Planning for Healthy, Just, Resilient, and CO2-Neutral Mobility in New Jersey
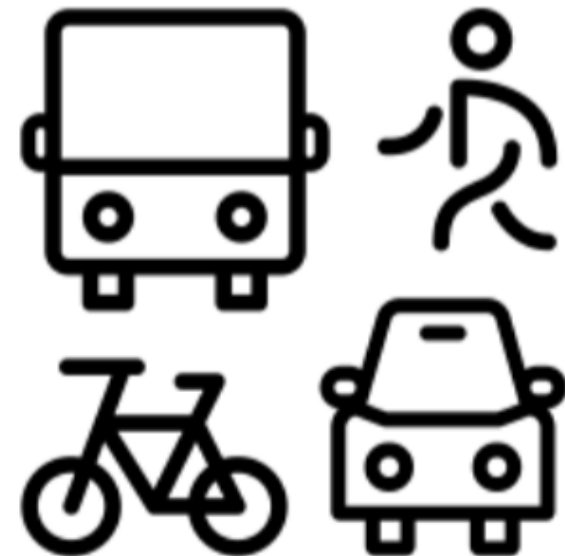
Project Update
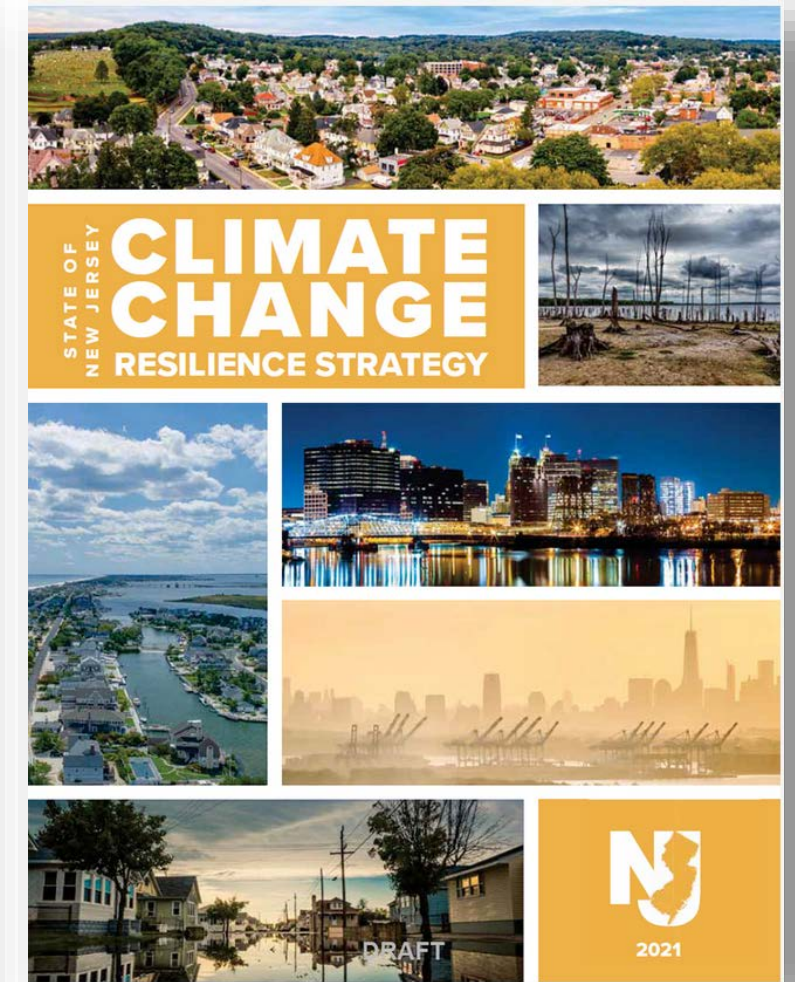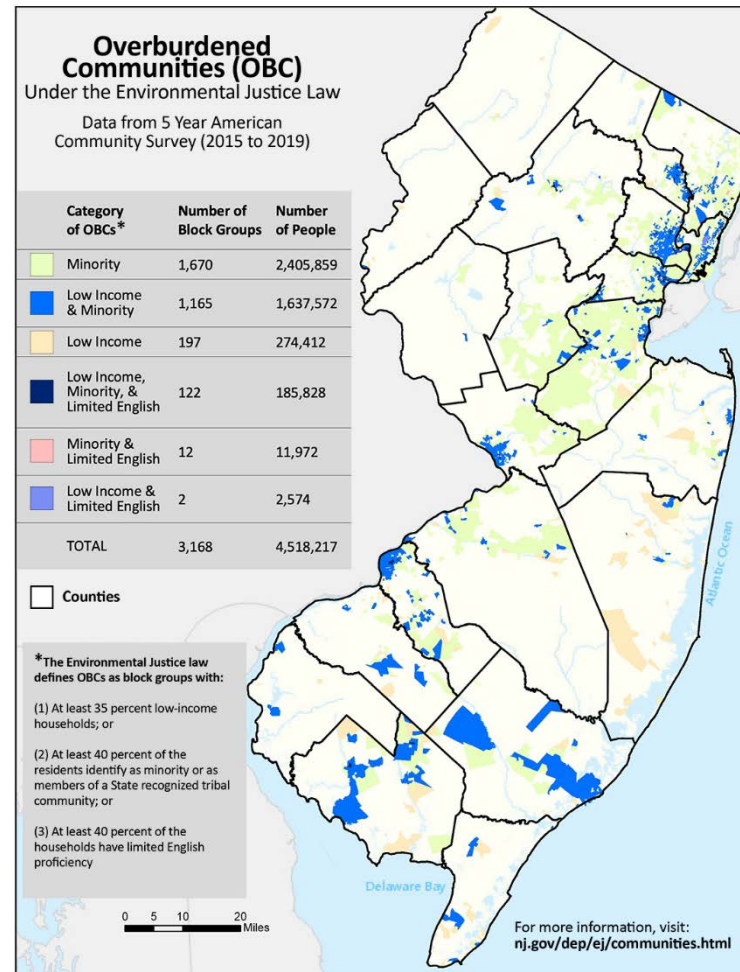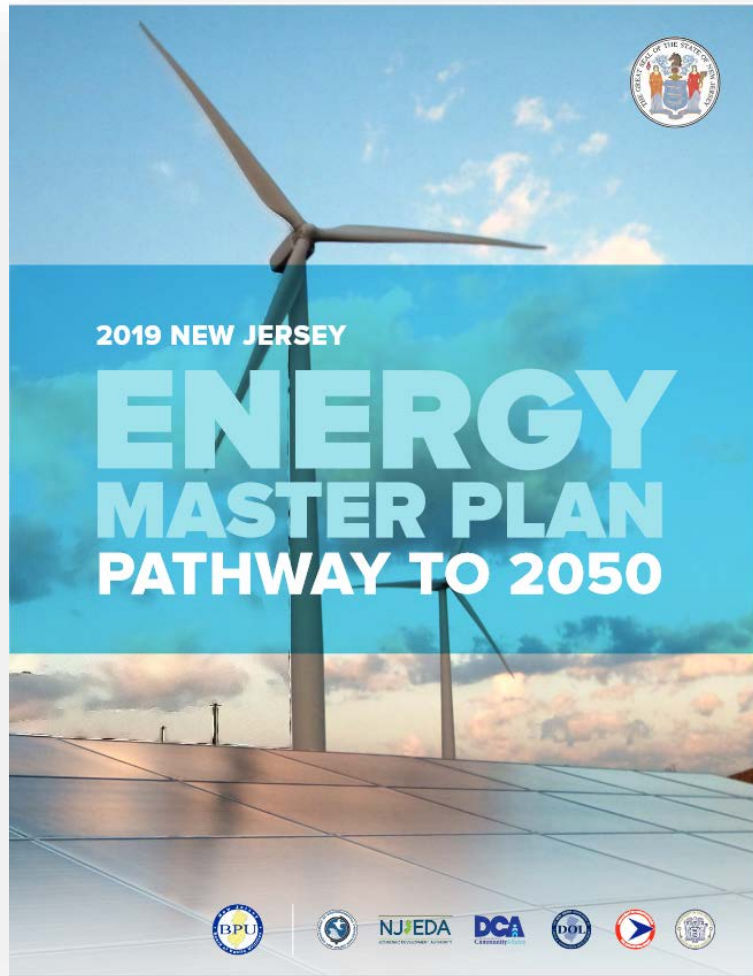
February 2022

Existing Work Groups

- Long-term Statewide Planning for Climate Change Workgroup

- Natural and Working Lands Workgroup

- Offshore Wind Ecological Monitoring Workgroup

- Public Health Workgroup

- Sustainable Organic Materials Management Workgroup
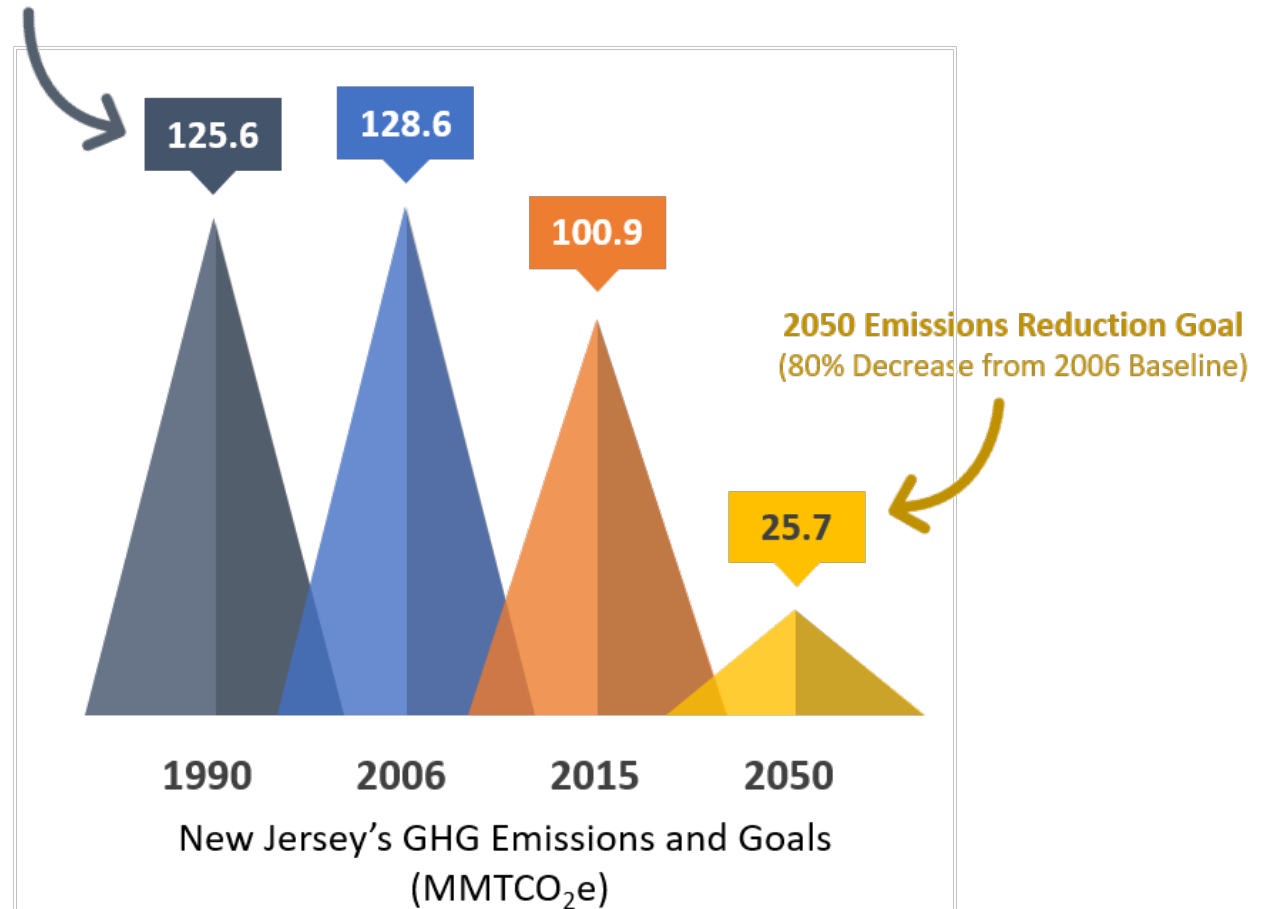
(NEW)
Transportation Workgroup

Changing policy dynamics at the State and national levels

New Jersey Emissions Targets

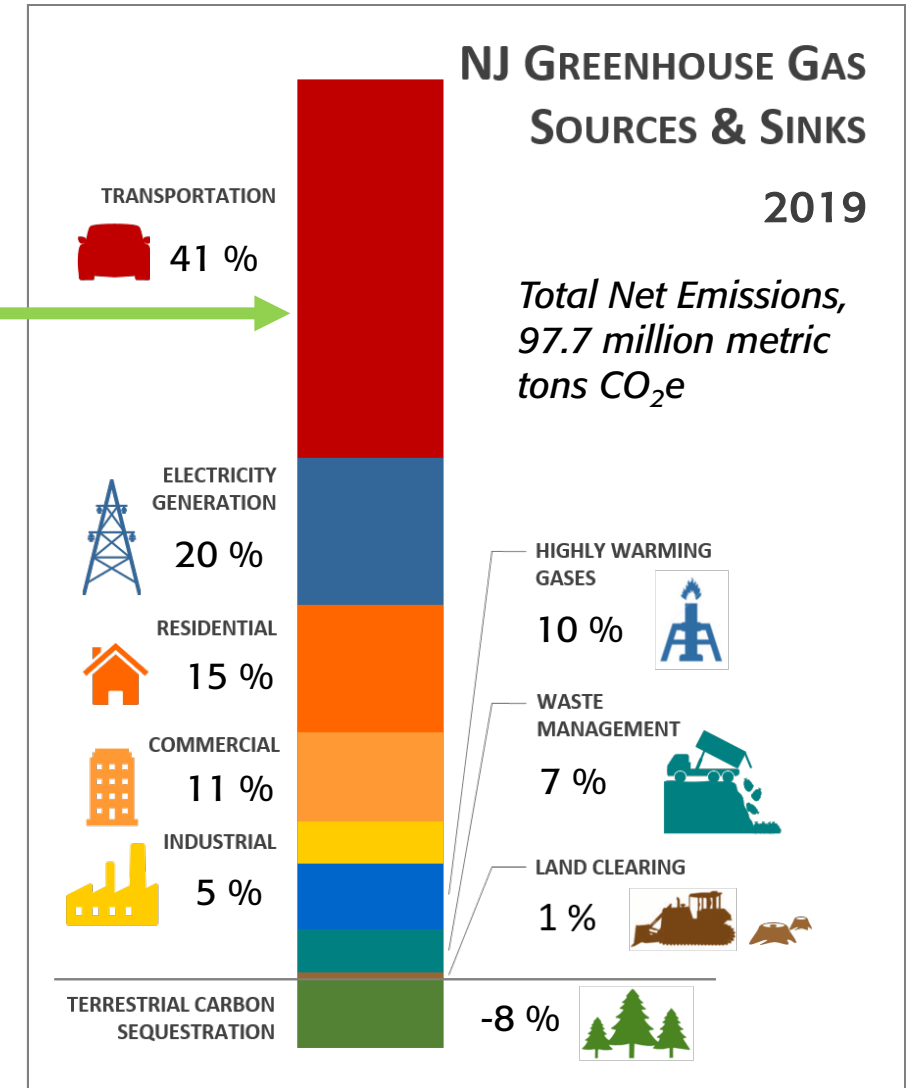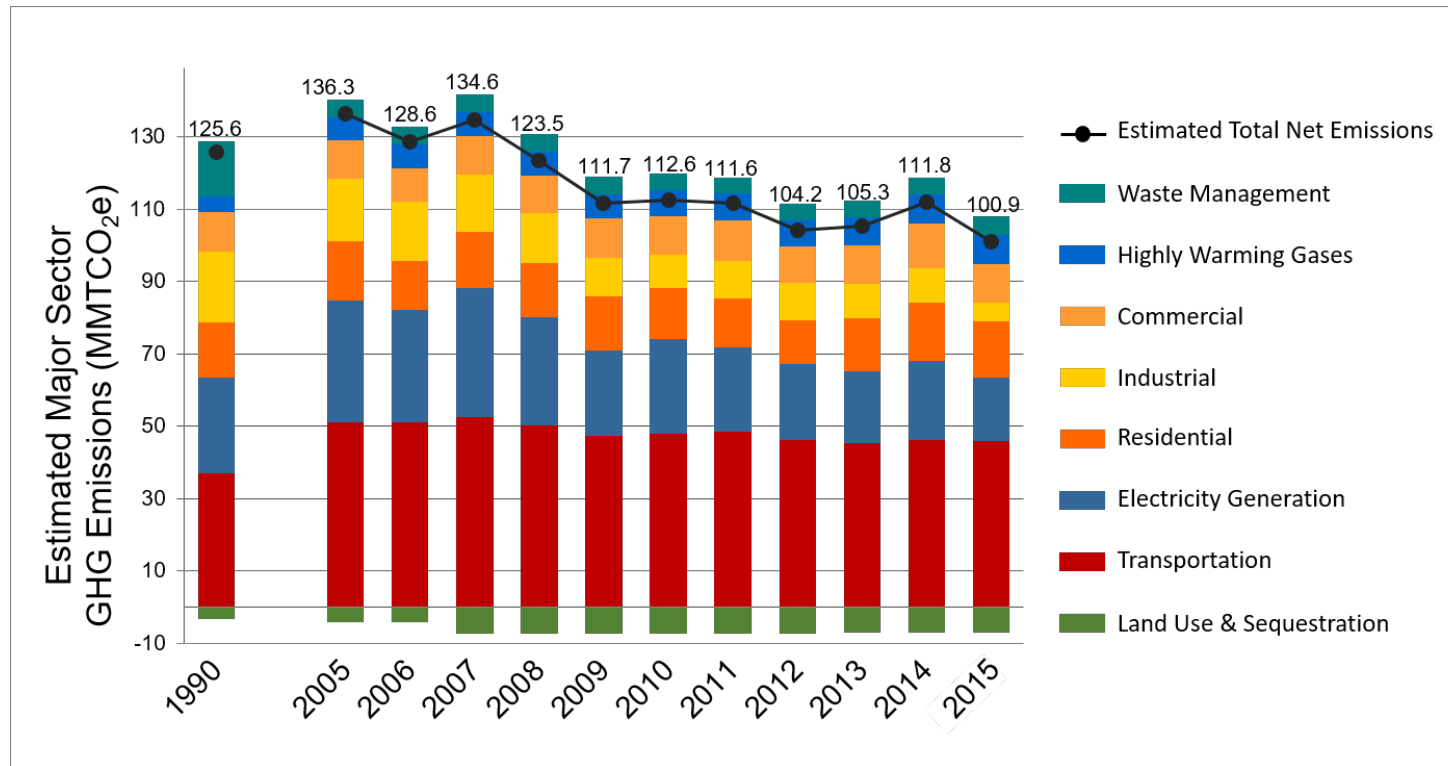**2020 Emissions Reduction Goal**
(Equivalent to 1990 GHG Emissions)

125.6

128.6

100.9

2050 Emissions Reduction Goal
(80% Decrease from 2006 Baseline)

25.7

1990   2006   2015   2050

New Jersey's GHG Emissions and Goals
(MMTCO$_2$e)

GHG Emissions in New Jersey

Reductions in the transportation sector will be critical to achieving NJ's emissions target

NJ GREENHOUSE GAS SOURCES & SINKS
2019

Total Net Emissions, 97.7 million metric tons CO$_2$e

TRANSPORTATION 41 %

ELECTRICITY GENERATION 20 %

RESIDENTIAL 15 %

COMMERCIAL 11 %

INDUSTRIAL 5 %

HIGHLY WARMING GASES 10 %

WASTE MANAGEMENT 7 %

LAND CLEARING 1 %

TERRESTRIAL CARBON SEQUESTRATION -8 %

Source: NJDEP

Significant attention being paid to vehicle electrification

- Charging infrastructure investments

- Rebates and tax credits to encourage EV purchases

- EVs can use HOV lanes

New Jersey Plug-in Electric Vehicle Registrations

Number of Electric Vehicle Registrations

Year	Plug-in Hybrid Electric Vehicles	Battery Electric Vehicles
2011 (338)	298	40
2012 (1,557)	1,292	265
2013 (4,186)	2,969	1,217
2014 (5,948)	3,940	2,008
2015 (7,564)	4,612	2,952
2016 (10,385)	6,019	4,366
2017 (14,211)	8,048	6,163
2018 (22,236)	10,566	11,670
2019 (29,960)	11,462	18,498
2020* (41,096)	12,227	28,869

* 2020 data available through 12.31.2020

243.8 — Average Victorian car — 9.7

209.1 — Top Range EV (Victorian grid) — 9.7

121.9 — Dual occupancy car — 4.9

119.6 — Motorcycle — 1.9

28.6 — Train — .5

20.2 — Tram — .6

17.7 — Bus — .8

Top Range EV (Green power) — 9.7

Bike — 1.5

Walking — .5

Dirty — Clean

⚫ = Grams of CO₂ per person kilometre travelled

🦶 = Space in square metres required per occupant

This infographic compares emissions and space consumption for different transport modes. Source: Institute for Sensible Transport

What can the working group do?

Multi-Goal Framework

Healthy. Improve health outcomes for people and communities by improving air quality and making it easier and safer to walk and bike.

Just. Promote **equity** by making travel by transit more reliable and convenient and by enhancing access to opportunity for marginalized groups.

Efficient. Increase transportation system efficiency and effectiveness by integrating advanced and emerging transportation technologies and modes.

Resilient. Enhance the resilience of transportation systems by adapting infrastructure to climate hazards.

Carbon Neutral. Reduce energy use and emissions of all kinds by facilitating a transition to CO_2-neutral transportation.

Toward a healthier, more equitable, and cleaner transport future in New Jersey

HEALTHY, JUST, RESILIENT, AND CO2-NEUTRAL MOBILITY FOR ALL

What is healthy mobility?

- Access
- Safety
- Physical activity
- Mental health
- Air quality
- Noise
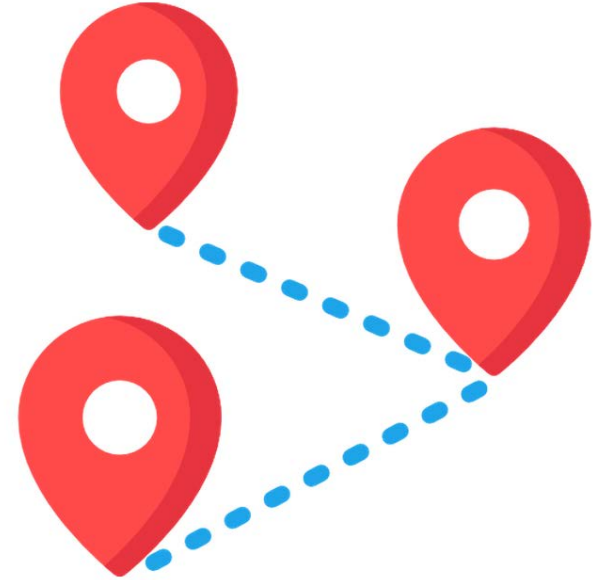
What is equitable and just mobility?

An equitable and **just transportation system** provides safe and clean transportation options that are affordable, convenient, and easy to use.

Equitable mobility provides the same opportunity for everyone to move around reliably and sustainably in ways that meet their needs.

Graphic courtesy of Shared-Use Mobility Center

What is resilient mobility?

