

Trail Program Implementation:

A Peer + Aspirational Review



Report Completed for:
The Walton Family Foundation

Report Completed by:
Alta Planning + Design

October 18, 2017

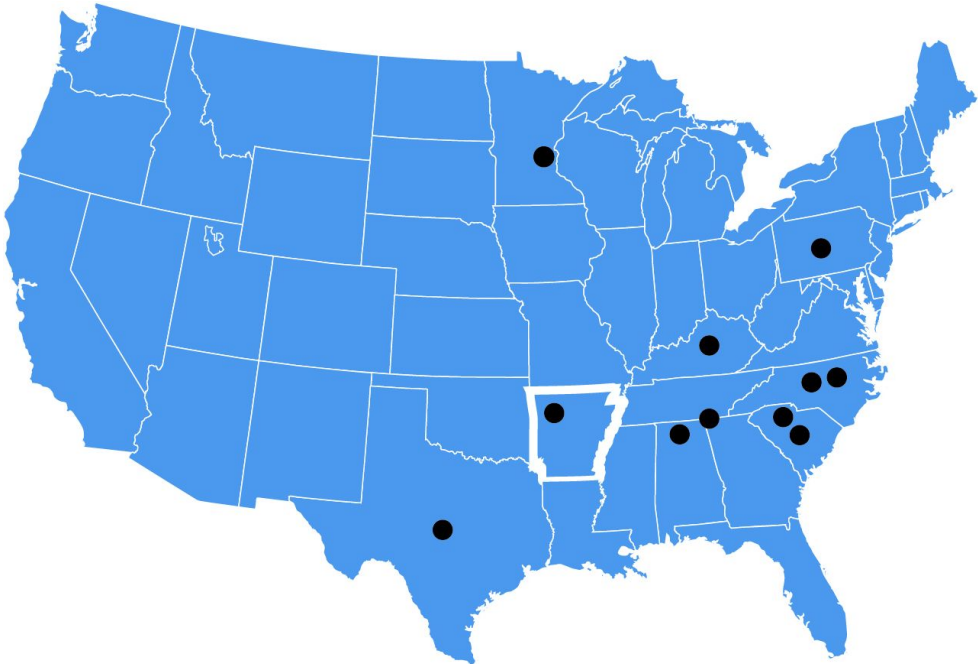
Introduction

Northwest Arkansas has experienced phenomenal growth as a region in the last 20 years. With the growth of population and jobs, the demographics of the area have changed as well. With the help of the Walton Family Foundation, and other corporate partners, the communities that comprise the region have been forward-thinking in keeping the character of their individual cities and looking at the big picture as well. To continue to attract talent and increase the livability of the area, an extensive, ever-growing trail system has emerged. As this system develops, it is important to take stock of the work achieved, as well as assess the lessons learned regarding design and construction. The primary spine of this system is The Razorback Greenway, which is a 10'-12' wide concrete trail.

The goal of this report is to highlight greenway trail programs, policy, funding, and design trends, as well as best practices. This peer city and aspirational city report summarizes data gathered from eight peer cities and two aspirational cities and compares it against data from the Northwest Arkansas (NWA) region.

- Austin, TX*
- Chattanooga, TN
- Columbia, SC
- Greensboro, NC
- Huntsville, AL
- Lancaster, PA
- Lexington, KY
- Minneapolis, MN*
- Raleigh, NC
- Spartanburg, SC

*Selected as aspirational cities



Key Findings

Comparing trail costs and program development across multiple jurisdictions and regions is often difficult as it's not a simple apple-to-apple comparison. This report breaks down trail development across multiple different data sources in order to highlight general trends and commonalities. However, the key findings summarized below were identified through interviews with trail program staff from the peer and aspirational cities.

- **Contractor Availability** - While there isn't a specific data source to accurately compare or identify this factor, several program staff stated that their trail costs are often dictated by the availability of trail construction contractors in their area. For instance, Raleigh NC receives multiple bids for their trail construction projects while Spartanburg SC received one bid for their last trail construction project. In areas where growth rates are high, such as Raleigh and Austin, contractors simply won't bid on projects under \$500,000.
- **In-House Capability** - Fayetteville AR has a unique trail program due to the fact that trail construction is primarily handled in-house by the Engineering Department. In-house capability greatly accelerates trail construction and the cost can often be reduced by keeping trail design, construction and maintenance internal. The City of Raleigh also has an in-house trail maintenance crew that allows the City to be very responsive to limb removal and general trail maintenance of their 114 mile trail network.
- **Enhanced Trails** - The regions that have been developing trails since the 1990's are typically designing trails with placemaking elements, such as public art, seating, wayfinding signs, restrooms, and lighting. The Midtown Greenway in Minneapolis is an example where they chose to design and install extravagant design elements that increased the trail's total cost but enhanced the trail users experience.
- **Public Support** - While public engagement is often an in-house component of a trail construction project and not detailed in a trail cost estimate, it's a critical element to ensure the ultimate success of the trail project. Spartanburg has gone to great lengths to communicate the benefits of trails and highlight the city's return on investment through extensive economic development studies.
- **Private Development** - Several cities leverage private investment to construct trail connections or provide right-of-way easements for future trail development. Fayetteville and both aspirational cities, Austin and Minneapolis, have an ordinance that requires developers to set aside land dedicated to parks/trails or pay a fee to the city to develop a park or trail in the future.
- **Bond Funding** - Most of Raleigh's 114 mile trail network can be directly attributed to city bond funding. Raleigh voters approved bonds in 2003, 2007, and 2014. Combined, these bonds equal over \$75 million in bond revenues dedicated to the city's Capital Area Greenway program.

City Descriptions

In order to understand the basic characteristic of each City, the following table highlights the key factors that are most relevant to trail costs and program implementation. The table is sorted by population growth, with Austin, NWA (Benton and Washington Counties) and Raleigh having experienced the fastest growth rates. Growth rates can often directly correlate to higher construction prices.

City	2010 population	Estimated 2016 population	2010-2016 population growth	Area (sq. miles)	Population Density
Austin*	790,390	947,890	19.9%	297.9	3,182 per sq. mile
NWA	427,036	486,340	13.9%	1,836	265 per sq. mile
Raleigh	403,892	458,880	13.6%	142.9	3,211 per sq. mile
Minneapolis*	382,578	413,651	8.1%	54	7,660 per sq. mile
Lexington	295,803	318,449	7.7%	283.6	1,123 per sq. mile
Huntsville	180,105	193,079	7.2%	209.1	923 per sq. mile
Greensboro	269,666	287,027	6.4%	126.5	2,269 per sq. mile
Chattanooga	167,674	177,571	5.9%	137.2	1,294 per sq. mile
Columbia	129,272	134,309	3.9%	132.2	1,016 per sq. mile
Spartanburg	37,013	37,876	2.3%	19.2	1,973 per sq. mile
Lancaster	59,322	59,218	-0.2%	7.4	8,002 per sq. mile

Greenway Trail Planning Efforts

A greenway trail master plan is one way that communities set defined goals and objectives for their greenway programs. Plans can be done at the state, regional or local level and often help to energize both staff and residents by highlighting past accomplishments and future potential. The table below identified each area's master plan document and the year it was either adopted or updated.

