



Needs and Gaps Assessment for the Transportation Disadvantaged

Final Report, December 2015
Richmond Regional Planning District Commission
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Introduction

Mobility is an essential aspect of daily life; the ability to get around directly affects one's quality of life and shapes one's world.¹ In commuting to work, shopping, doctor's appointments, visiting friends and family, or travelling for leisure and recreation there is exists a common denominator—the ability to be mobile.

As the United States and the world continue to urbanize and suburbanize, the resultant increase in distance traveled per person, the reliance on the personal automobile, and the rise in transportation costs will create a more pronounced strain on those who use it, with special focus on the transportation disadvantaged. The transportation disadvantaged populations are those who personally experience difficulties or are unable to transport themselves or are unable to purchase transportation services due to physical or mental disability, age, or income status.²

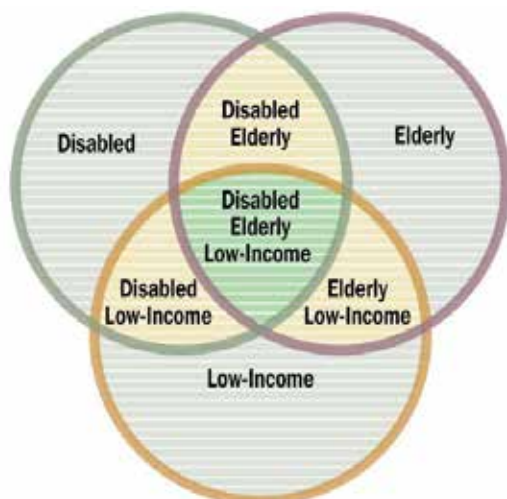


Figure 1. Transportation Disadvantaged Summary

1 Marx, Jerry, Christie Davis, Caitlin Miftari, Anne Salamone, and Wendy Weise. "Developing Brokered Community Transportation For Seniors And People With Disabilities." *Journal of Gerontological Social Work* 53 (April 2010): 449.

2 Duvarci, Yavuz, and Tan Yigitcanlar. "Integrated Modeling Ap-

proach for the Transportation Disadvantaged." *Journal of Urban Planning and Development* 133 (September 2007): 189.

According to the 2010 Census, almost 40 million people or 12.9 percent, were age 65 or older in the U.S.³; the American Community Survey reported that the poverty rate in 2012 was 15.0 percent, totaling 46.5 million individuals in poverty⁴; the Americans with Disabilities: 2010 report stated that about 65.7 million people, or 19 percent of the population, had a disability in 2010⁵. A limitation in mobility occurs when an individual is unable to move between a desired destination and origin due to external or self-limiting factors.⁶ Heavy dependence on the personal automobile in the United States produces an increased stress on populations engaged in the transition from self-dependence to reliance on public transportation services, specifically in aging populations, those with disabilities, and the low-income.

The majority of elderly individuals choose to live in the suburbs, and as this population ages, the proportion of the elderly living alone and the proportion of the elderly with a disability increases, leading to barriers in providing personal transportation. In 1990, approximately 82,000 people were age 65 and older in the Richmond Region, increasing to over 86,000 in 2000, according to the US Census. Data from the 2010 Census illustrates that the elderly population is almost 12 percent of the Richmond region's population, or approximately 117,000 people. This constitutes a 43 percent increase in the population age 65

proach for the Transportation Disadvantaged." *Journal of Urban Planning and Development* 133 (September 2007): 189.

3 "Aging Statistics." Administration on Aging. http://www.aoa.gov/Aging_Statistics/ (accessed July 30, 2014).

4 "About Poverty." United States Census Bureau. <https://www.census.gov/hhes/www/poverty/about/overview/> (accessed July 30, 2014).

5 Brault, Matthew K. "Americans with Disabilities: 2010." United States Census Bureau (July 2012).

6 Wasfi, Rania, David Levinson, and Ahmen El-Geneidy. "Measuring the Transportation Needs of Seniors." *Journal of Transport Literature* 6 (January 2012): 9.

and older in the Richmond region since 1990. The Administration on Aging estimates that the population age 65 and older will make up 19 percent of the US population by 2030.⁷ The percentages of the elderly population varies from 10.4 percent to 16.3 percent throughout the jurisdictions that comprise the Richmond Region. The desire and need to “live independently and age successfully” in older Americans is heavily reliant on the ability to remain mobile.⁸ The elderly population is likely to have difficulties in accessing public transportation and specialized transportation services due to their distance from these services.

For the disabled population, the issues faced relate to the availability of options that accommodate specific disabilities. The Americans with Disabilities Act defines a disability as “a physical or mental impairment that substantially limits one or more major life activities.”⁹ These disabilities can impede walking, climbing stairs, dressing, bathing, learning, remembering, or even preventing these individuals from leaving the home alone or being able to work.¹⁰ In the Richmond Region, almost 11 percent of the population report having a disability, or approximately 108,000 people. According to a 2004 survey conducted by the National Organization on Disability, 31 percent of persons with disabilities have difficulty with accessing transportation services, compared to only 13 percent of persons without disabilities.¹¹

The low-income population is also disadvantaged in aspects of mobility and access to transportation. The ability to “access [transportation] is [fundamental] for everyone to connect with employment opportunities, shopping, health and educational services, and the community at large.”¹² For those in poverty, the ability to work is often contingent on the availability of reliable and accessible transportation. Without a reliable system of transportation, the poverty trap is perpetuated due to the

inability to access employment. Despite economic barriers, less than 8 percent of individuals below poverty use public transit, suggesting that they will forego expenditure on personal and family needs in order to purchase a vehicle.

Each jurisdiction in the Richmond Region utilizes some form of specialized transportation to provide services to the transportation disadvantaged. However, the services provided in each jurisdiction do not always encompass the full scope of the transportation disadvantaged groups or the full scope of desired trip purposes. The areas serviced, hours of operation, ridership requirements, reservation system and rules, and costs vary by provider throughout the jurisdictions. The transportation disadvantaged cite these problems with specialized transportation services: difficulty in getting the necessary transportation, the transportation is difficult to use, services are non-existent in their area, the services are unreliable, desired destinations are not serviced, and bus stops or pick-ups are too far away.¹³ These problems are also common in the Richmond Region and include limited service areas, limited operational hours, inconsistent eligibility requirements with different providers, and lack of coordination. In past planning practices and models, the transportation disadvantaged have often been overlooked, failing to inform policymakers with accurate information on these populations, leading to decisions that often do not incorporate the transportation disadvantaged. Simultaneous recognition of transit needs and an identification of spatial gaps in transit accessibility and gaps in transit services can help the Richmond Region provide a more equitable and specialized public transit service.

¹³ “Developing Brokered Community Transportation for Seniors and People With Disabilities,” 450.

⁷ “Aging Statistics.” Administration on Aging. http://www.aoa.gov/Aging_Statistics/ (accessed July 30, 2014).

⁸ AARP. “Enhancing Mobility for Older Americans: A Five-Year National Action Agenda.” (June 2004): 8.

⁹ “2010 ADA Regulations” Americans with Disabilities Act. http://www.ada.gov/2010_regs.htm (accessed July 30, 2014).

¹⁰ “Americans with Disabilities: 2010.”

¹¹ The National Organization on Disability. “2004 NOD-Harris Survey of Americans with Disabilities.” The National Organization on Disability. http://nod.org/research_publications/surveys_research/harris (accessed August 1, 2014).

¹² “Integrated Modeling Approach for the Transportation Disadvantaged,” 189.

2 Background

The purpose of this needs assessment is to investigate the public transportation needs of the transportation disadvantaged, as well as the services currently available to these groups, in order to understand the gaps that exist in the current situation. The tasks necessary to complete this study are:

- Identification of transportation disadvantaged groups in the Richmond Region by jurisdiction and number in need of specialized transportation services
- Evaluation of demand for specialized services including major travel destinations, travel times, and trip purposes
- Review of existing specialized transportation services in the region
- Comparative analysis of specialized transportation services available to meet the needs of the transportation disadvantaged population in the region
- Identification of issues in existing transportation services in meeting the needs of the transportation disadvantaged
- Identification and analysis of gaps between existing services and the current demand for services
- Forecast of future demand for specialized and paratransit services

This assessment is intended for use by the Richmond Regional Transportation Planning Organization (RRTPO), jurisdiction governments, GRTC Transit System (GRTC), human services agencies and organizations, and transportation providers in evaluating specialized transportation services available, the demand for these services, and the existing gaps.

Data in this report is based upon the United States Census Bureau's 2010 Census and the 2012 American Community Survey 5-year estimates.

For the purpose of this assessment, the transportation disadvantaged population is defined as:

- **Elderly** – age 65 and over.
- **Disabled** – based on census definition for disability that refers to persons with a long-lasting physical, mental, or emotional condition that makes it difficult for a person to perform activities such as walking, climbing stairs, dressing, bathing, learning, or remembering. This condition can also impede a person from being able to go outside the home alone or to work at a job or business.
- **Low-Income** – based on census definition of poverty derived from figures in the 2008-2012 5-year estimates of the American Community Survey. Poverty status is determined by comparing an individual's total income with the poverty threshold appropriate for the individual's family size and composition. Table 1 shows the relationship between family size, composition, and poverty status.

Size of Family Unit	None	One	Two	Three	Four	Five	Six	Seven	Eight or more
One person (un-related individual)									
Under 65 years old	12,119								
65 years old and over	11,173								
Two people									
Householder under 65 years old	15,600	16,057							
Householder 65 years old and over	14,081	15,996							
Three people	18,222	18,751	18,769						
Four people	24,028	24,421	23,624	23,707					
Five people	28,977	29,398	28,498	27,801	27,376				
Six people	33,239	33,461	32,771	32,110	31,128	30,545			
Seven people	38,349	38,588	37,763	37,187	36,115	34,865	33,493		
Eight people	42,890	43,269	42,490	41,807	40,839	39,610	38,331	38,006	
Nine people or more	51,594	51,844	51,154	50,575	49,625	48,317	47,134	46,842	45,037

Table 1. Poverty Thresholds from US Census Bureau

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Transportation Disadvantaged - Elderly Population

The population of older adults in the United States is growing and becoming an increasingly larger percentage of the total population. The profile of the elderly population ranges across socioeconomic classes, degrees of health, and helps emphasize a population of diverse mobility needs. Because of the high dependence on the personal vehicle, for many elderly individuals, it is not until driving becomes difficult, that they are aware of the few options available to them, without their vehicle.

Over 50 percent of non-drivers, age 65 and older, stay at home on any given day; in more dense areas, this number is only 43 percent, while in more rural areas, it rises to 61 percent. These high percentages are due to the lack of coordination or the lack of services that cater to the needs of the transportation disadvantaged. A transportation disadvantaged senior is much more likely to be excluded from society, causing negative effects on their physical and mental well-being.¹⁴

¹⁴ "Measuring the Transportation Needs of Seniors," 9.

Table 2. Elderly Population in the Richmond Region

Jurisdiction	Total Population	Elderly Population	Percent Elderly	Percent of Region's Elderly
Charles City	7,256	1,214	16.73%	1.04%
Chesterfield	316,236	32,878	10.40%	28.20%
Goochland	21,717	3,237	14.91%	2.78%
Hanover	99,863	13,104	13.12%	11.24%
Henrico	306,935	37,924	12.36%	32.52%
New Kent	18,429	2,226	12.08%	1.91%
Powhatan	28,046	3,407	12.15%	2.92%
Richmond	204,214	22,619	11.08%	19.40%
Total	1,002,696	116,609	11.63%	

Source: ACS 2008-2012, Table C18130

Elderly Population (65 and older)

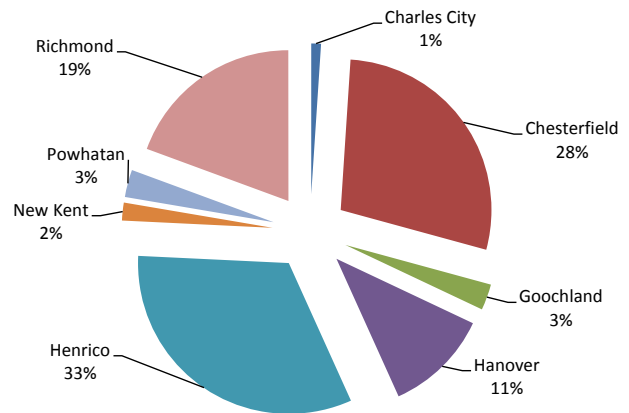


Figure 2. Elderly Population in the Richmond Region

According to the 1990 Census, there were 31 million Americans age 65 or over, and by 2000, this number had risen to 35 million or 12.4 percent of the 2000 population. The 2010 Census states that there are now 39.6 million person 65 or older, representing 12.9 percent of the U.S. population. By 2030, the population of persons 65 or over is

projected to increase to 72.1 million or 19 percent of population.

Almost 12 percent of the Richmond region's population is age 65 or older, as reported by the 2010 Census. Table 2 and Figure 2 illustrate the elderly population in each of the jurisdictions making up the Richmond Region, ranging from just over 10 percent in Chesterfield to almost 17 percent in Charles City. Chesterfield, Henrico, and Richmond make up over 80 percent of the region's elderly population. Map 1 illustrates the regional distribution of the elderly population.

The Insurance Institute for Highway Safety reports that 79.4 percent of individuals over 70 have their license, leaving 20.6 percent of all individuals over 70 unlicensed in 2012. Family and friends provide over 1.4 billion trips annually for the elderly population in the US. Though use of transit by persons age 65 and older increased 40 percent between 2001 and 2009, and is still increasing, the dependence on the private automobile is still strong.¹⁵ It is still important to note that the share of trips in private vehicles is decreasing and the share of trips by public transit is increasing.¹⁶ In the US, persons age 65 and older make only 9.4 percent of their trips by foot or bicycle, although 31.8 percent of trips are one mile or less and 46 percent are two miles or less¹⁷, compared to 55 percent of trips made on foot or bicycle by the elderly population in Germany.¹⁸

The 2012 ACS results show that 82.7 percent of elderly workers drove alone to work, higher than the percentage for all workers in the Richmond region. These numbers illustrate a reliance on the automobile, and the lack of use of public transportation services, whether due to inaccessibility or unavailability. The means of travel to work for the population of elderly workers in the Richmond region is shown in Table 3. Map 2 illustrates the breadth of GRTC service in relation to the elderly population.

¹⁵ Lynott, Jana, and Carlos Figueiredo. "How the Travel Patterns of Older Adults Are Changing: Highlights from the 2009 National Household Travel Survey." AARP Public Policy Institute: 1-8.

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ "Enhancing Mobility for Older Americans: A Five-Year National Action Agenda," 8.

Table 3. Means of Transportation to Work in the Richmond Region for Workers Age 65 and Older

Means of Transportation to Work	Total Workers	Elderly Workers (Age 65 and older)
Drove alone	81.3%	82.7%
Carpool	9.4%	5.8%
Transit	2.1%	1.4%
Walked	1.4%	1.6%
Taxicab, motorcycle, bicycle, or other	1.3%	0.5%
Worked at home	4.5%	8.0%

Source: ACS 2008-2012, Table B08101

As the Baby Boom Generation continues to age, a concurrent decline in the abilities that impact mobility also occurs.¹⁹ These impacts on mobility alter their ability to drive, walk, or use public transportation services, creating a greater need for specialized services. To help ensure that transportation disadvantaged elderly have access to employment, health care, and other basic human services, as well as leisure, various federal programs have been established. It is coordination between these services that will ultimately create a level of efficiency that can better serve the needs of this population.

A viable option in assisting the elderly population to better use public transit services and specialized transportation options is the implementation of a travel-training program. A travel-training program provides an orientation based on the needs of the population being served, and enhances the comfort and confidence of those who were previously unfamiliar with public transit. Other transportation options may include volunteer services, reduced-fare programs, accessible vehicles, curb-to-curb services allowing public transit buses to deviate from fixed-routes, and specialized services.

¹⁹ "Developing Brokered Community Transportation for Seniors and People With Disabilities," 451.

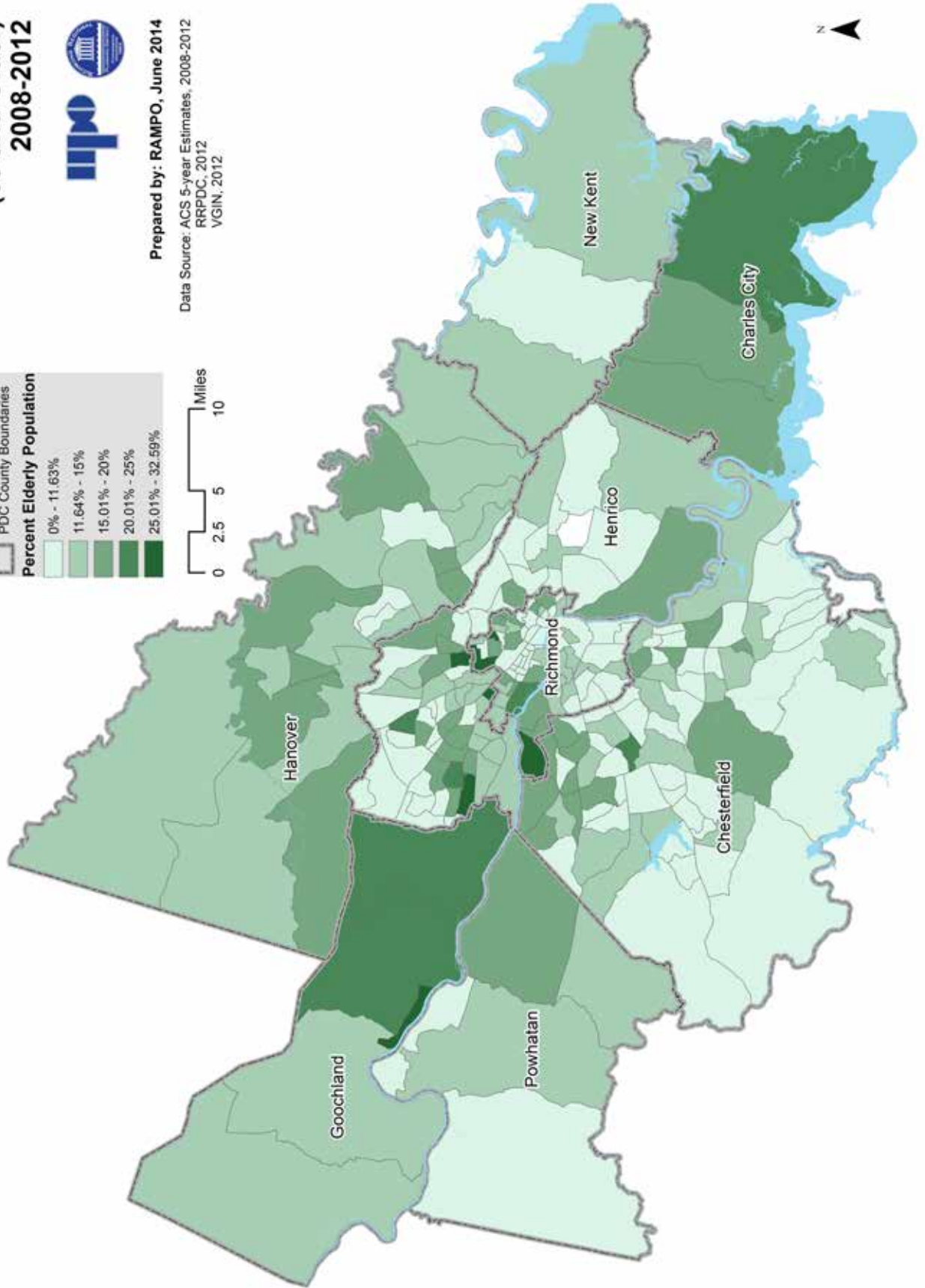
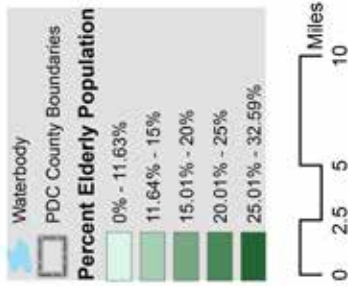
Map 1. Elderly Population (65 and Older)

