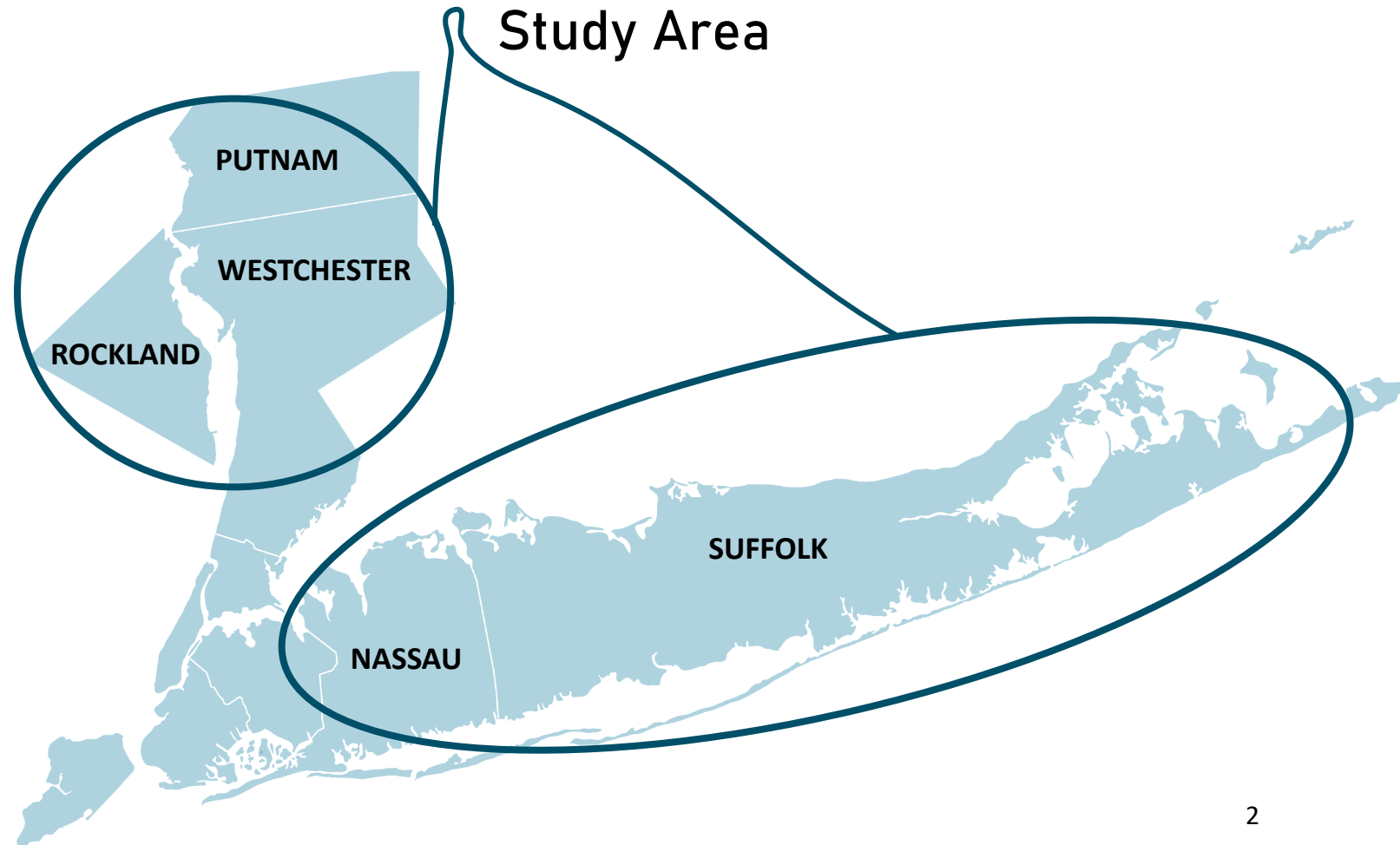


Growing Shared Mobility & Micromobility Outside NYC

Rachel Elmkies, AICP | September 13, 2023

Research Question

- Suburban county block groups for bike and scooter expansion & transit network integration
- Where should they go?



Demographic Variables

Census Block Group Variable	Data Source, Year, Version
Population density	EPA SLD v3 (US EPA, 2021)
% Population non-Hispanic white alone	ACS 2015-2019 (U.S. Census Bureau via Social Explorer, 2020)
Median household income	ACS 2015-2019 (U.S. Census Bureau via Social Explorer, 2020)
% Households with 0 cars	EPA SLD v3 (US EPA, 2021)
% Population 18 to 34 (shown to use shared mobility and micromobility more)	ACS 2015-2019 (U.S. Census Bureau via Social Explorer, 2020)

