

**AN ADVANCED CITY IS  
NOT ONE WHERE EVEN  
THE POOR USE CARS,  
BUT RATHER ONE WHERE  
EVEN THE RICH USE  
PUBLIC TRANSPORT.**



-- ENRIQUE PEÑALOSA,  
MAYOR OF BOGOTÁ, COLUMBIA



# APPENDIX A: DEMAND AND BENEFITS ANALYSIS DETAILED REPORT

## Introduction

Walking and bicycling are gaining new interest from communities across the United States after decades of neglect in which a one-size-fits-all approach to roadway design focused on motor vehicle transportation. With low levels of funding and comparatively low mode share, walking and bicycling face an uphill battle to prove their utility as viable, efficient modes of transportation. Many of walking and bicycling's greatest strengths – such as improving community health through physical activity – are not accounted for when evaluating transportation projects. Quantifying these factors demonstrates the importance of walking and bicycling transportation and help compare benefits with costs.

The benefits created by walking and bicycling are directly linked to levels of use or activity. For each additional mile traveled by walking or bicycling instead of driving, about one pound of greenhouse gas emissions are prevented, a few less cents are spent on gas, and a person gets a few minutes closer to reaching their recommended healthy levels of physical activity for the week. People who bike and walk to work – which, according to 2010-2012 American Community Survey (ACS) data, is likely around 8,000 employees in Columbia every weekday – free up additional road area and parking spaces that are shared among the remainder of the population who drive and carpool.

When walking and bicycling rates increase, these associated benefits add up to create healthier and more affordable communities. Increasing bicycling and walking transportation increases physical activity in a community. Because walking and bicycling are transportation activities, they play a role in a person's set of daily behaviors, keeping a person physically active on a regular basis such as through daily commuting, but also trips to school, social visits or trips to the grocery store.

To calculate the current benefits of walking and bicycling in Columbia, the first step is to estimate existing levels of use.



# Estimating Walking and Bicycling Activity

## Introduction

A number of tools for measuring walking and bicycling activity exist, however, each falls short of establishing a complete picture current activity. The following section describes the strengths and weaknesses of the most commonly used tools, and presents a methodology for estimating activity across an entire community.

## User Counts

User counts, typically conducted at points across the street network during peak travel hours, capture levels of walking and bicycling activity on street or paths during a short period of time. While user counts can be instructive in comparing relative levels of use between one street and another, they do not fully capture the spectrum of walking and bicycling activity happening across the community over the length of the year. Counts are well suited to studying where people walk and bike, but do not provide answers to other important questions, such as:

- What destinations are people walking and bicycling to, and where are they coming from?
- How far are they traveling?
- What is the purpose of their trip?
- How often do they make similar walking or bicycling trips?
- How often do they make other kinds of walking or bicycling trips?
- Do other residents also make similar types of trips by walking and bicycling, or do they typically travel by another mode?

Therefore, while user counts are a good tool for measuring walking and bicycling at a certain location, user surveys are needed to estimate the overall role of bicycling and walking in the transportation patterns of residents across the region.

## User Surveys

Transportation user surveys often ask respondents about their perceptions – e.g., their feeling of safety on a street – and about their usual travel behavior. The American Community Survey (ACS), an ongoing survey conducted by the US Census Bureau, collects social, economic and demographic information from respondents, and includes a question on respondents' commute to work. Sampling over 250,000 households per month, the ACS is the largest survey that asks Americans about their transportation habits, and the most widely available source of walking and bicycling data in communities. According to the 2010-2012 ACS, 0.42% of workers in Columbia bicycle to work, while 12.96% walk to work. These percentages are known as commute mode share; the percentage of a community's population making their journey to work by a certain mode of transportation compared to all modes.

Although commute mode share data is able to capture wider information about walking and bicycling than user counts alone, work commutes are just one type of trip. Columbia residents make many other types of trips (to school, college, go shopping, etc.) by a variety of modes. Detailed household travel surveys can provide more information on travel patterns and help measure the full spectrum of walking and bicycling trips happening in the community.

## HOUSEHOLD TRAVEL SURVEYS

Household travel surveys are usually conducted by phone, where an operator interviews each respondent using a detailed script to record a travel diary. To complete a travel diary, respondents are asked to recall all of their trips during a recent period of time, usually the last 24 hours or the previous full day. Detailed information is collected on the qualities of each trip, including the trip purpose, time of day, duration, length, mode, and other factors. By collecting this data from a large sample of people across the population, household travel surveys

can provide information on where, why, and how far people are walking and bicycling for transportation. Though a recent household travel survey for the Columbia is not available, national data from the 2009 National Household Travel Survey (NHTS 2009) can be used to estimate the number of other types of bicycling and walking trips being made in addition to work trips.



## Estimating Overall Activity

### EMPLOYED WORKERS AND ADULTS

Overall adult bicycling and walking activity can be estimated by combining available local data such as ACS commute mode share with national trip purpose information from NHTS 2009. On average, 1.6 utilitarian bicycle trips are made for every bicycle-to-work trip in the United States, and 4.3 utilitarian walk trips are made for every walk-to-work trip. An additional 3.9 social/recreational walking trip and 4.8 bicycling trips are made for each walking or bicycling commute trip, respectively (see Figure 1 and Figure 2). Assuming travel behavior in Columbia is similar to these national averages shows how walking and bicycling trips can add up beyond just commute trips, and provide a significant portion of the physical activity necessary to meet the health needs of the community.

### COLLEGE STUDENTS

Student commute trips to school and college are estimated independently of ACS data, because the populations making those trips are substantially different from the employed workforce surveyed by ACS. National data on walking and bicycling college trip mode share from NHTS 2009 was used to represent trips to local colleges and universities like the University of South Carolina.

### SCHOOL CHILDREN

National baseline K-8 school trip data from Safe Routes to School (SRTS) was used to estimate mode share for K-12 school trips such as those in Richland County School District One or other local school systems. For each type of trip, average trip distance applied to estimate the total distance traveled by walking and bicycling. National average trip distance multipliers are sourced from NHTS and SRTS, ranging from 0.36 miles for the K-12 walk to school to 3.54 miles per adult bike commute trip.

FIGURE 1 - RATIO OF BICYCLE-TO-WORK TRIPS TO OTHER BICYCLE TRIPS (SOURCE: NHTS 2009)

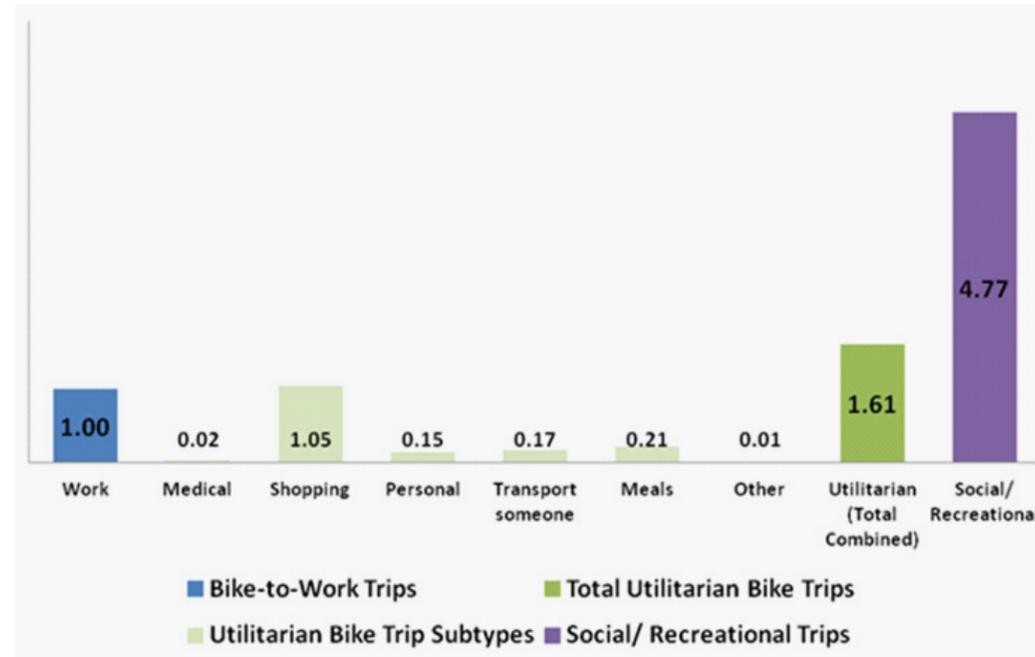
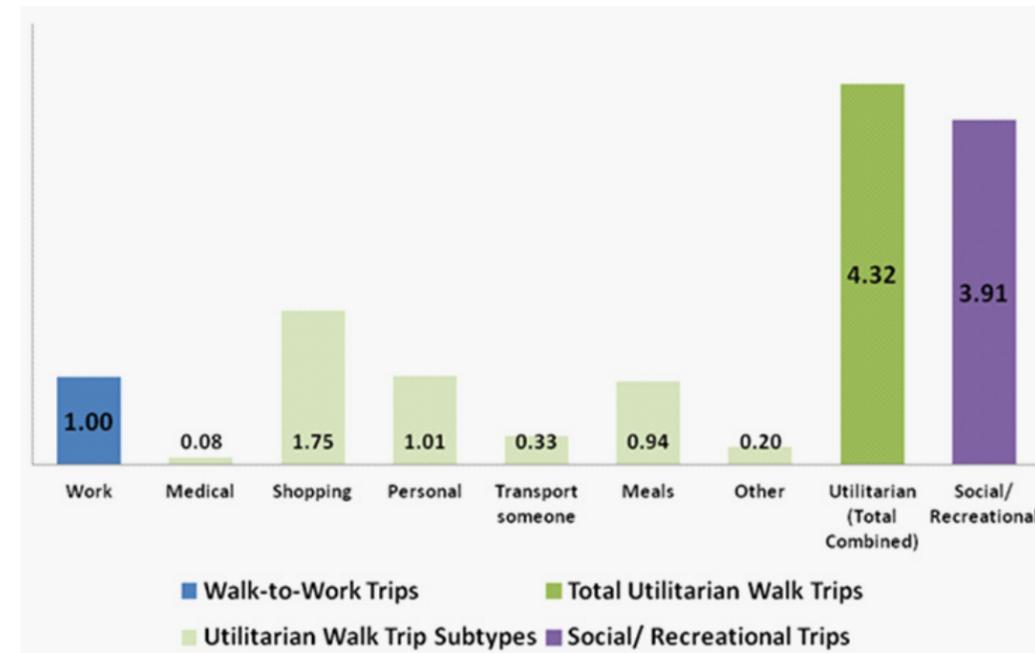


FIGURE 2 - RATIO OF BICYCLE-TO-WORK TRIPS TO OTHER BICYCLE TRIPS (SOURCE: NHTS 2009)



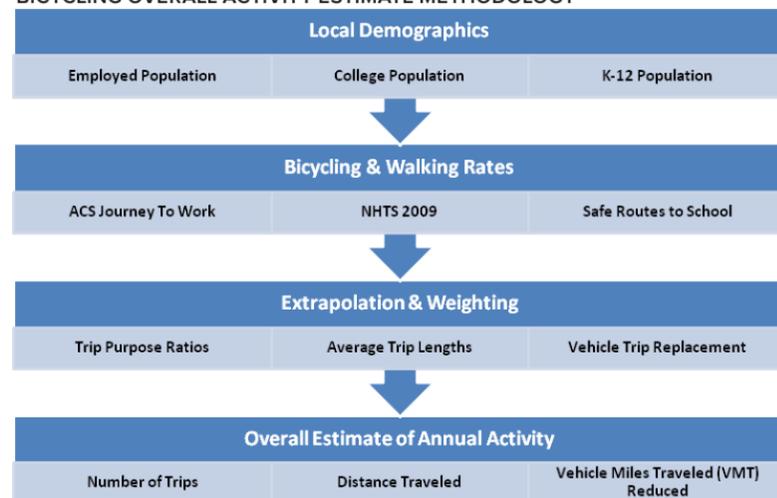


## BICYCLING AND WALKING ACTIVITY ESTIMATE REFERENCES AND METHODOLOGY

Figure 3 provides a visual depiction of the steps used to translate local and national transportation data into an annual estimate of bicycling and walking activity currently happening in Columbia.

The scale of health benefits created by bicycling and walking are based on the number of people using walking and bicycling for transportation, the rate at which they walk and bike, and the distance they travel using active transportation. By multiplying estimates of overall bicycling and walking trips with average trip distances and normal travel speeds, these data can be used to estimate quantities of physical activity generated by current transportation behaviors in the community at large.

**FIGURE 3 - COLOMBIA EXISTING WALKING AND BICYCLING OVERALL ACTIVITY ESTIMATE METHODOLOGY**



**TABLE 1 – BICYCLING AND WALKING ACTIVITY ESTIMATION REFERENCES - TRIP PURPOSE MULTIPLIERS**

Overall Bike/Walk Activity Extrapolation - Trip Purpose Multipliers		
Factor	Value	Source/Note
Commuter Trip Mode Share		
- Bike:	0.42%	ACS 2010-12
- Walk:	12.96%	ACS 2010-12
College Trip Mode Share		
- Bike:	1.67%	NHTS 2009
- Walk:	6.82%	NHTS 2009
School Trip Mode Share (K-12)		
- Bike:	1.00%	SRTS Baseline, 2010
- Walk:	13.35%	SRTS Baseline, 2010
Utilitarian Trip Multiplier		
- Bike:	1.61%	NHTS 2009 (avg. number of utilitarian trips per commute)
- Walk:	4.32%	NHTS 2009 (avg. number of utilitarian trips per commute)
Social/Recreational Trip Multiplier		
- Bike:	4.77%	NHTS 2009 (avg. number of soc./rec. trips per commute trip)
- Walk:	3.91%	NHTS 2009 (avg. number of soc./rec. trips per commute trip)

\* 2009 National Household Travel Survey (<http://nhts.ornl.gov/det/Extraction3.aspx>)

\*\* Safe Routes to School Travel Data: A Look at Baseline Results. National Center for Safe Routes to School, 2010 ([http://www.sacog.org/complete-streets/toolkit/files/docs/NCSRTS\\_SRTS%20Travel%20Data.pdf](http://www.sacog.org/complete-streets/toolkit/files/docs/NCSRTS_SRTS%20Travel%20Data.pdf)).



**TABLE 2 – BICYCLING AND WALKING ACTIVITY ESTIMATION REFERENCES - TRIP DISTANCE MULTIPLIERS**

Overall Bike/Walk Activity Extrapolation - Trip Purpose Multipliers		
Factor	Value	Source/Note
Commuter Trip Distance (miles)		
- Bike:	3.54	NHTS 2009
- Walk:	0.67	NHTS 2009
College Trip Distance (miles)		
- Bike:	2.09	NHTS 2009
- Walk:	0.48	NHTS 2009
School Trip Distance (K-12)		
- Bike:	0.77	SRTS Baseline, 2010
- Walk:	0.36	SRTS Baseline, 2010
Utilitarian Trip Distance (miles)		
- Bike:	1.89	NHTS 2009
- Walk:	0.67	NHTS 2009
Social/Recreational Trip Distance (miles)		
- Bike:	2.20	NHTS 2009
- Walk:	0.78	NHTS 2009

**TABLE 3 – BICYCLING AND WALKING ACTIVITY ESTIMATION REFERENCES - ANNUAL MULTIPLIERS**

Overall Bike/Walk Activity Extrapolation - Trip Purpose Multipliers		
Factor	Value	Source/Note
Annual Work Days	251	261 Weekdays - 10 Federal Holidays
Annual College Class Days	150	Assumes two 15-week semesters/three 10-week quarters
Annual K-12 School Days	180	South Carolina state minimum*

\* Number of Instructional Days/Hours in the School Year, Education Commission of the States, 2008 (<http://www.ecs.org/html/Document.asp?chouseid=7824>).



# Physical Activity Benefits of Active Transportation

## Introduction

**Current levels of bicycling in Columbia are just slightly lower than the national average, at 0.42%, but walking rates are some of the highest in the country at nearly 13%.**

Together walking and bicycling activity in Columbia returns significant benefits to the region. The Centers for Disease Control and Prevention (CDC) recognizes bicycling and walking are common activities that people can participate in to be physically active and increase their health. By walking and bicycling for transportation, Columbia residents can incorporate meaningful physical activity into their daily schedule. Exercise from bicycling and walking transportation typically falls under moderate intensity physical activity (see Table 4).

**TABLE 4 – BICYCLING AND WALKING ACTIVITY ESTIMATION REFERENCES - TRIP PURPOSE MULTIPLIERS**

Moderate Intensity
- Walking Briskly (3 miles per hour or faster, but not race-walking)
- Water aerobics
- Bicycling slower than 10 miles per hour
- Tennis (doubles)
- Ballroom dancing
- General gardening
Vigorous Intensity
- Race-walking, jogging, or running
- Swimming laps
- Tennis (singles)
- Aerobic dancing
- Bicycling 10 miles per hour or faster
- Jumping rope
- Heavy gardening (continuous digging or hoeing)
- Hiking uphill or with a heavy backpack

For many Columbia residents, meeting the CDC’s recommended minimum guideline of 150 minutes of moderate intensity physical activity per week could be as simple as commuting or making daily errands by walking and bicycling. A walk commute of three quarters of a mile each way, or a bicycle commute of 2.5 miles each way, five times per week, is sufficient to meet the CDC’s recommended guideline.

Current levels of bicycling and walking transportation already make a significant contribution to the overall level of physical activity and health of residents in the community. Using the estimates of annual bicycling and walking activity using the methodology described above, **Columbia residents bike and walk a combined 40 million trips annually, traveling a total of 30 million miles. This translates into about 9 million hours of moderate intensity physical activity annual from walking and bicycling** (see Table 6, Table 7 and Table 8).

**TABLE 5 - EXAMPLE PHYSICAL ACTIVITY BENEFITS FROM DAILY ACTIVE TRANSPORTATION**

Example Physical Activity Benefits from Active Transportation			
Active Transportation Mode	Commute Distance (miles, round trip)	Assumed Speed	Weekly Minutes of Exercise (assumes 5 day work week)
Walking	1.5	3 mph	150
Bicycling	5.0	10 mph	150
<b>CDC recommended weekly physical activity (minutes)</b>			<b>150</b>

**TABLE 6 - COLUMBIA ESTIMATED ANNUAL ACTIVE TRANSPORTATION TRIPS**

Columbia Estimated Physical Activity Benefits of Active Transportation	
<b>Estimated Annual Walking Trips</b>	<b>38,546,736</b>
Commuter walking trips	4,029,554
Utilitarian walking trips	17,421,580
K-12 walking trips	815,963
College commute walking trips	515,215
Social/recreational walking trips	15,764,424
<b>Estimated Annual Bicycling Transportation Trips</b>	<b>1,161,821</b>
Commuter walking trips	132,023
Utilitarian walking trips	212,709
K-12 walking trips	61,121
College commute walking trips	126,469
Social/recreational walking trips	629,497
<b>CDC recommended weekly physical activity (minutes)</b>	<b>39,708,557</b>



**TABLE 7 - COLUMBIA TRANSPORTATION PHYSICAL ACTIVITY BENEFITS - DISTANCE TRAVELLED**

Columbia Estimated Physical Activity Benefits of Active Transportation		
Estimated Annual Miles Walked	Average Distance (miles)	Total Annual Distance (miles)
Commuter walking trips	0.67	2,699,801
Utilitarian walking trips	0.67	11,614,445
K-12 school walking trips	0.36	289,765
College commute walking trips	0.48	247,299
Social/recreational walking trips	0.78	12,250,882
<b>Walking Subtotal</b>	-	<b>27,108,191</b>
Estimated Annual Miles Biked	Average Distance (miles)	Total Annual Distance (miles)
Commuter bicycling trips	3.54	467,372
Utilitarian bicycling trips	1.89	402,727
K-12 school bicycling trips	0.77	46,939
College commute bicycling trips	2.09	263,918
Social/recreational bicycling trips	2.20	1,384,412
<b>Bicycling Subtotal</b>	-	<b>2,565,369</b>
<b>Estimated Annual Miles Traveled Using Active Transportation</b>		<b>29,667,560</b>

**TABLE 8 - COLUMBIA ACTIVE TRANSPORTATION PHYSICAL ACTIVITY BENEFITS - HOURS OF ACTIVITY**

Columbia Estimated Physical Activity benefits of Active Transportation			
Active Transportation mode	Distance Traveled (miles)	Assumed Speed	Total Hours of Exercise
Walking Trips	27,102,191	3 mph	9,034,064
Bicycling Trips	2,565,369	10 mph	256,537
<b>Total</b>	<b>29,667,560</b>	-	<b>9,290,601</b>



## Potential Increased Benefits

Columbia is taking steps to improve the accessibility, safety, and quality of the walking and bicycling environment. The League of American Bicyclists has recognized Columbia as a Bronze Bicycle Friendly Community (BFC) since 2008. The city's new movement toward investing in bicycling and walking network improvements is starting to show results, and further improvements that increase walking and bicycling rates could return greater annual health benefits to the community.

Other cities awarded BFC designation can provide a valuable reference point for setting goals and creating a vision for what role bicycling could play in the future. Around the state, five other cities, 16 businesses, and two universities have achieved Bicycle Friendly status from the League of American Bicyclists. Many BFCs have reputations for their livability and the quality of their walking environment in addition to bicycling, providing examples for how active transportation can help create healthier, livable communities. Table 9 shows existing walking and bicycling rates in Columbia compared to other, similarly sized Bronze- and Silver-level BFC cities. It is also worth noting that, while there are currently no communities in South Carolina designated as a Walk Friendly Community (a program begun in 2010 and administered by the UNC Highway Safety Research Center's Pedestrian and Bicycle Information Center.), the following peer cities have earned the designation at the level noted:

- Tallahassee, FL: Silver
- Fort Collins, CO: Bronze
- Charlottesville, VA: Gold

The League of American Bicyclists reports that BFC-awarded cities have seen 80% growth in bicycling between 2000 and 2011. Although many Bronze-level BFC cities in the South have bicycle commuting rates similar to the national average, the average Silver-level bike friendly community has bicycling rates several times the national average. In these communities, commute mode choice data from ACS shows that many residents are able to get regular exercise by walking and bicycling for transportation.

**TABLE 9 - COMPARISON WALKING AND BICYCLING RATES**

Peer City Bicycling and Walking Rate Comparisons						
Geography	BFC Level	Population	Employed Population	Bicycle Mode Share	Walk Mode Share	Transit Mode Share
United States	-	306,603,772	139,488,206	0.53%	2.83%	4.99%
Tallahassee, FL	Bronze	184,079	86,782	0.86%	3.39%	2.22%
Fort Collins, Colorado	Platinum	146,235	75,098	6.39%	3.82%	1.55%
<b>Columbia, South Carolina</b>	<b>Bronze</b>	<b>130,596</b>	<b>61,915</b>	<b>0.42%</b>	<b>12.96%</b>	<b>1.75%</b>
Charleston, South Carolina	Bronze	123,226	62,300	2.52%	5.55%	2.92%
Athens & Clarke County, Georgia	Bronze	117,331	49,342	2.14%	5.72%	2.95%
Portsmouth, Virginia	Bronze	95,915	41,095	0.55%	3.92%	2.02%
Charlottesville, Virginia	Silver	43,644	20,773	3.29%	11.32%	8.21%

Population and modeshare data obtained from 2012 American Community Survey 3-year Estimates



**If bicycling rates in Columbia could grow similarly to BFC cities, health and other benefits to the city would increase significantly.** Table 10 and Table 11 explore the potential benefits of increased bicycling rates in Columbia at several example increased rates.

**TABLE 10 - POTENTIAL AIR QUALITY AND MONETIZED BENEFITS OF INCREASED BICYCLING IN COLUMBIA**

Columbia Potential Annual Bicycle Benefits			
	Current	Double Current Bike Mode Share	Example Silver BFC (Charlottesville)
<b>Bicycle Commute Mode Share</b>	<b>0.42%</b>	<b>0.84%</b>	<b>3.29%</b>
Annual VMT Reduced	846,000	1,690,000	6,630,000
<b>Air Quality</b>			
CO2 Emissions Reduced (pounds)	688,000	1,380,000	5,390,000
Other Vehicle Emissions Reduced (pounds)	27,000	54,000	212,000
Total Vehicle Emissions Costs Reduced	\$20,000	\$40,000	\$157,000
<b>Social Benefits</b>			
Reduced Traffic Congestion Costs	\$42,000	\$84,000	\$329,000
Reduced Vehicle Crash Costs	\$304,000	\$610,000	\$2,380,000
Reduced Road Maintenance Costs	\$127,000	\$250,000	\$990,000
<b>Individual Benefits</b>			
Household Vehicle Operation Cost Savings	\$478,000	\$960,000	\$3,740,000
Health Care Cost Savings from Physical Activity	\$98,000	\$196,000	\$770,000
<b>Total Benefits:</b>	<b>\$1,069,000</b>	<b>\$2,140,000</b>	<b>\$8,370,000</b>

Note: Estimates reflect conceptual benefits that would be generated at given increases in bicycle use as if they existed in Columbia today. Values are rounded for readability. Values are not discounted and do not reflect future demographic growth, cost changes or other multiplier changes.

**TABLE 11 - POTENTIAL PHYSICAL ACTIVITY BENEFITS OF INCREASED BICYCLING IN COLUMBIA**

Columbia Potential Annual Bicycle Benefits			
	Current	Double Current Bike Mode Share	Example Silver BFC (Charlottesville)
<b>Bicycle Commute Mode Share</b>	<b>0.42%</b>	<b>0.84%</b>	<b>3.29%</b>
Annual Bicycling Trips	1,160,000	2,320,000	8,980,000
Annual Miles Biked	2,570,000	5,140,000	19,890,000
Annual Hours of Physical Activity	300,000	600,000	2,320,000

Note: Estimates reflect conceptual benefits that would be generated at given increases in walking use as if they existed in Columbia today. Values are rounded for readability and do not reflect future demographic growth or other multiplier changes.



Bicycling rates are typically more responsive to changes in transportation infrastructure than walking. While national bicycling rates have trended upward for the last decade – growing nearly 50% over that time – walking rates are still declining slowly at the national level. Because walking is heavily dependent on the availability of short trips – generally under one mile – walking is more dependent on factors, such as land use, that are slow to change. It is quicker to build a bike boulevard or install a cycle track than it is to incent walkable, mixed-use development, which is dependent on private developers and the health of the real estate market. Bicycling rates in Columbia are therefore more likely to increase at a faster relative rate than walking, and may hold greater short-term potential for creating health benefits to the region. Table 12 and Table 13 below show the benefits of walking at example increased rates; it may be challenging to increase walking rates to levels shown, since current walking rates in Columbia are already among the highest in the nation.

**TABLE 12 - POTENTIAL AIR QUALITY AND MONETIZED BENEFITS OF INCREASED WALKING IN COLUMBIA**

<b>Columbia Potential Annual Bicycle Benefits</b>			
<b>Walk Commute Mode Share ( key activity indicator)</b>	<b>Current 13.0%</b>	<b>Example 2% Walk Mode Share Increase 15.0%</b>	<b>Example 4% Walk Mode Share Increase 17.0%</b>
Annual VMT Reduced	11,846,000	13,670,000	15,500,000
<b>Air Quality</b>			
CO2 Emissions Reduced (pounds)	9,637,000	11,120,000	12,610,000
Other Vehicle Emissions Reduced (pounds)	384,000	440,000	500,000
Total Vehicle Emissions Costs Reduced	\$276,000	\$320,000	\$360,000
<b>Social Benefits</b>			
Reduced Traffic Congestion Costs	\$598,000	\$84,000	\$329,000
Reduced Vehicle Crash Costs	\$4,265,000	\$4,920,000	\$5,580,000
Reduced Road Maintenance Costs	\$1,777,000	\$2,050,000	\$2,330,000
<b>Individual Benefits</b>			
Household Vehicle Operation Cost Savings	\$6,693,000	\$7,730,000	\$8,760,000
Health Care Cost Savings from Physical Activity	\$1,213,000	\$1,400,000	\$1,590,000
<b>Total Benefits:</b>	<b>\$14,815,000</b>	<b>\$17,100,000</b>	<b>\$19,400,000</b>

Note: Estimates reflect conceptual benefits that would be generated at given increases in walking use as if they existed in Columbia today. Values are rounded for readability. Values are not discounted and do not reflect future demographic growth, cost changes or other multiplier changes.

**TABLE 13 - POTENTIAL PHYSICAL ACTIVITY BENEFITS OF INCREASED WALKING IN COLUMBIA**

<b>Columbia Potential Annual Bicycle Benefits</b>			
<b>Walking Commute Mode Share</b>	<b>Current 12.96%</b>	<b>Example 2% Walk Mode Share Increase 14.96%</b>	<b>Example 4% Walk Mode Share Increase 16.96%</b>
Annual Bicycling Trips	38,550,000	44,500,000	50,440,000
Annual Miles Biked	27,100,000	31,280,000	35,460,000
Annual Hours of Physical Activity	9,000,000	10,390,000	11,780,000

Note: Estimates reflect conceptual benefits that would be generated at given increases in walking use as if they existed in Columbia today. Values are rounded for readability and do not reflect future demographic growth or other multiplier changes.



# Key Findings

The demand analysis reveals that Columbia residents are already walking, biking, and accessing transit with a combined total of 40 million trips annually. This equates to a total of 30 million miles traveled by bike or on foot each year and about 9 million hours of moderate intensity physical activity.

When translating existing demand into measurable benefits to the Columbia community, the analysis reveals that **Columbia is already realizing over \$1 million in community-wide benefits from existing bicycling activity, and over \$14 million in community-wide benefits from existing walking activity.** With incremental increases in mode share for bicycling and walking, those monetary benefits will grow exponentially, equating to a significant return on investment when it comes to bicycling and walking infrastructure, policies, and programs.

By doubling the current bicycling mode share and increasing walking rates by two percentage points, Columbia could increase those benefits to more than \$19 million in community-wide impact. **By reaching the bicycling mode share of a peer Silver-level Bicycle Friendly Community and increasing walking mode share by a total of four percentage points, Columbia could realize an estimated \$27.7 million in economic benefits resulting from bicycling and walking activity,** nearly doubling the current estimated benefits.





# APPENDIX B: BFC AND WFC ASSESSMENT

## Introduction

The Bicycle Friendly Community (BFC) and Walk Friendly Community (WFC) programs are two national initiatives designed to encourage cities and towns across the country to improve the bicycling and walking environments in their communities and to recognize communities that are successfully doing so. The programs provide communities with invaluable resources related to bicycle and pedestrian planning, help communities identify projects and programs to improve the bicycling and walking environment, and also generate positive media attention at the national and local level for communities that earn a designation.

The BFC program is administered by the League of American Bicyclists, a national bicycling advocacy organization based in Washington, D.C. Since the program began, the League has awarded over 300 communities with “bicycle-friendly” status. There are currently 6 BFCs in South Carolina. In 2011, the Pedestrian and Bicycle Information Center, based in Chapel Hill, North Carolina, announced the development of the WFC Program. There are currently 47 “walk-friendly” designated communities around the country, but none yet in South Carolina.

Both the WFC and BFC program use the five “E’s” of bicycle and pedestrian planning as the framework for identifying successful biking and walking communities. The five “E’s” are: Engineering, Encouragement, Education, Enforcement, and Evaluation. Each program has its own detailed questionnaire that a city or town must complete online in order to apply for recognition. Five levels of award designation are possible in the BFC program: Bronze, Silver, Gold, Platinum, and Diamond. The WFC program offers four award levels: Bronze, Silver, Gold, and Platinum. Both programs offer an Honorable Mention category, as well.

In 2008, Columbia applied for BFC designation and received a Bronze level award. Columbia is one of five Bronze level communities in South Carolina, alongside Charleston, Greenville, Spartanburg, and Rock Hill. Hilton Head is the only Silver level community in the state; no South Carolina communities have reached Gold, Platinum, or Diamond BFC designation. There are two opportunities each year to apply to both the BFC and WFC programs: BFC deadlines are in the spring and fall of each year, and WFC deadlines are in the summer and winter of each year.

As part of the scope of this project, Walk Bike Columbia will include a BFC Action Plan to set clear action steps for Columbia to reach Gold level BFC status. This project will also involve completing and submitting Columbia’s WFC application in the spring of 2015, along with a WFC Action Plan for Columbia to become the first Walk Friendly Community in the state.



## BFC Assessment

The BFC application involves a detailed list of questions organized around the 5 “E’s”. The following scorecard uses this application framework to evaluate the current bicycling environment in Columbia. This scorecard is not intended to be a complete picture of BFC-readiness, but rather a useful snapshot of Columbia’s strengths and weaknesses based on our understanding of the selection criteria.

The BFC scorecard shows that:

- Columbia has a strong collection of Education and Encouragement efforts to develop a safer and more welcoming bicycling environment.
- Some Engineering and Enforcement initiatives promote bicycle safety, convenience, and comfort, but several policies and programs are lacking in these categories that could further improve Columbia’s bicycling environment.
- Columbia scores weakest on Evaluation & Planning; this planning process, the Bicycle and Pedestrian Advisory Committee, and the Safe Streets Save Lives Campaign provide a good foundation, but there is room for improvement. In particular, the City currently lacks a dedicated bicycle coordinator position and long-term tracking of valuable bicycle-related data, such as crashes, motor vehicle traffic volumes and speeds, and bicycle counts to target improvements and track progress.

With a total score of 18.5 out of 29 possible points, the City of Columbia shows its commitment to maintaining its BFC status and potential for a Silver level designation within the near-term. A higher range of points are needed to evidence a likelihood of attaining Silver (20-24) or Gold (25-29) level status.

**TABLE 14 - BICYCLE FRIENDLY COMMUNITY SCORECARD FOR THE CITY OF COLUMBIA**

Engineering	Yes (1 pt)	Partial (0.5 pt)	No (0 pt)	Description
Does Columbia have a complete streets policy or other policy that requires the accommodation of pedestrians and cyclists in all new road construction and reconstruction projects?				Adopted July 21, 2010 by resolution R2010-054.
Does Columbia have guidelines for bicycle facility design or provide regular training to engineers and planners regarding bicycle facility design?				FHWA/NHI training course, APBP webinars, send staff to training/conferences, NACTO Urban Bikeway Design Guide adoption. Design manual under development.
Does your community have a comprehensive, connected and well-maintained bicycling network?				75 miles of off-road facilities. 19 miles of bike lanes, 0.5 miles of sharrows, 20 miles of bike routes out of 740 total road miles.
Is bike parking readily available throughout the community?				The City does not currently have comprehensive bike parking requirements, but is installing bike corrals in key locations.
Are all bridges accessible to bicyclists?				Some bridges are unsafe or inaccessible to bicyclists.
Does the City employ traffic calming measures to slow motor vehicle traffic on city streets (such as road diets, ≤ 20 mph speed limits, speed tables, etc.)?				Traffic calming has been implemented in some neighborhoods in the city.
Are all public transit buses equipped with front-mounted bike racks?				All public buses are equipped with bike racks (USC buses are not).
Does Columbia have a citywide bicycle way-finding system?				Palmetto Trail signage guides user through the City and a pilot way-finding program is planned for the Vista Greenway.
<b>Engineering Score Total</b>				<b>5.8/8</b>



Education & Encouragement	Yes (1 pt)	Partial (0.5 pt)	No (0 pt)	Description
Has Columbia implemented Safe Routes to School (SRTS) programs in elementary and middle schools within the last 18 months? Does it include bicycle education?				51-75% of elementary schools & 26-50% of middle schools have SRTS programs with bicycle education.
Are adult bicycling education and skills courses regularly offered in Columbia?				Traffic Skills 101 class, cycling skills classes, commuter classes, bicycle maintenance classes.
Has Columbia implemented a program in the last 18 months to educate motorists, pedestrians and cyclists on their rights and responsibilities as road users (e.g., as part of drivers education curriculum, test, manual, or bus driver training)?				Safe Streets Save Lives Campaign, public service announcements, Share the Road videos and signage, dedicated page on City website.
Does Columbia have an up-to-date bicycle map available online and in print?				
Does Columbia celebrate bicycling during National Bike Month with community rides, Bike to Work Day or media outreach?				Bike to Work Day, mayor-led ride, public education and outreach.
Is there an active bicycle advocacy group in Columbia?				Palmetto Cycling Coalition, Columbia BPAC, Palmetto Conservation Foundation, Friends of Harbison State Forest, USC Bike Advisory Committee.
Has Columbia implemented any education and training programs related to bicycle education or safety for city staff?				Bicycle education through Bike to Work Day, safety materials distributed during Bike Month.
Does Columbia have an active bicycle club?				Carolina Cyclers, Midlands SORBA, Summit Cycles Riders, Outspokin' Ride Group.
Does Columbia host any signature events that promote bicycling (such as car-free streets)?				Weekly bike rides, family rides, races, charity rides, parades, workshops, guided trail rides.
Does Columbia have recreational bicycle facilities such as bike parks, greenway trails, mountain bike trails, and velodromes?				20 miles of paved shared use paths, Vista Greenway, 30 miles of natural surface paths, 25 miles of singletrack.
Does Columbia have a ticket diversion program (i.e., where road users who receive a traffic citation can waive their fines by attending a bicycle and pedestrian education course)?				
<b>Education &amp; Encouragement Total</b>				<b>8.5/11</b>



Enforcement	Yes (1 pt)	Partial (0.5 pt)	No (0 pt)	Description
Does Columbia have Traffic Safety officers that are trained in traffic law as it applies to bicyclists?				Law Enforcement Bicycle Association training, Smart Cycling course, LCI class.
Does Columbia have law enforcement or other public safety officers on bikes?				1-10% of officers patrol on bikes.
Does Columbia have laws in place that protect bicyclists, such as penalties for motorists who fail to yield to a cyclist when turning, or a ban on cell phone use while driving?				It is illegal to park or drive in a bike lane, penalties for motorists that "door" cyclists, safe passing distance law, ban on texting while driving.
Do police work regularly with traffic engineers and planners to review sites in need of safety?				
<b>Enforcement Total</b>				<b>2/4</b>

Evaluation & Planning	Yes (1 pt)	Partial (0.5 pt)	No (0 pt)	Description
Is there an active Bicycle Advisory Committee that meets regularly?				The Bicycle Pedestrian Advisory Committee meets monthly.
Is there a specific plan or program to reduce cyclist/motor vehicle crashes?				Safe Streets Save Lives Campaign, BPAC efforts.
Does Columbia conduct regular bicycle counts and/or surveys for long-term benchmark analysis of bicycling mode share?				Columbia will undertake its first bicycle and pedestrian counts as part of Walk Bike Columbia.
Does Columbia collect data related to bicycle-vehicle crashes, traffic volumes, and motor vehicle speeds on existing or future corridor improvement projects?				This process will be started by the bicycle and pedestrian plan under development.
Does Columbia have a bicycle master plan that is being implemented?				Under development.
Do you have a full-time Bicycle Coordinator or staff person responsible for bicycle-related issues?				About 10% of the Planning Administrator's time is devoted to bicycling issues.
<b>Enforcement Total</b>				<b>2.5/6</b>
<b>Bicycle Friendly Total</b>				<b>18.5/29</b>



## WFC Assessment

The WFC application involves a detailed list of questions organized around the 5 “E’s”. The following scorecard uses this application framework to evaluate the current walking environment in Columbia. This scorecard is not intended to be a complete picture of WFC-readiness, but rather a useful snapshot of Columbia’s strengths and weaknesses based on our understanding of the selection criteria.

Based on the WFC scorecard:

- Columbia has been **successful at implementing a variety of Education & Encouragement programs** related to walking.
- **Some Engineering and Enforcement practices and policies are positively influencing the walking environment**, while others currently limit pedestrian activity and safety.
- **Evaluation & Planning for pedestrians is the area most in need of improvement.** The City currently lacks a dedicated pedestrian coordinator position, a full range of planning initiatives and policies related to pedestrian safety and accessibility, and long-term tracking of valuable pedestrian-related data such as crashes, motor vehicle traffic volumes and speeds, and pedestrian counts to target improvements and track progress.

With a total score of 15 out of 32 possible points, the City of Columbia is identified as a candidate for Bronze level WFC status. A higher range of points are needed to evidence a likelihood of attaining Silver (19-25) or Gold (26-32) level status.

TABLE 15 - WALK FRIENDLY COMMUNITY SCORECARD FOR THE CITY OF COLUMBIA

Engineering	Yes (1 pt)	Partial (0.5 pt)	No (0 pt)	Description
Does Columbia have a complete streets policy or other policy that requires the accommodation of pedestrians and cyclists in all new road construction and reconstruction projects?				Adopted July 21, 2010 by resolution R2010-054.
Does Columbia have guidelines for pedestrian facility design or provide regular training to engineers and planners regarding pedestrian facility design?				FHWA/NHI training course, APBP webinars, send staff to training/conferences. Design manual under development.
Does Columbia have a connected network of sidewalks, trails, and/or paths in the city?				The City has 391 miles of sidewalk along 740 total road miles, plus 20 miles of paved shared use paths and 30 miles of natural surface paths, but there are still major gaps in the sidewalk network.
Does Columbia have a sidewalk condition and curb ramp inventory process?				
Are all bridges accessible to pedestrians?				Some bridges are unsafe or inaccessible to pedestrians.
Are crosswalks provided at all street intersections and at areas with high demand for pedestrian traffic?				Some street intersections and areas with high pedestrian demand lack crosswalks.
Are accommodations for persons with disabilities, such as curb ramps or audible signals, provided throughout Columbia?				Curb ramps are provided at some intersections. Audible signals are lacking.
Does the City employ traffic calming measures to slow motor vehicle traffic on city streets (such as road diets, ≤20 mph speed limits, speed tables, etc.)?				Traffic calming has been implemented in some neighborhoods in the city.
<b>Engineering Score Total</b>				<b>4.5/8</b>



Education & Encouragement	Yes (1 pt)	Partial (0.5 pt)	No (0 pt)	Description
Has Columbia implemented Safe Routes to School (STRS) programs elementary and middle schools within the last 18 months? Does it include pedestrian education?				51-75% of elementary schools & 26-50% of middle schools have SRTS programs with bicycle education.
Has Columbia implemented a program within the last 18 months to educate motorists, pedestrians and cyclists on their rights and responsibilities as road users (e.g., as part of drivers education curriculum, test, manual, or bus driver training)?				Safe Streets Save Lives Campaign focuses on bicyclist safety, but also benefits pedestrians. The BPAC promote pedestrian safety through education initiatives, recommendations, and programs.
Does Columbia celebrate walking with International Walk to School Day, regular walking events, Walk to Work Day, or media outreach?				National Walk @ Lunch Day Event.
Is there an active pedestrian advocacy group in Columbia?				Columbia BPAC, Palmetto Conservation Foundation, Friends of Harbison State Forest, Eat Smart Move More.
Has Columbia implemented any education and training programs related to pedestrian education or safety for city staff?				
Does Columbia promote the health and environmental benefits of walking?				Eat Smart Move More Obesity Summit, National Walk @ Lunch Day.
Does Columbia offer walking route maps, guides, or tours for residents and visitors?				Self-guided walking tours, historic tours, guided neighborhood tours, trail maps.
Does Columbia host any events that promote walking (such as car-free streets)?				Fun runs and walks, Walk @ Lunch Day, marathon races, parades, guided hikes.
Does Columbia have a ticket diversion program (i.e., where road users who receive a traffic citation can waive their fines by attending a bicycle and pedestrian education course)?				
<b>Education &amp; Encouragement Total</b>				<b>5.5/9</b>

Education & Encouragement	Yes (1 pt)	Partial (0.5 pt)	No (0 pt)	Description
Does Columbia have Traffic Safety officers that are trained in traffic law as it applies to pedestrians?				Columbia Police Department Traffic Safety Unit, Crossing Guard Unit.
Does Columbia use targeted enforcement programs to promote pedestrian safety in crosswalks (such as a "crosswalk sting", media campaign regarding pedestrian-related laws, progressive ticketing, etc.)?				
Does Columbia have a systematic strategy for selecting locations and countermeasures for traffic and pedestrian safety?				Traffic study and traffic calming request program.
Do police work regularly with traffic engineers and planners to review sites in need of safety?				
<b>Enforcement Total</b>				<b>1.5/4</b>



Education & Encouragement	Yes (1 pt)	Partial (0.5 pt)	No (0 pt)	Description
Is there a Pedestrian Advisory Committee that meets regularly?				The Bicycle Pedestrian Advisory Committee meets monthly.
Is there a specific plan or program to reduce pedestrian/motor vehicle crashes in Columbia?				Safe Streets Save Lives Campaign, BPAC efforts.
Does Columbia conduct regular pedestrian counts and/or surveys for long-term benchmark analysis of walking mode share?				Columbia will conduct its first bicycle and pedestrian counts as part of Walk Bike Columbia.
Does Columbia collect data related to pedestrian-vehicle crashes, traffic volumes, and motor vehicle speeds on existing or future corridor improvement projects?				This process will be started by the bicycle and pedestrian plan under development.
Does Columbia have a pedestrian master plan or pedestrian safety action plan?				Under development.
Does Columbia have a trails plan?				Multiple trail planning and development efforts exist and are being reflected in the current master planning process.
Does Columbia have a trails plan?				Multiple trail planning and development efforts exist and are being reflected in the current master planning process.
Has Columbia adopted an ADA Transition Plan for the public right of way?				
Does Columbia have a policy requiring sidewalks on both sides of arterial streets?				
Has Columbia established a connectivity policy, pedestrian-friendly block length standards, and connectivity standards for new developments, or convenient pedestrian access requirements?				Columbia requires that new student housing developments provide sidewalks, but broader policies are not in place.
Does Columbia have a full-time Pedestrian Coordinator or staff person responsible for pedestrian-related issues?				About 10% of the Planning Administrator's time is devoted to pedestrian issues.
Is Columbia served by public transportation?				
<b>Evaluation &amp; Planning</b>				<b>3.5/11</b>
<b>Walk Friendly Total</b>				<b>15/32</b>





## **APPENDIX C: PLANNING, POLICY, CODE, AND PROGRAMS REVIEW**

This section provides a summary of the planning, policy, and municipal code review completed as it relates to bicycle, pedestrian, and transit-related efforts in Columbia.



# Review of Existing Planning Efforts

## Introduction

This section provides a summary of bicycle, pedestrian, and transit planning-related efforts in Columbia. Twenty relevant plans were reviewed for information and recommendations relevant to walking and bicycling. The documents reviewed for this Plan are listed in Table 16 and described on the following pages.

**TABLE 16 - THE BACKGROUND DOCUMENT REVIEW INCLUDED AN ASSESSMENT OF PLANNING DOCUMENTS RELATED TO BICYCLE AND PEDESTRIAN PLANNING**

Plan	Agency	Year
Columbia Owens Master Plan	South Columbia Development Corporation and Columbia Empowerment Zone	2002
A Plan for the Redevelopment of East Central City	East Central City Consortium, City of Columbia	2004
The Master Plan for The Villages of North Columbia	City of Columbia	2005
Five Points "FutureFive" Redevelopment and Master Plan	The Five Points Association	2006
Lower Waverly Catalyst Redevelopment Plan	City of Columbia Planning Department	2006
Bike and Pedestrian Pathways Plan	Central Midland Council of Governments (CMCOG)	2006
Central Midlands Commuter Rail Feasibility Study	CMCOG	2006
Innovista Master Plan	University of South Carolina, City of Columbia	2007
Midlands Tomorrow Household Travel Survey Report	CMCOG	2007
Midlands Tomorrow – 2035 Long Range Transportation Plan	CMCOG	2008
South Carolina Statewide Multimodal Transportation Plan – At a Crossroads	South Carolina Department of Transportation (SCDOT)	2008
The Columbia Plan: The Comprehensive Plan for Columbia, South Carolina, 2008-2018	City of Columbia Planning Department	2008
Southeast Lower Richland Sub-Area Transportation Study	CMCOG	2008
Columbia Area Transportation Study Transportation Improvement Program	CMCOG	2009
Regional Pathways Plan	CMCOG	2010
University of South Carolina Vision for a Sustainable Future: 2010 Master Plan	University of South Carolina	2010
Broad River Road Corridor and Community Master Plan	CMCOG and Richland County	2010
Irmo/Dutch Fork Sub-Area Transportation Study	CMCOG	2010
Central Midlands Regional Transportation Authority Comprehensive Operational Analysis Report	Central Midlands Regional Transit Authority (CMRTA)	2010
Central Midlands Regional Transportation Authority Park-and-Ride Study	CMRTA	2010
Columbia Connectivity: Linking Main Street and the Vista	Urban Land Institute - South Carolina	2011
COMET Vision: 2020	CMRTA	2012
Rosewood Plan: A Corridor & Neighborhood Plan	City of Columbia Planning & Development Department	2012
Joint Land Use Study Implementation for Fort Jackson – McGrady Training Center – McEntire JNGB	CMCOG	2013
City of Columbia Parks and Recreation Master Plan	City of Columbia	2013
Newberry-Columbia Alternatives Analysis	CMCOG	2014
Devine Street/Fort Jackson Boulevard Commercial Node Plan	CMCOG	2014



## Summary of Planning Efforts

### RELEVANT PLANS

#### Columbia Owens Master Plan

**Year:** 2002

**Description:** The purpose of this plan is to identify infrastructure investments and other improvements that can be made to stimulate economic development in the Columbia Owens area and Rosewood community. The plan identifies the primary weaknesses of the area as 1) a lack of direct truck access into the commercial/light industrial area, 2) poor storm drainage, and 3) litter, neglect of properties, poor maintenance, and the perception of crime. Recommendations include constructing a new spine road through the community to alleviate existing motor vehicle traffic congestion, with sidewalks included to improve pedestrian access through the area. This road and any other roadway or streetscape projects through the Columbia Owens/Rosewood community should be examined for opportunities to include bicycle and pedestrian improvements.

**Recommendations:**

- Traffic Improvements via a Spine Road (p. 28)
- Landscaping and Streetscape Improvements (p. 30)

#### A Plan for the Redevelopment of East Central City

**Year:** 2004

**Description:** This document is a Master Land Use and Redevelopment Plan for the East Central City area. The Land Use Plan presents strategies for the area's development and revitalization opportunities, and the Redevelopment Plan identifies catalyst projects for redeveloping twelve core Columbia neighborhoods. Key goals of the Master Plan are to create a pedestrian friendly environment; preserve, enhance, and create public open space, including linear trail space; and to develop high-density, mixed-use commercial activity nodes that include improvements for quality pedestrian, bicycle, and transit access. The plan also includes a Design Guidelines section with design specifications for pedestrian and bicycle improvements.

**Recommendations:**

- Recommendations (Section 2, p. 14-15)
- Land Use Plan (Section 4A, p. 3-6)
- Clusters (Section 4C, p. 2-15)
- Catalyst Projects (Section 5, p. 1-39)

#### The Master Plan for The Villages of North Columbia

**Year:** 2005

**Description:** This Master Plan presents a community vision and strategies to guide development in North Columbia as the area continues to grow. Included in the plan are several sites for catalyst projects that, through new construction and redevelopment, are intended to spur growth and activity in the area. Many recommendations are made to make North Columbia more pedestrian- and bicycle-friendly, including new and improved crosswalks, sidewalks, bike lanes, trail connections, and streetscape enhancements.

**Recommendations:**

- Master Plan (Section 1, p. 12-13)
- Vision and Goals (Section 3, p. 83)
- Neighborhood Villages (Section 3, p. 84-130)
- Catalysts (Section 4, p. 138-176)



## Five Points “FutureFive” Redevelopment and Master Plan

**Year:** 2006

**Description:** The Five Points “Future Five” Plan identifies opportunities for development and redevelopment in order to promote economic vitality, livability, and the unique character of the Five Points area. The goals and objectives of the plan highlight the importance of creating pedestrian-friendly environments to attract residents, visitors, and businesses to the area. Pedestrian-related recommendations include encouraging interconnectivity and density along major streets to promote more pedestrian activity; developing strategies for pedestrian scaled signage; and improving the design of crosswalks and pedestrian lighting to improve safety.

### **Recommendations:**

- Goals and Objectives (p. 3-4)
- Master Plan Overview (p. 46)
- Implementation Recommendations (p. 49-55)

## Lower Waverly Catalyst Redevelopment Plan

**Year:** 2006

**Description:** The purpose of the Lower Waverly Catalyst Redevelopment Plan is to identify conservation areas and blighted areas within the community that have opportunities for revitalization projects. The eastern portion of the Lower Waverly neighborhood was highlighted as an area that has not yet seen the same focus on redevelopment that is occurring in surrounding communities. The Lower Waverly plan recommends that the catalyst projects included in A Plan for the Redevelopment of East Central City be implemented to promote the revitalization of the area, including new sidewalks and streetscape improvements.

### **Recommendations:**

- Appendices 6-8: Catalyst Project 1-2 (p. 52-54)

## Bike and Pedestrian Pathways Plan

**Year:** 2006

**Description:** The 2006 Bike and Pedestrian Pathways Plan provides recommendations for sidewalks, on-road bicycle improvements, off-road multi-use trails, and over 35 program and policy strategies for improving the bicycle and pedestrian network in the Columbia Area Transportation Study (COATS) region. The plan identifies key local issues with walking and bicycling: a lack of sidewalks and shoulders; inadequate route signage; roadway debris; a lack of development regulations requiring pedestrian and bicycle facilities; and a lack of bicycle and pedestrian safety education and enforcement. The Bike and Pedestrian Strategies and Early Action Projects in the plan are designed to address these challenges through a series of phased infrastructure, programmatic, and policy improvements.