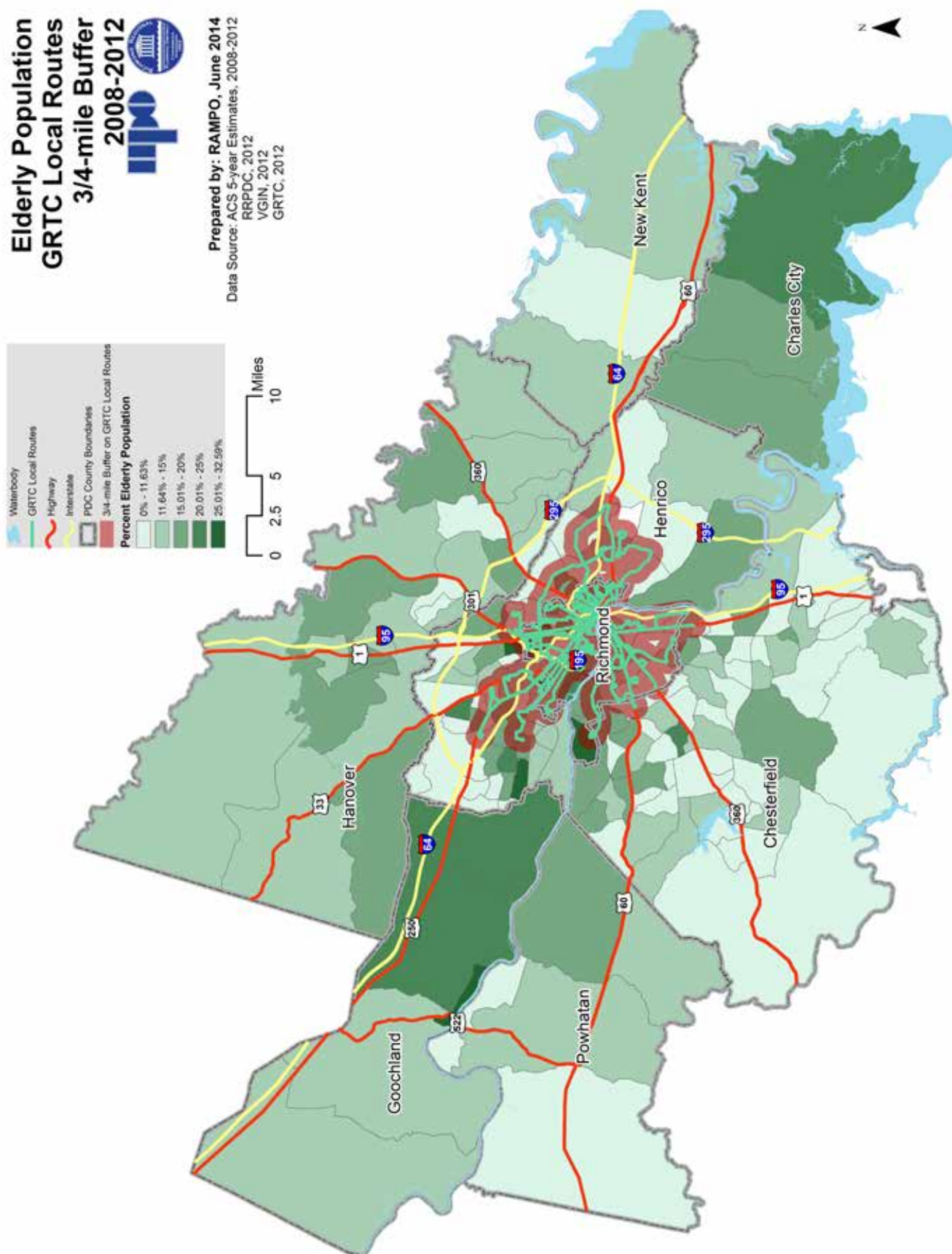
Elderly Population (65 and Older) 2008-2012



Prepared by: RAMPO, June 2014

Data Source: ACS 5-year Estimates, 2008-2012
RRPDC, 2012
VGIN, 2012





4

Transportation Disadvantaged - Disabled Population

The Americans with Disabilities Act of 1990 (ADA) prohibits any discrimination against and guarantees equal opportunity for persons with disabilities in areas such as employment, governmental services, public accommodations, commercial facilities, and transportation.²⁰ Section 504 of the Rehabilitation Act was extended with the passage of the ADA to include all state and local government activities, not just those programs receiving federal funds. It applies to all public transit services, regardless of funding source. Title II of the ADA also clearly defined the responsibility of the provider to make the participation of a disabled person possible, and the right to equal participation in public transit programs by disabled persons.²¹ In the region, the Code of Virginia (Title 51.5, Chapter 9, Section 44) enforces the stipulations put in place by the ADA.²²

A person with a disability is defined by the US Census Bureau as having a long-lasting physical, mental, or emotional condition that makes it difficult for that person to perform daily tasks alone.²³

Under the ADA, complementary paratransit service is required for passengers who are: unable to navigate the public bus system, unable to get to a point from which they could access the public bus systems, or have a temporary need for these services because of injury or disability.²⁴ Title 49 Part 37 details that the complementary paratransit service includes destinations within ¾-mile of all fixed-routes, as well requiring paratransit service

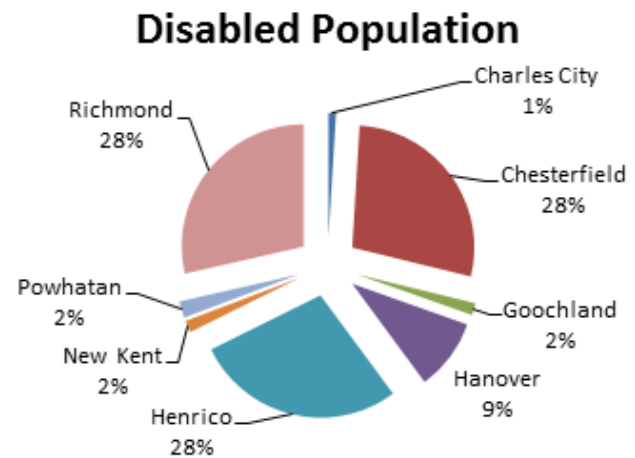


Figure 3. Disabled Population in the Richmond Region during hours in which public transit is also operating.²⁵ GRCT CARE is an example of this service in the Richmond Region.

According to data from the US Census Bureau, released to coincide with the 22nd anniversary of the ADA, 56.7 million people, or 19 percent of the population, had a disability in 2010.²⁶ Of the almost 8 million people in Virginia, approximately 850,000 have at least one disability, or approximately 11 percent of the population.

In the Richmond Region, 10.75 percent of the population has some form of disability. This is equivalent to a total of over 107,000 people. The percentages range from 7.8 percent in Goochland to 15.07 percent in Richmond. Chesterfield, Richmond, and Henrico comprise over 84 percent of the region's disabled population. These numbers are summarized in Table 4. Map 3 provides a graphical illustration of this distribution.

More than half of the homebound population in

²⁰ "2010 ADA Regulations."

²¹ Ibid.

²² "Code of Virginia." Commonwealth of Virginia. <http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+51.5-44> (accessed August 1, 2014).

²³ "Nearly 1 in 5 People Have a Disability in the U.S., Census Bureau Reports." United States Census Bureau. Last modified July 25, 2012. <http://www.census.gov/newsroom/releases/archives/miscellaneous/cb12-134.html>.

²⁴ "2010 ADA Regulations."

²⁵ Ibid.

²⁶ "Nearly 1 in 5 People Have a Disability in the U.S., Census Bureau Reports."

Map 3.Disabled Population

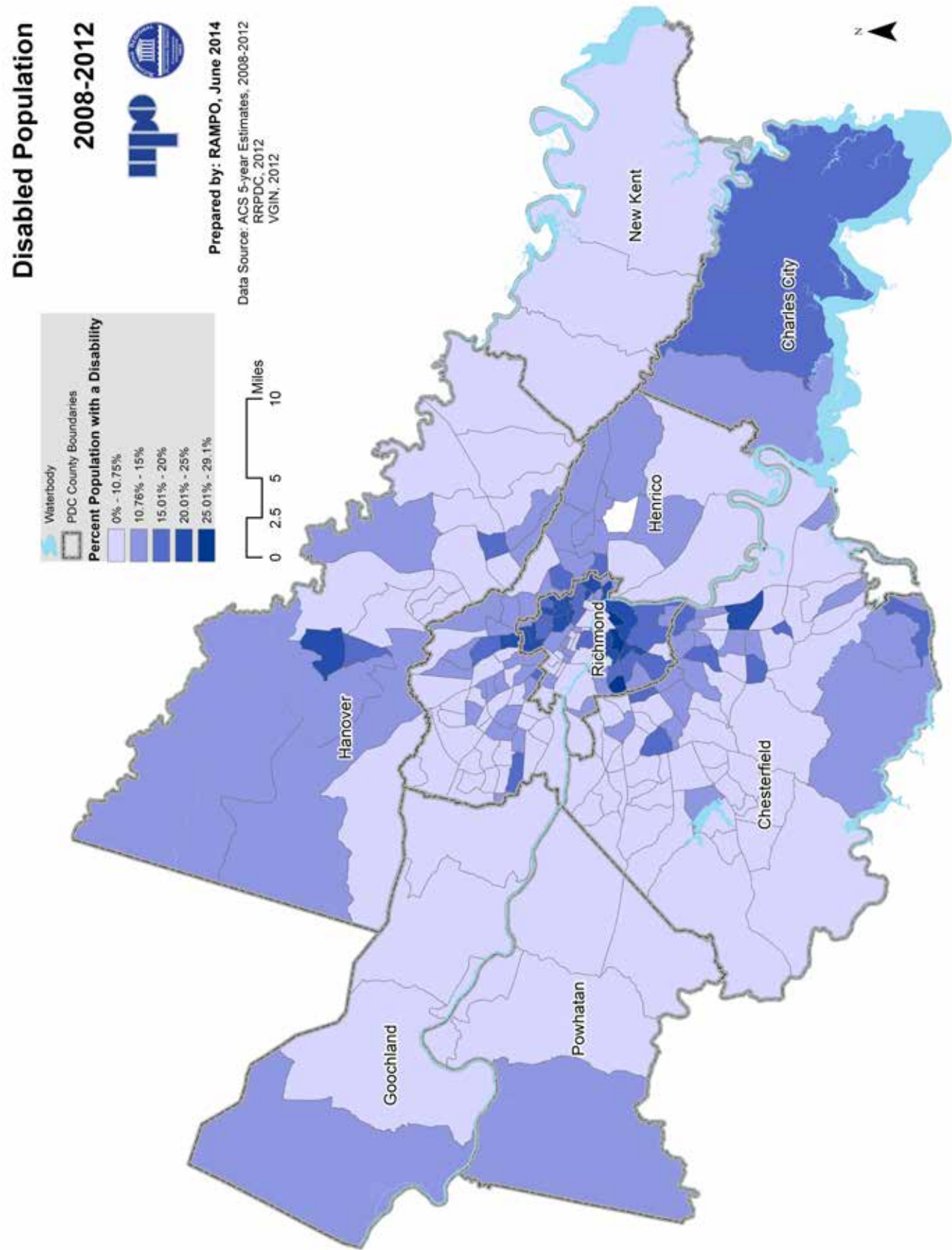


Table 4. Disabled Population in the Richmond Region

Jurisdiction	Total Population	Disabled	Percent Disabled	Percent of Region's Disabled
Charles City	7,256	1,047	14.43%	0.97%
Chesterfield	316,236	30,004	9.49%	27.84%
Goochland	21,717	1,712	7.88%	1.59%
Hanover	99,863	10,205	10.22%	9.47%
Henrico	306,935	29,985	9.77%	27.82%
New Kent	18,429	1,682	9.13%	1.56%
Powhatan	28,046	2,371	8.45%	2.20%
Richmond	204,214	30,768	15.07%	28.55%
Total	1,002,696	107,774	10.75%	

Source: ACS 2008-2012, Table C18130

the US consists of people with disabilities. People with disabilities who never leave the home tend to be older and have more severe disabilities. The majority (62%) of persons with disabilities leave the home five to seven days per week. Of those individuals who have disabilities and are not able to leave the home, 57 percent require specialized assistance or equipment. Among the population with disabilities that never leave the home, 29 percent have difficulty getting the necessary transportation, whereas only 11 percent of the disabled population that is able to leave the home experiences these same difficulties. Approximately 14 percent of the disabled population that leaves the home five to seven days a week need assistance to travel outside of the home, and 8 percent have problems getting the needed transportation services. Of the problems cited by individuals with disabilities who experienced difficulty getting the necessary transportation, the most frequent are: no or limited public transportation (33 percent), no access to a vehicle (26 percent), disability makes it difficult to use transportation (17 percent), and no one to depend on (12 percent). Comparatively, 47 percent of the non-disabled population reports that the most frequent difficulty experienced is the lack of or limited availability of public transportation services.²⁷

Although the majority of disabled workers use personal automobiles to commute, a higher percentage, 15 percent, of the disabled workers ride as passengers, compared to 6 percent of non-disabled workers. Only 66 percent of all disabled workers report driving to work compared to 85 percent of all non-disabled workers. The US Department of Transportation states that transportation services are generally available to the disabled population; more than 50 percent of the entire disabled population lives near a path or sidewalk, 60 percent have access to paratransit

Table 5. Means of Transportation to Work in the Richmond Region for Disabled Workers

Means of Transportation to Work	Total Workers	Disabled Workers
Drove alone	81.3%	69.9%
Carpool	9.4%	12.3%
Transit	2.1%	6.6%
Walked	1.4%	2.7%
Taxicab, motorcycle, bicycle, or other	1.3%	3.2%
Worked at home	4.5%	5.3%

***Calculated using data from the ACS 2012 5-year estimates based on Chesterfield, Hanover, Henrico, and Richmond due to availability of data

27 "Freedom to Travel, Data Analysis." Bureau of Transportation Statistics, Research and Innovative Technology Administration. http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/freedom_to_travel/html/data_analysis.html (accessed August 1, 2014).

services, and over 75 percent have taxi service. Only about 25 percent live within 5 miles of a rail service and 47 percent live within ¼-mile of bus transit. Approximately 42 percent of the disabled population used bus transit more than three times a week, compared to only 28 percent of the non-disabled population.²⁸

In Table 5, means of transportation to work for disabled workers is summarized. Approximately 70 percent of disabled workers drove alone to work, compared to the average of 81.3 percent for the region. Disabled workers surpass the percentages for the total workers in the region in every category but driving alone; 12.3 percent of disabled workers carpool and 6.6 percent use transit, compared to 9.4 percent and 2.1 percent, respectively. This data can be visualized using Map 4.

Map 5 illustrates the relationship between employment and disability status in the Richmond Region.

Alternative modes of transportation are more often used by disabled workers than those without disabilities, but there still exists a heavy reliance on the personal automobile. Nonetheless, persons with disabilities are more likely to have problems in accessing specialized transit or public transit services. The built environment and physical limitations are more likely to lead to a mobility disability for those who are disabled.²⁹

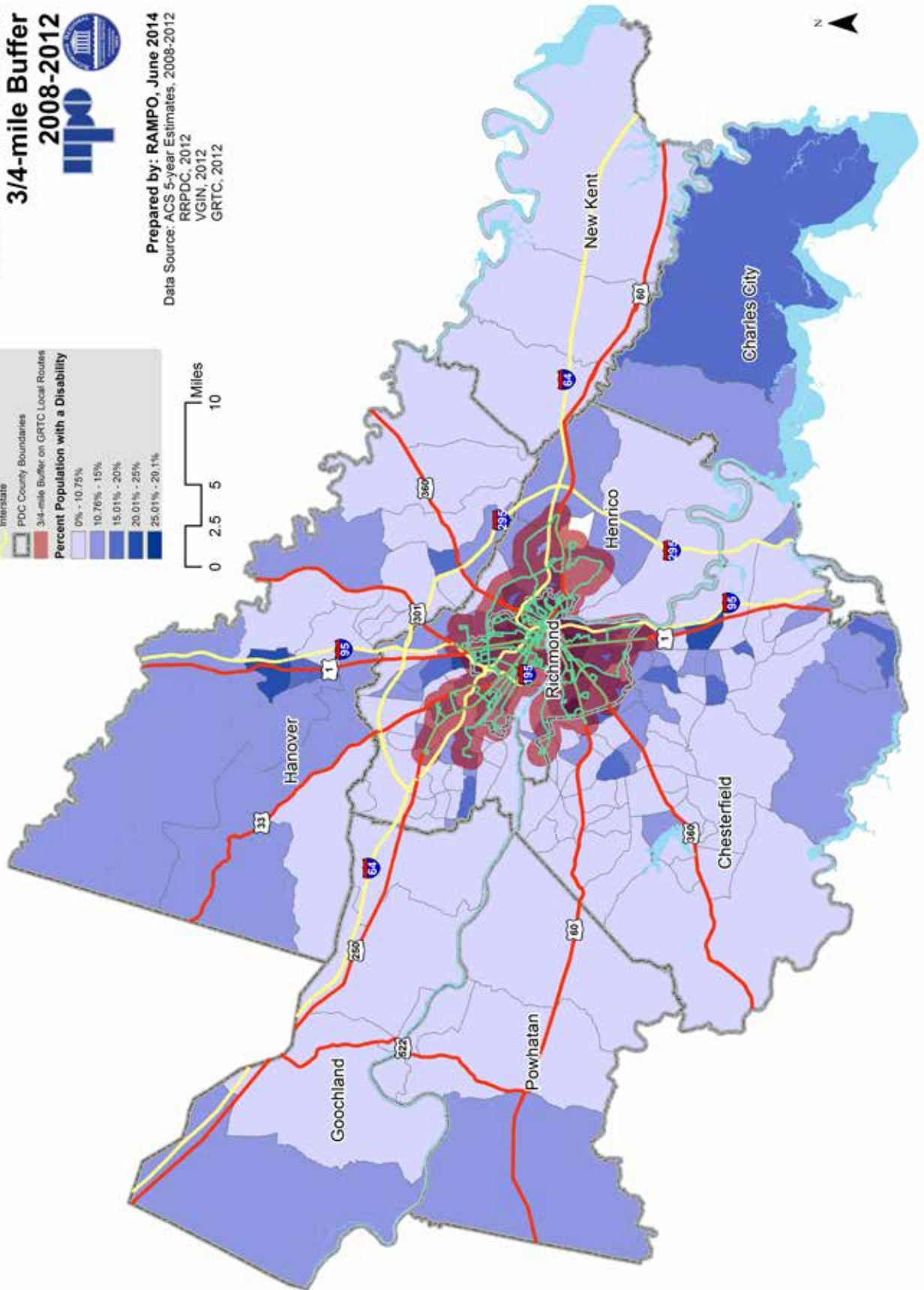
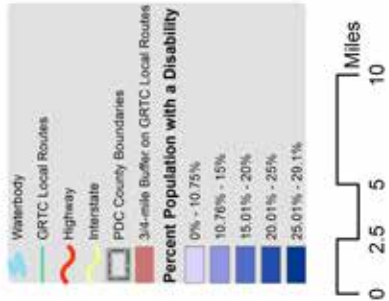
²⁸ "Freedom to Travel, Data Analysis."

²⁹ Clarke, Philippa, Jennifer A. Ailshire, Michael Bader, Jeffrey D. Morenoff, and James S. House. "Mobility Disability and the Urban Built Environment." *American Journal of Epidemiology* 188 (July 2008): 507.

