

Evaluating the **ECONOMIC IMPACT**

of Shared Use Paths
in North Carolina



NOVEMBER
2017

TECHNICAL MEMORANDUM: LITTLE SUGAR CREEK GREENWAY YEAR TWO



Division of
Bicycle &
Pedestrian
Transportation

Acknowledgements

Prepared by:

Institute for Transportation Research and Education (ITRE)

Alta Planning and Design

Prepared for:

North Carolina Department of Transportation

November 2017

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1. BACKGROUND

Historically, North Carolina has been known as the “Good Roads State,” due to the high quality and connectivity of its state roads system. There is a movement stirring to add a new moniker to North Carolina’s accolades by positioning itself as the “Great Trails State.” This project quantifies the economic contribution that these trails provide through outdoor recreation and transportation options and how these activities may impact local and state economies through tourism, events, urban redevelopment, community improvement, property values, health care savings, jobs, investment, and general consumer spending.

Currently, much of North Carolina’s overall mileage of shared use paths (SUPs) remains in planning phases. While construction is occurring, the information gleaned through this project’s case studies will assist in the evaluation of these expenditures and may influence decisions for further investment in SUPs for the development of more extensive trails and networked systems across the state. Methodologies developed through this project will assist in easier duplication of research efforts on economic contributions as new trails are opened or expanded, and research products from this project can serve as the basis for studies of these SUPs in the future. Additionally, as similar data are consistently collected and analyzed across the state, this project allows NCDOT to ultimately pull datasets together to compare economic activity from SUPs across regions or understand statewide trends.

Little Sugar Creek Greenway in Charlotte, North Carolina is one of four SUPs under study in this project. It has been selected as one of two trails to apply the study’s methodologies to generate a cross-sectional study. The following provides a summary of findings for Little Sugar Creek Greenway.

LAND USE OVERVIEW

The Little Sugar Creek Greenway was conceived over 30 years ago, and planning began in earnest in 2003 with the adoption of a Master Plan for the greenway. Phase 1a

of the greenway was constructed in 2002, and ran from Cordelia Park approximately 0.8 miles south.

Currently, six miles of greenway exist as three unconnected segments. The northernmost segment, from Cordelia Park to Alexander Street Park on East 12th Street, is approximately one mile. The middle segment runs approximately 3.8 miles from East 7th Street to Brandywine Road. This segment has a short signed on-street connection. The northernmost segment is fragmented from the middle segment by the urban interstate loops to I-277. The southernmost existing segment goes through Huntingtowne Farms Park from Burnt Mill Road to Ramblewood Lane and is approximately 0.80 miles. There is a large distance between the Huntingtowne Farms Park segment and the southern terminus of the northern segments.

When complete, the shared use path (SUP) will include over 19 miles of spine from Cordelia Park to the South Carolina state line, and connector spurs. The greenway will tie together the cultural, social, environmental, and economic history and future opportunities of the towns and neighborhoods through which it runs and is considered a crown jewel of the Charlotte area. A study starting in 2015 will identify how to connect segments of the Little Sugar Creek Greenway across the urban interstate loops.

2. MEMORANDUM OBJECTIVES

The findings presented in this document are from research that was conducted in Year 2 of the three-year project. Little Sugar Creek Greenway is one of two SUPs that are examined in a cross-sectional study using data collected in one year (2016). This memorandum provides summary statistics for behaviors and trail usage on the 5.14 miles of the middle and northern segments of the SUP for the following topic areas:

- Transportation: baseline travel behaviors
- Physical Fitness and Health: duration and extent of active behaviors

- Economy: expenditures related to usage of the shared use path

The data collected on these categories will provide inputs for a series of models that will estimate economic benefits (such as benefits resulting from annual trail user expenditures, retail sales tax, capital and operational expenditures, and property values and property taxes), as well as health benefits, and congestion and pollution reduction benefits related to the existence of the SUP.

Counts and surveys were conducted in October 2016. Bicyclists and pedestrians using the trail were surveyed at four locations distributed across the length of the northern and middle trail segments. Due to the distance between the middle and southern trail segments, the separate southern trail segment of the Little Sugar Creek Greenway was not studied.

Information that was gathered included:

- Trail origin and destination points to derive distance and direction of travel on the trail
- Purpose of trip – exercise/recreation/sight-seeing, work/school commute, dining/shopping/errands, going to/from a cultural attraction/entertainment/leisure activity
- Trip mode – mode of arrival at the trail (e.g. auto, bike, foot, bus, other) and mode of travel on the trail (e.g. walk, run, bike, other)

- Physical activity indicators – duration of active travel, quantity of typical monthly active travel by trip purpose
- Economic activity indicators – amount spent on goods or services during trail trip
- Respondents’ living status in the area and demographic information

The research team also counted greenway users and noted additional characteristics such as:

- Type of user – bicyclist, runner, walker, other mode
- Direction of travel – north or south
- Age – adult or child
- Gender
- Group size

3. METHODS

The research team conducted counts and intercept surveys in October 2016 during thirteen daylight hours from 6:30AM-7:30PM on one weekday and one weekend day. Dates were selected to avoid special events and Fridays to remove the potential for variation in typical volumes of non-motorized traffic. Data collection was stopped, delayed, or rescheduled as required due to rain events. Figure 1 provides a map of the four locations where counts and intercept surveys were collected.

TABLE 1: DATA COLLECTION SCHEDULE AND SUMMARY STATISTICS

DAY OF WEEK	DATE	TIME PERIOD	STATION	LOCATION	2016 COUNTS	2016 SURVEYS
Tuesday	10/18/2016	6:30AM to 7:30PM	1	Meyers Street	114	46
			2	Midtown Park	1,102	216
			3	Freedom Park	708	133
			4	Ridgewood Avenue	597	148
Saturday	10/22/2016	6:30AM to 7:30PM	1	Meyers Street	130	33
			2	Midtown Park	1,347	163
			3	Freedom Park	1,173	137
			4	Ridgewood Avenue	964	144
TOTALS					6,135	1,020