### **Recommendations:**

- Bike and Pedestrian Strategies (p. 33-42)
- Early Action Projects (p. 43-53)
- Preliminary Routing (p. 53-55)
- Three Rivers Greenway Additions (p. 55-56)
- Implementation Plan (p. 57-59)



## Central Midlands Commuter Rail Feasibility Study

**Year:** 2006

**Description:** The Central Midlands Council of Governments (CMCOG) completed this study to evaluate the feasibility of developing and operating commuter rail in the Central Midlands region. The study also assessed the feasibility of other high-capacity transit alternatives, such as Bus Rapid Transit (BRT). The study investigated three corridors for potential service: Newberry to Columbia, Camden to Columbia, and Batesburg-Leesville to Columbia. The Camden corridor ranked best in the comparative analysis. This study does not include recommendations specific to bicycle and pedestrian planning, but providing walking and bicycling access to transit and amenities (such as sidewalks, bikeways, and bicycle parking) will be important as transit improvements along the Camden corridor or other corridors are pursued.

## Innovista Master Plan

**Year:** 2007

**Description:** The Innovista Master Plan presents a vision for a vibrant, mixed-use urban neighborhood in the Innovista planning area near downtown Columbia. The plan seeks to revitalize this historically industrial area through redevelopment and the reuse of vacant properties and parking lots, extension and redesign of the historic street grid, and development of a grand waterfront park. Some streets in the planning area are identified for improvements to primarily serve pedestrian and bicycle traffic, (“A” streets) while other streets will remain designed primarily for automobile traffic (“B” streets). Two trails are planned as part of the waterfront park and restored Columbia Canal to complete the twelve-mile long Three Rivers Greenway regional trail system.

### **Recommendations:**

- Community Goals (p. 23)
- Urban Design Concept (p. 24-27)
- Open Space (p. 28-30)
- Circulation (p. 31-37)
- Greene Street Corridor (p. 40-57)
- Implementation (p. 81-82)

## Midlands Tomorrow Household Travel Survey Report

**Year:** 2007

**Description:** The Central Midlands Council of Governments (CMCOG) sponsored the Midlands Tomorrow Household Travel Survey to obtain demographic information and travel behavior data from Columbia residents. This information is used to update data inputs for the regional transportation model, which predicts future travel demand on the region’s roadways. When respondents were asked how important it is to them to have sidewalks in their neighborhood, 56.9 percent answered “Important” or “Very Important” When asked how important it is to them to have neighborhood bike paths, 42.6 percent answered “Important” or “Very Important”. When asked to rate their neighborhood sidewalk and bike path networks, 46.4 and 35.2 percent rated their sidewalk network and bike path network as average or worse (grade “C” to “F”), respectively. No recommendations were included in the report.



## Midlands Tomorrow 2035 Long Range Transportation Plan

**Year:** 2008

**Description:** The Midlands Tomorrow: 2035 Long Range Transportation Plan is the regional transportation plan for the Columbia metropolitan area prepared by the Central Midlands Council of Governments (CMCOG). CMCOG is the MPO for the urbanized area around Columbia, the Columbia Area Transportation Study (COATS), and is responsible for developing, maintaining, and administering the region's LRTP. Chapter 5, "Quality of Life," covers bicycle and pedestrian planning initiatives and recommends a multimodal system that improves the quality of life for residents by providing bicycling and walking facilities, greenway trails, and walkable downtowns. The LRTP lists the twenty-six Early Action Projects from the Bike and Pedestrian Pathways Plan to fill critical gaps that exist in the current network and to build momentum for other bicycle and pedestrian initiatives. A series of Transportation Network Design Principles are outlined in the plan to guide facility development, along with complete streets design standards.

### **Recommendations:**

- Goals for the 2035 LRTP (p. 5)
- Chapter 5: Quality of Life (p.69-87)
- CMCOG Regional Pathways Plan (Appendix A)
- Mitigation Strategies for Congested Corridors (p. 142-143) establishes five major mitigation strategies including, "shifting trips from automobiles to other modes"
- Over 900 people responded to the LRTP Transportation Survey. The issues that survey respondents would like to see addressed in the future include, "More sidewalks in subdivisions" and "More bike/walking facilities".

## The Columbia Plan: The Comprehensive Plan for Columbia, South Carolina, 2008-2018

**Year:** 2008

**Description:** The Columbia Plan was developed by the City of Columbia Planning Department to guide the city's growth and development over the next ten years. The plan's Transportation Element includes recommendations to better coordinate the regional transportation system – including the bicycle and pedestrian network – with land use planning and policies. Suggested pedestrian and bicycle improvements include hiring a Bike/Pedestrian Coordinator, conducting Holistic Design and Planning, requiring Walking and Biking Oriented Neighborhood Design, and implementing Streetscape projects along major transportation corridors. No specific locations are identified for pedestrian and bicycle improvements. The plan's goals, policies, and objectives provide general planning and policy guidance for future detailed studies, plans, and recommendations.

### **Recommendations:**

- Pedestrian and Bicycle Facilities (p. 204-206)
- Goals, Policies and Objectives (p. 211-233)

## Southeast Lower Richland Sub-Area Transportation Study

**Year:** 2008

**Description:** This report provides an analysis of the existing multimodal transportation system for Lower/Southeast Richland County, development trends, transportation needs, and recommended improvements. Multimodal improvements were identified for roadways, public transportation services, intersections, bicycle facilities, and pedestrian facilities.

### **Recommendations:**

- Suggested Bicycle and Pedestrian Improvements (p. 40-45)
- Potential New Developments (p. 56-57)
- Roadway and Intersection Improvements (p. 92)
- Bicycle and Pedestrian Needs (p. 93-104)
- Policy Needs and Recommendations (p. 126-127)



## Columbia Area Transportation Study (COATS) Transportation Improvement Program

**Year:** 2009

**Description:** The Transportation Improvement Program (TIP) establishes a list of agreed-upon transportation capital projects that are anticipated to receive federal funds for the next 7 years (2009-2015). The majority of projects are aimed at increasing the safety and efficiency of the existing transportation systems. Relevant bicycle and pedestrian improvements listed in the TIP include sidewalks, bikeways, wide outside shoulders, trails, intersection improvements, medians, street lighting, and other streetscaping. The TIP also includes a list of resurfacing projects, which may provide an opportunity to concurrently implement bicycle and pedestrian improvements.

## CMCOG Regional Pathways Plan

**Year:** 2010

**Description:** The Regional Pathways Plan highlights twenty-eight existing and proposed greenway, bikeway, and sidewalk projects to connect local and regional destinations, including major employment centers, Downtown Columbia, tourist and recreational attractions, schools, parks, places of worship, and shopping centers. This vision plan includes over 272 miles of existing and proposed facilities to create a regional bicycle and pedestrian pathways network. Phase I summarizes the existing conditions, gaps, and recommendations from various recent transportation, bicycle, and pedestrian studies. Phase II will involve more detailed analysis of specific corridors, short- and long-term recommendations, and identification of funding and implementation strategies.

### **Recommendations:**

- Regional Pathway Index (p. 8)

## University of South Carolina Vision for a Sustainable Future: 2010 Master Plan

**Year:** 2010

**Description:** The University of South Carolina completed the 2010 Master Plan to address the University's existing facility needs and projected future development. In addition to providing a development framework for the campus as a whole, the plan includes a long range vision to improve USC's South Campus with a linear park, student recreation area, and improved pedestrian connections to Williams Brice Stadium. Improved connections between the historic core campus, Innovista, and South Campus are also addressed. Three streets are recommended as pedestrian and bicycle priority streets – Greene Street, Main Street, and Sumter Street – to provide better walking and bicycling connections between areas of campus and to surrounding areas. The recommended restoration of Rocky Branch Creek into a campus linear park would include multi-use trails that link to a regional parks and trails network.

### **Recommendations:**

- Goals (p. 6)
- The Vision Plan for South Campus (p. 16-17)
- Pedestrian and Vehicular Circulation and Parking (p. 21-25)

## Broad River Road Corridor and Community Master Plan

**Year:** 2010

**Description:** This plan outlines strategies for the development and redevelopment of the Broad River Road Corridor, a conventional suburban corridor from the Broad River Bridge to Harbison State Forest that connects downtown Columbia to the surrounding region. The goals of the plan include developing an integrated land use and transportation system, introducing improved multimodal networks, encouraging transit oriented mixed-use developments, and enhancing connectivity to neighborhoods. Analysis for the plan included a Walkability Index study. Recommendations include a detailed alignment and feasibility study for developing a multi-use trail along Broad River, multiple trailheads, and bicycle lanes and sidewalks on Broad River Road where right-of-way exists.

### **Recommendations:**

- Project Goals (p. 5)
- Master Plan Guiding Principles (p. 17)
- Objectives (p. 28)
- Concept Plan (p. 29)
- Action Strategies (p. 46-47, 55, 75)
- Pedestrian Circulation and Walkability (p. 61-69)
- Bike Lanes (p. 70-71)
- Implementation Program (p. 100-106)



## Irmo/Dutch Fork Sub-Area Transportation Study

**Year:** 2010

**Description:** The purpose of this study is to guide the development of multimodal transportation improvements in the Irmo/Dutch Fork region. The study examines the existing transportation system, including bicycle and pedestrian facilities and transit service. A key issue identified in the document is a lack of sidewalk connections to schools, shopping, and parks throughout the study area. The study survey found that, on average, residents would like to see the majority of transportation funding spent on a combination of pedestrian facilities (15.5% of total funding, on average), bicycle facilities (12.4%), and transit service (23.5%). To address this demand and the current lack of bicycle and pedestrian connectivity, the plan recommends creating “complete streets”, developing dense mixed-use and transit-oriented development centers where appropriate, and maximizing the availability of transportation options by providing sidewalk, bike lanes, and expanded public transit.

### **Recommendations:**

- Sidewalk Recommendations and Crossing Improvements (p. 38)
- Bicycle Facility and Multi-Purpose Path Recommendations (p. 39-40)
- Public Transit Needs and Recommendations (p. 41-44)
- Intersection Improvements (p.45-46)
- Access Management Recommendations (p. 47-48)

## Central Midlands Regional Transportation Authority Comprehensive Operational Analysis Report

**Year:** 2010

**Description:** The CMRTA Comprehensive Operational Analysis identifies near-term, short-range, and long-range transit service recommendations to expand transit opportunities for Columbia-area residents. The report identifies three major themes and stages for improving transit: improving service reliability in the Near-Term Plan, enhancing service connectivity in the Short-Range Plan, and increasing transit accessibility in the Long-Range Plan. While the document does not include any specific pedestrian or bicycle recommendations, walking is recognized as an important transit access and egress mode. According to a CMRTA survey, 83.9% of transit users walk to the bus, and 87.1% walk from the bus to their final destination. Pedestrian facilities should therefore be a priority along current and proposed transit corridors (p. 55) and to connect proposed locations for future transfer centers (p. 43).

## Central Midlands Regional Transportation Authority Park-and-Ride Study

**Year:** 2010

**Description:** The purpose of the CMRTA Park-and-Ride Study is to analyze potential park-and-ride facilities in the region and assess which areas are best suited for the development of park-and-ride sites. The CMRTA does not currently have any designated park-and-ride facilities within its service area. Because this study is focused on opportunities to drive to and take transit, it does not include any specific pedestrian and bicycle recommendations. However, the study does list sidewalk facilities, bike racks, and bike lockers as items that should be included at each park-and-ride facility to provide pedestrian and bicycle access to transit.

## Columbia Connectivity: Linking Main Street and the Vista

**Year:** 2011

**Description:** This report explores ways to improve connections between Main Street, the University of South Carolina campus, the Innovista, and the Vista – particularly for pedestrians and bicyclists – to support the development and revitalization of downtown Columbia. Some of the major recommendations of the study that affect bicycle and pedestrian travel include: repurpose Assembly Street for multimodal use, establish connections between adjoining neighborhoods, launch a traffic safety and multimodal transportation public awareness campaign, conduct a road diet on Gervais Street, and improve north-south streetscapes.

### **Recommendations:**

- Panel Recommendations (p. 15-21)

## CMRTA COMET Vision: 2020

**Year:** 2012

**Description:** Vision: 2020 is a visionary plan to restructure and rebrand public transportation service in the Central Midlands region. The purpose of the effort is to create a transit system that is more innovative and intelligent, more connected throughout the region, and more accessible to all residents. Major efforts recommended in the plan are an upgrade to natural gas fueled buses, an improved downtown Transit Center, high-frequency service along high-capacity corridors, using smaller buses to serve neighborhoods with lower-density routes, offering reloadable smartcard passes, and providing real-time bus information via smartphones and online. Larger-capacity bicycle racks are recommended at bus stops and stations to support bicycle access to transit. No pedestrian or bicycle infrastructure recommendations are made, although it will be important to accommodate walking and bicycling access to transit along all routes.



## Rosewood Plan: A Corridor & Neighborhood Plan

**Year:** 2012

**Description:** This plan serves as a guide for the future growth, development, and redevelopment of the Rosewood corridor and neighborhood. In terms of pedestrian amenities, the community is defined as being isolated from the overall pedestrian network, with Rosewood Drive acting as a barrier to pedestrian activity. At the time of the plan's writing, most streets in the neighborhood lack sidewalks, including many streets near the community's four elementary schools. Bicycle connectivity is also rated as being low both within the neighborhood and along the Rosewood corridor. The plan includes several recommendations for improving the walking and bicycling environment, including: identify cyclist and pedestrian priority streets, reduce residential speed limits to 20 miles per hour, and installing traffic calming improvements on priority streets.

### **Recommendations:**

- Rosewood Transportation Vision and Goals (p. 56)
- Recommendations (p. 57-64)
- Priority Transportation Projects (p. B-34)

## Joint Land Use Study Implementation for Fort Jackson – McGrady Training Center – McEntire JNGB

**Year:** 2013

**Description:** The 2013 Joint Land Use Study provides a plan for implementation of the 2009 Fort Jackson/McEntire Joint Land Use Study (JLUS). The plan includes two small area plans, one for the McEntire JNGB Study Area and one for the Fort Jackson-McCrary Training Center Study Area, that identify a timeline and action plan for implementing strategies from the 2009 JLUS. The plan's recommendations focus on land use compatibility, zoning changes, and community-military coordination; they do not specifically include bicycle and pedestrian improvements. As infrastructure and development projects are planned in these areas, opportunities for bicycle and pedestrian facilities should be examined and included as appropriate.

## City of Columbia Parks and Recreation Master Plan

**Year:** 2013

**Description:** The purpose of this plan is to provide a five-year vision of leisure services for the City of Columbia, with an understanding of and plan for the long-term recreation needs of the community. The plan recognizes the importance of providing for bicycle and pedestrian recreation and defines three types of park trails that accommodate different user groups and needs within the community. One key recommendation made in the plan is to remove underutilized facilities at current parks and replace with walking trails, picnic areas, and natural woods areas with limited trails. The plan also calls for a greater focus on system-wide park linkages through greenways and waterway features, which could include trail access.

### **Recommendations:**

- Recommendations (p. 131-158)

## Newberry – Columbia Alternatives Analysis

**Year:** 2014

**Description:** The CMCOG conducted an analysis of the Newberry-Columbia corridor to evaluate the benefits and costs of transit improvements to the corridor. The study screened the feasibility of several different types of transit, including conventional bus, bus rapid transit in mixed traffic, bus rapid transit in dedicated right-of-way, modern streetcar, light rail, heavy rail, and commuter rail. Walking and bicycling are not a focus of the analysis, but are discussed as transit access modes. The study identifies "Good Transit Stops that are Accessible by All Modes," "Pleasant Pedestrian and Bicycle Environment," and "Adequate Parking," including bicycle parking, as three key characteristics of successful transit corridors. Sidewalks, bike programs, convenient bike parking, and dense mixed-use development are all identified as ways to improve pedestrian and bicycle access to transit.

### **Recommendations:**

- Pedestrian and Bicycle Facilities (p. 17-19)
- Goals and Objectives (p. 51-52)
- Characteristics of Successful Transit Corridors (p. C-4-C-7)
- Newberry-Columbia Corridor Districts and Guiding Principles (p. C-8-C-14)



## Devine Street/Fort Jackson Boulevard Commercial Node Plan

**Year:** 2014

**Description:** The purpose of this plan is to inform investment and identify catalyst projects to pursue in and around the Devine Street/Fort Jackson Boulevard Commercial Node. This area, comprising approximately 300 acres on the east side of Columbia near Fort Jackson, is a primary gateway and commercial center in Columbia. The Commercial Node Plan identifies a series of key issues that are limiting development, traffic, and interest in the area, including a lack of safe pedestrian connections, lack of bicycle facilities, and poor streetscape conditions. A series of Mobility Recommendations are made to address bicycle and pedestrian connectivity, safety, and access to destinations.

### **Recommendations:**

- Mobility Recommendations (p. 29-35)
- General Urban Design and Placemaking Recommendations (p. 36-38)
- Open Space Recommendations (p. 39-40)

## OTHER RELEVANT PLANNING EFFORTS

### South Carolina Statewide Multimodal Transportation Plan – At a Crossroads

**Year:** 2008

**Description:** The South Carolina Statewide Multimodal Transportation Plan provides a comprehensive evaluation and needs assessment of all transportation modes for the State of South Carolina. The plan outlines SCDOT’s recommendations for transportation investments across all modes through the year 2030. The plan’s recommendations for pedestrian and bicycle facilities are 1) Work to provide paved shoulders on routes in the statewide bicycle tour network, 2) Work with each MPO to implement low-cost bike improvements wherever feasible, such as when roads are resurfaced, 3) Include bike/pedestrian provisions in new projects wherever appropriate or where requested by local government officials. The next iteration of the plan, Charting a Course to 2040, is currently under development.

### **Recommendations:**

- Goals (p. 3)
- Bike and Pedestrian Needs (p. 27)
- Recommendations (p. 32-35)

## ONGOING PLANNING EFFORTS

Other planning efforts that are currently underway include:

- City of Columbia Parking Master Plan Update
- West Gervais Commercial Plan
- South Carolina Statewide Multimodal Transportation Plan – Charting a Course to 2040

At the time of this writing, these planning efforts were ongoing and not yet available in draft form. As materials become available, these plans and other future plans should be reviewed and their recommendations checked for consistency with this plan.

## Key Findings

These plans, studies, and reports help to identify the gaps that exist in the current bicycle and pedestrian network and underscore the demand for investment in improved facilities for walking and bicycling. Several of the plans repeatedly stress the importance of developing complete streets that make the transportation network and local and regional destinations accessible not just by automobile, but also by foot, bike, and transit. Key themes from previous planning efforts include:

- Improve bicycle and pedestrian connections to schools, parks, and employment centers; along major corridors; within commercial nodes; and within and between neighborhoods.
- Provide multi-use trails to link destinations throughout Columbia and the surrounding region.
- Improve bicycle and pedestrian access to transit with more sidewalks, bikeways, and amenities.
- Integrate complete streets design on new and existing roadways.
- Revise development regulations and policies to include standards for the provision of bicycle and pedestrian infrastructure and amenities.

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# Municipal Code Review

## Introduction

The consultant team reviewed existing development policy and regulatory documents for the City of Columbia. This task included a review of available policies and standards directly related to pedestrian and/or bicyclist safety within the City. The review focused on the City’s Code of Ordinances (CO), but also included a review of the City of Columbia 2010 Complete Streets Resolution.

The full policy and regulatory review is provided in the following policy matrix.

Planning and development regulations provide guidelines and requirements for most of what is developed in the City and as such are fundamental to the area’s walk- and bike-friendliness. Since most new development in Columbia is provided through private investment or investment by non-City agencies, the provision of walk- and bike-friendly development policies and ordinances are one of the most cost-effective means that the City has to establish walkable and bikeable infrastructure for its neighborhoods and districts.

## Key Findings

The City of Columbia has a number of very positive policies and regulations that support walkable and bikeable environments. However, it is also evident that the City could significantly strengthen many areas of policy regarding complete streets (including transit access), bicycle parking, and bicycle and pedestrian facility requirements and enhancements within the context of development ordinances. Policies and standards geared toward retrofit of existing facilities are also recommended and discussed within the attached policy matrix. Table 18 describes key strengths identified within the existing ordinances and policies of the City, as well as priority areas for improvement.

**TABLE 18 - EXISTING KEY ORDINANCE AND POLICY STRENGTHS**

City of Columbia Ordinances and Policies	
Strengths	Policy Areas for Improvement
Complete Streets Resolution	Development of comprehensive Complete Streets design guidance for new development and public investment
Adoption of NACTO <i>Urban Bikeway Design Guide</i>	Require pedestrian improvements with new development and redevelopment (sidewalks, lighting, street trees, etc.)
Good base of ordinances supporting pedestrian and bike safety (including prohibition on using mobile devices while driving, etc.)	Good base of ordinances supporting pedestrian and bike safety (including prohibition on using mobile devices while driving, etc.)
Good ordinance language requiring property owner participation in sidewalk maintenance	Update very suburban, auto-oriented development standards to be more context-based and pedestrian-friendly
Clear language prohibiting obstructions to sidewalks	Develop policy and ordinances for improved access to transit and improved safety requirements for heavy commercial vehicle operation within the City



## Conclusion

What is evident is that a more holistic approach to facilitating walkable and bikeable new development is required. The City development standards are very much oriented towards automobile access first and foremost. Walkability begins with access to destinations and to the extent politically feasible, the City and its partners at County and State agencies should promote development that is proximate to existing infrastructure, residential development, and existing destinations for education, employment, commerce, and civic activities. This begins with allowing and promoting a mixture of land uses and density of land uses that support walking and bicycle access in the built up areas of the city. For current residents who do not drive or have access to a car and for future residents and visitors who are looking to visit or invest in a place where walking and biking are part of the transportation options, walkable land use patterns are critical to quality of life.

Second, promoting “complete” infrastructure and transportation linkages between land uses is what is required to make sure that places that are proximate in distance are indeed comfortable and safe to walk or bike to and from. This will require a thorough review and refinement of existing development standards to ensure that pedestrian and bicycle access and access to transit is considered in every requirement from the development of sidewalks to provision of bicycle parking and street trees and pedestrian-scaled lighting. Development standards should also consider whether or not buildings and lots are oriented for pedestrian and bicycle access. The City of Columbia recently adopted a Complete Streets resolution and endorsed the NACTO Urban Bikeway Design Guide, which are great first steps in this direction.

The comments in the tables below outline many opportunities for making local development standards more pedestrian and bicycle friendly. This plan suggests that City staff and appropriate appointed committees develop proposed text amendments for any “low hanging fruit” amendments noted below. For more holistic changes, staff, committees, and the Plan committee members should incorporate changes into the upcoming comprehensive audit and rewrite of development standards over the next 12-18 months. The outcome of such an effort will be development standards that are predictable and sustainable for investors and developers, but that also promote active living, aging in place, quality of life, and transportation and recreation choices; and respect the local character of the City.



# City of Columbia Policy Regulatory Review Table

TABLE 17 - POLICY REVIEW FOR THE CITY OF COLUMBIA

Topic	Review	
	City of Columbia Code of Ordinances (CO) or Other Regulations	Comments and Suggestions
DEFINITIONS and SUPPORTING ORDINANCES		
1.1 Does "Street" definition include pedestrian, cyclist, and transit reference?	<p>Needs improvement. Definition of "street" Includes pedestrian infrastructure, but does not reflect City's Complete Streets policy or intent.</p> <p><i>From CO Sec. 1-2:</i></p> <p><b>Roadway.</b> <i>The term "roadway" means that portion of a street improved, designated or ordinarily used for vehicular travel.</i></p> <p><b>Street.</b> <i>The term "street" includes avenues, boulevards, highways, roads, alleys, lanes, viaducts, bridges and the approaches thereto and all other public thoroughfares in the city, and means the entire width thereof between opposed abutting property lines. It shall be construed to include a sidewalk or footpath, unless the contrary is expressed or unless such construction would be inconsistent with the manifest intent of the city council.</i></p>	<p>Consider adding language to reflect City's Complete Streets policy intent and specifically to include references to user groups including pedestrians, cyclists, transit users, etc:</p> <p><i>The term "street" includes avenues, boulevards, highways, roads, alleys, lanes, viaducts, bridges and the approaches thereto and all other public thoroughfares in the city, and means the entire width thereof between opposed abutting property lines. It shall be construed to include a sidewalk or footpath <b>[ADD: and accommodations for bicyclists, transit riders, and persons of all abilities as deemed contextually appropriate]</b> unless the contrary is expressed or unless such construction would be inconsistent with the manifest intent of the city council.</i></p>
1.2 Vehicle	No definition listed	<p>Some states' definition of 'vehicle' includes the bicycle. However, the State of South Carolina's definition of 'vehicle' does not include bicycles. See SC 56-3-20 Definitions –</p> <p><i>(1) "Vehicle" means every device in, upon, or by which a person or property is or may be transported or drawn upon a highway, except devices moved by human power or used exclusively upon stationary rails or tracks.</i></p>
1.3 Definition of Sidewalk	<p>Yes. Includes pedestrian reference.</p> <p><i>From CO Sec. 1-2: Sidewalk. The term "sidewalk" means any portion of a street between the curbline, or the lateral line of a roadway where there is no curb, and the adjacent property line, intended for the use of pedestrians.</i></p>	<p>Good. Very similar to MUTCD Definition: <i>That portion of a street between the curb line, or the lateral line of a roadway, and the adjacent property line or on easements of private property that is paved or improved and intended for use by pedestrians.</i></p>
1.4 Definition of Bicycle	No definition of bicycle found	MUTCD Definition: <i>A pedal-powered vehicle upon which the human operator sits.</i>



Topic	Review	
	City of Columbia Code of Ordinances (CO) or Other Regulations	Comments and Suggestions
1.6 General ordinances Supporting Pedestrian and Bicycle Safety	<p>Very good.</p> <p>CO Chapter 12 – Motor Vehicles and Traffic includes several regulations that are supportive of pedestrian and bicyclist safety and comfort including:</p> <ul style="list-style-type: none"> <li>• Prohibition of bicycles on sidewalks in downtown Columbia (Sec. 12-3)</li> <li>• Requirement to remove trees, shrubs or other plants from streets and sidewalks (Sec. 12-6)</li> <li>• Requirement to remove dangerous structures or obstructions from streets and “public ways” (Sec. 12-7)</li> <li>• Prohibition on driving on sidewalks (Sec. 12-8)</li> <li>• Prohibition on opening doors into traffic (Sec. 12-11)</li> <li>• Authorizing Play Streets (Sec. 12-14)</li> <li>• Definition of speed limits for trucks and other motor vehicles in business districts (max. 20-25mph) and residential areas (max. 30mph) and school zones (25mph) (Sec. 12-16 and 12-17)</li> <li>• Prohibition on e-mailing, texting on mobile device while driving (Sec. 12-19)</li> </ul>	<p>The regulations in this section are some of the most progressive in Columbia’s ordinances and are extremely progressive compared to many other cities. The authorization of play streets, the limited speed limits in business districts, and the ban on mobile device use while driving are especially commendable for supporting pedestrian and bicycle comfort and safety.</p> <p>Changes and additions to consider include:</p> <ul style="list-style-type: none"> <li>• Reducing the maximum allowable speed limits in residential areas to 20 or 25 mph</li> <li>• Disallowing driving, parking, or blocking designated bikeways, including bike lanes</li> <li>• Other allowances for and restrictions on bicycle travel such as prohibitions on wrong-way riding, riding without lights, riding without headphones,</li> <li>• Other protections for cyclists and pedestrians including: anti-harassment ordinances, safe passing of cyclists requirements, etc.</li> </ul> <p>See the following documents for comprehensive recommendations for policy and regulatory tools to support walking and bicycling and transit access:</p> <ul style="list-style-type: none"> <li>• Making Neighborhoods More Walkable and Bikeable, ChangeLab Solutions: <a href="http://changelabsolutions.org/sites/default/files/MoveThisWay_FINAL-20130905.pdf">http://changelabsolutions.org/sites/default/files/MoveThisWay_FINAL-20130905.pdf</a></li> <li>• Getting the Wheels Rolling: A Guide to Using Policy to Create Bicycle Friendly Communities, ChangeLab Solutions <a href="http://changelabsolutions.org/bike-policies">http://changelabsolutions.org/bike-policies</a></li> </ul>
<b>STREET ELEMENTS AND CONFIGURATION</b>		
2.1 Pedestrian accommodations required during new development or redevelopment	<p>Very limited. Needs significant improvement. No pedestrian or bikeway improvements currently required with new development with the exception of the very limited standard below.</p>	<p>Include access to transit in the list of priority destinations for sidewalk provisions.</p> <p>For good model language, see City of Wilson, NC UDO, Section 6.3: Required Improvements for All Development (and related sections that follow) <a href="http://www.wilsonnc.org/attachments/pages/545/CH%206-Infrastructure%20Standards.pdf">http://www.wilsonnc.org/attachments/pages/545/CH%206-Infrastructure%20Standards.pdf</a></p>
2.2 Bike accommodations (bike lanes, shoulders, etc) required during new or redevelopment	<p>CO Sec. 17-512(15): Access to parks, schools, etc. Streets shall be designed or walkways dedicated to ensure convenient access to adjoining parks, playgrounds, schools and other places of public assembly. Dedicated walkways shall not be less than 15 feet in width.</p>	<p>Consider adding requirements for greenway reservation, dedication, or provision in new developments where a greenway or trail is shown on an adopted plan or where a property connects to an existing or proposed greenway.</p>
2.3 New sidewalks, bike lanes, greenways, etc - connect to existing facilities, general connectivity requirements		<p>See requirements in Wake Forest, NC UDO, Section 6.8.2 Greenways: “When required by Wake Forest Open Space &amp; Greenways Plan or the Wake Forest Transportation Plan, greenways and multi-use paths shall be provided according to the provisions [that follow in the section cited above].” <a href="http://www.wakeforestnc.gov/udo.aspx">http://www.wakeforestnc.gov/udo.aspx</a></p>



Topic	Review	
	City of Columbia Code of Ordinances (CO) or Other Regulations	Comments and Suggestions
2.4 Use of Utility Rights-of-Way for walkways, bikeways, trails		<p>Kershaw County’s ZLDR Article 5:1-8 Utility Easements and Rights-of-Way contains a good example with respect to sewer rights-of-way. See below.</p> <p><i>b) - The Planning and Zoning Commission or Planning Official, as applicable, may approve the installation of sidewalks, trails, and greenways as required in this Article within the Kershaw County public sewer rights-of-way. All proposed sidewalks, trails, and greenways including any proposed hardscaping shall have approval from the Utilities Director prior to sketch plan or site plan submittal to the Planning Official or Planning and Zoning Commission, as applicable.</i></p> <p>This provision could be further improved/expanded to allow sidewalks, trails, and greenways in other utility rights-of-way such as water, power, etc.</p>
2.6 Cross-Access between adjacent land parcels	<p>Needs Improvement. Currently vague and difficult to enforce.</p> <p>CO Sec. 17-512 (8): <i>Street access to unsubdivided property. Where it is deemed necessary to the development of a logical street pattern and transportation network, streets and rights-of-way shall be extended to the boundary of adjoining property. Incompatible characteristics of adjoining property shall be given due consideration in making a determination of what shall constitute a logical street pattern. Reserve strips adjoining street rights-of-way for the purpose of preventing access to adjacent property shall not be permitted.</i></p>	<p>Add section in subdivision regulations to require cross-access between adjacent parcels to facilitate non-motorized (pedestrian and bicycle) access, at least. Requiring cross-access between adjacent parcels of land is a great tool for reducing the amount of traffic on major roads while increasing connectivity for pedestrians, bicycles, and cars.</p> <p>See City of Charlotte Subdivision Ordinance, Section 20-23 for example of connectivity requirements and block standards: <a href="http://www.charmeck.org/Planning/Subdivision/SubdivisionOrdinanceCity.pdf">http://www.charmeck.org/Planning/Subdivision/SubdivisionOrdinanceCity.pdf</a></p> <p>Example language from the City of Wilson, NC, Unified Development Ordinance, Section 6.4: <a href="http://www.wilsonnc.org/departments/developmentservices/unifieddevelopmentordinance/">http://www.wilsonnc.org/departments/developmentservices/unifieddevelopmentordinance/</a></p>
2.7 Block size	<p>Needs improvement to promote walking, biking and transit access.</p> <p>CO Sec. 17-513. Blocks.</p> <p><i>(b) Residential block length. In order that there may be convenient access between various parts of a subdivision, and in order to help prevent traffic congestion and undue inconvenience, the length of blocks hereafter established shall not exceed 1,800 feet or be less than 600 feet.</i></p>	<p>Small block size is important to intersection density and interconnectivity which serve to enhance walking, bicycling, and transit-access opportunities. Ideally, block size should not exceed 1000'-1200' feet for low density residential development and where blocks exceed this length, a crosswalk easement (as suggested in current text) should be required and not made an optional provision. In higher density areas, blocks can be as narrow as 200-400' wide. Block length should be tied to density of development.</p> <p>See City of Charlotte Subdivision Ordinance, Section 20-23 for example of connectivity requirements and block standards: <a href="http://www.charmeck.org/Planning/Subdivision/SubdivisionOrdinanceCity.pdf">http://www.charmeck.org/Planning/Subdivision/SubdivisionOrdinanceCity.pdf</a></p> <p>See City of Wilson, NC, Unified Development Ordinance Section 6.4 for excellent connectivity requirements, including bicycle and pedestrian connections: <a href="http://www.wilsonnc.org/departments/developmentservices/unifieddevelopmentordinance/">http://www.wilsonnc.org/departments/developmentservices/unifieddevelopmentordinance/</a>.</p>



Topic	Review	
	City of Columbia Code of Ordinances (CO) or Other Regulations	Comments and Suggestions
2.8 Dead end streets	Needs Improvement  CO Sec. 17-513. Blocks.  <i>(d) Cul-de-sac length. Culs-de-sac shall not exceed 1,000 feet.</i>	Street interconnectivity is critical to successful bicycle/pedestrian networks. Furthermore, long dead-end streets are create challenges for pedestrians, cyclists, and effective transit and other public services. Consider replacing this section with the following:  <i>Cul-de-sacs may be permitted only where topographic conditions and/or exterior lot line configurations offer no practical alternatives for connection or through traffic. Cul-de-sacs, if permitted, shall not exceed 250 ft in length from the nearest intersection with a street providing through access (not a cul-de-sac). A close is preferred over a cul-de-sac. Cul-de-sacs shall have pedestrian and bicycle neighborhood access trails at the ends to connect to adjacent streets. (For similar language, see the Town of Davidson, NC, Planning Ordinance - <a href="http://www.ci.davidson.nc.us/index.aspx?nid=598">http://www.ci.davidson.nc.us/index.aspx?nid=598</a>)</i>
PEDESTRIAN FRIENDLY BUILDINGS AND SITE DESIGN STANDARDS		
3.1 Off-street motorized vehicle parking is behind or to side of buildings		Consider requiring motorized vehicle parking that is behind or to the side of buildings in pedestrian-oriented zoning districts to improve the pedestrian-orientation of buildings and to minimize the need for pedestrians to walk through parking lots to access buildings.
3.2 Maximum automobile parking requirements defined		Limiting off-street parking allows for more dynamic use of space which will enhance bicycle and pedestrian opportunities.



Topic	Review	
	City of Columbia Code of Ordinances (CO) or Other Regulations	Comments and Suggestions
3.3 Bicycle parking requirements	<p>Very limited. Bicycle parking is only required for Private Dormitory uses per CO Sec. 17-321:</p> <p><i>Parking requirements for a private dormitory shall be as follows: in RG-3, C-4, M-1, M-2, and MX-2 districts the ratio shall be 0.75 on-site vehicular parking space and .25 on-site bicycle parking space per bedroom. In the C-5 zoning district the ratio shall be 0.5 vehicular parking space located within 800 feet of the dormitory's main entrance and 0.25 on-site bicycle parking space per bedroom. Seventy-five (75) percent of required bicycle parking in all districts shall be located in an enclosed and secured area.</i></p>	<p>Incorporate bicycle parking requirements throughout CO Chapter 17, especially Article III, Division 10: Off-Street Parking &amp; Loading Facilities</p> <p>City of Greenville Bicycle Parking Ordinance (good, complete example for southeastern city, however, only includes provisions for short term parking -- e.g., racks -- and does not include requirements or guidelines for long term parking and facilities for employee, resident, or student parking): <a href="https://www.greenvillesc.gov/ParksRec/trails/forms/GreenvilleBicycleParkingOrdinance_Article%2019-6.1.pdf">https://www.greenvillesc.gov/ParksRec/trails/forms/GreenvilleBicycleParkingOrdinance_Article%2019-6.1.pdf</a></p> <p>City of Charleston's bike parking requirements are much less detailed and complete than Greenville's (Sec. 54-320.): <a href="https://library.municode.com/index.aspx?clientId=14049&amp;stateId=40&amp;stateName=South%20Carolina">https://library.municode.com/index.aspx?clientId=14049&amp;stateId=40&amp;stateName=South%20Carolina</a></p> <p>City of Charlotte's bike parking requirements include standards for short term and long term bicycle parking, but do not include requirements for showers or lockers for active transport commuters: <a href="http://ww.charmeck.org/Planning/ZoningOrdinance/ZoningOrdCityChapter12.pdf">http://ww.charmeck.org/Planning/ZoningOrdinance/ZoningOrdCityChapter12.pdf</a></p> <p>References for best practices in bicycle parking requirements:</p> <ul style="list-style-type: none"> <li>• Bicycle Parking Model Ordinance, Change Lab Solutions: <a href="http://changelabsolutions.org/publications/bike-parking">http://changelabsolutions.org/publications/bike-parking</a></li> <li>• Bicycle Parking Guidelines, 2nd Edition – by the Association of Pedestrian and Bicycle Professionals (APBP; available for purchase)</li> <li>• The Model Bicycle Parking Ordinance developed by the Public Health Law &amp; Policy group provides excellent model language for bicycle parking requirements and related amenities, including showers and changing areas: <a href="http://www.atpolicy.org/sites/default/files/Model%20Bike%20Parking%20Ordinance%20with%20Annotations%20-%20Public%20Health%20Law%20and%20Policy.pdf">http://www.atpolicy.org/sites/default/files/Model%20Bike%20Parking%20Ordinance%20with%20Annotations%20-%20Public%20Health%20Law%20and%20Policy.pdf</a></li> </ul>
3.11 Site Amenities for Cyclists and others (Showers, Changing areas, etc)	No guidelines or requirements found	<p>Consider requiring or providing incentives to encourage the installation of site amenities such as showers, storage lockers/changing areas for bicyclists and others for employment and educational sites. The Model Bicycle Parking Ordinance developed by the Public Health Law &amp; Policy group provides excellent model language for bicycle parking requirements and related amenities, including showers and changing areas: <a href="http://www.atpolicy.org/sites/default/files/Model%20Bike%20Parking%20Ordinance%20with%20Annotations%20-%20Public%20Health%20Law%20and%20Policy.pdf">http://www.atpolicy.org/sites/default/files/Model%20Bike%20Parking%20Ordinance%20with%20Annotations%20-%20Public%20Health%20Law%20and%20Policy.pdf</a></p>



Topic	Review	
	City of Columbia Code of Ordinances (CO) or Other Regulations	Comments and Suggestions
3.4 Other place-supportive parking regulations (On-street parking, shared parking, pricing, employer incentives/ programs, etc)	No guidelines found	Require or incentivize shared parking and parking reductions in pedestrian-oriented districts, especially downtown.
3.5 Form-based or design-based codes are used	The Bull Street PUD provides a local example of form-based requirements, however, these standards apply only to a single master planned development: <a href="https://columbiasc.gov/depts/planning-development/docs/bullstreetpudoctober22012.pdf">https://columbiasc.gov/depts/planning-development/docs/bullstreetpudoctober22012.pdf</a>	<p>These types of codes offer flexibility in allowing mixed use while unifying streetscape design. These types of regulations are fundamentally pedestrian-oriented.</p> <p>The City of Spartanburg adopted a form-based code for its downtown area in 2011: <a href="http://www.cityofspartanburg.org/cms_assets/Downtown%20Code.pdf">http://www.cityofspartanburg.org/cms_assets/Downtown%20Code.pdf</a></p> <p>Another example can be found in the Beaufort, SC, Unified Development Ordinance; specific to their Boundary Street and Bladen Street Redevelopment Districts - <a href="http://www.cityofbeaufort.org/Data/Sites/1/media/City_Ordinances/udo-revised-september-2012-web.pdf">http://www.cityofbeaufort.org/Data/Sites/1/media/City_Ordinances/udo-revised-september-2012-web.pdf</a></p>
3.12 Pedestrian-scale lighting (< 15' tall) required along sidewalks, paths and in parking areas	No guidelines or requirements found.	Incorporate human-scale lighting (<15' tall) considerations for bicyclists and pedestrians where appropriate.
<b>PEDESTRIAN FACILITY DESIGN</b>		
4.2 Minimum sidewalk width by context	No guidelines found	<p>Best standards would require or provide sidewalks on both sides of all collector and arterial streets and on at least one side of local streets where warranted by density and/or system connectivity.</p> <p>Five foot wide sidewalks along local streets and six foot wide sidewalks along collectors and arterials are preferred minimum widths. Five feet is the minimum width required for two adults to walk side-by-side. In areas of higher density and mixed-use development, the minimum required width for sidewalks should be six feet or more. The land use context and density of development necessitates a greater level of requirement for sidewalk specifications. In areas such as downtown with buildings at the back of the sidewalk and ground level retail, sidewalks should be as wide as 10-18 feet wide.</p>



Topic	Review	
	City of Columbia Code of Ordinances (CO) or Other Regulations	Comments and Suggestions
4.3 Street Trees	<p>Needs improvement. Not required between sidewalk and the curb.</p> <p>CO Sec. 17-418. Street protective yard</p> <p><i>(a) Purpose, definition and applicability.</i></p> <p><i>(1) Purpose and definition. A street protective yard is a landscaped area located parallel and adjacent to a recorded public street right-of-way. This area contains plantings of trees and other vegetation designed to: provide more pleasing views along city travel ways; provide for continuity of vegetation throughout Columbia; reduce the amount of impervious surface and thereby reduce stormwater runoff; provide shade; and preserve a remnant of Columbia's natural vegetative cover.</i></p> <p>CO Sec. 17-531(10) Street trees. <i>The planting of street trees is not required. However, if the subdivider chooses to plant trees along the street to enhance the appearance of a subdivision, the trees shall not be planted on any street right-of-way of less than 60 feet unless it can be conclusively shown that there will be no future conflict with vehicles or with utility lines either above or below the ground surface.</i></p>	<p>In addition to their value for improving the air quality, water quality, and beauty of a community, street trees can help slow traffic and improve comfort for pedestrians. Trees add visual interest to streets and narrow the street's visual corridor, which may cause drivers to slow down. When planted in a planting strip between the sidewalk and the curb, street trees also provide a buffer between the pedestrian zone and the street.</p> <p>See NCDOT <i>Complete Streets Planning and Design Guidelines</i> (Chapter 4) for context-based pedestrian and "green" zone recommendations: <a href="http://www.completestreetsnc.org/wp-content/themes/CompleteStreets_Custom/pdfs/NCDOT-Complete-Streets-Planning-Design-Guidelines.pdf">http://www.completestreetsnc.org/wp-content/themes/CompleteStreets_Custom/pdfs/NCDOT-Complete-Streets-Planning-Design-Guidelines.pdf</a></p> <p>See also, Town of Wendell UDO Chapter 8, especially section 8.8, Street Trees: <a href="http://files.wendell.gethifi.com/departments/planning/zoning/udo-unified-development-ordinance/Chapter_8_-_amended_092611.pdf">http://files.wendell.gethifi.com/departments/planning/zoning/udo-unified-development-ordinance/Chapter_8_-_amended_092611.pdf</a></p>
<b>BICYCLE FACILITY DESIGN</b>		
5.1 Types of Facilities Specified or Allowed	<p>The City of Columbia officially endorsed and adopted the NACTO Urban Bikeway Design Guide in 2013: <a href="http://nacto.org/wp-content/uploads/2014/01/ColumbiaSC_Urban-Bikeway-Design-Guide-Resolution_05.21.13.pdf">http://nacto.org/wp-content/uploads/2014/01/ColumbiaSC_Urban-Bikeway-Design-Guide-Resolution_05.21.13.pdf</a>. However, development requirements or City Street Design standards do not currently reference or reflect the NACTO guidance.</p>	<p>Incorporate bicycle facility design best practices into CO and other appropriate City design requirements. The Design Guidelines developed for this Plan, as well as the following resources, will provide specific design guidelines and reference to national design guidelines.</p>
5.3 Bicycle Accommodations at Intersections		
<b>COMPLETE STREETS SUPPORTING POLICIES AND MANUALS</b>		
6.1 Complete Streets Policy	<p>Yes. Complete Streets Resolution presented to council in 2010 and adopted: <a href="http://www.columbiasc.net/depts/city-council/docs/old_downloads/07_21_2010_Agenda_Items/Resolution_2010_054%20Complete%20Streets%202_Final.pdf">http://www.columbiasc.net/depts/city-council/docs/old_downloads/07_21_2010_Agenda_Items/Resolution_2010_054%20Complete%20Streets%202_Final.pdf</a></p>	<p>The Complete Streets Policy needs to have an associated design guide with context-based provisions for all modes of transport, including walking, biking, and transit. The design guidance should be integrated into development standards for new development, as was done with the <i>Raleigh Street Design Manual</i> (<a href="http://www.raleighnc.gov/content/extra/Books/PlanDev/StreetDesignManual/#1">http://www.raleighnc.gov/content/extra/Books/PlanDev/StreetDesignManual/#1</a>) and the <i>Charlotte Urban Street Design Guidelines</i>: <a href="http://charmec.org/city/charlotte/transportation/plansprojects/pages/urban%20street%20design%20guidelines.aspx">http://charmec.org/city/charlotte/transportation/plansprojects/pages/urban%20street%20design%20guidelines.aspx</a></p>



Topic	Review	
	City of Columbia Code of Ordinances (CO) or Other Regulations	Comments and Suggestions
6.2 Design Manual for Pedestrian and/or Bicycle Facilities	The City of Columbia officially endorsed and adopted the NACTO Urban Bikeway Design Guide in 2013: <a href="http://nacto.org/wp-content/uploads/2014/01/ColumbiaSC_Urban-Bikeway-Design-Guide-Resolution_05.21.13.pdf">http://nacto.org/wp-content/uploads/2014/01/ColumbiaSC_Urban-Bikeway-Design-Guide-Resolution_05.21.13.pdf</a>	The City's CS Policy states that the City will prepare draft regulations to implement the policy. The following resources may be used in referencing best practices guidelines and policy specific to each point in the far left column:
6.3 Complete Street Design Guidelines for a variety of contexts	Needs improvement. Street classification system (CO. Sec. 17-512) does not provide context-sensitive options and does not provide detailed guidance for installation of sidewalks or any guidance for selection or provision of bikeways.	NACTO <i>Urban Bikeway Design Guide</i> (National Association of City Transportation Officials); [adopted by City of Columbia]
6.4 Existence of street hierarchy plan by context		NACTO <i>Urban Street Design Guidelines</i>  <i>Complete Streets Local Policy Workbook</i> – by the National Complete Streets Coalition and Smart Growth America
6.5 Traffic Calming programs, policies, and/or manuals	None found.	City of Charlotte, NC <i>Urban Street Design Guidelines</i> and related development standards: <a href="http://charmeck.org/city/charlotte/transportation/plansprojects/pages/urban%20street%20design%20guidelines.aspx">http://charmeck.org/city/charlotte/transportation/plansprojects/pages/urban%20street%20design%20guidelines.aspx</a>  City of Raleigh, NC <i>Raleigh Street Design Manual</i> : <a href="http://www.raleighnc.gov/content/extra/Books/PlanDev/StreetDesignManual/#1">http://www.raleighnc.gov/content/extra/Books/PlanDev/StreetDesignManual/#1</a>  The National Complete Streets Coalition provides good guidelines for traffic calming through their best practices manual: ( <a href="http://www.completestreets.org/resources/complete-streets-best-practices/">http://www.completestreets.org/resources/complete-streets-best-practices/</a> ).
6.8 Consideration of pedestrian and bicycle concerns and Level of Service (LOS) in Traffic Impact Analyses and other required engineering studies	None found.	Consider adopting multi-modal of service standards for new development where active transportation and transit use are expected to be high. Consideration of bicycle and pedestrian levels of service assure adequate facilities for bicyclists and pedestrians.  The City of Raleigh uses multimodal level of service approach in determining road improvements and traffic mitigation: <a href="http://www.raleighnc.gov/content/extra/Books/PlanDev/StreetDesignManual/#71">http://www.raleighnc.gov/content/extra/Books/PlanDev/StreetDesignManual/#71</a>  Charlotte, NC uses Pedestrian LOS and Bicycle LOS Methodologies for intersection improvements in their <i>Urban Street Design Guidelines</i> : <a href="http://charmeck.org/city/charlotte/transportation/plansprojects/pages/urban%20street%20design%20guidelines.aspx">http://charmeck.org/city/charlotte/transportation/plansprojects/pages/urban%20street%20design%20guidelines.aspx</a>
6.9 Access management program or policy	None found.	Consider adding language across all types of development pertaining to non-motorized vehicle and pedestrian access management; this could broadly be incorporated into zoning districts requirements or street design standards.



Topic	Review	
	City of Columbia Code of Ordinances (CO) or Other Regulations	Comments and Suggestions
6.10 Sidewalk Retrofit/Infill Program or Policy	CO Chapter 22 Streets, Sidewalks and Other Public Places, Article II Permanent Improvements and Special Assessments requires owner consent and potential property owner contributions of up to one-half the costs to “permanent improvements to any streets or sidewalks or parts of either” where improvements are “to be assessed against the abutting property.”	<p>The communities should consider developing sidewalk infill and maintenance program where City staff periodically inventory the street network to identify sidewalk gaps, and develop strategies, project prioritization criteria and funding for completing these gaps. Potential project prioritization criteria include filling gaps along key pedestrian routes, near major pedestrian trip generators like schools, transit routes, and along streets with high vehicle volumes.</p> <p>The City of Greenville, SC’s NSTEP program provides a good example of a sidewalk infill policy and program: <a href="http://www.greenvillesc.gov/publicworks/CivilEngineering.aspx">http://www.greenvillesc.gov/publicworks/CivilEngineering.aspx</a></p> <p>See City of Charlotte sidewalk retrofit policy for an example - <a href="http://charmeck.org/city/charlotte/Transportation/PedBike/Documents/Sidewalk%20Retrofit%20Policy%20Amendments%20FINAL.pdf">http://charmeck.org/city/charlotte/Transportation/PedBike/Documents/Sidewalk%20Retrofit%20Policy%20Amendments%20FINAL.pdf</a></p>
6.11 Sidewalk Maintenance Requirements and Obstructions	<p>CO Chapter 8, Article VII. Sidewalk Maintenance provides good provision for property owner-required maintenance of sidewalks and pedestrian area within the right-of-way.</p> <p>CO Chapter 22 Streets, Sidewalks and Other Public Places, Article III, Obstructions provides good language regarding sidewalk obstructions and legal remedies and requirements to remove.</p>	Enforcement of the obstructions language is critical and could provide a basis for removal of all kinds of temporary (e.g., trash cans) and more fixed obstructions in pedestrian ways (e.g., utility poles, sign poles).



Topic	Review	
	City of Columbia Code of Ordinances (CO) or Other Regulations	Comments and Suggestions
ITEMS REVIEWED		
7.1 Names of Resources	<p>GUIDELINES AND REGULATIONS:</p> <ul style="list-style-type: none"> <li>City of Columbia, South Carolina Code of Ordinances (CO): <a href="https://library.municode.com/index.aspx?clientId=13167">https://library.municode.com/index.aspx?clientId=13167</a></li> </ul> <p>ADDITIONAL POLICIES AND ORDINANCES:</p> <ul style="list-style-type: none"> <li>City of Columbia Complete Streets Resolution 2010: <a href="http://www.columbiasc.net/depts/city-council/docs/old_downloads/07_21_2010_Agenda_Items/Resolution_2010_054%20Complete%20Streets%202_Final.pdf">http://www.columbiasc.net/depts/city-council/docs/old_downloads/07_21_2010_Agenda_Items/Resolution_2010_054%20Complete%20Streets%202_Final.pdf</a></li> <li>City of Columbia Endorsement of NACTO Urban Bikeway Design Guide, 2013: <a href="http://nacto.org/wp-content/uploads/2014/01/ColumbiaSC_Urban-Bikeway-Design-Guide-Resolution_05.21.13.pdf">http://nacto.org/wp-content/uploads/2014/01/ColumbiaSC_Urban-Bikeway-Design-Guide-Resolution_05.21.13.pdf</a></li> </ul>	<p>REFERENCES AND HELPFUL RESOURCES</p> <ul style="list-style-type: none"> <li><i>Making Neighborhoods More Walkable and Bikeable</i>, ChangeLab Solutions: <a href="http://changelabsolutions.org/sites/default/files/MoveThisWay_FINAL-20130905.pdf">http://changelabsolutions.org/sites/default/files/MoveThisWay_FINAL-20130905.pdf</a></li> <li><i>Getting the Wheels Rolling: A Guide to Using Policy to Create Bicycle Friendly Communities</i>, ChangeLab Solutions <a href="http://changelabsolutions.org/bike-policies">http://changelabsolutions.org/bike-policies</a></li> <li><i>Bicycle Parking Guidelines, 2nd Edition</i> – by the Association of Pedestrian and Bicycle Professionals (APBP)</li> <li><i>Complete Streets Local Policy Workbook</i> – by the National Complete Streets Coalition and Smart Growth America</li> <li><i>NACTO Urban Bikeway Design Guide</i> – by the National Association of City Transportation Officials (NACTO)</li> <li>City of Beaufort, SC, Unified Development Code - <a href="http://www.cityofbeaufort.org/Data/Sites/1/media/City_Ordinances/udo-revised-september-2012-web.pdf">http://www.cityofbeaufort.org/Data/Sites/1/media/City_Ordinances/udo-revised-september-2012-web.pdf</a></li> <li>City of Charlotte Sidewalk Retrofit Policy - <a href="http://charmack.org/city/charlotte/Transportation/PedBike/Documents/Sidewalk%20Retrofit%20Policy%20Amendments%20FINAL.pdf">http://charmack.org/city/charlotte/Transportation/PedBike/Documents/Sidewalk%20Retrofit%20Policy%20Amendments%20FINAL.pdf</a></li> <li>City of Wilson, NC, Unified Development Ordinance provides - <a href="http://www.wilsonnc.org/departments/development/services/unifieddevelopmentordinance/">http://www.wilsonnc.org/departments/development/services/unifieddevelopmentordinance/</a></li> <li>Form-Based Codes Institute (FBCI) - <a href="http://www.formbasedcodes.org/">http://www.formbasedcodes.org/</a></li> <li>2010 ADA Standards for Accessible Design - <a href="http://www.ada.gov/2010ADASTandards_index.htm">http://www.ada.gov/2010ADASTandards_index.htm</a></li> </ul>



# Walk, Bike, and Transit Program Resources

In order to build upon the success of existing programs and improve the safety, comfort, and enjoyment of walking and bicycling in Columbia, this section provides a series of program recommendations for the City of Columbia to pursue.

