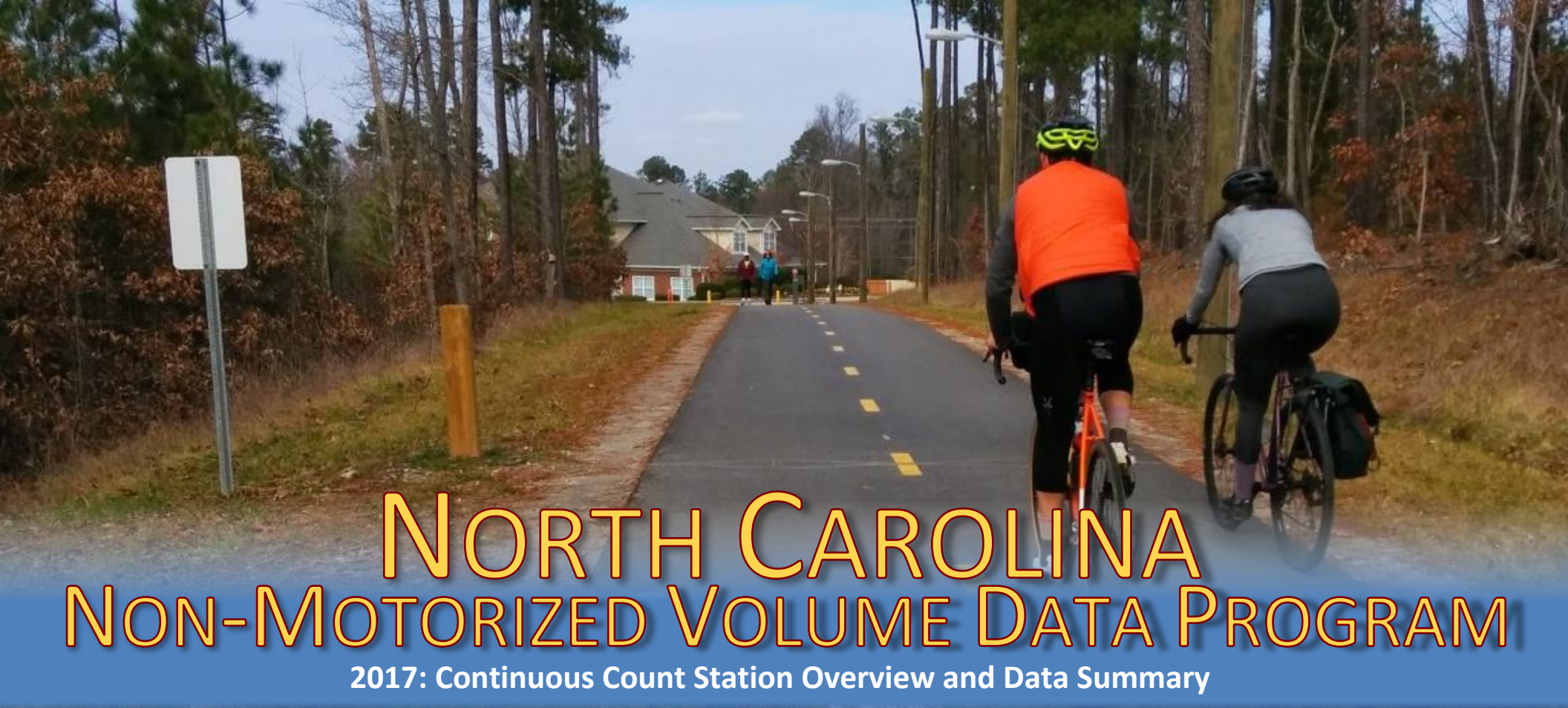

North Carolina
Non-Motorized Volume Data Program

2017: Continuous Count Station Overview and Data Summary

ITRE

North Carolina Non-Motorized Volume Data Program

2017: Continuous Count Station Overview and Data Summary

Phase I of the NC Non-Motorized Volume Data Program (NCNMVDP) included twelve locations where Continuous Count Stations (CCSs) were installed to monitor bicycle and pedestrian traffic. These stations went live in late 2014. Additional count stations were installed in Brevard and Durham, NC in 2015 and an additional two continuous count stations were installed in the communities of Wilkesboro and Duck in 2016 and incorporated into the NCNMVDP as extensions of the Phase I count sites. Phase II of the North Carolina Non-Motorized Volume Data Program included the installation of nine CCSs in late 2016 in Charlotte, North Carolina. As of January 2017, a network of twenty-five counts stations was located in the geographic region which comprises NCDOT Divisions 1, 5, 7, 9, 10, and 14. These stations cover a mix of sites across different land uses, travel patterns, and volume groups. Detailed technical information can be found in the **Phase I Final Report and Appendices.**

The following programmatic elements that were piloted in Phase I were refined and expanded upon in the Phase II expansion:

- Agency Coordination
- Pre – Installation (Site Selection and Procurement)
- Equipment Set Up (Installation and Onboarding
- Equipment Validation
- Data Handling (QA/QC Checks, Cleaning, and Correcting)
- Equipment Maintenance
- Data Reporting

Selected sites for Phase II were installed with the assistance from local agency staff in Charlotte, North Carolina. Data was monitored for the 12-month reporting period. A data summary is provided based on the count data, with days of missing data and data related to equipment errors removed. The equipment at each CCS underwent a validation process to ground-truth each stream of non-motorized count data and correct it for errors related to data collection (such as undercounting or overcounting). The resulting 2017 corrected data is represented in the tables and graphs within this document.

Travel patterns and volume groups represented here are based solely on Phase I and the early stations of Phase II of NC's program and may change as the program expands and new information on bicycling and walking patterns and more research becomes available on a national level. The Annual Average Daily Traffic from the most current NCDOT record is given at the street location nearest to the CCS. Annual Daily Averages for Pedestrian Traffic (AADPT) and Bicycle Traffic (AADBT) have been calculated using the AASHTO method. Due to the limited knowledge for segmentation of non-motorized data, these figures are only representative at the station; any generalizations or usage of data should keep this caveat in mind. Local agencies may have more information related to daily data outliers or trends.

Due to a manufacturing error, many recently installed stations did not collect accurate data for periods of months. This loss in consistent and reliable data lead the research team to omit data analysis and creation of annualized statistics for sites where over a season, or ninety days of data, were scrubbed from the dataset. These omissions are highlighted in the summaries below. A full dataset containing all valid data is available at the NCNMVDP program website.

For more information, see the program website at: **itre.ncsu.edu/focus/bike-ped/nc-nmvdp/**

ITRE

BREVARD GREENWAY – BREVARD, NC

Table **1** Site Description	
Active Since	October 13, 2015
Pedestrian Travel Pattern	Rural Recreation
Pedestrian Volume Group	Low
Bicyclist Travel Pattern	Rural Recreation
Bicyclist Volume Group	Low
Station Location Coordinates	N35.25736 W82.70768
Station Name / ID	BRV_BGW / 870001
Directional Distribution	
Northbound Pedestrians (53%) Bicyclists (51%)	*Southbound* Pedestrians (47%) Bicyclists (49%)

SITE OVERVIEW

A continuous count station was installed on Brevard Greenway in Brevard, NC east of parking lot on Salem Lake Rd. This paved trail is part of a system of multi-use paths throughout Brevard that connect to Pisgah National Forest. The counters are located about half a mile south of the Ecusta Rd access and west of the Transylvania Activity Center. Table **1** contains information related to the site and photographs of the completed site installation are shown in Figure 1.

Figure 2 is a site diagram that shows equipment placement for the count station that comprises the site. Bicyclists on the greenway are detected by a set of two inductive loops positioned in the path (indicated as blue diamonds) and pedestrians are detected by an infrared sensor (indicated with a red triangle) mounted in a post.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report.

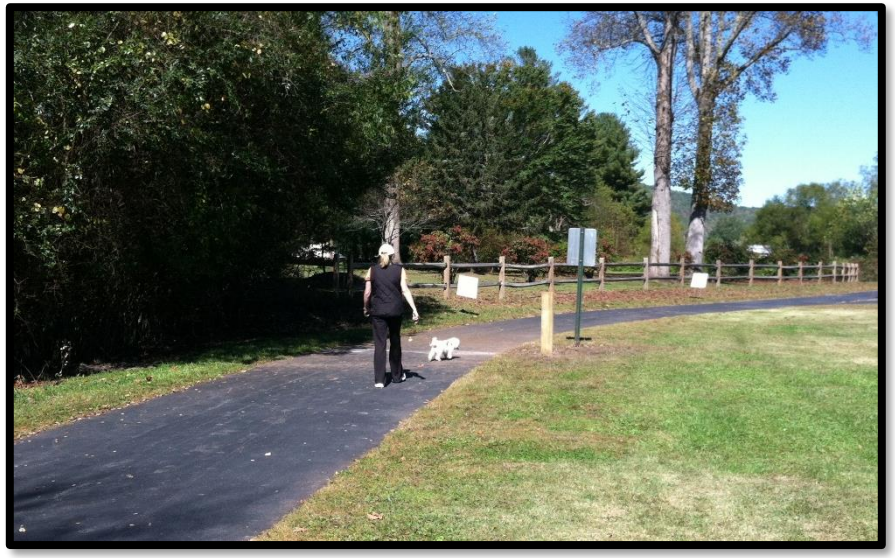

Figure 1. Continuous Count Station Installation

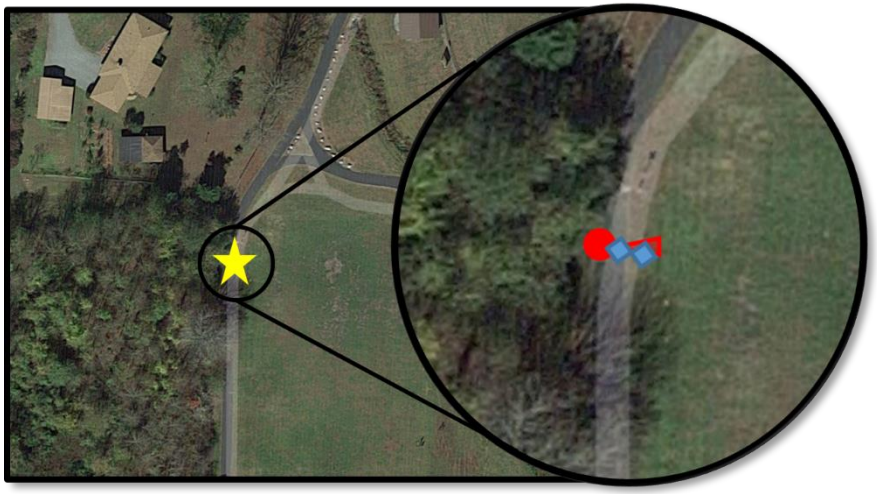

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

Summary Count Data

Over 30,000 pedestrian counts and over 26,000 bicycle counts were recorded during the 12-month analysis period. The overall volume of non-motorized users on this facility varied from approximately 2,700 to over 6,000 counts per month. **Table 2** is a summary of statistics for both bicyclist and pedestrian count data. Correction factors have been applied to the data based on a site-specific logger validation study. **Figure 3** displays the average high and low temperatures for this community during the months of the year. This site showed some correlation between temperature and non-motorized volumes.

Table 2 Summary Volume Statistics (1) (2)

Pedestrians		
	Highest Volume	**Lowest Volume**
Season	Spring	Winter
Month	February	September
Day of Week	Wednesday	Saturday
Date	Aug 10, 2017 (424)	Aug 08, 2017 (0)
Peak Period		Thursday 6 – 7PM
12 Month Pedestrian Count		31,093
Annual Average Daily Pedestrian Traffic		118 AADPT
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	Summer	Winter
Month	July	December
Day of Week	Sunday	Monday
Date	Aug 10, 2017 (424)	Jan 08, 2017 (0)
Peak Period		Weekends 11AM – 5PM
12 Month Bicycle Count		26,362
Annual Average Daily Bicycle Traffic		72 AADBT

(1) Data has been adjusted based on correction factors
(2) Annual Average Traffic calculated using AASHTO method

Pedestrian Data

The lowest monthly volumes for pedestrians was recorded in December, as shown in **Figure 3**. December was the only month with less than 2,000 pedestrian counts. The low pedestrian volumes in the winter likely due to cold weather and the winter holidays. The highest monthly pedestrian volumes were February, March, October and November; however, this is due to these months having less incidents of equipment malfunction rather than confirmed higher volumes of pedestrians. Pedestrian volumes were relatively consistent throughout the week, with volumes averaging over 120 pedestrians per day on Tuesdays through Thursdays.

Bicycle Data

The lowest monthly volumes for bicyclists were recorded in December and January, also shown in **Figure 3**. Both of these months had less than 1,500 bicycle counts. The highest monthly volumes were recorded July when over 3,000 bicyclists rode by the site. Bicyclist volumes were highest on the weekends, with peak periods occurring on from late morning to the afternoon. Weekday traffic peaked on weekdays from 6PM to 7PM.

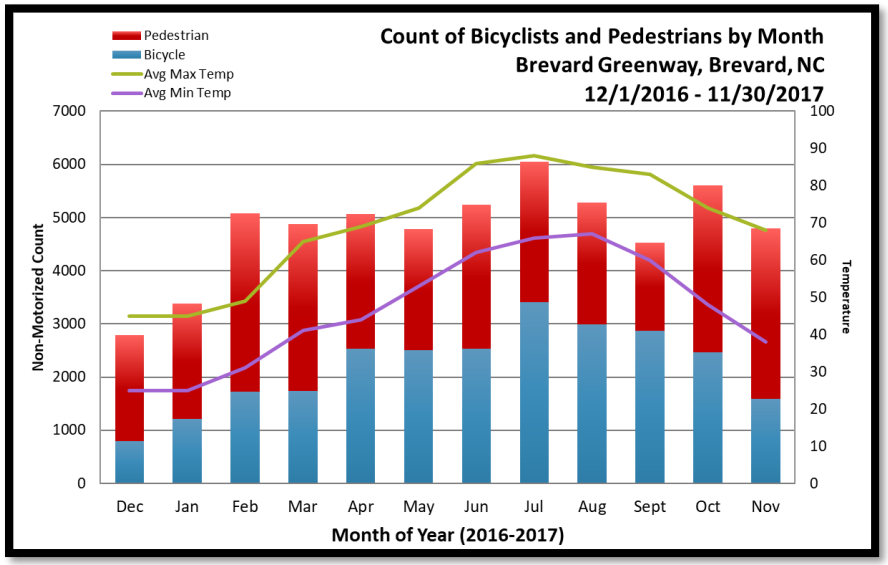

Figure 3. Non-Motorized counts by Month and Temperature

Detailed Pedestrian Count Information

Table 3 shows average pedestrian activity by day of week. This site's pedestrian sensor was damaged at an undetermined point in its lifetime and was subsequently replaced; however, the presence of the damaged data-collecting sensor leads to higher magnitudes of error in the analysis outcomes for this data collection year. The highest average daily volumes were recorded on Wednesdays and the lowest were recorded on Saturdays. Daily averages on Tuesdays through Thursdays were over 120 pedestrians. The weekend volumes averaged closed to 100 pedestrians a day. The overall average was 116 pedestrian counts a day.

Table 4 shows the pedestrian pattern observed at this site by hour of day and by day of week. Volumes were highest each day between 1PM and 4PM. Hourly averages of over 12 pedestrian counts per hour occurred every day during the peak, except for on Fridays. The highest hourly volumes occurred on Thursdays from 6PM – 7PM when an average of 16 pedestrians were detected by the sensor.

Hourly pedestrian volumes are depicted graphically in **Figure 4.** The figure shows daily local peaks occurring between 1PM and 4PM, suggesting that nearby schools may use the facility for children's recreation.

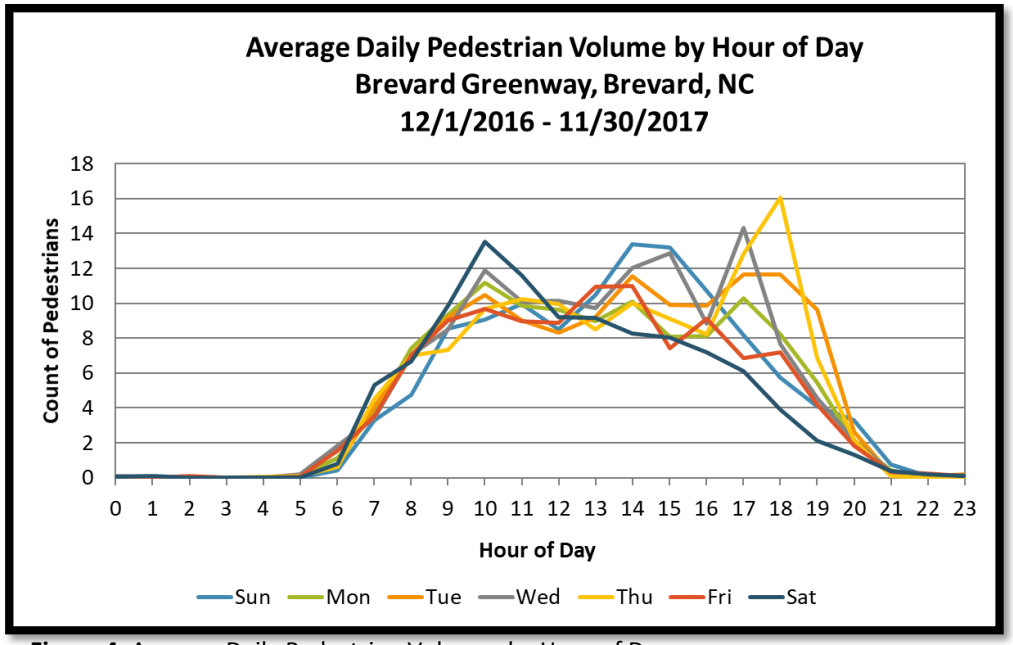

Figure 4. Average Daily Pedestrian Volumes by Hour of Day

Day of Week	Pedestrian Count
Sun	114
Mon	114
Tue	125
Wed	126
Thu	123
Fri	108
Sat	104
Average	**116**

Table 3. Average Pedestrian Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	1	1	2	1	2	1	1
7	3	4	4	3	4	4	5	4
8	5	7	7	7	7	7	7	7
9	9	9	9	9	7	9	10	9
10	9	11	10	12	10	10	14	11
11	10	10	9	10	10	9	12	10
12	8	10	8	10	10	9	9	9
13	10	9	9	10	9	11	9	10
14	13	10	12	12	10	11	8	11
15	13	8	10	13	9	7	8	10
16	11	8	10	9	8	9	7	9
17	8	10	12	14	13	7	6	10
18	6	8	12	8	16	7	4	9
19	4	5	10	5	7	4	2	5
20	3	2	3	2	2	2	1	2
21	1	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0
Avg	5	5	5	5	5	4	4	5

Table 4. Pedestrian Patterns by Day of Week and Hour of day

Seasonal variation is shown in **Figure 5.** Pedestrian patterns were consistent in all seasons. This outcome may be due to the data scrubbing resulting from the damaged pedestrian sensor; more data needed to be scrubbed from the dataset in the summer and autumn, seasons which historically record higher volumes. The period of greatest consistent volumes occurred from late August until early November. This pattern could be due to the pleasant weather, a small population increase due to Brevard College student activity, and special events along the trails on weekends.

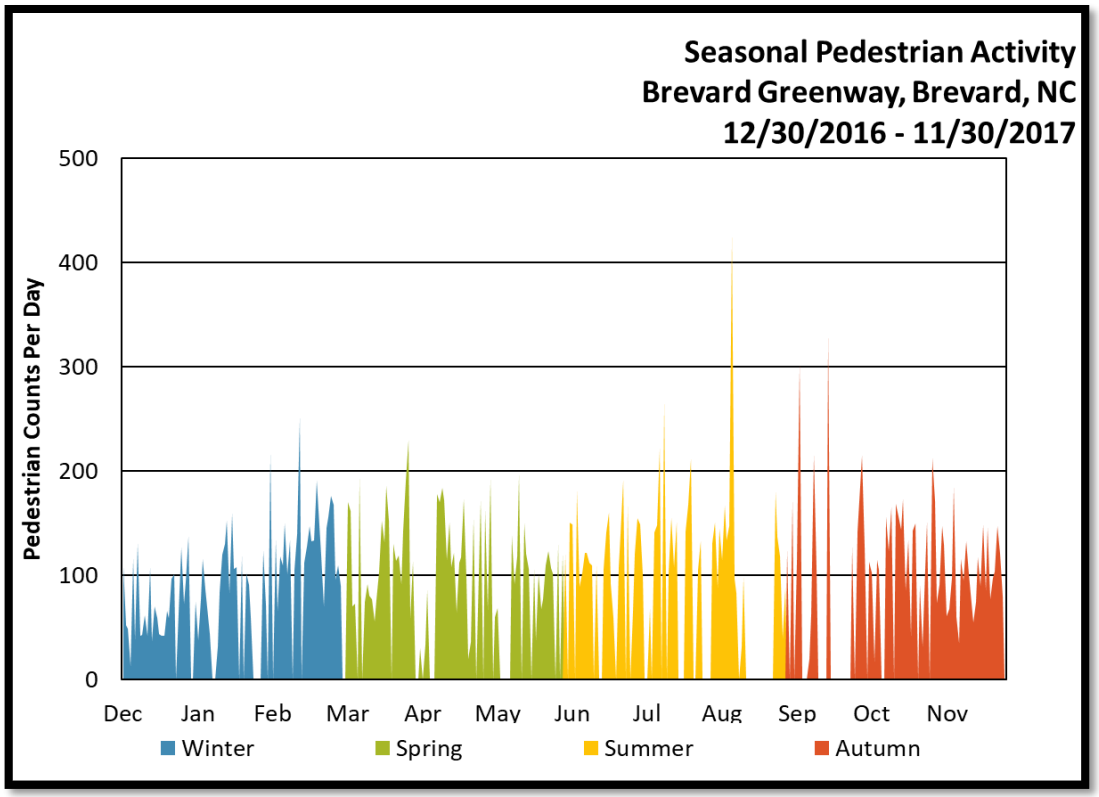

Figure 5. Seasonal Pedestrian Activity

Detailed Bicycle Count Information

Table 5 shows average bicycle activity by day of week. The highest daily averages occurred the weekends, with Sunday having more traffic. The lowest daily average was recorded on Mondays. An average of 72 bicycles were counted at the sight every day.

Table 6 shows daily bicyclist patterns at the site over the course of each day. Peak bicyclist volumes occurred on Sundays between 11AM and 5PM. Hourly volumes ranged from nine to thirteen bicycles during this time. Another slightly lower volume peak occurred on Saturdays between 10AM and 5PM. The period with the highest hourly volumes during weekdays occurred between 5PM and 7PM. This is likely due to people using the trail for recreation after work hours.

Hourly bicyclist volumes at this site are depicted graphically in **Figure 6.** The graph shows an increase in bicycle activity between 7AM and 10AM and a peak every day around 6PM. Weekend bicycle volumes rose sharply around 9AM and maintained a fairly consistent level until around 4PM.

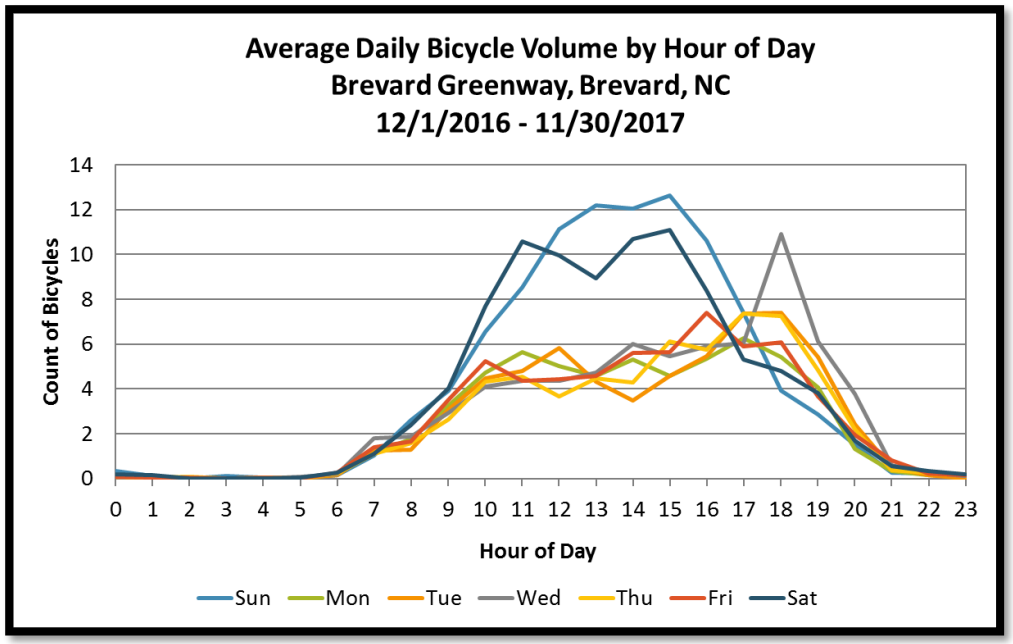

Figure 6. Average Daily Bicycle Volume by Hour of Day

Day of Week	Bicycle Count
Sun	98
Mon	59
Tue	62
Wed	70
Thu	61
Fri	63
Sat	92
Average	**72**

Table 5. Average Bicyclist Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0
7	1	1	1	2	1	1	1	1
8	3	2	1	2	2	2	2	2
9	4	3	3	3	3	4	4	3
10	7	5	4	4	4	5	8	5
11	9	6	5	4	5	4	11	6
12	11	5	6	4	4	4	10	6
13	12	5	4	5	4	5	9	6
14	12	5	3	6	4	6	11	7
15	13	5	5	5	6	6	11	7
16	11	5	5	6	6	7	8	7
17	7	6	7	6	7	6	5	7
18	4	5	7	11	7	6	5	7
19	3	4	5	6	5	4	4	4
20	2	1	2	4	2	2	2	2
21	0	0	0	1	0	1	1	0
22	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0
Avg	**4**	**2**	**3**	**3**	**3**	**3**	**4**	**3**

Table 6. Bicyclist Patterns by Day of Week and Hour of Day

Seasonal variation at the site is shown **Figure 7**. Bicyclists volumes were consistently high in the summer months, and high on weekends in the late spring and early fall. The highest seasonal volumes were recorded in the summer. Winter had significantly lower volumes compared to the rest of the seasons, likely caused by the colder weather. Weekend bicycle volumes exceeded 150 bicyclists per day on at least one weekend in all seasons except winter. The highest volume of bicyclists was recorded on August 21st, concurrent with the total solar eclipse that occurred in Brevard on that date.

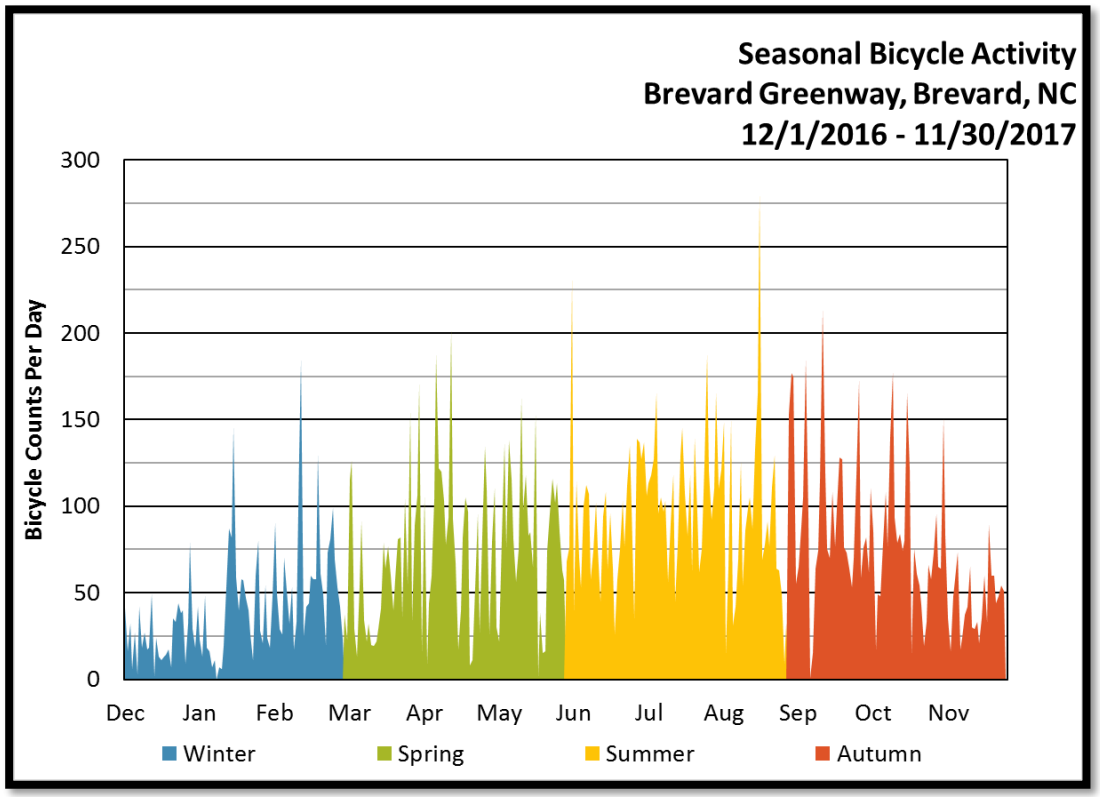

Figure 7. Seasonal Bicycle Activity

MARTIN LUTHER KING JR BLVD – CHAPEL HILL, NC

Table 1 Station Description	
Active Since	December 10, 2014
Pedestrian Travel Pattern	University Mixed
Pedestrian Volume Group	Medium
Bicyclist Travel Pattern	University Commute
Bicyclist Volume Group	Medium
Station Location Coordinates	N35.916080 W79.056832
Station Name / ID	CHL_MLK / 670003
Directional Distribution	
West Side	*East Side*
Pedestrians on Sidewalk (25%)	Pedestrians on Sidewalk (75%)
Bicyclists SB in Roadway (30%)	Bicyclists NB in Roadway (47%)
Bicyclists on Sidewalk (8%)	Bicyclists on Sidewalk (15%)

SITE OVERVIEW

A continuous count station was installed on Martin Luther King Jr Blvd in Chapel Hill, NC just north of the Columbia St intersection. The location of this site connects the central business district of Chapel Hill and the University of North Carolina at Chapel Hill with neighborhoods to the north and the north campus area. The site is located on a primary transit and commute corridor for the town and university. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 1.**

Figure 2 is a site diagram that shows equipment placement for the two count sites that comprise the station. Bicyclists in the roadway are detected by a set of two inductive loops positioned to the rightmost side of the lane (indicated as blue diamonds), bicyclists on the sidewalk are detected by an inductive loop positioned on the sidewalk (indicated as yellow diamonds), and pedestrians are detected by an infrared sensor (indicated with a red triangle) on the sidewalk.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions or missing data, 328 days of pedestrian and bicycle data are not present in the 12-month analysis period.

Figure 1. Continuous Count Station Installation West (Left) and East (Right)

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

SUMMARY COUNT DATA

Pedestrian and bicycle data analysis are omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

Table 2 Summary Volume Statistics (1) (2) (3)		
Annual Average Daily Traffic (AADT)	18,000 (NCDOT, 2015)	
Pedestrians		
	Highest Volume	**Lowest Volume**
Season	N/A	N/A
Month	N/A	N/A
Day of Week	N/A	N/A
Date	N/A	N/A
Peak Period	N/A	
12 Month Pedestrian Count	N/A	
Annual Average Daily Pedestrian Traffic	N/A	
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	N/A	N/A
Month	N/A	N/A
Day of Week	N/A	N/A
Date	N/A	N/A
Peak Period	N/A	
12 Month Bicycle Count	N/A	
Annual Average Daily Bicycle Traffic	N/A	

(1) Note: 328 days of bicycle and pedestrian data are not present in the 12-month analysis period

(2) Annual Average Traffic calculated using the AASHTO method

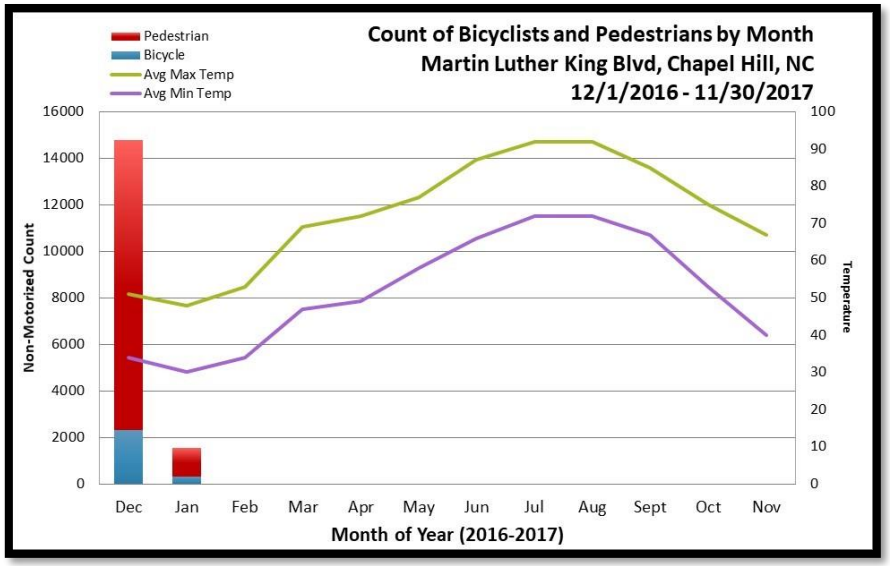

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Pedestrian data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid pedestrian data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

Detailed Bicycle Count Information

Bicycle data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid pedestrian data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

WEST 4TH STREET EXTENSION – CHARLOTTE, NC

Table 1 Site Description	
Active Since	October 28, 2016
Pedestrian Travel Pattern	Urban Mixed
Pedestrian Volume Group	Low
Bicyclist Travel Pattern	Urban Mixed
Bicyclist Volume Group	Low
Station Location Coordinates	N35.233242 W80.857407
Station Name / ID	CLT_4EX / 590003
Directional Distribution	
North Side	*South Side*
Pedestrians on Sidewalk (43%)	Pedestrians on Sidewalk (57%)
WB Bicyclists in Roadway (43%)	EB Bicyclists in Roadway (57%)

SITE OVERVIEW

A continuous count station was installed on W 4th Street Extension in Charlotte, NC between S Sycamore St and Interstate 77. This site is located in Frazier Park and is near residential areas. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 2.**

Figure 2 is a site diagram that shows equipment placement for the two count sites that comprise the station. Bicyclists in the roadway are detected by a set of two inductive loops positioned to the rightmost side of the path (indicated as blue diamonds) and pedestrians are detected by an infrared sensor (indicated with a red triangle) on the sidewalk.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions or missing data, 5 days of bicycle data and 6 days of pedestrian data are not present in the 12-month analysis period.

Figure 1. Continuous Count Station Installation

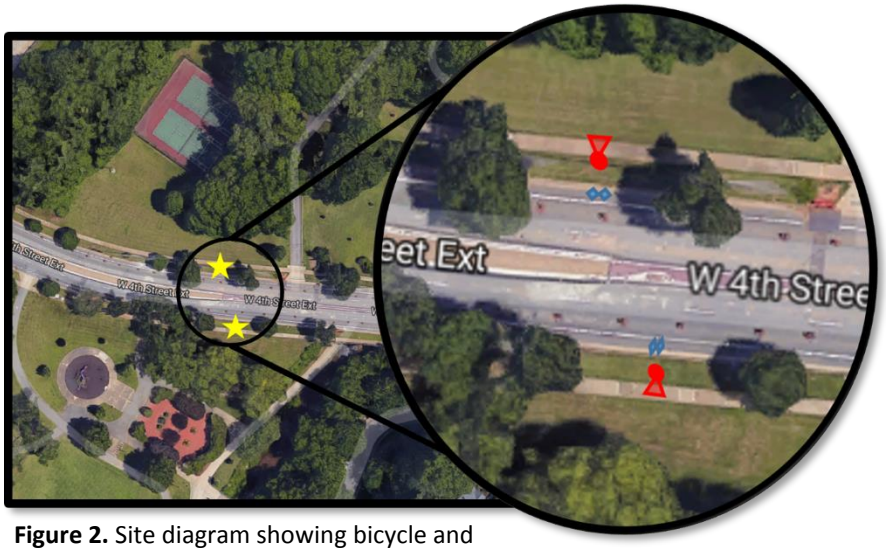

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

Summary Count Data

Over 45,000 pedestrian counts and nearly 8,000 bicycle counts were recorded during the 12 month analysis period. The overall volume of non-motorized users on this facility varies from 2,200 to over 5,700 counts per month. **Table 2** is a summary of statistics for both bicyclist and pedestrian count data. Correction factors were applied to the data based on a site-specific logger validation study. **Figure 3** displays the average high and low temperatures for this community during the months of the year. There is some correlation between temperature and volumes at this site.

Table 2 Summary Volume Statistics (1) (2) (3)		
Annual Average Daily Traffic (AADT)	4,700 (NCDOT, 2016)	
Pedestrians		
	Highest Volume	**Lowest Volume**
Season	Summer	Winter
Month	September	December
Day of Week	Sunday, Tuesday	Friday
Date	Mar 14, 2017 (299)	Apr 24, 2017 (21)
Peak Period	Tues & Wed 6-7PM	
12 Month Pedestrian Count	46,898	
Annual Average Daily Pedestrian Traffic	131 AADPT	
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	Summer	Winter
Month	August	December
Day of Week	Saturday	Sunday, Monday
Date	Apr 15, 2017 (67)	Jan 01 & 07, 2017 (0)
Peak Period	Saturday 3-5PM	
12 Month Bicycle Count	7,964	
Annual Average Daily Bicycle Traffic	22 AADBT	

(1) Note: 5 days of bicycle data and 6 days of pedestrian data are not present in the 12-month analysis period
(2) Data has been adjusted based on correction factors
(3) Annual Average Traffic calculated using AASHTO method

Pedestrian Data

The lowest volumes for pedestrians were recorded in December and January, as shown in **Figure 3**. Seasonal volumes were the highest in the summer, however September had the highest monthly pedestrian volume. Most of the warmer months from April until October had similar volumes; over 4,500 pedestrians were recorded during each of those months. Average daily pedestrian volumes were highest on Sundays and Tuesdays and lowest on Fridays.

Bicycle Data

The lowest monthly volumes for bicyclists were recorded during the winter months of December and January, shown in **Figure 3**. The lowest monthly volume was recorded in December. The summer season had the highest overall seasonal volume, and the highest monthly volume was recorded in August, followed closely by July and June. Daily average bicyclist volumes were the highest on Saturdays and the lowest on Sundays and Mondays.

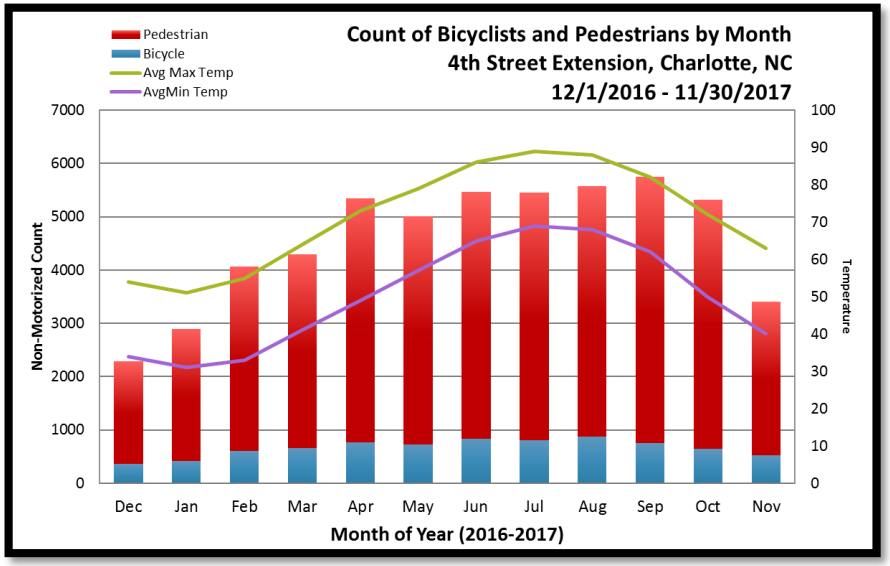

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Table 3 shows average pedestrian activity by day of week. The highest average daily count was on Sundays and Tuesdays, followed by Saturdays. The lowest average daily pedestrian volumes occurred on Fridays. Every day of the week averaged more than 100 pedestrians a day. An average of 131 pedestrians were counted at the site every day.

Table 4 shows the pedestrian pattern observed at this site by hour of day and by day of week. A weekday peak occurred from 5PM-7PM. This weekday activity was likely the result of after work recreation activities. The weekend average volumes were consistently high beginning at 9AM and continued through daylight hours.

Hourly pedestrian volumes are depicted graphically in **Figure 4.** The figure demonstrates that weekday peaks occurred before 9AM, at 12PM, and after 6PM, indicating recreational use before and after work and during lunch breaks. Saturdays and Sundays differ in use patterns; volumes were consistently high throughout the day and Saturday peak volumes were earlier than Sunday peak volumes. Pedestrian activity decreased after 9PM and increased again after 6AM. The average hourly counts rarely dropped to zero, indicating that the site is activity at almost every hour of the week.

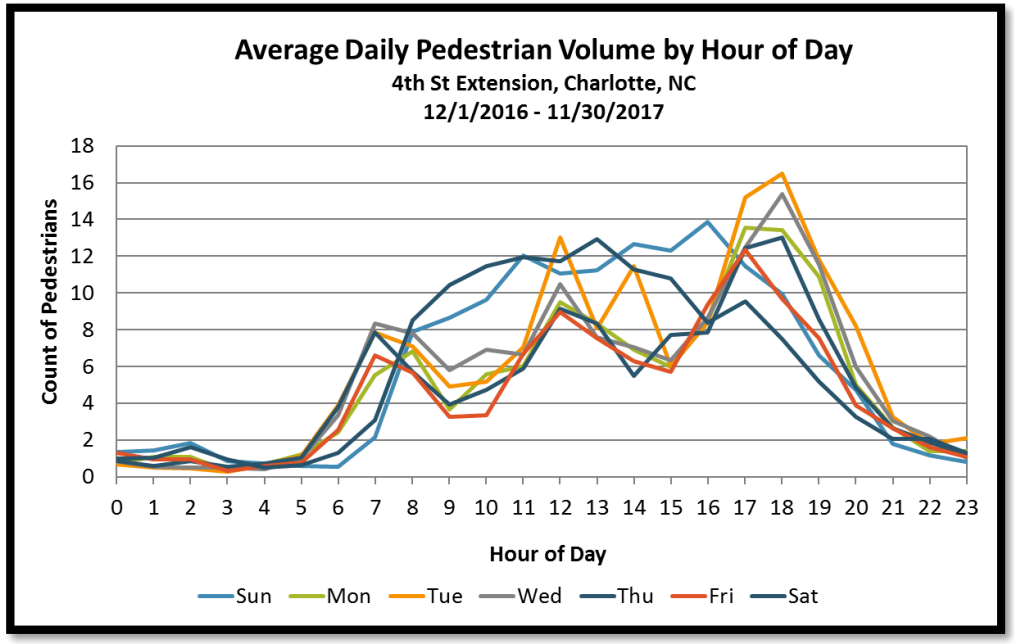

Figure 4. Average Daily Pedestrian Volumes by Hour of Day

Day of Week	Pedestrian Count
Sun	145
Mon	122
Tue	145
Wed	134
Thu	119
Fri	110
Sat	138
Average	**131**

Table 3. Average Pedestrian Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	1	1	1	1	1	1	1	1
1	1	1	0	1	1	1	1	1
2	2	1	0	1	1	1	2	1
3	1	0	0	0	1	0	1	1
4	1	1	1	0	1	1	0	1
5	1	1	1	1	1	1	1	1
6	1	2	4	3	4	3	1	3
7	2	6	8	8	8	7	3	6
8	8	7	7	8	6	6	9	7
9	9	4	5	6	4	3	10	6
10	10	6	5	7	5	3	11	7
11	12	6	7	7	6	7	12	8
12	11	9	13	10	9	9	12	11
13	11	8	8	8	8	8	13	9
14	13	7	11	7	5	6	11	9
15	12	6	6	6	8	6	11	8
16	14	8	8	9	8	9	8	9
17	11	14	15	12	12	12	10	12
18	10	13	17	15	13	10	7	12
19	7	11	12	12	9	8	5	9
20	5	5	8	6	5	4	3	5
21	2	3	3	3	3	3	2	3
22	1	1	2	2	2	2	2	2
23	1	1	2	1	1	1	1	1
Avg	6	5	6	6	5	5	6	5

Table 4. Pedestrian Patterns by Day of Week and Hour of Day

Seasonal variation is shown in **Figure 5**. The highest monthly pedestrian volumes were recorded during the summer months. Similar volumes were recorded spring, summer, and early autumn. Volumes decreased in the late autumn and early winter due to cooler weather patterns.

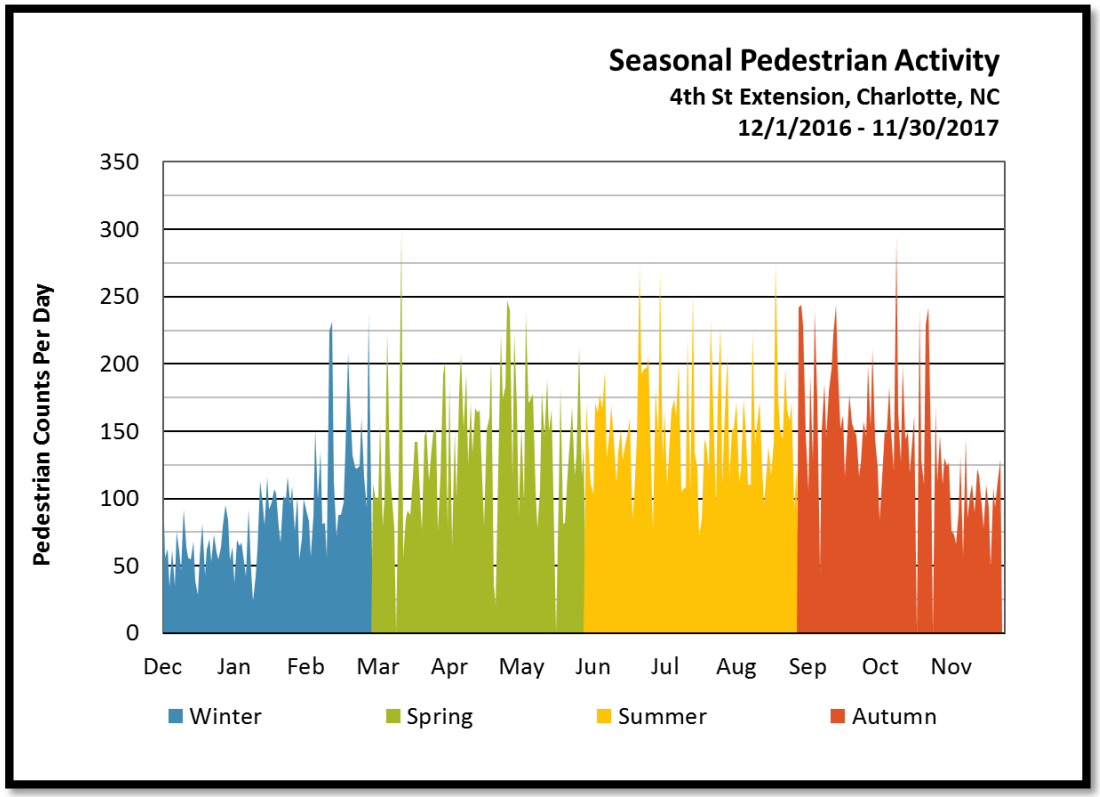

Figure 5. Seasonal Pedestrian Activity

Detailed Bicycle Count Information

Table 5 shows average bicycle activity by day of week. The highest average daily volumes were recorded on Saturdays. Average volumes were the lowest on Sundays and Mondays. On average, 22 bicycles were counted at the site each day, indicating that this is a low-volume cycling site.

Table 6 shows daily bicyclist patterns at the site over the course of each day. The highest weekday bicyclist volumes occurred on weekday evenings from 4PM until 6PM when counts reached about 3 bicycles per hour. Weekend peak volumes occurred on Saturdays from 3PM to 5PM.

Hourly bicyclist volumes at this site are depicted graphically in **Figure 6.** Weekdays had one local morning peak and an overall peak after 5PM. Saturdays had a peak in the morning around 7am, around 11AM, and around 5PM. Bicycle activity tapers off by 8PM on all days of the week. Bicycle averages fell to zero between 8PM and 5AM.