Robustness

Redundancy

Flexibility

Responsiveness

Coordination

What is carbon-neutral mobility?
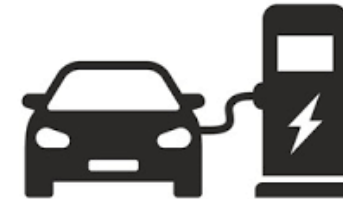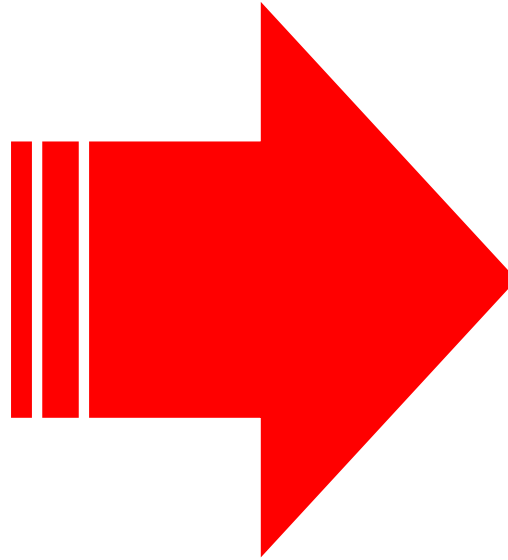
Guiding concepts

- **Decarbonize** the transportation sector
- Empower people to **drive less**
- Create a network of **diverse and inclusive neighborhoods that** are well connected to each other
- Think of **mobility as a service** and **reimagine** public transportation
- Embrace **new technologies** but ensure they are affordable and accessible to all
- Make **social justice** a key indicator of transportation performance

Potential Organizing Framework

"15-minute" City/Neighborhood

Leading Practice Examples

- Singapore
- Paris
- Portland
- Melbourne
- Ottawa
- Barcelona

© Shutterstock; Getty | Aerial views of Glasgow, Paris and Melbourne

Source: https://www.ft.com/content/c1a53744-90d5-4560-9e3f-17ce06aba69a

What is a "15-minute" city/neighborhood?

5 MINUTE WALK
(3 MPH AVG)
RADIUS - 1/4 MILE
ACRES - ~126
DWELLING UNITS - 1,000 @ 8/AC
POPULATION - 2,600 @ 2.6/UNIT

15 MINUTE WALK
(3 MPH AVG)
RADIUS - 3/4 MILE
ACRES - ~1,130
DWELLING UNITS - 9,040 @ 8/AC
POPULATION - 23,500 @ 2.6/UNIT

5 MINUTE BIKE
(12 MPH AVG)
RADIUS - 1 MILE
ACRES - ~2,010
DWELLING UNITS - 16,100 @ 8/AC
POPULATION - 41,860 @ 2.6/UNIT

5 MINUTE ELEC. VEHICLE
(20 MPH AVG)
RADIUS - 1 2/3 MILE
ACRES - ~5,580
DWELLING UNITS - 44,700 @ 8/AC
POPULATION - 116,200 @ 2.6/UNIT

15 MINUTE BIKE
(12 MPH AVG)
RADIUS - 3 MILE
ACRES - ~18,100
DWELLING UNITS - 144,800 @ 8/AC
POPULATION - 376,480 @ 2.6/UNIT

CREDIT: DPZ CoDesign
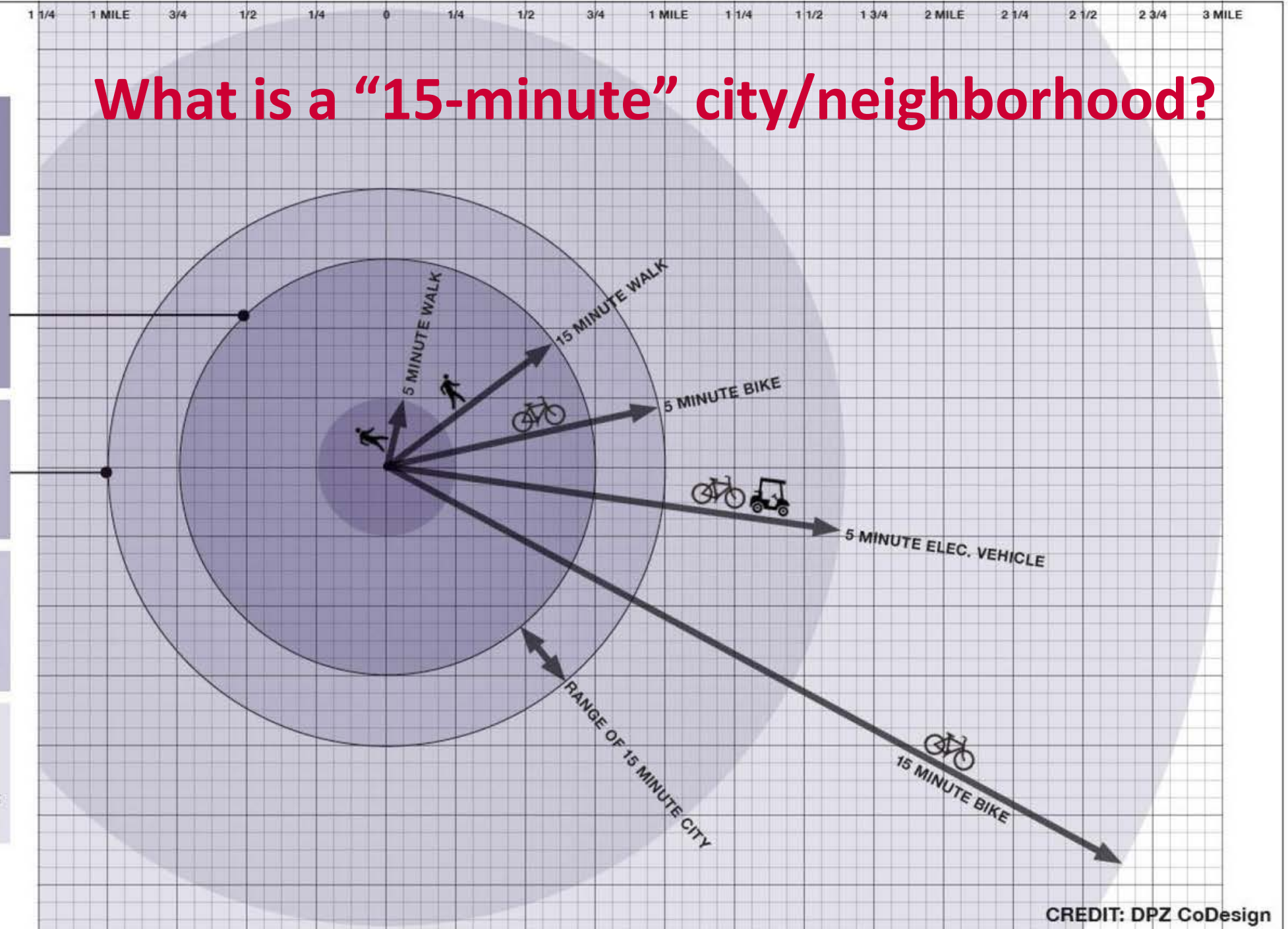
Key relationships
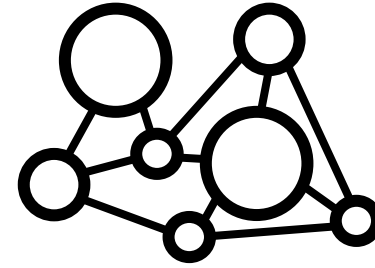
People + **Places** + **Connections**

- -

Neighborhood   **Community**   **Region**

Work Plan

PHASE 1 – Exploring key concepts, desktop analysis, looking toward the future (Mar 2021 to Feb 2022)	Activities: • Conduct leading practice research • Collect, analyze, and map data • Identify of potential community and equity partners • Convene "Thought Leaders" webinar and visioning workshops • Identify vision components • Select locations for neighborhood-scale analysis
PHASE 2 – Field work, community engagement, and developing recommendations (Mar 2022 to Sep 2022)	Activities: • Conduct field visits and interviews to get to know the neighborhoods • Develop and implement community engagement plan • Identify local mobility and other community needs and concerns • Prepare concept plans for retrofitting existing neighborhoods • Identify infrastructure needs • Develop planning and policy recommendations • Prepare comprehensive final report • Convene "Thought Leaders" Forum #2 – How do we get there?

Phase 1 Case Study Locations

1. Atlantic
2. Camden
3. Cumberland
4. Essex
5. Hudson
6. Mercer
7. Middlesex
8. Warren
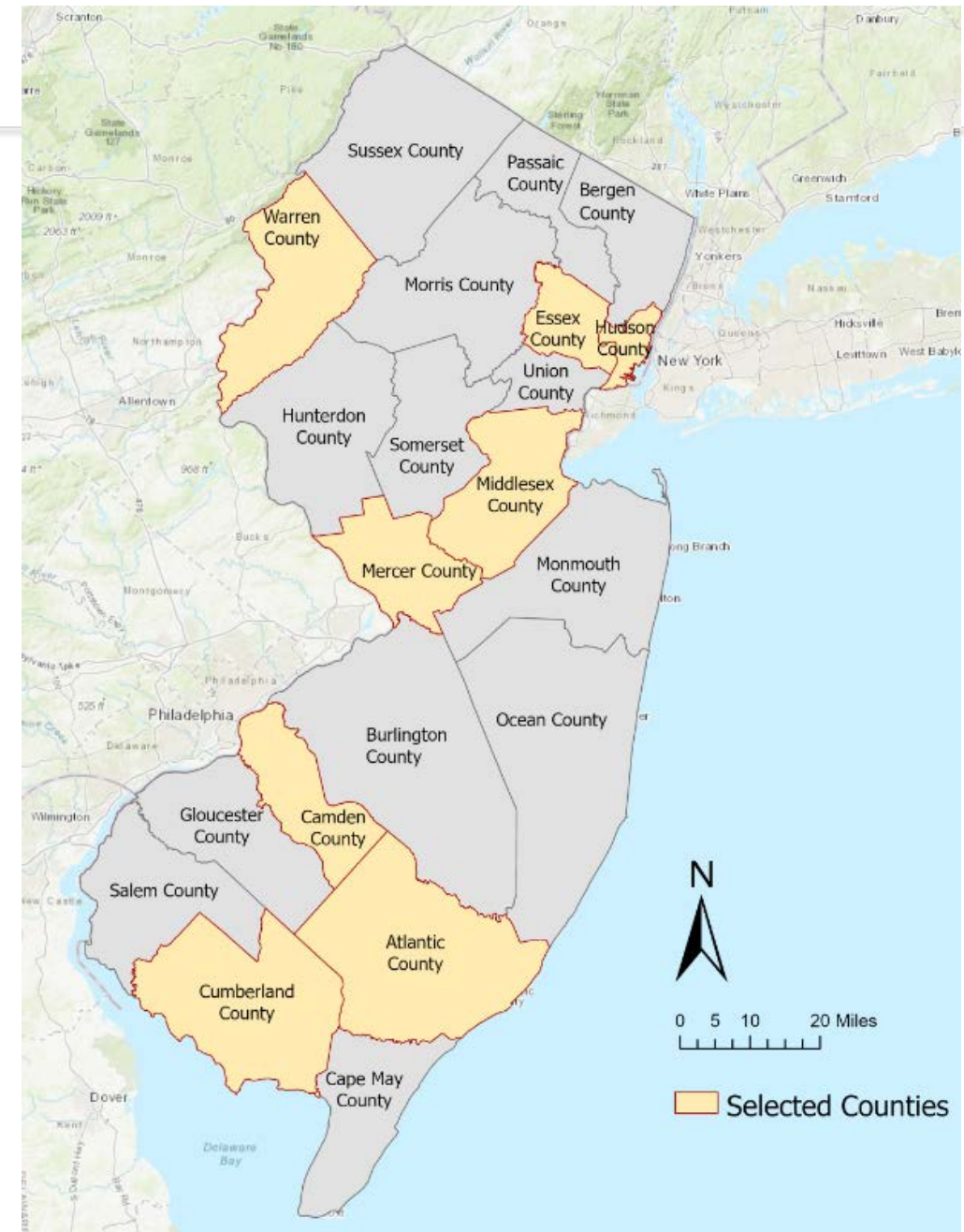
Exploring the Geography of People, Place, and Connections
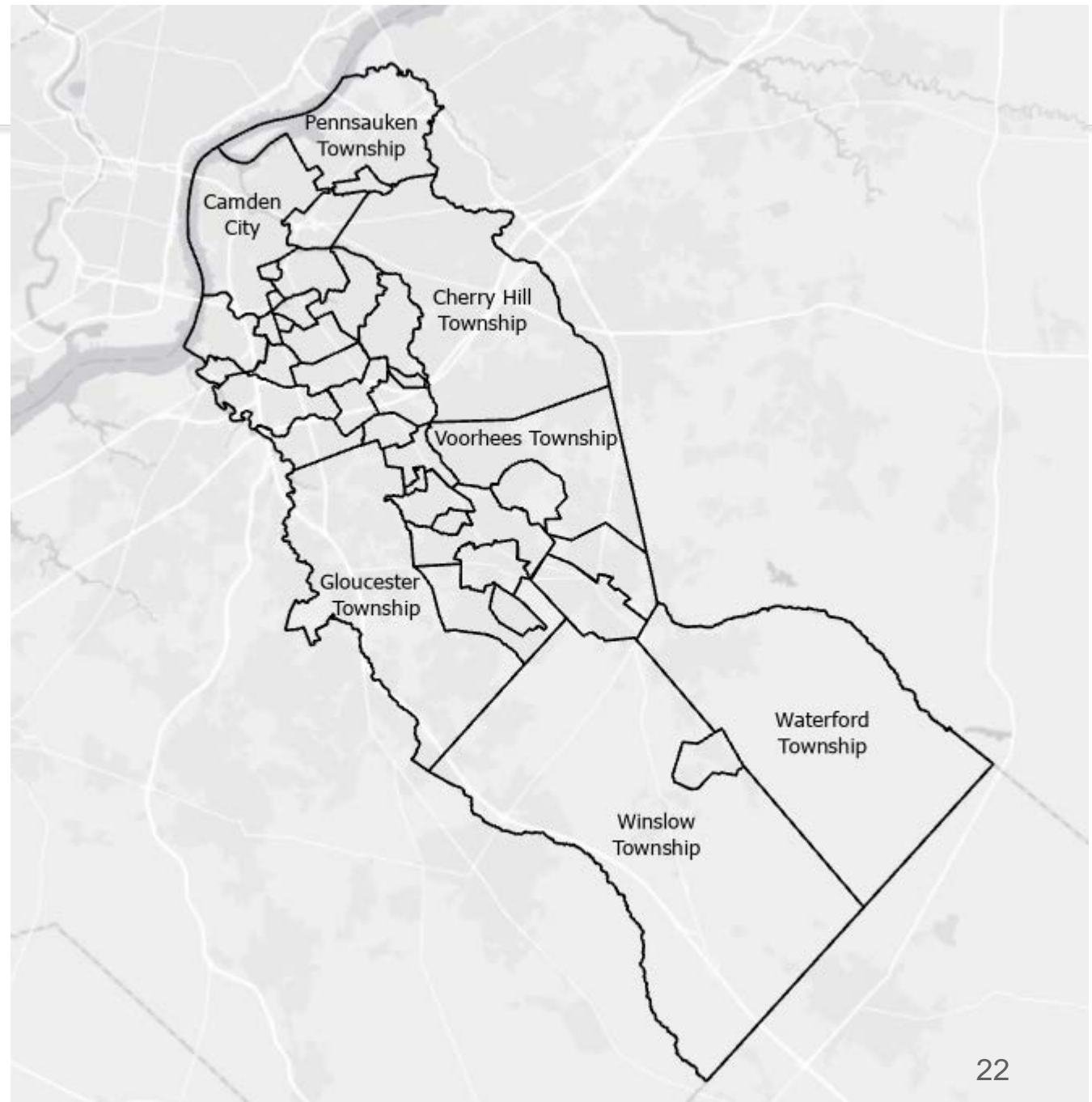
CAMDEN COUNTY
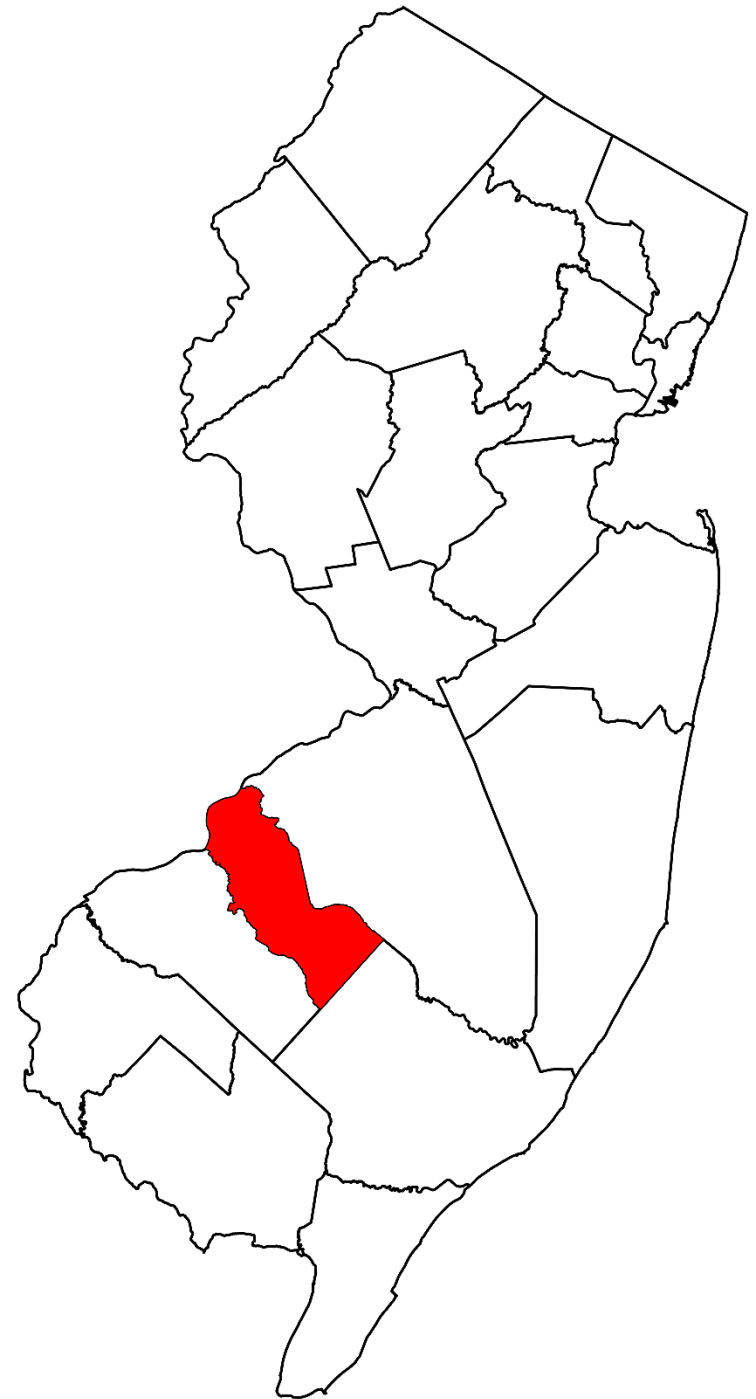
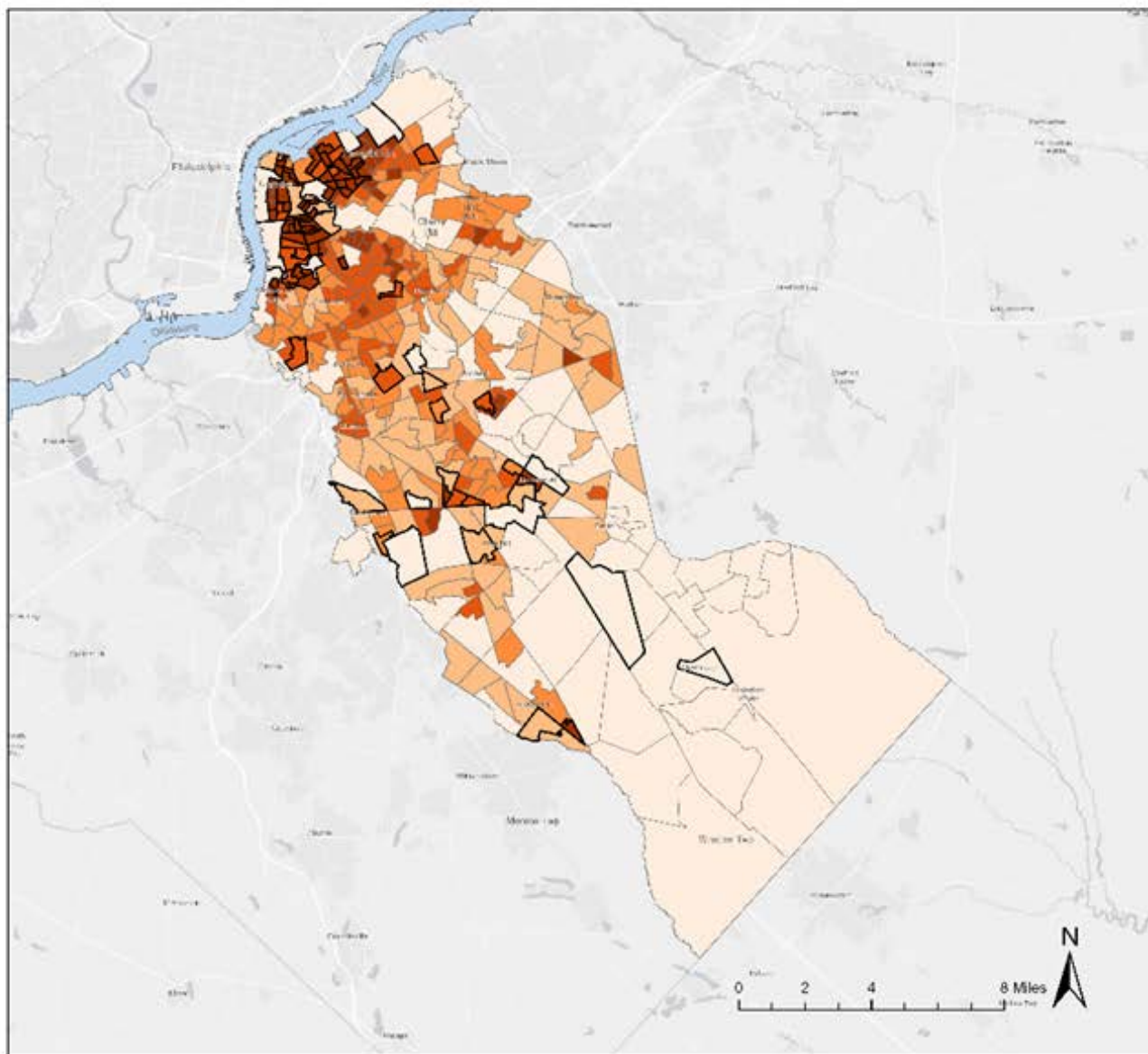Healthy, Just and CO2-neutral Mobility for All

GEOGRAPHY OF PEOPLE

County at a glance

A mix of small towns, urban centers and rural communities

- 227.3 square miles

- 37 Municipalities

- Over 510,000 residents

- County Seat: Camden City

Population

Population Density

Population per Sq. Mile by Block Group

- 52 - 2,177
- 2,178 - 3,574
- 3,575 - 5,210
- 5,211 - 7,438
- 7,439 - 31,690
- Low Income Block Group