## Education Programs

### Expand Media Campaign to Educate Motorists, Bicyclists, and Pedestrians

Education programs are essential to raise local awareness and understanding of pedestrian and bicycle issues and to improve safety. According to the Walk Bike Columbia Survey, 46% of Columbia citizens believe that a media campaign to educate motorists, bicyclists, and pedestrians would have the greatest impact on improving walking and biking in Columbia. The City of Columbia should work with the Palmetto Cycling Coalition, the Columbia BPAC, and other partners to further promote the Safe Streets Save Lives Campaign within Columbia and through a variety of media outlets, including online, TV, radio, bus placards and posters, billboards, and bumper stickers. Hard copy and online materials could also be provided as part of other education, encouragement, and enforcement programs as described below.

Program website:

- <http://safestreetssavelives.org/>

### Walk Bike Ambassador Program and Classes

A Walk Bike Ambassador Program empowers local advocates and volunteers to provide bicycling and walking education and encouragement to the larger community. This outreach and education program acts as a one-stop local resource for safety information, presentations, skills clinics, and instructional courses to incorporate bicycling and walking into everyday life. Walk Bike Ambassadors also serve as ideal partners for other education, encouragement, and evaluation programs and could help to promote the Safe Streets Save Lives campaign locally. Developing an ambassador program is one

of the recommendations for Columbia made in the League of American Bicyclists' BFC Application feedback.

#### Some examples of the services that a Walk Bike Ambassador Program can provide to the community include:

- Youth and family education: Signaling, helmet fitting, safe crossings, bike rodeo skills courses, guided rides on trails, bicycle maintenance classes
- Adult bicycling classes: Laws and responsibilities, Smart Cycling Courses, Traffic Skills 101 Courses, guided road and trail rides, bicycle maintenance classes
- Workplace education: Walking, bicycling, and transit information packages, brown bag talks, promotional materials, and encouragement and incentive programs for walking, bicycling, and transit
- School education: Safe Routes to School assistance, walkability and bikeability assessments, bicycle lessons

#### Sample programs:

- Minneapolis, MN: <http://www.bikewalktwincities.org/ambassadors>
- Northern CO: <http://bicycleambassadorprogram.org/>

### Traffic Ticket Diversion Program

Developing a ticket diversion program is one of the recommendations for Columbia made in the League of American Bicyclists' BFC Application feedback. A diversion class is offered to first-time offenders of certain community-related traffic violations, such as motorists speeding, pedestrians jaywalking, or bicyclists running a stoplight. In lieu of receiving a citation and/or fine, individuals can take a one-time free or inexpensive traffic safety class instead. This class should teach participants about traffic laws, traffic safety, and road user dangers and responsibilities for motorists, bicyclists, and pedestrians. The Columbia Safety Analysis developed for

this plan found that motorist education should focus on the dangers of speeding, how to share the road with bicyclists, and when a motorist must yield to a bicyclist. Bicyclist education should cover bicycle laws at traffic signals and stop signs and how to safely ride with traffic. This program provides an excellent way to educate all road users on how to operate in a multimodal traffic environment.

#### Sample program:

- Marin County, CA: <http://www.marinbike.org/Campaigns/ShareTheRoad/Index.shtml#StreetSkills>

### Professional Training Opportunities

Professional development courses provide training to transportation and other professionals who may not have received extensive experience or training in pedestrian and bicycle facilities. Educating professional staff about bicycle and pedestrian issues helps staff understand why and how to include bicycle and pedestrian accommodations in roadway projects and developments. Some trainings have already been offered in Columbia, such as the Safe Streets Save Lives Campaign Ambassador Training Tour, and the Innovative Design Training held by the Columbia BPAC, Walk Bike Columbia, and Alta Planning + Design in October 2014.

New professional training opportunities for city engineers, planners, police, and other staff should be pursued to build off of this progress and teach local professionals about current trends in bicycle and pedestrian design, planning, and implementation. Webinars and courses are available through the Association of Bicycle and Pedestrian Professionals (APBP), the Pedestrian and Bicycle Information Center (PBIC), and others. Sample topics include bicycle and pedestrian design standards, complete streets concepts, how to coordinate with other departments on bicycle and pedestrian projects, and funding opportunities.



#### Sample programs:

- Institute for Bicycle and Pedestrian Innovation: <http://www.ibpi.usp.pdx.edu/>
- <http://www.pedbikeinfo.org/training/webinars.cfm>

### Expand Safe Routes to School Efforts

Based on the Walk Bike Columbia Survey results, 33% of Columbia citizens believe that Safe Routes to School (SRTS) programs to engage schools, parents, and local officials would have the greatest impact on walking and biking in Columbia. The city should expand on existing efforts at local schools to include SRTS programs at all elementary and middle schools. Schools with existing programs could expand their offerings to include interactive traffic skills and safety classes, such as bike rodeo events where children have the opportunity to learn bicycle safety, practice safe riding skills in a controlled obstacle course, and win prizes for safe bicycling behavior. Neighborhood “Walking School Buses” or “Bike Trains”, in which a group of children walk or bike to school with parent volunteers, also help to educate children on safe walking and bicycling skills and raise awareness throughout the community.

#### Sample programs:

- National Center for Safe Routes to School: <http://www.saferoutesinfo.org/program-tools/organizers-guide-bicycle-rodeos>
- Sonoma County, CA: <http://www.sonomasaferoutes.org/content/bicycle-education-programs>

### Encouragement Programs

#### Commute Trip Reduction and Employer Incentives Program

A commute trip reduction program is designed to reduce drive-alone trips and traffic congestion through programs and incentives for employees, employers of all sizes, and property

owners. The City of Columbia should work with Central Midlands Transit and local employers to launch a commute trip reduction and employer incentives program throughout the city. The program would offer information about walking, bicycling, and transit, and provide incentives to try different modes to work, such as free trial transit passes, the ability to purchase passes at a reduced rate, and bike and transit maps. The program could also offer periodic events for major employers, such as brown bag talks on commute options, providing bike storage and shower facilities at the workplace, and navigating transit. A local Bike Commute Challenge during Bike Month in May could be organized for a friendly competition between employers, with organized bike commuter groups, breakfast stations at work for people who bike, and prizes for employees.

#### Sample programs:

- Destination Downtown, Vancouver, WA: <http://www.mydestinationdowntown.com/>
- Commute Solutions, Austin, TX: <http://www.commutesolutions.com/>
- Bike Commute Challenge, Oregon: <http://www.bikecommutechallenge.com/>

#### Walking and Bicycling Programs for Underrepresented Groups

Regular physical activity such as walking and bicycling has been shown to have considerable health benefits, such as helping to maintain a healthy weight and reduce the risk of heart disease, high blood pressure, and type 2 diabetes. Reaching out to traditionally underrepresented groups to encourage walking and bicycling can help to improve personal health and strengthen ties within the community. GirlTrek, a walking outreach program for black women and girls, is one such program that can easily be started within Columbia. The program tools are all available online for free and include a walk tracker, social media outlets, a team starter kit, and

online badges for achieving walking milestones. Ideally, such a program would be started and organized by a prominent local community leader, but could also be supported by Healthy Columbia, local health providers, and other local health groups. GirlTrek and other programs that reach out to specific community groups can help to improve access to walking and bicycling opportunities in order to address health and equity issues within Columbia.

#### Sample programs:

- GirlTrek: <http://www.girltrek.org/>
- Senior Strolls and Senior Cycles: <http://www.portlandonline.com/portlandcan/index.cfm?a=345916&>
- iCan Shine: <http://icanshine.org/>
- Healthy Portsmouth, Portsmouth, VA: <http://www.healthyportsmouthva.org/getinvolved>

### Bicycle Friendly Business Districts

A Bicycle Friendly Business District (BFBD) is an existing business district that works in partnership with the City, local businesses, and local neighborhood organizations to make a district more bicycle-friendly. Columbia is characterized by business districts and downtown neighborhoods that are well-organized, well-branded, and highly valued. The BFBD program capitalizes on that community asset.

The purpose of a BFBD is to encourage people to visit local businesses on bike and on foot, promote local character and community, create a lively street space that encourages people to visit the district, increase local traffic safety, and improve traffic congestion. A BFBD is characterized by improved bicycle infrastructure, such as ample bicycle parking; dedicated bicycle facilities to, from, and throughout the district; bicycle repair stations; map kiosks of the bicycle network; and bicycle safety and wayfinding signage. Local businesses in the district also offer discounts and incentives for people who travel by bike.



The City of Columbia should work with local business districts and neighborhood groups, particularly in and near downtown, to develop Bicycle Friendly Business Districts. Targeted bicycle infrastructure and parking improvements within a district would be coupled with local business discounts for bicyclists. Discounts could be a daily or once-weekly promotion that encourages residents and visitors to visit local businesses by bike. One successful version of the program requires bicyclists to purchase a low-cost program sticker that they display on their helmets. This allows businesses to identify participating bicyclists and provide discounts to those customers. A business discount program could be especially popular with businesses in downtown that have limited motor vehicle parking. In return for businesses' participation, a "Bicycle-Friendly Local Businesses" feature, along with discount information, could be featured on the BPAC website and Facebook page.

Businesses that make these and other efforts to provide incentives to bicyclists will be in a position to apply for Bicycle Friendly Business status with the League of American Bicyclists (LAB). In its Bicycle Friendly Community application feedback to the City of Columbia, the LAB recommended that more businesses apply for and obtain Bicycle Friendly Business designation to improve the bicycling environment and culture throughout Columbia.

**Sample programs and materials:**

- <http://www.activetrans.org/businessdistricts>
- [http://www.peoplepoweredmovement.org/site/images/uploads/Bike\\_Friendly\\_Business\\_Districts\\_Draft\\_3\\_%281%29.pdf](http://www.peoplepoweredmovement.org/site/images/uploads/Bike_Friendly_Business_Districts_Draft_3_%281%29.pdf)
- Salt Lake City, UT: <http://www.bikeslc.com/GetBiking/DiscountsforBicyclists.html>
- Long Beach, CA: <http://www.bikelongbeach.org/bike-friendly-businesses>

## Open Streets Events

Open Streets Events are periodic street festivals (typically held on the weekend) that create a temporary park that is open to the public for walking, bicycling, dancing, hula hooping, roller skating, and other forms of human-powered activity. These programs are known by many names: Open Streets, Ciclovias, Sunday Parkways, Summer Streets, and Sunday Streets. They promote health by creating a safe and attractive space for physical activity and social interaction, and are cost-effective compared to the cost of building new parks for the same purpose. These events can be weekly, monthly, or annual events, and are generally very popular and well-attended. Developing an Open Streets Program is one of the recommendations for Columbia made in the League of American Bicyclists' BFC Application feedback.

Open Streets events lend themselves to innovative partnerships and public/private funding. The City of Columbia should partner with Healthy Columbia, health care providers, and local health and fitness groups to hold periodic open streets events throughout Columbia. Activities at Open Streets Events can include a bicycle rodeo to teach children bicycling skills, hula hoop and jump rope contests, wheelchair basketball, yoga or Zumba classes, and prize drawings. Health care providers whose mission includes facilitating physical activity are often major sponsors. Businesses may also help sponsor the event if it brings customers to their location.

**Sample programs:**

- Portland, OR Sunday Parkways Guide: <http://www.portlandonline.com/transportation/index.cfm?c=51522&a=274625>
- Durham, NC Bull City Play Streets: <https://www.facebook.com/BullCityOpenStreets>
- Sunday Parkways videos: <http://www.streetfilms.org/tag/ciclovias/>

## Walking and Bicycling Map with Online Route Planning Tool

One of the most effective ways of encouraging people to walk and bike is through the use of maps and guides. In its BFC Application feedback, the League of American Bicyclists listed "Design and publish a local bike map in paper and online" as one of its top recommendations for Columbia. Based on the results of the Walk Bike Columbia Survey, 25% of Columbia citizens believe that a free, personalized route planning tool for walking, bicycling, and transit trips would have the greatest impact on walking and biking in Columbia.

The City of Columbia should develop a walk and bike map and distribute it to residents and visitors both in print and online; hard copies could be available for free or for a small charge at City Hall, local bike shops, gyms and recreation centers, and at other businesses. The map should show where existing bike lanes, sidewalks, trails, and other facilities are located and help to guide people to enjoyable routes and destinations; safety tips and links to local resources are also valuable additions. The map should be updated on a regular basis to reflect the most current facilities in town. An online route planning tool could be integrated with the map data of existing facilities and routes to help citizens plan trips on foot, by bike, and by transit. These resources could be developed as part of or as a complement to local transit-planning resources (e.g. a smartphone application or online route-planning tool).

**Sample walk/bike maps:**

- Durham, NC: <http://durhamnc.gov/ich/op/dot/Pages/Durham-Bike--Hike-Map.aspx>
- Portland, OR: <https://www.portlandoregon.gov/transportation/39402>
- Raleigh, NC: <http://www.raleighnc.gov/government/content/PWksTranServices/Articles/BicycleProgram.html>



## Bicycle Co-op

A Bicycle Co-op is a community-based coalition or non-profit bicycle repair shop and/or lending library. The mission, structure, and outcomes of Bicycle Co-ops varies significantly but the basic premise of a community-driven support service for bicycle maintenance and increased access to bicycles consistently serves as a powerful tool for advancing bicycle culture in cities across the country.

Most commonly, individuals bring a bicycle needing repair or maintenance and volunteers teach them the necessary steps. Co-ops often sell or loan used bicycles and new or used parts. Formal group bike-repair classes, programs directed at underserved youth, or broader bike advocacy efforts are common as well.

New interest in establishing a Bicycle Co-op in Columbia and the support of the City's Bicycle and Pedestrian Advisory Committee indicate existing community support and an opportunity to develop this program. The City of Columbia and other partners, such as the downtown business districts, should support this initiative through in-kind or financial support and through connecting the group with potential sponsors or promotional opportunities.

### Sample Programs:

- Lincoln Bike Kitchen in Lincoln, NE: <http://www.lincolnbikekitchen.org/index.html>
- Hub Cycle in Spartanburg, SC: <http://www.active-living.org/borrowing-bicycles>
- Iowa City Bike Library in Iowa City, IA: <http://www.bikelibrary.org/>
- Trips for Kids in Charlotte, NC: <http://tripsforkidscharlotte.org/>

## Walk, Bike, and Take Transit to Special Events

Columbia's downtown is a major destination for special events, ranging from the Soda City Market on Saturdays to college football and basketball games, from live music shows to weekend festivals. The Bicycle and Pedestrian Advisory Committee and community volunteers provide a bicycle valet service at many downtown events and festivals. Bike valet is a recognized best practice as a successful encouragement program, but is also volunteer- and time-intensive to maintain as an ongoing effort. Additionally, other efforts beyond bike valet can encourage safe access to special events via biking, walking, and using transit. The following multi-pronged approach will encourage residents to travel to events through active transportation and can help to mitigate special event traffic congestion.

- Formalize bicycle parking at special events through ordinance or an amendment to the existing special event permitting process that incorporates special event bicycle parking as a requirement for permit approval. Ensure that bicycle parking is well-signed and promoted prior to the event. Further guidance is offered in the Policy Recommendations chapter of this Plan.
- Establish temporary road diets (using traffic cones or similar treatment) on corridors linking to or passing through event sites as a way to reduce crossing distances for pedestrians and provide a buffer between increased pedestrian traffic and motor vehicle traffic. In addition to creating safer pedestrian access, this prioritizes active transportation and discourages motor vehicle transportation in target areas. For weekend events, this can serve as a way to right-size that section of roadway for reduced weekend traffic.
- List transit routes that provide access to a special event site in all City-sponsored promotions related to the event and establish this as City policy. Additionally, the City can encourage USC and other major partners to do the same

and establish such a request within its own special events permitting policy.

- As Columbia moves forward with implementing a bike share system, establish a protocol for creating temporary bike share stations at major events. This could include a temporary station at Williams Brice Stadium on game days and adding additional capacity for stations at or near the annual St. Patrick's Day festival, among other similar efforts.

## Enforcement Programs

One of the gaps identified in the Columbia BFC/WFC Assessment and the League of American Bicyclists' BFC Application feedback is a lack of bicycle- and pedestrian-specific enforcement programs. 39% of Columbia Walk Bike Columbia survey respondents believe that law enforcement programs targeting drivers, bicyclists, and pedestrians would have the greatest impact on improving walking and biking in Columbia. These programs can help to raise awareness of bicyclists and pedestrians, enforce road user rights and responsibilities, and reduce unsafe traffic behavior.

The Columbia Safety Analysis performed for this plan found that traffic enforcement for motorists should focus on speeding enforcement and ticketing drivers who fail to yield the right of way to bicyclists and pedestrians. Traffic enforcement for bicyclists should focus on enforcement for failing to follow traffic signs and signals, improper operations on the road, and wrong way riding on the road. These issues present the greatest crash risks to road users and could be reduced through targeted enforcement programs, as well as improved education and roadway engineering.

### Crosswalk Enforcement Action Program

Crosswalk enforcement actions (sometimes known as "crosswalk stings") raise public awareness about the legal obligation of motorists to stop for pedestrians at crosswalks. While crosswalk enforcement actions do result in tickets being



distributed, the greater impact comes through media publicity of the event to reinforce the importance of obeying pedestrian crossing laws.

Crosswalk enforcement should be implemented by the Columbia Police Department at locations where pedestrians have trouble crossing and where a large volume of pedestrians (especially vulnerable pedestrians such as children and seniors) is expected. High-crash locations may also be candidates for enforcement actions. If locations near schools are selected, the best timing for an enforcement action is the back-to-school window just after school has begun for the year. Locations should be selected by local police departments in consultation with city engineers and planners. If any complaints from the public have been received about problem crossing locations, they should be considered. School officials will also have valuable input about school crossing locations that would benefit from targeted enforcement.

Once locations have been determined, police officers prepare by marking the safe crosswalk stopping distance with cones. Plainclothes police officers or trained volunteer decoys then attempt to cross at corners and marked mid-block crossings. (Decoys may also be notable community members, such as the mayor or a well-known business leader, to increase media interest in the event.) If motorists fail to yield to the pedestrian in the crosswalk, a second police officer issues a warning or a ticket at the officer's discretion. It is recommended that the enforcement action be recorded on video to support issued violations should a motorist challenge the ticket. First-time offenders receiving a ticket should receive educational materials through the Safe Streets Save Lives Campaign (see "Existing Programs") and the option of taking a Traffic Ticket Diversion Class (see "Education Programs") for a waived or reduced fine.

**Example crosswalk enforcement action programs:**

- Chicago, IL: [http://www.cityofchicago.org/city/en/depts/cdot/provdrs/ped/svcs/crosswalk\\_enforcementinitiatives.html](http://www.cityofchicago.org/city/en/depts/cdot/provdrs/ped/svcs/crosswalk_enforcementinitiatives.html)
- New Jersey: <http://www.pedbikeinfo.org/data/library/details.cfm?id=4649>

**Targeted Enforcement & Speed Feedback Signs**

Speeding vehicles endanger all road users, including pedestrians and bicyclists. High-speed driving results in more frequent crashes and crashes that are more likely to result in serious injury or death. Targeted speed enforcement activities are a proven way to improve road safety and make walking and bicycling more comfortable.

Law enforcement officials should enforce speed near schools and parks, in downtown, and at locations that are known to have speeding problems (as identified by police officers and resident complaints). These campaigns are ideal for a Safe Routes to School Program; many towns hold an annual "Back to School Blitz" to enforce speed limits in school zones.

As part of ongoing enforcement against speeding, the City of Columbia should also consider creating a speed feedback sign request program to deploy speed feedback signs at the request of neighborhood associations and schools. The signs serve as a traffic calming device when used temporarily at strategic roadway locations. The town should also use speed feedback signs on streets with new pedestrian and bicycle facilities. The signs should be mounted temporarily (e.g., for two weeks) and then be moved to another location to keep motorists from becoming inured to the speed feedback sign effect.

**Example speed feedback sign request program:**

- Toronto, Canada: <http://www.toronto.ca/transportation/walking/wysp/>

**20's Plenty Campaign**

"20's Plenty" is a campaign that originated in the United Kingdom with the goal of minimizing pedestrian crash injuries and deaths. Lowering residential speeds to 20 MPH has enormous safety benefits for all users, especially pedestrians and cyclists, by reducing both the chance of a crash and its severity. This campaign could be implemented throughout the City of Columbia in areas with high pedestrian and bicyclist traffic, such as in downtown, on bicycle boulevards recommended in this plan and other neighborhood streets, and near schools, parks, and shopping centers. On higher order collector and arterial streets, the City should consider lowering speed limits to 25-30 mph where high pedestrian volumes are known to occur.

A successful campaign will bring together several different strategies, including:

- Making residents aware of the benefits of 20 MPH roadways and engaging their partnership on raising awareness and buy-in from their neighbors.
- Identifying specific streets on which a 20 MPH speed limit is appropriate, such as walking or bicycling routes, priority pedestrian and bicycle corridors, and residential streets.
- Traffic engineering to ensure that the design speed of the street matches the new posted speed.
- Partnership with law enforcement to enforce speed limits and deploy temporary speed feedback signs on 20 MPH streets.
- Evaluation of vehicle speeds and reported crashes (number and severity) before and after the integrated campaign is implemented to the effort to measure results and correct course.



#### More about UK “Twenty’s Plenty” campaign:

- <http://www.20splentyforus.org.uk/>
- <http://www.streetfilms.org/no-need-for-speed-20s-plenty-for-us/>

#### Evaluation and Planning Programs

In the Columbia BFC/WFC Assessment conducted for this plan, Evaluation and Planning program efforts were identified as the most in need of enhancement. Establishing this plan and tracking its implementation is an important first step in the evaluation and planning arena. Creating a dedicated bicycle and pedestrian coordinator position or selecting an outside consultant to perform the duties of coordinator at the City will be a critical implementation step in developing and maintaining long-term evaluation and planning initiatives within Columbia. A series of evaluation programs are described below that can help Columbia identify bicycle and pedestrian needs, track successes, and make the case for further bicycling and walking investments.

#### Citywide Pedestrian and Bicycle Counts Program

In order to track bicycling and walking trends in Columbia and measure the success of walking and bicycling projects, it is important to establish a citywide pedestrian and bicycle counts program. Developing a regular counts program is one of the recommendations for Columbia made in the League of American Bicyclists’ BFC Application feedback. The program should tally the number of pedestrians and bicyclists at key locations around the community, particularly at pinch points, in downtown, near schools, and on shared use paths. This program should build off of the counts that were started as part of the Walk Bike Columbia planning effort and be repeated at least once per year. This will provide the city with information on walking and bicycling activity levels.

It is recommended that the data collection program use methods developed by the national National Bicycle and Pedestrian Documentation Project (NBPDP). Counts should be performed in the second week in September; one weekday count (from 5-7 PM on a Tuesday, Wednesday, or Thursday) and at least one Saturday count (12 noon – 2 pm) should be completed. Counters can be city staff or volunteers, as long as proper training is provided. If desired, the data collection effort can also include surveys to learn more about walking and bicycling demographics, where people are traveling to and from, and what their needs are.

Manual counts are inexpensive to implement and help gather behavioral data (gender, age group, sidewalk versus roadway riding). However, manual counts necessarily gather a very small sample size and are subject to significant variability. Hence year-on-year comparisons of manual count sites are not statistically robust. Manual counts should therefore be one part of a complete evaluation program that also includes automatic machine counters. New and increasingly affordable technologies including active infrared, inductive loops, and pneumatic tubes that exclude motor vehicles in mixed traffic environments can produce much larger and statistically significant datasets. A limited number of automatic counters can be rotated around the city in a mobile counting program and in many cities is funded out of the city’s existing motor vehicle count budget.

The NBPDP website includes count and survey instructions, forms, and participant training materials:

- National Bicycle and Pedestrian Documentation Project: <http://bikepeddocumentation.org/>
- NCHRP 07-19

#### “Measuring the Street” Pre- and Post-Project Evaluation Program

As pedestrian, bicycle, and greenway infrastructure projects are planned, pre- and post-construction evaluation should be conducted to measure existing conditions, identify the areas of greatest need for walking and bicycling improvements, and track the influence of new facilities on walking and bicycling rates and safety. A pre/post evaluation program for pedestrian and bicycle projects is one of the recommendations for Columbia made in the League of American Bicyclists’ BFC Application feedback. This data will be valuable to build public and political support for future projects.

One example program is New York City’s “Measuring the Street” campaign, which tracks changes in crashes, traffic speeds, congestion, foot traffic, retail sales, and bike, walk, and transit rates after street improvements are made. These data help to show how bicycle and pedestrian improvements can provide universal benefits to road users and local businesses, and allow city staff to measure and track this progress over time. Baseline user counts are also useful data for making the case for needed pedestrian and bicycle improvements; many people in Columbia already walk and bike, and counts help to quantify the existing demand for a new facility or intersection improvement.

Crash data can likewise help to identify areas where bicycle and pedestrian improvements are needed and help make the case for investments to improve safety. Crash data provide useful indications of potential issues, but under-reporting issues, small numbers, and regression to the mean effects are key limitations. Furthermore, a lack of reported crashes at a given location does not mean that there are no engineering deficiencies: it may simply be that the location is so challenging to navigate on foot or on a bike that people avoid it. A comprehensive evaluation program that tracks several different metrics will help to mitigate these limitations.



#### **Sample Programs and Resources:**

- Measuring the Street, New York City Department of Transportation: <http://www.nyc.gov/html/dot/downloads/pdf/2012-10-measuring-the-street.pdf>

#### **Walking, Bicycling, and Greenways Report Card**

As the implementation of this plan progresses, a useful strategy is to use performance benchmarks to measure implementation accomplishments. A comprehensive review of the plan's progress should be published in an annual report that includes relevant performance metrics (walking and bicycling count results, new bicycle and pedestrian facility miles, completed projects, new and ongoing programs, pedestrian- and bicyclist-involved crashes). The report may also include information on user satisfaction, public perception of safety, or other qualitative data that has been collected related to walking and bicycling. Tracking successes over time helps to build momentum and justify continued or increased funding for bicycle and pedestrian projects and programs.

#### **Sample programs:**

- Memphis, TN: <http://bikepedmemphis.files.wordpress.com/2012/03/state-of-bicycling-2014.pdf>
- San Francisco, CA: [http://www.sfbike.org/download/reportcard\\_2006/SF\\_bike\\_report\\_card\\_2006.pdf](http://www.sfbike.org/download/reportcard_2006/SF_bike_report_card_2006.pdf)

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# APPENDIX D: PUBLIC INPUT AND BICYCLE COUNTS

## Introduction

This memo presents a summary of public input efforts for Walk Bike Columbia: Columbia Pedestrian and Bicycle Master Plan and Bike Share Plan. The consultant team conducted a multifaceted public outreach effort over a period of four months, from May 2014 to August 2014. The purpose of the effort was to gather local knowledge and community input to guide the plan’s development. The project team’s public engagement events and efforts included the following:

- Steering Committee meetings
- 4 public workshops with interactive project boards and maps
- 8 stakeholder focus groups
- Citizen survey (available both online and in hard copy)
- Project website with project information, videos, and relevant links
- Online interactive map and input tool
- Flyers for public workshops
- Social media promotion
- Spanish language materials and interpreters at public events

These efforts were offered across the city and through a variety of media in order to provide the representatives and residents of Columbia with many opportunities and different mechanisms for contributing to the plan’s development. The following sections present key findings of the public outreach process and a summary of the outreach efforts and their results.

## Key Findings

The Walk Bike Columbia public outreach process confirmed that Columbia citizens value access to active transportation and public transit. This is reflected in the low marks given to Columbia’s existing pedestrian and bicycle network and its transit operations, as well as in the fact that 81 % of respondents said walking and bicycling improvements are “very important” and 61% of respondents said that transit improvements are “very important.”

The primary concerns of residents when it comes to both walking and biking are the lack of safe roads and/or sidewalks, the need for improved design and/or maintenance of existing facilities, and the distance between destinations. The latter item points to a critical link between land use planning/land development and transportation planning/network development. The current efforts by the City and County to work collaboratively to update their land use plans and policies present a unique opportunity to address that important element. In addition to these priority concerns, citizens also noted bicycle parking as a key deterrent to bicycling activity and transit users stressed the need to improve and enhance transit operations (route network, headways, and reliability) while also improving walking and biking access to transit.

Key non-infrastructure strategies for encouraging safe walking, bicycling, and transit usage that are likely to have an impact in Columbia fall into the following categories:

- Education & Enforcement:
  - safety education media campaign
  - law enforcement sting targeted to motorists, bicyclists, and pedestrians
  - awareness campaign regarding the benefits and availability of walking, bicycling, and transit usage
- Encouragement:
  - employer-based incentives

- wayfinding signage for the complete multi-modal network
- informal, family-friendly events like ‘Open Streets’ (also known as Ciclovía)
- Evaluation:
  - Policies, plans, programs, and funding that prioritizes Safe Routes to School
  - Policies, plans, programs, and funding that prioritizes Safe Routes to Transit
  - Coordination of land use planning and transportation planning
  - Updated and improved design standards and design guidance for pedestrian and bicycle infrastructure, transit stop infrastructure, bicycle parking, and ADA accessibility

Regarding infrastructure improvements, citizens expressed a preference for sidewalks, trails, and shared-use paths and intersection improvements. For on-street bicycle facilities, buffered bicycle lanes and cycle tracks are preferable to standard bicycle lanes or shared roadways. Citizens also clearly stated neighborhood connectivity and access to parks and trails as city-wide priorities.

A majority of responses supports the concept of bike share in Columbia. Concerns regarding the distance between destinations and the low levels of bicycling for transportation that currently exist were expressed in terms of potential bike share usage. For a local bike share program to be deemed successful, citizens and stakeholders identified the following as the primary outcomes:

- Reduce the number of cars on the road.
- Reduce the number of car trips and vehicle miles traveled in private vehicles.
- Improve options and access to healthy living and active transportation.



## Project Website and Online Mapping

The project website, [www.walkbikecolumbia.org](http://www.walkbikecolumbia.org), provided information to the public about the plan and the planning process. The website included information on complete streets and bike share, background on the plan and existing conditions in Columbia, upcoming public workshops and meetings, informational videos and links, and relevant planning documents. Several thousand people accessed the website during the planning process; from mid-July to mid-August alone, over 3,300 unique viewers visited the project website.

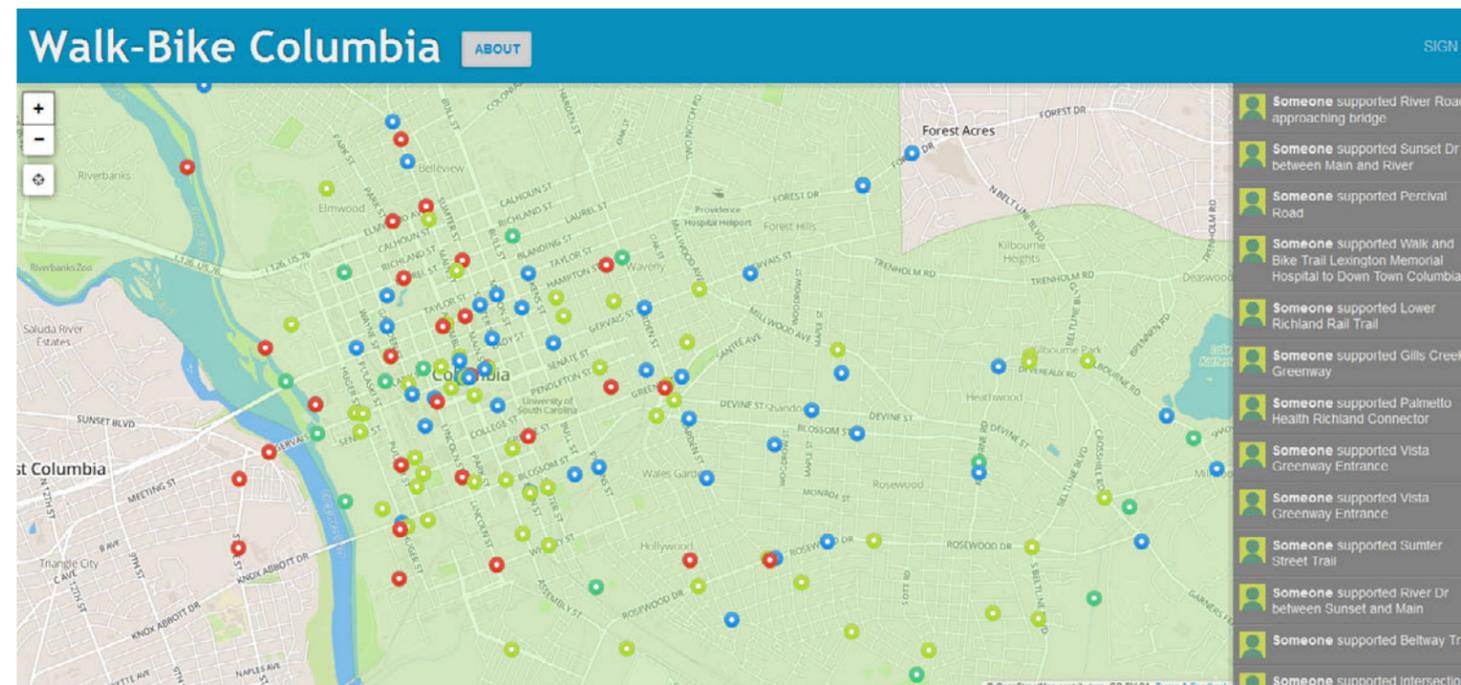
The website also included a link to the online Walk-Bike Columbia mapping tool, which provided an interactive map of the study area to invite public input. Web users were able to place points with comments to identify areas of safety concern; ideal routes for trails, on-road bicycle facilities, sidewalks, and bike share stations; and intersections and crossings that need improvement. The map below shows the online mapping interface with points that were placed by users. The different pin colors on the map represent different types of recommendations made. Altogether, users placed 193 points on the map and provided 89 additional comments.

Users were able to view other users' points and comments, and could vote to "support" a peer's recommended project. The following is a list of user-proposed projects that received the greatest support:

- Rosewood corridor bike lanes (13 votes of support)
- Safer crossing across Assembly Street at the Richland County Public Library (11 votes of support)
- Dedicated bicycle path connecting Shandon/Rosewood to Downtown (8 votes of support)
- Assembly Street bike lane from Elmwood Avenue to Shop Road (8 votes of support)
- River Drive bike lane between Main and Sunset (7 votes of support)

Other projects that received 6 votes of support included constructing the Vista Greenway from Park Street to Finlay Park, a road diet and bike lanes on Devine Street from Millwood to Harden, bike lanes along the length of Gervais, connecting the Three Rivers Greenway between Columbia Canal Dam and Granby Park, intersection improvements at Whaley and Main, Millwood Avenue bike lanes with frequent crosswalks and pedestrian refuge islands, intersection improvements at Garner's Ferry and Rosewood, keeping the Fort Jackson Boulevard Gate (Gate #1) open for longer hours for bicyclists to pass through, and bike lanes and sidewalks on Kilbourne Road between Rosewood and Devine.

FIGURE 4 – WALK BIKE COLUMBIA ONLINE MAPPING TOOL





The top voted locations for bike share stations included the following:

- Riverfront Park (6 votes of support)
- Richland County Public Library (6 votes of support)
- Aspyre and Olympia & Granby Mills (4 votes of support)
- River Walk Amphitheater (4 votes of support)
- Rosewood corridor (4 votes of support)
- Williams-Bryce Stadium and tailgate lot (3 votes of support)
- River Rat Brewery (3 votes of support)
- Main and Hampton (3 votes of support)
- Pinehurst Park (3 votes of support)
- Elmwood Park (3 votes of support)

The following maps show points by location, classified by number of votes of support, for proposed bicycle improvements, pedestrian improvements, trail improvements, and bike share stations, respectively. Users placed 69 points for bicycle improvements, 68 points for pedestrian improvements, 23 points for trail improvements, and 33 points for bike share stations. The majority of all points and comments were concentrated in the downtown area.

FIGURE 5 – PROPOSED BICYCLE IMPROVEMENTS FROM ONLINE INPUT MAP

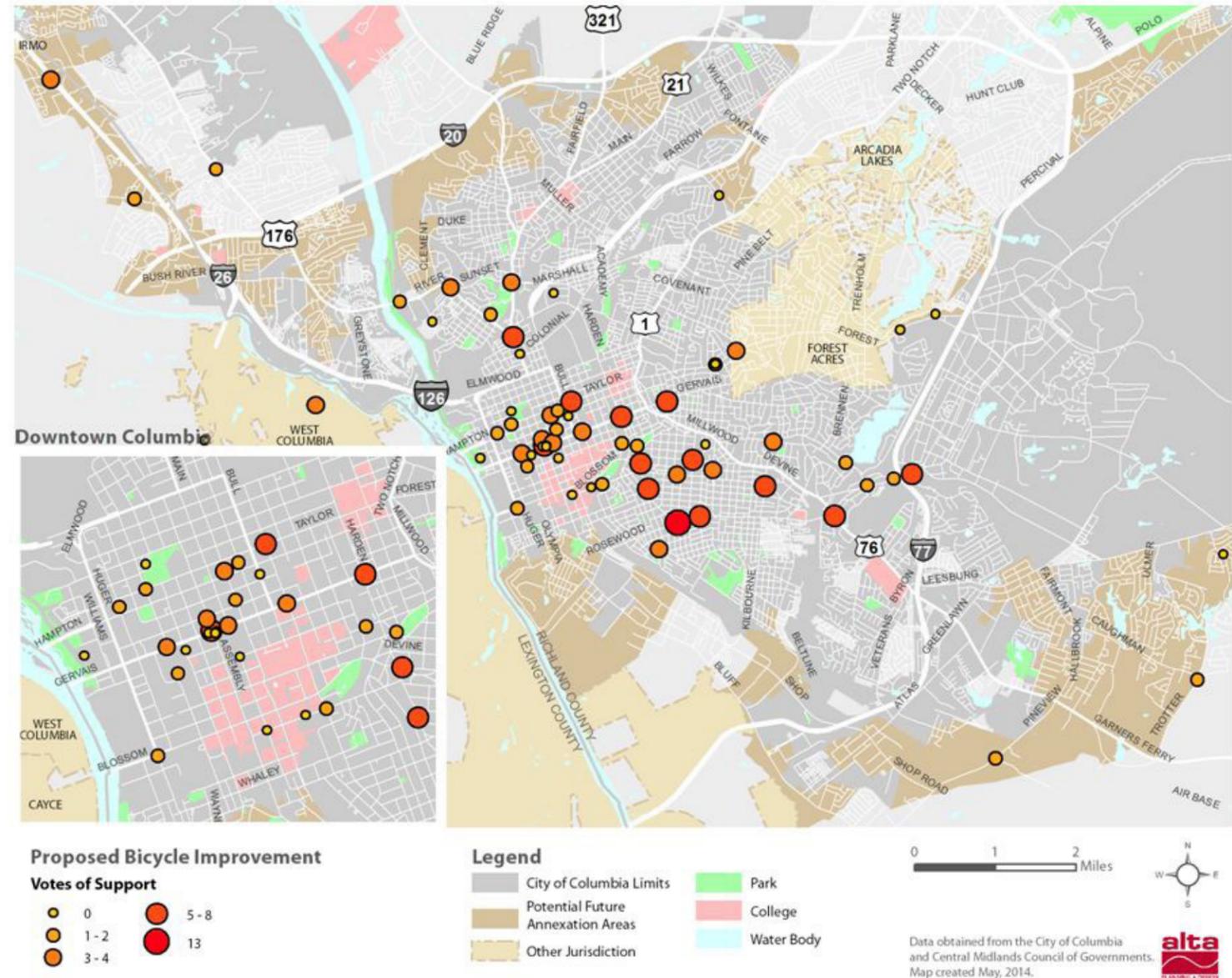
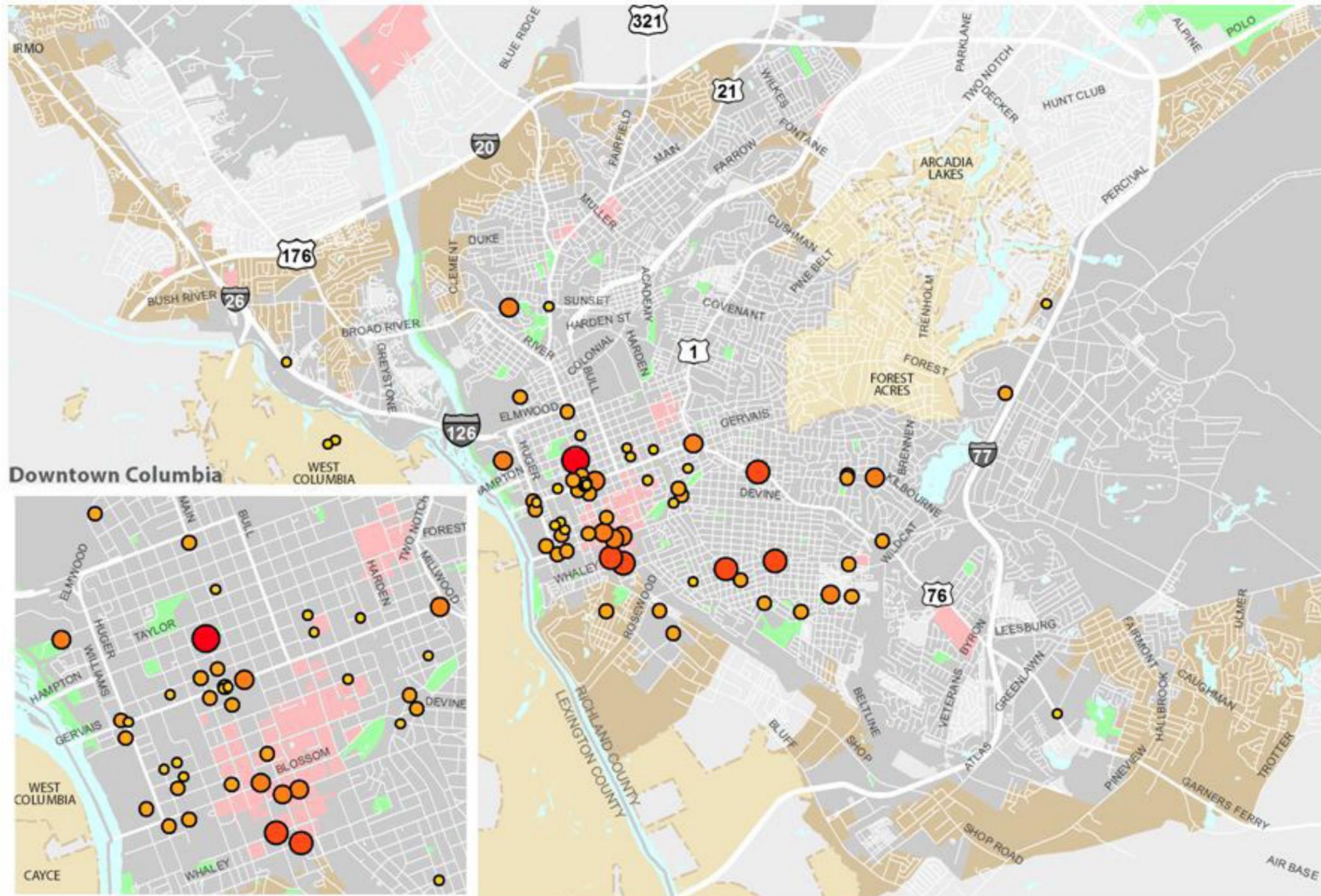


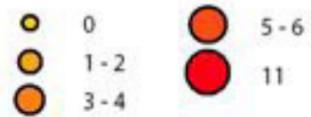


FIGURE 6 – PROPOSED PEDESTRIAN IMPROVEMENTS FROM ONLINE INPUT MAP

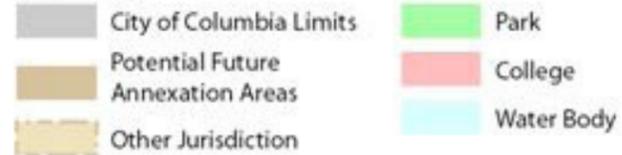


**Proposed Pedestrian Improvement**

**Votes of Support**



**Legend**

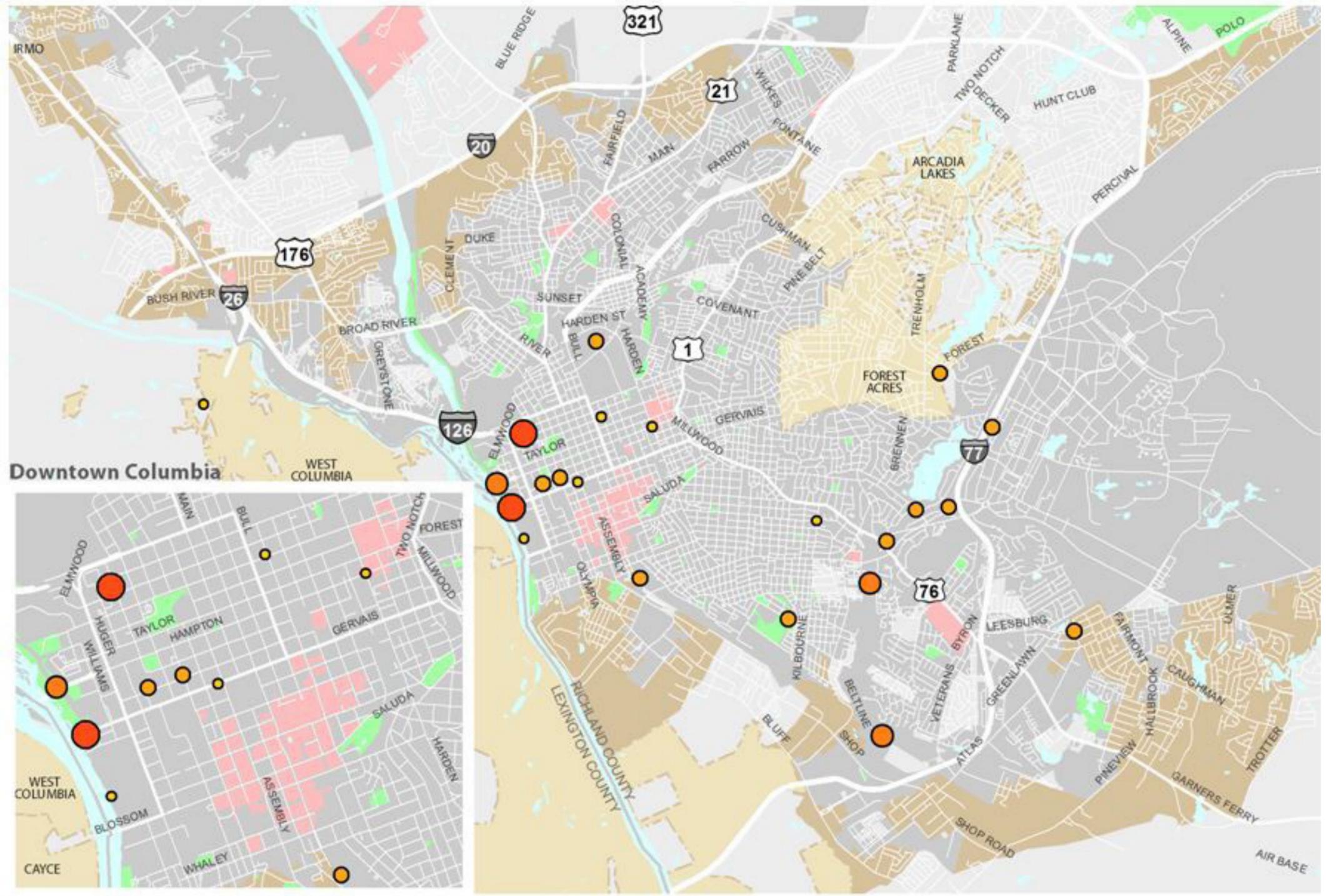


Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created May, 2014.





FIGURE 7 - PROPOSED TRAIL IMPROVEMENTS FROM ONLINE INPUT MAP



**Proposed Trail Improvement**

**Votes of Support**



**Legend**

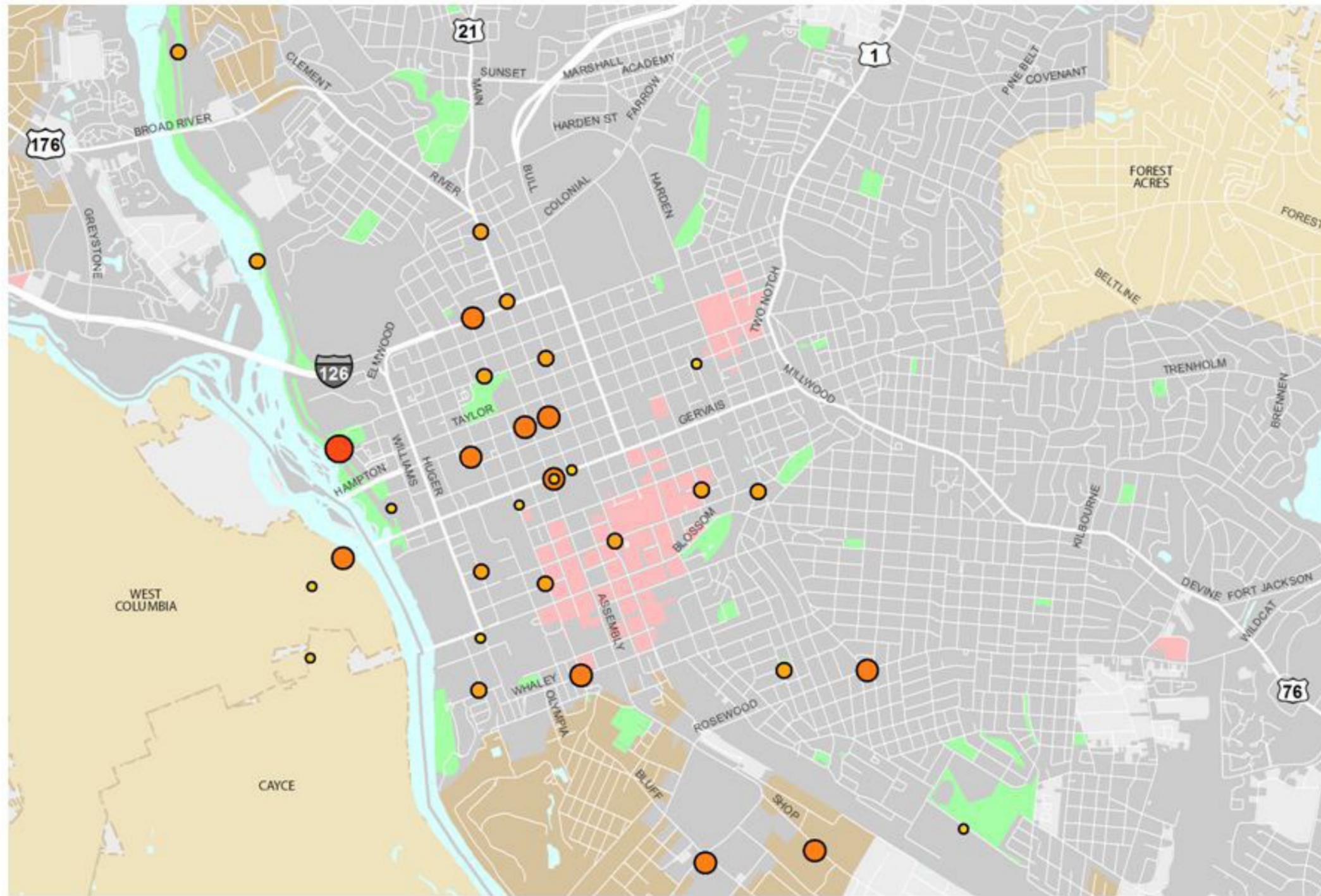


Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created May, 2014.





FIGURE 8 – PROPOSED BIKE SHARE STATIONS FROM ONLINE INPUT MAP

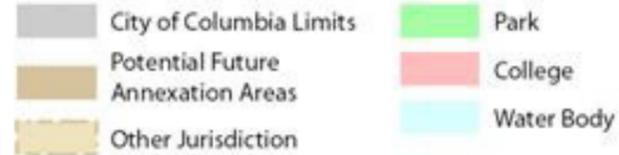


**Proposed Bike Share Station**

**Votes of Support**



**Legend**



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created May, 2014.





