Miami Valley Bike Plan Update 2015

FINAL DRAFT – July 2015

MIAMI VALLEY
Regional Planning Commission

2015 Bike Plan Update

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Terms used in this document

Bike Facility Types

BICYCLE BOULEVARDS

An enhanced version of signed shared roadways, bicycle boulevards are developed through a combination of traffic calming measures and other streetscape treatments, and are intended to slow vehicle traffic while facilitating safe and convenient bicycle travel. Bike boulevards often are designed to offer a safer alternative to a busy parallel route. Appropriate treatments depend on several factors including traffic volumes, vehicle and bicycle circulation patterns, street connectivity, street width, physical constraints, and other parameters.

BIKE LANES

Designated exclusively for bicycle travel, bike lanes are separated from vehicle travel lanes with striping and also include pavement stencils. Standard bike lanes provide the lowest degree of separation from motor traffic. For higher volume roadways the enhanced facilities described above are preferred because of their greater degree of separation.

BUFFERED BIKE LANES

A buffered bicycle lane is a bicycle lane that lies within the roadway and is separated from motor vehicle traffic by a stripe painted on the road with an additional stripe painted beyond its outer edge (on one or both sides) that indicates the beginning of the motor vehicle lane or parking area. This adds a space buffer, but no physical barrier, between cars and bikes.

CYCLE TRACKS

A cycle track is an exclusive bicycle facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane. Cycle tracks provide space that is intended to be exclusively or primarily for bicycles, and are separated from vehicle travel lanes, parking lanes and sidewalks by pavement markings or coloring, bollards, curbs/medians or a combination of these elements. Cycle tracks are distinguished from **PROTECTED BIKE LANES** by being two-way facilities constructed on one side of a one-way *or* two-way roadway.

INTERSECTION TREATMENTS

Intersection Treatments are critical to effective implementation of any of these facility types. Major roadway crossings can create a barrier to less experienced cyclists, effectively preventing these riders from using the route. Enhanced intersection designs for cycling facilities include green lanes, bicycle signals, and bicycle boxes.

LOW-STRESS/HIGH-STRESS CONNECTIVITY

Low-stress connectivity is the ability of a transportation network to connect cyclists' origins to their destinations without subjecting them to unacceptably stressful or uncomfortable riding conditions. Measuring the level of traffic stress is a means to identify barriers to riding for people with a low tolerance for traffic. To measure bicycling comfort and stress, GIS data on traffic speeds and volumes, roadway widths, bicycle facility type and other metrics are used to rank each street on a scale from 1 to 4, with 1 being the most comfortable and 4 being the most stressful.

PROTECTED BIKE LANES

Protected bike lanes are a simple concept: they are like sidewalks for bikes. While sidewalks separate pedestrians from vehicle traffic, protected bike lanes separate cyclists from auto traffic. Because they use planters, curbs, parked cars or posts to separate bike and auto traffic on busy streets, protected lanes are essential to building a full network of low-stress cycling routes. Protected bike lanes are distinguished from **CYCLE TRACKS** by being one-way facilities constructed on one or both sides of a roadway.

RURAL BIKE CORRIDORS

The concept of rural bikeways can be applied to rural roads in the Miami Valley based on the following potential levels of service:

1. *Basic Level of Service*: where rural roads have appropriate motor vehicle speeds and volumes, good pavement quality, adequate sight distances and rural land uses, two lane rural roads will serve as facilities for skilled bicyclists who are capable of sharing the road with other forms of traffic. Improvements to these roads can include "share the road" signage, speed limit enforcement techniques, motorist education, pothole and crack sealing repairs, vegetation management and other routine maintenance.

2. *Improved Level of Service*: where right of way, funding, and land use conditions are appropriate, paved shoulders can provide an improved level of service for all rural road users. Paved shoulders can help pavements last longer, provide safety benefits for motorists, serve as school bus stops, and provide space for both pedestrians and

bicyclists. In some cases, paved shoulders can be provided by modifying the width of the existing travel lanes to minimize construction costs.

3. *Enhanced Level of Service*: In areas where adjacent land uses are favorable to increased use of bicycling, such as school zones, rural main street areas and near new developments, bikeway improvements can be made either along the road or in the corridor. These improvements can include the construction of bike lanes, paved shoulders, shared-use paths separated from the roadway, if right-of-way, funding and community support, and maintenance agreements exist.

SHARED-USE PATHS (ALSO REFERRED TO AS "MULTI-USE PATHS" AND "TRAILS")

Often used by non-motorized users including pedestrians, cyclists, in-line skaters, and runners, shared-use paths are typically paved (asphalt or concrete) but may also consist of an unpaved smooth surface as long as it meets Americans with Disabilities Act (ADA) standards. The 'Miami Valley Trails' are referenced frequently in this report, and refer particularly to the network of paved shared use paths in the Region.

SHARROW

A shared-lane marking, or sharrow, is a street marking placed within a travel lane to indicate that a cyclist may use the full lane. Typically it consists of the wide shape of the arrow, pointing in the direction of traffic, combined with the bike symbol.

SHOULDER BIKEWAYS

Typically found in rural areas, shoulder bikeways are paved roadways with striped shoulders wide enough for bicycle travel. Shoulder bikeways often, but not always, include signage alerting motorists to expect bicycle travel along the roadway. Shoulder bikeways also accommodate pedestrians in rural areas.

SIDEPATHS

A sidepath is a bicycle facility that closely parallels a roadway and is separated from motor vehicle traffic by a curb or a swale. The sidepath is often in the location where one would expect a sidewalk, but is generally wider than a typical pedestrian facility. Sidepath placement guidelines are included in the appendix.

SIGNED SHARED ROADWAYS

A signed shared roadway accommodates vehicles and bicycles in the same travel lane. The most suitable roadways for shared vehicle/bicycle use are those with low posted speeds (25 MPH or less) or low traffic volumes (3,000 ADT or less). In addition to bike

route and directional signs, shared roadways may also include on-route pavement markings and pavement markings at intersections (e.g., crosswalks, bicycle turn lanes, etc.). Other shared roadway treatments include wide outside lanes (14 to 16 feet wide) on higher-volume streets.

TRAFFIC CALMING

Traffic calming consists of the installation of physical interventions, including narrowed roads and speed humps, put in place on roads with the intention of slowing down or reducing motor-vehicle traffic as well as to improving safety for pedestrians and cyclists.

The Six Es of Bike Planning

Education: ideas for increasing cycling knowledge and skills

Offering a variety of ways for people to get the skills and confidence to ride is important to building great places for bicycling. All types of regional partners (communities, businesses, advocate organizations and universities) can offer options for adults looking to improve their biking skills with everything from tips online, brown bag lunch presentations and in-depth on-bike training opportunities.

Encouragement: ideas for increasing ridership

Communities, businesses, advocates, and universities play a critical role in encouraging people to ride by giving them opportunities and incentives to get on their bikes. This can be done through producing community bike maps, route-finding signage, bicycle-themed celebrations and rides and commuter challenges. Dayton's investment in public bike sharing and other organizations' use of internal bike fleets, are convenient, cost effective, and healthy ways of encouraging people to make short trips by bike.

Engineering: ideas for infrastructure projects

The most visible and perhaps most tangible evidence of a great place for bicycling is the presence of infrastructure that welcomes and supports it. Survey after survey shows that the physical environment, a well-connected bicycling network consisting of quiet neighborhood streets, conventional and protected bike lanes, and separated trails is a key determinant in whether people will get on a bike and ride.

Enforcement: ideas concerning laws/rules regarding cycling

Basic laws and regulations need to govern bicycling and the rules of the road to ensure safety for all road users. With a good set of laws and regulations in place that treat bicyclists equitably within the transportation system, the next key issue is enforcement. Law enforcement officers

must understand these laws, know how to enforce them, and apply them equitably to ensure public safety. In densely populated areas, bicycle theft prevention is also a huge undertaking. Having law enforcement partners and great policies in place is essential to promoting bicycling.

Equity: ideas for sharing the access to cycling across the Region

As a part of the larger transportation system, the cycling network represents a sizable public investment. As such, it is important to evaluate what groups or populations have been well served by these investments and what groups have not. Considerations of age, physical ability, race, language, education and income are insightful metrics in these evaluations.

Equity is a recent addition to the Es rubric, only coming into broad use around the time of the 2014 Pro Walk|Pro Bike|Pro Place conference in Pittsburgh, Pennsylvania. Equity was not a part of the bicycle planning Es lexicon in 2008 when the CLRBP was first developed and is therefore not included in some “5 Es” lists discussed in this Update.

Evaluation: ideas for measuring cycling

Establishing measurable goals and objectives and tracking progress on those goals is critical to effective planning. Bicycle counts, mode share data, crash data and user surveys are all good methods to measure use, safety and convenience of the regional cycling network.

Executive Summary

This update to the Comprehensive Local-Regional Bikeways Plan (2008) provides an overview of the developments and current state of cycling and cycling infrastructure in the Miami Valley Region in southwest Ohio. The 2015 Update documents **past** accomplishments, highlights critical features of the **present** state of cycling in the Region, and points to a **future** where more people choose to bike more often for more reasons.

The Miami Valley Regional Planning Commission invites you to read this Update with an eye to the three key themes which underpin the approach suggested for the Region.

1. **Broadening focus from trails to on-street infrastructure and complete streets.** The Miami Valley is home to the nation's largest paved trail network, and MVRPC has been proud to partner with the numerous agencies that have made the Miami Valley Trails network the asset it has become. Key connections on this trail network remain to be completed and they remain a priority of this plan. But the remaining opportunities to create community connections via shared-use path are limited. The majority (in miles) of the proposed regional bikeways connections in this plan are along roadway corridors. In addition, on-street connections leading to the Miami Valley Trails will make the trails more accessible and improve the return on our four-decade investment in the trails. In short, a regional commitment to building safe, convenient, attractive cycling infrastructure along the Miami Valley's transportation corridors will be critical to the success of this plan.
2. **User comfort and safety are critical to shifting mode share.** This Update examines national and regional survey data, and the latest innovations in cycling infrastructure design. Surveys indicate that a majority of the regional population are interested in cycling more, but their concerns about their safety are preventing them from doing so; only a small slice of the general public is willing to ride a bicycle fully mixed in with motor traffic. Level of Traffic Stress analysis, and designs inspired by Dutch and Danish approaches that provide better separation from higher speed traffic, are emphasized in the current thinking across the U.S. and in this 2015 Update.
3. **A comprehensive approach will enhance the implementation of this 2015 Update.** In the end, it is not enough to build infrastructure, even the most advanced infrastructure. An effective program to build and improve our Region's cycling culture must take into account all of the "other Es." Encouragement, education and equity programs will increase awareness and interest in using bikes for transportation from a wide spectrum of the population. Enforcement efforts support the safety and comfort of all the users of the system. Evaluation tools will measure progress and identify gaps.

So the goal is more than building facilities. How bikeways are programmed and operated is essential to success. It is very important how advocates reach out in to the community and raise

awareness and education levels about cycling. And because cycling culture is all of these factors, it is about more than the Miami Valley Regional Planning Commission; It is about the current and future partnerships that will build and support the cycling ecosystem needed to get more people on their bicycles more often.

This 2015 Update draws upon several different kinds of analyses to evaluate and present the current state of cycling in the Miami Valley. Each of these approaches provides a unique and valuable insight into our Region, and contributes to the recommended projects, programs, and polices presented in the final section of the report.

Public Input and Survey Data. Through a series of four public meetings attended by over 140 people and an online survey completed by more than 700 people, MVRPC staff was able to glean critical understanding of the public's interest in the development of the cycling culture in our Region. Hundreds of project and program recommendations came from these meetings and survey. Complete lists of the suggestions are provided in the Appendix.

Regional Crash Data. MVRPC reviewed thousands of motor vehicle and bike/pedestrian crashes with a particular focus on the 695 bike or pedestrian crashes that occurred between 2011 and 2013. This analysis discovered the highest crash intersections and roadway segments for pedestrian- and bike-related crashes. These locations feed directly into the top recommended projects as safety priorities.

Level of Traffic Stress Analysis. MVRPC undertook a modified LTS analysis to look at our regional cycling network from the point of view of the cyclist. Assuming the Miami Valley Trails and most of our residential local streets are low stress cycling environments, and that most if not all cyclists will be comfortable cycling in those locations, the analysis seeks to understand where that low-stress network can and cannot take a cyclist. The analysis also looks at simple connections that can join low-stress "islands" and better connect our regional network. These connections would be low-cost, high impact projects allowing local jurisdictions to increase cycling opportunities for their residents.

Demographic Review. Relying primarily on census and American Community Survey data, this report looks at a macro level at the rates of cycling demand in our Region. Other data shine a different light on the overall picture of cycling in the Miami Valley. Health data from the Centers for Disease Control and local public health surveys produced by Public Health Dayton-Montgomery County allow us to see equity issues in terms of access to cycling and physical activity.

The Miami Valley Regional Planning Commission is a critical agency for funding transportation projects of all kinds in the Dayton Region. The agency's role in guiding the discussion of regional policy can be just as important as the federal funds being programmed for projects. This 2015 Update recommends several policies to guide agency, member jurisdiction and

partner approaches to building the cycling network and culture in the Miami Valley in the future. The top policy recommendations include:

1. **Support balanced federal funding for non-motorized transportation.** This includes advocacy for the inclusion of these programs in federal funding, and ensuring that such funds that are programmed through the Miami Valley Regional Planning Commission are used to enhance active transportation across the Region.
2. **Fill the gaps and complete the streets.** The 2015 Update continues the agency's primary focus on the regional bikeways network, while leveraging the power of the regional complete streets policy and a growing number of local policies to enhance the on-street connections to the regional network.
3. **Go above and beyond minimum standards.** Development of safe and attractive bike infrastructure, the kind that will attract more cyclists out to use them, may require enhanced designs. Going the extra distance to provide safety and separation features desired by the general public will increase usage of these facilities.
4. **Include bike and pedestrian infrastructure in local plans.** Jurisdictions in the Miami Valley will help build the better bicycling future if they make clear in comprehensive plans, thoroughfare plans and other local documents that cycling and pedestrian infrastructure are important and to be included in future development.
5. **Promote the nation's largest paved trail network.** The Miami Valley Trails are an asset with great potential to be more than a recreation outlet to the Region, including a commuter facility, a tourist draw, and an economic development opportunity. Approximately one million people use the trail network spending up to $13 Million in the local economy each year. 16% of the trail users come from areas of the state outside the Miami Valley Region, and 2% come from outside Ohio. Raising awareness of the trails regionally and across the Midwest will support these efforts. Member jurisdictions that connect themselves to the network can benefit in many ways.

These policies, joined with the projects and programs detailed in this 2015 Update, are recommended as the path forward to enhance the cycling ecosystem here in the Miami Valley. They should all meaningfully contribute to meeting the original 2008 CLRBP vision:

The Miami Valley Regional Planning Commission's Comprehensive Local-Regional Bikeways Plan is intended to enhance region-wide bikeway networks including regional and local bike paths, on street lanes and routes, and their connections through the MVRPC planning area. In conjunction with education, encouragement, enforcement and equity efforts, these improvements to the bikeways network will lead to more people biking more often to more places in the Miami Valley.

2015 Bike Plan Update

Introduction

This chapter gives readers an introduction to the plan and recognizes Bikeway Partner organizations.

Miami Valley Regional Planning Commission

The Miami Valley Regional Planning Commission (MVRPC) is the federally designated Metropolitan Planning Organization (MPO) for the counties of Miami, Montgomery, and Greene in western Ohio, plus the cities of Carlisle, Franklin, and Springboro in northern Warren County. With Dayton as its largest city (2013 estimated pop. 143,355), approximately 830,000 people reside within the 82 jurisdictions that comprise the MPO Region. Hereafter, the MPO planning area will be referred to as the 'Dayton Region', or simply the 'Region'. MVRPC allocates funding to bicycling infrastructure and produces encouragement and education materials including the Miami Valley Bikeways Guide Map.

The guide map includes trails in adjacent counties, outside of the MPO, including Butler, Clark, Darke, Hamilton, and Warren. That is one example of how MVRPC reaches beyond the strict planning boundaries to collaborate to promote cycling in Ohio. MVRPC coordinates with the Ohio Department of Transportation, Green Umbrella's Trails Alliance, National Aviation Heritage Area, and the Ohio-to-Erie Trail to make sure investments in cycling show the maximum return for Miami Valley residents and businesses.

2008 Comprehensive Local-Regional Bikeway Plan

In 2008, the Miami Valley Regional Planning Commission produced the Comprehensive Local-Regional Bikeways Plan (CLRBP), the first MVRPC planning document focused primarily on bicycling since 1977. MVRPC set out, with the help of nationally-recognized bikeway planners Alta Planning + Design and the Columbus engineering firm Burgess & Niple, to develop a long-range plan for our Region's cycling development. The plan was adopted after one and a half years of community involvement, workshops, and discussion. The CLRBP was supported both financially and throughout the community involvement process by our agency partners, Five Rivers MetroParks, the Miami Conservancy District, Greene County Parks & Trails, and the Miami County Park District. Many other park districts and community groups also supported the plan.

The 2008 plan developed a 30-year outlook for our Region. The plan highlighted the unique opportunity and resources our Region has to lead in promoting cycling as a key alternative to automobile travel and set very aggressive goals for growing bicycle usage in the Region. The

full 2008 CLRBP can be accessed at <http://www.mvrpc.org/transportation/bikeways-pedestrians/comprehensive-local-regional-bikeway-plan>.

2015 Bikeways Plan Update

Much has happened since the original 2008 Plan was written. More miles of trail have been added, whole new trails have opened, Link bike share has come to downtown Dayton, and a revitalized Bike Miami Valley is again advocating for cycling and cycling culture. MVRPC created and is implementing a Regional Complete Streets Policy, which requires that all roadway projects seeking MVRPC funding consider the needs of cyclists, pedestrians and transit users. Because of this policy, roadway projects regularly include bike elements, including bike lanes, sharrows, signage and parallel separated paths. Newer facility types, like protected bike lanes and bike boulevards, are also being discussed and added as elements of future roadway projects. Working with our member jurisdictions and other trail managing agencies, we are creating an increasingly bike-friendly Region.

The 2008 CLRBP guided these efforts. However, over these past seven years, certain sections of the CLRBP have become outdated. New programs, funding, and data emerged. Our Region is facing new challenges, cycling has new cultural impact opportunities, and MVRPC's role in promoting and supporting cycling is more important than ever. This report is intended as an update and supplement to the 2008 CLRBP. It does not replace it.

This 2015 Bike Plan Update follows a **past-present-future** format. The many accomplishments since the 2008 plan are shared in the Past section. Recent efforts to gather public priorities, report on current data, and evaluate the impacts of cycling on the Region are the subject of the Present section. The Future section contains updated planning and policy recommendations that will continue to improve bike friendliness.

MVRPC uses these recommendations in a variety of ways. The agency provides advice, guidance, and policy development assistance to our member jurisdictions where they chose to make bicycling a local priority. Eligible engineering projects are funded through the MAP-21 funds allocated to our Region using a competitive selection process, and we support bicycling infrastructure and programming grant applications through other funding sources. MVRPC's GIS mapping resources are put to particular use for the Miami Valley Bikeways Guide Map and the MiamiValleyTrails.org website, and are available to local jurisdictions and partner agencies. We convene groups to cooperate on bikeways projects and solve issues. Professional planning and engineering education programs, featuring best practices and up-to-date resources, are provided to our jurisdictions. And the agency makes resources available directly to the public, through the MVRPC website, public service announcements, and participation in community events. Each of these activities, guided by the Bike Plan, flow directly into the staff work-plan each year.

Partners in the Bikeways

Multiple agencies have envisioned specific bikeway projects, requested funding and built sections of the nation's largest paved trail network, as well as on-street bike lanes and bike support facilities. This 40-year coordinated effort has positioned the Region to become a national leader in providing safe, low-stress bikeways and trails for residents and visitors alike.

County and Local Parks Departments, and the Miami Conservancy District

The Parks and the Conservancy are the main entities which apply for and match funding for trail projects. They also continue to build out and manage the Region's multi-use trails network. By sharing and coordinating responsibility for patrolling and maintaining the trail network, they have created a truly unique cycling environment for residents and visitors which crosses multiple jurisdictional and county lines, creating one unified, safe, and enjoyable cycling experience.

Cities, Villages, and Townships

Individual jurisdictions in our Region have the ability to improve the bicycling experience for their residents. Our recommendations for using the Region's streets to safely accommodate bicycling are meant to be carried out in the context of each local jurisdiction in cooperation with their local engineering experts, law enforcement, schools, and political leadership. Each community is fiscally responsible for their infrastructure investments and for their services to their residents. No recommendations in this plan or prioritization of projects will supersede the local decision about implementation. MVRPC's role is to provide a broad vision and regional plan, offer planning support and advice for these locally-implemented projects that build the regional active transportation infrastructure and local programs that support active lifestyles. Some of these projects may be eligible for MVRPC-controlled federal funding.

Bike Miami Valley, the Ohio Bike Federation, Clubs, Teams, Friends, and Advocates

As a government agency, MVRPC is charged with responsibility to the public interest. It is also up to the bike community to make this Region a center for bike activities, education, and programs. Friends groups, advocates, and clubs are the hearts and hands that promote bike interests in the Miami Valley. Residents who support cycling and become actively involved in planning and decision making about cycling will help determine the extent and type of investments in cycling infrastructure. Events, including organized rides, are a key part of creating a vibrant bike culture, encouraging and educating the public. Advocacy groups, clubs and non-profits are primary organizers of these kinds of activities.

Private companies can have a role in supporting bicycling by encouraging employee commuting, providing bike parking, raising funds for local races or health challenges, and even

building linking infrastructure on their property. There is an increased interest from health organizations and schools in healthy, active lifestyles. With all of these stakeholders, MVRPC is confident the 2015 Update will find many users.

Regional Bikeways Committee

The Regional Bikeways Committee is made up of agencies and jurisdictions that own or manage bikeways, and of allied groups that support bikeway infrastructure and programming. While not a standing committee of the Miami Valley Regional Planning Commission, MVRPC provides staff support for the committee and its meetings. The Regional Bikeways Committee meets on an as-needed basis; meetings are open to the public and are announced via the MVRPC agency calendar on mvrpc.org.

MVRPC would like to thank all the people, agencies, and communities represented on our Regional Bikeways Committee, the official steering and review committee for this update.

Bike Plan Update Process Participating Organizations

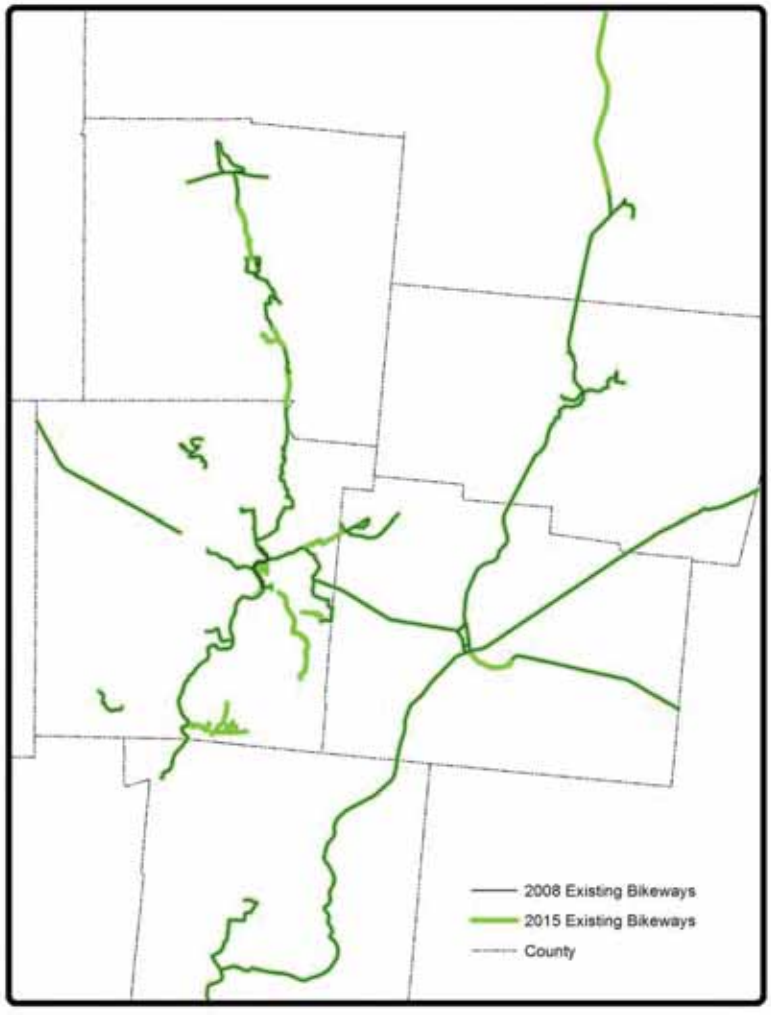
Bike Miami Valley
Centerville-Washington Park District
City of Beavercreek
City of Centerville
City of Dayton
City of Fairborn
City of Franklin
City of Kettering
City of Miamisburg
City of Piqua
City of Riverside
City of Springboro
City of Tipp City
City of Trotwood
City of Troy
City of Xenia
Clark County Springfield Transportation Coordinating Committee
Darke County Park District
Five Rivers MetroParks
Friends of the Little Miami State Park
Friends of Xenia Station
Greater Dayton RTA
Green County Mobility Manager
Greene County Parks & Trails
Miami Conservancy District
Miami County Park District
Montgomery County Engineer
National Park Service
National Trail Parks and Recreation District
Ohio Bicycle Federation
Simon Kenton Pathfinders
TrailWorks
Village of Yellow Springs
Washington Township
Wright State University

Past

This chapter presents an account of projects and programs that have improved bicycling in the Miami Valley since the 2008 plan was approved. Topics covered include:

- *Nation's Largest Paved Trail Network*
- *Infrastructure projects built since 2008*
- *Non-Infrastructure projects and programs tracked since 2008*
- *Trail user survey data collected in 2009 and 2013*

Nation's Largest Paved Trail Network



The Miami Valley Bikeways network is the result of over 40 years of work that local individuals and agencies have put into building and maintaining it. The trails are primarily a collection of river and rail trails. More recently, some new bike corridors with both multi-use path and bike-friendly roadway facilities have been added. The individual trails are linked to form a network that is a tremendous resource for recreation, fitness and commuting for locals, and a unique attraction for many visitors to the Region. The Miami Valley has made significant progress in the first seven years of the 30-year Comprehensive Local Regional Bikeways Plan. Several of the 2008 plan recommendations for new routes, additional signage, bike hubs and stations have been completed. The Region's accomplishments represent effective partnerships between agencies, jurisdictions, and private groups.

The table below shows the size of our major regional trails network.

Trail #	Trail Name	Trail Miles
Route 1	Ohio-to-Erie Trail	29.38 miles (Xenia to London)
Route 1 & 3	Little Miami Scenic Trail	74.4 miles (Newtown to Springfield)
Route 2	Creekside Trail	15.6 miles
Route 3	Simon Kenton Trail	35.7 miles (Springfield to Bellefontaine)
Route 4	Xenia-Jamestown Connector	15.8 miles
Route 5	Wright Brothers Huffman Prairie Trail	8.2 miles
Route 7	Stillwater River Trail	9.3 miles
Route 8	Mad River Trail	6.5 miles
Route 9	Iron Horse Trail	8.2 miles
Route 19	Dayton-Kettering Connector	7.2 miles
Route 25	Great Miami River Trail	63.45 miles (Franklin to Piqua), 16.67 miles (Middletown and Hamilton)
Route 36	Ohio to Indiana Trail	5.5 miles (Piqua), 11.1 miles (Darke Co, Tecumseh Trail)
Route 38	Wolf Creek Trail	16.9 miles
Route 40	Buck Creek Scenic Trail	6.8 miles
		330.7 Regional Miles of major trails

Another significant addition will be made in October of 2015 when the 2.4 mile Medlar Trail, connecting to the Great Miami, and the Austin Pike Path, at 2.2 miles, will be connected. This forms the beginning of the envisioned Great-Little Trail (formerly called the River Corridors Connector) that will eventually connect the Great Miami and Little Miami Trails across the south end of Montgomery County and northern Warren County. Connections outside the MVRPC planning area also add value to the network. For example, the Countryside Trail in Lebanon and the Tecumseh Trail in New Carlisle are both significant additions to the regional network.

Trail users, especially visitors, are less concerned about jurisdictional lines, and more concerned about connectivity. As efforts in neighboring regions like Cincinnati and Columbus connect to the Miami Valley bikeway network, the entire system becomes more attractive and more valuable. Just like the roadway system, the more connected the bikeway system becomes, the more users it will attract. As the system adds more low-stress connections to more destinations, biking becomes a more viable form of transportation.

Accomplishments since the 2008 CLRBP

Bikeways Network Building

In terms of the **High Priority Projects listed in the 2008 CLRBP**, the following progress has been made:

- Great Miami River Trail in Montgomery County. Triangle Park to Taylorsville opened in 2009, an extension on the west/north bank from Stewart to the University of Dayton/Courtyard Marriot complex was built in 2013.
- Iron Horse Trail—Centerville extended the trail toward I-675 and Kettering built sections up to Stroop and Wilmington roads and at State Farm Park in 2009.
- Piqua to Urbana and Piqua-Covington & Bradford-Greenville Connectors—Part of the Ohio to Indiana route, with temporary on-street markings applied in 2010 and 2011, and Darke County building major trail and road sections in 2013.
- Downtown Bike Lanes and Sharrows—Created in 2010 by City of Dayton.
- Bikeway Wayfinding Signage was created and installed across the regional trails in 2010, and has been adopted by other trails groups within the state as the standard for signage.
- Great Miami River Trail in Miami County—Tipp City to Troy section opened in 2010, Tipp City to Taylorsville and Troy to Piqua sections opened in 2012, and the Shook Bridge at Farrington Reserve opened in 2014.
- RiverScape Bike Hub built in 2010.
- Beavercreek Bike Station built in 2011.
- SR 741/Austin Rd Corridors—Sidepath constructed as part of Austin Road Interchange in 2011, new bike lanes striped along 741 in Springboro.
- Great Miami River Trail, Franklin to Middletown Connection—Middletown built to Butler County line in 2011, Franklin applied to fund a missing section within the City in 2014 with construction planned for 2020, and staff is awaiting news of a similar application from Middletown to OKI.
- Hamilton connected 3.3 miles to their Rentschler Forrest segment of the Great Miami River Trail between 2012-15
- Dayton Kettering Connector (SE Corridor Trail)—A collaboration between University of Dayton, and the cities of Dayton, Oakwood, and Kettering. Dayton completed lanes and trails on Brown Street, Irving Ave., sewer access road, and Shroyer Road crossing

improvements in 2012. Kettering created on-street signed routes and modified intersections in 2012.

- Mad River Trail was extended through Eastwood MetroPark and along Springfield Street to Huffman Dam in 2013.
- Jamestown Connector was extended east to the Greene County line and a tunnel was built under SR-35 near Xenia in 2013.
- Medlar Trail was constructed by Five Rivers MetroParks in 2014.
- Wolf Creek Trail access from downtown Dayton was improved with bridge reconstruction at the Edwin C. Moses, Salem, and Monument bridges. A ramp to the Broadway bridge will be installed in 2015.
- I-675 pedestrian/bike bridge at North Fairfield exit—Construction started in 2014 and will be complete in 2015.
- Construction of Kroc Center area improvements addressed an identified high crash location on the roadway network.

Other **local bikeway facilities** projects have included:

- Yellow Springs park and ride area on Cemetery Street
- Steve Whalen Blvd Bikeway, and Brown Street Bike Lanes in Dayton
- Miami Township bike routes/lanes on Newmark and Ferndown
- Forrer Road Buffered Bike Lanes in Kettering
- Commercial Street and Main Street Bike Lanes in Piqua
- South Alex Road bikeway in West Carrollton
- Springboro's first Spark'n'Go bike station built in 2013; second station to open in fall of 2015
- 24 Link bike share stations built in downtown Dayton in 2015
- Though outside of the MPO, but a huge link in the regional trail network, the Simon Kenton Trail was extended and paved through Urbana in 2010 and extended again, with crushed gravel, from Urbana to Bellefontaine in 2014.
- Also outside of the MVRPC's planning area, the Little Miami Scenic Trail south of Greene County was resurfaced and protected from erosion and the old wooden bridges provided with safer paved surfaces in 2012.

Connecting Trails

The Miami Valley has several national and state designated bikeways that pass through the Region. The North Country National Scenic Trail and the Underground Railroad National Trail both use our regional trails and road routes to link multiple states and a vast network of interpretive sites, creating a remarkable tourist experience. U.S. Bicycle Route 50 was recently created from Richmond, Indiana, across Ohio to West Virginia, Maryland, and DC. MVRPC assisted the state in securing resolutions from local communities in support of the new route,

and will continue working with the State of Ohio on a number of additional state designated bike routes.

Within Ohio, the Buckeye Trail is a 1,440 mile loop trail that follows old canals, abandoned railroads, rivers, and rural roads. Portions of the Great Miami River Trail, Mad River, Wright Brothers Huffman Prairie, and Little Miami Scenic Trails are a part of the Buckeye Trail locally. The Ohio to Erie Trail connects Cincinnati to Cleveland across the center of the state. In this area it makes use of the Little Miami Scenic Trail and the Prairie Grass Trail toward Columbus.

Links Beyond the Region

- North Country Trail http://www.nps.gov/noco/index.htm
- Underground Railroad Trail http://www.adventurecycling.org/routes-and-maps/adventure-cycling-route-network/underground-railroad-ugrr/
- US Bicycle Route 50 http://www.dot.state.oh.us/Divisions/Planning/SPR/bicycle/Pages/USBR-50.aspx
- Buckeye Trail http://www.buckeyetrail.org/
- Ohio to Erie Trail http://www.ohiotoerietrail.org/

Non-Infrastructure Programs and Progress — Other "Es"

In addition to engineering projects, there is a great deal going on in the areas of Encouragement, Education, Enforcement, and Evaluation. And, with this update, we will also be adding a focus on another important "E": Equity. Below are brief summaries of non-engineering efforts going on in our Region.

Encouragement — MVRPC continues to work with partner organizations to provide cycling activities aimed at increasing ridership.

- MiamiValleyTrails.org was taken over from the peerless private management of Tom Rectenwalt, and was redesigned as a regional, one-stop bike website, managed by MVRPC.
- Bike Maps—the Miami Valley Recreational Trails map (2008), and the Miami Valley Bikeways Guide Maps (2011, 2014) were published by MVRPC with the support of many sponsors, partner agencies and bike shops. Requests for this map come from across the nation, indicating that tourists appreciate it just as much as our local residents. The map design won a statewide GIS award in 2014.
- Local Bike Maps—Cities including Dayton, Piqua, Covington, Kettering, and Springboro have produced their own local bike maps.

- Drive Your Bike Brochure, a companion piece to the regional maps, was redesigned in 2009 and again in 2011 with information on fixing a flat, safe street riding, commuting, and other topics.
- Miami Valley Cycling Summits were held in 2009 (University of Dayton), 2011 (Dayton), 2013 (Springfield), and 2015 (Piqua) attracting bike-professionals, advocates, government officials, and private citizens. The cycling summits played a role in restarting Bike Miami Valley as an active advocacy organization.
- MVRPC's Complete Streets Policy was adopted in 2011, followed by several community policies.
- Bike to Health Campaigns—Bike for the Health of it, Bike with a Ranger, Night Rides programs were managed by park districts as well as the National Park Service.
- Recreational Rides/Touring—Greene Trails Classic, weekly club rides, Kettering's Bike to the Arts, fundraisers such as Tour de Donut, Twisted Pretzel Tour, and numerous other events.
- Bike to Work Week/Month —Xenia, Piqua, Troy, Dayton, Kettering Business Park, LexisNexis and Wright Patterson Air Force Base each coordinated events related to biking to work in May.
- Continuation of "Drive Less, Live More," a shared branding of regular summer events which is a cooperative effort of several partner agencies.
- Valet bike parking at multiple events—Cycling Summit, Bike to the Dragons, Covington 150th Anniversary Celebration, Bike To It Concert Series in Troy, Throwback Thursdays at Fraze Pavilion, Yellow Springs Street Fair, and Octoberfest at the Dayton Art Institute.
- "Rack 'n Roll" brochures for bike-on-bus racks were developed by Greater Dayton RTA, and all public transit buses in the three-county area are now equipped with bike racks.
- Formal discussions are ongoing among trail managing agencies and regional CVB agencies about how the Region can do a better job marketing the nation's largest paved trail network.
- Regional Bikeways Committee was established by MVRPC, to increase and formalize involvement of city and trail-managing-agency representatives in building facilities and program.
- Pedal Pals works with Rideshare to offer a database connecting potential bike commuting buddies.

Education — Local programs are essential to increase cycling knowledge and skills.

- Five Rivers MetroParks offers both Intro to Cycling and Intro to Commuting classes based on the League of American Bicyclists (LAB) Road I syllabus.
- Since the 2008 Plan was written, the number of League Certified Instructors in the area providing the Road I course has more than tripled in number to 10 individuals
- American Automobile Association has Bike Rodeo Kits available to lend.
- Five Rivers MetroParks conducts a large bike rodeo that attracts more than 100 young people each spring and offers train-the-trainer opportunities.

- Miami County Parks offers a week of bike trail programming as part of their summer day camps.
- Several area schools, including University of Dayton (Engineering Dept.), Dayton Early College Academy, and the Regional STEM school, offer bike maintenance, riding skills, and exploratory classes.
- Bike Miami Valley will offer a new adult cycling education curricula in coordination with the launch of the Link bike share program.
- MVRPC produced updated public service announcements on bike safety from the perspective of both cyclists and motorists in the spring of 2015 and aired widely on local and cable channels.

Enforcement — Applying the rules of the road across all modes of travel is essential to creating a safe environment and thriving bike culture in the Region.

- MVRPC's Bike Lights Campaign has provided an average of 200 front and rear light sets per year to police, school groups, and community based organizations, who in turn distribute to the public.
- Police in several communities use bike patrols for traffic enforcement.
- A regional crash analysis is performed by MVRPC with every Long Range Transportation Plan update and high crash areas are identified and shared with jurisdictions.
- There are ongoing local efforts to curb sidewalk riding, where illegal, and wrong-way riding by cyclists. Enforcement of all existing traffic laws, for both cyclists and motorists, making cycling safer.

Evaluation — If you don't count it, it doesn't count.

- MVRPC organized volunteer-led 2009 and 2013 Trail Users Surveys and counts on the major trails in our Region.
- Park districts have all added automated trail counters, from which MVRPC will collect and aggregate regional data.
- MVRPC has purchased new counters for both trails and on-street bicycle counting. The agency started collecting counts in the summer of 2015. These counters are available for loan to member jurisdictions and agencies.

Safe Routes to School

MVRPC hosted Safe Routes Forums in 2013 and 2014, bringing faculty and administrators together from school districts across the Region for unique training and a round-table discussion.

The Safe Routes to School program in Ohio is managed through the Ohio Department of Transportation, with the advocacy involvement of the Ohio Chapter of Safe Routes to School National Partnership.

Safe Routes to School awards in MVRPC's area

Year	Description
2007	Kettering: $153,000 infrastructure
2008	Dayton: $335,000 infrastructure and $150,000 encouragement Troy: Withdrawn
2009	Sugarcreek Township: $7,500 encouragement and $232,000 infrastructure Yellow Springs School Travel Plan Clark County Springfield TCC School Travel Plans
2010	West Milton: $19,000 encouragement Versailles: $290,000 infrastructure New Madison: $500,000 infrastructure and $67,000 encouragement Urbana: $434,000 infrastructure and $33,000 encouragement
2011	Clear Creek Township Travel Plan
2013	Sugarcreek Township: $101,000 infrastructure, $10,500 encouragement
2014	City of Centerville School Travel Plans

Bike Friendly Communities and Businesses

The City of **Dayton** achieved the status of Bronze Bicycle Friendly Community in 2010 and was reaffirmed at that level in 2014. The City of **Troy** was awarded Bronze status in 2015. The City of **Riverside** was awarded Honorable Mention in 2009. The Region is also home to three Bike Friendly Businesses: **Five Rivers MetroParks**, **LexisNexis**, and **Cox Media Group**.

The City of **Miamisburg**, located along the Great Miami River Trail, created a Bike Friendly Business model in 2014 that other cities may replicate. The program allows businesses to leverage their proximity to the trail and make cyclists feel welcome.

Piqua, **Xenia**, and **Dayton** are official "Trail Towns" along the Buckeye Trail, and have developed programs similar to the Miamisburg model for helping businesses attract and accommodate bicyclists visiting the community.

On-Street Network Building

Because bicyclists are legally allowed on most roads in Ohio, with the exception of limited access highways, the Miami Valley's entire roadway network is effectively the Region's on-street bicycle network, regardless of whether signage or markings are present on a given street. While most people will avoid high-stress riding situations, cyclists could be on nearly any road, at any time. The Region's multi-use trails are a tremendous asset, and one of our guiding principles is to see the 40-plus year investment put to better use. To return the best value to our communities and residents, the roadways and bike trails should be linked into one functional system.

Low-Stress Streets

Every community in the Region includes low-volume, low-speed residential streets in historic downtowns and suburban developments. Virtually all of these roadways are suitable and comfortable places to ride a bicycle in their present condition. As will be discussed later, many of these low stress areas are effectively islands, disconnected from the regional trails or other low-stress neighborhoods due to high-stress routes that serve as connections.

High-Stress Streets

At this writing, very few arterial streets in the Miami Valley have any kind of bicycle facility. Those that do, such as Byers Road, Austin Pike, Dayton-Xenia Road, North Fairfield Road and Clyo Road (among others) tend to have sidepaths. A guide for considering sidepaths is offered as an appendix to this report. Forrer Boulevard in Kettering has buffered bike lanes, Main Street in Piqua has bike lanes, and downtown Dayton has a series of connected bike lanes and sharrow-marked streets. Where these facilities exist (and this is not meant as an exhaustive list), they provide a degree of separation that encourages more cycling. But the overwhelming majority of arterial roadways in the Region have no accommodation for cycling, and are therefore used by only the most fearless of cyclists, if at all.

Rural Roads

The presence or absence of a paved shoulder makes a tremendous difference to bicyclists in the rural areas of our Region. Shoulders obviously create space usable by cyclists either as a travel way or an area to merge into in the presence of passing motor traffic. It should also be said that rural roadway shoulders offer much value to the motorists as well, as breakdown space, passing space for agricultural equipment, and to protect pavement condition. A solid majority of our rural roadways in the Region have no shoulder, based on a GIS review of Ohio Department of Transportation roadway (TIMS) data. Only 18% of the Region's roads, not including limited access highways or local streets, have a shoulder width of at least two feet.

Complete Streets Policies

Coming in a variety of forms, Complete Streets Policies uniformly champion one important concept: that all users of a public street must be able to move safely along and across that street. “All users” includes not only bicyclists and pedestrians, but also motorists, freight haulers, transit and emergency vehicles. “Users” means people of all ages and abilities, including persons with disabilities. Such policies encourage, indeed require, that consideration of the needs of bicyclists and pedestrians is incorporated into transportation projects from the earliest stages.

MVRPC Regional Complete Streets Policy

Based on a recommendation of the 2008 CLRBP, the MVRPC Board adopted a Regional Complete Streets Policy in January 2011, encouraging improvements to the transportation network so that all users are able to safely and conveniently reach their destinations along and across a street or road, regardless of their chosen mode of transportation, age, or ability level. The National Complete Streets Coalition ranked MVRPC’s policy as the top Metropolitan Planning Organization Complete Streets policy in the nation in 2011, awarding it a total of 88 out of a possible 100 points.

MVRPC’s policy encourages improvements to the transportation network so that more streets and roads in the Miami Valley will accommodate all users safely and comfortably. The policy applies to project solicitations for Surface Transportation Program and Congestion Mitigation/Air Quality funds through MVRPC’s transportation planning process since 2011. As a regional policy, it is flexible enough to be applied in urban, suburban, and rural settings, thanks to a focus on context sensitive solutions.

<http://www.mvrpc.org/transportation/complete-streets>

MVRPC staff is available to assist local communities in creating their own complete streets policies, as the following jurisdictions have done.

Local Complete Streets Policies

Dayton: The City of Dayton’s Livable Streets Policy was adopted in 2010 and earned high rankings from the Complete Streets Coalition in their 2011 analysis. As a result of Dayton’s policy, new street maintenance and construction projects include, where applicable, features such as wider sidewalks, bike lanes, sharrows, street trees, street furniture, green space or landscaping, and accommodations for public transit users.

MVRPC Assistance

MVRPC staff is available to assist local communities in creating their own complete streets policies, as these jurisdictions have done.

Piqua: The Piqua Bike-Run-Ped Advisory Council (now the Active Living Advisory Council) was formed to serve as an advocacy and advisory resource for biking and walking projects. The first order of business for the Council was to champion the creation and adoption, in 2013, of a Complete Streets policy to ensure future transportation infrastructure improvements take into consideration the needs of bikes and pedestrians. Their policy was recently recognized by the National Complete Streets Coalition as a top ranked policy.
<http://www.piquaoh.org/complete_streets.htm>

Riverside: The City of Riverside adopted a Comprehensive Alternative Transportation Policy on the recommendation of its Multimodal Transportation Commission. The Commission regularly looks at infrastructure improvements and other means of facilitating alternative modes of transportation throughout the city, which contribute to the safety, health, and economic well-being of residents.

Community Plans and Advisory Committees

Local planning for bicycle transportation is vital to making the investments in the regional bikeways network pay off. Cyclists in the Miami Valley need viable, safe, convenient, low-stress routes which branch off from the regional trails and regional bikeways and reach into communities and serve desired destinations. Numerous communities have developed local bike and pedestrian plans and/or are using bike and pedestrian advisory committees to provide non-motorized perspectives on community development. An overview of local efforts, listed alphabetically by community, follows.

Beavercreek: The City's Bikeway Plan depicts a 20-year priority plan for bikeways and walkways. Developed by the Beavercreek Planning and Zoning Department and approved by city council in 1999, the Plan states that all arterial streets should eventually include bikeways and walkways. In 2012, Beavercreek updated the city's Thoroughfare Plan, which now includes a comprehensive look at the existing on-road and separated bicycle facilities in the city, and recommends locations for future sidepath and on-road bicycle facilities. The Beavercreek Bikeway and Non-Motorized Transportation Advisory Committee is appointed by City Council to advocate for non-motorized transportation in the community.

Centerville/Washington Township: The Centerville-Washington Park District, Washington Township and the City of Centerville jointly completed the Community Connections Plan in 2005. The plan lays out a long-range system of on- and off-street bikeways, with each agency responsible for implementing projects within their respective areas. The committee that created that plan has been disbanded. Several former members are working to create a new Centerville Washington Trails Task Force to better advocate for the implementation of many of the plan elements.

Dayton: Adopted in 2011, the City of Dayton's 2025 Bicycle Action Plan Goals are based on the League of American Bicyclists' "5 Es" of bicycling. In addition, the Bike/Walk Dayton Committee

added a sixth goal, Maintenance, to recognize the importance of maintaining our bicycle infrastructure. <http://www.cityofdayton.org/departments/pcd/Documents/CityofDayton2025BicycleActionPlan.pdf>

Fairborn: In 2015 the city updated their Thoroughfare Plan with new and updated bike routes, lanes, and paths in response to local workshops supported by the Parks, Planning, and Engineering Departments. The city also has a Bicycle and Pedestrian Advisory Committee, which exists as a subcommittee of the Planning Board.

Kettering: A Bicycle Advisory Task Force was created in 2011 to make recommendations to Council regarding potential bike- and pedestrian-oriented programs and facilities. Their final report included maps of recommended signed routes and sidewalk connections, as well as a bike infrastructure inventory. <http://dev.ci.kettering.oh.us/wp-content/uploads/2013/03/Bicycle-Task-Force-Committee-FINAL-document-Recommendations-1-18-13.pdf>

Piqua: Because of the high level of interest within the Piqua community in promoting and enhancing walking and biking opportunities, a group of healthy living enthusiasts established the Bike-Run-Ped Advisory Council that has now evolved into the Active Living Advisory Council (ALAC). ALAC serves as an advocacy resource for active living initiatives and events within the community, including local bike to work days, races and runs, and hosting the 2015 Miami Valley Cycling Summit. Established following the summit, there is a local Piqua chapter of Bike Miami Valley.