City	Name of Plan	Year
Austin*	City of Austin Urban Trails Master Plan	2014
Chattanooga	City of Chattanooga Master Greenway Plan	Amended in 2002
Columbia	Does not have greenway-specific plan. Columbia Parks and Recreation Plan	2013
Greensboro	Bicycle, Pedestrian, and Greenways Master Plan	2015
Huntsville	City of Huntsville Greenways Plan	2006-Currently being updated
Lancaster	Does not have greenway-specific plan.	
Lexington	Lexington-Fayette County Greenway Master Plan (currently being updated)	2001
Minneapolis*	Does not have greenway-specific plan. Midtown Greenway Land Use Development Plan guides land use policy direction around Midtown Greenway corridor.	2007
NWA	Northwest Arkansas Regional Bicycle and Pedestrian Plan	2015
Raleigh	City of Raleigh Parks, Recreation and Cultural Resources System Plan	2014
Spartanburg	The Spartanburg Trails & Greenways Plan	2013

Existing Trail Network

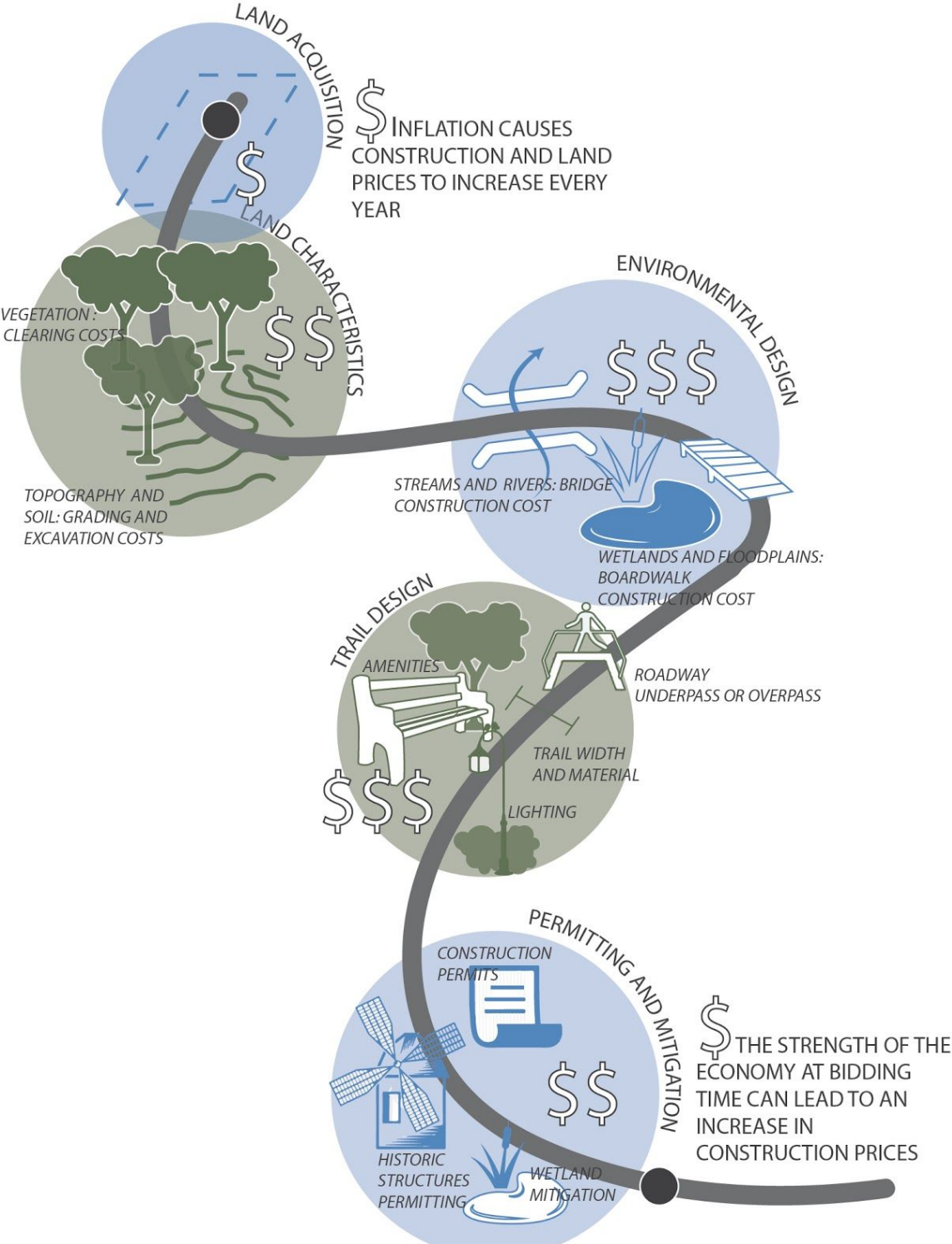
Understanding the existing network can also help gauge the community's program development. Trail costs and implementation strategies are going to vary significantly for cities that are just starting their trail program versus cities that have been designing and building trails since the early 1980's.

The table below highlights the existing trail network in each community, according to their adopted plan, program website or through an interview with program staff.

City	Existing Trails (miles)	Miles of Trails per City Size (Area in Square Miles)
Minneapolis	96 (includes off-street trail, SUP, and protected bike lane)	1.78 per sq mile
Austin	273	0.92 per sq mile
Raleigh	114	0.80 per sq mile
Greensboro	90	0.71 per sq mile
Lancaster	5 (includes internal park trail networks)	0.68 per sq mile
Chattanooga	23	0.17 per sq mile
Columbia	20	0.15 per sq mile
Huntsville	27	0.13 per sq mile
Lexington	24	0.08 per sq mile
NWA	132 (includes paved surface trails only)	0.07 per sq mile
Spartanburg	200 (includes on-street bikeways, blueways and trails)	N/A

Funding

In general, it is very difficult to compare funding totals across all cities as they are not apples-to-apples comparisons. There are several factors that determine the total trail construction costs, highlighted in the graphic below.



Example of Funding Sources

Given the present day economic challenges faced by local governments (as well as their state, federal, and private sector partners), it is difficult to know what financial resources will be available at different time frames during trail implementation. Successful trail programs take advantage of strategic funding opportunities as they arise and leverage resources by collaborating with a variety of stakeholders. The following table provides an overview of eligible funding sources for trail implementation.

