



walk**n**bike

PEER CITY AND
ASPIRATIONAL
CITY REVIEW

NASHVILLE, TENNESSEE



“A world-class multi-modal transportation system is essential to a vibrant city and a better quality of life.”

– Mayor Barry

This peer and aspirational city report was compiled as a resource for Nashville as it develops the 2016 WalknBike Plan. Nashville’s record of high quality design, progressive planning and meaningful civic participation prompted the selection of peer and aspirational review cities that have remarkable records of their own with regard to sidewalk and bikeway infrastructure and programming.

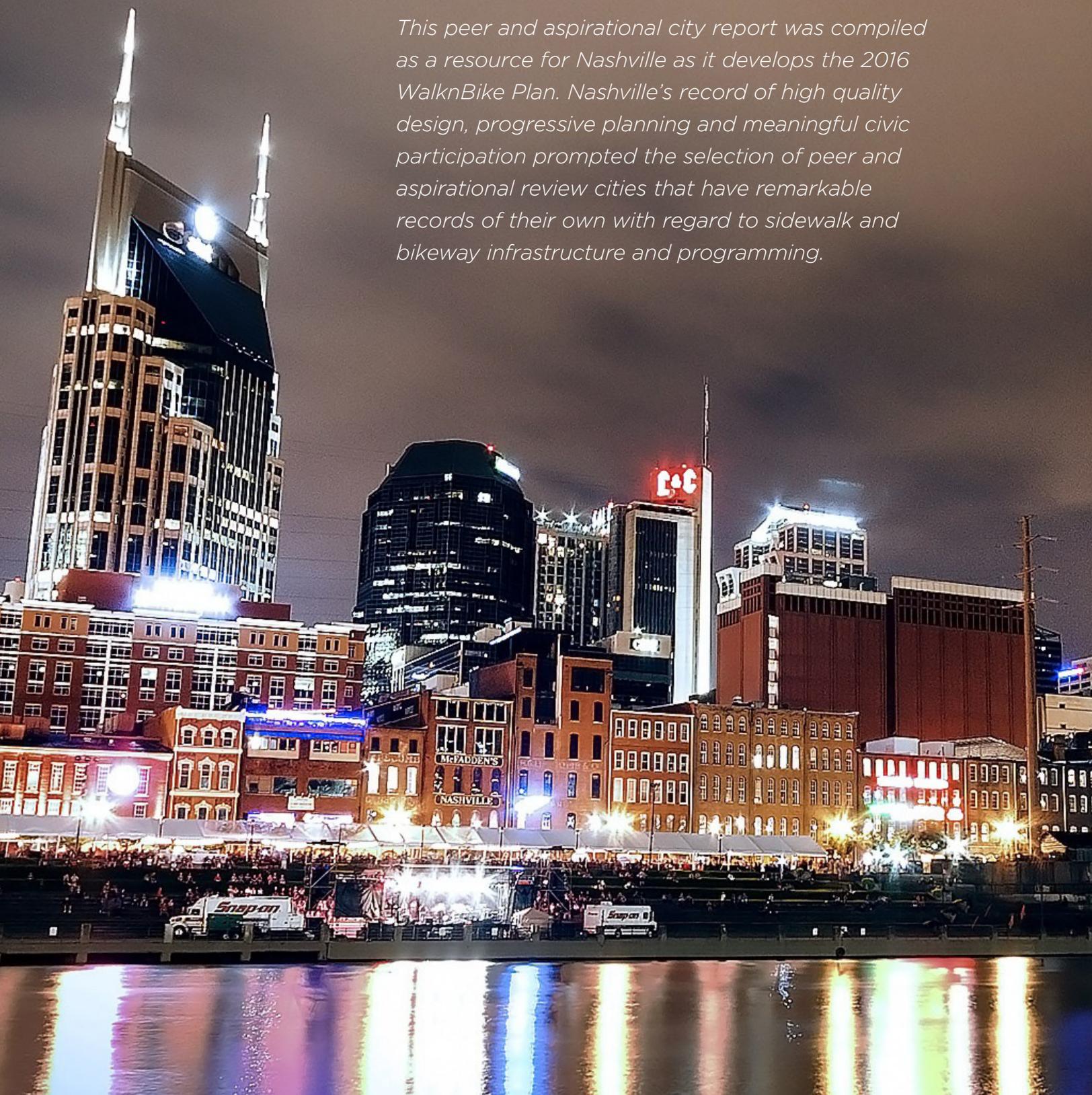


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EXECUTIVE SUMMARY

Nashville-Davidson County has begun the planning process for the 2016 Strategic Plan for Sidewalks and Bikeways. This report seeks to present and summarize data on sidewalk and bikeway funding, programs, policies, and design practices for Nashville as well as four peer cities (Indianapolis, Louisville, Memphis, and Raleigh) and four aspirational cities (Austin, Denver, Minneapolis, and Seattle).

GENERAL TRENDS & OVERARCHING THEMES

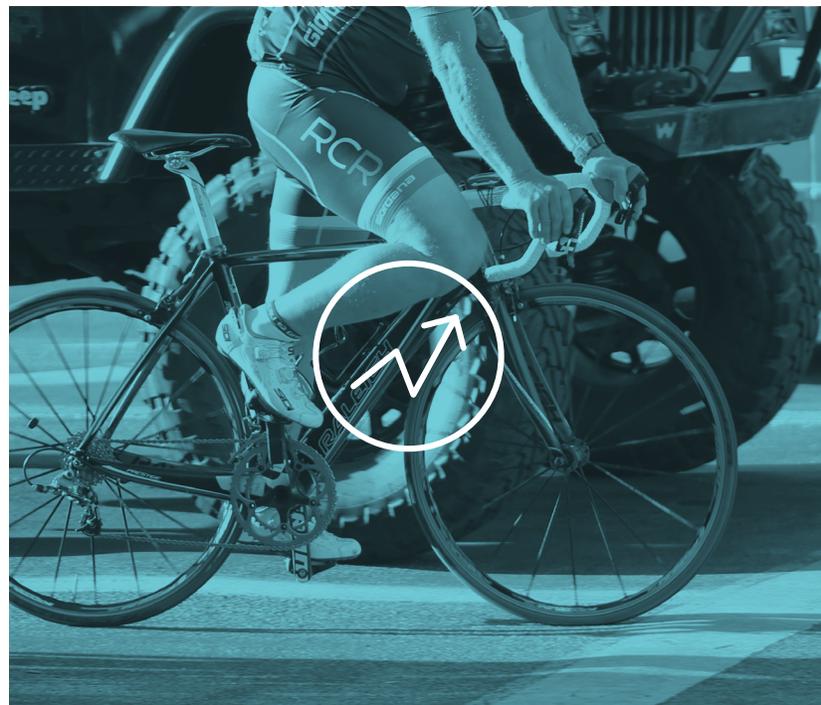
Of the peer and aspirational cities, Nashville is the least dense and covers the largest area (square miles).

Nashville has spent more on sidewalk and bikeway improvements than any other peer or aspirational city.

While an exact number of staff dedicated to bikeway and pedestrian programming is hard to quantify, there is a distinct difference in staffing levels between peer and aspirational cities.

Austin and Seattle have detailed budget line items for their bicycle and pedestrian programs, instead of broader bikeway and sidewalk allocations.

Most cities are moving towards separated bikeway implementation to develop an “all ages and abilities” network.



PRIORITIZATION METHODOLOGY

Nashville, Louisville, Memphis, Raleigh, Austin, Denver, and Seattle, which have a sidewalk prioritization process in place, include schools and transit access as prioritization criteria. Other commonly used criteria include parks/ greenways, access to a library or civic building, and stakeholder input.

Nashville, Austin, and Indianapolis do not have bikeway prioritization processes in place. Bikeway projects are undertaken in conjunction with road resurfacing projects.



POLICY & ENFORCEMENT

Nashville and Austin accept responsibility for repairing and maintaining sidewalks.

In all cities, residents can report a sidewalk maintenance issue through the city's 311 call system.

Nashville, Indianapolis, Louisville, Raleigh, and Austin have sidewalk fee in-lieu programs where developers can pay a fee instead of building sidewalks adjacent to their development.

Enforcement efforts in all cities tend to be dependent on available funding. Seattle and Austin have cameras in school zones that automatically generate tickets for traffic infractions and help to fund Safe Routes to School efforts.



OUTREACH & EDUCATION

All of the aspirational cities have separated their bicycle and pedestrian advisory councils into two distinct groups that meet monthly.

Nashville's civic engagement level matches that of the aspirational cities in the number of local advocacy and non-profits focused on bicycle and pedestrian issues.

Austin has a Bike Share Equity Program where residents who earn less than \$25,000 a year are eligible for subsidized annual memberships of \$5. Six bike share stations have been installed in low-income neighborhoods.

Seattle's Vision Zero program uses a comprehensive approach to reduce traffic fatalities in the city. This includes targeted enforcement in areas with high collisions, 20 MPH zones, corridor safety improvements, and programming such as Safe Routes to School.

DESIGN PRACTICES

Denver prioritizes bike parking by using a heat map that shows areas with high demand. For bicycle parking requests, the applicant must first fill out an application with the city.

All cities, with the exception of Minneapolis, have a Complete Streets policy in place. Seattle and Indianapolis have detailed performance measures in place to track implementation.

Nashville, Indianapolis, Memphis, Austin, Denver, Minneapolis, and Seattle have embraced and utilized tactical urbanism, although at different scales and under various lead agencies. Implementation is used as a way to demonstrate what pedestrian and bikeway facilities would look like in a neighborhood.





INTRODUCTION

Nashville, the capital of Tennessee, is experiencing significant population and economic growth. In order to accommodate growth in a sustainable manner, the Metropolitan Government of Nashville and Davidson County (here on referred to as Nashville) is focusing on improving accessibility and safety of the pedestrian and bikeway network. Mayor Barry is committed to meeting the needs for more sidewalks and bikeways in Nashville.

In March 2016, Mayor Barry initiated the planning process for an update to the Strategic Plan for Sidewalks & Bikeways (WalknBike Plan). One of the first steps of the process is to understand Nashville's bicycle and pedestrian infrastructure, policies, and programs in relation to peer cities in the United States – cities that are similar in demographics, land area, and other factors – as well as to aspirational cities – cities which Nashville strives to model based on the safety and friendliness of its pedestrian and bicycling environment.

The goal of this report is to highlight the bicycle and pedestrian program, policy, and design trends, as well as best practices. Recommendations regarding Nashville policies and procedures are not included in this report, but will be developed, with help from the WalknBike steering committee, and presented in the WalknBike Plan.

Peer and Aspirational Cities

This peer city and aspirational city report collects and summarizes data gathered from Nashville as well as four peer cities and four aspirational cities.



Nashville, TN = N



Peer Cities:

Indianapolis, IN = I



Louisville, KY = L



Memphis, TN = Me



Raleigh, NC = R



Aspirational Cities:

Austin, TX = A



Minneapolis, MN = Mi



Seattle, WA = S



Denver, CO = D



Selection Methods

The eight peer and aspirational cities featured in this report were selected by scoring quantifiable data for each of the 100 most populous U.S. cities. The objective of this selection method was to highlight both the commonalities cities share with Nashville, as well as the strength of current bicycle and pedestrian practices in those cities. The criteria used to score these cities were each given equal weight and included:

- Population Size
- Recent Population Growth
- Land Area
- Population Density
- Government Structure
- Bicycle Friendly Community (BFC) Ranking

Considered cities were ranked in order of their scores, and Metro Nashville ultimately selected the peer and aspirational cities from this list. While all chosen cities can be considered peers of Nashville based on the aforementioned criteria, Austin, Denver, Minneapolis, and Seattle were designated as aspirational cities as a result of their Silver or Gold Bicycle Friendly Community Rankings.

It's important to recognize that of all the cities selected, Nashville is the least dense and covers the largest area (square miles). This is an important factor to keep in mind and often makes direct comparisons to other cities challenging.

NASHVILLE ■

PEER CITY ■

ASPIRATIONAL CITY ■

BFC DESIGNATION

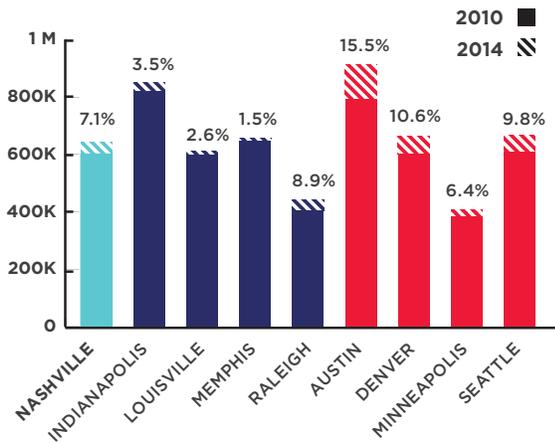
NASHVILLE	<i>Bronze</i>
INDIANAPOLIS	<i>Bronze</i>
LOUISVILLE	<i>Silver</i>
MEMPHIS	<i>Bronze</i>
RALEIGH	<i>Bronze</i>
AUSTIN	<i>Gold</i>
DENVER	<i>Silver</i>
MINNEAPOLIS	<i>Gold</i>
SEATTLE	<i>Gold</i>

CONSOLIDATED GOVERNMENT?

