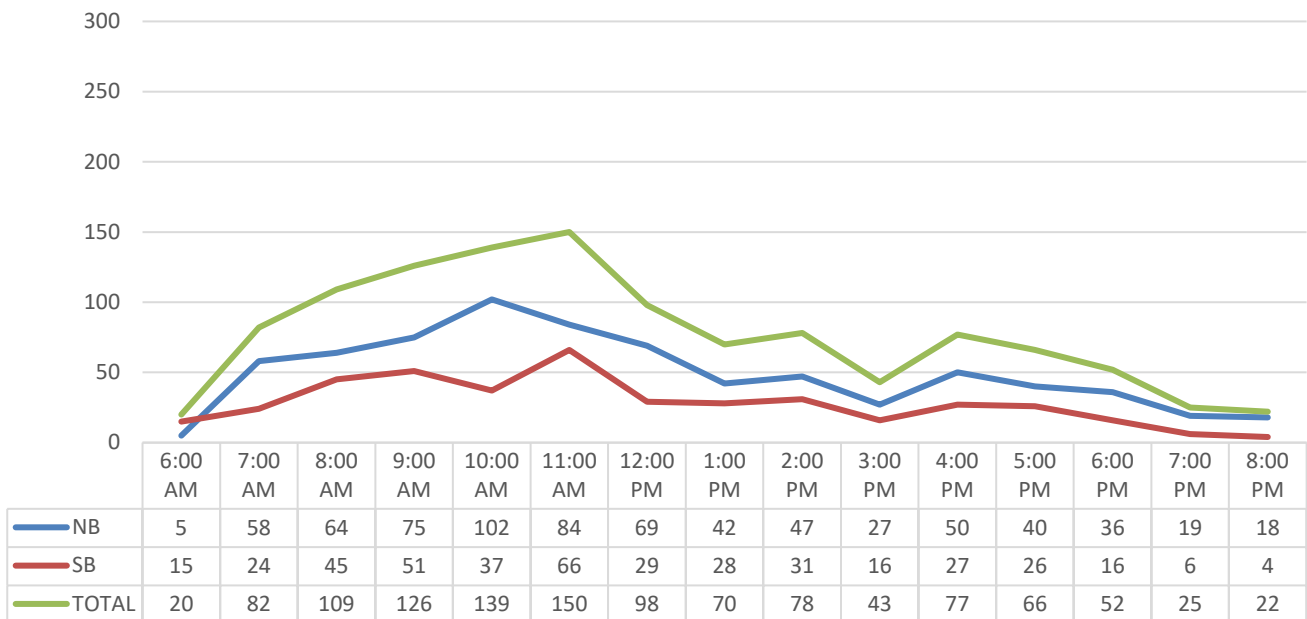


Appendix B: Weekday and Weekend Volume by Time – By-Direction

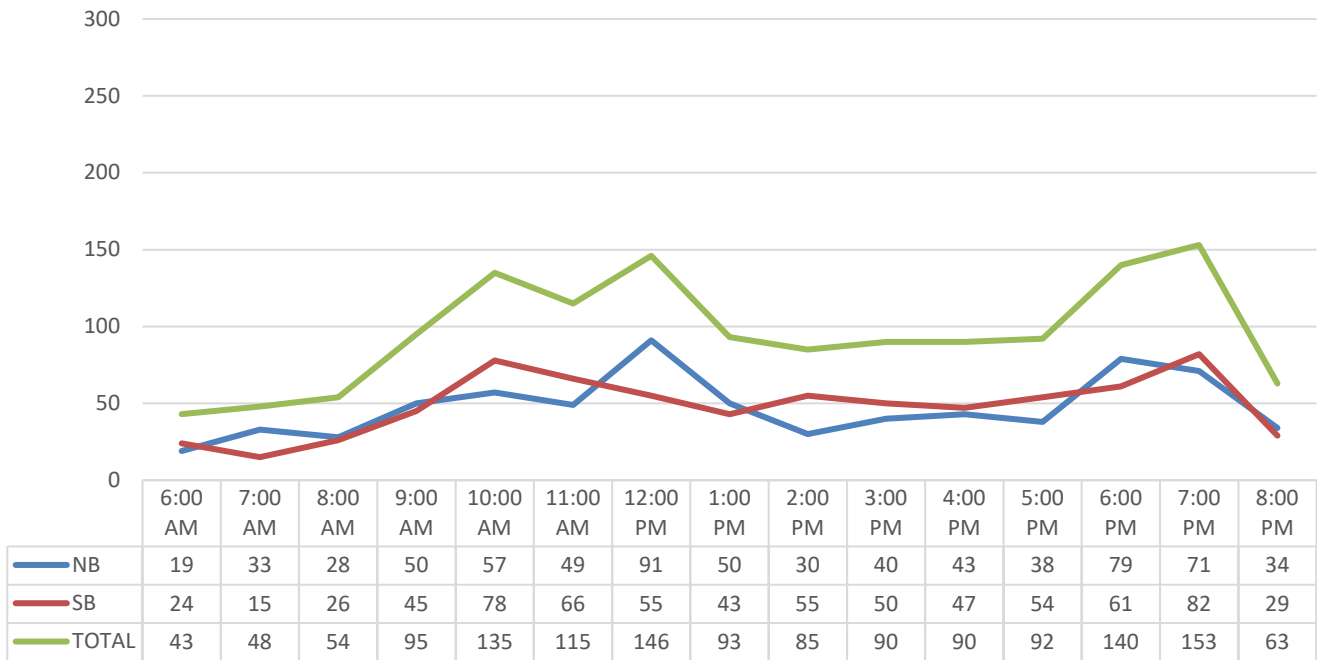
A: Weekday Volume by Time



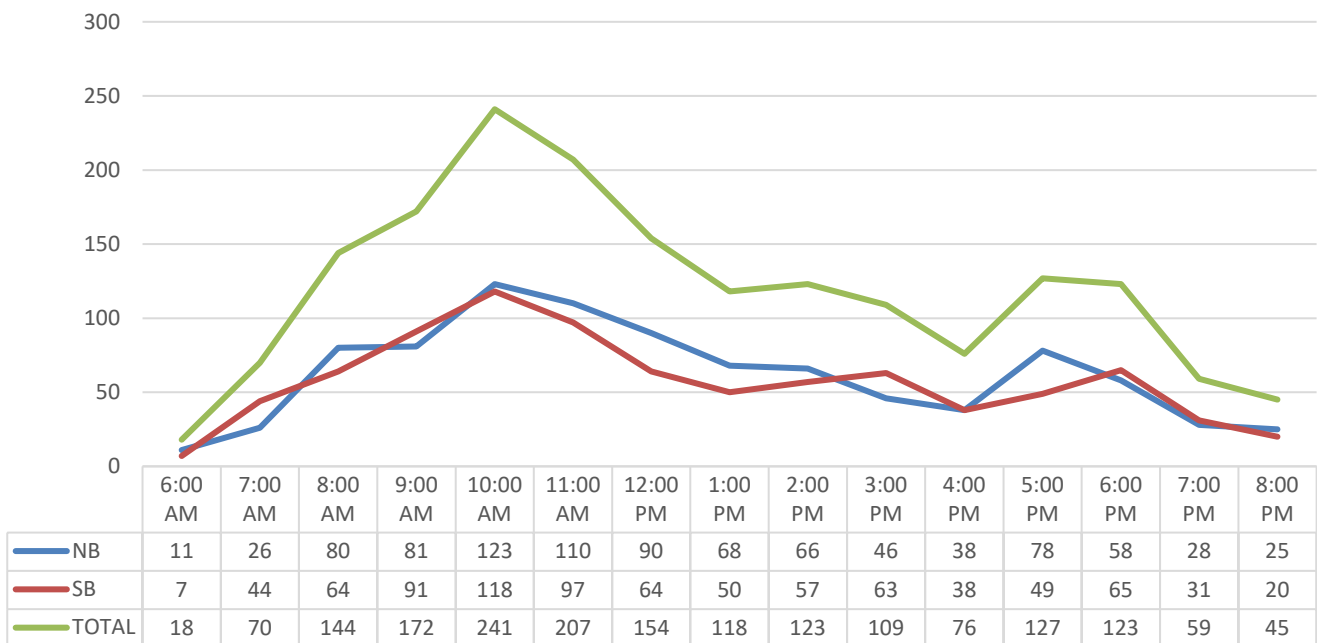
A: Weekend Volume by Time



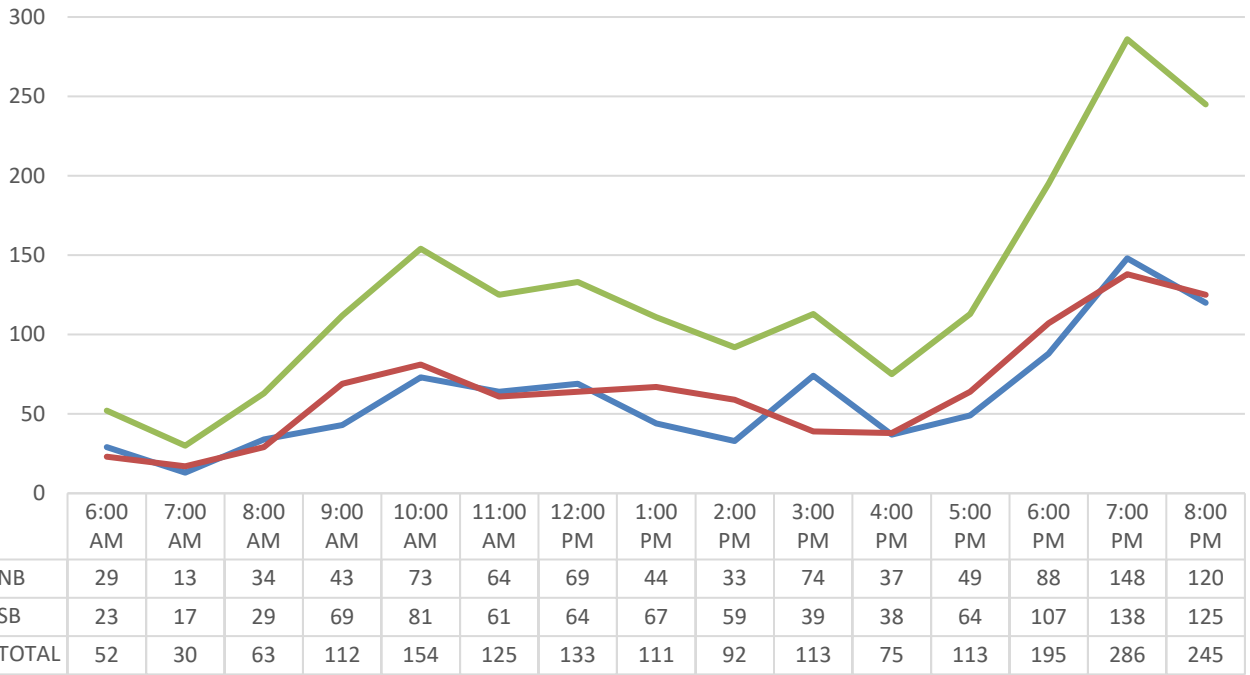
B: Weekday Volume by Time



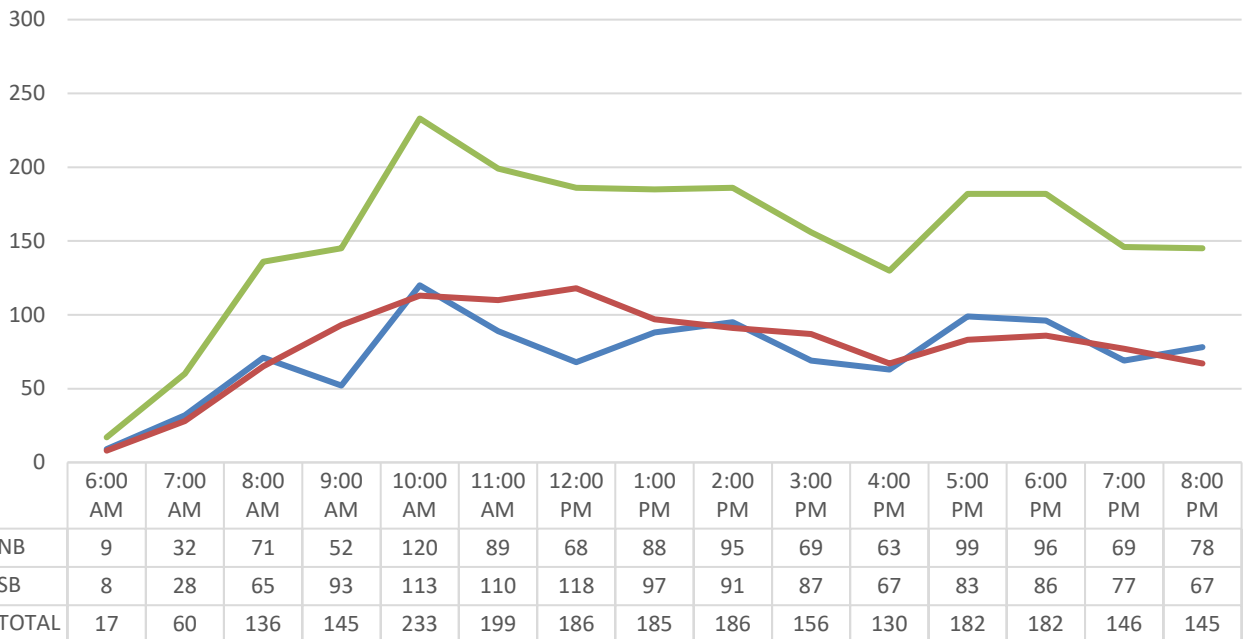