Federal	State	Local/Regional	Private
Congestion Mitigation and Air Quality (CMAQ) Improvement Program	State Bicycle and Pedestrian Grants	Business Improvement District Funds	Developers/Private Companies
Highway Safety Improvement Program (HSIP)	State Multimodal Funds	General Obligation Bonds	Trust Funds/Endowments
Surface Transportation Block Grant Program (STBG)	State Department of Transportation	Local Capital Improvement Programs	Foundations
Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant Program	State Department of Health	Regional (MPO) Bicycle and Pedestrian Program Funds	Nonprofits
Transportation Alternatives Program (TAP) - includes Safe Routes to Schools	State Parks, Recreation and Travel Commission	Tax Increment Financing (TIF)	Colleges and Universities
Recreational Trails Program (RTP)	State MainStreet Program	Municipal Set-Asides	Hospitals
Federal Lands and Tribal Transportation Program (FLTTP)		Voter-approved Sales Taxes or Other Levies	Individual Donors
Transportation Infrastructure Finance and Innovation Act (TIFIA)		Heritage Trusts	Crowdsourcing
Urban and Community Forestry Program (UCF)		County Department of Transportation	

Federal	State	Local/Regional	Private
Federal Lands Access Program (FLAP)		Developer Impact Fees	
Land and Water Conservation Fund (LWCF)		Parking Fees	
Environmental Protection Agency (EPA)		County Department of Transportation	
National Endowment for the Arts (for art along trail)		Municipal Department of Transportation	
		County Parks and Recreation	
		Municipal Parks and Recreation	
		Local Safe Routes to School Programs (SRTS)	
		Hotel/Motel/Lodging Taxes	
		Regional (MPO) Transportation Plans (TIP)	

Funding Summaries

This summary is for municipal dedicated trail allocations as well as stated goals for funding beyond the fiscal year. The funding summary does not include several of the “complete street” or location specific projects. Additionally, the allocated funds listed here are capital expenditures, rather than maintenance or operations funds. Since many cities are currently in various stages of their budget development process, budget year cycles may vary. If available, recommended or approved FY 2018 budgets are listed in the table on page 9 and 10.

City	Trail Program Funding Summary
Fayetteville	<p>The Engineering Division provides in-house surveying, design and property acquisition. The trail system is maintained by the Parks Department.</p> <p>Special Revenue Funds</p> <ul style="list-style-type: none"> • The City Budget allocates 1.5 million dollars per year for trail development • Development projects in the City are required to construct and improve pedestrian facilities based on the Active Transportation Plan
Rogers	<p>The City funds their trail program informally by using State turnback money that is from sales tax dollars. The Parks Department maintains the trail system. They have one staff member dedicated to trails.</p> <ul style="list-style-type: none"> • The City has funded an average of 500,000 - 1 million dollars for trail development in recent years.
Bentonville	<p>The City Engineering and Parks Departments rely heavily on the efforts of regional trail development groups, and grant applications for grant funding. The trails are maintained by the Parks Department staff.</p> <ul style="list-style-type: none"> • The City Budget allocates approximately 60 thousand dollars annually to repair and enhance the City sidewalk system.

City	Trail Program Funding Summary
Austin	<p>Public Works defined a separate “Urban Trails Program” for the first time in the proposed 2016-17 budget and approved \$160,687 for trail construction and design. Public works also designates funding for trails and sidewalks through various funds such as the Neighborhood Partnering Program, Safe Routes to Schools, Developer Sidewalk-in-lieu impact fees, and the Business Partnering Programs.</p> <p>Special Revenue Funds</p> <ul style="list-style-type: none"> ● \$33,874 for Austin Creeks and Trails Fund ● The Parks and Recreation FY 2016-17 Capital Budget includes a spending plan of \$22.8 million, portions of which will fund the Walnut Creek Trail System <p>Stated Goals:</p> <ul style="list-style-type: none"> ● Maintain the overall state of the existing sidewalk network between 80-85% in good or better condition. ● Reduce the total number of absent sidewalks in the network by 500 linear miles by 2022. ● Maintain the overall state of the existing urban trail network between 75-80% in good or better condition. ● Build out 25 linear miles of trails identified in the Urban Trail Masterplan by 2022.
Chattanooga	<p>The City of Chattanooga has an open operating plan that uses input from citizens to determine budgets. The proposed 2018 budget allocates capital transportation and public works funding for the following sidewalk and trail projects:</p> <ul style="list-style-type: none"> ● Riverwalk Phase 4: \$1.33 million ● South Chick Greenway: \$1.24 million ● New sidewalks: \$1 million ● Highway 58 Shared Use Path: \$1.19 million ● CDBG Sidewalks: \$288,000 ● Walnut Street Pedestrian Bridge: \$9.90 million
Columbia	<p>The City of Columbia budget does not include separate line items for trails or greenways.</p> <ul style="list-style-type: none"> ● \$7.9 million from the Richland County penny sales tax is allocated for construction of the Three Rivers Greenway and Saluda Riverwalk. ● Design of a pedestrian bridge over the Broad River will be funded with approximately \$750,000 from a SCDOT grant.

City	Trail Program Funding Summary
Greensboro	<p>The City of Greensboro budget does not include separate line items for trails or greenways. Trails are primarily funded through Transportation Bonds and Parks and Recreation bonds. Proposed bond projects include:</p> <ul style="list-style-type: none"> ● \$5 million for bikeway and sidewalk improvements through the Department of Transportation ● \$7 million for Phase 4 of the Downtown Greenway ● \$7 million for a 2 mile extension of the Atlantic & Yadkin Greenway
Huntsville	<p>The proposed Parks and Recreation budget allocates \$500,000 for greenways and bike paths. These proposed budget allocations are set to renew each year under the 10 year Capital Improvement Plan.</p>
Lancaster	<p>Lancaster City's budget does not include separate line items for trails or greenways.</p>
Lexington	<p>The approved 2018 budget allocates \$10,000 for construction of hiking & biking trails.</p> <ul style="list-style-type: none"> ● For the 2.5 mile Town Branch Trail, the city received a \$14.1 million TIGER grant. ● The Mayor of Lexington requested an additional \$1.8 million in the city budget for 2018 to add to the \$10 million the city has set aside through bond money. ● Additional funding comes from state funds such as the Kentucky Infrastructure Authority.
Raleigh	<p>The adopted 2018 budget allocates \$100,000 for Greenway acquisition and \$300,000 for the Capital Area Greenway System each year for the next five years. Additionally, \$300,000 in bond funds are allocated in 2018 for the Lassiter Mill/Allegheny Trail and \$200,000 for miscellaneous greenway improvements.</p> <p>The amount for greenways will increase to \$1.4 million for FY 2019 and 2020 and will be used for trail resurfacing, bridge replacement, and filling the gaps in the existing trail network.</p>
Spartanburg	<p>The 2018 Capital Projects Fund allocates \$150,000 each year over five years to the "Bike/Pedestrian/Trail Project" and the county allocates \$100,000 per year over five years for trail development.</p> <p>In the past, Spartanburg has used tax-increment financing (TIF) and SCDOT funds for trail planning and construction.</p>

Average Trail Costs

In order to understand trail costs across the ten selected cities, recent trail construction bid tabs were collected and analyzed. Many of the cities boasted a large trail construction revival within the past three to five years. The average cost of the peer trails, including the Razorback Regional Greenway were \$313.75 per linear foot with NWA in the bottom third of all the peer cities. The average cost of trails evaluated in NWA is \$217.09.

