



# PRINCETON

bicycle master plan



**WSP**

**PARSONS  
BRINCKERHOFF**



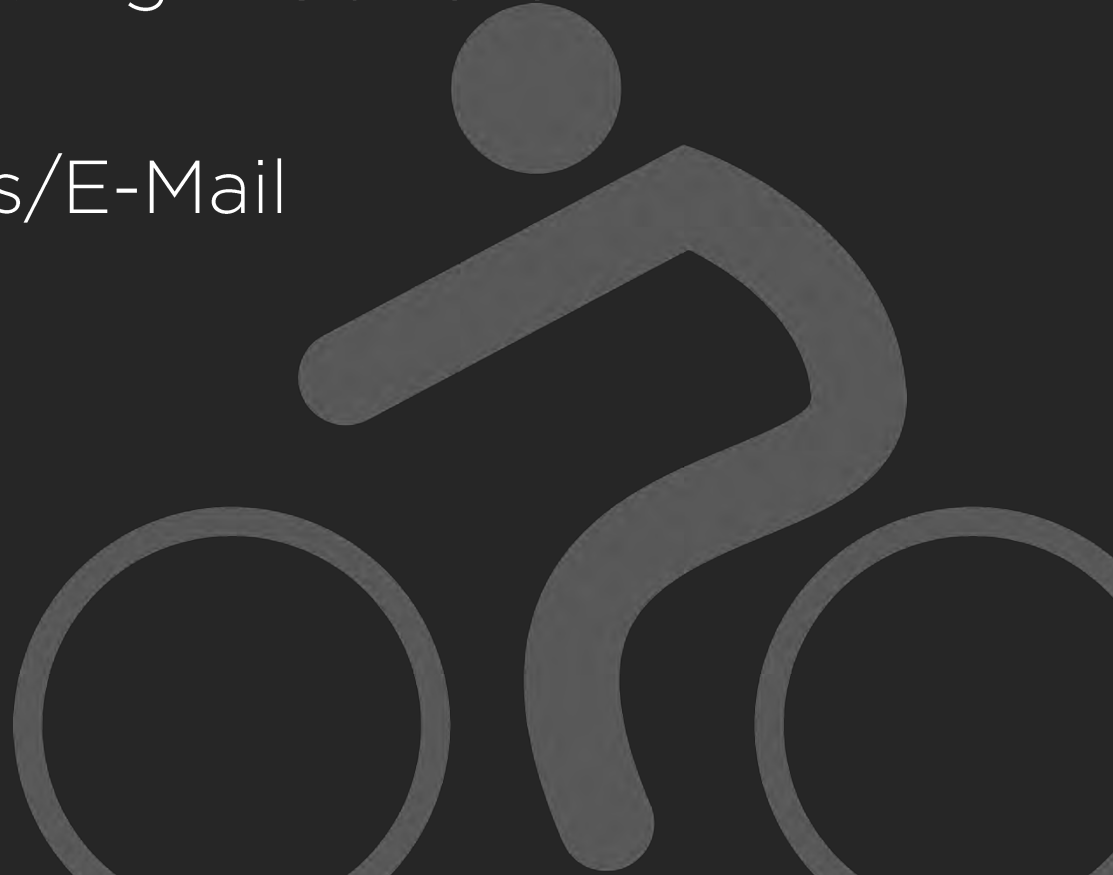
Master Plan  
Subcommittee  
February 10, 2016

# Public Outreach Findings

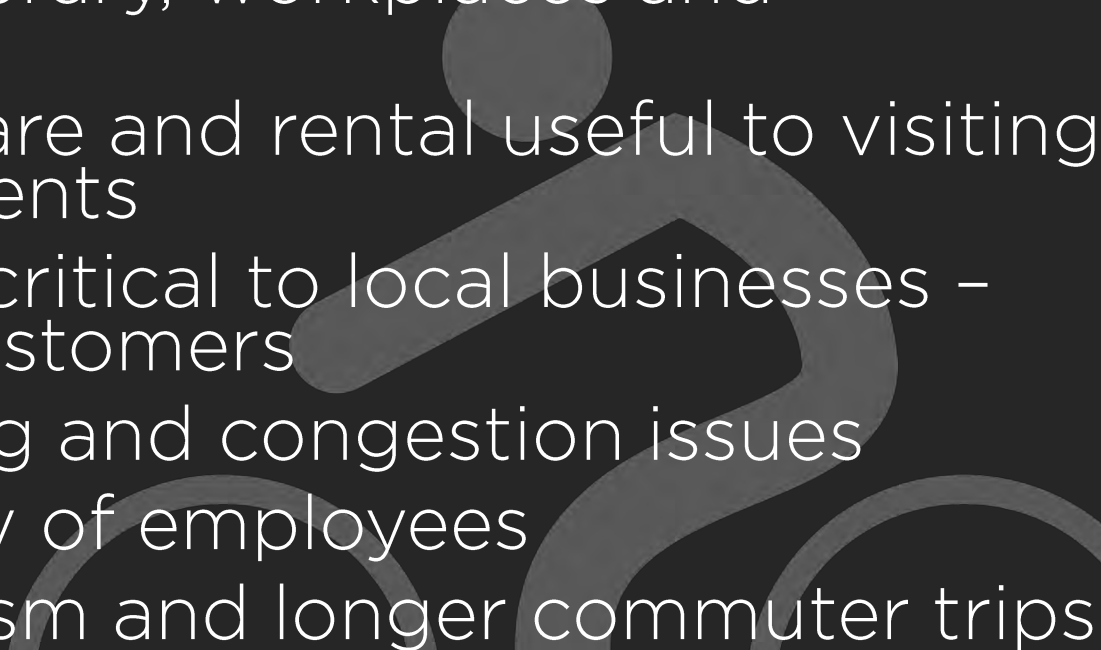


# Outreach Activities

- Study Advisory Committee Meeting
- Public Meeting & Night Out event
- Focus Groups
- Comment Forms/E-Mail
- Online Wikimap
- Online Survey



# Focus Groups Findings

- Emphasize safety and mobility
  - Balance needs of diverse group of stakeholders
  - Create network linking schools to neighborhoods, library, workplaces and downtown
  - Access to bike share and rental useful to visiting scholars and students
  - Moving people is critical to local businesses – employees and customers
  - Benefits to parking and congestion issues
  - Concern for safety of employees
  - Potential for tourism and longer commuter trips
- 

# Comment Forms

- Over 100 received
- Themes:
  - Traffic major deterrent
  - Varied opinion of Sharrows
  - Access along main routes
  - Maintenance of off-road paths
  - Education for pedestrians, cyclists, and motorists



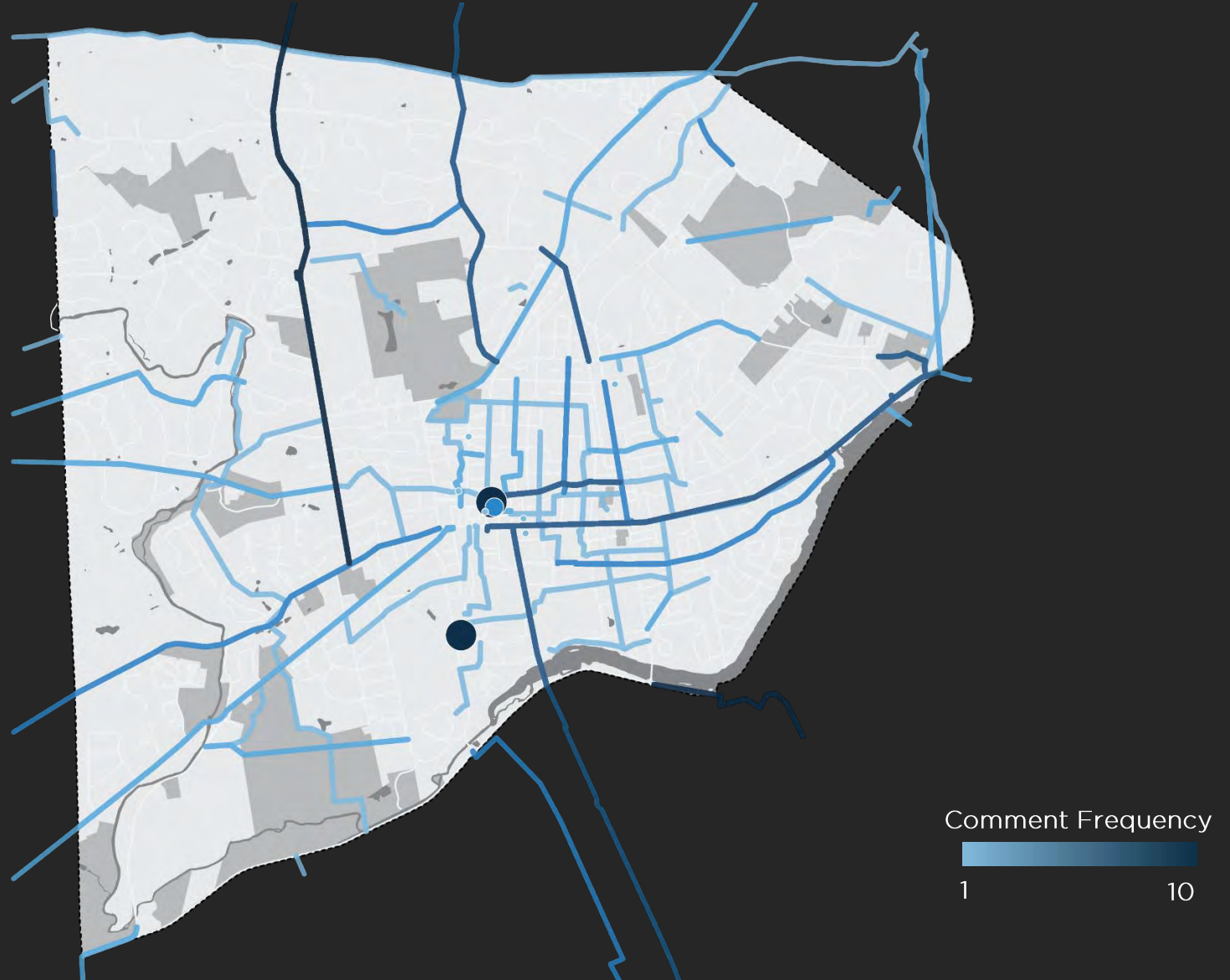
# Wikimap Results

- Forum to collect input on:
  - Existing problem areas
  - Desired routes
  - Desired bike parking
- 516 comments
- 84 unique users