Built Environment Variables

Census Block Group Variable	Data Source, Year, Version
Employment density (Jobs per squared meters)	EPA SLD v3 (US EPA, 2021)
Distance to transit stop	EPA SLD v3 (US EPA, 2021)
Walkability index (ranking includes walk trip likelihood & intersection density)	EPA SLD v3 (US EPA, 2021)
Jobs within 45-minute transit commute	EPA SLD v3 (US EPA, 2021)
Colleges and universities as defined by Integrated Postsecondary Education Data System (IPEDS)	Homeland Infrastructure Foundation Level Database (HIFLD) (US DHS, 2022)
Major employers in NYMTC suburban region with 1,000 to 10,000 employees (Westchester, Rockland, Putnam, Nassau, Suffolk counties)	I created this dataset using multiple Niche.com searches for largest employers in NYMTC's suburban counties and geocoded results (Niche.com, 2023-a-e)

Variable Weights

Census Block Group Variable	Weight (3=highest, 1=lowest)
% Population that is non-Hispanic White alone*	3
Distance to transit stop*	3
Employment density	3
% Households with no cars	3
Population density	3
Walkability index	2
Jobs within 45-minute transit commute	2
Colleges and universities	2
Median household income*	2
% Population aged 18 to 34	2
Number of employers in block group with 1k to 10k employees	1