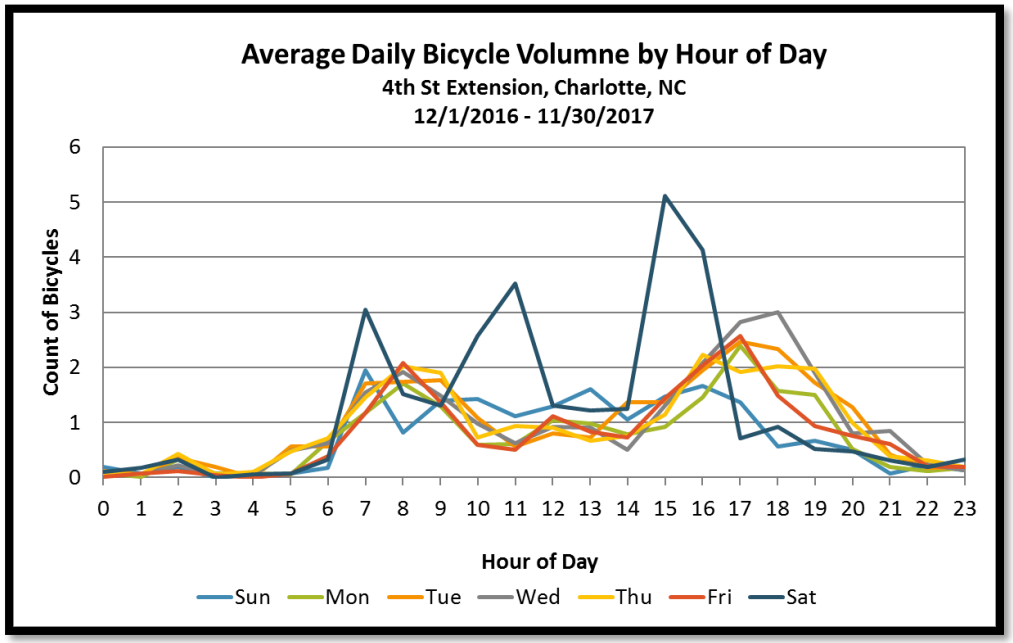

Figure 6. Average Daily Bicycle Volume by Hour of Day

Day of Week	Bicycle Count
Sun	18
Mon	18
Tue	24
Wed	24
Thu	22
Fri	19
Sat	30
Average	**22**

Table 5. Average Bicyclist Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	1	0	0	0	0	0
6	0	1	1	1	1	0	0	0
7	2	1	2	2	1	1	3	2
8	1	2	2	2	2	2	2	2
9	1	1	2	1	2	1	1	2
10	1	1	1	1	1	1	3	1
11	1	1	1	1	1	1	4	1
12	1	1	1	1	1	1	1	1
13	2	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	5	2
16	2	1	2	2	2	2	4	2
17	1	2	2	3	2	3	1	2
18	1	2	2	3	2	1	1	2
19	1	2	2	2	2	1	1	1
20	1	1	1	1	1	1	0	1
21	0	0	0	1	0	1	0	0
22	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0
Avg	1	1	1	1	1	1	1	1

Table 6. Bicyclist Patterns by Day of Week and Hour of Day

Seasonal variation at the site is shown in **Figure 7**. The highest seasonal volume was recorded during the summer. Each of the summer months (June – August) recorded more than 800 bicycles per month. The winter months had the lowest average; the ending weeks of December and beginning weeks of January recorded single-digit daily traffic.

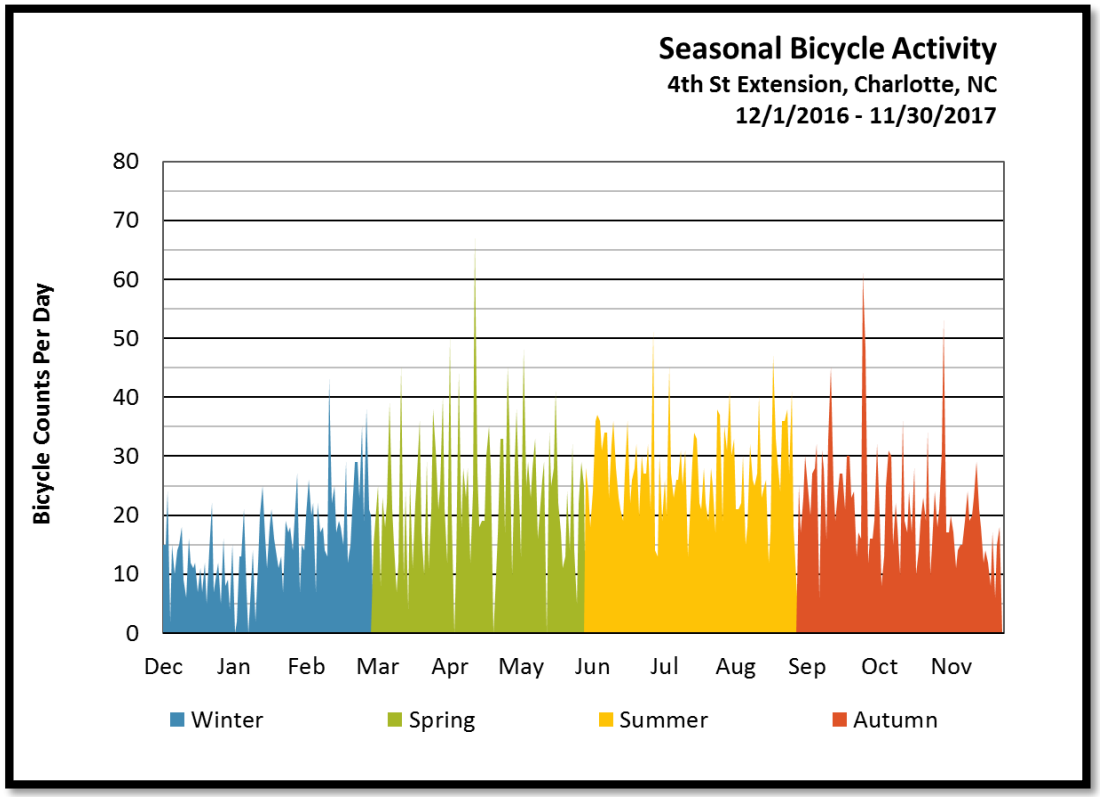

Figure 7. Seasonal Bicycle Activity

Table 1 Site Description	
Active Since	November 03, 2016
Pedestrian Travel Pattern	Urban Recreation
Pedestrian Volume Group	Medium
Bicyclist Travel Pattern	Urban Mixed
Bicyclist Volume Group	High
Station Location Coordinates	N35.209611 W80.861141
Station Name / ID	CLT_BLT / 590006
Directional Distribution	
Northbound Pedestrians (55%) Bicyclists (50%)	*Southbound* Pedestrians (45%) Bicyclists (50%)

Site Overview

A continuous count station was installed on the Blue Line Trail in Charlotte, NC between Tremont Ave. and Remount Rd. This site is located near a node of commercial businesses. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 2.**

Figure 2 is a site diagram that shows equipment placement for the count site that comprise the station. Bicyclists on the greenway are detected by a set of four inductive loops positioned in the path (indicated as blue diamonds) and pedestrians are detected by an infrared sensor (indicated with a red triangle) on the sidewalk.

Analysis Period

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions or missing data, 106 days of bicycle data and 119 days of pedestrian data are not present in the 12-month analysis period.

Figure 1. Continuous Count Station Installation

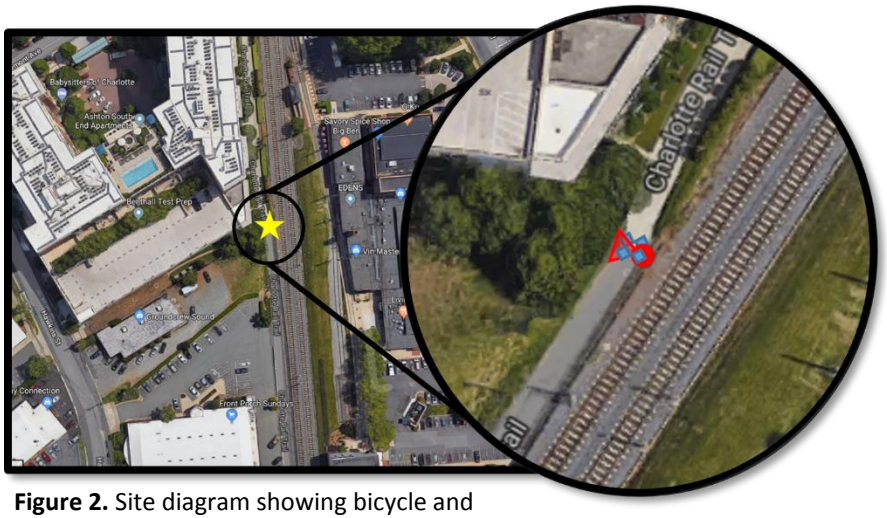

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

SUMMARY COUNT DATA

Pedestrian and bicycle data analysis are omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

Table 2 Summary Volume Statistics (1) (2) (3)		
Pedestrians		
	Highest Volume	**Lowest Volume**
Season	N/A	N/A
Month	N/A	N/A
Day of Week	N/A	N/A
Date	N/A	N/A
Peak Period		N/A
12 Month Pedestrian Count		N/A
Annual Average Daily Pedestrian Traffic		N/A
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	N/A	N/A
Month	N/A	N/A
Day of Week	N/A	N/A
Date	N/A	N/A
Peak Period		N/A
12 Month Bicycle Count		N/A
Annual Average Daily Bicycle Traffic		N/A

(1) Note: 106 days of bicycle data and 119 days of pedestrian data are not present in the 12-month analysis period
(2) Data has been adjusted based on correction factors
(3) Annual Average Traffic calculated using AASHTO method

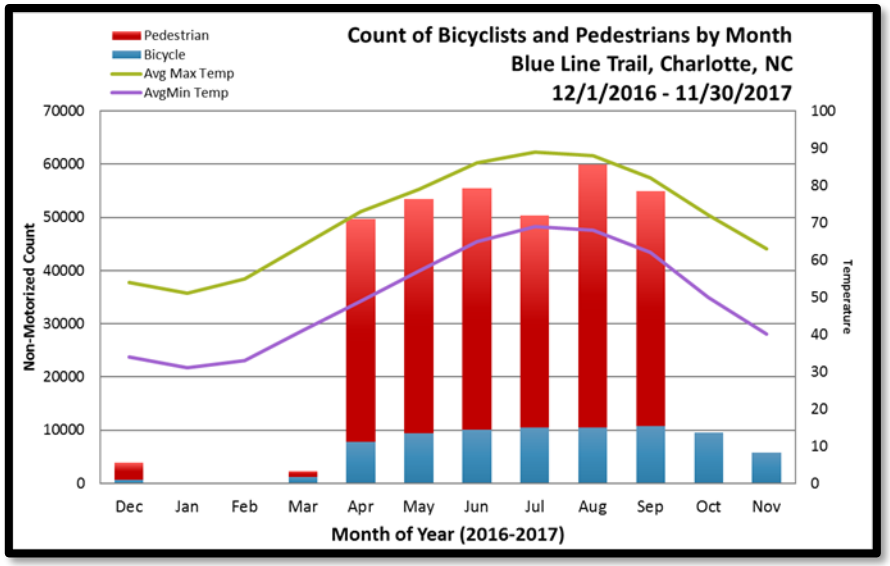

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Pedestrian data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid pedestrian data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

Detailed Bicycle Count Information

Bicycle data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid bicycle data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

ELIZABETH AVENUE – CHARLOTTE, NC

Table 1 Site Description	
Active Since	November 4, 2016
Pedestrian Travel Pattern	University Mixed
Pedestrian Volume Group	Low
Station Location Coordinates	W - N35.215303 W80.828625 E - N35.215139 W80.828333
Station Name / ID	CLT_ELZ / 590008
Directional Distribution	
West Side	*East Side*
Pedestrians on Sidewalk (44%)	Pedestrians on Sidewalk (56%)

SITE OVERVIEW

A continuous count station was installed on Elizabeth Avenue in Charlotte, NC between Charlottetowne Ave. and N Torrence St. This site is located between Central Piedmont Community College Central Campus and a commercial area. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 1.**

Figure 2 is a site diagram that shows equipment placement for the two count sites that comprise the station. Pedestrians are detected by an infrared sensor (indicated with a red triangle) on the sidewalk.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions or missing data, 6 days of pedestrian data are not present in the 12-month analysis period.

Figure 1. Continuous Count Station Installation West (Left) and East (Right)

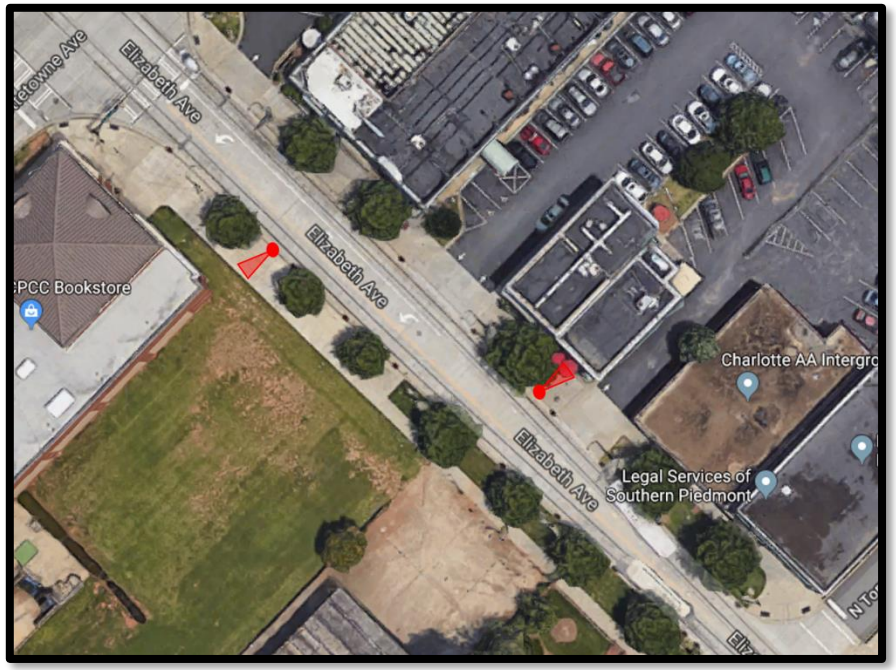

Figure 2. Site diagram showing pedestrian count equipment placement

Summary Count Data

Over 160,000 pedestrian counts were recorded during the 12 month analysis period. The overall volume of pedestrian users on this facility varies from just under 8,000 to over 19,500 counts per month. **Table 2** is a summary of statistics for pedestrian count data. Correction factors were applied to the data based on a site-specific logger validation study. **Figure 3** displays the average high and low temperatures for this community during the months of the year. There is not a correlation between temperature and volumes at this site.

Pedestrian Data

Figure 3 shows the lowest volumes for pedestrians were recorded in January and July, the only two months with less than 10,02000 pedestrian counts. Recorded volumes were the highest in the autumn, followed by the spring. The highest monthly volume for pedestrians was recorded in the months of October and February. Average daily pedestrian volumes were highest on Tuesdays through Thursdays and lowest on Sundays.

Table 2 Summary Volume Statistics (1) (2) (3)

Annual Average Daily Traffic (AADT)		7,300 (NCDOT, 2016)
Pedestrians		
	Highest Volume	**Lowest Volume**
Season	Autumn	Summer
Month	October	December
Day of Week	Tuesday	Sunday
Date	Feb 06, 2017 (1173)	Apr 23, 2017 (47)
Peak Period		Mon-Thur 12-1PM
12 Month Pedestrian Count		162,903
Annual Average Daily Pedestrian Traffic		456 AADPT

(1) Note: 6 days of pedestrian data are not present in the 12-month analysis period
(2) Data has been adjusted based on correction factors
(3) Annual Average Traffic calculated using AASHTO method

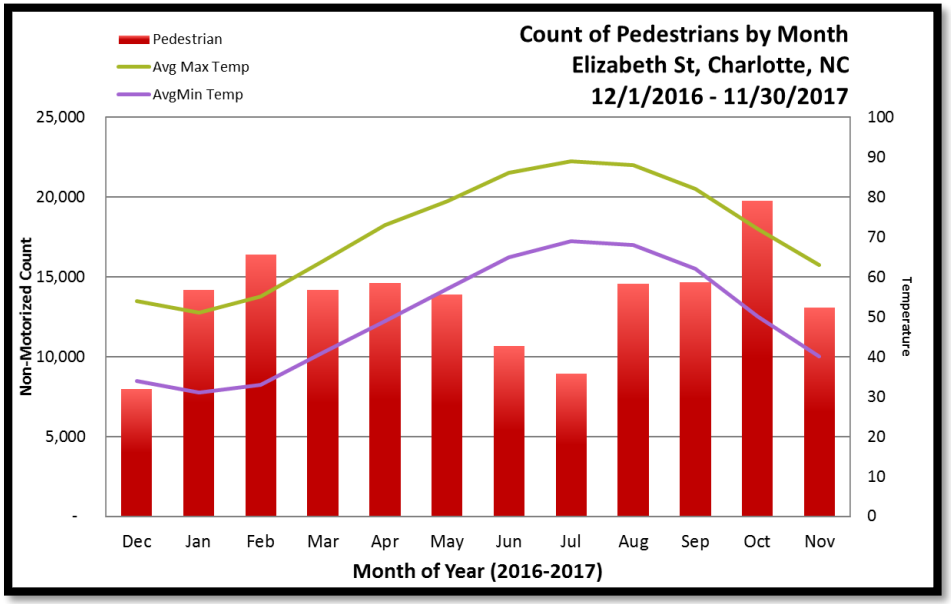

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Table 3 shows average pedestrian activity by day of week. The highest average daily count was on Tuesdays, followed by Wednesdays and Thursdays. The lowest volume days on average were Sundays and Saturdays. This weekly pattern is likely due to students commuting to and from Central Piedmont Community College and people traveling to the area for lunch. On average, 453 pedestrians were counted at the site each day.

Table 4 shows the pedestrian pattern observed at this site by hour of day and by day of week. The highest hourly pedestrian counts occurred at 12PM on every weekday. Average counts equaled or exceeded 90 pedestrians an hour between 12PM and 1PM Tuesdays through Thursdays.

Hourly pedestrian volumes are depicted graphically in **Figure 4.** The figure demonstrates a prominent lunchtime peak during the week days. Weekday pedestrian traffic started increasing at 6AM and lasted until 10PM. Sunday traffic started at 7AM and remained consistent until it decreased at 9PM. Saturday pedestrian traffic started at 6AM and had a small peak at 12PM. The site was active on Saturday nights until 11PM. Hourly pedestrian averages never fall to zero indicating the site was active at all hours.

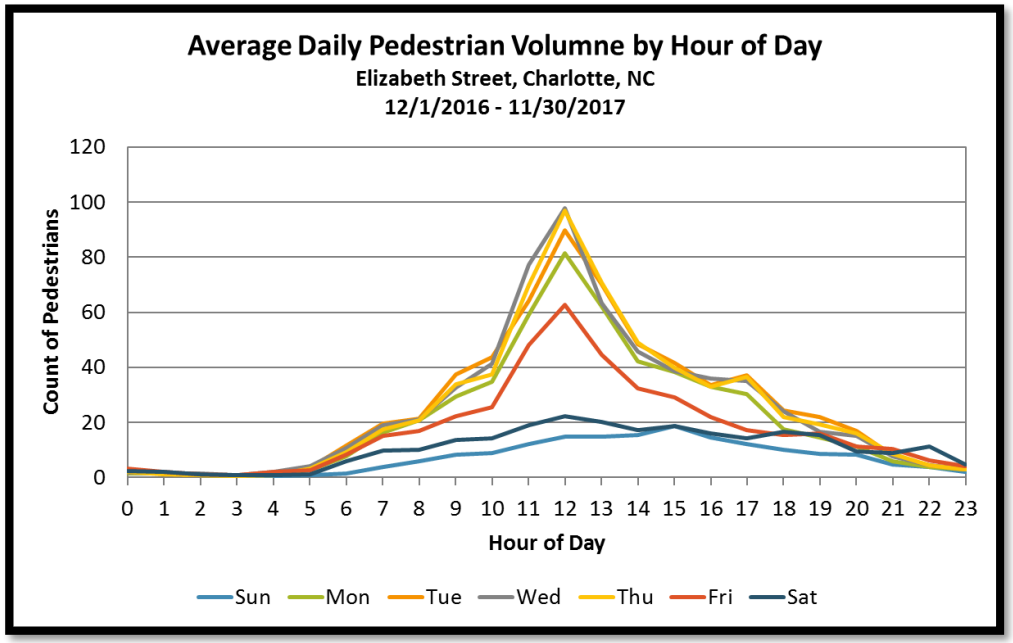

Figure 4. Average Daily Pedestrian Volumes by Hour of Day

Day of Week	Pedestrian Count
Sun	177
Mon	520
Tue	606
Wed	600
Thu	596
Fri	419
Sat	256
Average	**453**

Table 3. Average Pedestrian Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	2	2	2	2	2	3	2	2
1	2	1	2	1	1	2	2	2
2	1	1	1	2	1	1	1	1
3	1	1	1	1	1	1	1	1
4	1	2	1	2	1	2	1	1
5	1	3	3	4	3	3	1	3
6	2	8	12	11	9	8	6	8
7	4	16	20	19	18	15	10	14
8	6	21	21	21	21	17	10	17
9	8	29	37	33	34	22	14	25
10	9	35	44	41	37	25	14	29
11	12	59	64	77	70	48	19	50
12	15	81	90	98	97	63	22	67
13	15	62	70	63	71	44	20	49
14	16	42	48	46	49	32	17	36
15	19	38	42	38	40	29	19	32
16	15	33	34	36	33	22	16	27
17	12	30	37	35	36	17	14	26
18	10	18	24	24	22	15	17	19
19	9	15	22	17	19	16	15	16
20	8	11	17	15	16	11	10	13
21	5	6	8	8	9	10	9	8
22	4	4	4	4	4	6	11	5
23	2	3	3	3	3	4	5	3
Avg	**7**	**22**	**25**	**25**	**25**	**17**	**11**	**19**

Table 4. Pedestrian Patterns by Day of Week and Hour of Day

Seasonal variation is shown in **Figure 5**. The highest monthly pedestrian volumes were recorded during the autumn months. The month with the highest pedestrian count was October, followed by February. Pedestrian traffic was influenced by Central Piedmont Community College's schedule, as **Figure 5** shows a decrease in traffic during the college's winter, spring and summer breaks.

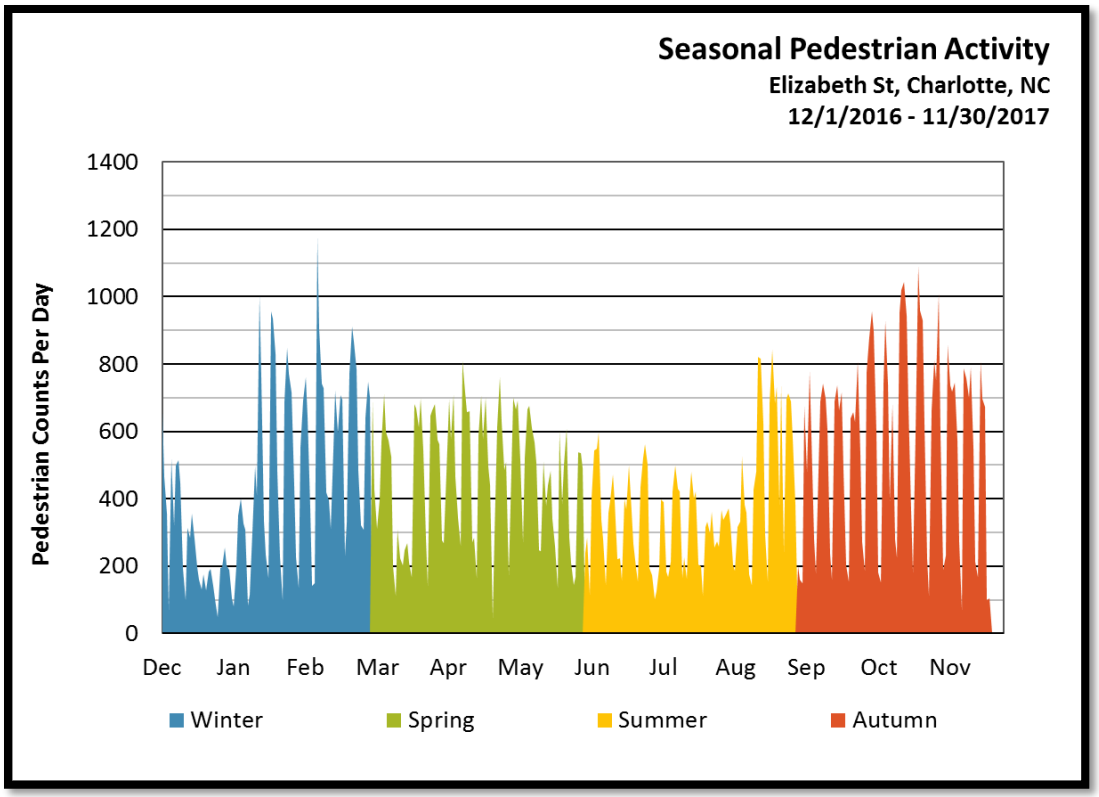

Figure 5. Seasonal Pedestrian Activity

NORTH TYRON STREET – CHARLOTTE, NC

Table 1 Site Description	
Active Since	November 3, 2016
Pedestrian Travel Pattern	Urban Mixed
Pedestrian Volume Group	Medium
Station Location Coordinates	N - N35.233252 W80.834690 S - N35.23282 W80.83504
Station Name / ID	CLT_NTR / 590007
Directional Distribution	
North Side	*South Side*
Pedestrians on Sidewalk (22%)	Pedestrians on Sidewalk (78%)

Figure 1. Continuous Count Station Installation North (Left) and South (Right)

SITE OVERVIEW

A continuous count station was installed on North Tyron Street in Charlotte, NC between 11th Street and 12th Street. This site is located on the edge of uptown, helping to connect it to the outer parts of the city. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 1.**

Figure 2 is a site diagram that shows equipment placement for the two count sites that comprise the station. Pedestrians are detected by an infrared sensor (indicated with a red triangle) on the sidewalk.

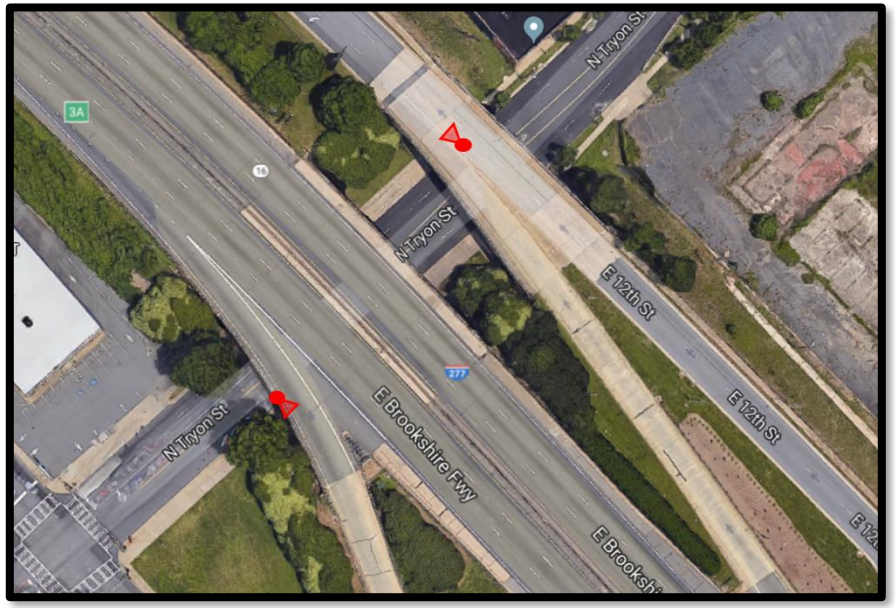

Figure 2. Site diagram showing pedestrian count equipment placement

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions or missing data, 29 days of pedestrian data are not present in the 12-month analysis period.

Summary Count Data

Over 230,000 pedestrian counts were recorded during the 12 month analysis period. The overall volume of pedestrian users on this facility varies from 20,000 to over 22,000 counts per month. **Table 2** is a summary of statistics for pedestrian count data. Correction factors were applied to the data based on a site-specific logger validation study. **Figure 3** displays the average high and low temperatures for this community during the months of the year. There is not a correlation between temperature and volumes at this site. Due to missing data, November will be excluded from the analysis for pedestrians.

Pedestrian Data

The lowest volumes for pedestrians were recorded in December, as shown in **Figure 3.** Recorded volumes were the highest in the spring, however monthly pedestrian volume was consistent throughout the year. The highest monthly volume for pedestrians was recorded in the month of May, followed by March. Average daily pedestrian volumes were highest on Tuesdays and lowest on Saturdays.

Table 2 Summary Volume Statistics (1) (2) (3)

Annual Average Daily Traffic (AADT)		14,000 (NCDOT, 2016)
Pedestrians		
	Highest Volume	**Lowest Volume**
Season	Spring	Autumn
Month	May	December
Day of Week	Tuesday	Saturday
Date	Feb 28, 2017 (1205)	Jan 01, 2017 (263)
Peak Period		Sunday 7-8AM
12 Month Pedestrian Count		234,505
Annual Average Daily Pedestrian Traffic		698 AADPT

(1) Note: 29 days of pedestrian data are not present in the 12-month analysis period
(2) Data has been adjusted based on correction factors
(3) Annual Average Traffic calculated using AASHTO method

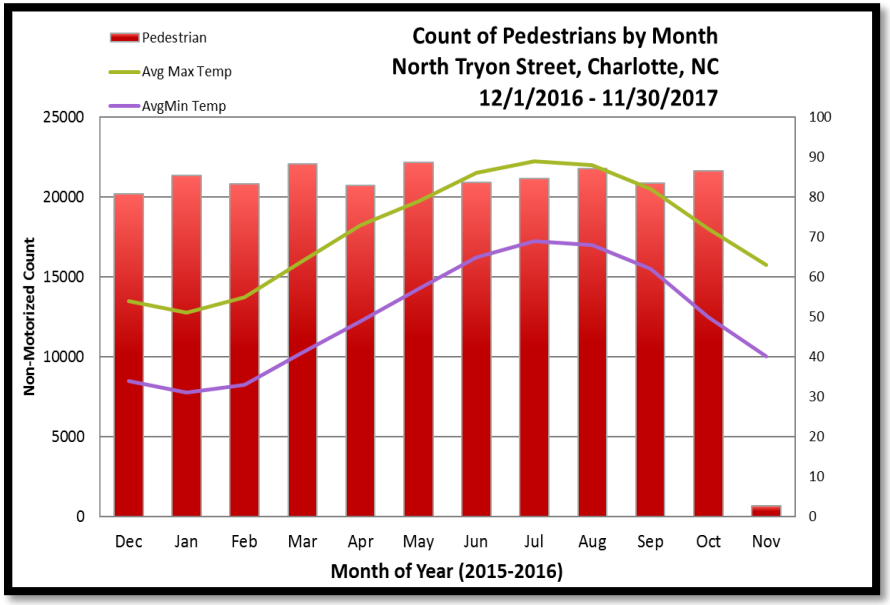

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Table 3 shows average pedestrian activity by day of week. The highest average daily volume occurred on Tuesdays, followed by Fridays. The lowest average daily volume was recorded on Saturdays. All days with the exception of Saturdays recorded an average of over 680 pedestrians per day.

Table 4 shows the pedestrian pattern observed at this site by hour of day and by day of week. Sunday had the highest hourly average, with an average of 96 pedestrians between 7AM and 8AM, this is possibly due to pedestrians walking to nearby churches. There was also a peak every day from 11AM until 1PM, likely due to people walking to restaurants in the area for lunch.

Hourly pedestrian volumes are depicted graphically in **Figure 4.** The figure demonstrates the Sunday morning peak at 7AM. Pedestrian activity started rising every day at 6AM until it reached its peach at midday. After the lunch peak, there was a smaller local peak around 3PM on weekdays and around 4PM on weekends. Activity slowly decreased to an average of 10 pedestrians per hour after 1AM. Hourly pedestrian averages never fell to zero indicating the site is active at all hours.

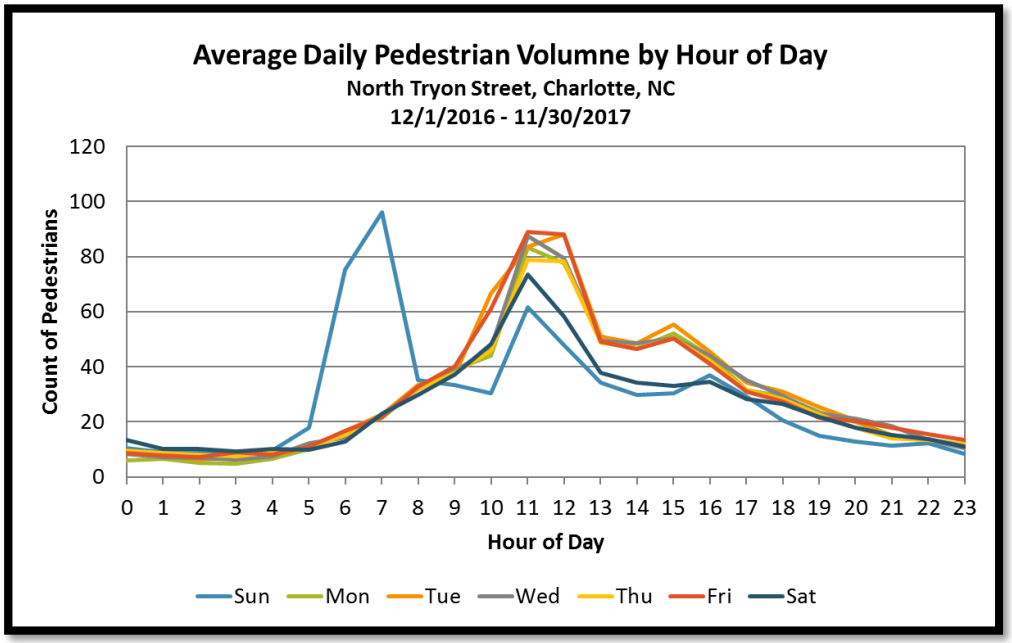

Figure 4. Average Daily Pedestrian Volumes by Hour of Day

Day of Week	Pedestrian Count
Sun	684
Mon	693
Tue	747
Wed	713
Thu	692
Fri	735
Sat	621
Average	**698**

Table 3. Average Pedestrian Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	10	6	9	8	10	9	13	9
1	9	7	8	7	9	8	10	8
2	9	5	6	7	8	7	10	8
3	8	5	7	6	8	9	9	7
4	10	7	8	8	9	8	10	8
5	18	10	11	12	11	11	10	12
6	75	17	17	14	15	17	13	24
7	96	21	23	23	22	22	23	33
8	35	32	33	32	32	33	30	32
9	33	39	37	38	38	40	37	38
10	30	44	67	47	46	61	48	49
11	62	83	83	87	79	89	73	80
12	48	78	88	79	78	88	58	74
13	34	51	51	49	49	49	38	46
14	30	47	49	49	47	46	34	43
15	30	52	55	50	50	50	33	46
16	37	44	45	44	42	41	34	41
17	29	32	34	35	32	31	28	32
18	21	29	31	30	28	27	27	28
19	15	24	25	23	23	21	22	22
20	13	20	21	21	18	20	18	19
21	11	15	14	18	14	18	15	15
22	12	14	13	14	13	16	14	14
23	9	11	12	10	12	14	11	11
Avg	**29**	**29**	**31**	**30**	**29**	**31**	**26**	**29**

Table 4. Pedestrian Patterns by Day of Week and Hour of Day

Seasonal variation is shown in **Figure 5**. The highest monthly pedestrian volumes were recorded during the summer spring (March – May). Total seasonal volumes in the summer, spring, the first half of autumn, and winter were similar. Seasonal patterns in autumn were unable to be adequately discerned due to missing data resulting from equipment malfunction. Daily volumes of over 800 pedestrians were counted in all seasons.

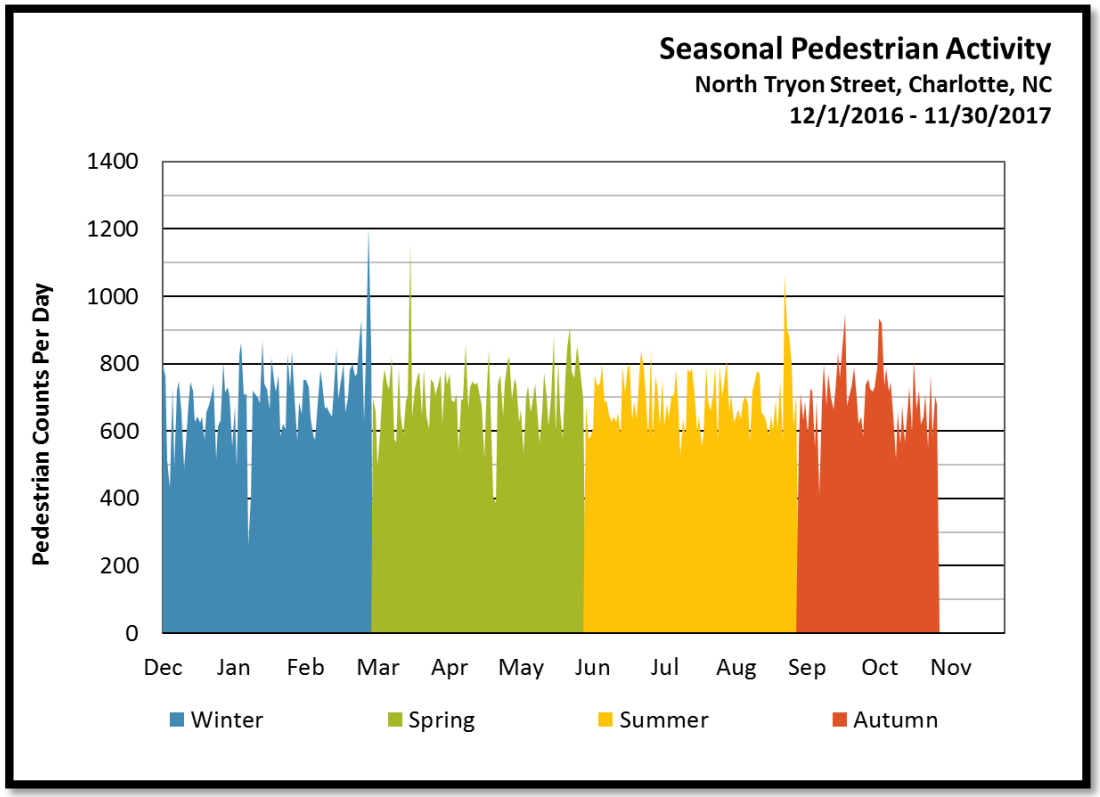

Figure 5. Seasonal Pedestrian Activity

PECAN STREET – CHARLOTTE, NC

Table 1 Site Description	
Active Since	November 14, 2016
Pedestrian Travel Pattern	Urban Recreation
Pedestrian Volume Group	Medium
Bicyclist Travel Pattern	Urban Recreation
Bicyclist Volume Group	Medium
Station Location Coordinates	N35.21808 W80.81457
Station Name / ID	CLT_PCN / 590009
Directional Distribution	
West Side	*East Side*
Pedestrians on Sidewalk (24%)	Pedestrians on Sidewalk (76%)
Bicyclists SB in Roadway (30%) Bicyclists on Sidewalk (9%)	Bicyclists NB in Roadway (41%) Bicyclists on Sidewalk (21%)

SITE OVERVIEW

A continuous count station was installed on Pecan Street in Charlotte, NC between Shenandoah Ave. and Commonwealth Ave. This site is located between residential and commercial areas. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 2.**

Figure 2 is a site diagram that shows equipment placement for the two count sites that comprise the station. Bicyclists in the roadway are detected by a set of two inductive loops positioned to the rightmost side of the path (indicated as blue diamonds), bicycles on the sidewalk are detected by an inductive loop positioned on the sidewalk (indicated as a yellow diamond), and pedestrians are detected by an infrared sensor (indicated with a red triangle) on the sidewalk.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions or missing data, 213 days of bicycle data and 219 days of pedestrian data are not present in the 12-month analysis period.

Figure 1. Continuous Count Station Installation

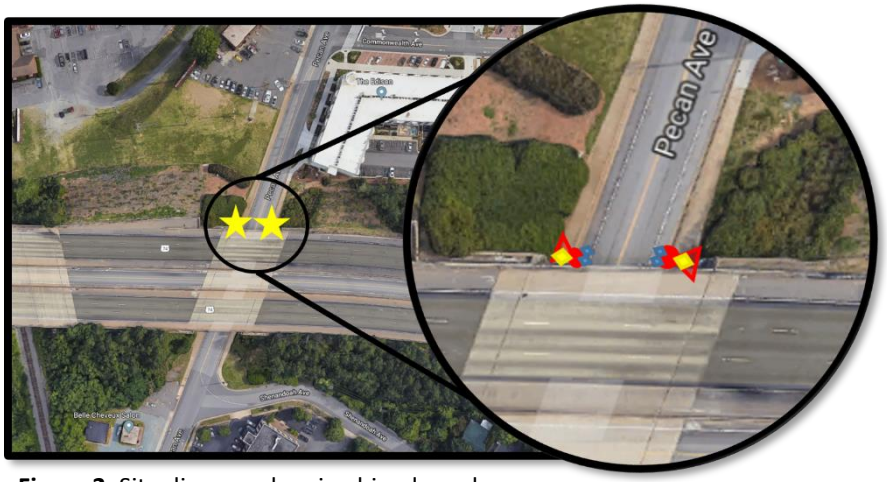

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

SUMMARY COUNT DATA

Pedestrian and bicycle data analysis are omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

Table 2 Summary Volume Statistics (1) (2)		
Annual Average Daily Traffic (AADT)	9,900 (NCDOT, 2016)	
Pedestrians		
	Highest Volume	**Lowest Volume**
Season	N/A	N/A
Month	N/A	N/A
Day of Week	N/A	N/A
Date	N/A	N/A
Peak Period	N/A	
12 Month Pedestrian Count	N/A	
Annual Average Daily Pedestrian Traffic	N/A	
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	N/A	N/A
Month	N/A	N/A
Day of Week	N/A	N/A
Date	N/A	N/A
Peak Period	N/A	
12 Month Bicycle Count	N/A	
Annual Average Daily Bicycle Traffic	N/A	

(1) Note: 213 days of bicycle data and 219 days of pedestrian data are not present in the 12-month analysis period
(2) Data has been adjusted based on correction factors
(3) Annual Average Traffic calculated using AASHTO method

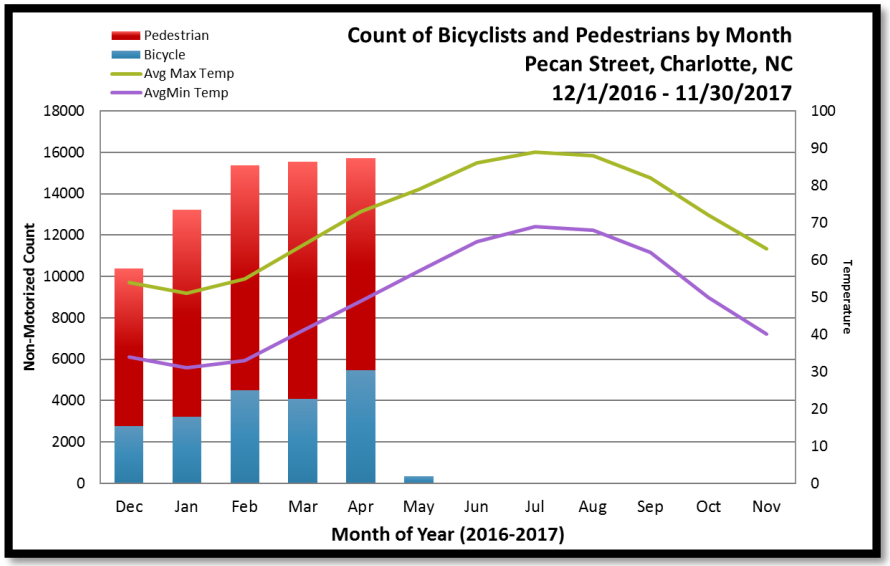

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Pedestrian data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid pedestrian data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

Detailed Bicycle Count Information

Bicycle data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid bicycle data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

STONEWALL STREET – CHARLOTTE, NC

Table 1 Site Description	
Active Since	October 27, 2016
Pedestrian Travel Pattern	Urban Mixed
Pedestrian Volume Group	Low
Bicyclist Travel Pattern	Urban Mixed
Bicyclist Volume Group	Low
Station Location Coordinates	N - N35.214504 W80.838323 S - N35.21450 W80.83832
Station Name / ID	CLT_STN / 590002
Directional Distribution	
North Side	*South Side*
Pedestrians on Sidewalk (83%)	Pedestrians on Sidewalk (17%)
Bicyclists WB in Roadway (24%) Bicyclist on Sidewalk (46%)	Bicyclists EB in Roadway (15%) Bicyclist on Sidewalk (15%)

SITE OVERVIEW

A continuous count station was installed on Stonewall Street in Charlotte, NC between Charlottetowne Ave and S McDowell St. This site is located adjacent on the edge of uptown, connecting it to nearby commercial and residential areas. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 2.**

Figure 2 is a site diagram that shows equipment placement for the two count sites that comprise the station. Bicyclists in the roadway are detected by a set of two inductive loops positioned to the rightmost side of the path (indicated as blue diamonds), bicycles on the sidewalk are detected by an inductive loop positioned on the sidewalk (indicated as a yellow diamond), and pedestrians are detected by an infrared sensor (indicated with a red triangle) on the sidewalk.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions, 106 days of bicycle data and 67 days of pedestrian data are not present in the 12-month analysis period.

Figure 1. Continuous Count Station Installation

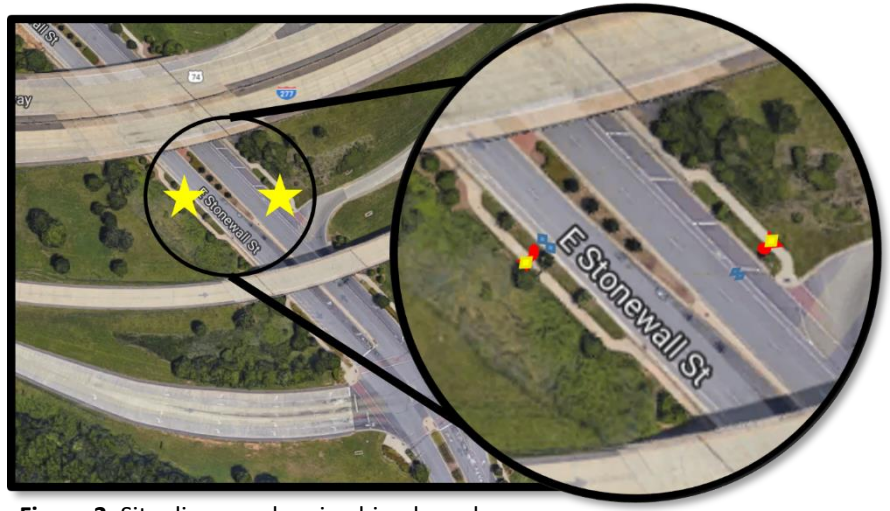

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

Summary Count Data

Bicycle temporal patterns are omitted due to the high volume of missing data caused by equipment malfunctions. Over 70,000 pedestrian counts were recorded during the 12 month analysis period. The overall volume of pedestrian users on this facility varies from 4,600 to over 8,800 counts per month. **Table 2** is a summary of statistics for pedestrian count data. Correction factors were applied to the data based on a site-specific logger validation study. **Figure 3** displays the average high and low temperatures for this community during the months of the year. Due to missing data, January, February, and November will be excluded from the pedestrian analysis.

Table 2 Summary Volume Statistics (1) (2) (3)

Annual Average Daily Traffic (AADT)		18,000 (NCDOT, 2016)
Pedestrians		
	Highest Volume	**Lowest Volume**
Season	Spring	Winter
Month	March	December
Day of Week	Saturday	Sunday
Date	Apr 01, 2017 (849)	Dec 25, 2016 (41)
Peak Period		Tues-Thurs 6-7PM
12 Month Pedestrian Count		72,178
Annual Average Daily Pedestrian Traffic		237 AADPT
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	N/A	N/A
Month	N/A	N/A
Day of Week	N/A	N/A
Date	N/A	N/A
Peak Period		N/A
12 Month Bicycle Count		N/A
Annual Average Daily Bicycle Traffic		N/A

(1) Note: 132 days of bicycle data and 67 days of pedestrian data are not present in the 12-month analysis period
(2) Data has been adjusted based on correction factors
(3) Annual Average Traffic calculated using AASHTO method

Pedestrian Data

The lowest volumes for pedestrians were recorded in December, as shown in **Figure 3**. The highest monthly volume was recorded during March, followed by April and then June. The highest seasonal volume was recorded in the spring, with the lowest seasonal recorded in the winter. Average daily pedestrian volumes were highest on Saturdays and lowest on Sundays.

