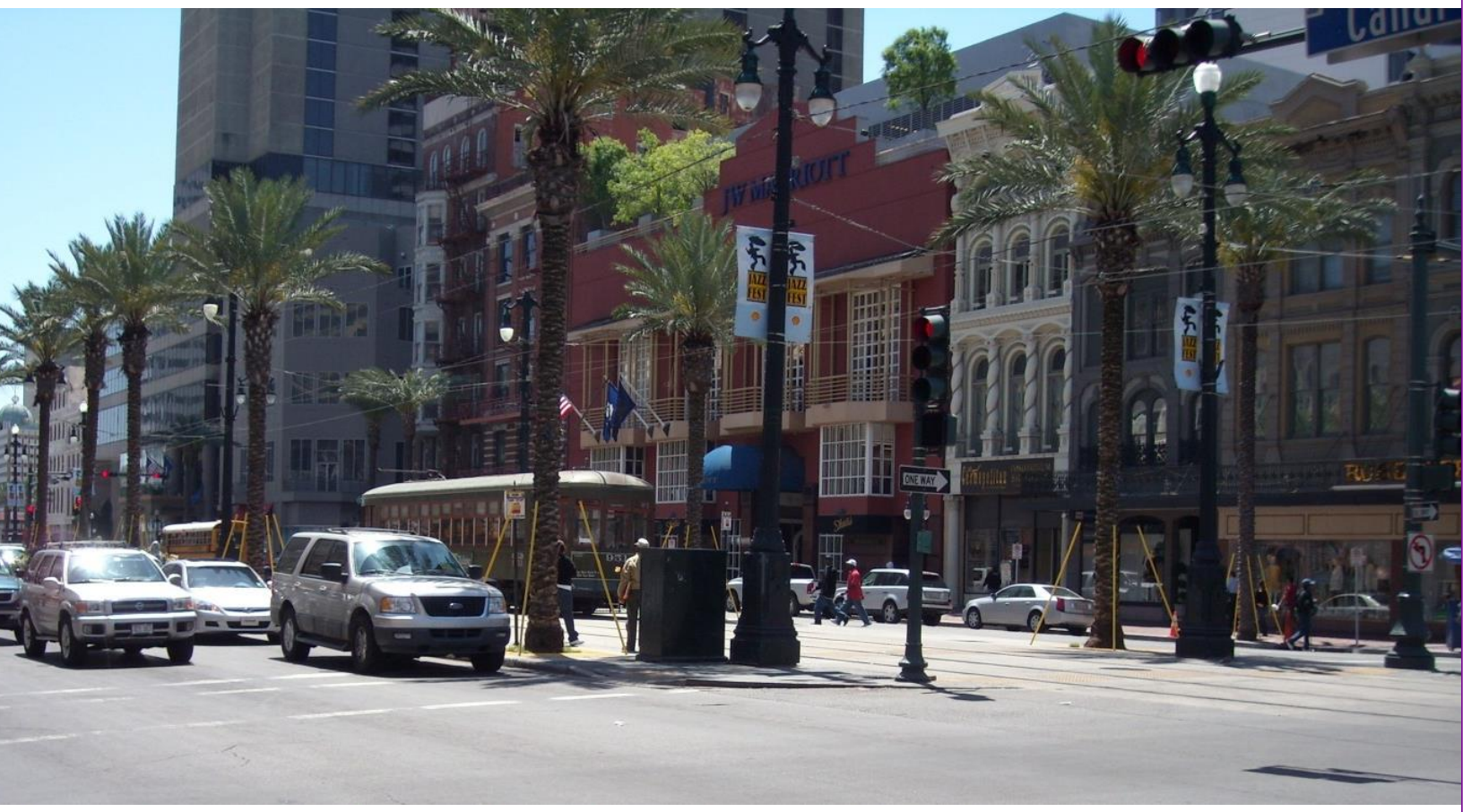

STRATEGIC MOBILITY PLAN

MARKET ANALYSIS

March 2018

RTA

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EXECUTIVE SUMMARY

This report analyzes existing drivers of transit demand and projects future demand for transit and alternative mobility modes. Based on this analysis, there are several opportunities to improve mobility services in the New Orleans region.

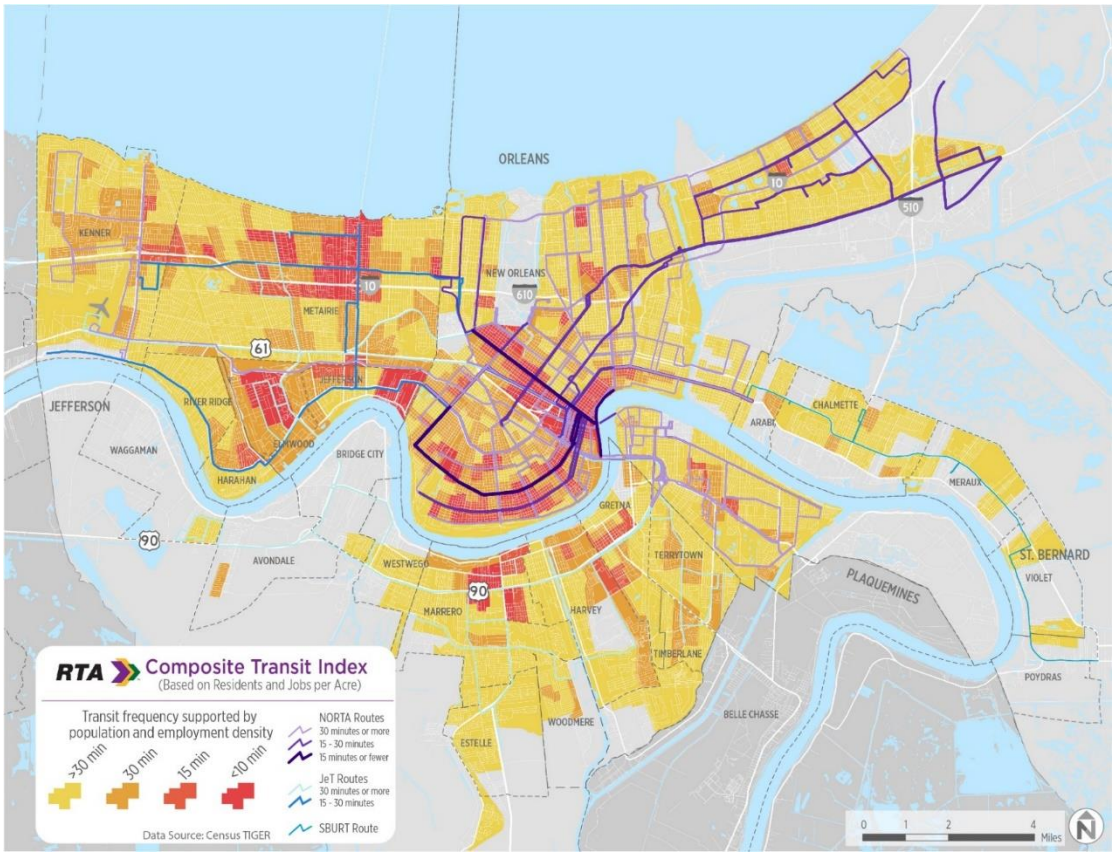
Current Transit Demand and Supply

Transit demand is highest in the core of Orleans Parish and parts of Metairie and urbanized Jefferson Parish. Figure 1 shows transit demand on the Southshore, based on population and employment densities and socioeconomic factors.

Figure 1 also shows existing transit routes in the region by frequency. By comparing the level of service supplied (frequency) with the level of service supported (demand), some conclusions can be drawn. For instance, the areas of high demand in Orleans Parish generally receive the level of service that their demand warrants. On the other hand, there are areas of high demand in Jefferson Parish that do not receive an adequate level of service.

It is important to note that some areas are special generators for transit demand and their impact on transit demand may not be adequately reflected in Figure 1. These include high schools, universities, hospitals, airports, and special event centers such as the Superdome and the Convention Center. These areas are discussed separately.

Figure 1: Composite Transit Index and Peak Transit Frequency (Southshore)



Future Transit Demand

The region is projected to grow from 1.12 million residents in 2015 to 1.31 million residents in 2035. Future development patterns, or the way in which the region grows, will change the demand for transit in many areas.

To understand how this growth may affect future transit demand, two growth scenarios were considered:

- Scenario A assumes that many high-income residents will move into central neighborhoods and that low-income populations will shift from the urban core to neighborhoods farther from downtown and in surrounding parishes. This scenario does not assume any substantial changes in the existing land use policy or zoning.
- Scenario B assumes population growth will be concentrated in central neighborhoods. However, through a combination of policy and zoning changes, the urban core expands housing supply and accommodates both low-income residents and new high-income residents.

Under both scenarios, overall transit demand outside of the City of New Orleans stays relatively stable while demand in the City increases in many areas. The primary differences between the scenarios are:

- In Scenario A, there is increased demand in parts of Hollygrove and the Jefferson Parish West Bank.
- In Scenario B, there is increased demand in parts of Mid-City, Central City, Broadmoor, Seventh Ward, and Metairie.

Major Findings

The analysis and projections in this report lead to several important conclusions about current and future mobility needs in the region.

- Providing a regional backbone of high-frequency transit routes is a crucial gap in the existing system. Several areas can be considered for high-frequency transit and improved off-peak and nighttime service.
- There are many neighborhoods with low-income populations and low-paying jobs that lack convenient late-night transit options.
- Residential neighborhoods in parts of Jefferson Parish have limited services and may be able to support more.
- There is demand for improved transit service that crosses parish boundaries.
- Schedules should be made easier to understand, especially for lower frequency routes.
- Alternative modes of transportation, such as bikesharing, carsharing, and ride-hailing, are likely to play increasingly important roles in the mobility industry. Stakeholders must carefully consider how these new modes can work together with existing transit services.

1.0 EXISTING TRANSIT DEMAND

Many factors drive transit demand. Four factors are particularly important:

- **Population and employment density**: Where many people live and work close to one another, transit demand is higher.
- **Socioeconomic characteristics**: Characteristics such as age, income, and race correlate with transit demand.
- **Special generators**: Some areas are special generators for transit demand. These include high schools, universities, hospitals, airports, and special event centers.
- **Travel flows**: Travel flows provide information on where people go and how they get there.

This section describes how these factors affect demand for transit service in the region. It also analyzes how well existing services meet transit demand and considers lessons for future transit service.

POPULATION AND EMPLOYMENT

For transit to be most effective, it must be frequent, fast, reliable, and easily accessible. More than any other factor, population and employment density determine transit's effectiveness, for several reasons:

- Transit needs to serve enough passengers to be cost effective and more density means more potential passengers. The reach of transit is generally limited to within one-quarter to one-half mile of the transit route or stop. Transit's market is therefore directly related to development density.
- To attract travelers who have other options, such as cars, transit must be relatively frequent – at least every 30 minutes, and preferably every 10 to 15 minutes. Below those frequencies, transit can be expected to serve only those who do not drive or cannot drive.

In addition, population and employment levels and densities provide an indication of the types of riders that transit will serve. In general, there are two types of transit riders:

- *Riders with many choices*, who have sufficient resources and the ability to operate private vehicles but choose to use transit for some or all trips. These riders may choose transit to avoid driving in congested roadways, the high cost of long commutes and parking, or other reasons.
- *Riders with limited choices*, who use transit because they do not have a car available or cannot drive a car. These riders rely more on transit than those with many choices. Riders with fewer choices are also more likely to use transit to get to appointments, shop, and visit friends and family.

Population Density

As shown in Table 1, there must be eight to 16 residents per acre to produce demand for hourly transit service, which is the lowest level of service that is generally considered acceptable in urban areas. As densities increase, the demand for transit grows. Communities with more than 31 residents per acre typically produce enough demand for frequent services (every 15 minutes or better) and premium services.

Table 1: Transit-Supportive Population Densities[1]

Transit Service Level	Population/Acre
Flex Bus	0.5
Community Circulator	2
Local Bus	
60-minute frequency	8-16
30-minute frequency	16-31
15-minute frequency	31-47
10-minute frequency	47-92
5-minute frequency	>92

Source: Nelson\Nygaard compiled from various national sources

The highest population densities in the New Orleans region are in Metairie, north and south of the I-10 corridor. However, more importantly, the largest contiguous areas of high population densities are in New Orleans, specifically in Uptown, Central City, Broadmoor, along S. Carrollton Avenue, Mid-City, the Marigny, and Seventh Ward. These are the areas that can support high-frequency transit (Figure 2 and Figure 3).

While Jefferson Parish and St. Bernard Parish have pockets of high demand for transit, St. Tammany Parish does not at this time.

[1] Note that these densities broadly indicate demand across a community and are not meant to predict precise demand at the block or Block Group level. For example, a geographically isolated census block with high density would not in and of itself provide sufficient demand to support high-level service; however, a significant cluster of similarly dense blocks would indicate an area of potential demand.

Figure 2: Population Density (Southshore)

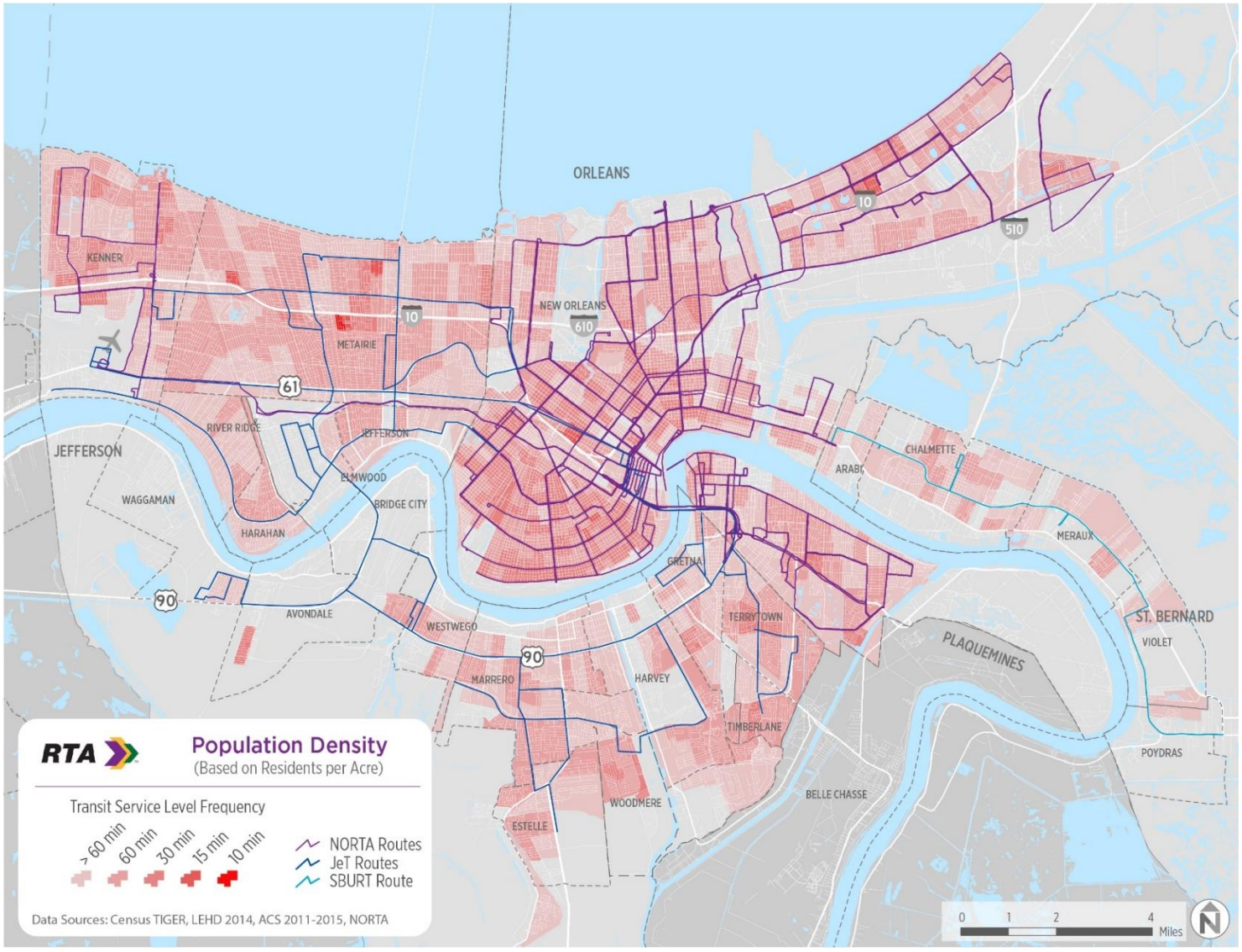
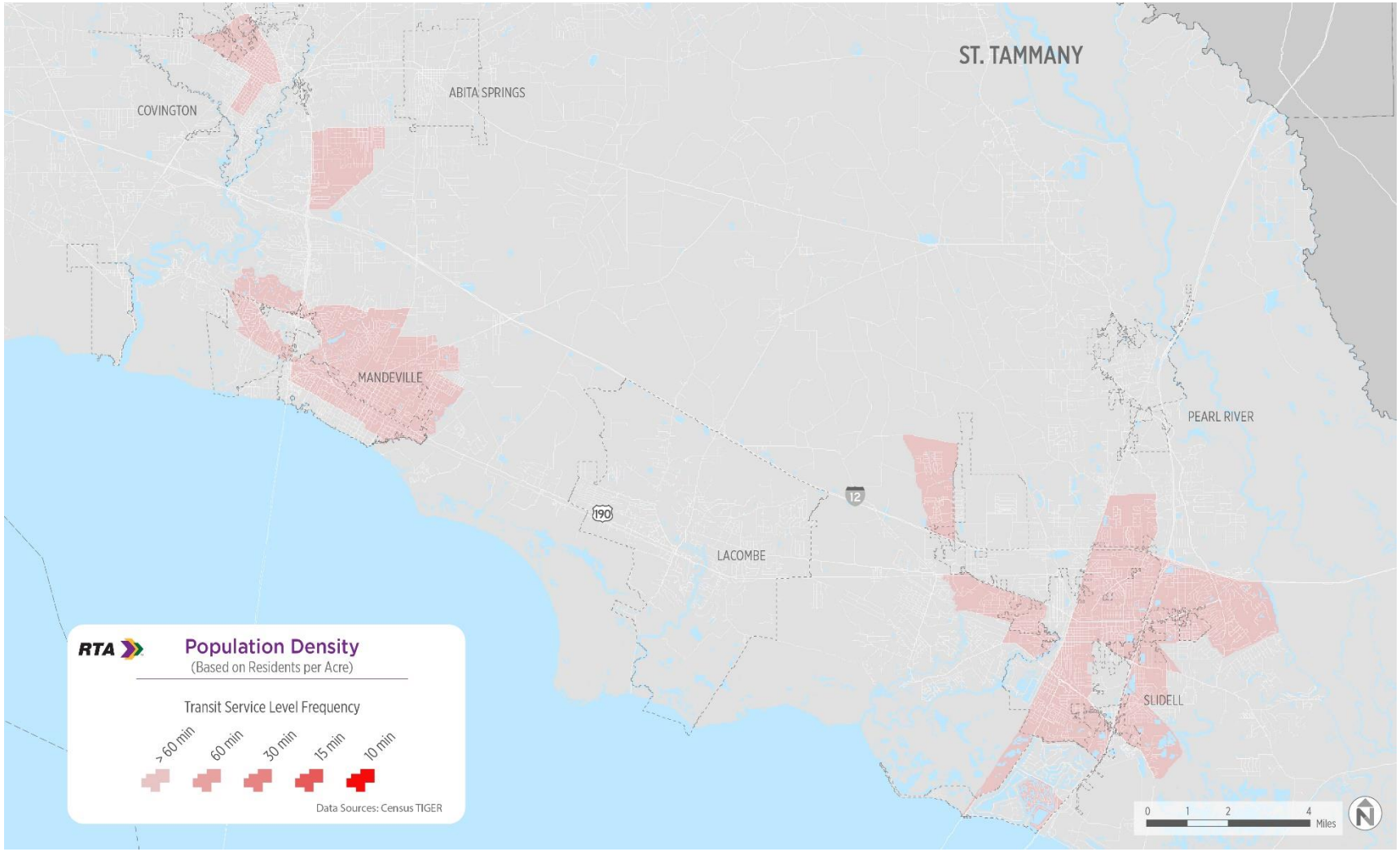


Figure 3: Population Density (Northshore)



Employment Density

The location and number of jobs is another strong indicator of transit demand, as traveling to and from work accounts for the largest single segment of transit trips in most markets. As shown in Table 2, four to eight jobs per acre typically produces demand for hourly bus service. Employment densities higher than 16 jobs per acre produce demand for frequent services (every 15 minutes or less) and premium services.

Table 2: Transit-Supportive Employment Densities

Transit Service Level	Jobs/Acre
Flex Bus	—
Community Circulator	—
Local Bus	
60-minute frequency	4-8
30-minute frequency	8-16
15-minute frequency	16-24
10-minute frequency	24-48
5-minute frequency	>48

Source: Nelson\Nygaard compiled from various national sources

Jobs in the New Orleans region are more concentrated than residences (Figure 4). The highest job densities are in:

- The Central Business District and the French Quarter in New Orleans.
- Along I-10 and North Causeway Boulevard in Metairie.
- Elmwood and Old Jefferson along Jefferson Highway

These areas are ideal candidates for high-frequency transit.

On the Northshore, several areas in Slidell, Mandeville, and Covington also have moderately high employment density. However, these areas are spread out, making it difficult to support frequent transit (Figure 5).

Figure 4: Employment Density (Southshore)

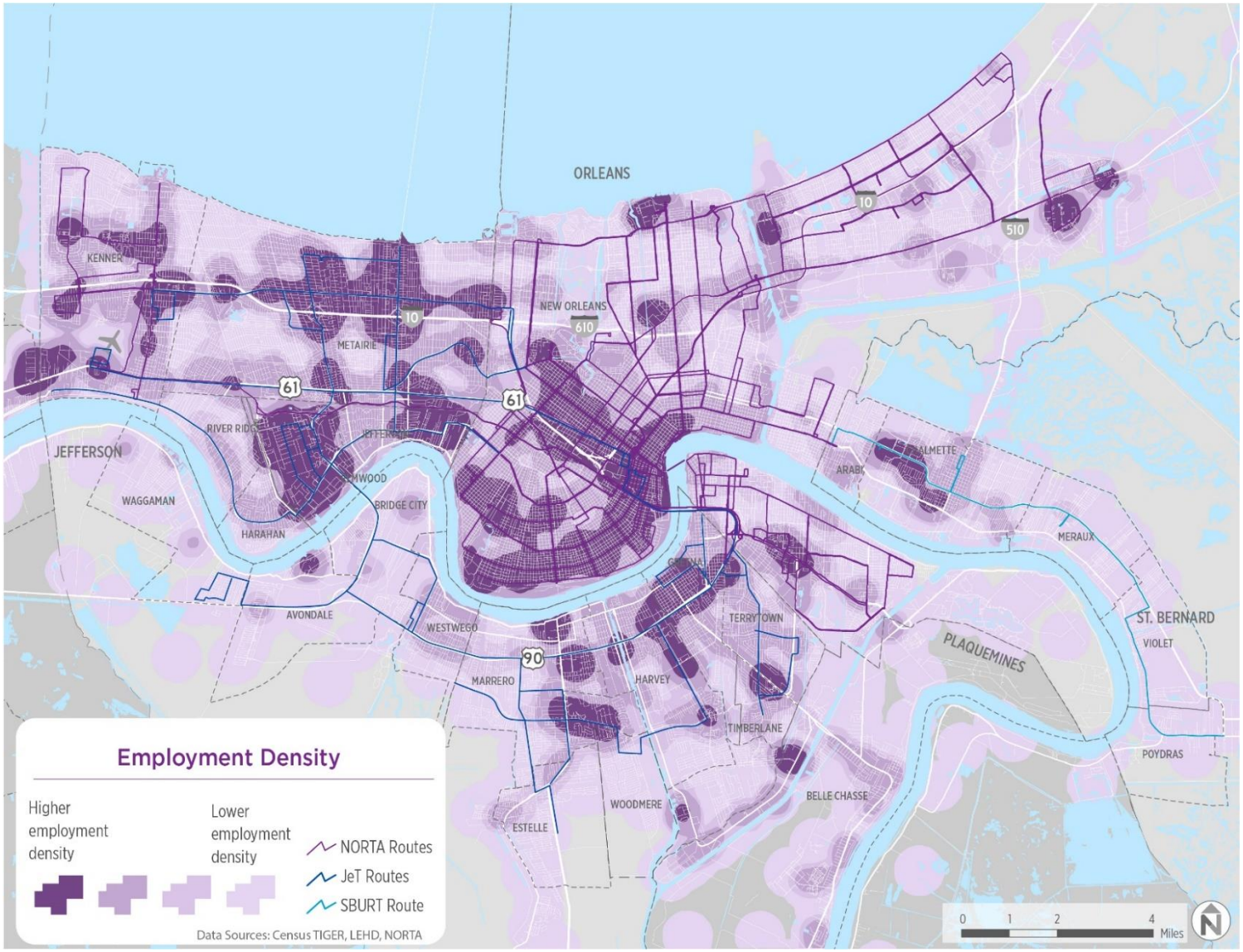
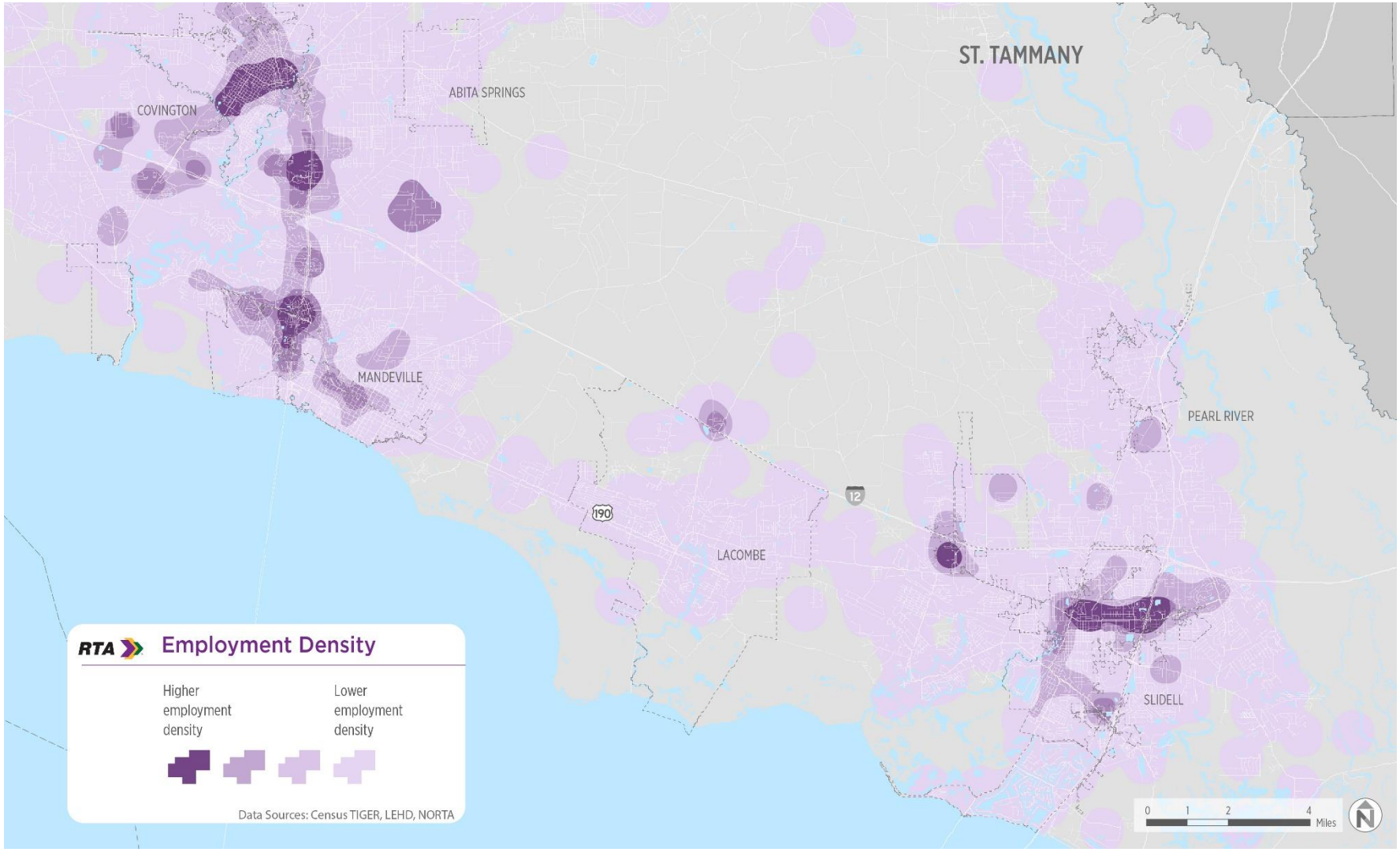


Figure 5: Employment Density (Northshore)



Low-Wage Jobs

Low-wage jobs are generally concentrated in the same areas as employment in general, as shown in Figure 6. For this analysis, low-wage jobs are defined as those with annual incomes under $40,000, following data taken from the Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) survey. Main findings from this analysis are:

- Clusters of low-wage jobs, such as in downtown and in the northern portion of Metairie, generally overlap with high job density for all income ranges.
- There are several areas that have a high density of jobs overall, but few low-wage jobs, including Old Jefferson and north Marrero.
- Some significant clusters of low-wage jobs are not well served by fixed-route transit. These include areas in and around Elmwood, Marrero and Harvey. These clusters have limited or no transit service.

Figure 6: Low-Income Employment Density (Southshore)

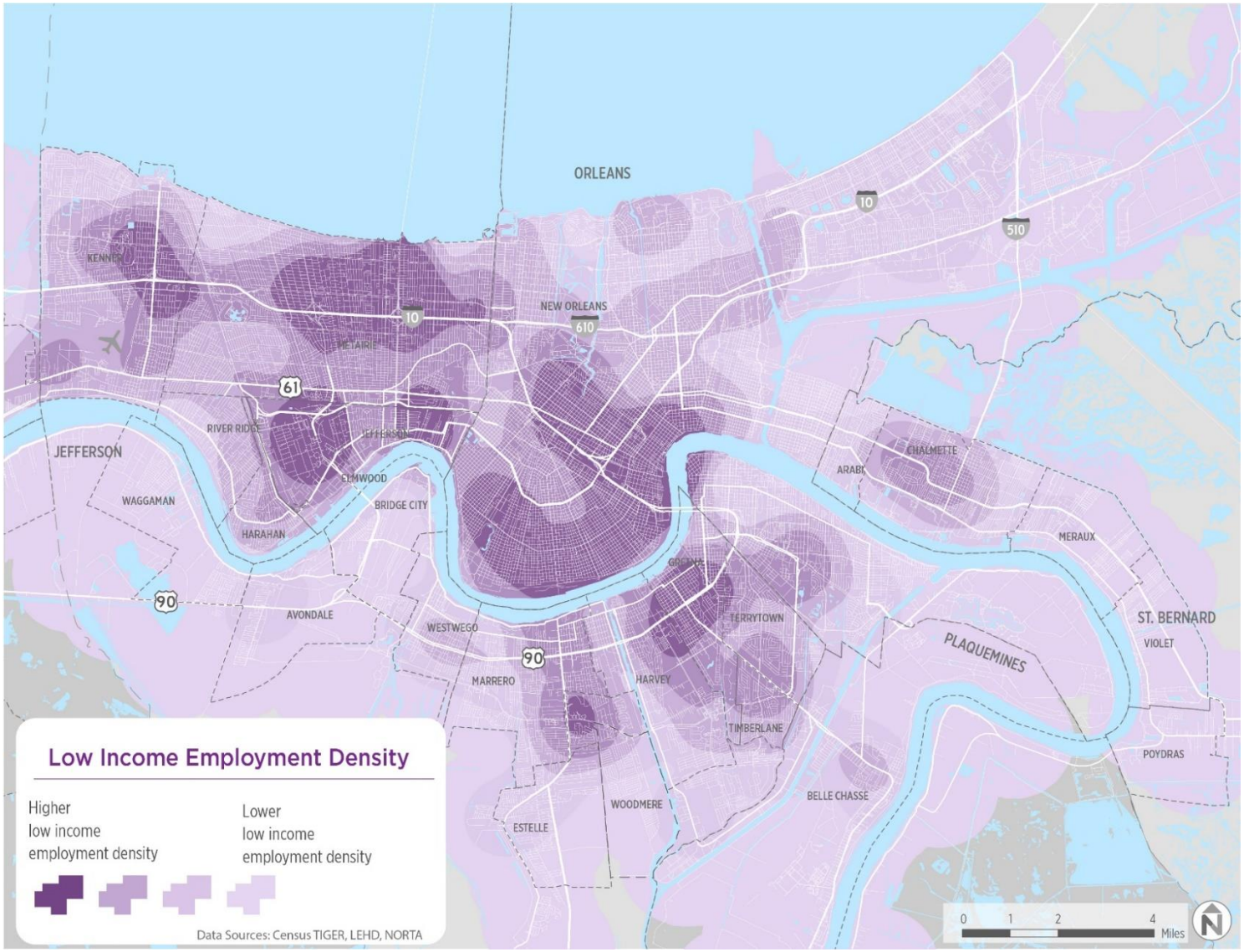
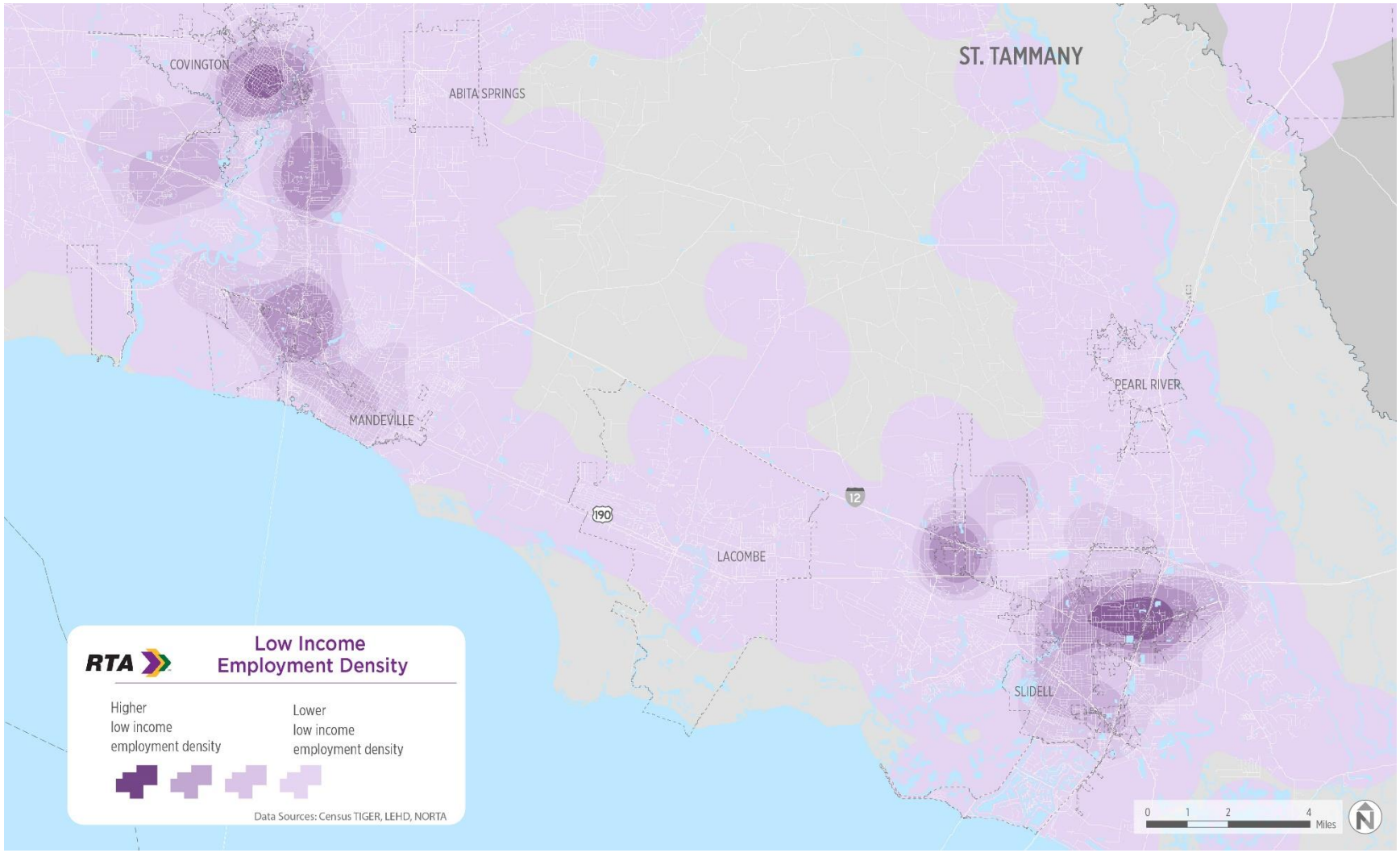


Figure 7: Low-Income Employment Density (Northshore)



Major Employers

Identifying large employers in the region is useful, not only because of the large concentration of jobs they represent, but also because of the marketing and other partnership opportunities that they may offer. Partnerships such as employer-supported transit passes and vanpool programs can attract choice riders to the transit system.

