



UPSTATE PROFESSIONAL PLANNERS



FREEDOM MOBILITY PLAN

with Upstate Mobility Alliance
& Greenlink

FEBRUARY 24, 2021

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AGENDA

Welcome

Michael Forman, GSP International Airport

Sponsor Recognition

Freedom Mobility Plan Presentation

Michael Hildebrand
Upstate Alliance
Executive Director

Kayleigh Sullivan
Greenlink
Transit Planning Manager

Matthew Rehnborg
Greenlink
Transit Planner

Q & A

Upstate Comprehensive Plan Review Update

Phil Lindler, Greenwood City/County Planning Director

Next Meeting – March 24 on Spartanburg's Northside Initiative

Adjourn



UPSTATE PROFESSIONAL PLANNERS MEETING

FEBRUARY 24, 2021

Thank you sponsors!





ALTERNATIVE
MOBILITY
FREEDOM INDEX

Purpose

The Goal

Decrease Single Occupancy Vehicle (SOV) usage.

A Solution: Alternative Mobility Identification

1. Map available mobility options.
2. Give neighborhoods access to this information.

Projected Outcomes

1. Neighborhoods are better educated and aware of their alternative mobility options.
2. Neighborhoods are empowered to advocate for better access and **quality** mobility options.

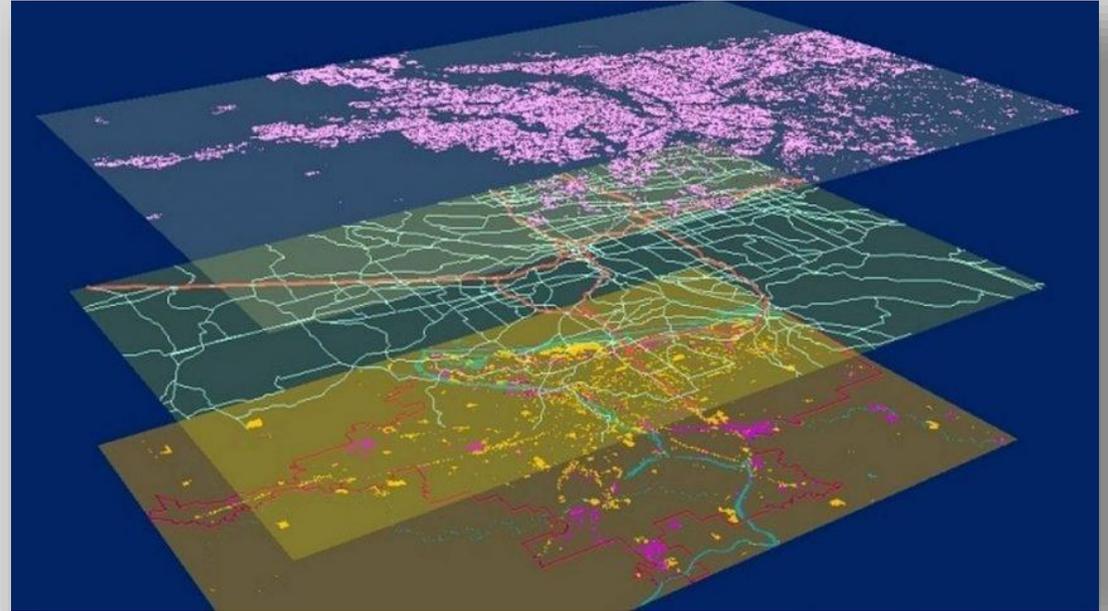
Neighborhood Evaluations

Need: Local knowledge, information, and relationships



GIS Information Needed

- Neighborhood boundaries
- Property Parcels
- Street Centerlines
- Sidewalks
- Bus Stops
- Bicycle Infrastructure (Bike Lanes, Sharrows)
- Trails/Multi-Use Paths



Initial Evaluation

To qualify for the Mobility Freedom program, a neighborhood must first meet thresholds related to:

- 1) Street Network Density
- 2) Average Parcel Size
- 3) Community Engagement Activity

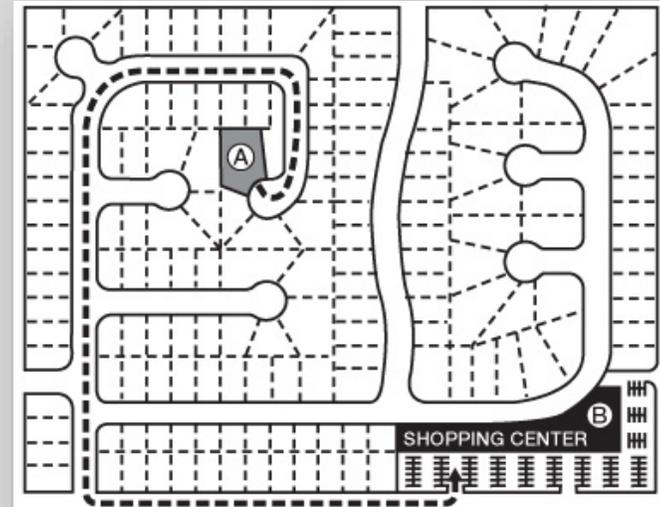
Street Network Density

Why: Focus on neighborhoods with high street connectivity levels that support non-auto transportation.

How: As a simple measurement of the connectivity of the neighborhood's street network, street network density is calculated as:

$$\text{Miles of Roadway} \div \text{Land Area (Square Miles)}$$

Threshold: To qualify, a neighborhood must feature at least **15 miles of roadway per square mile of land area.**



(A) Conventional suburban hierarchical network.



(B) Traditional urban connected network.

Street Network Density

Example: Nicholtown neighborhood, Greenville, SC

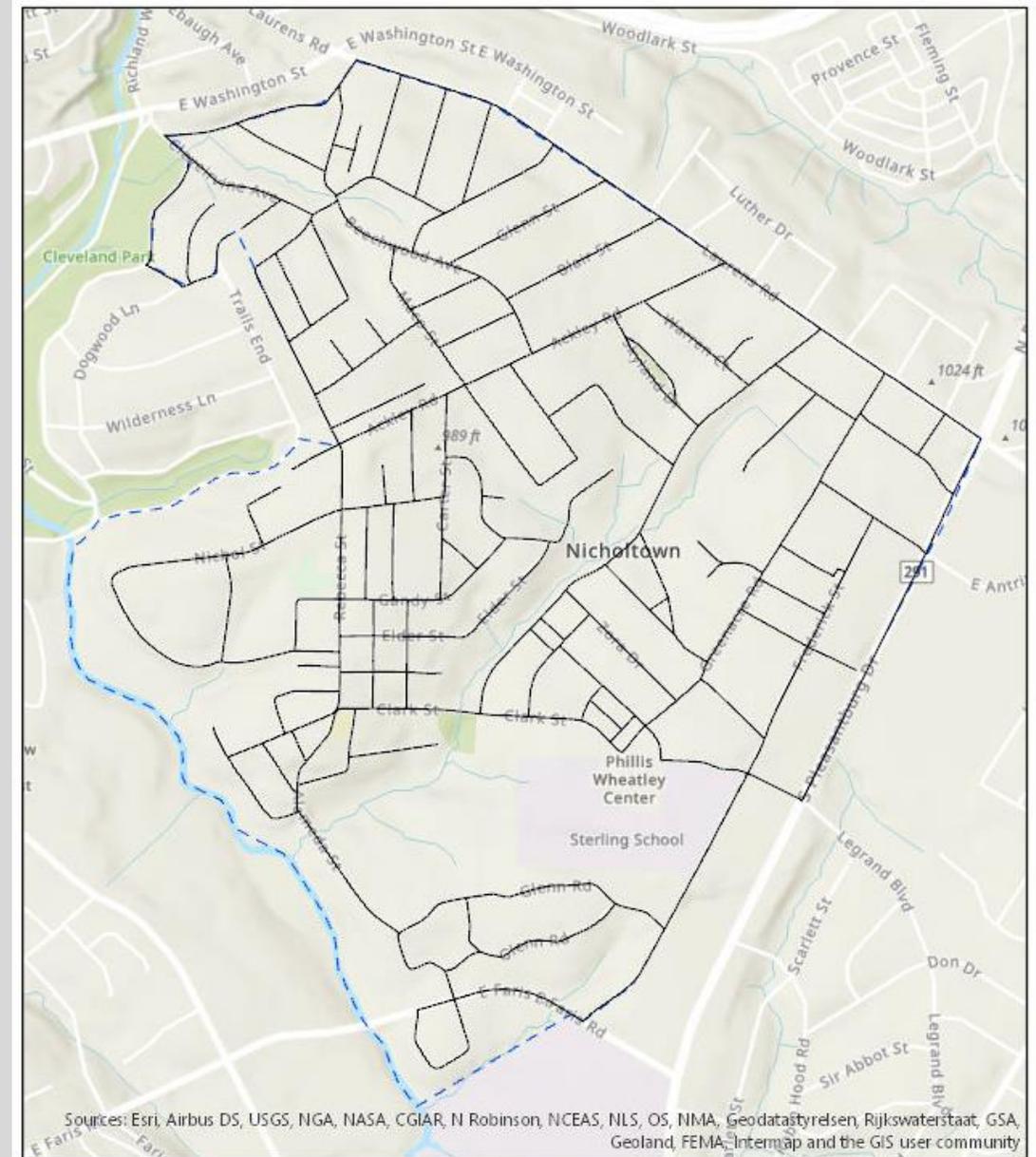
Total Street Length: 20.6 miles

Land Area: 1.05 square miles

Street Network Density: 19.6 street miles per square mile

✓ Nicholtown meets the street network requirement.