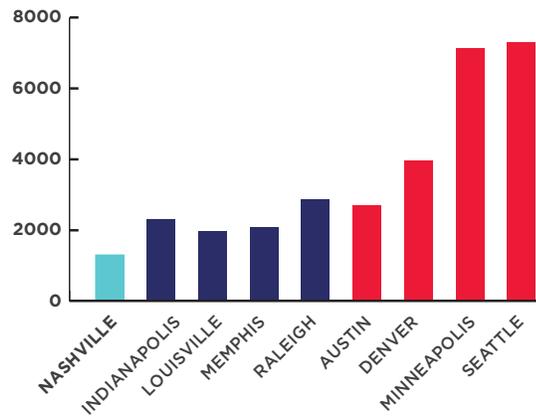
	<i>yes</i>	<i>no</i>
NASHVILLE	<input checked="" type="radio"/>	<input type="radio"/>
INDIANAPOLIS	<input checked="" type="radio"/>	<input type="radio"/>
LOUISVILLE	<input checked="" type="radio"/>	<input type="radio"/>
MEMPHIS	<input type="radio"/>	<input checked="" type="radio"/>
RALEIGH	<input type="radio"/>	<input checked="" type="radio"/>
AUSTIN	<input type="radio"/>	<input checked="" type="radio"/>
DENVER	<input checked="" type="radio"/>	<input type="radio"/>
MINNEAPOLIS	<input type="radio"/>	<input checked="" type="radio"/>
SEATTLE	<input type="radio"/>	<input checked="" type="radio"/>

NASHVILLE ■
 PEER CITY ■
 ASPIRATIONAL CITY ■

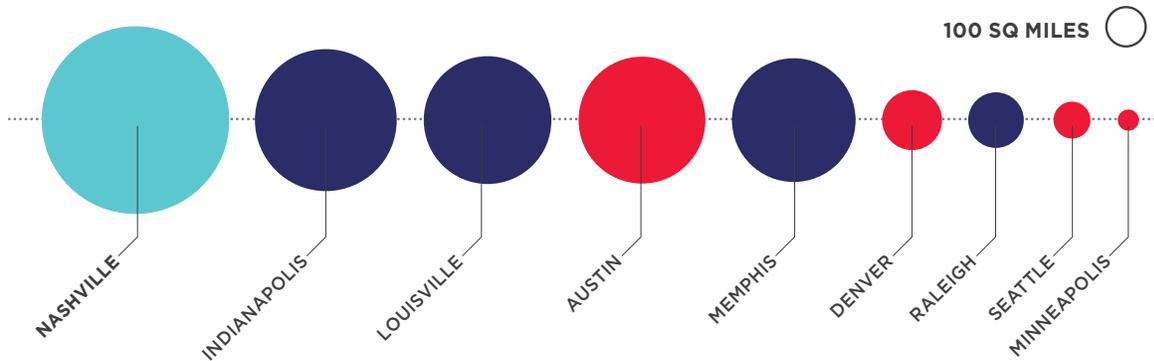
POPULATION GROWTH 2010-2014



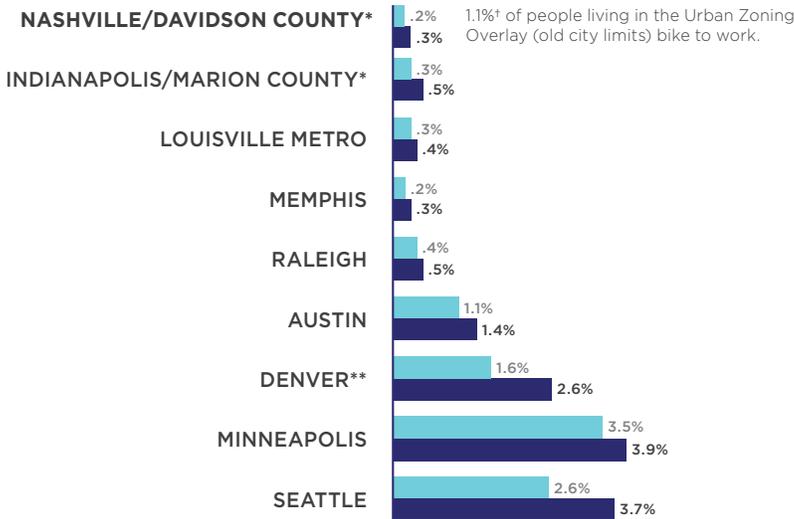
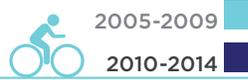
POPULATION DENSITY (per sq. miles)



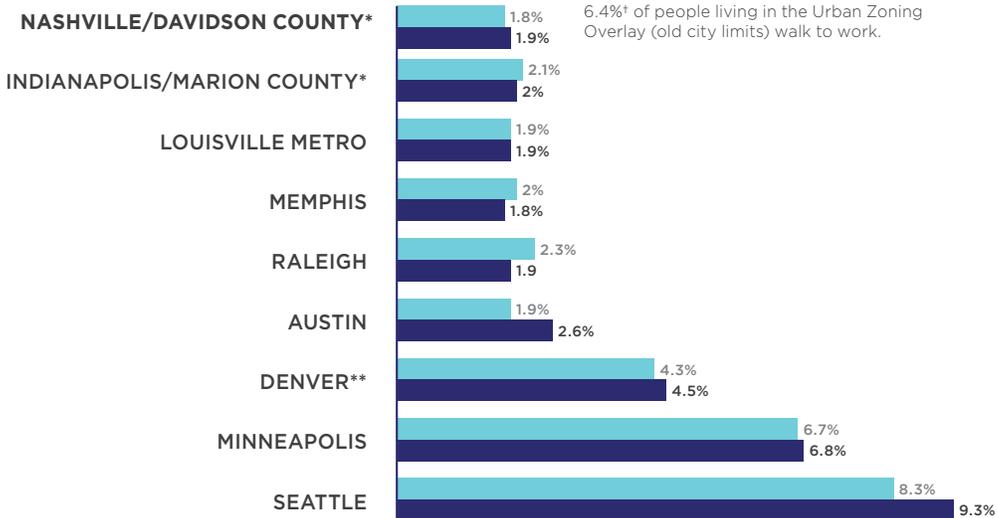
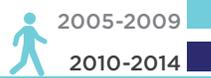
AREA (sq. miles)



BICYCLE COMMUTE SHARE



WALK COMMUTE SHARE



Source: U.S. Census Bureau, 2005-2009 American Community Survey and 2010-2014 American Community Survey
 *Consolidated city-county government
 **Consolidated city-county government but data only reflects City of Denver
[†]Data used from 2015 Access Nashville report card developed in the NashvilleNext plan.

Nashville and Indianapolis data represent county populations; all other data represents city populations.



GENERAL
TRENDS AND
OVERARCHING
THEMES

Summary

While this report is organized by the WalknBike Steering Committee subcommittee topics, this section highlights several key trends and themes that have an impact across all subcommittee topics.

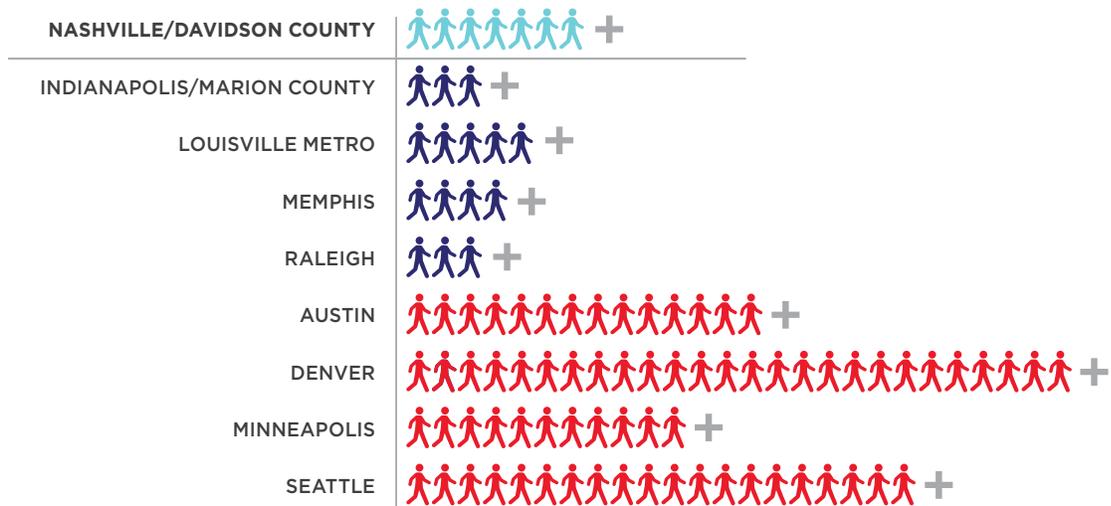
“Nashville is committed to creating sidewalk and bikeway infrastructure that is safe and inviting for all users. WalknBike, Nashville’s updated strategic sidewalk and bikeways plan, will aspire toward the highest marks of excellence and it will serve as the foundation for making future choices that will ensure Nashville becomes even more walk-able and bike-able.”

—MARK MACY,
PUBLIC WORKS DIRECTOR

Dedicated Bicycle & Pedestrian Staffing

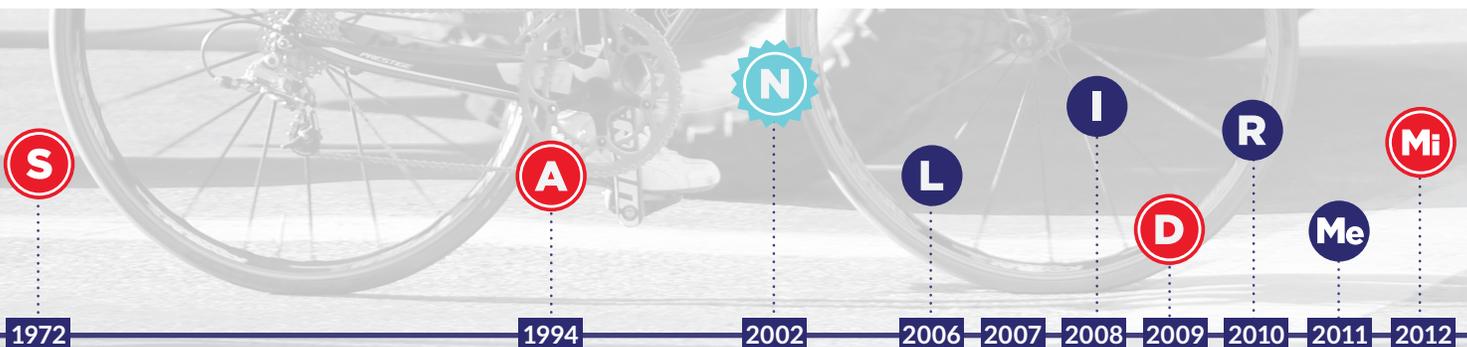
The number of staff dedicated to pedestrian and bicycle programs varied among peer and aspirational cities. Denver has a total of 26 dedicated full-time employees, which is the most among the peer and aspirational cities. All four peer cities – Indianapolis, Louisville, Memphis, and Raleigh – have a bicycle and pedestrian coordinator who works on both pedestrian and bicycle programs. On the other hand, Austin and Denver have separate staff who work on either the bicycle or the pedestrian program.

BICYCLE & PEDESTRIAN STAFFING



Note: The number of staff displayed for each city represents full-time staff and part-time staff. Additional staff are often involved in bicycle and pedestrian projects and programs, making it difficult to quantify an exact number.

To understand the length of time each City has been working on their bicycle and pedestrian programs, the timeline below notes the year the first city-funded full-time bicycle and pedestrian staff was hired.



Funding

In general, funding sources vary by city and also by what the funding is used for – maintenance of existing sidewalks, construction of new sidewalks, or bikeway projects. It is very difficult to compare funding totals across all cities as they are not “apples to apples” comparisons. Many bicycle and pedestrian facilities are part of a larger “complete street” project, making it difficult to identify exact costs. Instead, funding sources are compared across all cities and a brief summary of funding amounts and innovative strategies are described below.

Examples of Funding Sources

Federal	State	Local/Regional	Private
Congestion Mitigation and Air Quality (CMAQ) Improvement Program	State Bicycle and Pedestrian Grants	Business Improvement District Funds	Developers
Highway Safety Improvement Program (HSIP)	State Multi-modal Funds	General Obligation Bonds	Hospitals
Surface Transportation Program	State Safe Routes to School Funds	Local Capital Improvement Programs	Philanthropy
Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant Program		Regional Bicycle and Pedestrian Program Funds	Universities
Transportation Alternatives Program (TAP)		Tax Increment Financing (TIF)	
Federal Transit Agency (FTA) Grants		Unspecified City Funds	
		Voter-approved Sales Taxes or Other Levies	
		Transit Agency Funding (Operating)	
		Speeding Infraction Revenue	

Reported Funding Sources

City	Maintenance of Existing Sidewalks	Construction of New Sidewalks	On-Road Bikeway Projects
Nashville	Local/Regional, Private	Local/Regional, Private, State, Federal	Federal, Local/Regional
Peer	Indianapolis	Local/Regional	Local/Regional, Private
	Louisville	Federal, Local/Regional	Federal, Private, Local/Regional
	Memphis	Federal, Local/Regional	Private
	Raleigh	Local/Regional	Federal, Local/Regional, Private,
Aspirational	Austin	Local/Regional	Federal, State, Local/Regional, Private, State
	Denver	Local/Regional	Federal, Local/Regional, Private
	Minneapolis	Local/Regional	Private
	Seattle	Local/Regional	Federal, State, Local/Regional, Private

Funding Summaries

This summary is for dedicated bike and sidewalk allocations and doesn't include several of the "complete street" or location specific projects. Also, since cities are currently in various stages of their budget development process, budget year cycles may vary. If available, recommended FY17 budgets are highlighted.

City	Pedestrian Funding Summary	Bikeway Funding Summary	
	<p>Nashville's allocation for sidewalks (roughly 50% spent on construction and 50% spent on maintenance) are:</p> <ul style="list-style-type: none"> • 2010: \$5.2M • 2011: \$12.5M • 2012: \$12M • 2013: \$8M • 2014: \$18M • 2015: \$25M 	<p>Nashville's allocation for bikeways (separated from greenway trail allocations):</p> <ul style="list-style-type: none"> • 2010: \$900,000 • 2011: \$3M • 2012: \$3M • 2013: \$2M • 2014: \$1.9M • 2015: — <p>*Paving allocations, which had been the primary bikeway implementation strategy, has ranged from \$12M to \$30M over the past five years</p>	
	<p>The data above was pulled directly from the capital spending plans, which are the Mayor's recommendations of capital projects that the administration would like to see approved and financed. There is no mandate in the Metro Charter for an annual capital spending plan, so it can be submitted at the Mayor's discretion. The Capital Spending Plan must be approved by the Metro Council by Resolution.</p> <p>Mayor Barry's focus on improving and expanding the bicycle and pedestrian infrastructure is supported by her recommended FY17 spending plan:</p> <ul style="list-style-type: none"> • Sidewalks: \$30M • Paving: \$35M • Greenways: \$5M 		
Peer		<p>Indianapolis does not have a dedicated funding source for bicycle and pedestrian projects.</p>	
		<p>Louisville's FY16 approved executive budget sets aside:</p> <ul style="list-style-type: none"> • \$1.2M annual allocation reported for sidewalk maintenance. • \$1.3M for Metro Council Paving and Sidewalk Projects. <ul style="list-style-type: none"> • This is in addition to the \$50,000 per Council district (26 total) used at the council discretion • \$13M for Metro Street Improvements, including continued funding of the Urban Bike Lanes <p>Highlights of the recommended FY17 executive budget include:</p> <ul style="list-style-type: none"> • \$2.9M for Metro's sidewalk repair program • \$500,000 dedicated allocation for bicycle infrastructure • \$63,500 set aside under Develop Louisville for bike share project (federal grant match) • \$67.6M bond for roadways, bike lanes, sidewalks and other capital improvements is proposed <p>See SPOTLIGHT for details on the National Highway Traffic Safety Administration grant</p>	

