



FHWA's Fostering Multimodal Connectivity Newsletter

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Introduction

The Federal Highway Administration's (FHWA's) Fostering Multimodal Connectivity Newsletter is intended to provide transportation professionals with real-world examples of ways that multimodal transportation investments promote economic revitalization, provide access to jobs, and achieve safer communities through support of accelerated project delivery, technology and design innovation, and public/private partnerships. This newsletter communicates FHWA and partner efforts in support of the USDOT Strategic Plan by improving connectivity, accessibility, safety, and convenience for all users.

Want to access additional tools and resources? Please visit FHWA's [website](#). Past issues of the newsletter are also [available](#). To subscribe to the newsletter, visit [GovDelivery](#).



Charleston Embracing Multimodal Transportation through Changes to Parking and New Bus Rapid Transit System

Keith Benjamin, Director Department of Traffic and Transportation, City of Charleston, South Carolina

Charleston is growing at three times the national average—with 34 new residents moving in daily and a labor force growing at four times the national average. With automobile and aircraft companies expanding or relocating to the Charleston region, the city has billions of dollars in economic impact and the millennial population has jumped by 60 percent in the last 10 years.

While Charleston has become a destination, equitable mobility for all modes and all people remains a challenge. According to a report on [The State of Racial Disparities in Charleston County](#), the majority of residents are paying one-third of their income for housing, and another 15 percent for transportation. Data from the city planning department shows that up to 84 percent of residents in Charleston neighborhoods leave their immediate neighborhood every day in a single occupancy vehicle to get to work. While a most of these residents have indicated their desire to choose transit if it were reliable and connected, less than 10 percent of over 800 tri-county bus stops have a shelter or bench. The city lacks a culture of transportation safety, especially for non-motorized modes. According to [South Carolina's Highway Safety Plan](#), Charleston city and county both rank number one in South Carolina for bicycle/pedestrian deaths and injuries, most of which are people of color. The area also ranks number two for speed fatalities and number five for DUI fatalities. Infrastructure has not leveled up to the city's immense growth, and residents are being left behind.

It used to be that the solution to parking challenges—both real and perceived—was to find additional capacity. Now, many cities are using good parking and mobility management as the lever to promote more equitable access; better behavior and decision-making; positive economic development; efficient multimodalism; and intelligent community design. In January 2019, [the City Council unanimously embraced a new set of recommendations](#) for parking and mobility that was overwhelmingly supported by a robust community outreach campaign to residents, workers, and visitors. The [city of Charleston's parking study](#) laid out specific recommendations for consolidating city management, improving wayfinding, and establishing data driven policies for residential and commercial corridors. These recommendations support balanced utilization through dynamic curb lane management, and enhancing transportation infrastructure through parking revenue. Armed with significant on-the-ground occupancy data, the study made clear that parking management is about the intersection between parking supply, demand management, and mobility. Through a survey of over 3,500 participants; public forums; and focus groups and site visits from Charlotte, Seattle, and Columbus transportation officials; broad outreach to the community added qualitative answers to the full analysis.

The citizens of Charleston have given a clear mandate to decision makers of the need to broaden the spectrum of mobility options beyond single occupancy vehicles, which was made evident in the citizen survey that initiated the parking study. When asked what alternative mode of transportation they would regularly use if it were reliable and connected, over 50 percent of respondents said they would use transit. Regionally, agencies at the local, county, metropolitan planning organization, and State levels have worked to address this issue through the introduction of Lowcountry Rapid Transit, a 23-mile bus rapid transit system between Charleston, North Charleston, and Summerville. Led by the Berkeley-Charleston-Dorchester Council of Governments (BCDCOG), a 2015 study found that estimated costs for the project total \$360 million and in November 2016, Charleston County voters passed a half-cent sales tax that included \$250 million dedicated to the initial construction of the transit line, applications for matching Federal grants, as well as operational costs when the bus rapid transit line starts.



Currently the Lowcountry Rapid Transit project is in the existing conditions evaluation and conceptual design phase, and beginning the National Environmental Policy Act (NEPA) process. The goal is to begin construction in 2023, with the transit line opening for business in 2025.