Tip: When selecting street segments for a neighborhood's street network, include streets that run along neighborhood boundaries.



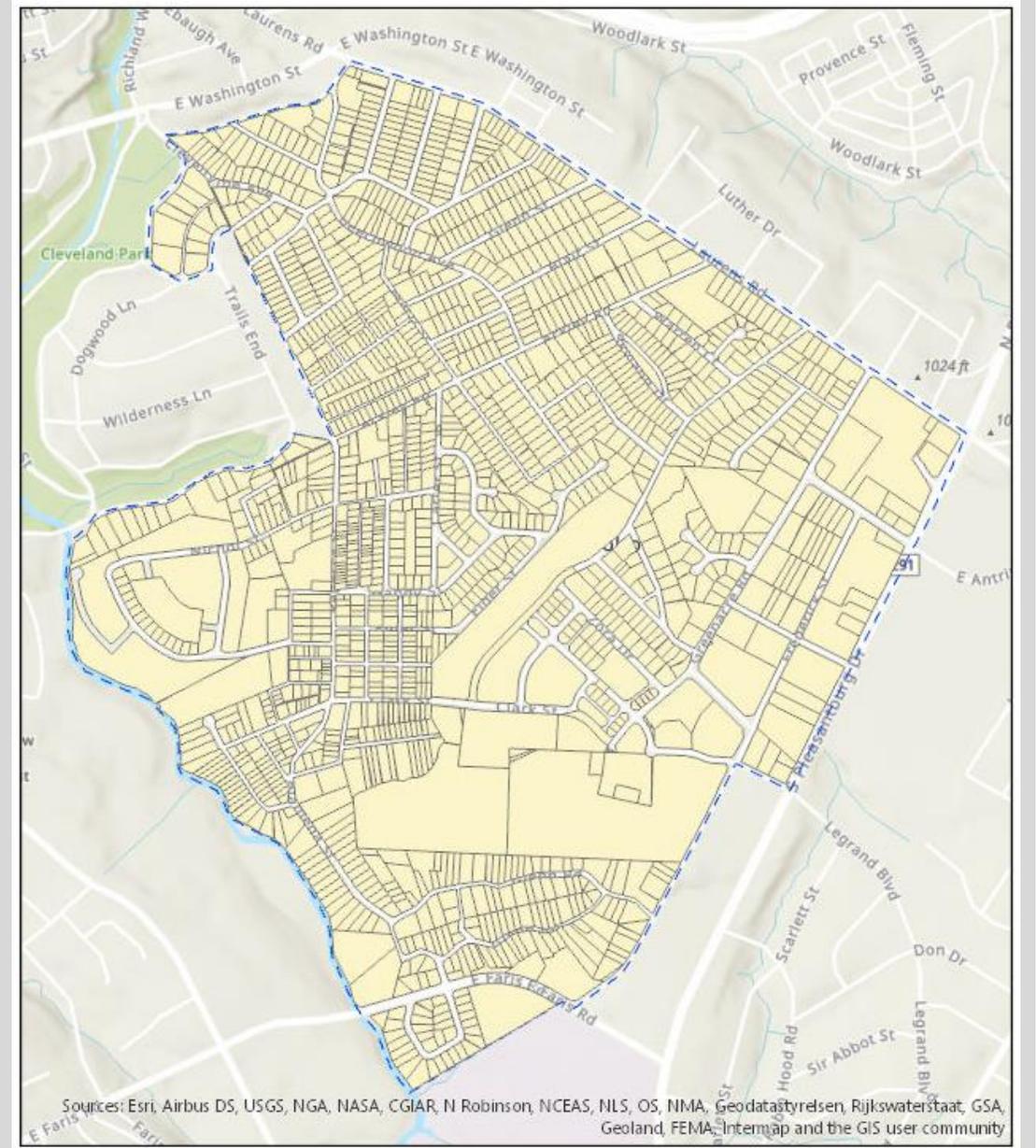
Average Parcel Size

Example: Nicholtown neighborhood, Greenville, SC

Average Parcel Size: 0.34 acres

✓ Nicholtown meets the average parcel size requirement.

Tip: If your GIS layer reports parcel size in square feet instead of acres, use the conversion of 1 acre = 43,560 square feet.



Community Engagement



Why: Focus on neighborhoods with high levels of community engagement that will support future education and outreach efforts

How: Neighborhoods will receive a score determined by the availability of community centers and the frequency of community events.

- Formal or Informal Community Center: 5 points
- Number of formal community-wide events held per quarter (For example, block parties) Please provide documentation.
6 or more: 5 points / 3-5: 3 points / 1-2: 1 point / 0: 0 points
- Number of informal community events are held per quarter? (For example, garage sales or Halloween trick-or-treating).
6 or more: 5 points / 3-5: 3 points / 1-2: 1 point / 0: 0 points

Threshold: To qualify, a neighborhood must score **10 or more points**

Practice Exercise

Which neighborhoods qualify for the Mobility Freedom Program?

Threshold Guidelines

Street Network Density: 15 miles per square mile

Average Parcel Size: 0.5 acre or less

Community Engagement: 10 or more points

- Community Center: 5 points
- Events per quarter (score formal and informal events separately):
 - 6 or more - 5 points
 - 3-5 - 3 points
 - 1-2 - 1 point
 - 0 - 0 points

Neighborhood A

Miles of Roadway: 34 miles

Land Area: 2 square miles

Average Parcel Size: 0.45 acres

Community Center: Yes

Formal Community Events per Quarter: 2

Informal Community Events per Quarter: 7

Neighborhood B

Miles of Roadway: 15 miles

Land Area: 1.5 square miles

Average Parcel Size: 0.4 acres

Community Center: No

Formal Community Events per Quarter: 3

Informal Community Events per Quarter: 3

Neighborhood C

Miles of Roadway: 18 miles

Land Area: 1 square mile

Average Parcel Size: 0.35 acres

Community Center: No

Formal Community Events per Quarter: 7

Informal Community Events per Quarter: 10

Alternative Mobility Freedom Scores

- 1) Transit Freedom
- 2) Bicycling Freedom
- 3) Pedestrian Freedom

Tip: A neighborhood does not need to have all three modes of transportation to participate

Transit Freedom

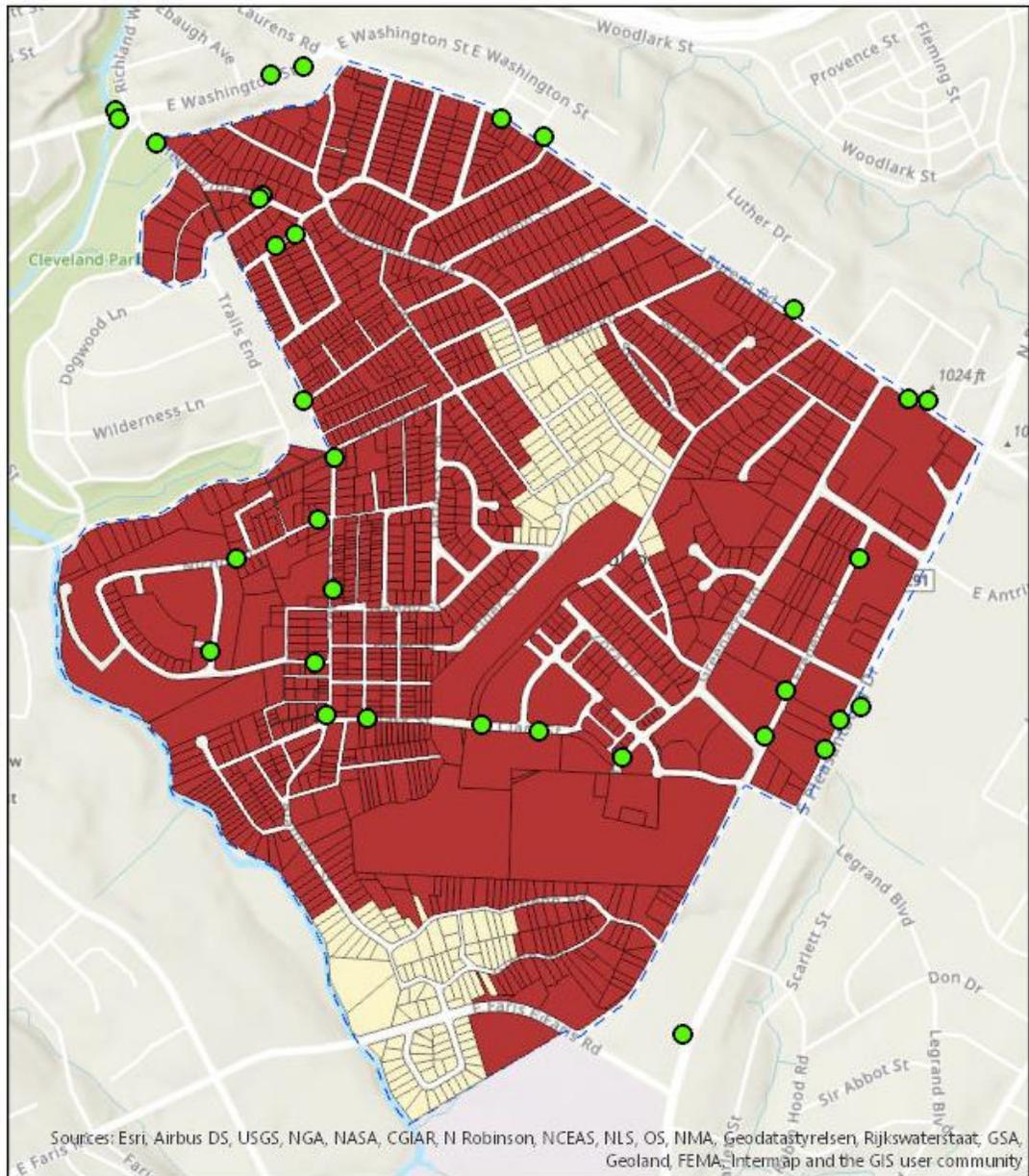
Infrastructure Score

What percentage of parcels in the neighborhood are located within $\frac{1}{4}$ mile of a bus stop?