Riverside: The Multi-Modal Transportation Commission makes recommendations to the City Manager and to City Council and works on projects related to Safe Routes to School, bikeways in the community, and other alternative transportation projects that contribute to the safety, health, and economic well-being of the City.

Springboro: In 2009, the City of Springboro adopted Alta's Bicycle Friendly Community Action Plan and created a Bicycle and Pedestrian Advisory Committee a year later. Building on that foundation, the City of Springboro Bicycle and Pedestrian Plan, adopted in 2013, is focused on infrastructure improvements, behavior change, and culture change that will create a family friendly bicycle and pedestrian community. <http://greenwaycollab.com/projects/springboro-bicycle-and-pedestrian-plan/>

Xenia: The Xenia X-Plan is a combination of comprehensive land use plan and thoroughfare plan that lays out a system of on- and off-street bikeways connecting Xenia with the surrounding trail system. The plan includes goals such as creating a welcoming and comfortable pedestrian environment and making Xenia's downtown the Bicycle Hub of the Midwest. <http://www.ci.xenia.oh.us/x-plan.html>

Yellow Springs: The Village has revived an ad-hoc committee to address Safe Routes to School plans in the city school district. The Chamber of Commerce operates from the Yellow Springs Station along the trail. The whole community has been very active in promoting businesses along the trails.

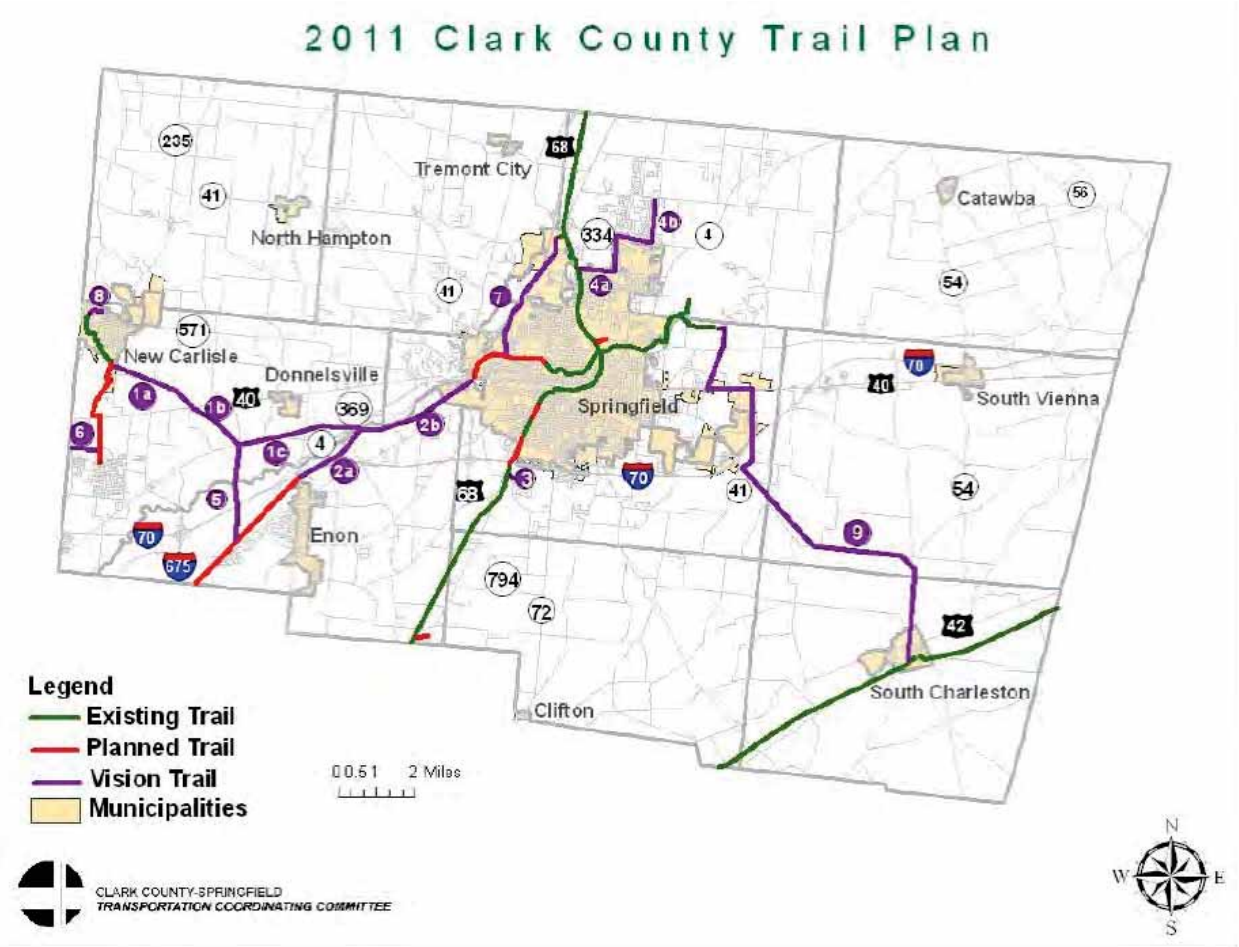
Neighboring Plans

Warren County: The primary focus of the Lebanon-Turtlecreek Trails Initiative (LTTI) is to link Armco Park, Union Village, and Otterbein to Lebanon and the Little Miami Scenic Trail, thereby plugging into the nation's largest network of off-street bike paths. The County has plans for a trail of approximately five miles to connect from Armco Park to Neil Armstrong Way in Lebanon. Then the plan is to head south with the trail to Glosser-Richardson Road providing more direct access to the Lebanon Countryside YMCA. Additional planned bike path connections include linking Union Village to the Cincinnati Zoo properties located north of Mason and connections further west of Lebanon that could eventually reach the Great Miami Trail. Their map, below, shows additional proposed connections north into Franklin, Springboro, and Washington Township, with no plan or date for construction at this time.

Warren County Plan Map – 2015 Lebanon – Turtlecreek Trails Initiative

Preble County: Preble Trails-Linking Communities is a new grassroots organization begun in 2014 to develop public interest and strategies to develop bicycling routes in Preble County. Goals include a covered bridge route and connections to the Miami Valley Trails and to Richmond, Indiana.

Clark County: The Clark County-Springfield Transportation Coordinating Committee's Multi-Use Trail Plan, adopted in 2011, identifies priorities for separated trails in Springfield and Clark County. Proposed connections to Greene and Miami Counties align with the vision map of the 2008 CLRBP and our current Long Range Transportation Plan.



Trail User Surveys

In 2009 and again in 2013, MVRPC and our partner agencies took to the trails in a large volunteer effort to survey users and measure the impact of the trails. The 2009 effort had a larger number of count locations but the findings of both surveys were similar. The counts were

conducted on a Wednesday and a Sunday in the summer. 11% percent of the counted trail users took the survey in 2009 and 7% in 2013.

Trail use was bike-dominated. On the Sunday counts, over two-thirds of counted trail users were on bikes. The majority of survey takers (66% in 2009, 73% in 2013) were 46 years of age or older. More than 60% were male. Importantly, when asked if they would be comfortable biking on streets as well as trails, the positive response increased from 49% in 2009 to just under 60% in 2013.

Using an intercept methodology developed by the Rails-To-Trails Conservancy and the Richard Stockton College of New Jersey (Rails-to-Trails 2005), the survey estimates the economic impact of the trails for the Miami Valley. Between 772,000 and 888,000 annual visits were made to the trails:

- 69% of those used hard-goods (equipment) purchased for the visit, a benefit of approximately $6,015,514 in purchases
- 47% of the visits resulted in soft goods (food, drink, etc.) being purchased during the visit, resulting in $5,761,140 in purchases each year

Sixteen percent of the trail users come from areas of the state outside the Miami Valley Region, and 2% come from outside Ohio. In addititon, over 7% of the 93,055 unique visitors to the trails network purchase overnight accommodations for an average of 2.4 nights. The overnight stays result in another $1,296,846 spent in the Region. When added together, the annual economic impact from the trails is estimated to be over $13 million. Together, the survey findings indicate the Miami Valley Trails are a regional asset waiting to be leveraged for economic development and transportation use.

<http://www.mvrpc.org/transportation/bikeways-pedestrians/trail-user-surveys>

Present

In preparing this Update, MVRPC staff gathered relevant data and reported on public priorities and on trends related to cycling in the Miami Valley. Topics covered in this chapter will include:

- *Public input to the Update from workshops and the online survey*
- *Regional bike and pedestrian crash and safety analyses*
- *Level of Traffic Stress analysis—overview of the concept, regional, and local application*
- *Cycling demographics, including regional census, equity, and health data*

Public Input Workshops

MVRPC hosted Input Workshops to learn what projects the public is interested in, and to get feedback on local bicycling priorities. The Bike Plan Input Workshops were well-attended, gathering input from over 140 people. Attendees included representatives of a handful of neighboring counties and park districts from outside our MPO, as well as local government officials (mayors, trustees, city department directors, police, and ODOT), consultants, the general public and news reporters. MVRPC partners from local park districts helped host the workshops and were very helpful, staffing the sign-in tables at each meeting and answering local questions.

The workshops were conducted in an open house format, with stations where participants could gather information from posters and have direct conversations about the content with staff and each other. The three stations focused on **Level of Traffic Stress**, where the public could inspect and correct our LTS ratings for their county and mark project recommendations on the map; **Priorities Brainstorming**, where they could offer ideas for "Es" activities that would move cycling forward; and on the **Plan Update Data**, where they could learn about the changes from 2008 to 2014 in U.S. Census journey-to-work data, traffic crashes, health data, and local projects completed on our network. Staff heard positive comments from attendees about the open house with input stations format, which allowed people to have in-depth discussions and get their questions answered.

The people who attended the workshops were generally well-informed about local bicycling issues; they brought a wealth of

suggestions. The Enforcement suggestions primarily centered on feeling safe as a rider. Many Education priorities were also aimed at safe rider/driver interactions and teaching kids to bike. In the Equity category, MVRPC received suggestions to better manage information resources and suggestions for developing partnerships aimed at different audiences. Better signage and amenities are needed, as well as community supported Encouragement events. By far, the most suggestions received were focused on new Engineering projects. People want to bike safely and comfortably, especially to the trails and to parks from their own neighborhood and to do so with their families. Connecting and extending the trails network is one of the public's highest priorities. This exercise did not seek public input on Evaluation.

The following are examples of the input received, grouped by topic area. A complete list of suggestions is included in the Update appendix.

Enforcement: ideas concerning laws/rules regarding cycling (a total of 14 suggestions)

- "No Right on Red" at bike crossings
- Enforce speed limits and safe passing
- Warning tickets and awareness campaigns
- Targeting improper sidewalk riding

Education: ideas for increasing cycling knowledge and skills (16 suggestions)

- The importance of sharing the road
- Youth cycling skills
- Safety PSAs and motorist education

Equity: ideas for sharing the access to cycling across the Region (16 suggestions)

- Earn-a-Bike programs
- Resources in multiple languages
- Better neighborhood directional signage
- Partnering with YWCAs and YMCAs, Life Enrichment Center, schools

Encouragement: ideas for increasing ridership (28 suggestions)

- Bike racks and end-of-trip amenities
- Employee wellness outreach
- Frequent community rides
- Family events and competitions
- Amenity, business, and history signage

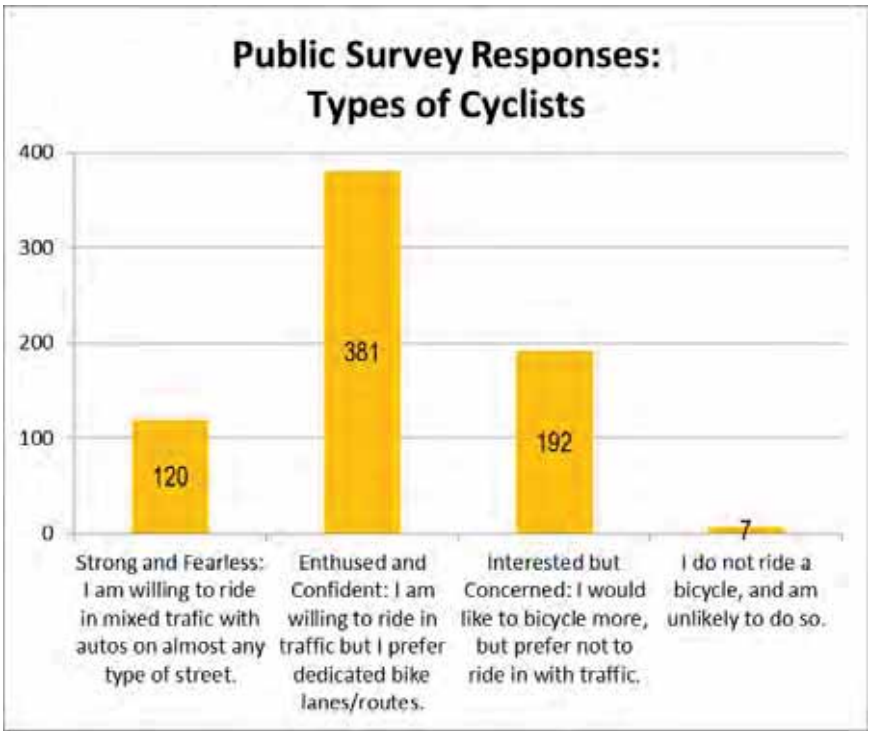
Engineering: ideas for new infrastructure projects (57 suggestions and 74 mapped projects)

- Getting to the trails & parks from local neighborhoods via low-stress connections

- Marked routes and lanes to neighborhood destinations
- Extending the trails (especially over/under/around barriers)
- Maintenance of lanes and trails
- Campsites and amenities along bikeways

Online Survey Results

An online survey was created by MVRPC with the input of Five Rivers MetroParks and Miami Conservancy District staff. Five Rivers also hosted the survey. The survey was open from January 22 through March 6, 2015, and was advertised via social media and shared with many of our agency partners, who also publicized it. At closing, 701 respondents had taken the survey. The survey results are attached at the end of this report.



This was not an unbiased sample of the general population, but a self-selected audience of bicyclists: 96% of respondents own a bike. Even among our bike-centric audience, the smallest percentage group was those who self-identified as *Strong and Fearless* riders, willing to ride in mixed traffic with autos on almost any type of street. Eighty-two percent of respondents identified as *Confident*, who prefer to ride in dedicated bicycle lanes or routes, or are *Interested but Concerned*. These later two groups would bicycle more if they didn't have to mix with traffic.

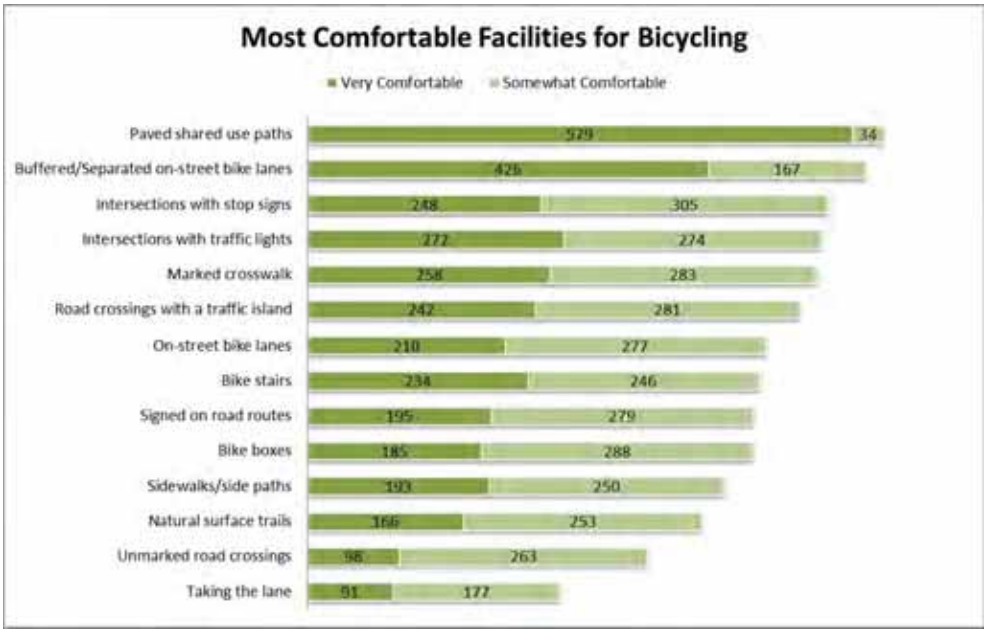
Our survey respondents were 89% white and 66% male. Partly due to the way we publicized the survey through partner agencies, 46% were part of a bicycle club, advocacy group, or employees of a trail-managing, engineering, or planning agency. 54% had no such affiliations.

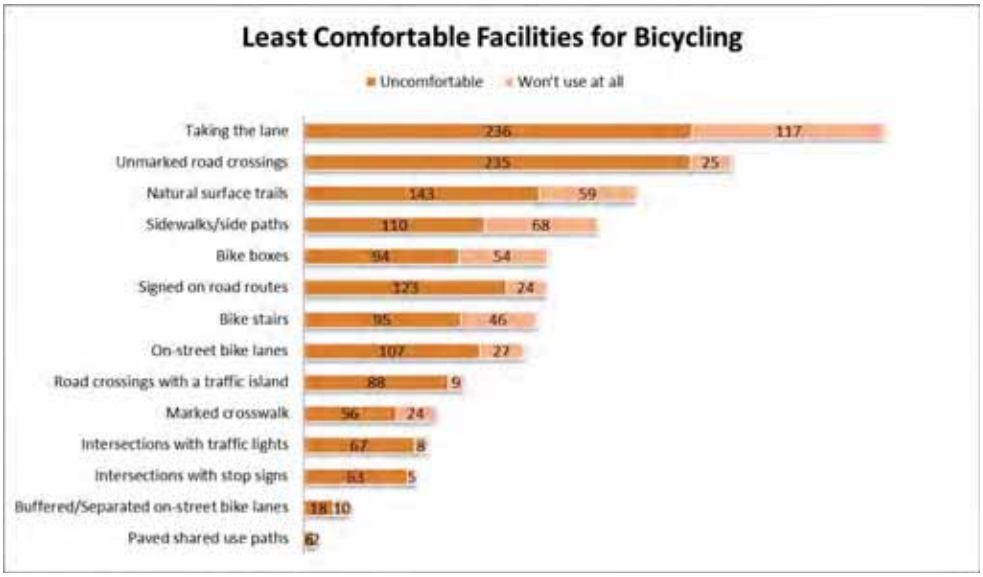
Top Destinations

The most important destinations to survey respondents were the Miami Valley Trails and also parks, echoing what MVRPC heard in the workshops. The importance of the trails as a destination informed the Level of Traffic Stress analysis. Additional destinations that ranked highly were restaurants, coffee shops, a friend's home or nearby neighborhood, recreation or community centers, libraries, and local shopping.

Comfort of Non-Motorized Facilities

The survey offered images of facilities and asked respondents which non-motorized facilities they would feel comfortable using. We combined the "uncomfortable and "won't use at all" ratings to get a least-comfortable list. We also combined the "very comfortable" and "somewhat comfortable" ratings for comparison.





Consistent with the self-ratings as enthusiastic but cautious riders, respondents are clearly more comfortable with separated facilities such as separated multi-use paths and buffered or protected bike lanes. As the Miami Valley doesn't have any local examples of protected lanes and only a few examples of buffered lanes, staff interprets this as a signal that the respondents are familiar with these concepts from cities they have visited like Indianapolis and New York or from the media, and are ready for more advanced bicycling facilities. The Miami Valley is in a good position to expand our cycling mode share if we build buffered or protected facilities. Experience in cities like Washington, D.C., Chicago, and Portland shows a direct correlation between safer on-street facilities and increased ridership rates. (Andersen, 2014)

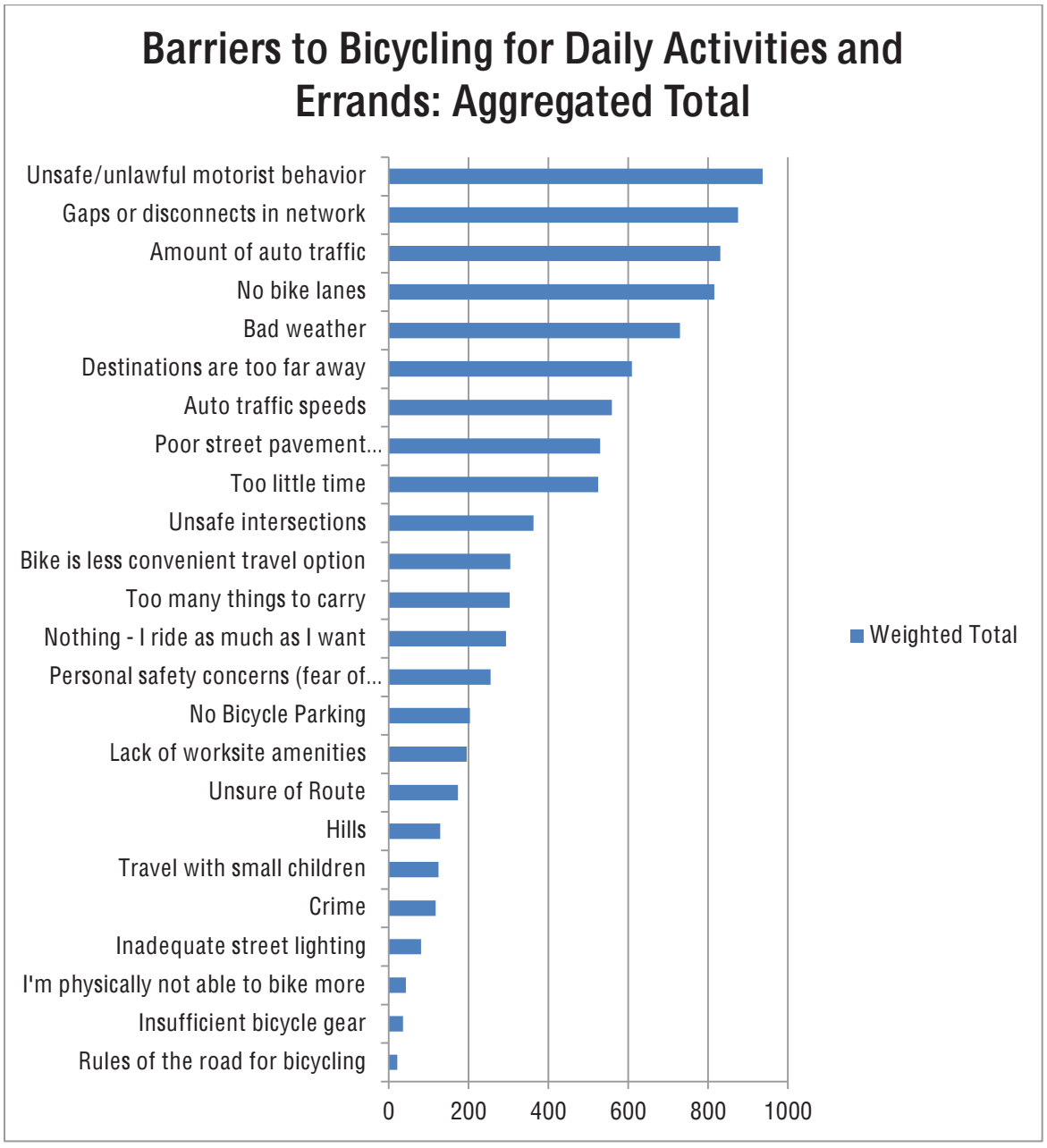
Conversely, bike facilities that offer less separation from motor traffic were consistently rated as uncomfortable or "won't use at all." Typical on-street lanes and signed on-road routes are solidly in the middle of the "comfortable list" while sidepaths/sidewalks fall towards the bottom of the list. That may be due to the bike-centric audience taking the survey, who understands the statistics and right-of-way issues that argue against sidewalk and side-path riding. For guidance on side-paths, see Appendix E.

Barriers

Barriers to bicycling were addressed in the survey, seeking to understand what keeps people from choosing to bike. When asked what the top barrier to using a bicycle was for daily activities, by far the top three answers were lack of bike lanes, bad weather, and gaps or disconnects in the bicycle network. The survey then asked for respondents to report their second, third, fourth, and fifth most significant barriers.

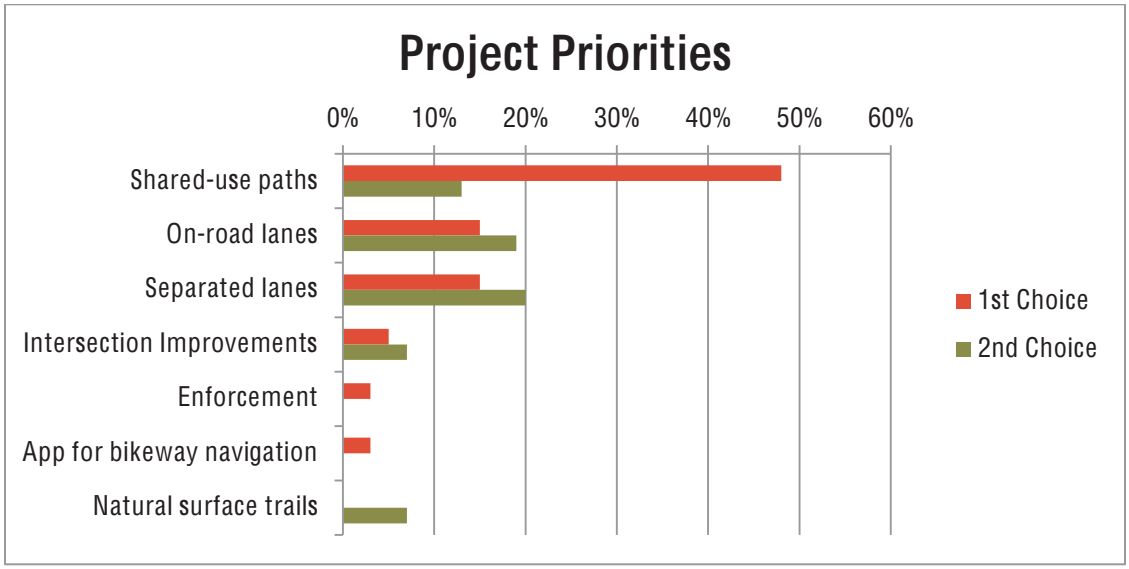
Notably, when the top five barriers are aggregated and compared, unsafe or unlawful motorist behavior was a clear concern. Creating more high quality bike lanes would be a solution to the

top four barriers in the list below, which presents the barrier responses weighted by the survey takers' priorities.



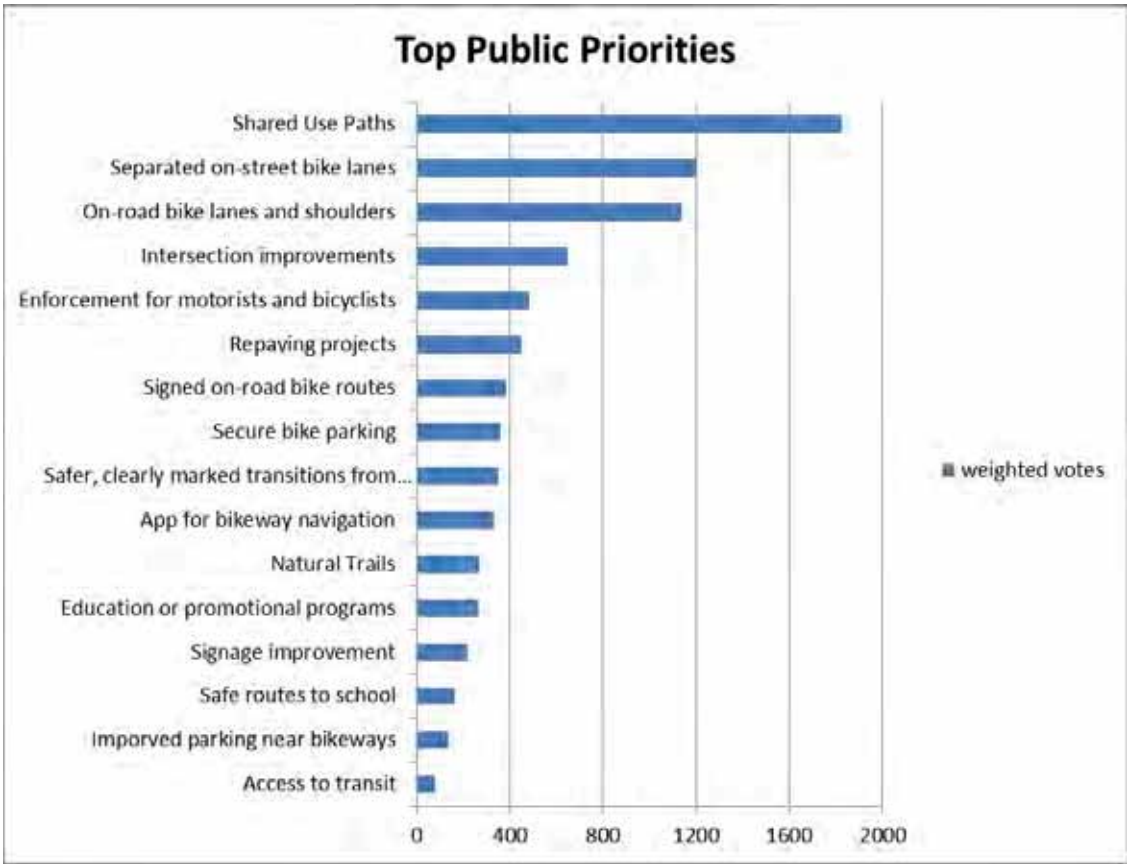
Project Priorities

We asked survey respondents to rank their priorities for types of projects they would like to see in the Update, and they overwhelmingly chose shared-use paths as their first priority. Facilities with some degree of separation also received considerable public support.



These priorities held through the cumulative analysis. Shared-use paths were the highest cumulative priority. Separated or buffered bike lanes were the second priority, and on-road painted lanes and shoulders were the third, followed by intersection treatments and enforcement programs. Respondents marked as important but of lower priority: repaving and maintenance, signs and navigational aids, secure bike parking, and better/clearer transitions from bikeway to roadway.

Staff used these priorities to inform the Bikeways Advisory Committee and to rebalance the project scoring criteria in the Update. The scoring criteria is included in an appendix at the end of this report.



Project Suggestions

Questions 19 and 20 or the survey asked for "other project priorities not listed," and asked respondents for their suggestions of up to five projects or programs they would like to see in the Update. These 600+ project suggestions created the basis for our updated project list. Staff condensed the suggestions to eliminate duplicates and to determine how often similar projects were suggested. The 300 condensed suggestions were then compared with projects currently in MVRPC's TIP and Long Range Plan. Projects not currently listed in MVRPC planning documents were then scored. The suggested projects are listed by County and Region, attached at the end of this report.

Safety and Crash Data

The Miami Valley has embraced cycling and promoted trails development for more than 40 years. These trails are perceived as safe for all ages and types of riders. Now, the call to make street cycling safer has never been more important if cycling is going to become a viable transportation mode in the Region. Statistically, trail riders are primarily a recreation and fitness rider group. Trails do not always connect riders with practical destinations, and like a highway they have limited access. In order to make transportation cycling available and practical for more people, more local destinations must become accessible by bikes via the roadway, and the streets must become safer and more inviting for a broader range of cyclists. Cyclists also have to be trained as skilled, smart street cyclists.

Feeling unsafe and vulnerable is a particular hazard of cycling, particularly when sharing the road with vehicles weighing over two tons moving at high speeds. Cyclists and pedestrians are considered vulnerable because they lack the protection provided by riding inside a motor vehicle. Even away from traffic, the act of balancing on two wheels can sometimes be perilous. More than 50% of bicycle crashes are single-person crashes or falls. The reward—having fun, travelling under one's own power, experiencing the freedom of the wide open road—is worth the chance of scrapes to most. But the calculation of risk vs. reward is different in the context of motor vehicle crashes, and the perceived risk of riding with motor vehicle traffic is too high for many potential riders.

MVRPC tracks crash rates in our Region and works to address areas with high crash rates in cooperation with local engineers and planners. The crash analysis aggregates bike- and pedestrian-related crashes together in most charts because the small sample size for each individual crash type limits statistical analysis. There are several important points to keep in mind while looking at the following crash data.

- 695 crashes between a person driving a motor vehicle and a person either walking or biking were reported on the regional road network from 2011 through 2013.
- These represented 1.7% of all reported crashes involving people driving a motor vehicle.

Crash Data from the Ohio Department of Public Safety

It is important to understand that MVRPC examines only a selection of vehicle crashes in the Miami Valley. The data received from the Ohio Department of Public Safety only tracks motor vehicle-involved crashes in the public right-of-way, not bike/bike, bike/pedestrian, or single-cyclist crashes. Also, the reports are only for crashes that result in more than $1,000 in damages or any crash that results in an injury or fatality. MVRPC then filters the data to report only crashes on federally functionally classified roads to exclude crashes on locally-maintained streets.

- Crashes between a person driving a motor vehicle and a person walking or biking were the most severe of all reported crash types.
- 80% of reported collisions between a person driving a motor vehicle and person biking and 91% of crashes between a motor vehicle and a person walking led to an injury or fatality.
- 24% of the 29 fatal crashes between a person driving a motor vehicle and a person either riding a bike or walking involved alcohol.
- 12% of crashes between a person driving motor vehicle and people either biking or walking involved someone under 16 years old, and 29% involved someone 16 to 25 years old.
- 68% of reported crashes between a person driving a motor vehicle and a person either walking or biking were intersection related.

In the MVRPC Region, crashes between someone driving a motor vehicle and a person either walking or biking are a small percentage of the total crashes: 695 out of over 40,000 crashes in a three year period. In the following tables the most severe (injury and fatality) crashes are tracked by year. The number of bike-related crashes is smaller still, compared to the combined bike- and pedestrian-involved crashes.

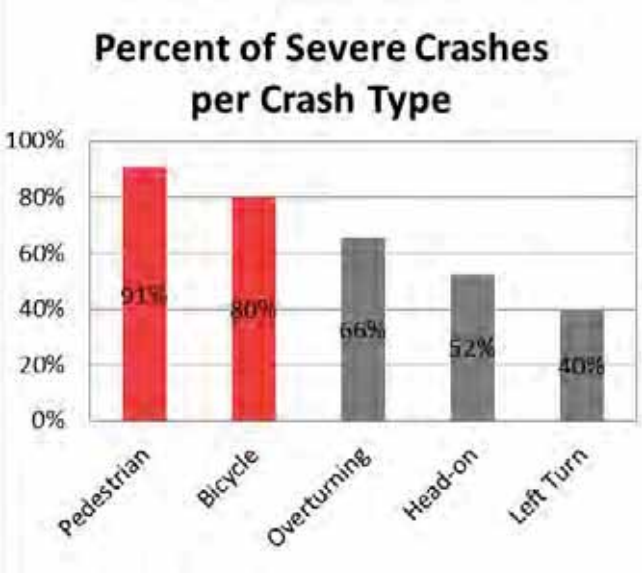
Annual Bike Crashes by Severity

Severity	2005	2006	2007	05-07 Total	2008	2009	2010	08-10 Total	2011	2012	2013	11-13 Total
Property Damage Only	16	14	20	50	14	20	9	43	31	15	12	58
Injury Crash	76	78	85	239	74	93	88	255	66	90	69	225
Fatal Crash	1		2	3		1	1	2	2	1	2	5
Grand Total	**93**	**92**	**107**	**292**	**88**	**114**	**98**	**300**	**99**	**106**	**83**	**288**

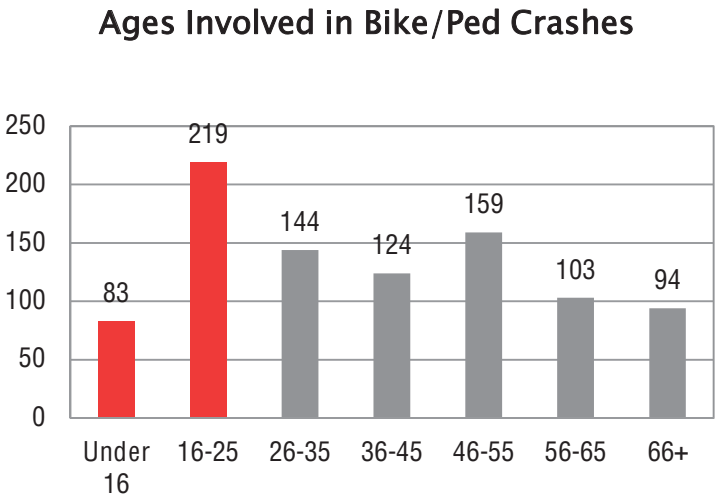
Annual Bike/Ped Crashes by Severity

Severity	2005	2006	2007	05-07 Total	2008	2009	2010	08-10 Total	2011	2012	2013	11-13 Total
Property Damage Only	45	23	30	98	31	27	19	77	50	27	19	96
Injury Crash	226	174	195	595	185	215	212	612	194	202	174	570
Fatal Crash	7	5	10	22	2	6	4	12	11	9	9	29
Grand Total	**278**	**202**	**235**	**715**	**218**	**248**	**235**	**701**	**255**	**238**	**202**	**695**

These tables demonstrate that while crashes between an automobile driver and either a person walking or biking are rare, when they do occur they are more likely to be severe; causing injury or fatality. This issue cannot be ignored. Many improvements have been made in vehicle safety technology, and those improvements have made a big difference in the rates of fatality and injury resulting from car crashes. The State of Ohio does not mandate helmet use for bicyclists. Helmet use does reduce the frequency and severity of head injuries resulting from a bicycle crash. (Thompson 1999)



The young age of many drivers (of both motor vehicles and bikes) points again to the continuing need for education and right-of-way decision-making skills. In discussions with educators at the Regional STEM School, the junior high school students who have not taken driver's education training have a very simplistic understanding of traffic rules and dynamics, compared to the high school students. Younger cyclists may also not have the skills to judge the speed of oncoming vehicles, due to the later natural development of that cognitive function.



Intersections are particularly challenging for drivers and cyclists of all ages. 68% of Crashes are intersection-related.

MVRPC staff tracks the high crash locations in our Region. Since most of the crashes on our roads are intersection-related, it helps to look at contributing causes, including:

- High vehicle speeds and volumes
- Low visibility crosswalks
- Wide lanes and road cross-sections that induce speeding
- Disregard of traffic control devices (i.e., running red lights)
- Motorists failing to yield to bicyclists and pedestrians

The top high-crash intersections are listed in the following chart. The map below depicts the intersections and roadway segments where three or more crashes between an automobile driver and a person bicycling or walking have occurred in three years' time.

High-Crash Locations for Bicycle or Pedestrian-Related Crashes (based on 2011 to 2013 crash data)

Road Segments

Road	Location	Jurisdiction	Bike Crashes	Ped Crashes	Total	Repeat High-Crash Location
Smithville Rd	US 35 WB Ramp to Burkhardt Rd	Dayton	1	6	7	●
Third St	Smithville Rd to Findlay St	Dayton	3	4	7	●
Main St	Siebenthaler Ave to Hillcrest Ave	Dayton	1	5	6	
North Dixie Dr	Needmore Rd to Bartley Rd	Harrison Twp.	0	6	6	●
Dorothy Ln	Wilmington Pk to Woodman Dr	Kettering	4	1	5	
Wayne Ave	Stewart St to Wyoming St	Dayton	2	3	5	●

Intersections

Intersection	Jurisdiction	Bike Crashes	Ped Crashes	Total	Repeat High-Crash Location
North Dixie Dr at Needmore Rd	Harrison Twp.	0	5	5	
Woodman Dr at Forrer Blvd	Kettering	5	0	5	
Keowee St at Fifth St	Dayton	2	2	4	
Salem Ave at Grand Ave	Dayton	2	2	4	
Salem Ave at Philadelphia Dr	Dayton	0	4	4	
Stroop Rd at Shroyer Rd	Kettering	0	4	4	
Wyoming St at Brown St	Dayton	1	3	4	

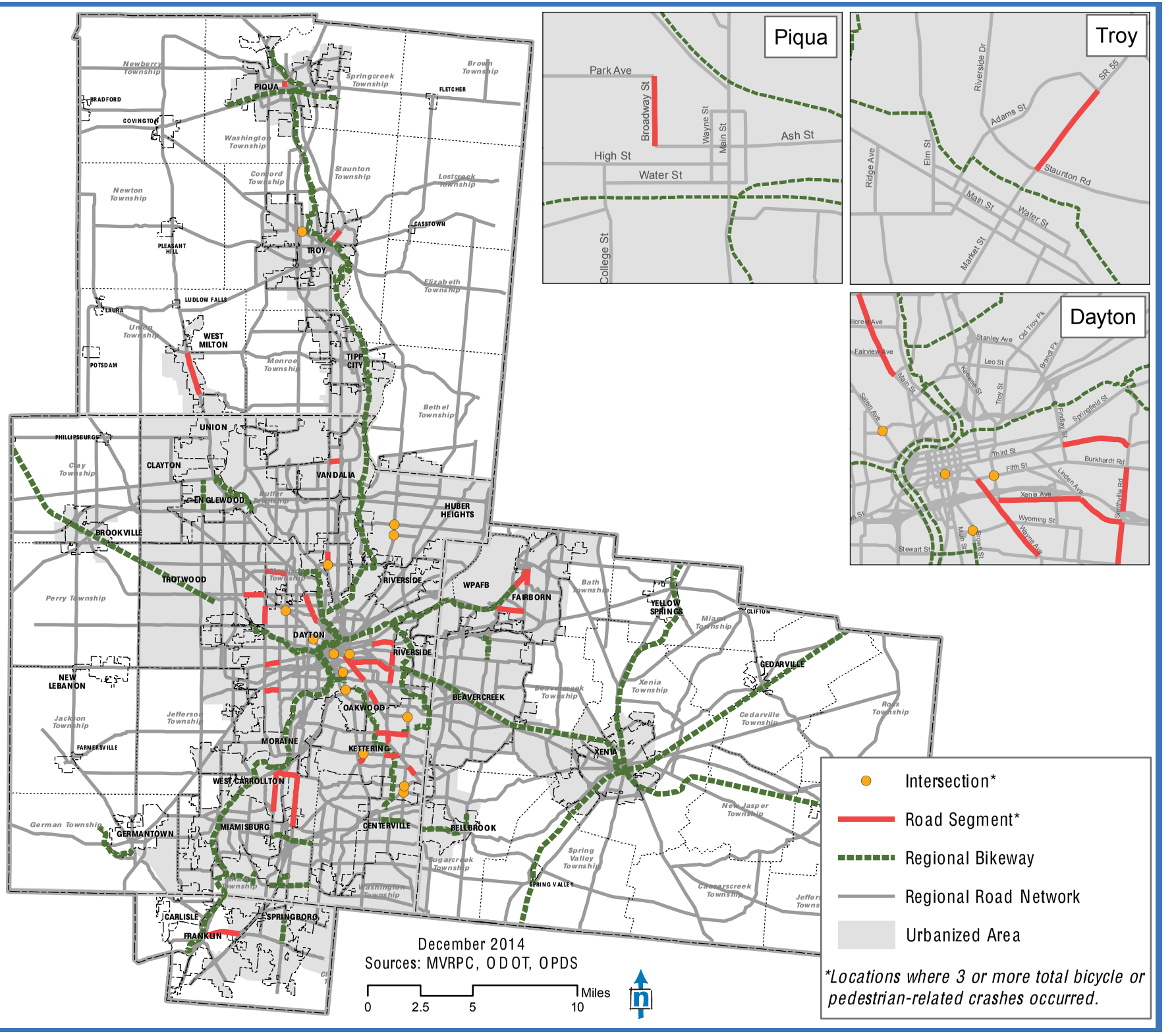
- List based on 2011 to 2013 reported crashes data.
- This list omits local roads and only includes Federal functionally classified roads.
- "Repeat High-Crash Location" are locations that were on high-crash list from SFY2012 (2008 to '10 data).

HighCrashLocations_
forPrint_letter.pdf

There are movements at the national and international levels to provide traffic design and treatments that will accommodate cyclists of wide-ranging ages and abilities. Safety has long been a central focus of engineers and planners. New resources are being produced nationally that work to prevent and/or reduce the severity of crashes with alternative roadway design. Another tool for roadway designers is to work from the perspective of a younger, less skilled, less confident ‘model user.’

High-Crash Locations for Bicycle or Pedestrian-Related Crashes

2011 - 2013



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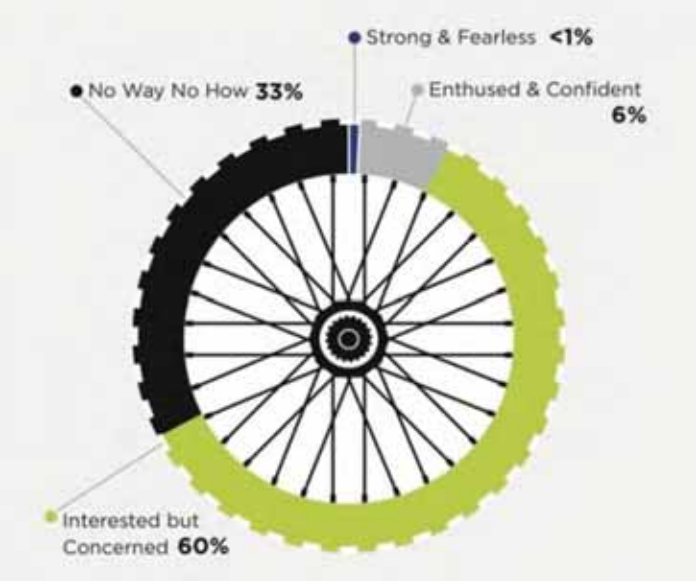
Level of Traffic Stress

The original 2008 Plan discusses the needs of different types of cyclists, categorized by their confidence level. The Level of Traffic Stress analysis method expands on this concept to measure how well bicycle facilities provide a sense of safety and comfort for different user groups. This new approach provides a strategy for targeted improvements that will encourage more bike riding by a broader range of people.

Riding a bike is a healthy, fun, inexpensive, sustainable way to get around. But for many people, riding to a destination means riding on the road, and riding on the road means mixing with cars and trucks. Most people find riding in traffic to feel unsafe and stressful. Research originally from Portland, Oregon, but reconfirmed in locations across the country, determined that less than one percent of the population are "strong and fearless" riders who will ride just about any place, regardless of traffic density and speed. Another 6% are "enthused and confident," willing to ride in on-street bike lanes, on lower traffic roads, and in places where the speed limit is lower and enforced. (Geller 2006)



About 60% of the population describes themselves as "interested but concerned." They might want to ride a bike for transportation if they felt safe from traffic. These people feel safe on bike paths, on low speed neighborhood streets, and in protected bike lanes, but do not like to mix with cars.

This tells us that the Region will not likely see an increase the percentage of trips taken by bike unless bike riding is made less stressful. The Level of Traffic Stress concept was first used by the Mineta Transportation Institute in San Jose, California as a way to think about the bike-friendliness of a city (Furth 2012).
Using a few simple metrics, speed limits and number of lanes, the authors mapped the City of San Jose into the following four categories of facilities:

Source Material

To read the Mineta Transportation Institute report, "Low-Stress Bicycling and Network Connectivity," please follow this link: <http://transweb.sjsu.edu/project/1005.html>

Level of Stress One (LTS 1): Bikeways and low-volume streets where the speed limit is 25 mph or less.


Level of Stress Two (LTS 2): Some striped bike lanes, protected lanes, cycle tracks



Level of Stress Three (LTS 3): Roads with 30 mph+ speeds and/or four lanes


Level of Stress Four (LTS 4): Most roads with 30 mph+ speeds and/or five or more lanes



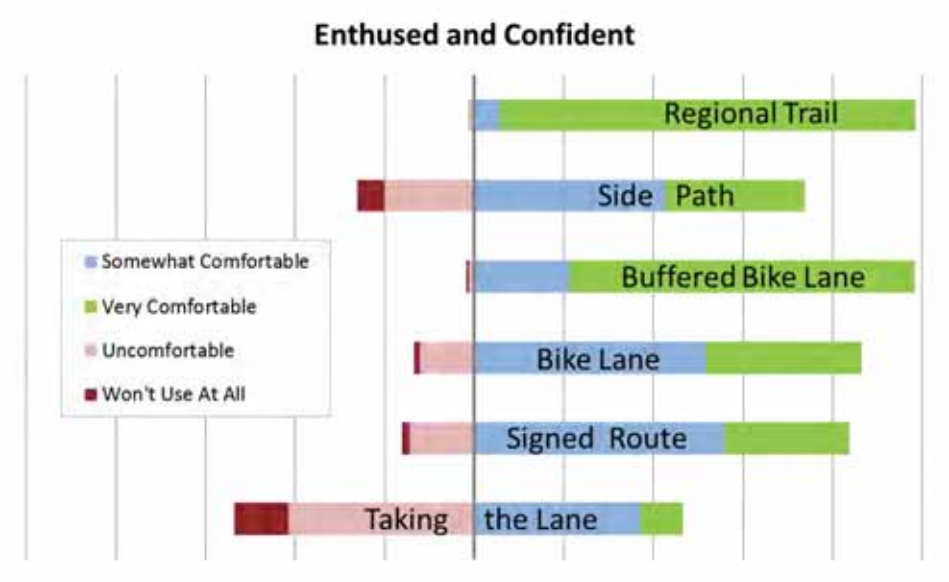
Using these categories, the researchers discovered that roadway networks, from the cyclist's perspective, are divided into many low-stress islands separated by high stress connections or crossings. This prevented all but the bravest of cyclists from cycling from "island to island." Many destinations were found to be within a reasonable cycling distance of residential areas, but they were inaccessible to most potential riders because the Level of Stress was too high.