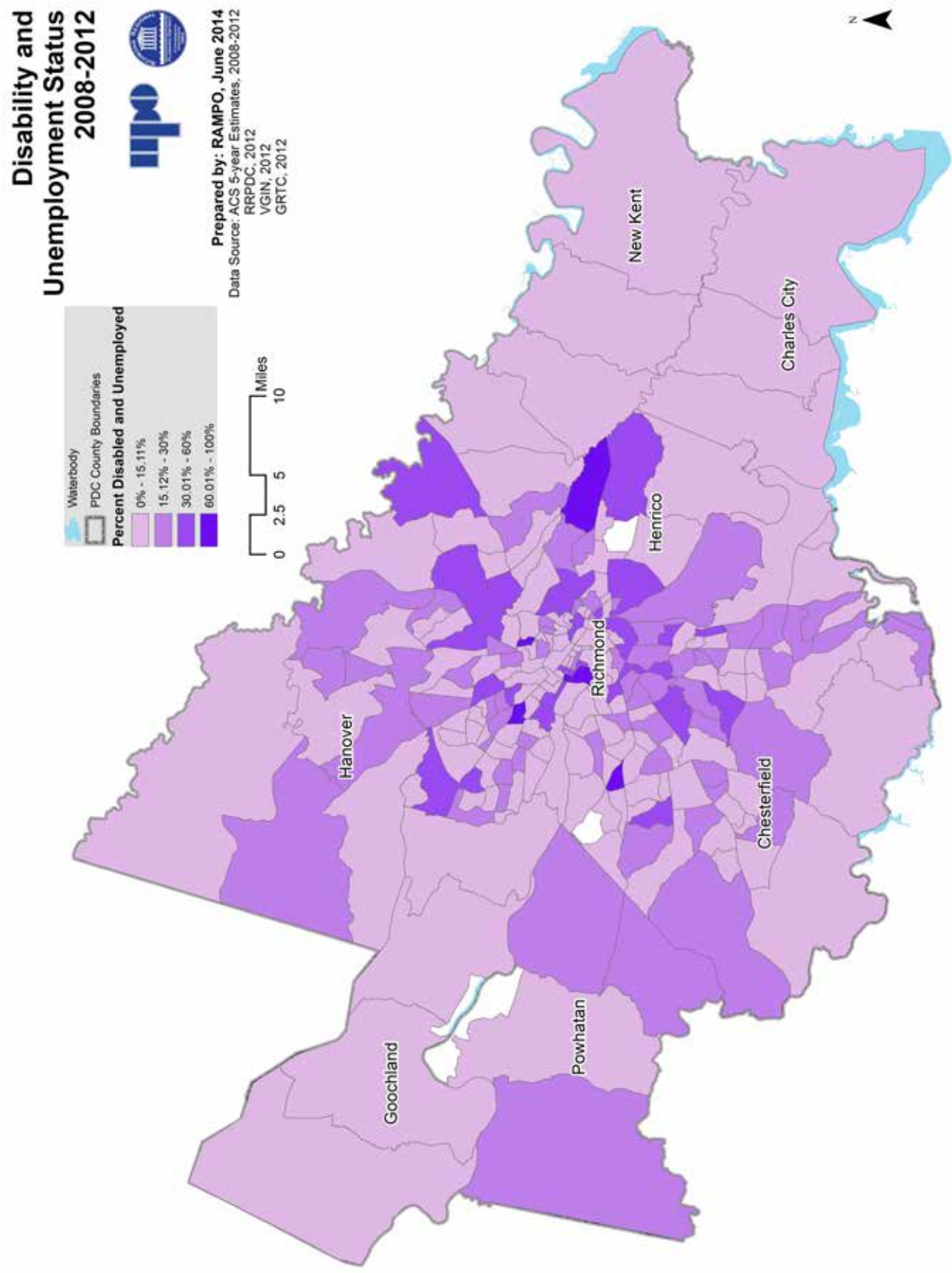
Disabled Population GRTC Local Routes 3/4-mile Buffer 2008-2012



Prepared by: RAMPO, June 2014
Data Source: ACS 5-year Estimates, 2008-2012
RRPDC, 2012
VGIN, 2012
GRTC, 2012



Map 5. Unemployment by Disability Status



5

Transportation Disadvantaged - Low-Income Population

In 2009, the National Household Transportation Survey reported that less than 2 percent of person-trips are made by way of public transit per year. Long periods of decline in public transit use were followed by suburban out-migration of affluent workers from dense urban areas.³⁰ Two major public transportation markets remain: the downtown commuters and transit dependents. Downtown commuters make up a portion of the public transit market due to the cost and limited availability of parking, high road congestion, tolls, and the concentration of jobs located in the Central Business District. The transit dependent make up the second portion of the public transit market due to their inability or unwillingness to drive or the lack of access to personal automobiles. In relation to the second market of public transit, the urbanization of poverty comes mainly from better access to public transit in the dense urban areas.³¹

Challenges with local transit systems have a role in creating extra barriers to transportation for the transportation disadvantaged. The disadvantages experienced by low-income groups are often the results of spatial characteristics like mono-centric development and growth that leads to urban sprawl and low-density suburban expansion—phenomena that are relevant in the Richmond Region.³² The large financial costs of personal automobile ownership make their purchase unattractive to low-income groups; public transportation offers an affordable alternative but does not always meet the entirety of their needs.³³ The low-income population often requires the most

flexibility in transportation options due to a higher percentage of reverse commuting, off-peak work hours, multiple jobs, and having to account for other daily events including medical visits and childcare related activities.³⁴ The commuting times and patterns of the population below the poverty level often do not coincide with public transit fixed-route services, scheduling, and peak hour routing.³⁵ In the absence of adequate public transportation services “[low-income populations] face significant barriers in trying to move from [the poverty trap] to work.”³⁶

The official poverty rate for the US in 2012 was

Population Below Poverty Level

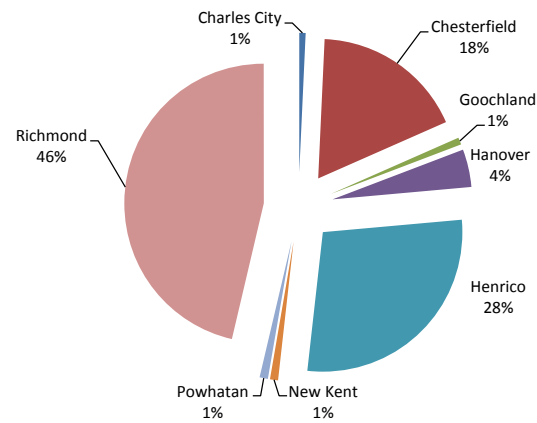


Figure 4. Population Below Poverty Level in the Richmond Region

30 Glaeser, Edward L., Matthew E. Kahn, and Jordan Rappaport. “Why do the poor live in cities? The role of public transportation.” *Journal of Urban Economics* 63 (2008): 2.

31 “Why do the poor live in cities? The role of public transportation,” 3.

32 Yigitcanlar, Tan, Kushairi Rashid, and Faith Dur. “Sustainable Urban and Transport Development for Transportation Disadvantaged: A Review.” *The Open Transportation Journal* 4 (2010): 1.

33 *Ibid.*, 3.

34 Scholl, Lynn. “Transportation Affordability for Low-Income Populations.” *Public Policy Institute of California* (2002): 1-8.

35 *Ibid.*, 1-8.

36 Sanchez, Thomas W. “Poverty, policy, and public transportation.” *Transportation Research Part A* 42 (2008): 834.

Table 6. Population Below Poverty Level in the Richmond Region

Jurisdiction	Total Population	Below Poverty	Percent Below Poverty	Percent of Region's Population Below Poverty
Charles City	7,256	824	11.36%	0.73%
Chesterfield	316,236	19,926	6.30%	17.66%
Goochland	21,717	924	4.25%	0.82%
Hanover	99,863	4,926	4.93%	4.37%
Henrico	306,935	31,804	10.36%	28.19%
New Kent	18,429	1,058	5.74%	0.94%
Powhatan	28,046	1,079	3.85%	0.96%
Richmond	204,214	52,260	25.59%	46.33%
Total	1,002,696	112,801	11.25%	

Source: ACS 2008-2012, Table B17001

15.0 percent, representing 46.5 million people in poverty. In Virginia, the 2012 ACS 5-year estimates report 11.1 percent of Virginians live below the poverty level.

For the Richmond region (detailed in Table 6), the overall rate of poverty is 11.25 percent, representing 112,801 persons below poverty. The City of Richmond's poverty rate is more than double the regional rate at 25.59 percent; Charles City and Henrico's poverty rates are half of Richmond's, with 11.36 percent and 10.36 percent, respectively. Richmond houses 46.33 percent of the region's population below poverty, Henrico has 28.19 percent, and Chesterfield has 17.66 percent. While Charles City's rate of poverty is high, the county only represents 0.73 percent of the region's population below poverty. Richmond, Henrico, and Chesterfield comprise over 92 percent of the region's population below poverty. Map 6 provides an overview of the regional distribution of poverty.

Transit's mode share experienced a general decline between 1995 and 2001, but a general increase from 2001 to 2009, according to the 2009 NHTS.³⁷ Existing public transit systems were designed to transport inner-city residents to locations intra-city, while also bringing suburban resi-

dents into the city for employment; however, most introductory and Tier 1 jobs that low-income individuals qualify for are located in the suburbs with limited or no accessibility via existing public transit.³⁸ Tier 1 jobs include the following industries: construction, manufacturing, wholesale trade, retail, transportation, and warehousing. Tier 2 jobs include the following industries: finance and insurance, real estate, entertainment, professional services, education, health care, administration, management, and public administration. In the Richmond region, 277,963 low-skilled jobs are serviced by GRTC, and another 18,622 jobs are serviced by bike access from these routes.³⁹ Maps 7-10 illustrate the four major GRTC corridors and relevant job access, along with bike access areas at both ends of each route. This data can be seen in Table 9, following the maps.

38 "Poverty, policy, and public transportation," 834.

39 Virginia Employment Commission (VEC) ES-202 2nd quarter 2012; employment data spot checked, verified, and revised accordingly by RRPDC staff.

37 U.S. Department of Transportation, Federal Highway Administration, 2009 National Household Travel Survey. URL: <http://nhts.ornl.gov>.

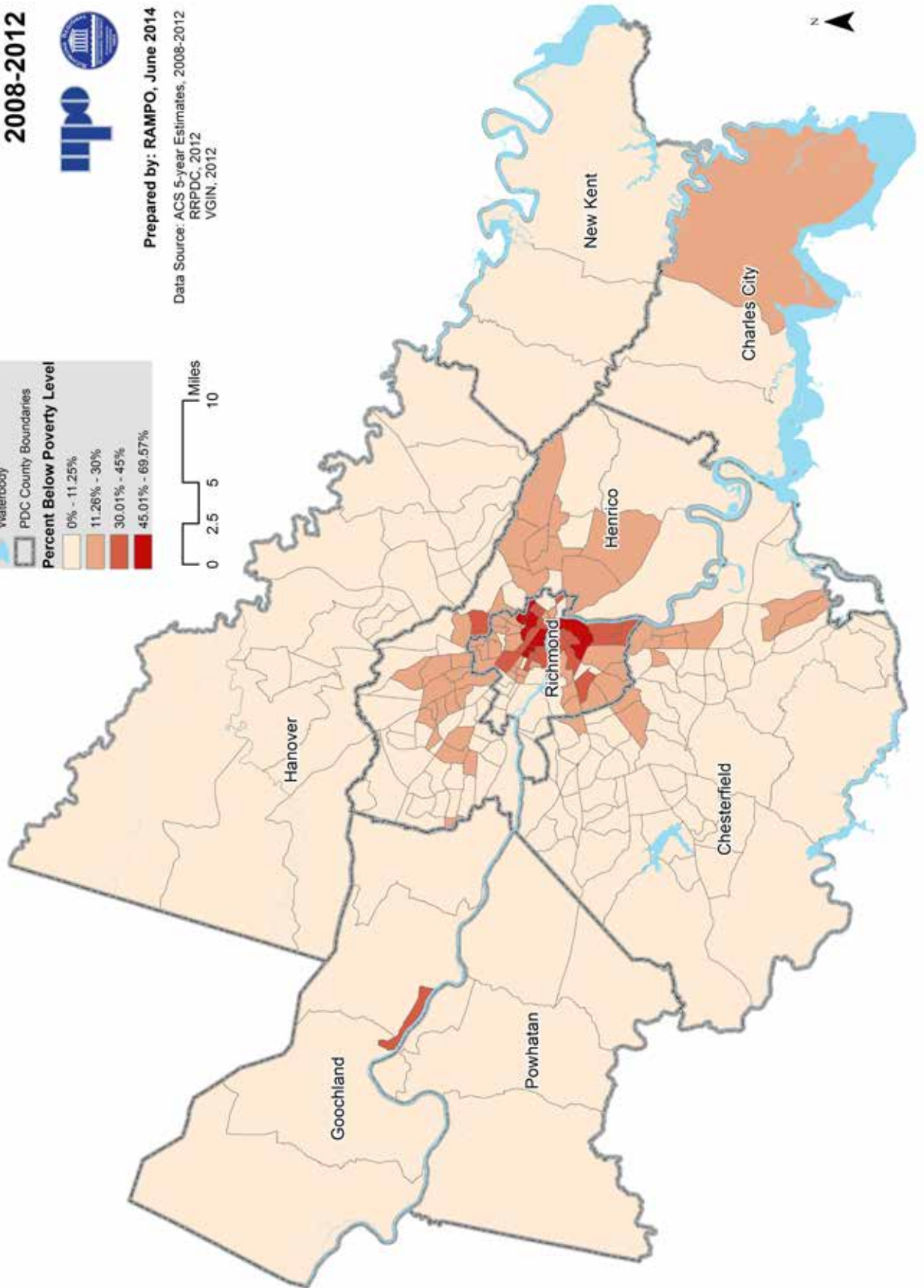
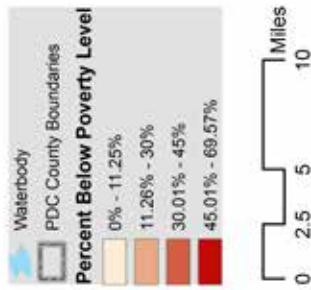
Map 6. Population Below Poverty Level

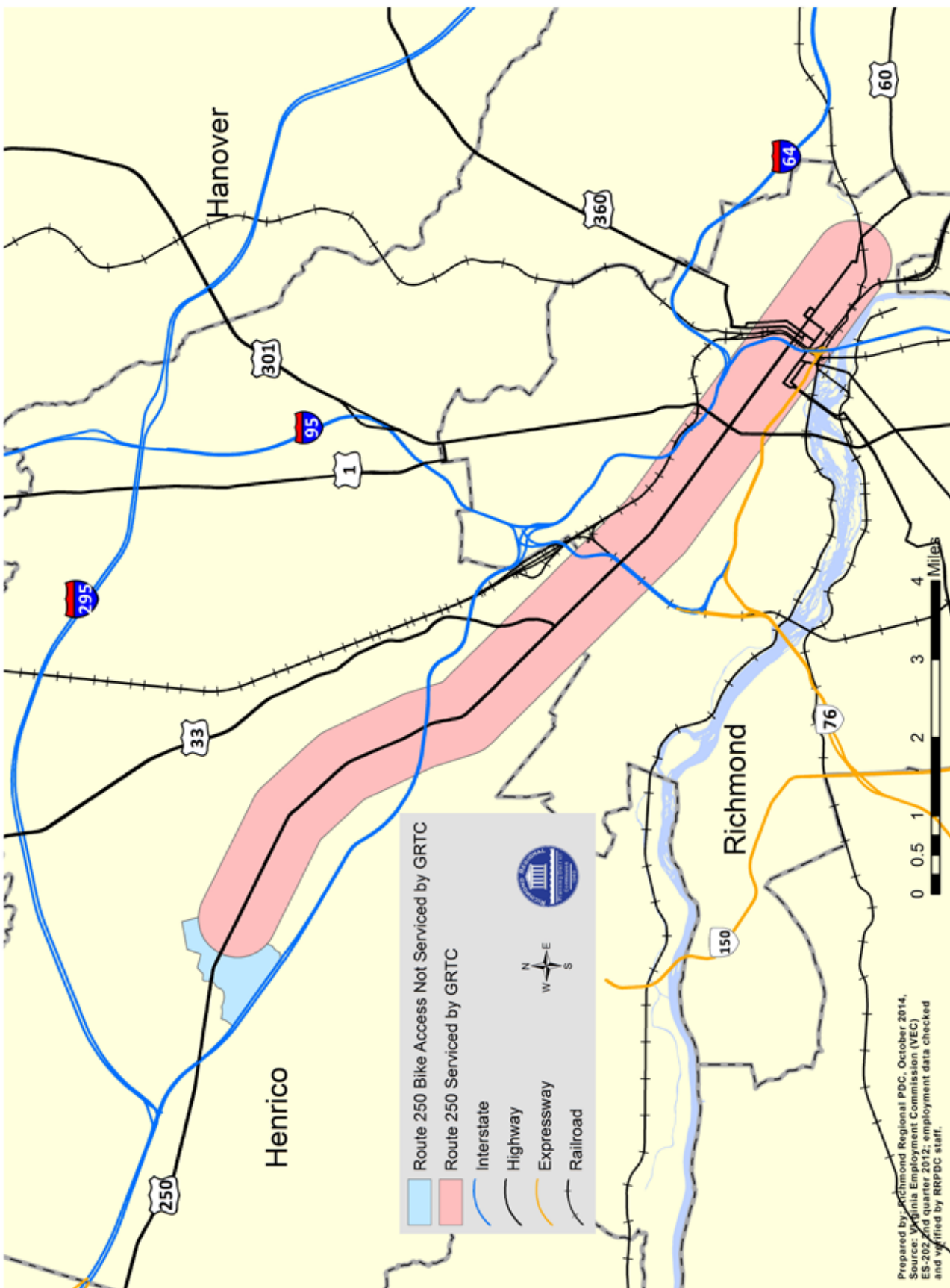
Population Below Poverty Level 2008-2012



