



# BIKEPATERSON: BUILDING A BETTER CITY

CITY OF PATERSON, PASSAIC COUNTY, NEW JERSEY

JANUARY 2024







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## **PHOTO AND IMAGE CREDITS**

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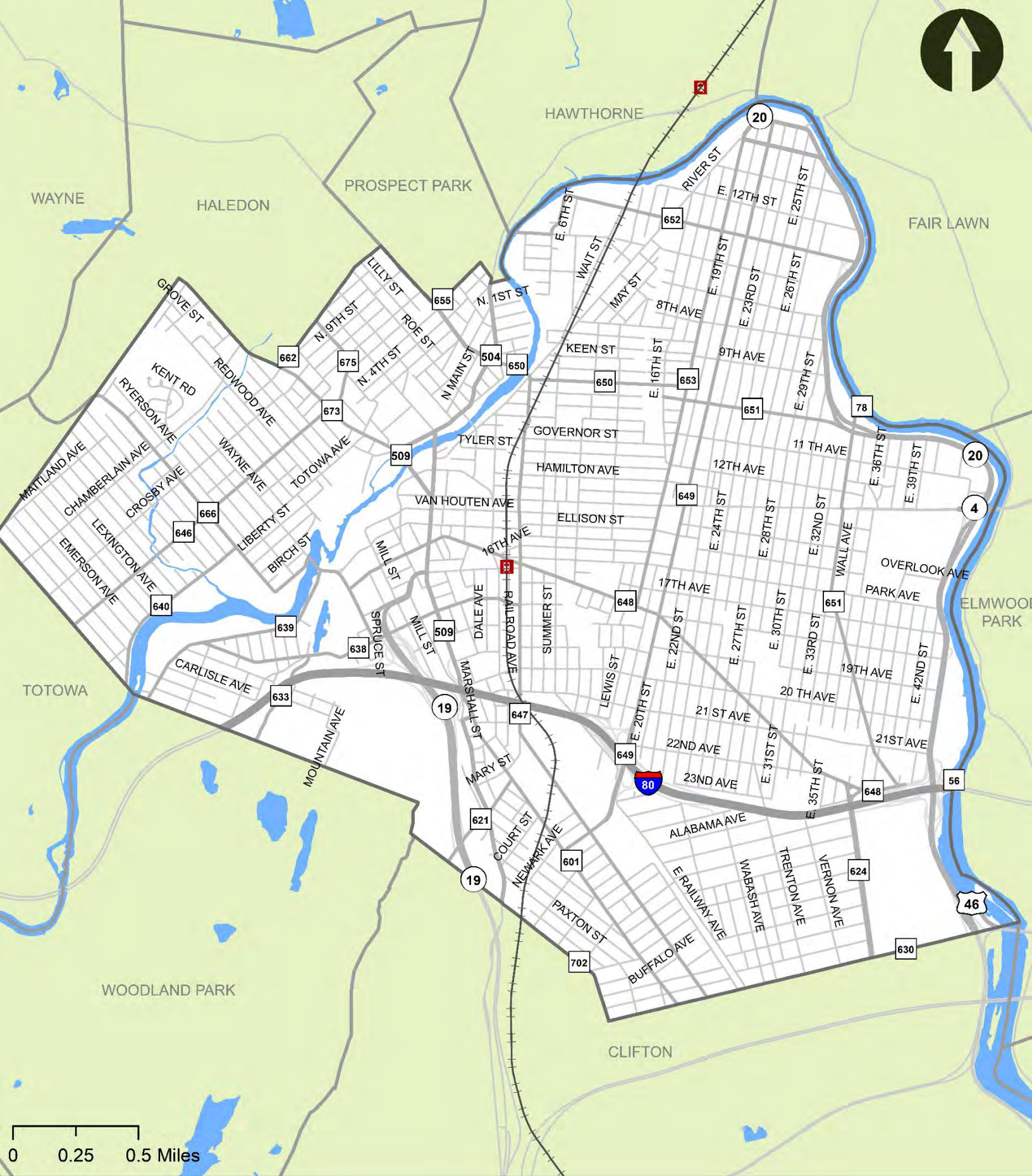


Figure 1: City of Paterson, Passaic County, New Jersey

**Legend**

-  NJ Transit Station
-  NJ Transit Rail Line
-  Water Body





## BIKE Paterson: Building a Better City

The City of Paterson is excited to present its first bicycle master plan. BIKE Paterson establishes a vision and blueprint to guide bicycle improvement projects and programs throughout the city.

In many ways Paterson is an ideal location for bicycling with its high population density, diverse street network, and wide variety of bicycle trip generators and destinations. But the city's roadway network currently affords limited opportunities for, and many constraints to, a safe, accessible, low-stress bicycling experience. Equity is a significant concern for Paterson, and a robust and accessible bicycle network can address equity issues by improving safety and mobility for all city residents, workers and visitors.

BIKE Paterson was developed as a companion piece to BIKE Passaic County and utilized the same community engagement and technical assessment tools. It also makes use of the BIKE Passaic County Pattern Book to provide general design guidance appropriate to the Paterson context.

BIKE Paterson was funded through the New Jersey Department of Transportation's Local Bicycle and Pedestrian Planning Assistance Program.

### Why BIKE Paterson?

Bicycling provides many health, economic, and environmental benefits.

**Healthy:** Bicycling is good for individual and community health.

Bicycling improves mental well-being, strengthens your immune system, and can reduce heart disease, diabetes, and cancer risk.

Bicycling is also a sustainable, zero-carbon transportation option that can reduce motor vehicle use and emissions, air pollution, and asthma rates, as well as help combat climate change.

**Affordable:** Bicycling is one of the least expensive forms of transportation.

Lower-income households generally spend a larger portion of their income on transportation, and bicycling can help reduce the burden of household transportation costs.

**Accessible:** Bicycling is accessible to people of all ages.

Bicycling can increase access to neighborhood destinations such as schools, parks, recreation centers, and shops.





Improved cycling infrastructure would benefit many, as almost one-third of Paterson's households do not own a motor vehicle, while about 40% of households own only one. A quarter of the population is under 18 and cannot drive.

Bicycling can also provide door-to-door convenience and reduce the need to find and pay for car parking.

## Planning Context

The City of Paterson has a long and proud history. Founded in 1792 by Alexander Hamilton as the first planned industrial city in the United States, manufacturers harvested the power of the Great Falls of the Passaic River to power a host of mills and factories, and turned Paterson into an economic and industrial powerhouse.

The city has always been a home for immigrant communities. Its mills and factories needed workers and skilled labor, and Paterson was a destination for newcomers looking for work. People from all over the world continue to come to Paterson even though much of the industry and manufacturing have left.

Paterson's natural features, such as rivers and hills, along with man-made railroads and highways, have constrained bicycle mobility and access. Traffic congestion, heavy trucks, poor roadway conditions, lack of lighting, aggressive drivers, and safety concerns have also discouraged people from bicycling in Paterson.



*Images: SGB Planning LLC*





## Demographics

As the third largest city in New Jersey, and the most populous in Passaic County, Paterson is home to 159,732 residents (as of the 2020 U.S. Census). The city is the ninth most densely populated municipality in New Jersey, with nearly 19,000 persons per square mile, and the most densely populated of the state’s largest cities.

Table 1 (below) illustrates key demographic indicators for Paterson compared to both Passaic County and New Jersey. Paterson has a large population of low-income residents, with more than one-quarter of all households living below the poverty line. More than seventy percent of all households have one- or zero-vehicles; four percent of workers walk to work and nearly nine percent use public transit.

Overall, Paterson inhabitants experience many disadvantages compared to other Passaic County and New Jersey residents: they are much more likely to live in poverty, have limited access to an automobile, be foreign-born, and have limited English proficiency. They are also younger, less educated, and less likely to own their own home. These factors, combined with the density of development and a high walk-to-work travel mode share create a strong potential demand for bicycle travel and infrastructure.

While few residents report that they currently bike to work, the provision of new or improved bicycle facilities may encourage students and commuters, particularly transit users and those that walk to work, to switch modes. This is particularly true of workers who don’t need to travel long distances.

Table 1: Key Demographics, 2020 U.S. Census Data

<b>Demographic Indicator</b>	<b>Paterson</b>	<b>Passaic County</b>	<b>New Jersey</b>
Median Household Income	\$45,141	\$73,562	\$85,245
% Below Poverty Threshold	25.2%	16.9%	10.2%
% Zero-Car Households	31.4%	15.9%	11.2%
% One-Car Households	40.6%	34.7%	33.7%
% Owner-Occupied Housing	26.0%	52.3%	64.0%
Median Age	33.4	37.3	40.0
% Population under 18	27.0%	23.7	21.8%
% Foreign Born	42.5%	30.6%	22.7%
% Adults with High School Diploma or Less	63.7%	47.7%	37.4%
% of Workers that Walk to Work	4.2%	3.8%	2.6%
% of Workers that Bike to Work	0.036%	0.23%	0.28%
% of Workers that use Public Transit to Work	8.64%	7.85%	10.8%



## Overburdened Communities - Equity Considerations<sup>i</sup>

New Jersey's groundbreaking Environmental Justice Law, N.J.S.A. 13:1D-157, requires the evaluation of the contributions of transportation and other facilities to existing environmental and public health stressors in overburdened communities when reviewing certain permit applications.

Overburdened communities (OBC) are defined as having high percentages of residents who are minorities, earn low- or poverty-level incomes, and/or have limited proficiency in English. Communities with similar demographic characteristics have traditionally borne a disproportionate amount of negative transportation and roadway project impacts and were therefore a priority focus of the BIKE Paterson planning process.

As depicted in Figure 2, almost all of the City of Paterson exceeds the OBC threshold for minority population, and a large portion also exceeds the threshold for low-income; limited English proficiency is also a significant concern.

Consistent with this finding, BIKE Paterson places an emphasis on safe and accessible mobility options for all ages, all abilities, and all incomes. The plan emphasizes bike-walk-transit accessibility, low-cost multimodal and non-motorized improvements, vulnerable road user safety, and quality of life over motor vehicle traffic flow and congestion mitigation.

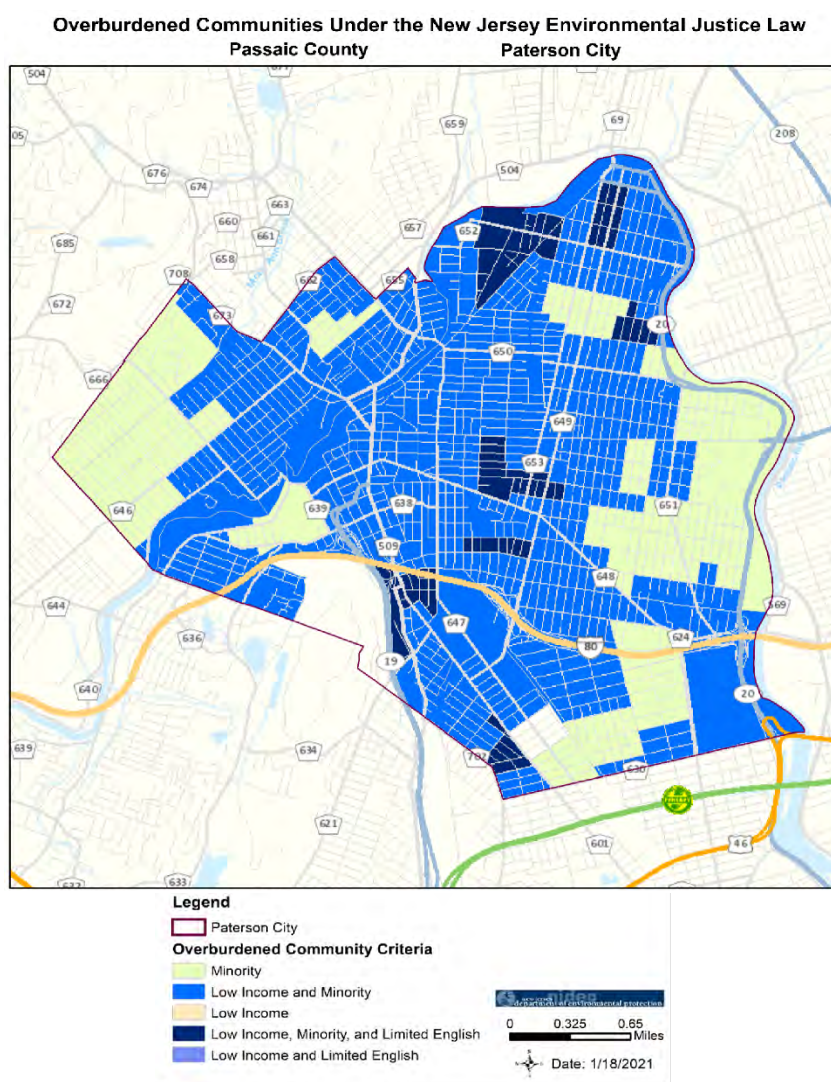


Figure 2. Overburdened Communities, City of Paterson  
Source: NJDEP



## **BIKE Paterson: Vision Statement and Goals**

The vision statement and goals express the community's aspirations and future intentions. BIKE Paterson is guided by the following vision statement:

**Paterson is a bicycle-friendly city where people of all ages and abilities can travel by bicycle on a comfortable, safe, and connected network.**

### **Goal 1: Connectivity**

Support increased access to transit, schools, parks, retail, and jobs.

- Build low-stress bicycle facilities to connect neighborhoods to local destinations.
- Increase bicycle access to transit stations and stops with a focus on first- and last-mile connections.
- Incorporate bicycle facilities and paths into the park system.

### **Goal 2: Safety**

Implement a comfortable and safe network that enables residents of all ages and abilities to bicycle for transportation and exercise.

- Reduce bicycle crashes through the construction of bicycle facilities separated from motor vehicle traffic.
- Promote traffic calming, road diets, and lower speed limits on bicycle routes.
- Combine bicycle improvements with Crime Prevention through Environmental Design (CPTED) principles.
- Prioritize roadway maintenance along the bicycle network.
- Provide fix-it stations in all neighborhoods.

### **Goal 3: Collaboration**

Foster a culture that values and supports bicycling as an essential form of travel.

- Work with the police department and community partners to encourage safe driving, walking and bicycling.
- Collaborate with community groups and organizations to expand open street and bicycling events.
- Continue to support bicycle education in schools through implementation of the Safe Routes to School program.
- Explore bike share or bike library programs.
- Establish an advisory committee representing a diverse range of stakeholders to track progress and ensure that improvements reflect the needs of the community.



#### Goal 4: Implementation

Integrate bicycles into the planning, design, maintenance, and operations of Paterson's streets.

- Utilize pilot projects to build support, understanding, and awareness of bicycle projects.
- Ensure all new development and redevelopment projects include bike parking and consider bicycle access.
- Integrate recommendations into capital improvement projects as well as regular maintenance, including the city's street paving program.
- Utilize the latest design guidelines and standards.
- Integrate BIKE Paterson into the city's Municipal Master Plan.





## Community Engagement

A diversity of outreach and engagement strategies and activities were used to offer a wide range of opportunities for the public to engage in the BIKE Paterson planning process. This section summarizes engagement efforts, comments, and suggestions collected.

Outreach efforts included a project website ([www.bikepaterson.com](http://www.bikepaterson.com)), virtual roundtable discussions, a community survey, and interactive mapping tool.

Project team members also engaged directly with residents in-person at city parks, on the street, and at community events to gather input and local knowledge, and promote participation in the community survey and interactive map.

Due to COVID-19 considerations, social distancing requirements, and on-line fatigue, the engagement process needed to be both flexible and creative. It was important to engage people who did not have internet access as well as those who were hesitant to gather in crowds.

Activities like this weekly flea market at Cianci Street are part of the everyday fabric of life in Paterson.



## What We Heard

"Please make this real, I would like to ride my bike in Paterson."

"Seeing something new in the city for recreational bike riders would be amazing."

"I hope that we can improve the conditions of the roads for biking. I would love to see more bikes and fewer cars."

"Traffic calming has to go into effect for residents to feel more comfortable biking."

"A bike path along the river would be nice."

"This is a great idea. I do not ride my bicycle often because a lack of bicycle parking and bicycle safe routes. Bicycle riders need to be safe in our city."



## Project Website

A project website ([www.bikepaterson.com](http://www.bikepaterson.com)) was used to solicit, gather, and share information about BIKE Paterson. The website included a project overview, timeline, relevant prior studies, a summary of frequently asked questions, a list of the benefits of bicycling, and links to the community survey and interactive map. The website was available in multilingual formats, including English, Spanish, Arabic, and Bengali, and was the primary information hub for this project. There were over 600 visits to the site from almost 400 unique visitors.



## Promotional Materials

Social media posts, flyers, and lawn signs were used to promote the project and encourage residents to participate by completing the survey and interactive map (WikiMap) and attending local events. All promotional materials were available in English, Spanish, Arabic, and Bengali, and they displayed a QR code and a link to the website.





# BikePaterson: A Bicycle Master Plan for the City of Paterson

The City of Paterson and Passaic County are working together to create Paterson's first Bicycle Plan. The Plan will explore ways to improve safety and create connections to support bicycling and enhance mobility for everyone in the community.

## GET INVOLVED

- Share input on a map: [wikimapping.com/Bike-Paterson.html](http://wikimapping.com/Bike-Paterson.html)
- Take the survey: [surveymonkey.com/r/bikepaterson\\_english](http://surveymonkey.com/r/bikepaterson_english)
- Visit the project website: [bikepaterson.com](http://bikepaterson.com)
- Email us at [bikepaterson@gmail.com](mailto:bikepaterson@gmail.com) for more information or to send us your ideas and questions



Scan QR code to access website and all outreach tools



The City of Paterson and Passaic County used their social media channels to encourage participation. *Source: City of Paterson*



Promotional materials were posted in businesses across the city and handed out to residents.



# What People Say About Bicycling in Paterson...



## Barriers to Bicycle More Frequently in Paterson

1. Fear of traffic/fear of being hit by a vehicle
2. Poor road conditions
3. Lack of secure bicycle parking/fear of bicycle theft
4. Lack of developed bicycle routes/lanes
5. Fear of crime/assault/harassment

## Impact of COVID-19 on Transportation Modes

**41%**  
Bike more

**20%**  
Walk more

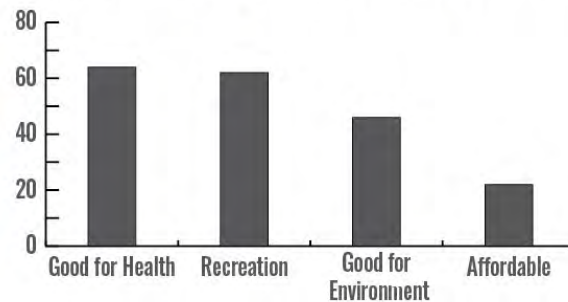
**29%**  
Drive less

**11%**  
Take transit less

**45%** rarely to never bicycle in Paterson, and **39%** are not comfortable/do not feel safe bicycling in Paterson.



## Why is Bicycling Important to You?







## Virtual Engagement

Interactive tools in English and Spanish were launched in October 2020 and available to the public until November 2021. Information gathered from both the survey and map helped shape the plan's vision and goals, the proposed bike network, and policy recommendations.

**When asked, “If you had a magic wand and could do one thing to improve bicycling in Paterson, what would it be?” people responded:**

“I would repair the roads, offer bike share in the parks, and stop the drag racing throughout the city.”

“Bicycle school for adult beginners.”

“Make bicycles more affordable to those who do not yet have one.”

“Make bike-only lanes so that bikers can feel safe and not worry about running into other pedestrians or even other cars.”

“Create more bike parking around Paterson so that bikers can leave their bikes outside/near their destinations. I have been wanting to bike to places like school (JFK high school) and parks but there are no proper bike parking areas that I feel I can safely leave my bike.”

“Enforce traffic laws for cars (e.g., actually stopping at stop signs, no double parking, obey the traffic laws).”

“Slow traffic down. Motorists tear around breaking the speed limit and running stop signs all over the place and they certainly are not looking out for pedestrians or cyclists.”

“Space to ride safely without fear of being hit.”

“Create safe lanes and paths and ban vehicles from entering the parks.”



## Community Survey





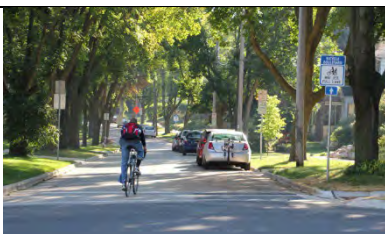
There were 121 survey participants, 1,636 responses, and 164 comments provided. People were asked about their experiences bicycling in Paterson, safety concerns, barriers to bicycle travel, and the types of bicycle improvements they wanted.

Table 2 includes a summary of survey respondents' level of comfort with various types of bicycle facilities that may be applicable to Paterson.

Below is a summary of what we learned.

- Over half of the survey respondents traveled by bike at least a few times per month while one-third never bicycled.
- Almost half of the respondents reported seeing other people bicycling in Paterson daily.
- Four out of ten people reported bicycling more often during COVID-19.
- Three-quarters of survey respondents said they were very or somewhat uncomfortable bicycling on Paterson streets as they are now. Fear of traffic/fear of being hit by a vehicle, poor road conditions, and a lack of secure bicycle parking at destination/fear of bicycle theft were the top factors affecting people's comfort and willingness to bicycle.
- Respondents indicated they would like to see more paths and bike lanes separated from motor vehicle traffic.
- Other improvements that they would like to see include roadway repairs, enforcement of traffic laws, and more bicycle parking, especially in downtown, at schools and parks, at the Great Falls, and along Main Avenue.

Table 2: Level of Comfort with Various Types of Bicycle Facilities

Typical Alignment	Bicycle Facility Type	Very or Somewhat Comfortable	Neutral/ Unsure	Very or Somewhat Uncomfortable
 <p>Source: PBIC</p>	<b>Multi-Use Path/Trail</b>	76%	11%	13%
 <p>Source: NACTO</p>	<b>Buffered Bicycle Lane</b>	74%	8%	18%
 <p>Source: NACTO</p>	<b>Standard Bicycle Lane</b>	36%	24%	41%
 <p>Source: Google</p>	<b>Current Streets</b>	9%	14%	77%
 <p>Source: NACTO</p>	<b>Low-Speed Roads</b>	39%	32%	29%



### Interactive Mapping Tool (WikiMap)

The WikiMap tool enabled participants to identify desired bike routes, areas that are difficult to bicycle and need improvements, as well as places that need bicycle parking. Desired bike routes include Union Avenue, Totowa Avenue, McBride Avenue, Grand Street, Marshall Street, Straight Street, and River Street. Areas in need of bicycle parking include: the NJ TRANSIT train station and the area around Great Falls National Historical Park.

As of January 2022, the WikiMap site had garnered eleven total comments, including seven desired bike routes, one problem bike corridor, and three locations where bike parking is needed. (See Figure 3)

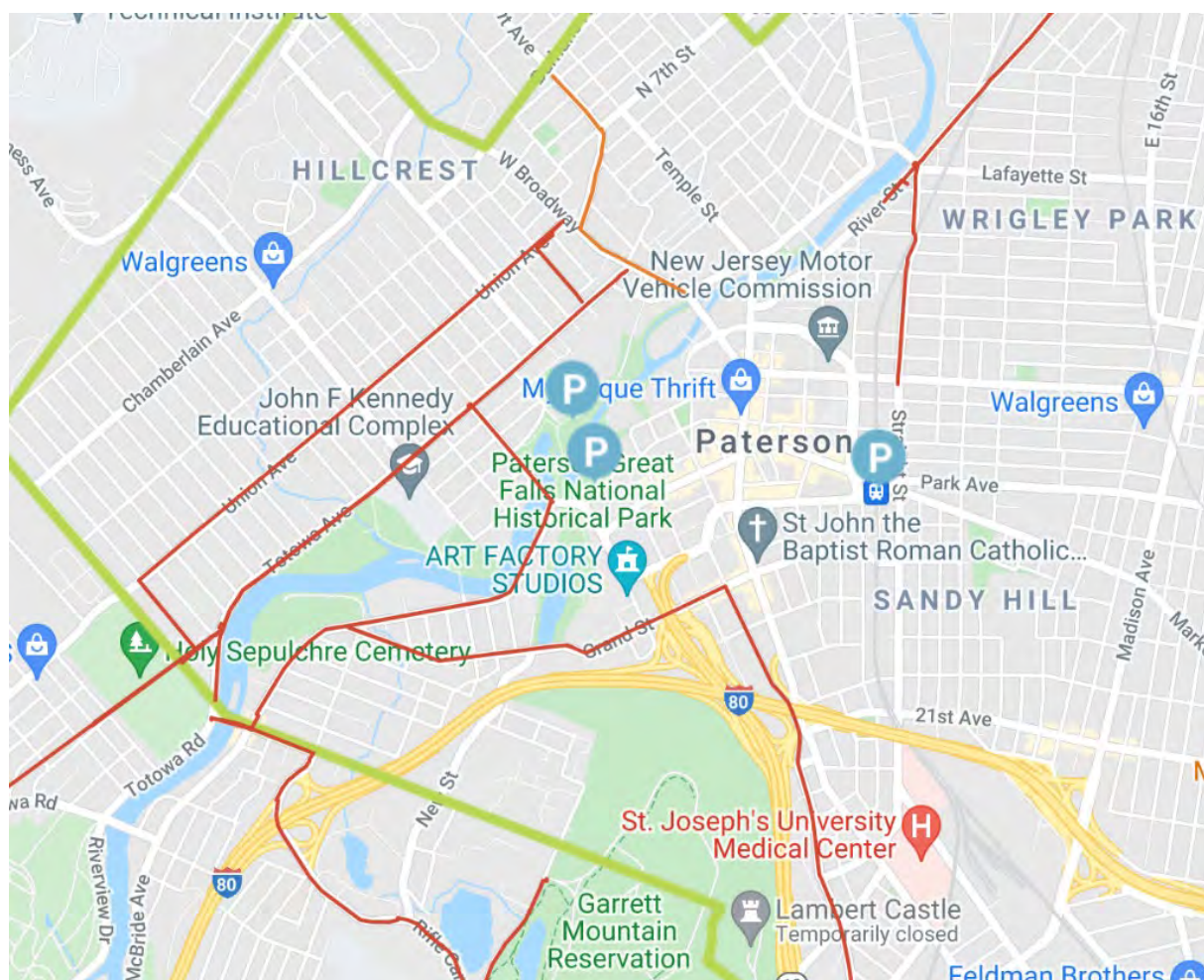


Figure 3: BIKEPaterson WikiMap Comments



## Community Events

The project team attended several outdoor community events to meet with a broad cross-section of people who live and work in Paterson. Project maps and information boards were available at these pop-up meetings, including displays that enabled participants to evaluate how comfortable they would feel bicycling on various types of facilities.

### National Night Out August 3<sup>rd</sup>, 2021

National Night Out is an annual event designed to increase community awareness of local police programs.

BIKEPaterson tables were set up at Roberto Clemente Park (5th Ward) and School 25 Park (6th Ward). Visitors to the event had the opportunity to learn about the project and speak with project team members.



### Great Falls Festival September 5th, 2021

The Great Falls Festival is a free, three-day event hosted by the City of Paterson featuring musical groups, concessions, and other live performances and activities at Overlook Park. The BIKEPaterson booth was located near the main stage. Visitors were able to learn about the project and to provide input on maps and boards.



**First Annual Paterson Green Fair, September 18<sup>th</sup>, 2021**

Presented by the Paterson Green Team, the Green Fair took place in Pennington Park. Members of the community learned about the benefits of bicycling and how to make Paterson a greener city. Hundreds of residents attended this informative event.



**Ride Out for Unity, October 16<sup>th</sup>, 2021**

This free community event was hosted at the skateboard park on 21st Avenue by the Paterson Police, Unity Foundation, Wheel Up Inc., and Brothers United Bicycle Club (BUBC).

The Ride Out event featured opportunities to speak with project team members, take part in skills competitions, participate in a 16-mile bike tour with Paterson Police escort, receive mentoring from BUBC members, and build relationships for future events and projects.