Survey Analysis

Local data, pulled from the online survey conducted by MVRPC for this 2015 Update, confirms the notion that "interested but concerned" cyclists prefer the safety benefits of separation from motor traffic. Previously, data about level of comfort on different facilities was shown in aggregate for the full population of survey takers. Here, these same responses are broken down by the types of cyclists. First, the responses of the "strong and fearless" show high comfort on many types of facilities. Note that the facility labels here match those used in the survey itself; "Regional Trails" refers to a shared use path and "Taking the Lane" means bicycling in traffic with no bike-specific facility.

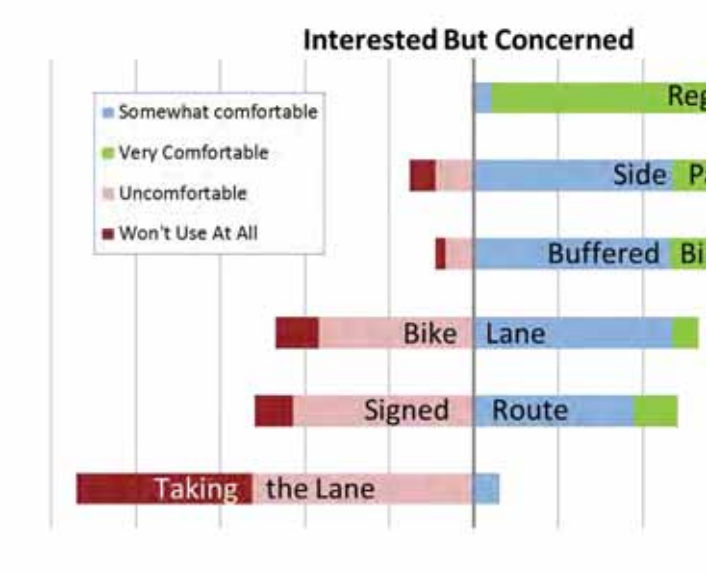
Note that the facility types highlighted in this chart progress from least stress at the top (trails) to most stress at the bottom (taking the lane).

The “enthused and confident” group, representing about 6 percent of the population, shows similar levels of comfort, but with some notable differences.



Enthusiasm for taking the lane is lower in this group, but the other facility types with separation or on calm streets show high comfort.

The final group is the "interested but concerned," which represents a majority of the general public.



National Data on Protected Bike Lanes

Page through a Bike Miami Valley presentation on the safety and ridership benefits of protected bike lanes. It can be found in Appendix G.

The pattern with this group is very clear. The greater the degree of separation from motor traffic, the greater the comfort with riding a bicycle these people express.

Local Level of Traffic Stress

In this 2015 Update process, the Level of Stress analysis has been simplified and adapted to the regional scale. The basic premise of this analysis is that to increase the number of cyclists, we must increase the low-stress connections between "islands." Using a modified version of the San Jose model, MVRPC staff mapped the entire Region to identify where the low-stress islands already exist. The initial premise was that the Miami Valley Trails network is a large low-stress (LTS 1) set of facilities. Streets within residential land use areas were also presumed to be LTS 1 facilities. Roadways that are federally functionally classified were assessed using the scale developed by the Mineta Institute. Most were found to be LTS 4 facilities, with a small minority found to be LTS 3. Limited-access highways were not scored, since they are not legal roads for bicycle traffic in Ohio. Using GIS analysis, the largest low stress islands were identified in terms of population. Finally, visual review was applied to the largest islands to identify potential projects that would provide low stress connections from those islands to either the trails network or neighboring islands.

Sample Mineta Institute map showing only LTS 1 (green) and LTS 2 (blue) links (Furth 2012).

MVRPC example map showing disconnected (red circle) and connected (blue circle) islands in Xenia.

The resulting regional LTS map was one criterion used in scoring potential projects. That is, if a project provides a low-stress connection between two or more low-stress islands or to the regional trails, that project may significantly improve the bikeway network, and therefore is given more points in the project scoring process.

Many important projects are likely to be intersection projects, where cyclists need to cross a high-stress road to continue their low-stress journey. One rule of LTSanalysis is that the highest stress segment of journey defines the whole journey. So, one high-stress (LTS 3 or 4) crossing in a three-mile ride, even if 2.95 miles are LTS 1, becomes a LTS 3 or 4 ride, because most cyclists will not cross the high-stress intersection.

The Miami Valley has the nation's largest paved trail network, which provides a very low-stress riding environment where cyclists are completely separated from traffic except for where the trails cross roads. However, these trails do not lead directly to many work, shopping, residential and recreational destinations. To reach those, riders need to be comfortable on the street grid. Increasing connections between the regional trail system and low-stress streets will make the regional network safer and more useful to many riders who are "interested, but concerned." *We believe that is the key to increasing the share of trips taken by bicycle in the Miami Valley*.


LTS Plan Map Greene.pdf


LTS Plan Map Miami.pdf


LTS Plan Map MotWar.pdf

How Local Jurisdictions Can Use the Level of Stress Concept

Respondents to the online survey and people who attended the update public meetings overwhelmingly said they wanted more low-stress connections, especially to the regional bikeway system and to parks and other recreational opportunities. Many projects critical to making our Region more bike-friendly will be local in nature. By incorporating Level of Stress thinking in local planning, it would be fairly simple to identify the high-stress barriers that separate low stress islands. In the public workshops for this update, citizens were given a short tutorial on the LTS concept and most of them understood immediately. Attendees were able to point to their neighborhood and to a desired destination and say "I could ride there, except for this intersection." Jurisdictional staff could do the same on a community level.

LTS Analysis: Montgomery and Northern Warren Counties

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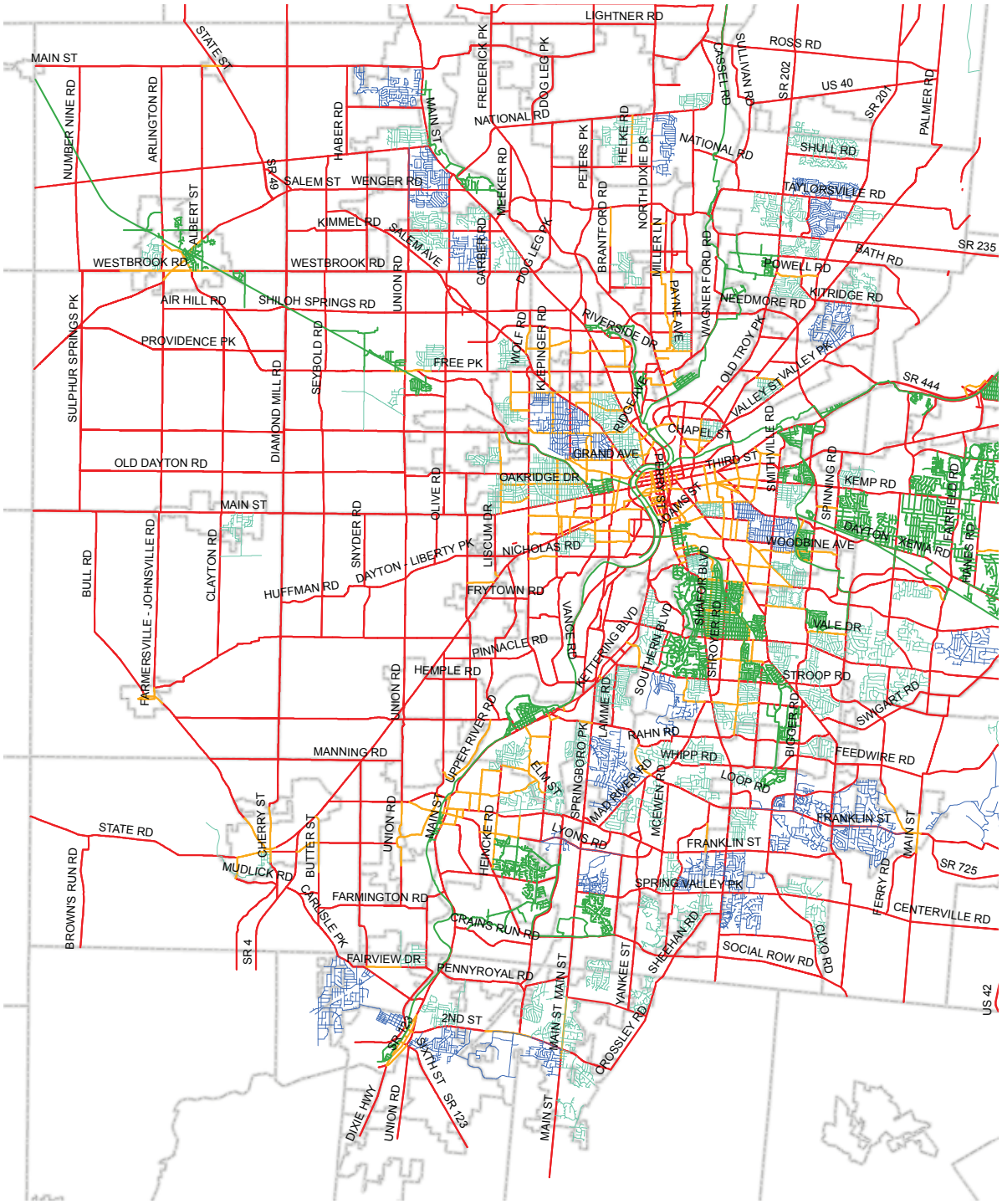

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LTS Analysis: Miami County

DRAFT

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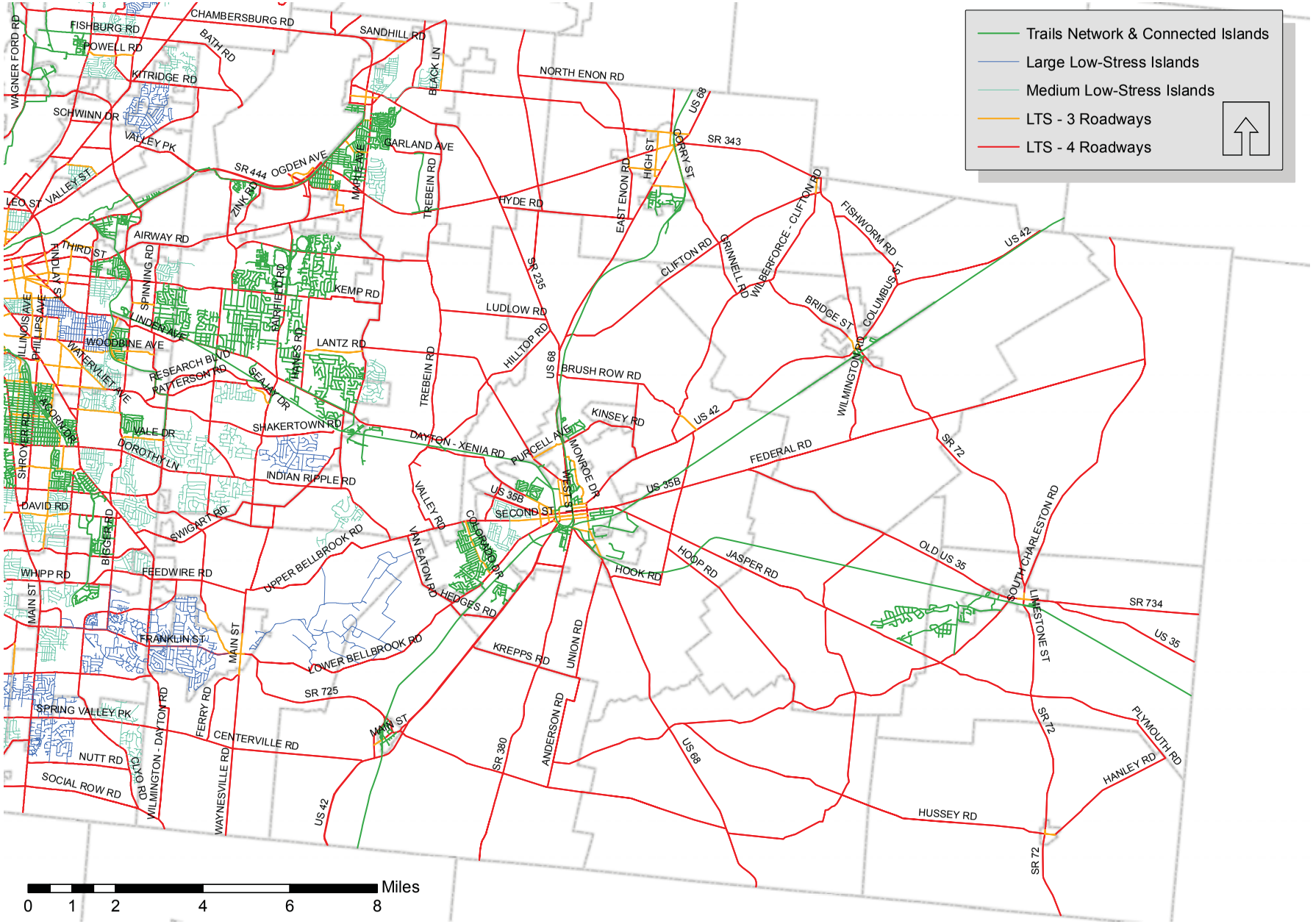


LTS Analysis: Greene County

DRAFT

MVRPC staff is happy to provide education and technical support to all jurisdictional staff interested in applying the Level of Stress methodology**.**

The matrix below can help jurisdictional staff score community streets. This matrix applies to streets **without** a bike lane.

	2-3 lanes	4-5 lanes	6+ lanes
Speed Limit Up to 25 mph	LTS 1* or 2*	LTS 3	LTS 4
30 mph	LTS 2* or 3*	LTS 4	LTS 4
35+ mph	LTS 4	LTS 4	LTS 4

(Furth 2012)

High Stress Crossing 1

Often, the neighborhood street grid already offers a low-stress riding environment, but residents sometimes don't know how to get from where they live to their destinations using neighborhood streets. Signage is one low cost method that can help riders get from their neighborhoods to the trail network and other destinations. When the street grid intersects with a barrier road (a high-stress crossing) the answer may be an intersection treatment that detects bicycles, or light phasing that gives adequate time to cross, or a mid-crossing refuge island.

Traffic calming devices like bump-outs, speed tables, raised crosswalks, and median barriers are sometimes used to slow down cars and discourage "cut through" automobile traffic. These approaches have been shown to significantly reduce injuries and fatalities. (Kazis, 2010) Many communities across the country are combining these techniques with traffic diversion techniques to define "bike boulevards" where cyclists have the priority. Bike boulevards often parallel busy, high speed roads. Local auto traffic is maintained

on a bike boulevard, but right-of-way priority is given to cyclists. These bike boulevards help cyclists complete trips on low-stress residential streets and ensure that where crossing higher-stress streets is necessary, it can be done safely.

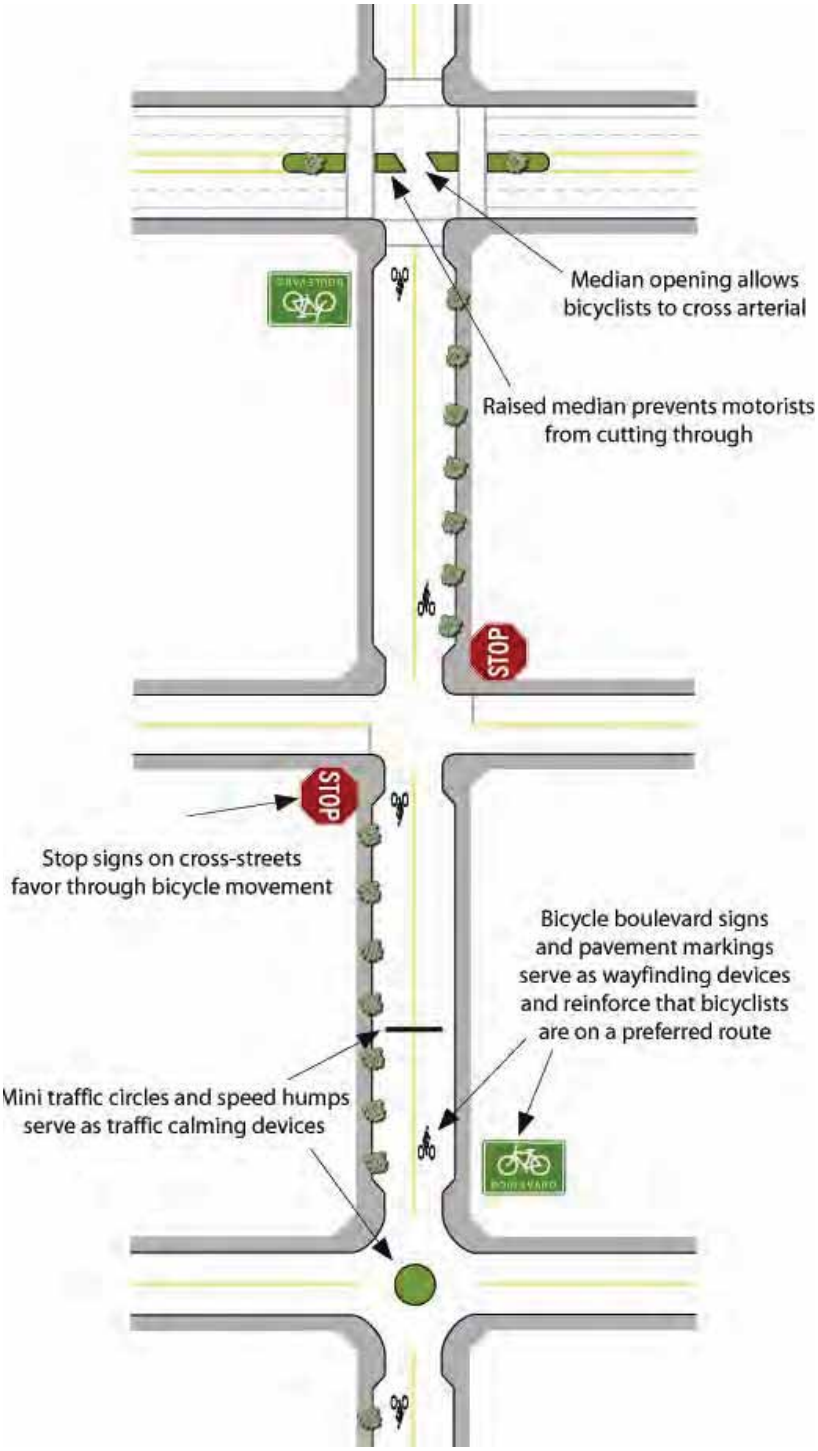
Intersections are another area that local engineers and planners will need to address. Getting cyclists to an intersection but not through it is a recipe for trouble. Difficult intersections and crossings can turn an otherwise low-stress bike ride into a car trip. We know that 68% of our Region's bike and pedestrian crashes occur at intersections, and so for safety reasons, the engineering treatments need to be very clear and predictable for all transportation users. Leading people to the intersection has to be matched with helping people through the intersection.

Local jurisdictions can take the LTS analysis method a step further and look at the directness of bikeway connections to important local destinations. If a rider has to detour significantly (25% longer than the most direct path) to stay on LTS 1 or 2 routes, the jurisdiction should examine ways to reduce the detour and improve low-stress connectivity.

To read the Mineta Transportation Institute report, Low-Stress Bicycling and Network Connectivity, please follow this link: <http://transweb.sjsu.edu/project/1005.html>

Sample Bicycle Boulevard treatments

(CLRBP 2008)


Median opening allows bicyclists to cross arterial
Raised median prevents motorists from cutting through
STOP
STOP
Stop signs on cross-streets favor through bicycle movement
Bicycle boulevard signs and pavement markings serve as wayfinding devices and reinforce that bicyclists are on a preferred route
Mini traffic circles and speed humps serve as traffic calming devices

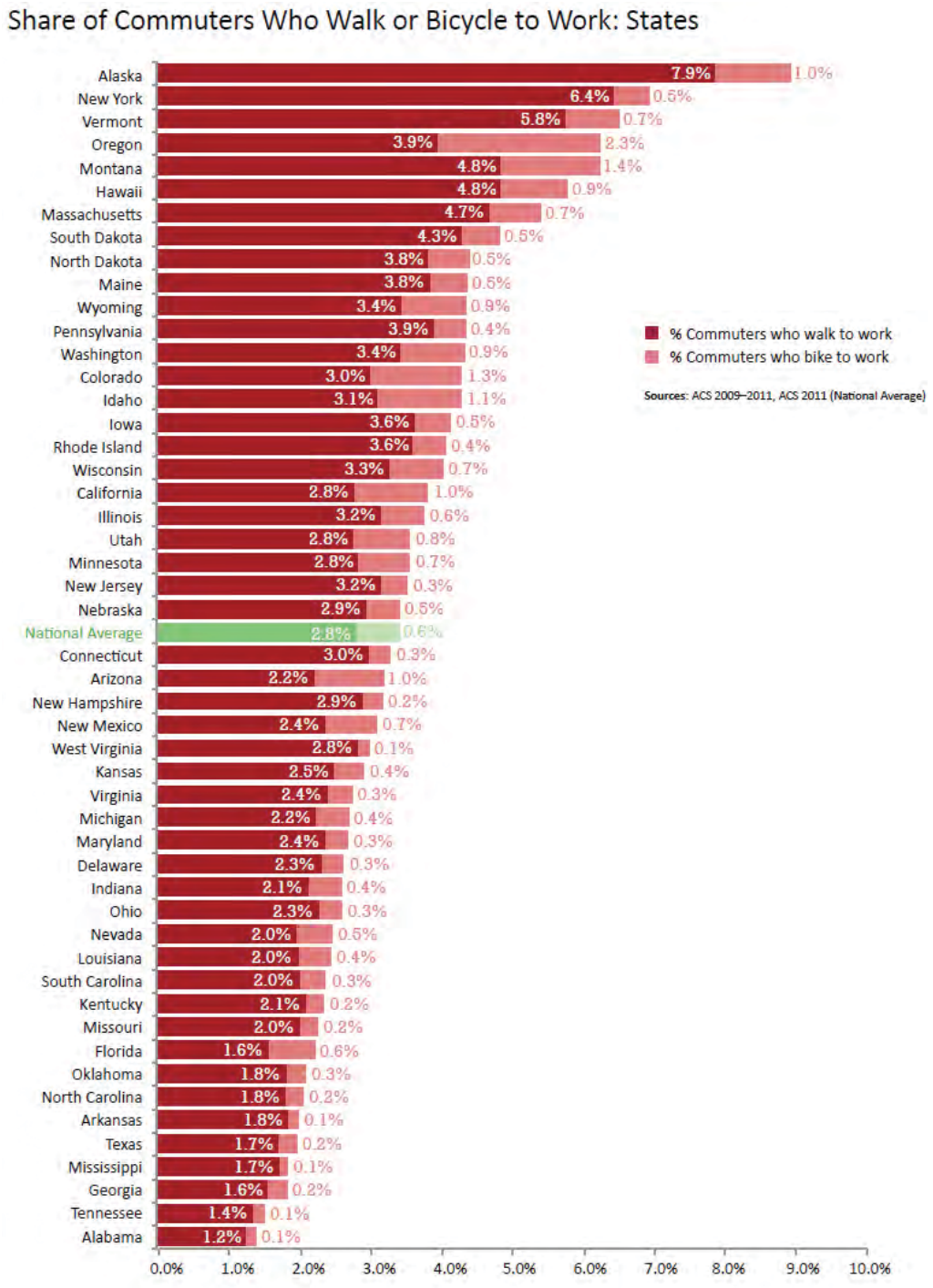
Biking in the Region: Measuring Cycling

Since the 2008 CLRBP was adopted, the level of academic attention and the number of studies on the impact of bicycling has increased dramatically. There is a clear empirical tie between active transportation and positive health impacts for individuals and the community. There is also a strong effort nationally to address safety, health, and equity issues with more proactive strategies and tactics. Evaluating the number and types of cycling trips in the Region provides data on the best use of such strategies to reach regional goals.

Journey to Work Trips

Based on data from the 2010 U.S. Decennial Census and 2009-2013 American Community Survey (ACS) five-year summary, the share of work-related trips made by bike in our Region has remained stable compared to data used in the 2008 planning process. In the same time period, the Region has continued to make progress in growing our bicycling network. We have added miles of trails and on-street facilities. Why has the additional infrastructure not translated into increased work-related trips? To get a complete picture of cycling in the Miami Valley, MVRPC looked at a variety of data sources at the federal, state, and local levels.

Ohio sits below the middle of the pack when it comes to work-related bicycling rates compared across the U.S. Our Region's bicycle commuting rate at 0.31% ± 0.07% is comparable to the State of Ohio rate of 0.3%.



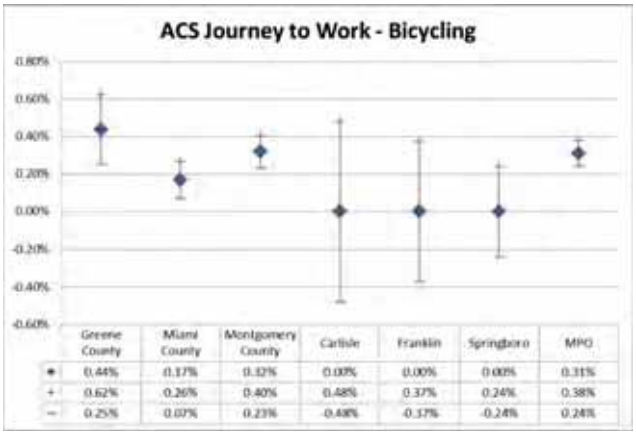
(Alliance for Biking & Walking 2014)

The journey-to-work data comes from the 2009-2013 ACS five-year summary tables. The numerical estimate for the various jurisdictions is listed first with the margin of error in the next column.

Regional Journey to Work Chart

Variable	Greene County		Miami County		Montgomery County		Carlisle		Franklin		Springboro	
Total	75,866	990	47,615	813	231,194	2,005	2,296	229	4,869	451	7,623	424
Car, truck, or van	69,225	1,096	45,117	811	209,758	2,091	2,247	236	4,755	442	7,623	424
Drive alone	63,967	1,222	40,892	897	190,296	2,339	2,101	231	4,517	426	6,763	436
Carpooled	5,258	596	4,225	443	19,462	1,051	146	94	238	119	510	208
Public transportation	249	97	227	134	5,040	472	1	2	15	17	19	32
Bus or trolley bus	224	89	227	134	4,953	462	1	2	15	17	19	32
Streetcar or trolley car	25	30	0	27	8	14	0	11	0	18	0	18
Subway or elevated	0	27	0	27	27	31	0	11	0	18	0	18
Railroad	0	27	0	27	52	57	0	11	0	18	0	18
Ferry boat	0	27	0	27	0	27	0	11	0	18	0	18
Taxicab	10	16	0	27	14	15	0	11	0	18	9	14
Motorcycle	90	62	28	22	377	137	9	14	0	18	0	18
Bicycle	332	140	80	46	735	197	0	11	0	18	0	18
Walked	2,502	363	750	190	6,166	641	8	13	24	35	0	18
Other means	232	100	186	100	1,766	347	0	11	0	18	13	20
Worked at home	3,226	386	1,227	204	7,338	580	31	46	75	50	309	94

When these estimates get down to the level of the individual community, the margin of error increases dramatically, as shown in the journey-to-work graph below. For small communities like Carlisle, Franklin, and Springboro, the estimated number of people who bike to work is 0 for each city, but with a margin of error of 11 to 18. County estimates are more reliable because the sample size is larger. At the regional level, we can fairly say that 0.31% ± 0.07% of the Region's 369,463 workers are cycling regularly, or **1,147 ± 248 people use bicycling as their primary mode of transportation to work**.

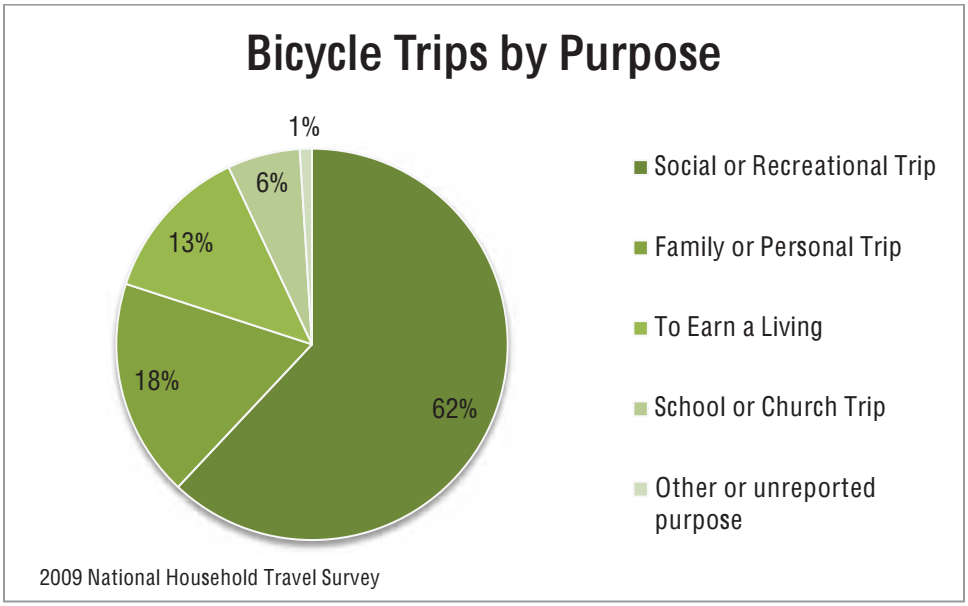


Other Active Transportation trips

The ACS journey-to-work data referenced here specifically counts the regular daily mode of travel for employed persons age 16 and over in households to their workplace. It does *not* count:

- College students who live on or near campus, who are more likely to bike
- High school and younger students biking to school
- Retired people and others without a job
- People who ride to work occasionally but not daily
- Utility trips to the grocery or running errands, recreation trips, or family and social trips

To understand these other trips, we rely upon the 2009 National Household Travel Survey (FHWA 2011), which shows only 13 percent of bicycle trips are taken to earn a living. The following analysis is an attempt to more closely estimate total bicycle usage in the Region.



Staff used a variety of data sources in the following table to determine an aggregate of daily bicycling activity in the Miami Valley. The results indicate that **117,750 utility bicycle trips off all types are taken each day around our Region**.

Total Regional Bicycling Activity; All Utility Trips

Variable	Figure	Calculations
Employed Adults, 16 Years and Older		
a. Study Area Population (1)	831,904	

b. Employed Persons (2)	361,488	(aggregated)
c. Bicycle Commute Mode Share (2)	0.31% ± 0.07%	(aggregated)
d. Bicycle Commuters	1,147 ± 248	(aggregated)
e. Work-at-Home Percentage (2)	3.30% ± 0.20%	(aggregated)
f. Work-at-Home Bicycle Commuters (3)	6,103	(aggregated)
School Children		
g. Population, ages 6-14 (4)	96,690	
h. Estimated School Bicycle Commute Mode Share (5)	2%	
i. School Bicycle Commuters	1,934	(g*h)
College Students		
j. Full-Time College Students (6)	66,004	
k. Bicycle Commute Mode Share (7)	10%	
l. College Bicycle Commuters	6,600	(j*k)
Work and School Commute Trips Sub-Total		
m. Daily Bicycle Commuters Sub-Total	15,784	(d+f+i+l)
n. Daily Bicycle Commute Trips Sub-Total	31,568	(m*2)
Other Utilitarian and Discretionary Trips		
o. Ratio of "Other" Trips in Relation to Commute Trips (8)	2.73	ratio
p. Estimated Non-Commute Trips	86,182	(n*o)
Total Estimated Daily Bicycle Trips	117,750	(n+p)

(1) 2010 Census, P1.
(2) 2009-2013 American Community Survey 5-Year Estimates, B08301.
(3) Assumes 50% of population working at home makes at least 1 daily bicycle trip.
(4) 2010 U.S. Census, PCT12.
(5) Estimated share of school children who commute by bicycle, as of 2000 (source: National Safe Routes to School Surveys, 2003).
(6) Fall 2013 enrollment, National Center for Education Statistics.
(7) Review of bicycle commute mode share in 7 university communities (source: National Bicycling & Walking Study, FHWA, Case Study #1, 1995).
(8) 27% of all trips are commute trips (source: National Household Transportation Survey, 2001).

Bike Counting Program

Another approach to measuring bicycle use is to combine trail counter data from across the Miami Valley Trails network. Currently six trail-managing agencies in the Region have permanent counters installed at over 30 locations. Most of the locations use infrared sensor type counters. These permanent counters count each pass of a user (bicyclist, pedestrian, etc.) for 24 hours, up to 365 days a year. The count data was collected by MVRPC starting in 2014, and the results were analyzed. Trail use is concentrated in the warmer months and on weekend days. (MVRPC, 2015) This information highlights the fact that the Region's trail network is under-utilized as a transportation facility, but serves primarily recreational uses.

Trail Counter Locations, with Estimated Annual Total and (Daily Average) Counts PDF

MVRPC is starting a bicycle counting program using special tube counters which measure the weight of the vehicle passing over the tube, and can be calibrated to distinguish the weight of a bike from that of a car. These tube-type counters are regularly deployed by MVRPC staff as a part of the routine Traffic Monitoring Program. Bike specific counts will be conducted as a new element of the program, on select trails and roads. The new counts will take place from May to September, with counters left for 7 days at each location.
<http://www.mvrpc.org/transportation/traffic-count-program/bicycle-counting-program>

Health and Equity Data

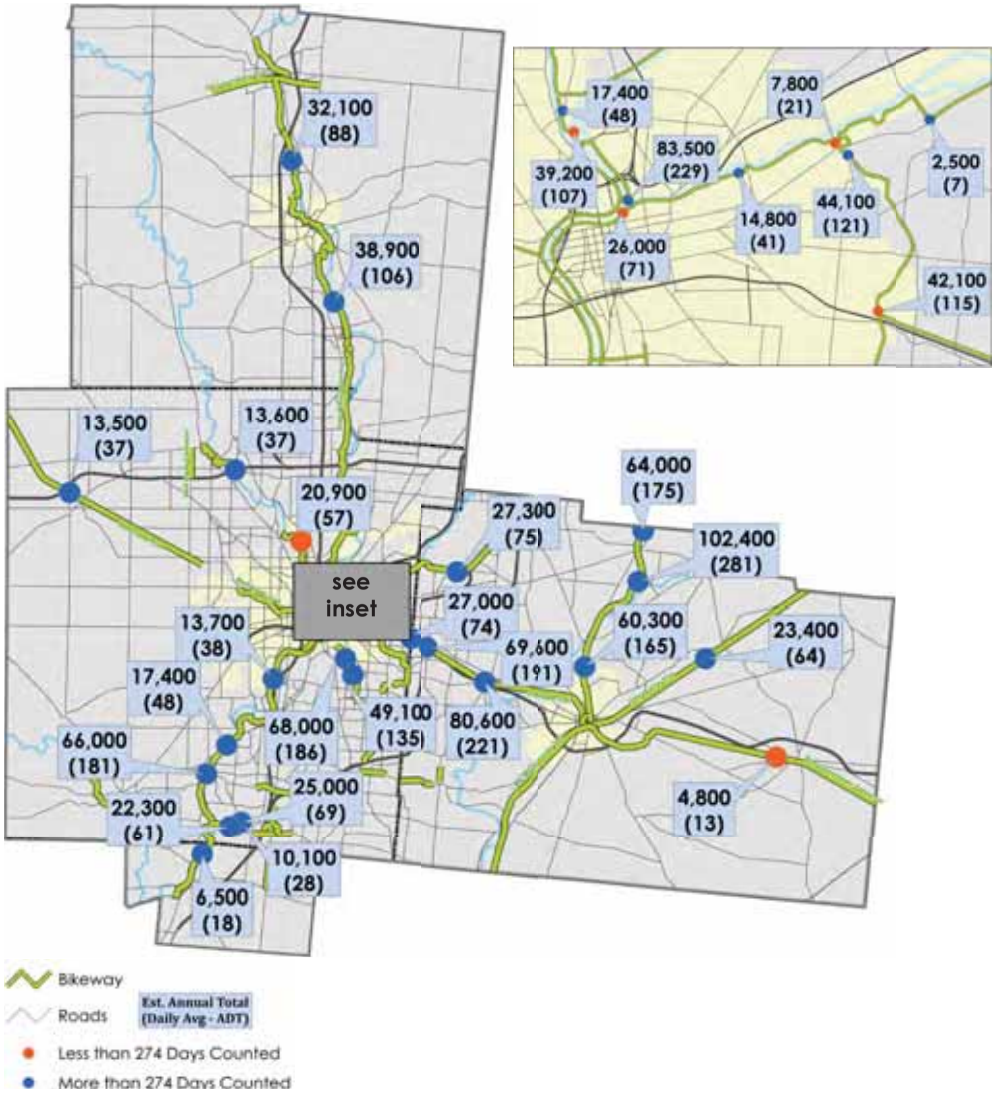
These broad demographic estimates of bicycle use can be further viewed in light of health and equity data collected about different parts of the Region. These other data shine different light on the issue of cycling demand in the Miami Valley.

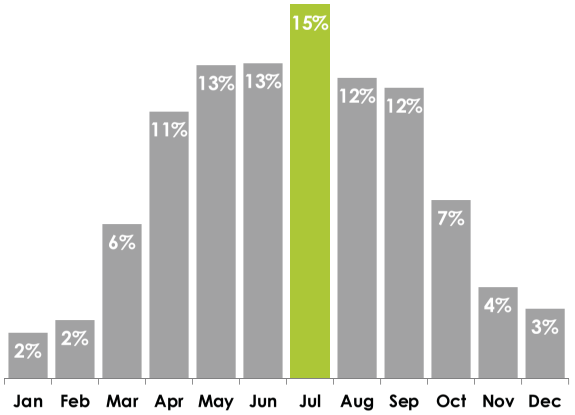
One example is ACS data regarding zero-car households, presented below. The 2013 5-year ACS shows that about 8 percent of households in the region as a whole are zero-car households. This is below the Ohio and national averages. However, Montgomery County, with more than 9.5% zero-car households is above the statewide and national averages. These households, no matter their county, are likely more dependent on active transportation modes than households with access to at least one motor vehicle. These residents are likely to benefit from improvements in cycling infrastructure and to use such facilities for more utilitarian trips.

Permanent Counters

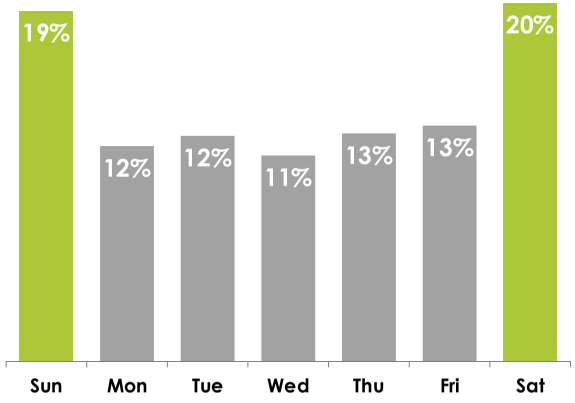
Existing Counters on the Bikeway

2014 Data





July
had highest percent of annual counts



Sat & Sun
had highest percent of weekly counts

- 6 trail agencies count at over 30 locations on the bikeway.
- The permanent counters count each pass of a user (bicyclist, pedestrian, etc) for 24 hours, 365 days each year.
- Count data from 2014 was collected and analyzed.
- Findings from 2014 counts are shown above.

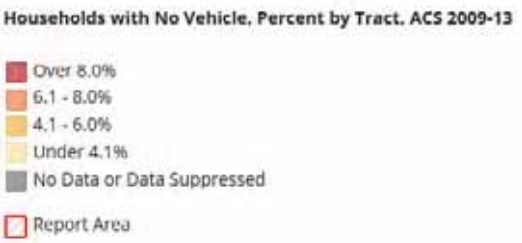
Households with No Motor Vehicle

This indicator reports the number and percentage of households with no motor vehicle based on the latest 5-year American Community Survey estimates.

Download Data

Report Area	Total Occupied Households	Households with No Motor Vehicle	Percentage of Households with No Motor Vehicle
Report Area	403,199	28,522	7.07%
Greene County, OH	62,836	3,200	5.09%
Miami County, OH	41,239	2,080	5.04%
Montgomery County, OH	222,578	21,333	9.58%
Warren County, OH	76,546	1,909	2.49%
Ohio	4,557,655	377,326	8.28%
United States	115,610,216	10,483,077	9.07%

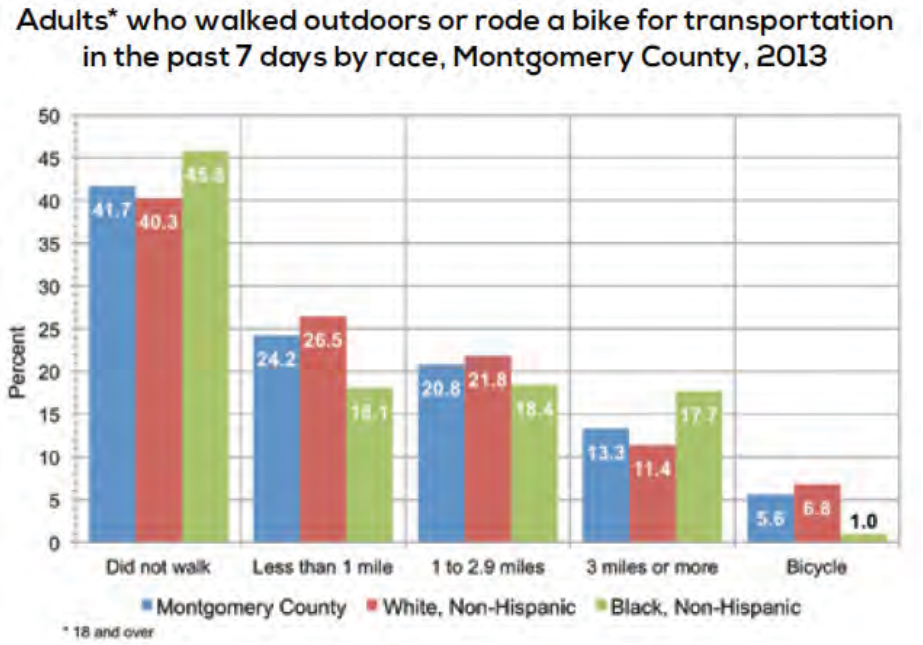
Note: This indicator is compared with the state average.
Data Source: US Census Bureau, American Community Survey. Source geography: Tract



(Community Commons 2015)

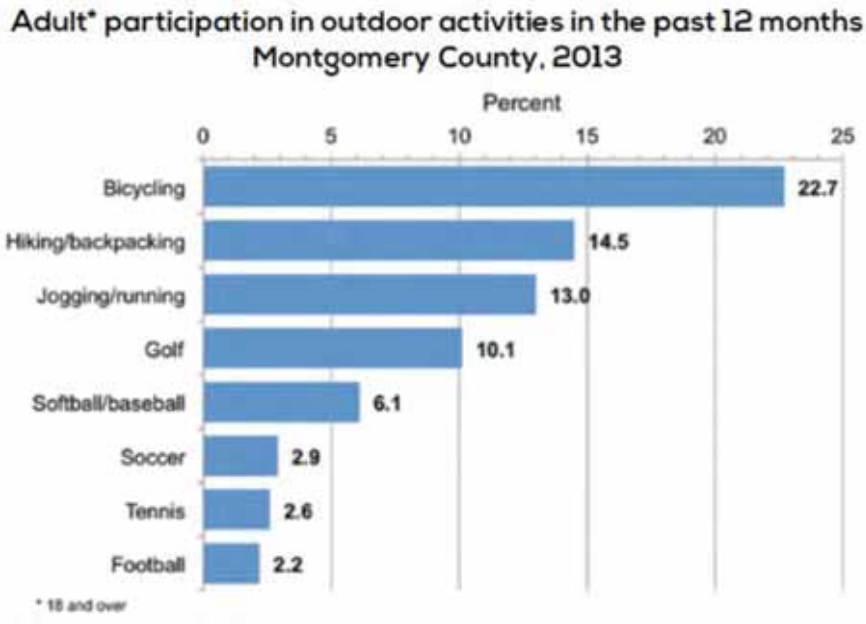
Another data set that informs our understanding of active transportation in the Miami Valley is public health data about physical activity and chronic disease. Transportation is one of the economic and social factors that influence an individual's health and the health of a community. The Robert Wood Johnson Foundation suggests in their October 2012 Health Policy Snapshot that "health impacts and costs should be factored into decisions about transportation and community development at all levels. Increasing transportation options, such as those that promote walking, biking, and use of public transit, can help improve public health." (RWJ 2012)

The health outcomes in some of the Region's neighborhoods are very poor. According to the 2014 Montgomery County Community Health Assessment "Many of the poor health outcomes are directly related to inactivity," and 43% of our population does not meet aerobic activity recommendations (PHDMC 2014, 28). "Physical inactivity is linked to a number of chronic diseases including diabetes, heart disease, and obesity. A lack of sidewalks, heavy traffic, and criminal activity can make it unsafe and difficult to walk within a neighborhood for exercise. (PHDMC 2014, 73)" The report's Built Environment section calls on people to take advantage of the many trails and parks in our area.



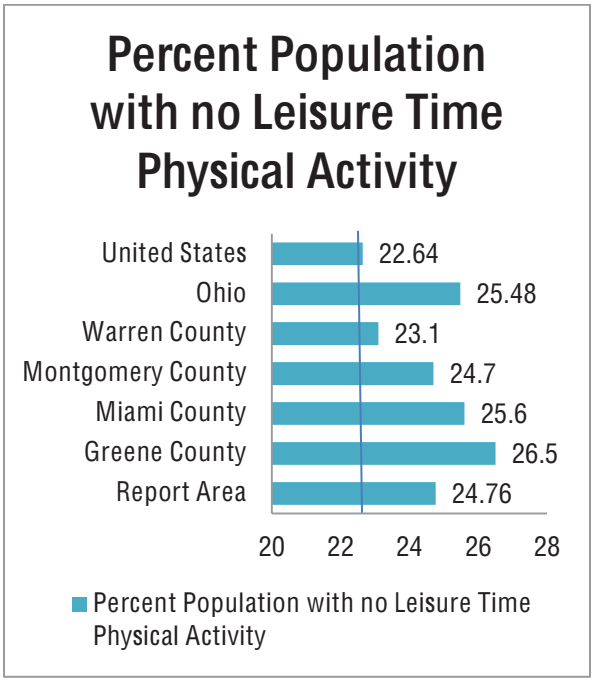
(PHDMC 2014, 73)

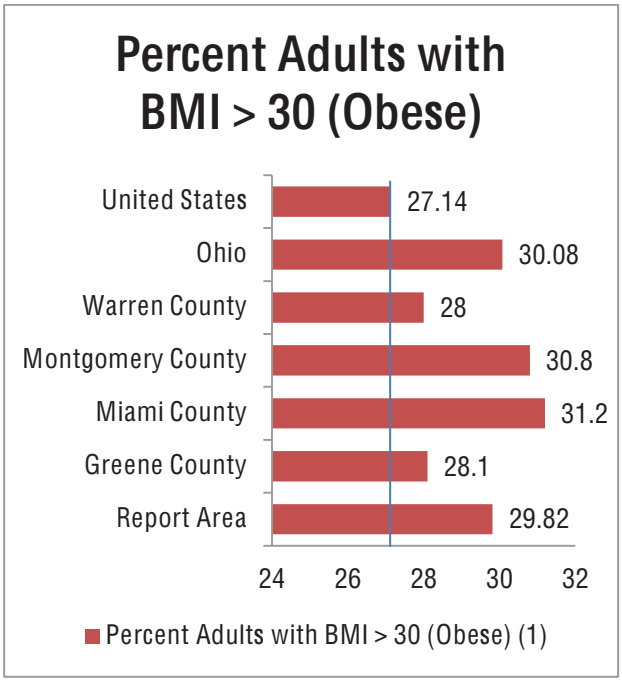
From Montgomery County's survey, whites bike more than blacks, and the black community is walking less than the white or county averages. Of those residents who do participate in outdoor activities, bicycling is a top choice.