Table 3 shows the largest employers in the New Orleans region. Some important employment centers are missing in the table because they depend largely on contract workers. The airport, Superdome, and Convention Center, are a few examples. It is also worth noting that, although the hospitality industry is one of the largest industries in the region, there is only one employer from this industry with 1,500 or more employees (Harrah's Casino). This is because the hospitality industry is comprised of many small to mid-size businesses.

Also, it is important to note that some of the city's top employers, such as Ochsner and the United States Postal Service, have more than one site, or location, in the region. Figure 8 and Figure 9 show actual employment sites in the New Orleans region with over 1,500 workers. Most of region's largest employers are served by either RTA or JeT.

Table 3: Employers in the New Orleans Region with 1,500 or More Employees

Employer	Sector
10,000 to 14,999 Employees	
Ochsner Health System	Heath Care
5,000 to 9,999 Employees	
LCMC Health	Heath Care
LSU Health Sciences Center New Orleans	Education/ Healthcare
Jefferson Parish School Board	Education
St. Tammany Parish School Board	Education
2,500 to 4,999 Employees	
City of New Orleans	Government
East Jefferson General Hospital	Healthcare
Jefferson Parish Government	Government
NASA Michoud Assembly Facility	Space Research & Technology
Tulane University	Education
United States Postal Service	Government
Walmart	Retail
1,500 to 2,499 Employees	
Acme Truck Line	Transportation
Capital One	Banking
Cox	Communications
Harrah's New Orleans Casino	Casinos
Jefferson Parish Sheriff's Office	Government
St. Tammany Parish Hospital	Healthcare
Shell Oil Company	Energy
Southeast Louisiana Veterans Health Care System	Healthcare
St. Charles Parish School Board	Education
Tulane Medical Center	Healthcare
USDA National Finance Center	Government

Source: Modified from Louisiana Commercial Realty: http://www.louisianacommercialrealty.com/2012/05/new-orleans-largest-employers/

Figure 8: Major Employment Sites (Southshore)

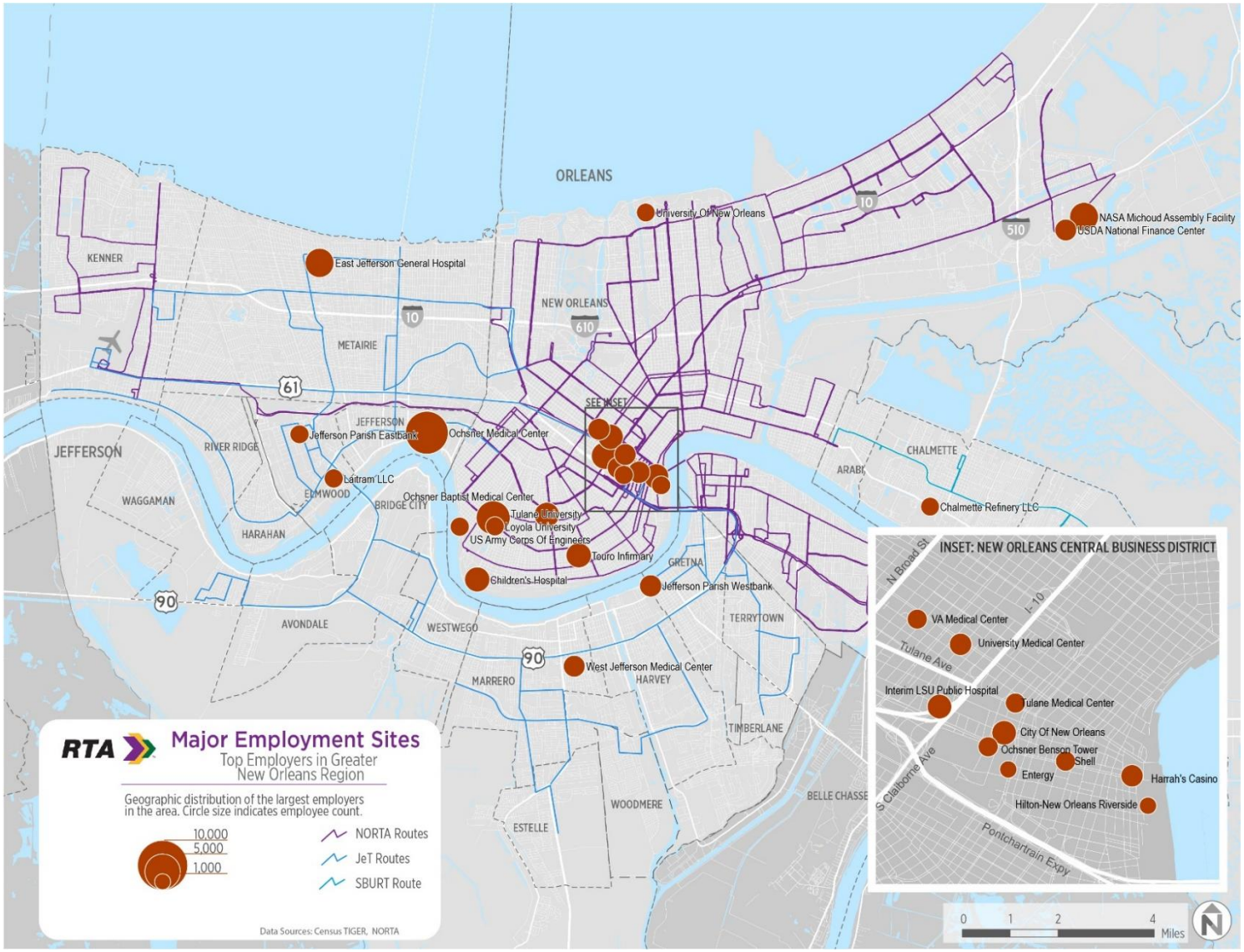
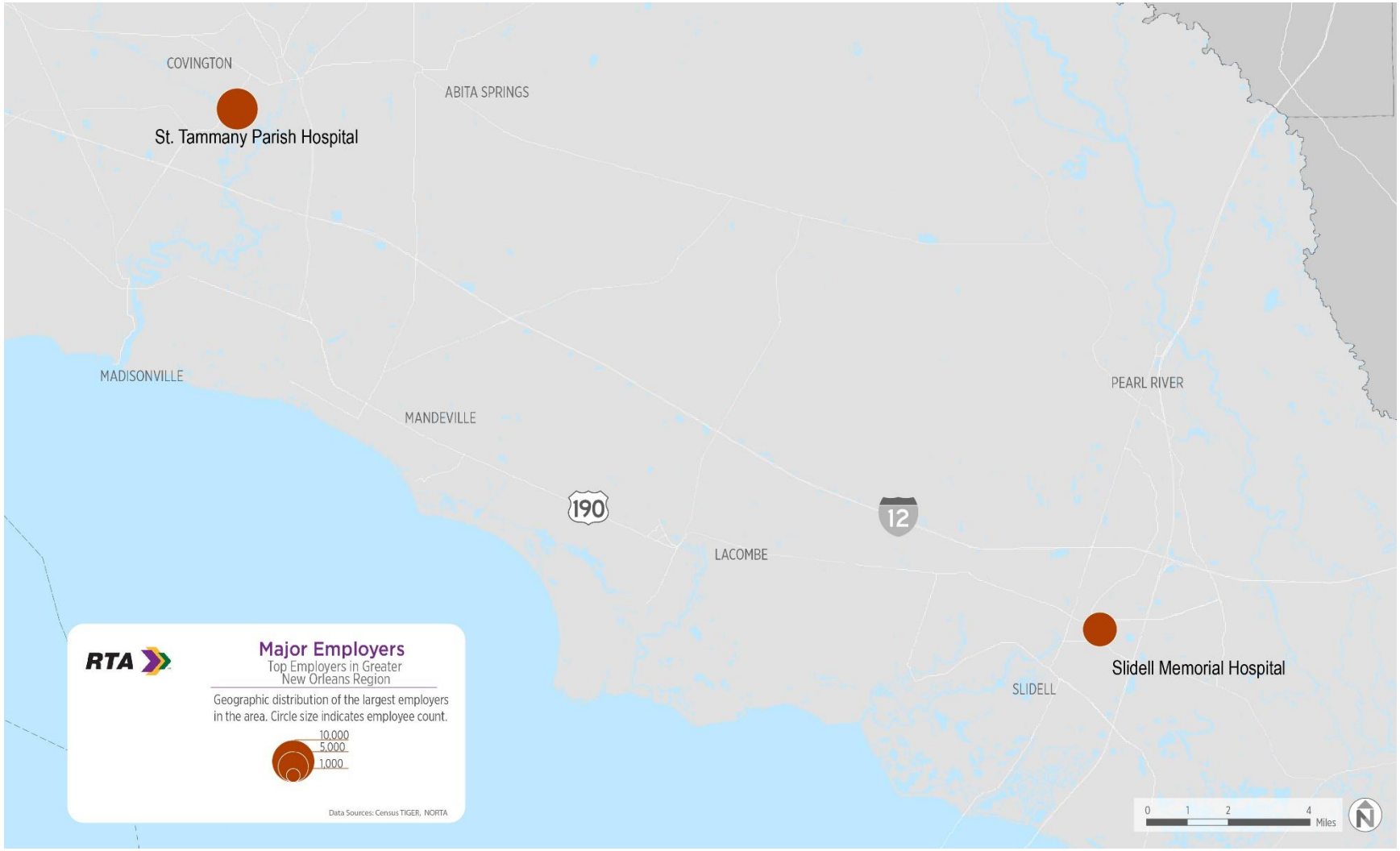


Figure 9: Major Employment Sites (Northshore)



Composite Transit Demand

Overall transit demand relates to population density and job density. Together, these two factors are referred to as “composite transit demand.” Areas with substantial population density and employment activity will generate more demand than areas of high-density housing or employment alone.

In the New Orleans region, the corridors with the highest composite transit demand are in New Orleans and Jefferson Parish (Figure 10 and Figure 11). These include:

- New Orleans:
    - From the French Quarter to Tulane University, bordered by the Mississippi River and the Freret Street/Rampart Street Corridor.
    - Canal Street Corridor.
    - Tulane Avenue Corridor.
    - Elysian Fields Avenue from the University of New Orleans to Marigny.
    - Along Jackson Avenue from Hoffman Triangle to the Garden District.
- Jefferson Parish:
    - Veterans Boulevard.
    - West Esplanade Avenue.
    - Napoleon Avenue.
    - Williams Boulevard.
    - Clearview Parkway connecting Kenner and Elmwood.
    - Jefferson Highway.
    - Along Louisiana Highway 23, from Timberlane to Gretna.
    - Along Barataria Boulevard, in Marrero.

Figure 10: Composite Transit Demand Index (Southshore)

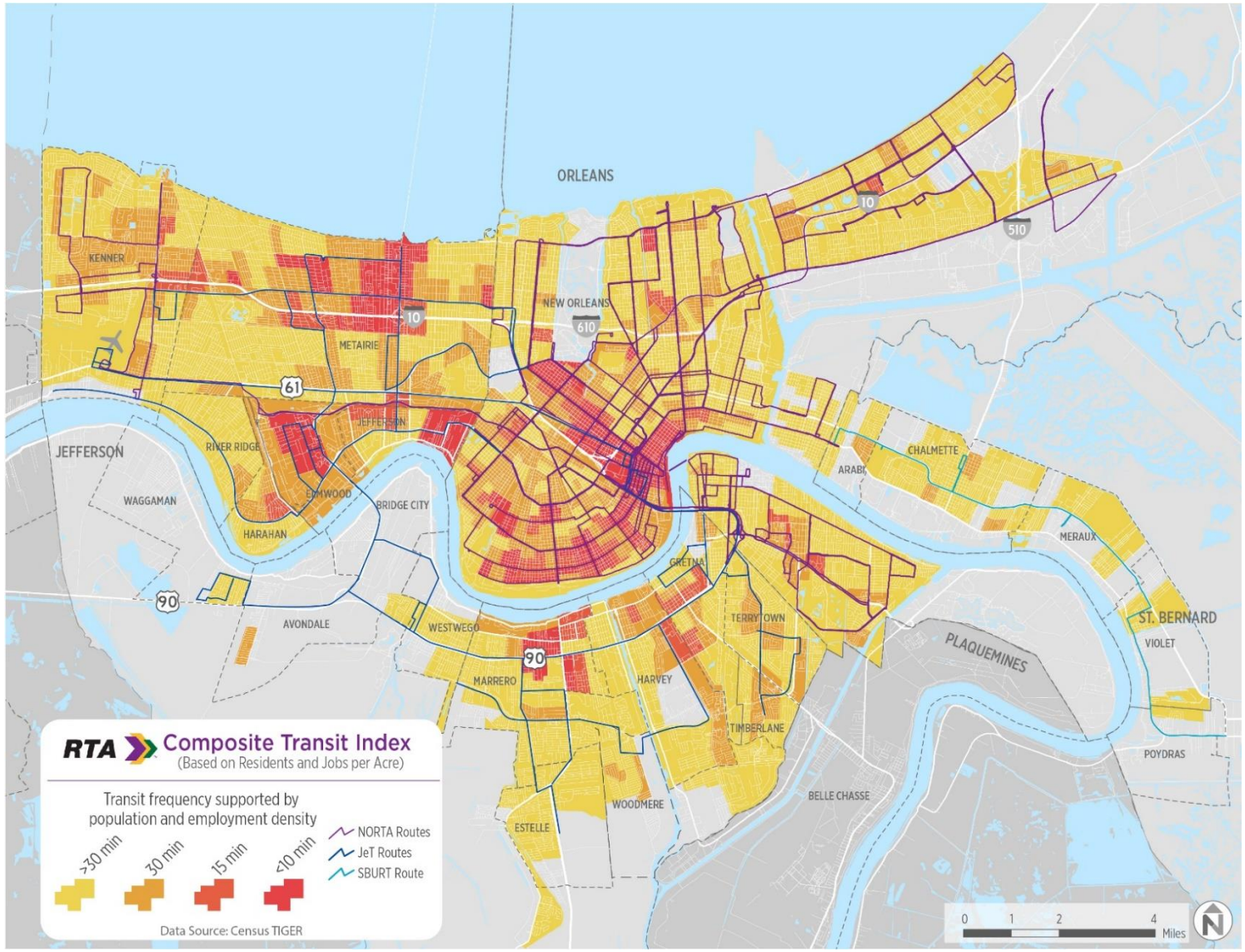
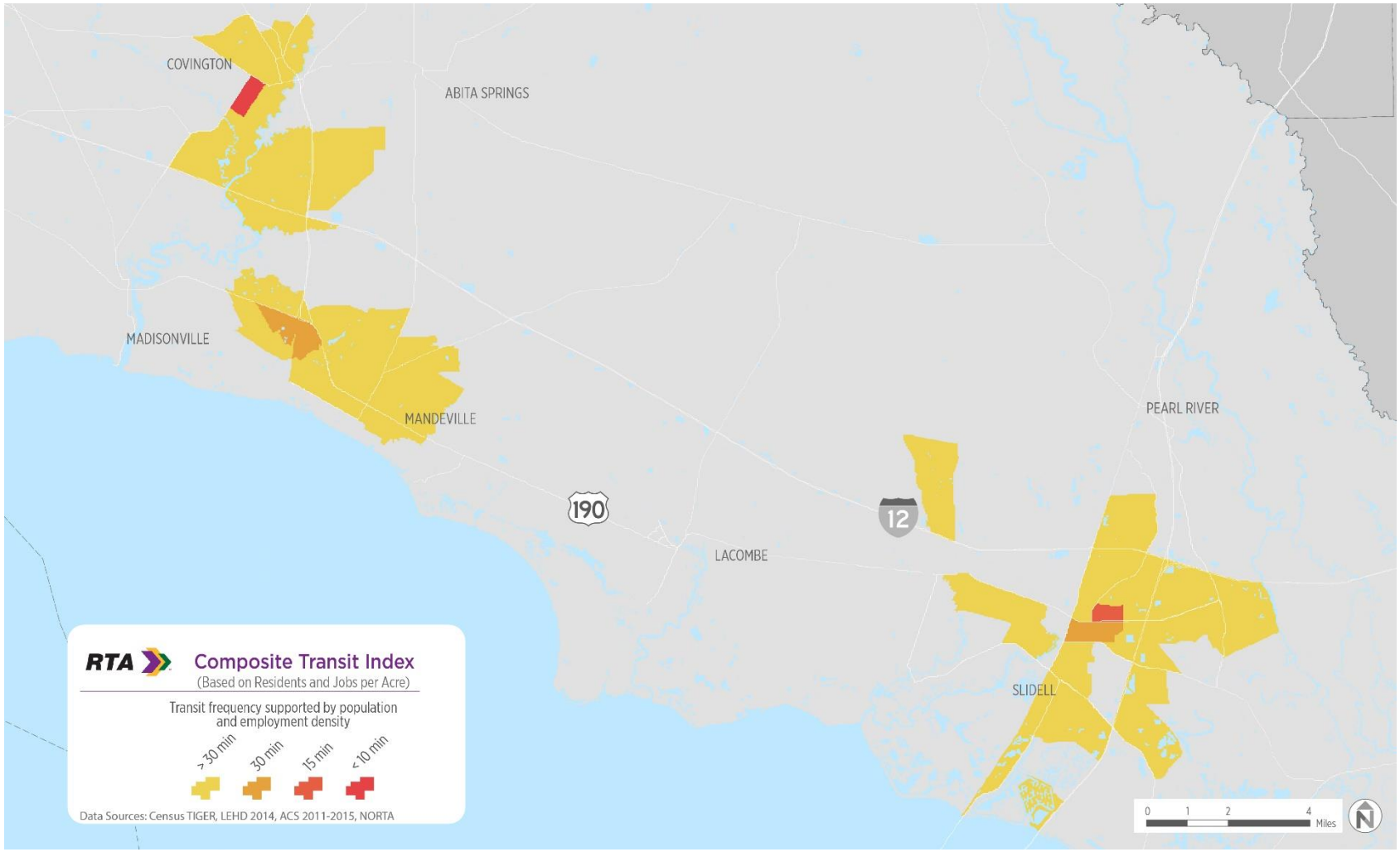


Figure 11: Composite Transit Demand Index (Northshore)



SOCIOECONOMIC CHARACTERISTICS

In addition to population density, socioeconomic characteristics correlate with transit use. National research shows that some population groups tend to use transit more than others. These include:

- People of color use transit at higher rates than people who are white and not Hispanic. Part of the differences in transit use are attributable to differences in income. Based on the Title VI of the Civil Rights Act of 1964, the Federal Transit Administration (FTA) requires "the level and quality of public transportation service is provided in a nondiscriminatory manner… without regard to race, color, or national origin."[2]
- People with low incomes tend to use transit at high rates, because it is cheaper than owning and operating a car. The FTA requires that federally funded transit agencies take all practicable actions to avoid policies and activities that would have a "disproportionately high and adverse effect" on low-income populations.
- Households without private vehicles. In large cities, many residents choose not to have a car because transit is available, car ownership creates additional responsibilities, and/or because there are options such as taxis, carsharing, and car rentals for times when a car is desired or needed. However, in urban areas that are oriented toward cars and where transit options are much more limited, people without automobiles largely consist of those with low incomes or those who do not drive.
- People with disabilities, many of whom cannot drive or have difficulty driving. Public transportation, including regular fixed-route bus service as well as specialized paratransit services, is an essential resource to ensure people with disabilities can remain active, productive, and part of their communities.

When significant numbers of these populations groups cluster together, they can influence the transit demand to an extent that is not captured when only considering total population. Similarly, transit demand may be relatively low in areas with fewer of these populations.

People of Color

People of color, including African-Americans, Hispanics, Asian-Americans, and people of multiple races, make up about half of the population in the New Orleans region and nearly 70 percent of people in Orleans Parish.

Thirty-four percent of the region's population is African-American. African-American people in the New Orleans region are mostly concentrated in New Orleans. Many of these people live relatively close to downtown New Orleans, areas with good transit service. However, many also live further from downtown, such as in New Orleans East, Algiers, and parts of Jefferson, St. Bernard, and St. Tammany parishes, where transit service is more limited or non-existent.

In Jefferson Parish, there are large clusters of Hispanic and Asian-American populations in Metairie, north Kenner, and Terrytown. Many Asian-Americans also live in far eastern New Orleans around the Village de L'Est and Versailles neighborhoods (see Figure 12 and Figure 13).

[2] Federal Transit Administration. Title VI Requirements and Guidelines for Federal Transit Administration Recipients.

Table 4: Race and Ethnicity

	Orleans Parish		4-Parish Region	
White (Not Hispanic or Latino)	122,060	31.3%	582,194	51.9%
Black or African-American (Not Hispanic or Latino)	227,767	58.5%	382,537	34.1%
Hispanic or Latino	21,849	5.6%	103,210	9.2%
Asian (Not Hispanic or Latino)	11,928	3.1%	36,091	3.2%
Multiracial or other (Not Hispanic or Latino)	6,013	1.5%	17,356	1.5%
Total Population	389,617	100.0%	1,121,388	100.0%
Source: 2015 ACS, 1-year estimate				

People Living in Poverty

People living in poverty use transit at higher rates. For low-income households, the cost of owning and using a private vehicle can be burdensome, which makes transit a more attractive option. This analysis uses the Census definition of poverty, which is based on a combination of household income and household size.

Twenty-one percent of region's residents and 27 percent of Orleans Parish residents live below the poverty line (Table 5). The largest concentrations of households in poverty are in Central City, Hollygrove, and Seventh Ward (Figure 14 and Figure 15).

Table 5: People Living Below the Poverty Level

	Orleans Parish		4-Parish Region	
Total Population Below Poverty Level	98,823	27%	140,976	21%
Source: 2015 ACS, 5-year estimate				

Zero-Vehicle Households

About 5 percent of households in the region, and 9 percent of households in Orleans Parish, do not have a private vehicle (Table 6). As shown in Figure 16 and Figure 17, the highest concentrations of zero-vehicle households are in the Central City neighborhood and neighborhoods just north of the Central Business District, including Seventh Ward and St. Roch. Additional clusters of zero-vehicle households are in neighborhoods northwest of the Central Business District, including Mid-City, and south of the Mississippi River in the Behrman neighborhood.

Table 6: Zero-Vehicle Households

	Orleans Parish		4-Parish Region	
Total Zero-Vehicle Households	15,014	9.0%	23,410	4.7%
Source: 2015 ACS, 1-year estimate				

People with Disabilities

The 14 percent of people in the New Orleans region with a disability often use a combination of traditional transit and paratransit for everyday needs (Table 7). Figure 18 and Figure 19 show that people with disabilities live throughout the city and region.

Table 7: People with Disabilities

	Orleans Parish		4-Parish Region	
People with Disabilities	50,665	13.6%	148,845	13.7%
Source: *2011-2015 American Community Survey 5-Year Estimates*				

Figure 12: Concentrations of People of Color (Southshore)

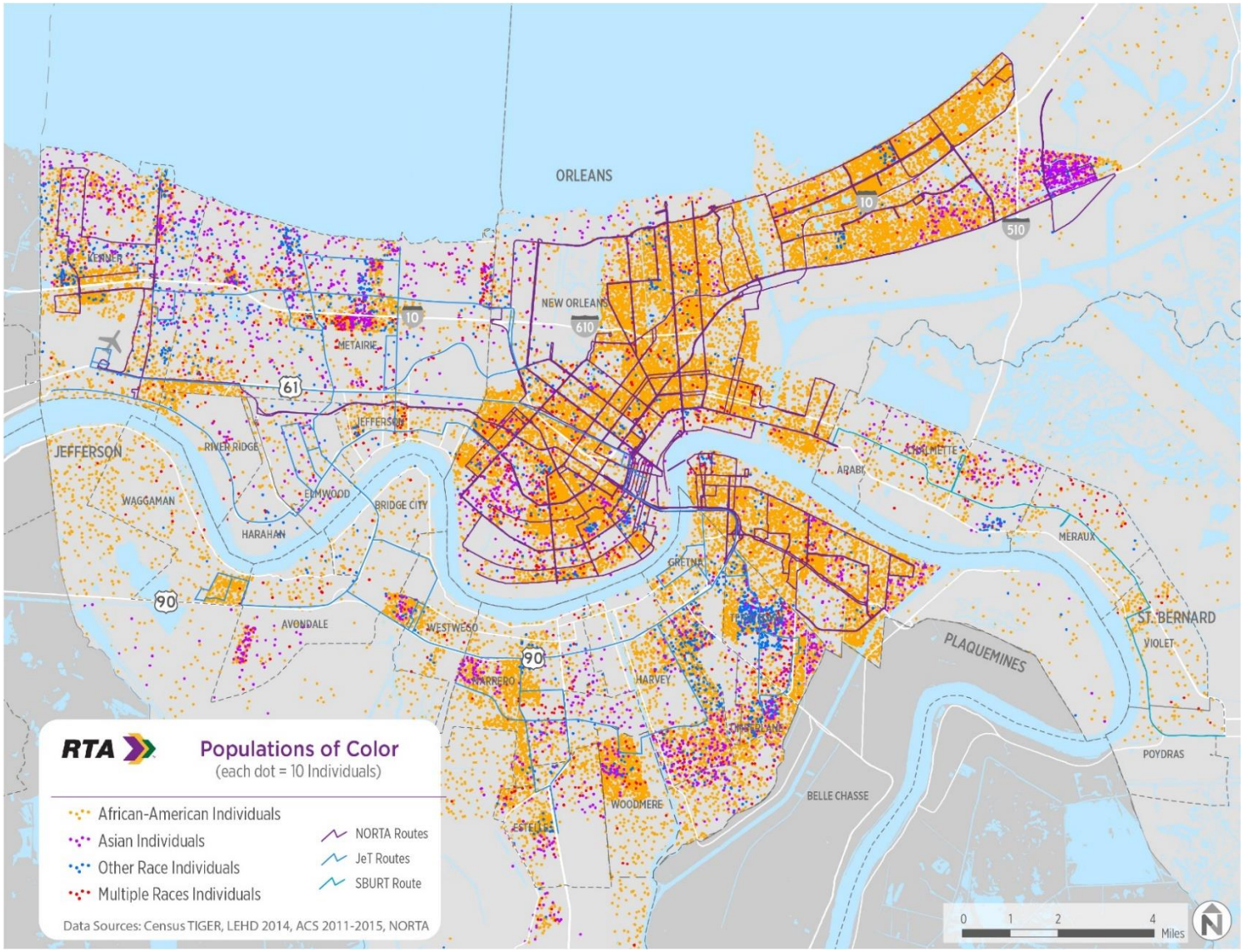


Figure 13: Concentrations of People of Color (Northshore)

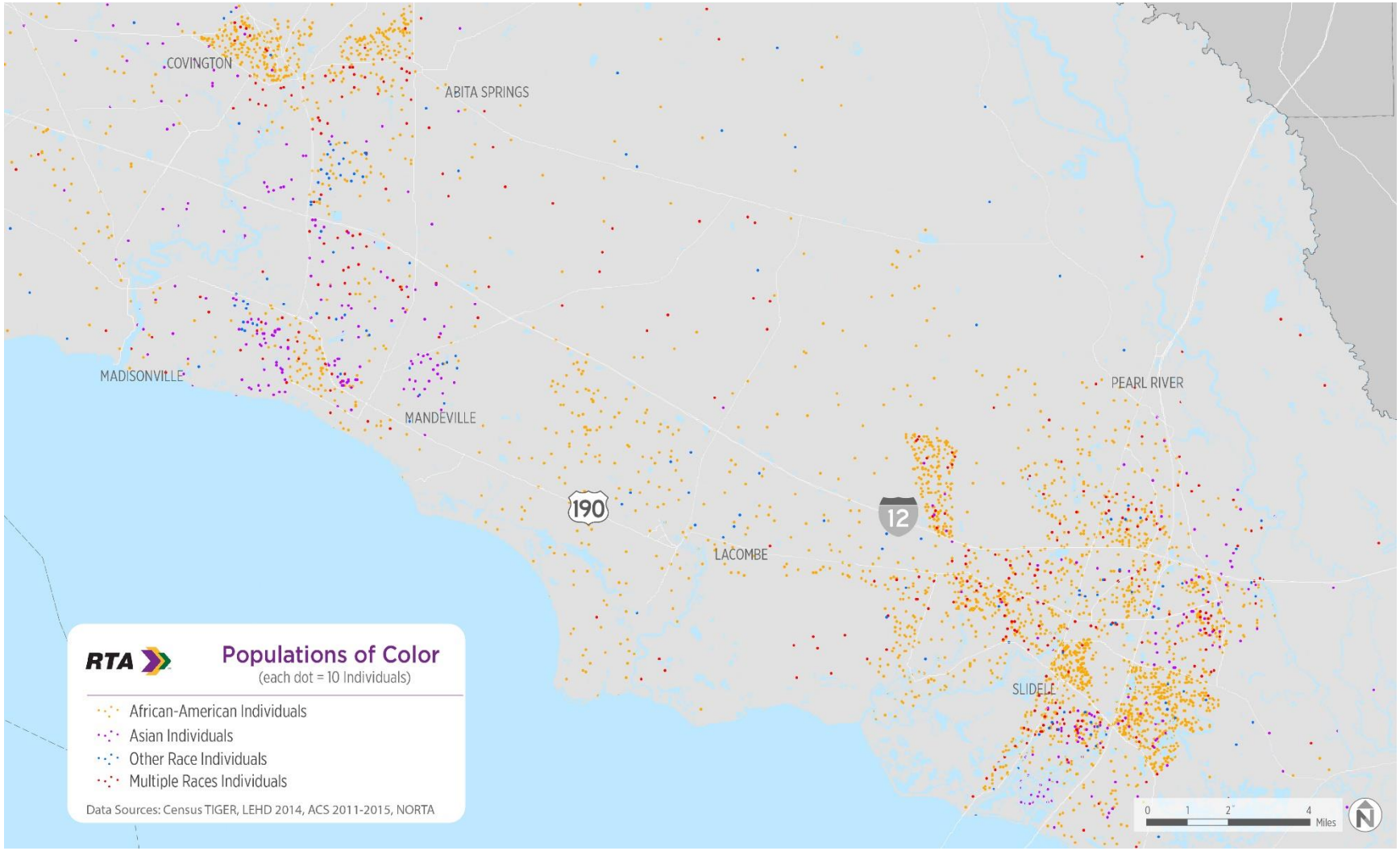


Figure 14: Population Below the Poverty Level (Southshore)

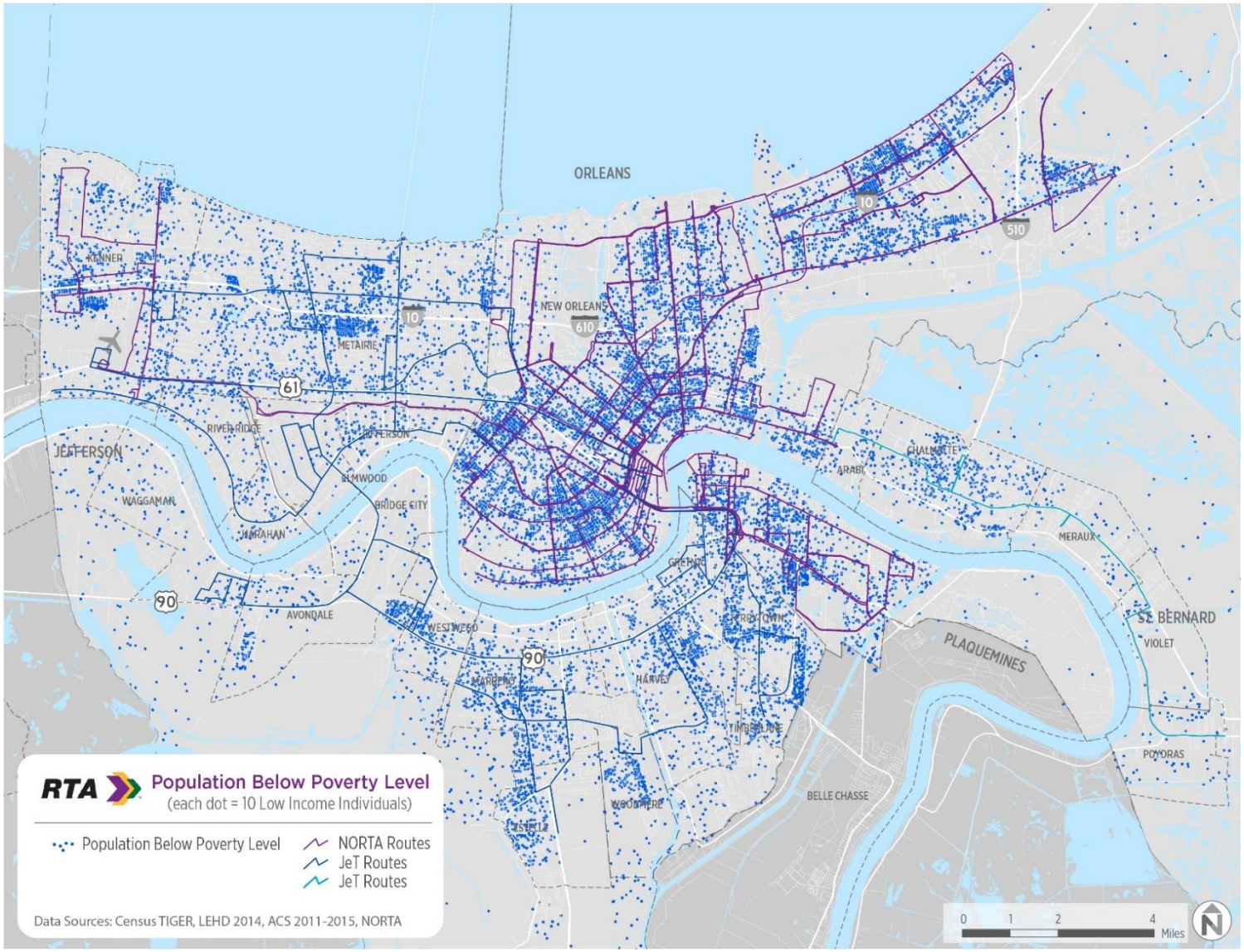


Figure 15: Population Below the Poverty Level (Northshore)

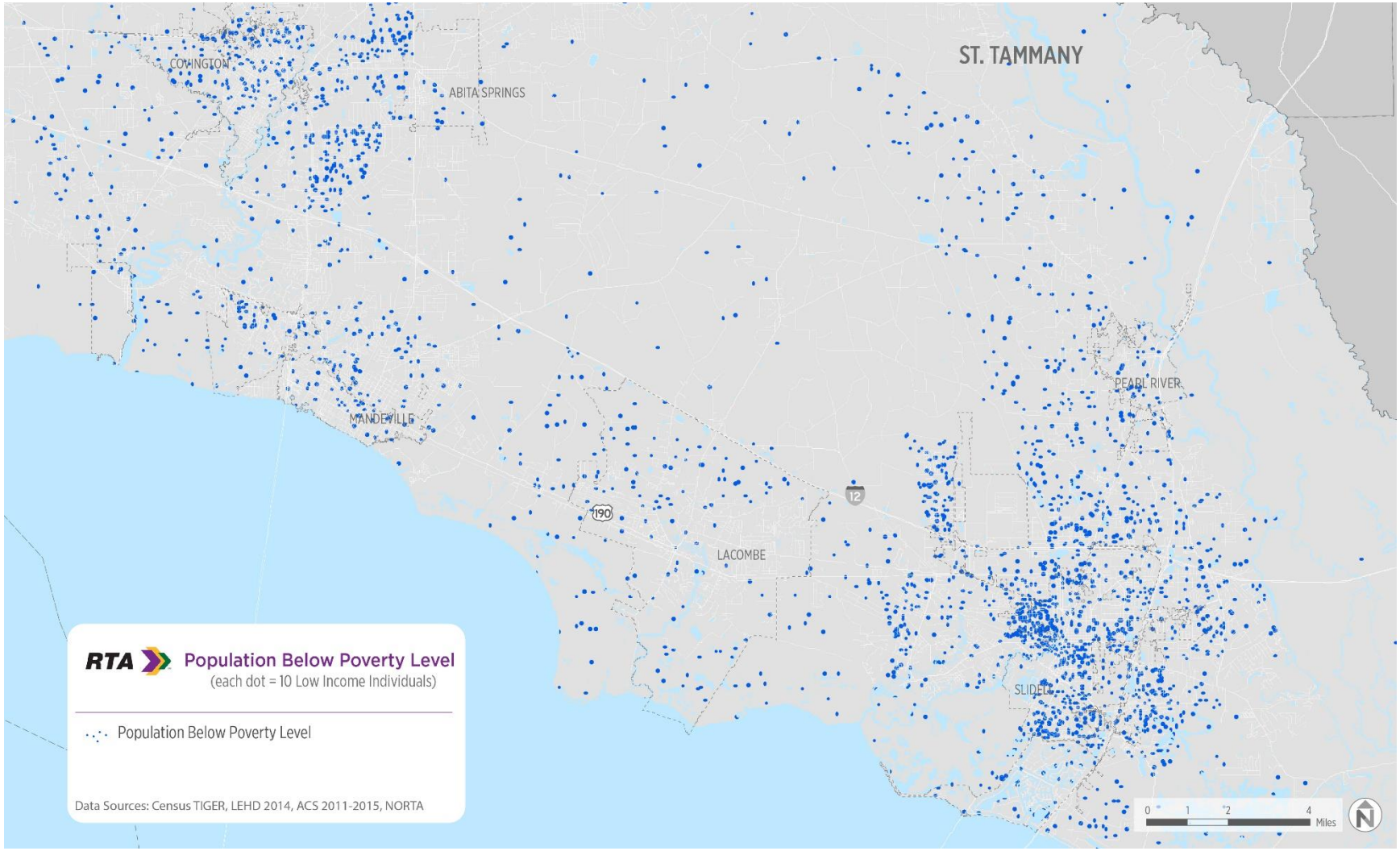


Figure 16: Zero-Vehicle Households (Southshore)