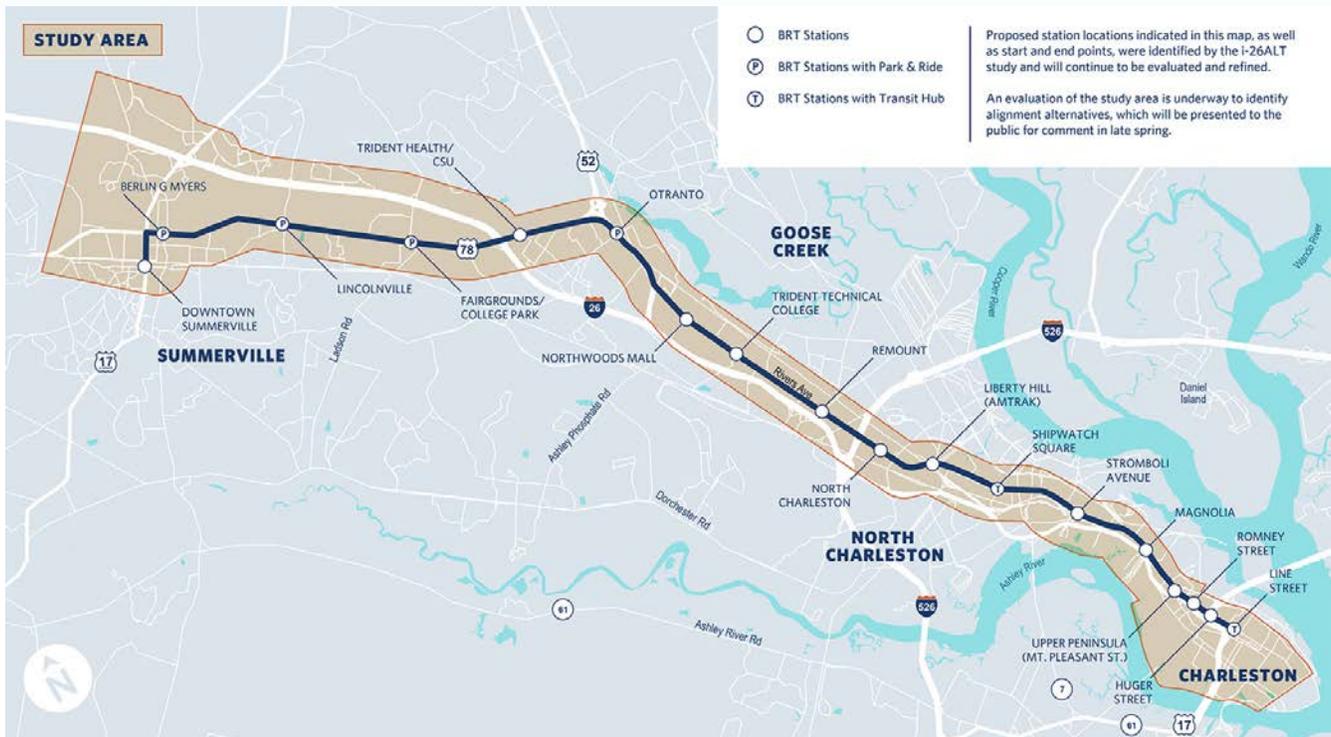


Figure 1: Map of Charleston area proposed bus rapid transit stations extending west from downtown Charleston. (Image courtesy of Charleston Department of Traffic and Transportation).

Multiple city, county, and State agencies are coordinating on South Carolina’s first mass transit project to provide reliable service, connect people, and spur economic revitalization along the corridor. As this major regional project moves forward, local municipalities like Charleston are taking a serious look at congestion mitigations like efficiencies in parking supply and demand that allow transit to be a viable option, ultimately creating safer, connected, and more affordable communities.

Ohio Non-Motorized Risk Assessment Pilot Supports Proactive Approach to Multimodal Safety

Jennifer Noll, Principal Planner, Mid-Ohio Regional Commission

The Mid-Ohio Regional Planning Commission (MORPC) is a voluntary association of local governments serving a 15-county area in Central Ohio. MORPC is the designated metropolitan planning organization (MPO) for the Columbus urbanized area.