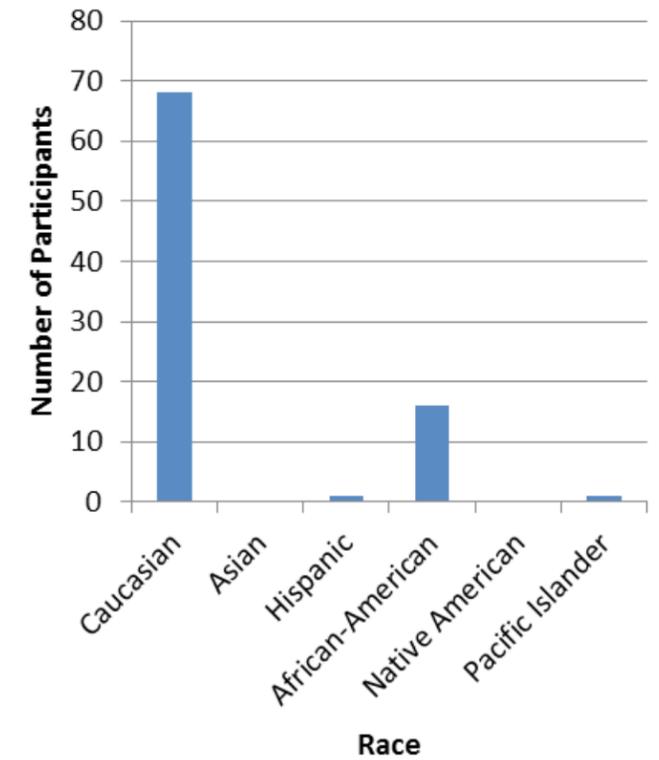
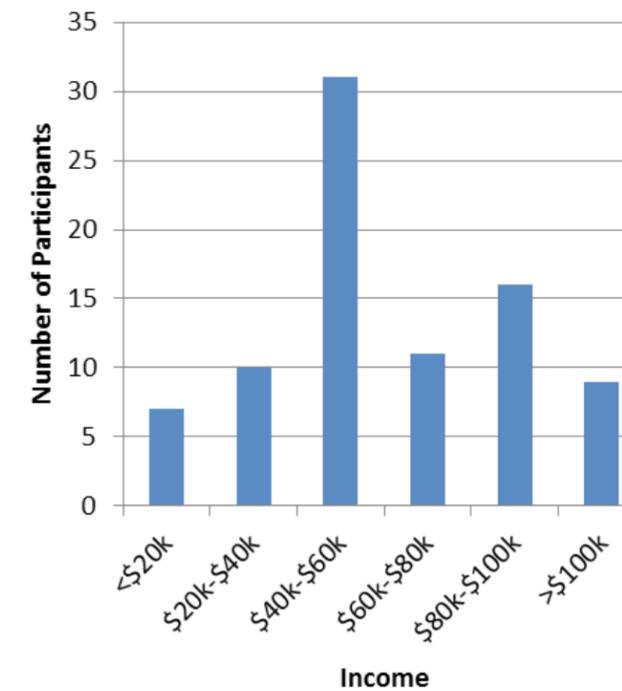
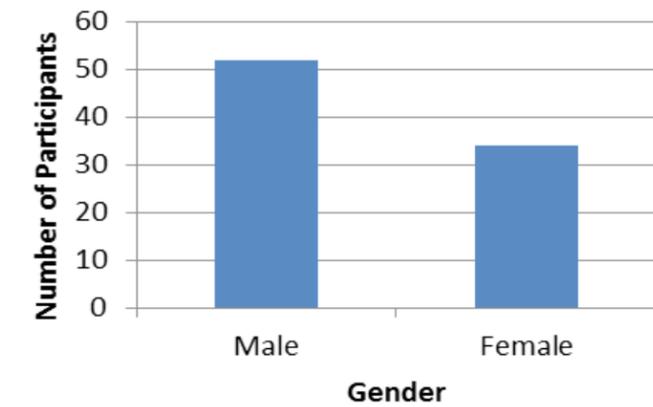
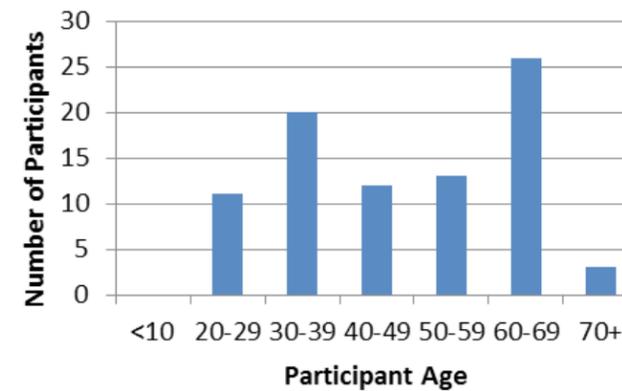
## Public Workshops

The project team held a series of public workshops during the existing conditions assessment phase of the Walk Bike Columbia planning process to collect input from different resident stakeholders around the City of Columbia. Four meetings were held at the end of July in different Districts around Columbia:

- District 1 – July 29, 2014, 5:30 to 7:30 PM, Eau Claire Print Building, 3907 Ensor Street
- District 2 – July 30, 2014, 11:30 to 1:30 PM, Capstone Building, 898 Barnwell Street
- District 3 – July 30, 2014, 5:30 to 7:30 PM, MLK Park Community Center, 2300 Greene Street
- District 4 – July 31, 2014, 5:30 to 7:30 PM, Woodland Park Community Center, 6500 Olde Knight Parkway

The meeting promotion strategy, location selection, and variation in meeting times were all intended to attract stakeholders with diverse backgrounds and needs. The meetings were all held in a drop-in format, allowing participants to arrive, participate in the exercises, and ask questions at their leisure. The project team set up and operated several display boards with information on the Plan; maps of existing and proposed bikeways, walkways and transit in Columbia; and exercises to help determine preferences related to types of infrastructure as well as non-infrastructure walking and bicycling support programs. A Spanish language interpreter was present at two of the four events.

The following graphs show the demographics of attendees across all meetings based on the workshop exit surveys, which were voluntary and not completed by all attendees. The meetings attracted people from a broad range of ages and income levels, and approximately 40% of participants were women. According to the exit surveys, the majority of attendees were Caucasian, though there was a modest representation of minority participants.





## SUMMARY OF COMMENTS ON THE EXISTING WALKING AND BICYCLING NETWORK, BIKE SHARE, AND TRANSIT

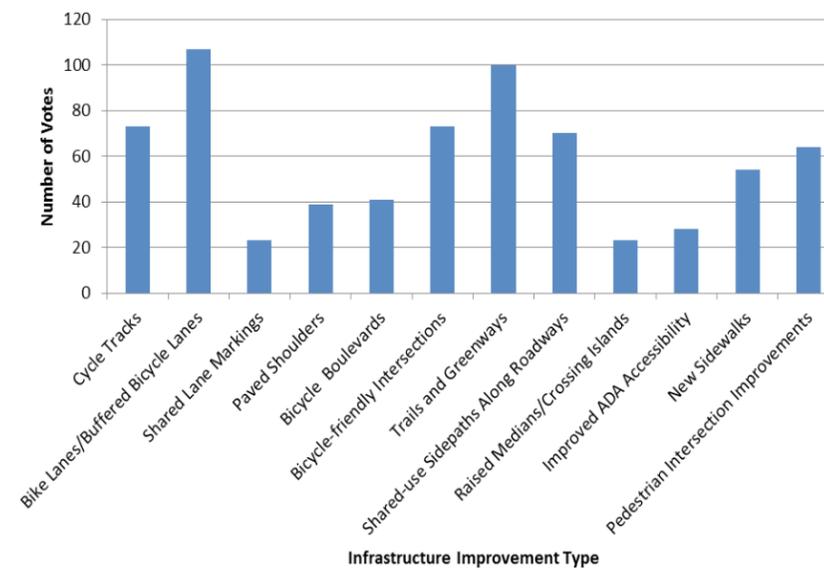
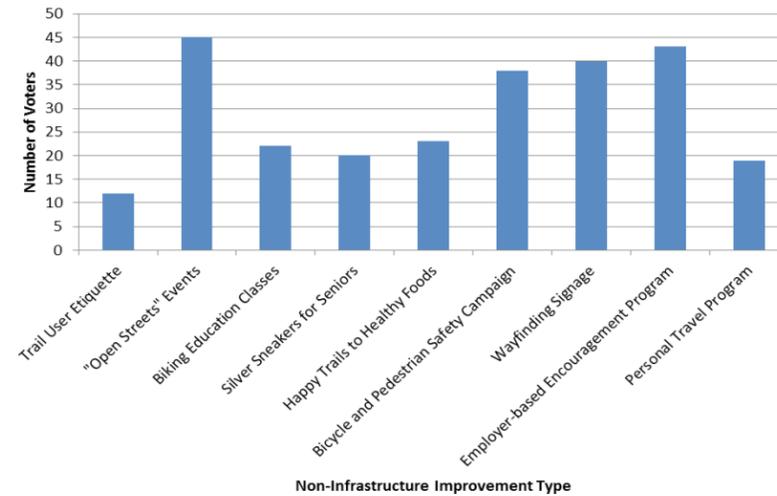
Across all meetings, comments on specific infrastructure focused on connectivity across barriers such as railways and rivers, as well as improvements for bicycling and walking along major corridors around the City such as Assembly Street, Garner’s Ferry Road, and Gervais Street.

Bike sharing was seen as being the most successful around the colleges and universities, Five Points, downtown, the greenways, and the Vista Business District. In terms of transit improvements, participants generally desired more amenities at bus stops such as shelters and better route information, better sidewalk connectivity to bus stops, and more frequent and extensive service.

## SUMMARY OF COMMENTS ON INFRASTRUCTURE AND NON-INFRASTRUCTURE IMPROVEMENT TYPES

Attendees were asked to vote with a fixed number of stickers (6) on pedestrian and bicycle infrastructure improvements that they would like to see in Columbia. As shown in the chart below, separated on-street bicycle facilities (bike lanes/ buffered bike lanes and cycle tracks) and trails were the most favored improvements. More shared-use paths and better intersection treatments for pedestrians and bicyclists were also popular choices. Shared lane markings, bicycle boulevards, and pedestrian crossing islands were the least requested.

Attendees were asked to vote on pedestrian and bicycling education, encouragement, and enforcement programs they would like to see around Columbia, and again vote with (3) stickers on the programs they prefer. The chart below shows that participants desired various programs with “open streets” type events, bicycle and pedestrian safety campaigns, wayfinding signage, and employer-based encouragement programs.





## Citizen Survey

A citizen survey was developed for Walk Bike Columbia and made available in both hardcopy and online form. The purpose of the survey was to gain a better understanding of Columbia residents' walking, bicycling, and transit behavior; their opinions on existing walking, bicycling, and transit conditions in Columbia; and their thoughts on how walking, bicycling, and transit in Columbia could be improved. The comment form was available online for nearly four months, from May 2014 to August 2014. To maximize the responses to the online form, the web address was distributed at steering committee meetings, public workshops, to local interest groups, in newsletters, in newspaper public service announcements, on the website and through social media, and on flyers throughout the city. Volunteers and staff set up booths to provide hard copy surveys on multiple days at the downtown transit center and the Soda City Market. Nearly 850 people completed the citizen survey.

### SURVEY RESPONDENTS

The survey included several questions to gather information about the survey respondents. Participants were asked about their age range, gender, disability status, where they live, where they work, and what type of bicyclist they identify as.

#### A wide range of age groups were well represented:

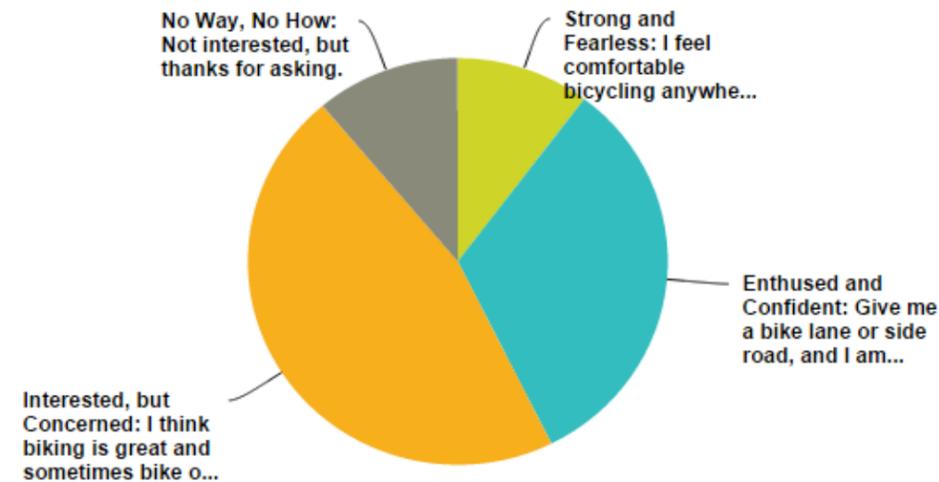
- 18% of respondents were age 20-29
- 27% were age 30-39, 19% were age 40-49
- 21% were age 50-59
- 12% were age 60-69

**Men and women were evenly represented**, with 50.1% female respondents and 49.9% male respondents. Nearly 30% of respondents stated that they are aware of one or more **resident in their neighborhood with a disability that affects that person's ability to walk or drive.**

**Most participants reported living in the City of Columbia (64%),** Richland County (21%), or Lexington County (14%). An even greater proportion, **77%, reported working in Columbia. When asked, "What type of bicyclist are you?" the large majority (78%) responded "Enthusied and Confident" (32%) or "Interested, but Concerned" (46%).** Only 10% identified as "Strong and Fearless" and 11% answered "No Way, No How" (Not interested in bicycling).

### What type of bicyclist are you?

Answered: 701 Skipped: 124



Answer Choices	Responses
Strong and Fearless: I feel comfortable bicycling anywhere, anytime.	10.3% 72
Enthusied and Confident: Give me a bike lane or side road, and I am ready to go! I can identify my own route through the City to reach my destination.	32.4% 227
Interested, but Concerned: I think biking is great and sometimes bike on trails or greenways, but biking on roads makes nervous.	46.2% 324
No Way, No How: Not interested, but thanks for asking.	11.1% 78
Total	701

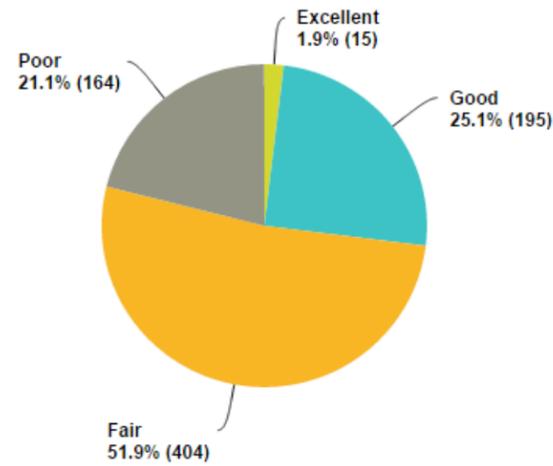


## SURVEY RESPONSES – WALKING AND BICYCLING CONDITIONS

Overall, **walking and bicycling conditions in Columbia are viewed as fair to poor**. Survey participants view the existing bicycling conditions more negatively than the existing walking conditions. **Over 70% of respondents said that walking conditions are “fair” (52%) or “poor” (21%)**, while 25% said “good” and just 2% said “excellent”. **For bicycling conditions, nearly 80% said that conditions are “fair” (45%) or “poor” (44%)**, 10% said “good”, and just 1% responded “excellent”. For many residents, the sidewalk network is insufficiently connected. Survey participants were asked, “Is the sidewalk network near your home complete?” and only 20% responded “Yes”. The other **80% reported that their sidewalk network is some degree of incomplete**: 26% reported it as mostly complete, but with gaps; 27% reported that “The sidewalks are spotty at best”; and 27% said “There are no sidewalks where I live”.

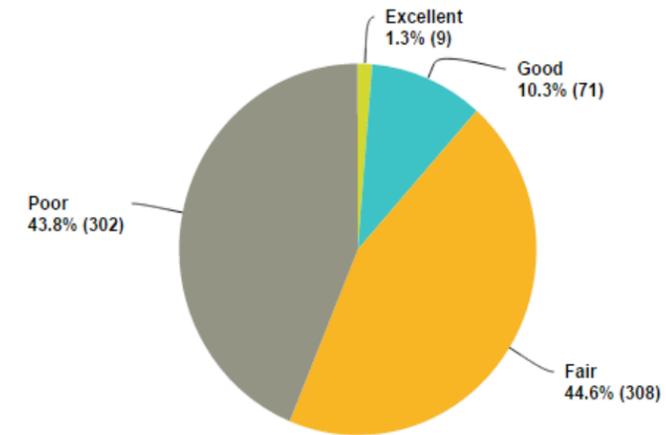
### How do you rate overall walking conditions in the City of Columbia?

Answered: 778 Skipped: 47



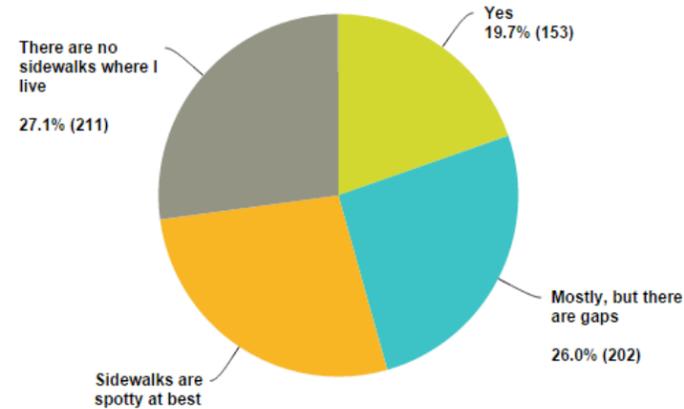
### How do rate the overall bicycling conditions in Columbia?

Answered: 690 Skipped: 135



### Is the sidewalk network near your home complete?

Answered: 778 Skipped: 47





### Factors That Influence Walking and Bicycling

Respondents were asked to rank a series of factors in terms of how influential each factor is on the respondent’s decision to walk instead of drive. **The factors that are most influential are walking for health reasons, walking to spend time outdoors, walking to see things that are missed while driving, and walking for environmental reasons.** The factors that were reported to be the least influential on the decision to walk are “Walking and/or bus transit are my primary forms of transportation” and “Walking is the most practical/convenient way for me to get to my destination.”

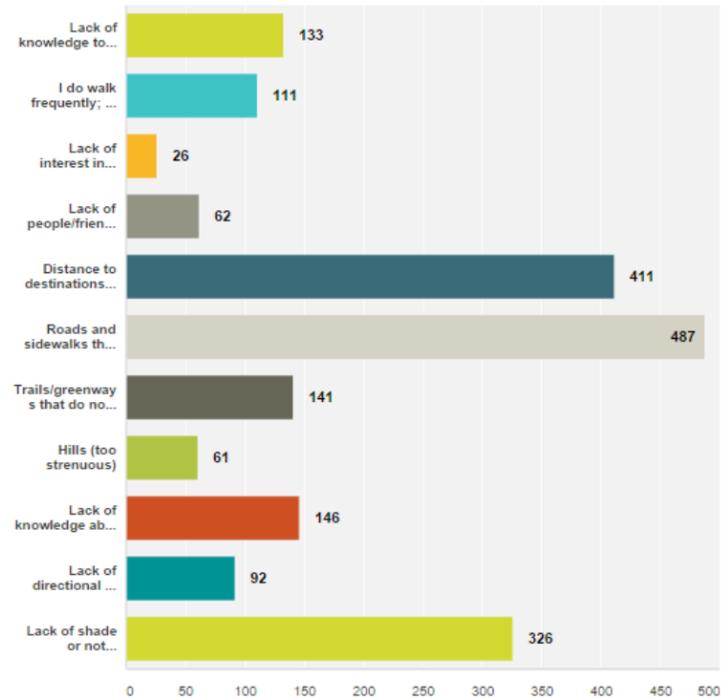
Respondents were asked a similar question about bicycling facilities, in which they had to rank facilities based on how likely they were to influence the respondent to bike more often, with 1 being most likely and 4 being very unlikely. **The facilities that were reported as the most influential in encouraging people to bike are paved off-street paths/greenways (average rank 1.36), intersection improvements for bicyclists (average rank 1.41), striped bike lanes (average rank 1.46), cycle tracks (average rank 1.57), and bicycle boulevards (average rank 1.59).**

### Factors That Prevent Walking and Bicycling

When survey participants were asked, **“What obstacles or concerns prevent you from walking more frequently (mark all reasons why)?”** the most popular answer was **“Roads and sidewalks that do not feel safe” (67%)**. Other top responses were “Distance to destinations too far” (57%) and “Lack of shade or not well-maintained” (45%). **When asked a similar question for bicycling, the standout answer was “Roads that do not feel safe” (84%)**. Other common responses were “Unclean/debris in the bike lane” (41%), “Lack of bicycle parking at destinations” (37%), and “Lack of bike storage at my destination” (31%).

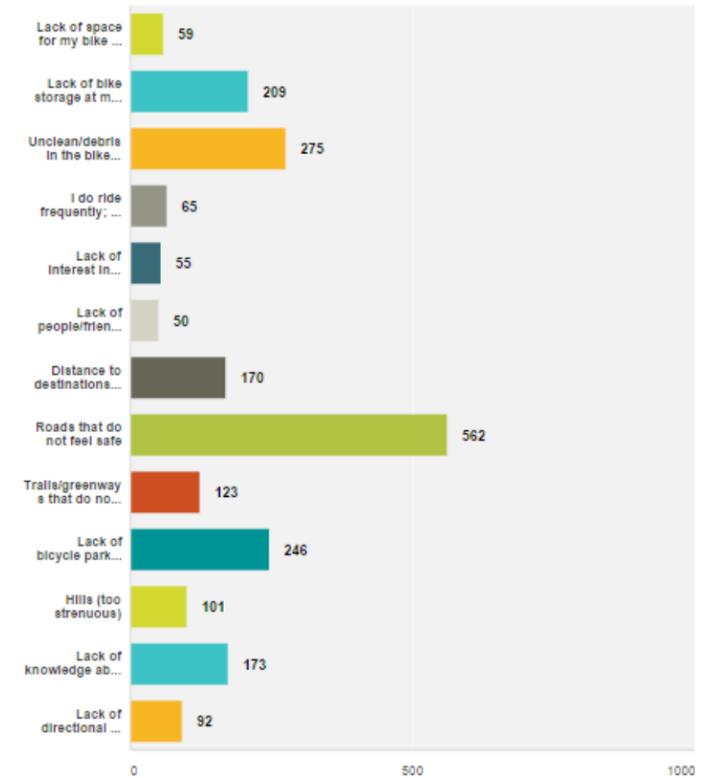
What obstacles or concerns prevent you from walking more frequently (mark all reasons why)?

Answered: 727 Skipped: 98



What obstacles or concerns prevent you from biking more frequently (mark all reasons why)?

Answered: 666 Skipped: 159



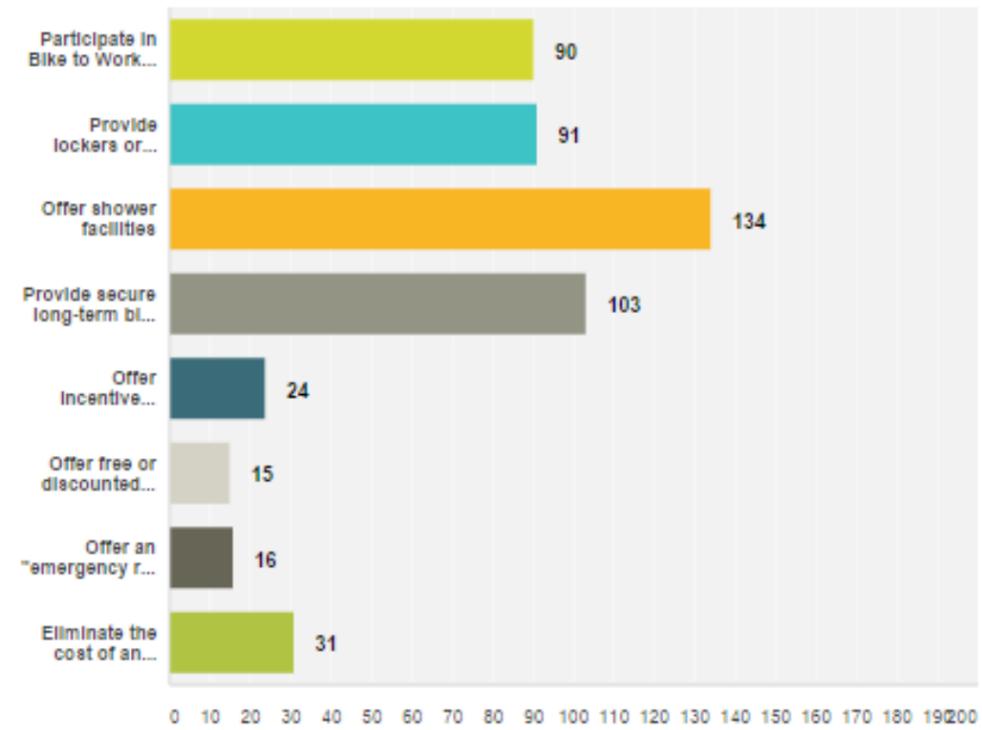


## Employer Support for Alternative Transportation

Employer supported programs that encourage walking, bicycling, and transit can help to encourage employees to commute by these modes. When asked, **“How does your place of work support employees who walk, bike, or take transit?”** the most commonly reported response was **“Offer shower facilities”**, followed by “Provide secure long-term bike parking”, “Provide lockers or storage for personal items”, and “Participate in Bike to Work Day or other biking/walking events.”

### How does your place of work support employees who walk, bike, or take transit?

Answered: 255 Skipped: 570





## SURVEY RESPONSES – BICYCLING AND WALKING IMPROVEMENTS

### Importance of Walking and Bicycling Improvements

When asked, “How important is it to you to improve the bicycle and pedestrian environment in Columbia?” the response was overwhelmingly supportive. **Nearly all (98%) of the respondents believe that it is very important (81%) or somewhat important (17%) to improve the bicycle and pedestrian environment in the city.**

### Walking Destinations

The top destinations that people in Columbia would **most like to be able to walk to are parks and trails (66%), restaurants or bars (66%), shopping or errands (60%), no particular destination – just walking for fitness or leisure (57%), houses of friends or family (53%), and to work (39%).**

### Bicycling Destinations

The **top destinations** that people in Columbia would **most like to be able to bike to are parks and trails (70%), no particular destination – just biking for fitness or leisure (64%), houses of friends or family (62%), shopping or errands (60%), restaurants or bars (57%), and to work (56%).**

### Priority Roadway Corridors for Walking Improvements, Pedestrian Intersection Improvements, and Bicycling Improvements

Survey respondents were asked to name one roadway corridor that they would most like to see improved to accommodate walking, safe pedestrian crossings, and bicycling, respectively. The **most common answers for walking improvements were Gervais, Assembly, Rosewood, Beltline, Garners Ferry, Trenholm, and Vista.**

Several of the most commonly listed roadways for walking improvements were also in the lists of top corridors for intersection improvements and bicycling improvements. The **top answers for pedestrian intersection improvements were**

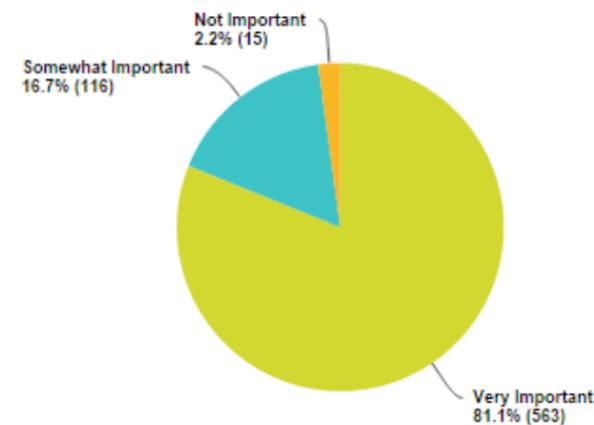
**Assembly, Gervais, Huger, Elmwood, Devine, Broad River, and Rosewood. The most common responses for bicycling improvements were Gervais, Assembly, Harden, Downtown, Forest Drive, Main Street, and Vista.**

### Priority Locations for Bicycle Parking

Participants were asked to list up to three locations where they would like to have **bicycle parking**. The **most common answers were Publix, Gervais, Vista, parks, Trenholm Plaza, Five Points, Main Street, Rosewood, shopping centers, and Downtown.**

How important is it to you to improve the bicycle and pedestrian environment in Columbia?

Answered: 694 Skipped: 131





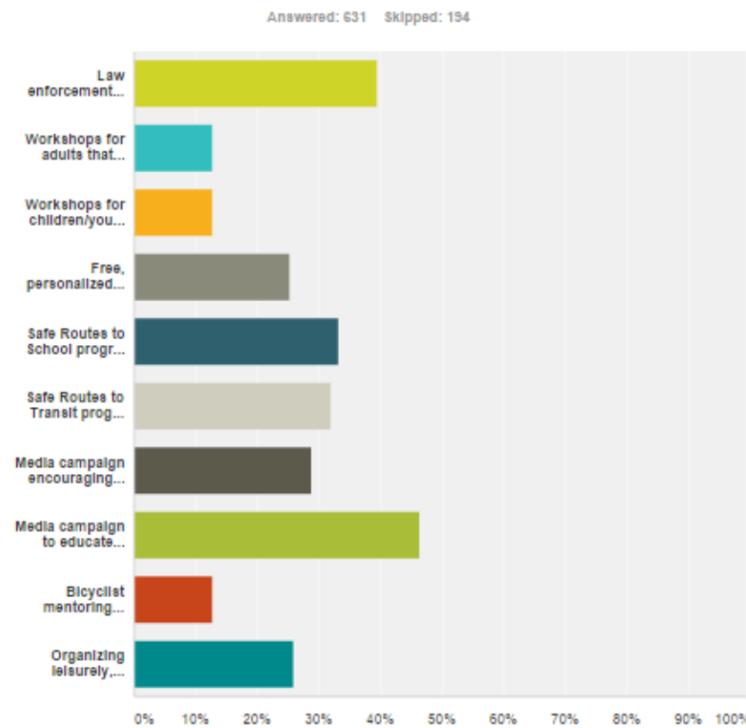
## Walking and Bicycling Programs

As part of the Walk Bike Columbia effort, the plan includes a series of program recommendations to increase education and awareness around walking and bicycling, improve traffic safety, and encourage people to walk and bike more for transportation and recreation. **Survey participants were asked to choose the top 3 programs that they believe would have the greatest impact on walking and biking in Columbia, and the overriding theme in the responses was a need to address safety concerns through education and enforcement.** A media campaign to educate to educate motorists, bicyclists, and pedestrians was the number one choice, with 46% of respondents placing it in their top 3. The second and third most popular choices, respectively, were “Law enforcement programs targeting motorists, bicyclists, and pedestrians” (39%) and “Safe Routes to School Program to engage schools, parents, and local officials” (33%).

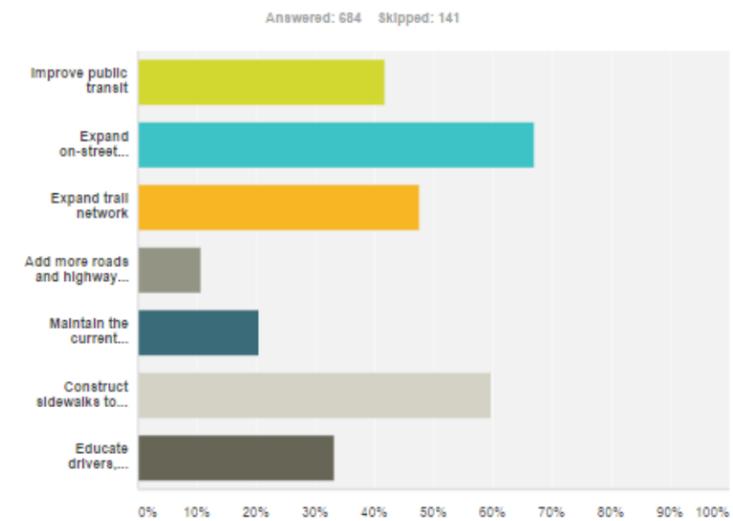
## Transportation Funding Priorities

Survey participants were asked to select **their top 3 transportation funding priorities to which taxpayer funding should be dedicated. The top choice was to expand the on-street bicycle network (selected by 67% of respondents), followed by “construct sidewalks to increase pedestrian connectivity” (selected by 60%) and “expand the trail network” (48%).** The least popular response was “Add more roads and highway lanes for vehicles and freight,” with just 11% of respondents choosing this as one of their top 3 choices.

Which of the following programs would have the greatest impact on walking and biking in Columbia? (choose up to 3)



Please select your top 3 transportation priorities for spending of taxpayer money.

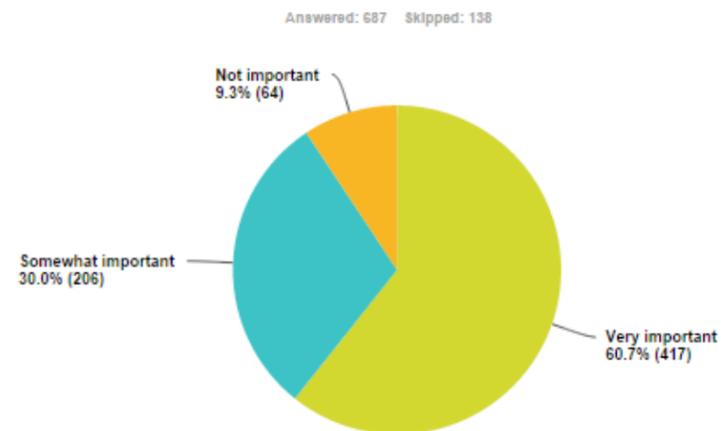




## SURVEY RESPONSES - TRANSIT

Survey participants were asked a series of questions related to transit use and potential transit improvements for Columbia. When asked, **“How do you use transit in Columbia?” 41% answered “I do not use transit, but I would like to” and 41% answered “I do not use transit.” Of those who did report using transit, the most popular trip purposes were to get to or from work (43% of transit users) and to run errands (39% of transit users). More than 90% of survey respondents feel that it is important to improve the transit environment in Columbia; 61% said it was “Very Important” and 30% said it was “Somewhat Important.” The roadway corridors that respondents would most like to see improved for transit access include Rosewood, Gervais, Assembly, Downtown, Garners Ferry, Huger, and Two Notch.**

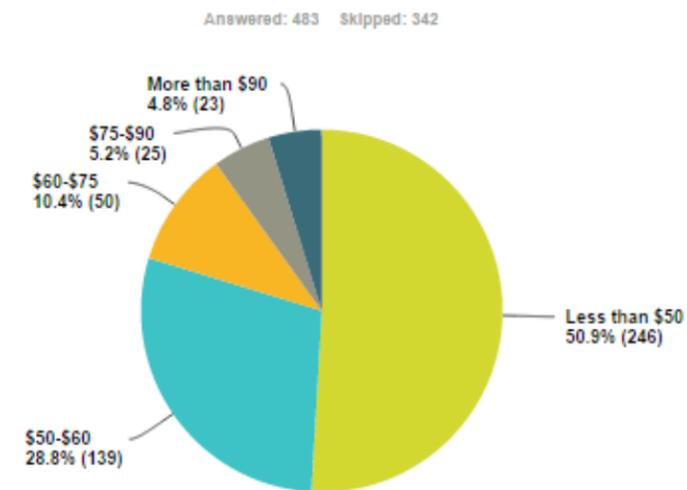
How important is it to you to improve the transit environment in Columbia?



## SURVEY RESPONSES – BIKE SHARE

The Walk Bike Columbia survey included a series of questions about bike share to gauge Columbia residents’ interest in and willingness to pay for a bike share system in the city. Of the survey respondents, 26.4% have used a bike share system in another city, while 73.6% have not. However, **the majority of respondents expressed interest in bike share: 62% said they are interested in a bike share program for Columbia, and 38% said they are not. When asked, “How much would you be willing to pay for an annual membership?” most respondents (51%) answered that they would pay less than \$50 per year for a bike share membership, and an additional 29% said they would pay between \$50 and \$60 for a membership.**

If so, how much would you be willing to pay for an annual membership?





## Stakeholder Focus Groups

Stakeholder focus groups added targeted feedback to the broader public outreach strategy for Walk Bike Columbia. A total of 8 stakeholder focus groups were held on June 17th and 18th, 2014, to gather input from organizations and residents representing a range of interests related to walking and bicycling in Columbia. The meetings were held at the City of Columbia Parking Services conference room, 820 Washington Street. Comments and feedback received during the meetings were used to inform both the Pedestrian and Bicycle Master Plan and the Bike Share Plan for Columbia. The following is a list of the 8 focus groups that were convened for this portion of the public outreach effort:

- Bicycle Culture
- Target Populations
- Neighborhoods
- County and State Agencies
- Colleges and Universities
- Tourism and Businesses
- Major Employers
- City and University Support Services

At each meeting, the project consultant team led a discussion of vision and goals for the future of walking and bicycling in Columbia, opportunities and strengths of the existing network, constraints and challenges of the existing network, ideas for new and improved programs and policies, and the feasibility of a bike share system for Columbia, including potential station locations, partners and operators, and pricing. A thematic summary of focus group input is provided below.

## VISION AND GOALS

At the start of each meeting, each focus group participant was asked to provide a 10-year vision and goals for walking, bicycling, and transit in Columbia. Participants touched upon several important themes to make Columbia a more walk-, bicycle-, and transit-friendly community, including the following:

- Connectivity and Coordination:
  - More and better connections between neighborhoods, outlying areas, and downtown
  - Capitalize on neighborhood network with bike routes
  - Leverage downtown neighborhoods
  - Coordinate efforts across agencies, jurisdictions, and modes
- Safety:
  - Develop facilities for all ages and abilities
  - Design for interested but concerned riders (90% of bike customers at local bike shop)
  - Become competitive among peer cities by meeting best practices
- Easier transportation choices and range of choices:
  - Multi-modal choices for college students and residents
  - Increase investments in bike paths/lanes and improve pedestrian access
  - Increase the mode share for bicycling and walking
  - Make public transit viable and practical for choice riders and change the negative mindset
  - Increase the mode share for transit
  - Pursue a light rail line in the next 10 years

- Environment & Recreation:
  - Connect people to natural resources
  - Build more greenways
- Health:
  - Promote active commuting

## OPPORTUNITIES AND STRENGTHS

Focus groups were asked to identify the existing strengths of the current walking and bicycling environment in Columbia, as well as key opportunities for improvement. Some of the strengths and opportunities in the City include existing and potential walk- and bicycle-friendly routes and infrastructure, strong community engagement, college and university presence, partnerships, access to destinations, strong neighborhoods, and recent improvements.

- Existing and potential walk- and bicycle-friendly routes and infrastructure: Some streets in Columbia already provide a safe and comfortable environment for walking and biking, such as Greene, Lincoln, Wheat, and Blossom Street. The riverfront trails are popular with residents and visitors, and the dense street grid network downtown makes it easy to reach many destinations within a short distance. The wide existing right of way and over supply of parking on many roads also provides opportunities to add new bicycle and pedestrian facilities.
- Strong community engagement: The Columbia bike community is well-connected and very active in supporting projects and events. The River Alliance has helped to plan and fund projects, and a new non-profit group is advocating for improved local transit options.
- College and university presence: Local colleges and universities help to create a vibrant walking and bicycling



environment in Columbia and supplement city-provided services. Many college students already regularly walk to major destinations such as Five Points, and USC provides a student shuttle that could potentially be expanded to include city residents through a partnership between USC and the City. USC also has a bike shop on campus and a Bicycle Advisory Committee that could serve as partners for future projects and programming. There is also potential to further promote alternative transportation through the colleges and universities by restricting vehicles on campus. For example, freshmen at Allen University cannot have cars, and more than 75% live on campus.

- Partnerships and funding: There are ample opportunities to expand existing partnerships and build new partnerships within Columbia. The City has a positive relationship with USC and other colleges and universities, and the City and County are currently collaborating to make joint updates to their land use plans. These partnerships will be important to funding and implementing future bicycle and pedestrian projects. The Penny Sales Tax revenue is also a valuable source of funding for alternative transportation efforts.
- Access to destinations: Some destinations in Columbia are already accessible by walking, biking, and transit, such as some parts of downtown, USC, and the riverfront trails. Grocery stores are located near residential areas throughout Columbia, which makes it possible for some residents to walk or bike to the store.
- Strong neighborhoods: Columbia is made up of a series of neighborhoods with a strong sense of community and a culture of walking. The Rosewood neighborhood, for example, has many transit users, walkers, and bicyclists, and is close to USC, downtown, and other key destinations. Neighborhoods along Millwood also have a high proportion of people walking throughout the day.

- Recent and ongoing improvements: Several ongoing improvements are contributing to a better walking, bicycling, and transit environment in Columbia. Focus group participants noted that bus service around the city is improving. The recent Assembly Street project improved the pedestrian environment by narrowing the road, installing curb bulb-outs, and making intersection improvements to provide safer crossing opportunities. Some crosswalks in town were also recently updated to comply with ADA accessibility standards. Upcoming developments, such as the Bull Street property redevelopment, present ideal opportunities to develop safe and comfortable bicycle and pedestrian facilities.

## CONSTRAINTS AND CHALLENGES

The focus groups identified several existing constraints on bicycling and walking in Columbia, and challenges to improving those conditions. The major issues discussed included safety concerns and barriers to using existing facilities, key areas that need safety improvements, difficulty partnering on some projects, and a lack of bicycle, pedestrian, and transit access and connectivity around the city.

- Partnerships: There is a lack of coordination among departments and agencies, both at the city level as well as between the City and regional and state agencies.
- Safety concerns and barriers to using existing facilities:
  - The bicycling environment does not feel safe because of uneven roadway surfaces, a lack of bike lane maintenance and enforcement, and rumble strips on roadways in rural areas. Driver behavior also adds to the safety concerns; vehicles regularly run stop signs or pull through crosswalks without yielding to pedestrians and bicyclists.
  - Arterial roadways are major barriers to walking and biking.

- Transit signage and travel information is lacking.
- Key areas that need safety improvements:
  - Provide a safe connection from the riverfront to campus and downtown
  - Add “Watch for Pedestrians” signage and other safety awareness signage at popular crossing points, such as across Assembly, Taylor, and near the Post Office
  - Provide traffic calming along roadways with a large amount of bicycle and pedestrian traffic, such as along Millwood by the high school
  - Provide better and more safe crossings across all major arterials in Columbia
- Priority corridors for facility improvements: The roadway corridors that were regularly mentioned for bicycle, pedestrian, and transit improvements include Assembly, Rosewood, North Main, Eugene, Elmwood, Whaley, Olympia/Granby Mills, Taylor, and Shop Road.
- Lack of access and connectivity:
  - Expand sidewalks and bicycle facilities into neighborhoods that are within walking and biking distance of downtown and already have a high proportion of pedestrians and bicyclists, such as Rosewood and the Olympia area.
  - Improve access to key destinations, such as connections to the riverfront trails, downtown, neighborhoods, grocery and convenience stores, and hospitals.
  - Provide more bike racks on buses to improve bicyclist access to and coordination with transit.
  - Develop key east-west and north-south cross-town connections.



## PROGRAM AND POLICY IDEAS

At each focus group meeting, participants were asked to identify programs or policies that they believe would help to improve bicycling, walking, and transit opportunities in Columbia. Many of the ideas centered on education and awareness campaigns, though participants also identified a need for improved transportation and land use policies as well as encouragement programs:

- Education and awareness programs:
  - Provide more education to the community on the option of walking, bicycling, or taking transit for transportation.
  - Develop a Share the Road campaign for Columbia to increase bicycle safety awareness among all road users.
  - Set-up a bike-on-bus demonstration at the downtown transit center to teach riders how to use the bus bike racks.
  - Develop a series of Public Service Announcements on bicycling and walking safety, education, and upcoming events that could be broadcasted through TV, radio, on the city website, or via social media.
  - Start a Bicycle mentor program to pair experienced cyclists with less experienced cyclists.
  - Increase public awareness and traffic safety education for bicyclists, pedestrians, and motorists
- Transportation and land use policies and planning:
  - Coordinate transportation planning and implementation with the land use planning process.
  - Improve land use policies and planning to promote infill and limit sprawl.
  - Develop citywide bicycle parking standards and placement policies, and add functional bike parking downtown, to neighborhoods, and at popular destinations around the city.
- Develop wayfinding signage that direct bicyclists and pedestrians around town and to bike parking areas.
- Encouragement programs:
  - Develop a “transit for everyone” campaign that highlights the benefits of using transit and brands transit as “cool to ride”.
  - Develop encouragement programs that use new technologies, such as apps with wayfinding information, walking routes and tours, bus information, hike and bike maps, and other tools to encourage people to walk, bike, and take transit in Columbia.

## BIKE SHARE

Focus group participants were asked about the possibility of a bike share program for Columbia, what the program’s goals should be, where stations should be located, and ideas on potential program partners and operators, membership schemes, and pricing. Participants identified three major goals for a Columbia bike share system:

- Reduce the number of cars on the road.
  - Reduce the number of car trips and vehicle miles traveled in private vehicles.
  - Improve options and access to healthy living and active transportation.
- Participants also developed a list of the places in Columbia that, if a bike share system is developed, should have a bike share station and be included in the bike share network. The locations identified included the following:
- Downtown
  - USC
  - State house

- Five Points
- Decker Mall
- 3 Rivers Greenway
- Stations connecting from the greenway trails to the Vista
- Libraries
- Government Services

The focus groups identified a wide range of potential bike share operators and partners who could help to fund and manage a bike share system for Columbia. The following agencies and organizations were named as potential operators:

- City of Columbia
- USC
- City/County partnership
- USC/City/County partnership
- Transit
- Private operator
- Library system

Lastly, focus group participants discussed ideas for bike share membership and pricing schemes. One idea posed is to have an annual membership fee with a tiered pricing structure for bike use depending on how long a bike is checked out. Some participants identified the potential to include the bike share fee within the student fee at local colleges and universities, which would encourage students to use the system. The fee could be priced and included in student fees similar to the way a student meal plan or a parking pass is priced.

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# Bicycle and Pedestrian Counts

## Introduction

Annual counts conducted in a systematic manner provide strong benchmarking information on bicycling and walking activity and related benefits. Count data adds to Columbia's understanding of existing bicycling and pedestrian patterns and needs, allows for more strategic planning of future bikeway and walkway investments, and provides a means of evaluating the impact of programs and facilities. **While count data will not provide comprehensive mode share data, it offers a snapshot of peak bicycle and pedestrian activity on a typical day.** It can also provide important baseline data for before-after studies where new investments are planned and provide insight into overall trends in Columbia's walking and bicycling environment over time.

This report outlines Alta's proposed bicycle and pedestrian count methodology and process for implementation. The approach is based on the National Bicycle and Pedestrian Documentation project, an annual bicycle and pedestrian count and survey effort sponsored by Alta Planning + Design with support from the Institute of Transportation Engineers (ITE).

**The count analysis will inform Walk Bike Columbia's summary of existing conditions regarding bicycle and walking activity, as well as the plan's recommended bicycling and walking network.** Additionally, it will serve as a useful complement to the Demand and Benefits Analysis completed for this Plan.

## Data Collection Methodology

A regular bicycle and pedestrian count program is instrumental for measuring change over time. This empirical data can be used to monitor Walk Bike Columbia's success at helping residents and visitors of Columbia walk and bicycle more. This section identifies a methodology for an annual bicycle and pedestrian count data collection program. It includes 2014 count dates and times, pre-count preparation steps, and

resources that will help agency staff with ongoing count efforts. The end of this section identifies the 28 count locations to include in the count program.

## PEDESTRIAN AND BICYCLE COUNTS PROGRAM

The purpose of initiating a count program in Columbia is to gather important benchmarking information about walking and bicycling rates. This information will be useful to City and CMCOG staff, and local and regional stakeholders, for understanding whether there is an association between plan implementation and walking and bicycling activity. **An ongoing, manual count program, with annual data collection efforts, requires the partnership of community members.**

In Columbia, likely partners are the institutions of higher education (and especially, departments or institutes related to public health, planning, transportation, and engineering), Eat Smart Move More, the Palmetto Conservation Foundation, advisory committees such as the City's Bicycle and Pedestrian Advisory Committee, ABLE SC, the COMET staff and transit advocates, Safe Routes to School, and cycling clubs.

At a minimum, this program should tally the number of pedestrians and bicyclists at key locations around the City (particularly at pinch points, in downtowns, near schools, and on trails); **the same locations should be counted in the same manner annually** (or more often up to four times per year, if resources permit, to track seasonal and other variations). If major on-street or off-street infrastructure projects are planned, baseline and post-construction user counts can be performed through this coordinated annual count process for maximum efficiency. Similarly, if land use developments are occurring that impact a specific user group, **pre- and post-construction counts** can be performed to track more refined information about growth of walking and bicycling. Examples of this could be new student housing within walking or biking distance of campus, or new multi-family housing near transit stops.

It is recommended that the data collection program use the methodology developed by the National Bicycle and Pedestrian Documentation Project (NBPD). Counters can be volunteers or agency staff, as long as proper training and support is provided.

**As recommended by NBPD, the City will conduct screenline counts.** Screenline counts document the number of users passing an imaginary line at either a mid-block or intersection location. They are primarily used to identify general trends in volumes, and to see how demographics, land use, and other factors influence walking and bicycling. For the inaugural count in September 2014, Alta provided a training webinar, which will occur one week prior to the counts and will be mandatory for all participating counters.

If desired, **future iterations of the annual count program could include intersection counts or surveys.** Depending on the volumes of bicyclists and pedestrians, intersection counts may be more complicated and require additional counters because they record two streets as well as turning movements. Surveys allow an agency to learn more detailed user information such as demographics, trip origin/destinations, trip purpose, and perceived benefits of bicycling and walking. The NBPD website includes count and survey instructions, forms, and participant training materials: <http://bikepeddocumentation.org>.

**Over time, the City and partners should invest in permanent and mobile automated counters** and integrate bicycle and pedestrian counts into regularly scheduled, on-going traffic count programs and required traffic impact analysis studies so that data on pedestrian and bicycle usage are a regular part of the City's transportation data collection. Even as automated counters are used in the future, manual counts can supplement the body of data, as needed.



## COUNT DATES AND TIMES

The national count days chosen by NBPD are September 9-14, 2014. Because the University of South Carolina had a home football game on September 13th, which could have significantly impacted traffic, as well as volunteer recruitment, Alta recommended that Columbia conduct counts on the following week, which represents an away-game weekend. The National Count Date represents a peak period for walking and bicycling, in which weather conditions across the country are generally conducive; schools and colleges have been underway for several weeks; and people have returned from vacations and are back at work.

At least one weekday and one weekend day should be included to obtain a sampling of weekday and weekend activity levels. There should be little statistical difference between counts conducted on a Tuesday, Wednesday, or Thursday of the same week, and this provides agencies and organizations some scheduling flexibility. For the 2014 counts, the team chose September 16th, 17th and 18th for the weekday counts and Saturday, September 20th for the weekend count.

Though NBPD recommends evening peak periods on the weekday, Columbia conducted counts during the morning peak period. The morning period presents a greater opportunity to capture school and campus travel data, in addition to work commute data. NBPD's recommended weekend time period is Noon to 2pm, however, given Columbia's potential heat in September, the team adjusted the time to 10am to Noon. **Note that it is important that count data reflect the same time periods for all future counts in order to be consistent.**

Table 19 summarizes Columbia's count dates and times:

**TABLE 19 - COUNT TIMES**

Day	Date	Time
Weekday ( Tuesday, Wednesday, or Thursday)	September 16, 17, 18	7:30 AM to 9:30 AM
Saturday	September 20	10 AM to Noon

## Count Locations

### NUMBER OF COUNT LOCATIONS

One count location per 15,000 of population is a useful rule of thumb for determining an appropriate minimum number of count locations. This equates to approximately ten locations in Columbia. **Given the level of planning underway for Walk Bike Columbia and the anticipated near-term investment in bicycling and walking infrastructure, the project team selected 28 count locations.** If Columbia desires greater geographic parity in its count program, or as new projects and new developments occur, additional count locations can be added.

### RECOMMENDED COUNT LOCATIONS

The NBPD website provides guidelines for selecting count locations, based on access to transit, proximity to main entrances for shopping or employment areas, and high density downtown or residential areas. Locations with recently completed or planned bicycle or pedestrian projects were also considered. The following 28 locations are proposed for inclusion in an annual count program.

**TABLE 20 - COUNT LOCATIONS**

Map ID	Corridor	Between	Reason for Location
1	Blossom St	William St and Huger St	Existing Bike Lane; Bridge Access
2	Wheat St	Pickens St and Sumter St	Existing Bike Lane; Palmetto Trail
3	Sumter St	Greene St and Pendleton St	Existing Sharrow; Palmetto Trail
4	N. Beltline Rd	Two Notch Rd and Dubard St	Existing Bike Lane; Collision History (bicycle)
5	Kilbourne Rd	Wheat St and Bloomwood Rd	Potential Future Investment
6	Rosewood Dr	S. Ravenel St and S. Ott Rd	Existing Sidewalk and Crossing; School; Planned Improvement
7	Bull St	Confederate Ave and Victoria St	Collision History (bike & ped)
8	Broad River Rd	St. Andrews Pkwy and Farrington Way	Transit Stops; Collision History (bike & ped)
9	Laurel St	Sumter St and Main St	Transit Center
10	Bluff Rd	Market Rd and Eden St	Collision History (bike & ped); Transit Stops; Planned Improvements
11	Greene St	Laurens St and Saluda Ave	Planned Improvements; Collision History (bike & ped)



Map ID	Corridor	Between	Reason for Location
12	Garners Ferry Rd	Leesburg Rd and Dorn Dr	Grocery Store; VA Medical Center; Collision History (bike & ped)
13	Harbison Blvd	Park Terrace Dr and Columbiana Dr	Commercial/Employment Center
14	Blossom St	Park St and Lincoln St	Collision History (pedestrian)
15	Taylor St	Lincoln St to Gadsden St	Park; Planned Improvements
16	Lake Murray Blvd	Kinley Rd and Parkridge Dr	Healthcare/Employment Center
17	Gervais St	Lincoln St and Park St	Retail and Visitor Destinations
18	Taylor St	Oak St and Pine St	Benedict and Allen Colleges
19	Fairfield Rd (321)	Amberley Rd and Wimmert Dr	Collision History (pedestrian); School; Transit Stops
20	Holly St	Montgomery Ave and Huron St	Transit Stops; Park; Planned Improvement; Collision History (bike & ped)
21	Sumter St	Hampton St and Washington St	New Student Housing
22	River Dr	Gibson St and Pearl St	Access to Trail; Planned Improvement; Collision History (bike & ped)
23	Devine St	Beltline Blvd and Cross Hill Rd	Grocery; Planned Improvements; Transit Stop
24	Sunset Dr	Elmhurst Rd and N. Main St	Planned Improvements
25	Harden St	Greene St and Devine St	Planned Improvements; Collision History (pedestrian)
26	Assembly St (three count locations)	Washington St and Hampton St	Library; Transit Stop; Planned Improvements
27	Harden St.	Blanding St and Taylor St	Benedict and Allen Colleges
28	Jackson Blvd	Kilbourne Rd	



## Count Results and Analysis

### PEDESTRIAN AND BICYCLE WEEKDAY COUNT

Volunteers conducted pedestrian and bicycle weekday counts between Tuesday, September 16th and Thursday September 18th. Most of the counts took place on September 16th in the morning between 7:30 and 9:30am. A few counts took place at different times due to scheduling conflicts. The weather was reported as being mild in the lower 70's and overcast (some volunteers reported a light drizzle). No data was recorded for locations 3, 7 and 10.