City	Pedestrian Funding Summary	Bikeway Funding Summary
Peer	<p>Me</p> <p>The Memphis FY17 Capital Improvement Program (CIP) allocates:</p> <ul style="list-style-type: none"> • \$500,000 has been allocated from general obligation bonds for sidewalk maintenance and an additional \$2.5M for ADA curb ramp improvements. • A transportation alternatives line item funds improvements for bicycle and pedestrian infrastructure. The local match for federal grants is funded from general obligation bonds (\$26,000) resulting in a total of \$123,000. <ul style="list-style-type: none"> • FY18 total is \$550,450 • FY19 total is \$1.85M • A STP pedestrian routes line item funds an analysis of existing sidewalks in the proximity of schools that totals \$221,182 (general obligation bond and federal grants) 	
	<p>R</p> <p>Raleigh's recent transportation bonds have significantly funded new sidewalk and sidewalk repair projects.</p> <p>2011 Bond:</p> <ul style="list-style-type: none"> • New sidewalk construction, \$4.75M • Citizen petitioned new sidewalk construction, \$3M • Sidewalk repair reserve, \$4M <p>2013 Bond:</p> <ul style="list-style-type: none"> • New sidewalk construction, \$1.5M <p>Raleigh's proposed FY17 Capital Improvement Program recommends:</p> <ul style="list-style-type: none"> • \$400,000 for sidewalk repairs • \$162,000 for micro-gap sidewalk improvements (400ft or less) • \$71,000 for bicycle lane marking and signage • \$425,000 for bike share 	<p>The funding summary below for Raleigh includes a combination of local, state, and federal funding sources budgeted for on-road bicycle improvements. However, much of the network has been built through state and local resurfacing projects, which isn't accounted for:</p> <ul style="list-style-type: none"> • FY09: \$314,000 • FY10: \$423,000 • FY11: \$429,000 • FY12: \$72,000 • FY13: \$1.35M • FY14: \$2.41M • FY15: \$4.62M

City	Pedestrian Funding Summary	Bikeway Funding Summary
	<p>Austin's 2015-2016 approved budget, dedicated allocations include:</p> <ul style="list-style-type: none"> • \$4.9M for Concrete Repair & Construction • \$3.7M for Off-Street R-O-W Maintenance (sidewalk cleanup) • \$720,000 for Sidewalk Program • \$903,700 for Bicycle Infrastructure Management <p>Austin's budget includes a summary of:</p> <ul style="list-style-type: none"> • Program accomplishments • FTE equivalents • Performance measures for each program activity. 	
	<p>Denver's Elevate 2020, the six year capital improvement plan (2015-2020), the following dedicated pedestrian allocations are included:</p> <ul style="list-style-type: none"> • \$2.5M for ADA Curb Ramps • Several bicycle and pedestrian focused projects are detailed in the "deferred discretionary projects" — bicycle and pedestrian transit section <p>In 2015, a "one-time" General Fund transfer of \$63 million was programmed to address deferred capital infrastructure needs, including \$10M for ADA curb ramps and other multi-modal infrastructure.</p>	<p>In the Denver Moves report, an historical summary of bike program funding showed the following:</p> <ul style="list-style-type: none"> • 2011: \$160,000 • 2012: \$140,000 • 2013: \$450,000 • 2014: \$1.4M • 2015: \$2.3M
	<p>Minneapolis's dedicated pedestrian improvement funding, focusing mainly on sidewalk repair, clean-up and widening, varies by year in the Council adopted budgets:</p> <ul style="list-style-type: none"> • 2015: \$1M • 2016: \$500,000 	<p>Minneapolis's adopted 2016 Council Adopted Budget includes the following:</p> <ul style="list-style-type: none"> • \$760,000 for separated bikeway implementation • Overall, bikeway specific funding accounts for 1.4% of capital funding for transportation projects
	<p>Seattle's 2016-2021 CIP allocates the following for FY 2016:</p> <ul style="list-style-type: none"> • \$1.5M for school safety initiatives related to the Pedestrian Master Plan • \$630,000 for implementation of the Pedestrian Master Plan • \$8.7M for new sidewalks • \$432,000 for ADA improvements <p>See SPOTLIGHT on Levy to Move Seattle</p>	<p>Seattle's 2016-2021 CIP allocates the following for FY 2016:</p> <ul style="list-style-type: none"> • \$1.3M for the implementation of the Bicycle Master Plan • \$5M for bike share expansion

Aspirational

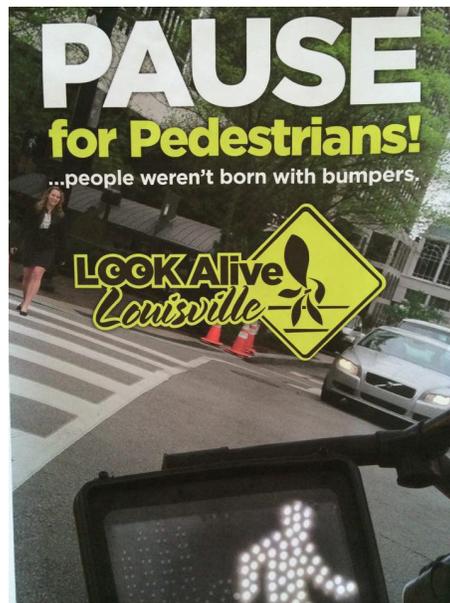
Spotlight: LOUISVILLE NHTSA GRANT

L In 2014, Louisville was selected as one of three cities to receive a grant from The U.S. Department of Transportation’s National Highway Traffic Safety Administration (NHTSA) for public education and enforcement initiatives to improve pedestrian safety. The grants collectively totaled approximately \$1.6 million and were part of the Department’s Everyone Is a Pedestrian campaign intended to help communities combat the rising number of pedestrian deaths and injuries that occurred from 2009 through 2012.

Louisville was awarded \$307,000 and used the funds to create a pedestrian education program for school-aged children and safe walking routes for senior citizens. In addition, the funds were used to conduct law enforcement training and crosswalk enforcement activities. “The NHTSA grant jump-started our pedestrian decoy project

with police,” Rolf Eisinger, Louisville’s Bicycle and Pedestrian Program Manager, said of a program where police officers conducted targeted enforcement in some of the city’s most dangerous locations for pedestrians. “NHTSA also allowed us to leverage our relationship with the school district and they’ve been able to implement a program on pedestrian safety during the school day. We also held a five-day curriculum to teach kids how to bike and put together a Safe Streets for Adults presentation because the average age for fatal crashes is 44-years-old. For that, we partnered with Humana, a large employer downtown, and 800 of their employees viewed or participated in the presentation, and we also gave it to other businesses too.”

These are a few of the many initiatives that came out of the NHTSA grant, and Eisinger said the city plans to build on these successful efforts in the future.



Spotlight: LEVY TO MOVE SEATTLE



In November 2015, Seattle residents voted to approve a nine-year, \$930 million Levy to Seattle, which provides funds for nearly 30 percent of the city's transportation budget. The levy provides funds for a multimodal transportation system, including sidewalk maintenance and repair, transit improvements, Vision Zero investments for walking, biking and driving safety, and improvements and expansion of the pedestrian and bicycle network. The \$930 million levy will be paid through a property tax, which will cost the median Seattle household

The Levy to

MOVE SEATTLE



about \$275 a year. The current levy replaces the previous nine-year levy, known as Bridging the Gap, which voters approved in 2006. This previous levy cost the median Seattle household about \$130 a year.

Pedestrian Planning

All peer and aspirational cities have an adopted pedestrian plan. Similar to Nashville, Denver and Seattle are in the process of updating their respective pedestrian plans. The update of the Seattle Pedestrian Plan should be completed by Fall 2016. Update frequency of pedestrian plans vary by city. Raleigh and Austin update their pedestrian plans every five years. In Louisville, the Bicycle and Pedestrian Program Manager puts together annual report cards to summarize progress that has been made towards carrying out actions listed in the plan.

	City	Name of Plan	Year
	Nashville	WalknBike Strategic Plan	2008*
Peer	Indianapolis	Marion County/Indianapolis Pedestrian Plan	2016
	Louisville	Louisville Pedestrian Master Plan	2010
	Memphis	Memphis Pedestrian and School Safety Action Plan	2015
	Raleigh	Raleigh Comprehensive Pedestrian Master Plan	2012
Aspirational	Austin	Sidewalk Master Plan	2009
	Denver	City and County of Denver Pedestrian Master Plan	2004*
	Minneapolis	Minneapolis Pedestrian Master Plan	2009
	Seattle	Seattle Pedestrian Master Plan	2009*

*Plan update currently underway

Bikeway Planning

All of the peer and aspirational cities have an adopted bicycle plan and stated the intent to update every five years.

	City	Name of Plan	Year
	Nashville	WalknBike Strategic Plan	2008, with 2016 Update Underway
Peer	Indianapolis	Marion County/Indianapolis Bicycle Plan	2012, with 2016 Planned Update
	Louisville	Louisville Bike Master Plan	2010, with 2016 Planned Update
	Memphis	No city plan; Memphis MPO Regional Bicycle & Pedestrian Plan	2014
	Raleigh	BikeRaleigh Plan Update	2016
Aspirational	Austin	Austin Bicycle Master Plan	2014
	Denver	Denver Moves	2011
	Minneapolis	Minneapolis Bicycle Master Plan	2011, with 2015 Protected Bikeway Update
	Seattle	Seattle Bicycle Master Plan	2014, with 2017 Update Planned

Bikeway Inventory

Bikeway infrastructure in peer and aspirational cities has grown over the years. The table below displays the current mileage of existing bikeways by facility type (as of May 2016) as well as targets for planned separated (protected) bikeways and neighborhood greenways that were identified in a bicycle plan or recent report. Many cities are moving away from shared lanes and instead moving towards implementing separated (protected) bikeways to attract “interested but concerned” cyclists who feel safer riding on the road when there is physical separation from motorists.

		Existing Facilities							Planned Facilities	
		Shared Lanes	Bicycle Lanes	Buffered Bicycle Lanes	Separated (Protected) Bikeway	Greenway	Shared-Use Paths	Neighborhood Greenways	Separated Bikeways	Neighborhood Greenways
										
Peer	Nashville	26	104	7	2	108 unpaved; 87 paved	Data not available	0	86	0
	Indianapolis	0	90	5* (combined protected/buffered)		8	70* (combined SUP and greenways)		Data not available	Data not available
	Louisville	35	33	Data not available	Data not available	100	14	0	2	100
	Memphis	75	68	0	9	24 unpaved	32	N/A	15	N/A
	Raleigh	27	32	6	0	107	15	N/A	195	144
Aspirational	Austin	2	180	32	6	273	27 paved	0	Data not available	Data not available
	Denver	24	77	Data not available	5	68	46	0	121	62
	Minneapolis	15	82 (combined bike lane and buffered bike lane)		96 (includes off-street trail, SUP, and protected bike lane)			20	78	24
	Seattle	129 (includes bike lanes and sharrows)		N/A	9	40	47	23	50	250

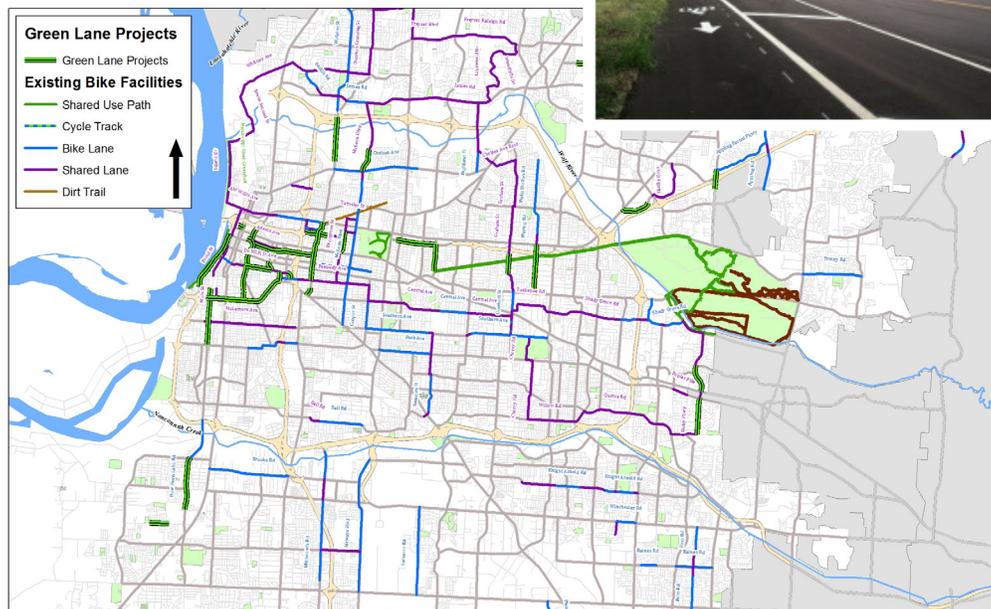
Spotlight: MEMPHIS GREEN LANE PROJECT

Me Memphis was one of the first six cities selected to participate in The Green Lane Project, a PeopleForBikes program focused on helping cities build separated bike lanes. Through the project, PeopleForBikes, a membership organization founded by bicycle industry leaders, works closely with selected cities to guide the efficient installation of separated bike lanes. The Green Lane Project hosts hands-on workshops and study tours for city leaders, provides technical and strategic assistance, and delivers targeted grants designed to get separated bike lanes on the ground.

Memphis installed its first separated bike lane in Fall 2013, a 0.3 mile facility running along Overton Park Avenue. The bikeway included a painted buffer zone and the relocation of on-street

parking 10ft from curbside. Memphis is expected to have more than 22 miles of separated bikeways ready for use by 2016 as part of the project.

Austin was also selected to participate in the first Green Lane Project round (2012-2014), while Denver and Seattle were selected for the second round (2014-2016).



Innovative or Transformative Projects

Communities are making strides to become safer and more accommodating for walking and biking. However, often times there are one or two initiatives that propel a city's bicycle and pedestrian friendliness. Each of our peer and aspirational cities summarized a particular activity that is either innovative in nature or transformative to their bicycle and pedestrian program.

NASHVILLE: MUSIC CITY BIKEWAY



Unveiled in 2012, the Music City Bikeway creates bicycle connections between major parks, densely populated neighborhood areas, and downtown Nashville. The entire route measures approximately 26 miles, and includes 8 miles of on-road bike lanes, 4 miles of signed shared roadways, and 14 miles of greenway trails.

The Music City Bikeway was developed through a successful collaboration between Metro Public Works, Metro Parks, the Nashville Bicycle and Pedestrian Advisory Committee and Walk/Bike Nashville. A portion of the bikeway was funded through the American Recovery and Reinvestment Act.

