



ASSESSING OPENNESS TO BIKING TO TRANSIT AT THREE REGIONAL RAIL STATIONS IN DELAWARE COUNTY

MARCH 2020





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PURPOSE

In an effort to improve intermodal trips that include biking to Regional Rail in Delaware County, the Delaware Valley Regional Planning Commission (DVRPC) examined bicycle usage and openness to biking through in-person surveying and existing conditions analysis at three Regional Rail stations. These efforts were to better understand the habits and preferences of existing and potential bike-to-transit users, in order to identify and prioritize improvements that can be made to increase bike-to-transit trips.

DVRPC worked with Delaware County to select three stations to include in the study: Swarthmore and Lansdowne on the Media/Elwyn line, and Norwood on the Wilmington/Newark Line. The findings inform strategies that will allow Delaware County, the Southeastern Pennsylvania Transportation Authority (SEPTA), the municipalities, and the Delaware County Transportation Management Association (DCTMA) to better accommodate and encourage current and future cyclists. These strategies include education and encouragement campaigns that are informed by the interest in or regularity with which riders bike to each station, as well as common attitudinal perspectives at each station, and infrastructure interventions.

This survey builds on SEPTA's ongoing work that aims to improve the rate of biking to transit. SEPTA conducted a comprehensive survey of bicycle parking on each of the Regional Rail lines in 2014. In 2015, SEPTA released their *SEPTA Cycle-Transit Plan*, which explores policy and infrastructure changes that can better integrate transit and bicycle networks. The strategic plan looks at biking to transit, bike facilities at stations, and how to have more bikes on transit.

During the week, SEPTA does not allow bicycles on morning inbound trains that arrive at any Center City station between 6:00 AM and 9:30 AM or outbound trains departing Center City stations between 4:00 PM and 6:30 PM. Center City stations include University City, 30th Street, Suburban, Jefferson, and Temple University. Outside of those peak times and on the

weekends, up to two bicycles are permitted on each car in passenger service.

SURVEY DEVELOPMENT AND COMPOSITION, AND THE TRANSTHEORETICAL MODEL OF CHANGE

The survey aimed to provide insights into Regional Rail riders' views on, and interest in, biking to transit. The information provided by a survey can also provide insight into other factors influencing or correlated with the choice of mode to the station.

The survey for this project was developed for two categories of respondents: those currently biking to transit on a regular basis, and those who are not. The survey framing was based upon the Transtheoretical Model (TTM)¹ of Change. The TTM, typically applied in the field of public health, has also been utilized to understand travel behaviors.² The TTM consists of five "stages of change" that one progresses through while making a decision about, and executing, a desired habitual change: pre-contemplation, contemplation, preparation, action, and maintenance. The stages are defined as the following:

- Pre-contemplation: Individuals are not intending to change in the near future.
- Contemplation: Individuals may be more likely to change but continue to overestimate the negative costs of doing so.
- Preparation: Individuals have decided to change soon and have begun taking small steps.

1 DiClemente, C. and Prochaska, J. (1998) Toward a comprehensive, transtheoretical model of change. In Miller, W. and Heather, N. (eds), *Treating Addictive Behaviours*. Plenum Press, New York.

2 Friman, M., Huck, J., & Olsson, L. E. (2017). Transtheoretical Model of Change during Travel Behavior Interventions: An Integrative Review. *International journal of environmental research and public health*, 14(6), 581. doi:10.3390/ijerph14060581

- Action: Individuals are modifying their behavior and are working to prevent a return to previous ways.
- Maintenance: Individuals have sustained change for over six months and less effort may be necessary to maintain the habit.

The project survey is intended to be paired with best practice research to identify non-infrastructure interventions that will encourage individuals to progress a stage closer toward a behavioral change: toward bicycling to the train station.

If one is not currently riding a bike to transit, that person may not be able to identify what would truly cause a change in their habits because they have no experience actually doing it; therefore, the survey did not directly ask what would lead to behavior change. Those who are already biking to transit were asked whether a number of interventions would cause them to bike more. These respondents have experienced bicycling to transit and can speak to what would improve their experience and cause them to bike more.

Generally, the types and locations of bicycle facilities that are recommended to help riders access stations are supported by existing research and design guides and developed through station area planning. Currently, almost no dedicated bicycle infrastructure exists near rail stations in Delaware County.

Beyond providing bike infrastructure and bike parking, the other ways to encourage bicycling to transit are to educate and encourage people to try. To hone possible education and encouragement messages, the survey included a section of “attitude” statements taken from the survey developed for the soon-to-be-published report for National Cooperative Highway Research Program Project 08-102: *Bicyclist Facility Preferences and Effects on Increasing Bicycle Trips*.

Attitude statements were each selected to reflect a potential obstacle against, or motivation for, bicycling to transit (time, personal health, environmental health,

perception of safety, etc.), and responses provide insight into potential effective interventions. These questions prompted respondents with an opinion statement, asking them to state their perspective on the Likert scale, ranging from *strongly agree* to *strongly disagree*. The subject’s perspective on direct benefits from bicycling, awareness, and level of safety all affect their likelihood of commuting via bicycle.

With these questions and framing, the survey was designed to support infrastructure recommendations and give stakeholders the information necessary to conduct survey-supported activities to educate and encourage.

LOCATION SELECTION

To select three stations to survey, a number of quantitative criteria were developed to ensure that the rail stations were in communities where biking might be desirable and somewhat comfortable. It was also important that the stations had enough passengers to justify prioritizing improvements to the station and the surrounding area to make them more bike friendly.

First, the team used DVRPC’s RideScore to filter stations. RideScore is an analysis previously done by DVRPC to evaluate the inherent suitability of areas around rail stations for biking by scoring positively trip generators, higher population and employment density, and the presence of regional trails. The RideScore ranges from 0 to 10, with 0 being the least bike friendly. All stations that had a RideScore below 5 were excluded.

Next, stations were removed if they had fewer than 250 daily boardings, had fewer than 100 parking spots, and if they had less than 50 percent of those parking spaces filled, based on SEPTA’s reported parking occupancy. These three features ensure that there is a sufficient number of people to survey at each station, and that there are at least 50 people driving to the station each day. It would be most beneficial to convert the people driving and parking to bike-to-transit users since that

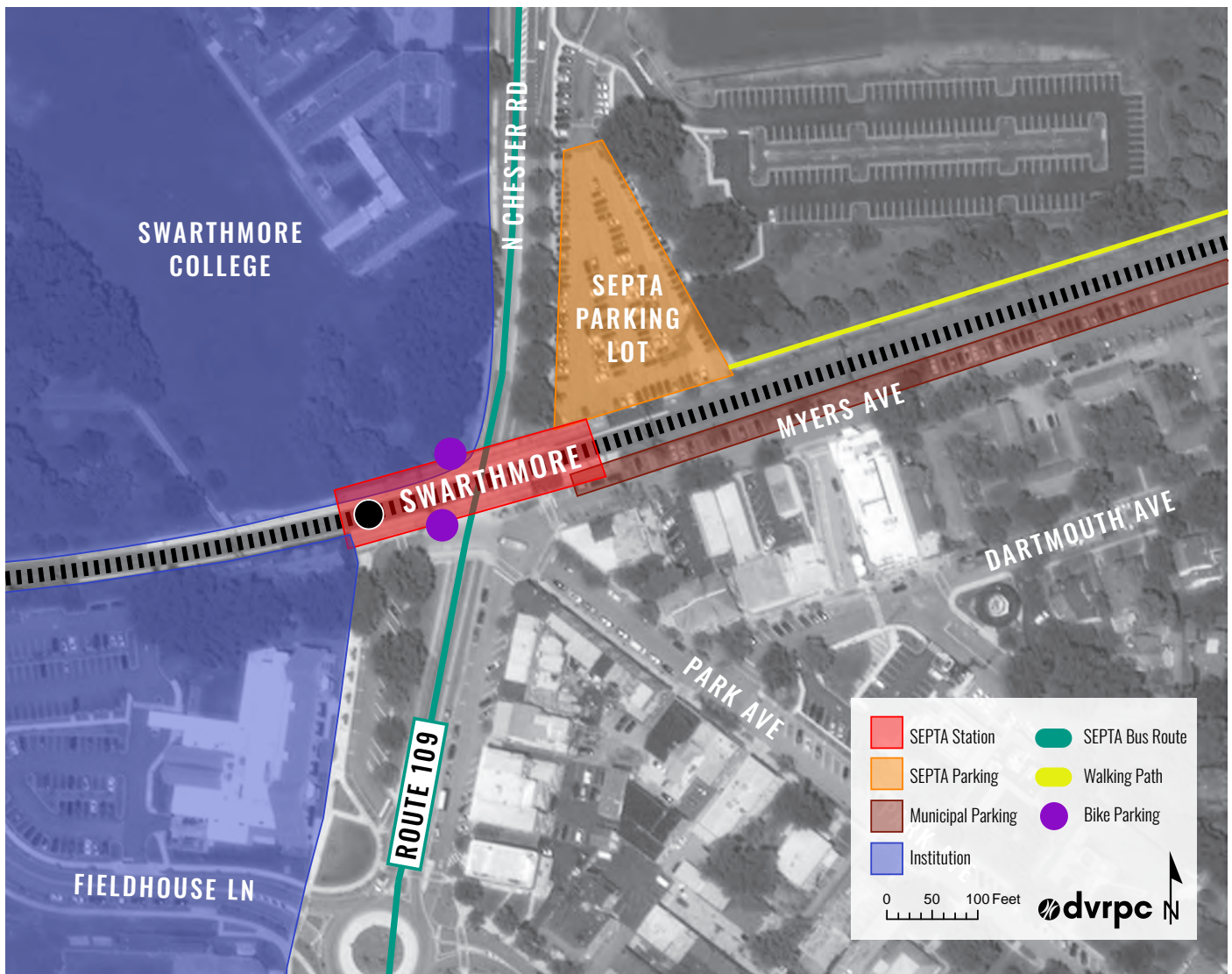


Figure 1. Swarthmore Station Map

Aerial Source: DVRPC, 2015

would free up parking for other riders, and ridership could grow at that station without the need to build more parking. Additionally, those walking or taking transit to the station are already engaging in healthier and more sustainable trips, and there is not a strong justification to encourage them to switch to biking to the station. The following section describes the three stations selected: Swarthmore, Lansdowne, and Norwood.

STATION OVERVIEWS

Swarthmore

The Swarthmore Station is located at Park Avenue and Chester Road in Swarthmore, Pennsylvania, and is served by the Media/Elwyn Regional Rail Line and SEPTA Bus Route 109 (Figure 1). The station has 783 average weekday riders, the most of the three surveyed stations.

The first inbound train comes to Swarthmore Station at 5:45 AM, and trains run about every 30 minutes from 5:45 AM to 9:15 AM and 4:00 PM to 7:00 PM. Outside of those peak times, trains come every hour. There are three other Regional Rail stops on the Media/Elwyn Line within two miles of Swarthmore: Moylan-Rose Valley, Wallingford, and Morton stations.

There are 248 designated station parking spots. Of the 248 parking spots, 153 are SEPTA daily spots that cost \$1 per day and are 100 percent occupied. The remaining 95 spots are Swarthmore Borough municipal metered parking on the inbound side of the station, which cost \$0.25 every 1.5 hours. These spots are 61 percent occupied. There are 15 bike racks on the inbound platform and 10 racks on the outbound platform, which can accommodate up to 50 bicycles total. The SEPTA Media/Elwyn Line Bike Survey, completed in 2013, found 17 bikes parked at the station.



Figure 2. Lansdowne Station Map

Aerial Source: DVRPC, 2015

More recent observations counted 25–30 bikes.

DVRPC surveyed 120 people at Swarthmore Station, which is 15 percent of the daily ridership.