The table below highlights the average trail cost per linear foot in each city, as well as average construction costs of Northwest Arkansas trails for comparison. Most often, the higher cost per linear foot included suspension bridges, landscaping, and/or public art features. The least expensive trails typically were of a smaller width, made of standard material, and within existing right-of-way. A more detailed review of trail segments and their individual costs are included on pages 14 - 26.

City	Total Linear Feet of Trail Cost Analyzed for this Report	Total Cost (2017 adj.)	Cost per Linear Foot
Spartanburg, SC	7,420	\$4,984,602	\$671.78
Minneapolis, MN	39,176	\$15,157,650	\$386.91
Chattanooga, TN	64,064	\$23,787,941	\$371.32
Lexington, KY	31,620	\$10,455,004	\$330.65
Raleigh, NC	93,480	\$28,025,969	\$299.81
Columbia, SC	19,696	\$5,746,739	\$291.77
Austin, TX	72,752	\$17,872,943	\$245.67
NWA	71,839	\$15,595,857	\$217.09
Huntsville, AL	6,283	\$1,020,742	\$162.46
Greensboro, NC	17,582	\$2,814,329	\$160.07
Lancaster, PA	N/A	N/A	N/A
AVERAGE			\$313.75

Individual Trail Program Review

Northwest Arkansas

While the Razorback Greenway, described below, serves as the regional “spine” of the greenway trail network in NWA, the area boasts a total of 132 off-road paved trails connecting communities across the region. Below is a snapshot of the key local trail projects:

Bentonville

- Bella Vista Lake Trail - 1.75 miles
- North Bentonville Trail - 2.2 miles

Rogers

- Cambridge Trail - 3.16 miles (5.66 planned)
- Turtle Creek Trail - 3.44 miles (8.86 planned)

Springdale

- Spring Creek Trail - 3.34 miles
- Powell Street Trail - 2.09 miles

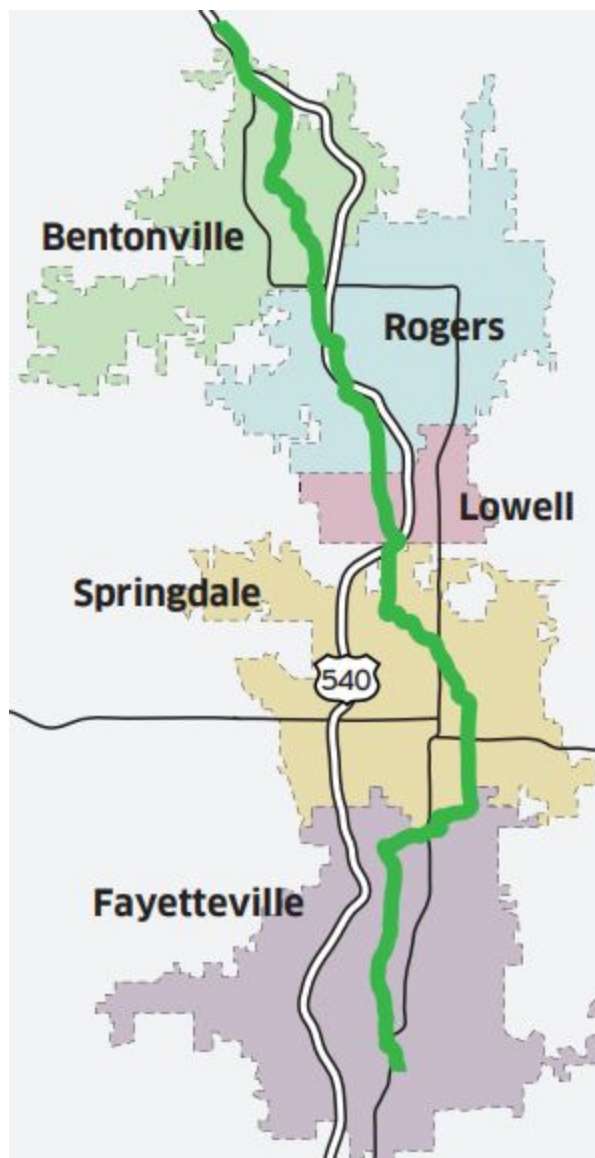
Fayetteville

- Town Branch Trail - 2.1 miles
- Lake Fayetteville Trail - 5.5 miles

Razorback Regional Greenway

Representing one of the most unique regional trail systems in the country, the Razorback Regional Greenway stretches nearly 37 miles from south Fayetteville to Lake Bella Vista. The project serves as a national model for active transportation, green infrastructure, healthy living, sustainable economic development, and public-private partnerships.

The Razorback Regional Greenway cost approximately \$38 million. The majority of funds for development came from a federal transportation grant (TIGER II) and a matching grant and gift from the Walton Family Foundation. The Northwest Arkansas Regional Planning Commission and Northwest Arkansas cities dedicated significant resources to bring the project to fruition.



Northwest Arkansas (Cont.)

Trail	Year	Type	Linear Feet	Total Cost (2017 adj.)	Cost per Lft	Details
Hidden Springs Trail	2017	Concrete	5,942	\$2,194,252	\$369.28	Neighborhood sidewalk connections
Cato Springs Trail	2017	Concrete	14,256	\$4,680,000	\$328.28	Bridges
Clear Creek Trail	2014	Concrete	13,916	\$3,690,448	\$265.19	Wayfinding signs
Clabber Creek Trail (Rupple Rd to Holcomb Elementary School)	2016	Concrete	3,531	\$799,500	\$226.42	Neighborhood sidewalk connections
Spring Creek Trail	2015	Concrete	2,100	\$447,841	\$213.26	MTB skills course
Farms Trail (Fox Fire Connector)	2015	Concrete	3,541	\$715,712	\$202.12	
Shiloh Trail (RRG to the Jones Center)	2015	Concrete	3,655	\$619,929	\$169.61	
Southern Loop -- Connecting Downtown Rogers to Razorback Regional Greenway	2014	Concrete	10,200	\$1,142,084	\$111.97	
Arkansas/Missouri RR Trail	2011	Concrete	3,960	\$459,363	\$116.00	
Scull Creek Trail (Fulbright Tunnel to Mud Creek)	2008	Concrete	5,908	\$534,964	\$90.55	Neighborhood sidewalk connections
Clabber Creek Trail (Highway 112 to Gregg Ave)	2015	Concrete	4,830	\$311,722	\$64.54	Neighborhood sidewalk connections
Average					\$217.09	

