



# SHIFTING GEARS

REGIONAL BICYCLE OUTREACH  
AND PRIORITY SETTING





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AND PRIORITY SETTING**



**APRIL 2011**

The Delaware Valley Regional Planning Commission is dedicated to uniting the region's elected officials, planning professionals, and the public with a common vision of making a great region even greater. Shaping the way we live, work, and play, DVRPC builds consensus on improving transportation, promoting smart growth, protecting the environment, and enhancing the economy. We serve a diverse region of nine counties: Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer in New Jersey. DVRPC is the federally designated Metropolitan Planning Organization for the Greater Philadelphia Region — leading the way to a better future.



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Valley. The outer ring symbolizes the region as a whole while the diagonal bar signifies the Delaware River. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey.

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# Executive Summary

Shifting Gears is an outreach and prioritization program enacted by the Delaware Valley Regional Planning Commission (DVRPC) in Fiscal Year 2010 to better understand issues pertaining to bicycling in the region, as well as to better match the agency's resources to the needs of our member governments in regards to bicycling.

To best accomplish these goals, a three-step approach was developed. The three components are:

- ☞ inventories of regionally relevant bicycle, trail, and open-space plans, as well as other regionally significant information;
- ☞ outreach to regional stakeholders (counties, Transportation Management Associations [TMAs], local bicycling advocates); and
- ☞ an online public survey concerning bicycle facilities and cyclist preferences, as well as outreach to non-cyclists.

This document presents the results of the inventory/outreach process, with maps for each of DVRPC's nine constituent counties featuring a set of recommended priority locations. These locations were prioritized based on a number of criteria, including volume of bicycle-related crashes, proximity to regional attractors, and location relative to other bicycle facilities. Bicycle use in these locations should be studied further to determine what (if any) safety issues are present, as well as issues surrounding accessibility. Because at times it may be necessary to develop alternative alignments due to unfavorable roadway conditions on a specific corridor, the priority locations highlighted in this section are depicted with 1/2-mile buffers around the chosen corridor (1/4-mile in Philadelphia).

This report also presents the findings of the Shifting Gears online survey which was completed by over 1,800 residents of the Delaware Valley. Respondents answered questions about their level of bicycling experience, preferred bicycle uses, and preferences in bicycle facilities. Additionally, non-cyclists were asked for input regarding improvements that could potentially motivate them to try bicycling.

Survey respondents also supplied recommendations on which specific roadway locations in the region could be enhanced from a bicycle perspective. These locations were compared to the priorities established in the outreach and inventory process. **Locations that evolved as priorities through both the outreach/criteria-based process and were named by survey respondents as locations that should be considered for bicycle enhancements are listed in Table 1 and Table 5 and depicted in Figure 35 on page 73.** These locations, because they were chosen through the

inventory/outreach prioritization process as well as selected by survey respondents, may be considered the highest priority locations.

Table 1: Highest Priority Locations

County	Location	Limits
Burlington	CR 541	Burlington City to Shamong Township
	US 130	Bordentown Township to Palmyra Borough
	US 206	Bordentown Township to Shamong Township
Camden	CR 561	Camden City to Haddonfield Borough
Mercer	NJ 27	Princeton Borough to Princeton Township
Bucks	PA 132	Bristol Borough to Warrington Township
Chester	US 30 Business	Atglen Borough to West Whiteland Township
	PA 842	East Marlborough Township to West Chester Borough
Delaware	PA 352	Thornbury Township to Chester City
	PA 3	Edgemont Township to Millbourne Borough
	US 13	Marcus Hook Borough to Darby Borough
	Eagle Road	Haverford Township
	Darby Road	Radnor Township to Upper Darby Township
Montgomery	Dekalb Pike	Upper Merion Township to Montgomery Township
	Ridge Pike	Pottstown Borough to Philadelphia
	PA 152	Montgomery to Cheltenham Township
Philadelphia	Broad Street/Route 611	Length of City
	Ridge Avenue	Length of City
	Frankford Avenue	Delaware Avenue to Cottman Avenue

Source: Delaware Valley Regional Planning Commission, (Philadelphia: DVRPC, 2010).

Table 1, above, lists the roadway locations that emerged as priorities through both the inventory/outreach process as well as the survey. Each county had at least one location with the exception of Gloucester County; where the two processes yielded different results.

Along with the outreach and survey findings, the Shifting Gears report makes recommendations toward improving bicycling in the region; in summary, these recommendations are:

☞ **Focus on safety.**

In planning and building new bicycle facilities, as well as maintaining current ones, the safety of cyclists, as well as other users should be foremost. All bicycle-related studies should emphasize safety.

☞ **Enhance local mobility.**

Survey evidence seems to indicate that the most prevalent uses of bicycles (outside of recreational use) are not work trips but for purposes such as shopping or visiting with friends. Focusing on local networks to enhance local mobility is just as important as building regional networks.

☞ **Share information.**

In assembling the various components of this project, one challenge was getting together all the relevant (current) data on bicycle facilities. Stakeholders should make sure to work together to ensure all information is up-to-date and easily accessible.

☞ **Think low-cost.**

An advantage of bicycle infrastructure is that it can be inexpensive compared to other transportation modes. Recent projects have proven that even with limited funding, significant bicycle infrastructure can be built.

By focusing more on prioritizing bicycle facilities and responding to the needs of the region's cyclists (and future cyclists), it is DVRPC's hope that the various networks proposed by some counties can begin to take shape.



# Introduction

## What Is Shifting Gears?

Shifting Gears is an outreach and prioritization program enacted by DVRPC in Fiscal Year 2010 to better understand issues pertaining to bicycling in the region, as well as to better match the agency's resources to the needs of our member governments in regard to bicycling.

To best accomplish these goals, a three-step approach was developed. The three components are:

- ☞ inventories of regionally relevant bicycle, trail, and open-space plans, as well as other regionally significant information;
- ☞ outreach to regional stakeholders (counties, TMAs, local bicycling advocates); and
- ☞ an online public survey concerning bicycle facilities and cyclist preferences, as well as outreach to non-cyclists.

By following this process, DVRPC hopes to gain a better understanding of the bicycling climate in the region. This process will also determine where planning initiatives meant to enhance the bicycling environment and potentially increase the number of cyclists would be most effective, and what the most effective initiatives may be. As an ancillary goal, through this report, as well as through DVRPC's ongoing Regional Bicycle and Pedestrian Advisory Forum meetings, it is hoped that the counties and DVRPC can work together on projects that enhance the environment for cyclists both regionally and locally.

### Structure of This Report

The rest of this introduction reviews several past reports that dealt with bicycling on a regional scale, and also introduces the project components in detail. Subsequent chapters review the survey findings including some location recommendations provided by survey respondents, as well as provide possible next steps.

**Chapter 2, *Outreach Findings***, details the inventory and outreach components of the project. The resulting maps consist of locations that, for a variety of reasons, are being recommended by DVRPC as priorities for future study. The chapter contains maps for each county, as well as an explanation of the factors considered in determining these priorities.

**Chapter 3** reviews the findings from the Shifting Gears online survey; findings are related to cyclist habits and preferences, as well as views of non-cyclists regarding possible motivations to try cycling. Also included is a set of recommended locations that respondents pointed out should be considered for enhancements.

**Chapter 4** summarizes the major elements of the Shifting Gears program.

**Chapter 5** contains recommendations for improving the bicycling environment in the Delaware Valley and conclusions based on the Shifting Gears process.

Moving forward, it is our hope that the Shifting Gears process and ensuing document lead to more proactive planning of bicycle facilities in the region, with a greater emphasis on safety and accessibility. **Comprehensive bicycle plans that sketch out a regional network are good, but by prioritizing facilities and focusing efforts on the needs of current and future cyclists, bicycle planning can move from being lines on a map to facilities on the road.**

## Background to This Report

For some time, DVRPC has been involved with bicycle and pedestrian planning in the Greater Philadelphia Region. Many projects undertaken by the agency make safer accommodations for cyclists their lynchpin. Two projects looked at bicycle use at a regional level. In the mid-1990s, as part of the 2020 Long-Range Plan development, DVRPC published comprehensive bicycle and pedestrian reports for Southeastern Pennsylvania and Southern New Jersey. In 2005 DVRPC conducted a regional survey of bicyclists. *Shifting Gears* is the third occasion where bicycling in the region as a whole has been studied by DVRPC. This section contains some background information on these two previous attempts to examine bicycling facilities, habits, and trends in the Delaware Valley region.

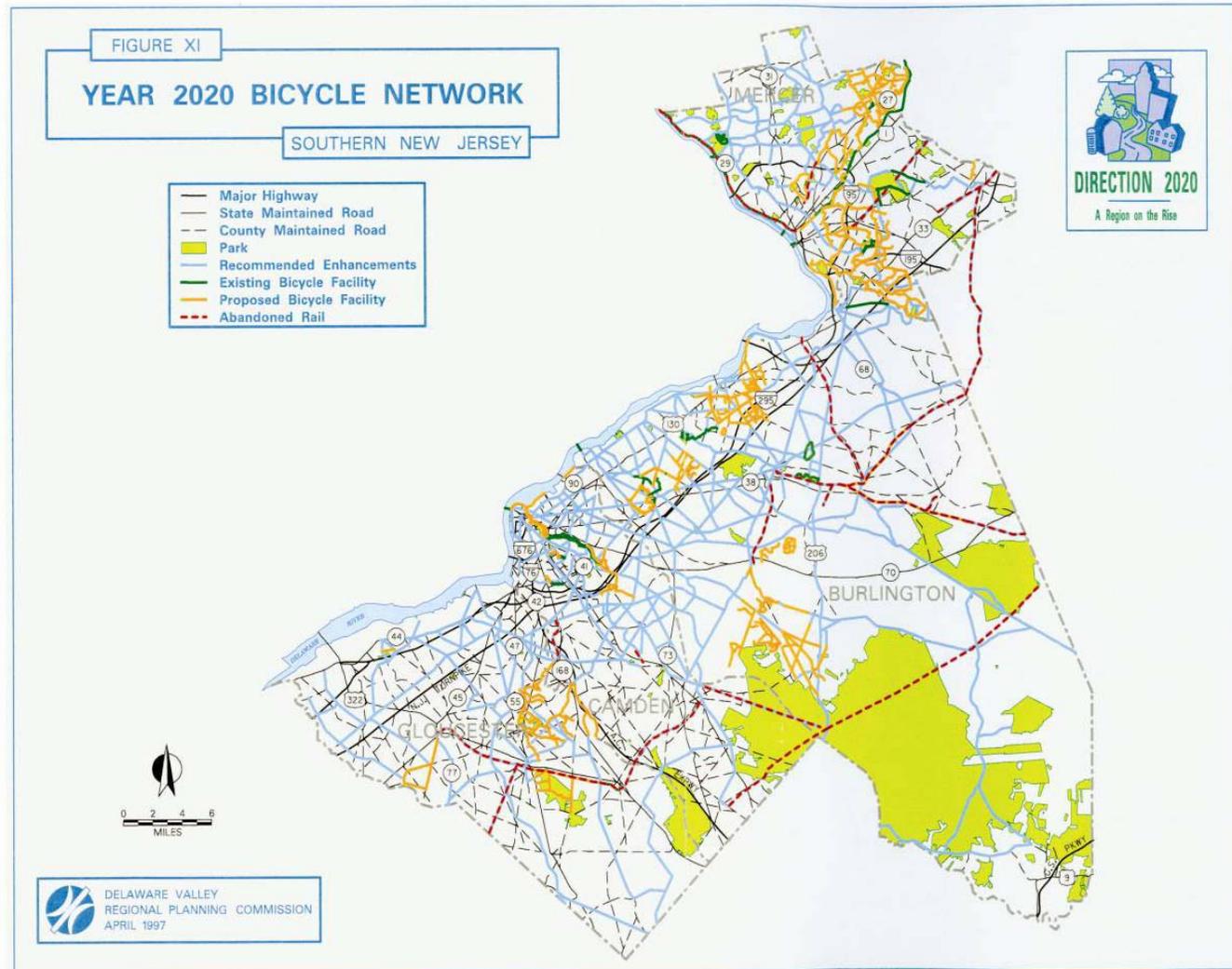
### Southern New Jersey and Southeastern Pennsylvania Bicycle and Pedestrian Mobility Plans

The Southern New Jersey Bicycle and Pedestrian Plan (DVRPC Publication 97002) and the Southeastern Pennsylvania Bicycle and Pedestrian Plan (DVRPC Publication 95009) were done as components of DVRPC's Long Range Plan *Direction 2020: A Region on the Rise*. These were the agency's first (and only) comprehensive plans that dealt specifically with accommodations for cyclists and pedestrians, most notably sketching out a regional network comprised of different types of on- and off-road facilities. The plans for the states were done separately (Pennsylvania in 1995 and New Jersey in 1997) and are shown as Figures 1 and 2 on pages 8 and 9 of this report.

The two reports inventoried existing bicycle facilities (on- and off-road), existing municipal mobility plans with non-motorized transportation elements, as well as open-space, park, and recreation plans for proposed facilities. The reports established goals and measures related to facility creation and increased bicycle use. Policies (both local and federal) were also outlined. Finally, lists of Transportation Improvement Program (TIP) projects which included bike/ped accommodations were also included.

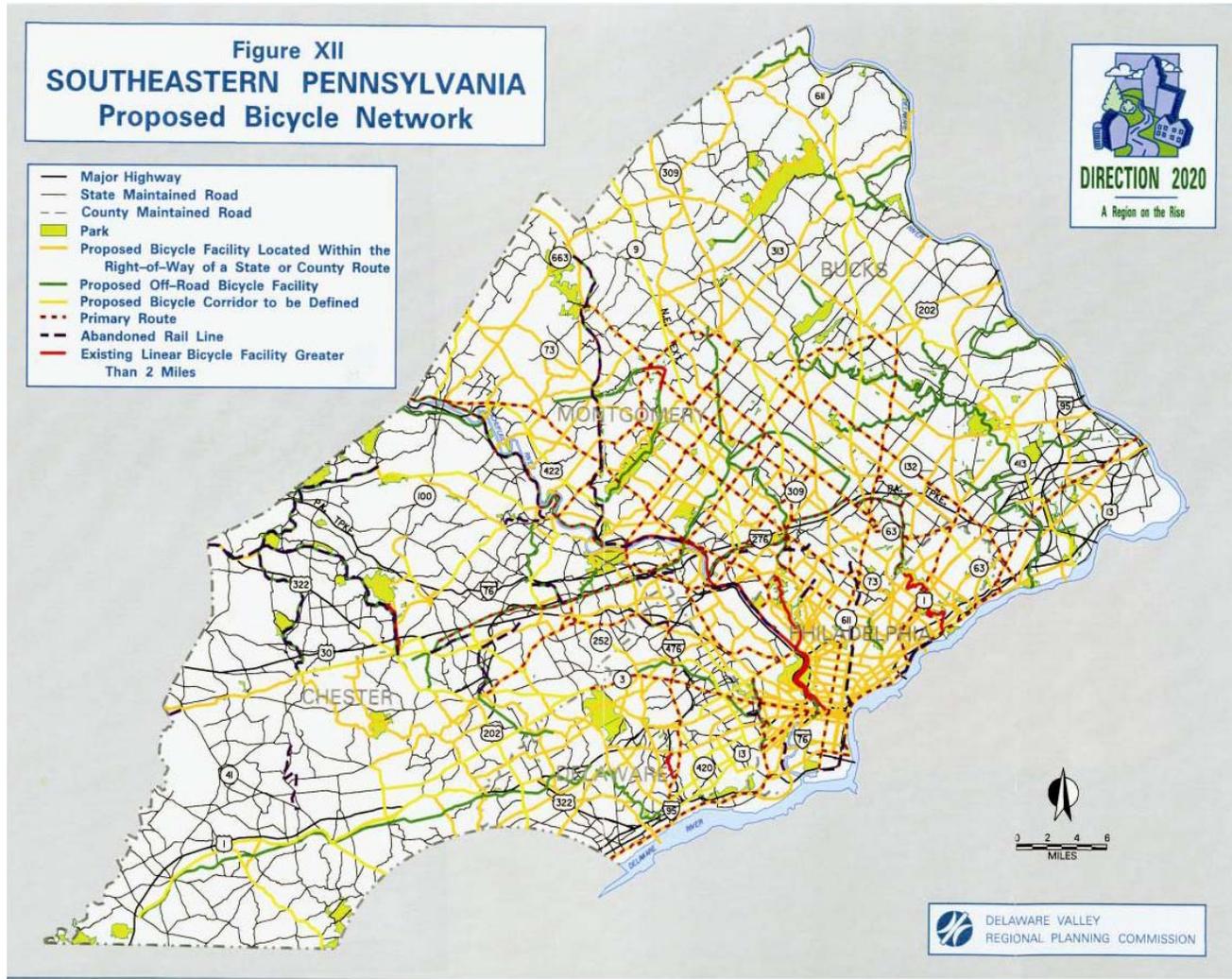
The New Jersey and Pennsylvania reports differ slightly in scope, but both speak to better integrating bicycle facilities with other transportation modes; establishing better connections between residential areas, local attractors, and employment centers; and adopting and supporting policies that both promote bicycling as well as those that promote mixed-use development. The importance of cooperation between the counties, municipalities, departments of transportation (DOTs), and transit agencies is also stressed. Figures 1 and 2 depict the proposed networks in New Jersey and Pennsylvania.

Figure 1: Southern New Jersey 2020 Bicycle Network



Source: Delaware Valley Regional Planning Commission, *Southern NJ Bicycle and Pedestrian Plan* (Philadelphia: DVRPC, 1997).

Figure 2: Southeastern Pennsylvania Proposed Bicycle Network



Source: Delaware Valley Regional Planning Commission, *Southeastern Pennsylvania Bicycle and Pedestrian Mobility Plan* (Philadelphia: DVRPC, 1995).

In the intervening years since the plans were published, much has been accomplished in the realm of bicycle facility planning and implementation. Several major advancements include:

- QR **The Schuylkill River Trail** has been extended from Philadelphia to Phoenixville with plans to further extend it to Pottsville in Berks County.
- QR **Cross County Connection TMA** (the TMA for Burlington, Camden, and Gloucester) has started compiling bicycle facilities reports that detail existing and proposed on- and off-road facilities in these counties.
- QR Portions of the **Chester Valley Trail**, a trail project connecting communities, employers, and local attractors in Chester and Montgomery counties have been completed and opened.
- QR The City of Philadelphia installed **buffered bicycle lanes on Spruce and Pine Streets** through Center City, the first such lanes through the densest part of the region.
- QR The State of New Jersey has adopted a **Complete Streets policy**; the City of Philadelphia is pursuing its own.

Accompanying the progress made in the implementation of bicycle facilities is the fact that bicycling itself has become increasingly popular, both in the city and the surrounding suburban communities. According to data supplied by the Bicycle League of America in 2008, **Philadelphia's percentage of bicycle commuters was 1.63, roughly three times the national average.** The city is considering a bike-share system to supplement existing transit infrastructure and has committed to adding 200 miles of bicycle lanes, including some on the Benjamin Franklin Parkway and other major streets. Some suburban communities have shown an increasing interest in bicycling issues and have worked to develop bicycle trails and on-road facilities.

Even with the positive steps taken toward making bicycling a more attractive travel mode, progress in creating bicycle facilities has been slow. Based on the proposed networks in the 1995 plan there is significant room to improve accommodations for cyclists.

One possible flaw in presenting facilities this way is that, prior to this report, no studies were done that formally examined the feasibility of whether or not a certain road or road segment was appropriate for bicycle accommodations. In Pennsylvania, many of the roads do not have the capacity to add separated facilities for bicyclists. Furthermore, most of the priority locations set forth in this plan are major arterials, where safety issues for bicycles are high and would be so even with enhanced bicycle facilities. Complicating matters further is the fact that Pennsylvania has limited county roads, meaning that municipalities must agree to facilities on local roads and PennDOT must agree to bicycle facilities on state roads. **This makes getting facilities built very difficult, even if only paint is involved.**

Even considering these difficulties, a comprehensive blueprint to build from in the future is important. Several suburban Pennsylvania projects proposed in the *Southeastern Pennsylvania Bicycle and Pedestrian Mobility Plan* became TIP projects, with construction being completed in 2010. These include Bicyclists Baltimore Pike in Delaware County, Old Baltimore Pike in Chester County, and the Susquehanna Bicycle Lanes in Montgomery County. These projects can be replicated in other locations with the proper coordination.