Methodology

1 Reverse Values

2 Weights of 1-3

3 Common Scale

4 Z-Scoring

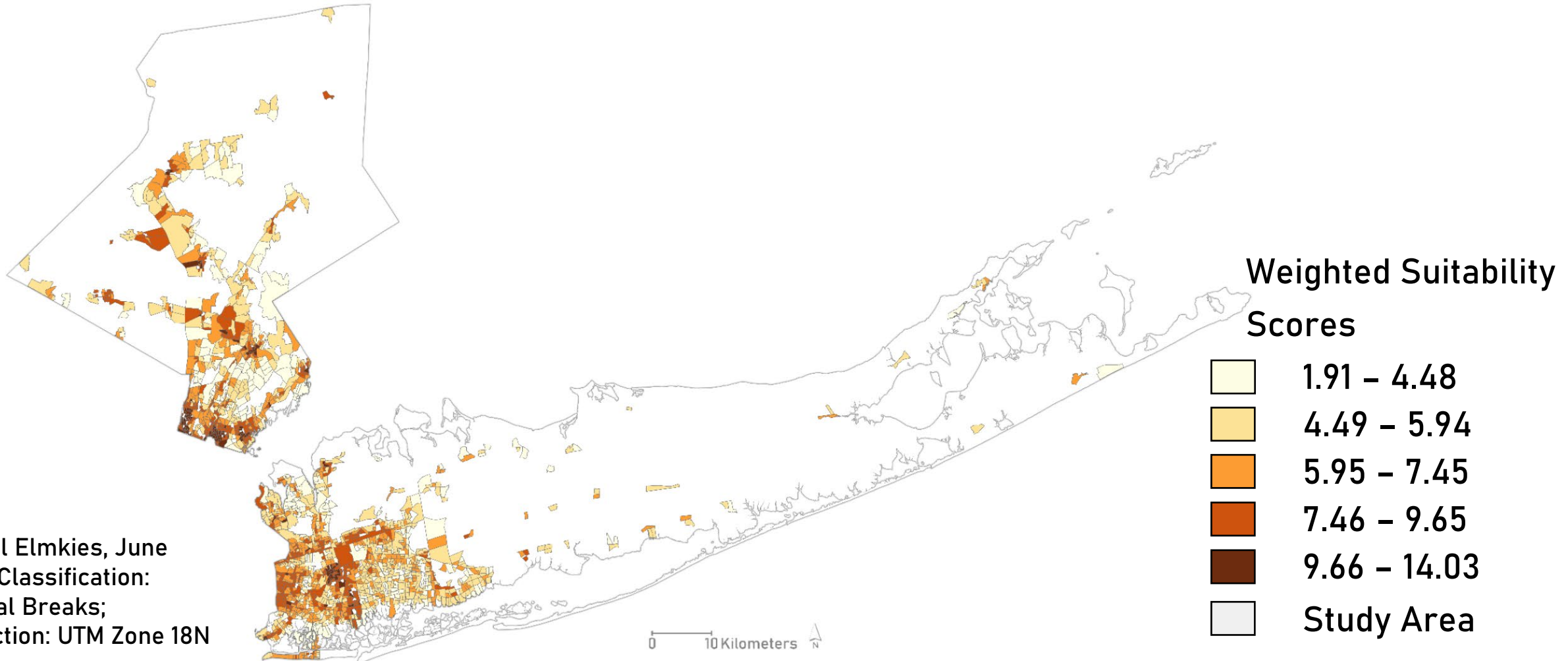


Results

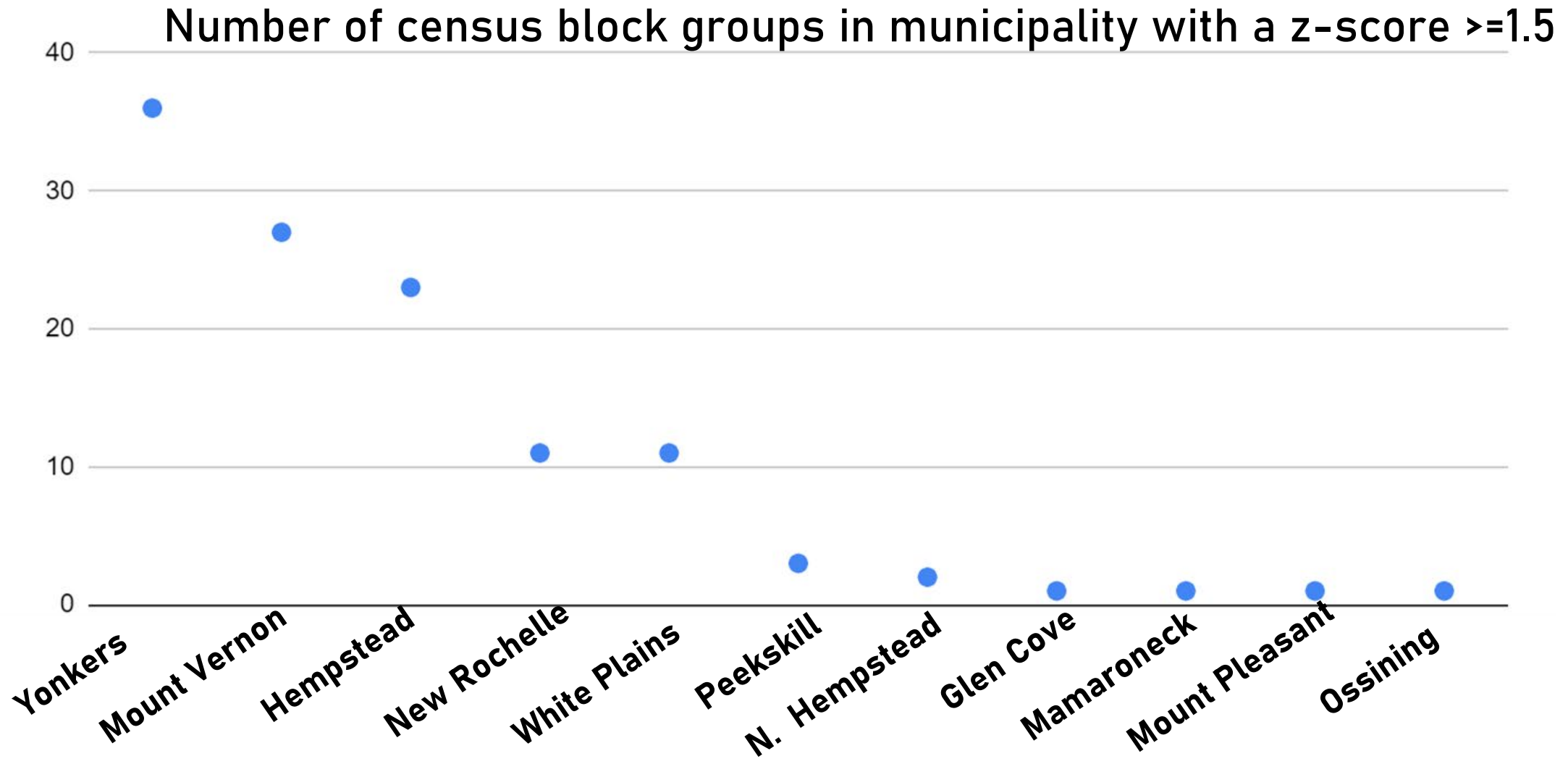


Photo: <https://www.lohud.com/videos/news/2020/08/10/yonkers-launches-shared-e-scooter-program/3338579001/>