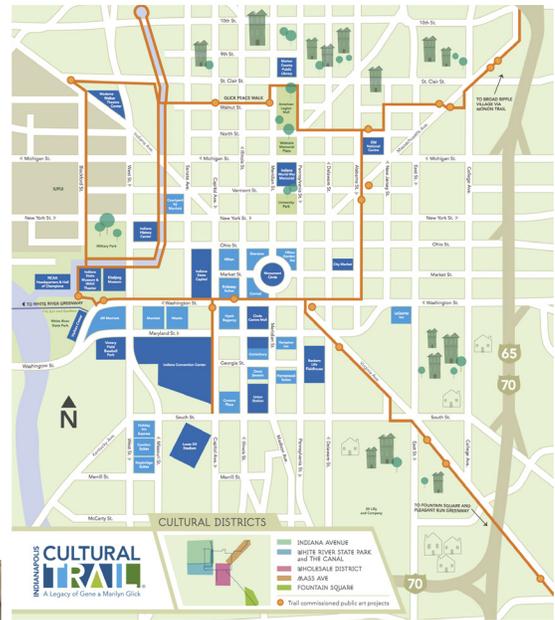
Nashville GreenBikes, a collaboration between the Metro Nashville Public Health Department and Metro Nashville Parks and Recreation, provides bicycles free-of-charge to anyone with an ID at several locations along the trail and throughout the Nashville area.

Bikeway users are directed along the route by dedicated Music City Bikeway signs.



INDIANAPOLIS: CULTURAL TRAIL

I The Indianapolis Cultural Trail, one of the most ambitious separated bikeway projects in the country, was funded largely by private philanthropy in addition to public funds. The \$62.5 million, 8-mile trail connects downtown business and cultural districts and utilized \$15.5 million in federal funds, \$26.5 million from private funds - mostly from the Central Indiana Community Foundation, and a \$20.5 million US Department of Transportation TIGER grant. Completed in 2013, the Indianapolis Cultural Trail has had an estimated \$864.5 million of economic impact.





“It really set the bar really high. It gave me and the city a big push for protected bikeways. It showed that we need to implement protected bikeways if we are going to give people the low stress experience they have there so they can come from their neighborhoods to the trail.”

– JAMISON HUTCHINS,
INDIANAPOLIS BICYCLE & PEDESTRIAN COORDINATOR

LOUISVILLE: BIG FOUR BRIDGE

L The opening of the Big Four Bridge (a bike-ped bridge across the Ohio River) has been one of the biggest accomplishments of the Louisville bicycle and pedestrian program. This bike and pedestrian only bridge crosses the Ohio River, linking Louisville KY to Jeffersonville, IN.

Louisville is also one of several peer/aspirational cities interviewed to install eco-counters around the city to collect data and better track bicycle and pedestrian implementation efforts. “Because of that we’ve learned that about half a million people are using the bridge annually over the Ohio River,” Bike and Pedestrian Program Manager Rolf Eisinger explained.



“It helps when people ask about usage of bike facilities and the community understands that bike lanes aren’t going anywhere.”

—ROLF EISINGER

LOUISVILLE BIKE AND PEDESTRIAN PROGRAM MANAGER

MEMPHIS: MAIN STREET TO MAIN STREET MULTI-MODAL CONNECTOR



The City of Memphis and Crittenden County, Arkansas are working to reopen the former roadway along the Harahan Bridge to bicycle and pedestrian traffic by Fall 2016. Located approximately 400 yards south of an existing riverwalk in Memphis, the bridge provides views of the Mississippi River and connects Memphis and Arkansas.

The Harahan Bridge project is part of the \$43 million Main Street to Main Street Multi-Modal Connector project. That 10-mile project will link Downtown Memphis with West Memphis, Arkansas with more walkable and bikeable streets, pathways, and trails.

Main Street to Main Street Multi-Modal Connector Funding Sources:

Federal Funds - TIGER IV	\$14,939,000
Federal Funds - CMAQ <i>Arkansas</i>	\$850,000
State Funds - TDOT	\$1,000,000
Shelby County, TN	\$1,000,000
City of Memphis Storm Water Funds <i>Drainage</i>	\$6,000,000
CRA Tax Increment Financing (TIF) <i>Uptown</i>	\$2,000,000
Center City Revenue Finance Corporation <i>Downtown Memphis</i>	\$2,000,000
Private Contributions <i>Harahan Bridge</i>	\$1,000,000

RALEIGH: CROWDFUNDING EFFORT

R In 2016, the City of Raleigh tried a new way of raising money, called crowdfunding, to finance various public projects. Crowdfunding harnesses the power of social media to help fund a new venture. By leveraging social media contacts, entrepreneurs and fundraisers reach a larger audience, which can lead to an increase in awareness and contributions. The idea had citizens finance projects – through donations – usually reserved for city government. Raleigh chose the neighbor.ly platform to accept tax-deductible donations.



The city's first attempts at raising money online fell short of its goal, but the crowdfunding initiative still netted \$9,000 for upgrading bike racks and greenway benches.

Raleigh launched the campaign in December 2013, and city officials weren't sure what to expect in seeking donations for amenities. The fundraising total was enough for 13 benches along the Neuse River Greenway and five decorative bike



racks along city streets – not quite the target of 10 racks and 15 benches, which would have required \$14,000 in donations.

“The good side of it was it engaged a bunch of people in taking a personal interest” in the effort, former assistant city manager Dan Howe said. “We purposely picked two projects we thought people could really get behind.” Howe said top donors – who gave \$500 to have their name on a bike rack or bench plaque – were consulted about the location and design.

AUSTIN: 183 EXPRESSWAY PROJECT



The Central Texas Regional Mobility Authority is in the process of reconstructing and improving the non-tolled US 183 in East Austin. This project will include adding \$25 million worth of pedestrian and bicyclist facilities, many where none existed before. The project will include:

- A new tolled expressway featuring three lanes in each direction
- An improved non-tolled US 183 with three general purpose lanes in each direction
- A high tech traffic monitoring system for improved traffic management and emergency response
- Miles of new bicycle lanes, sidewalks, and shared use paths with connections to the regional trail system
- Upgrades to the visual appearance of the corridor through aesthetic enhancements and landscaping improvements

The 183 South Project broke ground in April 2016, and construction is projected to last for about four years. The total project cost will be approximately \$743 million. The construction will take place in phases, with phase one improvements expected to be complete in 2019. The second phase will open to traffic about a year later.



DENVER: RAPID IMPLEMENTATION PROJECT

D In April 2016, a new commuter rail opened in Denver, connecting Union Station — a historic train station that now serves as a retail destination and transit facility — and Denver International Airport. In anticipation of the new commuter rail opening, Denver Public Works executed a rapid implementation project to improve the pedestrian environment in front of Union Station and reduce conflict between the varying converging uses.

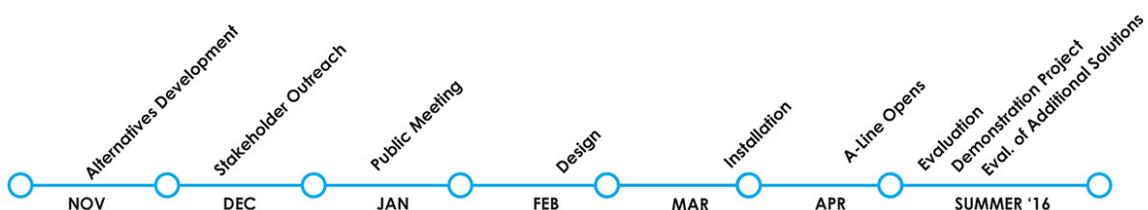
“We heard from constituents that there were bike parking challenges and bike access challenges and that it was hard to cross street in that area,” explained project manager Riley LaMie. “So what we did was a rapid implementation project to make changes within six months (prior to the opening of the rail line and the anticipated influx of ridership). We had a consultant on board within a month, did a design charrette with internal staff and hosted a public meeting within the first month, and workshopped through different solutions with mobility issues and station access. We had something designed and installed by April.”

The adopted improvements included:

- Installed temporary bulb-outs and bollards to prevent illegal parking, increase visibility of the intersection, and shorten pedestrian crossing distance.

- Installed a vehicular wayfinding system to direct vehicles to designated passenger pick-up and drop-off spaces.
- Adjusted the curb lane to be less confusing and accommodated bicycle parking through a City-installed bicycle corral.
- Worked with B-cycle, Denver’s bike sharing system, to install a station below the curb on Wynkoop Street.
- Increased car sharing space.

“To be able to do this in such a small time frame was really cool,” LaMie reflected. “There are now so many transportation options at the station.”



MINNEAPOLIS: SEPARATED BIKEWAY COST-SAVING DESIGN



Minneapolis recently took an innovative approach to achieving cost-savings when implementing separated bikeways: they used pre-cast curbs (think parking stop) to separate the bikeway from the road. This project was installed on Oak Street, a high bike traffic corridor near a local university.

“It’s kind of like a parking stop that stops wheels from going forward, but a little more robust,” explained Forrest Hardy, Associate Transportation Planner. “It’s one way to save on costs for a separated bikeway.”

This pilot project was installed along portions of Oak Street in coordination with a two-way separated bikeway using paint and bollards.



SEATTLE: NEIGHBORHOOD GREENWAYS

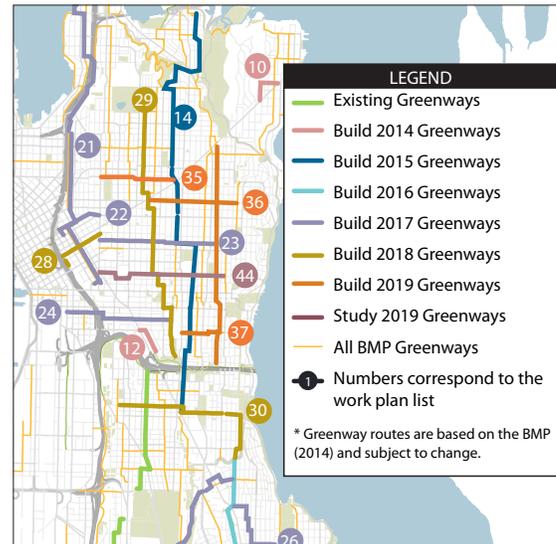
S The City of Seattle has a goal of building 250 miles of connected neighborhood greenways, routes on residential streets that are optimized for safe bicycle and pedestrian travel. The city showed its commitment to this goal in 2014, releasing a six-year work plan to add between 55 and 65 miles to Seattle's existing greenways.

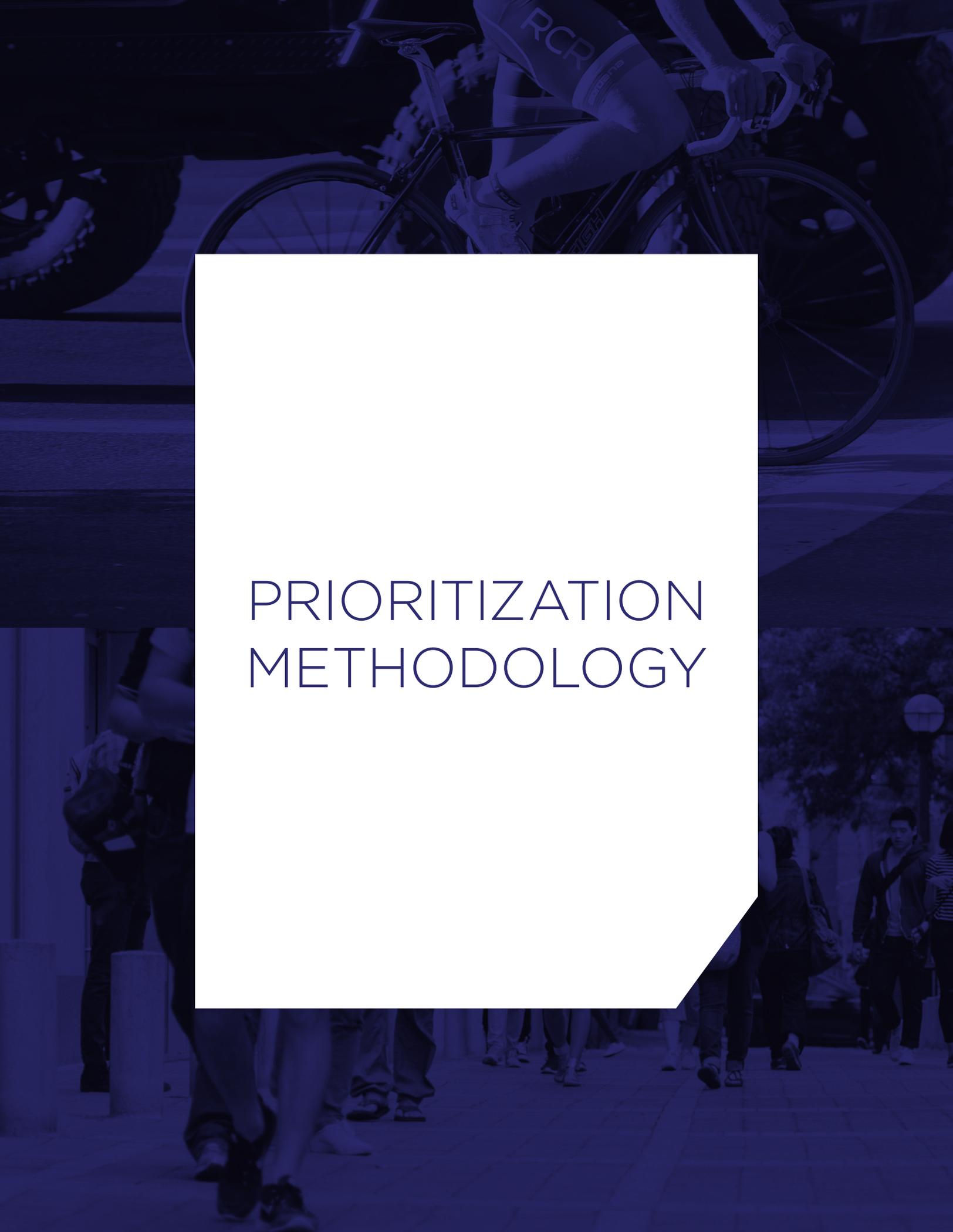
Each is unique, but there are a few common elements in Seattle's neighborhood greenways:

1. Changing the speed limit to 20 mph
2. Adding about one speed hump per block
3. Adding signs and pavement markings to help people find their way
4. Adding some combination of curb extensions, rapid flashing beacons, crosswalks, medians, or traffic signals at busy intersections
5. Adding stop signs at streets crossing the greenway
6. Smoothing sidewalks and streets and add curb ramps

Neighborhood greenways do not add bike lanes and there are minimal, if any, on-street parking impacts.

