Accessibility & Mobility Strategy Synthesis: **Equity Assessment**

Prepared for the North Jersey Transportation Planning Authority

Prepared by

ICF

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NJTPA
NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

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1| INTRODUCTION

The North Jersey Transportation Planning Authority's (NJTPA) *Accessibility and Mobility Strategy Synthesis* study is updating the region's Congestion Management Process (CMP) to better characterize and communicate system performance regarding accessibility and mobility and to support decision making about practical strategies. This effort has involved the development of eight CMP objectives, along with associated performance measures, which have been used in combination with stakeholder input to identify needs and to assess locations with specific issues or needs.

One of the CMP objectives identified as part of this process is: ***Ensure equitable access for all.*** The accessibility and mobility needs identified in the *Accessibility and Mobility Strategy Synthesis: Needs Assessment* report focused on issues associated with the performance of the transportation system in regard to topics such as transportation system reliability, the usability of public transit, the viability of walking and bicycling, freight movement, and delay, but did not directly address the equity objective or look at the data from the perspective of equity.

This document provides an assessment of accessibility and mobility conditions and performance of the transportation system to understand outcomes for different socio-demographic population groups and to identify particular needs of historically disadvantaged and/or vulnerable population groups. It is intended to consider how transportation systems meet the needs of these populations, who may be disadvantaged as a result of historical discrimination or based on present-day circumstances. While this analysis is valuable for any region, it is especially important for a region like Northern New Jersey with a population that is diverse in race, ethnicity, national origin, and other characteristics.

What is Equity?

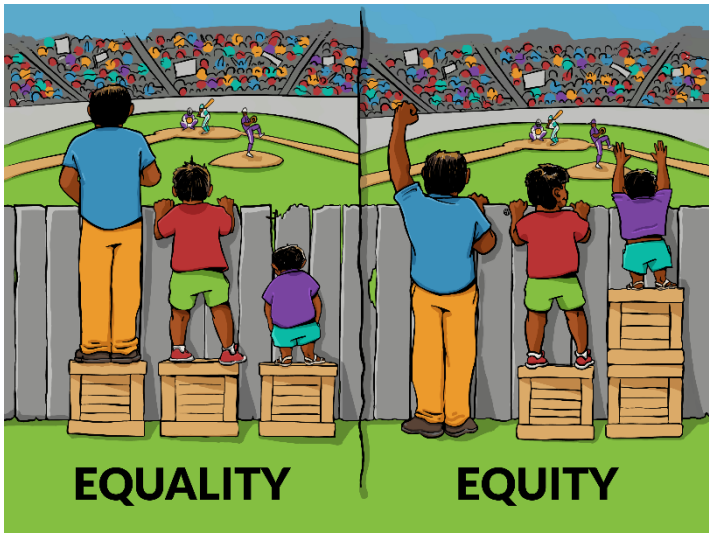
Before exploring equity needs in relation to mobility and accessibility, it is important to understand what is meant by equity, and to consider the different approaches to defining transportation equity. The "Evaluating Transportation Equity" report by the Victoria Transport Policy Institute[1] lays out two primary dimensions of equity:

- **Horizontal Equity** focuses on fair and equal treatment of individuals/groups in the distribution of resources and costs. This approach often is considered in regard to who pays their fair share ("get what they pay for and pay for what they get") in terms of fees and taxes, as well as distribution of resources or benefits, to avoid the favoring of one individual/group over other.
- **Vertical Equity** (also called social justice) recognizes that individuals/groups differ in their mobility ability and needs by virtue of special needs, impairments, or to compensate for overall inequities facing economically and/or socially disadvantaged groups.

[1] Todd Litman (Victoria Transport Policy Institute). June 2020. Evaluating Transportation Equity: Guidance for Incorporating Distributional Impacts in Transportation Planning. https://vtpi.org/equity.pdf

An image that has been used to present the concept of vertical equity or social justice by the Interaction Institute for Social Change appears in Figure 1. It highlights the distinction between treating everyone equally vs. providing equitable solutions for people, accounting for their unique needs. As shown in this image, some individuals may be disadvantaged due to their individual circumstances, and an equitable solution is one that is tailored to meet these needs so that everyone can have a positive outcome.

Figure 1. Illustrating Equality vs. Equity (Source: Interaction Institute for Social Change; Artist: Angus Maguire)



Equity is related to but distinct from Environment Justice analysis, which seeks to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations (required under Executive Order 12898 for Federal programs, policies, and activities). It is also related to Title VI of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color, or national origin in programs receiving Federal assistance.

In defining equity, the Federal Highway Administration notes that:

> *Equity in transportation seeks fairness in mobility and accessibility to meet the needs of all community members. A central goal of transportation equity is to facilitate social and economic opportunities by providing equitable levels of access to affordable and reliable transportation options based on the needs of the populations being served, particularly populations that are traditionally underserved. This population group includes low income individuals, minority individuals, elderly persons, children, people with LEP [limited-English proficiency], and/or persons with disabilities…An equitable transportation plan considers the circumstances that impact a community's mobility and connectivity needs, and this information is used to determine the measures needed to develop an equitable transportation network.*[2]

What does this Technical Report Assess and What does it Not Assess?

This technical report uses the CMP performance measures and associated data on transportation system performance outcomes to assess differences in travel patterns and identify potential needs across different population groups. The results are displayed – in **Sections 2 and 3** of this report – primarily in charts and maps for the following indicators of accessibility and mobility:

- Bicycle/Pedestrian Crashes with Fatalities or Serious Injuries
- Access to Frequent Transit
- Travel Time to Work
- Number of Jobs Accessible by Transit

[2] Federal Highway Administration, Environmental Justice program website, https://www.fhwa.dot.gov/environment/environmental_justice/equity/.

- Commute Needs (based on an analysis of transit services in relation to locations of jobs and housing for identified population groups)
- Congested Roadways

The analysis considers these issues in relation to different socio-demographic groups, including minority populations, low-income households, transit-dependent populations (zero car households), foreign-born populations, limited English proficiency (LEP) populations, persons with disabilities, and persons over the age of 65. Some of these characteristics are combined in a Social Vulnerability Index, developed by the Centers for Disease Control and Prevention, which accounts for these and other factors in one index. [The definitions of these population groups and SVI are provided further below].

The objective of this technical report is to identify accessibility and mobility needs for disadvantaged and/or vulnerable population groups that may not be revealed without looking at the data from an equity lens. It is important to note, however, that ***the analysis of transportation system performance data is insufficient to identify all the issues facing vulnerable population groups to support equitable access***.

As an example, the data analysis provides information on the "number of jobs accessible by transit", and maps highlight location with limited job accessibility in relation to the share of vulnerable population groups. Because many vulnerable populations live in urban areas with frequent transit services, the analysis generally does not find that *most* locations with large shares of vulnerable populations face undue burdens in terms of access to jobs by transit in comparison to neighborhoods in suburban and rural areas with fewer vulnerable populations. However, vulnerable population groups often face unique challenges. For instance, zero car households often face significant challenges accessing jobs in suburban locations, which households with vehicles may take for granted. Similarly, lower-income workers in some job sectors (e.g., shift workers, those in service industries such as restaurants or retail) may face challenges accessing jobs by transit even in areas with high-levels of transit services if those services do not operate as frequently outside of traditional commute hours when they need the service.

As a result of these limitations, the data analysis is primarily used to identify equity needs by identifying areas with high numbers of vulnerable populations that have *relatively* poor service levels or poor performance outcomes, rather than comparing absolute levels across different socio-demographic groups. In addition, ***a questionnaire was distributed to equity stakeholders to gather more specific information about unique challenges and needs that do not show up based on an analysis of these accessibility and mobility performance measures***. Those inputs from stakeholders are highlighted in **Section 4** of this report and provide important insights on the needs and issues facing vulnerable populations to support the objective of equitable access for all.

Section 5 provides an overall summary of needs identified to support equitable access. Most of these needs relate to and expand upon needs and issues identified in the Needs Assessment Report (e.g., reverse commute challenges, pedestrian safety/infrastructure needs). In addition, two additional areas of need are identified (affordability, access to information), along with promising strategies and approaches to address the needs and support equitable access.

Appendices provide more detail on the analysis of geographic data and performance measures, as well as inputs from equity stakeholders.

2| REGIONAL DEMOGRAPHICS AND TRAVEL PATTERNS FOR EQUITY GROUPS

This section provides summary demographics, as well as information on mode usage, for different socio-demographic groups within the NJTPA region.

Regional Population Characteristics

Table 1 identifies the equity groups considered for this study, and their population in the NJTPA region.

Table 1. Equity populations in the NJTPA region at a glance (Source: ACS 5-year 2014-2018)

Equity Group Description	Equity Group		Sample Size		Equity Group Population Percentage
	Criteria	Population	Sample Size Description	Total Population	
Minority population	Minority Population	3,088,823	Total Population	6,689,517	46.2%
Limited English Proficiency population	Speak Language other than English at home	2,187,905	Population aged 5 years and over	6,291,787	34.8%
Foreign-born population	Foreign-born population	1,705,611	Total Population	6,689,517	25.5%
Low-Income Households	Below 200% of poverty line	1,521,926	Population with Poverty Status Determined	6,575,923	23.1%
Age 65 or older population	Aged 65 and above	1,028,697	Total Population	6,689,517	15.4%
Transit dependent households	Households with no vehicle	295,043	Total Households	2,411,954	12.2%
People with disabilities	With a Disability	642,581	Total Civilian Non-Institutionalized Population	6,628,357	9.7%

Minorities, as defined by the US Census Bureau, are composed of several different race categories—Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, Other, and Two or More Races. Hispanics are also considered a minority, though Hispanic, or Latino, is defined by the US Census Bureau as an ethnicity rather than a race and persons who report themselves as Hispanic/Latino can be of any race. Table 2 provides the NJTPA region population by race and ethnicity used to calculate the total minority population.

Table 2. Population distribution by race and ethnicity in the NJTPA region (Source: ACS 5-year 2014-18, Table B03002)

No.	Race/Ethnicity	Population	Percentage
1.	White*	3,600,694	53.8%
2.	Black/African American*	785,120	11.7%
3.	Asian American*	703,125	10.5%

4.	American Indians and Alaskan Natives*	6,967	0.1%
5.	Native Hawaiians and other Pacific Islanders*	1,749	0.02%
6.	Other*	31,790	0.5%
7.	Two or more race*	99,644	1.5%
8.	Hispanic and Latino Americans	1,460,428	21.8%
Total Minority Population Sum of Items 2-8		**3,088,823**	**46.2%**
Total Population Sum of Items 1-8		**6,689,517**	**100.0%**

*Non-Hispanic and Latino Americans

Figure 2 shows the distribution of minority population by race and ethnicity for each of the 13 counties in the NJTPA region. Overall, the urban core and surrounding suburban regions are much more diverse as compared to the more rural counties in North Jersey. Hudson and Essex counties have the highest share of minority population.

- Hudson and Passaic counties have the highest proportion of population with a Hispanic/Latino origin.
- Essex and Union counties have the highest share of African American population.
- Middlesex county has the highest proportion of Asian American population.

Figure 2. County-level distribution of minority population by race/ethnicity (Source: ACS 5-year 2014-18, Table DP05)

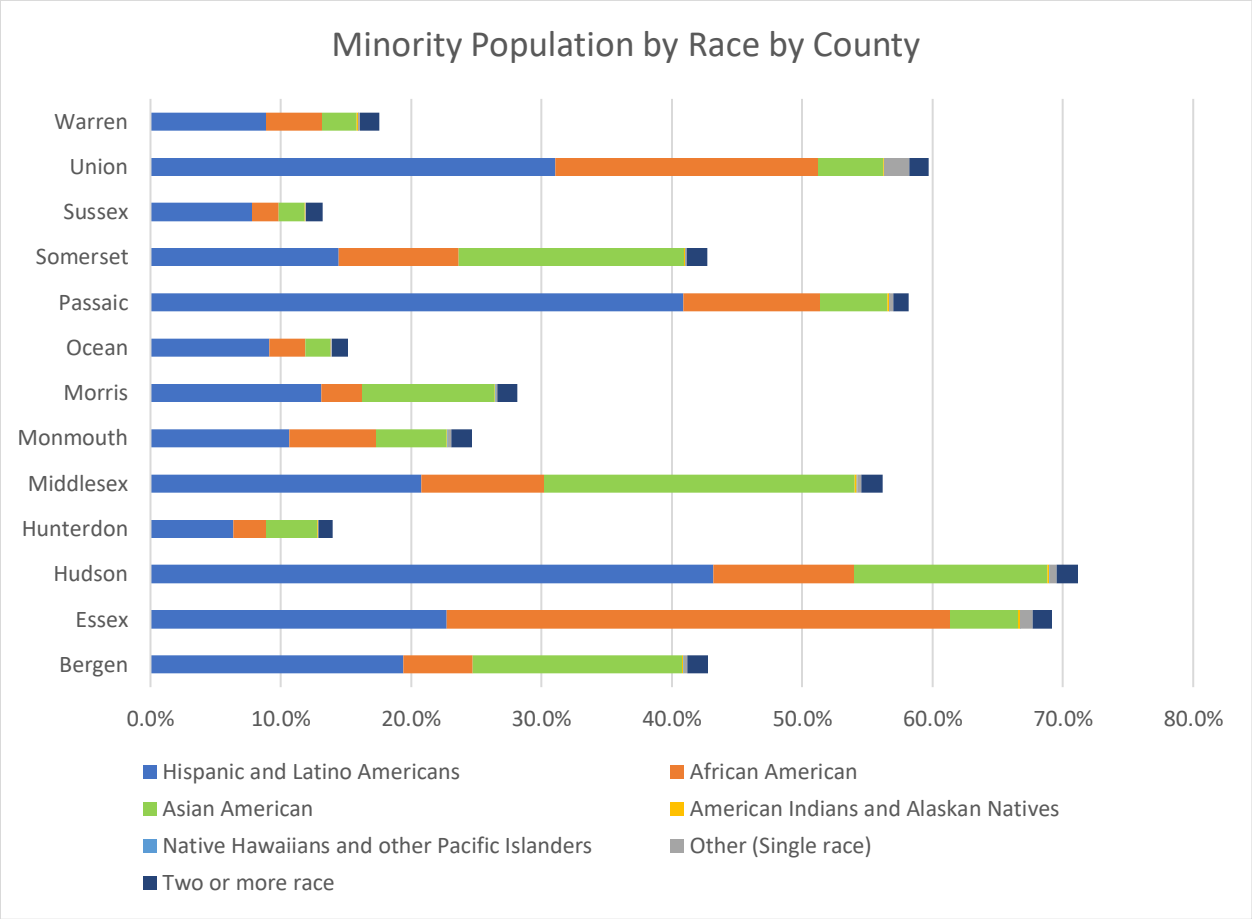
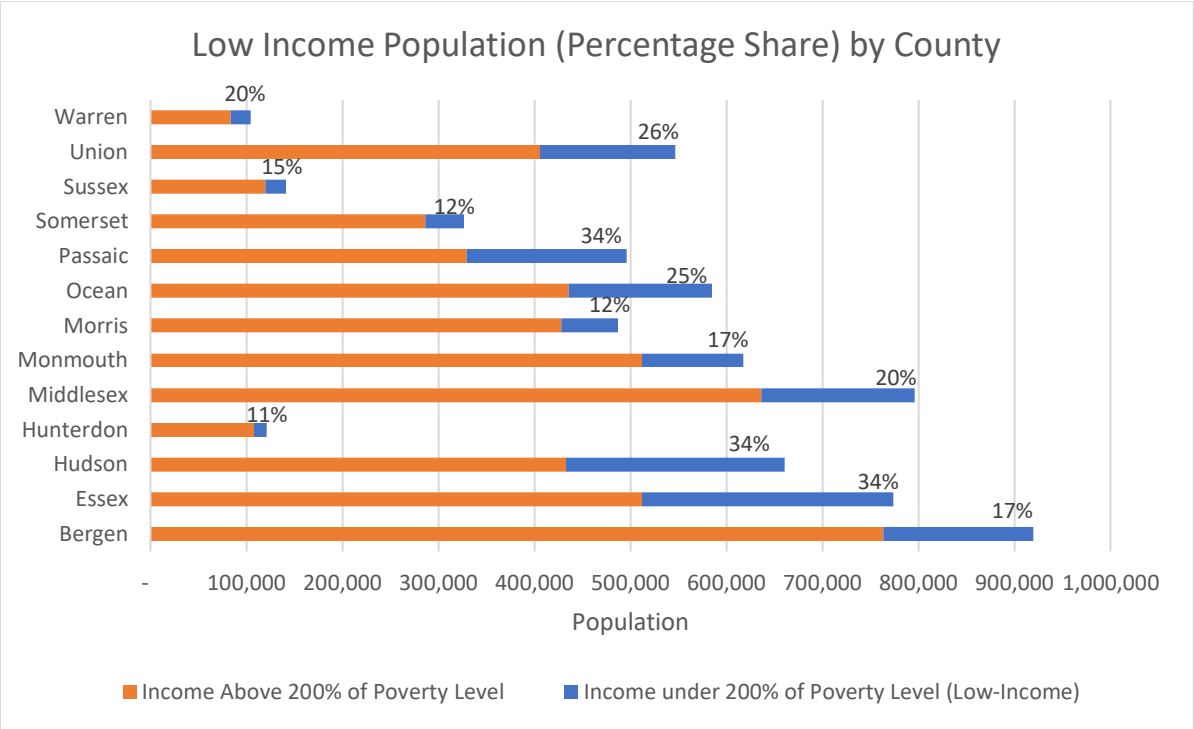


Figure 3 illustrates the low-income population and their share by county in the NJTPA region. Passaic, Essex and Hudson counties have the highest share of low-income population (34%).

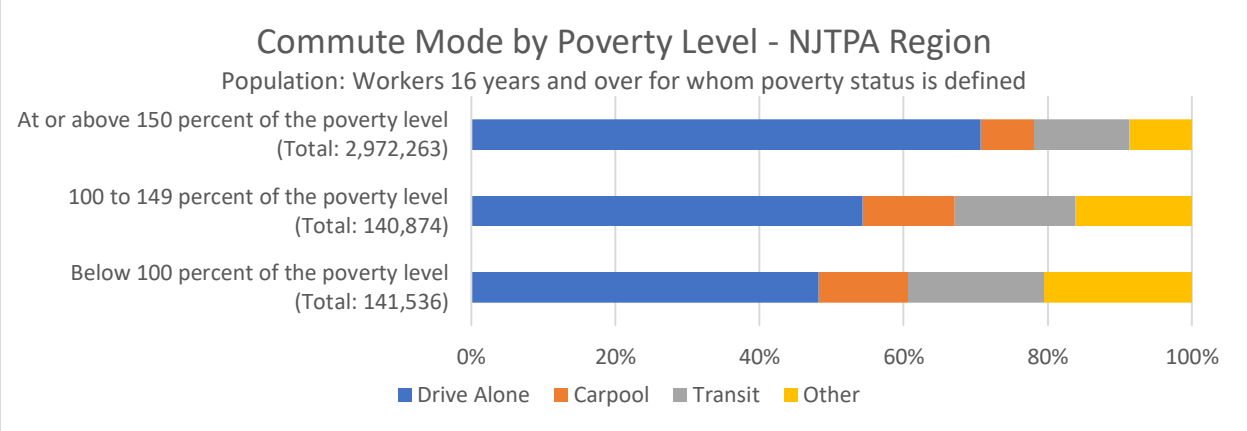
Figure 3. Population distribution by income level (Source: ACS 5-year 2014-18, Table S1701)



Commute Mode Shares by Regional Population Characteristics

Figures 4-7 show the commute mode shares of different population groups within the NJTPA region. Overall, vulnerable populations – those with low incomes, those who speak English less than well, foreign-born, and minority populations – tend to have a significantly higher share of commuting by transit, carpool, and other means (e.g., bicycling, walking) rather than driving alone, compared to other population groups.

Figure 4. Commute mode by Income level (Source: ACS 5-year 2014-18, Table S0802)



Note: The distribution of mode choice is only available by the income groups shown in the chart. The detailed analysis in the later sections of this document is performed using 'low-income' as 200 percent of the poverty level.

Figure 5. Commute mode by Language spoken (Source: ACS 5-year 2014-18, Table S0802)

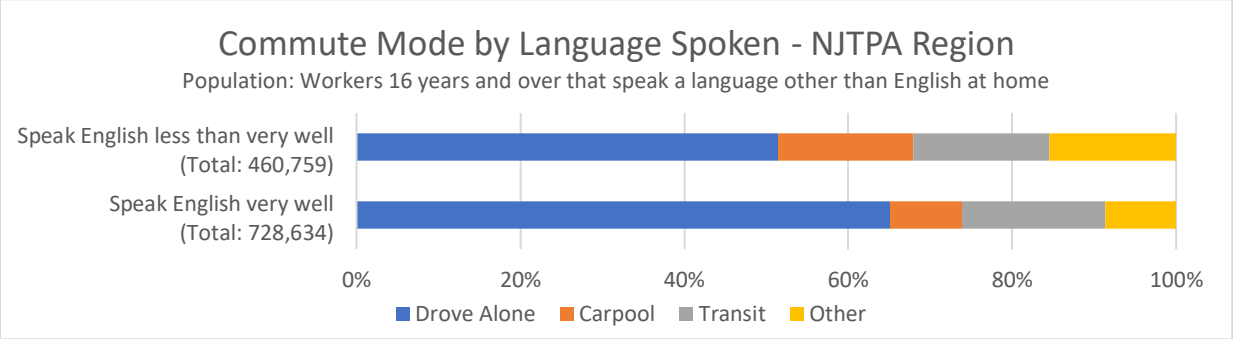


Figure 6. Commute mode by Place of birth (Source: ACS 5-year 2014-18, Table S0802)

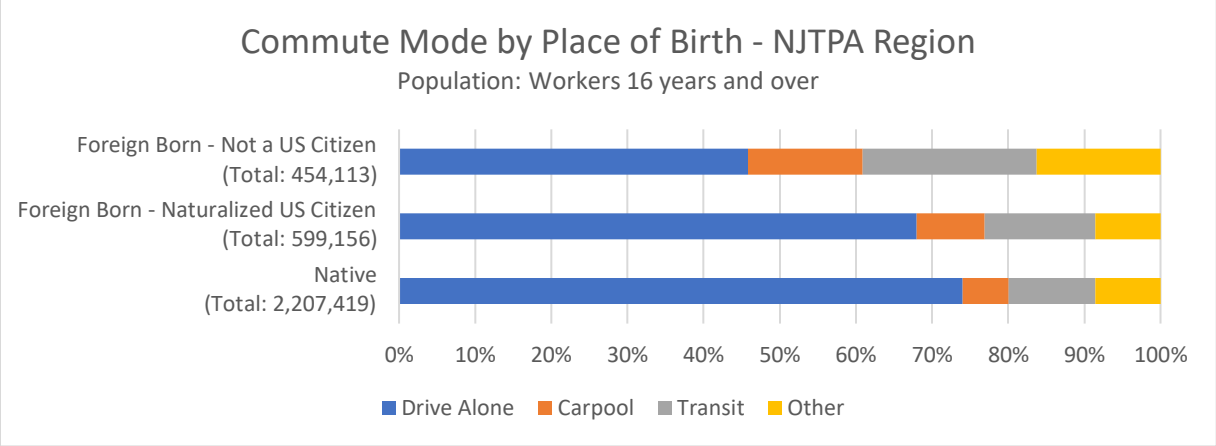
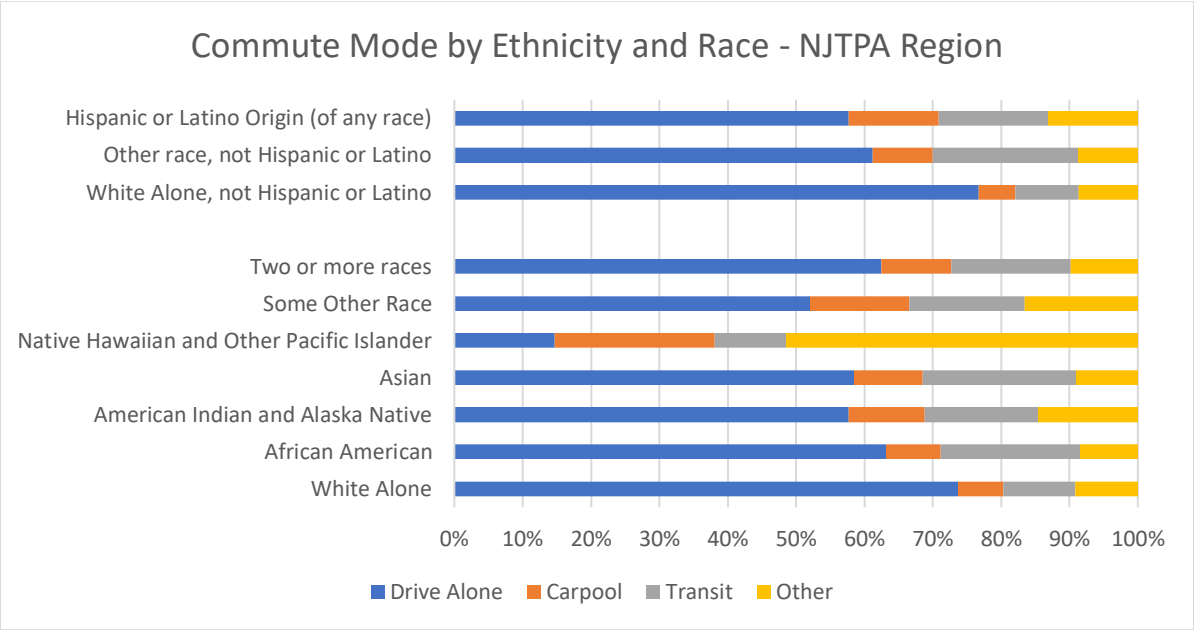


Figure 7. Commute mode by Race (Source: ACS 5-year 2014-18, Table S0802)



3| ACCESSIBILITY AND MOBILITY NEEDS WITH EQUITY CONSIDERATIONS, BASED ON SYSTEM PERFORMANCE DATA

This section identifies mobility and accessibility needs for equity populations based on an analysis of transportation performance measures. A single metric called the *Social Vulnerability Index (SVI)* has been adopted in this section as an overarching representation of different equity groups. SVI is a comprehensive ranking scale developed by the Centers for Disease Control and Prevention[3] (CDC) using 15 individual metrics across four themes, as shown below:

- Socioeconomic Status: Below Poverty, Unemployed, Income, No High School Diploma
- Household Composition and Disability: Aged 65 or Older, Aged 17 or Younger, Civilian with a Disability, Single-Parent Households
- Minority Status and Language: Minority, Speaks English "Less than Well"
- Housing Type and Transportation: Multi-Unit Structures, Mobile Homes, Crowding, No Vehicle, Group Quarters

The source for these variables is the American Community Survey (ACS) 2014-2018 (5-year) dataset. For each census tract, a percentile ranking from 0 to 1 was generated for 1) the fifteen individual variables, 2) the four themes, and 3) its overall position. This study employs the overall percentile ranking values as a single, comprehensive measure which incorporates the different types of equity groups. A higher percentile ranking (closer to 1) represents locations with more vulnerable populations.