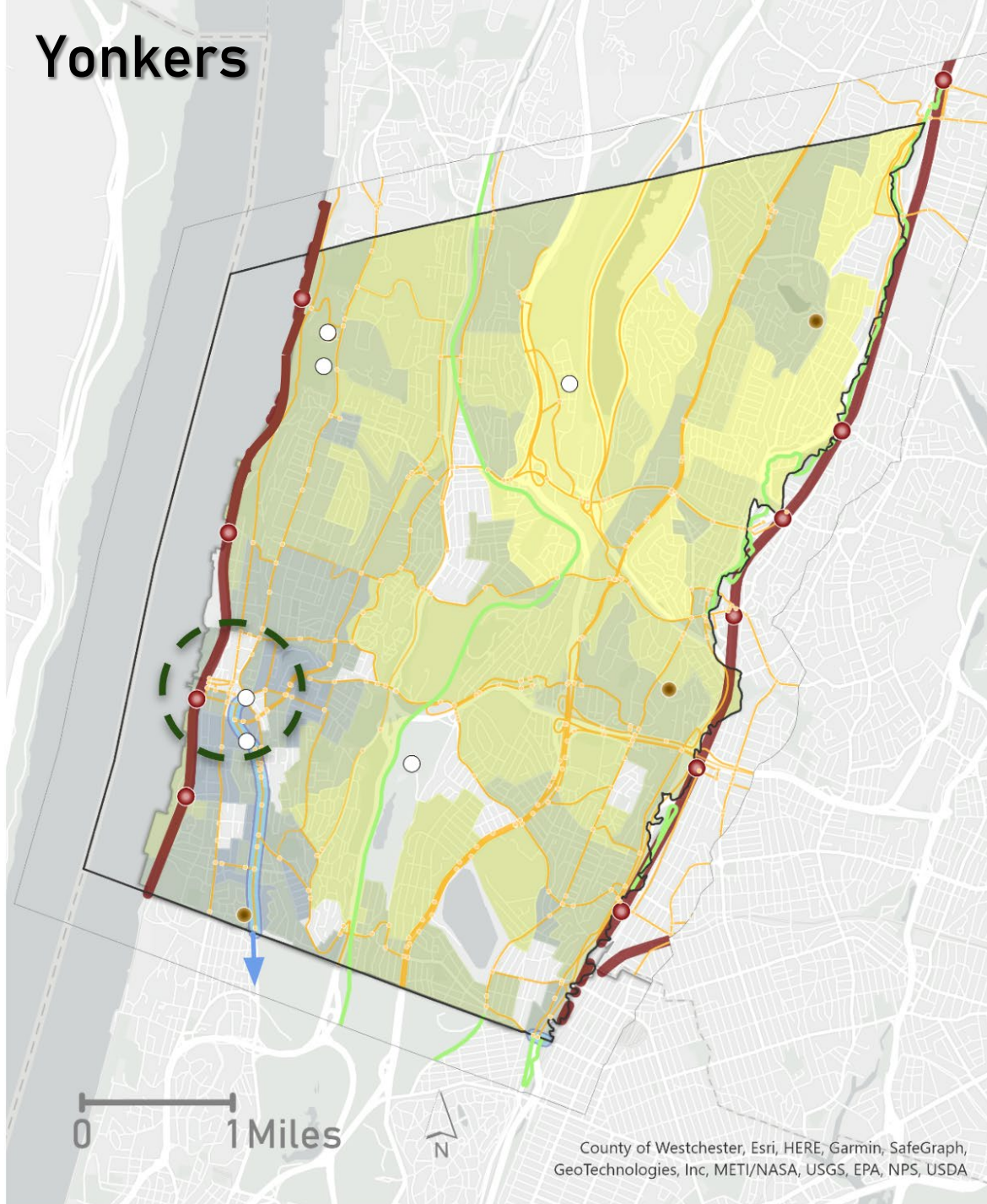
Most Suitable Block Groups



High Scorers



Yonkers



Yonkers
Z-Score of
Weighted
Suitability Score

2.43 - 3.51
1.35 - 2.42
0.26 - 1.34
-0.83 - 0.25
-1.92 - -0.84

Yonkers
Boundaries
NYMTC
Service Area

Transit stops
Operator
Beeline stop

Metro North
stop
NYS Bike
Routes

Transit routes
Operator

MTA Bus
Metro North
route
Beeline route

Yonkers
Attractions
Colleges and
Universities
.5 Mile Buffer
Around
Yonkers



Rachel Elmkies, June 2023; Classification:
Natural Breaks; Projection: UTM Zone 18N



Local hub: Yonkers Station, express bus to city, multiple Beeline stops, Getty Square, St. Joseph's Medical Center & Nursing Home