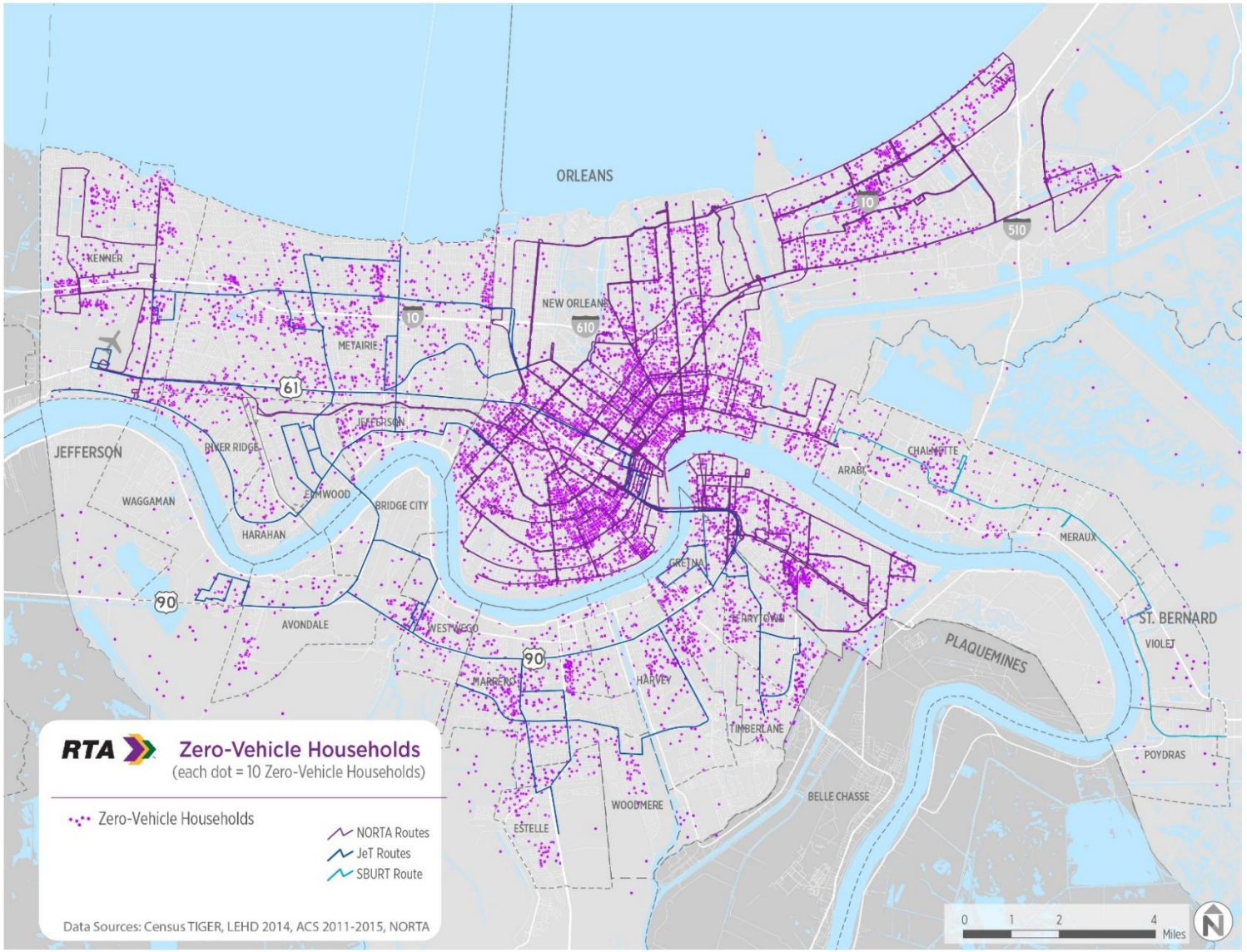


Figure 17: Zero-Vehicle Households (Northshore)

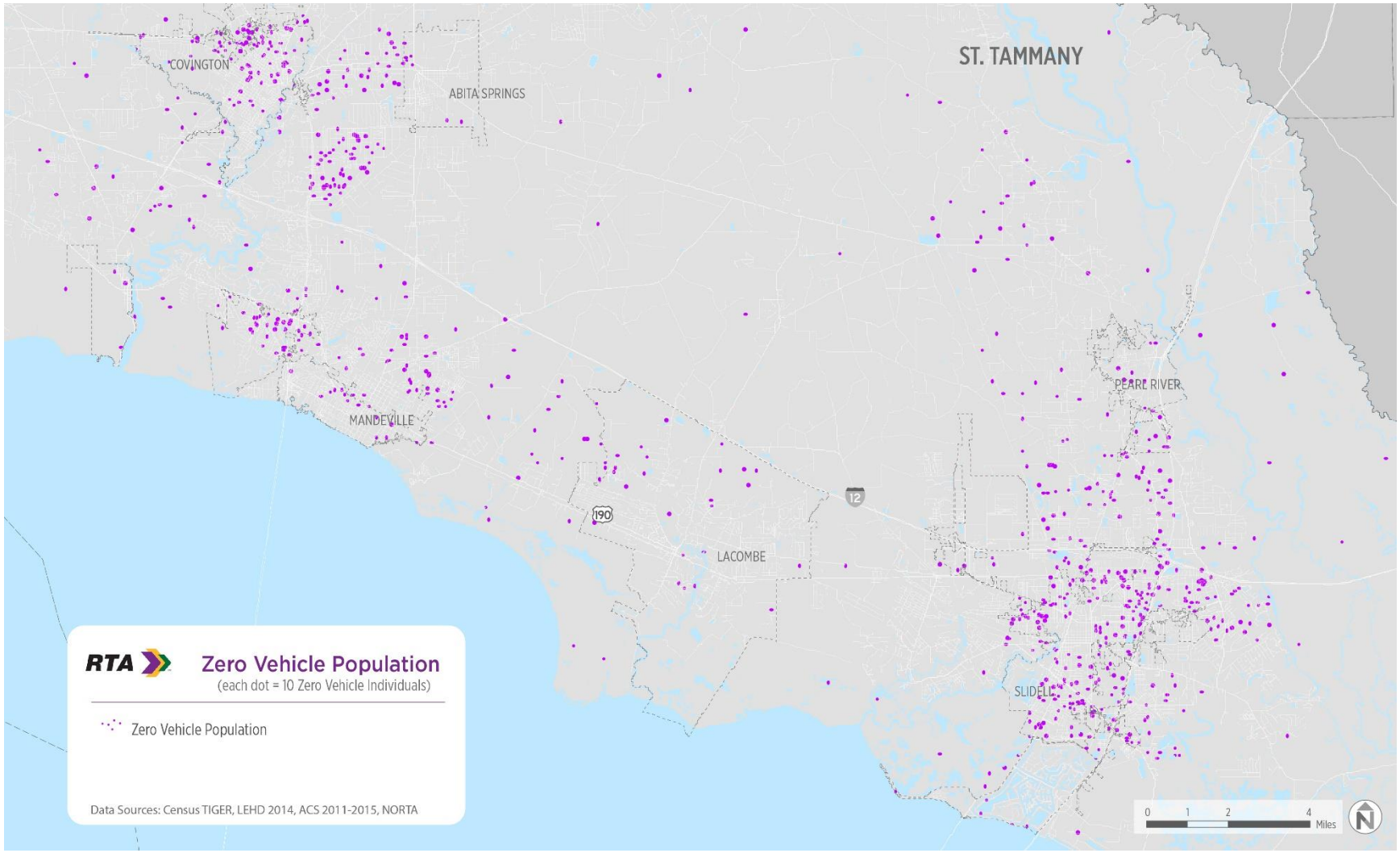


Figure 18: Disabled Population (Southshore)

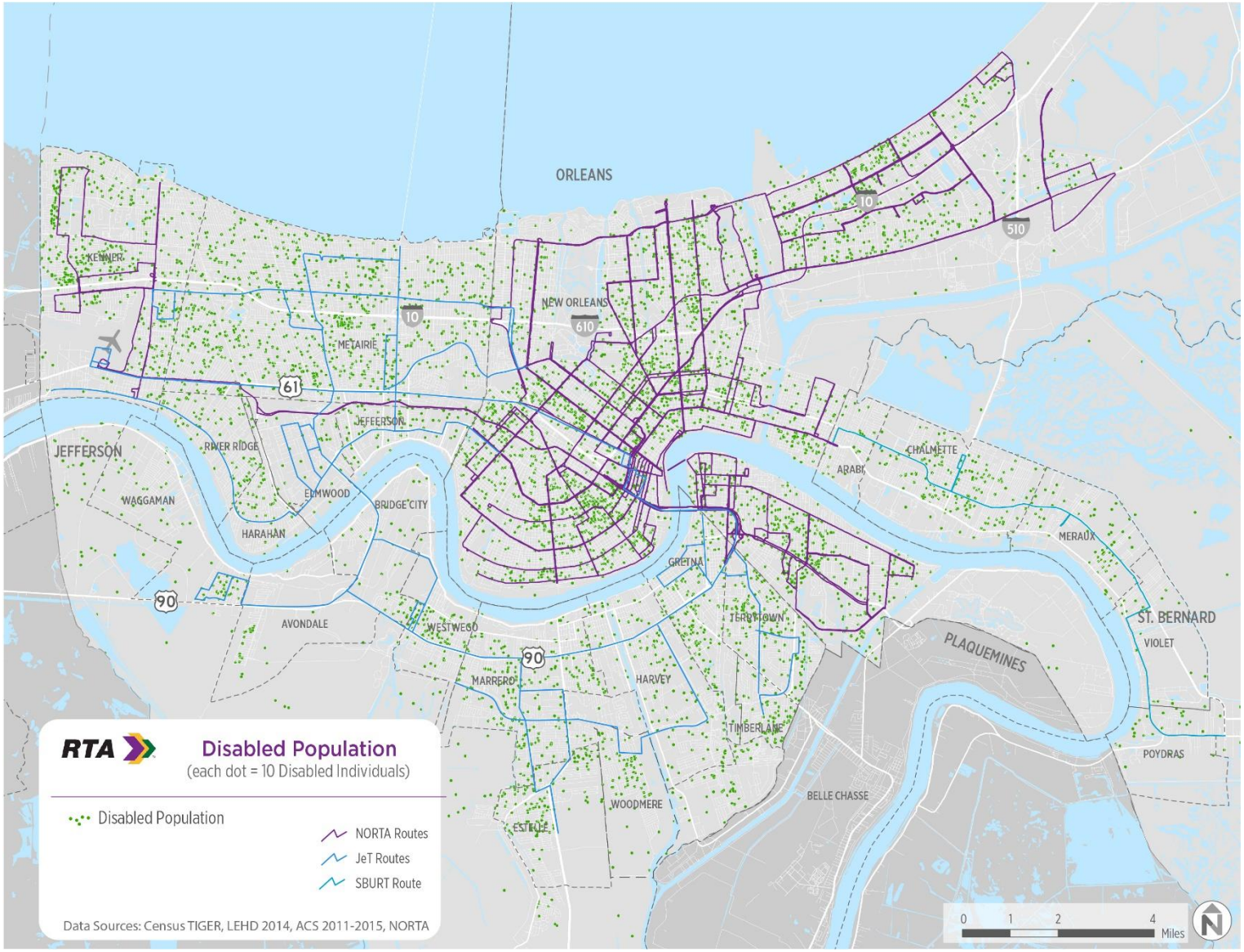
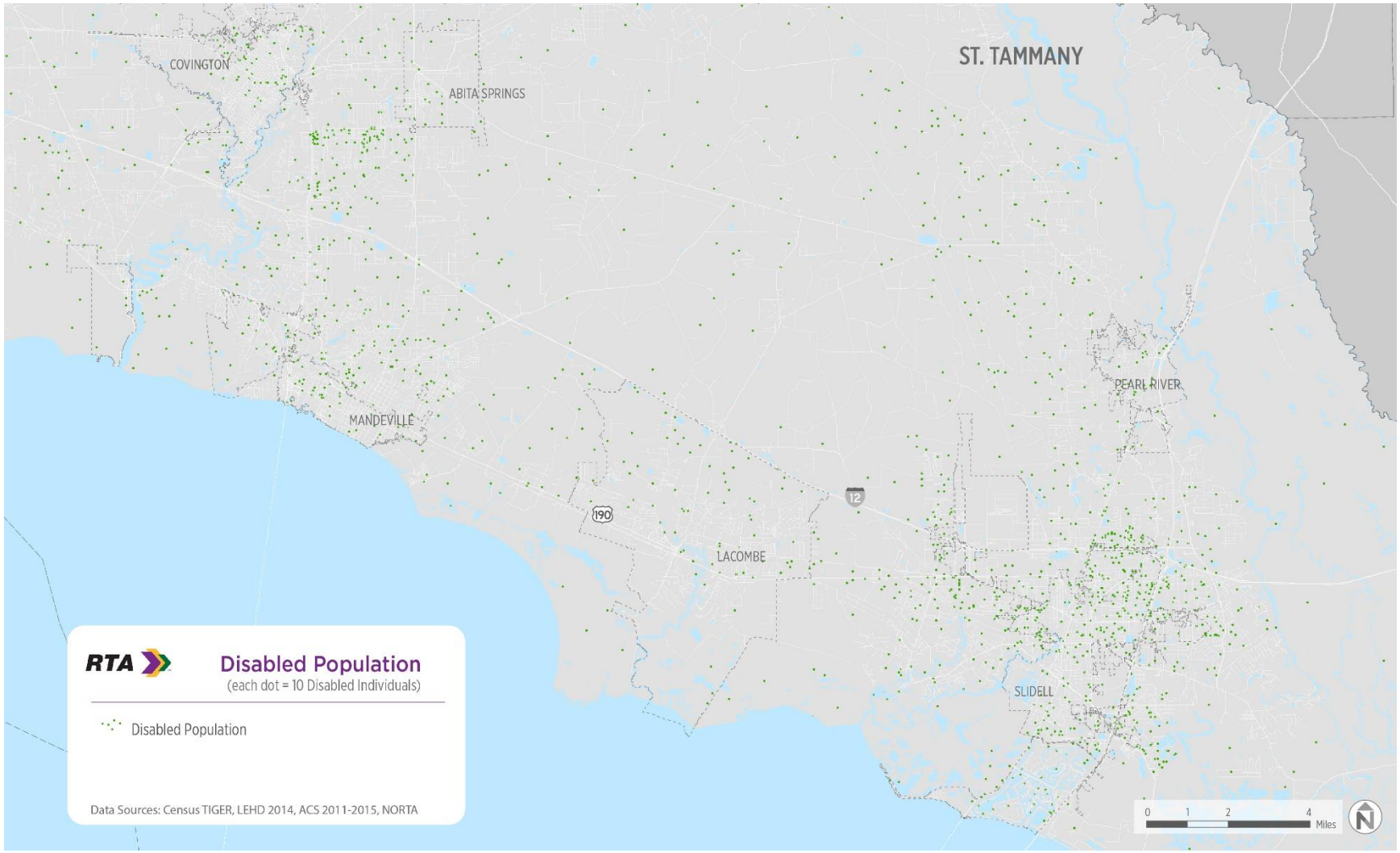


Figure 19: Disabled Population (Northshore)



Transit Propensity

Based on the socioeconomic characteristics described above – race and ethnicity, income, disability, and vehicle ownership – the study team developed a transit propensity index. It was developed in the following way:

1. First, transit index factors were developed for each socioeconomic characteristic for employed people who are 16 and older. These factors measure the likelihood to use transit relative to the region's general population, as shown in Table 8.
2. These factors were then applied to the total population in each census block group, a statistical area with between 600 and 3,000 residents.[3] This yielded a transit propensity factor for each Block Group and produced an "adjusted" population density based on the population's transit propensity.
3. Based on this adjusted population density, the study team analyzed the frequency of transit that each neighborhood could support.

In developing a methodology for the transit propensity factors, the study team referred to Transit Cooperative Research Program Report 28: Transit Markets of the Future (TCRP 28). As part of this report, researchers calculated a transit use index for demographic and other characteristics in metropolitan areas across the country. Each characteristic was assigned a factor, which indexed the likelihood of transit use relative to the average rate of transit use for the United States. Groups with an index factor greater than one are considered more likely than average to use transit, while those with a factor less than one are less likely to use transit.

The factors developed in TCRP 28 are based on census and survey data from the early 1990s. The factors are also based on national transit use patterns across all metropolitan areas, and are not specific to local transit markets and ridership patterns. Therefore, the TCRP 28 methodology was updated for this study using recent data for Jefferson, Orleans, St. Bernard, and St. Tammany parishes. In doing so, the updated factors are better tailored to actual transit use in the New Orleans region, and are based on the travel choices of today rather than two decades ago. These updated factors better reflect transit propensity but should still be considered an estimate. The propensity factors calculated for the New Orleans region are consistent with trends of transit propensity identified in similar cities across the United States.

Table 8 shows the transit index factors calculated for the New Orleans region. These factors illustrate the general trends described above. People of color have higher transit propensity than the general population. Residents without a vehicle are close to 10 times more likely to use transit than the general population. People with a disability are slightly more likely than the general population to use transit. Annual income is inversely related to transit propensity

[3] US Census Bureau. Geographic Terms and Concepts - Block Groups. https://www.census.gov/geo/reference/gtc/gtc_bg.html?cssp=SERP

Table 8: Transit-Index Factors for Jefferson, Orleans, St. Bernard, and St. Tammany Parishes by Demographic Group (Workers Age 16 and Older)

Demographic Group	Transit Index Factor
Race and Ethnicity	
White (Not Hispanic or Latino)	0.29
Black or African-American (Not Hispanic or Latino)	2.31
Hispanic or Latino	1.33
Asian (Not Hispanic or Latino)	0.57
Multiracial or other (Not Hispanic or Latino)	1.38
Vehicle Ownership	
No Car	9.95
One or More Cars	0.55
Disability	
With a Disability	1.27
Without a Disability	0.98
Annual Income	
Less than $10,000	2.37
$10,000-$15,000	1.69
$15,000-$25,000	1.59
$25,000-$35,000	0.78
$35,000-$50,000	0.55
$50,000 or Higher	0.30

Source: 2009-2014 American Community Survey 5-Year Estimates

Maps showing transit propensity by census block group are shown in in Figure 20 and Figure 21. The factor for each neighborhood is an adjustment for its population. For example, a Block Group with a factor of 1.5 is likely to have transit demand 1.5 times higher than its population would suggest. Conversely, a factor of 0.8 shows that the Block Group's socioeconomic characteristics suggest that transit demand is likely to be only 80 percent what its population would suggest.

Many areas have transit propensity factors 1.0 or higher, suggesting that their populations are more likely to ride transit than the population as a whole. Areas with factors of 1.5 or higher, indicating significantly higher propensity to ride transit include:

- Many parts of Central City.
- The Florida/Desire area.
- Pockets of Tremé-Lafitte, Tulane/Gravier, and Seventh Ward.
- The Tall Timbers-Brechtel and Fischer Development neighborhoods in Algiers.
- The Algiers Point, Whitney, and Behrman neighborhoods on the West Bank.

Figure 20: Transit Propensity Adjustment Factors (Southshore)

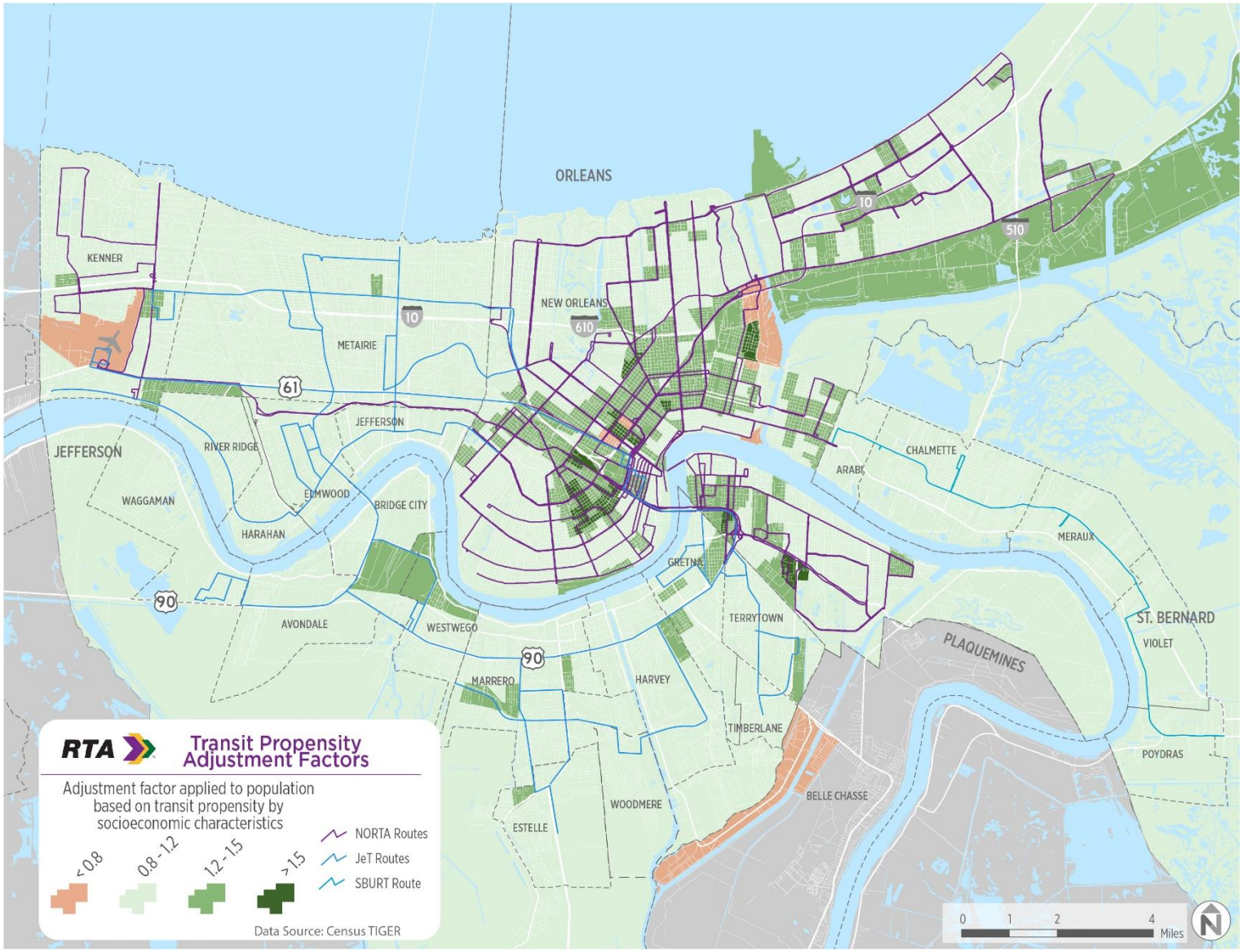


Figure 21: Transit Propensity Adjustment Factors (Northshore)

Figure 22: Adjusted Transit Frequency Supported by Population Density (Southshore)

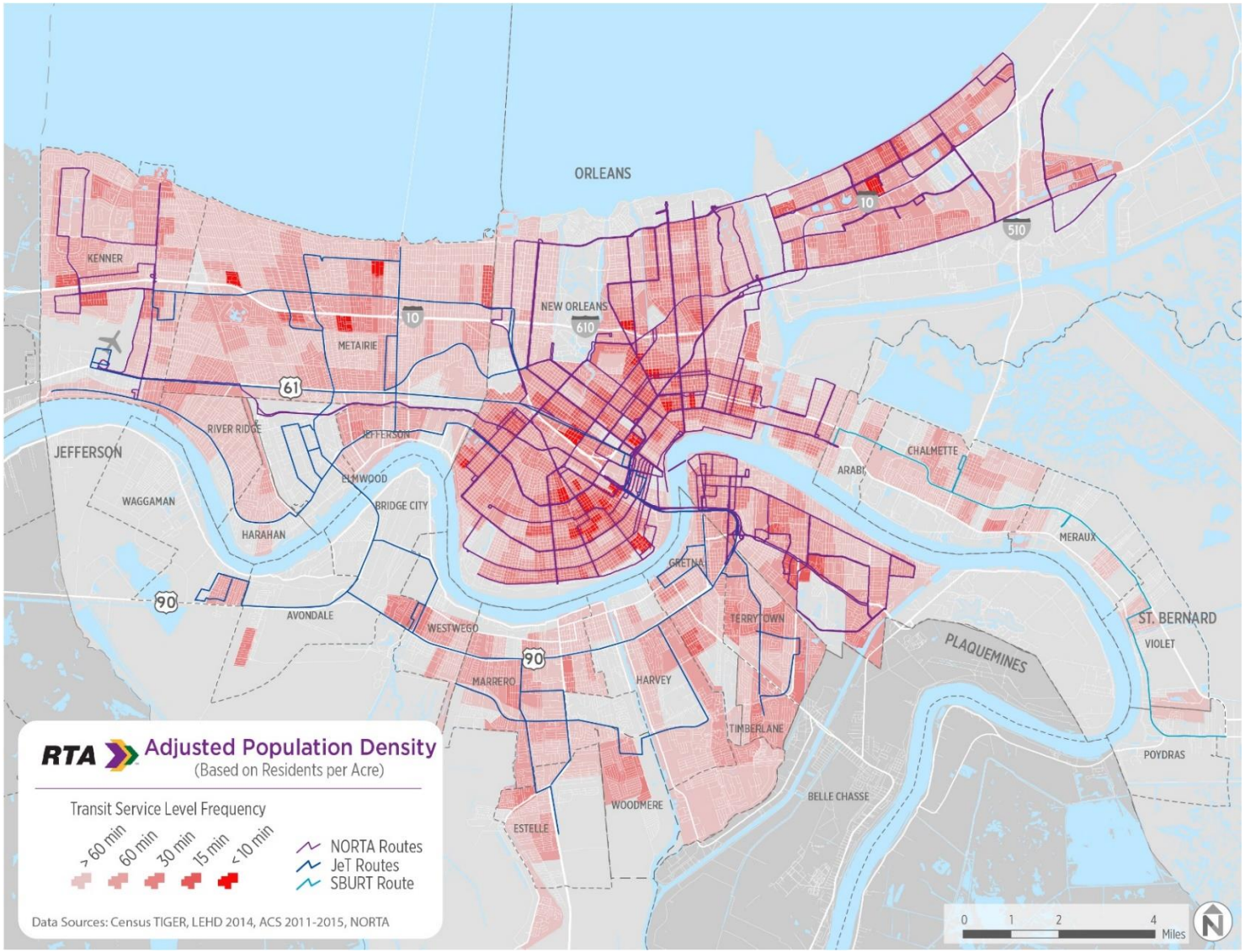
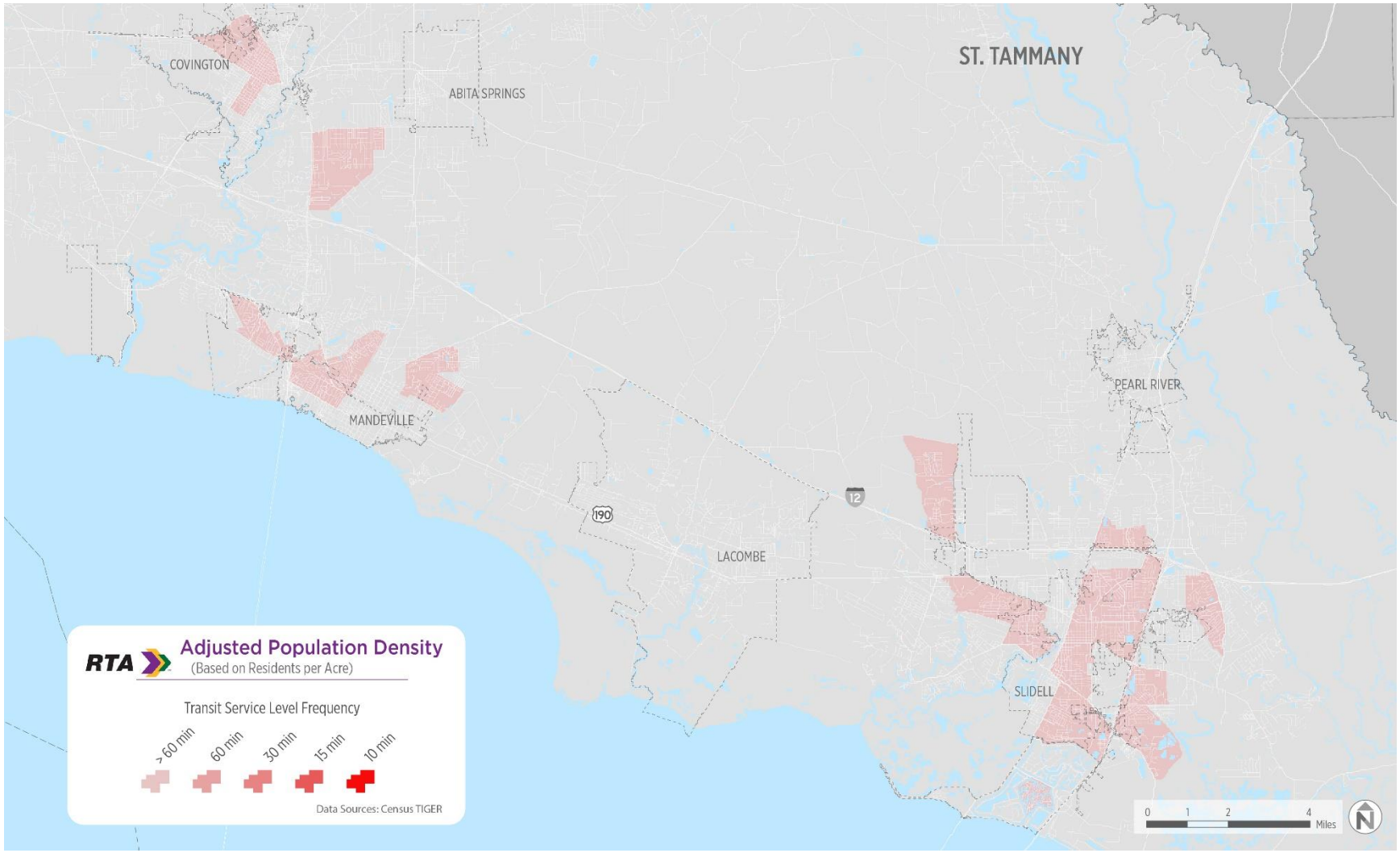


Figure 23: Adjusted Transit Frequency Supported by Population Density (Northshore)



SPECIAL GENERATORS

Some land uses generate large transit demand and economic activity. These include hospitals and Healthcare centers, schools and universities, and key tourist destinations (such as the airport, Superdome, and Convention Center). This section will focus on educational, healthcare, and hospitality related special generators. Combined, trips to schools, colleges and universities, and medical facilities make up about 20 percent of all non-home bound RTA trips.[4]

Schools and Universities

Current and future school-age residents tend to cluster around the area's largest high schools, such as JCFA Algiers, Edna Karr, Warren Easton, McDonogh College Prep, and G.W. College Prep (see Figure 24). Public high schools in New Orleans though are geographically distributed and many attend schools far from their residence.

Public and private universities are also large generators of transit ridership (Figure 25 through Figure 27). Large private universities are mostly in the urban core of New Orleans, while large public colleges and universities are clustered towards the central and lakeside parts of the city. Most students at private universities live in Uptown from S. Carrollton Avenue to the CBD and in Mid-City. Students at public colleges and universities are more dispersed, with the highest concentrations in Uptown, Hollygrove, Mid-City, Tremé, Seventh Ward, and parts of Jefferson Parish.

Tulane University, Loyola University, and the University of New Orleans are the largest universities in the region, and they generate significant demand for transit. Community colleges and smaller universities also generate high transit demand. A 2012 survey found that half of transit riders traveling to a college or university were going to Delgado Community College, and 16 percent were traveling to Southern University at New Orleans. Approximately one-quarter of travelers to or from Delgado Community College were JeT riders, indicating regional draw.

Healthcare and Hospitality

Examining healthcare and hospitality employment patterns can reveal demand for shift-based and nighttime transit. Figure 28 and Figure 29 show employment densities for the healthcare and hospitality sectors. These jobs are largely concentrated in:

- Central Business District and French Quarter, including the Medical District; the French Quarter/Marigny; Superdome and Smoothie King Center; the Convention Center; and the museum, art, and theater districts.
- Uptown, including Ochsner Baptist Hospital, Children's Hospital, and Touro Hospital as well as Magazine Street.
- Metairie, including the East Jefferson General Hospital and the Lakeside Shopping Center.
- Elmwood, including the Elmwood Shopping Center.
- Old Jefferson, including the Ochsner Medical Center.

Figure 30 and Figure 31 show that many New Orleanians leave home to go to work after 4 PM, often for healthcare and hospitality jobs. This commuting pattern is unusual for American cities and should be considered when planning mobility services.

[4] 2012 passenger survey for the Comprehensive Operations Analysis.

For visitors, by far the most popular transit lines are the Riverfront, St. Charles, and Rampart-St. Claude streetcar lines.[5] The Riverfront line is the only one in the city for which visitors make up the majority of riders. Visitors account for about one-quarter of riders on the St. Charles line and about one-fifth of riders on the Rampart-St. Claude line. Other routes with high visitor ridership are the Canal-City Park/Museum streetcar line, the E-2 Airport bus line (operated by JeT), the Canal-Cemeteries streetcar line, the 11-Magazine bus line, and the 10-Tchoupitoulas bus line. The Algiers-Canal Street ferry also has high visitor ridership.

[5] 2012 Comprehensive Operations Analysis and a recent survey of the Rampart-St. Claude Streetcar.