Bicycle Data

Bicycle data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid bicycle data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

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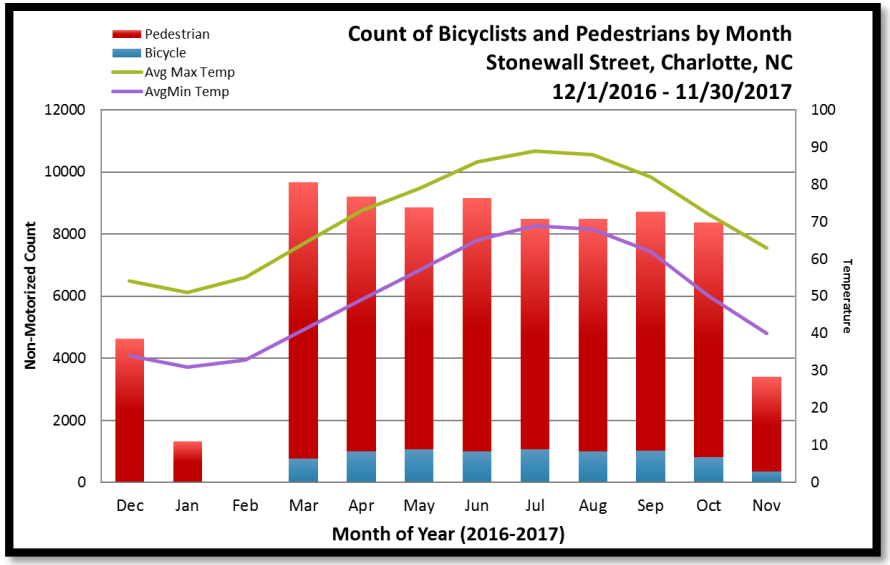

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Table 3 shows average pedestrian activity by day of week. The highest average daily count was on Saturdays. Sundays had the lowest average volume, followed by Mondays. Tuesdays through Fridays all had similar averages. On average, 242 pedestrians were counted at the site every day.

Table 4 shows the pedestrian pattern observed at this site by hour of day and by day of week. The highest hourly volumes on weekdays occurred around noon and in the evenings after work hours, likely due to people using the facility to walk to restaurants and for recreation after work. Saturdays had high hourly averages, averaging 20 or more pedestrians an hour from 8AM until 3PM. Sundays had smaller hourly averages, with averages only reaching more than 15 pedestrians per hour a few times during the day.

Hourly pedestrian volumes are depicted graphically in **Figure 4.** The figure demonstrates a lunchtime peak for every day except for Saturdays. Every weekday experiences a second peak around 6PM to 7PM, likely a result of people walking to stores or restaurants after work. Saturdays experienced a sharp increase of pedestrian traffic at 7AM, rising to a morning peak around 9AM; it's volume steadily decreased until it dropped off after 8PM.

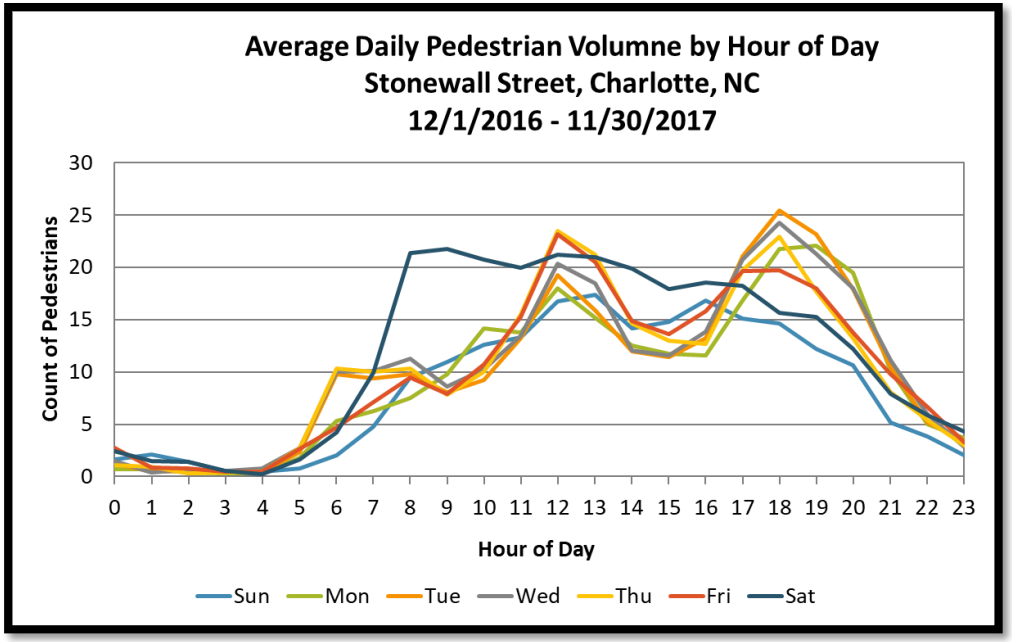

Figure 4. Average Daily Pedestrian Volumes by Hour of Day

Day of Week	Pedestrian Count
Sun	204
Mon	229
Tue	243
Wed	251
Thu	245
Fri	242
Sat	284
Average	**242**

Table 3. Average Pedestrian Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	2	1	1	1	1	3	2	2
1	2	1	0	0	1	1	2	1
2	1	0	1	1	0	1	1	1
3	1	0	0	1	0	1	1	0
4	0	0	0	1	0	0	0	0
5	1	2	2	3	3	3	2	2
6	2	5	10	10	10	5	4	7
7	5	6	9	10	10	7	10	8
8	9	8	10	11	10	9	21	11
9	11	10	8	9	8	8	22	11
10	13	14	9	10	10	11	21	13
11	13	14	13	13	15	15	20	15
12	17	18	19	20	23	23	21	20
13	17	15	16	18	21	20	21	18
14	14	13	12	12	15	15	20	14
15	15	12	11	12	13	14	18	13
16	17	12	13	14	13	16	19	15
17	15	17	21	21	20	20	18	19
18	15	22	25	24	23	20	16	21
19	12	22	23	21	18	18	15	19
20	11	19	18	18	13	14	12	15
21	5	10	10	11	8	10	8	9
22	4	5	5	6	5	7	6	5
23	2	4	3	3	3	3	4	3
Avg	**8**	**10**	**10**	**10**	**10**	**10**	**12**	**10**

Table 4. Pedestrian Patterns by Day of Week and Hour of Day

Seasonal variation is shown in **Figure 5**. The highest monthly pedestrian volumes was recorded during March, followed by April and June. December had the lowest monthly value out of the months with a full set of data, likely due to cold weather. Daily volumes regularly reached over 300 pedestrians on weekends in all the seasons except for the winter.

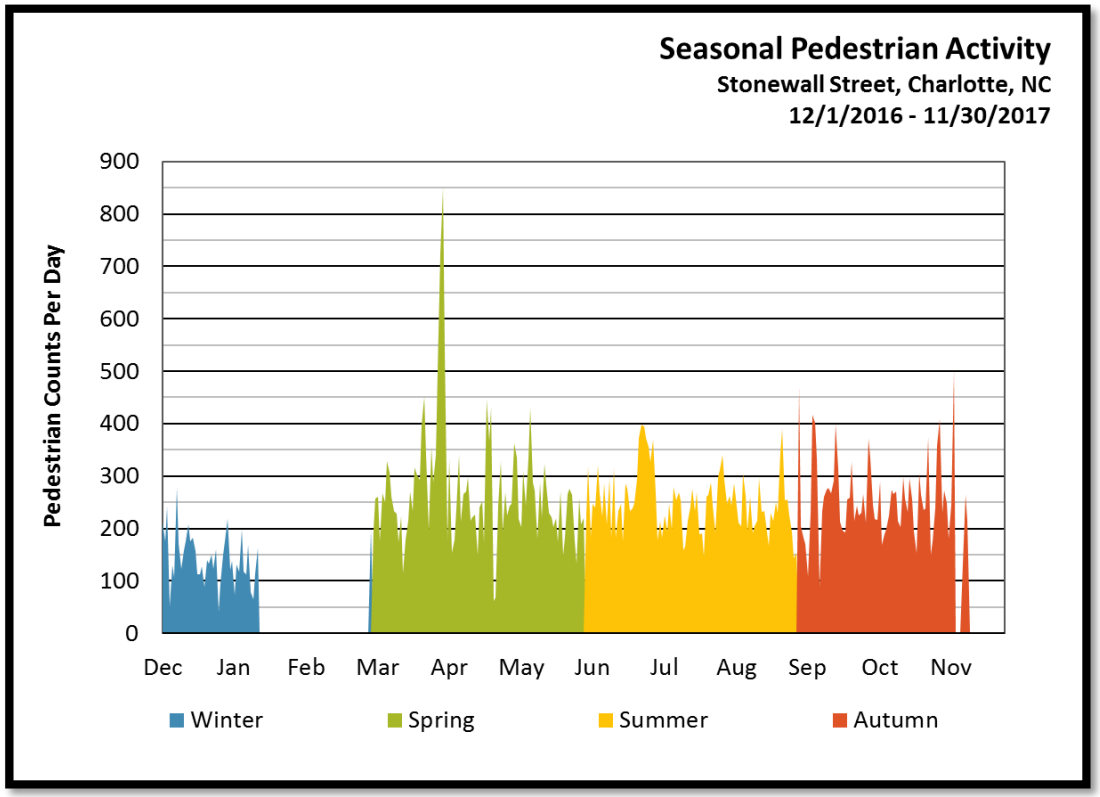

Figure 5. Seasonal Pedestrian Activity

Detailed Bicycle Count Information

Bicycle data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid bicycle data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

SOUTH TYRON STREET – CHARLOTTE, NC

Table 1 Site Description	
Active Since	November 14, 2016
Pedestrian Travel Pattern	Urban Commute
Pedestrian Volume Group	High
Bicyclist Travel Pattern	Urban Commute
Bicyclist Volume Group	Medium
Station Location Coordinates	N - N35.22167627 W80.85067891 S - N35.221323 W80.850736
Station Name / ID	CLT_STR / 590004
Directional Distribution	
North Side	*South Side*
Pedestrians on Sidewalk (45%)	Pedestrians on Sidewalk (55%)
WB Bicyclists in Roadway (35%)	EB Bicyclists in Roadway (65%)

SITE OVERVIEW

A continuous count station was installed on South Tyron Street in Charlotte, NC between W Morehead St. and W Hill Street. This site is located on the edge of uptown Charlotte, near many attractions such as Bank of America Stadium and the Charlotte Convention Center. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 2.**

Figure 2 is a site diagram that shows equipment placement for the two count sites that comprise the station. Bicyclists in the roadway are detected by a set of two inductive loops positioned to the rightmost side of the path (indicated as blue diamonds) and pedestrians are detected by an infrared sensor (indicated with a red triangle) on the sidewalk.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions, 123 days of data are not present in the 12-month analysis period.

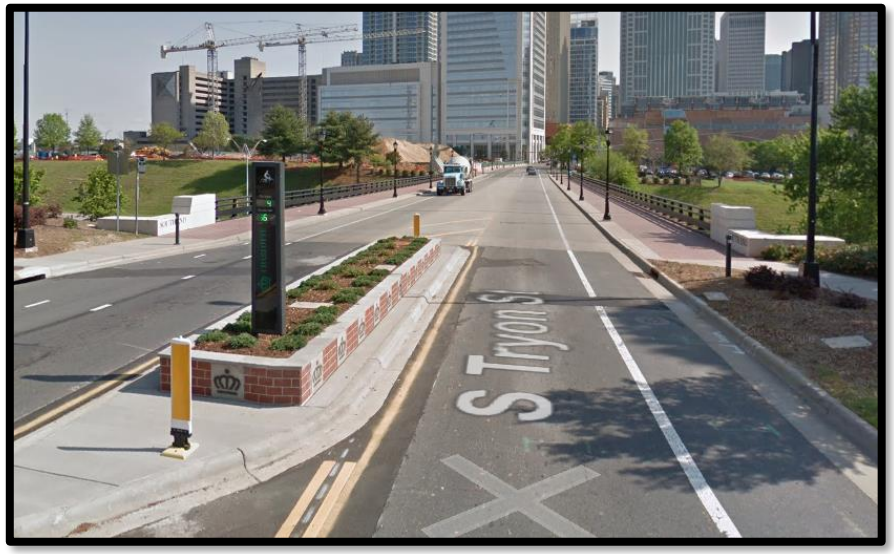

Figure 1. Continuous Count Station Installation West (Left) and East (Right)

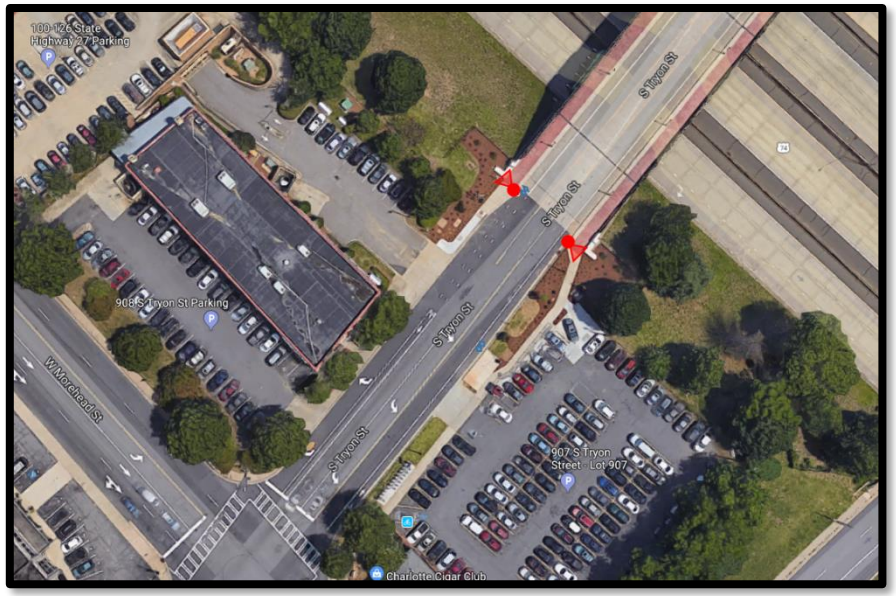

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

SUMMARY COUNT DATA

Pedestrian and bicycle data analysis are omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

Table 2 Summary Volume Statistics (1) (2) (3)		
Annual Average Daily Traffic (AADT)	10,000 (NCDOT, 2016)	
Pedestrians		
	Highest Volume	**Lowest Volume**
Season	N/A	N/A
Month	N/A	N/A
Day of Week	N/A	N/A
Date	N/A	N/A
Peak Period	N/A	
12 Month Pedestrian Count	N/A	
Annual Average Daily Pedestrian Traffic	N/A	
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	N/A	N/A
Month	N/A	N/A
Day of Week	N/A	N/A
Date	N/A	N/A
Peak Period	N/A	
12 Month Bicycle Count	N/A	
Annual Average Daily Bicycle Traffic	N/A	

(1) Note: 123 days of data are not present in the 12-month analysis period
(2) Data has been adjusted based on correction factors
(3) Annual Average Traffic calculated using AASHTO method

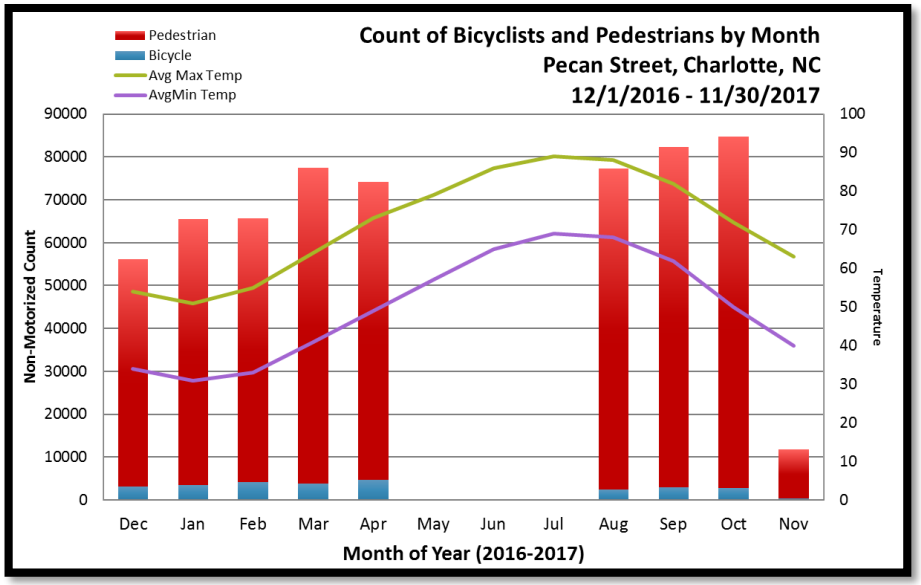

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Pedestrian data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid pedestrian data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

Detailed Bicycle Count Information

Bicycle data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid bicycle data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

SELWYN AVENUE – CHARLOTTE, NC

Table 1 Site Description	
Active Since	October 26, 2016
Pedestrian Travel Pattern	Urban Recreation
Pedestrian Volume Group	Low
Bicyclist Travel Pattern	Urban Recreation
Bicyclist Volume Group	Low
Station Location Coordinates	N35.178148 W80.837283
Station Name / ID	CLT_SWN / 590001
Directional Distribution	
West Side	*East Side*
Pedestrians on Sidewalk (60%)	Pedestrians on Sidewalk (40%)
SB Bicyclists in Roadway (59%)	NB Bicyclists in Roadway (41%)

Figure 1. Continuous Count Station Installation West (Left) and East (Right)

SITE OVERVIEW

A continuous count station was installed on Selwyn Avenue in Charlotte, NC between Ridgewood Ave and Sterling Rd. This site is located in a residential area close to Myers Park County Club. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 1.**

Figure 2 is a site diagram that shows equipment placement for the two count sites that comprise the station. Bicyclists in the roadway are detected by a set of two inductive loops positioned to the rightmost side of the path (indicated as blue diamonds) and pedestrians are detected by an infrared sensor (indicated with a red triangle) on the sidewalk.

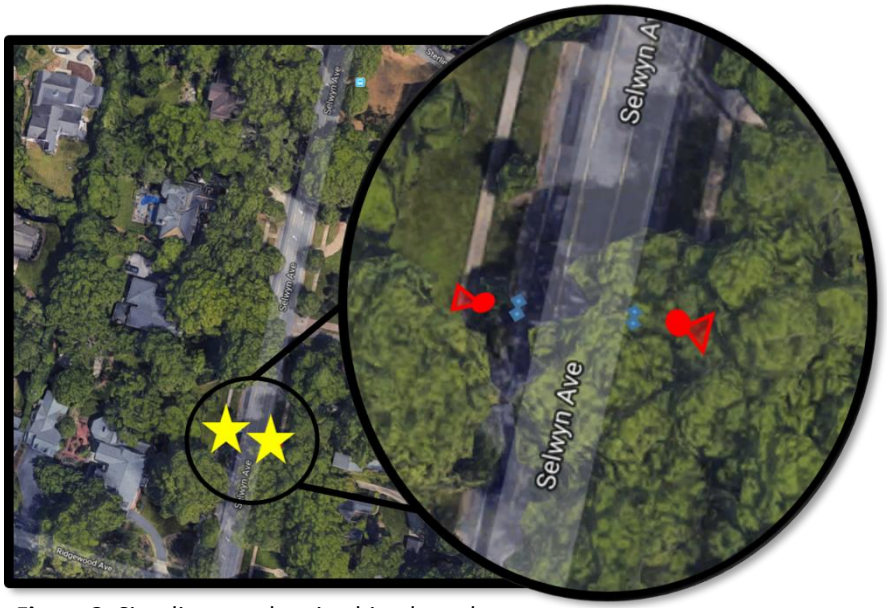

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions or missing data, 1 day of bicycle data and 22 days of pedestrian data are not present in the 12-month analysis period.

Summary Count Data

Over 90,000 pedestrian counts and over 17,000 bicycle counts were recorded during the 12 month analysis period. The overall volume of non-motorized users on this facility varies from just under 6,000 to over 11,000 counts per month. **Table 2** is a summary of statistics for both bicyclist and pedestrian count data. Correction factors were applied to the data based on a site-specific logger validation study. **Figure 3** displays the average high and low temperatures for this community during the months of the year. There is a slight correlation between temperature and volumes at this site. Due to missing data, November will be excluded from the pedestrian analysis.

Table 2 Summary Volume Statistics (1) (2) (3)

Annual Average Daily Traffic (AADT)	22,000 (NCDOT, 2016)	
Pedestrians		
	Highest Volume	**Lowest Volume**
Season	Spring	Winter
Month	September	December
Day of Week	Saturday	Friday
Date	Feb 11, 2017 (531)	April 24, 2017 (39)
Peak Period	Saturday 7AM-12PM	
12 Month Pedestrian Count	92,251	
Annual Average Daily Pedestrian Traffic	269 AADPT	
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	Summer	Winter
Month	July	January
Day of Week	Saturday	Monday
Date	July 29, 2017 (245)	Jan 07, 2017 (1)
Peak Period	Saturday 10-11AM	
12 Month Bicycle Count	17,304	
Annual Average Daily Bicycle Traffic	48 AADBT	

(1) Note: 1 day of bicycle data and 22 days of pedestrian data are not present in the 12-month analysis period
(2) Data has been adjusted based on correction factors
(3) Annual Average Traffic calculated using AASHTO method

Pedestrian Data

The lowest volumes for pedestrians, as shown in **Figure 3**, were recorded in January and February when the weather was colder. The highest monthly volume for pedestrians was recorded during the month of September, followed by October and August. Average daily pedestrian volumes were highest on the weekends and lowest on Fridays.

Bicycle Data

The lowest monthly volumes for bicyclists, also shown in **Figure 3**, are recorded in during the colder months of January, February, and December. The summer season had the highest overall seasonal volume, and the highest monthly volume was recorded in July. Daily average bicyclist volumes were the highest on Saturdays and Sundays, the lowest was Mondays.

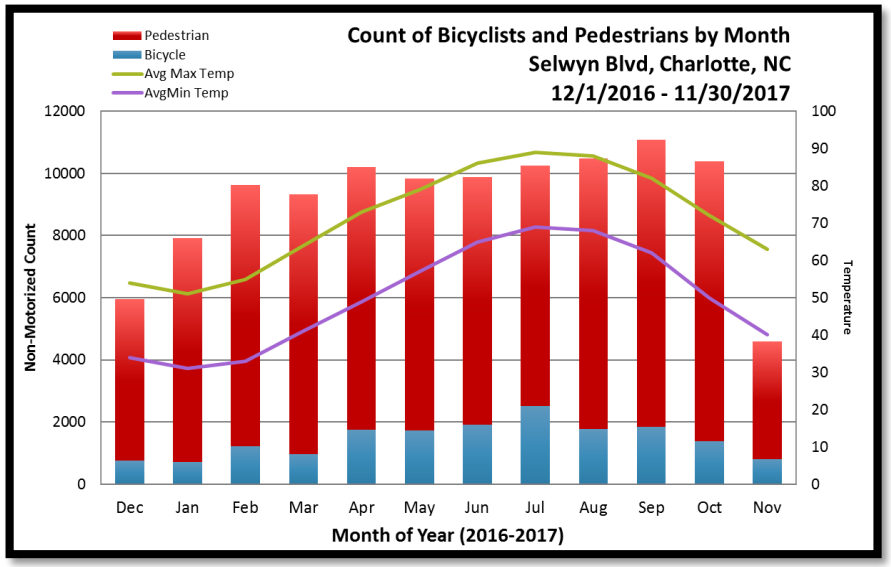

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Table 3 shows average pedestrian activity by day of week. The highest average daily count was on the weekends, suggesting that there is a large amount of recreational traffic. The lowest average daily volume occurred on Fridays, followed by Mondays. Overall, there was an average of 269 pedestrians counted at the site each day.

Table 4 shows the pedestrian pattern observed at this site by hour of day and by day of week. The highest hourly pedestrian volumes occurred on Saturday mornings from 7AM until 12PM; hourly averages stayed over 30 pedestrians during this time. Hourly averages on Sundays remained above 20 pedestrians from 8AM to 6PM. The highest weekday hourly average was on Tuesday mornings from 6AM to 7AM.

Hourly pedestrian volumes are depicted graphically in **Figure 4.** On Saturdays, pedestrian traffic started at 6AM and rose to an early peak around 8AM. Sunday pedestrian traffic started at 7AM, peaked around noon, and then started dropping of after 6PM. Weekday traffic started at 5AM, rose to a morning peak around 6AM and another peak around 6PM, typical of a commuter pattern. The site was largely inactive from 10PM until 5AM every day.

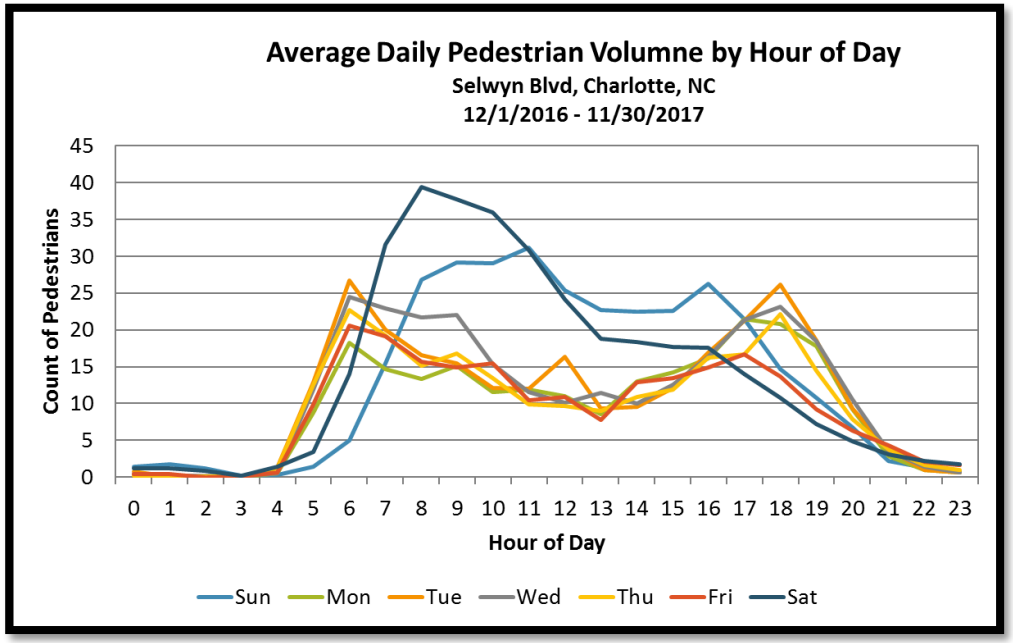

Figure 4. Average Daily Pedestrian Volumes by Hour of Day

Day of Week	Pedestrian Count
Sun	320
Mon	231
Tue	263
Wed	271
Thu	236
Fri	222
Sat	338
Average	**269**

Table 3. Average Pedestrian Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	1	0	1	0	0	0	1	1
1	2	0	0	0	0	0	1	1
2	1	0	0	0	0	0	1	0
3	0	0	0	0	0	0	0	0
4	0	1	1	1	1	1	1	1
5	1	9	13	12	13	10	3	9
6	5	18	27	25	23	21	14	19
7	16	15	20	23	19	19	32	20
8	27	13	17	22	15	16	39	21
9	29	15	15	22	17	15	38	22
10	29	12	12	15	13	16	36	19
11	31	12	12	12	10	10	31	17
12	25	11	16	10	10	11	24	15
13	23	9	9	11	9	8	19	13
14	23	13	10	10	11	13	18	14
15	23	14	12	13	12	13	18	15
16	26	16	17	16	16	15	18	18
17	22	21	21	21	17	17	14	19
18	15	21	26	23	22	14	11	19
19	11	18	19	19	14	9	7	14
20	7	9	9	11	8	6	5	8
21	2	3	4	4	4	4	3	3
22	1	1	1	1	2	2	2	1
23	1	1	1	1	1	2	2	1
Avg	13	10	11	11	10	9	14	11

Table 4. Pedestrian Patterns by Day of Week and Hour of Day

Seasonal variation is shown in **Figure 5**. The season that experienced the highest volume of pedestrian volume was the spring, followed closely by the summer. The winter experienced the lowest traffic, likely due to the cold weather. Every season had similar volumes. The months with the highest volume were September and October, the only two months that exceeded 9,000 pedestrians. December experienced the lowest volumes out of the months with a full set of data.

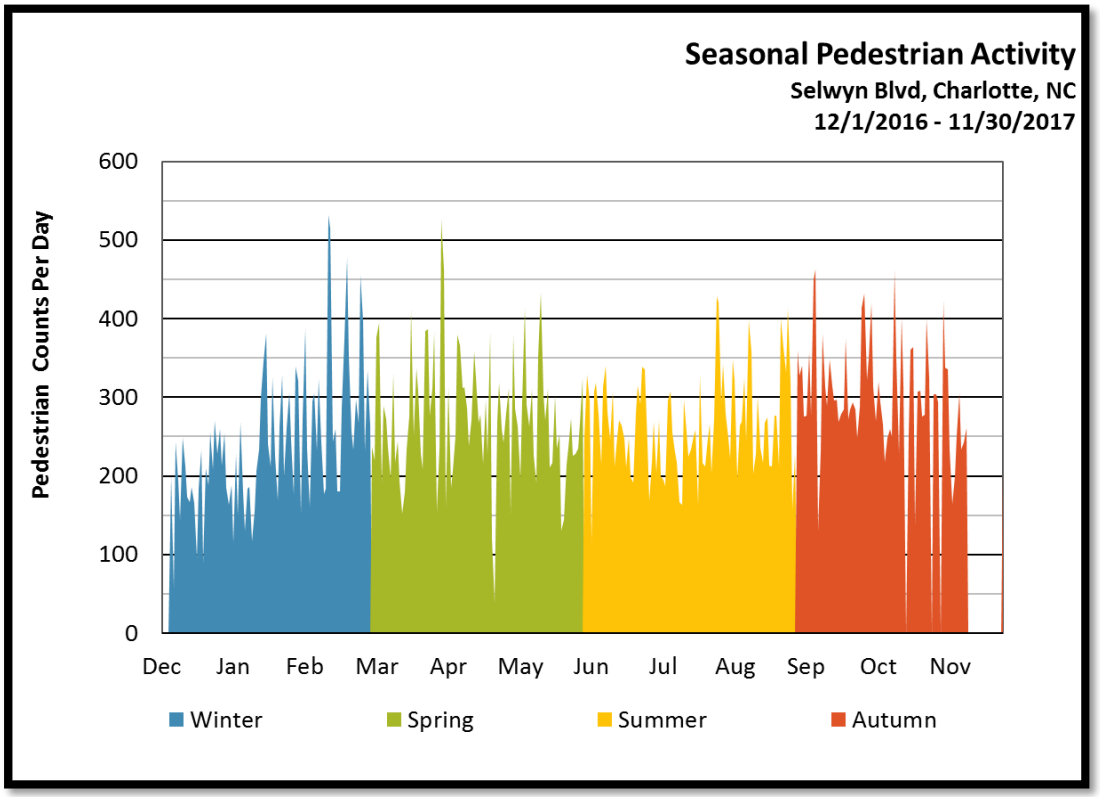

Figure 5. Seasonal Pedestrian Activity

Detailed Bicycle Count Information

Table 5 shows average bicycle activity by day of week. Saturdays had the highest average volume, followed by Sundays, both days having an average of more than 80 bicycles a day. The higher active on the weekend implies that the site is used for recreation. The lowest daily average was recorded on Mondays. An average of 48 bicycles were counted at the site each day.

Table 6 shows daily bicyclist patterns at the site over the course of each day. The highest hourly average occurred on Saturdays from 7AM to 12PM, rising to ten or more bicycles an hour twice in that period. Sunday averaged less bicycle traffic in the mornings, but more in the afternoon compared to Saturdays. Weekday traffic rarely exceeded 2 bicycles an hour.

Hourly bicyclist volumes at this site are depicted graphically in **Figure 6.** Weekend bicycle traffic started at 7AM and rose to a morning peak around 9AM or 10 AM, then slowly dropped until 8PM. Weekdays experienced an early peak at 6AM and then remained consistent throughout the day until an evening peak round 7PM. There was little to no bicycle traffic at this site between 9PM and 5AM.

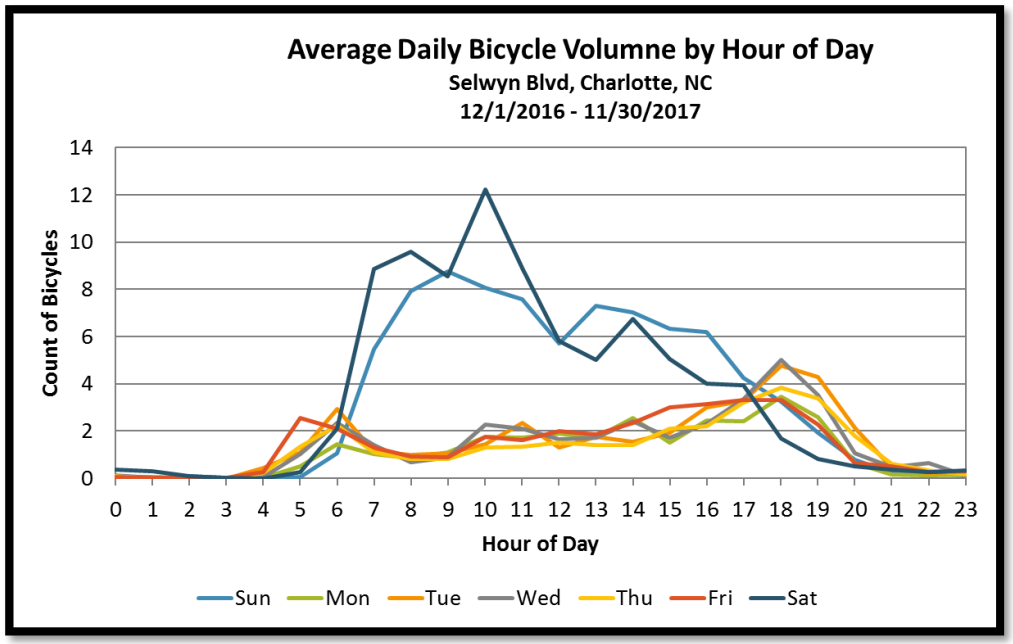

Figure 6. Average Daily Bicycle Volume by Hour of Day

Day of Week	Bicycle Count
Sun	82
Mon	28
Tue	37
Wed	35
Thu	31
Fri	35
Sat	86
Average	**48**

Table 5. Average Bicyclist Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	1	1	1	1	3	0	1
6	1	1	3	2	2	2	2	2
7	5	1	1	1	1	1	9	3
8	8	1	1	1	1	1	10	3
9	9	1	1	1	1	1	9	3
10	8	2	1	2	1	2	12	4
11	8	2	2	2	1	2	9	4
12	6	2	1	2	2	2	6	3
13	7	2	2	2	1	2	5	3
14	7	3	2	2	1	2	7	3
15	6	2	2	2	2	3	5	3
16	6	2	3	2	2	3	4	3
17	4	2	3	3	3	3	4	3
18	3	3	5	5	4	3	2	4
19	2	3	4	4	3	2	1	3
20	1	1	2	1	2	1	1	1
21	0	0	0	0	1	1	0	0
22	0	0	0	1	0	0	0	0
23	0	0	0	0	0	0	0	0
Avg	**3**	**1**	**2**	**1**	**1**	**1**	**4**	**2**

Table 6. Bicyclist Patterns by Day of Week and Hour of Day

Seasonal variation at the site is shown in **Figure 7**. The highest seasonal bicyclist volumes occurred during the summer months. July was the month with the most bicycle traffic, and the only month with over 2,000 bicycle counts. The month with the least amount of bicycle traffic was January, followed by December and November; this is likely due to the colder weather.

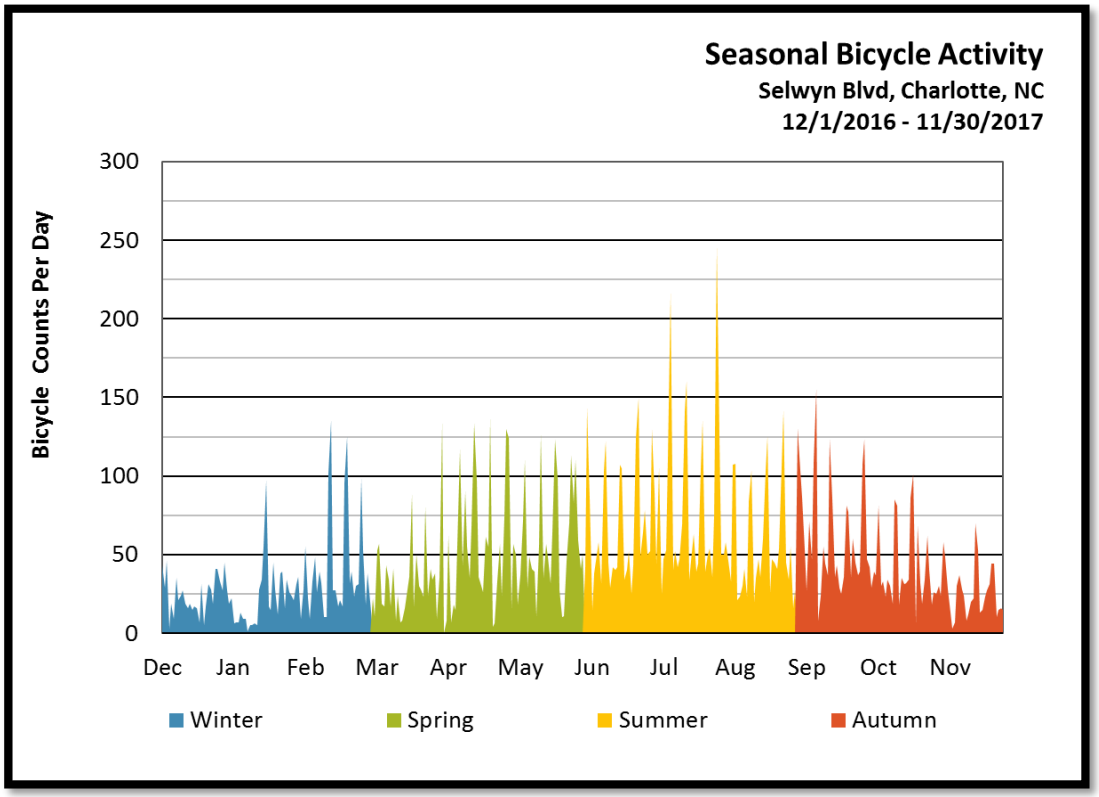

Figure 7. Seasonal Bicycle Activity

EAST 10TH STREET – CHARLOTTE, NC

Table 1 Site Description	
Active Since	November 2, 2016
Pedestrian Travel Pattern	Urban Mixed
Pedestrian Volume Group	Low
Bicyclist Travel Pattern	Urban Mixed
Bicyclist Volume Group	Medium
Station Location Coordinates	W - N35.224170 W80.827619 E - N35.224311 W80.827619
Station Name / ID	CLT_TEN / 590005
Directional Distribution	
West Side Pedestrians on Sidewalk (16%) Bicyclists SB in Roadway (28%) Bicyclists on Sidewalk (4%)	*East Side* Pedestrians on Sidewalk (84%) Bicyclists NB in Roadway (56%) Bicyclists on Sidewalk (12%)

SITE OVERVIEW

A continuous count station was installed on East 10th Street in Charlotte, NC between Seigle Ave and E 12th St. This site is located in a residential area, close to two different schools. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 1.**

Figure 2 is a site diagram that shows equipment placement for the two count sites that comprise the station. Bicyclists in the roadway are detected by a set of two inductive loops positioned to the rightmost side of the path (indicated as blue diamonds), bicycles on the sidewalk are detected by an inductive loop positioned on the sidewalk (indicated as a yellow diamond), and pedestrians are detected by an infrared sensor (indicated with a red triangle) on the sidewalk.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions, 225 days of bicycle data and 190 days of pedestrian data are not present in the 12-month analysis period.

Figure 1. Continuous Count Station Installation

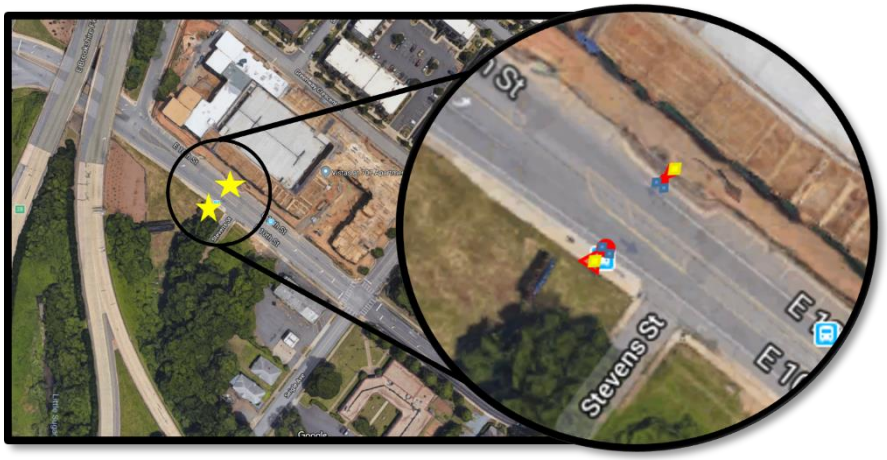

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

SUMMARY COUNT DATA

Pedestrian and bicycle data analysis are omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

Table 2 Summary Volume Statistics (1) (2)		
Annual Average Daily Traffic (AADT)	12,000 (NCDOT, 2016)	
Pedestrians		
	Highest Volume	**Lowest Volume**
Season	N/A	N/A
Month	N/A	N/A
Day of Week	N/A	N/A
Date	N/A	N/A
Peak Period	N/A	
12 Month Pedestrian Count	N/A	
Annual Average Daily Pedestrian Traffic	N/A	
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	N/A	N/A
Month	N/A	N/A
Day of Week	N/A	N/A
Date	N/A	N/A
Peak Period	N/A	
12 Month Bicycle Count	N/A	
Annual Average Daily Bicycle Traffic	N/A	

(1) Note: 225 days of bicycle data and 190 days of pedestrian data are not present in the 12-month analysis period
(2) Data has been adjusted based on correction factors
(3) Annual Average Traffic calculated using AASHTO method

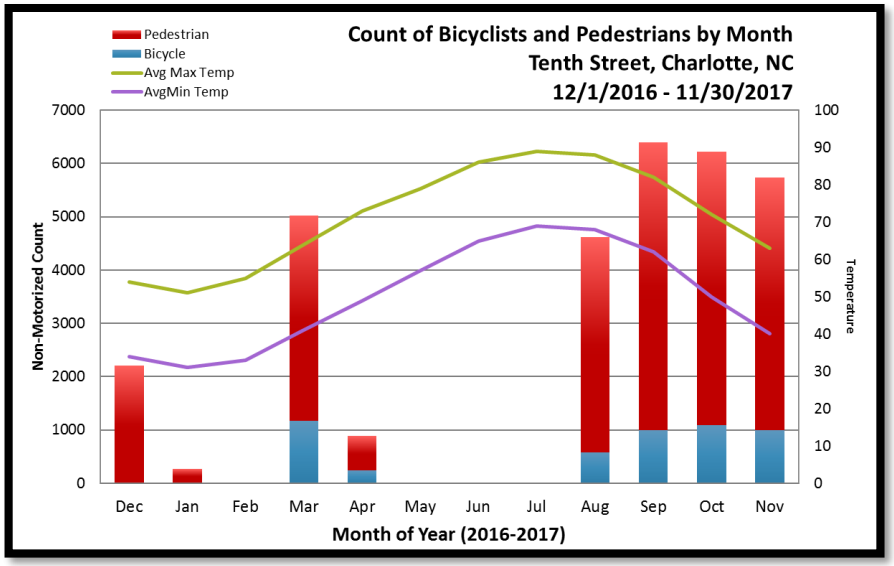

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Pedestrian data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid pedestrian data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

Detailed Bicycle Count Information

Bicycle data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid bicycle data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

LIBBA COTTEN BIKEWAY – CARRBORO, NC

Table 1 Station Description	
Active Since	December 11, 2014
Pedestrian Travel Pattern	University Mixed
Pedestrian Volume Group	Medium
Bicyclist Travel Pattern	University Commute
Bicyclist Volume Group	High
Station Location Coordinates	N35.90842 W079.06612
Site Name / Station ID	CRB_LCB / 670002
Directional Distribution	
Westbound Pedestrians (49%) Bicyclists (47%)	*Eastbound* Pedestrians (51%) Bicyclists (53%)

SITE OVERVIEW

A continuous count station was installed on the Libba Cotten Bikeway in Carrboro, NC near Brewer Ln. This short shared-use bikeway path is built along an active rail right-of-way linking Carrboro's central business district to the west side of UNC Chapel Hill. **Table 1** contains information related to the site, and photographs of the completed station installation are shown in **Figure 1**.

Figure 2 is a site diagram that shows equipment placement for the count station. Bicyclists on the greenway are detected by a set of three inductive loops positioned in the path (indicated as blue diamonds) and pedestrians are detected by an infrared sensor (indicated with a red triangle) mounted in a post.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions or missing data, 24 days of pedestrian and bicycle data are not present in the 12-month analysis period.

Figure 1. Continuous Count Station Installation

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

Summary Count Data

Over 200,000 bicycle counts and 120,000 pedestrian counts were recorded at the site during the 12-month analysis period. The overall volume of non-motorized users on this facility varied from 19,000 to over 37,000 counts per month, excluding November. **Table 2** is a summary statistics for both bicyclist and pedestrian count data. Correction factors have been applied to the data based on a site-specific logger validation study. **Figure 3** displays the average high and low temperatures for this community in relation to the count data. Due to missing data, November is excluded from the analysis for both pedestrians and bicycles.

Table 2 Summary Volume Statistics (1) (2) (3)

Pedestrians		
	Highest Volume	**Lowest Volume**
Season	Spring	Autumn
Month	March	July
Day of Week	Wednesday	Sunday
Date	Feb 28, 2017 (701)	Jan 09, 2017 (62)
Peak Period		Mon-Thru 5-6PM
12 Month Pedestrian Count		121,489
Annual Average Daily Pedestrian Traffic		360 AADPT
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	Spring	Winter
Month	September	December
Day of Week	Wednesday	Sunday
Date	Sept 19, 2017 (1,291)	Jan 8 & 9, 2016 (6)
Peak Period		Weekdays 8-10AM, 4-6PM
12 Month Bicycle Count		203,760
Annual Average Daily Bicycle Traffic		611 AADBT

(1) Note: 24 days of data are not present in the 12-month analysis period.
(2) Data has been adjusted based on correction factors
(3) Annual Average Traffic calculated using AASHTO method

Pedestrian Data

The lowest volumes for pedestrians were recorded in July, December, and June, as shown in **Figure 3**. Lower volumes were recorded in the summer months likely due to the University summer schedule when many students and faculty were on summer vacation. The lower volumes in December are likely due to the University's winter break, and the colder weather. The highest monthly volumes for pedestrians were recorded in the months of March, February, and April. Over 12,500 counts per month were recorded in these months. Pedestrian volumes were highest on Wednesdays and lowest during the weekend, especially on Sundays.

Bicycle Data

The lowest volumes for bicyclists were recorded in December, also depicted in **Figure 3**. The most bicycle activity occurred in spring, while the highest monthly bicycle volume occurred in September and exceeded 25,000 counts. Bicyclist volumes are higher on weekdays than weekends. The volumes are highest on Wednesdays and lowest on Sundays.