Yonkers



Greystone Station

Glenwood Station

Yonkers Station

Ludlow Station

Crestwood Station

Tuckahoe Station

Bronxville Station

Fleetwood Station

Mt. Vernon West Station

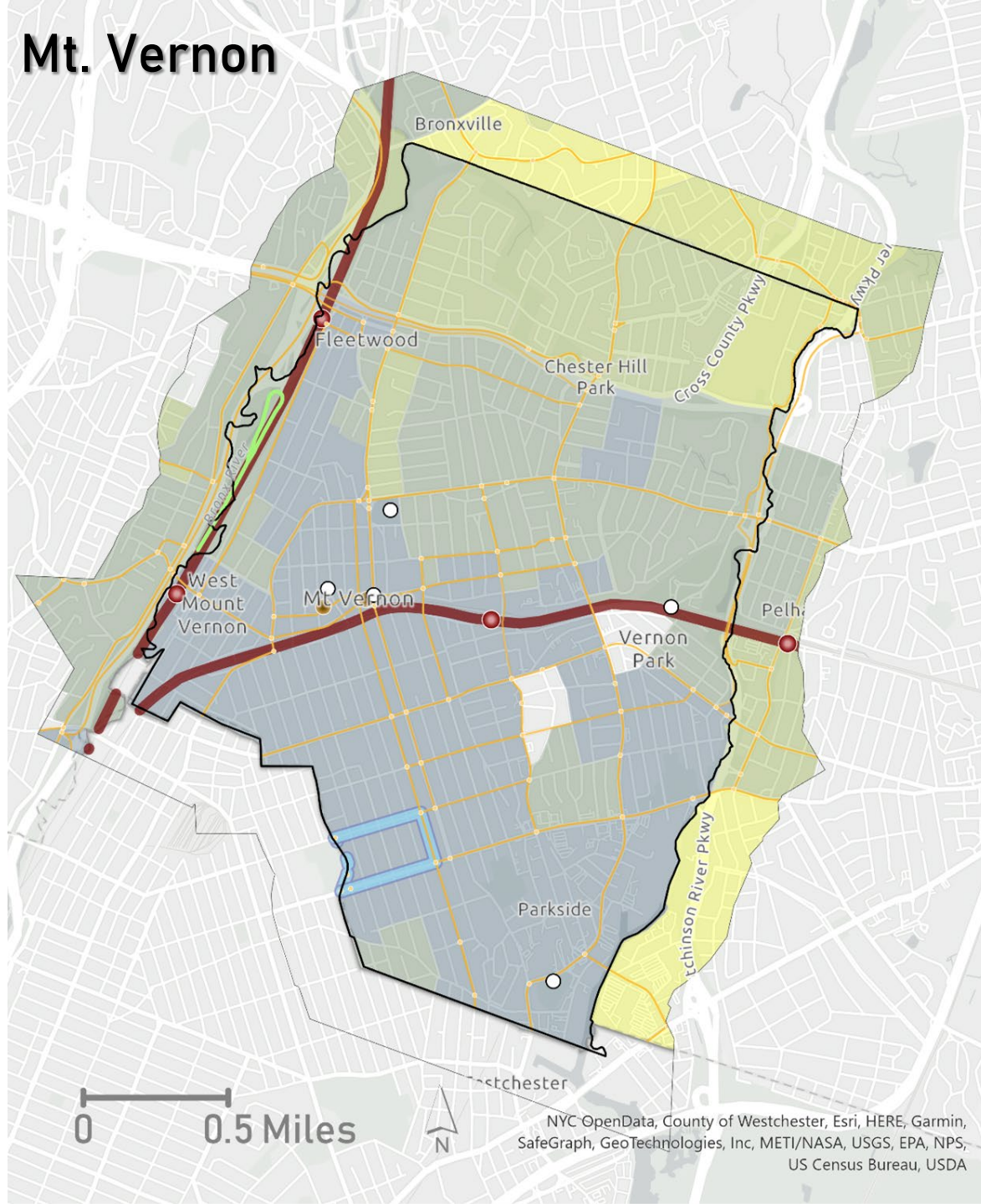
MTA commuter
bus to city

0 1 Miles



County of Westchester, Esri, HERE, Garmin, SafeGraph,
GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA

Mt. Vernon



- NYMTC Service Area
- Z Scores of Weighted Suitability Scores
 - 1.41 - 3.51
 - 0.32 - 1.40
 - 0.39 - 0.31
 - 0.98 - -0.40
 - 1.76 - -0.99
- Transit stops
 - Beeline stop
 - Metro North stop
 - NYS Bike Routes

- Transit routes
 - MTA Bus
 - Metro North route
 - Beeline route
- Colleges and Universities
- Mount Vernon Boundaries
 - .5 km Buffer Around Mount Vernon Boundaries
 - Mount Vernon Attractions



Rachel Elmkies, June 2023; Classification: Natural Breaks; Projection: UTM Zone 18N



Local Hub: Between two Metro North stations, multiple Beeline stops, a main shopping avenue, and Mt. Vernon Hospital