Figure 24: Population Density of Children of High-School Age and Younger (Orleans Parish)

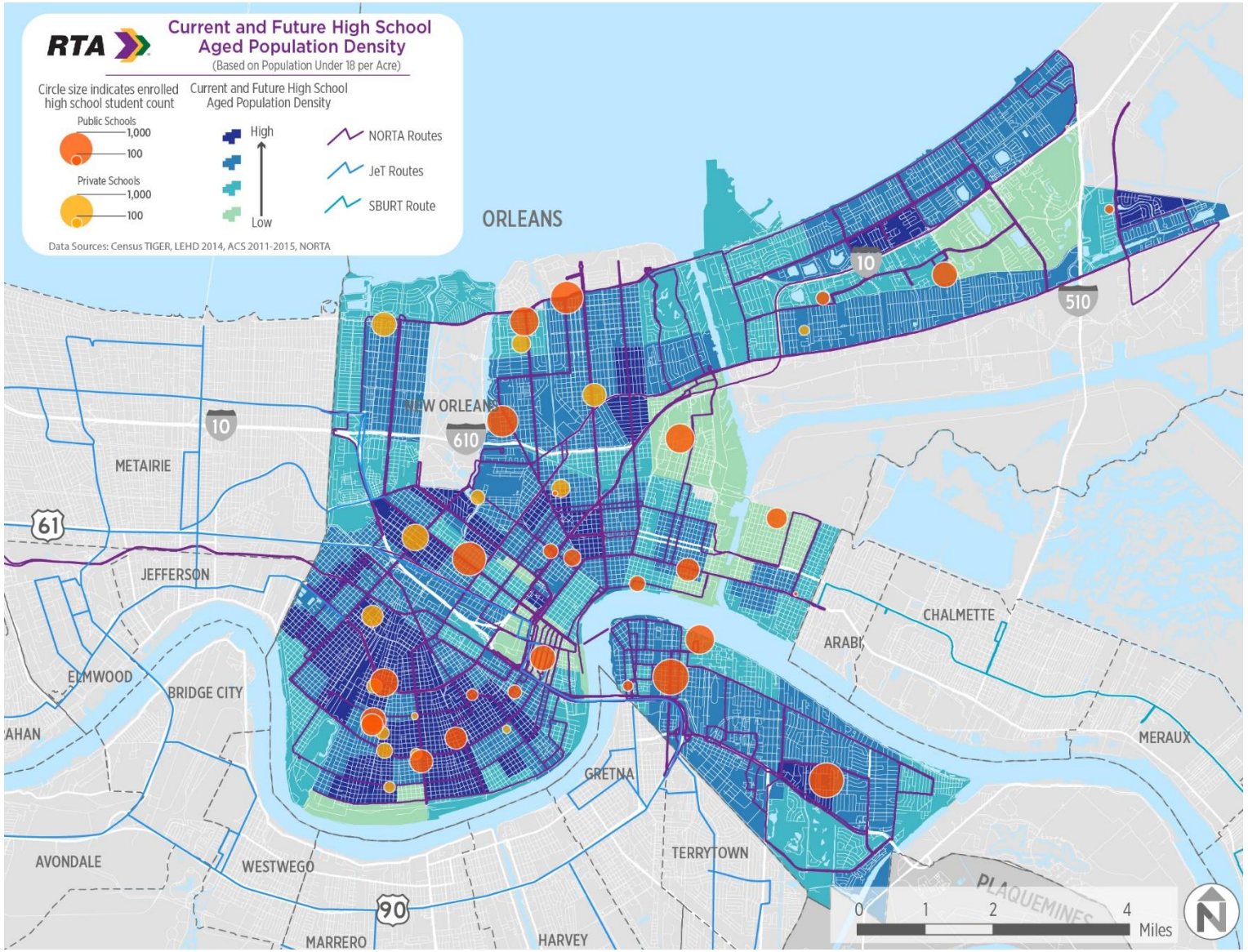


Figure 25: Private Colleges and Universities (Southshore)

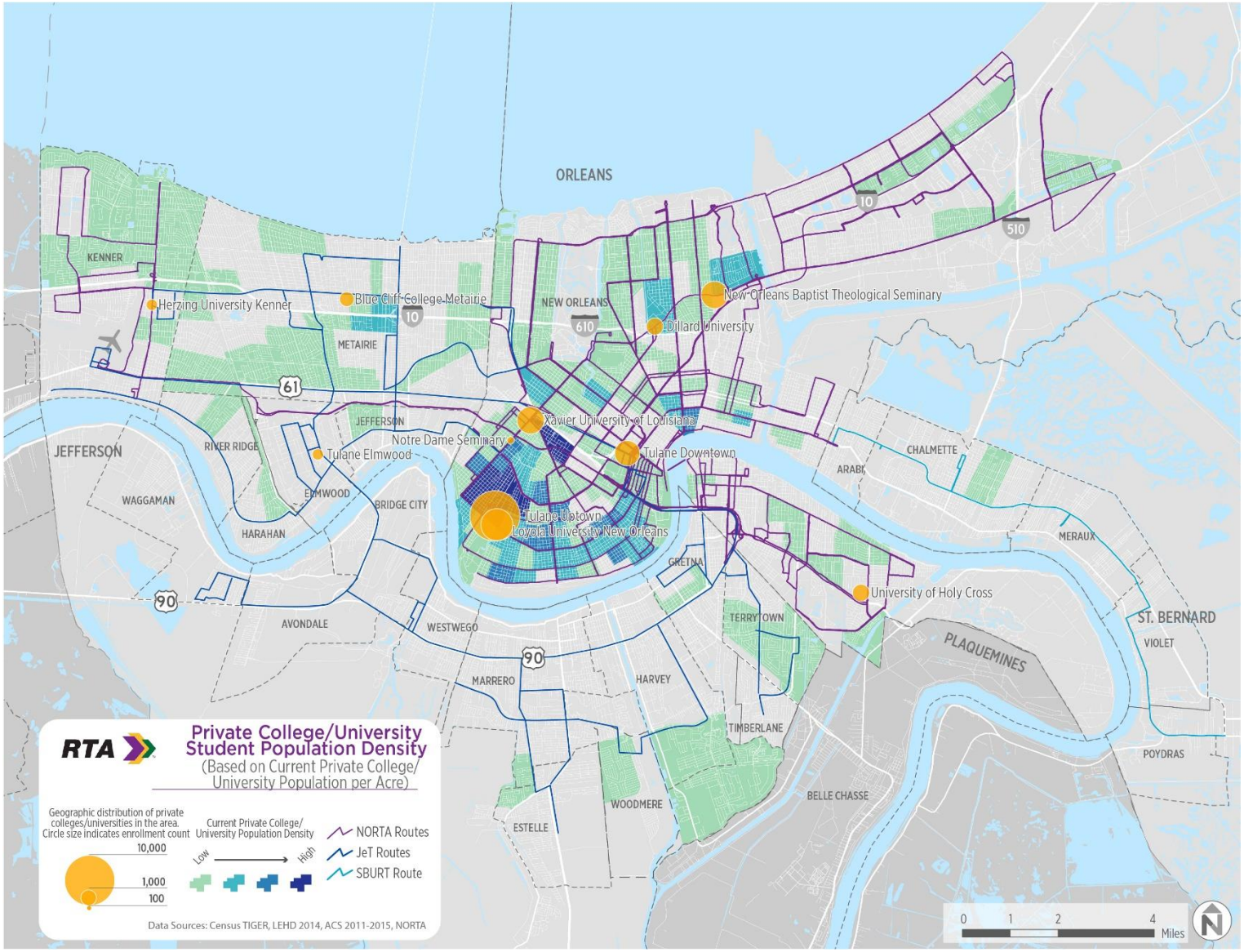


Figure 26: Public Colleges and Universities (Southshore)

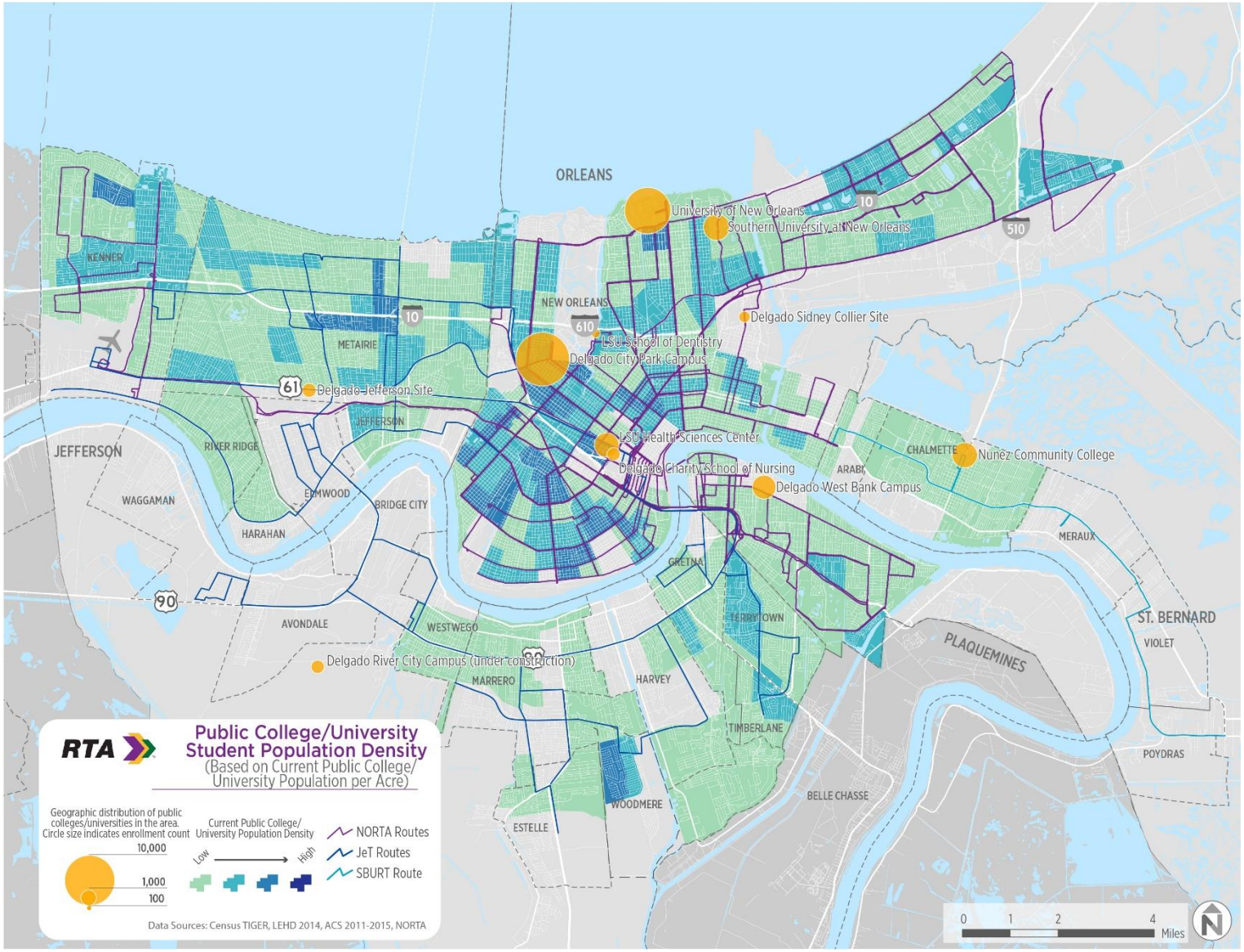


Figure 27: Public Colleges and Universities (Northshore)

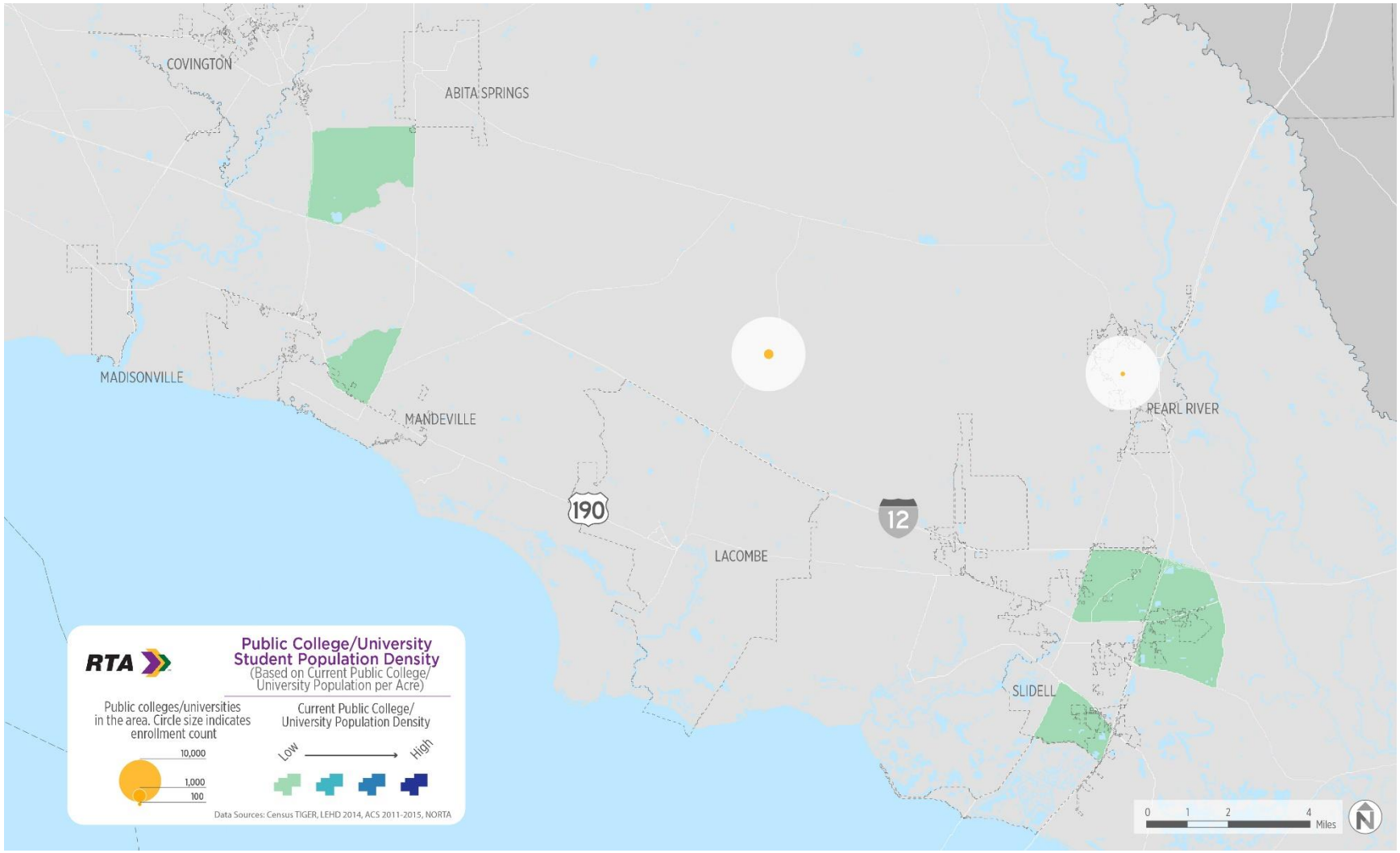


Figure 28: Residential Density of Employees in the Healthcare and Hospitality Sectors (Southshore)

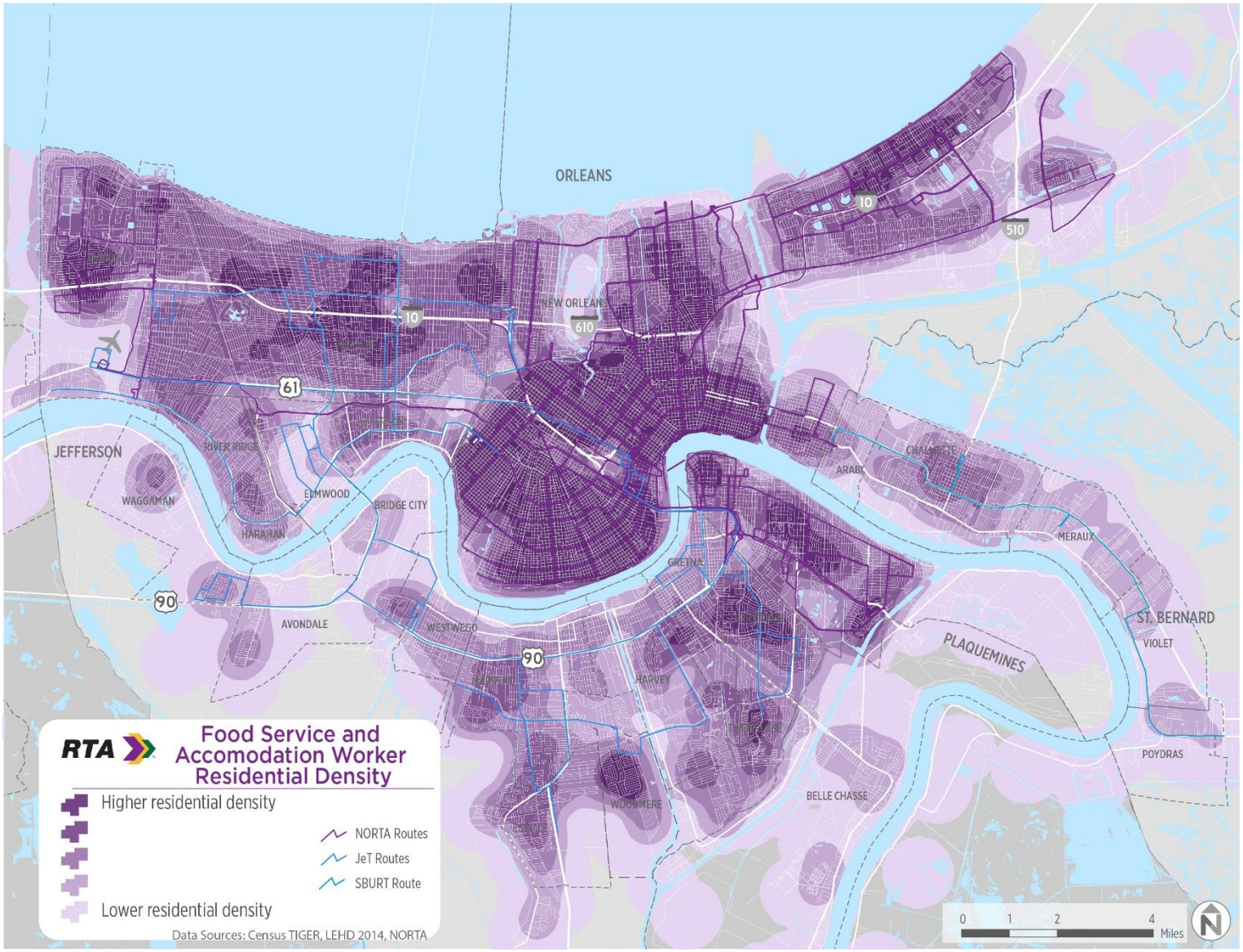


Figure 29: Residential Density of Employees in the Healthcare and Hospitality Sectors (Northshore)

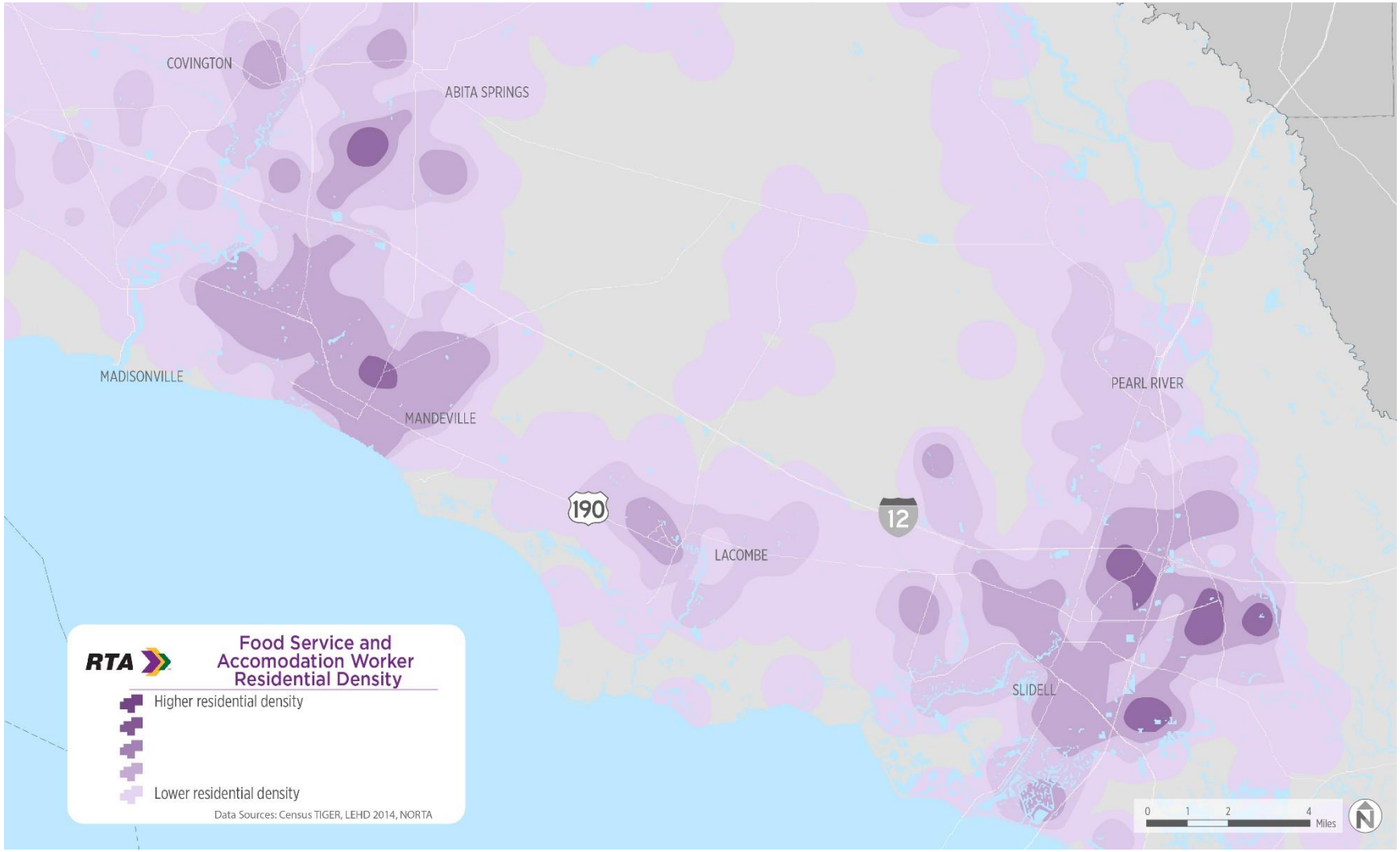


Figure 30: Workers Leaving Home to Go to Work, 4:00PM-11:59PM (Southshore)

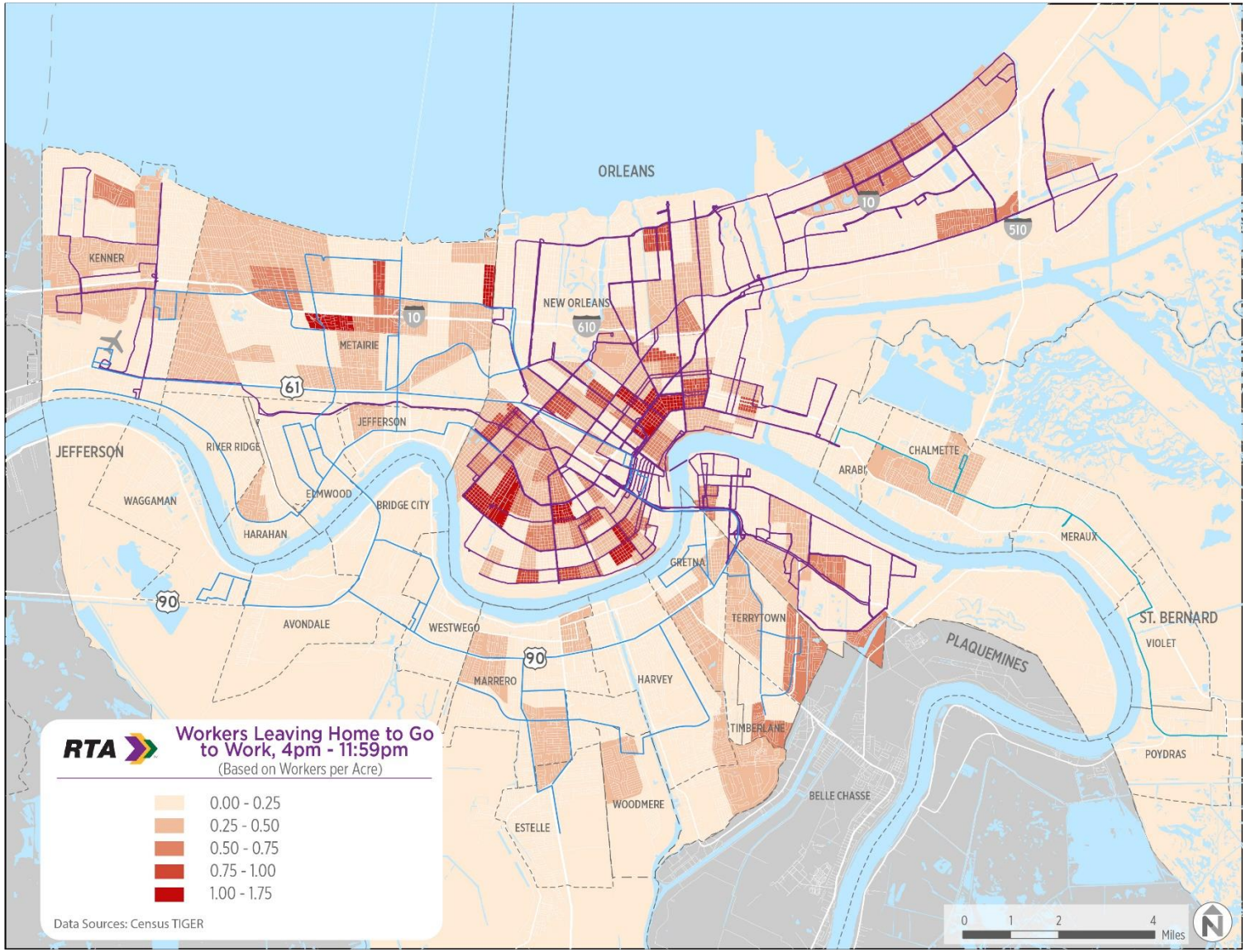


Figure 31: Workers Leaving Home to Go to Work, 4:00PM-11:59PM (Northshore)

TRAVEL FLOWS

For transit to be effective, it must take people from where they are to where they want to go. People travel for many reasons, including to and from work and school, and for shopping, medical, recreation, social, and other purposes. Travel flows, which show the places that people travel within the New Orleans region, are one way to determine where transit should provide direct service or easy connections.

Figure 32 through Figure 34 present travel flows for trips between districts, which are defined by the New Orleans Regional Planning Commission (NORPC). NORPC divided the New Orleans area into 20 districts with similar populations. The districts therefore vary greatly in area.

The travel flows with the most daily trips (over 50,000) are generally focused in the following areas:

- Within the core areas of New Orleans, Kenner, and western Metairie.
- Between Elmwood and Jefferson.
- Between Kenner and Elmwood.

There are also high travel flows – 30,000 to 50,000 daily trips – between New Orleans East and:

- Core areas of New Orleans and Kenner.
- Western Metairie.

Figure 32: Regional Travel Flows (Southshore)

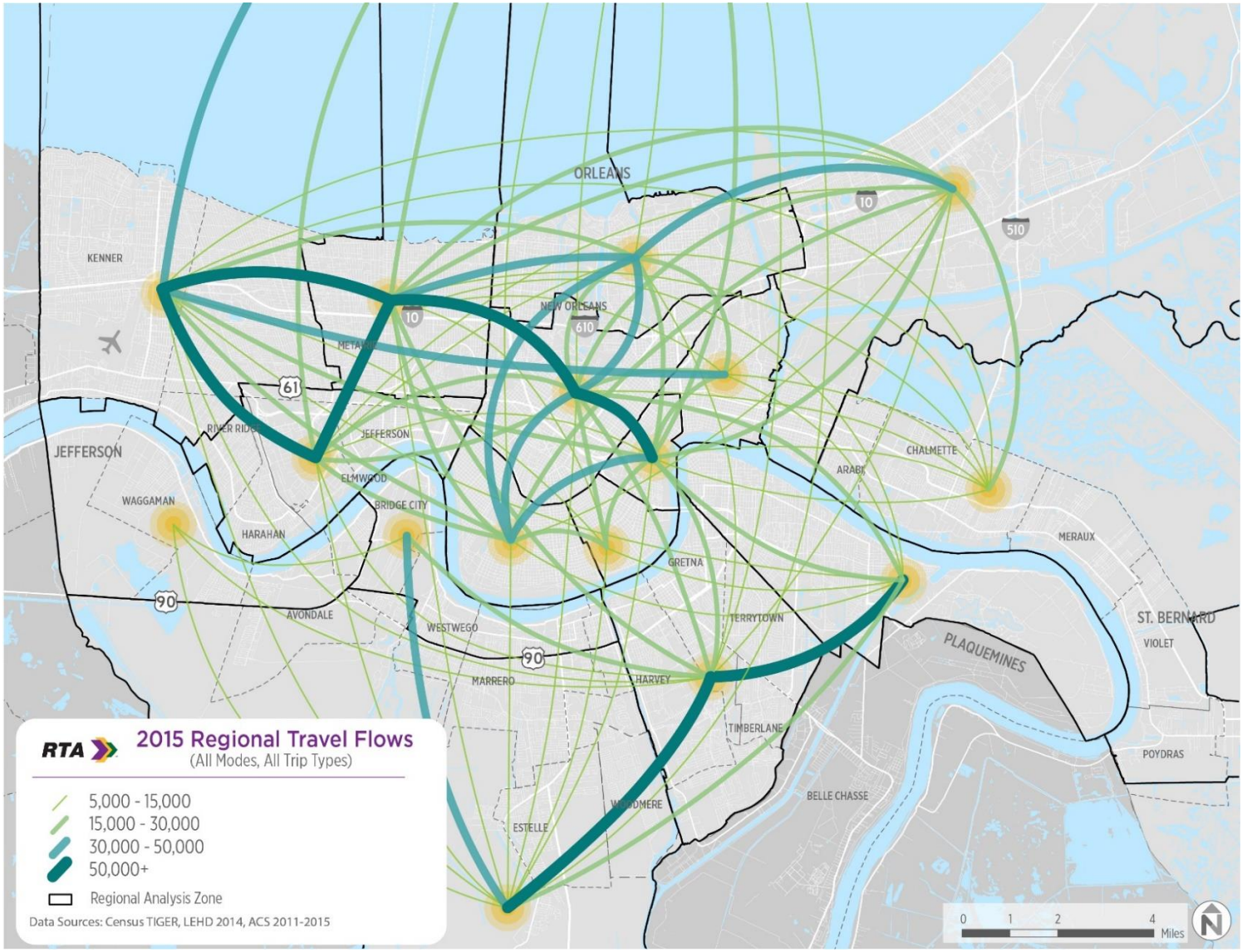


Figure 33: Regional Travel Flows (Region)

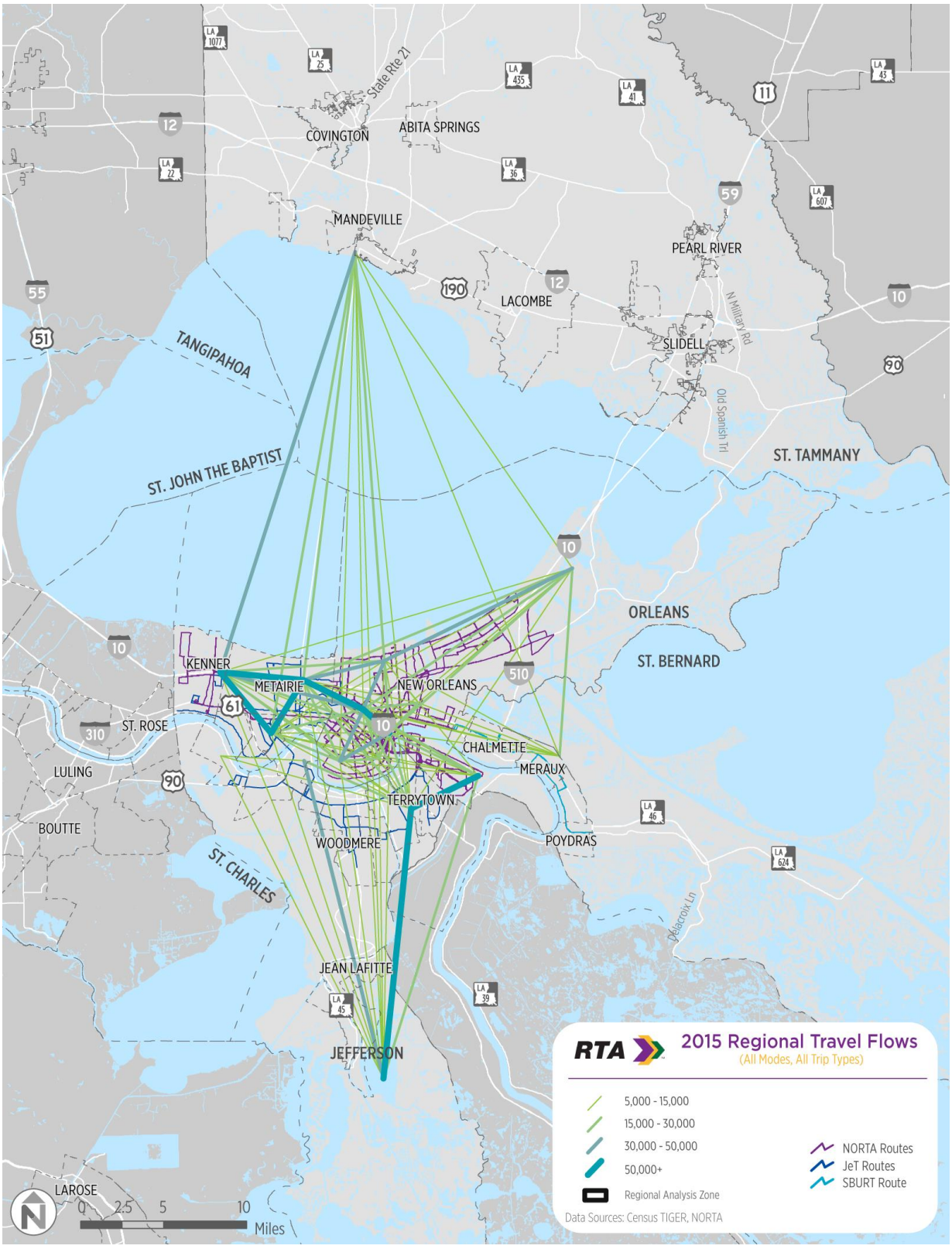
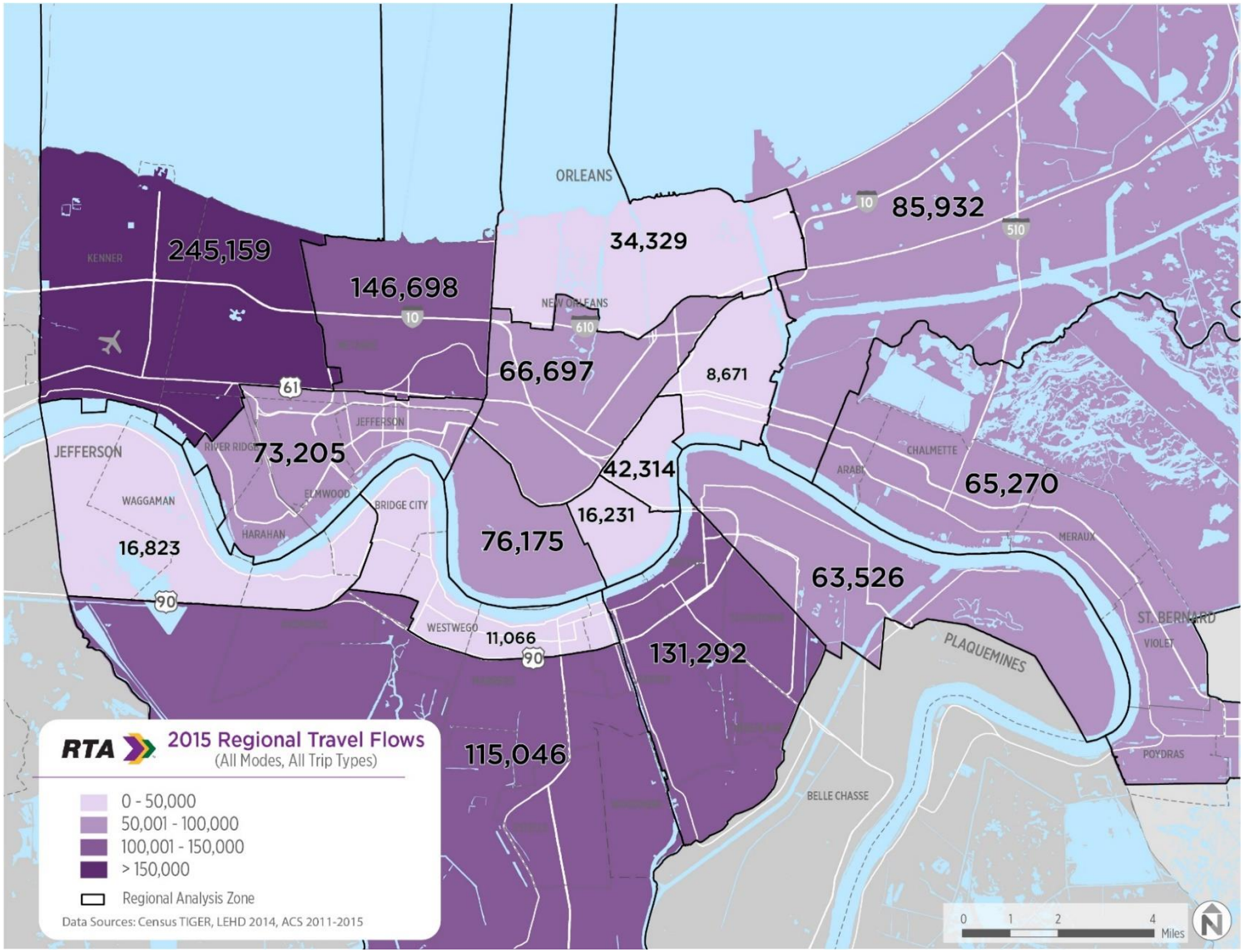


Figure 34: Regional Travel Flows – Intrazone/Internal Trips (Southshore)



2.0 FUTURE TRANSIT DEMAND

To estimate future transit demand, two growth scenarios were considered. The scenarios assume different development patterns for the next 20 years:

- **Scenario A** assumes that many high-income residents will move into central neighborhoods. Low-income populations shift from the urban core to neighborhoods farther from downtown and in surrounding parishes. The scenario does not assume any substantial changes in the existing zoning and regulatory system.
- **Scenario B** assumes similar population growth, concentrated in central neighborhoods. However, through a combination of policy and zoning changes, the urban core expands housing supply and accommodates both existing low-income residents and new high-income residents.