Data Source: NJGIN, ACS 2015-2019 5-year estimate, ESRI base map

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Prepared : June 10, 2021
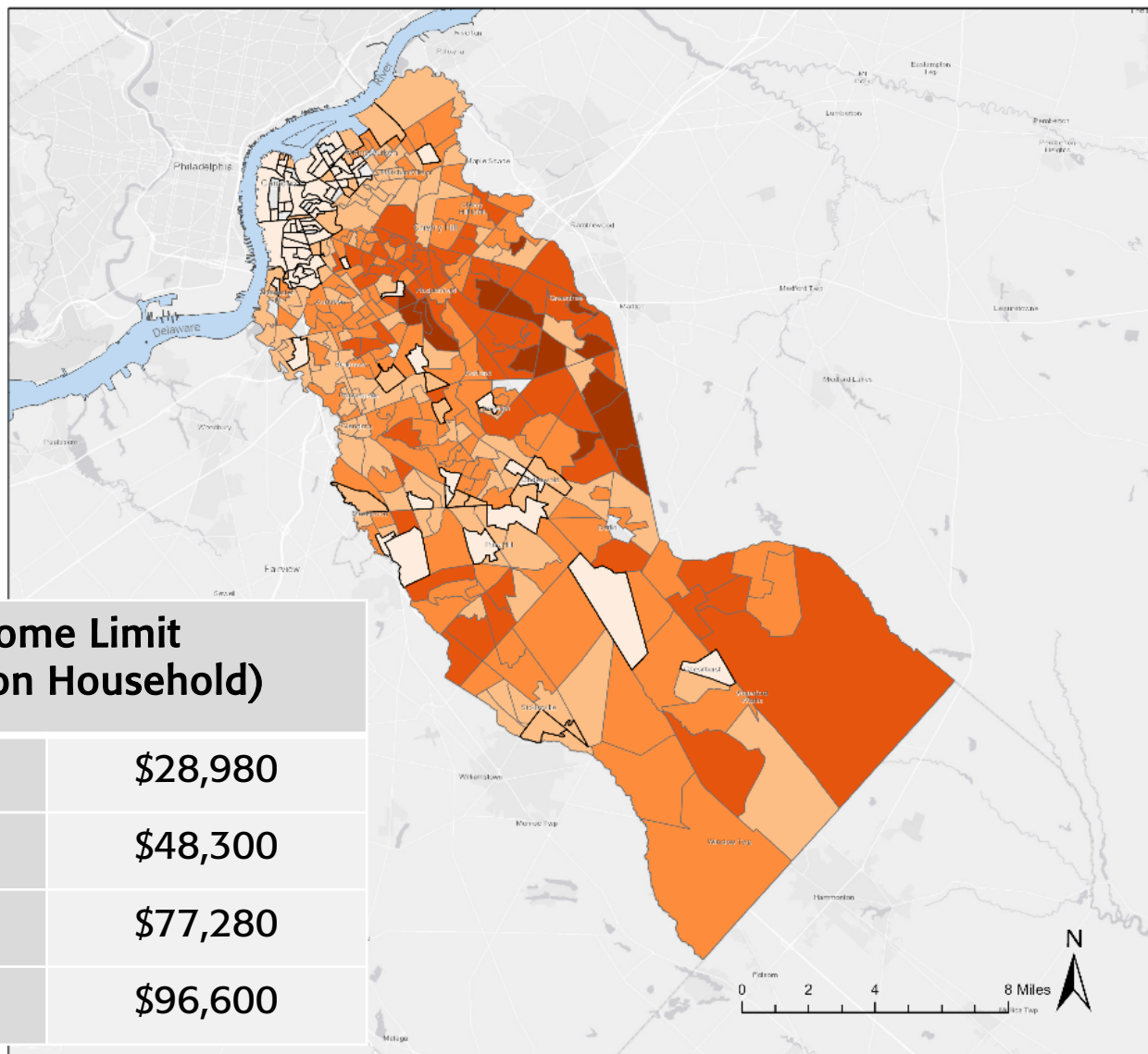by Alan M. Voorhees Transportation Center

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Change in Population : 2014-2019

Population projection, Camden County, NJ
Linear model

$y = -1{,}243.200000x + 3{,}017{,}058.800000$
$R^2 = 0.881934$

Legend: Population — Linear (Population)
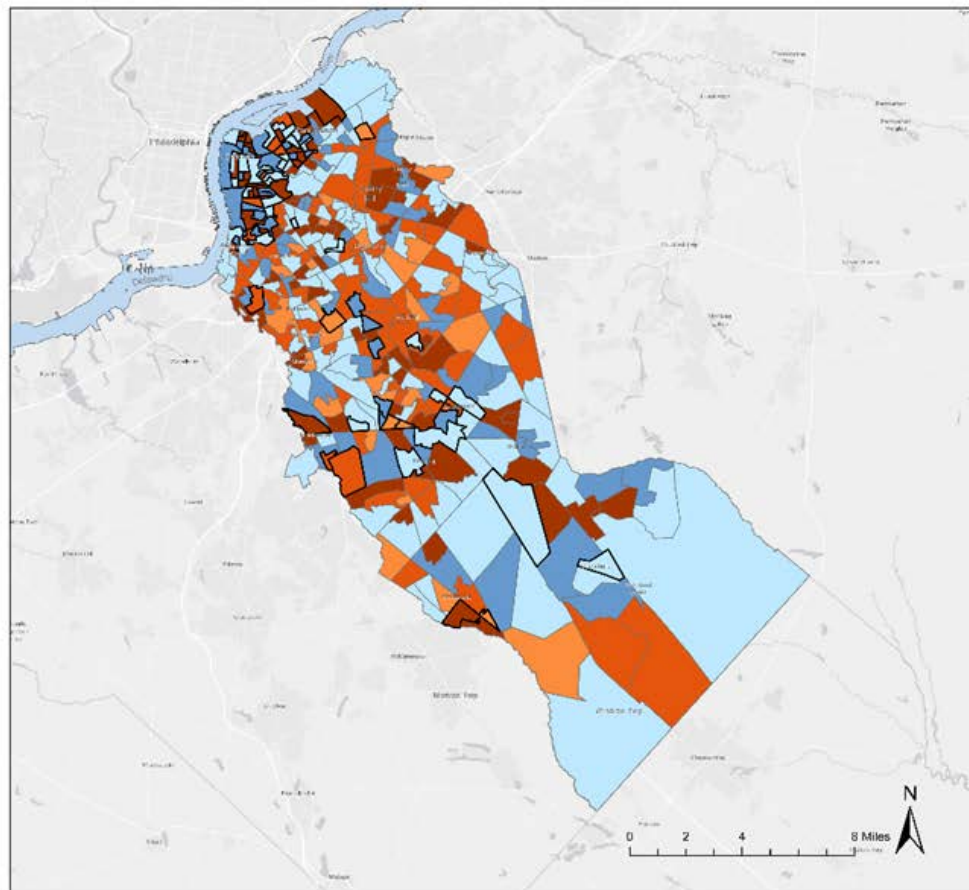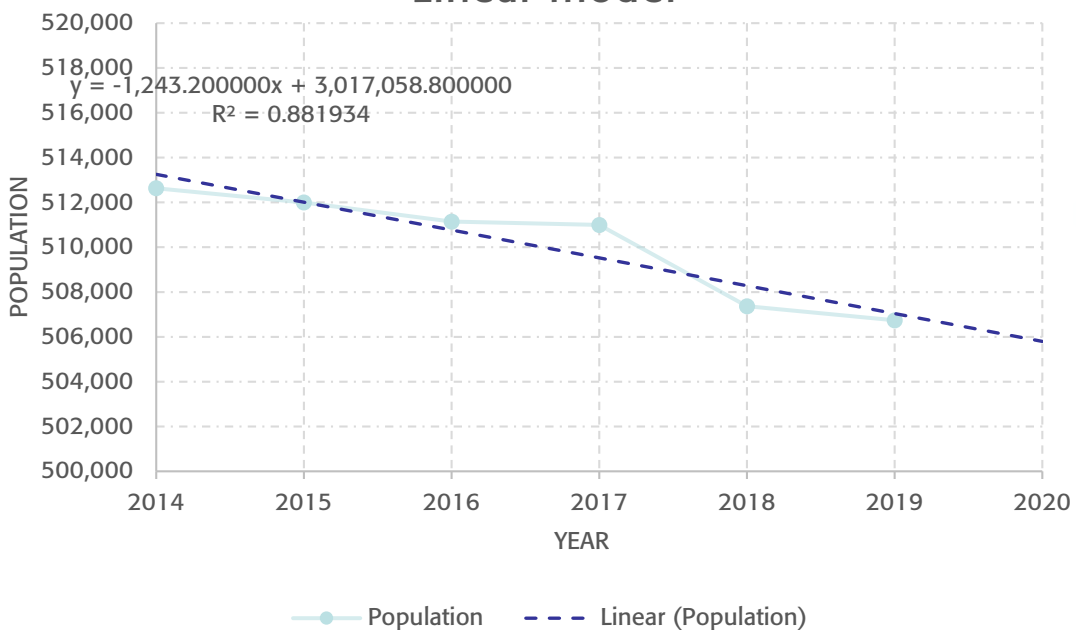
Population Change

Percent Population Change 2014-2019
- -0.83% - -0.18%
- -0.17% - -0.01%
- 0.00% - 0.02%
- 0.03% - 0.20%
- 0.21% - 1.21%
- Low Income Block Group

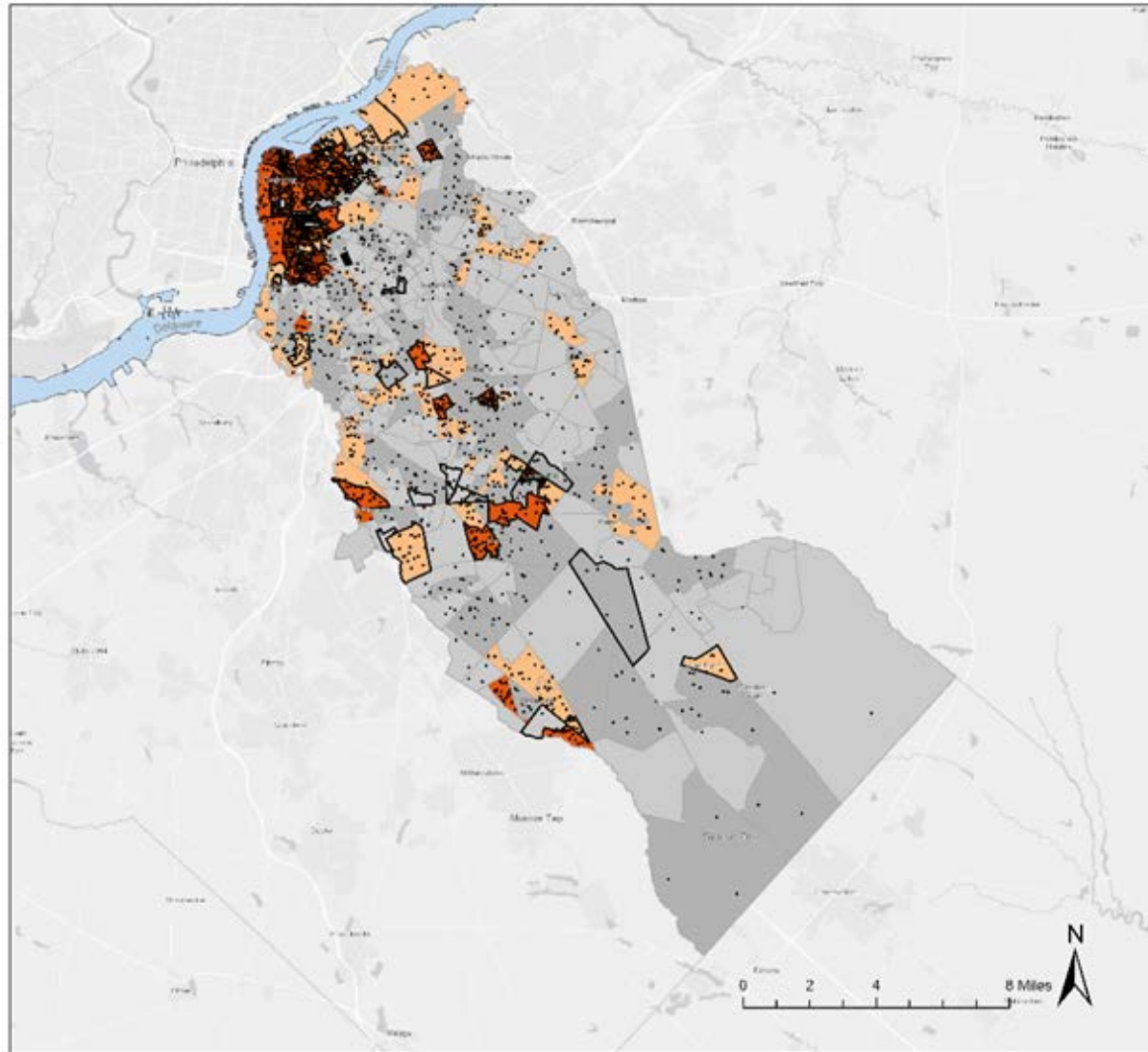Data Source: NJGIN, ESRI base map, ACS 2014 and 2019 estimate

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Race and Ethnicity - 2019

White (Non-Hispanic) — 55.6%
Black or African American (Non-Hispanic) — 18.4%
Asian (Non-Hispanic) — 5.68%
Multiracial (Non-Hispanic) — 2.16%
Other (Non-Hispanic) — 0.48%
Other (Hispanic) — 8.13%
White (Hispanic) — 7.62%
Black or African American (Hispanic) — 1.03%
Multiracial (Hispanic) — 0.75%

Legend: White | Black or African American | Other | Asian | Multiracial | American Indian & Alaska Native | Native Hawaiian & Other Pacific Islander

Data source: US Census Bureau ACS 1-year Estimate. Graphic credit: Data USA

Age & Gender

Age Sex Pyramid 2015-2019
Camden County, NJ

Median Age: 38.8 years old

Household Income

County Average Median Household Income: $70,451

AHPNJ Region 3: 2020 Affordable Housing Income Limits. Region 5: Burlington, Camden, and Gloucester	Income Limit (4 person Household)	
	Very Low	$28,980
	Low	$48,300
	Moderate	$77,280
	Median	$96,600

Median Household Income

□ Low Income Block Group
Median Household Income by Block Group

☐ 9,200 - 43,000
▢ 43,001 - 72,000
▢ 72,001 - 110,000
▮ 110,001 - 150,000
▮ 150,001 - 250,000

Note: Low Income Block Groups as median household income < $48,300 (APHNJ)
Data Source: NJGIN, ACS 2015-2019 5-year estimate, ESRI base map

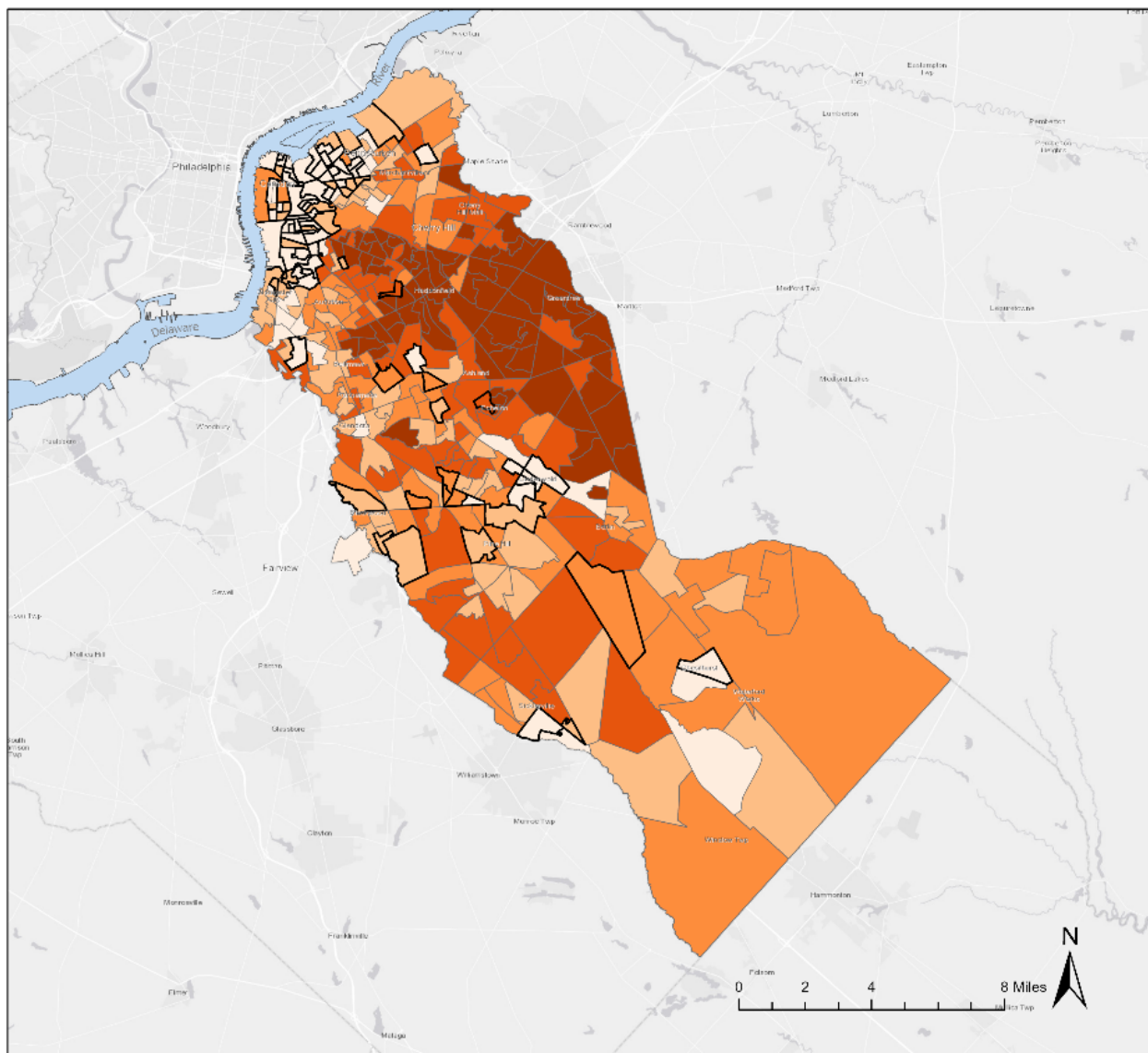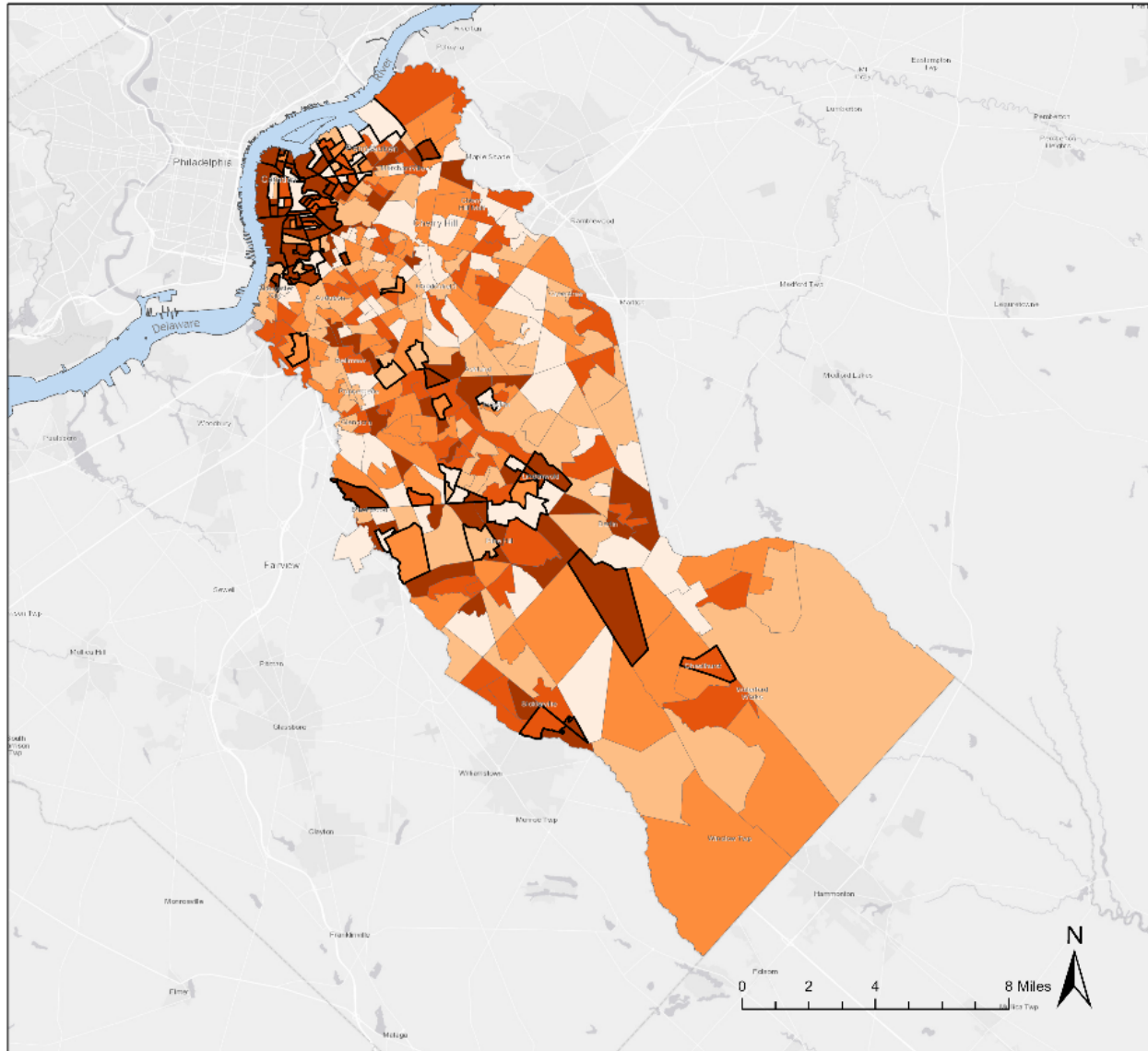**Planning for Healthy, Just, Resilient, and CO2-Neutral Mobility in New Jersey**

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Households living in poverty

Low Income Households

1 Dot = 10
· households under poverty
Percent of Households under
Poverty by Block Group

- 0% - 5.43%
- 5.44% - 12.43%   County Average- 12.43%
- 12.44% - 25.78%
- 25.79% - 41.88%
- 41.89% - 81.55%
- Low Income Block Group