USER COUNTS

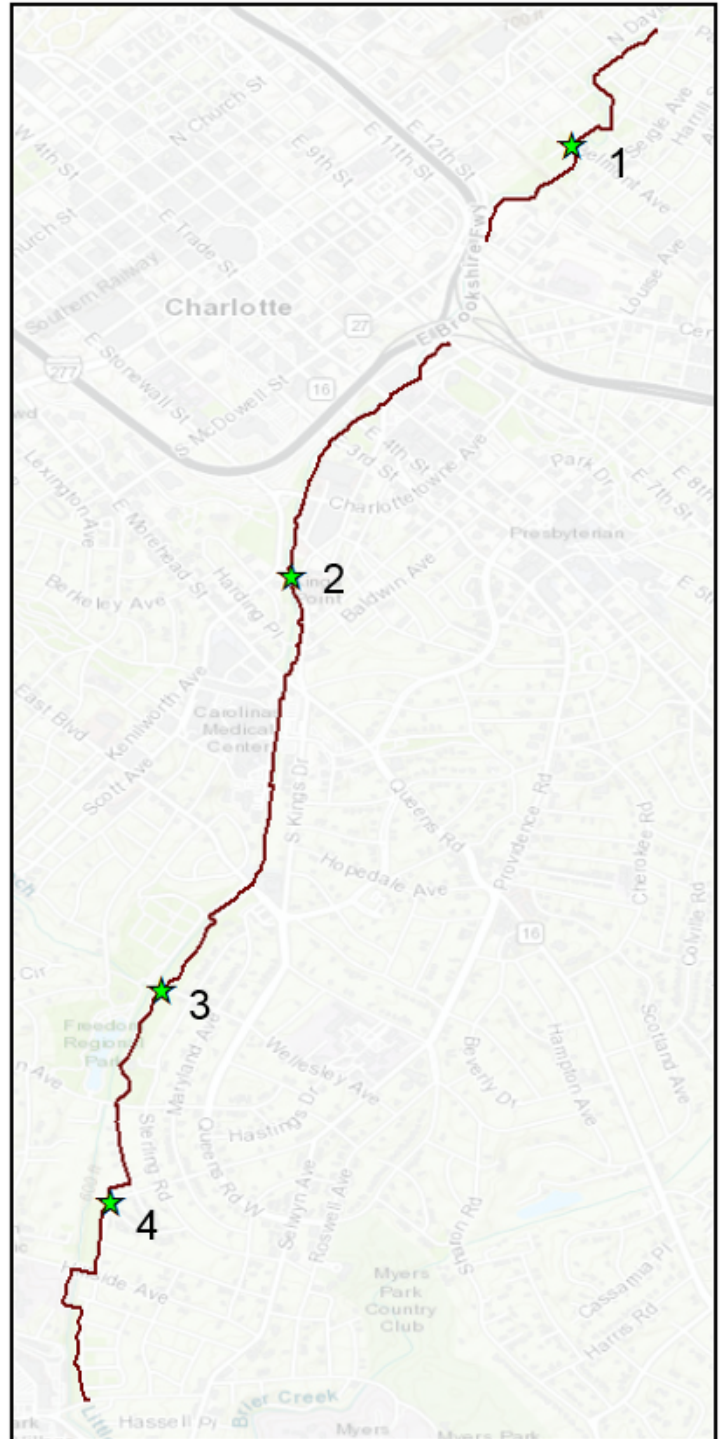
Manual screenline counts at four locations on the trail allowed the research team to record information needed to obtain user profiles and determine user flows. The data collection form used by the research team to conduct user counts can be found in Appendix A.

INTERCEPT SURVEYS

The research team intercepted users to solicit survey responses at the same four locations along the trail where manual screenline counts were collected. The survey form gathered information about the behavior and demographics of trail users. Survey sites were outfitted with a water cooler and yard signs on each approach instructing trail users to “slow down” for the “survey ahead” as they approached the site. Only individuals aged 18 years and older were surveyed with one survey distributed per household for household members traveling together on the trail. Appendix B provides an example of the survey form used.

Table 1 summarizes the data collection effort indicating the data collection period, survey/count location on the trail, the raw number of users counted, and the raw number of users intercepted to fill out a survey while using the trail. A total of 6,135 counts were collected during the survey period, and 1,020 surveys were completed.

FIGURE 1: MAP OF DATA COLLECTION STATIONS ON LITTLE SUGAR CREEK GREENWAY



4. RESULTS

Results have been compiled for overall use of the trail based on the aggregated data collected at the four survey/count stations. Findings include users’ demographics, their usage of the trail, and transportation, economic, and health aspects of trail use. The preliminary findings provided have not been tested for statistical significance. These results will be further evaluated for significance and for comparative analysis once all years of data collection are complete.

TRAIL USER DEMOGRAPHICS

Table 2 shows the **percentages of surveyed trail users and counts by gender and age group** for Little Sugar Creek Greenway users and counts overall:

- In general, a greater percentage of females than males used the trail.
- Nearly a quarter of those surveyed were over the age of 55.

Table 3 provides **additional demographic information for the surveyed trail users**, including education level, annual household income, and race.

- The majority of surveyed trail users (87%) completed college, business/technical school, or obtained an advanced degree.
- The majority of surveyed trail users were white (85%) and earned annual household incomes greater than \$74,999 (65%).

Survey user type data were compared to manual count user type data to determine if the survey responses could be considered representative of the population of trail users during the data collection period. Count data were adjusted based on the survey responses indicating the percentage of trips that were round trips and the number of survey/count stations passed according to user reported trail origin, turnaround, and destination points to avoid overestimating or ‘double/multi-counting’ unique users of the trail. A summary of the methods used to adjust the counts to unique users can be found in Appendix C.

TABLE 2: SURVEYED TRAIL USER AND COUNT DEMOGRAPHICS - GENDER AND AGE

DEMOGRAPHIC	2016 SURVEYED USERS (N)	2016 COUNTS (N)
Male	47% (470)	50% (3,042)
Female	53% (540)	50% (2,986)
Age 18-25	9% (89)	8% (456)
Age 26-55	69% (675)	76% (4,190)
Age >55	22% (218)	16% (881)



TABLE 3: SURVEYED TRAIL USER DEMOGRAPHICS - EDUCATION, ANNUAL HOUSEHOLD INCOME, AND RACE

DEMOGRAPHIC	2016 SURVEYED USERS (N)
Some High School	<1% (4)
Completed High School	3% (33)
Some College	9% (90)
Completed Business/Technical School	2% (16)
Completed College	44% (438)
Advanced Degree	41% (406)
Less than \$25,000	6% (54)
\$25,000-\$34,999	5% (43)
\$35,000-\$49,999	9% (78)
\$50,000-\$74,999	15% (139)
\$75,000-\$99,999	14% (128)
\$100,000-\$149,999	21% (188)
\$150,000-\$199,999	9% (85)
\$200,000 or more	21% (194)
White	85% (804)
Black	10% (97)
Asian	4% (37)
Native Hawaiian or Pacific Islander	<1% (2)
American Indian	<1% (4)

Table 4 provides the **percentages of Little Sugar Creek Greenway surveyed users, counts, and unique users by travel mode on the trail during the survey period.** Comparing data across the columns shows the degree to which those surveyed represent a proportionate sample of all those using the trail. Note that while children less than 18 years of age were counted, they were not surveyed.

- In general, surveyed user proportions are similar to unique user proportions by mode.
- The proportions of counted joggers/runners and bicyclists are greater than the proportion of surveyed and estimated unique joggers/runners and bicyclists. This is likely due to the longer distances travelled by joggers/runner

and bicyclists on average, which allows an individual jogger/runner or cyclist to be surveyed once per data collection day but counted multiple times along the trail.

- The proportion of counted walkers is less than the proportion of surveyed and estimated unique walkers. This is likely due to the shorter distances travelled by walkers on average coupled with a greater tendency to participate in the survey compared to other modes.

Table 5 provides data separated by **travel mode on the trail, gender, and age group** for trail users intercepted during the survey period.

TABLE 4: ALL TRAIL USERS DURING SURVEY PERIODS - TRAVEL MODE ON TRAIL

MODE	DAY	2016 SURVEYED USERS (N)	2016 COUNTS (N)	2016 UNIQUE USERS (N)
Bike	Tues	16% (86)	20% (509)	18% (209)
	Sat	11% (52)	19% (691)	14% (248)
Walk	Tues	55% (293)	46% (1,166)	51% (606)
	Sat	60% (285)	45% (1,624)	55% (974)
Jog/Run	Tues	29% (157)	33% (825)	31% (372)
	Sat	28% (135)	35% (1,247)	30% (536)
All Other Modes	Tues	<1% (1)	1% (20)	<1% (1)
	Sat	1% (3)	1% (30)	1% (10)