In both scenarios, transit propensity is based on projected median incomes and a 10 percent increase in the rate of zero-vehicle households.

The rest of this section shows the projections for household distribution by income level in 2035 under the two scenarios. These scenarios help identify how land-use policies can change demand for mobility services.

METHODOLOGY

2035 Parish Population Projections

At the regional level, this methodology assumes identical economic forecasts and population growth in each scenario. The study team first projected the 2035 population for each parish, based on the Louisiana Department of Transportation and Development's (DOTD) parish-level population and employment forecasts for 2040 from its 2015 Louisiana Statewide Transportation Plan Update.[6] The study team adjusted the 2040 forecast to 2035 by:

- Calculating the compound annual growth rate (CAGR) for population in each parish from 2010 to 2015.
- Growing the 2015 American Community Survey (ACS) estimate for 20 years using this rate.

Table 9 summarizes projections for each parish. These figures were used to test population projections at the Census Tract level.

[6] http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Multimodal/Transportation_Plan/Pages/default.aspx

Table 9: Parish Population – Historic and Projections

	Orleans	Jefferson	St. Bernard	St. Tammany	Total	Source
2010 Count	343,829	432,552	35,897	233,740	1,046,018	U.S. Census Bureau Decennial Census
2015 Estimate	389,738	435,555	45,384	249,968	1,117,669	2015 American Community Survey 1-year Supplemental Estimates
2035 Projection	432,584	471,038	46,116	359,244	1,308,982	Asakura Robinson analysis
2040 Projection	444,864	480,352	46,301	393,338	1,364,855	LA Dept. of Transportation and Development

This analysis excludes population at Orleans Parish Prison in all scenarios.

2015 Census Tract Estimates

The American Community Survey (ACS) provides 5-year population estimates at the Census Tract level, but not 1-year estimates. Therefore, the team developed two methods for adjusting the 2011-2015 5-year estimate for each Tract to produce baseline 2015 population estimates.

- In Orleans Parish, the 5-year estimate of each Census Tract is adjusted by its neighborhood's rate of change of residences receiving mail from 2012 to 2014.[7]
- In the other parishes, the 5-year estimate of each Census Tract is adjusted by its parish's overall rate of change between the 5-year estimate and 1-year estimate. These rates are 0.1%, 5.9%, and 2.9% in Jefferson, St. Bernard, and St. Tammany parishes, respectively.

The ACS 5-year median income estimates are used as the baseline 2015 income for each Census Tract.

2035 Census Tract Population Projections

Population projections in each Census Tract assume no changes in average household sizes. Therefore, all growth is the result of newly occupied housing units – both existing, currently vacant units, and new construction.

The approach analyzes recent demographic and housing trends and projects future changes based on two primary criteria: market strength and potential for infill or new development. The team used the City of New Orleans' 2009-2012 and 2015 Market Value Analysis reports to determine market strength and

[7] http://www.datacenterresearch.org/reports_analysis/neighborhood-recovery-rates-growth-continues-through-2016-in-new-orleans-neighborhoods/

direction, and validated the reports' findings through examination of 2011 to 2015 changes in housing costs and vacancy in the American Community Survey.[8] Potential for infill or new development was determined by evaluating Future Land Use Map designations, existing levels of multifamily housing, and protection by the Historic District Landmark Commission (Orleans Parish only).

The team further relied on knowledge of large, planned multifamily housing developments. These include both privately developed, market-rate projects such as in the Central Business District, Mid-City, and other strong-market neighborhoods (Table 10), as well as publicly subsidized affordable housing developments supported by the Housing Authority of New Orleans (Table 11).

Table 10: Selection of Market-Rate and Mixed-Income Planned and Under Construction – Multifamily Projects

Project and Location	Units	Status
1720 St. Bernard Avenue	53	Under construction
1535 Canal Street	330	Under construction
The Standard (Julia and O'Keefe, CBD)	89	Under construction
The Odeon (Girod and St. Rampart, CBD)	259	Planned
1717 Canal Street	212	Planned
Two Saints (St. Joseph and St. Charles, CBD)	233	Planned
2930 Burgundy Street	105	Planned
Via Latrobe (Chartres and Montegut)	260	Planned
1301 Annunciation	210	Planned
1100 Annunciation	86	Planned
Conti and Cortez, Mid City	382	Planned
Trade District (Lower Garden District)	1,400	Planned

[8] According to the reports' authors, Reinvestment Fund, "the Market Value Analysis (MVA) is a tool designed to assist the private market and government officials to identify and comprehend the various elements of local real estate markets. It is based fundamentally on local administrative data sources. By using an MVA, public sector officials and private market actors can more precisely craft intervention strategies in weak markets and support sustainable growth in stronger market segments." Available at: https://data.nola.gov/Economy-and-Workforce/New-Orleans-2015-Market-Value-Analysis-Final-Repor/tbyf-mn78

Table 11: Housing Authority of New Orleans – Projects Planned and Under Construction

UNDER CONSTRUCTION			
Project	**Unit Count**	**Estimated Completion**	**Location Description**
Lafitte III (Elderly)	100	January 2017 *leasing	700 N Galvez
Florida	51	March 2017 *leasing	2521 Independence
Iberville Phase IV	164	July 2017	N Robertson, Conti, N Villere, Iberville
Guste III	155	December 2017	2100 Clio
Iberville Offsite	237	April 2018	Mondy - 2327 St. Philip; Bell - 1010 N Galvez; Sacred Heart - 1720 St. Bernard; 1601 Orleans; 1508 Orleans
Iberville Phase V	80	April 2018	Block bounded by Tremé, Conti, Marais, Bienville
Iberville Phase VI	50	April 2018	Block bounded by N Villere, Conti, Marais, Bienville
Total	**837**		
PLANNED			
Project	**Estimated Unit Count**	**Estimated Completion**	**Location Description**
Iberville Phase VII	60	2018	Block bounded by N Villere, St. Louis, Tremé, Conti
Iberville Offsite	160	2019	TBD - area bounded by Broad, St. Bernard, Rampart, & Tulane
Winn Dixie	129	2019	1501 St. Louis
Lafitte On-site Homeownership	45	2018	Block bounded by N Prieur, Orleans, N Roman, Lafitte Ave
Cooper II	TBD	2019	Blocks bounded by S Miro, Earhart, N Prieur, Erato
Bywater/Marigny Scattered Sites	TBD	2019	Bounded by Mississippi River, Elysian Fields, St. Claude, Industrial Canal
Uptown Scattered Sites	TBD	2019	Bounded by N Claiborne, Pontchartrain Expressway, Mississippi (MS) River, Audubon Park
Additional Scattered Sites	TBD	TBD	Lower 9th Ward - Industrial Canal, MS River, Orleans/St Bernard Parish Line, Intracoastal Waterway Upper 9th Ward & St. Rock - St. Claude, Industrial Canal, I-10, Elysian Fields New Orleans East - Industrial Canal, Lake Pontchartrain, Paris Road, Intracoastal Waterway Carrollton - Audubon Park, US 90, Orleans/Jefferson Parish Line, MS River West Bank/Behrman - Holiday, General Meyer, Hendee, Wes Bank Expy, General De Gaulle
Total	**394**		

Source: Housing Authority of New Orleans, April 2017

Future Occupancy of Currently Vacant Units

Survey data from the 2015 Market Value Analysis provides the number of vacant units in the Orleans Parish Census Tract. This source is more reliable than 5-year ACS estimates. In other parishes, where this dataset is not available, 5-year ACS data was used to provide baseline vacancy numbers.

In Scenario A in Orleans Parish, continued demand for housing drives the near full occupancy of currently vacant units – from 90 percent to 100 percent, based on trending market strength as indicated by the Market Value Analyses. In Scenario B, in which new housing construction is permitted in strong market areas, vacant units are less likely to be occupied in weaker housing markets. Projected rates of occupancy of currently vacant units in this scenario range from 5 percent to 100 percent.

In both scenarios, 95 percent of currently vacant units in Jefferson and St. Tammany parishes and 10 percent in St. Bernard are projected to be occupied. These projections come from:

- The high rate of projected population growth in St. Tammany Parish (1.8 percent CAGR).
- The moderate projected growth rate in Jefferson Parish (0.4 percent CAGR), coupled with its lack of greenfield development opportunities and prevalence of single-family zoning.
- St. Bernard Parish's low growth rate (0.1 percent CAGR) and preponderance of vacant, developable land.

Future Infill and New Development

In Scenario A in Orleans Parish, infill development increases the existing housing supply by 0 percent to 50 percent by 2035, varying by market strength, future land-use designations, and historic status. Census Tracts in which large-scale multifamily projects are currently planned, such as in Mid-City and the Central Business District, anticipate the highest rates of infill development.

In Scenario B, infill development causes a 0 percent to 100 percent increase in housing supply. Census Tracts with the greatest market strength and proximity to central New Orleans, as well as those in which known large multifamily developments are currently planned, see the highest levels of new development in this scenario.

In both scenarios in the other parishes, the projected level of infill and new development corresponds to:

- The current proportion of multifamily developments (2+ unit structures) within each Census Tract.
- The remaining balance of population growth forecasted by DOTD after accounting for occupancy of currently vacant units.

Significant greenfield development is not anticipated in St. Bernard Parish nor most of Jefferson Parish. An exception is the envisioned Fairfield community development on the West Bank of Jefferson Parish (Census Tract 276.02). A population gain of 5,500 is assumed in both scenarios for this site.

New greenfield development is expected to generate the bulk of St. Tammany Parish's growth. The parish anticipates opening tens of thousands of acres of undeveloped land along the Interstate 12 and US Highway 190 corridors to accommodate this development.[9]

2035 Census Tract Income Projections

In Scenario A, median household income by Census Tract changes at annual rates ranging from -1 percent decline to 5 percent growth. The greatest change – 5 percent growth – occurs in Orleans Parish

[9] New Orleans Regional Planning Commission. Personal interview. 29 Mar. 2017.

neighborhoods that had low incomes in 2011 and significant growth in 2015. These are gentrifying neighborhoods in which high-income households are replacing low-income households.

The arrival and departure of households in rapidly changing neighborhoods over time has a greater impact on median household income than year-to-year changes in more stable neighborhoods. Annual income growth in all other Orleans Parish neighborhoods ranges from 0.25 percent to 0.5 percent.

Projected income declines by 1 percent annually in census tracts in Jefferson, St. Bernard, and St. Tammany are in areas where incomes are already below average and trending downwards, falling between 2011 and 2015. This trend reflects low-income households moving from Orleans Parish to other parishes and an increasing concentration of wealth in the city.

In Scenario B, median income growth is more widely distributed across the region. All Census Tracts make modest gains, ranging from 0 percent to 3 percent.

Employment Forecast

10-Year Projections

The New Orleans Business Alliance provides 10-year employment projections in the New Orleans metropolitan area at the zip code level, using software powered by Emsi, the labor market advisory company. This source estimates a total of 553,660 jobs in 2017 in the four-parish region, and projects growth to 577,286 by 2027 – an increase of 4.3 percent.

As shown in Table 12, the fastest growing occupations in the metropolitan area are projected to be primarily low-wage service jobs in the retail and hospitality industries. An exception is the fastest growing occupation of all: registered nurses, whose positions are anticipated to grow by over 1,800 – a 12 percent gain. This occupation's 2015 median hourly earnings were nearly $32, compared to the $8-$14 earnings of other fast-growing professions.[10]

[10] Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates also affected by county-level Emsi earnings by industry.

Table 12: Fastest-Growing Occupations, New Orleans Metropolitan Area

Occupation	2017 Jobs	2027 Jobs	Change in Jobs (2017-2027)	% Change	2015 Median Hourly Earnings
Registered Nurses	14,808	16,634	1,826	12%	$31.81
Retail Salespersons	19,571	20,907	1,336	7%	$11.03
Waiters and Waitresses	15,842	16,933	1,091	7%	$8.86
Combined Food Preparation and Serving Workers, Including Fast Food	9,191	10,225	1,034	11%	$8.73
Cooks, Restaurant	6,172	7,170	998	16%	$10.38
Security Guards	8,669	9,624	955	11%	$11.51
Bartenders	4,622	5,170	548	12%	$9.20
Receptionists and Information Clerks	4,885	5,422	537	11%	$11.82
Food Preparation Workers	8,598	9,110	511	6%	$8.68
First-Line Supervisors of Food Preparation and Serving Workers	5,763	6,268	506	9%	$13.80

Source: Emsi 2017

Job growth rates are anticipated to vary widely by zip code on the Southshore, from a loss of over 2,800 jobs in Harvey to a gain of nearly 3,200 in the 70130 zip code (comprising the Lower Garden District and Warehouse District (Figure 35)). Other areas of high growth include uptown New Orleans and Marrero. Inner-ring suburban areas – including Bucktown, Gretna, Lower Algiers, most of New Orleans East, and Mid-City – are expected to lose up to 250 jobs. The area surrounding Louis Armstrong International Airport is expected to lose just over 500 jobs. Jobs in this area and in Harvey are concentrated in the transportation and logistics and manufacturing sectors.

Overall, areas with clusters of educational institutions, healthcare centers, and hospitality jobs are projected to grow in employment. The expansion plans of Ochsner Medical Center, University of New Orleans, and the Ernest M. Morial Convention Center are early indicators of this growth. Ochsner Medical Center is planning to add 3,800 new jobs as part of its expansion, while the University of New Orleans aims to increase its enrollment from 6,000 to 20,000 within 10 years. The Convention Center is planning a massive mixed-use development at its southern end, in the Lower Garden District, which would create hundreds of service jobs.

Large tracts of developable land outside the city center hold the potential to grow industrial and manufacturing occupations. State and local economic development agencies are actively recruiting tenants for three sites in West Bank: the Churchill Technology and Business Park, Avondale Shipyard, and Bridgeview Park. On the East Bank, the riverfront Sinclair Tract is a vast greenfield development opportunity in the Meraux area of St. Bernard Parish. Contrary to the education, healthcare, and hospitality job centers described above, these areas are currently not well served by transit.

On the Northshore, current job hubs Covington, Mandeville and Slidell are expected to see the largest job growth (Figure 36). Unlike the Southshore, however, significant amounts of undeveloped land are

available. Louisiana Economic Development is recruiting tenants for commercial and industrial development sites of various sizes scattered across the parish. These include the Lakes at Madison Park, Nord du Lac and River Chase, to the south and west of Covington; the St. Tammany South Central Site between Abita Springs and Lacombe; the Tamanend Business Park in Lacombe, and Johnny F. Smith Memorial Business Park and Summit/Fremaux Technology and Business Park in Slidell.

Energy and Manufacturing

Inexpensive and abundant natural gas in the U.S. is fueling investment in energy and advanced manufacturing operations in parishes immediately outside of the 4-parish region. These investments are creating large numbers of temporary construction jobs and many permanent, high-wage jobs in manufacturing. Fast-growing occupations in energy and petrochemicals include: welders, pump operators, machinists, sales representatives, and first-line supervisors. Many of these occupations require do not require a post-secondary degree, but are high wage – often $15-35 an hour.[11,12]

Announced projects include:

- St. James Parish:
  - Noranda Bauxite & Alumina will expand and upgrade the alumina refinery in Gramercy – 65 new direct jobs, 185 new indirect jobs.[13]
- St. Charles Parish:
  - Entergy power plant – 700 construction jobs, 31 new direct jobs, 97 new indirect jobs.[14]
  - Monsanto is expanding its plant in Luling – 95 new direct jobs, 20 new contractor jobs, 450 new indirect jobs.[15]
- Plaquemines Parish:
  - Venture Global LNG will develop a new natural gas liquefaction facility and export terminal – 2,200 construction jobs, 250 new direct jobs, 728 new indirect jobs.[16]

[11] Data on the education requirements and wages for all of the fastest growing occupations are included in the downloadable data tables accompanying this research brief available at www.gnocdc.org.

[12] Hobor, George and Elaine Ortiz. "The Transformative Possibility of the New "Energy Boom" in Southeast Louisiana." *Greater New Orleans Community Data Center*. January 2014 www.datacenterresearch.org/reports_analysis/the-transformative-possibility-of-the-new-energy-boom-in-southeast-louisiana/. Accessed 6 June 2017.

[13] Louisiana Economic Development, "Gov. Edwards and Noranda Bauxite & Alumina CEO David D'addario Announce $35 Million Investment in St. James Parish Refinery" May 19, 2017.

[14] Louisiana Economic Development, "Gov. Edwards, Entergy Executives Break Ground On $869 Million Power Plant in St. Charles Parish" January 31, 2017.

[15] GNO Inc., "Monsanto Breaks Ground On $975 Million Louisiana Expansion" February 3, 2017.

[16] Louisiana Economic Development, "Venture Global Announces $8.5 Billion LNG Complex in Plaquemines Parish" December 21, 2016.

Figure 35: Projected Changes in Jobs by Zip Code, 2017-2027 (Southshore)

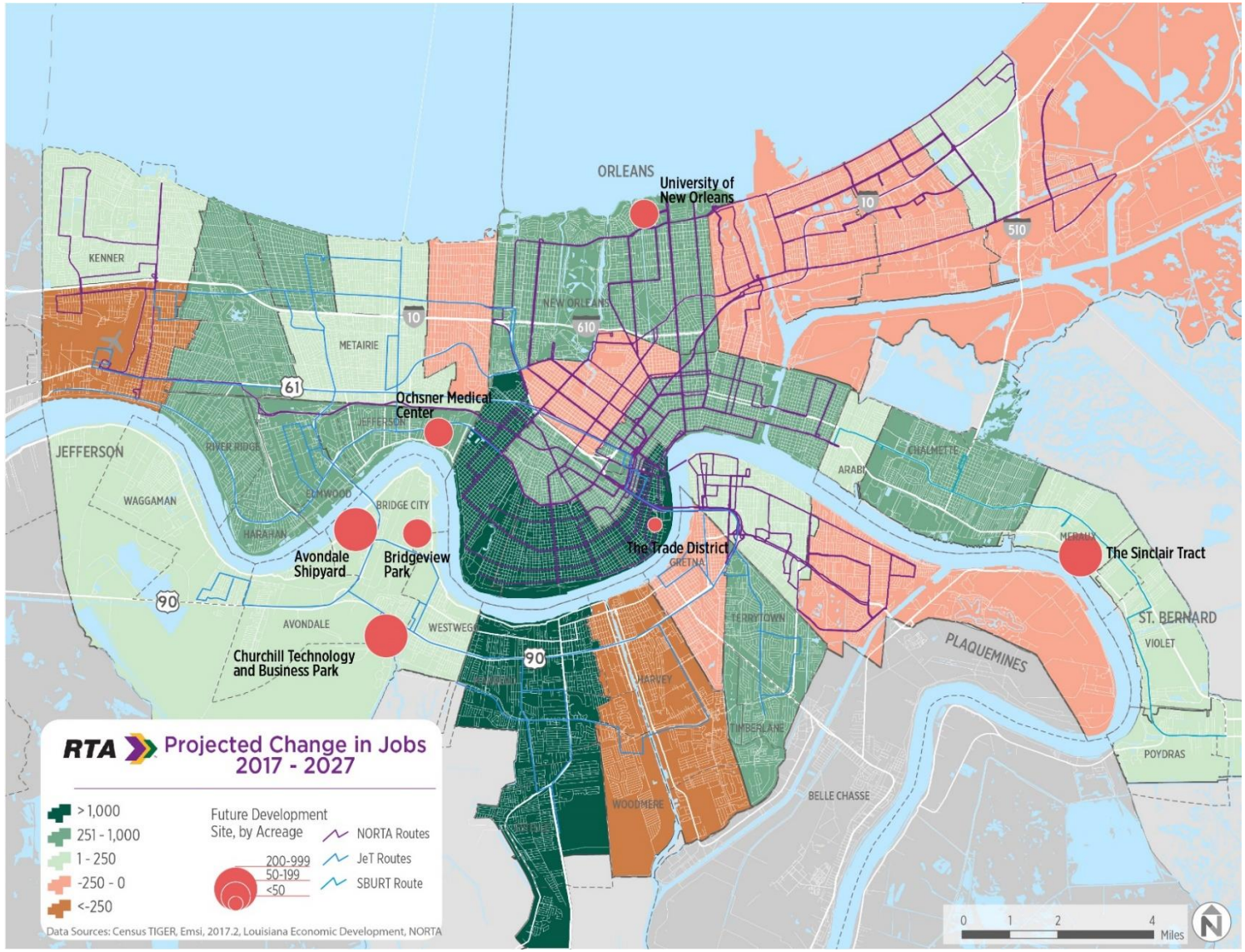
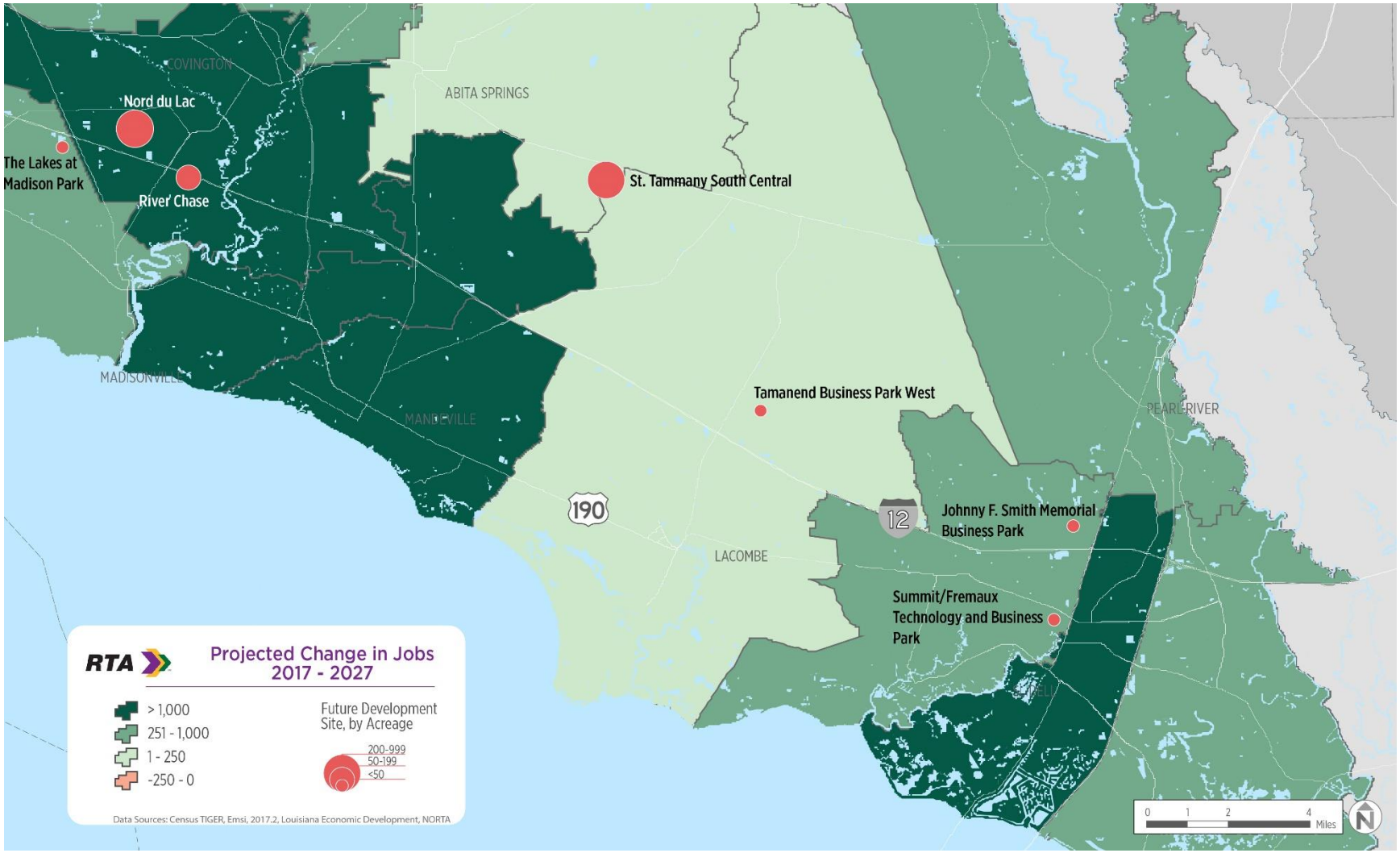


Figure 36 Projected Changed in Jobs by Zip Code, 2017-2027 (Northshore)



Water Management

Public and private stakeholders, such as the Louisiana Coastal Protection and Restoration Authority (CPRA), the Army Corp of Engineers, and the Sewerage and Water Board of New Orleans are expanding the water management infrastructure in the region. For example, the Sewerage and Water Board of New Orleans secured almost $1 billion from FEMA for rebuilding projects and anticipates spending $3.3 billion for water and sewer line upgrades in the future.[17]

The water management sector is projected to add more than 5,000 jobs to the region.[18] These jobs will include designing and building solutions for coastal restoration, coastal protection, and urban water management. Coastal restoration and protection projects will be located outside of the 4-parish region, in coastal areas such as Plaquemines and Terrebonne parishes. Commuter transit services, such as vanpools that connect workers in the New Orleans metropolitan area to these job opportunities, could be a valuable service.

Healthcare Biosciences

Greater New Orleans is experiencing significant growth in healthcare and biosciences. Key developments include:

- Ochsner Medical Center (Jefferson Campus) expansion – 3,200 new jobs.[19]
- Provision Healthcare to develop an Advanced Cancer Treatment Center at the UMC Campus – 60 new direct jobs, 63 indirect jobs.[20]

Education

The University of New Orleans is planning an aggressive increase in student enrollment, which could lead to substantial hiring in staff and faculty positions. The short-term goal is to increase enrollment by 4,000 students within five years, and the long-term goal is to increase enrollment by an additional 10,000 within 20 years.

In 2018, Delgado Community College will open a new campus in Churchill Technology Park on the West Bank of Jefferson Parish. Student enrollment is projected to rise to 1,000 at this facility.

Technology

In 2017, DXC Technology announced that it will bring 2,000 jobs by 2024 to a new “digital transformation center” in Downtown New Orleans. The company’s services include business technology and security and government contracting technology. In addition to providing many new, high-paying jobs in the region, the company’s presence is anticipated to create many more direct and indirect jobs.

Job growth in technology-related fields is anticipated to continue in the future.

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[17] Coastal Protection and Restoration Authority. (2013). Coastal Programs. Retrieved April 8, 2015, from http://coastal.la.gov/about/coastal-programs.

[18] *Ibid.*

[19] Ochsner Medical Center. Personal interview. 19 April. 2017.

[20] Louisiana Economic Development, “Provision Healthcare To Develop $100 Million Advanced Cancer Treatment Center In New Orleans” April 21, 2017.

FINDINGS

Scenario A

Figure 37 and Figure 38 show that in Scenario A, population growth in Orleans Parish is concentrated in two types of areas:

- Strong housing markets and moderate to high potential for infill development. This includes the Central Business District, Lakeview, Mid-City, and Central City. In these neighborhoods, real estate prices have rapidly increased in recent years, yet there is still significant physical room for growth, as permitted by future land use designations.
- High infill potential, and currently weak market housing markets that could strengthen over time. These are neighborhoods with a lot of vacant housing and land, such as the Lower Ninth Ward, the Florida/Desire area, and portions of Gentilly and New Orleans East. Population growth is more likely to arrive in these areas in the long term, after stronger markets are saturated.

Population growth is very limited in St. Bernard Parish in both scenarios. The highest growth is in Chalmette and Arabi, which the Parish is actively marketing to potential homeowners priced out of Orleans Parish.[21]

In Jefferson Parish, the population increases most in commercial corridors where multifamily housing is permitted, such as along Manhattan Boulevard in Harvey, the West Bank Expressways in Westwego, and in the northern portion of Kenner. However, the greatest growth occurs from the development of the Fairfield Community near US 90 and the Huey P. Long Bridge.

On the Northshore, population increases most in currently undeveloped areas on either side of Interstate 12, and in areas currently zoned for multifamily development in Covington, Slidell, and Mandeville.

As shown in Figure 39 and Figure 40, income rises rapidly in a handful of Orleans Parish neighborhoods that have historically been low income, but where incomes have increased significantly in the last five years. These include St. Roch, the area lakeside of the Fairgrounds, Lakeview, Central City, and Mid-City. Stable, high-income neighborhoods such as Audubon and the Lakefront also see strong income growth, while the remainder of the city sees only modest changes. Incomes also rise in most of St. Tammany Parish.

Median household income declines in numerous neighborhoods in Jefferson, St. Bernard, and St. Tammany parishes due to the displacement of low-income households from gentrified neighborhoods in Orleans Parish. These are concentrated in Harvey, Woodmere, Westwego, Bridge City, and Avondale on the West Bank, and in Kenner and the Interstate 10 corridor in Metairie. The dispersion of low-income households in this scenario will challenge mobility providers to cover longer-distance trips.

Figure 41 and Figure 42 present the Transit Propensity Adjustment Factors under Scenario A, based on the adjusted population-based demand and the employment-based demand for 2035 under this scenario. Figure 43 and Figure 44 present the Composite Transit Index based on these factors.

The areas with transit propensity adjustment factor greater than 2.0, which may indicate the ability to support high-frequency transit, include:

- Significant sections of Central City, including Faubourg Lafayette, Faubourg Livaudais, and Faubourg Delassize (similar to existing conditions).

[21] St. Bernard Parish Department of Community Development. Personal interview. 23 Feb. 2017.

- Pockets of Tremé-Lafitte, Tulane/Gravier, and Seventh Ward (similar to existing conditions).
- The Tall Timbers-Brechtel and Fischer Development neighborhoods in Algiers (more than in existing conditions).
- Multiple neighborhoods northwest of the Central Business District: Tulane/Gravier, Mid-City, Gert Town, and Bayou St. John (more than in current conditions).
- The Algiers Point, Whitney, and Behrman neighborhoods south of the Mississippi River (more than in existing conditions).

Multiple neighborhoods have transit propensity adjustment factors between 1.0 and 2.0, specifically:

- The Florida/Desire area, north of Florida Avenue (less than existing conditions).
- The greater Gentilly neighborhood east of City Park, including St. Anthony, Milneburg, Gentilly Terrace, Pontchartrain Park, and Gentilly Woods (similar to existing conditions).
- Multiple neighborhoods in northeast New Orleans: Little Woods, Pines Village, Plum Orchard, and West Lake Forest (more than in existing conditions).
- Multiple neighborhoods and municipalities south of the Mississippi River: Avondale, Marrero, Woodmere, Harvey, and Gretna (similar to existing conditions).
- Isolated pockets of Metairie, Jefferson, and Kenner (less than in existing conditions).

