Mapping Senior Access & Isolation in the Richmond Region: A Pilot Study and Analysis

Prepared for
Greater Richmond Age Wave Coalition
Senior Connections
VCU Department of Gerontology

Supported by
United Way of Richmond & Petersburg

Prepared by
The Center for Urban & Regional Analysis

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Introduction

Throughout our lives, our quality of life is strongly influenced by our ability to live independently and to have ready access to shopping, services and amenities. Our need to have services and amenities close by becomes even greater as we age, as our ability to travel to access these things declines. If aging seniors are to enjoy a high quality of life, the built environment must accommodate their needs. But since most of today’s communities were not built with the needs of seniors in mind, we must now determine which features afford a high quality of life throughout the aging process, which neighborhoods display more of those features, and how other neighborhoods may be improved. The information and technical tools are now available so that one can describe and map neighborhoods throughout a region, showing where seniors can more easily access shopping and important services. With this information in hand, one can work with local governments and interested organizations to improve senior access at appropriate locations in the region.

With that goal in mind, in April 2015 the Greater Richmond Age Wave Readiness Coalition, with support from the United Way of Richmond & Petersburg, commissioned the Center for Urban & Regional Analysis (CURA @ VCU) to conduct an initial, pilot study to show the kinds of information and insight that such an analysis and mapping project could provide. Accordingly, in this project we gathered, organized and mapped data to show senior-citizen access to goods and services at two levels of geography – (i) the Richmond Regional Planning District (Richmond, Chesterfield, Henrico, Hanover, Powhatan, Goochland, New Kent, Charles City, and Ashland), which constitutes over half of the Richmond MSA’s land mass, and (ii) the individual neighborhood level, in this case, the Willow Lawn neighborhood on the western Richmond-Henrico border. A more complete project would analyze and map the entire Richmond metropolitan statistical area (MSA) and most of the individual neighborhoods within it.

A more complete project would also be based upon rigorously developed norms and rubrics for assessing the adequacy of senior access and it would also consider more variables than this small pilot project was able to consider. Nevertheless, despite its limited scope, this project demonstrates how relevant information can be collected and mapped and the insights that such maps can bring to this important issue.

Part 1 of this report presents the maps of senior access and isolation at the level of the Richmond Regional Planning District, as well as brief descriptions of the data used for these maps and a very brief discussion of the results. Part 2 presents the mapping and discussion of senior access to shopping and amenities at the neighborhood level, specifically, in the Willow Lawn area. Note that the maps for each part are numbered separately, Maps 1 – 14 for Part 1 and Maps 1-5N for Part 2.
1. Senior Access at the Level of the Richmond Regional Planning District

In order to map the concentrations of senior citizens in the Richmond Regional Planning District, we first collected data on the places where seniors live. Then we gathered information on the common destinations of seniors (convenience goods, services, health care and amenities). Sections 1.1 and 1.2 explain the data sources for senior population and housing locations. Section 1.3 explains the data we used to show senior destinations and section 1.4 discusses the relative accessibility of the destinations to senior residences.

1.1 Senior Population

We obtained senior population data in the Richmond Regional Planning District from the US Census Bureau through its 2013 American Community Survey (ACS) 5-year estimates at the Census Block Group level. In each block group, we determined and then mapped the number of persons age 60 years and older and the number of persons 85 years and older. (See Maps 1 and 4 in the Appendix.) In addition, upon request, we mapped the number of persons age 5 to 19 years. (See Map 5 in the Appendix.)

1.2 Senior Housing

In addition to the Census data, we gathered senior housing data from the Virginia Housing Development Authority (VHDA) housing lists, online sources, and senior apartment publications in order to identify the location, number of dwelling units, the cost of monthly rent and amenities of senior apartments. (See Table 1.) We organized the data into three Excel spreadsheets -- Senior Apartments Publication, Section 8 Subsidized Apartments, and VHDA Subsidized Apartments.¹

Using online data sources such as Senior Housing Net, the Better Housing Coalition, the Section 8 Housing List and VHDA Housing Search, it was possible to identify locations of senior housing developments in the Planning District. Using the Internet and also phone contact with many of the senior housing developments, we were able to create a robust list with the street address, city, state and zip code of each development. We then geocoded and mapped these housing developments, as shown in Map 6 in the Appendix.