TABLE 5: COMPARATIVE PERCENTAGES/NUMBERS OF COUNTS AND THOSE SURVEYED, BY TRAVEL MODE ON TRAIL, GENDER, AND AGE

MODE, GENDER, AGE	2016 PERCENTAGE OF SURVEYED USERS (N)	2016 PERCENTAGE OF COUNTS (N)
Bicycle, M, 18-25	3% (8)	1% (39)
Bicycle, M, 26-55	10% (30)	9% (505)
Bicycle, M, >55	1% (4)	2% (134)
All Bicycle, Male	13% (42)	14% (809)
Bicycle, F, 18-25	1% (4)	0% (25)
Bicycle, F, 26-55	6% (18)	5% (249)
Bicycle, F, >55	0% (1)	1% (60)
All Bicycle, Female	8% (25)	6% (377)
Walker, M, 18-25	2% (6)	2% (89)
Walker, M, 26-55	14% (43)	12% (674)
Walker, M, >55	6% (17)	4% (236)
All Walker, Male	22% (68)	19% (1,122)
Walker, F, 18-25	2% (7)	2% (130)
Walker, F, 26-55	20% (61)	19% (1,047)
Walker, F, >55	7% (21)	6% (319)
All Walker, Female	28% (89)	27% (1,608)
Jogger/Runner, M, 18-25	1% (2)	1% (55)
Jogger/Runner, M, 26-55	14% (42)	16% (844)
Jogger/Runner, M, >55	1% (4)	1% (79)
Jogger/Runner, Male	15% (48)	18% (1,067)
Jogger/Runner, F, 18-25	4% (13)	2% (93)
Jogger/Runner, F, 26-55	8% (26)	15% (796)
Jogger/Runner, F, >55	1% (2)	1% (39)
Jogger/Runner, Female	13% (42)	16% (981)



TRAIL USER PROFILES

Information was compiled to investigate the travel modes used both to travel to the trail as well as while traveling on the trail, where trail users live in relation to the trail, whether they used the trail for recreational/non-recreational purposes, the frequency of trail use, and the distance users traveled on the trail.

Table 6 shows information on “Local” versus “Non-Local” point of trip origin by travel mode on the trail. “Local” is defined as the zip code area through which Little Sugar Creek Greenway passes (28206, 28205, 28202, 28204, 28207, 28203, and 28209). “Non-Local” is defined as all other zip code areas.

- In general, more Local people used the trail, with the highest percentage being those who bicycle on the trail (73%).
- The highest proportion of Non-Local trail users is walkers (43%).

Table 7 shows information on living status in the area as reported by surveyed trail users by travel mode. For those surveyed trail users who defined their living status as a visitor to the area, Table 8 summarizes their average stay in days by travel mode.

- The majority of surveyed users reported that they were permanent residents of the area (95%).
- The highest proportion of visitors is walkers (55%).
- The average stay in days for surveyed visitors is 3 days.

Trail users were asked about their frequency of use of the trail. The figures shown in Table 9 are averages of the total number of trips taken in the past 14 days as reported by survey respondents. Most of those surveyed used the trail several times during the previous two week period.

- On average, use of the trail during the previous two weeks was similar across all modes, with an average of six trips in the past 14 days for all modes.

TABLE 6: TRIP POINT OF ORIGIN BY TRAVEL MODE ON TRAIL

MODE	2016 LOCAL (N)	2016 NON-LOCAL (N)
Bike	73% (100)	27% (37)
Walk	57% (325)	43% (247)
Jog/Run	63% (181)	37% (107)
All Modes	61% (610)	39% (391)

TABLE 7: LIVING STATUS BY TRAVEL MODE ON TRAIL

LIVING STATUS AND MODE	PERCENT OF SURVEYED USERS	(N)
Permanent Resident	95%	959
Bike	14%	132
Walk	57%	551
Run	29%	276
Seasonal Resident	1%	8
Bike	0%	0
Walk	63%	5
Run	38%	3
Visitor	4%	38
Bike	16%	6
Walk	55%	21
Run	29%	11
Total	100%	1,005

TABLE 8: AVERAGE STAY FOR VISITORS IN DAYS BY TRAVEL MODE ON TRAIL

LIVING STATUS AND MODE	AVERAGE STAY IN DAYS	(N)
Visitor	3	22
Bike	4	4
Walk	4	11
Run	3	7

TABLE 9: AVERAGE NUMBER OF TRIPS IN THE PAST 14 DAYS

MODE	AVERAGE NUMBER OF TRIPS	(N)
Bike	7	138
Walk	7	576
Jog/Run	6	288
All Modes	6	1,006

TABLE 10: AVERAGE TRIP DISTANCE (IN MILES) BY TRAVEL MODE ON TRAIL

MODE	2016 AVERAGE MILES TRAVELED (N)
Bike	3.8 (131)
Walk	2.0 (552)
Jog/Run	3.5 (282)
All Modes	2.7 (976)

TABLE 11: AVERAGE TRIP DISTANCE (IN MILES) BY GENDER AND TRAVEL MODE ON TRAIL

GENDER	MODE	2016 AVERAGE MILES TRAVELED (N)
Male	Bike	4.0 (87)
	Walk	1.9 (217)
	Jog/Run	3.6 (138)
	All Modes	2.8 (446)
Female	Bike	3.5 (44)
	Walk	2.0 (331)
	Jog/Run	3.4 (139)
	All Modes	2.5 (514)

Table 10 provides information on the distance traveled on Little Sugar Creek Greenway by travel mode on the trail, and Table 11 provides information on the distance traveled on Little Sugar Creek Greenway by gender and travel mode on the trail. The figures reported in the table are average trip distances in miles. Cases in which inadequate data was provided to compute trip distance were not included.

- Bicyclists and joggers/runners traveled comparable distances on average and greater distances than walkers.
- Distances travelled by males and females on every mode except bicycle were comparable; male bicyclists traveled a half a mile further than female bicyclists on average.

TRANSPORTATION IMPACTS

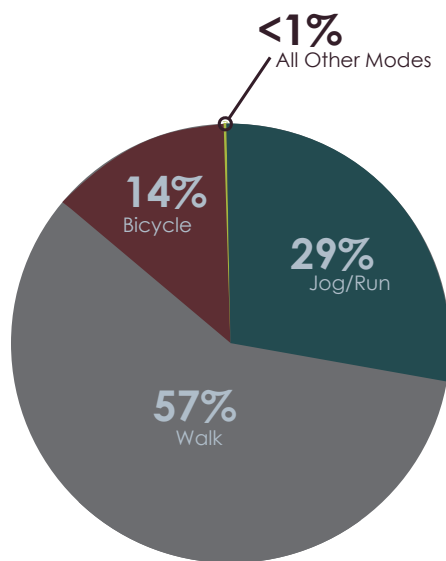
Analysis of transportation-related factors included:

- Mode used to travel on the trail
- Primary trip purpose
- Frequency of round trips versus one-way trips
- Mode used to travel to the trail
- Trail access points

Analysis of survey responses found differences in **proportions of users by travel mode on the trail**, as shown in Figure 2.

- The majority of trail users traveled on the trail by foot (86%).

FIGURE 2: TYPE OF USER BY TRAVEL MODE ON TRAIL



Given the relatively high use of the trail for exercise/recreational purposes (90% of trips – see Table 12), it is not surprising that most travel involved a roundtrip, not a one-way trip on the trail, as illustrated in Table 13. However, 10% of trips were for non-recreational purposes involving travel to/from work, school, dining, shopping, running errands, a cultural attraction, entertainment, or a leisure activity as their main purpose.

- Across all modes, most trips were roundtrips.

The survey also revealed the **mode by which trail users traveled to the trail**. Table 14 provides information on the access modes used to travel to the trail by all survey respondents, sorted by mode of travel on the trail. The percentages shown are calculated by row to reflect the shares of travel to the trail according to the mode used on the trail.

- Slightly less than half of those using the trail traveled to the trail by foot.
- The majority of respondents traveling by bicycle on the trail accessed the trail by bicycle (79%).
- 58% of respondents used an active mode of transportation to access the Little Sugar Creek Greenway.

The survey also provided information on where trail users were accessing the trail. Table 15 includes the top five access points on the trail according to where survey respondents accessed the trail.

- The majority of respondents (12%) accessed the trail from the Brandywine Road intersection.