Figure 37: Scenario A – Population Growth, 2010-2035 (Southshore)

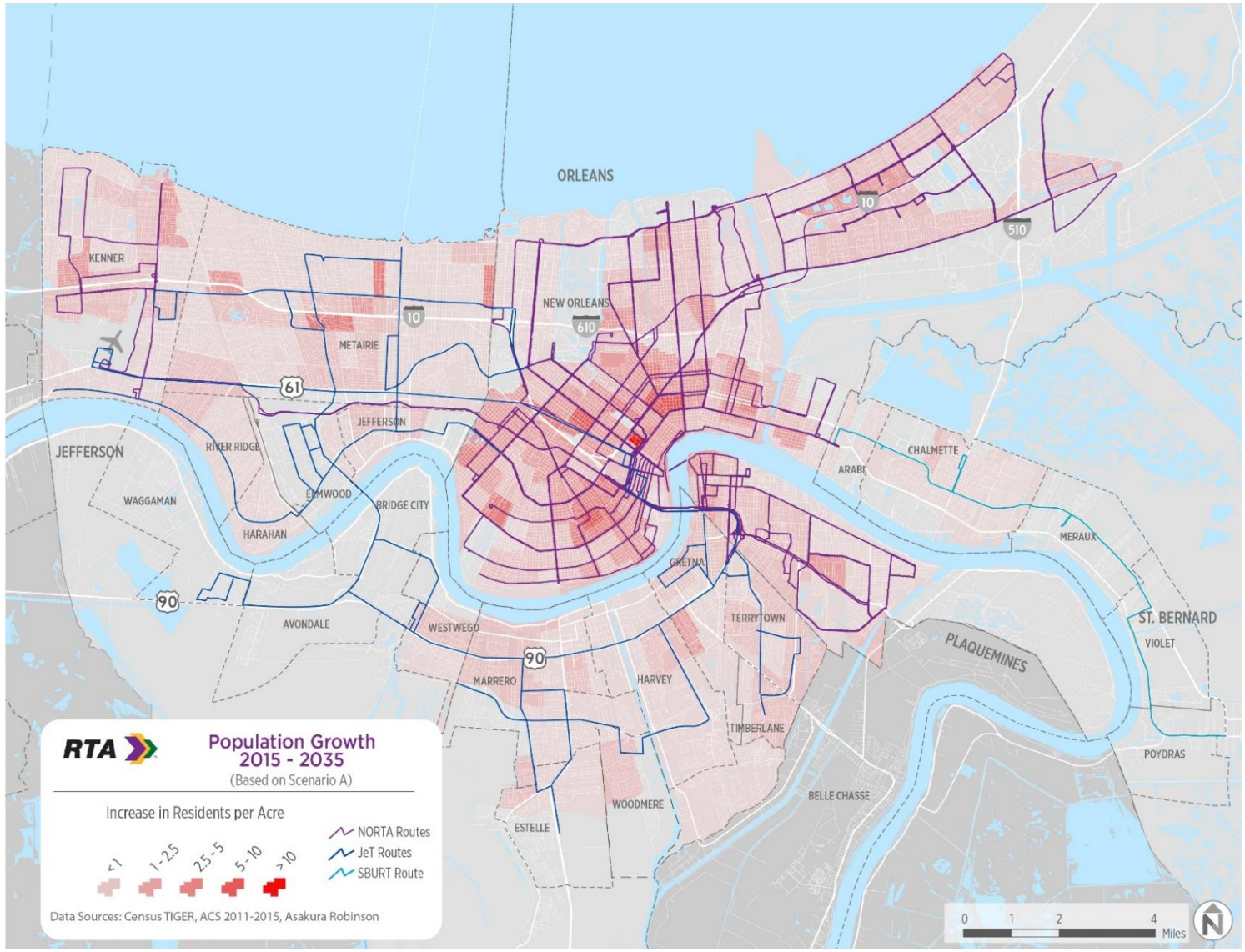


Figure 38: Scenario A – Population Growth, 2010-2035 (Northshore)

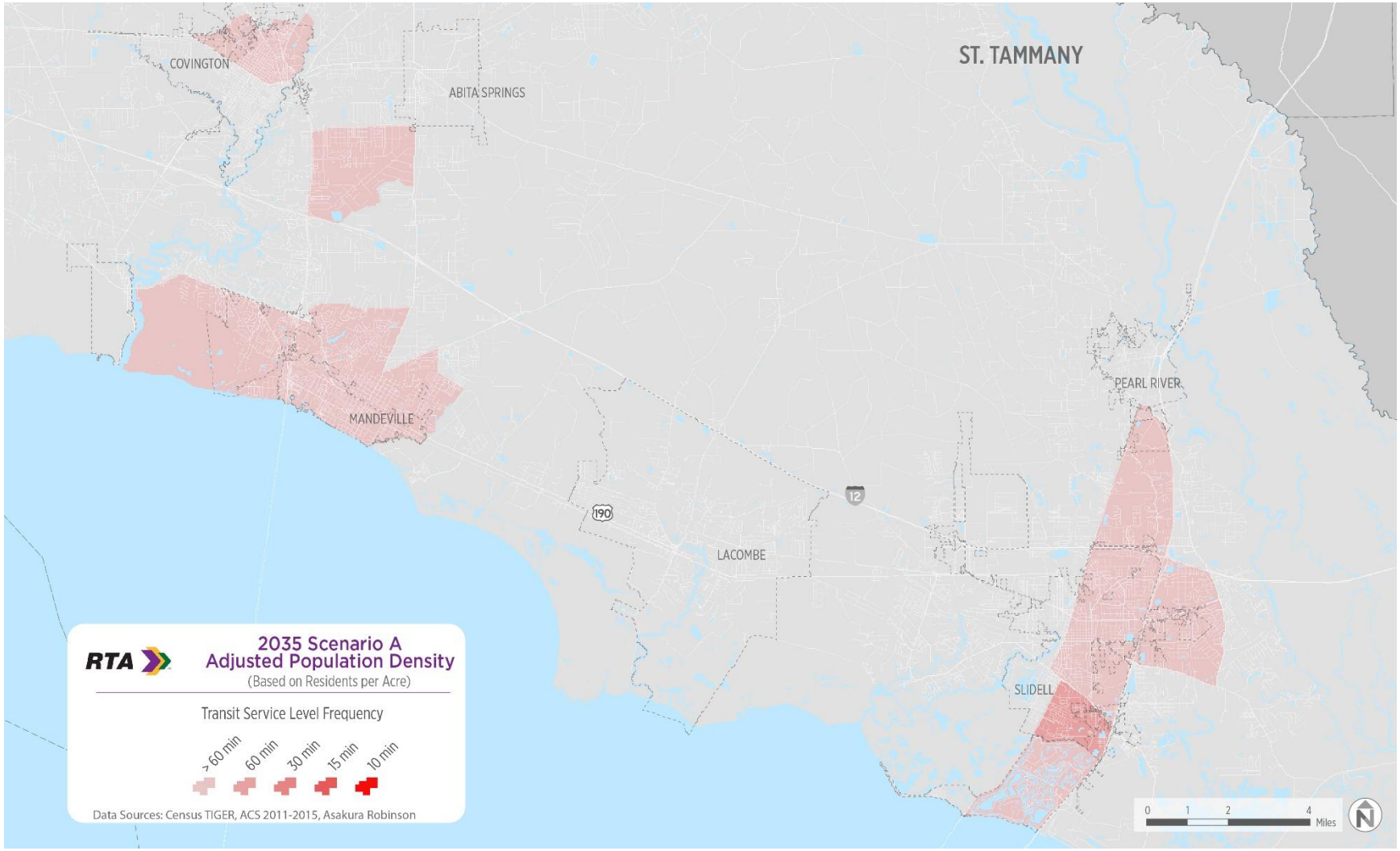


Figure 39: Scenario A – Income Change, 2010-2035 (Southshore)

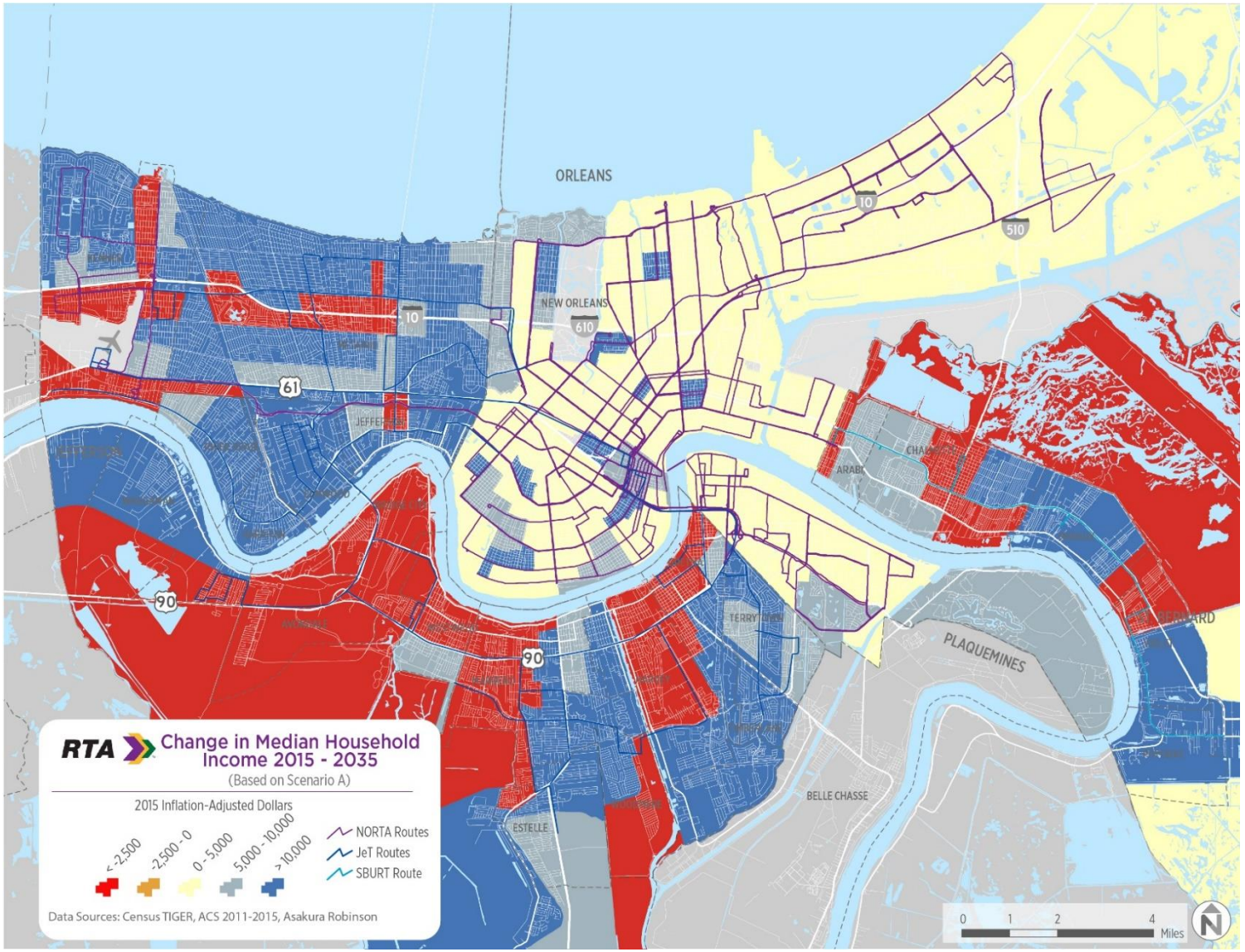


Figure 40: Scenario A – Income Change, 2010-2035 (Northshore)

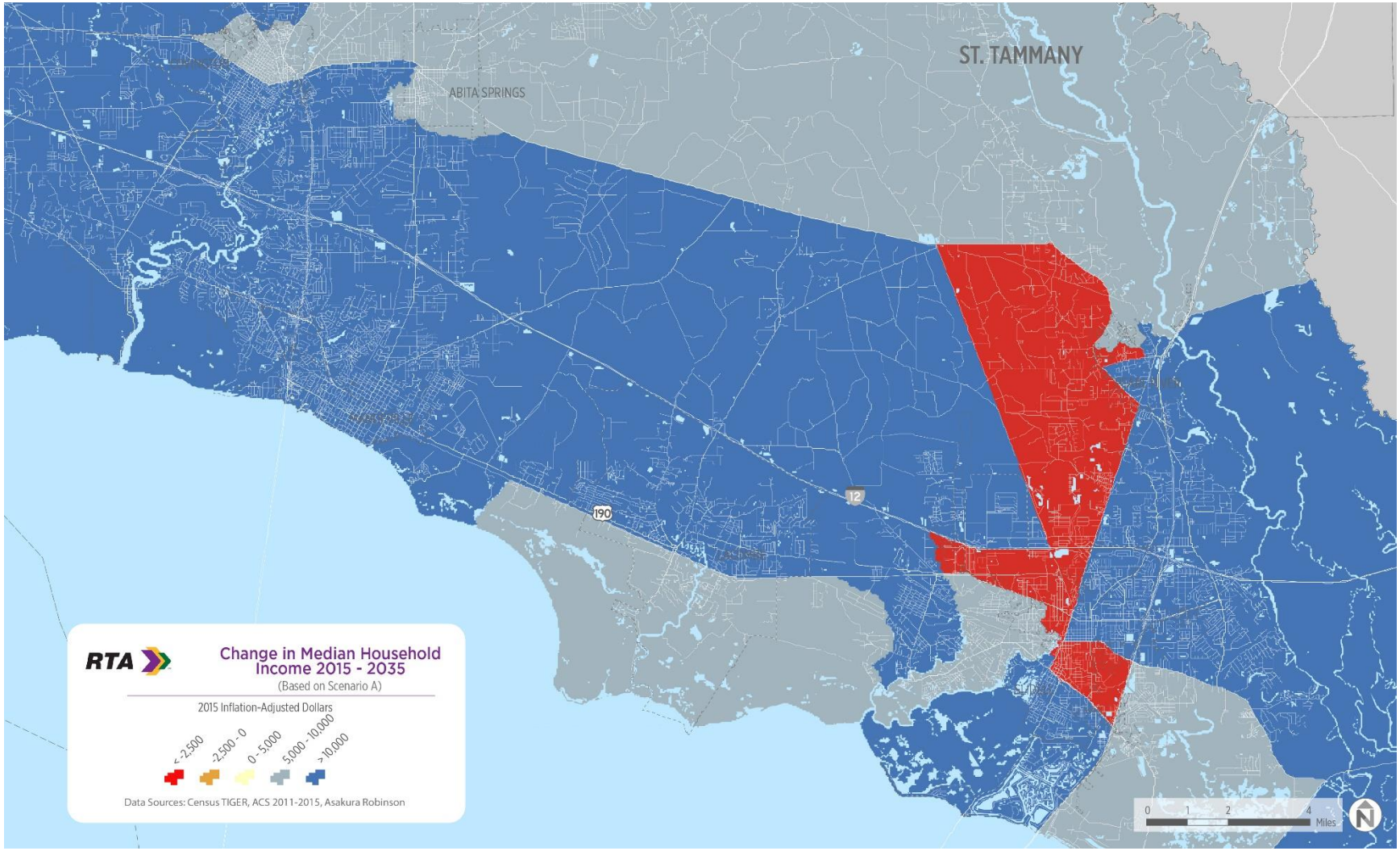


Figure 41: Scenario A – Transit Propensity Adjustment Factors in 2035 (Southshore)

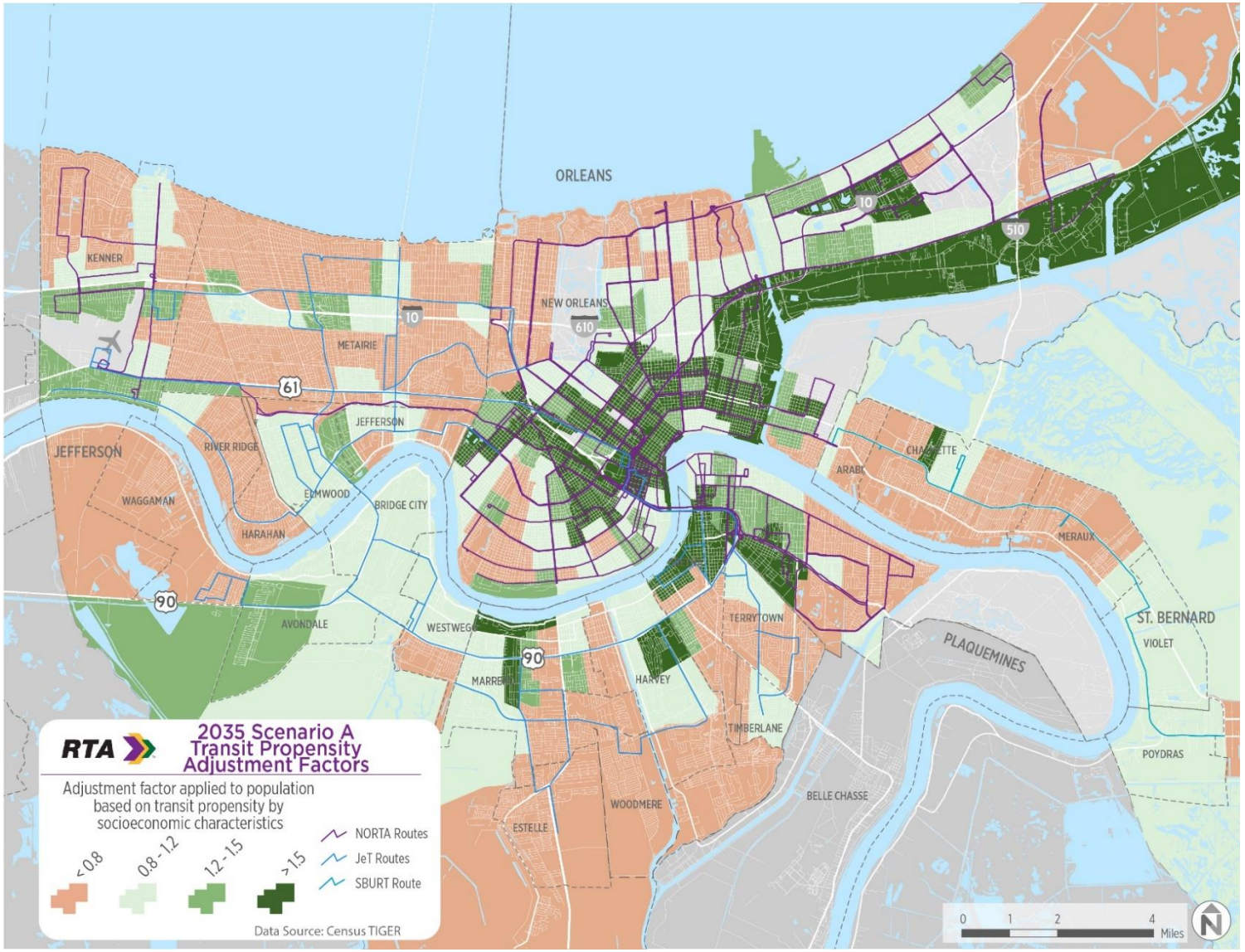


Figure 42: Scenario A – Transit Propensity Adjustment Factors in 2035 (Northshore)

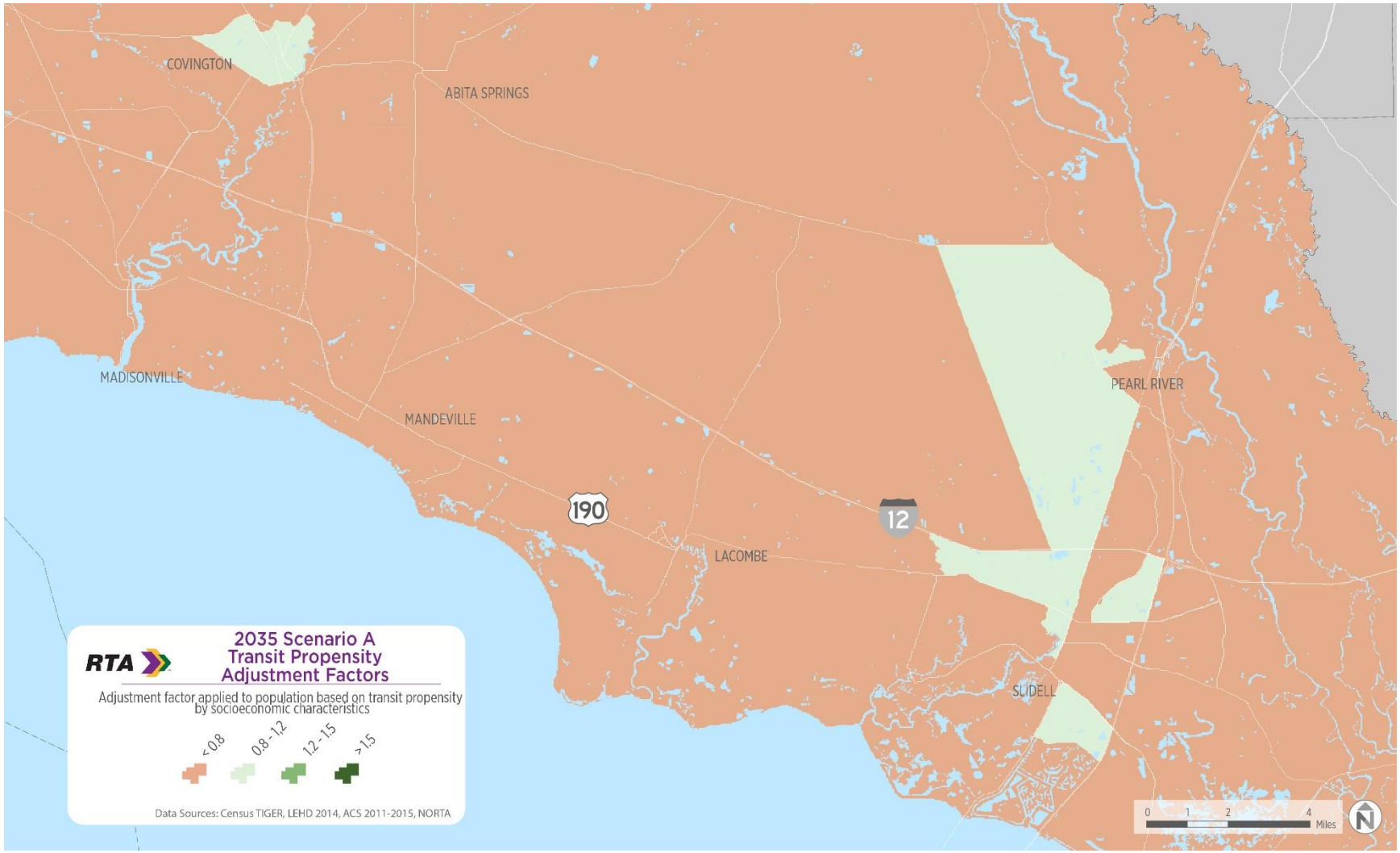


Figure 43: Scenario A – Composite Transit Index in 2035 (Southshore)

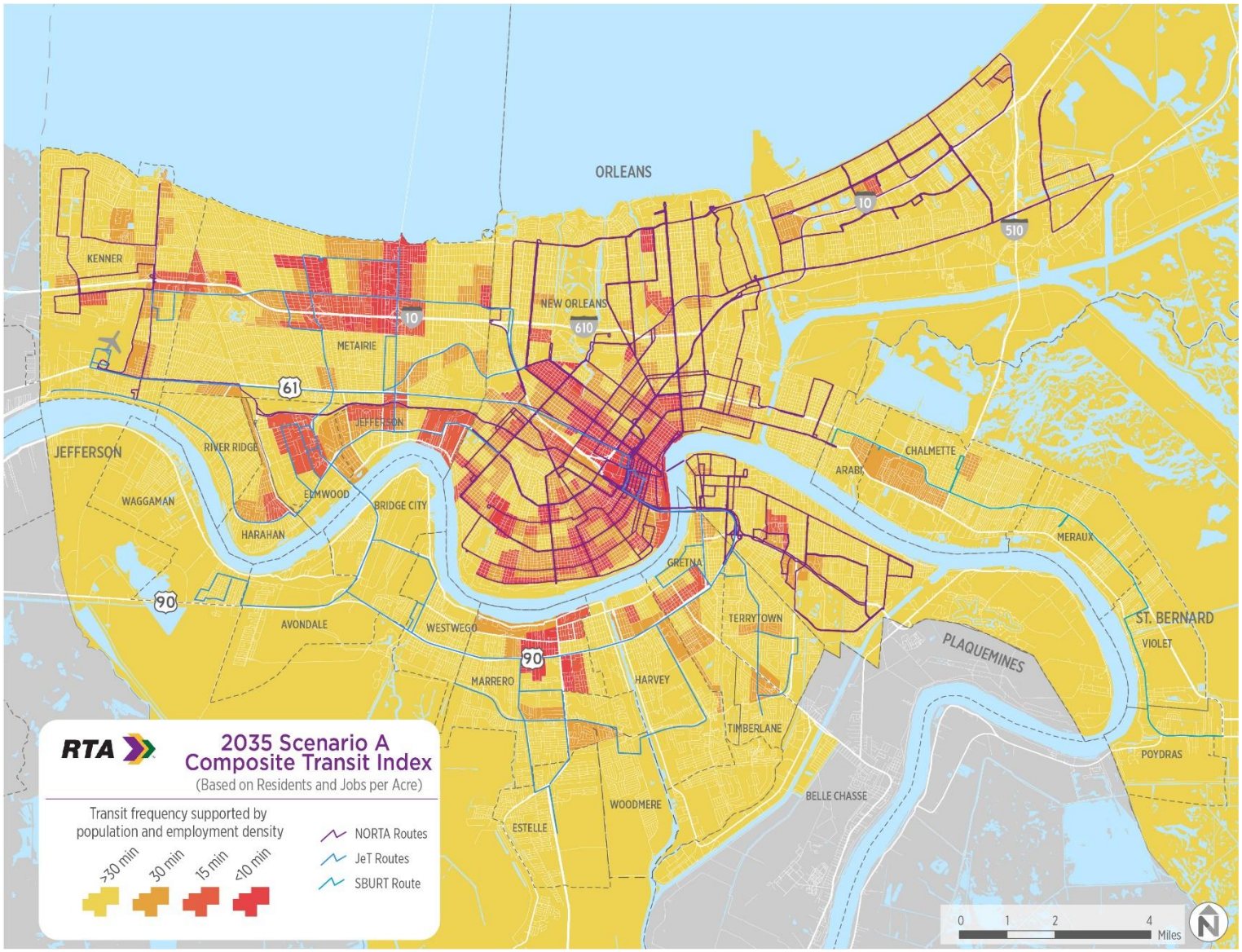
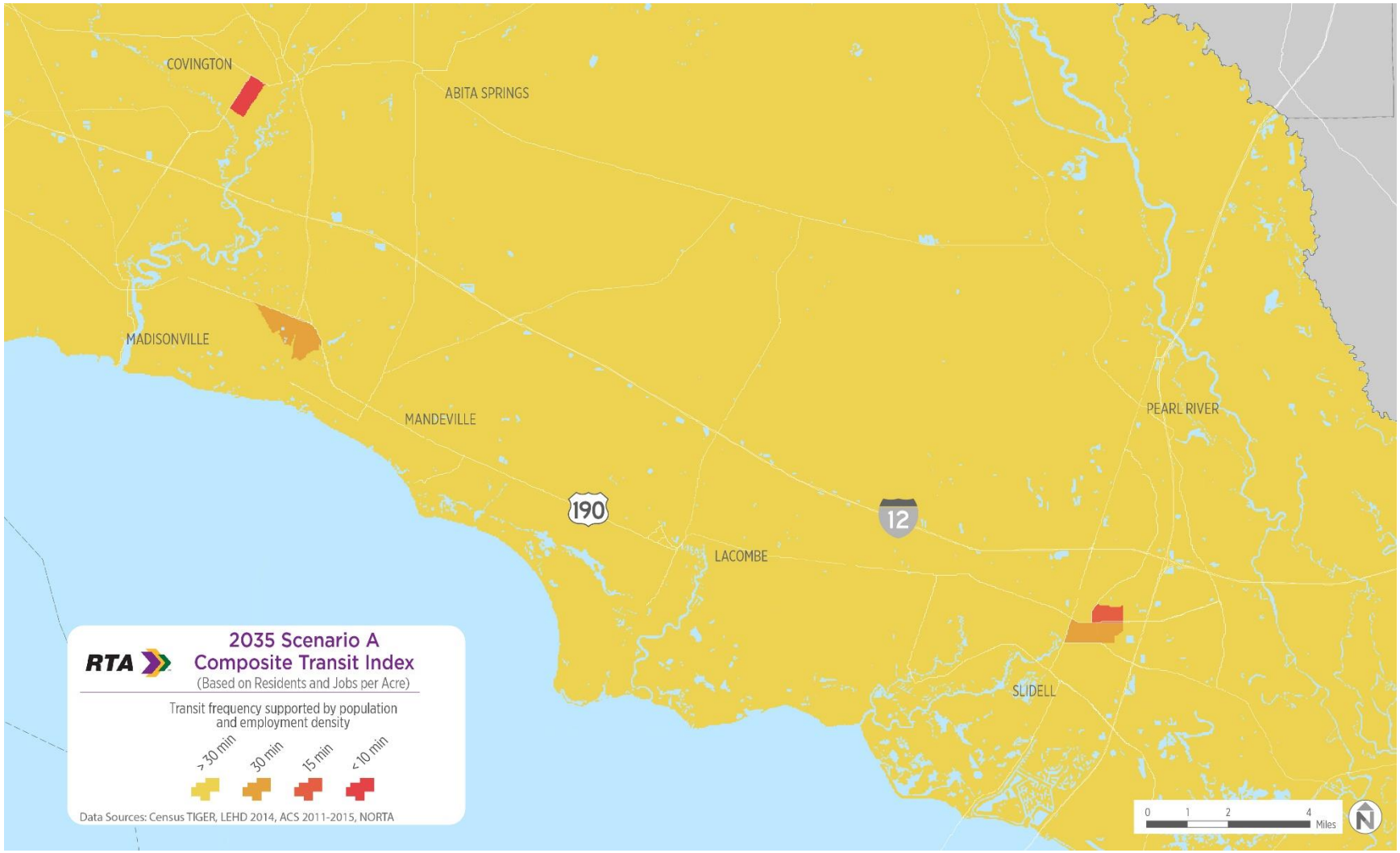


Figure 44: Scenario A – Composite Transit Index in 2035 (Northshore)



Scenario B

In Scenario B (Figure 45 and Figure 46), construction of housing units in neighborhoods with strong housing markets causes population to rise significantly near the city center. These include the Central Business District, Lower Garden District, Mid-City, Uptown, Audubon, and Marigny. West End and Lakeview also see growth of over 1,000 new residents. Pontchartrain Park and Filmore in Gentilly, the portion of the Upper Ninth Ward adjacent to the Industrial Canal, and portions of New Orleans East and historic Algiers also enjoy significant growth. Currently weak market areas see the lowest growth. This includes large portions of Algiers, and several neighborhoods in New Orleans East, Seventh Ward, and Gert Town.

Population growth is the same in suburban parishes as in Scenario A.

As shown in Figure 47 and Figure 48, median income changes very little across Orleans Parish in Scenario B, as low-income households maintain residency in Orleans Parish. Two exceptions are in Lakeview and Central City, where recent upticks in income continue in the long term. The lack of displacement results in more stable median income in the suburban parishes. Overall, no Census Tracts decline in household median income in this scenario. The higher concentration of low-income households closer to the city center in this scenario raises the viability of high-capacity mobility and higher-frequency transit services in central New Orleans.

Figure 49 and Figure 50 present the transit propensity adjustment factors under Scenario B, based on the adjusted population-based demand and the employment-based demand for 2035. Figure 43 and Figure 44 present the Composite Transit Index based on these factors.

Under Scenario B, the areas with a transit propensity adjustment factor greater than 2.0, and the potential to support high-capacity transit include:

- Significant sections of the city center, including Faubourg Lafayette, Faubourg Livaudais, and Faubourg Delassize (similar to existing conditions).
- Pockets of Tremé-Lafitte, Tulane/Gravier, and the South Seventh Ward (similar to existing conditions).
- The Tall Timbers-Brechtel and Fischer Development neighborhoods in Algiers (more than in existing conditions).
- Multiple neighborhoods northwest of the Central Business District: Tulane/Gravier, Mid-City, Gert Town, and Bayou St. John (more than in existing conditions).
- The Algiers Point, Whitney, and Behrman neighborhoods south of the Mississippi River (more than in existing conditions).

Many neighborhoods feature transit propensity adjustment factors between 1.0 and 2.0, specifically:

- The Florida/Desire area, north of Florida Avenue (less than in existing conditions).
- The greater Gentilly neighborhood east of City Park, including St. Anthony, Milneburg, Gentilly Terrace, Pontchartrain Park, and Gentilly Woods (similar to existing conditions).
- Multiple neighborhoods in northeast New Orleans: Little Woods, Pines Village, Plum Orchard, and West Lake Forest (more than in existing conditions).
- Multiple neighborhoods and municipalities south of the Mississippi River: Avondale, Marrero, Woodmere, Harvey, and Gretna (similar to existing conditions).
- Isolated pockets of Metairie, Jefferson, and Kenner (less than in existing conditions).

Comparison of Scenarios

Transit demand between the two scenarios shifts among neighborhoods (especially in outer neighborhoods), while overall demand remains constant.[22] Between Scenarios A and B, the biggest differences are:

- In Scenario A, greater transit demand in River Ridge, Chalmette, Meraux, Marrero, Harvey, Terrytown, and the southwestern section of St. Charles. This is attributed to displacement of lower-income populations from the urban core to neighborhoods farther from downtown and to surrounding parishes.
- In Scenario B, stable transit demand throughout most of the region, and increasing transit demand in the urban core, as well as in eastern and western sections of St. Tammany Parish. This is attributable to policies to manage growth and protect against displacement, while additional population growth adds demand at the edges.

[22] As a comparison of two projected future conditions, the future propensities should be used to compare the scenarios to one another, but not the existing conditions.

Figure 45: Scenario B—Population Growth, 2015-2035 (Southshore)

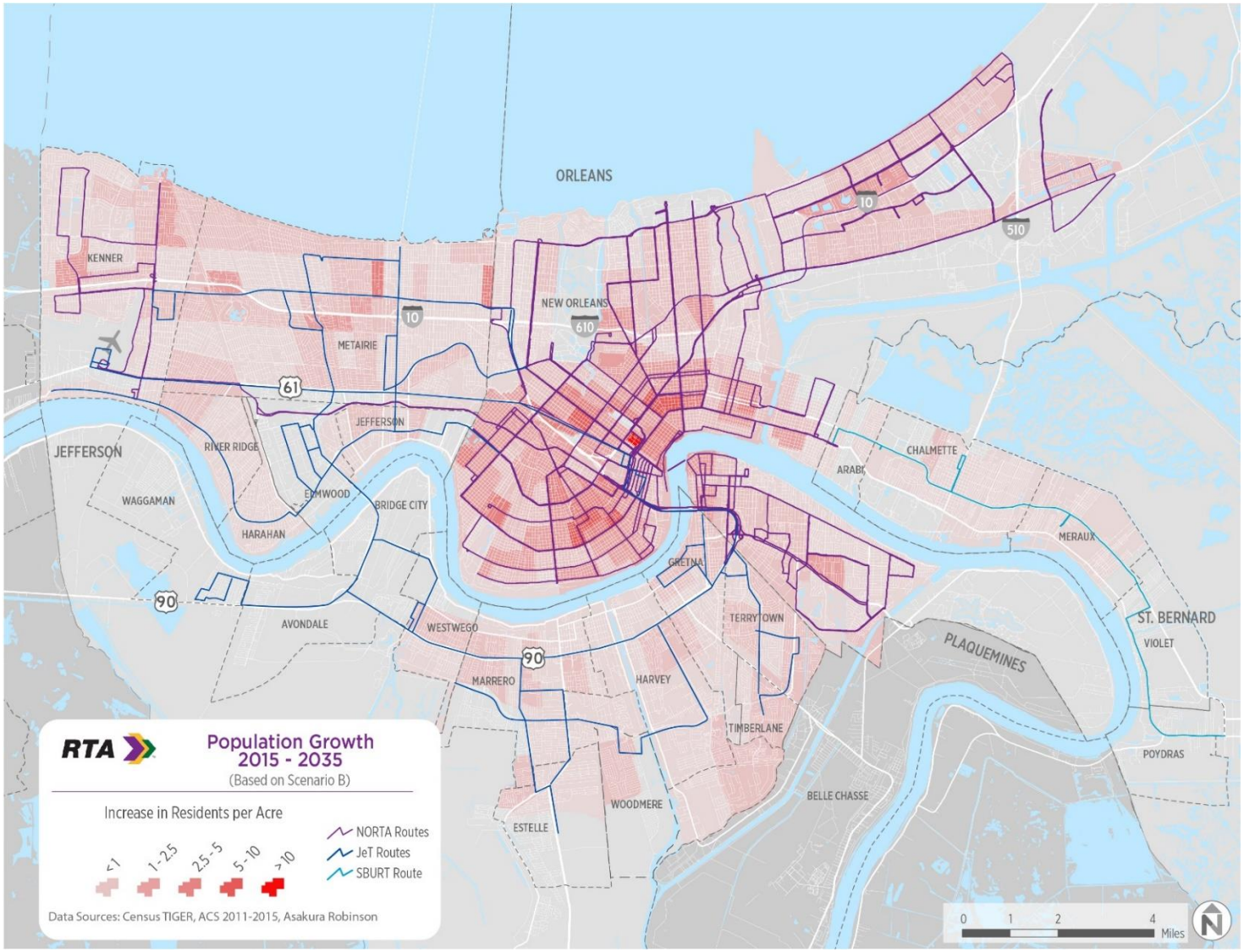


Figure 46: Scenario B—Population Growth, 2015-2035 (Northshore)

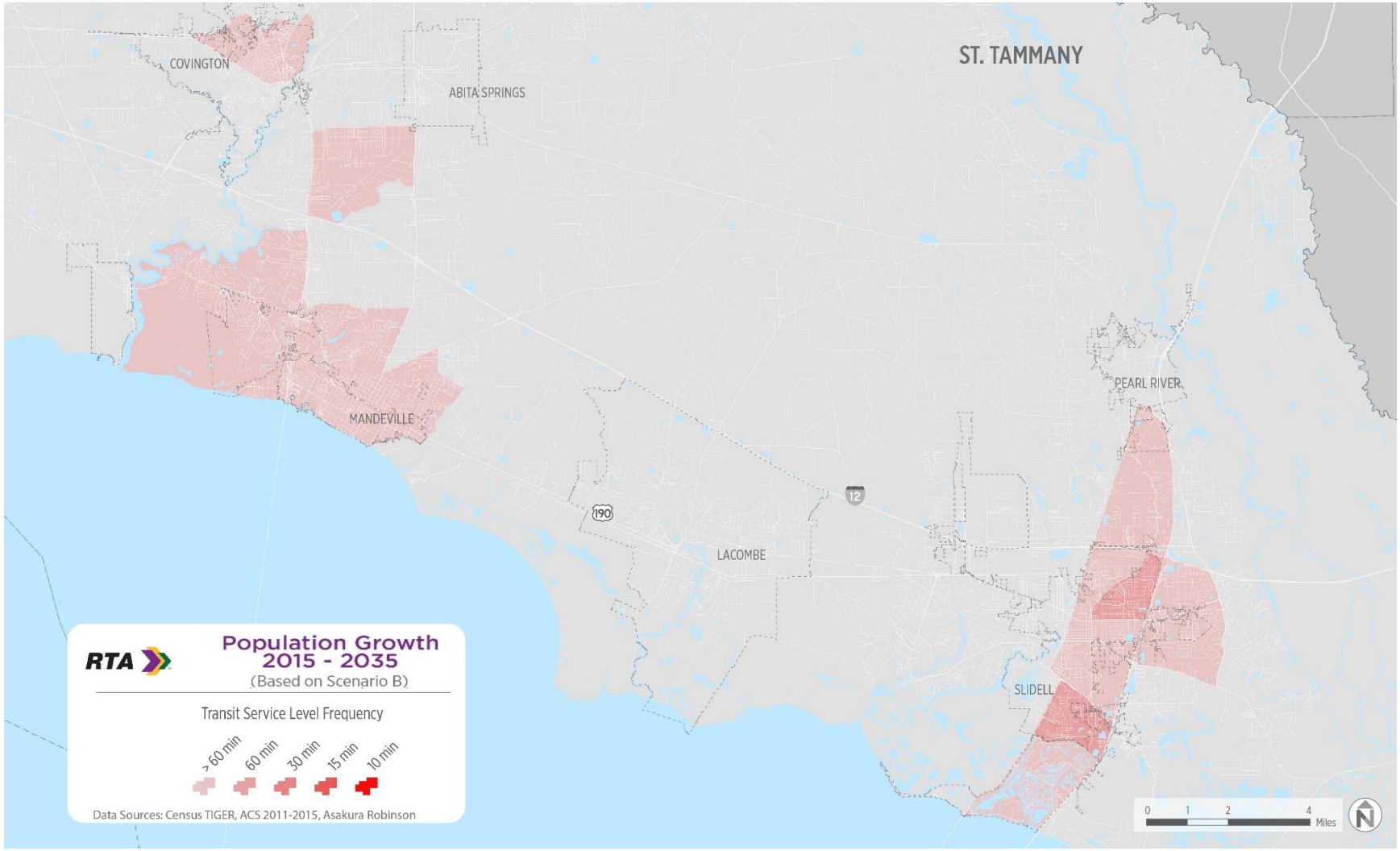


Figure 47: Scenario B—Income Change, 2015-2035 (Southshore)