Once senior housing and apartments were located we conducted a search of each senior community’s website (and, if necessary, contacted them by telephone) to determine the number of dwelling units, monthly cost of rent and amenities at these senior housing locations.

¹ The spreadsheets are cumbersome so they are not included in this report. They are available upon request.
The on-site amenities we recorded range from community accommodations and features to onsite doctors, services or shopping. Although we did not create a map of the housing developments offering specific amenities, it is obvious that such information is vital to an assessment of the accessibility of various senior services and amenities and would therefore be an essential component of a complete analysis of senior accessibility to shopping, services and amenities. (This information is stored in electronic spreadsheets and is available by request.)

1.3 Senior Destinations

We identified a total of 11 senior destinations, including bulk stores, grocery stores, churches, community centers, recreation centers, GRTC bus stops, hospitals, medical clinics, pharmacies, parks, and golf courses. We used online sources to identify the location, hours of operation, services and amenities of senior destinations. (See Table 1.) During the data collection process non-GIS data were organized into four Excel spreadsheets – Store Destinations, Community Centers, Recreation Centers, Medical Clinics. They were geocoded into GIS and mapped. (See Maps 7 to 12.)

The store destinations include big-box stores, grocery stores and pharmacies such as Walmart, Sam’s Club, Target, Costco, Food Lion, Kroger, Martin’s, CVS Pharmacy, Walgreens and Rite Aid. Through these companies’ websites we searched for stores based on city or county names. Store information, such as specific store hours, services or amenities, was also located through these companies’ online websites. Services or amenities range from fresh produce to an on-site clinic.

We also listed and gathered data on Community Centers and Recreational Centers, utilizing city and county online websites. In general, community centers can provide, but are not limited to providing, the following: rentable or free rooms or spaces for community-wide events, public meetings and private functions; spaces for local clubs and volunteer activities; food or clothing banks; information or resources like computers; local non-government activities as well as political activities; and classes or other activities. We also learned that some counties classify recreation centers as community centers, so we created a Recreation Centers Excel sheet. Recreation centers provide the same functions as community centers while including additional amenities such as fitness facilities.

Medical clinics were documented based on on-line searches of medical clinics in the study area. We used the Charitable or Free Clinics list, the Patient First Clinics list, and the Yellow Pages online resources. For these searches it was important to identify specific city or county names in order to capture as many medical clinics possible in the study area. Using the location information of medical clinics further data could be collected about them, such as their specializations. In this report a medical clinic is defined as a facility that is run by several specialists working together and sharing the same facilities.
<table>
<thead>
<tr>
<th>Data Types</th>
<th>Data Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Population</td>
<td>US Census Bureau: <a href="http://www.census.gov/">http://www.census.gov/</a></td>
</tr>
</tbody>
</table>
| Senior Apartments         | Apartment Navigator Publication  
Better Housing Coalition: http://www.betterhousingcoalition.org/communities/senior-homes/  
Senior Housing Net: http://www.seniorhousingnet.com/seniorliving-search  
For more detailed information such as dwelling units and monthly rent cost, apartments were contacted by phone. |
| Section 8 Subsidized      | Section 8 Housing list: www.section8housinglist.info/category/virginia-va/  
VHDA Housing Search:  
For more detailed information such as dwelling units and monthly rent cost, apartments were contacted by phone. |
| Apartments                | Called the VHDA office and they provided a list of subsidized housing for the study area:  
www.hud.gov/apps/section8/results.cfm?city_name_text=RICHMOND&county_name_text= &zip_code=&property_name_text=&client_group_type=Elderly&maxrec=20&state_code=VA&statename=Virginia |
| Store Destinations        | Identified major bulk stores and grocery stores such as Walmart, Sam’s Club, Target, Costco, Food Lion, Kroger, Martin’s, CVS Pharmacy, Walgreens and Rite Aid. Their websites provide location finders and store information:  
www.Walmart.com; www.samsclub.com;  
www.Target.com; www.costco.com; www.foodlion.com;  
www.walgreens.com; www.riteaid.com |
| Community Centers         | Using city, town and county websites, community centers where identified:  
www.charlescity.org/parks-rec.shtml;  
http://www.richmond.gov.com;  
Recreation Centers

