

3 Where Are We Now

3.1 Socio-Economic Overview

The ARTS planning area after suffering along with the nation from the bursting of the housing bubble in mid-2007 has recently commenced a sustained socio-economic comeback. The relatively low cost of living, maturing of the baby-boom population, military influence, and the natural beauty in the region continues to sustain population growth. The dominance of stable public sector jobs has been eclipsed by service sector job growth, primarily in the areas of health care, data management, information technology and educational services. The opening of a UNISYS Call Center in downtown Augusta, relocation of the National Cyber Command to Fort Gordon, construction of the Augusta Corporate Park and the establishment of supporting businesses and accommodations servicing these new employers will enhance the economic strengths of the ARTS planning area. However, with the increasing competition from other metropolitan areas to secure jobs, challenges remain for the ARTS planning area. A selection of opportunities, strengths and future socio-economic challenges in the study area are presented in *Table 4*.

Table 4: Opportunities, Strengths, and Challenges

Challenges	Opportunities and Strengths
Availability of workforce for new industries	Abundant and qualified workforce
Availability of sites for industrial location	Robust Transportation Infrastructure
Availability of supporting infrastructure	Concentration of health services and activity centers
Extent of Public Transportation System	Neighborhoods requesting public transit service
Continued diversity of economic base and jobs	Attraction of large employers
Generally persistent poverty and low income	Low Cost of Living
Retention of STEM graduates and young professionals	Stable economic base in Fort Gordon
Urban Sprawl	Age-Friendly Communities
Dominance of Masters in tourist appeal of area	Tourism based on history and environment

Source: ARTS

The availability of highly trained and a trainable workforce has been a major factor in the attraction of new industries such as UNISYS to the ARTS planning area. However, sustaining the workforce pool is dependent on the continued education and training opportunities. In 2014 the City of Augusta during 2014 was designated an 'Age-Friendly Community,' which recognizes 'Aging in Place' and community activities suitable for people of all ages. The low of cost of living in the ARTS planning area sustains its advantage as a place to live, work and play. Nevertheless, this advantage is tempered by persistent poverty levels and low incomes especially in the urban areas.

Through adopting the Transportation Vision 2040 goals ARTS seeks to sustain the economic vitality of the ARTS planning area. Transportation improvements, for example capacity widening, reduces congestion and improves freight logistics; sustaining the ARTS planning area's locational advantage. Encouraging the development of an efficient public transit system and non-motorized transportation modes, connects people to jobs, health care providers, workforce opportunities and other activity centers. Age-friendly Design, Traffic Calming and Complete Streets policies make the urban core safer and accessible for all users. Developing the Transportation Vision 2040 goals and objectives acknowledged the role of ARTS in enhancing opportunities and strengths while minimizing challenges within the ARTS planning area. This process was underscored by active public involvement during the public participation phase.

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3.2 Population, Housing, and Employment

Planning for the future involves a thorough understanding of what is happening today in order to make informed choices that help craft the desired future vision. A region's population and employment characteristics are two key components that determine the demand for transportation services and usage of transportation infrastructure. Rapid expansion and development of population or employment in the ARTS planning area may lead to challenges in accommodating travel growth on the transportation system. Sprawl growth leads to issues of increased traffic congestion, vehicle operation cost increases, ineffectiveness in providing social services and delays in emergency vehicle response, along with many other issues negatively affecting daily living, economic development, and travel.

Understanding population and employment growth trends in the ARTS planning area are important for planning, modeling and programming of transportation projects. Population and employment are two primary inputs into the Travel Demand Model (TDM) that are used to identify deficiencies in the current transportation system and generate future travel demand scenarios. The following sections display historical growth in population and employment in the four-county region and projected growth towards 2040 planning horizon year. The methodology governing future year population and employment estimates are presented in [*Appendix A*](#).

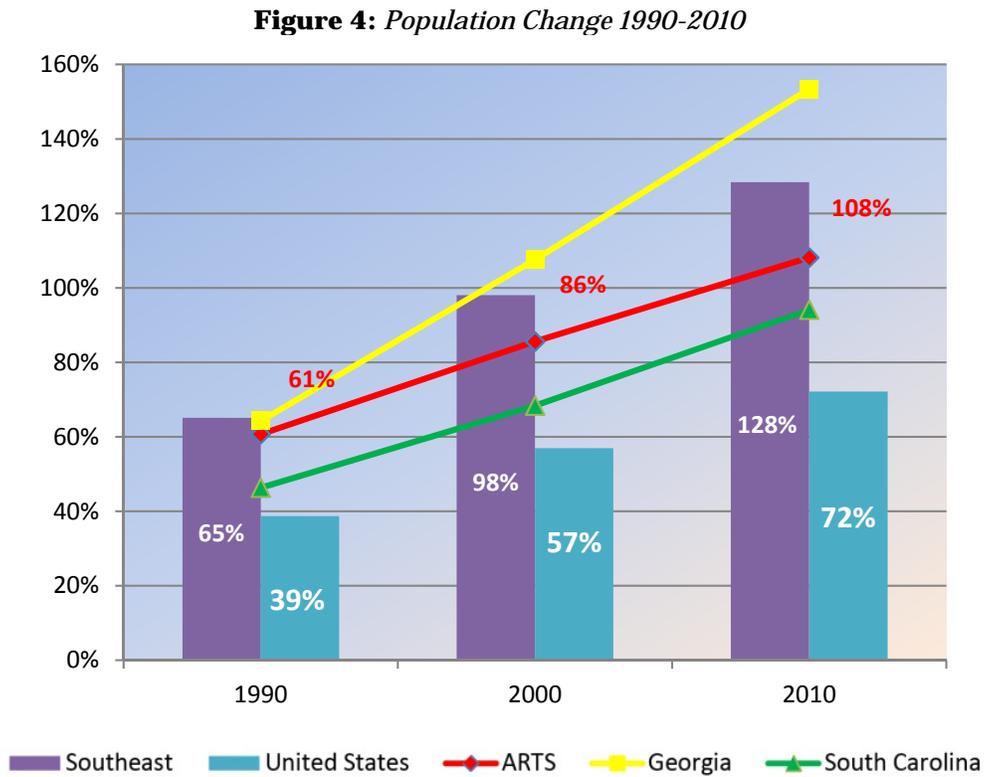
The 2010 base year and the plan year of 2040 (30 year horizon) were the chosen timeframes for the TDM that determines the needs of the current and future transportation systems. Using a base year of 2010 allows for the most accurate data available, which comes from the 2010 Decennial Census.

Although ARTS consists of Richmond County and portions of the remaining three counties, much of the following information involves the entire four-county region (i.e. 100% Aiken, Columbia, Edgefield and Richmond counties). The spread of the urbanized area within the four counties has led to the expansion of the ARTS boundary over the past few decades. This had led to differences in the physical land area of study covered in ARTS LRTP updates over the course of a few decades. A MPO boundary is continuously updated every ten years after the decennial census and, at a minimum, covers the urbanized and contiguous geographic areas likely to become urbanized over the next twenty years.

Analyzing the four counties as a whole provides an easier and more consistent understanding of trends affecting the ARTS planning area. Aiken, Columbia, Edgefield and Richmond county boundaries have remained relatively consistent over the past 50 years.

3.2.1 How has the population in the four-county region been growing?

Population in the southeastern portion of the United States has grown rapidly over the past few decades since 1990, as depicted in *Figure 4*. This graph shows the change in population from decade to decade relative to the year 1960. Although the four-county region during this time frame exhibited a slower increase in population growth compared to Georgia, the growth rate still exceeds that of South Carolina and the United States overall. As of 2010, the ARTS remain the second-most populous MPO in Georgia behind Atlanta and the fourth most populous MPO in South Carolina (behind Columbia, Charleston and Greenville).



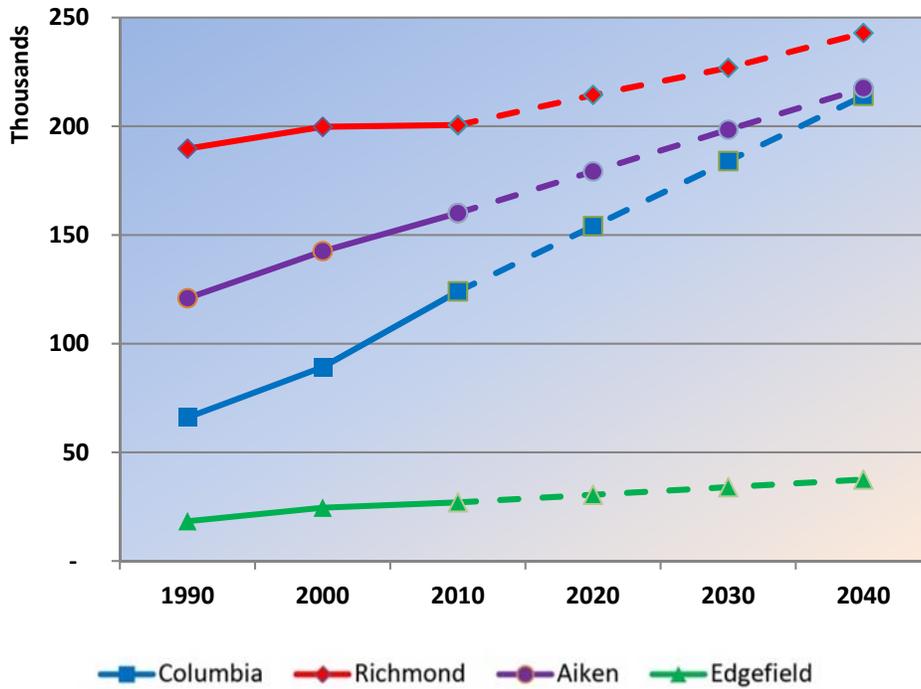
Source: US Census Bureau, 1990-2010

The four-county region has experienced steady population growth since 1960. This growth trend is expected to continue between 2010 and 2040. The four-county region is expected to grow in population from 511,686 residents in 2010 to approximately 712,986 in 2040, an additional 39% more residents.

3.2.2 Where is population growth occurring?

Although population growth from a regional outlook has been steady, the rate of growth at the county level has shifted. *Figure 5* illustrates that during the mid-20th century, the Richmond County population far exceeded that of the adjoining counties (i.e. Aiken or Columbia). However, as shown in *Figure 5*, over the past few decades there has been a slowdown in growth for the region’s largest county, with both Aiken and Columbia counties having gained an increasing share of the four-county regional population.

Figure 5: Four County Population Growth

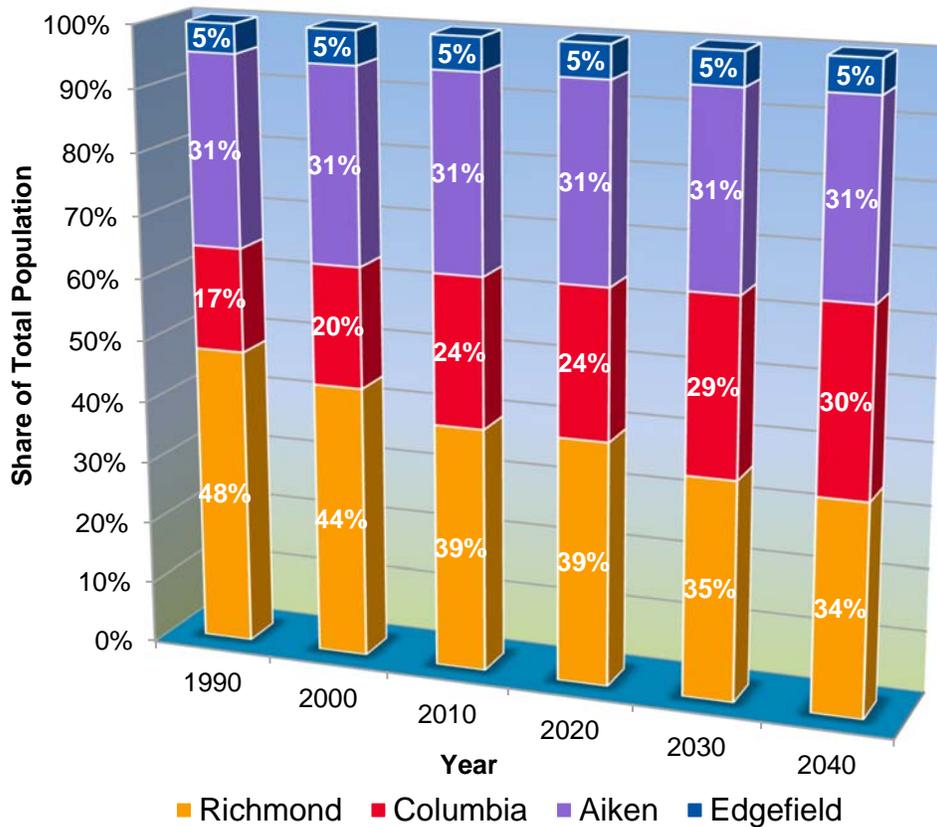


Source: US Census Bureau, 1990-2010 and ARTS Projections

Many residents in the ARTS planning area work, shop, and/or recreate in Richmond County while choosing to live in neighboring counties that potentially offer lower property development costs, quality education systems and various quality of life aspects not always found in Richmond County. Richmond County has some of the top-performing schools in the region. John S. Davidson Fine Arts Magnet School in Augusta, GA, over the years consistently ranks as one of the top high schools in Georgia by US News Best High Schools Rankings.

The shift in housing development in Columbia County is driving school choice. Population growth between counties is expected to continue into the coming decades, with Columbia County increasing the most in occupied households.

Figure 6: Four County Population Share



Source: US Census Bureau, 1990-2010 and ARTS Projections (2020-2040)

This current trend of population growth can be seen in [Figure 6](#), which presents the population change from 2000 to 2010 by census tract. The majority of census tracts with high population growth occur in Columbia and Aiken counties, supporting the shift in population growth away from Richmond County as presented in [Figure 7](#).

Findings regarding observed historical growth and existing population in the four-county region are presented as follows (See [Figure 8](#) for 2010 Population Density):

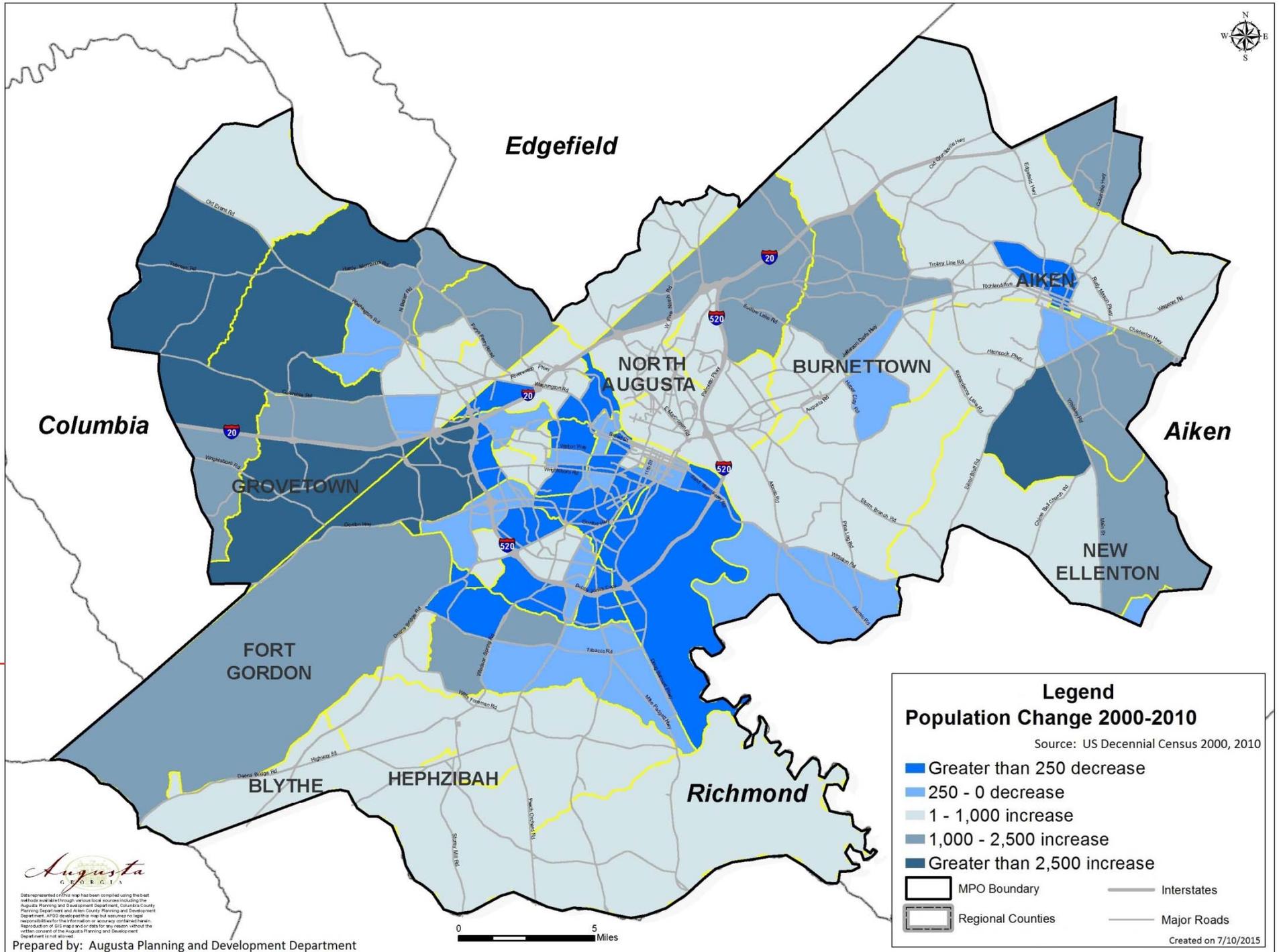
- The majority of higher density residential areas occur within Bobby Jones Expressway (I-520) corridor stretching from downtown Augusta towards the southwest, along and outwards from Wrightsboro Road.

- Historically, the majority of population growth in Richmond County occurred within the Bobby Jones Expressway (I- 520). However, in recent years population has spread south along Deans Bridge Road, Windsor Spring Road, Peach Orchard Road, and Tobacco Road, rapidly expanding the neighborhoods in South Augusta.
- Columbia County’s population has grown near the Richmond County line along Columbia County and Washington Roads, significantly expanding the Grovetown, Martinez and Evans communities.
- Aiken County, SC continues to see large concentrations of population around the cities of North Augusta and Aiken. Population growth has occurred between these two cities, along and outward from US 1 and Augusta Road.

Findings regarding projected population growth in the four-county region are presented as follows (See *Figure 9 for 2040 Population Density*):

- Richmond County will continue to grow in areas near I- 520 and towards South Augusta while adding infill to current high-density population areas near Georgia Regents University (GRU) and downtown Augusta.
- Columbia County’s growth will continue its expansion at numerous nodes and along Washington Road and areas near the Fort Gordon military installation, Grovetown, Martinez, and Evans.
- Growth will continue in the City of Aiken as well as southeastern portions of Aiken County.

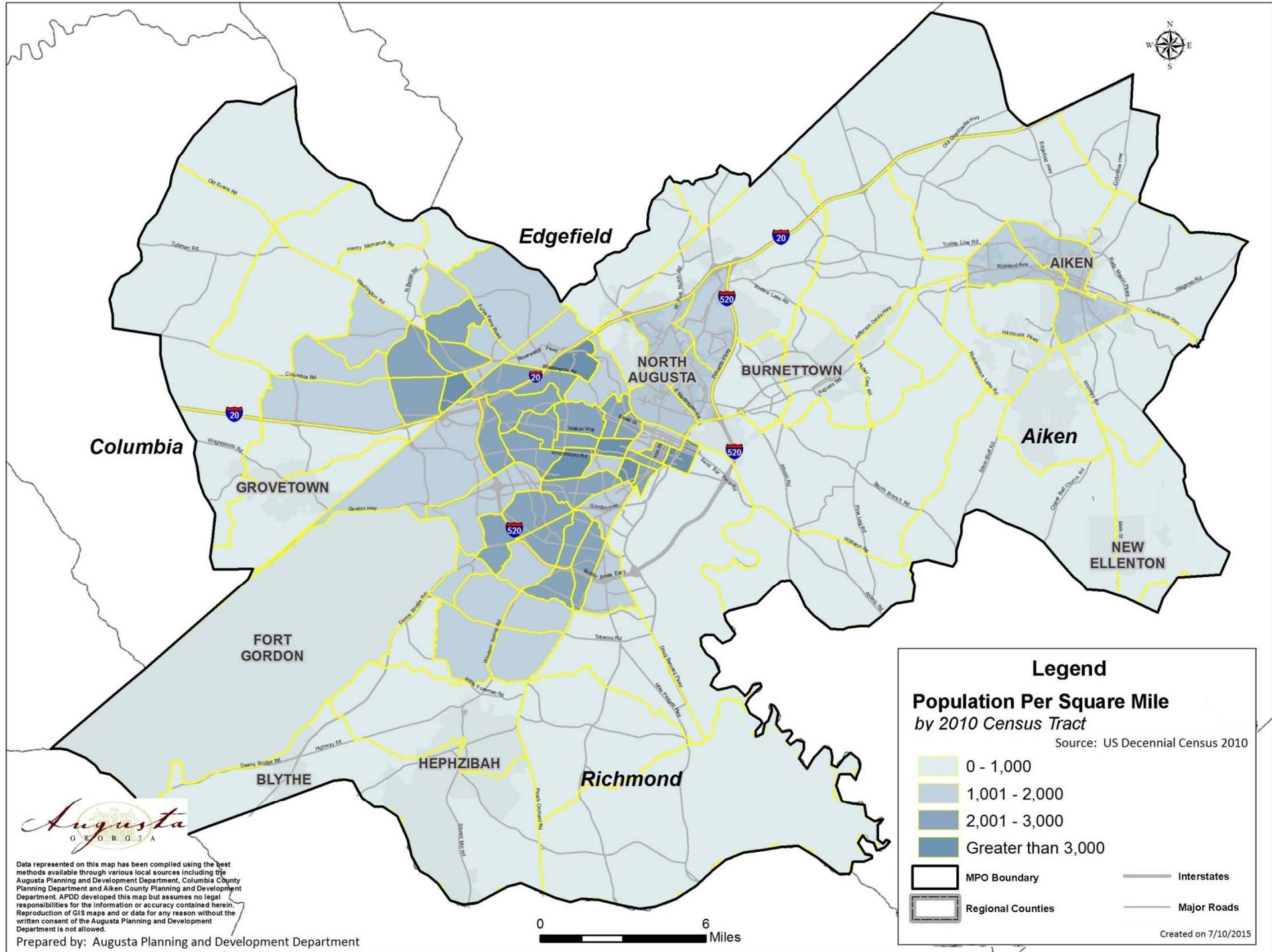
Figure 7: Population Change



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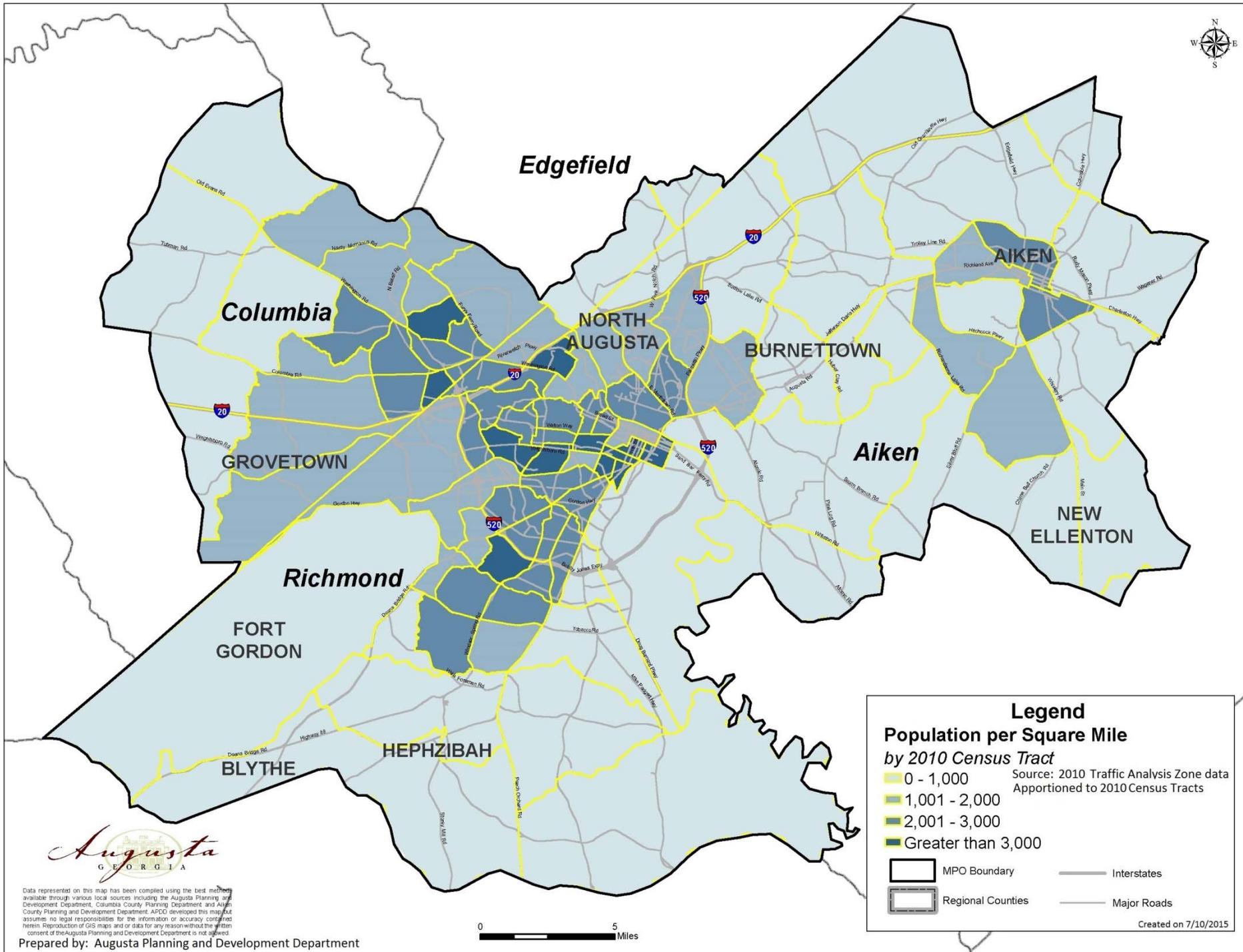
Figure 8: Population 2010



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Figure 9: Population 2040



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3.2.3 Age

Different age groups have varying transportation needs. It is important to plan for a multimodal transportation system that is able to provide an equitable, safe and accessible system for all citizens. Planning for multiple age groups includes complete streets, creating an age-friendly community (an AARP Livable Communities initiative), providing paratransit, and improving safety and access to schools for children. Understanding the age trends of the region will ensure proper planning for these varying needs.

A major demographic change expected over the course of the coming decades is the aging of the population, in particular the baby boomer generation (i.e., those born between 1946-1964). As seen in [Table 5](#), a large share of the population (25%) is within this age range, indicated as 46-64 years old in 2010.

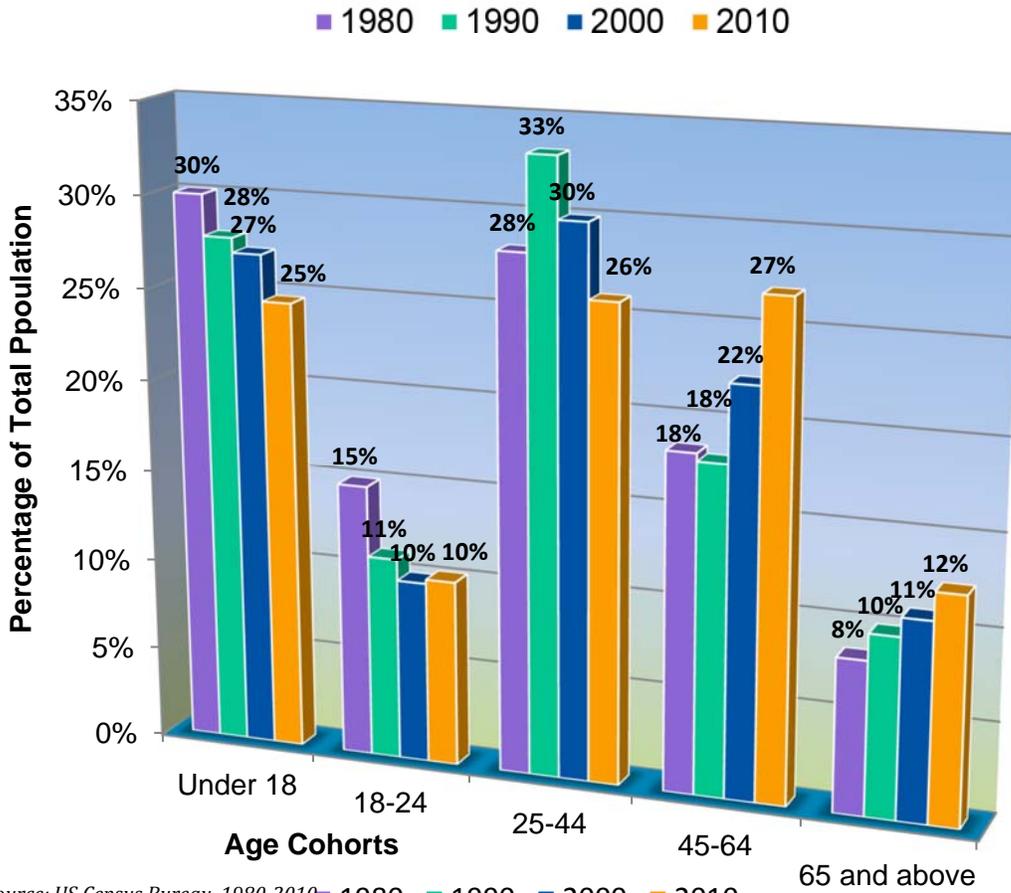
Table 5: Four County Population 2010

Cohort	Total	%
Under 18	125,714	25%
18 - 24 years	51,983	10%
25 - 45 years	140,249	27%
46 - 64 years	130,185	25%
65 and above	63,555	12%

Source: US Census Bureau 2010

[Figure 10](#) illustrates the decade-to-decade change in population by cohorts based on the US Census Bureau. An important finding from this figure is that the proportion of persons 65 years and older residing in the four-county region has increased continually since 1980. The 45-64 age cohorts have also experienced increases in its share since 1990.