B: Weekend Volume by Time



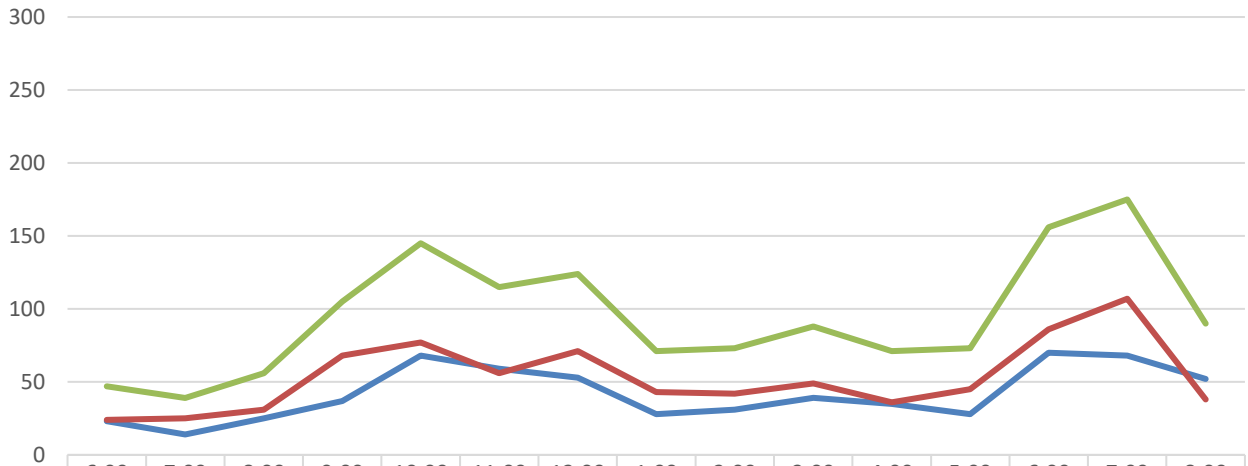
C: Weekday Volume by Time



C: Weekend Volume by Time

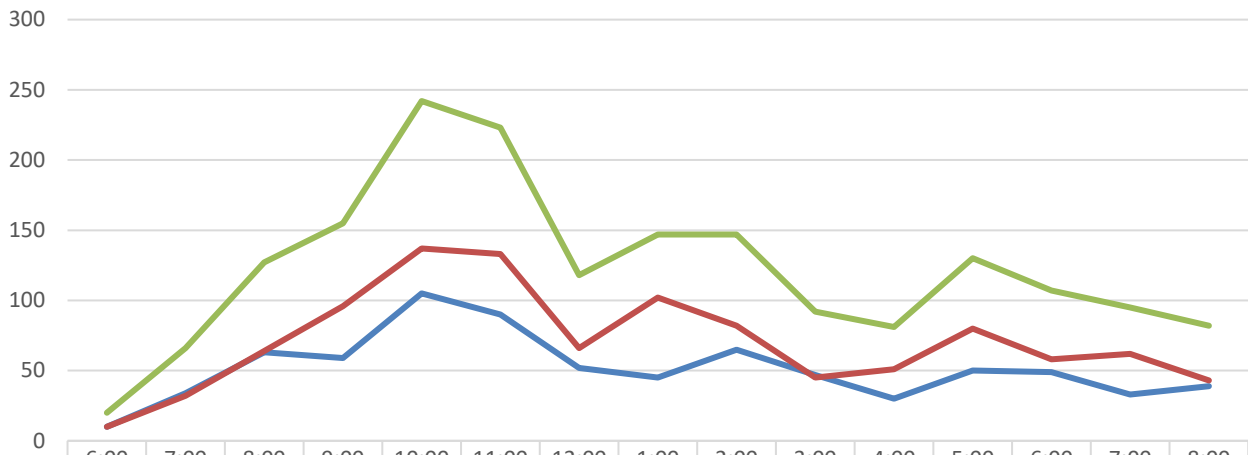


D: Weekday Volume by Time



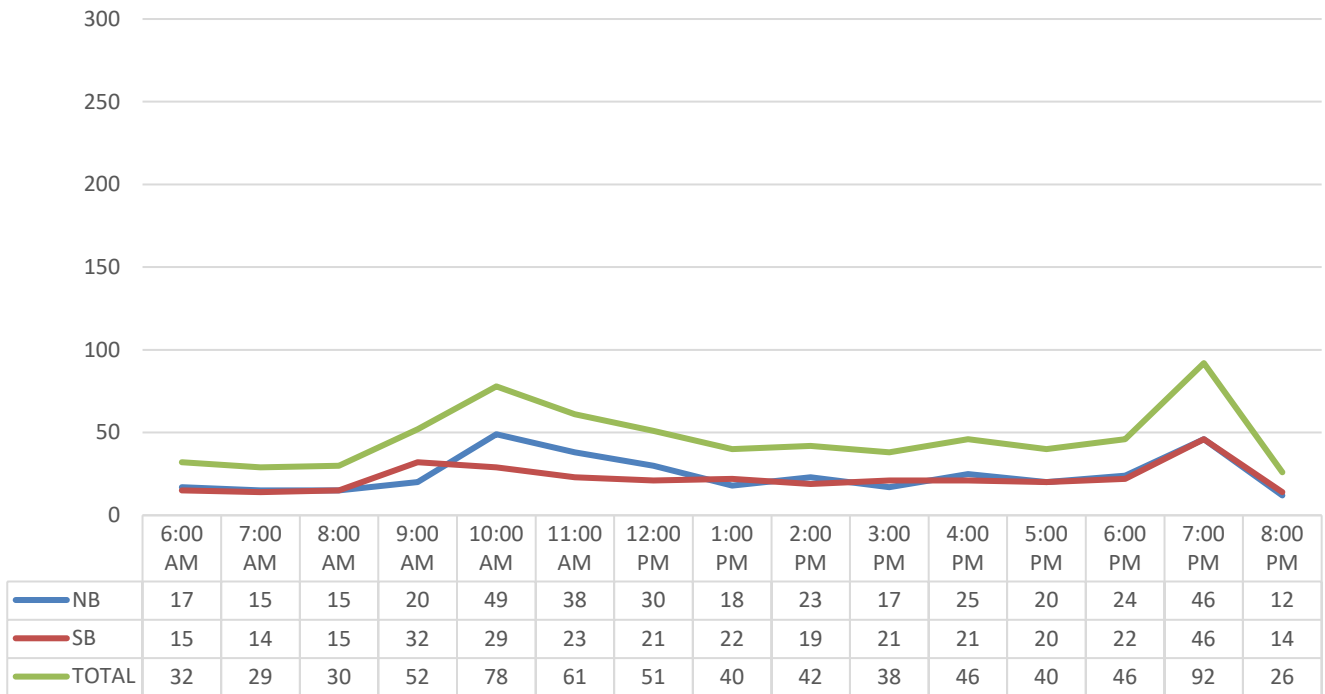
	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM
NB	23	14	25	37	68	59	53	28	31	39	35	28	70	68	52
SB	24	25	31	68	77	56	71	43	42	49	36	45	86	107	38