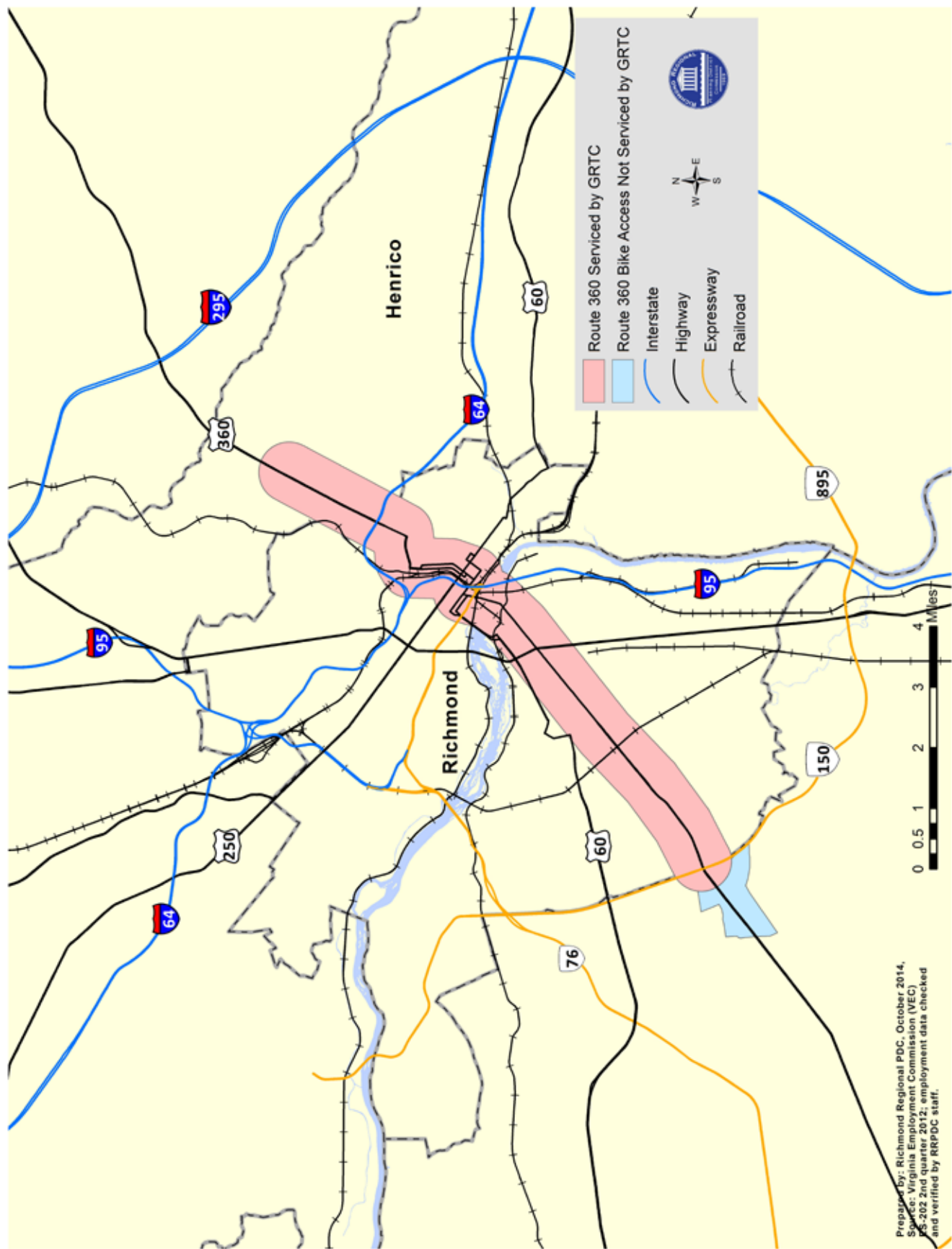
Prepared by: RAMPO, June 2014

Data Source: ACS 5-year Estimates, 2008-2012
RRPDC, 2012
VGIN, 2012

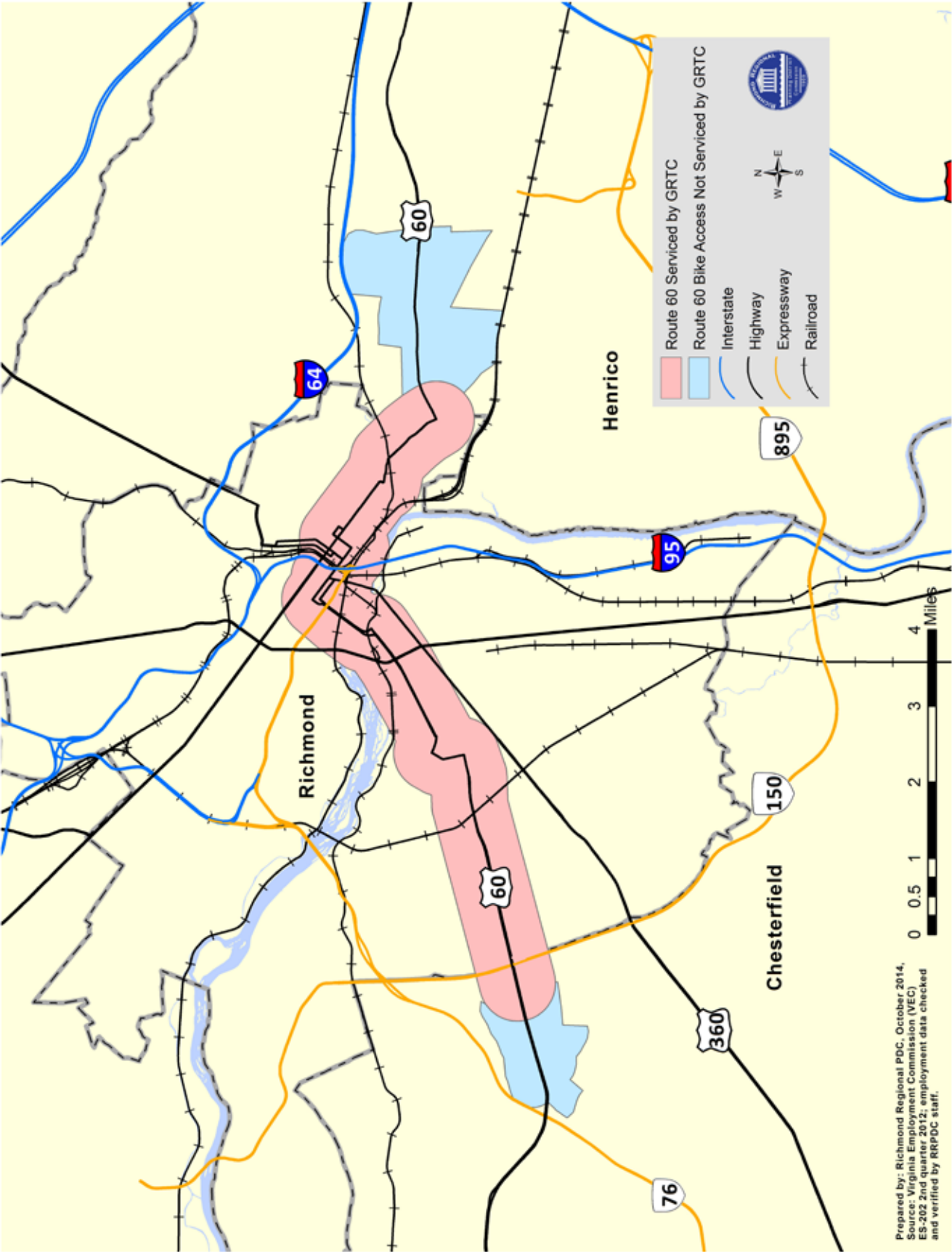




Map 8.Route 360 Corridor



Map 9.Route 60 Corridor



Map 10. Route 1 Corridor

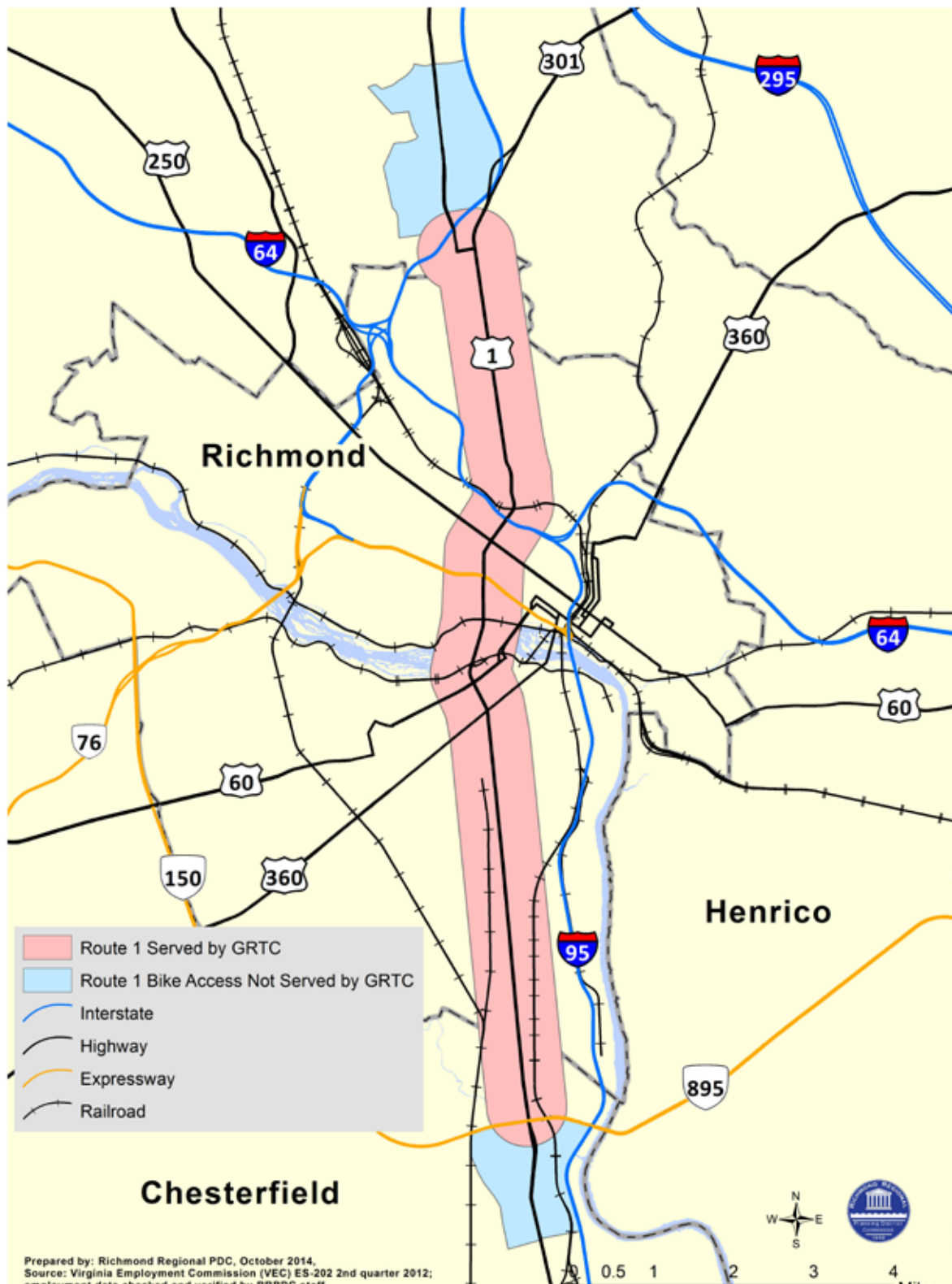


Table 7. Vehicle Availability by Poverty Status in the Richmond Region

Jurisdiction	Households	Households Below Poverty	Percent of Households Below Poverty	Households with 0-Vehi- cles Available	Households Below Poverty with 0-Vehi- cles Available	Percent of Households with 0-Vehi- cles and Below Poverty
Charles City	2,777	371	13.4%	161	75	46.6%
Chesterfield	113,090	6,899	6.1%	3,265	1,123	34.4%
Goochland	7,909	376	4.8%	154	73	47.3%
Hanover	36,444	2,042	5.6%	810	333	41.1%
Henrico	123,392	11,260	9.1%	6,279	2,323	37.0%
New Kent	6,719	324	4.8%	112	90	80.4%
Powhatan	9,429	616	6.5%	176	74	42.1%
Richmond	83,775	19,272	23.0%	14,973	9,089	60.7%
Total	383,535	41,160	10.7%	25,930	13,180	50.8%

***Calculated using the percentages from the 2006 report due to lack of available data.

Source: ACS 2008-2012, 2006 Needs Assessment

Transit-mode share by individuals below poverty in the Richmond region is summarized in Table 8. The majority use personal automobile with 62 percent driving alone; still this number is 20 percent less than the number for all workers. Almost four times more workers below poverty use transit than all workers, illustrating the greater dependence of low-income groups on public transit. Workers below the poverty level are more likely to carpool, use transit, walk, and take a taxi or bike than the total workers cohort.

Using ACS data and data from the previous 2006 Needs Assessment, statistics on vehicle availability were calculated in Table 7. Approximately 7 percent of all households do not have access to a vehicle in the Richmond region in 2012. Over 32 percent of households below poverty have no access to a vehicle. Of the households with no access to a vehicle, 50.8 percent were below poverty. This information suggests that the absence of car ownership in the population below the poverty level is not necessarily a choice, but is rather based on the inability to drive or the financial barriers present in purchasing a car.

Table 8. Means of Transportation to Work in the Richmond Region for Workers Below Poverty Level

Means of Transportation to Work	Total Workers	Workers at or Below Poverty Level
Drove alone	81.3%	62.0%
Carpool	9.4%	18.4%
Transit	2.1%	7.5%
Walked	1.4%	4.9%
Taxicab, motorcycle, bi- cycle, or other	1.3%	3.4%
Worked at home	4.5%	3.9%

Source: ACS 2008-2012, Table B08122

Public transit can be an effective means of linking unemployed, car-less, and low-income persons with appropriate jobs—hence the reasons for robust, affordable, efficient, and increased public transit services to aid in the movement of the transportation disadvantaged to gainful employment and other necessary activities.⁴⁰ Maps 11 and 12 illustrate unemployment in the region, and the relationship between poverty and GRTC local routes, respectively. Overall, the poor travel less than the non-poor; the 2009 NHTS indicates that households with an annual income of \$30,000 or below make at least 17.6 percent fewer trips than the average person-trips per household.⁴¹ This is not due to preference for less travel, but due to limited resources that prevent travel.

Although public transit is much more affordable, many low-income households are auto-dependent rather than transit-dependent, likely due to the absence of a public transit system that can satisfy their needs and preferences. Costly alternatives to public transportation are often the answer for persons below the poverty level, further inhibiting the move from “welfare to work.”⁴²

42 “Transit Mobility, Jobs Access, and Low-Income Labour Participation in US Metropolitan Areas,” 1314.

40 Sanchez, Thomas W., Qing Shen, and Zhong-Ren Peng. “Transit Mobility, Jobs Access, and Low-Income Labour Participation in US Metropolitan Areas.” *Urban Studies* 41 (June 2004): 1313.

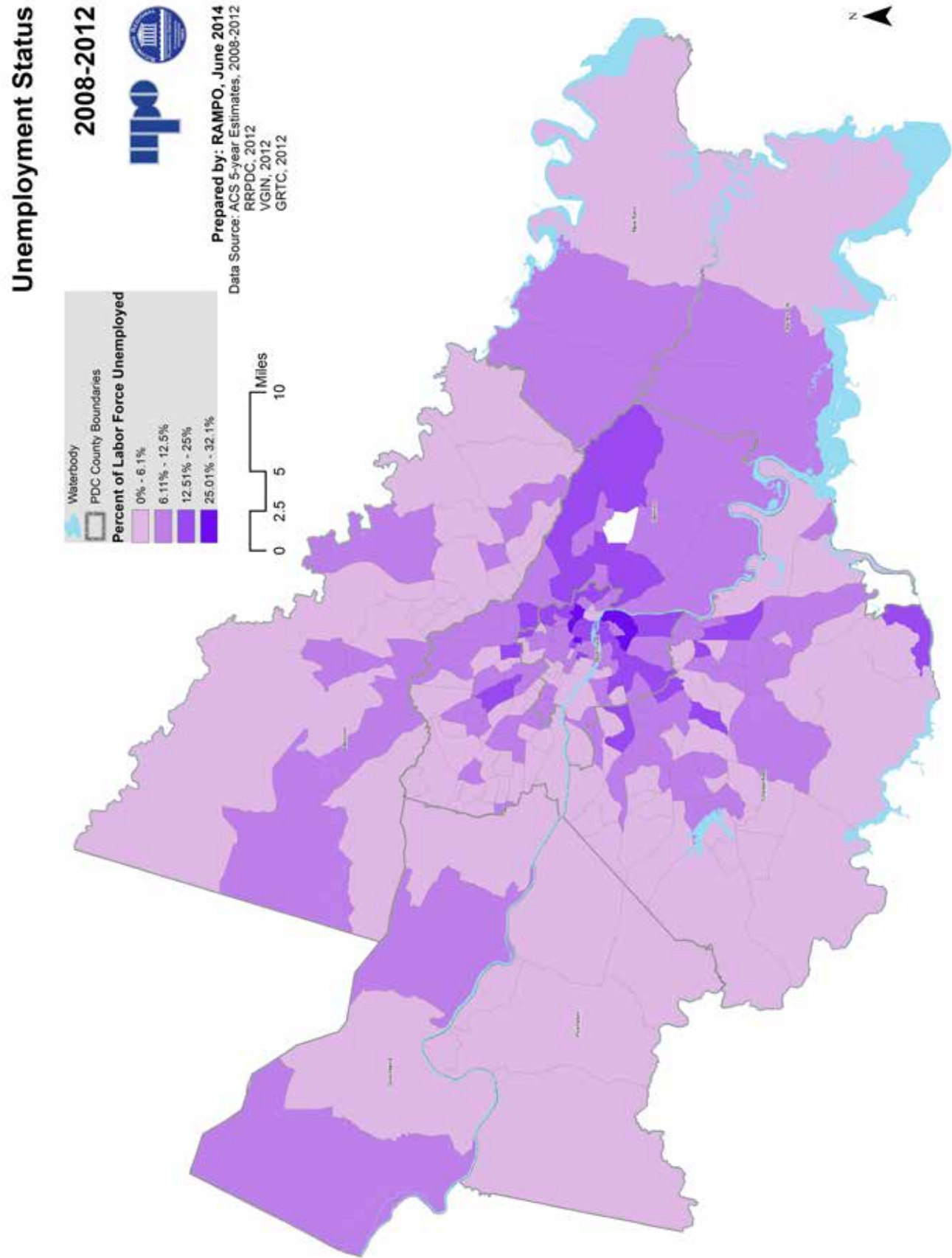
41 2009 National Household Travel Survey.

Table 9. Jobs Served by GRTC and Bike Access Areas

Corridor	Tier	GRTC		Bike Access	
		Businesses	Employees	Businesses	Employment
Route 1	1	656	11,662	112	2,020
	2	552	26,144	100	2,982
Route 60	1	724	10,439	288	5,975
	2	1,243	53,678	173	3,181
Route 250	1	1,756	28,250	79	906
	2	2,546	91,261	184	1,939
Route 360	1	696	10,234	62	629
	2	1,014	46,295	51	990

Source: 2012 RRPDC Socioeconomic Data, employment data derived from 2nd quarter Virginia Employment Commission’s (VEC) Quarterly Census of Employment and Wages (QCEW) and verified and spot checked by RRPDC staff.

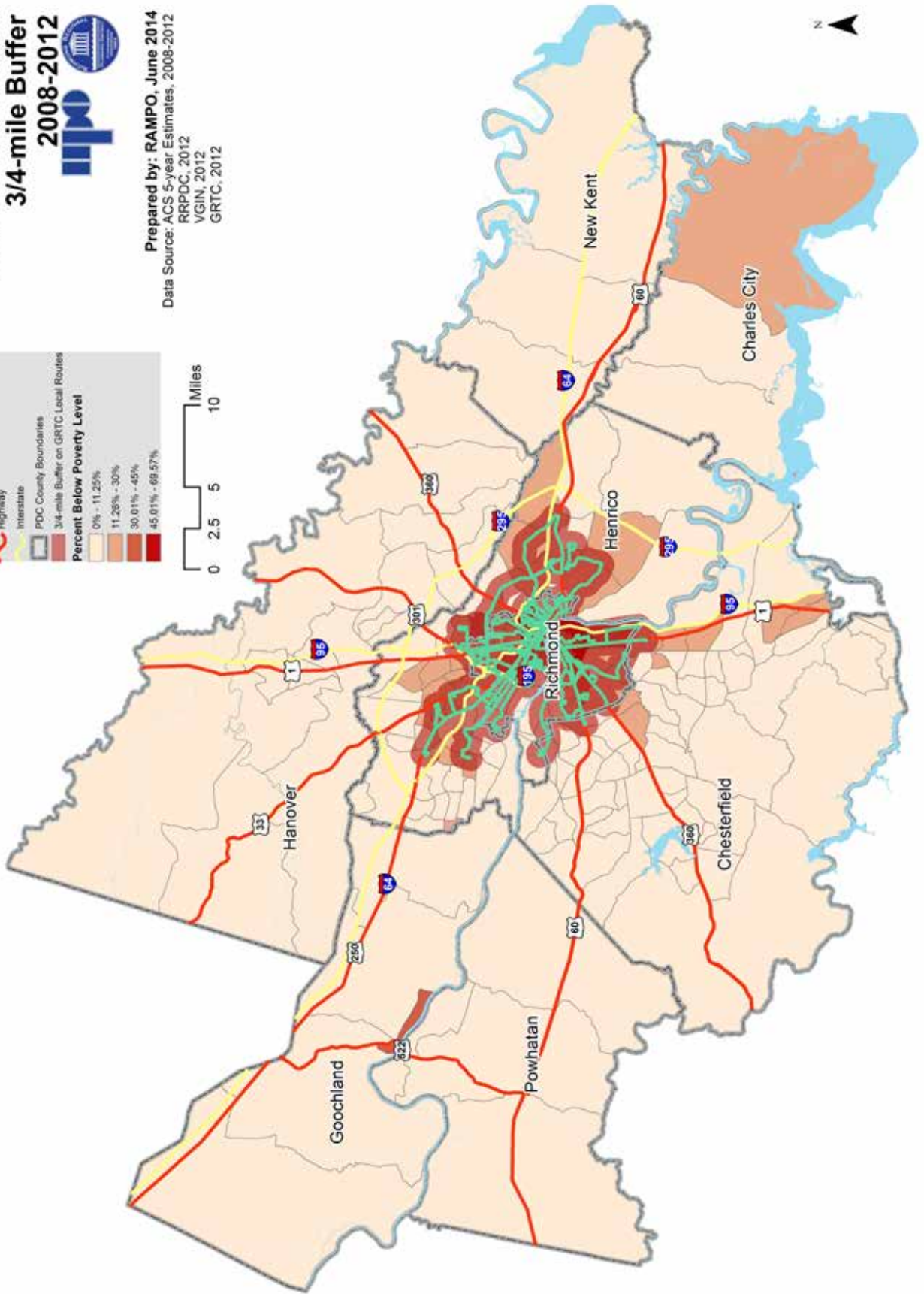
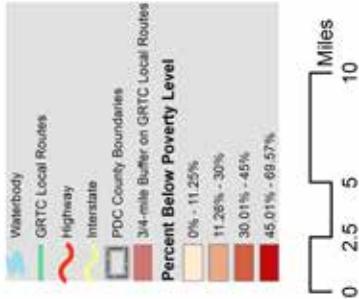
Map 11.Unemployment Status



Below Poverty Level GRTC Local Routes 3/4-mile Buffer 2008-2012



Prepared by: RAMPO, June 2014
Data Source: ACS 5-year Estimates, 2008-2012
RRPDC, 2012
VGIN, 2012
GRTC, 2012



6 Transportation Disadvantaged Summary

The transportation disadvantaged categories tend to overlap. The following provides a summary for each of the transportation disadvantaged categories, as well as providing a review of how these categories may overlap. The figure below illustrates the intersection of persons in different categories. In the City of Richmond, 1,831 individuals are below the poverty level, elderly, and disabled, representing 43.3 percent of the region's low-income, elderly, and disabled population. Henrico has 22.7 percent of the low-income, elderly, and disabled population, while Chesterfield has 16.4 percent, and Hanover has 9.8 percent of this population. Richmond, Henrico, Chesterfield, and Hanover contain 92.3 percent of the most transit dependent population in the Region.