GRTC Bus Stops
GRTC Transit System: http://www.ridegrtc.com/

Hospitals

Medical Clinics
Charitable or free clinics: http://www.vafreeclinics.org/find-clinic/
Patient First Clinics: https://www.patientfirst.com/locations/GreaterRichmondLocations.aspx
Yellow Pages: www.yellowpages.com/richmond-va/medical-clinics
For more detailed information, available websites of the medical centers were visited.

1.4 Accessibility to Senior Destinations
To assess the accessibility of seniors to their destinations, we developed a scoring scheme based on the distance from senior housing to senior destinations. (See Table 2.) Note that these are “Euclidean” or “as the crow flies” distances – they measure the shortest geographic distance from the residence to the destination, not accounting for the actual paths traversed by roadways. A higher score is given to a Census block group if it is located closer to a senior destination. A block group would receive a “0” accessibility score if it is more than five miles away from a senior destination.²

Each block group in the Richmond Regional Planning District was evaluated against the 11 senior destinations based on its distance to them. Accessibility scores were assigned and totaled for each block group and mapped. (See Map 13.)

² Note that these norms are not based on literature or formal analysis. Rather, they are intuitively developed and simply represent a mathematical way to account for the distance of senior destinations to senior residences.
### Table 2. Distance Criteria and Accessibility Scores

<table>
<thead>
<tr>
<th>Distance Criteria</th>
<th>Accessibility Scores</th>
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<tr>
<td>&lt;= 0.5 mile</td>
<td>10</td>
</tr>
<tr>
<td>&gt; 0.5 mile and &lt;= 1 mile</td>
<td>9</td>
</tr>
<tr>
<td>&gt; 1 mile and &lt;= 1.5 miles</td>
<td>8</td>
</tr>
<tr>
<td>&gt; 1.5 miles and &lt;= 2 miles</td>
<td>7</td>
</tr>
<tr>
<td>&gt; 2 miles and &lt;= 2.5 miles</td>
<td>6</td>
</tr>
<tr>
<td>&gt; 2.5 miles and &lt;= 3 miles</td>
<td>5</td>
</tr>
<tr>
<td>&gt; 3 miles and &lt;= 3.5 miles</td>
<td>4</td>
</tr>
<tr>
<td>&gt; 3.5 miles and &lt;= 4 miles</td>
<td>3</td>
</tr>
<tr>
<td>&gt; 4 miles and &lt;= 4.5 miles</td>
<td>2</td>
</tr>
<tr>
<td>&gt; 4.5 miles and &lt;= 5 miles</td>
<td>1</td>
</tr>
<tr>
<td>&gt; 5 miles</td>
<td>0</td>
</tr>
</tbody>
</table>

1.5 Assessment of Senior Accessibility to Senior Destinations

We then examined the senior population and accessibility score of each Census block group. Four types of block groups were highlighted based on the combinations below. (See Map 14.) Note that the term “concentration” is used in the typology. Here, senior concentration is a relative term. We sorted all of the Census block groups into ascending order based on the number of seniors in each one. We then divided them into quartiles, as follows: 4th quartile: 400 – 1,401, 3rd quartile: 267 – 399, 2nd quartile: 166 – 266, 1st quartile: 0 – 165.

The four Census block types are:

- **HH**: High senior concentration\(^1\) and High accessibility\(^3\).
- **HL**: High senior concentration\(^1\) and Low accessibility\(^4\).
- **LH**: Low senior concentration\(^2\) and High accessibility\(^3\).
- **LL**: Low senior concentration\(^2\) and Low accessibility\(^4\).