An outcome of this event was a proposed effort to expand the skate park to include a BMX track, install lighting, enlarge the playground, and provide the opportunity for mural painting – all to create an active and safe space for teens and other residents.







## Virtual Roundtable Discussions

The project team conducted two roundtable discussions via the online Zoom platform with community stakeholders representing parks and recreation, youth programming, housing, transportation management, and social service sectors. Roundtable formats provided a valuable opportunity for stakeholders to share their firsthand experiences with and challenges related to bicycling in Paterson. All responses were collected anonymously so that the conversations could remain free and open.

Key takeaways from the discussions included:

### Issues and Problems

- The overall quality of the bicycle environment in Paterson is poor and the existing network is limited.
- Narrow roads, high demand for on-street parking, traffic congestion, speeding, cut-through travel, bicycle theft, lack of storage for bicycles, and crime all present challenges.
- Bicycles are a luxury for many families. They do not have money to buy helmets or replace stolen bikes.
- Many residents who commute to NYC for work are reliant on jitneys and cheap travel options rather than conventional mass transit.

### *Opportunities for Improvement*

- There is latent demand for bicycling in Paterson. In addition to bicycle facilities, there is a need for education on safe road-sharing practices for motorists and bicyclists alike.
- Attendees talked about teenagers and young adults who ride BMX bikes and do tricks in the middle of the street. Some felt the behavior is unsafe but also noted how skilled youth are in the community. This points to demand for something like a BMX bike park.
- Recommendations from the plan need to be grounded in the realities of the city. Imagery and examples should be applicable to the challenges and needs of Paterson. Multilingual, symbols-based signs are essential.
- There is an opportunity to create a bicycle network and reconnect neighborhoods using strategically placed bicycle facilities integrated with local street networks.
- Partnerships with social services and youth programming in the city should be pursued.
- First- and last-mile bicycle and pedestrian connections to transit stops and stations are important to facilitate transit use by city and county workers.
- City streets are overburdened with pass-through traffic. There is a desire to recapture them as part of the local public realm for use by all travel modes.



Private jitney service is an integral part of mobility in Paterson.

Enhanced bicycle mobility could provide much-needed first- and last-mile connections to expand access to travel options.





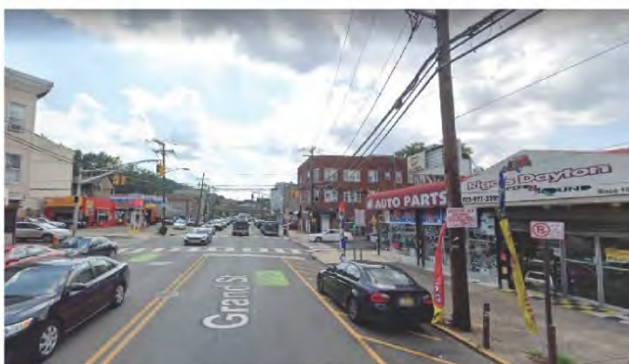
## Key Findings - Community Engagement

- **BIKE Paterson's vision and goals are supported.** A vast majority of those who participated in the plan strongly support its vision and goals to make bicycling safe, convenient, and enjoyable for people of all ages and abilities. Priorities include improved safety, enhanced access and connectivity, and emphasis on equity and vulnerable populations. Many noted that these goals cannot be achieved unless people feel safe and comfortable while bicycling.
- **People would like to bike more.** Half of questionnaire respondents reported bicycling at least a few times per month, but over 90% of them said they would bike more if there were more bicycle lanes, paths, and trails. While most reported that they bicycle for exercise, to enjoy nature, and as a social activity, they also support enhancing bicycle facilities for equity reasons and as an important part of promoting tourism.
- **Barriers to bicycling should be mitigated.** High-speed, high-volume traffic and aggressive motorist behavior prevent people from bicycling more. Poor road conditions including potholes, debris on the road, and overgrown vegetation are also a concern. While some residents indicated they would like to see more people bicycling, there are also concerns that on-street parking demands, existing street designs, high traffic volumes and speeds, and environmental conditions (including terrain) make it challenging to integrate bicycle facilities into existing local and regional street networks.
- **There is a strong preference for bicycle facilities separated from motor vehicle traffic.** Many questionnaire respondents indicated that they prefer bicycling in parks and areas with less traffic. While only 44% of them said they would be comfortable in a standard bicycle lane, 84% indicated they would be comfortable bicycling in a buffered bicycle lane, and 95% said they would be comfortable riding on a bike path or trail. Additional paths and trails were selected as the most desired infrastructure improvement by survey participants.
- **Providing and promoting bicycle related education and events is a priority.** Multiple stakeholders highlighted a need to address both bicycling and driving behaviors and believe that hosting more bike and open streets events would be a great way to encourage bicycling. It was also noted that it is important to support existing bike clubs and organizations that provide bicycle education opportunities.
- **There is a need for consistency and coordination.** Inconsistent enforcement between municipalities of regulations on things like sidewalk riding, helmet use, and bicycle registration causes confusion and may discourage people from bicycling in other communities. Coordination is also necessary to ensure that new bike lanes and paths do not stop at municipal borders.
- **Improved bicycle access and supportive amenities are desired.** People would like to see more secure bicycle parking at destinations, a wayfinding system, and a bike rental or bike-share system.



# BikePaterson: A Bicycle Master Plan for the City of Paterson

The City of Paterson and Passaic County are working together to create Paterson's first Bicycle Plan. Enhancing bicycling conditions can improve access to work and schools, and provide public health benefits. Based on an understanding of destinations, travel patterns, and safety needs, **BikePaterson** will propose a city-wide bicycle network with a goal of improving safety and mobility for all roadway users.



## TELL US WHAT YOU THINK!

- Experiences with bicycling in Paterson
- Concerns about safety
- Locations for bicycle improvements
- Types of bicycle improvements you want to see

## GET INVOLVED

📍 Share input on a map: [wikimapping.com/Bike-Paterson.html](http://wikimapping.com/Bike-Paterson.html)

📄 Take the survey: [surveymonkey.com/r/bikepaterson\\_english](https://surveymonkey.com/r/bikepaterson_english)

🌐 Visit the project website: [bikepaterson.com](http://bikepaterson.com)

✉ Email us at [bikepaterson@gmail.com](mailto:bikepaterson@gmail.com) for more information or to send us your ideas and questions



Scan QR code to access website and all outreach tools



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## Existing Conditions

In order to develop a program of mobility and safety recommendations for the City of Paterson, the project team began by analyzing existing conditions, including available crash data, street network connectivity, trip destinations and attractions. They followed up by performing a Bicycle Level of Traffic Stress (LTS) analysis and collecting related performance measures.

### Crash Analysis

In the six-year period 2014-2019, a total of 803 pedestrian and 222 bicycle crashes were reported: a ratio of about 3.6 to 1. More than one-fifth of these crashes resulted in at least minor injury to the victim(s); 36 resulted in minor injury, 8 resulted in serious injury, and 2 involved a fatality.

Table 3 summarizes available bicycle-related crash data for Paterson and compares it to countywide and statewide bicycle crash statistics. The city is slightly overrepresented in fatal bicycle crashes, as well as serious injury crashes; 62% of the reported bike crashes in Paterson took place on the municipal roadway network, compared to 50% countywide and 47% statewide.

People who walk and bike to get around face many of the same safety risks, including exposure to heavy volumes of motor vehicle traffic, large numbers of trucks, and high travel speeds. Pedestrians and cyclists often lack adequate dedicated infrastructure to separate them from vehicular traffic. Many crashes involving these vulnerable road users are frequently associated with aggressive behaviors by motorists and failure to exercise proper caution during interactions with other roadway users. Crashes that occur under dark conditions may indicate inadequate lighting, which is often noted in crash reports as a contributing factor.

The locations of reported bicycle crashes are depicted in Figure 4. A majority of crash hot spots are located in the downtown area of Paterson, with additional areas of concern along Broadway and Park Avenue, as well as along Getty Avenue in the southern portion of the city. The highest concentration of pedestrian crashes occurred along Main Street, particularly between Memorial Drive and Broadway.

Bicycle crash hotspots are substantially more scattered than those for pedestrians. This suggests that cycling is prevalent in all sections of Paterson and not limited to the central business district. This also implies that bicycle movements are needed throughout the city, not just near the Great Falls or in downtown areas.

In addition to these findings, studies have shown that bicycle and pedestrian crashes are frequently underreported. The actual crash numbers and severity for Paterson may actually be higher than available data indicates.

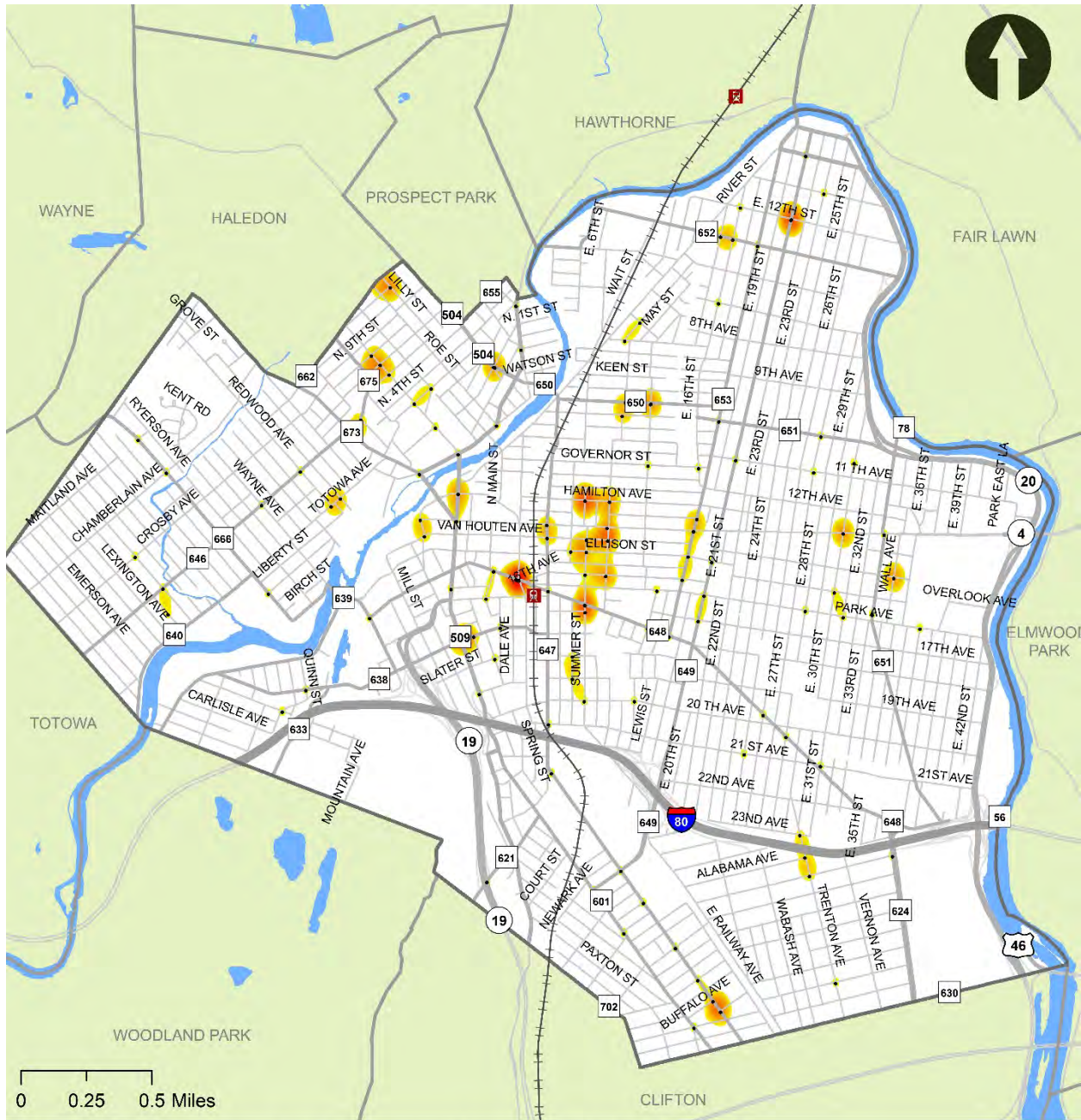


Table 3: City of Paterson Reported Bicycle Crashes (2014-2019)

<b>Comparison of Bicycle Related Crashes (2014-2019)</b>						
	<b>Paterson</b>		<b>Passaic County</b>		<b>New Jersey</b>	
<b>Severity</b>	<b>Count</b>	<b>% of Total</b>	<b>Count</b>	<b>% of Total</b>	<b>Count</b>	<b>% of Total</b>
Fatal	2	0.9%	3	0.5%	85	0.8%
Possible Injury	132	59.5%	315	50.8%	4895	45.1%
Suspected Minor Injury	36	16.2%	152	24.5%	3304	30.4%
Suspected Serious Injury	8	3.6%	16	2.6%	293	2.7%
Property Damage Only	44	19.8%	134	21.6%	2279	21.0%
<b>Total</b>	<b>222</b>	<b>100.0%</b>	<b>620</b>	<b>100.0%</b>	<b>10856</b>	<b>100.0%</b>
<b>Roadway Network</b>	<b>Count</b>	<b>% of Total</b>	<b>Count</b>	<b>% of Total</b>	<b>Count</b>	<b>% of Total</b>
County Road	79	35.6%	295	47.6%	3898	35.9%
Municipal Road	138	62.2%	312	50.3%	5198	47.9%
State Highway	5	2.3%	13	2.1%	1598	14.7%
Other	0	0.0%	0	0.0%	162	1.5%
<b>Total</b>	<b>222</b>	<b>100%</b>	<b>620</b>	<b>100%</b>	<b>10856</b>	<b>100%</b>
<b>Crash Location</b>	<b>Count</b>	<b>% of Total</b>	<b>Count</b>	<b>% of Total</b>	<b>Count</b>	<b>% of Total</b>
At Intersection	128	57.7%	382	61.6%	6174	56.9%
Not at Intersection	94	42.3%	238	38.4%	4682	43.1%
<b>Total</b>	<b>222</b>	<b>100%</b>	<b>620</b>	<b>100%</b>	<b>10856</b>	<b>100%</b>
<b>Roadway Condition</b>	<b>Count</b>	<b>% of Total</b>	<b>Count</b>	<b>% of Total</b>	<b>Count</b>	<b>% of Total</b>
Dry	207	93.2%	565	91.1%	9808	90.3%
Wet	1	0.5%	50	8.1%	966	8.9%
Snowy	0	0.0%	3	0.5%	21	0.2%
Icy	0	0.0%	0	0.0%	7	0.1%
Other	0	0.0%	0	0.0%	13	0.1%
Unkown	14	6.3%	2	0.3%	41	0.4%
<b>Total</b>	<b>222</b>	<b>100%</b>	<b>620</b>	<b>100%</b>	<b>10856</b>	<b>100%</b>
<b>Light Condition</b>	<b>Count</b>	<b>% of Total</b>	<b>Count</b>	<b>% of Total</b>	<b>Count</b>	<b>% of Total</b>
Daylight	146	65.8%	452	72.9%	8011	73.8%
Dusk	9	4.1%	21	3.4%	352	3.2%
Dawn	4	1.8%	7	1.1%	102	0.9%
Dark (no street lights)	2	0.9%	10	1.6%	203	1.9%
Dark (street lights off)	4	1.8%	7	1.1%	79	0.7%
Dark (street lights on, Cont)	49	22.1%	104	16.8%	1649	15.2%
Dark (street lights on, Spot)	8	3.6%	19	3.1%	413	3.8%
Unkown	0	0.0%	0	0.0%	47	0.4%
<b>Total</b>	<b>222</b>	<b>100%</b>	<b>620</b>	<b>100%</b>	<b>10856</b>	<b>100%</b>
<b>Environmental Condition</b>	<b>Count</b>	<b>% of Total</b>	<b>Count</b>	<b>% of Total</b>	<b>Count</b>	<b>% of Total</b>
Clear	209	94.1%	559	90.2%	9691	89.3%
Overcast	7	3.2%	23	3.7%	400	3.7%
Rain	4	1.8%	34	5.5%	658	6.1%
Snow	1	0.5%	3	0.5%	26	0.2%
Other	0	0.0%	0	0.0%	30	0.3%
Unkown	1	0.5%	1	0.2%	51	0.5%
<b>Total</b>	<b>222</b>	<b>100%</b>	<b>620</b>	<b>100%</b>	<b>10856</b>	<b>100%</b>

Note: "Cont" Indicates continuous lighting through the Dark/Nighttime  
 "Spot" indicates ambient or spot lighting only





# Bicycle Crash Hot Spots (2014-2019)

## Legend

- NJ Transit Station
- NJ Transit Rail Line
- Bike Crash
- Water Body

- High Crash Concentration
- Low Crash Concentration

178 Bicycle Crashes (With Documented Location)  
 36 with Minor Injuries  
 8 With Serious Injuries  
 2 Fatalities



Figure 4: Reported Bicycle Crash Hot Spots (2014-2019)

### Speed vs. Crash Occurrence & Severity

The risk of death and serious injury for a pedestrian when they are hit by the driver of a motor vehicle rises significantly with increased vehicle speed, even when the driver is traveling at a moderate speed, according to the *National Traffic Safety Board (2017)*. “Reducing Speeding-Related Crashes involving Passenger Vehicles.”

Many studies have shown that slower motor vehicle speeds exponentially increase the survival rates for both pedestrians and bicyclists who are involved in a collision with a motor vehicle.

As Figure 5 illustrates, a crash that takes place at 30 miles per hour is at least 16-times more likely to result in a fatality than a crash at 20 miles per hour. Consequently, lower speed limits are ideal for roadways heavily travelled by people walking and biking. Studies have also suggested that not only can bicycle infrastructure help slow motorists’ travel speeds but increasing the presence of cyclists and pedestrians has a traffic calming effect as well.<sup>ii</sup>

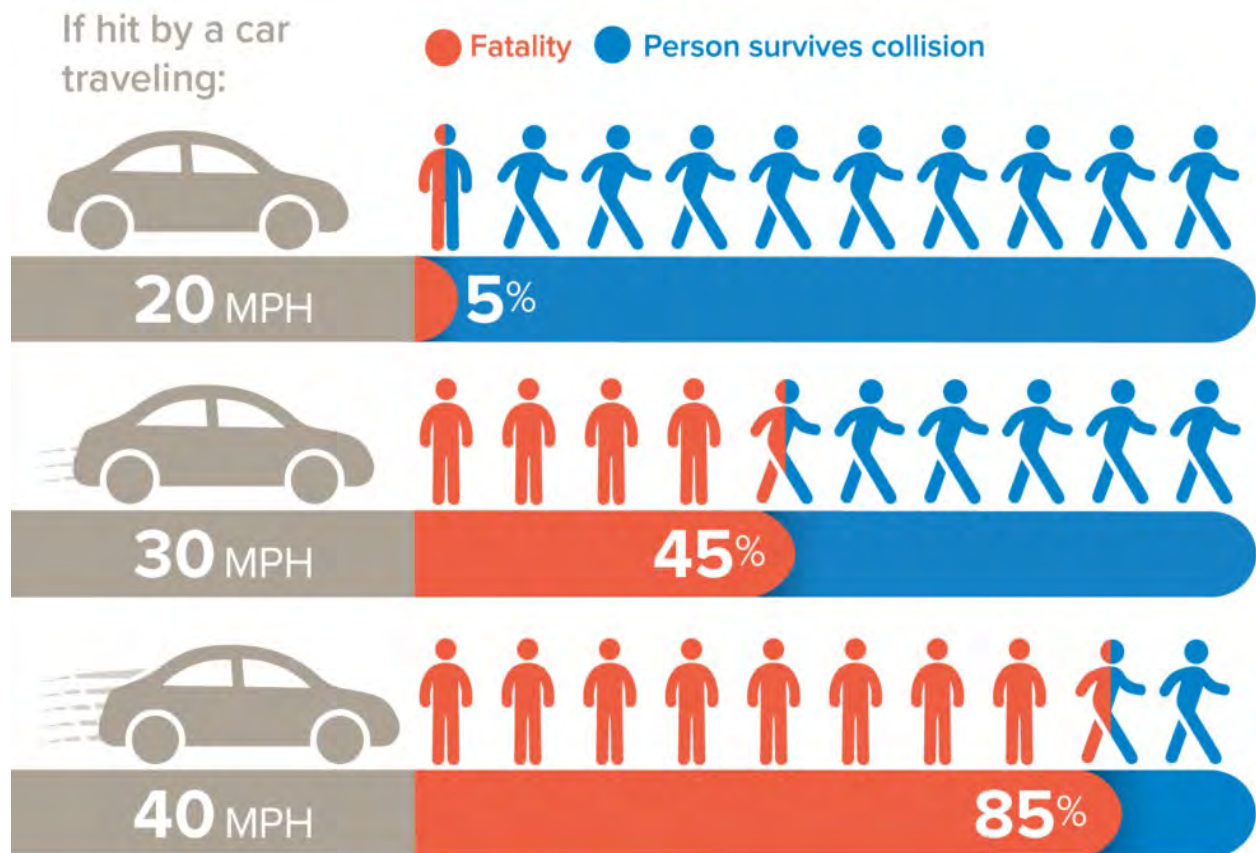


Figure 5: Risk of Fatality and Serious Injury to Pedestrians



## Street Network Assessment

Historical maps of Paterson from the turn of the 20<sup>th</sup> century reveal a robust and well-connected street system, the presence of a strong rail network, and the Morris Canal, indicating a long history of multimodal accessibility in the city. Even today, the roadway network is comprised of local urban streets, which are typically low-speed (25 mph speed limit) and one- or two-lane roadways.

The Great Falls Circulation Study (2016), however, found significant limitations to Paterson's current street network. During the highway-building era of the mid-twentieth century, much of Paterson's local street grid south of Grand Street and west of Main Street was removed and replaced with Interstate 80 and New Jersey Route 19. The alignment of Route 19 leads to high-speed traffic flowing directly onto city streets.

The Circulation Study noted significant volumes of through-traffic and heavy trucks, channeling thousands of regional rush hour trips through Paterson's neighborhoods, past its schools, and across the Great Falls Historic District, diminishing quality of life, safety, and mobility, each and every day.

Left turn opportunities are often limited by the one-way street pattern, and many intersections experience long queues during peak hours.



An awkward and confusing blend of history, industrial heritage, scenic beauty, and highway building looms large over present-day Paterson.



## Trip Destinations and Attractions

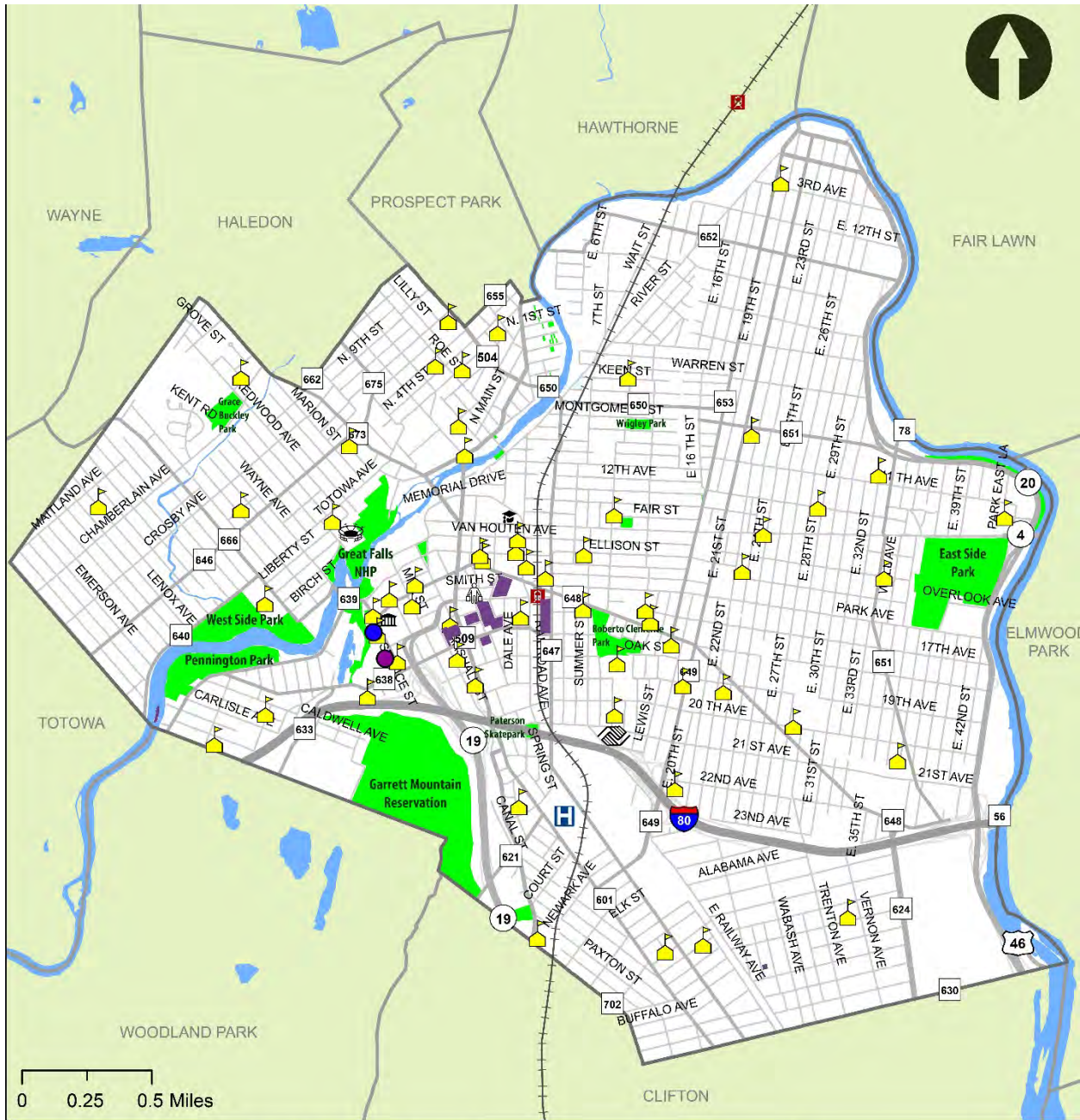
Paterson is a dynamic city with a large population and a diversity of destinations and attractions. The density of the city places many of these destinations within bicycling distance for much of the population.

Figure 6 below illustrates some of the key destinations in the city, while Figure 7 on the following page illustrates the location of these places throughout Paterson. While many of the destinations are clustered around downtown, several parks and the majority of the schools are scattered throughout the city and could benefit greatly from bicycle infrastructure to connect to the rest of the network.



Figure 6: Key Destinations and Attractions in Paterson





# Paterson Trip Destinations and Attractions

## Legend

## Trip Destinations and Attractions

- |                      |                      |                            |                             |
|----------------------|----------------------|----------------------------|-----------------------------|
| NJ Transit Station   | Park                 | NJCDC                      | St. Joseph's Medical Center |
| NJ Transit Rail Line | Government Buildings | Art Factory Studios        | Boys & Girls Club           |
| Water Body           | Paterson Museum      | Hencliff Stadium           | Center City Mall            |
|                      | School               | Passaic Co. Community Col. |                             |



Figure 7: Location of Paterson Trip Destinations and Attractions

## Bicycle Level of Traffic Stress (LTS)

The Bicycle Level-of-Traffic-Stress methodology evaluates a cyclist’s potential comfort level given the current use and design of the roadway. Different cyclists have different tolerances for traffic stress created by traffic volumes, high speeds, and proximity of automobile traffic. The LTS metric is based on the Dutch concept of low-stress bicycle facilities and has proven influential in the advancement of bicycle planning in the United States.

In general, lower stress facilities have increased separation between bike riders and vehicular traffic and/or have lower speeds and lower traffic volumes. Higher stress environments generally involve cyclists riding in close proximity to vehicular traffic, multi-lane roadways, and higher speeds or traffic volumes. The four levels of traffic stress used to evaluate Paterson’s road network are depicted in Figure 8.