Needs have also been identified with specific population groups in addition to SVI. For instance, the bicycle/pedestrian crashes with fatalities or serious injuries are mapped with SVI as well as with zero-vehicle households, since zero-vehicle households reflect a population group of interest in relation to bicycling/walking. The different types of needs and the corresponding equity groups for which these needs have been analyzed is summarized in the table below.[4]

Need Types	**Equity Groups**			
	Social Vulnerability Index	Zero-vehicle households	Low-income workers	Minority workers
Bicycle/pedestrian crashes with fatalities or serious injuries	●	●		
Access to frequent transit	●	●		
Travel time to work	●	●		
Access to jobs (home location and work location) by transit			●	●
Congested roadways	●			

[3] CDC Social Vulnerability Index. https://www.atsdr.cdc.gov/placeandhealth/svi/index.html

[4] Note that mapping was conducted for many socio-demographic characteristics, such as income, race/ethnicity, and persons with disabilities. However, since several of these characteristics are correlated, the SVI seemed to be the most effective way to present information with a limited number of maps.

Bicycle/Pedestrian Crashes with Fatalities or Serious Injuries

Bicycle / Pedestrian Crashes with Fatalities or Serious Injuries (2014-2018) in relation to Social Vulnerability Index

Figure 8. Bicycle and pedestrian crashes with fatalities or severe injuries (2014-18) by Social Vulnerability Index (2018)

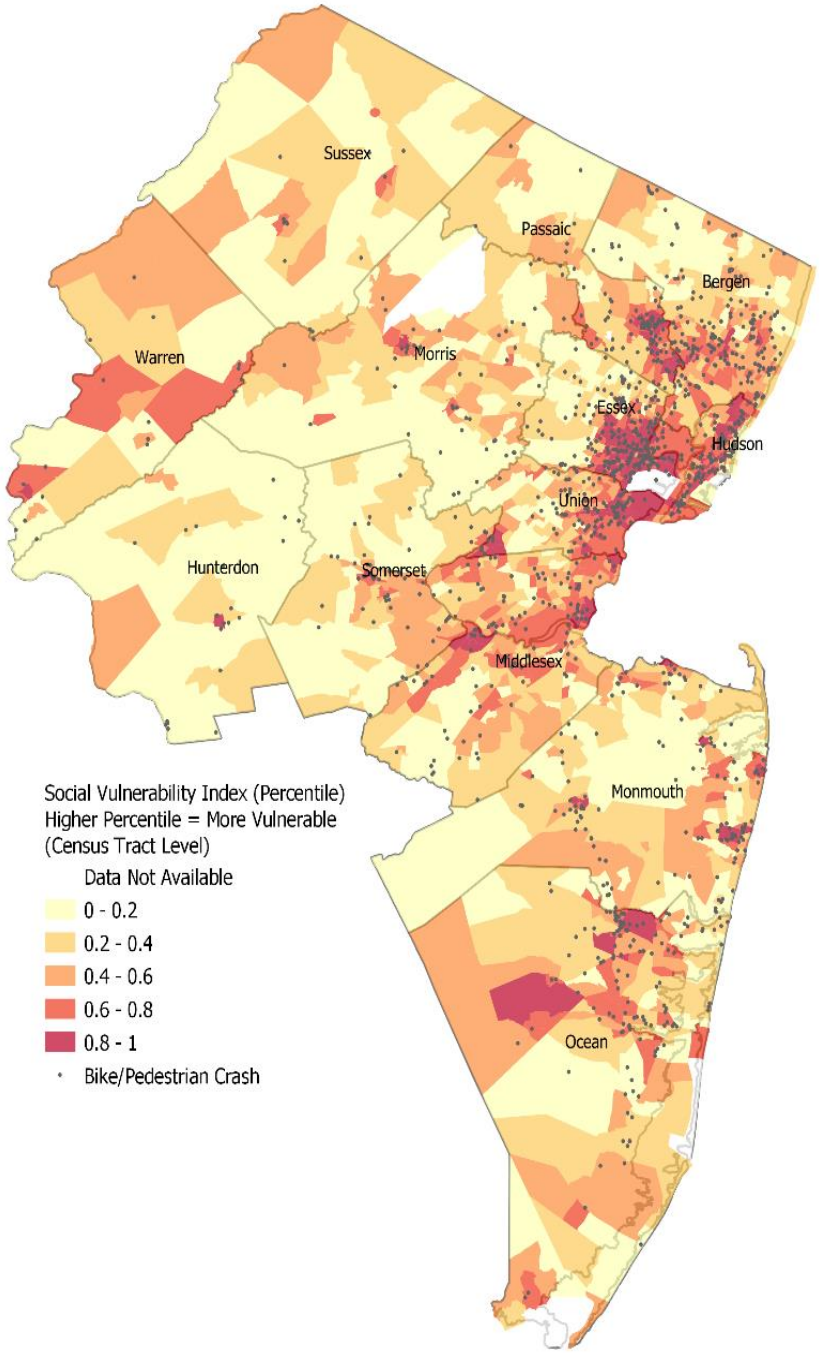
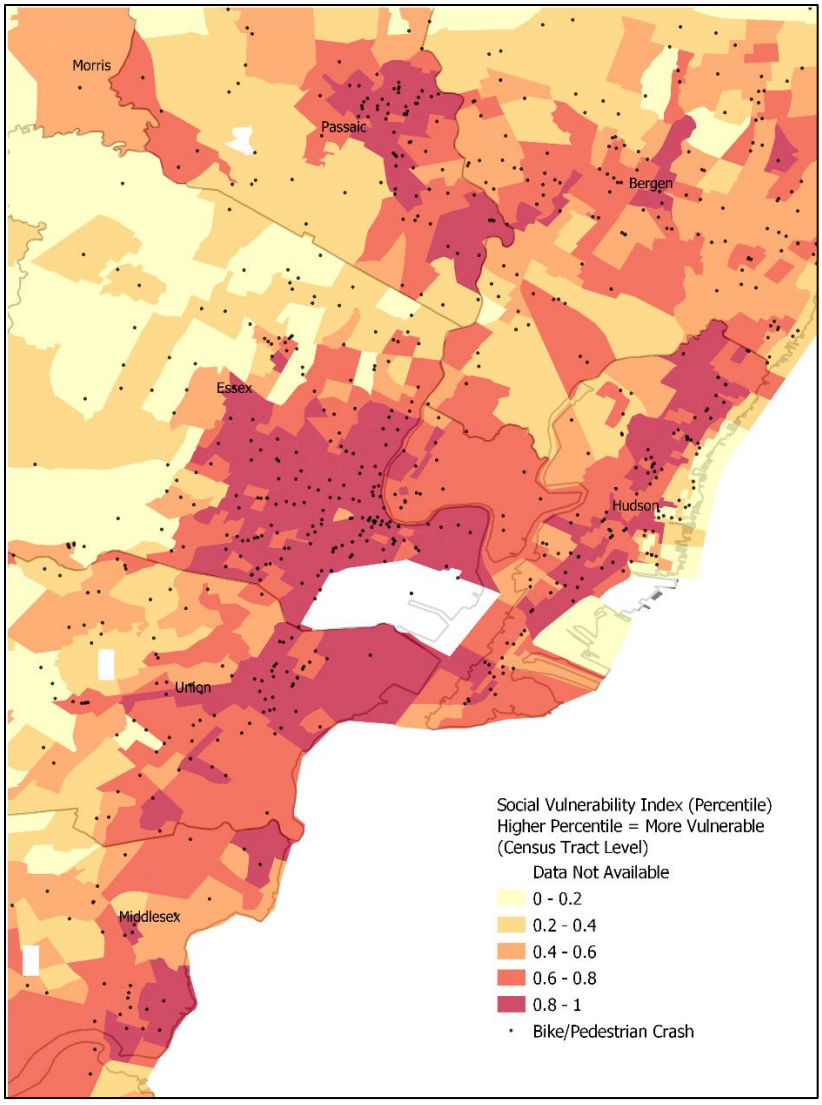


Figure 9.Bicycle and pedestrian crashes with fatalities or severe injuries (2014-18) by Social Vulnerability Index (2018) in the urban core of NJTPA region

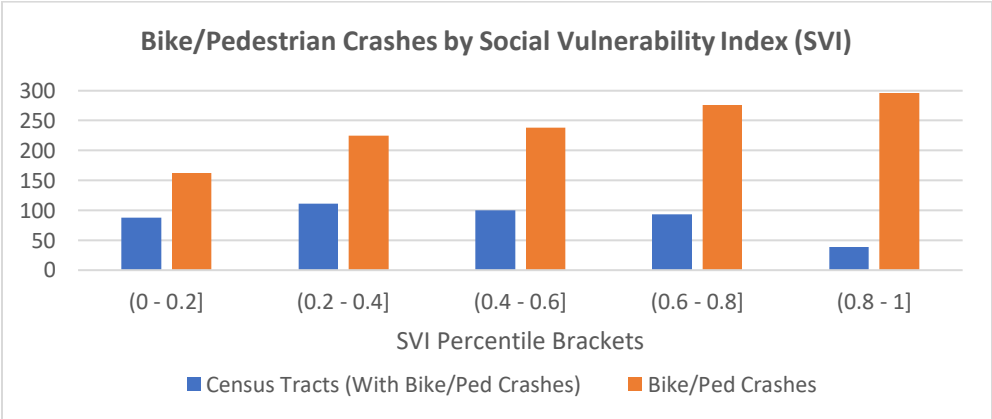


Observation: There are some clusters of bike/ped crashes in areas with a high proportion of vulnerable population groups.

Note: These population groups may use bicycles and walk to a variety of destinations. The map does not indicate the demographics of the people who were involved in the crashes, but the demographics of the census tracts where people live.

Figure 10 plots the number of census tracts by SVI and the number of crashes observed in these census tracts. More crashes are observed in areas with more vulnerable populations, even though they are represented by a smaller number of census tracts. However, it is important to note that high-SVI areas also tend to be relatively denser tracts with higher populations and may have more bicycle/pedestrian activity.

Figure 10. Distribution of bike/pedestrian crashes by SVI



Bicycle / Pedestrian Crashes with Fatalities or Serious Injuries (2014-2018) in relation to Zero-Vehicle Households

Figure 11. Bicycle and pedestrian crashes with fatalities or severe injuries by Zero-Vehicle Households (2014 - 2018)

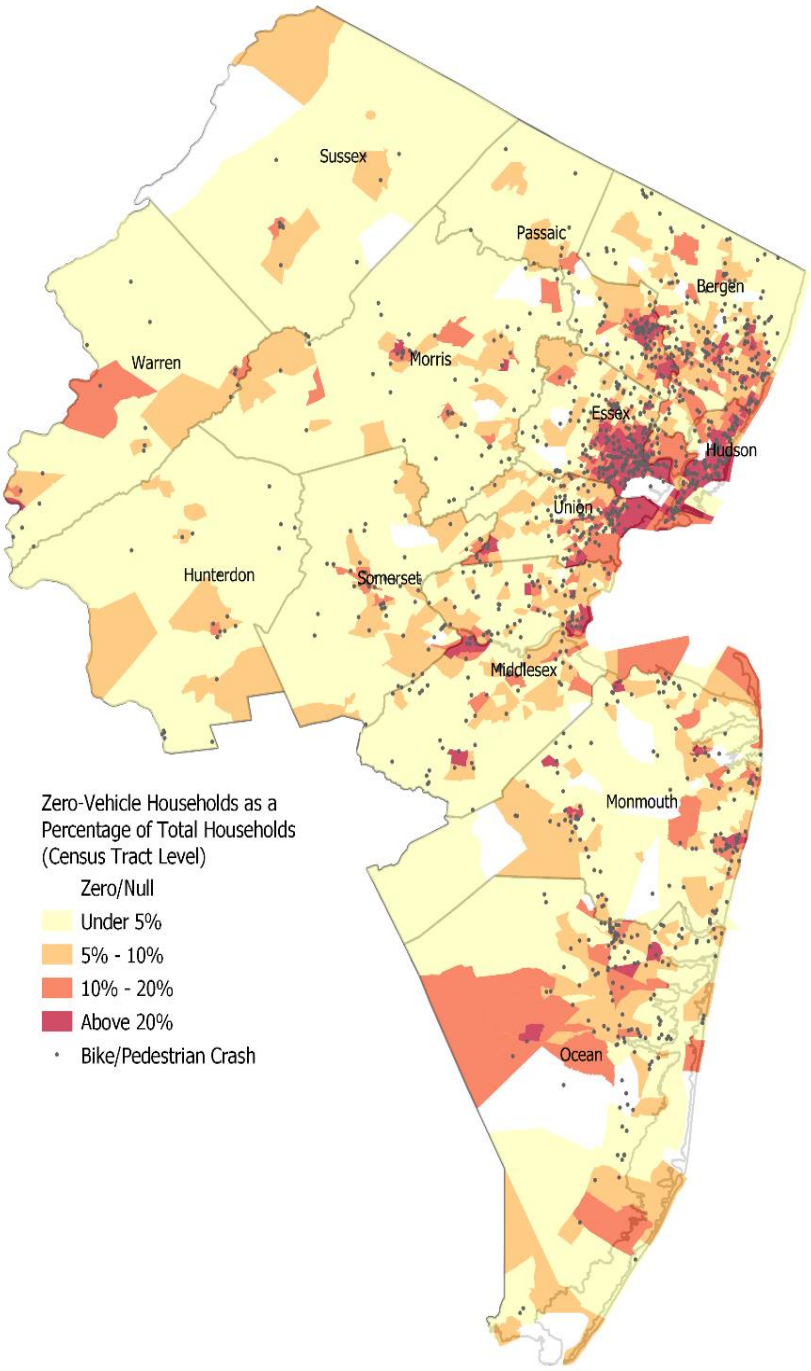
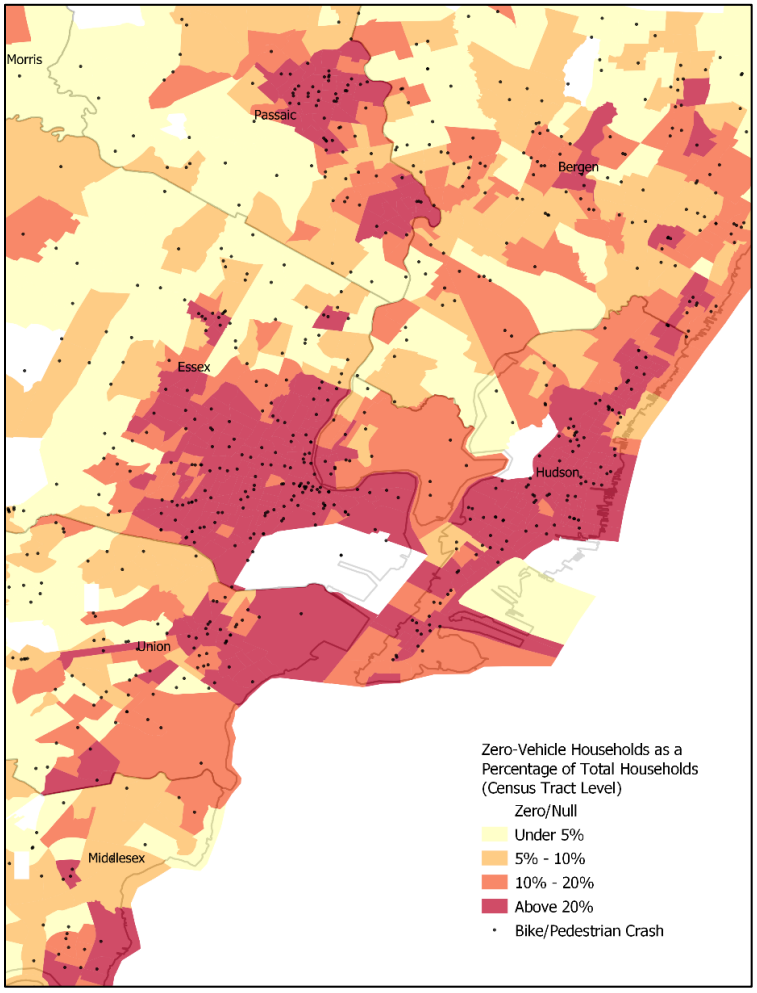


Figure 12. Bicycle and pedestrian crashes with fatalities or severe injuries by Zero-Vehicle Households (2014 - 2018) in the urban core of the NJTPA region

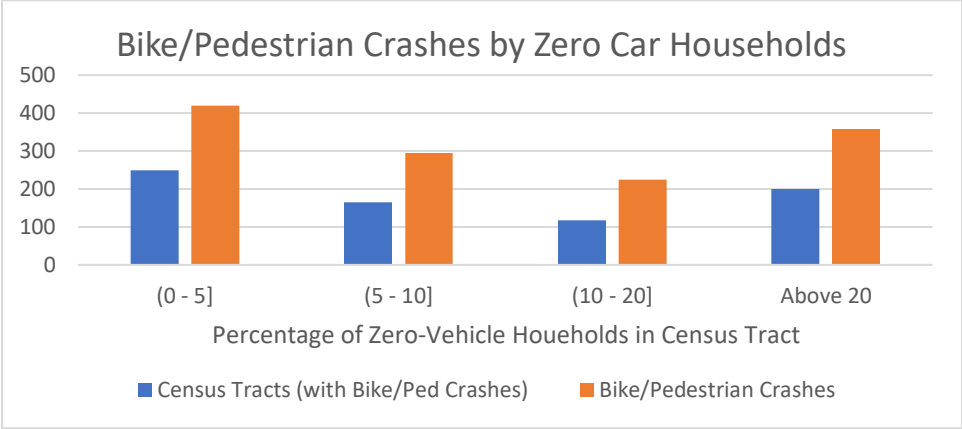


Observation: There are some clusters of bike/ped crashes in areas with a high proportion of zero car households.

Note: These population groups may use bicycles and walk to a variety of destinations. The map does not indicate the demographics of the people who were involved in the crashes, but the demographics of the census tracts where people live.

Figure 13 plots the number of census tracts by zero-vehicle households and the number of crashes observed in these census tracts. Unlike the analysis with SVI, there is no clear trend of increasing crashes with increasing zero-car households. However, it is important to note that locations with a high share of zero-car households also tend to be relatively denser areas and may have more bicycle/pedestrian activity.

Figure 13. Distribution of bike/pedestrian crashes by percentage of zero-households



Access to Frequent Transit

Transit (Rail + High Frequency Bus) Availability in relation to Social Vulnerability Index