Fleetwood Station

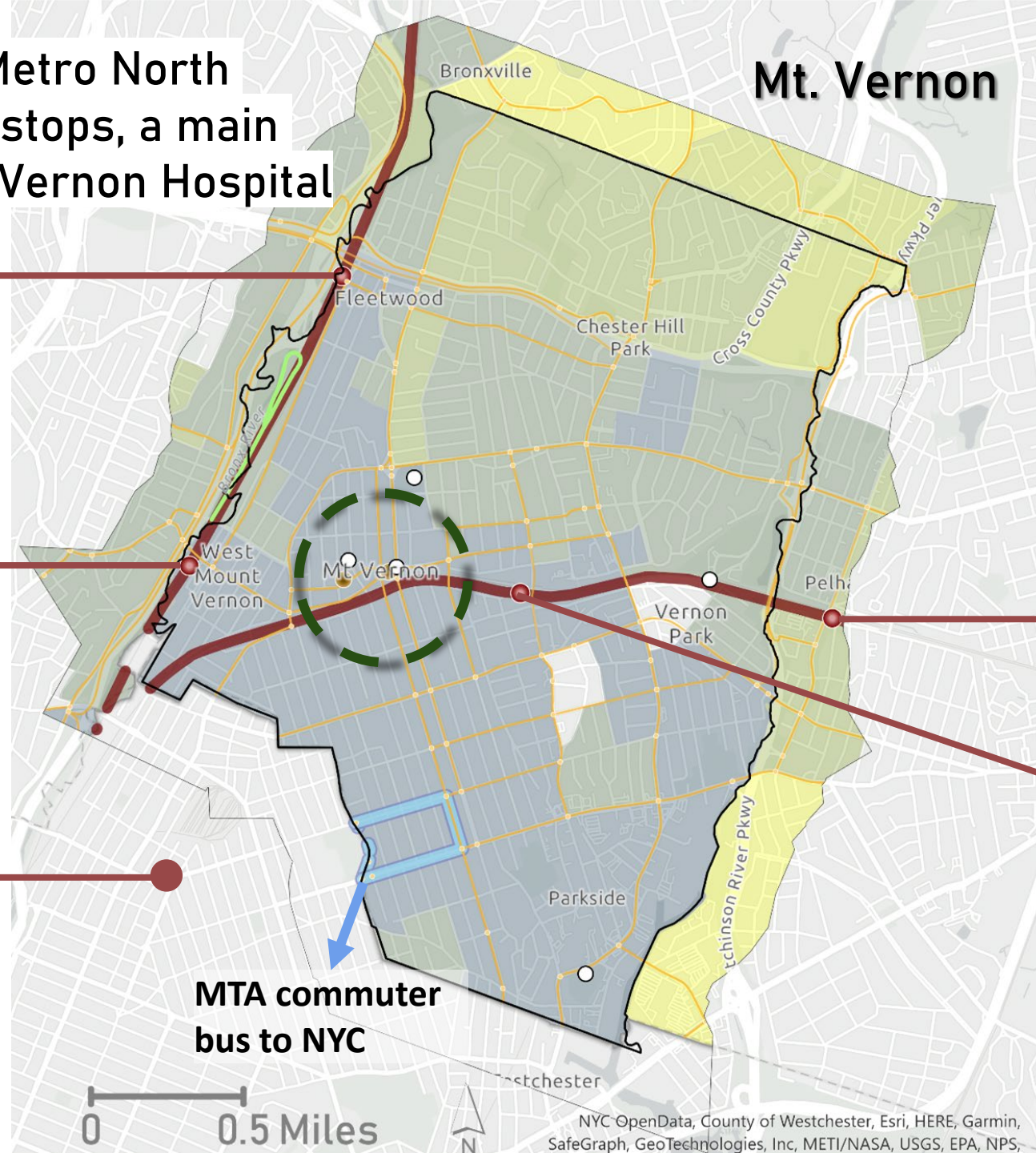
Mt. Vernon West Station

Wakefield 241 St. MTA subway stop

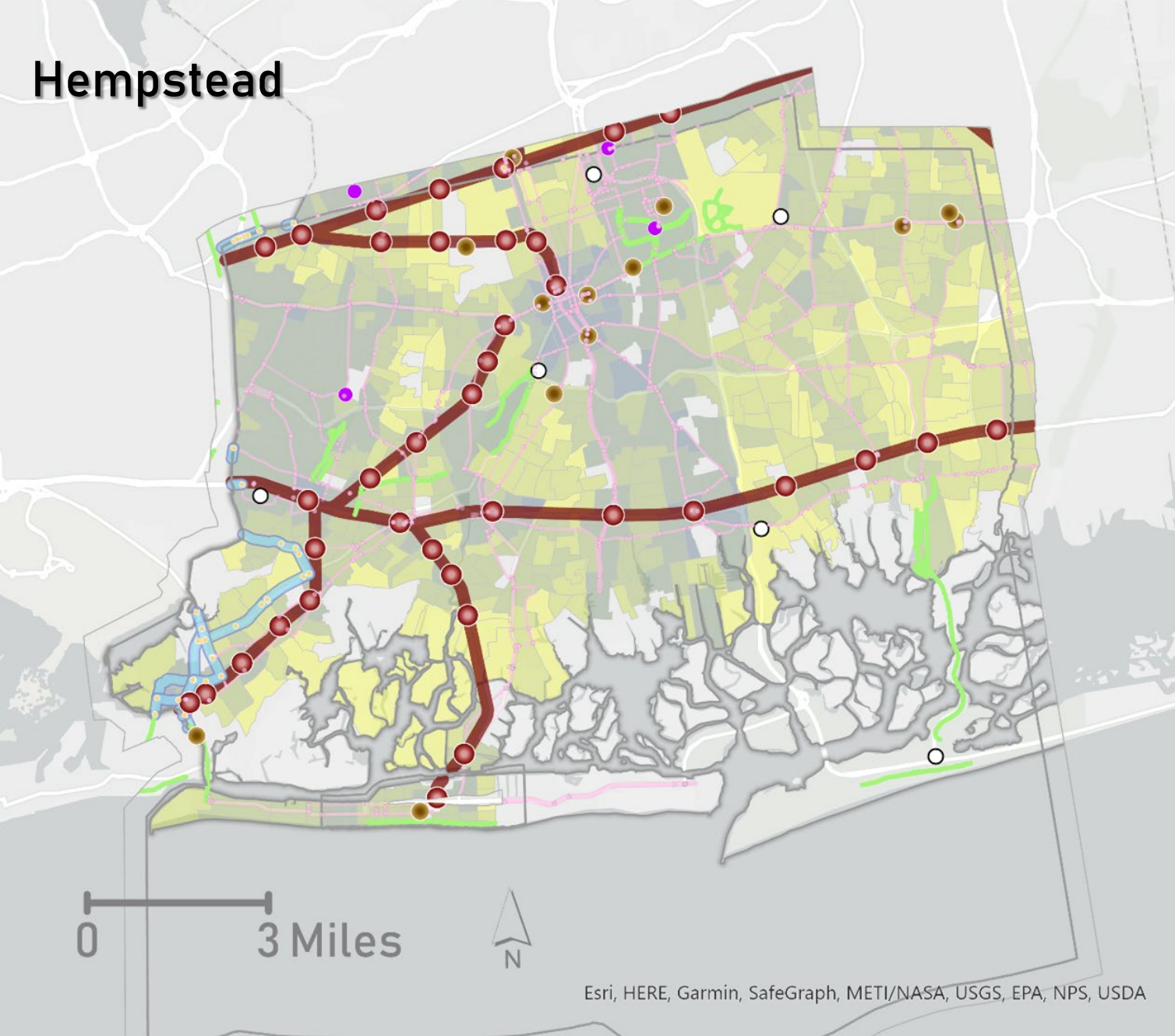
**MTA commuter
bus to NYC**

**Pelham
Station**

**Mt. Vernon
East
Station**



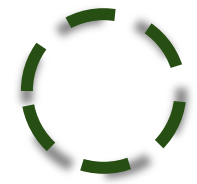
Hempstead



- NYMTC Service Area
- Z Scores of Weighted Suitability Scores
 - 1.41 - 3.51
 - 0.32 - 1.40
 - 0.39 - 0.31
 - 0.98 - -0.40
 - 1.76 - -0.99
- Transit stops
 - Beeline stop
 - NICE stop
 - LIRR stop
- NYS Bike Routes

- Transit routes
 - City of Long Beach
 - LIRR
 - MTA Long Island Bus
 - MTA Bus
 - NICE
- Major
 - Employers (>1k Employees)
 - Colleges and Universities
- Hempstead Boundaries
- Hempstead Attractions
- .5 mile Buffer
- Around Hempstead