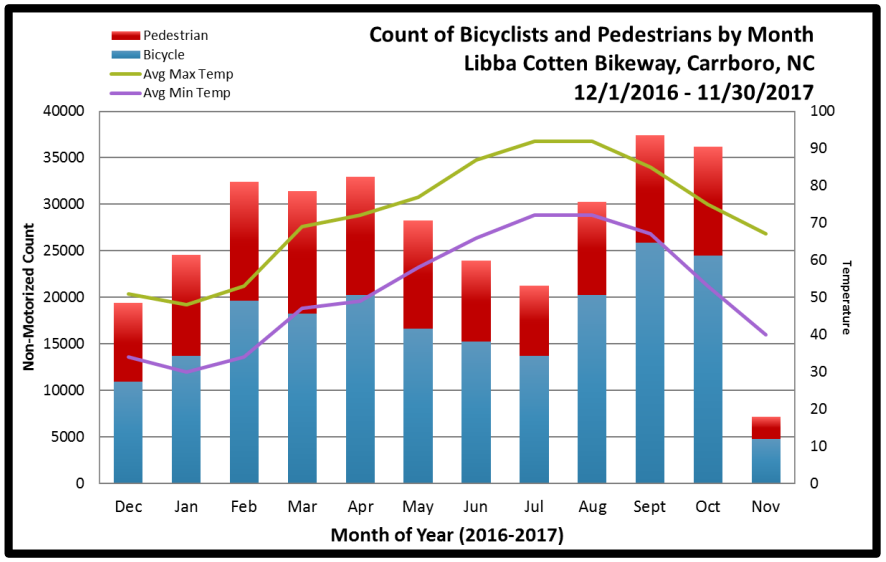

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Information

Table 3 shows average pedestrian activity by day of week. Tuesdays through Thursdays had higher average volumes than the rest of the week. The highest average daily counts were recorded on Wednesdays and the lowest were recorded on Sundays. On average, 356 pedestrians were recorded at the site each day.

Table 4 shows the pedestrian pattern observed at this site by hour of day and by day of week. The highest counts occurred during the week between 5PM and 7PM; this pattern is likely the result of students leaving campus and professionals leaving the business district. There is a morning weekday peak from 8AM to 11AM. The weekend peak is Saturday from 8AM to 11 AM, and Sunday has no real peak.

Hourly pedestrian volumes are depicted graphically in **Figure 4.** The figure shows weekday peaks in the morning and early evening, indicative of a prominent commute pattern. The lowest pedestrian activity occurs between 10PM and 6AM, though the site appears to remain active at all hours of the night as hourly pedestrian averages rarely falling to zero.

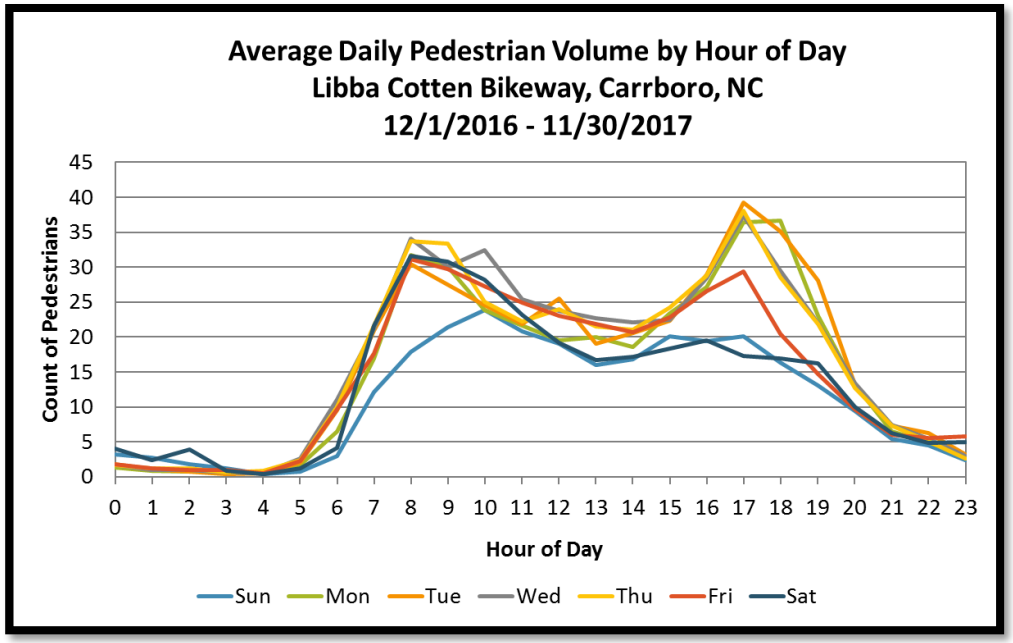

Figure 4. Average Daily Pedestrian Volumes by Hour of Day

Day of Week	Pedestrian Count
Sun	272
Mon	369
Tue	390
Wed	399
Thu	390
Fri	355
Sat	320
Average	**356**

Table 3. Average Pedestrian Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	3	1	2	2	2	2	4	2
1	3	1	1	1	1	1	2	1
2	2	1	1	1	1	1	4	1
3	1	1	0	1	1	1	1	1
4	0	1	1	0	1	0	0	1
5	1	2	2	3	2	2	1	2
6	3	6	10	11	10	10	4	8
7	12	17	21	21	22	18	22	19
8	18	32	30	34	34	31	32	30
9	21	30	27	30	33	30	31	29
10	24	24	25	32	25	27	28	26
11	21	22	22	25	22	25	23	23
12	19	20	26	24	24	23	19	22
13	16	20	19	23	22	22	17	20
14	17	19	21	22	21	21	17	20
15	20	23	22	22	24	23	18	22
16	19	27	29	28	29	27	20	26
17	20	36	39	37	38	29	17	31
18	16	37	35	29	29	20	17	26
19	13	23	28	22	22	15	16	20
20	9	13	13	13	13	10	10	12
21	5	7	7	7	7	6	6	7
22	5	5	6	5	5	6	5	5
23	2	3	3	3	3	6	5	4
Avg	11	15	16	17	16	15	13	15

Table 4. Pedestrian Patterns by Day of Week and Hour of Day

Seasonal variation is shown in **Figure 5**. The highest pedestrian volumes occurred during the spring months (March – May). Pedestrian activity decreased significantly during the summer months. Activity also decreased significantly around the winter holiday season from mid-December to early January.

Pedestrian volumes commonly exceeded 550 counts per day during the highest traffic seasons of late winter to mid-Spring. Counts exceeded 375 pedestrians per day in all seasons.

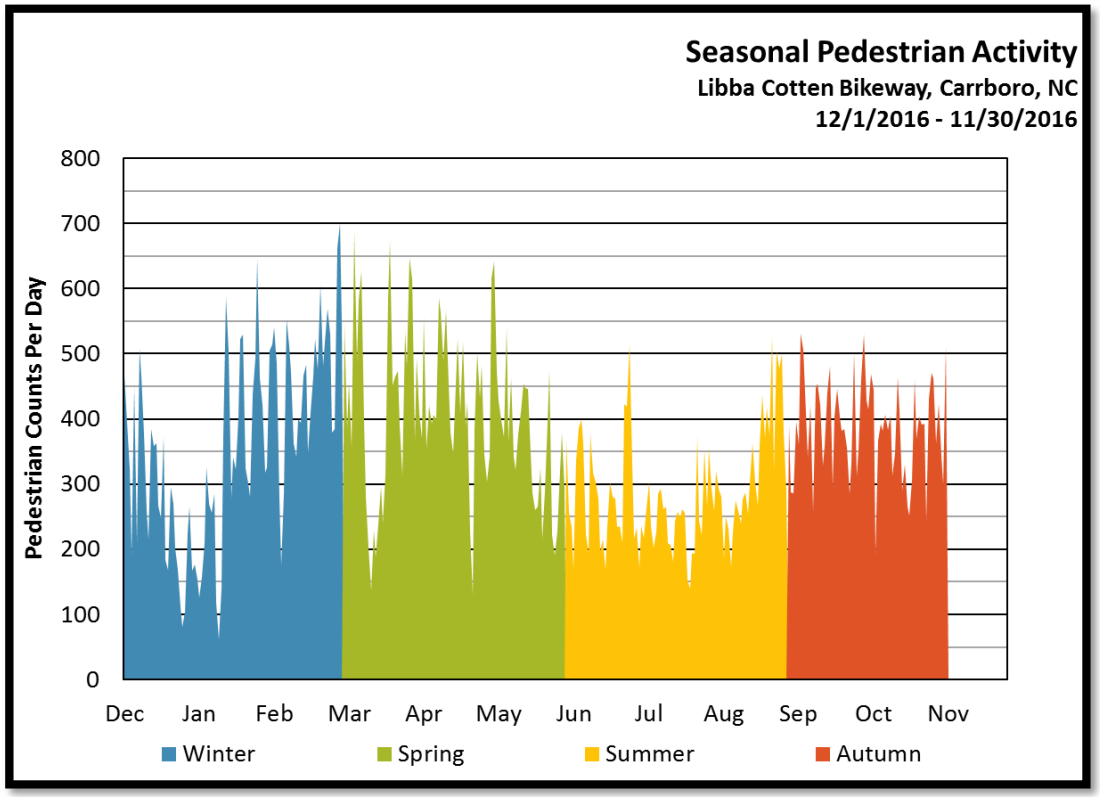

Figure 5. Seasonal Pedestrian Activity

Detailed Bicycle Count Information

Table 5 shows average bicycle activity by day of week. Wednesdays had the highest average daily counts, averaging 801 bicycles per day, closely followed by Thursdays. Saturdays and Sundays had significantly lower daily counts than weekdays. The overall average was 599 bicycles a day.

Table 6 shows daily bicyclist patterns at the site over the course of each day. Peak bicyclist volumes occurred on weekday mornings from 8-10AM and on weekday evenings from 4-6PM when counts typically exceed 70 bicycles per hour. Activity was recorded on weekend days throughout the daylight hours and into the evening.

Hourly bicyclist volumes at this site are depicted graphically in **Figure 6.** The figure shows weekday volumes peaking in the morning and afternoon that is typical of a commute pattern. On the weekends, bicycle activity primarily occurs between 9AM and 7PM, when hourly average volumes are between 14 and 26 counts per hour. Bicycle activity does regularly occur late into the evening on both weekdays and weekends and decreases to zero volume in the early morning hours.

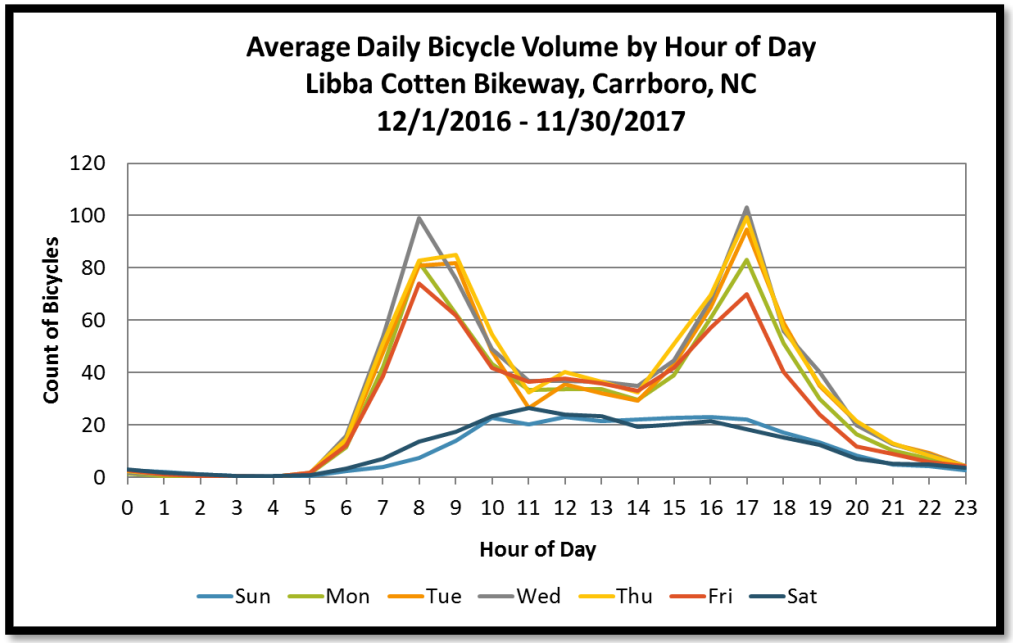

Figure 6. Average Daily Bicycle Volume by Hour of Day

Day of Week	Bicycle Count
Sun	261
Mon	675
Tue	744
Wed	801
Thu	795
Fri	641
Sat	272
Average	**599**

Table 5. Average Bicyclist Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	3	1	2	2	2	3	3	2
1	2	1	1	1	1	1	2	1
2	1	0	0	0	0	0	1	1
3	0	0	0	0	0	0	1	0
4	0	0	0	0	0	0	0	0
5	1	2	1	1	2	2	1	1
6	2	11	14	16	15	12	3	10
7	4	42	48	54	51	39	7	35
8	7	82	81	99	83	74	14	63
9	14	62	82	76	85	62	17	57
10	23	43	48	49	55	42	23	40
11	20	33	26	37	32	36	26	30
12	23	33	35	37	40	38	24	33
13	21	34	32	37	36	36	23	31
14	22	29	29	35	32	33	19	29
15	23	39	43	45	51	42	20	37
16	23	61	65	68	70	57	21	52
17	22	83	95	103	99	70	18	70
18	17	51	59	56	57	40	15	42
19	13	30	35	40	36	24	12	27
20	8	16	21	20	21	12	7	15
21	5	10	13	13	13	9	5	10
22	4	7	9	9	8	6	5	7
23	3	4	4	4	4	4	4	4
Avg	**11**	**28**	**31**	**33**	**33**	**27**	**11**	**25**

Table 6. Bicyclist Patterns by Day of Week and Hour of Day

Seasonal variation at the site is shown in **Figure 7.** The highest bicyclist volumes occurred during the spring months (March – May), followed by the autumn months (September – November). The highest volume seasons coincide with the fall and spring semester class schedule; volumes regularly exceed 1000 bicycles per day during these semesters. Bicycle activity decreased significantly during the winter holiday break from mid-December to early January. Bicycle traffic also dropped during the summer when classes were out. Weekday volumes exceeding 600 bicycles per day occurred in all seasons.

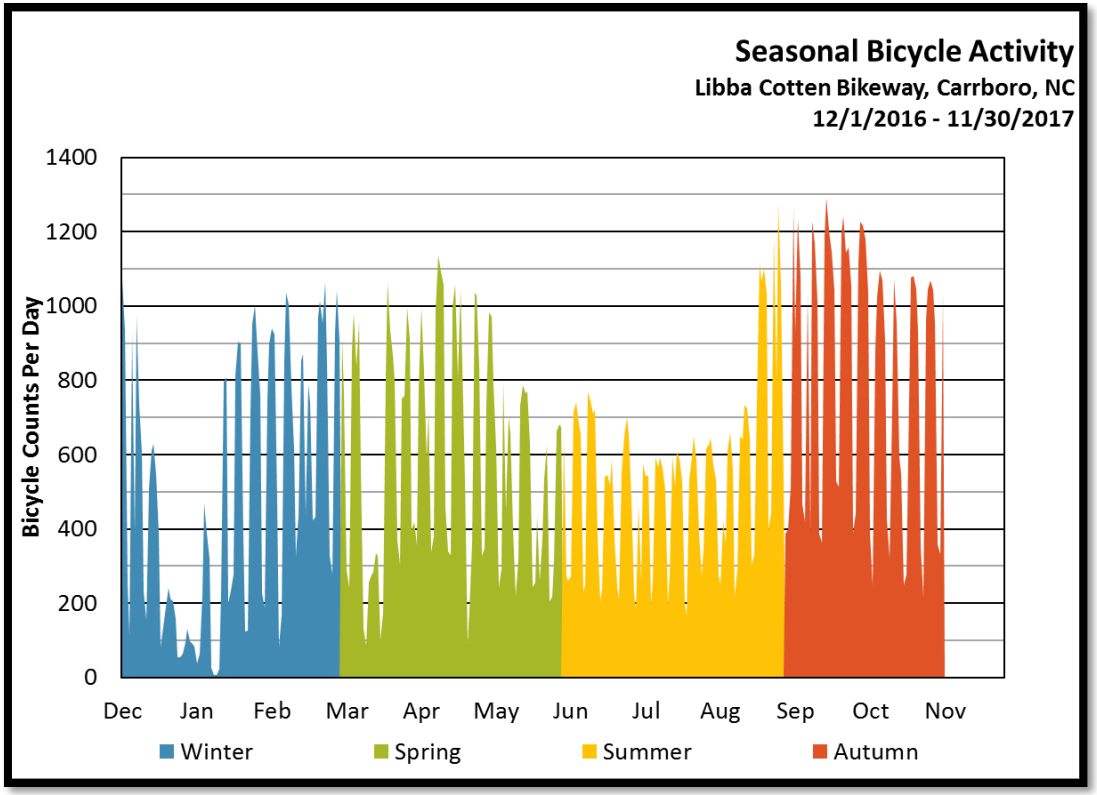

Figure 7. Seasonal Bicycle Activity

OLD NC HIGHWAY 86 – CARRBORO, NC

Table 1 Station Description	
Active Since	December 11, 2014
Pedestrian Travel Pattern	Urban Commute
Pedestrian Volume Group	Low
Bicyclist Travel Pattern	Rural Mixed
Bicyclist Volume Group	Medium
Station Location Coordinates	E - N35.93412 W79.10204 W - N35.93487 W79.10250
Station Name / ID	CRB_OLD/ 670001
Directional Distribution	
West Side	*East Side*
No Sidewalk on West Side	Pedestrians on Sidewalk (100%)
SB Bicyclists in Roadway (28%)	NB Bicyclists in Roadway (72%)

SITE OVERVIEW

A continuous count station was installed on Old NC Highway 86 (Hillsborough Rd) in Carrboro, NC near Old Fayetteville Rd. This stretch of road has numerous popular recreational bicycling routes which branch out into rural Orange and Alamance County. **Table 1** contains information related to the site, and photographs of the completed site installation are shown in **Figure 1.**

Figure 2 is a site diagram that shows equipment placement for the two count sites that comprise this station. Bicyclists in the roadway are detected by a set of two inductive loops positioned to the rightmost side of the lane (indicated as blue diamonds) and pedestrians are detected by an infrared sensor (indicated with a red triangle) on the east side sidewalk, which ends just north of the site. There are no pedestrian facilities on the west side though the red circle indicates the placement of the data logger.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions or missing data, 55 days of bicycle and pedestrian data are missing.

Figure 1. Continuous Count Station Installation East (Left) and West (Right)

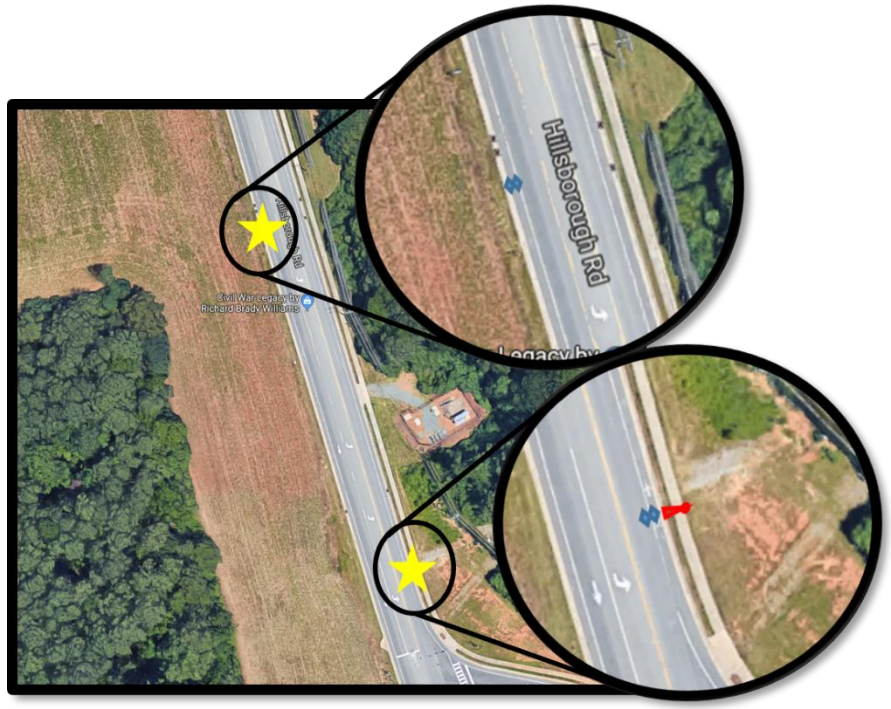

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

Summary Count Data

Over 18,000 pedestrian counts and 25,000 bicycle counts were recorded in the 12-month analysis period. The overall volume of non-motorized users on this facility varies from approximately 2,600 to almost 5,400 counts per month. **Table 2** is a summary of statistics for both bicyclist and pedestrian count data. Correction factors were applied to the data based on a site-specific logger validation study. **Figure 1** displays the average high and low temperatures for this community. This site shows a correlation between temperature and non-motorized volumes. Due to missing data, October and November are excluded from the analysis for both pedestrians and bicycles.

Table 2 Summary Volume Statistics (1) (2) (3)		
Annual Average Daily Traffic (AADT)	11,000 (NCDOT, 2015)	
Pedestrians		
	Highest Volume	**Lowest Volume**
Season	Summer	Autumn
Month	September	December
Day of Week	Sunday	Friday
Date	Aug 28, 2017 (144)	Jan 10, 2017 (9)
Peak Period	Weekdays 7-8AM	
12 Month Pedestrian Count	18,460	
Annual Average Daily Pedestrian Traffic	61 AADPT	
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	Summer	Autumn
Month	July	January
Day of Week	Saturday	Monday
Date	Feb 12, 2017 (284)	Jan 7-9, 2018 (1)
Peak Period	Saturday 9-10AM	
12 Month Bicycle Count	25,337	
Annual Average Daily Bicycle Traffic	81 AADBT	

(1) Note: 55 days of data are not present in the 12-month analysis period.
(2) Data has been adjusted based on correction factors
(3) Annual Average Traffic calculated using AASHTO method

Pedestrian Data

The lowest volumes for pedestrians were recorded in December, followed by January then July. School holidays likely account for the lower volumes during these months. The highest volumes for pedestrians were recorded in the months of September and August, having over 2,000 pedestrian counts per month. Pedestrian volumes were highest on Sundays and Wednesdays and lowest week on Tuesdays and Fridays.

Bicycle Data

The lowest volumes for bicyclists were recorded in January, followed by December and March, shown in **Figure 3**. The highest volumes were in July and June. Bicyclist volumes were highest on Fridays and Saturdays, with a distinct morning peak on Saturdays. Mondays had the lowest average bicycle volumes.

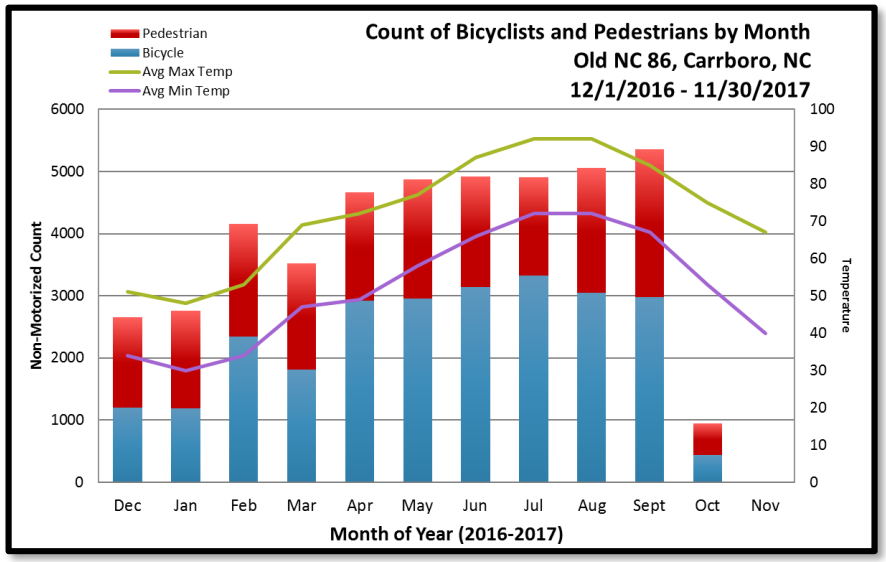

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Table 3 shows average pedestrian activity by day of week. The highest average daily counts were recorded on Sundays and Wednesdays. While Fridays and Mondays had the lowest daily average volumes. There was not a large variance in pedestrian volume throughout the week. On average, 60 pedestrian counts were recorded at the site each day.

Table 4 shows the pedestrian pattern observed at this site by hour of day and by day of week. The highest counts occur on weekdays between 7AM and 8AM. These counts are likely school trips with a return trip occurring sometime between 3 and 7PM.

Hourly pedestrian volumes are depicted graphically in **Figure 4.** The figure shows weekday morning peaks at 7AM and a distribution of counts across the afternoon and evening hours. Counts peak around 8AM on weekends, and are then slowly decrease throughout the rest of the daylight hours. The lowest pedestrian activity occurs between 10PM and 5AM when the sun is down and the average hourly volumes decrease to zero.

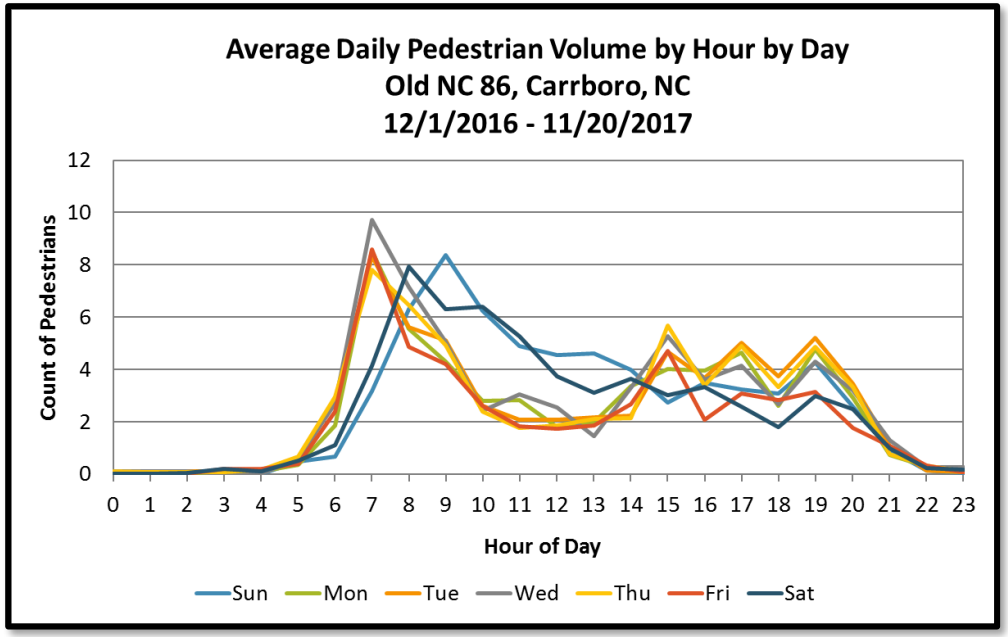

Figure 4. Average Daily Pedestrian Volumes by Hour of Day

Day of Week	Pedestrian Count
Sun	64
Mon	58
Tue	61
Wed	63
Thu	60
Fri	51
Sat	60
Average	60

Table 3. Average Pedestrian Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	1	1	1	0	1	1
6	1	2	3	3	3	2	1	2
7	3	9	8	10	8	9	4	7
8	6	6	6	7	6	5	8	6
9	8	4	5	5	5	4	6	5
10	6	3	3	2	2	3	6	4
11	5	3	2	3	2	2	5	3
12	5	2	2	3	2	2	4	3
13	5	2	2	1	2	2	3	2
14	4	3	2	3	2	3	4	3
15	3	4	5	5	6	5	3	4
16	3	4	4	4	3	2	3	3
17	3	5	5	4	5	3	3	4
18	3	3	4	3	3	3	2	3
19	4	5	5	4	5	3	3	4
20	3	3	3	3	3	2	2	3
21	1	1	1	1	1	1	1	1
22	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0
Avg	3	2	3	3	3	2	3	2

Table 4. Pedestrian Patterns by Day of Week and Hour of Day

Seasonal variation is shown in **Figure 5**. The highest seasonal pedestrian volumes occurred in the summer when the weather was consistently warm and the spring when the nearby schools were in session. The lowest pedestrian volumes occurred in the winter when the weather was colder and school was intermittently out of session due to holidays. Pedestrian volumes regularly exceed 70 counts per day in ever season of the year, including the winter months.

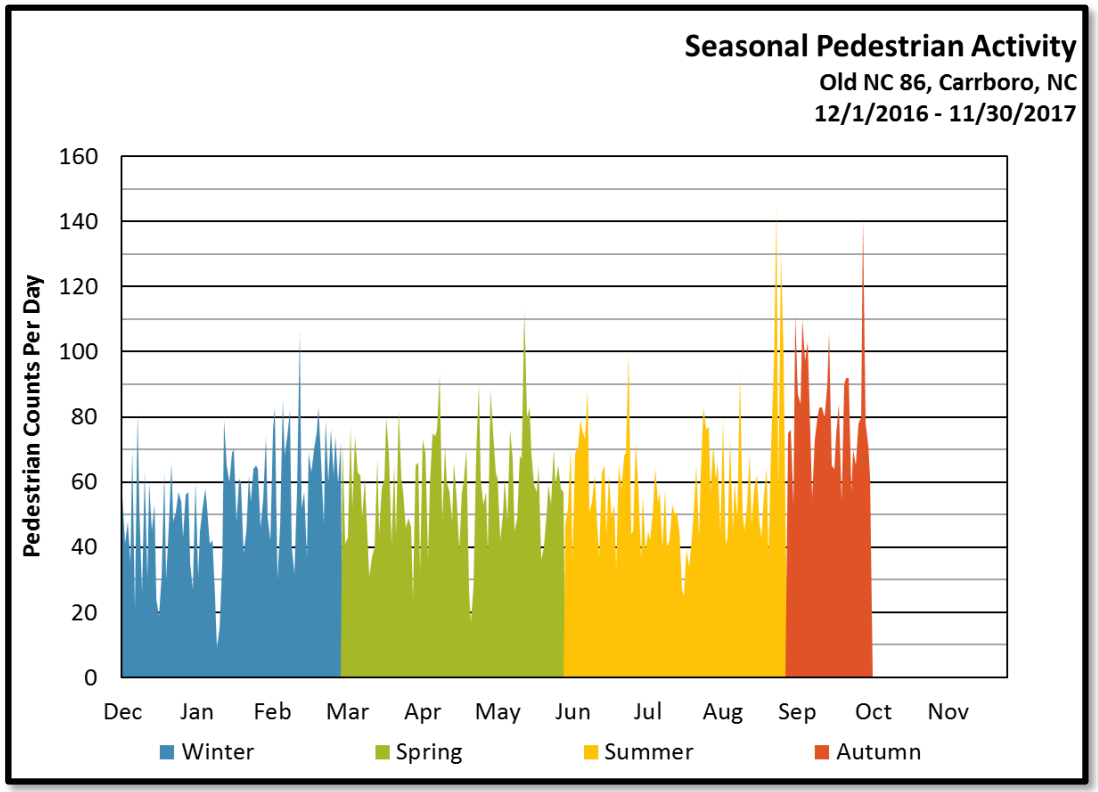

Figure 5. Seasonal Pedestrian Activity

Detailed Bicycle Count Information

Table 5 shows average bicycle activity by day of week. Saturdays and Sundays have the highest average and Mondays had the lowest average counts per day. The highest weekday counts occur on Wednesdays when an average of 79 bicyclists were recorded at the site. Average daily counts ranged from 52 bicycles to 143 bicycles throughout the week. An overall average of 82 bicyclists were counted at the site every day.

Table 6 shows daily bicyclist patterns at the site over the course of each day. There was consistent activity on weekdays when over three bicycles per hour were recorded at the site during the daylight hours with a small evening peak increasing to about nine bicycles per hour. Saturdays typically had the highest average weekend bicycle volumes; a steep peak of at least 30 bicycles per hour occurred from 9-10AM on Saturdays.

Hourly bicyclist volumes at this site are depicted graphically in **Figure 6.** The graph shows a weekday peaking in the evenings from approximately 5-6PM. On the weekends, bicycle activity primarily occurs between the hours of 8AM and 6PM with Saturdays experiencing a high peak in the morning hours, tapering off in the evening. Sunday bicycle volumes are more consistent throughout the day.

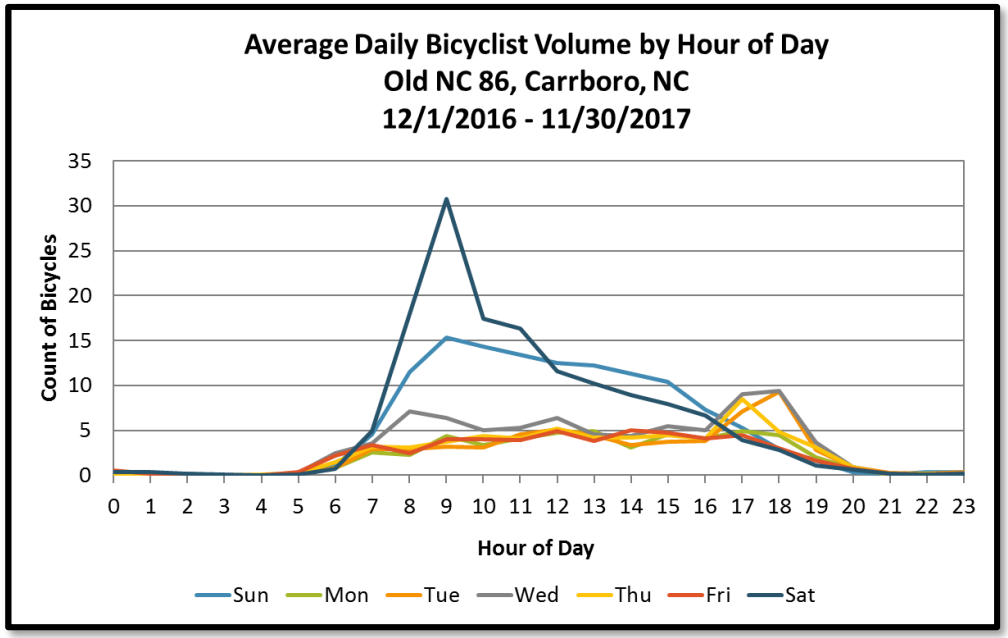

Figure 6. Average Daily Pedestrian Volumes by Hour of Day

Day of Week	Bicycle Count
Sun	126
Mon	52
Tue	59
Wed	79
Thu	60
Fri	54
Sat	143
Average	82

Table 5. Average Bicyclist Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	0	0	0	0	0	1	0	0
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	1	1	1	2	1	2	1	1
7	5	3	3	4	3	3	5	4
8	12	2	3	7	3	2	18	7
9	15	4	3	6	4	4	31	10
10	14	3	3	5	4	4	17	7
11	13	4	5	5	4	4	16	7
12	12	5	5	6	5	5	12	7
13	12	5	4	5	4	4	10	6
14	11	3	3	4	4	5	9	6
15	10	5	4	5	4	5	8	6
16	7	4	4	5	4	4	7	5
17	5	5	7	9	9	4	4	6
18	3	4	9	9	5	3	3	5
19	2	2	3	4	3	2	1	2
20	0	1	1	1	1	1	1	1
21	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0
Avg	5	2	2	3	3	2	6	3

Table 6. Bicyclist Patterns by Day of Week and Hour of Day

Seasonal variation at the site is shown in **Figure 7**. Seasonal bicycle volumes were highest in the summer, followed by the spring. The lowest volumes were during the winter, likely caused by the cold weather. There is also a small drop in March, which was likely caused by spring break. Volumes exceeded 150 bicycle per day in all seasons.

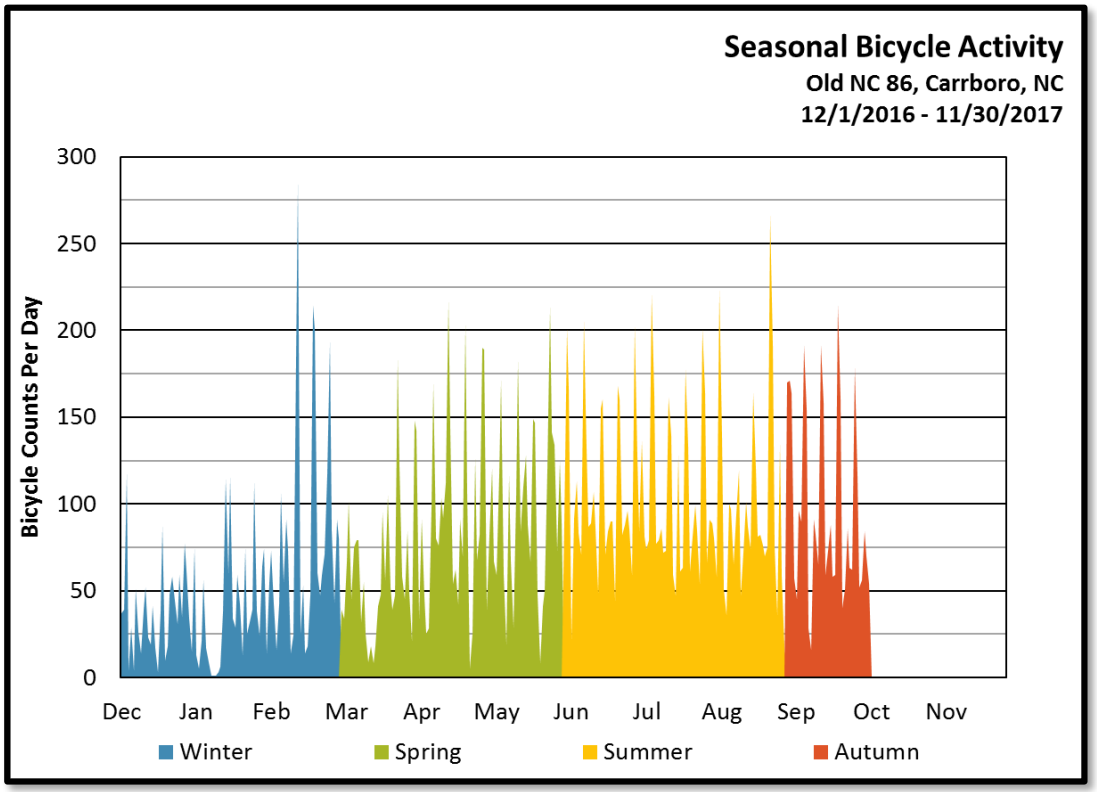

Figure 7. Seasonal Bicycle Activity

DUCK TRAIL – DUCK, NC

Table 1 Site Description	
Active Since	May 28, 2016
Pedestrian Travel Pattern	Urban Recreation
Pedestrian Volume Group	Medium
Bicyclist Travel Pattern	Urban Recreation
Bicyclist Volume Group	High
Station Location Coordinates	N36.159743 W75.751608
Station Name / ID	DCK_TRL / 270001
Directional Distribution	
Northbound	*Southbound*
Pedestrians (51%)	Pedestrians (49%)
Bicyclists (50%)	Bicyclists (50%)

SITE OVERVIEW

A continuous count station was installed on Duck Trail in Duck, NC just north of Four Seasons Ln. The trail follows NC Highway 12 that and connects downtown Duck to the outlaying residential areas. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 1.**

Figure 2 is a site diagram that shows equipment placement for the count station that comprises the site. Bicyclists on the greenway are detected by a set of two inductive loops positioned in the path (indicated as blue diamonds) and pedestrians are detected by an infrared sensor (indicated with a red triangle) mounted in a post.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions or missing data, 225 days of bicycle and 29 days of pedestrian data are not present in the 12-month analysis period.

Figure 1. Continuous Count Station Installation

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement (Left is north)

Summary Count Data

Bicycle temporal patterns are omitted due to the high volume of missing data as caused by equipment malfunctions. Almost 140,000 pedestrian counts were recorded during the 12-month analysis period. The overall volume of pedestrian users on this facility varies from 1,500 to over 41,000 counts per month. **Table 2** is a summary of statistics for both bicyclist and pedestrian count data. Correction factors were applied to the data based on a site-specific logger validation study. **Figure 3** displays the average high and low temperatures for this community during the months of the year. There is a correlation between temperature and volumes at this site.

Table 2 Summary Volume Statistics (1) (2) (3)

Annual Average Daily Traffic (AADT)		10,000 (NCDOT, 2016)
Pedestrians		
	Highest Volume	**Lowest Volume**
Season	Summer	Winter
Month	August	January
Day of Week	Monday	Thursday, Friday
Date	July 31, 2017 (2467)	Jan 07, 2017 (7)
Peak Period		Everyday 9AM-12PM
12 Month Pedestrian Count		139,713
Annual Average Daily Pedestrian Traffic		462 AADPT
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	N/A	N/A
Month	N/A	N/A
Day of Week	N/A	N/A
Date	N/A	N/A
Peak Period		N/A
12 Month Bicycle Count		N/A
Annual Average Daily Bicycle Traffic		N/A

(1) Note: 225 days of bicycle data and 29 days of pedestrian data are not present in the 12-month analysis period
(2) Data has been adjusted based on correction factors
(3) Annual Average Traffic calculated using AASHTO method

Pedestrian Data

The lowest volumes for pedestrians were recorded in January and February, as shown in **Figure 3**. Recorded volumes were the highest in August, followed by July. The summer experience the highest volume of pedestrian traffic, likely due to tourists in Duck. Average daily pedestrian volumes were highest on Mondays and lowest on Thursdays and Fridays. June and July were missing a significant amount of data, but they still had a higher volume of pedestrians than most of the months.

Bicycle Data

Bicycle data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete bicycle dataset that includes all valid data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

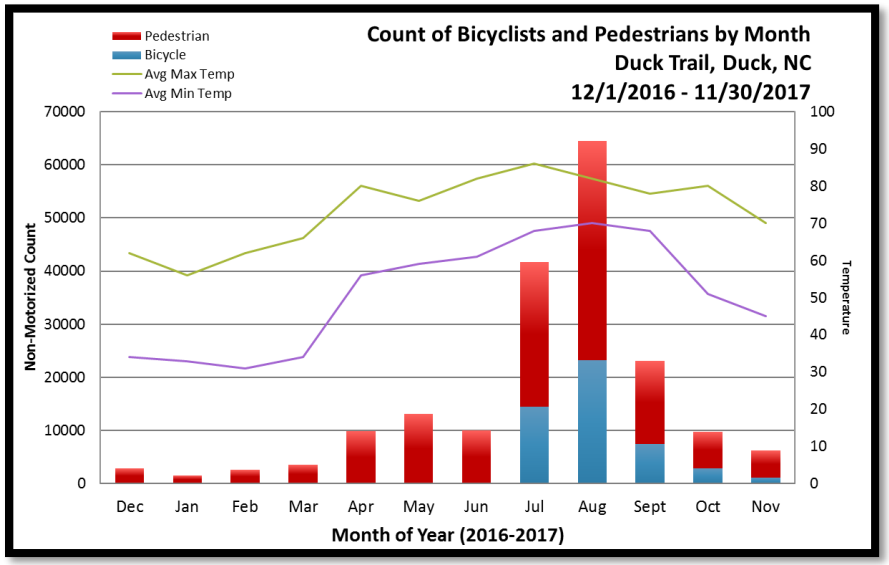

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Table 3 shows average pedestrian activity by day of week. The highest average daily count was on Mondays, followed by Wednesdays and Tuesdays. Volumes were lowest on Thursdays and Fridays. An average of 416 pedestrians were recorded at the site every day.

Table 4 shows the pedestrian pattern observed at this site by hour of day and by day of week. A peak occurred from 9AM to 12PM on every day of the week. After the morning peak on the weekdays, the pedestrian traffic decreased until around midnight, were it dropped close to zero. The weekends had more consistent volumes throughout the day, and also decreased to around zero close to midnight.

Hourly pedestrian volumes are depicted graphically in **Figure 4.** The figure demonstrates the morning peak and the slow decrease into the night. It also shows a small evening peak around 8PM. The site was largely inactive between midnight and 5AM.

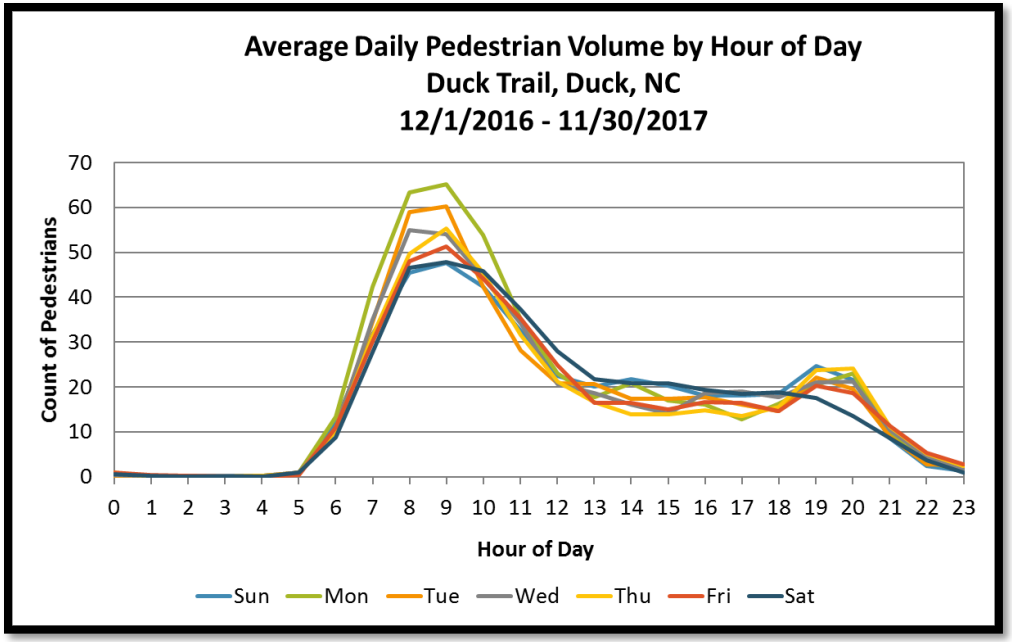

Figure 4. Average Daily Pedestrian Volumes by Hour of Day

Day of Week	Pedestrian Count
Sun	411
Mon	456
Tue	417
Wed	418
Thu	401
Fri	401
Sat	408
Average	416

Table 3. Average Pedestrian Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	0	1	0	0	1	1	1	1
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	1	1	1	1	1	0	1	1
6	12	13	11	10	10	11	9	11
7	32	42	35	35	31	30	28	33
8	45	63	59	55	50	48	47	52
9	48	65	60	54	55	51	48	54
10	42	54	42	44	46	44	46	46
11	32	35	28	34	32	35	37	33
12	22	23	21	21	21	25	28	23
13	20	18	21	19	17	17	22	19
14	22	21	17	16	14	16	21	18
15	20	17	17	14	14	15	21	17
16	18	16	18	19	15	17	19	17
17	18	13	16	19	13	16	18	16
18	18	16	15	18	15	15	19	17
19	25	20	22	21	24	20	17	21
20	22	23	20	21	24	19	14	20
21	9	10	9	10	11	11	9	10
22	2	3	3	4	5	5	4	4
23	1	1	2	2	2	3	1	2
Avg	17	19	17	17	17	17	17	17

Table 4. Pedestrian Patterns by Day of Week and Hour of Day

Seasonal variation is shown in **Figure 5**. The highest monthly pedestrian volumes were recorded during the summer months (June - August). Pedestrian traffic dropped off sharply in the colder months. This implies that there is a lot of summer tourists using the trail. July 31st, 2017 had the highest recorded amount of pedestrians with 2,467.