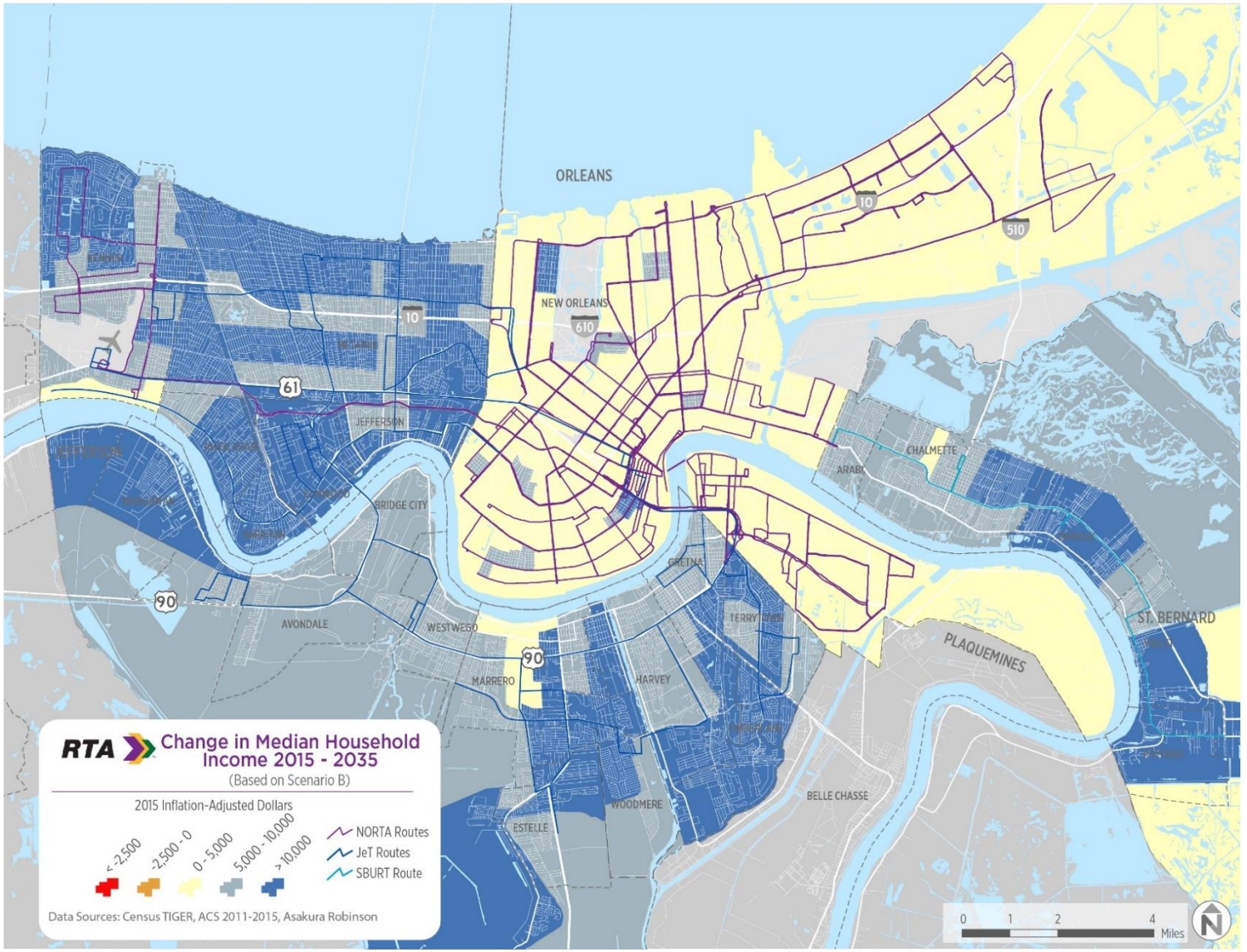


Figure 48: Scenario B—Income Change, 2015-2035 (Northshore)

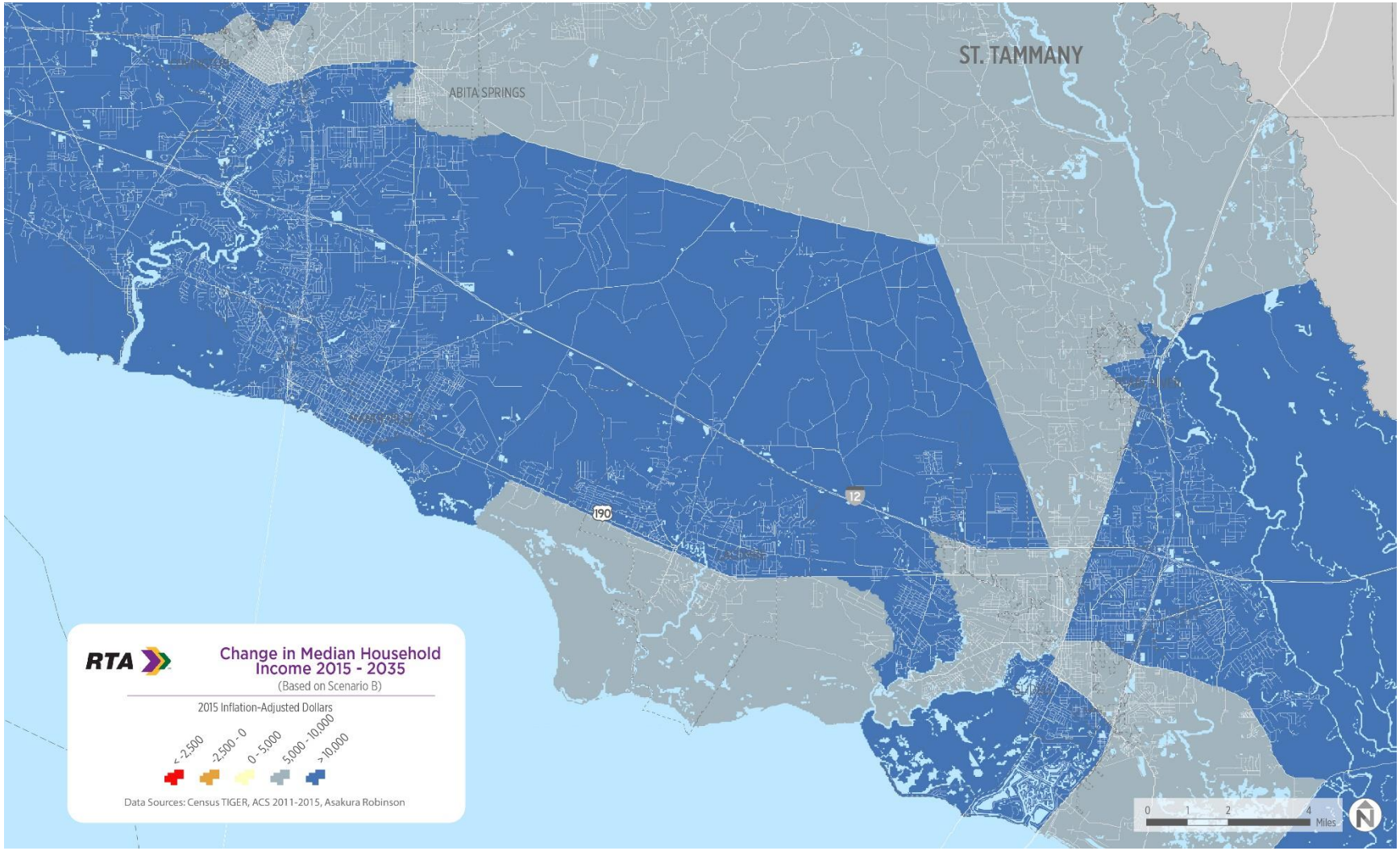


Figure 49: Scenario B—Transit Propensity Index, 2035 (Southshore)

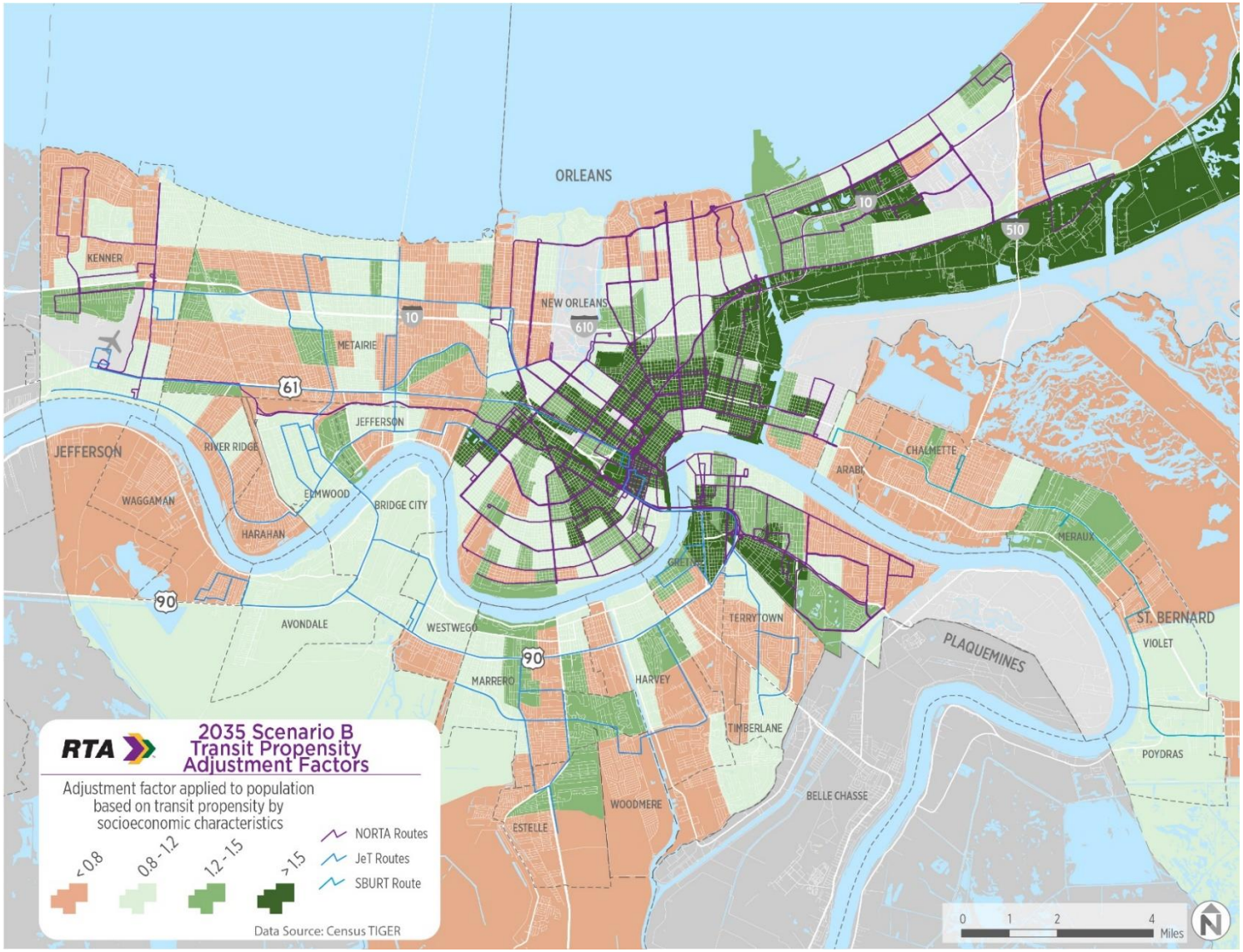


Figure 50: Scenario B—Transit Propensity Index, 2035 (Northshore)

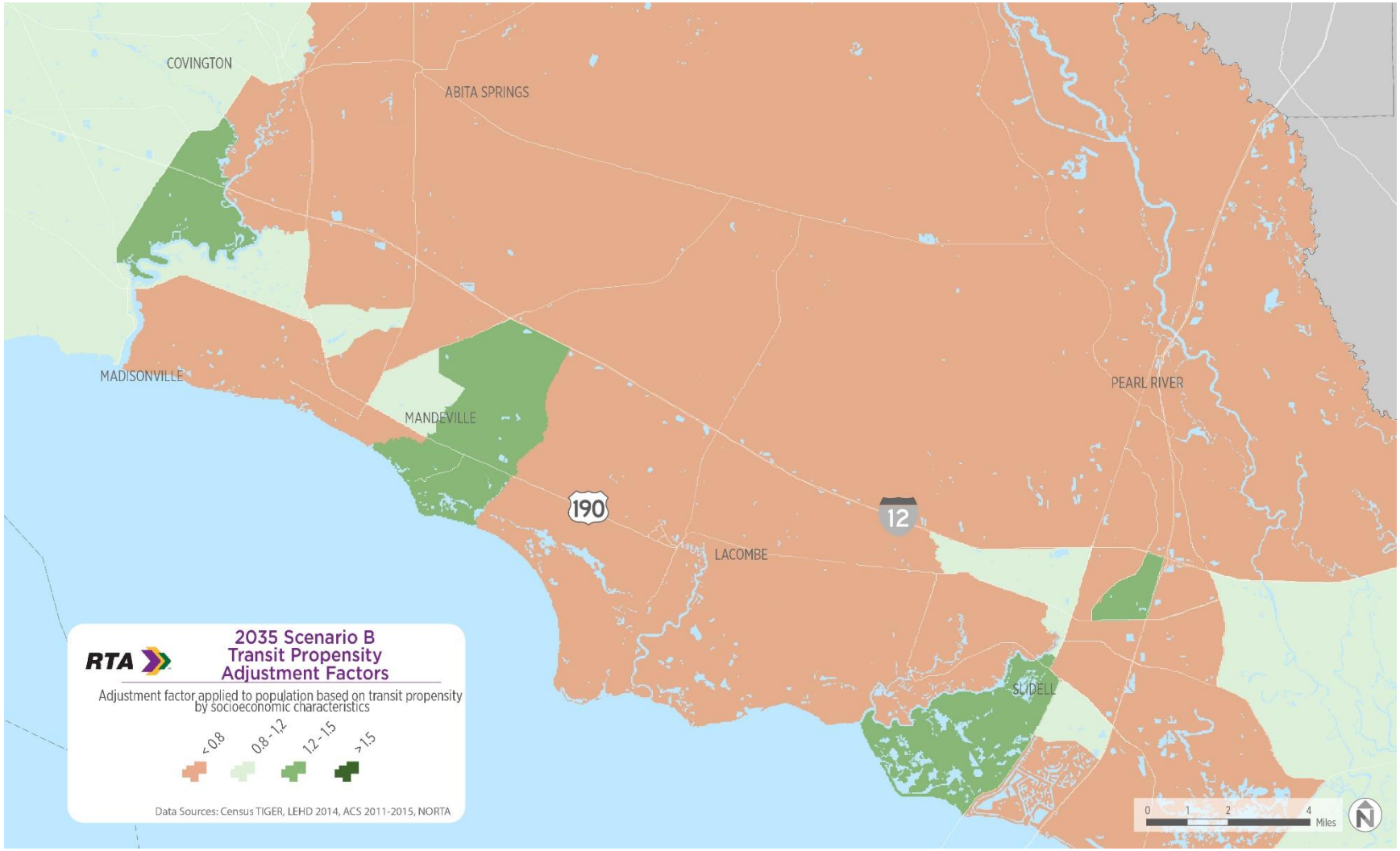


Figure 51: Scenario B—Composite Transit Index, 2035 (Southshore)

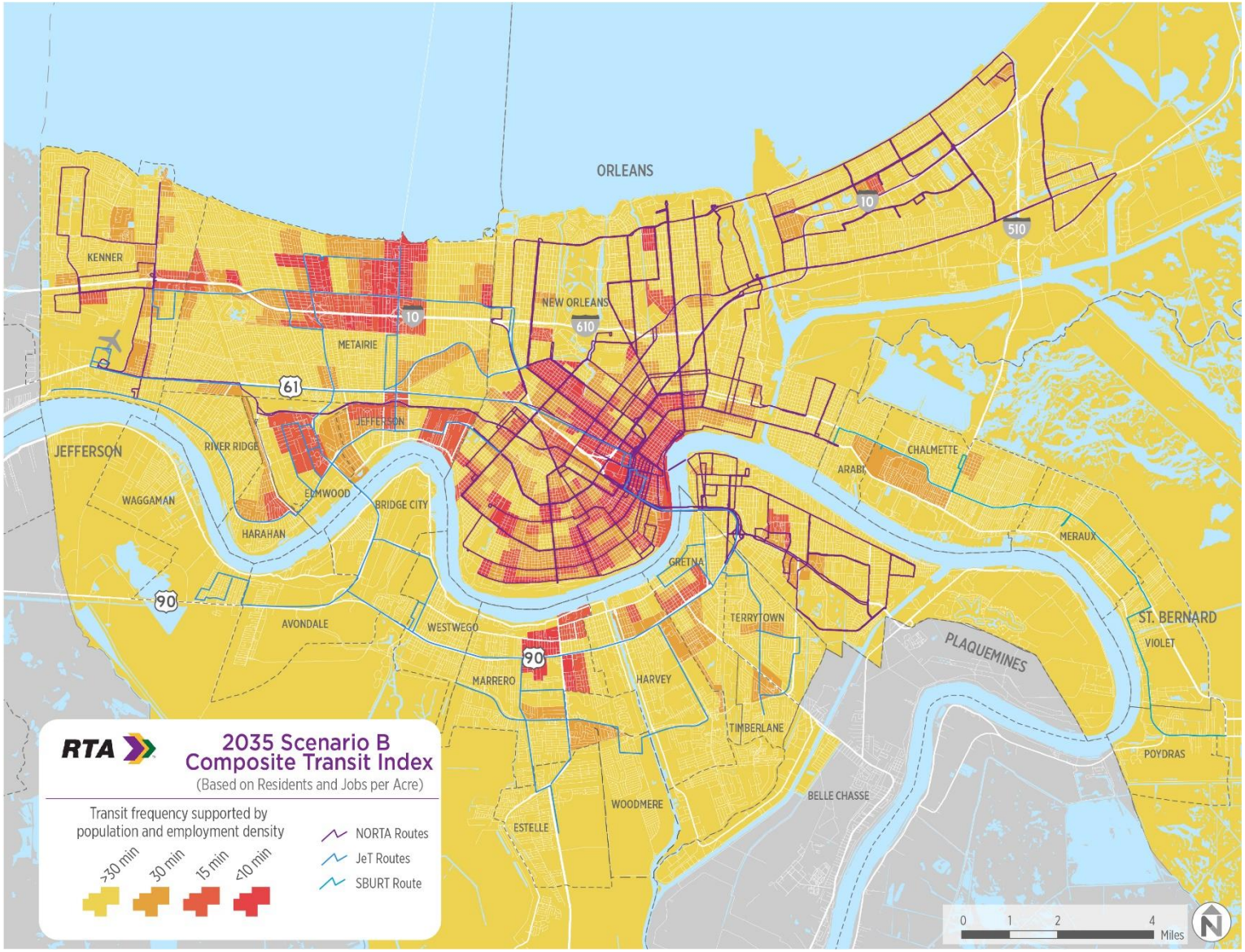
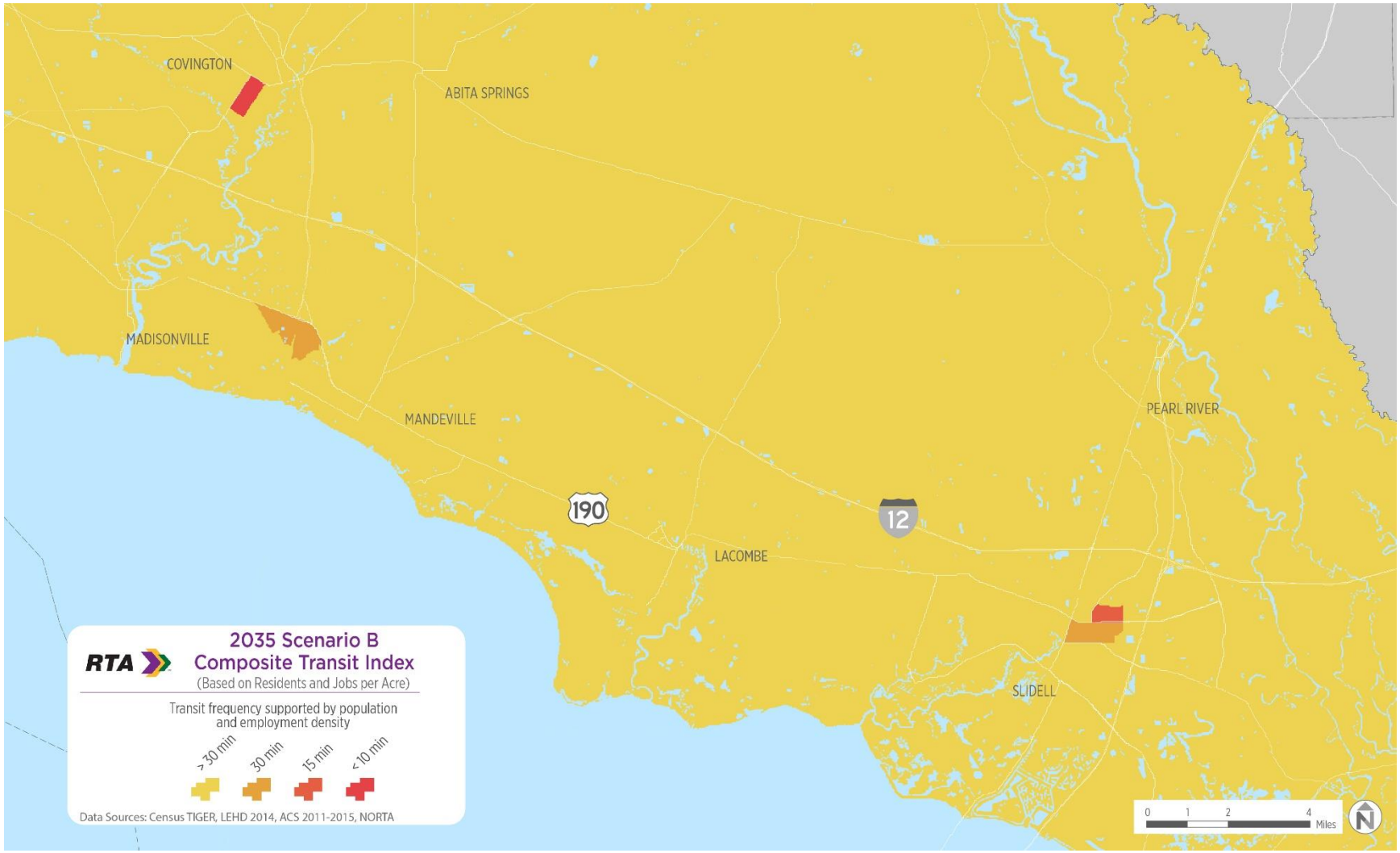


Figure 52: Scenario B—Composite Transit Index, 2035 (Northshore)



3.0 DEMAND FOR NEW MOBILITY MODES

Today, transit, private automobile, and walking are not the only forms of mobility people can choose from to get from one place to another. Changing land use patterns, demographic shifts in urban centers, and the proliferation of app-based technologies have led to new ways to get around in cities around the country, such as:

- Transportation Network Companies (TNCs), such as Uber, Lyft, and others, provide one-way, on-demand ride-hailing (and shared rides, in some cities), ordered through a smartphone using a credit card.
- Subscription-based carsharing services, such as Zipcar and Car2Go, allow members to reserve a car as needed for short-term trips, such as buying groceries, moving, or visiting relatives.
- Bike share systems allow users to rent a shared bike. Some systems require that bikes be rented and returned to fixed docks, while other systems are dockless, and can unlocked and locked anywhere with a smartphone.

It is unclear whether the use of mobility alternatives increases or decreases transit use—the effect likely varies according to context. At their best, TNCs, carsharing, and bikesharing can complement transit, encourage walking and biking, and reduce private car use. These services are included here to consider ways they can complement transit for the New Orleans region.

Methodology

Similar to transit, an individual's propensity for using mobility alternatives can be projected through socioeconomic characteristics and population density (even though not all of these options are currently available). National research shows that many population groups have a significantly higher propensity for TNC, carsharing, and bikesharing use than the overall population.[23] These characteristics can include:

- **Age**: Young people (age 20-39) are more likely to use mobility alternatives.
- **Educational Attainment**: People with higher education levels are more likely to use mobility alternatives.
- **Income**: Most mobility alternatives require access to a smartphone, the internet, and a credit card, which provides barriers to use for low-income populations. On the other end of the income spectrum, high earners may forego regular use of mobility alternatives altogether, and choose to drive a personal vehicle instead. Thus, middle-income earners ($40,000 - $80,000/year), who

[23] App-Based, On-Demand Ride Services: Comparing Taxi and Ridesourcing Trips and User Characteristics in San Francisco, University of California Transportation Center, Lisa Rayle (corresponding author), November 2014

Impacts of Ridesourcing – Lyft and Uber – on Transportation including VMT, Mode Replacement, Parking, and Travel Behavior, Alejandro Henao, University of Colorado, Denver, January 2017

Impact of Ride-Sourcing Services on Travel Habits and Transportation Planning, Zhen Chen, Beijing Jiaotong University, 2013

may use mobility alternatives in conjunction with transit or other modes, are the target population for these services.

When many people with high propensity to use mobility alternatives cluster together in dense urban environments, they can raise demand for these services beyond what the population alone would suggest. Similarly, in a location where mobility-alternative supportive demographic groups have low representation, the demand for ride-hailing, carsharing, and bikesharing may be lower than population alone would indicate.

Results

Figure 53 and Figure 54 illustrate relative propensities to use mobility alternatives, based on the portion of population in each census block group that is college-educated, between age 20 and 39, and middle-income. Most residents who are likely to use mobility alternatives reside in Orleans Parish and urbanized parts of Jefferson Parish, especially near valuable real estate in densely populated neighborhoods. Riverfront and tourist areas, such as the Garden District, French Quarter, Gentilly, and Elmwood have very high propensity for mobility alternatives. Farther from downtown, areas near JeT and SBURT transit service, such as Metairie, Chalmette, and Estelle, also attract residents likely to use alternative mobility services.

Overall, there is a clear dividing line between high propensity towards mobility alternatives north of the Mississippi River and medium to low propensity south of the river. While this discrepancy is affected by socioeconomic factors, it may also have to do with lower density and less transit availability. Mobility alternatives are especially useful to fill gaps in first-mile and last-mile connections, as well as times when transit service is lacking (such as off-peak times in the evening and late night). Given New Orleans' service-based economy, these instances are precisely where more affluent, college-educated users may look to private-sector alternative mobility services to fill gaps. However, many of the region's low-income population who work nighttime service jobs, must travel at off-peak times and may not be able to afford mobility alternatives, or may not be comfortable using them.

Figure 53: Alternative Mobility Propensity (Southshore)

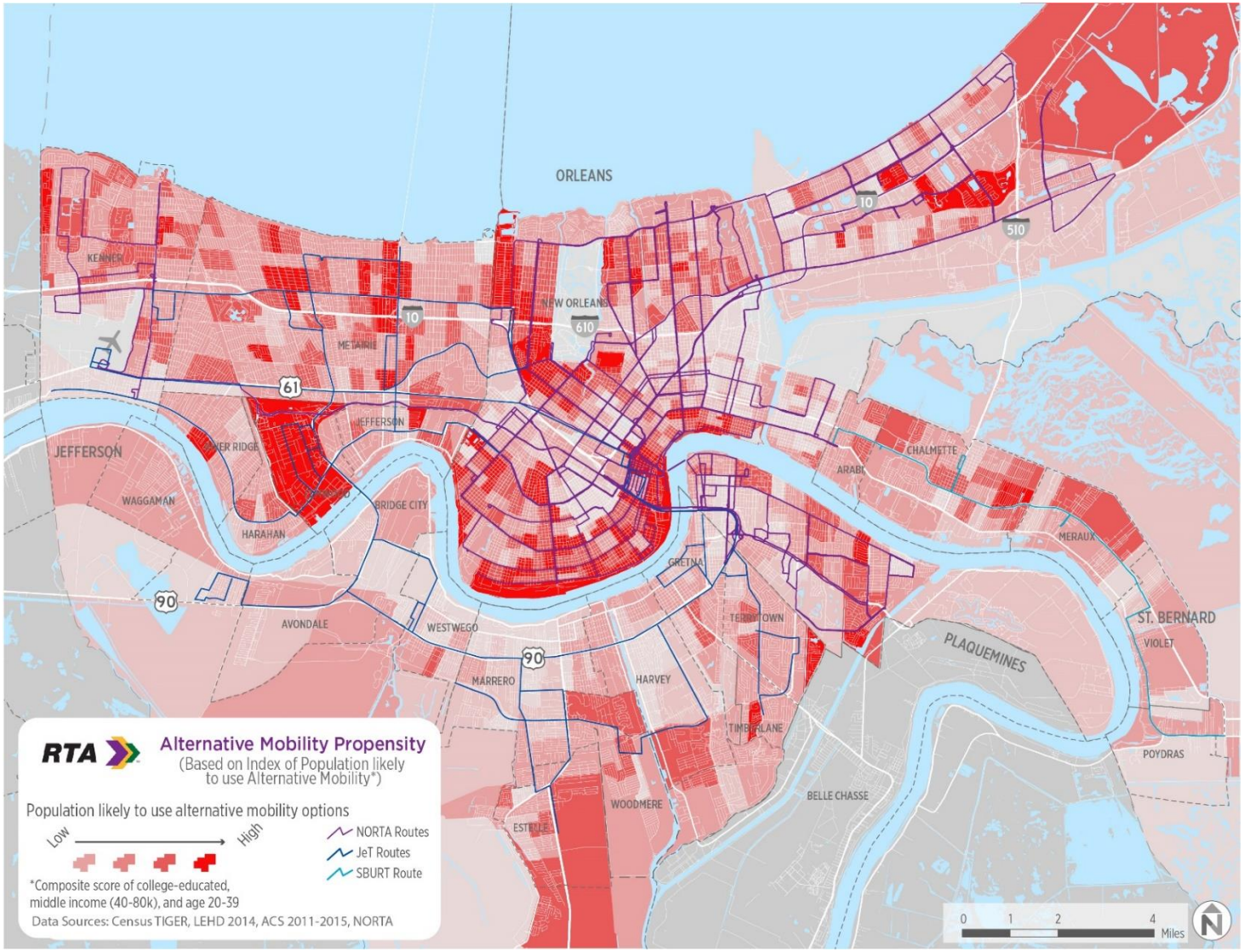
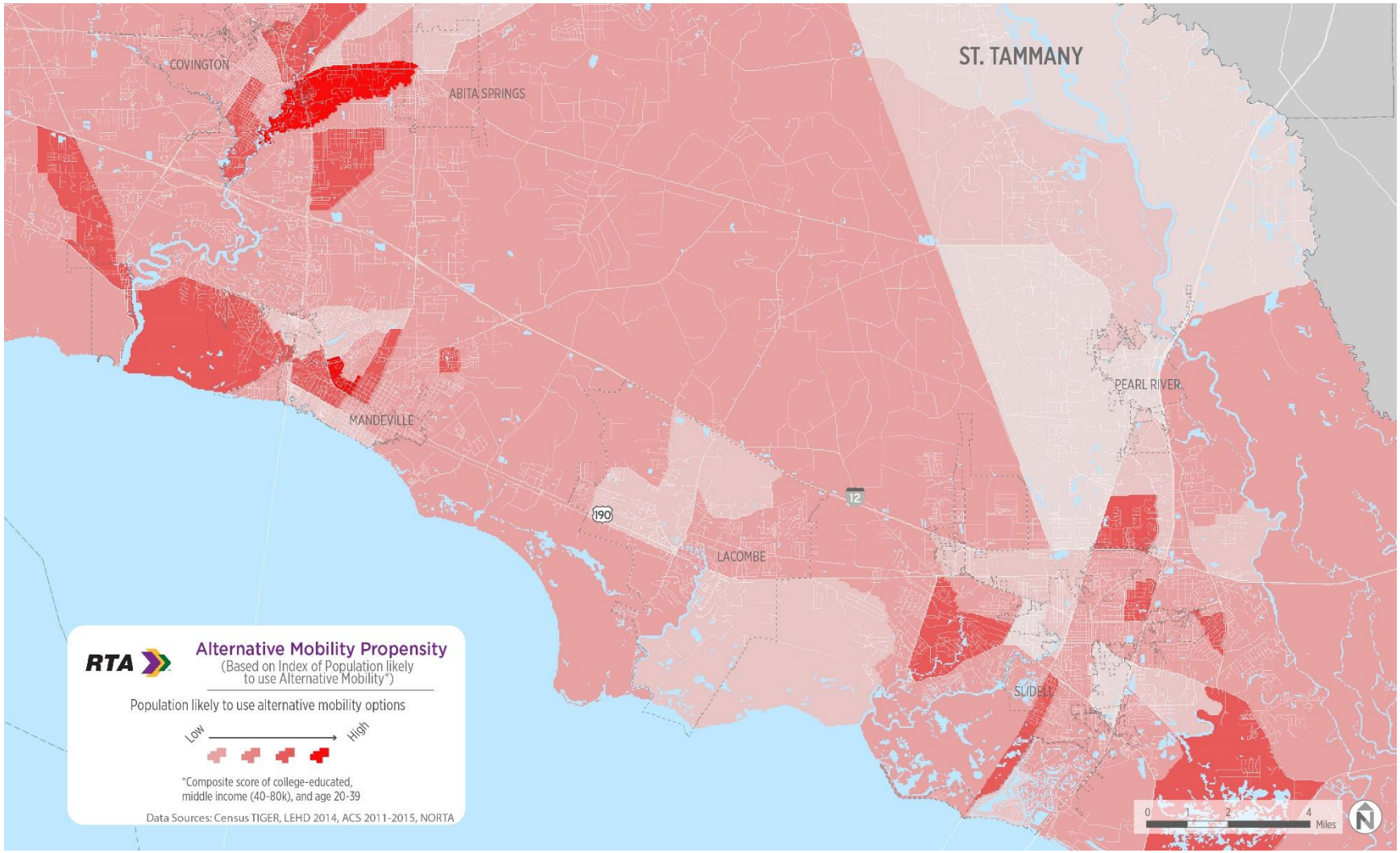


Figure 54: Alternative Mobility Propensity (Northshore)



4.0 CONCLUSIONS

The analysis and projections in this appendix lead to several important conclusions about the future of New Orleans' mobility system. First, several areas can be considered for high-frequency transit and improved off-peak and nighttime service. High-frequency lines may be especially useful to connect areas with low-income populations and many low-paying jobs. Improved services across parish lines may also be useful for residents and for our region's economic growth.

As we consider improvements to the regional mobility network, alternative modes of transportation, such as bikesharing, carsharing, and ride-hailing, are likely to play increasingly important roles. Stakeholders must consider how these new modes can work together with the transit network.

UNDERSERVED AREAS

Transit demand is primarily a function of population density and job density. Downtown New Orleans, and as far out as Mid-City, Uptown, and the Garden District, have the highest transit demand in the region—Figure 55 shows these areas generally have high-frequency services already during peak periods.

Several dense neighborhoods outside the downtown could like support frequent service, but do not have it. Parts of Metairie, Elmwood, Jefferson, Marrero, Gretna, and Kenner (north of the airport) generally have service every 15-30 minutes during peak periods on arterials. However, some areas, including along Claiborne Avenue and Freret Street, portions of Gretna, and much of Jefferson Parish, have significant demand, but service only every 30 minutes or less.

A closer examination of residential and employment spatial data reveals further breakdowns in service gaps. Residential neighborhoods in the Jefferson Parish, such as Metairie, Terrytown, Woodmere, and Marrero, have limited services and may be able to support more (Figure 61). Many of these same neighborhoods are secondary employment centers, so good transit is essential for providing economic opportunity for New Orleanians (Figure 62).