MORPC recently completed a pilot project to put to practice the processes and methodologies outlined within the Federal Highway Administration (FHWA) [Guide for Scalable Risk Assessment Methods for Pedestrians and Bicyclists](#). The step-by-step format is easy to follow; allows for flexibility in exposure and risk calculation methods; notes the strengths and



weaknesses of different methods; and takes into account variations among agencies in terms of resources and staff expertise and capacity. The Guide is adaptable to a variety of geographic scales and offers examples of how to translate and aggregate between scales. Such flexibility can assist agencies and practitioners to better define and calculate non-motorized exposure and risk.

The need to evaluate and understand risk to non-motorized roadway users is real; the prevalence and severity of pedestrian and bicycle crashes within Central Ohio represents a serious transportation safety issue for the region. Between 2012 and 2016, the number of non-motorized fatal crashes in the region increased by 88 percent, compared to a 19 percent fatal crash increase across all crash types. Similar trends have been observed across Ohio and nationwide.

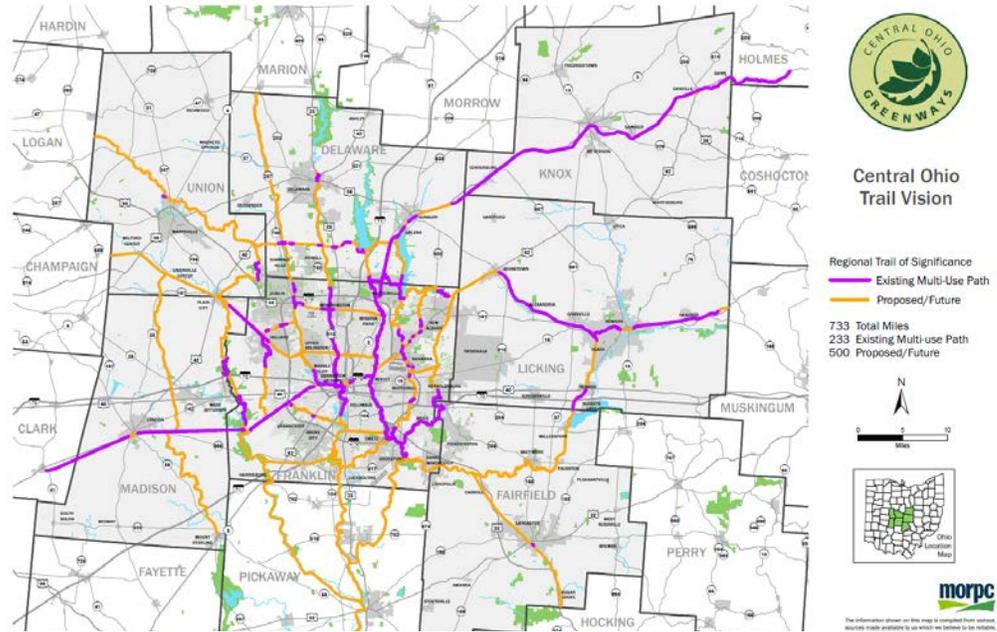


Figure 2: A map showing existing and proposed sections of the Central Ohio Greenways. (Image courtesy of Mid-Ohio Regional Commission).

With a network of over 200 miles of trails, the Central Ohio Greenways (COG) comprise a significant portion of the region’s pedestrian and bicycle network, providing low-stress connections for people of all ages and abilities between neighborhoods, employment centers, and other destinations. COG trails are mostly separated from road rights-of-way, but trail users have the potential to come into conflict with motorized vehicles at trail access points and at-grade roadway crossings. While MORPC was aware of the risk, they had not developed a method to understand, quantify, and address it prior to this study.

The team followed the *Guide for Scalable Risk Assessment Methods* to develop a numeric index quantifying the risk experienced by non-motorized users of the COG trail network within the MPO boundary. The risk index establishes a methodology for prioritizing trail crossings and access points in need of advanced facilities and treatments.

MORPC calculated risk experienced by non-motorized users at 110 regional trail crossings and access points based on extrapolated trail count data and roadway user volumes. Staff estimated volumes on roadways without count data using statewide averages by roadway functional classification.

Locations exhibiting low crash frequencies may not accurately represent the risk levels experienced by non-motorized users if risk is only defined by observed crash statistics. To account for this, and to generalize risk calculation to other portions of the region’s transportation network where non-motorized volume data is unavailable, MORPC employed an “additional risk indicators” method, in which “risk” is a function of multiple indicators. The team selected indicators based on FHWA



systemic safety analysis recommendations, and utilized data that is readily available region-wide, including roadway, crossing, and site context characteristics. This method allowed MORPC to understand user risk and safety at key locations and prioritize locations for countermeasure implementation even in the absence of crash data.