And *senior concentration* is defined as:

1. Block groups with high senior population in the 4th quartile (top 25%).
2. Block groups with low senior population in the 1st quartile (bottom 25%).
3. Block groups with high accessibility scores in the 4th quartile (top 25%).
4. Block groups with low accessibility scores in the 1st quartile (bottom 25%).
1.6 Brief Analysis

The maps presented above, especially Map 14, indicate that senior accessibility is highest in Henrico County, especially in areas closer to the City of Richmond, and in the City of Richmond itself, particularly north of the James River. Seniors are also concentrated in these areas, particularly in Henrico County.

However, senior accessibility appears to be relatively low – despite high concentrations of seniors – in almost every other jurisdiction of the Planning District – Chesterfield, Powhatan, Goochland, Hanover, New Kent and Charles City. This is perhaps not surprising, given the fact that rural communities outside the urban core have traditionally lacked ready access to amenities, and in light of the fact that during the last 40 years new subdivisions have often been built at some distance from shopping, services and amenities. This pattern is a cause for concern and it should be investigated further.

The picture created thus far is incomplete in at least two ways: (1) we have not considered or been able to gather data on all relevant variables at the level of the Richmond Regional Planning District; (2) we have yet to consider the finer grained, neighborhood level of detail, to which we turn next.
2. Senior Access at the Level of the Neighborhood: Willow Lawn

2.1 Land Uses within the Pedestrian Shed

For the pilot neighborhood-level analysis we chose the Willow Lawn area, on the City of Richmond’s western border with Henrico County, because of pre-existing neighborhood involvement with senior accessibility studies. It is a useful choice for another reason as well: It lies in an area where senior access should be relatively good because of the many shops and other amenities nearby. This analysis helps to distinguish senior access at the macro, regional level from access at the micro, pedestrian level.

The analysis is organized around the pedestrian shed – the area within walking distance from a neighborhood center. Pedestrian sheds are typically defined as the area covered by a 5-minute walk, or a quarter mile, as this is the distance that the average person will walk without considering other modes of transportation. Especially if the pedestrian ways are safe, comfortable and interesting, longer pedestrian sheds, such as a half-mile (10-minute walk) or one-mile (20-minute walk) areas are also appropriate. Of course, these distances may vary with age and health condition, but the 5-minute walk is a good, and standard, starting point for understanding a neighborhood’s pedestrian accessibility.

The pedestrian sheds for the Willow Lawn neighborhood center were established (employing ¼, ½, ¾ and 1-mile radii) using the Shoppes at Willow Lawn as the epicenter. In order to better understand senior access to destinations in the Willow Lawn area, we mapped land uses within the pedestrian shed. (See Map 1N.) The land-use data adds information about the nexus of residential areas and the commercial and civic locations that serve as possible destinations within a neighborhood.

2.2 Senior Destination Nodes

The pedestrian shed is considered the building block of a walkable neighborhood, and assumes that there are destinations to which people are going to walk. These destinations typically include many of the amenities included in Part 1 above, such as stores, churches, community centers, public spaces and transit stops. For this neighborhood analysis we focused on destinations that are most relevant to seniors in the immediate neighborhood.

Land-use data was collected on location for the Willow Lawn neighborhood-level analysis, which simultaneously verified land uses and identified the detailed types of destinations within each land use. For example, most of the Shoppes at Willow Lawn are labeled as businesses, but
fieldwork enabled us to identify these locations more precisely and to organize them into eight types of destinations – food stores, pharmacies, restaurants, medical facilities, community/fitness centers, civic services (post offices, libraries, churches, banks), transit stops and public spaces. We then geo-coded each of these destination types into GIS and mapped them for each of the pedestrian sheds. (See Map 2N.)