TABLE 12: PRIMARY TRIP PURPOSE

PRIMARY TRIP PURPOSE	2016 PERCENTAGE OF SURVEYED USERS (N)
For exercise/recreation/sightseeing	90% (912)
Travel to/from work or school	4% (42)
Travel to/from dining/shopping/running errands	4% (45)
Travel to/from cultural attraction/entertainment/leisure activity	2% (20)

TABLE 13: TRIP TYPE

MODE	2016 ROUNDTrip (N)	2016 THROUGHTRIP (N)
Bike	82% (111)	18% (25)
Walk	81% (462)	19% (111)
Jog/Run	85% (249)	15% (43)
All Modes	82% (831)	18% (182)

TABLE 14: MODE TO THE TRAIL BY MODE USED ON TRAIL

MODE ON TRAIL	MODE TO TRAIL		
	2016 by Bicycle (n)	2016 by Car (n)	2016 by Foot (n)
Bike	79% (106)	17% (23)	4% (5)
Walk	0% (0)	48% (273)	52% (292)
Jog/Run	0% (0)	42% (121)	58% (169)
All Modes	11% (106)	42% (417)	47% (466)

TABLE 15: TOP FIVE ACCESS POINTS ON THE LITTLE SUGAR CREEK GREENWAY

ACCESS POINT DESCRIPTION	PERCENT SURVEYED (N)
Brandywine Road	12% (122)
Princeton Avenue	8% (84)
Freedom Park near playground	7% (74)
Freedom Park near baseball fields	7% (71)
Water fountain at Target/Wendy’s	6% (56)

ECONOMIC IMPACTS

The users of the trail can have an impact on businesses through expenditures on a variety of goods and services. The survey asked trail users to list expenditures on goods or services directly related to their trip on the trail on the day of the survey. If a trail user was traveling with members of their household, estimates represent the total for their household.

The results are shown in the following table. Table 16 shows **trail users' expenditures related to their trip on Little Sugar Creek Greenway** categorized by the type of expenditure and separated by user group.

- Food-related expenditures were the most common among surveyed trail users. The largest percentage of respondents made purchases at a restaurant - 18% of respondents made a restaurant-related purchase with an average cost of \$20, and 7% of respondents made a grocery-related purchase with an average cost of \$35.
- 5% of respondents made a retail-related purchase with an average cost of \$45, while 1% of respondents made an entertainment-related purchase with an average cost of \$71.
- 1% of bicyclists purchased a bike rental with an average cost of \$13.

PUBLIC HEALTH IMPACTS

Increasing physical activity among children and adults is a national health objective in the United States. Access to facilities, such as trails, is one of the factors positively associated with physical activity. Information compiled that relates to public health impacts from user of the Little Sugar Creek Greenway included:

- The percentage of trail users who indicated exercise as their primary trip purpose
- The mode of activity users engaged in while on the trail
- The average duration of each activity by user type

Table 17 indicates users' **primary trip purpose**. Non-recreational trip purposes included work, school, shopping, restaurant, and entertainment trips. It is important to note that users on the trail whose purpose was not primarily exercise/recreation were still engaging in physical activity while on the trail.

TABLE 16: TYPE OF AND AVERAGE EXPENDITURE BY USER GROUP

LSC USER GROUP	Respondents	Restaurant		Respondents	Grocery		Respondents	Retail		Respondents	Entertainment		Respondents	Bike Rental	
		% of Respondents	Average Expenses		% of Respondents	Average Expenses		% of Respondents	Average Expenses		% of Respondents	Average Expenses			
Bicycle	135	25%	\$23	136	12%	\$21	136	9%	\$42	136	1%	\$75	135	1%	\$13
Jog/Run	288	10%	\$13	288	5%	\$35	287	2%	\$22	288	<1%	\$180	288	0%	\$-
Walk	568	20%	\$20	567	8%	\$39	566	5%	\$51	568	<1%	\$12	568	0%	\$-
Total	991	18%	\$20	991	7%	\$35	989	5%	\$45	992	1%	\$71	991	0%	\$13



- Overall, 90% of all users on Little Sugar Creek Greenway indicated their primary trip purpose as exercise/recreation.
- 10% all users on Little Sugar Creek Greenway indicated their primary trip purpose as non-recreational.

Table 18 indicates the **duration of the active portion of a trail user's trip** (in minutes) by mode traveled on the trail. The total active portion of a trail user's trip was self-reported on the survey and may include time spent actively traveling to or from the trail. This table includes respondents who did not indicate gender so overall totals vary slightly from those reported in Table 19.

- The average duration of the active portion of the trip for all users surveyed on the trail was 51 minutes.
- Walkers reported the highest average duration of the active portion of the trip (52 minutes) compared to joggers/runners (51 minutes) and bikers (50 minutes).

Table 19 breaks out the **duration of the active portion of a user's trip by gender and travel mode on the trail**. Respondents that did not indicate gender are excluded from the data in the table.

- Male bicyclists reported a longer duration for the active portion of their trip than females.
- Female respondents spent five more minutes on average on their walking trips than male respondents.

Table 20 presents information on the **duration of the active portion of a user's trip in relation to annual household income** to assess the activity of users of differing socio-economic status. Duration of the active portion of the trip may include active travel to/from the trail.

TABLE 17: RECREATIONAL VERSUS NON-RECREATIONAL TRIP PURPOSES

PRIMARY TRIP PURPOSE	2016 PERCENTAGE OF SURVEYED USERS (N)
For exercise/recreation/sightseeing	90% (912)
Non-recreational (all other trip purposes)	10% (107)

TABLE 18: AVERAGE DURATION (IN MINUTES) OF THE ACTIVE PORTION OF USER'S TRIP

MODE	2016 DURATION (N)
Bike	50 min (135)
Walk	52 min (570)
Jog/Run	51 min (289)
All Modes	51 min (998)

TABLE 19: AVERAGE DURATION (IN MINUTES) OF THE ACTIVE PORTION OF USER'S TRIP BY GENDER AND TRAVEL MODE ON TRAIL

GENDER	MODE	2016 DURATION (N)
Male	Bike	53 min (90)
	Walk	49 min (226)
	Jog/Run	51 min (139)
	All Modes	50 min (459)
Female	Bike	45 min (45)
	Walk	54 min (339)
	Jog/Run	52 min (145)
	All Modes	52 min (529)

- Individuals with household incomes of less than \$25,000 reported using the trail for an average of 54 minutes.
- The longest duration of activity on average (59 minutes) was reported by those in the \$35,000-\$49,999 household income bracket.

Table 21 presents information on the **percentage of exercise met by using the trail over the past 14 days by travel mode on the trail.**

- Respondents used the trail to meet 49% of their total exercise on average over the past 14 days.

Table 22 presents information on the **percentage of exercise met by using the trail over the past 14 days by gender and travel mode on the trail.**

- Overall, the average percentage of exercise met by using the trail over the past 14 days was larger for female trail users compared to male trail users; the difference was the greatest for female walkers compared to male walkers.