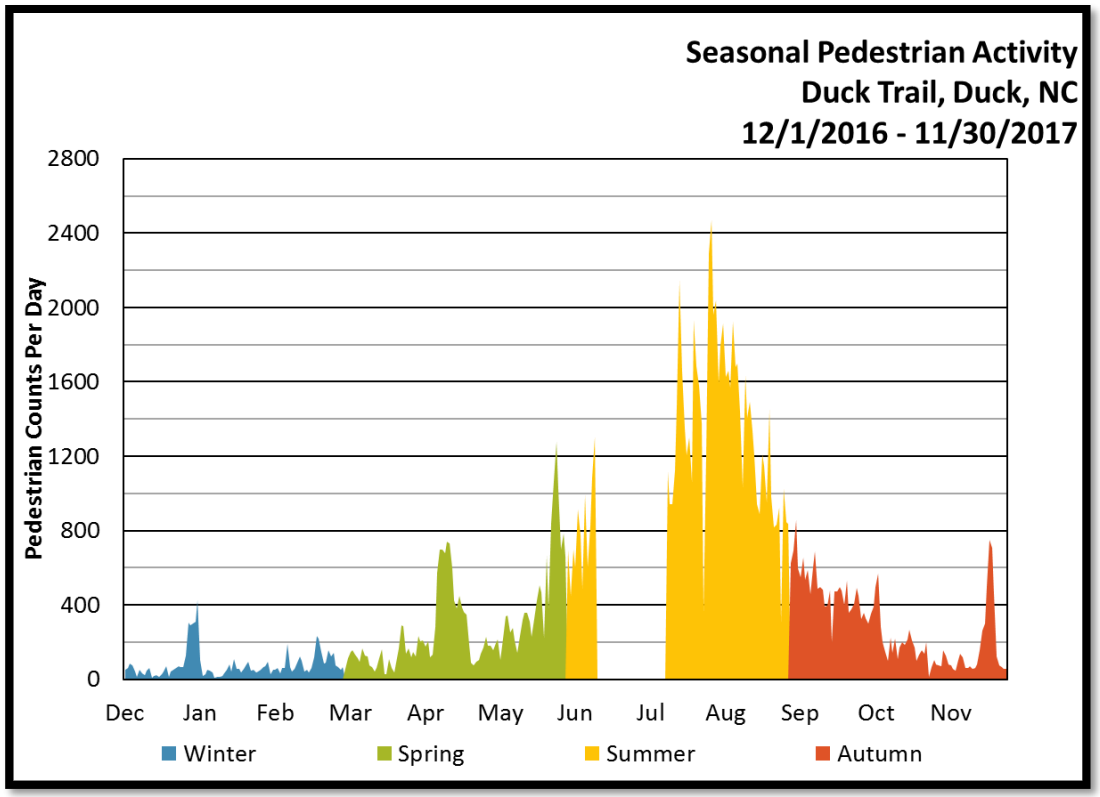

Figure 5. Seasonal Pedestrian Activity

Detailed Bicycle Count Information

Bicycle data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete bicycle dataset that includes all valid data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

AMERICAN TOBACCO TRAIL DOWNTOWN – DURHAM, NC

Table 1 Station Description	
Active Since	October 6, 2015
Pedestrian Travel Pattern	Urban Mixed
Pedestrian Volume Group	Low
Bicyclist Travel Pattern	Urban Recreation
Bicyclist Volume Group	Medium
Station Location Coordinates	N35.987500 W78.907598
Station Name / ID	DRH_ATD / 310003
Directional Distribution	
Northbound Pedestrians (51%) Bicyclists (47%)	*Southbound* Pedestrians (49%) Bicyclists (53%)

SITE OVERVIEW

A continuous count station was installed on the American Tobacco Trail in Durham, NC west of the W Lakewood Ave and Blackwell St intersection. The site is located just south of the Durham downtown entertainment district and American Tobacco Campus. The American Tobacco Trail is approximately 22 miles long and receives both local and long distance trail users. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 1.**

Figure 2 is a site diagram that shows equipment placement for the count station. Bicyclists on the greenway are detected by a set of two inductive loops positioned in the path (indicated as blue diamonds) and pedestrians are detected by an infrared sensor (indicated with a red triangle) mounted in a post.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions or missing data, 121 days of pedestrian and bicycle data are not present in the 12-month analysis period.

Figure 1. Continuous Count Station Installation West (Left) and East (Right)

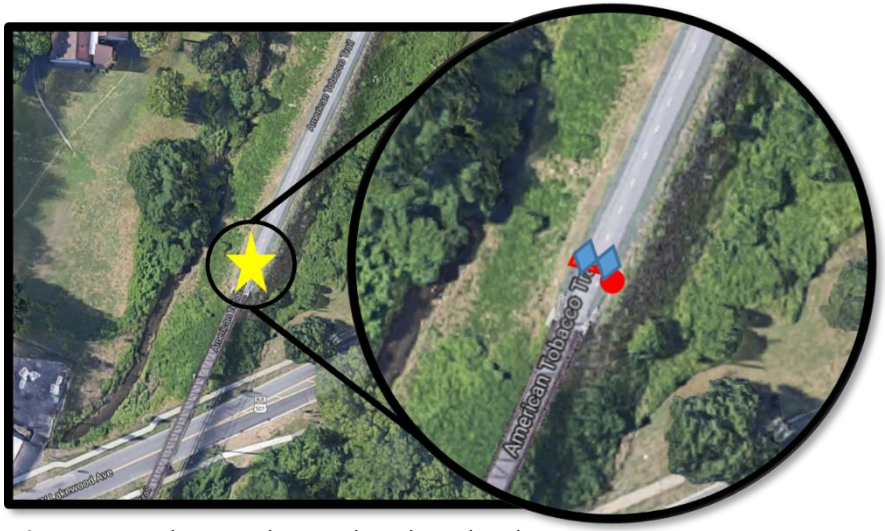

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

SUMMARY COUNT DATA

Pedestrian and bicycle data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

Table 2 Summary Volume Statistics (1) (2) (3)		
Annual Average Daily Traffic (AADT)	13,000 (NCDOT, 2015)	
Pedestrians		
	Highest Volume	**Lowest Volume**
Season	N/A	N/A
Month	N/A	N/A
Day of Week	N/A	N/A
Date	N/A	N/A
Peak Period	N/A	
12 Month Pedestrian Count	N/A	
Annual Average Daily Pedestrian Traffic	N/A	
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	N/A	N/A
Month	N/A	N/A
Day of Week	N/A	N/A
Date	N/A	N/A
Peak Period	N/A	
12 Month Bicycle Count	N/A	
Annual Average Daily Bicycle Traffic	N/A	

(1) Note: 121 days of data are not present in the 12-month analysis period
(2) Data has been adjusted based on correction factors
(3) Annual Average Traffic calculated using the AASHTO method

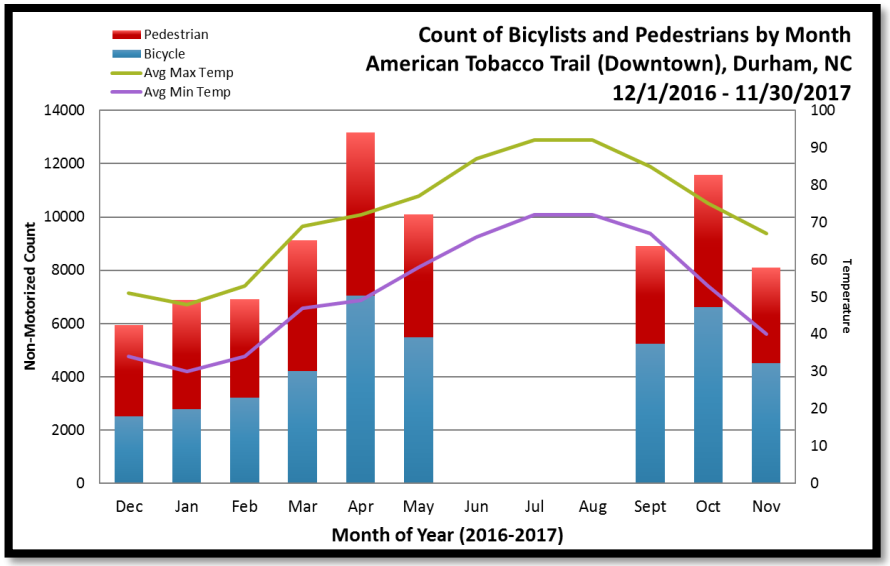

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Pedestrian data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid pedestrian data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

Detailed Bicycle Count Information

Bicycle data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete dataset that includes all valid bicycle data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

AMERICAN TOBACCO TRAIL – DURHAM, NC

Table 1 Station Description	
Active Since	September 17, 2014
Pedestrian Travel Pattern	Rural Recreation
Pedestrian Volume Group	Low
Bicyclist Travel Pattern	Rural Recreation
Bicyclist Volume Group	Medium
Station Location Coordinates	N35.90903 W78.94175
Station Name / ID	DRH_ATT/ 310001
Directional Distribution	
Northbound Pedestrians (47%) Bicyclists (47%)	*Southbound* Pedestrians (53%) Bicyclists (53%)

SITE OVERVIEW

A continuous count station was installed on the American Tobacco Trail in Durham, just south of I-40. It is located between the I-40 bicycle and pedestrian overpass and Highgate Dr. This site is located in an area that contains a variety of single and multi-family housing and connects to local and regional shopping destinations. The American Tobacco Trail is approximately 22 miles long and receives both local and long distance trail users. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 1.**

Figure 2 is a site diagram that shows equipment placement for the count station. Bicyclists on the greenway are detected by a set of two inductive loops positioned in the path (indicated as blue diamonds) and pedestrians are detected by an infrared sensor (indicated with a red triangle) mounted in a post.

ANALYSIS PERIOD

Data analyzed for this site includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions or missing data 31 day of pedestrian data are not present in the 12-month analysis period.

Figure 1. Continuous Count Station Installation

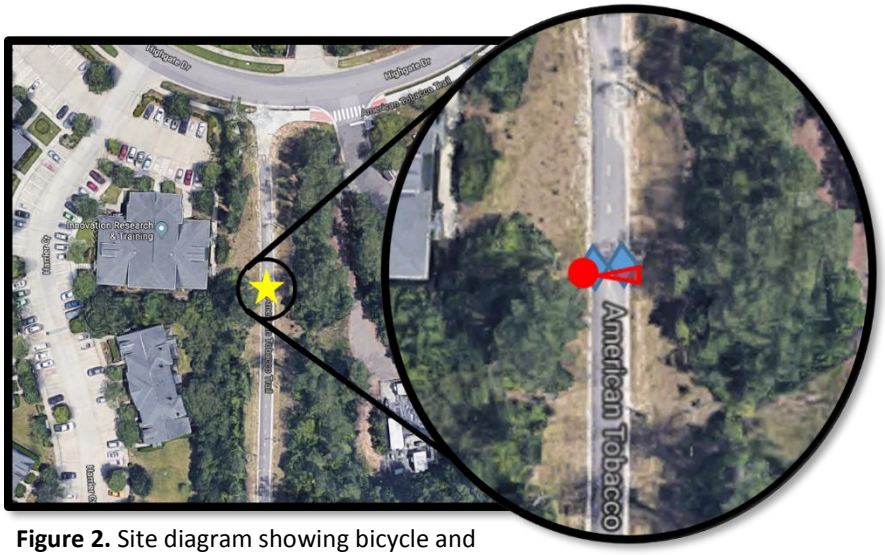

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

Summary Count Data

Over 110,000 pedestrian counts and 95,000 bicycle counts were recorded in the 12-month analysis period. The overall volume of non-motorized users on this facility varies from over 10,000 to 22,000 counts per month. **Table 2** is a summary of statistics for both bicyclist and pedestrian count data. Correction factors were applied to the data based on a site-specific logger validation study. **Figure 3** displays the average high and low temperatures for this community during the months of the year. This site shows a correlation between temperature and non-motorized volumes. Due to missing data, July is excluded from the analysis for pedestrians.

Table 2 Summary Volume Statistics (1) (2) (3)

Pedestrians		
	Highest Volume	**Lowest Volume**
Season	Autumn	Summer
Month	October	December
Day of Week	Saturday	Friday
Date	Nov 12, 2017 (2181)	April 24, 2017 (20)
Peak Period		Sat 8 – 10AM
12 Month Pedestrian Count		112,280
Annual Average Daily Pedestrian Traffic		337 AADPT
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	Summer	Winter
Month	July	January
Day of Week	Sunday	Tuesday, Thursday
Date	Feb 12, 2017 (953)	Jan 8/10, 2017 (0)
Peak Period		Weekends 9AM – 5PM
12 Month Bicycle Count		95,318
Annual Average Daily Bicycle Traffic		261 AADBT

(1) Note: 31 days of pedestrian data are not present in the 12-month analysis period.
(2) Data was adjusted based on correction factors
(3) Annual Average Traffic calculated using AASHTO method

Pedestrian Data

The lowest volumes for pedestrians were recorded in December, June, and January, as shown in **Figure 3**. Winter holidays and cold weather likely caused low pedestrian volumes in the winter months. The highest volumes were recorded in October, September and November; close to 12,000 pedestrians were counted in each of those months. Average daily pedestrian volumes were highest on Saturdays and lowest on Fridays.

Bicycle Data

The lowest volumes for bicyclists were recorded in January and December, also shown in **Figure 3**. Highest overall average volumes were recorded in the summer season, with the highest volumes recorded in July. Weekday average counts were lower than weekends, with small peaks in ridership occurring around 6pm. Bicyclist volumes were lowest on Tuesdays and Thursdays and highest on the weekends.

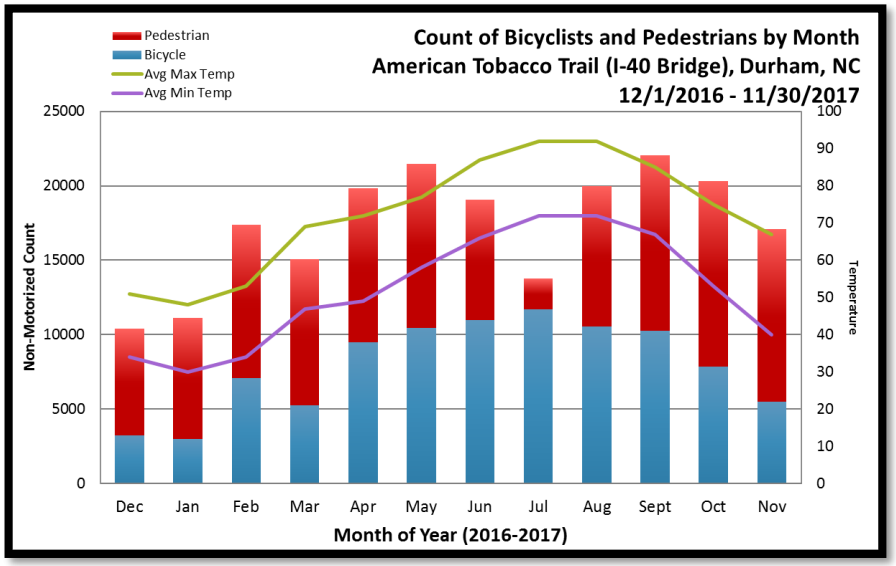

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Table 3 shows average pedestrian activity by day of week. The highest average daily counts were recorded on Saturdays and the lowest on Fridays. Average daily counts during the weekdays ranged from 230 pedestrians per day on Fridays to 313 pedestrians per day on Thursdays. Weekend days average around 500 pedestrians. On average, over 336 pedestrian counts were recorded at the site each day.

Table 4 shows the pedestrian pattern observed at this site by hour of day and by day of week. The highest counts occurred on the weekends; both Saturday and Sunday from 8AM to 12PM averaged over 40 pedestrian counts per hour in the peak period. This pattern is likely the result of weekend recreational activity. There is a small weekday peak 5PM to 7PM Tuesdays through Thursdays with an average of about 26 pedestrians in that time.

Hourly pedestrian volumes are depicted graphically in **Figure 4** showing the weekend peaking at 8AM on Saturday morning and on Sunday at 9AM. Afternoon weekday peaks occurred from 5-7PM. The lowest pedestrian activity occurs between 9PM and 5AM; Pedestrian activity decreases to zero counts per hour every day between 12AM and 5AM.

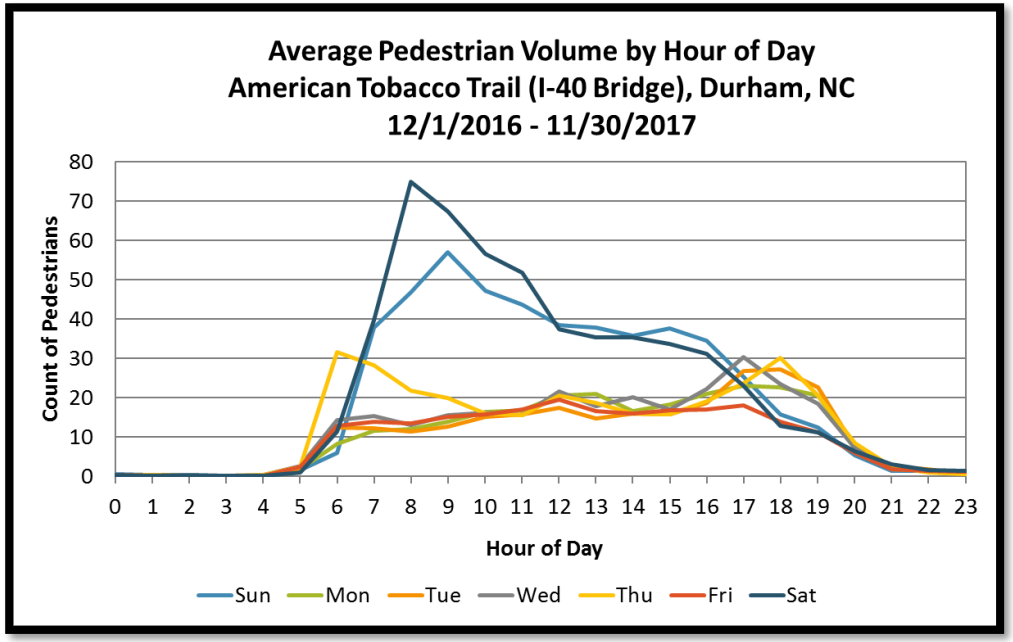

Figure 4. Average Daily Pedestrian Volumes by Hour of Day

Day of Week	Pedestrian Count
Sun	487
Mon	256
Tue	253
Wed	276
Thu	313
Fri	230
Sat	536
Average	336

Table 3. Average Pedestrian count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	2	2	2	3	2	2	1	2
6	6	8	12	14	32	13	11	14
7	38	12	12	15	28	14	40	23
8	47	12	11	13	22	13	75	28
9	57	14	13	16	20	15	68	29
10	47	16	15	16	16	16	57	26
11	44	17	16	16	15	17	52	25
12	38	21	17	22	21	20	37	25
13	38	21	15	18	19	17	35	23
14	36	17	16	20	16	16	35	22
15	38	18	16	17	16	17	34	22
16	35	21	19	22	19	17	31	23
17	25	23	27	30	24	18	23	24
18	16	23	27	23	30	14	13	21
19	12	20	23	19	21	11	11	17
20	5	7	7	7	8	6	6	7
21	1	2	2	2	2	2	3	2
22	1	2	2	1	1	1	2	1
23	0	1	1	1	1	1	1	1
Avg	20	11	11	11	13	10	22	14

Table 4. Pedestrian Patterns by Day of Week and Hour of Day

Seasonal variation is shown in **Figure 5**. The highest seasonal pedestrian volumes occurred during the autumn months (Sep-Nov). The highest daily volumes of pedestrian activity occurred during the seasonal temperature changes in late winter (mid-February to March) and mid-autumn (late September to October).

Sunday November 12, 2017 was the inaugural Raleigh-Durham-Chapel Hill Marathon and Half Marathon, recording over 2,000 pedestrians passing by the counter that day. Pedestrian volumes never exceeded 1,000 besides that day.

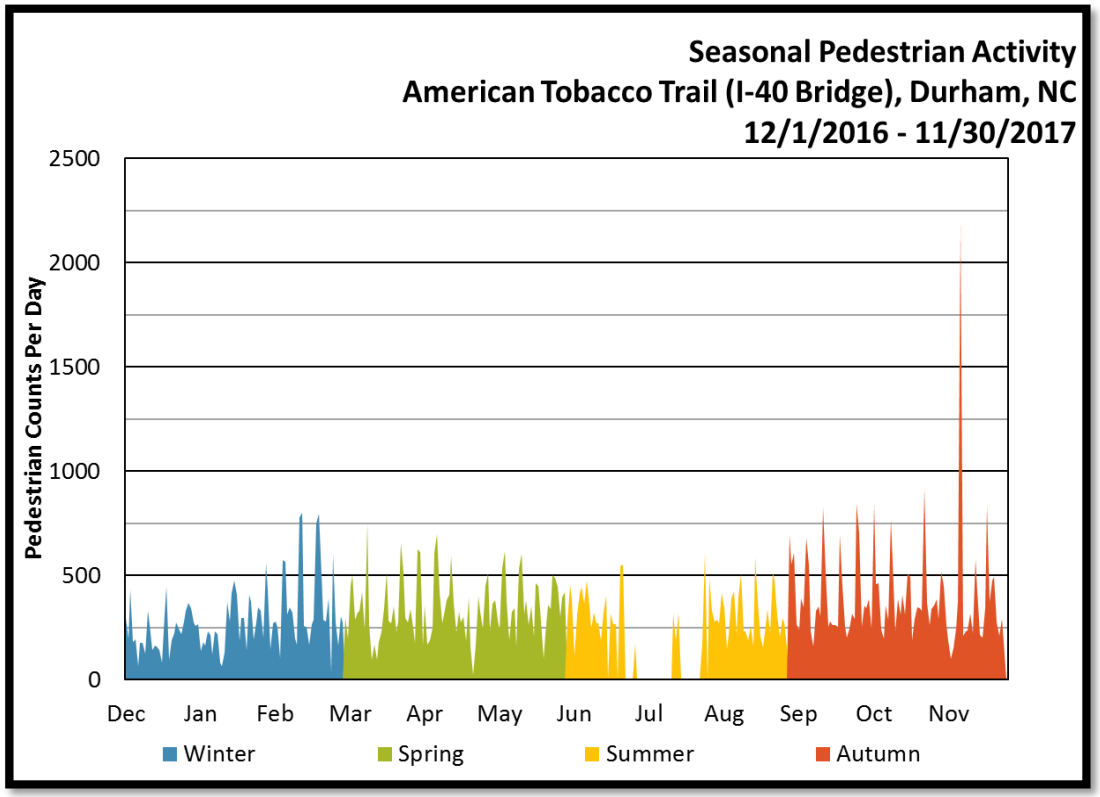

Figure 5. Seasonal Pedestrian Activity

Detailed Bicycle Count Information

Table 5 shows average bicycle activity by day of week. Sundays had the highest average bicycle traffic, followed by Saturdays. The weekends average over 400 bicycles a day, while weekdays average close to or below 200 bicycles a day. Tuesdays and Thursdays had the lowest average with 176 counts per day. The overall daily average counts for the site is 261 bicycle counts per day.

Table 6 shows daily bicyclist patterns at the site over the course of each day. The highest average hourly volumes were recorded on Sundays between 10AM and 4PM, averaging over 50 bicycles an hour in that time frame. Saturdays had a similar bicycle traffic pattern, but average in the 40s in the same time frame.

Hourly bicyclist volumes at this site are depicted graphically in **Figure 6.** The figure shows a small weekday peaking pattern in the evenings after business hours. Bicycle activity primarily occurs between 7AM and 8PM on weekend days. Saturdays and Sundays had a similar volume pattern, although counts are higher on Sundays. Some bicycle activity does occur into the late evening on both weekdays and weekends and decreases to zero counts per hour in the early morning hours from 11PM to 5AM.

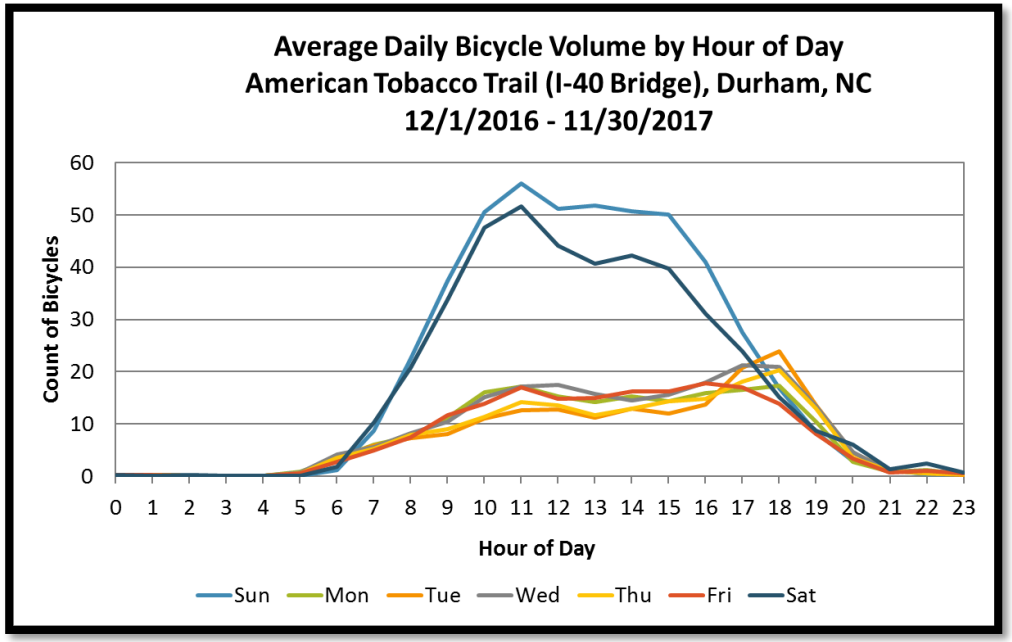

Figure 6. Average Daily Bicycle Volume by Hour of Day

Day of Week	Bicycle Count
Sun	479
Mon	187
Tue	176
Wed	206
Thu	176
Fri	183
Sat	423
Average	**261**

Table 5. Average Bicyclist Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	1	1	1	1	0	0	0
6	1	3	4	4	4	3	2	3
7	9	6	6	6	5	5	10	7
8	23	8	7	8	8	7	21	12
9	37	11	8	10	9	12	34	17
10	51	16	11	15	11	14	48	24
11	56	17	13	17	14	17	52	27
12	51	15	13	18	14	15	44	24
13	52	14	11	16	12	15	41	23
14	51	15	13	15	13	16	42	24
15	50	14	12	16	14	16	40	23
16	41	16	14	18	15	18	31	22
17	28	17	21	21	18	17	24	21
18	17	17	24	21	20	14	15	18
19	8	10	14	13	13	8	9	11
20	3	3	4	5	3	3	6	4
21	1	1	1	1	1	1	1	1
22	0	1	1	1	1	1	2	1
23	0	0	0	1	0	0	1	0
Avg	20	8	7	9	7	8	18	11

Table 6. Bicyclist Patterns by Day of Week and Hour of Day

Seasonal variation at the site is shown in **Figure 7**. The highest bicycle volumes occurred in the summer, late spring, and early fall when weekend peaks regularly exceeded 600 bicycles per day. Activity at this site was highly seasonal and weather dependent; repeated cold and or wet weekends in the late autumn and winter greatly affected the season's overall activity levels.

The highest volumes were recorded on February 12th, September 4th, and May 29th; over 900 bicycles were recorded at the site each day.

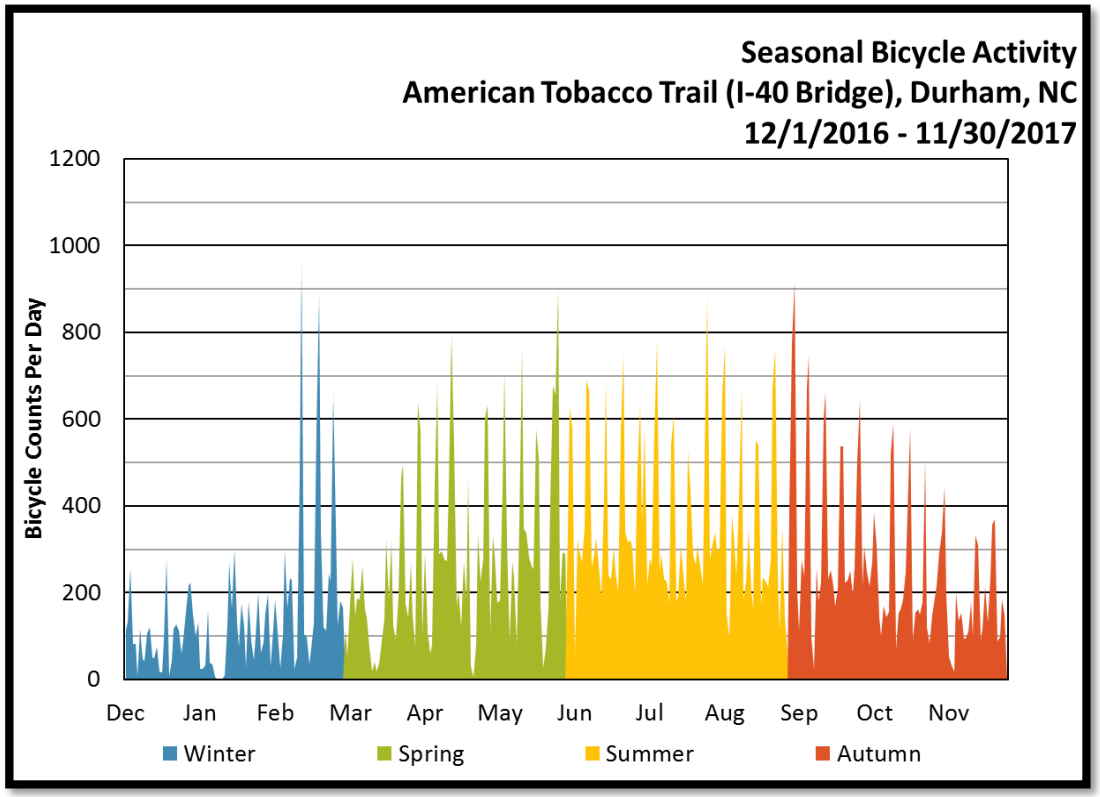

Figure 7. Seasonal Bicycle Activity

SOUTH ELM STREET – GREENSBORO, NC

Table 1 Site Description	
Active Since	September 18, 2014
Pedestrian Travel Pattern	Urban Mixed
Pedestrian Volume Group	High
Bicyclist Travel Pattern	Urban Mixed
Bicyclist Volume Group	Medium
Station Location Coordinates	E - N36.06926 W79.79048 W - N36.070020 W79.790534
Station Name / ID	GSO_ELM/ 400001
Directional Distribution	
West Side	*East Side*
Pedestrians on Sidewalk (36%)	Pedestrians on Sidewalk (64%)
SB Bicyclists in Roadway (47%)	NB Bicyclists in Roadway (53%)

SITE OVERVIEW

A continuous count station was installed on South Elm Street in Greensboro, NC between Washington and McGee Street in the heart of Greensboro's downtown business district which has a mix of shops, restaurants, offices, and entertainment. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 1.**

Figure 2 is a site diagram that shows equipment placement for the two count sites that comprise the station. Bicyclists in the roadway are detected by a set of two inductive loops positioned to the rightmost side of the lane (indicated as blue diamonds) and pedestrians are detected by an infrared sensor (indicated with a red triangle) on the sidewalk.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions or missing data, 45 days of bicycle data and 15 day of pedestrian data are not present in the 12-month analysis period.

Figure 2. Continuous Count Station Installation East (Left) and West (Right)

Figure 1. Site diagram showing bicycle and pedestrian count equipment placement

Summary Count Data

Over 1.1 million pedestrian counts and almost 26,000 bicycle counts were recorded in the 12-month analysis period. The overall volume of non-motorized users on this facility varies from nearly over 50,000 to over 120,000 counts per month. **Table 2** gives a basic breakdown of summary statistics for both bicyclist and pedestrian count data. Correction factors have been applied to the data based on a site-specific logger validation study. **Figure 3** displays the average high and low temperatures for this community during the months of the year and average monthly bicycle and pedestrian counts. Due to missing data, March and October are excluded from the bicycle analysis and November is excluded from the pedestrian analysis.

Table 2 Summary Volume Statistics (1) (2) (3)

Annual Average Daily Traffic (AADT)	6,200 (NCDOT, 2015)	
Pedestrians		
	Highest Volume	**Lowest Volume**
Season	Summer	Winter
Month	September	January
Day of Week	Saturday	Monday
Date	July 4, 2017 (15,822)	Dec 25, 2016 (569)
Peak Period	Fridays 7-9PM	
12 Month Pedestrian Count	1,167,715	
Annual Average Daily Pedestrian Traffic	3,316 AADPT	
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	Summer	Winter
Month	June	November
Day of Week	Wednesday	Sunday
Date	May 17, 2017 (375)	Jan 07, 2017 (5)
Peak Period	Tues–Fri 1–2PM	
12 Month Bicycle Count	25,065	
Annual Average Daily Bicycle Traffic	75 AADBT	

(1) Note: 45 days of bicycle data and 15 days of pedestrian data are not present in the 12-month analysis period
(2) Data has been adjusted based on correction factors
(3) Annual Average Traffic calculated using AASHTO method

Pedestrian Data

Figure 3 shows that the lowest volumes for pedestrians were recorded December through March. Cold temperatures could account for the low pedestrian volume. The highest pedestrian volumes were recorded in the September and October. Volumes were consistently high in spring, summer, and autumn. Pedestrian volumes are highest on Saturdays and Fridays, and lowest on Mondays.

Bicycle Data

The lowest volumes for bicyclists are recorded in November, shown in **Figure 3**. The summer season has the highest overall average; bicycle volumes exceeded 3,000 counts per month in June, July, and August. Bicyclist volumes are highest Tuesdays through Fridays, with peak periods occurring in the late morning and mid-afternoon. The lowest bicycle counts were recorded on Sundays and Mondays.

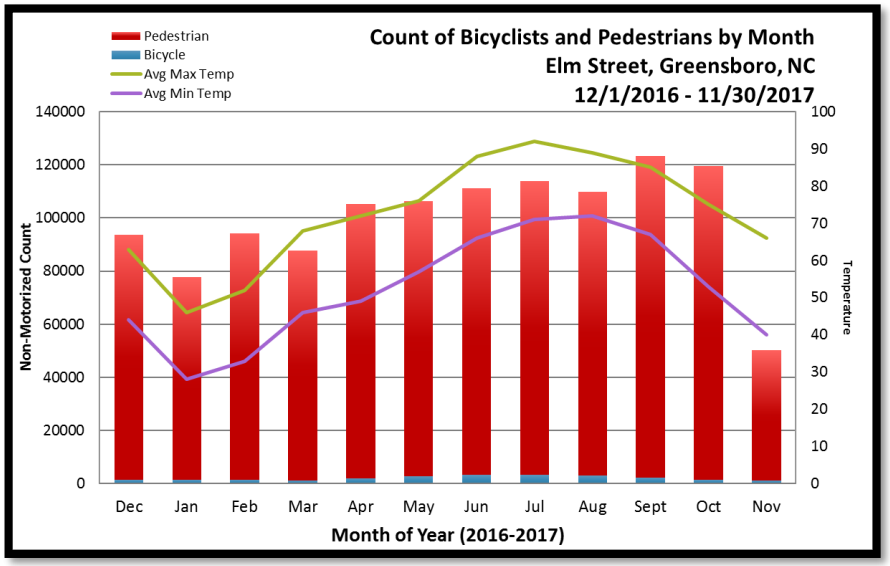

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Table 3 shows average pedestrian activity by day of week. The highest volume of activity was recorded on Saturdays with an average of nearly 5,500 counts per day. The lowest average volumes were recorded on Mondays. However, the average volume on Monday was still over 2,000 counts per day. On average, 3,336 pedestrian counts were recorded at the site each day.

Table 4 shows the pedestrian pattern observed at this site by hour of day and by day of week. The highest average counts occur on Friday evenings and Saturday afternoons into the night. An average of over 300 counts per hour are recorded from 6PM on Fridays continuing through 11PM, then again from 12PM Saturday to 1AM on Sunday. These evening and weekend counts are likely the result of people going to and from restaurants, events, and entertainment in the Central Business District. There is a peak on weekdays around 12PM of around 300 pedestrians an hour, likely due to lunch.

Hourly pedestrian volumes are depicted graphically in **Figure 4.** The figure shows Saturdays peaking around 2PM and continuing on until it drops close to zero 3AM Sunday morning. Friday has a similar pattern, peaking around 7pm and then dying down around 3AM Saturday morning. Afternoon weekday peaking occurs between 11AM and 2PM. The lowest pedestrian activity occurs between 3AM and 6AM. Hourly pedestrian averages never fall to zero indicating the site is active at all hours.

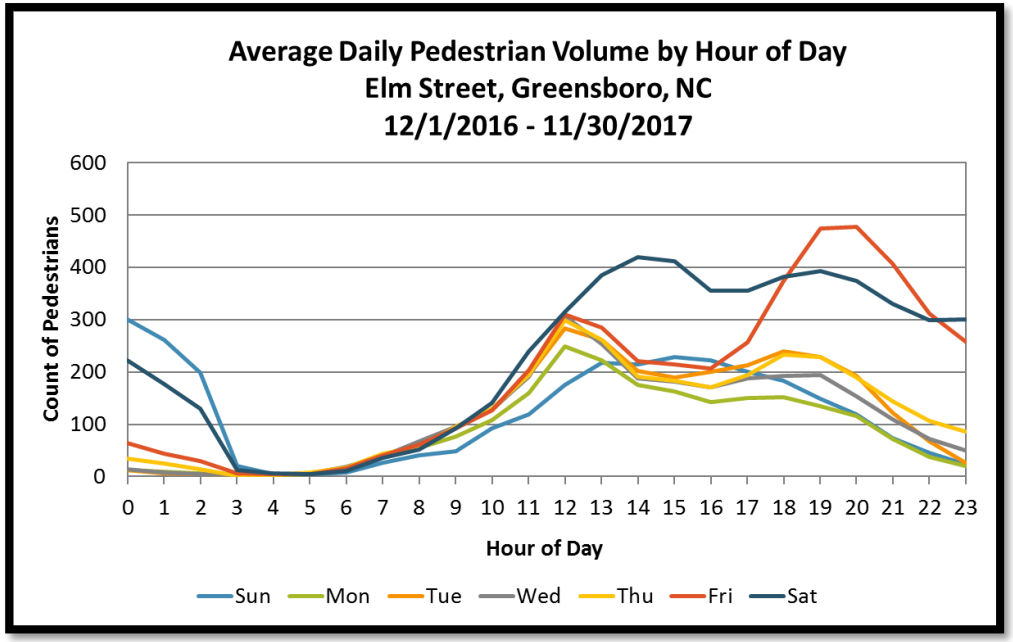

Figure 4. Average Daily Pedestrian Volumes by Hour of day

Day of Week	Pedestrian Count
Sun	2976
Mon	2118
Tue	2792
Wed	2634
Thu	2906
Fri	4486
Sat	5442
Average	**3336**

Table 3. Average Pedestrian Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	301	13	12	14	34	65	221	94
1	262	8	7	8	25	43	177	76
2	199	6	5	4	14	29	131	55
3	19	3	3	3	2	6	13	7
4	5	3	3	4	3	5	5	4
5	4	5	6	6	7	5	4	5
6	8	16	16	19	17	15	11	14
7	27	38	41	38	43	41	37	38
8	40	55	61	67	57	61	51	56
9	48	76	96	95	95	93	92	85
10	92	108	126	129	130	127	141	122
11	118	159	194	190	194	203	240	185
12	175	248	283	307	299	310	315	277
13	218	222	262	253	262	284	385	269
14	214	175	202	188	191	220	420	230
15	228	162	189	181	183	214	412	224
16	222	142	200	171	170	206	356	210
17	200	150	213	187	194	257	354	222
18	184	152	239	192	233	375	382	251
19	149	134	229	194	228	474	393	257
20	119	115	193	153	190	477	373	231
21	74	73	122	109	143	406	330	180
22	46	38	67	72	106	312	299	134
23	24	20	27	50	85	259	300	109
Avg	124	88	116	110	121	187	227	139

Table 4. Pedestrian Patterns by Day of Week and Hour of Day

Seasonal variation is shown in **Figure 5**. There is little difference in count volumes between spring, summer, and autumn, though the summer season experiences slightly higher counts overall. The highest volume of counts was recorded in September, largely due to autumn foot traffic combined with a large National Folk Festival. Over 4000 counts per day were recorded on most Saturdays from March through November prior to Thanksgiving.

The daily record of 15,822 pedestrians was recorded on Tuesday, July 4th, 2017. This was due to activity surrounding Greensboro's FunFourth Festival. Another high amount of pedestrians were recorded on Saturday, September 9th, 2017, where 15,582 pedestrians were counted. This was due to Greensboro's National Folk Festival.

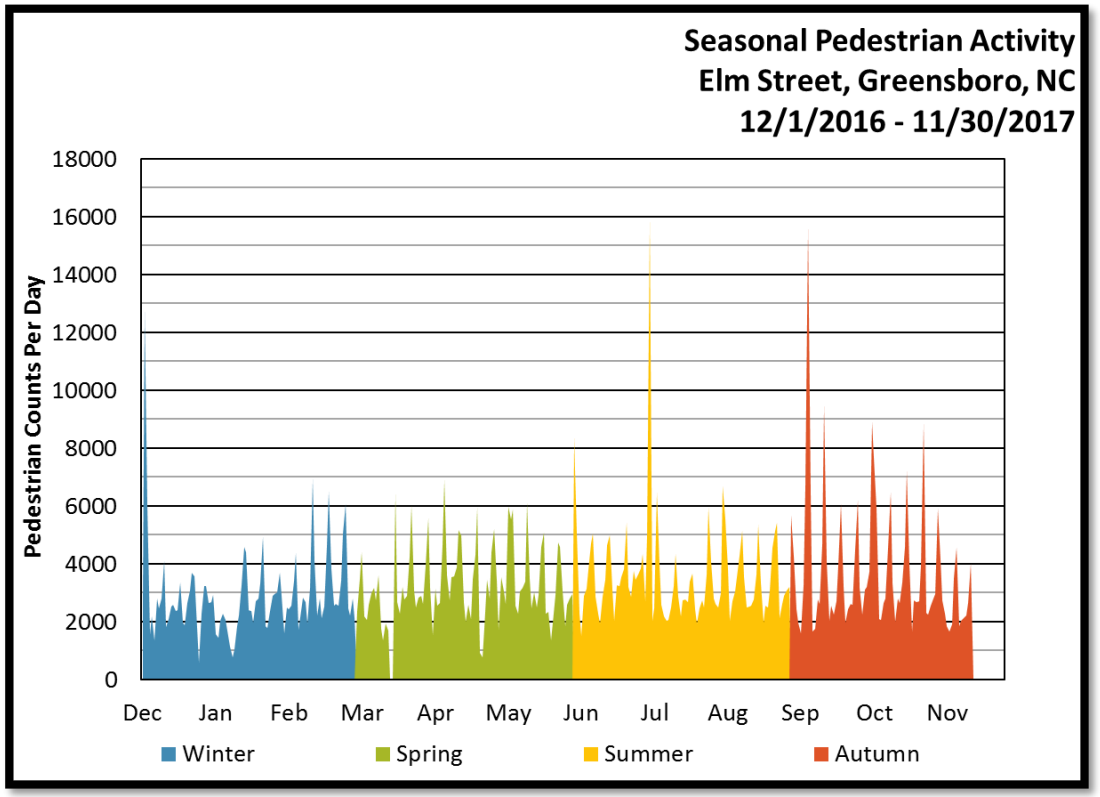

Figure 5. Seasonal Pedestrian Activity

Detailed Bicycle Count Information

Table 5 shows average bicycle activity by day of week. The highest average volumes were recorded on Wednesdays through Saturdays, averaging 80 bicycle counts or more per day. Bicycle activity at the site was lowest on Sundays and Mondays. On average, 78 bicycle counts were recorded at the site each day.

Table 6 shows daily bicyclist patterns at the site over the course of each day. Peak bicyclist volumes occur on Tuesdays through Fridays at approximately 1PM. Wednesdays had another peak from 7PM to 8PM.

Hourly bicyclist volumes at this site are depicted graphically in **Figure 6.** The figure shows a weekday and weekend peaking period from the late morning to the early afternoon, between the hours of 11AM and 3PM, with another peak on Wednesday around 7PM. Bicycle activity does occur into the evening on both weekdays and weekends and drops off in volume in the early morning hours. Hourly bicycle averages never fall to zero indicating the site is active at all hours.

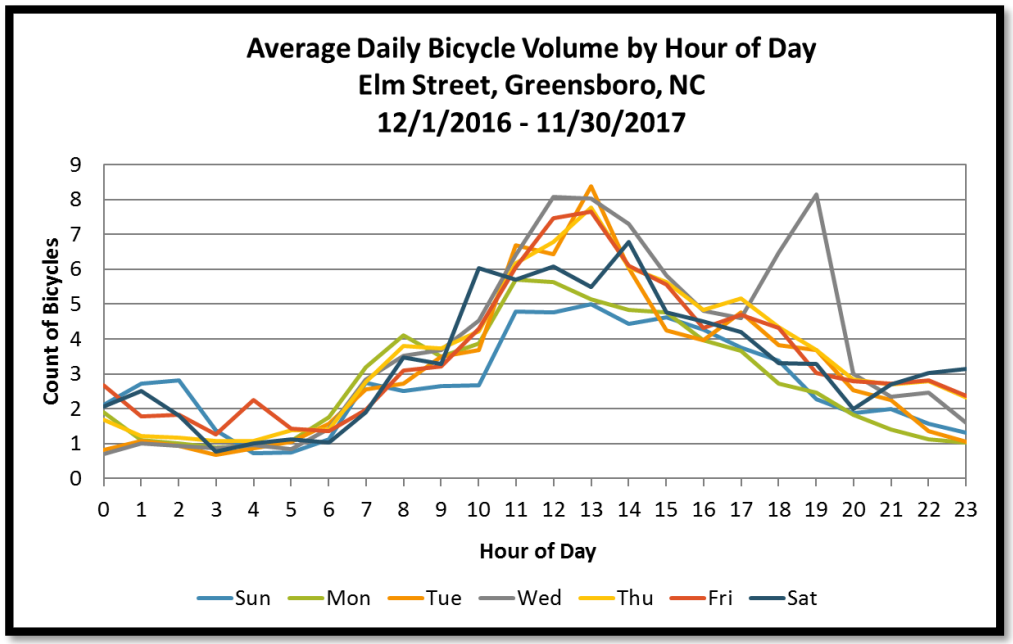

Figure 6. Average Daily Bicycle Volume by Hour of Day

Day of Week	Bicycle Count
Sun	66
Mon	68
Tue	75
Wed	90
Thu	85
Fri	85
Sat	80
Average	**78**

Table 5. Average Bicyclist Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	2	2	1	1	2	3	2	2
1	3	1	1	1	1	2	3	2
2	3	1	1	1	1	2	2	2
3	1	1	1	1	1	1	1	1
4	1	1	1	1	1	2	1	1
5	1	1	1	1	1	1	1	1
6	1	2	2	1	1	1	1	1
7	3	3	3	3	3	2	2	3
8	3	4	3	4	4	3	3	3
9	3	4	4	4	4	3	3	3
10	3	4	4	5	4	4	6	4
11	5	6	7	6	6	6	6	6
12	5	6	6	8	7	7	6	6
13	5	5	8	8	8	8	5	7
14	4	5	6	7	6	6	7	6
15	5	5	4	6	6	6	5	5
16	4	4	4	5	5	4	5	4
17	4	4	5	5	5	5	4	4
18	3	3	4	6	4	4	3	4
19	2	2	4	8	4	3	3	4
20	2	2	3	3	3	3	2	2
21	2	1	2	2	3	3	3	2
22	2	1	1	2	3	3	3	2
23	1	1	1	2	2	2	3	2
Avg	**3**	**3**	**3**	**4**	**4**	**4**	**3**	**3**

Table 6. Bicyclist Patterns by Day of Week and Hour of Day

Seasonal variation at the site is shown in **Figure 7**. The highest bicyclist volumes occur during the summer months (June - August). Volumes exceeded 75 bicycles per day in all seasons and regularly exceed 100 bicycles per day in the summer and early autumn. Bicycle traffic dropped off in the late autumn and winter months, likely due to the cold weather.

The highest volume day was Wednesday, May 17th, 2017, where 375 bicycles were recorded to go by the counting station. This was due to the Ride of Silence through downtown Greensboro.