A summary of the weekday count data is provided to the right:

TABLE 21 - WEEKDAY COUNT DATA

User Types	Total Users During 2 Hour Counts	Average Users During 2 Hour Counts
Female Bicycles:	56	2
Male Bicycles:	203	8
Female Pedestrians:	516	21
Male Pedestrians:	865	35
Other:	6	0
Accessing Transit:	79	3
Wrong-way Bicyclists:	28	1
Sidewalk bicyclists:	79	3

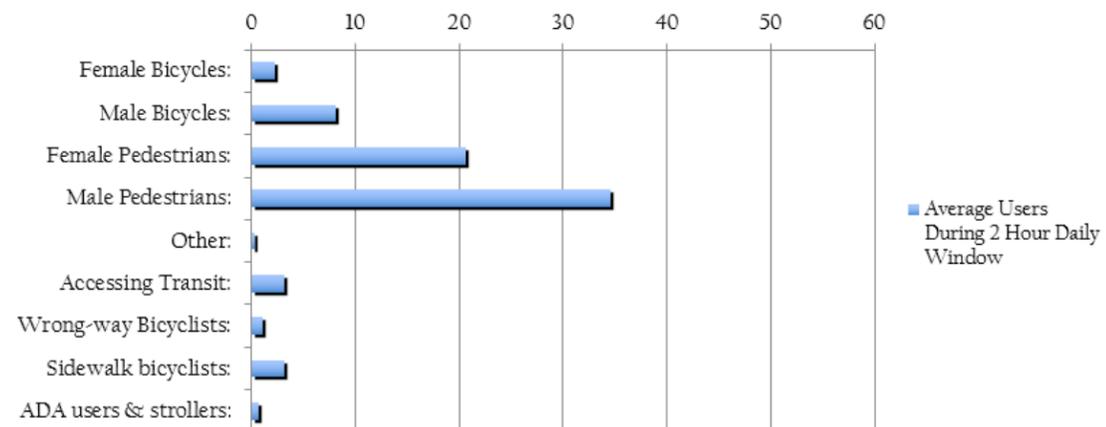
#### Top 3 locations for Bicyclists from Weekday Counts:

- Wheat Street between Pickens Street and Sumter Street – 47 bikes
- Greene Street between Laurens Street and Saluda Avenue – 45 bikes
- Harden Street between Greene Street and Devine Street – 29 bikes

#### Top 3 locations for Pedestrians from Weekday Counts

- Blossom Street between Park Street and Lincoln Street – 185 pedestrians
- Harden Street between Greene Street and Devine Street – 121 pedestrians
- Laurel Street between Sumter Street and Main Street – 128 pedestrians

Average Number of Users During 2 Hour Daily Window on Weekdays





## PEDESTRIAN AND BICYCLE WEEKEND COUNT

Volunteers conducted pedestrian and bicycle weekend counts on Saturday, September 20th. Most of the counts took place on September 16th in the morning between 7:30 and 9:30am. One count took place at a different time due to scheduling conflicts. The weather was reported as being mild in the lower 70's and sunny. No data was recorded for locations 1, 7, 16, 20, 21, 22, 26 C, and 27.

A summary of the weekend count data is provided to the right:

### Top 3 locations for Bicyclists from Weekend Counts:

- Broad River Road between St. Andrews Pkwy and Farrington Way – 18 bicyclists
- Sumter Street between Greene Street and Pendleton Street – 11 bicyclists
- Wheat Street between William Street and Huger Street– 9 bicyclists

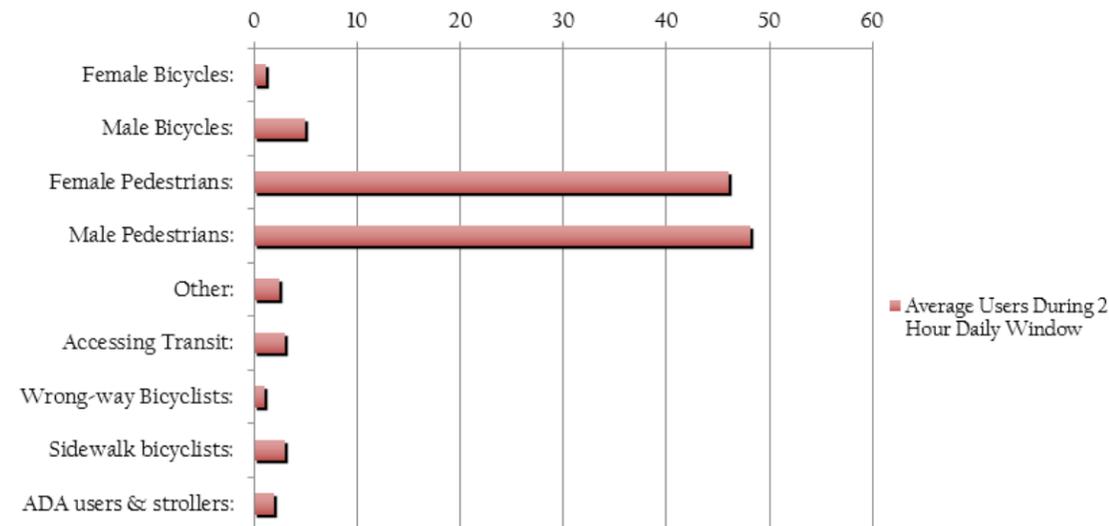
### Top 3 locations for Pedestrians from Weekend Counts:

- Hampton Street between Assembly and Park Street –462 pedestrians
- Sumter Street between Greene Street and Pendleton Street – 329 pedestrians
- Gervais Street between Lincoln Street and Park Street – 279 pedestrians

TABLE 22 - WEEKEND COUNT DATA

User Types	Total Users During 2 Hour Counts	Average Users During 2 Hour Counts
Female Bicycles:	23	1
Male Bicycles:	100	5
Female Pedestrians:	920	46
Male Pedestrians:	962	48
Other:	50	3
Accessing Transit:	59	3
Wrong-way Bicyclists:	21	1
Sidewalk bicyclists:	59	3

Average Number of Users During 2 Hour Daily Window on Weekends





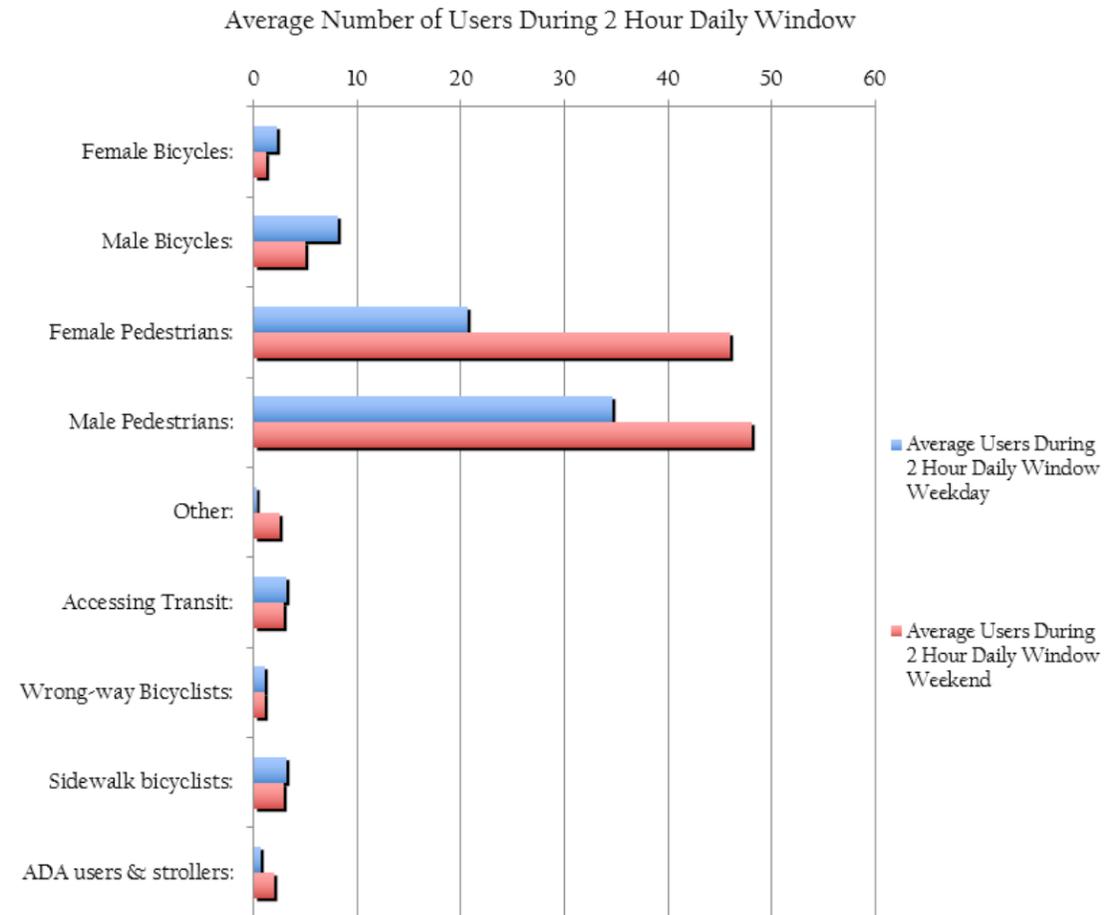
## Pedestrian and Bicycle Counts Analysis

As seen from both the weekday and the weekend counts, Columbia has a substantial amount of pedestrian and bicycle traffic occurring throughout the City. Much of this traffic observed during the counts implementation is occurring around popular destinations for bicycling and walking such as recreation centers, civic buildings, college and university campuses and downtown.

Pedestrian levels are indicative of the City's census-reported high rates of walking commuting. Anecdotally, many surveyors noted unsafe jaywalking occurring at several of the count locations. Weekend events such as the Soda-City Market, South Carolina Pride Festival and Greek Festival also likely increased walking rates.

The count results also suggest that many people in Columbia are bicycling for commuting purposes to work and/or school as higher numbers of these users are bicycling during typical weekday commute times. The counts also show a high instance of sidewalk bicycle riding, even occurring on streets with existing bike lanes. This is typically an indicator that users don't feel comfortable riding in the roadway due to inadequate bicycle facilities for roadway conditions.

A comparison of the weekday and weekend counts are provided below. Full count results can be found in **Attachment A**.







## **APPENDIX E: EXISTING CONDITIONS ANALYSIS DETAILED REPORTS**

This appendix section houses the analysis and reports for the Pedestrian Level of Service analysis, the Bicycle Level of Traffic Stress analysis, and the pedestrian and bicycle counts. The methodology, findings, conclusions, and maps and figures for the analyses and counts are included and discussed in detail.



# Pedestrian Level of Service & Bicycle Level of Stress Analysis

## Overview

### INTRODUCTION

This memorandum details the methods and results of a Pedestrian Level of Service Analysis (PLOS) and Bicycle Level of Traffic Stress Analysis (BLTS) for the City of Columbia. Each analysis incorporates the recent research on factors that impact bicycle and pedestrian comfort and safety, and was tailored to the City of Columbia using the data available. Each model analyzed the full roadway network within Columbia’s Urban Service Area (and adjacent areas where they border the urban service area on both sides), excluding limited access highways, to provide a full picture of connectivity around the city.

### DATA SOURCES

The following data inputs were incorporated into the PLOS and BLTS analyses. Table 23 displays each variable, its source, and notes on limitations of the available data and assumptions that were made.

**TABLE 23 - SOURCES OF MODEL INPUTS**

Model Input	Source	Notes
Posted Speed Limit	City of Columbia Streets Database	
Number of Travel Lanes	2005 Regional Demand Model	Not available for all streets. Streets without data were assumed to contain two travel lanes.
Annual Average Daily Traffic Volumes (AADT)	SCDOT 2012 Traffic Volumes	Not available for all streets. Collector streets without data were assumed to carry between 3,000 – 10,000 AADT. Local streets without data were assumed to carry less than 3,000 AADT.
Traffic Signals	SCDOT & City of Columbia	Four-way stops were identified using aerial imagery. Where local roads meet collector or arterial roads, the local roads were assumed to be stop-controlled.
Bicycle Lanes	City of Columbia	
Shared Lane Markings ('Sharrows')	City of Columbia	
On-Street Parking	City of Columbia	Comprehensive for downtown Columbia
Speed Control Structures	City of Columbia	
Sidewalks	City of Columbia	Updated in January, 2014
Crosswalks	City of Columbia	
Curb Ramps	City of Columbia	



## Pedestrian Conditions - Level of Service Analysis

### PEDESTRIAN LEVEL OF SERVICE ANALYSIS METHODOLOGY

The Pedestrian Level of Service Analysis treats segments and intersections separately. A level of service was identified for each roadway segment in the study area, apart from limited access highways, while intersections were examined along roadways with a functional classification of ‘collector’ or ‘arterial’. These higher order roadways present the greatest obstacle to pedestrians, and more data was available for analysis along these corridors.

The selected segment-based Pedestrian Level of Service Analysis (PLOS) is rooted in the concept that a doubling of travel speed results in a four-fold increase in stopping time and resulting crash severity. According to one study, speed has the following impact on pedestrian fatalities<sup>1</sup>.

- At 20 mph the odds of pedestrian fatality are 5%
- At 30 mph the odds of pedestrian fatality are 45%
- At 40 mph the odds of pedestrian fatality are 85%

While other studies have found some variation, these approximate numbers are reported consistently across the literature.

It is imperative that dedicated travel facilities are provided to create safe travel conditions for pedestrians. This PLOS analysis is based primarily on safety and does not consider factors of the built environment known to make walking an attractive and preferred form of transportation. While built environment factors are not explicitly considered, lower posted speeds and more dedicated pedestrian space will typically correlate with places people want to walk based on the surrounding land uses and urban form (e.g., residential neighborhoods and commercial uses in lower speed urban areas).

The segment-based Pedestrian Level of Service Analysis (PLOS) measures pedestrian safety using four factors: posted speed limit, roadway width (number of travel lanes), pedestrian buffer (on-street parking or bicycle lanes), and the presence of sidewalks. Table 24 outlines the scoring methodology of the PLOS analysis. The PLOS follows a five-point scale, with 1 representing the highest comfort level. Generally, more pedestrian space on a lower speed roadway segment correlates to a higher comfort level. Where sidewalks are only provided on one side of the roadway, pedestrian comfort degrades on multi-lane roadways since pedestrians are forced to cross more than two lanes of traffic to reach that sidewalk. Bicycle lanes or on-street parking act as buffers between pedestrians and motor vehicle traffic, increasing comfort.

**TABLE 24 - SEGMENT SCORING MATRIX FOR PEDESTRIAN LEVEL OF SERVICE. 1 = HIGHEST COMFORT LEVEL**

Pedestrian Space	Speed Limit (MPH)					
	<= 25 MPH**		30 - 35 MPH		>= 40 MPH	
	2 lanes	> 2 lanes	2 lanes	> 2 lanes	2 lanes	> 2 lanes
Complete sidewalk on both sides next to a buffer*	1	1	1	1	2	3
Complete sidewalk on both sides	1	1	2	3	3	4
Complete sidewalk on one side next to a buffer*	2	2	2	3	3	4
Complete sidewalk on one side	2	3	3	4	4	5
No dedicated space next to a buffer*	2	3	3	4	4	5
No dedicated space	2	3	4	5	5	5

\*Bicycle lanes and/or on-street parking

\*\*Scores also apply to 30 mph roadways with traffic calming

<sup>1</sup> Killing Speed and Saving Lives, UK Dept. of Transportation, London, England. See also Limpert, Rudolph. Motor Vehicle Accident Reconstruction and Cause Analysis. Fourth Edition. Charlottesville, VA. The Michie Company, 1994, p. 663.



The selected intersection-based Pedestrian Level of Service is rooted in evidence on pedestrian crash reduction factors related to design treatments or interventions<sup>2</sup>.

- Installation of a pedestrian crossing reduces crashes by 25%
- Conversion of an unsignalized intersection to a roundabout reduces crashes by 27%
- Installation of a raised median and crosswalk reduces crashes by 56%
- Speed reduction by enforcement reduces crashes by 71%

Each intersection leg was scored based on the characteristics of the crossing. Like the segment-based scoring, 1 represents the highest level of service. Intersection scoring is additive - scores start at 1 or 2 depending on speed, and then increase with missing infrastructure. Stop-controlled or uncontrolled crossings receive additional points since pedestrians must find gaps in traffic.

**TABLE 25 - INTERSECTION SCORING MATRIX FOR PEDESTRIAN LEVEL OF SERVICE. 1 = HIGHEST COMFORT LEVEL**

Characteristics of Crossing Leg	Posted Speed Limit		
	<= 25 mph**	30 - 35 mph	>= 40 mph
Baseline	1	1	2
More than 2 lanes*	1	2	2
No Marked crosswalk	0	1	1

\*Bicycle lanes and/or on-street parking

\*\*Scores also apply to 30 mph roadways with traffic calming

## PEDESTRIAN LEVEL OF SERVICE ANALYSIS RESULTS

### Segment Analysis

The results of the pedestrian segment-based supply analysis can be seen in Figure 9 on the following page. Low speed roadways with buffers and sidewalks, the links with the highest level of pedestrian comfort, are shown in dark green. Roads with a higher level of stress for pedestrians are shown in orange and red. The highest levels of comfort are found in the downtown area, largely due to the extensive sidewalk network there, and in low-speed neighborhoods. Collector and Arterial corridors near downtown have medium levels of comfort due to sidewalks and moderate speed limits, but comfort decreases on major roadways further out as speed limits and numbers of lanes increase and sidewalk infrastructure disappears. Throughout the urban service area there are clusters of high-comfort pedestrian networks along local roads, but these safe walking environments are segmented from one another by low comfort links.

### Intersection Analysis

The results of the pedestrian intersection-based supply analysis can be seen in Figure 10. Intersection level of service scores were calculated along collector and arterial roadways. These roadways present a large barrier to pedestrians between signalized intersections, particularly in the outer areas of the City. Trenholm Road, Two Notch Road, Beltline Boulevard, Garners Ferry Road, Leesburg Road, Broad River Road, and Clemson Road are some of the greatest barriers to pedestrian travel, with long stretches between safe crossings.

<sup>2</sup>Source: Federal Highway Administration. Desktop Reference for Crash Reduction Factors. <http://safety.fhwa.dot.gov/>



FIGURE 9 - PEDESTRIAN LEVEL OF SERVICE SEGMENT ANALYSIS RESULTS

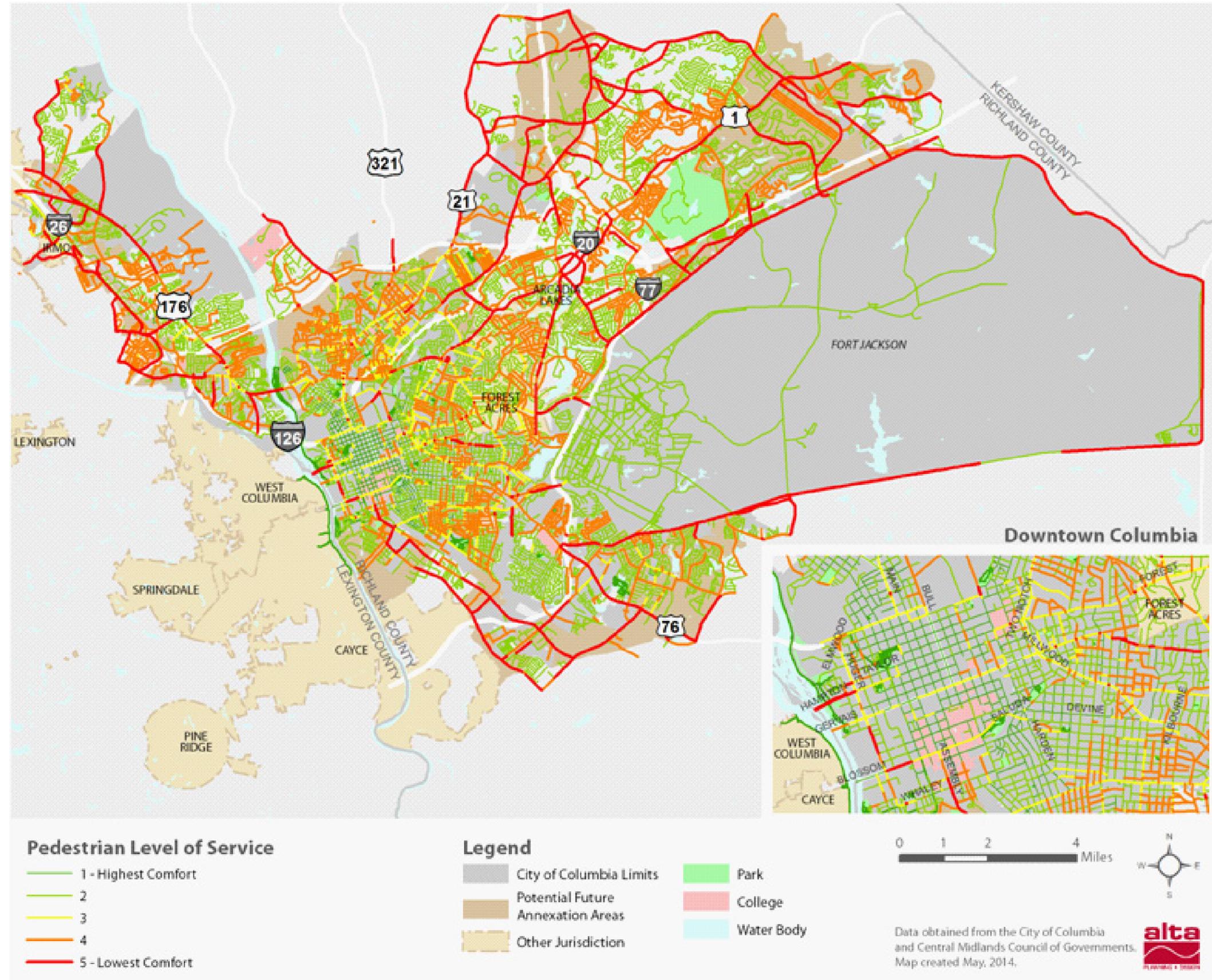
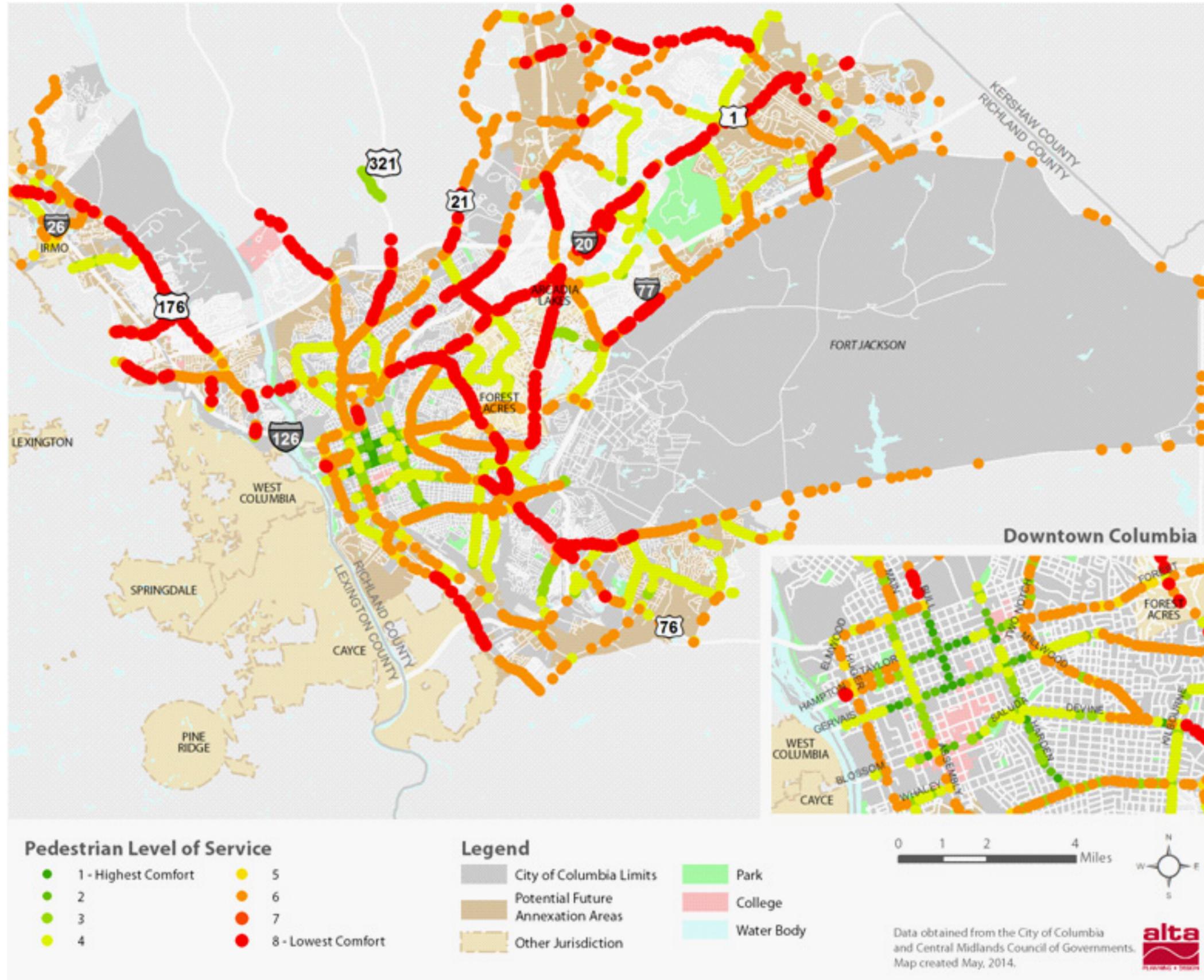




FIGURE 10 - PEDESTRIAN LEVEL OF SERVICE INTERSECTION ANALYSIS RESULTS





## Bicycle Conditions - Level of Traffic Stress Analysis

### INTRODUCTION TO LEVEL OF TRAFFIC STRESS

The methods used for the Level of Traffic Stress Analysis were adapted from the 2012 Mineta Transportation Institute (MTI) Report 11-19: Low-Stress Bicycling and Network Connectivity. The approach outlined in the MTI report uses roadway network data, including posted speed limit, the number of travel lanes, and the presence and character of bicycle lanes, as a proxy for bicyclist comfort level. Road segments are classified into one of four levels of traffic stress based on these factors. The lowest level of traffic stress, LTS 1, is assigned to roads that would be tolerable for most children to ride, and also to multi-use paths that are separated from motorized traffic; LTS 2 roads are those that could be comfortably ridden by the mainstream adult population; LTS 3 is the level assigned to roads that would be acceptable to current “enthused and confident” cyclists; and LTS 4 is assigned to segments that are only acceptable to “strong and fearless” bicyclists, who will tolerate riding on roadways with higher motorized traffic volumes and speeds. The definitions for each level of traffic stress are shown in the following table.

**TABLE 26 - LEVEL OF TRAFFIC STRESS (LTS) DEFINITIONS. SOURCE: MINETA TRANSPORTATION INSTITUTE REPORT 11-19.**

LTS 1	Presenting little traffic stress and demanding little attention from cyclists, and attractive enough for a relaxing bike ride. Suitable for almost all cyclists, including children trained to safely cross intersections. On links, cyclists are either physically separated from traffic, or are in an exclusive bicycling zone next to a slow traffic stream with no more than one lane per direction, or are on a shared road where they interact with only occasional motor vehicles (as opposed to a stream of traffic) with a low speed differential. Where cyclists ride alongside a parking lane, they have ample operating space outside the zone into which car doors are opened. Intersections are easy to approach and cross.
LTS 2	Presenting little traffic stress and therefore suitable to most adult cyclists but demanding more attention than might be expected from children. On links, cyclists are either physically separated from traffic, or are in an exclusive bicycling zone next to a well-confined traffic stream with adequate clearance from a parking lane, or are on a shared road where they interact with only occasional motor vehicles (as opposed to a stream of traffic) with a low speed differential. Where a bike lane lies between a through lane and a rightturn lane, it is configured to give cyclists unambiguous priority where cars cross the bike lane and to keep car speed in the right-turn lane comparable to bicycling speeds. Crossings are not difficult for most adults
LTS 3	More traffic stress than LTS 2, yet markedly less than the stress of integrating with multilane traffic, and therefore welcome to many people currently riding bikes in American cities. Offering cyclists either an exclusive riding zone (lane) next to moderate-speed traffic or shared lanes on streets that are not multilane and have moderately low speed. Crossings may be longer or across higher-speed roads than allowed by LTS 2, but are still considered acceptably safe to most adult pedestrians.
LTS 4	A level of stress beyond LTS3.



## LEVEL OF TRAFFIC STRESS PLUS METHODOLOGY

The Level of Traffic Stress analysis completed for the City of Columbia builds on the MTI approach, expanding it to incorporate the impact on comfort of traffic volumes, the presence of traffic calming, and sharrows. The resulting categorization of each segment of Columbia’s road network is termed ‘Level of Traffic Stress Plus’, to highlight its divergence from the original model. Scoring in LTS Plus is based off of the four basic categories defined in the MTI report, but allows half points between each category to represent a more nuanced continuum of bicycle comfort for use in project prioritization. The scoring methodology

is summarized in the following table. At its core, the LTS Plus scoring decreases comfort (1 is the highest comfort level) as the number of lanes, posted speed limit, and traffic volumes increase. Traffic volumes reduce comfort more where bicyclists share the road with motorized vehicles, but comfort also decreases in bicycle lanes as traffic volumes next to those bicycle lanes increase. Shared lane markings are scored to have a limited impact on comfort, reducing scores to the equivalent of a 30 mph roadway where they are marked on a 35 mph roadway, but otherwise having no impact on the comfort of a shared street environment.

Unsignalized crossings increase stress for cyclists along otherwise low-stress routes. An intersection level of service analysis was completed to identify difficult crossings. Crossing comfort decreases as the number of lanes and posted speed increase. While median refuges can reduce the stress of an unsignalized crossing, refuges were not included in this analysis because of insufficient data.

**TABLE 27 - SEGMENT SCORING MATRIX FOR BICYCLE LEVEL OF TRAFFIC STRESS. 1 = HIGHEST COMFORT LEVEL**

Number of Travel Lanes	Traffic Volume (AADT)	Shared Street			Street with Sharrows		Street with Bike Lane		
					Speed Limit (MPH)				
		<= 25*	30	>= 35	All Other	35	<= 30	35	>= 40
2 Lanes (residential)	No data	1	2	3.5		2	1	3	3.5
2 - 3 lanes	<=3k	1.5	2.5	3.5		2.5	1.5	2.5	3.5
	3k - 10k	2	3	4		3	2	3	4
	10k - 20k	3	3.5	4		3.5	2.5	3.5	4
	>20k	4	4	4		4	3	4	4
4 - 5 Lanes	<=3k	2.5	3.5	3.5		3.5	2	2.5	3.5
	3k - 10k	3	4	4		4	3	3	4
	10k - 20k	3.5	4	4		4	3.5	3.5	4
	>20k	4	4	4		4	4	4	4
6+ Lanes	All volumes	4	4	4		4	4	4	4

\*Bicycle lanes and/or on-street parking

\*\*Scores also apply to 30 mph roadways with traffic calming

**TABLE 28 - INTERSECTION SCORING MATRIX FOR BICYCLE LEVEL OF TRAFFIC STRESS. 1 = HIGHEST COMFORT LEVEL**

Number of Travel Lanes	Posted Speed Limit		
	<= 25 mph**	30 - 35 mph	>= 40 mph
Up to 3 lanes	1	2	3
4 - 5 lanes	2	3	4
6+ lanes	4	4	4



## **BICYCLE LEVEL OF TRAFFIC STRESS (LTS) + ANALYSIS RESULTS**

### **Segment Analysis**

The results of the segment-based Level of Traffic Stress Plus Analysis are shown in Figure 11. Much of the network consists of disconnected clusters of low-stress (LTS 1 to 2) streets, shown in green and yellow. Individually, these islands of low-stress streets are comfortable to ride for most adults, but they are isolated from one another by larger roads with higher traffic speeds that disrupt bicycle mobility.

As an additional note, limited data on the roadways within Fort Jackson limit the accuracy of the analysis results on those roadways. Limited access highways were omitted from the analysis entirely.

### **Intersection Analysis**

The results of the intersection-based Level of Traffic Stress Plus Analysis are shown in Figure 12. Many of the major roadways that act as barriers to pedestrians also hinder bicycle travel because of high speeds and lanes and long distances between signalized crossings.

### **Connectivity Analysis**

While major roadways act as barriers at unsignalized crossings, signals provide a connection for cyclists to move between low-stress neighborhood roadways. Figure 13 displays connected clusters of roadways that can be travelled without using any link or crossing with a level of stress higher than 2. In central Columbia where the road network was built in a grid pattern, a large low-stress network is accessible. Outside of this central core, however, low-stress roads have been built without connectivity across major roadways, making travel between neighborhoods inaccessible to most adults. This display makes apparent the gaps in the bicycle network that could be targeted for improvements to create connected bicycling routes that are comfortable for the mainstream adult population. Along with improvements along high-stress corridors, safe crossing opportunities across those corridors will greatly increase bicycling mobility.



FIGURE 11 - BICYCLE LEVEL OF TRAFFIC STRESS SEGMENT ANALYSIS RESULTS

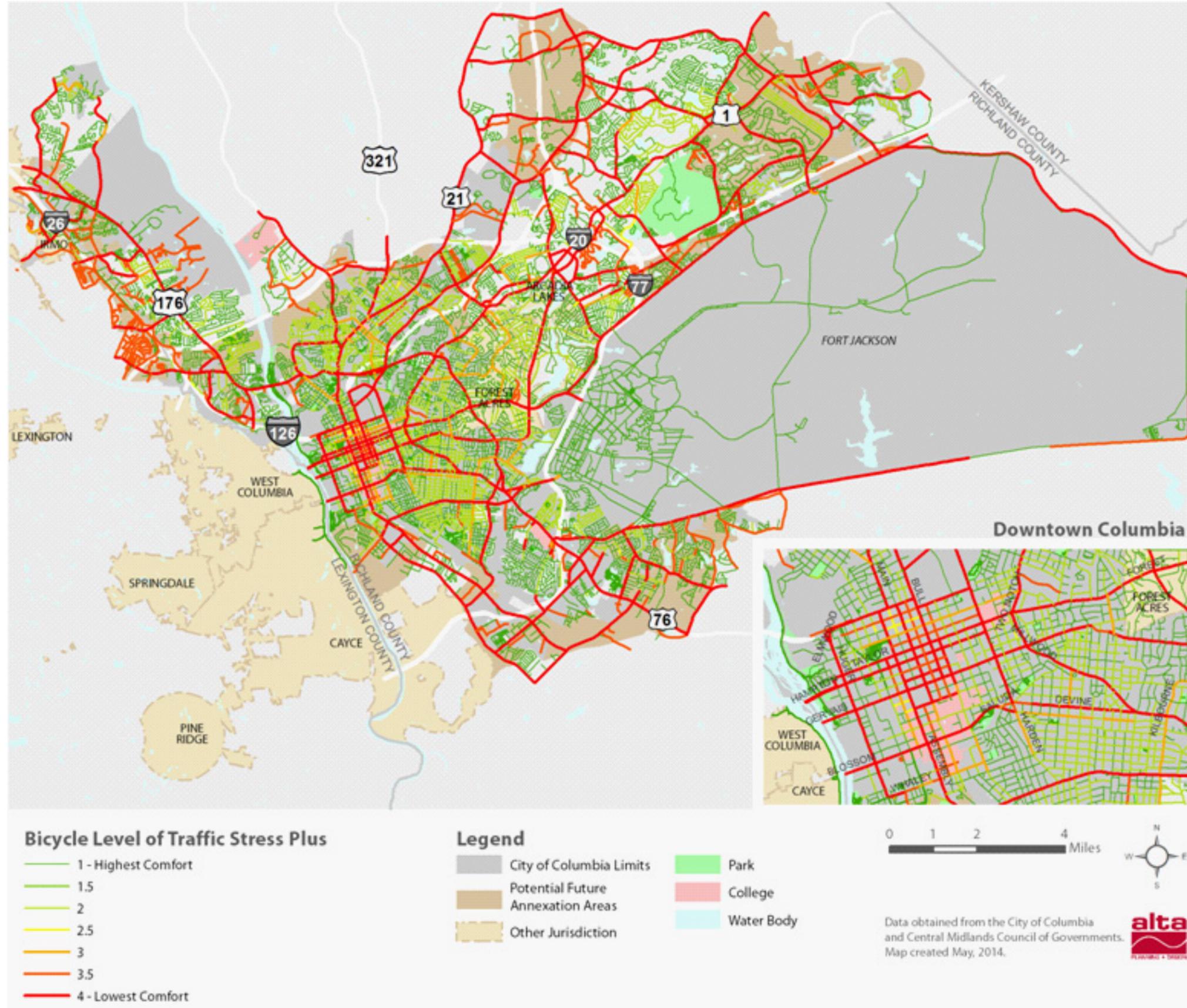




FIGURE 12 - BICYCLE LEVEL OF TRAFFIC STRESS INTERSECTION ANALYSIS RESULTS

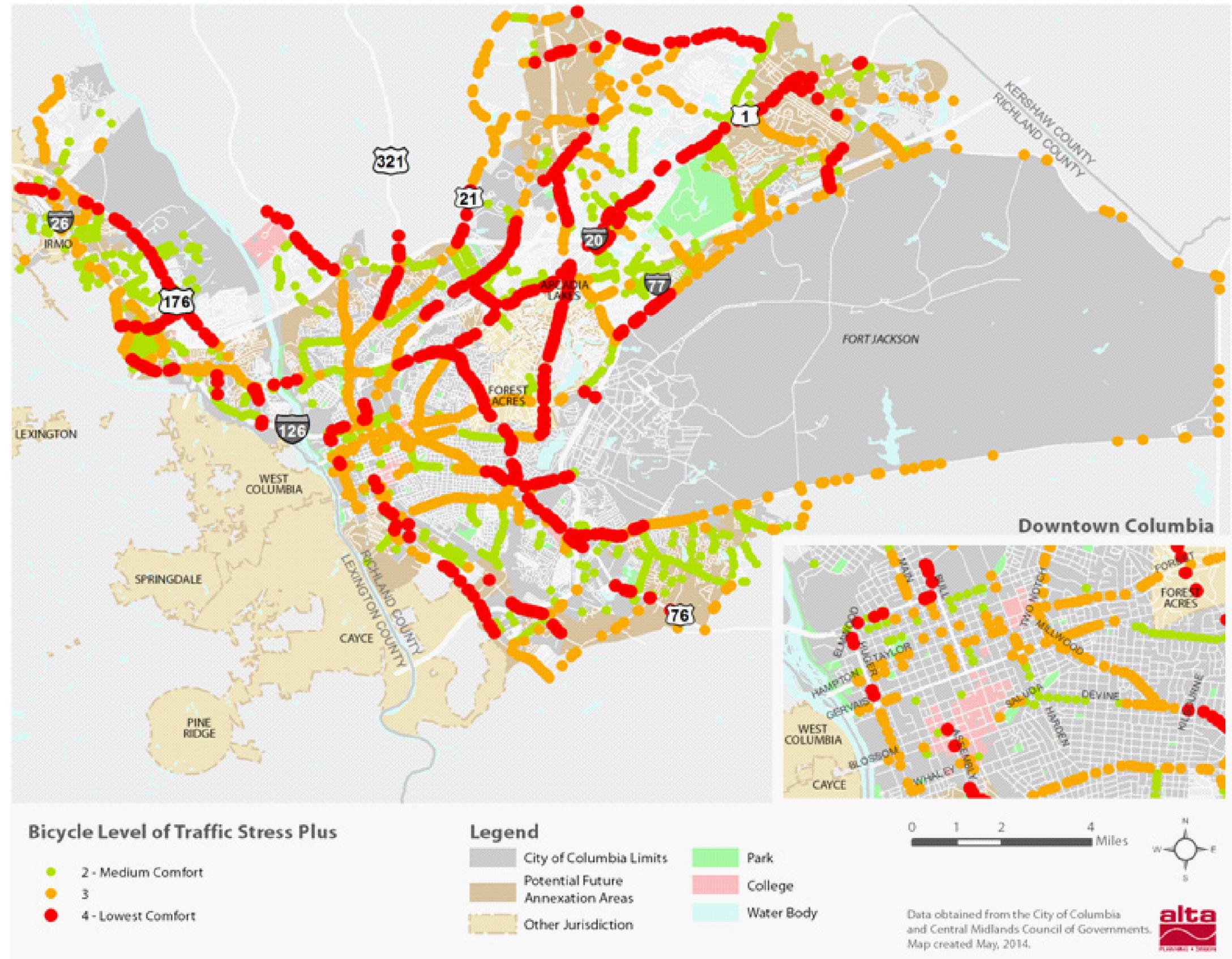
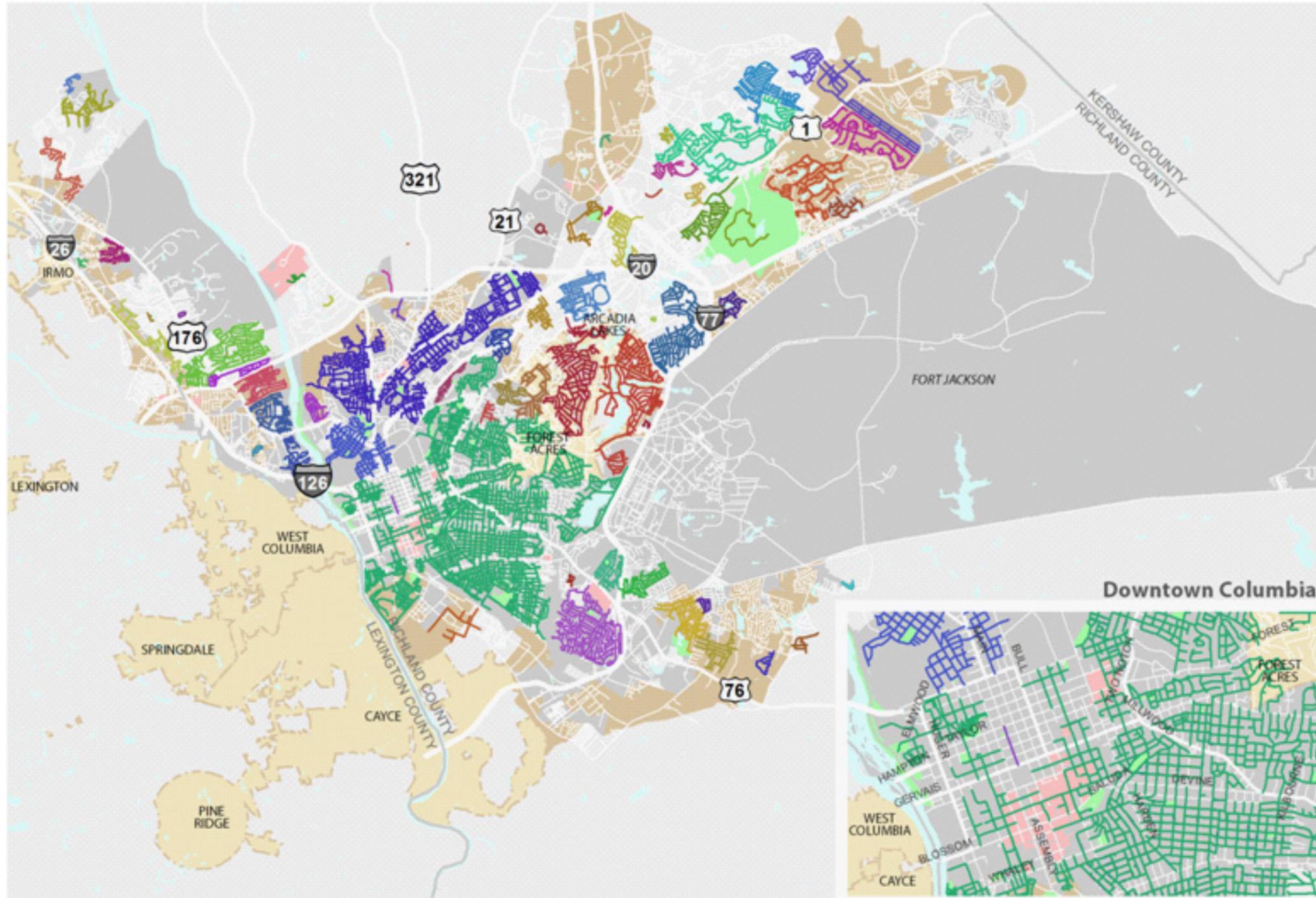




FIGURE 13 - BICYCLE LEVEL OF TRAFFIC STRESS 1& 2 CONNECTIVITY CLUSTERS



**Level of Traffic Stress (LTS) 1 & 2 Connectivity Clusters**

This map displays connected segments of roadway - or clusters - that can be accessed comfortably by a typical adult cyclist (LTS 1 or 2).

**Legend**

- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Park
- College
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created May, 2014.





## Conclusions

The pedestrian level of service analysis and bicycle level of stress analyses described in this memo provide a picture of the quality of infrastructure in the City of Columbia that serves bicyclists and pedestrians. In the next step of this planning process, demand for pedestrian and bicycle travel will be analyzed in order to identify areas of high demand and poor supply that should be prioritized for infrastructure improvements.

## Appendix: Data Inputs

The following maps constitute the input data for the analysis.



FIGURE 14 - SPEED LIMITS AND TRAFFIC CALMING

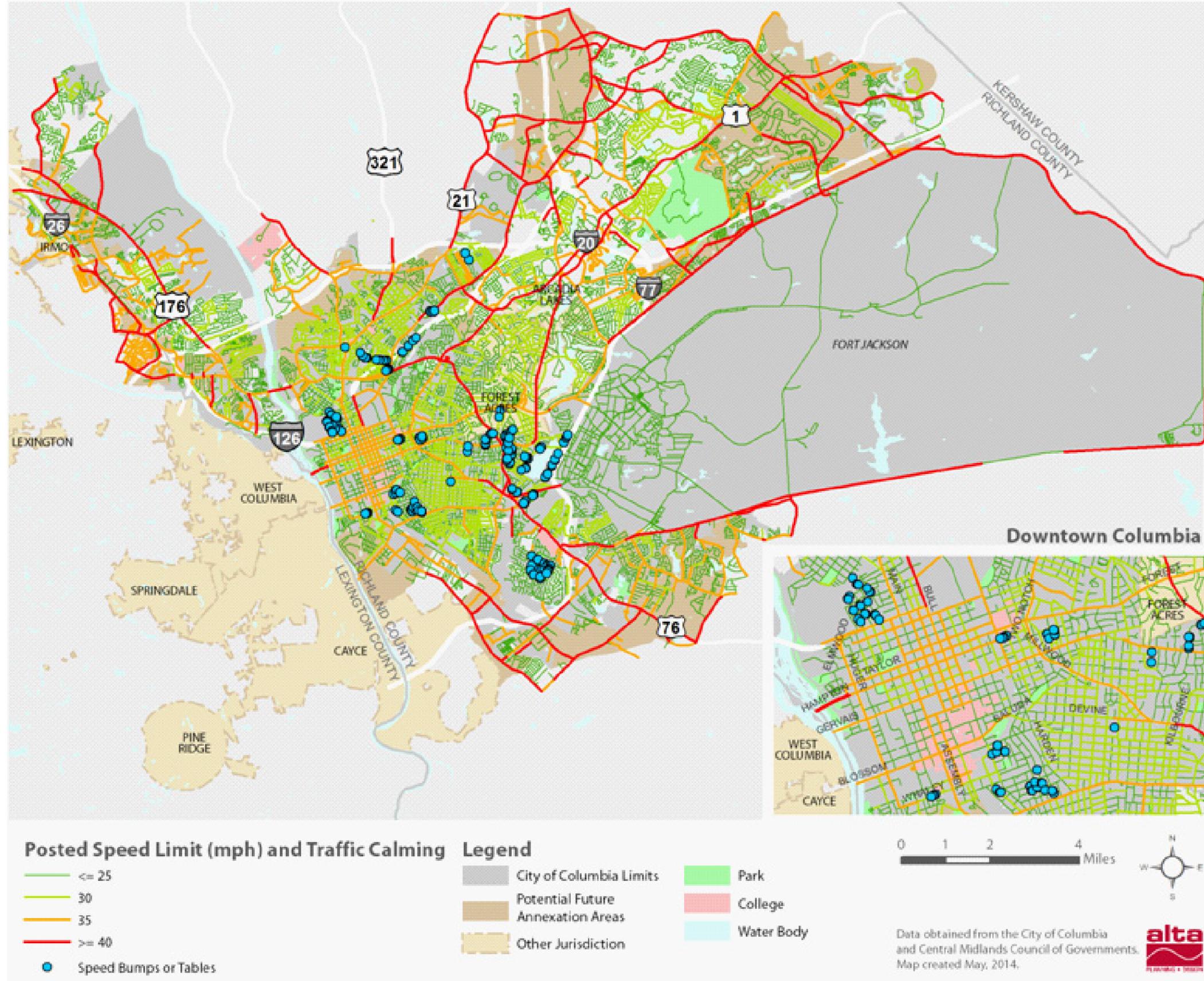
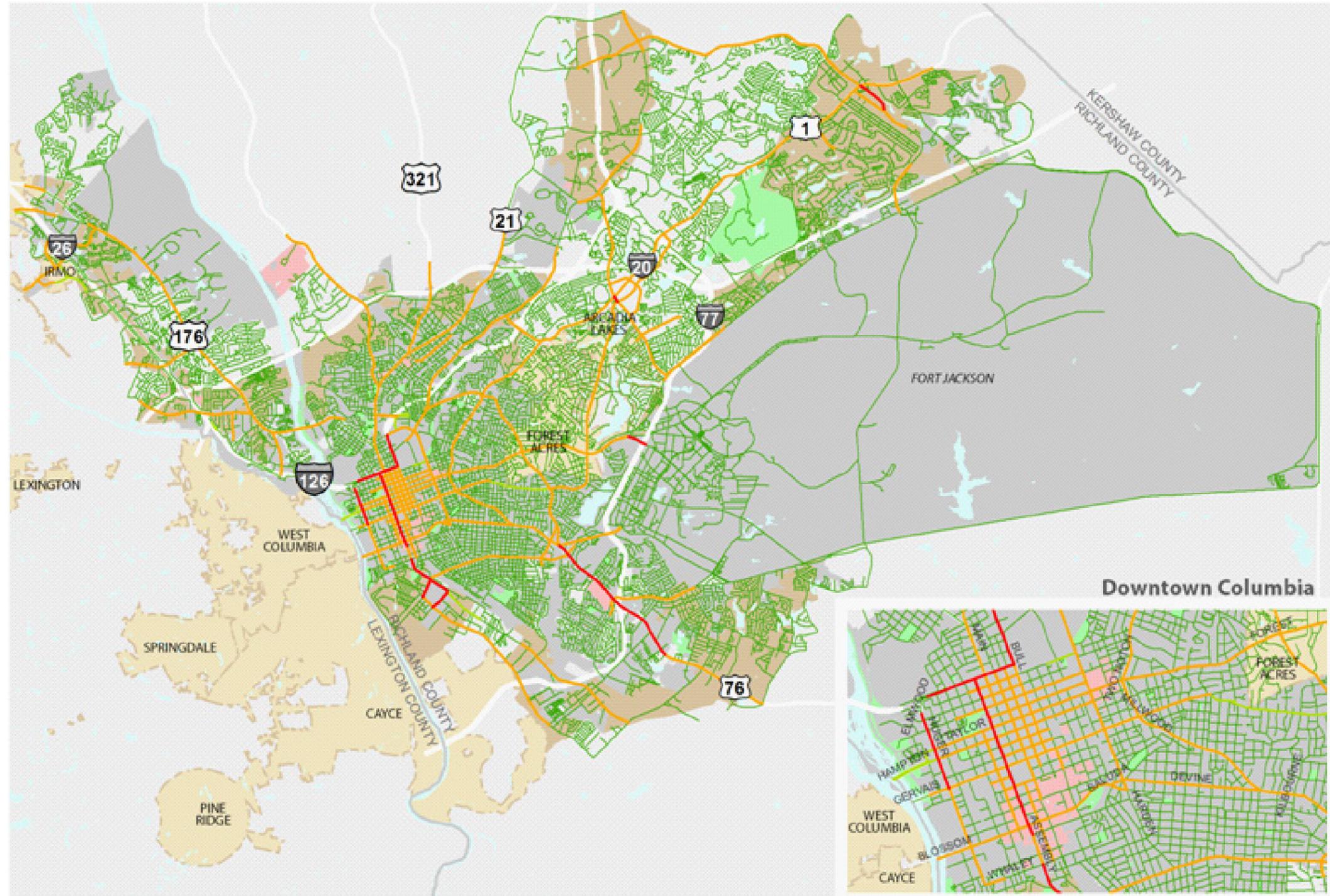




FIGURE 15 - NUMBER OF TRAVEL LANES



**Number of Travel Lanes**

- ≤ 2 lanes
- 3 lanes
- 4 - 5 Lanes
- 6 - 7 lanes

**Legend**

- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Park
- College
- Water Body

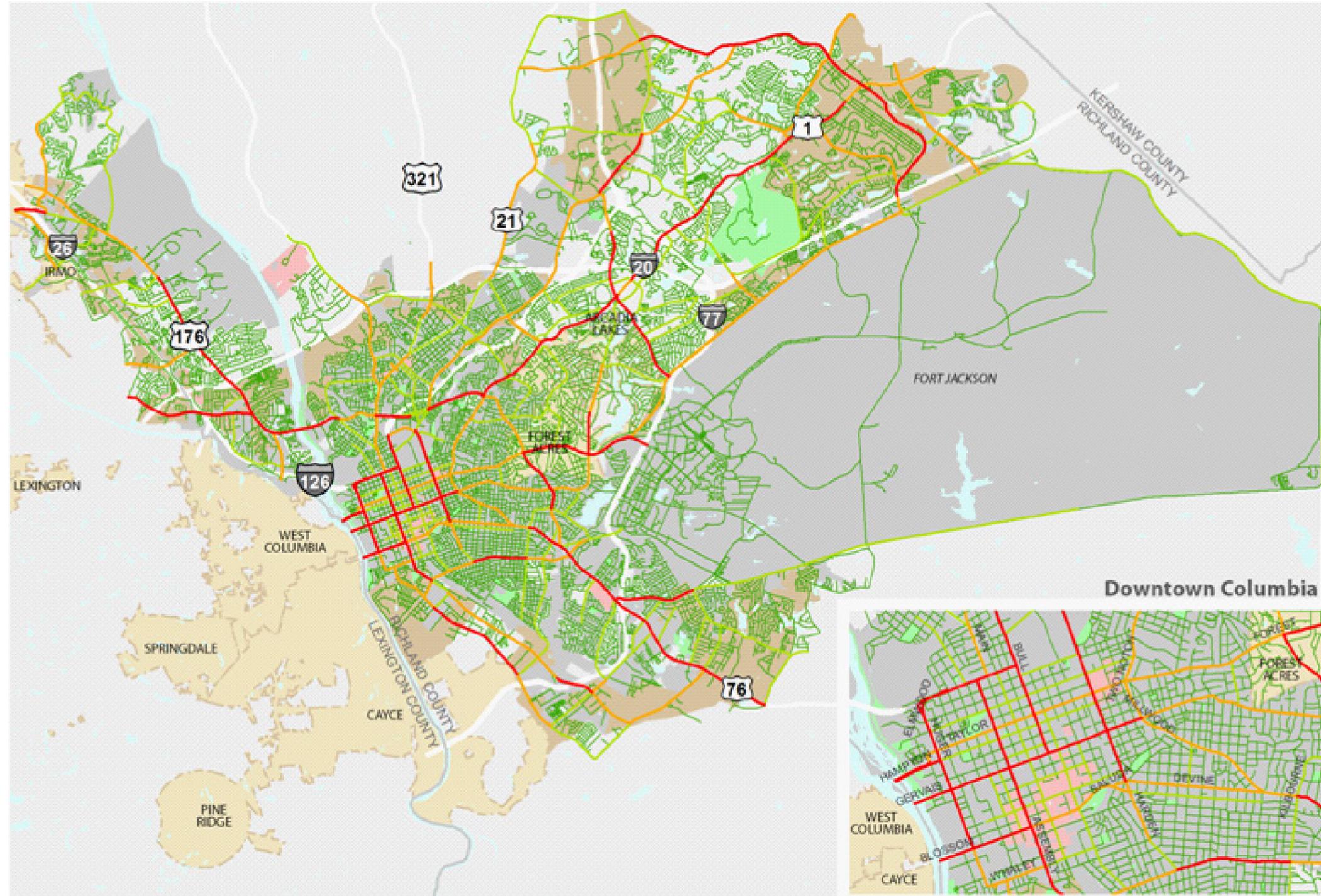


Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created May, 2014.