Data Source: NJGIN, ACS 2015-2019 5-year estimate, ESRI base map

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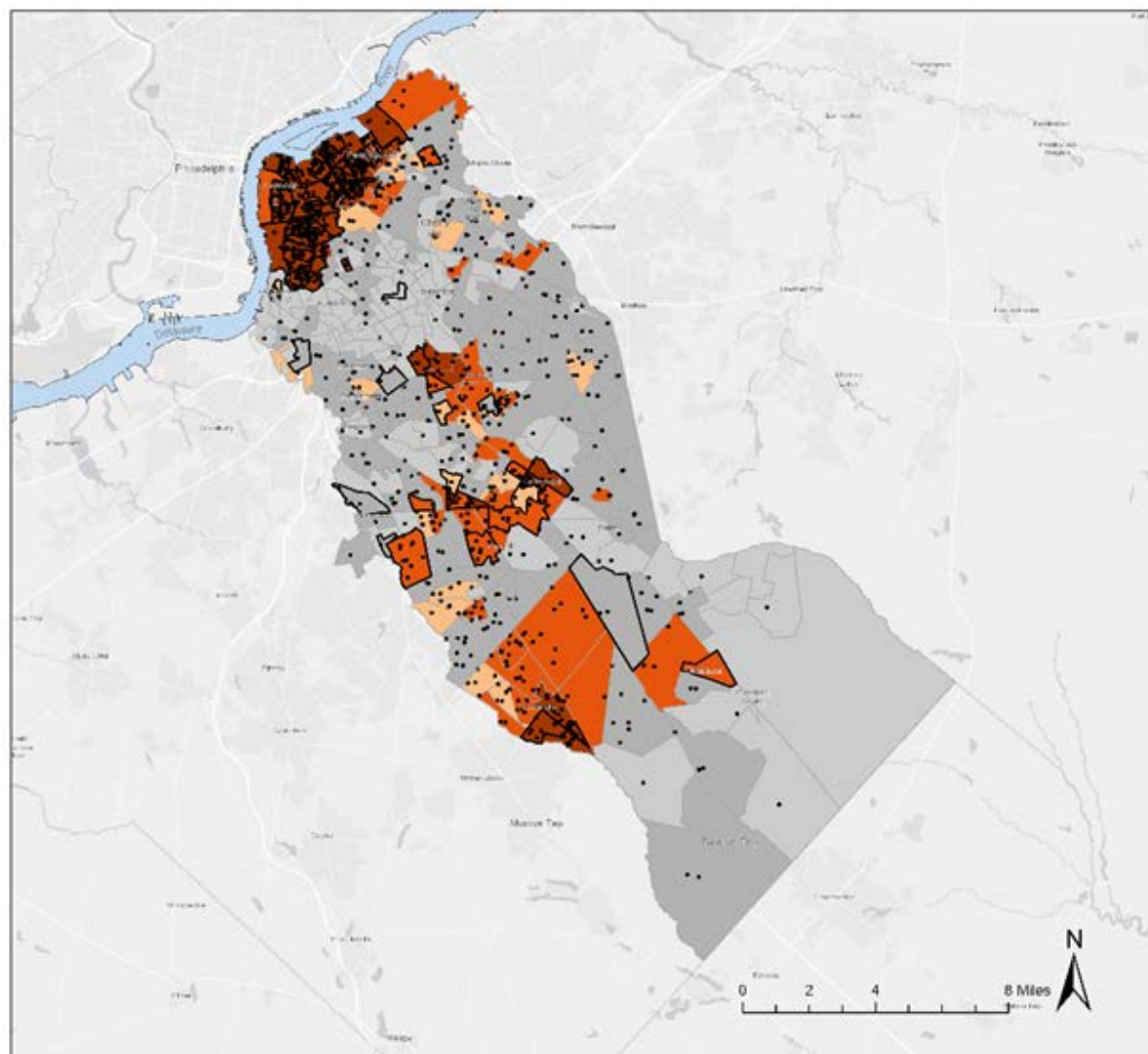Prepared : June 10, 2021
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Educational Attainment
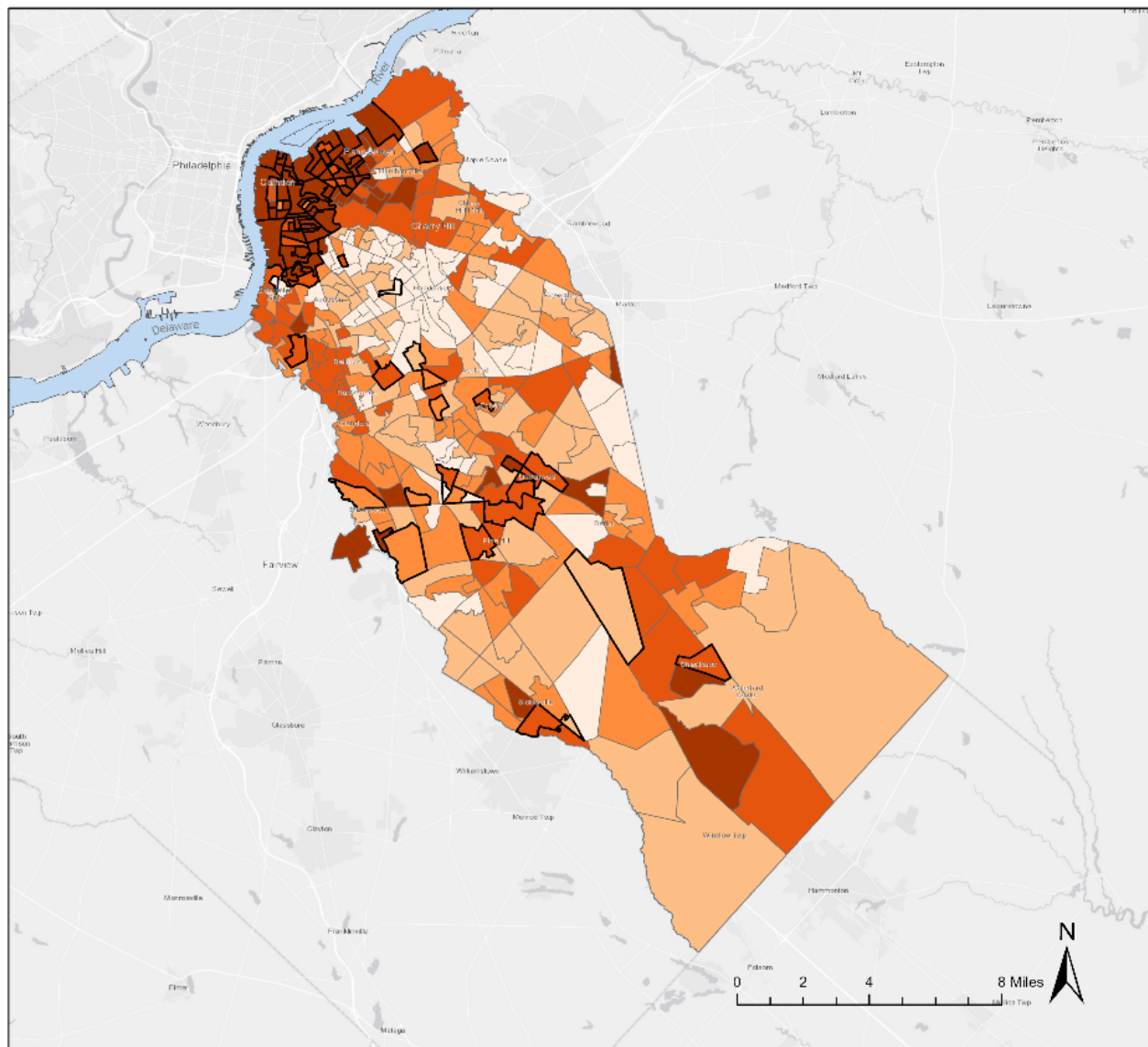
Educational Attainment (less than high school)

Percent of Population with less than High School Degree
- 0% - 2.91%
- 2.92% - 6.04%
- 6.05% - 10.55%
- 10.56% - 19.82%
- 19.83% - 93.17%
- Low Income Block Group

Data Source: NJGIN, ACS 2015-2019 5-year estimate, ESRI base map

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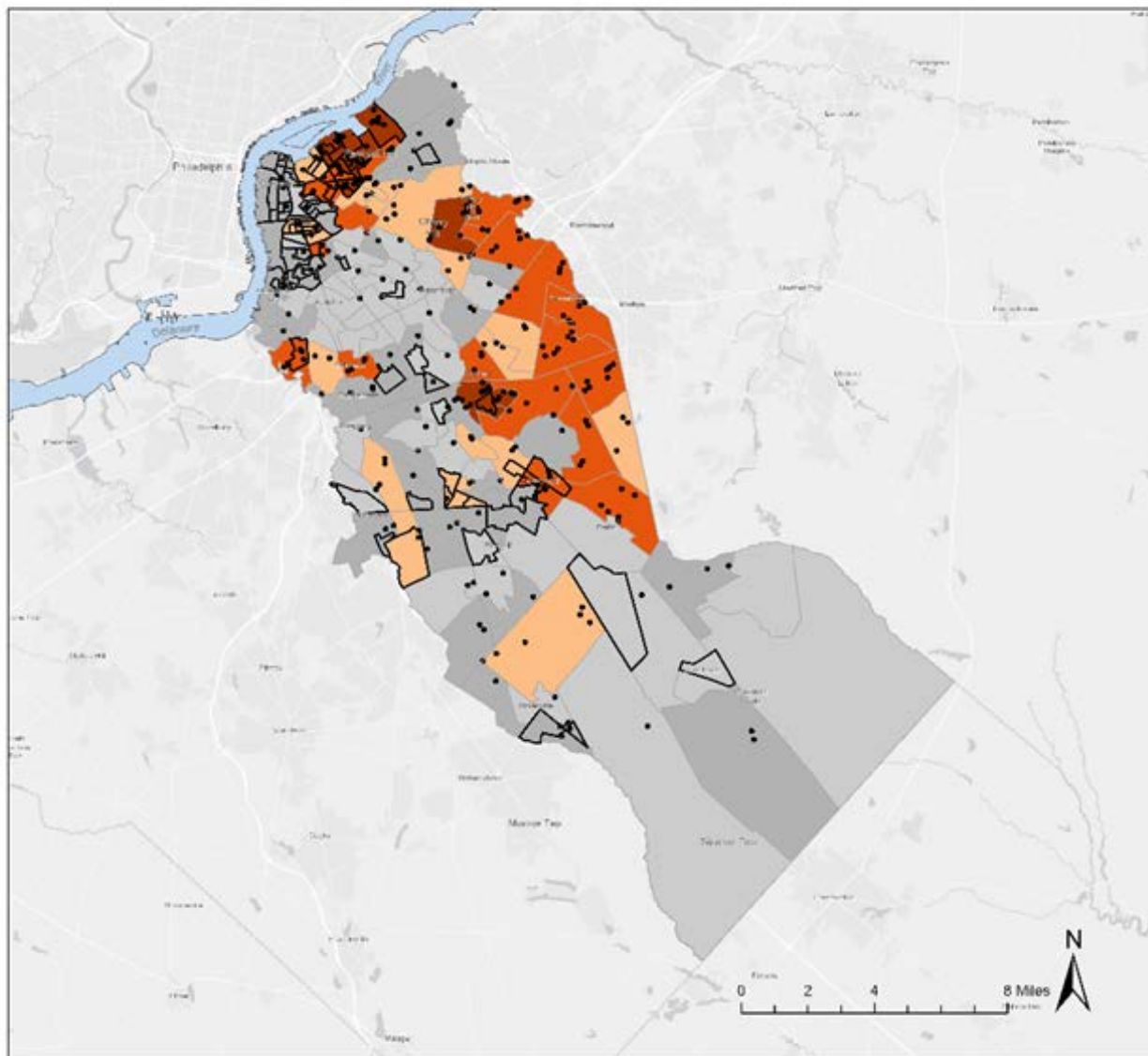
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Educational Attainment
Camden County, NJ
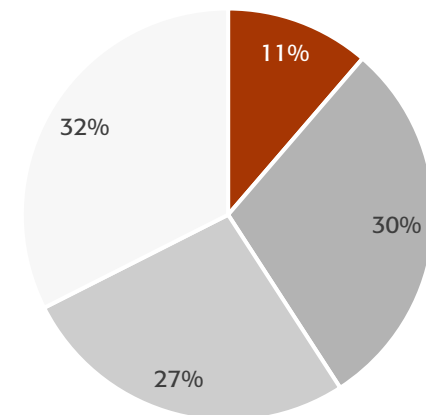
- Less than High School — 11%
- H.S Degree or Equivalent — 30%
- Some College — 27%
- Bachelor's Degree or Higher — 32%

Educational Attainment

Educational Attainment
(Bachelor's Degree or higher)

Percent of Population with
Bachelor's Degree or Higher
- 0% - 13.02%
- 13.03% - 22.31%
- 22.32% - 31.37%
- 31.38% - 47.13%
- 47.14% - 88.09%
- Low Income Block Group

Data Source: NJGIN, ACS 2015-2019 5-year
estimate, ESRI base map

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Unemployment Status

Employment Status

Percent of Unemployed Population by Block Group
- 0% - 1.19%
- 1.20% - 2.73%
- 2.74% - 4.56%
- 4.57% - 7.43%
- 7.44% - 23.84%
- Low Income Block Group

Data Source: NJGIN, ACS 2015-2019 5-year estimate, ESRI base map

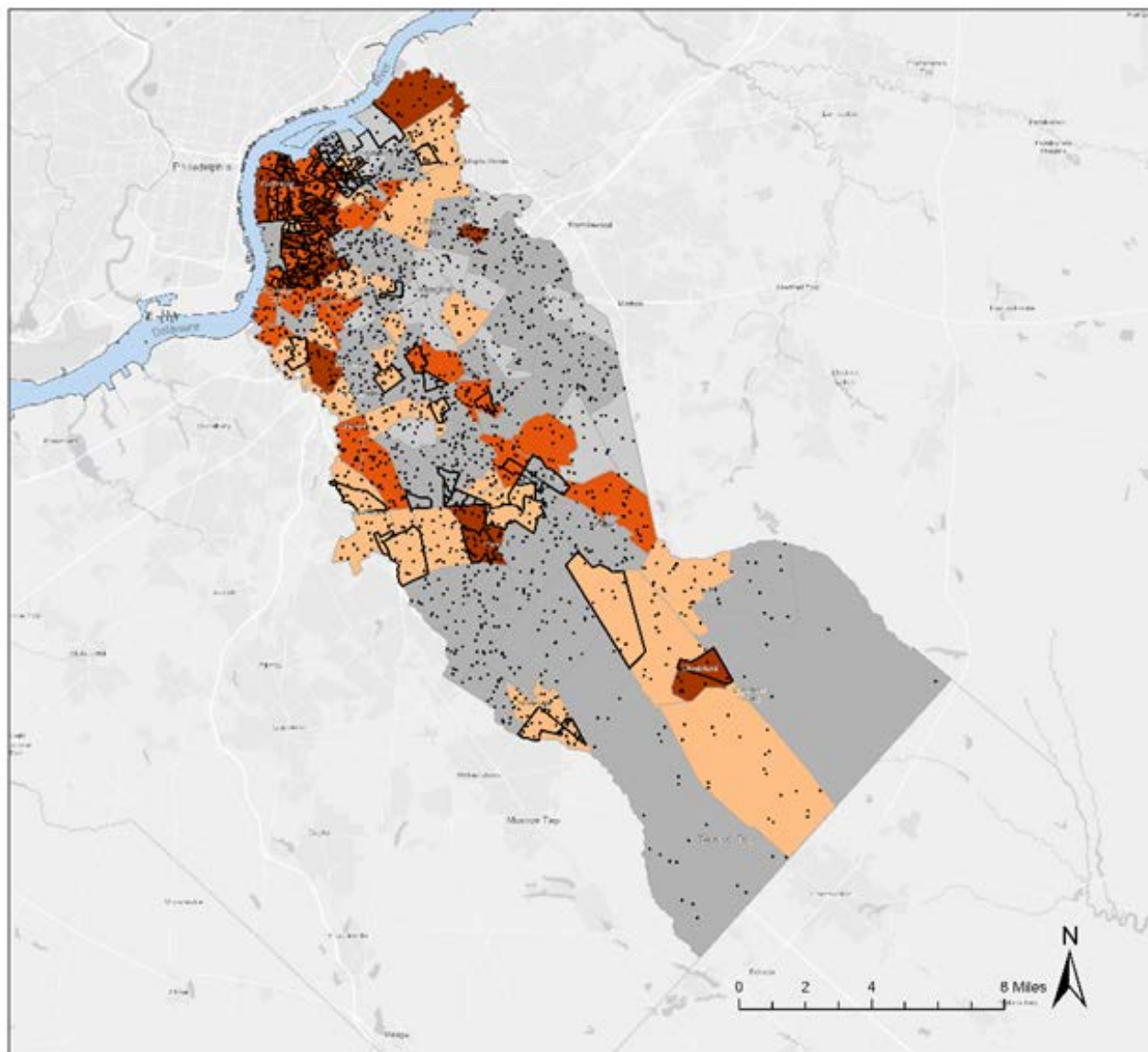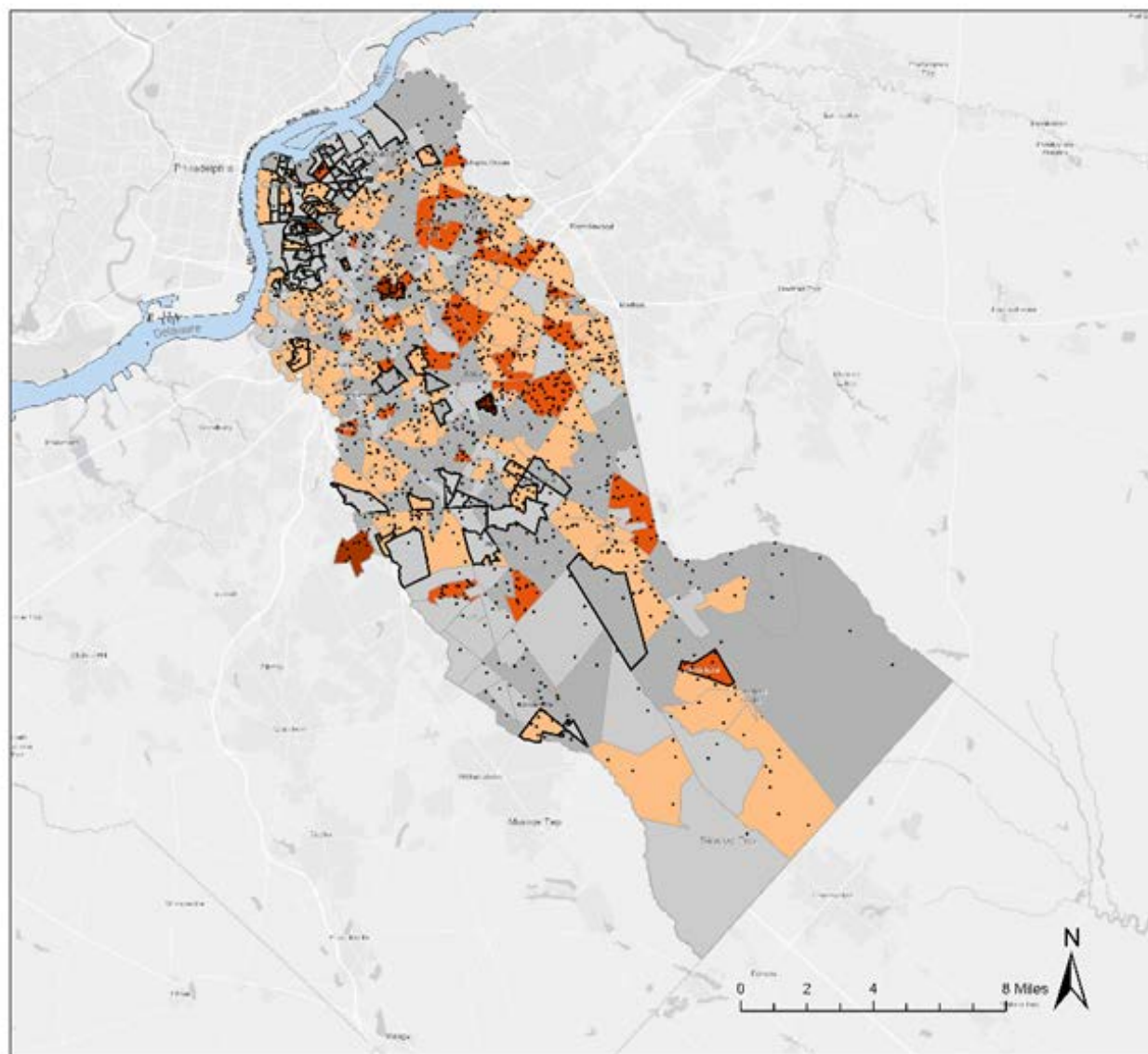**Planning for Healthy, Just, Resilient, and CO2-Neutral Mobility in New Jersey**

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Indicators of Potential Disadvantage

- Racial Minority
- Foreign Born status
- Limited English Proficiency
- Disability status
- Older Adults (75+)
- Single Parent households

Indicators of Potential Disadvantage

Racial Minority

1 Dot = 200
· persons of racial minority
Percent of Racial Minority
Population by Block Group
- 0% - 14.71%
- 14.72% - 43.33%   County Average-43.33%
- 43.34% - 51.41%
- 51.42% - 77.77%
- 77.78% - 100%
- Low Income Block Group

Data Source: NJGIN, ACS 2015-2019 5-year estimate, ESRI base map

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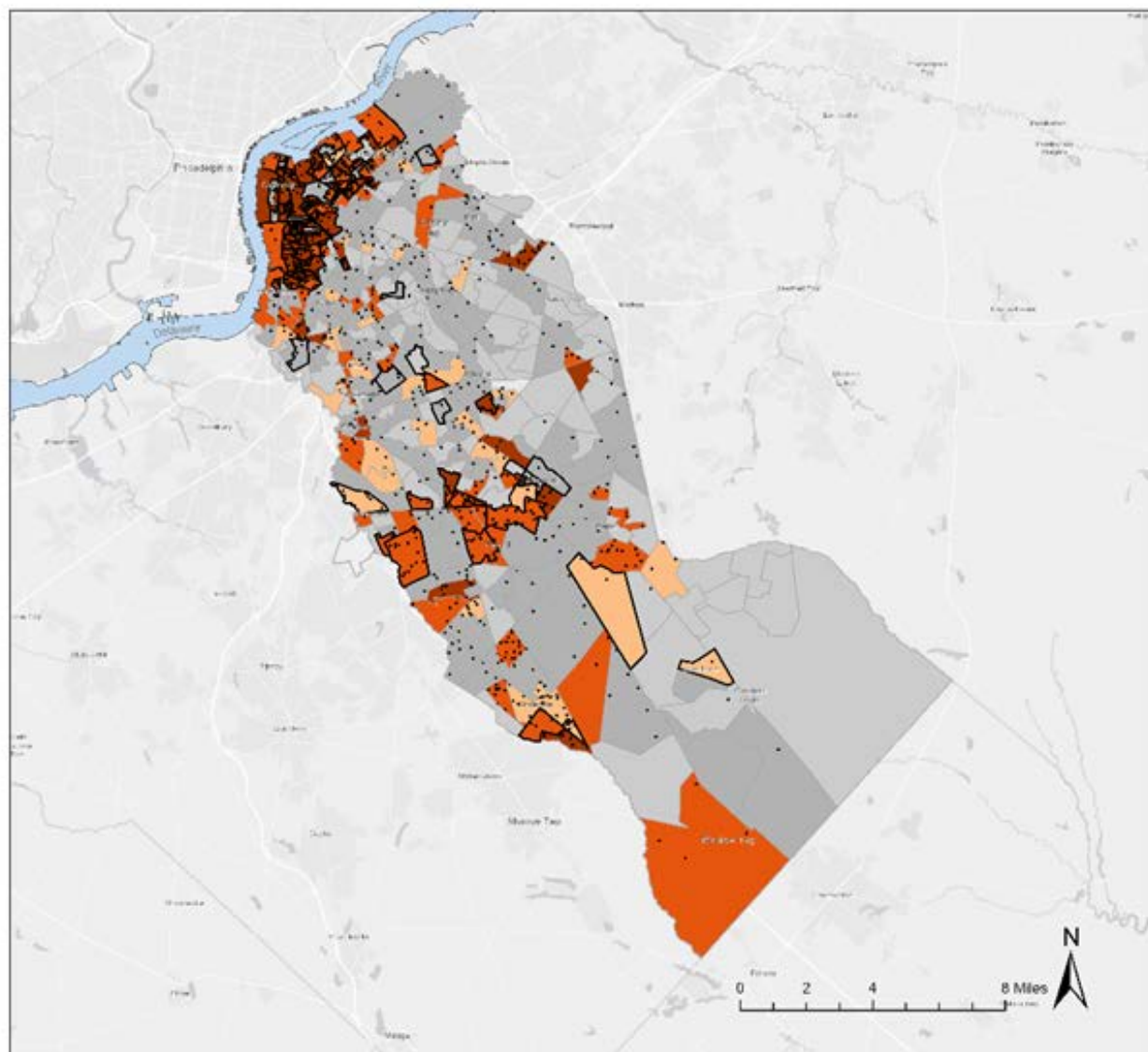by Alan M. Voorhees Transportation Center

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Indicators of Potential Disadvantage

Foreign-born Population

1 Dot = 200
· foreign-born persons
Percent Foreign-born Population by Census Tract

- 0.96% - 5.21%
- 5.22% - 11.12% County Average- 11.12%
- 11.13% - 15.38%
- 15.39% - 21.83%
- 21.84% - 33.53%
- Low Income Block Group

Data Source: NJGIN, ACS 2015-2019 5-year estimate, ESRI base map

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Indicators of Potential Disadvantage
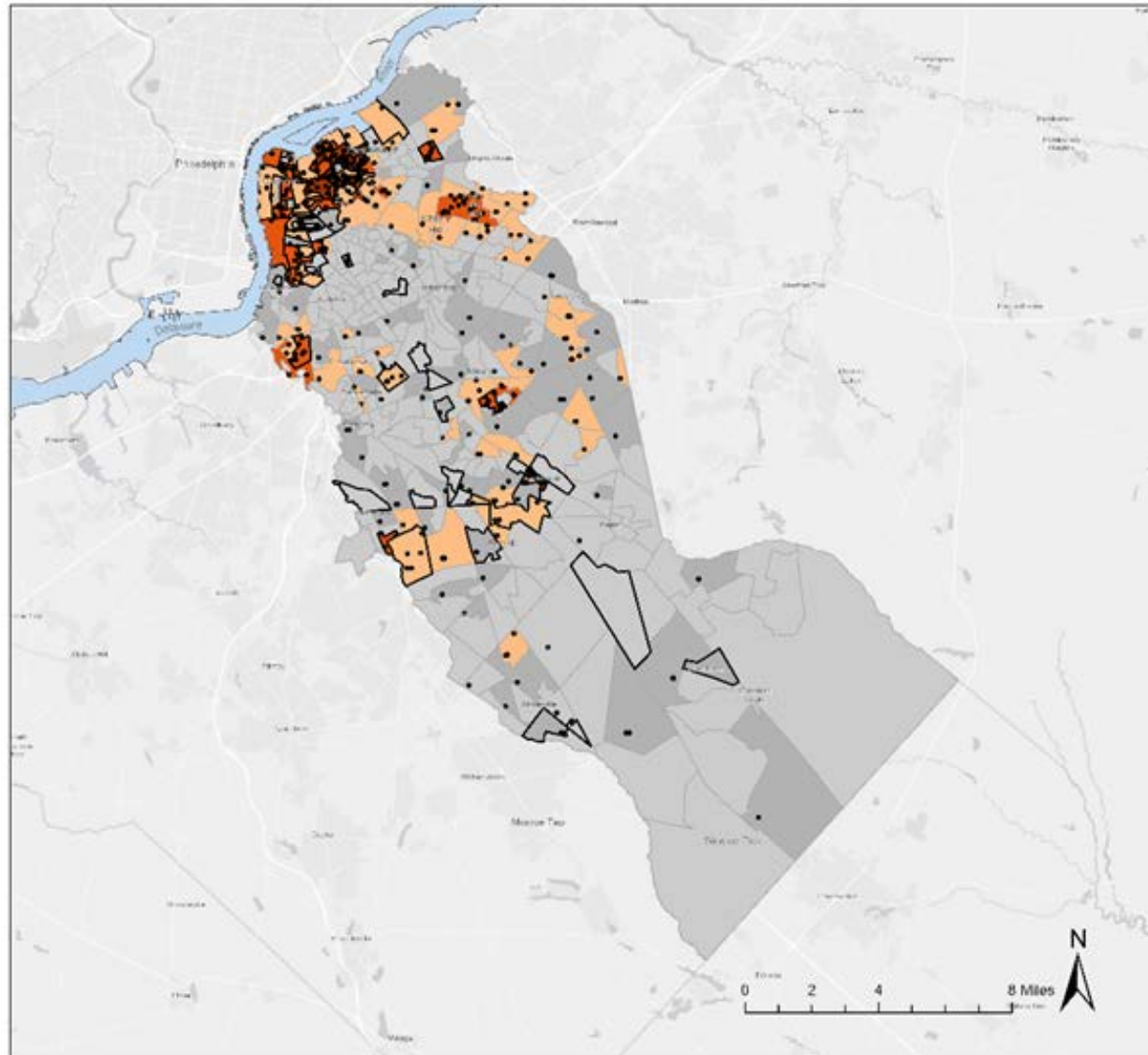
Limited English Proficiency