To date, the city's greenway efforts have mostly been funded through the nine-year voter approved Bridging the Gap Levy, a \$365 million levy for transportation maintenance and improvements passed in 2006.





PRIORITIZATION METHODOLOGY

Summary

The purpose of any prioritization process is to use an objective method of ranking and selecting projects for a local government. These prioritization processes help cities to focus resources in areas where they are most needed. There isn't a single approach to prioritizing projects and thus the methodology differs from city to city. Using Geographic Information Systems (GIS) software allows for a data driven process that is easily replicated in the future. Most cities that have a prioritization methodology in place incorporate pedestrian demand and bicyclist demand.

“One thing I've learned is to be consistent with prioritization. Consistency and transparency are key.”

– CHAD CRAGER,
AUSTIN PUBLIC WORKS DEPARTMENT DIVISION MANAGER

New Sidewalk Prioritization Methodology

Methods for prioritizing new sidewalk projects can be found within each city’s pedestrian plan. Indianapolis and Minneapolis currently do not have a prioritization process in place. To determine areas of high pedestrian demand, Indianapolis, Louisville, Memphis, Raleigh, Austin, and Seattle use Geographic Information Systems (GIS) as part of their methodology. The table below summarizes the prioritization methodology for pedestrian projects.

City	Prioritization Methodology for Pedestrian Projects
Nashville	<p>Use Pedestrian Generator Index (PGI)</p> <ul style="list-style-type: none"> • Land use intensity and mix of uses • Destinations • Major streets <p>Sidewalk matrix is applied, which combines PGI, current sidewalk condition and coordination with other departments</p>
Peer	<p>Indianapolis</p> <p>No formal process in place. Prioritization of new sidewalk projects depends largely on the funding source.</p>
	<p>Louisville</p> <p>Step 1: Develop pedestrian study network (includes primary roads and paths used by pedestrians rather than including the entire road network)</p> <p>Step 2: Latent Demand Method</p> <p>Step 3: Benefit-cost index</p>
	<p>Memphis</p> <p>Step 1: Develop project list based on quantitative analysis along with policy support, equity, stakeholder input</p> <p>Step 2: Score potential projects based on established criteria</p> <p>Step 3: Phase projects based on geographic equity and proximity to populations with disabilities</p>
	<p>Raleigh</p> <p>Methodology is based on three overarching criteria:</p> <ul style="list-style-type: none"> • Demand analysis • Needs analysis • Evidence of need
Aspirational	<p>Austin (based on Sidewalk Master Plan Update 2016)</p> <p>Use Geographic Information System (GIS) software to analyze missing and existing sidewalk segments using a number of datasets to produce an objective score for each segment</p> <p>Sidewalk Base Score is based on two scores:</p> <ul style="list-style-type: none"> • Pedestrian Attractor Score • Pedestrian Safety Score
	<p>Denver</p> <p>Step 1: Proximity criteria</p> <p>Step 2: Implementation criteria</p>
	<p>Minneapolis</p> <p>No formal prioritization process in place. 92% of all surface streets include sidewalks, therefore city-initiated new sidewalk construction is not currently a priority.</p>
	<p>Seattle</p> <p>Step 1: Base Analysis</p> <ul style="list-style-type: none"> • Potential pedestrian demand • Equity • Corridor function <p>Step 2: High priority areas</p> <p>Step 3: Needs assessment</p> <p>Step 4: Development of project lists</p>

Note: In case-by-case and site-specific situations, Nashville and most cities will study an individual project through the lens of additional criteria to determine the best possible engineering solution.

The following table lists criteria that are factored into the prioritization process for each city; weighting of each criteria is not described in this table but can be found within each city’s pedestrian plan. Criteria in **bold** are used in four or more cities.

Prioritization Criteria for Pedestrian Projects by City

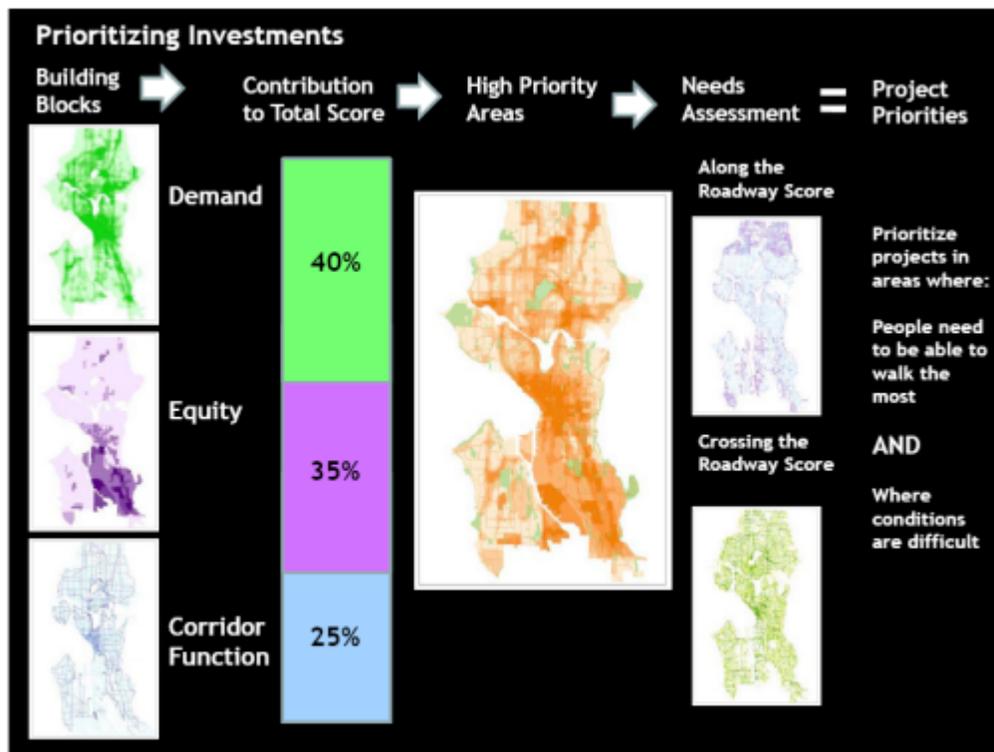
Category	Criteria	Nashville	Indianapolis	Louisville	Memphis	Raleigh	Austin	Denver	Minneapolis	Seattle
Connectivity to Destinations	Park or Greenway	✓		✓		✓	✓	✓		✓
	Schools	✓		✓	✓	✓		✓		✓
	College/ University	✓		✓		✓		✓		✓
	Places of Public Accommodation (library, police station, health center, post office)	✓		✓	✓	✓	✓	✓		✓
	Hospital	✓					✓			✓
	Senior Housing or Assisted Living Facility	✓								
	Community Center/ recreation center	✓			✓	✓	✓			
	Religious Institutions						✓			
	Retail Shopping	✓		✓			✓			✓
	Public or Section 8 Housing	✓					✓			
Density	Population density			✓			✓			✓
	Employment density			✓		✓	✓			✓
Land Use	Neighborhood or Commercial Center	✓								
	Suburban Transect Zone	✓								
	Industrial or Medical District	✓								
	Urban Services District	✓								
	Urban Transect Zone	✓								
	Transit oriented development (TOD)							✓		
Transit	Transit Access	✓		✓	✓	✓	✓	✓		✓
Safety	Pedestrian Crashes				✓		✓			✓
Demographics	Equity				✓					
	Health Status						✓			✓
	Automobile ownership									✓
	Disability population									✓
	Median Household Income						✓			✓
Public input and project considerations	Previously proposed project (i.e., in an adopted plan)				✓		✓	✓		
	Stakeholder input				✓	✓	✓	✓		
	Cost			✓				✓		
	Action (Trade-off)							✓		
	Opportunity driven							✓		

Prioritization Criteria for Pedestrian Projects by City

Category	Criteria	Nashville	Indianapolis	Louisville	Memphis	Raleigh	Austin	Denver	Minneapolis	Seattle
Roadway characteristics	Public Parking Facilities						✓			
	Existing Facilities on Street (including bike lanes)					✓	✓			✓
	Mitigates pedestrian/bicycle/vehicle conflicts							✓		
	Inadequate infrastructure				✓	✓				
	Connects off-street to on-street bike facilities or sidewalks							✓		
	Street classification	✓				✓	✓			✓
	Speed limit					✓				✓
	Buffer width									✓
	Sidewalk slope					✓				✓
	Curb									✓
	Length of block									✓
	Road width									✓
	Crosswalk									✓
	Curb ramp									✓
	Signal control									✓
	Stop sign control									✓
	Pedestrian use and sidewalk construction	Evidence of pedestrian use					✓			
Traffic count						✓				
Visual obstructions present						✓				
Easement required to construct sidewalk						✓				
Stormwater/Buffer concerns						✓				
Utility conflicts						✓				

Spotlight: SEATTLE PEDESTRIAN NETWORK PRIORITIZATION

S The process for identifying and prioritizing pedestrian projects in Seattle is unique in that it considers areas of high pedestrian demand as well as existing roadway characteristics. After high priority areas are identified, characteristics “along the roadway” and “crossing the roadway” are evaluated to determine the friendliness of the pedestrian environment. Criteria include block length, presence of traffic signals, road width, and traffic speeds.



Bikeway Prioritization

Nashville, Indianapolis, and Austin don't have a defined prioritization methodology for bikeway projects. In Minneapolis, the bikeway projects are prioritized based on criteria listed in the Minneapolis Complete Streets Checklist. As of May 2016, this checklist is in draft form but the City plans to adopt the checklist soon. Each of the remaining cities has its own unique process for prioritizing bikeway projects. The bikeway prioritization process in Denver is the same as the sidewalk prioritization process.

	City	Prioritization Methodology for Bikeway Projects
	Nashville	No formal process in place. Bicycle and Pedestrian Coordinator prioritizes projects based on whether they will improve the connectivity of the existing bikeway schedules and network, increase safety, and attract more riders. Additionally, bikeways are constructed according to resurfacing schedules.
Peer	Indianapolis	No formal process in place. Bicycle and Pedestrian Program Manager prioritizes projects based on whether they will improve the connectivity of the existing bikeway network, increase safety, and attract more riders.
	Louisville	Step 1: Develop bicycle study network (based on accessibility, directness, safety, access to destinations, and favored routes) Step 2: Latent Demand Method Step 3: Benefit-cost index
	Memphis	Used on-street facilities and shared-use path network Attractors and Generators Analysis Regional priorities, primary priorities, secondary priorities, and problem points/corridors
	Raleigh (based on 2016 update)	The 2016 update to the 2009 Bicycle plan used the recommendations in the 2009 plan as a starting point New projects were prioritized based on destination analysis, demographics analysis, crash/safety analysis, areas of currently low bike facility service, and equity
	Austin	No formal process in place; Bikeways are constructed according to resurfacing schedules
Aspirational	Denver	Step 1: Proximity criteria Step 2: Implementation criteria Three phase model where Phase 1 are near-term priorities that close the gaps in the network
	Minneapolis	Based on Complete Streets Checklist
	Seattle	Based on six overarching criteria: <ul style="list-style-type: none"> • Public input • Topography • Locations of existing bike facilities and system gaps • Connections between key destinations • Existing street characteristics • Designations in other modal plans

The following table lists criteria that are factored into prioritization for each city; weighting of each criteria is not described in this table but can be found within each city’s bike plan. Seattle was the only city to consider topography as one of its prioritization criteria. Criteria in **bold** are used in four or more cities.

Bikeway Prioritization Criteria by City

	Nashville*	Indianapolis*	Louisville	Memphis	Raleigh	Austin*	Denver	Minneapolis*	Seattle
Parks			✓	✓			✓		✓
Daycare, Preschool, K-12 Schools			✓	✓			✓		✓
College/University			✓	✓					✓
Transit Access			✓						✓
Library or Civic Building			✓	✓			✓		✓
Cost			✓						
Population Density			✓						
Employment Density			✓						
Retail Shopping			✓	✓					
Connections to Activity Centers				✓					✓
Public Input				✓	✓		✓		✓
Landmarks/Points of Interests				✓					
Hospitals				✓					
Employment Centers				✓					✓
Government Offices				✓					
System-wide Gaps					✓				
Short Segment Gaps					✓				
Committee Input					✓		✓		✓
Mitigates Pedestrian/Bicycle/Vehicle Conflicts							✓		

* While no formal process, many of these factors are considered when implementing bikeway projects.

REGIONAL FUNDING CRITERIA – MEMPHIS REGION HIGHLIGHT

Memphis is a leader in using federal-aid funds for separated bike lanes in Memphis. This is, in part, because of how the region designed its funding criteria for project selection. The region’s Surface Transportation Program criteria process, for example, explicitly awards points for projects that include a “cycle track or shared-use path”.

Conveying Prioritization Process to the Public

All peer and aspirational cities have noted that there is room for improvement in terms of communicating the prioritization process to the public. Some cities have translated educational materials into different languages depending on languages most commonly spoken by its resident population.

While project prioritization can be better conveyed, cities such as Denver and

Seattle excel at keeping residents regularly updated on pedestrian and bikeway implementation efforts. Louisville and Memphis issue annual reports to update the public on the status of biking in the city. Indianapolis issues quarterly report cards (as seen below) to summarize Complete Streets implementation efforts. During the 2016 Bike Raleigh Plan, a “State of Biking in Raleigh” report was issued to highlight recent accomplishments and inform the public on key initiatives and next steps.

Complete Streets Ordinance Metrics

Projects In-Progress Between 7/1/2015 and 9/30/2015



Count of Transportation Projects Included: **83**

SIDEWALKS & TRAIL/PATH		INCIDENTS			ADA RAMPS	
Projects Bidding 5 that include sidewalks linear feet of sidewalk bid 22,983	Projects Completed 9 that include sidewalks linear feet of sidewalk completed 26,675	Reported in Marion County for 2015 Quarter 3 Number of Automobile/Pedestrian: 89 Number of Automobile/Bicycle: 62 Number of Automobile: 8,682			Projects Bidding 5 that include ADA ramps count of ADA ramps bid 143	Projects Completed 10 that include ADA ramps count of ADA ramps completed 561
Projects In-Progress 35 that include sidewalks linear feet of sidewalk in-progress 175,700		<small>Incidents reported herein are obtained through "ARIES; Automated Reporting Information Exchange System v2.1.2" and subject to terms of use.</small> KIDS WALKING TO SCHOOL DPW is beginning to work with the appropriate parties to begin reporting on this metric. Quarterly reports are not required until 2014.			Projects In-Progress 35 that include ADA ramps count of ADA ramps in-progress 1,809	
INTERSECTION IMPROVEMENTS		TRANSIT STOPS			BIKE LANES	
Intersection Improvements projects bidding 2 projects completed 7	Projects Bidding 3 projects going to bid with crosswalks count of crosswalks to bid 16	TRANSIT STOPS DPW is beginning to work with the appropriate parties to begin reporting on this metric. Quarterly reports are not required until 2014.			Projects Completed 2 that include bike lanes miles of new bike lanes 0.1 miles of rehab bike lanes bid 0.2	Projects Completed 2 that include bike lanes miles of new bike lanes 6.6 miles of rehab bike lanes 0.0
Projects In-Progress 15 that include crosswalks count of crosswalks in-progress 158					Projects In-Progress 9 that include bike lanes new bike lane miles 12.6 rehab bike lane miles 2.5	

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POLICY AND ENFORCEMENT

Summary

A strategic approach is necessary to consistently incorporate the consideration and provision of bicycling and walking accommodations into the decision-making process. While this report did not conduct a comprehensive review of all policies, an overview on policies relating to maintenance, new development and accessibility is provided on the following pages. Targeted bicycle and pedestrian enforcement efforts are also featured.