FIGURE 16 - TRAFFIC VOLUMES (AADT)



**Traffic Volumes (AADT)**

- 0 - 3,000
- 3,001 - 10,000
- 10,001 - 20,000
- > 20,000

**Legend**

- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Park
- College
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created May, 2014.





FIGURE 17 - PRESENCE OF SIDEWALKS

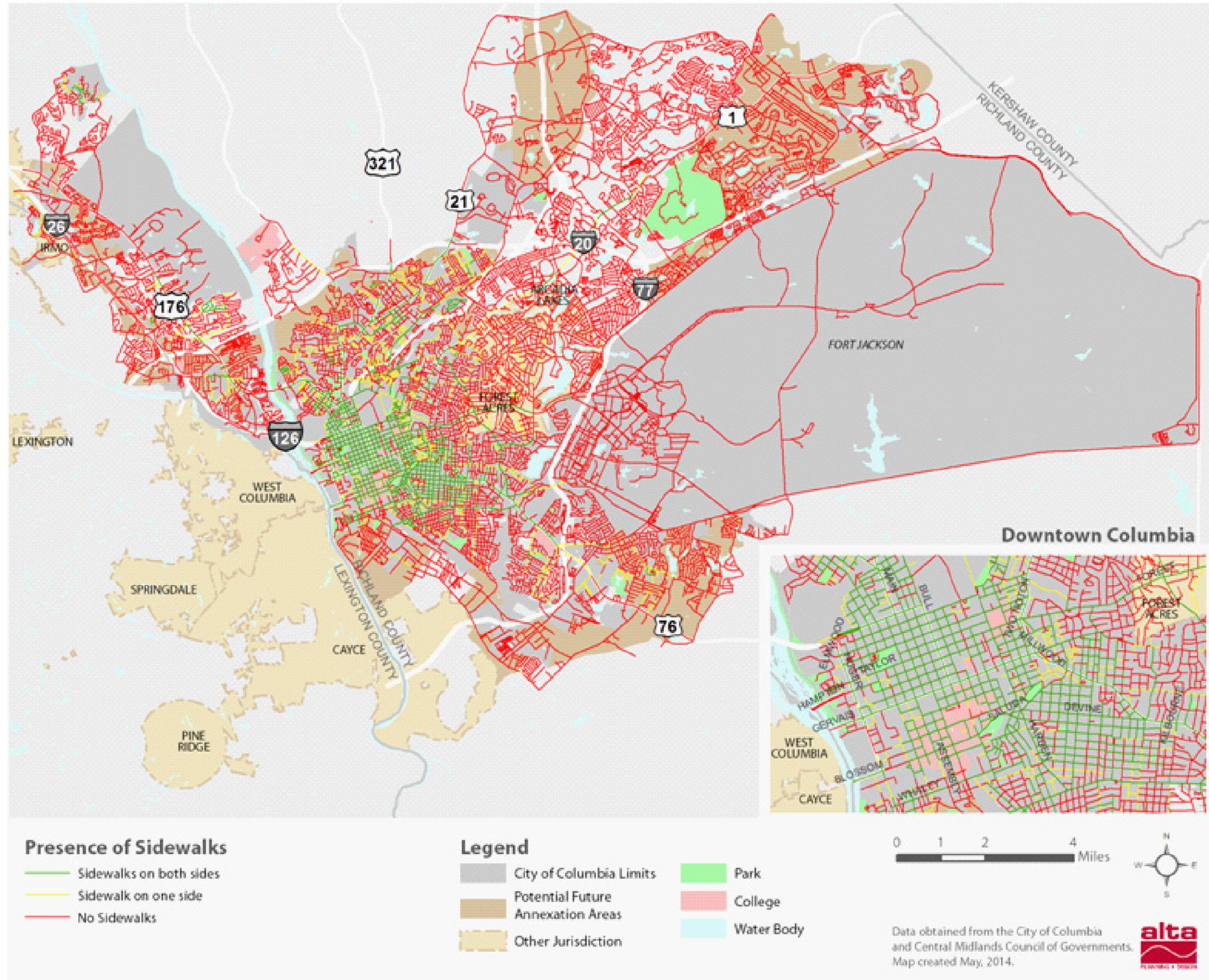




FIGURE 18 - BIKEWAYS AND ON-STREET PARKING

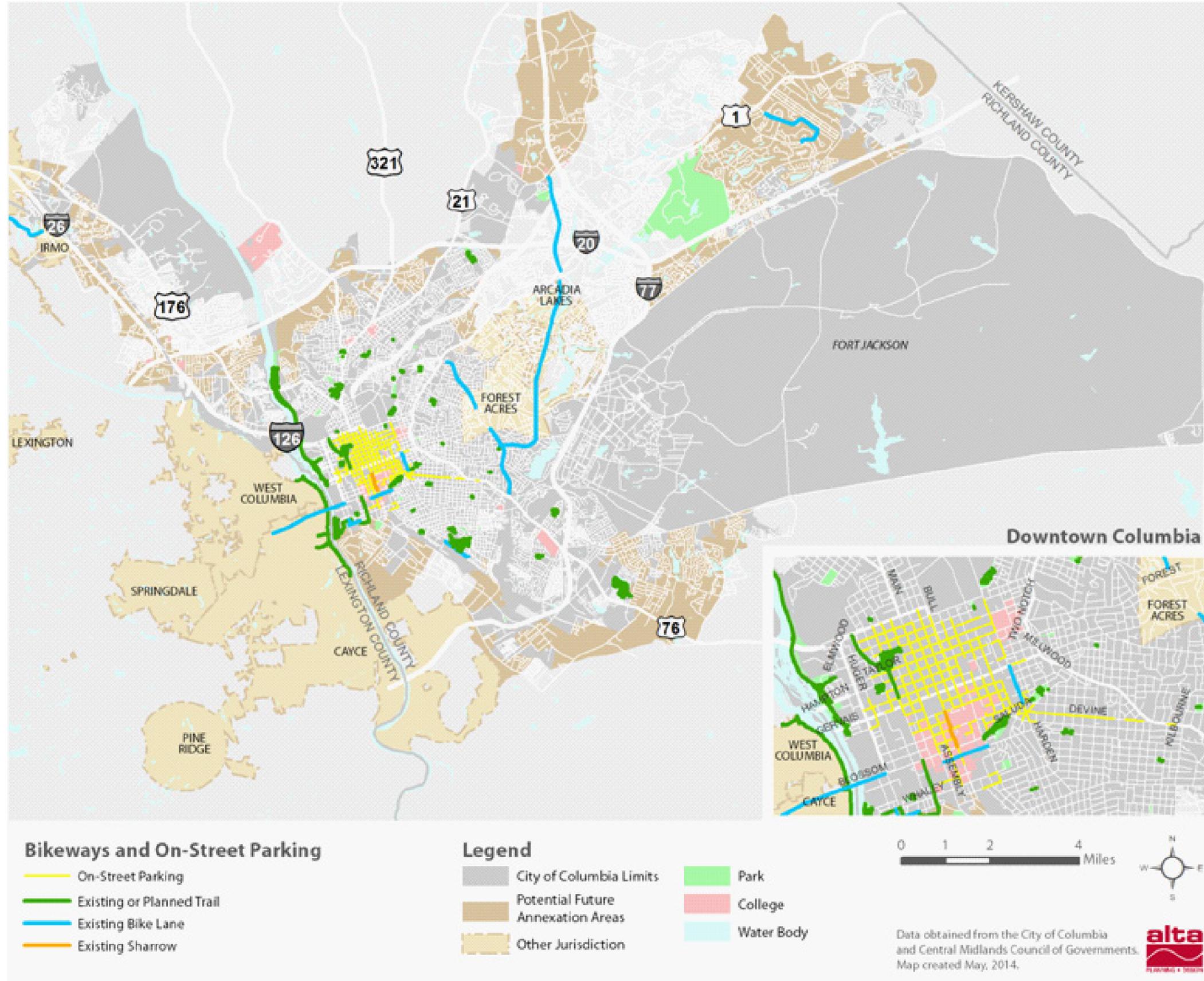




FIGURE 19 - CROSSWALKS AND CURB RAMPS

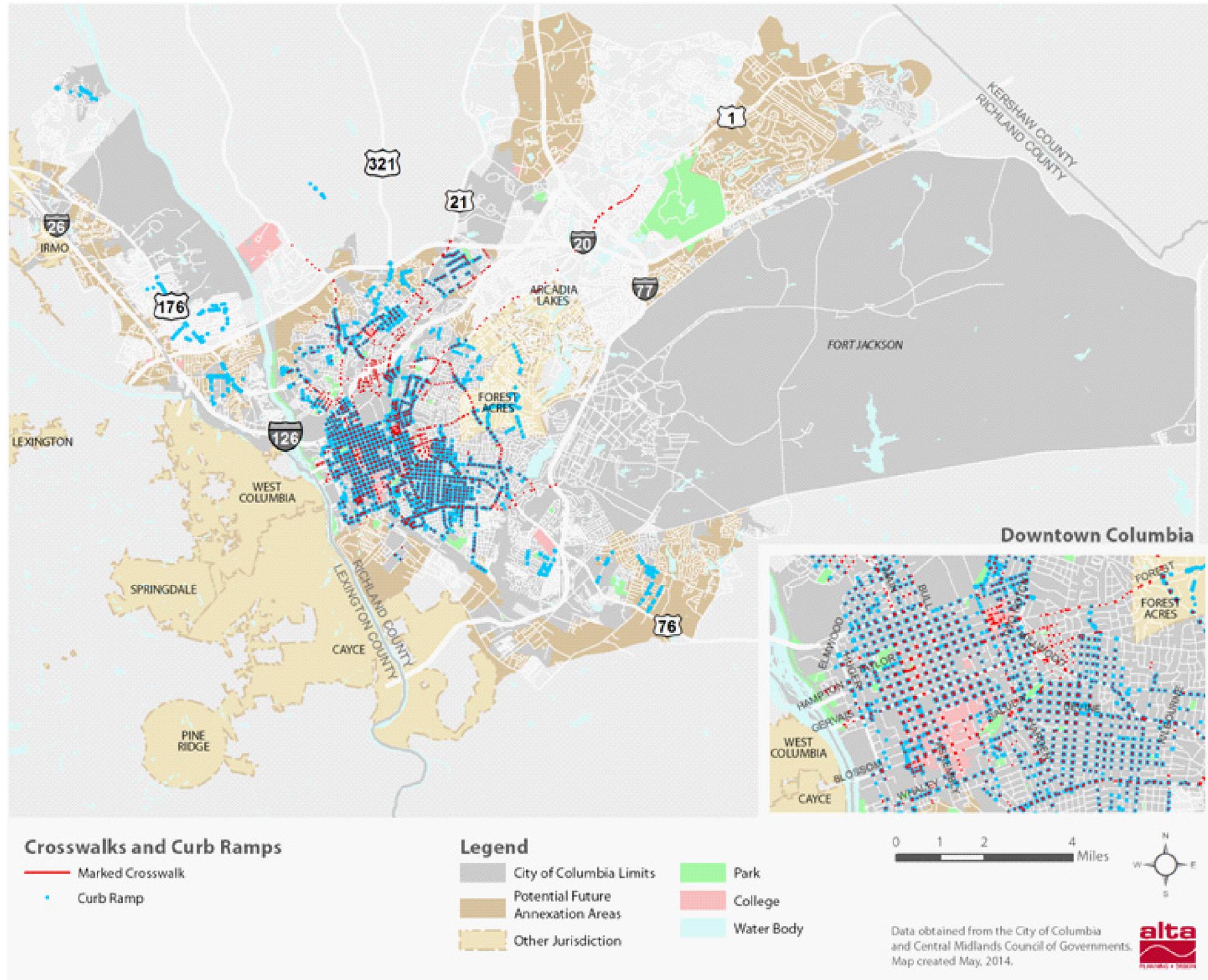
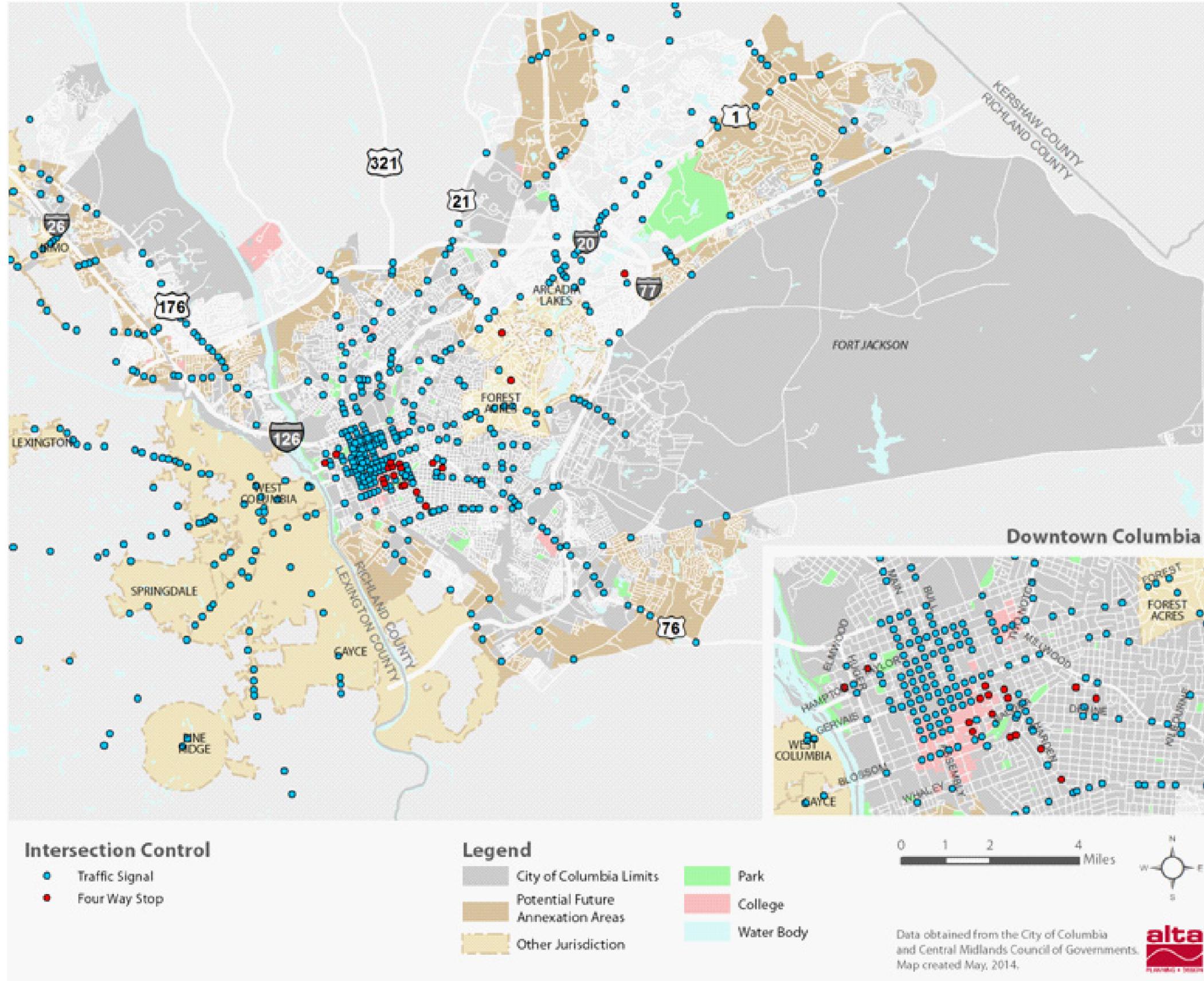




FIGURE 20 - INTERSECTION CONTROL





# Safety Analysis

## Overview

Safety for pedestrians and bicyclists is a priority outcome for this master plan. Columbia's recent history of pedestrian and bicycle collisions is an important consideration for the development of an improved bikeway and walkway network and new, effective education, enforcement, and evaluation programs. This is underscored by the fact that **South Carolina ranks 47th in the country for bicycle-friendliness<sup>1</sup> and is #4 on the list of the most dangerous states for pedestrians in the U.S.<sup>2</sup>**

The South Carolina Department of Public Safety provided collision data for the period of January 1, 2010, through May 9, 2014. SCDPS data is catalogued by county. All pedestrian and bicycle collisions within Richland County are analyzed in the following analysis.

For the period of January 1st to May 9th 2014, SCDPS data indicates a total of eight bicycle collisions and 28 pedestrian collisions.

Figure 21 to the right shows the total number of reported pedestrian-motor vehicle and bicycle-motor vehicle collisions in Richland County for each year from 2010 through 2013. This reflects a total of 162 reported bicycle collisions and 529 reported pedestrian collisions. For the period of January 1st to May 9th 2014, SCDPS data indicates a total of eight bicycle collisions and 28 pedestrian collisions.

To better understand the collision data, the table to the right provides a summary of bicycle and pedestrian collision data for a series of North Carolina cities with characteristics similar to Columbia.

The following sections present greater details on the yearly bicycle and pedestrian crash analysis for Richland County. These findings provide a basis for understanding the current safety conditions for bicyclists and pedestrians and priority locations for safety improvements.

FIGURE 21 - RICHLAND COUNTY TOTAL BICYCLE AND PEDESTRIAN COLLISIONS REPORTED (JAN. 2010 - DEC. 2013)

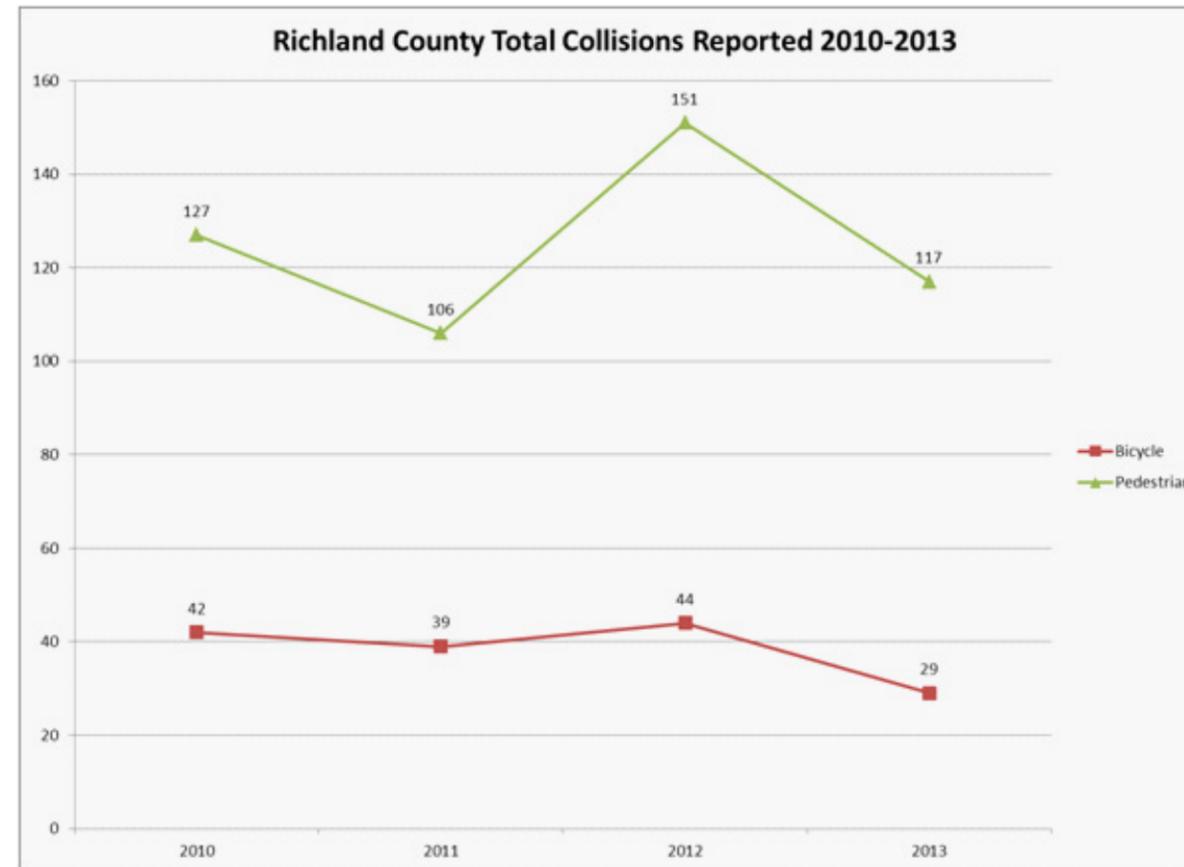


TABLE 29 - PEDESTRIAN AND BICYCLISTS COLLISION DATA

City	Population	Average Annual Pedestrian Collisions	Average Annual Bicycle Collision	University/College Presence
<b>Columbia, SC</b>	133,000	132	41	USC
<b>Cary</b>	136,278	29	19	N/a
<b>Fayetteville</b>	208,615	96	28	N/a
<b>Durham</b>	229,014	114	39	Duke
<b>Winston-Salem</b>	229,986	55	16	Wake Forest University
<b>Greensboro</b>	269,696	150	48	UNC-G and others
<b>Raleigh</b>	406,056	195	86	NC State

<sup>1</sup>League of American Bicyclists. 2014. Bicycle Friendly State 2014 Ranking. Retrieved here: [http://bikeleague.org/sites/default/files/2014\\_state\\_ranking\\_chart.pdf](http://bikeleague.org/sites/default/files/2014_state_ranking_chart.pdf)

<sup>2</sup>National Complete Streets Coalition. 2014. Dangerous by Design. Retrieved here: <http://www.smartgrowthamerica.org/documents/dangerous-by-design-2014/dangerous-by-design-2014.pdf>



## Data Source Summary

Traffic collision data was analyzed for crashes within Richland County, South Carolina involving a pedestrian and motor vehicle or a bicyclist and motor vehicle between January 1, 2010 and May 9, 2014. All analyses are based on the available data. A few considerations should be noted when reviewing the results of this analysis:

- The South Carolina Department of Public Safety (SCDPS) manages a statewide database of traffic collisions. To be included in the statewide database, a collision must: 1) involve a licensed motor vehicle such as an automobile, truck or motorcycle (mopeds, go-carts and trains on tracks do not qualify); 2) occur on a public roadway (shopping center parking lots and private roads do not qualify); and 3) involve a reportable injury or at least \$1000 in total property damage. Crashes that do not meet these definitions are NOT included in the database.
- Second, due to the factors above and others, crash data typically under-reports the actual occurrence of crashes, especially those crashes that do not result in a serious injury. As such, specific locations identified in the crash analysis may not present all potentially unsafe areas for bicyclists and pedestrians. For future follow up studies, local knowledge from bicycle and pedestrian advocacy groups such as running and cycling clubs should be sought when possible to obtain additional information on unsafe environments. Detailed information on causes of crashes is also useful determining common types of collisions in a given area that may indicate a need for engineering improvements. However, inconsistent coding of the primary factors contributing to a collision may misrepresent this information.
- Finally, it should be noted that the data provided for this analysis does not contain certain data that can be

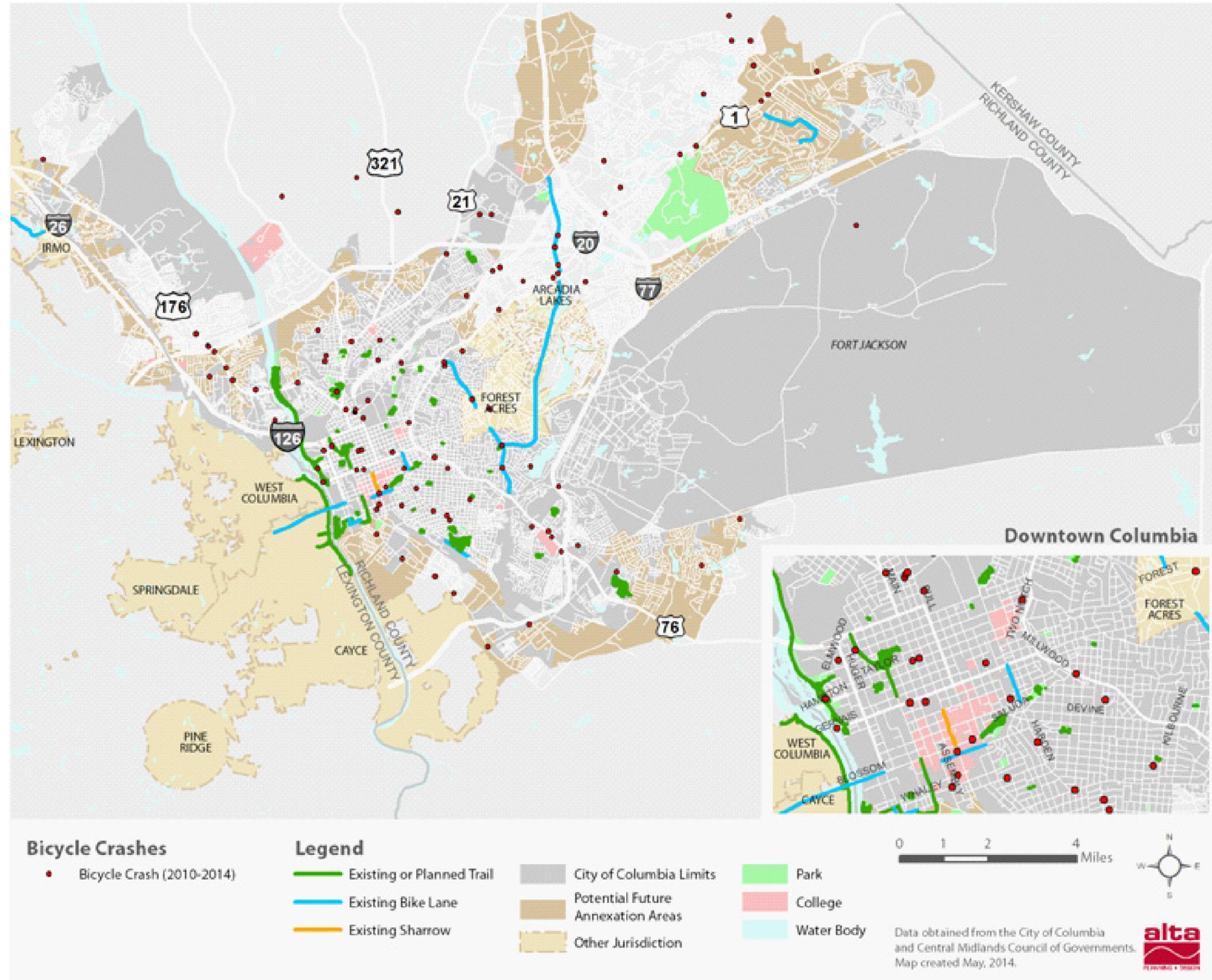
helpful in identifying recommendations for awareness programs and engineering improvements. Demographic data such as the age of crash victims can be useful in determining how education plays into potential causes of crashes. Younger bicyclists and pedestrians, in particular, are often less observant of safety practices such as looking left or right before crossing a roadway, to check for the presence of cars. As further reporting and analysis is done on bicycle and pedestrian crash data, data needs should be monitored to ensure that measures important within communities in the region are represented in crash data.

## Geographic Distribution of Bicycle Crashes

Bicycle crashes are evenly distributed in Columbia and the surrounding areas (see Figure 22). The majority of crashes are along streets with no dedicated bikeway facility, however three occurred on the Beltline Boulevard bike lane, one on the Wheat Street bike lane, and four along the Trenholm Road bike lane (outside of the project study area). Collisions occur on arterials, collector roads, and neighborhood streets alike. Collisions occurred on both the Hampton Street and Gervais Street bridges across the Broad River. Broad River Road and Bluff Road bear the highest numbers of bicycle collisions.



FIGURE 22 - MAP OF BICYCLE CRASHES





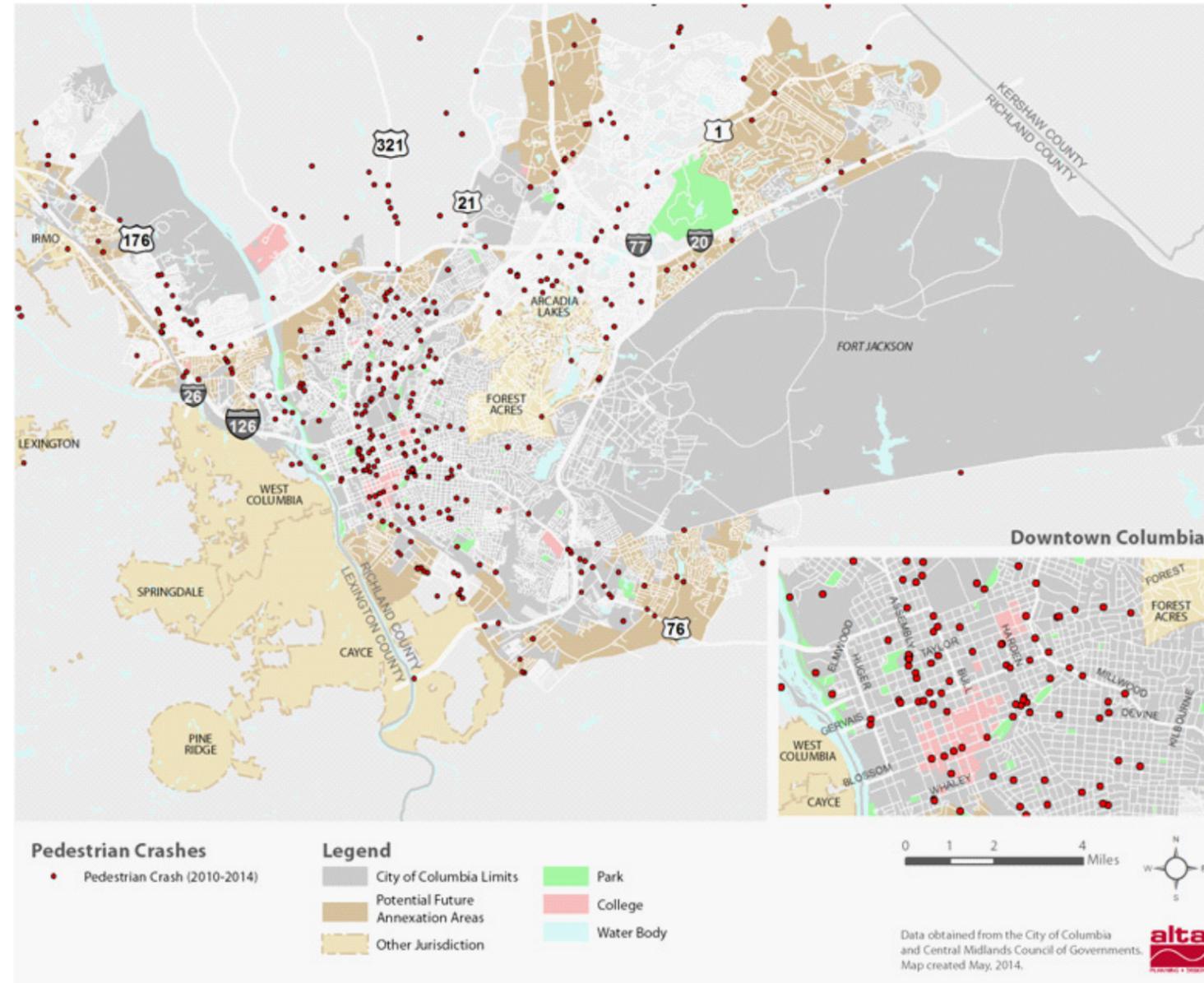
## Geographic Distribution of Pedestrian Crashes

Like bicycle crashes, pedestrian crashes are relatively evenly distributed in Columbia and the surrounding areas (see Figure 23). The **highest concentration exists in the central Columbia area**, immediately west of Main/N. Main Street and east of US 1 and US 76. Additionally, several arterials present long stretches of high levels of pedestrian collisions and pedestrian collisions are clustered at several key intersections. **The table below shows the top intersections and corridors for pedestrian collisions in the study area.**

TABLE 30 - TOP PEDESTRIAN COLLISIONS

Top Intersections	Number of Collisions	Top Corridors	Number of Collisions
Bull & Whaley	3	BROAD RIVER RD	27
Forest & McDuffie	3	TWO NOTCH RD	17
Devine & Santee	3	BLUFF RD	12
Devine & Harden	3	GARNERS FERRY RD	11
Greenlawn & Garners Ferry	3	FARROW RD	9
		HARDEN ST	9
		BLOSSOM ST	8
		DEVINE ST	8
		MONTICELLO RD	7
		BULL ST	6

FIGURE 23 - MAP OF PEDESTRIAN CRASHES (2010-2014)

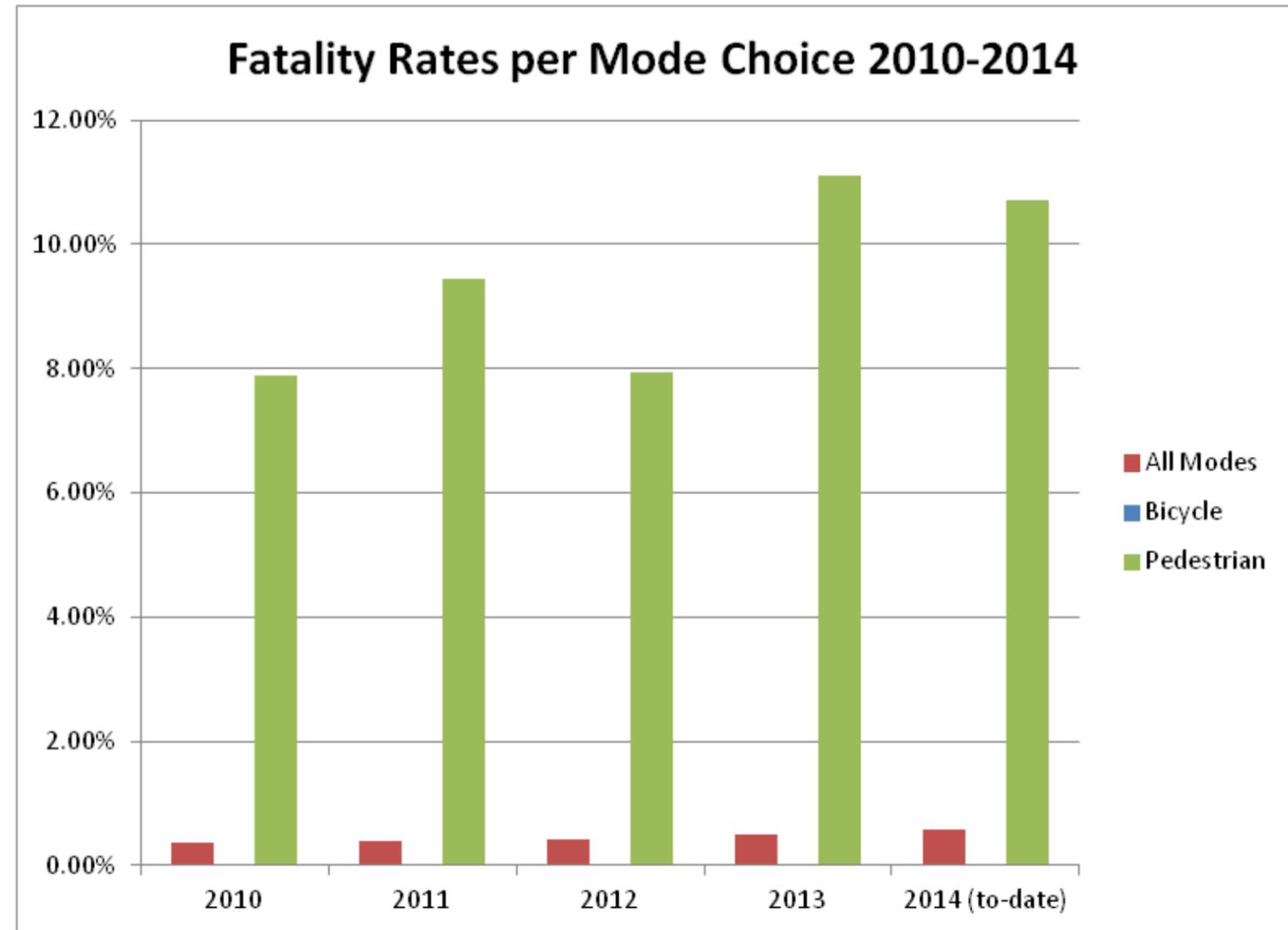




## Collision Injuries and Fatalities

The following figure shows the percent of total collision fatalities attributable to each transportation mode. As shown, between 11.8% (in 2013) and up to 18.8% (in 2014 to-date) of reported collision fatalities in Richland County are pedestrian fatalities, with an annual average (excluding 2014) of 13.0%. No bicyclist fatalities are shown in this time period, however, the Columbia community has suffered the loss of several bicyclists over the last few years. The tragic deaths of 19 year old Jesse Gamble in 2008 and 45 year old Mandy Kennedy, a mother of two, in March of 2014 rattled the community. Each was commuting to/ from work at the time of their motor vehicle collision. The March 2014 fatality is not included in this data because the incident is still under investigation.

The following two sections assess the bicycle injuries and fatalities and pedestrian injuries and fatalities, respectively.

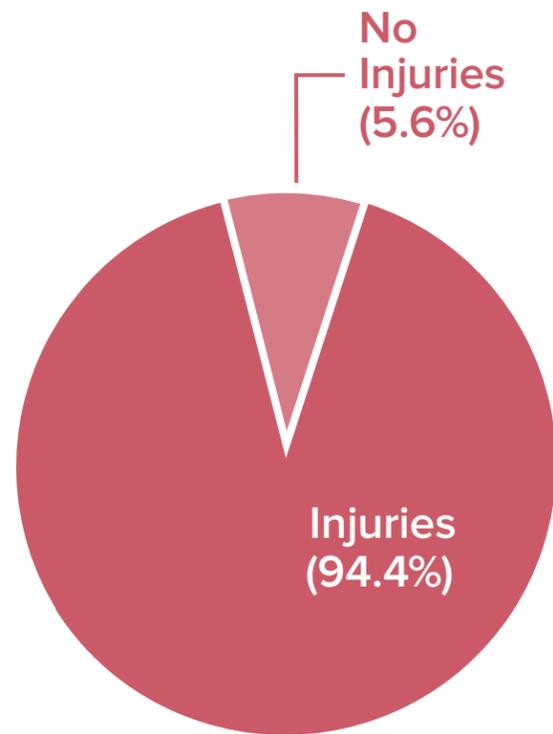




### BICYCLE INJURIES AND FATALITIES

Figure 24 shows the ratio of bicyclist injuries and of fatalities to the total collisions reported in Richland County that involved a bicycle from 2010 through May 9, 2014. As shown, there have been no bicyclist fatalities as a result of reported collisions in Richland County over the time period. However, the majority of bicycle collisions (94.4%) result in an injury.

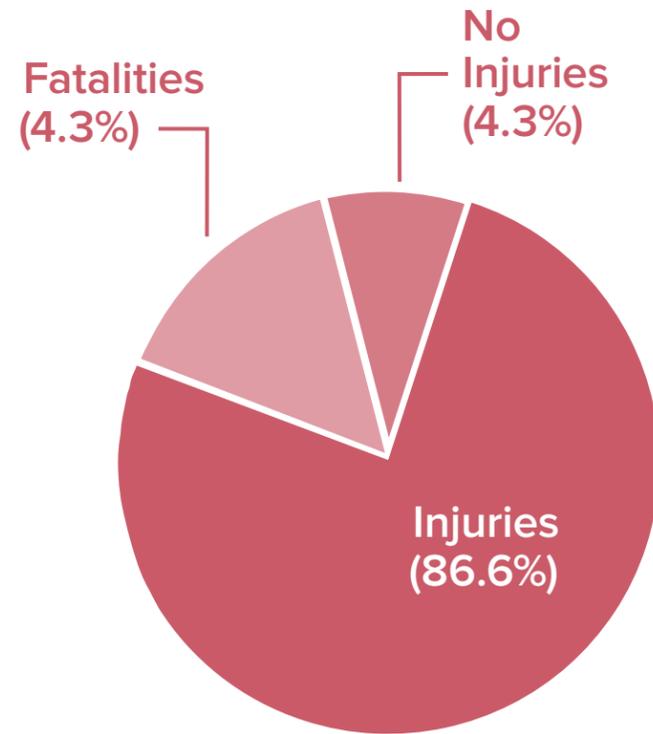
FIGURE 24 - RATIO OF BICYCLISTS INJURIES AND FATALITIES TO TOTAL COLLISIONS REPORTED (2010-2014)



### PEDESTRIAN INJURIES AND FATALITIES

Figure 25 shows the ratio of pedestrian injuries and of fatalities to the total collisions reported in Richland County that involved a pedestrian during the data time period. As shown, 86.6% of the pedestrian collisions resulted in one or more injuries, and 9.1% resulted in a fatality. Only 4.3% of pedestrian collisions during the data time period did not result in an injury or fatality.

FIGURE 25 - RATIO OF PEDESTRIAN INJURIES AND FATALITIES TO TOTAL COLLISIONS REPORTED (2010-2014)





## Collision Conditions

A total of 162 bicycle collisions and 529 pedestrian collisions were reported in Richland County from January 1, 2010 through May 9, 2014. Table 31 presents the characteristics of these collisions, such as the road surface conditions, lighting conditions, weather conditions, and where the collision occurred.

As shown in the table, most crashes for bicyclists and pedestrians occurred during dry road surface conditions (96% and 87%, respectively) and on clear days (89% and 83%, respectively). The majority of bicycle collisions occurred during daylight hours (70%), but **only 43% of pedestrian collisions occurred during daylight**. In addition, most collisions occurred on the roadway (89% for bicyclists and 87% for pedestrians).

TABLE 31 - RICHLAND COUNTY BICYCLE AND PEDESTRIAN COLLISION CHARACTERISTICS (2010-2014)

	Bicycle		Pedestrian	
	Total	% of Total	Total	% of Total
Total Collisions Reported	162	100%	529	100%
Road Surface Conditions				
- Wet	6	4%	65	12%
- Dry	155	96%	461	87%
Lighting Conditions				
- Daylight	114	70%	230	43%
- Dawn / Dusk	9	6%	29	5%
- Dark (Street Lamp Lit)	20	12%	121	23%
- Dark (Lighting Unspecified)	7	4%	53	10%
- Dark (Unlit)	12	7%	96	18%
Weather Conditions				
- Clear	144	89%	440	83%
- Cloudy	10	6%	38	7%
- Fog, Smog, Smoke	2	1%	3	1%
- Rain	4	2%	45	9%
- Snow	1	0.6%	2	0.4%
- Unknown	1	0.6%	1	0.2%
First Harmful Event Location				
- On Roadway	144	89%	458	87%
- Median / Shoulder	3	2%	18	3%
- Off Roadway	15	9%	45	9%
- Unknown	0	0%	8	2%



## Collisions by Month and Time of Day

The following sections present the collisions per month and by time of day from 2010 through May 9, 2014. The data offers some indication as to the time of year and the hours that people bicycle and walk in Richland County. May and October held the highest number of bicycle collisions and October and November held the highest number of pedestrian collisions from 2010 through 2013<sup>3</sup>. Both bicycle and pedestrian collisions are concentrated in the late afternoon and evening hours, though there are crashes during the morning period as well.

It should be noted that there are collisions involving bicycles and pedestrians throughout the year, indicating that people in Richland County continue to cycle during the winter months. Similarly, collisions occur at all times of day, although the majority occur during daylight hours (between 6 am and 9 pm).

### BICYCLE CRASHED BY MONTH AND TIME OF DAY

Figure 26 displays the bicycle collisions by month from 2010 through 2013. As shown, the most collisions occur in May and October with April and November close behind. The reported bicycle collisions decrease after May and build back up until the second peak in October. The higher numbers of collisions involving bicycles in the spring and fall months likely indicates that cycling is more prevalent during these good weather months.

Figure 27 presents the bicycle collisions by the time of day from 2010 through May 9, 2014. As shown, almost half of the bicycle collisions occur between 3 pm and 9 pm (47.5%), followed by an even distribution of collisions between the three-intervals from 6 am until 3 pm (13.6% during each three-hour interval).

FIGURE 26 - BICYCLE COLLISIONS BY MONTH (2010-2013)

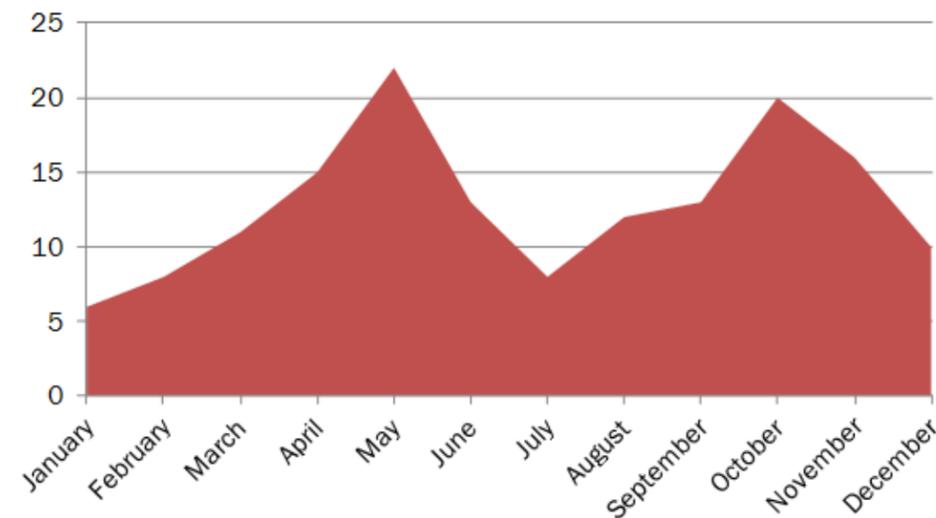
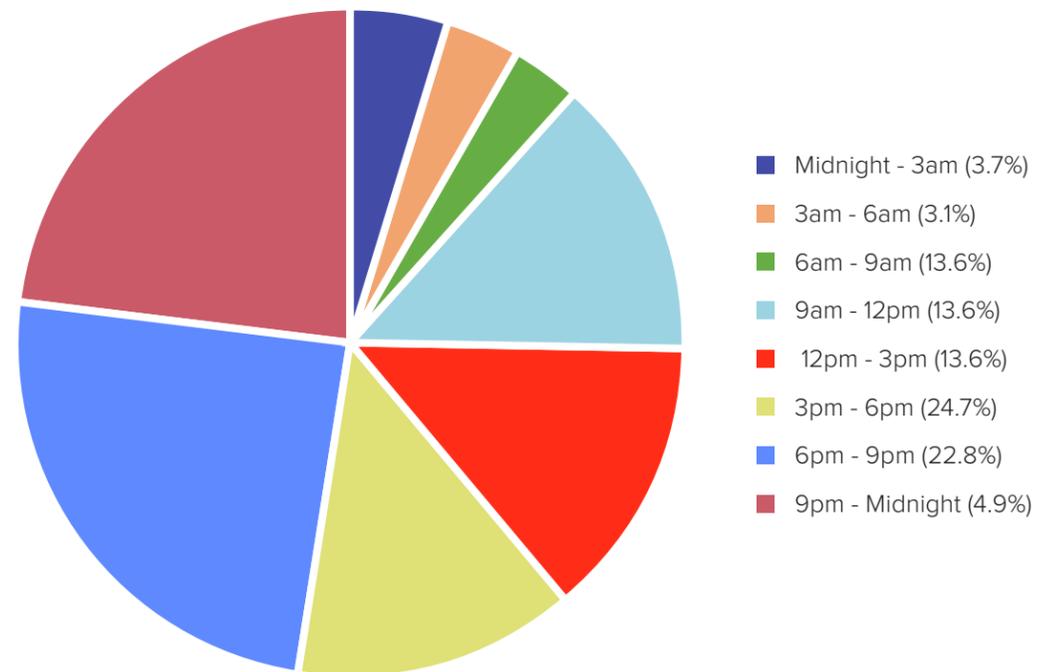


FIGURE 27 - BICYCLE COLLISIONS BY TIME OF DAY (2010-2014)



<sup>3</sup>The 2014 data was excluded from the monthly analysis as it only extends through May 9, and would thus skew the data to more collisions in earlier months.



### PEDESTRIAN CRASHES BY MONTH AND TIME OF DAY

Figure 28 displays the pedestrian collisions by month from 2010 through 2013. As shown, the most collisions occurred in November (67 instances). The reported pedestrian collisions increase during the fall months and are lowest in late spring and summer. Trends may reflect the fact that there is more daylight in spring and summer months.

The majority of pedestrian collisions occur during the evening hours from 6 pm to 9 pm (21.4%), followed closely by 9 pm to midnight (18.5%) and 3 pm to 6 pm (17.0%).