Figure 10: Four County Population Cohorts

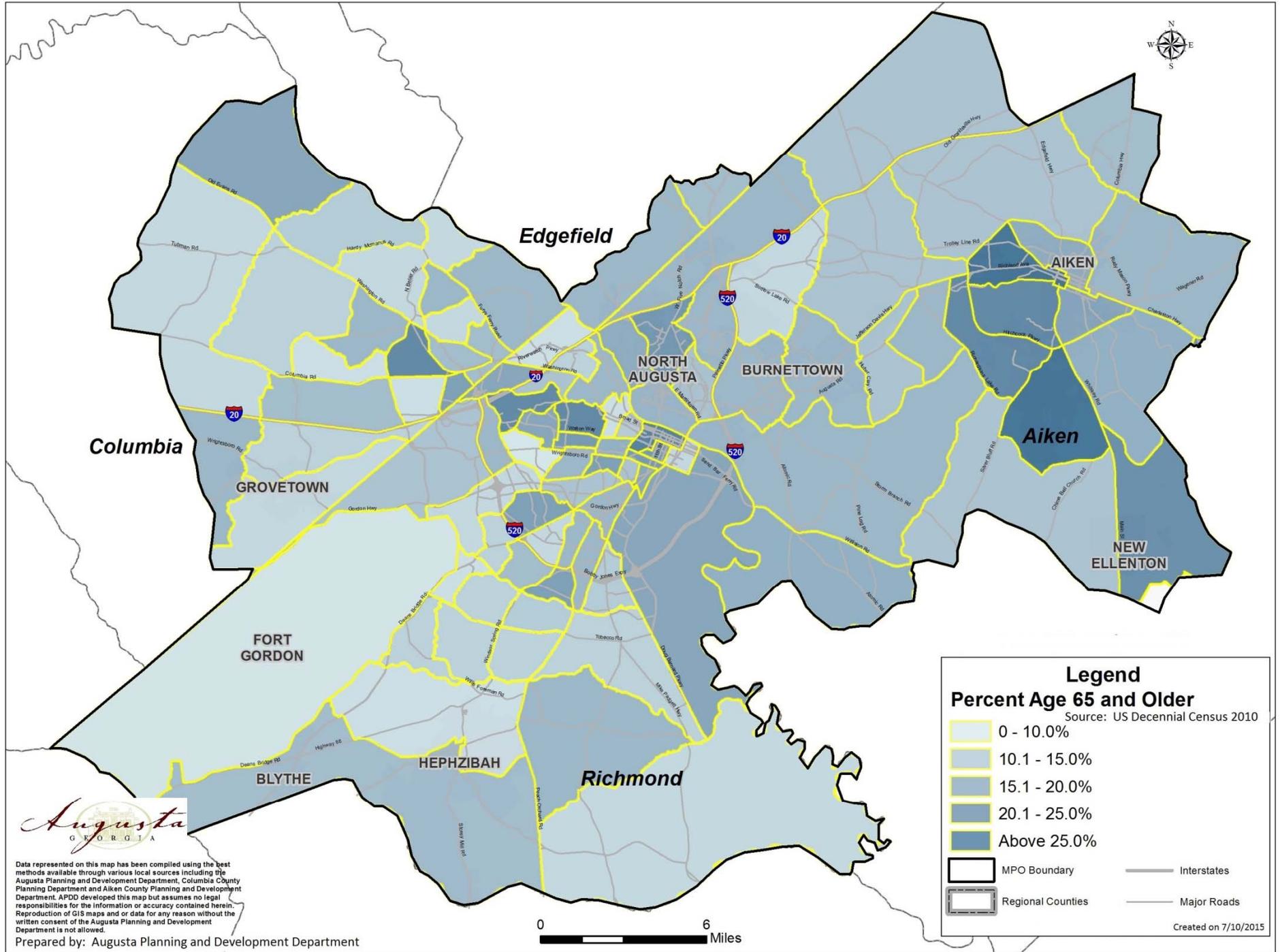


Source: US Census Bureau, 1980-2010

According to [Figure 11](#), a fair amount of the current elderly population live in Aiken County in the cities of Aiken and New Ellenton; Richmond County in neighborhoods near downtown Augusta and along I-520 Bobby Jones Expressway; and Martinez in Columbia County. However, large numbers of this cohort are also spread throughout the region. The growing numbers in this cohort combined with its wide spatial dispersion creates challenges in the region’s ability to provide effective and efficient public transit for these residents. Transportation mobility, especially public transit serving urban and rural areas is critical for livability and wellbeing.

Another significant population cohort is that of young adults (persons aged 18-24 years). As seen in [Figure 12](#), a large number of young adults in the ARTS planning area live in close proximity to Fort Gordon, GRU, Paine College, and the University of South Carolina-Aiken.

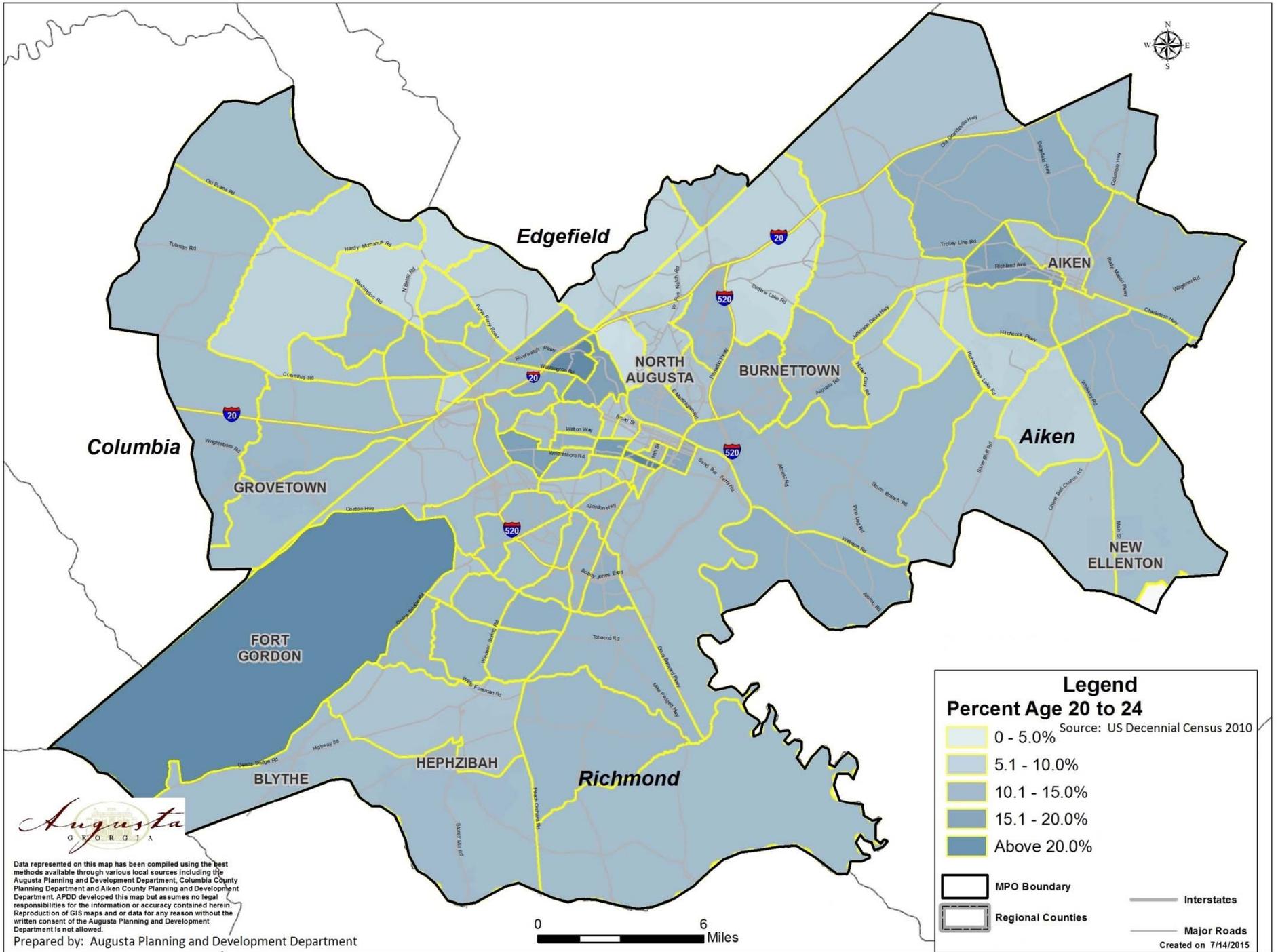
Figure 11: Elderly Population



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Figure 12: Young Adult Population



3.2.4 Housing Trends

Associated with population growth is the amount and type of housing stock. Changing household characteristics affect the transportation system in a way not completely captured by shifts in population. As defined by the Census Bureau, a household consists of all the people who occupy a housing unit (including a house, an apartment or other group rooms, a single room intended for separate living quarters). Although the region’s population will grow in the coming decades, national trends suggest that the housing market may shift towards a demand for more single person and single parent households, resulting in a decrease in the average number of persons per household. The national trends are seen in the four-county region as well, shown in [Table 6](#). From 2000 to 2010, there has been a decrease in average household size for the four counties, decreasing faster than the national average in this period.

Table 6: *Four County Household Size*

County/State/ Nation	2000	2010	% Change
Columbia	2.85	2.75	-0.035
Richmond	2.55	2.47	-0.031
Aiken	2.53	2.45	-0.032
Edgefield	2.66	2.56	-0.038
Georgia	2.65	2.63	-0.008
South Carolina	2.53	2.49	-0.016
United States	2.59	2.58	-0.004

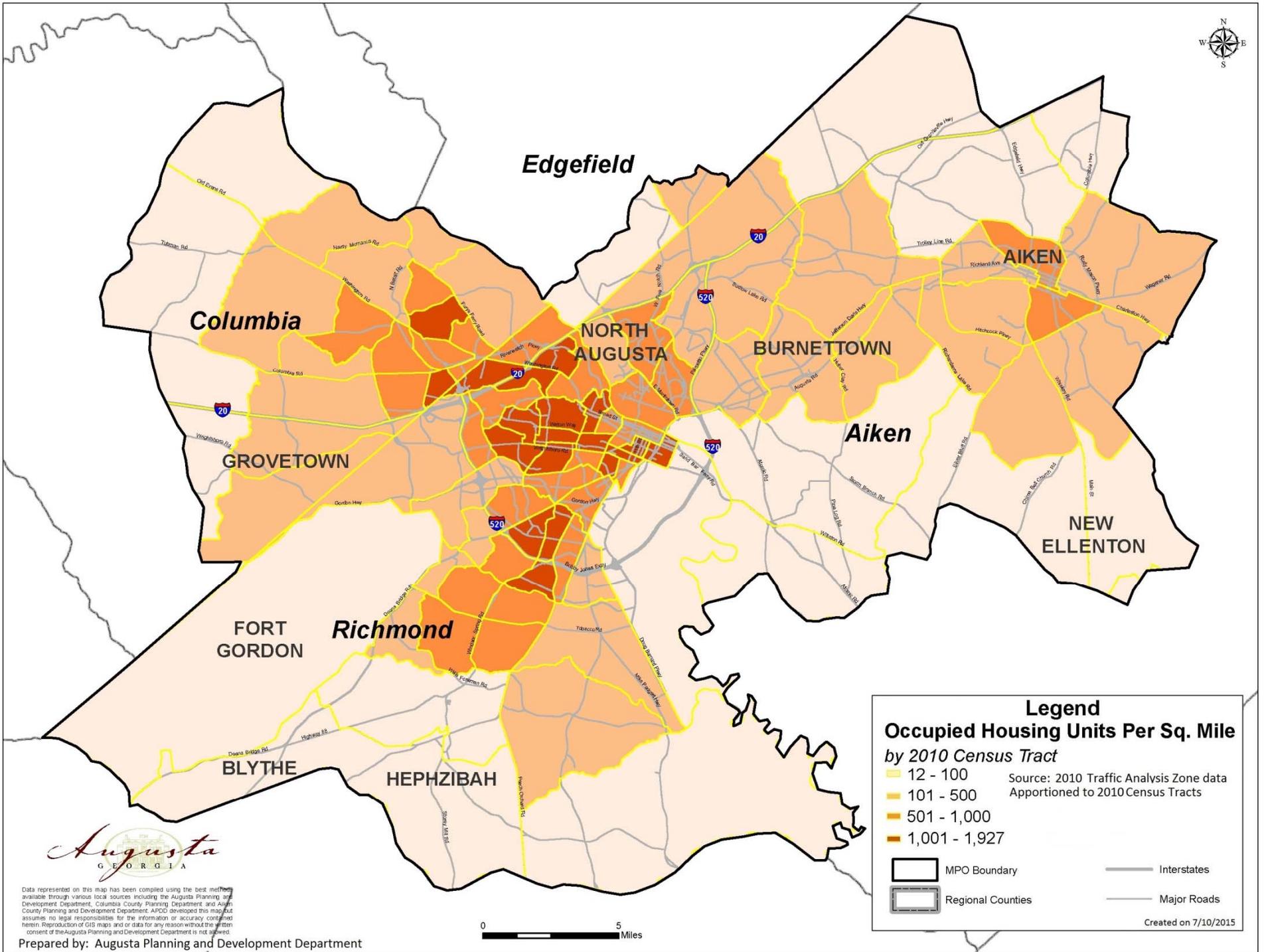
Source: U.S. Decennial Census

Analysis of existing household density shows that the majority of the population is concentrated along I-20, along I-520, and within the urban areas of Augusta, GA. Columbia County’s households shows a higher density of people living along major corridors such as Washington Road, Belair Road, Columbia Road and Fury’s Ferry Road compared to other parts of the county. Aiken County high-density areas are within the City of Aiken and North Augusta as shown in [Figure 13](#). [Figure 14](#) shows that these very same areas are projected to intensify in household density by 2040, from 1,927 units per square mile to 2,231 units per square mile. Surrounding census tracks are also expected to become even denser.

Key areas expected to become denser in 2040:

- South of Columbia and Washington Roads in Columbia County
- South of I-20 and I-520 as well as Walton Way in Richmond County
- Urban areas of North Augusta, SC. and Augusta, GA.

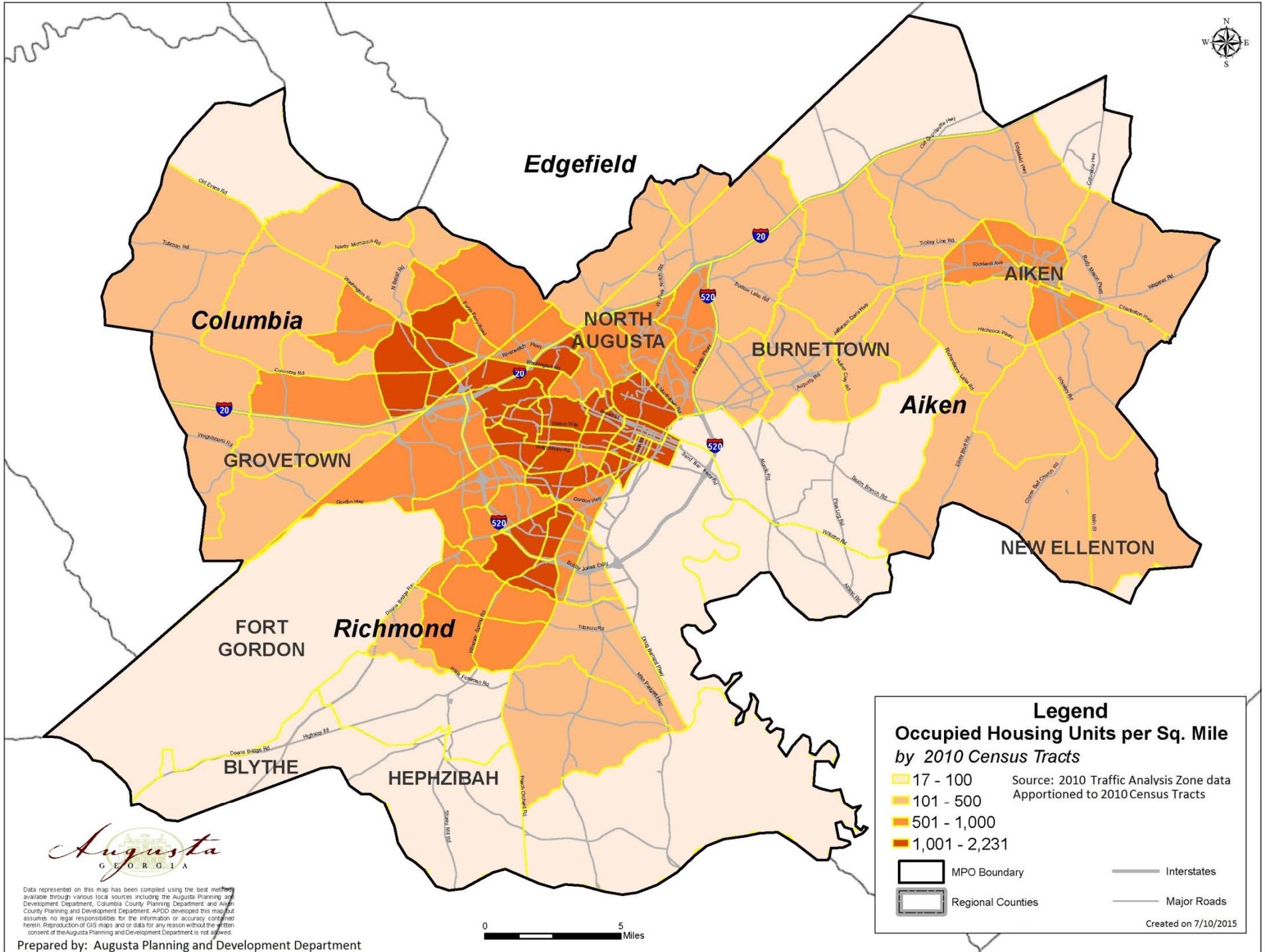
Figure 13: Occupied Housing Unit Density 2010



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Figure 14: Occupied Housing Unit Density 2040



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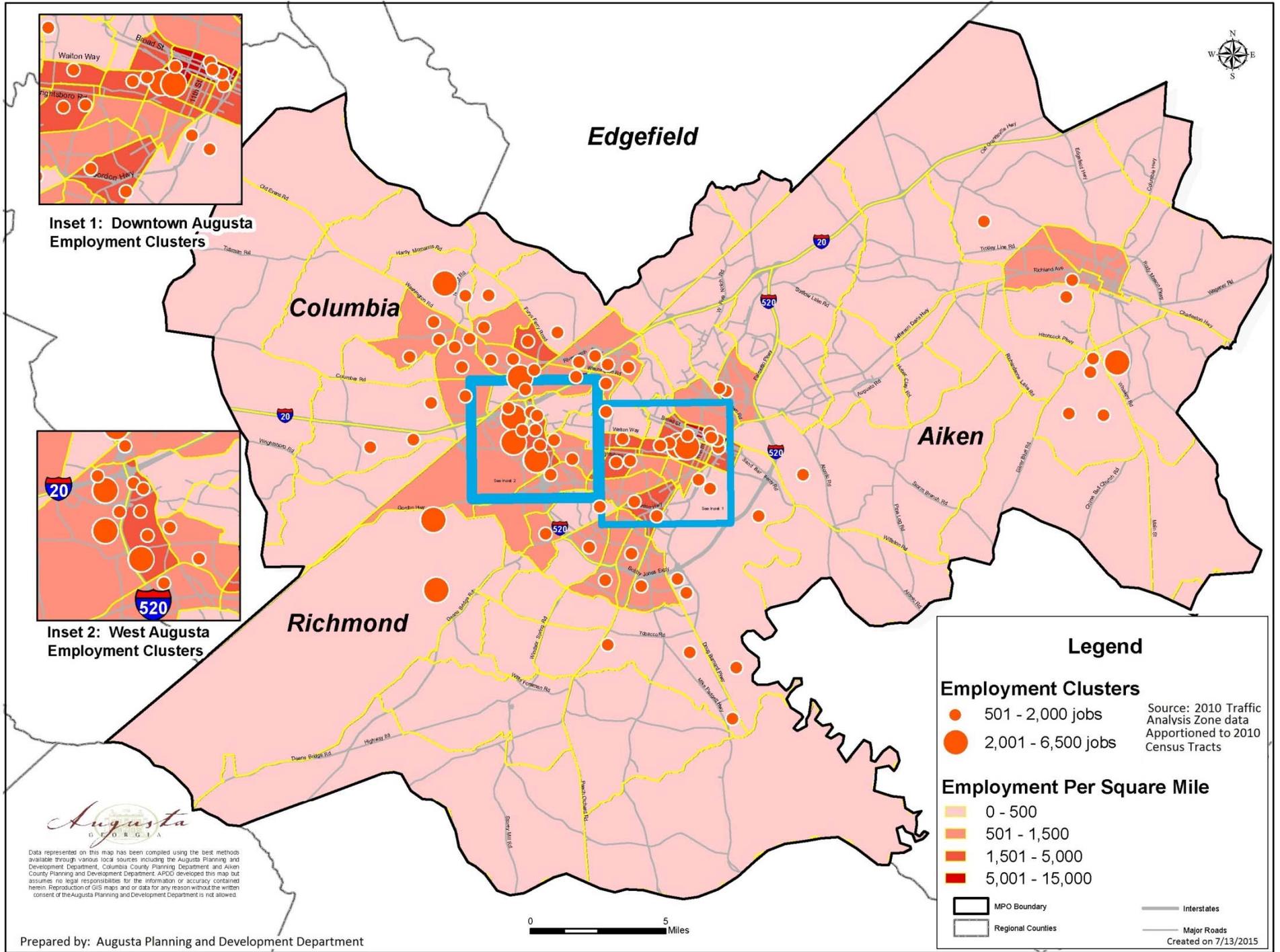
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3.2.5 How has employment in the ARTS planning area been growing?

Following similar spatial patterns of economic development seen throughout the nation, the majority of new jobs created in recent years has continued to move away from downtown into less developed areas. Although downtown Augusta, GA, North Augusta, SC, and Aiken, SC, have traditionally remained as concentrations of high employment, there have been large increases in employment in and around Fort Gordon and the Georgia Regents University (GRU) and medical districts in Augusta. Strip commercial centers along major corridors (i.e., Washington Road, Whiskey Road and Gordon Highway also indicated in [Figure 15](#) have also grown due to lower development costs and their ability to meet the needs of a spatially dispersed residential population.

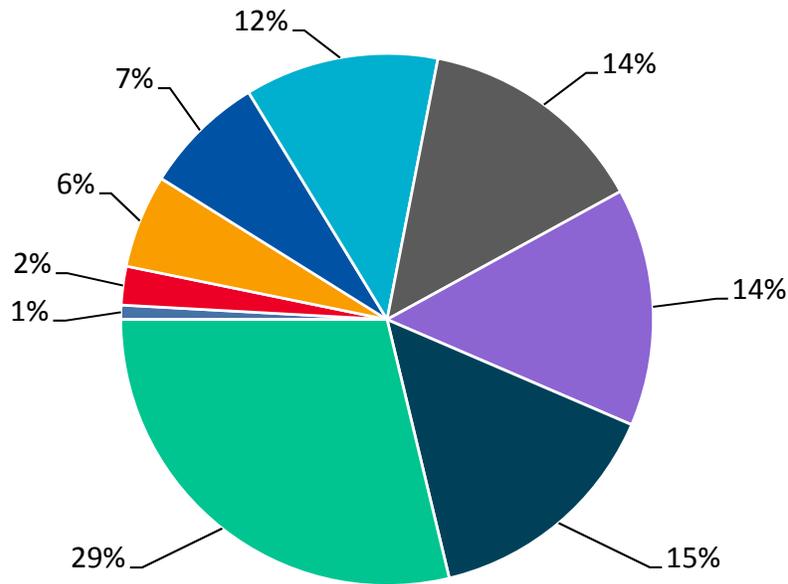
The majority of employment clusters in the ARTS generally providing service related jobs show the largest area of employment in [Figure 16](#) categorized as educational services, health care, and social assistance. Service related jobs are a dominant job category for many of the large employers in the ARTS planning area, e.g., Fort Gordon, GRU, University Hospital, Medical College of Georgia (MCG) Health, Savannah River Site, East Central Regional Hospital, and Doctors Hospital of Augusta.

Figure 15: Employment Density and Cluster 2010



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Figure 16: Employment by Sector 2010



Source: U.S. Census Bureau, LODES 2010 Work Area Characteristics

- | | |
|---|---|
| ■ Agriculture, forestry, fishing, hunting, and mining | ■ Transportation, warehousing, and utilities |
| ■ Information, finance, insurance, real estate, and leasing | ■ Public administration & other services |
| ■ Arts, entertainment, recreation, lodging & food services | ■ Professional, scientific, management, admin, & waste services |
| ■ Construction & Manufacturing | ■ Wholesale & Retail Trade |
| ■ Educational services, health care, and social assistance | |

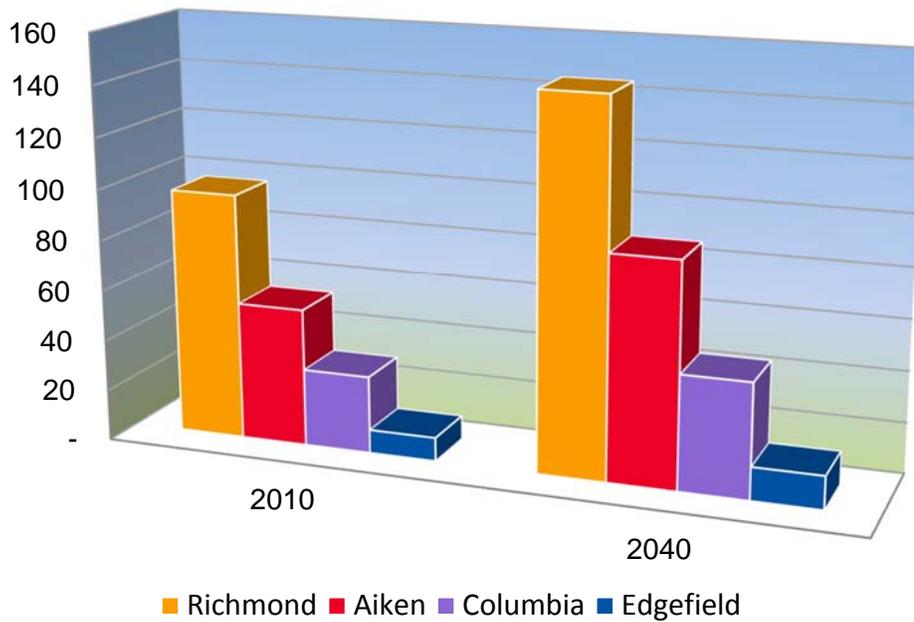
Various commercial strip developments in the study area also provide a large amount of service related jobs. Commercial strip developments and shopping centers as well as downtown often provide concentrations of retail employment. Manufacturing facilities are located in industrial parks near major railroad networks or waterways (e.g., Savannah River) and tend to be distant from major population concentrations.

Findings regarding the observed historical and existing employment in the four-county region are presented as follows (*Figure 17*):

- High employment has been concentrated in Richmond County, e.g., downtown Augusta, GRU (i.e., Summerville and Health Sciences campuses) and the surrounding hospitals.
- A concentrated cluster of employment is seen in the Fort Gordon area, where many workers commute into a relatively small area. This high concentration of employment has influenced residential development along the Columbia County and Richmond County border.

- I- 520 and Washington Road corridors, i.e., between Columbia and Richmond Counties host large concentrations of employment.
- Aiken County’s largest employment areas are North Augusta as well as the City of Aiken especially along Whiskey Road and Hitchcock Parkway.

Figure 17: *Four County Employment 2010-2040*

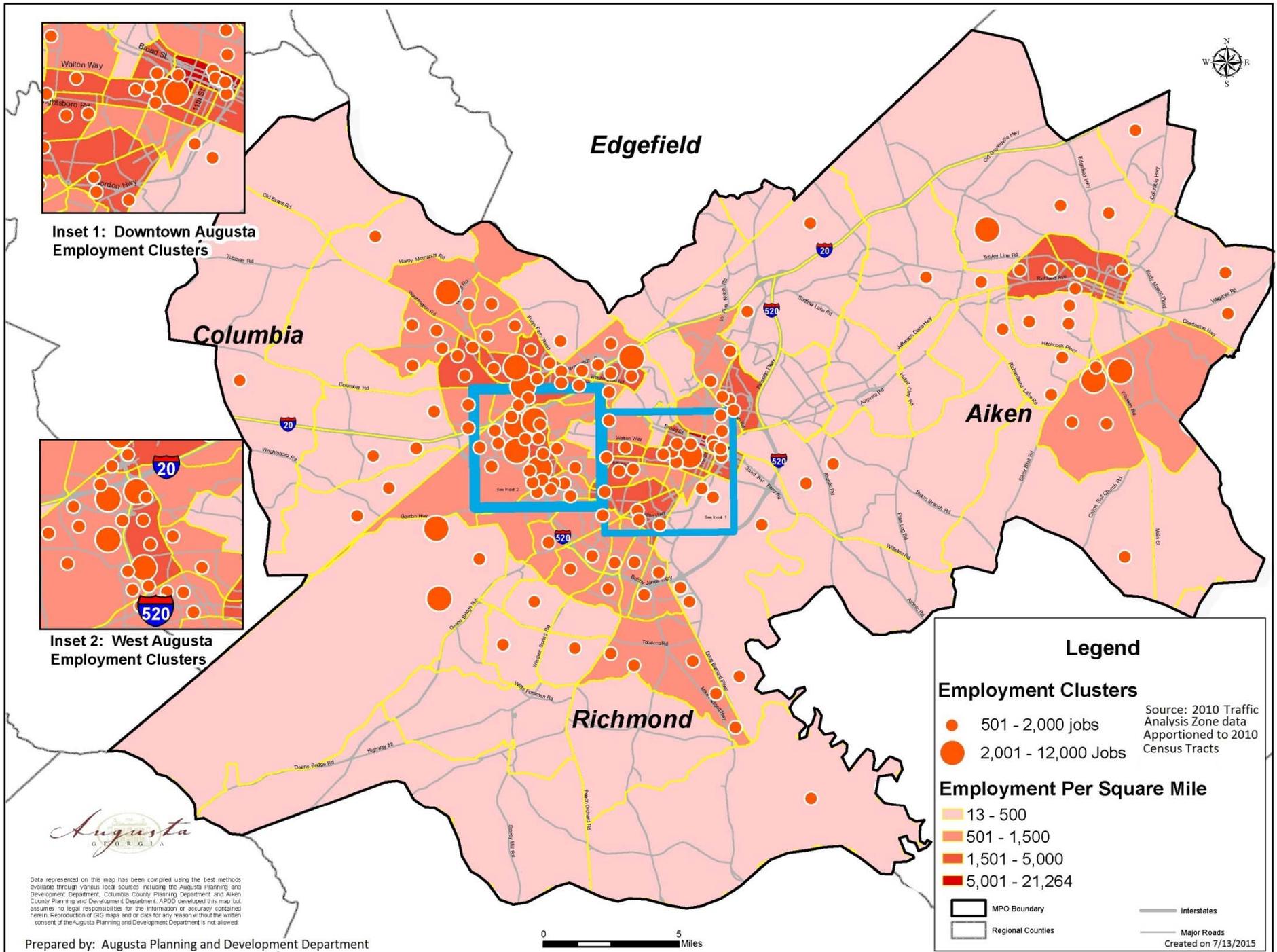


Source: ARTS Individual Counties provided estimates and forecasts

3.2.6 Future Employment in the Four County Region

Based on the projections provided from the various counties and seen in [Figure 18](#), the four-county region is expected to gain around 56% more jobs between 2010 and 2040, growing from approximately 191,037 workers to 298,160 workers. Richmond County will continue to have the largest concentration of employment in the region. However, jobs will significantly increase in Aiken and Columbia counties due to the growth in the service sector serving the rapidly growing residential populations.

Figure 18: Employment Density and Cluster 2040



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Findings regarding projected employment growth in the four-county region are presented as follows:

- High employment densities will continue to be concentrated in the region’s downtowns, e.g., Augusta GA and City of Aiken and North Augusta SC.
- Strip developments along major corridors (e.g., Washington Road, Whiskey Road, Hitchcock Parkway, US 1/25/28, etc.,) will continue to expand, as they have historically.
- The major medical districts and hospitals (e.g., GRU, University, Doctors, etc.,) and Aiken County will remain a large center of employment.
- Fort Gordon will continue to attract jobs with both government personnel, contractors, and retail and service jobs spurred to meet the needs of the area.
- The relocation of the Cyber Command Center from the National Capital Region (expected completion in 2019) will create an estimated 1,500 new jobs at Fort Gordon.

3.3 Environmental Justice

Environmental Justice (EJ) is the fair dispersal of benefits and/or burdens in a community arising from the enforcement of regulations or the endorsement of a policy instrument.

Executive Order 12898 in 1994 – commonly referred to as Title VI – established EJ principles for Federal agencies and funding programs. This Executive Order came about due to the burdens many low-income and minority populations experienced from transportation projects, as well as noise and air pollution. All of which adversely affect personal health, wellbeing and economic opportunity of these population groups.

“The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.’

-National Environmental Policy Act (NEPA)

ARTS transportation planning process ensures everyone’s transportation needs are being met, the benefits and burdens are distributed evenly, adverse effects are mitigated and there is no presence of discrimination at any level. The long range transportation planning process includes overall recommendations that support environmental justice principles for the ARTS planning practices. The ARTS environmental justice principles are used to promote a fair transportation planning process while meeting state and federal requirements.