Figure 8: The Four Types of Bicyclists by LTS Level *Source: WSP*

As illustrated in Figure 9 on the following page, the high-stress (LTS 3 and LTS 4) roadways within Paterson include those with higher posted and travel speeds and/or higher volumes, including NJ 20, Memorial Drive, Ward Street, Park Street, Market Street, and Getty Avenue. About 30% of all roadways in the city are considered high stress. In addition to traffic volumes and travel speeds, the unique topography in Paterson can also be challenging to cyclists, leaving limited low-stress opportunities, especially for longer trips and more-distant, and dispersed destinations.



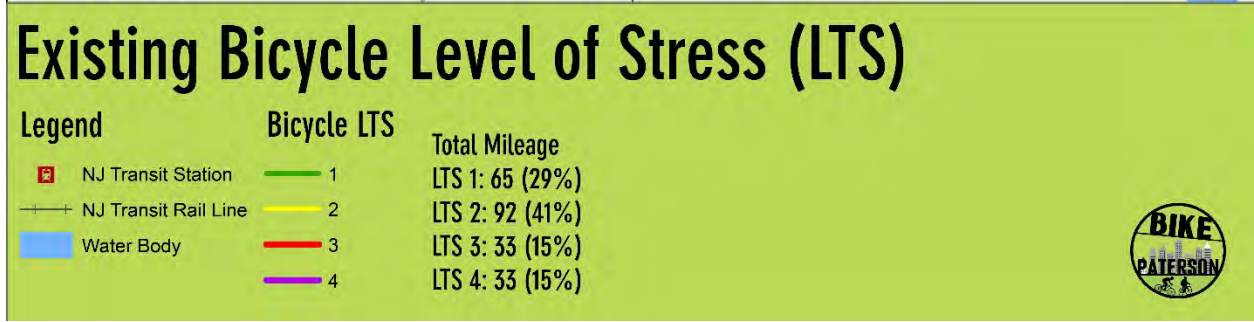
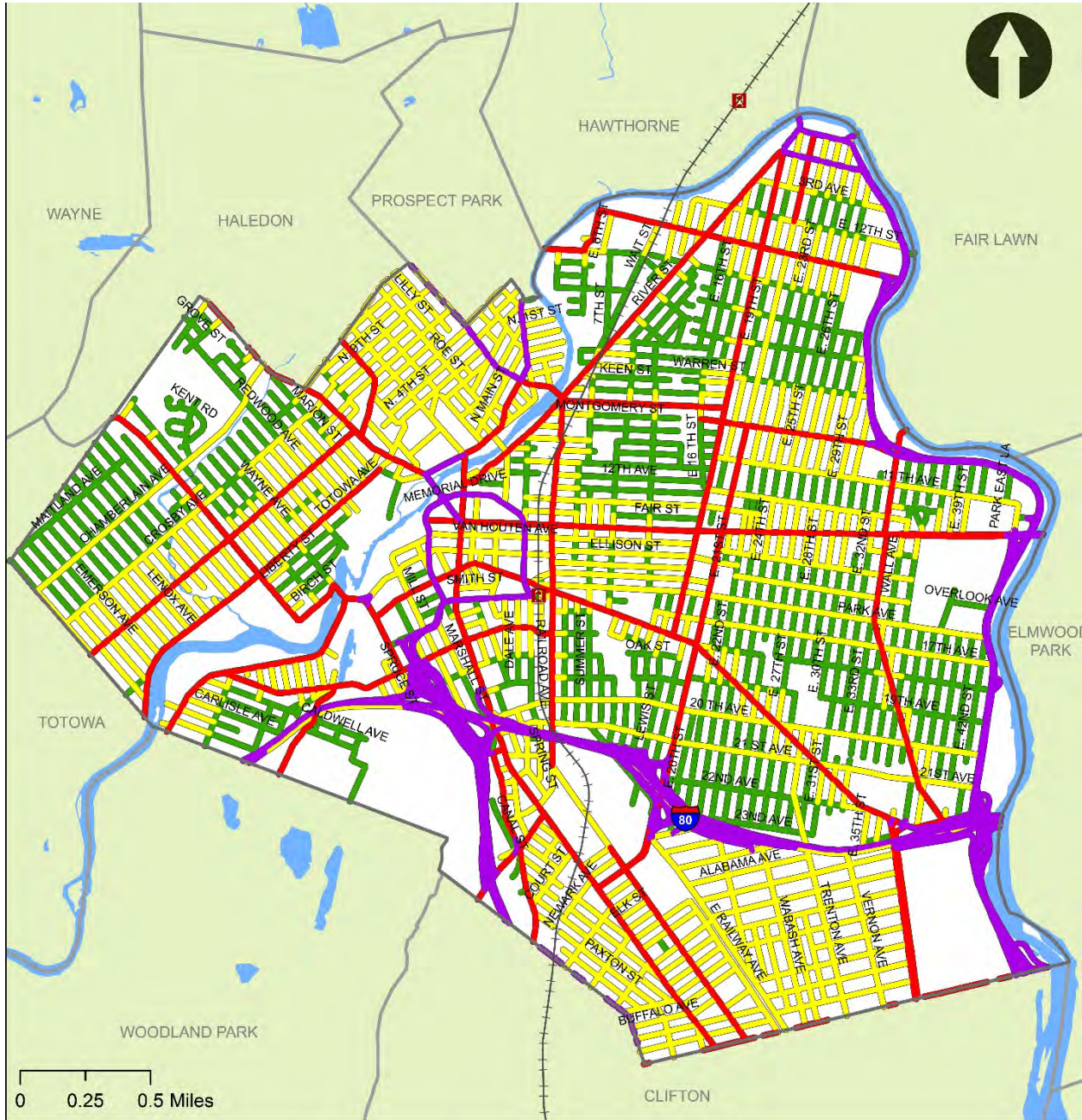


Figure 9: Existing Bicycle Level of Traffic Stress (LTS)





Paterson's well-traveled streets often require cyclists to mix directly with moving traffic.



## Island Effect

The LTS analysis shows that Paterson’s roadway network is heavily fragmented with severe connectivity limitations due to the prevalence of “higher-stress” roadways. This creates numerous small “islands” of isolated low-stress roadways frequently disconnected from adjacent streets and neighborhoods, which results in significant mobility limitations for travel by bicycle.

The result is an “island effect” where cyclists are confined to small areas of low-stress riding, often cut off from the rest of the city. This is consistent with comments and observations from the community engagement effort. Many survey respondents indicated they feel unable or uncomfortable bicycling beyond their own streets and neighborhoods due to safety concerns.

Figure 9 depicts at least ten individual low-stress islands across Paterson’s complex geography and built environment, cut off from each other by areas with high exposure to high traffic volumes, speeds, and large trucks and buses, and aggressive and inattentive driving behaviors.

## Priority Corridors

The Moving Passaic County Transportation Element (2012) introduced the concept of priority (bicycle) corridors. These corridors are considered priority routes for bicycle and pedestrian travel because they strategically link and interconnect the major neighborhoods, districts, and wards of the city, as illustrated in Figure 10. They also serve the essential function of linking residential areas with primary destinations including downtowns and shopping districts, jobs, education, social services, parks, recreation, and more.

However, when applying the LTS analysis to the priority corridors, the data indicate that nearly all of the priority corridors are high-stress roadways. In addition, a majority of crash hot spots occur along and adjacent to the priority network roadways (see composite of priority network, LTS, crash hot spots, and island effect in Figure 12). This results in a high correlation between crash occurrence, high stress network, and the priority corridors.

These conditions reduce the accessibility of the critical destinations, limiting access to better jobs, education, health care, and other essential services, and hampers mobility across Paterson for many residents, workers, and visitors.

The LTS assessment reveals that the City of Paterson will have to look beyond the essential backbone of the priority corridors to adequately meet the everyday access and mobility needs of people traveling by bike.



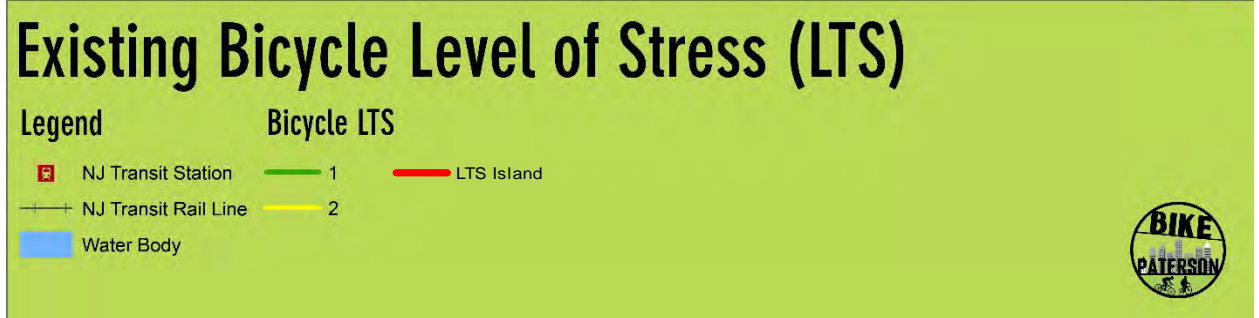
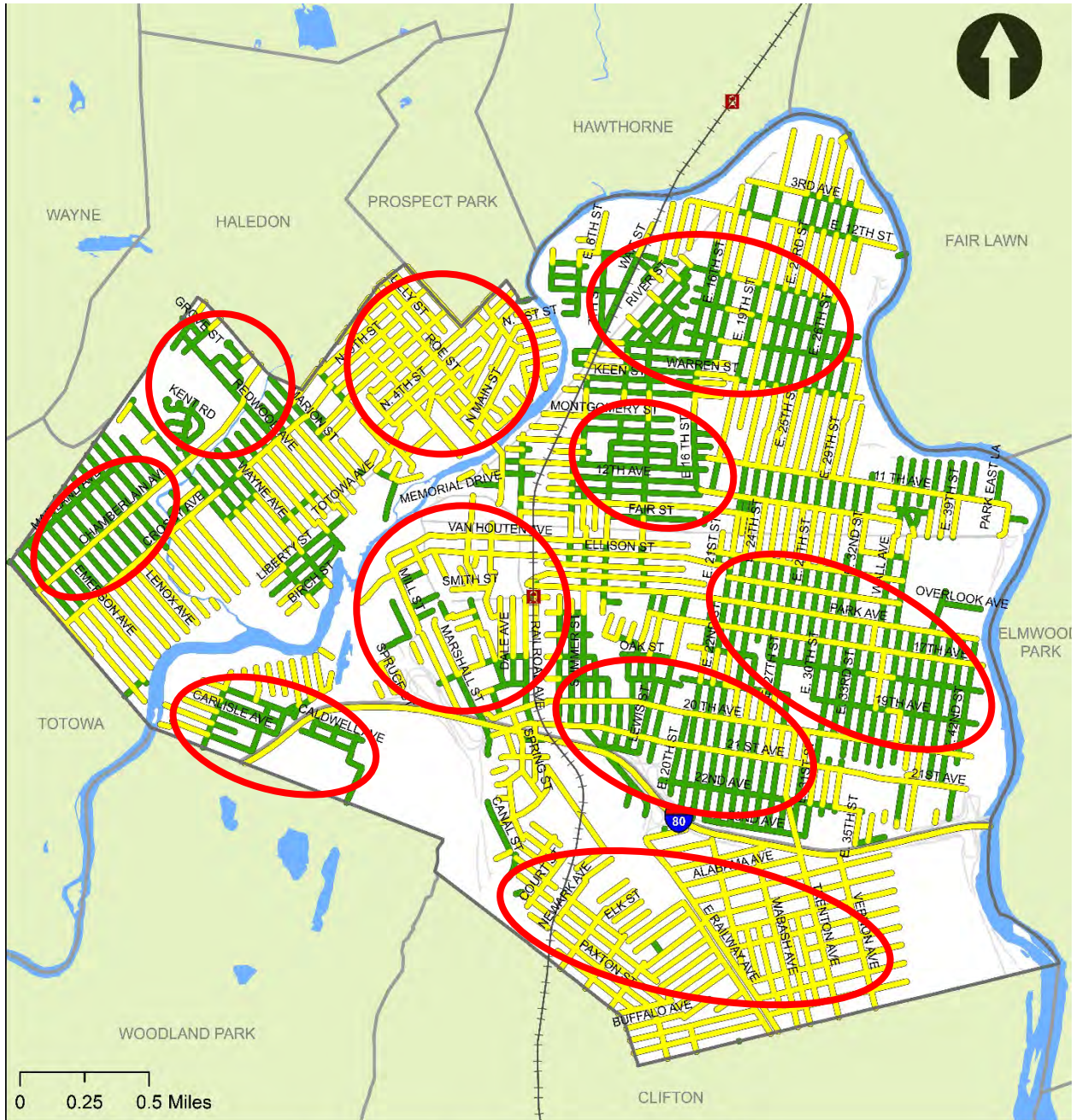
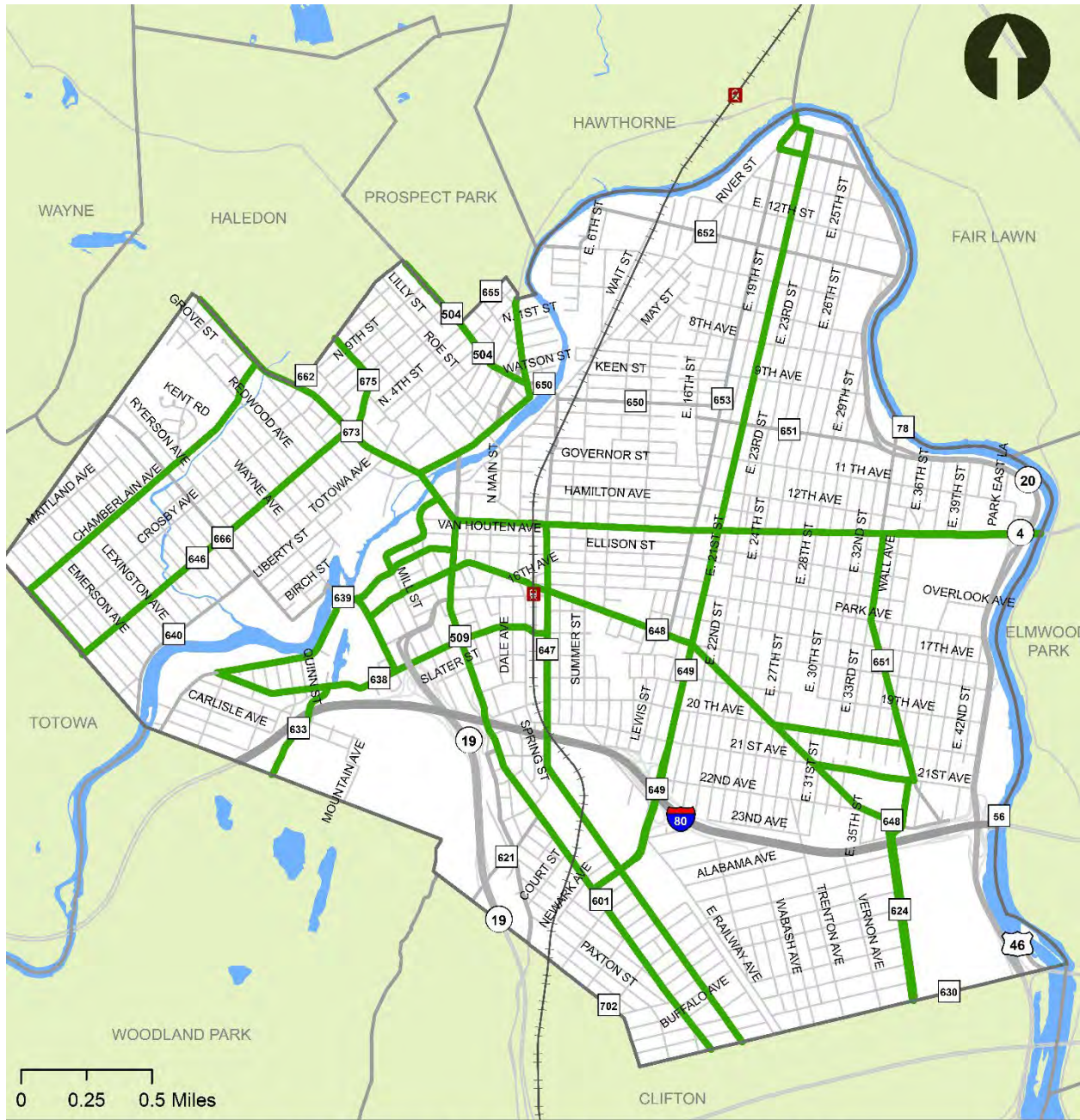


Figure 10: LTS Island Effect





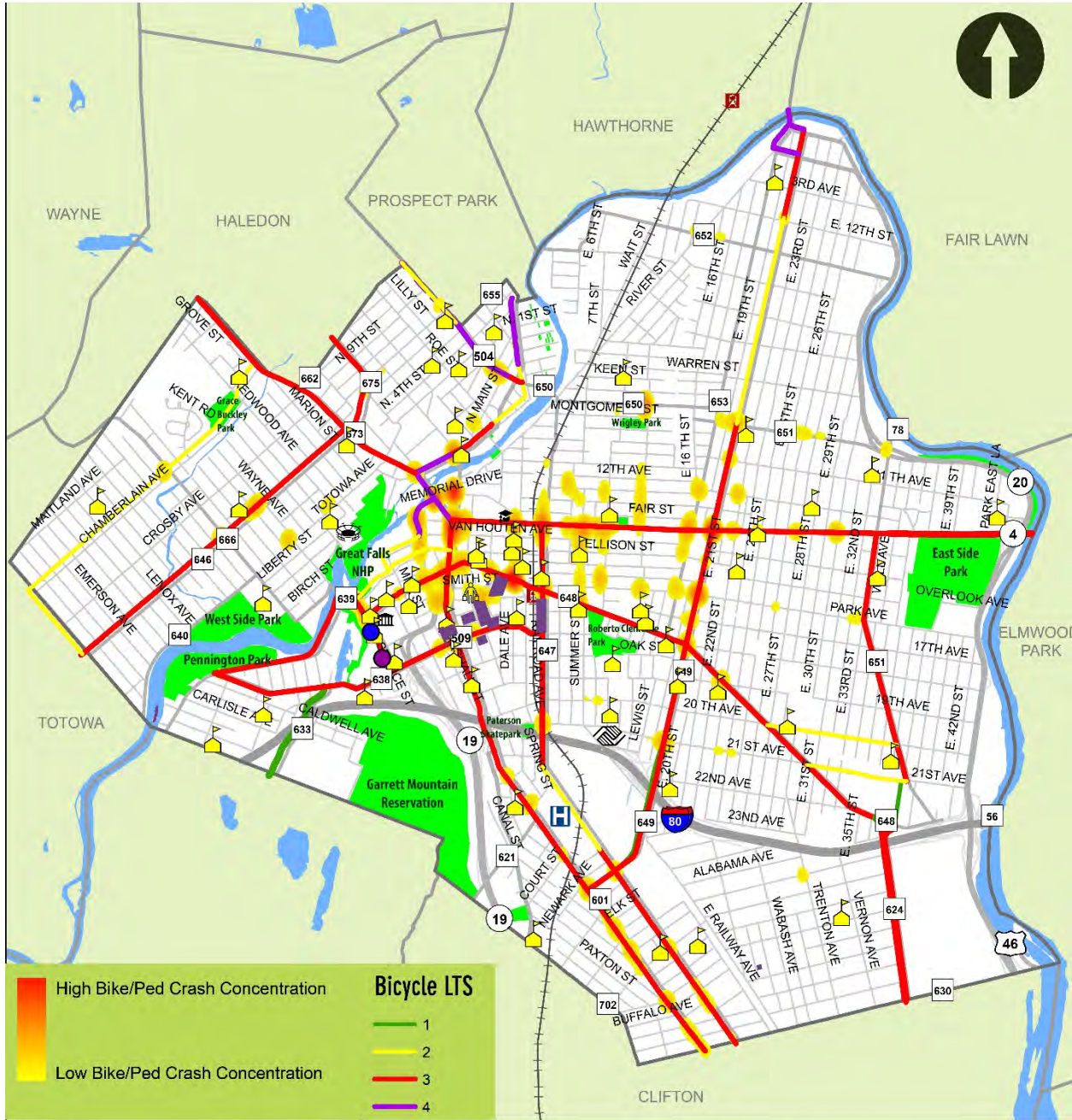
## Priority Bicycle Corridors Identified in Transportation Element of Passaic County Master Plan (2012)

### Legend

- NJ Transit Station
- NJ Transit Rail Line
- Priority Bicycle Corridor
- Water Body

Figure 11: Priority (Bicycle) Corridors





# Paterson Trip Destinations and Attractions

## Legend

## Trip Destinations and Attractions

- NJ Transit Station
- NJ Transit Rail Line
- Priority Bike Corridor
- Water Body
- Parks
- Government Buildings
- Paterson Museum
- School
- NJCDC
- Art Factory Studios
- Hencliff Stadium
- Passaic Co. Community Col.
- St. Joseph's Medical Center
- Boys & Girls Club
- Center City Mall

Figure 12: Priority Corridors, LTS, Crash Hot Spots, and Destinations



## Key Findings-Existing Conditions

- **Equity is a primary concern.** Almost all of the City of Paterson is considered an Overburdened Community, based on New Jersey’s Environmental Justice Law. BIKE Paterson therefore places an emphasis on safe and accessible mobility options for all.<sup>iii</sup>
- **There are limited opportunities for safe accessible biking.** Paterson currently affords limited opportunities, few dedicated facilities, and many constraints to a safe, accessible, low-stress biking experience. The city currently has just 4.1 miles of dedicated bicycle facilities, including 0.85 miles of bike lanes, 0.35 miles of buffered bike lanes, and 2.9 miles of shared use markings (sharrows).
- **Interested but concerned cyclists should be the focus.** Most survey respondents indicate a strong interest in bicycle riding in Paterson but are uncomfortable with current conditions and the lack of dedicated facilities. Almost all prefer bike paths and facilities separated from motor vehicle traffic.
- **The street environment is stressful.** Paterson’s roadway network presents a very stressful environment for many cyclists. About 30% of the city’s roadway miles are evaluated as high-stress, LTS 3 and 4. This is consistent with comments and observations from the community engagement effort; many residents indicated they are unable to or uncomfortable with bicycling beyond their own streets and neighborhoods due to safety concerns, exposure to high traffic volumes, speeds, large trucks and buses, and aggressive and inattentive driving behaviors.
- **The street network is constrained.** Paterson’s once robust street grid has been reconfigured over the years to prioritize regional traffic flow over local safety, mobility, and quality of life. The vast majority of Paterson streets are posted at 25-mph but many survey respondents voiced concerns regarding fast-moving traffic, frequent interactions with large trucks, and aggressive and inattentive driving behaviors.
- **On-street parking limits opportunities for improvement.** The population density, prevalence of multi-family housing, and limited off-street parking options make on-street parking an essential part of living in Paterson. Many survey respondents indicated a strong desire to maintain on-street parking availability, which would limit the ability to convert already constrained street spaces to dedicated on-street bicycle facilities.
- **The City of Paterson plays a central role in creating safer streets.** Greater percentages of reported bicycle crashes occur on municipal roads than on county and state roadways, heightening the need for the city to prioritize bicycle safety.





## Implementation Framework

Implementation will take place one roadway segment and one new bicycle facility at a time. It will require collaboration and consensus among a diverse range of stakeholders and participants, including the public, elected officials, and various municipal and county partners to balance the needs and priorities of all involved.

Implementation is supported by five plan elements: strategies to Build a Better Paterson; the BIKEPassaicCounty Pattern Book; the proposed bicycle network; an implementation committee; and policies, plans, and program strategies.

### Building a Better Paterson

Advancing a series of high priority strategies and projects can transform and build a more equitable city, better equipped to meet the needs of today and challenges of tomorrow.

These strategies include adopting a Complete and Green Streets Policy, applying the Safe System Approach to roadway design, reclaiming Paterson's city streets, and applying for FHWA's Reconnecting Communities Pilot Program grants.

### BIKEPassaicCounty Pattern Book and Design Guidance

Candidate bicycle improvements were identified using the Bikeway Selection Guidance Process of the New Jersey Complete Streets Design Guide and the BIKEPassaicCounty Pattern Book (see appendix).

### Proposed Paterson Bicycle Network

The proposed bicycle network includes more than 43 miles of dedicated new bicycle facilities to create a total of 47.5 bicycle network miles.

### BIKEPassaicCounty Implementation Committee

BIKEPaterson can benefit from coordinating with the actions of the proposed BIKEPassaicCounty implementation committee whose mission will be to track progress and identify and support opportunities for advancing recommendations.

Representatives from the City of Paterson should participate in the meetings and actions of the county's implementation committee.

### Strategies: Policies, Plans, and Programs

Policy, planning, and program strategies proposed for BIKEPassaicCounty can also support implementation of BIKEPaterson. The strategy matrix demonstrates the relationship between each strategy and plan goals and is designed to help local partners implement recommendations.



**PATERSON POLICE**  
**COMMUNITY POLICING**







## Building a Better City of Paterson

Advancing a series of high priority strategies and projects can transform and build a more equitable City of Paterson, better equipped to meet the challenges of today and the needs of tomorrow. Building a Better Paterson begins with putting into place state-of-the-art policies, procedures, tools, and methodologies to design streets and neighborhoods that meet the needs of all who live, work, visit, and conduct business in Paterson. These actions create the foundation for a new and bright future.

### Adopt Complete and Green Streets Policy

Adopting a Complete Streets policy formalizes the commitment to develop an integrated and connected multimodal transportation system that serves all neighborhoods and populations, including bicyclists. Green Streets elements integrate green infrastructure in street design, allowing municipalities to become more resilient, sustainable, and equitable.

### Apply the Safe System Approach

FHWA's Safe System approach aims to eliminate fatal and serious injuries for all road users. Applying the Safe System Approach includes designing and managing road infrastructure to mitigate the risk of crashes and their severity.

### Reclaim Paterson's City Streets

Many Paterson streets have been engineered to move motor vehicle traffic rather than provide for the safe and equitable mobility of all road users. The Great Falls Circulation Study (2016) found significant limitations to Paterson's current street network and identified a series of traffic calming, streets design, and circulation projects to improve safety and mobility.

### Apply for FHWA's Reconnecting Communities Pilot Program

Quality of life in Paterson is impacted on a daily basis by roadways such as Memorial Drive, MacLean Boulevard, NJ 19, and Interstate 80. The federal Reconnecting Communities Pilot Program can help Paterson develop and implement more beneficial projects like the recently completed Spruce Street road diet in the Great Falls Historic District.

More and more American cities are turning to the idea of "right-sizing" and even removing highways as a means of restoring safe and vibrant streets to their urban fabric.<sup>iv</sup>

FHWA's Reconnecting Communities pilot program provides technical assistance and hands-on planning support for transformative infrastructure projects that serve disadvantaged communities. This program seeks to mitigate traffic congestion and environmental impacts of transportation infrastructure, including highways and rail lines.<sup>v</sup>



## Safe System Approach

FHWA’s Safe System Approach aims to eliminate fatal and serious injuries for all road users.<sup>vi</sup> BIKEPaterson incorporates elements of the Safe System Approach into everyday municipal planning, project development, and project design.

**THE SAFE SYSTEM APPROACH**

**Zero is our goal. A Safe System is how we will get there.**

Imagine a world where nobody has to die from vehicle crashes. The Safe System approach aims to eliminate fatal & serious injuries for all road users. It does so through a holistic view of the road system that first anticipates human mistakes and second keeps impact energy on the human body at tolerable levels. Safety is an ethical imperative of the designers and owners of the transportation system. Here’s what you need to know to bring the Safe System approach to your community.