FIGURE 28 - PEDESTRIAN COLLISIONS BY MONTH (2010-2013)

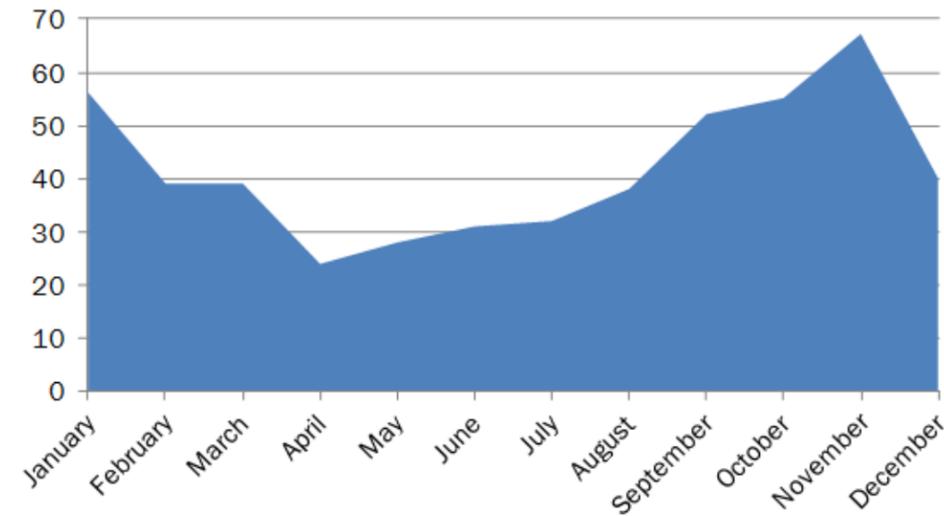
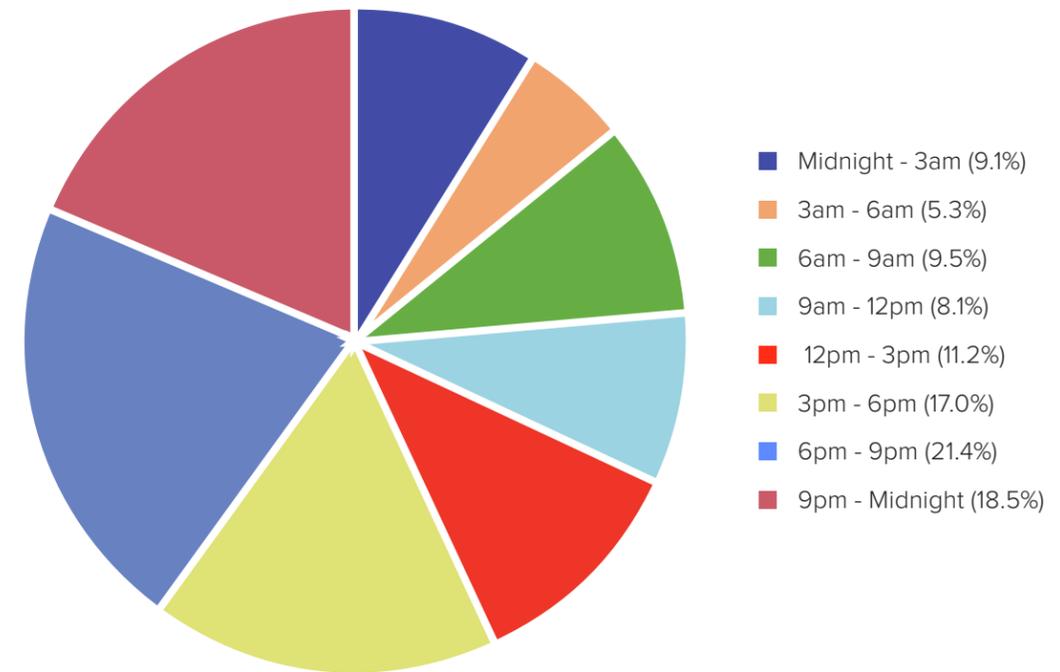


FIGURE 29 - PEDESTRIAN COLLISIONS BY TIME OF DAY (2010-2014)





## Collisions by Contributing Factor

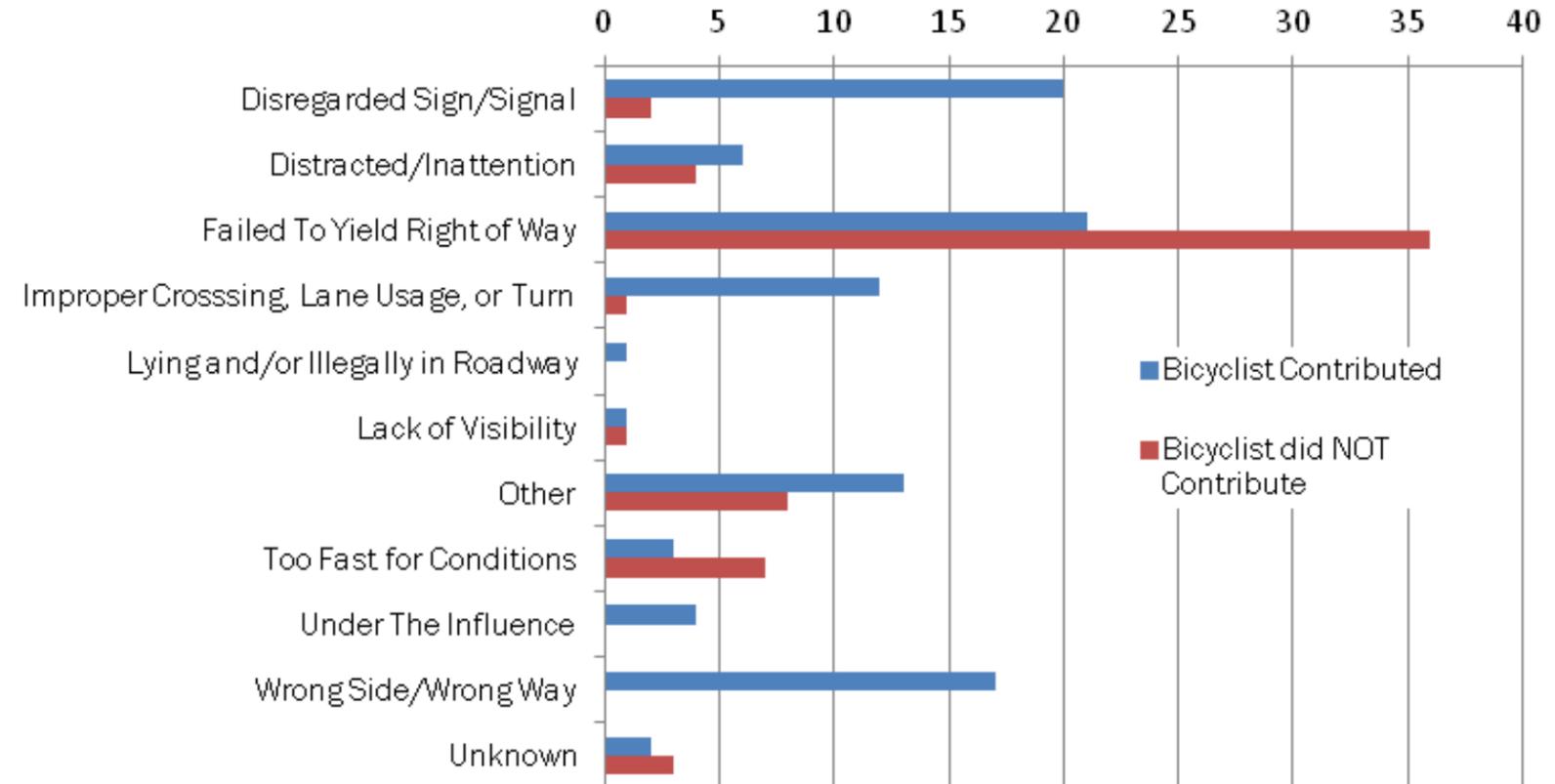
The available data also includes some information about the circumstances of the reported collisions. The following two sections assess the number of crashes for each category of primary factor contributing to the collision.

### BICYCLE CONTRIBUTING FACTORS

**The bicyclist was reported to be a contributor to the collision in 100 of the 162 incidents (61.7%).** The top three primary factors for how the bicyclist contributed were failure to yield the right of way (21 collisions), disregarded a sign or signal (20 occasions), and riding in the wrong direction (17 instances). Conversely, in 36 reported bicycle collisions, the motorist failed to yield the right of way to the bicyclist, but the motor vehicle disregarded a sign or signal or was driving in the wrong direction in only two or zero instances, respectively. Note that although this data indicates contributing factors to these incidents, it does not indicate the geometry of the collision, or whether or not a citation(s) was given as a result of the crash.

**This data indicates several opportunities for creating targeted education and enforcement programs.** For motor vehicle drivers, such programs should address failing to yield the right of way bicyclists and speeding. For bicyclists, such programs should address failing to follow traffic signs and signals, improper operations on the road, and riding on the wrong side (or the wrong way) of the road. Often, improved bicyclist infrastructure can serve as the most powerful and efficient means of teaching a cyclist how to properly navigate a roadway or intersection

FIGURE 30 - BICYCLE COLLISION CONTRIBUTING FACTORS (NUMBER OF COLLISIONS BY TYPE)



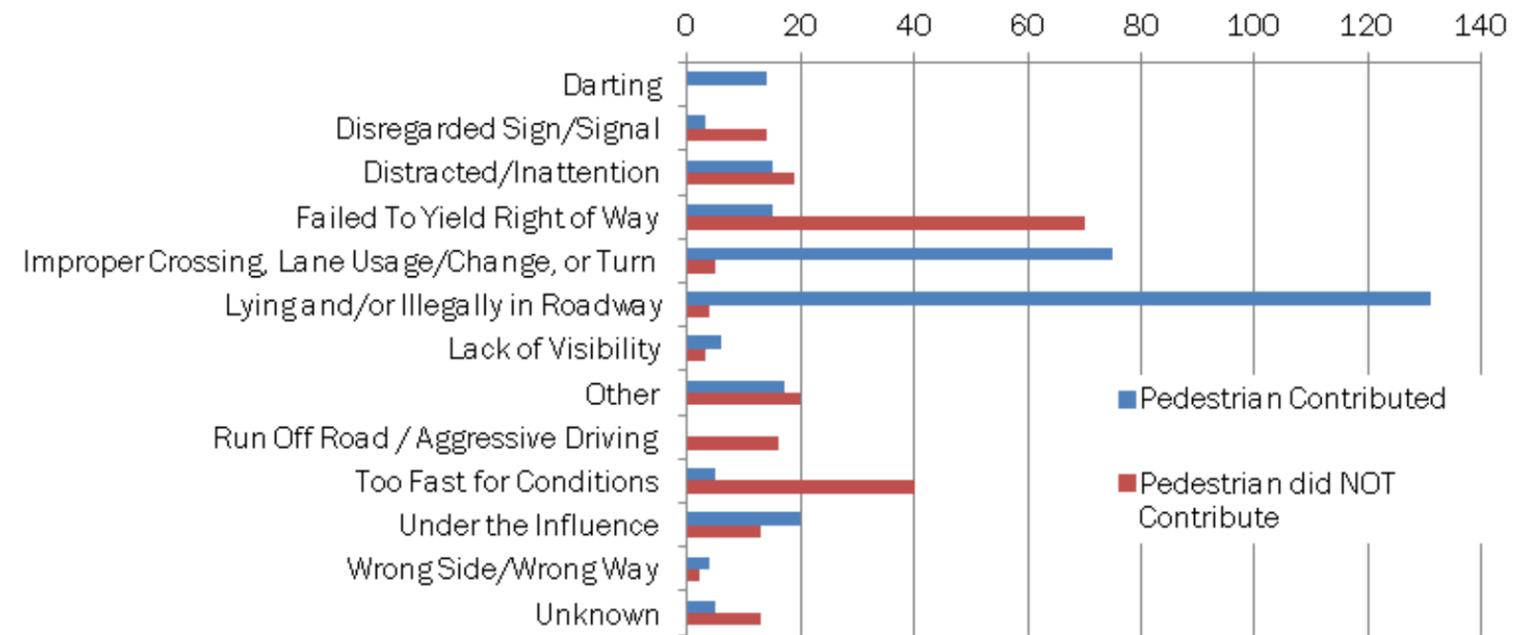


### PEDESTRIAN CONTRIBUTING FACTORS

The pedestrian was reported to be a contributor to the collision in 310 of the 529 incidents (58.6%). **The top two primary factors for how the pedestrian contributed were illegally being in the roadway (131 collisions) and improper crossing, lane usage, or turn (75 instances).** It is important to note that a pedestrian may be identified as illegally within a roadway when they have been given no alternate safe place to walk, stand, or cross. This could include corridors with no sidewalks, a sidewalk on only one side of the road, long distances between intersections (for crossing), or bus stops with no designated waiting area.

**The top two primary factors for collisions by motorists were failure to yield the right of way (70 collisions) and driving too fast for conditions (40 collisions).** Note that although this data indicates contributing factors to these incidents, it does not indicate the geometry of the collision, or whether or not a citation(s) was given as a result of the crash.

FIGURE 31 - PEDESTRIAN COLLISION CONTRIBUTING FACTORS (NUMBER OF COLLISIONS BY TYPE)







# APPENDIX F: INTERMODAL TRANSIT ANALYSIS

## Introduction: Bicycle Access and Public Transportation

A major theme emerging from the Bike Walk Columbia Plan and the long-range vision for the Columbia area is that the region must develop a transportation system that creates and encourages the use of more travel choices, such as transit, biking, walking and ridesharing, and begin to reduce the degree of reliance on the single-occupant automobile for vehicle travel.

Quality of life is an important factor in the Columbia area. From the urban core of Columbia to the region's hills and lakes, the historical, cultural and recreational amenities are abundant. These amenities along with affordable housing, shopping centers, healthcare, and educational facilities draw people to the Midlands. The climate and geography of Columbia and the surrounding communities provide an opportunity for bicycling to truly be a transportation alternative to the single-occupant vehicle, when conveniently linked with the transit system via secure and plentiful bicycle parking at transfer stations and bicycle access onboard transit vehicles. The combination of bicycling and public transit offers many Columbia residents, workers, and visitors perhaps the best alternative to the flexibility and convenience of the single-occupant vehicle as a result of lower costs, reduced parking stress, and reduction in greenhouse gases.

Bicycling can be a convenient method of reaching a transit stop or transfer station. The bicycle offers the independence of the automobile and costs less than auto ownership, including paid parking and gas. On transit systems, such as The COMET, that allow bicycles onboard, the same bike can be used on the origin and destination ends of the trip. Workplace showers can allow longer distance commuters to bicycle to work, and arrive at their desks fresh and clean.

Well-designed, strategically located bicycle and pedestrian facilities can increase ridership on public transit by providing people with safe, pleasant access to these transit options. With geographically strategic investments in bicycle and pedestrian system improvements, together with the implementation of smart land use strategies and better education and incentive programs, many short auto trips could be shifted to walking, biking or transit trips to help reduce vehicles miles traveled (VMT) and emissions for a relatively low cost.

The following chapters provide an overview of the major transit providers in the Columbia area and a discussion of opportunities for future coordination among bicycle, pedestrian and transit access in the region.



## Existing Transit Service

Public transportation empowers individuals to be independent, seek and retain employment, access medical care, and gain access to new opportunities. Nationally, the role of public transportation is evolving from the perspective of the stand-alone provider of services to the idea of public transportation developing partner alliances with other agencies and organizations. The result is improved mobility alternatives for customers for all transportation services. This evolutionary process has resulted in the recognition that while public transit remains an integral part of the overall transportation network, emphasis must be placed on the more inclusive perspective of partnerships.

Transportation providers in Columbia presently serve the mobility needs of the general public, including the elderly, persons with disabilities, low-income persons, commuters, students, and recreational users. Transportation providers include:

- The COMET, a public transit agency operated by the Central Midlands Regional Transit Authority (CMRTA)
- University of South Carolina Transportation Services, private student transportation
- The Santee Wateree Regional Transit Authority serving Elgin, Lugoff, Sumter, Hopkins, Camden, and Columbia
- Newberry Express from Newberry
- Intercity services, Greyhound Lines and Southeastern Stages, Megabus
- Private taxi, limousine, and shuttle providers

Even though the primary focus of this study is coordination between The COMET and USC Campus Shuttles, future facilities with other providers in the Columbia area should consider bicycle and pedestrian connections, as appropriate.



## THE COMET (CMRTA)

The COMET provides fixed route and paratransit service in the Columbia urbanized area, including portions of Richland and Lexington Counties.

In July 2012, Richland County voted to place a penny-on-the-dollar tax referendum on the November 2012 ballot, with transit receiving 29 percent of each penny collected until the sunset of the tax: 22 years OR \$1.07 billion, whichever comes first. The penny tax referendum passed in the November 2012 election and, after several legal efforts to overturn the results, the South Carolina Supreme Court upheld the referendum results; thus, providing The COMET financial stability.

The tax cycle required that the new tax collections would not begin until May 1, 2013 and first disbursement would not occur until approximately November 2013—a full year after the election results.

In May 2014, The COMET added Sunday service for the first time since 2012, matching the level of service on Saturday for the best weekend service Columbia has ever had. In September 2014, The COMET launched 100 hours of additional service, a 25 percent increase, including:

- expanded hours on main line routes;
- increased frequencies on key routes;
- expanded Saturday service;
- the first ever USC-oriented route targeting student housing.

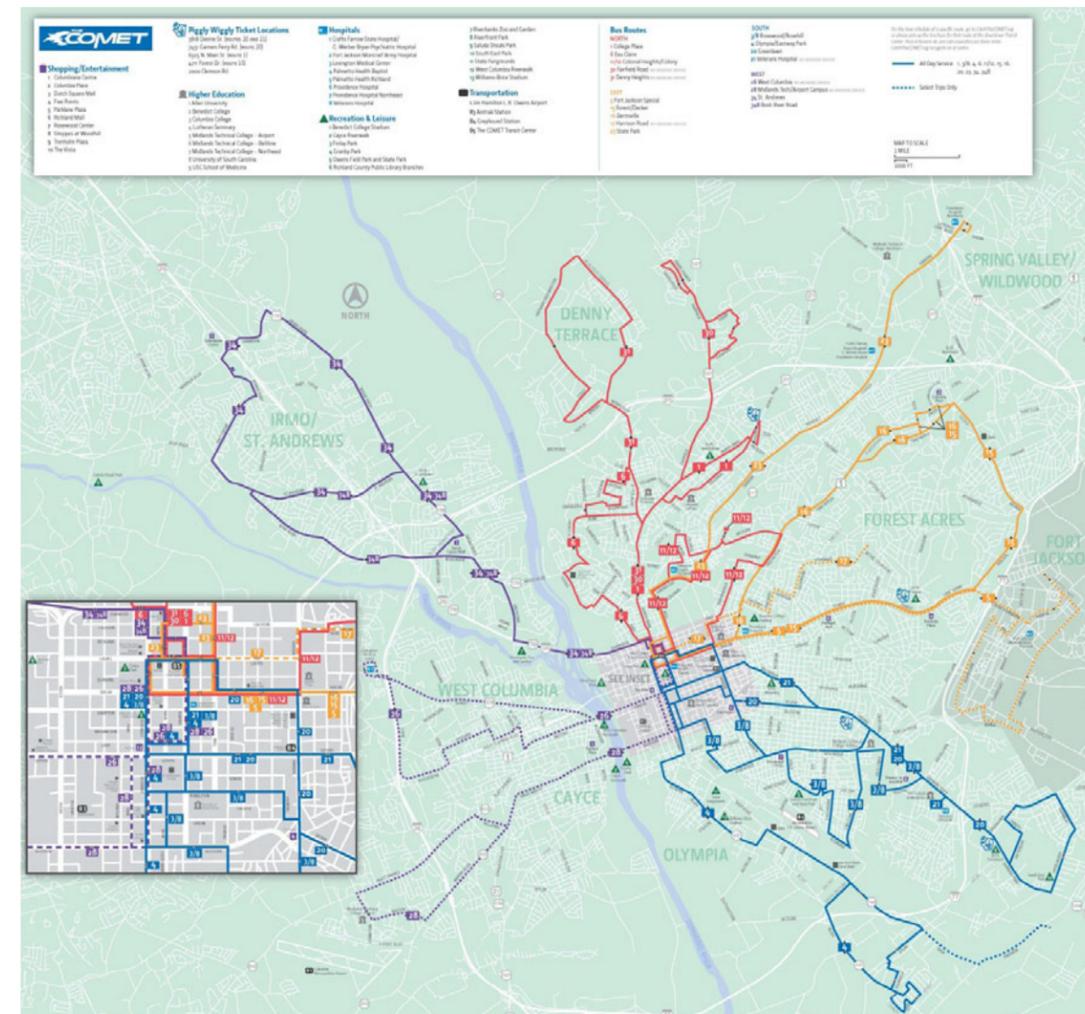
The COMET, previously known as CMRTA, re-branded from CMRTA for a variety of reasons; however, the main reason was the system demanded a name and image that reflected the identity of a bold, aggressive, forward-thinking transit system. It had to be vibrant, speak to the future and create loyalty to the system. It had to be cool. The new brand and color scheme has been the most talked-about aspect of transit for the past year. Much of The COMET's activity since summer 2013 has surrounded staffing, capital procurement, and system planning.

The COMET provides fixed route service within Richland County and portions of Lexington County. Much of this service is provided within the City of Columbia with operations reaching into the communities of Cayce, West Columbia, Forest Acres, Arcadia Lakes, Springdale, St. Andrews area, and Harbison area. The COMET routes that exist as of July 2014 are shown in Figure 32. Service is provided from 5:30am to 11:00pm, Monday through Friday, and 7:30 am – 9:30 pm on Saturdays and Sundays

with service every 60 minutes. In August 2014, The COMET implemented additional transit service, the Orbit, which is an internal circulation of transit routes that provides approximately 15-30 minute headways for the downtown Columbia area, near the USC Campus. Additional service will be implemented in 2015 to complete the full rollout of the Orbit.

The COMET also operates two other types of service: ADA demand-response (DART) and open-access demand response (Flex) service.

**FIGURE 32 - THE COMET SERVICE**





### DART:

The ADA demand response paratransit service follows the service days and times of the fixed route system. Demand response must be prescheduled the day before and has a no denial policy, using trip negotiation and scheduling to accommodate trip requests. To qualify for DART service, applicants must be unable to independently access and/or use The COMET fixed route system. If an individual resides within 3/4-mile of the fixed route service, but does not have an accessible path, such as a sidewalk or wheelchair ramps at an intersection, then the person is eligible for this type of service. Those who wish to use the DART system can be certified as eligible by completing an application and following the short eligibility review process.

### Flex:

The open-access service is a newly created flexible service that operates like the ADA service; however, any passenger can ride the vehicle and ALL origins and destinations must be within the service zone, which includes the end-of-the-line points for three fixed routes. This service is designed to connect low-density areas to fixed route buses, especially higher frequency main line routes. The first Flex Zone began in February 2014 and will be expanded to a larger service area. There is no dedicated vehicle to this route, as the passengers are fit into the DART manifest and delivered to the route destinations by DART drivers. This minimizes overall costs and allows for the same staff to answer and schedule telephone-based calls. The COMET also operates a “Re-Flex” route, which is a hybrid deviated fixed route—it has a series of scheduled fixed route trips, but then is available to perform demand-response service like a classic flexible service.

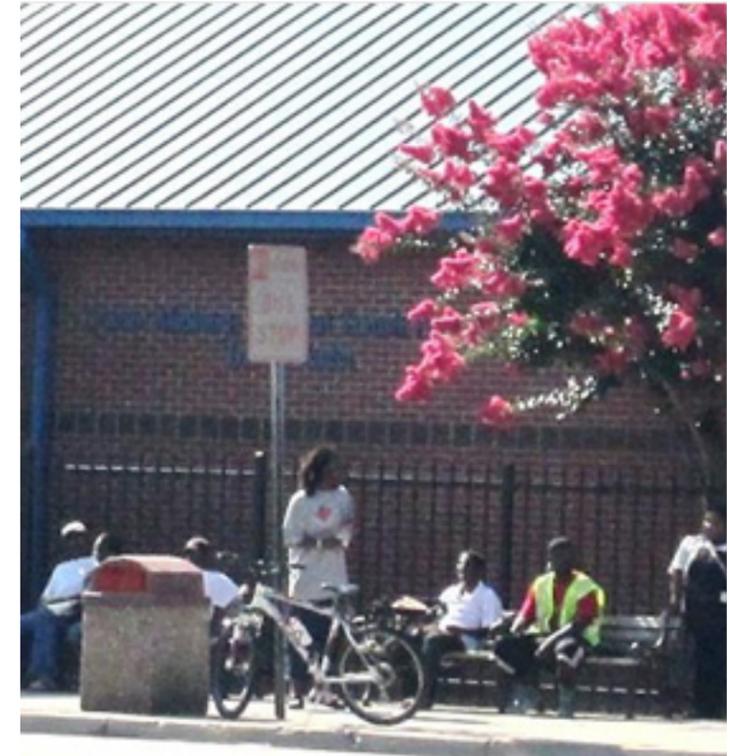
### System:

The COMET base fare is \$1.50. In FY 2012, The COMET provided just under 2M passenger trips, with approximately 145,000 revenue vehicle hours. The COMET has approximately 45 peak vehicles in operation for fixed route and paratransit services each weekday. In FY2012, the annual operating budget for both services was approximately \$12M.

The COMET receives FTA 5307 revenue funds, which have a requirement of at least one percent of the funding apportioned to The COMET must be used for transit enhancement activities, such as historic preservation, landscaping, public art, pedestrian access, bicycle access, and enhanced access for persons with disabilities. This Columbia Bike Walk Plan provides an opportunity for The COMET to use the findings as a priority for these funds, as appropriate to other needs identified within specific transit plans.

Within Columbia, the Downtown Transit Center is the primary transfer point for The COMET routes. The Santee Wateree RTA also provides transit service into the Columbia area via two routes. The stops for the routes include the Downtown Transit Center and the following other locations listed below. Any future roadway or transit improvement projects should consider bicycle and pedestrian facilities and connections at these sites.

- Richland Memorial Hospital
- Bull/Confederate, DHEC/DSS
- Sumter/Hampton, Palmetto Health
- Sumter/State House, State House
- Sumter/Pendleton
- Pendleton/Assembly, DNR
- Assembly/Gervais
- Assembly/Washington
- Assembly/Blanding





## CAROLINA SHUTTLE (UNIVERSITY OF SOUTH CAROLINA, CAMPUS TRANSPORTATION)

The Carolina Shuttle is operated by the University of South Carolina Vehicle Management and Parking Services, within the Division of Administration and Finance. The campus shuttle operates six routes Monday through Friday, 7:30 am to 5:45 pm. The Evening Shuttle operates from 5:30pm to 12:30am. The system operates during the Fall and Spring semesters, with limited operation during the summer, reading days, and holidays. The Carolina Shuttle does not run on a set schedule. Buses arrive at designated stops approximately every 15 minutes.

The Carolina Shuttle is free to all USC students, faculty, and staff. Shuttle and parking maps are available at Parking Services, the Askus information desk at the Russell House, and at Vehicle Management. Commuting students are encouraged to park in lots located at the Coliseum, Bates Area, and 1600 Hampton, then ride the Shuttle to central campus. Approximately 35,000 students attend USC during the fall and spring semester. As USC continues to improve facilities and connections across campus, these primary stop locations should consider adequate bicycle, pedestrian, and transit facility needs.

The Campus Shuttle has an operating budget of approximately \$1.5M annually. USC has 30 buses in its fleet. While school is in session, 15 peak vehicles are in operation, while 6 vehicles operate during the summer session. Annual ridership for the USC Shuttle service is approximately 212,000 trips, which averages approximately 1,100 trips per day. The cost per student is \$24.25 per semester for the Shuttle bus pass.

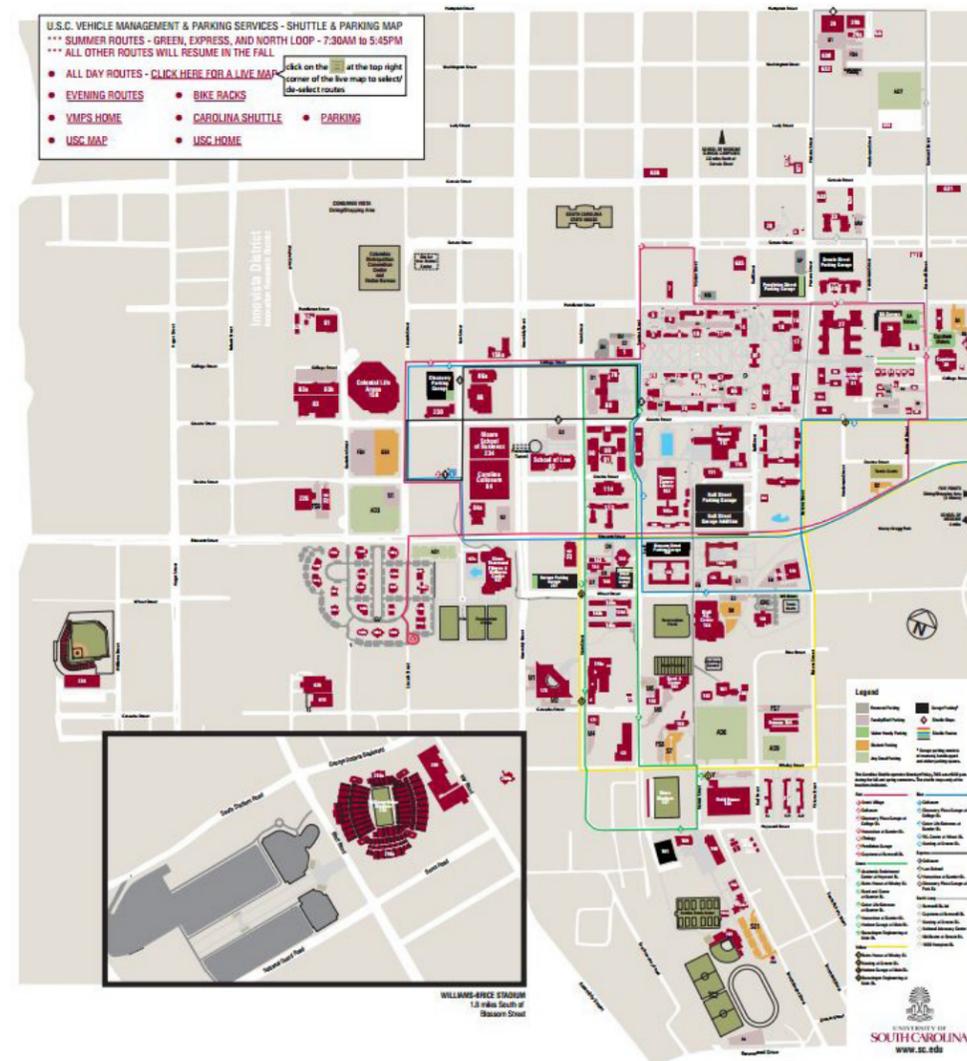
The USC Shuttle currently uses the NextBus software to display current and live information where the bus is located on the six routes. An example for the Blue Route is: <http://www.nextbus.com/googleMap/?a=usc&r=blue>. USC Shuttle

management has a goal to advance technology for the Shuttle service, which includes:

- Scheduling and dispatch software to improve route efficiencies
- Fuel management system that would upgrade the existing GasBoy software that has been in place for many years

- Maintenance software, compatible with the Fuel Management and the Scheduling software to ensure efficient tracking of required operational and maintenance data

All USC Shuttle vehicles are wheelchair accessible.





## INTERCITY SERVICES

### Bus:

South Carolina is served by two (2) Class A intercity bus carriers, Greyhound Bus Lines and Southeastern Stages. The city of Columbia and Fort Jackson are stops for both carriers. The intercity bus stop is located at 2015 Gervais Street, near Laurens Street, in downtown Columbia and at Fort Jackson. The downtown bus station should have adequate pedestrian amenities, along with accessible pathways to and from the facility.

### Intercity Rail:

Intercity rail transportation, particularly high speed rail service, has a greater potential than intercity bus to significantly impact how South Carolina residents and visitors travel between cities in the future, due to the reduced travel times, level of comfort, and direct service. One key to integration of intercity bus service is to connect patrons to high-speed rail service, which extends the reach of the high speed rail corridor.

Although there is not a funded national program for the actual construction of high-speed rail passenger corridors, the United States Department of Transportation (USDOT) has designated a network of corridors for the development of high-speed rail service in this country. These corridors are generally focused on regional trips that could be competitive with commercial air service from a schedule standpoint. To date, only small amounts of Federal funding have been provided, adequate only for studies. South Carolina is a member of the Southeast High Speed Rail Coalition, along with its neighbors, North Carolina, Georgia, Florida and Virginia. Two corridors that pass through South Carolina have been adopted as part of the Southeast High Speed Rail Coalition plan. These corridors were added to the Southeast Corridor network designated by the USDOT as future high-speed rail passenger routes.

The provision of a high-speed rail station in Columbia with connections to/from other urban activity centers via rail or bus would be very important for access to and from the Central Midlands region. Although not categorized as intercity passenger rail, the Central Midlands Council of Governments has analyzed at a preliminary level the feasibility and viability of regional commuter rail in several corridors, extending from Columbia to Camden, Newberry and Batesburg-Leesville. The COG also studied the possibility of a connecting rail service to high-speed rail via either Spartanburg or Charlotte.

<http://www.sehsr.org/history.html>

As the possibility of high-speed rail becomes a reality for the Midlands, appropriate planning of transit route connections, bicycle and pedestrian facilities should be incorporated into the process.

### Passenger Rail: Amtrak

The Amtrak passenger rail station is located at 850 Pulaski Street, near College Street, southeast of the downtown area. The Silver Star provides service through Columbia, from New York City, Tampa to Miami, Florida. In 2013, the Columbia station recorded 36,349 boardings and alightings, the third busiest in South Carolina, behind Charleston, and Florence.

The Amtrak station should continue to incorporate bicycle, pedestrian, and transit facilities into future improvements.





## COORDINATION OF TRANSIT SERVICES

Over the past 10 years, there has been a strong national emphasis for livable communities that provide a range of transportation choices available to all residents within the community, including transit, walking, and bicycling. The above transit services within Columbia and surrounding areas offer transportation options to residents. Building upon these existing systems is a goal for many agencies in the area.

The state of coordination among the transit providers is present, but limited within the community.

- The COMET has bicycle racks on all buses, which has been a priority for the agency for several years. New buses ordered by The COMET buses will have racks for three bikes.
- USC does not have bike racks on buses, but does have many bicycle racks located on campus to accommodate student and faculty bike riders. Future buses should include bicycle racks on the front of the vehicles to accommodate the high usage of bicycles on campus. USC should continue to provide bicycle racks around campus to accommodate the bicycle mode share.
- The COMET, in coordination with USC, began in August 2014 the Garnet route, which provides service every 20 minutes from the student complexes on Bluff Road to the USC campus. Currently the apartment complexes on Bluff Road provide small shuttle vans for USC students to/from campus. Over the next year, The COMET and USC will continue to work together for future funding of this route.
- The COMET began in August 2014 more frequent service in the core downtown from the Downtown Transit Center to the USC campus. The goal of the reconfiguration of routes is to provide convenient and

frequent service to downtown employees, students, and staff.

- Local government agencies involved in the High Speed Rail initiatives continue to recognize the necessary link between bus and rail services for the future.
- The COMET has approximately 900 bus stops located across Columbia. One goal of the agency is to have accessibility at all bus stops. This goal will improve accessibility to pedestrian facilities within the community.





## Bicycle and Pedestrian Access to Transit in Columbia

Every transit trip begins with a walking or bicycling trip. Transit users must find one way or another to reach their transit stop and to complete the final leg of their journey to their destination (often referred to as the “last mile”). Transit is a critical link in a truly multi-modal network and through providing safe and convenient pedestrian and bicycling access to transit, Columbia can increase safety, accessibility, and attractiveness of all of these modes.

### BICYCLE ACCESSIBILITY

High activity transit routes that are linked with existing bicycle facilities and priority corridors for bicycling improvements present the greatest opportunity for encouraging bike-and-bus multi-modal trips. Through the existing conditions analysis of this planning process, the project team identified the following downtown areas as target areas for creating and improving bicycling access to transit:

- USC campus area
- Assembly Street
- Taylor, between Benedict College and Finlay Park

Other areas for priority improvements of bicycling access to The COMET transit services include:

- East: Leesburg Road at Semmes Road
- South: Shop Road and Bluff Road at S. Beltline Blvd
- North: River Drive, east of the Broad River
- North: Columbia College at N. Main and Fairfield Roads
- Northeast: Farrow Road near Wilson Blvd
- Northwest: Broad River Road at Lake Murray Blvd

Providing bicycle parking and on-bus bicycle storage are critical improvements that must occur for bike-and-bus multi-modal trips to be feasible for the average transit user. Bicycle parking needs and recommendations are discussed in section 4 of this chapter and in the Bicycle Parking Plan of this Master Plan. A summary of bike-on-bus needs is included below:

- Bike racks are available on the front of all The COMET buses and bicycles are also allowed onboard. Each month, The COMET has approximately 200 bikes loaded on the bus bike racks. Route 101, Route 15, and Route 16 have the highest use of bicycle rack usage, as reported in March 2014. The Downtown Transit Station does not have existing facilities for bicycle parking; therefore, passengers will secure bicycles on sign posts or along the fence for safety.
- The Carolina Shuttle (USC) fleet currently does not have mounted bicycle racks on buses. All future procured buses should include bicycle racks on the buses. Many bicycle racks and benches are available to USC faculty and students across the campus. Future facility improvements should continue to coordinate bicycle racks and major USC Shuttle bus stops.

Both The COMET and the Carolina Shuttle should invest in 3-mount bicycle racks on buses to meet current demand and to ensure that bike-and-bus multi-modal trips are a consistent and reliable option for transit users. This is identified as a goal within The COMET’s current planning efforts and would positively impact bicycle access to the entire system.

## ADA AND PEDESTRIAN ACCESSIBILITY

A number of factors impact pedestrian - and in particular ADA - accessibility to the transit network. The following statistics provide a snapshot of accessibility needs throughout The COMET system, based on The COMET’s most up-to-date field-collected data:

**Boarding & Alighting Areas:** A total of 121 stops, or 14 percent of all stops, need a boarding and alighting (b&a) area. B & A is a basic provision for accessing transit. It not only provides a safe area for waiting away from traffic, but is also a federal mandate for ensuring ADA accessibility of transit. According to the U.S. Access Board, the following dimensions define an accessible B & A area (note that compliance with dimensions is required to the extent construction specifications are within a public entity’s control):

*810.2.2 Dimensions. Bus boarding and alighting areas shall provide a clear length of 96 inches (2440 mm), measured perpendicular to the curb or vehicle roadway edge, and a clear width of 60 inches (1525 mm), measured parallel to the vehicle roadway. Public entities shall ensure that the construction of bus boarding and alighting areas comply with 810.2.2, to the extent the construction specifications are within their control.*

**Sidewalk Access:** 583 existing transit stops have sidewalk access. This equates to approximately 34 percent of transit stops having no sidewalk access. Transit users walking to a transit stop without a sidewalk are often relegated to a drainage ditch or walking within the roadway travel lane. The safety of disabled transit users is further comprised.

**Shelters & Benches:** Only 25 of The COMET transit stops, or 2.8 percent, have a shelter. Approximately 10 percent, or 86, of The COMET’s transit stops have benches.

**Lighting:** A total 385 of The COMET transit stops, or 44 percent, have sufficient lighting (either through street lights of adjacent building lighting). A nearly equivalent number of stops, 43 percent, have no lighting.



## EXTERNAL FACTORS FOR CONSIDERATION

Lexington County is the neighbor to the west of Richland County and despite having a substantial population, it has limited transit service. Mainly rural and suburban with no urban core, it has a growing retail corridor along the confluence of two main highways that provides the majority of economic investment, mainly in the way of retail stores and service economy jobs. New industrial parks have opened and attracted major employers such as Amazon.com and Nephron Pharmaceuticals. As Lexington County grows, new opportunities for transportation, especially public transit may become more critical.

Lexington County is a primary growth opportunity for The COMET, as it may have ample demand for a future park-and-ride facility into the metro core of the City and has tremendous opportunity to grow rural transportation services.

Both Richland and Lexington counties have extensive rural areas; The COMET's ability to deliver low-cost and highly flexible transportation services in these areas will be of critical importance over the next five years. The COMET has already deployed pilot flex zones in one rural area and will implement a new flex/fixed route combination in another area, establishing distinct service models that can be used across the Midlands region.

The City straddles the two counties, with only a very small portion of the City in Lexington County.

As the capital city of South Carolina and home to the University of South Carolina, Columbia's primary employers are: health care providers, financial and legal services, economic development, government employers, and education and research facilities. Columbia has repositioned itself as a cultural community over the past five years, working to revitalize its downtown and attract new development. A substantial number of residential developments are underway in the downtown core, which will be supported by new USC housing complexes. The new influx of residents will increase downtown employment and retail and spur increased density for the

downtown area. Millennial-age residents are gravitating to downtown due the low cost of living, proximity to campus and growing availability of downtown activities.

The COMET's goal for the next 3 years focuses on suburban zones, creating circulators in development areas to move people within defined service areas and connecting to high-capacity corridors. Over the next three years, The COMET will identify park and ride services, which provide an opportunity for bicycle and pedestrian trail coordination.

Transit enhancements are a major emphasis for The COMET and for USC Shuttle services, which includes benches, shelters, trash cans, 3-position bicycle racks on buses, schedule racks throughout the community, transit technology (trackers and fare payment), on-board security systems and general information. USC is currently conducting its Phase 1 Transportation Master Plan that will incorporate the multiple modes of transportation on and off campus.

An additional focus for The COMET is existing Downtown Transit Center, which is leased from the City for a nominal rate. The Transit Center is outfitted with a contractor-staffed information/pass sales desk, public restrooms, a climate controlled waiting area with seating, digital announcement & information boards for customers, and real-time trip arrival information. The Transit Center is one of the key challenge areas for The COMET. It is currently a social gathering place for a variety of non-transit activities.

The Transit Center is also a challenge operationally, as it lacks on-street boarding and alighting space. The facility is on a corner property, surrounded by businesses, parking lots and driveways, making it impossible to load more than a few buses at a single time. As the system grows, The COMET is looking for other sites to accommodate the service. Until a permanent large-scale facility is constructed, this will be the primary transit hub for downtown. The COMET has already begun a transit

center location study, partnering with the Central Midland Council of Governments (CMCOG) to conduct an analysis of the downtown core. Step one is identifying the transit service corridors, followed by identifying all attainable property within that area. Second is identifying, from among those properties, all locations that can support a multi-modal center. Third is feasibility analysis: conducting stakeholder meetings and receiving input from neighboring businesses. Finally, a list of prioritized properties, in order of attainability based on support from neighboring businesses and price, will be presented to move forward. The study shall also look at potential park-and-ride locations, as well as satellite transfer points in suburban transit-friendly areas. Each of these sites will consider bicycle and pedestrian access for Columbia residents.





## Multimodal Best Practices and Policies

An initial step for developing the transportation network in Columbia for all modes is to have policies in place to support development decisions in the future. Current research also provides best practices used across the country for bicycle and pedestrian access to transit facilities. One such study is the Improvement to Transit access for Cyclists and Pedestrians, Toolkit of Non-Motorized Infrastructure Best Practices, February 2012. The study identifies the following recommendations:

- Shelter: Providing a shelter at all transit stops and stations allows commuters protection from sun and from inclement weather. Shelters should be established outside of the pedestrian walking zone and with sufficient room for bus wheelchair lifts to load and unload passengers. If there is not adequate space to install a dedicated shelter, there should be awnings or overhangings on the surrounding buildings for commuters to stand beneath.
- Seating: Benches or seats should be provided at all transit stops and stations for commuters to rest while waiting for the bus or train. Elderly and disabled passengers often have difficulty standing for long periods. Seating should be installed within close proximity of transit stops and stations and under the provided shelter if feasible.
- Wayfinding Signage: Wayfinding signage at transit stops and stations helps users navigate the area and locate amenities, such as bicycle storage areas and passenger loading zones. Providing passengers with this information improves access to transit by removing barriers of potential users.
- Bicycle Storage: Providing bicycle storage at transit stops and stations allows commuters to combine their trips with greater convenience. Short-term bicycle racks are appropriate for bus stops where storage space in the public right-of-way is limited. Long-term storage facilities, such as lockers or enclosed storage rooms, should be provided at train stations in addition to bicycle racks for commuters that require all-day storage. Both

short- and long-term parking facilities should be located near loading zones and, when possible, in view of station attendants. Racks cost approximately \$200 per rack and lockers cost approximately \$2000-\$3000 per locker to install.

The following provide examples of effective policies supporting coordination of transit, bicycle and pedestrian modes.

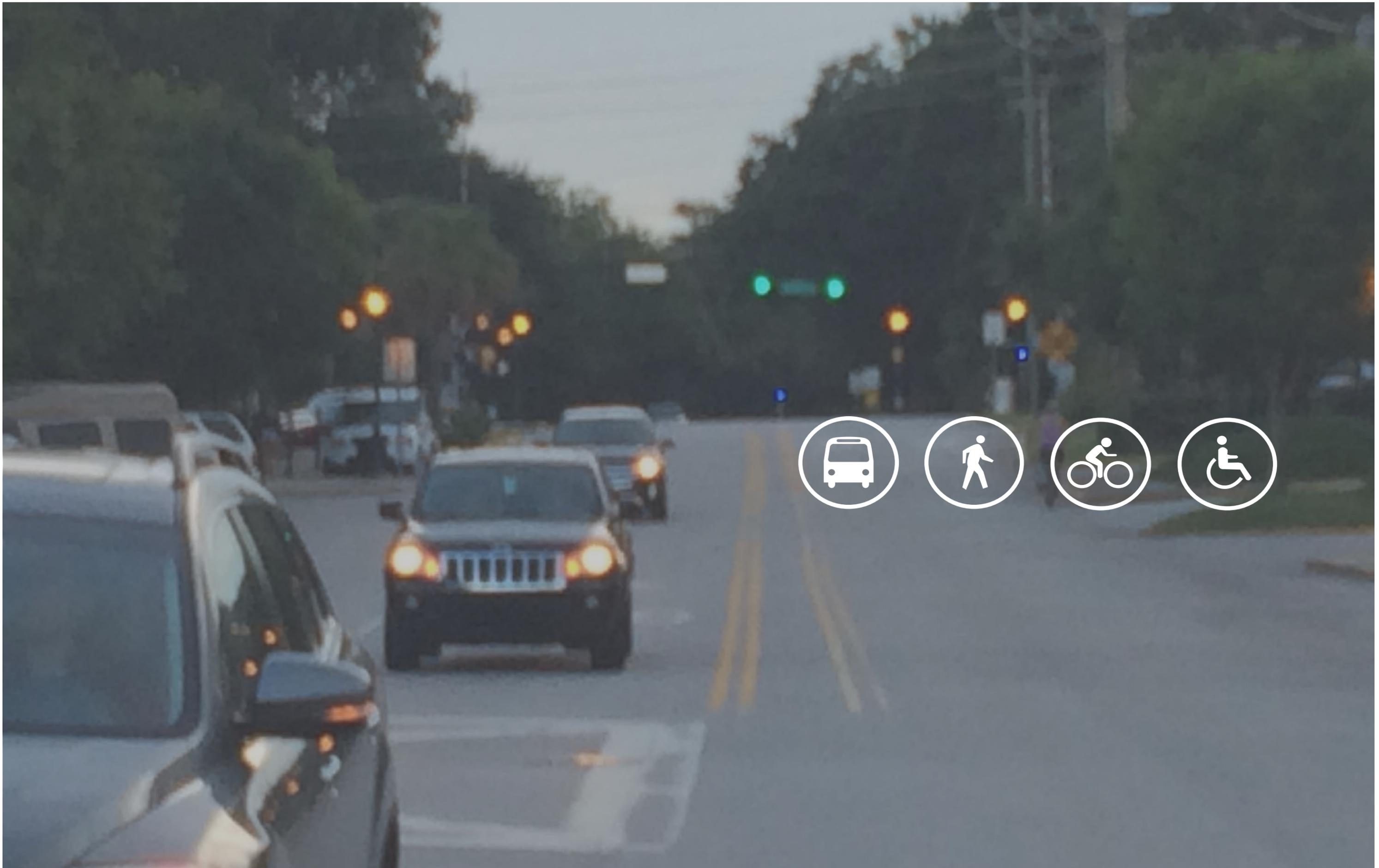
- Promote convenient intermodal connections between all elements of the Columbia transportation network, including a transit system that incorporates easy bike and ped access.
- Promote transportation improvements that support the redevelopment of lower-density, auto-dominated arterials to become more pedestrian and transit compatible urban transportation corridors.
- Promote the development of local street patterns and pedestrian routes that provide access to transit services within convenient walking distance of homes, jobs, schools, stores, and other activity areas.
- Develop a coordinated network of facilities for pedestrians and bicycles which provides effective local mobility, accessibility to transit services and connections to and between centers.
- Support opportunities to redevelop the road system as multimodal public facilities which accommodate the needs of pedestrians, bicycles, transit, automobiles, and trucks.
- Provide opportunities for creation of town centers in urban areas that: (1) serve as focal points for neighborhoods and major activity areas; (2) include a mix of land uses, such as pedestrian-oriented commercial, transit stops, recreation and housing; and (3) encourage transit use, biking and walking through design and land use density.
- Support the transformation of low-density auto-oriented transportation corridors to higher-density mixed-use urban transportation corridors when redevelopment would not

detract from centers or compact communities. Corridors that offer potential include those that are located near significant concentrations of residences or employment, and have the potential to support frequent transit service and increased pedestrian activity. Encourage the redevelopment of these arterials through:

- Addition of transit facilities, pedestrian-oriented retail, offices, housing, and public amenities,
- Building design and placement, street improvements, parking standards, and other measures that encourage pedestrian and transit travel, and
- Provision of pedestrian and bicycle connections between transportation corridors and nearby neighborhoods.

As the Midlands region continues to grow over the next decade, providing a viable transportation network for all modes becomes critical. The data included in this report provide guidance for policy and decision makers to improve transportation for all modes, including bicycle, transit and pedestrian connections.







# APPENDIX G: BIKE SPACE ANALYSIS

## Introduction

A critical component of the bikeway network analysis was the use of Alta Planning + Design's 'BikeSpace' model. BikeSpace is an analysis tool that excels at quickly identifying corridors with the greatest potential for striping dedicated bicycle facilities. It does not make recommendations for non-delineated bikeway treatments such as shared lane markings, bicycle boulevards, or signed bike routes. Assuming acceptable minimum widths for each roadway element, the model analyzes a number of roadway characteristics to retrofit bike lanes on each surveyed roadway segment. Factors used in this analysis include:

- Current roadway width
- Raised or painted median
- Number and width of travel lanes
- Presence and number of turn lanes and medians
- Location and utilization of on-street parking
- Presence of roadway shoulder

In some cases, the retrofit is simple and only requires the addition of a bike lane in readily available roadway space. Other corridors may be more challenging and require a tradeoff to stripe bike lanes. Though the model makes recommendations for bike lanes, its outcomes should not be considered a replacement for a striping plan. The model is useful in its ability to clearly illustrate locations where projects can be completed easily and locations where adding bike lanes may be challenging. The decision to narrow or eliminate a travel lane, or remove on-street parking will need to be carefully weighed against the benefits of adding bike lanes. The City of Columbia will need identify the impacts of altering the roadway's existing condition and, as with any roadway retrofit, conduct careful field analyses and detailed engineering studies prior to striping bike lanes.

Retaining a uniform roadway configuration throughout a corridor can simplify travel for motorists and cyclists alike, creating a safer and more comfortable experience for all users. It is recognized that acceptable street characteristics vary by jurisdiction. For the purposes of the model, acceptable minimum roadway dimensions were based on local practices and set at the following:

- Travel lane width: 11 feet
- Right turn lane width: 10 feet
- Left or Center Turn Lane width: 10 feet
- Parking lane width: 7 feet
- Bike lane minimum width: 5 feet
- Buffered bike lane minimum width: 7 feet
- 1-way cycletrack minimum width: 9 feet
- 2-way cycletrack minimum width: 10 feet
- Threshold ADT for 5 or 4 to 3 lane road diet: 18,000 ADT



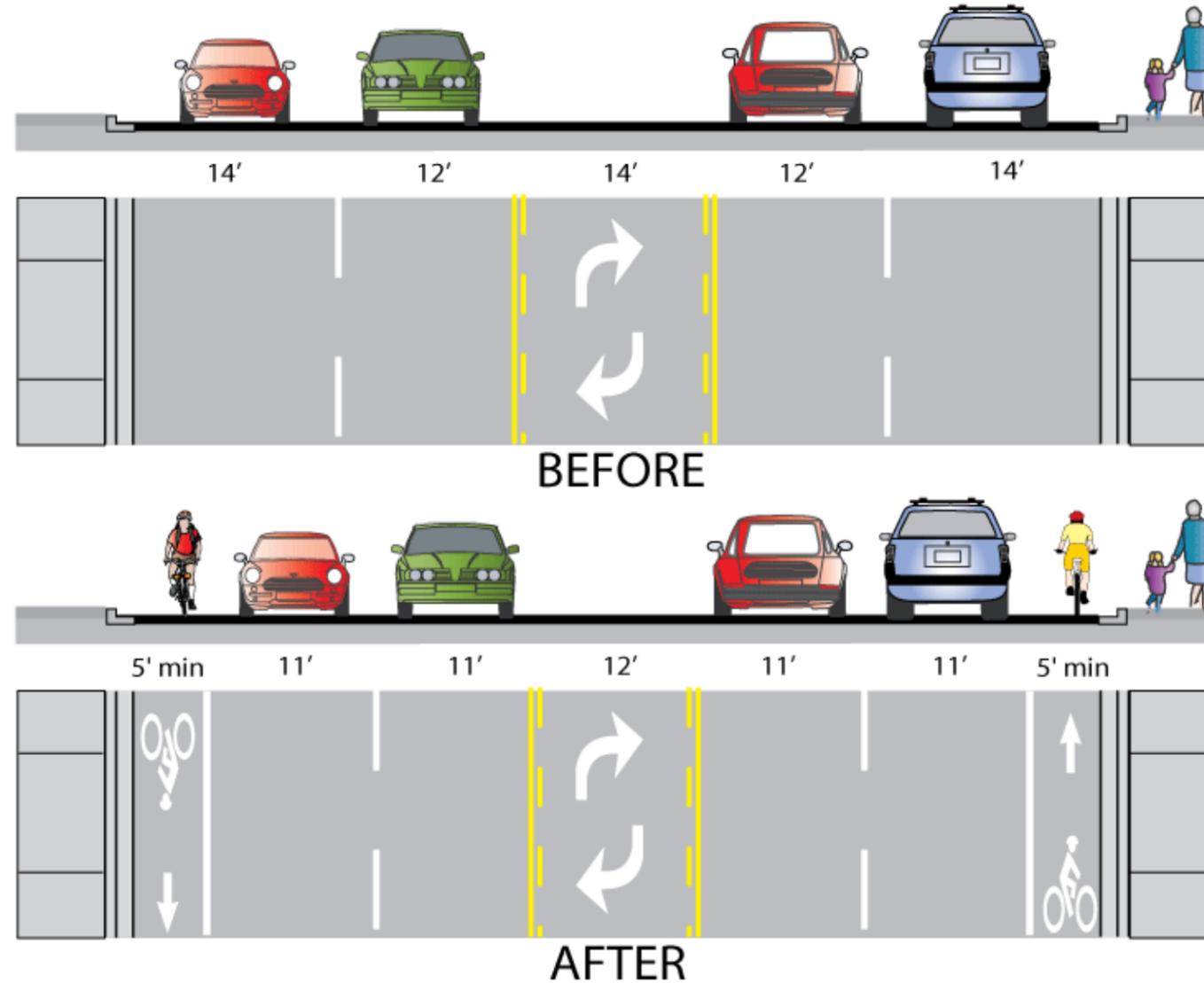
## BikeSpace Outcomes

Analysis corridors were those corridors where delineated on-street bicycle facilities (bicycle lanes, buffered bike lanes, and cycle tracks) had been recommended as a part of this planning effort. BikeSpace results were used to help determine the near-term feasibility of proposed improvements and were incorporated into project prioritization.