A composite risk index was generated for each trail crossing and access point using the additional risk indicators listed below, exposure estimates (site volume/count data), and observed crash frequency/severity at these locations. Each indicator was assigned a value between 0 and 10 depending on its influence on risk, summed and weighted.

- Crossing length
- Crossing type
- Intersection signalization
- Number of lanes crossed
- Pedestrian signalization
- Posted roadway speed
- Presence of bike lane
- Presence of refuge island
- Presence of sidewalk
- Presence of street parking
- Presence of transit route
- Presence of warning signage

There were some challenges with how to best relate the exposure estimates to calculated risk with these additional indicators. MORPC included the exposure estimate (product of non-motorized and vehicular volumes) in the calculation of the risk index, treating exposure the same way as the additional risk indicators. Another challenge was understanding how each additional risk indicator influences risk, and their relative significance. MORPC's method of identifying each additional risk indicator's weight largely relied on professional judgement.

As the project continues, MORPC will use the calculated risk index and subsequent ranking of trail crossings and access points to prioritize locations for safety investment through the [Systemic Safety Improvement program](#). Thanks to this methodology, MORPC can move beyond a reactive method for addressing issues at high-risk intersections, and provide a more proactive approach to improving safety on a regional scale.

Scooter Pilot Reveals User Preferences and Potential Challenges

Briana Orr, Transportation Demand Management Specialist, Portland Bureau of Transportation

In 2017, electric scooters (e-scooters) emerged as a new shared mobility service in the United States. Less than a year after their debut, e-scooters were operating in 65 U.S. cities. They did not arrive without disruption, and cities have faced challenges with their rapid spread. Portland, Oregon responded with a proactive approach, creating the [E-Scooter Pilot Program](#). With the pilot, the Portland Bureau of Transportation (PBOT) focused on giving Portlanders access to this new transportation option while also ensuring that e-scooters would support Portland's fundamental policy values. Designed to assess whether—and how—e-scooters could help meet Portland's transportation needs, the pilot featured a permitting framework that aligned e-scooter company business practices with four critical city of Portland objectives:

1. Reduce traffic congestion by shifting trips away from private motor vehicle use
2. Prevent fatalities and serious injuries on Portland streets
3. Expand access to opportunities for underserved Portlanders
4. Reduce air pollution, including climate pollution



In January 2019, the Portland Bureau of Transportation released the [2018 E-Scooter Findings Report](#). Drawing on scooter use data, public opinion polling, staff observations, and other sources, the report evaluates Portland’s first e-scooter pilot. Based on this evaluation, PBOT also announced a one-year pilot program that will bring e-scooters back to Portland streets in spring 2019.

Several findings show that e-scooters were well-received by Portlanders and aligned to the city’s goals:

A majority of Portlanders viewed e-scooters positively. In a representative citywide poll conducted in December 2018, 62 percent of all Portlanders viewed e-scooters positively at the end of the pilot. Support was even higher among Portlanders under 35 (71 percent), people of color (74 percent), and those with incomes below \$30,000 (66 percent).

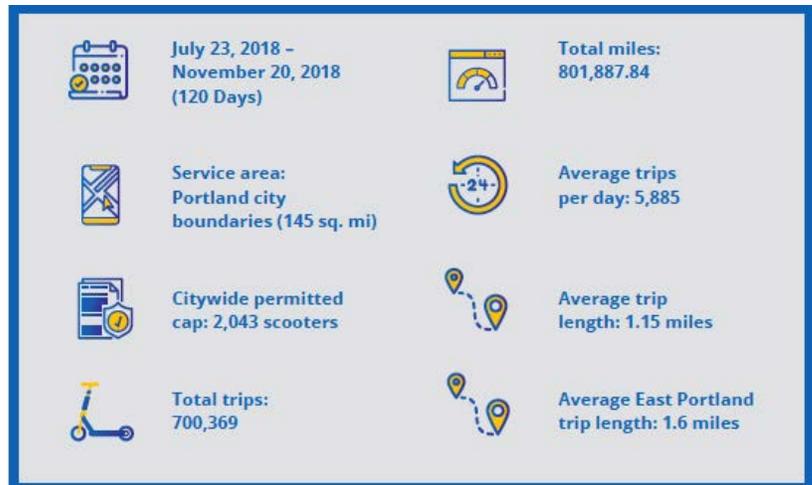


Figure 3: Portland e-scooter pilot overview graphic. (Image courtesy of Portland Bureau of Transportation).