EJ Principles:

- Avoid, minimize, or mitigate health, social, economic, and environmental effects on minority and low income populations.
- Ensure the full and fair participation by all communities in the transportation decision-making process.
- Prevent the denial of, reduction in, or delay in the receipt of benefits by minority and low-income populations.

EJ populations in the ARTS planning area analyzed at the census tract level. Two datasets were used; 1) 2010 Decennial Census to identify EJ population groups by ethnicity and age cohort; and, 2) 2008-2012 American Community Survey to identify low income population groups and persons with Limited English Proficiency (LEP).

3.4 Analysis Methodology

FHWA and FTA provides MPOs with the environmental Justice Planning Guidelines which defines specific terms and concepts for regional planning necessary to meet federal regulations. These terms and analytical concepts include:

Adverse effect – minority or low-income individuals within a given community or from the broader community; who experience a broad range of environmental, traffic, and economical disruptions and experience the denial of, reduction in, or significant delay in the receipt of benefits of FHWA/DOT programs, policies, or activities.

Disproportionately high and adverse – Adverse effects are those that are either currently or will be borne by minority and/or a low-income population; and/or more severe magnitude than the adverse effect that will be suffered by the nonminority and/or non-low-income population.

Low-income – person whose median household income is at or below the Department of Health and Human Services (HHS) poverty guidelines.

Minority – Race of people other than white, this includes: Black, Hispanic, Asian American-, American Indian and Alaskan Native or Native Hawaiian and Other Pacific Islander.

Populations – The people affected by a proposed FHWA/DOT program, policy, or activity. The primary focus is on low-income and minority people.

Elderly Population – people 65 years and older.

Hispanic – People of Spanish or Latin American origin, includes all races and genders.

Limited English Proficiency (LEP) – Persons 5 years and older speaking Spanish or Spanish Creole in the home, any other language, and speaking English “not well” according to the U.S. Census.

Zero Car – Household with no vehicles

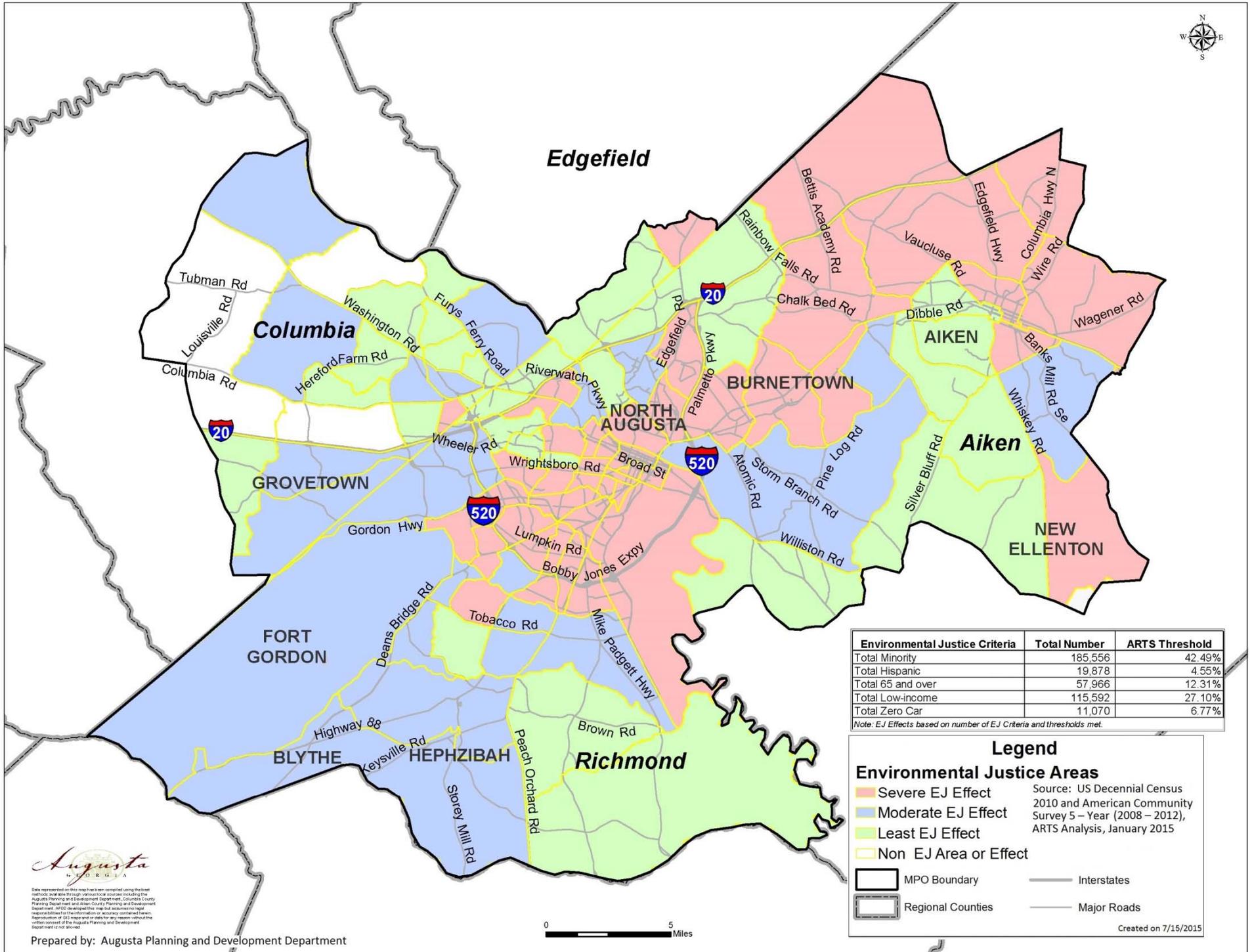
The Census tracts meeting multiple criteria are identified as being either least, moderately, or severely adversely affected, depending on the number of EJ demographic they meet. A breakdown of ARTS planning area according to the five EJ demographic and adverse effects is presented in Table 7. For example; Hispanic, elderly persons 65 and over, who do not have a car, will experience more adverse effects, than those persons who are only Hispanic or Hispanic and elderly.

Table 7: Environmental Justice Demographics

ARTS	MPO Total	Threshold
Total Population	436,719	
Total Households	174,276	
Total Minority	185,556	42%
Total Hispanic	19,878	5%
Total Elderly	57,966	12%
Total Low-Income	115,592	27%
Total Zero Car	11,070	7%

Source: U.S. Decennial Census, ACS 2008-2012

Figure 19: Environmental Justice



Environmental Justice Criteria	Total Number	ARTS Threshold
Total Minority	185,556	42.49%
Total Hispanic	19,878	4.55%
Total 65 and over	57,966	12.31%
Total Low-income	115,592	27.10%
Total Zero Car	11,070	6.77%

Note: EJ Effects based on number of EJ Criteria and thresholds met.

Legend

Environmental Justice Areas

- Severe EJ Effect
- Moderate EJ Effect
- Least EJ Effect
- Non-EJ Area or Effect

Source: US Decennial Census 2010 and American Community Survey 5 – Year (2008 – 2012), ARTS Analysis, January 2015

- MPO Boundary
- Regional Counties
- Interstates
- Major Roads

Created on 7/15/2015



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Unit of Geographic Analysis

Figure 19 illustrates how the Environmental Justice demographic is present in the ARTS planning area. The ARTS planning area includes 95 census tracts all with data provided by the U.S. Census and based on their TIGER/Line Data files. The primary data used for all Environmental Justice analysis is the 5 Year 2008-2012 American Community Survey and 2010 Decennial Census data.

Environmental Justice Criteria and Measurement

Each individual census track is analyzed based on five specific criteria and in relation to the total population within that specific census tract. These Criteria include:

- Minority
- Hispanic
- Elderly (65 and over)
- Low-Income (150% HHS Poverty Guidelines)
- Household with no vehicle

3.4.1 Determine Disproportionate High and Adverse Effect

Socioeconomic data is distributed throughout the ARTS boundary. The Environmental Justice analysis identifies any adverse impacts on the community and economic vitality based on five thresholds – minority, hispanics, elderly, low-income households, and households with no vehicle. These five criteria and their relationship to one another also help determine if there are any adverse effects within the ARTS MPO planning area.

3.4.2 Effect Analysis

Environmental Justice Criteria are also studied in conjunction with one another. Individual census tracts may meet multiple criteria; it is these particular census tracts that are considered highly and adversely affected. A second analysis of each individual census tract based on unique thresholds for each category is conducted to determine which census tracts are adversely effected and to what extent. This analysis is presented in the overall Environmental Justice Map illustrating which census tracts meet single or multiple criteria based on the following classifications of adverse effects.

- Not adversely effected
- Least adversely effected (1 criteria)
- Moderate adversely effected (2 criteria)
- Severe adversely effected (3 or more)

3.4.3 Needs Assessment

ARTS EJ Transportation needs include

1. Public Transit in ARTS has developed incrementally and expanded upon with very little visionary planning, leaving some areas distant from any access or availability.
 - Bus stops are located at inconvenient spots along major arterial and collector roads away from neighborhood, commercial, or residential centers.
 - Recreation centers, parks, shopping venues, and employment centers are outside any transit stops.
 - Transit ridership has declined due to improved traffic management, moreover, lack of awareness of transit availability.
2. Employers, Neighborhood Organizations, Civic Leaders, and others require incentives to assist in transportation improvements.
 - Presenting to local speaker bureaus, civic leagues, neighborhood organizations and churches while gathering information from them.
 - Publicizing all research, documents, plans, and projects through city webpage as well as independent transportation planning web portal.
 - Creating public and private partnerships with local stakeholders, organizations, and communities.
3. Alternative transportation is available in the ARTS region but coverage is limited
 - Pedestrian safety improvements continues to expand throughout the area but many neighborhoods lack walkability

3.4.3.1 Highway and Freeway Analysis

New construction and future improvements to both the I-20 and I-520 will help all residents within the MPO area as well as those outside. Enhancements to I-520 with the assistance of Federal funds will assist in developing a stronger link to minorities and low-income people living in southern portions of Richmond County. Future High Occupancy Vehicle lanes, additional lanes and access points to the highways and freeways will help improve vehicular circulation and make local roads safer for pedestrians and non-commuting travelers. This will also reduce travel time through improved traffic conditions along Federal highways for distance commuters between Columbia, SC and Atlanta, GA while simultaneously refining linkages between Aiken and Richmond Counties, and improving access to major employers and healthcare in the region.

3.4.3.2 Local Roads Analysis

Maintenance, expansion, and creation of new local roads will benefit minorities and low-income residents throughout the ARTS area providing better access to alternative travel routes, improved traffic conditions, and reduced travel time. People living in west Columbia County outside the MPO boundary will be able to drive into the urban areas of Columbia County, GA in less time than before improvements were made to local roads. Currently, people living outside Columbia County's portion of ARTS must travel fifteen miles to access government facilities, central business district, and other urban amenities. People living in Aiken County, SC outside the ARTS must travel even further – an average of 20 miles – to access the government and business facilities of North Augusta, SC and Augusta, GA. People in Richmond County are able to access a variety of alternative and improved local routes and reduced congestion within the County while also accessing surrounding counties in less time. Improvements to local roads in these counties will facilitate better access for minorities and low-income people who live outside the ARTS. Both Environmental Justice and non-Environmental Justice Area within the ARTS will benefit from improved local roads while the burden to enhance them is distributed evenly throughout the four counties.

3.4.3.3 Pedestrian Analysis

ARTS Bicycle and Pedestrian Plan as part of the Long Range Transportation Plan documents the various pedestrian oriented transportation developments occurring throughout the area. Many residents of all races, age, income, and ability now have access to greater avenues for walking, cycling, and recreation. Aiken County, GA continues to promote Safety Routes to School by expanding it to other schools throughout the County while Augusta, GA promotes its Age-Friendly designation by GA AARP through walkability surveys in neighborhoods throughout the County. Columbia County, GA is ensuring pedestrian safety by insisting on sidewalks in any new construction and road improvement projects.

3.4.3.4 Public Transit Analysis

Best Friends Express in Aiken County, South Carolina and Augusta Public Transit in Richmond County, Georgia continue to provide public transportation for residents throughout their service areas. Both transit operators constantly seek new opportunities to expand their service to other minority and low-income neighborhoods so even more people may have access to public transportation. Columbia County continues to promote their non-fixed route service through marketing, where people of all income levels can make reservations from the comfort of their home and be delivered to the destination of their choosing. Refer to the Augusta Public Transportation Title VI Program for more detail information on the local public transportation.

3.4.4 Findings

ARTS continued efforts to ensure environmental justice within its planning area are based on some of the findings based on the analysis presented. Transportation projects that accomplish the following two criteria ensure that environmental justice population needs and challenges are addressed. The Long Range Transportation Plan various modes are documented below.

1. The highway system consisting of I-520 and I-20 which bisect the counties in the region primarily between Columbia and Richmond County in Georgia and Aiken County in South Carolina, benefits all four county environmental justice areas.

Minority and low-income populations are located outside each of the four county urban cores but all within the ARTS planning area. Age and racial demographics are equally distributed throughout the metropolitan planning area. Constant road maintenance, improvements and expansion of the two highways are critical for the ARTS MPO area. Each of the counties are anticipating population and employment growth while more and more commuters continue to travel along these two highways. Planned HOV lanes, expansion of existing system, installation of additional access point, and other necessary improvements to the highway network will provide greater safety for elderly and slow drivers while allowing others to travel more freely.

2. Public transportation focuses primarily on the environmental justice areas and is always attempting to expand into other minority and low-income neighborhoods.

Public Transit fiscal costs accounted for only 7% in the ARTS LRTP 2035 Plan. Richmond County's 10 fixed bus routes and Aiken County's 3 fixed-bus routes continue to provide minority and low-income residents with the public transit needs while seeking to expand into other neighborhoods. Columbia County's rural transportation on-demand route currently is not assisted by the ARTS, it is a self-sustaining system implemented by the county as an independent means to addressing their environmental justice population. Public transportation providers are planning to expand their marketing initiatives in an effort to increase ridership and will eventually be linked to park and ride facilities throughout the ARTS area.

3.5 Land Use Patterns, Growth & Development

In planning, land uses are generally categorized as residential, commercial and industrial. As development becomes more systematic, various degrees of land uses can be observed. Zoning is a land management tool adopted by cities and counties to impose restrictions or limitations on the placement of proposed land uses. The ARTS planning area hosts three (3) counties, one (1) city/county consolidated, and several municipal planning authorities as presented in [Table 9](#). Each agency listed in [Table 8](#) adheres to its own land use and zoning regulations.

One of the most traditional planning practices in the United States today (as in the ARTS planning area) is single use zoning codes (i.e., Euclidean zoning), which separate and isolate land uses into distinct districts characterized by a single land use. Best planning practice has revealed that: 1) land uses are shaped by planning and the transportation linkages that serve them; and, 2) single use zoning practices disrupts the natural synergy between land uses and encourages urban sprawl.

A consolidated land use map for the ARTS planning area was produced for the Transportation Vision 2040 LRTP. Creating a composite land use map representing the ARTS enabled: 1) assessment of current land uses in the ARTS planning area; 2) visual understanding of land uses identifying development trends, and, 3) identification of the linkages between development patterns, travel trends and transportation corridors. [Figure 20](#) presents existing land use in the study area according to the American Planning Association (APA) Land Based Classification. The methodology of consolidating the four county land use maps into one aggregate map representing current land uses is presented in [Appendix B](#).

Table 8: *Planning Organizations in ARTS*

Jurisdiction	County/City	Organization
County	Aiken County	Aiken County Planning and Development
	Columbia County	Columbia Planning Department
	Edgefield County	Building & Planning Department
City	Aiken	City of Aiken Planning Department
	Blythe	Blythe Planning Commission
	Burnettown	Aiken County Planning and Development
	Evans	Columbia Planning Department
	Grovetown	Grovetown Planning and Zoning
	Hephzibah	City Clerk
	New Ellenton	New Ellenton Planning Commission
	North Augusta	Planning & Development
	Augusta-Richmond	
City/County	County	Augusta Planning and Development

Source: ARTS

The existing composite land use map (*Figure 20*) is current as of May 2015. It consists of nine (9) standard land use classifications described as follows:

1. Residential: All types of residential categories and densities.
2. Commercial: General business uses such as retail sales, services, and entertainment facilities.
3. Office: Exclusively for professional office uses.
4. Industrial: Industrial business uses such as warehousing and wholesale trade facilities, manufacturing facilities, processing plants, factories, and other similar uses.
5. Public Institutional: Government and institutional land uses, including city halls and government building complexes, police and fire stations, libraries, post offices, schools, prisons, etc. Examples of institutional land uses include college campuses, hospitals, churches, and cemeteries, etc.
6. Transportation/Communication/Utility: includes transportation routes, airports, public transit stations, power generation plants, railroad facilities, cell towers, and other similar uses.
7. Parks, Recreation, and Conservation: includes both active and passive recreation land uses. Examples include city parks and recreational facilities.
8. Agriculture: includes land use exclusively related to agriculture and farming.
9. Forestry: includes land use exclusively used for commercial timber or pulpwood harvesting or similar uses such as woodlands not in commercial use.

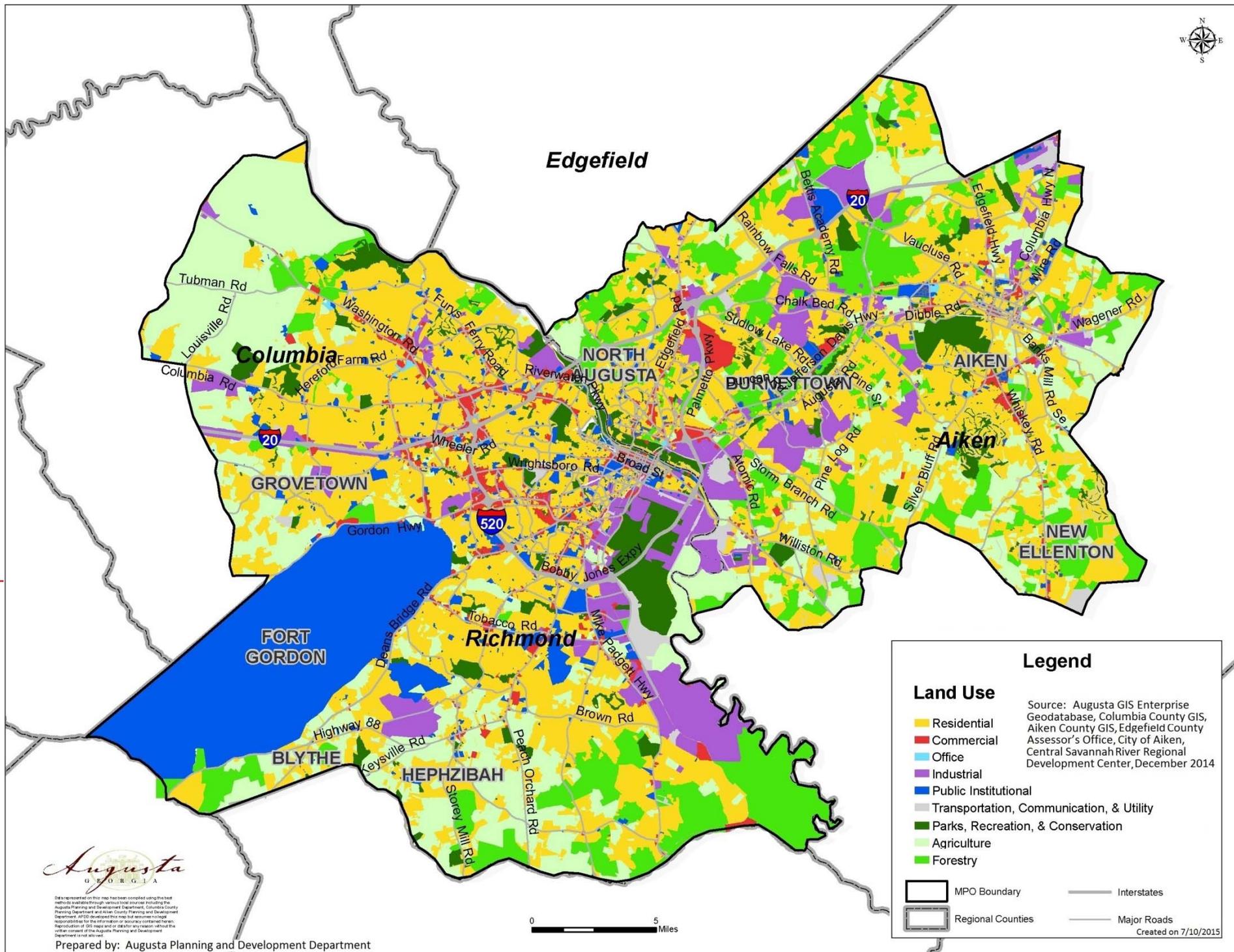
The land use map contains nine categories based on data collected from each of the four counties³. Two uses, commercial and office, are quite similar but portrayed differently on the map and land use planning in general. Commercial is a more wide-ranging category that includes office, retail sales and services and repair-oriented uses. The office category is particularly directed to office uses. For example, it is common to find office uses in areas designated for commercial, but many commercial uses such as retail sales (i.e. general sales, personal, entertainment and repair-oriented services) are largely prohibited in areas designated for office. In addition, an analysis of the map reveals slight discrepancies on how the various jurisdictions classify commercial and office uses. It appears that Columbia County makes one of the clearest delineations between the two categories. Conversely, the highly populated Richmond County is almost entirely designated central business districts for commercial, with the highest concentration of office in an established medical park, south of the I-20 / I-520 interchange.

³ Aiken, Columbia, and Edgefield Counties provided Zoning Data, not Land Use. Land Use map based on Richmond County Land Use and APA Land Base Classification Standards.

The ARTS planning area is primarily urban, suburban, and rural in terms of development patterns. Unlike the traditional growth patterns that in the past radiated from the urban core (e.g., downtown Augusta, Aiken and North Augusta), in recent decades land development has occurred sporadically without continuity, or form. This development can be observed in parts of Aiken and Columbia Counties.

Residential development is the dominant land use in the study area, 32% overall (*Tables 9 and 10*). Another top land use is forestry and agriculture. However, established patterns of commercial development are generally located in the historic urban cores (e.g., downtown Augusta, Aiken and North Augusta) and nearby major regional thoroughfares. For example, Bobby Jones Expressway, Gordon Highway and Washington Road in Richmond County; Belair Road, Washington Road and Evans to Locks Road in Columbia County; and, Jefferson Davis Highway, York Street and west Buena Vista in Aiken County have become significant centers for commercial development.

Figure 20: Land Use



Data represented on this map has been compiled using the best methods available through various tools, including the Augusta Planning and Development Department, Columbia County Planning Department and Aiken County Planning and Development Department. All GIS developed from map data sources are high resolution. The information or sources contained herein, reproduction of GIS maps and/or data for any reason without the written consent of the Augusta Planning and Development Department is not allowed.

Prepared by: Augusta Planning and Development Department

Legend

Land Use

- Residential
- Commercial
- Office
- Industrial
- Public Institutional
- Transportation, Communication, & Utility
- Parks, Recreation, & Conservation
- Agriculture
- Forestry

Source: Augusta GIS Enterprise Geodatabase, Columbia County GIS, Aiken County GIS, Edgefield County Assessor's Office, City of Aiken, Central Savannah River Regional Development Center, December 2014

- MPO Boundary
- Regional Counties
- Interstates
- Major Roads

Created on 7/10/2015

Table 9: Total Land Use

Land Use	Sq. Mi.*	%
Residential	282.2	36%
Agriculture	161.3	20%
Forestry	108.8	14%
Public Institutional	95.3	12%
Industrial	59	7%
Parks, Recreation, & Conservation	40.7	5%
Commercial	25.5	3%
Transportation/Communication/Utility	14.6	2%
Municipal Specific Land Use zone	4.8	1%
Office	1.4	0%
Total	793.6	100%

Source: ARTS

* Does not include roads

Table 10: Land Use by County

Land Use	Richmond		Columbia		Aiken		Edgefield	
	Sq. Mi.	%	Sq. Mi.	%	Sq. Mi.	%	Sq. Mi.	%
Agriculture	57.1	17%	51.3	37%	50.4	17%	2.8	23%
Commercial	14.2	4%	3.6	3%	7.8	3%	0.1	1%
Forestry	43.2	13%	5.7	4%	57	19%	3	25%
Industrial	27	8%	5.4	5%	25	8%	0.4	3%
Office	0.4	0%	0.5	0%	0.5	0%	0.7	6%
Parks & Conservation	19.7	6%	6.8	4%	15	5%	0.2	2%
Public Institutional	83	24%	3.6	3%	8.6	3%	4.7	39%
Residential	94.2	27%	59.2	41%	127.7	43%	0	0%
Transportation/Utility	6.9	2%	0.8	40%	7.1	2%	0	0%
Total Area	345.7	100%	136.9	100%	299.1	100%	11.9	100%

Source: ARTS

Proximity to major arterials provides convenient access and accommodates greater traffic volumes that traffic intensive land uses tend to generate. The land use of the central business district of Augusta GA or Aiken SC is almost entirely commercial and/or public institutional. Larger urban areas, particularly in Richmond and Columbia Counties, contain more commercial land uses than their rural counterparts. Many of the industrial areas in the ARTS exist east and south of Downtown Augusta, GA, north of the City of Aiken, SC, and northern areas of Columbia County. In the western portion of Columbia County, as well as in other areas, the aggregate mining field in Columbia County is broadly coded as industrial. Clusters of industrial development are also associated with industrial parks and airports. Industrial uses tend to comprise larger tracts of land in comparison to commercial tracts.

Agricultural land uses, i.e., areas for crops and poultry, are generally situated along the periphery and less populated sections of the study area. This is particularly true along the western portion of Columbia County, southern Richmond County, and northern parts of Aiken County, SC. Recreational parks are spread throughout in smaller sections of the study area. For example, Phinizy Swamp Nature Park, located south of Augusta, is one of the largest contiguous parks in the region. Following the Savannah River even further south, there is a large area of forestry. Some smaller areas of forestry are found north of Aiken, in the southeast corner of the areas, and surrounding Fort Gordon. Unused/undeveloped tracts of land are found throughout the area, with the least amount in Richmond and Columbia Counties.

Richmond County is the most centrally located county in the region and contains within its boundaries; Fort Gordon, Hephzibah, Blythe and Augusta, the largest city in the study area. Richmond County is primarily residential, but is the only county in the study area where the second largest land use is forestry. While development is present throughout Richmond County, the land use map reveals that it is more concentrated around the northern section, near the urban core. Looking at land use in the remaining areas of Richmond County, 36% is residential, 17% is forestry, 9% is industrial, and 7% is agricultural. Hephzibah, Blythe, and Fort Gordon are mainly situated to the south and comprise 28% of the land area in Richmond County⁴.

Aiken County SC, the second largest county located on the eastern side of the study area, includes approximately 299 square miles. Again, the portion of Aiken County within the study area is dominated by residential land use at 38% followed by agriculture 13%, forestry 8%, and industrial at 7%. Agriculture is the second largest land use in Aiken County.

Columbia County is situated north and east of Richmond County. Land areas within Columbia County are generally residential, at 33%. Columbia County has a higher percentage of agriculture use, at 23% when compared to other counties in ARTS. Five percent of land use is industrial.

Ten percent of Edgefield County SC is within the study area of which 35% is residential. Agricultural land use is approximately 22%. Third-most common land use is forestry, at 14%. These statistics account for the portion of Edgefield that is within ARTS, not the entire Edgefield County.

⁴ Land uses provided for Hephzibah and Blythe but not Fort Gordon

There are portions of land within the study area that remain unused or without land use classification. In Richmond County, this proportion is 16%. The rates for unused lands in Aiken, Columbia and Edgefield Counties are 22%, 26% and 22% respectively. Generally, current land uses and development patterns within the study area can be characterized as typical urban/suburban in pre-established cities with rural areas further away.

3.5.1 Future Growth & Development

As identified in the population and employment growth, as well as land use trends, major economic development areas are focused in the Industrial Park in southeast Augusta, downtown Augusta, and the various medical districts. This includes Georgia Regents University, retail on I-520 by the Augusta Mall and on Washington Road heading into Columbia County. Columbia County continues to grow, increasing major retail development along Washington Road into Evans. Fort Gordon is projected to continue to produce jobs, with development coming in around major thoroughfares near the base. Downtown City of Aiken and major industrial parks such as the Savannah River Site and the Sage Mill Industrial Park will continue to attract employment to the area.

The main thoroughfares serving these active economic areas will face greater demands heading into the future. Interstate 20 and 520 will continue to serve their purpose as high volume interstate corridors. However, major arterials that link population and employment centers bear a large amount of the commuting demand for the region.

Substantial population clusters in South Augusta and near Fort Gordon use many of the north-south connectors to reach Interstate 520 and downtown Augusta, including Deans Bridge Road, Windsor Spring Road, and Peach Orchard Road. Other major roadways that continue to be developed that also serve as major commuting corridors, include Gordon Highway, Wrightsboro Road, and Washington Road.

Columbia County continued development creates added pressure on Washington Road, Riverwatch Parkway, Gordon Highway, and Columbia Road. Additional roadways within Columbia County will see additional demand as the main thoroughfares reach capacity limits.

Jefferson Davis Highway in Aiken County serves as the main roadway to link Augusta, North Augusta, Burnetown, and the City of Aiken. The growth near New Ellenton and other communities south of the City of Aiken also places pressure on Whiskey Road and Silver Bluff Road.

Many of the local and regional land use and growth plans include efforts to promote the growth and development of these areas. Proactively linking land use and transportation at the regional level. There is abundant economic opportunity to expand and develop along these corridors, as seen in their historic growth. However, it is a necessity to ensure they efficiently move persons and goods by appropriately planning the surrounding land uses.

Transportation Vision 2040 is the current LRTP for the Augusta Regional MPO. This LRTP has built upon the issues, visions, goals, needs, and recommendations found within previously completed plans and research studies since the ARTS 2035 LRTP update in 2010. The following planning studies provided guidance for Transportation Vision 2040.

Augusta-Richmond Comprehensive Plan (2008) - A document updated every ten years, taking into account all the socioeconomic, land use, transportation, environmental, infrastructure and community driving forces anticipated to occur over the next twenty years. This document is based on the Department of Community Affairs' minimum requirements for local Comprehensive Planning. While focusing primarily on Augusta-Richmond County, the document provides substantial information on the entire Augusta Metropolitan Statistical Area as a whole and the influence Augusta-Richmond County has on neighboring counties. The City of Augusta is well prepared for any change that will occur thanks to a very thorough, comprehensive and concise analysis. Planning and implementation in a uniform manner are achievable due to the valuable input from each of the communities.

Westobou: A Shared Vision Master Plan (2009) - This is a master plan focused on downtown Augusta, GA. and North Augusta, SC. An urban design plan providing a variety of opportunities dedicated to improving the interconnection of two cities linked by the Savannah River. "Champions" in the region, urban revitalization, mixed-use areas, and transportation improvements are some effective strategies proposed in the plan that will help improve the physical environments the two cities share with one another.

Realizing the Garden City: The Augusta Sustainable Development Agenda (ASDA)-2010 - comprehensive urban designs plan for Augusta-Richmond County. The plan is divided into three (3) distinct classifications: Urban, Suburban, and Rural. The document is a set of specific and strategic projects, that when implemented, will have a dramatic impact on the city and its residents. Key goals are increase economic activity and vitality, protect and enhance the environment, reinforce livable communities and neighborhoods and create effective and attractive regional linkages. Specific objectives include Strategic Action Corridors, Site-specific Projects by Type, and other initiatives.

ASDA represents the City of Augusta's first step into "new urbanism" and "smart growth." This initiative uses various components of established smart growth principles and applies them to Richmond County. Specific elements of ASDA will be included in the ARTS Transportation Vision 2040 LRTP, e.g., Strategic Action Corridors. These corridors include Augusta Way, Gordon Highway Jobs Corridor, Westobou Trace, Riverwatch Parkway, Tobacco Road and Farm to City Scenic Trail.