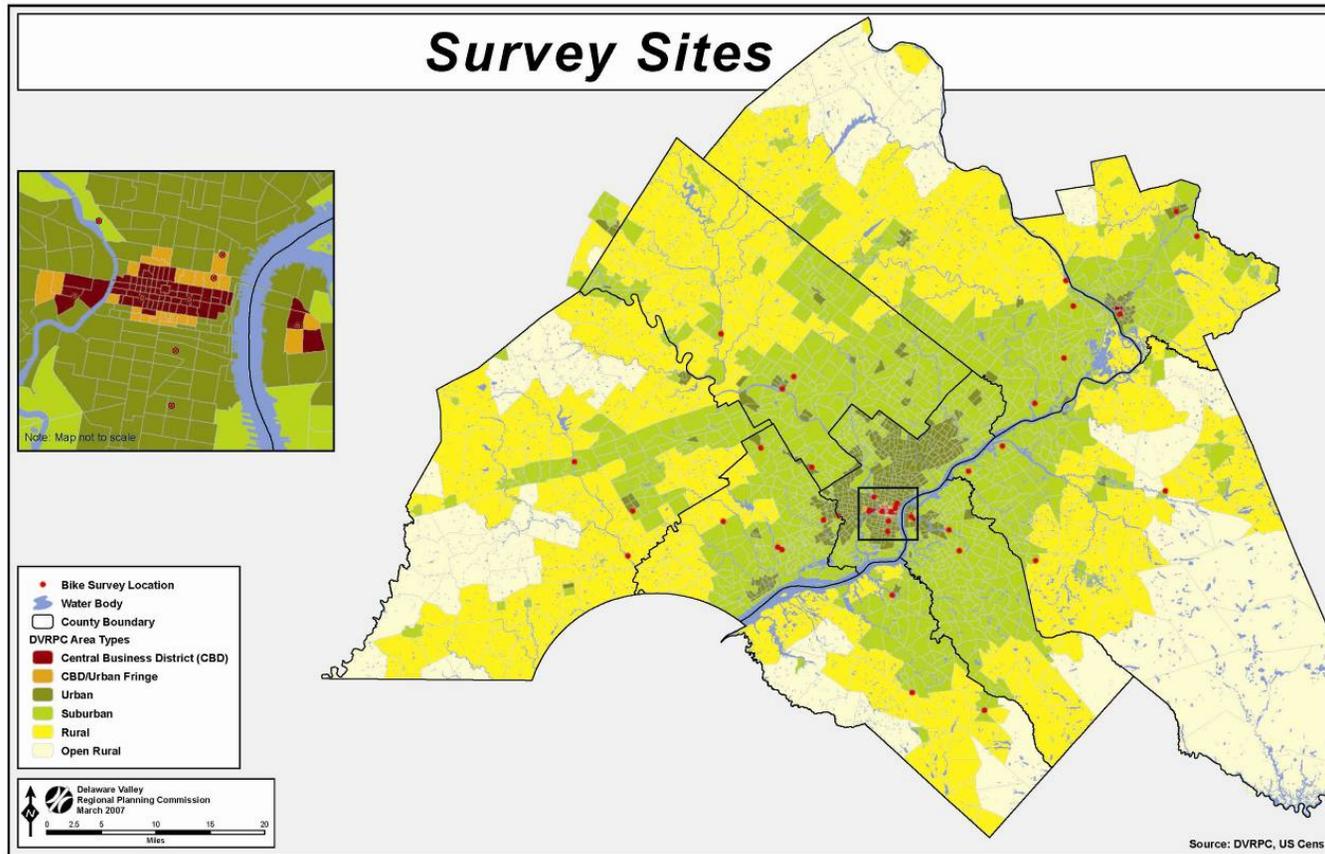
### Bicycling in the Delaware Valley in 2005

In 2005 DVRPC conducted intercept and mailback surveys of the region's cyclists, to date the largest survey of its kind in the country. Dozens of volunteers stopped and questioned cyclists at survey locations dispersed throughout the region in urban, suburban, and rural areas. In total, over 4,000 questionnaires were distributed and 1,227 usable surveys were returned. The results of this survey effort were documented in the report *Bicycling in the Delaware Valley in 2005* (DVRPC Publication 07050). Figure 3 depicts the locations in the region where surveys were handed out.

This survey sought information pertaining to various aspects of bicycling, including:

- ☞ trip purpose;
- ☞ reasons for riding;
- ☞ miles/time ridden per month by season; and
- ☞ demographics of the region's cyclists.

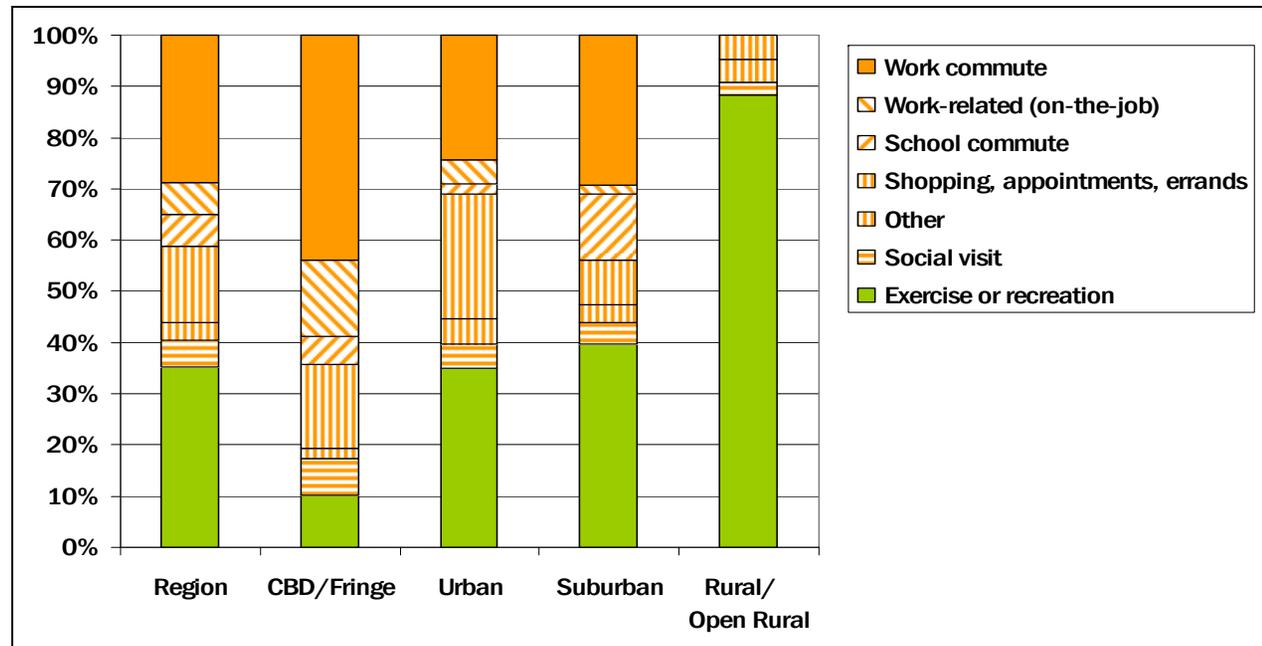
Figure 3: Regional Survey Sites



Source: Delaware Valley Regional Planning Commission, *Bicycling in the Delaware Valley* (Philadelphia: DVRPC, 2007).

Some of the more interesting findings of this report deal with trip purpose, and how trip purposes may diverge according to geography. In a region like ours, which ranges from dense urban areas to rural locales, it is important to understand the different ways that residents of these various areas use bicycles. Figure 4 depicts how trip purpose broke down over the different area types in our region.

Figure 4: Trip Purpose by Area Type



Source: Delaware Valley Regional Planning Commission, *Bicycling in the Delaware Valley* (Philadelphia: DVRPC, 2007).

These survey results illustrate that bicycles are used for a variety of different purposes throughout the region, depending on area type. The closer a cyclist is to the central business district, the more utilitarian the typical purpose (work, school, shopping, etc.). Cyclists in suburban and rural areas constituted the majority of trips made purely for exercise or recreational purposes. One thing the data points out, however, is that most trips are not work trips; they are other types of utility trips or recreational trips.

This survey project establishes potential baseline data for future survey work of this nature, though the costs and logistics of doing such projects may prove unwieldy in the future. Indeed, the Shifting Gears survey component borrows some of the question formatting of this survey; but because it is not an intercept survey and was designed using different methods, it cannot be considered a true update.

## Shifting Gears Project Components

The Shifting Gears program has three distinct components:

- ☞ inventories of regionally-significant plans as well as other data that may be pertinent to bicycle use,
- ☞ outreach to regional stakeholders; and
- ☞ an online survey geared toward both cyclists and potential cyclists.

Combining these three parts offers an opportunity to gather available plans and data, understand current planning initiatives in the region, and reach out to the public to further our understanding of cyclists and how they view the cycling environment. This section describes the three components that comprise the project.

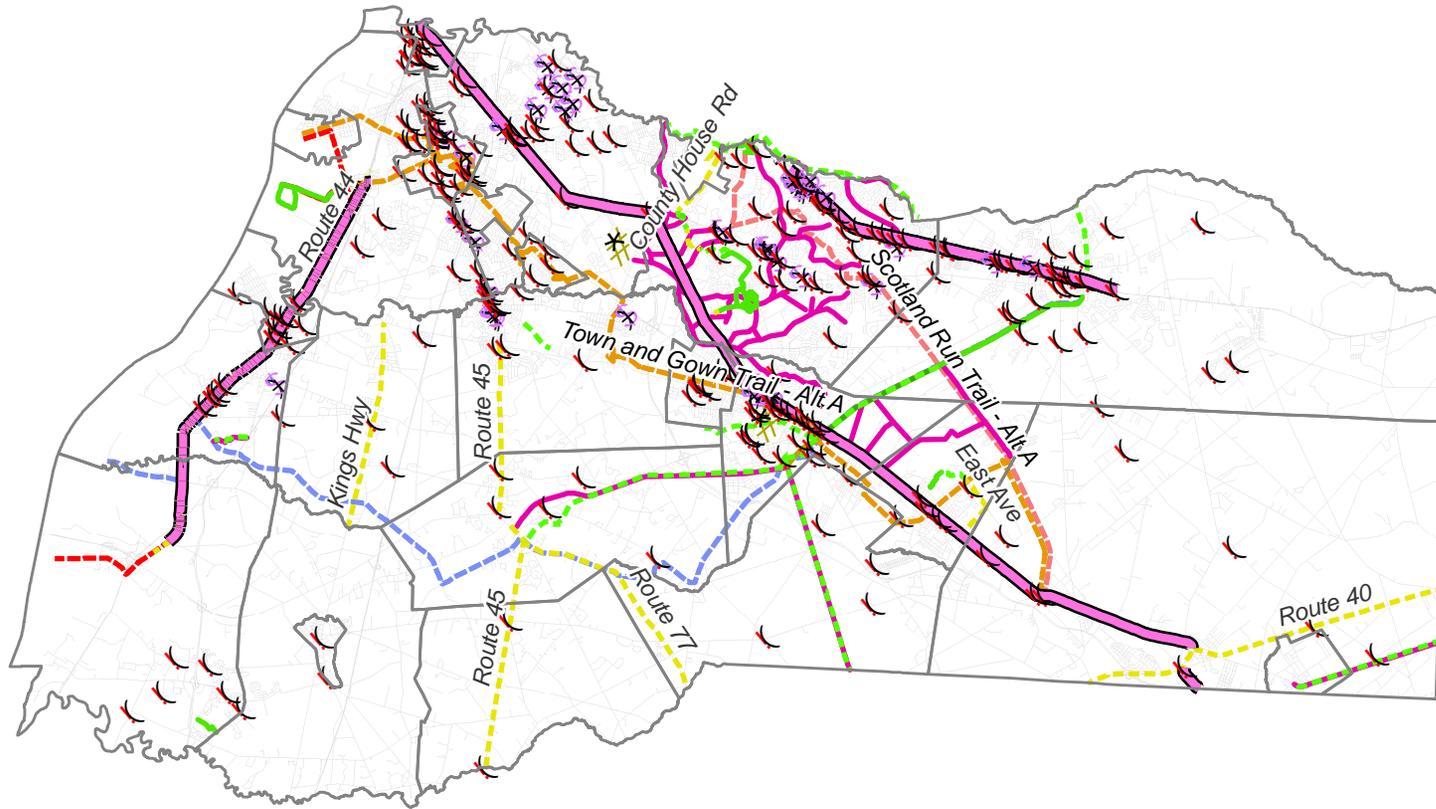
### Draft Inventories

The first step of the program was to gather regional plans that deal with bicycle facilities (both on- and off-road), along with other pieces of relevant information, and combine them into draft inventories to share with constituent counties during the stakeholder outreach sessions. A separate inventory was generated for each of DVRPC's nine counties. Included in the inventories were county bike/ped master plans, comprehensive trail plans, TMA plans (if applicable), and a few other plans of regional significance. Municipal plans, while important in their own right in terms of planning local mobility initiatives, were not considered as part of this process.

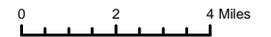
These inventories also include attractors such as shopping centers, business parks, universities, colleges, and local train stations; and bicycle crash data. This information serves two purposes: first, to pinpoint potential trouble spots in the region; and second, to get an idea of where people ride, as official bicycle counts for most locations are not available. Figure 5 depicts the draft inventory created for Gloucester County.

Figure 5: Gloucester County Shifting Gears Draft Inventory

# Gloucester County



- DVRPC Trails**
- Design/Construction
  - Existing
  - Planned
  - Proposed
- CCCTMA Bicycle Facilities**
- Off-Road, Existing
  - - - Off-Road, Proposed
  - On-Road, Existing
  - - - On-Road, Proposed
- Gloucester County Trail Plan**
- - - Delaware Estuary Trail
  - - - Town and Gown Trail
  - - - Scotland Run Trail
  - - - Gloucester County Trail
- Attractors**
- \* Business Park
  - # College
  - ) Shopping Center
  - ( Bicycle Crash
  - Recommended Priority



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

As evidenced by Figure 5, the draft inventories illustrate both existing and planned facilities for each county. In Gloucester County's case, the local TMA (Cross County Connection) conducts inventories of the bicycle facilities within the county. Gloucester County also worked with DVRPC on a trail plan, which is included in the draft inventory.

DVRPC hopes to use these inventories to initiate discussions about facility prioritization and planning initiatives. The crash and attractor data assists in making these decisions, particularly in cases with discrepancies between planned facilities and locations where people want or need to ride.

### **Stakeholder Outreach**

The second component of Shifting Gears was a series of stakeholder meetings held at locations throughout the region. Stakeholder groups were composed of representatives from county planning commissions, TMAs, and local cycling advocates. The purpose of these meetings was to introduce Shifting Gears to the various stakeholders, discuss policy issues, and examine the draft inventories and make comments. Three such stakeholder meetings were held: one at the Burlington County offices, one at PennDOT district 6-0 headquarters, and one at the monthly meeting of the Bicycle Coalition of Greater Philadelphia. Because Mercer County was in the process of developing its own bike/ped master plan, alternative outreach methods were used.

The outreach meetings started with a brief presentation on the Shifting Gears process, followed by an examination of the draft inventories and a question/answer session. In reviewing the draft inventories in a public forum and soliciting comments from stakeholders, the hope was to spur dialogue as well as to ensure that bicycle facilities were properly represented.

### **Online Survey**

The third component of Shifting Gears was an online survey that asked a variety of questions pertaining to bicycling in the Delaware Valley. The purpose of the survey was to add another layer of participation to the process, and to solicit some user perspective about which roadways require improvement to enhance bicycle safety. The survey also offered non-cyclists the opportunity to comment on what factors may lead them to try bicycling as a transportation mode.

Survey results are described in detail in Chapter 3.

## Summary Points

- ❧ DVRPC has conducted regional studies of bicycle facilities and cyclist habits before: in the mid-1990s for the 2020 Long-Range Plan, and in the 2005 *Bicycling in the Delaware Valley* bicycling survey.
- ❧ Shifting Gears is an outreach and prioritization program enacted by DVRPC in Fiscal Year 2010 to better understand issues pertaining to bicycling in the region, as well as to better match the agency's resources to the needs of our member governments in regard to bicycling.
- ❧ The program is comprised of three components: assembling inventories of bicycle facilities, outreach to regional stakeholders, and an online public survey.



## Outreach Findings

The first task of Shifting Gears was to create draft inventories to share with counties at regional stakeholder meetings. These inventories include relevant regional plans as well as bicycle crash location information and local attractors that may generate bicycle traffic. Stakeholders commented on the initial inventories which were then amended by DVRPC staff. Edited maps were sent out in the spring of 2010 to again give stakeholders the chance to comment on the inventories. Figures 6 through 14 on the following pages depict these enhancement locations as well as other data, including the location of bicycle-related roadway crashes, local attractors, regional trails, and on-road bicycle facilities that already exist or have been proposed. The purpose of this process was to develop a set of priority locations where bicycle use, safety, and access should be studied in the future. To select these locations, the following factors were considered:

### Volume of Bicycle-Related Crashes

New Jersey bicycle crash data was culled from the Plan4Safety crash database at Rutgers University. Pennsylvania crash data came from reports supplied by PennDOT. The crash data is used to determine potential trouble spots for cyclists as well as locations with high volumes of cyclists. The presence of significant volumes of bicycle crashes is the strongest justification for enhancing bicycle facilities and improving bicycle accessibility.

### Proximity to Regional Attractors

To make bicycling a more attractive travel mode, locations such as shopping centers, business parks, colleges and universities, train stations, and parks should be as accessible as possible. Locations providing access to these types of locations should be prioritized.

### Volume of Bicycle/Pedestrian Commuters

Journey-to-work data from the 2000 census was reviewed to determine which municipalities and neighborhoods have relatively high numbers of people already bicycling and walking to work. Locations that passed through these parts of the region that have high instances of bicycle crashes and/or attractors are considered priorities.

## Existing Bicycle Facilities

Creating a network of bicycle facilities requires strong connections between on- and off-road facilities. Existing and proposed facilities were inventoried, and the priorities should create more seamless bicycle use for commuting as well as for recreational and local use.

Calling a location a priority does *not* mean bicycle facilities necessarily belong on that roadway. Because some locations are major arterials where bicycle use may not be desirable, a 1/2-mile buffer has been placed around each location (1/4-mile for Philadelphia). **Considering the difficulty in getting facilities implemented, as well as the need to ensure designated bicycle facilities are safe, it may be necessary to find alternative alignments to these arterials that serve the same trip ends, to best serve all users.** Table 2 lists the locations chosen using the above criteria.

Table 2: Outreach-Recommended Locations

County	Location	Limits
Burlington	CR 537	Mount Holly Township to Maple Shade Township
	CR 541	Burlington City to Shamong Township
	US 130	Bordentown Township to Palmyra Borough
	US 206	Bordentown Township to Shamong Township
Camden	Kings Highway	Through the county
	NJ 168	Collingswood Borough to Gloucester Township
	CR 610	Camden City to Pennsauken Township
	CR 551	Camden City to Brooklawn Borough
	CR 561	Camden City to Haddonfield Borough
Gloucester	NJ 42	Washington Township to Monroe Township
	NJ 44	West Deptford Township to Logan Township
	NJ 45	Westville Borough to Harrison Township
	NJ 47	Westville Borough to Franklin Township
Mercer	Hamilton Road	Trenton to Hamilton Township
	Route 571	West Windsor Township to Hightstown Borough
	NJ 27	Princeton Borough to Princeton Township
	NJ 31	Trenton to Hopewell Township
	NJ 33	Trenton to Robbinsville Township and East Windsor Township to Hightstown Borough
	US 206	Through the county

Table 2: Outreach-Recommended Locations (continued)

County	Location	Limits
Bucks	State Road	Bensalem Township to Bristol Township
	PA 132	Bensalem Township to Warrington Township
	PA 413	Bedminster Township to Newtown Township and Newtown Township to Bristol Borough
	PA 513	Bensalem Township to Penndel Borough
Chester	PA 82	East Marlborough Township to Kennett Square Borough
	US 30 Business	Atglen Borough to West Whiteland Township
	PA 100	West Whiteland Township to West Chester Borough
	PA 3	West Chester Borough to Willistown Township
	PA 842	East Marlborough Township to West Chester Borough
	Brandywine Trail corridor	East Bradford Township to Pennsbury Township
	Old Baltimore Pike Trail corridor	New Garden Township to Birmingham Township
Delaware	Chichester Road	Bethel Township to Marcus Hook Borough
	Darby Road	Haverford Township to Upper Darby Township
	Eagle Road	Haverford Township
	Lansdowne Avenue	Haverford Township to Yeadon Borough
	PA 291	Trainer Borough to Tinicum Township
	PA 3	Edgemont Township to Millbourne Borough
	PA 352	Thornbury Township to Chester City
US 13	Marcus Hook Borough to Darby Borough	
Montgomery	Dekalb Pike	Upper Merion Township to Montgomery Township
	Ridge Pike	Pottstown Borough to Philadelphia
	PA 152	Montgomery Township to Cheltenham Township
	PA 263	Hatboro Borough to Abington Township
	US 30	Lower Merion Township
Philadelphia	Broad Street/Route 611	The length of the city
	Frankford Avenue	Delaware Avenue to Cottman Avenue
	Ridge Avenue	The length of the city

Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

# Burlington County

## Plans Compiled for Inventory

### Cross County Connection TMA—Bicycle Facilities Inventory for Burlington County

This plan documents existing and proposed on- and off-road bicycle facilities in Burlington County. The TMA inventories each municipality to generate these facilities lists and maps.