Connection Score

Of those bus stops, how many are attached to a sidewalk?





Transit Freedom: Nicholtown Example

Infrastructure Score

Number of Parcels within 1/4 mile of bus stop: 1,487

Total Number of Parcels: 1,677

Percentage of Parcels within 1/4 mile of bus stop: 89%

Connection Score

Bus Stops Located within 1/4 mi of neighborhood: 32

Bus Stops Attached to a Sidewalk: 24

Percentage of Bus Stops Attached to a Sidewalk: 75%

Tip: When selecting bus stops, include stops that are located within 1/4 mile of the neighborhood boundaries.

Bicycling Freedom

Infrastructure Score

What percentage of streets in the neighborhood feature existing marked bicycle infrastructure (bike lanes or sharrows)?

Connection Score

How many designated access points are there to and from the neighborhood? (Points should include trail access)



Bicycling Freedom: Nicholtown Example

Infrastructure Score

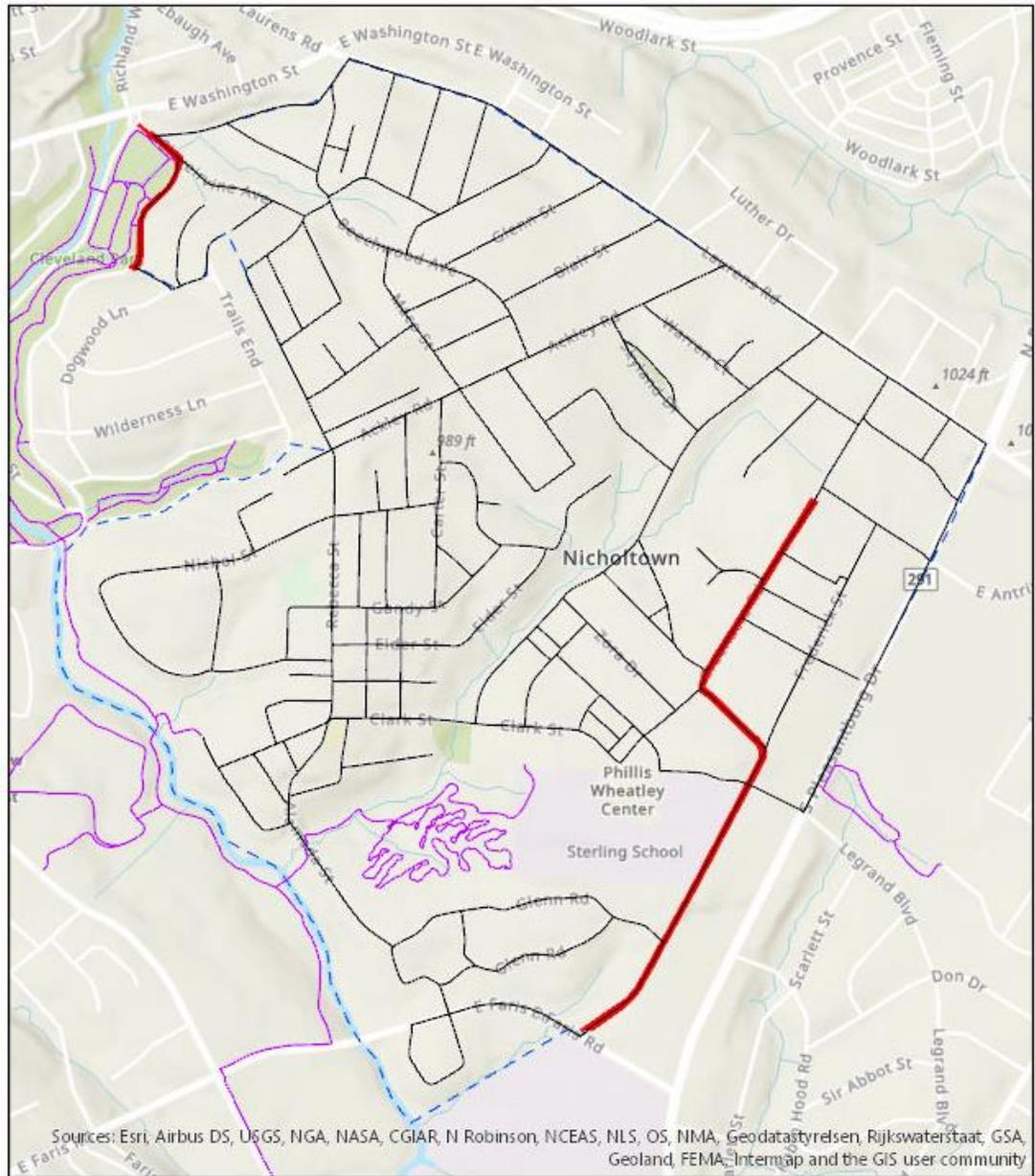
Total Existing Bicycle Lane/Sharrows Length: 1.34 miles

Total Neighborhood Street Length: 20.6 Miles

Percentage of Streets with Bicycle Infrastructure: 6.5%

Connection Score

Number of Bicycle Access Points: **4**



Pedestrian Freedom

Infrastructure Score

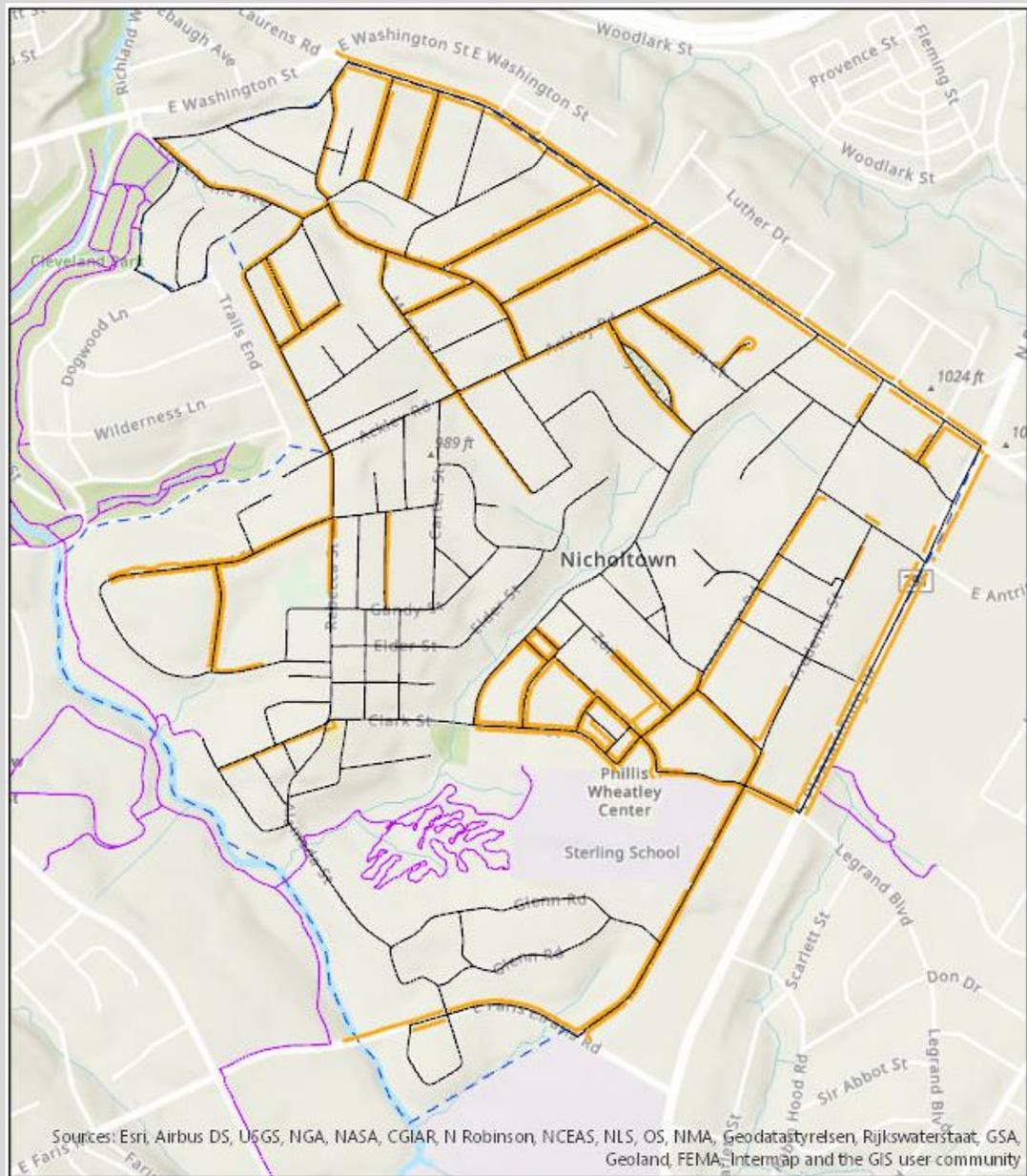
What percentage of street edges in the neighborhood feature sidewalks?