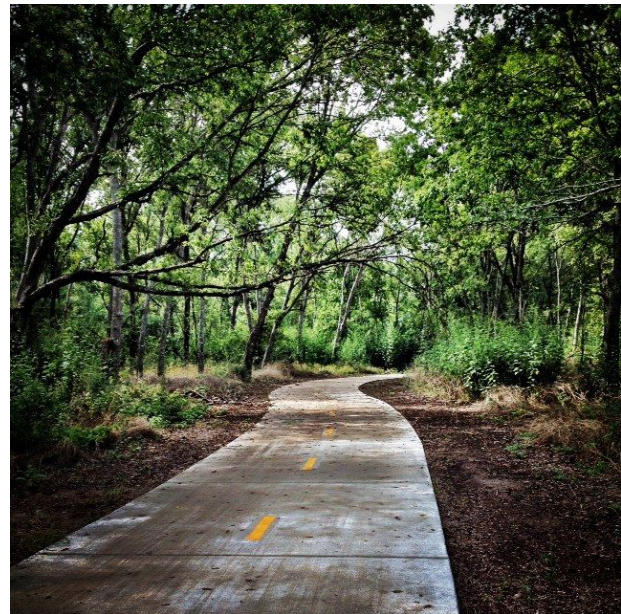
Austin, TX

According to the 2014 Urban Trails master plan, Austin has nearly 300 miles of trail, 30 miles of which are considered urban trails. Urban trails are described as hard surface trails that are wide enough to accommodate both recreational users and commuters. Their signature trails include:

- Boardwalk Trail at Lady Bird Lake – 1 mile
- Country Club Trail – 4 miles *
- Johnson Trail – 1 mile
- LAB – 6 miles total (about 2 miles of Urban Trail)
- Shoal Creek Trail – 8 miles
- **Southern Walnut Creek Trail – 6 miles ***
- **Northern Walnut Creek – 8 miles ***
- **US 290 Sidepath to Manor – 5 miles ***

* Trails assessed for cost study analyses

A typical Austin Urban Trail is 12' wide, concrete with a 2' shoulder, 10' vertical clearance, 2% cross slope and maximum 5% grade. Austin has a very humid and hot climate, therefore the main deterrent for greenway users is the heat. The master plan takes great note in tree preservation techniques to increase the shade around the trails as well as less environmental impact. Significant landscaping is one differential factor in Austin that increases costs as well as the fact that it's a growing, urban center with limited right-of-way for trails and greenways.



Walnut Creek Trail

The photos on the right showcase the Southern Walnut Creek Trail. This trail is Austin's first Urban Trail, completed in 2008. The trail is open for public use and begins at Govalle Park and ends in the vicinity of Johnny Morris Road and Daffen Lane. The trail is approximately 7.3 miles in length and consists of a 10' wide concrete trail with 2' shoulders.

Completed in early 2016, Northern Walnut Creek Phase 1 spans from Mopac south to Walnut Creek Metropolitan Park. It has 9 creek crossings and 4 trailheads. A continuation of Northern Walnut Creek Phase one is underway with construction anticipated at the end of 2017. It will

construct a 10' wide trail with 2' wide shoulders from Amherst Drive to the northern end point of the Phase 1 trail and the connection to the Mopac Trail currently being built by the Regional Turnpike Authority.

Trail	Year	Type	Linear Feet	Total Cost (2017 adj.)	Cost per Lft	Structures
Southern Walnut Creek Trail Phase 1	2012	10'-wide concrete trail	38,016	\$7,820,902	\$205.73	5 Creek Crossings 2 Roadway Underpasses 1 Railway underpass 600 ft Boardwalk 2 Trailheads
Northern Walnut Creek Trail	2016	10'-wide concrete trail	16,896	\$3,382,501	\$200.20	9 Creek crossings 4 Trailheads
Country Club Creek Trail	2015	12' wide concrete trail	2,140	\$519,537	\$242.77	
Austin 290 to Manor	2016 Design, construct in 2018	12' wide concrete	15,700	\$6,150,003	\$391.72	3 Low water bridges
Average					\$245.67	

Chattanooga, TN

In 1994, the City of Chattanooga contracted with the Trust for Public Land to assist the community in establishing a unified greenway system. The Tennessee Riverpark and Chattanooga Area Greenways System represent this community's efforts to provide residents open green space for recreation and to preserve and protect their natural environment.



Chickamauga Creek Greenway and Tennessee Riverwalk

The South Chickamauga Creek Greenway (pictured above) lies mostly within a natural riparian corridor that transverses from a heavy industrial zone to some of Hamilton County's most hidden natural treasures. The greenway travels along the creek's edge under over-passing road and railway systems, linking the Tennessee River Park and Riverwalk, which has become a central ribbon to Chattanooga's economic and cultural revitalization and it provides locals and visitors with a scenic way in which to explore Chattanooga. The Chickamuaga Creek and the Tennessee Riverwalk deal with many creek crossings and steep grades that make these trails slightly more expensive than the average.

Trail	Year	Type	Linear Feet	Total Cost (2017 adj.)	Cost per Lft	Structures
Southern Chickamauga: East Chattanooga to Faith Road	2011	10'-wide asphalt trail and boardwalk	21,120	\$2,977,279	\$140.97	1,700 ft boardwalk 160 ft pedestrian bridge 550 ft boardwalk 2 railway underpasses
Southern Chickamauga Expansion	2015	10'-wide asphalt	4,400	\$2,701,594	\$614.00	190-foot footbridge 2 trailheads
Riverwalk Extension	2016	12'-wide concrete	26,400	\$16,239,659	\$615.14	1 underpass 1 150 ft bridge
Caine Lane Greenway Connector	Bid 2017	10'-wide asphalt trail	6,864	\$468,660	\$68.28	
University Greenway	2005	8' wide concrete	5,280	\$1,400,749	\$265.29	
Average					\$371.32	

Columbia, SC

Columbia, SC has recently unveiled the new rail trail, Vista Greenway, that moves through the heart of the town. The Saluda Riverwalk, an extension of their Three Rivers Greenway, is expected to be finished 2017.

Vista Greenway

The Vista Greenway (pictured top right) is an urban walkway that provides pedestrian and cycling connectivity to the Vista from the neighborhoods north of Elmwood Avenue, mostly along an abandoned railroad bed.



Three Rivers Greenway: Saluda Riverwalk Extension

The Saluda Riverwalk (pictured bottom right) will connect downtown Columbia with the Riverbanks Zoo. The Zoo is a huge draw for the city and it receives about 1.4 million visitors a year, this riverwalk will connect the zoo to downtown and the museums located there. The existing Three Rivers Greenway is located along the river and has many boardwalk elements.