TOTAL	47	39	56	105	145	115	124	71	73	88	71	73	156	175	90

D: Weekend Volume by Time

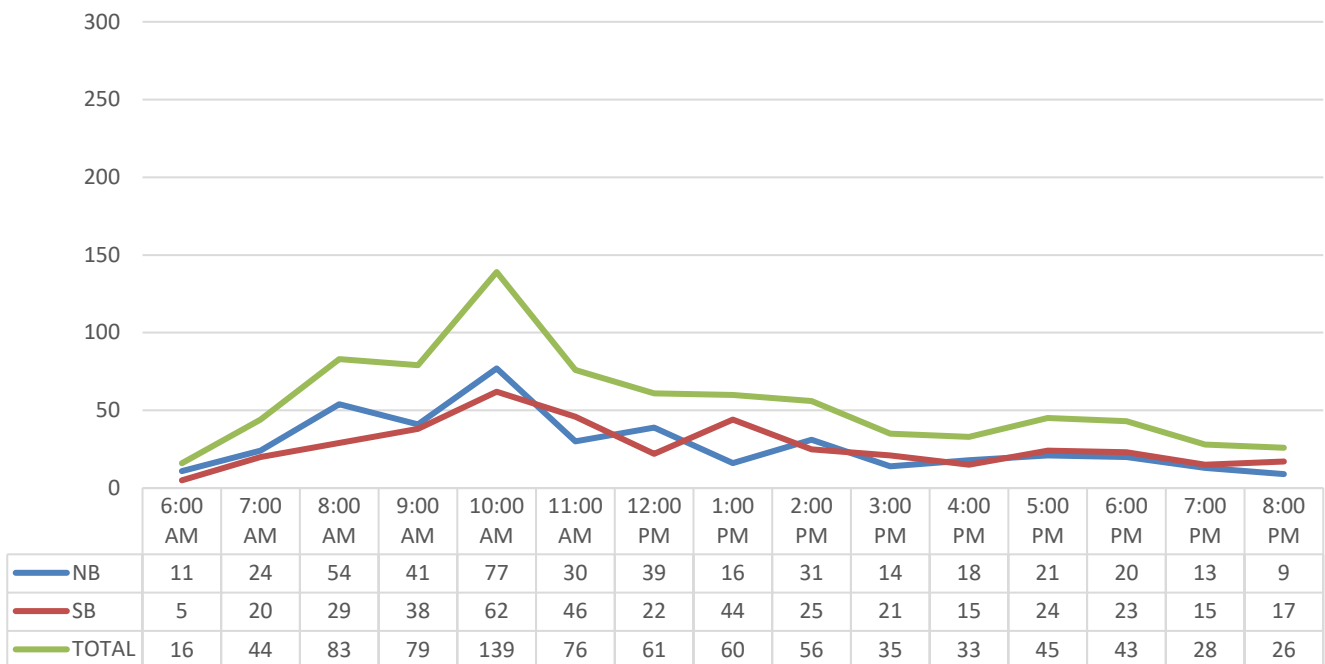


	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM
NB	10	34	63	59	105	90	52	45	65	47	30	50	49	33	39
SB	10	32	64	96	137	133	66	102	82	45	51	80	58	62	43
TOTAL	20	66	127	155	242	223	118	147	147	92	81	130	107	95	82