Tip: Street edge distance is calculated as
= (total street length) x 2

Connection Score

How many pedestrian access points are there to and from the neighborhood?





Pedestrian Freedom: Nicholtown Example

Infrastructure Score

Total Existing Sidewalk Length: 13.45 miles

Total Street-Edge Length: 41.2 miles

Percentage of Street Edges with Sidewalks: 32.6%

Connection Score

Pedestrian Access Points: **16**

ALTERNATIVE MOBILITY FREEDOM INDEX

Freedom Scale	
0.00	No Freedom
1.00	Low Freedom
4.00	Moderate Freedom
7.00	High Freedom
10.00	Complete Independence

Alternative Mobility Freedom Index

Neighborhood:	Nicholtown	Transit Freedom:	1.6
City:	City of Greenville	Bicycling Freedom:	0.8
County:	Greenville County	Walking Freedom:	1.3
		Alternative Mobility Freedom:	6.3
		Level of Freedom:	Moderate Freedom

Transit Freedom

Infrastructure

Number of Parcels within ¼ Mile of a Bus Stop:	1487
Total Number of Parcels:	1677

Infrastructure Score: 0.886702445

Connections

Number of Bus Stops within 1/4 mile of Parcels:	32
Number of Bus Stops Attached to Sidewalk:	24

Connection Score: 0.75

Transit Access Score: 1.6

Bicycling Freedom

Infrastructure

Total Existing Bicycle Lane/Sharrow Length	1.34
Total Street Length	20.6

Infrastructure Score: 0.065048544

Connections

Number of Formal Access Points to and from the Neighborh	4
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Connection Score: 0.75

Bicycling Access Score: 0.8

Walking Freedom

Infrastructure

Total Existing Sidewalk Length	13.45
Total Street Length	41.2

Infrastructure Score: 0.326456311

Connections

Number of Formal Access Points to and from the Neighborh	16
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Connection Score: 1

Walking Access Score: 1.3

Celebrate Mobility Options: Moderate+



Mobility Assessment (Quality) & One-Pager Strategic Plan/Partnership (nested within current plans)



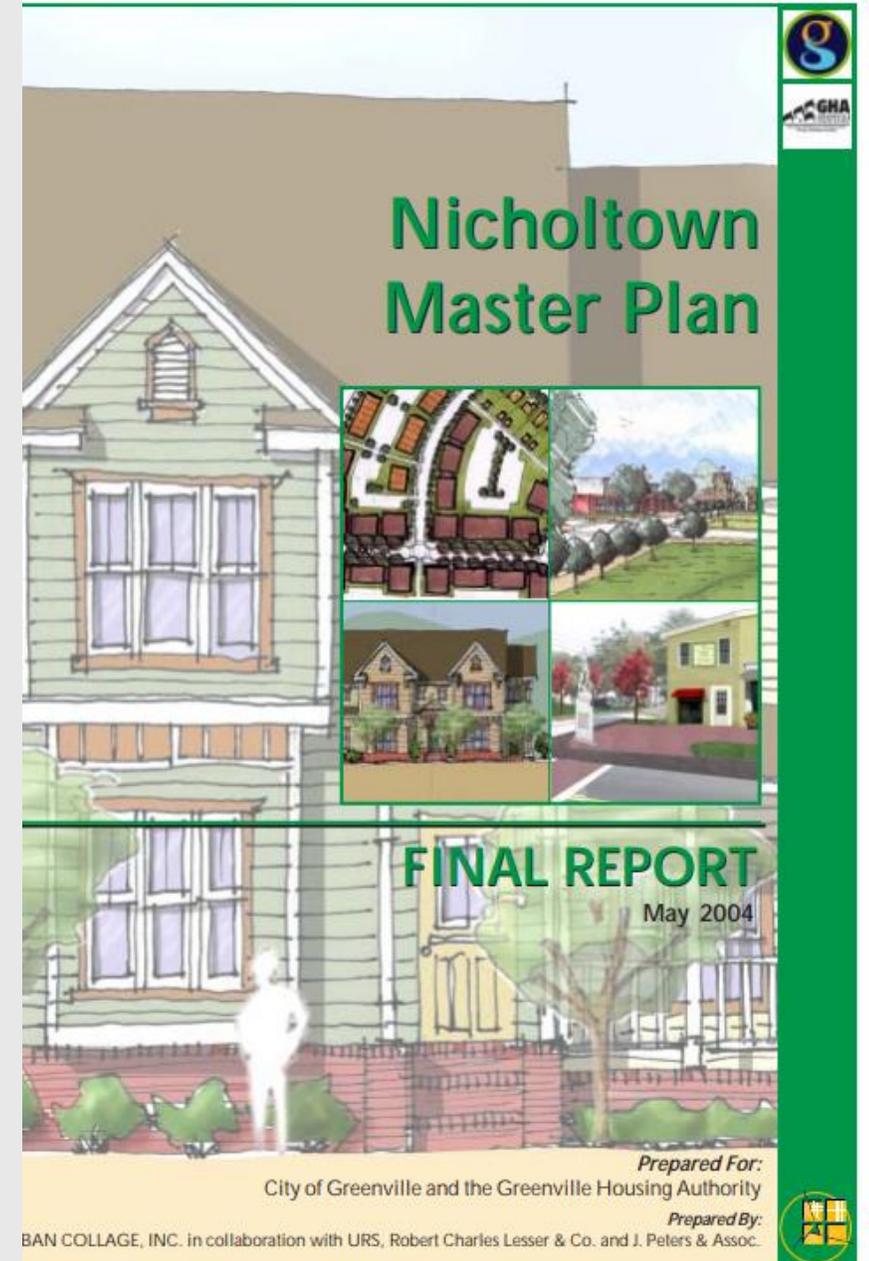
Neighborhood Campaign (Ride, Bike, or Walk)



Advocacy Training

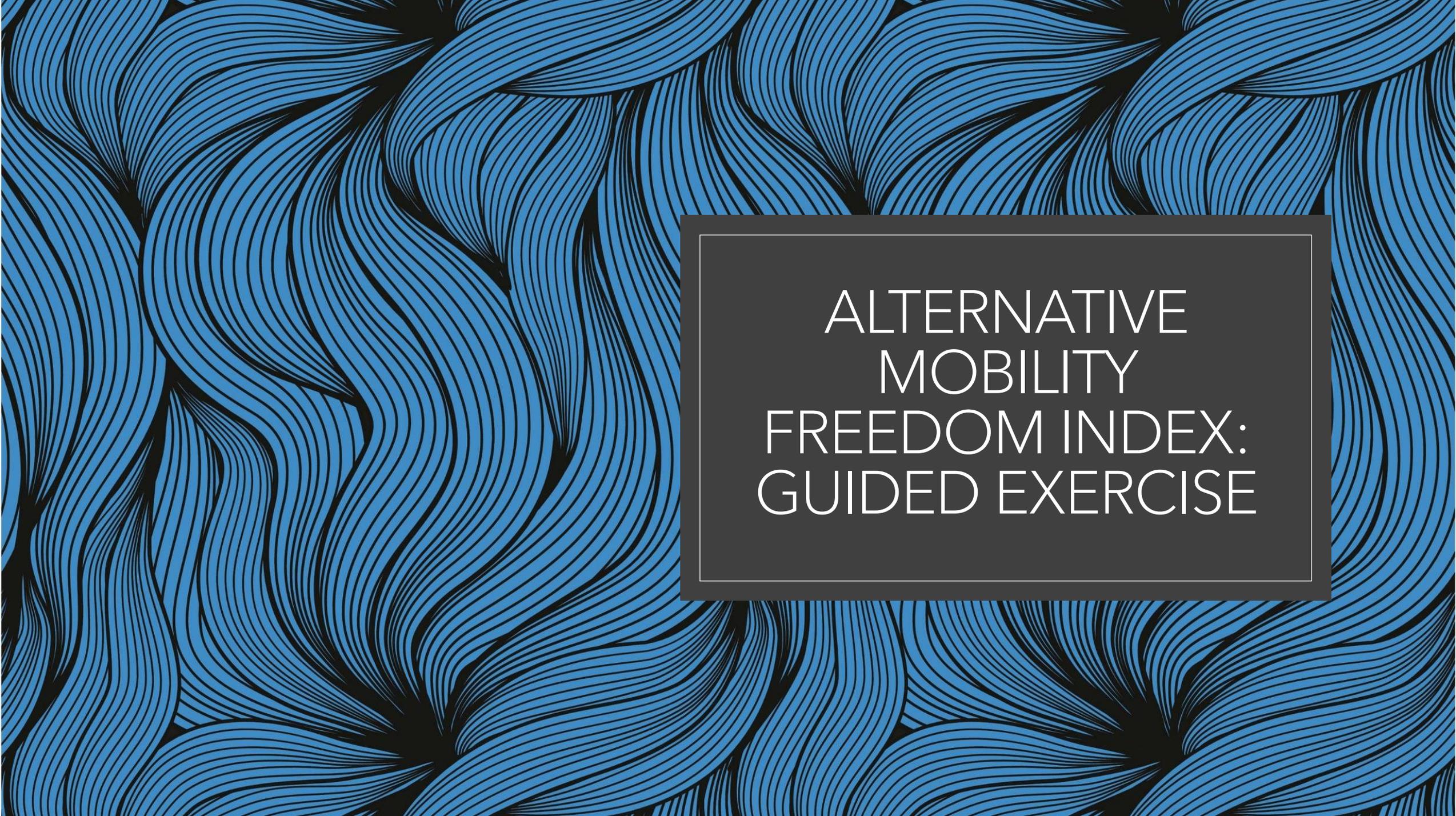


End Goal: Heightened awareness of mobility access & a game plan for how to move forward