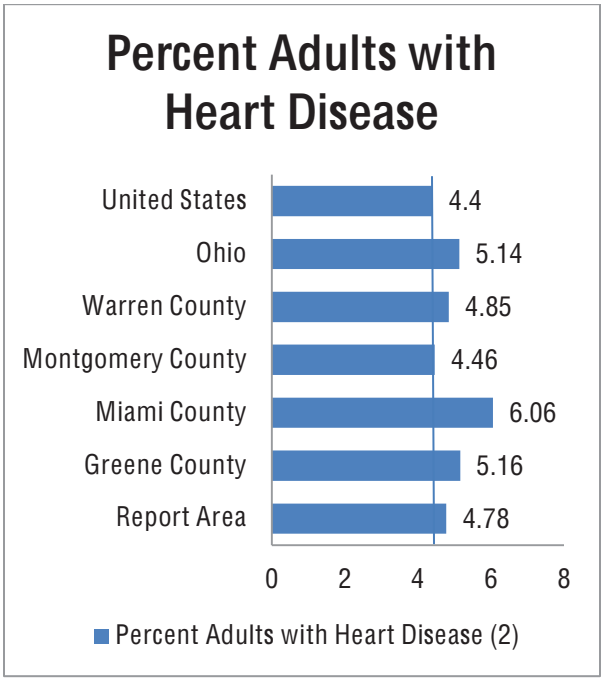


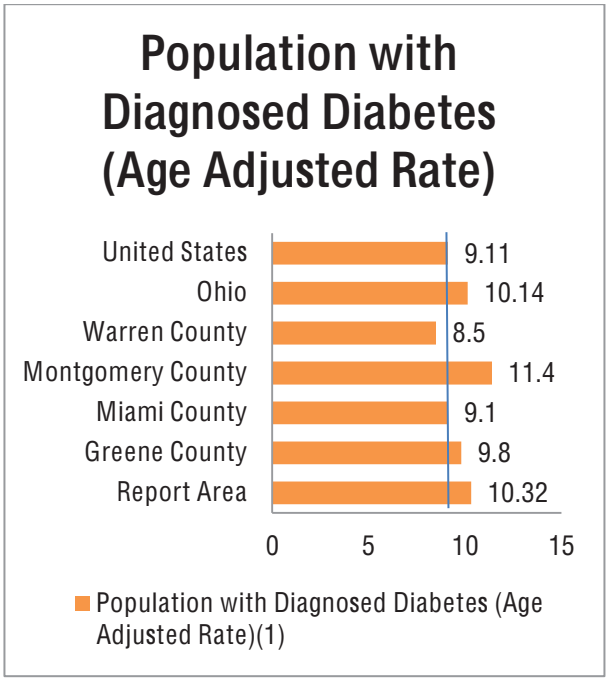
(PHDMC 2014, 73)

The Centers for Disease Control also states that a quarter of the Region's adult population is not physically active in their leisure time, a rate higher than the national average. It is therefore not surprising that when compared to the national average, more people in the region are obese, are diagnosed with diabetes, and are diagnosed with heart disease.









(Community Commons 2015)

Adults need at least 2.5 hours of moderate aerobic activity each week and should also be engaged in strengthening activities. Forty-six percent met this measure, while 38% did not meet the minimum recommended activity level. Bicycling can provide low-impact aerobic activity. Our Region's network of trails and neighborhood roads provides a low-stress cycling environment for riders of all skill levels, including children.

These snapshots of the Miami Valley provide additional reasons to continue to improve access to the Region's cycling network: to improve the well-being and quality of life of the residents of the Miami Valley. The evaluation of project suggestions was guided by these principles; projects addressing an equity issue were given designated points in the scoring matrix.

Future

This chapter contains updated planning recommendations that improve the bike-friendliness of the Region. Topics include:

- *Vision, Goals, and Objectives for cycling in the Region*
- *Top Projects recommended*
- *Changes proposed to the Long Range Transportation Plan*
- *Policies and Programs recommended in the areas of Encouragement, Education, Enforcement, Evaluation, Equity, and Engineering*

Continuing down the path…

The analysis and statistics reviewed in the previous section leads to the conclusion that while the regional trails offer an extensive low-stress riding environment, getting to the trails often requires riding on or crossing very high-stress streets and roads. This limits the percentage of the population using the trails. In the survey and public input workshops, the number one desired destination for cyclists was the trail system, followed closely by parks. If the Region is to maximize the value of the trail system to its fullest extent, the number of low-stress connections to the trails must be increased, and existing low-stress connections must be identified and publicized to potential cyclists. Shifting more trips to active transportation trips can impact the health and well-being of our Region, and would generate additional economic benefits as well.

To increase the number of low-stress connections, adaptations are needed on existing roadways in the Miami Valley. Because many practical destinations (jobs, shopping, schools, banking, etc.) are along or across high-stress roads, much of the public will not consider biking to those destinations, even when they are a short distance away. The survey performed for this Update — and other surveys nationwide — indicate that a greater degree of separation from motor traffic will induce the public to consider using a bicycle facility. Protected bike lanes were repeatedly identified as desirable facilities for biking by survey respondents and attendees at public input workshops. This Update recommends projects that will fill gaps in the bikeways network with low-stress facilities and supports local communities using this LTS methodology to improve their infrastructure.

Engineering is not the only E that will be needed. Programming in areas such as Encouragement and Education are essential to making cycling a robust form of transportation in the Region. Enforcement and Evaluation are recognized by the local public as valuable services needed to protect and promote cyclist needs. An Equity approach to both projects and programs will balance the needs of diverse users with the available resources. The programming recommendations at the end of this section will help the Region meet our goals.

Vision, Goals, Objectives and Outcomes

Plan Vision

The overall vision of the 2015 Bike Plan Update, modified from the Comprehensive Local-Regional Bikeways Plan, is as follows:

> *The Miami Valley Regional Planning Commission's Comprehensive Local-Regional Bikeways Plan is intended to enhance Region-wide bikeway networks including regional and local bike paths, on street lanes and routes, and their connections through the MVRPC planning area. In conjunction with education, encouragement, enforcement and equity efforts, these improvements to the bikeways network will lead to more people biking more often to more places in the Miami Valley.*

In order to significantly increase bicycle usage in the Region, we must consider the needs and interests of the less experienced, less confident cyclists. This 2015 Update is intended both to meet the needs of the experienced cyclist and to get more novice cyclists to make use of the bike paths and streets. The Knoxville Regional Bicycle Plan (Knoxville RTPO, 2009) put it well:

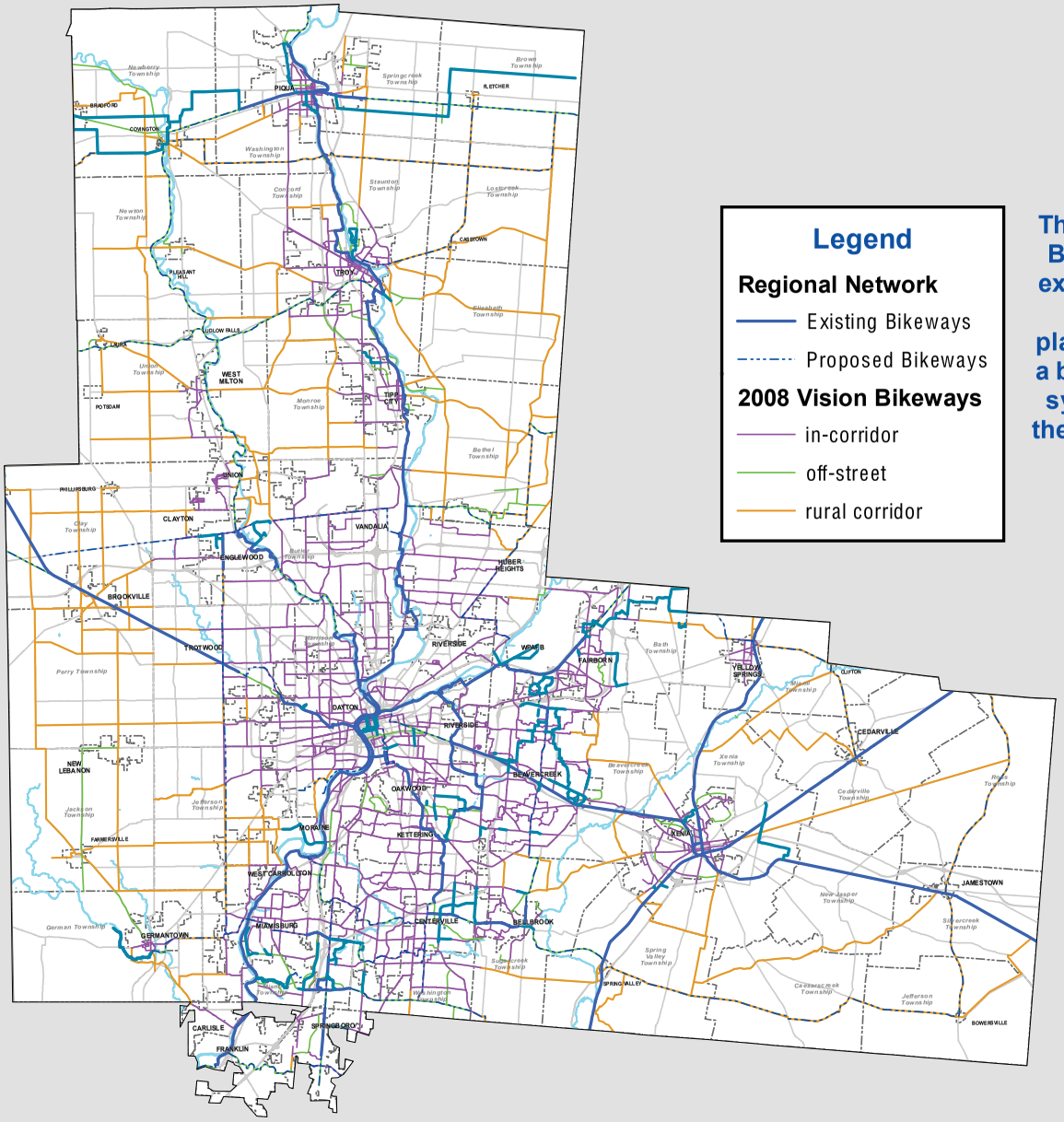
> *All Bicyclists are Different. Bicyclists have a variety of skills and needs. They ride for many different reasons, including commuting, running errands, recreation, and exercise.*
>
> *Expect Bicycles on Every Street. Bicyclists want to go to the same places motorists want to go; therefore, bicyclists will ride on every road to some extent.*
>
> *It's more than just getting there. Enforcement, encouragement and education are integral parts of a bicycle friendly community, along with facilities.*

In short, let us build a Region where more people make the choice to ride bicycles more often. Well-designed multimodal projects will help to make the Region safer and more convenient for all road users. This plan encourages jurisdictions and advocates alike to push for and to take on ambitious projects which identify and eliminate gaps and barriers to cycling.

Vision Map

The vision map for the Region is based on the 2008 CLRBP and on the Long Range Transportation Plan bikeways network. This map included connections to be made — In-Corridor, Off-Street, and Rural Corridor — with the goal of connecting communities throughout the Region. Per the 2008 Plan:

> *The recommended bikeway network builds upon the existing system and planned improvements. The proposed network has been developed to fill system gaps, continue the expansion of the regional trail network, formalize existing*



This map displays Trails and Bikeways that make up our existing network, and shows the 30 year Vision of the plan; to use our roadways as a bike-friendly transportation system getting residents to the trails and parks from their own neighborhoods.

MVRPC

2008 Vision Map

Comprehensive Local-Regional Bikeways Plan

DRAFT

> *routes used by bicyclists, and improve access between residential, employment, civic, and commercial destinations and the current bikeway network.*

The existing and recommended network can be broken into two broad categories: in-corridor bikeways and off-street bikeways. Similar to today, shared-use paths would be the Region's future off-street bikeway system. Off-street bikeways imply full separation from vehicle traffic, appropriate design to accommodate multiple users (e.g., bicyclists, pedestrians, in-line skaters, etc.), and appropriate treatments where shared-use paths intersect roadways. The in-corridor designation indicates a desired bicycle transportation route without a predetermined facility design. Depending on their location and context, the Miami Valley's in-corridor bikeway network could include any of the facility types discussed in the introduction.

Though shown on specific routes, in some locations and contexts in-corridor bikeways may be established along parallel routes.

Vision Map (PDF)

BikeVisionLandscape_ltblueTabloid.pdf

Proposed Goals and Objectives

The following goals and objectives will guide the implementation process for the 2015 Update and provide measurable benchmarks that are part of MVRPC's management processes. The following goals were amended slightly from the 2008 CLRBP based on evolving best practices as well as input from the public and from partner agencies.

The CLRBP recommended benchmarks for each goal set out in 2008. MVRPC has taken many of these measurements but until now there was no consistent reporting process to bring the information together. The congestion management report produced by MVRPC in 2015 established system performance, safety and accessibility criteria that will be measured each year, including miles of regional bikeways, the population the network serves, and the employment the network serves. These measures will be evaluated each year and may be publicized via the MiamiValleyTrails.org and MVRPC websites.

Additional benchmark measures will come from the lists below and can be used to compare our Region with other areas in the country.

Goal 1: Implement the Miami Valley Comprehensive Local-Regional Bikeways Plan.

Objective 1-1: *Complete the proposed Top-Priority projects identified in the Bikeways Plan by 2025.*

Benchmarks: Miles of projects completed; number of locations improved; number of bike parking spaces installed; percentage of projects completed; periodic updates of the Bikeways Map.

Objective 1-2: *Complete the proposed High-Priority projects by 2045.*

Benchmarks: Miles of projects completed; number of locations improved.

Goal 2: Increase the number of people bicycling for transportation and recreation.

Objective 2-1: *Increase the low-stress connections between neighborhoods, between neighborhoods and the trail system and other desired destinations.*

Benchmarks: Number of trail access points; number of locations and intersections improved.

Objective 2-2: *Increase the number of bikeway system users year over year as measured through annual count data.*

Benchmarks: Conduct periodic counts of pedestrian and bicycle travel at key locations on the on- and off-street bikeway system using MVRPC's shared bicycle counters; use U.S. Census data and National Household Travel Survey data for mode share data; continue Trail User Surveys.

Goal 3: Improve bicyclist safety.

Objective 3-1: *Reduce the number of bicyclist injuries and fatalities year over year and in comparison with the miles of bicycle facilities built and maintain a crash rate consistent with the Region's population.*

Benchmark: Triennial crash data reports. Approach hospitals for data and reports on-trail incidents.

Objective 3-2: *Bicyclists, pedestrians, and motorists will share the road safely.*

Benchmark: Emphasize education, encouragement and enforcement that parallel the development of physical infrastructure. Specific benchmarks could include Public Service Announcements & advertising, participation in cycling events (e.g., National Bike Month,

races and club rides) and programs (e.g., number of League of American Bicyclists Certified Instructors, Bicycle Friendly Communities designation, police on bikes). Work with Bike Miami Valley to track police ticketing.

Goal 4: Increase access to low stress cycling facilities and low stress roads for citizens throughout the Region, with special consideration to underserved communities.

Objective 4-1: *A 5% increase in the percentage of citizens who have access to the regional trail network using only Level of Stress 1 or 2 connections by 2025.*

Objective 4-2: *An increase in neighborhood linkages to the trails network, particularly from neighborhoods that have high chronic disease rates.*

Benchmarks: Prioritize funding to support additional low stress improvements from neighborhoods to the trails network; use U.S. Census data and public health/chronic disease data to determine the percentage and equitable distribution of population affected. Partner with organizations to improve cycling infrastructure, especially in low-income areas.

Proposed Outcomes

As the broad goals are met, they will have specific outcomes for the individuals who choose to cycle more and who are able to do so safely. While it is difficult to measure the impact of cycling on complicated issues like climate change, the Region's economy, and the general health of the population, individuals who choose to cycle make a difference in all those areas at an individual level. By making cycling safer and more accessible to the Region's population, we will enable more of the Region's residents to make the choice to cycle. The following are outcomes that can result from that choice.

Green Outcome: Offer and encourage a more environmentally-friendly option to the Region's commuters.

The current bike-related performance benchmark for environmental quality is an annual calculation of the pollution reduction benefits achieved by bicycle travel in the Miami Valley. Currently, our bicycle mode share is too small to have a significant impact on carbon and other pollutant emissions when measured at a macro level. However, individuals who choose to commute by bicycle do reduce their own carbon footprint and have a small, but real, impact on congestion and overall air quality. For each gallon of gasoline not burned on a daily commute, an individual cyclist saves an estimated 25 lbs. of CO_2. Put another way, each day a "drive alone" commuter chooses to cycle in a typical five-day work week reduces his/her car commute miles and the related emissions by 20%.

Health Outcome: Improve the health and physical fitness of Miami Valley residents.

Each trip by bicycle, for either transportation or recreation, results in increased physical activity and related improvements in cardiovascular fitness. Anecdotal data from Miami Conservancy District intercept surveys also indicates an improvement in mental health and overall happiness. By improving access to safe cycling, more residents can choose active transportation and improve their individual health. Bike riding is a great way to get low-impact, aerobic exercise. For example, a 150-pound bike rider will burn around 430 calories for every 10 miles he/she rides. (Carbon Challenge, 2010)

Economic Outcome: Capitalize on the benefits of bicycling in the local economy.

Bicycling can be a tool for economic development, tourism, and job-creation efforts. Identified business benefits include improvement in employee health and quality of life. Other benchmarks include increases in bicycle-related tourism (events, lodging, meals, etc.), and related job creation and retail activity. A study by Portland State University showed that bicycle commuters shop more frequently and thereby can spend more money at local retailers than automobile commuters (Clifton 2012). Our Region is home to the nation's largest paved trail network, a local asset and a tourist attraction, which results in an estimated $10-13 million in local economic impact each year. (MVRPC 2013) The trails have the potential to have an even greater economic impact, and the Region should aggressively promote the trails as a unique recreational and transportation asset.

Active Youth Outcome: Involve Miami Valley schools in Safe Routes to Schools Programs.

The growing national Safe Routes to Schools (SR2S) movement provides multiple benefits for health, safety, mobility, and the environment. Evidence also indicates improved attentiveness and better learning outcomes for students who walk or bike to school. Specific benchmarks include the percentage of schools with active SR2S programs, discussed further in the "Present" chapter, and the mode share of children bicycling to school.

Support Facilities Outcome: Encourage and assist local communities in the Miami Valley Region to provide appropriate bicycle support facilities.

MVRPC should assist local agencies in developing bicycle parking and other support facilities ordinances. The Pedestrian and Bicycle Information Center and the Association of Pedestrian and Bicycle Professionals provide sample bicycle parking ordinances addressing both short- and long-term parking facilities. The number of bicycle parking spaces installed annually can be tracked as a benchmark, and communities can consider installing other support facilities like repair stations, restrooms and way-finding. A "see/click/fix" tool was developed by MVRPC as

part of the MiamiValleyTrails.org website, but could be better advertised and used to manage problems on the larger bikeways network. By integrating cycling infrastructure into communities, cycling becomes a more viable transportation alternative.

Quality of Service and Infrastructure Outcome: Ensure that the Miami Valley Region's bikeways are well maintained and operated efficiently.

As the bikeway system is expanded over time, it requires an ongoing operations and management program. Operations include safety patrols, security, activity programming, promotional efforts, education and outreach, routine litter patrol, annual safety reporting, and facilities condition management. A thorough management process could include an annual reporting program, assignment of staff responsibilities, interagency coordination, and the development of public-private partnerships. The benchmark can be an annual report developed by MVRPC and partner agencies summarizing operations and maintenance needs as well as measures taken to address these needs. Conducting the Local Bikeway Project Survey each year would help generate this report.

Bike Share Outcome: Make bike sharing a meaningful addition to the transportation options available.

The creation of the Link Bike Share program in downtown Dayton provides an opportunity to make cycling a mainstream transportation mode and helps solve the "last mile" challenge that many transit riders face. While Link will initially serve a small part of the Region, it is an important symbol for the Region being seen as bike friendly. The successful launch and operation of Link was a milestone for alternative transportation in the Miami Valley.

Future Project Recommendations

Building out a 30 year plan will be an ongoing process involving multiple jurisdictions and many individual projects. The 2008 CLRBP identified 17 top-priority projects and 100 high-priority projects. Through extensive public input and specific input from partner organizations, a new list of 22 top-priority projects has been developed. This list includes many of the unfinished high-priorities of the earlier plan. Regional bike projects identified through the update process will be integrated into the MVRPC Long Range Transportation Plan (LRTP), which is also currently being updated. The LRTP projects include updated cost estimates and potential sponsors.

Most of these are engineering projects, that is, they call for the construction or maintenance of cycling infrastructure. However, there is also emphasis on the other Es of bicycle planning: Education, Encouragement, Enforcement, Equity and Evaluation. These non-infrastructure efforts will be keys to growing the cycling participation in the Region. Outreach efforts should target populations with current low levels of cycling participation. Middle-class, middle-aged

white males continue to be over-represented in cycling nationally and in the Region. Attracting more female riders and more riders of color should be a focus of outreach and education efforts.

The 2015 Bike Plan Update encourages all forms of cycling, including, fitness, recreational and transportation-focused cycling. However, a great deal of this Update's policy proposals emphasize how the Region can increase the use of bicycles as a form of everyday transportation to work, shopping and other practical destinations.

Top Infrastructure (high-scoring) Projects

Coming to grips with 600 project suggestions is a project in itself. Following the Public Input Workshops and online survey, MVRPC staff merged duplicate suggestions and kept track of how many times specific projects were mentioned, as a measure of popularity and importance to the public. Many projects suggested were already included in our 2008 Vision Plan and were so noted. New suggestions that went beyond the 2008 plan were sorted into scoreable engineering projects and non-scoreable suggestions.

Staff relied heavily on our Regional Bikeways Committee to provide direction on how projects should be scored. The committee was presented with data and preferences from the online public survey and the results of our open house input workshops. Based on this input, the Regional Bikeways Committee suggested changes to the scoring criteria used in the original 2008 CLRBP. Staff used the revised scoring criteria, which placed greater emphasis on trail and park connections, low stress connections and intersection treatments, and whether a project was a priority in a local bikeway plan or thoroughfare plan. The full list of suggested projects by county and by Region and the project Scoring Criteria are included in Appendix B at the end of this report.

The top projects are presented in the following table.

Top Projects Table

County	Project	Facility Type
Greene	Complete shared-use paths on Grange Hall Rd./National Rd. between Kauffman Ave. and Indian Ripple Rd.	On street/ off-street
Greene	Construct the Three Counties Trail between Wright Brothers (Huffman Prairie) Bikeway and Haddix Rd.	Off-street
Greene	Complete shared-use paths on Shakertown Rd. between County Line Rd. and U.S. 35/Factory Rd. (widen shoulders and complete pedestrian path on south side as interim measure)	On street/ off-street

Greene	Construct shared-use path between South Street and Xenia Dr; add bike lanes on Xenia Dr. between path and Yellow Springs-Fairfield Rd; Widen/add shoulders on Black Lane, Armstrong Rd., W Enon Rd., N Enon Rd., and Yellow Springs-Fairfield Rd. to the Little Miami Scenic Trail.	On street/ off-street
Greene	Take Little Miami Trail off of the Detroit Street sidewalk, creating a buffered bike lane with auto parking along 4 of the 6 blocks	On street
Greene	Construct a bicycle and pedestrian bridge over South Detroit Street from the Xenia Station property to the east side of US 68 to serve the Ohio-to-Erie Trail and the Jamestown Connector.	Off-street
Miami	Construct shared-use path connecting Treasure Island and Duke Park in Troy	Off-street
Miami	Widen shoulders along SR 55 and SR 589, providing an on-street bikeway linking Troy, Casstown, and Fletcher	On street
Miami	Construct shared-use path roughly paralleling SR 55 and along former Penn Central Railroad corridor between Ludlow Falls and Troy.	Off-street
Miami	Replace Great Miami River Trail bridge over Great Miami River in Piqua near the power plant with ADA accessible bicycle and/or pedestrian facility.	Off-street
Miami	Complete Ohio to Indiana Trail between Darke and Champaign counties through Piqua.	On street/ off-street
Montgomery	Construct Creekside Recreation Trail extension roughly paralleling U.S. 35 between the Iron Horse Trail and 4th St. in the Huffman Historic Area; implement shared roadway improvements on Terry St. between future Creekside Recreation Trail and Monument Ave.	On street/ off-street
Montgomery	Construct bicycle/pedestrian facilities along SR 741 between Austin Pike and Alex Bell Rd.	On street/ off-street
Montgomery	Connect Great Miami River Recreation Trail and Carriage Hill MetroPark via shared-use path through Carriage Trails development (Huber Heights); connect Carriage Hill MetroPark and New Carlisle via widened shoulders on SR 202, Singer Rd., Palmer Rd., Dayton-Brandt Rd., and shared-use path on former railroad corridor between Dayton-Brandt Rd. and New Carlisle	On street/ off-street
Montgomery	Construct the Old National Road Trail paralleling US 40 from the intersection with the Wolf Creek Trail to Union Road in Englewood; connect through Englewood MetroPark; connect shared-use path paralleling US 40 from Fredrick Pike to the Taylorsville Dam and Great Miami River Trail through the Dayton International Airport Property and City of Vandalia.	On street/ off-street
Montgomery	Continue Iron Horse Trail to the south beyond I-675 to Centerville High School and then to the Great-Little Trail.	Off-street

Montgomery	Construct Bikeway from eastern terminus of Kitty Hawk Drive in Springboro north to southern terminus of Washington Church Road. Project includes a safe crossing of Austin Pike to connect with Great-Little Trail.	Off-street
Montgomery & Warren	Construct The Great-Little Trail: connect between the Great Miami River Recreation Trail and the Little Miami Scenic Trail along the Medlar Trail; new shared-use path to the Byers Road bikeway; along Miamisburg-Springboro Rd./Austin Pike/Social Row Rd.; widen shoulders on Ferry Rd./Lytle Rd. between Wilmington-Dayton Rd. and North St. in Corwin; develop signed on-street bikeway along North St./Corwin Rd. to Little Miami Scenic Trail.	On street/ off-street
Warren	Construct Great Miami River Recreation Trail between Baxter Drive and Miami River Preserve Park	On street/ off-street
Regional	Construct intersection improvements creating low stress trail to roadway transitions and crossings at top scoring locations (Factory Rd at SR 35, Dayton Xenia Road, North Fairfield Road, Detroit Street at Miami Street)	On street
Regional	Construct buffered or protected bike lanes along high-stress urbanized roadways, creating trail connections (e.g. Lincoln Boulevard, Wright Brothers Parkway, N Main Street north of Shoup Mill, Washington Street between Ponitz High School and Chaminade Julienne, Swailes Road between Tipp City and Troy)	On street
Regional	Implement bicycle/pedestrian improvements at Top 5 crash locations	On street

MVRPC accepts proposals for any local projects that an eligible jurisdiction or agency submits. All applications go through a transparent, competitive selection process. The projects selected as top priorities in this plan are not at any advantage or disadvantage for MVRPC-controlled funding. This plan should serve as a springboard for community action, identifying potential projects that would fill important gaps in the network. Together, the LRTP and Top Priority local projects form a blueprint to accommodate, plan for, and promote bicycling.

Long Range Network Projects

> *The Long Range Transportation Plan (LRTP) is a long-range (20+ year) strategy and capital improvement program developed to guide the effective investment of public funds in multimodal transportation facilities. The plan is updated every four years, and may be amended as a result of changes in projected Federal, State, and local funding, major improvement studies, Congestion Management Process plans, interchange justification studies, and environmental impact studies. The Plan provides the context from which the Region's Transportation Improvement Program (TIP), a short-range capital improvement program for implementing highway, transit, and bikeway projects, is drawn.*

The regional trails and bikeways in the LRTP form the highways of transportation bicycling. All other bikeways, whether trails, road routes, lanes, shoulders, or other paths, are considered “local” rather than “regional” in the LRTP, and function the same way the local surface streets function to carry automobile traffic to local destinations off the interstates.

As a result of the public input and information provided by the Regional Bikeways Committee, staff is recommending several changes and updates to the LRTP Regional Bikeways. Since the original CLRBP recommended new corridors in 2008, some of the routes have been partially or wholly built, some have changed names, or have changed configuration.

In addition, an important new regional corridor was suggested during this update process. This new corridor follows the historic Route 40 that would connect the Wolf Creek Trail, the currently disconnected Stillwater Trail at Englewood MetroPark, and the Great Miami River Trail at Taylorsville MetroPark. This proposed *Old National Road Trail (Z)* would meet the regional goals of connecting trails and parks, and would form a new loop in the system of mostly linear trails. Combined with the existing LRTP corridor between Taylorsville-Carriage Hill-Huber Heights and to New Carlisle (*Carriage Hills Connector, U*), this could build a powerful connection across several communities in northern Montgomery County and southern Miami County.

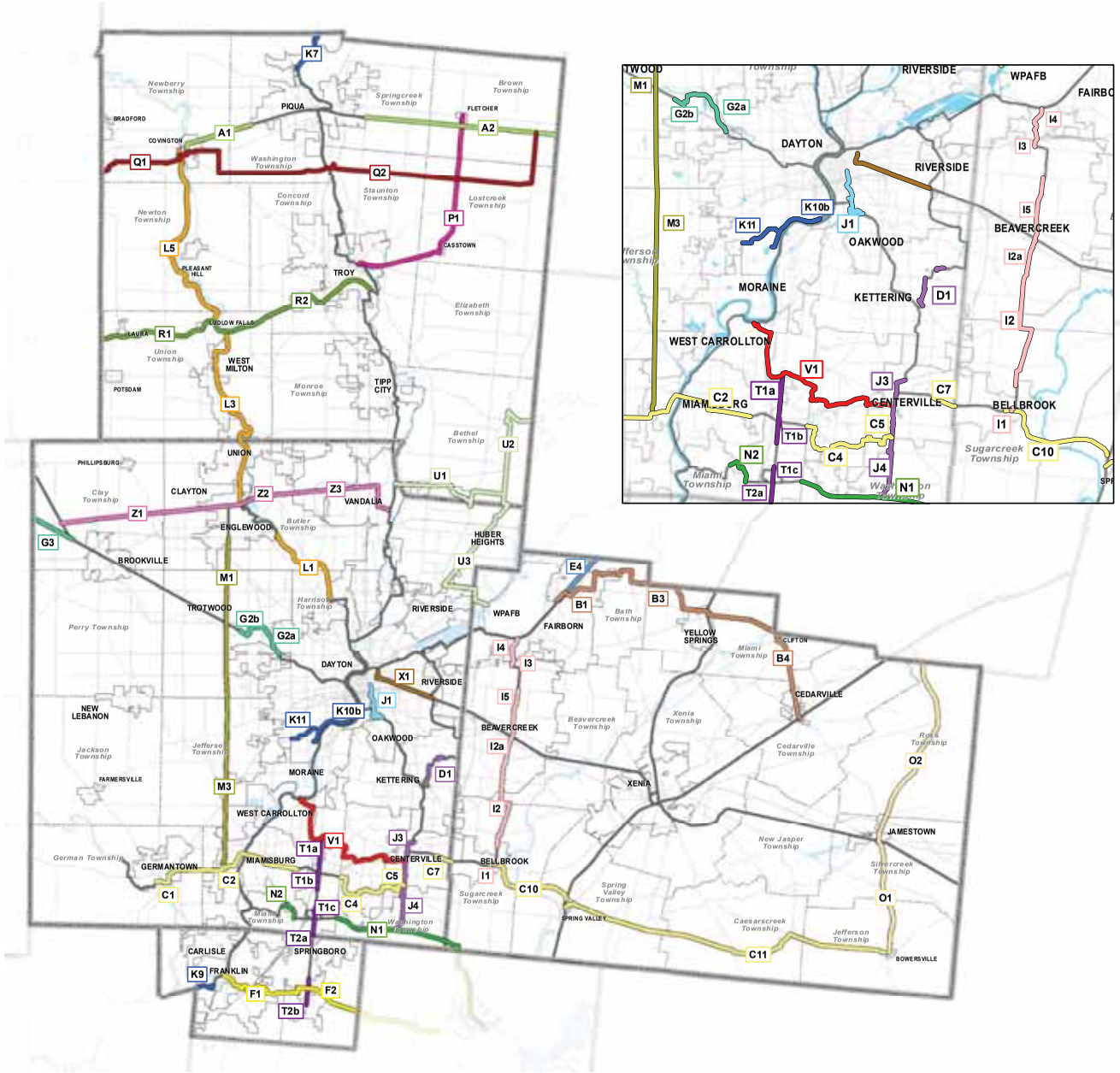
The LRTP will be updated in 2016, and will have its own public review process to review these and other proposals. The recommended changes to the LRTP based on the Bike Plan Update process are indicated in red in Table ##. The map that follows shows the Regional bikeways network, separate from local projects.

Long-Range Projects list.pdf

RegionalBikeway11x17_update2015.pdf

Connections outside the Region

Although MVRPC cannot make policy for neighboring regions, it is important we work to connect with those neighbors that are also building bike infrastructure. Projects like the Ohio-to-Indiana Trail will not be possible without the cooperation and coordination of Darke County and Champaign County officials. The Triangle Trail in Fayette County and the Camp Chase Trail in Madison County may connect to the Region in the next few years. Similarly to the south, the Great Miami River Trail needs the support of OKI and Butler County officials to fill existing gaps.



Proposed Bikeways

- Bellbrook-Fairborn Connector
- Bowersville-Jamestown-Clifton Connector
- Cardinal Trail
- Carriage Hills Connector
- Dayton-Kettering Connector
- Fairborn-Yellow Springs-Cedarville Connector
- Germantown-Bowersville Connector
- Great Miami River Trail
- Great Miami River-Centerville Connector
- Great Miami River-Creekside Connector
- Great Miami-Little Miami Connector
- Great-Little Trail
- Iron Horse Trail
- Laura-Troy Connector
- Ohio to Indiana Trail
- Old National Road Trail
- SR 741 Corridor
- Stillwater River Trail
- Troy-Fletcher Connector
- Wolf Creek Connector
- Wolf Creek Trail
- Wright Brothers-Huffman Prairie Trail
- Existing Bikeways

N

0 2.5 5 10 Miles

MVRPC

Long Range Transportation Plan

Proposed Regional Bikeways

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Long Range Transportation Projects Suggested Changes

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Corridor Label	Corridor Name	Section Label	Section Name	Owner/Maint	Type of Facility	Width (feet)	Length (miles)	Cost	Comments
East-West	Ohio-to-Indiana Trail	A1	From the existing Cardinal Trail bike route, traveling north on High St. to abandoned Conrail ROW, then east along Conrail ROW	Miami County	Off-Street	10	3.50	$778,179.00	
East-West	Ohio-to-Indiana Trail	A2	Construct shared use path between Piqua and Miami/Champaign county line via Garbry's Big Woods Reserve/Sanctuary	Miami County	Off-Street	10	9.00	$1,878,626.00	
East-West	Fairborn-Yellow Springs-Cedarville Connector Trail	B1	Construct shared use path between South St. and Xenia Dr.; add bike lanes on Xenia Dr. between shared use path and Yellow Springs-Fairfield Rd.	Fairborn	Off-Street	10	1.60	$471,892.00	
East-West	Fairborn-Yellow Springs-Cedarville Connector Trail	B3	Widen/add shoulders on Black Lane, Armstrong Road, W Enon Road, N Enon Road and Yellow Springs-Fairfield Road to the Little Miami Scenic Trail.	Greene County, Fairborn, Yellow Springs	On-Street	6	8.20	$3,295,240.00	Fairborn has a revised preferred route.
East-West	Fairborn-Yellow Springs-Cedarville Connector Trail	B4	Widen shoulders on SR 343 and SR 72 between Yellow Springs and Cedarville	Greene County	On-Street	6	7.70	$2,633,212.00	
East-West	Germantown-Spring Valley-Bowersville Connector Trail	C1	Construct shared use path along Twin Creek between Main St. and SR 4/SR 725 intersection	Germantown	Off-Street	10	1.00	$286,691.00	
East-West	Germantown-Spring Valley-Bowersville Connector Trail	C10	From Sackett-Wright Park in Bellbrook to the Little Miami Scenic Trail	Greene County	Off-Street	10	4.60	$1,100,000.00	
East-West	Germantown-Spring Valley-Bowersville Connector Trail	C11	Widen shoulders between Spring Valley and Bowersville via Spring Valley-Pointersville Rd. and Hussey Rd.	Greene County	On-Street	6	16.30	$5,512,398.00	
East-West	Germantown-Spring Valley-Bowersville Connector Trail	C2	Widen shoulders on Lower Miamisburg Rd./Riverview Ave./Maue Rd. between SR 4 and Alexandersville Rd.	Montgomery County, Miamisburg	On-Street	Varies	6.80	$2,837,899.00	
East-West	Germantown-Spring Valley-Bowersville Connector Trail	C4	Retrofit Spring Valley Pike to include bike lanes between Yankee St. and McEwan Rd.	Washington Township	On-Street	6	0.40	$123,532.00	
East-West	Germantown-Spring Valley-Bowersville Connector Trail	C5	Traveling east from McEwen Rd., along residential streets, to Alexandersville-Bellbrook Pike	Washington Township, Centerville	On-Street	NA	5.00	$1,432,103.00	
East-West	Germantown-Spring Valley-Bowersville Connector Trail	C7	From existing SR 725 bikeway, traveling east from Marwyck Dr. to Wilmington Pike	Centerville	Off-Street	12	0.70	$253,113.00	
East-West	Germantown-Spring Valley-Bowersville Connector Trail	C8	Traveling east along SR 725, from Wilmington Pike to 0.02 miles east	Bellbrook	Off-Street	12	0.00	$25,000.00	
East-West	Germantown-Spring Valley-Bowersville Connector Trail	C9	Traveling east along SR 725, from Bellevue Dr. to Rosecrest Dr.	Bellbrook	Off-Street	12	0.50	$123,127.00	
	Iron Horse Trail	D1	Sign/stripe bike facility along Valleywood Drive from Dorothy Lane to Wilmington Pike (.89 mi) and then construct a .25 mile bikeway along Wilmington Pike to the Wilmington/Stroop Intersection.	Kettering	On/Off-Street	Varies	1.20	$80,000.00	Alternative to current D1
	Iron Horse Trail	D2	Construct a new bikeway from Galewood St. along Little Beaver Creek and Woodman Blvd to Vale Dr.	Kettering	Off-Street	12	0.40	$99,475.20	segment already exists in GIS data. There was no line item for it, however.

Long Range Transportation Projects Suggested Changes

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Corridor Label	Corridor Name	Section Label	Section Name	Owner/Maint	Type of Facility	Width (feet)	Length (miles)	Cost	Comments
East-West	Mad River Trail	E4	Northeast from existing Mad River Corridor Bikeway along former railroad to Enon	Greene County Park District	Off-Street	10	2.80	$599,592.00	
East-West	Great Miami-Little Miami Connector Trail	F1	Construct shared use path along SR 123 between downtown Franklin and Clear Creek; construct shared use path along Clear Creek between SR 123 and Lower Springboro Rd.	Warren County	Off-Street	12	3.60	$971,212.00	
East-West	Great Miami-Little Miami Connector Trail	F2	Widen shoulders on Lower Springboro Rd. between proposed Clear Creek Trail and US 42	Warren County	On-Street	6	8.70	$2,984,977.00	
East-West	Wolf Creek Trail	G2a	Wolf Creek Pike from Little Richmond Road to SR 49 Connector-Road resurfacing, storm drainage via swale predominantly. Construct multi-use path on east side of roadway. Pedestrian bridge is required for pathway as well as modifications needed at the railroad crossing. Pavement markings will be brought up to standard and bike lane markings included.	City of Trotwood	Off-Street	10	1.60	$6,383,000.00	PID # 88223. Move to "Funded Table". Description as recorded in TELUS. Cost reflects project cost recorded in TELUS and includes roadway work as well as the bikeway.
East-West	Wolf Creek Trail	G2b	Installation of 6,550' of bike path to connect Wolf Creek Trail near the intersection of Wolf Creek Pike and NW Connector (SR 49) and the intersection of Olive Road and Modern Way in the City of Trotwood. Also included is paving of the existing unpaved bikeway from Olive Road, west to Vickwood Lane.	City of Trotwood	Off-Street	10	1.30	$191,000.00	PID # 98269. Move to "Funded Table". Cost, description, and length as recorded in TELUS.
East-West	Wolf Creek Trail	G3	Construct Shared use path between existing Wolf Creek Trail (near Dodson) and Montgomery/Preble County line	Five Rivers Metro Parks	Off-Street	12	2.20	$532,040.00	
North-South	Bellbrook-Fairborn Connector Trail	I1	Signed shared roadway from SR 725 along W. Walnut St. to existing bikeway at Bellbrook Park	City of Bellbrook	On-Street	Varies	0.30	$135,402.00	
North-South	Bellbrook-Fairborn Connector Trail	I2	From the existing bikeway, traveling north along Upper Bellbrook/Feedwire/S. Alpha-Bellbrook/Stutsman/N. Fairfield Rds., to Newton Dr.	Greene County	Off-Street	10	5.50	$1,230,503.00	
North-South	Bellbrook-Fairborn Connector Trail	I4	WSU to Kauffman Ave. Bikeway traveling north from Colonel Glenn Hwy. to Kauffman Ave.	Wright State University	Off-Street	10	1.00	$231,788.00	
North-South	Bellbrook-Fairborn Connector Trail	I5	Construct sidepath from Newton to Seajay Dr. and Old Mill Lane to Kemp Rd.	Beavercreek	Off-Street	8	2.50	$1,000,000.00	
North-South	Iron Horse Trail	J3	Construct a bycicle/pedestrian crossing at I-675, 0.33 mi east of Loop Rd and extend the trail to Alex Bell Rd	Centerville	On/Off-Street	Varies	0.50	$5,000,000.00	
North-South	Iron Horse Trail	J4	Extend Iron Horse Trail from Boyce Road to Social Row Road using Clareridge Lane, Spring Valley and Atchison Roads	Centerville	On-Street	Varies	2.40	$675,493.00	
North-South	Great Miami River Trail	K10b	Construct trail on the west bank of the Great Miami River from current trail terminus at Courtyard Hotel to W. River Road	Dayton	Off-Street	12	1.00	$481,000.00	Move to Funded table. PID # 95303. Cost as recorded in TELUS.
North-South	Great Miami River Trail	K11	Construct trail on/along West River Road to Sun Watch Village and Guthrie Road to Possum Creek MetroPark	Dayton	On/Off-Street	Varies	3.60	$895,277.00	Reflects current Dayton plans
North-South	Great Miami River Trail	K6b	From Riverside Drive to Eldean Road	Miami County Park District	Off-Street	10	1.50	$365,457.00	Done?

Long Range Transportation Projects Suggested Changes

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Corridor Label	Corridor Name	Section Label	Section Name	Owner/Maint	Type of Facility	Width (feet)	Length (miles)	Cost	Comments
North-South	Great Miami River Trail	K7	Traveling north from Johnston Farm to the County Line	Miami County Park District	Off-Street	10	2.10	$456,557.00	
North-South	Great Miami River Trail	K9	Construct Great Miami River Trail between Baxter Drive and Miami River Preserve Park	Franklin, Middletown, Miami Conservancy District	Off-Street	12	2.00	$1,386,572.00	
North-South	Stillwater River Trail	L1	From existing bikeway at Sinclair Park, traveling north to Grossnickle Park	Five Rivers Metro Parks/Various	Off-Street	10	4.70	$2,990,725.00	
North-South	Stillwater River Trail	L3	From the existing Englewood Reserve Bikeway, traveling north along the Stillwater River corridor, to SR 55	Miami Conservancy District	Off-Street	10	10.40	$3,413,921.00	
North-South	Stillwater River Trail	L5	Construct shared use path roughly paralleling SR 48 between Covington and Ludlow Falls	Miami Conservancy District	Off-Street	10	10.00	$2,051,460.00	
North-South	Wolf Creek Connector Trail	M1	Widen shoulders along Union Rd. from the Wolf Creek Bikeway to the existing path at I-70	Englewood, Trotwood	On-Street	6	4.10	$1,688,055.00	
North-South	Wolf Creek Connector Trail	M2	Union Boulevard to the Englewood Reserve (also serves the Old National Road Trail).	Englewood	On-Street	6	0.60	$249,370.00	
North-South	Wolf Creek Connector Trail	M3	Widen shoulders on Union Rd. between Existing Wolf Creek Trail in Trotwood and SR 725	Montgomery County	On-Street	6	11.60	$3,975,305.00	
East-West	Great-Little Trail	N1	Construct shared use path along Miamisburg-Springboro Rd./Austin Pike/Social Row Rd. between Medlar Rd. and Wilmington-Dayton Rd.; widen shoulders on Ferry Rd./Lytle Rd. between Wilmington-Dayton Rd. and North St. in Corwin; develop signed on-street bikeway	Montgomery County, Centerville Washington Park District	On/Off-Street	Varies	10.70	$2,491,329.00	
East-West	Great-Little Trail	N2	Construct shared use path in Miami Twp. connecting the GMR Trail with Miamisburg-Springboro Rd	Miami Twp	Off-Street	Varies	2.10	$1,800,000.00	will be done October 2015.
North-South	Bowersville-Jamestown-Clifton Connector Trail	O1	Widen shoulders on SR 72 between Bowersville and Jamestown	Greene County	On-Street	6	5.40	$1,842,903.00	
North-South	Bowersville-Jamestown-Clifton Connector Trail	O2	Widen shoulders on Charleston Rd. and Selma-Jamestown Rd. between Jamestown and Greene/Clark County line	Greene County	On-Street	6	10.40	$3,506,843.00	
North-South	Troy-Fletcher Connector Trail	P1	Widen shoulders along SR 55 and SR 589, providing an on-street bikeway linking Troy, Casstown, and Fletcher	Troy, Miami County	On-Street	6	10.60	$3,596,324.00	
East-West	Cardinal Trail	Q1	Widen roadway shoulders along the Cardinal Trail route (Covington-Gettysburg Rd.) between Covington and the Miami/Darke County line	Miami County	On-Street	6	4.70	$1,564,309.00	
East-West	Cardinal Trail	Q2	Widen roadway shoulders along the Cardinal Trail route between Covington and the Miami/Champaign County line (Spring St., CR 30, Farrington Rd., Peterson Rd., Alcony-Canover Rd., Loy Rd.)	Miami County	On-Street	6	20.10	$6,722,240.00	
East-West	Laura-Troy Connector Trail	R1	Construct shared use path along former railroad corridor between Laura and Ludlow Falls	Miami County	Off-Street	10	6.60	$1,388,219.00	
East-West	Laura-Troy Connector Trail	R2	Construct shared use path roughly paralleling SR 55 and along former Penn Central Railroad between Ludlow Falls and Troy	Miami County	Off-Street	12	7.60	$1,920,678.00	

Long Range Transportation Projects Suggested Changes

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Corridor Label	Corridor Name	Section Label	Section Name	Owner/Maint	Type of Facility	Width (feet)	Length (miles)	Cost	Comments
North-South	SR 741 Bikeway	T1a	Construct bike facility along SR 741 from the Cox Arboretum entrance to the north terminus of the facility constructed under PID #90289	Montgomery County	On/Off-Street	Varies	0.50	$183,000.00	
North-South	SR 741 Bikeway	T1b	Construct bike facility along SR 741 between Mall Park Drive and Ferndown Drive.	Montgomery County	On/Off-Street	Varies	1.70	$623,000.00	
North-South	SR 741 Bikeway	T1c	Construct a bike facility along SR 741 from entrance to Waldruhe Park to Austin Pike.	Montgomery County	On/Off-Street	Varies	0.60	$220,000.00	
North-South	SR 741 Bikeway	T2a	Construct bike lanes on SR 741 between Austin Pike and the current terminus of the bike lanes approx. 1,000 feet south of W. Tech Drive.	Springboro, Warren County	On-Street	6.0	0.20	$56,000.00	
East-West	Carriage Hills Connector Trail	U1	Connect Great Miami River Trail and Carriage Hills MetroPark via shared use path through Carriage Trails development	Various	Off-Street	12	4.20	$1,063,000.00	
North-South	Carriage Hills Connector Trail	U2	Connect Carriage Hills MetroPark and New Carlisle via widened shoulders on SR 202, Singer Rd., Palmer Rd., SR 571, Dayton-Brandt Rd., and shared use path on former railroad corridor between Dayton-Brandt Rd. and New Carlisle	Miami County, Montgomery County	On/Off-Street	Varies	8.00	$2,431,000.00	
North-South	Carriage Hills Connector Trail	U3	Connect Huffman MetroPark and Carriage Hill MetroPark via Union School House, Baker, Kitridge, and Bellefontaine Roads	Montgomery County, Five Rivers MetroParks	On-Street	Varies	8.30	$2,302,289.00	
East-West	Great Miami River-Centerville Connector Trail	V1	Construct trail following local streets and shared use paths connecting Moraine, West Carrollton, Washington Township, Centerville, and Bellbrook via Cox Arboretum, Yankee Park, Grant Park and Pleasant Hill Park	Various	On/Off-Street	Varies	8.20	$1,881,895.00	
East-West	Great Miami River-Creekside Connector Trail	X1	Construct trail extension roughly paralleling US 35 to 4th St. along RR ROW then west to Keowee St and North to Monument Avenue	Dayton, Five Rivers MetroParks	Off-Street	12	3.10	$770,679.00	
NA	Troy Bikeway Hub	Y1	Construct Troy Bike Hub structure	Troy	NA	NA	0.00	$200,000.00	
NA	Piqua Bikeway Hub	Y2	Redevelop a historical building into a Bike Hub at the intersection of the GMR trail and the Piqua-Covington Fletcher Trail	Piqua	NA	NA	0.00	$500,000.00	
East-West	Old National Road Trail	Z1	Construct a bikeway paralleling US 40 from the intersection with The Wolf Creek Trail to Union Road in Englewood.	Montgomery County, Clayton, Englewood, Five Rivers MetroParks	On/Off-Street	Varies	8.40	$2,088,979.20	
East-West	Old National Road Trail	Z2	Construct a bikeway through Englewood MetroPark using marked park roads, new shared use path, and a new covered bridge.	Five Rivers MetroParks/ Englewood	Off-Street	12	2.30	$3,150,000.00	Move to Funded table. Cost as approved in 14-15 round of STP solicitations. Description does not match project description as approved. PID # not yet assigned.
East-West	Old National Road Trail	Z3	Construct bikeway paralleling US 40 from Frederick Pike to the Taylorsville Dam (Great Miami Trail) through Dayton Airport property and City of Vandalia.	Vandalia, Dayton	On/Off-Street	Varies	6.30	$1,894,334.40	

Growing the Nation's Largest Paved Trail Network will continue to be an effort that extends beyond the MVRPC planning boundaries.