Table 10 details the numbers and percentages in which an individual may fall under more than one category of the transportation disadvantaged in

the Richmond Region and the jurisdictions. This summary is meant to distinguish individuals who are unique to one of the three transportation disadvantaged categories and to understand where overlaps may occur.

Of the 337,184 total individuals who are elderly, disabled, or low-income, 68,347 experience overlap with other categories.

In the region, 4,070 people are both elderly and below the poverty level, representing 0.42 percent of the regional population. Almost 65 percent of this population is located in the City of Richmond and Henrico County.

Over 2 percent of the Richmond Region's population is considered disabled and below the poverty level; this translates to almost 21,000 citizens. Forty-seven percent of the disabled and low-income population is located in Richmond, while almost 24 percent and over 18 percent are located in Henrico and Chesterfield, respectively. Together, Richmond, Henrico, and Chesterfield comprise 89 percent of the region's disabled and low-income population.

The elderly and disabled group represents a larger percentage of the regional population—4.02 percent of the population in the Richmond region is elderly and disabled, capturing 39,303 individuals. Of this amount, 11,914 or 30.3 percent are located in Henrico, 10,748 or 27.3 percent reside in Chesterfield, and 9,260 or 23.6 percent live in Richmond. Together, Richmond, Henrico, and Chesterfield comprise 81.2 percent of the region's elderly and disabled population.

In the Richmond region, 4,227 people are disabled, elderly, and low-income, representing 0.56 percent of the region's population. In Richmond, 1,831 individuals are below the poverty level, elderly, and disabled, representing 43.3 percent

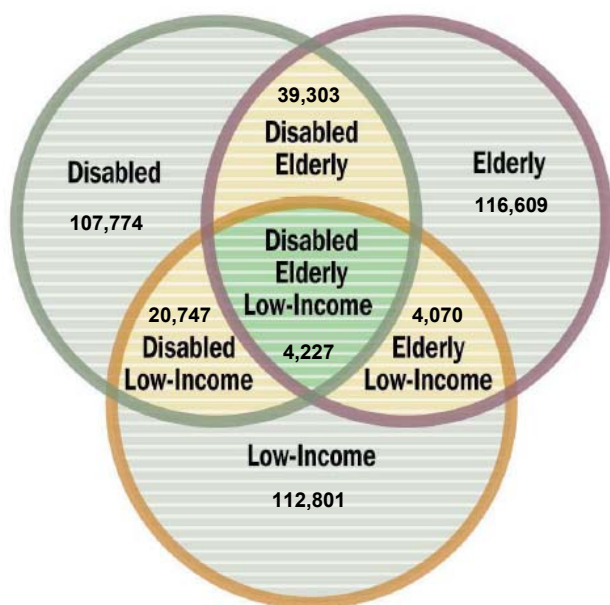


Figure 5. Transportation Disadvantaged Population Summary

Table 10. Transportation Disadvantaged Summary

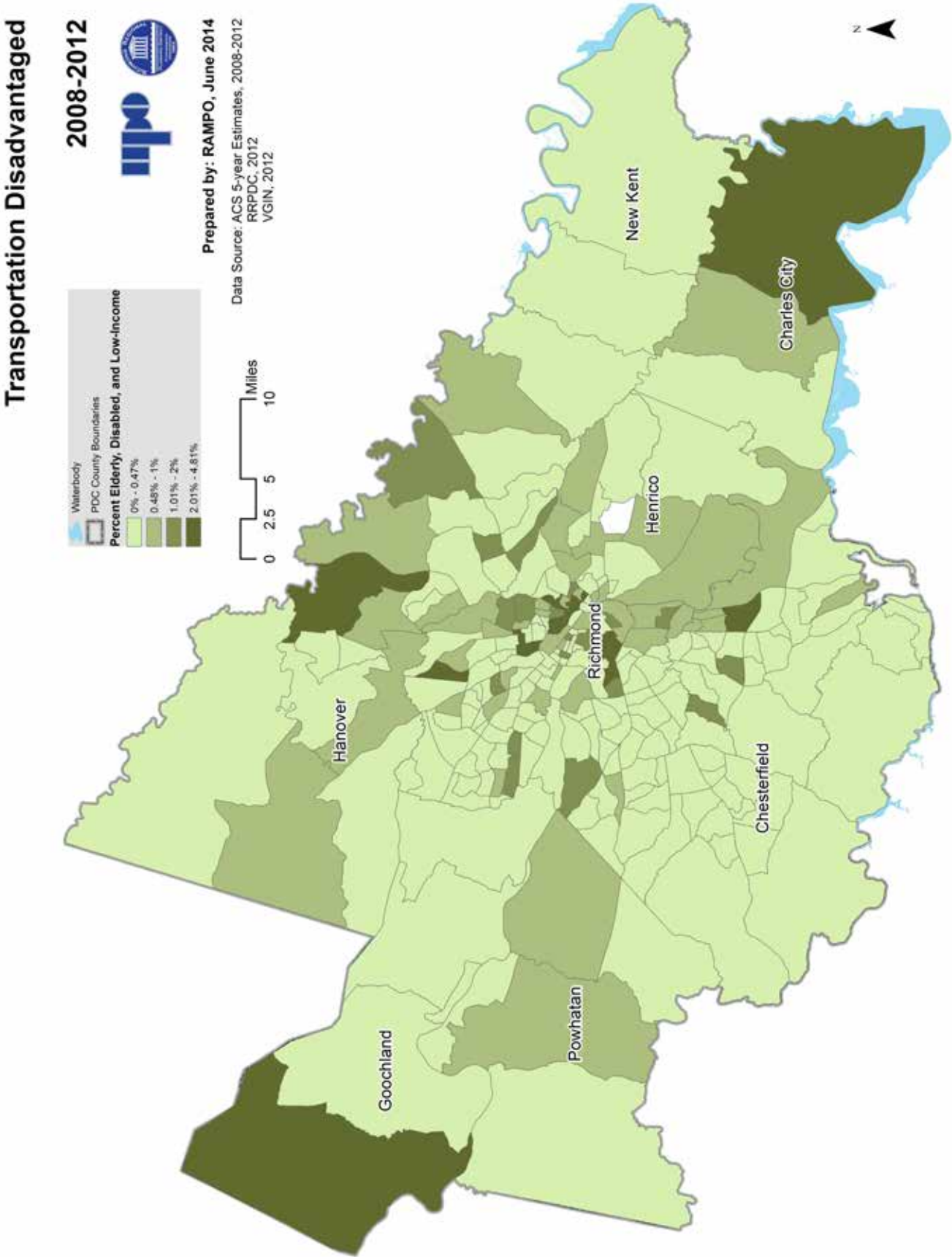
Jurisdiction	Total Population	Below Poverty and Elderly	Percent Below Poverty and Elderly	Below Poverty and Disabled	Percent Below Poverty and Disabled	Elderly and Disabled	Percent Elderly and Disabled	Below Poverty, Elderly, and Disabled	Percent Below Poverty, Elderly, and Disabled
Charles City	7,200	67	0.01%	166	0.02%	459	0.05%	67	0.01%
Chesterfield	311,911	699	0.07%	3,761	0.39%	10,748	1.10%	694	0.07%
Goochland	18,797	65	0.01%	177	0.02%	870	0.09%	111	0.01%
Hanover	97,516	411	0.04%	1,393	0.14%	4,341	0.44%	417	0.04%
Henrico	303,681	1,159	0.12%	4,965	0.51%	11,914	1.22%	958	0.10%
New Kent	17,905	66	0.01%	167	0.02%	795	0.08%	56	0.01%
Powhatan	24,220	117	0.01%	353	0.04%	916	0.09%	93	0.01%
Richmond	195,465	1,486	0.15%	9,765	1.00%	9,260	0.95%	1,831	0.19%
Total	976,695	4,070	0.42%	20,747	2.12%	39,303	4.02%	4,227	0.43%

Source: ACS 2008-2012, Table C18130

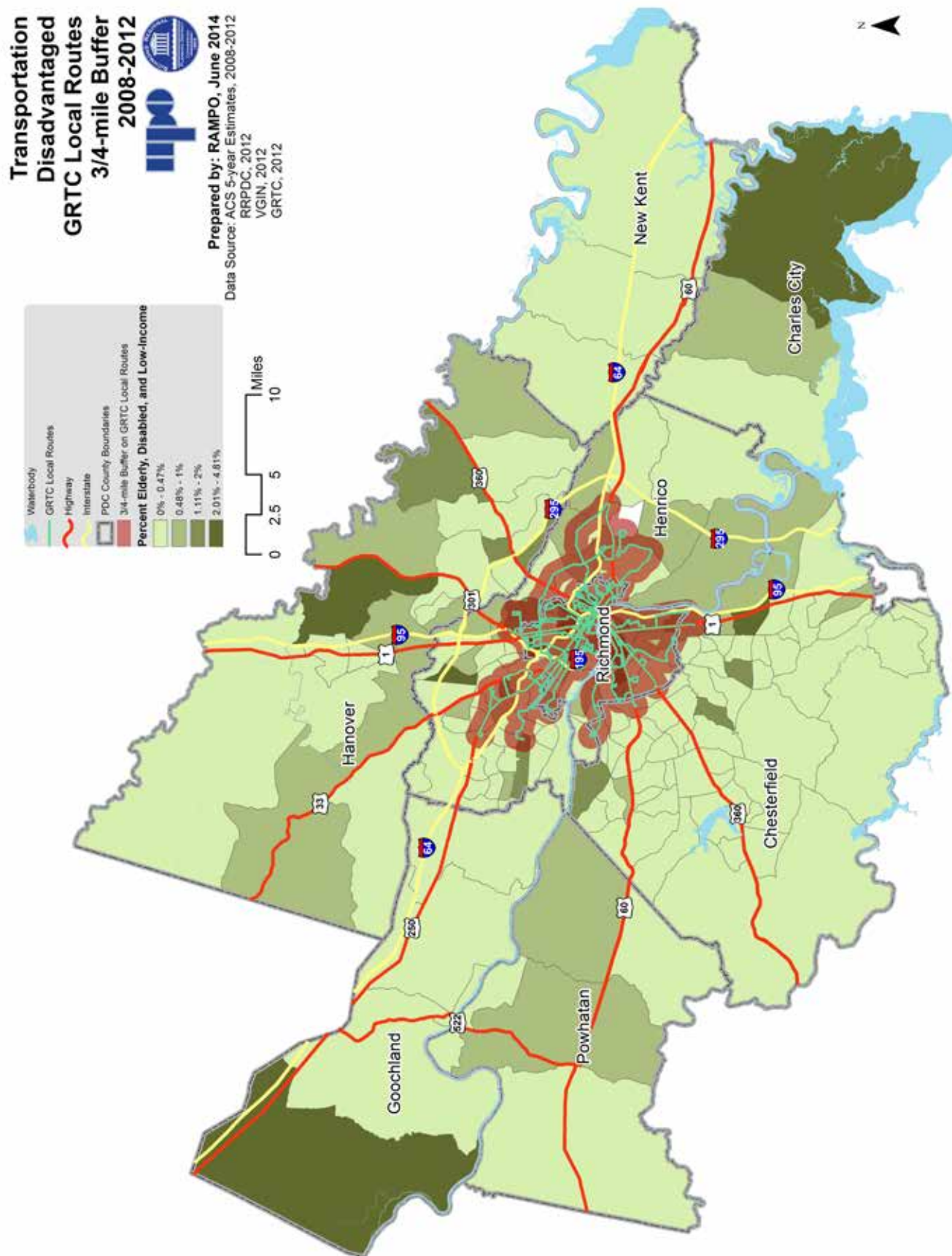
of the region's low-income, elderly, and disabled population. Henrico has 22.7 percent of the low-income, elderly, and disabled population, while Chesterfield houses 16.4 percent, and Hanover contains 9.8 percent of this population. Richmond, Henrico, Chesterfield, and Hanover contain 92.3 percent of the most transit dependent population in the Region.

Map 13 illustrates the regional distribution of the transportation disadvantaged population, while Map 14 illustrates the transportation disadvantaged population and GRTC local routes.

Map 13. Transportation Disadvantaged



Map 14. Transportation Disadvantaged and GRTC Local Routes



7

Specialized Transportation Providers and Programs

GRTC

GRTC Transit System, previously known as the Greater Richmond Transit Company, and now commonly referred to as GRTC, is the Federal Transit Administration (FTA) designated public transportation services provider for the Richmond Urbanized Area. This public non-profit agency is jointly owned by the City of Richmond and Chesterfield County. GRTC provides fixed-route services and specialized transit services in the form of CARE, CVAN, and RideFinders. GRTC operates 154 transit vehicles, including buses and vans, travelling over 40 routes in the City of Richmond, Chesterfield and Henrico counties. The entire GRTC fleet is equipped with low-floor entry and wheelchair lifts. Bus operators can provide extra assistance to seniors and persons with disabilities. All GRTC buses are also equipped with front-mounted bicycle racks.

FIXED-ROUTE SERVICE

GRTC's fixed-route service includes both local routes and express routes. The local bus service operates from 5:00 a.m.-1:00 a.m. daily. GRTC local routes run every day in Richmond and from 6:00 a.m.-7:00 p.m. on weekdays in Henrico County. There is no weekend service in the counties.

The fare for local routes varies: adults and children over 5 pay \$1.50, the general transfers cost \$0.25, and children under 5 and CARE ID holders ride free of charge. Reduced fares of \$0.75 are available for seniors 65 and older, persons with disabilities, and Medicaid card holders.

GRTC also offers nine different express routes and park-and-ride lots. Express routes operate on weekdays to transport commuters to and from work. GRTC express routes serve over 230,000 passengers per year.

Express route fares for the City of Richmond and Henrico are \$2.00 (Parham, Glenside, White Oak Village, Gaskins, Stony Point, and Spring Rock Green Express routes), while Chesterfield express fares are \$6.00 (Chesterfield and Commonwealth 20/Swift Creek Express routes). There are no discounted or reduced fares on express routes. Express routes are not subject to ADA requirements for complimentary paratransit service.

Other transfer services, depending on originating route and destination route, range from an extra \$0.50 to \$5.25 charge. Seniors and individuals with disabilities with valid identification can receive a free transfer card.

CARE AND CARE PLUS

The Americans with Disabilities Act (ADA) recognizes that some users of public transportation, due to the nature of a disability or age, will be unable to use fixed-route transit services even with full accessibility measures. In an effort to create equal access for this group of riders, the ADA mandates that a comparable paratransit service be offered by public transit operators. GRTC's version of ADA Paratransit is known as CARE service (Community Assisted Rider Enterprise). GRTC is required to provide CARE service within ¾-mile of local bus routes and stops, but Henrico County has adopted a policy of providing CARE throughout the County.

In order to use CARE, the ADA requires the submission of an application and completion of a finding of eligibility. Eligibility determinations are made for GRTC by ADARide, a third party contractor. To be eligible for CARE, riders must be 80 years of age or older, or have a disability. Riders certified as ADA Paratransit-eligible by transit systems outside of the Richmond Region are eligible to use CARE.

CARE service operates daily from 5:00 am-1:00 am for City of Richmond residents, and 6:00 am-11:00 pm for Henrico County residents. CARE service operates within a ¾-mile area beyond GRTC's fixed-route bus lines. CARE Plus operates daily from 6:00 am-8:00 pm for City of Richmond residents and 6:00 am-11:00 pm for Henrico County residents. CARE Plus is not required under the ADA. A trip is considered as CARE Plus if the origin or destination is more than ¾-mile from a GRTC fixed bus line, or if the travel is desired to a destination in the City of Richmond or Henrico County on a day or time when fixed-route service does not operate. Map 15 details the GRTC CARE service, as well as the ¾-mile buffer. CARE and CARE Plus vouchers may be purchased in books of six and ten, costing \$18.00 and \$30.00, respectively. Individual fares are \$3.00 for CARE service in both Henrico and Richmond. CARE Plus individual fares are \$3.00 for residents of Henrico, and \$6.00 for residents of Richmond. Only one child, under the age of 5, and a personal care as-