Lansdowne

Lansdowne Station is located at Scottsdale Road and South Lansdowne Avenue in Lansdowne, Pennsylvania (Figure 2). The station is served by the Media/Elwyn Regional Rail line and has an average of 314 weekday riders. The first inbound train comes to the Lansdowne Station at 6:00 AM, and trains run about every 30 minutes from 6:00 AM to 9:30 AM and 4:00 PM to 7:00 PM. Outside of those peak times, trains come every hour. SEPTA bus routes 109, 113, and 115 connect to this station. There are four other Regional Rail stops on the Media/Elwyn Line within two miles of Lansdowne: Primos, Clifton-Aldan, Gladstone, and the

Fernwood-Yeadon stations. There is also one stop on the Wilmington/Newark Line within a two-mile radius: Darby Station.

There are 139 designated surface parking spots on the south side of the tracks that are 90 percent occupied. SEPTA manages 127 parking spots; 90 of them are daily spots that cost \$1 per day, and 37 of them are permit spots that cost \$20 per month. The daily spots are 100 percent utilized, and the permit spots are 68 percent utilized. The remaining 12 spots are run by the borough and are 83 percent utilized. There is currently only one bike rack under the bridge on the inbound side of the station, which can accommodate four bicycles. In accordance with recommendations in SEPTA’s Bike Survey Study, SEPTA has plans to install a new bike rack on the outbound side of the station in the near future. The SEPTA Media/Elwyn Line Bike Survey, completed in 2013, found three bikes parked at the station.



Figure 3. Norwood Station Map

Aerial Source: DVRPC, 2015

DVRPC surveyed 100 people at Lansdowne Station, which is 32 percent of the daily ridership.

Norwood

Norwood Station, located in Norwood, Pennsylvania, at Winona and Welcome avenues and the border of Prospect Park, is on the Wilmington/Newark Regional Rail line (Figure 3). The station has 255 average weekday riders. The first inbound train comes to Norwood Station at 6:00 AM, and trains run about every 30 minutes from 6:00 AM to 8:30 AM and 4:00 PM to 6:30 PM. Outside of those peak times, trains come every hour. Bus Route 114 operates as a connection to the station. Although Amtrak trains run through the station, it is only served by SEPTA. There are five other Regional Rail stops on the Wilmington/Newark Line within two miles: Ridley Park, Prospect Park, Glenholden, Folcroft, and Sharon Hill stations. There are also two stops on

the Media/Elwyn Line within a two-mile radius: Morton and Secane stations.

There are 112 designated station parking spots adjacent to the outbound platform along Harrison Avenue, as well as metered street and lot parking on the south side of the tracks. Of the 112 parking spots, 62 are owned by SEPTA, cost \$1/day, and are 100 percent occupied. The other 50 are in a municipal lot and cost \$0.25 for two hours. These spots are 68 percent occupied. There is currently no bicycle parking provided on either side of the station platform. The SEPTA Wilmington/Newark Line Bike Survey, completed in 2013, found one bike parked at the station.

DVRPC surveyed 96 people at Norwood Station, which is 38 percent of the average weekday ridership.

ADMINISTERING THE SURVEY

MATERIALS, METHODS, AND DATA

The survey was conducted over the course of four days. Each station was surveyed for one day, with an additional day added for Norwood, in order to reach a maximum margin of error of 10 percent for each location based upon station ridership. A range of two to five staff members administered the surveys during a given time. The team surveyed during the following times:

- Swarthmore: 11 inbound trains and seven outbound trains, the first at 6:12 AM and the last at 12:04 PM;
- Lansdowne: 12 inbound trains and eight outbound trains, the first at 5:59 AM and the last at 12:17 PM; and
- Norwood:
 - Day 1: Nine inbound trains and six outbound trains, the first at 5:59 AM and the last at 10:17 AM; and
 - Day 2: Four inbound trains, the first at 7:09 AM and the last at 8:18 AM.

The team surveyed those boarding outbound trains,

when possible, but the majority of surveys were done with people riding inbound trains toward Philadelphia. The surveys were conducted via tablet to capture and format the data more efficiently. Those administering the survey read the questions aloud and selected the respondents' answers. Relevant anecdotal information gathered during the survey was captured in an optional "notes" section at the end of the survey, to compile a holistic perspective of individual opinions and experiences. The survey started with the same questions, but split into *questions for people who did bike* and *questions for people who currently did not*. This structure is shown in Figure 4. The survey has 17 questions in total and took an average of 4 minutes and 36 seconds to finish. The full survey for bicyclists and the survey for non-bicyclists can both be found in the Appendix.

Table 1 shows a breakdown of the number of surveys initiated and completed, by station. Sixteen bicyclist surveys were completed, 15 at Swarthmore Station and one at Lansdowne Station. All respondents said they had been biking to transit for longer than six months. No bicyclists surveys were initiated or completed at Norwood Station. Several bicyclists at Swarthmore arrived and did not take the survey, either because they declined or time did not permit.

Table 1. Number of Surveys Initiated and Completed, by Station

		Overall		Swarthmore		Lansdowne		Norwood	
Initiated		326		123		101		102	
Non-Bike		295		104		98		93	
	I do not regularly bike to transit, and I do not intend to start within the next six months.	259	83%	85	71.4%	87	87.9%	87	93.6%
	I am thinking about biking to transit regularly within the next six months.	31	9.9%	15	12.6%	11	11.1%	5	5.4%
	I plan to bike to transit regularly within the next 30 days.	5	1.6%	4	3.4%	0		1	1.1%
Bike		16		15		1		0	
	I bike to transit regularly and have been for less than six months.	0		0		0		0	
	I bike to transit regularly and have been for six months or more.	16	5.5%	15	12.6%	1	1%	0	
Finished		239	73.3%	86	70%	78	77.2%	75	73.5%

Figure 4. Graphic of Survey Flow

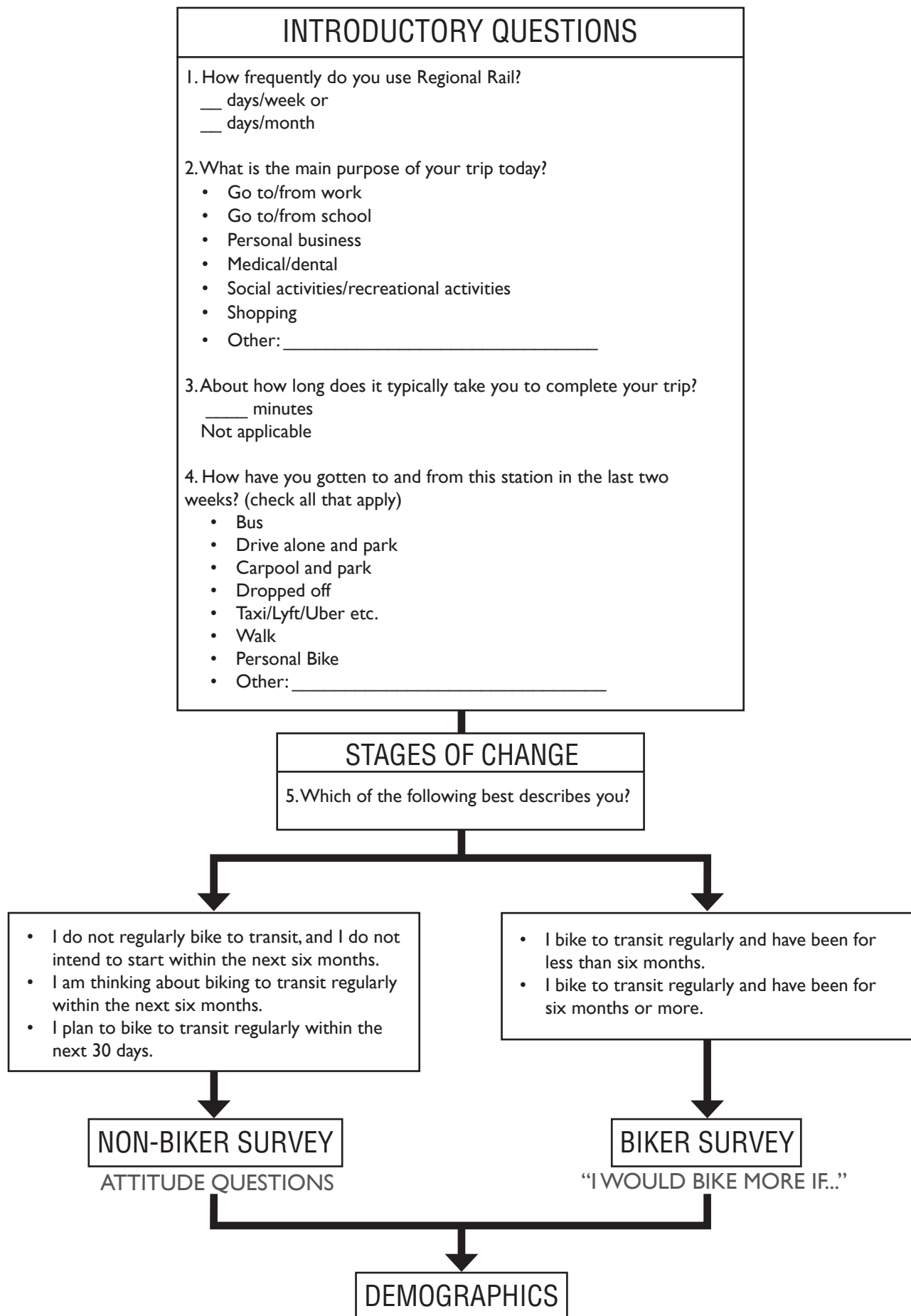


Table 2. Trip Purpose and Mode to Regional Rail, by Station

		Overall		Swarthmore		Lansdowne		Norwood	
What is the main purpose of your trip today?		n	%	n	%	n	%	n	%
Go to/from School		14	4.4	2	1.7	4	4.0	8	8.3
Go to/from Work		281	89.2	108	90	87	87.9	86	89.6
Medical/Dental		6	1.9	3	2.5	2	2.0	1	1.0
Other		2	0.6	1	0.8			1	1.0
Personal Business		8	2.5	4	3.3	4	4.0		
Shopping		1	0.3			1	1.0		
Social/Recreational		3	1.0	2	1.7	1	1.0		
How have you gotten to and from this station in the last two weeks? (Select all that apply)		n	%	n	%	n	%	n	%
Bus		13	4.1	5	4.2	5	4.1	3	3.1
Carpool and park		2	0.6	1	0.8			1	1.0
Drive alone and park		138	40.0	55	45.8	40	32.8	43	44.8
Dropped off		43	13.7	18	15.0	10	8.2	15	15.6
Other		3	1.0	1	0.8			2	2.1
Personal bike		16	5.1	15	12.5	1	0.8		
Taxi/Lyft/Uber, etc.		2	0.6			1	0.8	1	1.0
Walk		168	53.5	56	46.7	65	53.3	47	49.0
How frequently do you use Regional Rail?									
Average		4.32 days/week		4.08 days/week		4.49 days/week		4.45 days/week	

SURVEY FINDINGS AND SUMMARY TABLES

The survey responses quantify several aspects of station usage that were previously unknown or that were only estimated or extrapolated from data like ridership and parking occupancy, and can inform future targeted marketing. Mode to the station is determined for each station, as well as the demographics of station users, and how those differ by mode to the station. On the topic of biking to Regional Rail stations, a rough number of people who are currently biking to each station is known. Also, it is now known how many people are thinking about or planning on biking to the Regional Rail stations. The demographics of the people in each one of these groups has also been cataloged (see Using the Survey: Identifying Different Audiences). These differences highlight the unique needs of each group, which can be used to inform education and encouragement campaigns or activities.

For those who are currently biking to the station, more is known on what would encourage them to bike more, and for those who are not biking, themes or topics that

can be used for encouragement activities have been tested through the strength and direction of responses to the attitudinal questions (see the Appendix for full responses to attitudinal questions for both bikers and non-bikers).

In addition, the survey gathered important household and individual information about factors that might be affecting biking, such as whether one can ride a bike and how confidently, whether one owns a bike, how many cars are available to the household, and how many children are living in the household and of what age. These, too, can help to illuminate possible barriers to biking and can be addressed through educational and encouragement actions.