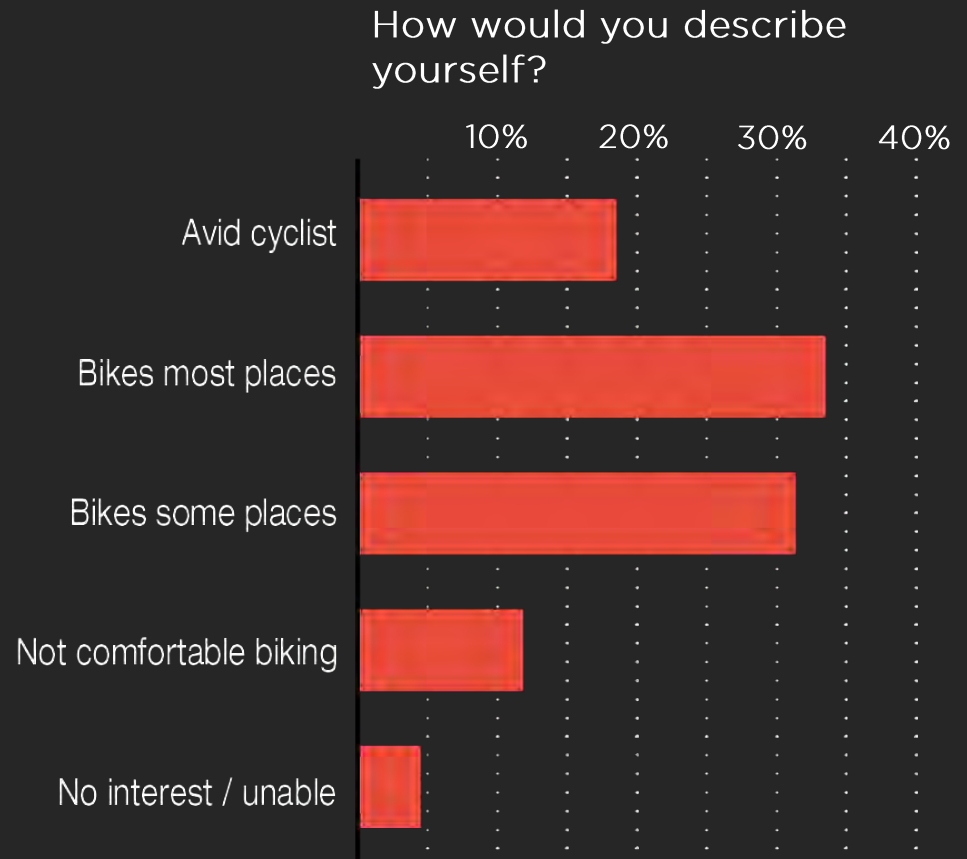


# Wikimap | Desire Lines



# Survey | Who Responded?

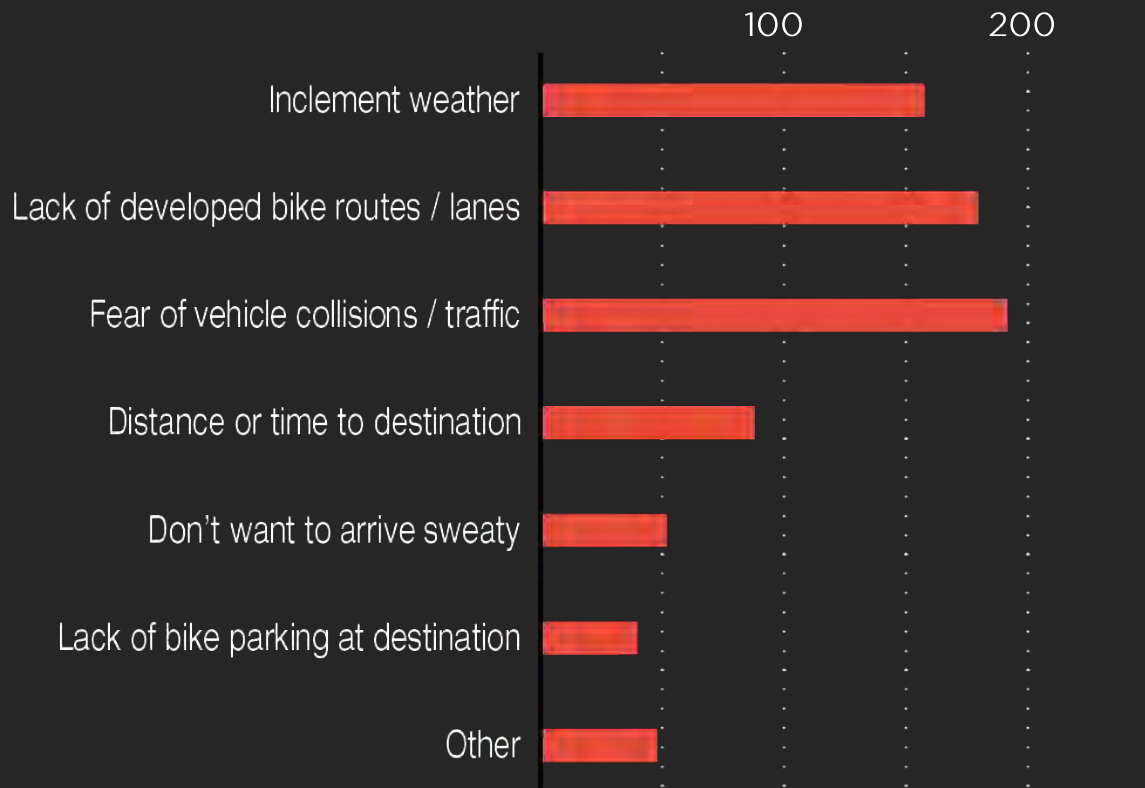
- 471 responses
- 51% male, 49% female
- Average age: 46
- Range of cyclists types





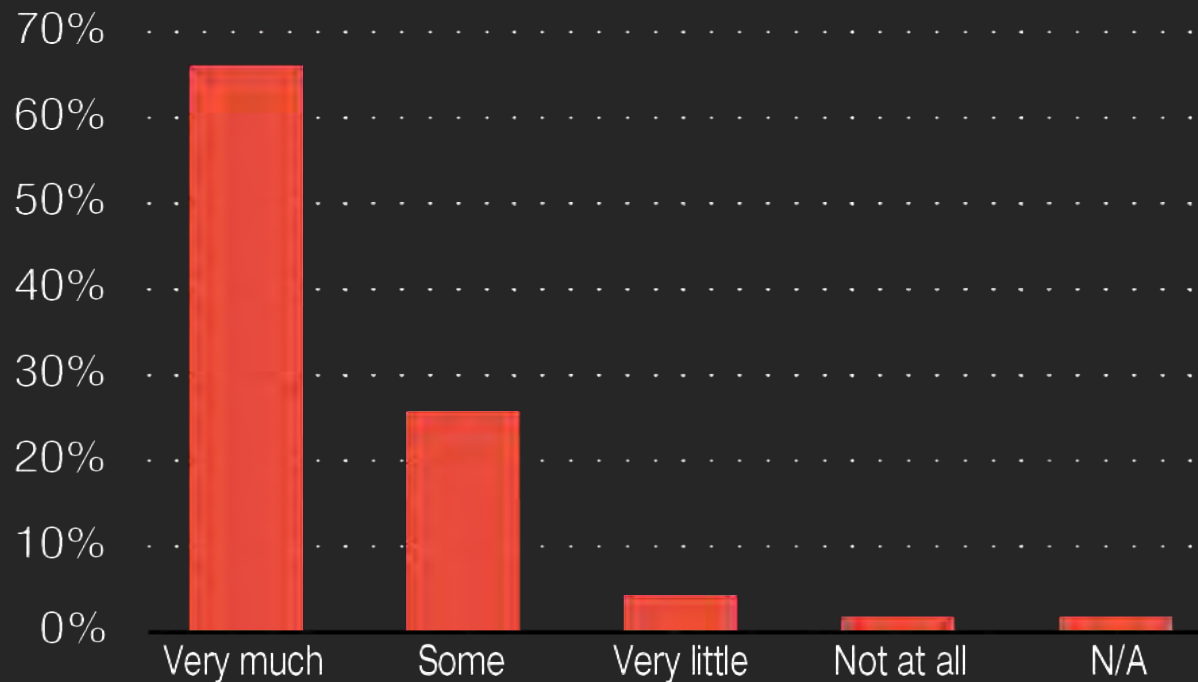
# Survey | Barriers?

What prevents you from riding your bicycle more?