This plan was implemented through the Tiger II program received from both USDOT and HUD in an effort to revitalize downtown Augusta. A fifteenth Street Corridor improvement was one of the major successes benefiting from this program. Transit oriented development and other urban revitalization practices were exercised to help encourage pedestrian access and address low-income communities with housing opportunities. Other corridors seeking similar improvements include Tobacco Road, Riverwatch Parkway, Gordon Highway, Westobou Trace and Farm to City Parkway.

Reclaiming Historic Harrisburg (2011) - A Community and Stakeholder-based process advocated by Blueprints for Successful Communities, initiated by local community leaders and committed to the historic Harrisburg neighborhood. The document is an urban design plan committed to improving the quality of life, connection of the neighborhood to the city, preserving its history, and preparing for the future economic development potential for Harrisburg. The plan focuses on transportation issues such as the Broad Street corridor and the John C. Calhoun Expressway, and residential land uses. This document demonstrates the significant influence a single community has in shaping its own neighborhood through an active, vibrant, and entertaining public workshop planning process.

Missed Opportunity: Transit and Jobs in Metropolitan America (2011) - The Brookings Institute released their report titled Missed Opportunity: Transit and Jobs in Metropolitan America in 2011. The report assesses the coverage and service of transit in metropolitan areas throughout the United States. The report is a good resource for understanding the application of performance measures that evaluate the effectiveness of transit service provision. The Augusta-Richmond metropolitan area ranked in the bottom 10% for its share of working-age residents with access to transit and the average share of jobs accessible within 90 minutes via transit. Overall, the Augusta-Richmond metropolitan area ranked 98 out of 100 metropolitan areas in regards to the combined ranking of access to transit and employment.

Augusta Regional Transportation Study Bicycle and Pedestrian Plan (2012) - ARTS commissioned Alta Greenways to help improve the bicycling and pedestrian environment. The plan provided an integrated seamless framework to facilitate walking and biking as viable transportation choices throughout the entire region. The plan is based on Education and Enforcement as well as Encouragement and Evaluation. Using common urban design and traffic engineering practices, such as, complete streets, bicycle facilities, and development ordinances, the plan demonstrated how local jurisdictions, MPOs, and state DOTs can work together, improve pedestrian, and bicycle transportation in the area as a whole.

Recommendations arising from the study emphasized: 1) Education and Enforcement through police training programs and implementation of the Safe Streets Save Lives program; 2) Encouragement through the promotion of Safe Routes to School programs and car-free street events; and, 3) Evaluation through forming committees, sourcing funding, and implementing pedestrian count programs. Engineering recommendations from the study included implementing shared lane marking (sharrows), dedicated bicycle routes, and paved shoulders on highways.

Aiken County Bicycle and Pedestrian Plan (2012) – Reflective of the ARTS Bicycle and Pedestrian Plan (2012), the Aiken County Bicycle, and Pedestrian Plan present similar principles and practices. Initiating Complete Street Policies, Safe Routes to Schools programs and infrastructure improvements, as well as education and enforcement strategies; Aiken County continues its dedication to being a pedestrian friendly environment. The Aiken County Bicycle and Pedestrian Plan uses the six E's principles – Engineering, Education, Encouragement, Enforcement, Evaluation, and Equity; to institute a comprehensive planning approach to non-automotive travel.

Central Savannah River Area Regional Plan 2035 (2012) - The Central Savannah River Area Regional Commission Authority (CSRA-RC) is a planning and development agency serving thirteen counties south of the Savannah River in Georgia (an area in excess of 6,500 square miles). Every ten years CSRA updates the Regional Plan (with 20 year planning horizon) incorporating recent changes to the plan. The Regional Plan serves as a reference document for the CSRA Economic Development Strategy (CEDS) and Regionally Important Resources Plan (RIRP) as well as local County and City Comprehensive Plans.

The CSRA Regional Plan presents a broad understanding of the area’s overall transportation and community facilities, land use, natural and environmental resources, economic development, population, housing, and intergovernmental coordination. The Regional Plan also documents a specific goal that relates directly to ARTS: *ensure the provision of community facilities and services throughout the state to support efficient growth and development patterns that will protect and enhance the quality of life of Georgia's residents.* Like CEDS, the Regional Plan demonstrates how large regional agencies can provide valuable information to cities and counties in their independent efforts to improve local quality of life.

Lower Savannah Council of Governments 2012 Comprehensive Economic Development Strategy (2012) - The Lower Savannah Council of Governments (LSCOG) is responsible for the economic development of six counties encompassing 3,966 sq. miles and 45 municipalities in South Carolina. Similar to CEDS, LSCOG Comprehensive Economic Development Strategy incorporates transportation improvement projects, enhancing bicycle and pedestrian facilities and effectively accommodating freight and rail “through” movements. The LSCOG CEDS recommends specific community improvement strategies such as design standards to accommodate truck traffic, and the implementation of a regional Bicycle and Pedestrian Plan. Aiken County is the only county that is part of the ARTS and LSCOG. Other counties in LSCOG include Allendale, Bamberg, and Barnwell in South Carolina.

Northside Transportation Study (2012) - The Northside Transportation Study was prepared for the City of Aiken by CDM Smith and Fuss & O’Neill. The purpose of the plan was to provide an independent assessment of the transportation improvements that were recommended in the Northside Comprehensive Plan. The plan draws upon the completed ARTS LRTP 2035 for the transportation demands of roadways and broader recommendations.

US 1/US 78 Corridor Study (2012) - Completed in 2012 by CDM Smith and the Lawrence Group. The US 1/US 78 Corridor Study provided the vision for a 12-mile stretch of the highway from the City Aiken, SC; to Augusta, GA. Significant issues addressed in the study were highway safety and congestion. Recommendations included access management, roadway design, and coordinated traffic signals.

ARTS Advanced Transportation Management System (ATMS) Master Plan (2013) - The ARTS Advanced Transportation Management System (ATMS) Master Plan was most recently updated in December 2013. With the rapid development of technology, the purpose of the ATMS document addresses current transportation issues and concerns in the ARTS planning area through accommodating and facilitating technology-related transportation improvements, i.e., Intelligent Transportation Systems (ITS). Noting that ARTS LRTP aims to provide infrastructure improvements that enhance livability and mobility within the region, employing ITS can help achieve this. ITS improvements include state-of-the-art Traffic Signals, Dynamic Messaging Signs (DMS), Surveillance Cameras, and Fiber Optic Communications, etc.

Comprehensive Economic Development Strategy 2013-2017 (2013) - The Central Savannah River Area Regional Commission (CSRA-RC) prepared CEDS for the largest political region in Georgia, encompassing thirteen counties south of the Savannah River. Augusta is considered the economic core of the region. CEDS assesses and evaluates local conditions and develops goals and strategies that if implemented can meet community needs and values. CEDS is required to qualify for Economic Development Administration (EDA) federal assistance and is a prerequisite for Economic Development District (EDD) designation. As a strategy document, CEDS is also used for County Comprehensive Plans, the Augusta Area Diversification Initiative (AADI), and Special Economic Development Plans and Studies. CEDS presents goals and actions that permit the region to expand its tourism economy, develop and promote an infrastructure plan, and support regional transportation funding; benefiting the entire CSRA region and beyond, including those areas north of the Savannah River.

Congestion Management Process (2010-2014) - The Congestion Management Process (CMP) is an annual travel time survey along major roads in the ARTS to identify which routes suffer from congestion. CMP also evaluates strategies and projects that are implemented to alleviate traffic congestion in the ARTS area. Highway traffic flow performance is measured by the difference between actual travel flow speeds compared to the posted speed limit. The grades range from Not Presently Congested (NPC), where average speeds are at or above the posted speed limit; to Seriously Congested (SC), where average speeds are at 30% or below the posted speed limit. The higher the congestion, the more frequently a roadway is surveyed in future years, with seriously congested roads surveyed annually.

Dougherty Road Corridor Study (2013) - The Dougherty Road Corridor Study was prepared in 2013 by URS for the City of Aiken and Aiken County. Dougherty Road is a one-mile collector road that connects two major corridors in Aiken County - Whiskey Road and Silver Bluff Road. Due to its current high utilization and growing utilization into the future, the corridor study sought to provide recommendations for improvements to both the transportation infrastructure and surrounding built environment. Recommendations included road widening and extensions, intersection improvements, and water, sewer, and storm water drainage improvements.

The 2013 Augusta-Richmond County Analysis of Impediments to Fair Housing Choice (2013) - Prepared for the Augusta Housing and Community Development Department (AHCDD) by Western Economic Services, LLC, and this report assess how the City of Augusta and Richmond County provide fair housing to residents. In order to qualify to receive funds under the Fair Housing Act, jurisdictions must analyze and certify that they are taking actions to overcome any identified impediments to provide housing for low-income citizens, e.g., mortgage availability or redlining, etc. Although focusing particularly on housing, the study provides useful insights into community transportation issues, affecting low-income households.

SC 19 (Edgefield Highway) Corridor Study (2014) - The City of Aiken and Aiken County, along with consultants DRMP during 2014 conducted a corridor study of SC 19 Edgefield Highway situated in South Carolina. The corridor traverses 11 miles from Hampton Avenue in downtown Aiken to the Aiken County - Edgefield County line. The diverse abutting land uses and the changing road functional classifications of adjoining roadways throughout the 11-mile stretch initiated the need for a detailed study to be undertaken. The study directly assesses the mobility needs and community vision (20-year planning horizon) along the corridor through identifying goals for transportation improvements along the corridor. Other planning aspects presented in the study include access, safety, capacity, development, and better mobility for residents, businesses, and users.

3.6 Transportation System

3.6.1 Highways and Roads

Primary functions of a roadway are to: 1) facilitate safe and efficient movement between an origin and a destination (i.e., travel); and, 2) provide access to adjoining lands or to other roads (i.e., access). For many years, these functions focused exclusively on the movement of people and goods in motorized vehicles. Land use planning that prioritized travel and access by motorized transportation resulted in strip development, urban sprawl and the growth of disadvantaged populations who did not have access to a personal vehicles and experienced limited mobility. Recently, road function has widened to take into account the mobility and access needs of non-motorized transportation options.

The Interstate Highway System (aka Dwight D. Eisenhower System of Interstate and Defense Highways) commenced in 1956 has often been referred to as the Greatest Public Works Project in U.S. History. Interstates serve the national purposes of moving people and goods throughout the US. ARTS is transected by two interstates, I-20 (an east-west interstate) linking Atlanta GA and Columbia SC; and the I-520, (aka Bobby Jones Expressway in Georgia and as Palmetto Parkway in South Carolina), a 23.6 mile auxiliary circumferential interstate. Major routes transecting the study area include:

- I-20 an 18 mile east-west interstate linking Atlanta GA and Columbia SC.
- I-520 (aka Bobby Jones Expressway in Georgia and as Palmetto Parkway in South Carolina), is a 23.6 mile auxiliary circumferential interstate. I-520 begins at the I-20 in the northern part of Augusta, encircles Augusta and converges with I-20 in North Augusta SC.
- US 1 Georgia: A south to north highway connecting Charlton County in South Georgia with Richmond County.
- US 1 South Carolina: Traversing the Sandhills Region of South Carolina this highway connects North Augusta in Aiken County with Wallace in Marlboro County SC.
- US 25 Georgia: A typical 4 lane highway that connects Brunswick GA to Augusta GA before crossing the Savannah River into South Carolina.
- US 25 South Carolina: A highway that connects North Augusta SC to the SC and North Carolina state line near Hendersonville NC.
- US 78 Georgia: A highway connecting Haralson County GA with Augusta GA.
- US 78 South Carolina: Beginning at the Georgia South Carolina state line in North Augusta US 78 continues to Charleston in Charleston County SC.
- US 278 Georgia: An east–west highway that connects Augusta GA with Cedartown GA on the Georgia Alabama state line.

- US 278 South Carolina: An east–west highway connecting North Augusta SC with Hilton Head Island SC.

3.6.2 Functional Classification of Highways

Functional classification is the process by which streets and highways are grouped into classes based on the character of traffic service that they are intended to provide to the motoring public. Each class has specific design criteria according to its intended purposes. For example, high speed limited access highways will have different design criteria when compared to a local road designed for low speeds with multiple access points. There are three highway functional classifications as defined by the FHWA: arterial (Interstates, Freeways and Expressways, and principal and minor arterials), collector (major and minor), and local described as follows:

Table 11: Functional Classifications

Class	Description
Interstate	Highest classification of Arterials designed and constructed with mobility and long-distance travel in mind. These roadways are officially designated as Interstates by the Secretary of transportation.
Other Freeways and Expressways	Similar to interstates. These roadways have directional travel lanes usually separated by some type of physical barrier, and their access and egress points are limited to on- and off-ramp locations. Like interstates, they are designed to maximize mobility with no direct land use access.
Other Principal Arterials	Serve major centers of metropolitan areas. These roadways provide mobility so traffic can move from one place to another quickly and safely. Prioritizing higher mobility with a low degree of access enables travel at the highest level of service for the longest uninterrupted distance.
Minor Arterials	Provide service for trips of moderate length and serve geographic areas that are smaller than their higher Arterial counterparts and offer connectivity to the higher Arterial system.
Major Collectors	Collectors serve a critical role in the roadway network by gathering traffic from Local Roads and funneling them to the Arterial network. Major collectors tend to provide more mobility than access. They are longer in length, have lower connecting driveway densities, have higher speed limits, and spaced at greater intervals, have higher AADT, and may have more travel lanes than minor arterials.
Minor Collectors	Minor collectors generally have lower AADT and provide more access than mobility.
Local	Consists of all roads not defined as an arterial or collector. These roadways provide access to homes, businesses, and other property (with limited or no through movement) by prioritizing lower mobility and high accessibility.

Source: ARTS, GDOT and SCDOT

The above seven functional classifications are used by GDOT and SCDOT. FHWA Directive 23 CFR 470 states that the State transportation agency has the primary responsibility for developing and updating the functional road classification in rural and urban areas and existing roads and streets in its jurisdiction. [Table 11](#) summarizes functional classification of the highway system within the ARTS boundary.

Table 12: Road Miles by Functional Classifications (in miles)

	Aiken	Edgefield	SC	Columbia	Richmond	GA	Total
Interstate	29	-	29	10	22	32	61
Other Freeways and Expressways			-		8	8	8
Other Principal Arterials	69	2	71	24	108	132	203
Minor Arterials	96	2	98	53	121	174	272
Collector	204	7	212	31	72	103	315
Local*	1,205	40	1,245	556	962	1,519	2,764
Total	1,603	52	1,655	674	1,293	1,967	3,622

Source: ARTS, GDOT and SCDOT

Notable points from [Table 12](#) are:

- Local roads make up the majority of ARTS roadways, over 75%, including subdivisions.
- Interstates, freeways and expressways, e.g., I-20 and [I-520](#) account for only 2.8% of the road network, and this includes on and off ramps linked to them.
- Collectors and Arterial roads account for the second largest share of ARTS roadways.

3.6.3 National Highway System

The National Highway System (NHS) is a network of strategic highways within the US that were developed by the United States Department of Transportation (USDOT) in cooperation with the states, local officials, and MPOs. As a strategic network, these roadways are important to the nation's economy, defense, and mobility. There are five NHS classifications defined as follows:

- Interstate: “A superior network of limited access, divided highways offering high levels of mobility while linking the major urban areas.”⁵ Example: I-20 and I-520.
- Other Principal Arterials: Highways in rural and urban areas, which provide access between an arterial and a major port, airport, and public transportation facility. Example: US Highway 278 in South Carolina.
- Strategic Highway Network (STRAHNET): A network of highways which are important to the United States' strategic defense policy and which provide defense access, continuity and emergency capabilities for defense purposes. Example: US Highway 1 in South Carolina.
- Major Strategic Highway Network Connectors: Highways that provide access between major military installations and highways that are part of STRAHNET.
- Intermodal Connectors: Highways providing access between major intermodal facilities and the other four subsystems making up the NHS.

⁵ Highway Functional Classification: Concepts, Criteria and Procedures 2013

Gordon Highway (US Highway 78) from the I-520 to Fort Gordon is classified as a STRAHNET Connector. US Highway 1 (Deans Bridge Road) and US Highway 25 (Peach Orchard Road) south of their intersection with I-520 are classified as Non-Interstate STRAHNET Routes.

3.7 Regional Travel and Commuting Patterns

By examining regional travel through the commuting patterns between population and employment centers, the preferred transportation mode, travel time, and other system characteristics, we are able to better understand the travel needs of the region. Understanding how the system functions as a whole will help adequately plan for future transportation needs.

Table 13 presents data detailing commuting patterns (where people live and work) between counties within the study area (*Figure 21*). Over half (56%) of the working age population - those age 16 and above - living in Richmond County, work in Richmond County. In Aiken County, 46% of the working age population works in the county. Both Edgefield and Columbia County currently serve as bedroom communities - large shares of their residential population are commuting outside their county for work. A large share (42%) of Columbia County residents commutes to work in Richmond County; 27% of Columbia County residents work in Columbia County, while 42% work in Richmond County.

Table 13: County to Work by County of Residence

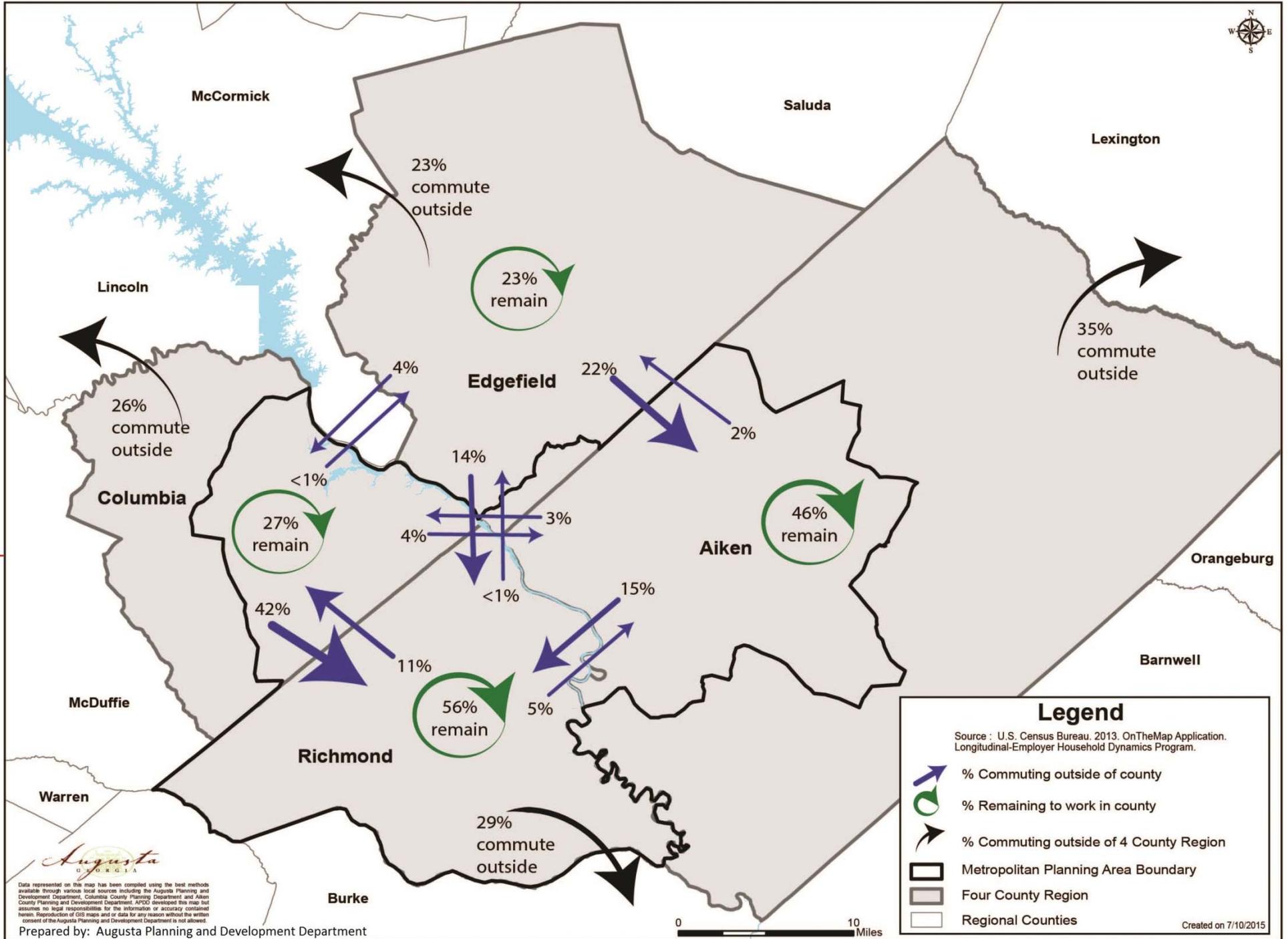
Live in...	Work In...							
	Columbia County		Richmond County		Aiken County		Edgefield County	
Columbia	12,284	27%	19,434	42%	1,860	4%	154	0%
Richmond	7,675	11%	40,496	56%	3,346	5%	208	0%
Aiken	1,564	3%	8,733	15%	27,251	46%	1,049	2%
Edgefield	362	4%	1,363	14%	2,126	22%	2,187	23%

Source: U.S. Census Bureau, LODES 2010 Residential and Work Area Characteristics

Larger regional commuting patterns between the ARTS planning area and other nearby metro areas include Atlanta, GA and Columbia, SC. Columbia and Richmond counties tend to commute to and from Atlanta, GA while Aiken and Edgefield counties tend to commute to and from Columbia, SC.

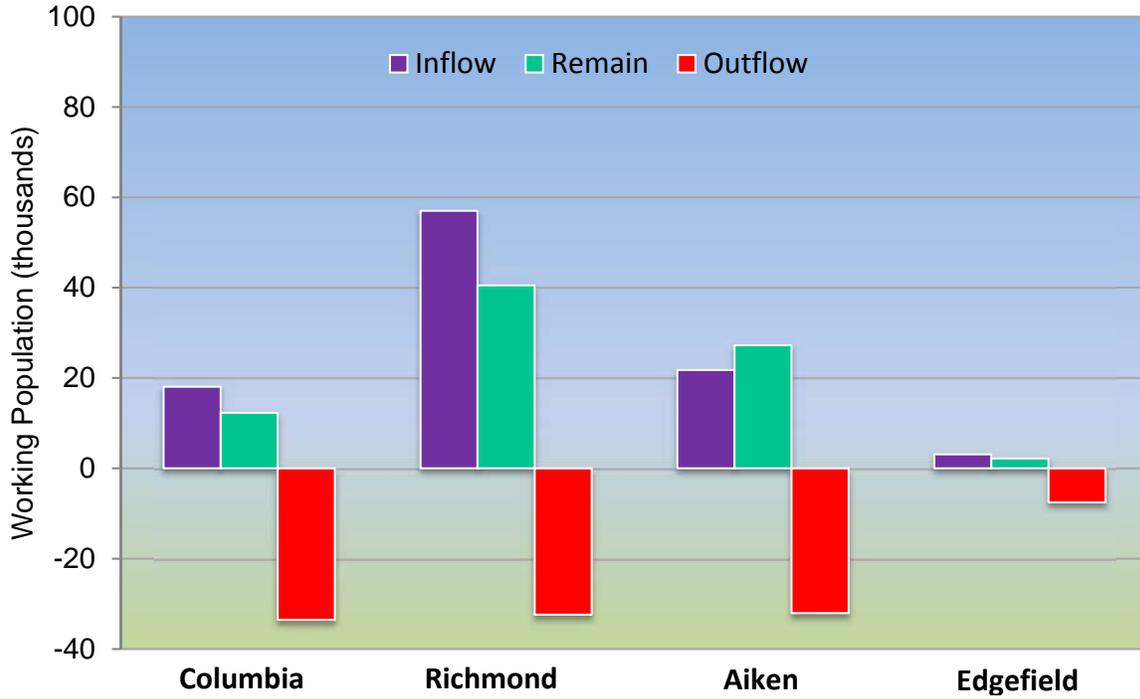
Using the same data presented in *Figure 21*, *Figure 22* depicts the numerical inflows, outflows, and remaining workforce for each county. Positive numbers represent workers who are either working in the county they live in (Remain) or are coming into the county to work from another county (Inflow). Negative numbers represent those who live in the county but commute out of the county for work (Outflow). Both Richmond and Aiken Counties show a net increase of workers when the commutes are totaled, while Columbia and Edgefield have a net decrease. As a whole, more workers commute into the ARTS planning area than leave -a net increase of 76,656 workers.

Figure 21: Commuting Patterns



Data represented on this map has been compiled using the best methods available through various local sources including the Augusta Planning and Development Department, Columbia County Planning Department and Aiken County Planning and Development Department. ARTS developed this map but assumes no legal responsibilities for the information or accuracy contained herein. Reproduction of GIS maps and/or data for any reason without the written consent of the Augusta Planning and Development Department is not allowed.

Figure 22: Individual County Commuter Flow 2010



Source: US Census Bureau, Longitudinal Employer-Household Dynamics, 2010

3.7.1 Travel Time to Work

Average commute travel times have slightly decreased for the ARTS as a whole comparing 2000 Decennial Census data to the 2008-2012 ACS data, as shown in [Table 14](#). Richmond County shows the shortest mean travel time of the four counties. This is most likely due to the above findings that Richmond County has a larger share of its labor force population working in the county. Resulting in shorter home-based work trips, requiring less distance to travel or commute.

Table 14: Mean Travel Times to Work

	Columbia	Richmond	Aiken	Edgefield
Census 2000 (in minutes)	25.3	22.2	24.8	27.1
ACS 2008-2012 (in minutes)	24.4	20.1	25.4	26.6

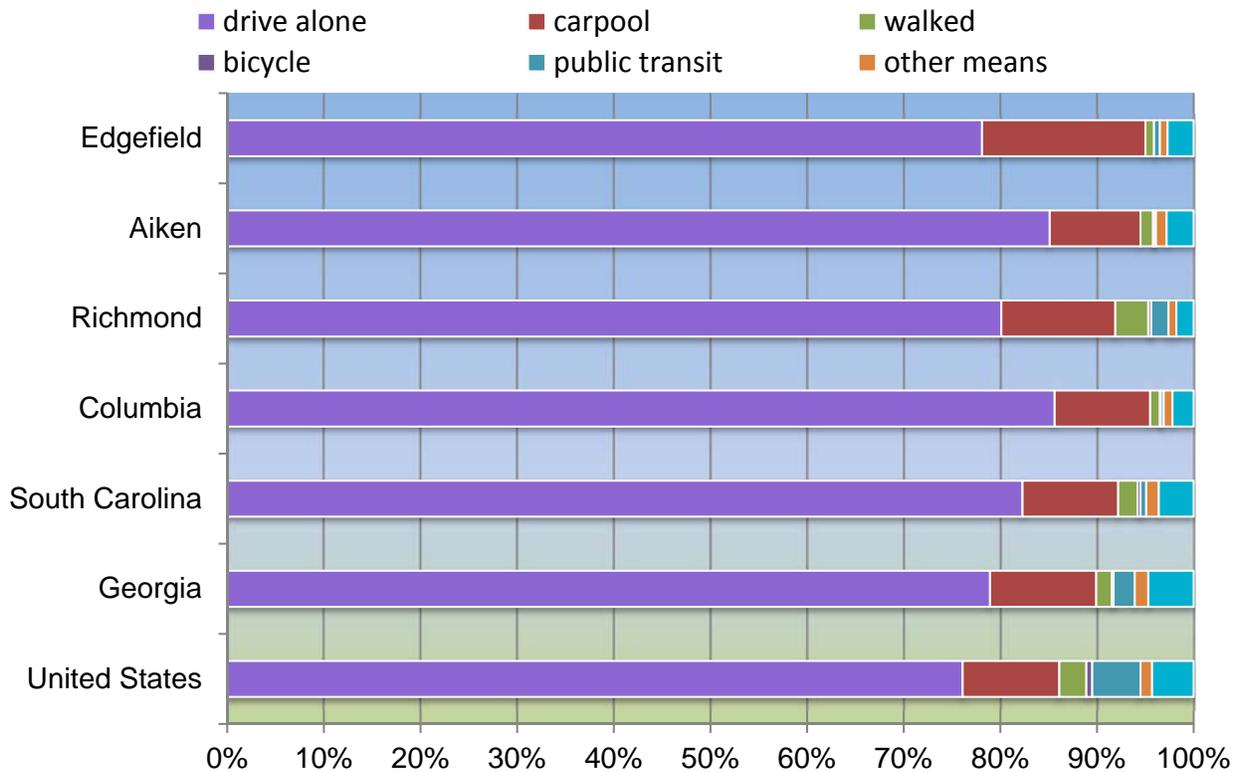
Source: US Census Bureau 2000, 2008-2012 American Community Survey 5-Year Estimates

3.7.2 Journey to Work by Travel Mode

As previously mentioned, the journeys to work trips are predominantly by private vehicles. As seen in *Figure 23*, the share of the various mode types has changed very little over the past ten years, with the use of the private vehicle averaging 95% of mode split. Vehicle use in Richmond County being slightly lower, with around 92% of workers using private vehicles. This difference of 4% is due to higher shares of those walking, biking, and using public transportation in Richmond County.

Carpooling takes in around 11%-12% of private vehicle trips for counties within the ARTS area. Edgefield County appears to have the highest percentage of workers carpooling, equating to almost 17% of personal automobile trips. *Figure 23* illustrates the percentage of total transportation by travel mode.