How to find Funded (TIP) Projects

The Region's Long Range Transportation Plan is implemented through the Transportation Improvement Program (TIP) process. Specifically outlined in the TIP are the Region's highway, bikeway/pedestrian, and transit improvements that are federally and/or state financed. Projects that rise through the competitive selection process for each funding source are collected in the TIP list. MVRPC typically selects projects several years in advance of their readiness for construction and tracks approved projects in the online Telus tracking system.

The TIP is a four-year plan of projects in the Region. It is completely updated every two years and is regularly amended by the MVRPC Board of Directors. Therefore, it would be of little value to present the current TIP as of the summer of 2015. The TIP database can be viewed from the MVRPC web site under the Transportation tab, or at <http://maps.mvrpc.org/telus/WebTelus/Login:LoginPublic>

Infrastructure Policy and Programs

Design recommendations for cycling infrastructure are evolving very rapidly. In the 2008 plan, there were no recommendations for "green lanes" or protected bike lanes. However, many US cities are now adding those types of facilities. Instead of making specific design recommendations, this update includes an index of the most current design guideline resources in Appendix D. An updated, online version is maintained at the Pedestrian and Bicycle Information Center:

http://www.pedbikeinfo.org/planning/facilities_designresourceindex.cfm

MVRPC staff will monitor evolving design standards and best practices and will make those resources available to member jurisdictions though our website, library and through hosting webinars. When new publications or resources are made available, MVRPC staff will notify local engineers via email notices.

Policy Recommendations

Policy: MVRPC maintains a regional focus. Our goals for infrastructure are prioritized in the following order:

1. Network Long Range Transportation Plan (LRTP) corridors and segments
2. Encouraging local jurisdictions to adopt Complete Streets policies
3. Low Traffic Stress projects
4. Stand-alone projects

It is recognized that a stand-alone local project maybe of highest local priority and we encourage funding flexibility to take advantage of opportunities (utility work, redevelopment or maintenance, etc.) and other unique circumstances.

Policy: **Going above and beyond**. MVRPC's long term policy perspective includes taking biking and walking issues seriously as a transportation option, as a funding priority, and as design treatments that can improve communities and solve issues without adding additional regulations. To be effective, roadway and bikeway designs must exceed AASHTO minimum requirements. For example, rather than getting a bike lane up to an intersection and dropping the lane markings, designs should guide riders through the intersection. Colored lane treatments and bike signals were specific requests made in the public survey process.

If the community is investing in a destination, the neighborhoods around the destination, outside of the developer's purview, need to be the special focus of planning and engineering. Initial planning should include providing low-stress connections to the destination. Many communities around the nation have adopted their own design guidelines that go above and beyond the AASHTO requirements and made the extra-special treatments a routine endeavor. FHWA encourages application for the use of experimental treatments, when needed, along with official review and study. The innovation and demonstrated improvements can be well worth the effort.

Policy: Encourage jurisdictions to include bike and pedestrian facilities in comprehensive plans, engineering transportation plans, and thoroughfare plans. As part of a comprehensive planning approach, bikeways and connectivity can be built into new projects and redevelopment in a routine way. Developers appreciate knowing the communities' design expectations up front and can plan to build amenities into their product accordingly. Local business owners and residents also appreciate knowing what is planned for their street or neighborhood and the community can use their private investments to meet local goals. Plans should be updated every five years or more frequently so demonstrated benefits of newer designs can be incorporated.

Program Recommendations

Cities should implement an effective method for **allowing community suggestions or requests, particularly regarding public bike racks, pothole repair, street sweeping, traffic lights that detect bicycles, and other local facilities improvements**. After a test period, staffing and maintenance budgets can be justified or modified as suits the local needs. A high level of maintenance helps advertise the bikeways as a valuable resource, and improves the perception of safety, deterring vandalism and litter.

Provisions for **keeping the bikeways open and clear during construction** projects should be written into project designs and regulations.

Jurisdictions and partner agencies should **use walking and biking audits** to explore problem areas or new development. MVRPC staff is experienced in leading these exercises in both informal and formal settings and welcomes the invitation to assist jurisdictions throughout the

Region. FHWA recommends Road Safety Audits as a problem solving tool, and ODOT's Safe Routes program requires them as School Travel Plan tool. Staff can also provide resources to local officials who would organize their own audits.

Local jurisdictions need to provide, or **encourage their businesses, schools, recreation centers, and libraries to provide travel-related infrastructure**. Bike parking is a basic requirement; secure and covered parking goes above and beyond. Repair stations, showers, appropriate lighting, and other end-of-trip amenities can also go above and beyond.

Signage can be seen as both an Engineering and Education strategy. Sign suggestions from the survey included more "Share the Road" and "Bikes May Use Full Lane" signs in the absence of other bike facilities. **Signing popular routes and wayfinding between destinations** are useful for both local residents and tourists. MVRPC maintains the standards for the Regional Trails Signage in our library, and makes these documents available to partner agencies and jurisdictions. We also recommend that our local partners make use of the updated NACTO and MUTCD signage guides when creating or modifying new routes, lanes, and bicycle boulevards through their communities.

Partnering with the Business Community is essential as the Region builds and renovates, to ensure that hotels, restaurants, retail, and recreation services are focused on bicycle travel and provide infrastructure to physically connect with trails and bikeways.

Non-Infrastructure Policy and Programs

Building a bicycle-friendly Region is more than just building trails and on-street bike facilities. Policy recommendations are made to meet the goals and bring the Bikeway Plan Update vision to life in the Miami Valley Region. Program recommendations carry the policies and goals forward and engage the community at a practical level. These programs and policies become part of the content of MVRPC's annual work plan and give shape to our involvement with our partner agencies. This chapter addresses those essential elements of making bicycling a viable option for transportation and recreation in our Region.

The suggested project list included many non-infrastructure projects, listed in Appendix C under the Regional tab. Without these complementary programs and activities, our bikeway network will remain underutilized. There are many existing efforts to promote bicycling in the Region, and MVRPC staff supports and promotes these efforts. MVRPC maintains a number of programs in house, while partnering with regional agencies on many more.

Policy Recommendations

Policy: Support federal spending on active transportation projects and programs for several reasons:

- Affordable — The cost savings of building active transportation facilities over typical new roadways is great, and the facilities save the community money in the long run in reduced fuel and health care costs
- Children need safe places — the ability to get to school and after school activities under their own power should be a safe and attractive option for kids
- Preventative Health Care — providing active transportation facilities in a community allows residents to increase their routine exercise and helps prevent chronic diseases of inactivity
- Demonstrated to improve communities — many cities have expanded active transportation networks and experienced increased economic activity and neighborhood vitality
- Voters favor a federal role in funding walking and biking facilities and they ***do not want*** to decrease the amount of money being spent. (Rails-to-Trails 2015)

Policy: Nurture political will to improve the active transportation landscape. MVRPC sees value in the safety and livability our communities can gain with additional active transportation programs and projects. Following the Department of Transportation's lead, we have encouraged our local partners to participate in the Mayor's challenge to improve pedestrian and cyclist safety. <http://www.dot.gov/mayors-challenge>

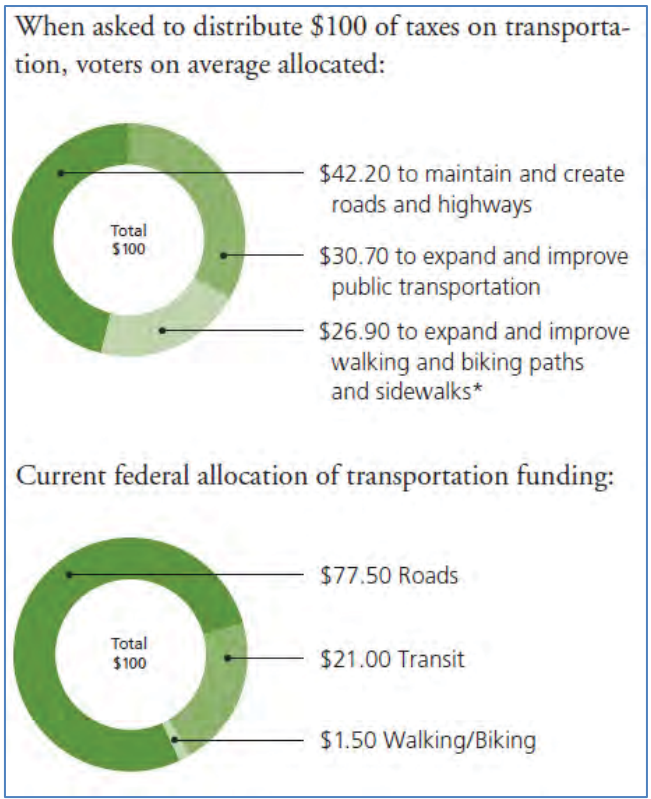
Several other visionary programs to motivate political action within our Region can be harnessed. For example, Gil Penalosa's *8 80 Cities* vision (creating safe public spaces for all ages) and the "Toward Zero Deaths" movement are both accessible and relatable public policy tools.

http://www.8-80cities.org/

http://safety.fhwa.dot.gov/tzd/

Policy: Rebalance funding of non-motorized transportation at a more equitable rate to other travel modes. Research from Rails to Trails <http://www.railstotrails.org/policy/poll/> indicates that the public believes that more than a quarter of federal transportation dollars should be spent on bicycling and pedestrian projects, when the reality is only 1.5% of federal funds are actually spent that way.

MVRPC has a history of committing a higher level of funding to bikeways and active transportation projects than many



comparable MPOs, and our Regional Complete Streets Policy ensures that the needs of all users are considered when applicants request MVRPC-controlled funding. MVRPC also encourages the adoption of local Complete Streets policies and will assist jurisdictions in that process. Increasing active transportation projects in the Regional TIP and working with state and federal funders to increase the funds devoted to these projects would further demonstrate the agency's commitment to increased health, safety, and growth in the bikeway network.

Policy: Promote the Nation's Largest Paved Trail Network — Our Network!

The Miami Valley has invested heavily in our off-street paved trails and has created the largest network of its kind in the United States. However, that fact is not widely known. Within our Region, people are regularly impressed when they see a regional map for the first time. Even our neighbors in Cincinnati and Columbus may only be aware of the Little Miami Scenic Trail and some vague connections out of Xenia. This Update recommends that MVRPC:

- Target marketing efforts inside the Region toward creating more positive associations with bicycles
- Partner with appropriate agencies to target marketing efforts outside the Region toward cycling tourism
- Encourage all individual trail-managing agencies and jurisdictions to emphasize that they are part of a much larger network
- Support efforts of those agencies to develop common marketing messages and collateral

Policy: Cooperation with and support of Bike Miami Valley

As a result of recommendations made in the 2008 plan, Bike Miami Valley (BMV) was re-launched as a regional advocacy group in 2010. MVRPC has a formal role on the Board of Bike Miami Valley, an informational role on the Regional Advisory Committee, and provides the organization with office space.

Bike Miami Valley will be an important partner in carrying out Education, Encouragement, and Equity activities. BMV can also work with law enforcement agencies to ensure appropriate Enforcement activities make the road safer for both motorists and cyclists. The success of the BMV chapter program will be vital to ensuring that its efforts are felt on a regional basis. As of this writing there are two chapters: Springfield and Piqua.

Bike Miami Valley launched the Link bike share program in May 2015, and the program has the potential to change the downtown Dayton bicycling landscape. The bikes have proven very popular with over 5,000 rides in the program's first month by over 1,200 unique riders. Development and maintenance of safe and inviting bike infrastructure in the bike share service area will be vital to the program's utility and success.

Policy: Continue to partner with the League of American Bicyclists to **increase the number of Bike Friendly Communities in the Miami Valley**

While the recognition garnered from a Bike Friendly Community award can be a great source of community pride and goodwill, the League's Bike Friendly Community program can also advance cycling culture in jurisdictions across the Miami Valley. Participation in the program will guide progress by acting as a roadmap for what communities should do next to build cycling culture. The BFC program has set standards for what constitutes a supportive, safe and thriving bicycling culture and environment for each level of award (Bronze, Silver, Gold, and Platinum). Participation can inspire action, involvement and coordination among people who want to improve conditions for bicyclists, and can raise expectations as to a community's potential for cycling. The program can support sustained improvement as jurisdictions respond to feedback and apply for successively higher levels of recognition.

MVRPC encourages local jurisdictions to apply for Bike Friendly Community (BFC) status with the League of American Bicyclists, to join Dayton and Troy as award recipients in our Region. Dayton and Troy should endeavor to progress to silver status in the future. MVRPC intends to work jointly with jurisdictions, trail-managing agencies and regional partners to apply for and receive a Bike Friendly Region award from the League in the next 5 years.

Program Recommendations

Education:

MVRPC supports education efforts for both cyclists and drivers on sharing the road safely. This effort includes public service announcements, signage, and cyclist education classes. Critical topics include correct on-street lane position, safe passing distance, proper signaling, and navigating intersections safely. In conjunction with the launch of the Link Bike Share program, Bike Miami Valley will develop and offer an Adult Street Cycling program beginning in the summer of 2015.

In spring of 2015, MVRPC released two new public service announcements that address these and other issues. One is focused on cyclist behavior and the other is about motorist behavior. Both emphasize sharing the road. Bike Miami Valley, in cooperation with Cox Media group, also began running the *Travel With Care* safety awareness campaign for drivers and cyclists aimed at increasing respect and empathy for cyclists and good road etiquette for both drivers and cyclists. In future years, additional PSAs should be developed on specific biking and driving safety issues.

Facilitate professional education in non-motorized transportation planning principles. MVRPC will continue to be a resource to our community partners, sharing reference documents and trainings as they are available. Staff regularly promotes APBP, PBIC, and APA webinars, which offer best practices from around the country and host trainings at the MVRPC offices.

To promote youth cycling education, MVRPC will **continue to host Safe Routes forums** and work with the Ohio Safe Routes Network to create opportunities for students to walk and bike to school. MVRPC supports local school efforts to provide education and encouragement events that create safe and healthy travel habits for students.

The Region should **build on the bicycle education immersion models** started at schools like the Early College Academy and the STEM school and try to replicate those models. Each of these schools offers from one week to three weeks of on-bicycle curriculum for their students. Several parks departments and advocacy organizations also offer bike rodeos for younger children. AAA Dayton maintains a Bike Rodeo kit that can be lent out to organizations and schools.

Support driver's education programs that integrate bicycling rules of the road. The preparation manual for the Ohio Driver's License Exam now includes a section on "Sharing the Road with Bicyclists." Both cyclists and drivers need more instruction on how to interact safely while sharing the road. Specific topics for drivers include: safe passing distance (3 feet), cyclists' right to take the entire lane as necessary, and care in making turns at intersections. The importance of maintaining safe speeds and carefully checking lanes should also be addressed.

Increase the number of League of American Bicyclists instructors and courses. League-certified instructors can offer courses to the public about safe riding behaviors. Proper lane positioning, signaling, and riding with traffic are high priority messages of these courses. MVRPC will also continue to distribute the "Drive Your Bike "safety brochure at public events and through Bike Miami Valley, bicycle shops, the Life Enrichment Center, and other outlets.

Safe interaction of all trail users, including cyclists of all skill levels and all other modes (walkers, skaters, joggers, pet walkers, etc.) is essential. Education for new trail users is a regional need, as is better signage at intersections of trails and roadways to alert drivers of the presence of cyclists. Crowded trails are not appropriate for hardcore cycling training at high speeds, or other high-speed riding. Outreach to cycling clubs and racing teams needs to be ongoing to discourage high-speed riding on crowded sections of the trail. Likewise, slower trail users need to be reminded to stay to the right and to be aware of their surroundings. Riders wishing to travel in high-speed groups should be directed to rural roads or to quiet sections of the trail network.

Encouragement

Encouragement efforts include rides organized by trail-managing agencies and the continuation of long-standing efforts like Bike Month, Bike to Work Day and other bike-themed events. The addition of bike infrastructure, including bike racks, water fountains, and benches in urban and rural downtowns is encouraged. Assisting employers to integrate cycling into wellness programs is another key strategy. Continued improvement of amenities, including signage, benches, lighting, tool stations, restrooms, and water stops near trail system should be added as feasible. More bike racks near businesses will encourage riders to frequent those businesses.

MVRPC will continue to support and encourage local bike month and Bike to Work Day events.

MVRPC encourages *cyclovias* or cycling streets, where a road is occasionally closed to car traffic and opened to active transportation and other community uses; the first in the Region was held in Piqua in 2015 in conjunction with the 2015 Miami Valley Cycling Summit. Organized

rides for people who haven't ridden for a while and want to "get back into it" as well as family-friendly or all-ages rides are recommended. Parks organizations should be encouraged to continue events like "Bike for the Health of It" (Five Rivers MetroParks) and Night Rides on the Trails (Greene County Parks & Trails).

MVRPC can facilitate discussions of electric bikes (e-bikes) with goal of creating regional policy. Currently the regional trail system prohibits all motorized vehicles. As part of ongoing planning, trail-managing agencies need to develop consistent policies concerning e-bikes. The primary issue is with speed and if this user group can mix safely with all other trail and road users. E-bikes can significantly extend the practical range for cycling and offer an option for increasing cycling mode share. Popularity of e-bikes is growing rapidly in Europe, Asia, and some parts of the United States. It is likely that they will become increasingly common in our Region. However, any e-bike policy would need to address if/how they are different from mopeds, whizzers, and other gasoline powered two-wheeled vehicles.

Bike Friendly Business programs can be found in different forms in the Region, and MVRPC encourages businesses, main-street organizations, and community efforts to build on these model efforts. Miamisburg, Xenia, and Piqua have adopted simple visitor-focused programs that help local businesses interact positively with riders as customers. Each of the cities encourages their business to provide bike parking, free water, and free trails maps to visitors, as well as letting cyclists use the business restrooms without a purchase requirement. The businesses have a logo sticker that they put in their window.

The Trail Towns program <http://www.trailtowns.org>, which started along the Great Allegheny Passage, is another example of a bike-visitor focused business program. Dayton, Piqua, and Xenia are certified Trail Towns for the Buckeye Trail and North Country Scenic Trail <http://www.buckeyetrail.org/trailtowns.php>.

Bike Friendly Businesses Reach Out to Trail Users

City of Miamisburg is developing its new Bike Friendly Business program as an outreach effort between downtown businesses and users of the Great Miami River Trail. Each Bike-Friendly Business is committed to providing four services to visiting cyclists:

- Providing free water
- Providing bike parking
- Allowing visitors to use restrooms without pressure to purchase from the business
- Provide bicycling information in the form of maps (which the City provides) or answering questions and giving directions

Twenty businesses joined right away, following a breakfast meeting kickoff of the program. Miami Conservancy District sponsored the breakfast. Miamisburg intends to add kiosks with river, trail, and business directions information and wayfinding.

Visitors can easily spot Bike Friendly Businesses in Miamisburg: they each have a colorful sticker in front window. Already many businesses h

The Bike Way Bike Shop
• Urban Loft Boutique
• Classic Stitch
• TJ Chumps
• Star City Brewing LLC
• Miamisburg Branch, Dayton Metro Library
• 2 Cups Coffee and Bakery
• English Manor Bed and Breakfast
• MZ Pickles Sandwich Shop
• Anticoli's Guiliano Tavern
• A Taste of Wine
• Luna Blue's
• Great Miami Outfitters

Another type of Bike Friendly Business program is for **businesses that focus on their cycling employees**, offering amenities like showers and lockers, as well as secure bike storage. Business health care benefits can be tied to participation in active transportation programs and organized rides. MVRPC's "Drive Your Bike" brochure offers information on how employers can highlight the benefits of cycling for their employees. The Region also boasts three Bike Friendly Businesses certified through the League of American Bicyclists, out of 16 total in the State of Ohio. Universities may also apply for Bike Friendly status. <http://bikeleague.org/bfa#business>

Continue to support and promote the Miami Valley Cycling Summit. The MVCS has been held every other year since 2009 and has the explicit goal of spurring community support and activism. Originally put together by the combined staff of Five Rivers MetroParks, City of Dayton, MVRPC, MCD, Greene County Parks & Trails, and Miami County Parks, as well as volunteers from local cycling groups, the event has fostered the growth of Bike Miami Valley and is now one of their flagship events. The Summit has been held in Dayton (2009 and 2011), in Springfield (2013), and in Piqua (2015). It is slated to be held in Greene County at Wright State University in 2017. Past Summits have attracted over 300 people to the single day, free event, and provided a forum for idea exchange. Summit speakers from across the country have shared their insights on building a cycling culture and cycling's impact on economic development. These speakers are also introduced to the nation's largest paved trail network, and leave with a new appreciation of our Region.

Continue to update the Miami Valley Bikeways Guide Map. Published every three years since 2005, the Bikeways Guide Map has become the gold standard for bike mapping in Ohio, with other MPOs copying the map's style and the 2014 Edition winning the Ohio GIS Conference First Place Award for Reference Maps and Best in Show award. To continue providing the best map possible, staff will incorporate more resources into the map development process, including creating new committee roles and an open issues tracking and feedback loop process. MVRPC will continue to include trail connections outside the borders of our MPO Region with an emphasis on those counties and areas that do not have their own MPO oversight or resources.

Encourage community mapping by local jurisdictions. Many local communities have found that mapping bicycle infrastructure and routes is both great public relations and a strong planning tool. Local communities are able to provide a level of detail that the regional map cannot replace.

Expand staff, pursue foundation funding for, and partner with agencies to better **support the MiamiValleyTrails.org website**. MVRPC and agency partners would continue working to make the website central to the bike culture of the Region including improved resources for tourism, local encouragement events and sponsor and community updates.

Encourage trail maintenance organizations to **provide more signage about the trails and about the area around the trails that will direct people to historical sites, eating establishments and town centers**. City and county roadway partners should also provide more on-road signage directing people to trail access points.

Support the Drive Less, Live More campaign, which encourages the public to walk, bike, carpool, and take transit as an alternative to driving alone.

Enforcement and Regulations

Enforcement efforts including speed limit enforcement, discouraging sidewalk bike riding in communities where it is illegal, and increasing predictability for cyclists and drivers are high priorities. Efforts to enforce traffic laws for motorists and cyclists need to increase as bicycles become more common on streets and roads. Improving safety will require an attitude shift on the part of all road users. Cyclists will benefit from increased safety in numbers.

A first step is stricter enforcement of existing speed limits, but this plan also recommends review of speed limits in areas with considerable bicycle traffic. **Lowering vehicle speeds** can make the roadways safer and less stressful for all users, but especially for cyclists. In some cases, jurisdictions should be encouraged to lower speed limits or add traffic calming features to the roadway.

Local jurisdictions may consider **dedicating ticketing fees or bicycle license fees for maintenance funding**. They may also address bike theft with local bike registrations, like programs currently offered in Dayton and Beavercreek.

Continue to integrate bike and pedestrian planning programs and crash data analysis at the agency level. Staff can assist local jurisdictions with safety evaluations, walking and bicycling audits, and other techniques that address problem areas. By periodically identifying the Region's top crash locations, MVRPC can address issues through our planning process. We will also evaluate Toward Zero Death strategies for regional use.

Encourage local jurisdictions to use traffic calming measures to improve Level of Traffic Stress. Encourage land use and development codes that accommodate and encourage non-motorized travel. Create pedestrian-oriented commercial centers and neighborhoods. Using the safety in numbers theory, creating additional visibility for bicyclists and common interaction between car and bike drivers can quickly change attitudes and improve awareness.

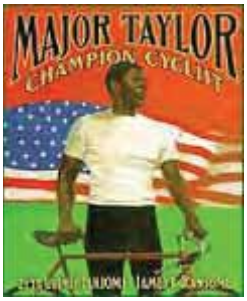
Limiting right turn on red at some intersections, especially near bike infrastructure or where bike traffic is heavy. Particularly where cyclists are likely to be riding the opposite direction from car traffic or coming from the rear, it is important that motorists aren't attempting to "shoot the gap" and looking only one way before turning.

Local laws may also need to be reviewed. An "Idaho Stop" law for Ohio was suggested during the public input workshop. This allows cyclists to treat a red light or stop sign as a yield sign, and to proceed after making sure the intersection is clear, without coming to a full stop. Safe passing distance as advocated in Ohio House Bill 154 would require motorists to give cyclists at least 3 feet of space when passing.

Keep cyclists off of sidewalks and riding with traffic in a safe and predictable fashion. Using warnings and information for cyclists to limit wrong-way and sidewalk riding will be part of our education messages. MVRPC does not recommend sidepaths as they confuse the standards of pedestrian sidewalk use with the function of a paved trail, without providing the traffic control that a trail is required to use. We direct our local engineers to use Suggested Sidepath Guidelines, attached in the appendix, when considering sidepath designs.

Equity

As mentioned previously, the issue of Equity overlaps with all of the other Es. Making sure that Engineering projects occur in lower-income and minority communities, that bicycle education is available to children of color, that trails are equally well-maintained in all parts of the Region, and making special outreach to groups which are traditionally underrepresented in cycling are all important Equity efforts.



An Equity issue that is directly related to the trail system infrastructure has evolved over the years. To a large extent, the trail network has grown the most where right-of-way was already in public hands or was fairly easy to obtain. Because many of the trails follow the flood control plain along the rivers and others follow abandoned railroad lines, trails were built extensively in the communities where these opportunities existed. This development pattern has primarily been along the Miami River and the Mad River. Miles of abandoned railroad right-of-way in Greene County have also been turned into trails. Development to the west of Dayton has not been as extensive, and there are several communities in northwest Montgomery County with no direct or easy connection to the regional trail system. Since many residents of west Dayton, Trotwood and Jefferson Township are people of color, this has resulted in a de facto equity issue. Current efforts to complete the Wolf Creek Trail connection between Dayton and Trotwood will help alleviate this, but other communities with significant minority populations are still isolated from the trail network. This factor will be considered in the scoring of infrastructure projects, with additional points given to projects which connect high-need communities.

Work with local advocates on outreach projects. We have an opportunity to treat advocacy organizations as technical assistance providers. By utilizing the networks of Bike Miami Valley, the Major Taylor Cycling Club of Dayton, Safe Routes advocates in the schools, and the Safe Kids Coalition, we can reach audiences beyond the traditional cycling community.

Organized rides are easily tailored to specific interest groups, such as families, women, people of color, and immigrant groups. Supporting these targeted community events can be seen as both equity and encouragement activities.

Partner to provide basic bike lights to youth and low income communities. Many low-income riders ride out of necessity. These riders may ride at dawn and dusk to get to and from jobs. MVRPC is working with two organizations that provide bicycles equipped with front and rear lights to low-income riders. The shops *Bicycles for All* in Kettering and the *Life Enrichment Center* in Dayton provide bikes to people of limited resources. *Bicycles for All* repairs and sells used adult bikes at very reasonable prices and *the Life Enrichment Center* has an "Earn a Bike" program for low-income individuals. MVRPC, through federal grant funding, provides lights to these organizations to be installed on adult bicycles. Both organizations also give children's bikes to low-income kids. MVRPC has also paired with Dayton Schools, Project Congo, GDRTA, the *Link* shop, and the Safe Kids Coalition to distribute bike lights.

Share bike light resources and other safety information with community police departments. Staff participates in the Miami Valley Crime Prevention Association, which provides a forum to connect with a large number of the local police departments. There, we regularly share information about events and resources. Other regions often work with the police to provide warning tickets and distribute bike lights as part of awareness campaigns.

Work with the public health community to analyze and improve health outcomes in disadvantaged areas of the Region. MVRPC partnered with Public Health Dayton and Montgomery County in 2015-16 on a community health project to focus attention on pockets of high chronic disease rates. MVRPC brings several active transportation tools to the project. Staff has also researched best practices around the country that maximize health funding and private monies in active transportation investments. Closest to home, Interact for Health in Cincinnati has given grant money to fund promotional projects and trails programming, including a salaried Trails Coordinator position. The following table has information on health-oriented funding programs that target active transportation projects.

Snapshot of FY 2014 CDC Funding Programs

PROGRAM	GOAL	AWARDEE TYPE	TOTAL FUNDING
State Public Health Actions to Prevent and Control Diabetes, Heart Disease, Obesity and Associated Risk Factors and Promote School Health	*Existing* CDC program that funded all 50 states and the District of Columbia to help prevent chronic disease, including in school settings.	State public health departments	51 awards $33 million for up to 5 years
State *and* Local Public Health Actions to Prevent Obesity, Diabetes, Heart Disease, and Stroke	Expands on the State Public Health Actions awards to include community strategies and focuses on adults.	State and large city health departments	21 awards (17 state; 4 large city) $69.5 million over 4 years
Partnerships to Improve Community Health (PICH)	Creates or strengthens healthy environments that make it easier for people to make healthy choices and take charge of their health at the community level. Emphasis on community partnerships.	Government agencies, non-government organizations	39 awards $49.3 million over 3 years
Racial and Ethnic Approaches to Community Health (REACH)	Focuses on capacity building and implementation of policy and environmental improvements in racial and ethnic communities experiencing health disparities.	Government agencies, non-government organizations	49 awards (17 basic; 32 comprehensive) $34.9 million over 3 years
National Implementation and Dissemination for Chronic Disease Prevention	Supports national organizations to reach deeper into smaller communities to strengthen ability to improve health environments.	National non-profit organizations	5 awards $9.4 million over 3 years
A Comprehensive Approach to Good Health and Wellness in Indian Country	Implements a coordinated and more comprehensive portfolio of chronic disease prevention and health promotion	Tribal governments and organizations	22 awards $11.3 million over 5 years
Programs to Reduce Obesity in High-Obesity Areas	Implements obesity interventions in counties with more than 40% prevalence of adult obesity.	Land grant universities cooperative extensions	6 awards $4.2 million over 3 years

Marry active transportation and local sustainability efforts, i.e. Dayton Regional Green, Open Space planning. As with the health partnerships, active transportation is a tool for sustainability programs and projects.

Evaluation

Counting vehicle traffic is a mainstay of transportation planning. Until recently, vehicles primarily meant cars and trucks. Bicycles were often not treated or counted as vehicle traffic. This has meant that measuring bicycle mode share was difficult and has relied heavily on self-reporting in sources such as the American Community Survey, and local trail surveys. Because of the way questions in these surveys are worded, it is likely that bicycle use for transportation has been underreported. Many people who use a bicycle occasionally for commuting to work or running errands, but not as their primary journey-to-work mode therefore do not report themselves as bike commuters.

Maintain database of partner agency trail counters and develop on-street bike count system. Since the original plan was adopted, most of our parks partners and some cities have invested in automatic trail counters. MVRPC collects this data informally and has been aggregating it as a test process. In FY2016, MVRPC launched a concerted effort to count bicycles, both on separated trails and on selected streets and roads. New technology will make those counts much more accurate. While it is not possible to distinguish between recreational

cyclists and commuters with a counter, time of day can be used as an indicator. For example, early morning riders, Monday through Friday, are more likely to be commuters. With more accurate cycling counts, it will be easier to plan for appropriate bicycle infrastructure.

Conduct trail surveys every four years using partner agency and volunteer resources. As demonstrated by the 2009 and 2013 intercept surveys, a counter cannot replace the level of data pertaining to behavior and economic impact resulting from cycling.

Incorporate other LRTP information and recommendations. Work with ODOT, neighboring MPOs, and other state partners to address larger network issues as they arise.

Maintain an inventory of 'local' bikeways to complement the Regional trails network. MVRPC staff has spent considerable time updating and maintaining the geographic information systems database of bikeways for use in mapping and to share as a resource with State and local partners. This inventory shall be maintained and formalized for greater consistency and access within the organization.

Develop a benchmarking program and publication schedule for bikeways data to be shared with the community. MiamiValleyTrails.org is a possible platform for sharing the benchmarked data. Monitor national best practices, incorporate and adapt what is appropriate for our Region.

Conclusion

The years between the completion of the 2008 Comprehensive Local-Regional Bikeways Plan and this 2015 Update of that Plan have seen significant progress in terms of bike culture in the Miami Valley. New infrastructure, including new trails, bike lanes, bike and pedestrian bridges and the Link Bike Share program have been added to the regional bikeways network. Bike Miami Valley has been re-launched as a strong advocacy organization for cycling. The www.miamivalleytrails.org website has transitioned into being a publicly-managed information source for locals and visitors alike. Many of these projects were identified as priorities in the 2008 plan.

Nationally, protected bike facilities and the Level of Traffic Stress concept have emerged as tools to broaden the appeal of cycling beyond the stereotype of a Lycra-clad weekend warrior and to increase the number of people who will consider biking for transportation. The 2008 Plan did not even mention "Protected Bike Lanes" and the Level of Traffic Stress methodology has only been widely discussed since 2012. However, both of these approaches to increasing cycling are spreading rapidly around the country. This Update will help spread those concepts to the Miami Valley and broaden the Region's focus from the extensive Miami Valley Trail system to making streets and intersections more inviting to the less-confident cyclist. While MVRPC and regional partners will continue to be proud of, and to promote, the Nation's Largest Paved Trail Network, the Miami Valley cannot hope to significantly increase the mode share of biking

without taking a hard look at the streets and intersections and, where possible, making them more comfortable for a broader range of people riding bikes.

Cycling is a great form of recreation, a tool for fitness and an affordable, healthy transportation choice. But in order to be a practical, widely-used transportation option, more origins and destinations must be connected in a way that makes for a pleasant and safe riding experience. Local communities can do this by identifying and promoting existing low-stress roadways and by making improvements like bike boulevards, buffered and protected lanes, calming intersections, and widening shoulders on streets and roads throughout the Region. Community programming, activities, and education are also needed to increase exposure to safe cycling experiences.

MVRPC will continue to build better bike experiences for the Region with the tools available to an MPO. Our Complete Streets policy will ensure multi-modal transportation projects are being built throughout the Region. Our data, maps, counts, and research will guide staff and inform policy decisions, and are available as a resource to our members, partner agencies, and the public. Through MVRPC's formal and informal partnerships more education, encouragement, enforcement, and equity programming will be created to meet the Region's local needs. Our hope is to see more bike riders from more backgrounds going more places, safely. Let's use this Update as a tool to get there.

Appendices

a. Online Survey Results

SurveyMethods_Bike Input1thru5.pdf

SurveyMethods_Bike In6thru10.pdf

SurveyMethods_Bike In11thru15.pdf

SurveyMethods_Bike In16thru20.pdf

SurveyMethods_Bike In21thru25.pdf

b. Public Input Suggestions by County & Region

Bike Plan Survey Projects Sorted.pdf

Bike Plan Survey Projects Miami.pdf

Bike Plan Survey Projects Mont.pdf

Bike Plan Survey Projects Warren.pdf

Bike Plan Survey OtherCounties.pdf

c. Funding Opportunities & TIP map

TIPforPlanLndsc11x17.pdf

Funding Op Appendix.pdf

d. Design Recommendations & Resources

DesignResourceIndex_Excel0514151.xlsx

e. Sidepath suggested guidelines

Sidepath text.pdf

f. Cost Factors Used

Cost Factors Used in Scoring.pdf

g. BMV Protected Lanes Research Summary

Protected Bike Lanes - Research Summary

h. Citations

Citations and Resources.pdf

Appendix A – Online Survey Results

Publish Results

Analyze Survey Results - Results Summary

Survey: MVRPC Bikeways Planning Survey

The data below represents this survey's consolidated results. To conduct analysis on what types of individuals answered questions in a particular way, click on the Create Criteria button.

Individual Results

Survey Status	
Status:	Closed
Deploy Date:	01/22/2015
Closed Date:	03/06/2015

Respondent Statistics	
Total Responses:	701
Completes:	538
Partials:	163

Points Summary

No Points Questions used in this survey.

Convert to PDF
Convert to Word
Email PDF
Export To Excel

Create Display Criteria

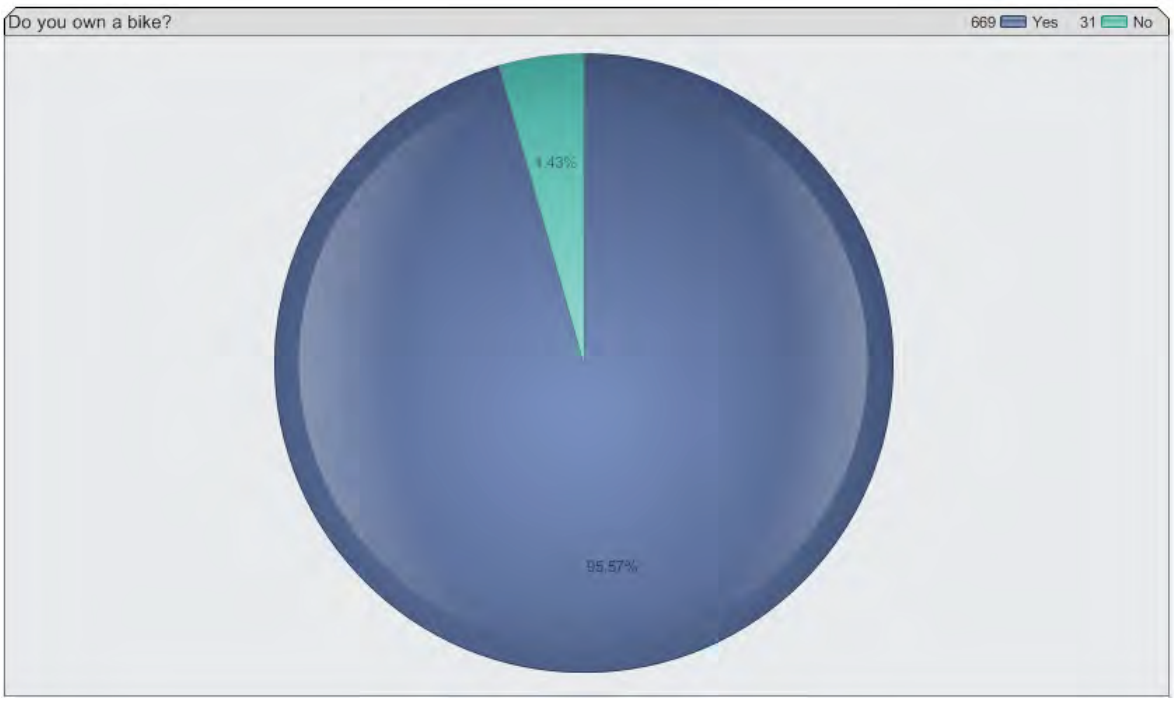
Criteria Active: 0 Create Criteria

View Questions: 1 to 5

Summarized Data Report - Survey: MVRPC Bikeways Planning Survey

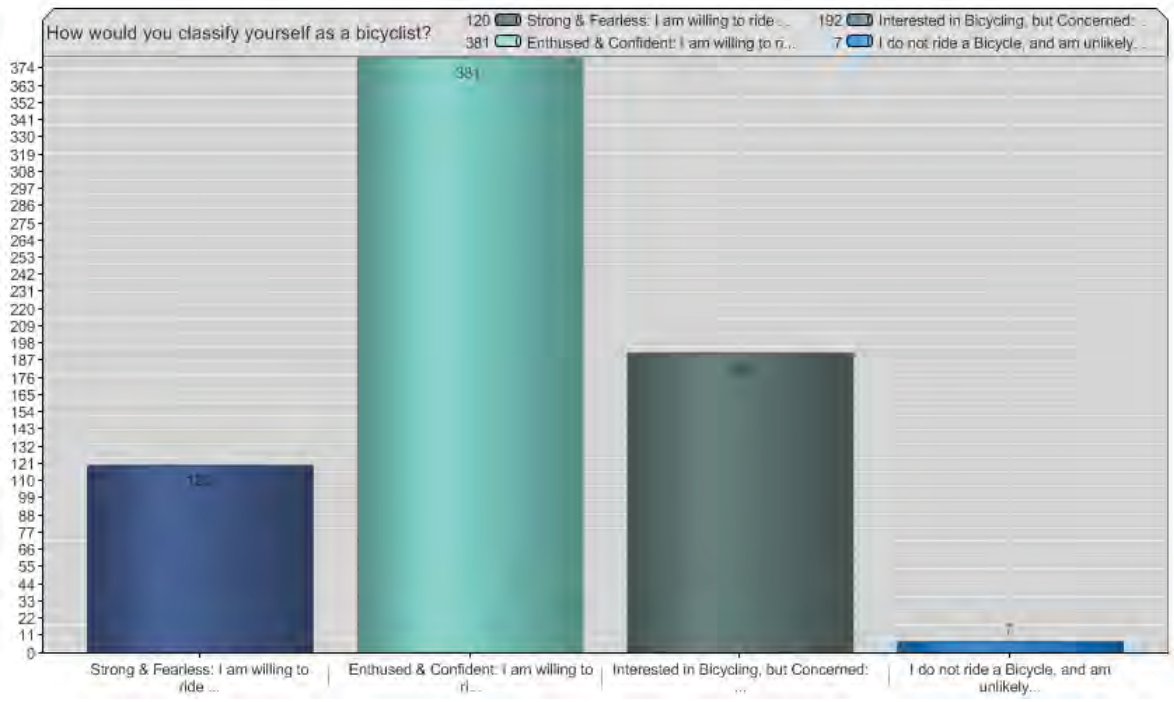
1. Do you own a bike?

	Responses	Percent
Yes:	669	95.57%
No:	31	4.43%
Total Responded to this question:	700	99.86%
Total who skipped this question:	1	0.14%
Total:	701	100%



2. How would you classify yourself as a bicyclist?

	Responses	Percent
Strong & Fearless: I am willing to ride in mixed traffic with automobiles on almost any type of street.:	120	17.14%
Enthused & Confident: I am willing to ride in traffic but I prefer dedicated bicycle lanes/routes.:	381	54.43%
Interested in Bicycling, but Concerned: I would like to bicycle more, but I prefer not to ride in traffic.:	192	27.43%
I do not ride a Bicycle, and am unlikely ever to do so.:	7	1%
Total Responded to this question:	700	99.86%
Total who skipped this question:	1	0.14%
Total:	701	100%



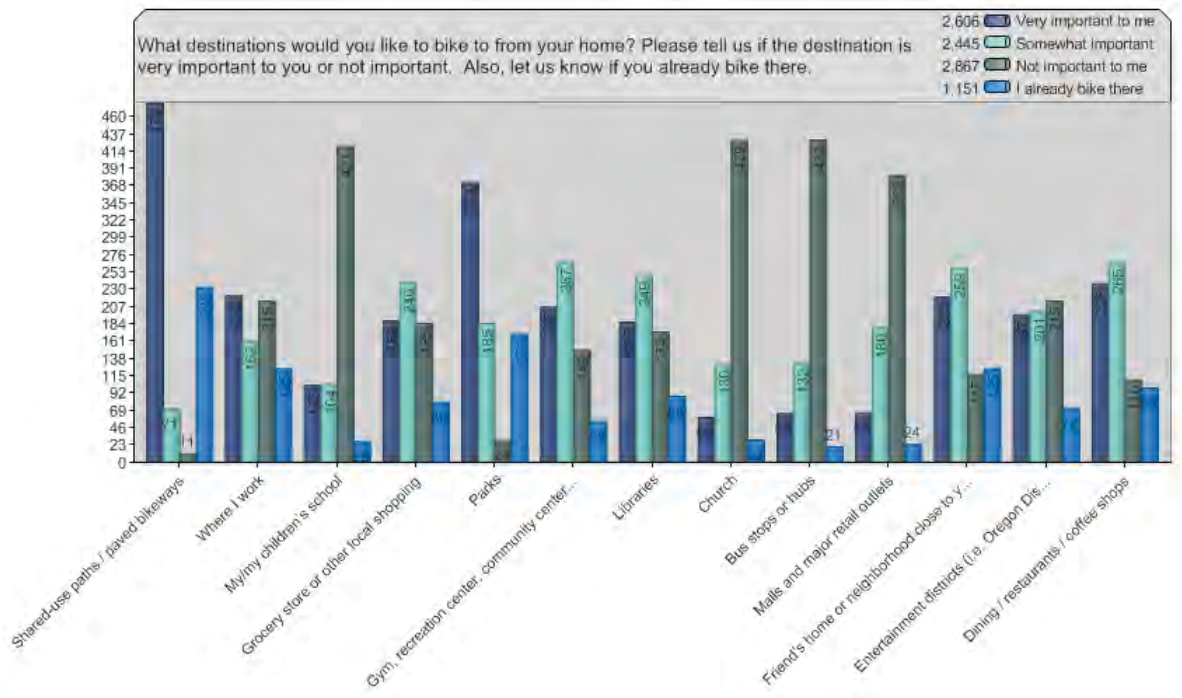
3. What destinations would you like to bike to from your home? Please tell us if the destination is very important to you or not important. Also, let us know if you already bike there.

	Very important to me	Somewhat important	Not important to me	I already bike there	Total
Shared-use paths / paved bikeways:	479(60.33%)	71(8.94%)	11(1.39%)	233(29.35%)	794
Where I work:	222(30.66%)	162(22.38%)	215(29.7%)	125(17.27%)	724
My/my children's school:	103(15.7%)	104(15.85%)	421(64.18%)	28(4.27%)	656
Grocery store or other local shopping:	189(27.23%)	240(34.58%)	185(26.66%)	80(11.53%)	694
Parks:	373(49.21%)	185(24.41%)	29(3.83%)	171(22.56%)	758
Gym, recreation center, community center, senior center:	207(30.53%)	267(39.38%)	149(21.98%)	55(8.11%)	678
Libraries:	187(26.79%)	249(35.67%)	174(24.93%)	88(12.61%)	698
Church:	60(9.24%)	130(20.03%)	429(66.1%)	30(4.62%)	649
Bus stops or hubs:	65(10.03%)	132(20.37%)	430(66.36%)	21(3.24%)	648

Total Responded to this question:	640	91.3%
Total who skipped this question:	61	8.7%
Total:	701	100%

	Very important to me	Somewhat important	Not important to me	I already bike there	Total
Malls and major retail outlets:	66(10.12%)	180(27.61%)	382(58.59%)	24(3.68%)	652
Friend's home or neighborhood close to yours:	220(30.51%)	259(35.92%)	117(16.23%)	125(17.34%)	721
Entertainment districts (i.e. Oregon District, the Greene):	197(28.76%)	201(29.34%)	215(31.39%)	72(10.51%)	685
Dining / restaurants / coffee shops:	238(33.43%)	265(37.22%)	110(15.45%)	99(13.9%)	712

Total Responded to this question:	640	91.3%
Total who skipped this question:	61	8.7%
Total:	701	100%



4.