Next Steps

- Upstate Mobility Alliance completing pilot evaluation before officially announcing program.
- Feedback and suggestions are welcome!
- Be thinking about neighborhoods in your community that might fit well for the program.



ALTERNATIVE
MOBILITY
FREEDOM INDEX:
GUIDED EXERCISE

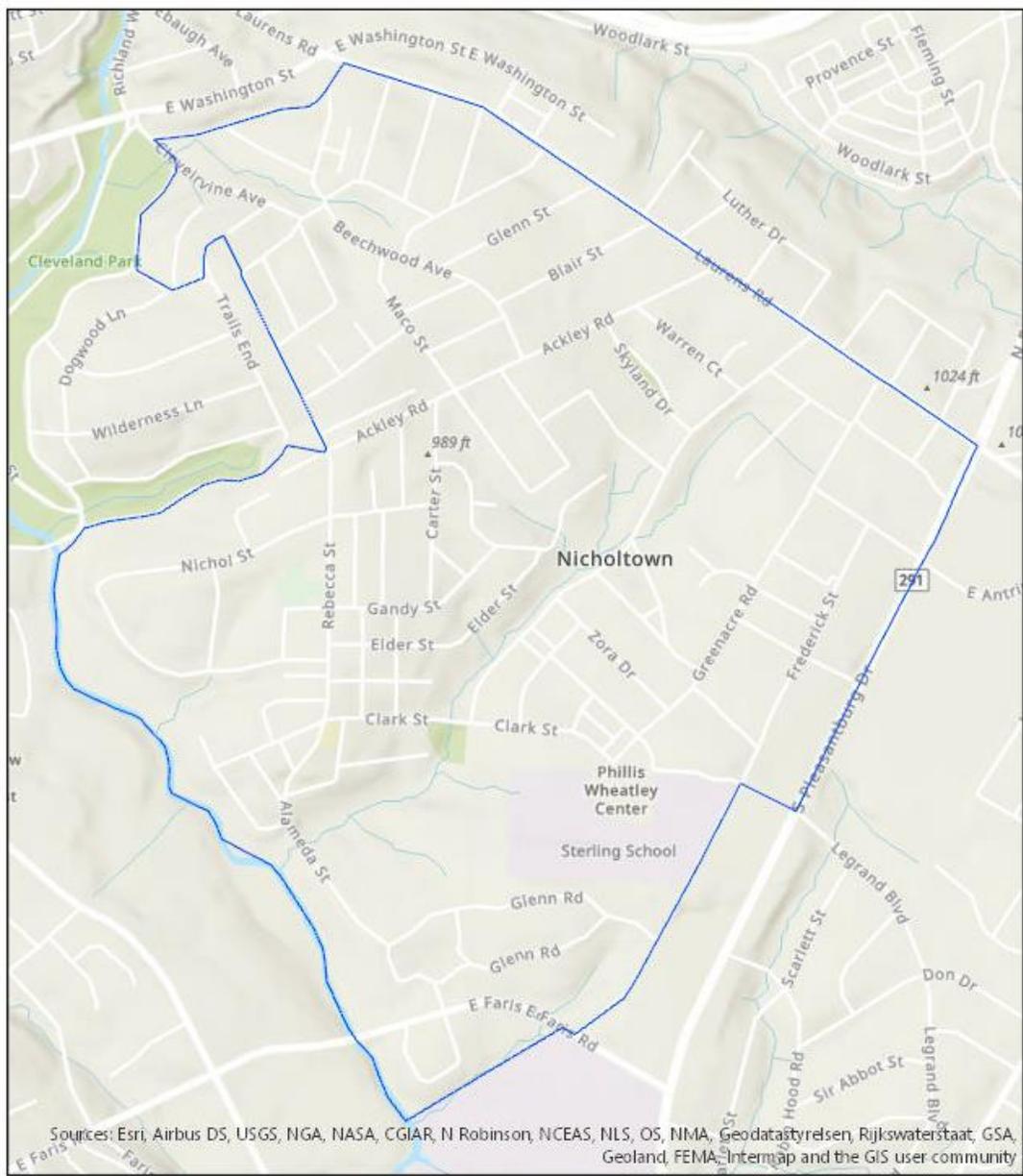
Background

- The Upstate Mobility Alliance is developing a program to identify, evaluate, and promote neighborhoods across the Upstate that support multiple modes of transportation.
- If there is a neighborhood in your community that you think would work well in this program, you can use the information in this presentation to work through some of the evaluation steps used by this program.
 - **All of these steps will be explained in more detail in the Upstate Professional Planners Workshop meeting on Wednesday, February 24th.** This information is being shared ahead of time so that you can have a chance to work through the steps and determine if you have any questions or comments that could be shared during the meeting.

Neighborhood Selection

Use officially established neighborhood boundaries as scoring analysis area.

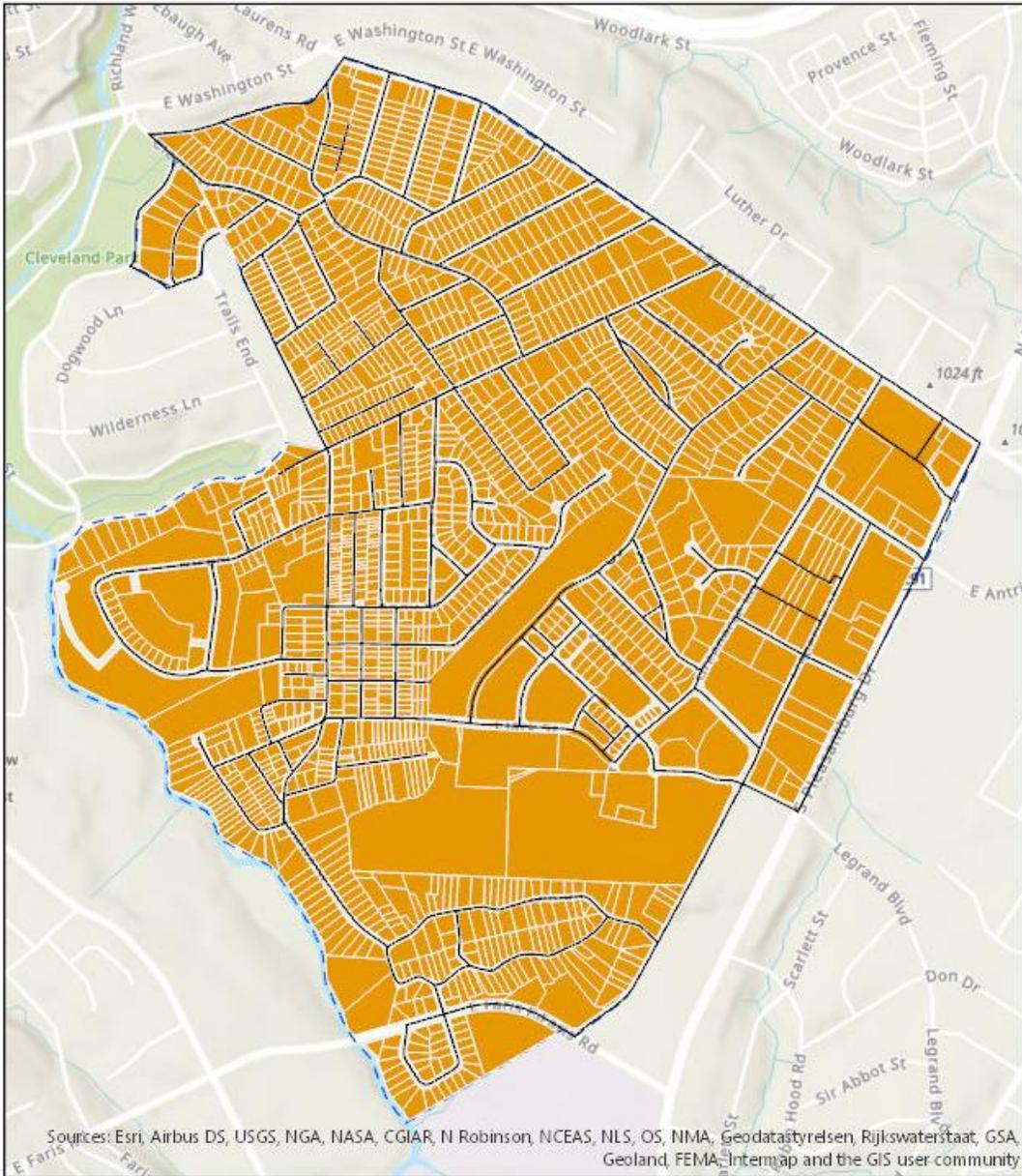
Example: Nicholtown neighborhood in Greenville, SC