Table 2 summarizes the mode taken to the station and the trip purpose of respondents, overall and by station. About 90 percent or more of trips were to or from work. For all stations, over 50 percent of people walk to the station at least some of the time. The survey asked respondents to indicate any of the modes they had used

Table 3. Answers to Attitudinal Questions, by Station

Statement	Answer	Overall		Swarthmore		Lansdowne		Norwood	
		n	%	n	%	n	%	n	%
Most drivers don't seem to notice bicyclists.	Strongly Agree	39	13.6%	14	14.1%	18	18.8%	7	7.7%
	Agree	140	49%	49	49.5%	41	42.7%	50	55%
	Neutral	61	21.3%	24	24.2%	20	20.8%	17	18.7%
	Disagree	45	15.8%	12	12.1%	16	16.7%	17	18.7%
	Strongly Disagree	1	0.4%			1	1%		
Many bicyclists appear to have little regard for their personal safety.	Strongly Agree	14	5%	2	2.1%	6	6.4%	6	6.8%
	Agree	68	24.4%	19	19.6%	27	28.7%	22	25%
	Neutral	63	22.6%	21	21.7%	23	24.5%	19	21.6%
	Disagree	118	42.3%	48	49.5%	32	34%	38	43.2%
	Strongly Disagree	16	5.7%	7	7.2%	6	6.4%	3	3.4%
Bike lanes take up street and sidewalk space that would be better used for other things.	Strongly Agree	3	1.1%	1	1.1%	1	1.1%	1	1.2%
	Agree	16	6%	1	1.1%	12	13%	3	3.5%
	Neutral	24	8.9%	5	5.6%	13	14.1%	6	6.9%
	Disagree	176	65.4%	58	64.4%	52	56.5%	66	75.9%
	Strongly Disagree	50	18.6%	25	27.8%	14	15.2%	11	12.6%
Around here, adults who bicycle for transportation are viewed as odd.	Strongly Agree	1	0.4%	1	1.1%				
	Agree	29	10.8%	5	5.6%	11	12%	13	14.9%
	Neutral	28	10.4%	6	6.7%	9	9.8%	13	14.9%
	Disagree	175	65.1%	60	66.7%	61	66.3%	54	62.1%
	Strongly Disagree	36	13.4%	18	20%	11	12%	7	8.1%
I would bicycle more if my friends/family came with me.	Strongly Agree	11	4.15%	4	4.6%	4	4.4%	3	3.5%
	Agree	76	28.7%	26	29.9%	21	23.1%	29	33.3%
	Neutral	50	18.9%	15	17.2%	22	24.2%	13	14.9%
	Disagree	119	44.9%	41	47.1%	39	42.9%	39	44.8%
	Strongly Disagree	9	3.4%	1	1.2%	5	5.5%	3	3.5%

to access the station in the last two weeks. The second most prevalent mode was driving alone and parking. Less than 1 percent of people had used Uber, Lyft, or a taxi in the last two weeks. On average, respondents rode Regional Rail 4.32 days per week.

Those who do not currently bike to transit were asked to respond to a number of attitudinal statements. Table 3 shows how strongly people agreed or disagreed with a selection of statements that most directly relate to biking.

Responses to several of the attitudinal statements indicate how station users feel about several aspects of biking and bike infrastructure (see Table 3). Overall, 84 percent of those surveyed either disagreed or strongly disagreed that “bike lanes take up street and sidewalk space that would be better used for other things.” This, paired with a sense that drivers do not always notice

people who are biking (63 percent of people agreed or strongly agreed to this), suggests that there would be public support for adding bike infrastructure in these communities. There is some variation in this potential support. Swarthmore and Norwood had stronger levels of disagreement than Lansdowne in response to whether bike lanes take up valuable space. Still, in all three places the majority disagreed or strongly disagreed.

Survey responses also show that bicycling for transportation has become more normalized. Seventy-nine percent of people disagreed or strongly disagreed that adults who bike for transportation are viewed as odd. The vast majority of those surveyed were going to Philadelphia, where they likely see bicyclists regularly, and this may contribute to their view of biking, in both the city and the communities where they live.

Table 4. Answers to Bicyclist Questions, by Station

Statement	Answer	Overall		Swarthmore		Lansdowne	
		n	%	n	%	n	%
I would bike more if there were more bicycle parking options.	Strongly Agree	3	20%	3	21.4%		
	Agree	4	26.7%	4	28.6%		
	Neutral	6	40%	5	35.7%	1	100
	Disagree	2	13.3%	2	14.3%		
I would bike more if there were better-quality bicycle parking options.	Strongly Agree	2	14.3%	2	15.4%		
	Agree	2	14.3%	2	15.4%		
	Neutral	7	50%	6	46.2%	1	100
	Disagree	3	21.4%	3	23.1%		
I would bike more if there were more bicycle lanes or paths.	Strongly Agree	6	42.9%	5	38.5%	1	100
	Agree	4	28.6%	4	30.8%		
	Neutral	1	7.1%	1	7.7%		
	Disagree	3	21.4%	3	23.1%		
I would bike more if there were better-quality bicycle lanes or paths.	Strongly Agree	6	42.9%	5	38.5%	1	100
	Agree	3	21.4%	3	23.1%		
	Neutral	3	21.4%	3	23.1%		
	Disagree	2	14.3%	2	15.4%		
I would bike more if there were shower facilities at my destination.	Strongly Agree	4	28.6%	4	30.8%		
	Agree	4	28.6%	4	30.8%		
	Neutral	4	28.6%	3	23.1%	1	100
	Disagree	2	14.3%	2	15.4%		
I would bike more if more of my destinations were closer to the train station.	Strongly Agree	1	7.7%	1	8.3%		
	Agree	3	23.1%	3	25%		
	Neutral	4	30.8%	4	33.3%		
	Disagree	5	38.5%	4	33.3%	1	100

Note. No respondent indicated that they biked to transit at Norwood Station. No respondents to the bicyclist survey strongly disagreed with any of the above statements.

Overall, these responses suggest that some of these beliefs that might be common in some places, beliefs that might discourage people from trying biking to transit, are not present in these stations' users or could be mitigated with safety improvements that would provide separation between vehicles and bicyclists and work to make bicyclists more visible to drivers.

Responses to all attitudinal statements, by station, are shown in Table A-2 in the Appendix.

BICYCLIST SURVEY RESPONSES

Survey respondents who answered that they regularly bike to transit were asked whether a number of improvements would lead them to increase the amount of biking that they did. Importantly, the wording of the

question asked about biking overall, not just biking to transit. Of the 16 people who bike regularly, up to 15 responded to each item (see Table 4 for a detailed summary of responses by question). All but one of these bicyclists were at the Swarthmore Station. The remaining bicyclist had biked to the Lansdowne Station. Not a single bicyclist strongly disagreed that any of the bicycle supportive strategies would cause them to bike more.

A larger number of people agreed or strongly disagreed that more bike parking options would cause them to bike more as opposed to better-quality bike parking options. This would suggest that in Swarthmore, the focus should first be on expanding bike parking compared to upgrading existing parking options. Large

portions of those surveyed were neutral about both bike parking improvements increasing the amount they biked (overall 40 percent were neutral about more bike parking options, and 50 percent were neutral on better-quality bicycle parking options).

When asked about more bicycle lanes and paths, 72 percent agreed or strongly agreed that more facilities would cause them to bike more. When asked about better-quality bicycle lanes or paths, slightly fewer people, 64 percent, said that this would cause them to bike more.

For all of these items, the answers only reflect people who were already biking to transit and therefore were not concerned or did not view bike parking, the absence or quality of bike lanes, or the distance to destination as barriers to biking to the station. With very few existing bicycle facilities in place, survey respondents were likely experienced bike riders and were more comfortable tolerating a higher-stress bike ride.

USING THE SURVEY: IDENTIFYING DIFFERENT AUDIENCES

To understand the types of people who were surveyed, and the discernible differences between them, responses were categorized into three different groups: people who bike regularly, people who are thinking about or planning on biking, and people who have the access and ability to ride a bike but do not ride now. These groups were named “regular bikers,” “would-be bikers,” and “could-be bikers,” respectively. Below is a summary of the demographics of each group and the attitudinal statements that seemed to resonate the strongest for each. The percentage of those surveyed that fall into each category, by station, is also shown.

REGULAR BIKERS

- **Swarthmore: 12.6 percent**
- **Lansdowne: 0.9 percent**
- **Norwood: 0 percent**

People who regularly bike answered one of two options to the “state of change” question: they either “bike to transit regularly or have been for less than six months,” or they “bike to transit and have been for six months or more” and are therefore in the maintenance stage. There were 16 total respondents in the group across all three stations surveyed. Of those, the majority of them were between 35 and 54 years old. All respondents were male, 69 percent of them were white, 84 percent of them made over \$100,000, and 63 percent of them had children over 18 years old. Just over half of the respondents owned two cars. Within the group of regular cyclists, 28 percent of them said that they also sometimes walked. Only 12 percent sometimes drove. Because the vast majority of this group used Swarthmore Station, the demographic information may be more reflective of the area around Swarthmore than the larger universe of regular bike-to-transit users.

The survey respondents in this group received attitudinal questions about what changes would encourage them to bike more. Of the 16 respondents, 71 percent agreed or strongly agreed that more bike lanes would encourage them to bike more. Forty-six percent agreed or strongly agreed that more bike parking would encourage them to bike more; however, 40 percent were neutral on this item.

The improvements that are slightly outside the scope of the ability for this project’s stakeholders to address, but are still useful insights, are that 57 percent agreed or strongly agreed that shower facilities at work could encourage biking, and 53 percent agreed or strongly agreed that allowing bicycles on the SEPTA Regional Rail would encourage more biking.

WOULD-BE BIKERS

- **Swarthmore: 18.4 percent**
- **Lansdowne: 11.2 percent**
- **Norwood: 6.5 percent**

“Would-be” bikers selected one of two options to the “state of change” question. They said that they were either “thinking about biking to transit regularly within the next six months” (contemplation stage) or that they “plan to bike to transit regularly within the next 30 days” (preparation stage). There were 36 total respondents in this group across all three stations surveyed. Of those, the majority of them were between 25 and 44 years old, 48 percent identified as female and 51 percent identified as male, 82 percent were white, 48 percent reported making over \$100,000, and 74 percent of them had children over 18 years old. Fewer than 50 percent of them had two cars. Almost half of them often walked to the station, and 39 percent reported driving alone.

The survey respondents in this group answered attitudinal questions that aimed to understand interests and motivations that could be used for education and encouragement in a future campaign to encourage biking to transit. Some key highlights of the responses were that people were worried about safety on a bicycle and did not think that bike lanes took space away from cars. Seventy-four percent of people agreed or strongly agreed that most drivers do not seem to notice bicyclists, and 80 percent of people disagree or strongly disagree that bike lanes take up street and sidewalk space that would be better used for other things. There also did not seem to be a stigma related to bicycling: 81 percent of people disagreed or strongly disagreed with the idea that adults who bike are viewed as odd.

Protecting the environment and getting exercise could be used as reasons for beginning to bike to transit. Eighty-five percent of “would-be” bikers disagreed or strongly disagreed that this country has gone too far to protect the environment. Ninety-four percent of these respondents agreed or strongly agreed that getting regular exercise was very important to them.

COULD-BE BIKERS

- **Swarthmore: 62.4 percent**
- **Lansdowne: 37.9 percent**
- **Norwood: 46.3 percent**

The “could-be” biker group includes all people who indicated that they owned a bicycle and answered “somewhat confident” or “very confident” to the “how would you rate your ability to ride a bicycle” question, but otherwise were in the pre-contemplation stage and did not bike to transit and did not intend to start. Although not doing so now, this group had both the ability and the equipment necessary to begin biking to transit. There were 112 total respondents in this group across all three stations surveyed. Of those, the majority of them were between 35 and 54 years old, 46 percent identified as female and 51 percent identified as male, 73 percent were white, 33 percent reported making over \$100,000, and 86 percent of them had children over 18 years of age. Within the group, 19 percent of them had three or more cars, 58 percent often walked to the station, and 53 percent reported driving alone.