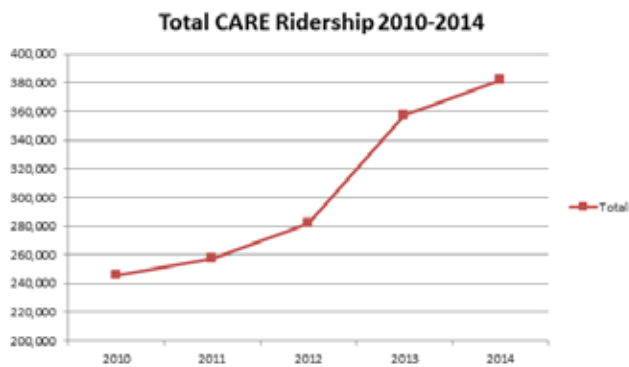


Figure 6. GRTC CARE Total Ridership

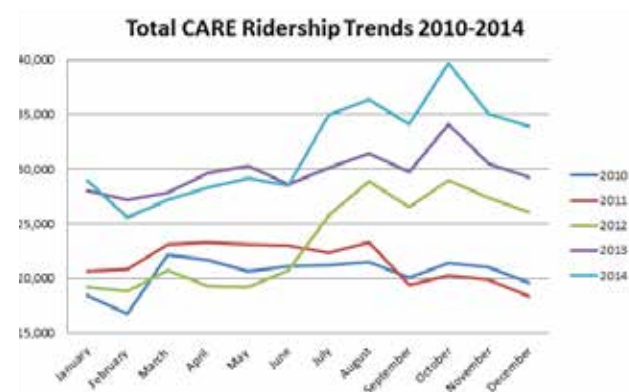


Figure 7. GRTC CARE Total Ridership Trends

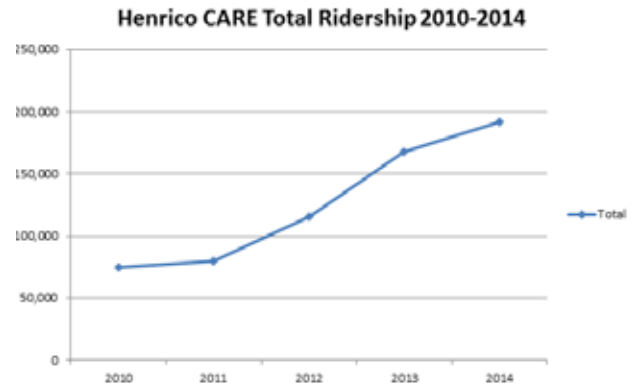


Figure 8. GRTC CARE Henrico Ridership

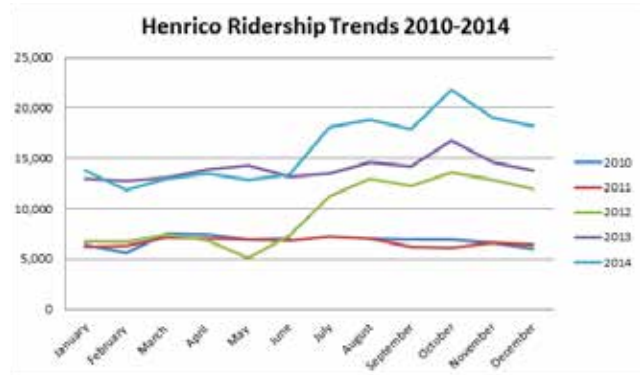


Figure 9. GRTC CARE Henrico Ridership Trends

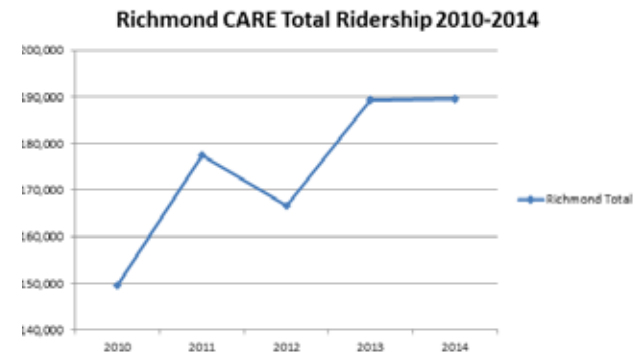


Figure 10. GRTC CARE Richmond Ridership

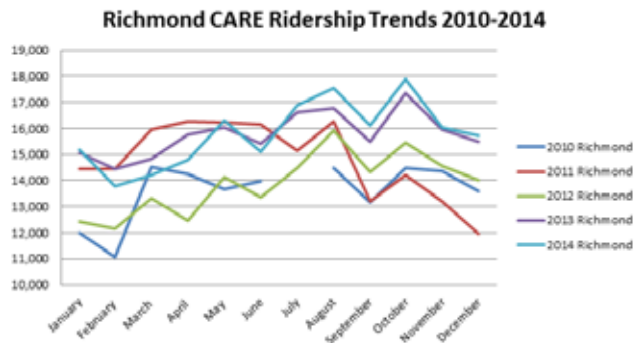
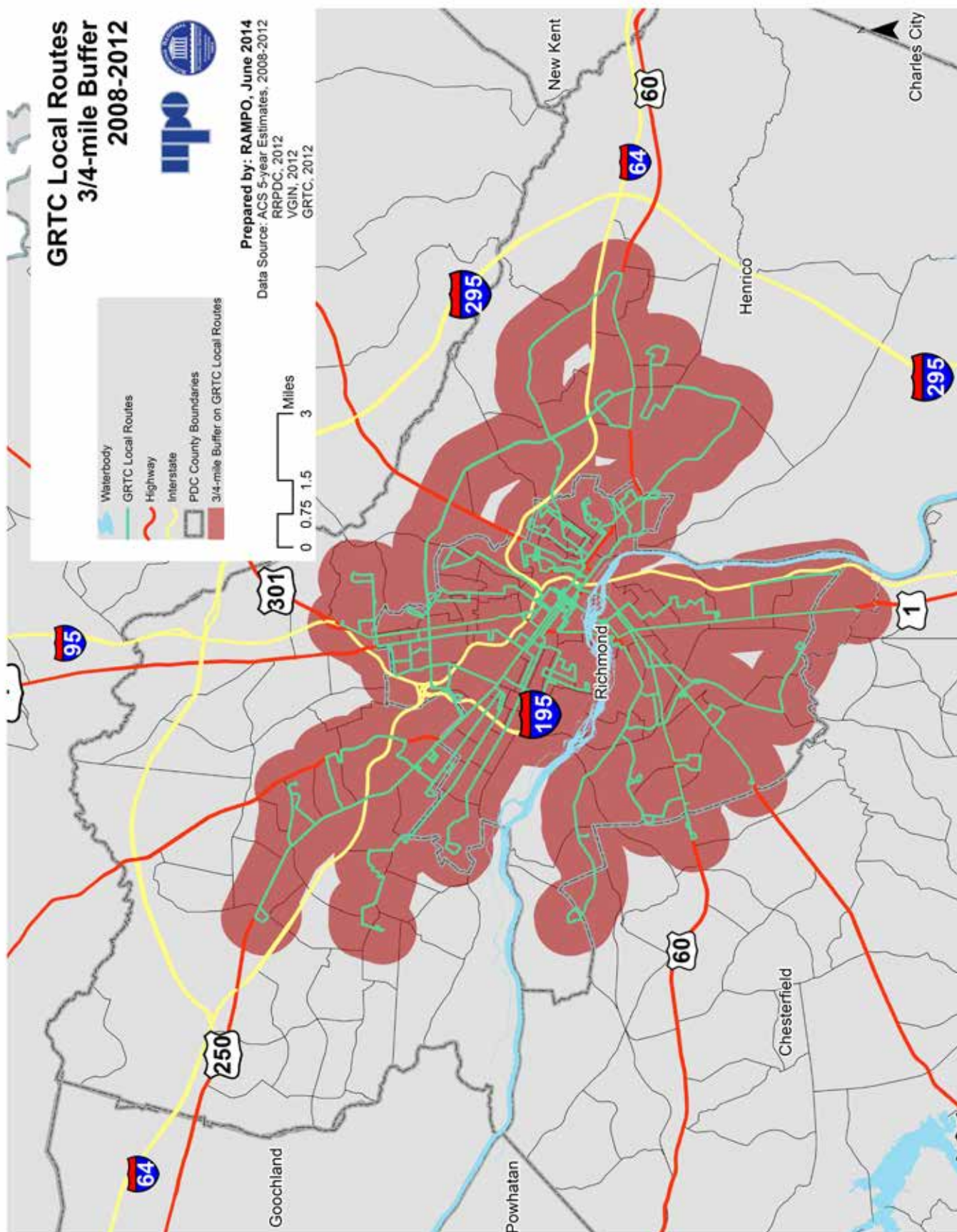
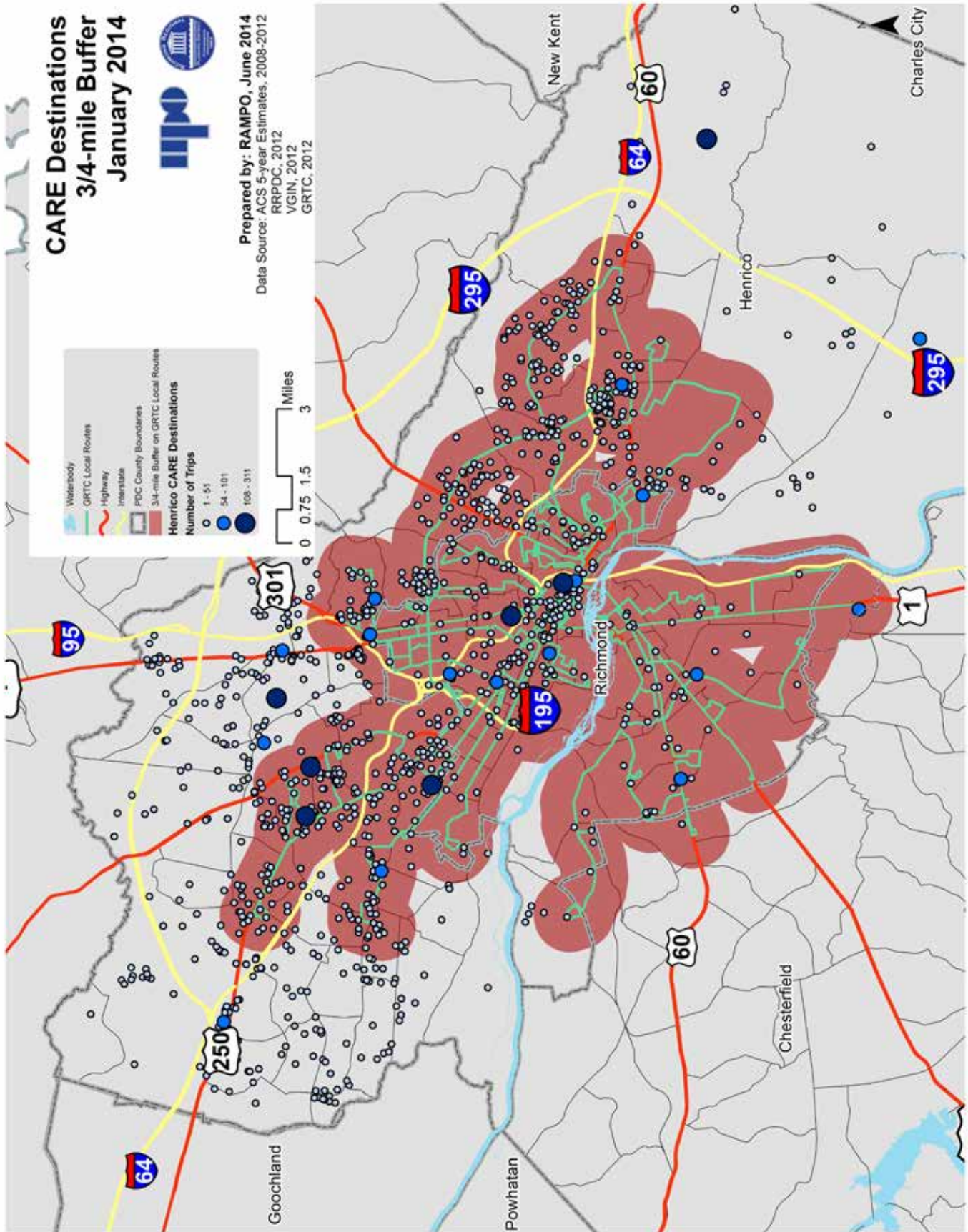


Figure 11. GRTC CARE Richmond Ridership Trends

Source: All graphs were created using data from GRTC Transit System

Map 15. GRTC Local Routes with 3/4-mile Buffer





sistant (PCA) are permitted to ride for free with a paying CARE customer. A CARE ID allows customers to ride GRTC local routes free of charge, while free fare is not available on express routes or the Pemberton route. Map 16 provides information on frequent trip destinations from GRCT CARE trips originating in Henrico.

CARE provides curb-to-curb service and assistance for customers when boarding and exiting the vehicle. Operators will help with seatbelts, securing wheelchairs, small parcels, and a maximum of two bags of groceries. Operators are not allowed to leave the side or back of the vehicle; are not permitted to enter customers' residences; are not allowed to carry or push customers up or down stairs or ramps; and are not allowed to walk customers into homes or facilities.

C-VAN

C-VAN eliminates transportation barriers to employment in the Richmond Region, and is operated in partnership with the Department of Social Services. C-VAN provides transportation assistance for Virginia Initiative for Employment not Welfare (VIEW) participants. All C-VAN participants must be referred by the Department of Social Services. To qualify, customers must have an income below the poverty level and have a dependent child.

Bay Transit

Bay Transit provides transportation and paratransit services to 12 counties in the Middle Peninsula and Northern Neck regions, including New Kent and Charles City. They also serve the towns of West Point and Colonial Beach, and offer seasonal trolley service to the towns of Kilmarnock, Irvington, White Stone, Urbanna, and Colonial Beach. Bay Transit has been an operating division of Bay Aging, a multi-county Area Agency on Aging, since 1996. Bay Transit has grown from a fleet of one vehicle to a total of 68 vehicles. The fleet is comprised of 12 to 14 passenger handicapped accessible buses, vans, trolleys, and service and support vehicles. In 2008, Bay Transit served over 156,000 passengers, with an average cost of \$15.76 per passenger.

In 2005, Bay Transit began providing demand-response, curb-to-curb transportation in New Kent and Charles City counties. There are no eligibility requirements other than county residency. Fares are \$1.00 each way (a booklet of 10-tickets can be

purchased for \$8.00), to any destination in New Kent and Charles City, operating between 6:00 am and 6:00 pm, Monday through Friday.

Paratransit service is currently provided in Charles City and New Kent, with at least three wheelchair-equipped vehicles available. Bay Transit states in their FY 2010-2015 Transit Development Plan that they plan to provide services to the City of Richmond and Williamsburg, and offer extended evening and weekend service.

Access Chesterfield

Access Chesterfield is Chesterfield County's coordinated transportation service program available to residents of Chesterfield who are disabled, age 60 and over, or whose income is at or below 200 percent of the federal poverty level.

Effective June 1, 2014, Access Chesterfield provides curb-to-curb service. For passengers with disabilities the van will get as close to the door as possible, and drivers will provide assistance when boarding or exiting the vehicle. Riders are allowed one free aide, age 18 or older, to accompany them on their trip, with prior notification. Beginning July 1, 2014 trips outside of Chesterfield County will be limited to medical trips only, with the exception of residents living in southeastern Chesterfield, who require transportation along a designated route in Colonial Heights. Access Chesterfield will also provide transportation to GRTC fixed-routes for those who wish to travel outside of the county for any other reason besides medical.

Trip vouchers cost \$30.00 per book of five, and each voucher is good for a one-way trip, independent of distance. A two-way trip requires the use of two vouchers. Reservations must be made at least one day in advance and no more than four days in advance. Services are available from 5:30 am -7:30 pm, Monday through Friday, and from 5:30 am-5:30 pm on Saturday.

LogistiCare

LogistiCare is a non-emergency transportation services broker that provides scheduling and routing services for Medicaid transportation providers. All trips must be for medical purpose. LogistiCare is a national organization and their service area covers the entire state of Virginia.

Transportation coordinated by LogistiCare is curb-

to-curb and is available 24-hours a day. Reservations must be made at least 48 hours in advance. Service is provided to recipients of Medicaid and Medicare, commercial and senior members, special-needs students, and ADA paratransit riders. Riders are allowed one aide, as needed.

Mechanicsville Churches Emergency Functions

Mechanicsville Churches Emergency Functions (MCEF) provides services in Hanover County, ranging from financial assistance to the Senior Rides Program. The Senior Rides Program helps seniors continue to live independent lives. The program assists seniors age 60 and over in the Mechanicsville area who are unable to drive, or have a medical condition that requires frequent trips for treatments. The transportation is free (with donations used to sustain the program) and can be used for grocery shopping, medical appointments, and personal business.

MCEF has a total of 8 volunteer drivers, providing 2-3 rides per week, on average. The program has 58 registered riders.

Table 11. Mechanicsville Churches Emergency Function Overview

Number of Drivers	Rides per week	Registered Riders	Rides per year (estimate)
8	2.5	58	130

Source: Data from MCEF

Goochland Free Clinic and Family Services

Goochland Free Clinic and Family Services (GFCFS) provides free transportation services to residents of Goochland County who cannot transport themselves due to age, disability status, or income. Trips are provided to medical and dental appointments and for pharmaceutical needs.

Service is provided Monday through Friday; transportation to Richmond is available Monday from noon to 3:00 pm and on Friday from 9:00 am to noon, and transportation within Goochland is available Tuesday through Thursday from 9:00 am to 3:00 pm.

In 2010, GFCFS served 113 unique riders and over 1,300 trips. In 2013, ridership increased to over 140 unique riders, and the number of rides increased to over 1,500.

Senior Connections, the Capital Area Agency on Aging

Senior Connections acts as a brokerage service between customers and transportation providers. The agency's Information and Assistance Program helps coordinate customers with the necessary service to meet their need. Senior Connections provides the information and assistance ranging from transportation to money management services and also makes referrals to other appropriate community resources. Through its Mobility Management Program, Senior Connections assists Richmond area seniors in identifying the most cost-effective means of transportation to essential services, primarily medical appointments.

Table 12. Goochland Free Clinic and Family Services Overview

	2009	2010	2011	2012	2013
Number of Rides to Richmond (round trip considered a single trip)	427	446	443	378	479
Number of Rides to Goochland (round trip considered a single trip)	841	915	1026	1148	1057
Mileage	36150	37314	40909	42187	43600
Number of Unduplicated Riders Age 60+		36	24	24	24
Total Number of Unduplicated Riders (individuals served)		113	120	128	142

Source: Data from GFCFS

Senior Connections also offers Friendship Cafes, which are gathering places for seniors age 60 and older, where a nutritional meal is provided. Transportation to the cafes is available, and there is no fee for the meal or transportation. Cafes are located in Richmond, Charles City and New Kent, Chesterfield, Hanover, Henrico, and Powhatan. There are 19 cafes in total across the region. For period from June 1, 2014 to May 31, 2015, Senior Connections provided 17,390 trips for 120 persons.

Human Services Agencies

THE SHEPHERD'S CENTER OF RICHMOND

The Shepherd's Center of Richmond (TSCOR) has been providing volunteer-based transportation programs for over 25 years. Transportation is conducted using all personal vehicles and volunteer drivers; therefore wheelchairs cannot be accommodated.

Transportation is provided to medical appointments, grocery shopping, and other essential activities. TSCOR also offers light handyman help, simple bookkeeping, and friendly caller and visitor services. To qualify, a person must be 60 or older, be able to walk (with a cane or walker), have no serious cognitive impairment, and live within the service area. The service is free, but donations are accepted.

Service is provided between 9:00 am and 3:30 pm. Reservations must be made at least 7 days in advance but no more than 14 days in advance for medical or grocery trips.

Service area zip codes: 23059, 23060, 23113, 23114, 23219, 23220, 23221, 23222 (medical only), 23224 (medical only), 23225, 23226, 23227, 23228, 23229, 23230, 23233, 23235, 23236, 23238, 23294.

THE SHEPHERD'S CENTER OF CHESTERFIELD

The Shepherd's Center of Chesterfield provides free transportation services to seniors. All transportation services are performed by volunteer drivers using personal vehicles. While the service is free, donations are accepted. Wheelchairs cannot be accommodated due to the use of personal vehicles.

Transportation is available for medical appointments, grocery shopping, and prescription pick-

up. Reservations must be made at least four days in advance. On average, The Shepherd's Center of Chesterfield provides 14 trips per week. They have served 63 individuals in 10 different zip codes, and made 389 trips over the past year.