Portlanders primarily used e-scooters for transportation. 71 percent of Portlanders reported that they most frequently used e-scooters to get to a destination, while only a third of respondents (29 percent) said they most frequently used e-scooters for recreation or exercise.

E-scooters replaced driving and ride-hailing trips. 34 percent of Portland riders and 48 percent of visitors took an e-scooter instead of driving a personal car or using ride-hailing or a taxi.

Having safe scooter infrastructure mattered to riders and sidewalk users. Based on scooter ride data and rider survey data, users preferred riding on low-traffic streets and protected facilities. Portland is actively improving and expanding a network of safe streets designed for people walking and rolling. For example, one of the multimodal safety improvements in Portland’s [Central City in Motion](#), a planning process funded by the Federal Congestion Mitigation and Air Quality (CMAQ) program, will implement a year-round streetscape improvements known as “[Better Naito](#).” The planned future Naito Parkway will provide a two-way cycletrack and sidewalk along the west side of Portland’s Waterfront Park.

Users demonstrated a strong preference for bikeways and other protected infrastructure. In their absence, or on higher-speed streets, sidewalk riding increased. Observations showed that sidewalk riding was lowest on streets designed for people walking and rolling. When riding on a street with a protected bike lane, 8 percent of riders used the sidewalk, but on a street with no bike facilities, 39 percent of riders used the sidewalk. Similarly, when posted speed limits are 30 miles per hour (MPH) or higher, most users rode illegally on the sidewalk.

Scooter safety risks were similar to other ways of getting around. According to the Multnomah County Health Department, scooter related injuries increased from less than one per week before the pilot to about 10 per week during the pilot. Weekly emergency room visits peaked in late August and early September before decreasing to near pre-pilot levels by the end of the pilot in November. Scooter-related injuries (including injuries from non-motorized scooters) were a small portion of total traffic crash injuries, accounting for about five percent of the estimated 3,220 of total traffic crash



injury visits to emergency rooms and urgent care centers during the pilot period. Scooters generated 176 visits or less than half the 429 visits for bicycle-related injuries.



Figure 4: E-scooter users in Portland demonstrated a strong preference for bikeways and other protected infrastructure. In their absence, or on higher-speed streets, sidewalk riding increased. (Image courtesy of Portland Bureau of Transportation).

Several findings also showed that e-scooter use created conflicts with pedestrians and underperformed on some city goals:

Portlanders reported widespread illegal sidewalk riding and incorrect scooter parking. With speeds capped at 15 MPH, scooters are appropriate for bike lanes or low-volume streets, but they are too fast for use on sidewalks, where they make it unsafe or uncomfortable for people walking or using mobility devices. While staff observations showed most scooters parked properly in the sidewalk furnishing zone, improperly parked scooters negatively impacted accessibility and created a hazard for people with visual impairments.

E-scooter companies did not consistently comply with the East Portland fleet requirement and the pilot program showed other equity challenges. Companies did not consistently comply with the East Portland fleet requirement to deploy at least 100 e-scooters in this historically underserved area. Companies only enrolled 43 Portlanders in a low-income plan. Along with staff observations, this suggests low company performance in aligning business practices with city equity goals.

A longer one-year pilot program will give the Portland Bureau of Transportation the chance to test new measures to improve the use of e-scooters. [The New York Times lauded Portland’s report](#) as “the most detailed analysis of the impact of e-scooters on a city.” A handful of other cities have produced reports on pilot programs with dockless bikes and/or e-scooters, including [Washington, D.C.](#) and [Seattle](#). To download the Finding Report and for more information, visit the [Portland Bureau of Transportation e-scooter project page](#).

Resource Highlight: Right-Sizing Transportation Infrastructure to Foster Economic Development

Drew Quinton, Community Planner, U.S. Department of Transportation Volpe Center, Cambridge, Massachusetts

The Federal Highway Administration (FHWA) recently published a white paper titled “[Economic Development and Highway Right-Sizing](#).” The paper describes the various aspects of right-sizing transportation facilities, including when to consider right-sizing, the economic and community benefits it provides, and issues that may arise when completing a right-sizing project. The white paper highlights case studies of right-sizing projects from across the United States and abroad.