“Installing eco-counters has really helped us to track trends around the city and given us ways to measure the success of some of the projects we’ve implemented.”

–ROLF EISINGER,
LOUISVILLE BIKE AND PEDESTRIAN COORDINATOR

Sidewalk Maintenance

Nashville and Austin accept responsibility for maintaining and repairing sidewalks within the city. Sidewalk maintenance can include clearing overgrown vegetation, removing snow and ice, and repairing damaged sidewalks. In terms of sidewalk cleanup programs, soda blasting is used to clean sidewalks in Nashville and Louisville. In Raleigh, the Downtown Raleigh Alliance is responsible for power washing and sweeping the sidewalks. In all peer and aspirational cities, the 311 City Services (call center, online, and mobile applications) is a way for residents to report sidewalk maintenance issues. In Louisville, requests from the public are put on a list and then prioritized based on the condition of the sidewalk.

Sidewalk Inventory

	City	Existing sidewalks (miles)
	Nashville	1103
Peer	Indianapolis	3580
	Louisville	2000
	Memphis	3400
	Raleigh	847
Aspirational	Austin	2360
	Denver	3143
	Minneapolis	1800
	Seattle	2100

Sidewalk Maintenance Responsibility

	City	Who is responsible for maintaining and repairing sidewalks?
	Nashville	City; exception is when the developer has to bring the sidewalk up to standard if it is part of a development process
Peer	Indianapolis	Property owners and City
	Louisville	Property owners and City
	Memphis	Property owners
	Raleigh	Property owners and City
Aspirational	Austin	City
	Denver	Property owners
	Minneapolis	Property owners and City
	Seattle	Property owners and City



Sidewalk Repair Activities

- Repair any vertical displacement that exceeds 3/4 inch
- Fix any cracks that are more than one inch wide
- Repair any surface that has deteriorated, cracked, or settled
- Improve any inadequate drainage issues
- Eliminate any safety hazards for pedestrian access.
- Install accessible curb ramps where there aren't any present or bring existing up to current federal ADA standards



Sidewalk Maintenance Activities

- Keep sidewalks clear of snow
- Prevent all vegetation from overgrowing onto or above sidewalks
- Prevent tree limbs from obstructing sidewalks



Sidewalk Clean-up

- Pressure washing or "soda blasting" sidewalks to clean graffiti, utility markings, discolorations, and other unsightly spots.
- Trash removal
- Sidewalk sweeping

Bikeway Maintenance

Nashville currently includes sweeping of bikeways in its routine roadway sweeping schedule. Nashville’s roadway sweeping is currently carried out by the Metro Water Services Department as part of its stormwater maintenance efforts. The sweeping schedule, as well as contact information for those with questions or looking to report a concern, are available online. Only Indianapolis and Louisville (see photo at right) have sweepers to maintain separated bikeways, but Austin has programmed funding to purchase two narrow sweepers to maintain their separated bicycle lanes. Denver and Minneapolis have purchased equipment to clear snow from separated bikeways.

Denver has purchased equipment specifically for bikeways totaling approximately \$230,000 (\$130,000 for a sweeper unit and \$100,000 for a snow removal unit fully equipped with a plow, broom, bucket, snow blower, and liquid de-icer tank).

	City	Standalone Sweeping Activities	Included in Roadway Sweeping - not prioritized	Separated Bikeway Equipment
	Nashville		✓	
Peer	Indianapolis	✓		✓
	Louisville	✓		✓
	Memphis		✓	
	Raleigh		✓	
Aspirational	Austin		✓	
	Denver	✓	✓	
	Minneapolis	✓	✓	✓
	Seattle	✓	✓	✓



Sidewalk Requirements for New Development

In all peer and aspirational cities, sidewalks are required for new developments. Louisville and Memphis have unified development ordinances (UDO) that describe the sidewalk requirement for new developments. In cities with existing Complete Streets policies in effect, new developments must also meet Complete Streets design guidelines. Developers are required to pay 100% for all the work in the right-of-way at the development site.

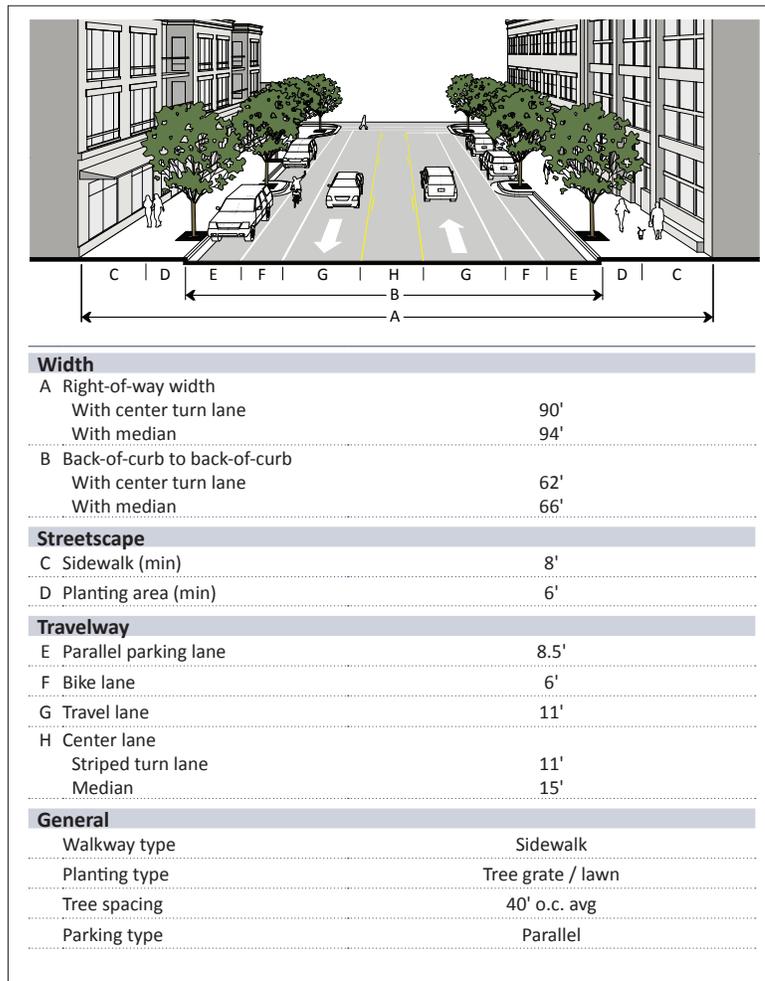
Sidewalk Fee in-lieu Programs

Nashville, Indianapolis, Louisville, Raleigh, and Austin have sidewalk fee in-lieu programs where developers can elect to pay a fee rather than constructing sidewalks adjacent to their property. The table to the right summarizes the stipulations for the sidewalk fee in-lieu programs.

	City	Fee in lieu program	How fees are assessed and/or used
	Nashville	✓	Fee assessed based on length of sidewalk needed
Peer	Indianapolis	✓	Funds don't have to be spent in the district where development is located
	Louisville	✓	In-lieu fee has to be used to build a new sidewalk in the council district where the development is located
	Memphis		N/A
	Raleigh	✓	Fees are assessed for each side and per linear foot; Right-of-way dedication and all necessary easements shall be dedicated to the city
Aspirational	Austin	✓	Funds are set aside and used to build future sidewalks and curb ramps in the same neighborhood as the development that is being built; Funds must be spent within 10 years
	Denver		N/A
	Minneapolis		N/A
	Seattle		N/A

Bikeway Requirements for New Development

While sidewalk requirements, and in some cases greenway trail easements, for new development have become an industry standard, on-road bikeways are not always required as part of the development process. Similar to new sidewalks at development sites, new developments have to comply with and meet Complete Streets requirements in cities with an existing Complete Streets policy. Raleigh, Austin, Seattle, and Minneapolis reported requirements for new developments to install on-road bikeway facilities by street typology (image below shows Raleigh’s Avenue 3-Lane cross-section). Most cities require bike parking in new developments. The City of Austin has noted that more bike parking spaces have been installed in the city through new development than through the city’s own bike parking program.



Spotlight: PARKLAND DEDICATION FEE

Two aspirational cities have a city ordinance that requires developers to set aside land dedicated to parks or pay a fee to the city to develop a park in the future.

A The City of Austin passed its first Parkland Dedication Ordinance in 1985. The city may actually require dedication of land if the proposed development is located in an area that lacks parks. A few trails in Austin have been built around developments due to the Parkland Dedication Ordinance. In-lieu fees are determined based on the density of the proposed development. The photo below shows Austin's Pease Park planned improvements using parkland dedication funds.



In Minneapolis, the Parkland Dedication Ordinance went into effect in 2014. There are three ways in which a development can fulfill the requirements of the ordinance: set aside land for public use for parks, playgrounds, open space, and trails; build a privately owned park that is open to the public; or pay a fee in lieu of land dedication. Fees collected from the ordinance will be transferred to the Park and Recreation Board of Minneapolis and will be used to build new parks, playgrounds, open space, and trails.



Access During Construction

Like Nashville, most cities have a constant influx of new development construction, especially in their downtown areas. With construction comes road closures and detours, which can be challenging for bicyclists and pedestrians. The table below highlights policies or practices requiring pedestrian access during

construction that go beyond the minimum federal requirements. Seattle, Minneapolis and Austin have bikeway access during construction policies in place. In Austin, a resolution states that if there’s construction on an urban trail, there has to be a detour that is up to 20% of total project cost.

Standards for developers to maintain safe adjacent pedestrian access during project construction		
City		
Nashville	In the process of refining legislation (draft regulations available here: http://www.nashville.gov/Portals/0/SiteContent/pw/docs/permits/BicyclePedestrianSafetyRegulations.pdf) that will ensure pedestrians and bicyclists have safe paths around construction and reviewing policy for granting requests for sidewalk closures.	
Peer	Indianapolis	Currently left to code enforcement, but working on strengthening this.
	Louisville	Access is required per MUTCD requirements.
	Memphis	Follows state guidelines for pedestrian movement during construction. Major projects use scaffolding and approach must be approved.
	Raleigh	Recently released guidebook to document best practices for pedestrian accommodations (see Spotlight below).
Aspirational	Austin	Access is required per MUTCD requirements.
	Denver	Access is required per MUTCD requirements.
	Minneapolis	Right of Way office deals with temporary detours during construction (TPAR). Developers need to provide alternate pedestrian route around project.
	Seattle	Recently adopted a rule that says no one can close a sidewalk without providing a temporary sidewalk. Now developers are required to provide a temporary walkway adjacent to their development unless it is for some reason not feasible.

Spotlight: PEDESTRIAN ACCOMMODATIONS IN WORK ZONES GUIDEBOOK

R The City of Raleigh recently developed a guidebook to document best practices for pedestrian accommodations in work zones. According to the guide, it is intended to serve as “a translation from technical documents... to real world applications for engineers, contractors, and citizens.” The 36-page document lays out the planning and approval process for pedestrian routing plans, provides design examples and resources, and provides examples of best practices for ensuring the safety and convenience of pedestrians.

Enforcement Efforts

Enforcement programs can be used to educate roadway users about the traffic laws that govern them. Nashville, along with several of its peer and aspirational cities, lack routine bicycle and pedestrian enforcement efforts. Cities work with their police departments to conduct targeted enforcement, but not on an ongoing basis. In all cities, bicycling laws are covered during training for police officers. Police officers are members of the Bicycle Advisory Committee in Nashville and Austin. Below are highlights of key enforcement initiatives from select cities.



Austin's Police Department has a Pedestrian

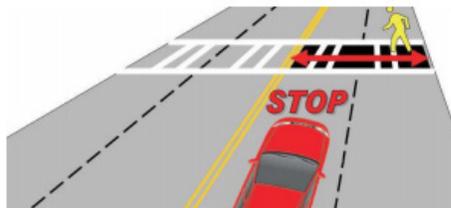
Enforcement Safety Team to increase awareness amongst both drivers and pedestrians of safe and legal behaviors. Police officers hand out flyers with information on the responsibilities of both drivers and pedestrians.



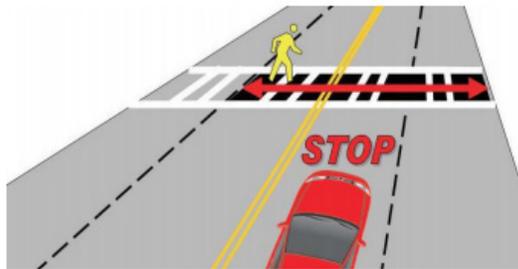
Austin Police Department
Pedestrian Enforcement Safety Team (PEST)



WHAT DRIVERS MUST KNOW ABOUT PEDESTRIANS:
PEDESTRIANS + CROSSWALK = STOP, even if the pedestrian is not in your lane



STOP for a pedestrian in a crosswalk when the Pedestrian is anywhere on your half of the road or approaching from the opposite side of the roadway.



TURNING DRIVERS STOP, EVEN ON GREEN



R In Raleigh, police officers are required to take an in-service training program called “Bicyclist Safety and Law Enforcement” to cover bicyclists’ legal rights and responsibilities, defensive bicycling practices, types and causes of common crashes, and effective enforcement activities to promote safety.



L Louisville offers a program called Bike Sense Cops for Kids which teaches youth in the third through the fifth grades how to safely bike to their destinations as well as the rules of the road. Louisville Metro Police Officers have the opportunity to advocate and enforce bicycle safety measures that have been taught to students during their training.



Spotlight: SPEEDING VIOLATIONS FUND SAFE ROUTES TO SCHOOL

S As part of Seattle’s Safe Routes to School program and Vision Zero commitment, the Department of Transportation and Police Department have installed school zone speed cameras throughout the city. These speed cameras help enforce the 20 mph speed limit while school zone beacons are flashing by automating traffic tickets every time there is an infraction. The tickets start at around \$230, and those funds are used to bolster the city’s Safe Routes to School program. Since inception, the average number of traffic violations per camera per day has decreased by 64 percent and average speeds have decreased by 4 percent.