## Bicycle Crash Data

Between 2003 and 2008 there were 555 reported bicycle crashes in Burlington County, 413 of which have been mapped. The municipalities with the most bicycle crashes are Medford Township (40), Burlington City (30), and Evesham Township (29).

## Recommended Priority Locations

1. CR 537 between Mount Holly Township and Maple Shade Township
2. CR 541 between Burlington City and Shamong Township
3. US 130 between Bordentown Township and Palmyra Borough
4. US 206 between Bordentown Township and Shamong Township

Figure 6: Outreach-Recommended Priority Locations (Burlington County)

**Regional Trails**

- Existing
- Planned/Proposed

**On-Road Facility**

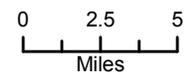
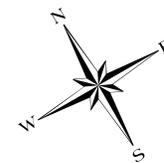
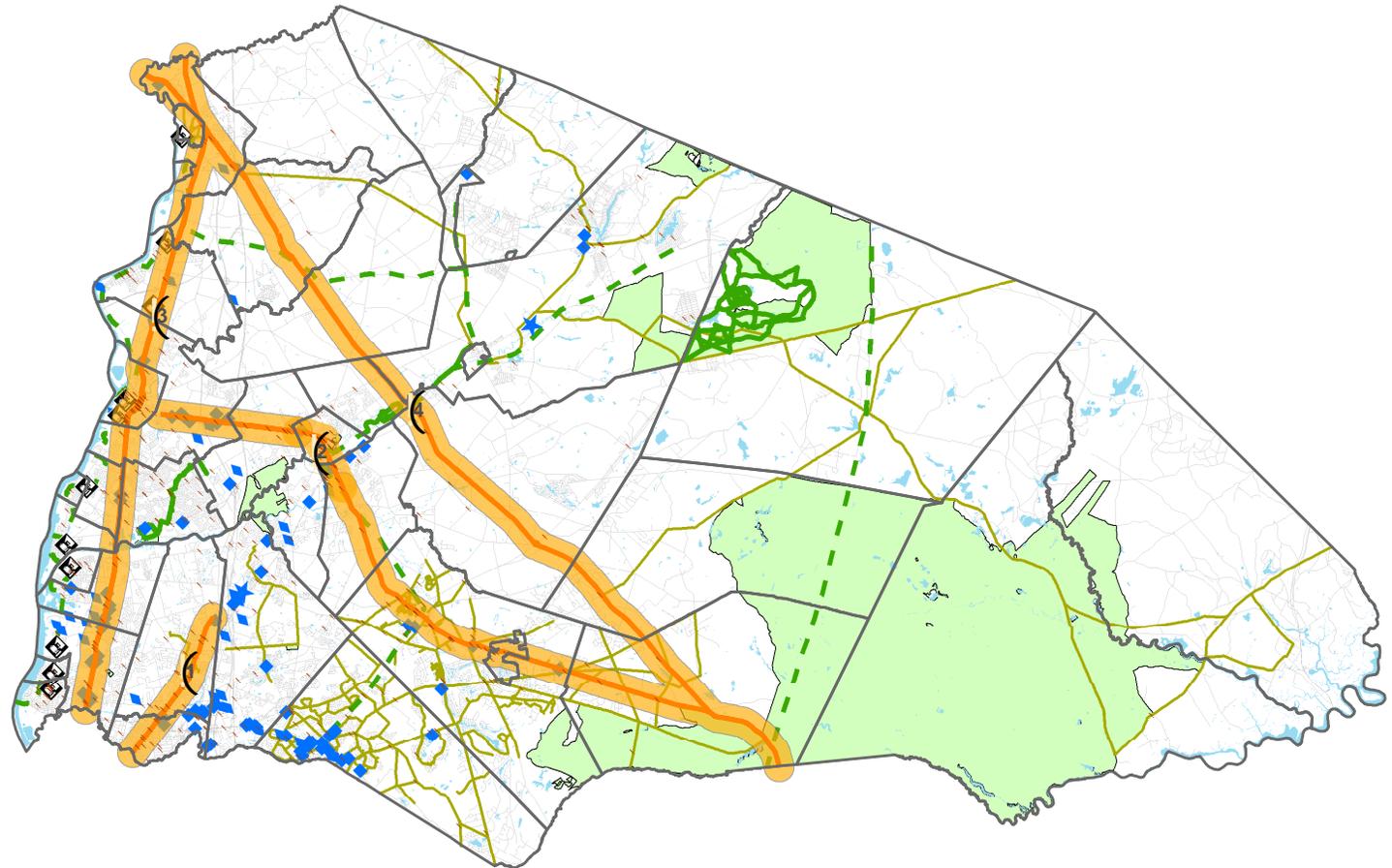
- Existing/Proposed

**Attractors**

- Rail Station
- Business Park
- College/University
- Shopping Center

**Priority Locations**

- Corridor
- Bicycle Crash



SEPTEMBER 2010

Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

# Camden County

## Plans Compiled for Inventory

### Cross County Connection TMA—Bicycle Facilities Inventory for Burlington County

This plan documents existing and proposed on- and off-road bicycle facilities in Camden County. The TMA inventories each municipality to generate these facilities lists and maps.

### DVRPC—Central Camden County Bicycle and Multi-Use Trail Plan

This plan sketches an interconnected set of on- and off-road bicycle facilities throughout ten municipalities in Camden County.

## Bicycle Crash Data

Between 2003 and 2008 there were 204 reported bicycle crashes in Camden County. The City of Camden has 86 of these crashes, or over 40 percent. Pennsauken (20), Cherry Hill (19), and Gloucester Township (11) have the highest volume of crashes among the remaining municipalities.

## Recommended Priority Locations

1. Kings Highway through the county
2. NJ 168 from Collingswood Borough to Gloucester Township
3. CR 610 from Camden City to Pennsauken Township
4. CR 551 from Camden City to Brooklawn Borough
5. CR 561 from Camden City to Haddonfield Borough

Figure 7: Outreach-Recommended Priority Locations (Camden County)

**Regional Trails**

-  Existing
-  Planned/Proposed
-  Design/Construction

**On-Road Facilities**

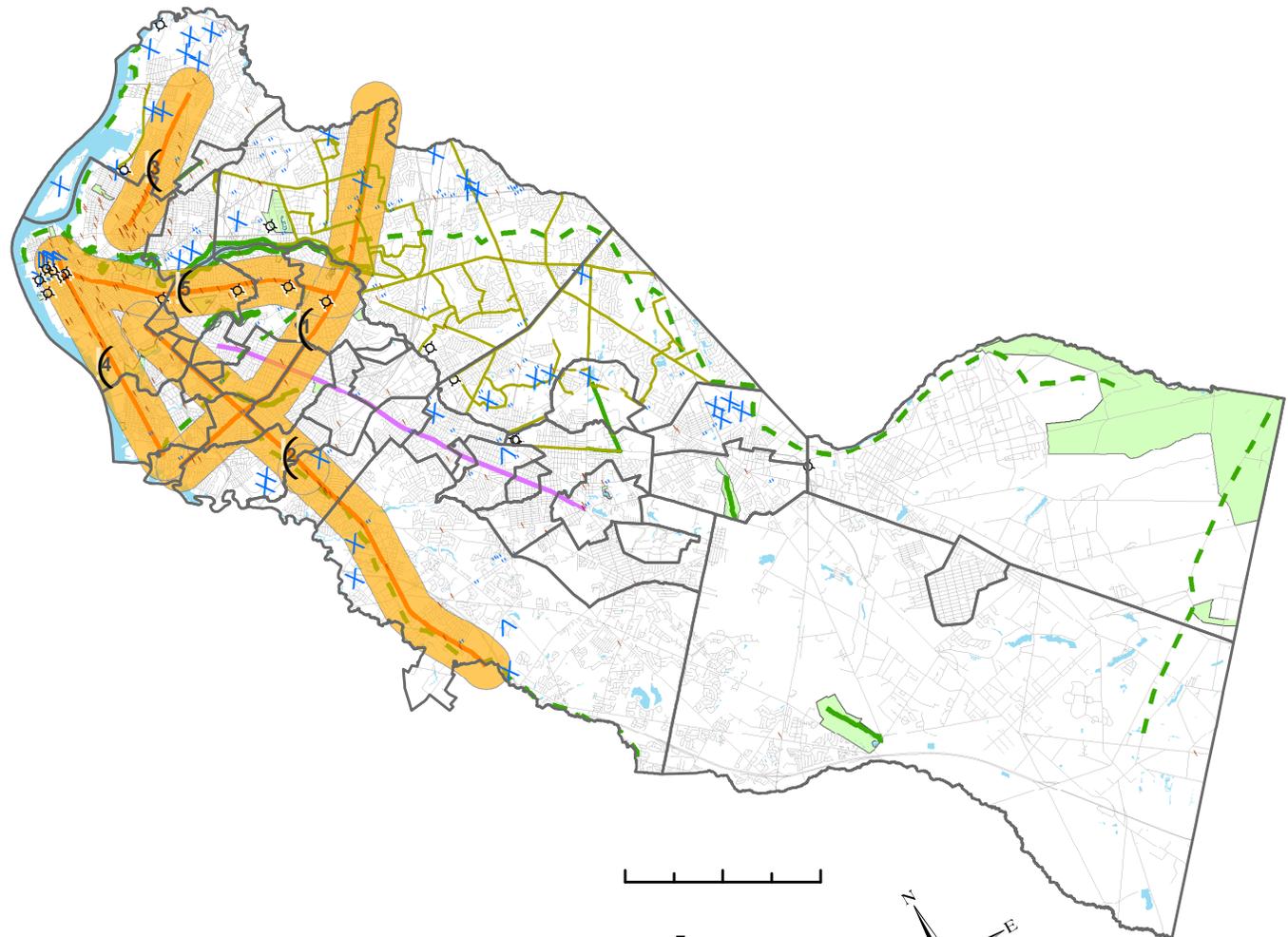
-  Existing/Proposed

**Attractors**

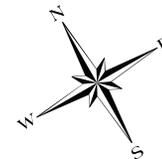
-  Rail Station
-  Business Park
-  College/University
-  Shopping Center

**Priority Locations**

-  Corridor
-  Bicycle Crash



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Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

# Gloucester County

## Plans Compiled for Inventory

### Cross County Connection TMA—Bicycle Facilities Inventory for Burlington County

This plan documents existing and proposed on- and off-road bicycle facilities in Gloucester County. The TMA inventories each municipality to generate these facilities lists and maps.

### Gloucester County Trail Plan

This plan outlines trail alignments throughout the county to improve bicycle access to town centers, employment, and recreational facilities.

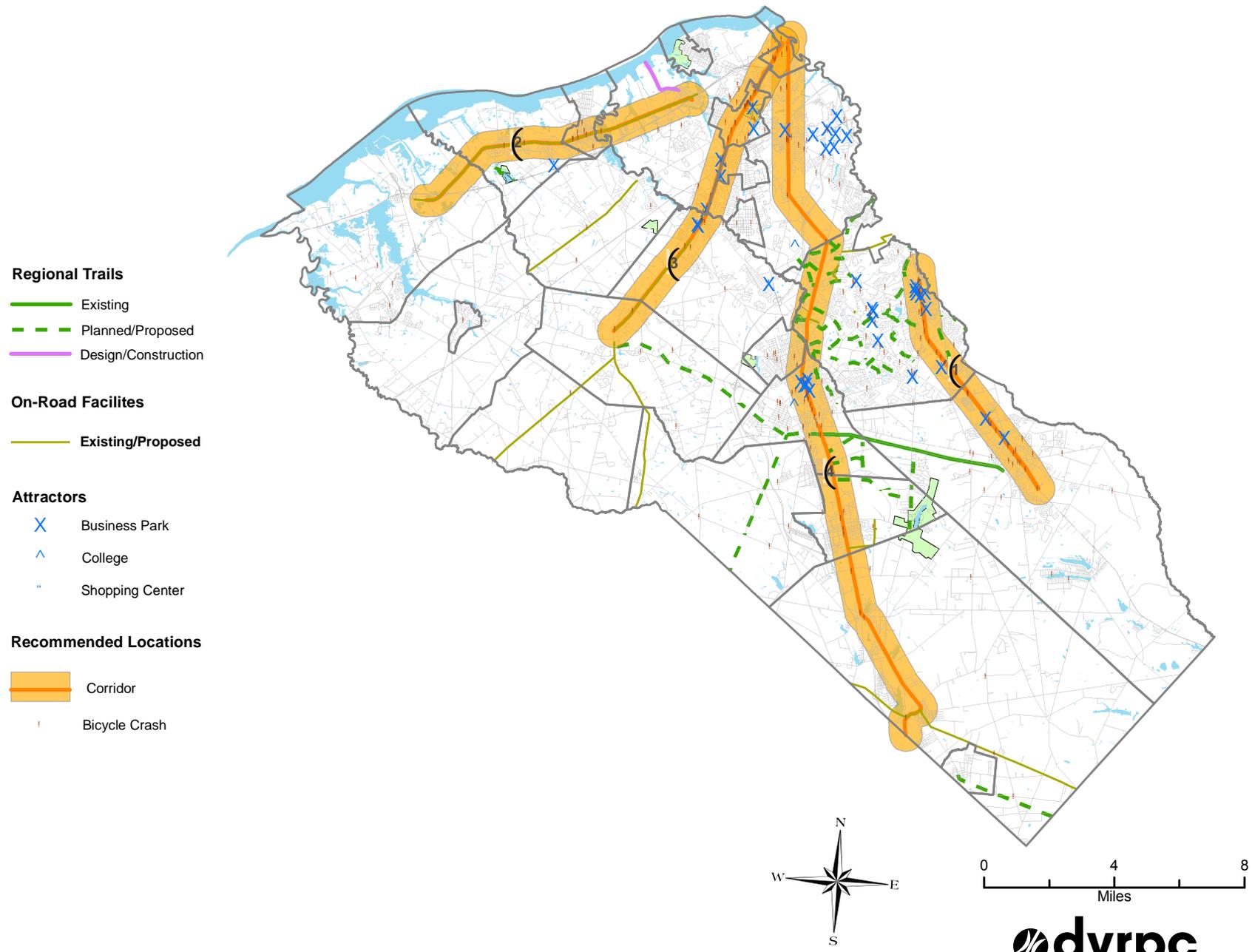
## Bicycle Crash Data

Between 2003 and 2008 there were 234 reported bicycle crashes in Gloucester County. Washington Township (**40**), Monroe Township (**28**), and Glassboro Borough (**26**) have the highest number of bicycle-related incidents among municipalities.

## Recommended Priority Locations

1. NJ 42 from Washington Township to Monroe Township
2. NJ 44 from West Deptford Township to Logan Township
3. NJ 45 from Westville Borough to Harrison Township
4. NJ 47 from Westville Borough to Franklin Township

Figure 8: Outreach-Recommended Priority Locations (Gloucester County)



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

## Mercer County

### Plans Compiled for Inventory

Mercer County's Bicycle Master Plan is in the process of being completed.

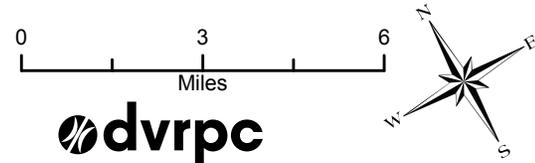
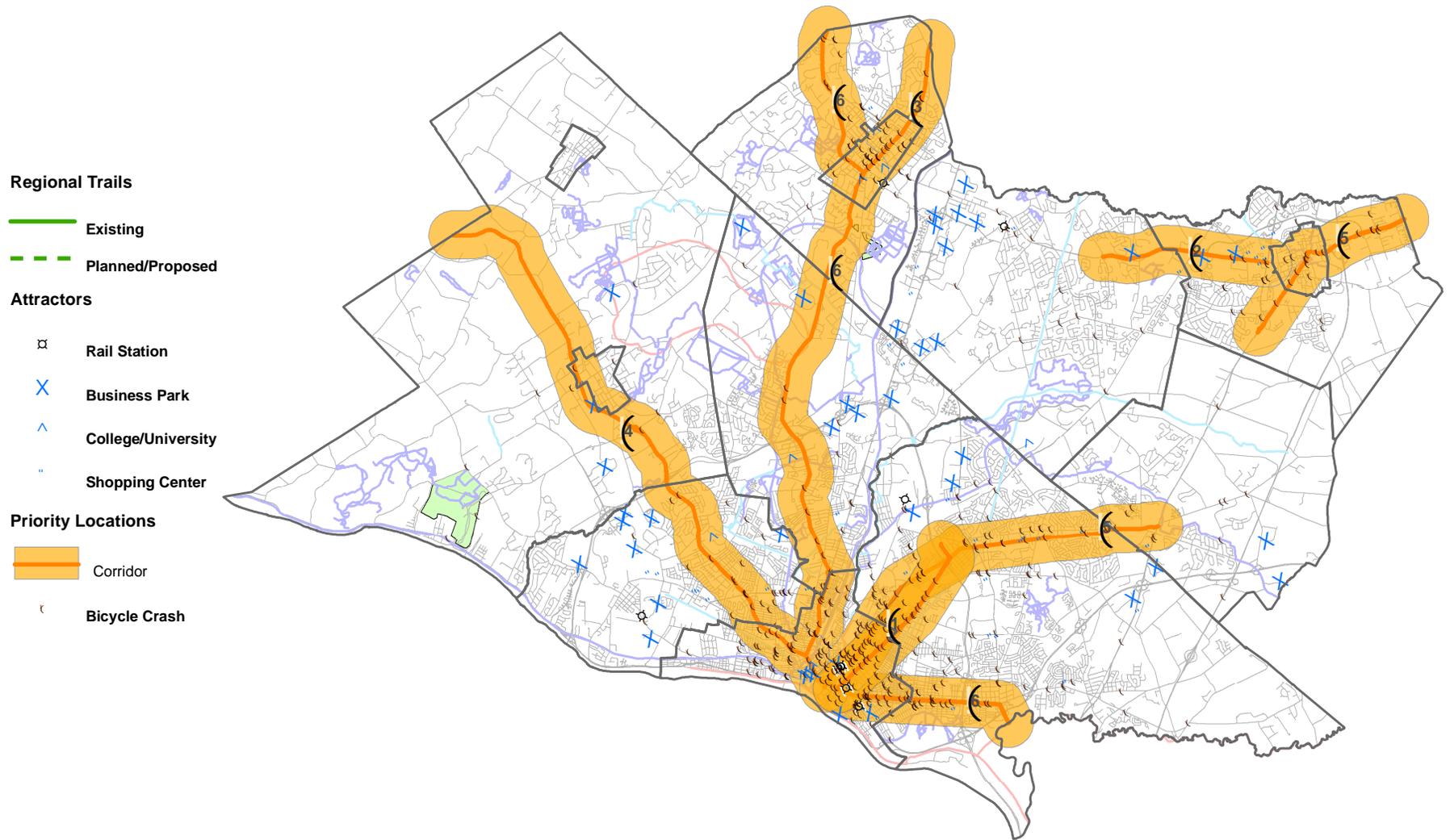
### Bicycle Crash Data

Between 2003 and 2008 there were 516 reported bicycle crashes in Mercer County. The majority of incidents took place in Trenton (**207**) and Hamilton Township (**131**). Among the remaining municipalities, Princeton Borough has the most with **30** bicycle crashes, and Princeton Township has **28**.