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Data Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civic Services</td>
<td>Bank of Lancaster, BB&amp;T, West Branch Library, Park Sterling Bank, Chesapeake Bank, Gateway Bank, Union Bank &amp; Trust, Bank of America, Brookland United Methodist Church, Wells Fargo Bank, Hope Christian Ministry, Capital Bank, Suntrust Bank, Village Bank, Faison School, Monument Heights Baptist Church, The Church of Jesus Christ of Latter-day Saints, Holy Comforter Episcopal Church, Westminster Presbyterian Church, Thomas Jefferson High School, West End Church of Christ, Congregation Kol Em, Mt Gerizim World Outreach, Restoration Fellowship Christian, St Giles Presbyterian Church, US Post Office, West End Branch Richmond Post Office.</td>
</tr>
<tr>
<td>Community/Fitness Center</td>
<td>Pump Custom Fitness, Cross Fit, Styles Group Fitness, Gold's Gym, Weinstein JCC, Circle Center Adult Day Care, Maramac Fitness, G.O.A.L High Performance Sport Specific Training, Pilates Richmond, Fit Richmond, Balance Pilates Training Center, Marshall Center, AARP Senior Employment Services, Westwood Club.</td>
</tr>
<tr>
<td>Food Store</td>
<td>Kroger, Southern Seasons, Food Lion, Target, Happy Mart, West Broad Shell Station, 7-Eleven, Exxon</td>
</tr>
<tr>
<td>Medical Facility</td>
<td>Tidewater Physical Therapy, Lens Crafters, Dermatology Associates of Virginia, Patterson Eye Clinic, Ariya Chiropractic Center, Bagby and Shaw Optical, The Foot Care Center, Orthodontics, Bon Secours Hospital, Powell Orthotics and Prosthetics, Anthem Blue Cross, Ankle and Foot Center, Capita Optometry Eye Care, West End Eye Care, Glenburnie Rehabilitation, West Home Health Care, Virginia Endoscopy Group, Health South, Alliance Physical Therapy, Paul Valentine Orthotics and Prosthetics, Dominion Urgent Care, VCU Medical Center, Visiting Angels Living, Homewatch Caregivers, Guardian Home Care LLC, Health Force, Glenburnie Home Care LLC, Guardian Place, Virginia Supportive Housing.</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>Target, Westwood Pharmacy, Bremo Pharmacy, Walgreens, CVS Pharmacy, The Vitamin Shoppe,</td>
</tr>
<tr>
<td>Public Space</td>
<td>Open Spaces, Willow Lawn Playground, Westwood Playground, Westwood Club</td>
</tr>
</tbody>
</table>
Within the pedestrian shed, two destination nodes were selected for further analysis: The Shoppes at Willow Lawn and the Patterson & Libbie Business District node. Both of these nodes contain a relatively high density and diversity of destination types. Likewise, these nodes contain destinations that can serve both daily and specialty needs, so they have the potential to serve nearby senior population nodes.

### 2.3 Senior Population Nodes

Taking into account the destination nodes within the pedestrian sheds, we mapped the total number of seniors (defined as persons 60 years and older) in the Willow Lawn area, using the US Census Bureau’s 2013 *American Community Survey* (ACS) 5-year estimates at the Census block group level. (See Map 3N.)

Two Census block groups with high total numbers of seniors were then selected as de facto senior population nodes for further analysis. The first senior population node, located in a residential area near the intersection of Grove Avenue and Seneca Road, contains a total senior population of 334 persons. The second senior population node is located near the intersection of Malvern Avenue and Monument Avenue and contains a total senior population of 421 persons. (See Map 3N.) We selected these population nodes because they are within walking distance to the Shoppes at Willow Lawn and to the business district at Patterson and Libbie Avenues.
2.4 Pedestrian Accessibility to Senior Destinations

The final step in this analysis focused on the pedestrian experience while walking from senior population nodes to the destination nodes. We identified pedestrian paths from the two selected senior population nodes (Grove/Seneca and Malvern/Monument) to the destination nodes – the Patterson & Libbie Business District and the Shoppes at Willow Lawn, respectively. In selecting these paths, we assumed that the seniors are able to walk and that walkers prefer direct, safe and convenient routes.

Through field analysis of the two selected pedestrian paths, we documented the pedestrian experience – obstacles and amenities – between the senior residential locations and the destination hubs. For each pedestrian path, data on the existing conditions for the pedestrian were recorded and geocoded in GIS.