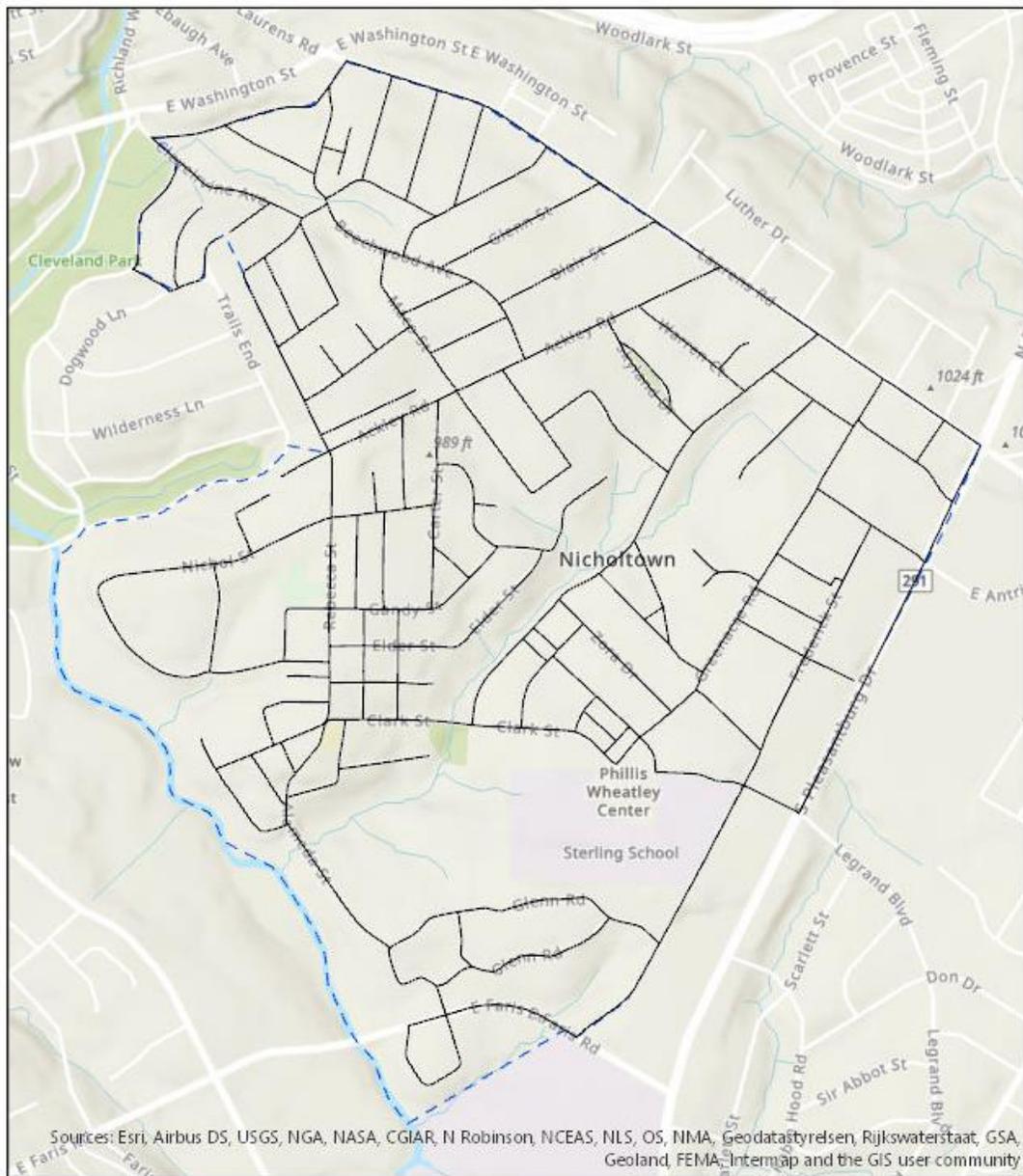


Neighborhood Qualification Proposal: Built Environment

In order to manage the total number of neighborhoods to be evaluated in the region, it is proposed to establish qualification thresholds related to a neighborhood's **street network** and **average parcel size**.

By limiting the scope to neighborhoods with **high levels of street connectivity** and **small average parcel sizes**, we will be able to concentrate our efforts on neighborhoods that have the greatest capacity to support multi-modal travel.





Street Density

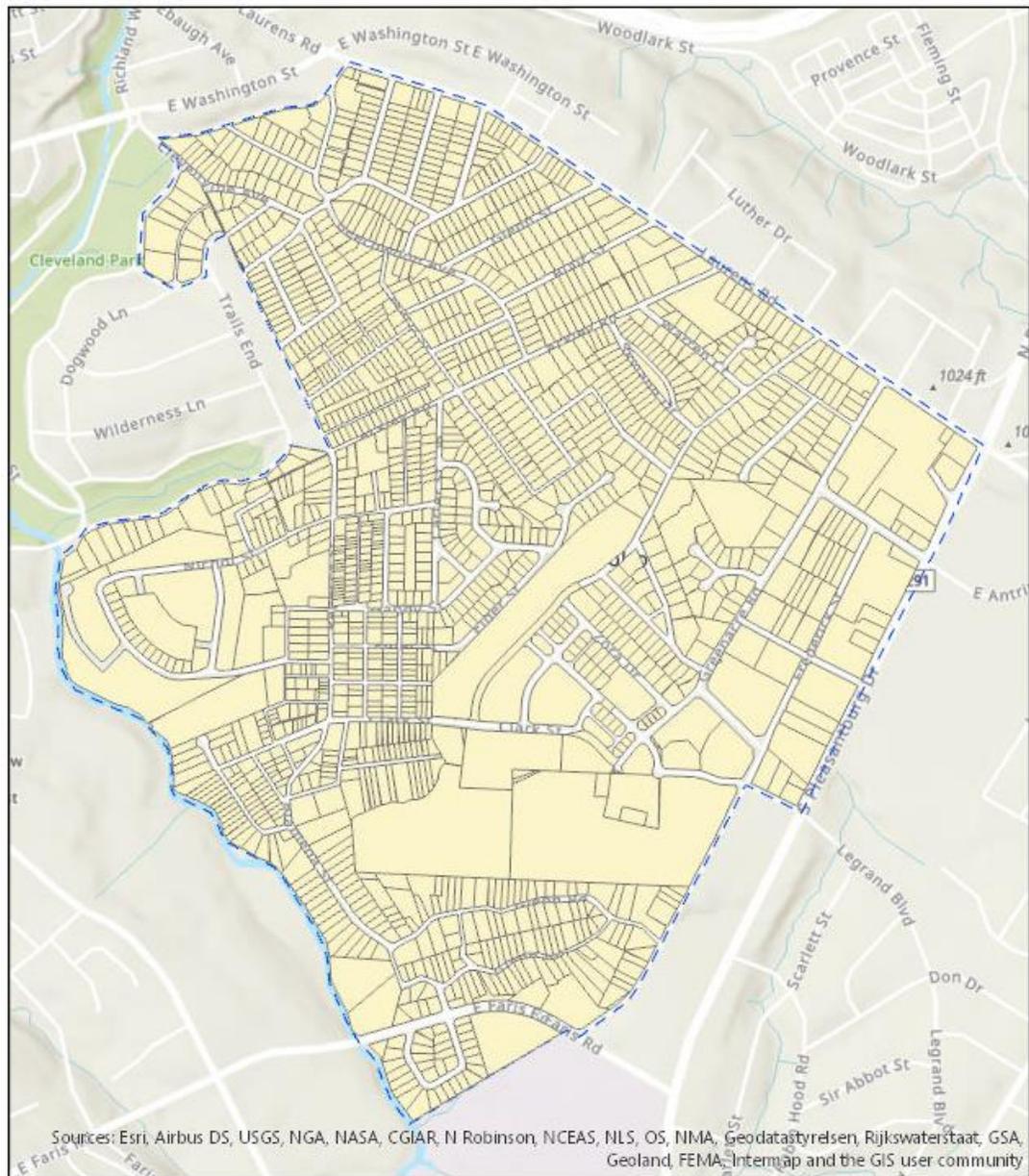
As a simple analysis of a neighborhood's street network, we propose measuring the number of miles of streets per square mile of land area in the neighborhood.