### Recommended Priority Locations

1. Hamilton Road from Trenton to Hamilton Township
2. Route 571 from West Windsor Township to Hightstown Borough
3. NJ 27 from Princeton Borough to Princeton Township
4. NJ 31 from Trenton to Hopewell Township
5. NJ 33 from Trenton to Robbinsville Township and from East Windsor Township to Hightstown Borough
6. US 206 through the county

Figure 9: Outreach-Recommended Priority Locations (Mercer County)



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Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

## Bucks County

### Plans Compiled for Inventory

Bucks County is currently working on a bike/ped master plan, the first of its kind for the county. No other plans were consulted.

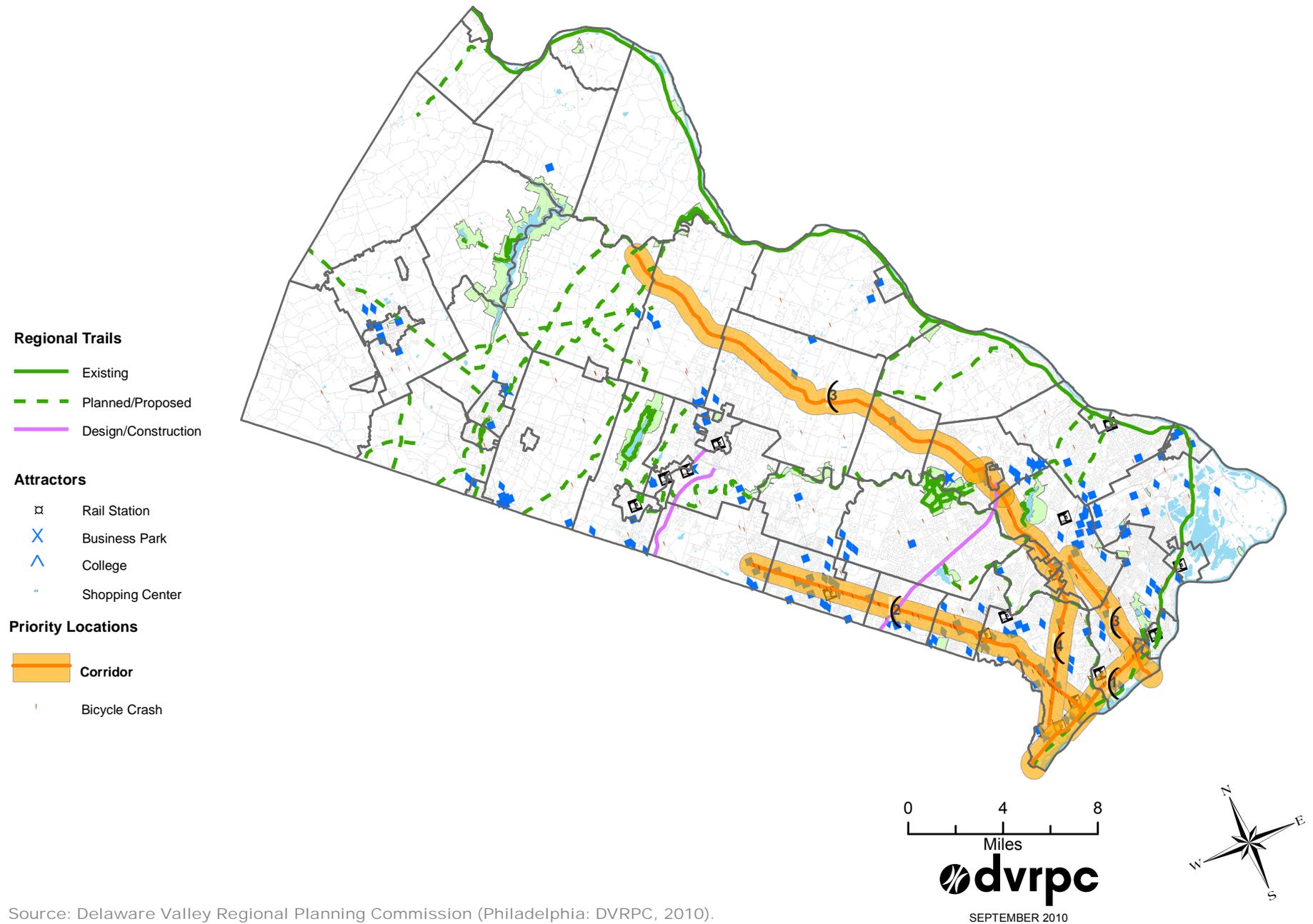
### Bicycle Crash Data

Between 2003 and 2008 there were 213 reported bicycle-related crashes in Bucks County. Bristol Township (39), Bensalem Township (37), and Middletown Township (13) have the most among municipalities.

### Recommended Priority Locations

1. State Road from Bensalem Township to Bristol Township
2. PA 132 from Bensalem Township to Warrington Township
3. PA 413 from Bedminster Township to Newtown Township and from Newtown Township to Bristol Borough
4. PA 513 from Bensalem Township to Penndel Borough

Figure 10: Outreach-Recommended Priority Locations (Bucks County)



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

## Chester County

### Plans Compiled for Inventory

#### Chester County Planning Commission — Chester County Recommended Bikeway Network

The Chester County Planning Department released a map assigning roadways in their county a functional classification in regard to bicycle facilities.

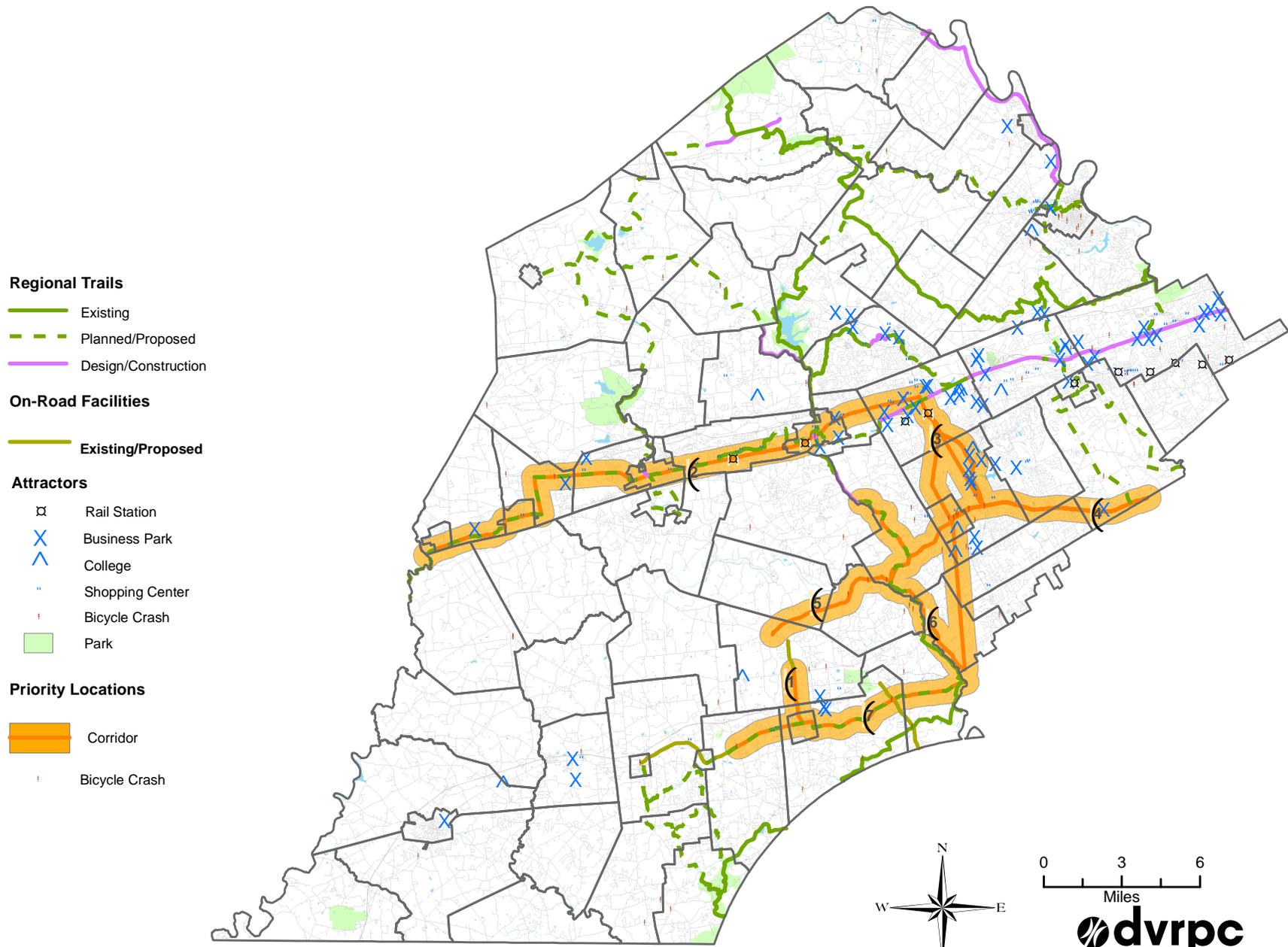
### Bicycle Crash Data

Between 2003 and 2008 there were 87 reported bicycle-related crashes in Chester County. Phoenixville Borough (9) and Tredyffrin Township (9) have the most among municipalities.

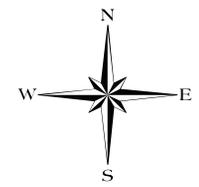
### Recommended Priority Locations

1. PA 82 from East Marlborough Township to Kennett Square Borough
2. US 30 Business Route between Atglen Borough and West Whiteland Township
3. PA 100 corridor/spur from West Whiteland Township to West Chester Borough
4. PA 3 from West Chester Borough to Willistown Township
5. PA 842 from East Marlborough Township to West Chester Borough
6. Brandywine Trail corridor from East Bradford Township to Pennsbury Township
7. Old Baltimore Pike Trail corridor from New Garden Township to Birmingham Township

Figure 11: Outreach-Recommended Priority Locations (Chester County)



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).



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## Delaware County

### Plans Compiled for Inventory

#### Delaware County Planning Department — Delaware County's Bicycle Plan

The county's plan designates a set of county-wide bicycle facilities that promote integrating bicycle mobility into the greater transportation system and lays out network recommendations.

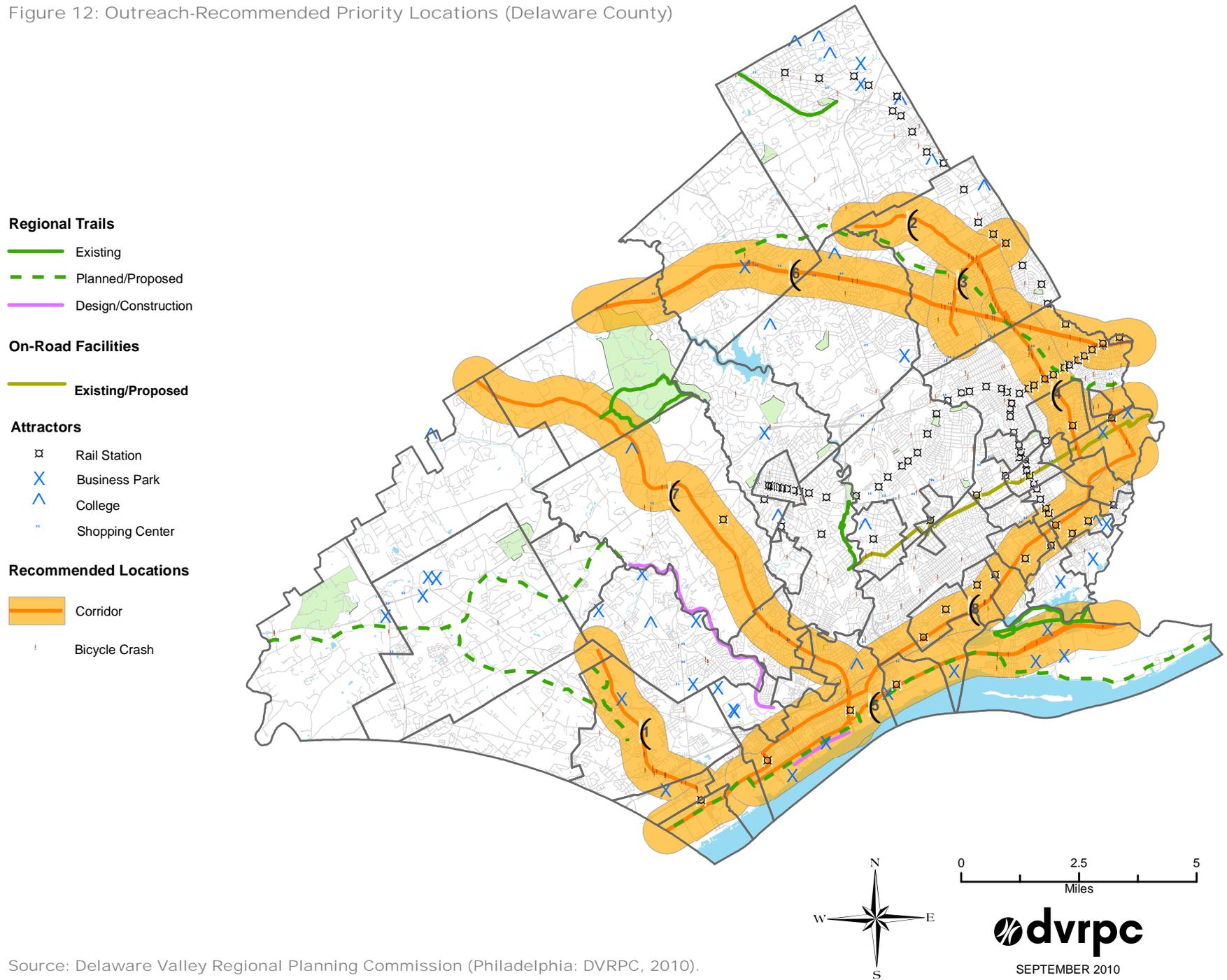
### Bicycle Crash Data

Between 2003 and 2008 there were 230 reported bicycle-related crashes in Delaware County. Upper Darby has the highest number of incidents with **50**. Haverford Township has **32**, and Upper Chichester has **16**.

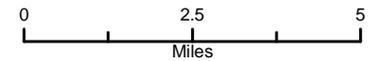
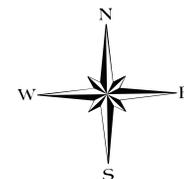
### Recommended Priority Locations

1. Chichester Road from Bethel Township to Marcus Hook Borough
2. Darby Road from Haverford Township to Upper Darby Township
3. Eagle Road in Haverford Township
4. Lansdowne Avenue from Haverford Township to Yeadon Borough
5. PA 291 from Trainer Borough to Tinicum Township
6. PA 3 from Edgemont Township to Millbourne Borough
7. PA 352 from Thornbury Township to Chester City
8. US 13 from Marcus Hook Borough to Darby Borough

Figure 12: Outreach-Recommended Priority Locations (Delaware County)



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).



SEPTEMBER 2010

# Montgomery County

## Plans Compiled for Inventory

### Montgomery County Planning Commission — Montgomery County Transportation Plan

This transportation plan defines a set of primary and secondary bicycle corridors throughout the county.

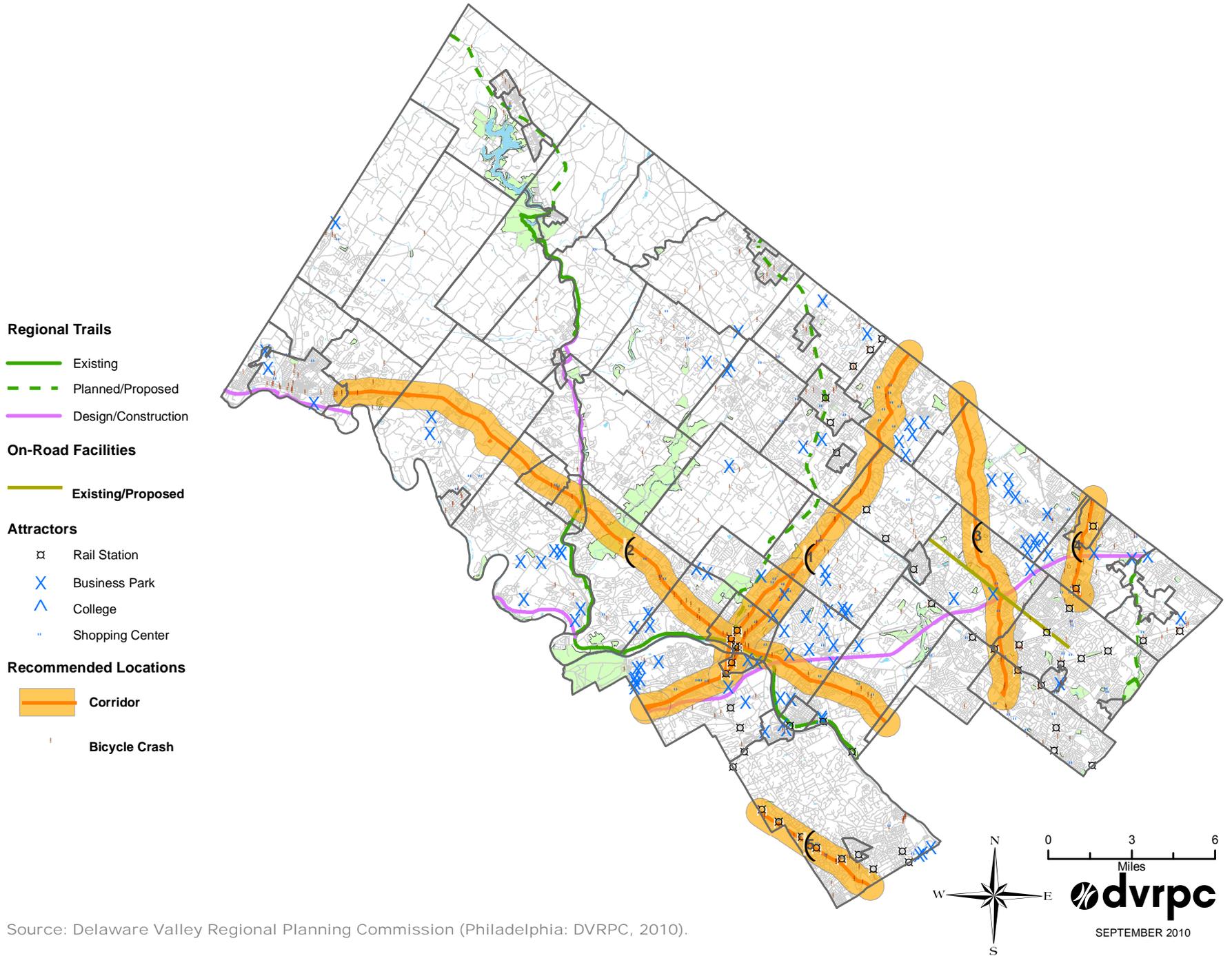
## Bicycle Crash Data

Between 2003 and 2008 there were 279 reported bicycle-related crashes in Montgomery County. Lower Merion Township, with **32** crashes, has the highest volume of incidents among municipalities. Pottstown has **24**, and Norristown and Cheltenham each have **18**.

## Recommended Priority Locations

1. Dekalb Pike from Upper Merion Township to Montgomery Township
2. Ridge Pike from Pottstown Borough to Philadelphia
3. PA 152 from Montgomery Township to Cheltenham Township
4. PA 263 from Hatboro Borough to Abington Township
5. US 30 in Lower Merion Township

Figure 13: Outreach-Recommended Priority Locations (Montgomery County)



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

SEPTEMBER 2010

# Philadelphia

## Plans Compiled for Inventory

### Greater Philadelphia Regional Bicycle Map

The Philadelphia bike map illustrates roadways with bicycle lanes and bicycle-friendly-streets.