TABLE 20: AVERAGE DURATION (IN MINUTES) OF THE ACTIVE PORTION OF USER’S TRIP BY ANNUAL HOUSEHOLD INCOME

HOUSEHOLD INCOME	2016 DURATION (N)
<\$25,000	54 min (51)
\$25,000-\$34,999	56 min (42)
\$35,000-\$49,999	59 min (76)
\$50,000-\$74,999	48 min (138)
\$75,000-\$99,999	54 min (124)
\$100,000-\$149,999	51 min (187)
\$150,000-\$199,999	52 min (85)
>\$200,000	51 min (193)

TABLE 21: AVERAGE PERCENTAGE OF EXERCISE MET BY USING THE TRAIL OVER THE PAST 14 DAYS BY TRAVEL MODE ON TRAIL

MODE	2016 PERCENT EXERCISE (N)
Bike	47% (135)
Walk	48% (564)
Jog/Run	50% (287)
All Modes	49% (990)

TABLE 22: AVERAGE PERCENTAGE OF EXERCISE MET BY USING THE TRAIL OVER THE PAST 14 DAYS BY TRAVEL MODE ON TRAIL

GENDER	MODE	2016 PERCENT EXERCISE (N)
Male	Bike	47% (91)
	Walk	43% (226)
	Jog/Run	51% (139)
	All Modes	46% (460)
Female	Bike	48% (44)
	Walk	52% (334)
	Jog/Run	50% (145)
	All Modes	51% (523)



TRAVEL ACTIVITY MAPS

The following maps provide a visualization of travel activity on the Little Sugar Creek Greenway generated using the user reported trail origin, turnaround, and destination points taken from the surveys. Figure 3 shows where roundtrips for all modes (left) and one-way, throughtrips for all modes (right) occurred on the trail during the survey period. Roundtrips and throughtrips occurred on the entire

length of the trail. Figure 4 shows where trips occurred on the trail during the survey period by primary trip purpose. The majority of trips were for exercise/recreation and these trips occurred on the entire length of the trail. Commuting and errands trips were concentrated around Midtown Park, but were reported along the entire trail. Figures 5-7 show travel activity on the trail by mode on the trail, and include the average trip duration and average miles traveled for each mode.

FIGURE 3: ROUNDTrip (LEFT) AND THROUGHTRIP (RIGHT) TRAVEL ACTIVITY FOR ALL MODES - 82% OF REPORTED TRIPS WERE ROUNDTrips AND 18% OF REPORTED TRIPS WERE THROUGHTRIPS

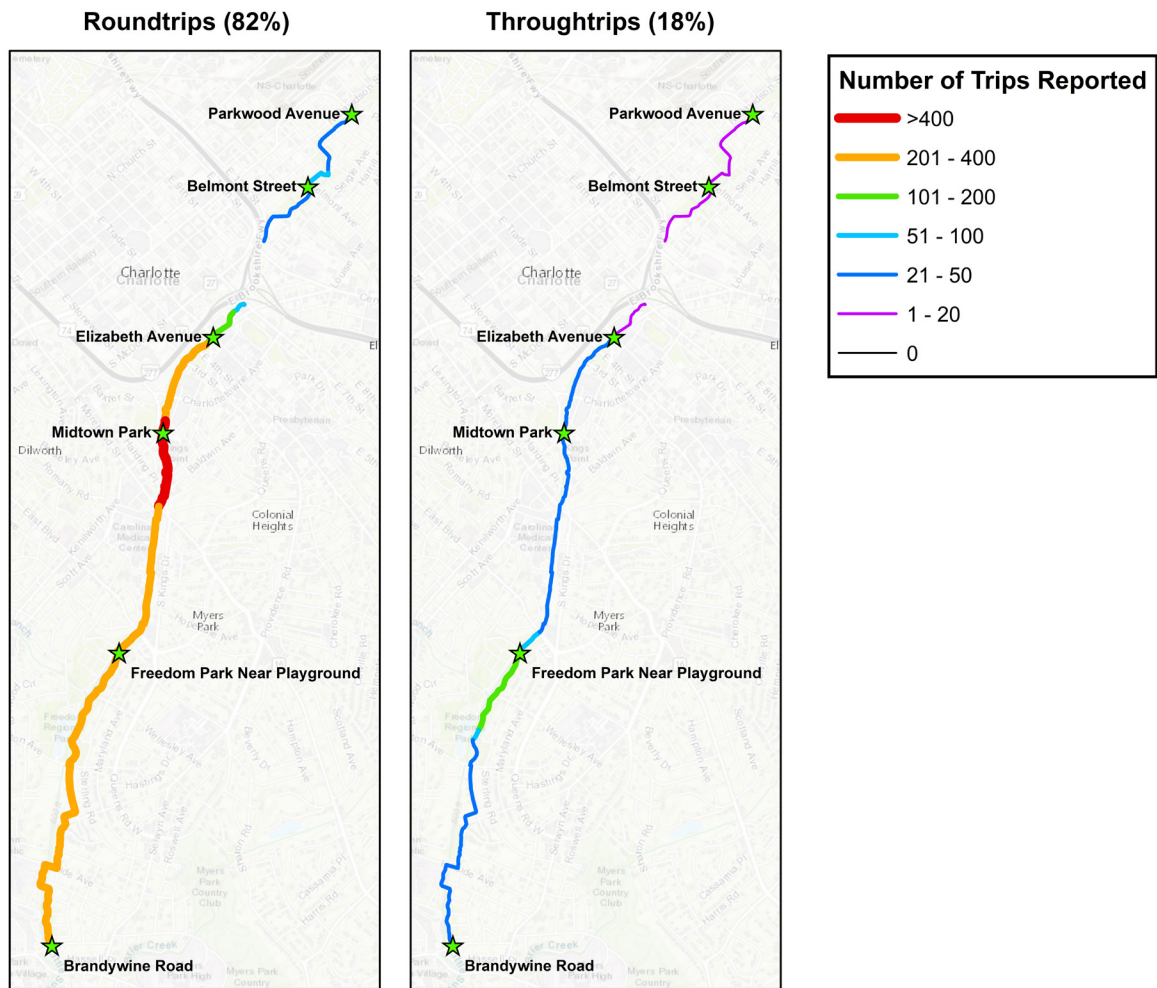


FIGURE 4: COMMUTE (LEFT), ERRANDS (CENTER), AND EXERCISE/RECREATION (RIGHT) TRAVEL ACTIVITY FOR ALL MODES - 4% OF REPORTED TRIPS WERE COMMUTE TRIPS, 4% OF REPORTED TRIPS WERE ERRANDS TRIPS, AND 90% OF REPORTED TRIPS WERE FOR EXERCISE/ RECREATION