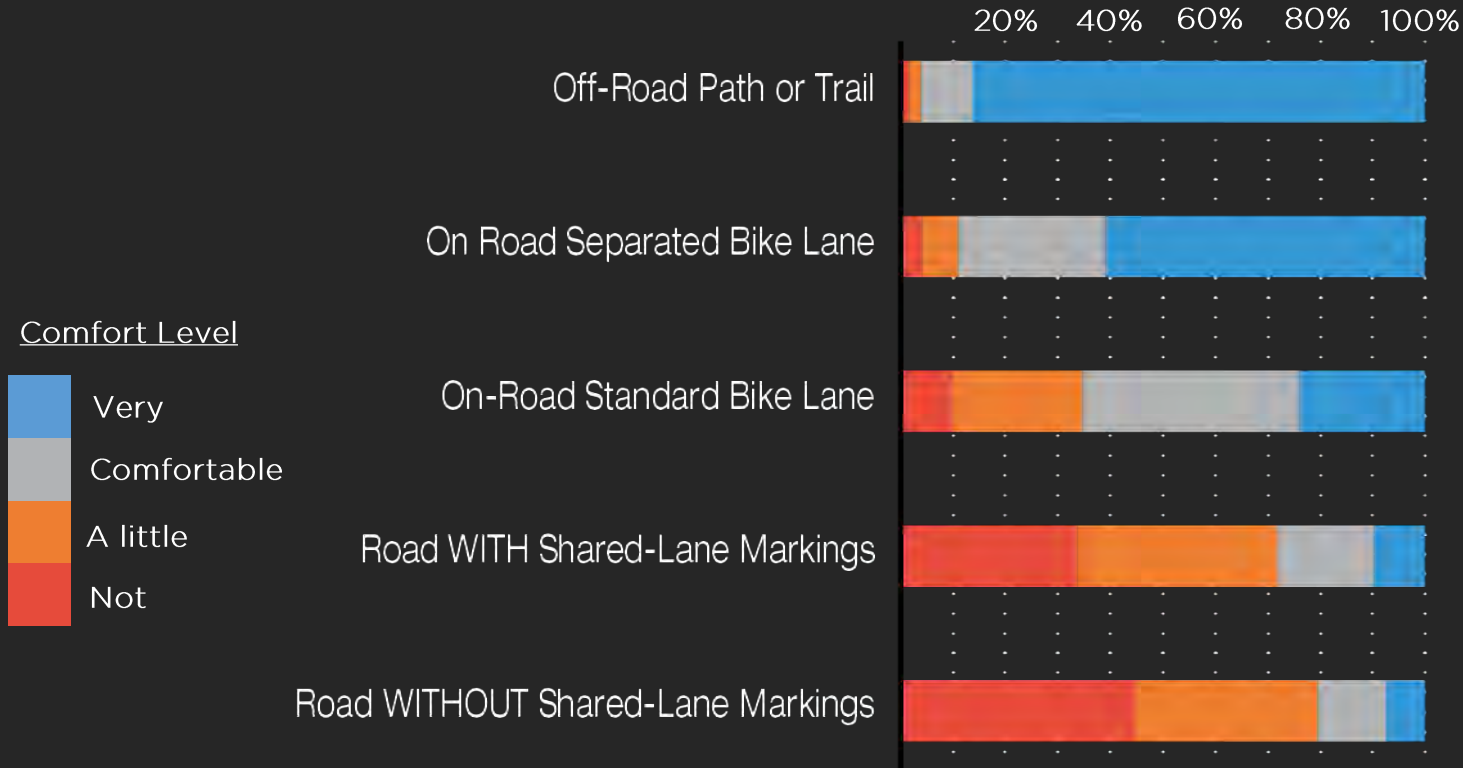


# Survey | Impact of Speed?

How much does the speed of motor vehicle traffic influence where you feel comfortable riding a bicycle?

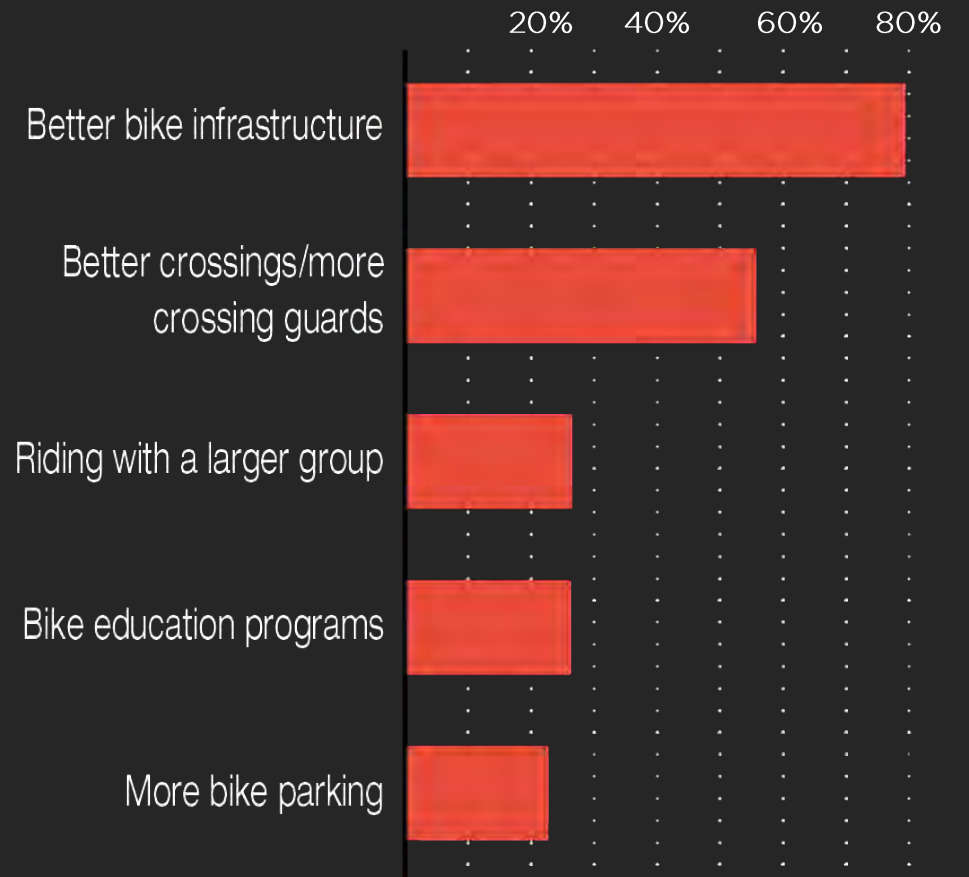


# Survey | Preferred Facilities?



# Survey | Parents & Biking to School

Please rate to what degree the following items would make you more comfortable with your child biking to school?



For display purposes, chart shows the percentage of respondents who indicated 8-10

# Survey | Key Takeaways

- Consistent with national data
- Traffic and speed are major concerns
- Preference for increased separation
- Providing separated facilities key to increasing ridership
- Sharrows had little impact on comfort



# Existing Conditions Analysis





# Princeton Cyclists





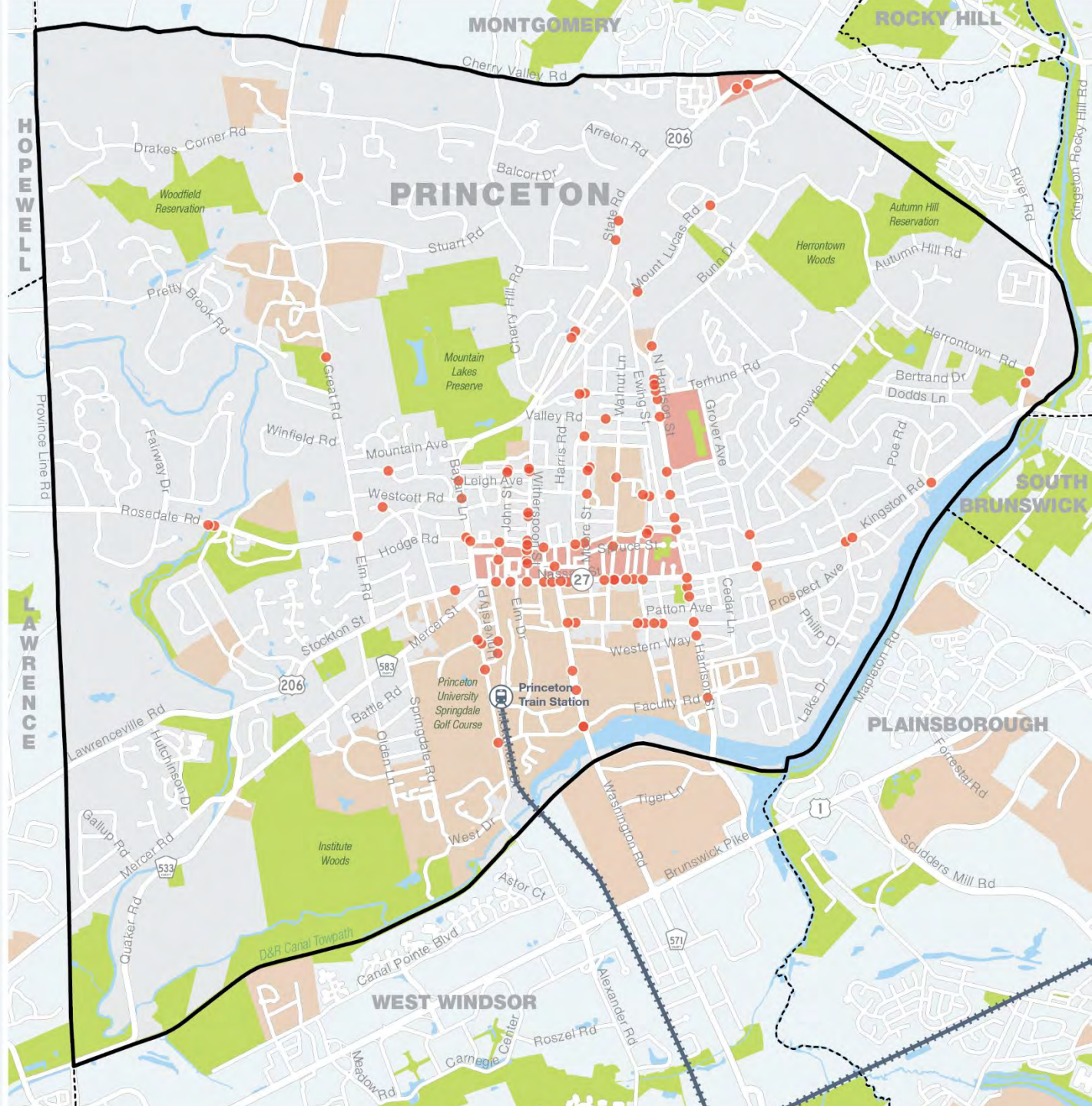
# Princeton Cyclists



# Crash Analysis

- 2010-2014 NJDOT crash data
- 70 crashes
- Concentrated along primary roadways and town center
- 57% occurred at intersections
  - Consistent with statewide average
- High proportion of young people
  - 31% ages 18-24 (vs. 12% statewide avg)
  - 22% ages 25-34 (vs. 10% statewide avg)