Figure 14. SVI with respect to frequent transit in the NJTPA region

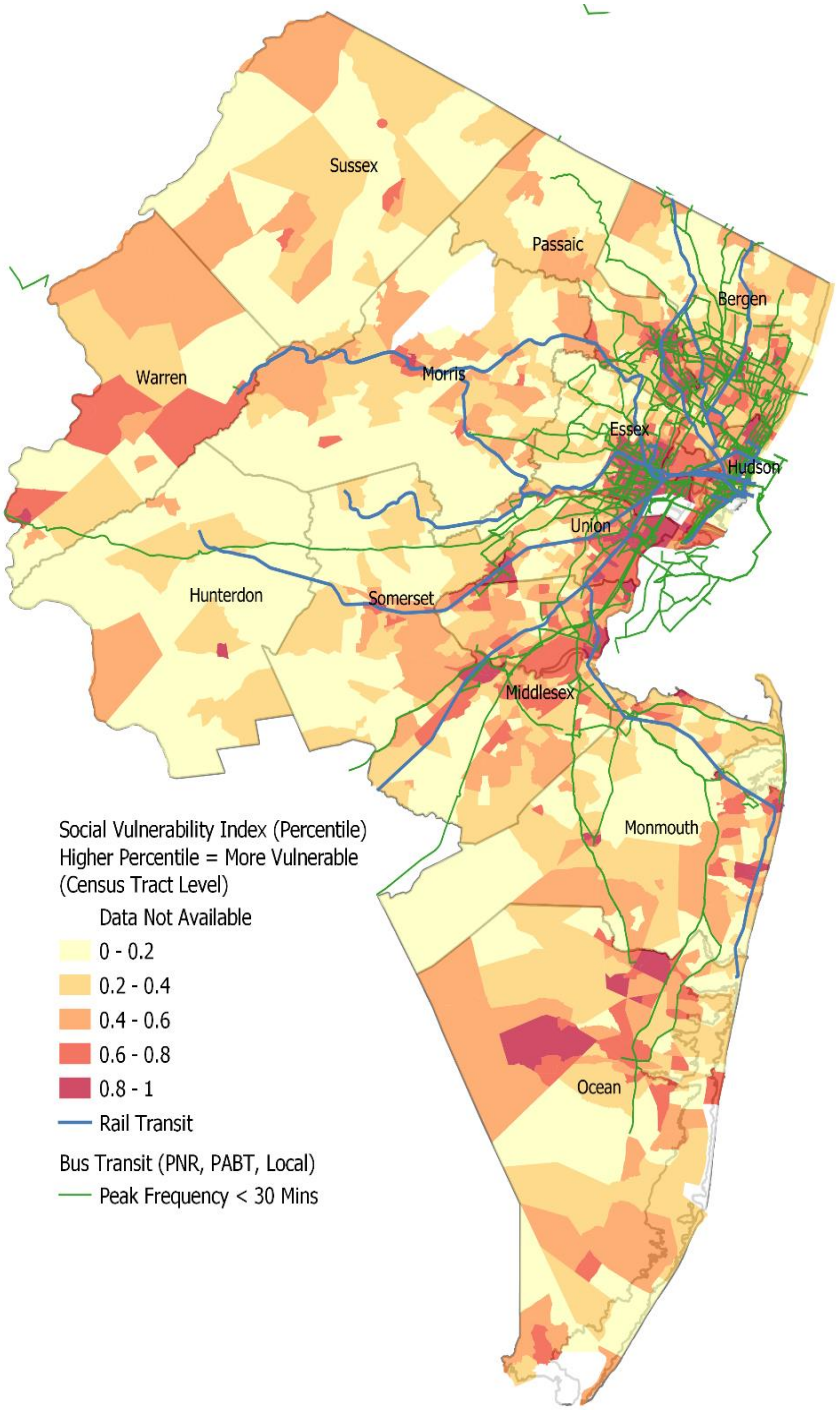
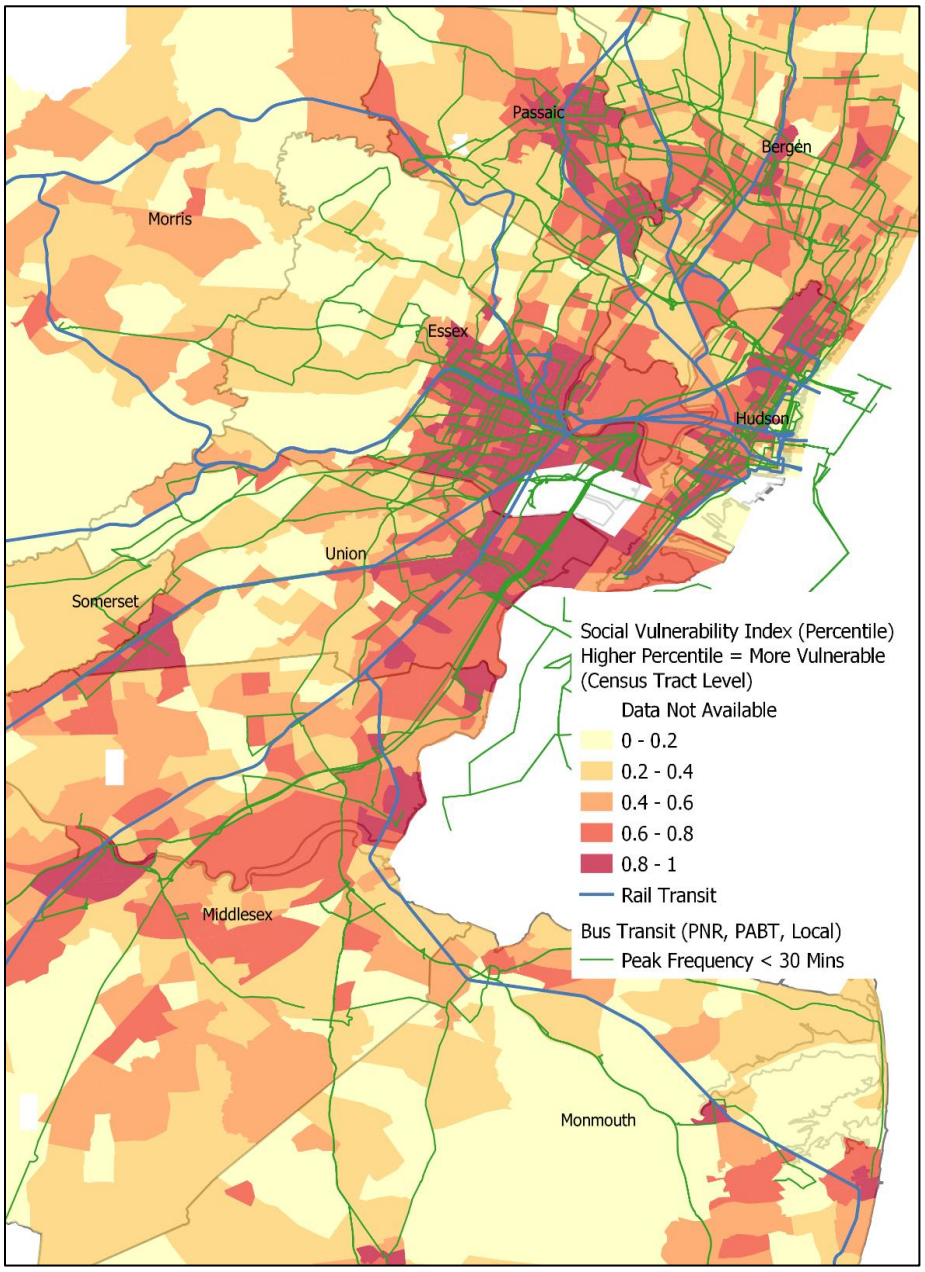


Figure 15. SVI with respect to frequent transit in the urban core of NJTPA region



Observations: The map identifies several areas with high shares of vulnerable population without access to frequent transit. While all of these areas may not be suitable for a transit network (depending on size and density of population and travel patterns), they may signify a need. Examples of such areas are:

- Parts of Warren (Belvidere), Sussex (Hamburg, Newton), and Hunterdon Counties (Raritan Twp)
- Parts of Ocean County (e.g., Lakehurst, Seaside Heights)
- Portions of Morris County (e.g., Lake Hiawatha, Troy Hills)

Note that these maps show transit services in relation to household population characteristics. It is important to recognize that even in areas with significant transit services, there may be needs associated with reverse commute trips where the employment destinations lack transit services.

Transit (Rail and High Frequency Bus) Availability in relation to Zero-Vehicle Households

Figure 16. Zero-car households with respect to frequent transit in the NJTPA region

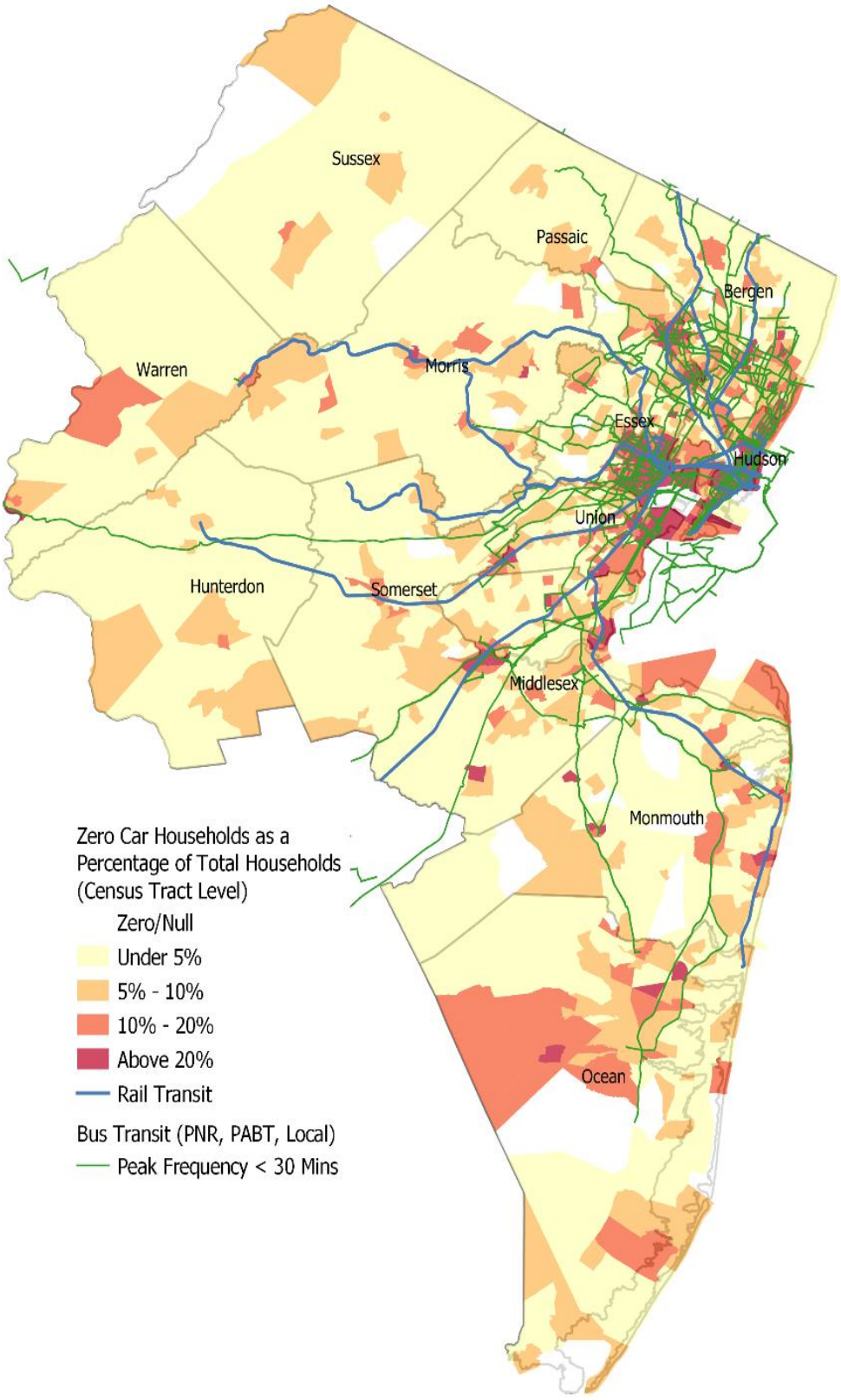
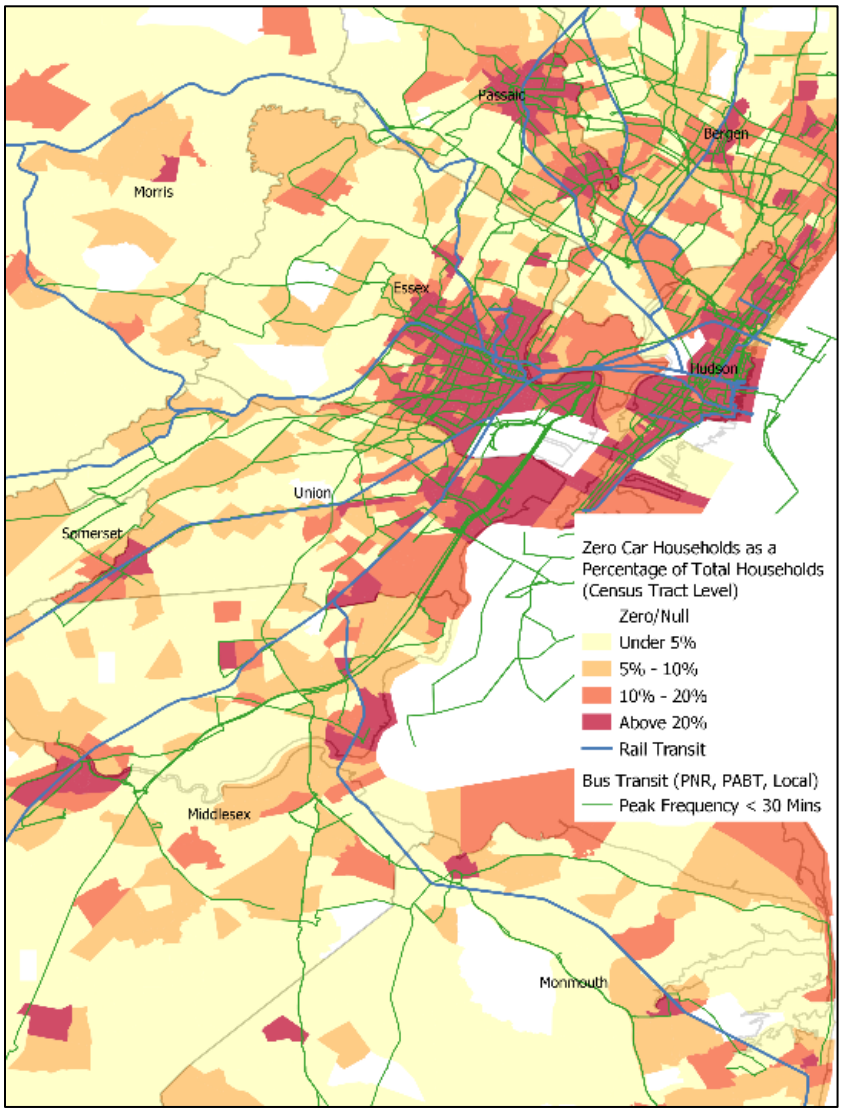


Figure 17. Zero-car households with respect to frequent transit in the urban core of NJTPA region



Observations: The map identifies several areas with high shares of zero car households without access to frequent transit. The general observations are similar to the map on vulnerable population groups.

As with the previous set of maps, note that these maps show transit services in relation to household population characteristics. It is important to recognize that even in areas with significant transit services, there may be needs associated with reverse commute trips where the employment destinations lack transit services.

Travel Time to Work

Travel Time to Work in relation to Social Vulnerability Index

Figure 18. Share of workers with long commutes by SVI in the NJTPA region

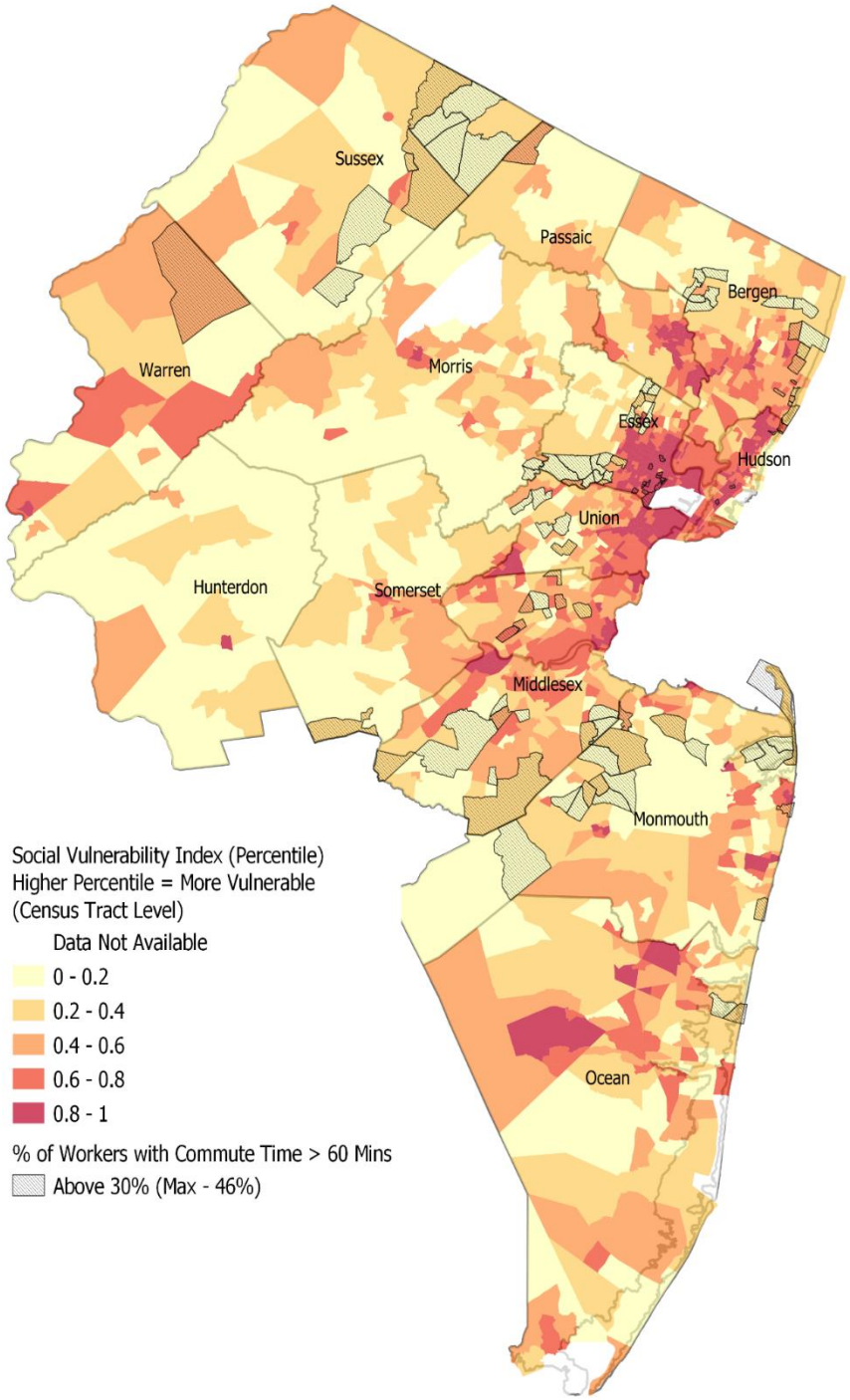
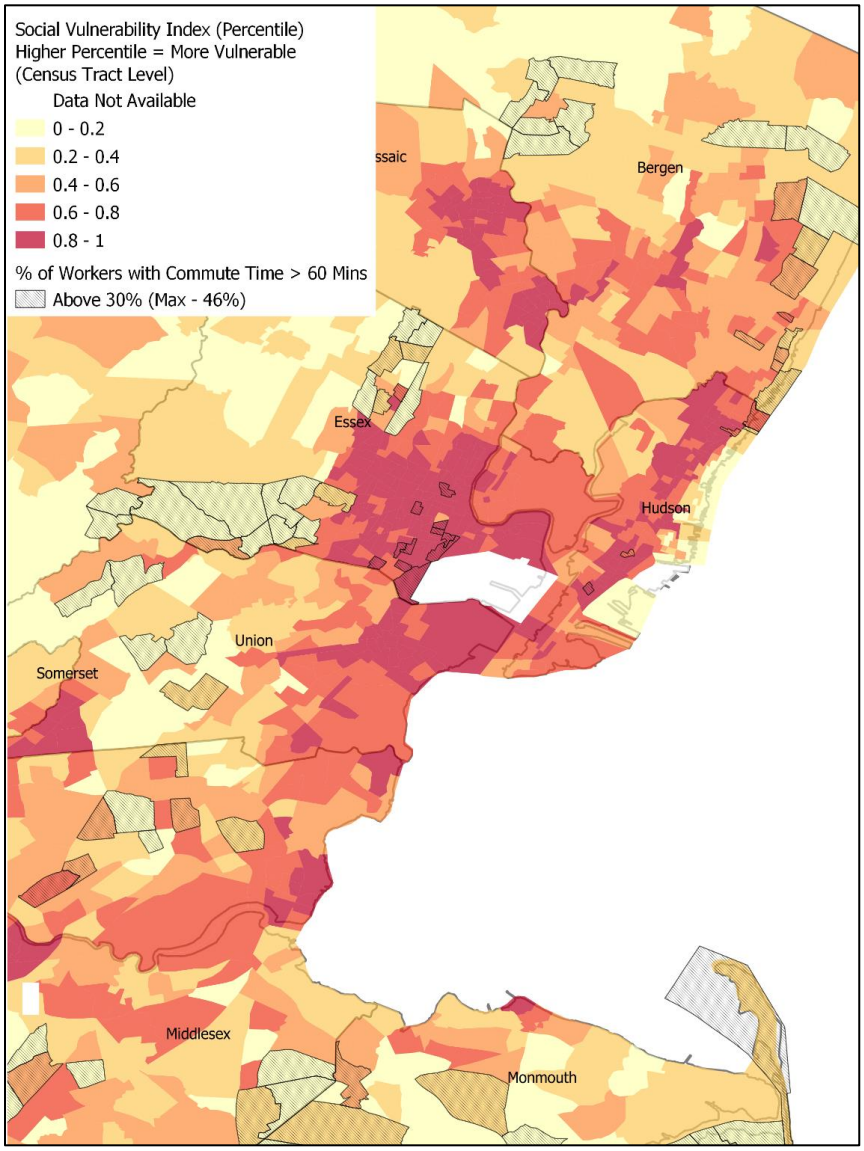


Figure 19. Share of workers with long commutes by SVI in the urban core of NJTPA region



Observations: While areas with the largest share of workers with long commutes tend to be in areas with low levels of vulnerable populations, there are some census tracts with high levels of vulnerable population groups that also have a high share of workers with long commutes. These locations are primarily in Essex (i.e., Newark) and Hudson Counties (Greenville, West Bergen).

The census tracts highlighted in red and orange below could be prioritized or assessed furtherwith regard to potential gaps in accessibility.

The areas with highest priority needs can be identified by distributing the census tracts by the share of workers with long commutes and their SVI percentile. As shown in Table 3, the 12 census tracts marked in red are the ones with the highest priority from an equity perspective. Eleven (11) of these 12 census tracts are located in Newark, while the remaining census tract is in the Greenville area of Jersey City.

Table 3. Distribution of census tracts by workers with long commute and by SVI percentile

		Worker % with Commute Time above 60 Mins				Total Census Tracts
		Under 10%	(10% - 20%]	(20% - 30%]	Above 30%	
Social Vulnerability Index Percentile	Under 0.2	17	149	81	51	298
	(0.2 - 0.4]	32	153	98	26	309
	(0.4-0.6]	35	135	89	14	273
	(0.6-0.8]	75	141	63	6	285
	(0.8-1]	96	128	55	12	291
Total Census Tracts		255	706	386	109	1456

Travel Time to Work in relation to Zero-Vehicle Households

Figure 20. Share of workers with long commutes by zero-car households in the NJTPA region

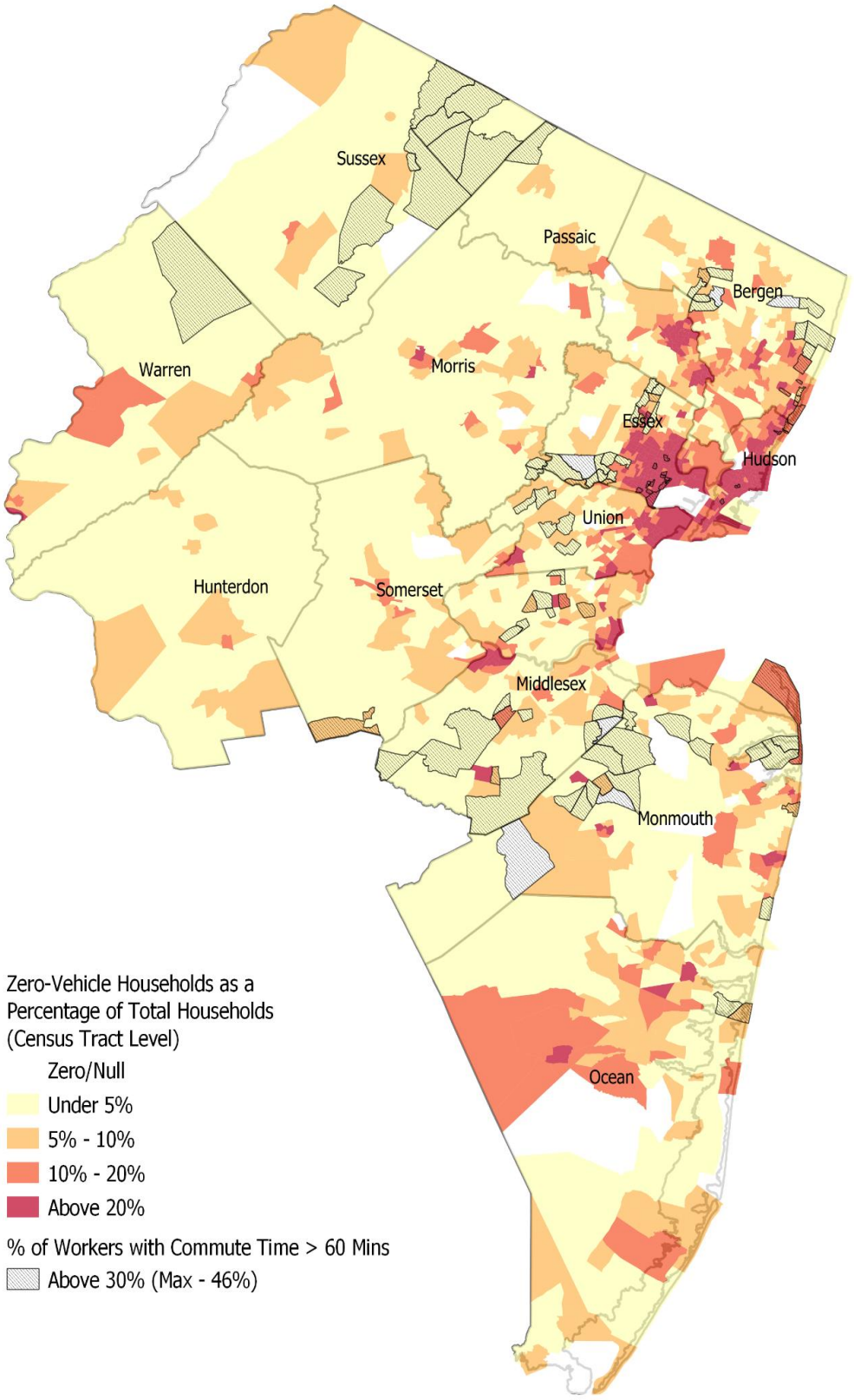
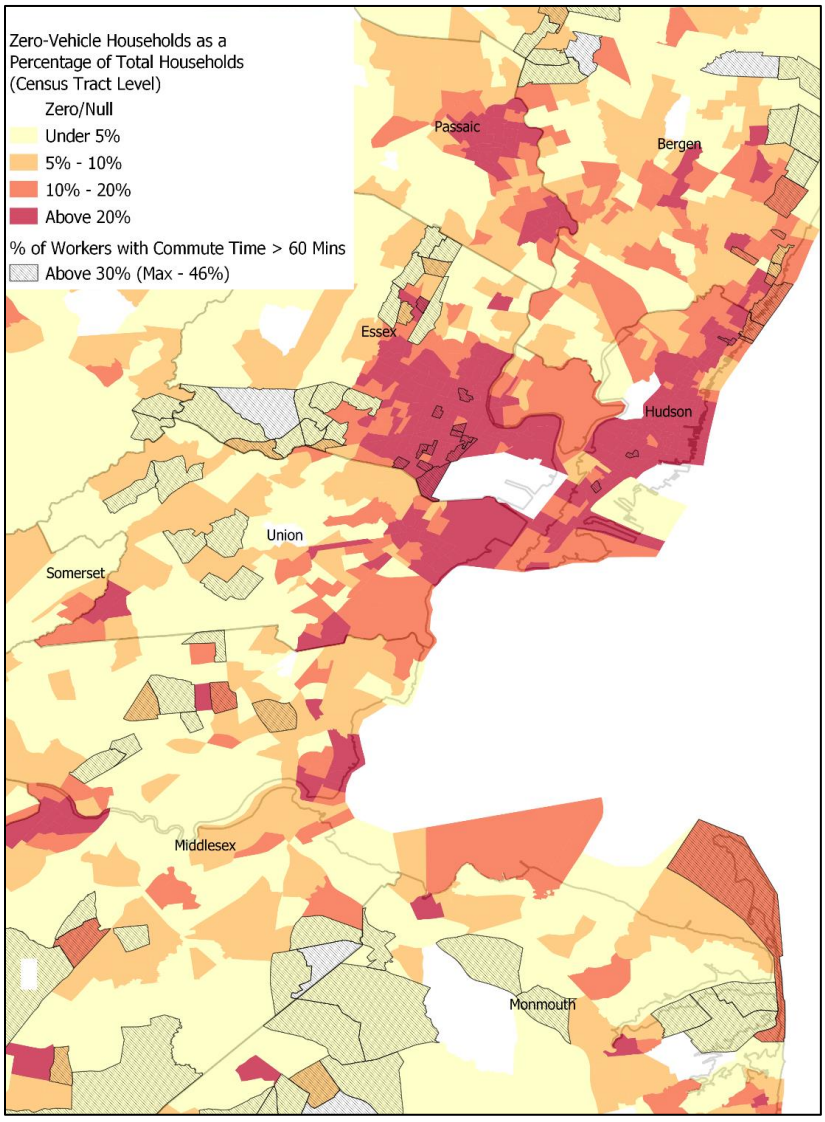


Figure 21. Share of workers with long commutes by zero-car households in the urban core of the NJTPA region



Observations: While areas with the largest share of workers with long commutes tend to be in areas where most households have vehicles, there are some census tracts with high levels of zero-vehicle households that also have a high share of workers with long commutes. Those Census tracts highlighted in red and orange below could be prioritized or assessed further in regard to potential gaps in accessibility.