1 Dot = 20 households with limited English proficiency

Percent of Limited English Proficiency Households by Block Group

- 0% - 1.86%
- 1.87% - 4.80%   County Average- 4.80%
- 4.81% - 12.97%
- 12.98% - 26.27%
- 26.28% - 54.87%
- Low Income Block Group

Data Source: NJGIN, ACS 2015-2019 5-year estimate, ESRI base map

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Indicators of Potential Disadvantage

Disability

1 Dot = 30
· persons with disability
Percent of Persons with
Disability by Census Tract

- 5.22% - 9.02%
- 9.03% - 13.53%   County Average- 13.53%
- 13.54% - 15.55%
- 15.56% - 19.7%
- 19.71% - 28.35%
- Low Income Block Group

Data Source: NJGIN, ACS 2015-2019 5-year estimate, ESRI base map

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Indicators of Potential Disadvantage

Older Adults

1 Dot = 20
· older adults (75+)
Percent of Older Adults (75+)
by Block Group
- 0% - 3.63%
- 3.64% - 6.56%   County Average-
6.56%
- 6.57% - 14.78%
- 14.79% - 29.22%
- 29.23% - 48.20%
- Low Income Block Group

Data Source: NJGIN, ACS 2015-2019 5-year
estimate, ESRI base map

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Indicators of Potential Disadvantage

Single Parent Families

1 Dot = 30
· single parent families
Percent of Single Parent Families
by Block Group
- 0% - 9.27%
- 9.28% - 36.95%   County Average-36.95%
- 36.96%- 48.52%
- 48.53% - 74.42%
- 74.43% - 100%
- Low Income Block Group

Data Source: NJGIN, ACS 2015-2019 5-year
estimate, ESRI base map

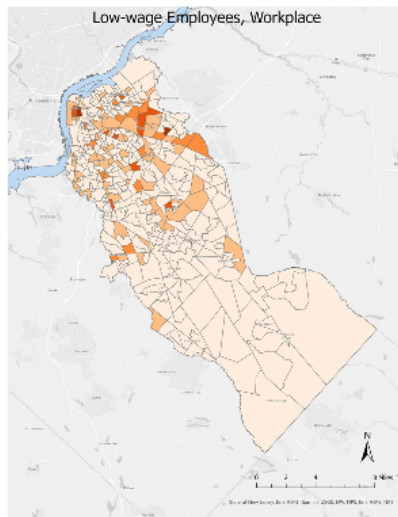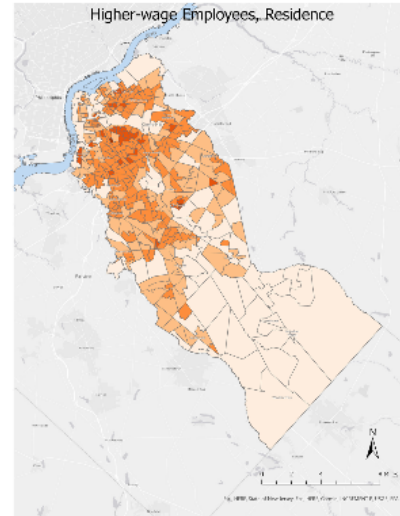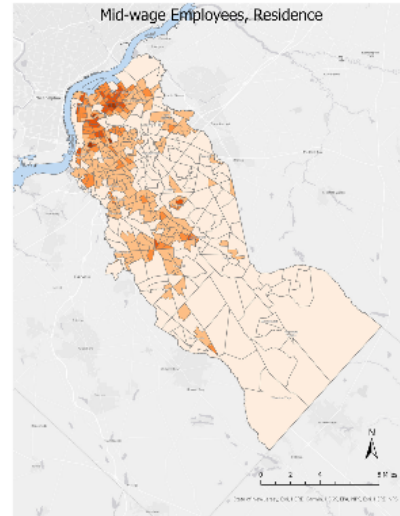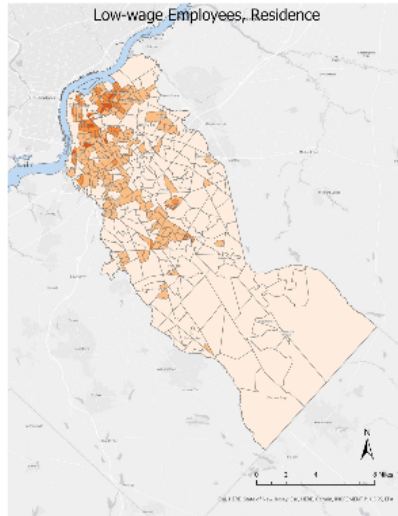**Planning for Healthy, Just, Resilient, and CO2-Neutral Mobility in New Jersey**

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Health Behaviors

Camden is ranked among the least healthy counties in New Jersey (Lowest 0%-25%)

Source: 2020 NJ County Health rankings

Health Behaviors	Camden County	NJ
Adult Smoking	18%	14%
Adult obesity	33%	26%
Food environment index	8.4	9.3
Physical inactivity	29%	26%
Access to exercise opportunities	90%	95%
Excessive drinking	17%	18%
Alcohol-impaired driving deaths	20%	22%

Physical Environment	Camden County	NJ
Air pollution-particulate matter	10.1	9.9
Drinking water problems	Yes	-
Severe housing problems	20%	22%
Driving alone to work	76%	71%
Long commute-driving alone	41%	43%

Health Behaviors

Quality of Life	Camden County	NJ
Poor or fair health	18%	16%
Poor physical health days	4.2	3.7
Poor mental health days	4.6	3.8
Low birthweight	9%	8%
Life expectancy	77.2	80.5
Diabetes prevalence	13%	10%
Frequent physical distress	12%	11%

Camden is ranked among the lower middle range of counties in New Jersey (Lower 25%-50%)
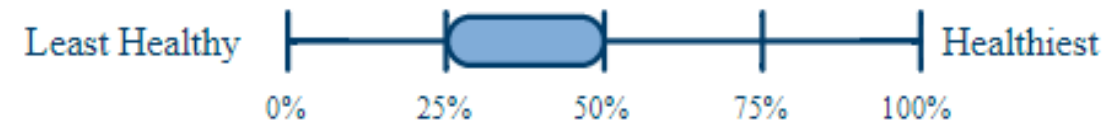
Source: 2020 NJ County Health rankings

Healthy, Just and CO2-neutral Mobility for All

GEOGRAPHY OF PLACE

Natural Land Use

Land Use Division

Land Use

- AGRICULTURE
- BARREN LAND
- FOREST
- URBAN
- WATER
- WETLANDS
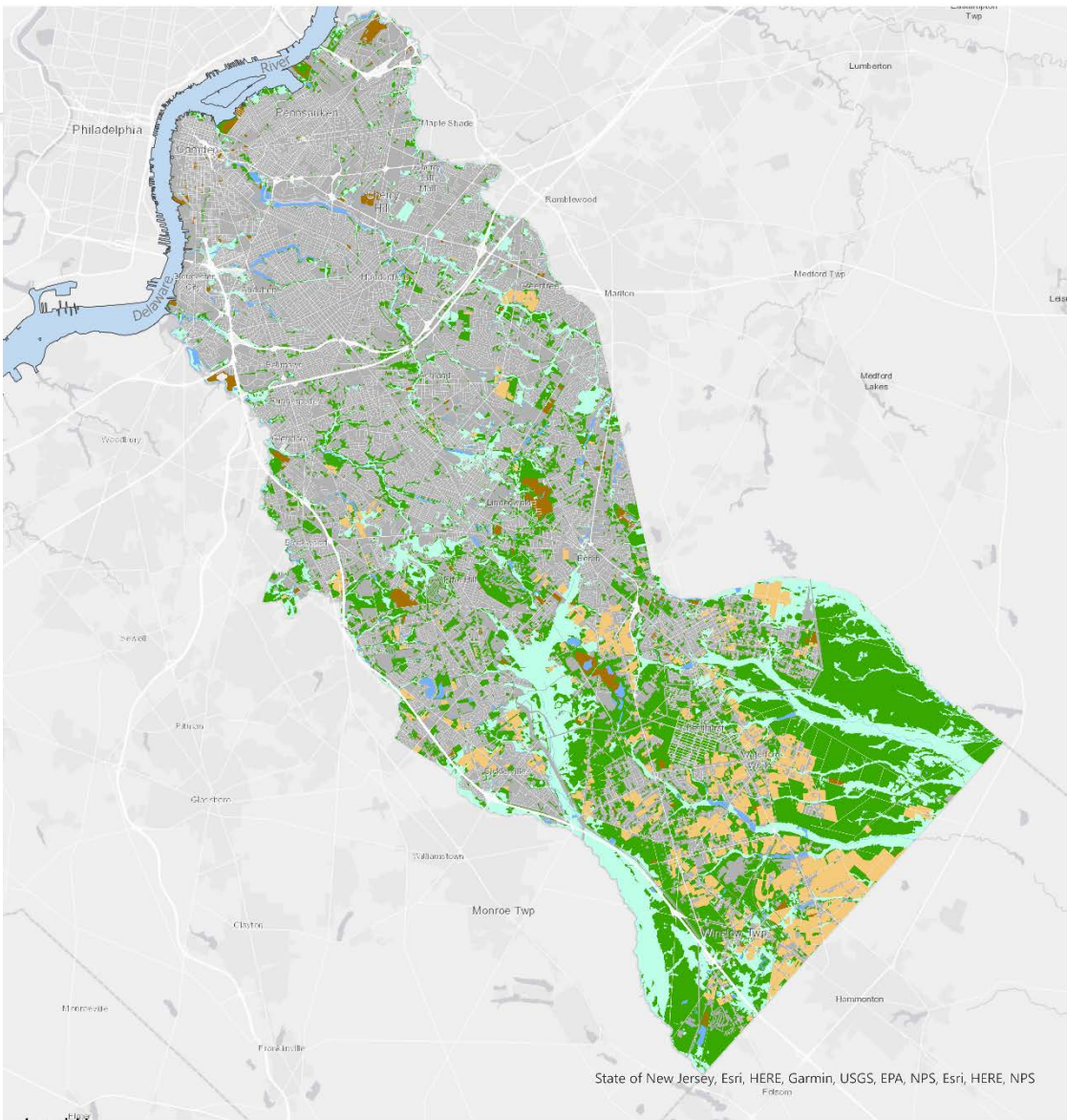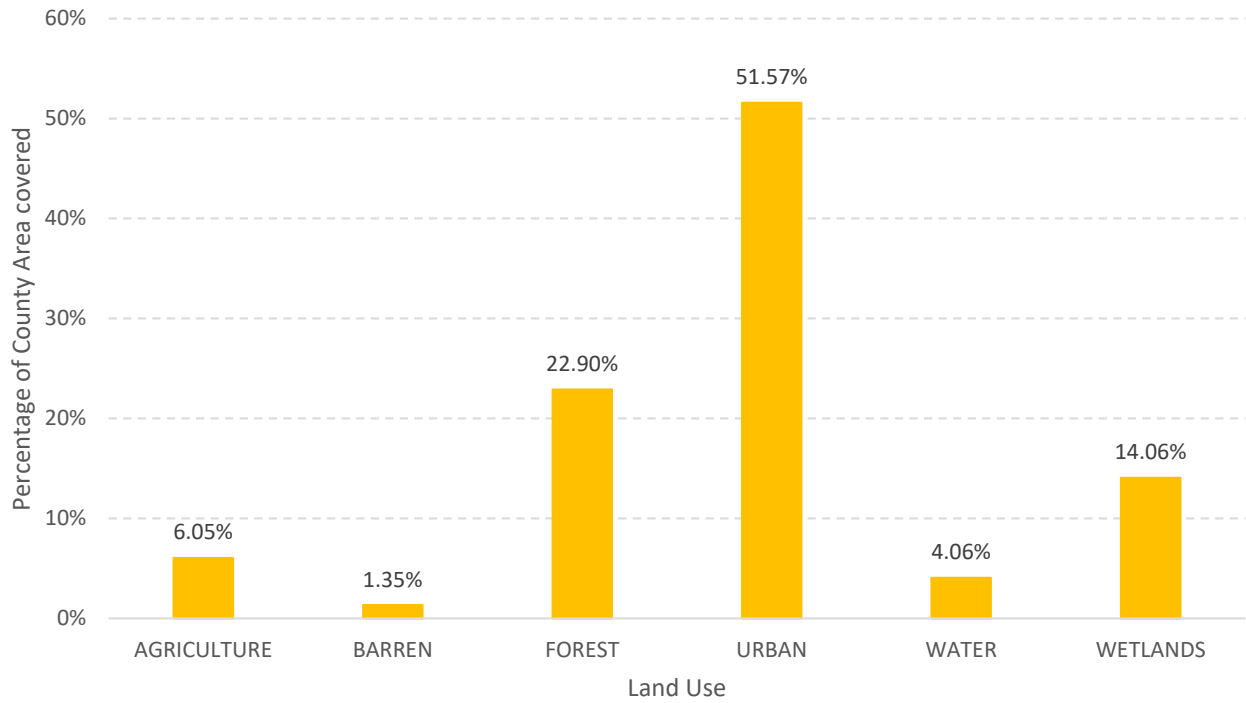
Note: Land Use/Land Cover 2015
Anderson Classification System
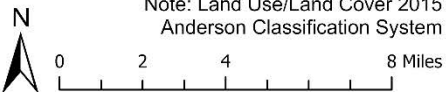
Data Source: NJGIN, ESRI Basemap

Urban Land Use
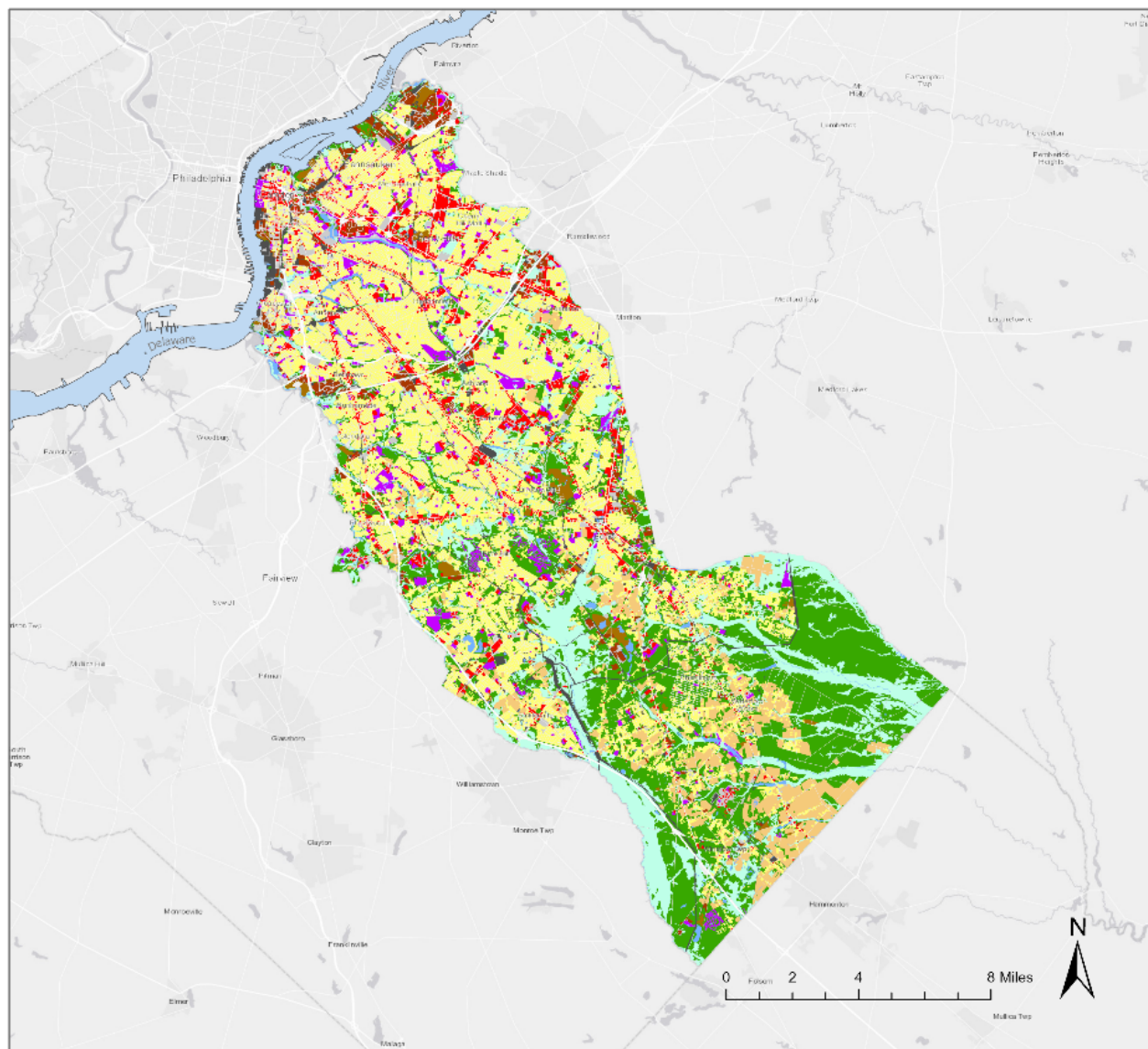
Land Use

Urban Land Use
- Residential
- Commercial and Service
- Industrial
- Transportation/Communication/Utilities
- Recreational Land
- Other Urban Land

Other Land Uses
- Agriculture
- Barren Land
- Forest
- Water
- Wetlands

Data Source: NJGIN, NJDEP, ESRI base map

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Employment Density

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Employment Density by Wage

Education Services
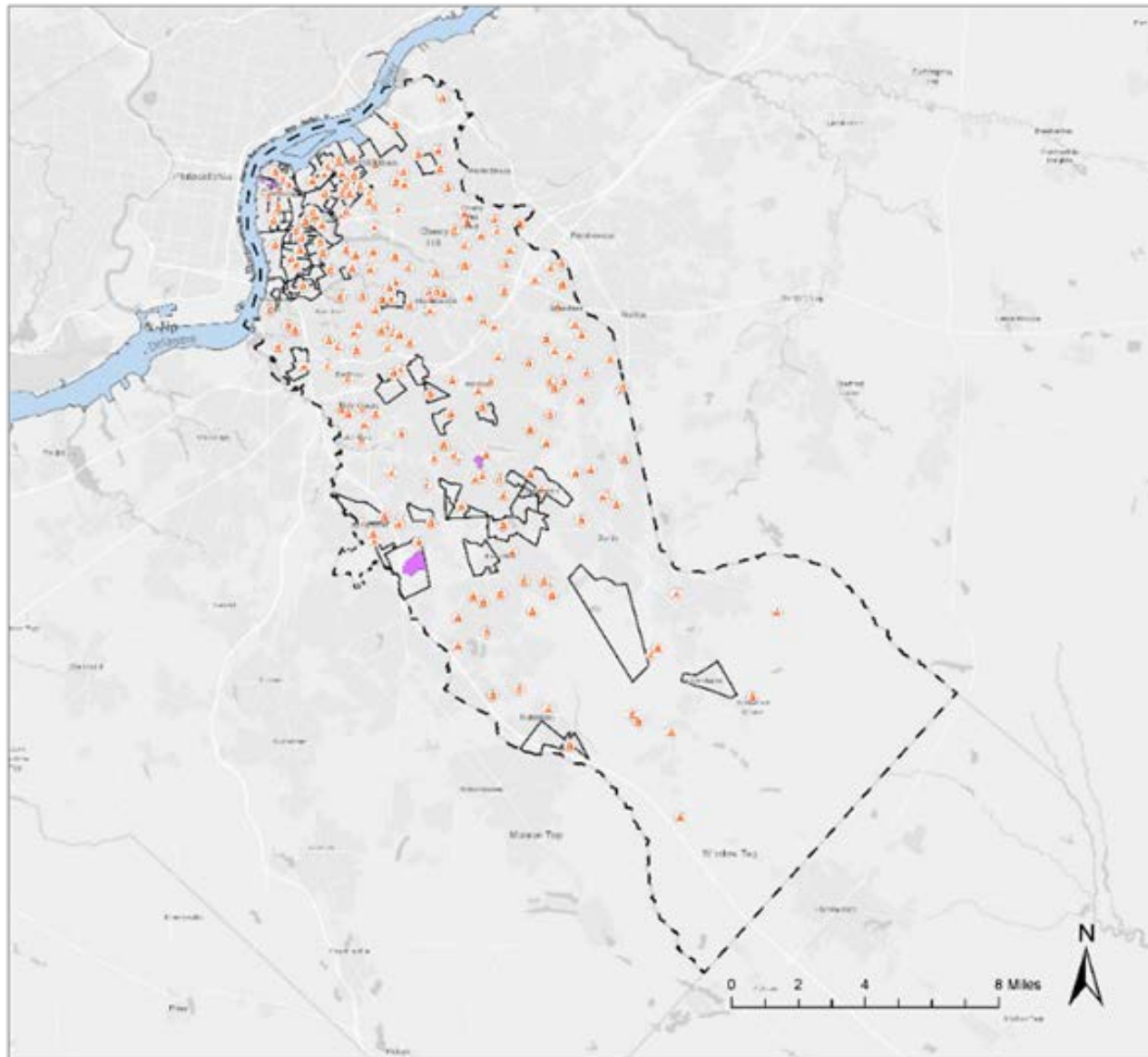
Education Facilities

- K-12 Public schools
- Colleges and Universities
- Low Income Block Group

Data Source: NJGIN, ESRI base map, ACS 2015-2019 5-year estimate, ESRI Business Analyst