## Bicycle Crash History

- Bicycle Crash (2010-2014)
- Park
- Commercial Area
- School



0 0.25 0.5 1 Miles

# Bicycle Level of Traffic Stress

- Reflective of how bicyclists perceive the roadway
- Primary factors
  - Traffic speed
  - Number of lanes
  - Crossings of higher stress level roadways
- Prioritizes
  - **Lower** speeds
  - **Narrower** roadways
  - **Separated** facilities
  - Network **connectivity**



# Bicycle Level of Traffic Stress



- **Stress Level 1:**  
All Users (children, seniors)



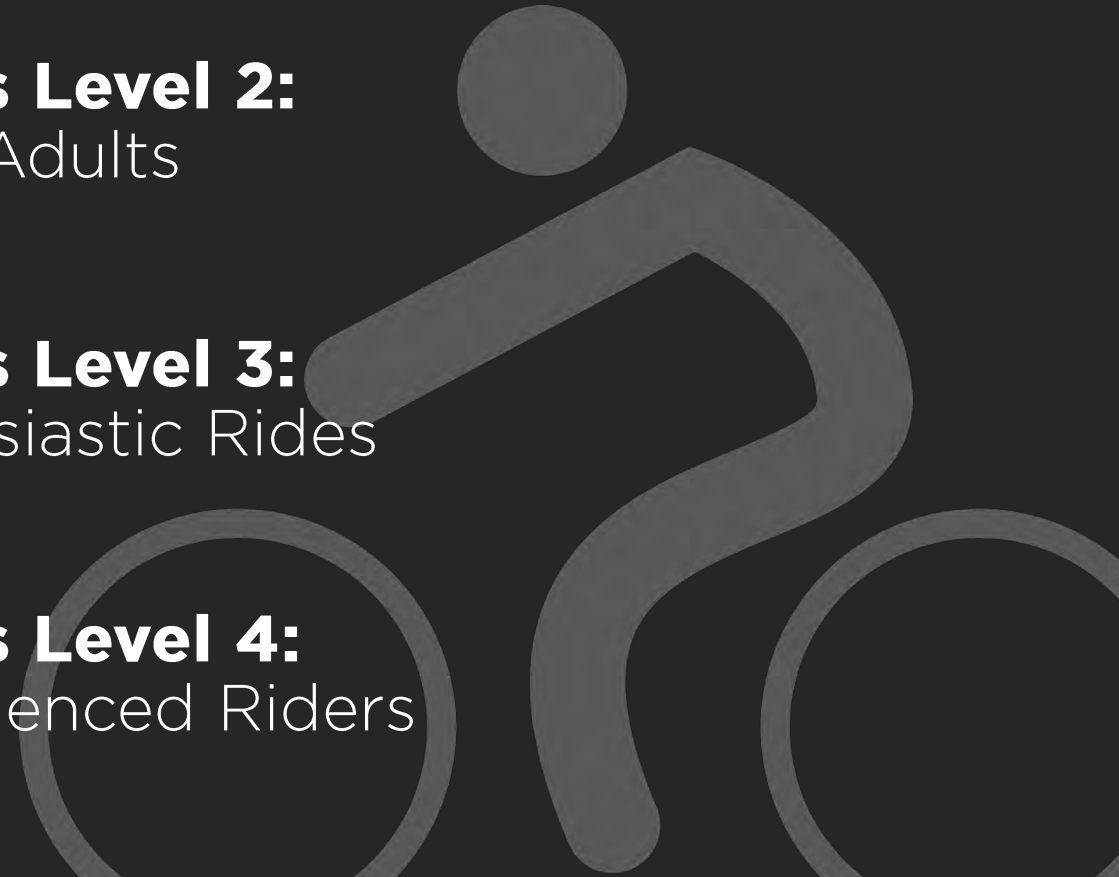
- **Stress Level 2:**  
Most Adults



- **Stress Level 3:**  
Enthusiastic Riders



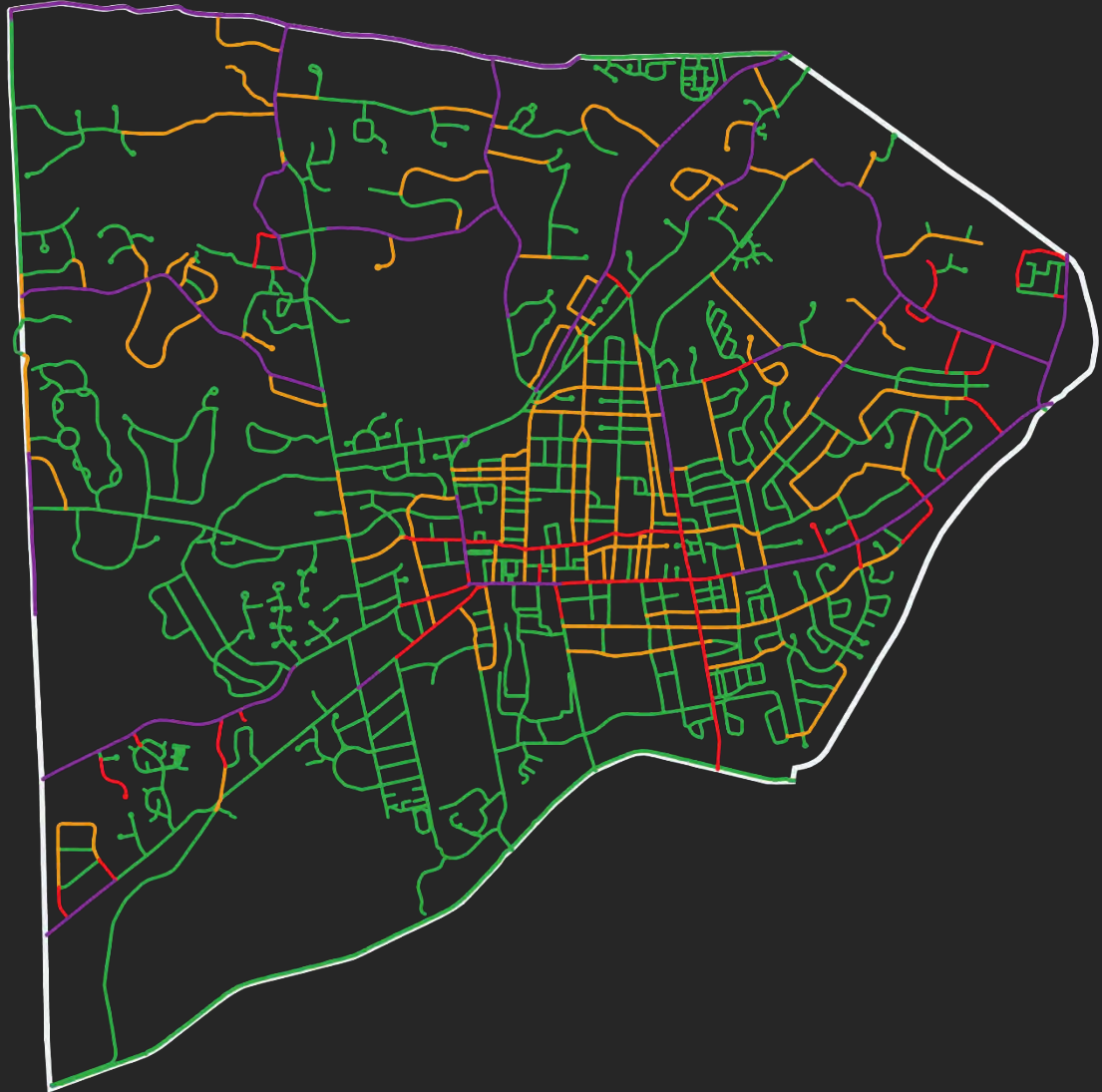
- **Stress Level 4:**  
Experienced Riders