The areas with highest priority needs can be identified by distributing the census tracts by the share of workers with long commutes and zero-vehicle households. As shown in Table 4, the 15 census tracts marked in red are the ones with the highest need from an equity perspective. Eleven (11) of the 15 census tracts are located in Newark, 2 in Jersey City, 1 in West New York town (Hudson) and 1 in the central part of Montclair Township (Essex).

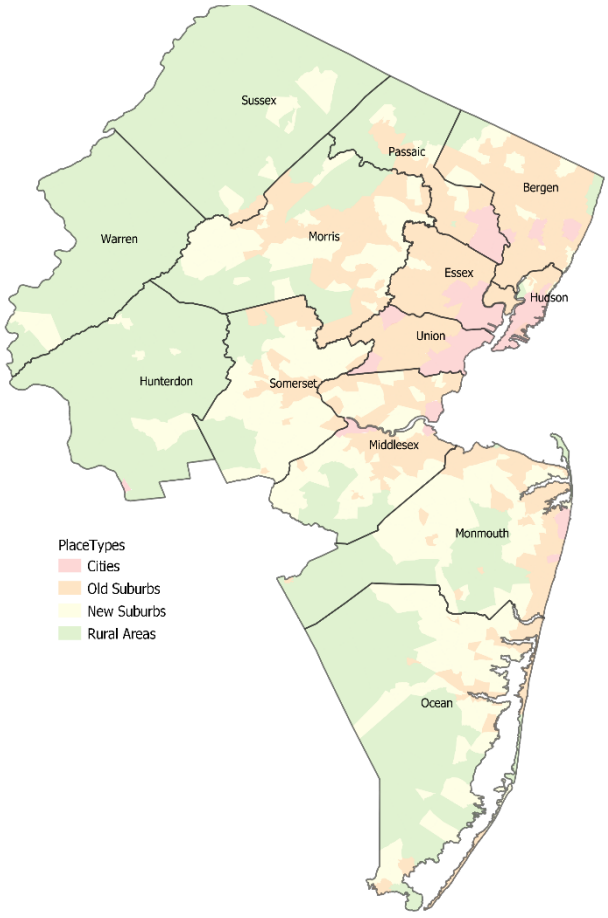
Table 4. Distribution of census tracts by workers with long commute and zero-household vehicles

		Worker % with Commute Time above 60 Mins				Total Census Tracts
		Under 10%	(10% - 20%]	(20% - 30%]	Above 30%	
Zero-Vehicle HH %	Under 5%	50	286	158	64	558
	(5% - 10%]	57	152	85	14	308
	(10% - 20%]	61	98	48	10	217
	Above 20%	84	161	87	15	347
Total Census Tracts		252	697	378	103	1430

Access to Jobs by Transit

The purpose of this analysis is to identify regions with a high proportion of equity group populations that have relatively lower access to jobs by transit. The North Jersey Regional Transportation Model (NJRTME) provides information about job accessibility by Traffic Analysis Zones (TAZ). Since urban areas have more density and larger populations than rural areas of comparable size, the number of jobs accessible by transit in urban areas should be larger to reflect the needs of this larger population. As a result, rather than looking at total access to jobs across the region, a separate analysis of job accessibility by transit was conducted by place type. Figure 22 shows the distribution of NJTPA region by four place types – cities, new suburbs, old suburbs and rural areas.

Figure 22. Place types in the NJTPA region



The job accessibility data by TAZ available from the NJRTME model is classified based on these place types, with the results shown in Table 5. Summary statistics for job accessibility by transit by place type. It should be noted that since the geographic unit of Job Accessibility dataset (TAZ) and the Place Type dataset (census tract) are different, TAZs on boundaries of two different place types have been included in the calculation of summary statistics for both place types. This may explain the low 'minimum' value for cities and a high 'maximum' value for rural areas.

For this analysis, the 1st quartile value of job accessibility for the respective place type is considered as a threshold. In other words, regions with job accessibility lesser than the 1st quartile value of the respective place type are identified as areas of relatively low transit accessibility to jobs. They are mapped with two separate equity group variables – Social Vulnerability Index and Zero-Vehicle Households.

Table 5. Summary statistics for job accessibility by transit by place type

Place Type	Number of Jobs Accessible by Transit within 60 minutes from a TAZ Summary Statistics					
	Minimum	1st Quartile	Median	3rd Quartile	Maximum	Mean
Cities	0	172,582	334,217	1,315,874	3,703,560	786,339
Old Suburbs	0	39,030	99,535	253,772	2,559,338	240,793
New Suburbs	0	11,764	41,798	90,002	3,554,017	168,616
Rural	0	635	7,822	30,842	1,323,620	28,186

Access to Jobs by Transit in Cities

This section identifies areas that have fewer than 172,582 jobs accessible by transit within a 60-minute commute (1st quartile) in and around cities, focusing on areas with a high share of population that are socially vulnerable.

Figure 23. Job accessibility by transit with respect to SVI in cities

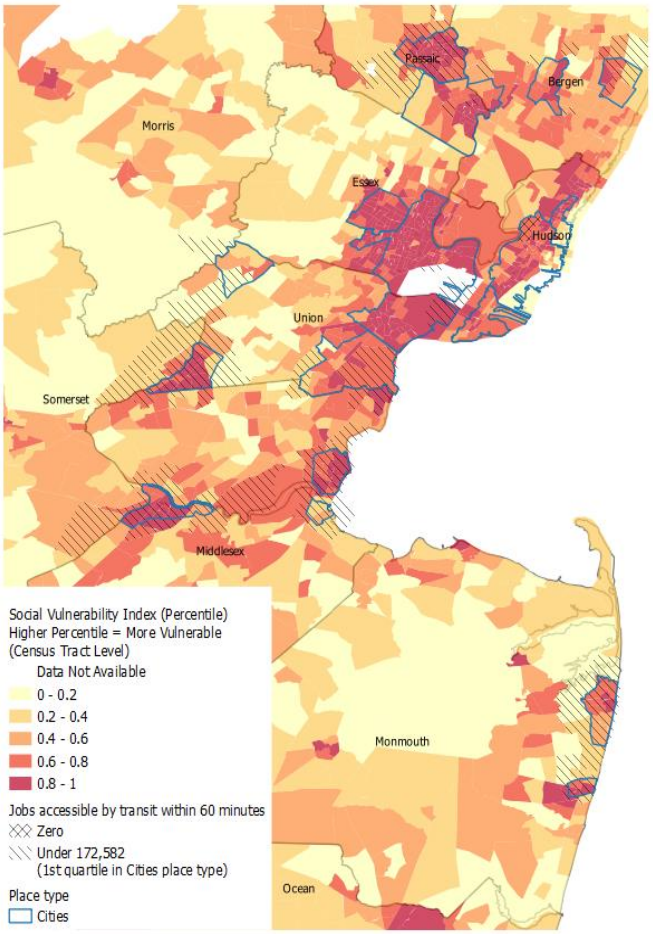
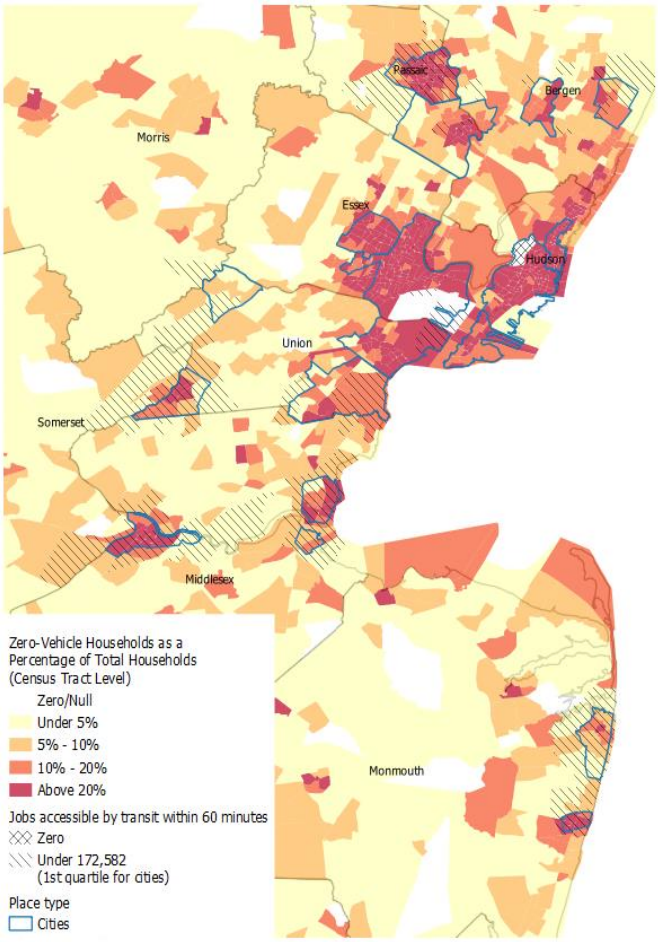


Figure 24. Job accessibility by transit with respect to zero-vehicle households in cities



Some examples of urban areas that have a high share of vulnerable/zero-vehicle households and have relatively low job accessibility by transit include:

- Paterson (Passaic county)
- Plainfield (Union county)
- New Brunswick and Perth Amboy (Middlesex county), and
- Asbury Park and Long Branch (Monmouth county).

Access to Jobs by Transit in Old Suburbs

This section identifies areas that have fewer than 39,030 jobs accessible by transit within 60 minutes (1st quartile) in and around old suburbs with high population for equity groups.

Figure 25. Job accessibility by transit with respect to SVI in old suburbs

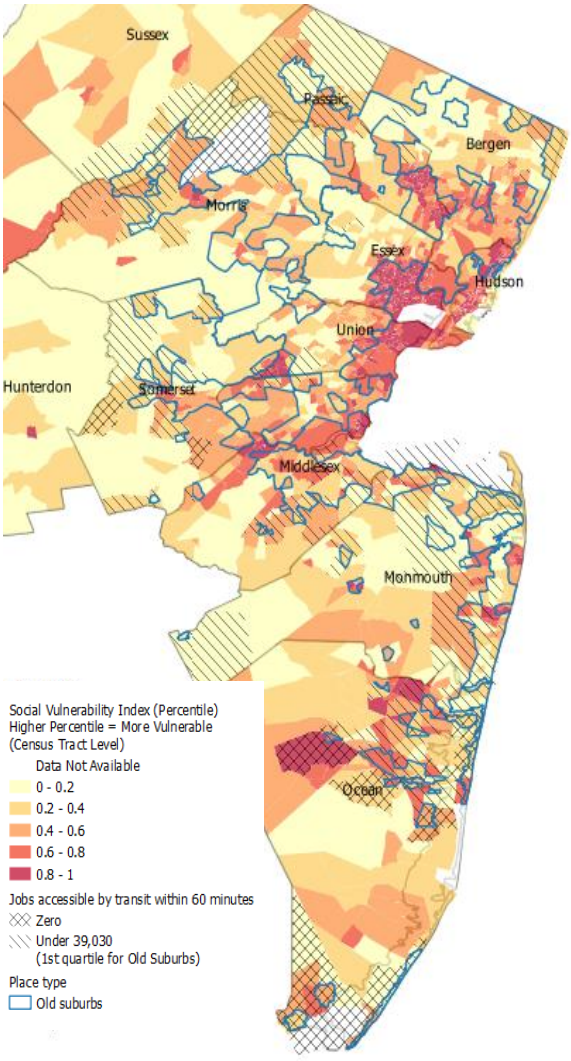
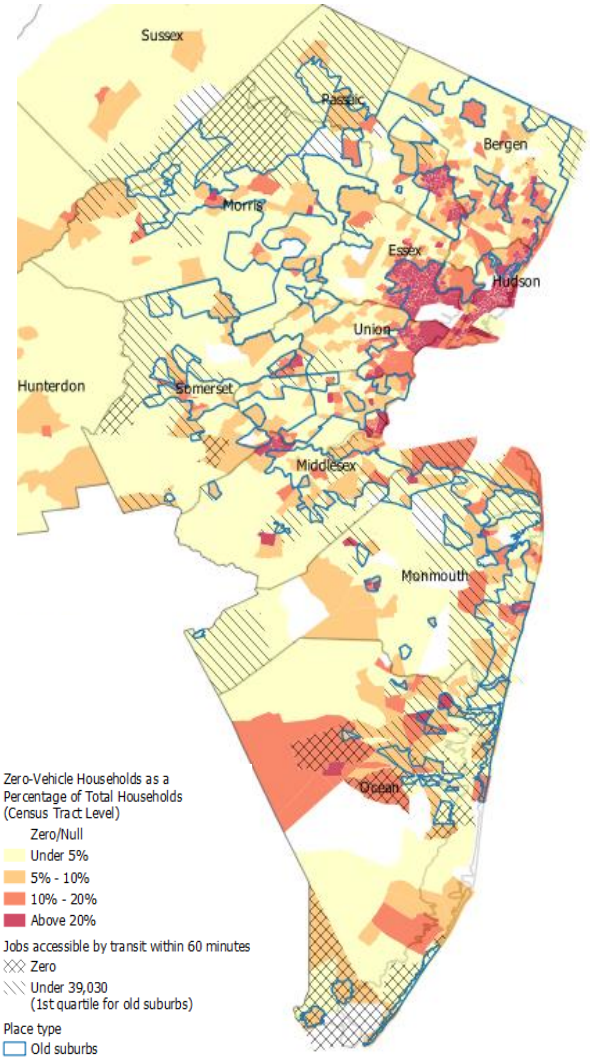


Figure 26. Job accessibility by transit with respect to zero-vehicle households in old suburbs



Some examples of old suburbs that have a high share of vulnerable/zero-vehicle households and have relatively low job accessibility by transit include:

- Somerville (Somerset county),
- Neptune Township (Monmouth county), and
- Toms River (Ocean county).

Access to Jobs by Transit in New Suburbs

This section identifies areas that have fewer than 11,764 jobs accessible by transit within 60 minutes (1st quartile) in and around new suburbs with high population for equity groups.

Figure 27. Job accessibility by transit with respect to SVI in new suburbs place type

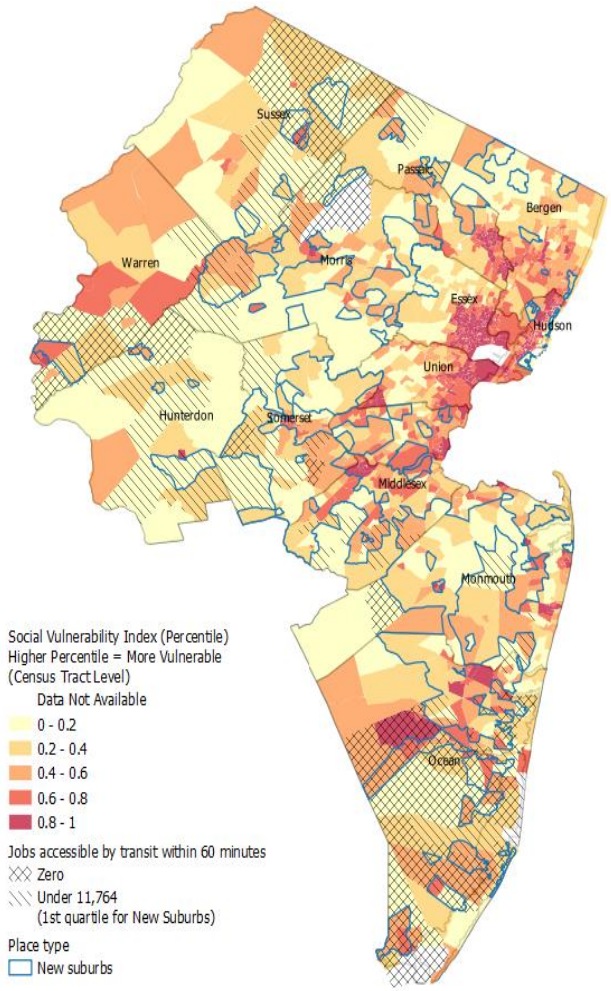
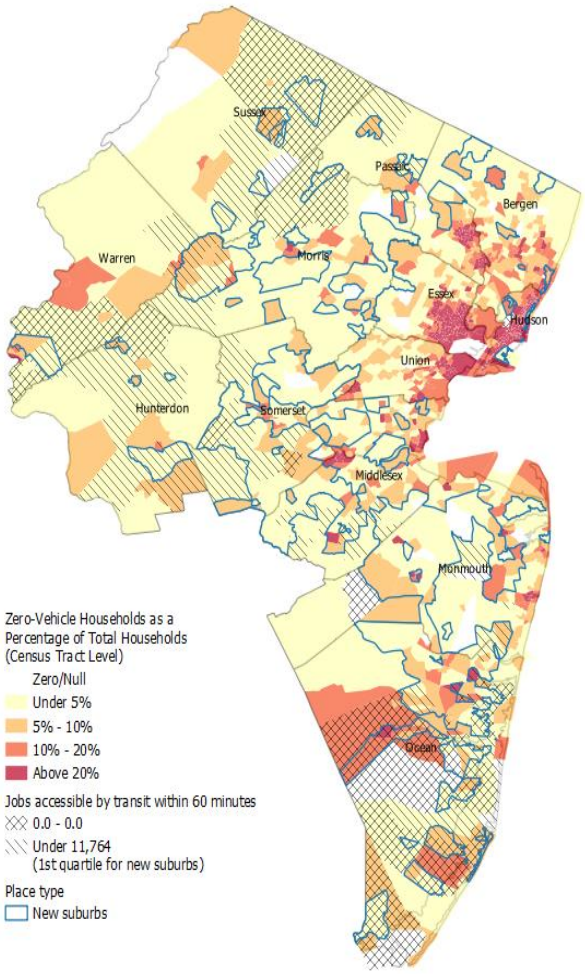


Figure 28. Job accessibility by transit with respect to zero-vehicle households in new suburbs place type



The social vulnerability and share of zero-vehicle households in new suburbs is relatively low as compared to other place types. Some examples of new suburbs that have a relatively high share of vulnerable/zero-vehicle households and have relatively low job accessibility by transit include:

- Manchester Township (Ocean County) and
- Franklin (Sussex County).

Access to Jobs by Transit in Rural areas

Rural areas tend to have limited access to jobs by transit. This section identifies areas that have fewer than 635 jobs accessible by transit within 60 minutes (1st quartile) in rural with high population for equity groups.

Figure 29. Job accessibility by transit with respect to SVI in rural place type

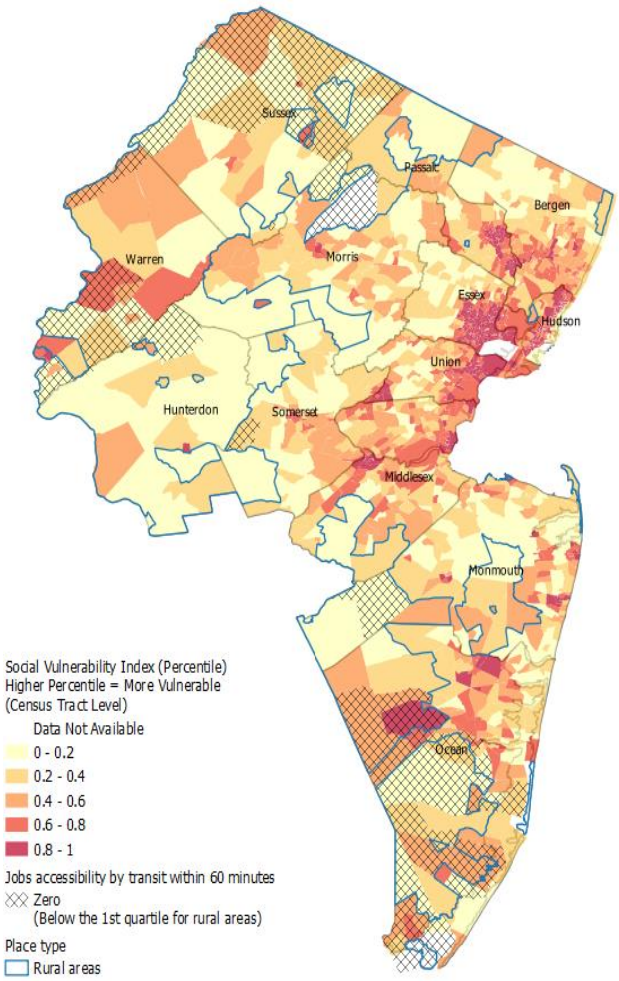
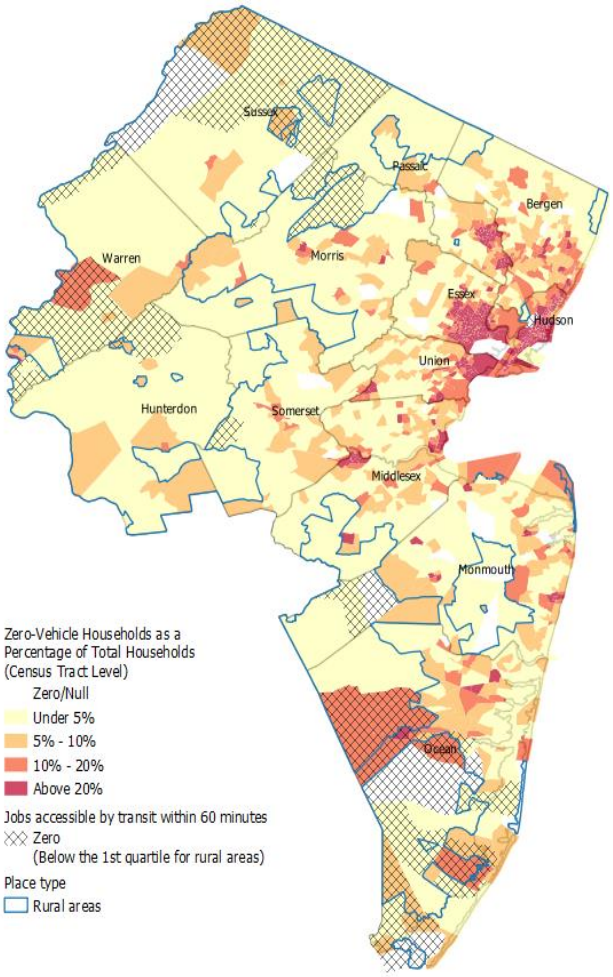


Figure 30. Job accessibility by transit with respect to zero-vehicle households in rural place type



Some examples of rural areas that have a relatively high share of vulnerable/zero-vehicle households and have no or very limited job accessibility by transit include:

- Manchester Township and Stafford Township (Ocean County) and
- Belvidere-White Township area (Warren County).