Are there any other destinations you would like to bike to from your home? Please list them.

	Responses	Percent
Responses:	170	100%
Total Responded to this question:	170	24.25%
Total who skipped this question:	531	75.75%
Total:	701	100%

Graph/Chart function not relevant for this question type.

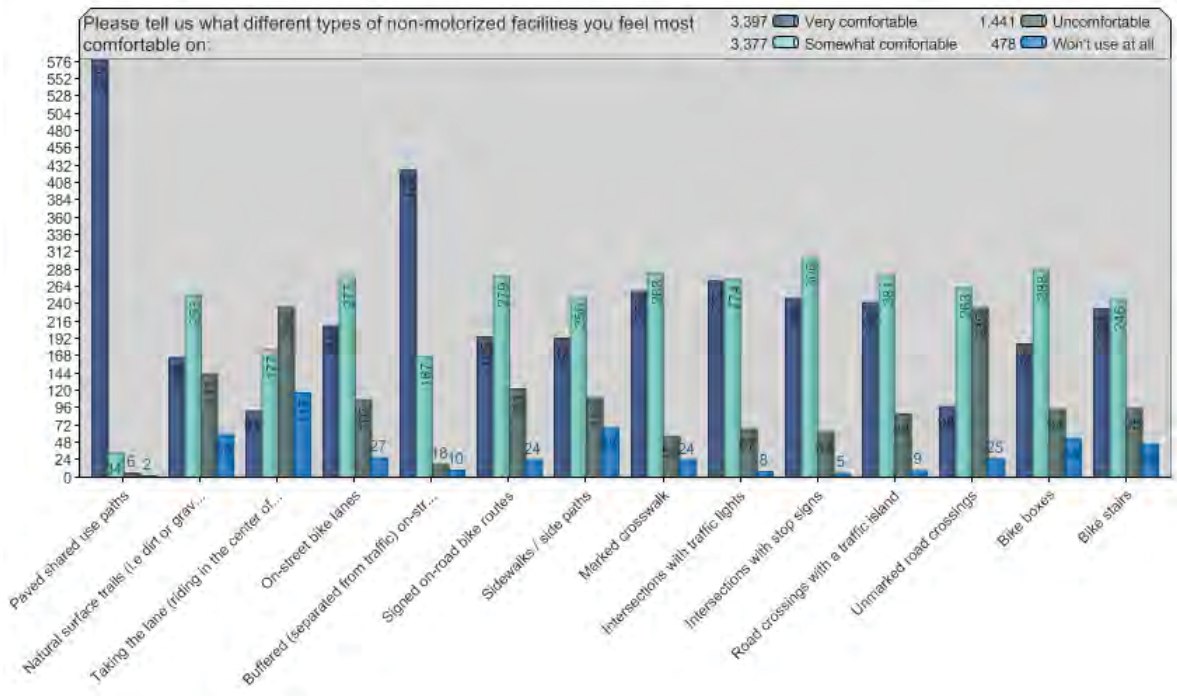
5. Please tell us what different types of non-motorized facilities you feel most comfortable on:

	Very comfortable	Somewhat comfortable	Uncomfortable	Won't use at all	Total
Paved shared use paths:	579(93.24%)	34(5.48%)	6(0.97%)	2(0.32%)	621
Natural surface trails (i.e dirt or gravel):	166(26.73%)	253(40.74%)	143(23.03%)	59(9.5%)	621

Total Responded to this question:	621	88.59%
Total who skipped this question:	80	11.41%
Total:	701	100%

	Very comfortable	Somewhat comfortable	Uncomfortable	Won't use at all	Total
Taking the lane (riding in the center of the traffic lane):	91(14.65%)	177(28.5%)	236(38%)	117(18.84%)	621
On-street bike lanes:	210(33.82%)	277(44.61%)	107(17.23%)	27(4.35%)	621
Buffered (separated from traffic) on-street bike lanes:	426(68.6%)	167(26.89%)	18(2.9%)	10(1.61%)	621
Signed on-road bike routes:	195(31.4%)	279(44.93%)	123(19.81%)	24(3.86%)	621
Sidewalks / side paths:	193(31.08%)	250(40.26%)	110(17.71%)	68(10.95%)	621
Marked crosswalk:	258(41.55%)	283(45.57%)	56(9.02%)	24(3.86%)	621
Intersections with traffic lights:	272(43.8%)	274(44.12%)	67(10.79%)	8(1.29%)	621
Intersections with stop signs:	248(39.94%)	305(49.11%)	63(10.14%)	5(0.81%)	621
Road crossings with a traffic island:	242(39.03%)	281(45.32%)	88(14.19%)	9(1.45%)	620
Unmarked road crossings:	98(15.78%)	263(42.35%)	235(37.84%)	25(4.03%)	621
Bike boxes:	185(29.79%)	288(46.38%)	94(15.14%)	54(8.7%)	621
Bike stairs:	234(37.68%)	246(39.61%)	95(15.3%)	46(7.41%)	621

Total Responded to this question:	621	88.59%
Total who skipped this question:	80	11.41%
Total:	701	100%



View Questions: 1 to 5

Close

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Publish Results

Analyze Survey Results - Results Summary

Survey: MVRPC Bikeways Planning Survey

The data below represents this survey's consolidated results. To conduct analysis on what types of individuals answered questions in a particular way, click on the Create Criteria button.

Your report has been generated. Click here to download the file.

Individual Results

Survey Status		Respondent Statistics		Points Summary
Status:	Closed	**Total Responses:**	701	No Points Questions used in this survey.
Deploy Date:	01/22/2015	**Completes:**	538	
Closed Date:	03/06/2015	**Partials:**	163	

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Create Display Criteria

Criteria Active: 0 Create Criteria

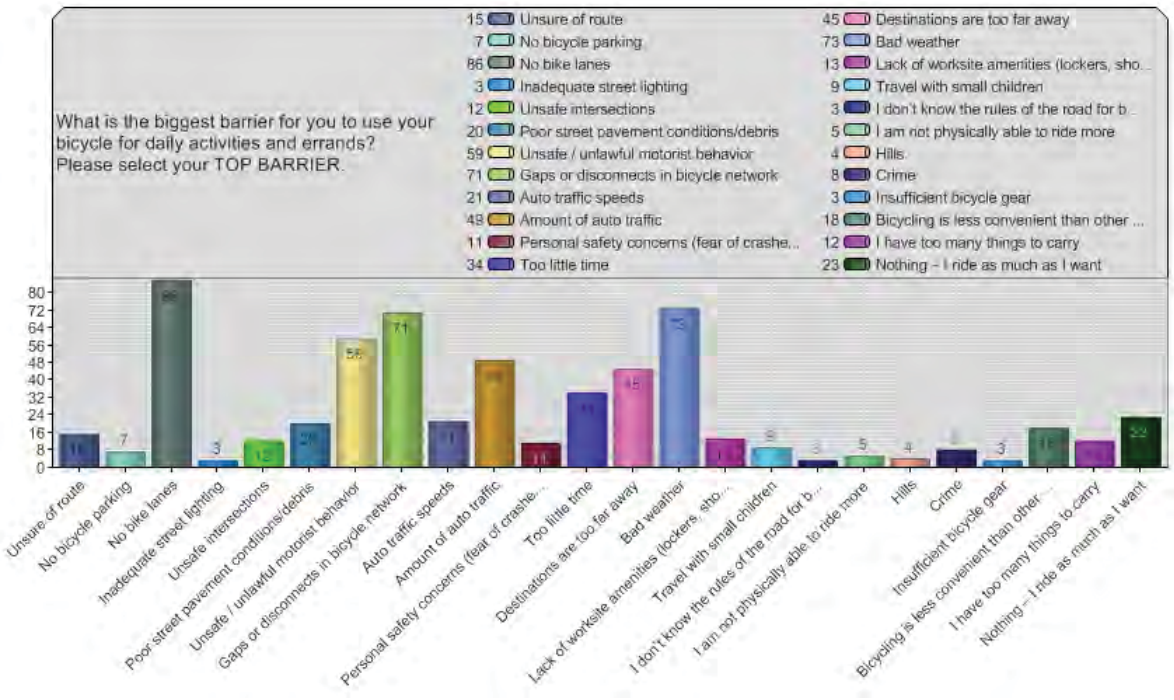
View Questions: 6 to 10

Summarized Data Report - Survey: MVRPC Bikeways Planning Survey

6. What is the biggest barrier for you to use your bicycle for daily activities and errands?
Please select your TOP BARRIER.

	Responses	Percent
Unsure of route:	15	2.48%
No bicycle parking:	7	1.16%
No bike lanes:	86	14.24%
Inadequate street lighting:	3	0.5%
Unsafe intersections:	12	1.99%
Poor street pavement conditions/debris:	20	3.31%
Unsafe / unlawful motorist behavior:	59	9.77%
Gaps or disconnects in bicycle network:	71	11.75%
Auto traffic speeds:	21	3.48%
Amount of auto traffic:	49	8.11%
Personal safety concerns (fear of crashes):	11	1.82%
Too little time:	34	5.63%
Destinations are too far away:	45	7.45%
Bad weather:	73	12.09%
Lack of worksite amenities (lockers, showers, dressing rooms):	13	2.15%
Travel with small children:	9	1.49%
I don't know the rules of the road for bicycling:	3	0.5%
I am not physically able to ride more:	5	0.83%
Total Responded to this question:	604	86.16%
Total who skipped this question:	97	13.84%
Total:	701	100%

	Responses	Percent
Hills:	4	0.66%
Crime:	8	1.32%
Insufficient bicycle gear:	3	0.5%
Bicycling is less convenient than other travel options:	18	2.98%
I have too many things to carry:	12	1.99%
Nothing – I ride as much as I want:	23	3.81%
Total Responded to this question:	604	86.16%
Total who skipped this question:	97	13.84%
Total:	701	100%

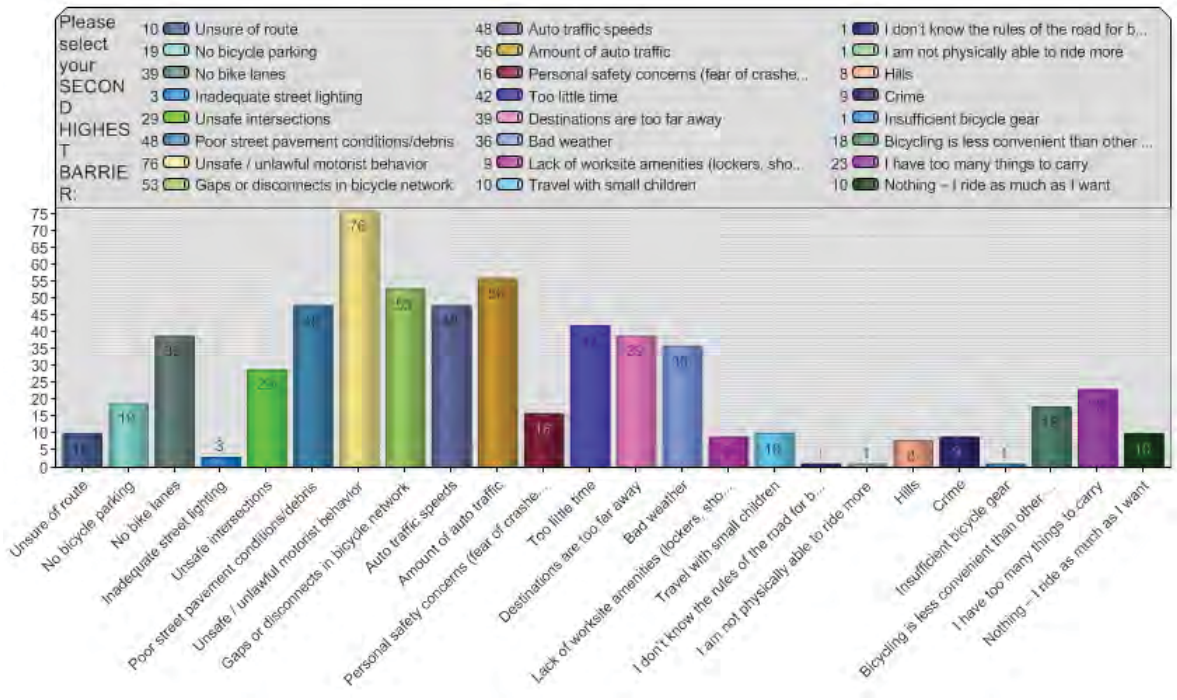


7.

Please select your SECOND HIGHEST BARRIER:

	Responses	Percent
Unsure of route:	10	1.66%
No bicycle parking:	19	3.15%
No bike lanes:	39	6.46%
Inadequate street lighting:	3	0.5%
Unsafe intersections:	29	4.8%
Poor street pavement conditions/debris:	48	7.95%
Unsafe / unlawful motorist behavior:	76	12.58%
Gaps or disconnects in bicycle network:	53	8.77%
Auto traffic speeds:	48	7.95%
Amount of auto traffic:	56	9.27%
Total Responded to this question:	604	86.16%
Total who skipped this question:	97	13.84%
Total:	701	100%

	Responses	Percent
Personal safety concerns (fear of crashes):	16	2.65%
Too little time:	42	6.95%
Destinations are too far away:	39	6.46%
Bad weather:	36	5.96%
Lack of worksite amenities (lockers, showers, dressing rooms):	9	1.49%
Travel with small children:	10	1.66%
I don't know the rules of the road for bicycling:	1	0.17%
I am not physically able to ride more:	1	0.17%
Hills:	8	1.32%
Crime:	9	1.49%
Insufficient bicycle gear:	1	0.17%
Bicycling is less convenient than other travel options:	18	2.98%
I have too many things to carry:	23	3.81%
Nothing – I ride as much as I want:	10	1.66%
Total Responded to this question:	604	86.16%
Total who skipped this question:	97	13.84%
Total:	701	100%

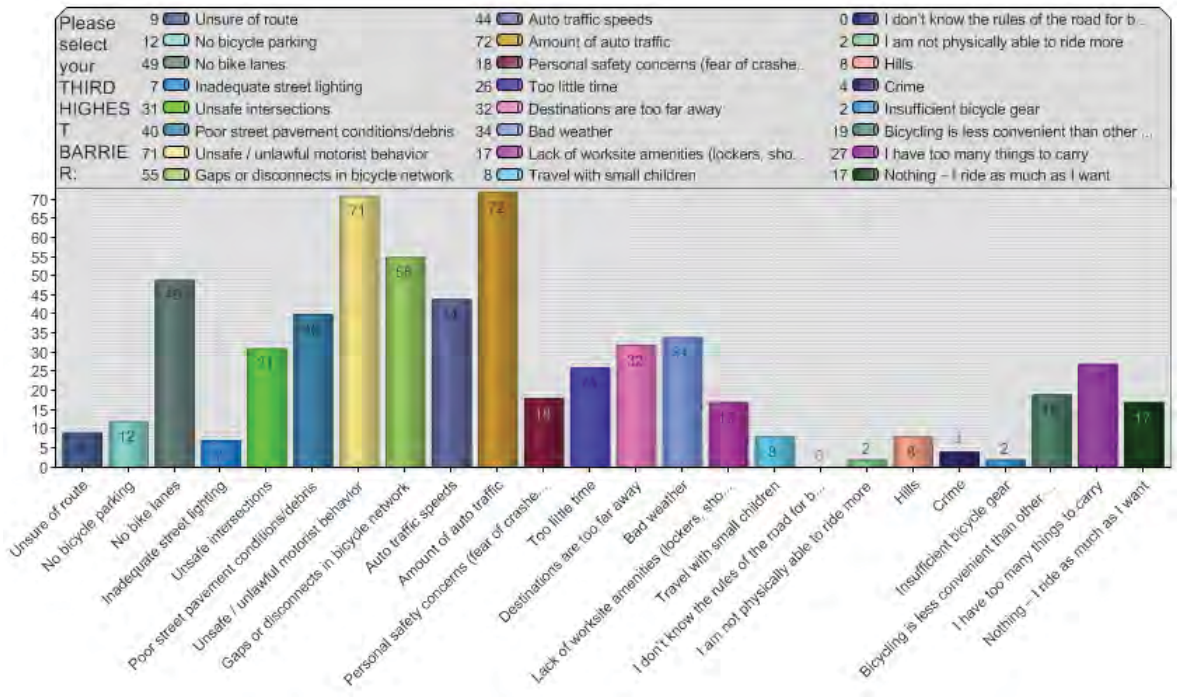


8.

Please select your THIRD HIGHEST BARRIER:

	Responses	Percent
Unsure of route:	9	1.49%
No bicycle parking:	12	1.99%
Total Responded to this question:	604	86.16%
Total who skipped this question:	97	13.84%
Total:	701	100%

	Responses	Percent
No bike lanes:	49	8.11%
Inadequate street lighting:	7	1.16%
Unsafe intersections:	31	5.13%
Poor street pavement conditions/debris:	40	6.62%
Unsafe / unlawful motorist behavior:	71	11.75%
Gaps or disconnects in bicycle network:	55	9.11%
Auto traffic speeds:	44	7.28%
Amount of auto traffic:	72	11.92%
Personal safety concerns (fear of crashes):	18	2.98%
Too little time:	26	4.3%
Destinations are too far away:	32	5.3%
Bad weather:	34	5.63%
Lack of worksite amenities (lockers, showers, dressing rooms):	17	2.81%
Travel with small children:	8	1.32%
I don't know the rules of the road for bicycling:	0	0%
I am not physically able to ride more:	2	0.33%
Hills:	8	1.32%
Crime:	4	0.66%
Insufficient bicycle gear:	2	0.33%
Bicycling is less convenient than other travel options:	19	3.15%
I have too many things to carry:	27	4.47%
Nothing – I ride as much as I want:	17	2.81%
Total Responded to this question:	604	86.16%
Total who skipped this question:	97	13.84%
Total:	701	100%

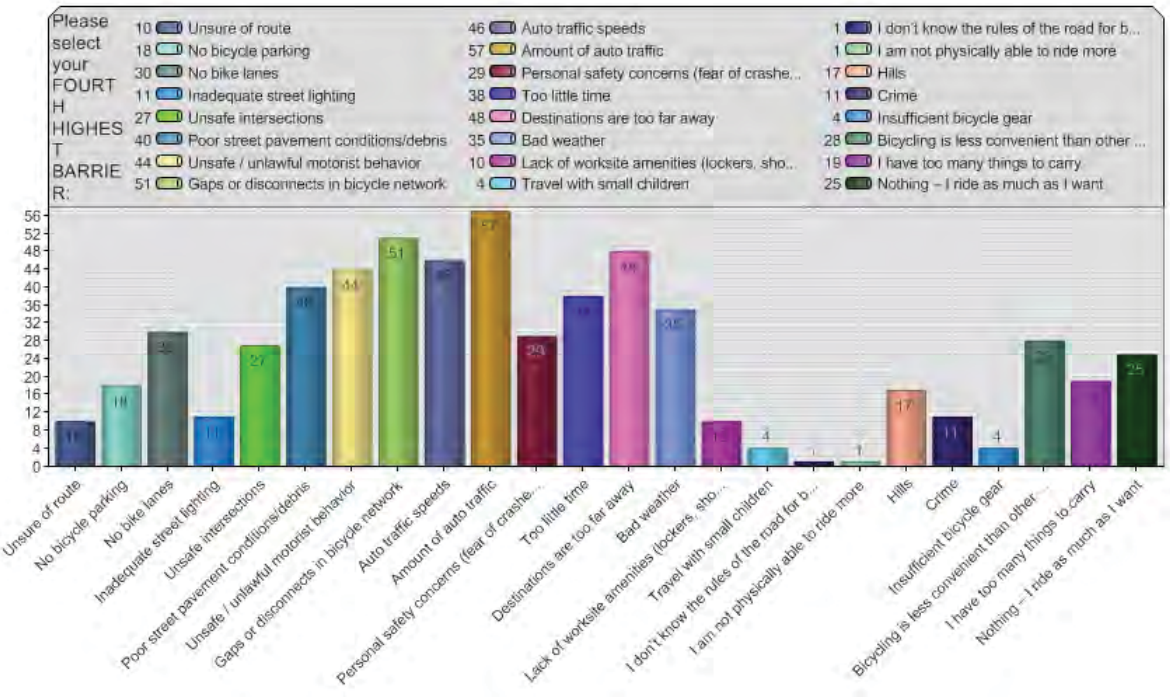


9.

Please select your FOURTH HIGHEST BARRIER:

	Responses	Percent
Unsure of route:	10	1.66%
No bicycle parking:	18	2.98%
No bike lanes:	30	4.97%
Inadequate street lighting:	11	1.82%
Unsafe intersections:	27	4.47%
Poor street pavement conditions/debris:	40	6.62%
Unsafe / unlawful motorist behavior:	44	7.28%
Gaps or disconnects in bicycle network:	51	8.44%
Auto traffic speeds:	46	7.62%
Amount of auto traffic:	57	9.44%
Personal safety concerns (fear of crashes):	29	4.8%
Too little time:	38	6.29%
Destinations are too far away:	48	7.95%
Bad weather:	35	5.79%
Lack of worksite amenities (lockers, showers, dressing rooms):	10	1.66%
Travel with small children:	4	0.66%
I don't know the rules of the road for bicycling:	1	0.17%
I am not physically able to ride more:	1	0.17%
Hills:	17	2.81%
Total Responded to this question:	604	86.16%
Total who skipped this question:	97	13.84%
Total:	701	100%

	Responses	Percent
Crime:	11	1.82%
Insufficient bicycle gear:	4	0.66%
Bicycling is less convenient than other travel options:	28	4.64%
I have too many things to carry:	19	3.15%
Nothing – I ride as much as I want:	25	4.14%
Total Responded to this question:	604	86.16%
Total who skipped this question:	97	13.84%
Total:	701	100%

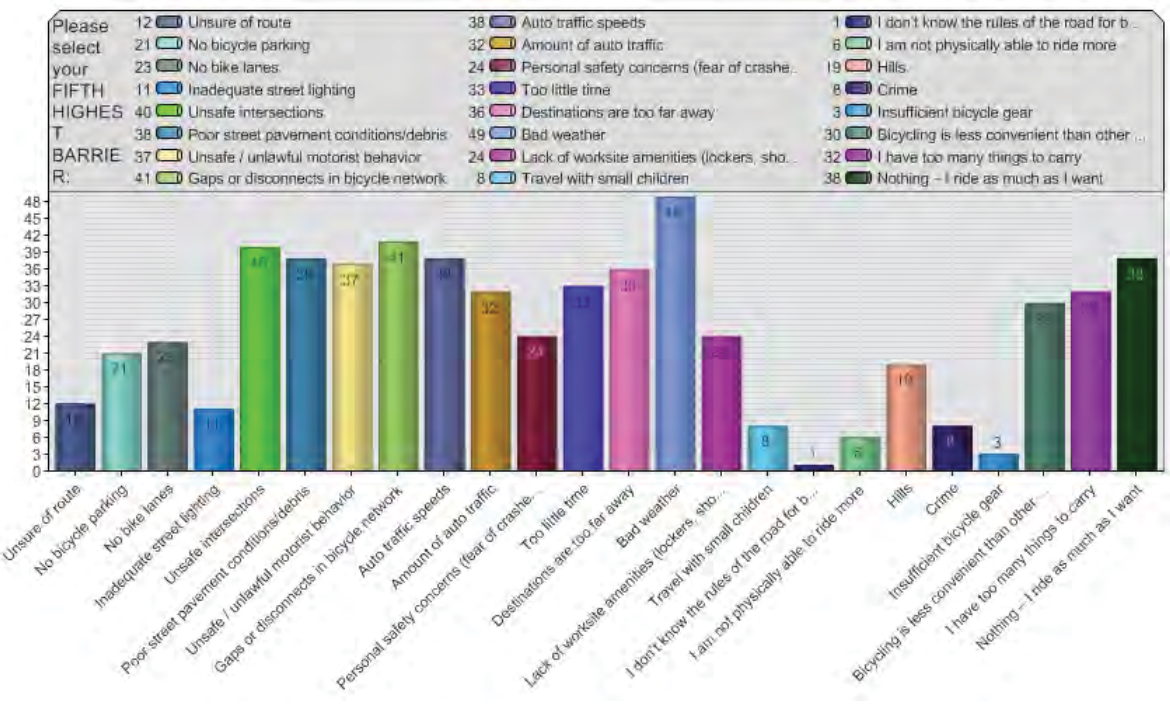


10.

Please select your FIFTH HIGHEST BARRIER:

	Responses	Percent
Unsure of route:	12	1.99%
No bicycle parking:	21	3.48%
No bike lanes:	23	3.81%
Inadequate street lighting:	11	1.82%
Unsafe intersections:	40	6.62%
Poor street pavement conditions/debris:	38	6.29%
Unsafe / unlawful motorist behavior:	37	6.13%
Gaps or disconnects in bicycle network:	41	6.79%
Auto traffic speeds:	38	6.29%
Amount of auto traffic:	32	5.3%
Personal safety concerns (fear of crashes):	24	3.97%
Total Responded to this question:	604	86.16%
Total who skipped this question:	97	13.84%
Total:	701	100%

	Responses	Percent
Too little time:	33	5.46%
Destinations are too far away:	36	5.96%
Bad weather:	49	8.11%
Lack of worksite amenities (lockers, showers, dressing rooms):	24	3.97%
Travel with small children:	8	1.32%
I don't know the rules of the road for bicycling:	1	0.17%
I am not physically able to ride more:	6	0.99%
Hills:	19	3.15%
Crime:	8	1.32%
Insufficient bicycle gear:	3	0.5%
Bicycling is less convenient than other travel options:	30	4.97%
I have too many things to carry:	32	5.3%
Nothing – I ride as much as I want:	38	6.29%
Total Responded to this question:	604	86.16%
Total who skipped this question:	97	13.84%
Total:	701	100%



View Questions: 6 to 10

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Publish Results

Analyze Survey Results - Results Summary

Survey: MVRPC Bikeways Planning Survey

The data below represents this survey's consolidated results. To conduct analysis on what types of individuals answered questions in a particular way, click on the Create Criteria button.

Your report has been generated. Click here to download the file.

Individual Results

Survey Status	
Status:	Closed
Deploy Date:	01/22/2015
Closed Date:	03/06/2015

Respondent Statistics	
Total Responses:	701
Completes:	538
Partials:	163

Points Summary

No Points Questions used in this survey.

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Create Display Criteria

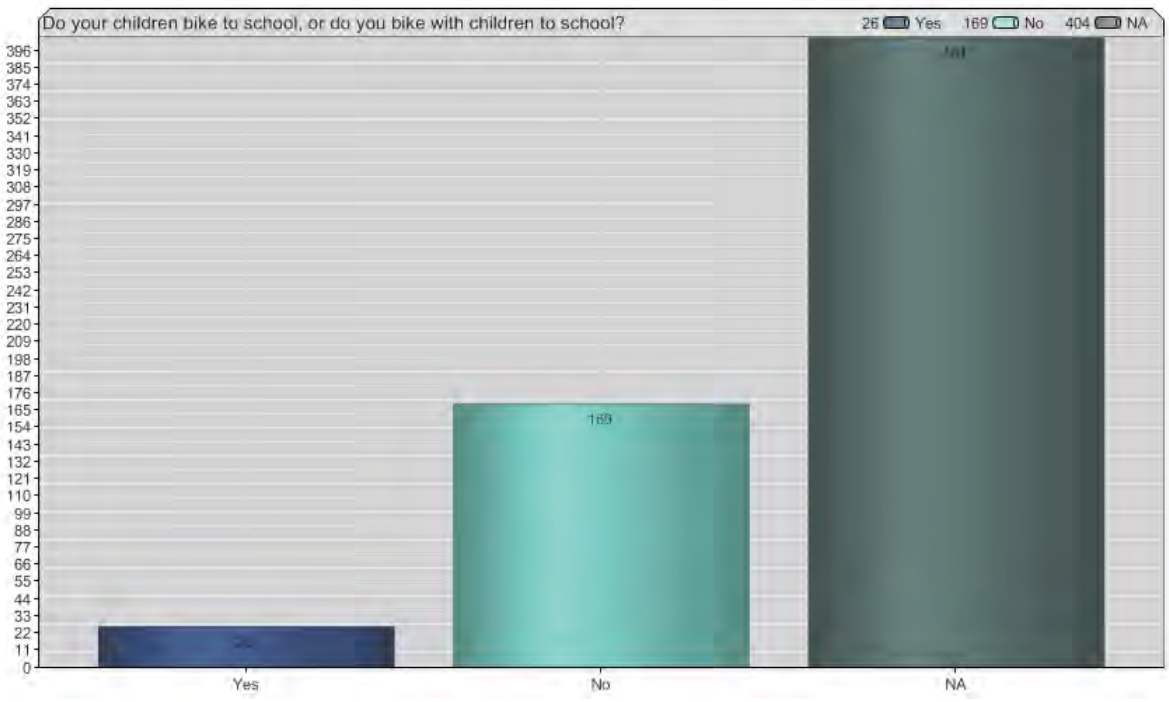
Criteria Active: 0 Create Criteria

View Questions: 11 to 15

Summarized Data Report - Survey: MVRPC Bikeways Planning Survey

11. Do your children bike to school, or do you bike with children to school?

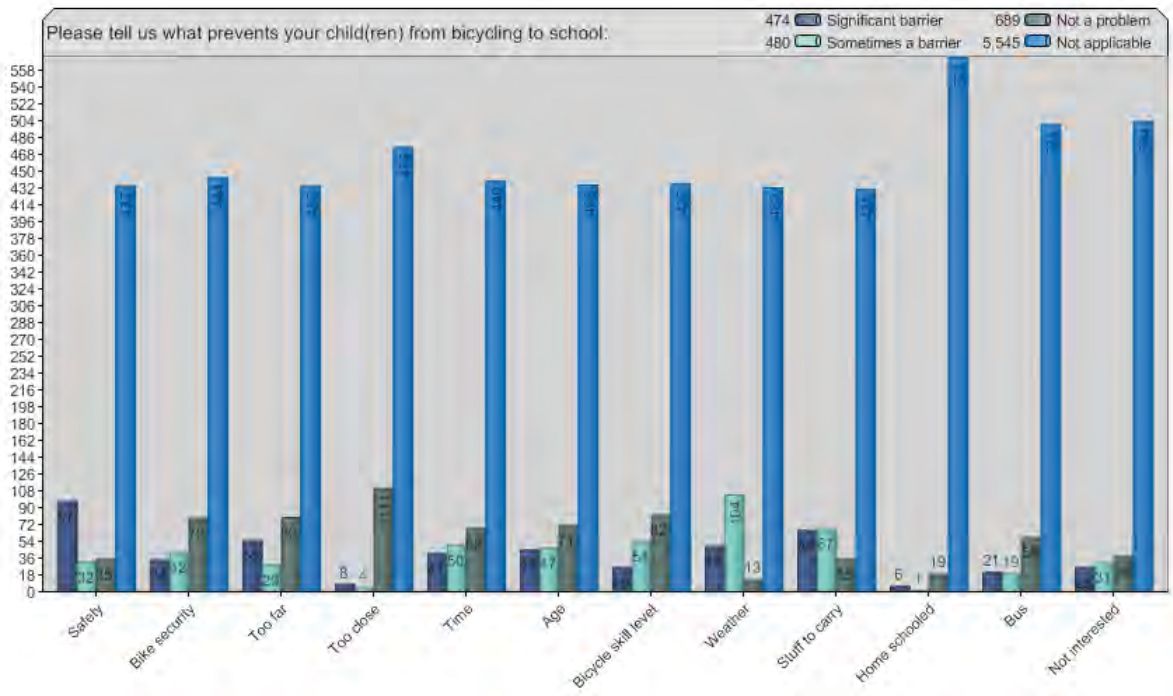
	Responses	Percent
Yes:	26	4.34%
No:	169	28.21%
NA:	404	67.45%
Additional Comments:	74	12.35%
Total Responded to this question:	599	85.45%
Total who skipped this question:	102	14.55%
Total:	701	100%



12. Please tell us what prevents your child(ren) from bicycling to school:

	Significant barrier	Sometimes a barrier	Not a problem	Not applicable	Total
Safety:	97(16.19%)	32(5.34%)	35(5.84%)	435(72.62%)	599
Bike security:	34(5.68%)	42(7.01%)	79(13.19%)	444(74.12%)	599
Too far:	55(9.18%)	29(4.84%)	80(13.36%)	435(72.62%)	599
Too close:	8(1.34%)	4(0.67%)	111(18.53%)	476(79.47%)	599
Time:	41(6.84%)	50(8.35%)	68(11.35%)	440(73.46%)	599
Age:	45(7.51%)	47(7.85%)	71(11.85%)	436(72.79%)	599
Bicycle skill level:	26(4.34%)	54(9.02%)	82(13.69%)	437(72.95%)	599
Weather:	49(8.18%)	104(17.36%)	13(2.17%)	433(72.29%)	599
Stuff to carry:	66(11.02%)	67(11.19%)	35(5.84%)	431(71.95%)	599
Home schooled:	6(1%)	1(0.17%)	19(3.17%)	573(95.66%)	599
Bus:	21(3.51%)	19(3.17%)	58(9.68%)	501(83.64%)	599
Not interested:	26(4.34%)	31(5.18%)	38(6.34%)	504(84.14%)	599

Total Responded to this question:	599	85.45%
Total who skipped this question:	102	14.55%
Total:	701	100%



13. Please list any other barriers that prevent your child(ren) from bicycling to school:

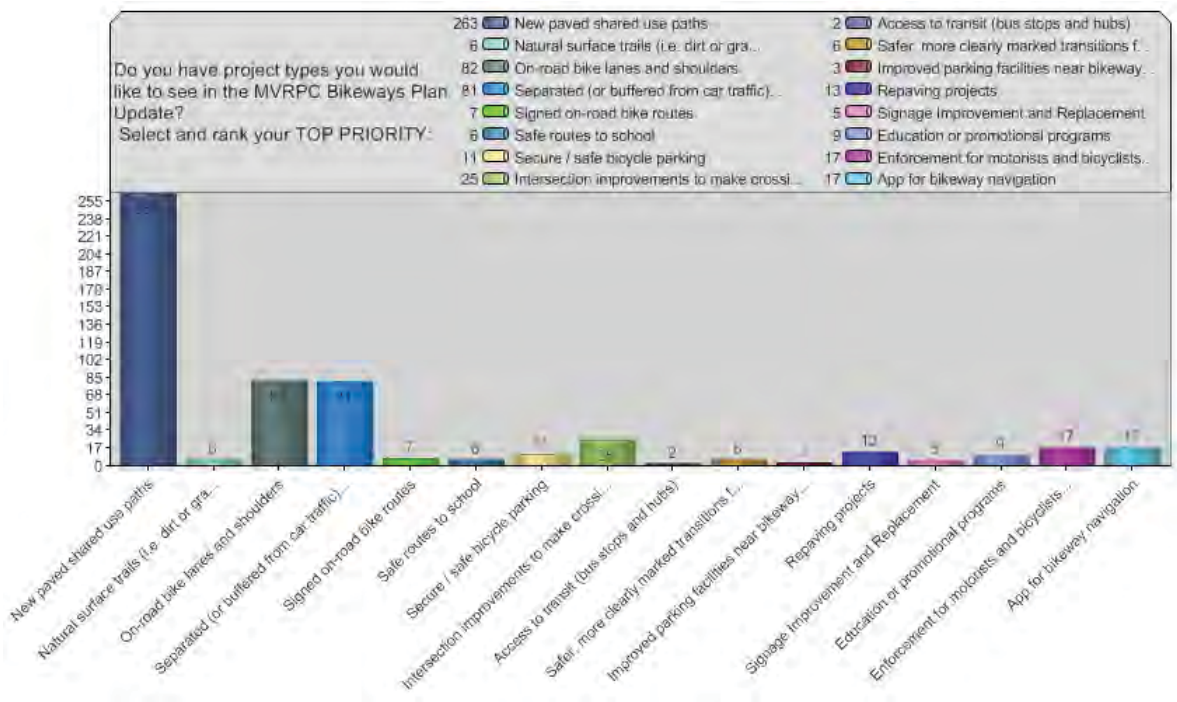
	Responses	Percent
Responses:	99	100%
Total Responded to this question:	99	14.12%
Total who skipped this question:	602	85.88%
Total:	701	100%

Graph/Chart function not relevant for this question type.

14.

Do you have project types you would like to see in the MVRPC Bikeways Plan Update?
Select and rank your TOP PRIORITY:

	Responses	Percent
New paved shared use paths:	263	47.56%
Natural surface trails (i.e. dirt or gravel):	6	1.08%
On-road bike lanes and shoulders:	82	14.83%
Separated (or buffered from car traffic) on-street bike lanes:	81	14.65%
Signed on-road bike routes:	7	1.27%
Safe routes to school:	6	1.08%
Secure / safe bicycle parking:	11	1.99%
Intersection improvements to make crossing major roads easier:	25	4.52%
Access to transit (bus stops and hubs):	2	0.36%
Safer, more clearly marked transitions from bikeway to roadway:	6	1.08%
Improved parking facilities near bikeways:	3	0.54%
Repaving projects:	13	2.35%
Signage Improvement and Replacement:	5	0.9%
Education or promotional programs:	9	1.63%
Enforcement for motorists and bicyclists:	17	3.07%
App for bikeway navigation:	17	3.07%
Total Responded to this question:	553	78.89%
Total who skipped this question:	148	21.11%
Total:	701	100%

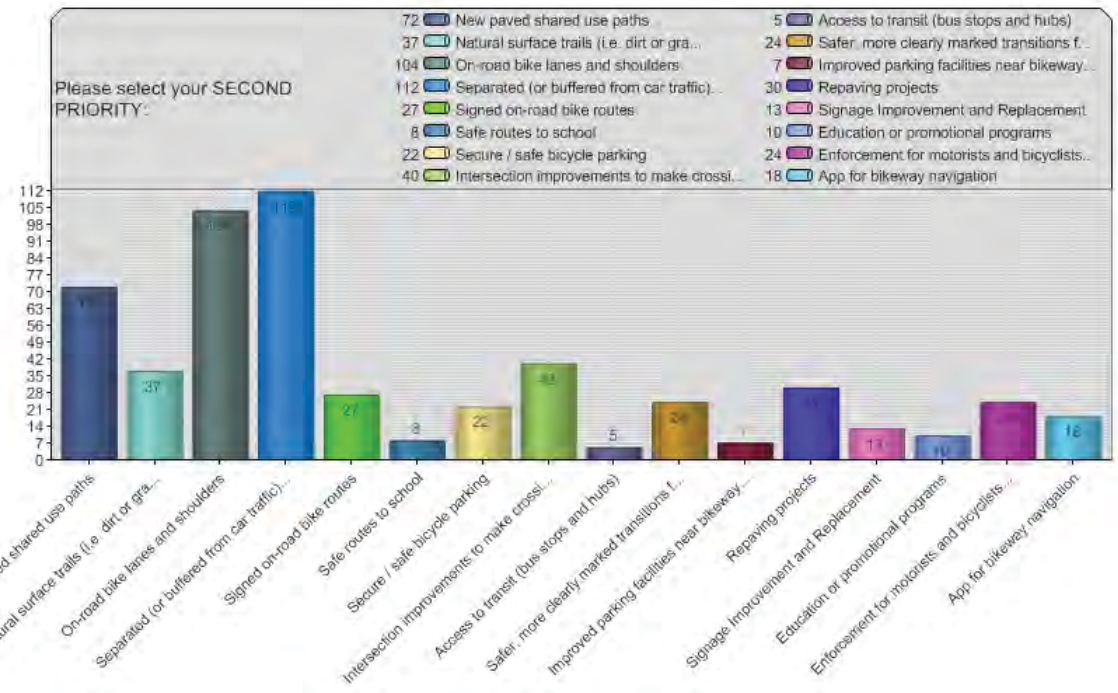


15.

Please select your SECOND PRIORITY:

	Responses	Percent
New paved shared use paths:	72	13.02%

	Responses	Percent
Natural surface trails (i.e. dirt or gravel):	37	6.69%
On-road bike lanes and shoulders:	104	18.81%
Separated (or buffered from car traffic) on-street bike lanes:	112	20.25%
Signed on-road bike routes:	27	4.88%
Safe routes to school:	8	1.45%
Secure / safe bicycle parking:	22	3.98%
Intersection improvements to make crossing major roads easier:	40	7.23%
Access to transit (bus stops and hubs):	5	0.9%
Safer, more clearly marked transitions from bikeway to roadway:	24	4.34%
Improved parking facilities near bikeways:	7	1.27%
Repaving projects:	30	5.42%
Signage Improvement and Replacement:	13	2.35%
Education or promotional programs:	10	1.81%
Enforcement for motorists and bicyclists:	24	4.34%
App for bikeway navigation:	18	3.25%
Total Responded to this question:	553	78.89%
Total who skipped this question:	148	21.11%
Total:	701	100%



View Questions: 11 to 15

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Publish Results

Analyze Survey Results - Results Summary

Survey: MVRPC Bikeways Planning Survey

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Individual Results

Survey Status		Respondent Statistics		Points Summary
Status:	Closed	**Total Responses:**	701	No Points Questions used in this survey.
Deploy Date:	01/22/2015	**Completes:**	538	
Closed Date:	03/06/2015	**Partials:**	163	

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Create Display Criteria

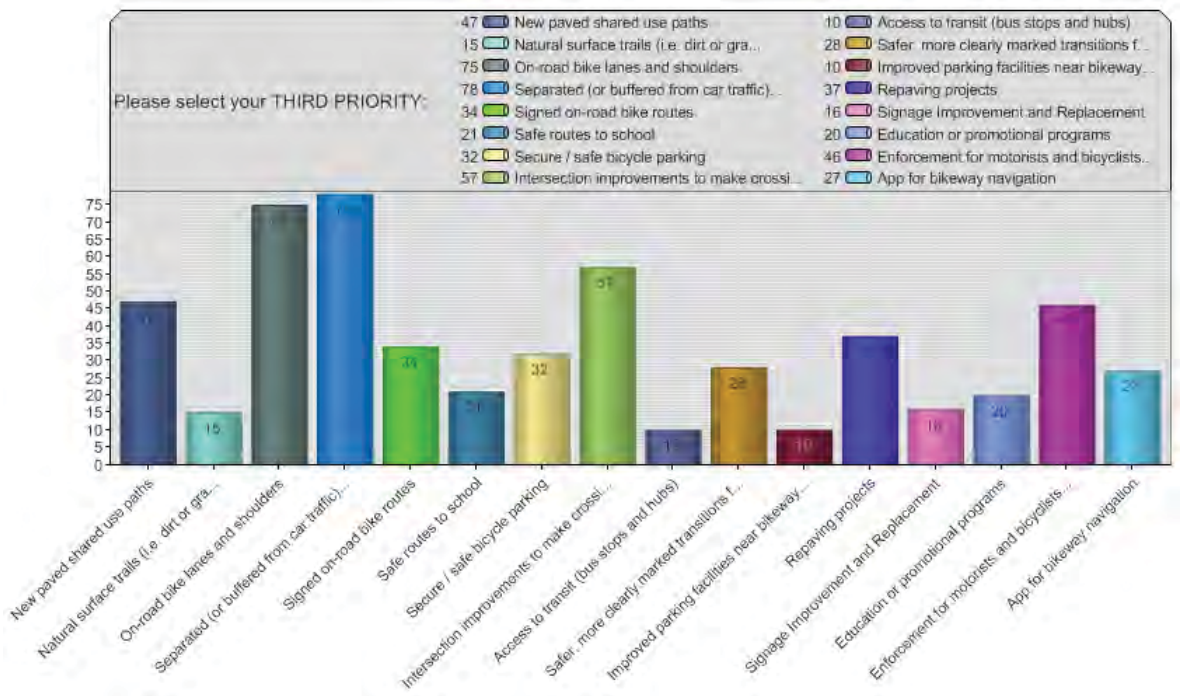
Criteria Active: 0 Create Criteria

View Questions: 16 to 20

Summarized Data Report - Survey: MVRPC Bikeways Planning Survey

16.
Please select your THIRD PRIORITY:

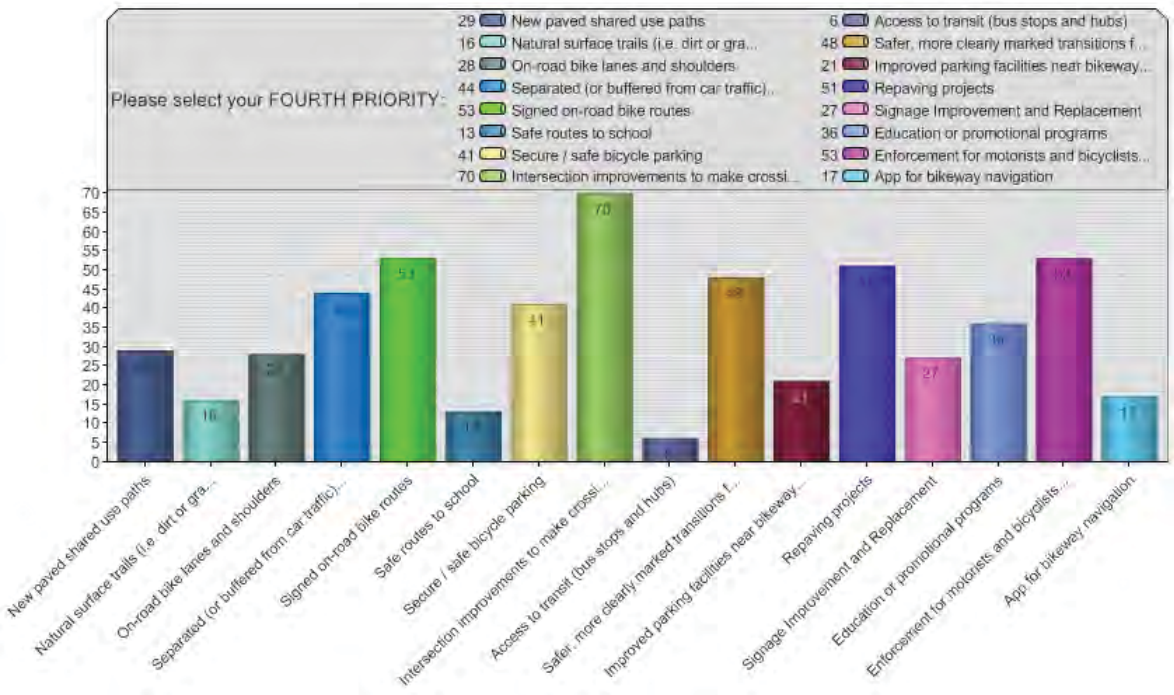
	Responses	Percent
New paved shared use paths:	47	8.5%
Natural surface trails (i.e. dirt or gravel):	15	2.71%
On-road bike lanes and shoulders:	75	13.56%
Separated (or buffered from car traffic) on-street bike lanes:	78	14.1%
Signed on-road bike routes:	34	6.15%
Safe routes to school:	21	3.8%
Secure / safe bicycle parking:	32	5.79%
Intersection improvements to make crossing major roads easier:	57	10.31%
Access to transit (bus stops and hubs):	10	1.81%
Safer, more clearly marked transitions from bikeway to roadway:	28	5.06%
Improved parking facilities near bikeways:	10	1.81%
Repaving projects:	37	6.69%
Signage Improvement and Replacement:	16	2.89%
Education or promotional programs:	20	3.62%
Enforcement for motorists and bicyclists:	46	8.32%
App for bikeway navigation:	27	4.88%
Total Responded to this question:	553	78.89%
Total who skipped this question:	148	21.11%
Total:	701	100%



17.