---

SAFE SYSTEM PRINCIPLES

<p style="text-align: center; font-size: 2em;">0</p> <p><b>Death/Serious Injury is Unacceptable</b></p> <p>While no crashes are desirable, the Safe System approach prioritizes crashes that result in death and serious injuries, since no one should experience either when using the transportation system.</p>	<p style="text-align: center; font-size: 2em;">!</p> <p><b>Humans Make Mistakes</b></p> <p>People will inevitably make mistakes that can lead to crashes, but the transportation system can be designed and operated to accommodate human mistakes and injury tolerances and avoid death and serious injuries.</p>	<p style="text-align: center; font-size: 2em;">♿</p> <p><b>Humans Are Vulnerable</b></p> <p>People have limits for tolerating crash forces before death and serious injury occurs; therefore, it is critical to design and operate a transportation system that is human-centric and accommodates human vulnerabilities.</p>
<p style="text-align: center; font-size: 2em;">🙌</p> <p><b>Responsibility is Shared</b></p> <p>All stakeholders (transportation system users and managers, vehicle manufacturers, etc.) must ensure that crashes don’t lead to fatal or serious injuries.</p>	<p style="text-align: center; font-size: 2em;">🔄</p> <p><b>Safety is Proactive</b></p> <p>Proactive tools should be used to identify and mitigate latent risks in the transportation system, rather than waiting for crashes to occur and reacting afterwards.</p>	<p style="text-align: center; font-size: 2em;">🔄</p> <p><b>Redundancy is Crucial</b></p> <p>Reducing risks requires that all parts of the transportation system are strengthened, so that if one part fails, the other parts still protect people.</p>

FHWA-SA-20-015

Investment in roadway safety saves lives



Applying the Safe System Approach involves anticipating human mistakes by designing and managing road infrastructure to keep the risk and the consequences of a mistake low; and when a mistake leads to a crash, the impact on the human body doesn't result in a fatality or serious injury. Road design and management should encourage safe speeds and driving behaviors to reduce injury severity.<sup>vii</sup>

### SAFE SYSTEM ELEMENTS

**Making a commitment to zero deaths means addressing every aspect of crash risks through the five elements of a Safe System, shown below.** These layers of protection and shared responsibility promote a holistic approach to safety across the entire transportation system. The key focus of the Safe System approach is to reduce death and serious injuries through design that accommodates human mistakes and injury tolerances.



#### Safe Road Users

The Safe System approach addresses the safety of all road users, including those who walk, bike, drive, ride transit, and travel by other modes.



#### Safe Vehicles

Vehicles are designed and regulated to minimize the occurrence and severity of collisions using safety measures that incorporate the latest technology.



#### Safe Speeds

Humans are unlikely to survive high-speed crashes. Reducing speeds can accommodate human injury tolerances in three ways: reducing impact forces, providing additional time for drivers to stop, and improving visibility.



#### Safe Roads

Designing to accommodate human mistakes and injury tolerances can greatly reduce the severity of crashes that do occur. Examples include physically separating people traveling at different speeds, providing dedicated times for different users to move through a space, and alerting users to hazards and other road users.



#### Post-Crash Care

When a person is injured in a collision, they rely on emergency first responders to quickly locate them, stabilize their injury, and transport them to medical facilities. Post-crash care also includes forensic analysis at the crash site, traffic incident management, and other activities.

### THE SAFE SYSTEM APPROACH VS. TRADITIONAL ROAD SAFETY PRACTICES

#### Traditional

- Prevent crashes
- Improve human behavior
- Control speeding
- Individuals are responsible
- React based on crash history

#### Safe System

- Prevent deaths and serious injuries
- Design for human mistakes/limitations
- Reduce system kinetic energy
- Share responsibility
- Proactively identify and address risks

Whereas traditional road safety strives to modify human behavior and prevent all crashes, the Safe System approach also refocuses transportation system design and operation on anticipating human mistakes and lessening impact forces to reduce crash severity and save lives.

## WHERE ARE YOU ON THE SAFE SYSTEM JOURNEY?

Implementing the Safe System approach is our shared responsibility, and we all have a role. It requires shifting how we think about transportation safety and how we prioritize our transportation investments. Consider applying a Safe System lens to upcoming projects and plans in your community: put safety at the forefront and design to accommodate human mistakes and injury tolerances. Visit [safety.fhwa.dot.gov/zerodeaths](https://safety.fhwa.dot.gov/zerodeaths) to learn more.



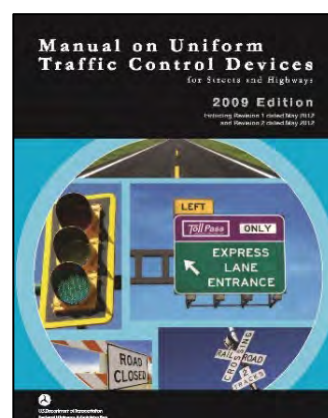
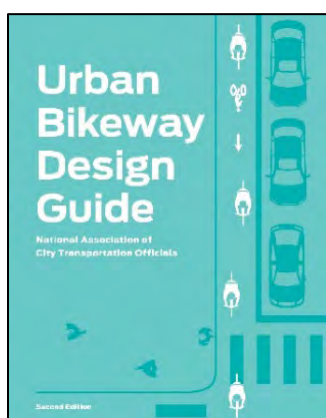
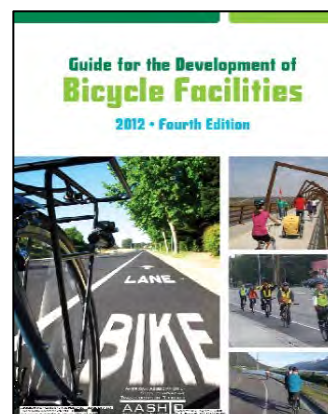
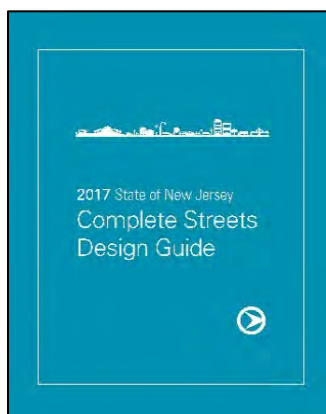


## BIKE Passaic County Pattern Book and Design Guidance

BIKE Paterson utilizes the BIKE Passaic County Pattern Book to provide general design guidance appropriate to the Paterson context. The Pattern Book summarizes the range of proposed improvements from on-street bicycle lanes to off-street side paths and trails. See the Appendix document for detailed discussion of the Pattern Book.

The purpose of the Pattern Book is threefold:

1. To inform the planning of the proposed bicycle network by providing consistent criteria for facility selection relative to the variety of conditions that exist;
2. To provide a visual illustration and common palette of planned bicycle facilities to support and enhance communication between officials, stakeholders, and the public; and
3. To inform context-sensitive concept plans for priority routes in the proposed bicycle network.



For each bicycle facility type, the Pattern Book provides a definition, typical application and dimensions, and references to published design guides where additional details can be obtained.

The level of detail provided in the Pattern Book is appropriate for bicycle facility network planning. Future implementation of proposed bicycle facilities should include careful and deliberate engineering design to ensure the safety of all users and comply with any and all applicable codes, statutes, and evolving best practices. Intersections, crossings, bicycle parking, wayfinding, and curbside management (such as parking, transit stops, goods movement, micromobility, and parklets) will be important considerations in future phases of bicycle route design.





Together, the New Jersey Complete Streets Design Guide, the BIKE Passaic County Pattern Book, and related design resources all help to evaluate and select appropriate bicycle facility types and ensure consistency in implementation.

## Proposed Bicycle Network

The proposed bicycle network implements the BIKE Paterson Vision Statement: **a bicycle-friendly city where people of all ages and abilities can travel by bicycle on a comfortable, safe, and connected network.**

Development of the bicycle network draws upon the collaborative engagement and outreach efforts; findings and recommendations from previous plans and studies; existing conditions assessment, and applicable guidance, including the BIKE Passaic County Pattern Book, the New Jersey Complete Streets Design Guide, and related resources. Together, these resources create a uniform process for evaluating and selecting appropriate facility types, while the Pattern Book also helps ensure consistency and connects details among the various facility types. A bike lane should look and function the same, regardless of the context or community, so that cyclists and motorists are able to recognize and use the facility and interact in a safe and predictable manner.

The New Jersey Complete Streets Design Guide (CSDG) outlines a three-part process for identification and selection of candidate bicycle facilities:

1. Evaluate Candidate Roadway Segment and Local Context
2. Determine Candidate Facility Type Options
3. Assess Feasibility and Select Preferred Facility Type

Bicycle facility type recommendations for the proposed bicycle network were evaluated and selected based on context, existing conditions, and collaborative efforts, to develop a comprehensive, interconnected, and fully integrated bicycle network.

The City of Paterson proposed bicycle network depicted in Figure 12 adds 43.4 new miles to the existing inventory of 4.1 miles of dedicated bicycle facilities, to create a total of 47.5 network miles, and includes a variety of bicycle facility types.

Large format bicycle network mapping with enhanced detail and a table of the bike network recommendations are provided in Appendices 4 and 5, respectively.

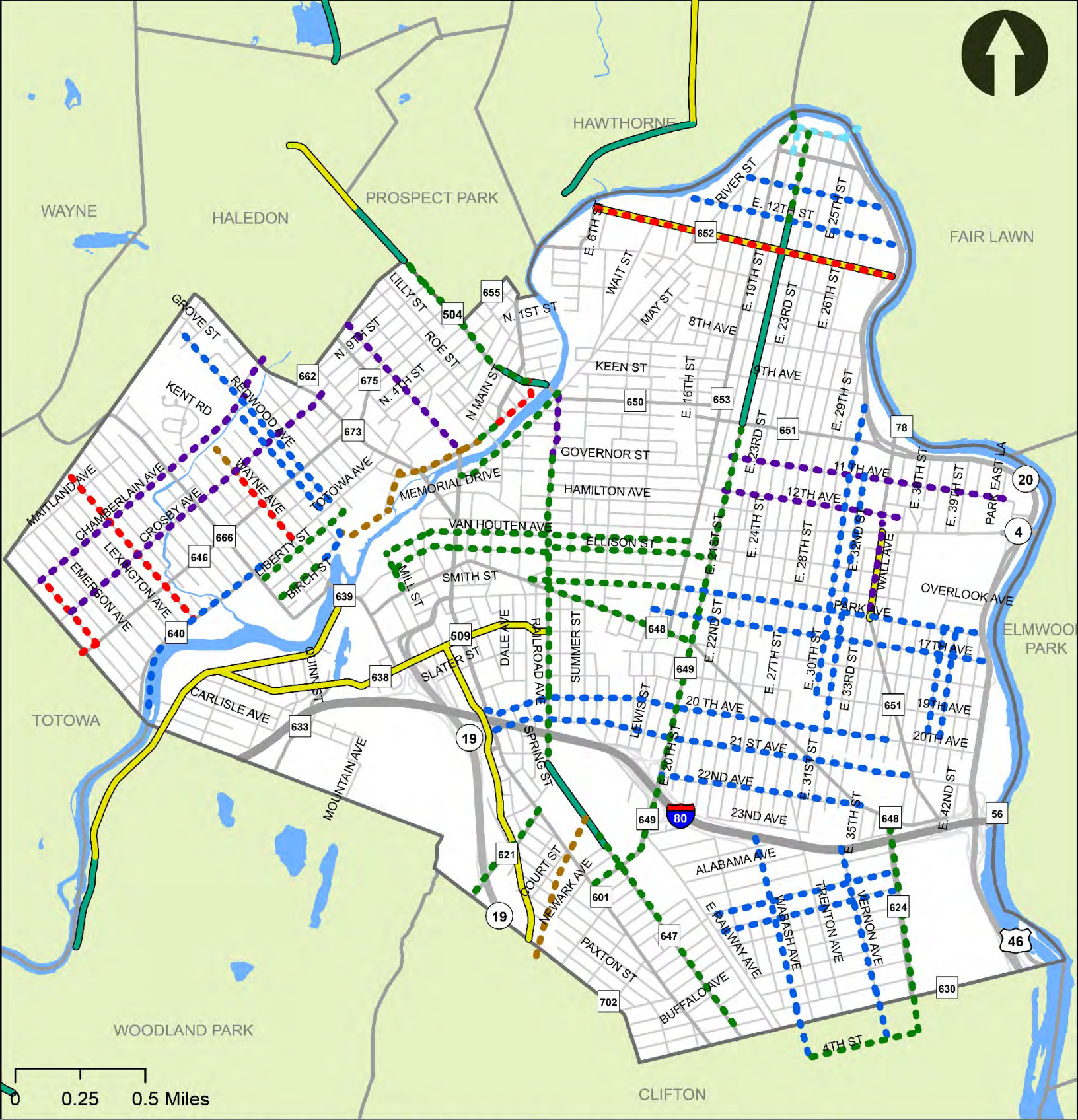


Figure 13: City of Paterson Proposed Bicycle Network

**Legend**

- Existing Bike Lanes
- Existing Sharrows

**Proposed Bicycle Network**

- Bike Lanes
- Buffered Bike Lanes
- 2-Way to 1-Way with Bike Lanes
- Hybrid Bike Lanes
- Bike Boulevard or Marked Shared Lane
- Shared Use Path





## Recommended Implementation Strategies

### Policies, Plans, and Programs

BIKE Paterson recommends policies, plans, and programs that will support development of the bicycle network and help to create a successful and sustainable bicycle-friendly City. Successful plan implementation will require cooperation and partnerships among the City of Paterson, Passaic County, other government agencies, community groups, local businesses, and social service/non-profit organizations. The proposed recommendations are based on a review of existing programs, information garnered through the engagement process, and guidance from the SAC.

The recommendations are organized into three categories: policies and regulations, planning, and other supportive programs. The supportive programs include recommendations related to education, encouragement, access to bicycles, bike/transit integration, and placemaking. Each section contains an overview of the category and descriptions of the recommended policies and programs. Local governments can use this chapter to assist with implementation in their municipalities and inclusion in their master plans.

Table 4 summarizes these recommendations.





Table 4: Policy, Planning, and Program Strategy Matrix

<b>RECOMMENDATION</b>	<b>GOALS*</b>	<b>POTENTIAL PARTNERS</b>
A: Municipalities should adopt a Complete and Green Streets Policy	1,3,5	Municipal Government
B: Develop bicycle facility maintenance procedures to ensure that all relevant agencies are aware of requirements and standards	1,2,3	Municipal Government, County Government, DPW, Parks Department, Engineering Department
C: Establish a Bicycle/Pedestrian or Complete Streets Advisory Committee with the responsibility of advising municipal staff and boards on bicycle projects and needs	3,4	Municipal Government, Local Committees/Neighborhood Groups
D: Incorporate bicycle needs into zoning, land use, and development review	1,2,3,5	Municipal Government, County Government, Engineering Department, Planning Departments and Boards
E: Ensure consistency with municipal Master Plans and Elements	1,2,3,5	Municipal Government, Planning Departments and Boards
F: Create a Vision Zero Action Plan to identify strategies to achieve the goal of eliminating severe injury and fatal crashes	1,3	Municipal Government, County Government, Non-Profits/Advocacy Groups, Local Committees/Neighborhood Groups
G: Conduct Bicycle and Pedestrian Road Safety Audits and Assessments	1	NJDOT, NJTPA, County, Municipal Government, Non-Profits/Advocacy Groups, TMAs, Schools, Bicycle Clubs, Local Committees/Neighborhood Groups
H: Coordinate transportation and land use activity through the development of corridor plans	1,2,3	Municipal Government, County Government, NJDOT (Transportation Issues)
I: Integrate opportunities for bicycle improvements into Climate Action Plans/Greenhouse Gas Emissions Inventories	2,3,5	Municipal Government, County Government, Environmental Commissions, Local Committees/Neighborhood Groups
J: Support organizations that provide driver and bicycle education classes, workshops, and rodeos	1,2,4,5	TMAs, Non-Profits/Advocacy Groups, Enforcement, Bicycle Clubs
K: Work with advocacy groups and law enforcement to inform the public about bicycle related laws and changes to new laws	4,5	Municipal Government, County Government, NJDOT and other State Government, Enforcement, Non-Profits/Advocacy Groups
L: Help promote, organize, and schedule group rides and tours	2,4,5	Municipal Government, County Government, TMAs, Enforcement, Non-Profits/Advocacy Groups, Bicycle Clubs, Local Businesses, Local Committees/Neighborhood Groups



M: Participate in and support efforts to promote bicycling such as Safe Routes to School and Bike Month activities	1,2,4,5	Municipal Government, County Government, TMAs, Enforcement, Non-Profits/Advocacy Groups, Bicycle Clubs, Local Businesses
N: Engage local groups to develop and implement an Open Streets event	1,2,4,5	Municipal Government, County Government, TMAs, Enforcement, Non-Profits/Advocacy Groups, Bicycle Clubs, Local Businesses, Local Committees/Neighborhood Groups
O: Work with police departments and local businesses to develop a positive ticketing program	3,4	Enforcement, Local Businesses
P: Consider piloting a bike and scooter share program	2,4,5	Municipal Government, County Government, NJDOT, Local Businesses, Local Committees/Neighborhood Groups
Q: Create opportunities for people to borrow or purchase bikes, e-bikes, and tools at low or no cost	2,4,5	TMAs, Non-Profits/Advocacy Groups, Bicycle Clubs, Local Businesses
R: Partner with non-profit organizations to provide free bikes upon completion of a bike training or as incentives for youth education	1,2,4,5	Non-Profits/Advocacy Groups, Bicycle Clubs
S: Explore opportunities to install bike fix-it stations	1,2,4	Municipal Government, Non-Profits/Advocacy Groups, Local Committees/Neighborhood Groups, Local Businesses
T: Coordinate with NJ TRANSIT to improve bicycle access at train stations and identify locations for enhanced bike parking	2,3	Municipal Government, County, NJTRANSIT
U: Develop a plan for bicycle wayfinding signage	1,2	Municipal Government, County Government, NJDOT, Local Businesses
V: Work with partners to support demonstration pilot projects	1,2,4,5	Municipal Government, County Government, Non-Profits/Advocacy Groups, Bicycle Clubs, Local Businesses, Enforcement, Local Committees/Neighborhood Groups
<u>Street design and traffic regulation</u> W: Targeted Lower Speed Limits and Right Turn on Red Prohibitions X: Slow Speed Zones Y: Targeted road diet applications Z: Targeted one-way to two-way street conversions	1,2,3	Municipal Government, County Government, MPOs, NJDOT, TMAs





## POLICIES AND REGULATIONS

Policies and regulations play a critical role in creating a bicycle-friendly environment and in making bicycling an integral part of daily life. Policies and ordinances set the regulatory approach for bicycling. They help formalize implementation of projects and establish a framework for programs to support bicycling by improving safety, access, and amenities for bicycling.

Decades of auto-centric transportation policies have made bicycling less safe and less convenient. There are many opportunities to make changes through the adoption of new policies and in the way a municipality approaches land use planning, site development, and zoning decisions. Some of the ways that government can address bicyclists' needs through policies and regulations include the following:

- A. Adopting a Complete and Green Streets Policy
- B. Developing bicycle facility maintenance procedures to ensure that all relevant agencies are aware of requirements and standards
- C. Establishing a Bicycle/Pedestrian or Complete Streets Advisory Committee with the responsibility of advising municipal staff and boards on bicycle projects and needs
- D. Incorporating bicycle needs and safety into zoning, land use, and development review

### [Recommendation A:](#)

#### [Adopt a Complete Streets and Green Streets Policy](#)

#### [Audience/Potential Partners: Municipal Government](#)

Adopting a Complete Streets policy formalizes the commitment by a jurisdiction to develop an integrated and connected multimodal transportation system that serves all neighborhoods and vulnerable road users including bicyclists. Complete Streets policies direct the implementation of the most current and best practice design guidelines; provide performance measures and criteria for prioritizing projects; and help set clear and accountable procedures. Green Streets integrate green infrastructure in street design, allowing municipalities to become more resilient, sustainable, and equitable. Passaic County and four of its 12 municipalities (Pompton Lakes, Bloomfield, North Haledon, and Little Falls) have already adopted Complete Streets policies.

### [Resources](#)

There are many available guides and documents to help government agencies institutionalize Complete and Green Streets principles in roadway planning, design, and maintenance policies. These include:



### Policy Development

- Complete and Green Streets for All: Model Complete Streets Policy and Guide (NJDOT, 2019)
- Institutionalize Complete Streets: Implementation Brief (NJTPA, 2021)
- The Elements of a Complete Streets Policy (Smart Growth America and the National Complete Streets Coalition, 2018)
- Making Complete Streets A Reality: Guide to Policy Development (NJDOT, 2012)

### Design Guidance

- New Jersey Complete Streets Design Guide (NJDOT, 2017)
- Urban Street Design Guide (NACTO)

### Green Streets

- Green Streets Handbook (EPA, 2021)
- Green Infrastructure Element of the Passaic County Master Plan (2019)
- Green Infrastructure Guidance Manual for New Jersey (Rutgers, 2016)



### **Spotlight: Passaic County's Complete Streets Program**

Passaic County adopted the Complete Streets Guidelines and Checklist as part of the 2012 Transportation Element. The Passaic County Planning and Engineering Departments work together to apply the guidelines to integrate Complete Streets measures into the County's resurfacing program. Recently, the County has incorporated bicycle lanes, sharrows, and road diet measures in resurfacing projects as a way to target "low-hanging fruit" and build momentum for Complete Streets Implementation.



**EXAMPLE OF URBAN SHARROWS DESIGN . SOURCE: NACTO**

#### Recommendation B:

Develop bicycle facility maintenance procedures to ensure that all relevant agencies are aware of requirements and standards

Audience/Potential Partners: Municipal Government, County Government, Department of Public Works, Parks, Engineering, and Traffic

Bicycle facilities, whether on- or off-road, require regular maintenance to ensure that they are safe and accessible. Inadequately maintained facilities can create hazardous conditions and disrupt connectivity. Bike facilities are especially vulnerable to the accumulation of debris and leaves, which can create serious obstacles and hazards to bicyclists. On trails and multi-use paths, overgrown vegetation can encroach onto the pavement edge, effectively narrowing the usable surface.



Maintenance may include sweeping streets and paths, trimming vegetation, repainting lines and symbols, and replacing or maintaining bollards or other buffer materials.

As with on-road bike lanes, multi-use paths and trails require snow removal during winter. Snowplows and snow removal equipment are often too large to maneuver on multi-use paths and trails. Special equipment may be necessary. Maintenance policies should address the overall priority of snow removal on paths and trails and estimated clearance times so that trail users can adjust their trips and expectations accordingly.

Bike lane design should always consider snow removal and storage. Lanes should be wide enough for a pickup truck to plow them (unless specialized equipment is available) and room should be provided for snow storage (wide buffers can help with this). Some cities with significant snowfalls are experimenting with deicing methods to keep the bike lanes safe including using beet juice or cheese brine as an additive to rock salt to save costs and improve deicing effectiveness.<sup>viii</sup>

Maintenance policies should be reviewed by all relevant agencies including the Departments of Public Works, Parks, and Engineering. Ideally, a mechanism should be implemented to encourage bicyclists to report maintenance problems. In addition, the cost of maintenance, along with a clear understanding of financial responsibility, should be part of every project budget.

#### Resources

- Guide for the Development of Bicycle Facilities (AASHTO) provides model maintenance policy language.
- How Communities are Paying to Maintain Trails, Bike Lanes, and Sidewalks by Advocacy Advance: a partnership of Alliance for Biking & Walking and the League of American Bicyclists (2014)
- City of Madison, Wisconsin Public Works Bicycle Facilities Maintenance Program (2017)
- The City of Clifton Police Department operates an online traffic reporting system that allows residents to report any concerns to the traffic division. The traffic division works with all departments within the City of Clifton to resolve issues impacting public safety. Bicyclists can use this system to report maintenance issues.





## Spotlight: City of Clifton Traffic Safety Concerns Web Page

The City of Clifton Police Department operates an online traffic reporting system that allows residents to report any concerns about transportation facilities to the traffic division. The police work with all departments within the City to resolve issues impacting public safety. Bicyclists can use this system to report maintenance issues.

### Traffic Safety Concerns Page

New Jersey is consistently among the states with the most vehicular traffic. As a result, our roadway systems are under constant stress. If you see an issue or concern, we encourage our residents to report them to the Traffic Division to investigate. Officers from the Traffic Division work with all departments within the City to resolve issues impacting public safety.

Please complete the following form to submit your concern directly to the Traffic Division. Be sure to include as much information as possible so the issue can be investigated properly.

\*\*\*\*IMPORTANT\*\*\*\* This is a non-emergency form of communication. If the issue you see is an Emergency, **Call 9-1-1** instead.

**If you have a traffic-related concern, please fill-in information below, then click the Submit button.**

Note: Including your name and eMail is optional but, is useful should we need to follow-up with you regarding this matter.

Name	eMail	
<input type="text" value="First and Last Name"/>	<input type="text" value="eMail Address"/>	
City	State	Zip
<input type="text" value="City"/>	<input type="text" value="State"/>	<input type="text" value="Zip"/>
Feedback/Comment		
<input type="text" value="Type your message here..."/>		
<input type="button" value="Submit form"/>		

SOURCE: [WWW.CLIFTONPOLICE.ORG/TRAFFIC\\_SAFETY\\_CONCERNS.HTML](http://WWW.CLIFTONPOLICE.ORG/TRAFFIC_SAFETY_CONCERNS.HTML)



### Recommendation C:

Establish a Bicycle/Pedestrian, Complete Streets, or Traffic Safety Advisory Committee with the responsibility of advising municipal staff and boards on bicycle projects and needs

Audience/Potential Partners: Municipal Government, Local Committees/Neighborhood Groups

Creating a municipal Bicycle/Pedestrian or Complete Streets Advisory Committee with the responsibility of advising municipal staff and agencies regarding projects and programs helps to address bicycle and pedestrian needs within the community. The Advisory Committee should include a diverse range of stakeholders selected through a fair process. Committees and boards can establish partnerships with local government and provide an opportunity for public input and engagement in transportation decision-making and planning processes.

### Recommendation D:

Incorporate bicycle needs into zoning, land use, and development review

Audience/Potential Partners: Municipal Government, County Government, Engineering Department

The land use and development review process is a huge opportunity to ensure new development includes appropriate bicycle accommodations. Leveraging private development activity provides an opportunity to advance planned improvements and preferred design standards by requiring their integration in development site plans.

Methods to incorporate bicycle needs into zoning, land use, and development review include:

1. Require bicycle parking via ordinance
2. Utilize checklists to identify bicycle improvements
3. Allow for mixed-use development and transit-oriented development (TOD)
4. Include bicycle infrastructure improvements in Redevelopment Plans
5. Require a Traffic Impact Statement for applications for development and redevelopment
6. Review motor vehicle parking requirements
7. Manage the curbside to minimize conflicts between road users
8. Clarify operation of bicycles on sidewalks
9. Develop street tree standards



## 1. Require bicycle parking via ordinance

Requiring secure and convenient bike parking via an ordinance is essential to support and encourage bicycling for commuting, shopping, social visits, and other purposes. It is important for these ordinances to require both short- and long-term bicycle parking. Short-term bike parking is characterized by proximity to the destination and ease of use; it is primarily used by people who are visiting locations for two hours or less. The design of long-term bicycle parking prioritizes the need for security and shelter from the elements and is primarily used by those who need to store their bike for several hours or overnight.

Municipalities can also adopt bicycle amenity standards (showers, changing rooms, repair stations, etc.) or incentivize these types of facilities in exchange for increased Floor Area Ratio (FAR), additional square footage, or reduced motor vehicle parking requirements.

### **SPOTLIGHT: TOWNSHIP OF LITTLE FALLS § 280-136.21 BIKE PARKING**

Bike parking shall be provided in all Transit Village (TV) Districts to make cycling a more convenient transportation option. Bicycle parking facilities shall adhere to the requirements below. Buildings containing multiple tenants may satisfy their individual requirements by providing a single bike rack in a centrally located area.