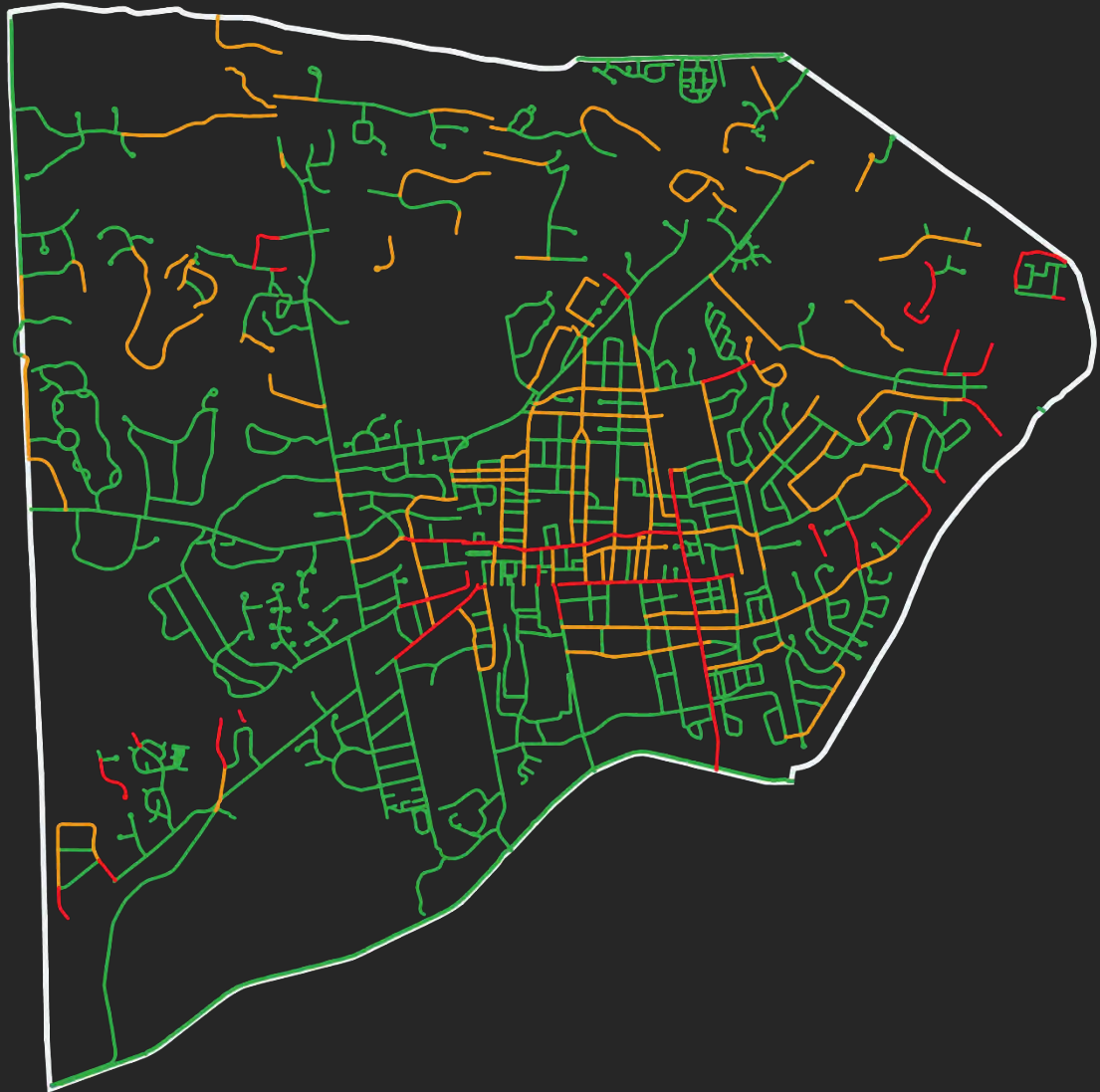
# Bicycle Level of Traffic Stress

Full Network:  
LTS 1, 2, 3, 4



# Bicycle Level of Traffic Stress

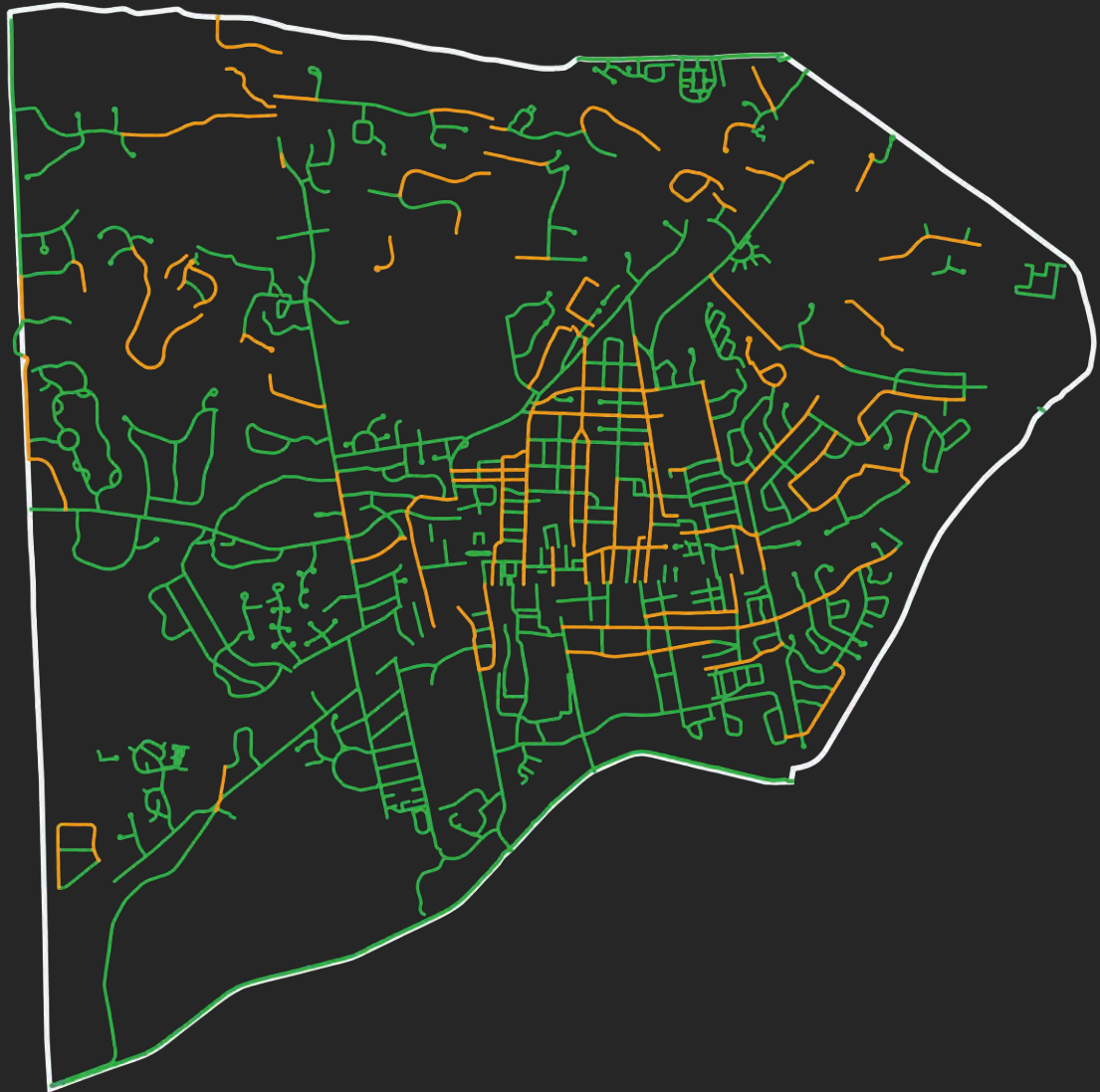
LTS 1, 2, 3



# Bicycle Level of Traffic Stress

LTS 1 & 2

Removal of high stress roads illustrates that the lower stress network is fragmented. “Islands” of low stress roads begin to appear.



# Bicycle Level of Traffic Stress

LTS 1, with paths

“Island effect”  
even more  
pronounced when  
LTS 2 links are  
removed,  
indicating lack of  
connectivity.



# Bicycle Level of Traffic Stress

LTS 1, without paths

Outer reaches of the Municipality even less connected without the existing path network.