Please select your FOURTH PRIORITY:

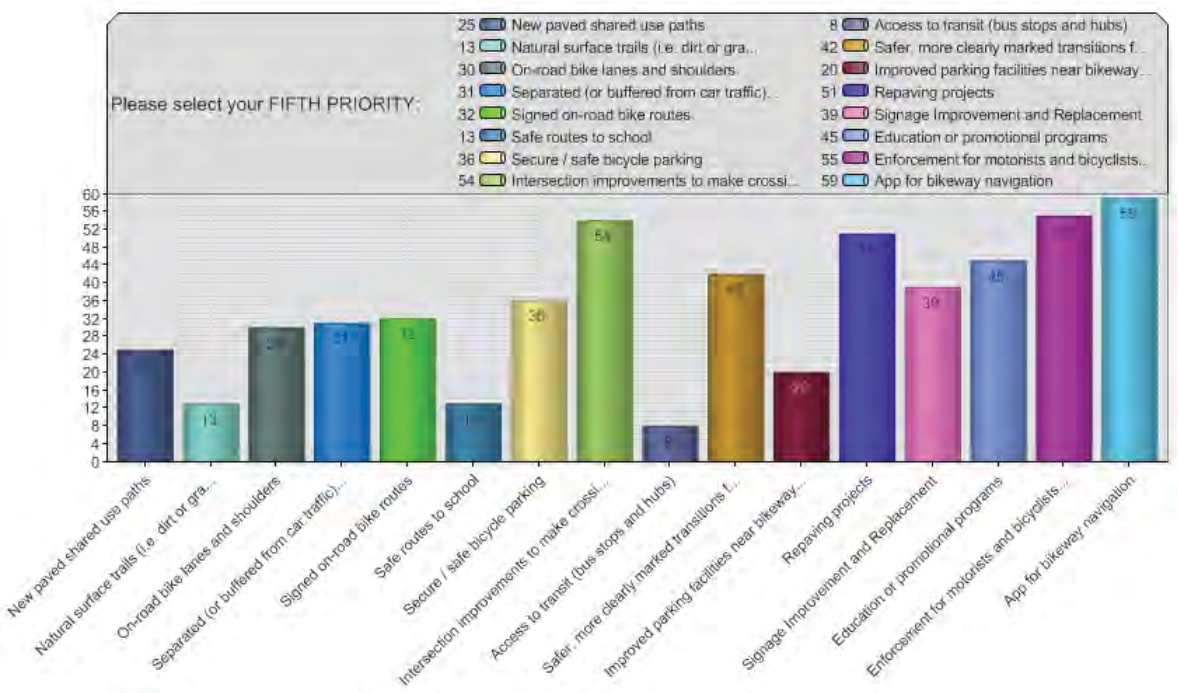
	Responses	Percent
New paved shared use paths:	29	5.24%
Natural surface trails (i.e. dirt or gravel):	16	2.89%
On-road bike lanes and shoulders:	28	5.06%
Separated (or buffered from car traffic) on-street bike lanes:	44	7.96%
Signed on-road bike routes:	53	9.58%
Safe routes to school:	13	2.35%
Secure / safe bicycle parking:	41	7.41%
Intersection improvements to make crossing major roads easier:	70	12.66%
Access to transit (bus stops and hubs):	6	1.08%
Safer, more clearly marked transitions from bikeway to roadway:	48	8.68%
Improved parking facilities near bikeways:	21	3.8%
Repaving projects:	51	9.22%
Signage Improvement and Replacement:	27	4.88%
Education or promotional programs:	36	6.51%
Enforcement for motorists and bicyclists:	53	9.58%
App for bikeway navigation:	17	3.07%
Total Responded to this question:	553	78.89%
Total who skipped this question:	148	21.11%
Total:	701	100%



18.

Please select your FIFTH PRIORITY:

	Responses	Percent
New paved shared use paths:	25	4.52%
Natural surface trails (i.e. dirt or gravel):	13	2.35%
On-road bike lanes and shoulders:	30	5.42%
Separated (or buffered from car traffic) on-street bike lanes:	31	5.61%
Signed on-road bike routes:	32	5.79%
Safe routes to school:	13	2.35%
Secure / safe bicycle parking:	36	6.51%
Intersection improvements to make crossing major roads easier:	54	9.76%
Access to transit (bus stops and hubs):	8	1.45%
Safer, more clearly marked transitions from bikeway to roadway:	42	7.59%
Improved parking facilities near bikeways:	20	3.62%
Repaving projects:	51	9.22%
Signage Improvement and Replacement:	39	7.05%
Education or promotional programs:	45	8.14%
Enforcement for motorists and bicyclists:	55	9.95%
App for bikeway navigation:	59	10.67%
Total Responded to this question:	553	78.89%
Total who skipped this question:	148	21.11%
Total:	701	100%



19.

Please list any other project types that you would like to see in the MVRPC Bikeways Plan Update:

	Responses	Percent
Responses:	152	100%
Total Responded to this question:	152	21.68%
Total who skipped this question:	549	78.32%
Total:	701	100%

Graph/Chart function not relevant for this question type.

20.

Please provide a description and location of up to five specific projects or programs you would like to see included in the MVRPC Bikeways Plan Update:

	Responses	Percent
Responses:	552	100%
Total Responded to this question:	552	78.74%
Total who skipped this question:	149	21.26%
Total:	701	100%

Graph/Chart function not relevant for this question type.

View Questions: 16 to 20

Close

This survey is powered by www.surveymethods.com

Publish Results

Analyze Survey Results - Results Summary

Survey: MVRPC Bikeways Planning Survey

The data below represents this survey's consolidated results. To conduct analysis on what types of individuals answered questions in a particular way, click on the Create Criteria button.

Your report has been generated. Click here to download the file.

Individual Results

Survey Status	
Status:	Closed
Deploy Date:	01/22/2015
Closed Date:	03/06/2015

Respondent Statistics	
Total Responses:	701
Completes:	538
Partials:	163

Points Summary

No Points Questions used in this survey.

Convert to PDF
Convert to Word
Email PDF
Export To Excel

Create Display Criteria

Criteria Active: 0 Create Criteria

View Questions: 21 to 24

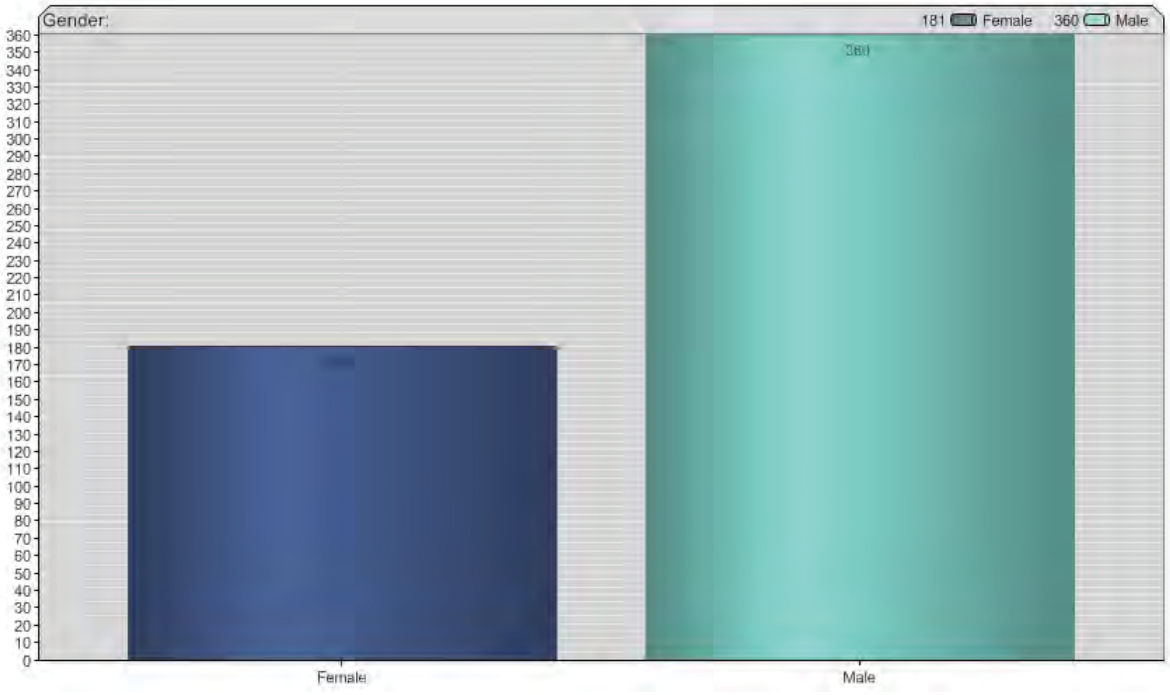
Summarized Data Report - Survey: MVRPC Bikeways Planning Survey

21.
In order to know how representative the survey is of the general public, please tell us some more about yourself:

	Responses	Percent
Home ZIP code::	543	100.37%
Work ZIP code::	543	100.37%
Age:: Highest: 100.00 Lowest: 0.00 Average: 49.01 Median: 52.00	543	100.37%
Annual household income::	541	100%
Total Responded to this question:	541	77.18%
Total who skipped this question:	160	22.82%
Total:	701	100%

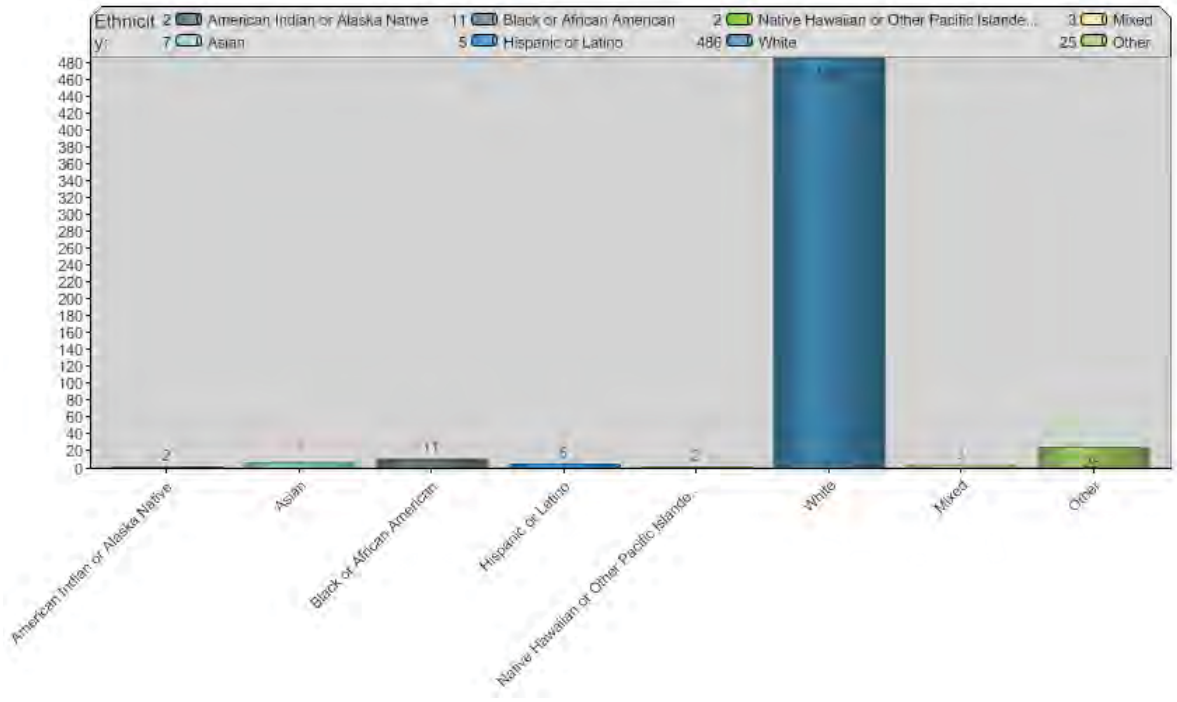
22.
Gender:

	Responses	Percent
Female:	181	33.46%
Male:	360	66.54%
Total Responded to this question:	541	77.18%
Total who skipped this question:	160	22.82%
Total:	701	100%



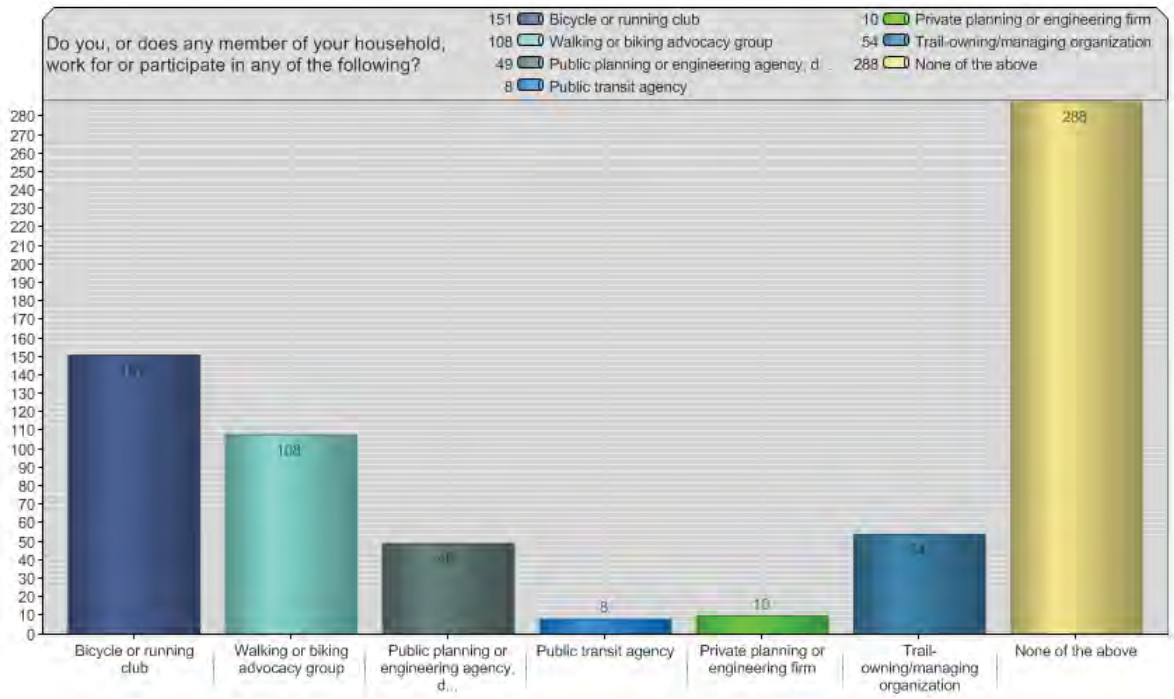
23.
Ethnicity:

	Responses	Percent
American Indian or Alaska Native:	2	0.37%
Asian:	7	1.29%
Black or African American:	11	2.03%
Hispanic or Latino:	5	0.92%
Native Hawaiian or Other Pacific Islander:	2	0.37%
White:	486	89.83%
Mixed:	3	0.55%
Other:	25	4.62%
Total Responded to this question:	541	77.18%
Total who skipped this question:	160	22.82%
Total:	701	100%



24. Do you, or does any member of your household, work for or participate in any of the following?

	Responses	Percent
Bicycle or running club:	151	27.91%
Walking or biking advocacy group:	108	19.96%
Public planning or engineering agency, department, or commission:	49	9.06%
Public transit agency:	8	1.48%
Private planning or engineering firm:	10	1.85%
Trail-owning/managing organization:	54	9.98%
None of the above:	288	53.23%
Total Responded to this question:	541	77.18%
Total who skipped this question:	160	22.82%
Total:	701	100%



View Questions: 21 to 24

Close

This survey is powered by www.surveymethods.com

Appendix B - Public Input Suggestions by County & Region

Bike Plan Update **Public Input Comments and Suggestions**

Repeats	County	Project
14	GREENE	Fairborn to Yellow Springs mixed use path or buffered bike lanes
11	GREENE	Trail Bridge over Detroit Street near Xenia Station
9	GREENE	A direct connection from Dayton to Springfield (Three Counties Trail)
7	GREENE	Bellbrook to Spring Valley Trail
6	GREENE	Connect WSU to trail system
5	GREENE	cleaner route and safer Bike Route from Beavercreek Station straight to Wright State down Fairfield Road.
4	GREENE	Paved trail connecting the Little Miami Scenic Trail north of Yellow Springs to Young's Jersey Dairy and then on to John Bryan State Park
3	GREENE	More routes to WPAFB
3	GREENE	Fairborn to Xenia
3	GREENE	Bike facility on Research from County Line Road to Grange Hall
3	GREENE	bike lanes on Grange Hall Road/National Road
3	GREENE	Find a safe way to access the Little Miami Scenic Trail from Fairground Recreation Center thru Angela Ave. traffic light in front of Groceryland. I know many doable options and key land acquisition from a willing seller.
2	GREENE	Detroit Street in Xenia off the sidewalk
2	GREENE	bridge or dedicated bike lane on Indian Ripple Rd over I-675 in Beavercreek for access to the Greene
2	GREENE	WSU I-675 walkway/bike bridge project
2	GREENE	Connection to Grange Hall and N. Fairfield paths for Knollwood (Beavercreek)
2	GREENE	More Share the Road signs in Xenia
2	GREENE	Indian Ripple Road, Shakertown Road, South Fairfield Road -- safe lanes would connect many potential bike commuters to the bike path network.
	GREENE	WSU to Airway Shopping Center
	GREENE	Bike-friendly crossings of North Fairfield in Beavercreek
	GREENE	Bike-friendly crossings of Dayton-Xenia in Beavercreek
	GREENE	Jamestown trail connection to Ohio to Erie Trail
	GREENE	Safer routes through downtown Fairborn
	GREENE	Fairborn - Kaufman Ave Trail to Yellow Springs Fairfield Road
	GREENE	Bike lanes on spring valley-painters rd from cornstalk rd through Spring Valley on 725 connecting to bike path.
	GREENE	Protected (on or off-road) bikeways to Yellow Springs High School are either missing or in need of repair (Dayton and S. College streets).
	GREENE	Xenia Avenue and Dayton Street in Yellow Springs examined for on-street protected bikeways
	GREENE	Improve intersections on Creekside Trail through Beavercreek
	GREENE	Safer way to cross SR 35 at Factory Road and other crossing points In Beavercreek
	GREENE	Cedarville to Yellow Springs
	GREENE	Fairborn to Taylorsville
	GREENE	Bike lanes on Xenia streets
	GREENE	Widen Old Yellow Springs Road for bike facility
	GREENE	Widen Ravenwood Road for bike facility
	GREENE	Widen Col Glen Road to Kaufman for bike facility
	GREENE	A spur from the Xenia-BC trail that reaches dayton-xenia road, maybe at the public park by progress drive
	GREENE	Feedwire East/West route with new Costco development around Wilmington Pk/Feedwire
	GREENE	Would love to improve roads around Bellbrook/sugarcreek to make wider and more bike friendly.
	GREENE	Trail connection to Clifton Mill
	GREENE	Remove metal from bike path near Kaufman avenue next to Air Force base,
	GREENE	Better access to the bikeways from neighborhoods near The Greene.
	GREENE	Build an off-road bike path from the Creekside Trail right near the I-675/US-35 exchange directly north towards Wright-Patt Air Force Base (in 675 Right of Way)
	GREENE	Build some off-road bike paths near New Germany Trebein Rd., Beaver Valley Road, and Old Yellow Springs Rd. in Fairborn/Beavercreek that will connect to the Huffman Prairie Bikeway and Creekside Trail
	GREENE	wider shoulders or dedicated bike lanes on Airway/Colonel Glenn Highway over the Exit 15 ramp.
	GREENE	Bellbrook to creekside
	GREENE	Improve Creekside Trail crossing of 2nd Street in Xenia to include a safety island in the street.
	GREENE	Connect Collier Street in Xenia to the Ohio-to-Erie Trail.
	GREENE	Improve intersection (Detroit at Miami) for crossing from Xenia Station to Jamestown/Ohio-to-Erie Trails.
	GREENE	Provide pedestrian/bikeway along Second Street between Colorado Drive and Progress Drive in Xenia.
	GREENE	Provide bikeway connection along Dayton Avenue between Progress Drive and Sheehan Drive in Xenia
	GREENE	Trail crossing improvements at intersection of Kinsey and SR 68
	GREENE	Better signage for car drivers approaching crossings of the Jamestown Connector (at Bickett, Hoop, Jasper and Quarry)
	GREENE	Better signage on Dayton Yellow Springs Road to get from Twin Towers Park to Goes Station
	GREENE	Connect Ferguson School to Bike Path (Beavercreek).
	GREENE	Bike/Ped bridge over Beaver Creek to connect Gateway Drive OR Valle Greene Drive to Market Court in Fairborn.
	GREENE	Huffman Dam to New Carlisle

Bike Plan Update **Public Input Comments and Suggestions**

Repeats	County	Project
13	MIAMI	Urbana-Piqua connector
13	MIAMI	Piqua to Sidney trail
10	MIAMI	Piqua to Union City
7	MIAMI	Trail along Stillwater river from Miami County south to Englewood
5	MIAMI	In Troy, there are only bike paths near the downtown. There are no paths in the southwest area of the city. I would like to see some connectors to the other trails from this side of town. Swailes Road.
3	MIAMI	continue bike lane south 25A from Piqua city limits to Peterson Rd at traffic light Just widen the berm
3	MIAMI	Piqua:1) buffered on street bike lanes; 3) Bicycle friendly signal technology; 4) intersection cyclist box; 5) transportation safety for bikes and cars
2	MIAMI	Springfield to New Carlisle to Troy Connector
2	MIAMI	Troy to Urbana
2	MIAMI	Improve bicycle friendliness at Ross Rd Trail Access, sharrows, caution lights, share the road, 35 mph or lower speed limit, bike lane, etc. Adventures on Great Miami is destination ni this area.
	MIAMI	Bridge at Piqua Power Plant - to be ADA accessible
	MIAMI	Neighborhood connections in Tipp City
	MIAMI	Market Street Bridge in Troy - bike lanes
	MIAMI	Ramps to Adams Street Bridge in Troy - too steep.
	MIAMI	In Troy between Market Street and Adams Street on Great Miami Trail upgrade from substandard sidewalk to 10' paved trail
	MIAMI	More bicycle organized activities in Miami County
	MIAMI	Miami County, Troy and Tipp City in particular. Safe biking to shopping areas and restaurants from the township.
	MIAMI	West Milton to GMR Trail.
	MIAMI	Connect North end of a Duke Park (Troy) trail to Eldean Road covered bridge along Miami River
	MIAMI	Connect South end of a Duke Park (Troy) trail to existing levy trail at park across from Hobart Arena.
	MIAMI	Bike Hub in Miami County
	MIAMI	Great Miami River bridge to connect Treasure Island to Duke Park in Troy
	MIAMI	GMR Trail maintenance between Troy and Tipp City
	MIAMI	Signage for blind curves on trails
	MIAMI	On top of the levee the concrete path needs to be widened
	MIAMI	Connect to retail on Covington (Kroger, etc.) and Smitty's BMX - Piqua
	MIAMI	Troy to Laura along 55
	MIAMI	Peters & 25A can get people into Troy & Tipp – it needs to be more bike friendly
	MIAMI	Connect to Pitsenbarger Park - Piqua
	MIAMI	Create linkage from M.C. YMCA Robinson Branch to the Great Miami River Trail

Bike Plan Update **Public Input Comments and Suggestions**

Repeats	County	Project
32	MONT	Build the Great-Little Trail
22	MONT	Continue Iron Horse Trail into Centerville; tunnel under I-675
21	MONT	Complete DKC through Warren Street and Downtown Dayton
16	MONT	Greater Downtown Dayton bike facilities: bike lanes, buffered bike lanes. Destinations: Oregon Distict, 2nd Street Market, St. Anne's Hill. Locations: Patterson, Perry Street, Fifth Street, Second Street, Patterson at Jefferson, Patterson at Main
10	MONT	Wolf Creek Trail Gap
10	MONT	Close gap on Stillwater Trail in Mont Co.
10	MONT	Build "Old National Road Trail" along US 40 from Wolf Creek Trail, through Englewood MP, along DAY Airport, through Vandalia, to Taylorsville MP, GMRT
9	MONT	Centerville to Delco park completion
9	MONT	Road diet and bike facility on Wayne Ave in Dayton
7	MONT	Creekside Trail extension to Steve Whalen (along 35)
6	MONT	Rebuild trail under 75 in Dayton
6	MONT	Road Diet along East Dorothy Lane in Kettering – to the Greene
5	MONT	Safer routes through downtown Kettering/Centerville
5	MONT	Secure bike parking at main library and other high theft areas
5	MONT	bike lane for Springboro Pk. for all of Montgomery county
4	MONT	Better Trail access thru downtown Dayton
4	MONT	Continuing the shared use path from Centerville Station to Centerville High School to the west and Sugarcreek Metropark to the east.
3	MONT	Bike facilities on Bridges in Dayton to west side.
3	MONT	reduce downtown Dayton speed limit to 25
3	MONT	On-road bike paths that connect communities in Southern Montgomery County (Centerville, Miamisburg, Kettering, West Carrollton) to the Dayton Mall).
2	MONT	Bike parking on Brown St. Dayton
2	MONT	trail from the new Springfield St trail to get to MoMBA
2	MONT	Iron Horse Park to Bellbrook
2	MONT	Provide additional ways (between Moraine and Carillon Park) to access the Great Miami River Trail for people who live in Kettering
2	MONT	bike lane for full length of Yankee St.
2	MONT	Forest Ridge to Huffman Dam or Mad River Trail
2	MONT	Mountain Bike trial in Germantown or Twin Creek Metropark.
2	MONT	Street Metal Storm Drain (grate) slots where tires can get caught in along Burkhardt road in Riverside.
2	MONT	Improve crossing Helena St. by Island Park.
2	MONT	Bike lane n main st, north of shoup mill
2	MONT	Huber to Great Miami Trail connections
2	MONT	Forrer Blvd./Road. Change marked bike route into a separate lane. Mark the lane as a Bikes May Use Full Lane area.
2	MONT	Safe bike routes from all directions to downtown Centerville.
2	MONT	reconfiguration of the crossing on Shroyer Rd on the Dayton-Kettering Connector
2	MONT	KOA campground to US 40 Old National Trail
	MONT	Pedestrian/bike crosswalk at Whipp and Polen (across from the Oak Creek Plaza)
	MONT	On-road bike lanes (NOT sharrows) connecting bike trail on Hempstead Station Rd. to amenities such as Wilmington-Stroop library
	MONT	More Centerville bike paths
	MONT	Repave underpasses along Wayne Avenue (35, RR trestle)
	MONT	repave Jefferson St bike lane in Dayton
	MONT	GMR Trail in Dayton - provide separation along Veterans Parkway.
	MONT	bike lane for 725 Miamisburg to Centerville.
	MONT	A bike lane on residential streets parallel to Far Hills North and South and the EQuivalent parallel to 3rd street east and west
	MONT	A bridge from Eastwood lake over the Mad River to Eastwood park
	MONT	Iron Horse Connector to Centerville via Hewitt and Bigger Road Bridge.
	MONT	bikeway from Old North Dayton to the Findlay Street ramp of the Mad River Trail
	MONT	connecting the end of the planned path on Stanley Ave to the Great Miami River Corridor Bikeway
	MONT	more connections on the West side of Dayton to major bikeways (similar to the planned Broadway St bike lanes)
	MONT	programs in Dayton elementary schools teaching kids how and where to access major trails

Repeats	County	Project
	MONT	UD to the Creekside Trail
	MONT	Connecting the shared use path at Alex-Bell & Clyo in Centerville to the shared use path at Centerville Station Rd & Clyo.
	MONT	Continuing the shared use path on E. Alex Bell in Centerville to shared use path near Wilmington Pike & Alex-Bell (that leads to Bellbrook)
	MONT	shared use path connecting the two ends of Zengel Drive in Centerville (between Clyo & Rt 48)
	MONT	3rd and Springfield Street in Dayton to have bike lanes and signage
	MONT	a safe path from Brown School to Taylorsville
	MONT	Safe Bike Path crossing lane crossing RT-741 to Austin Landing
	MONT	Marked Bike Lane on roads in Wash. Twp
	MONT	West of Miami River from Miamisburg/south
	MONT	Bike path along North Keowee Street from downtown to Great Miami River bridge and connected to Great Miami Trail.
	MONT	re-construct dangerous trail crossing in Miamisburg at Linden Ave
	MONT	Safe crossings of 675 at Far Hills
	MONT	Bike lanes on Ackerman, Rahn, Lincoln Blvd, Whipp in Kettering
	MONT	Routes from Oakwood to Dayton Mall avoiding US48
	MONT	On road bike lanes and shoulders throughout the greater Dayton area and suburbs!
	MONT	Creekside to Miamisburg thru Kettering
	MONT	bike/ separated lanes from downtown to the south suburbs.
	MONT	Better connection from Miller Lane area to bikeways
	MONT	Bike facilities under the US 35 overpasses into downtown Dayton.
	MONT	connect current trail in Germantown to Germantown MetroPark and/or Twin Creek Metropark
	MONT	Connect Germantown trail to Miamisburg (Medlar Bikeway)
	MONT	Trail connection between Germantown and Farmersville using old railroad path
	MONT	New trail or bike lane on Upper Miamisburg Road
	MONT	Trail or buffered lanes to connect business areas. Shops of Oakwood, Town & Country, Belmont
	MONT	bike facilities on Siebenthaler or Ridge Aves east of Stillwater Trail
	MONT	Kettering and Oakwood connection to Great Miami path.
	MONT	GDRTA to run later into the evening
	MONT	Make sidewalk to street smoother at intersection of yankee/social/row on Northeast corner as there is not a gentle descend now and have to cut through grass
	MONT	rework the path on the back side of Taylorsville Dam to get ride of the sharp 180 degree turn. Somewhat dangerous.
	MONT	Bike lane on Wright Bros Parkway
	MONT	Straightening out meanderings on Yankee Trace path, unsafe at bike speeds
	MONT	Bike lanes along SR 48 Centerville north to Whip Road.
	MONT	Assist Centerville in developing a bike/ped plan.
	MONT	Repave the DeWeese Parkway shared path
	MONT	Improve maintenance of Kettering Connector, including more frequent mowing and swift notice of blockages. The area is heavily wooded and downed trees occasionally block the path.
	MONT	Bike lane Third Street to Airway Shopping Center
	MONT	Iron Horse Trail to the Greene
	MONT	Bike hubs in all Greater Downtown Dayton neighborhoodds
	MONT	Improve intersection of Third and Keowee in Dayton.
	MONT	I want to see bike path improvements on the paths west of the river
	MONT	Remove parking meters on Wayne Ave in Dayton – make room for bike lane.
	MONT	restore bike route signage through Belmont in Dayton
	MONT	safety issue going through eastwood from creekside station toward riverscape
	MONT	Velodrome Wayne and Fifth Street
	MONT	Bike lanes marked for these streets: Bunnel Hill; SR 73; Yankee Rd; Lyons road; All of Lytle 5 Points
	MONT	Far Hills/Main street/Oakwood Ave/Brown Street protected bike lane
	MONT	A trail/sidewalk from Brandt Pike and Kitridge to the Kroger nearby. (Huber Heights)
	MONT	extension of paved path or separated bike lane along shoup mill between riverside dr and main st
	MONT	DKC to Delco Park
	MONT	Mark Airway Rd. and Burkhardt Rd. street crossings.
	MONT	Bike parking at The Cannery Lofts
	MONT	Bike facility along Alex-Bell in West Carrollton and Miami Twp. (west from Munger)
	MONT	Crossover from Riverscape to St. Clair and from Jefferson to Riverscape. The transitions are very awkward
	MONT	Improve intersections along Patterson at Jefferson and Main in Dayton.

Repeats	County	Project
	MONT	More bike infrastructure connecting west Dayton
	MONT	Dayton Gran Fondo (no cars)
	MONT	Bike path along Rt 4 corridor from Huffman Dam to Chambersburg Road (then to Carriage Hill MP)
	MONT	Shakertown at Research – Iron Horse Trail crossing improvements.
	MONT	Safe crossing of Alex Road in West Carrollton from west side to YMCA on the east side. Or bike facility on Alex from Rose to Liberty.
	MONT	Improve bike facilities from Dayton Mall west to Great Miami Trail, along Lyons Road, Maue Road, and E. Linden Avenue
	MONT	Repave Iron Horse under US 35
	MONT	Phillipsburg to US 40 - Old National Trail
	MONT	Bike Facilities along N. & S. Findlay Street to connect the Mad River Trail to the Steve Whalen Bikeway
	MONT	Connect Chaminade-Julienne and DECA Prep to trail network and West Side
	MONT	Separated bikelane on Old Salem Road in Clayton and Englewood
	MONT	Connect at Powell Road intersection to the Trail. Improve Powell Road crossing of Old Troy Pike in Huber Heights
	MONT	Share or Path along Keowee Street from the Mad River Trail north across the Great Miami River to the Great Miami River Trail
	MONT	Dayton project along Valley – Rita – Keowee should have a connection to Mad River Trail by also heading south on Keowee
	MONT	Spur from Creekside Trail to Cosler in Dayton
	MONT	Connect Huffman MP parking lot on Lower Valley Pike to Huffman Dam and to MoMBA
	MONT	Connection from Tacoma Street (Cleveland Park island) to the Steve Whalen Bikeway
	MONT	No turn on red sign at Patterson & Monument
	MONT	More sharrows in BikeShare service area

Bike Plan Update **Public Input Comments and Suggestions**

Repeats	County	Project
10	WAR	Franklin to Middletown (& Hamilton)
5	WAR	Springboro better connected to the Great Miami trail
2	WAR	Lebanon to Great Miami Trail
2	WAR	A trail connecting the GMRRT and the LMST somewhere around Morrow
2	WAR	Extension south of Byers Road path down Woods Rd connecting with Pennyroyal....this in very dangerous, no shoulders, no walk, severe drop offs, actual traffic speed >45mph. Even extending this down Clearcreek Franklin Road to SR73 where similar situation exists between Pennyroyal and Tamarack
	WAR	construct off road N/S trail between Springboro and Austin Road
	WAR	Improved safety in S'boro on SR741 south of OH73
	WAR	Safe separate Bike access to Soccer fields in Springboro
	WAR	Bike and Pedestrian access from Foliage Lane across creek into North Park and neighborhood east of North
	WAR	Short stretch of SR 73 is two lanes, but is three lanes on either end
	WAR	Bike and Pedestrian way desired between Wheatmore Court and S. Richard's Run
	WAR	Bike and Pedestrian facility from eastern terminus of Kitty Hawk Drive in Springboro, north to southern terminus of Washington Church Road
	WAR	Bike and Pedestrian connection from Painters Court to Shady Pines Avenue in Springboro
	WAR	Bike and Pedestrian connection from Tanglewood Drive to SPARC n Go #2 along SR 73
	WAR	Bike facility on SR 123 bridge over Great Miami River in Franklin – connect west side neighborhood to Great Miami River Trail and downtown Franklin
	WAR	Consessions at Sparc n Go stations

Bike Plan Update **Public Input Comments and Suggestions**

Repeats	County	Project
2	PREBLE	Trails west to Eaton and Oxford
2	PREBLE	Brookville to Indiana (Preble Co.)
2	PREBLE	Please consider including Preble County in the Bikeways Plan for Miami Valley.
	PREBLE	I would like to see dollars spent in Preble County as in other counties and communities within the MVRPC responsibility program.
	PREBLE	Routes that intersect OH35 in West 5Alexandria &/or Eaton
	PREBLE	1. An assessment study to consider a Preble County Bikeway; east/west as well as north/south 2. Assistance and guidance to help our grass roots newly-formed committee to write grants 3. To partner with the local YMCA and Preble County Park District 4. To work with the Preble County Council on Aging to teach and share with them that bicycling can be fun and good for your health 5. To prepare steps and activities to coordinate with the local historical society that has a new director onboard 6. Use modern online methods to extend our message to the county and beyond 7. Market ourselves to change behavior

Repeats	County	Project
16	CLARK	Eliminate bike lanes sections of LMR Trail in Springfield
3	CLARK	Bicycle lanes in downtown Springfield.
2	CLARK	Bicycle lanes on all main arteries in Springfield.
	CLARK	New Carlisle to Great Miami / Tipp city
	CLARK	Work with Clark Co to find a way to widen Jackson Road up to Dan Young's property a short distance and then cross his farm to traffic light.
	CLARK	Access to trails from Northern Clark County
	CLARK	An extension of the Tecumseh trail in New Carlisle to link with other trails in the area.
	CLARK	Shared use bikeways and on road bike lanes on major roadways in the Enon Area
	CLARK	Connector from the trail to Bechtel Ave. Springfield where there are great lunch stop locations.

Tally	County	Project
2	DARKE	Brookville to Greenville
	DARKE	Connect along SR 49 to Montgomery County

Bike Plan Update **Public Input Comments and Suggestions**

Tally	County	Project
23	REG	Low stress connections to the trails
21	REG	Programs to get more people on bikes
20	REG	better enforcement
19	REG	More trails
19	REG	More trail signage – colleges, restaurants, travel times, maps, consistent, Emergency numbers
19	REG	Clearing of facilities for bikes: more trail sweeping, sweeping bike lanes, sweeping road shoulders, clearing snow in bikelanes and trails, clean roads after crashes, educate public works about the importance to cyclists
18	REG	Training motorists on how to drive on shared roads with bikers
17	REG	more bike parking options – covered parking like Cleveland – park n Rides (spec. at Fishburg and Huffman Dam)
13	REG	classes for beginning road riders
11	REG	Funding for maintenence of trails
10	REG	More bike lanes
9	REG	A bike route app
8	REG	More restrooms
8	REG	Trail-side tent camping
7	REG	Better detours for highway construction
7	REG	Safe routes to school for all schools in the area.
6	REG	Volunteer safety patrols
6	REG	Education for beginning trail users
6	REG	Safety alarm stations along trails
6	REG	Close trail gaps
5	REG	more lighting on trails
5	REG	More mountain bike trails
5	REG	Funding for trail paving, repaving
5	REG	bike paths need to be elevated above routine flood levels.
5	REG	Bike Groups for underserved groups: women, youth, minorities
5	REG	Trail connections to major parks: Sugarcreek, Germantown, Miami County Parks, MoMBA, Carriage Hill, Huffman (from Riverside, HH), Cox Arb.
4	REG	More bike friendly direct routes between towns whether they be multi-use paths or marked road ways.
4	REG	Bike Ped Crossings over roads
4	REG	Green bike lanes
4	REG	Information on hotels near bike paths - bike friendly hotel program
4	REG	More shaded areas, "pull-off" areas, and benches along trails
3	REG	More drinking fountains along trails
3	REG	bicycle rental
3	REG	Curb cuts at all access points
3	REG	Set trail maintence standard – safety, timeliness
3	REG	Buffered bike lanes
3	REG	More share the road signs.
3	REG	Incentives for secure / weather protected bike parking
3	REG	Better advertising of new improvements such as new bike ways that have been opened.
3	REG	Proper cycling signage on streets
2	REG	Trail policing
2	REG	more development of business along bike path
2	REG	include funding for width for bike facilities on all road widening projects
2	REG	Do away with most dedicated bike lanes as none are maintained to be kept clear of debries and many are located in unsafe area along parked cars.
2	REG	Establish a century loop on the trails system
2	REG	Three foot lane enforced
2	REG	No right turn on red where bike facilities are present
2	REG	turn all breakdown lanes/shoulders to bike lanes
2	REG	Clear signage on major street approaches to bike pathways to alert motorists and increase education of motorist to bike traffic.
2	REG	safe bicycling route maps of Loops using trails to reach rural areas with safe roads
2	REG	Mileage markers along all trails
2	REG	Bike Ed in schools

REGIONAL

Tally	County	Project
	REG	Cell phone charging stations
	REG	stewardship programs for public outreach
	REG	Goose Control
	REG	US Bike Route 50 Signs
	REG	Regional marketing promoting biking activities by subject/month instead of individual communities promoting separately.
	REG	Group Rides organized by type of bike – road, mountain, recumbent.
	REG	Idaho Stop legal for cyclists
	REG	River Access
	REG	Bicycle lanes parallel to other highways, that are safe to bicyclists.
	REG	Ash Tree removal and replacement
	REG	Bikes with electric assist permitted on bikeways.
	REG	Sharrows/signage/markings for recently completed projects that do not have lanes or roadways that are not slated for repaving/construction
	REG	Bike sensitive traffic signals - retrofit in to older intersections
	REG	More safety initiatives
	REG	Repair of current bikeways
	REG	Bike sharing project expanded to suburbs
	REG	Organized rides for people who getting back into riding
	REG	A contest for new bicycle rack parking installations at businesses. If a business installs a bike rack, they get one entry for each bicyclist who parks there for a month or two, and the winner gets a prize. It would get bicyclists out supporting their local companies, it would provide good advertisement, and it will help expand bicycle parking.
	REG	Sidewalks near schools
	REG	Kayak carrier rentals for bikes along the river for people who don't want to take 2 cars when they kayak short stretches of the river.
	REG	Extended trip guides (i.e. Springfield/YS to Cincinnati area along Little Miami River)
	REG	Additional access points from bike paths to streets
	REG	Need bike path on both sides of main roads not just on one side.
	REG	Supply vending machines for tools, tubes, chains, ect
	REG	Reallocating the travel mode goals to emphasize cycling in municipal planning which is tied to transportation funding (e.g. more $ for bicycling, walking, public transit)
	REG	bicycling and multi-modal education in drivers education classes
	REG	Better lighting on roadways
	REG	Set up a League of Cycle Merchants and try to get people who want to sell water, spare tires, snacks, and such and maybe even an emergency services to help stranded bikers with a number to call to get a flat fixed or something of that nature, during bike trail hours.
		Address issues of automobile traffic studies when bike routes interfere with existing roadways.
		prudent use of tax monies
	REG	Eliminate eminent domain for bike ways.
	REG	Make crosswalk signals longer
	REG	Partner with YMCAs
	REG	Partner with insurance companies to lower rates
	REG	Bicycle Boulevards
	REG	Restaurants on Trail Maps
	REG	Bike boxes
	REG	Bike signals
	REG	Printed resources in multiple languages

Revised Project Scoring Criteria based on Regional Bikeways Committee input.

Criterion	Points	Total Maximum Possible Score
System Connectivity: Provides an essential link in creating a continuous bikeway system within the study area	Provides an essential link in the proposed network; without this link, the system could not be completed: 19-25 points max	25
	Provides a low stress link to the regional trails network: 13-18 points	
	Important as a "stand-alone" project, but not critical to the overall system: 6-12 points	
	A long-term element and potential future link in the system: 0-6 points	
Transportation: Increases the use of bicycle travel to destinations	Access to regional trails and parks: 0-3 points	15
	Access to residential neighborhoods: 0-3	
	Improves traffic safety: 0-3	
	Access to schools: 0-2	
	Access to transit: 0-2	
	Access to employment and retail: 0-2	
Implementation: Project or program is ready to be advanced to implementation	Feasible and ready for implementation: 10-15 points max	15
	Requires further study but has the potential to be advanced: 4-9	
	Presents significant constraints: 0-3	
Local Priority: Project satisfies a need identified in a local plan or an identified weakness in a LAB Bike Friendly Community application	Project is identified in a local or community level bicycle plan: 10 points	15
	Project meets an identified weakness in a past Bike Friendly community application to the League of American Bicyclists: 5 points	
Quality of Life Benefits: Project will provide quality of life benefits to the residents, visitors and businesses of the Miami Valley	Presents particular tourism, environmental and/or business development opportunities: 0-5 points	10
	Project improves equity of access to cycling facilities: 0-5 points	
Agency and Public Support: Project is supported by the organizations(s) responsible for its implementation and management	Project has full agency and public support: 7-10 points max	10
	Project has potential to receive agency and public support: 4-6	
	Project may be able to receive future support: 0-3	
Cost: Project can be implemented within the costs provided based on identified opportunities and constraints	Project can be implemented within the following range of unit costs:	10
	Less than $200K/mile or location: 8-10 points max	
	$200K-$500K/mile or location: 3-7	
	Greater than $500K/mile or location: 0-2	
	Non-capital projects: 0-10 points based on ability to reach the widest range of people per unit of cost required to develop policy or program	

Appendix C - Funding Opportunities & TIP map

Appendix - Funding Opportunities

The bicycling network in the Miami Valley exists at an interesting stage in 2015. The first segments of regional trail are over 40 years old, and have been re-paved and rebuilt more than once. There are many sections that are over twenty years old and these require monitoring and maintenance, as well. At the same time, the on-road network of bike facilities is in its relative infancy and resources are needed for additional miles of bike lanes, buffered bike lanes and cycle tracks.

Naturally, maintenance and development of a bikeway system requires adequate funding. There are several transportation funding streams that project sponsors in the Region can draw from to build out the network envisioned in this plan, including funds allocated by the Miami Valley Regional Planning Commission and other funds administered at the state level.

MVRPC-Attributable Funds

Federal transportation funds are allocated by formula to Metropolitan Planning Organizations, such as the Miami Valley Regional Planning Commission. MVRPC uses a transparent project evaluation process to select from the projects submitted during each open solicitation. Below are brief descriptions of each of these funding sources.

Surface Transportation Program (STP)

This is the most flexible source of funding available through MVRPC. STP funds may be used for any federally-eligible surface transportation project type, including planning studies. Bicycle and pedestrian facilities are eligible under this category, although practically speaking, under the MVRPC project evaluation system, a stand-alone bike or pedestrian project is unlikely to score competitively. On the other hand, all projects seeking STP funds through MVRPC must comply with the Regional Complete Streets Policy, meaning accommodation for bicyclists and pedestrians must be included in the project (unless an exception is met). These bicycle and pedestrian elements can be included in the STP funding for roadway projects. This represents an opportunity to fund bike lanes, buffered or protected bike lanes, and even cycle tracks as a part of a comprehensive roadway project.

STP funds require a minimum 20 percent local (non-federal funds) match and are typically not applied to design and right-or-way phases of projects. Typically, MVRPC allocates about $10.8 million of STP funds on an annual basis.

Transportation Alternatives Program (TAP)

The MAP-21 legislation combined several past programs for non-motorized transportation into a single heading: TAP. Transportation Alternatives funds are designated for projects that enhance the accessibility of the transportation system for bicyclists, pedestrians and other non-motorized users (children, senior adults, and persons with disabilities). Trails, rail-to-trail conversions, sidewalks, and safe routes to school projects are all eligible project types under this category. MVRPC conducts a project

selection process that is very similar to, but separate from, the STP solicitation to identify and select projects for the allocated TAP funds. Stand-alone bike and pedestrian projects will fare best in the TAP project evaluation system; TAP funds represent an opportunity to construct key linkages in the regional cycling network, and to build safe, low stress connections to the regional trails and within jurisdictions.

Similar to STP, TAP projects require a minimum 20 percent local (non-federal funds) match. Typically, MVRPC allocates about $1.1 million in TAP funds annually.

Other Funding Opportunities

There are several sources for funds that are administered on a statewide basis that may be applied to the build out of the bicycling network in the Miami Valley.

Congestion Mitigation/Air Quality (CMAQ)

In recent years, the CMAQ program has transitioned from a program allocated by MPOs to a statewide solicitation and allocation process. This transition is reflected in the hybrid application process. Project submissions are still made through the larger metropolitan planning organizations in Ohio, including the Miami Valley Regional Planning Commission. However final ranking and project selection is completed by a statewide committee, on which MVRPC has a seat. Eligibility for CMAQ funds hinges on a demonstration that the project will reduce traffic congestion and/or reduce air pollution. As such, projects that enhance bicycle and pedestrian access are eligible for these funds, along with a number of other project types.

MVRPC's solicitation for CMAQ projects will occur to match the statewide process' schedule, and is anticipated to occur every other year. MVRPC uses a project evaluation system similar, but not identical, to the STP project evaluation system, and like TAP and STP CMAQ projects require a minimum 20 percent local (non-federal funds) match. MVRPC has historically devoted significant CMAQ funds to regional trails projects.

Recreational Trails Program (RTP)

The Ohio Department of Natural Resources (ODNR) administers this federal funds program which funds the development of trails (non-motorized and motorized) of all types, including paved, multi-use trails typical of the Miami Valley Trails. Trail support facilities, projects enhancing trail accessibility for persons with disabilities, and trail maintenance projects are also eligible under RTP. ODNR has typically solicited for RTP projects once per year with applications due in February.

As with other federal funding streams, RTP requires a minimum 20 percent local (non-federal funds) match. However, unique to the RTP program, RTP funds may be used as the local match for CMAQ, STP, and TAP projects (if the project is RTP-eligible).