In many instances the BikeSpace model recommends multiple implementation strategies for a given roadway segment. To determine the appropriate treatment, the model organizes its recommendations in order of the most preferred facility type. The order uses the first strategy (below) for a given segment of roadway and is given priority over succeeding strategies. Not all of the below options were possible strategies for all segments, but on many segments multiple strategies could be used to implement bike lanes. Each of the specific treatment recommendations is defined in detail below.

**Bike Lanes Fit Within Existing Roadway Configuration** – In this option, enough surplus road space exists to simply add the bike lane stripes and stencils without impacting the number of lanes or configuration of the roadway. This is by far the most desirable and easily implemented option available.

**Reconfigure Travel Lanes and/or Parking Lanes** – In this option, bike lanes can be added by simply adjusting wide travel lanes or parking lanes within the established minimums presented above. No reduction to the number of travel lanes or available parking is needed.



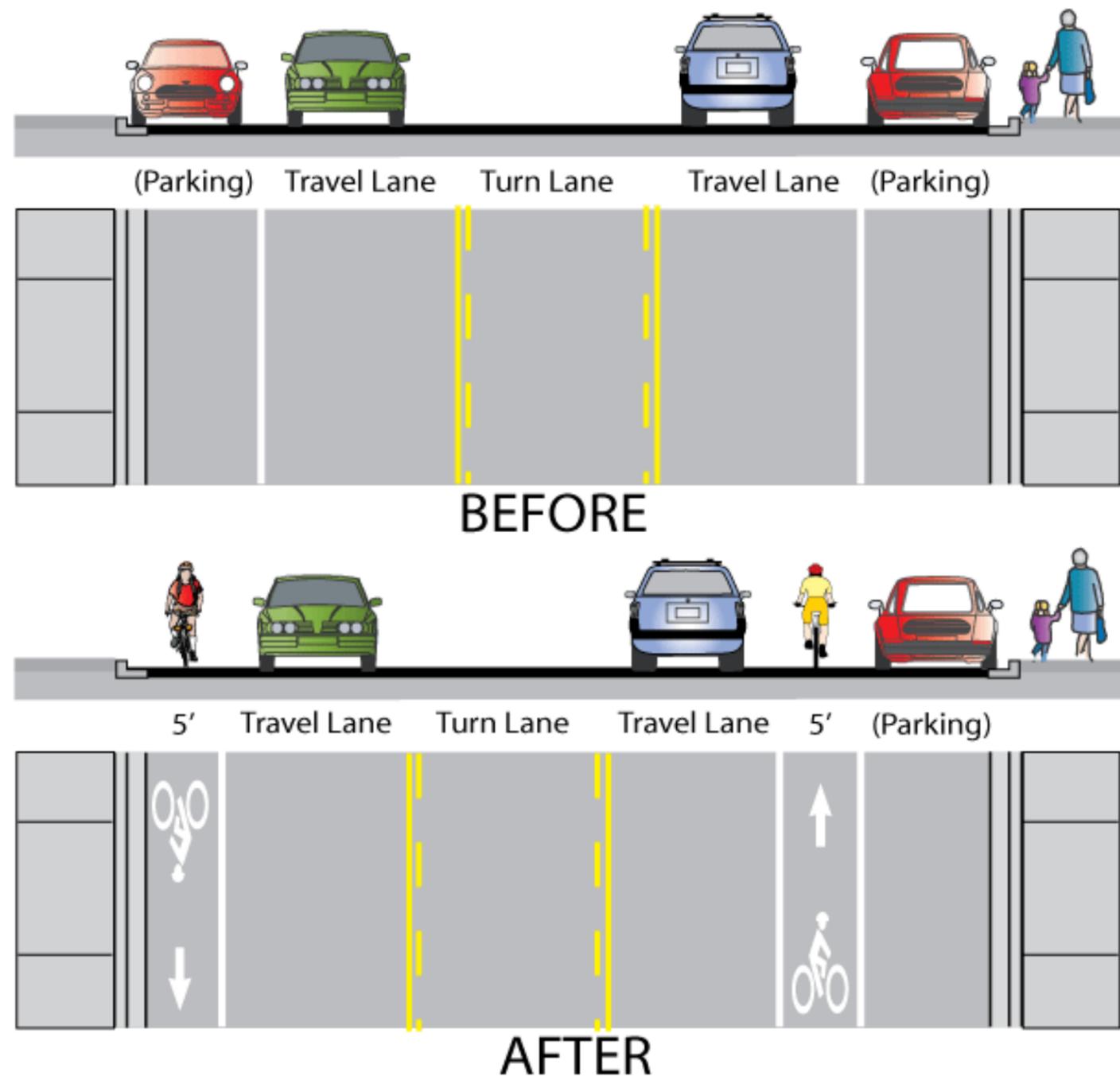


**Candidate for '5 to 3' or '4 to 3' Road Diet** – In this option, a reconfiguration of the existing travel lanes may be necessary. In areas with two travel lanes in either direction, it may make sense to remove two travel lanes and use the spare roadway width to stripe a center turn lane and two 5' bike lanes. On roads with two travel lanes in each direction and a center turn lane, it may make sense to remove two travel lanes and use the spare roadway width to stripe buffered bike lanes or a cycle-track (either one-way or two-way). This treatment may not be appropriate on roads with high ADT.

**Add Additional Pavement Width and Stripe Bike Lanes** – In this option, it was determined that additional right-of-way was available along the corridor. Where no curbs exist along the segment it may be possible to pave a new roadway shoulder and stripe bike lanes

**Remove On-Street Parking** – In this option, on-street parking may be removed on one side of the road. However this on-street parking configuration may currently be utilized in residential or commercial areas. This option is seen as a less desirable option and may only be considered as a last resort in short sections to maintain bike lane continuity. A full parking study should be conducted to determine if excess parking capacity exists before making changes to the roadway configuration.

**Bike Lanes Will Not Fit** – In this last case, the existing roadway geometry will not allow for the addition of bike lanes. Either a bike route or major reconstruction of the roadway may be necessary for bikeway continuity.





## General Outcomes

The project team incorporated the BikeSpace analysis into the recommended bikeway network GIS files provided to the City and utilized this information in prioritizing the recommended bicycle network. This information can also be utilized to help determine an implementation strategy for individual projects, although detailed studies and engineering judgment should always be used in project development. The following table explains how to interpret the BikeSpace data within the recommendations GIS file attribute table. As discussed previously, the table presents all potential implementation strategies. However, these are ranked in terms of ease of implementation from easiest/least expensive to most difficult/most expensive. Therefore it is recommended that the implementation strategy that appears first in the list be the most highly considered.

**TABLE 32 - BIKESPACE GIS ATTRIBUTE LEGEND**

GIS Attribute Heading	Attribute Name	Potential Values	Notes
Width_BL	Is there sufficient width to add bike lanes?	0 = no, 1 = yes	
Need_BL	Need bike lanes based on volume?	0 = no, 1 = yes	
Restr_Ex_Ln	Restripe existing outside lanes and add bike lanes	0 = no, 1 = yes	Most preferred implementation strategy (least cost/easiest to implement)
Reconfig_Wdth	Reconfigure lane or parking widths and add bike lanes	0 = no, 1 = yes	
Rd_Dt_Can	Candidate for Road Diet	0 = no, 1 = yes	Road diets are generally 4 or 5 lane roads reduced to 3 lanes
No_Lns_Rem	Number of lanes remaining after road diet	value = number of lanes	
Rem_Park	Bike lane implementation would require removal of parking lanes	0 = no, 1 = yes	
Add_Wdth	Bike lanes will not fit within the existing roadway. Add additional roadway width and stripe bike lanes.	0 = no, 1 = yes	Least preferred implementation strategy (most cost/most difficult to implement)

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# EVERY TRANSIT-USER IS A PEDESTRIAN AND/OR BICYCLIST

Pedestrian and bicycle access to transit stops is critical to the safety and convenience of transit users in Columbia. Share your thoughts on how to create more transit stops in Columbia that provide safe and comfortable access for pedestrians and bicyclists.



A LACK OF SIDEWALKS, ADA-ACCESSIBLE FEATURES, OR OTHER KEY ELEMENTS OF A CONVENIENT AND OVERALL



TRANSIT STOPS/ROUTES IN NEED OF BETTER AND BICYCLE ACCESS?

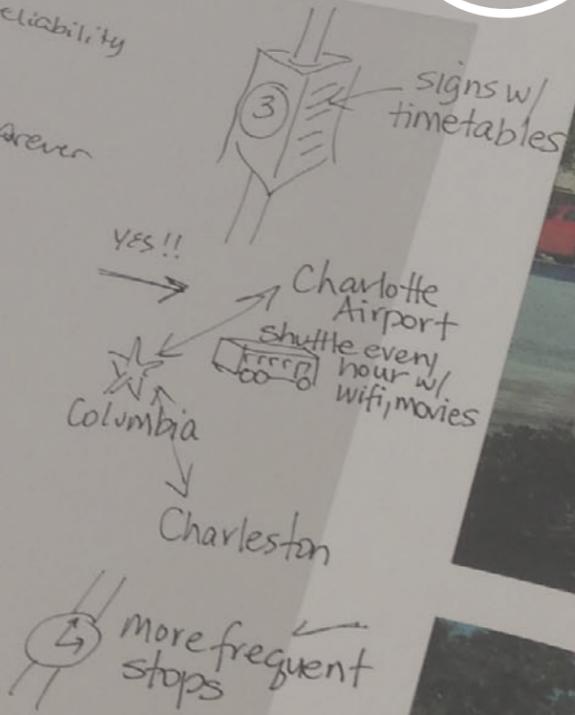
WHAT WOULD MAKE TRANSIT IN COLUMBIA MORE CONVENIENT AND PRACTICAL FOR YOU?



BICYCLE RACKS ON BUSES, WHEELCHAIR ACCESSIBLE FEATURES ARE CRITICAL TO BEING PRACTICAL, AND INVITING

*How do I connect residential?*  
*to connect our urban core... these*  
*lines, the more core streets should*  
*run/keep intersecting*  
*unsafe. Could create*  
*it. Fix it, please!*

Cheaper & non-stop buses to Charlotte & Charleston  
 Better communication of bus/shuttle times & ensure reliability  
 Bus shelters  
 more frequent stops.  
 CUES that come more frequently so you don't wait forever for the next bus.  
 Shade - @ Stops and sidewalks to stops  
 Many stops don't feel safe -- sketchy areas  
 Smart streets - sidewalks + protected bike lanes  
 neighborhood connections to Greenway + major East West North South bike routes  
 Timeliness! #8 is always late  
 Enforcing existing laws w/regard to sharing the road.  
 FREQUENT SCHEDULES FOR THE MALLS!  
 Routes/Stop West of Assembly St.  
 More frequent than hourly.





# APPENDIX H: POTENTIAL IMPLEMENTATION FUNDING SOURCES

## Introduction

This report outlines sources of funding for pedestrian and bicycle projects in Columbia, SC. When considering possible funding sources for the Columbia pedestrian and bicycle network, it is important to consider that not all construction activities will be accomplished with a single funding source. Pedestrian and bicycle funding is administered at all levels of government, federal, state, local and through private sources. The following sections identify potential matching and major funding sources, and the criteria for pedestrian and bicycle projects and programs.

**The Implementation Chapter** of this Plan provides further guidance regarding the recommended structure for Columbia County's community-driven efforts to generate volunteer investment and secure local private and public sector funds for implementation.

## Federal Funding Sources

Federal funding is typically directed through state agencies to local governments either in the form of grants or direct appropriations, independent from state budgets. Federal funding typically requires a local match of 20%, although there are sometimes exceptions, such as the recent American Recovery and Reinvestment Act stimulus funds, which did not require a match.

The following is a list of possible Federal funding sources that could be used to support construction of many pedestrian and bicycle improvements. Most of these are competitive, and involve the completion of extensive applications with clear documentation of the project need, costs, and benefits. It should be noted that the FHWA encourages the construction of pedestrian and bicycle facilities as an incidental element of larger ongoing projects. Examples include providing paved shoulders on new and reconstructed roads, or building sidewalks, on-street bikeways, trails and marked crosswalks as part of new highways.

The FHWA has recently put together a table that outlines pedestrian and bicycle funding opportunities by improvement type within the US Department of Transportation, Federal Transit Administration and Federal Highway Funding that is helpful as a reference supplement to this chapter: [http://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/funding/funding\\_opportunities.cfm](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.cfm)

### MOVING AHEAD FOR PROGRESS IN THE TWENTY-FIRST CENTURY (MAP-21)

The largest source of federal funding for bicyclists and pedestrians is the US DOT's Federal-Aid Highway Program, which Congress has reauthorized roughly every six years since the passage of the Federal-Aid Road Act of 1916. The latest act, Moving Ahead for Progress in the Twenty-First Century (MAP-21) was enacted in July 2012 as Public Law 112-141. The Act replaces the Safe, Accountable, Flexible, Efficient

Transportation Equity Act – a Legacy for Users (SAFETEA-LU), which was valid from August 2005 - June 2012.

MAP-21 authorizes funding for federal surface transportation programs including highways and transit for the 27 month period between July 2012 and September 2014. It is not possible to guarantee the continued availability of any listed MAP-21 programs, or to predict their future funding levels or policy guidance. Nevertheless, many of these programs have been included in some form since the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991, and thus may continue to provide capital for active transportation projects and programs.

In South Carolina, federal monies are administered through the South Carolina Department of Transportation (SCDOT) and Metropolitan Planning Organizations (MPOs). Most, but not all, of these programs are oriented toward transportation versus recreation, with an emphasis on reducing auto trips and providing inter-modal connections. Federal funding is intended for capital improvements and safety and education programs, and projects must relate to the surface transportation system.

There are a number of programs identified within MAP-21 that are applicable to pedestrian and bicycle projects. These programs are discussed below.

*More information:* <http://www.fhwa.dot.gov/map21/summaryinfo.cfm>



## TRANSPORTATION ALTERNATIVES

Transportation Alternatives (TA) is a new funding source under MAP-21 that consolidates three formerly separate programs under SAFETEA-LU: Transportation Enhancements (TE), Safe Routes to School (SR2S), and the Recreational Trails Program (RTP). These funds may be used for a variety of pedestrian, bicycle, and streetscape projects including sidewalks, bikeways, multi-use paths, and rail-trails. TA funds may also be used for selected education and encouragement programming such as Safe Routes to School, despite the fact that TA does not provide a guaranteed set-aside for this activity as SAFETEA-LU did. South Carolina's Governor did not opt-out of the Recreational Trails Program funds, ensuring that dedicated funds for recreational trails continue to be provided as a subset of TA. MAP-21 provides \$85 million nationally for the RTP.

Complete eligibilities for TA include:

**1. Transportation Alternatives** as defined by Section 1103 (a) (29). This category includes the construction, planning, and design of a range of pedestrian and bicycle infrastructure including "on-road and off-road trail facilities for pedestrians, bicyclists, and other active forms of transportation, including sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic calming techniques, lighting and other safety-related infrastructure, and transportation projects to achieve compliance with the Americans with Disabilities Act of 1990." Infrastructure projects and systems that provide "Safe Routes for Non-Drivers" is a new eligible activity.

For the complete list of eligible activities, visit: [http://www.fhwa.dot.gov/environment/transportation\\_enhancements/legislation/map21.cfm](http://www.fhwa.dot.gov/environment/transportation_enhancements/legislation/map21.cfm)

**2. Recreational Trails.** TA funds may be used to develop and maintain recreational trails and trail-related facilities for both active and motorized recreational trail uses. Examples of trail uses include hiking, bicycling, in-line skating, equestrian use,

and other active and motorized uses. These funds are available for both paved and unpaved trails, but may not be used to improve roads for general passenger vehicle use or to provide shoulders or sidewalks along roads.

Recreational Trails Program funds may be used for:

- Maintenance and restoration of existing trails
- Purchase and lease of trail construction and maintenance equipment
- Construction of new trails, including unpaved trails
- Acquisition or easements of property for trails
- State administrative costs related to this program (limited to seven percent of a state's funds)
- Operation of educational programs to promote safety and environmental protection related to trails (limited to five percent of a state's funds)

Under MAP-21, dedicated funding for the RTP continues at FY 2009 levels – roughly \$85 million annually. South Carolina will receive \$1,211,220 in RTP funds per year through FY2014. Grant applications are typically due in April of 2013. More info on administration of the Recreational Trails Program in South Carolina can be found through the following site: <http://www.scprt.com/our-partners/grants/trails.aspx>

**3. Safe Routes to School.** The purpose of the Safe Routes to Schools eligibility is to promote safe, healthy alternatives to riding the bus or being driven to school. All projects must be within two miles of primary or middle schools (K-8).

Eligible projects may include:

- **Engineering improvements.** These physical improvements are designed to reduce potential pedestrian and bicycle conflicts with motor vehicles. Physical improvements may

also reduce motor vehicle traffic volumes around schools, establish safer and more accessible crossings, or construct walkways, trails or bikeways. Eligible projects include sidewalk improvements, traffic calming/speed reduction, pedestrian and bicycle crossing improvements, on-street bicycle facilities, off-street pedestrian and bicycle facilities, and secure bicycle parking facilities.

- **Education and Encouragement Efforts.** These programs are designed to teach children safe bicycling and walking skills while educating them about the health benefits, and environmental impacts. Projects and programs may include creation, distribution and implementation of educational materials; safety based field trips; interactive bicycle/pedestrian safety video games; and promotional events and activities (e.g., assemblies, bicycle rodeos, walking school buses).
- **Enforcement Efforts.** These programs aim to ensure that traffic laws near schools are obeyed. Law enforcement activities apply to cyclists, pedestrians and motor vehicles alike. Projects may include development of a crossing guard program, enforcement equipment, photo enforcement, and pedestrian sting operations.

In South Carolina, SRTS projects utilizing the remaining SAFETEA-LU funding require no matching funds by the local implementing agency. However, all SRTS projects moving forward that utilize MAP-21 TA funding require a 20% monetary match.

**4. Planning, designing, or constructing roadways within the right-of-way of former Interstate routes or divided highways.**

At the time of writing, detailed guidance from the Federal Highway Administration on this new eligible activity was not available.



Average annual funds available through TA over the life of MAP-21 equal \$814 million nationally, which is based on a 2% set-aside of total MAP-21 authorizations. TA apportionments for 2013 and 2014 were slightly around 2.8 million for urbanized areas with populations more than 200,000 people. It is likely that 2015 funding will be substantially less due to a smaller overall apportionment of MAP-21 funding (<http://www.fhwa.dot.gov/MAP21/funding.cfm>). State DOTs may elect to transfer up to 50% of TA funds to other highway programs, so the amount listed above represents the maximum potential funding.

TA funds are typically allocated through the planning districts. Columbia's funding would come through the MPO. TA funds require a 20 percent local match and must be administered by either SCDOT or a qualified Local Public Agency (LPA).

## **SURFACE TRANSPORTATION PROGRAM (GUIDESHARE)**

The Surface Transportation Program (STP) provides states with flexible funds which may be used for a variety of highway, road, bridge, and transit projects. A wide variety of pedestrian and bicycle improvements are eligible, including on-street bicycle facilities, off-street trails, sidewalks, crosswalks, pedestrian and bicycle signals, parking, and other ancillary facilities. Modification of sidewalks to comply with the requirements of the Americans with Disabilities Act (ADA) is also an eligible activity. Unlike most highway projects, STP-funded pedestrian and bicycle facilities may be located on local and collector roads which are not part of the Federal-aid Highway System. Fifty percent of each state's STP funds are suballocated geographically by population. These funds are funneled through SCDOT to the MPOs in the state. The remaining 50% may be spent in any area of the state. In South Carolina, STP is known as Guideshare.

In 2014 the total amount of estimated Guideshare funding for COATS is \$10,483,916. Total STP funding in 2015 is projected to be 35% less than 2014 levels statewide, so COATS's allocation will likely drop as well. It should also be noted that these numbers are far behind projected Guideshare funding estimates in the 2009 COATS Long Range Transportation Plan (which estimates \$13,860,000 in 2014 and \$15,523,200 in 2015).

## **SOUTH CAROLINA C FUNDS**

South Carolina has a long-established program that provides funding to counties to administer projects on state and local roads. Funding for this program comes from a portion of State fuel tax revenues. Up to 75% of these funds may be used for projects on local-jurisdiction roadways, with the remainder being utilized on State-jurisdiction roadways. Bikeway and sidewalk improvements as a part of repaving or reconstruction are eligible project types. In FY 2014-2015, Richland County received \$3,355,300 for C-fund projects.

*More information on the C-fund program can be found here:*  
<http://www.scdot.org/doing/cprogram.aspx>

## **HIGHWAY SAFETY IMPROVEMENT PROGRAM**

MAP-21 doubles the amount of funding available through the Highway Safety Improvement Program (HSIP) relative to SAFETEA-LU. HSIP provides \$2.4 billion nationally for projects and programs that help communities achieve significant reductions in traffic fatalities and serious injuries on all public roads, bikeways, and walkways. Infrastructure and non-infrastructure projects are eligible for HSIP funds. Pedestrian and bicycle safety improvements, enforcement activities, traffic calming projects, and crossing treatments for active transportation users in school zones are examples of eligible projects. All HSIP projects must be consistent with the state's Strategic Highway Safety Plan.

Pedestrian and Bicycle strategies identified in the 2014 Draft SHSP include engineering bike lanes, sidewalks and shared-use paths, especially where supported by crash data, educational programs and targeted enforcement.

*Last updated in 2007, the SCDOT SHSP is located here:* [http://www.scdot.org/inside/pdfs/Multimodal/Road\\_Map.pdf](http://www.scdot.org/inside/pdfs/Multimodal/Road_Map.pdf)

## **CONGESTION MITIGATION/AIR QUALITY PROGRAM**

The Congestion Mitigation/Air Quality Improvement Program (CMAQ) provides funding for projects and programs in air quality nonattainment and maintenance areas for ozone, carbon monoxide, and particulate matter which reduce transportation related emissions. States with no nonattainment areas such as South Carolina may use their CMAQ funds for any CMAQ or STP eligible project. These federal dollars can be used to build pedestrian and bicycle facilities that reduce travel by automobile. Purely recreational facilities generally are not eligible.



## PARTNERSHIP FOR SUSTAINABLE COMMUNITIES

The Partnership for Sustainable Communities is a joint project of the Environmental Protection Agency (EPA), the U.S. Department of Housing and Urban Development (HUD), and the U.S. Department of Transportation (USDOT). The partnership aims to “improve access to affordable housing, more transportation options, and lower transportation costs while protecting the environment in communities nationwide.” It is based on five Livability Principles, one of which explicitly addresses the need for pedestrian and bicycle infrastructure (“Provide more transportation choices: Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation’s dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health”).

It is not a formal agency with a regular annual grant program. Nevertheless, it is an important effort that has already led to some new grant opportunities (including the TIGER grants). Columbia should track Partnership communications and be prepared to respond proactively to announcements of new grant programs.

*More information: <http://www.epa.gov/smartgrowth/partnership/>*

## RIVERS, TRAILS, AND CONSERVATION ASSISTANCE PROGRAM

The Rivers, Trails, and Conservation Assistance Program (RTCA) is a National Parks Service (NPS) program providing technical assistance via direct NPS staff involvement to establish and restore greenways, rivers, trails, watersheds and open space. The program only provides planning assistance. Projects are prioritized for assistance based on criteria including conserving significant community resources, fostering cooperation between agencies, serving a large number of users, encouraging public involvement in planning and implementation, and focusing on lasting accomplishments. This program may benefit trail development in Columbia and the region indirectly through technical assistance, particularly for community organizations, but is not be considered a future capital funding source.

*More information: <http://www.nps.gov/orgs/rtca/apply.htm>*

## COMMUNITY DEVELOPMENT BLOCK GRANTS

The Community Development Block Grants (CDBG) program provides money for streetscape revitalization. Federal CDBG grantees may “use Community Development Block Grants funds for activities that include (but are not limited to): acquiring real property; reconstructing or rehabilitating housing and other property; building public facilities and improvements, such as streets, sidewalks, community and senior citizen centers and recreational facilities; paying for planning and administrative expenses, such as costs related to developing a consolidated plan and managing Community Development Block Grants funds; provide public services for youths, seniors, or the disabled; and initiatives such as neighborhood watch programs.”

Trails and greenway projects that enhance accessibility are the best fit for this funding source. CDBG funds could also be used to write an ADA Transition Plans. Columbia currently regularly receives CDBG funds annually for local disbursement – 2014 award amounts totaled \$950,277.

*More information: [www.hud.gov/cdbg](http://www.hud.gov/cdbg)*

## COMMUNITY TRANSFORMATION GRANTS

Community Transformation Grants administered through the Center for Disease Control support community-level efforts to reduce chronic diseases such as heart disease, cancer, stroke, and diabetes. Active transportation infrastructure and programs that promote healthy lifestyles are a good fit for this program, particularly if the benefits of such improvements accrue to population groups experiencing the greatest burden of chronic disease.

In past years, SCDHEC has received over \$4.5 M annually in grant money from this program and has used it to fund internal position and has administered it to various programs across the state such as Eat Smart Move More!

*More info: <http://www.cdc.gov/communitytransformation/>*

## LAND AND WATER CONSERVATION FUND (LWCF)

The Land and Water Conservation Fund (LWCF) provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. Funds can be used for right-of-way acquisition and construction. The program is administered by the South Carolina Department of Parks, Recreation & Tourism as a grant program. Any Trails and Greenways Plan projects located in future parks could benefit from planning and land acquisition funding through the LWCF. Trail corridor acquisition can be funded with LWCF grants as well. This program requires a 50-50 match – applications are due in the spring.

*More information: <http://www.scprt.com/our-partners/grants/lwcf.aspx>*

## FEDERAL LANDS ACCESS PROGRAM (FLAP)

FLAP is a grant program initiated by the MAP-21 transportation bill that provides funding specifically for access on or to federal lands – this includes bicycle and pedestrian improvements. In Columbia, this could be specifically for projects that connect to Congaree Swamp National Monument Wilderness.

*Unless reauthorized, the funding for this program will expire with MAP-21, for more information on this program, refer to the following website: <http://www.efl.fhwa.dot.gov/programs/federal-lands-access.aspx>*

## EPA GREEN INFRASTRUCTURE GRANT SOURCES

The City of Columbia had a Consent Decree Order and resulting settlement with the EPA in 2013 as a result of sanitary sewer overflow and effluent limit exceedances (<http://www2.epa.gov/enforcement/columbia-south-carolina-clean-water-act-settlement>). As a result of the Order and Settlement, Columbia must assess and rehabilitate its sewer system within 12 years at a total estimated cost of \$750 million. This projected work presents opportunities for the City to address



some of its pedestrian and bicycle-infrastructure deficiencies in conjunction with both “green” roadway projects and sanitary sewer system improvements.

The EPA offers a number of grant resources that serve to improve clean water in communities such as the EPA Clean Water State Revolving Fund, EPA Clean Water Act Nonpoint Source Grant and EPA Community Action for a Renewed Environment (CARE) Grants. More information on these, and other funding sources can be found through the EPA’s website:

[http://water.epa.gov/infrastructure/greeninfrastructure/gi\\_funding.cfm](http://water.epa.gov/infrastructure/greeninfrastructure/gi_funding.cfm)

### **NEW FREEDOM INITIATIVE**

MAP-21 continues this initiative under Section 5310 – Enhanced Mobility of Seniors and Individuals with Disabilities. Section 5310 provides capital and operating costs to provide transportation services and facility improvements that exceed those required by the Americans with Disabilities Act. Examples of pedestrian/accessibility projects funded in other communities through the New Freedom Initiative include installing Accessible Pedestrian Signals (APS), enhancing transit stops to improve accessibility, and establishing a mobility coordinator position. In 2013 and 2014, over \$250 M dollars were available nationwide through this grant program, 60% of this available to urbanized areas with populations over 200,000. Funds granted through this program require a 20% local match.

*More information:* <http://www.hhs.gov/newfreedom/>

### **PILOT TRANSIT-ORIENTED DEVELOPMENT PLANNING**

MAP-21 establishes a new pilot program to promote planning for Transit-Oriented Development (TOD). This program provides \$10 M a year nationally for TOD planning and awards grants on a competitive basis. Planning programs can include efforts that facilitate “multimodal connectivity and accessibility” and “increase access to transit hubs for pedestrian and bicycle traffic.”

### **OTHER FEDERAL TRANSIT ADMINISTRATION FUNDING SOURCES FOR PEDESTRIAN INFRASTRUCTURE, BICYCLING INFRASTRUCTURE AND BIKE SHARE.**

Most FTA funding can be used to fund pedestrian and bicycle projects “that enhance or are related to public transportation facilities.”

According to the FTA, an FTA grantee may use any of the following programs under Title 49, Chapter 53, of the United States Code to fund capital projects for pedestrian and bicycle access to a public transportation facility:

- Section 5307 Urbanized Area Formula Program;
- Section 5309 New Starts and Small Starts Major Capital Investment Programs;
- Section 5309 Fixed Guideway Modernization Program;
- Section 5309 Bus and Bus Facilities Discretionary Program;
- Section 5310 Elderly Individuals and Individuals with Disabilities Formula Program;
- Section 5311 Non-Urbanized Area Formula Program;
- Section 5311 Public Transportation on Indian Reservations;
- Section 5316 Job Access & Reverse Commute Formula Program;
- Section 5317 New Freedom Program; and,
- Section 5320 Paul S. Sarbanes Alternative Transportation in Parks and Public Lands.

### **ADDITIONAL FEDERAL FUNDING**

The landscape of federal funding opportunities for pedestrian and bicycle programs and projects is always changing. A number of Federal agencies, including the Bureau of Land Management, the Department of Health and Human Services, the Department of Energy, and the Environmental Protection Agency have offered grant programs amenable to pedestrian and bicycle planning and implementation, and may do so again in the future.

*For up-to-date information about grant programs through all federal agencies, see: <http://www.grants.gov/>*

### **CENTER FOR DISEASE CONTROL GRANT OPPORTUNITIES**

The CDC provides funding opportunities for several different organization and jurisdiction types that can potentially support pedestrian and bicycle infrastructure, planning or other support programs. An overview of these different programs and funding cycles can be found here: (<http://www.cdc.gov/chronicdisease/features/funding-opportunity-announcements.htm>, <http://www.cdc.gov/chronicdisease/about/2014-foa-awards.htm#stateLocal>).

As an example of a project type, the YMCA of Greater Cleveland was awarded close to \$1M in funding in 2014 to administer funding of a citywide protected bikeway plan and transportation-related Health Impact Assessments, among other projects.



## State Funding Sources

The following is a list of possible State funding sources that could be used to support construction of many pedestrian and bicycle improvements in Columbia County.

### **SOUTH CAROLINA TRANSPORTATION INFRASTRUCTURE BANK**

The South Carolina Transportation Infrastructure Bank (SCTIB) is a statewide revolving loan fund designed in 1997 to assist major transportation projects in excess of \$100 million in value. The SCTIB has since approved more than \$4.5 billion in financial assistance and is arguably the largest and most active State Infrastructure Bank in the country. SCTIB funded development of the Palmetto Parkway in Aiken County, which included development of a roughly five mile multi-use trail within the parkway's right of way.

*More information: <http://sctib.sc.gov/Pages/default.aspx>*

### **SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION – CAPITAL PROJECTS**

Columbia County should work closely with SCDOT to include pedestrian and bicycle improvements as part of major projects. The two groups should cooperate on a regular basis to identify opportunities for implementation of the Columbia Pedestrian and Bicycle master Plan.

### **SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION – MAINTENANCE PROGRAM**

The South Carolina Department of Transportation carries out a number of road resurfacing maintenance projects annually. There may be opportunities for road restriping to be completed as part of regular roadway maintenance. This will require coordination between the City of Columbia, the SCDOT District Traffic Engineer and the local maintenance office to ensure that the pavement marking design is appropriate and safe for cyclists and drivers.

### **SOUTH CAROLINA PARKS AND RECREATION DEVELOPMENT FUND (PARD)**

The PARD grant program is a state funded non-competitive reimbursable grant program for eligible local governments or special purposes district entities within each county which provide recreational opportunities. The fund requires a 20% cash or in-kind match. The following bullets highlight characteristics of the grant program.

- Monthly grant cycle
- Non-competitive program available to eligible local governmental entities within each county area for development of new public recreation facilities or enhancement/renovations to existing facilities.
- Projects need endorsement of majority weighted vote factor of County Legislative Delegation Members.
- This is an 80-20 match program
- Application Deadline is the 10th of each month

PARD funding is allocated on a county-by-county basis and comes from a portion of the State's bingo revenues. In 2013, insufficient revenue was generated to fund the PARD program. Richland County has failed to generate sufficient bingo revenue to fund the program in the past several years, but this could change in the future.

*More information: <http://www.scprt.com/our-partners/grants/pard.aspx>.*

### **STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM**

The Statewide Transportation Improvement Program (STIP) is SCDOT's short-term capital improvement program, providing project funding and scheduling information for the department and South Carolina's metropolitan planning organizations. The program provides guidance for the next six years and is updated every three years. The South Carolina Department of Transportation Commission, as well as the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) approve the STIP.

In developing this funding program, SCDOT must verify that the identified projects comply with existing transportation and comprehensive plans. The STIP must fulfill federal planning requirements for a staged, multi-year, statewide, intermodal program of transportation projects. Specific transportation projects are prioritized based on Federal planning requirements and the specific State plans.

*More information: <http://www.scdot.org/inside/stip.aspx>*



## Local Government Funding Sources

Local funding sources that would support bike facility project construction will most likely be limited but should be explored to support Columbia County active transportation projects.

### METROPOLITAN PLANNING ORGANIZATION

Metropolitan Planning Organizations (MPOs) are federally required regional transportation planning organizations. MPOs are responsible for planning and prioritizing all federally funded transportation improvements within an urbanized area.

The Columbia Area Transportation Study (COATS) is the Metropolitan Planning Organization (MPO) for the City and surrounding urban areas (<http://www.centralmidlands.org>). MPOs are a partnership between local and state government that makes decisions about transportation planning in urbanized areas and meets planning requirements established by federally authorizing legislation for transportation funding. COATS works cooperatively with SCDOT to develop transportation plans, travel models, transit plans, and pedestrian and bicycle plans. COATS works with the state on funding issues for transportation improvements, project planning issues, and other issues such as environmental and air quality concerns. COATS also works with local governments to coordinate land use and transportation planning.

MPOs maintain a long-range transportation plan (LRTP) and develop a transportation improvement program (TIP) to develop a fiscally constrained program based on the long-range transportation plan and designed to serve the region's goals while using spending, regulating, operating, management, and financial tools. This Plan recommends that the City and its partners continue to work closely with COATS to ensure pedestrian, bikeways and transit improvement projects recommended in this Plan are listed in the TIP.

## GENERAL FUND

The General Fund is often used to pay for maintenance expenses and limited capital improvement projects. Projects identified for reconstruction or re-pavement as part of the Capital Improvements list should also incorporate recommendations for bicycle or pedestrian improvements in order to reduce additional costs. More information on the City of Columbia budget and General Fund can be found here:

<http://www.columbiasc.net/budget-office/current-prior-budgets>

## LOCAL BOND MEASURES

Local bond measures, or levies, are usually general obligation bonds for specific projects. Bond measures are typically limited by time based on the debt load of the local government or the project under focus. Funding from bond measures can be used for engineering, design and construction of trails, greenways, and pedestrian and bicycle facilities. A bond issued in Denver, Colorado funded \$5 million for trail development and also funded the City's bike planner for several years. In 2012, voters in Austin, Texas approved a \$143 million bond measure to fund a variety of mobility and active transportation projects. A project paid for with a bond measure will need to be repaid through a designated revenue stream such as parking revenues or other user fees.

## STORMWATER UTILITY FEES

Stormwater charges are typically based on an estimate of the amount of impervious surface on a user's property. Impervious surfaces (such as rooftops and paved areas) increase both the amount and rate of stormwater runoff compared to natural conditions. Such surfaces cause runoff that directly or indirectly discharges into public storm drainage facilities and creates a need for stormwater management services. Thus, users with more impervious surface are charged more for stormwater service than users with less impervious surface.

The rates, fees, and charges collected for stormwater management services may not exceed the costs incurred to provide these services. The costs that may be recovered through the stormwater rates, fees, and charges includes any costs necessary to assure that all aspects of stormwater quality and quantity are managed in accordance with federal and state laws, regulations, and rules. Open space may be purchased with stormwater fees, if the property in question is used to mitigate floodwater or filter pollutants.

## SYSTEM DEVELOPMENT CHARGES/ DEVELOPER IMPACT FEES

System Development Charges (SDCs), also known as Developer Impact Fees, represent another potential local funding source. SDCs are typically tied to trip generation rates and traffic impacts produced by a proposed project. A developer may reduce the number of trips (and hence impacts and cost) by paying for on- or off-site pedestrian improvements that will encourage residents to walk (or use transit, if available) rather than drive. In-lieu parking fees may be used to help construct new or improved pedestrian facilities. Establishing a clear nexus or connection between the impact fee and the project's impacts is critical in avoiding a potential lawsuit.

## STREET USER FEES

Many cities administer street user fees through residents' monthly water or other utility bills. The revenue generated by the fee can be used for operations and maintenance of the street system, and priorities would be established by the Public Works Department. Revenue from this fund can be used to maintain on-street pedestrian and bicycle facilities, including routine sweeping of bicycle lanes and other designated bicycle routes.

## IN LIEU OF FEES

Developers often dedicate open space or greenways in exchange for waiving fees associated with park and open space allocation requirements in respect to proposed development. These types of requirements are presented within local municipal codes and ordinances.



## UTILITY LEASE REVENUE

A method to generate revenues from land leased to utilities for locating utility infrastructure on municipally owned parcels. This can improve capital budgets and support financial interest in property that would not otherwise create revenue for the government.

## LOCAL IMPROVEMENT DISTRICTS (LIDS)

Local Improvement Districts (LIDs) are most often used by cities to construct localized projects such as streets, sidewalks or bikeways. Through the LID process, the costs of local improvements are generally spread out among a group of property owners within a specified area. The cost can be allocated based on property frontage or other methods such as traffic trip generation. Based on South Carolina's Municipal Improvements Act of 1999, LIDs can include a Municipal Improvement District (MID), a County Public Works Improvement District (CPWID) or a Residential Improvement District (RID).

Several cities have successfully used LID funds to make improvements on residential streets and for large scale arterial projects. LIDs formed to finance commercial street development can be "full cost," in which the property assessments are entirely borne by the property owners.

## BUSINESS IMPROVEMENT AREA OR DISTRICT (BIA OR BID)

Trail development and pedestrian and bicycle improvements can often be included as part of larger efforts aimed at business improvement and retail district beautification. Business Improvement Areas collect levies on businesses in order to fund area wide improvements that benefit businesses and improve access for customers. These districts may include provisions for pedestrian and bicycle improvements, including as wider sidewalks, landscaping and ADA compliance.

## SALES TAX

Local governments that choose to exercise a local option sales tax use the tax revenues to provide funding for a wide variety of projects and activities. Columbia has included pedestrian and bicycle projects as part of the county-wide one-cent sales tax addendum. In 2012, Richland County voters passed a 1% sales addendum to fund \$1.07 billion in transportation improvements county-wide over the following 22 years. \$81 M of this revenue will go towards sidewalks, bike lanes and greenways. This should prove to be a huge boon to walking and bicycling in the region in the coming years.

*More Information: <http://www.richlandonline.com/Government/TransportationPenny.aspx>*

## PROPERTY TAX

Property taxes generally support a significant portion of a local government's activities. However, the revenues from property taxes can also be used to pay debt service on general obligation bonds issued to finance open space system acquisitions. Because of limits imposed on tax rates, use of property taxes to fund open space could limit the county's or a municipality's ability to raise funds for other activities. Property taxes can provide a steady stream of financing while broadly distributing the tax burden. In other parts of the country, this mechanism has been popular with voters as long as the increase is restricted to parks and open space. It should be noted that other public agencies compete vigorously for these funds, and taxpayers are generally concerned about high property tax rates.

## EXCISE TAXES

Excise taxes are taxes on specific goods and services. These taxes require special legislation and the use of the funds generated through the tax are limited to specific uses. Examples include lodging, food, and beverage taxes that generate funds for promotion of tourism, and the gas tax that generates revenues for transportation-related activities.

## TAX INCREMENT FINANCING (TIF)

Tax Increment Financing is a tool to use future gains in taxes to finance the current improvements that will create those gains. When a public project (e.g., shared use trail) is constructed, surrounding property values generally increase and encourage surrounding development or redevelopment. The increased tax revenues are then dedicated to support the debt created by the original public improvement project. More information on the legal requirements for TIF for Redevelopment Projects can be found here:

*<http://www.scstatehouse.gov/code/t31c006.php>*



## Private Sector Funding Sources

Many communities have solicited greenway funding assistance from private foundations and other conservation-minded benefactors. Below are several examples of private funding opportunities available.

### BIKES BELONG GRANT PROGRAM

The Bikes Belong Coalition of bicycle suppliers and retailers has awarded \$1.2 million and leveraged an additional \$470 million since its inception in 1999. The program funds corridor improvements, mountain bike trails, BMX parks, trails, and park access. It is funded by the Bikes Belong Employee Pro Purchase Program.

*More information: <http://www.bikesbelong.org/grants/>*

### THE ROBERT WOOD JOHNSON FOUNDATION

The Robert Wood Johnson Foundation was established as a national philanthropy in 1972 and today it is the largest U.S. foundation devoted to improving the health and health care of all Americans. Grant making is concentrated in four areas:

- To assure that all Americans have access to basic health care at a reasonable cost
- To improve care and support for people with chronic health conditions
- To promote healthy communities and lifestyles
- To reduce the personal, social and economic harm caused by substance abuse: tobacco, alcohol, and illicit drugs

*More information: <http://www.rwjf.org/applications/>*

### BANK OF AMERICA CHARITABLE FOUNDATION, INC.

The Bank of America Charitable Foundation is one of the largest in the nation. The primary grants program is called Neighborhood Excellence, which seeks to identify critical issues in local communities. Another program that applies to greenways is the Community Development Programs, and specifically the Program Related Investments. This program targets low and moderate income communities and serves to encourage entrepreneurial business development.

*More information: <http://www.bankofamerica.com/foundation>*

### THE WALMART FOUNDATION

The Walmart Foundation offers a Local, State, and National Giving Program. The Local Giving Program awards grants of \$250 to \$5,000 through local Walmart and Sam's Club Stores. Application opportunities are announced annually in February with a final deadline for applications in December. The State Giving Program provides grants of \$25,000 to \$250,000 to 501c3 nonprofits working within one of five focus areas: Hunger Relief & Nutrition, Education, Environmental Sustainability, Women's Economic Empowerment, or Workforce Development. The program has two application cycles per year: January through March and June through August. The Walmart Foundation's National Giving Program awards grants of \$250,000 and more, but does not accept unsolicited applications.

*More information: <http://foundation.walmart.com/apply-for-grants>*

### DUKE ENERGY FOUNDATION

Funded by Duke Energy shareholders, this non-profit organization makes charitable grants to selected non-profits or governmental subdivisions. Each annual grant must have:

- An internal Duke Energy business "sponsor"
- A clear business reason for making the contribution

The grant program has three focus areas: Environment and Energy Efficiency, Economic Development, and Community Vitality. Related to this project, the Foundation would support programs that support conservation, training and research around environmental and energy efficiency initiatives.

*More information: <http://www.duke-energy.com/community/foundation.asp>*

### THE KODAK AMERICAN GREENWAYS PROGRAM

The Conservation Fund's American Greenways Program has teamed with the Eastman Kodak Corporation and the National Geographic Society to award small grants (\$250 to \$2,000) to stimulate the planning, design and development of greenways. These grants can be used for activities such as mapping, conducting ecological assessments, surveying land, holding conferences, developing brochures, producing interpretive displays, incorporating land trusts, and building trails. Grants cannot be used for academic research, institutional support, lobbying or political activities.

*More information: <http://www.conservationfund.org>*



## NATIONAL TRAILS FUND

American Hiking Society created the National Trails Fund in 1998, the only privately supported national grants program providing funding to grassroots organizations working toward establishing, protecting and maintaining foot trails in America. 73 million people enjoy foot trails annually, yet many of our favorite trails need major repairs due to a \$200 million backlog of badly needed maintenance. National Trails Fund grants help give local organizations the resources they need to secure access, volunteers, tools and materials to protect America's cherished public trails. To date, American Hiking has granted more than \$240,000 to 56 different trail projects across the U.S. for land acquisition, constituency building campaigns, and traditional trail work projects. Awards range from \$500 to \$10,000 per project.

Projects the American Hiking Society will consider include:

- Securing trail lands, including acquisition of trails and trail corridors, and the costs associated with acquiring conservation easements.
- Building and maintaining trails which will result in visible and substantial ease of access, improved hiker safety, and/or avoidance of environmental damage.
- Constituency building surrounding specific trail projects - including volunteer recruitment and support.

*More information:* <http://www.americanhiking.org/alliance/fund.html>

## THE CONSERVATION ALLIANCE

The Conservation Alliance is a non-profit organization of outdoor businesses whose collective annual membership dues support grassroots citizen-action groups and their efforts to protect wild and natural areas. One hundred percent of its member companies' dues go directly to diverse, local community groups across the nation—groups like Southern Utah Wilderness Alliance, Alliance for the Wild Rockies, The Greater Yellowstone Coalition, the South Yuba River Citizens' League, RESTORE: The North Woods and the Sinkyone Wilderness Council (a Native American-owned/operated wilderness park). For these groups, who seek to protect the last great wild lands and waterways from resource extraction and commercial development, the Alliance's grants are substantial in size (about \$35,000 each), and have often made the difference between success and defeat. Since its inception in 1989, The Conservation Alliance has contributed \$4,775,059 to grassroots environmental groups across the nation, and its member companies are proud of the results: To date the groups funded have saved over 34 million acres of wild lands and 14 dams have been either prevented or removed—all through grassroots community efforts.

The Conservation Alliance is a unique funding source for grassroots environmental groups. It is the only environmental grant maker whose funds come from a potent yet largely untapped constituency for protection of ecosystems—the active transportation outdoor recreation industry and its customers. This industry has great incentive to protect the places in which people use the clothing, hiking boots, tents and backpacks it sells. The industry is also uniquely positioned to educate outdoor enthusiasts about threats to wild places, and engage them to take action. Finally, when it comes to decision-makers, especially those in the Forest Service, National Park Service, and Bureau of Land Management, this industry has clout - an important tool that small advocacy groups can wield.

The Conservation Alliance Funding Criteria: The Project should be focused primarily on direct citizen action to protect and enhance our natural resources for recreation. The Alliance does not look for mainstream education or scientific research projects, but rather for

active campaigns. All projects should be quantifiable, with specific goals, objectives and action plans and should include a measure for evaluating success. The project should have a good chance for closure or significant measurable results over a fairly short term (one to two years). Funding emphasis may not be on general operating expenses or staff payroll.

*More information:* <http://www.conservationalliance.com/index.m>

## NATIONAL FISH AND WILDLIFE FOUNDATION (NFWF)

The National Fish and Wildlife Foundation (NFWF) is a private, nonprofit, tax-exempt organization chartered by Congress in 1984. The National Fish and Wildlife Foundation sustains, restores, and enhances the Nation's fish, wildlife, plants and habitats. Through leadership conservation investments with public and private partners, the Foundation is dedicated to achieving maximum conservation impact by developing and applying best practices and innovative methods for measurable outcomes.

The Foundation awards matching grants under its Keystone Initiatives to achieve measurable outcomes in the conservation of fish, wildlife, plants and the habitats on which they depend. Awards are made on a competitive basis to eligible grant recipients, including federal, tribal, state, and local governments, educational institutions, and non-profit conservation organizations. Project proposals are received on a year-round, revolving basis with two decision cycles per year. Grants generally range from \$50,000-\$300,000 and typically require a minimum 2:1 non-federal match.

Funding priorities include bird, fish, marine/coastal, and wildlife and habitat conservation. Other projects that are considered include controlling invasive species, enhancing delivery of ecosystem services in agricultural systems, minimizing the impact on wildlife of emerging energy sources, and developing future conservation leaders and professionals.

*More information:* <http://www.nfwf.org/AM/Template.cfm?Section=Grants>



## THE TRUST FOR PUBLIC LAND

Land conservation is central to the mission of the Trust for Public Land (TPL). Founded in 1972, the Trust for Public Land is the only national nonprofit working exclusively to protect land for human enjoyment and wellbeing. TPL helps conserve land for recreation and spiritual nourishment and to improve the health and quality of life of American communities. Also, TPL is the leading organization helping agencies and communities identify and create funds for conservation from federal, state, local, and philanthropic sources.

Since 1996, TPL has helped states and communities craft and pass over 382 successful ballot measures, generating \$34 billion in new conservation-related funding.

*More information: <http://www.tpl.org/what-we-do/services/conservation-finance/>*

## COMMUNITY ACTION FOR A RENEWED ENVIRONMENT (CARE)

CARE is a competitive grant program that offers an innovative way for a community to organize and take action to reduce toxic pollution in its local environment. Through CARE, a community creates a partnership that implements solutions to reduce releases of toxic pollutants and minimize people's exposure to them. By providing financial and technical assistance, EPA helps CARE communities get on the path to a renewed environment. Transportation and "smart-growth" types of projects are eligible. Grants range between \$90,000 and \$275,000.

*More information: <http://www.epa.gov/care/>*

## LOCAL TRAIL SPONSORS

A sponsorship program for trail amenities allows smaller donations to be received from both individuals and businesses. Cash donations could be placed into a trust fund to be accessed for certain construction or acquisition projects associated with the greenways and open space system. Some recognition of the donors is appropriate and can be accomplished through the placement of a plaque, the naming of a trail segment, and/or special recognition at an opening ceremony. Types of gifts other than cash could include donations of services, equipment, labor, or reduced costs for supplies.

## CORPORATE DONATIONS

Corporate donations are often received in the form of liquid investments (i.e. cash, stock, bonds) and in the form of land. Employers recognize that creating places to bike and walk is one way to build community and attract a quality work force. Bicycling and outdoor recreation businesses often support local projects and programs. Municipalities typically create funds to facilitate and simplify a transaction from a corporation's donation to the given municipality. Donations are mainly received when a widely supported capital improvement program is implemented. Such donations can improve capital budgets and/or projects.

## Other Sources

### VOLUNTEER WORK AND PUBLIC-PRIVATE PARTNERSHIPS

Individual volunteers from the community can be brought together with groups of volunteers from church groups, civic groups, scout troops and environmental groups to work on greenway development on special community workdays. Volunteers can also be used for fundraising, maintenance, and programming needs. Local schools or community groups may use the bikeway projects as a project for the year, possibly working with a local designer or engineer. Work parties may be formed to help clear the right-of-way where needed. A local construction company may donate or discount services. A challenge grant program with local businesses may be a good source of local funding, where corporations 'adopt' a bikeway and help construct and maintain the facility.

### PRIVATE INDIVIDUAL DONATIONS

Private individual donations can come in the form of liquid investments (i.e. cash, stock, bonds) or land. Municipalities typically create funds to facilitate and simplify a transaction from an individual's donation to the given municipality. Donations are mainly received when a widely supported capital improvement program is implemented. Such donations can improve capital budgets and/or projects.

### FUNDRAISING / CAMPAIGN DRIVES

Organizations and individuals can participate in a fundraiser or a campaign drive. It is essential to market the purpose of a fundraiser to rally support and financial backing. Oftentimes fundraising satisfies the need for public awareness, public education, and financial support.



## **LAND TRUST ACQUISITION AND DONATION**

Land trusts are held by a third party other than the primary holder and the beneficiaries. This land is oftentimes held in a corporation for facilitating the transfer between two parties. For conservation purposes, land is often held in a land trust and received through a land trust. A land trust typically has a specific purpose such as conservation and is used so land will be preserved as the primary holder had originally intended.

## **ADOPT-A-TRAIL PROGRAM**

A challenge grant program with local businesses may be a good source of local funding, where corporations ‘adopt’ a trail and help maintain the facility. Foundation grants, volunteer work, and donations of in-kind services, equipment, labor or materials are other sources of support that can play a supporting role in gathering resources to design and build new pedestrian and bicycle facilities.

Residents and other community members are excellent resources for garnering support and enthusiasm for a trail, and Columbia County should work with volunteers to substantially reduce implementation and maintenance costs. Local schools, community groups, or a group of dedicated neighbors may use the project as a goal for the year, possibly working with a local designer or engineer. Work parties can be formed to help clear the right-of-way for a new trail or maintain existing facilities where needed.

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