Nicholtown Example

- Total Street Length: 20.6 miles
- Land Area: 1.05 square miles
- Street Density: 19.6 miles per square mile

Methodology

- 1) Within the city/county street centerline shapefile, select all street segments located in the neighborhood, including boundary streets.
- 2) Create a new shapefile from the selected segments.
- 3) Determine the total length of streets in the new neighborhood street shapefile by using the "statistics" function in the layer's attribute data. (number may need to be converted from feet to miles)
- 4) Determine the total area of the neighborhood by using the "measure features" tool in ArcGIS.
- 5) Divide the total neighborhood street length (Step 3) by total neighborhood land area (Step 4)



Average Parcel Size

As a simple measure of the density of the neighborhood's built environment, we propose measuring the average size of property parcels in the neighborhood.

Nicholtown Example

Average Parcel Size: 14,760 sq feet (0.34 acres)

Methodology

- 1) Clip the city/county parcel shapefile using the neighborhood boundary.
- 2) Use the "statistics" function in the attribute data of the new neighborhood parcel shapefile to determine that average (mean) size of parcels. (Depending on source, may need to convert square feet to acres)

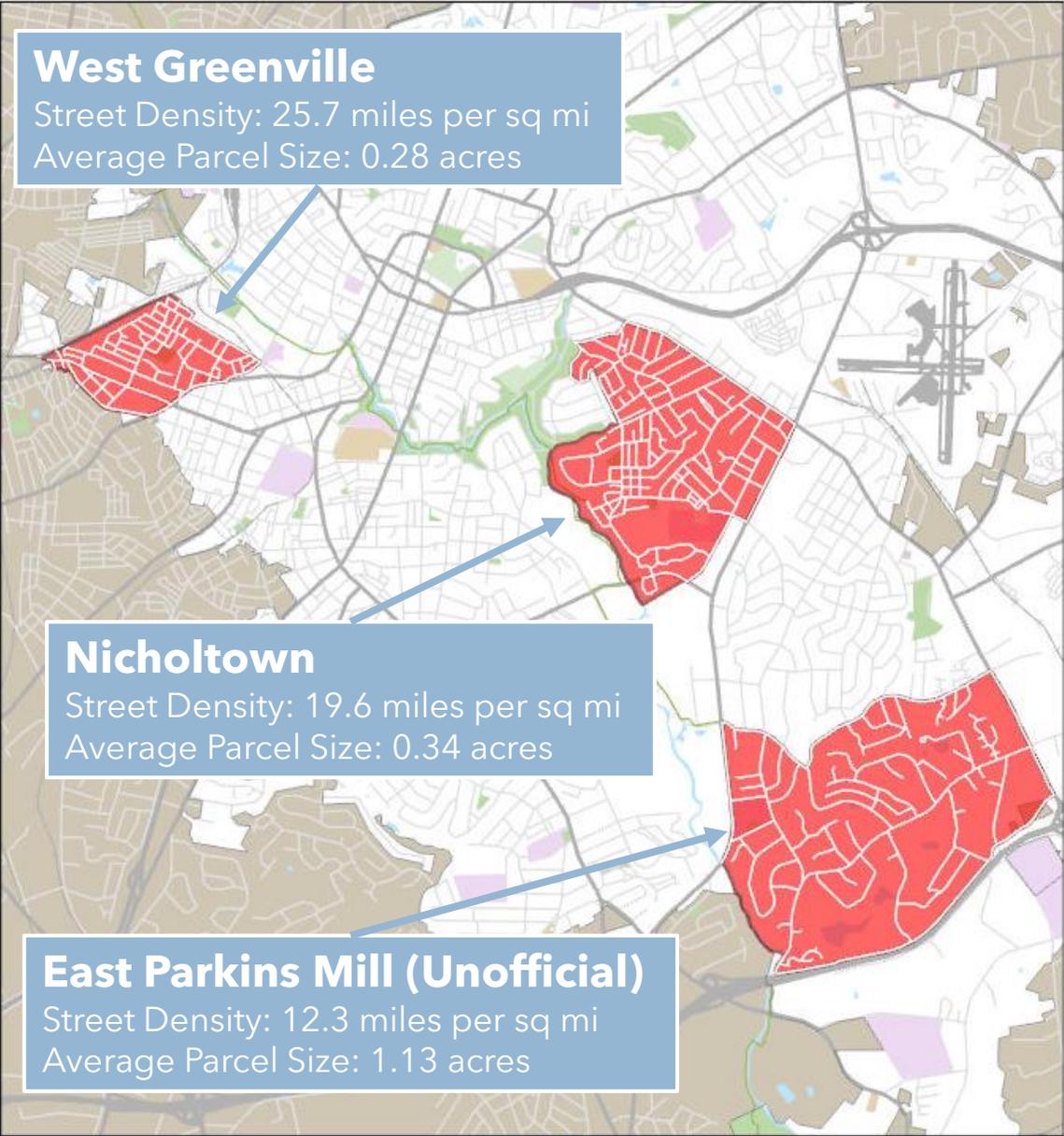
Proposed Qualification Thresholds

Three neighborhoods in Greenville were evaluated to determine potential qualification thresholds. Two (West Greenville and Nicholtown) represent neighborhoods with high multimodal potential, and one (East Parkins Mill) represents an area with lower multimodal potential.

Based on these results, the following qualification thresholds are proposed:

Street Density: Must be greater than 15 miles per square mile.

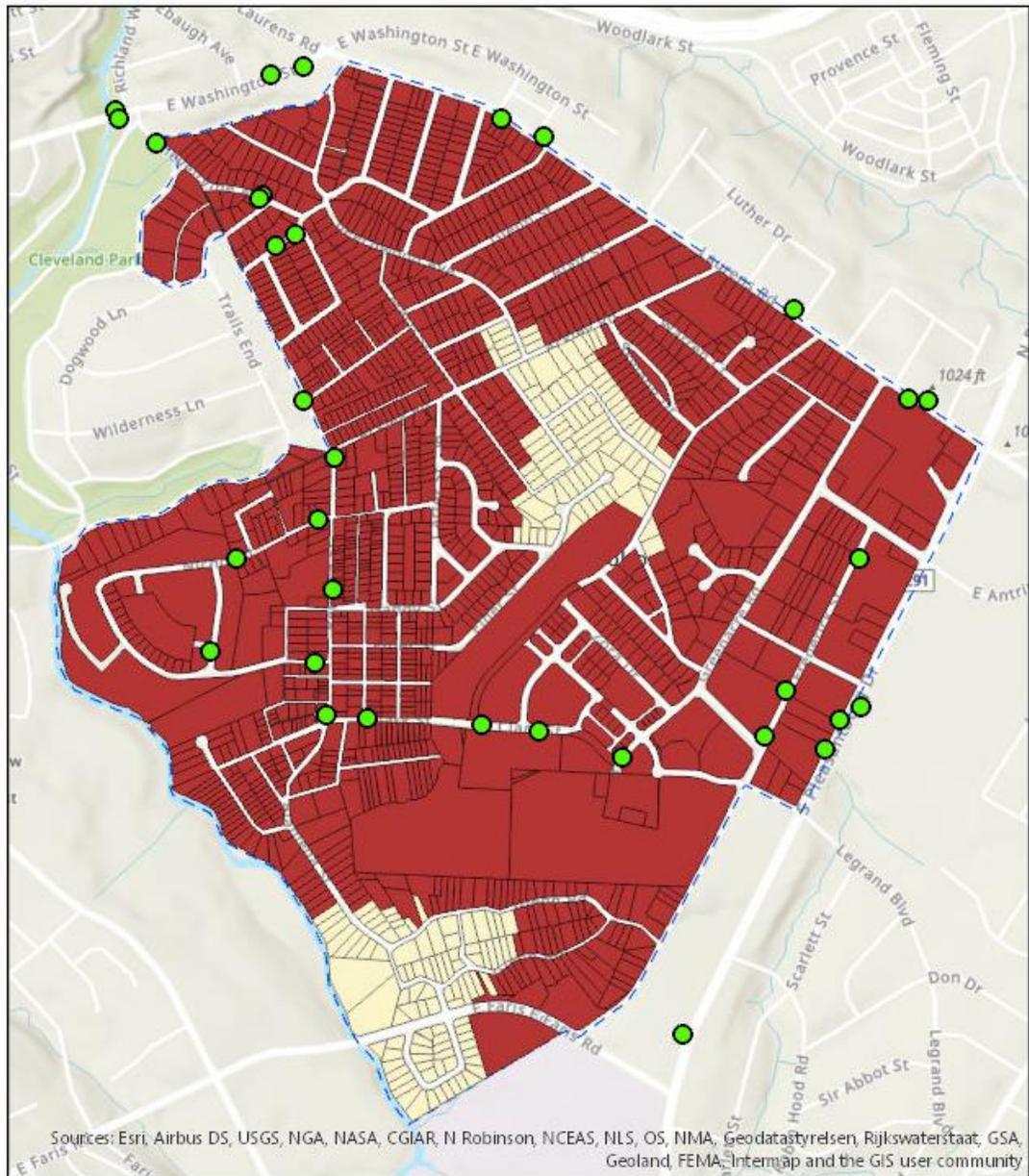
Average Parcel Size: Must be less than ½ acre



Neighborhood Evaluation

If a neighborhood qualifies for a full evaluation, three factors will be considered:

1. Transit Access
2. Bicycle Infrastructure
3. Pedestrian Infrastructure



Evaluation Factor 1: Transit Access

What percentage of parcels in the neighborhood are located within $\frac{1}{4}$ mile of a bus stop?