# Bike Paths | Impact

- Significantly improves low stress network



LTS 1, with Trails Highlighted



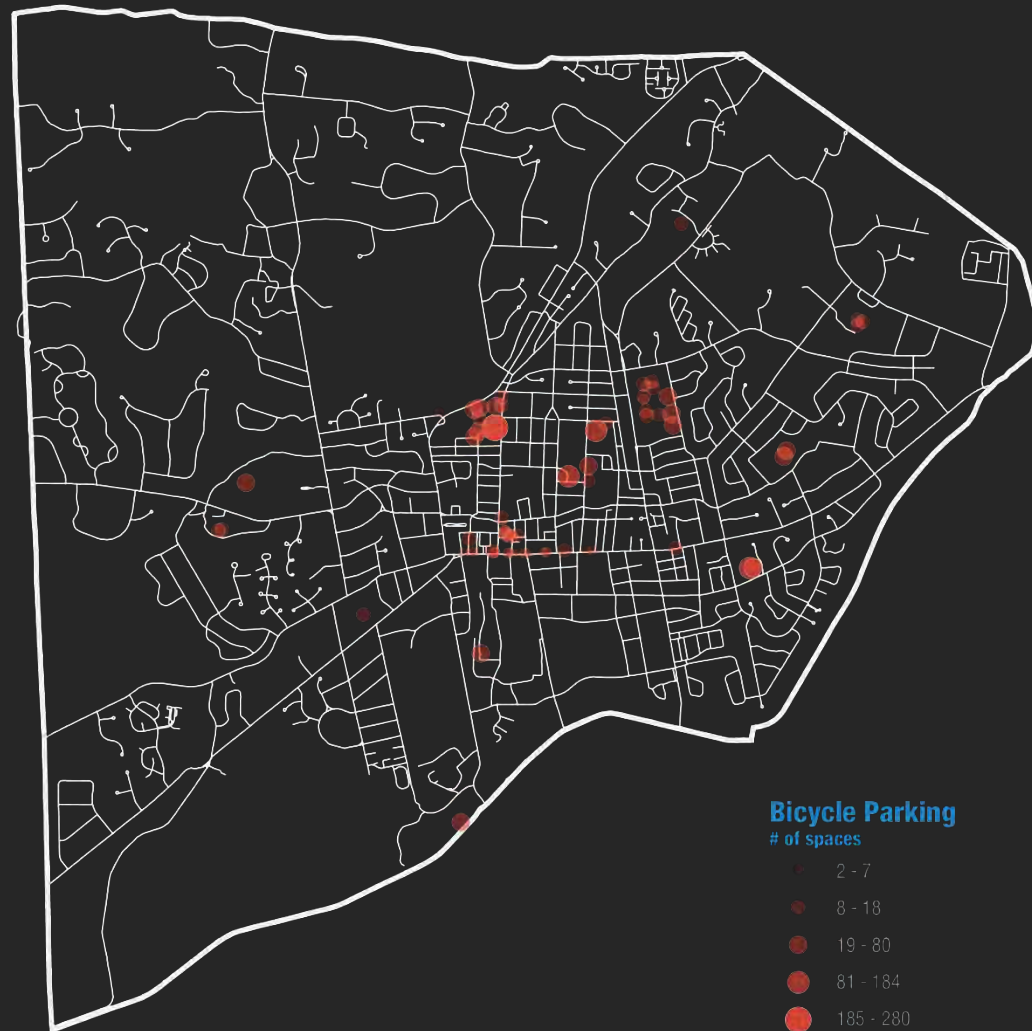
# Bike Paths | Deficiencies

- Pavement conditions
- Not designed for bicycle speeds
- Limited width
- Lack of lighting

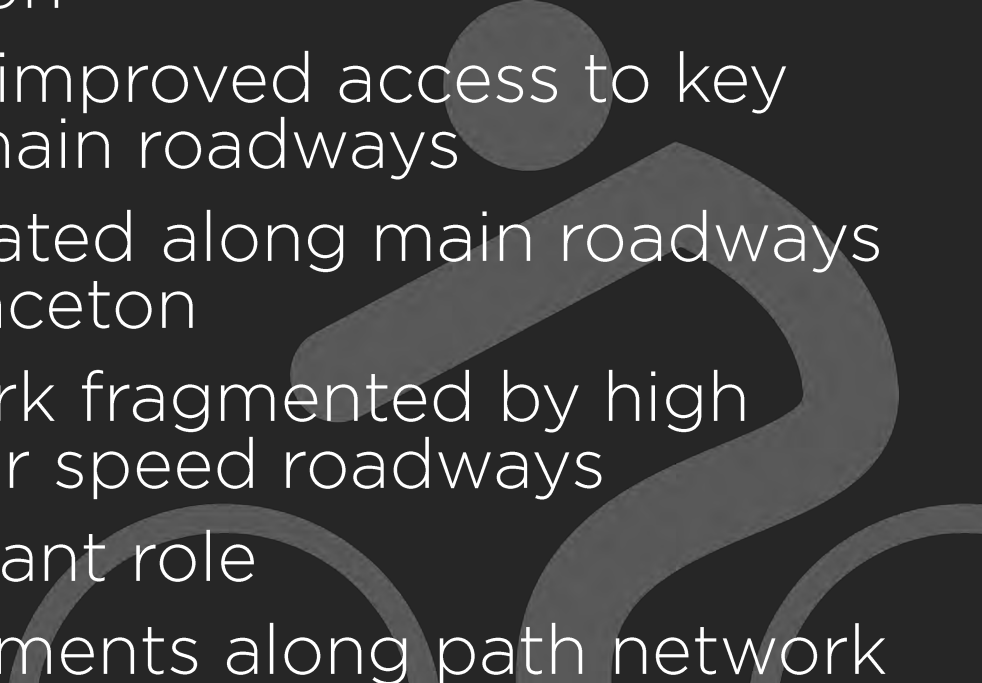


# Bike Parking

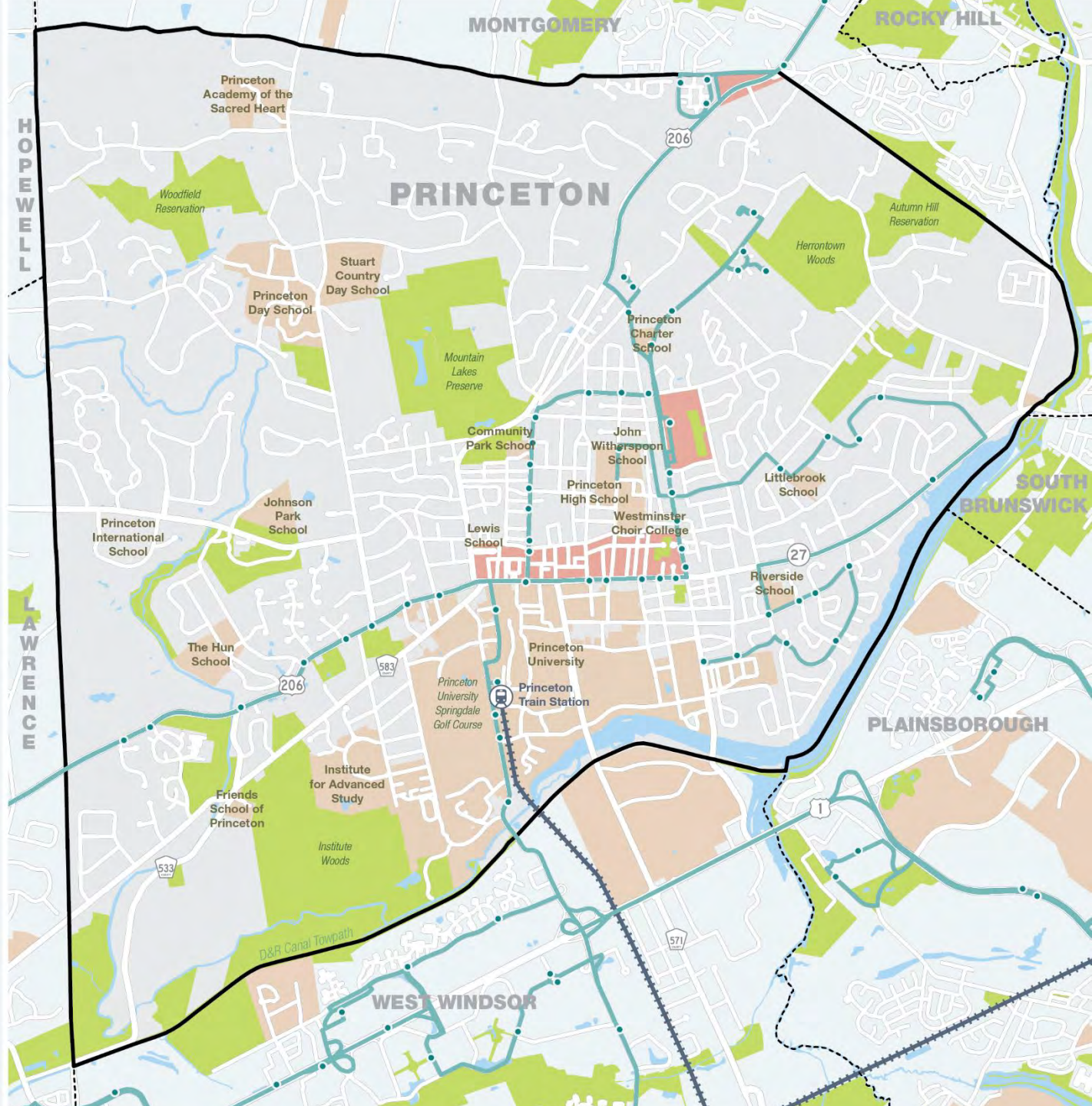
- 1,633 existing spaces
- Significant amount at schools and parks
- 92% of capacity is older style racks




# Recap

- Cyclists are vulnerable road users, and include children and those that depend on cycling as daily transportation
  - High demand for improved access to key destinations via main roadways
  - Crashes concentrated along main roadways and center of Princeton
  - Low stress network fragmented by high volume and higher speed roadways
  - Paths play important role
  - Need for improvements along path network
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## Points of Interest

-  NJ Transit Bus Stop
-  NJ Transit Bus Route
-  School
-  Park
-  Commercial Area