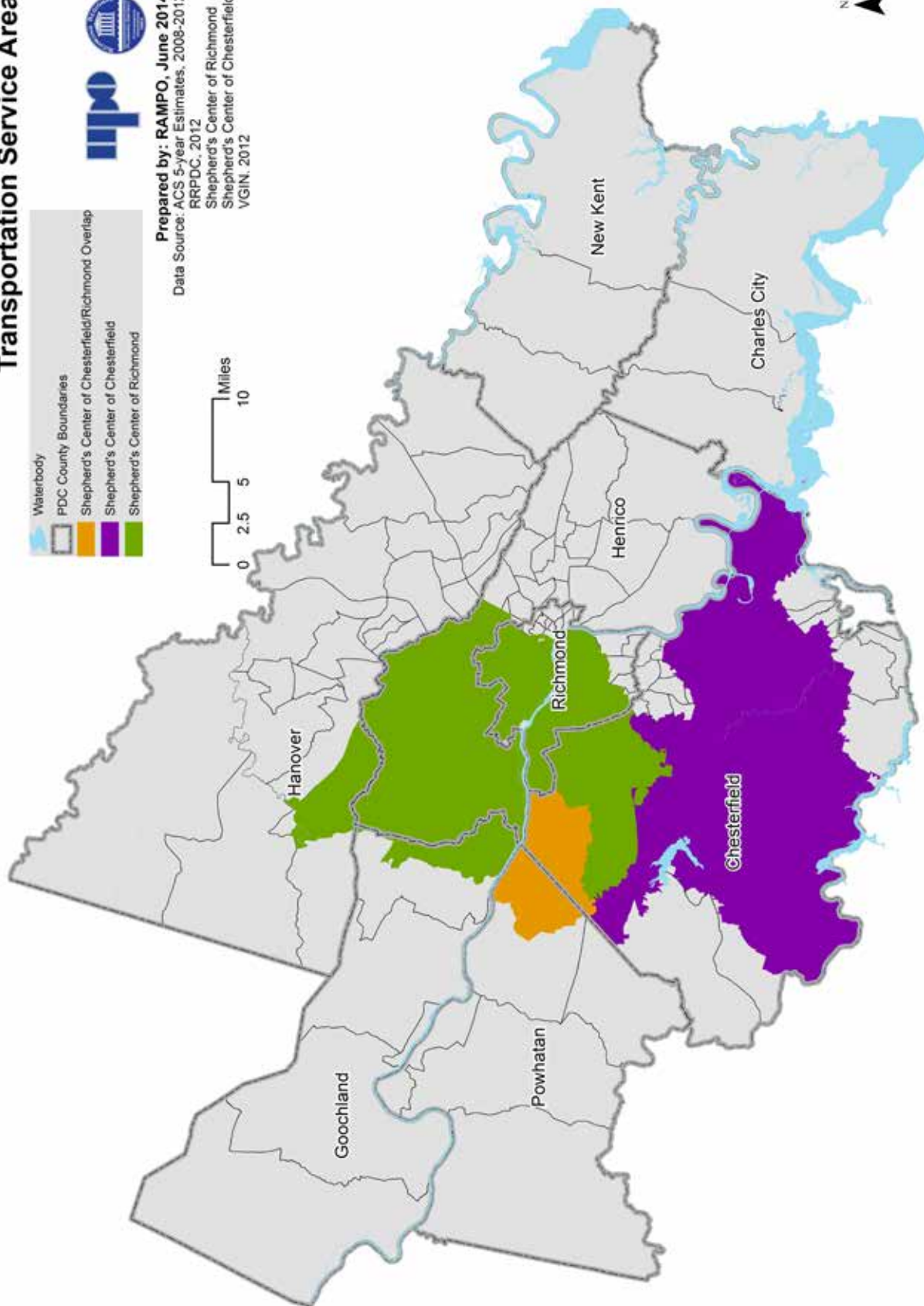
Service area zip codes: 23112, 23113, 23237, 23831, 23836, and 23838.

Map 17 depicts the services areas of both the Shepherd's Centers of Richmond and Chesterfield, as well as the centers' overlapping areas of service.

Shepherd's Center Transportation Service Area



Prepared by: RAMPO, June 2014
 Data Source: ACS 5-year Estimates, 2008-2012
 RRPDC, 2012
 Shepherd's Center of Richmond
 Shepherd's Center of Chesterfield
 VGIN, 2012



8

Issues

Outlined below are some of the most common issues faced when providing or using specialized transportation or paratransit services.

Communication

Communication is a key component in successfully serving the transportation disadvantaged population. Without communication, there is a lack of awareness of the services available in the region to the elderly, low-income, and disabled populations. This lack of awareness can be due to lack of marketing or advertising of existing services. When there is a breakdown in communication between service providers and customers, customers sometimes do not understand service schedules or the need for flexibility in pick-up/drop-off and wait times. It also holds true that service providers are not always fully aware of the services needed by customers, when scheduling transportation.

In regards to communication, there are sometimes misunderstandings of some of the needs of the transportation disadvantaged, often unknown or overlooked by providers, the general public, and decision makers. Some of the needs related to employment are misunderstood; many tier 1 jobs are hourly, and often have late or off-peak shifts, creating a need for transit services outside normal business hours for the elderly, disabled, or low-income. Public transit may not provide service during this time or to the desired destination, creating issues in maintaining employment.

Coordination

A major issue in providing robust and accessible paratransit services is the lack of coordination between service providers and constituent agencies. Coordinating services includes using a brokerage system, pooling funds or resources, shared driver and rider training, shared volunteers, maximiz-

ing use and efficiency of vehicles, coordinating scheduling of services, and increasing cooperation among local stakeholders, government agencies, and organizations.

Without coordination, customers may have to rely on multiple providers to satisfy different needs or to access different destinations. The majority of human service agencies rely heavily on the use of volunteers to transport customers. The number of volunteers is often limited within each organization, making it difficult to provide high volumes of trips on a weekly basis. With the use of volunteer drivers, and sometimes, volunteers' vehicles, there is a need for additional vehicles equipped to transport the disabled. Programs with volunteer drivers should at best be considered as a supplement to programs with paid professional drivers.

Cost

An issue faced by both providers and customers is cost; the cost to provide specialized transportation and paratransit services is much greater than fixed-route transit. The cost also increases due to the relatively high concentration of elderly populations in the rural counties, where population densities are low, there is no access to any form of public transit, and the travel required to the desired destinations is often much farther. The increasing cost of providing specialized transit services creates barriers in supplying and purchasing these services.

Issues of cost are also present when it is necessary to have multiple options available to the different groups of transportation disadvantaged. Seniors desire more freedom through the use of transit, but do not wish to be restricted to using it solely for medical trips. The disabled and low-income customers often need financial assistance in order to remove barriers in using specialized transit services. In order to provide more opportu-

nities for transportation, new service providers are needed, and they are often met with high start-up costs, creating a need for financial assistance in order to enter the market.

Service

The need for improved quality and quantity of service is an issue experienced by the elderly, disabled, and low-income. Fixed-route bus service does not provide access to some of the major employment centers in the region, and also the rural areas of the region have no access to fixed-route transit. The lack of weekend service also presents an issue, coupled with limited service during off-peak hours for evening and night shift workers.

The elderly and disabled require door-to-door services, beyond curbside service, to overcome difficulties in boarding and exiting vehicles. Elderly and disabled individuals also need assistance carrying packages or bags, entering or exiting through doorways, or maneuvering between the vehicle or curb and the home or business. Currently, the transportation disadvantaged are often subject to long wait and ride times, creating the need for more rapid and streamlined trips. The use of coordinated shuttle services could help to address long wait and rider times, but would be very expensive.

Policy/Guidelines

Since specialized transportation services frequently operate independently and separately, it can be confusing to seniors and persons with disabilities to know exactly what services they qualify for. The rules and requirements pertaining to eligibility, scheduling procedures, costs, and options for aides vary from provider to provider. The definition of elderly, disabled, or low-income also can vary between organizations, making it difficult to stay current on each organization's eligibility criteria. Further, the large degree of variation makes it more difficult for coordination to take place.

With various current policies and guidelines, family members of the transportation disadvantaged are sometimes not included, making it difficult to transport children to daycare or other locations. As there are variations among providers concerning the accommodation of children, flexibility in guidelines could allow for these nuances. There are also no current guidelines for organizations

who serve individuals who are borderline-disabled or borderline-poor.

Built Environment

The disabled and elderly population experiences numerous mobility barriers with a primary barrier being the built environment. Even when fixed-route transit is widely available, the built environment can be an impediment in accessing transit service. Inadequate access, lack of sidewalks, lack of navigable sidewalks, lack of pedestrian facilities, and lack of shelters at bus stops prevent elderly and disabled customers from accessing public transit. Aside from public transit, poor design at some apartment complexes and retirement facilities or in some driveways, make it difficult for GRTC vans and other demand-response services' vehicles to approach and provide service in these areas. When there is limited access, the service providers are forced to pick-up customers at the entrance to the facilities or at the very end of driveways.

There are also issues of safety in the urbanized area; bus stops in secluded and dimly-lit areas create safety concerns for riders using transit services early in the morning, or late in the evening and night. As the counties continue to expand and suburban employment continues to grow, without a parallel increase in public transit services to these growing areas, access to employment, retail, and medical centers in the counties will continue to be limited. The lack of access to suburbanized areas limits the number of jobs available to the transportation disadvantaged population. New suburban developments often do not consider access to employment, education and training, and human services facilities for the transportation disadvantaged who may require specialized transit services.

Lack of basic transportation design features such as sidewalks, curb cuts, railings, bus shelters, signage, and pedestrian traffic signals create difficulties in accessing public transit and make such service less desirable for everyone, and especially for transportation disadvantaged users.



Needs, Gaps, and Recommendations

Public transit has an important influence on regional development patterns, economic viability, and the creation of livable communities. An affordable and accessible transportation service is an important social service and can be considered “an essential part of livable communities.”⁴³ A simultaneous recognition of transit needs and an identification of spatial gaps in accessibility to transit services can help lead a region to the provision of a more equitable, affordable, and accessible public transportation service better serving the transportation disadvantaged groups.

Needs and Gaps

The current state of paratransit and specialized transportation services is underserving, but still provides a large number of annual rides. In 2013, the total number of rides provided was 1,519,181 compared to a total of 1,399,058 in 2010. Over the period from 2010 to 2013, the largest percentage increase occurred between 2012 and 2013, with a 5.31 percent growth in service. The total number of trips in 2012 was 1,442,600. This increase represents an 8.59 percent growth over a 3-year period. While not all-inclusive, these figures include ridership data from LogistiCare/DMAS, GRTC CARE, Mechanicsville Churches Emergency Functions (MCEF), Access Chesterfield, Senior Connections, Goochland Free Clinic and Family Services, and The Shepherd’s Centers of Chesterfield and Richmond.

Using the Center for Urban Transportation Research at the University of South Florida’s model for Forecasting Paratransit Service Demand, the theoretical demand for paratransit and specialized transit services was calculated at a regional level. The model uses the percentage of transit

coverage in the region; the number used was 31 percent, taken from the Brookings Institute’s report on the Richmond Metropolitan Area. It also takes into account the general number of annual service days, which was inputted as 260, excluding weekend days due to the lack of service on the weekends in most areas and with most providers. The information generated by the model is based on age by poverty status and by disability status data from Census or American Community Survey data from 2012 and regional population projections beginning in 2015, in 5-year increments. The population projections were extrapolated from the Socioeconomic Data Report 2008 – 2035. From the population projections in the report, the 5-year incremental data was calculated using a least-square regression.

The model generated a general Transportation Disadvantaged population total of 270,627, versus the number reported for the region of 337,184. The true number of transportation disadvantaged lies between these two numbers. The difference in numbers allows the model more space for errors that may be present in the numbers used for annual service days, population projections, and transit coverage. The forecasting model also generates a Critical Need Transportation Disadvantaged population totaling 26,706, and a low-income/ not disabled/ transit-dependent population totaling 17,274, creating a total of 43,980 persons classified as the Critical Transportation Disadvantaged population. Using national average trip rates of 1.899 for low-income not disabled and 0.049 for severely disabled; the total daily trips are equal to 34,112. Using the number of annual service days (estimated at 260 on average, without weekend service) the total number of annual trips is equal to 8,869,046 for 2012 and 9,018,933 in 2013. The model forecasts from 2012 to 2022, with a growth percentage of 18.57 percent during

⁴³ Mamun, Sha Al, and Nicholas E. Lownes. “Measuring Service Gaps.” Transportation Research Record: Journal of the Transportation Research Board 2217 (2011): 153.

that same time period.

In its current state, specialized transportation is underserving the transportation disadvantaged population. A gap of 7,426,446 trips exists in 2012 and the figure for 2013 is 7,499,752 trips. In 2013, the model shows that the region is underserved by almost 7,500,000 trips, which is 493 percent above what is currently provided. The numbers of daily trips for 2012 and 2013 are 5,548 and 5,843, respectively, compared to the model's estimated daily trip demands of 34,112 and 34,688 for 2012 and 2013, respectively. There are significant discrepancies between the current level of service being provided and the model's estimated level of needed service. While the model's number representing the level of demand for service is just an estimate, and due to the nature of the variables is not exact, the difference between the current level of service and the modeled demand represents the need for an improvement in specialized transportation in the region.

Recommendations

Through literature, document, and plan review (Richmond/Petersburg Metropolitan Planning Areas Coordinated Human Services Mobility Plan by DRPT/KFH, and other literature), recommendations on ways to improve efficiency and increase specialized and paratransit services in the region were constructed. Like the issues stated previously, the recommendations are broken down by the same categories. The recommendations that were gathered through research and study are broken down by category.

COMMUNICATION

Recommendations involving improvements in communication would prove to be effective and low-cost. Increased outreach and marketing, both at a regional and local level would lead to an increase in awareness, and usage of service. It should also lead to increased efficiency which should lower costs in order to make services more cost effective. Coinciding with increased outreach, marketing incentives in the form of the environmental, economic, and social benefits of public transportation will help attract choice riders.

In order to facilitate these recommendations, a regional travel training program should be instituted to educate potential paratransit, fixed-route tran-

sit, and specialized transportation users on how to use these services. This will lead to increased ridership, and improved confidence, satisfaction, and security when riding.

A last caveat with improved communication is to increase the dialogue between medical facilities (mainly dialysis treatment centers, due to the high demand for recurring transportation) and the transportation providers in order to identify opportunities for coordination. This would hopefully lead to the consideration of specialized transit operational issues by medical facilities when scheduling appointments for users.

COORDINATION

A recommendation that often comes up, and has had success in states like Florida, is the creation and maintenance of a council or committee with the purpose of coordinating specialized transportation services. The creation of a coordination entity would centralize administration and support between all of the human services agencies and transportation providers in the area. This entity would work to foster coordination between existing services, including private operators, and encourage the development of new services. The organization could also serve as a centralized point of contact for information, services, outreach, and support. At a general level, this organization could help incrementally implement coordination or brokerage of human services transportation in the region.

The GAO, in 2003, cited three efforts undertaken by states, and proven to yield results in coordination efforts. These efforts are: coordinated planning, shared use of vehicles among multiple programs, and brokerages.⁴⁴ Coordinated planning refers to "some coordination of human service and transportation agencies and providers [working] together to plan transportation services for their clients."⁴⁵ The GAO defines the shared use of vehicles as vehicles owned by one program being used by multiple entities.⁴⁶ Lastly, a brokerage is "a type of coordination where one agency serves as the central point of contact for providing ride

44 "Developing Brokered Community Transportation for Seniors and People With Disabilities," 450.

45 United States General Accounting Office. Report to Congressional requests: Transportation-disadvantaged populations, GAO Report GAO-03-697 (June 2003): 18.

46 Ibid., 19.

information or arranging transportation for clients of multiple programs.”⁴⁷ The GAO concluded that coordination efforts result in improved customer service where coordination can reduce duplication and fragmentation, or the silo-effect. Coordination can also reduce the cost per trip, in some cases as much as a 20 percent reduction.⁴⁸ Two Transportation Research Record case studies of programs in North Carolina and South Carolina metropolitan areas, found that “a higher degree of coordination, meaning a larger pool of trips with shared resources, results in improved overall system performance.”⁴⁹

The coordination of planning could be achieved directly through the aforementioned organization. The creation of an enhanced volunteer driver program or the shared use of volunteer drivers would lead to the shared use of vehicles amongst different programs. An enhanced volunteer driver program creates a larger pool of drivers that could be utilized by the various providers and agencies, providing flexibility and low-costs. Brokerage of services through an agency such as Senior Connections, the Capital Area Agency on Aging, would greatly benefit improved coordination and subsequent improvements in the current system. A brokerage arrangement with a centralized call center would result in increased efficiency in managing volunteer drivers, receiving and responding to requests, and in operating a unified call center.

Other general recommendations include building better relationships to institute a regional network, expanding the number of accessible vehicles, approaching marketing from a regional perspective, and working to better engage the private-sector transportation providers and the faith community.

COST

It is expensive to provide specialized transportation services or paratransit services. By providing additional funding for start-up, barriers to entry into the market of specialized transit can be removed. With more service providers, costs will decrease due to the possible increase in coordi-

nation, vehicle sharing, and volunteer driver programs.

Another way to reduce costs is to engage in partnerships with employers and the industry and transportation sectors. Employers may be able to provide funding, or sponsor transit for their workers, thereby, covering the expenses otherwise incurred by the employee. DRPT and KFH Consulting suggest that “transitioning more expensive paratransit services to fixed-route services” would increase cost efficiency, through the utilization of existing services.⁵⁰

Making progress in cost-savings works directly with coordination. As mentioned above, a 2003 GAO study cited a decrease in cost per service trip of up to 20 percent for coordinated trips. By working to better increase coordination, it is also possible to simultaneously reduce costs.⁵¹

SERVICE

Recommendations for better service pertain to increasing the quantity of demand-response service, frequency of fixed-route service, and expanding the breadth of existing services. By allowing weekend trips, many organizations and agencies would be able to fulfill the needs of many users. Also, creating transit links between counties and allowing providers to transport users outside of their current service-area would greatly increase mobility and access in the region for the transportation disadvantaged. By providing extended weekend, evening, and night service, job access is improved for tier 1 jobs and any other employment opportunities that work based on shifts.

Transportation Network Companies (TNC’s) such as Uber, Lyft and SideCar represent a potential transportation resource for transportation disadvantaged individuals, albeit there are certain limitations associated with these services:

- TNC’s provide prearranged transportation in response to a request that is usually submitted via a smartphone app. Thus, riders must possess and be proficient in the use of contemporary communications technology

47 “Developing Brokered Community Transportation for Seniors and People With Disabilities,” 450.

48 Ibid., 450.

49 Burnier, Carolina, Amy Jacobi, Gwo-Wei Torng, and Yehuda Gross. “Uncovering the Impacts of Coordinating Human Service Transportation – One Study, Two Locations, and Three What-If Coordination Scenarios.” Transportation Research Record (2014): 2-5.

50 KFH Group, Inc. “Richmond and Petersburg Metropolitan Planning Areas Coordinated Human Service Mobility Plan.” Virginia Department of Rail and Public Transportation (June 2014).

51 “Developing Brokered Community Transportation for Seniors and People With Disabilities,” 450.

- TNC drivers use their personal vehicles. Riders with special needs may have difficulty in being transported in certain makes and models of vehicles, and to date, there is little information about TNC's offering specialized service such as wheelchair accessible vehicles
- Although states and local governments appear to be moving toward more regulation of TNC's, currently TNC's are not subject to the same regulatory requirements in such areas as licensure, driver screening and qualifications, vehicle standards, insurance, and passenger discrimination as conventional taxis

Despite the above-noted limitations, the increasing popularity and availability of TNC's and the generally affordable cost of TNC-provided trips (off-peak trips of under 10 miles can cost as little as \$15.00) make them a potential transportation option for ambulatory persons who can afford the fees and have access to and can utilize the ride-hailing technology. Since many human services trips occur during off-peak hours, TNC-provided trips could be competitive with other forms of transportation. Further, use of prepaid trip card debit cards would give passengers greater flexibility in selecting the TNC operator and time that they wish to travel.

POLICY/GUIDELINES

General recommendations regarding policy and guidelines begin with creating less variation between agencies' and organizations' eligibility criteria. The varying eligibility criteria create confusion for users and often limit users to few providers. By creating a more universal system of eligibility, more users will qualify for services, and while leading to an increase in total costs, will create a significant diminishing in cost-per-trip. Another recommendation, that would result from coordination and brokerages, would be to institute a centralized scheduling organization that matches users' needs with the correct services and providers, while also aiding in the scheduling of services. This could also take the form of an online or application-based service.

Creating more universal codes for eligibility, and instituting more flexible policies with respect to

accompaniment of riders by family members and aides would help lead to a more robust and more widely-used system for paratransit and specialized transportation.

BUILT ENVIRONMENT

To provide better access and improved mobility for the transportation disadvantaged groups, improvements in the built environment must be made. Recommendations to improve the built environment include adding bus shelters, enhancing access to bus stops by improving and building sidewalks, providing curbcuts and removing physical obstacles (i.e. signposts) in existing sidewalks, improvements at crosswalks, and ensuring that new apartments and retirement complexes provide adequate access to buses and retrofitting those that do not. Creating environments that facilitate ease of access for all groups may lead to an increase in transit ridership, and a generally more active lifestyle. As the region continues to experience growth, more widespread use of universal design principles will benefit all persons.