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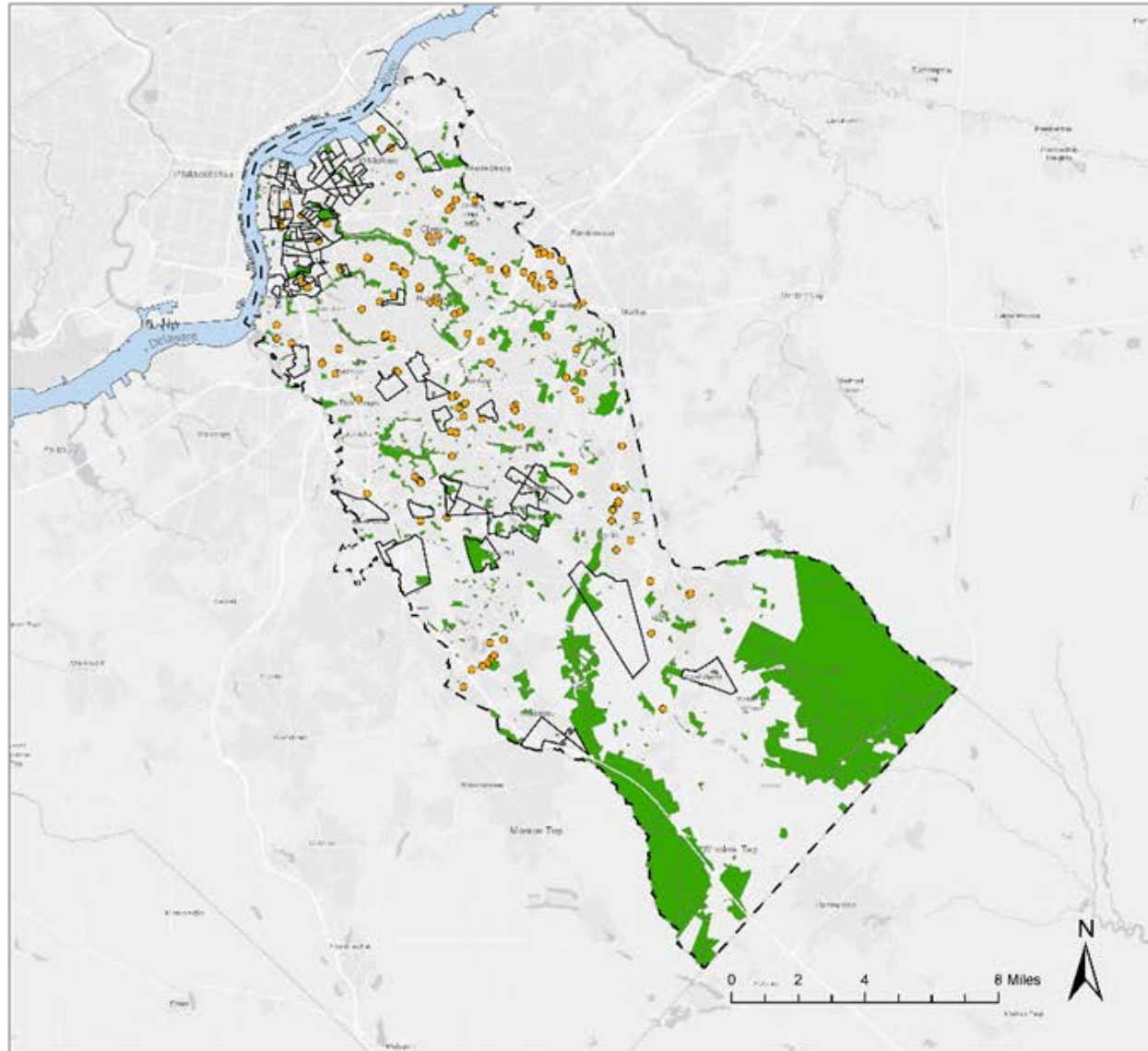
Recreation

Recreation

- Fitness Center
- State, local, and nonprofit open space
- Low Income Block Group

Data Source: NJGIN, ESRI base map, ESRI Business Analyst (2020 data)

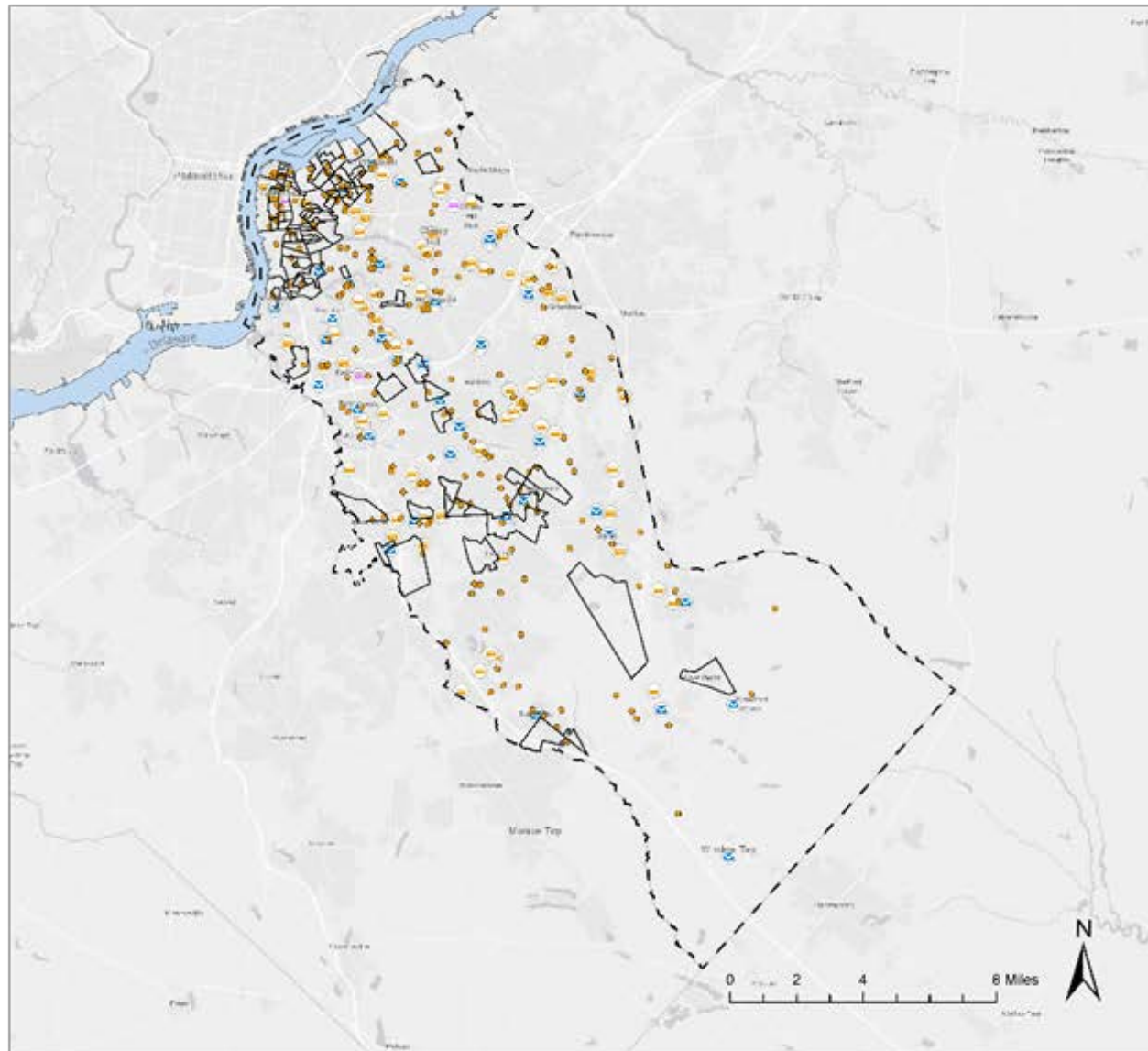**Planning for Healthy, Just, Resilient, and CO2-Neutral Mobility in New Jersey**

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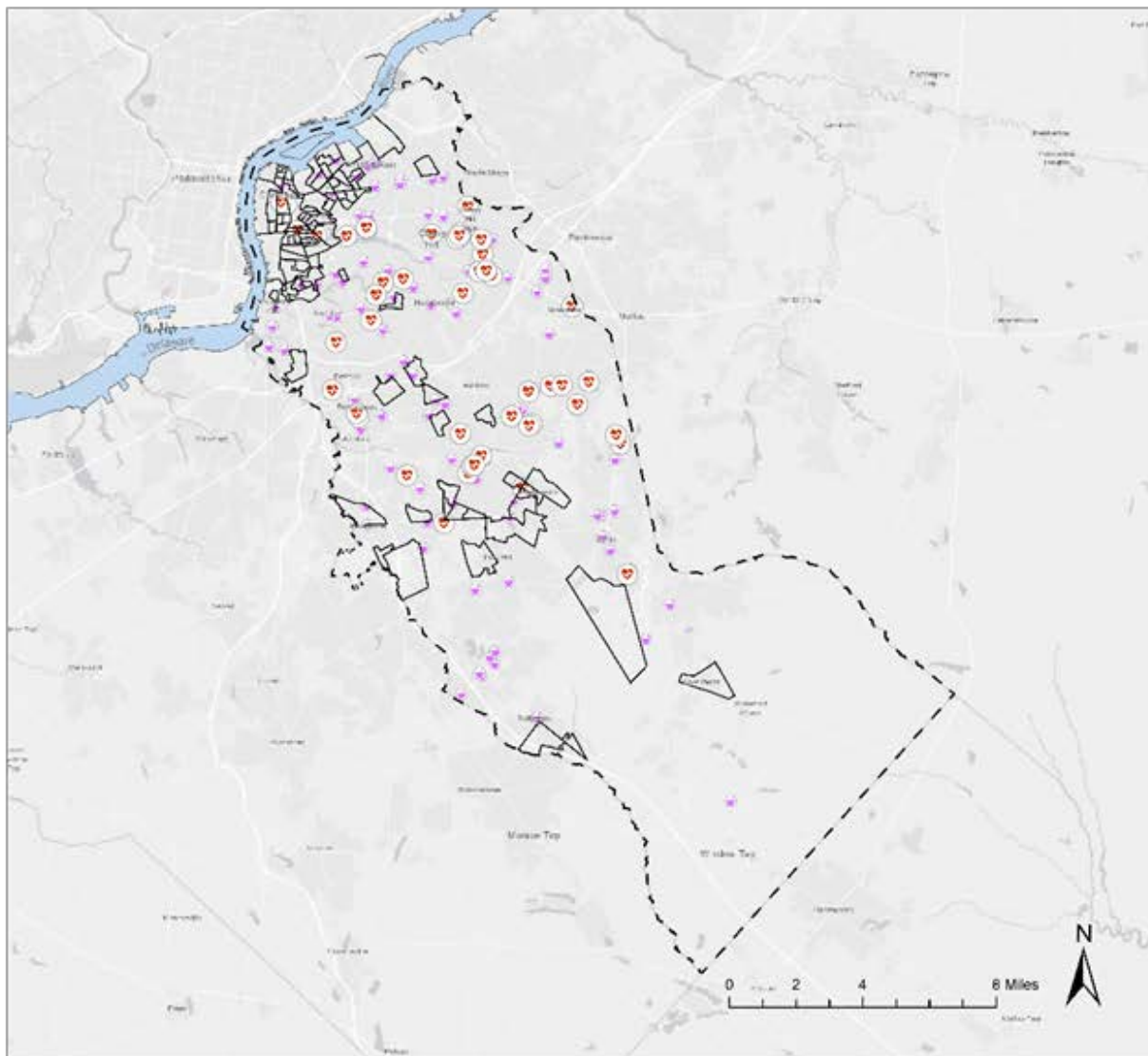
Medical Services

Medical Services

- Hospital and Emergency Center
- Pharmacy and drug store
- Low Income Block Group

Data Source: NJGIN, ESRI base map, ESRI Business Analyst (2020 data)

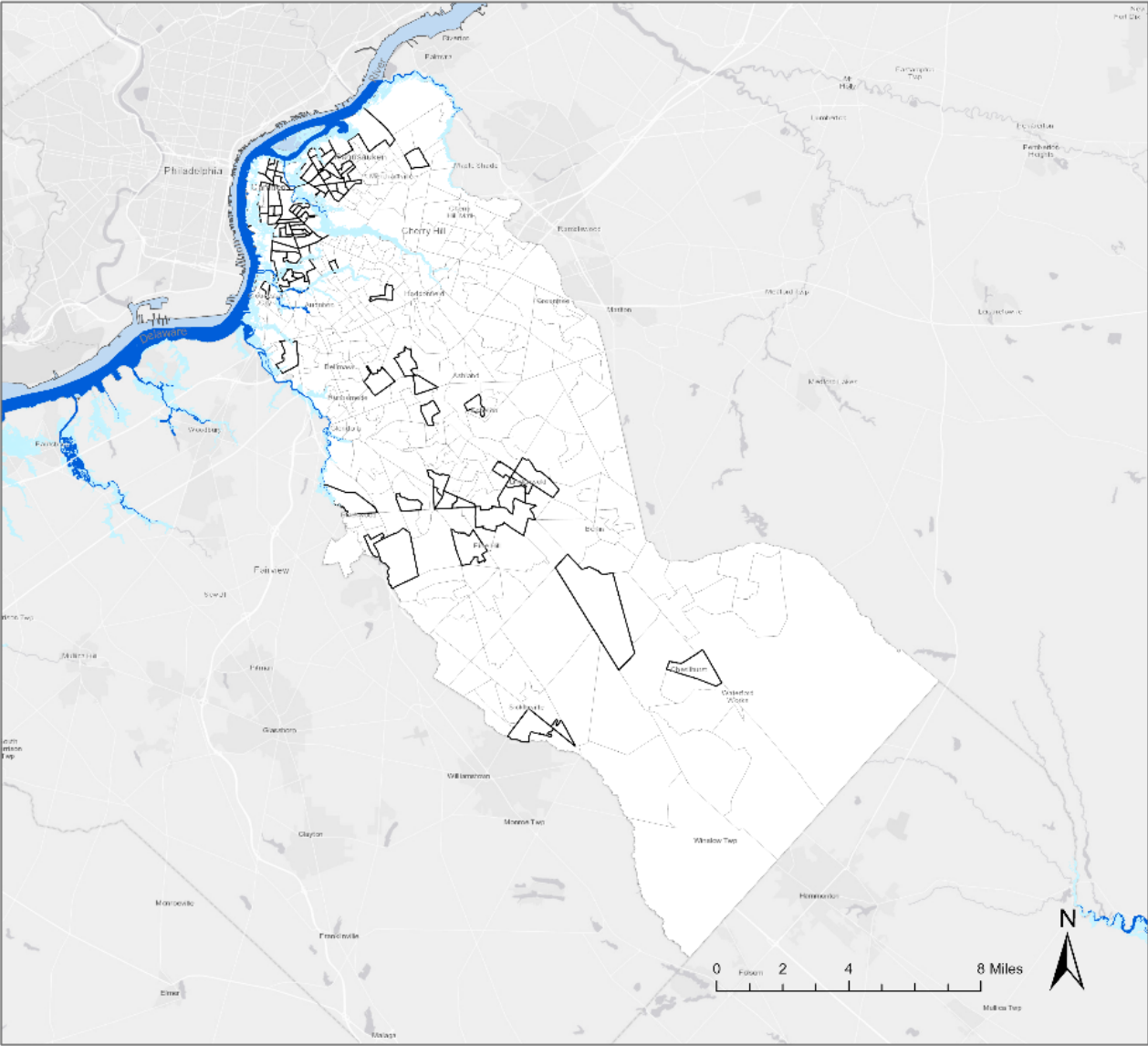**Planning for Healthy, Just, Resilient, and CO2-Neutral Mobility in New Jersey**

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Other Essential Services

Essential Services

- Postal Services
- Commerncial Banking
- Credit Unions
- Child Care Centers
- Low Income Block Group

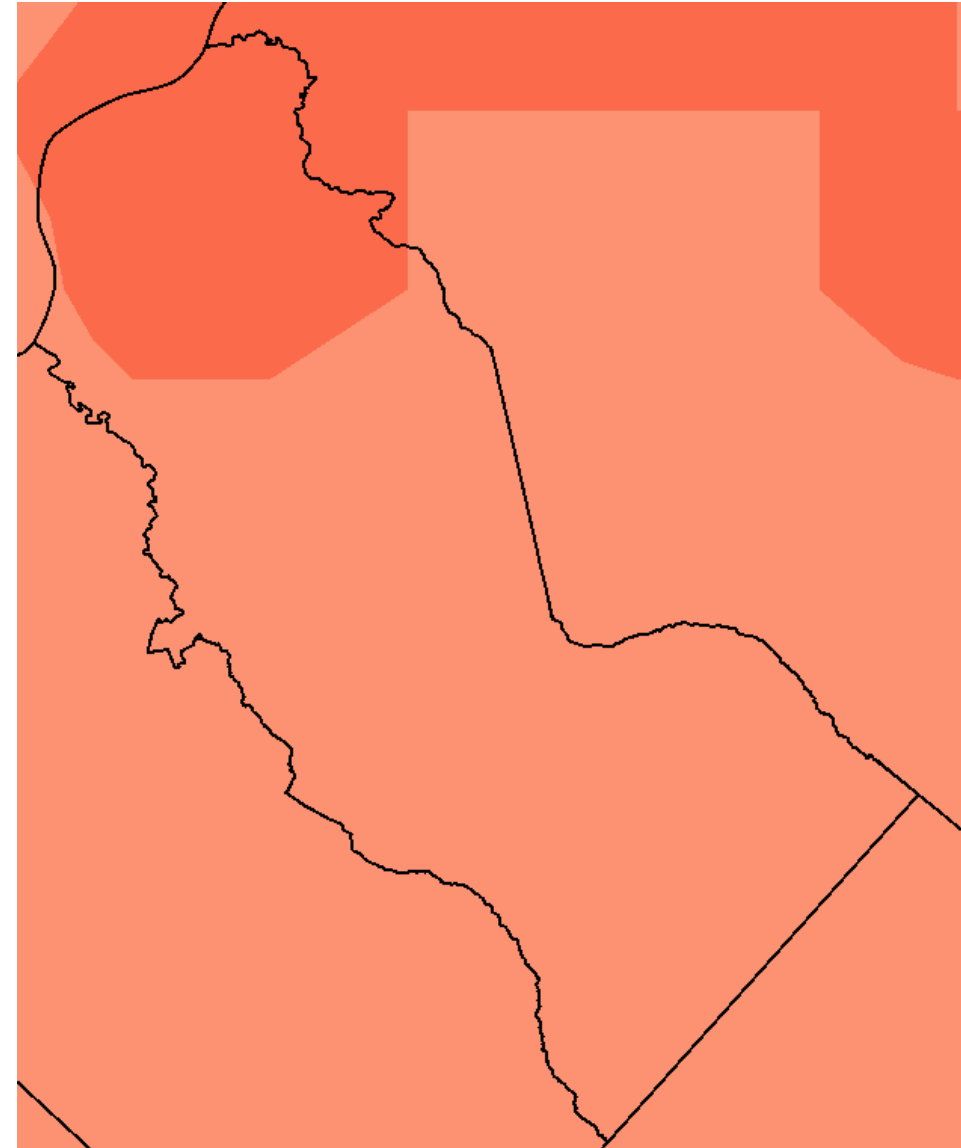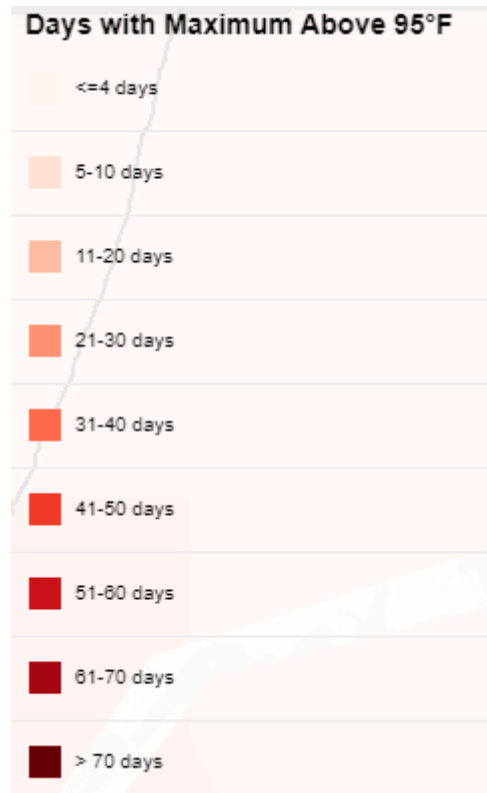Data Source: NJGIN, ESRI base map, ESRI Business Analyst (2020 data)

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Commercial Amenities
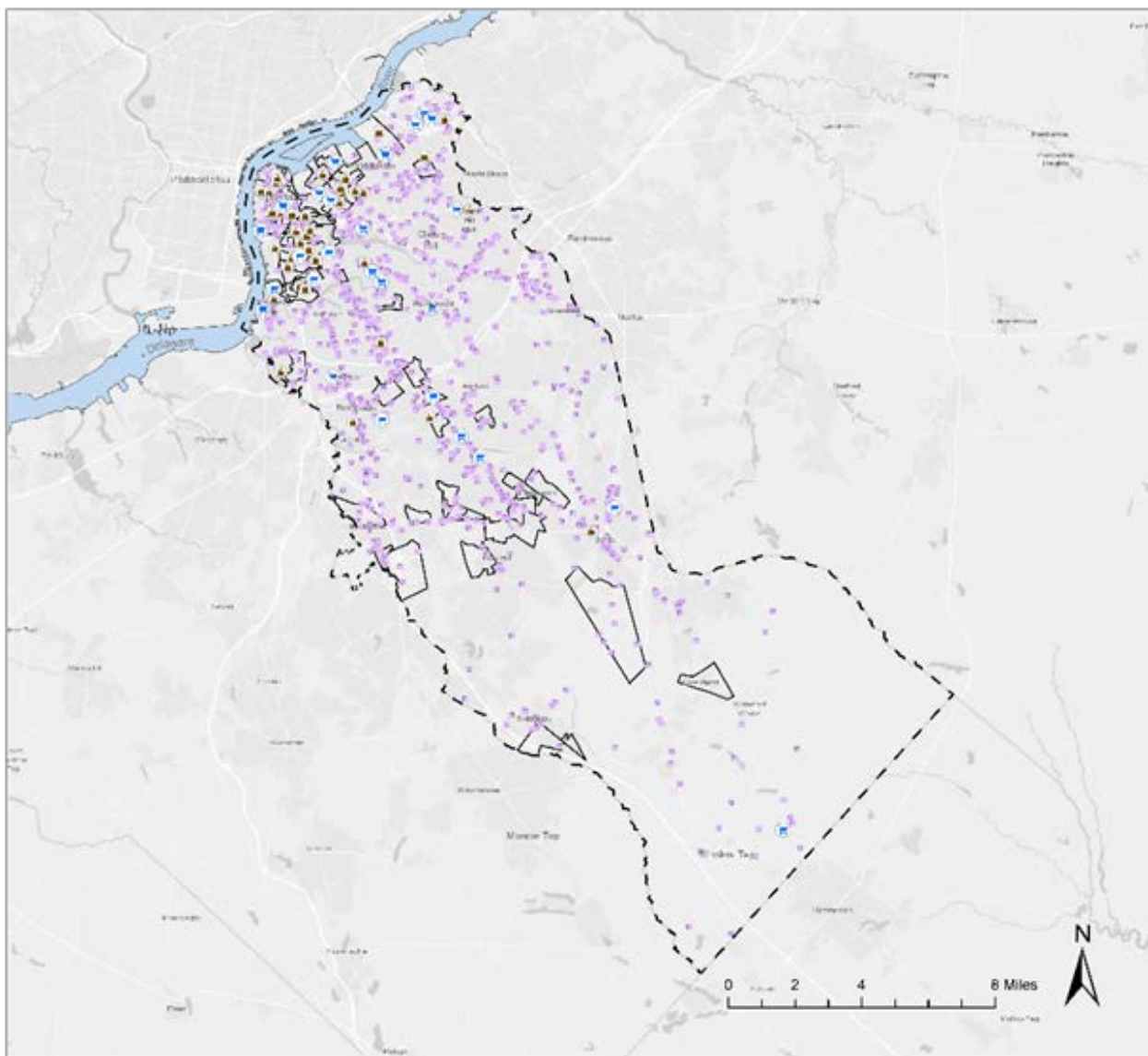
Commercial Amenities

- Convenience/ Specialty Stores
- Full-service Grocery Stores
- Laundromats
- Low Income Block Group

Data Source: NJGIN, ESRI base map, ACS 2015-2019 5-year estimate, ESRI Business Analyst

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Climate Vulnerability

Sea Level Rise (5 ft)

Low Income Block Group
5 ft. sea level rise depth
High
Low

Data Source: NJGIN, ACS 2015-2019 5-year estimate, NOAA, ESRI base map

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Climate Vulnerability

Exposure to extreme heat
(High-emissions scenario)

Days with Maximum Above 95°F

- <=4 days
- 5-10 days
- 11-20 days
- 21-30 days
- 31-40 days
- 41-50 days
- 51-60 days
- 61-70 days
- > 70 days