- Multifamily residential: one space per 10 units, located within a secured common area within the building, an outdoor rack, or a combination.
- Nonresidential: two spaces per 5,000 square feet of gross floor area, located on the site within 50 feet of the principal building entrance and within a highly visible, well-lighted area that does not impede pedestrian or vehicular traffic.
- Mixed-use: both interior and exterior bike parking spaces as per the residential and nonresidential parking requirements above.

## 2. Utilize checklists to identify bicycle improvements

Checklists are practical tools to help with the implementation of bicycle facilities. Checklists are meant to be used by developers and municipalities in the early stages of projects to ensure that important elements, such as equity and sustainability considerations, are included in the project budget and scope.

A site review checklist can be used by developers to identify bicycle safety and accessibility in site development. Complete Streets checklists assist in project selection, planning, design, construction, and maintenance. They can be used to collect, share, and track project information between agencies/departments and ensure that projects fulfill the requirements and goals identified by the community.





Complete Streets checklists also help to explain and facilitate the process for granting exceptions and indicate the party responsible for approving exceptions.

### 3. Allow for transit-oriented development/mixed-use zoning

Mixed-use zoning allows for the combination of different land uses in an area. Transit-oriented development (TOD) focuses on growth near locations that are served by transit. Both land use strategies make communities more walkable and bikeable by promoting higher density development, encouraging a mix of uses, and creating bicycle- and pedestrian-friendly streetscapes.

### 4. Include bicycle infrastructure improvements in redevelopment plans

Redevelopment plans provide guidance for the future of an area. They are written to be consistent with the community's Master Plan vision and land use objectives. They indicate land use and building requirements and design standards and establish the zoning requirements for the given area. Redevelopment plans have the potential to enhance bikeability by ensuring the built environment includes bicycle infrastructure improvements and connections.

### 5. Require Traffic Impact Statement for development and redevelopment applications

A Traffic Impact Statement (TIS) assesses the effects of a proposed development on the surrounding transportation system and recommends improvements to mitigate those impacts. A municipality can make a TIS a requirement for applications for development and redevelopment that increases the intensity of land use, where intersection traffic control is modified, or if there are potential negative impacts on pedestrians or bicyclists. A TIS can help ensure that safe and efficient access is provided for all modes of travel.

### 6. Review parking requirements

Minimum parking requirements subsidize cars and are generally based on the single-use suburban development common in the 1970s and 1980s. They tend to increase traffic congestion and carbon emissions, encourage sprawl, raise housing and development costs, reduce walkability/bikeability, and exclude people without cars. Parking minimums that ignore shared parking relationships in mixed-use contexts, as well as walkability and transit accessibility, can be major barriers to reinvestment in small properties and older buildings.

Communities in New Jersey and beyond have begun to reduce or remove minimum required parking standards for motor vehicles, at a minimum in their downtowns and in areas served by transit and/or targeted for redevelopment. Some municipalities have gone further and implemented maximum parking standards. Towns can also explore reducing minimum parking requirements for commercial and mixed-use development in tandem with adopting local bicycle parking requirements as part of a Complete Streets policy.

## SPOTLIGHT: PARKING REQUIREMENTS FOR RESIDENTIAL LAND USES

In New Jersey, the Residential Site Improvement Standards (RSIS) specify statewide, mandatory requirements for new, residential development. The RSIS specifies motor vehicle parking requirements for residential land uses. Most municipalities in New Jersey treat the parking requirements as minimums. However, according to the Department of Community Affairs (DCA) who writes the rules, the RSIS specifies the maximum number of parking spaces planning boards and other local reviewers can require. In addition, the rules recognize that a variety of factors affect parking. When local reviewers ask for more parking than specified in the RSIS, the rules require the developer to notify the DCA of an agreement to exceed the standards, as specified at N.J.A.C. 5:21-3.6.

Source: The New Jersey Planner, Vol. 82, No. 1, January/February 2021. ISSN: 2168-6416

### 7. Manage the curbside to minimize conflicts

Due to limited curb space, some drivers might double-park their vehicles or block bus and bicycle lanes, obstructing other users of the street. Designating specific zones for commercial loading and unloading activities, delivery truck parking, curbside pick-up, as well as pick-up and drop-off zones for ride-share vehicles can support smoother traffic flow and make the streets safer and more efficient for everyone. The need for efficient curbside management will only increase in the future with the continued rise of e-commerce, micromobility programs, and the introduction of self-driving cars on the roadways.



*Physical barriers in this example protect the bicycle lane from adjacent vehicular traffic.*



## 8. Clarify operation of bicycles on sidewalks

New Jersey does not have a state statute prohibiting bicyclists from riding on the sidewalk. Sidewalks can provide an essential environment for safe, independent mobility, especially for children – including those on bicycles. Municipalities play the most important role in assuring that sidewalks are constructed, inspected, properly maintained, repaired, or reconstructed when needed. ADA standards specify a minimum 5-foot clear path width. An 8-foot-wide pedestrian clear zone allows two pairs of people to comfortably pass each other, and a 10-foot or wider clear zone can support higher volumes of pedestrians and some bicyclists, depending on the land use and demand.

While some people may not feel safe riding in the street, using a bicycle on a sidewalk can create conflicts with pedestrians. To avoid confusion and maximize safety, the municipality should make it clear that bicyclists must yield the right-of-way to pedestrians. Communities may also want to consider allowing children under a certain age to ride their bikes on the sidewalk, restricting bicycle speed to under 5 mph, and prohibiting their use on sidewalks in downtown and commercial areas where the potential for conflict is higher.

It is important for municipalities to inform residents and visitors of their adopted rules and regulations. Participants in focus group discussions identified inconsistent regulations and enforcement between neighboring municipalities as an issue, especially regarding sidewalk riding, helmet use, and registration requirements.

### **SPOTLIGHT: BOROUGH OF POMPTON LAKES**

#### **§ 8-10.4 RIDING ON SIDEWALKS / CH 8: POLICE REGULATIONS**

No person over the age of eight years shall ride a bicycle, tricycle, other wheeled vehicle or other means of transportation (except wheelchairs or other devices used for the same purpose; as an example, handicap scooters) upon any sidewalk in the Borough.

1. Wanaque Avenue from Lakeside Avenue to Pompton Avenue.
2. Colfax Avenue from Wanaque Avenue to Adrian Street.
3. Lakeside Avenue from Wanaque Avenue to Adrian Street.

Definition: As used in this section, "sidewalk" shall mean any sidewalk laid out by the Borough of Pompton Lakes or by any private individual, which is reserved by custom for the use of pedestrians and which has been specially prepared for their use, but not including footpaths or portions of public roads lying outside of the thickly settled parts of the Borough which are worn only by travel and are not improved by the Borough Council or by the abutting owners.





## 9. Develop street tree standards

Street trees, shrubs, and landscape plantings play an important role in a street's vibrancy – they create shade, reduce traffic noise and energy consumption, and define boundaries between different types of roadway users. Trees provide a sense of enclosure and a focus of interest that encourages people to walk and bike, visit local businesses and shops, and spend more time on the street. Municipalities should adopt guidelines that address tree selection, tree wells, tree size and spacing, and installation and maintenance. The guidelines should also address the location of plantings around bicycle facilities. When selecting trees, it is important to prioritize native species as well as trees that are resilient to climate change.

## PLANNING INTEGRATION

It is important to coordinate the implementation of this plan's recommended projects and programs with the recommendations and priorities set forth in related plans. The goals and recommendations of this plan should also align with future planning efforts. It is recommended that the goals and recommendations be integrated into planning documents and related plans to ensure that municipalities:

- E. Ensure consistency with municipal Master Plan Elements
- F. Create a Vision Zero Action Plan to identify strategies to achieve the goal of eliminating severe and fatal crashes
- G. Conduct Bicycle and Pedestrian Road Safety Audits and Assessments
- H. Coordinate transportation and land use activity through the development of Corridor Plans
- I. Integrate opportunities for bicycle improvements into Climate Action Plans and Greenhouse House Emissions Inventories

### Recommendation E:

#### Ensure consistency with Municipal Master Plan Elements

Bicycle access and safety should be addressed in all planning documents and related plans, including the following:

1. Land Use Plan Element
2. Circulation Plan Element
3. Housing Element and Fair Share Plan (Affordable Housing)
4. Stand-alone Pedestrian and/or Bicycle Master Plan



### 1. Land Use Plan Element

The Municipal Master Plan is a comprehensive, long-range plan intended to guide the growth and development of a community. The Land Use Plan Element should encourage mixed-use, transit-oriented development, and the linking of residential developments with commercial, recreational or other residential areas by trails or multi-use paths.

### 2. Circulation Plan Element

The Circulation Plan Element of the Master Plan examines the current transportation system and existing conditions, considers emerging trends and issues, and identifies strategies and recommendations to improve community mobility. This Element should include specific recommendations for bicycle facilities.

### 3. Housing Element and Fair Share Plan (Affordable Housing)

The Municipal Land Use Law (MLUL), through incorporation of the New Jersey Fair Housing Act (FHA), requires municipalities to include a housing element in their Master Plans as a condition to exercising zoning power. The principal purpose of the Housing Element is to provide the data, policies, and methods by which communities will meet present and forecast housing needs, with particular emphasis on low- and moderate-income households.

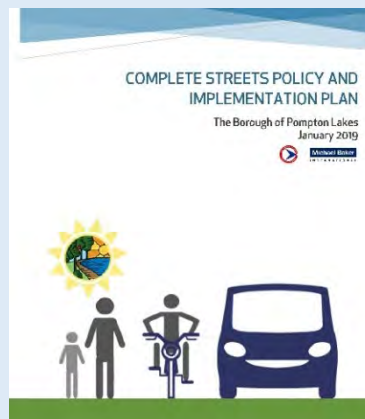
The Housing Element describes the specific, intended methods that a municipality plans to use to make affordable housing available. Affordability includes not only the cost of housing, but the time and cost of transportation to jobs and necessary services from that location. Communities that are walkable, bikeable, and public transportation-friendly allow residents to access employment and amenities easily and effectively with less dependence on automobiles. This results not only in savings of time and money, but also in increased physical activity and reduced greenhouse gas emissions.

### 4. Stand-alone Pedestrian and/or Bicycle Master Plan

A Bicycle and Pedestrian Master Plan helps to guide the development of a community's network of biking and walking facilities. A Bicycle and Pedestrian Plan describes existing and proposed conditions, includes a public outreach component, presents a vision, proposes network recommendations, and prioritizes projects for implementation. It should also include design guidelines. The NJDOT provides technical assistance to municipalities to assist with development of these types of plans through its Local Bicycle and Pedestrian Planning Assistance Program.

## SPOTLIGHT: NJDOT LOCAL BICYCLE & PEDESTRIAN PLANNING ASSISTANCE

The NJDOT's Bureau of Safety, Bicycle and Pedestrian Programs works with local governments to develop bicycle and pedestrian plans through the Local Planning Assistance Program. Through this program, the NJDOT has provided technical planning assistance to more than 100 municipalities and counties to develop plans which will help make their communities better and safer places to bike and walk. The program provides these services to local jurisdictions that express a strong desire in improving or enhancing bicycle and pedestrian travel within their communities.



The Borough of Pompton Lakes received assistance from NJDOT to develop a Complete Streets Policy and Implementation Plan.

### Recommendation F:

Create a Vision Zero Action Plan to eliminate severe and fatal crashes

Audience/Potential Partners: Municipal Government, County Government, Non-Profits/Advocacy Groups, Local Committees/ Neighborhood Groups

Vision Zero is a multidisciplinary and collaborative approach that seeks to eliminate severe injuries and fatalities resulting from vehicle crashes and to prioritize human life and health in all aspects of transportation systems and operations. Vision Zero recognizes that human error and mistakes are inevitable and focuses on systems-level change (above individual behavior change) to achieve safer mobility. This approach acknowledges that many factors contribute to safe mobility, including roadway design, reduced speeds, and policy implementation. Vision Zero Action Plans serve as effective roadmaps for eliminating severe injury crashes and fatalities. They outline actionable strategies, roles and responsibilities, and performance measures to help communities implement their vision for traffic safety for all roadway users. Some communities choose to adopt a Vision Zero policy or promote a Vision Zero pledge to further demonstrate their commitment to build safer streets and eliminate traffic fatalities.

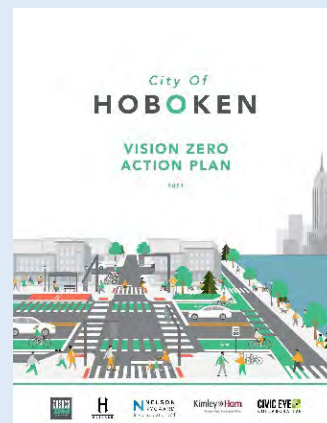
### Resources

- Vision Zero NJ Alliance - <https://www.visionzero4nj.org/>
- Vision Zero Network - <https://visionzeronetwork.org/>



## **SPOTLIGHT: HOBOKEN VISION ZERO ACTION PLAN**

Hoboken adopted a Vision Zero Action Plan in 2021. It is an important benchmark in the City's effort to eliminate traffic-related deaths and injuries by 2030. The Plan is informed by the Safe System Approach, which is a data-driven, holistic, and equitable method to roadway safety that includes five elements: Safe Roads, Safe Speeds, Safe Vehicles, Safe Road Users, and Post-Crash Care.



### Recommendation G:

#### Conduct Bicycle and Pedestrian Road Safety Audits and Assessments

Audience/Potential Partners: Municipal Government, Non-Profits/Advocacy Groups, TMAs, Schools, Bicycle Clubs, Local Committees/Neighborhood Groups

Walking and bicycling audits are performed to identify existing conditions and challenges to walking and bicycling within a specific area. An audit can be used to identify potential alternatives or solutions to identified issues. These can include engineering treatments, policy changes, or education and enforcement measures.

#### Resources

The NJTPA's Complete Streets Technical Assistance Program provides free direct technical assistance to municipalities to complete a specific task related to advancing a Complete Streets initiative in their community, including road safety audits. The program is funded by the NJTPA, with technical assistance provided in partnership with Sustainable Jersey and the Voorhees Transportation Center at Rutgers University

### Recommendation H:

#### Coordinate transportation and land use activity through the development of corridor plans

Audience/Potential Partners: Municipal Government, County Government, State Government

Corridor plans help to coordinate transportation and land use activity within a major transportation corridor. They identify existing conditions and issues and offer guidance on future infrastructure and capital improvements.



### Recommendation I:

#### Integrate opportunities for bicycle improvements into Climate Action Plans/Greenhouse Gas Emissions Inventories

Audience/Potential Partners: Municipal Government, County Government, Environmental Commissions, Local Committees/Neighborhood Groups

A Climate Action Plan provides strategies and measures to reduce greenhouse gas (GHG) emissions and illustrates ways to enhance a community's resilience to climate hazards in the long term. A GHG Inventory includes a list of emission sources to manage the impacts and risks of these gases, as well as to identify opportunities to reduce and mitigate those risks in communities.

#### Resources

The State of New Jersey adopted an Energy Master Plan (EMP) in 2019. Reducing energy consumption and emissions from the transportation sector is a key strategy from the plan. Supporting more transit use, bicycling, and walking is included as a way to reduce the overall transportation energy footprint. In 2020 the State released the New Jersey Global Warming Response Act 80x50 Report with the goal to reduce New Jersey's greenhouse gas emissions by 80% from their 2006 levels by 2050. The report recommends prioritizing Complete Streets and other bicycle- and pedestrian-friendly improvements as a way to reduce vehicle miles traveled.

### **EDUCATION**

Educational programs offer different ways for people of all ages and abilities to learn skills and gain confidence in bicycling. They can also provide all roadway users with information about how to share the road safely with vulnerable roadway users. The following actions are recommended:

- J. Support organizations that provide driver and bicycle education classes, workshops, and bike rodeo events
- K. Work with advocacy groups and law enforcement to inform the public about bicycle related laws



### Recommendation J:

#### Support organizations that provide driver and bicycle education classes, workshops, and rodeos

Audience/Potential Partners: TMAs, Non-Profits/Advocacy Groups, Enforcement, Bicycle Clubs

Educational programming can range from information sharing about rules of the road to more structured training programs. Over one-third of questionnaire respondents want to see more motorist and bicycle safety education programs, and 20% want access to basic bicycle repair classes. Bicycle educational programming and materials should be culturally relevant, representative of the community, and tailored to the needs of different populations. Types of education programs include:

- Safety classes for both drivers and bicyclists can teach people how to safely share the road with other users.
- Bicycle rodeos are designed to empower younger cyclists to ride more confidently. They are opportunities to educate parents and children about bicycle safety on the roadway and they often offer quick tune-ups and bicycle safety inspections.
- Bicycle maintenance workshops teach people basic bicycle repair skills and demonstrate how to perform regular check-ups and inspections so that people can feel more confident in their ability to handle issues such as flat tires.

### Resources

There are many organizations that provide education to bicyclists and drivers in the region. Transportation Management Associations (TMAs) provide programs and services that improve mobility, the environment, and overall quality of life in New Jersey, including cycling classes for youth and adults, bike rodeos, and bike workshops. They also assist with implementing Safe Routes to School programs. TransOptions is the TMA for northwestern Passaic County; EZ Ride is the TMA for the southeast portion of the county.

The New Jersey Bike Walk Coalition (NJBWC) offers the Smart Cycling curriculum developed by the League of American Bicyclists that teaches cyclists how to ride safely and legally on busy streets and highways.





### Recommendation K:

#### Work with advocacy groups and law enforcement to inform the public about bicycle related laws and changes to new laws

Audience/Potential Partners: Municipal Government, County Government, State Government, Enforcement, Non-Profits/Advocacy Groups

Recently, new laws have been passed that impact bicyclist safety. Sometimes, information about these laws may not be clearly communicated to law enforcement or the public. Inconsistency of enforcement across municipalities was identified as an issue during focus group discussions.

### Resources

The New Jersey Bike Walk Coalition (NJBWC) is the statewide advocacy group for bicyclists and pedestrians which helps to educate the public on the laws and rules of the road. NJBWC also organizes the NJ Bike Walk Summit, which is a great opportunity to learn about state and federal policy issues and to network with others to advance the safety of people who walk and bike.

## **ENCOURAGEMENT**

Providing a variety of opportunities to bicycle in the community can encourage people of different experience levels to ride more regularly and inspire changes in travel patterns. Programs such as organized bike rides and open streets events also build a greater sense of community and allow people to see and use typically car-centric streets and public spaces differently. They also help to diversify perceptions of bicyclists and encourage more people to see themselves riding a bike for recreation or transportation. More than one-half of questionnaire respondents indicated that community bicycle events would encourage them to bike more often; one-third of participants would love to have more local group rides to gain confidence in bicycling. The following is recommended to provide encouragement:

- L. Help promote, organize, and schedule group rides and tours
- M. Participate in and support efforts to promote bicycling such as Safe Routes to School and Bike Month activities
- N. Engage local groups to develop and implement an open streets event
- O. Work with police departments and local businesses to develop a positive ticketing program



### Recommendation L:

Help promote, organize, and schedule group bicycle rides and tours

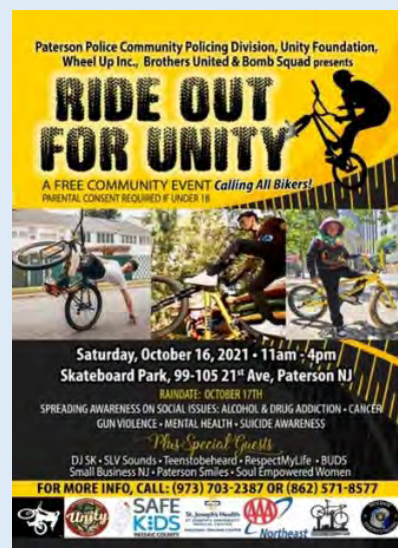
Audience/Potential Partners: Municipal Government, County Government, TMAs, Enforcement, Non-Profits/Advocacy Groups, Bicycle Clubs, Local Businesses, Local Committees/Neighborhood Groups

Organized bike rides and bike tours are great ways to build community and help people with little experience in bicycling to ride more confidently. County and municipal staff can help promote events and assist with road closures and police escorts.

### **SPOTLIGHT: PATERSON RIDE OUT FOR UNITY**

The Paterson Ride Out for Unity was a free community event for all bikers at the skateboard park on 21<sup>st</sup> Avenue presented by the Paterson Community Police Division, Unity Foundation, Wheel Up Inc, Brothers United and Sisters United Bicycle Clubs & Bomb Squad.

The Ride Out for Unity was held in October 2021.



## Public Awareness Campaigns

### Recommendation M:

Participate in and support efforts to promote bicycling such as Safe Routes to School and Bike Month activities

Audience/Potential Partners: Municipal Government, County Government, TMAs, Enforcement, Non-Profits/Advocacy Groups, Bicycle Clubs, Local Businesses

Bike Month activities, which often take place in May, can illuminate the many benefits of bicycling, create opportunities for people to discuss challenges and issues with biking in their communities, strengthen and create partnerships among bicycle-related groups, and empower people to incorporate bicycling in their daily lives.

Recommendation N:

Engage local groups to develop and implement an Open Streets event

Audience/Potential Partners: Municipal Government, County Government, TMAs, Enforcement, Non-Profits/Advocacy Groups, Bicycle Clubs, Local Businesses, Local Committees/Neighborhood Groups

Open Streets events temporarily close roadways to motor vehicles in order to encourage people to walk, bike, and explore public spaces safely. They help people reimagine how car-centric public streets and spaces can be used differently.

Ride Out for Unity, October 16th, 2021, was a free community open streets event hosted at the skateboard park on 21st Avenue by the Paterson Police, Unity Foundation, Wheel Up Inc., and Brothers United Bicycle Club.



Ride Out for Unity, October 16th, 2021, Paterson, NJ





#### Recommendation O:

Work with police departments and local businesses to develop a positive ticketing program

Audience/Potential Partners: Enforcement, Local Businesses

Positive ticketing rewards kids for good behavior. In these types of programs, young cyclists who wear their helmets are given “tickets” or coupons for ice cream or other items contributed by local businesses. This strategy helps to build relationships with younger community members and can be carried out by community organizations and/or law enforcement.

### **ACCESS TO BICYCLES**

Providing access to bikes is crucial to encouraging and allowing more people to bicycle. Barriers to access include affordability and lack of bicycle storage spaces. One-fifth of questionnaire participants noted that free and low-cost access to bicycles would encourage them to ride more often. To increase access, the following actions are recommended:

- P. Consider piloting a bike and/or micromobility share program
- Q. Create opportunities for people to borrow or purchase bikes, e-bikes, and tools at low or no cost
- R. Partner with non-profit organizations to provide free bikes upon completion of a bike training or as incentives for youth education
- S. Explore opportunities to install fix-it stations

#### Recommendation P:

Consider piloting a bike and/or micromobility share program

Audience/Potential Partners: Municipal Government, County Government, State Government, Local Businesses, Local Committees/Neighborhood Groups

Bike share programs allow people to conveniently access bicycles and reduce concerns over bicycle theft, parking, and maintenance. They also serve as a great option for first and last mile transit connections. Successful bike share systems require a designated fleet of bikes, parking locations, and a network of bicycle-friendly streets that connect high demand destinations. Adequate funding is necessary to support a successful network. Some bike share systems are privately funded with revenue coming from fares and advertising. Other systems rely on partnering with institutions and local businesses.

E-scooter sharing platforms are another alternative to bike share, but instead of bikes, electric-motor scooters are used. E-bikes, which have small electric motors that increase speed and ease of pedaling, have also increased in popularity and use.

## SPOTLIGHT: UNION TOWNSHIP BICYCLE SHARE PROGRAM

Union Township has a docked bicycle share program that provides the community with multi-modal transportation options. It has a fleet of 60 bicycles with stations located throughout the town.



SOURCE: SUSAN G. BLICKSTEIN, LLC

### Recommendation Q:

Create opportunities for people to borrow or purchase bikes, e-bikes, and tools at low or no cost

Audience/Potential Partners: TMAs, Non-Profits/Advocacy Groups, Bicycle Clubs, Local Businesses

Bike and tool libraries provide free access to bicycles, bicycle accessories, and tools for short periods of time. They often repair donated bikes and serve as a great resource for those who might not own one. Sometimes bikes are available to individuals at no or low cost.

## SPOTLIGHT: BOYS & GIRLS CLUB OF MERCER COUNTY BIKE EXCHANGE

The Boys & Girls Club of Mercer County Bike Exchange is a volunteer-led enterprise that repairs donated bicycles and sells them in the community. All proceeds go to The Boys & Girls Club of Mercer County. The bike exchange encourages the community to donate bicycles or to organize bike drives in schools, companies, civic or faith organizations.



SOURCE: WWW.BGCMERCER.ORG/BGC-BIKE-EXCHANGE

Recommendation R:

Partner with non-profit organizations to provide free bikes upon completion of a bike training or as incentives for youth education

Audience/Potential Partners: Non-Profits/Advocacy Groups, Bicycle Clubs

Earn-a-bike programs allow children to earn a free bicycle through participation in various programs or initiatives, such as volunteering, summer reading programs, or bike mechanic classes. For example, The Boys & Girls Club of Wayne has given bicycles as rewards for kids who have completed a certain amount of work in their afterschool program.

Recommendation S:

Explore opportunities to install fix-it stations

Audience/Potential Partners: Municipal Government, Non-Profits/Advocacy Groups, Local Committees/Neighborhood Groups, Local Businesses

Fix-it stations allow bicyclists to perform basic repairs and maintenance and help to quickly resolve issues during a ride.



Example photo of commercially available “Bike Fix-it Station” with work stand, tools, and air pump. Image source: <https://www.dero.com/product/fixit-plus/>





## BIKE-TRANSIT INTEGRATION

Building bicycle facilities in close coordination with transit services enables people, especially those who do not own a car, to access transit stations and stops safely and conveniently by bike. Additionally, modal integration helps to avoid generating car trips to and from transit stations.

### Recommendation T:

[Coordinate with NJ TRANSIT to improve bicycle access at train stations and identify locations for enhanced bike parking](#)

Audience/Potential Partners: Municipal Government, NJTRANSIT

Integrating active transportation and transit addresses first and last mile challenges, reduces the number of car trips to transit stations, and creates greater connectivity in the transportation network.

- First and last mile connections are transportation services and infrastructure that enhance connections to and from transit services: i.e. the “first mile” from a trip origin to transit and/or the “last mile” from transit to the trip destination. These solutions can have an outsized impact on the total demand for travel and on regional mobility by filling gaps in the multimodal transportation network.<sup>ix</sup>
- Bike stations are buildings or structures designed to be used as secure long-term bicycle parking facilities. They can vary in size and design, ranging from lockable bicycle cages to multi-story buildings designed specifically for providing secure bicycle parking solutions.
- Bike lockers or boxes can be provided at places where people need long-term parking solutions, such as transit stations.

### Resources

- NJTRANSIT Transit Friendly Planning Guide
- Association of Pedestrian and Bicycle Professionals (APBP) Bike Parking Guide
- NACTO Transit Street Design Guide

## SPOTLIGHT: NEW JERSEY BIKE & WALK COALITION BIKE DEPOT PROGRAM

The NJBWC created the bike depot program in October 2014 with the launch of the Montclair bike depot at the Bay Street NJ TRANSIT station. The Bloomfield station bike depot was launched in March 2017 and the Elizabeth bike depot opened in May 2018, at the midtown garage adjacent to the Elizabeth station.



The Elizabeth Bike Depot is a collaboration between NJBWC and the Parking Authority of the City of Elizabeth. The depot is managed and maintained by the NJBWC. All

*SOURCE: NJBWC.ORG/BIKE-DEPOT-PROGRAM/*

proceeds above expenses are used by the NJBWC to further its mission to make streets safer for all users in the state.

Elizabeth Bike Depot was made possible through Urban Enterprise Zone funds.