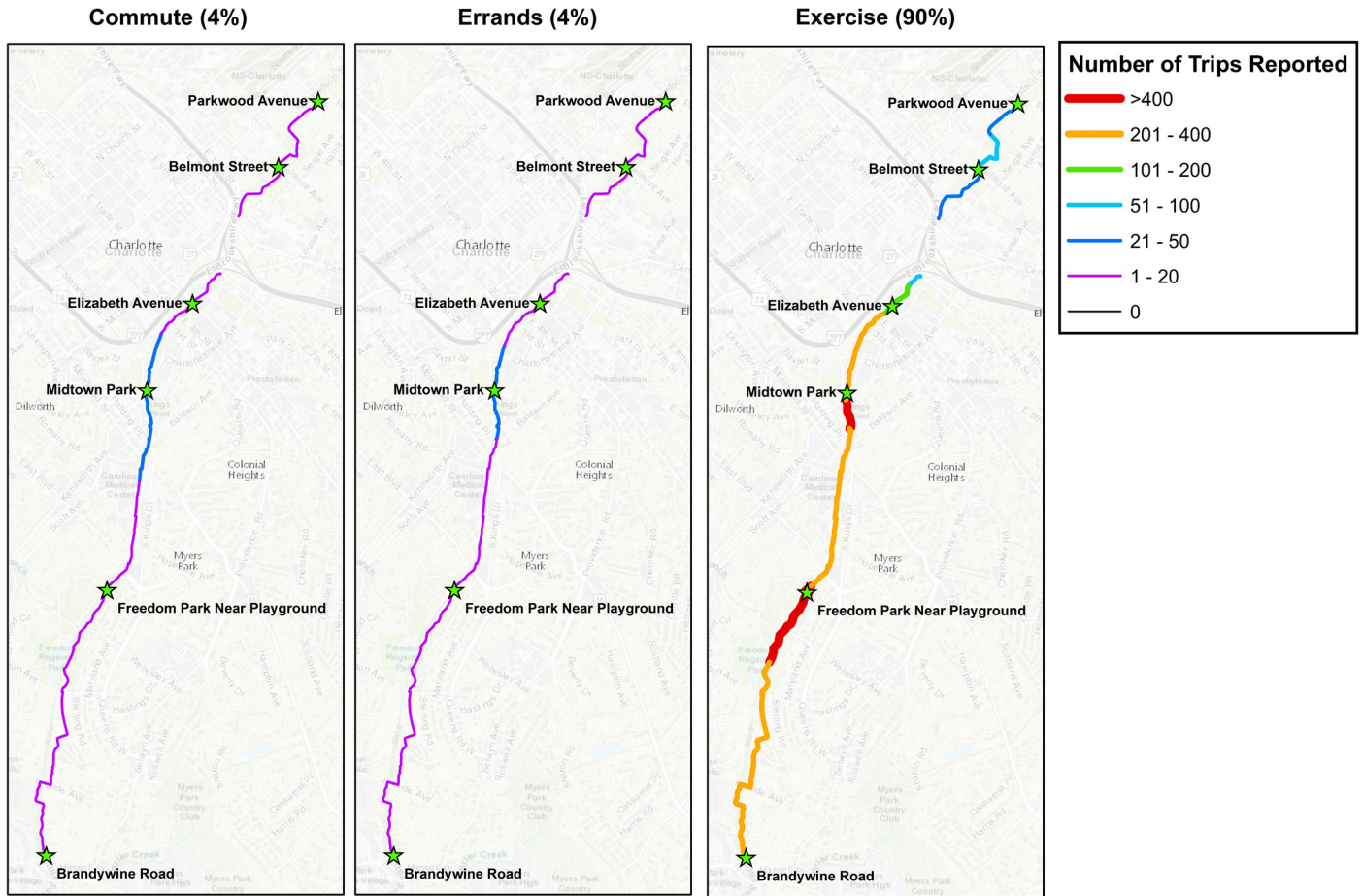


FIGURE 5: ROUNDRIPS (LEFT) AND THROUGHTRIPS (RIGHT) FOR BICYCLISTS - 82% OF REPORTED BICYCLING TRIPS WERE ROUNDRIPS AND 18% OF REPORTED BICYCLING TRIPS WERE THROUGHTRIPS; THE AVERAGE TRIP DURATION FOR BICYCLISTS WAS 50 MIN; THE AVERAGE DISTANCE TRAVELED BY BICYCLISTS WAS 3.8 MI

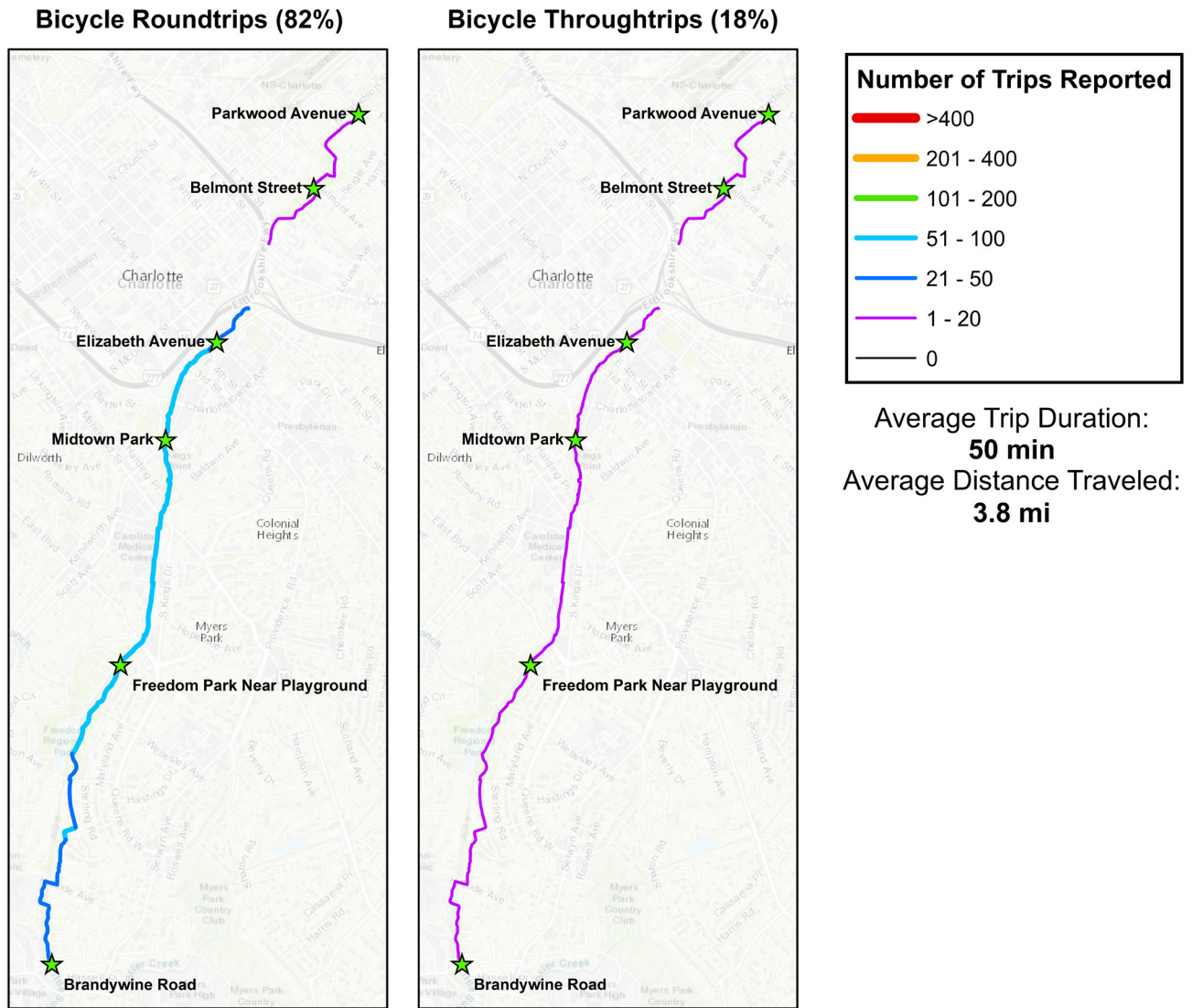
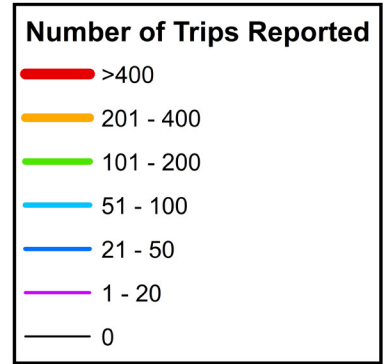
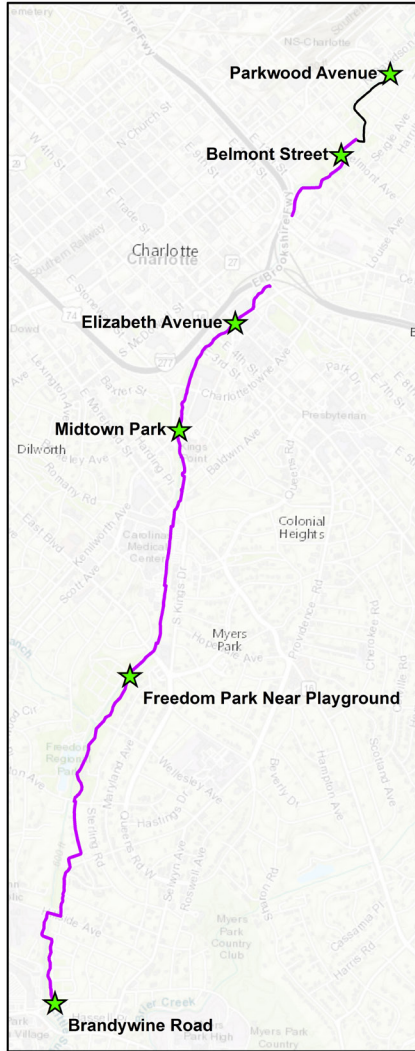
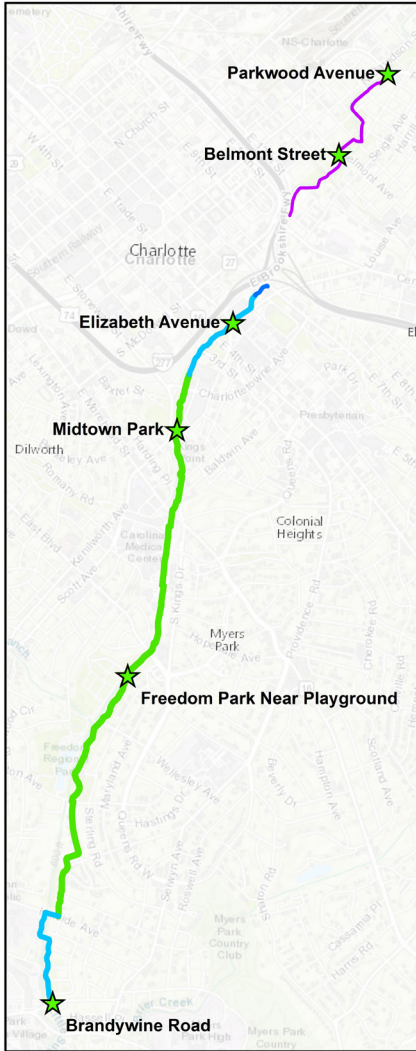