A The City of Austin has a similar funding strategy in effect, with the Safe Routes to School program being covered by funds from speeding violations in school zones, county registration for vehicles, and the city’s general fund.





OUTREACH &
EDUCATION

Summary

Each city has a diverse range of stakeholders in the pedestrian and bicycle “community,” many with different reasons for walking or biking. This section highlights a range of methods used in the peer and aspirational cities to provide outreach and education to various stakeholders.

“What doesn’t work is when you do an open house with a preferred opportunity already selected. We really want there to be public input in shaping that alternative.”

– BRIAN DOUGHERTY,
STRATEGIC ADVISOR FOR THE CITY OF SEATTLE

Pedestrian Advisory Council/Bikeway Advisory Council

Bicycle and pedestrian advisory councils, boards, or commissions are all-volunteer bodies, typically appointed to provide guidance and leadership on all matters related to bicycle and pedestrian activities and integration. Memphis and Louisville are the only two cities that lack a formal advisory board, although Louisville reported a previous board that is no longer active. Meeting schedules and subcommittee topics vary by City, as described in the table below.

City	Pedestrian Advisory Council?	Meeting Frequency	Sub-committees	Bikeway Advisory Council?	Meeting Frequency	Sub-committees	
Nashville	Combined Bike/Ped	Every other month		Combined Bike/Ped	Every other month	Infrastructure subcommittee	
Peer	Indianapolis	No (currently considering starting one)	N/A	N/A	Yes	Monthly	
	Louisville	No	N/A	N/A	No	N/A	
	Memphis	No	N/A	N/A	No	N/A	
	Raleigh	Combined Bike/Ped	Monthly	Pedestrian Planning; Bicycle Planning; Community Outreach; Joint Bicycle & Pedestrian Planning	Combined Bike/Ped	Monthly	
	Austin	Yes	Monthly		Yes	Monthly	
Aspirational	Denver	Yes	Monthly	Yes	Monthly		
	Minneapolis	Yes	Monthly	Infrastructure & Engineering; Programs & Policies	Yes	Monthly	Education, Encouragement, Enforcement, Equity, and Evaluation Subcommittee (5E's); Engineering Subcommittee
	Seattle	Yes	Monthly		Yes	Monthly	

Local Nonprofits and Advocacy Groups

Often times, educational and encouragement programming are a result of partnerships between City, private sector, and non-profit organizations. The table below, while not exhaustive, represents the various non-profit and advocacy groups in each City that influence the bicycle and pedestrian culture. Most of the peer cities only have 1-2 local advocacy groups while the aspirational cities all have at least four.

	City	Local Advocacy Group
	Nashville	Walk Bike Nashville, Greenways for Nashville, Ride for Reading, Shade Parade Nashville, Oasis Bike Workshop, Edgehill Bike Club, Turbo Nashville
Peer	Indianapolis	IndyCOG, Walk Urban Indy
	Louisville	B4L (Bicycling for Louisville)
	Memphis	Memphis Hightailers
	Raleigh	Oaks & Spokes
Aspirational	Austin	Bike Austin, Walk Austin, Movability Austin, Austin Gets Around, Reconnect Austin
	Denver	Bike Denver, Walk Denver, Bikes & Beers, Trips for Kids Denver
	Minneapolis	Minneapolis Bicycle Coalition, Twin Cities Bike Advocates, Bike Walk Twin Cities, Transit for Livable Communities
	Seattle	Cascade Bicycle Club, Bike Works, Feet First, Undriving, Seattle Neighborhood Greenways

Program Implementation

	City	City Initiatives	Private Initiatives (Local Nonprofit or Advocacy)
	Nashville	✓	✓
Peer	Indianapolis		✓
	Louisville	✓	✓
	Memphis		✓
	Raleigh	✓	✓
Aspirational	Austin	✓	✓
	Denver	✓	✓
	Minneapolis	✓	✓
	Seattle	✓	✓

Bike Share

Bike share programs encourage bicycle use as an appealing, convenient, active, and healthy transportation option. It's no surprise that all of the peer and aspirational cities either have an operating bike share system or they are in the process of securing funding and implementing a system.

	City	Existing Bike Share Program	Number of Stations	Number of Bikes Available
	Nashville	✓	31	263
Peer	Indianapolis	✓	27	250
	Louisville	Finalizing Bike Share Business Plan	N/A	N/A
	Memphis	Developing implementation strategy	60	600
	Raleigh	Funding secured, developing implementation strategy	30	300
Aspirational	Austin	✓	45	300
	Denver	✓	87	700
	Minneapolis	✓	190*	1700*
	Seattle	✓	54	500

*Data is for Minneapolis-St.Paul

Spotlight: AUSTIN BIKE SHARE EQUITY PROGRAM



The City of Austin has made a conscious effort to increase ridership and use of the Austin B-Cycle system among low-income communities by providing subsidized memberships of \$5 per year to non-student residents who earn less than \$25,000 a year. To date, bike share stations have been installed at six priority low-income neighborhoods throughout the city. Austin B-Cycle has hired staff to conduct outreach with potential members. In addition, the age requirements for membership was reduced from 18 to 13, which allows youth to use B-Cycle to connect to afterschool programming.



Bike and Pedestrian Programs

While not an exhaustive list of programs, this sampling highlights bicycle and pedestrian programming in each city.



Nashville

WalkBike Nashville - a group dedicated to educating Nashvillians about road safety to prevent pedestrian and bicycling injuries and deaths - provides a long menu of programs, highlights including:



Livable Streets Project - A new initiative to energize new neighborhood voices around active transit through various events. After all these events, the group works with community members to find out where the challenges and opportunities in the neighborhood are and how to advocate effectively for improvements.

Wayfinding - Metro installed personal map stations with 3-D illustrations to help orient pedestrians to key destinations.



Indianapolis

Walk Urban Indy - Program to encourage residents to walk in their neighborhoods to increase exercise and neighborhood awareness in two main ways:

Providing Educational Route Guides - guides offering measured routes and themed information about the neighborhood you're walking through

Walking Group Coordination - encouraging the formation and sustainability of walking groups through a series of events, workshops, and online information.



Memphis

Bicycle Ambassadors - An ioby crowd-funded program that trains bicycle ambassadors to organize bike trains - group rides to school along certain routes for elementary schoolers.



L Louisville

Hike, Bike and Paddle event - The City of Louisville and a host of other state, local, nonprofit and corporate sponsors put on a twice annual event that includes a host of active activities and contests.

Bike Sense - A program designed to teach children how to operate a bike, learn the rules of the road (or bike laws) and avoid potential hazards while operating their bicycle.

R Raleigh

Inaugural Kid's Camp - The City of Raleigh has partnered with Chavis Community Center and 4H to put on a kid's bicycle camp targeted towards low-income families this summer. The camp will cost \$25 for a week of half-day programming, and will culminate in a bike ride and picnic. Sponsorships will also be available. Each day will feature a different speaker, and participants will learn bike mechanic skills, rules of the road, and healthy nutrition habits. "Equity is a big issue for us, so we were really excited to get this partnership together," explained Bicycle and Pedestrian Program Manager Susan Wilson. "This will be our first bike camp, so if it's successful this summer, we'll implement it again next summer."



A Austin

City Cycling - A Bike Austin initiative billed as "Driver's Ed for Cyclists." League-certified instructors teach City Cycling and the curriculum includes bike selection, simple maintenance, fixing a flat, and strategies for riding a bike safely and confidently.

Walk Texas ACTIVE AUSTIN - A ten-week program, coordinated through the Austin/Travis County Health and Human Services Department free of charge, where participants record their daily/weekly physical activity, which converts to points depending on the number of active minutes and the intensity of the activity. At the end of the program, medals are given based on total points.

D Denver

Trips for Kids Denver programs:

Ride Program - offers introductory daylong mountain biking adventures to at-risk youth

Earn-a-Bike Program - provides disadvantaged youth (age 10-23) the opportunity to earn a bike by completing a multi-session training course covering the fundamentals of bike repair/maintenance and the rules of safe urban bicycling.

Youth-at-Work - program to provide high school youth with supervised, hands-on work experience at full service bike shop.





Minneapolis

2016 Parklet Program - Minneapolis Public Works Department has an application program for parklets that offer amenities like seating, plantings, bike parking and public art, and are considered to enliven the pedestrian experience.



Seattle



Feet First's "Street Stories" Program - In this five week after school curriculum, middle and high school students learn about walkability, community design, and digital storytelling, then create their own video about walking in their community.

Feet First Walking Audits - Walking Audits are intended to collect information for pedestrian-savvy project planning. Audits work with community members, elected officials, and city staff to assess the community and identify barriers and opportunities to walking so that the city or neighborhood can take steps toward improving walkability.

Spotlight: MINNEAPOLIS BIKE WALK AMBASSADOR PROGRAM



In the 2005 federal Transportation funding bill — Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) — Congress established a pilot program to demonstrate the extent to which bicycling and walking could carry a significant part of the transportation load, and represent a major portion of the transportation solution.



Each of the four pilot sites — Minneapolis and its surrounding communities; Columbia, MO; Marin County, CA; Sheboygan County, WI — had \$22 million to invest in planning, infrastructure, and public education. The four communities also studied the impact of these investments on traffic congestion, energy use, health, and the environment. Transit for Livable Communities was designated to administer the Bike Walk Twin Cities initiative for Minneapolis and its neighboring communities

Part of the funding was used to implement a Bike Walk Ambassador program and fund staff within Public Works to conduct bicycle and pedestrian education programs. Since that grant, Bike Walk Twin Cities has continued the effort.

Vision Zero Commitment

Nashville recently joined several of its peer and aspirational cities in committing to Vision Zero, an approach to traffic safety with an ultimate goal of ending traffic deaths and serious injuries. Every city is in different stages of implementation or adopting different implementation strategies.

	City	Vision Zero Commitment?	Implementation Strategies
	Nashville	✓	Mayor Barry signed an Executive Order formalizing a 'Complete and Green Streets' policy in May 2016, which included a vision zero commitment saying that Metro must seek to work collaboratively toward achieving a system of streets with no traffic fatalities or serious injuries.
Peer	Indianapolis	No formal commitment.	
	Louisville	No formal commitment.	While Louisville does not have a Vision Zero commitment, the city has used its NHTSA grant to implement measures to achieve zero traffic deaths (see Spotlight: Louisville NHTSA Grant on page 14).
	Memphis	No formal commitment.	
	Raleigh	No formal commitment.	
Aspirational	Austin	✓	The Austin City Council approved a resolution calling for the City Manager to create a Vision Zero Task Force in 2014. The city has released a draft 2016-2018 Vision Zero Action Plan which it is now looking to finalize.
	Denver	✓	Mayor Hancock announced a Vision Zero commitment in February 2016 and directed staff to develop a comprehensive Vision Zero Action Plan. Heads Up, the city's former public multimodal transportation safety campaign including education, engineering and enforcement components, will be re-envisioned and re-launched as part of the Vision Zero campaign.
	Minneapolis	No formal commitment.	
	Seattle	✓	See Spotlight: Seattle's Vision for Safe Streets on page 57.

Spotlight: SEATTLE'S VISION FOR SAFE STREETS



Seattle is often recognized as one of the safest cities in the country, seeing a 30% decline in traffic fatalities even as their population grows. Despite this fact, accidents take the lives of around 20 people and cause injury to nearly 150 each year. Vision Zero is Seattle's chosen strategy for ending traffic deaths and serious injuries by 2030, and last year the city released a plan building on its 2012 Road Safety Action Plan to guide implementation.

Seattle's Vision Zero Plan calls for street designs that emphasize safety, predictability, and the potential for human error, coupled with targeted education and data-driven enforcement. Some of Seattle's key implementation strategies include:

- SeaStat, a Seattle Police Department program which uses data to allocate police resources, will continually monitor collision trends and deploy enforcement appropriately.
- Seattle Police Department's Traffic Collision Investigation Squad and SDOT engineers will review the factors that contribute to each serious collision that occurs to learn as much as possible from each incident.
- 20 MPH Zones, mainly located close to schools and parks, and lowered speed limits on busier arterial streets.
- Coupling corridor safety improvements with enforcement to reduce speed, impairment, and distraction.

VISION ZERØ

SAFER STREETS FOR SEATTLE

- Supporting engineering work through targeted public outreach and enforcement through education programs like Safe Routes to School, Be Super Safe, Pedestrian Safety for Seniors, and the overarching Vision Zero campaign.

Seattle is using Washington State's Target Zero program as a model for its Vision Zero campaign, as traffic fatalities have dropped 40 percent across the state since the first version of Target Zero was launched in 2000. Through partnerships with the Washington Traffic Safety Commission, the Washington State Department of Transportation, and the Washington State Patrol, Seattle experienced collision reductions thanks to Vision Zero-style tactics employed on busy urban corridors. The City has attempted to build on these successes in its Vision Zero implementation, and has already seen collisions and speeds reduced in some corridors.



DESIGN
PRACTICES

Summary

The most visible evidence of a great place for walking and biking is simply the presence of infrastructure that welcomes and supports it. The section below highlights implementation strategies, complete street efforts, and innovative tactical urbanism.

“We’ve never had a formal complete streets policy, but one just passed through a subcommittee and will be passed through the full committee next cycle. I think it will be something to note because it’s very strong. Even though we’ve really done pretty well on this kind of thing, we wanted to go beyond checking the box and what we already do and push the bar further.”

–FORREST HARDY,
MINNEAPOLIS SAFE ROUTES FOR YOUTH & SENIORS PLANNER

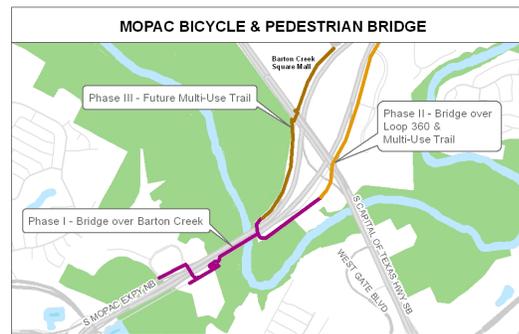
Spotlight: AUSTIN MOPAC MOBILITY BRIDGES



In order to address traffic congestion in the MoPac corridor of the city, Austin is partnering with the State of Texas to implement MoPac Mobility Bridges. The goal is “an 81% reduction in delay,” explained Chad Crager, Division Manager for Austin Public Works Department. “It’s the first project ever where we were able to take a lane from a state entity and turn into protected bike lane.” According to the city’s website, the project includes three phases totaling approximately two miles of bicycle and pedestrian facilities, and restriping southbound MoPac to create an additional lane for traffic, with phasing planned as follows:

- Phase I includes a bicycle/ pedestrian bridge over Barton Creek at MoPac, the restriping of the southbound lanes of MoPac at the bridge over Barton Creek to improve motor vehicle congestion, and improved bicycle and pedestrian connections to Southwest Parkway, Loop 360, and other planned trails in the area (the Violet Crown Trail and the Oak Hills Neighborhood Trail System).
- Phase II includes a bicycle/ pedestrian bridge over Loop 360 at MoPac.
- Phase III is a multi-use trail that would accommodate bicycles and pedestrians on the west side of MoPac from Loop 360 to Tamarron Boulevard.