Path 1: Senior Node to Patterson & Libbie Business District

The first pedestrian path starts in the neighborhood at Seneca Road and Grove Avenue and proceeds to the Patterson & Libbie Business District. This route follows Grove Avenue to Libbie Avenue and then follows Libbie Avenue to reach the Patterson and Libbie shopping node. (See Map 4N.) We noted selected obstacles along this path to demonstrate the challenges a pedestrian would typically encounter. The visual analysis of this path demonstrates the existing conditions of sidewalks and curb ramps, crosswalks and benches:

Sidewalks and Curb Ramps

Continuous, well-maintained sidewalks are necessary if seniors are to have direct, pedestrian access to neighborhood amenities. As illustrated through the photo documentation of Path 1, this neighborhood suffers from inconsistent sidewalks, presenting a safety hazard for pedestrians navigating routes to the commercial hub at Patterson and Libbie Avenues. In places where there are sidewalks along this route, some, such as those along Libbie Avenue, are so narrow that pedestrians would have to walk single-file. On the other hand, as illustrated in the second image, the route does have curb ramps that provide access from the sidewalk to the street for pedestrians with physical or visual impairments.
Crosswalks

Streets designed for fast-moving traffic constitute challenges for aging populations, who might cross the street at a slow pace. This pedestrian path features different styles of crosswalk at different intersections. For example, the intersection of Grove Avenue and Libbie Avenue has crosswalks with interlocking concrete pavers that typically provide more slip-resistance for pedestrians. These textured crosswalks likewise offer visual clarity. The crosswalks at Libbie and Patterson Avenues, which are outlined in the third image, use bright white markings to alert drivers.
Benches and Ledges

Many of the shops have benches located outside of their businesses; they can serve as stopping points for pedestrians. Placing benches near concentrations of seniors is a strategy adopted by cities that model safe routes for seniors to nearby destinations. As demonstrated in the images below, steps and stairs can serve as public spots where one can sit and enjoy the area while en route to a further destination.

Well-placed street benches

Table 4. Selected Grove Avenue / Libbie Avenue Path Obstacles

<table>
<thead>
<tr>
<th>Obstacle Number</th>
<th>Type</th>
<th>Obstacle Number</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Object Blocking Walkway</td>
<td>4</td>
<td>No Sidewalk</td>
</tr>
<tr>
<td>2</td>
<td>No Ramp</td>
<td>5</td>
<td>No Sidewalk</td>
</tr>
<tr>
<td>3</td>
<td>Object Blocking Walkway</td>
<td>6</td>
<td>No Sidewalk</td>
</tr>
</tbody>
</table>
Path 2: Senior Population Node to Shoppes at Willow Lawn

We studied pedestrian paths on the route from Malvern Avenue to the Shoppes at Willow Lawn via Monument Avenue. We focused on identifying challenges related to continuity and connections between sidewalks, curb ramps and crosswalks.

Along the Monument Avenue route to Willow Lawn (Map 5N), one finds many sidewalks with ramps along Malvern Avenue, but notably fewer ramps and crosswalks to get across Monument Avenue. At some crosswalks, such as at Malvern and Antrim Avenues, there are pedestrian crossing buttons that give the pedestrian the right of way to cross the street. Still, there are no ramps connecting the sidewalk to the crosswalk for pedestrians traversing Monument Avenue. And at the intersection of Monument Avenue and Antrim Avenue, there is not only a lack of crosswalks and ramps, but grass and signs block that direction all together. These elements can be seen in the following images:

![Absence of ramps connecting to crosswalks](image1.png)  ![Signs and grass obstructing passage](image2.png)

A few intersections on Monument Avenue have no ramps at all. At the intersection of Sauer Avenue and Monument Avenue, for example, there is no curb ramp at the crossing. The pavement encourages crossing, but the lack of a curb ramp limits access to the crossing, as illustrated in the following images:
Absence of curb ramps discourages street-crossing.

The major pedestrian challenge along this route to the Shoppes at Willow Lawn is crossing Monument Avenue without the continuation of the sidewalk or crosswalk. Field observations documented many seniors and other people walking, running and dog-walking. However, as shown in the images below, seniors are left to cross this busy road without crosswalks to access Willow Lawn destinations.