The survey respondents in this group answered the same attitudinal questions as the “would-be” bikers. The takeaways were very similar, if not more pronounced. Sixty-three percent of people agreed or strongly agreed that most drivers do not seem to notice bicyclists, and 88 percent of people disagreed or strongly disagreed that bike lanes take up street and sidewalk space that would be better used for other things. Similarly, few people thought biking was strange – 76 percent of people disagreed or strongly disagreed with the idea that adults who bike are viewed as odd.

SUMMARY OF BIKE-TO-TRANSIT CURRENT AND POTENTIAL TARGET GROUPS

Regular Bikers

(16 people)

- Answered that they bike regularly.
- ALL respondents were men (although female bikers were observed).
- Majority are between 35 and 54 years old.
- 84 percent made over \$100,000.
- 69 percent were white.
- 28 percent sometimes walk; 12 percent sometimes drive.

Would-Be Bikers

(36 people)

- Answered that they are thinking or planning to start biking to transit.
- 48 percent are female; 51 percent are male.
- Majority are between 25 and 44 years old.
- 48 percent made over \$100,000.
- 82 percent were white.
- Almost half walk to the station; 39 percent drive alone.

Could-Be Bikers

(112 people)

- Answered they do not bike now and do not intend to start.
- BUT, they own a bike and are somewhat or very confident riding a bike.
- 46 percent are female; 51 percent are male.
- Majority are between 35 and 54 years old.
- 33 percent made over \$100,000.
- 73 percent were white.
- 58 percent sometimes walk; 53 percent sometimes drive.

RECOMMENDATIONS

Based on analysis of the survey, existing conditions around the stations, and best practices for encouraging and supporting biking to transit, three types of recommendations are described in the following pages: infrastructure, education and encouragement, and system-wide policy and action. Survey responses were paired with national resources and research, described in more detail in each section of recommendations, to identify best practices tailored to this project.

INFRASTRUCTURE

LEAD: • Municipalities • PennDOT • SEPTA

Providing safe, comfortable ways to access the station, as well as safe, convenient storage when one arrives, is an important step for improving the ability to bike to transit. Installing bike infrastructure, such as bike lanes and bike parking, is location specific. To help tentative, prospective, or long-time users access a transit hub, there is a range of infrastructure improvements that can be made. The first step to identifying necessary improvements is to analyze the existing conditions at and approaching the station. Figure A-2 in the Appendix, from the Atlanta Regional Council's *Bike to Ride: An Idea Book of Regional Strategies for Improving Bicycling Access to Transit*, provides a list of questions to assess how bike-friendly a transit stop is and what the barriers to bike access might be.

A basic guide to what type of bike facility is most appropriate based on different street characteristics can be found in Figure A-4 in the Appendix. Bicycle facilities should be constructed in order to connect neighborhoods to the north, south, east, and west to the station in a logical, low-stress way. DVRPC's Level of Traffic Stress (LTS) analysis (available via an interactive web map at <https://www.dvrpc.org/webmaps/BikeStress>) rates each road on how comfortable it would be for a bicyclist. LTS is another way to evaluate existing conditions for bicyclists and can be used to analyze which important road links are most in need of intervention in order to be comfortable for a cyclist. DVRPC's bicycle LTS is shown for each station area in this study in Figure 5. LTS 1 streets are the most

comfortable for bicyclists. Wayfinding can also help to direct bicyclists to the station and is especially pertinent if the bike facilities are not a direct path, and should be placed at decision points or places where turning would be necessary.

Because most of this infrastructure is on road, the municipality, in the case of local roads, or PennDOT with the municipality, for state roads, would need to lead implementation since they own and have jurisdiction over the majority of the roads.

For communities looking to improve rates of biking to transit, bike parking is recommended on both the inbound and outbound sides of the station. With so many options on the market, deciding what type of bike parking to install can be confusing. Figure A-3 in the Appendix, from the Atlanta plan, is a helpful visual to inform decisions about the type of bike racks to install. These racks are recommended because they fulfill important criteria, such as supporting the bicycle frame in two places so bikes do not tip and are less prone to damage and allowing for the frame and at least one wheel to be locked with a U-lock.

At this time, SEPTA will not install secure bike parking at Regional Rail stations, such as bike lockers or cages. However, a municipality may pursue this option on their own and place them on public property, or partner with an adjacent land owner. An option for bike lockers is shown with the Swarthmore recommendations. Secure bike parking may be desirable if covered bike parking is otherwise not available, or if there are perceived issues of bike security.

Station-specific infrastructure recommendations are shown on the following pages, along with some additional survey and stage of change information for each station. They include bicycle facilities, as well as improvements for bicycle parking, both of which are important for providing safety and comfort for bicyclists. Bicycle facilities were recommended based on providing access to the station from the north, south, east, and west, and what was feasible based on existing road configurations and the desire to offer low-cost, easy-to-implement improvements.

The facility types that would provide the most separation and comfort, and therefore appeal to the widest group of cyclists, were prioritized. These included buffered bicycle lanes, standard bicycle lanes, contraflow bicycle lanes, and neighborhood greenways. Contraflow bike lanes allow bicyclists to travel in the opposite direction of motor vehicles on one-way roads. Neighborhood greenways, sometimes referred to as bicycle boulevards or neighborhood bikeways, are low-volume, low-speed streets that are optimized for bicyclists and pedestrians using signage, pavement markings, traffic calming, auto traffic reduction, and intersection crossing treatments. DVRPC's *Identifying Neighborhood Greenway Possibilities in Philadelphia* is a helpful local resource for more information on designing these types of facilities. The Atlanta Regional Commission's *Bike to Ride: an Idea Book of Regional Strategies for Improving Bicycling Access to Transit* and the National Association of City Transportation Officials' *Urban Bikeway Design Guide* were useful references for route and facility design.

EDUCATION AND ENCOURAGEMENT

LEAD: • Municipalities • County • TMAs

The second set of recommendations is for education and encouragement activities, based on analysis of different audiences or market segmentation described in the previous section, and informed by where people are in the transtheoretical state of change (i.e., thinking about, planning on, or regularly riding a bike to the station). This can help determine the most appropriate encouragement activities to nudge people from one state of change to another, and closer to biking to transit. Education and encouragement activities can play an important role in changing behavior and can be paired with infrastructure investments or not. Industry leaders in education and encouragement programs were consulted for this project and offered a number of tailored recommendations. These recommendations are broken out for different audiences and use the three Delaware County stations in this study as representing archetypes of different station types.

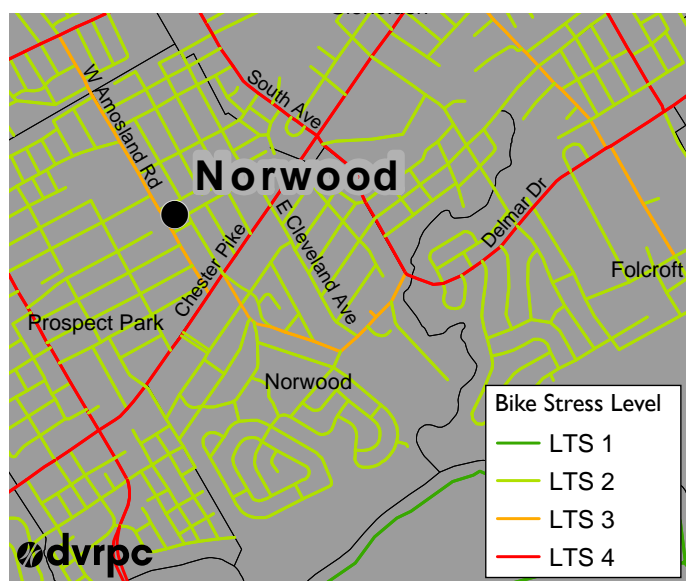
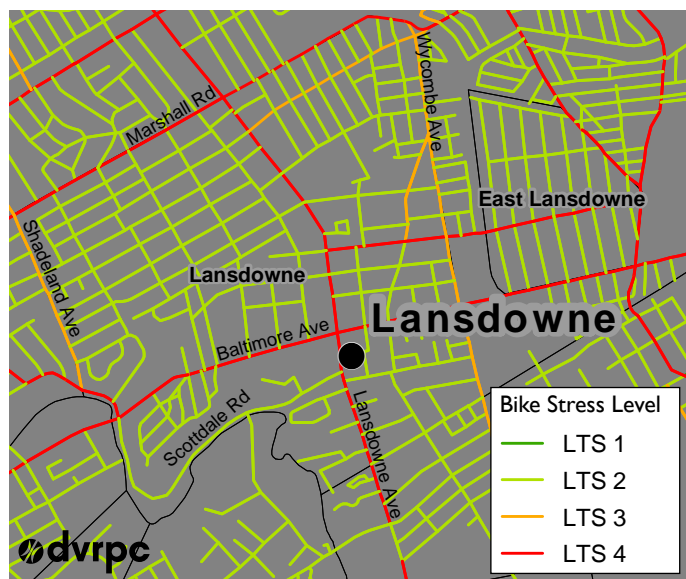
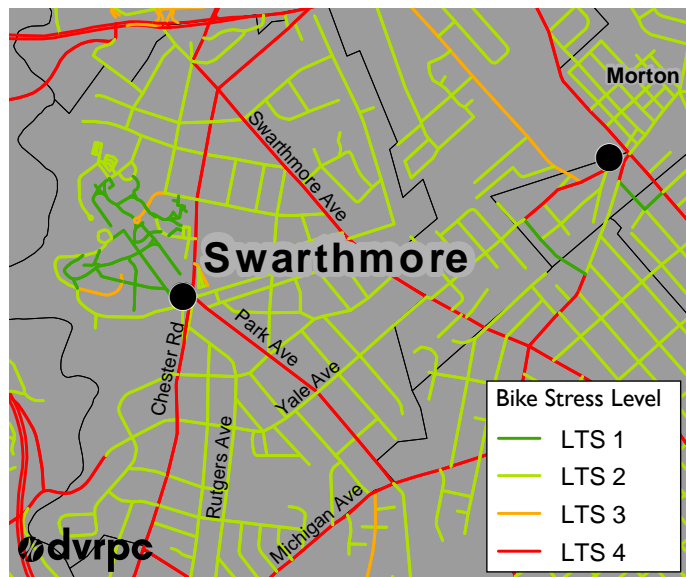


Figure 5. Bicycle Level of Traffic Stress Mapped for Each Station Area

A station such as Swarthmore has a different set of recommended activities compared to a station such as Norwood, where few people are currently biking and at most have thought about but not planned on doing so in the future. For those at stations where few if any people are biking now and where most riders are likely in the pre-contemplation stage or “could-be” bikers, such as Norwood, behavioral campaigns should focus on increasing awareness of the ability to bike to transit and the benefits of making the change. As an example, this could be a media campaign that focuses on the contemplation stage, such as Norwood; behavioral campaigns should focus on increasing awareness of the ability to bike to transit and the benefits of making the change. As an example, this could be a media campaign that focuses on how biking to transit supports peoples’ health or sustainability goals, and/or other values and priorities. These strategies are appropriate for all stations.

Those in the contemplation and planning stages have expressed interest in biking but have not begun yet, and are “would-be bikers” in the survey analysis. For this group, the approach is more about how to get them to try biking rather than why they are or are not biking. Any behavioral campaign should motivate and increase confidence, help people plan for the change, and reaffirm their commitment. Ideas for this include:

- Start a social media or poster campaign that highlights people in the neighborhood who are already biking to transit and why they like it and how it makes their life better.
- Connect people to a bike buddy whom they can travel with and keep each other accountable.
- Create an action planning form where people can write out their plan to get to and from transit on a bicycle, including planning a route, identifying the items needed, etc.
- Organize a group ride to the station from a central neighborhood starting point.
- Throw an event at a transit station that provides

people with materials to help them plan their ride.