## PLACEMAKING

Placemaking is the process of creating and reimagining public spaces that reflect shared needs, values, and identities of a community as well as contribute to people's well-being. It is a collaborative process that involves understanding a community's vision and desires for a place to facilitate creative patterns and uses. Placemaking strategies can range from simple, low-cost changes to capital improvements. Some placemaking strategies to transform places to become more bicycle-friendly include:

- U. Develop a plan for bicycle wayfinding signage
- V. Work with partners to support demonstration and pilot projects

[Recommendation U: Develop a plan for bicycle wayfinding signage](#)

[Audience/Potential Partners: Municipal Government, NJTRANSIT](#)

Wayfinding is the use of signage, maps, apps, and other elements to help people better navigate, understand, and experience a place. Signs can be used identify bike routes and can include mileage or travel time to community destinations. Wayfinding can also include unique branding of a downtown, neighborhood or historic district.

[Recommendation V: Work with partners to support demonstration and pilot projects](#)

Audience/Potential Partners: Municipal Government, County Government, Non-Profits/Advocacy Groups, Bicycle Clubs, Local Businesses, Enforcement, Local Committees/Neighborhood Groups

Demonstration programs are short-term, low-cost projects that are used to pilot and experiment with potential solutions and improvements for safer walking and bicycling. This allows communities to test ideas using materials like paint, bollards, or rubber markers without spending a lot of money and time. In some locations, these projects may stay in place until the municipality can find funding to create something more permanent. Also called tactical urbanism, these demonstrations can create excitement in different areas and momentum for a project, provide results more quickly, and allow for testing the effectiveness of certain treatments in different areas.

### **SPOTLIGHT: BOROUGH OF KEYPORT DEMONSTRATION PROJECT**

Using temporary paint and plastic bollards, the Borough of Keyport was able to demonstrate how potential improvements, including a bicycle lane, designated pedestrian space, and crosswalk, could improve safety where the Henry Hudson Trail crosses Maple Place at the intersections with Church and Atlantic streets.



**SOURCE: NJTPA**

This weeklong demonstration project was one component of public outreach for Keyport's Complete Streets Policy and Implementation Plan. The plan was completed through the NJTPA's Planning for Emerging Centers Program. This competitive program provides technical assistance to communities to create more sustainable, transit-supportive and walkable communities.





## DESIGN STRATEGIES

Recommended design and traffic regulation strategies include low-cost and innovative roadway design strategies to achieve the vision and goals of BIKE Paterson. These examples include proven strategies and countermeasures intended to slow travel speeds, improve separation among pedestrians, bicyclists, and motor vehicle traffic, and calm traffic, especially in residential areas and locations with high volumes of pedestrians or cyclists.

- W. Targeted Lower Speed Limits and Right Turn on Red Prohibitions
- X. Slow Speed Zones
- Y. Targeted road diet applications
- Z. Targeted one-way to two-way street conversions

### Recommendation W:

#### Targeted Lower Speed Limits and Right Turn on Red Prohibitions

**Audience/Potential Partners:** Municipal Government, Passaic County, NJDOT

Identify streets and intersections where targeted lower speed limits and/or right turn on red prohibitions can improve safety and provide a less stressful street environment for travel by bike and by foot. When a crash occurs, the speed a vehicle is traveling at the point of impact is directly linked to the fatality rate of any cyclists or pedestrians involved. The average fatality rate for a person hit by a car is 10% at 20 mph, 40% at 30 mph, and 85% at 40 mph (USDOT, 2011).<sup>x</sup>

A street provides connectivity and access between residential areas and significant destinations such as schools, parks, libraries, social services, dining and entertainment, and transit service. However, roadways may experience levels of traffic, speeds, and truck travel that create a stressful environment for people walking or biking. Targeted application of lower speed limits and/or Right Turn on Red prohibitions may reduce the stress level and provide conditions that are more comfortable for vulnerable roadway users.

Lower speeds are also one of the factors that can reduce the LTS metric for a street, corridor, or intersection. Lowering the posted speed may reduce the LTS enough to make a dedicated bicycle facility a viable option. These speed and turn changes are also among the FHWA's Proven Safety Countermeasures, which have demonstrated results in case studies in cities and towns across the U.S.



### Recommendation X: Slow Speed Zones

Audience/Potential Partners: Municipal Government, Passaic County, NJDOT

Slowing vehicle speeds is a key step in creating a safe environment for all road users. Slow speed zones, *20 is Plenty* programs, and similar strategies are designed to provide safety benefits on a larger scale than targeted speed and turn changes.

These changes may be applied on a neighborhood or corridor basis, such as in downtowns or along main streets. They can also be more targeted, creating a slow zone around a school, park, recreation center, senior center, library, or other destination. Travel within neighborhoods is often slower and more local, with many trips starting or ending at home. Homes, schools, and other destinations typically generate more pedestrian, bicycle, and transit travel with more vulnerable road users directly exposed to vehicular traffic.

A 1-mph decrease in operating speeds can result in a 17% decrease in fatal crashes.<sup>xi</sup> Another study found that a 10% reduction in the average vehicle speed resulted in 27% fewer injury crashes and 34% fewer fatal crashes.<sup>xii</sup>

Walkable school zones have several health, safety, and educational benefits, while also reducing transportation costs for families and school districts. Safe Routes to School programs have been found to increase walking and improve safety for students that walk and bike to school. In New York City, schools with SRTS programs saw a 44% decline in pedestrian injuries.<sup>xiii</sup> SRTS programs can also improve local air quality by decreasing congestion around schools, as 10-14% of vehicle trips during the morning rush are for school transportation.<sup>xiv</sup>

### Recommendation Y: Targeted road diet applications

Audience/Potential Partners: Municipal Government, Passaic County, NJDOT

A road diet is most commonly implemented on a four-lane undivided roadway. Typically, the road diet makes the roadway one lane in each direction for motor vehicles, with a median and turning lanes or a turning lane in the middle with protected bike lanes or on-street parking on one or both sides.

The four-lane undivided roadway configuration generally experiences more crashes than other designs because:

- Vehicles swerve around or are unable to stop when another vehicle comes to a stop in the left lane to turn left.
- Vehicles turning left onto the roadway must cross four lanes of traffic.
- Having multiple lanes in each direction encourages speeding.
- There are no bicycle facilities and pedestrians must cross longer distances with multiple conflict points.



Road diets on these types of roadways have been found to reduce crashes by 19-47% nationally.<sup>xv</sup> Passaic County has been a leader in implementing road diets in New Jersey. The County found that after road diets were implemented, severe crashes were reduced by 50-60%, leading to many fewer injuries and fatalities.<sup>xvi</sup>

#### Recommendation Z:

##### Targeted one-way to two-way street conversions

Audience/Potential Partners: Municipal Government, Passaic County, NJDOT

Identify streets and intersections where targeted one-way to two-way street conversions may improve safety, mobility, and access.

At the time when reducing congestion, promoting higher travel speeds, and maximizing vehicle throughput were considered the highest priority, city and local streets were converted from two-way to one-way travel, especially in locations with significant peak period directional travel demand. The conventional wisdom was that two lanes in the same direction could move more traffic and that this outcome should be prioritized. However, these multi-lane streets have also been found to encourage higher speeds, aggressive driving, and frequent lane-changing, with the unintended consequence of creating a less safe street environment, especially in densely developed areas that experience high levels of bicycling and walking.





## End Notes

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- <sup>i</sup> <https://www.nj.gov/dep/ej/communities.html>, accessed January 9, 2022
- <sup>ii</sup> Jacobsen and Rutter, *Bicycling and Cycling Safety*, 2012
- <sup>iii</sup> <https://dep.nj.gov/ej/communities>, accessed January 24, 2024
- <sup>iv</sup> <https://www.nytimes.com/interactive/2021/05/27/climate/us-cities-highway-removal.html>, accessed September 28, 2022
- <sup>v</sup> <https://www.transportation.gov/grants/reconnecting-communities/reconnecting-communities-additional-guidance>, accessed October 13, 2022
- <sup>vi</sup> <https://www.nj.gov/dep/ej/communities.html>, accessed January 9, 2022
- <sup>vii</sup> [https://safety.fhwa.dot.gov/zerodeaths/zero\\_deaths\\_vision.cfm](https://safety.fhwa.dot.gov/zerodeaths/zero_deaths_vision.cfm), accessed January 9, 2022
- <sup>viii</sup> Alta Planning + Design. (2014). Winter Bike Lane Maintenance: A Review of National and International Best Practices (Updated 2/14). Retrieved: <https://altago.com/wp-content/uploads/winter-bike-riding-white-paper-alta.pdf>
- <sup>ix</sup> First-Last-Mile-Implementation-Brief PDF ([www.njtpa.org](http://www.njtpa.org)). Accessed January 24, 2024
- <sup>x</sup> AAA Foundation. (2011). Impact Speed and a Pedestrian's Risk of Severe Injury or Death. Retrieved: <https://www.propublica.org/article/unsafe-at-many-speeds>
- <sup>xi</sup> Highway Safety Manual
- <sup>xii</sup> NACTO. (N.d.). Speed kills. Retrieved: <https://nacto.org/publication/city-limits/the-need/speed-kills/>
- <sup>xiii</sup> Peter A Muennig et al., 'The Cost-Effectiveness Of New York City's Safe Routes To School Program', American Journal Of Public Health, issue 0 (2014): 1-6.
- <sup>xiv</sup> McDonald N., Brown A., Marchetti L., Pedroso M. (2011). U.S. School Travel 2009: An Assessment of Trends. American Journal of Preventive Medicine, 41(2), 146-151.
- <sup>xv</sup> Turner-Fairbank Highway Research Center (June 2010). "Evaluation of Lane Reduction 'Road Diet' Measures on Crashes." Federal Highway Administration. FHWA-HRT-10-053.
- <sup>xvi</sup> NJDOT. (2016). What Is a Road Diet? Retrieved: <https://vimeo.com/169003402>



Please make this real, I would like to ride my bike in Paterson ...



# BIKE PATERSON: APPENDIX

CITY OF PATERSON, PASSAIC COUNTY, NEW JERSEY

JANUARY 2024







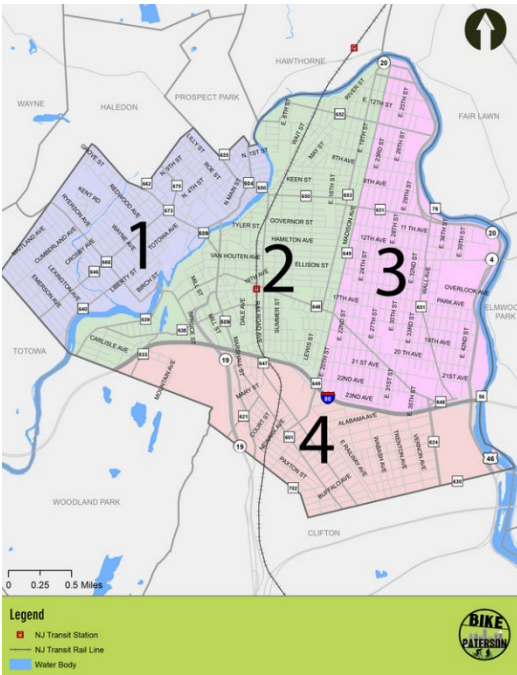
## **APPENDIX 1: SURVEY FINDINGS**

# Appendix: Community Survey Results

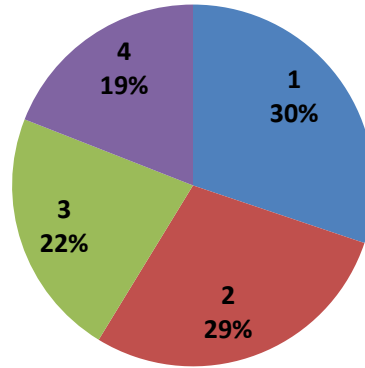
The online survey was open from October 2020 through November 2021 and a total of 121 people participated. It was available in both English and Spanish.

## Survey Participant Demographics:

Three-quarters of participants (75%) live in Paterson, with 25% both living and working in Paterson. Almost 15% of participants work but do not live in Paterson. Survey responses were geographically distributed throughout the city. Included in the survey was a map of Paterson, divided into four sections. Participants were asked to identify the area in which they live: 30% live in area 1 (western Paterson), 29% live in area 2 (central Paterson), 22% live in area 3 (eastern Paterson), and 19% live in area 4 (southern Paterson).

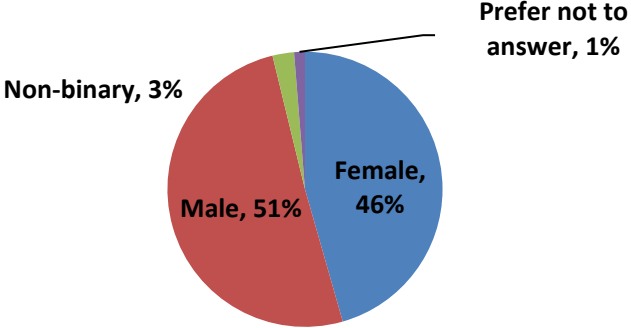


If you live in Paterson, identify which part of the City you live in?

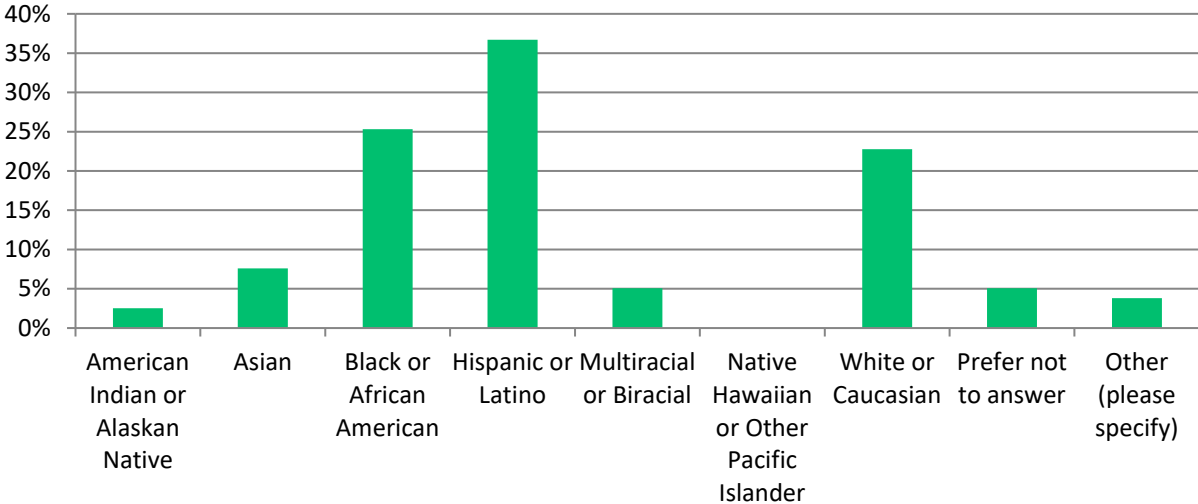


Just over half of survey participants (51%) identified themselves as male, 46% identified as female, and 3% identified as non-binary. Over half of participants were in the 35-44 (32%) and 25-34 (29%) age cohorts, with the rest of the participants distributed across the other age cohorts. Over a third of survey participants (37%) identified themselves as Hispanic or Latino. There was a similar share of participants who identified as Black or African American (25%) or White or Caucasian (23%), followed by those who identified as Asian (8%), multiracial or biracial (5%), and American Indian or Alaskan Native (3%).

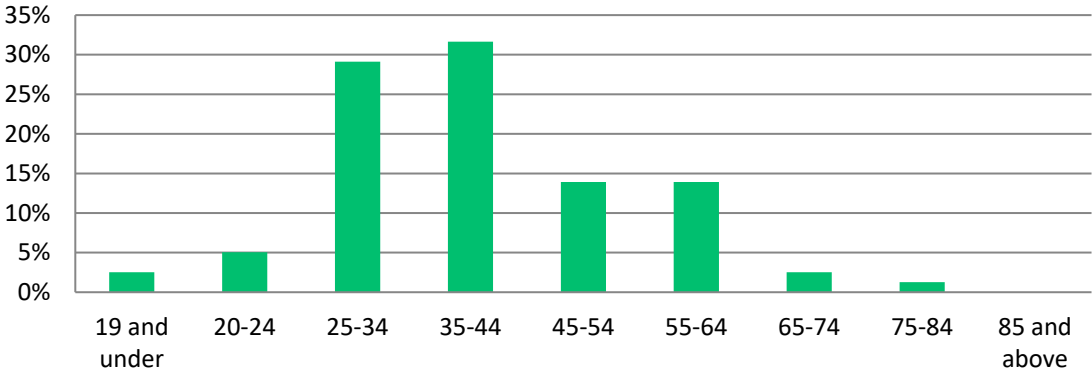
Do you identify as:



Which of the following best describes you?  
(Select all that apply)



What is your age?

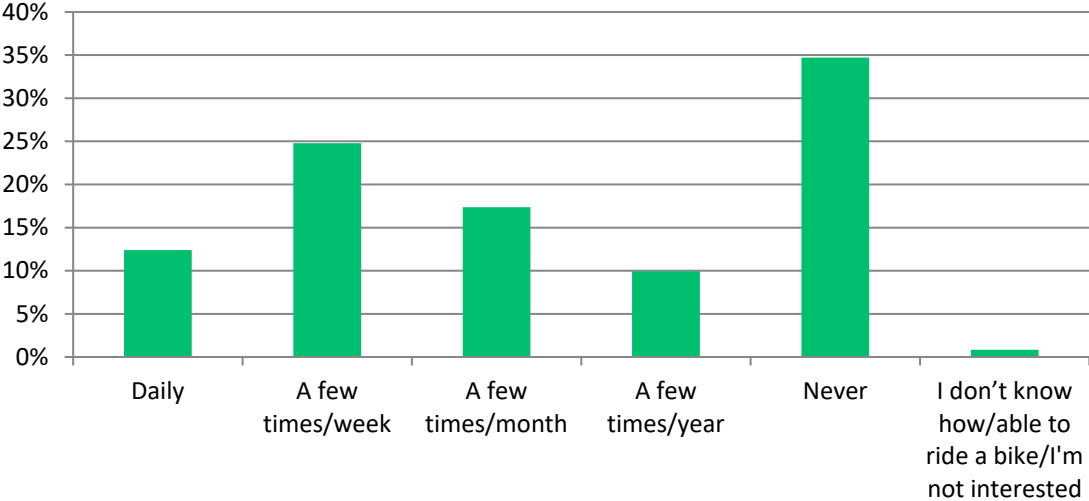




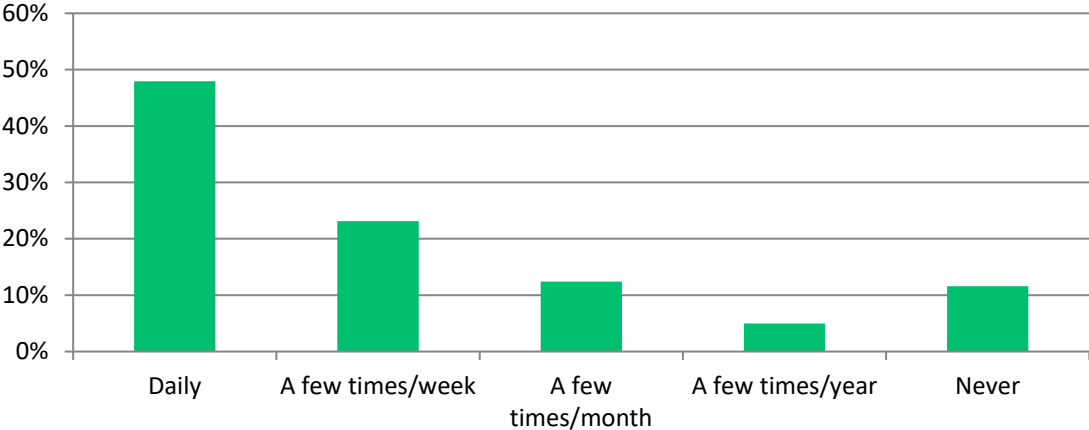
### Frequency of Bicycling:

While only 12% of respondents bicycle daily, almost half (48%) of participants responded that they see other people bicycling in Paterson daily. Over one-third (35%) of survey participants reported that they never travel by bicycle in Paterson, followed by those who bicycle a few times a week (25%) and a few times a month (17%). Reasons that bicycling is important for those who bicycle include good for health (64%) and recreation/social activity (62%) followed by good for the environment (46%), affordable (22%), and convenient (21%).

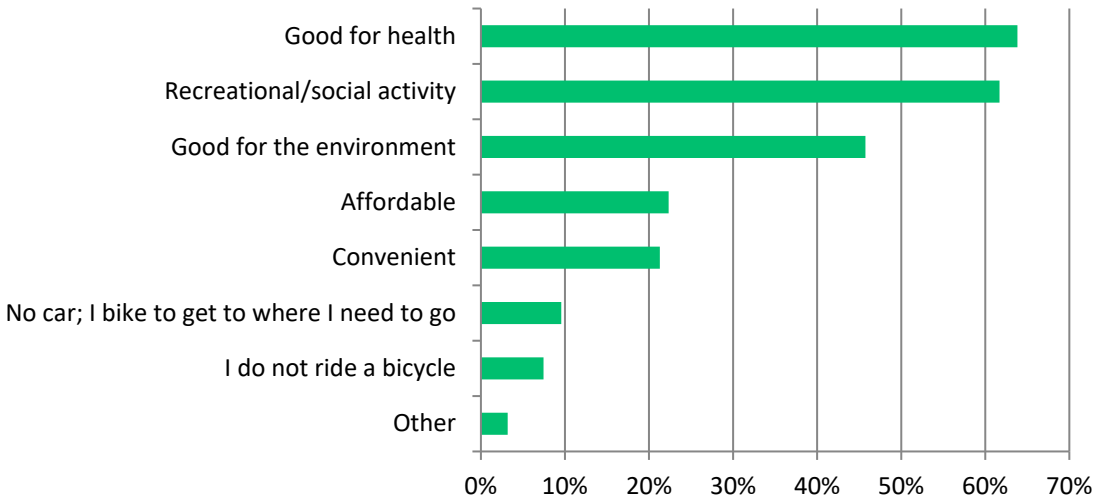
#### How frequently do you travel by bicycle in Paterson?



#### How frequently do you see other people bicycling in Paterson?



## If you travel by bicycle, why is it important to you? (select your top three reasons)



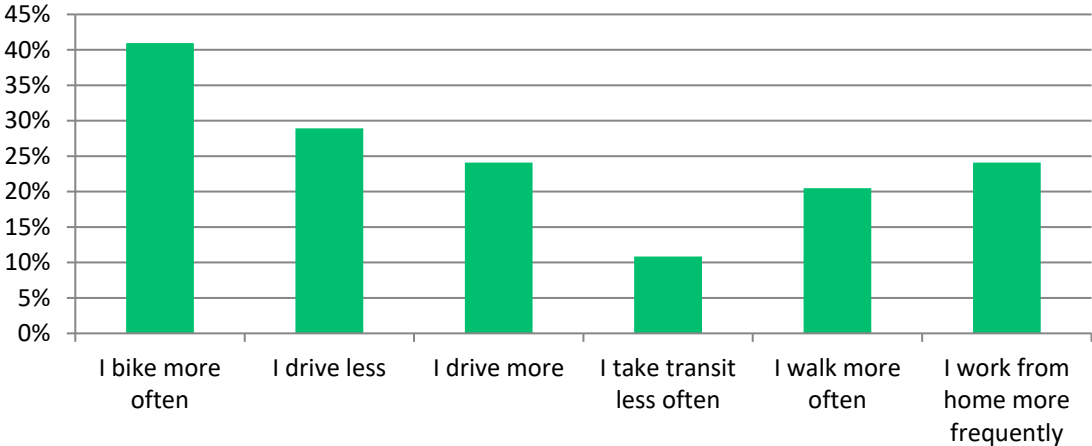
### Primary Modes of Transportation Prior to COVID-19:

Survey respondents were asked about their primary mode of transportation for various trips prior to COVID-19. Prior to COVID-19, respondents primarily drove or were driven to work/school (61%), on shopping/errand trips (74%), and when dining out (78%). Over half of respondents (56%) indicated walking or bicycling as their primary mode of transportation for recreation, exercise, or worship.

### Impact of COVID-19 on Modes of Transportation:

During COVID-19, 41% of respondents bicycle more often and 20% walk more often. While 29% of respondents drive less, 24% drive more. About a quarter of respondents work from home more frequently, and 11% indicated that they take transit less often.

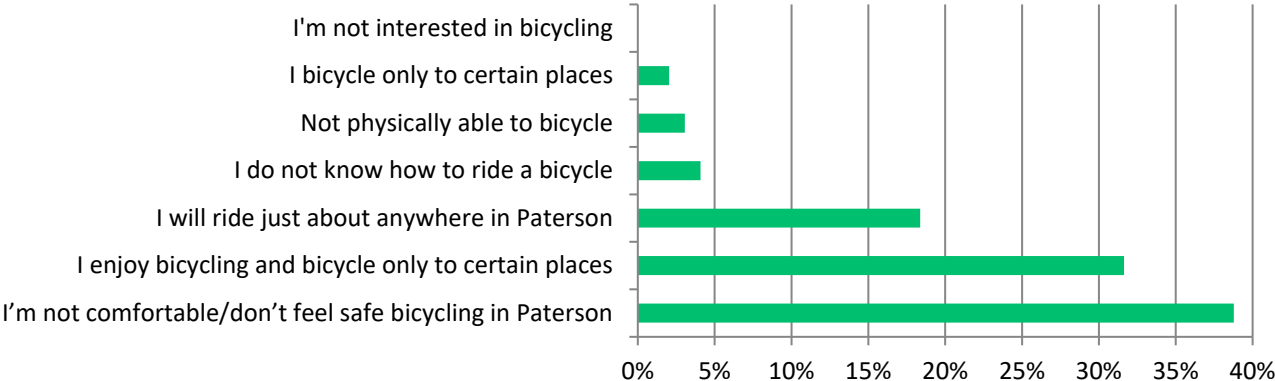
Indicate if your levels of walking, bicycling, taking transit, or driving have changed during COVID-19 (Select all that apply).



**Comfort Bicycling in Paterson:**

When asked about their interest in/ability to bicycle, 39% of respondents indicated that they are not comfortable or don't feel safe bicycling in Paterson; 32% reported that they enjoy bicycling but bicycle only to certain places, while 18% said they would ride just about anywhere in Paterson.

How would you describe yourself in terms of your interest in/ability to bicycle?



The following factors are the top contributors to participants' comfort and/or willingness to travel by bicycle in Paterson: fear of traffic/fear of being hit by a vehicle (63%), poor road conditions (55%), lack of secure bicycle parking at destination/fear of bicycle theft (55%), lack of developed bicycle routes/lanes (44%), and fear of crime/assault/harassment (43%).



Participants were asked about their level of comfort bicycling on different types of bicycle facilities.

	Multi-use Path/Trail	Buffered Bicycle Lane	Standard Bicycle Lane	Current Streets	Low-speed Roads
<b>Very comfortable</b>	64.7%	57.8%	19.8%	9.4%	20.3%
<b>Somewhat comfortable</b>	10.6%	15.7%	16.0%	0.0%	19.0%
<b>Neutral/Unsure</b>	10.6%	8.4%	23.5%	14.1%	31.6%
<b>Somewhat uncomfortable</b>	2.4%	7.2%	17.3%	21.9%	12.7%
<b>Very uncomfortable</b>	11.8%	10.8%	23.5%	54.7%	16.5%

The majority of participants felt very comfortable bicycling on separated bicycle facilities, such as a multi-use path/trail (65%) and a buffered bicycle lane (58%). Participants were mixed in terms of their level of comfort bicycling on a standard bicycle lane or a low-speed road, with only 20% of them feeling very comfortable bicycling on either of those facilities. The majority of survey respondents (55%) indicated that they were very uncomfortable bicycling on Paterson streets as they are now, without any special striping or bicycle markings.