Nicholtown Example

Number of Parcels within $\frac{1}{4}$ mile of bus stop: 1,487

Total Number of Parcels: 1,677

Percentage of Parcels within $\frac{1}{4}$ mile of bus stop: 89%

Methodology

- 1) Create map with neighborhood parcels and bus stops.
- 2) Select all parcels located within $\frac{1}{4}$ mile of bus stops.
- 3) Record number of selected parcels, divide by total number of parcels in the neighborhood.

Evaluation Factor 2: Bicycle Infrastructure

What percentage of streets in the neighborhood feature existing marked bicycle infrastructure (bike lanes or sharrows)?

Nicholtown Example

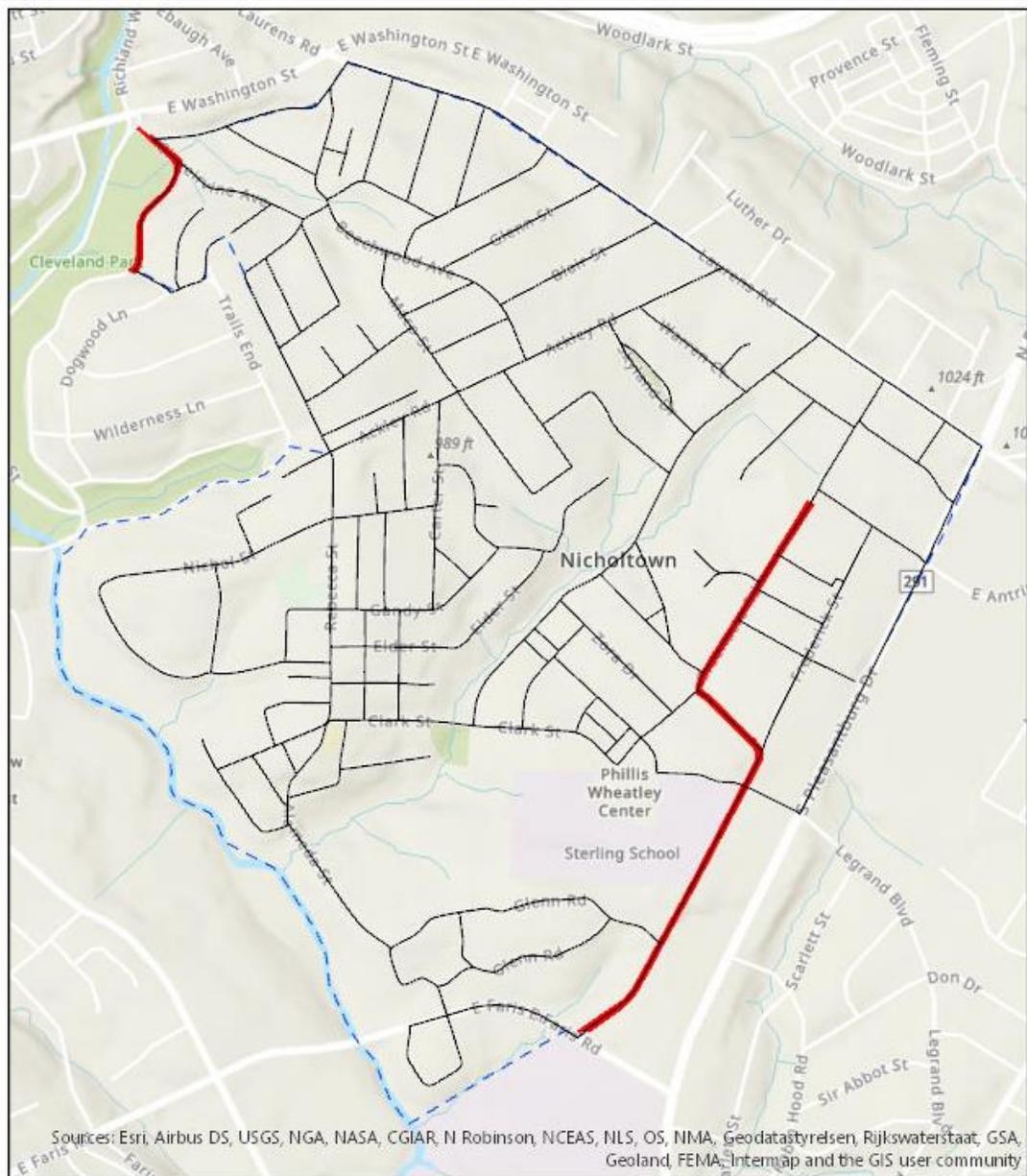
Total Existing Bicycle Lane/Sharrows Length: 1.34 miles

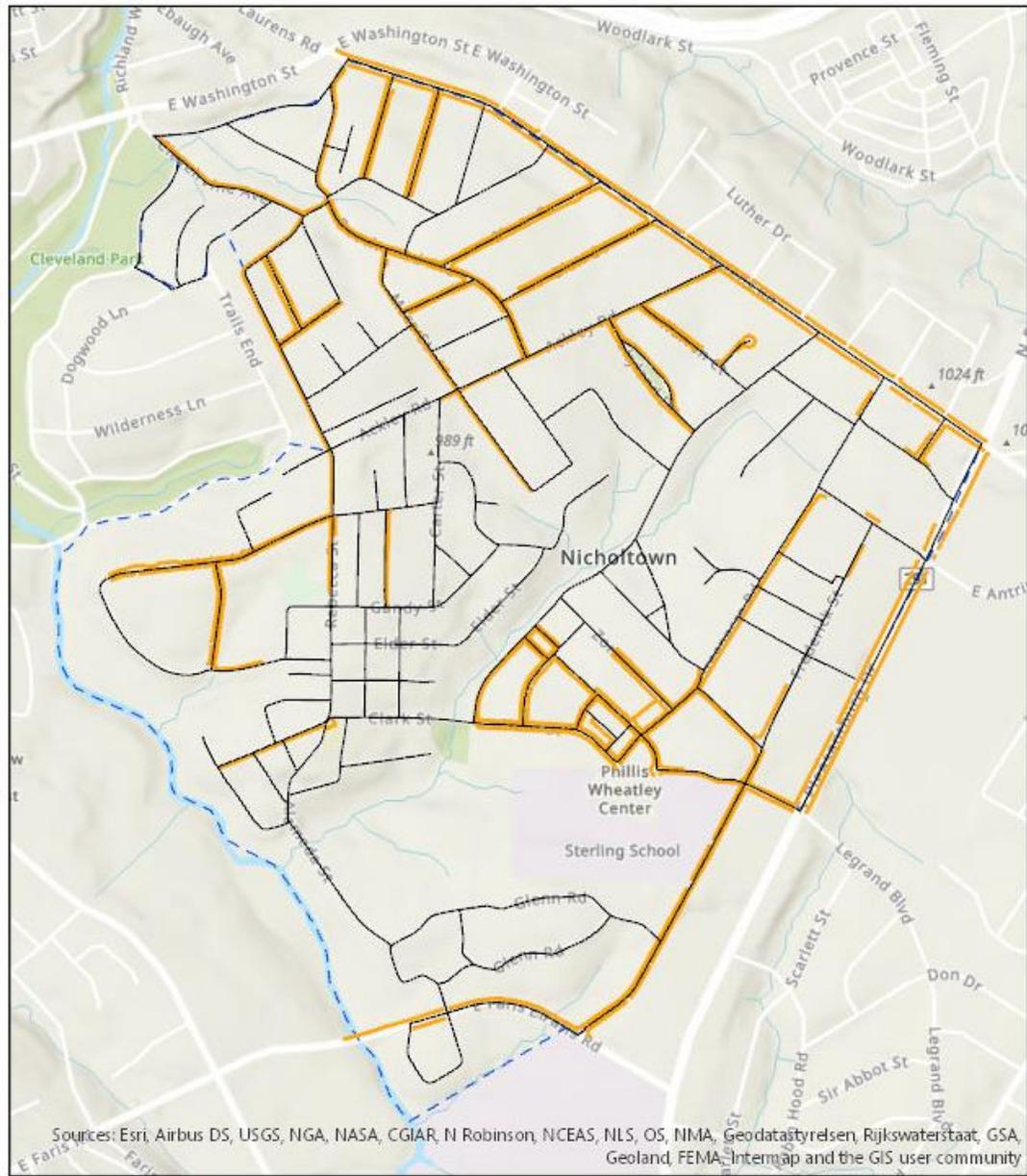
Total Neighborhood Travel Lane Length: 20.6 Miles

Percentage of Streets with Bicycle Infrastructure: 6.5%

Methodology

- 1) Select all existing segments of bicycle infrastructure along neighborhood streets.
- 2) Use the "statistics" function in the attribute data of selected bicycle infrastructure segments to determine total length of selected segments.





Evaluation Factor 3: Pedestrian Infrastructure

What percentage of street edges in the neighborhood feature sidewalks?

Note: Street edge distance is calculated as (total street length x 2).

Nicholtown Example

Total Existing Sidewalk Length: 13.45 miles

Total Street Length: 41.2 miles

Percentage of Street Edges with Sidewalks: 32.6%

Methodology

- 1) Select all sidewalk segments along neighborhood streets.
- 2) Use the "statistics" function in the attribute data of selected sidewalk segments to determine total length of selected segments.