FIGURE 6: ROUNDTrips (LEFT) AND THROUGHTRIPS (RIGHT) FOR RUNNERS - 85% OF REPORTED RUNNING TRIPS WERE ROUNDTrips AND 15% OF REPORTED RUNNING TRIPS WERE THROUGHTRIPS; THE AVERAGE TRIP DURATION FOR RUNNERS WAS 51 MIN; THE AVERAGE DISTANCE TRAVELED BY RUNNERS WAS 3.5 MI

Run Roundtrips (85%)

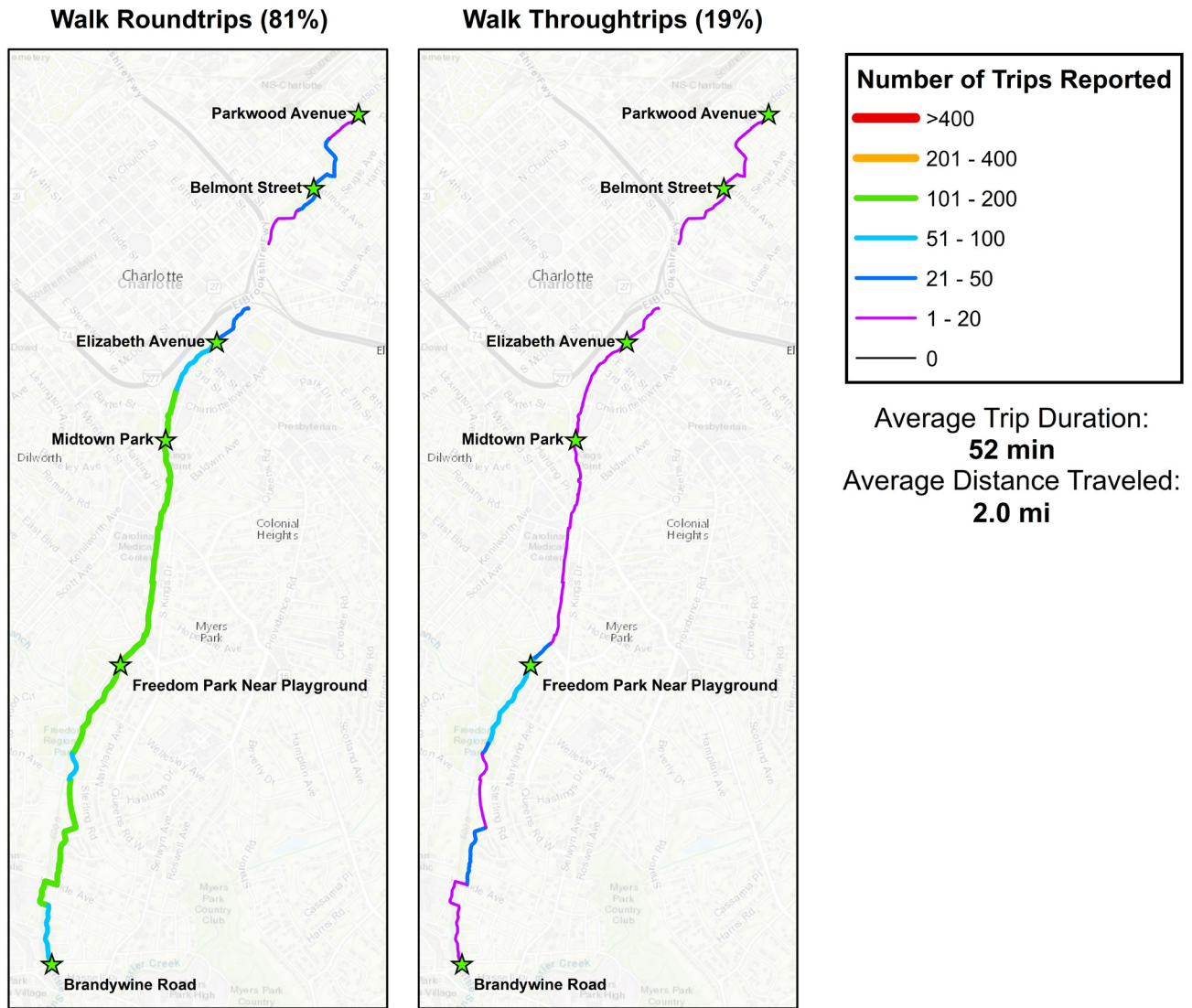
Run Throughtrips (15%)



Average Trip Duration:
51 min
Average Distance Traveled:
3.5 mi



FIGURE 7: ROUNDTrips (LEFT) AND THROUGHTRIPS (RIGHT) FOR WALKERS - 81% OF REPORTED WALKING TRIPS WERE ROUNDTrips AND 19% OF REPORTED WALKING TRIPS WERE THROUGHTRIPS; THE AVERAGE TRIP DURATION FOR WALKERS WAS 52 MIN; THE AVERAGE DISTANCE TRAVELED BY WALKERS WAS 2.0 MI



5. NEXT STEPS

This memorandum presents initial findings from an analysis of the data from surveys and manual counts conducted for a cross-sectional study of Little Sugar Creek Greenway. Some additional analysis will be required to test for statistical significance of differences among responses in various mode and/or demographic categories.

Surveys and manual counts were collected in October 2016. Additional analyses, including economic valuation analyses such as calculation of retail sales tax benefits, property value and property tax benefits, capital and operational expenditures, as well as congestion, pollution reduction, safety, and health benefits, are in progress.



APPENDIX B: SURVEY QUESTIONNAIRE

Shared Use Path User Survey

(to be completed by persons 18 or older – one per household)

Site No.