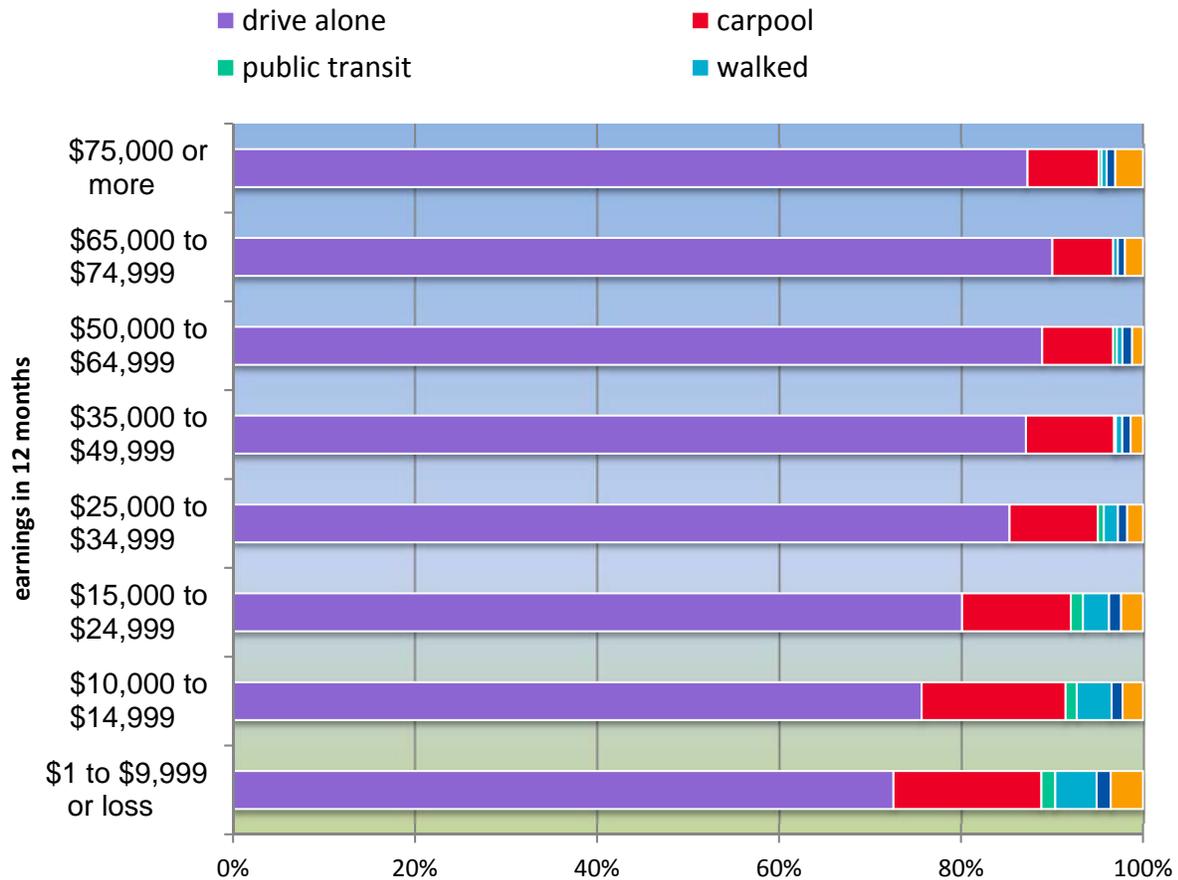
Figure 23: Journey to Work by Travel Mode



Source: US Census Bureau 2000, American Community Survey 2008-2012 5-Year Estimates

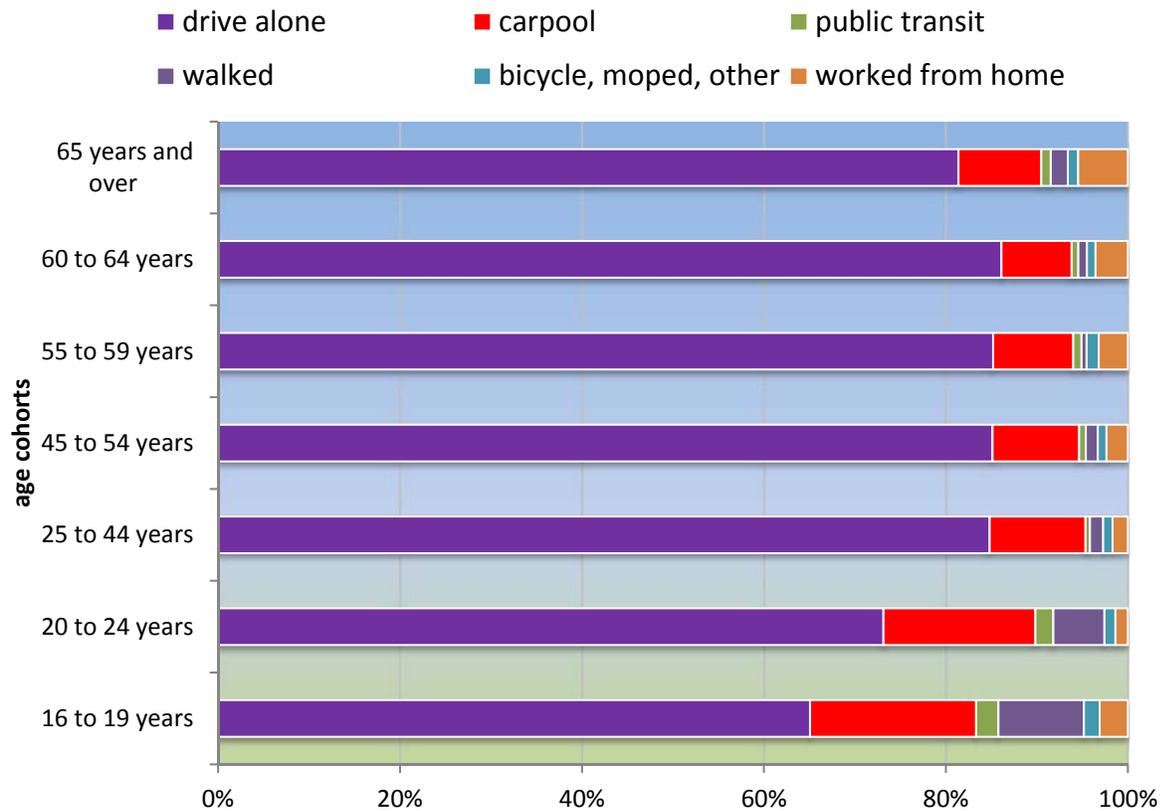
Figure 23 illustrates the percentage of transportation by travel mode. As a whole, the population predominantly uses single occupancy driving as the mode of choice. The shares journey to work travel mode tend to change depending on particular segments of the population. *Figure 24* provides the breakdown of mode choice by earnings, while *Figure 25* shows mode choice by age cohorts. Lower income groups tend to use alternative transportation modes, for example, bicycle, walking and/or carpooling, more frequently. This is an important aspect to consider when planning for future commuting needs. Citizens utilize various transportation modes other than the personal vehicle are dependent on an effective and efficient multimodal transportation system. A poor transportation system, compounded by a sprawling development pattern that further separates population and employment locations could limit the job potential and quality of life for many low-income groups.

Figure 24: Journey to Work by Travel Mode - Income



Source: American Community Survey, 5-Year Estimates, 2012

Figure 25: Journey to Work by Travel Mode - Age



Source: American Community Survey, 5-Year Estimates, 2012

Figure 25 illustrates the percentage of transportation by travel mode. Younger populations, specifically under 24 years of age, tend to use alternative modes of transportation more so than other age cohorts. Much of the population under 24 years of age may reside close to universities as well as Fort Gordon. These locations combine clusters of residents and employment, both of which increase the ability to take alternative transportation modes due to the short commuting distances. National trends have shown that younger generations are choosing alternative modes of transportation more so than previous generations. Many young adults are waiting longer to obtain a drivers' license and/or are choosing to live in an environment with multimodal transportation options. The one other age group that tends to use non-auto forms of transportation more so than the majority, are those aged 65 years and over. Although these groups show a slight increase in shares of walking and public transit, their biggest increase is the percentage working from home.

3.8 Traffic Safety

An analysis of traffic crashes is an important step to identify high crash locations (e.g., intersection or links) that may warrant additional safety improvements. Addressing these deficiencies will improve traffic safety, non-recurring congestion resulting in mobility benefits for all road users as well as the regional community. The analysis presented in this section assesses crash frequency, (bike and pedestrian), injury and fatalities, and crash location from crash data (i.e., year 2013) provided by GDOT and South Carolina Department of Public Safety (SCDPS).

Methodology

ARTS used the FHWA’s methodology for calculating crash rate, as stipulated in the publication; Roadway Departure Safety: A Manual for Local Rural Road Owners’. Crash rate per mile allows accurate determination of which segments of roadway are susceptible to greater number of crashes. Multiple roadways can have the same number of accidents but along different segment lengths of the road. This information guides traffic engineers to design intersection and/or operational improvements that may reduce the number of crashes and severity of injury.

FHWA’s Formula for Crash Rate by Route Length – Crashes per Mile

$$R = \frac{C}{N \times L}$$

R = Crashes per mile expressed as crashes per each 1 mile of roadway per year.

C = Total number of crashes in the study period.

L = Length of the roadway segment in miles.

N = Number of years of data

Through GIS Analysis, ARTS used the total number of crashes along a particular road segment and divided it by segment length. This produced different crash rates for each road segment. [Figure 26](#) illustrates road segments in ARTS area experience between 1 to 10 crashes per mile, while other smaller segments of roadway show a greater safety concern (11 to 50 crashes per mile). Closer inspection of the map also identifies pockets of greater than 100 crashes per mile. This includes all manner of crashes: Non-vehicular collision, non-injury, off-road, night time, and wet road.

3.8.1 Fatal Crashes

In 2013, there were 52 fatal crashes within the four-county ARTS planning area (*Table 15*). Of these fatal crashes, 44 were within the ARTS boundary resulting in the deaths of 48 persons.

Table 15: Fatal Crashes in the ARTS planning area

Year 2013	Aiken	Columbia	Edgefield	Richmond	Total
Fatal crashes	22	9	0	21	52
Fatal crashes within ARTS Boundary	16	7	0	21	44
Persons killed (within ARTS Boundary)	18	7	0	23	48

Source: ARTS, GDOT, and SC Department of Public Safety

3.8.2 Pedestrian and Bicycle Crashes

In 2013, 54 bicycle and 57 pedestrian crashes occurred in the four-county ARTS planning area (*Tables 16 and 17*). Of the 53 bicycle crashes within the ARTS boundary six (6) were fatal (i.e., 11%), compared to six (6) fatal pedestrian crashes within the ARTS boundary (i.e., 12%). Aiken County accounted for three (3) of the six (6) fatal pedestrian crashes; Columbia County accounted one (1) of the six (6) fatal pedestrian crashes; and Richmond County accounted for six (6) of the fatal bicycle crashes and two (2) fatal pedestrian crashes. *Figure 28* identifies the locations of bicycle and pedestrian crashes including the six (6) fatal bicycle and six (6) fatal pedestrian crashes in 2013.

Table 16: Bicycle Crashes and Fatalities (2013)

Year 2013	Aiken	Columbia	Edgefield	Richmond	Total
Bicycle crashes	11	4	1	38	31
Bicycle crashes within ARTS Boundary	10	4	1	38	30
Fatal crashes within ARTS Boundary	0	0	0	6	6
Persons killed (within ARTS Boundary)	0	0	0	6	6

Source: ARTS, GDOT, and SC Department of Public Safety

Figure 26: Non-intersection Crashes

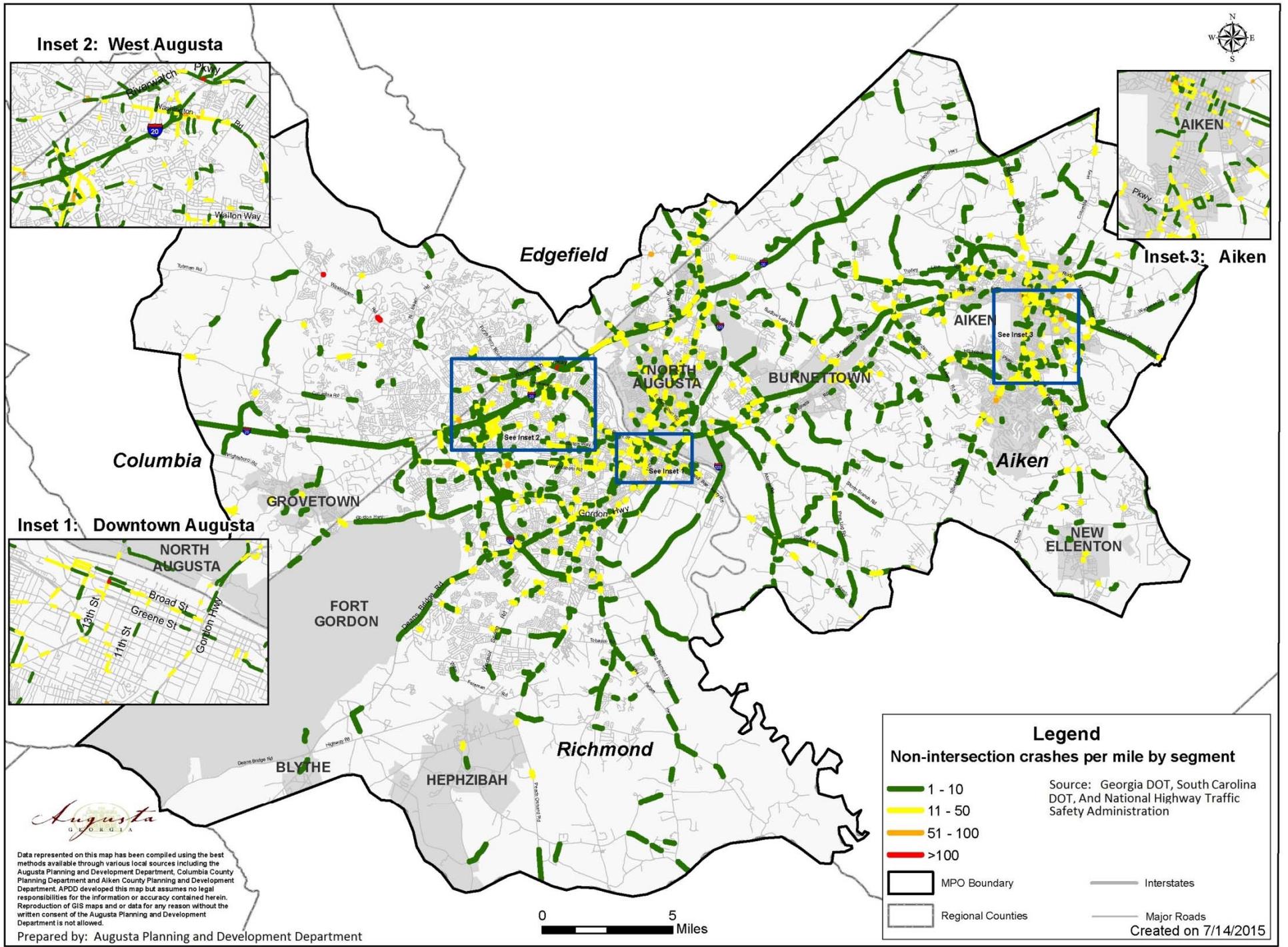
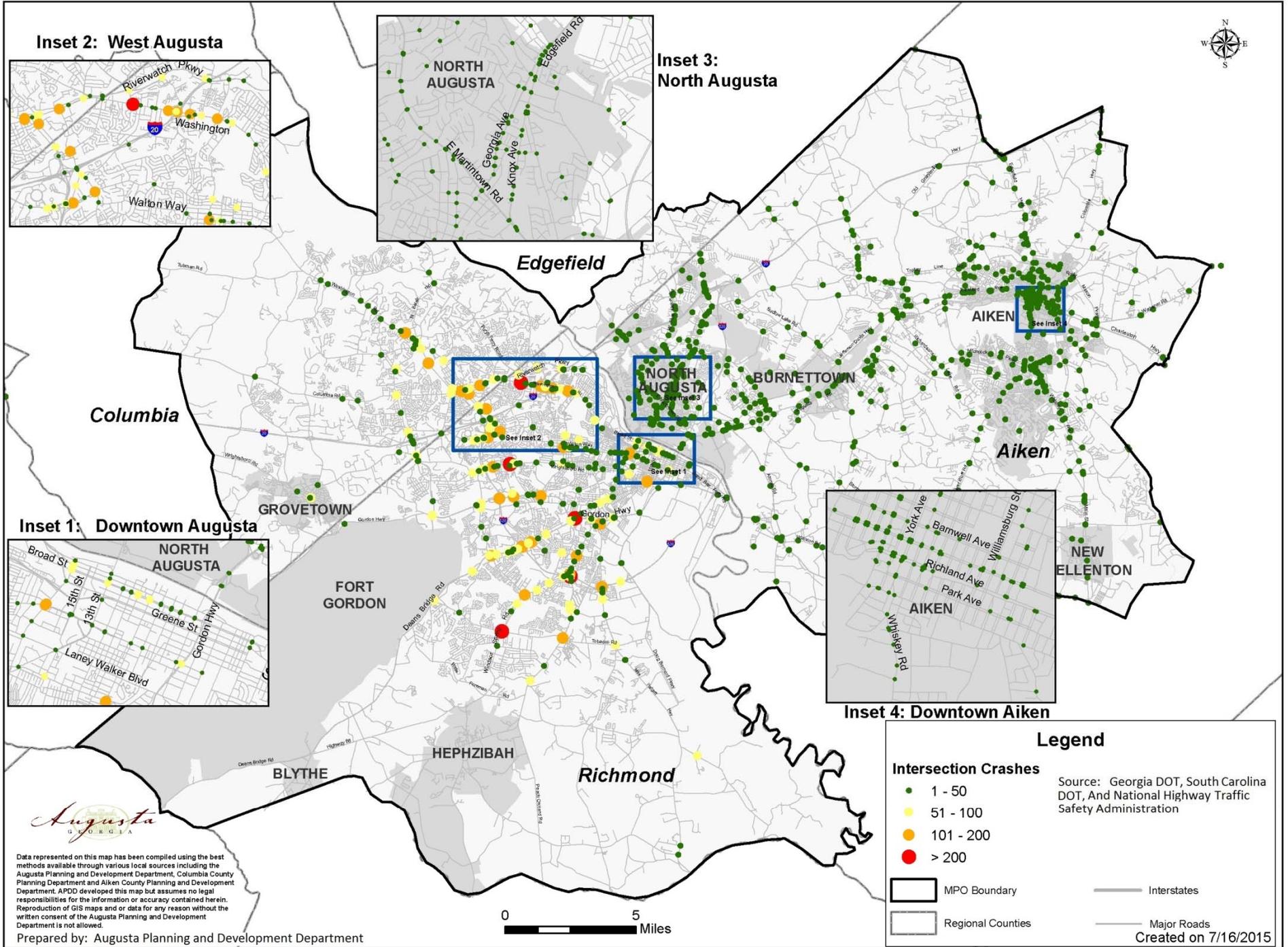


Figure 27: Traffic Crashes in the ARTS Planning Area



Legend

Intersection Crashes

- 1 - 50
- 51 - 100
- 101 - 200
- > 200

MPO Boundary
 Interstates

Regional Counties
 Major Roads

Source: Georgia DOT, South Carolina DOT, And National Highway Traffic Safety Administration

Created on 7/16/2015

Data represented on this map has been compiled using the best methods available through various local sources including the Augusta Planning and Development Department, Columbia County Planning Department and Aiken County Planning and Development Department. APDD developed this map but assumes no legal responsibilities for the information or accuracy contained herein. Reproduction of GIS maps and/or data for any reason without the written consent of the Augusta Planning and Development Department is not allowed.

Prepared by: Augusta Planning and Development Department

Figure 28: Fatal Bicycle and Pedestrian Crashes in the ARTS Planning Area 2013

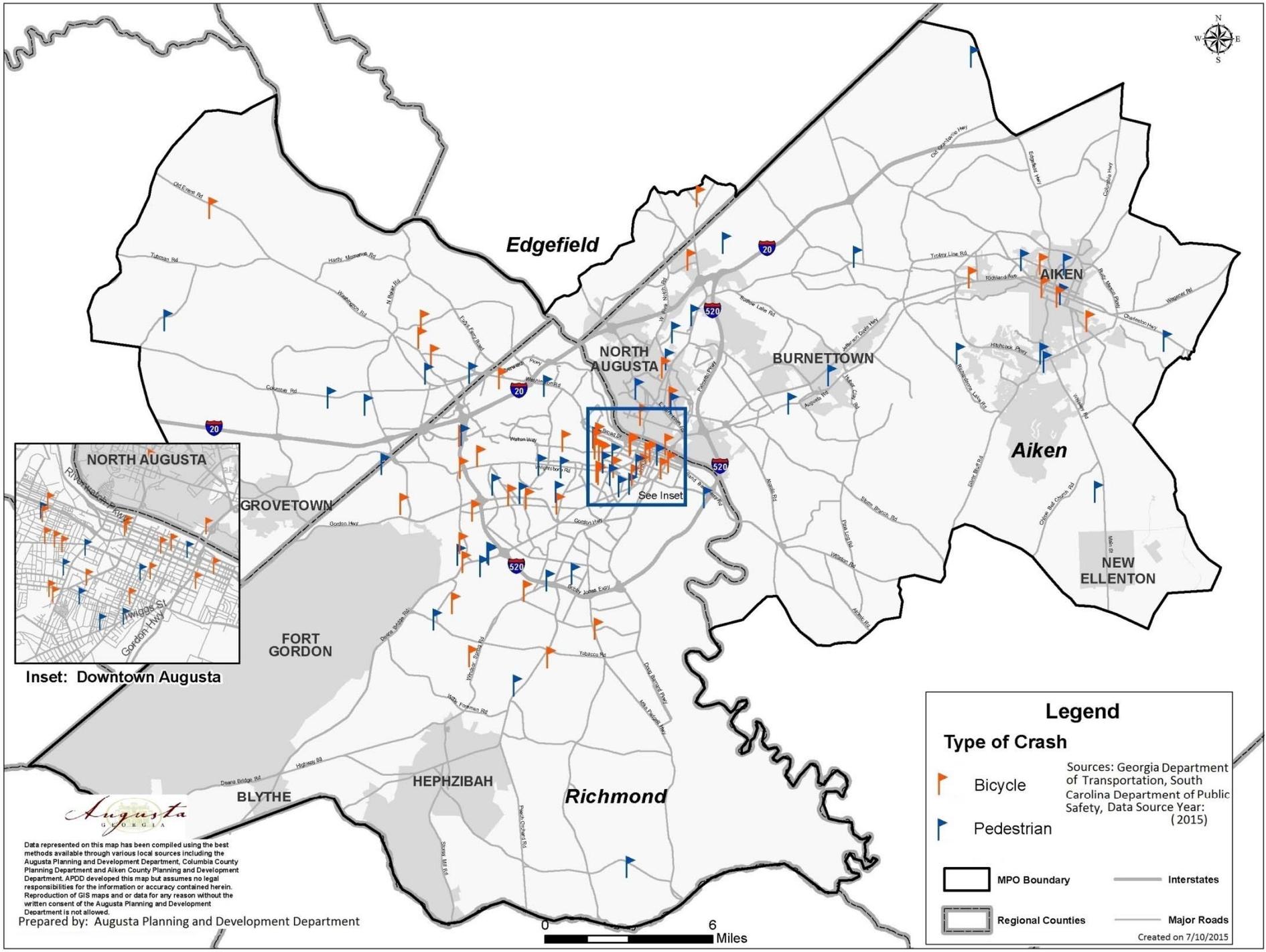


Table 17: Pedestrian Crashes and Fatalities (2013)

Year 2013	Aiken	Columbia	Edgefield	Richmond	Total
Pedestrian crashes	24	5	2	26	57
Pedestrian crashes within ARTS Boundary	20	5	0	26	51
Fatal crashes within ARTS Boundary	3	1	0	2	6
Persons killed (within ARTS Boundary)	3	1	0	2	6

Source: ARTS, GDOT, and SC Department of Public Safety

3.8.3 High Crash Intersections

The top traffic crash intersections by county are presented in *Tables 18 to 21*. In *Table 18*, the majority of intersections listed are situated on arterials, such as SC 230 Martintown Road, SC 118 University Parkway, etc. Arterials are typically highly trafficked routes linking major activity centers with the interstate system.

Table 18: Top Traffic Crash Intersections Aiken County (2013)

Rank	Intersection	# Crashes	Injuries	Fatalities
1	Martintown Road @ Georgia Ave	16	11	0
2	University Pkwy @ Richland Ave.	13	10	0
3	Howlandville Rd. @ Augusta Rd./Main St.	12	6	0
4	Edgefield Rd. @ Ascauga Lake Rd.	12	0	0
5	Georgia Ave. @ Buena Vista Ave.	12	6	0
6	Richland Ave @ Chesterfield St.	11	11	0
7	Rudy Mason Pkwy and Wire Road	10	16	0
8	Edgefield Rd. @ Nutgrove Dr.	9	4	0
9	York St. @ Rutland Dr.	8	8	0
10	Edgefield Rd @ Pinewood Rd/Edgefield Dr.	7	1	0
11	Edgefield Rd and Chalet North Blvd	9	4	0

Source: ARTS, GDOT, and SC Department of Public Safety

In *Table 19*, six (6) of the 11 Top Traffic Crash Intersections in Columbia County are located along Washington Road. Washington Road, an arterial, provides access to major strip malls, office complexes and residential subdivisions. All of these developments are major generators of traffic contributing to recurring traffic congestion, high traffic volumes, and excessive incidence of traffic crashes at intersections crossing Washington Road.

Table 19: Top Traffic Crash Intersections Columbia County (2013)

Rank	Intersection	# Crashes	Injuries	Fatalities
1	Washington Road and Davis Road	47	10	0
2	Washington and Columbia Road	39	18	0
3	Washington Rd and Flowing Wells Dr	31	19	0
4	Washington Rd and Ronald Reagan Dr	26	3	0
5	Bobby Jones Exp and Rose Lane	24	12	0
6	Washington Rd and Cox Rd	24	6	0
7	W Robinson Ave and Railroad Ave	24	7	0
8	Old Petersburg Rd and New Petersburg Rd	23	17	0
9	Washington Rd and Baston Rd	20	13	0
10	Old Evans Rd and Columbia Industrial Blvd	19	7	0
11	Jimmy Dyess Pkwy and Wrightsboro Road	37	13	0

Source: ARTS, GDOT and SC Department of Public Safety

The small urbanized portion of Edgefield County within the ARTS planning area resulted in only two intersections with two (2) or more crashes in 2013 ([Table 20](#)). Both West Five Notch Road and Edgefield Road are functionally classified as minor arterials.

Table 20: Top Traffic Crash Intersections Edgefield County (2013)

Rank	Intersection	# Crashes	Injuries	Fatalities
1	West Five Notch Rd and Murah Rd	2	3	0
2	Edgefield Rd and Pine Oak Dr.	3	4	0

Source: ARTS, GDOT, and SC Department of Public Safety

[Table 21](#) presents the top 10 traffic crash intersections in Richmond County. All of the intersections are intersected by at least one major arterial. Furthermore, all of these intersections are located along routes with high traffic volumes. Many of these intersections are also along routes, such as Washington Road and Walton Way and are classified as Seriously Congested (SC) from recent Congestion Management Surveys. Seriously Congested (SC) conditions, high traffic volumes and associated turning movements all contribute to increasing possibility for an intersection crash.

Table 21: Top Traffic Crash Intersections Richmond County (2013)

Rank	Intersection	# Crashes	Injuries	Fatalities
1	Washington Road and Furys Ferry Rd	111	40	0
2	Tobacco Road and Windsor Spring	66	16	0
3	Bobby Jones Exp. and Deans Bridge Road	55	25	0
4	Robert C Daniel Jr Pkwy and Wheeler Road	53	10	0
5	Bobby Jones Exp. and Gordon Highway	52	17	0
6	Gordon Highway and Deans Bridge Road	40	13	3
7	Peach Orchard and I-520 W	39	10	0
8	Walton Way and 15th Street	37	12	0
9	Deans Bridge Road and Barton Chapel Road	37	7	0
10	Gordon Highway and Highland Ave	37	4	0

Source: ARTS, GDOT, and SC Department of Public Safety

3.8.4 High Crash Highway Links

The top 15 links with the highest incidence of crashes in the ARTS planning area in are presented in [Table 22](#). This listing according to number of crashes includes all crash outcomes, such as property only damage, injury or fatality. Each road segment identified excludes crashes that occurred at associated intersections. Some of which are presented in [Tables 18 to 21](#). Presented in [Table 22](#) are several ‘ramp’ links as locations of high crash incidence. Inappropriate turns onto and off ramps together with incorrect speeds all may contribute to high crash incidents at these locations.

Table 22: Top Ranked Road Links for Crash Incidents ARTS planning area 2013

Rank	County	Road Name	From	To	# Crashes	# Injury Crashes	Crashes/ Mile
1	Columbia	Old Evans Road	M and M Road	Rosemont Road	26	12	70.7
2	Richmond	Washington Road	Ramp	Boy Scout Road	13	7	64.9
3	Richmond	Washington Road	Sherwood Drive	Bertram Road	12	0	80.7
4	Richmond	Robert C. Daniel Jr. Pkwy	Wheeler Road	Agerton Lane	12	4	33.7
5	Aiken	Chalk Bed Road	Ergle Street	Baker Street	11	0	14.7
6	Aiken	Interstate-20	County line	Aiken County	10	0	12.2
7	Richmond	Washington Road	Bertram Road	Kroger	8	2	39
8	Richmond	Bobby Jones Expy	bound off ramp onto Marks Church Road	eastbound off ramp to Wheeler	8	3	11.1
9	Aiken	Charleston Hwy	Airco Blvd	Old Barnwell Road	8	0	5.9
10	Aiken	I-20	.25 west of North Augusta Greenway	North Augusta Greenway	8	0	17.3
11	Columbia	I-20	ramp @ Harlem Grovetown Road	ramp @ S. Belair Road	7	3	2.1
12	Richmond	Washington Rd	Stevens Creek Road	Washington Road	7	2	82.8
13	Richmond	Bobby Jones Expy	Milledgeville Road	Glenn Hills Drive	7	2	5.6
14	Aiken	Whiskey Road	Beatty Lane	Oak Grove Road	7	0	49
15	Aiken	I-20	@ W. Martintown Road	Richmond/Aiken line	7	0	8.7

Source: ARTS, GDOT, and SC Department of Public Safety

3.9 Security

Sustaining regional economic competitiveness, reducing congestion, improving safety, and maximizing the return on existing transportation infrastructure are all dependent on a secure and resilient transportation system. Indeed, one of the objectives of the Transportation Vision 2040 goal, ‘Congestion Mobility and Traffic Safety’ is to, develop and maintain a transportation system that provides increased security for all of its users. The term ‘secure transportation system’ is taken to imply a transportation system that is secure from: 1) intentional physical or technological harm, such as a terrorist attack or cyber-attack; and, 2) unintentional harm, such as the spillage of hazardous material after a highway crash, or a landslide after heavy rains. A ‘resilient’ transportation system is better able to resist the full impact of disruptions and permits a return to full operations in as short a time as possible.

A secure transportation system incorporates and implements strategies and measures that enable an efficient response to and recovery from the loss/damage of an asset. Indeed, overseers of transportation infrastructure and transit providers in the ARTS planning area are all tasked to secure their respective transportation systems and assets. Developing the Transportation Vision 2040 LRTP, ARTS coordinates closely with GDOT, SCDOT, Augusta-Richmond County, Columbia County, Aiken County, Edgefield County, Augusta Public Transit, Columbia County Transit, and Best Friend Express in securing the local multimodal transportation system. The transportation system plays an essential role in the economic fabric of the ARTS planning area and provides access when responding to emergencies. Securing the transportation system is required at state, county and local levels. Emergency plans and procedures at each of these levels will be presented in the following sections.

3.9.1 Georgia Emergency Operations Plan

The Georgia Emergency Operations Plan (GEOP) (2013) is the State of Georgia’s Strategic Plan for coordination and management of disasters. As an operational plan it details; 1) how the state will respond to victims, 2) how the state will assess the situation, and the 3) necessary steps towards recovery after a disaster. GEOP as a living plan is updated based on lessons learned from exercises, actual events and emergency response best practices. The plan documents the types of emergencies, present hazards or threats, and the best methods to respond to them when local jurisdictions request state or federal assistance in dealing with emergencies.

3.9.2 South Carolina Emergency Operations Plan

The South Carolina Emergency Operations Plan (SCEOP) is a plan developed for use by government departments and agencies in response to a natural, technological, or manmade emergency in South Carolina. Similar to the GEOP, state department involvement is primarily at the request of local agencies. Divided into four stages of emergency management, i.e., mitigation, preparedness, response, and recovery; the plan outlines general policies and procedures that permit a uniform, coordinated basis for joint state and local operations. The South Carolina Department of Transportation (SCDOT) is the lead agency in dealing with Emergency Support Function (ESF) #1 activity. In this role, SCDOT assists federal, state, or local agencies, in the management of transportation systems and infrastructure during domestic threats or in response to incidents.

3.9.3 Augusta-Richmond County Emergency Operations Plan

The Augusta-Richmond County Emergency Operations Plan (EOP) (2011) describes the management and coordination of resources and personnel during periods of major emergency. The plan while giving guidance on responding to and recovering from emergencies gives guidance on reducing the threat of emergencies. The plan defines the roles and responsibilities of local agencies, the private sector, and other stakeholders, involved in responding to the emergency. Application of the plan assists Augusta-Richmond County and its departmental affiliates continuing their minimum essential functions during natural, technological or manmade threats or emergencies. The plan is updated at a maximum four (4) years in order to incorporate lessons learned from exercises, actual events and emergency response best practices.

3.9.4 Columbia County Emergency Operations Plan

The Augusta-Richmond County Emergency Operations Plan (EOP) (2015) establishes a framework for emergency management planning and response to: 1) prevent emergency situations; 2) reduce vulnerability during disasters; 3) establish capabilities to protect residents from effects of crisis; 4) respond effectively and efficiently to actual emergencies; and 5) provide for rapid recovery from any emergency or disaster affecting the local jurisdiction and Richmond County. The plan while giving guidance on responding to and recovering from emergencies gives guidance on reducing the threat of emergencies. The plan predicated on the National Incident Management System (NIMS) defines the roles and responsibilities of local agencies, the private sector, and other stakeholders, involved in responding to the emergency. Application of the plan assists Augusta-Richmond County and its departmental affiliates continuing their minimum essential functions during natural, technological or manmade threats or emergencies. The plan is updated at a maximum four (4) years in order to incorporate lessons learned from exercises, actual events and emergency response best practices.