Absence of crosswalks makes crossing difficult and unsafe.
1.5 Brief Analysis

This initial analysis of street-level senior access has identified important inconsistencies in pedestrian infrastructure, notably sidewalks, curb ramps, crosswalks and benches. Comfortable, safe and interesting pedestrian walkways will enable seniors to connect with neighborhood amenities and destinations. Policies that encourage on-street parking, street trees and other design elements can buffer pedestrians from street traffic. In addition, because popular walking areas tend to be safer than deserted areas, sidewalk widths should accommodate multiple pedestrians and routes should encourage a comfortable public realm through the provision of seating areas.

Conclusion

This pilot study has demonstrated the value of taking a “hawk’s-eye view” of senior access and isolation issues – a perspective that comprehends the proximity of seniors to shopping and services at the level of the Richmond Regional Planning District and which can also drill down to the micro level of crosswalks and curb ramps. Both are important because senior access will be improved not through a one-size-fits-all approach that is applied to the entire metropolitan area, but through solutions that are sensitive to varying contexts throughout the region.

Before solutions or improvements of any sort can be devised, however, we must first do a more thorough job of understanding conditions of access and isolation throughout the metropolitan area. This will include the development of a well-grounded set of norms for defining “access” and a rubric for measuring and evaluating qualities and degrees of access and isolation. It will include the identification of a larger set of senior destinations, and it will include more features of the built environment that affect access, both vehicular and pedestrian. As we build a comprehensive profile of senior access throughout the metropolitan area, we must also describe how public policies, as well as the actions of private organizations and individuals, create the conditions of access and isolation in our region, so that we can ultimately identify the tools and specific actions that will make our region senior friendly.
Appendix

Map 1 of 14 2013 Persons 60 Years and Older in the Greater Richmond Region
Map 2 of 14 2013 Population Distribution in the Greater Richmond Region
Map 3 of 14 2013 Percentage of Persons 60 Years and Older in the Greater Richmond Region
Map 4 of 14 2013 Persons 85 Years and Older in the Greater Richmond Region
Map 5 of 14 2013 Persons 5 to 19 Years Old in the Greater Richmond Region
Map 6 of 14 Senior Housing Locations in the Greater Richmond Region
Map 7 of 14 Bulk Stores and Grocery Stores in the Greater Richmond Region
Map 8 of 14 Churches in the Greater Richmond Region
Map 9 of 14 Community and Recreation Centers in the Greater Richmond Region
Map 10 of 14 Greater Richmond Transit Company (GRTC) Bus Stop Locations in the Greater Richmond Region
Map 11 of 14 Hospitals, Medical Clinics and Pharmacies in the Greater Richmond Region
Map 12 of 14 Parks and Golf Courses in the Greater Richmond Region
Map 13 of 14 Accessibility to Senior Destinations in the Greater Richmond Region
Map 14 of 14 2013 Persons 60 Years and Older and Their Accessibility to Senior Destinations in the Greater Richmond Region
Map 1 N of 5 Willow Lawn Land Use and Pedestrian Walk Shed
Map 2 N of 5 Willow Lawn Neighborhood: Services and Amenities
Map 3 N of 5 Willow Lawn Neighborhood: Population 60 Years and Older
Map 4 N of 5 Willow Lawn Neighborhood: Grove and Libbie Avenues Route
Map 5 N of 5 Willow Lawn Neighborhood: Monument Avenue Route
2013 Persons 60 Years and Older in the Greater Richmond Region*

* Richmond Regional Planning District

Source: 2013 American Community Survey (ACS) 5-year estimates, US Census Bureau
2013 Percentage of Persons 60 Years and Older in the Greater Richmond Region*

* Richmond Regional Planning District

Source: 2013 American Community Survey (ACS) 5-year estimates, US Census Bureau

Prepared in collaboration with community partners, June 2015.
2013 Persons 85 Years and Older in the Greater Richmond Region*

* Richmond Regional Planning District

Source: 2013 American Community Survey (ACS) 5-year estimates, US Census Bureau

Prepared in collaboration with community partners, June 2015.
Senior Housing Locations in the Greater Richmond Region*