At this time, work is being completed on the Transportation and Community Development Initiative (TCDI)-funded Philadelphia Pedestrian and Bicycle Plan, which makes facility recommendations and sets policy goals moving forward.

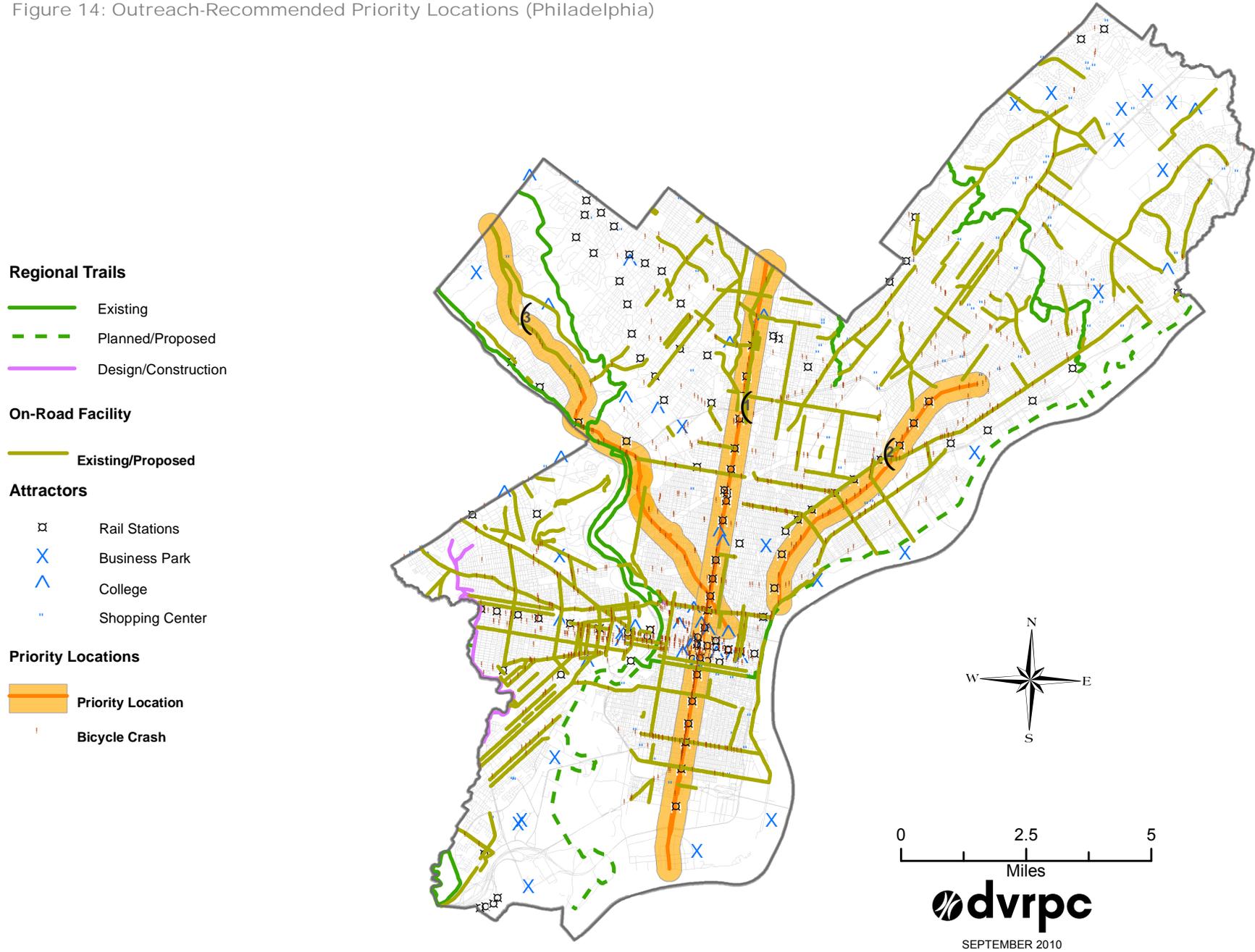
## Bicycle Crash Data

Between 2003 and 2008 there were **1,093** reported bicycle-related crashes in Philadelphia. The majority of these crashes took place in Center City and University City.

## Recommended Priority Locations

1. Broad Street/Route 611 the length of the city
2. Frankford Avenue from Delaware Avenue to Cottman Avenue
3. Ridge Avenue the length of the city

Figure 14: Outreach-Recommended Priority Locations (Philadelphia)



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

## Summary Points

- ☞ For each county, a set of recommended priority locations was suggested.
- ☞ The selection was based on a set of criteria that includes volume of bicycle-related crashes, proximity to attractors, the number of bike/ped commuters adjacent to the corridor, and location relative to other bicycle facilities.
- ☞ A 1/2-mile buffer was placed around each corridor (1/4-mile in Philadelphia). Arterials that have been designated priority locations may be unsafe for bicycle use and an alternative alignment may be necessary.
- ☞ Bicycle use in these locations should be studied further to determine if there are safety issues present, and how to establish alternative bikeway alignments at these locations.

## Survey Findings

The third component of the Shifting Gears program was an online survey conducted through the Survey Monkey web portal. The survey went online in early March 2010, and responses were collected through May. An email containing information relevant to the survey and a weblink was sent to thousands of contacts and planning partners in the region. A postcard advertising the survey (Figure 15) was also sent to bicycle shops, cafes, and libraries. In the month and a half that the survey was online, DVRPC received over 1,900 unique responses, of which 1,830 were usable.

The goal of the survey was to reach out to cyclists to get information on bicycle use and facility preferences, as well as to get user recommendations for locations that may require enhancement to provide safer bicycle travel. There was also a section of questions intended for non-cyclists or those who ride infrequently to determine why they do not ride (or ride more) and what could potentially motivate them to do so. These questions were separate from the rest of the survey. Roughly 175 of the 1,830 usable responses, or almost 10 percent of survey respondents, fell into this category.

Figure 15: Shifting Gears Postcard



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

The survey was divided into several sections:

- ☞ respondent information;
- ☞ questions for infrequent/non-cyclists;
- ☞ bicycle use; and
- ☞ bicycle facilities.

This section presents the relevant survey findings.

### **Section 1: Respondent Information**

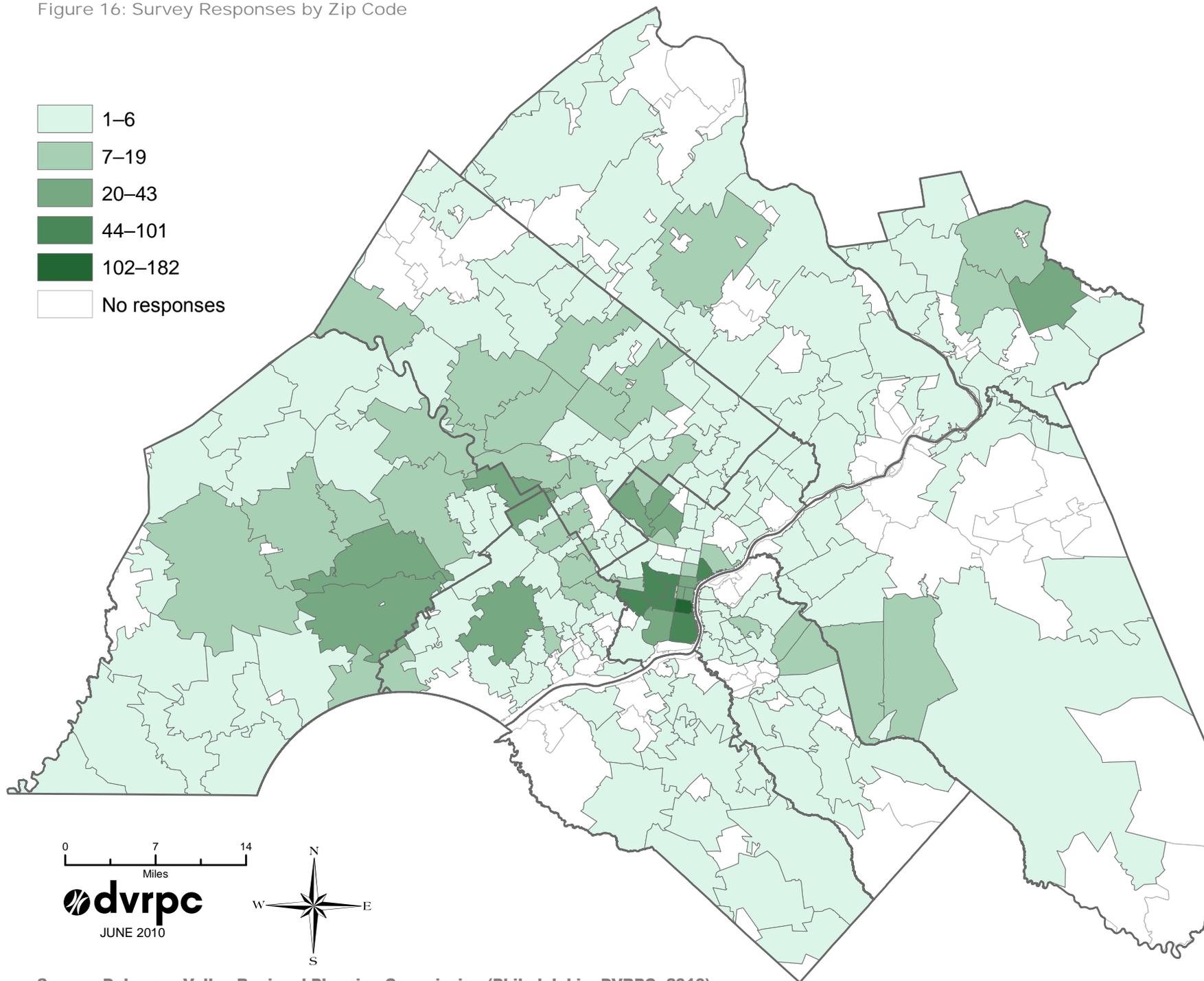
The first section of the Shifting Gears survey asked the user for home address (although only the zip code was required), and to classify themselves as an experienced, moderate, or beginner cyclist or as an individual who infrequently or never uses a bicycle.

The purpose of these questions was to categorize the cyclist according to their ability level as well as to get some sense of where the highest volumes of cyclists in the region were. While there are certainly a large number of cyclists who did not take the survey, the distribution of responses is helpful in determining what parts of the region (both roadways and nodes) may be the most appropriate locations for bicycle-related enhancements and initiatives geared toward increasing bicycle safety and use.

#### **Question 1: What is your home address?**

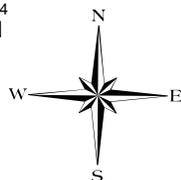
Survey respondents were asked for their home address, although only a zip code was required. This question was included to identify where the region's cyclists are located, and how that compares with existing and planned facilities and other bicycle initiatives. As was expected, the City of Philadelphia is home to the largest number of survey respondents. For the full distribution of responses throughout the region (summarized by zip code) see Figure 16.

Figure 16: Survey Responses by Zip Code



0 7 14  
Miles

**dvrpc**  
JUNE 2010



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

The highest volume of responses came from within the City of Philadelphia, while there were also a high number of responses in West Chester area zip codes, and along the 202 Corridor in Chester and Montgomery counties. In New Jersey, Princeton Junction, Princeton (Borough and Township), and Lawrence had a relatively high number of respondents, as did the Route 70 corridor in Camden and Burlington counties.

Table 3 lists the zip codes with the highest number of respondents, both in the suburban counties as well as the City of Philadelphia.

Table 3: Zip Codes with High Volumes of Survey Responses

Suburban zip codes				Philadelphia zip codes	
Zip Code	Post Office	County	Respondents	Zip Code	Respondents
19380	West Chester	Chester	31	19147	182
19063	Media	Delaware	28	19146	101
08550	Princeton Junction	Mercer	28	19103	97
19087	Wayne	Montgomery	25	19130	66
19382	West Chester	Chester	22	19143	65
08108	Collingswood	Camden	19	19104	58
18901	Doylestown	Bucks	19	19125	57
19038	Glenside	Montgomery	15	19148	57
19446	Lansdale	Delaware	15	19107	43
19083	Havertown	Delaware	14	19119	36
19335	Downingtown	Chester	13	19106	32
19460	Phoenixville	Chester	13	19145	31
19355	Malvern	Chester	12	19128	26
08540	Princeton	Mercer	11	19144	25
08648	Trenton	Mercer	11	19123	23

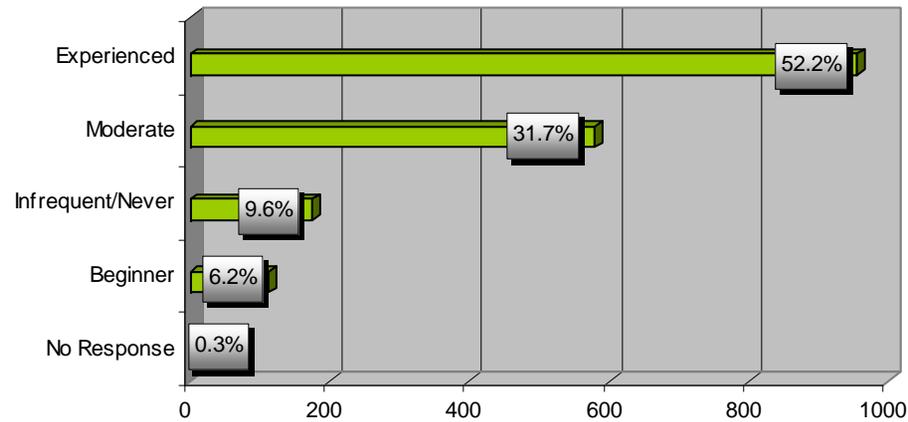
Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

In the rest of the region, West Chester in Chester County had over 50 total responses. Several other towns in Chester County also had a high number of responses, notably Phoenixville, Downingtown, and Malvern. West Windsor Township (08550) had the highest number of responses in New Jersey. In Philadelphia, the highest concentration of survey respondents came from South Philadelphia, zip codes 19147 and 19146. Most zip codes with a high number of survey respondents fell outside of Center City.

## Question 2: How would you classify yourself as a cyclist?

Respondents were asked how they classify themselves as a cyclist, or what level of experience they have. Of the almost 1,830 respondents that answered this question, over 950 respondents (52 percent) consider themselves experienced cyclists. Just over 600 respondents (32 percent) consider themselves cyclists of moderate experience or skill. Six percent, or 123 respondents, consider themselves beginner-level cyclists. For the breakdown of how the survey respondents chose to classify themselves (both in percentage and absolute value), see Figure 17.

Figure 17: Survey Respondent Classifications



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

Along with the classifications described above, 10 percent of the survey respondents indicated that they are infrequent cyclists or do not ride at all. These respondents answered a separate set of questions concerning why they do not ride a bike (or ride one more frequently).

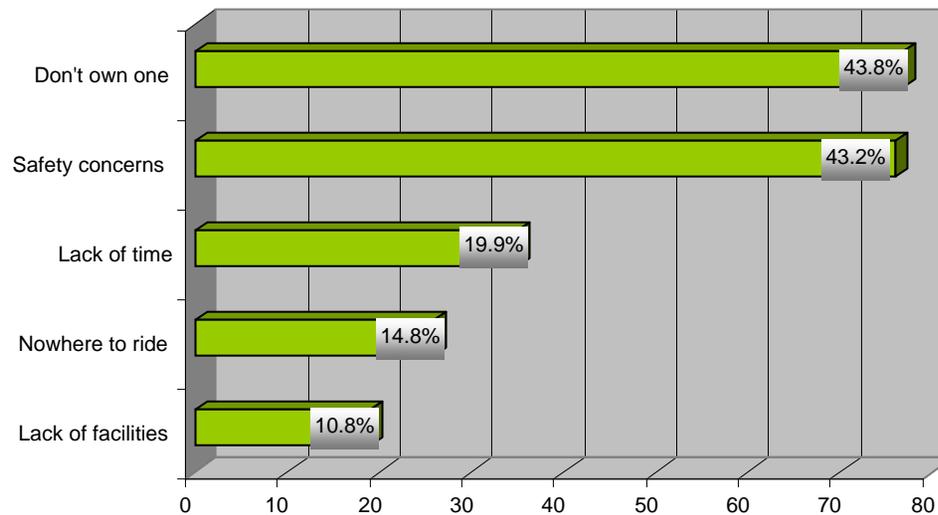
## Section 2: Questions for Infrequent/Non-Cyclists

In the first section of the survey users were asked to classify themselves as cyclists. Roughly 10 percent of survey respondents (176 in total) selected the Infrequent/Non-cyclist classification; the analysis in this section refers only to the responses from these users. While this certainly does not represent a huge percentage of non-cyclists in the Delaware Valley, it may offer some insight into why people do not bike, and what may be done for them to consider it.

### Question 1: Why don't you ride a bicycle?

Respondents were asked why they do not ride a bicycle and were given several choices. Figure 18 depicts their responses. Respondents could select as many factors that were applicable to them.

Figure 18: Why Don't You Ride a Bike? (non-cyclists)



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

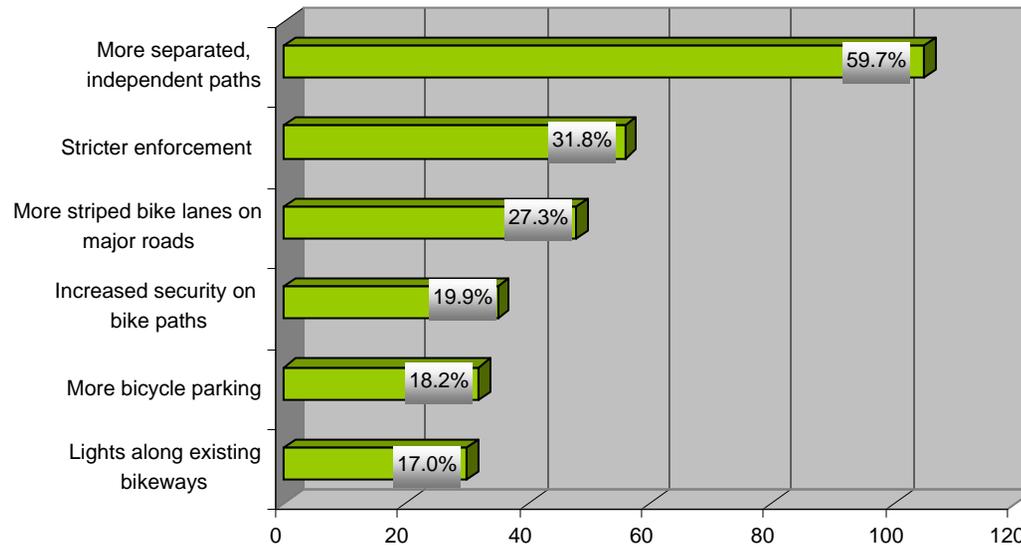
Of the 176 survey respondents who classified themselves as infrequent/non-cyclists, just over 40 percent indicated they do not ride because they do not own a bicycle or have safety concerns that prevent them from doing so. Just fewer than

20 percent (around 30 respondents) indicated they lack the time to ride. Almost 15 percent have nowhere to ride. Almost 11 percent lack any bicycle facilities nearby.

Question 2: What might motivate you to ride a bicycle?

Survey respondents were given a choice of various factors that may motivate them to ride a bicycle. Respondents' top six reasons are depicted in Figure 19. Respondents could choose as many of the factors as applicable.

Figure 19: What Might Motivate You to Ride a Bicycle? (non-cyclists)



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

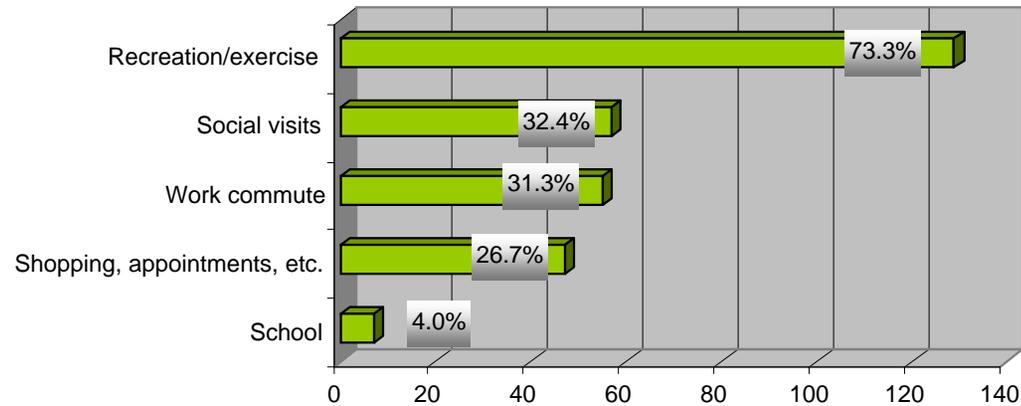
Of the different choices given to respondents, roughly 60 percent of respondents indicated that more separated, independent paths or trails would motivate them to ride a bicycle. Just over 30 percent indicated increased enforcement of bicycle traffic regulations may motivate them. Just over 27 percent indicated more striped lanes on major roads is a factor, while almost 20 percent indicated that increased security on regional trails and paths might motivate them to ride a bike. Roughly 18 percent of these respondents indicated additional bicycle parking is a motivating factor, and 17 percent indicated that increasing lighting along existing bikeways is a factor.