0 0.25 0.5 1 Miles



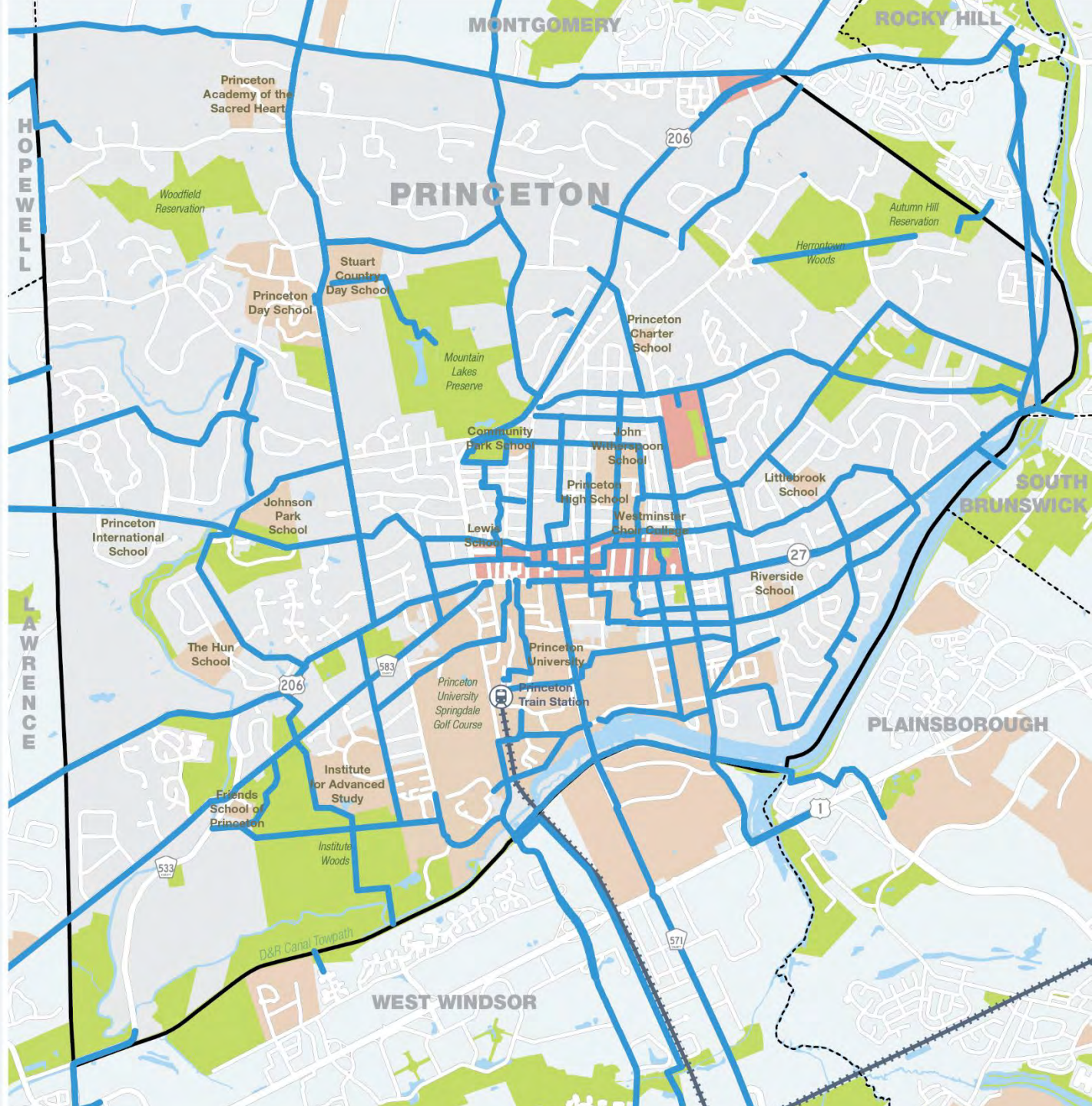
Desire lines from Wikimap and Public Meeting map mark-ups provide starting point for preliminary bike network.

## Points of Interest

-  School
-  Park
-  Commercial Area
-  Desire Line








0 0.25 0.5 1 Miles



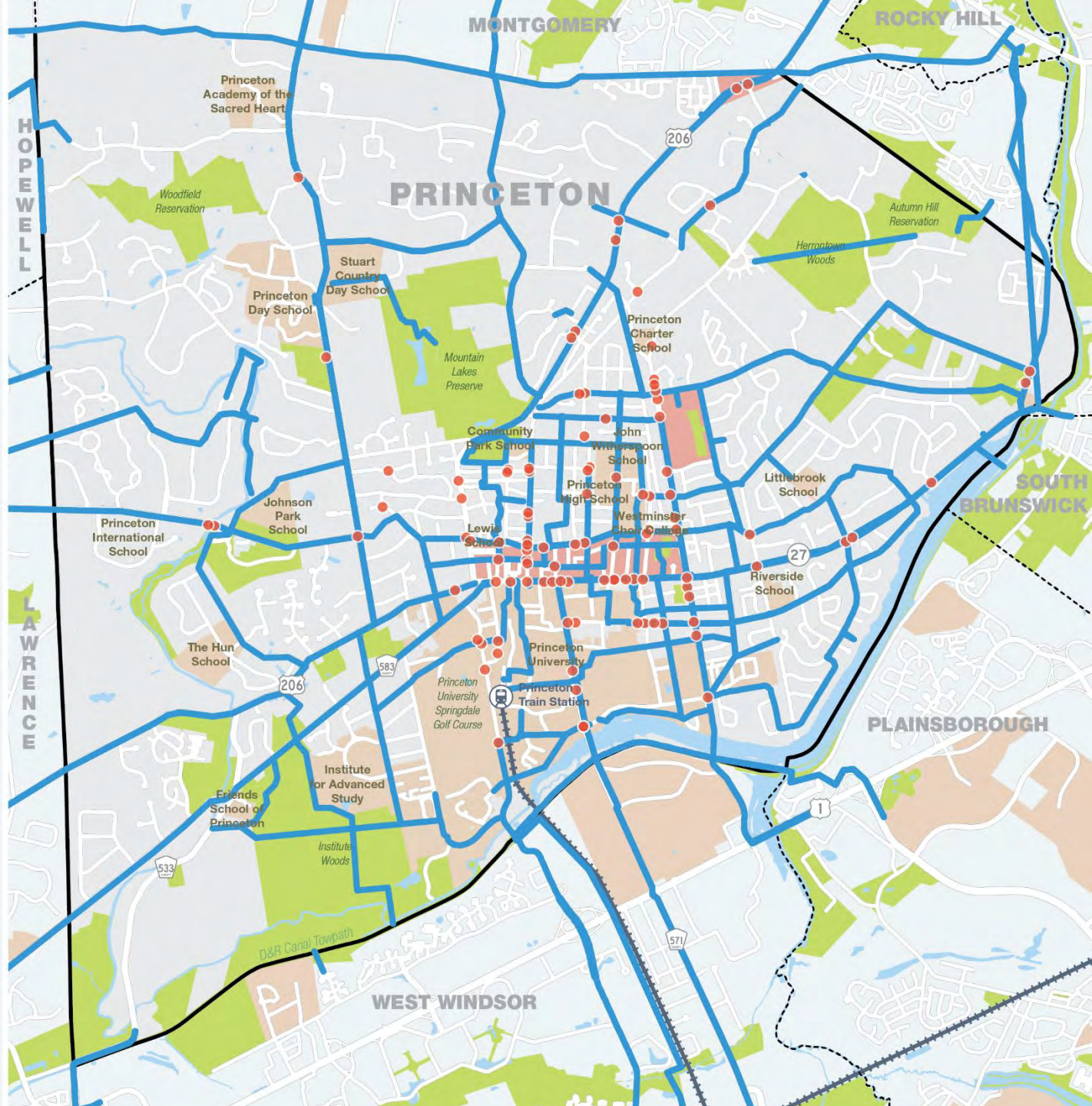


## Points of Interest

-  School
-  Park
-  Commercial Area
-  Desire Line
-  Crash



0 0.25 0.5 1 Miles





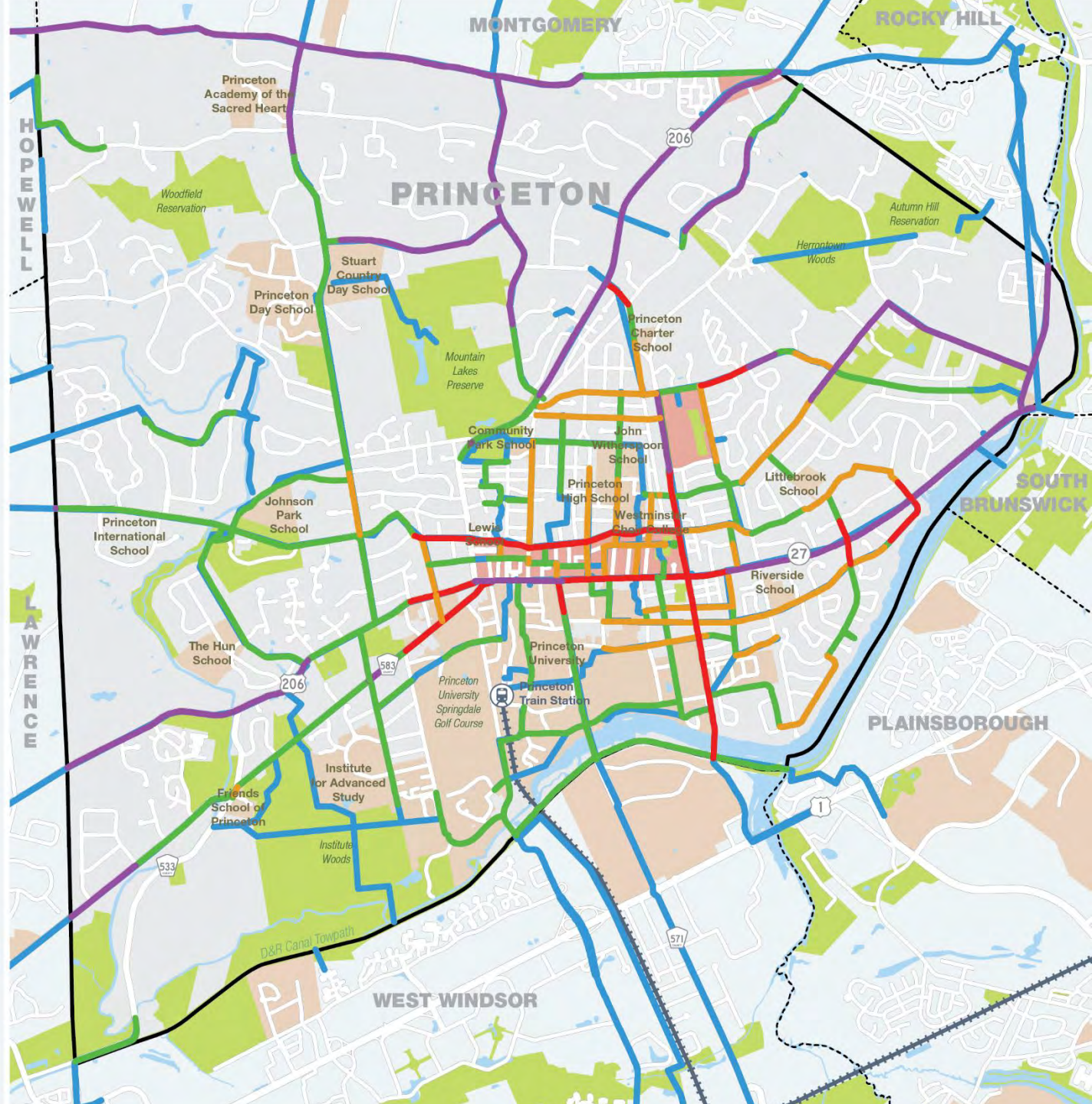
- Level of Stress 1
- Level of Stress 2
- Level of Stress 3
- Level of Stress 4