- Target under-represented groups with specific materials and activities, such as organizing women’s-only rides.
- Invite people to reflect on the benefits they would receive if they tried biking to the station.

Regular bikers, or those in the two maintenance stages, still benefit from encouragement to continue to bike to transit. An ideas to help them “maintain” includes:

- Social media support group for people who are biking to transit.

These recommendations might be implemented by a TMA, the municipality, or a larger effort undertaken by the county or other interested groups, in partnership with SEPTA. These groups are likely to lead implementation of these activities because they have experience operating similar programs in the past, they have both the interest and capacity to work on this issue, or it might address a goal or issue they work on.

SYSTEM-WIDE POLICY AND ACTIONS

LEAD: • SEPTA • Municipalities

The last set of recommendations is for policies or actions that SEPTA would be best to lead on, likely in partnership with the municipalities, because they would be beneficial at all stations or because SEPTA permissions and facilities would be necessary or desired. SEPTA may also include them in future updates to the *SEPTA Cycle-Transit Plan*. These recommendations might come from the education and encouragement best practices or from peer agencies. Sources include the *TriMet Bike Plan* and the *Bicycle and Transit Integration* guide by the American Public Transportation Association Standards Development Program. *Applying Behavioural Insights to Transportation Demand Management*, a report published by TransLink in Vancouver, British Columbia, describes how these sorts of “nudges” can be used to change customer behavior.

The attitude questions tested some possible themes

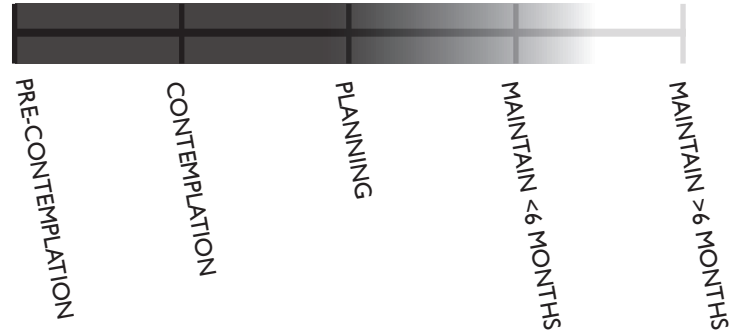
and motivations for biking to transit, and the findings from those questions can inform some of the recommendations below. The survey instrument could also be used to evaluate other stations in the future.

Recommendations include:

- Regularly evaluate demand, usage, and placement of bike parking on SEPTA property.
- Reconsider policy on bike lockers. Pilot their use at one or more stations.
- Plan a system-wide marketing campaign (posters, digital messaging, etc.) promoting the benefits of biking to transit. Survey results tested the resonance of some possible themes (health, sustainability, time savings, etc.). Other messages could include the reliability of there always being a space to park your bike versus the uncertainty of an available vehicle parking spot for fully occupied stations.
- Partner with other agencies to provide space and materials for bike-to-transit activities or tabling. Events can focus on targeting customers at different stages of change with regard to biking to transit (see the previous section).

SWARTHMORE RECOMMENDATIONS

Of the three locations, Swarthmore is the furthest along in the transtheoretical model of change “states of change.” As shown to the right, many people at the station are in the maintenance phase, and several are also planning or contemplating biking to the station. Out of the 16 bike surveys conducted, 15 of them were in Swarthmore, and described in Table 5.



The bike parking on the inbound side of the train tracks nearest to the street was full, and there were some bikes parked to railings or other things in this area of the platform.

STRATEGY: build on growth of regular bikers and existing bike infrastructure and parking

The following bike infrastructure is recommended:

- contraflow bike lane southbound, with northbound sharrows: Rutgers Avenue, from Yale Avenue to Michigan Avenue;
- convert striped shoulders to bike lanes: Yale Avenue from the west borough line to the east borough line.

Neighborhood greenway treatments include:

- Princeton Avenue from Swarthmore Avenue to Park

Avenue, Park Avenue from the train station to the borough line. Rutgers Avenue from the train station to Yale Avenue because dedicated facilities are not feasible and the lower volumes and speeds enable a mixed traffic facility type to be safe and comfortable.

Other recommended improvements include:

- wayfinding signs to help current and future bicycle riders identify bike routes to the station;
- more bike parking on the inbound side of the station; and
- bike lockers located on an adjacent parking spot to the station (see Figure 6).

Table 5. Mode and Trip Purpose for Survey Respondents at Swarthmore Station

SWARTHMORE		Regular bikers		Interested bikers		Everyone else	
What is the main purpose of your trip today?		n	%	n	%	n	%
	Go to/from School					2	2.3%
	Go to/from Work	14	93.3%	17	89.5%	77	89.5%
	Medical/Dental	1	6.7%			2	2.3%
	Other					1	1.2%
	Personal Business			1	5.3%	3	3.5%
	Shopping						
	Social/Recreational			1	5.3%	1	1.2%
How have you gotten to and from this station in the last two weeks?		n	%	n	%	n	%
	Bus					5	4.8%
	Carpool and park					1	1%
	Drive alone and park	3	13%	9	37.5%	43	41.4%
	Dropped off	1	4.4%	3	12.5%	14	13.5%
	Other					1	1%
	Personal bike	13	56.5%	1	4.2%	1	1%
	Taxi/Lyft/Uber, etc.						
	Walk	6	26.1%	11	45.8%	39	37.5%

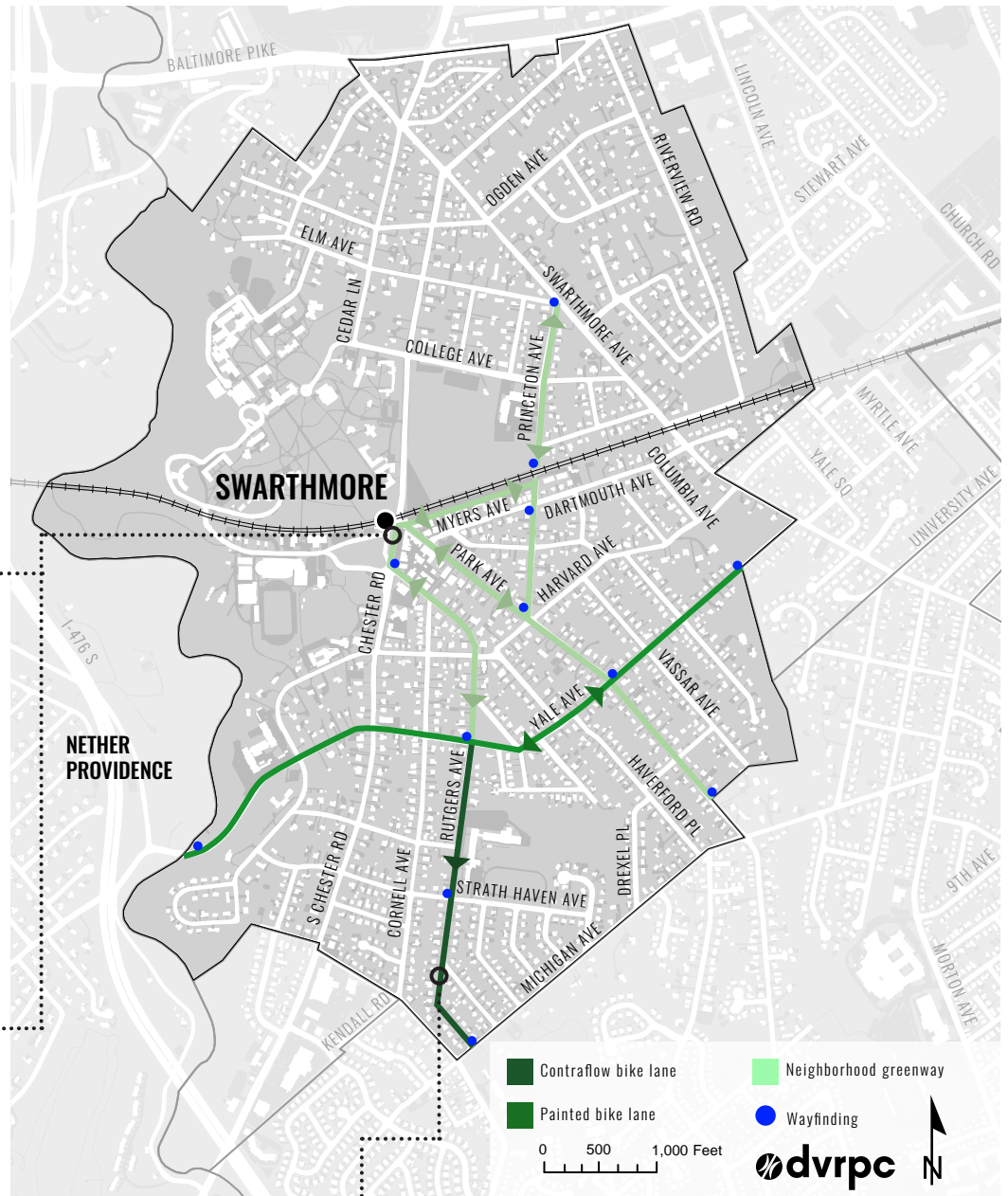
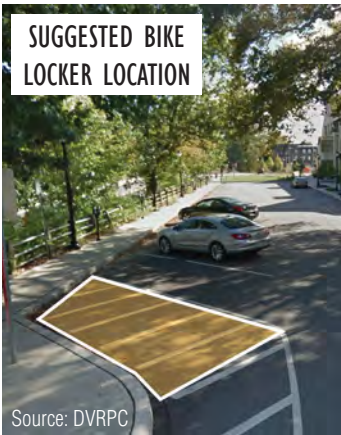
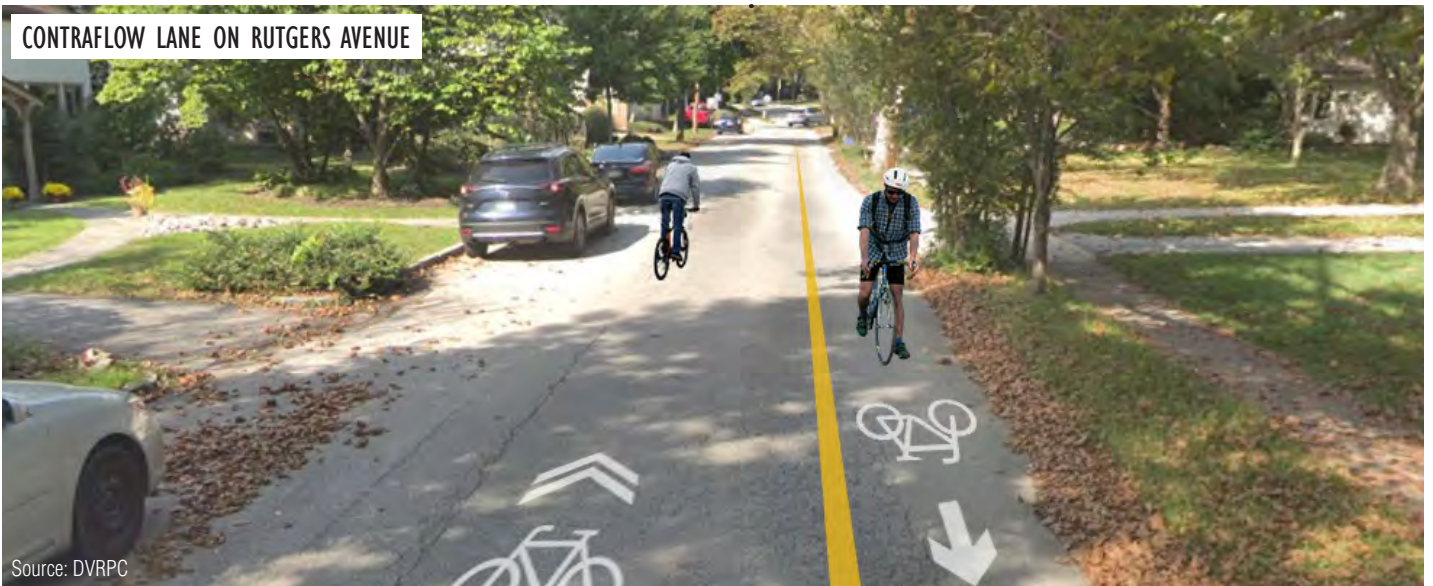


Figure 6. Swarthmore Bicycle Facility Recommendations

Source: DVRPC



LANSDOWNE RECOMMENDATIONS

One person surveyed at Lansdowne Station biked to the station, and there were 11 people who said that they were interested in bicycling in the future, shown in Table 6. With this level of interest, bike facilities leading to the station and bike parking at the station could increase the bike-to-transit rate and make it safer for the people who already choose to bike to the station.