A transportation facility right-sizing project is one whose goal is to “match land use and transportation contexts appropriately on existing streets,” as defined by FHWA and the Federal Transit Administration (FTA) in the [Livability in](#)



[Transportation Guidebook](#). Right-sizing typically involves reducing the transportation facility footprint and repurposing the land made available to more appropriately meet regional transportation needs and stimulate economic development.

Three of the types of transportation facilities that can be right-sized include elevated highways, at-grade highways, and below-grade or depressed highways. Often, these types of facilities are right-sized by replacing them with at-grade boulevards. Boulevards typically have slower speeds and fewer lanes than the highways they replace, and they include more opportunities for people using all transportation modes to cross the corridor. In some cases, highways are right-sized by turning them into tunnels and redeveloping the land above or creating a park.

There are a number of reasons a transportation facility could be considered for a right-sizing project:

- **Obsolescence** – Facilities can become obsolete (meaning the demand for the facility has dropped significantly) due to changes in the local economy or transportation network changes.
- **Damage or Deterioration** – Facilities may be damaged or deteriorated due to accumulated deferred maintenance as it nears the end of its useful life.
- **Economic Development and Revitalization** – Sometimes, nothing may be wrong with the facility itself, but it may just be occupying valuable real estate that would serve the community better as commercial or residential development.
- **Neighborhood Connectivity** – The transportation facility may be cutting off one part of a neighborhood from another, limiting access to jobs and services.

Right-sizing transportation projects can help improve a community's economic competitiveness in a number of ways. By reducing the footprint of a transportation facility, right-sizing provides the opportunity to create or improve public spaces, increase transportation safety with improved road geometry, and encourage economic development along a corridor by making the neighborhood more attractive for local businesses, all while meeting traffic demands.

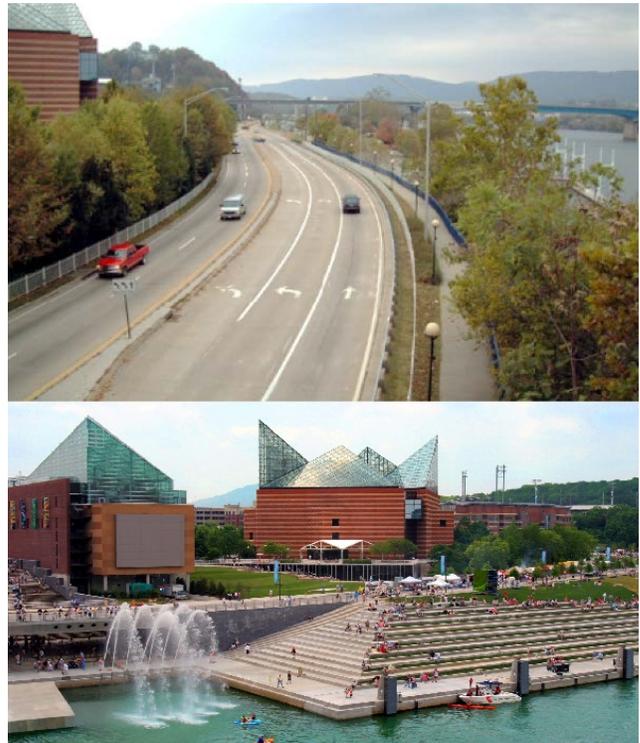


Figure 5: Before (above) and after (below) photos of downtown Chattanooga with waterfront improvements (Photo courtesy of Chattanooga Convention & Visitors Bureau).

When considering a right-sizing project, it is important to involve the local community throughout the entire process. The first step in the community engagement process is assessing community attitudes toward the transportation facility in question, in order to determine whether right-sizing it in some way would address the community's concerns. Having established that, engaging the community through a "visioning" process is one effective method of gathering public input. Through visioning, the community works with planning professionals to identify solutions, taking into account community members' local knowledge of social, environmental, economic, and land use issues. Through visioning, residents and local businesses provide information to guide the growth of their community and how right-sizing the transportation infrastructure can facilitate that growth.