Source: NJ Forest Adapt

Healthy, Just and CO2-neutral Mobility for All

GEOGRAPHY OF MOBILITY AND CONNECTIONS
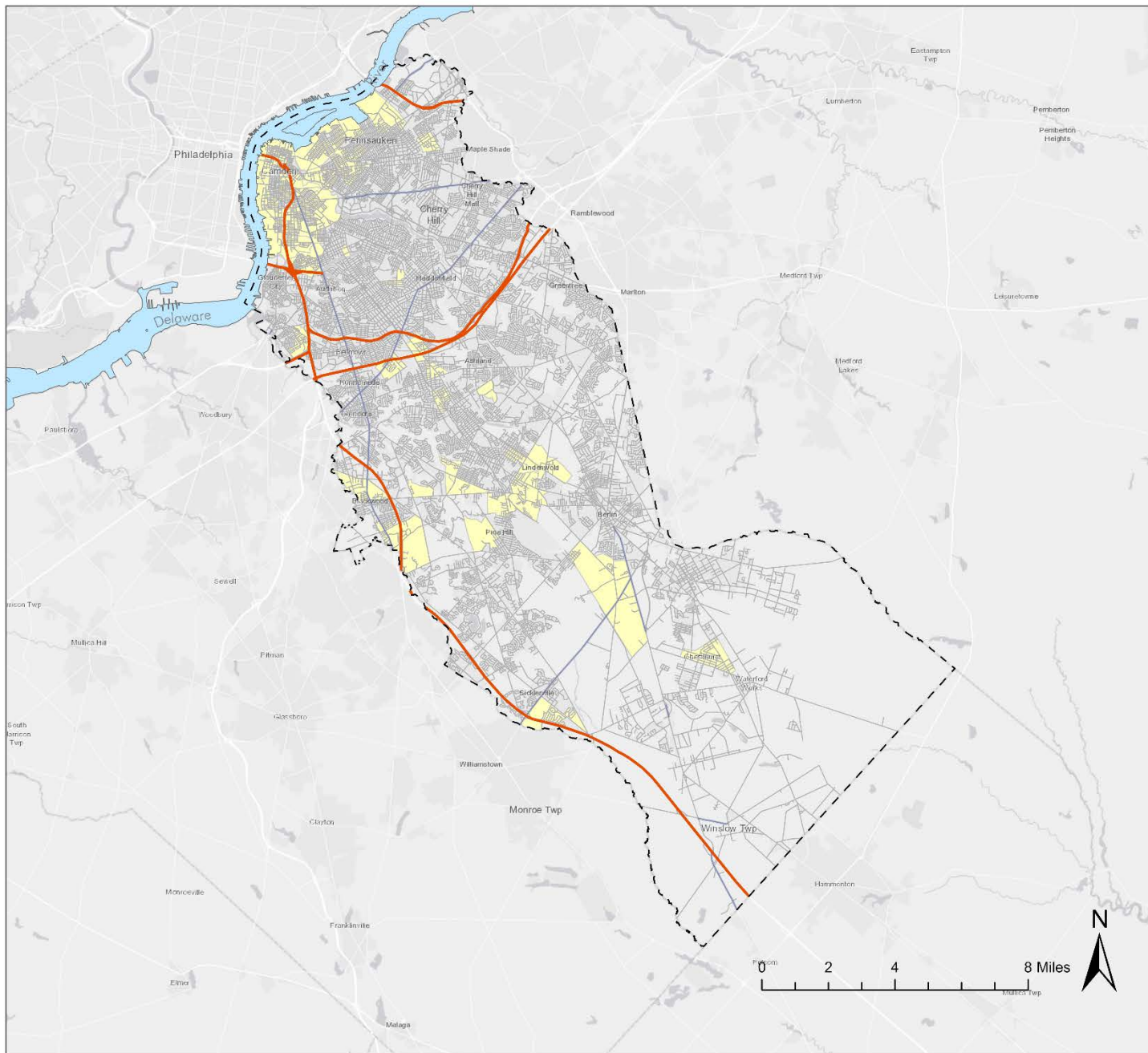
Road Network

Type

— Interstate/US/State highway

— County Route

— Local Road

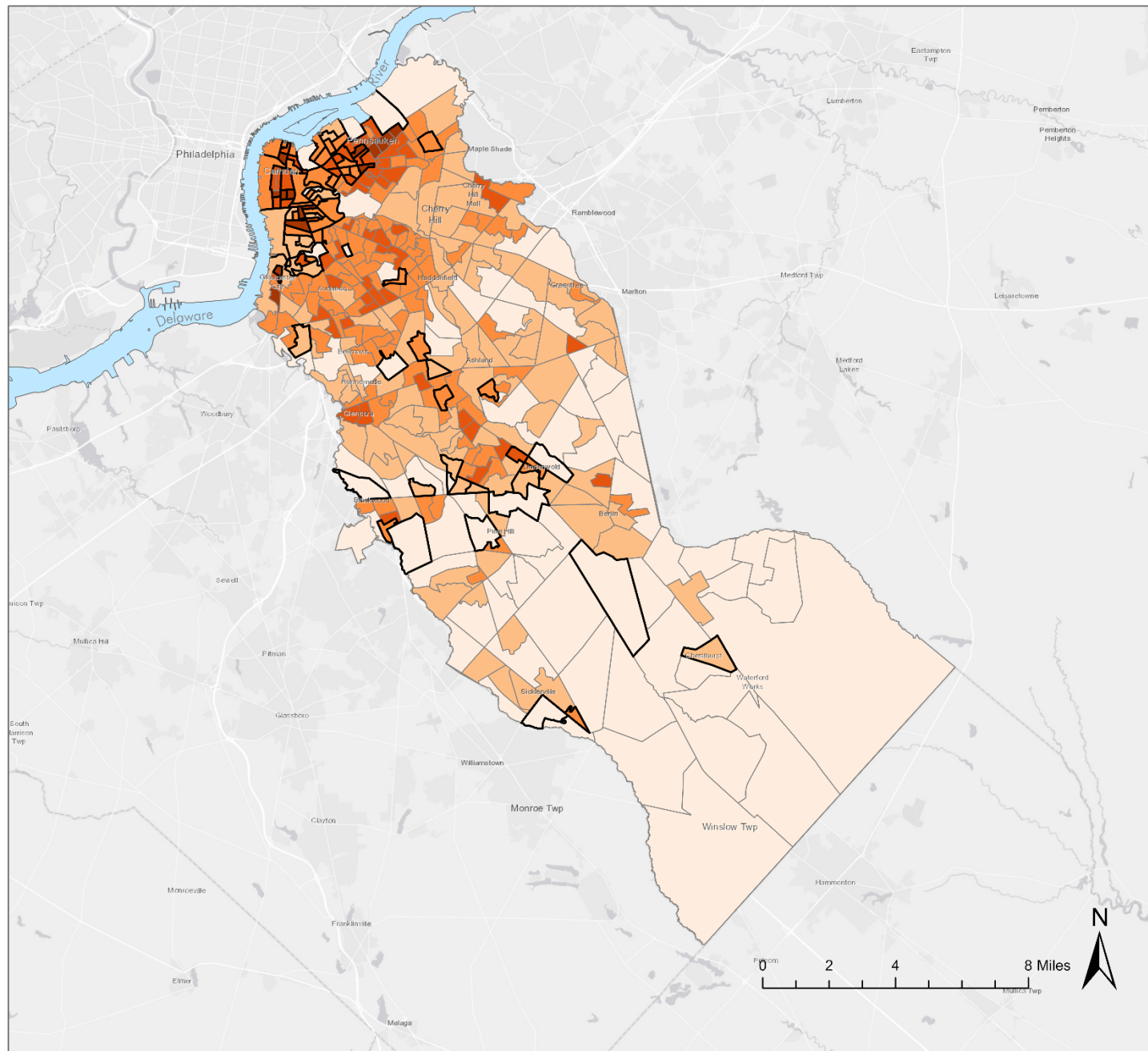▨ Low Income Block Group

Data Source: NJGIN, ESRI base map

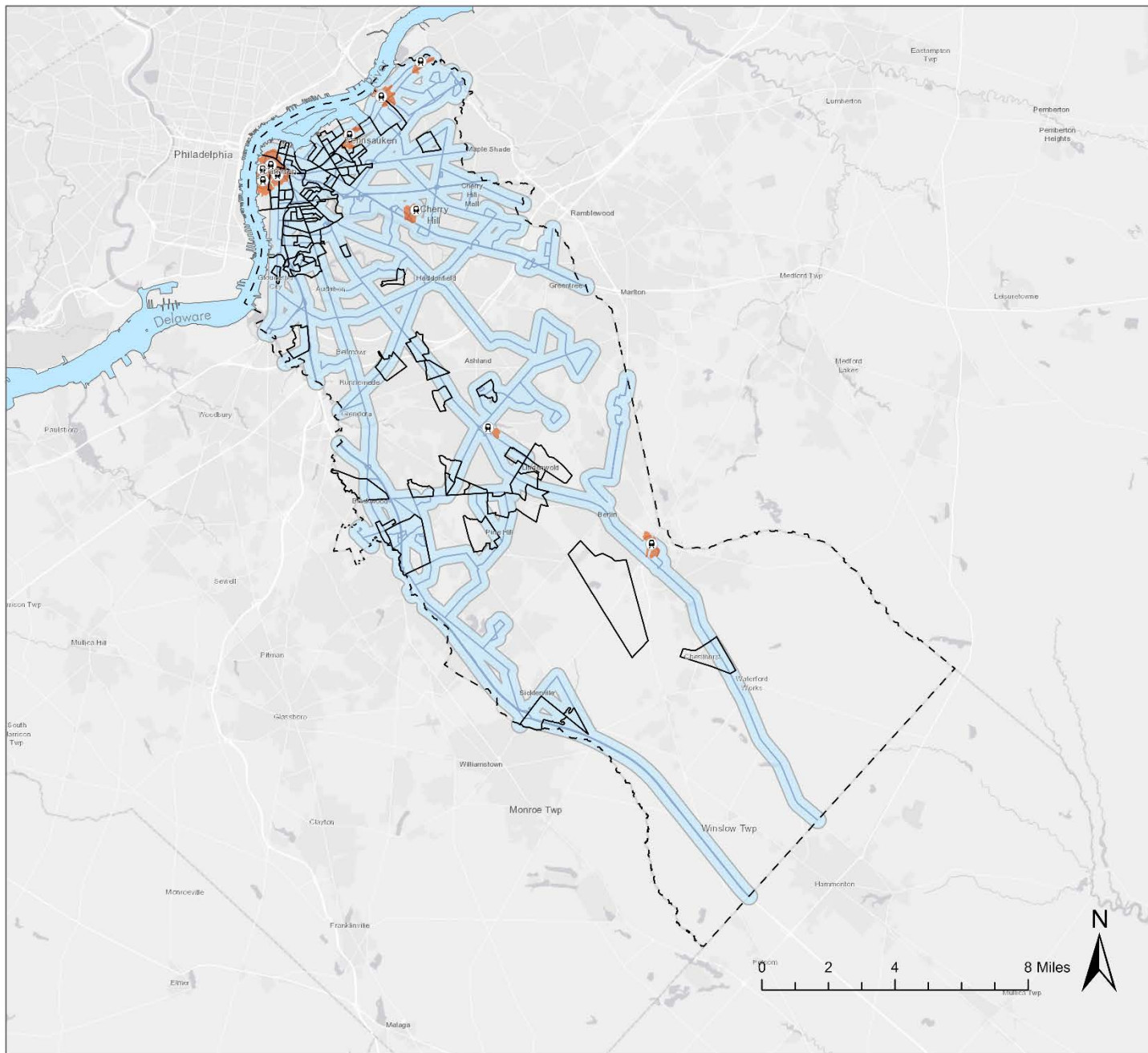**Planning for Healthy, Just, Resilient, and CO2-Neutral Mobility in New Jersey**

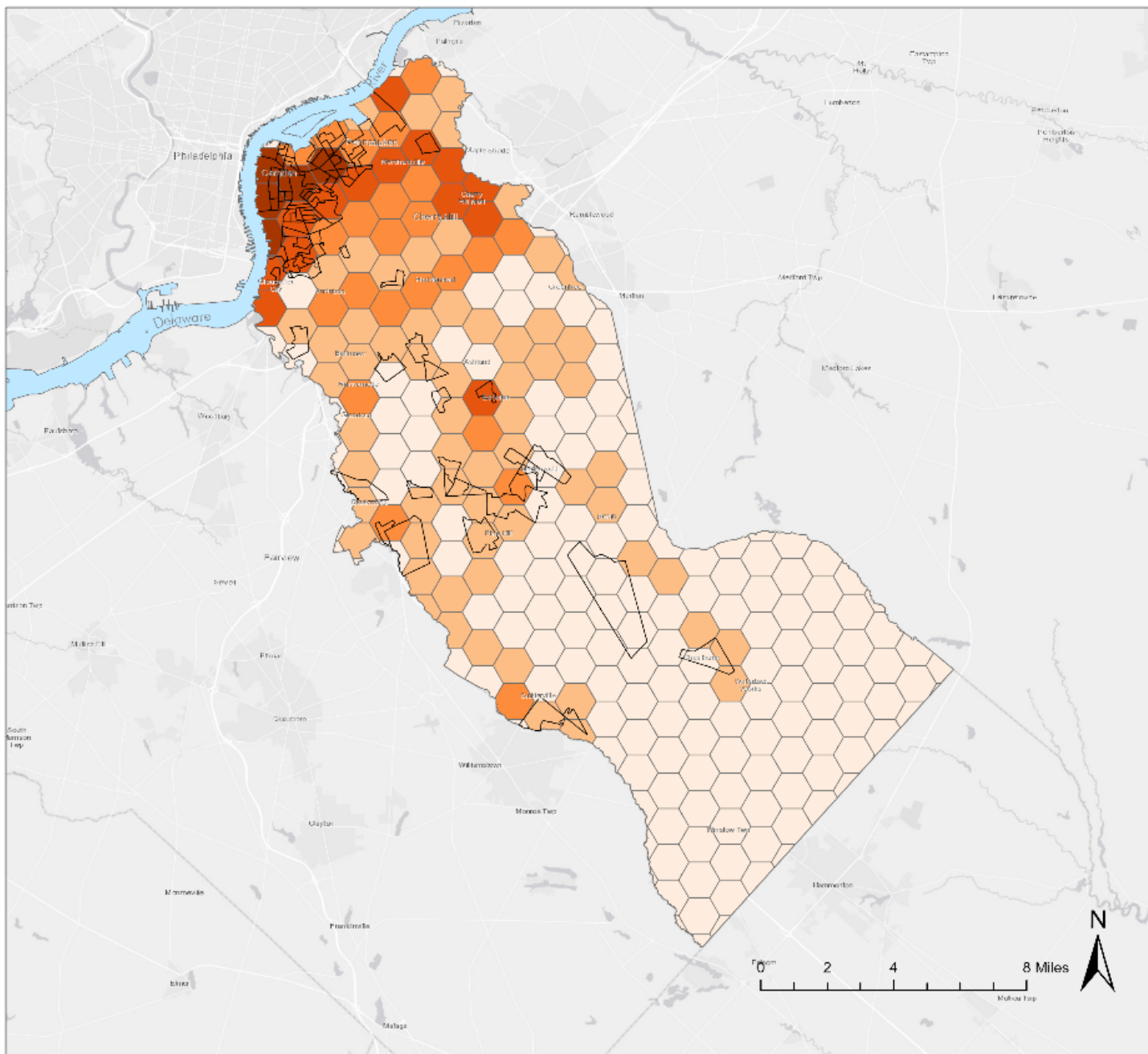Prepared : June 10, 2021
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Intersection Density

Number of Intersections per acre
- 0 - 41
- 42 - 79
- 80 - 123
- 124 - 194
- 195 - 298
- ☐ Low Income Block Group

Data Source: NJGIN, EPA, ESRI base map

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Transit Service Area

- ⊛ Rail Station
- 🟧 Rail Station Service Area
- 🟦 Bus Service Area
- — Bus Route
- ▭ Low Income Block Group

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0   2   4   8 Miles

N

Bus Stop Density

□ Low Income Block Group

Number of Bus Stops per sq. mile

- □ 0 - 5
- ▨ 6 - 17
- ▨ 18 - 35
- ▮ 36 - 64
- ▮ 65 - 164

Note- The area of a hexagon is 1 sq. mile
Data Source: NJGIN, ESRI base map

Planning for Healthy, Just, Resilient, and CO2-Neutral Mobility in New Jersey

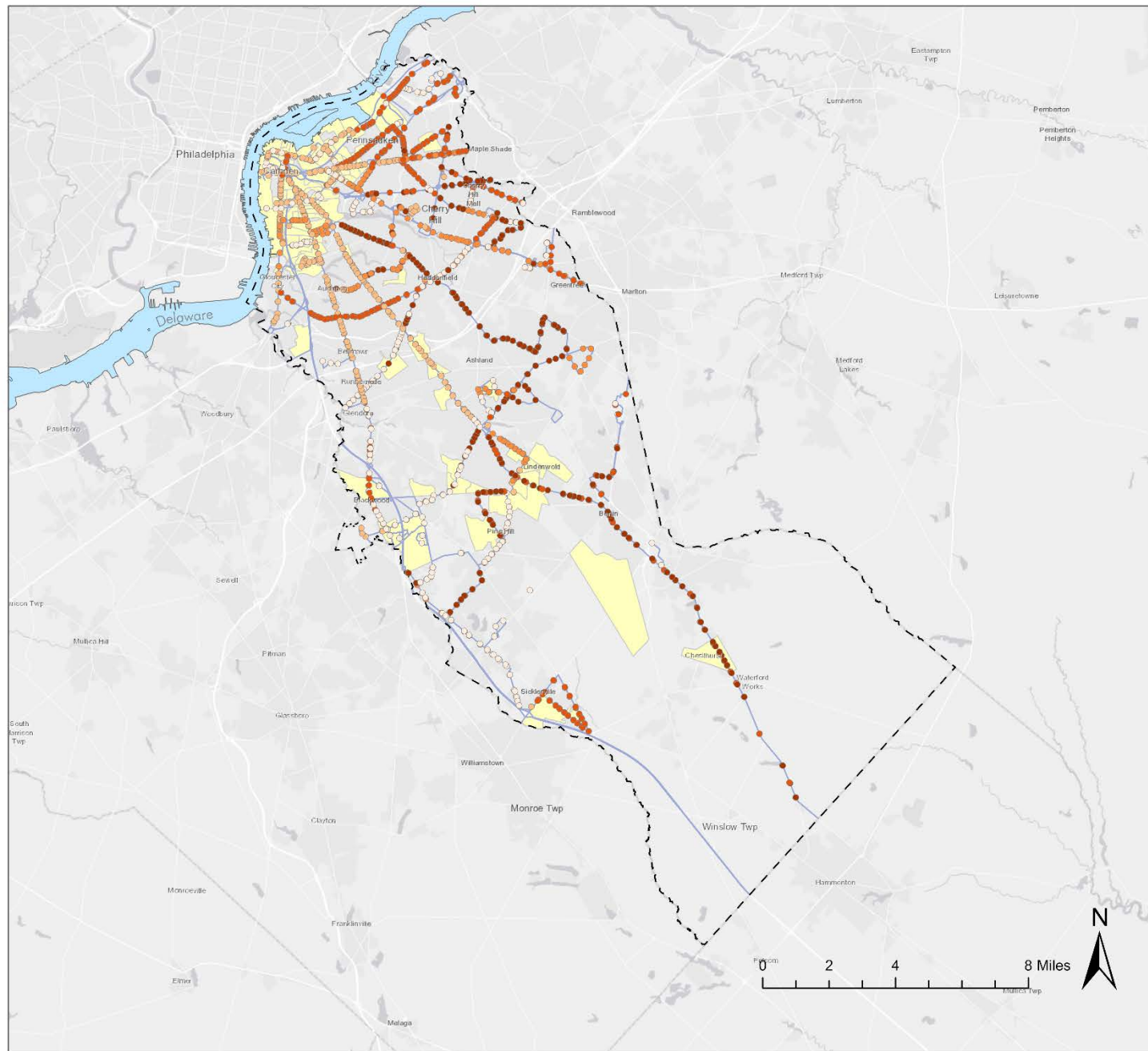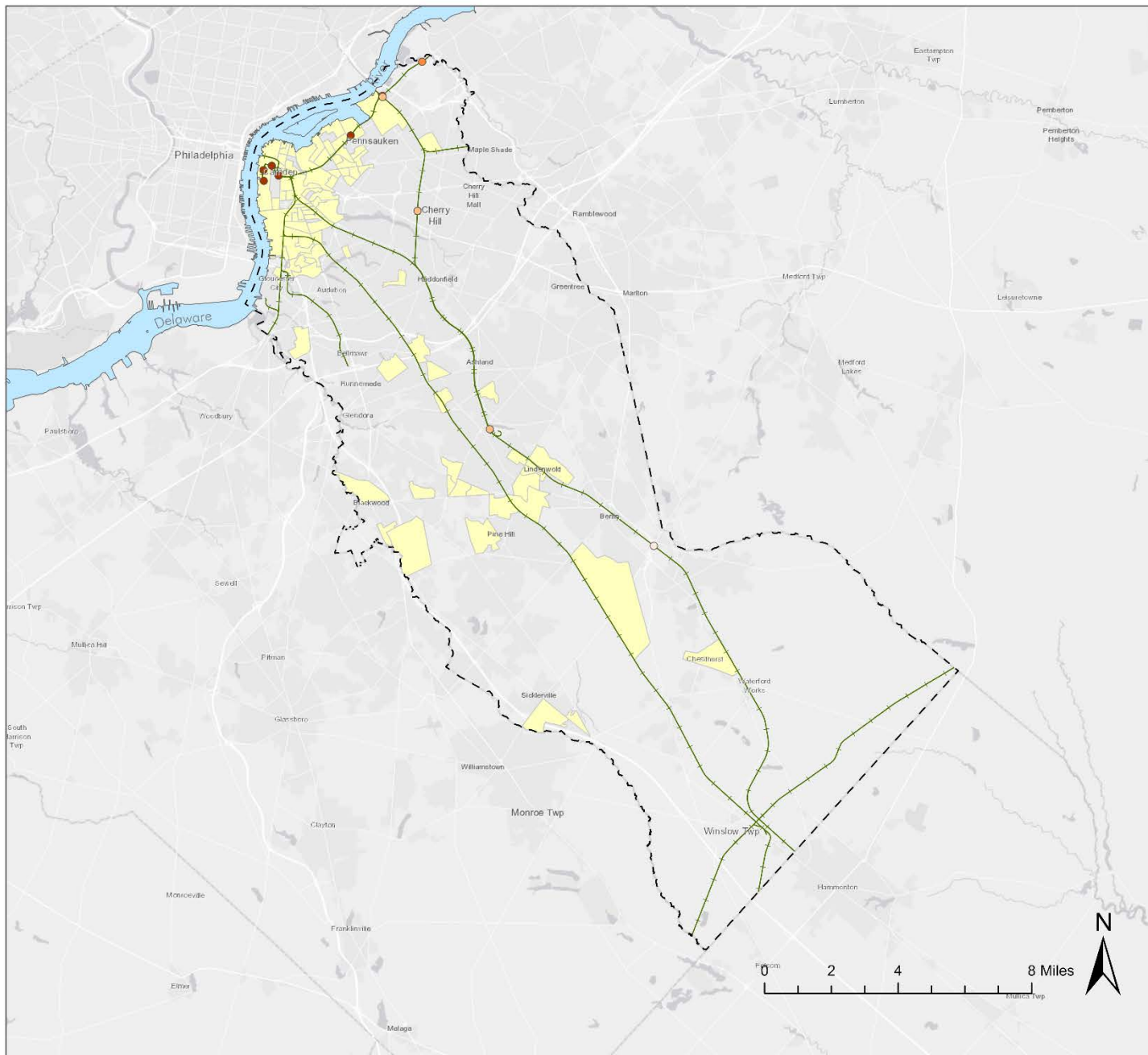Prepared : June 10, 2021
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0 2 4 8 Miles

N

Service Frequency- Bus Stops

Maximum Wait Time (minutes)
- ○ 0 - 15
- 16 - 38
- 39 - 53
- 54 - 70
- 71 - 127
- — Bus Route
- ▢ Low Income Block Group