Date

1. Trip Diagram

[Auto] [Bike] [Foot] [Bus] [Other]

Trail Access Point

Trail

Trail Access/Turnaround Point

Start:
(street address, nearby intersection, name of place, business, or neighborhood name) [Walk] [Run] [Bike] [Other]

Trail

Trail Access Point

[Auto] [Bike] [Foot] [Bus] [Other]

End:

Destination:
(street address, nearby intersection, name of place, business, or neighborhood name)

3. If this trail were unavailable, which of the following would best describe your course of action for today's trip:

- I wouldn't make the trip
- I would travel to another trail via:
 - Auto Walk/Run/Bicycle Bus
- I would go to my travel destination via:
 - Auto Walk/Run/Bicycle Bus

2. How many minutes on this trip will you be walking/running/bicycling/etc?

Minutes

Trip Purpose	4. What is the main purpose of <u>today's</u> trip? (check one)	5. What is the secondary purpose of <u>today's</u> trip? (check all that apply)
Travel to/from work or school	<input type="checkbox"/>	<input type="checkbox"/>
Travel to/from dining/shopping/running errands	<input type="checkbox"/>	<input type="checkbox"/>
For exercise/recreation/sightseeing	<input type="checkbox"/>	<input type="checkbox"/>
Travel to/from cultural attraction/entertainment/leisure activity	<input type="checkbox"/>	<input type="checkbox"/>

6. Related to today's trip on the trail, approximately how much did (will) you spend on the following goods or services? If traveling with members of your household, estimates should represent the total for your household.

Expenditure Type	Amount	At what business did (will) you make these purchases?
Restaurant meals and drinks	\$	
Groceries/convenience items	\$	
Retail shopping	\$	
Entertainment/admissions	\$	
Bike rental	\$	
Other (specify): _____	\$	



7. When was the first time you used this trail (month and year)?

8. How many trips have you made on this trail in the last 14 days?

9. Allocate those total trips by the following primary purposes (total should sum to answer in #8):

Primary Purpose	No. of Trips by Purpose
Travel to work or school	
Travel to dining/shopping/running errands	
For exercise/recreation/sightseeing	
Travel to cultural attraction/entertainment/leisure activity	

10. Over the past 14 days, what percentage of your exercise was met by using this trail?

_____ %

11. How many people are traveling with you on the trail today?

_____ Check if with you on today's trip: Stroller
 Pet

12. How many people from your household are traveling with you today? (if different from response to # 11)? _____

15. Tell us about who is on the trail with you today from your household or those in your responsible care:

	You	Person 2	Person 3	Person 4	Person 5	Person 6	Person 7
Age							
Gender	<input type="checkbox"/> Male <input type="checkbox"/> Female	<input type="checkbox"/> Male <input type="checkbox"/> Female	<input type="checkbox"/> Male <input type="checkbox"/> Female	<input type="checkbox"/> Male <input type="checkbox"/> Female	<input type="checkbox"/> Male <input type="checkbox"/> Female	<input type="checkbox"/> Male <input type="checkbox"/> Female	<input type="checkbox"/> Male <input type="checkbox"/> Female
Travel Mode	<input type="checkbox"/> Walk <input type="checkbox"/> Run/Jog <input type="checkbox"/> Bicycle <input type="checkbox"/> Other:	<input type="checkbox"/> Walk <input type="checkbox"/> Run/Jog <input type="checkbox"/> Bicycle <input type="checkbox"/> Other:	<input type="checkbox"/> Walk <input type="checkbox"/> Run/Jog <input type="checkbox"/> Bicycle <input type="checkbox"/> Other:	<input type="checkbox"/> Walk <input type="checkbox"/> Run/Jog <input type="checkbox"/> Bicycle <input type="checkbox"/> Other:	<input type="checkbox"/> Walk <input type="checkbox"/> Run/Jog <input type="checkbox"/> Bicycle <input type="checkbox"/> Other:	<input type="checkbox"/> Walk <input type="checkbox"/> Run/Jog <input type="checkbox"/> Bicycle <input type="checkbox"/> Other:	<input type="checkbox"/> Walk <input type="checkbox"/> Run/Jog <input type="checkbox"/> Bicycle <input type="checkbox"/> Other:

16. Household Income:
- less than \$25,000
 - \$25,000-\$34,999
 - \$35,000-\$49,999
 - \$50,000-\$74,999
 - \$75,000-\$99,999
 - \$100,000-\$149,999
 - \$150,000-\$199,999
 - \$200,000 and more

17. Education Level:
- Some high school
 - Completed high school
 - Some college
 - Completed college
 - Completed business/technical school
 - Advanced degree

18. Race:
- White
 - Black or African-American
 - American Indian or Alaskan Native
 - Asian
 - Native Hawaiian or Other Pacific Islander

13. Where is your permanent residence (i.e., where is home)?

City/Town: _____

State/Province: _____ ZIP: _____

14. How do you define your living status in the area?

- Permanent Resident
- Seasonal Resident
- Visitor - If checked, my stay is _____ days

Visitors ONLY: How important was this trail in your decision to visit the area?

- Not important
- Somewhat important
- Very important

Visitors ONLY: How much will your household spend on your entire visit, excluding transportation to/from the area? (include all spending on lodging/hotels, foods, retail items, entertainment, etc.)

\$ _____

Conducted by:



On behalf of:



Thank you for taking the time to fill out this survey!

APPENDIX C: UNIQUE USERS ESTIMATION METHODOLOGY

Because it is uncommon for people to travel the entire length of the Little Sugar Creek Greenway in one trip, multiple count locations were used to understand overall trail usage. However, a simple summation of counts from each station would result in double- or multi-counting people who passed more than one station during their trip. When combining raw counts from each count station to develop a comprehensive estimate of trail usage in the study area, survey data were used to help define trip patterns (where respondents entered, exited, and/or turned around on the trail) to reduce the raw count at each station by people who would have been counted at another station. The number of times a user is likely to be over counted increases as the number of survey-and-count stations increases. For the 2016 data collection period, four survey-and-count stations were used in order to provide coverage for the approximately five-mile length of the trail. This means that a single user could be counted up to eight times for a roundtrip or four times for a one-way, throughtrip. The amount of times a user is over counted is directly related to trip distance, which is tied to a user's travel mode, i.e. bicyclists tend to travel further distances than joggers/runners and walkers, and joggers/runners tend to travel further distances than walkers.

Because four stations were used for data collection on the Little Sugar Creek Greenway, determining the number of unique users involves several calculations based on survey responses and manual count data. The following calculation steps are required for each data collection day by travel mode on the trail to generate the number of unique users by mode for each data collection day:

1. Determine number of stations passed for each intercepted user based on the station where a user was intercepted
2. Determine the number of users by number of stations passed based on the station where a user was intercepted

3. Determine the number of and proportion of roundtrips and throughtrips intercepted at each station
4. Determine the ratio of users by the number of stations passed to the total number of users intercepted at each station for roundtrips and for throughtrips
5. Determine the number of roundtrip and throughtrip counts collected at each station by adjusting by the proportion of roundtrips and throughtrip surveys collected at each station
6. Adjust the number of roundtrip and throughtrip counts collected at each station by the ratio of users by number of stations passed to the total number of users intercepted at each station to generate the number of unique users by number of stations passed

Note that the adjustments for users making roundtrips or those making longer distance trips where they passed more than one survey-and-count location does not result in a true count of individual persons using the trail during the total data collection period – some individuals may have visited the Little Sugar Creek Greenway on more than one data collection day, made more than one trip per day, or traced a unique travel pattern on the trail that was not otherwise captured in survey responses for traditional roundtrips or one-way, throughtrips. Unique users can be understood only on a per day basis. For the Saturday data collection date in 2016, 248 unique bicyclists and 1,510 unique pedestrians (536 joggers/runners; 974 walkers) are estimated to have used the trail. For the Tuesday data collection date in 2016, 209 unique bicyclists and 978 unique pedestrians (372 joggers/runners; 606 walkers) are estimated to have used the trail.