Of the remaining choices, 15 percent considered better signage of existing routes and covered secure parking motivating factors. Thirteen percent indicated classes teaching bicycle safety and skills would be motivating factors while 10 percent noted that having a location to change and shower might motivate them. Only 3 percent indicated advertising as a motivating factor.

Question 3: What type of trip would you like to use a bicycle for?

Infrequent/non-cyclists were asked what types of trips they would consider using a bike for. Their responses are depicted in Figure 20.

Figure 20: What Would You Consider Using a Bicycle For? (non-cyclists)



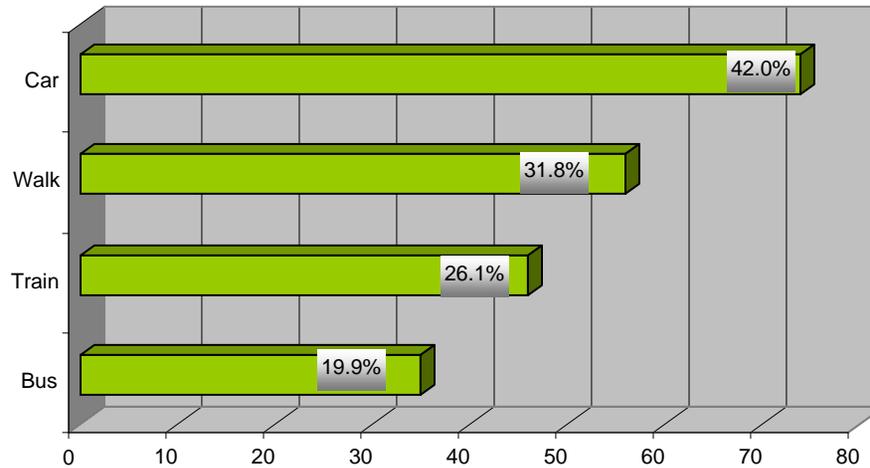
Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

Almost three-quarters of non-cycling survey respondents indicated they would consider using a bicycle for recreation and exercise. Slightly over 30 percent indicated they would use a bike for social visits or work commutes, and just fewer than 30 percent indicated they would consider using a bike for shopping trips or other types of appointment. Only 4 percent indicated they would consider using a bicycle for school trips.

Question 4: How do you currently get to work?

Non-cycling respondents were asked how they currently get to work. Users could check as many modes that applied to them. Their responses are depicted in Figure 21.

Figure 21: How Do You Currently Get to Work (non-cyclists)?



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

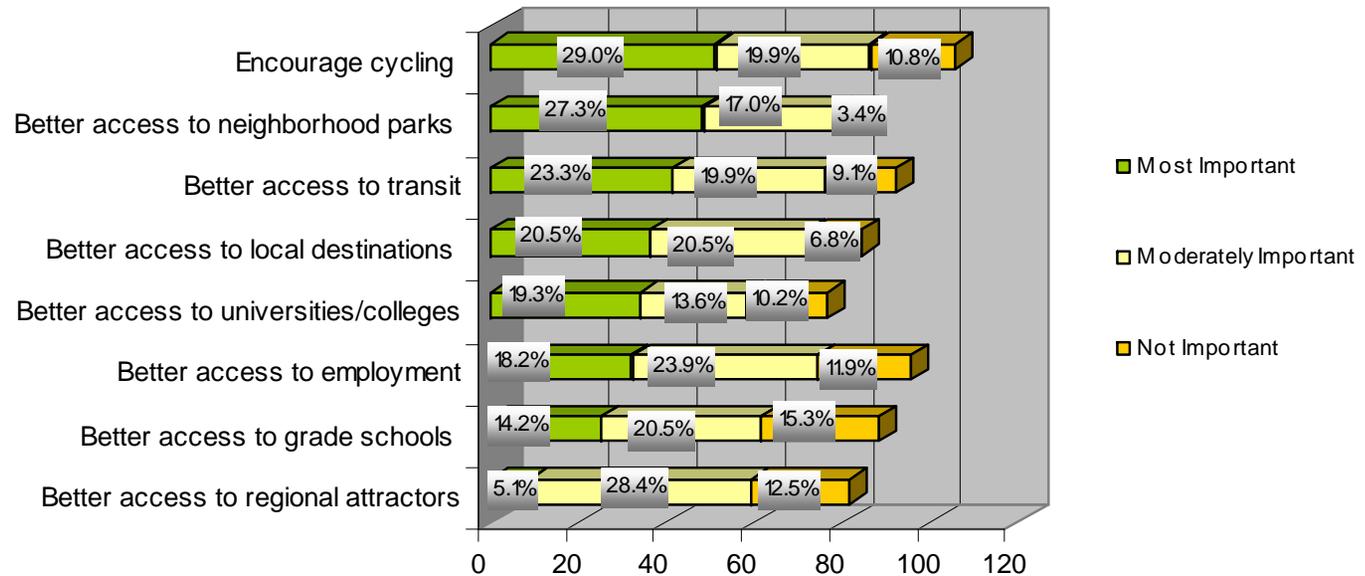
Forty percent of the non-cycling respondents (just over 70) indicated they currently drive a car to work. Just over 30 percent indicated they walk to work, while just over 25 percent indicated they ride the train to work. Approximately 20 percent indicated using a bus.

These high walking and transit mode shares are indicative that non-cycling survey respondents are not representative of the regional population at large, where the auto mode share is much more dominant for journey-to-work trips.

### Question 5: Why should bicycling facilities be improved?

Non-cycling respondents were asked why bicycling facilities should be enhanced. Figure 22 depicts their responses.

Figure 22: Why Should Bicycle Facilities Be Improved? (non-cyclists)



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

Of the survey respondents who considered themselves infrequent/non-cyclists, 30 percent indicated that encouraging more cycling is a “most important” reason to improve bicycling facilities. A slightly smaller percentage of respondents indicated that enhancing access to neighborhood parks is a “most important reason” to improve cycling facilities. Just over 20 percent indicated that access to local destinations such as libraries and main streets is a “most important reason”, and just under 20 percent indicated that access to colleges and universities and access to employment are “most important reasons.” Less than 15 percent of respondents indicated that access to grade schools is “most important.” Only 5 percent indicated that improvements for better access to major regional attractors such as shopping malls is of high importance.

### Section 3: Bicycle Use

The questions in this section asked cyclists why they choose to ride a bicycle, what types of trips they make, and with what frequency each trip type is made. Only respondents who indicated that they were experienced-, moderate-, or beginning-level cyclists answered these questions.

#### Question 1: Why do you choose to ride your bicycle instead of using another form of transportation?

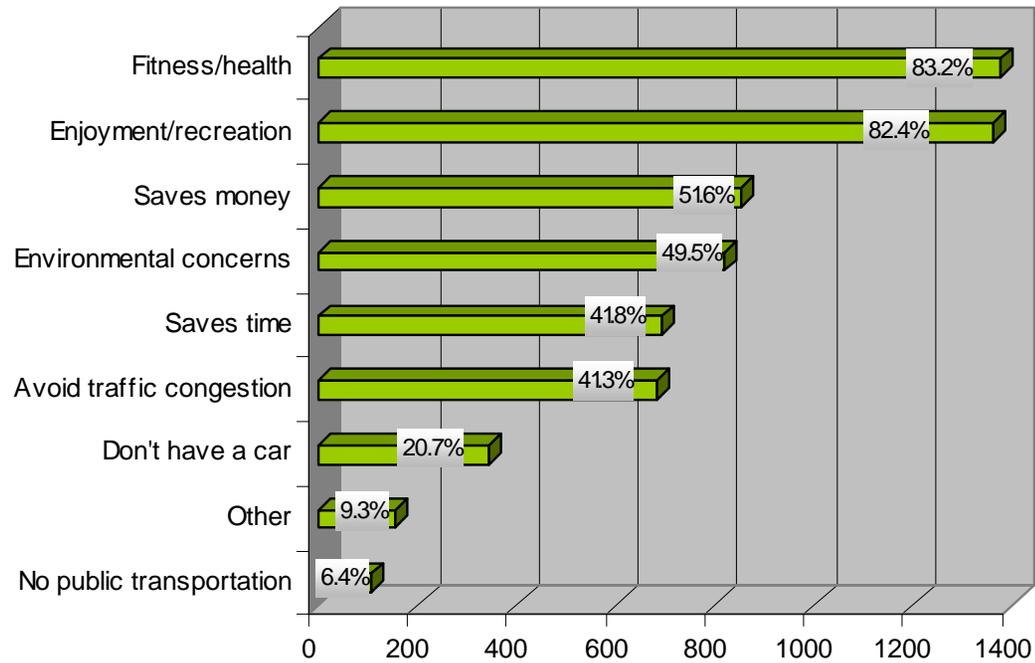
Respondents were asked what reasons led them to prefer bicycling over other modes of transportation. Several possible choices were presented and respondents were permitted to choose as many as were applicable. Figure 23 (on the following page) indicates how the various classes of cyclists responded to the question.

According to survey results, **over 80 percent of respondents indicated that fitness and health or enjoyment and recreation are reasons they choose to bicycle.** Roughly half of the survey respondents indicated that saving money and environmental concerns play a part in their mode choice selection, while slightly less indicated that bicycling offers them ways to save time and avoid traffic congestion.

Significantly fewer respondents indicated that they ride for captive reasons, such as that they do not own or have access to a car (20 percent) or do not have accessible public transportation nearby (slightly over 6 percent). This seems to indicate that **the majority of cyclists in the Delaware Valley likely consider themselves choice cyclists**, rather than captive.

Almost 10 percent of respondents indicated that there are other reasons they choose to use a bicycle; most of these fit into the categories already presented, but a number of respondents indicated they ride for social reasons or to relieve stress.

Figure 23: Why Do You Choose to Ride a Bicycle?

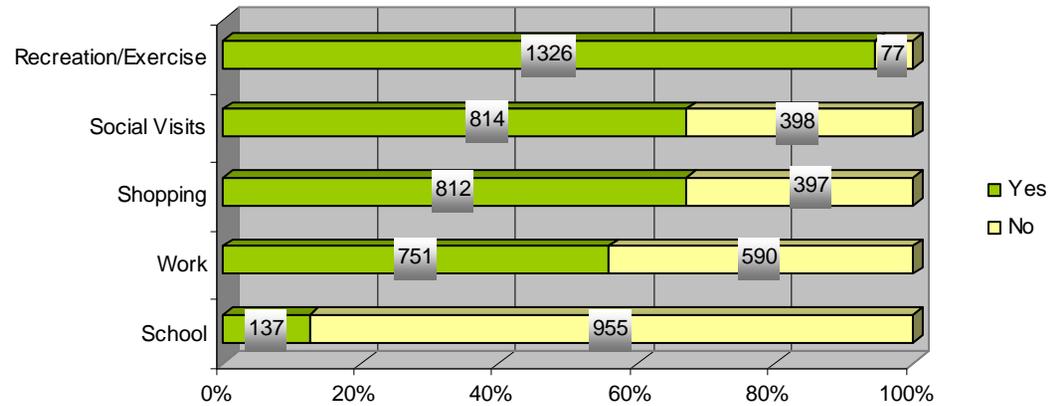


Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

### Question 2: What trips do you make via bicycle? How often?

Respondents were asked for what purposes they use their bicycles and how often. The categories were work, school, recreation/exercise, social visits, and shopping. They were asked whether they ever use a bike for that purpose, and, if so, how often and how many miles per week. Figure 24 indicates what trip types cyclists make via bicycle, in both absolute numbers and percentages.

Figure 24: What Trips Do You Make via Bicycle?

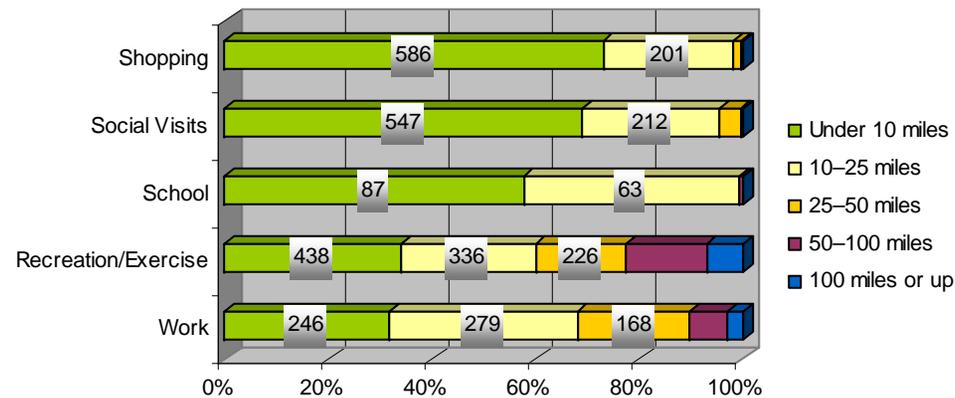


Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

Over 1,300 respondents indicated that they use bicycles for recreation and exercise, the highest number of positive responses. Responses for social visits or shopping were roughly equal, with just over 800 respondents indicating they use bicycles for these purposes. Approximately 750 cyclists taking the survey indicated that they use a bicycle for work trips. Only a small number of survey respondents, 137 users, indicated that they use a bicycle to travel to/from school.

Additionally, respondents were asked how many miles they traveled for each of these purposes per week. Figure 25 indicates their responses in terms of both absolute numbers and percentages.

Figure 25: How Far Per Week Do You Travel for Certain Trip Types?



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

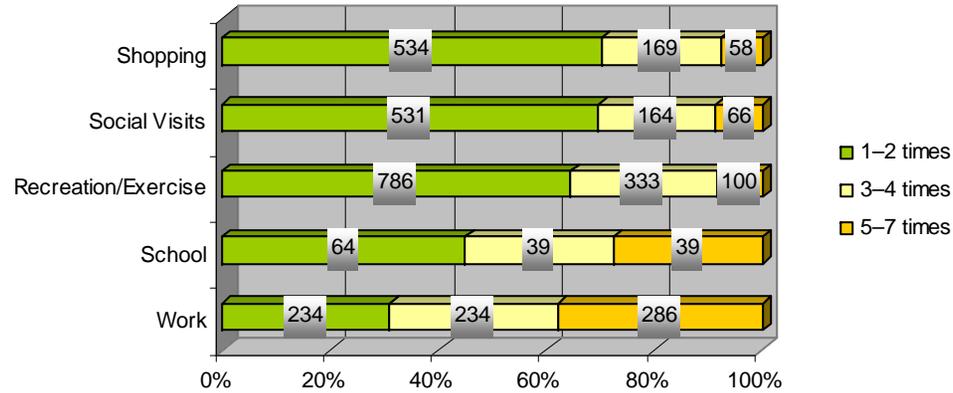
Most respondents indicated a propensity for shorter trips, with approximately 70 percent of respondents indicating that shopping and social visits accounted for 10 miles or less of bicycle travel per week. Approximately 25 percent of respondents indicated that shopping and social visits totaled between 10 and 25 miles per week. Only a fraction of respondents indicated that trips of this type add up to more than 25 miles per week. School trips were also short, with just under 60 percent of respondents who bike to school indicating that school trips account for less than 10 miles per week in total. Roughly 40 percent of respondents who use a bicycle for school trips indicated those trips added up to between 10 and 25 miles per week.

Thirty-four percent of respondents (438) that use bicycles for recreation and exercise purposes totaled these trips at less than 10 miles per week. Reasonably high numbers of respondents also indicated these trips add up to between 10 and 25 miles (26 percent) and between 25 and 50 miles (18 percent). Fifteen percent of recreation/exercise users indicated that these trips account for between 50 and 100 miles and 7 percent indicated 100 miles or more.

Work trips were also evenly distributed in terms of miles traveled per week. Of the 772 respondents who indicated they use a bicycle to travel to work, 32 percent (246) travel under 10 miles per week, 36 percent (279) indicated trips totaling between 10 and 25 miles per week, and 22 percent (168) indicated that their work trips amount to between 25 and 50 miles per week. Small numbers of cyclists who ride to work total between 50 and 100 miles (7 percent) or more than 100 miles (3 percent).

Survey respondents were also asked how many occasions per week they use a bicycle for the aforementioned trip purposes. Figure 26 depicts their responses in terms of both absolute numbers and percentages.

Figure 26: How Frequently Do You Make Certain Trip Types?



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

High volumes of respondents (roughly 70 percent each) indicated that shopping and social visits are made one or two times a week. Twenty percent indicated that they use a bicycle for shopping and social visits three to four times per week. Under 8 percent of respondents indicated using a bicycle between five and seven times a week for these trip purposes.

In terms of recreation/exercise trips, roughly 65 percent of the survey respondents indicated that they make one or two of these trips per week. Twenty-seven percent make three or four recreational/exercise trips per week, and 8 percent use a bicycle for this purpose five to seven times per week.

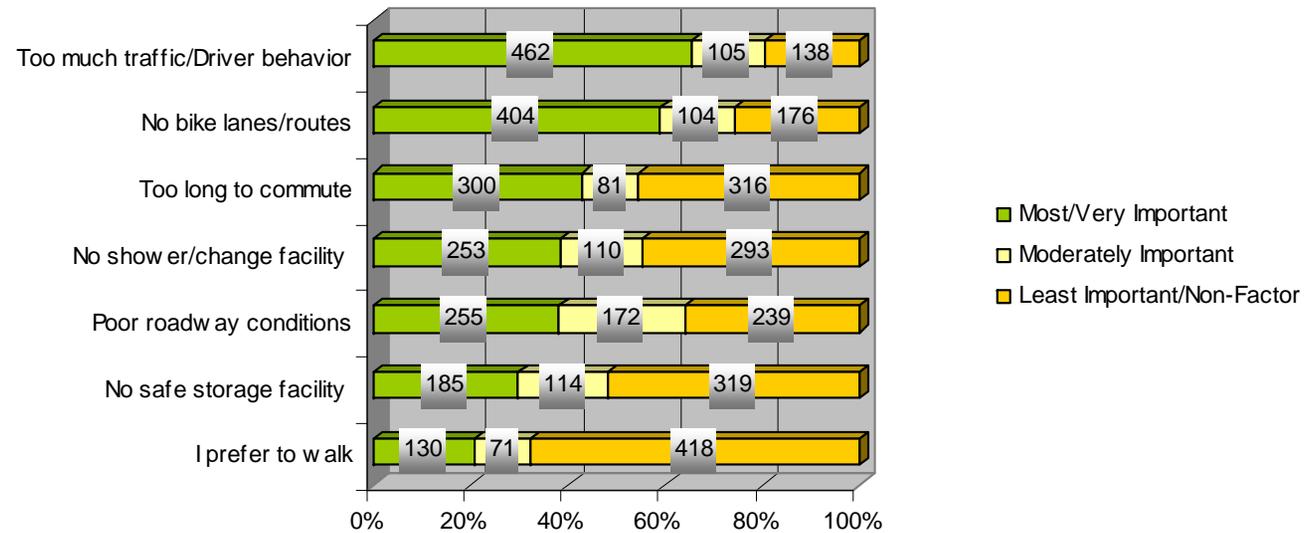
Forty-five percent of respondents who use a bicycle to travel to/from school do so one or two times weekly, while 27 percent indicated that they do so between three and seven times weekly.

In terms of work trips, responses were quite evenly distributed. Thirty percent of respondents indicating that they use a bicycle to travel to work do so one or two times weekly or three or four times weekly. Thirty-eight percent of those indicating that they ride to work do so five to seven times per week.