Trail	Year	Type	Linear Feet	Total Cost (2017 adj.)	Cost per Lft	Structures
Vista Greenway Phase 2	2016	10'-wide asphalt trail	2,800	\$1,246,739	\$445.26	Lighting
Three Rivers Greenway	2017	10'-wide asphalt trail and boardwalk	16,896	\$4,500,000	\$266.34	
Average					\$291.77	

Greensboro, NC

Greensboro’s network of trails and greenways offers a variety of opportunities to actively enjoy the outdoors. The trails are located in urban and natural settings, and can be found in neighborhood and regional parks, open spaces, and around the City’s three lakes. The Trails Division of the Greensboro Parks and Recreation Department was founded in 1997 with the purpose of maintaining existing trails and fostering the development of a more comprehensive trails system.



Downtown Greensboro Greenway

The Downtown Greenway (pictured above), is a collaborative project of the City of Greensboro and Action Greensboro, a local advocacy organization. Most of the downtown loop follows an existing rail line and is embellished with intensive landscaping, public art, and many environmentally friendly trail amenities such as, the “big belly trash compactor” that uses the sun to compact garbage. The aim for this trail to be seen as an aesthetic, green linear park is why the costs for this trail is so high. In the table below, other simpler rail trail projects have been included to provide another perspective of regional trail costs.

Trail	Year	Type	Linear Feet	Total Cost (2017 adj.)	Cost per Lft
Downtown Greensboro Greenway: Phase 1B	2016	10’-wide asphalt trail	3,168	\$1,949,823	\$615.47
A and Y Battleground Rail Trail	2009	10’-wide asphalt trail	9,134	\$722,427	\$79.09
Southeast Walking Trail	2005	8’ wide concrete	5,280	\$142,079	\$26.91
Average					\$160.07

Huntsville, AL

Huntsville has nearly 30 miles of greenways and a plan for nearly 200 miles of connections. Given that Huntsville has miles of existing trail and a desire to expand, recent efforts have been made to allocate funding toward trail extensions. One recent trail extension included a one mile extension of the Aldridge Greenway.



Trail	Year	Type	Linear Feet	Total Cost (2017 adj.)	Cost per Lft
Aldridge Trail extension	2017	10'-wide asphalt trail	6,283	\$1,020,742	\$162.46

Lancaster, PA

While the City of Lancaster and Lancaster County don't have a robust network of greenway trails, the region has ambitious plans for three large rail-trail projects coming up in 2017-2018; the 7-mile Warwick-to-Ephrata Rail Trail, the 23-mile Enola Low Grade Trail and the 11-mile Northwest Lancaster County River Trail. The region is also in the process of developing an active transportation plan that will highlight critical trail connections and prioritize investment.



Lancaster's trails are usually crushed stone and they tend to refurbish existing bridge infrastructure. Funding is hard to come by in this region and these projects usually receive pushback from some residents and municipal officials.

*No trail construction bid tabs were available to be included in the cost analysis.

Lexington, KY

Lexington has been making great strides in the past 5 years in planning, designing and implementing trail projects. The trails program in Fayette County addresses critical regional connections by focusing on rail and utility corridors. Significant trail extension projects will be opened within the next year including four miles to the Town Branch Trail and two miles to the Legacy Trail.



Town Branch Trail

Town Branch Trail (TBT) is a proposed ‘shared-use’ greenway trail (paved route for pedestrians and bicyclists) that will connect Downtown Lexington with its world-famous equine landscape via area neighborhoods, parks, and historic sites as it follows the westward course of Lexington’s historic waterway, the Town Branch of Elkhorn Creek along whose banks Lexington was founded in 1779. The trail is a significant part of Lexington’s Greenway Masterplan, Downtown Masterplan, Downtown Streetscape Plan, and Newtown Pike Extension Plan.

Legacy Trail

The Legacy Trail is a shared-use greenway trail that connects downtown Lexington with area neighborhoods, parks and historic sites as it follows a northward course to the Kentucky Horse Park. The trail stretches 12 miles from the North Side YMCA to the Kentucky Horse Park campgrounds. Eight of the 12 miles are located off of roadways, and the entire length is paved. There is interpretative signage along the way and an additional trailhead at Coldstream Park.

Trail	Year	Type	Linear Feet	Total Cost (2017 adj.)	Cost per Lft
Town Branch: Alexandria Drive to Manchester St	2016	10'-wide asphalt trail	21,120	\$6,662,503	\$315.46
Legacy Trail	2016	10'-wide asphalt trail	10,500	\$3,792,502	\$361.19
Average					\$330.65

Minneapolis, MN

Minneapolis boasts one of the most connected and expansive greenway systems in North America. Their program launched in the mid 1970's and has continued to grow each year.

Midtown Greenway

The Midtown Greenway, pictured right, runs through the heart of Minneapolis. The Midtown Greenway is a 5.5-mile long former railroad corridor in south Minneapolis with bicycling and walking trails. It is owned by the Hennepin County Regional Railroad Authority and the trails are maintained by the City of Minneapolis. The Midtown Greenway Coalition is the grassroots organization that successfully advocated for installation of the Midtown Greenway by public agencies. The Coalition continues to engage the community in protecting, improving, and using the Greenway.



For most of its distance across the city, the corridor is grade-separated from the street grid, either in a gorge passing under bridges carrying streets overhead, or on a levy with traffic passing underneath it. This offers barrier-free bicycling that can make cross-town trips faster than going by car. All the way across Minneapolis the Midtown Greenway runs parallel to nearby Lake Street, a commercial strip with hundreds of retailers, restaurants, and other businesses.

The detailed cost breakdown in the table on page 19 highlights the fact that adding significant structures with artistic details greatly increases the cost (picture bottom right).

Additionally, Minneapolis chose to increase the width of the

Midtown Greenway to twenty feet width to allow significant bike commuter access to the city. Another huge cost is the large suspension bridge that fills the community's desire to be completely separated from the roadway.



Minneapolis, MN (Cont.)

Trail	Year	Type	Linear Feet	Total Cost (2017 adj.)	Cost per Lft	Structures
Midtown Greenway: Phase 1	2000	20'-wide asphalt trail	14,256	\$6,186,065	\$433.93	
Midtown Greenway: Phase 2	2004	20'-wide asphalt trail	7,920	\$6,031,638	\$761.57	
Lake Calhoun/bde Maka ska & Lake Harriet Trail	2017	2- 10' wide asphalt trails	15,000	\$2,608,360	\$173.89	
Minnehaha Parkway Trail and Site Improvements	2016	8' concrete	2,000	\$331,588	\$165.79	
Average					\$386.91	

Raleigh, NC

The Capital Area Greenway System is a network of public open spaces and recreational trails that connect many of Raleigh's parks. Many of the city's major ecological features can be experienced in their natural state along the greenway system. A major goal of the Greenway Program is to establish a completed network of interconnected trails throughout the city.