Commute Needs

This section analyzes the home and workplace locations of different equity groups to identify potential gaps in transit services connecting home and workplace locations. Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics (LODES) 2017 is the primary data source for these analyses.

The first step in this analysis was to map census tracts where equity group households are located and where workplaces of those equity groups are located. The second step included comparing the number of equity group residences and workplaces per census tract. If a census tract has significantly more workplaces as compared to residences for a particular equity group, it is a likely commute destination for many workers within that group. Similarly, if there are more residences as compared to workplaces for a particular equity group in a census tract, it is a likely commute origin for many workers within that group. As the final step, these key origins and destinations were overlaid within information on frequent transit services to identify potential gaps in services connecting likely origins and destinations. It is important to note, however, that this analysis did not included direct analysis of commute flows between individual locations and so represent *potential* commute needs for the population groups examined.

This section analyses the commute needs for two groups:

- Low-Income Workers
- Minority Workers

Commute Needs of Workers with Low Income Jobs

Based on the available data specification in LEHD LODES 2017, jobs with earnings $1250/month or less are considered as low-income jobs. Figure 31 shows areas with a high number of low-income jobs.

Figure 31. Location of low income jobs in the NJTPA region (Source: LEHD LODES 2017)

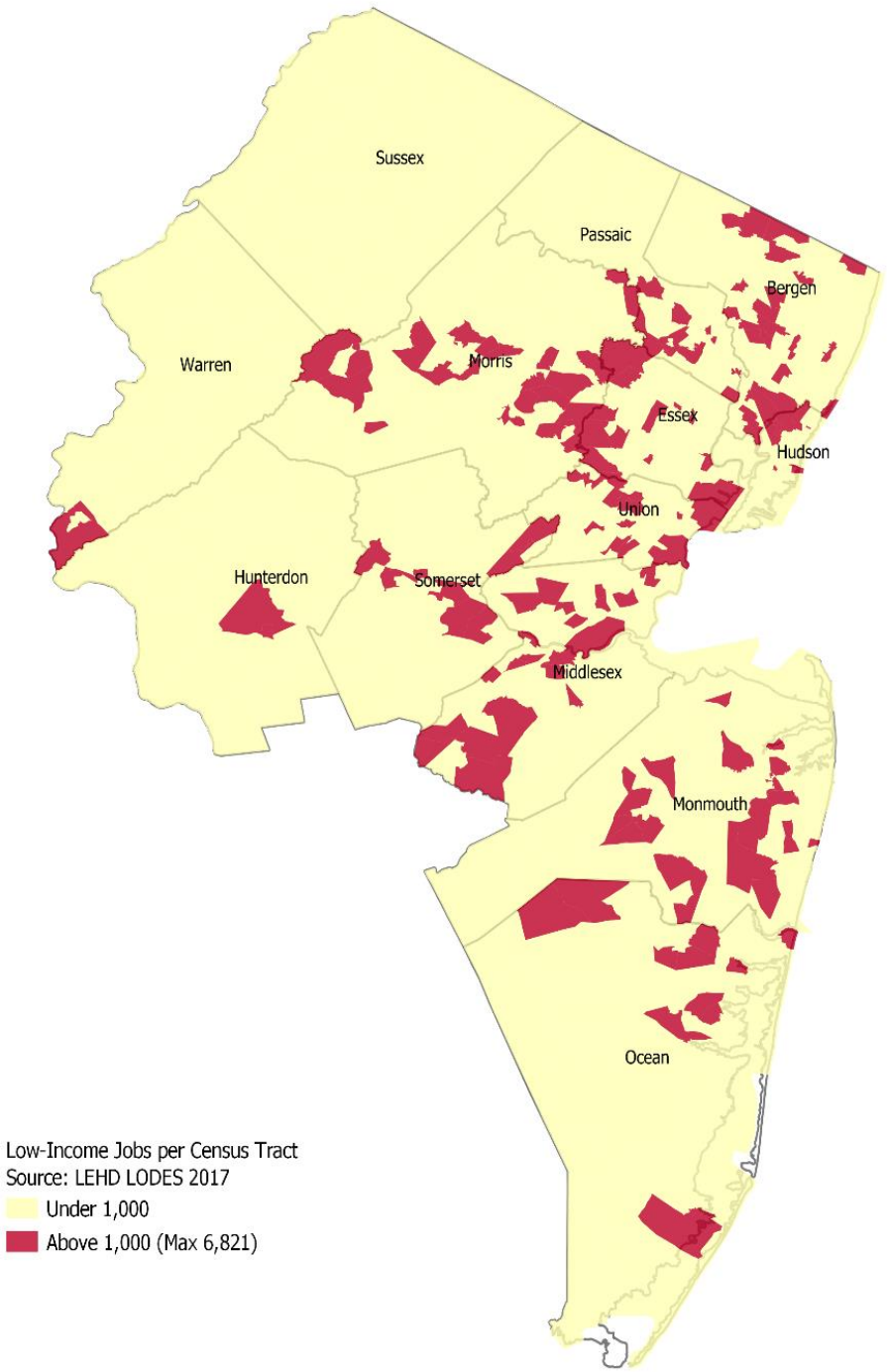
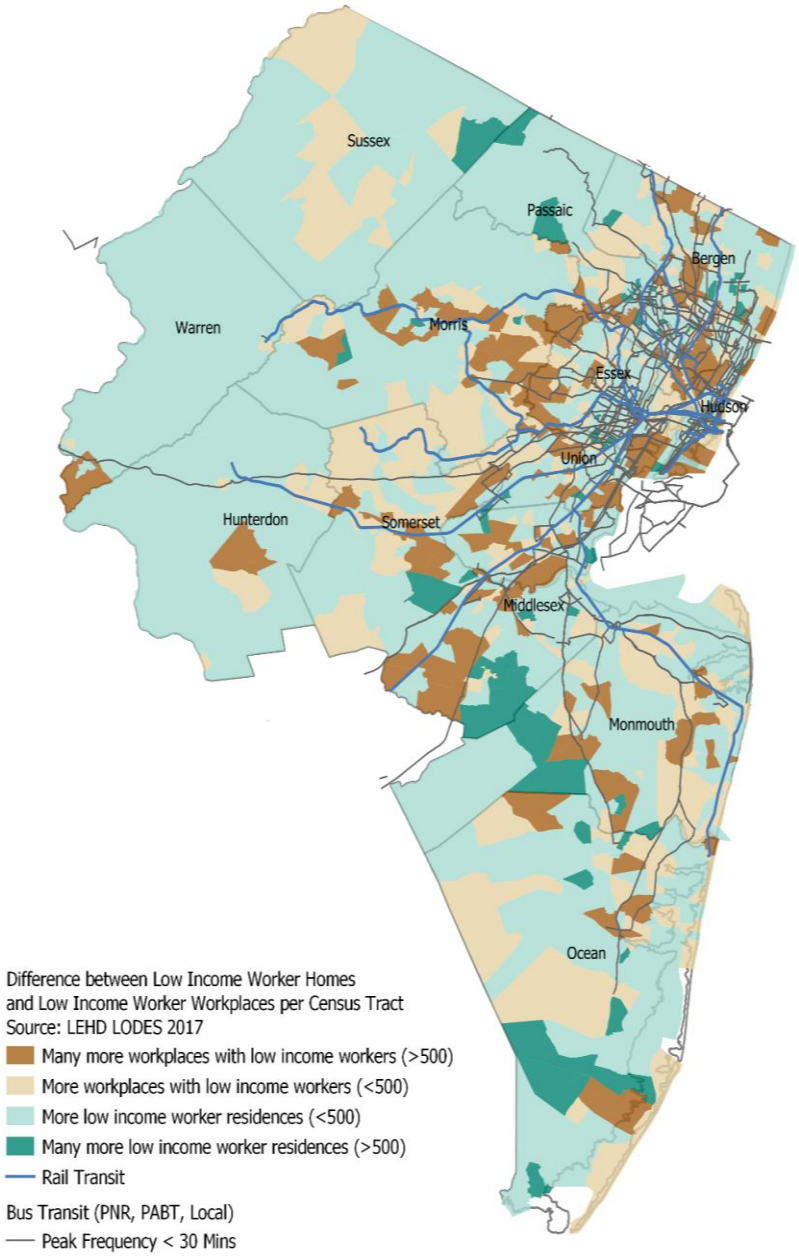


Figure 32 shows the difference between the number of low-income worker residences and low-income worker workplaces for each census tract, along with high-frequency transit routes.

- Regions with a higher number of low-income residences as compared to low-income jobs (blue) may reflect a concentration of longer commute origins for many low-income workers.
- Similarly, regions with a higher number of low-income workplaces as compared to low-income residences (brown) may reflect a concentration of longer commute destinations for many low-income workers.

Figure 32. Location of residences and workplaces of low-income workers in the NJTPA region with respect to frequent transit (Source: LEHD LODES 2017)



Areas with high number of low-income worker residences as compared to low-income worker workplaces, or vice versa that are not served by quality transit are as below:

- East-Hanover-West Caldwell region in East Morris – West Essex
- Flemington in Hunterdon County
- Stafford Twp – Barnegat Twp region in Ocean County
- Region between Manalapan Twp and Freehold Twp in Middlesex/Monmouth/Ocean Counties

Commute Needs of Minority Workers

Figure 33 shows areas with a high number of jobs with minority workers in the NJTPA region as per the LEHD LODES 2017 dataset. Minority includes all non-white races (African American, American Indian or Alaska Native, Asian and Native Hawaiian or Other Pacific Islander) and mixed-race groups. Examples of regions with highest employment of minority workers (shown in red) include the Newark airport, Newark Port, Rutgers and Princeton Universities, CPV Woodbridge Energy Center – Raritan Center Business Park – Middlesex County College area in Middlesex County, etc.

Figure 33. Location of workplaces of minority workers in the NJTPA region (Source: LEHD LODES 2017)

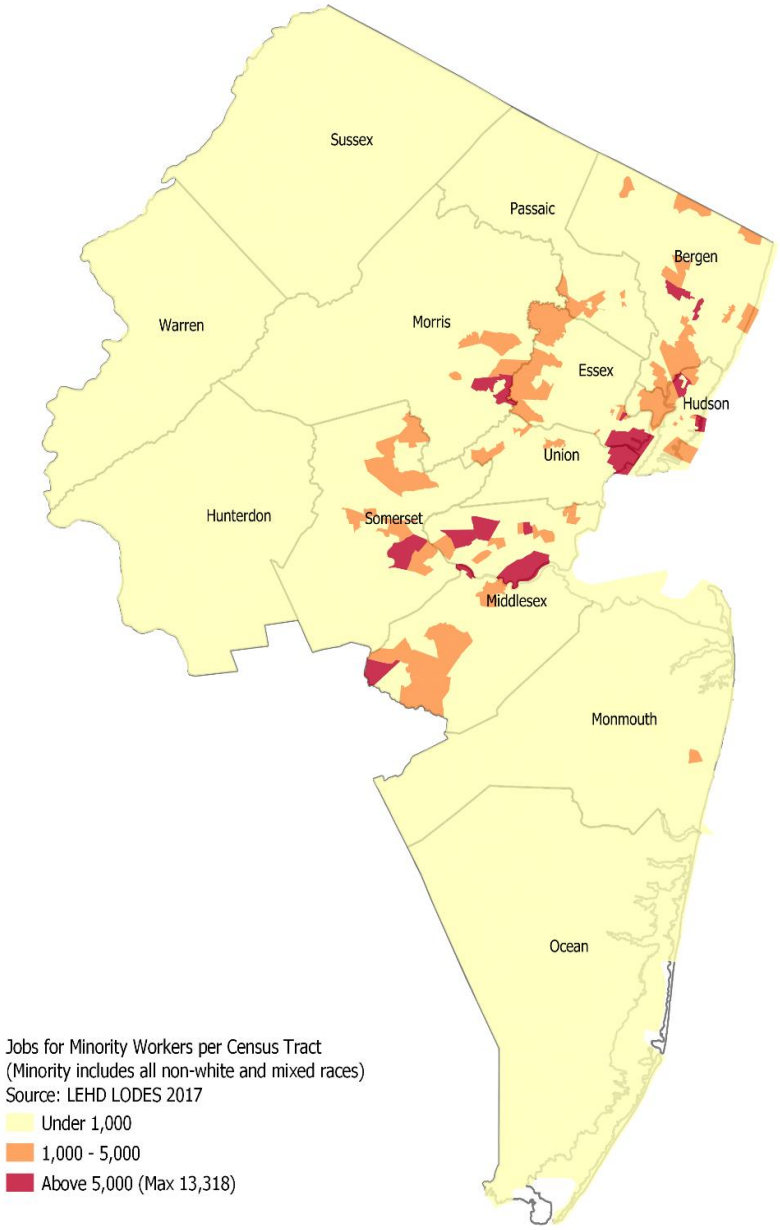
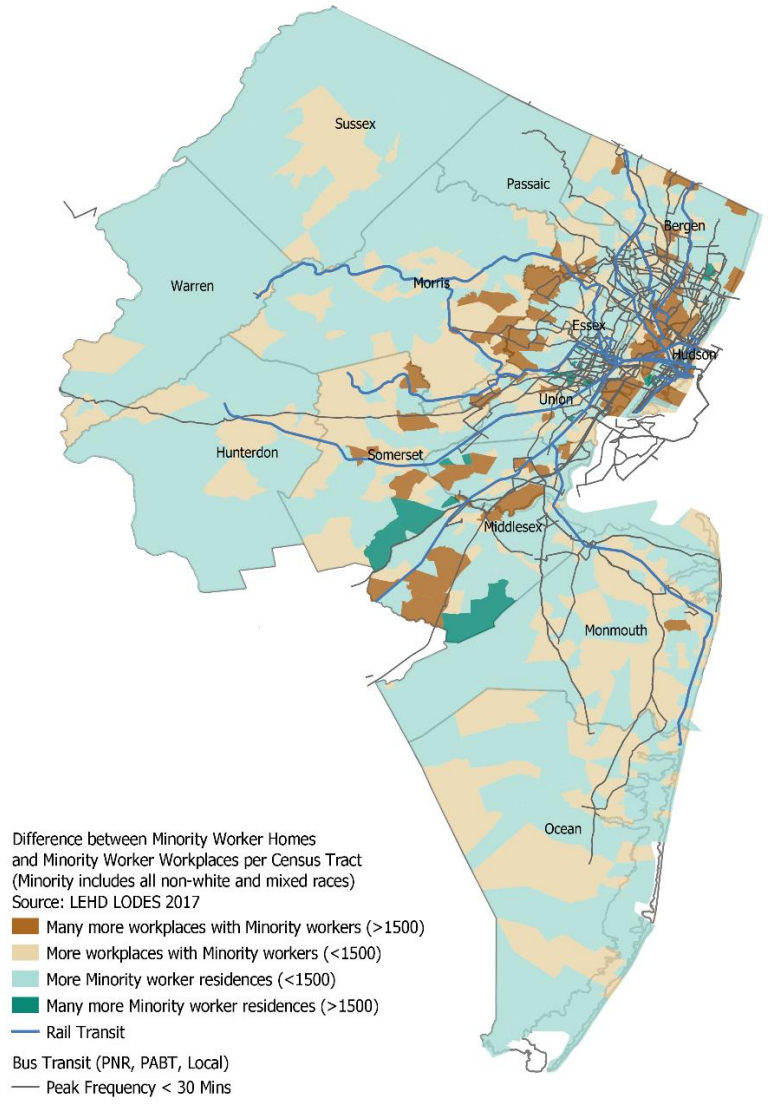


Figure 34 shows the difference between the number of minority worker residences and minority worker workplaces for each census tract.

- Regions with a higher number of minority worker residences as compared to minority worker jobs (blue) may reflect a concentration of longer commute origins for many minority workers.
- Similarly, regions with a higher number of minority worker workplaces as compared to minority worker residences (brown) may reflect a concentration of longer commute destinations for many minority workers.

Figure 34. Residences and workplaces of minority workers in the NJTPA region with respect to frequent transit (Source: LEHD LODES 2017)



Areas with high number of minority worker residences as compared to minority worker workplaces, or vice versa that are not served by quality transit are as below:

- Franklin Township – Blackwells Mills – Pleasant Plains region and Warren Township in southern Somerset County
- Piscataway – South Plainfield region and Cranbury Twp.- South Brunswick Township region in Middlesex County
- West of Keasby (Woodbridge Energy Center – Raritan Center Business Park – Middlesex County College region) and Old Bridge Twp. in Middlesex County
- Parsippany – Troy Hills region in Morris County
- Englewood Cliffs and St. Joseph's Village in Bergen County

Congested Roadways

Travel Time Index (AM Peak) in relation to Social Vulnerability Index

Figure 35. Travel Time Index (TTI) on roadways in the NJTPA region with respect to SVI

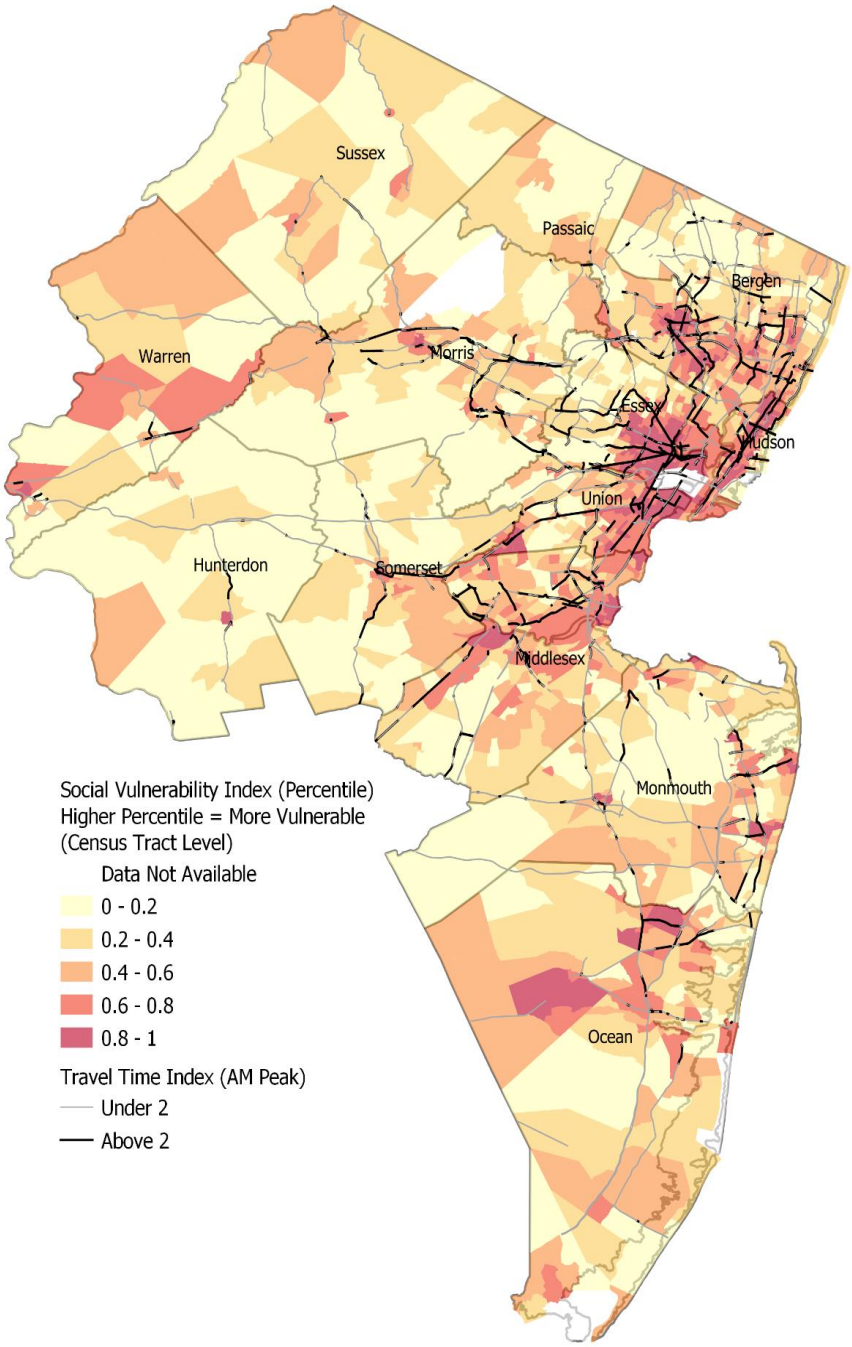
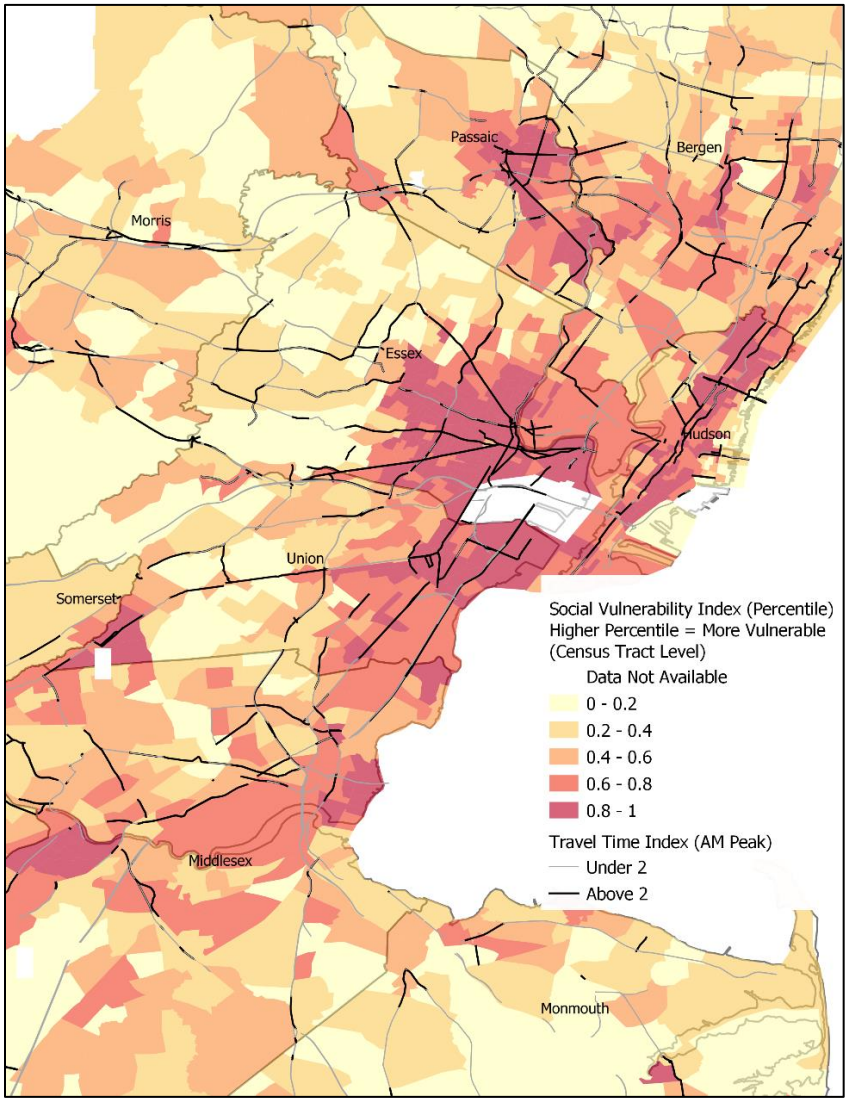


Figure 36. Travel Time Index (TTI) on roadways in the urban core of NJTPA region with respect to SVI



Observations: Congested roadways in areas with a high Social Vulnerability Index (SVI) are concentrated in the urban core of NJTPA region, although there are some areas with highly congested roadways with large shares of vulnerable populations in other parts of the region as well.