E: Weekday Volume by Time

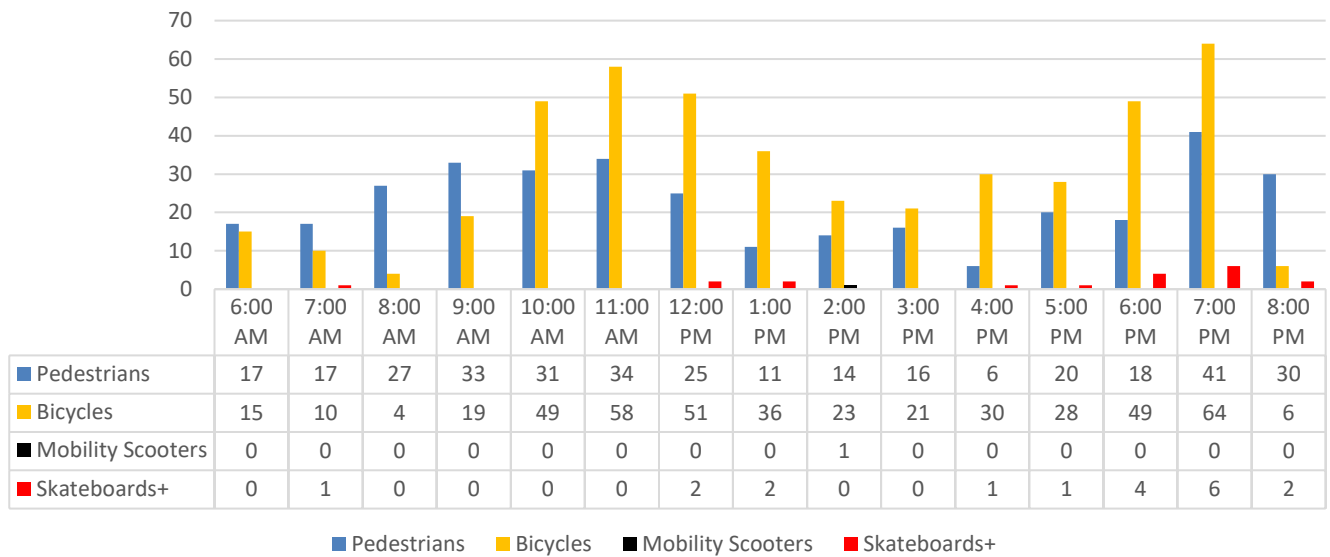


E: Weekend Volume by Time

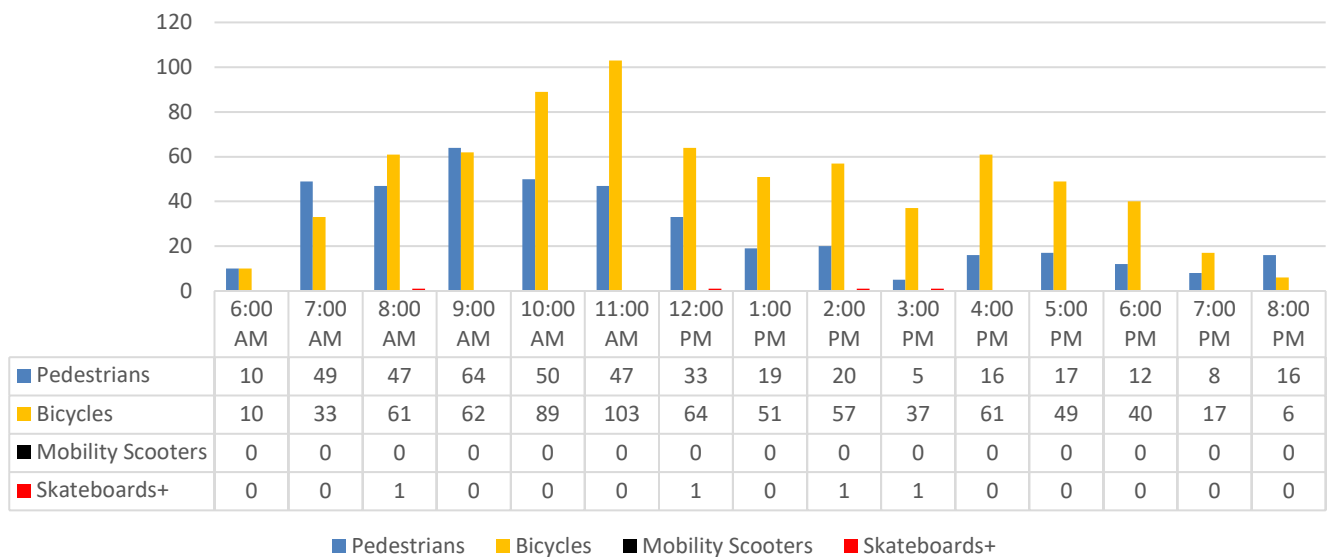


Appendix C: Type of Mode by Time

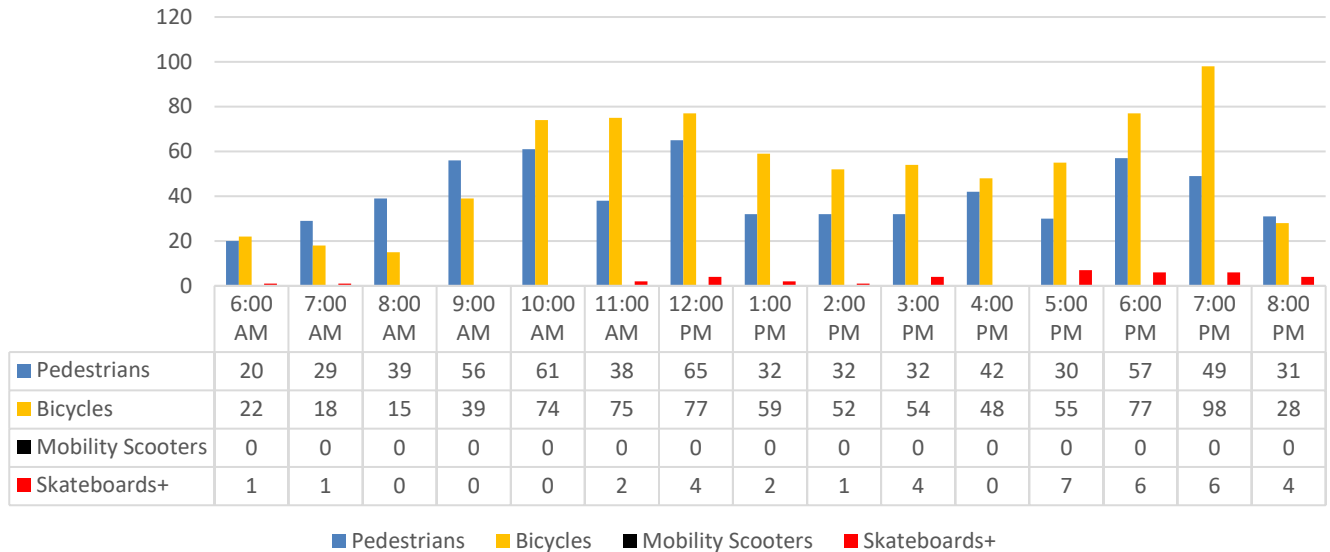
A: Weekday by Type



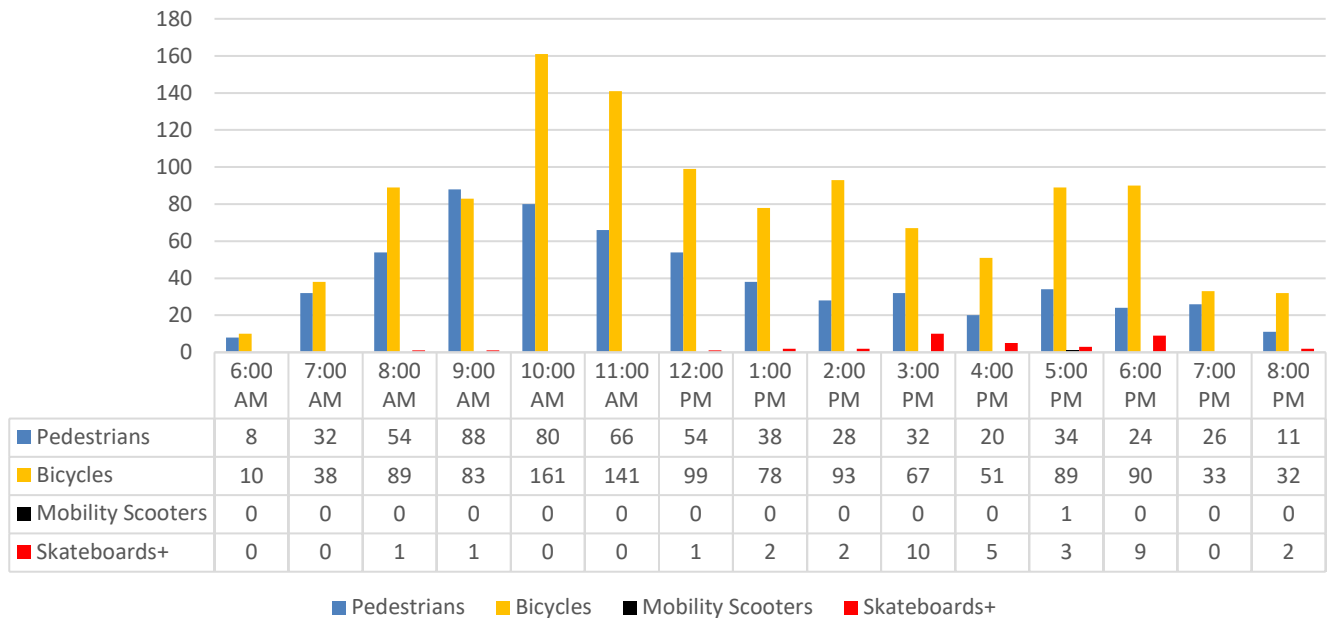
A: Weekend by Type



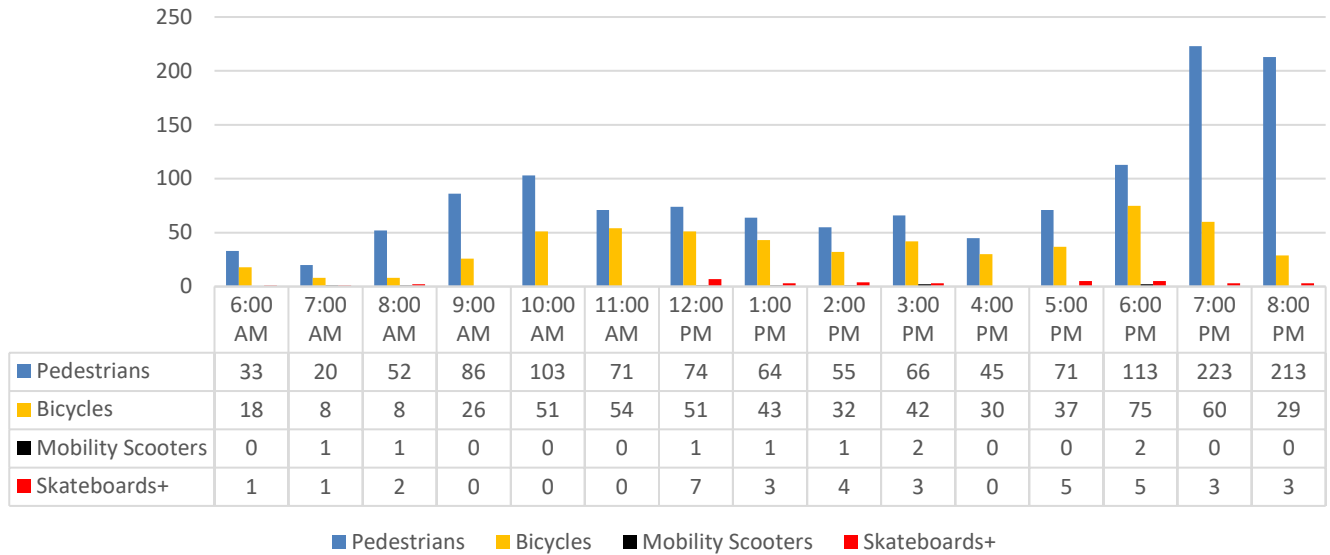
B: Weekday by Type



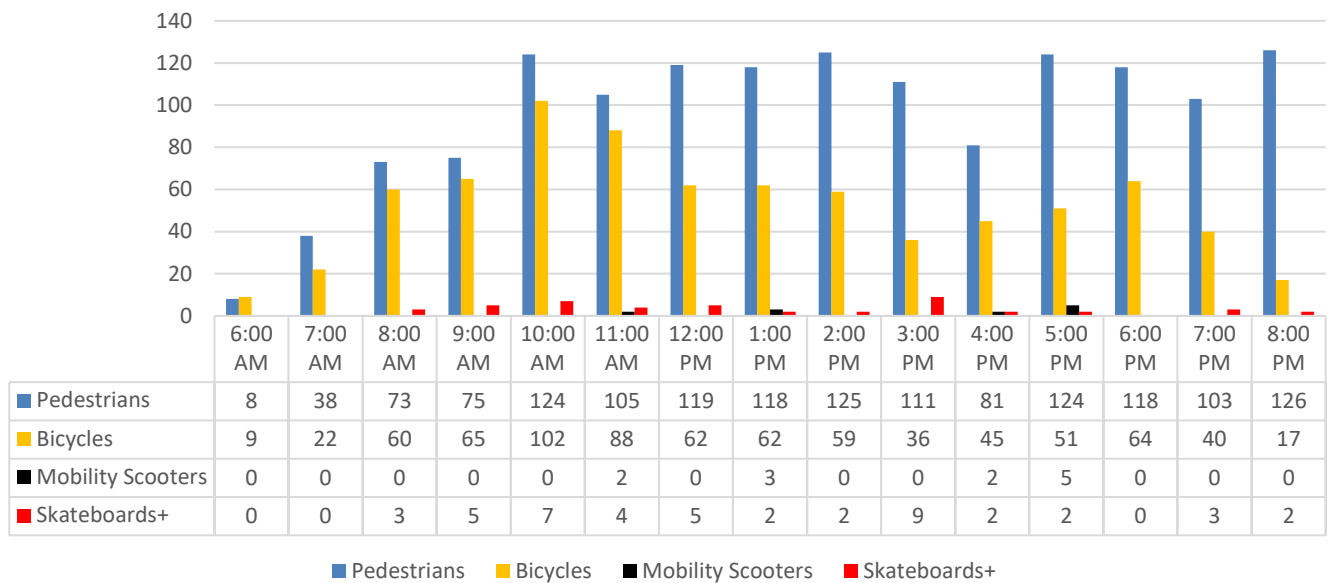
B: Weekend by Type



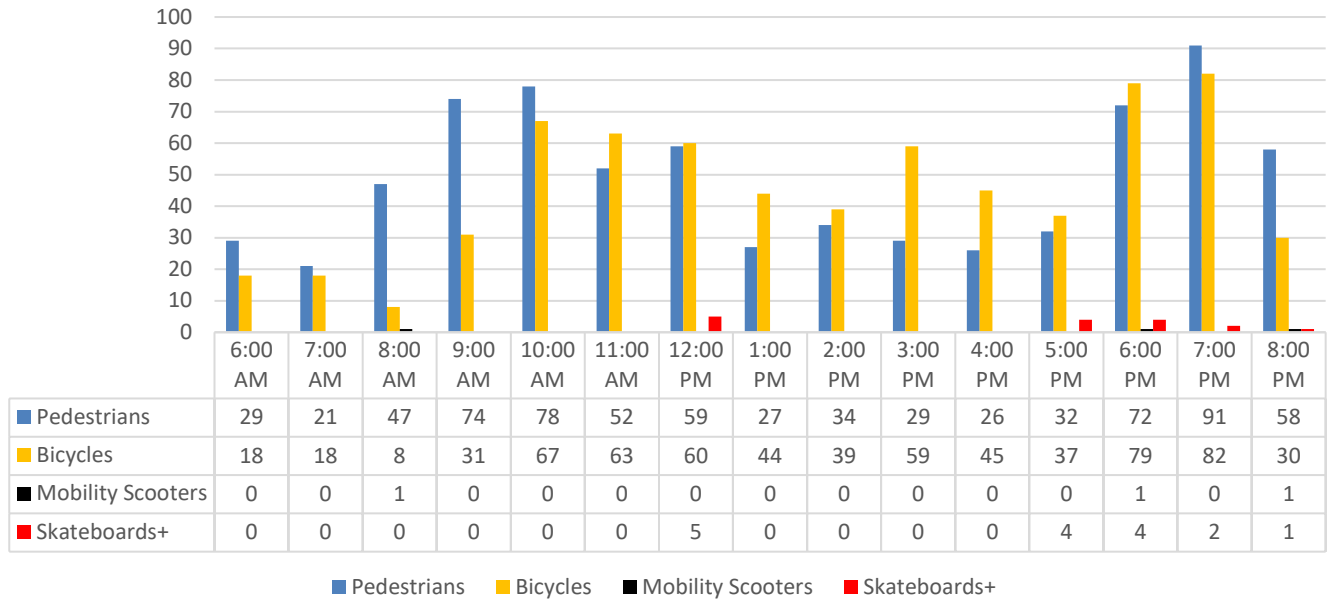
C: Weekday by Type



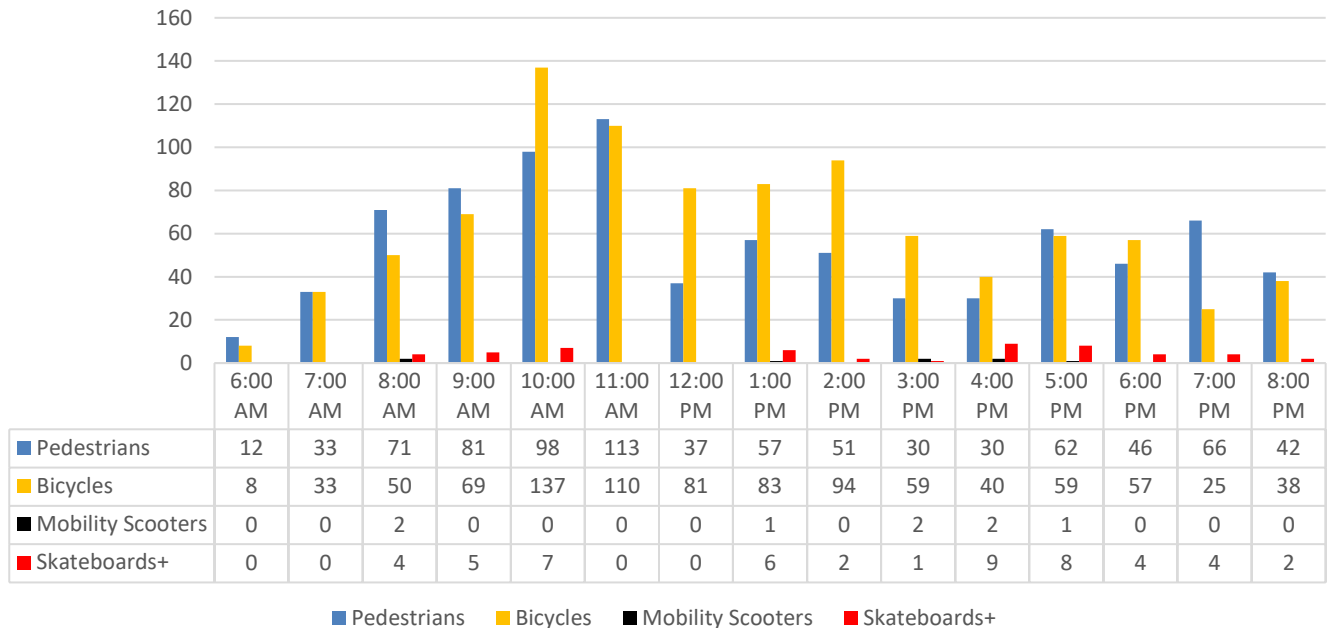
C: Weekend by Type



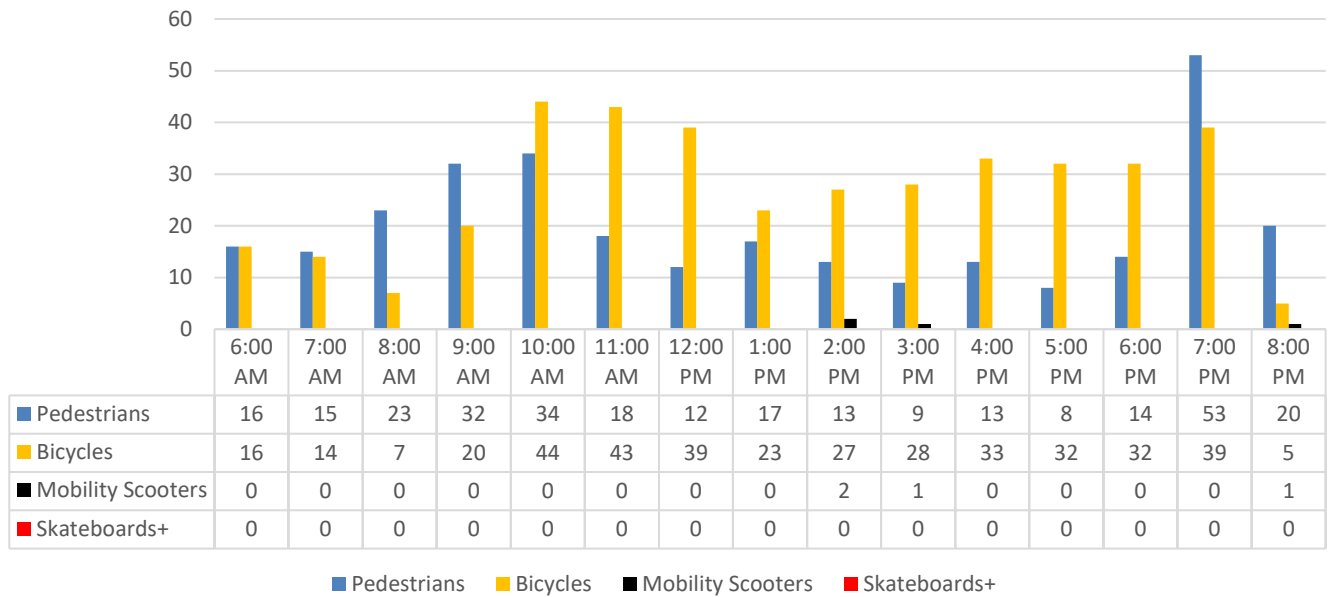
D: Weekday by Type



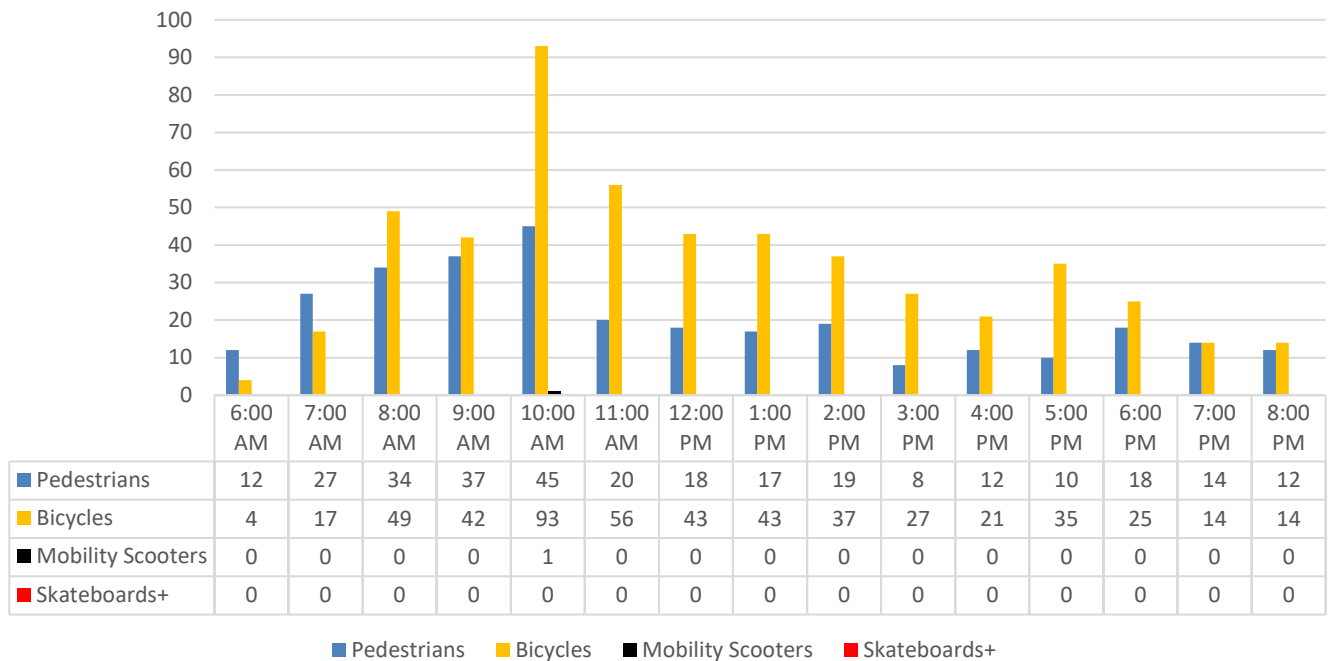