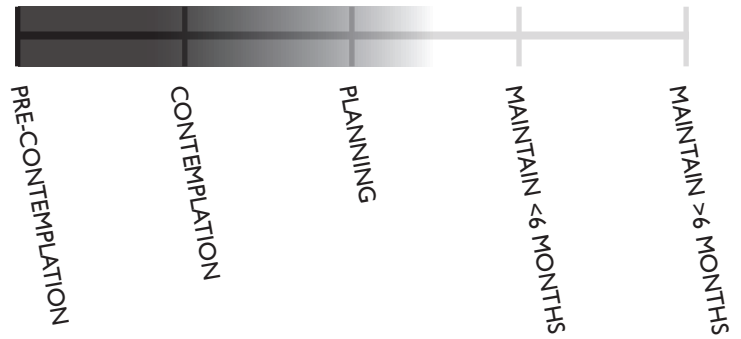
STRATEGY: Build bike infrastructure and additional bike parking to encourage interested bikers and support existing bikers.

The following bike infrastructure is recommended:

- conventional five-foot bike lanes: Lansdowne Avenue, from Madison Avenue to the borough line; this will require removing one parking space north of the bridge, removing parking from Dudley to the bridge, and removing the turn lane at Scottsdale Road; and
- left-side buffered bike lane: Wycombe Avenue, southbound; this requires removing parking and sharing the turn lane at the intersection at Wycombe and Stewart avenues.

Neighborhood greenway treatments include:

- Highland Avenue: at the offset intersection of Highland Avenue and Stewart Avenue,



accommodations for bike movements are recommended and shown in Figure 7; and

- Madison Avenue, Nyack Avenue, Scottsdale Road, Eldon Road, and Greenwood Avenue.

Other recommended improvements include:

- wayfinding along the new bike routes to help people access the station; locations are shown in Figure 7;
- remove the gate on Highland Avenue to allow easier access for bikers and pedestrians to access the outbound platform; and
- new bike parking on the outbound side, near the SEPTA parking lot; consider more visible and accessible bike parking on the inbound side of the station.

Table 6. Mode and Trip Purpose for Survey Respondents at Lansdowne Station

LANSDOWNE		Regular bikers		Interested bikers		Everyone else	
What is the main purpose of your trip today?		n	%	n	%	n	%
	Go to/from School					4	4.6%
	Go to/from Work	1	100%	10	90.9%	76	87.4%
	Medical/Dental					2	2.3%
	Other						
	Personal Business			1	9.1%	3	3.5%
	Shopping					1	1.2%
	Social/Recreational					1	1.2%
How have you gotten to and from this station in the last two weeks?		n	%	n	%	n	%
	Bus			1	7.7%	4	3.7%
	Carpool and park						
	Drive alone and park			5	38.5%	35	32.7%
	Dropped off			1	7.7%	9	8.4%
	Other						
	Personal bike	1	50%				
	Taxi/Lyft/Uber, etc.					1	1%
	Walk	1	50%	6	46.2%	58	54.2%

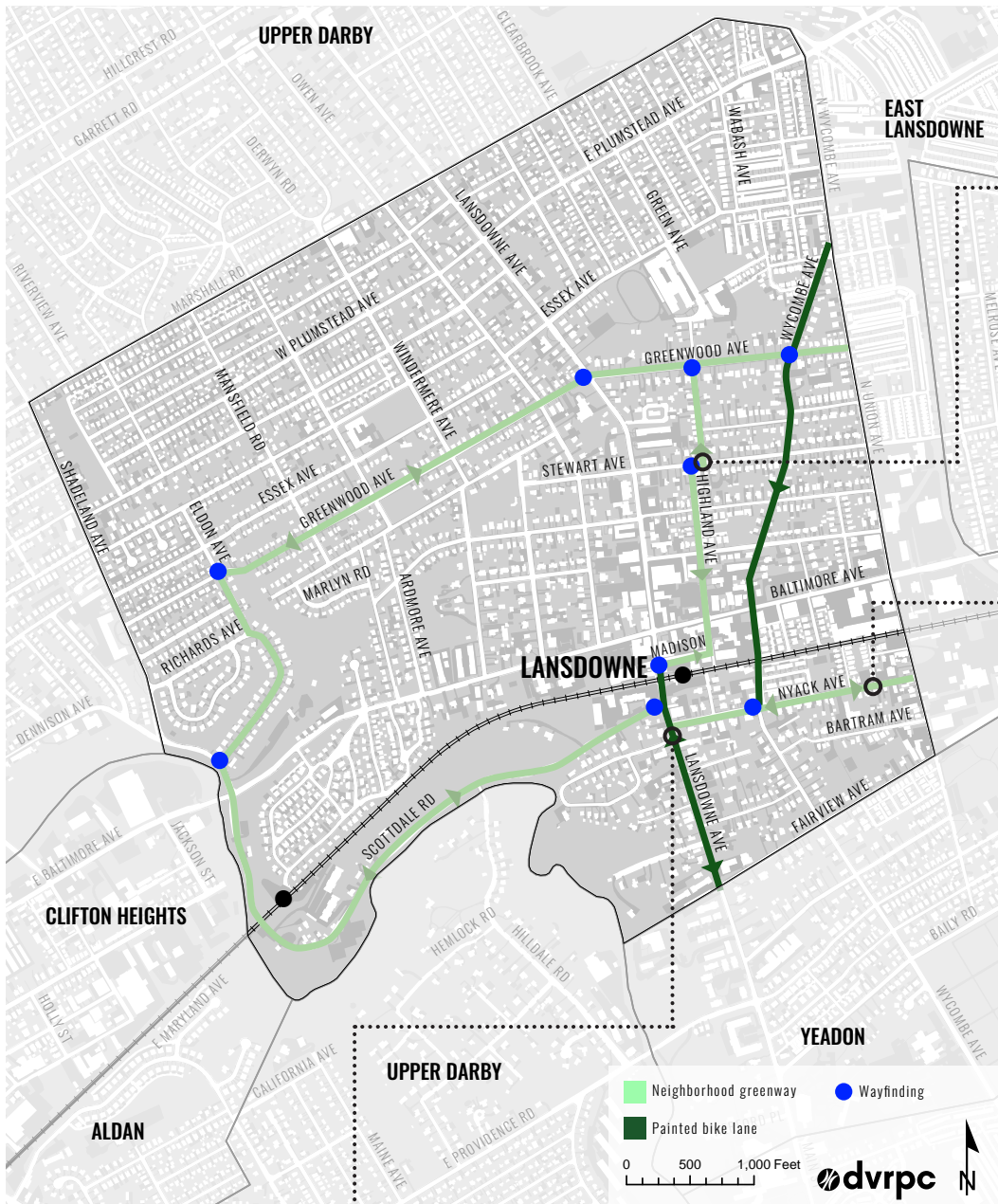


Figure 7. Lansdowne Bicycle Facility Recommendations

Source: DVRPC



NORWOOD RECOMMENDATIONS

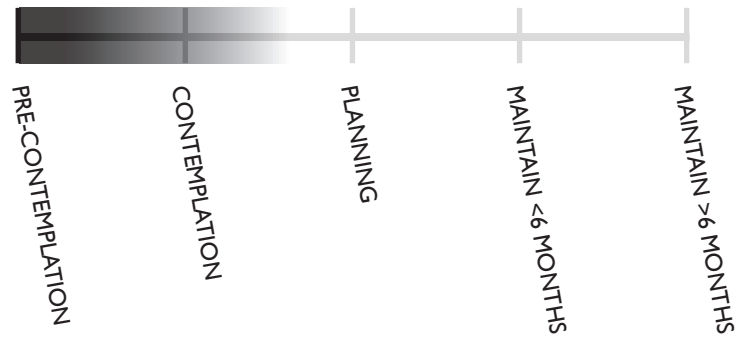
No survey respondents rode a bike to the station in Norwood. There were six people who said they were planning or contemplating biking in the future (interested bikers), as summarized in Table 7. However, the vast majority of station users are in the pre-contemplation stage.

Many of the road widths in Norwood make it difficult to add dedicated bike lanes. Further, the geographic shape of the borough, tall and thin, makes it difficult to create a connected network of bike facilities wholly within the borough.

STRATEGY: Construct formal bike parking and pursue developing a multi-municipal bike infrastructure plan to encourage interested bikers.

With this in mind, the following actions are recommended:

- Install bike parking on both sides of the station. Two survey respondents indicated that the lack of bike parking was a reason not to bike to the station.



- Construct a neighborhood greenway on Cleveland Avenue to Welcome Avenue to connect neighborhoods to the south of the station.
- Develop a multi-municipal bike plan with surrounding boroughs that will help create a connected network for better access to Norwood Station and surrounding stations. For example, South Avenue, shown in Figure 8, is a good candidate for a protected bike lane, but it is outside of the borough.

Table 7. Mode and Trip Purpose for Survey Respondents at Norwood Station

NORWOOD		Regular bikers		Interested bikers		Everyone else	
What is the main purpose of your trip today?		n	%	n	%	n	%
	Go to/from School			1	16.7%	7	7.8%
	Go to/from Work			5	83.3%	81	90%
	Medical/Dental					1	1.1%
	Other					1	1.1%
	Personal Business						
	Shopping						
	Social/Recreational			1	5.3%	1	1.2%
How have you gotten to and from this station in the last two weeks?		n	%	n	%	n	%
	Bus					3	2.9%
	Carpool and park					1	1%
	Drive alone and park			4	44.4%	39	37.8%
	Dropped off			1	11.1%	14	13.6%
	Other					2	2%
	Personal bike						
	Taxi/Lyft/Uber, etc.					1	1%
	Walk			4	44.4%	43	41.8%