Note: The map does not indicate the demographics of the people who are in traffic congestion, but the demographics of the census tracts where people live. Still, high levels of traffic congestion may correlate with high levels of air pollution, as well as challenges with pedestrian/bicycle access, particularly for persons with disabilities and older residents.

A majority of the congested roadways in the regions with high SVI are non-interstates. Examples of such roadways are as listed below:

- Hudson – Tonnelle Ave, JFK Blvd.,
- Essex – I-280, South Orange Ave, Springfield Ave, Bloomfield Ave
- Passaic County – I-80, Broadway, Main St.,
- Union – I-04, Newark Ave, North Ave, Westfield Ave, Spring St., South Ave.
- Bergen – River St
- Hunterdon – US 202
- Somerset – US 206, Main St.
- Morris – McFarlan St, Salem St.
- Monmouth – Corlies Ave, Route 35, Joline Ave
- Middlesex – Route 18, Jersey Ave, Green St.
- Ocean – Ocean Ave, River Ave, Route 70
- Warren – Memorial Parkway

4| STAKEHOLDER PERSPECTIVES ON EQUITY NEEDS

Approach to Gathering Stakeholder Perspectives

While the quantitative analysis of transportation system performance measures overlaid on socio-demographic characteristics provides valuable information on some issues and needs facing vulnerable populations, it is clear that the data alone do not reveal all of the challenges and issues facing these population groups. As a result, a web-based questionnaire on transportation equity was developed and distributed to CMP working group members, community organizations, and advocacy groups to solicit qualitative feedback as part of a multi-pronged approach to identifying equity needs. The questionnaire included multiple choice and free response questions assessing equity concerns, barriers, and the relationships between historically disadvantaged populations, place type, and transportation mode. Commentary offered by stakeholders through this questionnaire, and a related CMP working group meeting, served to complement the data analysis of demographic and travel data with real-world issues and locations.

Questions

Stakeholders were asked a series of questions, beginning with accessibility needs for minority, low-income, and/or other disadvantaged population groups related to public transit, driving, and active transportation (e.g., bicycle and pedestrian travel). Next, a matrix allowed respondents to match place typologies (large urban, small urban, suburban, and rural) with trip types and associated barriers or equity challenges. Finally, the questionnaire offered respondents an opportunity to recommend specific resources, such as training, funding, and other services or organizations, to address equity concerns and challenges.

Findings

Twenty-eight respondents completed the questionnaire, with representation from a range of local, regional, and statewide governments, agencies, and organizations. Key thematic takeaways are summarized here, including anecdotes and highlights from free-response feedback.

Destinations

Questionnaire respondents reported witnessing minority, low-income, and/or other disadvantaged population groups needing to reach a full range of destinations. Employment, education, healthcare, social services, and open space and recreation are all essential destinations for disadvantaged populations, and the results suggest that transportation needs are not limited to just one kind of trip (e.g., commuting to work). More equitable transportation will address range of trip types, not simply commute trips.

Public Transit

Respondents identified availability of transit service, frequency of service, and off-peak travel as significant transit needs for minority, low-income, and/or other disadvantaged population groups. Other transit needs identified include reliability and cost. When asked which populations are the most vulnerable to inequity when using public transit, low-income, disabled, and senior populations received the most attention. Minority and foreign-born or Limited English Proficiency (LEP) populations also were considered vulnerable transit users. These results suggest attaining a more equitable transportation system will need increased service hours, coverage, and frequency, and special accommodations may be

required for low-income, disabled, and senior populations, among others. Insufficient frequency and service coverage are often cited as significant hurdles to suburb-to-suburb travel by transit.

Additional equity concerns noted in questionnaire responses included:

- Difficulty of wheelchair service, particularly off-peak and late night.
- Transit service hours and frequency geared primarily toward traditional 9 AM to 5 PM commutes.
- Growing population centers, e.g., Hackettstown, lack robust transit while population growth is fueled by immigrants and populations with low car ownership.
- Dissemination of user-friendly transit information, particularly to seniors and those without smartphones or Internet access, remains important.
- Transit access to growing warehouse districts (e.g., East Windsor) is difficult, in some cases due to inadequate shelters and inaccessible bus stops or lack of safe pedestrian connections.
- Lack of bus priority measures result in transit users experiencing delays due to roadway congestion.
- There is a need for more bilingual information and transit staff resources for LEP populations at transit hubs.
- Transit travel times can be lengthy for routine trips such as shopping or work/school trips.
- Consideration should be given to county-run bus systems to complement NJ Transit, and offer services at a lower price point.

Driving

Respondents noted that the cost of car ownership and the cost/availability of parking are the most significant accessibility needs among minority, low-income, and/or other disadvantaged population groups related to driving. Tolls, congestion, and unreliable travel times were noted by a handful of participants as well, though to a much lower degree than the cost of car ownership. Respondents noted that low-income populations are particularly vulnerable when considering driving choice, which perhaps explains why costs associated with driving emerged as a common concern. A relatively smaller share of respondents noted that disabled, minority, senior, and foreign-born or LEP populations also face inequities related to driving.

These responses indicate that driving is not an option for many, so transit and active transportation play a critical role in helping people reach their destinations. Similarly, driving represents an undue financial burden for disadvantaged populations unable to rely on frequent and reliable transit.

Additional equity concerns noted in questionnaire responses included:

- Roadway congestion is a concern for older adults.
- Many seniors choose to limit their driving to short trips.
- Unsafe pedestrian links (e.g., difficult road crossings) limit seniors' ability to complete trips.
- Need for first-mile/last-mile connections from suburban areas to commuter bus and rail to promote use of these established traditional transit services.

Active Transportation

Infrastructure, trip length/convenience of destinations, and safety (personal or traffic safety) are significant equity concerns shared by respondents. Neighborhood environment, which includes air quality and noise, was also noted by several respondents. Respondents suggested that disabled and senior populations are the most vulnerable populations, followed by low-income, minority, and foreign-born or LEP populations.

Considering walking and bicycling necessitate at least a moderate level of mobility, it is understandable why disabled and seniors ranked higher than other groups. The results highlight the need to consider all types of road users, including people with lower mobility levels, and how non-motorized transportation represents an important component of any mode, including transit and even driving.

Additional equity concerns noted in questionnaire responses included:

- Lack of ADA accessibility; poor condition or lack of sidewalks.
- Unsafe driving by motorists is a danger to pedestrians and bicyclists.
- Gaps in sidewalk and bicycle networks and incomplete facilities (e.g., abrupt ends to bicycle lanes).
- Lack of snow removal on sidewalks (or snow plowed onto sidewalks) disrupt mobility in winter.
- Lack of enforcement of bicycle lanes (e.g., parking in lanes) creates safety hazards for bicyclists.
- Inadequate crossing time at busy intersections make crossing dangerous and difficult for seniors or those with mobility limitations (e.g., Route 129 in Trenton, Route 9 in Ocean County).
- Lack of pedestrian connections from bus stops on major corridors to suburban warehouse and employment centers.

Spatial Considerations

Different trip types may have varying levels of equity concerns when placed in urban, suburban, or rural contexts. For employment, education, healthcare, and social service destinations, respondents suggested there are greater equity concerns in less dense locations relative to higher density locations. For instance, the survey responses indicate that someone who is a member of a disadvantaged demographic would face greater barriers in reaching employment destinations if they lived in a rural area than a larger urban area. A noteworthy exception is open space and recreational destinations. The survey respondents suggest that a member of a disadvantaged demographic group who lives in suburban context faces less concerning accessibility barriers in reaching recreational opportunities than an individual in an urban or even rural context. These results suggest that a more equitable transportation system would need to address the obstacles posed by geographic barriers.

Recommended Resources

Questionnaire respondents were asked to offer recommended resources or further recommendations to address equity concerns. Suggestions included:

- Coordination between counties (intergovernmental and private) to provide a comprehensive hub of mobility/access information available statewide.
- Training and education: NJTIP, County AAA/Offices on Aging, Municipal Offices on Aging Municipal and County ADA Coordinators, Alliance Center for Independence, Brain Injury

Alliance of NJ, American Planning Association chapters, Smart Towns, Smart Growth Institute, and similar groups all offering webinars and training on equity and social justice issues.

- Creation of new funding sources specifically targeted for the creation of suburban and small urban public bus routes.
- Cultural sensitivity training to improve interface between transit providers and disadvantaged populations.
- Partnerships between transit providers and community organizations to better understand the impact of bus route and service design and local needs.

5| SUMMARY ASSESSMENT OF EQUITY-RELATED NEEDS

Needs and Challenges Faced

The assessment conducted for this study identified several needs and challenges facing historically disadvantaged and vulnerable communities. While some are general needs for the region, these needs are often much more acute for low-income, minority, and other populations who do not have access to (or the ability to drive) a personal vehicle, who have mobility impairments, and/or are dependent on public transit and other available services for access to destinations.

In addition to the information analyzed and collected in this study, there are a range of other plans that provide insight to these unique needs. Specifically, the regional Coordinated Human Services Transportation Plan (CHSTP), and local human service plans describe the transportation needs of seniors, low-income people, veterans, and individuals with disabilities. Below are highlighted some of the key types of needs identified based on the analysis from this study and a review of other documents, including the CHSTP.

Spatial and Temporal Needs

Many populations face challenges accessing destinations not well served by public transit and other available transportation services, particularly in suburban areas, or that are not well served during certain times. Disadvantaged populations living in rural areas also face barriers in reaching employment and other destinations. Common issues identified include:

- **Reverse commute challenges** for residents of urban areas to reach jobs in suburban areas that are not well served by transit or require multiple indirect connections. Suburban distribution sites, fulfillment centers, and other employment opportunities often have part-time, temp workers, and shift workers, and are located in suburban areas that are auto-oriented, which create challenges for transit agencies to provide viable services.
- **Long and uncompetitive transit travel times / Limited alternatives, including for non-commute purposes -** Many fixed route transit services are oriented to New York City and urban job centers but are not as functional for local trip purposes like school, childcare, and shopping. Transit riders often need to travel to stations in the urban core (such as Newark Penn Station or Secaucus Junction) and then back to other locations to arrive at their destination, often with long travel times. Travelers who need to transfer between buses often face long travel times, and if one bus is delayed, it may mean missing the second bus, which then adds to each more delay. Moreover, some areas have had population growth fueled by immigrants and populations with low vehicle ownership but lack robust transit services.
- **First-mile/last-mile connections -** While this issue affects transit riders broadly, lack of first-mile/last-mile connections can be a particular problem for disadvantaged and vulnerable populations due to lack of access to vehicles for park-and-ride and/or limited physical ability to walk. For instance, lack of bus stops near residences, such as senior centers, and destinations can be a hindrance to mobility. Gaps in sidewalk and bicycle networks from bus stops to suburban employment centers was also cited as a concern.

- **Limited options for off-peak travel** (mid-day, evening, and weekend services) - Where services exist, they may not be available at the times or frequency that are needed, as many transit services are geared toward traditional work hours. Disadvantaged populations are more likely to have shift work, work on weekends, or other nontraditional commuting hours where transit services are limited or infrequent. They also may need services for other purposes such as shopping or religious services. Travel and wait times can be particularly long for off-peak services and may require indirect connections that make what would be a short drive trip into a much longer transit trip.

- **Cross-county transportation services -** Community transportation services, including deviated fixed-route and demand response services, are often confined to the borders of the provider jurisdiction. According to the CHSTP, members of disadvantaged or vulnerable populations, who rely on county-provided transportation services, or services provided by non-profits contracting with counties, are often unable to reach nearby destinations in adjacent counties, even if that destination is near their place of residence. The inability to reach needed medical care is a concern, especially among veterans, who often must travel far to access VA hospitals.

Infrastructure and System Operations Needs

Conditions of transportation infrastructure and how transportation systems are operated may limit some individuals from accessing available transportation options. Examples include:

- **Americans with Disabilities Act (ADA) accessibility**, including the condition of sidewalks and lack of ADA provisions along sidewalks and at transit stations, is an important issue for vulnerable populations. Access to wheelchair services during off-peak periods was also identified as a concern.

- **Need for supportive transit infrastructure, such as bus shelters and benches** - Lack of benches to sit on and shelter while waiting for transit is of interest to all transit riders but is of particular importance to the elderly, people with morbid obesity, and those with physical impairments.

- **Road design, lack of crosswalks and pedestrian medians, and gaps in pedestrian and bicycle infrastructure** create challenges that make it dangerous to cross a street, to access locations by walking or biking, and can make bus stops difficult or dangerous to access.

- **Traffic signal crossings** that are not timed to reflect the needs for people with mobility impairments also create challenges.

- **Roadway congestion and unsafe driving** is also a concern, both from the perspective of drivers and pedestrians. Many older adults choose to limit their driving to short trips due to roadway concerns.

- **Maintaining sidewalks and areas for bicyclists, including snow clearing** is an important issue. In the winter, snow plows that clear snow from roadways often push the snow up onto sidewalks, including at intersections in curb cuts, making it very difficult for pedestrians. Potholes and uneven repaving from maintenance work on roadways makes bicycling challenging or dangerous.

Affordability

Affordability of transportation services is a concern for low-income and other vulnerable populations, both from the perspective of the challenges of owning a vehicle (including the cost or vehicle ownership and parking), which may seem necessary to reach certain job opportunities and other destinations, and the cost of transit fares. For low-income people, trains are not as affordable or accessible and so may rely on buses. With limited transit services during off-peak hours, people may need to pay for ridehailing or taxi services, which are more expensive.

Access to Information

Challenges accessing information on transportation services, which can make trip planning complex.

- **Multilingual information** – Stakeholders identified a need for more bilingual information and staff resources to support LEP populations.
- **Access to varied information sources** – Dissemination of user-friendly transit information, particularly to seniors and those without smartphones or Internet access, was cited as a need.

Note: The spatial and temporal needs and infrastructure and system operations needs listed above for disadvantaged population groups generally were also identified as part of the Needs Assessment report in relation to overall issues with mobility and accessibility in the region. Affordability and access to information were not specifically identified in the general Needs Assessment report and have been added to the list of regional needs that has been taken forward to the Strategy Identification and Prioritization Report.

Strategies and Opportunities to Address Equity

A separate report on Strategy Identification and Prioritization identifies a full array of strategies for the NJTPA, transportation service providers, local agencies, and other partners to consider to address regional needs; it also includes data-driven analysis to identify potential areas to consider for specific strategy implementation. Below are highlighted some specific strategies and approaches that were identified and highlighted by stakeholders as particularly valuable to address equity concerns.

Land Use-Transportation Coordination

Accessibility and mobility for communities is hugely influenced by the interconnections between land use and transportation. Opportunities identified include:

- **Siting of affordable housing**: There are opportunities to tap into regional and local agencies to identify issues tied into siting of affordable housing in relation to available public transit and other transportation options. Communities currently may locate their affordable housing without much regard to access to transit services and other household needs (grocery shopping, walkability, etc.), and better siting could help to address needs.

- **Siting of warehouses, retail, and other employment opportunities:** Local governments, transportation service providers, economic development agencies, and the private sector can work together to support location of employment development in locations that are well served by transit or can be effectively served through combinations of public and private transit, shuttle, or shared ride services. Businesses that look for corporate campus locations may tend toward available cheap land and what appears to be access to a sizeable workforce but not take

into account location relative to transit corridors, and in so doing, wind up further "off the beaten path" for job opportunities and potential employees. There are disconnects in job access in what otherwise is a densely developed region with robust transit service.

- **Mobility hubs and transit-oriented development –** The ability to take care of multiple needs, such as having groceries, libraries, schools, and health services within a core area, without having to make multiple separate trips, is beneficial to all people, but particularly so to populations with**out** a personal vehicle, with mobility impairments, and other vulnerable populations. Both urban centers and towns in suburban and rural areas offer multiple opportunities that enhance access compared to more dispersed development patterns.

Enhancing the Usability of Public Transit and Other Travel Options

Overall, enhancing the usability of public transit plays a critical role in providing equitable access to all, since disadvantaged populations are more likely to rely on transit for their daily mobility needs than other population groups. Some key strategies identified to support equity include:

- **Transit priority –** Buses are often stuck in traffic congestion and behind double-parked vehicles, leading to long travel times and poor reliability, which can be an added challenge when needing to transfer between buses. Dedicated lanes for buses would reduce travel times and improve transit on-time performance.

- **Suburban bus services –** With the suburbanization of low- and moderate-income households, there is an increasing demand for local bus services by residential populations in suburban areas, as well as new job concentrations (e.g., warehousing and fulfillment centers) in suburbs. However, it is recognized that there are challenges to cost-effectively service these areas by NJ TRANSIT. One possible solution identified is for County systems to establish and operate lower-cost fixed-route contract services open to the general public, which could receive some regional funding.

- **Supportive transportation services, including jitneys and vans –** Additional transportation services such as commuter vans and jitneys can compliment and in some cases supplement bus transit service and fill service gaps in service for vulnerable communities in locations and at times when fixed route transit is not viable. Curb management practices to support pick-ups/drop-offs, grant funding, and enhancing information availability and mapping of service routes could make this a more robust system.

- **Bus shelters and benches –** Supportive infrastructure is needed to make transit more comfortable and usable for all users, and this is particularly valuable to support equitable outcomes.

- **First-mile/last-mile connections –** Sidewalks, bicycle networks, local shuttles, micromobility services and other connections to support access to bus and rail stations would help to support all people and would be particularly valuable to disadvantaged populations that rely on transit. Small park-and-ride lots may also be beneficial in areas near major bus stops.

Enhancing the Pedestrian and Bicycle Environment

Enhancing the environment for non-motorized transportation will benefit all users, and is particularly important for historically disadvantaged communities. Strategies to consider include:

- **Small scale improvements** – Improvements to sidewalks, crosswalks, and bicycle facilities, such as on-street bike lanes and off-street trails, that are small in scale and connect where people live to local destinations, including jobs, schools, parks, groceries, and other shopping would help to improve accessibility for a variety of populations.

- **Street design** – Many streets were built for maximizing traffic throughput and speeds, resulting in a situation where adding sidewalks alone is not enough to support a safe, quality environment for pedestrians and bicyclists. Efforts can focus on traffic calming or redesigning streets to enhance the environment for nonmotorized travel.

Integrating Equity Perspectives into Transportation Decision Making

Achieving equitable outcomes is supported by integrating equity into all aspects of transportation decision making. Some approaches for strengthening the integration of equity include.

- **Prioritizing investments in areas with high levels of vulnerable populations** – As part of the process of prioritizing projects, the NJTPA and transportation agencies throughout the region should consider where there are opportunities to advance projects to meet the needs of disadvantaged populations and to prioritize those in locations with high levels of disadvantaged or vulnerable populations. The analyses in Section 3 of this document could be a basis for such analysis by identifying areas with high Social Vulnerability Index levels, overlaid with different types of transportation challenges. Conducting similar analyses early in project identification, analysis, and prioritization processes would help to support consideration of these issues.

  It is also important to recognize that vulnerable populations typically are not as engaged in the transportation decision-making process, often due to barriers such as language, education, health conditions, time constraints, or other issues. As a result, programs that are open to all participants may inadvertently fail to equitably address the needs of disadvantaged communities. For instance, in cases where community request is a mechanism for identifying and prioritizing investments, such as for bus shelters or sidewalk improvements, disadvantaged communities may not be as active in making requests as other communities. Proactive efforts to reach out to these communities and to prioritize investments in these areas with a high proportion of vulnerable populations can help to address these barriers.

- **Considering the impacts of freight and goods movement** – While many of the strategies identified to enhance equity focus on moving people, it is important to recognize how freight movement often disproportionately affects low-income and minority communities. Large volumes of truck traffic create noise, vibration, air pollution, and other impacts on surrounding communities. While enhancing mobility includes improving the efficiency of goods movement, it is important to consider how to avoid, minimize, and mitigate potential harmful effects on surrounding communities.

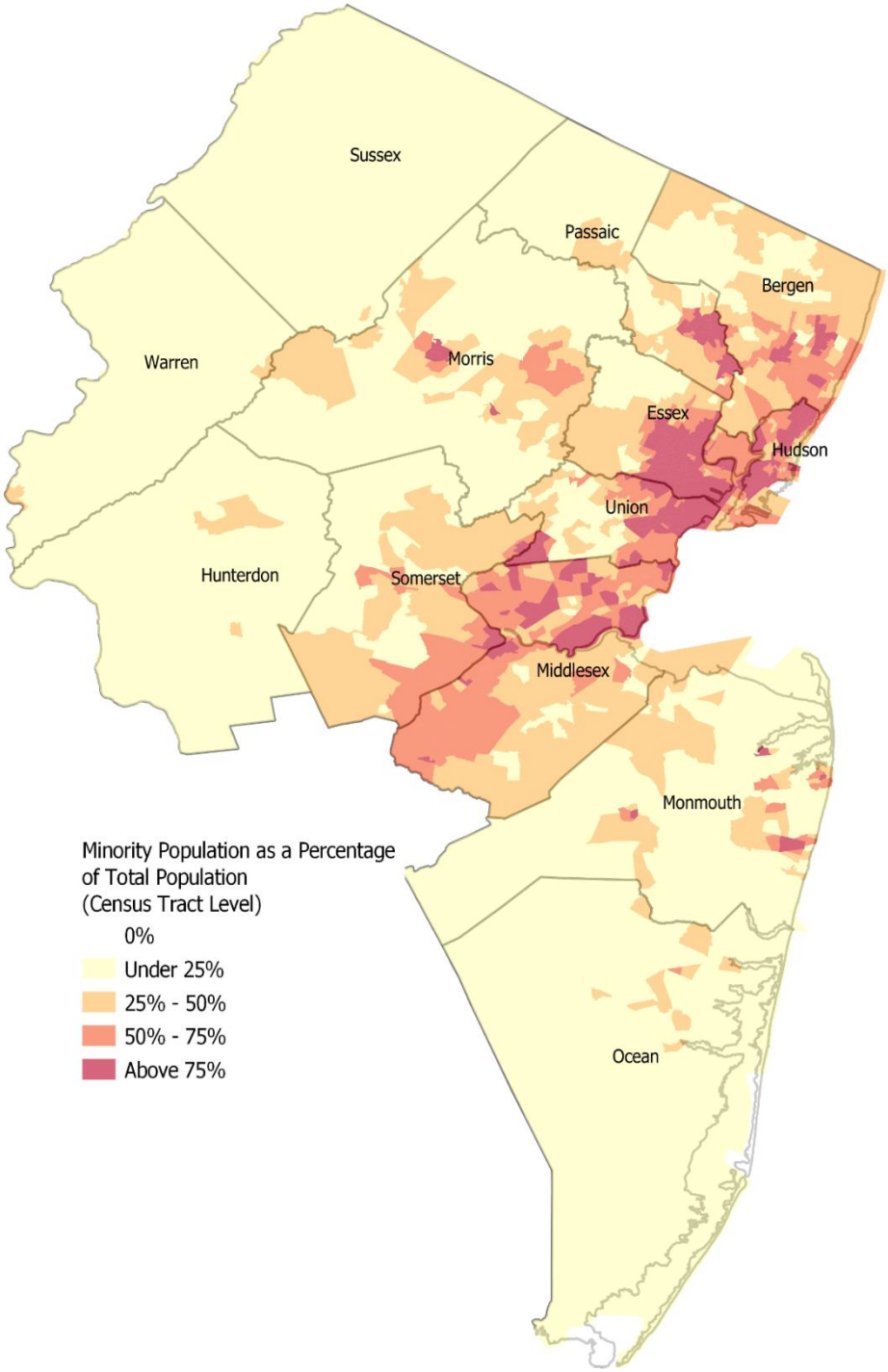
- **Exploring projects from a multi-purpose perspective** – Many times, transportation projects that focus on one issue or problem may create unintended challenges to access or mobility. For

instance, a roadway safety improvement project may create barriers to pedestrian movement. Exploring problems and solutions in the context of all modes and working to balance diverse needs when developing and implementing projects helps to maximize the benefits of projects. For instance, a road safety or rehabilitation project could offer an opportunity to add or enhance bicycle lanes, sidewalks, or other improvements that enhance accessibility for nonmotorized users.