Note- Weekday Morning Hours- 6:00 - 10:00

Data Source: NJGIN, ESRI base map, NJT Transit GTFS data

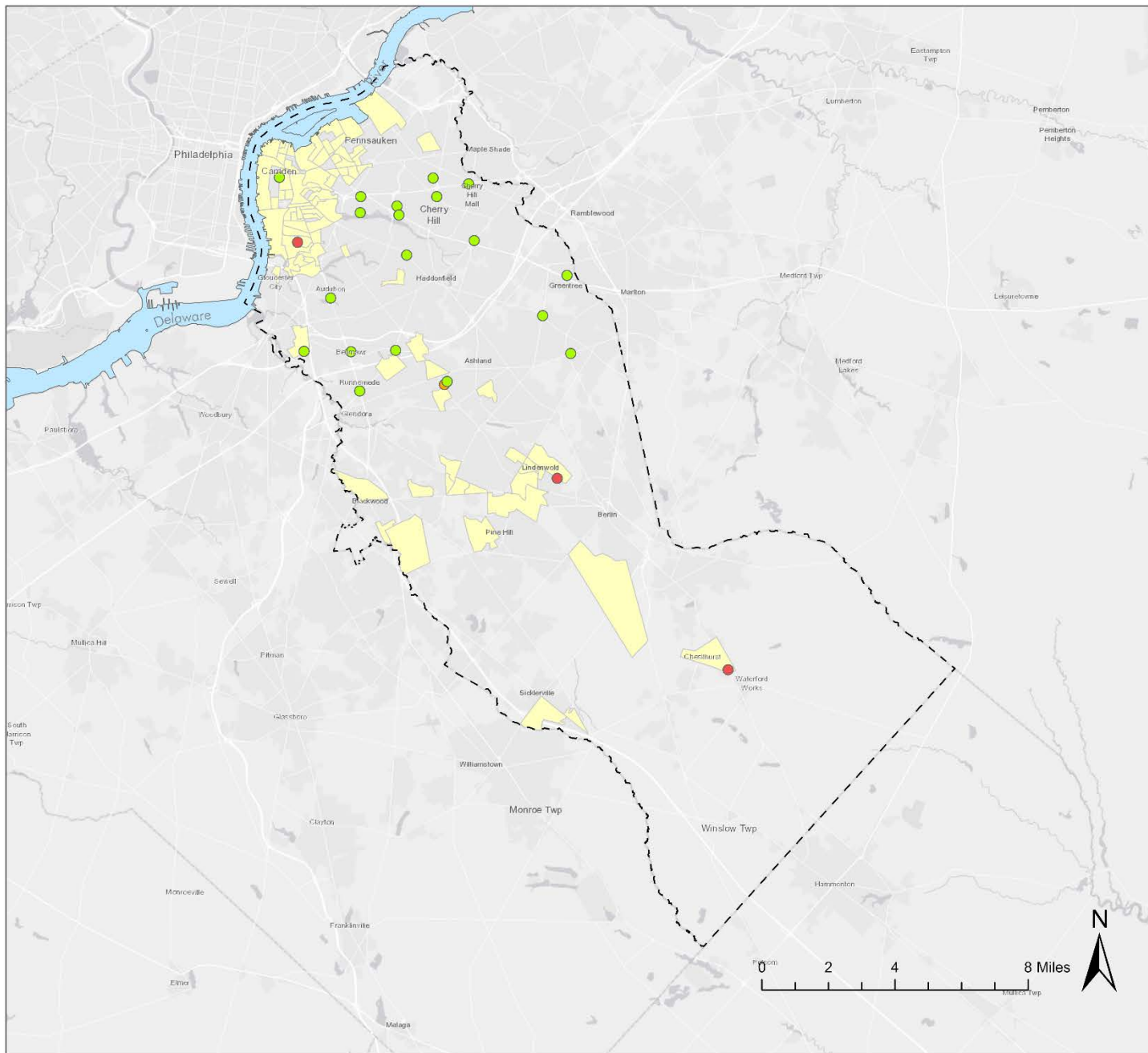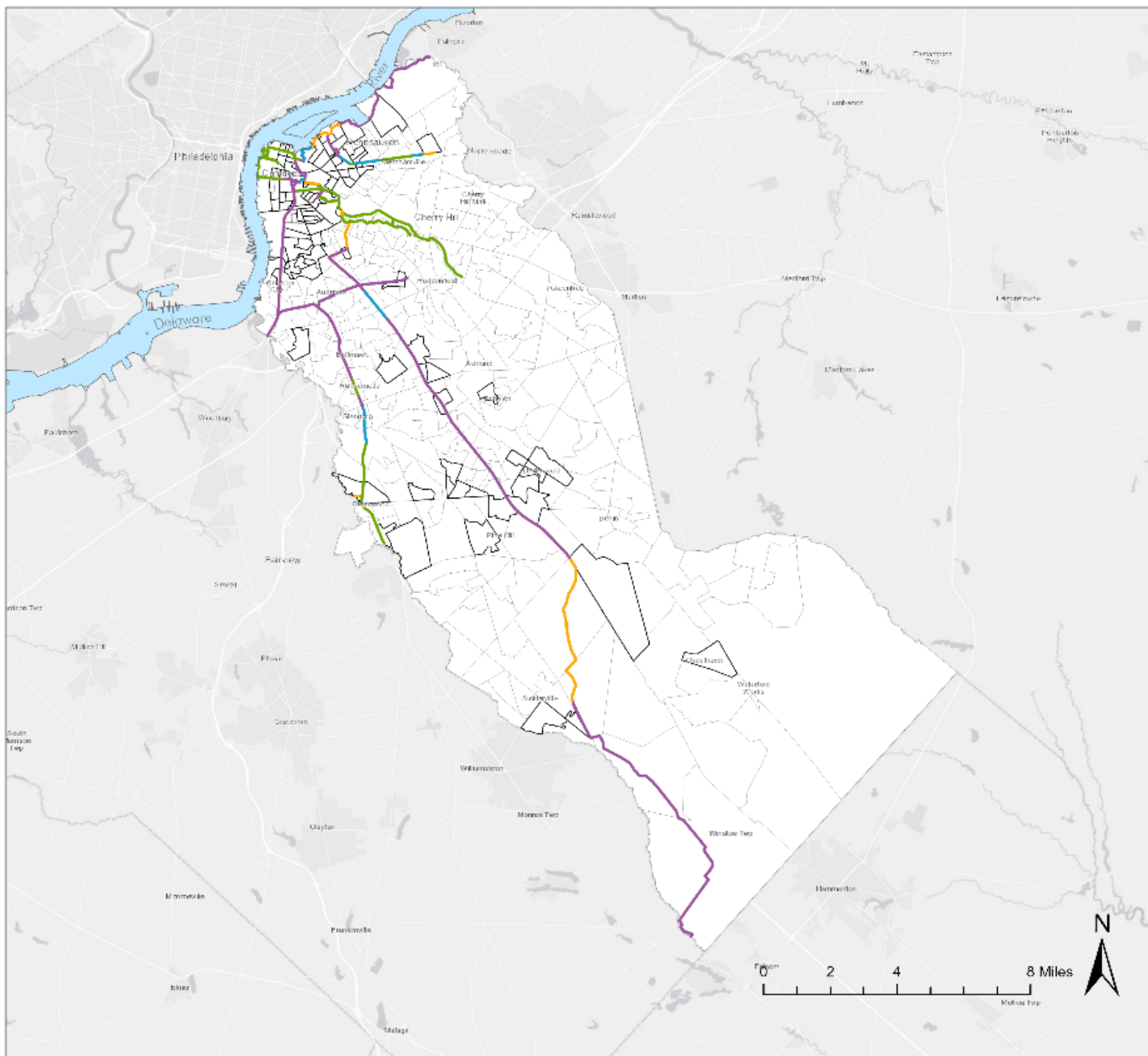**Planning for Healthy, Just, Resilient, and CO2-Neutral Mobility in New Jersey**

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Service Frequency- Rail Stations

Trips Per Hour
- ○ 0 - 1.25
- ○ 1.26 - 1.50
- ○ 1.51 - 6.75
- ● 6.74 - 7.00
- ● 7.01 - 7.25
- ┼ Railroads
- ▢ Low Income Block Group

Note- Weekday Morning Hours- 6:00 - 10:00

Data Source: NJGIN, ESRI base map, NJT Transit GTFS data

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Alternative Fuel Stations

Fuel Type
- CNG
- Electric
- Liquefied Petroleum Gas
- Low Income Block Group

Data Source: NJGIN, Alternative Fuel Data Center, ESRI base map

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Circuit Trails

- Existing
- In Progress
- Pipeline
- Planned
- Low Income Block Group

Data Source: NJGIN, DVRPC, ESRI base map

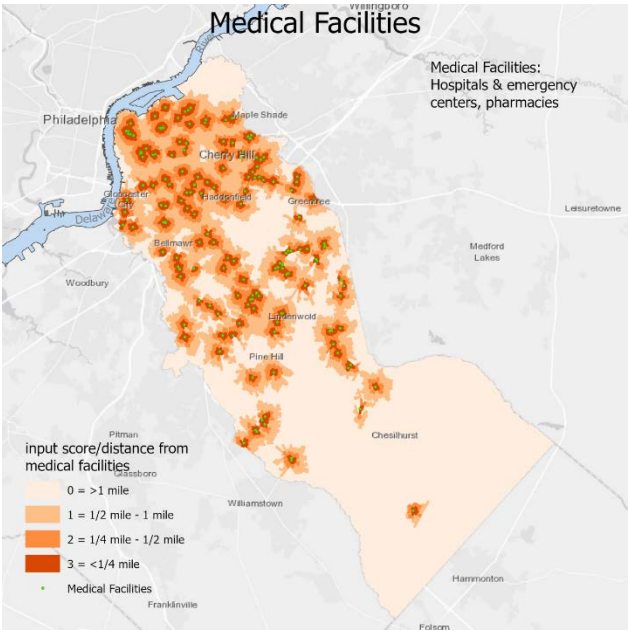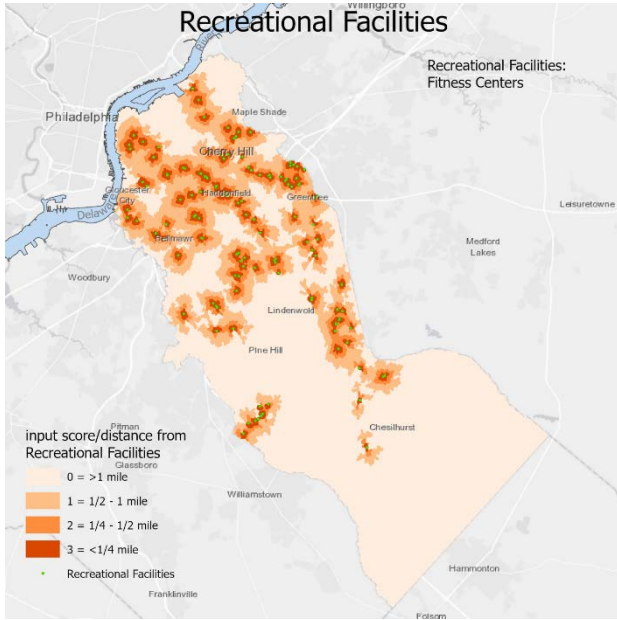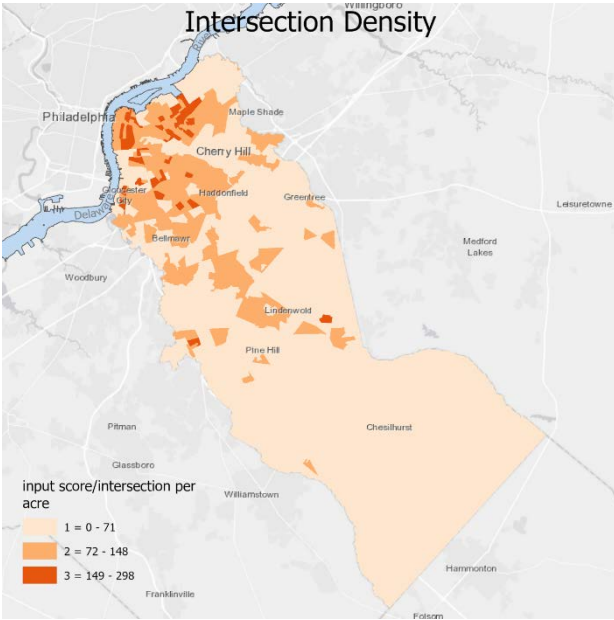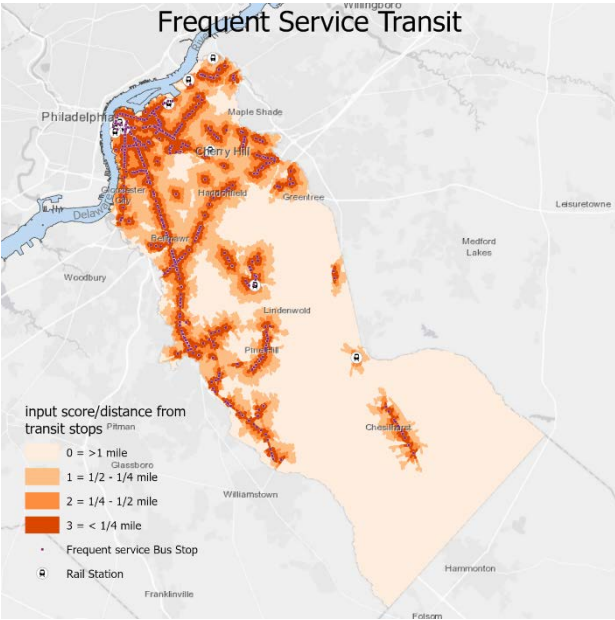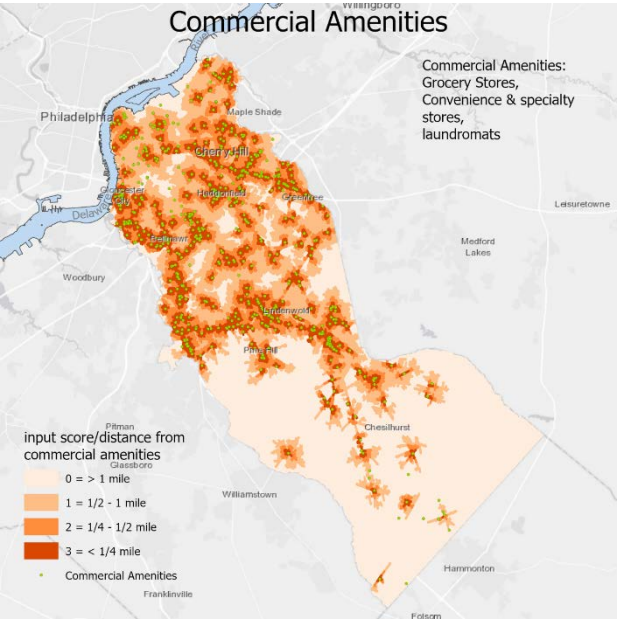**Planning for Healthy, Just, Resilient, and CO2-Neutral Mobility in New Jersey**

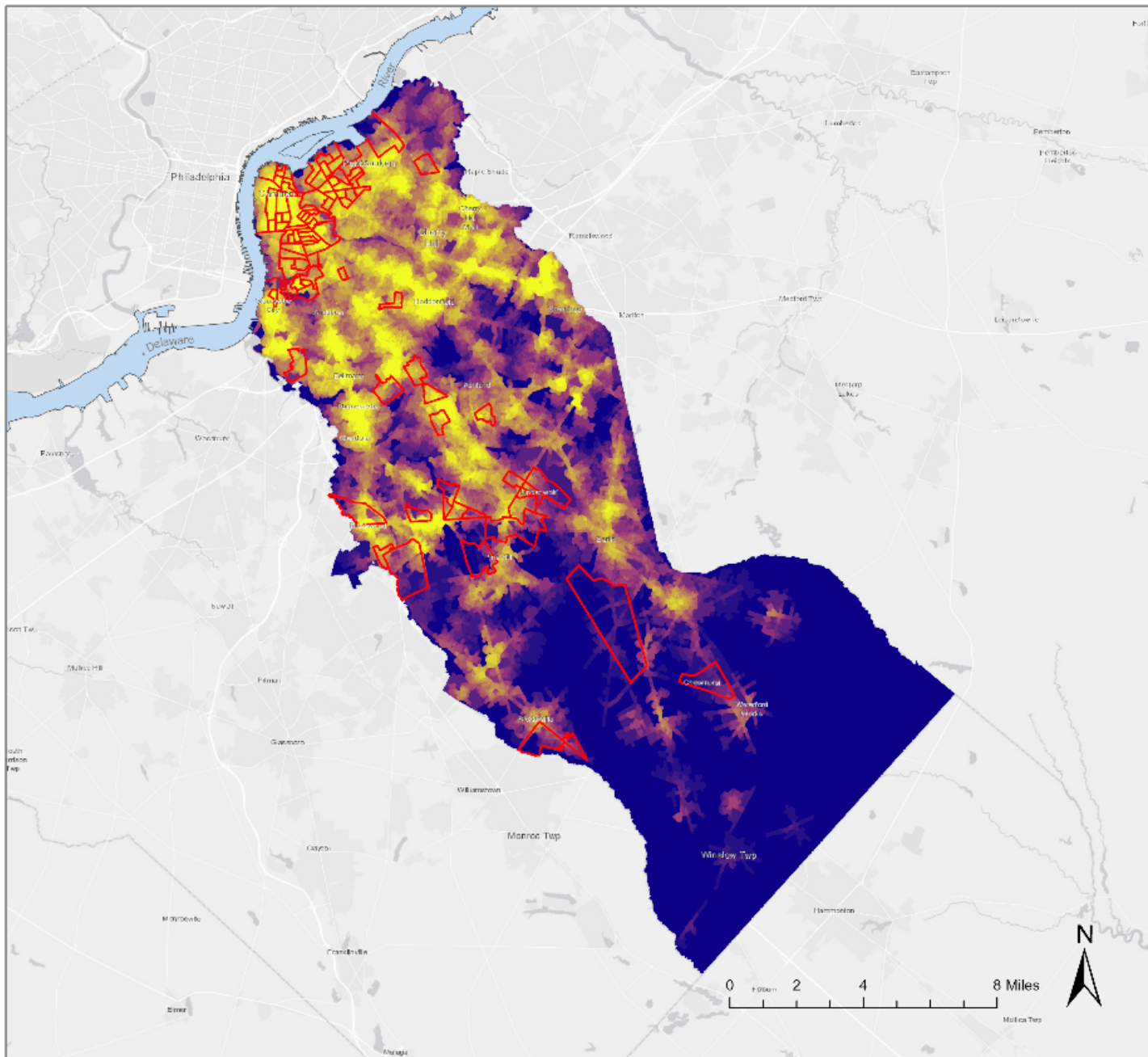Prepared : June 10, 2021
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Measured Accessibility Analysis
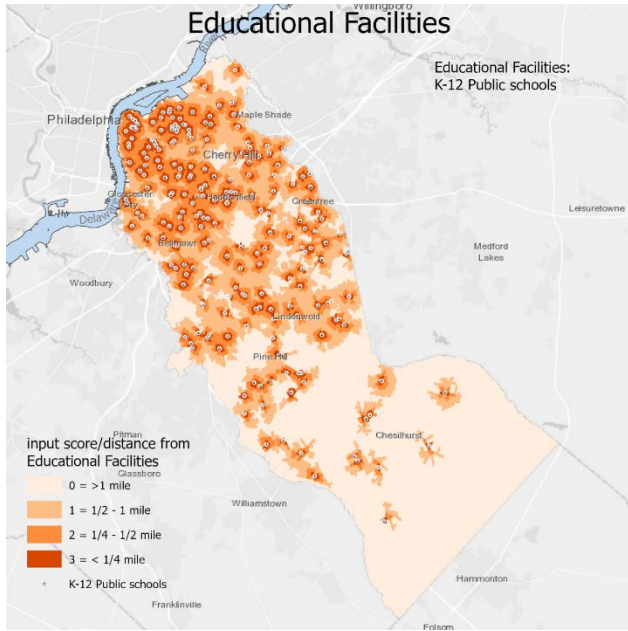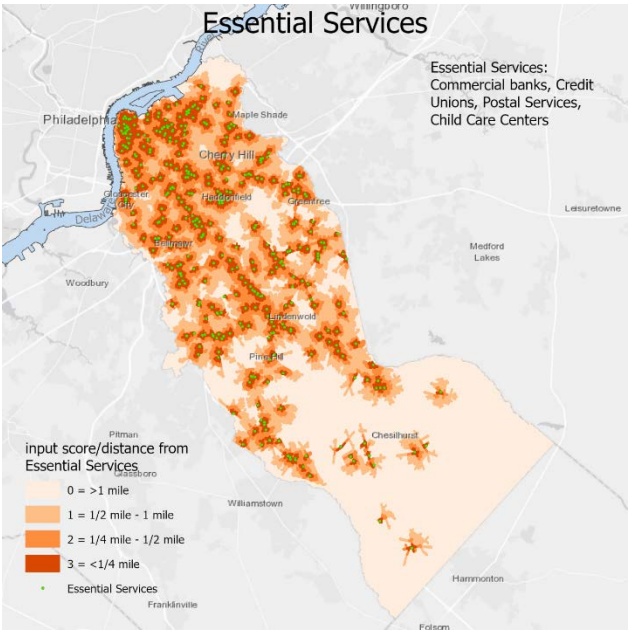
Accessibility

Accessibility

Best Access
Moderate Access
Limited Access

☐ Low Income Block Group

Data Source: NJGIN, ESRI Business Analyst, NJ Transit GTFS data, ESRI base map

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Issues Forum #1

- **Objectives**
  - Explore the components of the multi-goal framework
  - Identify
    - Needs, concerns, and desired long-term outcomes
    - Performance measures
    - What needs to change
    - Potential obstacles and impediments to achieving healthy, just, resilient, and carbon-neutral mobility for all
- **Format**
  - Plenary + breakouts
  - Virtual or in-person depending on conditions
- **Timing** – December 2021- March 2022
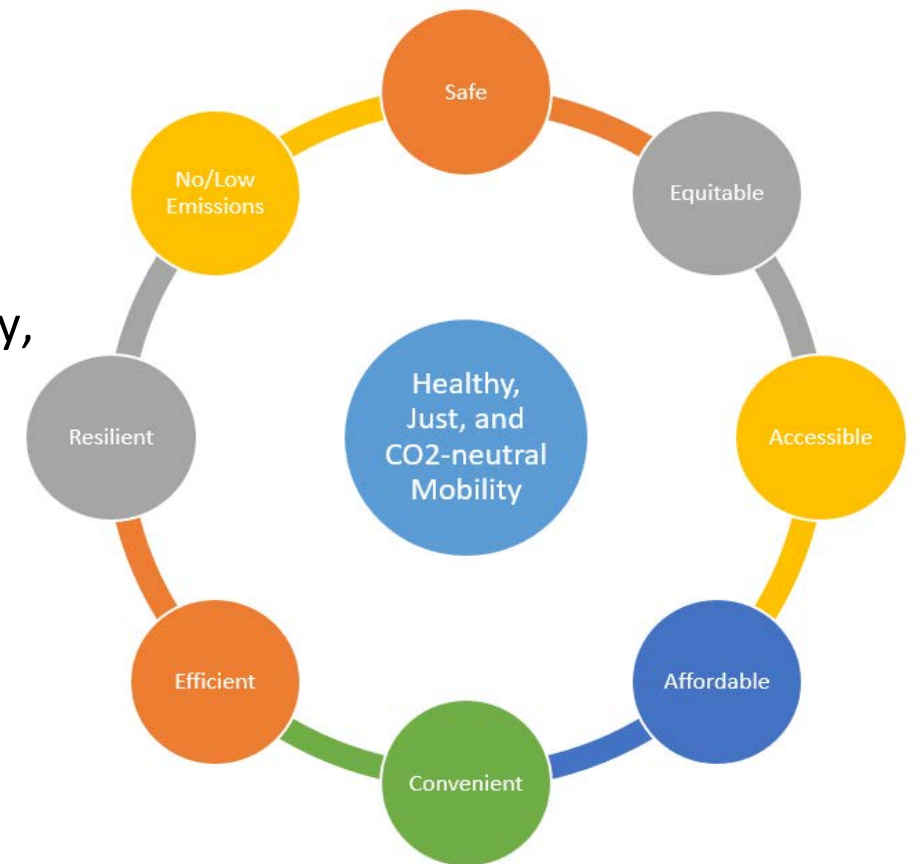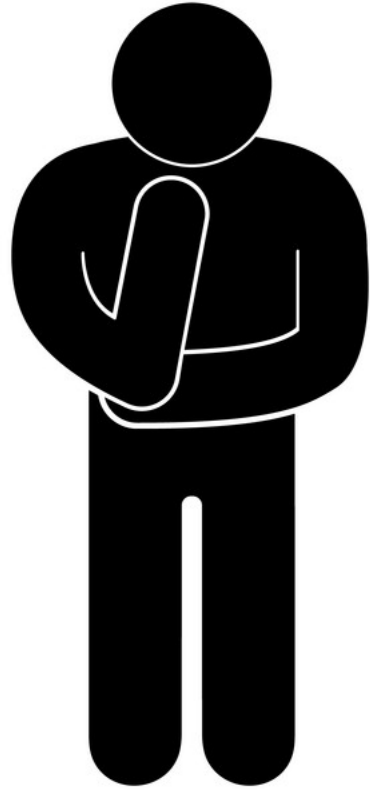
Thoughts?
Questions?
Discussion?