Clean Ohio Trails (COT)

The Clean Ohio Program is a voter approved state bond issue that funds specific project types on a statewide basis; trails are one of the project types. The COT program is administered by the Ohio Department of Natural Resources (ODNR), which typically seeks project applications once per year in February. Trails and trailhead facilities, and the land acquisition needed for these facilities are eligible under this funding line. COT is state funding, and can therefore be used as local (non-federal) match for federally funded projects. COT funds have been used to develop several sections of the Miami Valley trails.

Safe Routes To School (SR2S)

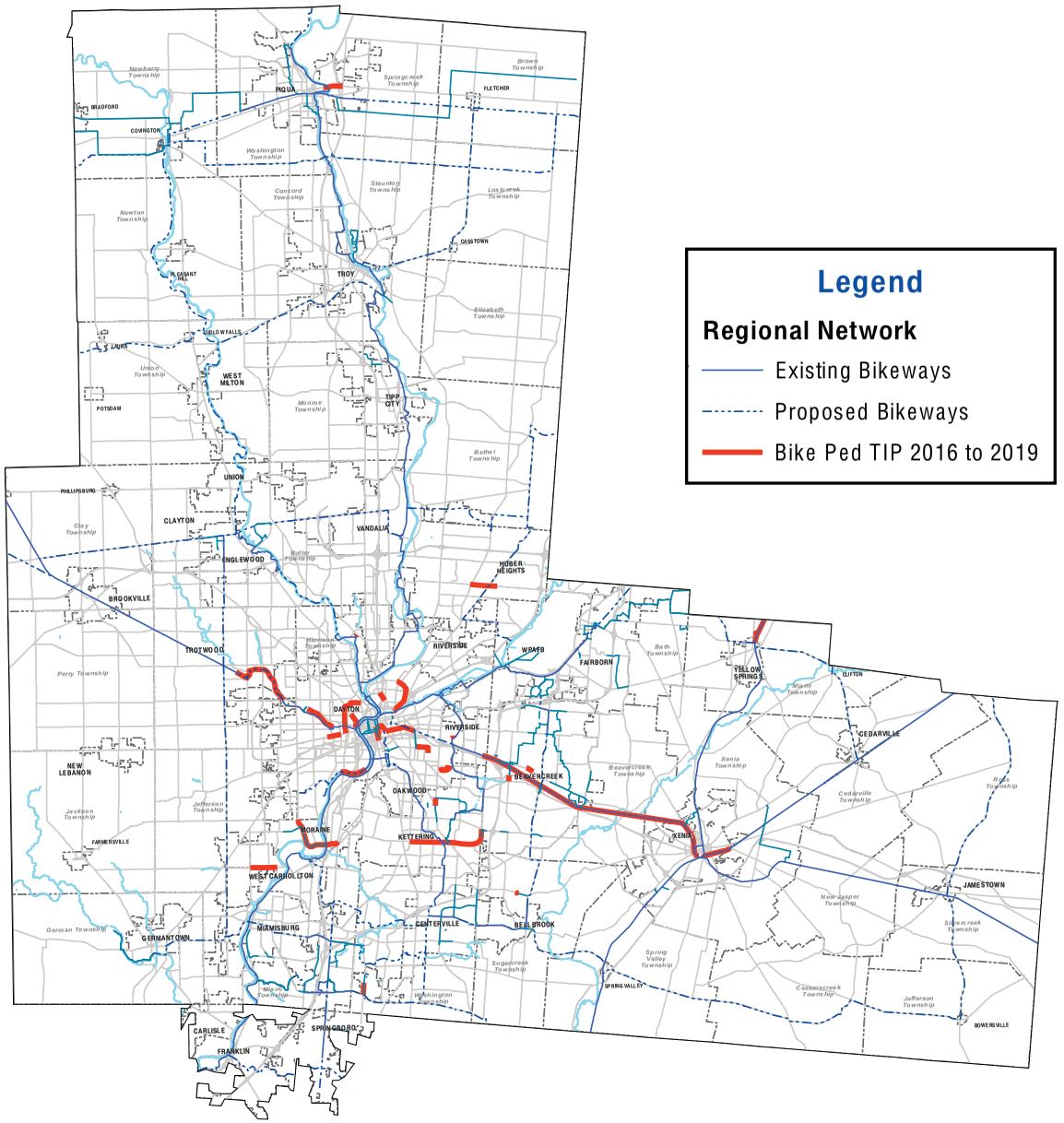
While safe routes to school projects are eligible to apply for MVRPC-attributable TAP funds, they may also apply to the statewide pool of SR2S funds administered by the Ohio Department of Transportation. SR2S funds are directed toward making active transportation (walking and biking) by students in K-8 schools safer. Eligible projects (either infrastructure or non-infrastructure) must be listed in an ODOT-approved school travel plan. These funds may also be applied for to assist the development of a school travel plan. ODOT typically solicits for SR2S projects once per year, with applications due in March.

NatureWorks

NatureWorks grants are administered by the Ohio Department of Natural Resources (ODNR) and distribute state bond issue funds (not related to Clean Ohio) designated for park and recreation facilities. Trails and trail-related facilities are eligible under this program. The typical grant awards are small; the majority are under $100,000 and none exceed $150,000. Applications are typically received annually, with the deadline in May.

Land and Water Conservation Program (LWCF)

The Land and Water Conservation Fund grant program provides up to 50 percent reimbursement assistance for state and local government subdivisions (townships, villages, cities, counties, park districts, joint recreation districts, and conservancy districts) to for the acquisition, development, and rehabilitation of recreational areas. Projects eligible for this line of funding must support the goals of the Ohio State Comprehensive Outdoor Recreation Plan (SCORP). Trails and trail support facilities are eligible projects. ODNR administers this funding program but does not solicit for projects every year. Under the terms of this federal program, the state can choose, at its discretion, to apply the funds to state priority projects or solicit for local projects. About half of the approximately $140 million in LWCF funds received by Ohio over the years have gone to local projects.



Legend

Regional Network

- Existing Bikeways
- Proposed Bikeways
- Bike Ped TIP 2016 to 2019

This map displays in RED the Bike and Pedestrian facilities projects that are funded through MVRPC's Transportation Improvement Program between Fiscal Years 2016 - 2019

0 2.5 5 7.5 10 Miles

N

MVRPC

TIP 2016-2019

Transportation Improvement Program Bike and Pedestrian Projects

DRAFT

Miami Valley Regional Planning Commission · 10 N. Ludlow Street, Suite 700, Dayton, OH 45402 · ph: 937-223-6323 · www.mvrpc.org

Appendix D - Design Recommendations & Resources

Shared Use Path Design Treatments - Courtesy of Pedestrian and Bicycle Information Center

March 1, 2015

Note: Page numbers refer to printed version of design guideline.

		Roadside Design Guide (2011) AASHTO	A Policy on Geometric Design of Highways and Streets (2011) AASHTO	Guide for the Development of Bicycle Facilities (2012) AASHTO	Guide for the Planning, Design, and Operation of Pedestrian Facilities (2004) AASHTO	Manual on Uniform Traffic Control Devices (2012) FHWA	Designing Walkable Urban Thoroughfares (2010) ITE/CNU	Recommended Design Guidelines to Accommodate Pedestrians and Bicycles at Interchanges (2014) ITE	Traffic Control Devices Handbook (2013) ITE	Urban Bikeway Design Guide (2014) NACTO	Urban Street Design Guide (2013) NACTO	Draft Guidelines: PROWAG, Shared Use Path Guidelines (as of 2014) US Access Board
A. General Shared Use Path Design												
A1	Width of shared use path			Section 5.2.1	Section 3.2.14				Page 614			R302.3.2
A2	Shoulders on path			Section 5.2.1	Section 3.2.14							R302.3
A3	Clear zone adjacent to path			Section 5.2.1	Section 3.2.14							
A4	Barrier or guardrail requirements	Section 5.2.3	Section 4.10.3	Section 5.2.1								
A5	Sidepath design considerations		Section 2.7, 4.15.2	Section 5.2.2					Page 614-616			
A6	Separated bicycle and pedestrian paths			Section 5.2.1								
A7	Equestrian considerations			Section 5.2.3								
A8	Design speed		Section 2.7	Section 5.2.4								
A9	Horizontal alignment		Section 2.7	Section 5.2.5								
A10	Cross slope			Section 5.2.6	Section 3.2.14							R302.6
A11	Grade of shared use path		Section 2.7	Section 5.2.7	Section 3.2.14							R302.5
A12	Surface structure			Section 5.2.9								
A13	Bridges and underpasses		Section 4.10.3, 4.16.4	Section 5.2.10	Section 3.5.3							R302.7
A14	Drainage			Section 5.2.11								
A15	Lighting		Section 3.6.3	Section 5.2.12	Section 3.5.4							
A16	Minimum curve radius		Section 2.7	Section 5.2.5								
A17	Stopping sight distance for shared use path		Section 2.7	Section 5.2.8								
A18	Railroad grade crossings		Section 5.2.6			Chapter 8D			Page 623			
B. Intersection Design												
B1	Sidepath intersections	Section 5.2.3		Section 5.3.4					Page 614-616			
B2	Path widening at intersections			Section 5.3.5								
B3	Curb ramps and aprons		Section 4.17.3	Section 5.3.5	Section 3.3.5							R304.5.1.2
B4	Shared use path chicanes			Section 5.3.5								
B5	Restricting motor vehicle traffic			Section 5.3.5								
B6	Crossing islands		Section 4.17.3	Section 5.3.5	Section 3.4.1		Pages 156-157				Page 116-117	
B7	Transition zone			Section 5.3.6								
B8	Traffic calming for intersections			Section 5.3.6	Section 2.6, 3.4.2		Pages 111 - 112, 184-187, 195-197				Page 45-47	
B9	Shared use paths through interchanges			Section 5.3.6				Page 9 -21				
B10	Raised crosswalks				Section 3.4.2			Page 8			Page 54, 114-115	
B11	**Midblock Crossings**											
B11.1	Geometric design issues			Section 5.3.2	Section 3.4.1	Figure 9B-7	Pages 150-155					R302.6.2
B11.2	Assignment of right of way/ selection of control			Section 5.3.2		Section 9B.03						
B11.3	Clear sight triangles for shared use path			Section 5.3.2								
B11.4	Clear sight triangles for roadway at trail crossings			Section 5.3.2								
C. Signals, Signs and Markings Related to Shared Use Paths												
C1	**Signals**											
C1.1	Crossing timing			Section 5.4.3	Section 4.1.2				Pages 553-554, 381-382,			
C1.2	Signal actuation for shared use path users			Section 5.4.3		Sections 4E.08, 4E.09, 9B.13, 9C.05			Pages 214-215, 402, 553, 624-625			
C1.3	Pedestrian Hybrid Beacon (HAWK Signal)			Section 5.4.3		Section 4F		Page 7	Page 556-558, 225-226, 338	Page 111-116		
C1.4	RRFB (Rectangular Rapid Flash Beacon)					Interim approval (July 2008)		Page 8	Page 560, 226	Page 105-110		
C1.5	Pedestrian signal heads	Section 4.6			Section 4.1.4, 4.1.6	Section 4E			Page 551-553, 334-338, 412		Page 110-111	
C1.6	Bicycle signal heads					Interim approval (Dec 2013)			Page 628-629	Page 93-98		
C1.7	HAWK and RRFB at vehicular intersections					Section 4F.02			Page 628-629			
C2	**Signs**											
C2.1	Sign placement next to paths			Section 5.4.2		Section 9B.01						
C2.2	Sign sizing			Section 5.4.2		Section 9B.02			Page 617			
C2.3	Sign types/design	Section 4.3.3		Section 5.4.2		Section 9B.01						
C2.4	Intersection with roadway signage			Section 5.4.2		Section 2C.49			Page 617-621			
C3	**Pavement Markings on Shared Use Path**											
C3.1	General markings			Section 5.4		Section 3B.20, 9C.03			Page 621-623			
C3.2	Marked crosswalks			Section 5.4.1					Page 622			
C3.3	Centerline striping on shared use path			Section 5.4.1		Section 9C.03			Page 621			
C3.4	Edgeline striping on shared use path			Section 5.4.1					Page 621-622			
C3.5	Approach markings for obstructions			Section 5.4.1		Figure 9C-8			Page 623			
C3.6	Pavement markings to supplement intersection control			Section 5.4.1								
C3.7	Supplemental pavement markings on approaches			Section 5.4.1								
C3.8	Advance stop or yield lines			Section 5.4.1		Section 3B.16		Page 7				

Color Key
Design Treatment Addressed
Interim Approval
Experimental Status

On-Street Bicycle Facility Design Treatments - Courtesy of Pedestrian and Bicycle Information Center

May 14, 2015

Note: Page numbers refer to printed version of design guideline.

		Roadside Design Guide (2011) AASHTO	A Policy on Geometric Design of Highways and Streets (2011) AASHTO	Guide for the Development of Bicycle Facilities (2012) AASHTO	Guide for the Planning, Design, and Operation of Pedestrian Facilities (2004) AASHTO	Manual on Uniform Traffic Control Devices (2012) FHWA	Designing Walkable Urban Thoroughfares (2010) ITE/CNU	Recommended Design Guidelines to Accommodate Pedestrians and Bicycles at Interchanges (2014) ITE	Traffic Control Devices Handbook (2013) ITE	Urban Bikeway Design Guide (2014) NACTO	Urban Street Design Guide (2013) NACTO	Draft Guidelines: PROWAG, Shared Use Path Guidelines (as of 2014) US Access Board
A.	**Bicycle Facility Selection**											
A1	Guidance of appropriate use/ typical application of bicycle facilities			Section 2.5.2	N/A		N/A		Page 571-572	Throughout entire document	N/A	N/A
B.	**General Roadway Design**											
B1	Paved shoulders		Sections 2.7, 4.4	Section 4.5					Pages 598-600			
B2	Bicyde route signs			Section 2.5.3		Sections 9B.20, 9B.21			Pages 578	Page 139		
B3	Shared lane markings			Section 4.4		Section 9C.07			Pages 588-596	Page 133		
B4	Shared lane signage			Section 4.3		Sections 9B.06, 9B.19, 9B.20			Pages 597-598			
B5	Bicyde boulevards/neighborhood greenways			Section 4.10					Pages 586-587	Pages 149-214		
B6	Bicycle accommodations related to traffic calming			Sections 4.12.6, 4.12.7	N/A		N/A			Pages 167-214	N/A	N/A
B7	Bicycle accommodations on bridges/tunnels		Sections 4.10.3, 4.16.4	Section 4.12.3		Section 9B.19						
B8	Bicycle treatments at railroad crossings			Section 4.12.1		Section 9B.19			Pages 595-596, 613			
B9	Bicycle-safe drainage grate design		Section 2.7, 4.7.2	Section 4.12.8					Page 597			
B10	Rumble strips (bicycle guidance)		Section 4.5	Section 4.5.2					Pages 600-601			
B11	Colored bicycle facilities			Section 4.7.2		Interim approval (April 2011)			Pages 583-584, 616	Page 119		
C.	**Bicycle Lanes**											
C1	Bicycle lane signs and pavement markings			Section 4.7		Sections 9B.04, 9C.04			Pages 603-604	Page 3		
C2	Bicycle lane design	Section 10.2.1.7	Section, 2.7, 4.3	Section 4.6		Section 9C.04			Pages 601-606	Page 3		
C3	Bicycle lanes on one-way streets (left or right side)			Section 4.6.3					Page 602	Page 21		
C4	Retrofitting bicycle facilities			Section 4.9								
C5	Buffered bicycle lanes			Section 4.7	N/A	Section 3D.02	N/A		Pages 605-606	Page 9	N/A	N/A
C6	Contra-flow bicycle lanes			Section 4.6.3					Pages 612-613	Page 15		
C7	Bicycle lanes adjacent to on-street parking (parallel or diagonal)			Section 4.6.5		Section 9C.04			Pages 604-605	Page 3		
C8	Advisory bicycle lanes					Experimental status (2014)						
C9	Bicycle lanes adjacent to peak-hour parking											
C10	Bicycle lanes adjacent to transit stops					Figure 9C-6						
D.	**Separated Bicycle Lanes**											
D1	Sidepath/shared-use path	Section 5.2.3	Section 7.3.9	Section 5.2.2					Pages 613-623			
D2	One-way separated bicycle lanes	Sections 5.2.3, 10.2.1.7			N/A	Section 9C.04	N/A		Pages 605-606	Pages 29, 35	N/A	N/A
D3	Two-way separated bicycle lanes	Sections 5.2.3., 10.2.1.7				Section 9C.04			Pages 605-606	Page 41		
D4	Separated bicycle lane design at transit stops									Page 32		
E.	**Intersection Design**											
E1	Bicycle detection			Section 4.12.5		Sections 9B.13, 9C.05			Pages 624-625	Page 99		
E2	Signal timing for bicycle clearances		Section 7.3.9			Section 9D.02			Pages 625-628	Page 97		
E3	Bicycle signalheads	Section 4.6				Interim approval (Dec 2013)			Pages 628-629	Page 93		
E4	Bicycle push buttons					Section 9B.11			Pages 624	Page 96		
E5	Bicycle lane intersection approaches		Section 9.11.3	Section 4.8		Figures 9C-1, 9C-4, 9C-5, 9C-6			Pages 606-610	Page 73		
E6	Combined bicycle lane/ turn lane				N/A	Section 9C.07	N/A			Page 79	N/A	N/A
E7	Bicycle boxes					Experimental status (2014)				Page 49		
E8	Bicycle crossing markings					Section 3B.08				Page 55		
E9	Two-stage queue boxes					Experimental status (2014)				Page 61		
E10	Separated bicycle lane intersection approaches									Page 85		
E11	Bicycle design treatments at roundabouts		Section 9.3.4	Section 4.12.11		Section 9C.04			Pages 611-612			
E12	**Bicycle Lanes and Interchanges**											
	E12.1 Bicycle lane exit ramp							Page 10				
	E12.2 Bicycle lanes through on-ramps			Section 4.12.10	N/A		N/A	Pages 9-16	Pages 610-611		N/A	N/A
	E12.3 Bicycle lanes through off-ramps			Section 4.12.10				Page 17-21	Pages 610-611			
	E12.4 Bicycle lane at Single Point Interchanges			Section 4.12.10				Page 23-25				

Color Key
Design Treatment Addressed
Interim Approval
Experimental Status

Appendix E - Sidepath suggested guidelines

Sidepaths and Wide Sidewalks as Bikeways

This plan update makes a strong case for facilities that provide separation between motor traffic and bicycle traffic along high stress corridors. The case has been made with both national survey data and regional survey data developed as a part of this update process: the “interested but concerned” portion of the cycling public places a premium on safety, and they seek separation for that safety. As the charts on pages 77 and 78 indicate, these cyclists, who represent the majority of the general public, report increasing comfort with increasing separation from traffic. This group, in contrast to the “strong and fearless,” express comfort with sidepath facilities.

The Dayton-Xenia Road sidepath has numerous driveway crossings.

This difference is not altogether surprising. Sidepaths are bikeways located along roadways in a location where one would often see a sidewalk. They are typically outside the curb, separated from the motor vehicle lanes by a green strip, and perhaps a change in elevation. To the “interested but concerned” cyclist, sidepaths offer a clear separation from motorized vehicles. However, the “strong and fearless” rider is likely to focus on the high number of driveway crossings these facilities often feature. They are both right.

Given this region’s long history of trail building, sidepaths are also a popular facility type, because they are so similar to our trails. The City of Beavercreek and Centerville/Washington Township are two examples of jurisdictions that have made a strong commitment to sidepaths to serve cyclists and pedestrians in their communities. This plan recognizes the role sidepaths can play in the development of a complete, low stress cycling network. At the same time, appropriate placement of sidepath facilities is important to ensure their convenience and safety.

The design guidance provided by NACTO and AASHTO are reliable guides for all facility types, and both of these sources express a preference for bicycle facilities inside the curbs over sidepaths. Their reasoning is related to the increased number of conflicts between sidepath users and roadway users at intersections.

The Byers Road sidepath includes long stretches of uninterrupted bikeway. This will be fine as long as surrounding development does not result in numerous access crossings in the future.

To that end, this plan suggests careful consideration of the placement of sidepath facilities. Consultation of AASHTO's *Guide to the Development of Bicycle Facilities* for the selection of facility types is a good place to start. The League of Illinois Bicyclists has created an online tool that provides a quick guide to whether a sidepath facility is an appropriate choice for a particular location. The tool makes an assessment based on factors such as AADT, speed limits, and the number of residential and commercial driveway crossings and can be found at www.bikelib.org/roads/blos/sidepathform.htm.

Local engineering judgment of each project context, advised by early involvement of the general public, should guide designers on the choices between facility types. When balancing the pros and cons of a sidepath versus an on-street facility, safety, cost, available right-of-way will be important factors.

Appendix F - Cost Factors Used

COST FACTORS USED IN SCORING – 2015 DOLLARS

From ODOT Dist. 7:

New Multi-use Trail (10') - $150,000/mi
New Separated Bikepath (8') - $125,000/mi

Striping - $500-$1500/mi
Resurfacing Multi-use - $65,000/mi
Resurfacing Bikepath - $52,000/mi
Signs - $125/ea.

From staff at LJB:

Below are some budgetary numbers that can be used to estimate a buffered bike lane.
For a 60' pavement section - estimate $125 per linear foot
For a 48' pavement section - estimate $100 per linear foot
Since bike lanes are typically incorporated onto an existing facility without widening, the numbers above are bare bones to mill and overlay existing pavement and apply new pavement markings. This **does not** include curb repair, pavement replacement or widening, curb ramps, signal work, signage, utility relocation, r/w, etc.

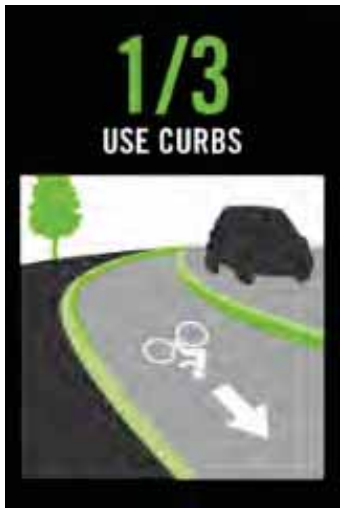
Bike Miami Valley list:

- Shared Lane (sharrow) Marking: $180 per marking (1)
- Bicycle Lane: ~$133,000 per mile (1)
- Green "paint:" ~$15-20 per linear foot (2)
- Protected bikeway:
    - Plastic Posts: ~$140,000 per mile (3)
    - Curbs: ~$250-500 per mile (4)

(1) Costs for Pedestrian and Bicyclist Infrastructure Improvements: A Resource for Researcher, Engineers, Planners, and the General Public
(2) City of Dayton
(3) City of Chicago
(4) San Francisco Bicycle Coalition

Appendix G - BMV Protected Lanes Research Summary

Growth of Protected Lanes in the U.S.



Types of Protected Lanes

Solid Painted Buffer

Striped Buffer

Striped Buffer with Plastic Posts

Striped Buffer with Parked Cars

Raised Concrete Curb

Striped Buffer with Flower Beds

Source:
Lessons from the Green Lanes: Evaluating Protected Bike Lanes in the U.S. (National Institute for Transportation and Communities)

Protected Lanes: Impact on Ridership

Ridership changes before and after addition of protected bike lanes in six cities (Portland, San Francisco, Chicago, Austin, NYC, and Washington DC):

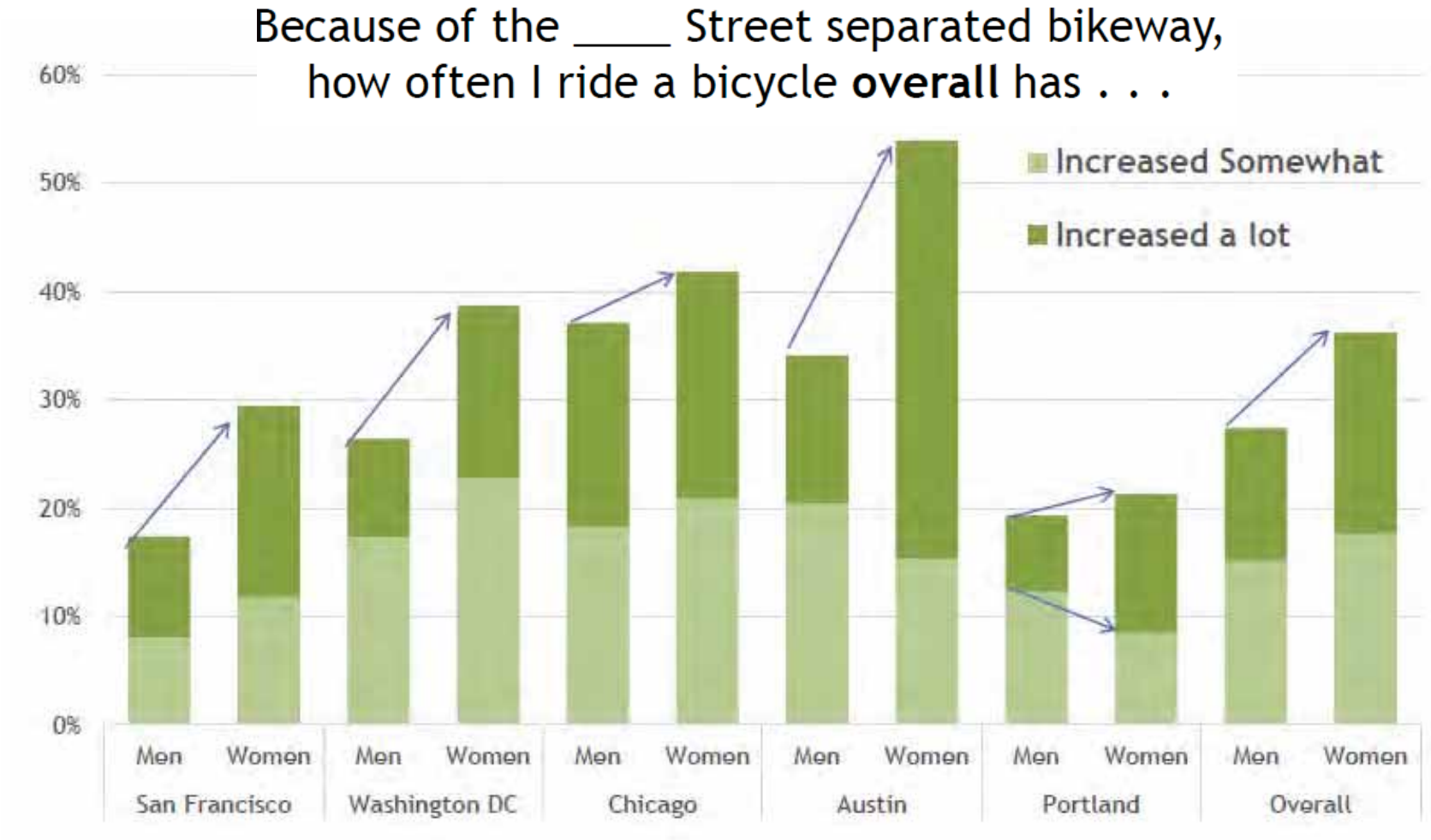
City	Street	Increase in Cycling Volume	Previous Condition	Type of Separation
New York	9th Avenue	**65%**	No prior bike lane	Plastic Posts
	8th Avenue	**9%**	Prior bike lane	Parked Cars
	1st Avenue	**160%**	No prior bike lane	Parked Cars
	Columbus Avenue	**51%**	No prior bike lane	Parked Cars
	2nd Avenue (2nd to 14th)	**49%**	Prior bike lane	Parked Cars
	2nd Avenue (23rd to 34th)	**60%**	No prior bike lane	Parked Cars
	Broadway (47th to 59th)	**108%**	Prior bike lane	Parked Cars
	Broadway (18th to 23rd)	**28%**	Prior bike lane	Parked Cars
Austin	Rio Grande	**126%**	Prior bike lane	Plastic Posts
	Bluebonnet	**46%**	Prior bike lane	Plastic Posts
	Barton Springs	**58%**	No prior bike lane	Plastic Posts
Chicago	Dearborn St	**171%**	No prior bike lane	Plastic Posts
	Milwaukee Avenue	**21%**	Prior bike lane	Parked Cars
Portland	Multnomah Street	**68%**	Prior bike lane	Planters
San Francisco	Fell St	**46%**	Prior bike lane	Plastic Posts
Washington DC	L Street	**65%**	No prior bike lane	Plastic Posts

↑ 71% Average Increase in Cycling Volume ↓

Sources: *Lessons from the Green Lanes: Evaluating Protected Bike Lanes in the U.S. and the New York City Department of Transportation*

Protected Lanes: User Surveys

Cyclists cite protected lanes as a reason they ride more often:



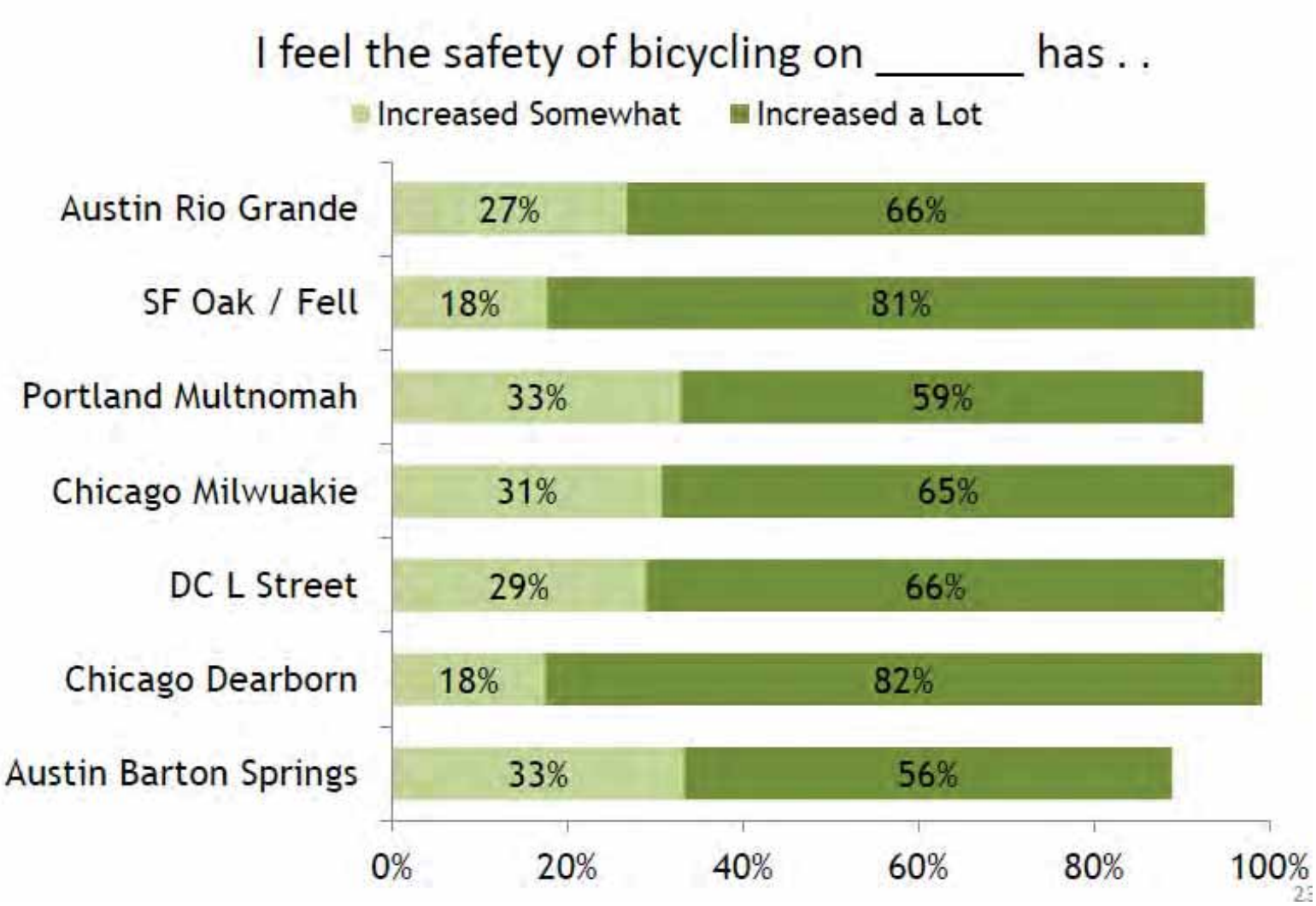
Source: Rider Intercept Survey of 1,111 riders (Lessons from the Green Lanes: Evaluating Protected Bike Lanes in the U.S.)

IMPACT ON SAFETY

Why Do Protected Lanes Increase Ridership?

Protected lanes greatly increase rider <u>perceived safety</u>, leading to increased cycling activity

Source: Rider Intercept Survey of 1,111 riders (Lessons from the Green Lanes: Evaluating Protected Bike Lanes in the U.S.)

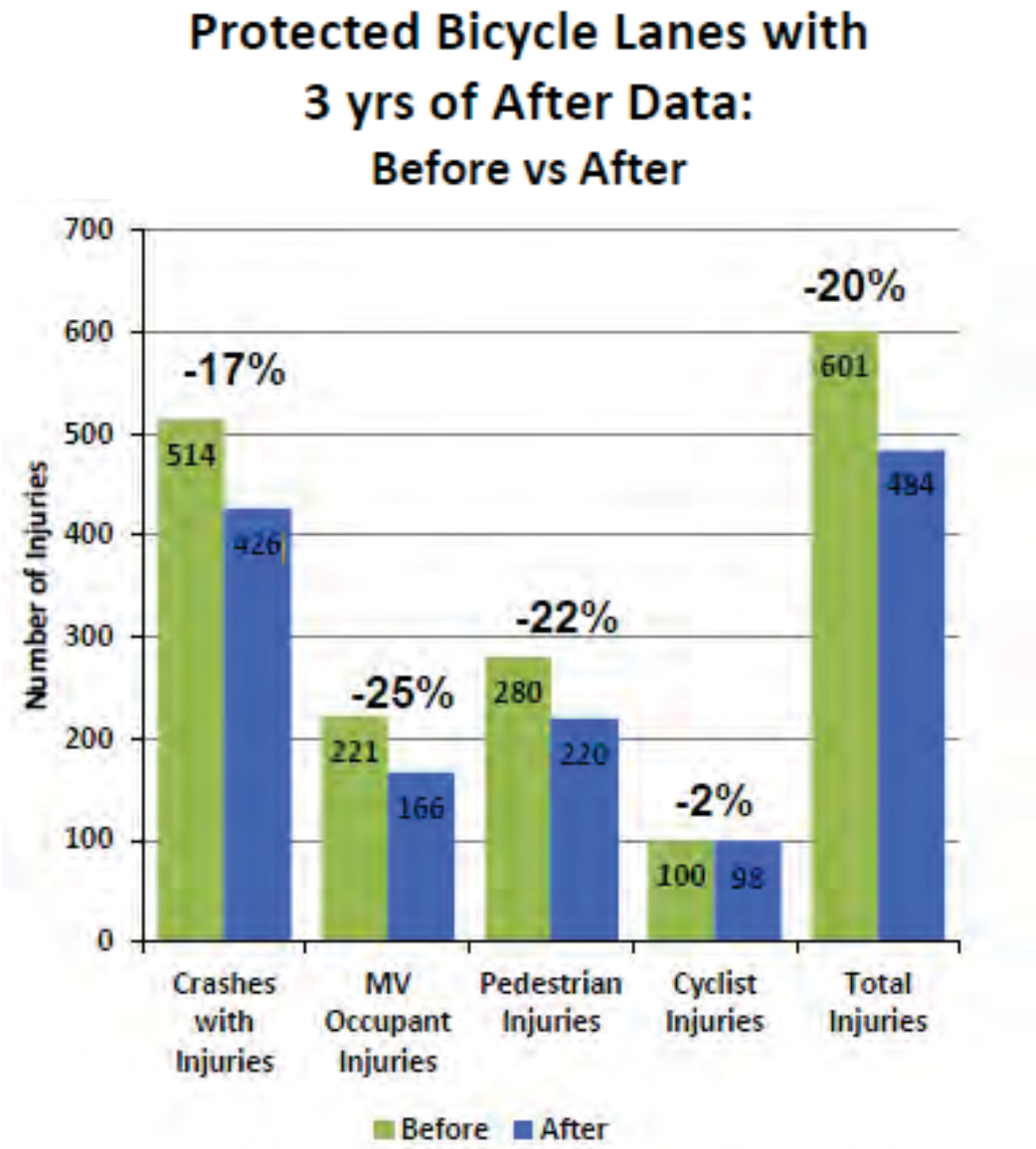


Why Do Protected Lanes Increase Ridership?

Protected lanes also greatly increase rider actual safety; data from NYC protected lanes:

- Crashes with injuries have been reduced by 17%
- Pedestrian injuries are down by 22%
- Cyclist injuries show a minor improvement even as bicycle volumes have dramatically increased
- Total injuries have dropped by 20%

Source: Protected Bike Lanes in NYC (New York City Department of Transportation)

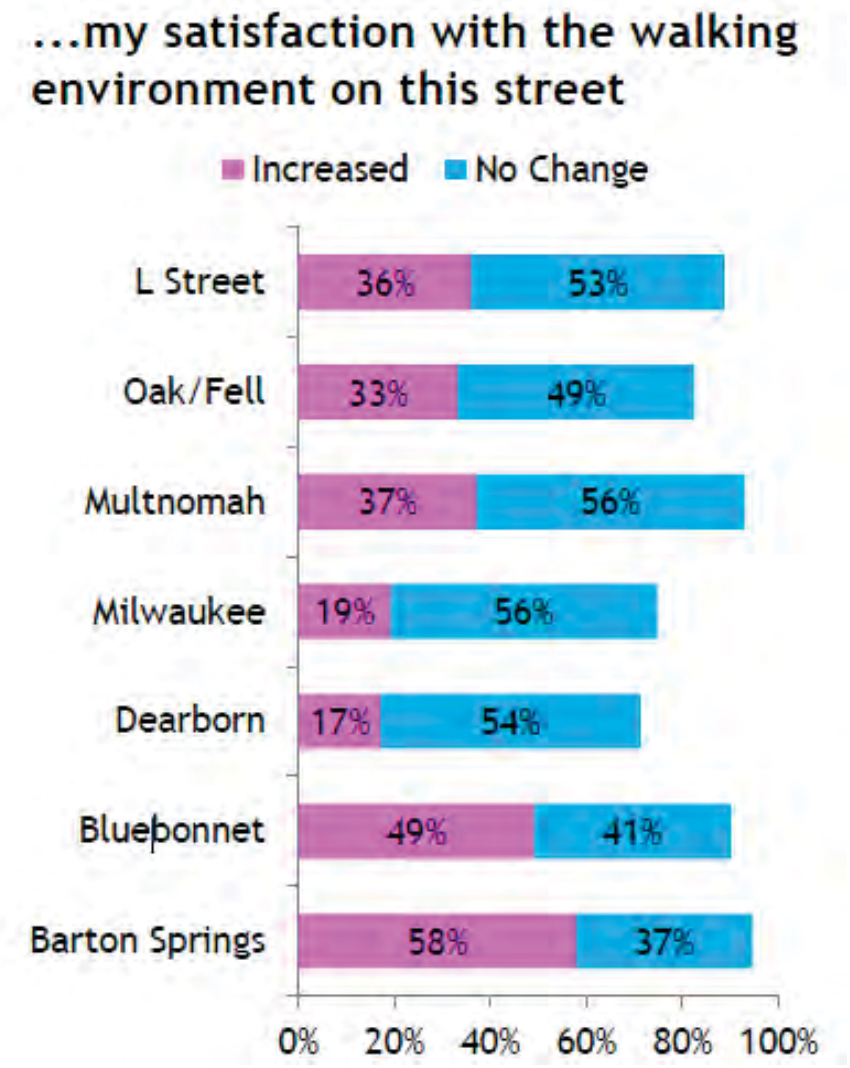


COMMUNITY SUPPORT

Protected Lanes: Community Support

Protected lanes impact more than just the cycling environment on the street, they can become an important part of creating a walkable urban place

Source: Survey of 2,283 residents in communities with protected lanes (Lessons from the Green Lanes: Evaluating Protected Bike Lanes in the U.S.)

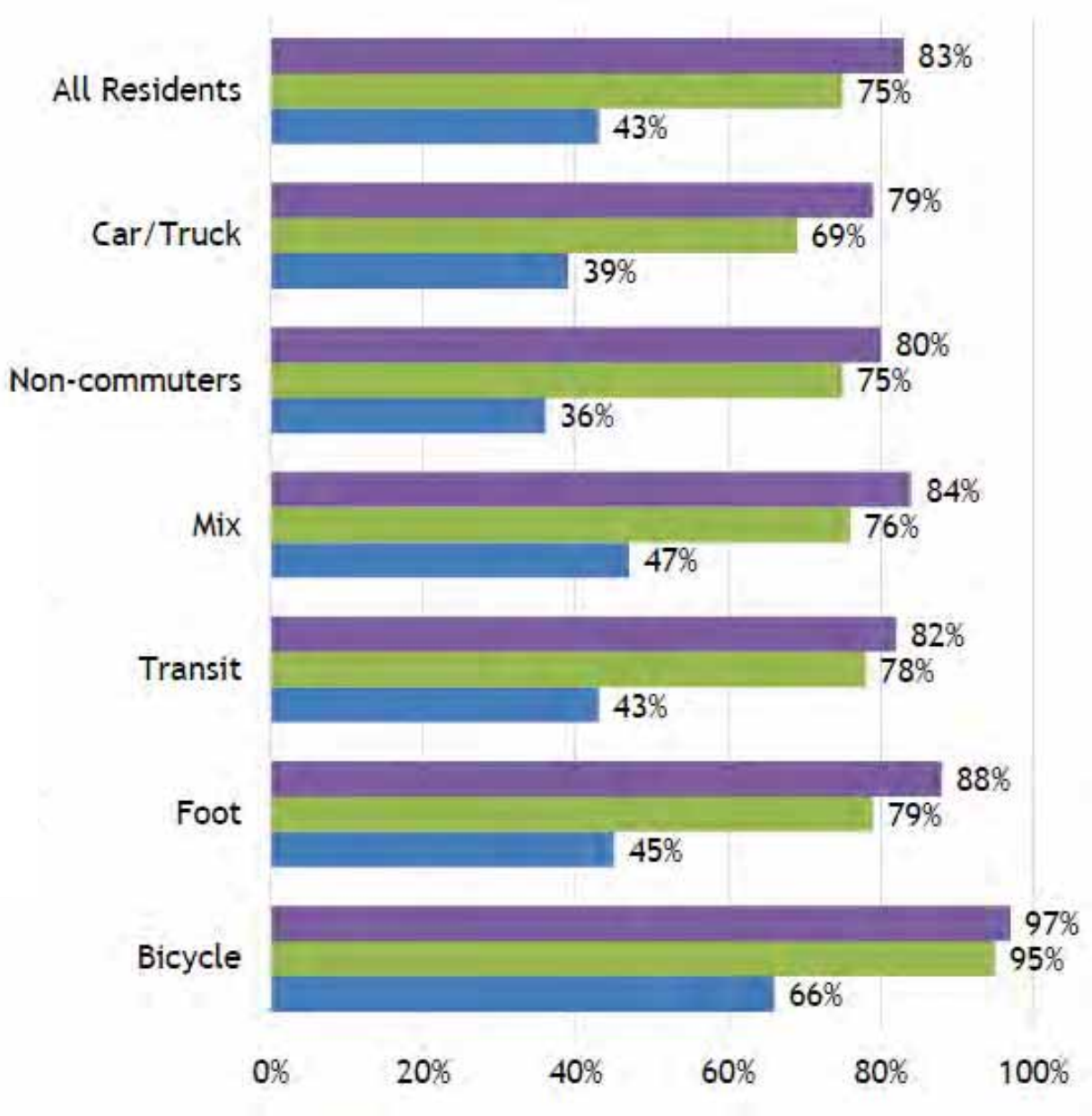


Protected Lanes: Community Support

Protected lanes are supported by residents with a variety of commute modes

Source: Survey of 2,283 residents in communities with protected lanes (Lessons from the Green Lanes: Evaluating Protected Bike Lanes in the U.S.)

- Facilities that encourage bicycling for transportation are a good way to improve public health.
- I would support building more protected bike lanes at other locations.
- Because of the protected bike lanes, the desirability of living in my neighborhood has increased

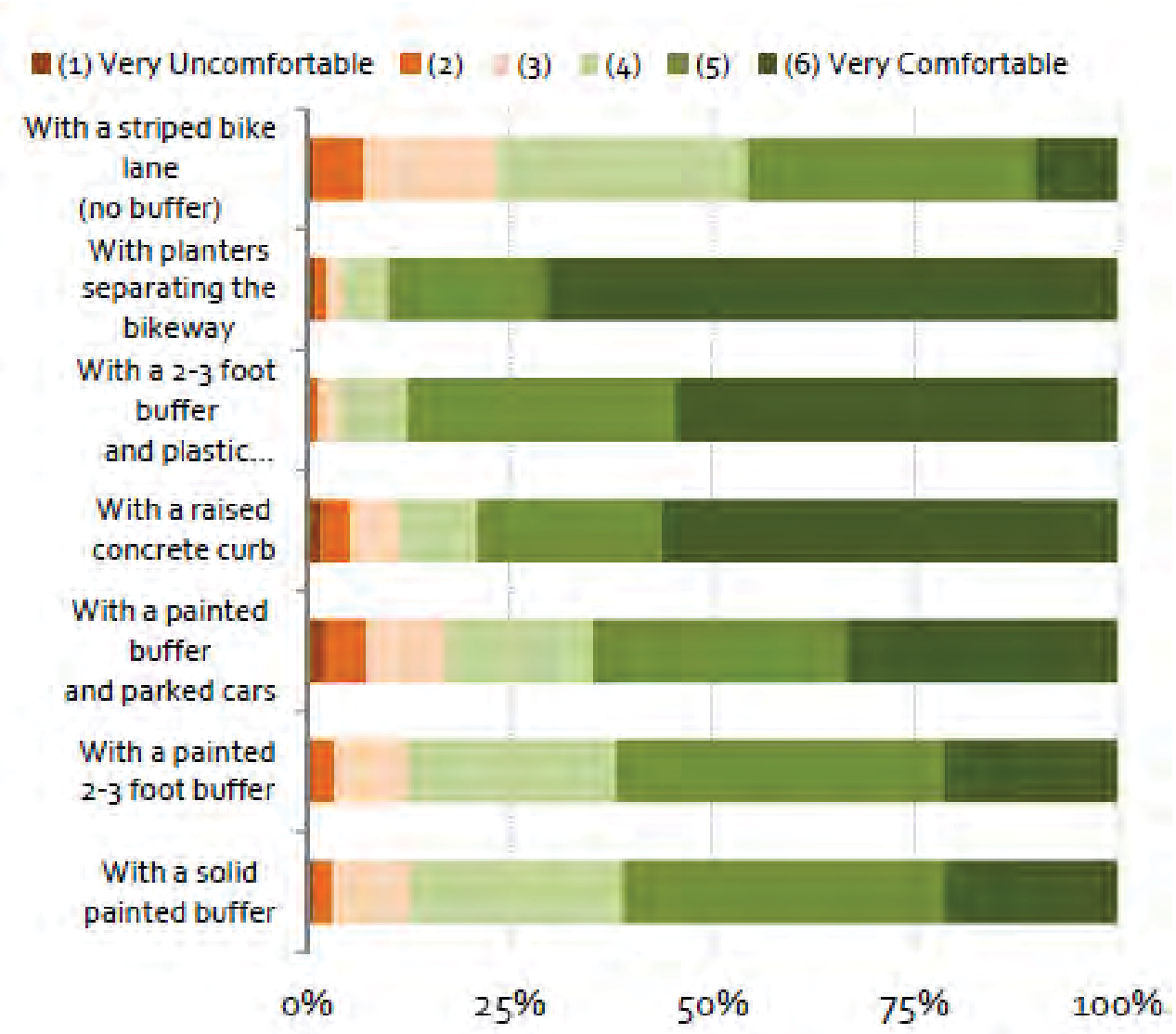


PROTECTED LANE SEPARATION ELEMENTS

Protected Bike Lane Separation Elements

Stated cyclist comfort levels with various types of protected bike lanes:

- Designs with more physical separation had highest scores. Buffers with objects (e.g. flexposts, planters, curbs, or parked cars)
- Flexpost buffers got very high ratings even though they provide little actual physical protection
- Any type of buffer shows a considerable increase in self-reported comfort levels over a striped bike lane



Source: Lessons from the Green Lanes: Evaluating Protected Bike Lanes in the U.S.

Appendix H - Citations

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