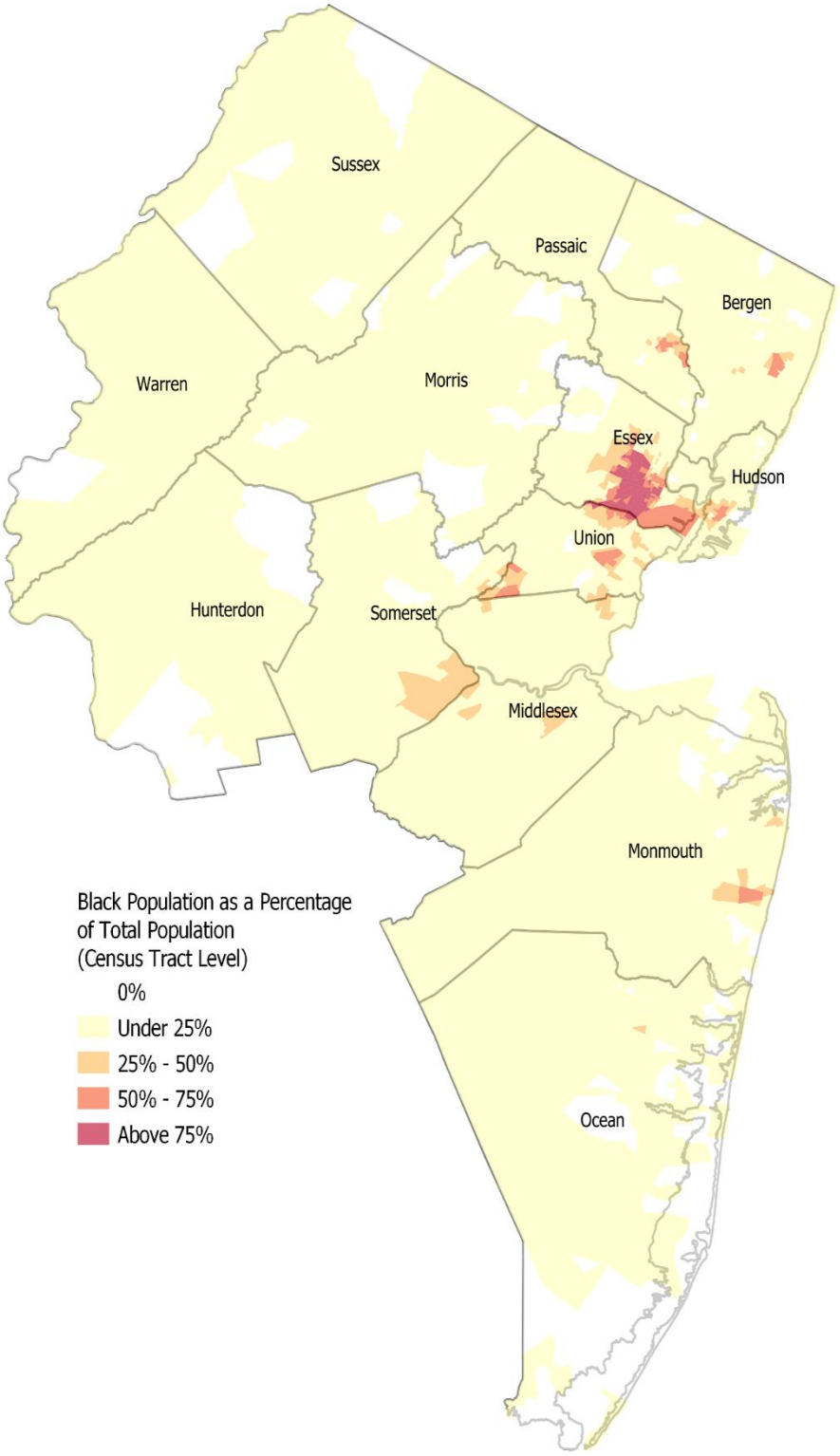
- **Considering opportunities to rectify past injustices**. In addition to addressing existing needs, it is important to recognize that transportation projects have played a historic role in inequality. In many locations, development of highways bisected minority and/or low-income communities, resulting in displacement of homes and businesses, creating barriers to local access, and contributing to noise, vibration, air pollution, and other harmful effects. The NJTPA and other partner agencies can look to advance strategies that help to rectify past impacts on communities, such as through addressing nuisances, enhancing the visual environment, capping highways, improving connectivity of the local road and pedestrian network, and other efforts to enhance community livability.

6| APPENDIX: MAPS OF POPULATION DEMOGRAPHICS AND ACCESSIBILITY MEASURES

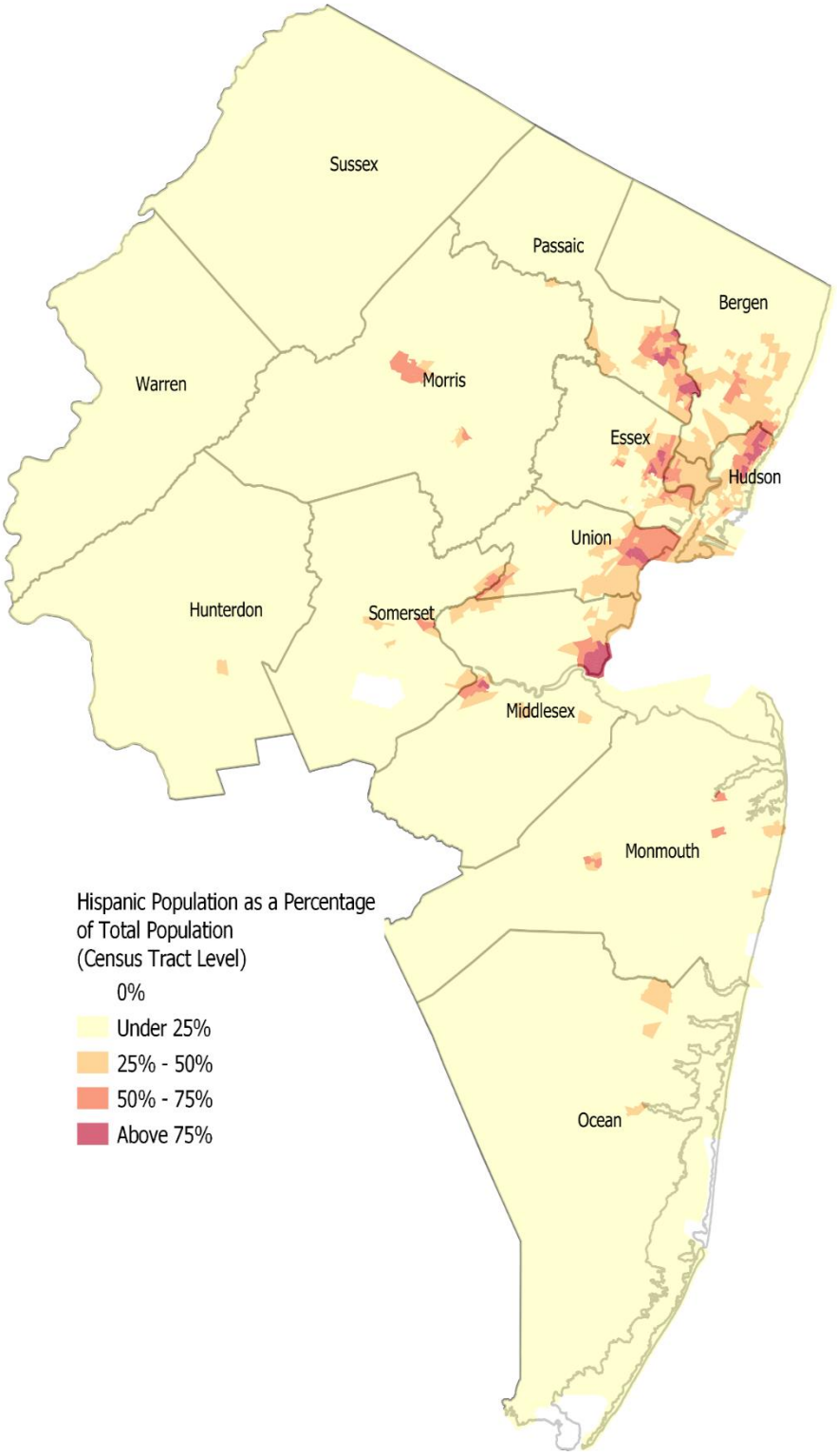
Race – Minority Population (Source: ACS 5-year 2014-18)



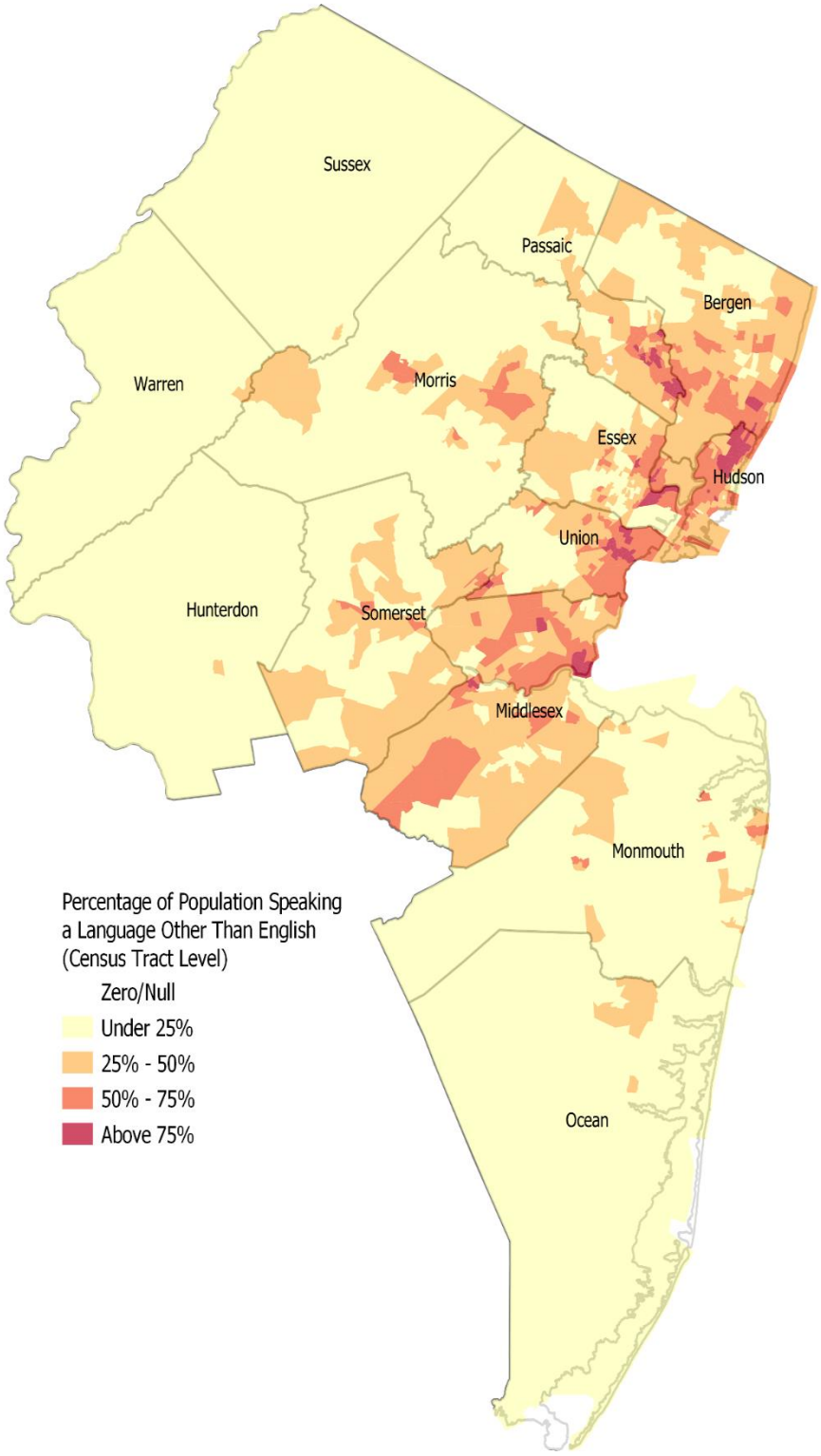
Race – African American Population (Source: ACS 5-year 2014-18)



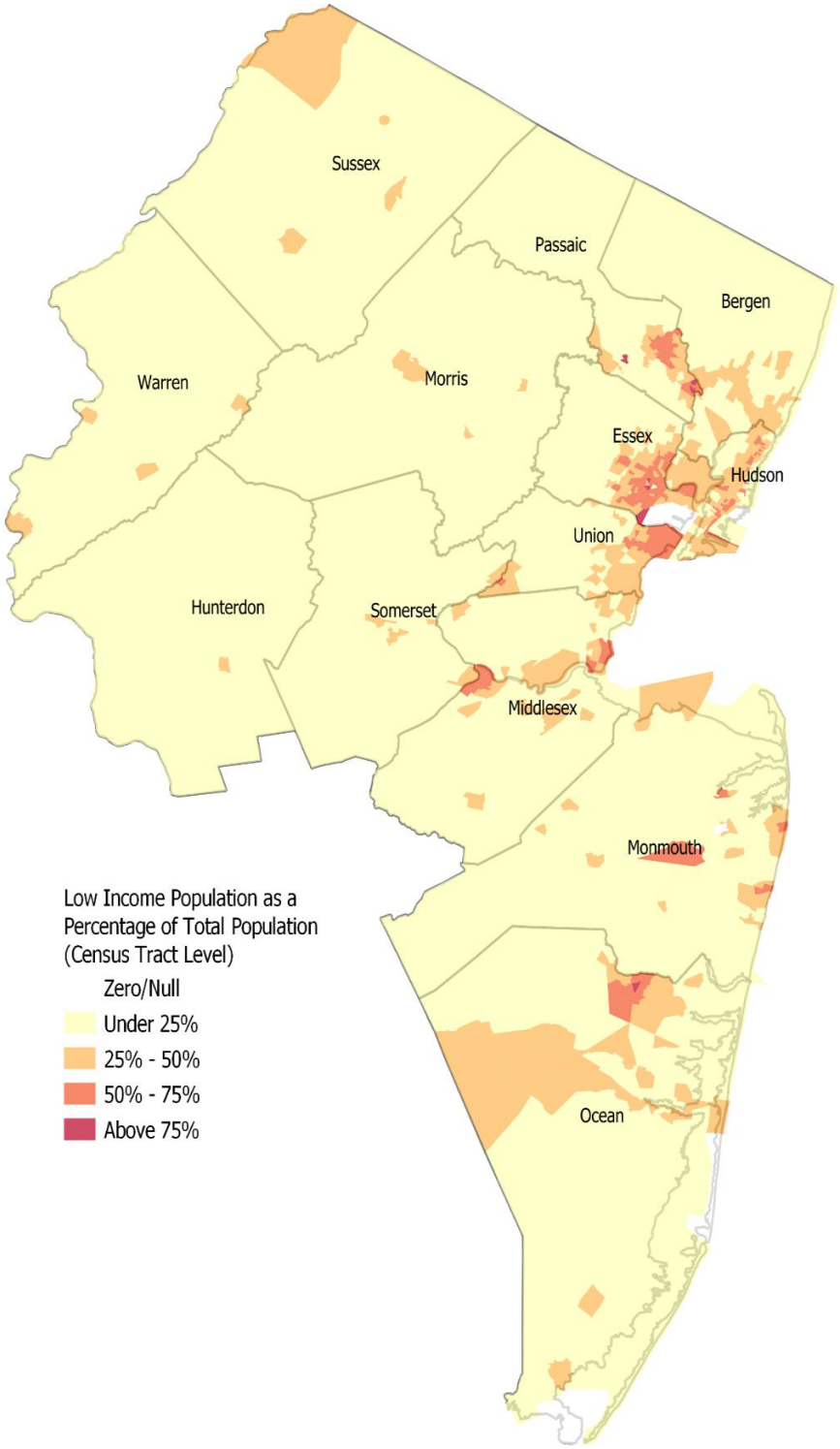
Race – Hispanic Population (Source: ACS 5-year 2014-18)



Percentage of Population speaking language other than English (Source: ACS 5-year 2014-18)

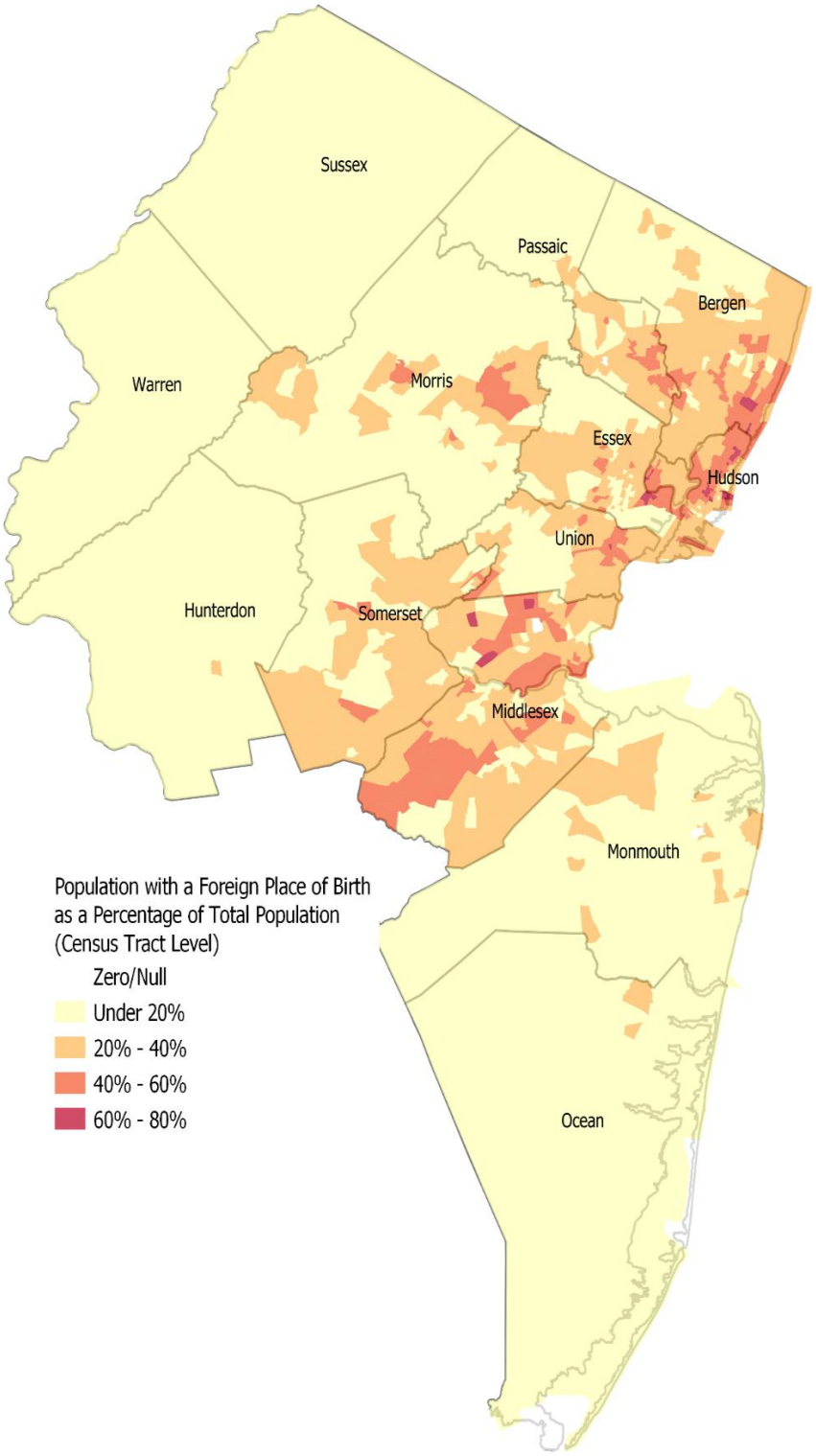


Low Income Population (At or below 200 percent of the poverty line) (Source: ACS 5-year 2014-18)



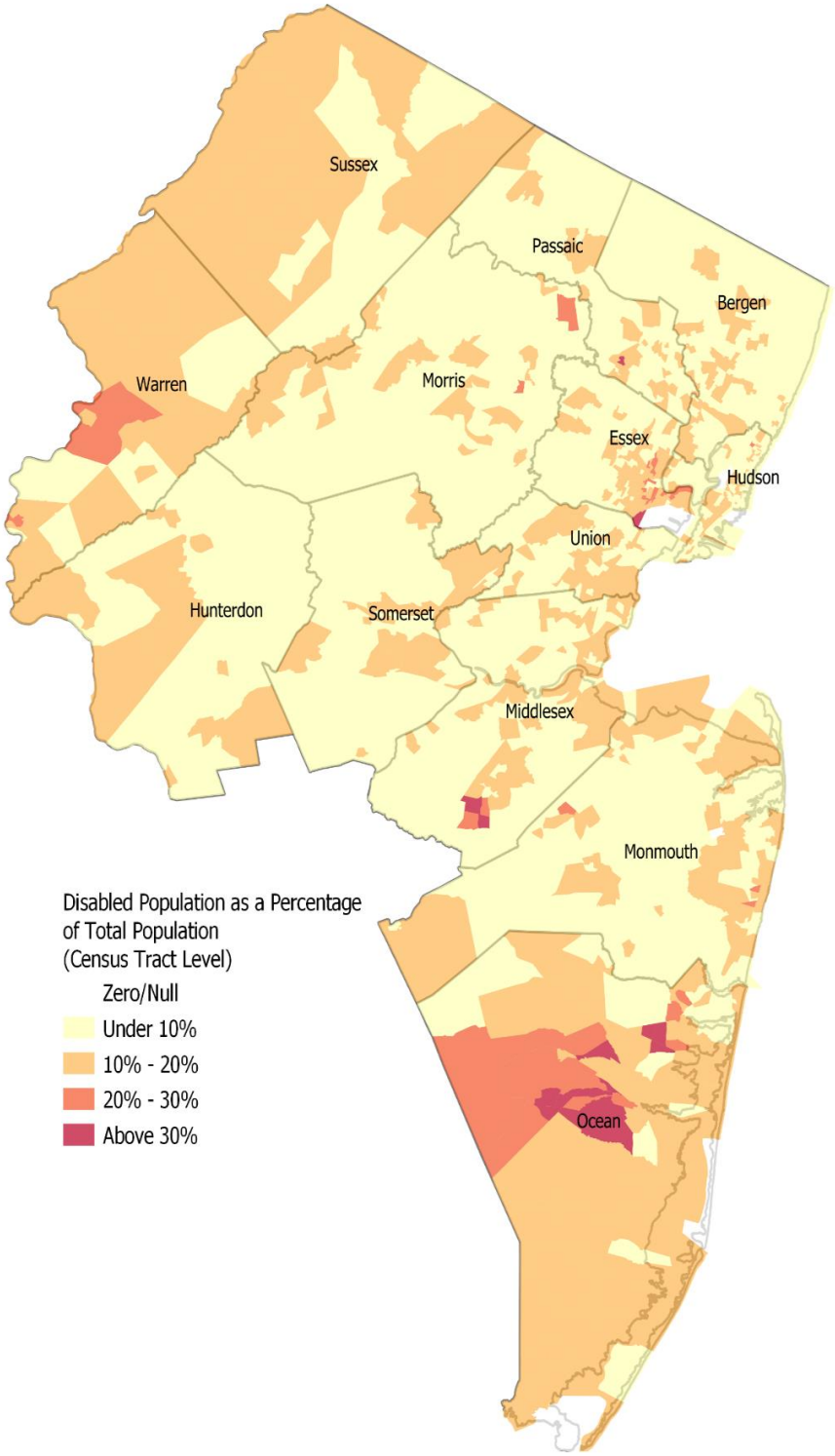
Place of Birth (Source: ACS 5-year 2014-18)