Picture of a standard bike lane (marked by a solid white line) that has no separation from travel lanes that cars and trucks use



Picture of a buffered bicycle lane that is striped with paint on the street and is separated from motorized traffic by vertical elements, such as bollards (sturdy, short, vertical posts) or curbing (edge of a raised sidewalk). Source: NACTO



Picture of a multi-use path/trail that is fully separated from roads that carry motorized traffic. Source: Pedestrian and Bicycle Information Center.

### Bicycle Parking:

Participants were asked to list three locations in Paterson where you think bicycle parking is most needed. The top five locations that survey respondents indicated were most in need of bicycle parking were downtown, parks, Great Falls, schools, and Main Ave.

## Open-ended Survey Comments:

### Magic Wand

Participants were asked about the type of improvements that they would do to improve bicycling in Paterson if they had a magic wand. Responses were categorized into the following themes.

- Infrastructure
  - More bike lanes, especially protected facilities
  - More bike parking
  - Improve and maintain the condition of the streets/fix potholes
  - Evaluate traffic signal timing
  - Better lighting
- Enforcement
  - Illegal parking
  - Speeding
  - Stopping at Stop signs
  - Crime
- Education
  - More signs
  - Bike education classes for kids and adults
  - Public events

### Other Comments

28 participants left open-ended comments at the end of the survey. The following summarizes key highlights from the comments:

- Many survey participants were excited about the project because it would enable them to feel safer bicycling or bicycle more often.
- Many participants highlighted concerns about safety, both on city streets and on bicycle paths. Some were uneasy about traffic and felt unsafe driving on streets. They suggested better enforcements of traffic laws for vehicles on the road. Poor road conditions also contributed to participants' concerns about street safety. Other participants who were concerned with bicycle safety noted the importance of having protected paths separate from vehicles or divided lanes separating bicyclists from pedestrians. Wider bicycle lanes were also suggested.
- Multiple participants suggested a bicycle rental or bicycle share program to make bicycling more accessible and affordable for city residents.



## **APPENDIX 2: REMOVING HIGHWAYS**



# Can Removing Highways Fix America's Cities?

By [Nadja Popovich](#), [Josh Williams](#) and [Denise Lu](#) May 27, 2021

ROCHESTER, N.Y. — Built in the 1950s to speed suburban commuters to and from downtown, Rochester's Inner Loop destroyed hundreds of homes and businesses, replacing them with a broad, concrete trench that separated downtown from the rest of the city.

Now, the city is looking to repair the damage. It started by filling in a nearly-mile-long section of the sunken road, slowly stitching a neighborhood back together. Today, visitors of the Inner Loop's eastern segment would hardly know a highway once ran beneath their feet.

As midcentury highways reach the end of their life spans, cities across the country are having to choose whether to rebuild or reconsider them. And a growing number, like Rochester, are choosing to take them down.

In order to accommodate cars and commuters, many cities “basically destroyed themselves,” said Norman Garrick, a professor at the University of Connecticut who studies how transportation projects have reshaped American cities.

“Rochester has shown what can be done in terms of reconnecting the city and restoring a sense of place,” he said. “That’s really the underlying goal of highway removal.”

The project’s successes and stumbling blocks provide lessons for other cities looking to retire some of their own aging highways. Nearly 30 cities nationwide are currently discussing some form of removal.

Some, like Syracuse and Detroit, have committed to replacing stretches of interstate with more connected, walkable neighborhoods. Others, like New Orleans and Dallas, are facing pressure from local residents and activists to address the pollution, noise and safety hazards brought by the mega-roads.

<sup>1</sup> <https://www.nytimes.com/interactive/2021/05/27/climate/us-cities-highway-removal.html>, accessed September 28, 2022



The eastern section of Rochester's Inner Loop highway, before it was removed. *City of Rochester*



Shawn Dunwoody, a local artist and community organizer, walking along the new Union Street corridor, which replaced the Inner Loop. *Mustafa Hussain for The New York Times*



## **APPENDIX 3: PATTERN BOOK**





# Technical Memorandum: Pattern Book

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Date: 08/17/2021 (revised 01/27/2022; revised 03/10/2022, revised 05/10/2022, revised 5/27/2022; revised 06/27/2021)

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# Introduction

This Pattern Book has been developed as a component of the *BIKEPassaicCounty Plan* to provide general design guidance on several configurations for bicycle facilities that are planned in Passaic County, both on-road and off-road. For each bicycle facility type, the Pattern Book provides a definition, key points to describe the typical application of the facility, typical dimensions, and references to published design guides where additional details can be obtained. The Pattern Book also provides an Order-of-Magnitude Cost Estimate List for a range of bicycle facility configurations.

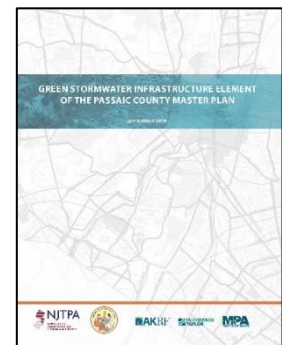
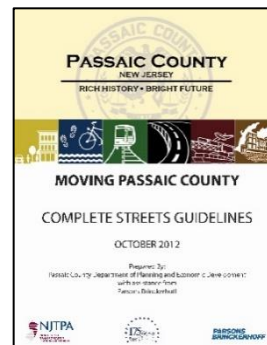
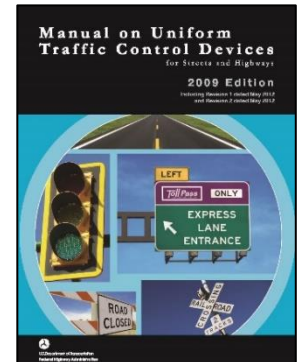
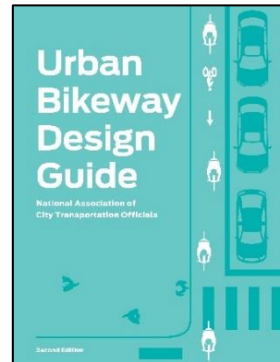
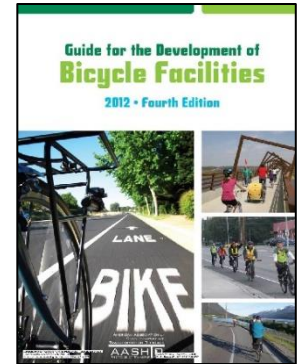
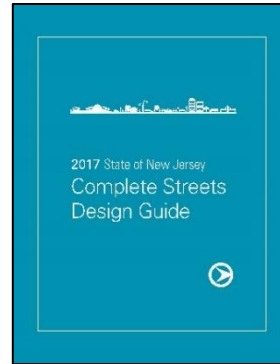
The purpose of this Pattern Book is threefold:

1. To inform the planning of a *BIKEPassaicCounty Network* by providing consistent criteria for facility selection relative to the variable conditions that exist throughout Passaic County,
2. To provide a visual illustration and common palette of planned bicycle facilities in order to enhance communication with municipalities, stakeholders, and the public, and
3. To inform context-sensitive concept plans for priority routes in the *BIKEPassaicCounty Network*.

Much of the interest and growth in bicycle facilities and networks in New Jersey over the past 30 years is attributable to the information provided in continually evolving design guides published at the state and national levels. The design guidance presented in this Pattern Book is distilled from such resources including, the [State of New Jersey Complete Streets Design Guide](#), the [AASHTO Guide for the Development of Bicycle Facilities](#), the [NACTO Urban Bikeway Design Guide](#), and the [Manual on Uniform Traffic Control Devices \(MUTCD\)](#). Additional resources are also referenced in this Pattern Book to provide sufficient detail where needed. Recommendations are subject to change as newly published design guidance from appropriate sources evolves over time.

This Pattern Book also serves as a companion to augment the design guidance provided in the [Transportation Element \(Appendix A: Complete Streets Guidelines\)](#) and the [Green Stormwater Infrastructure Element \(Appendix A2: Green Streets Guidelines\)](#) of the Passaic County Master Plan, completed in 2012 and 2018, respectively. As it relates to the Complete Streets Guidelines, this Pattern Book expands the definition of a bicycle lane from a standard four- to five-foot-wide striped area at the outside edge of the street, to include robust configurations (such as buffered or separated bike lanes) that can be more attractive to bicyclists of varying experience and confidence levels. It also provides guidance on shared use path and sidepath facilities, which are attractive to users of all ages and abilities and create value in terms of mobility, recreation, and public health for bicyclists, pedestrians, and other wheeled users. As it relates to the Green Streets Guidelines, this Pattern Book provides guidance on the spatial requirements of bicycle facilities, a vital consideration for balancing the green streets approach to ensure that the vehicle cartway, bicycle facilities, and stormwater management infrastructure are designed to function in concert.

The level of detail provided in this Pattern Book is appropriate for bicycle facility network planning and conceptual planning of priority routes. Future implementation of planned bicycle facilities should include careful and deliberate engineering design to ensure the safety of all users and comply with any and all applicable codes, statutes, and evolving best practices. Intersections, crossings, bicycle parking, wayfinding, and curbside management (such as parking, transit stops, goods movement, and parklets) will be important considerations in future phases of bicycle route design once the *BIKEPassaicCounty Network* has been formalized.





# Marked Shared Lanes

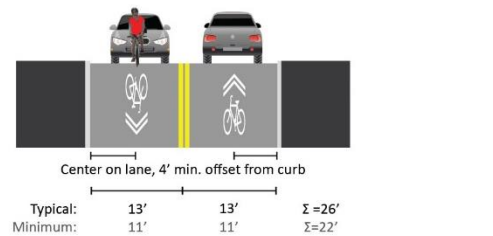
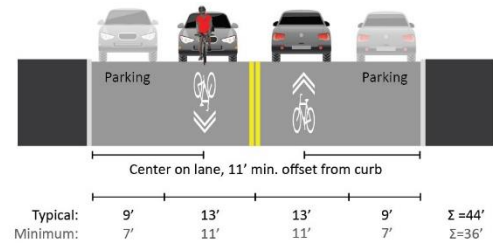
Marked shared lanes are streets with special pavement markings (known as shared lane markings or “sharrows”) to indicate a shared roadway for motor vehicles and bicycles. Shared lane markings are not exclusive bicycle facilities, but help provide directional guidance to bicyclists, reinforce the legitimacy of bicyclists, and alert motorists to the potential presence of bicyclists.

## Application:

- Low-speed, low-traffic streets (usually single lane each direction with posted speed  $\leq 25$  MPH and volume  $< 10,000$  ADT)
- Guide bicyclists over short distances between other on-road or off-road bicycle facilities
- Guide bicyclists through intersections
- Not preferred for use over long distance
- Material should be high quality thermoplastic or polymer cement material, such as Endurablend
- Where used, should be placed immediately after an intersection and spaced at intervals of  $< 250$  feet thereafter
- Shared lane markings should be centered on the lane (at least 11 feet from the curb in the presence of on-street parallel parking, or at least 4 feet from the curb where there is not on-street parking)
- Green color backing of shared lane marking is experimental and requires application to the Federal Highway Administration (FHWA)

## Planning & Design Resources:

- 2017 [State of New Jersey Complete Streets Design Guide](#), Chapter 3, p. 98, NJDOT
- 2012 [Guide for the Development of Bicycle Facilities](#), Chapter 4, p. 4-4, AASHTO
- 2011 [Urban Bikeway Design Guide](#), p. 273, NACTO
- 2012 [MUTCD, Section 9C.07](#)



## Shared lane markings

Top: With on-street parking

Bottom: Without on-street parking



Example of bicyclists on road with shared lane markings in Princeton, NJ

## Evolving Practice: Advisory Bicycle Lanes

For roads with a low traffic volume ( $< 6,000$  ADT) that are too narrow for conventional bicycle lanes, Advisory Bicycle Lanes are currently being evaluated as a potential solution. Advisory Bicycle Lanes “demarcate a preferred space for bicyclists and motorists to operate on narrow streets that would otherwise be shared lanes. Unlike dedicated bicycle lanes, motor vehicle use is not prohibited in the advisory bike lane and is expected on occasion.” (AASHTO Research Roadmap, 2021). The treatment requires an application for experimentation and approval from FHWA to implement. As the research and guidance around Advisory Bicycle Lanes continues to develop, this type of facility may supplant the use of shared lane markings.

Additional Resources:

- 2016 [Small Town and Rural Multimodal Networks](#), pp. 2-17 – 2-24, FHWA
- 2021 [AASHTO Council on Active Transportation Research Roadmap Review](#), p. 74



Example Advisory Bicycle Lane in Edina, MN (Source: FHWA, [Small Town and Rural Multimodal Networks](#))





# Bicycle Boulevard

A bicycle boulevard (also known as a community greenway) is a street with low motor vehicle speed and volume that is further enhanced to prioritize bicycle travel and support interconnected bicycle mobility. The principal elements of a bicycle boulevard include direct/efficient routing and access to destinations, signage and pavement markings, traffic calming measures for speed and volume management, and crossing enhancements for bicyclist convenience and safety.

## Application:

- Local streets with network connectivity and low motor vehicles speeds ( $\leq 25$  MPH) and volumes ( $< 2,500$  ADT)
- Bicycle boulevards are linear corridors of interconnected, traffic-calmed streets where bicyclists are afforded an enhanced level of safety and comfort
- Include easy-to-follow route signage and pavement markings (shared lane markings) for bicyclists
- Traffic calming interventions are utilized to manage motor vehicle speed and volume, optimizing comfort for bicyclists, and may include facilities such as a chicane, mini roundabout, curb extension, refuge island, speed hump, raised crosswalk, raised intersection, full street closure, or partial street closure, based on local context



Example of a bicycle boulevard in Berkeley, CA that shows pavement markings and a chicane in the foreground, and a speed hump in the background. (Source: [Flickr](#)/Payton Chung)

## Planning & Design Resources:

- 2017 [State of New Jersey Complete Streets Design Guide](#), Chapter 3, p. 99, NJDOT
- 2012 [Guide for the Development of Bicycle Facilities](#), Chapter 4, page 4-33, AASHTO
- [Urban Bikeway Design Guide, Bicycle Boulevards website](#), NACTO
- 2016 [Small Town and Rural Multimodal Networks](#), p. 2-9, FHWA



Example layout of a bicycle boulevard that shows a refuge island, speed humps, and a roundabout (Source: FHWA, [Small Town and Rural Multimodal Networks](#))



# Signed Bicycle Route

Signed bicycle routes are streets that include signage to support bicycling. Bicyclists may operate on all roadways, except where prohibited by statute or regulation. In certain parts of Passaic County, particularly the northwest portion of the county, physical constraints of topography and distance make the provision of dedicated bicycle facilities difficult. Yet, the scenic character of these streets is attractive to bicyclists, especially experienced and confident road bicyclists.

Along these types of routes, most without a designated space or markings for bicyclists, regulatory signage (to alert motorists of bicyclist presence) and wayfinding signage (to enhance bicyclist navigation of routes) can be installed following MUTCD guidelines. In addition to signage, it is important to ensure that these routes have good pavement quality, sight distances, and bicycle-compatible drainage grates, bridge expansion joints, and railroad crossings. Consideration should also be made for bicyclist movement through traffic signals and intersections.

## Application:

Signed bicycle routes may be considered where:

- Expanding shoulders on both sides of the road would require substantial expense, including regrading of topographic features and/or relocation of utility poles, light poles, drainage appurtenances, swales, etc.
- Streets are unable to accommodate other treatments due to constraints such as vehicle volumes and speeds (see table on page 6), distances between destinations, elevation change along the route, or the expense of shoulder widening.

## Planning & Design Resources:

- 2012 [Guide for the Development of Bicycle Facilities](#), Chapter 4, pp. 4-3, 4-34 - 4-37, AASHTO
- Manual on Uniform Traffic Control Devices (MUTCD): [Part 9. Traffic Controls for Bicycle Facilities](#)
  - Section 9B.02 Design of Bicycle Signs
  - Section 9B.20 Bicycle Guide Signs



Regulatory Sign R4-11 may be used on roadways where no bicycle lanes or adjacent shoulders usable by bicyclists are present and where travel lanes are too narrow for bicyclists and motor vehicles to operate side by side. (Source: MUTCD Section 9B.06)



Bicycle guide signs can be used to indicate destination, direction, and distance, helping bicyclists to navigate. (Source: MUTCD Figure 9B.4)



# Bicycle Lanes on Two-Way Streets

Bicycle lanes are on-road facilities that designate an exclusive space for bicyclists to operate within the street. Bicycle lanes can be implemented in a range of configurations depending upon the context and characteristics of a given street, considering variables such as the street width, traffic speed, traffic volume, direction of travel, and presence of on-street parking. Bicycle lane configurations appropriate for two-way streets include standard bicycles lanes, buffered bicycle lanes, and separated bicycle lanes.

### Application:

- The minimum width of a bicycle lane is 5 feet when the lane is adjacent to a vertical element, such as a vertical curb, or on-street parking.
- The minimum width of a bicycle lane may be reduced to 4 feet when there is no vertical curb or on-street parking.
- Selection of the appropriate bicycle facility for a given street should consider speed limit and traffic volume (as indicated in the Bicycle Facility Selection Table below) and street width to provide the most robust bicycle lane possible for the street.
- When placed next to a parking lane, the desirable distance from the curb face to the edge of the bicycle lane is 14.5 feet to keep bicycles out of the door zone.

### Planning & Design Resources:

- 2017 [State of New Jersey Complete Streets Design Guide](#), Chapter 3, pp. 91-96, 106-107, NJDOT
- 2012 [Guide for the Development of Bicycle Facilities](#), Chapter 4, p. 4-12, AASHTO
- 2011, [Urban Bikeway Design Guide](#), pp. 4-104 NACTO
- 2016 [Small Town and Rural Multimodal Networks](#), FHWA

Bicycle Facility Selection Table from 2017 [State of New Jersey Complete Streets Design Guide](#), Chapter 3, p. 106, NJDOT

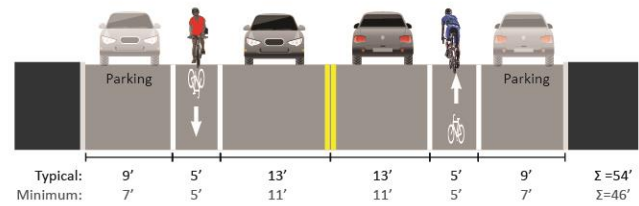
ADT	85TH PERCENTILE SPEED <sup>1</sup>						
	≤ 20	25	30	35	40	45	≥50
≤ 2,500	ABCDEF	A <sup>2</sup> BCDEF	CDEF	CDEF	CDEF	DEF	F
2,500–5,000	BCDEF	BCDEF	CDEF	CDEF	DEF	DEF	F
5,000–10,000	B <sup>3</sup> CDEF	B <sup>3</sup> CDEF	CDEF	DEF	DEF	EF	F
10,000–15,000	DEF	DEF	DEF	DEF	EF	EF	F
≥15,000	DEF	DEF	DEF	EF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

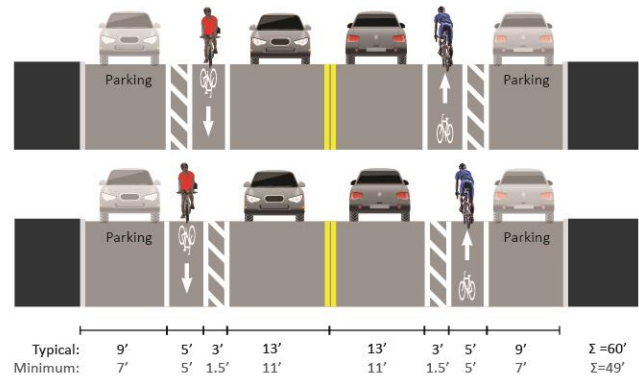
<sup>1</sup>If data not available, use posted speed

<sup>2</sup>Bicycle boulevards are preferred at speeds ≤25 mph

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

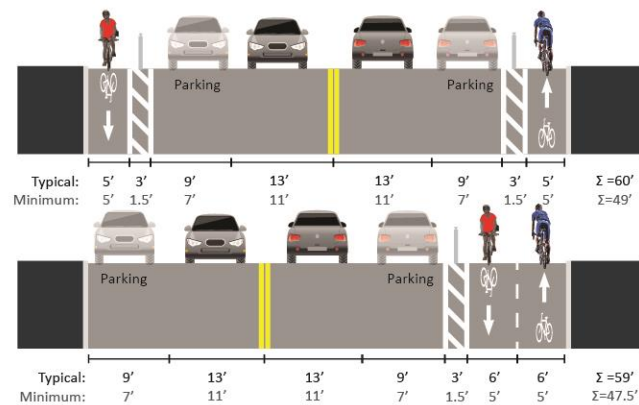


**Standard Bicycle Lane**



**Buffered Bicycle Lane**

Top: Buffer to parking. Bottom: Buffer to traffic.



**Separated Bicycle Lane**

Top: One-way. Bottom: Two-way cycle track.





# Bicycle Lanes on One-Way Streets

Bicycle lanes can be provided on one-way streets, following the same dimensional guidance as bicycle lanes on two-way streets. On one-way streets, the standard location for a bicycle lane is to the right of the motor vehicle lane. However, a left-side bicycle lane can be provided if there is a significant number of bicyclist left turns, or if such placement results in a decrease in conflict with parking, transit, deliveries, or other activities on the right side of the street.

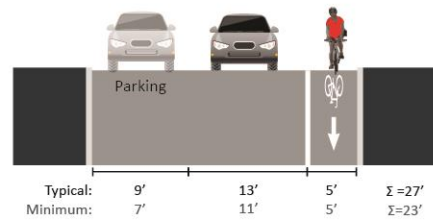
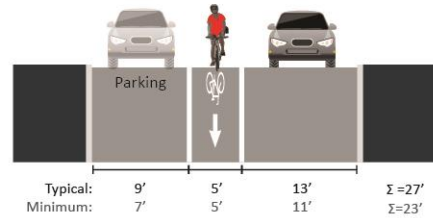
Because one-way streets offer only one direction of travel, bicycle lanes on one-way streets should be coupled with complementary bicycle facilities elsewhere in the network to provide bicycle mobility in the opposite direction.

## Application:

- Typically considered for an urban context with grid network of streets
- One-way buffered or separated bicycle lanes may be considered for the left side, if space allows, however there is little published guidance on such a configuration.
- Refer to Bicycle Facility Selection table on page 5.
- Same dimensional guidance as bicycle lanes on two-way streets
- A standard bicycle lane and a contraflow bicycle lane may be coupled on a one-way street. Contraflow bicycle lanes require careful design for separation (centerline or median), signage, and intersection approaches. They are discouraged where parking or other curbside vehicular activities are present on the same side of the street.

## Planning & Design Resources:

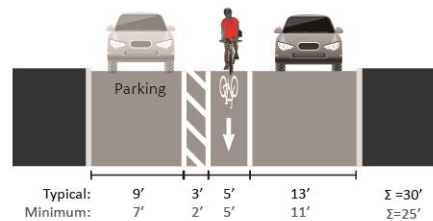
- 2017 [State of New Jersey Complete Streets Design Guide](#), Chapter 3, pp. 90-97, NJDOT
- 2012 [Guide for the Development of Bicycle Facilities](#), Chapter 4, pp. 4-12 – 4-14, AASHTO
- Urban Bikeway Design Guide [Bike Lanes](#) and [Left-Side Bike Lanes](#), pp. 31-57, NACTO



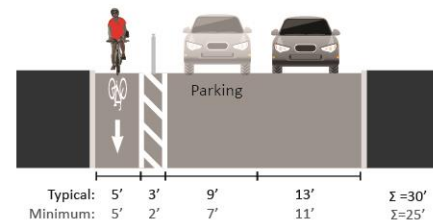
### One-Way Bicycle Lane

Top: Right-side bicycle lane.

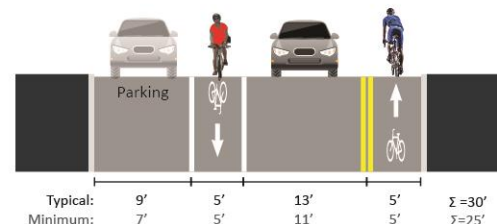
Bottom: Left-side bicycle lane.



### One-Way Buffered Bicycle Lane



### One-Way Separated Bicycle Lane



### Standard Bicycle Lane and Contraflow Lane



# Paired Hybrid Streets

Hybrid streets provide a bicycle lane in one direction with a shared lane in the opposite direction.

(The shared lane may include shared lane markings). By pairing hybrid streets at the network level – i.e., ensuring that there are complementary bicycle facilities in close proximity to provide bicycle mobility in the opposite direction – this configuration can provide a dedicated bicycle facility (standard, buffered, or separated bike) on narrow streets that cannot support bicycle lanes in both directions, utilizing the redundancy of the urban grid network to support bicyclist mobility.

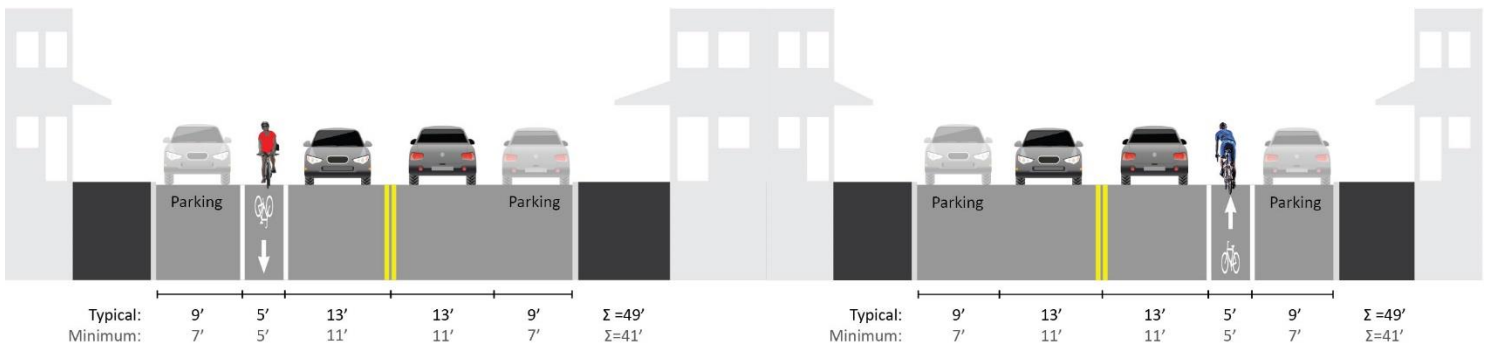
These hybrid designs can be useful in constrained street environments with narrow street width that limit opportunities for traditional bicycle accommodations and designs.

### Application:

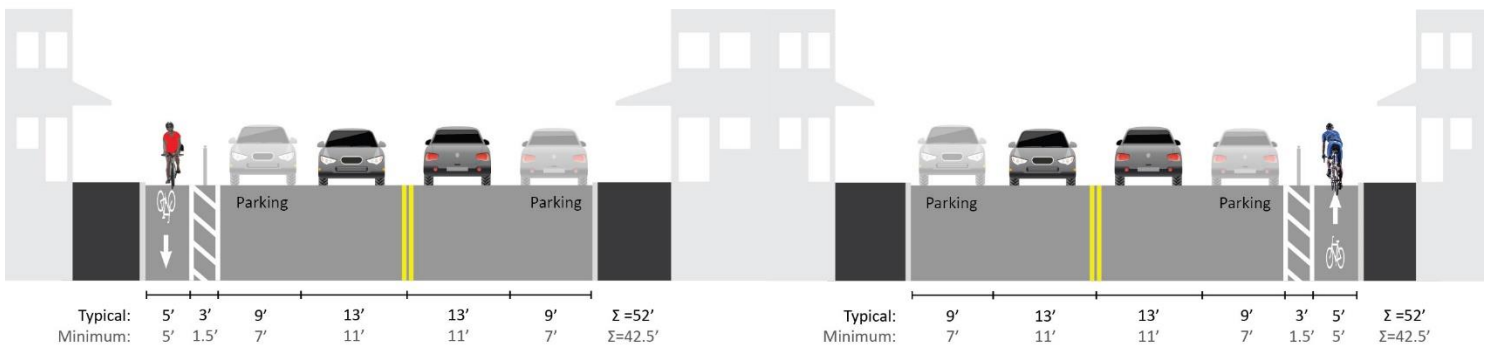
- Typically considered for an urban context with grid network of streets
- Should be coupled with complementary bicycle facilities elsewhere in the network that provide bicycle mobility in the opposite direction
- Can be applied to adjacent two-way or one-way streets
- Note that the AASHTO *Guide for the Development of Bicycle Facilities* (2012) cautions against a bicycle lane in one direction on a two-way street, citing the peril of wrong-way bicycling in the bicycle lane (p. 4-12).
- Signage and pavement markings should be provided to discourage wrong-way riding in the bicycle lane.
- Refer to Bicycle Facility Selection table on page 5.
- Same dimensional guidance as bicycle lanes on two-way streets
- When possible, on two-way streets, the bicycle lane should be oriented in the uphill direction (creating a climbing lane) and the shared lane should be marked in the downhill direction.