3.9.5 Aiken County Emergency Operations Plan

The purpose of the Aiken County Emergency Operations Plan (ACEOP) (2014) is to ‘ensure mitigation and preparedness, appropriate response, and timely recovery from hazards that may affect Aiken County.’ In doing so the plan: 1) defines policies and procedures for use by county and municipal governments in dealing with a natural, technological, or purposeful harm disaster; and, 2) provides guidelines for the development of mechanisms to facilitate the prompt and efficient deployment of resources in any emergency or disaster situation. These two objectives consolidate the mission of the Aiken Emergency Operations to “provide for the protection of the people and resources in the county in order to minimize damage, injury, and loss of life resulting from any type of emergency or disaster.”

Dealing with emergencies or threats, ACEOP notes the size, spatial dispersion, and complexity of the county’s transportation network and the potential threat of a major incident causing significant injury or loss of life. Disaster ratings of various emergencies are established based on the likelihood of occurrence. Rail has the highest disaster rating of nine (9) compared to the other 18 emergencies. Highways, is rated at six (6). ACEOP serves as a benchmark document for local government agencies minimizing threats, dealing with and recovering from disasters and emergencies.

3.9.6 Strategic Highway Network

The Strategic Highway Network (STRAHNET) is a network of highways includes interstates and arterials (for long-distance travel) and connectors (to connect individual installations to the routes). I-20 and I-520 are STRAHNET interstate routes; Gordon Highway (US Highway 78) from the I-520 to Fort Gordon is classified as a STRAHNET Connector; and US Highway 1 (Deans Bridge Road) and US Highway 25 (Peach Orchard Road) south of their intersection with I-520 are classified as Non-Interstate STRAHNET Routes.

3.10 Congestion Management

“Congestion occur when the number of vehicles on the road reaches or exceeds the capacity of the road, resulting in slowed or stopped traffic.”⁶ Managing the causes of congestion has the potential to significantly reduce the associated negative impacts and improve the functionality of the transportation system both of which have the potential to enhance the local socio-economic environment. A Congestion Management Process (CMP) is a systematic and regionally accepted approach for managing congestion.

As part of the CMP process 52 corridors in the ARTS planning area (*Table 24*) are subject to travel time surveys. Of these, sixteen (16) are located in Aiken County, eight (8) in Columbia County and twenty-two (22) in Richmond County. Another six (6) corridors connect Richmond and Columbia counties: Bobby Jones Expressway, SR 223 / Robinson Avenue, Belair Road / Jimmie Dyess Parkway, Wrightsboro Road, Fury’s Ferry Road, and Davis Road/Walton Way Extension/Jackson Road. *Figure 29* presents the 52 CMP corridors in the ARTS planning area.

⁶ 2014 Georgia Infrastructure Report Card, American Society of Civil Engineers Georgia Section 2014

3.10.1 Seriously Congested Corridors

Seriously Congested (SC) conditions are defined as an observed average travel speed at least 30% less than the posted speed. *Table 23* indicates that of the 52 corridors CMP corridors surveyed in the ARTS planning area over a 5 year period (i.e., 2010-2014), 20 were Seriously Congested (SC) in two or more time periods surveyed four (4) corridors in Aiken County; seven (7) in Columbia County and nine (9) in Richmond County. Seriously Congested (SC) corridors (in two or more periods) for the 2010-2014 CMP surveys are shown in *Figure 29 and 30*.

Table 23: ARTS Congestion Management Process Corridors

County	CMP #	CMP Corridor	From	To	Congested Status	Year of Survey
Aiken County	1	Atomic Road	Buena Vista Avenue	Silver Bluff Road	Not Presently Congested	2011
	2	Belvedere-Clearwater Road	US 25	US 1	At Risk of Congestion	2011
	3	Bettis Academy	Ascagua Lake Road	Fields Cemetery	At Risk of Congestion	2013
	4	Buena Vista Avenue	Martintown Road	Georgia Avenue	At Risk of Congestion	2012
	5	Dougherty Road	Whiskey Road	Silver Bluff Road	Seriously Congested	2014
	6	Georgia Avenue	Savannah River	I-20	Borderline Congested	2013
	7	Knox Avenue	Martintown Road	Georgia Avenue	Marginally Congested	2013
	8	Laurens Street / SC 19	South Boundary	I-20	At Risk of Congestion	2012
	9	Martintown Road	Jeff Davis/US 1	I-20	Marginally Congested	2014
	10	(East) Pine Log Road	US 78	Silver Bluff Road (Eastern End)	Borderline Congested	2013
	11	Richland Avenue	Vaucluse Road	Beaufort Street	Marginally Congested	2014
	12	SC 118	US 78	Silver Bluff Road		2012
	13	Silver Bluff Road	Whiskey Road	Savannah Drive	Seriously Congested	2014
	14	US1	York Street	I-20	At Risk of Congestion	2011
	15	US 1 / US 78	Martintown Road	Pine Log Road	At Risk of Congestion	2011
	16	Whiskey Road	Richland Avenue	Powderhouse Road	Seriously Congested	2014

Table 23: ARTS Congestion Management Process (continued)

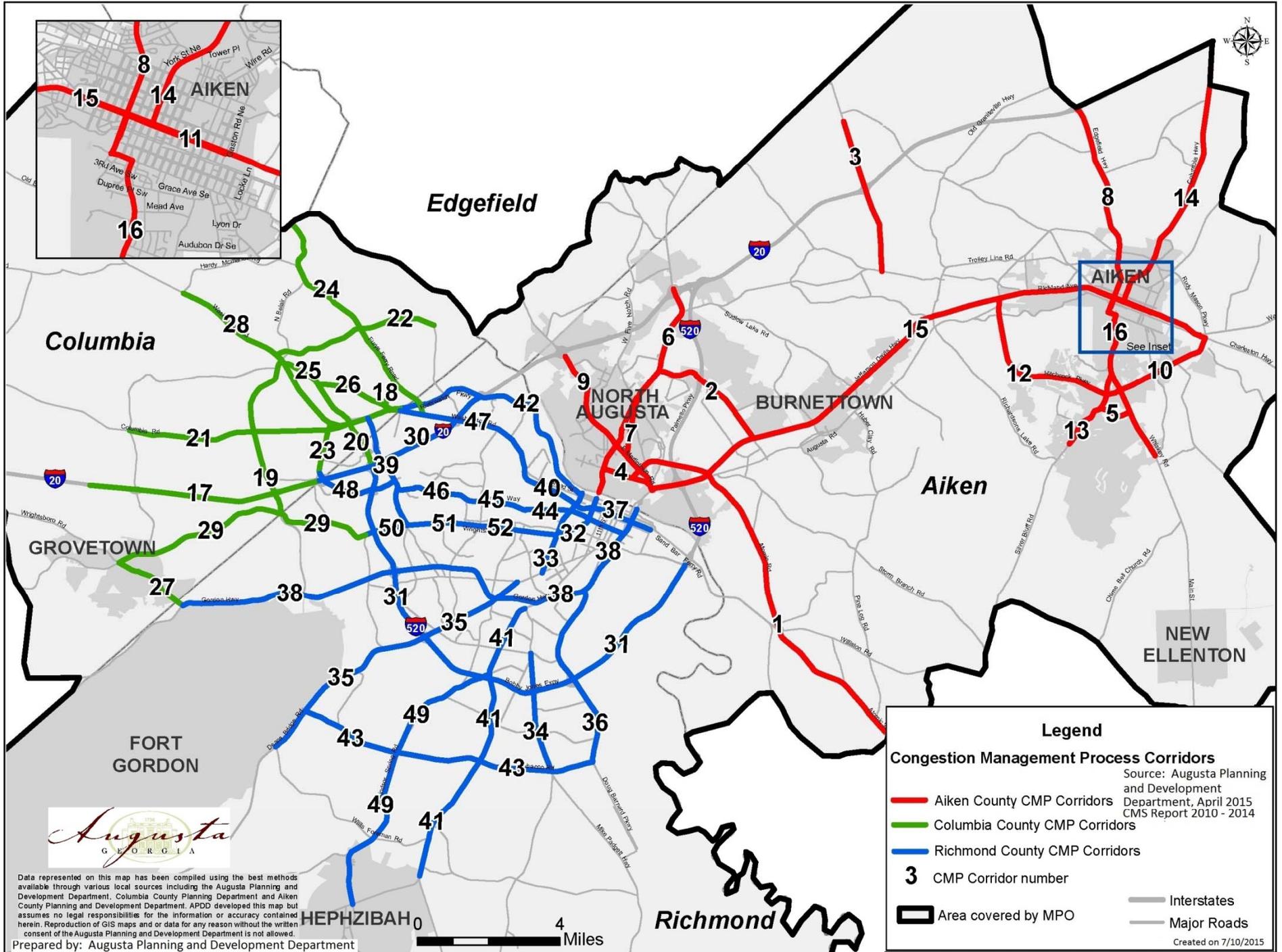
County	CMP #	CMP Corridor	From	To	Congested Status	Year of Survey
Columbia County	17	I-20	Euchee Creek	Columbia/Richmond County Line	Not Presently Congested	2011
	18	Baston Road	Fury's Ferry Road	Washington Road	Seriously Congested	2010
	19	Belair Road	Washington Road	Wrightsboro Road	Seriously Congested	2014
	20	Bobby Jones Expressway/I-520	Washington Road	I-20	At Risk of Congestion	2012
	21	Columbia Road	Washington Road	Hereford Farm Road	Marginally Congested	2012
	22	Evans-to-Locks Road	Stevens Creek Road	Washington Road	Seriously Congested	2014
	23	Flowing Wells Road	Wheeler Road	Washington Road	Seriously Congested	2014
	24	Fury's Ferry Road	Savannah River	Washington Road	Borderline Congested	2014
	25	Old Evans Road	Bobby Jones	Washington Road	Marginally Congested	2012
	26	Old Petersburg Road	Riverwatch Parkway	Old Evans Road	Marginally Congested	2011
	27	SR 223/Robinson Ave	Wrightsboro Road	Gordon Highway	Seriously Congested	2014
	28	Washington Road	Hardy McManus Road	Pleasant Home Road	Borderline Congested	2013
	29	Wrightsboro Road	Barton Chapel Road	Robinson Avenue	Marginally Congested	2012

Table 23: ARTS Congestion Management Process (continued)

County	CMP #	CMP Corridor	From	To	Congested Status	Year of Survey
Richmond County	30	I-20	Richmond Co. Line	River Watch Pkwy	Not Presently Congested	2011
	31	I-520	I-20	Laney Walker Blvd.	Not Presently Congested	2010
	32	13th Street/RA Dent Boulevard	Reynolds Street	Wrightsboro Road	Seriously Congested	2014
	33	15th Street/Ruth B. Crawford Hwy.	Reynolds Street	MLK Boulevard	Seriously Congested	2014
	34	SR 56/Mike Padgett Hwy	Lumpkin Road	SR 56 Loop	Not Presently Congested	2011
	35	Deans Bridge Road	MLK Boulevard	Willis Foreman Rd	At Risk of Congestion	2010
	36	Doug Barnard Pkwy/New Savannah Rd	Gordon Highway	Tobacco Road	Not Presently Congested	2012
	37	Greene Street	E. Boundary Street	12th Street	Marginally Congested	2013
	38	Gordon Highway	Savannah River	SR 223	At Risk of Congestion	2011
	39	Jackson Road/Walton Way Ext./Davis Road	Washington Road	Wrightsboro Road	Seriously Congested	2013
	40	John C. Calhoun Expressway	Washington Road	12th Street	At Risk of Congestion	2011
	41	Peach Orchard Road	Tubman Home Road	SR 88	At Risk of Congestion	2012
	42	River Watch Pkwy	Pleasant Home Rd	Fifteenth Street	Not Presently Congested	2011
	43	Tobacco Road	Deans Bridge Rd	Doug Barnard Pkwy	Borderline Congested	2013
	44	Walton Way Segment #1	Gordon Highway	Milledge Road	Borderline Congested	2012
	45	Walton Way Segment #2	Milledge Rd	Bransford Road	Seriously Congested	2014
	46	Walton Way Ext.	Bransford Road	Jackson Road	At Risk of Congestion	2012
	47	Washington Road	Pleasant Home Rd	John C. Calhoun Expressway	At Risk of Congestion	2014
	48	Wheeler Road	Flowing Wells Road	Walton Way Ext.	Seriously Congested	2014
	49	Windsor Spring Rd	Peach Orchard Rd	SR 88	Borderline Congested	2012
	50	Wrightsboro Road Segment	Barton Chapel Rd	Jackson Road	Seriously Congested	2012
	51	Wrightsboro Road Segment	Jackson Rd	Highland Avenue	Borderline Congested	2013
52	Wrightsboro Road Segment	Highland Ave	Fifteenth Street	Seriously Congested	2013	

Source: ARTS, GDOT, and SC Department of Public Safety

Figure 29: ARTS Congested Management Program



Data represented on this map has been compiled using the best methods available through various local sources including the Augusta Planning and Development Department, Columbia County Planning Department and Aiken County Planning and Development Department. APDD developed this map but assumes no legal responsibilities for the information or accuracy contained herein. Reproduction of GIS maps and/or data for any reason without the written consent of the Augusta Planning and Development Department is not allowed.

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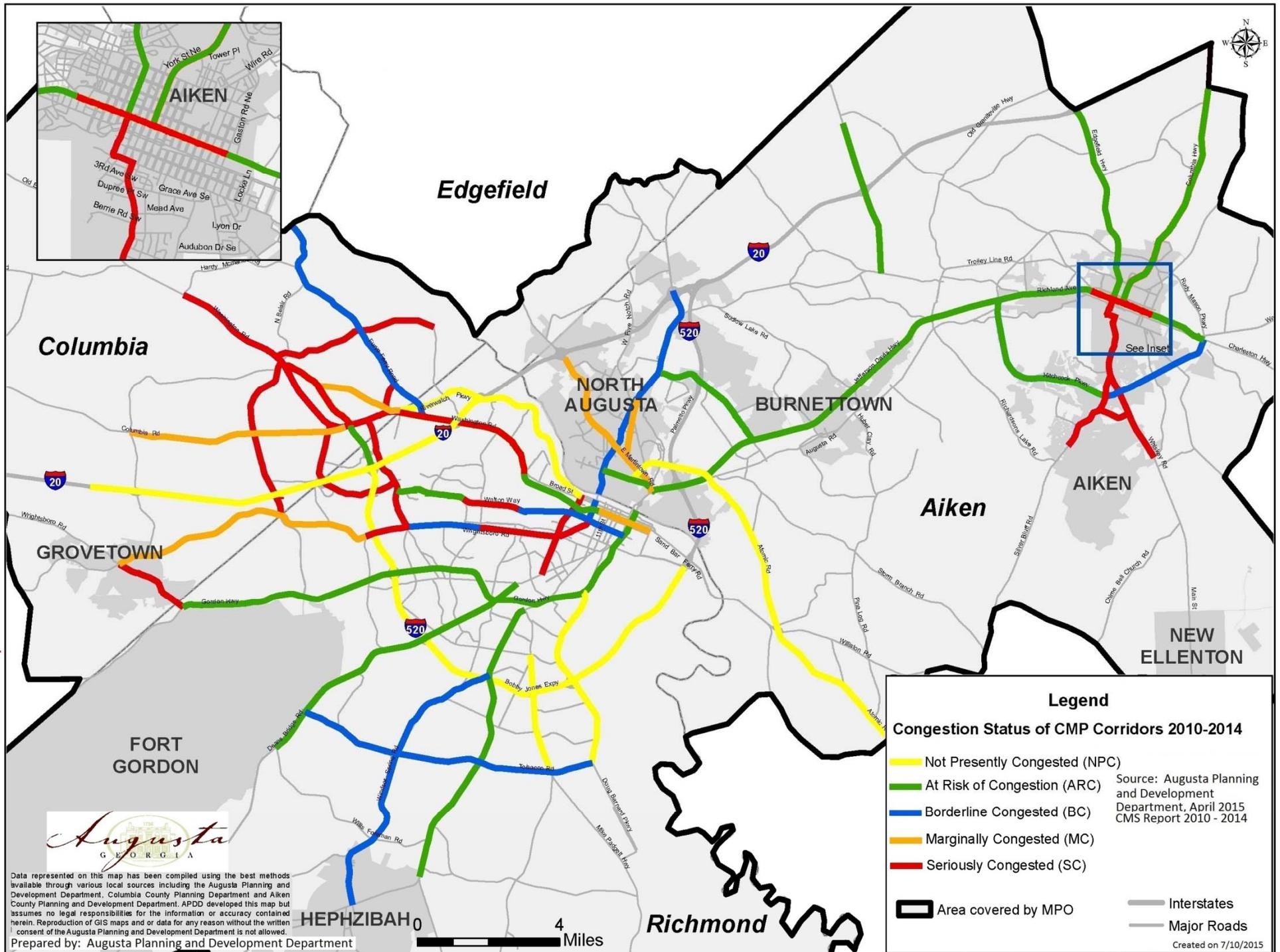
Legend

Congestion Management Process Corridors
 Source: Augusta Planning and Development Department, April 2015 CMS Report 2010 - 2014

- Aiken County CMP Corridors
- Columbia County CMP Corridors
- Richmond County CMP Corridors
- 3** CMP Corridor number
- Area covered by MPO
- Interstates
- Major Roads

Created on 7/10/2015

Figure 30: ARTS Congestion Management Program



Legend

Congestion Status of CMP Corridors 2010-2014

- Not Presently Congested (NPC)
- At Risk of Congestion (ARC)
- Borderline Congested (BC)
- Marginally Congested (MC)
- Seriously Congested (SC)

Source: Augusta Planning and Development Department, April 2015 CMS Report 2010 - 2014

- Area covered by MPO
- Interstates
- Major Roads

Created on 7/10/2015

Augusta
GEORGIA

Data represented on this map has been compiled using the best methods available through various local sources including the Augusta Planning and Development Department, Columbia County Planning Department and Aiken County Planning and Development Department. APDD developed this map but assumes no legal responsibilities for the information or accuracy contained herein. Reproduction of GIS maps and/or data for any reason without the written consent of the Augusta Planning and Development Department is not allowed.

Prepared by: Augusta Planning and Development Department

3.10.2 Congestion Measurement

Measuring congestion within the ARTS planning area, each of the 52 corridors were traveled (i.e., run) at least once during the 5 year period from January 2010 through December 2014. Each run consists of traveling in both directions along a corridor during AM peak hours and PM peak hours on three separate weekdays (2 runs per day x 3 days = 6 total runs). A Global Positioning System (GPS) recording unit is activated at the start of the trip and the driver travels the length of the corridor while keeping pace with the traffic. The average speed on each link and corridor are calculated and the overall speed deviation from the posted speed limit on each corridor determines the relative level of congestion on each route, *Table 24*. The extent of deviation from the posted speed potentially indicates the need for a congestion mitigation strategy to be applied on that corridor or link.

Table 24: Congestion Management Process Speed Deviation Thresholds

Category	Average Speed
Not Presently Congested (NPC)	>= Posted speed limit.
At Risk of Congestion (ARC)	1% - 15% below the posted speed limit
Borderline Congested (BC)	15% - 25% below the posted speed limit
Marginally Congested (MC)	25% - 30 % below the posted speed limit
Seriously Congested (SC)	> 30% below the posted speed limit

Source: ARTS

Table 25 presented the congested status or extent of speed deviation from the posted speed for each of the 52 CMP corridors as well as the corresponding year of survey. *Figure 30* is a graphical representation of the congested status of all 52 CMP corridors. Adopting a systematic approach in the measurement of congestion compels a systematic approach in congestion mitigation. For example, in *Figure 30* the marginally congested corridors in Columbia County such as the Old Evans Road CMP corridor are situated near several Seriously Congested (SC) CMP corridors, namely, Belair Road and Evans-to-Locks Road. The full results of the 2014 CMP survey are contained in the Documents and Resources section of the ARTS website www.augustaga.gov/arts.

Acknowledging any anticipated growth in traffic volumes, resolving congestion evident on one CMP corridor is likely to shift congestion to another route. The dynamic nature of congestion will continue to be a challenge in areas of anticipated high traffic growth. Effectively dealing with such a scenario calls for a series of transportation improvements and not simply the implementation of congestion mitigation strategies in order to attain the Congestion, Mobility and Traffic Safety goal. Strategies proposed in the Transportation Vision 2040 LRTP update range from road widening, traffic signal coordination, improved public transit options together with a wider range of bike and pedestrian facilities; all of which can sustainably manage congestion.

Seriously Congested (SC) conditions are defined as an observed average travel speed at least 30% less than the posted speed. *Table 25* indicates that of the 52 corridors CMP corridors surveyed in the ARTS planning area over a 5 year period (i.e., 2010-2014), 20 were Seriously Congested (SC) in two or more time periods surveyed four (4) corridors in Aiken County; seven (7) in Columbia County and nine (9) in Richmond County.

Table 25: Seriously Congested Corridors CMP Surveys 2010-2014

County	Corridor	From	To
Aiken	Dougherty Road	Whiskey Road	Silver Bluff Road
	Richland Avenue	Vaucluse Road	Beaufort Street
	Silver Bluff Road	Whiskey Road	Savannah Drive
	Whiskey Road	Richland Avenue	Powderhouse Road
Columbia	Baston Road	Fury's Ferry Road	Washington Road
	Belair Road	Washington Road	Wrightsboro Road
	Evans-to-Locks Road	Stevens Creek Road	Washington Road
	Flowing Wells Road	Wheeler Road	Washington Road
	Old Evans Road	Bobby Jones	Washington Road
	SR 223/Robinson Ave	Wrightsboro Road	Gordon Highway
	Washington Road	Hardy McManus Road	Pleasant Home Road
Richmond	13th Street/RA Dent Boulevard	Reynolds Street	Wrightsboro Road
	15th Street/Ruth B. Crawford Hwy.	Reynolds Street	MLK Boulevard
	Jackson Road/Walton Way Ext./Davis Road	Washington Road	Wrightsboro Road
	Walton Way Segment #1	Gordon Highway	Milledge Road
	Walton Way Segment #2	Milledge Road	Bransford Road
	Washington Road	Pleasant Home Rd	John C. Calhoun Expressway
	Wheeler Road	Flowing Wells Road	Walton Way Ext.
	Wrightsboro Road Segment 1	Barton Chapel Road	Jackson Road
	Wrightsboro Road Segment 3	Highland Avenue	Fifteenth Street

Source: ARTS

3.10.3 Seriously Congested Links/Segments

In 2014, each of the 15 CMP corridors surveyed in the ARTS planning area was comprised of several individual links. In total 396 links were surveyed. Of these, 238 (60%) experienced Seriously Congested (SC) conditions during at least any one of the periods surveyed. The top 10 congested links/segments by county in the a.m., either p.m. peak periods or both are presented in Tables 26 to 28.

Table 26: Top 10 Seriously Congested Links Aiken County CMP 2014 Survey

Rank	Corridor	Direction	Time	From	To	Seconds	Distance	MPH	PSL	Sp Dev
1	Martintown Rd.	Westbound	AM	Byrnes Rd.	I-20	339	1.02	10.83	42.5	-0.75
2	Silver Bluff Rd.	Northbound	PM	Pine Log Rd.	Dougherty Rd.	58	0.16	9.87	35	-0.72
3	Martintown Rd.	Westbound	PM	Byrnes Rd.	I-20	306	1.02	12	42.5	-0.72
4	Silver Bluff Rd.	Northbound	AM	Pine Log Rd.	Dougherty Rd.	56	0.16	10.29	35	-0.71
5	Martintown Rd.	Westbound	PM	Knox Ave.	Georgia Ave.	125	0.45	12.96	42.5	-0.70
6	Whiskey Rd.	Southbound	AM	Richland Ave.	South Boundary	119	0.44	13.27	37.5	-0.65
7	Whiskey Rd.	Northbound	PM	South Boundary	Richland Ave.	118	0.44	13.42	37.5	-0.64
8	Richland Ave.	Westbound	NOON	York St.	Chesterfield St.	29	0.09	11.05	30	-0.63
9	Whiskey Rd.	Northbound	AM	East Gate Dr.	Pine Log Rd.	223	0.94	15.15	37.5	-0.60
10	Whiskey Rd.	Southbound	PM	Richland Ave.	South Boundary	100	0.44	15.84	37.5	-0.58

Source: ARTS Notes: MPH = Observed Miles per Hour; PSL = Posted Speed Limit; and, Sp Dev = % Speed Deviation from PSL

Table 27: Top 10 Seriously Congested Links Columbia County CMP 2014 Survey

Rank	Corridor	Direction	Time	From	To	Seconds	Distance	MPH	PSL	Sp Dev
1	Belair Road	Southbound	PM	Washington Road	Peachtree Road	286	0.14	1.76	45	-0.96
2	Belair Road	Southbound	AM	Washington Road	Peachtree Road	284	0.14	1.78	45	-0.96
3	Flowing Wells Road	Southbound	PM	Washington Road	Columbia Road	245	0.21	3.09	45	-0.93
4	Belair Road	Southbound	PM	I-20 EB	Park West Drive	52	0.07	4.85	45	-0.89
5	Evans-To-Locks Rd	Eastbound	PM	Evans Town Center Blvd.	N. Belair Rd	140	0.22	5.66	45	-0.87
6	Flowing Wells Road	Northbound	PM	Columbia Road	Washington Road	128	0.21	5.91	45	-0.87
7	Evans-To-Locks Rd	Westbound	PM	Columbia Industrial Blvd	N. Belair Rd	334	0.59	6.36	45	-0.86
8	Fury's Ferry Road	Northbound	AM	Washington Road	River Watch Parkway	162	0.3	6.67	45	-0.85
9	Flowing Wells Road	Southbound	AM	Washington Road	Columbia Road	112	0.21	6.75	45	-0.85
10	Fury's Ferry Road	Southbound	PM	River Watch Parkway	Washington Road	150	0.3	7.2	45	-0.84

Source: ARTS Notes: MPH = Observed Miles per Hour; PSL = Posted Speed Limit; and, Sp Dev = % Speed Deviation from PSL

Table 28: Top 10 Seriously Congested Links Richmond County CMP 2014 Survey

Rank	Corridor	Direction	Time	From	To	Seconds	Distance	MPH	PSL	Sp Dev
1	13th Street / Ra Dent Blvd	Northbound	AM	Jones Street	Reynolds Street	61	0.05	2.95	35	-0.92
2	13th Street / Ra Dent Blvd	Northbound	PM	Jones Street	Reynolds Street	50	0.05	3.6	35	-0.90
3	13th Street / Ra Dent Blvd	Southbound	PM	Reynolds Street	Jones Street	41	0.05	4.39	35	-0.87
4	13th Street / Ra Dent Blvd	Southbound	PM	Greene Street	Telfair Street	43	0.06	5.02	35	-0.86
5	Fifteenth St	Southbound	PM	Reynolds Street	Jones Street	51	0.08	5.65	35	-0.84
6	Wheeler Road	Westbound	PM	I-20 WB	Wheeler / Mason McKnight	54	0.11	7.33	45	-0.84
7	Walton Way Seg 2	Westbound	PM	Milledge Road	Johns Road	116	0.22	6.85	35	-0.80
8	13th Street / Ra Dent Blvd	Northbound	PM	Wrightsboro Road (no signal)	John Wesley Gilbert Dr.	50	0.1	7.2	35	-0.79
9	Washington Road	Westbound	AM	I-20 WB	Stevens Creek Road	31	0.08	9.29	45	-0.79
10	13th Street / Ra Dent Blvd	Northbound	PM	Broad Street	Jones Street	24	0.05	7.5	35	-0.79

Source: ARTS Notes: MPH = Observed Miles per Hour; PSL = Posted Speed Limit; and, Sp Dev = % Speed Deviation from PSL

3.11 Intermodal Connectors

Intermodal connectors are roads that provide access between major intermodal facilities and the other four subsystems (i.e., interstate, arterials, etc.) to and from the NHS. They may take the form of strategic links connecting, a transportation or freight hub-to-corridor; hub-to-hub; or strategic military installation-to-corridor. As connecting links at the start or end of a truck's journey, they often include local roads in industrial areas or residential neighborhoods. Intermodal Connectors as strategic links serve:

- Seaports and Ferry Terminals.
- Airports.
- Amtrak Stations.
- Public Transit Station, e.g., heavy rail or park-and-ride lots.
- Intercity Bus Terminals.
- Intermodal freight transportation facilities, e.g., Truck/Rail Terminals, Pipeline/Truck Terminals.

The State of Georgia currently has 88.61 miles of Intermodal connectors compared to 15.9 miles in South Carolina. Neither GDOT nor SCDOT have designated any routes as intermodal connectors in the ARTS. ⁷

Highway access to Augusta Regional Airport in a North-South direction is via State Route 56 Spur and Doug Barnard Parkway; and East-West via I-520 (Bobby Jones Expressway and Palmetto Parkway) connecting to State Route 56 Spur. Other highways in the surrounding area providing indirect access are I-20, US 1, US 25, and US 78, Tobacco Road and Mike Padgett Highway. Augusta Regional Airport is used by medical facilities for air ambulance and medical transport services on daily basis.

⁷ http://www.fhwa.dot.gov/planning/national_highway_system/intermodal_connectors accessed 5/20/15

3.11.1 Freight System

Freight is a significant component of transportation demand within the ARTS planning area. Trucking is the dominant mode for moving freight with rail playing a secondary role. The majority of freight in the study area traveled on I-20 and I-520, two (2) routes with the highest volumes of freight by weight and value. I-20 provides primary truck access to the study area, while the I-520 provides radial access to the City of Augusta. Despite several miles of navigable waterways in the study area (e.g., Savannah River), none of these waterways are used for the transport of freight.

The lack of a direct interstate connection between the study area and Macon GA, Savannah GA, Charleston SC and Greenville SC; necessitates that movements between these centers use the arterial highway network. Arterial roads accommodating these movements may experience an increase in trucking volumes and congestion. I-20 is the primary route for trucking operations in the study area, the mixing of truck and auto traffic may give rise to concerns about safety.

Important facts about truck freight in the ARTS planning area includes:

- Statistics from the Georgia Center of Innovation and Logistics (GCIL) indicate that in Richmond County (2010) 5,955,515 tons of freight moved by truck compared to 2,942,084 tons by rail. Value of goods moved by truck exceeded \$18 billion compared to \$1.9 billion by rail.
- GCIL statistics indicate that in Columbia County (2010) 1,072,411 tons of freight moved by truck compared to 173,987 tons by rail. Value of goods moved by truck surpassed \$1.26 billion compared to \$349 million by rail.
- In 2006, the top three origins for truck freight in the Augusta region were Jefferson County GA at 2,914,828 tons (17%), Macon GA at 2,657,400 tons (16%), and Atlanta GA at 2,189,076 tons (13%). The top three destinations for truck freight were Atlanta GA 2,282,139 (17%), Greenville SC 929,458 (7%), and Macon GA 859,647 (6%).⁸
- I-20 is one of two interstates forming a corridor between Atlanta, GA, and South Carolina (the other being I-85). However, I-20 compared to I-85 has much lower truck and auto volumes and forecast to have sufficient road capacity through 2050.
- Richmond County ranked seventh among the top 20 counties in Georgia for inbound tons moved in 2007.⁹ More than 3 million tons moved in 2007 approximately 3% of inbound tons moved in Georgia. This finding confirms the ability of mid-sized metropolitan regions (e.g., ARTS) to generate and attract a fair share of truck tonnage.