D: Weekend by Type



E: Weekday by Type



E: Weekend by Type



Appendix D: Full Data

Time	NB					SB				
	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total
6:00 AM	6	9	0	0	15	11	6	0	0	17
7:00 AM	11	5	0	1	17	6	5	0	0	11
8:00 AM	13	3	0	0	16	14	1	0	0	15
9:00 AM	17	11	0	0	28	16	8	0	0	24
10:00 AM	14	36	0	0	50	17	13	0	0	30
11:00 AM	20	44	0	0	64	14	14	0	0	28
12:00 PM	17	37	0	0	54	8	14	0	2	24
1:00 PM	7	28	0	2	37	4	8	0	0	12
2:00 PM	11	14	1	0	26	3	9	0	0	12
3:00 PM	12	13	0	0	25	4	8	0	0	12
4:00 PM	4	17	0	1	22	2	13	0	0	15
5:00 PM	11	13	0	1	25	9	15	0	0	24
6:00 PM	13	35	0	2	50	5	14	0	2	21
7:00 PM	27	47	0	5	79	14	17	0	1	32
8:00 PM	16	5	0	1	22	14	1	0	1	16
Total	199	317	1	13	530	141	146	0	6	293

A: Weekday

Time	NB					SB				
	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total
6:00 AM	1	4	0	0	5	9	6	0	0	15
7:00 AM	33	25	0	0	58	16	8	0	0	24
8:00 AM	25	38	0	1	64	22	23	0	0	45
9:00 AM	40	35	0	0	75	24	27	0	0	51
10:00 AM	36	66	0	0	102	14	23	0	0	37
11:00 AM	30	54	0	0	84	17	49	0	0	66
12:00 PM	30	39	0	0	69	3	25	0	1	29
1:00 PM	12	30	0	0	42	7	21	0	0	28
2:00 PM	15	31	0	1	47	5	26	0	0	31
3:00 PM	2	25	0	0	27	3	12	0	1	16
4:00 PM	7	43	0	0	50	9	18	0	0	27
5:00 PM	9	31	0	0	40	8	18	0	0	26
6:00 PM	6	30	0	0	36	6	10	0	0	16
7:00 PM	4	15	0	0	19	4	2	0	0	6
8:00 PM	12	6	0	0	18	4	0	0	0	4
Total	262	472	0	2	736	151	268	0	2	421

A: Weekend

	NB					SB				
Time	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total
6:00 AM	12	6	0	1	19	8	16	0	0	24
7:00 AM	21	12	0	0	33	8	6	0	1	15
8:00 AM	19	9	0	0	28	20	6	0	0	26
9:00 AM	32	18	0	0	50	24	21	0	0	45
10:00 AM	15	42	0	0	57	46	32	0	0	78
11:00 AM	13	34	0	2	49	25	41	0	0	66
12:00 PM	46	45	0	0	91	19	32	0	4	55
1:00 PM	21	28	0	1	50	11	31	0	1	43
2:00 PM	14	16	0	0	30	18	36	0	1	55
3:00 PM	15	24	0	1	40	17	30	0	3	50
4:00 PM	12	31	0	0	43	30	17	0	0	47
5:00 PM	20	15	0	3	38	10	40	0	4	54
6:00 PM	31	43	0	5	79	26	34	0	1	61
7:00 PM	25	44	0	2	71	24	54	0	4	82
8:00 PM	16	17	0	1	34	15	11	0	3	29
Total	312	384	0	16	712	301	407	0	22	730