Note: Different percentages used in color scale

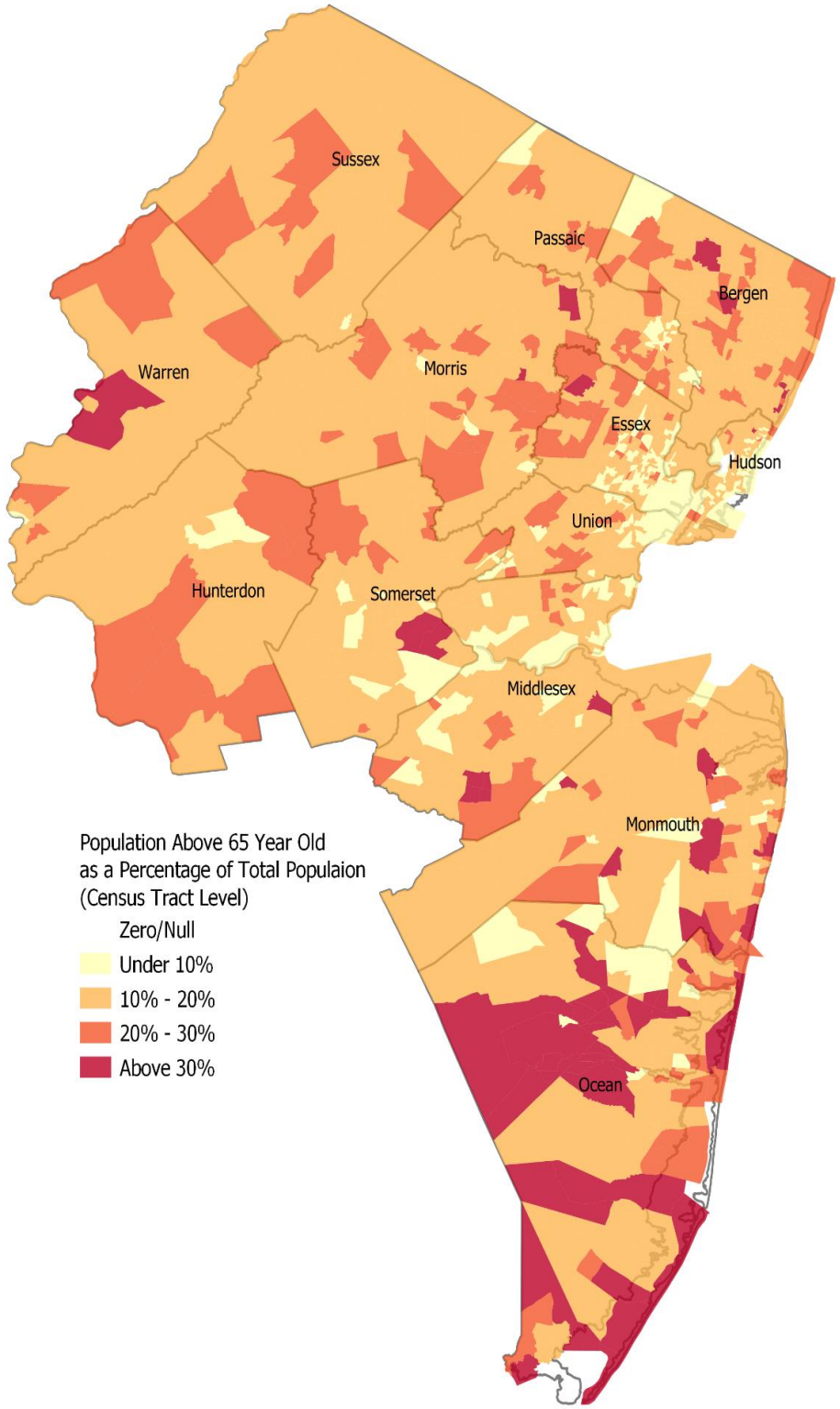


Disabled Population (Source: ACS 5-year 2014-18)

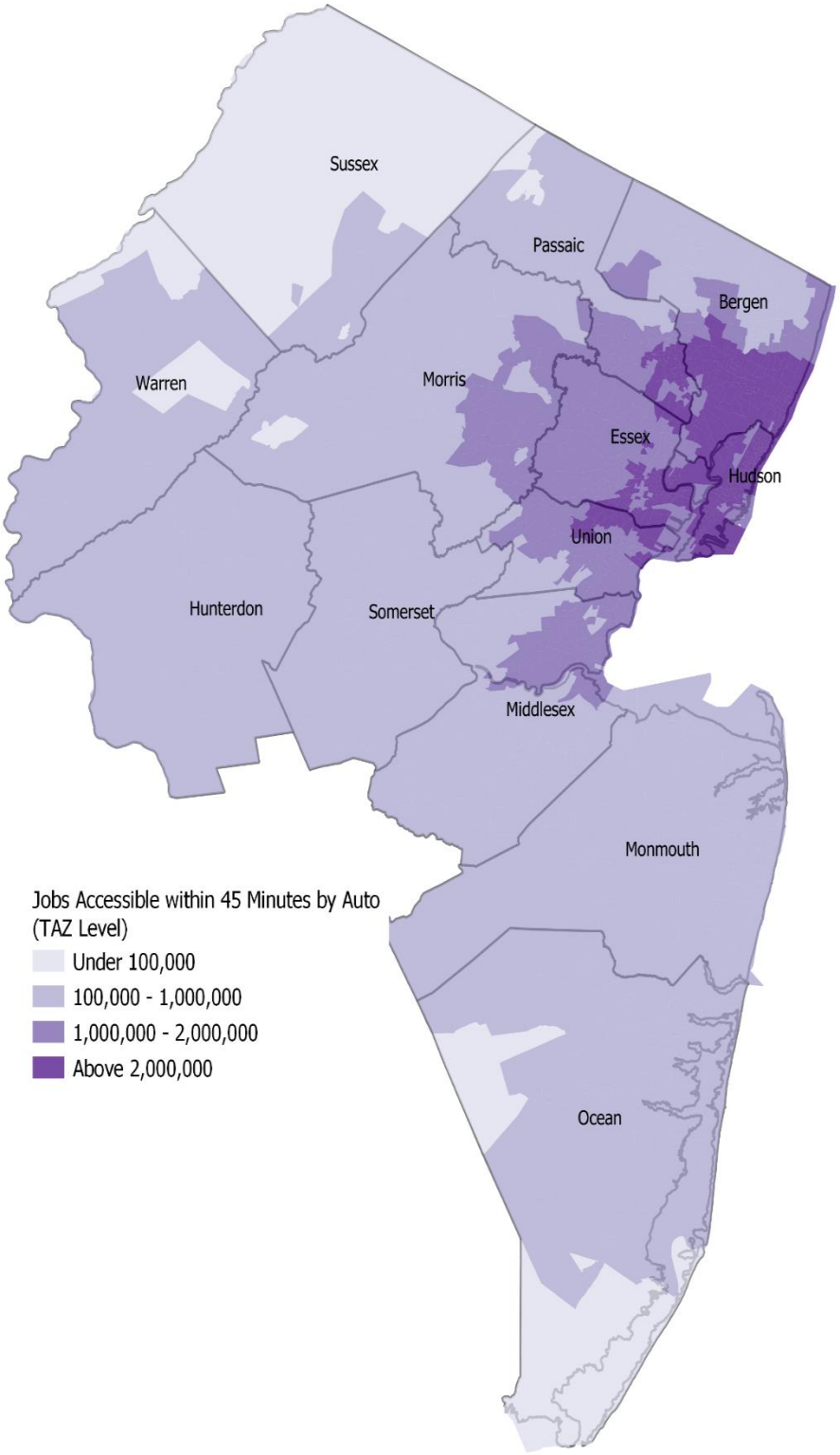
Note: Different percentages used in color scale



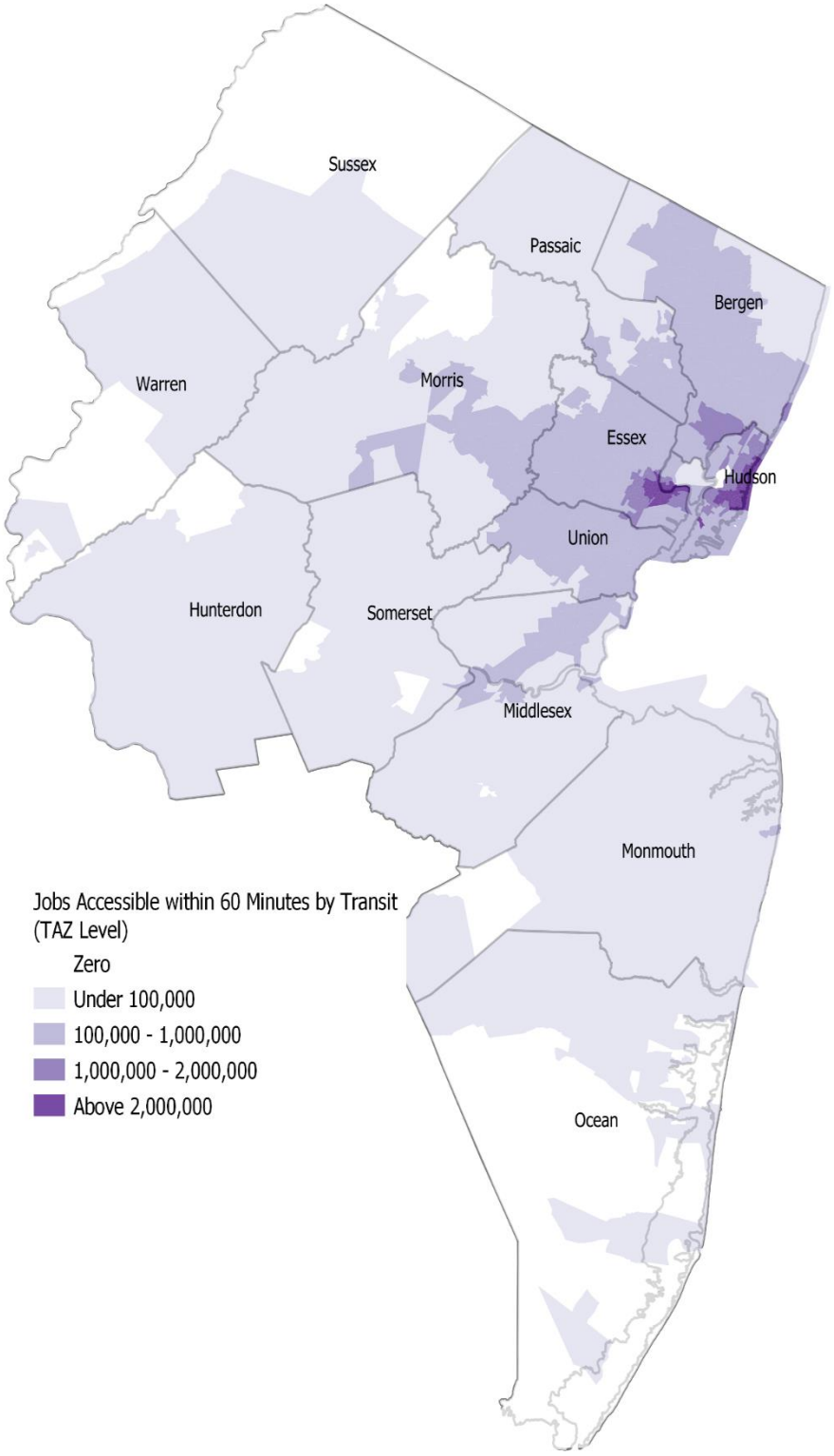
Population 65 and older (Source: ACS 5-year 2014-18)



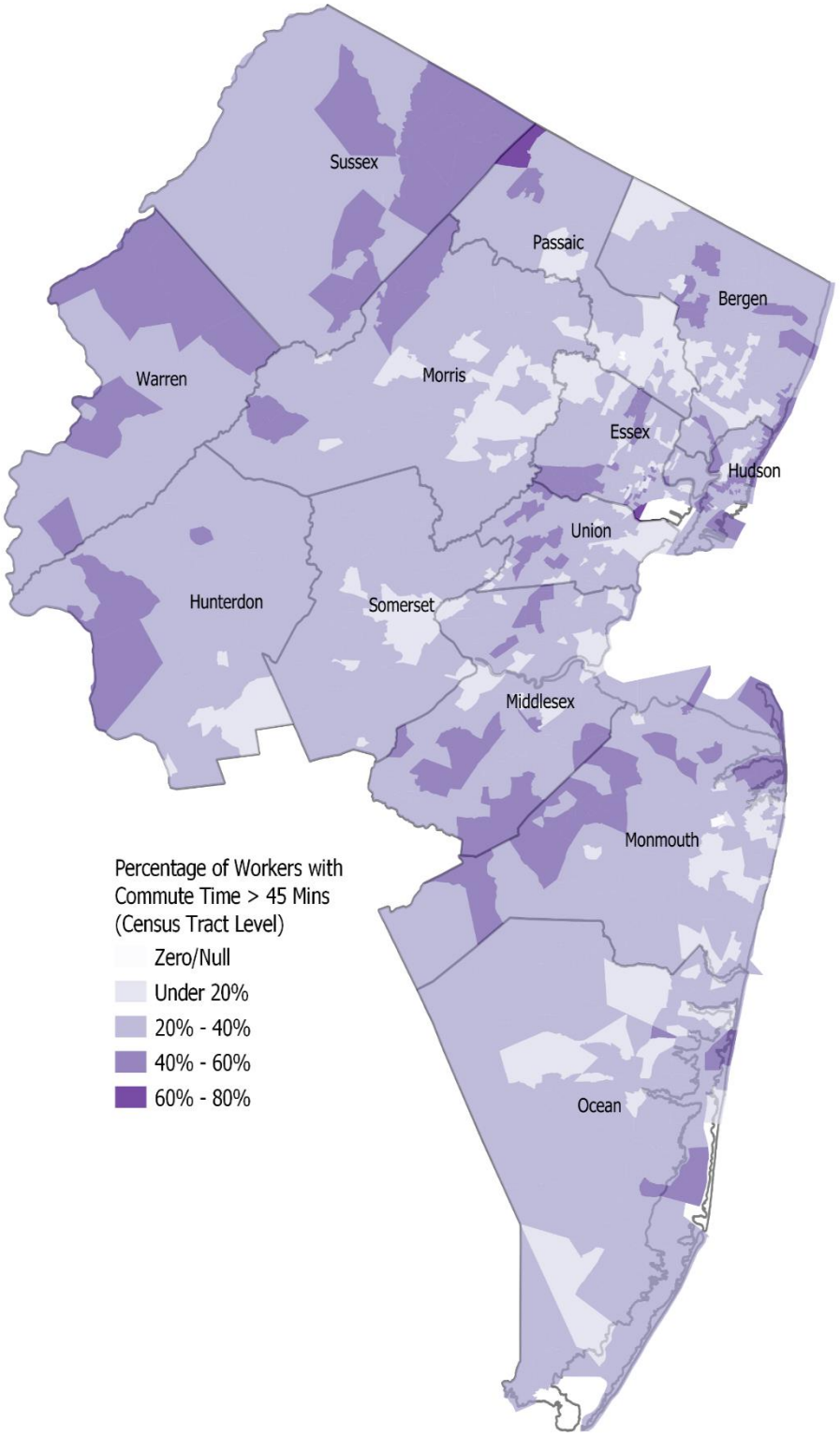
Accessibility by Auto (Source: NJRTME Model)



Accessibility by Transit (Source: NJRTME Model)



Commute Trip Time (Source: ACS 5-year 2014-18)



7| APPENDIX: OPEN RESPONSES TO QUESTIONS

Below are recorded the individual responses to open-ended questions within the stakeholder questionnaire.

Accessibility implies that transportation enables travelers to reach their desired destinations with ease. Where do you witness needs for minority, low-income, and/or other disadvantaged population groups related to accessibility and mobility?

- shopping and healthy food
- In certain pockets, I think all of these apply
- transportation to senior centers, meal sites, meal pantries and local errands
- Food Shopping
- Transportation to shopping, grocery, commerce, etc.
- Transport individuals with intellectual and developmental disabilities

Please offer specific examples of needs or challenges related to public transit (issues and/or locations).

- wheelchair service on off hours
- Services hours and routes that are geared towards 9 to 5 workers in downtowns; the cost of transit; lack of information about delays
- Some areas in the region lack transit, such as Hackettstown, where there is a growing population of immigrants and low car ownership. Some areas are more difficult to reach urban areas other than NYC, such as Paterson to Newark.
- Maps, ramps, signage, human assistance
- Cost seems to be one of the major barriers, but accommodations for people with morbid obesity is also problematic.
- Needing to take multiple buses, which means that the transfers have to line up. If one bus is delayed, it may mean missing the 2nd bus (the transfer bus), which then adds to each more delay. - Again regarding delay, if you buy a 2-zone ticket and miss the transfer because the first bus is delayed, your 2-zone ticket may expire because it only has a live time of something like 45 minutes. To contrast, I believe most train tickets have nearly 3 hours of use. It's not fair to bus users! - Buses get stuck in traffic when they don't have dedicated lanes. In the Ironbound, buses also get stuck behind double-parked vehicles. Very unfair to transit riders. - When you use the bus app to find arrival times, it's very clumsy because you need to know the number of your stop. How is anyone supposed to know that unless they frequent that stop all the time?! It would be nice to have an app that tells you which buses are arriving at different stops within a 1/4 mile radius of you rather than have to look up arrival times for each stop. - The way NJ Transit tracks bus arrival time performance is not very robust. Their are something like 30 terminals and they only 6 terminals are measured for on-time performance, which is measured by the buses being on time when they depart. Performance should be measured by their arrival times! You'll have to confirm this, but I believe train on-time performance is tracked by how late they arrive at the final station. This fundamental tracking difference between how buses versus trains being rated as "on-time" masks many of the delay problems since buses (regular buses, not "commuter buses") are disproportionately used by EJ communities when compared to train.

- Providing information to older adults who may not be able to access information on line. Transportation stops near their residence. Education on how to access public transportation
- Lack of transit access to the growing warehouse district in the East Windsor and Middlesex County. Infrequent service to many suburban locations. Bus stops along Rt. 1 in Mercer County along the highway and without any shelters and are inaccessible to people with disabilities, seniors and uncomfortable for all. Lack of pedestrian infrastructure to access stops making it difficult to use some Ocean Ride services and NJT.
- For low-income people, trains are not so affordable/accessible so many rely on buses. for LEP population, signs and bilingual staff are often unavailable at bus stops or train stations.
- Location cancellations have affected many in the lower income areas of Hudson County. This has resulted to using alternative transportation modes (e.g., Car Sharing) which costs per ride much more than public transportation. Additionally, the reliability of the service routes are at many times not adhered to which causes secondary effects for many trying to get to work (i.e., late slips, issues with management, etc.)
- Individuals with Disabilities have difficulty in accessing public transportation early morning for employment, especially those in more rural/suburban areas that are not 3/4 of a mile from a stop.
- As the suburbanization of low and moderate income households continues, the demand for local bus service in suburban areas is far outstripping the capacity of NJ Transit to meet these emerging demands. There is a need for County systems to develop lower cost fixed schedule services that are open to the general public. One way to do this is for NJ Transit and MPO funding to establish lower cost contract services which could be operated by County systems. One of the few current examples is the funding by NJ Transit of Somerset County to operate fixed schedule service to Raritan Valley Community College to operate a former NJ Transit fixed schedule service at lower operating cost per hour.
- Low income families and individuals often have to ride the bus for hours to get to the store or get to work due to limited routes.
- The funding required to operate requested services

Please offer specific examples of needs or challenges related to driving (issues and/or locations).

- Signage
- Most people in vulnerable situations do not have the funds for adequate vehicle purchase or upkeep. Other costs (tolls and parking) are major barriers.
- Cost of fuel (if not already included in car ownership)
    - Not always having a vehicle available (for example, if shared) - Not having a license, so driving undocumented and then may not report crashes that occur for fear of law enforcement - car theft - Car insurance being more expensive for people that live in urban areas
- Road congestion is a concern for older adults
- Many seniors choose to limit their driving. They may drive near their home, but if everything they need requires crossing the highway, then they can't access it.
- Cost of gasoline, insurance and tolls continue to rise in Hudson County. This presents a specific challenge to the minority communities in the county when trying to use private auto transportation.
- The need for first-mile/last-mile connections from suburban areas to commuter bus and rail to promote use of these established traditional transit services.

- the cost of maintaining a car is very expensive in the State of New Jersey. Some low-income families and individuals cannot afford car insurance, car repairs, registration, DL renewals, etc. Some drive very unreliable cars which consistently are in need of repairs.

Please offer specific examples of needs or challenges related to walking and bicycling (issues and/or locations).

- Lack of ADA accessibility; poor condition or lack of sidewalks.
- Proper lanes, automotive driver safety.
- There is not adequate infrastructure for walking or bicycling and many vulnerable groups have associated mobility issues.
- Bicycle roadways and designated walking areas that abruptly end in traffic (middle of road) without safe area to walk/bike leaving individual walking/biking in traffic.
    - Uneven sidewalks cause tripping hazards
    - Cars parked across sidewalks or crosswalks are hard to get around with a stroller
    - Drivers are often oblivious to people in the crosswalk
    - Drivers use their horn too liberally--especially in Ironbound
    - When it snows in the winter, the snow plows come through and push the snow up onto the sidewalks, especially at the intersections in the curb cuts making it very difficult to climb over with a cart, stroller or small child
    - Drivers crowd bicyclists in order not to cross the double yellow line
    - Potholes or uneven repaving from maintenance work on the roadway makes it dangerous for cyclists, especially when there's not a marked bike lane to ride in
    - Cars parked in bike lane make bike lane use difficult
    - It's a lot of responsibility for kids walking to school unaccompanied to take their safety into their own hands since there can't be a crossing guard at every point.
    - Sidewalk lighting is often inconsistent and knocked down poles don't quickly get fixed
    - Unlike a roadway, sidewalk snow clearing is the responsibility of the individual property owner and many property owners, including business owners in downtown BIDs don't clear the snow in front of their business
- Additional bike lanes needed for travel.
- Not enough crossing time at some locations to allow for seniors or people with disabilities to cross. Lack of lead lights and pedestrian refuge islands and/or long distances between signalized intersections. Rt. 129 in Trenton, Rt. 9 in Ocean and many other locations. In the warehouse district, lack of sidewalks to get from a bus stop to the distribution center.
- Walking/bicycling relative to "last mile" and safe access to transit stops/stations.
- Seniors/Disabled/FLEP persons are at risk as more vehicles on the roads mean more traffic safety concerns.
- Availability of safe trails and bike lanes to promote use of bikes for commutation by everyone.
- Not enough sidewalks and safe places to walk.

Please provide any additional equity concerns related to transportation access and mobility.

- Part of the equity discussion is also about unequal law enforcement, and fear of going into some areas (by any mode) by people of color. I know we can't address this in the CMP Study, but traffic stops and harassment while walking is real.
- Cost and ability to make the connections between work trips plus personal or childcare related trips, etc.

- Policies need to address the costs and infrastructure barriers that are the most significant factors limiting transportation for vulnerable groups.
- Coordinated platform to access information and updates.
- Access to affordable healthy food is an issue of concern in urban areas that might be a food desert. The ability for low income and seniors to get to a grocery store is also an issue in some rural and suburban locations, though county paratransit can and does help provide service for this.
- As above, equity concerns for each type of trip depend also upon the modal choice and availability (or lack thereof). May need to drill down on these some more to get to the true underlying issues.
- In general, low-income population relies on public transportation rather then driving own cars. traveling within and between suburban and rural areas for work and basic services seems to be challenging for them, especially in inclement weathers.
- All have been addressed previously.
- The greatest equity challenge is availability of transit on suburban and small urban areas. Promoting use of lower cost community transit using 20-30 passenger buses in areas where there is a demand for new transit based on growth of limited or zero car households. In some areas where the only transit is non-NJ Transit community transit services, we are actually going backwards with systems discontinuing existing fixed route and route deviation fixed route services. This is because there is an expectation that these public bus services should be provided by NJ Transit who does not have the financial resources to create new bus routes. The answer is dedicating funding through NJ Transit to provide new routes through a lower cost mode either through the County systems or through contracted private community transit operators. This is calling for a reinitiating of the Wheels program approach which NJ Transit initiated in the 1990's but with a partnership with County coordinated systems.
- Low-income individuals in rural areas often only have opportunities for employment in their local areas which often limit their financial options.

Please identify any resources you consider useful in tackling equity concerns in accessibility and mobility. (Example: organizations, services, training, funding, etc.)

- Reallocation of funding for infrastructure.
- Coordination between counties (intergovernmental and private), comprehensive hub of mobility/access information available statewide, funding, services, public awareness campaigns.
- Training – NJTIP, County AAA/Offices on Aging, Municipal Offices on Aging, Municipal and County ADA Coordinators, Alliance Center for Independence, Brain Injury Alliance of NJ, APA Chapters, Smart Towns, Smart Growth Institute, and similar groups all offering webinars and training on equity and social justice issues.
- Cultural sensitivity is also important. i have seen NJ transit train conductors single out young people of color to scold or apply "policies." A few conductors are just simply rude and ignores people's needs. i think regular trainings on work ethics, cultural differences might help.
- Partnering with local community organizations to better understand the impact of routes and recommendations of where to place new ones.
- Creation of new funding sources specifically targeted for the creation of suburban and small urban public bus routes.