⁸ Augusta Regional Transportation Study Freight Plan Final Report 2009

⁹ Georgia Statewide Freight and Logistics Plan, 2010-2050. Truck Modal Profile 2013

- According to the GA statewide Travel Demand Model examining internal state truck flows, the largest non-Atlanta truck volumes modeled in 2010 were between metro Savannah and metro Augusta (311 daily trucks).³
- Aiken County ranked eighth (~1.8 million tons) of the top ten South Carolina county origins of commodities that are predicted to move outbound in 2040. Estimates suggest that Aiken County is expected to play a larger role in freight by 2040.¹⁰

Important facts about the road freight network in the ARTS planning area can be listed as follows:

- In the Georgia portion of ARTS the Statewide Designated Freight Corridor consists of I-20, I-520 and US Highway 1/SR 4 (Fall Line Freeway).
- In the South Carolina portion of ARTS, the Strategic Freight Roadway Network consists of I-20, I-520, US Highway 4, US Highway 19, US Highway 25 and US Highway 78.
- I-20 between Atlanta, GA, and South Carolina is designated as a Long-Haul Interstate Corridor. Long haul interstate corridors are considered as segments of the interstate that are in between urban regions with the minimum number of lanes for the interstate.¹¹
- In August 2013, the State Transportation Board designated the I-20, I-520 and the Fall Line Freeway (i.e., existing US Highway 1 from Wrens, GA. to the City of Augusta) as Freight Corridors. Freight corridors represent a network of strategic highways for freight movements in Georgia.
- I-20, I-520 and the Fall Line Freeway are part of the Governor's Road Improvement Program (GRIP). GRIP is a system of economic development highways that, when complete, will connect 95% of Georgia cities with populations of 2,500 or more to the Interstate Highway System. It will also place 98% of Georgia's population within 20 miles of a four-lane road.

The strategic highway freight network in the ARTS is presented in [Figure 31](#).

¹⁰ South Carolina Multimodal Freight Plan. Appendix D. 2014

¹¹ Georgia Statewide Freight and Logistics Plan, 2010-2050. Task 5 Report Freight Improvement Project Recommendations 2011

Freight Rail

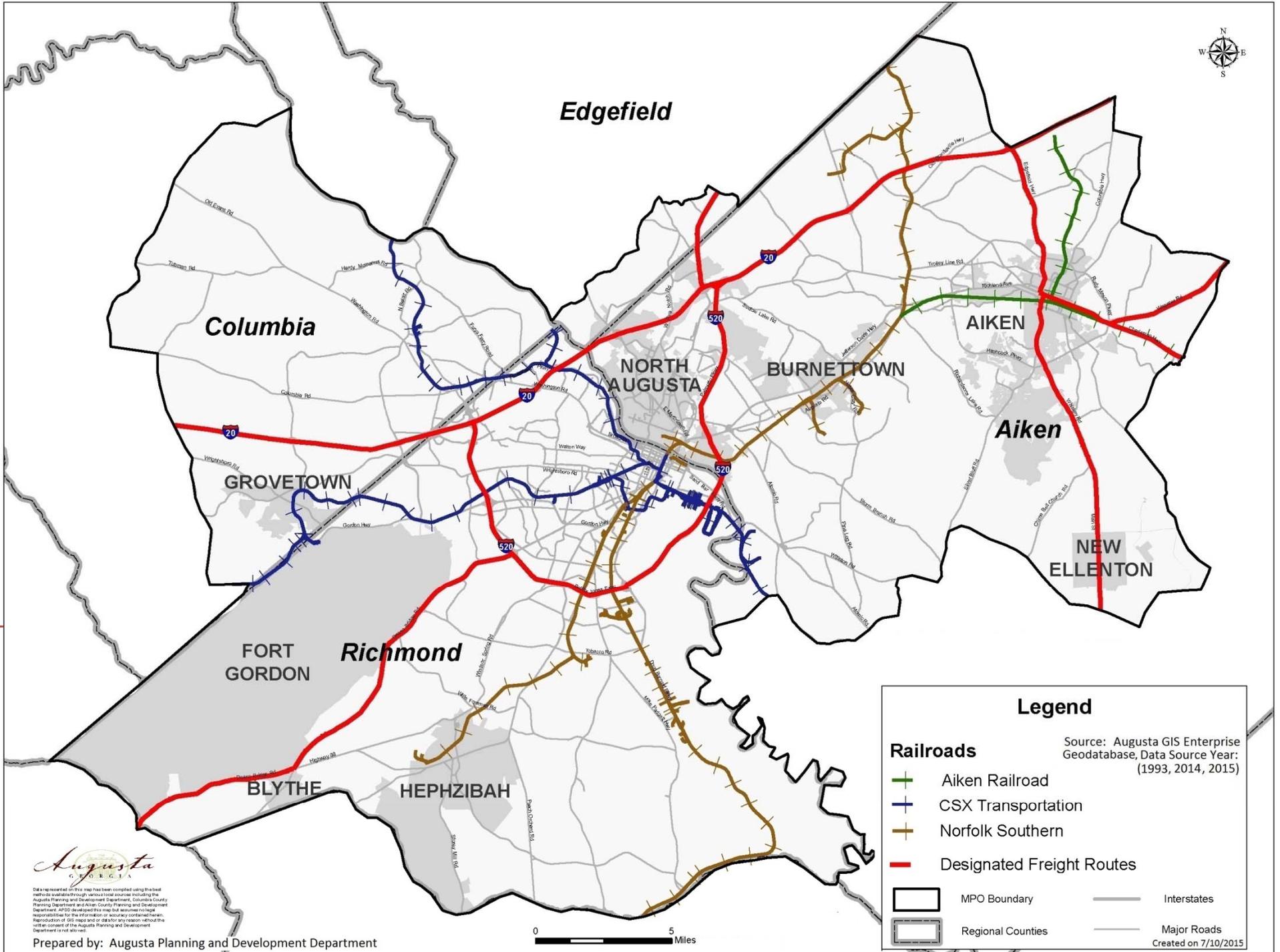
Freight rail transportation continues to play an important role in the ARTS. The study area is traversed by numerous railroads that provide an alternative mode of moving freight throughout the region. Currently, there are two Class 1 railroad companies providing freight services in the study area, CSX Transportation (CSX) and Norfolk Southern Railway (NS). US Class I Railroads are line haul freight railroads with operating revenue of \$467 million or more in 2013.¹² The majority of CSX or NS Class 1 railroads in the study area can accommodate 286K (i.e., 286,000 pounds) railcars. NS and CSX own and operate a vast network of railroads primarily east of the Mississippi River.

NS railroad has mainlines and spur tracks serving Aiken and Richmond counties as well as Augusta GA providing a direct rail routes west Atlanta or south to Savannah, GA. The majority of NS railroads in the study area meet 286K capacity with an exception limited to the Moores Subdivision in Augusta.¹³

¹² American Association of Railroads

¹³ Georgia Statewide Freight and Logistics Plan, 2010-2050. Task 5 Freight Improvement Project Recommendations 2013

Figure 31: Freight and Railroad Network



Data represented on this map has been compiled using the best methods available through various local sources including the Augusta Planning and Development Department, Columbia County Planning Department and Aiken County Planning and Development Department. ARTS developed this map but assumes no legal responsibility for the information or accuracy contained herein. Reproduction of GIS maps and/or data for any reason without the written consent of the Augusta Planning and Development Department is not allowed.

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0 5 Miles

CSX railroad has mainlines and spur tracks serving Aiken, Columbia and Richmond counties as well as Augusta, GA. The main CSX terminal for the Augusta, GA, region is located off Laney-Walker Boulevard in Augusta. In addition, CSX operates a TRANSFLO terminal in Augusta, GA, located on 48 acres between Wrightsboro Road and Olive Road. TRANSFLO terminals permit trans loading of bulk commodities between railcars and trucks. The CSX terminal in Augusta is located on the Central Service corridor that runs from Detroit (Michigan), Chicago (Illinois), and St. Louis (Missouri) to Savannah. This North-South corridor skirts the eastside of Georgia passing through Augusta, GA.¹⁴

Not all railroads in the study area can accommodate 286K railcars. These tracks are classified as ‘short-line’ railroads, often covering a short distance and accommodating low tonnage railcars. Short-line railroads are defined by the American Association of Railroads as typically short distance railroads that serve a limited area and have annual operating revenue \$37.4 million or less.¹⁵ Often independent or privately held short-lines perform several functions:

- Link two industries requiring a rail connection or connecting customers, shippers, and manufactures to the national rail network
- Allow the transfer of railcars between different railroad companies sharing the same facility or between group facilities.
- Permit the operation of a passenger train service for tourism.

In the South Carolina ARTS area, there is one short-line railroad operator, Aiken Railway Company (ARC), a subsidiary of Western Carolina Railway Service Corporation. ARC began rail service in 2012 and leases and operates two branch lines – the 12.45-mile line between Warrentonville and Oakwood, and the 6.45-mile line running between Aiken and North Aiken – total 18.9 miles in length. With minimal operations, ARC handles railcars weighing between 1,100 – 143,000 tons. The strategic highway freight network and railway system in the ARTS is presented in Figure 31.

¹⁴ GDOT Intermodal Program Division State Rail Plan 2009

¹⁵ American Short Line and Regional Railroad Association

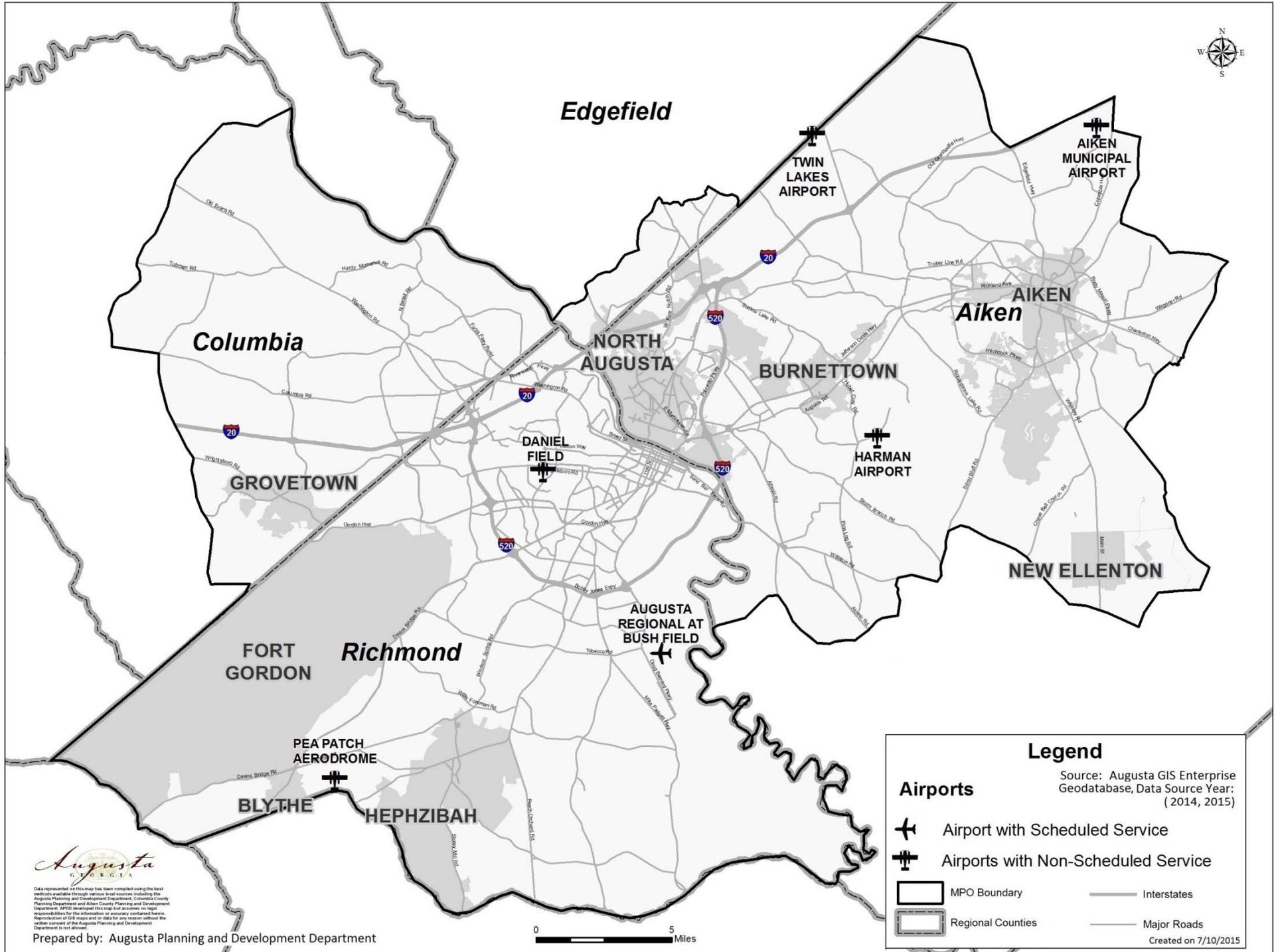
3.11.2 Airports

The ARTS is served by three airports that provide commercial and general aviation services. These airports include Augusta Regional Airport [at Bush Field], Daniel Field and Aiken Municipal Airport. Augusta Regional Airport and Daniel Field are situated in the state of Georgia and Aiken Municipal Airport in South Carolina. Each of these airports are described below and their location within the study area is presented in *Figure 32*.

3.11.2.1 Augusta Regional Airport

Augusta Regional Airport is a city-owned and operated, public use airport located eight miles south of downtown Augusta. The airport is situated on approximately 1,400 acres of land. The Federal Aviation Administration (FAA) has classified Augusta Regional Airport as Non-hub airport has more than 10,000 passengers boarding per year, but less than 0.05% of the total passenger boarding within the United States in the most current calendar year). The airport is also designated as a Fixed Based Operator (FBO) and is permitted to provide aeronautical services such as fueling, hangar, aircraft parking, rental and maintenance as well as flight instruction.

Figure 32: Airport



Data represented on this map has been compiled using the best methods available through various local sources including the Augusta Planning and Development Department, Columbia County Planning Department and Aiken County Planning and Development Department. APDC developed this map but assumes no legal responsibility for the information or accuracy contained herein. Reproduction of GIS maps and/or data for any reason without the written consent of the Augusta Planning and Development Department is not allowed.

Prepared by: Augusta Planning and Development Department

0 5 Miles

Currently, two primary commercial airlines operate daily services from Augusta Regional Airport: Delta Airlines and US Airways Express. Only two destinations are served directly from Augusta Regional Airport, Atlanta GA, and Charlotte NC. Delta Airlines provides services to Atlanta and US Airways Express provides services to Charlotte. Delta Airlines service is provided by Atlantic Southeast Airlines, whereas US Airways is provided by US Airways Express. In late December 2014, US Airways announced the resumption of its seasonal service to Washington DC., providing one daily round trip flight between Augusta, GA, and Washington, DC (except Saturdays) operating between March 29 thru June 3, 2015.

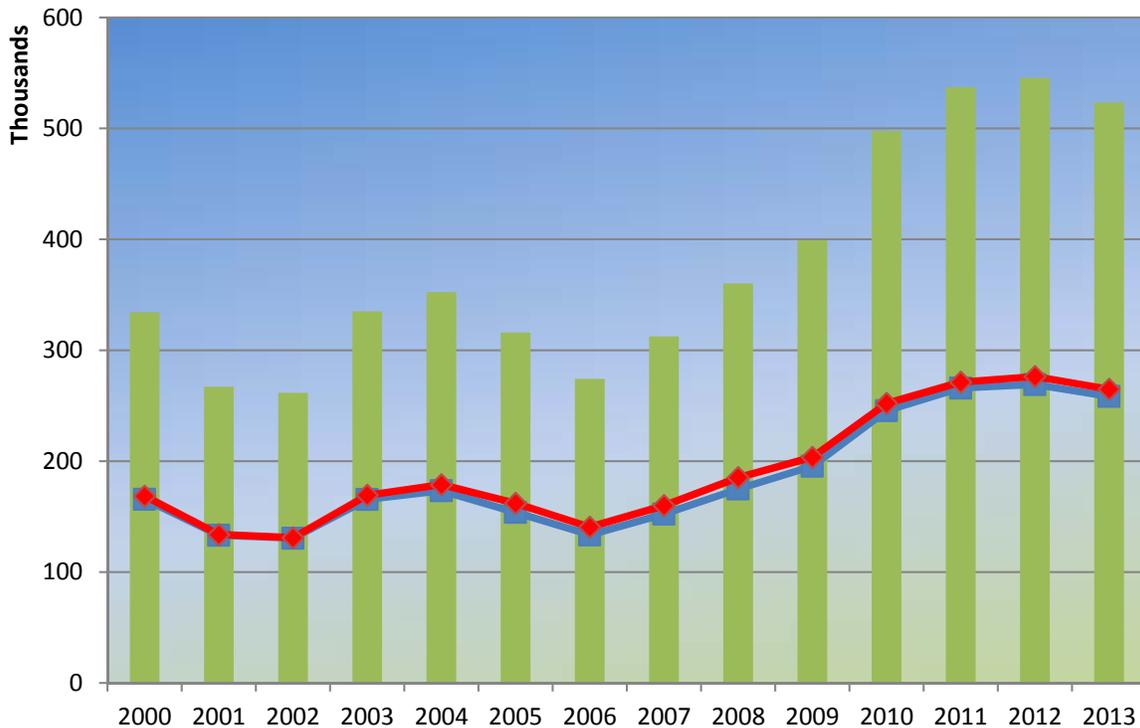
Figure 33 presents statistics denoting the number of arrivals, departures and total passengers at Augusta Regional Airport. Air passenger throughput at Augusta Regional Airport has shown a sustained recovery since dipping in 2001 and 2005-2008. Since 2011, air passengers throughout has exceeded 500k passengers per year at Augusta Regional Airport.

Statistics provided by Augusta Regional Airport indicate that in 2013 Delta Airlines had 100% on-time departures record compared to 83.93% of US Airways flights. In 2013, Delta Airlines had a 60% share of passengers at Augusta Regional Airport, followed by US Airways at 39 percent and charters at 1%. Continued passenger throughput driven by anticipated population growth, tourism and economic expansion, Augusta Regional Airport is currently updating its Master Plan with a scheduled completion in Spring 2015. The 20-year Master Plan has a project value of \$627,560 and Mead & Hunt, Inc., is the project consultant.

The Augusta National Golf Tournament commonly referred to as The Masters is the busiest season for the Augusta Regional Airport and Daniel Fields Airports. The economic impact of Augusta Regional Airport is significant, supporting the region with 1,561 jobs with an annual payroll of \$59,016,500 and \$269,632,600 in economic output in the ARTS.¹⁶ In 2012, a new passenger terminal facility was opened consisting of a 14,000 square feet flight planning, crew area and amenities for passengers and catering facilities, and VIP lounge. The recently completed credit card parking lot and taxiway expansion will further strengthen Augusta Regional Airport role in the regional economy.

¹⁶ 2011 Georgia Statewide Airport Economic Impact Study GDOT

Figure 33: Augusta Regional Airport Passengers 2000-2013



Source: ARTS

3.11.2.2 Daniel Field Airport

Daniel Field Airport (DNL) is publicly owned and operated by the General Aviation Commission (GAC). The two-runway airport is situated on 146 acres of land approximately five miles from downtown Augusta. Wrightsboro Road and Highland Avenue provide direct road access to Daniel Field Airport. East-west indirect highway access is via I-20 connecting with the I-520 that intersects Wrightsboro Road.

Classified as a Level 1 Airport according to the Georgia Aviation System Plan the Daniel Field airport is primarily used by corporate and private clients for business and recreational purposes. Daniel Field Airport also hosts the Augusta Squadron of the Civil Air Patrol. Daniel Field Airport is classified by GDOT as Level I and is one of thirty of such airports in the State of Georgia in this category. In 2001, Daniel Field Airport had an economic impact of more than \$15 million, providing 127 total jobs with a total payroll \$4,372,600.¹⁷

¹⁷ 2011 Georgia Statewide Airport Economic Impact Study GDOT

The following aircraft related services are provided at Daniel Field Airport: Fuel, parking, hangars, recreational flying, corporate/business jets, flight training and instruction, experimental aircraft, charters, and aircraft repair. Landside services provided 99 apron parking spaces, 62 hangar spaces, 70 auto parking spaces, and a 6,700 square foot terminal and administrative building.

Not more than three miles from the Augusta National Golf Course, Daniel Field Airport plays an important role during Masters Week (the first full week in April). During this time, charter and corporate operators attending the Masters Golf Tournament use it extensively. Its close proximity to numerous medical facilities in the Augusta region, medical air services use the airport almost daily. According to the GAC, Daniel Field Airport has over 27,500 operations a year.

3.11.2.3 Aiken Municipal Airport

Aiken Municipal Airport (AIK) is a city-owned and managed airport situated on 70 acres of land five miles north of central business district of Aiken SC. Road access to the airport is from US 1 near Exit 22 on I-20. As one of 54 general aviation airports in SC, Aiken Municipal Airport serves the aviation community in the ARTS area and has an extended market reach to 11 other counties in the CSRA.

AIK has two runways and averages 120 daily aircraft operations. Of these aircraft operations, 61% are local general aviation; 32% transient general aviation; 6 % air taxi and 1% military. It operates between the hours of 7 a.m.-7 p.m. ET, 365 days a year with extended hours during the Masters Golf week. Currently, no scheduled commercial airlines operate to or from Aiken Municipal Airport. Aiken Municipal Airport has no master plan and there are no significant projects in place.

The two-runway airport accommodates a variety of aviation related activities including:

- Hotel Shuttle, car rental, and taxi services,
- Passenger, commercial and air freight service,
- Corporate/business jets,
- Recreation flying and agricultural spraying,
- Flight training and the testing of experimental aircraft.

3.11.3 Waterborne Transportation

Despite an abundance of navigable rivers and lakes in the ARTS, none of these bodies of water facilitates waterborne freight transportation. The many rivers and lakes in the study area region are primarily used for recreational purposes (e.g., boating, fishing and multiuse trails). All freight in the ARTS is moved by truck, rail or air. The closest seaports to the study area are Savannah GA (138 miles) or Charleston SC (171 miles).

The Savannah River as the largest body of water in the study area also forms the border between Georgia and South Carolina. It is also an important source of drinking water for the ARTS planning area as well as assimilating the region's treated wastewater. For decades a 9-foot-deep, 90-foot-wide shipping channel permitted waterborne freight between Augusta to Savannah, GA. The required dredging and maintenance of the channel ceased in 1979, along with the cessation of commercial shipping between these two cities.¹⁸

Reliving the heydays of the industrial usage of the Savannah River and its tributaries, the Augusta Canal, built in 1845, is the only intact industrial canal in the American South in continuous use. The Augusta Canal played a pivotal role in the industrialization of Augusta, GA, providing power to the nearby mills, transportation, and drinking water for the city. Today, as a national historical landmark (declared in 1978) the Augusta Canal provides themed boat tours, e.g., Heritage Boat Tour, Civil War Boat Tour; multiuse pedestrian and bicycle trails; and, pristine nature reserves and wetlands.

Another important site along the Savannah River that once played a role in the industrialization of the ARTS is the New Savannah Bluff Lock and Dam. Constructed in 1937 the New Savannah Bluff Lock and Dam is located on the Savannah River adjacent to Augusta Regional Airport. Operated by the Augusta Recreation, Parks & Facilities Department, the recreation area offers facilities for picnicking, fishing and recreational boating. As of May 15, 2014, the Lock operation at the Lock and Dam Park terminated, and due to safety reasons access to the Lock for fishing ceased.

¹⁸ New Plant Vogtle parts could require dredging. Augusta Chronicle September 3, 2009.

3.12 Bridges

There are a total of 14,675 bridges in Georgia of which 233 are within the ARTS boundary. In South Carolina, there are 8,344 bridges of which 109 are within the study area boundary. As indicated earlier the study area is bisected by the Savannah River that is crossed by seven bridges along six routes, namely:

- I-20 (one bridge in each direction).
- US 25 (13th Street in Georgia and Georgia Avenue in South Carolina).
- 5th Street (Jefferson Davis Memorial Bridge).
- US 1/US 278 (Gordon Highway in Georgia and Jefferson Davis Highway in South Carolina).
- I-520 (Bobby Jones Expressway in Georgia and the Palmetto Parkway in South Carolina).
- GA/SC 28 Sand Bar Ferry Road.

General classifications of bridges according to their importance are as follows:

- Critical – structure with a high cost to build/replace or loss would have major effect to the area.
- Essential – loss of structure would affect commerce or emergency response.
- Other – all other structures not included in Critical or Essential.

Bridges may also be classified as:

- Structurally Deficient – a bridge that has significant load carrying elements in poor or worse condition due to deterioration and/or damage. A structurally deficient bridge is not unsafe and is not likely to collapse.
- Functionally Obsolete – a bridge that does not meet current traffic demands on the structure. A bridge may be constructed using design standards from an earlier period that have become outdated today. For example, a bridge with no sidewalks on a section of roadway with sidewalks; or a bridge with narrow shoulders that do not meet current safety standards in either case will be classified as functionally obsolete.

The Transportation Vision 2040 goal 'Maintenance section' recognizes the importance of maintaining a strong bridge network to support the roadway system in the ARTS planning area. This objective also complements the 'Congestion, Mobility and Traffic Safety' goal. Maintenance of bridges along the Strategic Highway Network is critical to sustain efficient traffic movement, connectivity and access throughout the ARTS planning area. However, the I-20 crossing of the Savannah River (two lanes in each direction) as the primary freight route between Georgia and South Carolina has at times created a bottleneck in the local transportation system. This is one of several challenges of the bridge network in the ARTS planning area; in addition to bridges that are structurally deficient or functionally obsolete. Bridges lacking safe pedestrian or bicycle facilities, such as sidewalks or marked bike lanes was another concern presented at public meetings. Developing the Transportation Vision 2040 LRTP update, future capacity needs and potential structural conditions were factored into proposed bridge installation or modernization projects.

3.13 Public Transportation

The availability of public transportation adds additional mobility options to residents, workers and visitors. Public transportation also facilitates geographical accessibility, educational and economic opportunity as well as improvements in public health to persons who: 1) do not have access to a private automobile; 2) do not drive due to disability, age or prohibition; or 3) simply would like to exercise their choice to use an alternative transportation modes to a private vehicle.

There are many people in the ARTS that can relate to one or more of the preceding categories and their use and access to public transportation is not a choice, it is a necessity. This is highlighted by the fluctuating cost of gasoline. Several fixed route providers serve the study area: Augusta Public Transit (APT), Columbia County Transit (CCT), and Best Friend Express (BFE). Rural transportation or paratransit providers include Pony Express, a part of BFE for rural Aiken County and Richmond County Transit, a part of APT.

3.13.1 Augusta Public Transit

Currently, APT contracts MacDonald Transit Associates Inc., to operate nine (9) fixed routes primarily in and around the City of Augusta (*Figure 34*). All APT buses serving the nine (9) fixed routes are equipped with bike racks each capable of carrying two bicycles. The system is primarily radial with the majority of services terminating at the Broad Street passenger bus terminal near downtown Augusta. Route #2 a circulator route terminates at the Social Security office in West Augusta. Two routes (#8 and #9) terminate at the K-Mart bus transfer point (Deans Bridge Road and Gordon Highway). In November 2014, a new route #10 was added to the network. This six-month pilot route links Augusta Mall with Fort Gordon. This service improvement was identified in the five year APT Development Plan. Service frequencies and schedules vary as presented in *Table 29*. According to the 2012 National Transit Database (NTD) the following operational statistics are presented:

Service Area: 25 sq. mi	Annual Passenger Miles: 2,542,908
Vehicles available for maximum service: 26	Annual Unlinked Passenger Trips: 737,562
Vehicles operated in maximum service: 19	Fare Revenues approximated: \$672,531

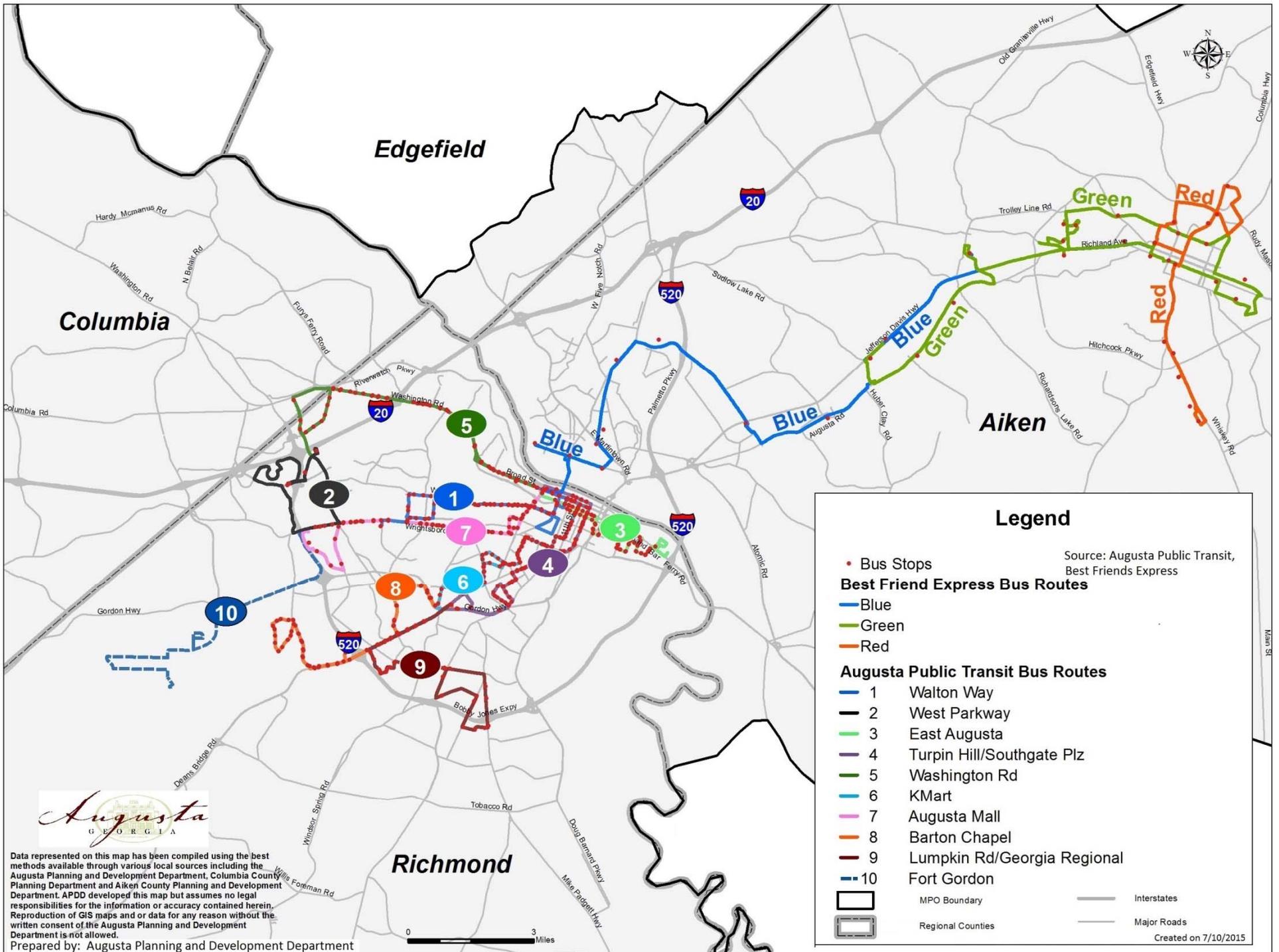
Table 29: Augusta Public Transit Schedule

Route # and Name	Monday to Friday				Saturday			
	First Bus leaves Terminal	Last Bus leaves Terminal	# of Trips	Avg. Headway (minutes)	First Bus leaves Terminal	Last Bus leaves Terminal	# of Trips	Avg. Headway (minutes)
1 – Walton Way	6:30am	5:10pm	9	83	10:30am	5:10pm	6	80
2 – West Parkway	7:10am	5:10pm	16	40	7:10am	5:10pm	16	40
3 – East Augusta	6:30am	7:30pm	11	80	7:00am	7:00pm	11	72
4 – Turpin Hill/Southgate Plaza	7:00am	6:30pm	10	76	7:00am	6:00pm	10	73
5 – Washington Road	6:30am	5:50pm	15	49	7:00am	6:30pm	10	77
6 – Kmart	6:30am	7:00pm	20	40	7:00am	7:00pm	19	40
7 – Augusta Mall	6:30am	7:00pm	17	47	9:00am	7:00pm	9	75
8 – Barton Chapel Transfer	6:00am	7:00pm	16	60	10:00am	7:00pm	10	60
9 – Lumpkin Road Georgia Regional	6:30am	5:30pm	14	60	No Service			
10 – Fort Gordon**	9:30am	6:30pm	6	80	9:10am	6:30pm	8	80

Source: ARTS

** Pilot transit route for six (6) months in 2014-2015.

Figure 34: Public Transit

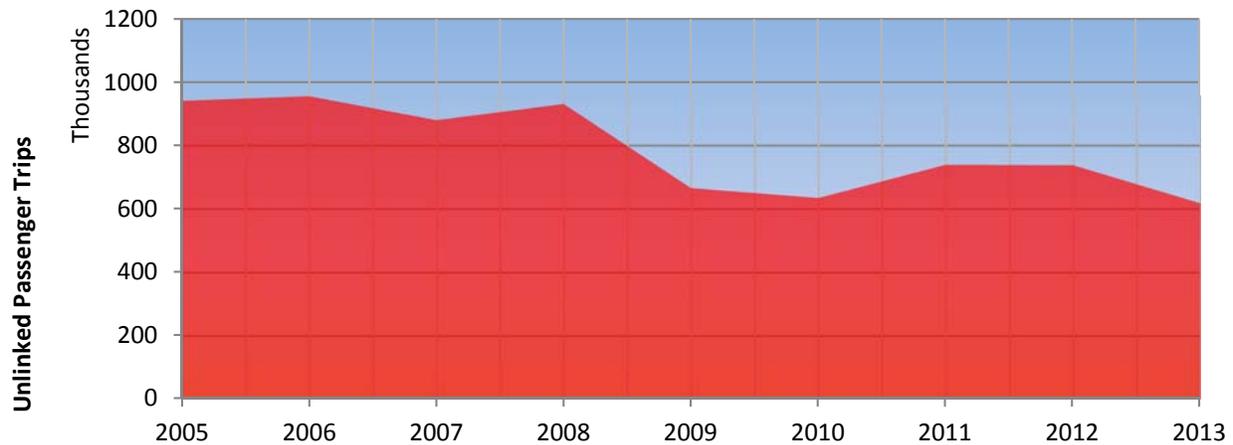


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 Prepared by: Augusta Planning and Development Department

There is no Sunday service on any route. Overall, public transit services operate from 6:30 a.m. to 8:00 p.m. Monday through Friday. On some routes, services operate earlier or later than these times based on route distance. Some APT services commence or terminate at the APT garage on Fenwick Street in Augusta, GA. Route #6 has the highest weekday frequency of 20 trips per day. With the exception of Route #10, Route #1 has the lowest frequency of weekday trips per day.