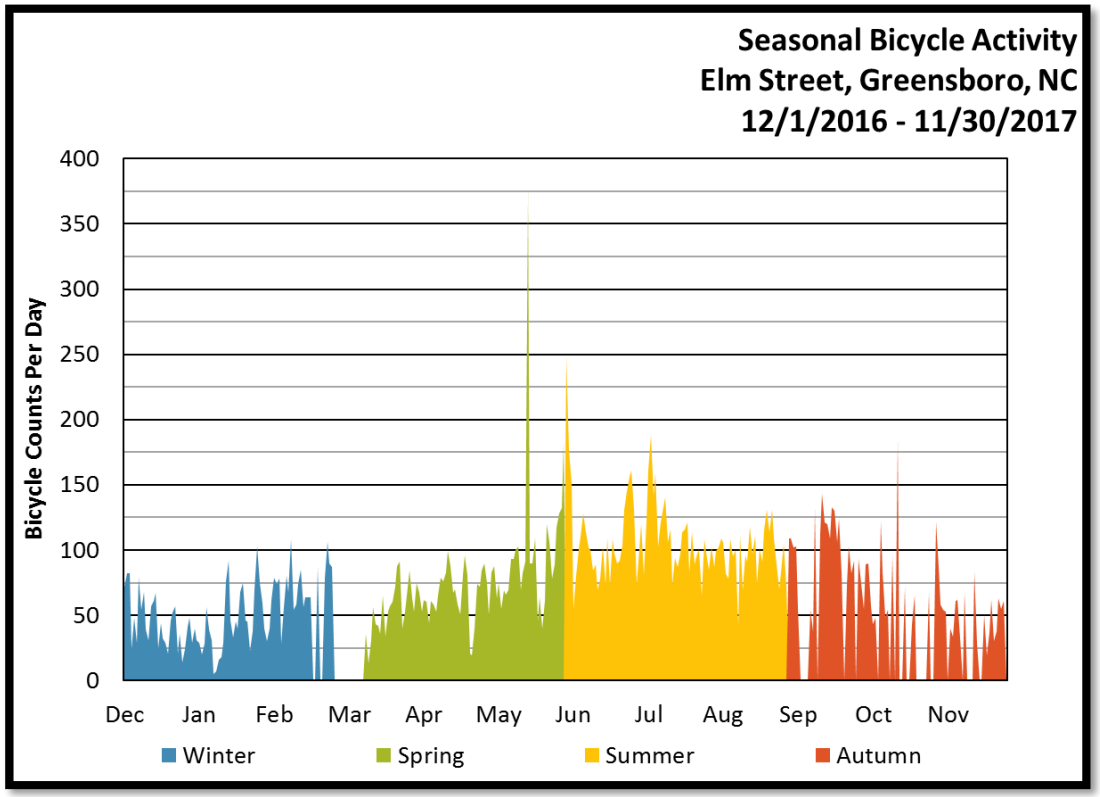

Figure 7. Seasonal Bicycle Activity

LAKE DANIEL GREENWAY – GREENSBORO, NC

Table 1 Station Description	
Active Since	September 18, 2014
Pedestrian Travel Pattern	Urban Mixed
Pedestrian Volume Group	Low
Bicyclist Travel Pattern	Urban Recreation
Bicyclist Volume Group	Low
Station Location Coordinates	N36.07977 W79.81432
Station Name / ID	GSO_LDG / 400002
Directional Distribution	
Westbound	*Eastbound*
Pedestrians (55%)	Pedestrians (45%)
Bicyclists (59%)	Bicyclists (41%)

SITE OVERVIEW

A continuous count station was installed on the Lake Daniel Greenway in Greensboro, NC near Aycock St. This greenway starts at the Wesley Long Hospital and runs along North Buffalo Creek north of UNC-Greensboro, linking to the Latham Park Greenway and the Moses Cone Memorial Hospital. **Table 1** contains information related to the site and a photograph of the completed site installation is shown in **Figure 2.**

Figure 2 is a site diagram that shows equipment placement for the count station. Bicyclists on the greenway are detected by a set of two inductive loops positioned in the path (indicated as blue diamonds) and pedestrians are detected by an infrared sensor (indicated with a red triangle) mounted in a post.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions or missing data, 29 days of pedestrian data are not present in the 12-month analysis period.

Figure 1. Continuous Count Station Installation

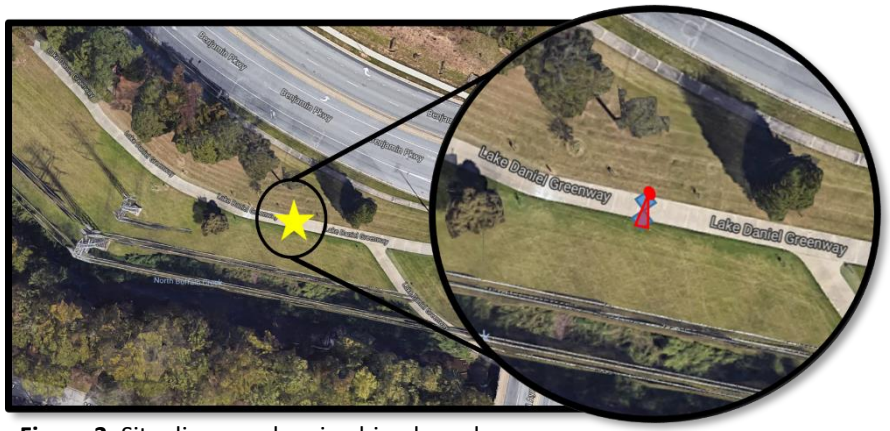

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

Summary Count Data

Almost 67,000 pedestrian counts and over 20,000 bicycle counts were recorded during the 12-month analysis period. The overall volume of non-motorized users on this facility varies from just over 4,500 to almost 9,000 counts per month. **Table 2** is a summary of statistics for both bicyclist and pedestrian count data. Correction factors were applied to the data based on a site-specific logger validation study. **Figure 3** displays the average high and low temperatures for this community during the months of the year. Due to missing data, May and June are excluded from the analysis for pedestrians.

Table 2 Summary Volume Statistics (1) (2) (3)

Pedestrians		
	Highest Volume	**Lowest Volume**
Season	Autumn	Winter
Month	October	December
Day of Week	Sunday	Friday
Date	Nov 18, 2017 (662)	Jan 09, 2017 (20)
Peak Period		Saturday 8-11AM
10 Month Pedestrian Count		66,944
Annual Average Daily Pedestrian Traffic		202 AADPT
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	Summer	Winter
Month	July	December
Day of Week	Sunday	Friday
Date	Feb 12, 2017 (206)	Jan 07, Jan 08, Apr 04 (0)
Peak Period		Sunday 2-5PM
12 Month Bicycle Count		20,124
Annual Average Daily Bicycle Traffic		55 AADBT

(1) Note: 29 days of pedestrian data are not present in the 12-month analysis period
(2) Data has been adjusted based on correction factors
(3) Annual Average Traffic calculated using AASHTO method

Pedestrian Data

Of the months with complete datasets, the lowest monthly volume was recorded in December, as shown in **Figure 3**. The highest monthly volume for pedestrians was recorded in October when over 7,000 pedestrian counts were recorded. The highest seasonal volume was recorded in the autumn and the lowest was recorded in winter. Pedestrian volumes were highest on Sundays and lowest on Fridays.

Bicycle Data

The lowest volumes for bicyclists were recorded in during the winter months, also shown in **Figure 3**. December and January were the months with the lowest volume of bicycle traffic. The highest seasonal bicycle counts were recorded in summer months; the highest monthly volumes were recorded in July and August, when over 2400 bicycles were counted each month. Bicyclist volumes are highest on Sundays and lowest on Fridays.

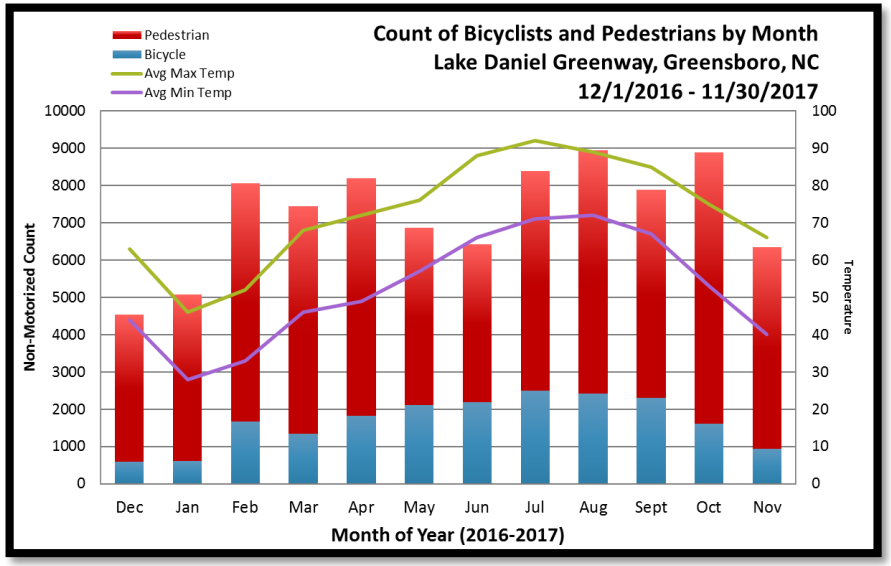

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Table 3 shows average pedestrian activity by day of week. The highest daily average was recorded on Sundays, with a similar volume on Saturdays. Fridays had the lowest average daily volumes, when an average of 172 pedestrians were counted on average. The weekends had a higher average than every week day. On average, 199 counts were recorded at the site each day.

Table 4 shows the pedestrian pattern observed at this site by hour of day and by day of week. The highest counts were recorded on the Saturdays, when activity increases rapidly between 7AM and 10AM and remains active until the evening. On weekdays, activity was recorded by 6AM and remained relatively consistent until an early evening peak that averaged over 20 counts per hour.

Hourly pedestrian volumes are depicted graphically in **Figure 4.** The figure shows weekend activity peaking between 8AM and 10AM and then volumes remaining relatively consistent until 4PM. Afternoon weekday peaks occurred from 5PM to 6PM. The lowest pedestrian activity occurred between 9PM and 6AM; hourly averages decreased to zero from 1AM to 5AM.

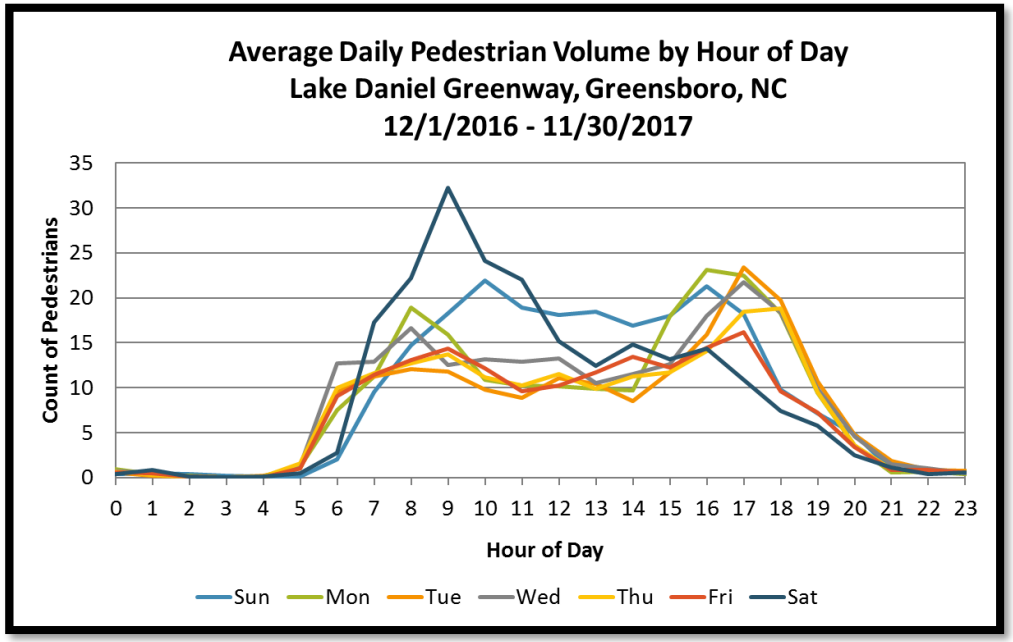

Figure 4. Average Daily Pedestrian Volumes by Hour of Day

Day of Week	Pedestrian Count
Sun	222
Mon	204
Tue	185
Wed	207
Thu	183
Fri	172
Sat	221
Average	**199**

Table 3. Average Pedestrian Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	0	1	1	1	1	1	0	1
1	0	0	0	0	0	0	1	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	1	1	1	2	1	0	1
6	2	8	10	13	10	9	3	8
7	10	11	11	13	12	11	17	12
8	15	19	12	17	13	13	22	16
9	18	16	12	13	14	14	32	17
10	22	11	10	13	11	12	24	15
11	19	10	9	13	10	10	22	13
12	18	10	11	13	11	10	15	13
13	18	10	10	11	10	12	12	12
14	17	10	8	12	11	13	15	12
15	18	18	12	13	12	12	13	14
16	21	23	16	18	14	14	14	17
17	18	23	23	22	19	16	11	19
18	10	18	20	18	19	10	7	15
19	7	9	11	10	9	7	6	9
20	5	4	5	5	4	3	2	4
21	1	1	2	2	1	1	1	1
22	1	1	1	1	1	1	0	1
23	1	0	1	1	1	1	1	1
Avg	9	8	8	9	8	7	9	8

Table 4. Pedestrian Patterns by Day of Week and Hour of Day

Seasonal variation is shown in **Figure 5**. The highest pedestrian volumes occurred during the autumn months (September–November), although spring and summer recorded similar activity levels. This pattern indicates that there was minimal variation in activity in months when the weather is warmer. From March through November, volumes regularly exceeded 200 pedestrian counts per day.

A record daily volume of pedestrians was observed on Saturday, November 18th, 2017, when 662 pedestrians were recorded at the counting station.

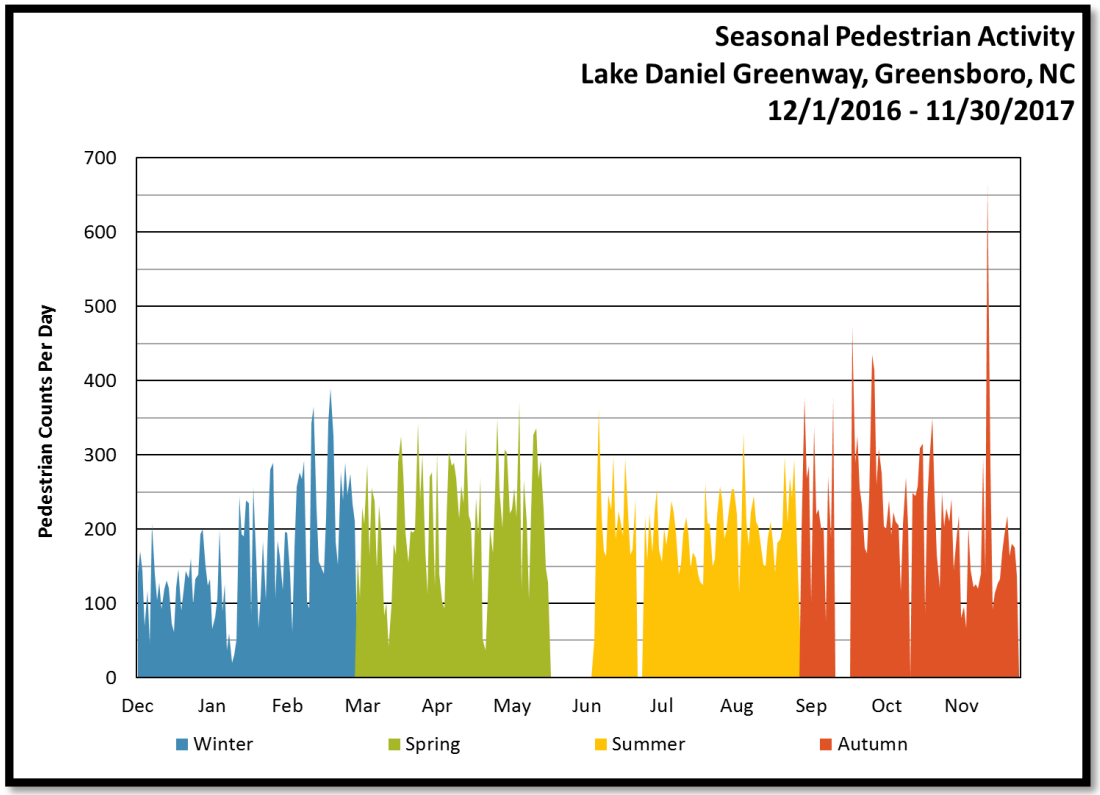

Figure 5. Seasonal Pedestrian Activity

Detailed Bicycle Count Information

Table 5 shows average bicycle activity by day of week. The highest daily volumes were recorded on Sundays, which averaged over 80 bicycle counts per day. Fridays had the lowest average with only 43 bicycles a day. An overall average of 55 bicycle counts per day were recorded at the site.

Table 6 shows daily bicyclist patterns at the site over the course of each day. Peak bicyclist volumes occurred on the weekends during the daytime hours; volumes exceeded seven bicycles per hour on Sundays between 10am and 6pm. Weekdays had similar volumes to one another, when activity started around 6AM and peaked in the early evening hours around 5PM.

Hourly bicyclist volumes at this site are depicted graphically in **Figure 6.** On the weekdays, activity began at 6AM, peaked around 6PM, and tapered out in the evening around 8PM. On the weekends, bicycle activity primarily occurred between the hours of 9AM and 7PM. Saturdays have a morning peak at 10AM and around 3PM. Sunday volumes peaked from 2-5PM. On all days of the week, bicycling activity occurred primarily during the daylight hours and decreased to zero after 11PM.

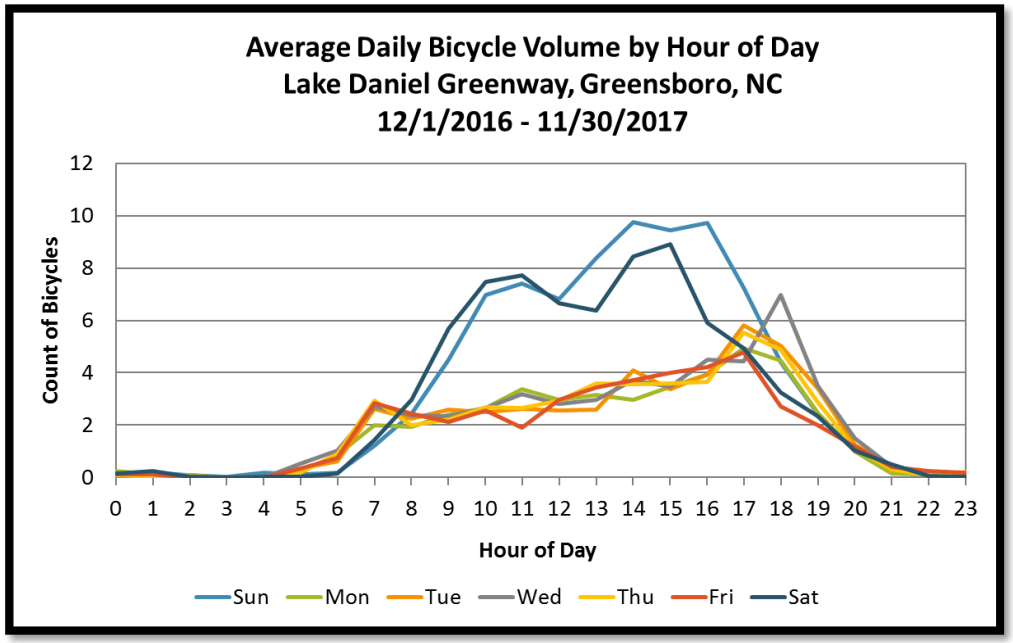

Figure 6. Average Daily Bicycle Volume by Hour of Day

Day of Week	Bicycle Count
Sun	83
Mon	44
Tue	46
Wed	50
Thu	46
Fri	43
Sat	74
Average	**55**

Table 5. Average Bicyclist Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	0	1	0	0	0	0
6	0	1	1	1	1	1	0	1
7	1	2	3	3	3	3	1	2
8	2	2	2	2	2	2	3	2
9	5	2	3	2	2	2	6	3
10	7	3	3	3	3	3	7	4
11	7	3	3	3	3	2	8	4
12	7	3	3	3	3	3	7	4
13	8	3	3	3	4	3	6	4
14	10	3	4	4	4	4	8	5
15	9	3	3	3	4	4	9	5
16	10	4	4	5	4	4	6	5
17	7	5	6	4	6	5	5	5
18	4	4	5	7	5	3	3	5
19	2	2	3	4	3	2	2	3
20	1	1	1	1	1	1	1	1
21	0	0	0	0	0	0	1	0
22	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0
Avg	3	2	2	2	2	2	3	2

Table 6. Bicyclist Patterns by Day of Week and Hour of Day

Seasonal variation at the site is shown in **Figure 7**. The highest bicyclist volumes occur during the summer months (June–August) when volumes regularly exceed 100 bicycle counts per day. Similar seasonal volumes were recorded in spring and autumn.

The highest daily volume of cyclists recorded was on Sunday, February 12th, 2017, when 206 bicycles were detected at the site.

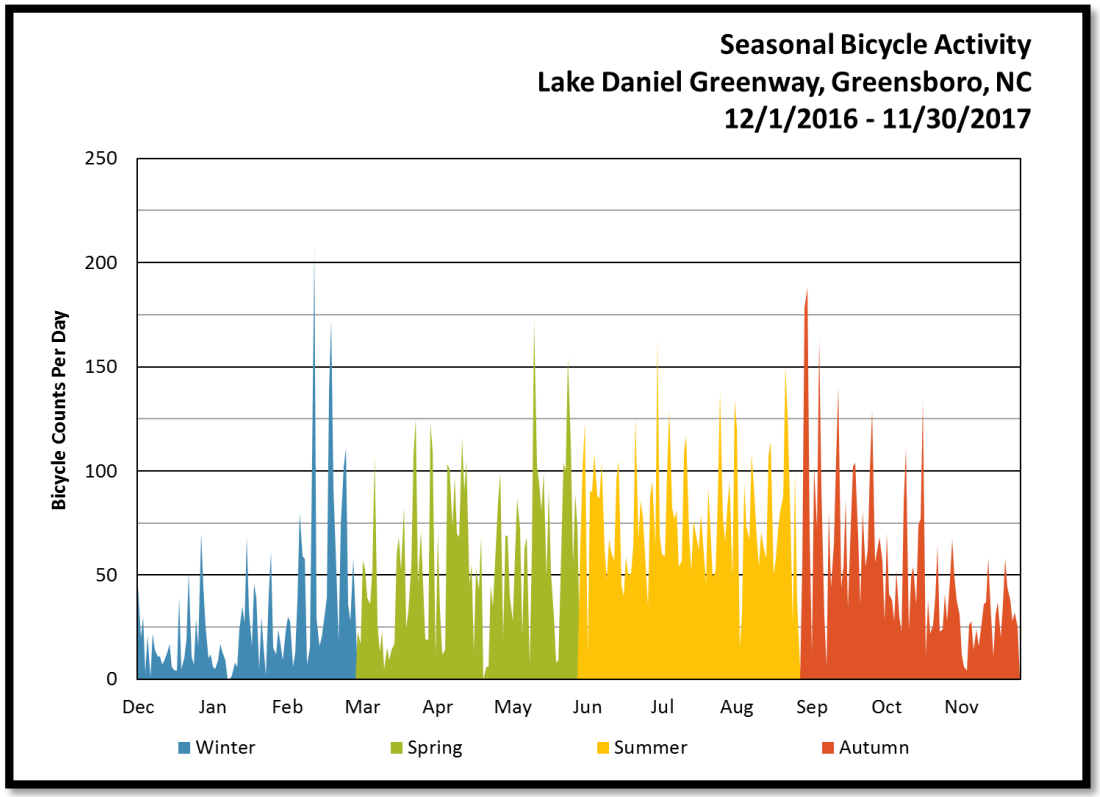

Figure 7. Seasonal Bicycle Activity

SPRING GARDEN STREET – GREENSBORO, NC

Table 1 Station Description	
Active Since	September 19, 2014
Pedestrian Travel Pattern	University Commute
Pedestrian Volume Group	Medium
Bicyclist Travel Pattern	University Commute
Bicyclist Volume Group	Medium
Station Locations	N36.066517 W79.803851
Station Name/ ID	GSO_SPR / 400003
Directional Distribution	
North Side	*South Side*
Pedestrians on Sidewalk (57%)	Pedestrians on Sidewalk (43%)
EB Bicyclists in Roadway (52%)	WB Bicyclists in Roadway (48%)

SITE OVERVIEW

A continuous count station was installed on Spring Garden Street in Greensboro, NC between Springdale Ct and Mendenhall St. This site is situated between downtown Greensboro and UNC Greensboro's campus in a residential area with local businesses nearby. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 1.**

Figure 2 is a site diagram that shows equipment placement for the two count sites that makes up the station. Bicyclists in the roadway are detected by a set of two inductive loops positioned to the rightmost side of the path (indicated as blue diamonds) and pedestrians are detected by an infrared sensor (indicated with a red triangle) on the sidewalk.

ANALYSIS PERIOD

Data analyzed for this site includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report.

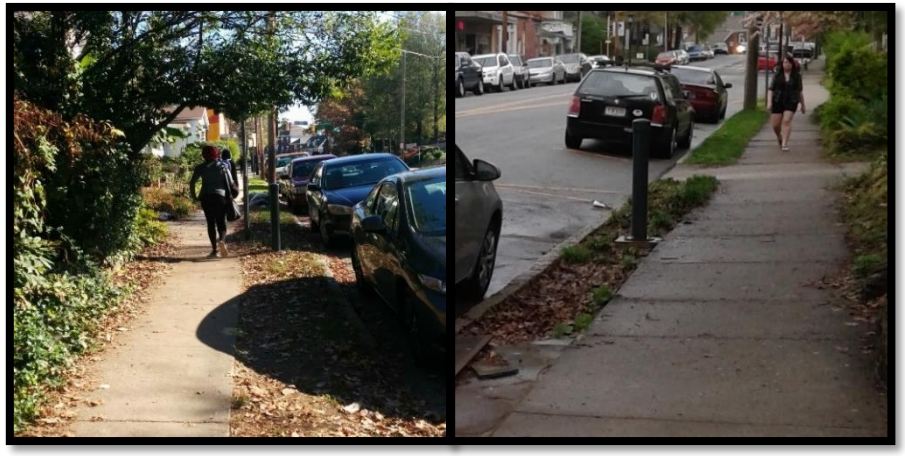

Figure 1. Continuous Count Station Installation North (Left) and South (Right)

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

Summary Count Data

Over 320,000 pedestrian counts and more than 38,000 bicycle counts were collected at the site during the 12-month analysis period. The overall volume of non-motorized users on this facility varies from 15,000 to nearly 45,000 counts per month **Table 2** is a summary of statistics for both bicyclist and pedestrian count data. Correction factors were applied to the data based on a site-specific logger validation study. **Figure 3** displays the average high and low temperatures for this community during the months of the year. This site does not show a strong correlation between temperature and non-motorized volumes for pedestrians, but there is some correlation for bicyclists.

Table 2 Summary Volume Statistics (1) (2)		
Annual Average Daily Traffic (AADT)	5,600 (NCDOT, 2015)	
Pedestrians		
	Highest Volume	**Lowest Volume**
Season	Autumn	Summer
Month	September	July
Day of Week	Tuesday	Sunday
Date	Aug 30, 2017 (1958)	Nov 23, 2017 (122)
Peak Period	Tues - Thurs 9AM-4PM	
12 Month Pedestrian Count	323,254	
Annual Average Daily Pedestrian Traffic	890 AADPT	
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	Autumn	Winter
Month	September	December
Day of Week	Wednesday	Sunday
Date	Aug 24, 2017 (272)	Jan 08, 2017 (3)
Peak Period	Tues - Thurs 3-6PM	
12 Month Bicycle Count	38,646	
Annual Average Daily Bicycle Traffic	106 AADBT	

(1) Data has been adjusted based on correction factors
(2) Annual Average Traffic calculated using AASHTO method

Pedestrian Data

The lowest pedestrian volumes were recorded in the months of July, June, and January, as shown in **Figure 3**. This is likely due to UNCG's summer and winter breaks. The highest pedestrian volumes were recorded in the September and October; over 38,000 pedestrians were counted during each of these two months. Average daily pedestrian volumes were the highest on Tuesdays and the lowest during the weekends.

Bicycle Data

The lowest bicycle volumes were recorded in the months of December and January, also shown in **Figure 3**. This is also likely due to the colder weather and UNCG's winter break. The highest bicycle counts were in August through October, which aligns with the fall semester. The highest weekly bicycle volumes were recorded on Wednesdays and Tuesdays, while the weekends had the lowest volumes.

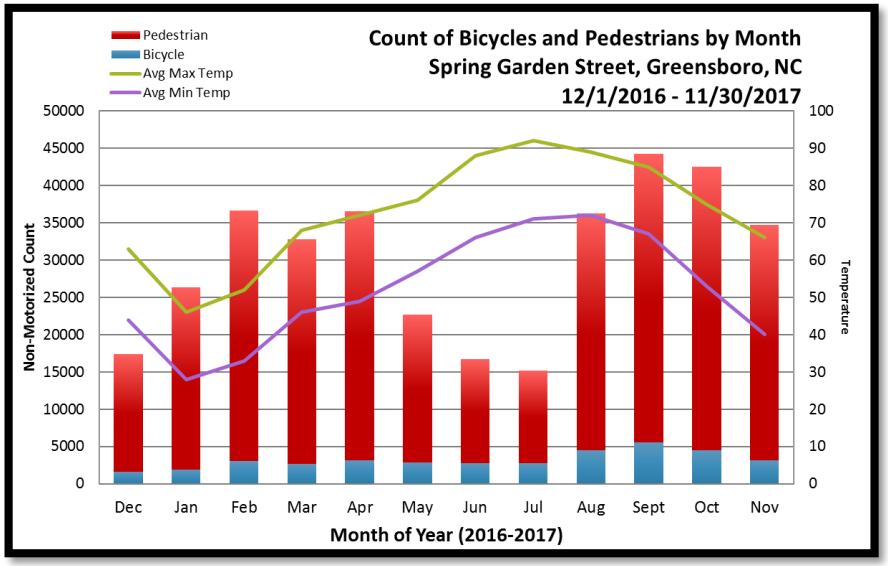

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Table 3 shows average pedestrian activity by day of week. The highest average daily pedestrian volumes were recorded on Tuesdays, followed by Wednesdays. The lowest average volumes were recorded on weekend days; however, the site was still relatively active on weekends and recorded over 460 pedestrians on the average weekend day. A daily average of 885 pedestrians were counted at the site.

Table 4 shows the pedestrian patterns observed at this site by hour of day and by day of week. The highest counts occurred on Tuesdays and Thursdays from 9AM to 11AM, 12PM to 2PM and Monday through Thursdays from 3PM to 4PM; this peak pattern coincides with UNCG's Tuesday, Thursday class schedule. The weekday volumes are likely the result of students getting to and from the UNCG campus. Most pedestrian activity on the weekends started around 12PM and continued until the evening and early morning.

Hourly pedestrian volumes are depicted graphically in **Figure 4** and show the weekday peaks which followed the university class schedule. Pedestrian volumes taper off around 1AM on weekdays. The lowest pedestrian activity occurred between 3AM and 7AM but hourly pedestrian averages never fell to zero on any day or hour of the week, indicating the site was active at all hours.

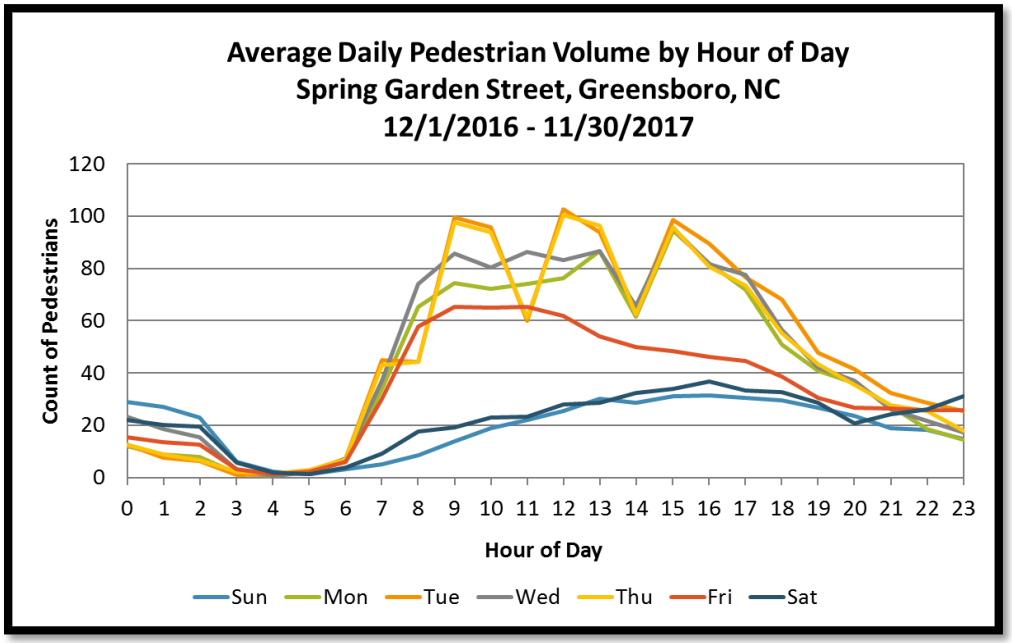

Figure 4. Average Daily Pedestrian Volumes by Hour of Day

Day of Week	Pedestrian Count
Sun	468
Mon	1019
Tue	1151
Wed	1123
Thu	1095
Fri	816
Sat	522
Average	**885**

Table 3. Average Pedestrian Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	29	12	13	23	13	15	22	18
1	27	9	8	18	9	14	20	15
2	23	8	6	15	7	12	20	13
3	6	2	1	3	2	3	6	3
4	2	1	1	1	1	1	2	1
5	1	2	3	2	3	2	1	2
6	3	6	7	7	7	6	4	6
7	5	34	45	37	43	30	9	29
8	8	65	44	74	44	58	18	44
9	14	74	100	86	98	65	19	65
10	19	72	96	80	94	65	23	64
11	22	74	60	86	61	65	23	56
12	25	76	102	83	100	62	28	68
13	30	87	94	86	96	54	29	68
14	28	62	64	65	62	50	32	52
15	31	94	99	95	96	48	34	71
16	32	82	89	81	81	46	37	64
17	31	72	77	77	74	45	33	58
18	30	51	68	56	55	39	33	47
19	27	41	48	42	43	31	29	37
20	24	36	41	37	35	27	21	32
21	19	27	32	26	28	27	24	26
22	18	18	28	22	26	26	26	23
23	15	14	25	17	18	26	31	21
Avg	**19**	**42**	**48**	**47**	**46**	**34**	**22**	**37**

Table 4. Pedestrian Patterns by Day of Week and Hour of Day

Seasonal variation is shown in **Figure 5**. Pedestrian activity is highly related to the university semester schedule. The highest pedestrian volumes occur at the end of August when students are returning to campus and continue during the autumn months (September – November). Lower volumes are recorded during the summer, winter, spring, and Thanksgiving breaks. Pedestrian volumes exceeds 1500 per day in all seasons of the year.

Wednesday August 30th, 2017 had a record number of pedestrians with over 1,900 counts.

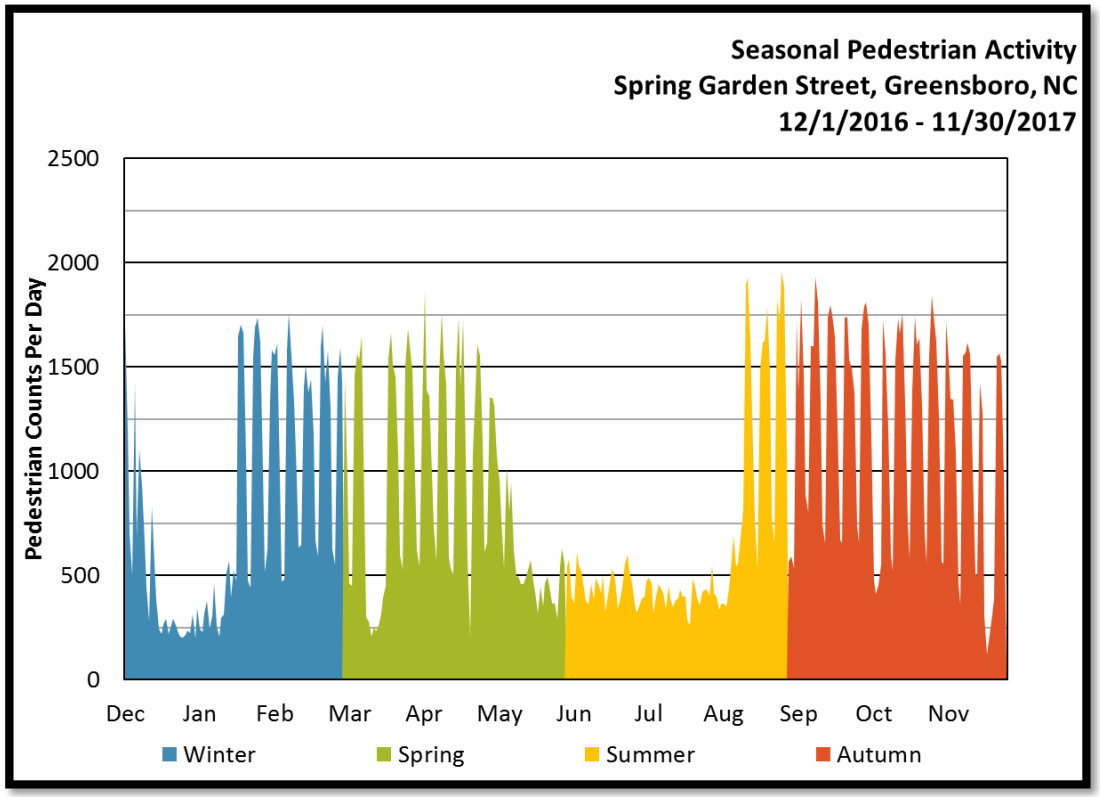

Figure 5. Seasonal Pedestrian Activity

Detailed Bicycle Count Information

Table 5 shows average bicycle activity by day of week. The highest daily average was recorded on Wednesdays, Tuesdays, and Thursdays. The lowest daily bicycle average was recorded on Sundays, which averaged 72 counts per day. On average, 106 bicycles were counted at the site every day.

Table 6 shows daily bicyclist patterns at the site over the course of each day. Bicycle volumes increased around 8AM on weekday mornings and decrease at approximately 7PM. Mondays through Thursdays had a peak period between 3PM and 6PM.

Hourly bicyclist volumes at this site are depicted graphically in **Figure 6.** The figure shows that bicycling activity was generally consistent throughout the week on weekdays. Bicycle traffic had a similar pattern to pedestrian traffic, with multiple peaks throughout the week in between classes. The largest peak was on weekday afternoons from 3PM until 6PM Bicycle volumes peaked on Saturdays at 9AM then slowly declined in activity throughout the day.

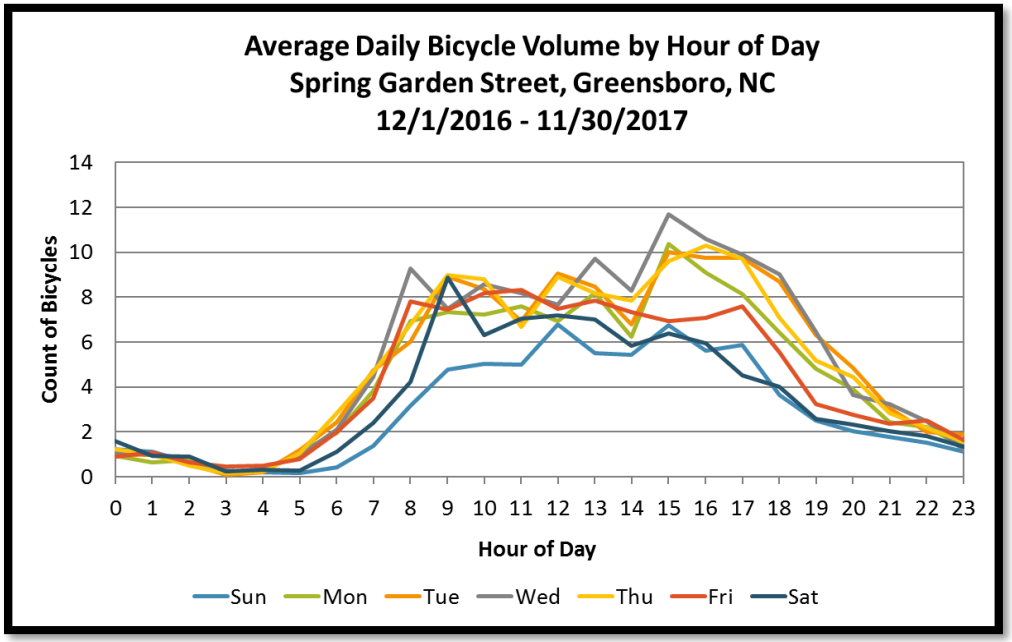

Figure 6. Average Daily Bicycle Volume by Hour of Day

Day of Week	Bicycle Count
Sun	72
Mon	109
Tue	122
Wed	128
Thu	121
Fri	104
Sat	85
Average	**106**

Table 5. Average Bicyclist Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	1	1	1	1	1	1	2	1
1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	1	1	1	1	1	0	1
6	0	2	2	2	3	2	1	2
7	1	4	5	4	5	4	2	4
8	3	7	6	9	7	8	4	6
9	5	7	9	8	9	7	9	8
10	5	7	8	9	9	8	6	7
11	5	8	7	8	7	8	7	7
12	7	7	9	8	9	8	7	8
13	6	8	8	10	8	8	7	8
14	5	6	7	8	8	7	6	7
15	7	10	10	12	10	7	6	9
16	6	9	10	11	10	7	6	8
17	6	8	10	10	10	8	5	8
18	4	6	9	9	7	6	4	6
19	3	5	6	6	5	3	3	4
20	2	4	5	4	4	3	2	3
21	2	2	3	3	3	2	2	3
22	2	2	2	2	2	3	2	2
23	1	1	2	1	2	2	1	1
Avg	3	5	5	5	5	4	4	4

Table 1. Bicyclist Patterns by Day of Week and Hour of Day

Seasonal variation at the site is shown in **Figure 7**. The highest bicyclist volumes occurred during the late summer when the university class schedule starts and continues into the autumn months (September – November). Bicycle volumes commonly exceeded 200 counts per day during this period. Winter, spring, and early to mid-summer had lower bicycle volumes, with counts rarely exceeding 150 per day in that time period.

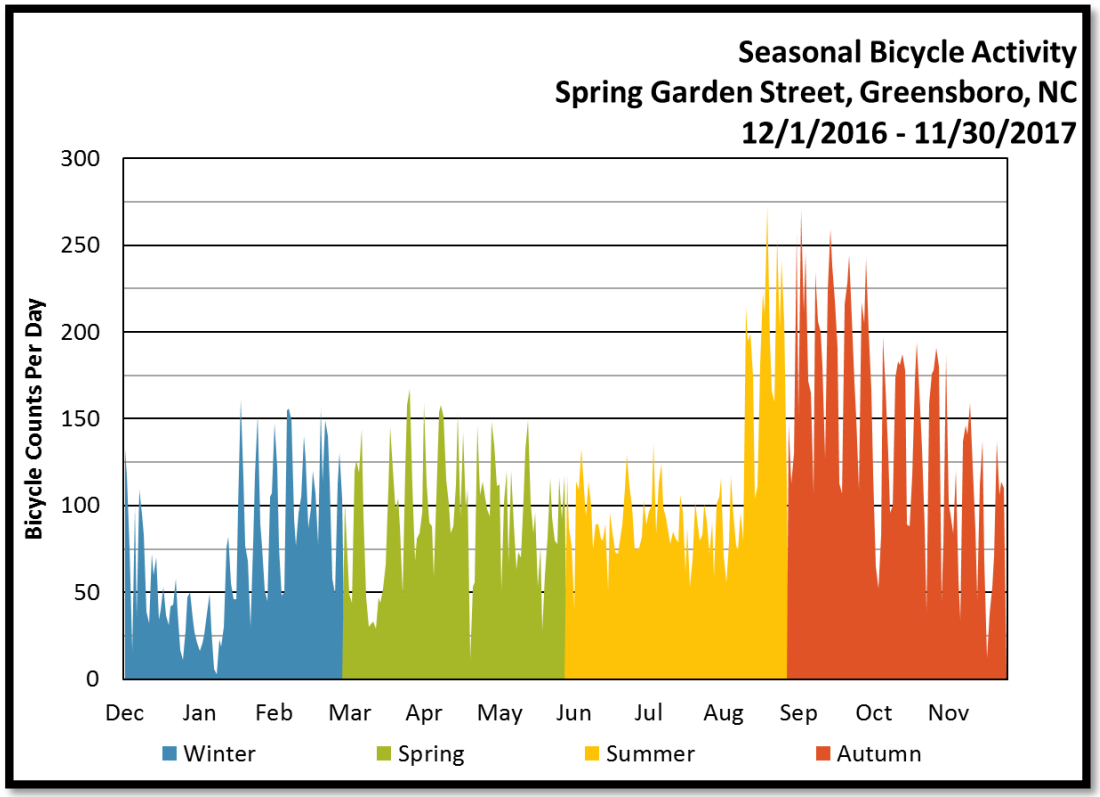

Figure 7. Seasonal Bicycle Activity

WALKER AVENUE – GREENSBORO, NC

Table 1 Station Description	
Active Since	November 10, 2014
Pedestrian Travel Pattern	Urban Mixed
Pedestrian Volume Group	Medium
Bicyclist Travel Pattern	Urban Mixed
Bicyclist Volume Group	Low
Station Location Coordinates	N - N36.068839 W79.828518 S - N36.068743 W79.827820
Station Name / ID	GSO_WAL / 400004
Directional Distribution	
North Side	*South Side*
Pedestrians on Sidewalk (40%)	Pedestrians on Sidewalk (60%)
WB Bicyclists in Roadway (54%)	EB Bicyclists in Roadway (46%)

SITE OVERVIEW

A continuous count station was installed on Walker Ave in Greensboro, NC between Scott Ave and the Southwest Greenway. This site is situated in the Lindley Park neighborhood adjacent to pedestrian-scale commercial node which includes a grocery store, local restaurants, and shops. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 1.**

Figure 2 is a site diagram that shows equipment placement for the two count sites that makes up the station. Bicyclists in the roadway are detected by a set of two inductive loops positioned to the rightmost side of the path (indicated as blue diamonds) and pedestrians are detected by an infrared sensor (indicated with a red triangle) on the sidewalk.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions or missing data, 184 days of bicycle data and 2 days of pedestrian data are not present in the 12-month analysis period.

Figure 1. Continuous Count Station Installation North (Left) and South (Right)

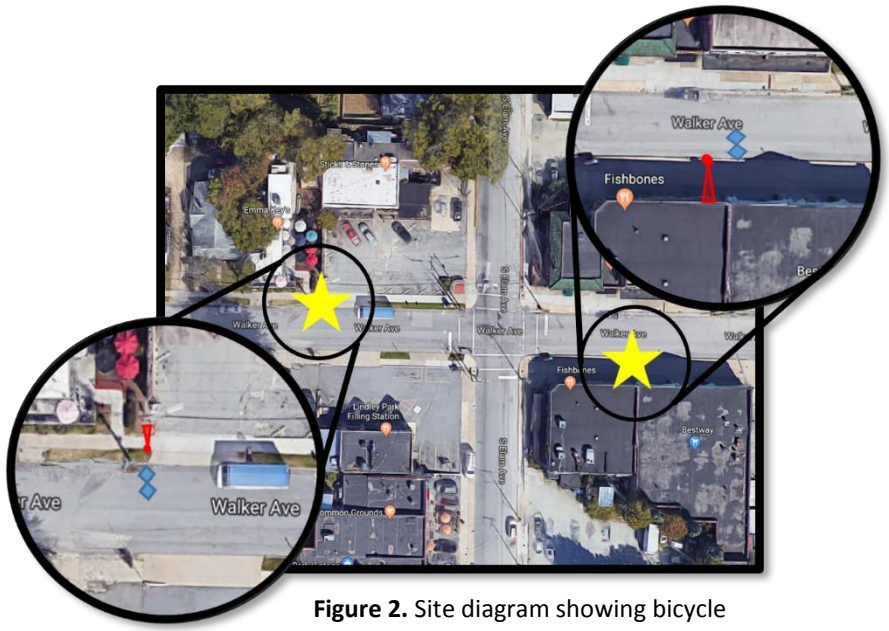

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

Summary Count Data

Bicycle temporal patterns are omitted due to the high volume of missing data as caused by equipment malfunctions. Over 400,000 pedestrian counts were recorded during the 12-month analysis period. The overall volume of pedestrian traffic on this facility varied from 27,000 to almost 40,000 counts per month. **Table 2** highlights summary statistics for both bicyclist and pedestrian count data. Correction factors were applied to the data based on a site-specific logger validation study. **Figure 3** displays the average high and low temperatures for this community during the months of the year.

Table 2 Summary Volume Statistics (1) (2) (3)		
Annual Average Daily Traffic (AADT)	2,100 at Lindell Rd (NCDOT, 2015)	
Pedestrians		
	Highest Volume	**Lowest Volume**
Season	Spring	Winter
Month	April	November
Day of Week	Saturday	Monday
Date	Apr 01, 2017 (2623)	Dec 25, 2016 (164)
Peak Period	Sat 11AM-1PM	
12 Month Pedestrian Count	406,033	
Annual Average Daily Pedestrian Traffic	1121 AADPT	
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	N/A	N/A
Month	N/A	N/A
Day of Week	N/A	N/A
Date	N/A	N/A
Peak Period	N/A	
12 Month Bicycle Count	N/A	
Annual Average Daily Bicycle Traffic	N/A	

(1) Note: 184 days of bicycle data and 2 days of pedestrian data are not present in the 12-month analysis period

(2) Data has been adjusted based on correction factors

(3) Annual Average Traffic calculated using AASHTO method

Pedestrian Data

The lowest monthly volumes for pedestrians were recorded in November, January, and December, as shown in **Figure 3**. Cold weather in the winter months may account for the decreased volume. The highest monthly pedestrian volumes were recorded in April when over 39,000 counts were recorded. Average daily pedestrian volumes were highest on Saturdays and lowest during the week on Monday.