### Question 3: Why don't you ride a bicycle to work?

Respondents who do not choose to ride a bike to work were asked why they chose not to do so, and were given a number of factors to choose from. They were asked to give the various choices a ranking based on the importance in their decision to use a different travel mode. Checking a “one” meant it was unimportant in their decision while a “five” meant it was a primary role in their decision. It was necessary to give a value to all of the choices. Figure 27 depicts their responses.

Figure 27: Why Don't You Ride a Bicycle to Work?



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

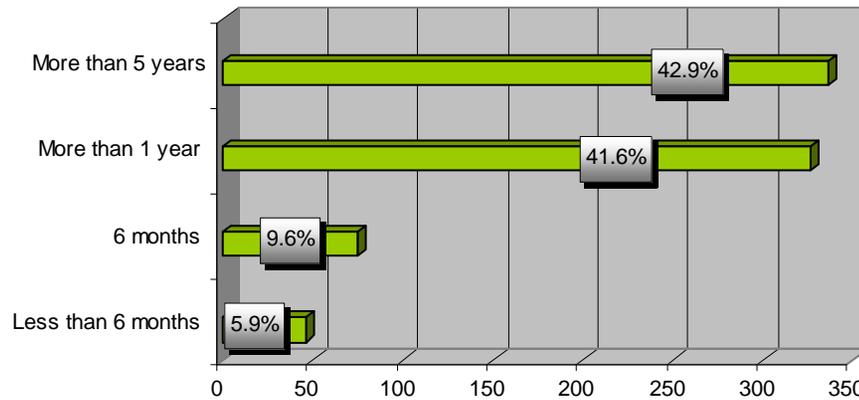
According to survey results, the most important factors are too much traffic/driver behavior (462 responses or 66 percent) and a lack of bicycle lanes and other facilities (404 responses or 60 percent). Forty-three percent (300 responses) indicated that a too-long commute distance is a very important factor.

Smaller numbers indicated that a lack of a shower/change facility (39 percent) and poor roadway conditions (38 percent) are important reasons in their decision to not bike to work. Other respondents indicated that a lack of a safe storage facility (30 percent) or a preference for walking (21 percent) are major factors in their decisions.

#### Question 4: If you commute by bicycle to work or school, how long have you been doing so?

Respondents that commute to work or school by bicycle were asked how long they have done so. Almost 800 survey respondents answered this question. Figure 28 indicates how responses broke down in terms of percentage and absolute numbers.

Figure 28: How Long Have You Been Commuting to Work via Bicycle?



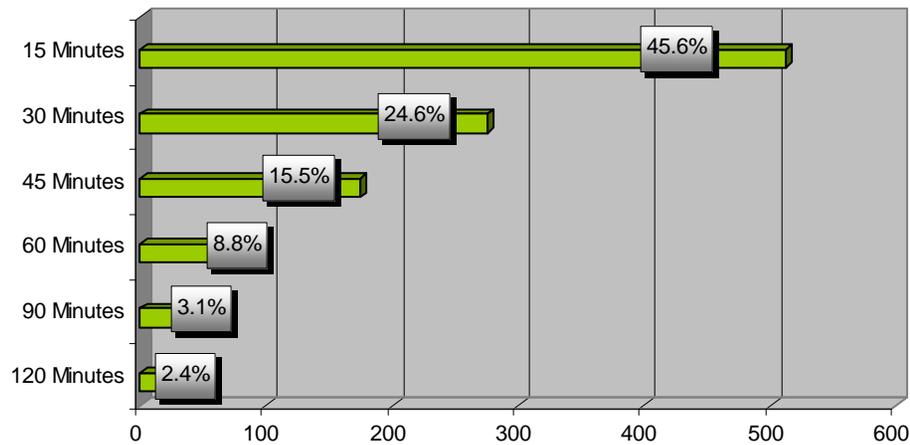
Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

Almost an equal number of respondents indicated they had been bicycling to work for more than five years, and more than one (336 and 326, both approximately 42 percent). Significantly smaller numbers of respondents indicated they had been using a bicycle to get to work between six months and a year (10 percent) or for less than six months (6 percent).

#### Question 5: What is the estimated time/distance of your work/school trip?

Respondents were asked how many miles their typical work/school commute is, as well as how long that commute takes them. While just under 900 survey respondents indicated that they ride to work and/or school, over 1,100 respondents answered this question.

Figure 29: Estimated Travel Time to Work (round trip)

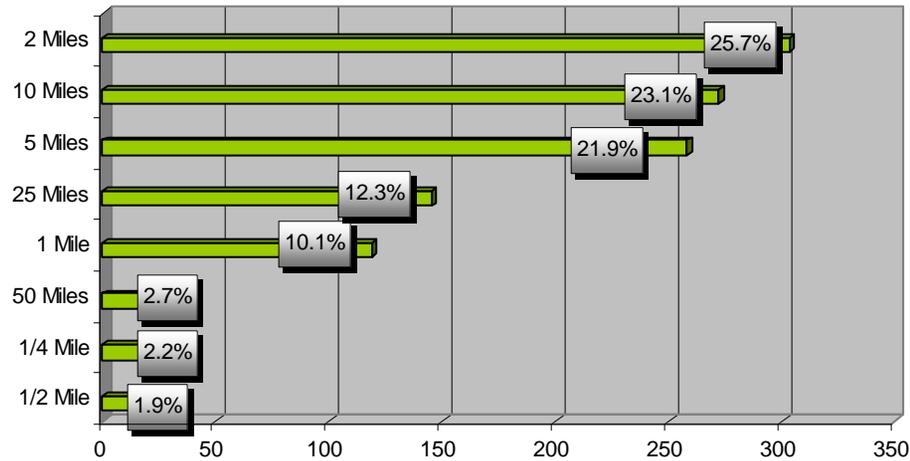


Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

Figure 29 indicates the duration of the respondents' reported round trip work/school commutes. The highest volume of respondents (512, or 46 percent) indicated their work/school commute is approximately 15 minutes in length. As commute times increase, respondent volume decreases, with 70 percent of respondents indicating their work or school round trip commute lasted less than 30 minutes. Fourteen percent indicated work/school round trip commutes last an hour or more.

In terms of distance traveled, 14 percent of respondents indicated their work/school round trips are a mile or less. The majority of work/school round trips are approximately 2, 5, or 10 miles, with over 70 percent of respondents indicating their work/school round trip falls into this range. Fifteen percent of respondents indicated their work/school round trip is 25 miles or greater. Responses are depicted in Figure 30.

Figure 30: Estimated Distance to Work (round trip)

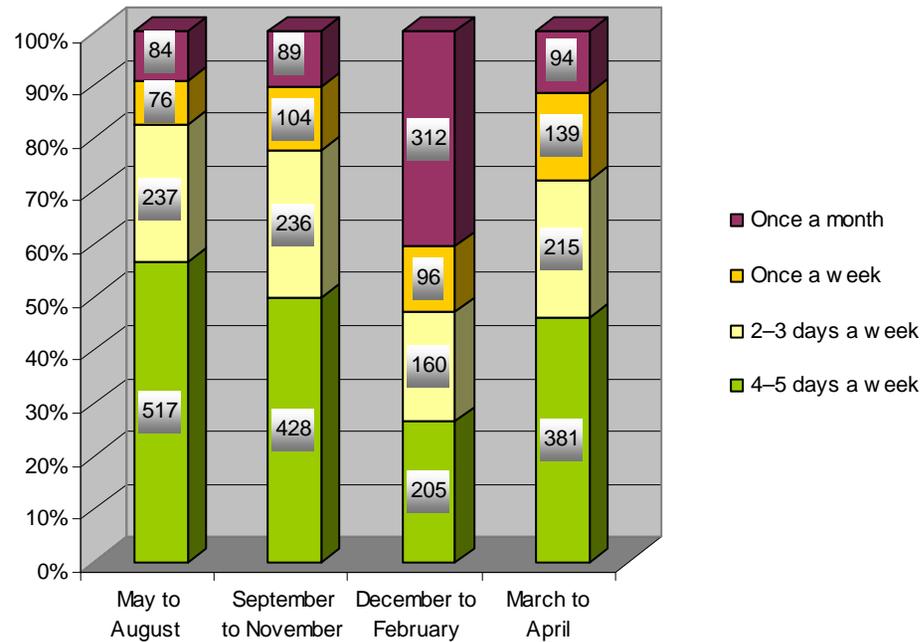


Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

### Question 6: How frequently do you bike to work/school during different periods of the year?

Respondents were asked with what frequency they use a bike to get to work/school during different parts of the year. The year was broken down into four parts that generally follow the weather: spring/summer (May through August), fall (September through November), winter (December through February) and late winter/early spring (March and April). Figure 31 on the following page displays their responses.

Figure 31: Bicycling to Work/School during Different Periods of the Year



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

Just over 500 respondents (57 percent) indicated that from May to August they ride in daily or almost daily; 26 percent (237 responders) indicated they bike to work two or three times per week between May and August. Eight percent bike in approximately once a week, while 9 percent do so once a month.

Between September and November, approximately 50 percent of respondents bicycle to work daily or almost daily, and 28 percent do so two or three days a week. Twelve percent of respondents indicated they bike to work once a week, and 10 percent indicated they do so approximately once a month.

Between December and February the frequency of trips drops, with only 27 percent indicating they bicycle to work almost daily while 21 percent indicated they do so two or three times weekly. Twelve percent indicated that they bicycle to work once a week, while 40 percent bike to work once a month.

Between December and February the frequency of trips drops, with only 27 percent indicating they bicycle to work almost daily while 21 percent indicated they do so two or three times weekly. Twelve percent indicated that they bicycle to work once a week, while 40 percent bike to work once a month.

Between March and April, 46 percent indicated they bike to work daily or almost daily, and 26 percent indicated they bike to work two or three times a week. Seventeen percent indicated they bike to work once a week, and 11 percent do so once a month.

#### **Section 4: Bicycle Facilities**

The questions in this section asked survey respondents to comment on their preferences regarding bicycle facilities (on- and off-road), and what types of design features they would like to see implemented in the region to enhance the bicycling environment. Responses are shown both in terms of the absolute number of responses and the percentage. Survey respondents were also asked for locations in the region where bicycling accommodations should be improved to increase safety and accessibility.

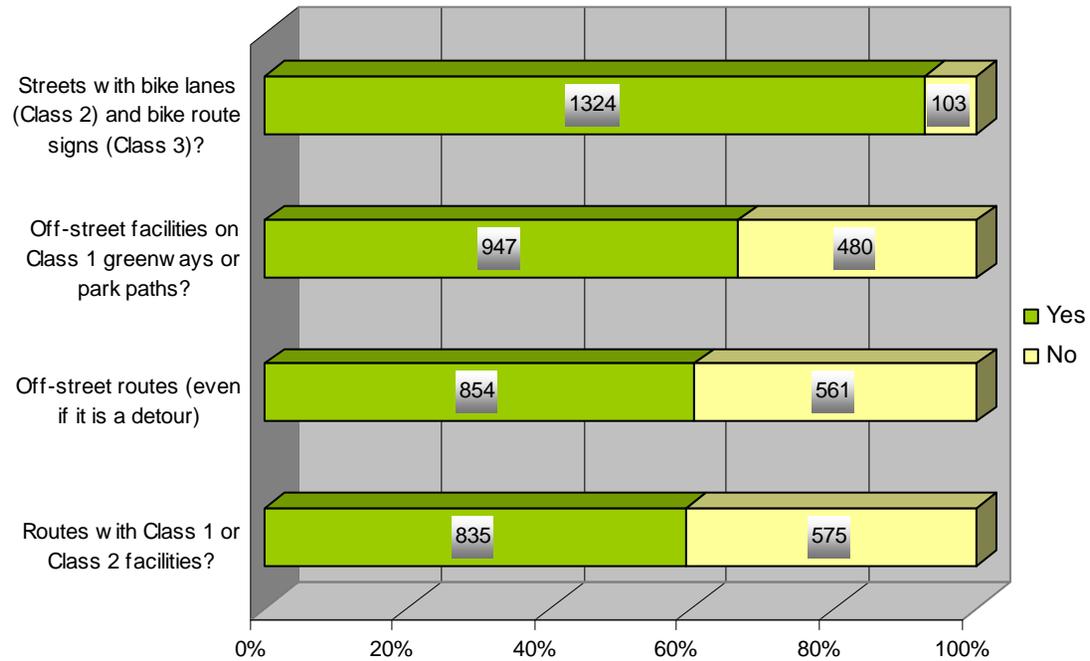
##### **Question 1: Please tell us a bit about your riding preferences.**

Respondents were asked to comment on which class of bicycle facilities (off-road multi-use trails, designated on-road facilities such as bicycle lanes, or signed routes) they prefer to use. Figure 32 depicts their responses.

Generally speaking, survey respondents prefer separated bicycle facilities, the more protected the better. In terms of on-road cycling, roughly 9 out of 10 survey respondents overwhelmingly prefer streets with bicycle lanes or bike route signs. Sixty-six percent of respondents prefer riding on off-street trails or bicycle paths to on-road facilities. Sixty percent of respondents reported they will take a longer route if it is located off-street and will plan a route based on the availability of trails or bicycle lanes.

The responses clearly show a high preference for separated facilities, whether it be a trail or a bicycle lane, and a willingness to adjust routes according to what facilities are available.

Figure 32: Cyclist Facility Preferences

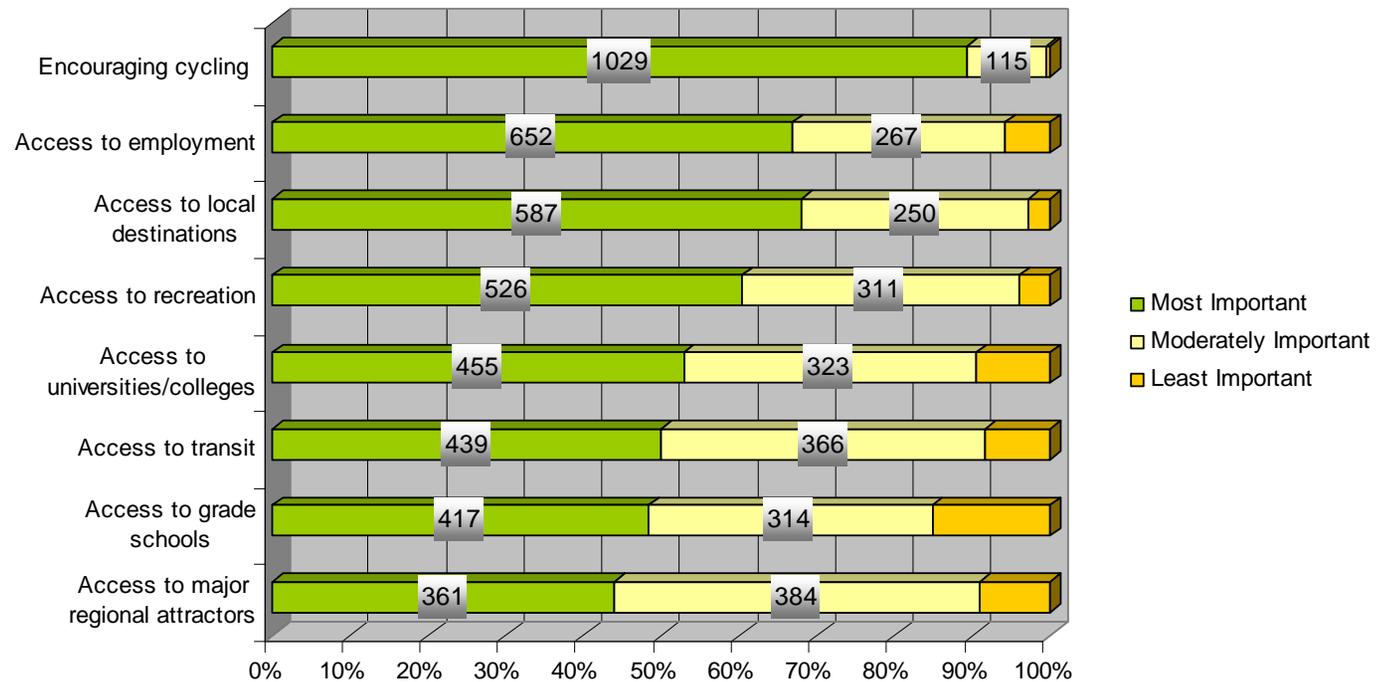


Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

**Question 2: Why should bicycle facilities be improved?**

Respondents were asked why bicycle facilities should be improved or, more appropriately, what locations in the region should be more accessible via bicycle. This question was asked to help determine how potential facilities could be prioritized. Figure 33 indicates how users responded to this question.

Figure 33: Why Should Bicycle Facilities Be Improved?



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

As evidenced in Figure 33, respondents feel facilities should be improved to encourage bicycling in the region, with almost 90 percent of the respondents saying this is a very important reason to enhance bicycle facilities. Creating improved access to employment and local destinations like shopping, banks, and libraries (both around 67–68 percent) is also considered an important reason to improve facilities according to respondents. Sixty percent of respondents feel that better bicycle facilities should be enhanced to improve access to parks and playgrounds.

Slightly over 50 percent of respondents consider improved access to and around local universities and colleges important reasons to enhance the bicycling environment, while just under 50 percent consider access to grade and high schools an important factor in determining where to improve bicycle facilities. Just over 40 percent of respondents consider improving access to major regional attractors such as shopping malls an important factor in enhancing bicycle facilities.

### Question 3: What design features would you like to see implemented in the region?

Respondents were asked what types of bicycle-specific enhancement they would like to see implemented on a wider scale and to compare them to other types of enhancements in terms of relative attractiveness. Respondents were not limited in how many features they could define as “most attractive” or “least attractive.” Figure 34 on the following page displays the results.

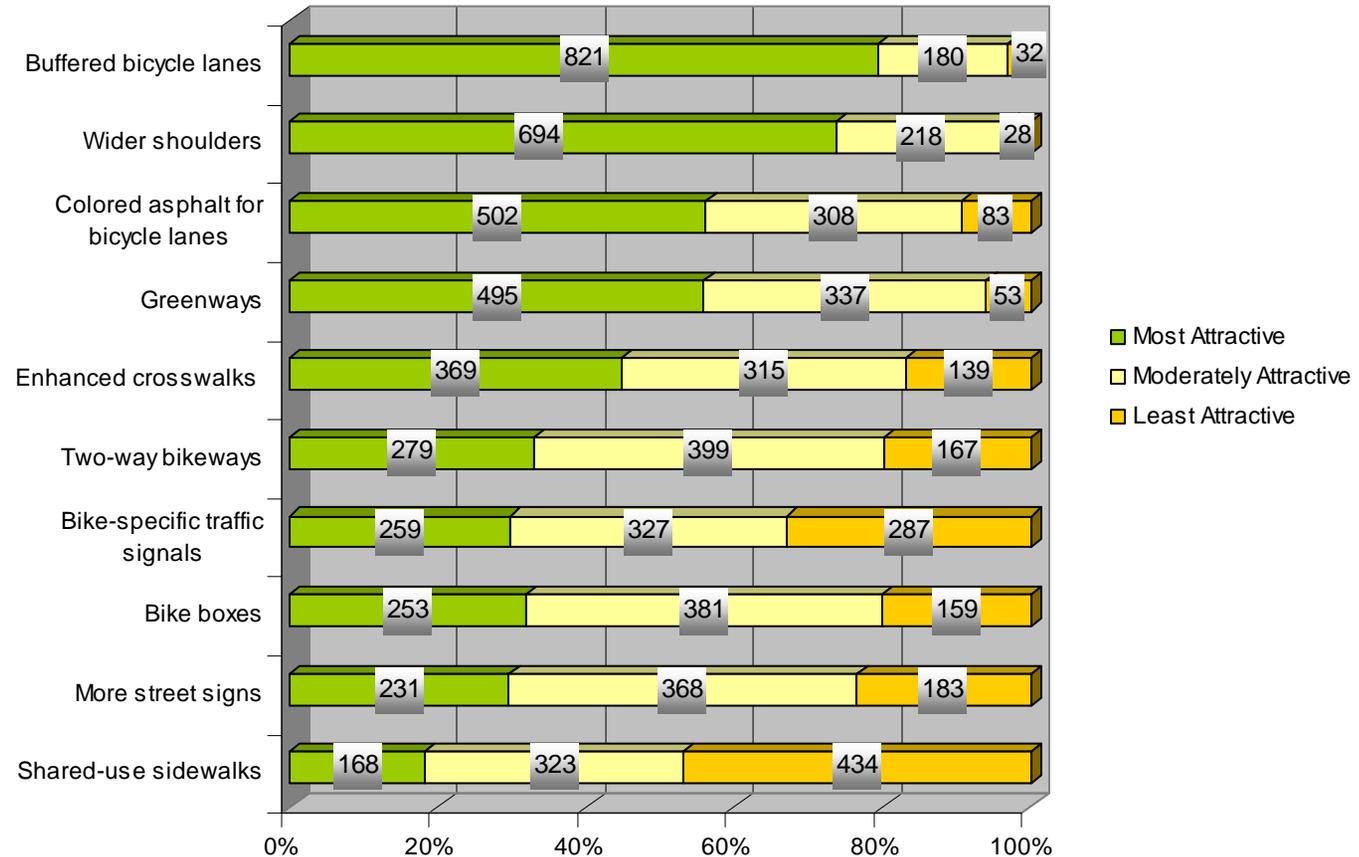
**According to respondents, the most attractive design features are buffered bicycle lanes, such as those found on Spruce and Pine Streets in Center City Philadelphia.** Eighty percent of respondents indicated that buffered bicycle lanes are a very attractive design feature. Seventy-four percent of respondents indicated that wider shoulders are an attractive design feature, making it the second most attractive feature.