B: Weekday

	NB					SB				
Time	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total
6:00 AM	5	6	0	0	11	3	4	0	0	7
7:00 AM	7	19	0	0	26	25	19	0	0	44
8:00 AM	35	45	0	0	80	19	44	0	1	64
9:00 AM	39	41	0	1	81	49	42	0	0	91
10:00 AM	51	72	0	0	123	29	89	0	0	118
11:00 AM	27	83	0	0	110	39	58	0	0	97
12:00 PM	33	57	0	0	90	21	42	0	1	64
1:00 PM	24	44	0	0	68	14	34	0	2	50
2:00 PM	13	52	0	1	66	15	41	0	1	57
3:00 PM	7	36	0	3	46	25	31	0	7	63
4:00 PM	12	21	0	5	38	8	30	0	0	38
5:00 PM	20	54	1	3	78	14	35	0	0	49
6:00 PM	13	40	0	5	58	11	50	0	4	65
7:00 PM	14	14	0	0	28	12	19	0	0	31
8:00 PM	2	23	0	0	25	9	9	0	2	20
Total	302	607	1	18	928	293	547	0	18	858

B: Weekend

Time	NB					SB				
	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total
6:00 AM	19	9	0	1	29	14	9	0	0	23
7:00 AM	8	5	0	0	13	12	3	1	1	17
8:00 AM	26	6	0	2	34	26	2	1	0	29
9:00 AM	33	10	0	0	43	53	16	0	0	69
10:00 AM	45	28	0	0	73	58	23	0	0	81
11:00 AM	34	30	0	0	64	37	24	0	0	61
12:00 PM	33	32	1	3	69	41	19	0	4	64
1:00 PM	27	17	0	0	44	37	26	1	3	67
2:00 PM	23	10	0	0	33	32	22	1	4	59
3:00 PM	42	29	0	3	74	24	13	2	0	39
4:00 PM	17	20	0	0	37	28	10	0	0	38
5:00 PM	34	13	0	2	49	37	24	0	3	64
6:00 PM	50	34	1	3	88	63	41	1	2	107
7:00 PM	113	34	0	1	148	110	26	0	2	138
8:00 PM	109	11	0	0	120	104	18	0	3	125
Total	613	288	2	15	918	676	276	7	22	981

C: Weekday

Time	NB					SB				
	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total
6:00 AM	5	4	0	0	9	3	5	0	0	8
7:00 AM	16	16	0	0	32	22	6	0	0	28
8:00 AM	35	33	0	3	71	38	27	0	0	65
9:00 AM	25	27	0	0	52	50	38	0	5	93
10:00 AM	61	52	0	7	120	63	50	0	0	113
11:00 AM	39	49	1	0	89	66	39	1	4	110
12:00 PM	45	19	0	4	68	74	43	0	1	118
1:00 PM	58	26	2	2	88	60	36	1	0	97
2:00 PM	61	34	0	0	95	64	25	0	2	91
3:00 PM	54	11	0	4	69	57	25	0	5	87
4:00 PM	40	20	1	2	63	41	25	1	0	67
5:00 PM	66	28	3	2	99	58	23	2	0	83
6:00 PM	63	33	0	0	96	55	31	0	0	86
7:00 PM	49	19	0	1	69	54	21	0	2	77
8:00 PM	67	9	0	2	78	59	8	0	0	67
Total	684	380	7	27	1098	764	402	5	19	1190

C: Weekend

Time	NB					SB				
	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total
6:00 AM	13	10	0	0	23	16	8	0	0	24
7:00 AM	5	9	0	0	14	16	9	0	0	25
8:00 AM	19	6	0	0	25	28	2	1	0	31
9:00 AM	23	14	0	0	37	51	17	0	0	68
10:00 AM	27	41	0	0	68	51	26	0	0	77
11:00 AM	23	36	0	0	59	29	27	0	0	56
12:00 PM	9	42	0	2	53	50	18	0	3	71
1:00 PM	8	20	0	0	28	19	24	0	0	43
2:00 PM	14	17	0	0	31	20	22	0	0	42
3:00 PM	8	31	0	0	39	21	28	0	0	49
4:00 PM	9	26	0	0	35	17	19	0	0	36
5:00 PM	8	18	0	2	28	24	19	0	2	45
6:00 PM	22	45	1	2	70	50	34	0	2	86
7:00 PM	28	39	0	1	68	63	43	0	1	107
8:00 PM	36	14	1	1	52	22	16	0	0	38
Total	252	368	2	8	630	477	312	1	8	798

D: Weekday

Time	NB					SB				
	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total
6:00 AM	5	5	0	0	10	7	3	0	0	10
7:00 AM	12	22	0	0	34	21	11	0	0	32
8:00 AM	38	21	1	3	63	33	29	1	1	64
9:00 AM	30	29	0	0	59	51	40	0	5	96
10:00 AM	28	72	0	5	105	70	65	0	2	137
11:00 AM	40	50	0	0	90	73	60	0	0	133
12:00 PM	9	43	0	0	52	28	38	0	0	66
1:00 PM	15	25	1	4	45	42	58	0	2	102
2:00 PM	22	43	0	0	65	29	51	0	2	82
3:00 PM	12	33	1	1	47	18	26	1	0	45
4:00 PM	6	21	1	2	30	24	19	1	7	51
5:00 PM	16	28	0	6	50	46	31	1	2	80
6:00 PM	18	29	0	2	49	28	28	0	2	58
7:00 PM	24	7	0	2	33	42	18	0	2	62
8:00 PM	17	20	0	2	39	25	18	0	0	43
Total	292	448	4	27	771	537	495	4	25	1061

D: Weekend

	NB					SB				
Time	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total
6:00 AM	8	9	0	0	17	8	7	0	0	15
7:00 AM	10	5	0	0	15	5	9	0	0	14
8:00 AM	10	5	0	0	15	13	2	0	0	15
9:00 AM	11	9	0	0	20	21	11	0	0	32
10:00 AM	21	28	0	0	49	13	16	0	0	29
11:00 AM	10	28	0	0	38	8	15	0	0	23
12:00 PM	5	25	0	0	30	7	14	0	0	21
1:00 PM	6	12	0	0	18	11	11	0	0	22
2:00 PM	8	13	2	0	23	5	14	0	0	19
3:00 PM	4	13	0	0	17	5	15	1	0	21
4:00 PM	8	17	0	0	25	5	16	0	0	21
5:00 PM	3	17	0	0	20	5	15	0	0	20
6:00 PM	8	16	0	0	24	6	16	0	0	22
7:00 PM	29	17	0	0	46	24	22	0	0	46
8:00 PM	11	1	0	0	12	9	4	1	0	14
Total	152	215	2	0	369	145	187	2	0	334

E: Weekday

	NB					SB				
Time	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total	Pedestrians	Bicycles	Mobility Scooters	Skateboards+	Total
6:00 AM	8	3	0	0	11	4	1	0	0	5
7:00 AM	12	12	0	0	24	15	5	0	0	20
8:00 AM	21	33	0	0	54	13	16	0	0	29
9:00 AM	19	22	0	0	41	18	20	0	0	38
10:00 AM	28	49	0	0	77	17	44	1	0	62
11:00 AM	7	23	0	0	30	13	33	0	0	46
12:00 PM	11	28	0	0	39	7	15	0	0	22
1:00 PM	7	9	0	0	16	10	34	0	0	44
2:00 PM	11	20	0	0	31	8	17	0	0	25
3:00 PM	3	11	0	0	14	5	16	0	0	21
4:00 PM	8	10	0	0	18	4	11	0	0	15
5:00 PM	7	14	0	0	21	3	21	0	0	24
6:00 PM	8	12	0	0	20	10	13	0	0	23
7:00 PM	7	6	0	0	13	7	8	0	0	15
8:00 PM	6	3	0	0	9	6	11	0	0	17
Total	163	255	0	0	418	140	265	1	0	406

E: Weekend