## Points of Interest

- School
- Park
- Commercial Area
- Desire Line



0 0.25 0.5 1 Miles




# Review Vision & Goals



# Vision: Aspirational Future

## Option A

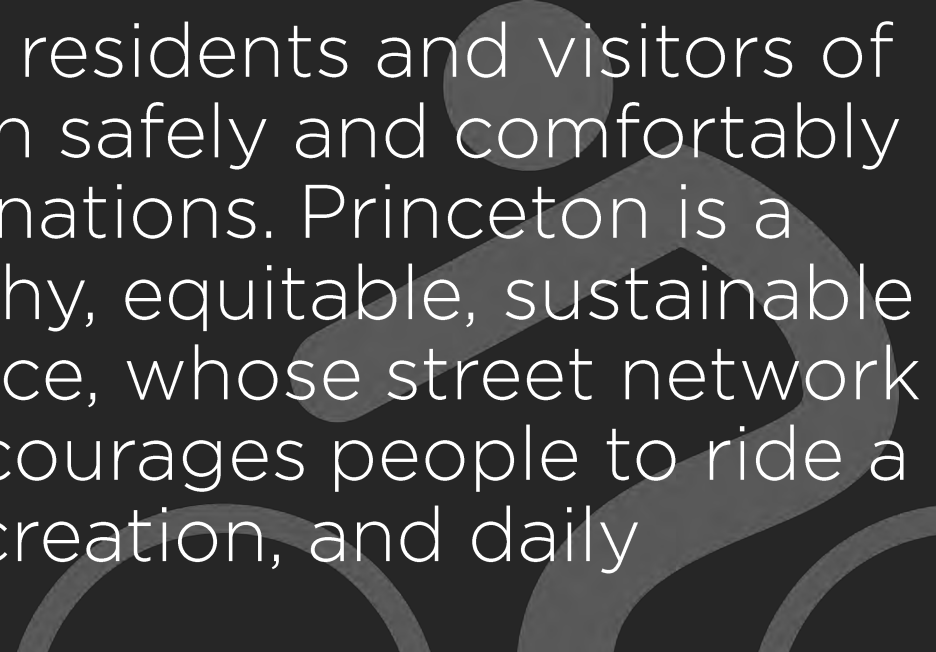
Princeton welcomes cycling as a valid and essential form of transportation for residents and visitors. Implementation of the Bicycle Master Plan over time creates a more livable, healthy, equitable, sustainable, and mobile community, whose streets safely accommodate and encourage people to bicycle for fun, recreation, and daily transportation.

A faint, stylized graphic of a person riding a bicycle is visible in the background, rendered in a light gray color. The figure is positioned behind the text, with the head and torso visible above the main body of text, and the wheels and frame of the bicycle extending below and to the sides.

# Vision: Aspirational Future

## Option B

The vision of the BMP is to create a community where residents and visitors of all ability levels can safely and comfortably bicycle to all destinations. Princeton is a more livable, healthy, equitable, sustainable and accessible place, whose street network welcomes and encourages people to ride a bicycle for fun, recreation, and daily transportation.

A faint, stylized graphic of a person riding a bicycle is visible in the background, rendered in a light gray color. The figure is positioned behind the text, with the head and torso area overlapping the words 'community' and 'Princeton', and the legs and wheels extending towards the bottom right of the slide.

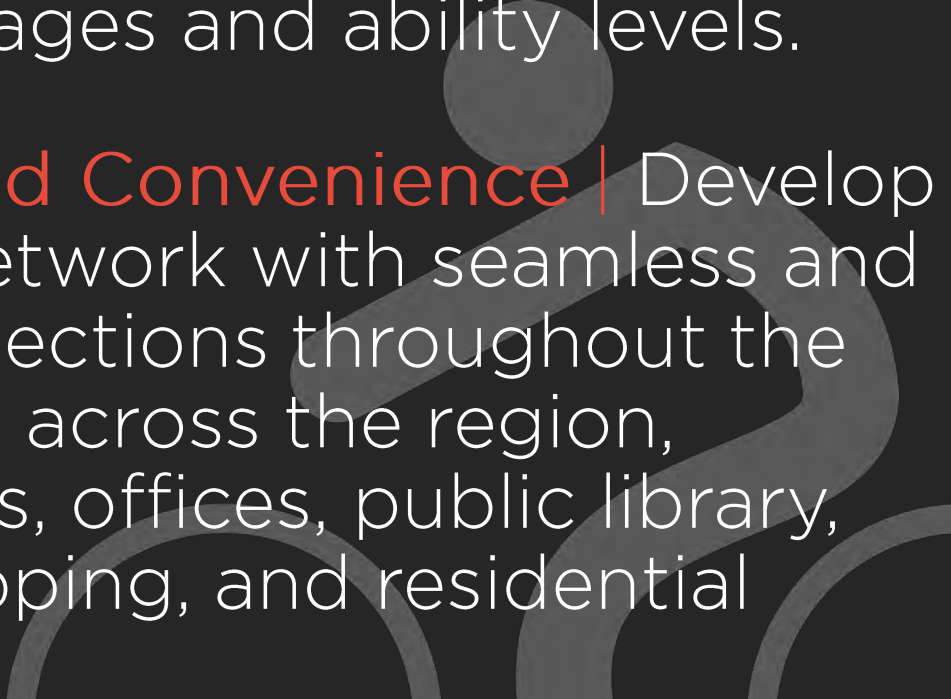


# Goals

- **Policy** | Advance and support the Municipality's Complete Streets Policy and Master Plan.
- **Safety** | Prioritize safety for those with limited transportation options, including school-age children and vulnerable roadway users.



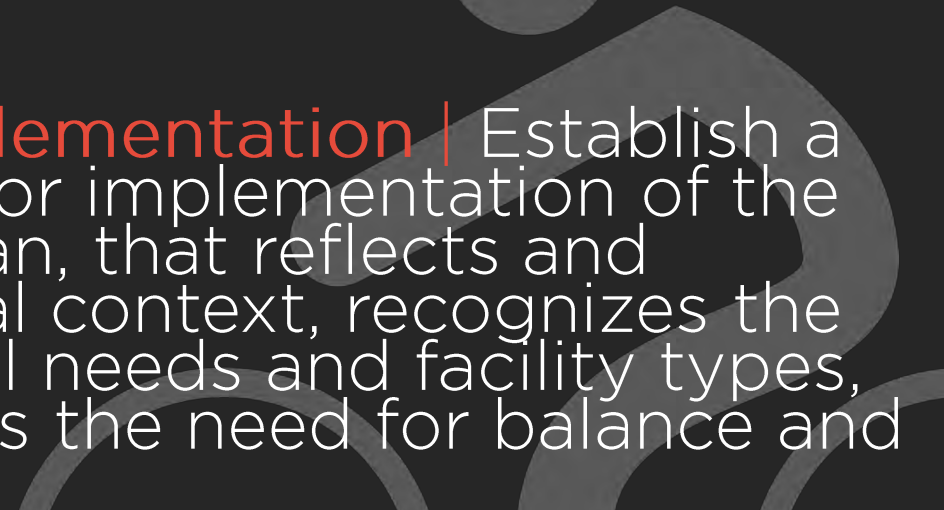
# Goals

- **Accessibility and Comfort** | Create a low stress bicycle network that is accessible to cyclists of all ages and ability levels.
  - **Connectivity and Convenience** | Develop a core bicycle network with seamless and convenient connections throughout the municipality and across the region, including schools, offices, public library, parks, local shopping, and residential neighborhoods.
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# Goals

- **Mobility** | Encourage higher bicycle use for short, local trips to mitigate roadway congestion and parking demand issues in the downtown core.
  - **Health and Equity** | Encourage and promote cycling as an active, affordable, and essential form of transportation to improve community health, wellness, and equity.
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# Goals

- **Awareness and Mutual Respect** | Promote safe cycling practices and a mutual respect and better understanding of the rules of the road among all roadway users through education, enforcement, and encouragement programs.
  - **Process and Implementation** | Establish a clear framework for implementation of the Bicycle Master Plan, that reflects and enhances the local context, recognizes the spectrum of travel needs and facility types, and acknowledges the need for balance and trade-offs.
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# Next Steps

- SAC Meeting 2/23
- Present status to full Planning Board?
- Develop draft network and facility types