Bicycle Data

Bicycle data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete bicycle dataset that includes all valid data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

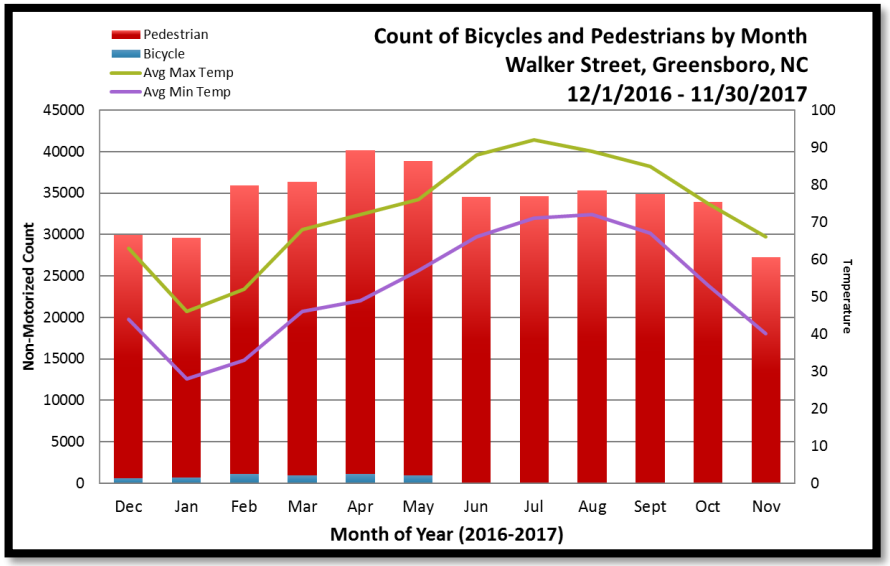

Figure 3. Non-Motorized counts by Month and Temperature

Detailed Pedestrian Count Information

Table 3 shows average pedestrian activity by day of week. The highest daily average was recorded on Saturdays, averaging greater than 600 more than Sunday, the second most active day. The lowest daily average was recorded on Mondays. On average, 1,119 pedestrian counts were recorded at the site each day.

Table 4 shows the pedestrian pattern observed at this site by hour of day and by day of week. The highest counts occur on Saturdays from 10AM to 1PM and then Fridays and Saturdays 6PM-8PM. These periods averaged over 150 pedestrian counts per hour, likely the result of people going to and from neighborhood restaurants and bars in the area. Weekday peaks occurred from 6PM-8PM.

Hourly pedestrian volumes are depicted graphically in **Figure 4.** The figure shows a lunch and evening hours peaking pattern that occurred every day of the week. There are peaks every day around lunch and around dinner, so the facility is likely used to travel to restaurants in the area. The site's hourly average rarely drops to zero, indicating that the site is active is almost always active.

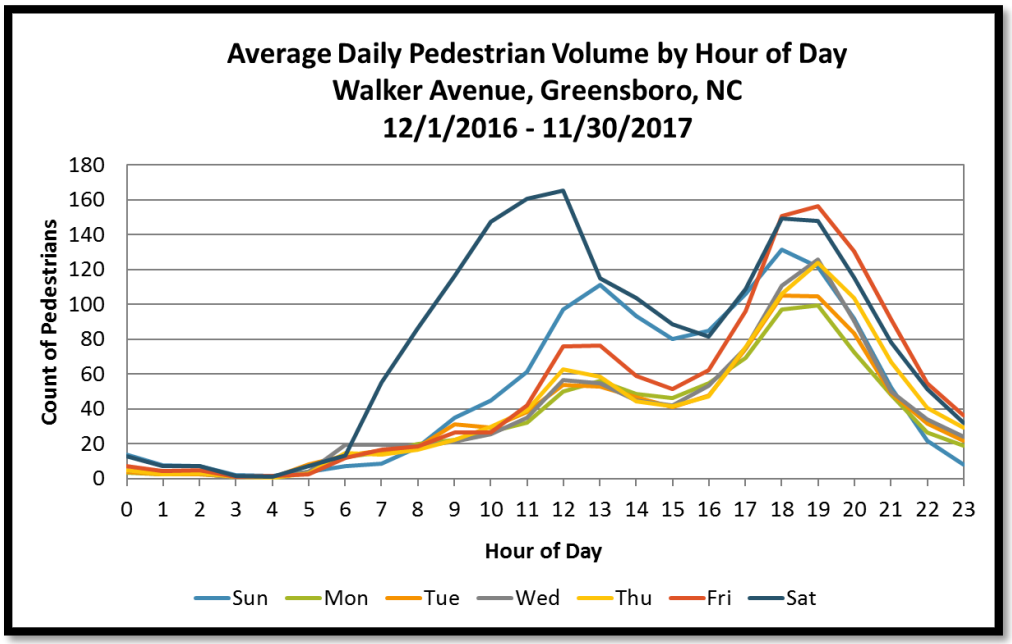

Figure 4. Average Daily Pedestrian Volumes by Hour of Day

Day of Week	Pedestrian Count
Sun	1209
Mon	829
Tue	876
Wed	914
Thu	950
Fri	1203
Sat	1851
Average	**1119**

Table 3. Average Pedestrian Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	14	3	4	5	5	7	13	7
1	8	2	3	3	2	4	7	4
2	7	3	2	3	3	5	7	4
3	2	1	1	1	1	1	1	1
4	2	0	1	0	1	1	1	1
5	4	4	8	4	3	2	7	5
6	7	13	13	19	15	12	13	13
7	9	15	16	19	14	16	55	21
8	18	20	18	19	17	19	86	28
9	35	22	31	21	22	27	116	39
10	45	27	29	25	30	27	147	47
11	61	32	38	35	39	42	161	58
12	97	50	54	56	63	76	165	80
13	111	56	53	55	59	76	115	75
14	93	49	47	45	44	59	104	63
15	80	46	41	42	41	51	89	56
16	85	54	47	53	47	62	82	62
17	106	69	74	75	75	96	109	86
18	132	97	105	111	106	151	149	121
19	121	100	105	126	124	156	148	126
20	92	72	83	90	104	131	115	98
21	52	48	49	50	67	91	78	62
22	22	26	32	34	41	54	51	37
23	8	19	22	24	29	36	32	24
Avg	**50**	**35**	**36**	**38**	**40**	**50**	**77**	**47**

Table 4. Pedestrian Patterns by Day of Week and Hour of Day

Seasonal variation is shown in **Figure 5**. Pedestrian volumes are relatively consistent throughout the warmer seasons, and were lower during the winter season. The highest pedestrian traffic occurred in the spring while the lowest occurred in winter. Over 1,500 counts per day were recorded on weekends during all seasons.

The daily record for pedestrian volume was recorded on Saturday April 1st, 2017.

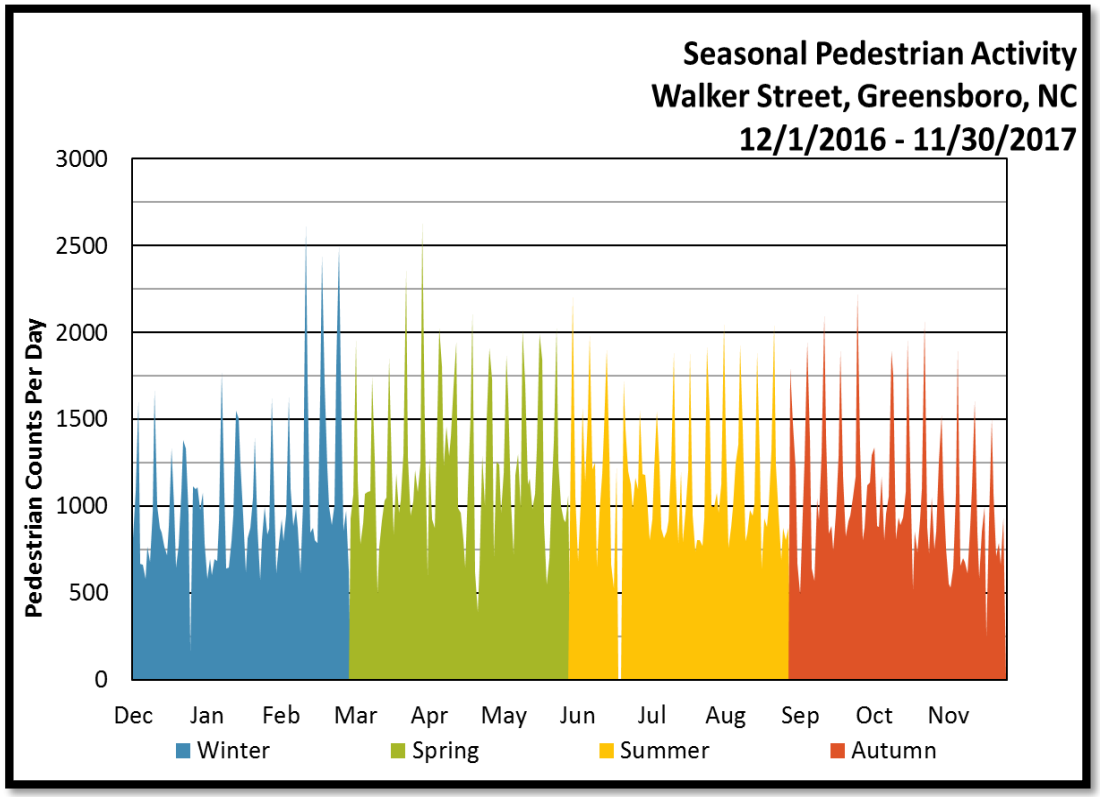

Figure 5. Seasonal Pedestrian Activity

Detailed Bicycle Count Information

Bicycle data analysis is omitted due to high volume of missing data caused by equipment malfunction. A complete bicycle dataset that includes all valid data for this site is available at https://itre.ncsu.edu/focus/bike-ped/nc-nmvdp/.

YADKIN RIVER GREENWAY – NORTH WILKESBORO, NC

Table 1 Site Description	
Active Since	April 23, 2016
Pedestrian Travel Pattern	Rural Mixed
Pedestrian Volume Group	Low
Bicyclist Travel Pattern	Rural Mixed
Bicyclist Volume Group	Low
Station Location Coordinates	N36.15243 W81.14793
Station Name / ID	WLK_YDK / 960001
Directional Distribution	
Northbound	*Southbound*
Pedestrians (44%)	Pedestrians (56%)
Bicyclists (49%)	Bicyclists (51%)

SITE OVERVIEW

A continuous count station was installed on Yadkin River Greenway in North Wilkesboro, NC by the confluence of the Reddies River and the Yadkin River. This site is located in between North Wilkesboro and Wilkesboro, connecting the two with a pedestrian bridge. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 1.**

Figure 2 is a site diagram that shows equipment placement for the two count sites that comprise the station. Bicyclists on the greenway are detected by a set of two inductive loops positioned on the path (indicated as blue diamonds) and pedestrians are detected by an infrared sensor (indicated with a red triangle) on the greenway.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report.

Figure 1. Continuous Count Station Installation

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

Summary Count Data

Almost 75,000 pedestrian counts and over 11,000 bicycle counts were recorded during the 12-month analysis period. The overall volume of non-motorized users on this facility varies from 3,000 to nearly 10,000 counts per month. **Table 2** is a summary of statistics for both bicyclist and pedestrian count data. Correction factors were applied to the data based on a site-specific logger validation study. **Figure 3** displays the average high and low temperatures for this community during the months of the year. There is some correlation between temperature and volumes at this site.

Table 2 Summary Volume Statistics (1) (2)

Pedestrians		
	Highest Volume	**Lowest Volume**
Season	Summer	Winter
Month	June	December
Day of Week	Tuesday	Friday
Date	Oct 28, 2017 (1706)	Jan 07, 2017 (5)
Peak Period		Tues 5-6PM, Sat 10-11AM
12 Month Pedestrian Count		74,030
Annual Average Daily Pedestrian Traffic		203 AADPT
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	Summer	Winter
Month	June	December
Day of Week	Sunday	Friday
Date	Feb 12, 2017 (160)	Multiple
Peak Period		Sun 2-5PM
12 Month Bicycle Count		11,689
Annual Average Daily Bicycle Traffic		32 AADBT

(1) Data has been adjusted based on correction factors
(2) Annual Average Traffic calculated using AASHTO method

Pedestrian Data

The lowest volumes for pedestrians were recorded in December and January when the weather was colder, as shown in **Figure 3**. Recorded volumes were the highest in the summer. The highest monthly volume for pedestrians was recorded in the month of June, followed by May. Average daily pedestrian volumes were highest on Tuesdays and lowest on Fridays.

Bicycle Data

The lowest monthly volume for bicyclists was recorded during December, also shown in **Figure 3**. The summer season had the highest overall seasonal volume, and the highest monthly volume was recorded in June. Daily average bicyclist volumes were the highest on Sundays and the lowest on Fridays. December 4, 6, 10, 15, 20, 21; January 7, 10; March 15; April 23; September 12; and November 4, 8 are all tied with the lowest day, each having zero bicycles counted.

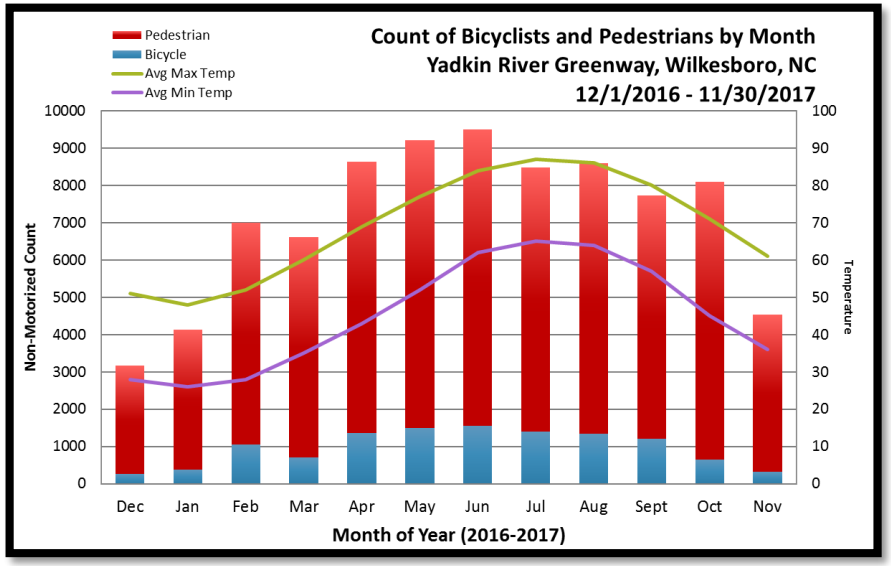

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Table 3 shows average pedestrian activity by day of week. The highest average daily count was on Tuesdays and Wednesdays. Fridays had the lowest average volume, followed by Sundays. There was an average of 203 pedestrians counted at the site every day.

Table 4 shows the pedestrian pattern observed at this site by hour of day and by day of week. A weekday peak occurred from 5PM to 6PM on Mondays through Thursdays. This weekday activity is likely due to post-workday recreation. Another peak occurred on Saturday mornings from 10AM to 11AM. Pedestrian counts were higher or equal to 23 pedestrians per hour during these peak periods.

Hourly pedestrian volumes are depicted graphically in **Figure 4.** The figure demonstrates steady weekday use with evening peaking. Saturdays and Sundays differ in use patterns; Saturday peak volumes were higher and earlier in the morning than Sunday peak volumes. Pedestrian activity decreased to zero after 9PM and increased again after 5AM.

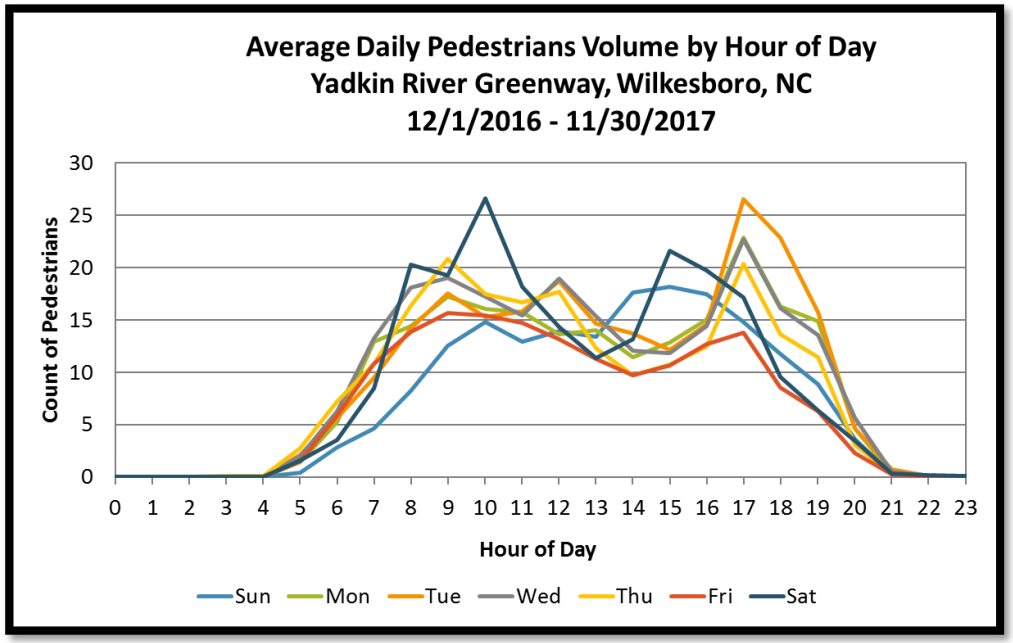

Figure 4. Average Daily Pedestrian Volumes by Hour of Day

Day of Week	Pedestrian Count
Sun	177
Mon	209
Tue	225
Wed	223
Thu	204
Fri	167
Sat	215
Average	**203**

Table 3. Average Pedestrian Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	1	2	2	3	2	2	2
6	3	5	6	6	7	6	4	5
7	5	13	9	13	11	11	8	10
8	8	14	14	18	16	14	20	15
9	13	17	18	19	21	16	19	17
10	15	16	15	17	17	15	27	18
11	13	16	16	15	17	15	18	16
12	14	14	19	19	18	13	14	16
13	13	14	15	15	12	11	11	13
14	18	11	14	12	10	10	13	12
15	18	13	12	12	11	11	22	14
16	17	15	15	14	12	13	20	15
17	15	23	27	23	20	14	17	20
18	12	16	23	16	14	9	10	14
19	9	15	16	14	11	6	6	11
20	4	5	5	6	3	2	3	4
21	0	0	1	1	0	0	0	0
22	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0
Avg	7	9	9	9	9	7	9	8

Table 4. Pedestrian Patterns by Day of Week and Hour of Day

Seasonal variation is shown in **Figure 5**. The highest monthly pedestrian volumes were recorded during the summer months; total seasonal volumes in the spring were similar. Volumes were significantly lower in the winter months. Daily volumes regularly reached over 250 pedestrians during all seasons.

Oct 28, 2017 had a record number of pedestrians of 1706. This is likely due to traffic from the Trail of Treats, a Halloween celebration along the Yadkin River Greenway.

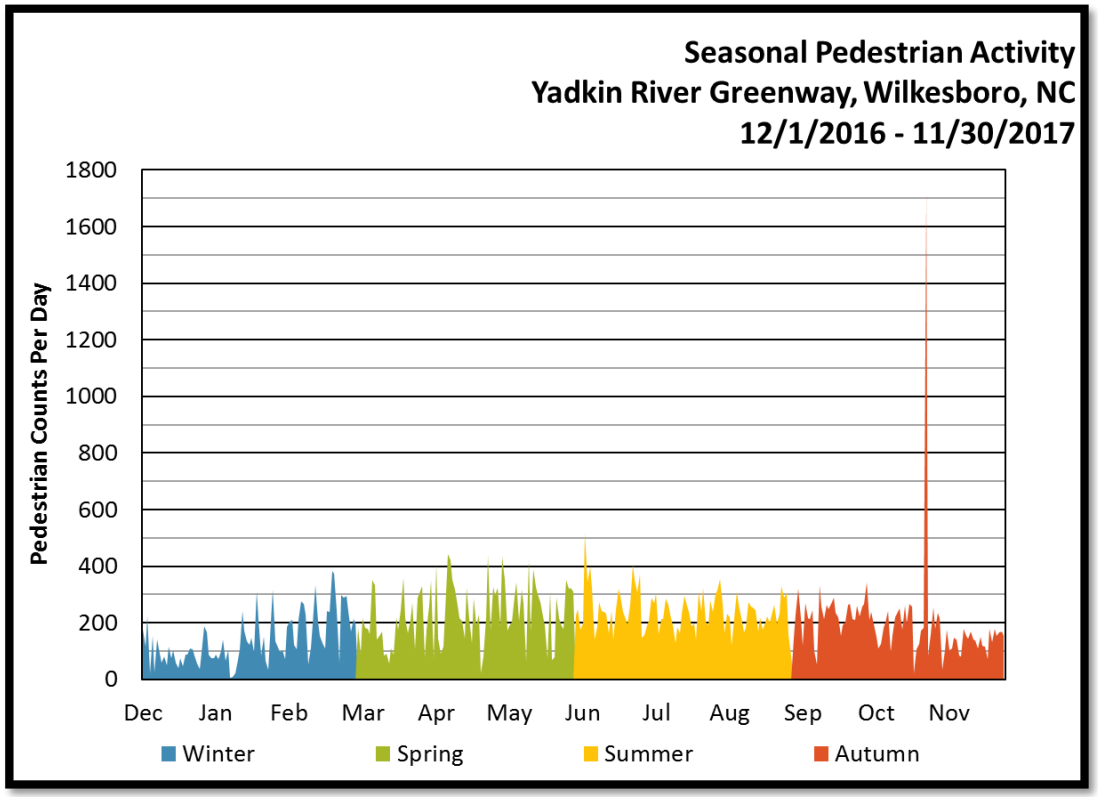

Figure 5. Seasonal Pedestrian Activity

Detailed Bicycle Count Information

Table 5 shows average bicycle activity by day of week. Sundays had the highest average volume with more than 45 bicycles per day. The lowest daily average was recorded on Fridays, closely followed by Mondays, Tuesdays, and Thursdays. An average of 32 bicycles were recorded at the station every day.

Table 6 shows daily bicyclist patterns at the site over the course of each day. Peak bicyclist volumes occur on Sundays 2PM until 5PM when counts reached about 6 bicycles per hour. Bicycle traffic was fairly consistent during daylight hours, except for Sundays afternoons.

Hourly bicyclist volumes at this site are depicted graphically in **Figure 6.** The figure shows a small morning and evening peak on the weekdays. Weekend traffic started around 7AM and continued until 9PM. Sundays had a peak in the early afternoon and Saturdays had a peak in the late morning into the early afternoon. Bicycle activity dropped to zero by 9PM on all days of the week, and remained as zero until 7AM.

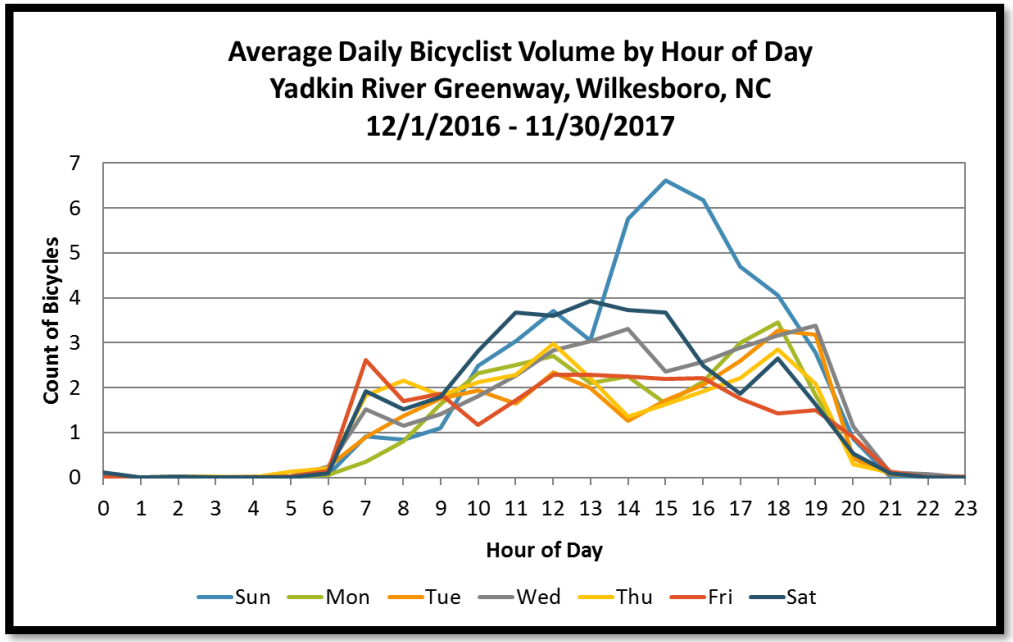

Figure 6. Average Daily Bicycle Volume by Hour of Day

Day of Week	Bicycle Count
Sun	46
Mon	27
Tue	27
Wed	33
Thu	28
Fri	26
Sat	36
Average	**32**

Table 5. Average Bicyclist Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0
7	1	0	1	2	2	3	2	1
8	1	1	1	1	2	2	2	1
9	1	2	2	1	2	2	2	2
10	2	2	2	2	2	1	3	2
11	3	3	2	2	2	2	4	2
12	4	3	2	3	3	2	4	3
13	3	2	2	3	2	2	4	3
14	6	2	1	3	1	2	4	3
15	7	2	2	2	2	2	4	3
16	6	2	2	3	2	2	2	3
17	5	3	3	3	2	2	2	3
18	4	3	3	3	3	1	3	3
19	3	2	3	3	2	2	2	2
20	1	0	0	1	0	1	1	1
21	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0
Avg	2	1	1	1	1	1	2	1

Table 6. Bicyclist Patterns by Day of Week and Hour of Day

Seasonal variation at the site is shown in **Figure 7**. The highest seasonal bicyclist volumes occurred during the spring and summer months. There was a sharp decrease in bicycle volume in the late autumn and winter months, likely caused by the cold weather. Daily volumes exceeded 80 bicycles a day in each season.

The highest daily volume was recorded on February 12th, 2017 when 160 bicycles were counted at the site.

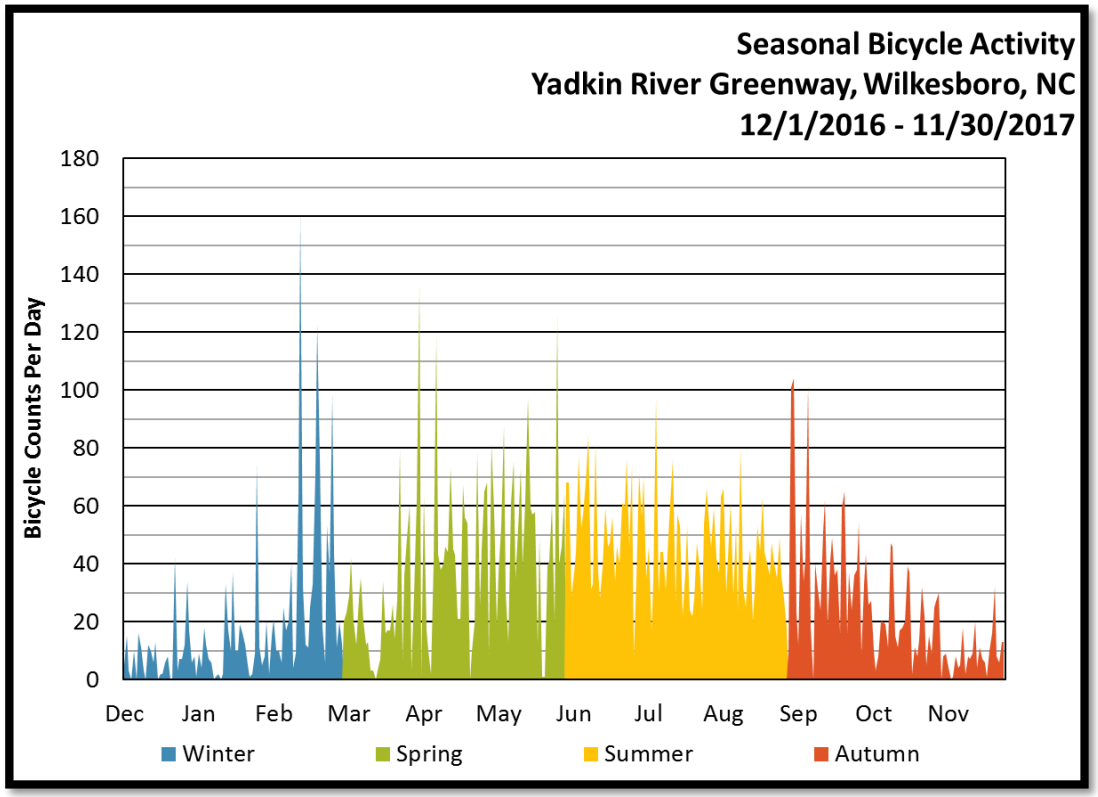

Figure 7. Seasonal Bicycle Activity

FOURTH STREET – WINSTON-SALEM, NC

Table 1 Station Description	
Active Since	September 17, 2014
Pedestrian Travel Pattern	Urban Mixed
Pedestrian Volume Group	High
Bicyclist Travel Pattern	Urban Commute
Bicyclist Volume Group	Low
Station Location Coordinates	N - N36.098017 W80.24748 S - N36.098167 W80.247567
Station Name / ID	W-S_4TH / 330003
Directional Distribution	
North Side	*South Side*
Pedestrians on Sidewalk (47%)	Pedestrians on Sidewalk (53%)
WB Bicyclists in Roadway (54%)	EB Bicyclists in Roadway (46%)

SITE OVERVIEW

A continuous count site was installed on 4th Street in Winston-Salem, NC in between Marshall St and Cherry St. The site is located in the central business district of Winston-Salem with shopping, restaurants, and entertainment in close proximity. **Table 1** contains information related to the site, and photographs of the completed site installation are shown in **Figure 2.**

Figure 2 is a site diagram that shows equipment placement for the two count sites that comprise the station. Bicyclists in the roadway are detected by a set of two inductive loops positioned to the rightmost side of the lane (indicated as blue diamonds), and pedestrians are detected by an infrared sensor (indicated with a red triangle) on the sidewalk.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions or missing data 2 days of pedestrian data are not present in the 12-month analysis period.

Figure 1. Continuous count Station Installation North (Left) and South (Right)

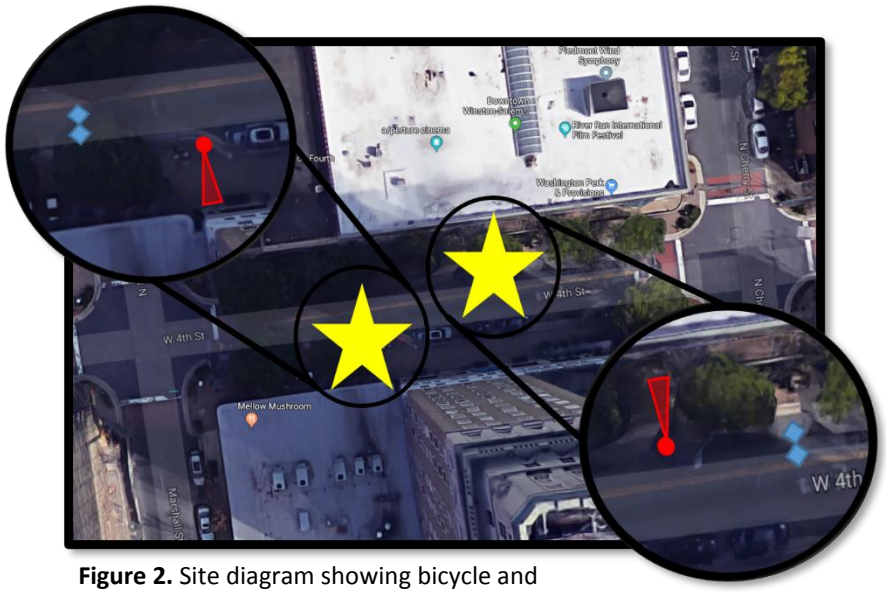

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

Summary Count Data

Over 1.3 million pedestrian counts and over 23,000 bicycle counts were recorded in the 12-month analysis period. The overall volume of non-motorized users on this facility varied from 90,000 to over 140,000 counts per month. **Table 2** is a summary of statistics for both bicyclist and pedestrian count data. Correction factors were applied to the data based on a site-specific logger validation study. **Figure 3** displays the average high and low temperatures for this community during the months of the year. This site showed some correlation between temperature and non-motorized volumes.

Table 2 Summary Volume Statistics[1] [2] [3]		
Annual Average Daily Traffic (AADT)	5,500 (NCDOT, 2015)	
Pedestrians		
	Highest Volume	**Lowest Volume**
Season	Summer	Winter
Month	August	December
Day of Week	Saturday	Monday
Date	Aug 05, 2017 (12,282)	Dec 25, 2016 (862)
Peak Period	Sat 6-10PM	
12 Month Pedestrian Count	1,354,090	
Annual Average Daily Pedestrian Traffic	3,744 AADPT	
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	Summer	Autumn
Month	May	November
Day of Week	Friday	Sunday
Date	May 29, 2017 (413)	April 23, 2017 (6)
Peak Period	Weekdays 12-3PM	
12 Month Bicycle Count	23,489	
Annual Average Daily Bicycle Traffic	64 AADBT	

(1) Note: 2 day of pedestrian data are not present in the 12-month analysis period
(2) Data has been adjusted based on correction factors
(3) Annual Average Traffic calculated using AASHTO method

Pedestrian Data

As shown in **Figure 3**, the lowest monthly volume for pedestrian traffic was recorded in December and the lowest seasonal volume was recorded in winter. The highest monthly volume was recorded in August and the highest seasonal volume was recorded in the summer. Monthly volumes exceeded 120,000 in April, May, June, August, and October. Average daily pedestrian volumes were the highest on Saturdays and the lowest on Mondays and Sundays.

Bicycle Data

The lowest seasonal volumes for bicyclists are recorded in during the autumn months and the highest in the summer, also shown in **Figure 3**. The highest monthly volume was recorded in May; a popular professional bicycle race and festival during the last weekend of May likely increased overall monthly volume. Bicyclist volumes were the highest on Fridays and the lowest on Sundays.

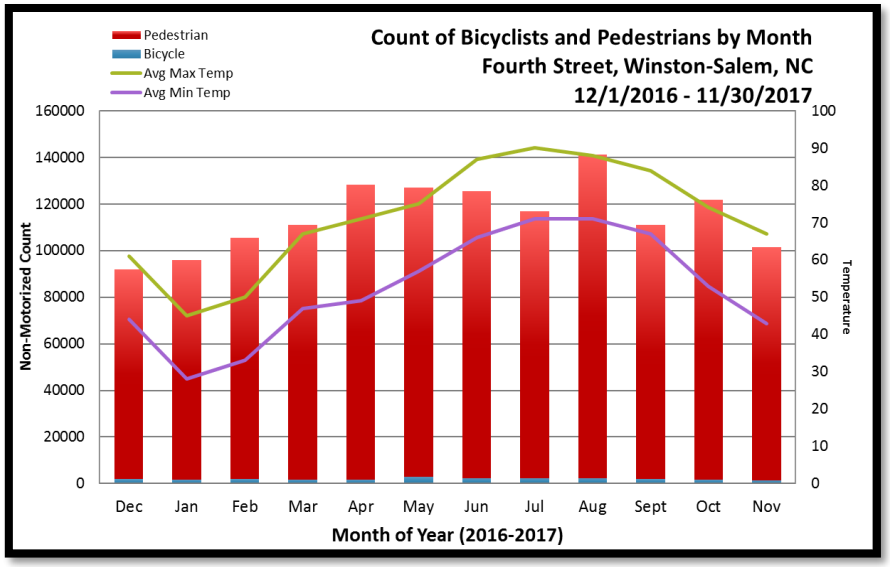

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Table 3 shows average pedestrian activity by day of week. The highest average daily pedestrian volumes were recorded on Saturdays, followed by Fridays. The lowest were recorded on Mondays, averaging around 400 less than the next lowest day, Tuesdays. On average, 3,742 pedestrian counts are recorded at the site each day.

Table 4 shows the pedestrian pattern observed at this site by hour of day and by day of week. The highest counts occur on the Saturday, beginning 5PM, peaking at 7PM, and continuing until 1AM Sunday morning. Similarly, high hourly counts were recorded on Friday from 6PM to 10PM. A mid-day peak at lunch time was recorded on every weekday.

Hourly pedestrian volumes are depicted graphically in **Figure 4.** The graph shows a weekday peaking pattern of an initial large midday peak at 12PM, followed by a slight decrease in volume, and a second smaller peak at 6PM. Volumes are high on weekends after 12PM, and begin decreasing at 4PM on Sundays and 8PM on Saturdays. Pedestrian activity was recorded throughout the evening into the morning indicating that this site is active at all hours of the day.

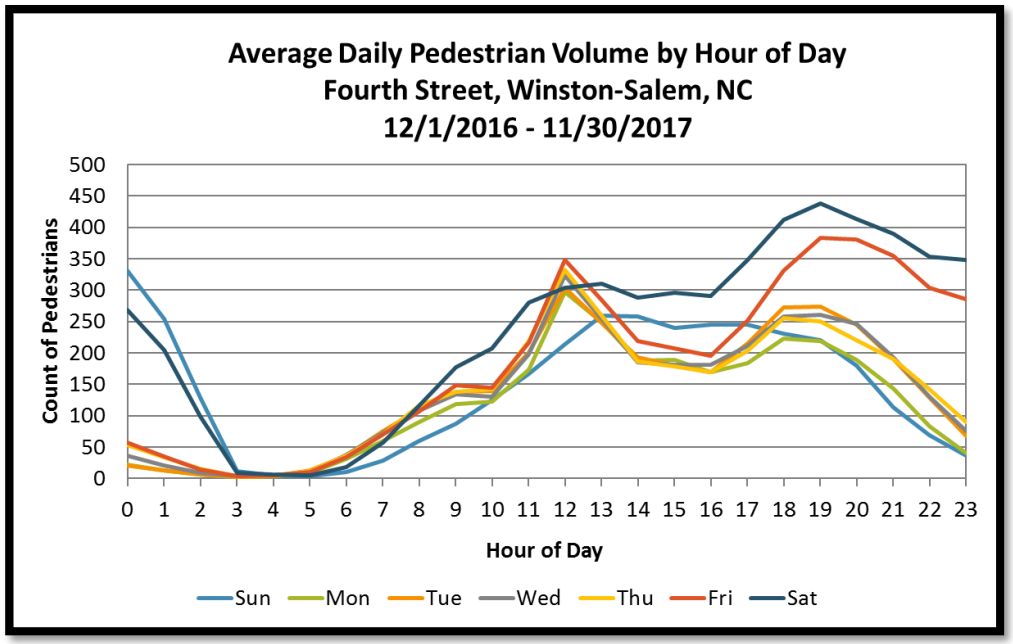

Figure 4. Average Daily Pedestrian Volumes by Hour of Day

Day of Week	Pedestrian Count
Sun	3521
Mon	2820
Tue	3245
Wed	3262
Thu	3319
Fri	4388
Sat	5638
Average	**3742**

Table 3. Average Pedestrian Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	331	22	21	37	53	57	268	112
1	255	12	13	21	33	36	205	81
2	128	6	7	9	16	14	98	39
3	12	3	3	4	4	4	9	6
4	5	4	4	5	5	6	6	5
5	3	8	12	9	11	10	5	8
6	10	32	37	38	36	33	18	29
7	29	60	75	73	70	71	58	62
8	60	90	109	108	116	106	115	101
9	87	118	138	135	138	148	177	134
10	125	122	139	131	142	145	208	144
11	166	173	201	198	219	216	281	207
12	214	297	304	324	333	348	304	303
13	259	249	248	253	259	284	310	266
14	258	188	193	186	187	219	288	216
15	240	188	180	181	179	208	295	210
16	245	170	170	181	169	196	291	202
17	245	183	215	211	203	252	348	236
18	230	222	272	258	255	330	412	282
19	220	219	274	260	250	383	438	291
20	180	189	244	246	220	380	413	267
21	114	143	190	193	190	354	390	224
22	68	83	128	130	142	304	353	172
23	37	40	68	75	90	286	348	133
Avg	**147**	**118**	**135**	**136**	**138**	**183**	**235**	**155**

Table 4. Pedestrian Patterns by Day of Week and Hour of Day

Seasonal variation is shown in **Figure 5**. Activity at the site was high year-round, with weekend volumes exceeding 5000 counts per day in all seasons. The highest seasonal pedestrian volume occurred in the summer, followed closely by the spring. Pedestrian traffic was significantly lower in the winter; almost 50,000 less people passed by the site in the winter months than in the autumn months, the next lowest season.

The highest daily volume record occurred on Saturday August 5th, 2017, when over 12,000 pedestrians were recorded going by the count station. This peak volume is concurrent with the National Black Theatre Festival.

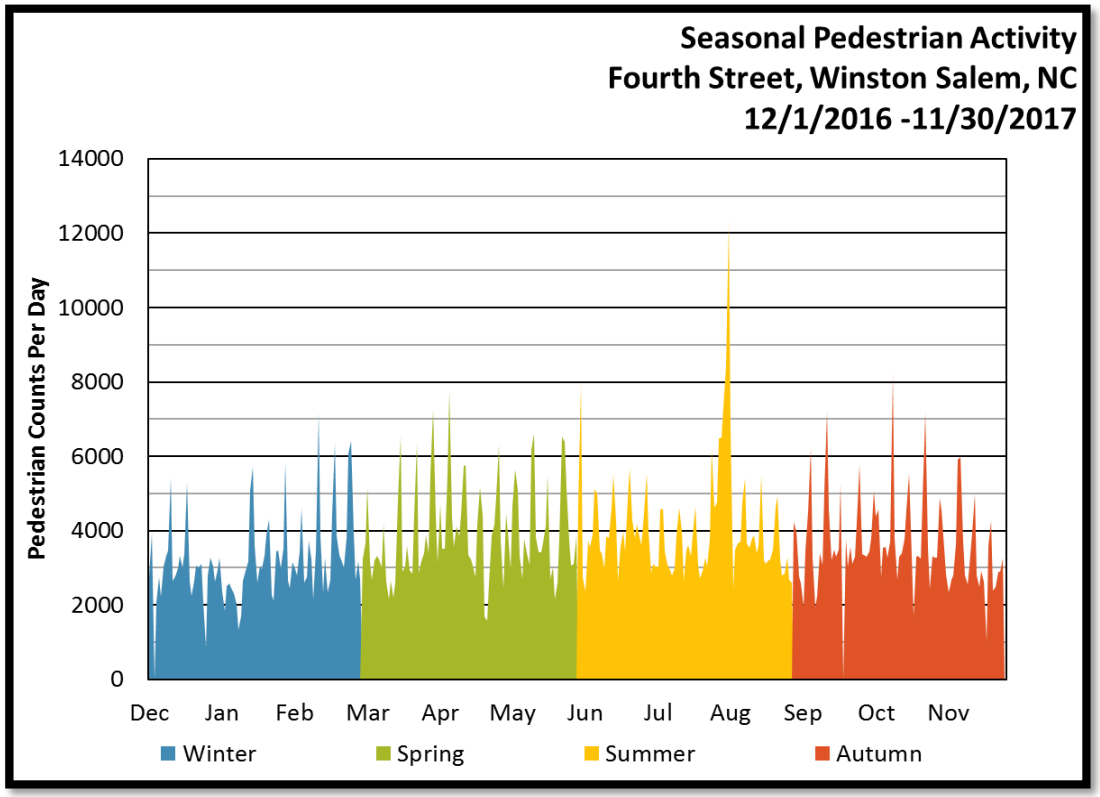

Figure 5. Seasonal Pedestrian Activity

Detailed Bicycle Count Information

Table 5 shows average bicycle activity by day of week. The highest average daily volume was recorded on Fridays, followed by Thursdays. The lowest averages were recorded on Sundays. Bicycle traffic was consistently higher on weekdays than on weekends, indicating that the route may be more popular as a transportation route than a recreation route. On average, 64 bicycles were counted at the site every day.

Table 6 shows daily bicyclist patterns at the site over the course of each day. Peak bicyclist volumes occur on weekdays from approximately 11AM to 4PM when counts averaged 5 to 8 bicyclists per hour. Weekend volumes were relatively consistent during the daylight hours.

Hourly bicyclist volumes at this site are depicted graphically in **Figure 6.** The graph shows a large mid-day peaking pattern occurring on all weekdays. Weekend bicycle activity begins around 6AM, slowly increased until mid-day, then decreased until about 2AM. Bicycle activity occurred into the evening on all days and decreased to zero counts per hour from 3AM until 6AM.

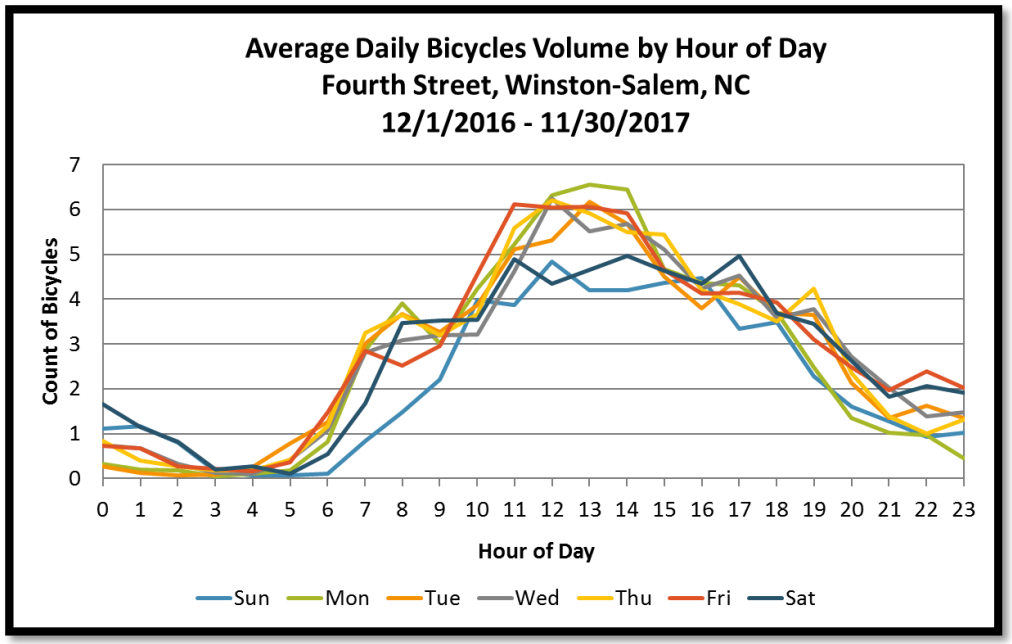

Figure 6. Average Daily Bicycle Volume by Hour of Day

Day of Week	Bicycle Count
Sun	52
Mon	64
Tue	66
Wed	67
Thu	68
Fri	70
Sat	65
Average	**64**

Table 5. Average Bicyclist Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	1	0	0	1	1	1	2	1
1	1	0	0	1	0	1	1	1
2	1	0	0	0	0	0	1	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	1	0	0	0	0	0
6	0	1	1	1	1	1	1	1
7	1	3	3	3	3	3	2	2
8	1	4	4	3	4	3	3	3
9	2	3	3	3	3	3	4	3
10	4	4	4	3	4	5	4	4
11	4	5	5	5	6	6	5	5
12	5	6	5	6	6	6	4	6
13	4	7	6	6	6	6	5	6
14	4	6	6	6	5	6	5	5
15	4	5	5	5	5	5	5	5
16	4	4	4	4	4	4	4	4
17	3	4	4	5	4	4	5	4
18	3	4	4	4	4	4	4	4
19	2	2	4	4	4	3	3	3
20	2	1	2	3	2	2	3	2
21	1	1	1	2	1	2	2	2
22	1	1	2	1	1	2	2	1
23	1	0	1	1	1	2	2	1
Avg	**2**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

Table 6. Bicyclist Patterns by Day of Week and Hour of Day

Seasonal variation at the site is shown in **Figure 7**. The highest consistent bicyclist volumes occur during the summer months, with August experiencing the highest volume in a single month. Autumn had the lowest amount of bicycle traffic as volumes lowered as the weather got colder. Weekday volumes exceed 75 bicycles per day in all seasons.

On Monday May 28, 2016 over 400 bicycle counts were recorded, with high hourly counts occurring in the morning. An explanation for this peak is the Winston-Salem Cycling Classic, a professional cycling event. The day prior and day following the event also saw high numbers of cycling, with approximately 150 bicycle counts each. These volumes are likely due to the celebrations surrounding the cycling event, an increase in recreation rides, and the competitors training.