One notable example of a successful right-sizing project can be found in Tennessee. The Riverfront Parkway in Chattanooga was originally built to accommodate a high volume of truck traffic through the region. However, due to the declining manufacturing industry in the Chattanooga region, the truck volumes on the Parkway were much lower than the facility could accommodate.

The Parkway redesign process was driven by a citizens' committee formed specifically for this task, called the Chattanooga Venture. The committee was tasked with seeking out the community's suggestions on how to right-size the Riverfront Parkway to enable Chattanooga to become a more connected, livable community that attracts outside investments. The Parkway was ultimately reduced along the downtown waterfront area from as many as five travel lanes to two. The community's vision led to the redevelopment of 129 acres of waterfront property adjacent to the Parkway's right-of-way. The robust community input is largely credited for the success of the right-sizing project and the revitalization of downtown Chattanooga.

Successfully right-sizing a transportation facility can be a complex and nuanced process. It is important to forecast and quantify the economic, traffic, and social impacts and benefits that the project will have on the community. It is also important to involve the community in the process, as community members can provide insight into neighborhood needs and impacts that may otherwise be overlooked.

Right-sizing projects can be large in scope, and pursuing them can be daunting. However, the economic and community development benefits achieved through right-sizing can greatly contribute to a community's quality of life while continuing to meet current and future traffic demand.



Announcements/New Resources

- The Federal Highway Administration (FHWA) presented recent and ongoing efforts in [a summary of research and program activities](#). The annual Bicycle and Pedestrian Research Summary describes bicycle and pedestrian research in the previous year.
- FHWA recently published the “[Guide for Scalable Risk Assessment Methods for Pedestrians and Bicyclists](#),” which outlines eight sequential steps for developing risk values and describes the scope and nature of each step, including guiding principles. An accompanying spreadsheet tool to estimate statewide and metropolitan planning organization (MPO) area non-motorized exposure will soon be available online. In the meantime, the tool can be obtained by contacting Tamara Redmon at tamara.redmon@dot.gov. FHWA is also providing technical assistance through mid-2020 for States, cities, communities, and MPOs interested in implementing these risk assessment and exposure estimation approaches.
- FHWA released its “[Bikeway Selection Guide](#)” to help transportation practitioners consider and make informed decisions about trade-offs relating to the selection of bikeway types. The Guide outlines a process for identifying the desired bikeway type and assessing and refining potential options based on real-world conditions and decision-making factors. The Guide is accompanied by a comprehensive literature review, a “[Resource Guide for Separating Bicyclists from Traffic](#),” which summarizes safety research for common bikeway types, and provides a brief history of U.S. and international guidance for bikeway selection.
- As part of the [Safe Transportation for Every Pedestrian \(STEP\)](#) initiative under FHWA’s Every Day Counts initiative, the Oklahoma Department of Transportation (ODOT) published an “[Action Plan for Implementing Pedestrian Crossing Countermeasures at Uncontrolled Locations](#).” The plan recommends actions that may reduce the number and rate of crashes, fatalities, and injuries involving people walking on Oklahoma’s and the nation’s roads. The Action Plan was developed as a collaborative effort between the FHWA Division Office and ODOT.
- FHWA is developing a series of short videos highlighting innovative and proven public involvement techniques for today’s transportation plans and projects. The techniques will also be featured in a webinar series, beginning on April 25, 2019. Stay tuned for more information coming soon. More information is available on the [Virtual Public Involvement webpage](#).
- FHWA released two new publications focusing on Environmental Justice (EJ) analysis. The first publication, “[Addressing Changing Demographics in Environmental Justice Analysis, State of the Practice](#)” provides information on national demographic trends and methods to meaningfully involve EJ populations in transportation decision making. A [webinar](#) was held January 30, 2019 on this resource. The second publication, “[Environmental Justice Analysis in Transportation Planning and Programming, State of the Practice](#),” provides strategies and techniques for identifying EJ populations; conducting targeted public involvement; assessing EJ population transportation needs; understanding benefits and burdens of proposed transportation plans; and deploying strategies to address such effects. Complementing these efforts, FHWA also supported the development of the new instructor-led [Environmental Justice Analysis course](#) offered by the National Highway Institute, as well as a case study on “[Using Social Media to Reach Environmental Justice Communities](#),” published by the Center for Environmental Excellence by the American Association of State Highway and Transportation Officials (AASHTO).