* Richmond Regional Planning District

Sources: 2013 American Community Survey (ACS) 5-year estimates, US Census Bureau
Apartment Navigator Publication
Better Housing Coalition at http://www.betterhousingcoalition.org/community/senior-homes/
Senior Housing Net at http://www.seniorhousingnet.com/seniorliving-search
Section 8 Housing list at www.section8housinglist.info/category/virginia-va/
Virginia Housing Development Authority (VHDA)

Prepared in collaboration with community partners, June 2015.
Bulk Stores and Grocery Stores in the Greater Richmond Region*

* Richmond Regional Planning District

Sources: 2013 American Community Survey (ACS) 5-year estimates, US Census Bureau
Location and store information were obtained from the websites of major bulk stores and grocery stores such as Target, Walmart, Sam's Club, Costco, Food Lion, Kroger, etc.

Prepared in collaboration with community partners, see cover page of the report, 06/02/2015
Community and Recreation Centers in the Greater Richmond Region*

* Richmond Regional Planning District

Sources: 2013 American Community Survey (ACS) 5-year estimates, US Census Bureau.
Community and recreation centers were identified using local jurisdiction websites.

Prepared in collaboration with community partners, June 2015.
Greater Richmond Transit Company (GRTC) Bus Stop Locations in the Greater Richmond Region*

* Richmond Regional Planning District

Sources: 2013 American Community Survey (ACS) 5-year estimates, US Census Bureau

Greater Richmond Transit Company (GRTC)
Hospitals, Medical Clinics and Pharmacies in the Greater Richmond Region*

Sources: 2013 American Community Survey (ACS) 5-year estimates, U.S. Census Bureau. Hospitals were obtained from the Geographic Names Information System (GNIS), US Geological Survey. Medical clinics were identified using Yellow Pages. Pharmacies were obtained from the websites of major drug stores and grocery stores such as CVS Pharmacy, Walgreens, Rite Aid, Target, Walmart, Sam’s Club, Costco, Food Lion, Kroger and Meijer.

Persons 60 Years and Older by Census Block Group

- Hospital
- Medical Clinic
- Pharmacy

Map 11 of 14

Prepared in collaboration with community partners, June 2015.
Accessibility to Senior Destinations** in the Greater Richmond Region*

** Senior Destinations include grocery stores, drug stores, bulk stores, churches, community centers, recreation centers, local parks, golf courses, GRTC bus stops, hospitals, and medical clinics.

* Richmond Regional Planning District

Map 13 of 14

Accessibility Scores in Points
(Higher Scores Indicate Better Accessibility)
by Census Block Group

- 0 - 20
- 21 - 40
- 41 - 60
- 61 - 80
- 81 - 99

Major Highway
Jurisdiction Boundary
Waterbody

Source: 2013 American Community Survey (ACS) 5-year estimates, US Census Bureau
Senior Destinations GIS Database, VCU Center for Urban and Regional Analysis (CURA)
Prepared in collaboration with community partners, June 2015
Prepared in coordination with community partners, June 2015
2013 Persons 60 Years and Older and Their Accessibility to Senior Destinations** in the Greater Richmond Region*  

* Richmond Regional Planning District  
** Senior Destinations include grocery stores, drug stores, bulk stores, churches, community centers, recreation centers, local parks, golf courses, GRTC bus stops, hospitals, and medical clinics.

Map 14 of 14  
Source: 2013 American Community Survey (ACS) 5-year estimates, US Census Bureau  
Senior Destinations Database, VCU Center for Urban and Regional Analysis (CURA)

Prepared in collaboration with community partners, June 2015, VCU CURA
Willow Lawn Neighborhood: Services and Amenities

Populations 60 Years and Older
- 0 - 150
- 151 - 300
- 301 - 450
- 451 - 600
- 601 - 1,401

Legend
- Walkshed

Services & Amenities
Type
- Civic Services
- Community/Fitness Center
- Medical Facility
- Pharmacy
- Food Store
- Public Space
- Restaurant
- Bus Stops

Map 2N of 5