This project is a joint Federal, Regional, City of Austin, and State partnership project. The first two phases are expected to be completed this summer, while the third phase



has not yet been funded. Design of Phases I and II is provided by year 2000, 2006, and 2010 bicycle-specific bond funding. Phase I construction is funded through Proposition 12 Congestion Management funds through the Capital Area Metropolitan Planning Organization (CAMPO). Phase II of the project was funded through Surface Transportation and Metropolitan Mobility (STPMM) funding administered through the CAMPO in the fall of 2011. All phases are within the Texas Department of Transportation (TxDOT) right of way.

Bikeway Implementation

Types of Bikeway Projects



Resurfacing Projects

A significant portion of existing bikeway mileage have been developed across all cities through resurfacing programs. Repaving projects provide a clean slate for revising pavement markings and adding bicycle facilities.

Nashville Example: Highway 100 and Richard Jones Road

Pro: Cost to add bikeways is absorbed into the annual state or local resurfacing budget

Con: Roadways are selected by pavement quality, not bikeway network connectivity.



Standalone Bikeway Projects

Most cities have implemented standalone restriping projects where travel lanes are narrowed or removed to install bikeways.

Nashville Example: Charlotte Pike (TDOT project)

Pro: Projects can be selected based on a prioritization methodology.

Con: Requires dedicated funding sources.



Major Roadway Projects (Complete Streets)

Under the Complete Streets approach adopted by all of our peer and aspirational cities, every new roadway or major capital improvement project integrates traditional or separated bikeways.

Nashville Example: Korean Veterans Blvd (KVB) and 11th Ave (The Gulch)

Pro: Opportunity to gain extra width required for separated bikeways.

Con: Lengthy implementation timeline, often taking 1-2 years from concept to completion.



Grouped Bikeway Projects

Nashville, along with a couple peer cities including Raleigh and Memphis, have implemented a large batch of bikeway improvements as one project. Federal funding, in particular, is often easier and more efficient to spend in large amounts, which makes grouping projects useful.

Nashville Example: Music City Bikeway (see page 18 for more details)

Pro: Big impact to the bikeway network (Raleigh added 27 miles in one project).

Con: Public participation can be challenging across such a large demographic. Negative feedback on one section may derail an entire project.

Spotlight: DENVER BIKE PARKING



While most U.S. cities recognize the role of bike parking as a critical link in the transportation system, few have a systematic approach to assessing and meeting demand. To address this issue, the City of Denver revamped its bike parking program last year by developing a zonal map for the City and County of Denver that shows areas with anticipated high demand. “We developed a demand map, kind of like a heat map,” explained Riley LaMie, Associate City Planner for the City and County of Denver. This map highlighted two zones of high demand, and is now being used as a tool to prioritize installation locations for bike corrals and bike racks.

Denver also has an innovative application process for bicycle parking requests. There are two ways to get bicycle parking in the public right-of-way: either Denver Public Works will install parking at a requested location based on selection criteria, or Public Works will approve the applicant to install bicycle parking at their own cost. In both cases, the first step is for property owners to fill out an application with the city. This application requires applicants to provide a site plan and photograph of the proposed location, as well as answer a few brief questions about the existing conditions in that area. This program began with a dedicated source of funding of \$90,000 last year and received an additional \$50,000 this year.

Design Forces

Capacity to handle the design of sidewalks and bikeways varies by city. Contractors handle sidewalk and bikeway design in Nashville, Indianapolis, Louisville, and Memphis. Staff in these cities are responsible for project management and coordination.

		Sidewalk and Bikeway Design		
City		In-House Forces	Contractor	Both
Peer	Nashville		✓	
	Indianapolis		✓	
	Louisville		✓	
	Memphis		✓	
	Raleigh			✓
Aspirational	Austin			✓
	Denver			✓
	Minneapolis	✓		
	Seattle	✓		

Complete Streets

Complete Streets policies provide guidance for design and implementation of roadway projects that accommodate all users. Each city has adopted a complete streets policy, with the exception of Minneapolis. Among the peer and aspirational cities, Seattle was the first city to adopt its Complete Streets policy. In Nashville, Mayor Barry recently signed a new Complete and Green Street Executive Order: http://www.nashville.gov/Portals/0/SiteContent/pw/docs/news/2016/031_ExecutiveOrder_CompleteStreetsPolicy.pdf. Detailed performance measures to track progress and implementation are highlighted below.

	City	Complete Streets Policy?	Year Adopted	Implementation Measures
	Nashville	✓	2010	<ul style="list-style-type: none"> • Departments to review and modify current standards • Professional development for staff on best practices for multi-modal transportation • Identify funding sources • Metro Government departments to collaborate with utility and communications providers • Detailed performance measures will be developed by Planning Commission
Peer	Indianapolis	✓	2012	<ul style="list-style-type: none"> • Total miles of bike lanes • Linear feet of new pedestrian accommodation • Number of new curb ramps installed along city streets • Crosswalk and intersection improvements • Percentage of transit stops accessible via sidewalks and curb ramps (beginning in June 2014) • Rate of crashes, injuries, and fatalities by mode • Rate of children walking or bicycling to school (beginning in June 2014)
	Louisville	✓	2008	N/A
	Memphis	✓	2013	<ul style="list-style-type: none"> • City will incorporate project ranking matrix that complies with Complete Streets policy into its annual CIP review process • Work with Memphis Urban Area Metropolitan Planning Organization to ensure Transportation Improvement Plan is consistent with Complete Streets policy
	Raleigh	✓	2015	N/A
Aspirational	Austin	✓	2008	<ul style="list-style-type: none"> • Metrics and reporting will be consistent with Imagine Austin implementation • Mobility goals: <ul style="list-style-type: none"> • Miles of new and improved sidewalks • Miles of new and improved bicycle facilities • Accessible transit stops
	Denver	✓	2011	N/A
	Minneapolis	No formally adopted policy, although operating under general guidelines in practice		
	Seattle	✓	2007	Major construction and maintenance projects are evaluated based on the Complete Streets checklist: <ul style="list-style-type: none"> • Traffic volume • Street classification and type • Inventory of sidewalk condition • Crosswalks • Transit facilities • Parking restrictions • Recommendations from existing neighborhood and bicycle, pedestrian, transit and freight plans

Tactical Urbanism

Many cities have embraced tactical urbanism as a way to implement quick, cost-effective projects or to show residents a real life example of how certain design treatments are operated. Below are a few highlights from several cities, or their local advocacy group, that have used tactical urbanism methods.



Nashville

Tactical Urbanism Organizers (TURBO Nashville) seeks to make permanent change through temporary pop-up installations in the built environment. They've implemented pop-up bus stops along Nolensville Pike and traffic calming measures on 51st Avenue for a one-day celebration of a complete street example.



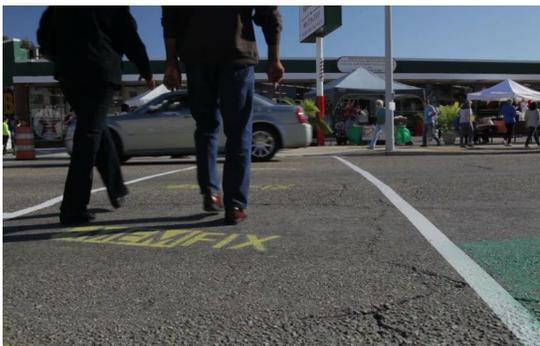
I Indianapolis

A recent demonstration project incorporated tactical urbanism as a tool for traffic calming in Indianapolis. The City first analyzed areas where motorists tend to drive above the posted speed limit, and then recruited volunteers to use paint and other materials to draw traffic circles and crosswalks.



Me Memphis

Memphis is home to MEMFix, a community-led revitalization effort that demonstrates a temporary showcase of what a dynamic, walkable neighborhood could look like with pop-up shops, activated storefronts, vibrant public



spaces, bicycle and pedestrian-friendly streets, and engaging activities for visitors. The premise is to stimulate ideas for that vision through temporarily installing features such as: bicycle, pedestrian, and traffic calming features like bike lanes, crosswalks and bump-outs at intersections; landscaping, street furniture, pavement-to-plaza spaces, and parklets; pop-up retail in vacant properties; or programming like art, music, history, and food trucks to draw people to the neighborhood. MEMFix even has a design guide available for these projects.

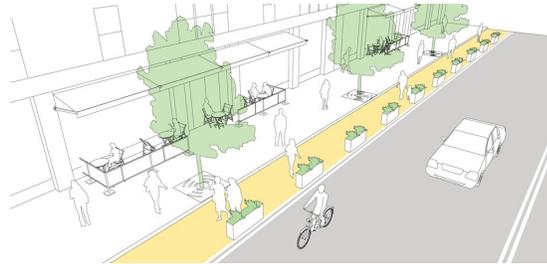
A Austin

This spring, architecture students at the University of Texas at Austin used cinder blocks, wood and spray paint to create \$10 benches for four bus stops in East Austin that lacked seating.



D Denver

Denver has been host to a number of successful tactical urbanism projects in recent years. One such project, shown here, was last year's six-hour pop-up road diet on West Colfax Avenue featuring parklets along a travel lane, brightly colored crosswalks, and temporary bulb-outs and bike lanes. Denver is currently working on an innovative tactical urbanism application program where residents can apply to implement a project in the city.



Mi Minneapolis

The City of Minneapolis Public Works, Minneapolis Downtown Improvement District, and the Warehouse District Business Association recently partnered to implement The First Avenue Walkway Pilot Project to test functionality and evaluate the impacts of providing additional pedestrian space on 1st Avenue. Temporary sidewalk expansions consisted of interim materials including planters, paint, flexible posts, and signage. The Minneapolis Downtown Improvement District, a business-led non-profit, includes a tactical urbanism committee with members from the city and local business community.

S Seattle

Seattle has implemented several tactical urbanism improvements in recent years using paint, flexible bollards, and planters to increase safety and enhance the overall function of various streets. These projects often tie in with future SDOT capital projects, but the city also welcomes requests for tactical urbanism project ideas on its website.



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APPENDIX

Contact List

City	Name	Department	Position	Contact Information
Nashville	Jason Radinger	Metro Nashville-Davidson County Public Works Department	Bicycle & Pedestrian Coordinator	Jason.Radinger@nashville.gov
	Jenna Smith	Metro Nashville-Davidson County Public Works Department	Public Information Manager and Projects Manager	Jenna.smith@nashville.gov
	Adams Carroll	Metro Nashville-Davidson County Planning Department	Active Mobility Planner	Adams.carroll@nashville.gov
Indianapolis	Jamison Hutchins	Indianapolis Department of Public Works	Bicycle and Pedestrian Coordinator	jamison.hutchins@indy.gov
Louisville	Rolf Eisinger	Louisville Metro Department of Public Works and Assets	Bicycle and Pedestrian Coordinator	johnrolf.eisinger@louisvilleky.gov
Memphis	Stephen Edwards	City of Memphis Traffic Engineering	Engineer	stephen.edwards@memphistn.gov
Raleigh	Susan Wilson	Raleigh Department of City Planning, Transportation Planning	Bicycle and Pedestrian Program Manager	susan.wilson@raleighnc.gov
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	Laura Dierenfield	Austin Department of Transportation	Active Transportation Program Manager	laura.dierenfield@austintexas.gov
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Resources

Austin

The City of Austin: <http://www.austintexas.gov/>

Austin Bicycle Master Plan: https://austintexas.gov/sites/default/files/files/2014_Austin_Bicycle_Master_Plan__Reduced_Size_.pdf

Sidewalk Master Plan: https://www.austintexas.gov/sites/default/files/files/Public_Works/Sidewalk_Master_Plan.pdf

Denver

The City of Denver: <http://www.denvergov.org/>

Denver Moves: https://www.denvergov.org/Portals/708/documents/FINAL_Denver_Moves.pdf

City and County of Denver Pedestrian Master Plan: http://www.pedbikeinfo.org/pdf/PlanDesign_SamplePlans_Local_Denver2004.pdf

Indianapolis

The City of Indianapolis: <http://www.indy.gov/>

Marion County/Indianapolis Pedestrian Plan: http://indywalkways.org/wp-content/uploads/2015/10/Indianapolis_Pedestrian-Plan_DRAFT_web_Pages.pdf

Louisville

The City of Louisville: <https://louisvilleky.gov/>

Louisville Bike Master Plan: <https://louisvilleky.gov/government/bike-louisville/bike-master-plan>

Louisville Pedestrian Master Plan: <https://louisvilleky.gov/government/bike-louisville/pedestrian-master-plan>

Memphis

The City of Memphis: <http://www.memphistn.gov/>

Memphis MPO Regional Bicycle & Pedestrian Plan: <http://memphismpo.org/sites/default/files/public/documents/bike-ped-plan/regional-bicycle-and-pedestrian-plan-full.pdf>

Memphis Pedestrian and School Safety Action Plan: https://bikepedmemphis.files.wordpress.com/2015/04/mpss_action_plan_all_optimized.pdf

Minneapolis

The City of Minneapolis: <http://www.minneapolismn.gov/>

Minneapolis Bicycle Master Plan: <http://www.minneapolismn.gov/bicycles/WCMS1P-135610>

Minneapolis Pedestrian Master Plan: http://www.minneapolismn.gov/pedestrian/projects/pedestrian_pedestrian-masterplan

Nashville

The City of Nashville: <https://www.nashville.gov/>

WalknBike Strategic Plan: http://mpw.nashville.gov/IMS/Sidewalks/StrategicPlan_July2008.pdf

Raleigh

The City of Raleigh: <http://www.raleighnc.gov/>

BikeRaleigh Plan Update: <http://bikeraleigh.org/home/index.php/projects/bike-raleigh-plan>

Seattle

The City of Seattle: <http://www.seattle.gov/>

Seattle Bicycle Master Plan: <http://www.seattle.gov/transportation/bikemaster.htm>

Seattle Pedestrian Master Plan: http://www.seattle.gov/transportation/pedestrian_masterplan/