Neuse River Trail

One piece of the Capital Area Greenway System is the Neuse River Trail. The Neuse River Greenway Trail offers scenic views of the Neuse River, winding boardwalk areas through wetlands, historical sights, interpretive signs, and agricultural fields. In addition to being part of the City's Capital Area Greenway System, it is a segment of the Mountains-to-Sea Trail, which is a long distance trail that runs across North Carolina from the Great Smoky Mountains to the Outer Banks. (raleighnc.gov)

Trail	Year	Type	Linear Feet	Total Cost (2017 adj.)	Cost per Lft	Structures
Neuse River Trail: Knightdale to Hedingham Section	2011	10'-wide asphalt trail	34,320	\$6,823,328	\$198.81	2 bridges, and 600 ft boardwalk
Neuse River Trail: Skycrest North	2011	10'-wide asphalt trail	27,984	\$9,619,740	\$343.76	1 suspension bridge, 2 prefab bridges, 3 tributary bridges, 2000 ft of boardwalk
Neuse River Trail: Poole Road North	2012	10'-wide asphalt trail	6,336	\$2,351,307	\$371.10	1 bridge, 300 ft boardwalk
Neuse River Trail: Auburn Knightdale to Poole Road	2011	10' wide asphalt trail	15,840	\$5,445,246	\$343.77	5 bridges
Honeycutt Greenway	2012	10' wide asphalt trail	9,000	\$3,786,348	\$420.71	3 bridges and 1000 foot boardwalk
Average					\$299.81	

Spartanburg, SC

Spartanburg has outlined a framework for a connected network of off-street trails, integrated seamlessly with the on-street network, to facilitate walking and biking as viable transportation choices and recreation opportunities throughout the metropolitan area.



Mary Black Rail Trail

This is the most popular walking and cycling trail in Spartanburg County. Completed and opened in 2004, the Mary Black Rail Trail is a 2-mile long trail just south of downtown. Bikes are available for rent from the B-Cycle station at the trailhead at Henry and Union streets. Adjacent to the state-of-the-art YMCA that opened in 2012, the Rail Trail also passes by the City's first dog park, "Rail Tail".

Trail	Year	Type	Linear Feet	Total Cost (2017 adj.)	Cost per Lft
Woodruff Greenway Trail	2014	10'-wide asphalt trail	5,280	\$4,152,585	\$786.47
Doodle Trail (Greenville, SC)	2006	10'-wide asphalt trail	2,140	\$832,017	\$388.79
Average					\$671.78

Program Staffing

Staff dedicated to trail planning, design, construction, maintenance and programming varies between the ten selected cities. Planning and design staff may be involved in trail planning and design, but that may not be their sole responsibility. Therefore, it's difficult to put a total number of full-time staff assigned to the trail program. Instead, the table below highlights the number of dedicated staff identified and uses a plus symbol to indicate additional support, such as maintenance, real estate, land-use, programming, and construction administration.

Fayetteville plans, designs, constructs, and maintains all of their trails in-house with a workforce equivalent to 11 full time staff. Fayetteville's approach to staffing is unique to the NWA region and therefore specifically highlighted in the table below. Most jurisdictions in the NWA region staff their trail programs through a combination of Parks and Recreation staff and Department of Transportation staff, averaging one to two full-time equivalent staff dedicated to trail development.

City	Total Number of Full-time Staff
Fayetteville, AR	11
Austin, TX	4+
Lexington, KY	3+
Raleigh, NC	3+
Minneapolis, MN	2+
Greensboro, NC	2+
Lancaster, PA	1+
Spartanburg, SC	1+
Huntsville, AL	N/A
Chattanooga, TN	N/A
Columbia, SC	N/A

Local Nonprofits and Advocacy Groups

Each city has a diverse range of stakeholders in the trail “community”, many with different reasons for using and enjoying the trail network. This section highlights a range of methods used in our peer and aspirational cities to provide outreach and education to various stakeholders. Educational and encouragement programming is often a result of partnerships between City and private sector organizations. The table below, while not exhaustive, illustrates various non-profit and advocacy groups in each City that influence the trail culture.

City	Groups
Austin*	Austin Parks Foundation Bike Austin WalkAustin
Chattanooga	Wild Trails Bike Walk Chattanooga South Chickamauga Creek Greenway Alliance
Columbia	Palmetto Cycling Coalition (NOTE: Statewide organization based in Columbia)
NWA	Oz Trails, NWA Trails, Bicycle Coalition of the Ozarks, Ozarks Off-Road Cyclists, NWA Land Trust, Northwest Arkansas Regional Planning Commission
Greensboro	Bicycling in Greensboro (BIG)
Huntsville	Spring City Cycling Club
Lancaster	Dream Ride Projects
Lexington	Bluegrass Cycling Club
Minneapolis*	Midtown Greenway Coalition Minneapolis Bicycle Coalition Twin Cities Bike Advocates Bike Walk Twin Cities
Raleigh	Oaks & Spokes
Spartanburg	Partners for Active Living

Evaluation

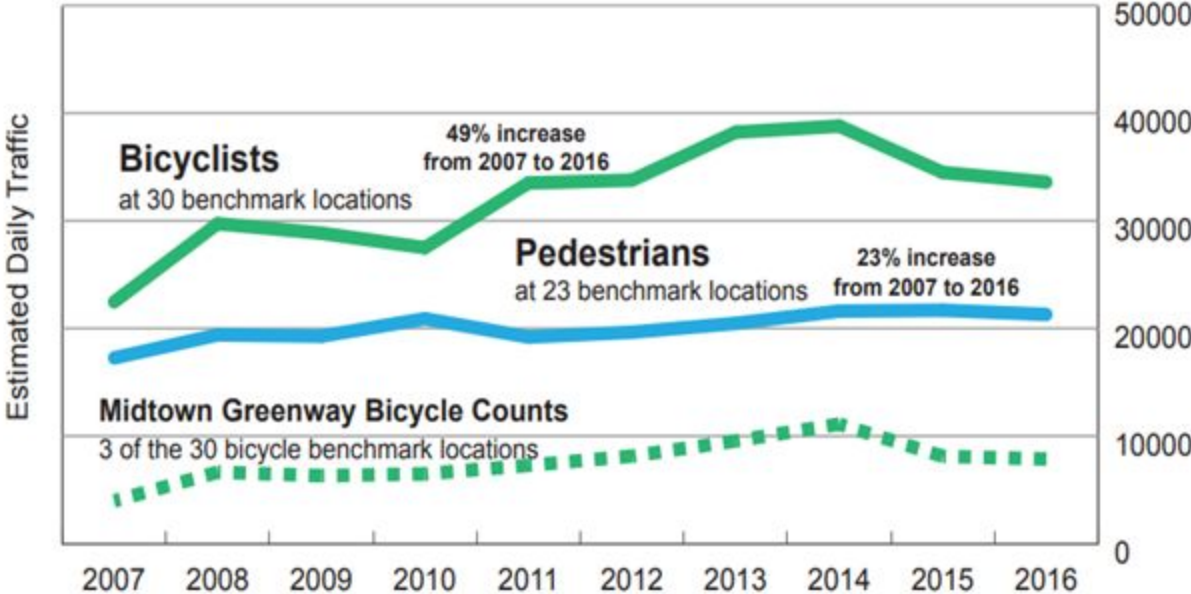
Trail counts can be conducted manually or with automatic sensors. Manual counts are low-cost, easy to implement, and can provide additional data such as gender and percentage of people who bike that wear helmets or have bike lights. However, manual counts require significant volunteer time and do not provide a continual, 24 hour picture of usage. Better data on pedestrian and cyclist travel will:

- Help to determine where investments are most needed;
- Help quantify the benefits of walking and biking, and;
- Make active transportation projects more competitive for funding opportunities.

SPOTLIGHT: Minneapolis, MN User Count Report

Since 2007, the Minneapolis Public Works Department has conducted annual bicyclist and pedestrian traffic counts at locations throughout the city. This annual count is summarized in an annual report that includes data and maps of estimated daily traffic (EDT) for bicyclists and pedestrians. Public Works conducts these annual counts to understand non-motorized traffic patterns on streets and trails, to measure the effects of improvements made to streets, and to track trends in bicyclist and pedestrian traffic across Minneapolis.

The graph below highlights the steady increase in estimated daily traffic (bicycle traffic only) along the Midtown Greenway Trail between 2007 and 2016.



*2016 Minneapolis Bicyclist & Pedestrian Count Report

Trail Impact Studies

An impact analysis may measure the economic, environmental, and health benefits of trails. This can be done either as an estimate before a trail is built, or as an evaluation after a trail has been established.



SPOTLIGHT: Swamp Rabbit Trail 3-year Evaluation Study

The Swamp Rabbit Trail builds on the success of downtown Greenville’s revitalization by linking the downtown core with destinations such as Cleveland Park, Furman University, Falls Park, and the Town of Travelers Rest. The trail is approximately 20 miles and follows abandoned rail corridors and greenways. In 2014 the Greenville-Pickens Area Transportation Plan (GPATS) released a 3 year study of the Swamp Rabbit Trail usage as well as health and environmental impacts. The study observed over 500,000 trail users in year three, which highlighted the success of the trail as a major recreation and transportation corridor. The high number of trail users opened the doors for funding trail expansion as well as safety improvements at major trail intersections.

Figure 1: Percent of GHS SRT Users for Gender

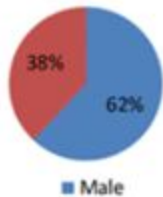


Figure 2: Percent of GHS SRT Users for Age

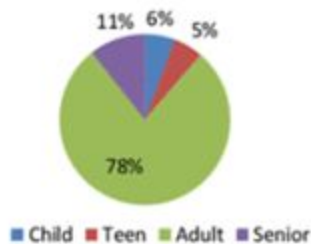
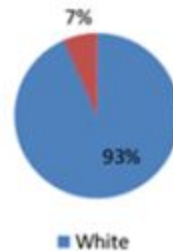


Figure 3: Percent of GHS SRT Users for Ethnicity



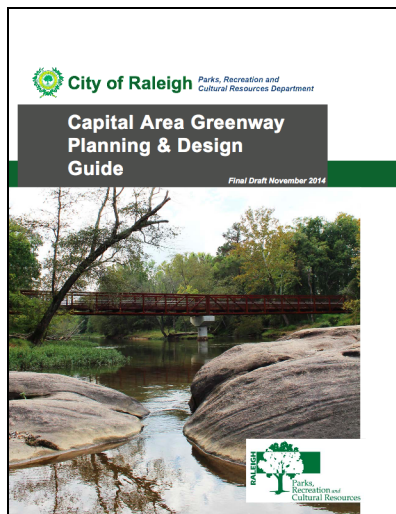
• NCHRP Report 797: “Guidebook on Pedestrian and Bicycle Volume Data Collection.” Available at: escholarship.org/uc/item/11q5p33w.pdf

• National Bicycle and Pedestrian Documentation Project: <http://bikepeddocumentation.org/>

Design Practices

The most visible evidence of a great trails is simply the fact that the infrastructure is welcoming and attractive to users. To guide the creation of such infrastructure, municipalities may follow guidance from national, state and local design standards and best practices for trail development.

SPOTLIGHT: Raleigh, NC



The City of Raleigh published the Capital Area Greenway (CAG) Planning and Design Guide in 2015 to inform the “planning, design, and engineering of greenway trail facilities.” The guide offers dimension, surface, amenity, and wayfinding guidance for five types of greenways: cross city greenway trails, greenway collector trails, greenway connector loop trails, neighborhood greenway trails and greenway connectors. These guidelines can be seen in the figure below.

Source: Capital Area Greenway (CAG) Planning and Design Guide, 2015

SPOTLIGHT: Chattanooga, TN

The Tennessee River Walk has several innovative design treatments, including the switchbacks featured to the right. These were installed to navigate difficult steep grade changes while maintaining ADA compliance. The design also includes placemaking elements that while may be more expensive, provides users with a more attractive trail experience.



Mayor Quotes

“We’ve been really trying to share, over the last two decades, how important the development of greenways can be to quality of life and improving the value of our properties all throughout the city,” the mayor says. “Pulling the greenway concept into our entertainment and arts and commercial district, the Vista, helps people really get the idea of how important this is. With phase two connecting the Vista with the city’s oldest neighborhood, Elmwood, it’s a big deal.”

--City of Columbia Mayor Benjamin

"We heard citizens loud and clear say that greenways are a priority. After looking at the BIG Picture (comprehensive plan) feedback and examining the rapid construction of new greenways and multi-modal lanes in other cities, we decided to update our plan to better reflect the public's desires and to determine how we are going to pay for these pedestrian networks."

-- City of Huntsville Mayor Battle

“The City of Raleigh has worked hard to make itself a more bicycle-friendly city. Since we adopted a new Bicycle Transportation Plan in 2009, the city received bronze-level Bicycle Friendly Community designation from the League of American Bicyclists, but there is still much more work to be done.”

--City of Raleigh Mayor McFarlane

“We’re moving forward with trail infrastructure in parts of town that haven’t had them historically, making sure we have community input to make that happen and to make that happen well. But the future, the third wave of where we need to go – if the first is recreation, the second is transportation – it’s lifestyle. We build this in from the bottom up, into how we live. How we live together in community, in cities, and in urban areas. That’s the frontier that we’re facing right now.”

--City of Minneapolis Mayor Hodges