10

Appendix

List of Service Providers

ACCESS CHESTERFIELD*

279-8489 (registration)

955-4172 (ride requests)

Chesterfield County, with service to Richmond, Petersburg, Hopewell, & Colonial Heights

Monday-Friday: 5:30 a.m.-7:30 p.m.

Saturday: 5:30 a.m.-5:30 p.m.

Wheelchair accessible service available

www.chesterfield.gov/content.aspx?id=2949

ACTI-KARE IN-HOME CARE

521-1233

Chesterfield, Goochland, Hanover, Henrico, Richmond

Monday-Sunday: 6:00 a.m.-9:00 p.m.

www.actikarerichmondva.com

ALLIANCE SPECIALTY TRANSPORT

225-8599

Transportation provided 24 hours a day

Office hours are Monday-Friday: 9:00 a.m.-5:00 p.m.

Service provided to Chesterfield, Henrico & Richmond; service provided to Goochland, Hanover, & Powhatan for additional fee

<http://alliancespecialtytransport.com/index.html>

Ambulatory, wheelchair accessible & non-medical stretcher van service available

ANGELS FOR HIRE/ANGELRIDE

423-9200

Western Richmond, Western Henrico, Northern Chesterfield

www.angelride.net/index.html

Wheelchair accessible service available

AT YOUR SERVICE

514-3874

Mary Carter Hyman

marycarter@atyourservice-richmond.com

BAY TRANSIT

(877) 869-6046
 Katherine Newman
 knewman@bayaging.org
 www.baytransit.org
 Service from Charles City and New Kent Counties to Richmond

BIG BEN TAXI CAB

986-6667
 Wael Khataybeh
 wkhataybeh@yahoo.com
 Richmond, Henrico, Chesterfield, Chester

BROOKS LLC

276-3401 (office)
 Charles T. Brooks
 ctimb Brooks57@yahoo.com
 Richmond, Goochland, Petersburg
 Monday-Friday: 7:00a.m.-7:00 p.m.
 Saturday: 7:00 a.m.-5:00 p.m.
 Sunday by appointment

CAP-UP

598-3351, ext 103
 788-0050
<http://capup.org/CAPUP/Home.html>
 Goochland, Hanover & Powhatan

CAREMORE

(888) 649-5968
<http://www.caremore.com/en/About/About-VA.aspx>

CAPITAL AREA HEALTH NETWORK

780-0840
<http://cahealthnet.com/>

COMFORT KEEPERS

750-1123
<http://www.comfortkeepers.com/office-273/richmond-virginia>

DEPENDACARE TRANSPORTATION

745-1818 (office)
 426-9029 (cell)
 Edgar Gonzalez
 edgar@dependcareva.com
 Chesterfield, Goochland, Hanover, Henrico, Powhatan, City of Richmond
 www.dependacareVa.com
 Wheel chair accessible service available

DISABLED AMERICAN VETERANS VOLUNTEER TRANSPORTATION NETWORK

Mary Johnson
 675-5313

FORWARD FLEET

426-4313

GOOCHLAND FREE CLINIC & FAMILY SERVICES

556-6260

Goochland County

<http://goochlandfreeclinicandfamilyservices.org/>

Monday 12:00 p.m.-3:00 p.m. (Richmond)

Tuesday-Thursday 9:00 a.m.-3:00 p.m. (Goochland)

Friday 9:00 a.m.-12:00 p.m. (Richmond)

GROOME TRANSPORTATION

(800) 552-7911 or 222-7222

reservations@groometrans.com

GRTC CARE

782-2273 or 474-9922

<http://www.ridegrtc.com/services/specialized-transportation/>

Wheelchair accessible service available

HOME HELPERS

864-4258

Tracey Boseman

www.HomeCareRichmond.com

Richmond@homehelpers.cc

HOME INSTEAD SENIOR CARE

527-1100

www.homeinstead.com

Seven days a week

J&M TRANSPORTATION SERVICES LLC

737-2693

878-5020

Junior & Melissa Taylor

melissamcgowans@gmail.com

Monday-Friday: 7:00 a.m.-6:00 p.m.

JENCARE

344-9848 (1712 E. Broad)

228-1143 (3806 Mechanicsville Turnpike)

674-3425 (6530 Hull Street Rd)

504-7980 (524 South Park Blvd)

www.JencareMed.com

Transportation service available within a six mile radius of clinic locations

JUNNIE RAY INC.

326-6414 (office) 901-9223 (cell)

Jason C. Johnson

junnieraycare@gmail.com

LOGISTICARE (MEDICAID RECIPIENTS)

1-866-386-8331
<http://www.logisticare.com>
 Wheelchair accessible service available

MECHANICSVILLE CHURCHES EMERGENCY FUNCTION SENIOR RIDES

334-6590 or 357-9360
 Lynn Saunders
<http://www.mcef.co/>
LHS23111@comcast.net
 Service provided in zip codes 23111, 23116 & a portion of 23059

MOBILITY TRANSPORTATION, LLC

687-2199
 Dominick Atkins
www.mobility-transportation.com
mobilitytransportationllc@gmail.com
 Wheelchair accessible service available
 Service provided in Chesterfield, Henrico and Richmond
 Monday-Friday: 6:00 a.m.-6:00 p.m.; Saturday: 6:00 a.m.-1:00 p.m.

N&S TRANSPORTATION, LLC

478-4600

NAPOLEON TAXI

354-8294
<http://napoleontaxi.com>

NEW FREEDOM TRANSPORTATION, LLC

288-1248
www.newfreedomtransportation.com

RAINBOW TAXICAB

762-9200
mefrmmrol@aol.com

SALEH MEDICAL TRANSPORTATION, INC.

Doug Meyers
 334-9511 or 266-1190
myerslightning@yahoo.com

SAM TRANSPORTATION LLC

715-9242

SAVE OUR SENIORS

559-4480 or 914-4406
 Jeff Kyte

SEASONAL TRANSPORT LLC

303-9591

SENIORBRIDGE RICHMOND

282-0753 & 364-1276
www.matureoptions.com

SENIORS FIRST TRANSPORTATION LLC

562-3606

SENIORS HELPING SENIORS

Richmond and Eastern Henrico
553-0526
<http://www.seniorshelpingseniors.com/RVA/>

SHEPHERD'S CENTER OF CHESTERFIELD

706-6689
Chesterfield County
www.shepctrchesterfield.org
Services provided in the following zip codes: 23112, 23113, 23237, 23831, 23836, and 23838

SHEPHERD'S CENTER OF RICHMOND

355-7282
www.tscor.wordpress.com
Services provided in the following zip codes: 23059, 23060, 23113, 23114, 23219, 23220, 23221, 23222 (Medical Only), 23224 (Medical Only), 23225, 23226, 23227, 23228, 23229, 23230, 23233, 23235, 23236, 23238, 23294

SUNRISE TRANSPORTATION

559-6083 or 515-8124

TENDERCARE TRANSPORT OF VIRGINIA

288-8763
<http://www.tendercareofva.com/>
Wheelchair accessible & stretcher service available

TNT TRANSPORTATION SERVICES, INC.

270-3258
www.tntvans.com
Monday-Friday: 7:00 a.m.-6:00 p.m.
Wheelchair accessible service available

TOTAL PRAISE TRANSPORT

229-5353
Donnell Fonville
www.totalpraisettransport.com
totalpraisettransport@hotmail.com
Chesterfield and Tri-Cities
Monday-Saturday: 6:00 a.m.-6:00 p.m.

VAN GO

261-7388
www.vangorichmond.com
Wheelchair accessible service available

VETERANS CAB

275-5542

VIP & ASSOCIATES

421-2500

Monday-Friday: 8:00 a.m.-4:00 p.m.

Wheelchair accessible service available

WEST END CAB LLC

833-1234

Christopher Hessler

<http://westendcab.com/>

westender58@gmail.com

Western Henrico, Goochland, Powhatan, Louisa, Amelia

Monday-Saturday: 5:00 a.m.-8:00 p.m.

***Unless otherwise noted the transportation provider serves all of the metropolitan Richmond area.**

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Ad Hoc Committee Member Review Comments & Staff Response

Draft report document was reviewed by the Ad Hoc Committee at the June 2, 2015 meeting. The following documents the Committee members' comments and staff's response to those comments. Staff response follows each numbered comment in italicized text. (Note: some comments have been consolidated. See list of acronyms at end of section.)

1. As we discussed, it does not seem that the data that has been collected in a statistically large/varied enough sample to make some of the inferences that you guys have done in the report. Specifically, the lack of reporting by many of the agencies from whom you requested information is disappointing. You did not ask Van Go for our statistics, and we provided over 185,000 additional, non-duplicate trips in 2012, and again in 2013 (ACCESS, VAMC, PACE, Henrico, Private)
2. As we discussed, there is a very large number of human services trips which are not counted, including the VAMC, private trips, hospitals like Riverside/PACE, and ALL county CSBs. See #1 above for just Van Go's non-duplicate trips alone.
3. There is a lack of "apples-to-apples" comparison in the data, much of which is due to #1 above. To get a good picture of what is going on, it may be best to get the following from each service provider. This will create a truer picture of Cost-per-Trip:
 - Total number of passenger trips. This is ONE passenger traveling ONE way on a vehicle.
 - Either total miles of all trips, or average mileage of a passenger trip
 - TOTAL cost of the service. This includes all vehicle costs (especially true acquisition

cost), labor, taxes, benefits, and overhead including rent, phone, etc.

The data concerning the gap in unmet transportation needs is very difficult to calculate. The procedure for estimating the demand appears to be reasonable, as it is based on census data and methodology from the literature. As is common with most efforts of this type, the challenge is in securing information regarding the number of trips currently being provided. You are correct that not all trips currently being provided are noted in the report, but given that the estimated daily trip demand is approximately 35,000 trips and it was reported that only 5,800 trips are being provided, even if the actual number of trips being provided were increased by 50% to 8,700 or 100% to 11,600, there is still a significant gap between the estimated demand and amount of service being provided. This is likely the more significant point-that the gap is several orders of magnitude. (Response to Comments 1-3 consolidated into this section)

4. I very much like the data maps and overlays. This is very interesting and is a great tool for planning.

The data maps and overlays can be made available. One of the purposes of the document is to provide human service agencies and transportation providers with information that they can cite in grant applications, plans, and related documents.

5. Would it be possible to include data from any private provider who will participate that runs 10 or more vehicles.

An attempt was made to compile data on services from the area's known providers. While limiting the information to providers of a specified fleet size may reduce the number of services listed in

the appendix, considerable effort would have to be put forth in re-contacting providers to ascertain their fleet size. Thus, because the study effort needs to come to a conclusion, the data should be regarded as the best available information at the time the document was developed.

6. I do not believe that the Bay Transit numbers are correct if they are referring to cost-per-passenger-trip, unless they have merged this with some of their transit numbers. They have left out some costs like vehicle acquisition or management overhead, or they have used the 5310/5311 grant money to reduce their costs.
7. The statement “In 2008 Bay Transit served 156,000 passengers at a cost of \$15.76 per passenger” is not clear. Is it 156,000 trips at \$15.76 per trip?

These figures have been checked for accuracy

8. The MCEF statistic is not clear. Could we merge this with all the small providers?

This was the amount of service as reported at the time the document was prepared. It has undoubtedly changed as the MCEF Senior Rides Program has expanded. It was written up separately due to the fact that it is a recent success story and to our knowledge the only volunteer driver program in Hanover.

9. Why doesn't the CAAA have proper statistics? They know how many rides they provide because they pay the providers...

The text has been revised to include the number of trips provided by Senior Connections.

10. The statistical inferences under “Needs and Gaps” do not seem to be accurate. Just adding Van Go's trips alone has a significant change. However, I see that using the model you did, there is no way we are near to closing the gap.

Please see response to Comments 1-3. You are correct that based on our calculations there is a significant gap between demand and actual service provided.

11. It does not seem that brokering trips is neither a clear conclusion nor an advisable so-

lution. There is enormous potential for problems when one agency/office holds the keys to funding other agencies vehicles. “Brokerage” implies that funding comes into one spot and is “brokered” out which can be a very bad idea. If we are considering an “information” brokerage that gives potential passengers their transport options, this could work. But a “Community Transportation” brokerage would become bloated, inefficient, costly, and would very quickly eat up entirely too much of the limited fiscal resources desperately needed for providing trips to passengers. The footnotes 44, 47, 48, and 51 refer to a document that is not statistically significant and seems to also draw conclusions while not proving the accuracy of those conclusions.

Based upon the findings and recommendations from the literature, we believe a service brokerage model does have the potential to increase efficiencies, lower costs and provide additional consumer choices. You are correct that creation of a new entity to function as a broker could potentially increase administrative costs, but if the brokerage function were provided by an existing transit/paratransit/taxicab company, that already has much of the infrastructure in place, it seems likely that savings could be realized through the elimination of duplicate efforts.

With regard to the cited study, while its limitations (i.e. insufficient number of returned surveys to develop statistically significant conclusion), the study notes that “... it nevertheless offers valuable information for social agencies across the nation providing transportation to seniors, particularly for providers in rural and suburban areas where public transportation is typically limited and seniors are relatively isolated. Information obtained from survey respondents indicate that they experience problems reliably meeting their daily living needs due to inconsistent or unavailable private and public transportation options....And finally, as suggested by respondent's concerns regarding a proposed brokered transportation service, those who currently use an agency bus or van for transportation may be willing to use a brokered transportation service because, historically, agency provided transportation may not have reliably taken them where they expressly need to go at a

time that met their needs, or may not have guaranteed them a return ride home.”

12. “Coordination” absolutely is one way to reduce costs; but one of the first steps in that model would be to get agencies like county CSBs or other recipients of 5310/5311 funding to allow non-CSB clients to ride their vehicles. There is a huge demand for vehicles on the road from 6:00am – 6:00pm Mon-Sat (12 hours per day, six days, 72 hours each week). However, CSB vehicles (most of which were purchased with 80% federal grant funding) sit in their parking lots 45 of those 72 hours. That means they are parked for over 60% of the time they are needed! That is a lot of sitting that could be coordinated and used for doctor appointments, grocery shopping, or other human service needs.

This is an ongoing problem, and some inroads have been made through the development of Coordinated Human Service Mobility Plans, and state and federal requirements that recipients of state and federal funds coordinate the use of transportation resources. From observation, it seems that for almost human service agencies, transportation is not a core function but rather an element of a larger overall program, and the agency staffs lack the time, interest, mandates and incentives to pursue coordination of their respective transportation services.

13. The conclusion under “Service” and “Policy/Guidelines” are accurate and very important. Except that “...increasing ridership, and leading to diminishing costs” is misleading, and should read “...while leading to an increase in total costs, will create a significant diminishing in costs-per-trip”.

This section has been revised as suggested.

14. Uber, Lyft, and SideCar are just a few of the new TNCs that human services agencies could utilize to provide non-wheelchair transportation to some of the folks in need. The funding could be paid onto a passenger’s “Trip Card,” and they could use it to take trips using the TNCs. Most human services trips are not at Uber’s peak demand time and would therefore be more affordable. Trips of under 10 miles can go for as little \$15.00.

This is a good suggestion and a brief discussion about transportation network companies will be added to the “Service” section.

Acronyms:

- ACCESS Chesterfield: Chesterfield’s coordinated transportation program
- VAMC: McGuire VA Medical Center
- PACE: Riverside Program of All-Inclusive Care for the Elderly
- CSB: Community Services Board
- MCEF: Mechanicsville Churches Emergency Function
- Senior Connections, the Capital Area Agency of Aging
- TNC: Transportation Network Companies

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Bibliography

- “2010 ADA Regulations.” Americans with Disabilities Act. http://www.ada.gov/2010_regs.htm (accessed July 30, 2014).
- “Aging Statistics.” Administration on Aging. http://www.aoa.gov/Aging_Statistics/ (accessed July 30, 2014).
- “Code of Virginia.” Commonwealth of Virginia. <http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+51.5-44> (accessed August 1, 2014).
- “Freedom to Travel, Data Analysis.” Bureau of Transportation Statistics, Research and Innovative Technology Administration. http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/freedom_to_travel/html/data_analysis.html (accessed August 1, 2014).
- “About Poverty.” United States Census Bureau. <https://www.census.gov/hhes/www/poverty/about/overview/> (accessed July 30, 2014).
- AARP. “Enhancing Mobility for Older Americans: A Five-Year National Action Agenda.” (June 2004).
- Brault, Matthew K. “Americans with Disabilities: 2010.” United States Census Bureau (July 2012).
- Burnier, Carolina, Amy Jacobi, Gwo-Wei Torng, and Yehuda Gross. “Uncovering the Impacts of Coordinating Human Service Transportation – One Study, Two Locations, and Three What-If Coordination Scenarios.” *Transportation Research Record* (2014): 1-14.
- Clarke, Philippa, Jennifer A. Ailshire, Michael Bader, Jeffrey D. Morenoff, and James S. House. “Mobility Disability and the Urban Built Environment.” *American Journal of Epidemiology* 188 (July 2008): 506-513.
- Duvarci, Yavuz, and Tan Yigitcanlar. “Integrated Modeling Approach for the Transportation Disadvantaged.” *Journal of Urban Planning and Development* 133 (September 2007): 188-200.
- Glaeser, Edward L., Matthew E. Kahn, and Jordan Rappaport. “Why do the poor live in cities? The role of public transportation.” *Journal of Urban Economics* 63 (2008): 1-24.
- KFH Group, Inc. “Richmond and Petersburg Metropolitan Planning Areas Coordinated Human Service Mobility Plan.” Virginia Department of Rail and Public Transportation (June 2014).
- Lynott, Jana, and Carlos Figueiredo. “How the Travel Patterns of Older Adults Are Changing: Highlights from the 2009 National Household Travel Survey.” AARP Public Policy Institute: 1-8.

- Mamun, Sha Al, and Nicholas E. Lownes. "Measuring Service Gaps." *Transportation Research Record: Journal of the Transportation Research Board* 2217 (2011): 153-161.
- Marx, Jerry, Christie Davis, Caitlin Miftari, Anne Salamone, and Wendy Weise. "Developing Brokered Community Transportation For Seniors And People With Disabilities." *Journal of Gerontological Social Work* 53 (April 2010): 449-466.
- Mayor's Anti-Poverty Commission, City of Richmond. *Mayor's Anti-Poverty Commission Report*. Richmond, VA.: Richmond City Council, 2013.
- "Nearly 1 in 5 People Have a Disability in the U.S., Census Bureau Reports." *United States Census Bureau*. Last modified July 25, 2012. <http://www.census.gov/newsroom/releases/archives/miscellaneous/cb12-134.html>.
- Sanchez, Thomas W. "Poverty, policy, and public transportation." *Transportation Research Part A* 42 (2008): 834-841.
- Sanchez, Thomas W., Qing Shen, and Zhong-Ren Peng. "Transit Mobility, Jobs Access, and Low-Income Labour Participation in US Metropolitan Areas." *Urban Studies* 41 (June 2004): 1313-1331.
- Scholl, Lynn. "Transportation Affordability for Low-Income Populations." *Public Policy Institute of California* (2002): 1-8.
- The National Organization on Disability . "2004 NOD-Harris Survey of Americans with Disabilities." *The National Organization on Disability*. http://nod.org/research_publications/surveys_research/harris (accessed August 1, 2014).
- U.S. Department of Transportation, Federal Highway Administration, 2009 National Household Travel Survey. URL: <http://nhts.ornl.gov>.
- United States General Accounting Office. *Report to Congressional requests: Transportation-disadvantaged populations*, GAO Report GAO-03-697 (June 2003): 18.
- Virginia Employment Commission (VEC) ES-202 2nd quarter 2012; employment data spot checked, verified, and revised accordingly by RRPDC staff.
- Wasfi, Rania, David Levinson, and Ahmen El-Geneidy. "Measuring the Transportation Needs of Seniors." *Journal of Transport Literature* 6 (January 2012): 8-32.
- Yigitcanlar, Tan, Kushairi Rashid, and Faith Dur. "Sustainable Urban and Transport Development for Transportation Disadvantaged: A Review." *The Open Transportation Journal* 4 (2010): 1-8.