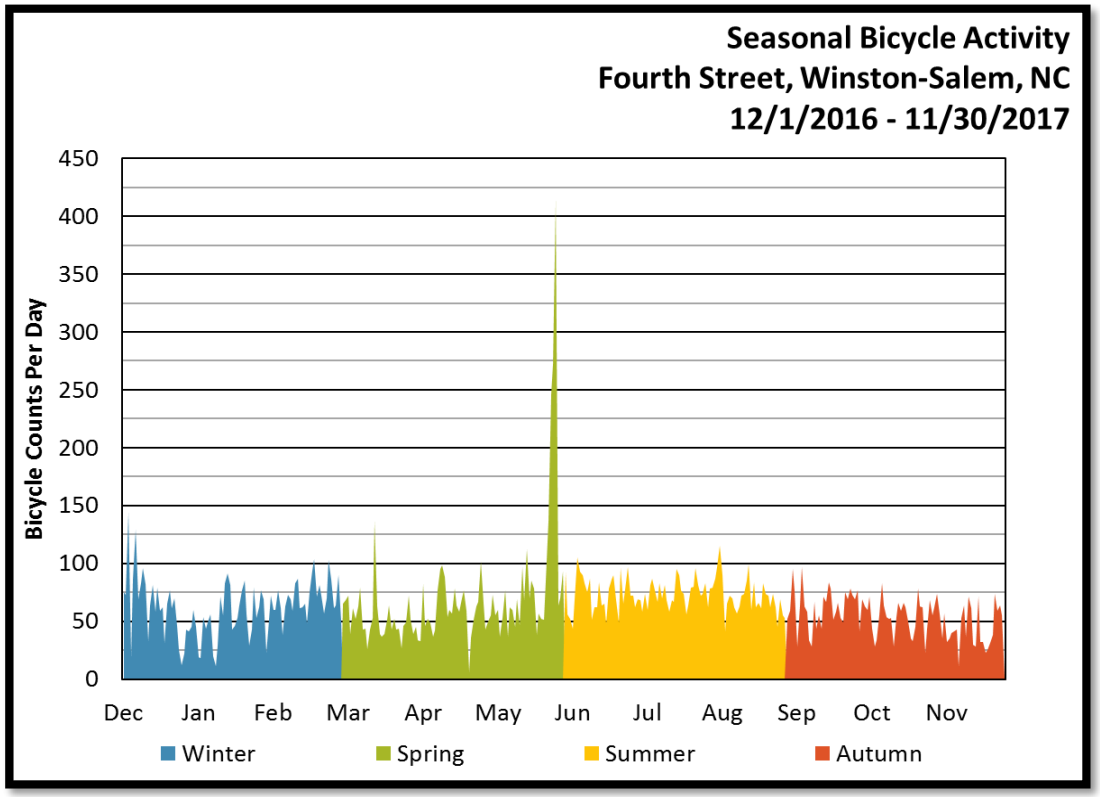

Figure 7. Seasonal Bicycle Activity

WEST END BOULEVARD – WINSTON-SALEM, NC

Table 1 Site Description	
Active Since	November 14, 2014
Pedestrian Travel Pattern	Urban Mixed
Pedestrian Volume Group	Low
Bicyclist Travel Pattern	Urban Mixed
Bicyclist Volume Group	Low
Station Location Coordinates	W- N36.10050 W80.26083 E - N36.10020 W80.26087
Station Name / ID	W-S_END / 330005
Directional Distribution	
West Side	*East Side*
Pedestrians on Sidewalk (88%)	Pedestrians on Sidewalk (12%)
SB Bicyclists in Roadway (58%)	NB Bicyclists in Roadway (42%)

SITE OVERVIEW

A continuous count station was installed on West End Blvd in Winston-Salem, NC between Pilot View St and Brookstown Ave. This site is located adjacent to Hanes Park and is located near a node of neighborhood businesses. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 1.**

Figure 2 is a site diagram that shows equipment placement for the two count sites that comprise the station. Bicyclists in the roadway are detected by a set of two inductive loops positioned to the rightmost side of the path (indicated as blue diamonds) and pedestrians are detected by an infrared sensor (indicated with a red triangle) on the sidewalk.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions or missing data, 9 days of pedestrian data are not present in the 12-month analysis period.

Figure 1. Continuous Count Station Installation West (Left) and East (Right)

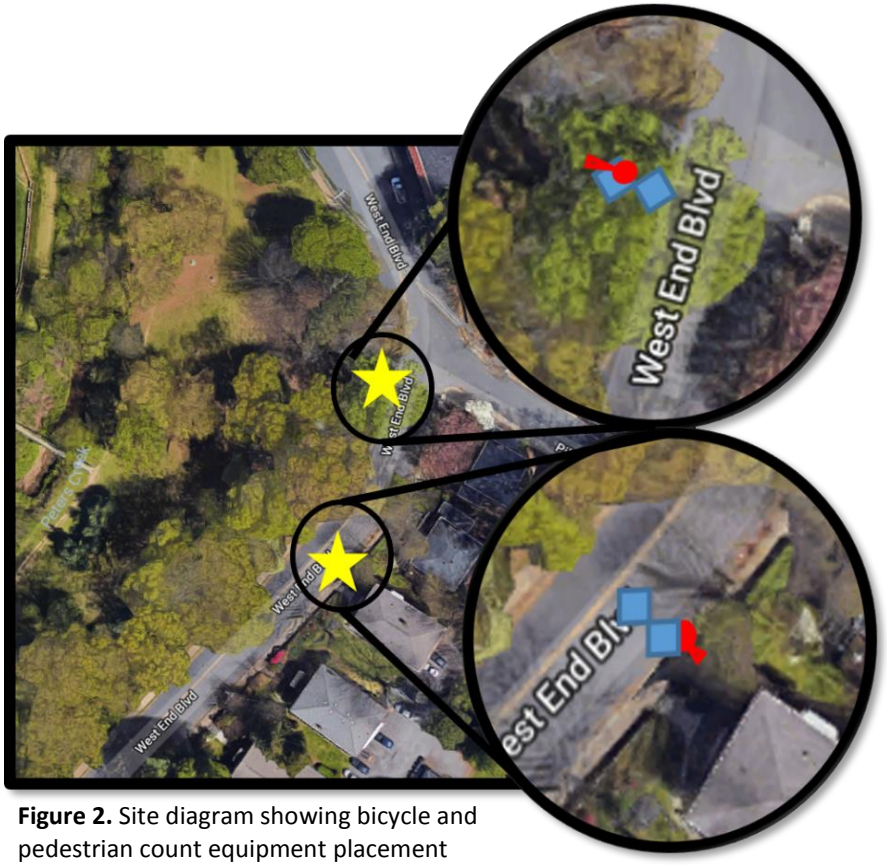

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

Summary Count Data

Over 120,000 pedestrian counts and nearly 10,000 bicycle counts were recorded during the 12 month analysis period. The overall volume of non-motorized users on this facility varies from 8,000 to over 13,000 counts per month. **Table 2** is a summary of statistics for both bicyclist and pedestrian count data. Correction factors were applied to the data based on a site-specific logger validation study. **Figure 3** displays the average high and low temperatures for this community during the months of the year.

Table 2 Summary Volume Statistics (1) (2) (3)

Annual Average Daily Traffic (AADT)		12,000 (NCDOT, 2015)
Pedestrians		
	Highest Volume	**Lowest Volume**
Season	Spring	Winter
Month	May	January
Day of Week	Tuesday	Friday
Date	Dec 03, 2016 (2044)	Jan 09, 2017 (40)
Peak Period		Mon-Thur 5-7PM, Sat 7-11AM
12 Month Pedestrian Count		123,892
Annual Average Daily Pedestrian Traffic		349 AADPT
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	Summer	Winter
Month	July	December, January
Day of Week	Wednesday	Sunday
Date	May 27, 2017 (54)	Jan 08, 2017 (1)
Peak Period		Sun 3-5PM, Weekdays 5-7PM
12 Month Bicycle Count		9,307
Annual Average Daily Bicycle Traffic		26 AADBT

(1) Note: 9 days of pedestrian data are not present in the 12-month analysis period
(2) Data has been adjusted based on correction factors
(3) Annual Average Traffic Calculated using AASHTO method

Pedestrian Data

The lowest volumes for pedestrians were recorded in January and December when the weather was colder, as shown in **Figure 3**. The most traffic was recorded during the spring months, and the least in the winter months. May was the month with the highest volume. Average daily pedestrian volumes were highest on Tuesdays and lowest on Fridays.

Bicycle Data

Also shown in **Figure 3**, December and January were tied as the months with the least amount of bicycle traffic. The summer season had the highest overall seasonal volume, and the highest monthly volume was recorded in July. Daily average bicyclist volumes were the highest on Wednesdays and the lowest on Sundays.

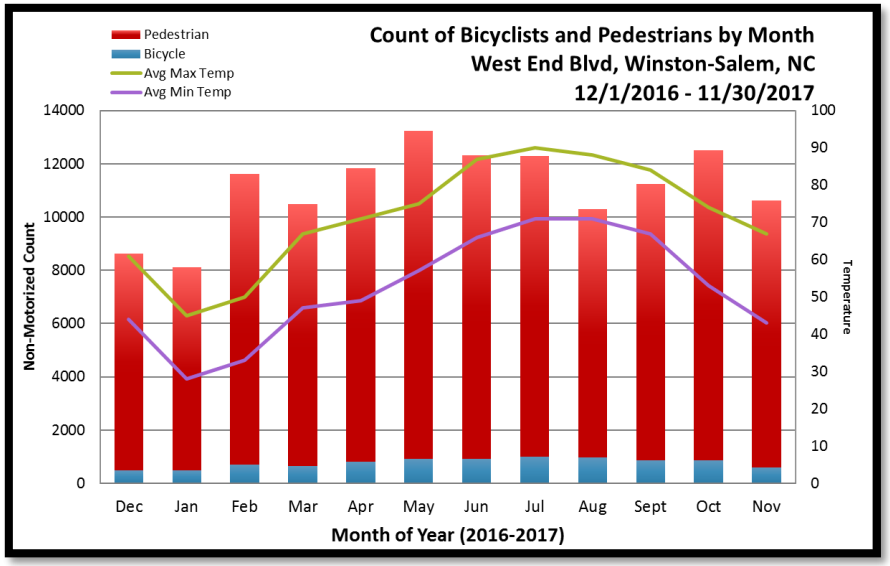

Figure 3. Non-Motorized Counts by Month and Temperature

Detailed Pedestrian Count Information

Table 3 shows average pedestrian activity by day of week. The highest average daily count was on Tuesdays and Saturdays, although Saturdays' average was skewed by the Mistletoe Marathon. Fridays had the lowest average, followed by Sundays. On average, 348 pedestrian counts were recorded at the site each day.

Table 4 shows the pedestrian pattern observed at this site by hour of day and by day of week. The highest volume of weekday traffic occurred from 4PM to 8PM on Mondays through Thursdays. This weekday activity is likely the result of people leaving their workplaces to travel to their vehicles or restaurants and after work recreation activities. Another peak occurred on Saturday mornings from 7AM to 12PM. Pedestrian counts were higher than 30 pedestrians per hour during these peak periods, and reach as high as 63 pedestrians per hour.

Hourly pedestrian volumes are depicted graphically in **Figure 4.** The figure demonstrates steady weekday use with evening peaking. Saturdays and Sundays differ in use patterns; Saturday peak volumes were higher and earlier in the morning than Sunday peak volumes. Pedestrian activity decreased after 10PM and increased again after 5AM.

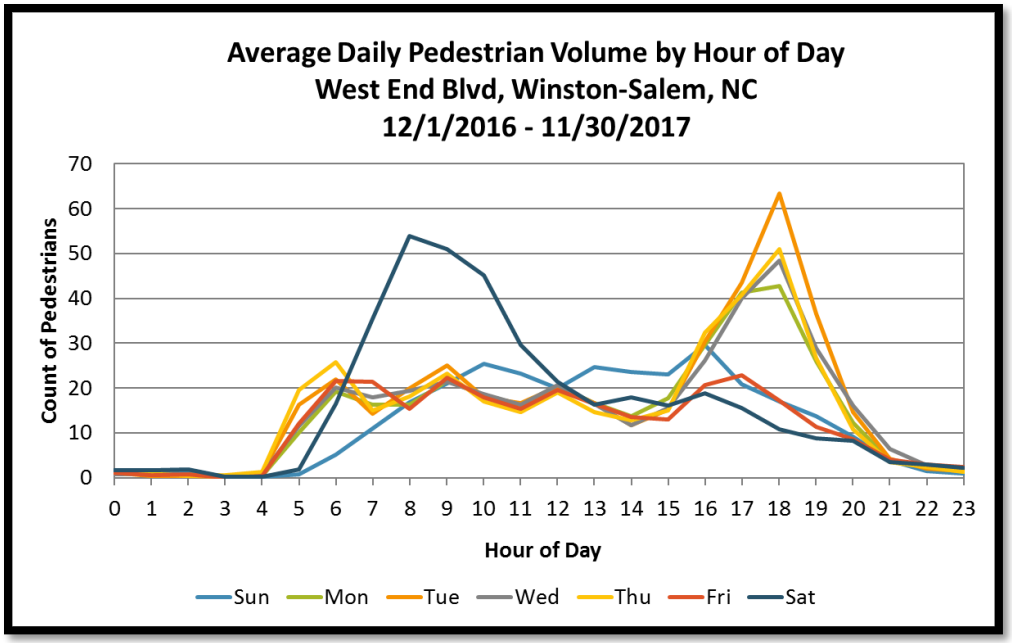

Figure 4. Average Daily Pedestrian Volumes by Hour of Day

Day of Week	Pedestrian Count
Sun	295
Mon	350
Tue	396
Wed	365
Thu	368
Fri	282
Sat	382
Average	**348**

Table 3. Average Pedestrian Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	1	1	1	1	2	1	2	1
1	2	1	0	1	1	1	2	1
2	1	1	0	1	0	1	2	1
3	0	0	0	0	1	0	0	0
4	0	0	1	1	1	0	0	1
5	1	10	16	12	20	12	2	10
6	5	19	22	20	26	22	17	19
7	11	16	14	18	15	21	36	19
8	17	16	20	19	18	15	54	23
9	21	22	25	21	23	22	51	26
10	25	19	18	19	17	18	45	23
11	23	16	17	16	15	15	30	19
12	20	20	20	21	19	20	21	20
13	25	17	17	17	15	17	16	17
14	24	14	12	12	13	14	18	15
15	23	18	15	15	15	13	16	17
16	30	30	30	26	32	21	19	27
17	21	41	44	40	41	23	16	32
18	17	43	63	48	51	17	11	36
19	14	26	37	29	27	11	9	22
20	9	12	15	16	11	9	8	11
21	4	4	4	6	3	4	3	4
22	1	3	2	3	2	3	3	2
23	1	2	2	2	1	2	2	2
Avg	**12**	**15**	**16**	**15**	**15**	**12**	**16**	**15**

Table 4. Pedestrian Patterns by Day of Week and Hour of Day

Seasonal variation is shown in **Figure 5**. The highest seasonal pedestrian volumes were recorded during the spring, with similar values in the autumn and summer. The winter season had approximately 5,000 less pedestrians counted by the station compared to the traffic during the summer.

December 3rd, 2016 had a record number of pedestrians due to the Mistletoe Half Marathon, 5K and fun run. Volumes on this day peaked at over 2,000 counts.

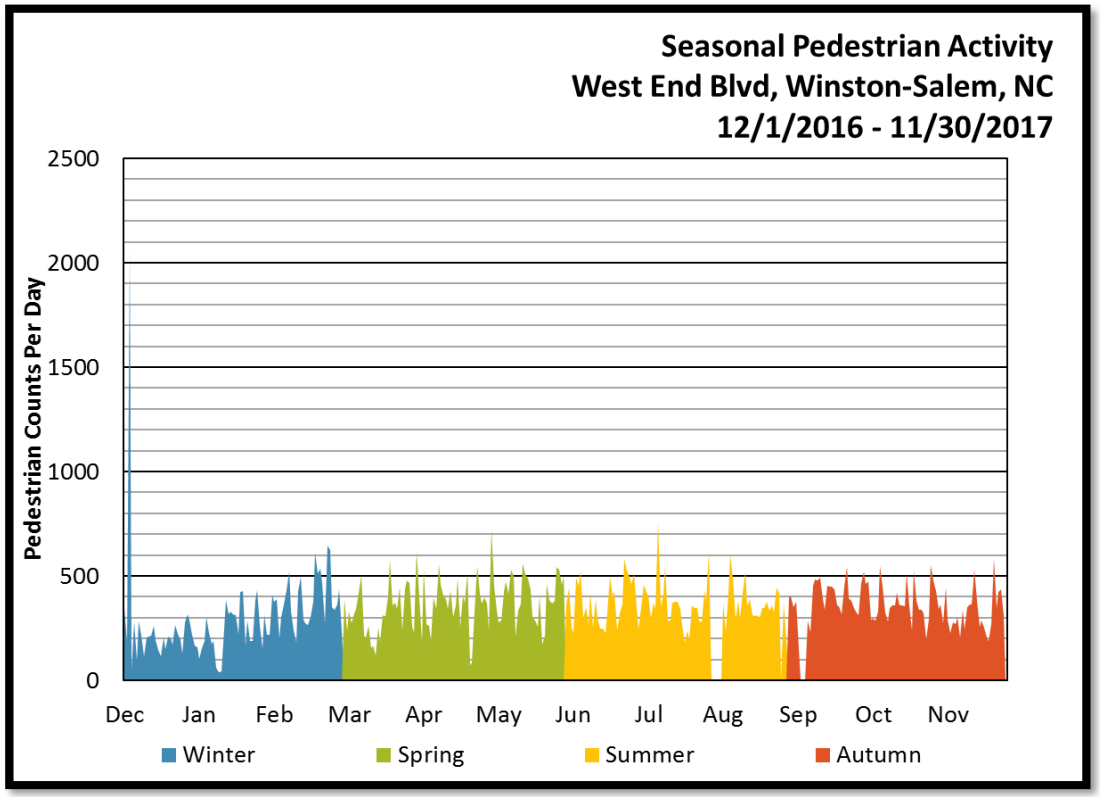

Figure 5. Seasonal Pedestrian Activity

Detailed Bicycle Count Information

Table 5 shows average bicycle activity by day of week. Wednesdays had the highest count at an average of 27 bicycles per day. The lowest daily average was recorded on Sundays. Daily averages only varied by 3 bicycles a day, showing that volumes were consistent throughout the week. On average, 25 bicycles were counted at the site each day.

Table 6 shows daily bicyclist patterns at the site over the course of each day. Peak bicyclist volumes occur on weekday evenings from 4PM to 7PM when counts reached about 3 bicycles per hour. Sunday peak volumes occurred from 3PM to 5PM.

Hourly bicyclist volumes at this site are depicted graphically in **Figure 6.** The figure shows volumes that increased throughout the weekday and peaked in the early evening. A smaller daily peak also occurred from 6AM to 7AM. Weekend traffic started around 6AM and steadily rose until it peaked in the afternoon. Bicycle activity tapers off by 8PM on all days of the week. Overall bicycle volumes were low at this site.

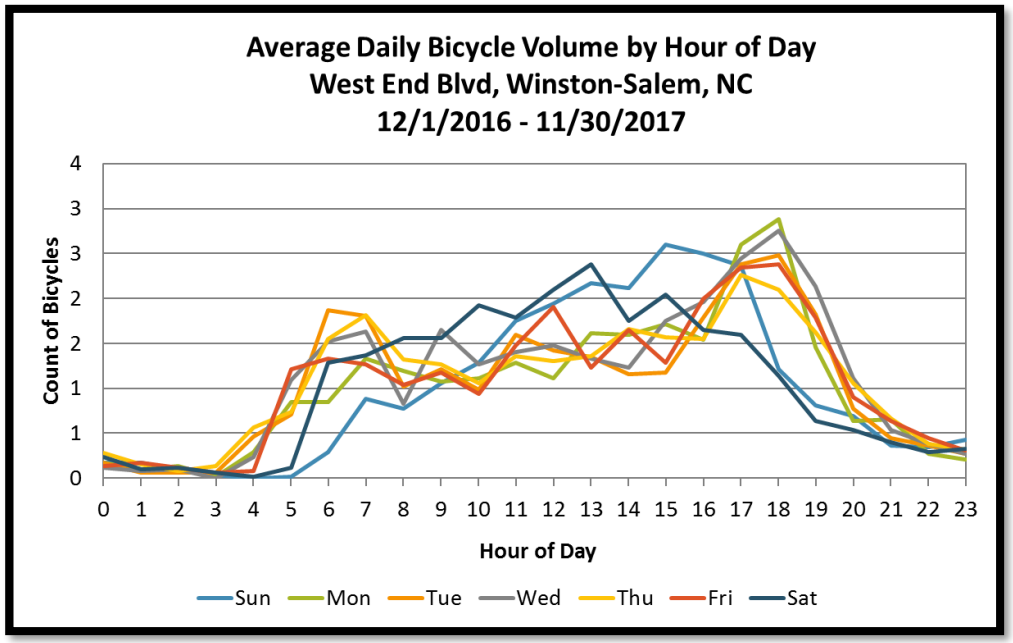

Figure 6. Average Daily Bicycle Volume by Hour of Day

Day of Week	Bicycle Count
Sun	24
Mon	25
Tue	25
Wed	27
Thu	26
Fri	26
Sat	25
Average	**25**

Table 5. Average Bicyclist Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	1	0	0	0
5	0	1	1	1	1	1	0	1
6	0	1	2	2	2	1	1	1
7	1	1	2	2	2	1	1	1
8	1	1	1	1	1	1	2	1
9	1	1	1	2	1	1	2	1
10	1	1	1	1	1	1	2	1
11	2	1	2	1	1	1	2	2
12	2	1	1	1	1	2	2	2
13	2	2	1	1	1	1	2	2
14	2	2	1	1	2	2	2	2
15	3	2	1	2	2	1	2	2
16	3	2	2	2	2	2	2	2
17	2	3	2	2	2	2	2	2
18	1	3	2	3	2	2	1	2
19	1	1	2	2	2	2	1	1
20	1	1	1	1	1	1	1	1
21	0	1	0	1	1	1	0	1
22	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0
Avg	1	1	1	1	1	1	1	1

Table 6. Bicyclist Patterns by Day of Week and Hour of Day

Seasonal variation at the site is shown in **Figure 7**. The highest seasonal bicyclist volumes occurred during the summer months. There were over 800 bicycles a month from April through October, with over 1000 bicycles in July. The lowest was winter, likely because of the cold weather. January and December both had under 500 bicycles counted by the station.

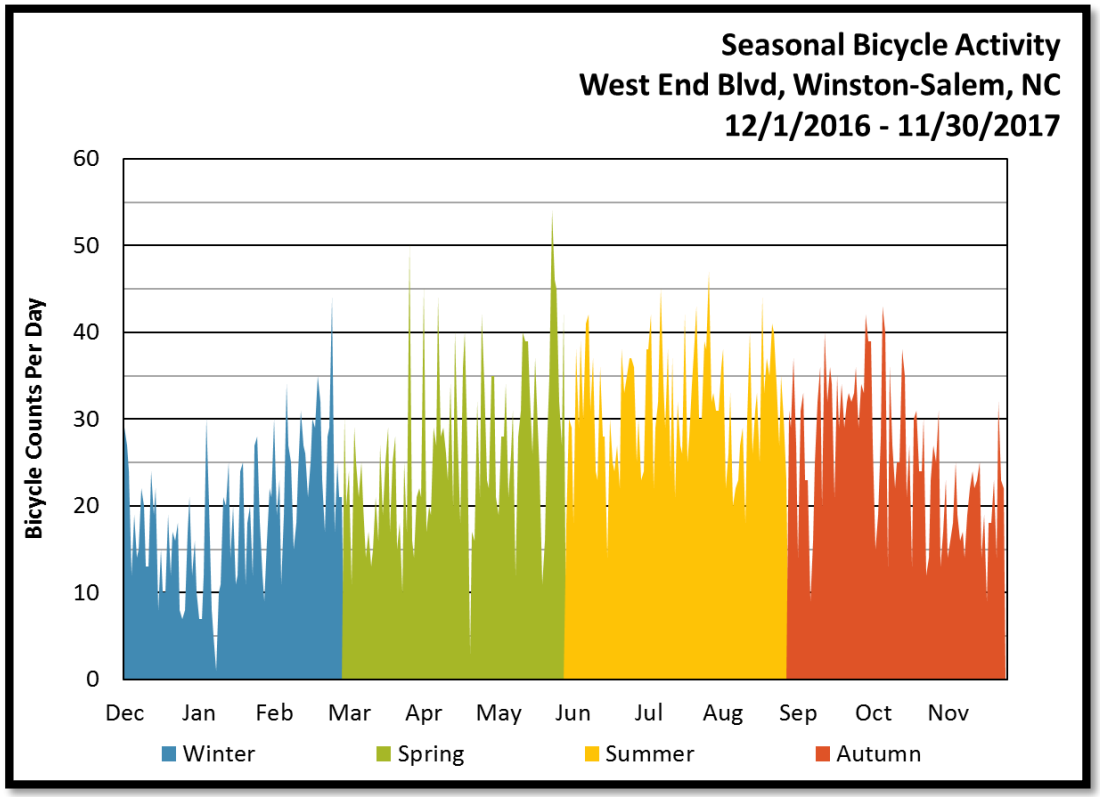

Figure 7. Seasonal Bicycle Activity

SALEM LAKE GREENWAY – WINSTON-SALEM, NC

Table 1 Site Description	
Active Since	October 16, 2014
Pedestrian Travel Pattern	Rural Recreation
Pedestrian Volume Group	Low
Bicyclist Travel Pattern	Rural Recreation
Bicyclist Volume Group	Medium
Station Location Coordinates	N36.09288 W080.19205
Station Name / ID	W-S_SLG /330004
Directional Distribution	
Westbound	*Eastbound*
Pedestrians (48%)	Pedestrians (52%)
Bicyclists (56%)	Bicyclists (44%)

SITE OVERVIEW

A continuous count station was installed on the Salem Lake Greenway in Winston-Salem, NC east of a parking lot on Salem Lake Rd. This unpaved trail circles Salem Lake and connects to the paved Salem Creek Greenway, Winston-Salem's longest paved trail, which extends six miles west of the Lake. **Table 1** contains information related to the site and photographs of the completed site installation are shown in **Figure 1.**

Figure 2 is a site diagram that shows equipment placement for the count station that comprises the site. Bicyclists on the greenway are detected by a set of two inductive loops positioned in the path (indicated as blue diamonds) and pedestrians are detected by an infrared sensor (indicated with a red triangle) mounted in a post.

ANALYSIS PERIOD

Data analyzed for this station includes the period from December 1, 2016 through November 30, 2017. This range was selected based on available data and reporting by season. Data is broken out into seasonal groupings: Dec-Feb as winter, Mar-May as spring, Jun-Aug as summer, and Sep-Nov as autumn. Specific graphs showing seasonal bicycle and pedestrian activity are covered under the detailed information outlined later in this report. Due to equipment errors or malfunctions or missing data 16 days of pedestrian and bicycle data are not present in the 12-month analysis period.

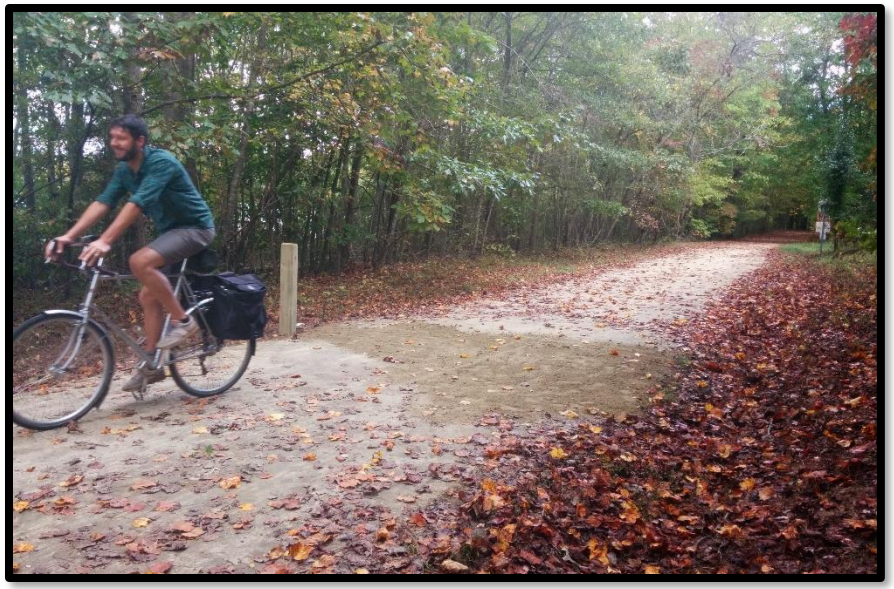

Figure 1. Continuous count Station Installation

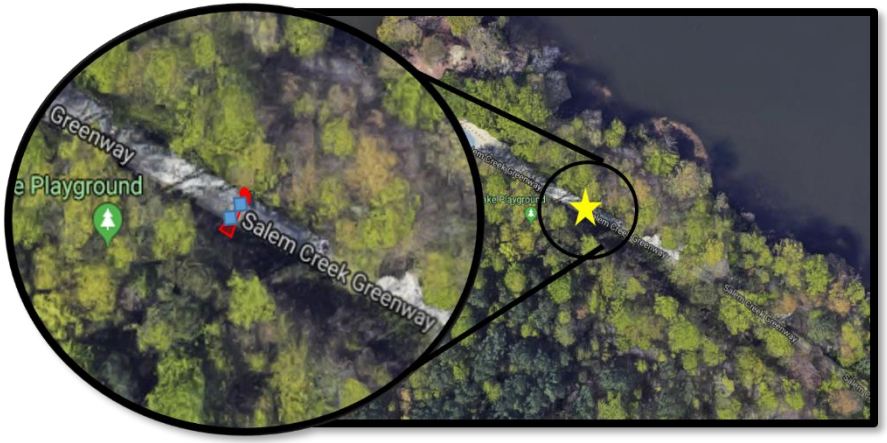

Figure 2. Site diagram showing bicycle and pedestrian count equipment placement

Summary Count Data

Almost 140,000 pedestrian counts and over 55,000 bicycle counts were recorded in the 12-month analysis period. The overall volume of non-motorized users on this facility varies from just under 8,000 to over 24,000 counts per month. **Table 2** is a summary of statistics for both bicyclist and pedestrian count data. Correction factors have been applied to the data based on a site-specific logger validation study. **Figure 3** displays the average high and low temperatures for this community during the months of the year. This site shows some correlation between temperature and non-motorized volumes. Due to missing data, November is excluded from the analysis for both bicycles and pedestrians.

Table 2 Summary Volume Statistics (1) (2) (3)

Pedestrians		
	Highest Volume	**Lowest Volume**
Season	Summer	Winter
Month	September	December
Day of Week	Sunday, Saturday	Thursday
Date	Feb 12, 2017 (1700)	Jan 09, 2017 (4)
Peak Period		Sat 8AM-10AM
12 Month Pedestrian Count		139,596
Annual Average Daily Pedestrian Traffic		395 AADPT
Bicyclists		
	Highest Volume	**Lowest Volume**
Season	Summer	Winter
Month	July	January
Day of Week	Sunday	Friday
Date	July 30,2017 (600)	Jan 10, 2017 (0)
Peak Period		Sun 10AM-5PM
12 Month Bicycle Count		56,539
Annual Average Daily Bicycle Traffic		160 AADBT

(1) Note: 16 days of pedestrian and bicycle data are not present in the 12-month analysis period
(2) Data has been adjusted based on correction factors
(3) Annual Average Traffic calculated using AASHTO method

Pedestrian Data

The lowest monthly volumes for pedestrians were recorded in December and January, as shown in **Figure 3**. This significant decrease in pedestrian volumes is likely due to cold weather during the winter months. The highest monthly pedestrian volumes were recorded in September and July; monthly counts exceeded 16,000 pedestrians during these months. Pedestrian volumes were highest on the weekends and lowest on Thursdays.

Bicycle Data

The lowest volumes for bicyclists were recorded in during the winter months January and December, also shown in **Figure 3**. The highest monthly volumes were recorded June through September; over 6,000 bicyclists were recorded at the site during each month. Bicyclist volumes were highest on Sundays. Weekend traffic peaked from 10AM to 5PM; weekdays peaked around 6PM. The lowest average daily bicycle volumes were recorded on Thursdays.

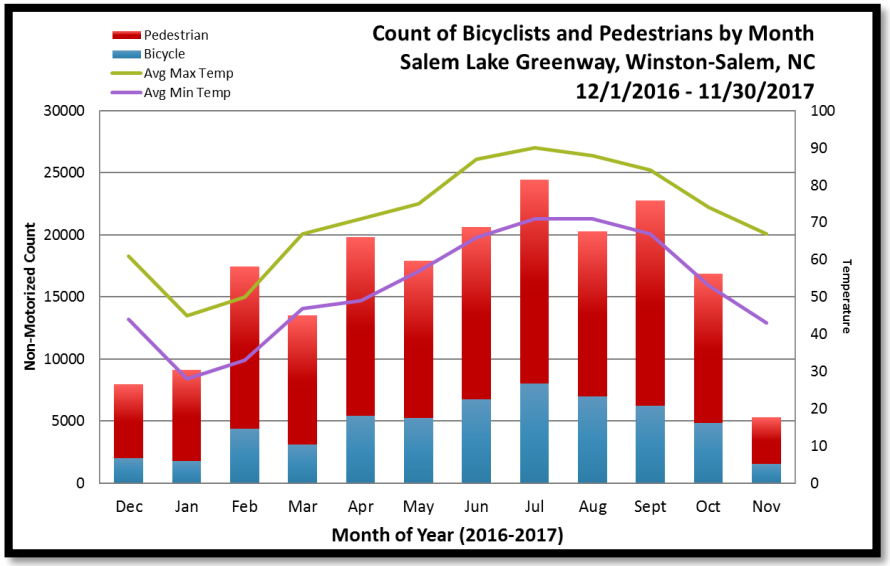

Figure 3. Non-Motorized counts by Month and Temperature

Detailed Pedestrian Count Information

Table 3 shows average pedestrian activity by day of week. The highest average daily volumes were recorded on Sundays and Saturdays with almost 750 pedestrians a day. The lowest average was on Thursdays. The weekend volumes were significantly higher than the weekend traffic. On average, 400 pedestrians were counted at the site each day.

Table 4 shows the pedestrian pattern observed at this site by hour of day and by day of week. The highest counts occurred on the weekend, beginning around 8AM and continuing through 6PM on Sundays and from 7AM to 5PM on Saturdays. Hourly averages of over 65 pedestrian counts per hour occurred during this weekend peak period, likely related to recreational activity. During the week, Wednesdays had the highest average at approximately 8AM with nearly 40 pedestrian counts per hour. The highest hourly averages occurred on Saturdays from 8AM until 10AM.

Hourly pedestrian volumes are depicted graphically in **Figure 4.** The figure shows the weekend volumes peaking in morning hours on Saturday and Sunday mornings, then decrease until 8PM. Weekdays had an average of about 20 from 9AM until 4PM, when it rose to a small evening peak of around 25 pedestrians an hour. No pedestrian activity occurs between 10PM and 6AM when the sun is down and the Salem Lake Park is closed.

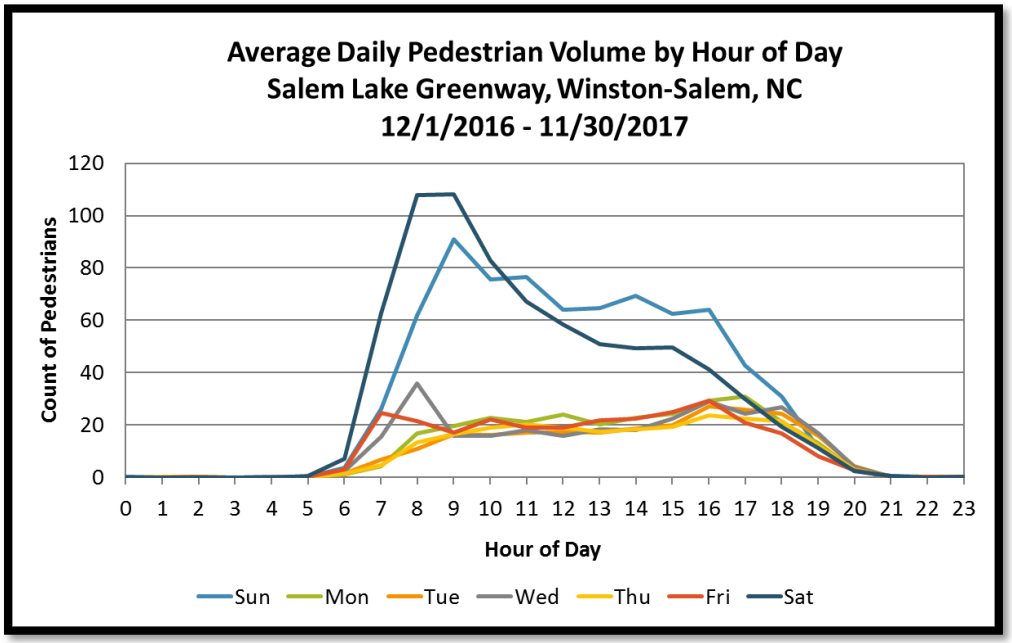

Figure 4. Average Daily Pedestrian Volumes by Hour of Day

Day of Week	Pedestrian Count
Sun	749
Mon	274
Tue	240
Wed	280
Thu	232
Fri	274
Sat	749
Average	**400**

Table 3. Average Pedestrian Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	4	1	1	2	1	3	7	3
7	26	4	7	16	5	25	63	21
8	62	17	11	36	13	21	108	38
9	91	20	17	16	16	17	108	41
10	76	23	16	16	19	22	83	36
11	77	21	17	18	20	19	67	34
12	64	24	17	16	19	19	58	31
13	65	20	17	18	17	22	51	30
14	69	23	19	18	18	23	49	31
15	63	24	20	22	19	25	50	32
16	64	29	27	29	24	29	41	35
17	43	31	26	24	23	21	30	28
18	31	21	24	27	21	17	19	23
19	11	13	16	17	12	8	11	13
20	3	3	4	4	3	3	2	3
21	1	0	0	0	0	0	1	0
22	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0
Avg	31	11	10	12	10	11	31	17

Table 4. Pedestrian Patterns by Day of Week and Hour of day

Seasonal variation is shown in **Figure 5**. The highest pedestrian volumes occurred during the summer months. Winter had the lowest overall traffic, but had spikes of activity throughout the season. Pedestrian volumes exceeded 1000 counts per day at least once every season.

The highest recorded amount of pedestrian traffic was February 12th, 2017, when 1700 pedestrians were recorded. This is likely due to the weather being a lot warmer than what is usual in February.

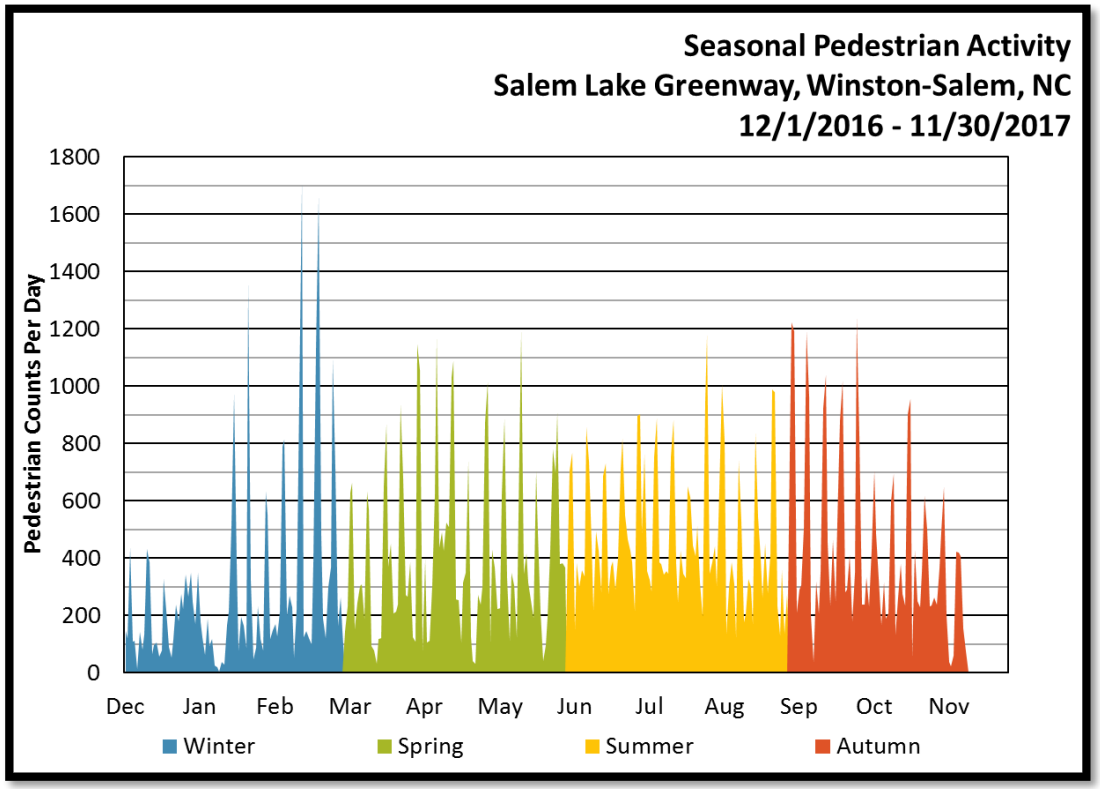

Figure 5. Seasonal Pedestrian Activity

Detailed Bicycle Count Information

Table 5 shows average bicycle activity by day of week. The highest average daily volumes occurred on Sundays with over 280 bicycles a day and the lowest occurred on Thursdays. The weekends had significantly higher volumes compared to weekdays, this is likely due to the trail being largely used for recreation. On average, 162 bicycles were counted at the site each day.

Table 6 shows daily bicyclist patterns at the site over the course of each day. Peak bicyclist volumes occurred on the weekends from 10AM to 5PM when average hourly counts regularly exceeded 30 bicycles per hour on Sundays and around 25 an hour on Saturday. A small peak occurred on weekday evenings around 6PM when average hourly counts was about 19 bicyclists per hour on Tuesdays, Wednesdays, and Thursdays.

Hourly bicyclist volumes at this site are depicted graphically in **Figure 6.** The figure shows the weekday peaks occurring in the evening hours. On the weekends, bicycle activity peaked around 11AM and again at around 3PM. Bicycle activity did not occur between the hours of 9PM and 6AM when Salem Lake Park is closed.

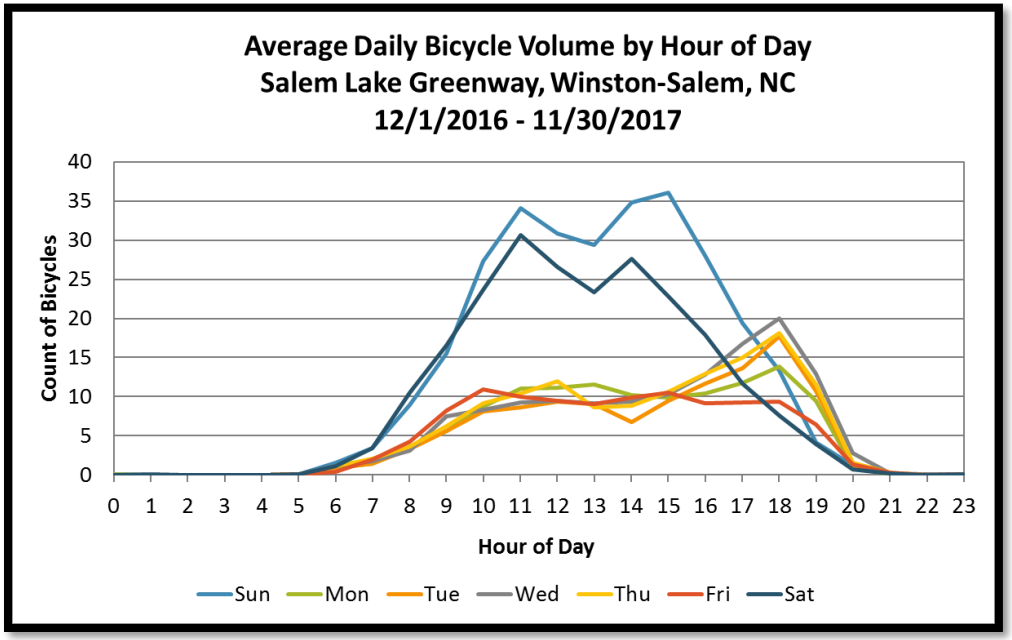

Figure 6. Average Daily Bicycle Volume by Hour of Day

Day of Week	Bicycle Count
Sun	288
Mon	121
Tue	118
Wed	135
Thu	132
Fri	111
Sat	228
Average	**162**

Table 5. Average Bicyclist Count by Day of Week

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Avg
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	2	1	1	1	1	0	1	1
7	3	1	1	2	2	2	3	2
8	9	4	3	3	4	4	11	5
9	16	6	6	7	6	8	17	9
10	27	9	8	8	9	11	24	14
11	34	11	9	9	10	10	31	16
12	31	11	9	9	12	9	27	16
13	29	12	9	9	9	9	23	14
14	35	10	7	9	9	10	28	15
15	36	10	10	10	11	11	23	16
16	28	10	12	13	13	9	18	15
17	19	12	14	17	15	9	12	14
18	13	14	18	20	18	9	8	14
19	4	9	11	13	12	6	4	8
20	1	1	2	3	2	1	1	1
21	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0
Avg	12	5	5	6	6	5	10	7

Table 6. Bicyclist Patterns by Day of Week and Hour of Day

Seasonal variation at the site is shown in **Figure 7**. The highest bicyclist volumes occurred during the summer months, and the lowest in the winter. Weekend bicycle volumes exceeded 300 bicycles per day in all seasons. The record high bicycle count of 600 bicycles occurred on July 30, 2017.

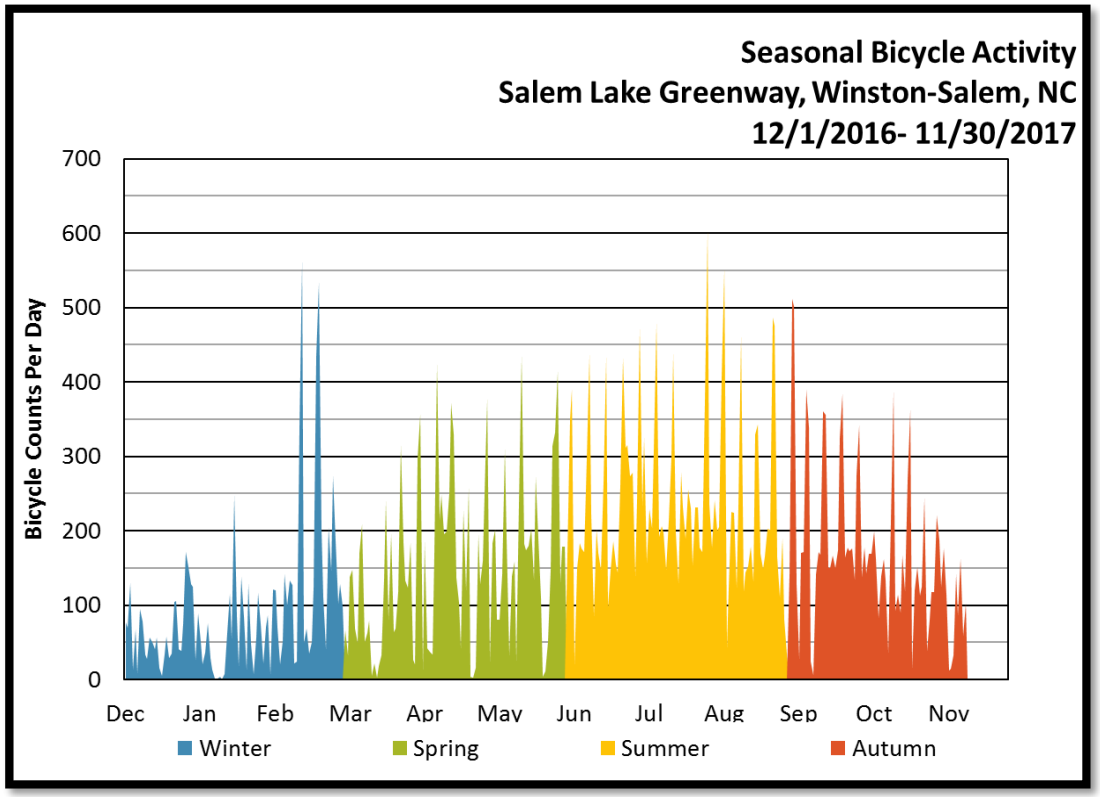

Figure 7. Seasonal Bicycle Activity