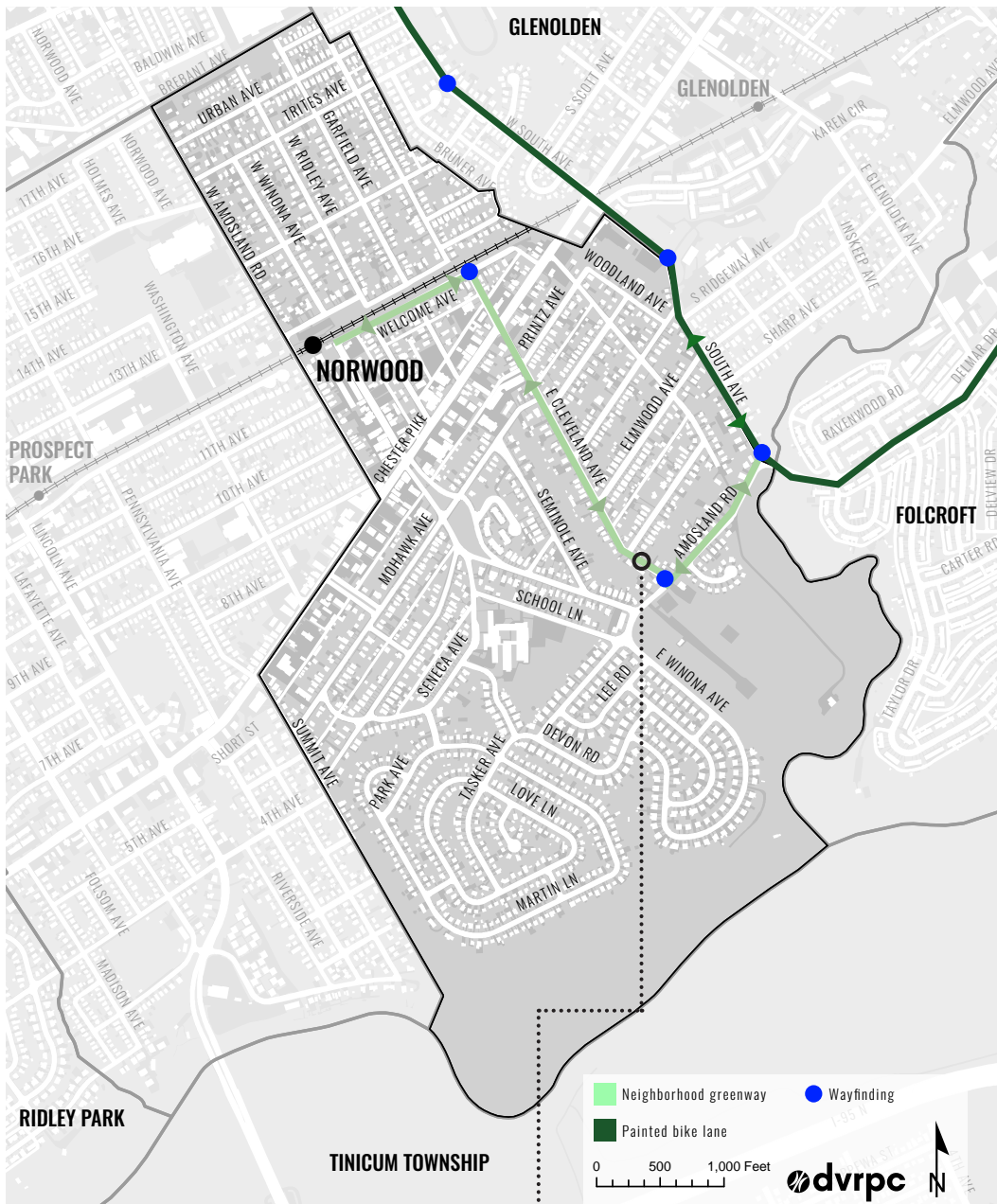
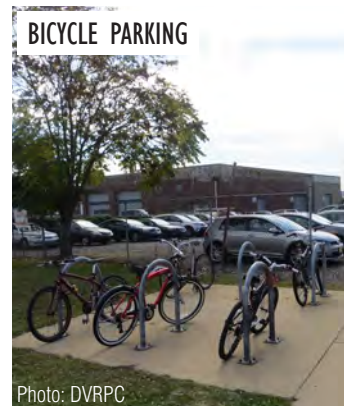


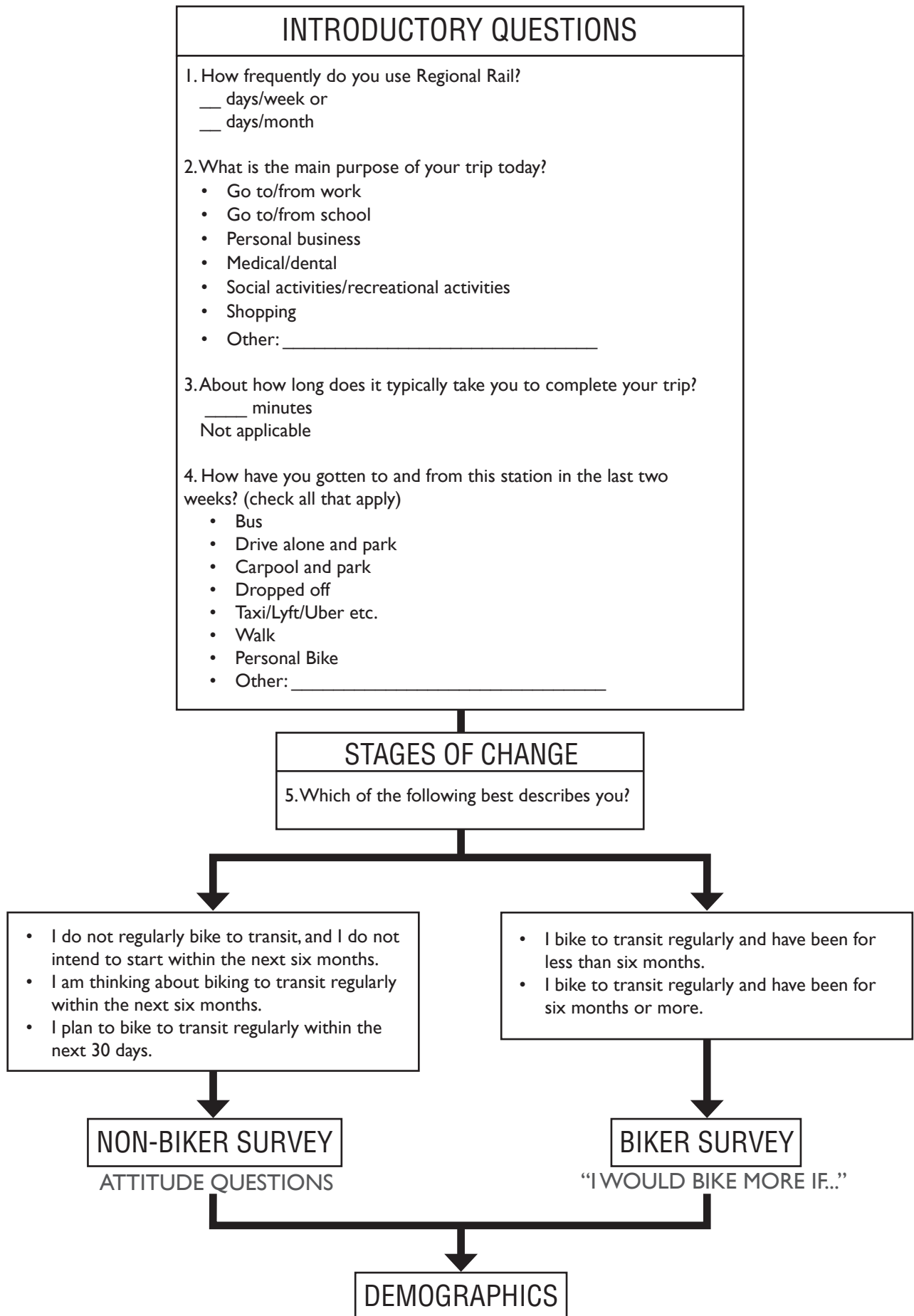
Figure 8. Norwood Bicycle Facility Recommendations

Source: DVRPC



APPENDIX

Figure A-1. Copy of Full Survey



NON-BIKER SURVEY

Vehicle/bike info

6. How would you rate your ability to ride a bicycle?

- I cannot ride a bike at all
- I can ride a bike, but I am not very confident doing so
- I am somewhat confident riding a bike
- I am very confident riding a bike

7. Do you own a bicycle?

- Yes
- No

Attitudes

8. Choose from the following: strongly disagree, disagree, neutral or no opinion, agree, strongly agree

- I'm often in a hurry to be somewhere else
- This country has gone too far in its efforts to protect the environment
- Most drivers don't seem to notice bicyclists
- Owning a car is an important sign of my freedom
- Many bicyclists appear to have little regard for their personal safety
- Getting regular exercise is very important to me
- Bike lanes take up street and sidewalk space that would be better used for other things
- Around here, adults who bicycle for transportation are viewed as odd
- I like the idea of living in a neighborhood where I can walk to the grocery store
- I would bicycle more if my friends/family came with me

BIKER SURVEY

Vehicle/bike info

6. How would you rate your ability to ride a bicycle?

- I cannot ride a bike at all
- I can ride a bike, but I am not very confident doing so
- I am somewhat confident riding a bike
- I am very confident riding a bike

7. Including yourself, how many people in your household hold a driver's license?

Attitudes

8. I would bike more if there was/were... (strongly agree, agree, neutral, disagree, strongly disagree)

- More bicycle parking options
- Better-quality bicycle parking options
- More bicycle lanes or paths
- Better-quality bicycle lanes or paths
- Shower facilities at my destination
- A bike share program available
- An option to bring my bike on the train
- More of my destinations or errands closer to the train station

DEMOGRAPHIC SURVEY

9. Which of the following describes you? (select all that apply)

- Student
- Work full-time
- Work part-time
- Have two or more jobs
- Homemaker/unpaid caregiver
- I do not work/am retired

10. How old are you?

- Under 18 years
- 18–24 years
- 25–34 years
- 35–44 years
- 45–54 years
- 55–61 years
- 62–64 years
- 65 or over

11. What is your gender identity?

- Female
- Male
- Other
- Prefer not to answer

12. Would you describe yourself as...

- American Indian/Native American
- Asian/Pacific Islander
- Black/African American
- Hispanic/Latino
- White/Caucasian
- Prefer not to answer
- Other

13. Knowing more about your general neighborhood will help us put your transportation choices and opinions in context.

Please give your address or, if you prefer, an intersection (two streets that cross) near your home?

- Address:
- City:
- Zip code:

14. Knowing more about where you work/study will help us to understand the transportation options available.

Please give the address or, if you prefer, an intersection (two streets that cross) close to your main work/school location. (N/A if not employed or student)

- Address:
- City:
- Zip code:

15. Please check the category that contains your approximate annual household income:

- Less than \$15,000
- \$15,000 to \$24,999
- \$25,000 to \$34,999
- \$35,000 to \$49,999
- \$50,000 to \$74,999
- \$75,000 to \$99,999
- \$100,000+

16. Including yourself, how many people in your household fall into each of the age groups listed below:

Under 5	___	18+	___
5 to 12	___	13 to 18	___

17. How many automobiles are available to your household?

- None
- One
- Two
- Three or more

Table A-1. Summary of Responses to Bicyclist Survey Questions

Bicyclist Questions		Overall		Swarthmore		Lansdowne	
QA: I would bike more if there were more bicycle parking options	Strongly Agree	3	20%	3	21.4%		
	Agree	4	26.7%	4	28.6%		
	Neutral	6	40%	5	35.7%	1	100%
	Disagree	2	13.3%	2	14.3%		
QB: I would bike more if there were better-quality bicycle parking options	Strongly Agree	2	14.3%	2	15.4%		
	Agree	2	14.3%	2	15.4%		
	Neutral	7	50%	6	46.2%	1	100%
	Disagree	3	21.4%	3	23.1%		
QC: I would bike more if there were more bicycle lanes or paths	Strongly Agree	6	42.9%	5	38.5%	1	100%
	Agree	4	28.6%	4	30.8%		
	Neutral	1	7.1%	1	7.7%		
	Disagree	3	21.4%	3	23.1%		
QD: I would bike more if there were better-quality bicycle lanes or paths	Strongly Agree	6	42.9%	5	38.5%	1	100%
	Agree	3	21.4%	3	23.1%		
	Neutral	3	21.4%	3	23.1%		
	Disagree	2	14.3%	2	15.4%		
QE: I would bike more if there were shower facilities at my destination	Strongly Agree	4	28.6%	4	30.8%		
	Agree	4	28.6%	4	30.8%		
	Neutral	4	28.6%	3	23.1%	1	100%
	Disagree	2	14.3%	2	15.4%		
QF: I would bike more if a bike share program were available	Strongly Agree	3	23.1%	3	25%		
	Agree	1	7.7%	1	8.3%		
	Neutral	4	30.8%	3	25%	1	100%
	Disagree	5	38.5%	5	41.7%		
QG: I would bike more if there were an option to bring my bike on the train	Strongly Agree	4	30.8%	4	33.3%		
	Agree	3	23.1%	3	25%		
	Neutral	1	7.7%	1	8.3%		
	Disagree	5	38.5%	4	33.3%	1	100%
QH: I would bike more if more of my destinations were closer to the train station	Strongly Agree	1	7.7%	1	8.3%		
	Agree	3	23.1%	3	25%		
	Neutral	4	30.8%	4	33.3%		
	Disagree	5	38.5%	4	33.3%	1	100%

Note. No respondent indicated that they were a cyclist at Norwood.