Figure 55: Composite Transit Index (Southshore)

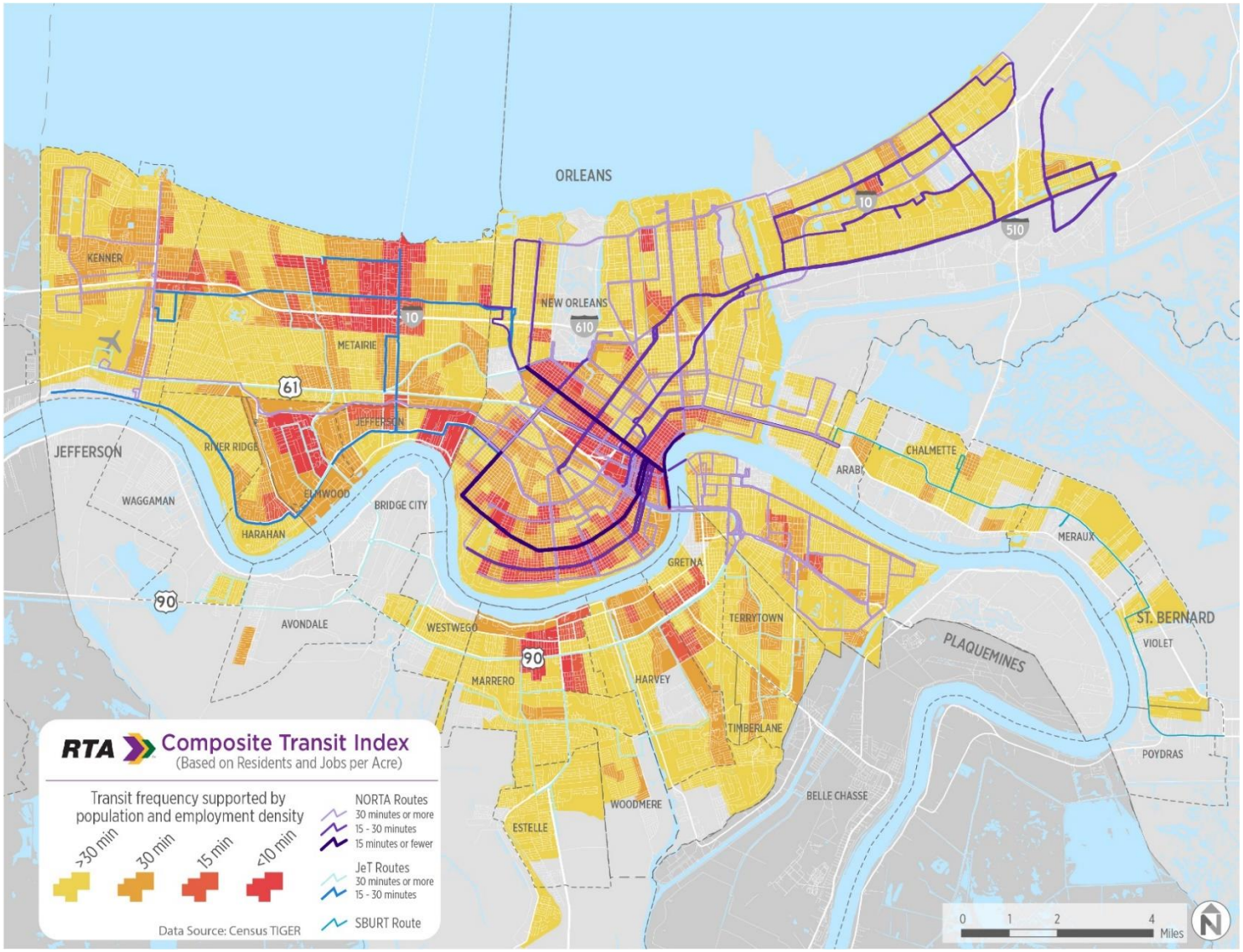


Figure 56: Adjusted Population Density (Southshore)

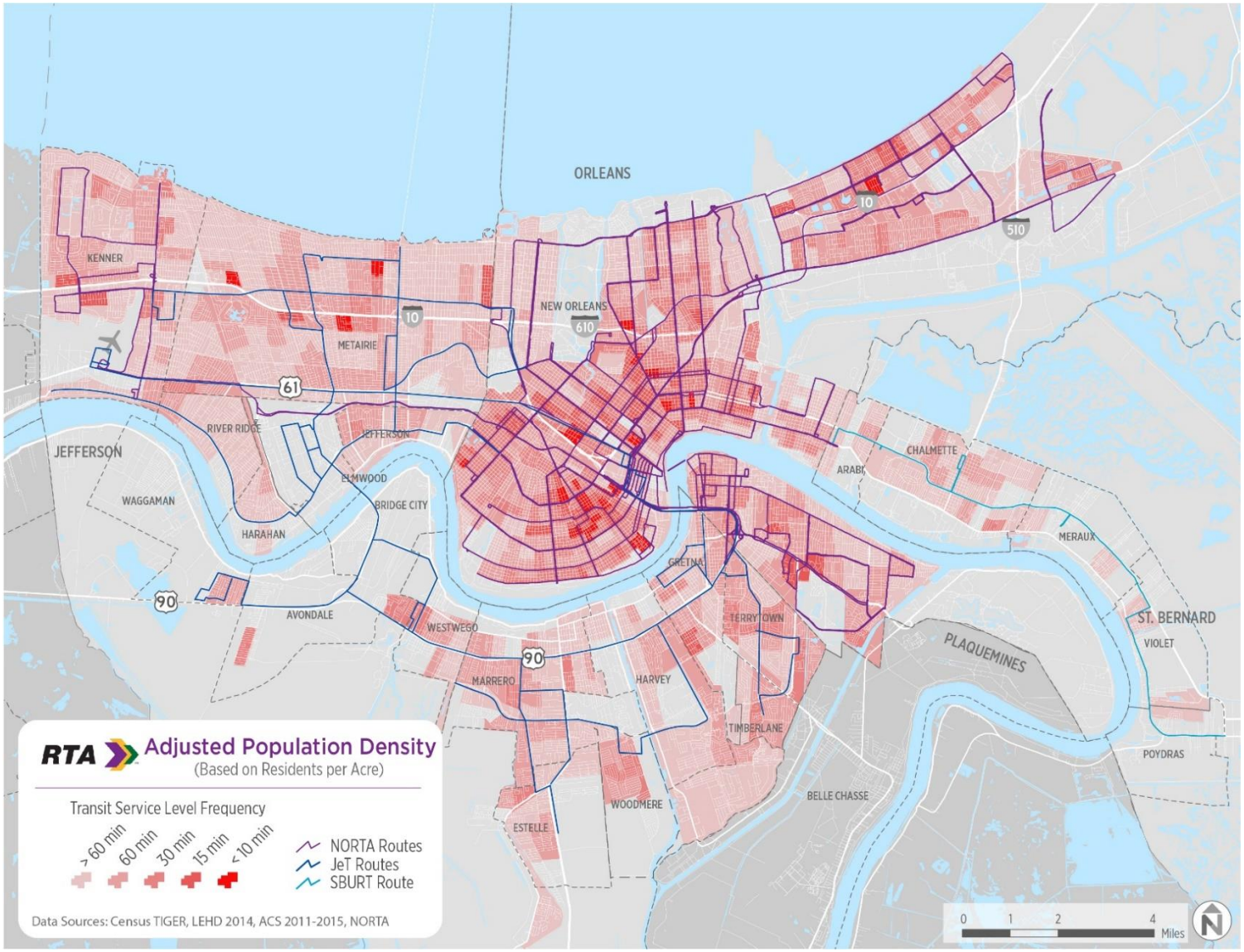
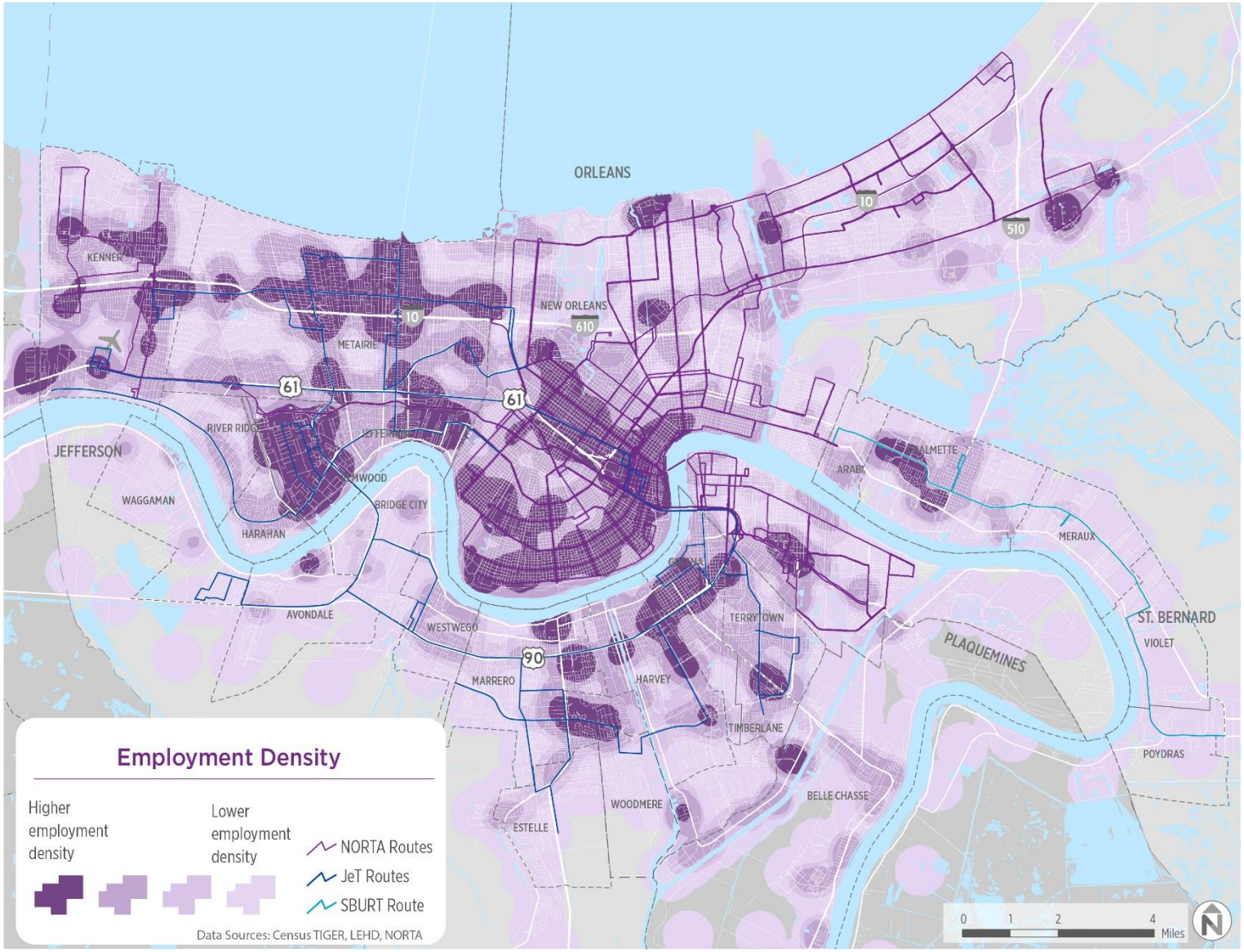


Figure 57: Employment Density (Southshore)



FREQUENCY

High-frequency service (usually defined as every 15 minutes or better) is a key component of an effective and efficient transit network. Frequent service allows riders the flexibility to rely less on schedules and rigid trip planning that is often required when service operates less frequently. A network of high-frequency routes that serves a contiguous area also makes transferring less inconvenient. Frequent service off-peak and on weekends is essential to meet the needs of passengers who work non-traditional hours.

Figure 58 maps the breadth of route frequencies across the region. Frequent service is concentrated in the city center and out to the northeast, while most other parts of the system, from the west to the south, have limited frequencies between 15-60 minutes. Even during peak periods, the distribution of frequent service is limited in New Orleans. Figure 59 demonstrates that service with a frequency of 15 minutes or better is limited to a few key routes around downtown and running east along the Chef Menteur Highway via the 94 Broad route.

Providing a regional backbone of strong, frequent service routes is a crucial gap in the existing system. Building out a regional frequent service network will allow more people access to jobs and housing options, and make taking transit an integrated part of their daily routine.

Figure 58: Peak Route Frequency (Southshore)

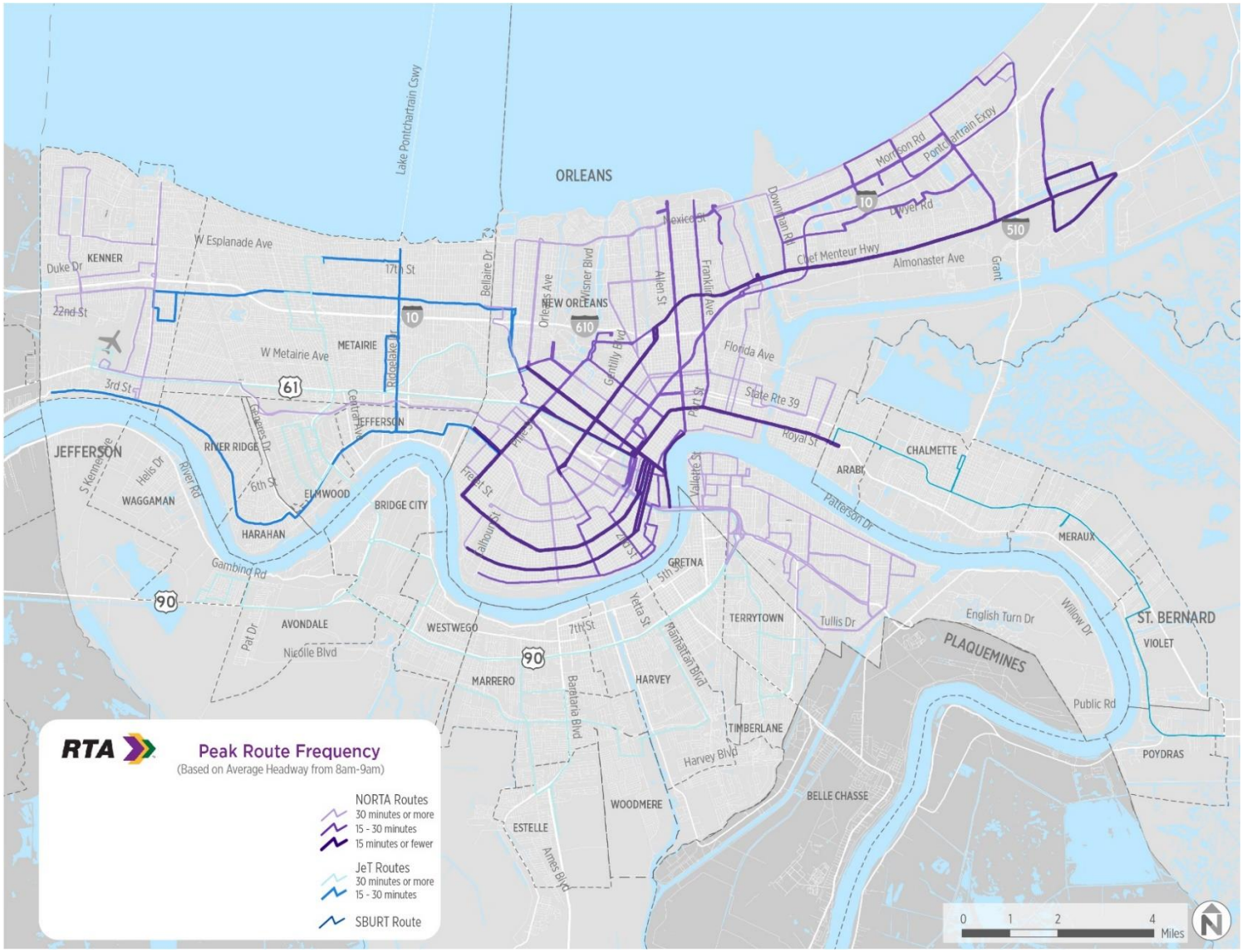
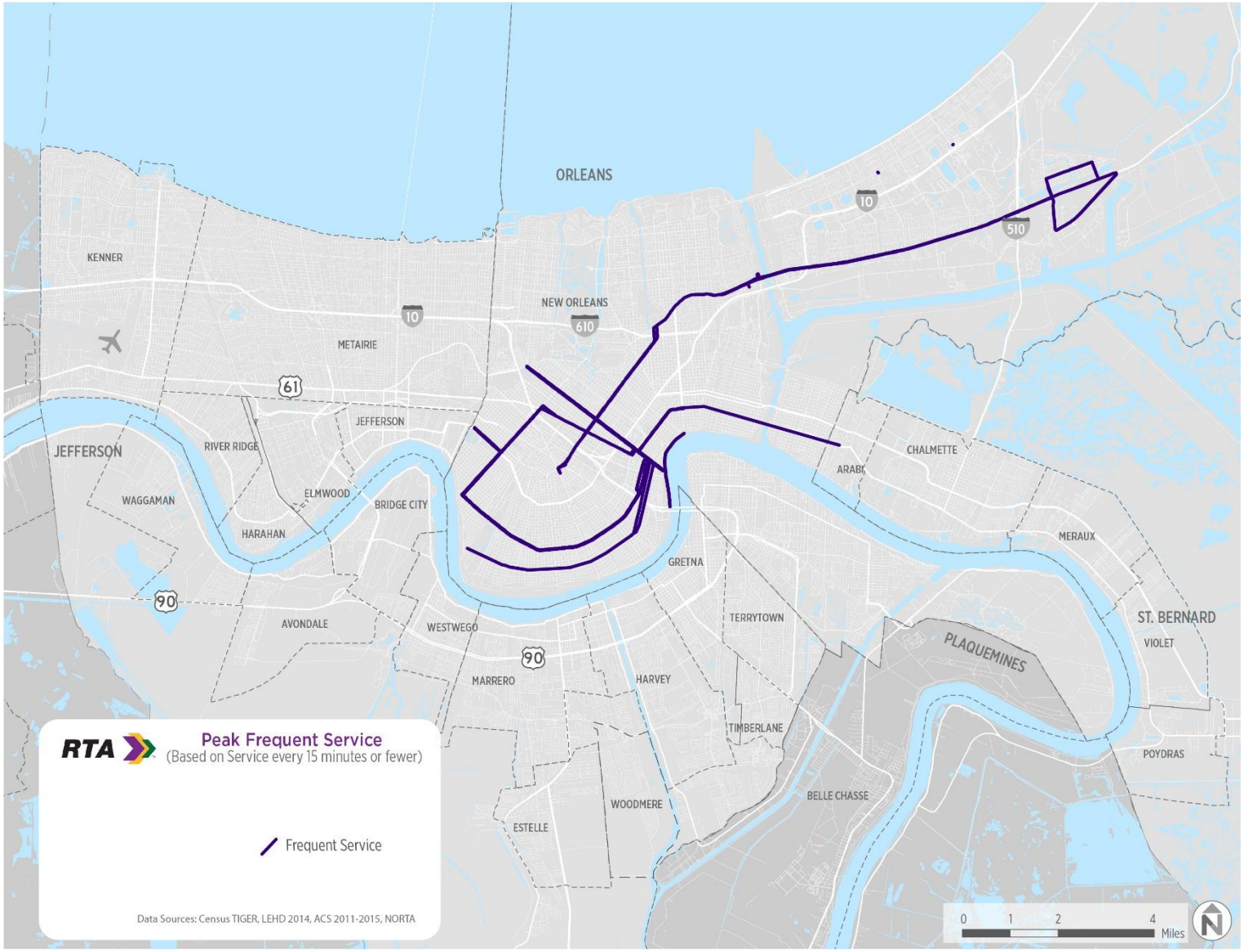


Figure 59: Peak Frequent Service (Southshore)



NIGHTTIME SERVICE

Many low-income jobs do not keep to a 9-to-5 schedule, and the service and entertainment industry—essential for the New Orleans economy—depends on many employees working very late hours. However, most low-income neighborhoods do not have transit service after 10 p.m. Even where there is late-night service for low-income communities (such as New Orleans East), few routes operate more than once per hour (see Figure 60 and Figure 61). This is the case despite the addition of new late-night and early-morning service following the recommendations of RTA's *Later Evening Service Plan and Funding Study* (October 2014).

There are several neighborhoods with low-income populations and low-paying jobs that lack adequate late-night transit. The *Later Evening Service Plan and Funding Study* found that Little Woods East, Central City, Plum Orchard, Little Woods West, Seventh Ward, Old Aurora, and Mid-City all have many low- to moderate-income service workers likely to use late night transit service (Figure 62).

Figure 63 shows that job centers are far from many low-income populations, which suggest a need for additional nighttime services. Alternative mobility services, such as microtransit, could also help close these gaps.

Figure 60: Nighttime Route Frequency (Southshore)

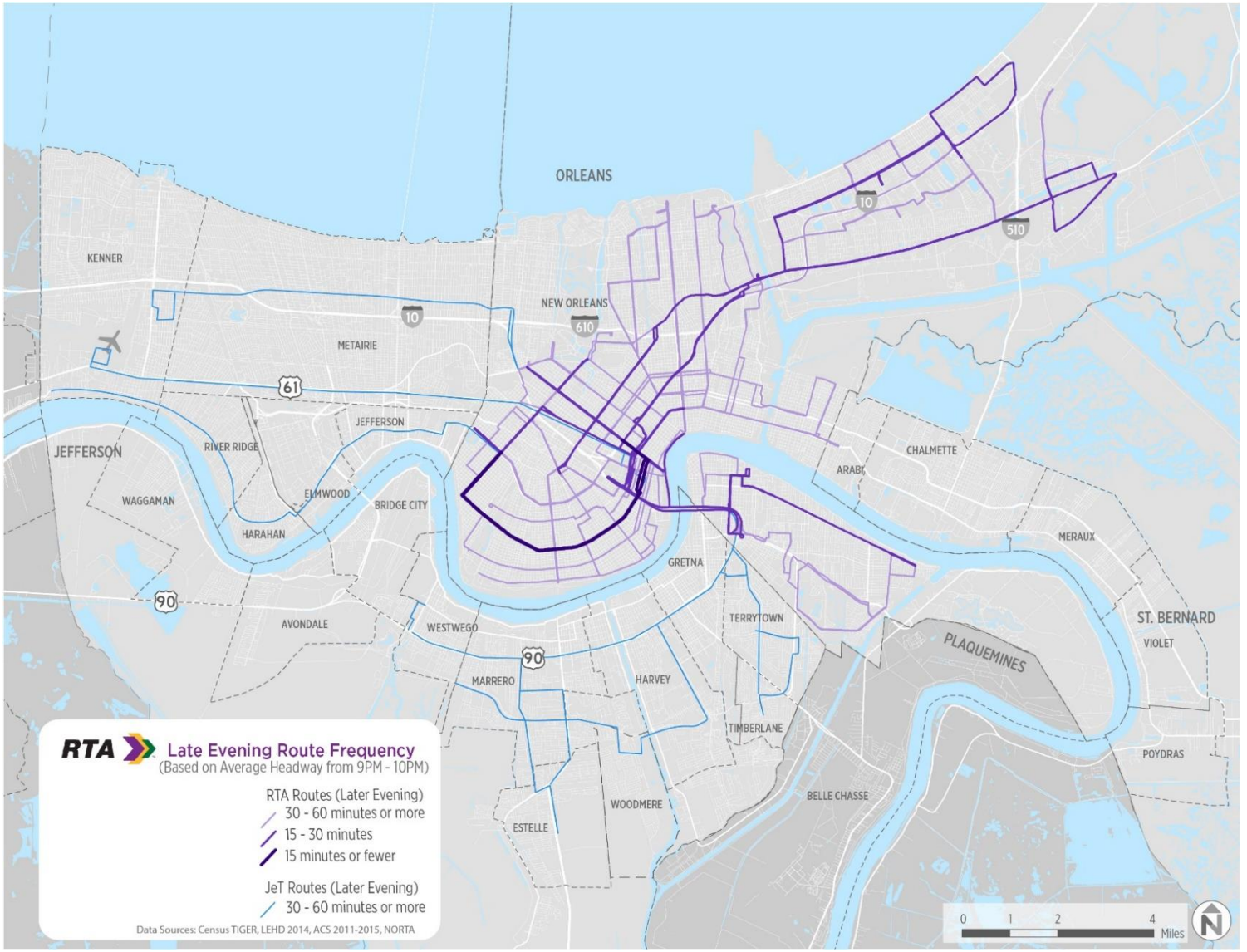


Figure 61: Nighttime Service and Composite Transit Index (Southshore)

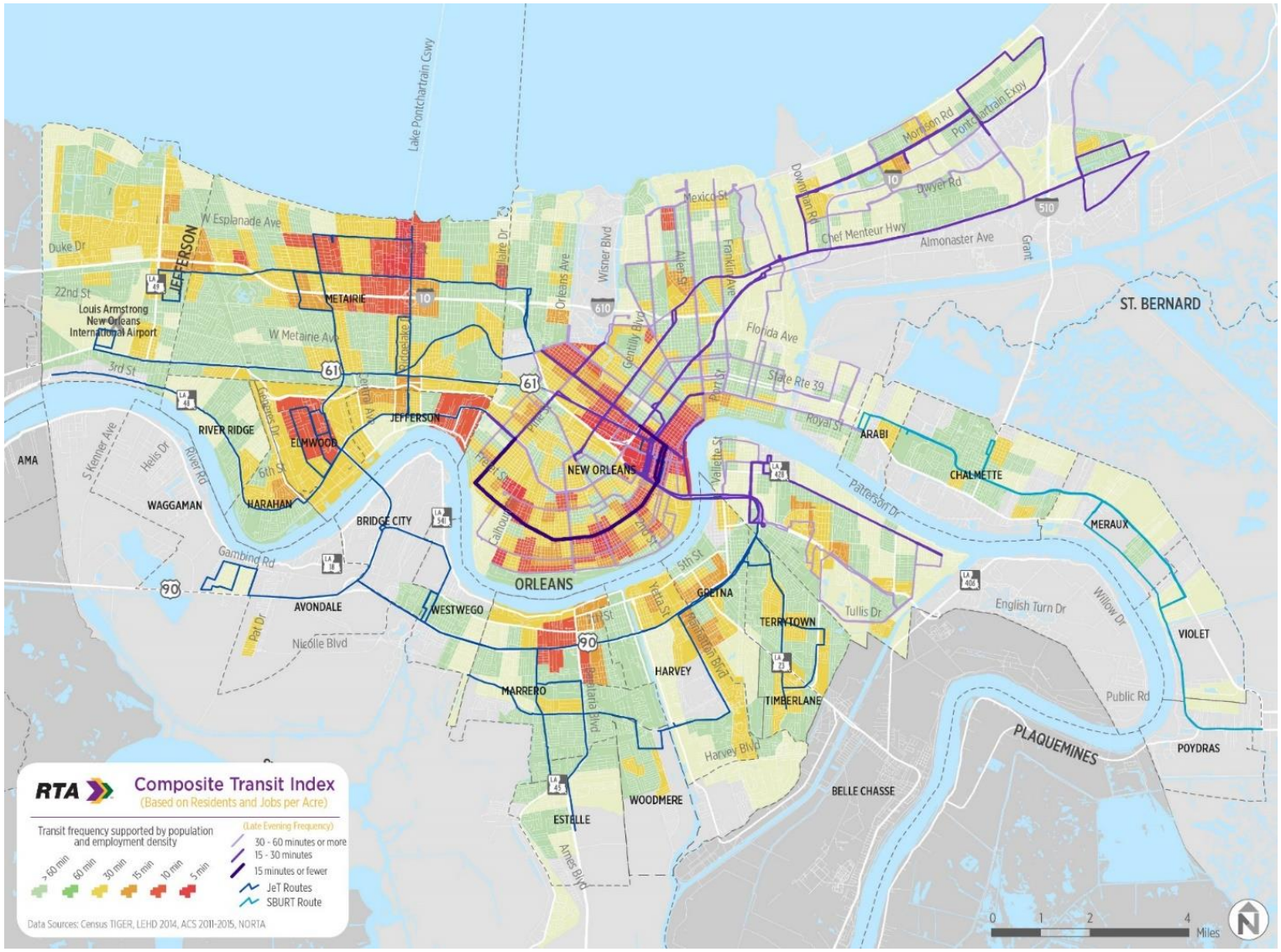


Figure 62: End of Weekday Service and Population Below Poverty Level (Southshore)

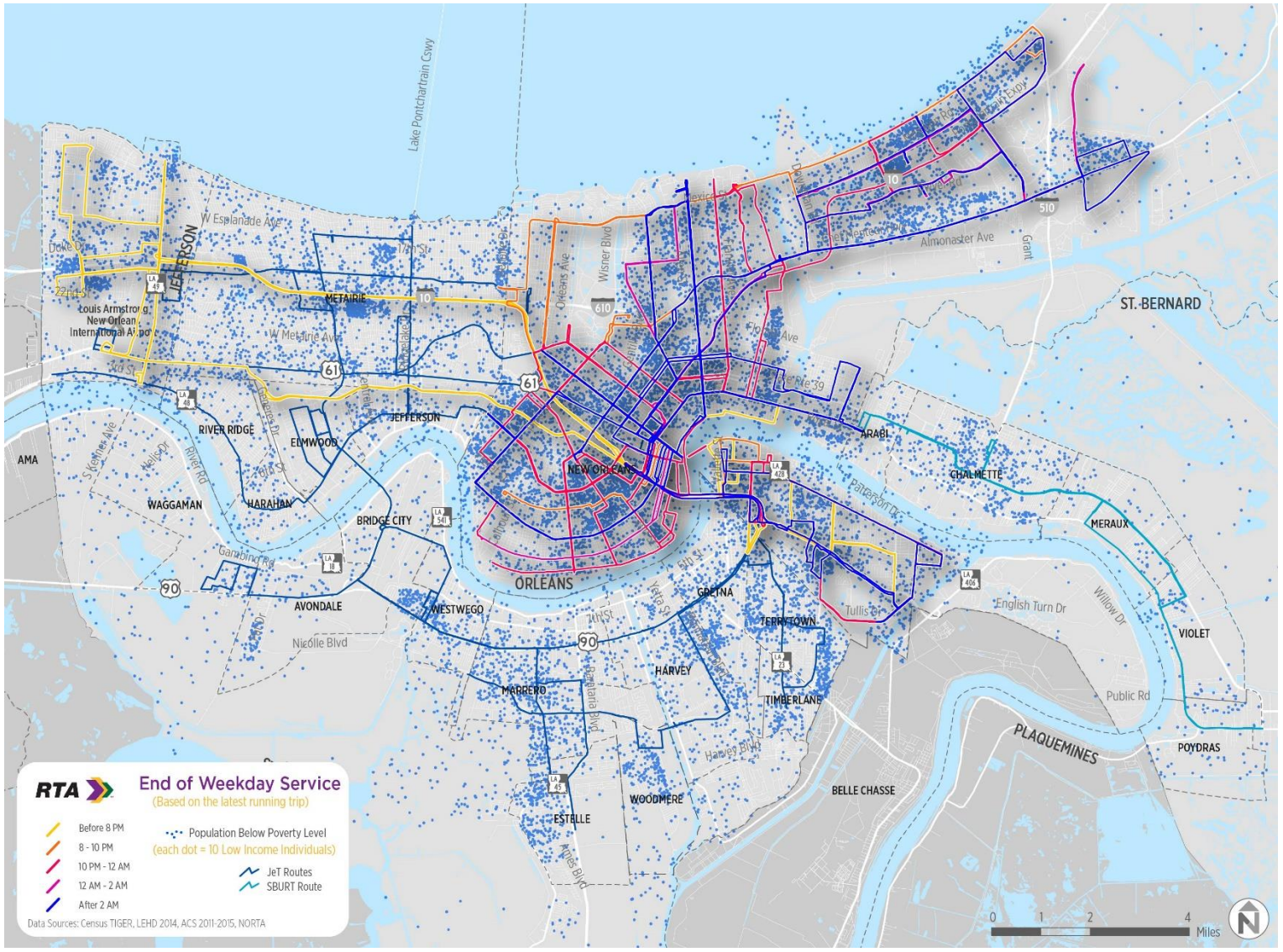
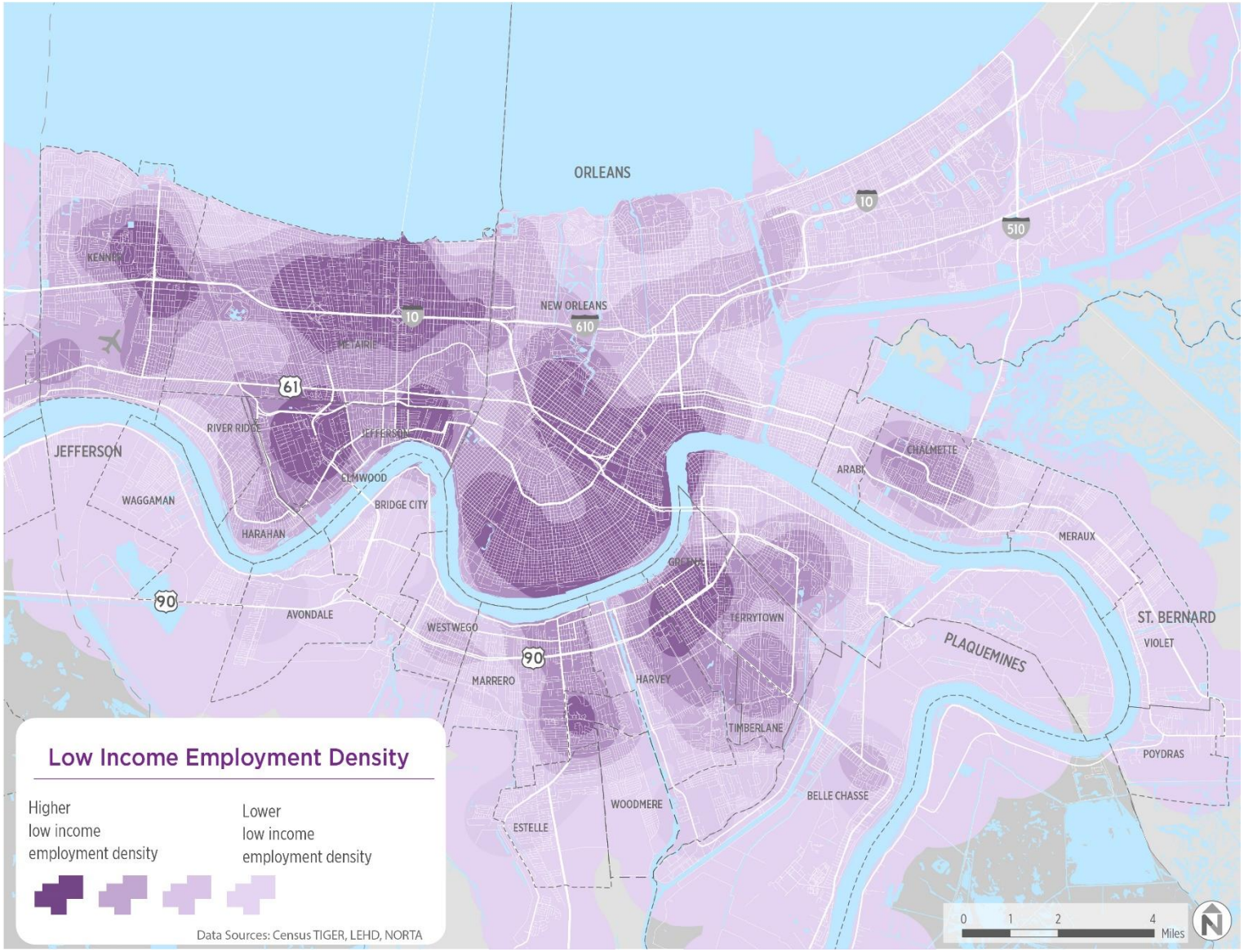


Figure 63: Low-Income Employment Density (Southshore)



SCHEDULING

Many routes operate with inconsistent headways throughout the day. Of those that are consistent, most use 40- or 50-minute headways, which result in service coming at a different minute for each consecutive hour. Cycle times that are multiples of 60 allow for the greatest range of clock-face schedules. Clock-face schedules are schedules that result in buses serving a stop at the same minute (or minutes) every hour (for example: 1:10, 2:10, 3:10, or 1:00, 1:30, 2:00, 2:30). Clock-face frequencies make it easy for riders to remember schedules and coordinate connections and transfers.

INTER-PARISH TRAVEL

Although RTA is a regional system, most routes serve Orleans Parish. Only two bus lines serve areas outside Orleans Parish. These are the 202 Airport Express (serving Louis Armstrong New Orleans International Airport) and the 201 Kenner Loop (serving the City of Kenner). Both routes serve Jefferson Parish, but only the Airport Express crosses parish lines. In addition to RTA, JeT and SBURT operate in urbanized Jefferson Parish and St. Bernard Parish, respectively. These operations, however, have jurisdictional boundaries and generally require transfers to cross parishes.

Approximately 6 percent of RTA and JeT riders transfer between the two systems. Riders transferring between systems are disproportionately traveling for work. Jefferson Parish has considerable demand for increased inter-parish service, given its commuting patterns and its concentration of low-income populations and low-paying jobs.

MOBILITY ALTERNATIVES

Transportation network companies, carsharing, and bikesharing are expanding in the region and may provide opportunities for partnership to extend the reach of traditional transit. However, price and technology requirements may limit the effectiveness of these services, especially for low-income neighborhoods or for filling the gaps during late-evening hours. Reliance on these options will require overcoming these financial and operational requirements.