Figure 35 presents APT unlinked passenger trips. Overall, between 2005 and 2013, the ridership trend has decreased peaking in 2006 and 2008. At 617,000 unlinked trips, 2013 marked the lowest ridership year since data submission to the NTD in 1991.

Figure 35: Augusta Public Transit Ridership



Source: National Transit Database

APT provides paratransit services for persons with a permanent or temporary disability that prevents them from using fixed-route services. Paratransit services are offered within $\frac{3}{4}$ mile of APTs fixed route services complying with the American with Disabilities Act of 1990 (ADA). Operating at the same times and days as local fixed routes, paratransit services seek to complement existing APT services. Eligible users of paratransit services submit an application endorsed by a health professional who can verify the type and extent of disability. When using the service prospective riders must reserve their trip by 5 p.m. the day before the trip (Monday thru Friday). However, trips can be reserved up to 14 days in advance. Reservations and trip confirmation are processed by an automated voice system. Due to the specialized nature of the paratransit service, public transit agencies can charge users a premium fare (double fixed route fare).

3.13.2 Richmond County Rural Transit System Operated by Augusta Public Transit

Accommodating the mobility needs of the Richmond County population that live south of I-520; Richmond County Transit System (RCTS) commenced operations in September 1989. RCTS is a collaborative transportation venture between Richmond County and GDOT with funds made available through 49 U.S. Code § 5311 Formula grants for rural areas (aka Section 5311 provided by GDOT Intermodal Program). RCTS operating in the rural areas of Richmond County, including Hephzibah, McBean and Blythe, is a shared-ride transportation service available to persons living in the rural area of county. RCTS operates Monday thru Friday between the hours of 6:a.m. and 5:30 p.m. As a curb-to-curb transit service, RCTS provides curbside pickup to passengers in close proximity to their origins and/or destinations. Users of this service must register and make reservations ahead of intended travel, up to 14 days in advance or by 2 p.m. on the day before travel. Due to the specialized nature of the paratransit system users are charged a premium fare.

3.13.3 Columbia County Public Transit

Columbia County Public Transit (CCPT) based in Grovetown GA is a demand-response rural transit service available for all residents of Columbia County. CCPT provides curb-to-curb service Monday thru Friday between the hours of 8:30 a.m. to 4:30 p.m. serving destinations in Columbia and Richmond counties (with the exception of areas south of Gordon Highway). The earliest drop off time is 10:00 am and the latest pick-up time is 3:30 p.m. Riders who require physical assistance to enter or leave the vehicle must provide a personal escort. There are no restrictions regarding trip purpose, such as to medical appointments, grocery shopping, education, etc., but trip reservations must be booked a minimum of one business day in advance. Due to the specialized nature of this demand-response system, users are charged a premium fare.

3.13.4 Best Friend Express

Best Friend Express (BFE) is a fixed-route transit and paratransit service managed by LSCOG and operated by Aiken Area Council on Aging (AACOA). The three (3) transit routes of BFE operate a circular service between the hours of 7:00 a.m. to 7:00 p.m. Monday thru Friday. All BFE buses are equipped with two bike racks. Currently, there is no Saturday or Sunday service. With an average 120 minute headway, BFE transit services operate throughout Aiken County, SC, serving downtown Aiken, social service agencies, Aiken Regional Medical Center, University of South Carolina Aiken (USC-A), Aiken Technical College., and Whiskey Road to Aiken Mall. BFE North Augusta service operates between North Augusta, SC, to Aiken Technical College, serving the City Municipal Building, social service agencies, Wal-Mart and North Augusta Plaza, and Riverview Park. BFE also connects with APT at the Broad Street Transit Terminal enabling passengers to travel from the City of Aiken to the Augusta Mall and other areas in Augusta, GA, on public transit.

As a fixed route service, passengers can board or arrive at marked bus stops or flag down the bus anywhere along the route. Passengers can also disembark anywhere along the route that the driver deems safe to stop. As a paratransit service provider, BFE's buses are equipped with lifts and are wheelchair accessible. Reduced fares are offered to passengers with a disability, Medicare cardholders, students with valid ID, or seniors 60 years and older.

Bus headway is an important indicator of ridership, route frequency, and capacity. It presents the greatest challenge to achieving sustainable fixed-route operations and increasing transit ridership in the ARTS. APT for example, the average weekday bus headway (or passenger wait time between two buses) on the APT is 61.5 minutes, increasing to 66 minutes for the nine Saturday routes (*Table 24*). Standard transit industry benchmarks have determined that passenger wait times in excess of 60 minutes are generally unattractive to all riders. "Service levels longer than 30 minutes are generally unacceptable from the perspective of the passenger and are not convenient to develop a solid, consistent, ridership base."¹⁹ In the study area where the majority of persons are choice riders, an excessive bus headway reduces the potential of public transit becoming a practical transportation alternative.

3.13.5 Intercity Bus Service

Intercity bus service in the ARTS is provided by Southeastern Coach Stages, Greyhound Lines Inc. There are two intercity bus terminals in the study area: Augusta terminal located at 1125 Greene Street, and the Aiken Terminal located at 153 Pendleton Street NW. Five daily bus services connects Augusta with Atlanta and Augusta with Columbia SC. Two of the five daily Augusta-Atlanta services are non-stop while the other services make several stops along the route. Four daily services link Aiken with Columbia SC and three link Aiken with Atlanta.

3.13.6 Passenger Rail

Rail passenger service to the ARTS ceased with the 1968 closure and subsequent demolition of the Augusta Union Station in 1972 (Walker Street between 8th and 9th Streets in downtown Augusta). The closest passenger rail facilities to the ARTS area are provided by AMTRAK in Denmark, SC (62 miles away), Columbia, SC (74 miles away), Gainesville, GA (140 miles way), and Atlanta, GA (148 miles away).

¹⁹ Best Practices In Transit Service Planning 2009

The demand to keep Georgia economically competitive as a state to live, work and play has initiated proposals to develop a high-speed passenger rail network. The GDOT State Rail Plan (published in 2009) acknowledged the work of the Georgia Rail Passenger Program (GRPP) that proposed several rail passenger routes as part of a statewide intercity service. Atlanta would be the hub of the high speed and commuter rail network linking nine of Georgia’s largest cities with metro Atlanta. The proposed 171-mile Augusta-Madison-Atlanta rail corridor would provide a direct passenger rail link between Atlanta and Augusta. The new service (expected to be operational around the year 2030) would use existing CSX freight lines with three daily intercity trains in each direction.²⁰

3.14 Bicycle and Pedestrian Systems

A well-established bicycle and pedestrian system allows for affordable personal mobility, carbon-free transportation, and supports a healthy, active lifestyle for ARTS residents. Maintaining and improving upon the bicycle and pedestrian network is reflected in ARTS goals and objectives. These goals include: promoting mobility and accessibility for non-motorized users; increasing safety and security by promoting strategies that reduce traffic crashes and injuries involving cyclist and pedestrians; improving and maintaining the transportation system; enhancing the economic, social, and environmental fabric of the region; promoting efficient land use and development patterns; and developing a transportation system that is financially feasible.

The following sections provide an overview of the bicycle and pedestrian network. The 2012 ARTS Bicycle and Pedestrian Plan, established with the goals and objectives provides a basis for planning and programing future projects to enhance non-motorized transportation.

3.14.1 Bicycle Systems

Communities in the ARTS value bicycling as a viable recreational pursuit and to a lesser extent an alternative transportation choice. Not only can bicycling serve as an alternative transportation mode choice integrated into the transportation system, but it provides added economic, social, environmental, and health benefits. Indeed, cycling related sporting events such as the Ironman Triathlon bring in millions of dollars to the region each year, while multiple leisure and fitness bicycling groups can be seen on weekend morning rides throughout Augusta, GA, and North Augusta, SC.

²⁰ Georgia Rail Passenger Program Fact Sheet 2005

Table 30 indicates the numbers of persons who use bicycling as their means of transportation to work. Albeit a small portion of people commute by bicycle, these are important users of the ARTS transportation network. Both Richmond and Aiken counties display the highest numbers of riders. Richmond and Aiken counties both have a central business districts, densely built environments and university districts that to some degree provide safe environments conducive to bicyclists.

Table 30: Persons Riding Bicycle to Work

	Columbia	Richmond	Aiken	Edgefield
Persons who bicycle as their means of transportation	23	185	108	0

Source: US Census Bureau, American Community Survey 2008-2012 5-Year Estimate

The updated 2012 ARTS Bicycle & Pedestrian Plan provides an in-depth analysis of bicycling conditions within the transportation network. The plan also presents an overall vision for a more bicycle and pedestrian friendly study area. The following sections draw from the work contained in the 2012 ARTS Bicycle & Pedestrian Plan.

3.14.2 Current Assessment of Bicycle Infrastructure

A variety of bicycle infrastructure is available or planned for the ARTS; including, greenways, multi-use paths, dedicated bike lanes, sidewalks and paved shoulders. *Figure 36* represents the 2012 bicycle infrastructure in the study area. Established bicycle infrastructure is predominantly found in Aiken County, which has dedicated bike routes as well as an extensive greenway system located within North Augusta, SC and the City of Aiken, SC. Richmond County features an extended greenway system near the Savannah River and Riverwatch Parkway

Two Georgia State Bicycle Routes also feed into the more localized bicycle network. Savannah River Run (Route 85) runs along the Savannah River from the North Carolina State Line to Savannah, GA, encompassing 314 miles. The Augusta Link (Route 50) runs East-West from Thomson in McDuffie County to Route 85 near downtown Augusta, GA, encompassing a total of 39 miles.

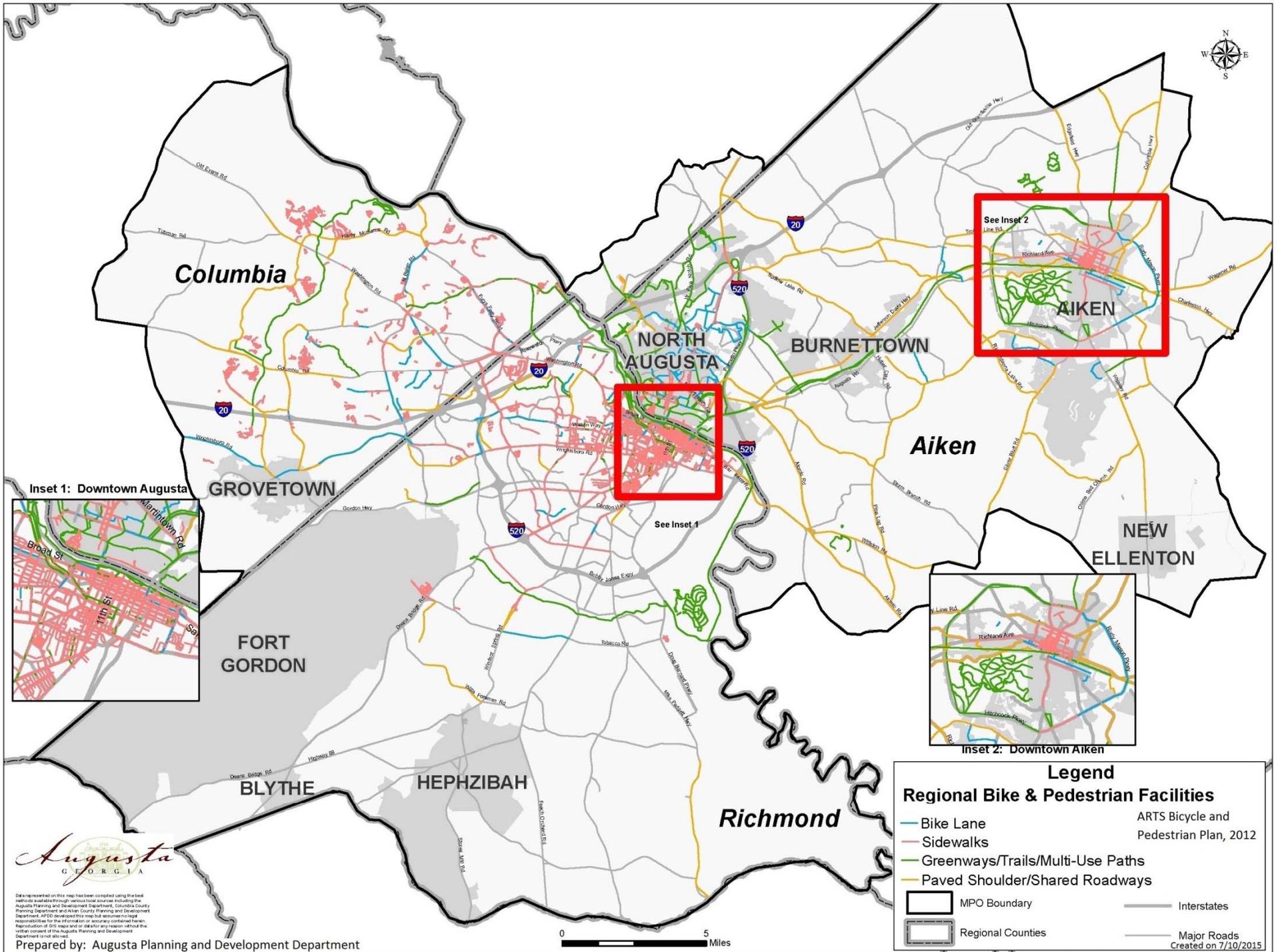
Highlighted strengths and opportunities of the 2012 ARTS Bicycle & Pedestrian Plan include:

- 7.1 miles of bicycle lanes between Columbia and Richmond Counties;
- 34.8 miles of greenways that provides both transportation and recreational activities;

A strong downtown grid network in Augusta, GA, North Augusta, SC, and the City of Aiken, SC that create a comfortable bicycling environment;

- Multiple roadways with large lane widths, low volume traffic or low speeds that create a suitable route for recreational bicycling; and a,
- Pedestrian-friendly infrastructure features that create tangible benefits for bicyclists.

Figure 36: Bicycle and Pedestrian Plan



Despite the above strengths, many deficiencies remain. Unsuitable bicycling environments within the ARTS transportation network create numerous traffic safety issues. There is an overall lack of efficient, connected and safe routes for bicyclists. A few of the deficiencies and constraints include, large commercial corridors designed specifically for motorized transportation that offer no connectivity for bicycle and pedestrian users, narrow roads with minimal shoulder width, dangerous railroad crossings and driveways. A weakness in bicycle infrastructure connectivity is exacerbated through the lack of appropriate signage to guide users to destinations both safely and efficiently, as well as street paving maintenance.

3.14.3 Bicycle Policy Overview

Key policy findings from the 2012 ARTS Bicycle & Pedestrian Plan indicate that none of the jurisdictions within the ARTS have a Complete Streets Policy or any guidelines specific to Complete Streets. However, North Augusta, SC, includes Complete Street policy in its Comprehensive Development Ordinance. Noting other design principles of bicycle infrastructure, both North Augusta, SC., and Aiken County, SC, incorporates some elements of Form Based Code in its development standards. None of the jurisdictions within the study area has explicit state-of-the-art guidance on bicycle and pedestrian facilities. Streetscape Design Guidelines are an essential component of Form Based Codes and they graphically show how pedestrian and bicycles can exist in harmony with building form and transportation in all zoning districts.

None of the jurisdictions reviewed considered multi-modal level of service criteria in their development review process. North Augusta, SC, does prioritize traffic mitigation measures that include multi-modal aspects. There were also no strategies for sidewalk or bicycle facility retrofits on existing facilities. Jurisdictions with the study area have incorporated approaches to regulating automobile and bicycle parking, however, the provision of bicycle parking facilities is not a requirement at any location.

Although the ARTS have historically lacked the policies for a strong bicycle network, there has been a recent push in the bicycling community together with local officials. This coalition seeks to provide a safer and a more active bicycle friendly network that captures the needs of both recreational and daily travel users. Priorities being proposed include bicycle parking locations, continued dedicated bike infrastructure during state road resurfacing projects, and connecting the current network through additional connectors and routes.

North Augusta Development Code adopted in 2007 and made effective in January 1, 2008 contains specific provisions for sidewalks, and require sidewalks in all their local streets through arterials streets. This local jurisdiction in the ARTS has taken the lead in formally adopting and enforcing a Complete Streets Policy for the benefit of all pedestrians and cyclists.

3.14.4 Walking and Pedestrian Systems

ARTS pedestrians live, work and recreate in a wide range of physical settings and environments, all connected through transportation. The design of walking and pedestrian systems must strive to accommodate all pedestrian needs by increasing the availability and connectivity of sidewalks. An existing ARTS definition of a 'street' primarily defines the term as it relates to vehicular functioning excluding the use by a pedestrian or cyclist. Increasing pedestrian travel and improving pedestrian comfort and safety (through sidewalk provision) are some of the issues driven by MAP-21, and by the need for everybody to become more physically active.

Like most cities across the country, the ARTS experienced spatial dispersal of development driven by the rapid increase of the road network. Often roads were designed and constructed, without thought to include sidewalks, as the focus was to accommodate sprawling development facilitated by access to the private automobile. The lack of sidewalks created an increased reliance on the automobile and minimal pedestrian connectivity that ultimately reduced the attractiveness of alternative transportation options available. Most of the existing sidewalks are concentrated in the urban cores of downtown Augusta, GA and Aiken, SC. However, sidewalks also occur in small clusters scattered throughout Columbia County (*Figure 37*).

Sidewalks are a vital component in creating a walkable and healthy community because they separate vehicle movements from bicycle traffic and pedestrians. This separation enhances the safety, connectivity and comfort of pedestrians and bicyclists. The provision of sidewalks in many ARTS planning area communities have become an important element in creating sustainable and livable spaces. In addition to sidewalks, other important elements creating a pedestrian friendly environment include pedestrian signals, crosswalk treatments, signage, refuge islands, and streetscape elements. Several examples of these exist throughout the study area.

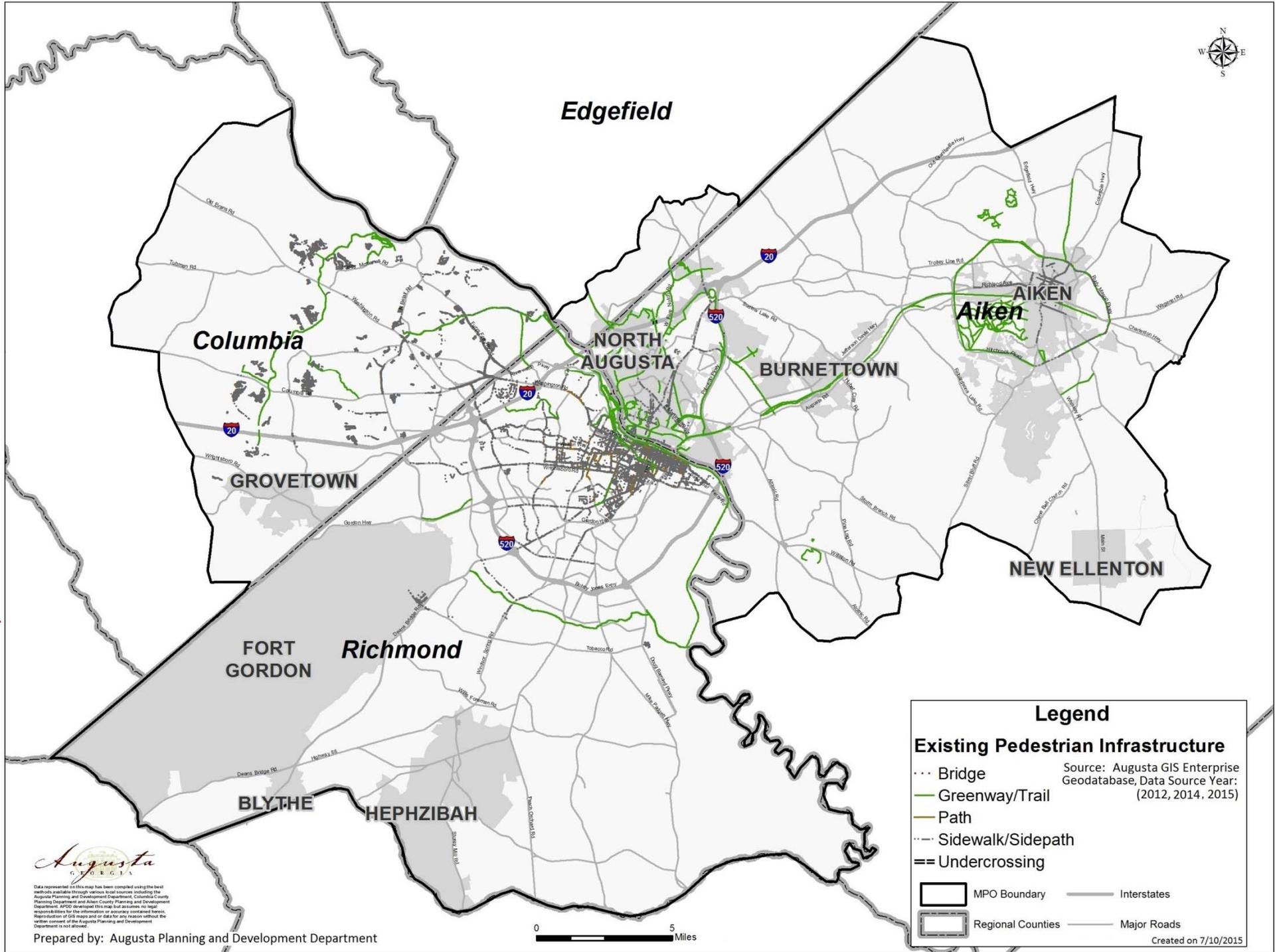
Many gaps still exist in the current pedestrian mobility network. The 2012 Augusta Regional Transportation Study Bicycle and Pedestrian Plan provided a set of minimum design standards and guidelines that can be used in the design of bicycle and pedestrian facilities. In addition to engineering guidelines, policy and education recommendations were put forward in the Plan. Educating motorists about sharing the road, encouragement of safe-routes-to-school programs and consistent enforcement of existing laws and regulations, all these initiatives have a role in creating bicycle and pedestrian friendly spaces in the study area.

3.14.5 Multi-use Trails

The ARTS has several multi-use recreational trails that crisscross communities, strengthen connectivity and enhance access. Multi-use trails are open for non-motorized uses only and often combine recreational uses shared by pedestrians, bicyclists and equestrians. The Augusta Canal and North Augusta Greenway are two prime examples of multi-use trails.

The Augusta Canal multi-use trail includes multiple trails, side-trails and paths within the Augusta Canal National Heritage Area. Main trails include Towpath Trail, Augusta Canal Historic Trail and River Levee Trail, to name but a few. The multi-use trails connect pedestrians and cyclists from downtown Augusta, GA, to Petersburg Boat Dock on the Savannah River in Columbia County, GA, and to residential subdivisions located along the Evans-to-Locks Road, Evans GA.

Figure 37: Existing Pedestrian Network



Data represented on this map has been compiled using the best methods available through various local sources including the Augusta Planning and Development Department, Columbia County Planning Department and Aiken County Planning and Development Department. APD developed this map but assumes no legal responsibility for the information or sources contained herein. Reproduction of GIS maps and/or data for any reason without the written consent of the Augusta Planning and Development Department is not allowed.

Residents of North Augusta, SC. commonly refer to the North Augusta Greenway as The Greenway. The Greenway was initially developed as a Rails-to-Trails project that followed an abandoned right-of-way of the former Central of Georgia Railway (later renamed as the Central Rail Road and Banking Company of Georgia). As a greenway 13 miles in length, it is mostly shaded and meanders throughout the riverfront community of North Augusta, SC. The greenway connects to Riverview Parkway in North Augusta, SC. Riverview Parkway Trail loops around the Hammonds Ferry neighborhood, Brick Pond Park and continues along the Savannah River. Another addition to the Greenway system includes the Palmetto Parkway Bike Path. Palmetto Parkway Bike Path parallels I-520 and runs south from Ascauga Lake Road to Atomic Road.

Columbia County's Euchee Creek Greenway is an extensive nature park and trail system that follows Euchee Creek from Harlem Grovetown Road to Wrightsboro Road. Euchee Creek Greenway is located within a floodplain and is predominately flat, lending Euchee Creek corridor most favorably for trail development.

Aiken County's Hitchcock Woods is the largest urban nature trail system in the study area. The 70 miles of sandy trails, rings itself around the City of Aiken's urban core. The public trail is open to equestrians, hikers, dog walkers, joggers, and horses with carriages.

3.15 Complete Streets

Complete Streets is now a standard transportation planning practice. This strategy involves designing local streets to incorporate all modes of travel such as; bicycles, pedestrians, motorized vehicles, and public transit. Many state DOTs have formally adopted Complete Streets Policies by encouraging local jurisdictions design and implement transportation improvements to holistically meet local community's travel needs in a safe environment.

3.15.1 State Policy

The State of Georgia and South Carolina, like many states across the country have adopted Complete Streets policies. Local jurisdictions are following their example by adopting these policies into their zoning or street ordinances. North Augusta, SC, is the only city within the ARTS adopting a Complete Streets policy into their zoning ordinance.

GDOT formally adopted a Complete Street Policy on September 20, 2012. It is now incorporated into the GDOT Design Policy Manual – Chapter 9 – and regulated by GDOT for all transportation projects under their oversight, funded with state or federal funds. The policy mirrors USDOT Complete Streets Policy:

“The DOT policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. Every transportation agency, including DOT, has the responsibility to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems. Because of the numerous individual and community benefits that walking and bicycling provide — including health, safety, environmental, transportation, and quality of life — transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes.”²¹

State transportation projects in planning, concept development, or preliminary engineering phase are expected to comply with the policy. Projects advanced to final design or approval of right-of-way plan must also comply with the policy.

SCDOT adopted a Complete Streets Policy in 2003. SCDOT is strongly committed to improving conditions for walking and bicycling. Planning for Complete Streets will be a routine part of planning, design, construction and operating activities. Local municipalities must make such improvements an integral part of their programs when state and federal funds are used.

3.15.2 Local Policies

Counties in the ARTS planning area are encouraged to draft, adopt and update their ordinances to include Complete Streets policies and design guidelines. Sidewalk ordinances in Aiken, SC, Columbia and Richmond Counties in Georgia, are ways of ensuring Complete Streets policy is implemented. In Aiken County, SC, sidewalks are required along one side of the road for all subdivisions with fifty (50) lots or more or by planning commission recommendation. In Columbia County, GA, sidewalks are an important consideration of landscaping and design while in Richmond County they are required along all arterials and collector streets. These ordinances are stated in their local zoning and subdivision regulations as follows:

²¹ http://www.fhwa.dot.gov/environment/bicycle_pedestrian/overview/policy_accom.cfm

Aiken County – Article VII – Land Development Regulations, Sec. 24-7.15 – Sidewalks

Sidewalks shall be required on one (1) side of each street in all subdivisions with 50 lots or more with an average lot size of one-half (½) acre or less. Sidewalks also may be required by the planning commission to continue an existing sidewalk in an adjacent subdivision or along an existing street to access nearby schools and/or public recreation areas. Within subdivisions, sidewalks shall be at least four (4) feet wide; when providing access to public facilities, sidewalks shall be not less than five (5) feet wide.

Richmond County - Subdivision Regulations: Article IV; Design Standards, Sec. 404 Sidewalks

Sidewalks must be provided on any existing arterial or collector street that is part of any subdivision plan that is adjacent to an existing street classified as an arterial or collector in the Highway Functional Classification System within the Augusta-Richmond County Urbanized Area as defined by the Augusta Regional Transportation Study. Where installed, sidewalks shall meet the construction standards of the Traffic Engineer.

Columbia County - Chapter 90 – Zoning: Sec. 90-140. Landscaping - Design standards.

(1) Landscape strips required in this section shall meet the following requirements:

a. Landscape strips shall contain no structures, parking areas, patios, storm water detention facilities, or any other accessory uses, except for retaining walls or earthen berms constructed as part of an overall landscape design, pedestrian-oriented facilities such as sidewalks and bus stops, underground utilities, driveways required to access the property and signs otherwise permitted by this chapter.

City of North Augusta – Article 14.4, Table 14-2, 3, and 4 – Street Types and Design

Sidewalks – Refers to the number of sidewalks required. Sidewalks for boulevards, avenues and collector streets shall have a minimum width of six (6) feet and a maximum width of twenty (20) feet. Sidewalks for all other classifications shall have a minimum width of five (5) feet. Sidewalks shall include additional width where required by the Americans with Disabilities Act. See §14.10 for sidewalk design requirements. For main streets, grated tree wells may be used in lieu of planting strips. For parkways, the sidewalks shall take the form of multi-use Greenways that may meander at a distance of between six (6) to fifty (50) feet from the paved section of the roadway. A minimum six (6) foot paved shoulder shall be included on any street with a design speed of forty-five (45) miles per hour or greater where curb and gutter and sidewalk are not provided.

North Augusta’s zoning ordinance requires sidewalks on both side of every street from local through collector and one side for all arterial streets. Their pedestrian walkway design criteria and bikeway design criteria consist of detailed tables that are inclusive of all roadway classifications. Local Planning and Development Departments in each county administer these ordinances through a development review process.