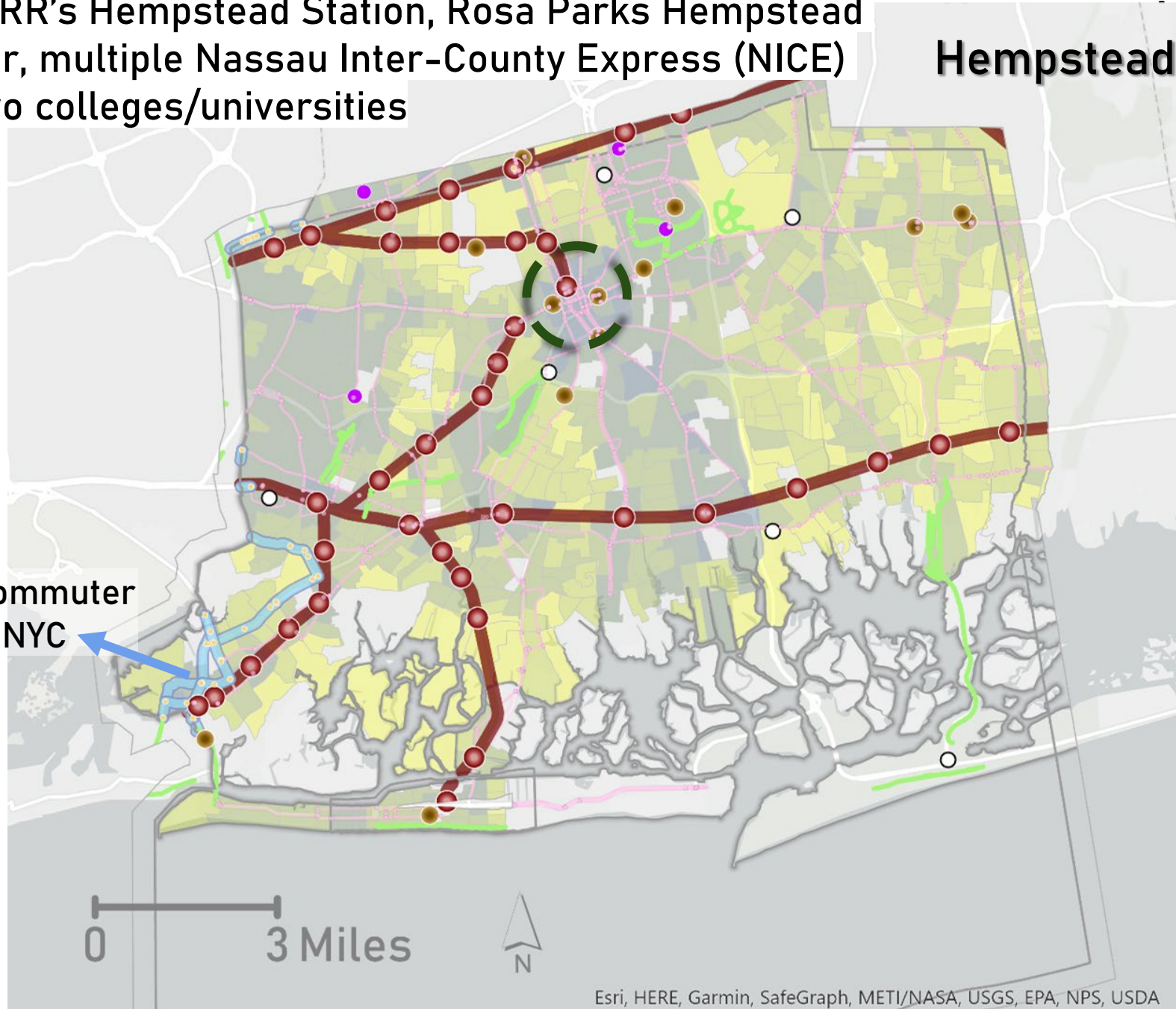




Local Hub: LIRR's Hempstead Station, Rosa Parks Hempstead Transit Center, multiple Nassau Inter-County Express (NICE) stops, and two colleges/universities

Hempstead

MTA commuter
bus to NYC



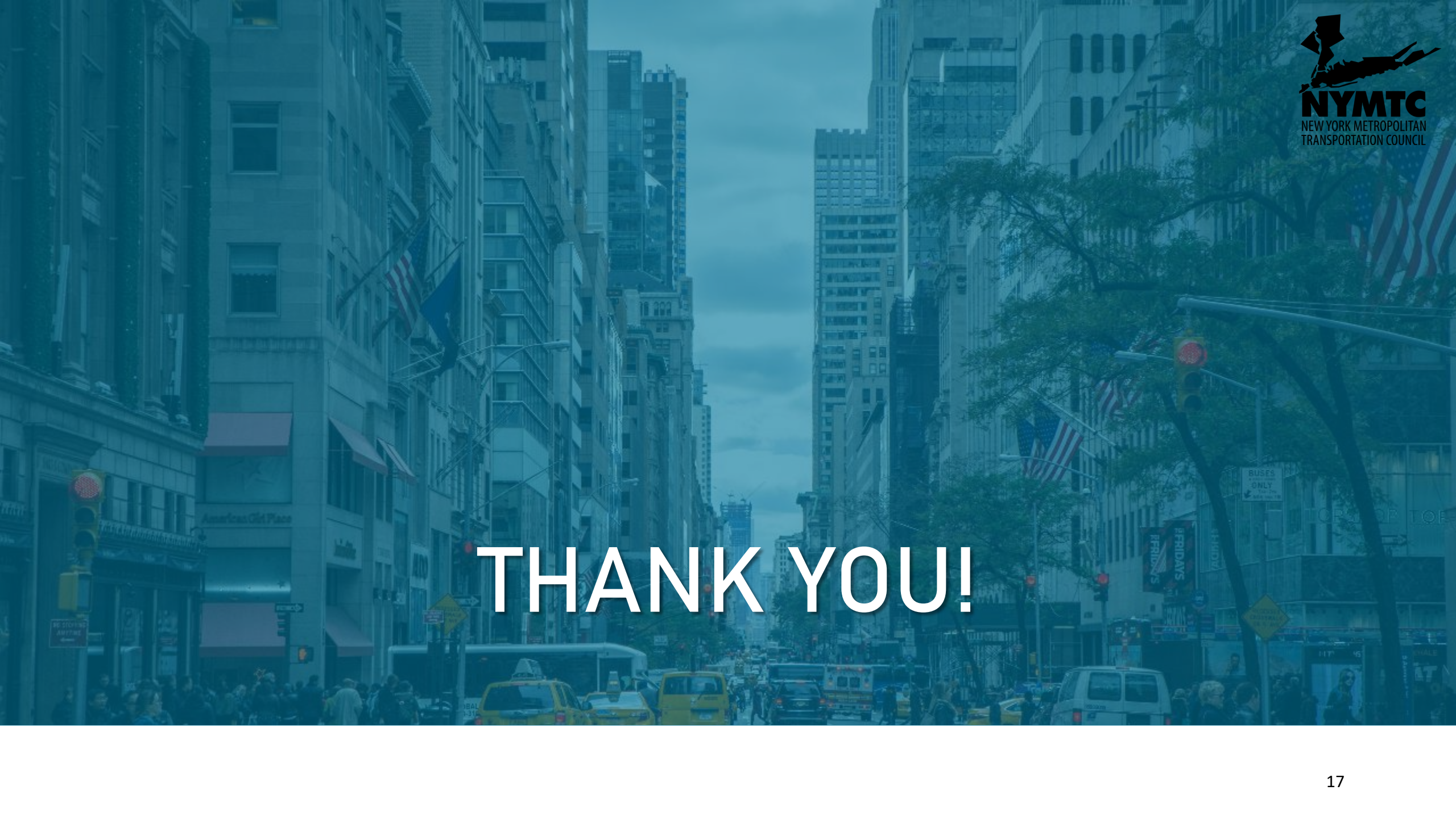
0 3 Miles



Conclusions and Further Research



Photo: <https://www.timesunion.com/business/article/Number-Of-The-Day-14906095.php>



THANK YOU!