Fifty-six percent of respondents consider colored asphalt, used to denote a transition bicycle lane, a most attractive feature. Fifty-five percent consider greenways a most attractive design feature. Forty-five percent of respondents consider enhanced crosswalks that can better accommodate bicyclists as well as pedestrians a most attractive design feature.

Figure 34 also depicts the design features that the majority of respondents consider “moderately attractive.” Two-way bikeways, where a traditional one-way bicycle lane is split into a two-way bicycle lane, were considered most attractive by 33 percent of respondents but moderately attractive by 47 percent. Bicycle-specific traffic signals were most attractive to 30 percent but moderately attractive to 37 percent of respondents. Bicycle boxes, which allow cyclists to move across intersections ahead of vehicles to get in position to make turns, were most attractive to 32 percent of respondents but moderately attractive to 48 percent. Added street signs were most attractive to 30 percent of respondents but moderately attractive to 47 percent.

The only design feature that a high number of respondents marked as unattractive is shared-use sidewalks, like those along Kelly Drive by the Schuylkill River. Forty-seven percent of respondents indicated that shared-use sidewalks are unattractive design features.

Figure 34: Which Design Features Are Most Attractive?



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

**Question 4: If you can, please identify three roadways or other locations where cycling accommodations should be improved (and why).**

Survey respondents were asked to list specific on-road locations that should be enhanced to accommodate safer bicycle travel. Almost 1,000 users responded to this question. Responses were analyzed to determine which locations were mentioned several times throughout the survey. Table 4, on pages 66, 67, and 68, depicts the locations that were suggested by survey respondents.

Table 4: Survey-Recommended Enhancement Locations

<b>Burlington County</b>		<b>Camden County</b>	
<b>Road</b>	<b>Limits</b>	<b>Road</b>	<b>Limits</b>
NJ 38	Camden County to NJ 73	NJ 38	NJ 30 to Burlington County
NJ 70	NJ 73 to US 206	Ben Franklin Bridge	Ben Franklin Bridge
NJ 73	US 130 to US 70	Berlin Road	Kresson Road to Evesham Road
US 130	NJ 73 to US 206	Church Road	Maple Avenue to NJ 41
US 206	US 130 to NJ 70	Collings Avenue	Route 168 to Haddon Avenue
CR 541	US 130 to NJ 70	Evesham Road	NJ 41 to White Horse Road
Riverton Road	Broad Street to Bridgeboro Road	Haddon Avenue	NJ 168 to NJ 41
		Kresson Road	CR 561 to NJ 73
		NJ 30	US 130 to NJ 73
		White Horse Road	NJ 30 to Evesham Road
<b>Gloucester County</b>		<b>Mercer County</b>	
<b>Road</b>	<b>Limits</b>	<b>Road</b>	<b>Limits</b>
Black Horse Pike	US 130 to NJ 42	NJ 31	US 202 to US 206
		CR 571	NJ 27 to US 130
		Alexander Road	Mercer Street to CR 571
		Canal Pointe Boulevard	Farber Road to Alexander Road
		NJ 27	US 206 to River Road

Table 4: Survey-Recommended Enhancement Locations (continued)

<b>Bucks County</b>		<b>Chester County</b>	
<b>Road</b>	<b>Limits</b>	<b>Road</b>	<b>Limits</b>
US 202	River Road to County Line Road	PA 23	PA 82 to PA 113
PA 232	River Road to County Line Road	US 30	PA 82 to PA 320
PA 611	Swamp Road to Street Road	PA 82	US 30 to PA 162
Limekiln Pike	US 202 to County Line Road	PA 100	PA 23 to US 30
PA 132	PA 611 to PA 532	PA 113	US 30 to PA 23
		US 322	PA 82 to High Street (West Chester)
<b>Delaware County</b>		US 202	West Chester University to Delaware County
<b>Road</b>	<b>Limits</b>	PA 252	US 30 to Delaware County
US 202	Chester County to US 1	PA 282	PA 82 to US 30
PA 252	Chester County to US 1	PA 162	PA 82 to US 322
PA 320	US 30 to PA 3	PA 352	PA 3 to Delaware County
PA 352	Chester County to US 1	PA 401	PA 23 to Route 30
Baltimore Avenue	PA 320 to Philadelphia County	PA 841	PA 82 to PA 41
US 1	PA 320 to PA 3	PA 842	PA 82 to US 322
Concord Avenue	Steel Road to State Road	Creek Road	US 322 to PA 842
Darby Road	PA 320 to PA 3	Paoli Pike	Garfield Avenue to US 30
Haverford Road	Landover Road to Karakung Drive	Upper Gulph Road	Conestoga Road to Delaware County
Eagle Road	Haverford Road to Steel Road	PA 52	West Chester to US 1
Upper Gulph Road	Chester County to Montgomery County		

Table 4: Survey-Recommended Enhancement Locations (continued)

<b>Montgomery County</b>		<b>Philadelphia County (continued)</b>	
<b>Road</b>	<b>Limits</b>	<b>Road</b>	<b>Limits</b>
PA 63	PA 363 to PA 611	Ben Franklin Parkway	Kelly Drive to Logan Square
US 202	County Line Road to PA 463	Broad Street	Cheltenham Avenue to Constitution Avenue
Bethlehem Pike	County Line Road to Stenton Avenue	Chestnut Street	34th Street to 22nd Street
Butler Pike	PA 152 to Ridge Pike	Fairmount Avenue	Length of city
Cheltenham Avenue	Paper Mill Road to Crescentville Road	Frankford Avenue	Delaware Avenue to Lehigh Avenue
Limekiln Pike	County Line Road to PA 73	Germantown Avenue	Cheltenham Avenue to Girard Avenue
Germantown Pike	Ridge Pike to Butler Pike	Girard Avenue	Lancaster Avenue to Frankford Avenue
Ridge Pike	PA 100 to PA 363	Grays Ferry Avenue	Woodland Avenue to South Street
Souderton Pike	Cherry Lane to Unionville Pike	Kelly Drive	City Avenue to Ben Franklin Parkway
Stenton Avenue	Butler Pike to Philadelphia County	Front Street	Kensington Avenue to Girard Avenue
Trooper Road	Audubon Road to Woodlyn Avenue	Locust Street	25th Street to 4th Street
Upper Gulph Road	Delaware County to PA 320	Market Street	48th Street to Front Street
<b>Philadelphia County</b>		Oregon Avenue	24th Street to Columbus Boulevard
<b>Road</b>	<b>Limits</b>	Roosevelt Boulevard	9th Street to PA 63
Main Street	Leverington Avenue to Ridge Avenue	South Street	Taney Street to Front Street
Ridge Avenue	Leverington Avenue to Spring Garden Street	Washington Avenue	Grays Ferry Avenue to Columbus Boulevard
7th Street	Market Street to Spring Garden Street	Wissahickon Avenue	Allens Lane to PA 13
9th Street	Market Street to Snyder Street	Baltimore Avenue	Delaware County to 39th Street
10th Street	Market Street to Snyder Street	Columbus Boulevard	Pattison Avenue to Spring Garden Street
11th Street	Market Street to Reed Street	Delaware Avenue	Spring Garden Street to Girard Avenue
12th Street	Market Street to Reed Street	Kensington Avenue	Girard Avenue to Allegheny Avenue
21st Street	Market Street to Spruce Street	Cheltenham Avenue	Ivy Hill Road to Crescentville Road
23rd Street	Market Street to Spruce Street	Stenton Avenue	Northwestern Avenue to Ivy Hill Road

Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

## Summary Points

- ☞ The Shifting Gears survey went online in March 2010 and in 60 days over 1,800 responses were received from all over the Delaware Valley region. The survey sought input from cyclists on bicycle use and facilities, as well as from non-cyclists on why they choose not to ride and what factors might motivate them to try bicycling.
- ☞ Roughly half of the survey respondents indicated they reside in Philadelphia. West Chester and Media Boroughs, and West Windsor Township had high numbers of responses among suburban locations.
- ☞ Many non-cyclists indicated that they do not ride a bicycle because of safety concerns and would consider using a bicycle for recreational purposes. The presence of more independent bicycle paths may motivate them to ride.
- ☞ Cyclists indicated they ride primarily for health reasons, but also to save money and for environmental concerns.
- ☞ The vast majority of respondents ride recreationally, while slightly more than half use a bicycle to commute to work.
- ☞ Survey respondents also indicated a number of locations in the region that should be considered for bicycle enhancements.



# Summary

This section summarizes and highlights the most salient points from the Shifting Gears process and final document.

## Chapter 1: Introduction

This chapter introduced the principal concepts of the Shifting Gears program, its various components, and previous work conducted by DVRPC that examined bicycling on a regional scale.

- QR Shifting Gears is an outreach and prioritization program enacted by DVRPC in Fiscal Year 2010 to better understand issues pertaining to bicycling in the region, as well as to better match the agency's resources to the needs of our member governments in regard to bicycling.
- QR The program is comprised of three components: assembling inventories of bicycle facilities, outreach to regional stakeholders, and an online public survey.
- QR DVRPC has conducted regional studies of bicycle facilities and cyclist habits before, in the mid-1990s for the 2020 Long Range Plan and in the 2005 *Bicycling in the Delaware Valley* bicycling survey.

## Chapter 2: Outreach Findings

This chapter proposes priority locations in each of DVRPC's nine counties, based on the inventory and outreach process as well as comments from regional stakeholders on draft inventories.

- QR For each county, a set of recommended priority locations was suggested.
- QR The selection was based on a set of criteria that includes volume of bicycle-related crashes, proximity to attractors, the number of bike/ped commuters adjacent to the corridor, and location relative to other bicycle facilities.
- QR A 1/2-mile buffer was placed around each location (1/4-mile in Philadelphia) in situations where the recommended locations are major arterials that may be unsafe for bicycle use and where an alternative alignment may be necessary to provide for safe bicycle usage.

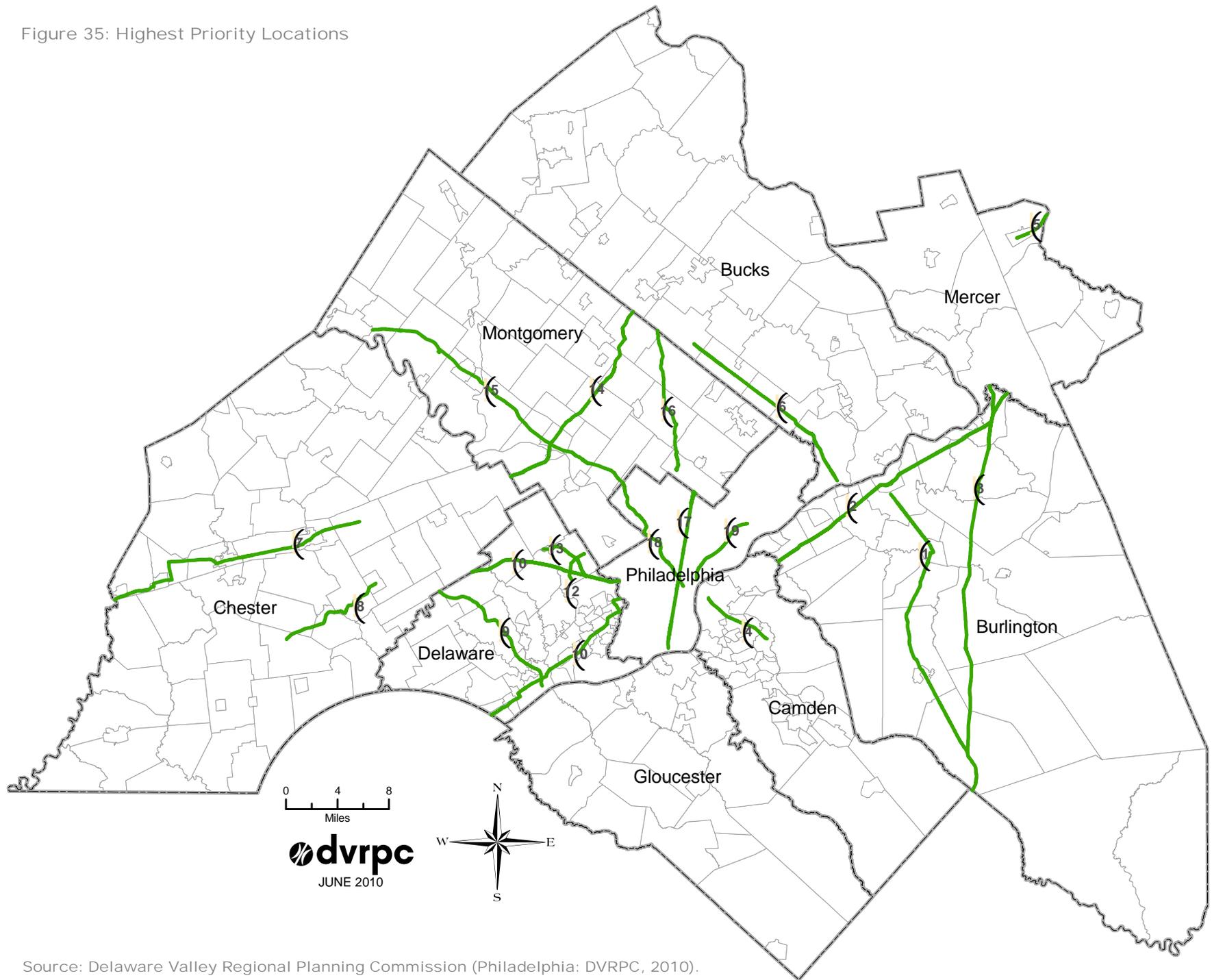
- ✎ Bicycle use in these locations should be studied further to determine if there are safety issues present, as well as if alternative bikeway alignments can be established.

### Chapter 3: Survey Findings

The Shifting Gears survey went online in March 2010 and in 60 days over 1,800 responses were received from all over the Delaware Valley region. The survey sought input from cyclists on bicycle use and facilities, as well as from non-cyclists on why they choose not to ride and what factors might motivate them to try bicycling.

- ✎ Roughly half of the survey respondents indicated they reside in Philadelphia. West Chester and Media Boroughs, and West Windsor Township had high numbers of responses among suburban locations.
- ✎ Many non-cyclists indicated that they do not ride a bicycle because of safety concerns and would consider using a bicycle for recreational purposes. The presence of more independent bicycle paths may motivate them to ride.
- ✎ Cyclists indicated they ride primarily for health reasons, but also to save money and for environmental concerns.
- ✎ The vast majority of respondents ride recreationally, while slightly more than half use a bicycle to commute to work.
- ✎ There was some overlap in the locations that survey respondents indicated should be considered for bicycle enhancements and those that were highlighted in the inventory/stakeholder outreach process. Those locations are considered to be the region's highest priority and depicted in Figure 35 on the following page and listed in Table 5 on page 74.

Figure 35: Highest Priority Locations



Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

Table 5: Highest Priority Locations

County	Location	Limits	Map ID
Burlington	CR 541	Burlington City to Shamong Township	1
	US 130	Bordentown Township to Palmyra Borough	2
	US 206	Bordentown Township to Shamong Township	3
Camden	CR 561	Camden City to Haddonfield Borough	4
Mercer	NJ 27	Princeton Borough to Princeton Township	5
Bucks	PA 132	Bristol Borough to Warrington Township	6
Chester	US 30 Business	Atglen Borough to West Whiteland Township	7
	PA 842	East Marlborough Township to West Chester Borough	8
Delaware	PA 352	Thornbury Township to Chester City	9
	PA 3	Edgemont Township to Millbourne Borough	10
	US 13	Marcus Hook Borough to Darby Borough	11
	Eagle Road	Haverford Township	12
	Darby Road	Radnor Township to Upper Darby Township	13
Montgomery	Dekalb Pike/US 202	Upper Merion Township to Montgomery Township	14
	Ridge Pike	Pottstown Borough to Philadelphia	15
	PA 152	Montgomery Township to Cheltenham Township	16
Philadelphia	Broad Street/PA 611	Length of City	17
	Ridge Avenue	Length of City	18
	Frankford Avenue	Delaware Avenue to Cottman Avenue	19

Source: Delaware Valley Regional Planning Commission (Philadelphia: DVRPC, 2010).

## Recommendations

This section makes recommendations for improving the bicycling environment moving forward. Recommendations are based on both inventory/stakeholder outreach sessions and survey findings.

### Recommendation 1: Focus on safety

The presence of high volumes of bicycle crashes indicates two things: first, that cyclists are present on a given road segment; and second, that a study of the bicycling environment should be considered. If the ultimate goal of facility planning is to put more cyclists on the road, then safety should be in the forefront, and planning initiatives should match up to safety needs. Road safety audits conducted from a bicycle-specific point of view or customized bicycle safety studies such as DVRPC's *Bicycle–Bus Conflict Study* (DVRPC Publication 09041) may be helpful in identifying targeted safety improvement opportunities. **All bicycle-related studies should emphasize safety.**

### Recommendation 2: Enhance local mobility

Both the 2005 bicycle survey and the 2010 Shifting Gears survey highlight the fact that other than recreational use, the most prevalent bicycle uses are for shopping, errands, and other types of non-work, utilitarian purposes. While increasing the number of bicycle commuters is a stated goal for many counties, perhaps refocusing efforts away from commuting onto more localized uses would create a greater net gain in bicycle users. The *Camden County Bicycle and Multi-Use Trails Plan* (DVRPC Publication 08073) is a good example of a project with the ultimate goal of enhancing bicycle mobility in a local context. Future projects should also emphasize enhancing local mobility as a principal focus of bicycle planning efforts.

### Recommendation 3: Share information

In developing the inventories for this project, as well as conducting separate outreach for other projects, it became apparent that there needs to be greater cooperation in terms of sharing information between all relevant stakeholders in regard to bicycle facilities. From DVRPC's perspective, having current information on bicycle facilities (including off-road trails) enhances projects and can help prioritize future facility planning. Ensuring all information is kept up to date and is easily accessible will also make cooperation between municipalities and counties easier.

#### Recommendation 4: Think low-cost

One of the advantages of bicycle infrastructure compared to other transportation modes is that the costs are relatively low. The three recent projects completed in Pennsylvania suburban counties (Old Baltimore Pike in Chester County, Bicyclists Baltimore Pike in Delaware County, and Susquehanna Road in Montgomery County) are all strong examples of low-cost ways to improve bicycle facilities. While these projects were funded through the region's TIP, similarly inexpensive (and creative) projects can also succeed given proper planning and cooperation between regional stakeholders. **Some of the locations recommended in Chapter 2 as well as those indicated by survey respondents in Chapter 3 may be appropriate places to start planning for such projects.**

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**Key Words:** Bicycles, bicycle trails, bicycle lanes, bicycle surveys, bicycle facilities

**Abstract:** This report describes Shifting Gears, a three-step process that included inventories of regional bicycle facilities, outreach to stakeholders, and an online survey. Included are descriptions of each of the various components of the program, a set of proposed priority locations based on the inventories and outreach sessions, and survey findings.

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