### Planning & Design Resources:

- 2012 [Guide for the Development of Bicycle Facilities](#), Chapter 4, p. 4-12, AASHTO



**Two-Way Hybrid Street Pairing with with Standard Bicycle Lanes**

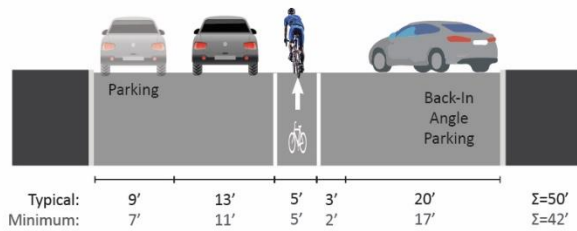


**Two-Way Hybrid Street Pairing with Separated Bicycle Lanes**



# One-way Street with Bicycle Lane and Back-In Angle Parking

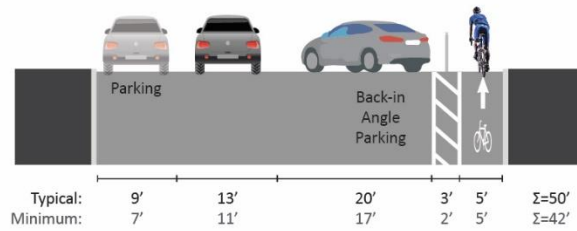
On one-way streets that are at least 42 feet wide, it is possible to include a bicycle lane and on-street angle parking. The preferred orientation of the angle parking is back-in (also called head-out) because it provides better visibility for a driver exiting a parking space to recognize oncoming vehicles or bicyclists, and also eliminates the risk of dooring bicyclists in travel. Like other one-way streets with bicycle lanes, this configuration should be coupled with complementary bicycle facilities elsewhere in the network to provide bicycle mobility in the opposite direction.



**One-Way Street with Back-In Angle Parking and Bicycle Lane**



John Muir Drive in San Francisco, CA.  
 (Source: [STREETS BLOG SF](https://www.streetsblog.com/sf))



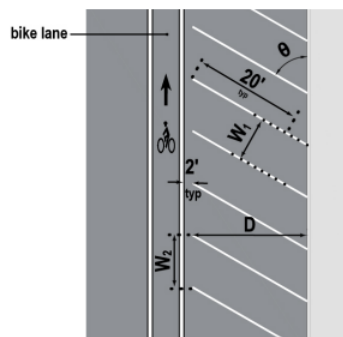
**One-Way Street with Back-In Angle Parking and Separated Bicycle Lane**



Skillman Avenue at 35<sup>th</sup> Street in Queens, NY.  
 (Source: Google Streetview)

## Application:

- Typically considered for mix-used and commercial areas where parking turnover is high
- Same dimensional guidance as bicycle lanes on two-way streets
- On streets where it is possible to convert existing parallel parking to back-in angle parking, there is an opportunity to increase the parking capacity of the street. A typical parallel parking space requires 22 feet of curb length; meanwhile, a typical back-in angle parking space at 45 degrees requires 13 feet of curb length. Thus, as a rule of thumb, parking capacity can be increased by a factor of 1.7.
- Striping and plastic bollards can be installed in the no-parking areas around intersections to ensure that sight triangles at intersections are maintained.



Back in Angle Parking			
$\theta$ (Degrees)	$W_1$ (feet)	$W_2$ (feet)	D (feet)
0°	7–10	20	7–10
30°	8–9	16–18	16.9–17.8
45°	8–9	11.3–12.7	19.8–20.5
60°	8–9	9.2–10.4	21.3–21.8

$W_1$  = stall width  
 $W_2$  = striping width  
 D = depth to face of curb  
 $\theta$  = angle

Typical angle parking dimensions from 2021 [On-Street Motor Vehicle Parking and the Bikeway Selection Process](#), p. 4, FHWA

## Planning & Design Resources:

- 2021 [On-Street Motor Vehicle Parking and the Bikeway Selection Process](#), FHWA



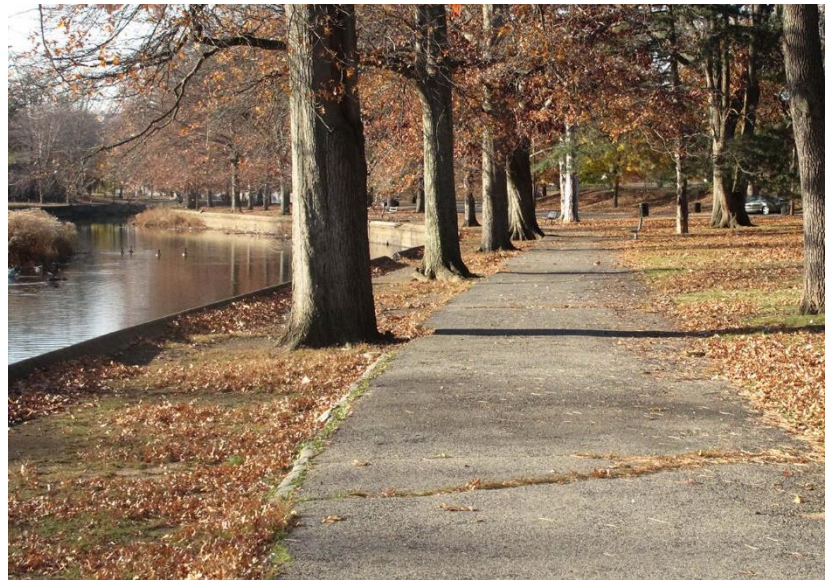
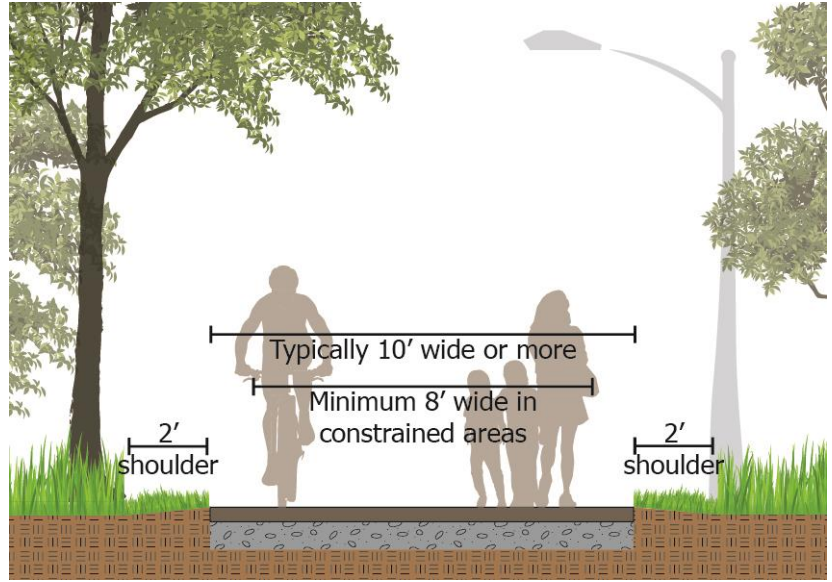


# Shared Use Path / Trail

A shared use path consists of a paved travel area that is 10 feet wide or more (minimum 8 feet in constrained areas) in a right-of-way that is independent of the existing roadway network. Shared use paths are designed to accommodate two-way travel for bicyclists, pedestrians, and other non-motorized users, such as in-line skaters, skateboarders, and kick scooter users. Because they are separated from motor vehicle traffic, shared use paths are considered low-stress facilities that are attractive to non-motorized travelers of all ages and abilities.

## Application:

- Continuous right-of-way that is independent of the road network
- Scenic/recreation areas
- River/stream frontage
- Rail-to-trail or rail-with-trail facilities
- Utility corridors
- Appropriate New Jersey Department of Environmental Protection (NJDEP) permits must be obtained when facilities impact freshwater wetlands, transition areas, state open waters, flood hazard areas, or other environmentally sensitive locations.
- Lighting should be considered where nighttime use is permitted, especially when the shared use path connects to transit, schools, employment, or shopping areas.
- Horizontal illumination of 0.5 to 2 foot-candles should be considered, with higher levels at intersections or where personal safety is a concern.
- Lighting sources may include pedestrian-scale lights (10-15 feet high) or fixtures mounted to existing street light poles. Lower fixture height and uniform spacing of fixtures can provide uniform distribution of light, avoid disruption/shadows, and improve the sense of security.
- A vertical illumination pattern that maintains a height of 7 feet enables visual recognition of other pedestrians/bicyclists, which may be beneficial in heavily traveled areas.
- Lighting for shared use paths requires careful photometric design and consideration of capital and operating costs, power source, residential light pollution, wildlife impacts, and other factors.



Shared use path example in Westside Park, City of Paterson, Passaic County

## Planning & Design Resources:

- 2017 [State of New Jersey Complete Streets Design Guide](#), Chapter 3, p. 102, NJDOT
- 2012 [Guide for the Development of Bicycle Facilities](#), Chapter 5, AASHTO
- 2016 [Small Town and Rural Multimodal Networks](#), pp. 4-3 – 4-10, FHWA
- 2016 [Lighting Regional Trails: Best Practices and Recommendations](#), Oregon Metro
- 2017 [Empire State Trail Design Guide](#), pp. 3-18, NYSDOT
- 1998 [Time-Saver Standards for Landscape Architecture: Design and Construction Data](#), Second Edition, McGraw-Hill
- NJDEP [Trails, Boardwalk and Bike Paths](#) permitting overview



# Sidepath

A sidepath is a shared use path (10 feet wide or more, minimum 8-feet in constrained areas) for pedestrians, bicyclists, and other non-motorized users that is constructed adjacent to a roadway, yet physically separated from motor vehicles. In contrast to a standard shared use path, a sidepath has special design considerations to function safely within the roadway right-of-way.

## Application:

- Appropriate along roadways with a high level of traffic stress for bicyclists and insufficient width for on-road separated bike lane facilities
- Should be considered where driveways and intersection crossings are infrequent (or can be reduced, if possible)
- Should provide continuity between other sections of on-road and off-road bicycle facilities in the network
- One-way sidepaths can be provided on both sides of the street
- Should be separated from the roadway a minimum of 5 feet (or a barrier or railing should be provided)
- Fixed objects (such as utility/light poles, mail boxes, signs, trash cans, etc.) can constrain the operating width of the sidepath and should be located outside of the shoulder area whenever possible.
- Appropriate NJDEP permits must be obtained when facilities impact freshwater wetlands, transition areas, state open waters, flood hazard areas, or other environmentally sensitive locations.
- Horizontal illumination of 0.5 to 2 foot-candles should be considered, with higher levels at intersections or where personal safety is a concern.
- Lighting sources may include pedestrian-scale lights (10-15 feet high) or fixtures mounted to existing street light poles.
- See Shared Use Path / Trail for additional information on lighting.



Example layout of a sidepath adjacent to a busy roadway as it crosses a perpendicular street. (Source: FHWA, [Small Town and Rural Multimodal Networks](#))

## Planning & Design Resources:

- 2017 [State of New Jersey Complete Streets Design Guide](#), Chapter 3, p. 102, NJDOT
- 2012 [Guide for the Development of Bicycle Facilities](#), Chapter 5, AASHTO
- 2016 [Small Town and Rural Multimodal Networks](#), pp. 4-11 – 4-18, FHWA
- NJDEP [Trails, Boardwalk and Bike Paths](#) permitting overview





# Rail Trails

Rail trails are railroad rights-of-way that are converted to provide shared use path facilities. In general, rail trails are defined in two categories:

- A **rail-to-trail** is a railroad that is decommissioned and converted to use as a trail. In Passaic County, the planned 7.15-mile Highlands Rail Trail will be a premier example of a rail-to-trail facility once constructed.
- A **rail-with-trail** is a railroad that continues rail operations while enabling construction and operation of a shared use path within the railroad right-of-way. This requires careful design and coordination to maintain physical separation of the trail from railroad operations and ensure safety of all users.

## Application:

- Rail trails are constructed within railroad rights-of-way, offering an opportunity for a high quality shared use path experience, often with significant regional connectivity advantages.
- In general, rail trails should be planned to provide a shared use path – a paved travel area that is 10 feet wide or more (minimum 8 feet in constrained areas). (See Shared Use Path/Trail on page 10 for additional guidance).
- Making use of existing railroad infrastructure, such as bridges, grade-separated crossings, and gentle grades contribute to rail trail connectivity, unique travel experiences, and can attract bicyclists and pedestrians of all ages and abilities.
- Rail trails require extensive planning, funding, and coordination among a variety of stakeholders, including the railroad owners and lessees, the Federal Railroad Administration, utilities, and government agencies at all levels with regulatory, environmental, transportation, funding, use, and maintenance interests.

## Planning & Design Resources:

- 2020 [Rails with Trails Best Practices and Lessons Learned](#), U.S. Department of Transportation
- 2017 [Rails to Trails Conversions: A Legal Review](#), Rails-to-Trail Conservancy
- 2012 [Guide for the Development of Bicycle Facilities](#), Chapter 5, AASHTO



Rail-to-Trail example: Merchantville Mile in Merchantville, NJ.



Rail-to-Trail example: Traction Line Trail in Morris Township, NJ.





# Crossings & Intersections

A high quality bicycle network will improve mobility throughout Passaic County and attract more people of all ages, abilities, and backgrounds to bicycling as a means of both transportation and recreation. Inevitably, the bicycle network will need to be designed to respond to the varying conditions at intersections, interchanges, driveways, and other locations where bicyclists, pedestrians, and motorists will cross paths. At the network planning level, it is advisable to anticipate and plan around crossings and intersection configurations that are presently unfriendly or potentially dangerous to bicyclists. However, it is also important not to sacrifice potential bicyclist mobility improvements due to the perception that change at these locations is not feasible. Safety, comfort, and convenience can be improved at challenging intersections.

At crossings and intersections, design measures can be taken to increase the conspicuity of bicyclists and bicycle facilities, give bicyclists the right of way, integrate bicyclist turning- and thorough-movements into signal phasing, reduce the turning speeds and radii of motor vehicles, and balance (as well as help to make predictable) the disparate speeds and movement of motorists, bicyclists, and pedestrians.

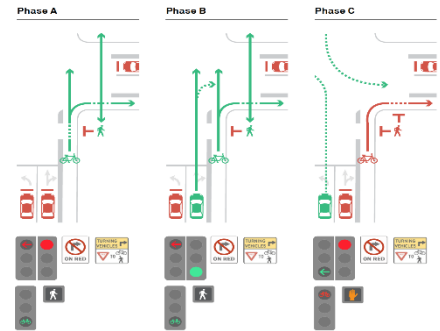
Common treatments at crossings and intersections include pavement markings and signage, signal modifications (signal face visibility, timing/phasing, and actuation), physical separation of bicyclists facilities through construction of curbing or other means (known as protected intersections), and grade separation. Well-designed crossings and intersection are likely to integrate or combine aspects of these treatments to function in concert.

It is important to note that the design approach to crossings and intersections continues to evolve as bicycle networks and facilities grow in prevalence. Crossings and intersections deserve careful design to ensure safety, functionality, and mobility for all users. Although *BIKEPassaicCounty* is primarily a network and policy level plan, it will likely also inspire future thought and inquiry around crossings and intersections as they relate to both on-road and off-road bicycle facilities. Additional resources for reference in future planning and design of crossings and intersections include the following:

- [Don't Give Up at the Intersection: Designing All Ages and Abilities Bicycle Crossings](#). NACTO, 2019.
- [Urban Bikeway Design Guide](#), 2011, NACTO:
  - Intersections, pp. 105-202
  - Bicycle Signals, pp.203-237
- [State of New Jersey Complete Streets Design Guide](#), 2017, Chapter 3, Intersections, pp. 111-145
- [AASHTO Guide for the Development of Bicycle Facilities](#), 2012:
  - Chapter 4: Design of On-Road Facilities, 4.8 – Bicycle Lanes at Intersections
  - Chapter 5: Design of Shared Use Paths, 5.3 – Shared Use Path Roadway-Intersection Design
- Manual on Uniform Traffic Control Devices (MUTCD): [Part 9. Traffic Controls for Bicycle Facilities](#)



Pavement markings through intersection, Hoboken, NJ (Source: Google Streetview)



Lead Bike Interval (LBI) signal phasing diagram (Source: NACTO)



Protected intersection (Source: [City of San Luis Obispo, CA](#))



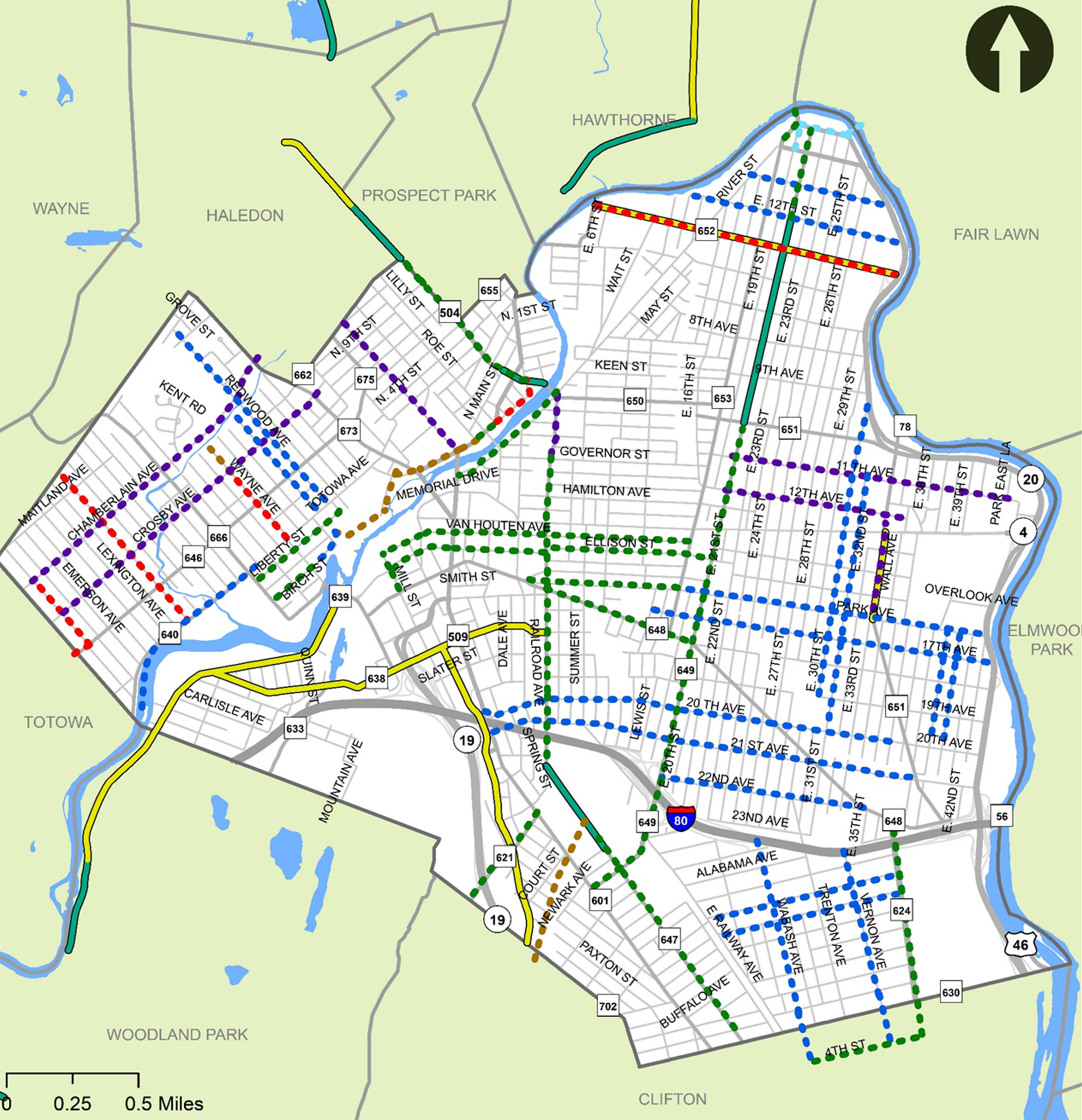
Grade separated crossing of US Route 22 in Bridgewater, NJ





# **APPENDIX 4: PROPOSED BICYCLE NETWORK C-SIZE PLOT**





# Proposed Bicycle Network Improvements

## Legend

- Existing Bike Lanes
- Existing Sharrows

## Proposed Bicycle Network

- Bike Lanes
- Buffered Bike Lanes
- 2-Way to 1-Way with Bike Lanes
- Hybrid Bike Lanes
- Bike Boulevard or Marked Shared Lane
- Shared Use Path



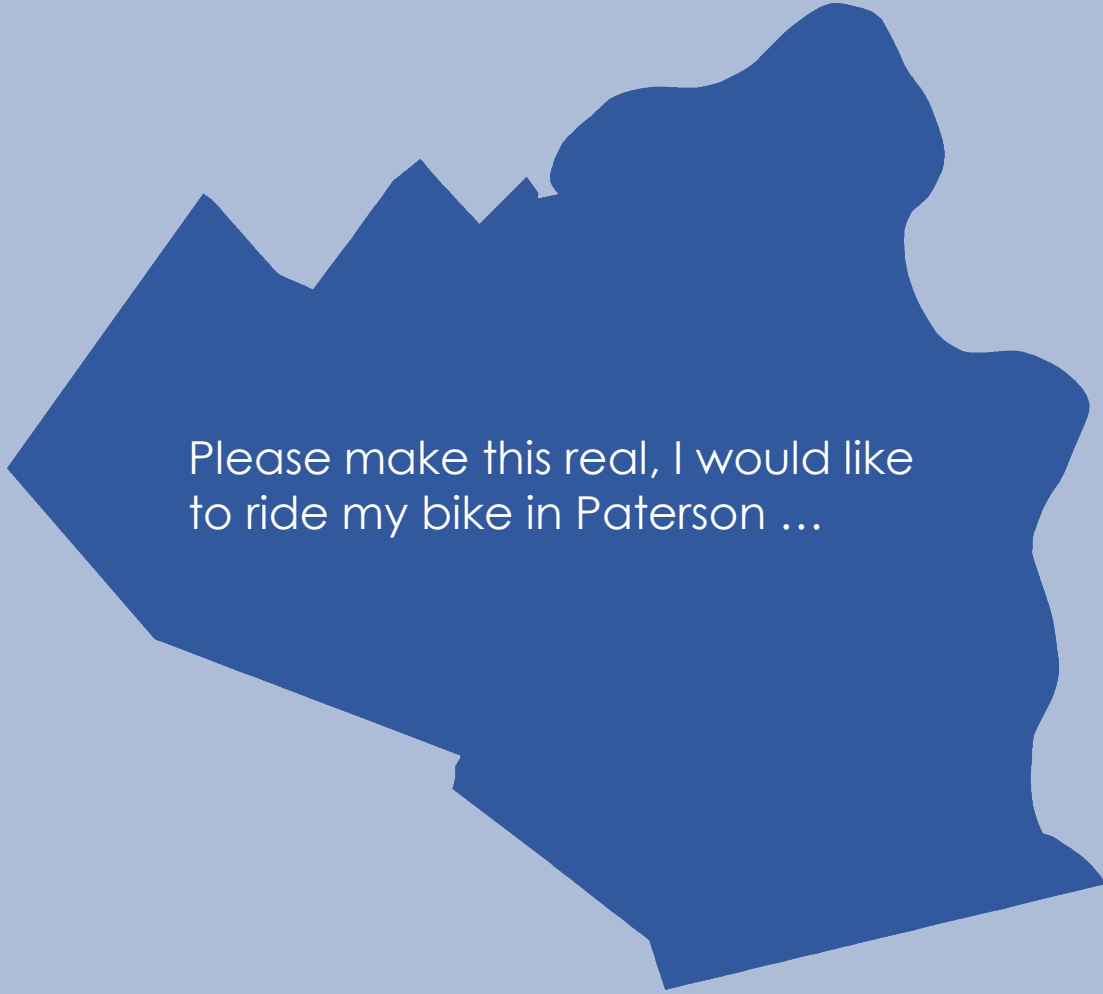




## **APPENDIX 5: BIKE NETWORK FACILITIES**

BIKE Paterson Bicycle Network

Proposed (new) Bike Route Mileage												
Municipality		Miles of Bike Lanes	Miles of Bike Boulevard	Miles of Cycle Track	Miles of Buffered Bike Lanes	Miles of 2-way to 1-way w Bike Lanes conversion	Miles of Signed Bike Route	Miles of Shared-use Path	Miles of Shared-Lane Markings	Miles of Sidepath	Miles of Hybrid one-way pairs	Total Miles
Paterson		11.77	2.48	0.00	0.20	13.26	0.00	0.86	0.00	0.00	7.43	43.4
River Street (one-way southbound)		1st Ave	2nd Ave									
Madison Avenue		1st Ave	4th Ave									
Madison Avenue		10th Ave	Main St									
Presidential Boulevard		Clinton St	Jefferson St									
Haledon Avenue		Burhans St	N Main St									
Walnut Street (one-way southwest)		Redwood Ave	Breakneck Ave									
Maple Street (one-way northeast)		Breakneck Ave	Wayne Ave									
River Street		Straight St	Main St									
Straights St		Governor St	Getty Ave									
Van Houten Street (one-way westbound)		E 18th St	Elison/Mill St									
Elison Street (one-way eastbound)		McBride Ave/Mill St	Madison Ave									
Park Avenue (one-way westbound)		Market/Straight St	Madison Ave									
Market Street		Straight St	Madison Ave									
Getty Avenue		Hemlock St	Crooks Ave									
Barclay Street		Main St	Hazel St									
Lakeview Avenue		Market St	Crooks Ave									
5th Avenue												
Lenox Avenue												
Presidential Boulevard (one-way northeast)												
Cumberland Avenue												
1st Avenue												
Maple Street (one-way northeast)												
3rd Avenue												
4th Avenue												
Park Avenue												
17th Avenue												
20th Avenue												
21st Avenue												
22nd Avenue												
Illinois												
Michigan												
Trenton Avenue												
Wabash Avenue												
Redwood Avenue												
Albion Avenue												
Totowa Avenue												
E 30th Street												
E 32nd Street												
E 40th Street												
E 41st Street												
Presidential Boulevard												
11th Avenue												
12th Avenue												
Temple Street												
Chamberlain Avenue												
Crosby Avenue												
E 33rd Street												
Breakneck Avenue/Ryle Road												
Existing Bike Facilities												
Paterson												4.1
Haledon Avenue	0.2	N. Main St	N Bridge St									
Madison Avenue	0.7	4th Avenue	10th Avenue									
Getty Avenue	0.4											
Murray Avenue/Grand Street/Essex Street	1.4					Hospital Plaza	Hemlock St					
5th Avenue	1.2									McBride St	Straight St	
33rd Street	0.3									E 5th St	McClean Blvd	
										Broadway	Park Avenue	



Please make this real, I would like to ride my bike in Paterson ...