Table A-2. Summary of Responses to Non-Biker Survey Questions

Non-Bike Questions		Overall		Swarthmore		Lansdowne		Norwood	
QA: I'm often in a hurry to be somewhere else	Strongly Agree	42	14.6%	16	16%	13	13.5%	13	14.1%
	Agree	108	37.5%	41	41%	33	34.4%	34	37%
	Neutral	48	16.7%	20	20%	13	13.5%	15	16.3%
	Disagree	80	27.8%	20	20%	33	34.4%	27	29.4%
	Strongly Disagree	10	3.5%	3	3%	4	4.2%	3	3.3%
QB: This country has gone too far in its efforts to protect the environment	Strongly Agree	3	1.1%	1	1%	2	2.1%		
	Agree	11	3.8%	3	3%	5	5.2%	3	3.3%
	Neutral	28	9.8%	6	6.1%	6	6.3%	16	17.4%
	Disagree	124	43.2%	35	35.4%	46	47.9%	43	46.7%
	Strongly Disagree	121	42.2%	54	54.6%	37	38.5%	30	32.6%
QC: Most drivers don't seem to notice bicyclists	Strongly Agree	39	13.6%	14	14.1%	18	18.8%	7	7.7%
	Agree	140	49%	49	49.5%	41	42.7%	50	55%
	Neutral	61	21.3%	24	24.2%	20	20.8%	17	18.7%
	Disagree	45	15.8%	12	12.1%	16	16.7%	17	18.7%
	Strongly Disagree	1	0.4%			1	1%		
QD: Owning a car is an important sign of my freedom	Strongly Agree	50	17.6%	8	8.2%	22	22.9%	20	22.2%
	Agree	105	37%	38	38.8%	27	28.1%	40	44.4%
	Neutral	71	25%	29	29.6%	22	22.9%	20	22.2%
	Disagree	53	18.7%	20	20.4%	24	25%	9	10%
	Strongly Disagree	5	1.8%	3	3.1%	1	1%	1	1.1%
QE: Many bicyclists appear to have little regard for their personal safety	Strongly Agree	14	5%	2	2.1%	6	6.4%	6	6.8%
	Agree	68	24.4%	19	19.6%	27	28.7%	22	25%
	Neutral	63	22.6%	21	21.7%	23	24.5%	19	21.6%
	Disagree	118	42.3%	48	49.5%	32	34%	38	43.2%
	Strongly Disagree	16	5.7%	7	7.2%	6	6.4%	3	3.4%
QF: Getting regular exercise is very important to me	Strongly Agree	102	37.2%	39	41.5%	36	38.7%	27	31%
	Agree	149	54.4%	50	53.2%	45	48.4%	54	62.1%
	Neutral	13	4.7%	4	4.3%	6	6.5%	3	3.5%
	Disagree	9	3.2%	1	1.1%	5	5.4%	3	3.5%
	Strongly Disagree	1	0.4%			1	1.2%		
QG: Bike lanes take up street and sidewalk space that would be better used for other things	Strongly Agree	3	1.1%	1	1.1%	1	1.1%	1	1.2%
	Agree	16	6%	1	1.1%	12	13%	3	3.5%
	Neutral	24	8.9%	5	5.6%	13	14.1%	6	6.9%
	Disagree	176	65.4%	58	64.4%	52	56.5%	66	75.9%
	Strongly Disagree	50	18.6%	25	27.8%	14	15.2%	11	12.6%
QH: Around here, adults who bicycle for transportation are viewed as odd	Strongly Agree	1	0.4%	1	1.1%				
	Agree	29	10.8%	5	5.6%	11	12%	13	14.9%
	Neutral	28	10.4%	6	6.7%	9	9.8%	13	14.9%
	Disagree	175	65.1%	60	66.7%	61	66.3%	54	62.1%
	Strongly Disagree	36	13.4%	18	20%	11	12%	7	8.1%
QI: I like the idea of living in a neighborhood where I can walk to the grocery store	Strongly Agree	86	32.3%	37	42.1%	32	35.2%	17	19.5%
	Agree	161	60.5%	48	54.6%	53	58.2%	60	69%
	Neutral	14	5.3%	2	2.3%	5	5%	7	8.1%
	Disagree	4	1.5%	1	1.1%	1	1.1%	2	2.3%
	Strongly Disagree	1	0.4%					1	1.2%
QJ: I would bicycle more if my friends/family came with me	Strongly Agree	11	4.15%	4	4.6%	4	4.4%	3	3.5%
	Agree	76	28.7%	26	29.9%	21	23.1%	29	33.3%
	Neutral	50	18.9%	15	17.2%	22	24.2%	13	14.9%
	Disagree	119	44.9%	41	47.1%	39	42.9%	39	44.8%
	Strongly Disagree	9	3.4%	1	1.2%	5	5.5%	3	3.5%

STATION/STOP AREA CHECKLISTS

This checklist is designed to help evaluate whether or not a transit stop/station and the area immediately surrounding it are bike-friendly. It can be used during planning processes led by transit agencies or cities/counties that have an interest in facilitating more combined bike + transit trips.

OUTSIDE THE STOP OR STATION

- Is there a safe way to reach the stop or station by bike?
 - Do any of the streets near the stop or station have bikeways?
 - Do you feel safe crossing the streets immediately adjacent to the stop or station on a bike?
- Is there signage leading bicyclists to the stop or station?
- Do you have to cross the path of cars or buses to enter the station on a bike?
 - If Yes, are crosswalks, green conflict markings, and appropriate signs and signals provided?
- Is there room on the sidewalks and paths leading to the stop or station for you to walk with our bike?
- Is it easy to roll a bike from the street to the sidewalk and enter the station without lifting the bike?

INSIDE THE STATION / AT THE STOP

- If there are multiple station levels, is it easy to roll a bike between them?
 - Is there a ramp?
 - Is there a functioning elevator?
 - Is there a wheel channel on the staircase?
- Are there visible and clear signs leading to bike parking, elevators or ramps?
- Is it easy to roll a bike through the fare gate/turnstile (for rail stations)?
- Is there a clear and level waiting area?
- Are there objects like benches or trash cans obstructing movement on the waiting area?
- Is there space at the waiting area to lean a bike so the bicyclist doesn't have to hold it?
- Does the waiting area have information about where bikes go on the transit vehicle?

BIKE PARKING

- Is there bike parking?
 - Are there bikes locked up to objects that are not bike racks? How Many?
 - Is the parking immediately visible?
 - Is the rack designed to create at least two points of contact with a bicycle frame?
 - Is the parking one of the "good" styles shown at the bottom of this page?
 - Is the rack far enough away from walls, other bike racks, and other obstacles?
 - Is the parking protected from weather?
 - Is the parking area well lit?
 - Is bike parking offered both inside + outside the fare gate (for rail stations)?

Figure A-2. Station Checklist

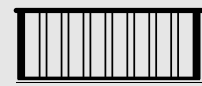
Source: Atlanta Regional Council *Bike to Ride: An Idea Book of Regional Strategies for Improving Bicycling Access to Transit*

Bike Parking Examples

GOOD



BAD

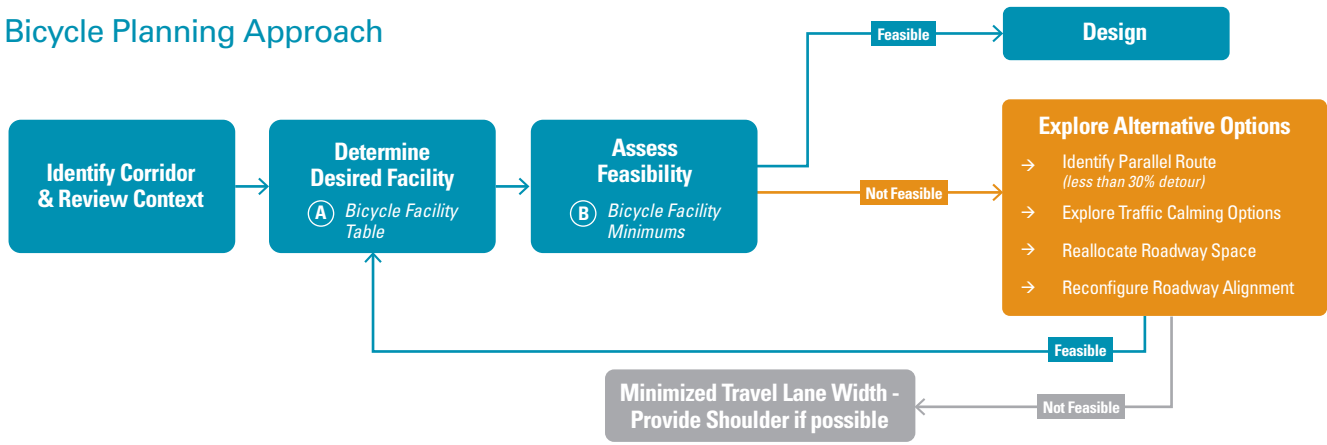


Graphics courtesy Association of Pedestrian and Bicycle Professionals *Essentials of Bike Parking Report (2015)*

Figure A-3. Bike Parking Examples

Source: Atlanta Regional Council *Bike to Ride: An Idea Book of Regional Strategies for Improving Bicycling Access to Transit*

Bicycle Planning Approach



A Bicycle Facility Table

ADT	85TH PERCENTILE SPEED ¹						
	≤ 20	25	30	35	40	45	≥50
≤ 2,500	ABCDEF	A ² BCDEF	CDEF	CDEF	CDEF	DEF	F
2,500–5,000	BCDEF	BCDEF	CDEF	CDEF	DEF	DEF	F
5,000–10,000	B ³ CDEF	B ³ CDEF	CDEF	DEF	DEF	EF	F
10,000–15,000	DEF	DEF	DEF	DEF	EF	EF	F
≥15,000	DEF	DEF	DEF	EF	EF	F	F

A: Shared Street/Bicycle Boulevard **B:** Shared-lane Markings **C:** Bicycle Lane **D:** Buffered Bicycle Lane
E: Separated Bicycle Lane **F:** Shared-use Path

¹If data not available, use posted speed

²Bicycle boulevards are preferred at speeds ≤25 mph

³Shared-lane markings are not a preferred treatment with truck percentages greater than 10%

Figure A-4. Bicycle Facility Planning Guidance

Source: New Jersey Department of Transportation Complete Streets Design Guide, 2017

ASSESSING OPENNESS TO BIKING TO TRANSIT AT THREE REGIONAL RAIL STATIONS IN DELAWARE COUNTY

Publication Number:

17017

Date Published:

March 2020

Geographic Area Covered:

Delaware County, Swarthmore, Lansdowne, Norwood

Key Words:

Biking, Transit, Surveys, Bike-to-transit trips

Abstract:

In an effort to improve intermodal trips that include biking to Regional Rail in Delaware County, the Delaware Valley Regional Planning Commission (DVRPC) examined bicycle usage and openness to biking through in-person surveying and existing conditions analysis at three Regional Rail stations. These efforts were to better understand the habits and preferences of existing and potential bike-to-transit users, in order to identify and prioritize improvements that can be made to increase bike-to-transit trips.

DVRPC worked with Delaware County to select three stations to include in the study: Swarthmore, Lansdowne, and Norwood. The findings inform strategies that will better accommodate and encourage current and future cyclists. These strategies include education and encouragement campaigns that are informed by the interest in or regularity with which riders bike to each station, as well as common attitudinal perspectives at each station, and infrastructure interventions.

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