

All Dogs Go to Prince George's County: Finding a Home for a Second Animal Services Facility

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Executive Summary

As a continuation of the Fall 2017 PALS project, Spring 2018 semester students from the community planning and engineering programs used advanced computer mapping tools (geographic information system, or GIS) to provide Prince George's County with potential sites to build a second animal shelter. The team attempted to find land that the county already owned, but none of the parcels met the requirements.

The team found a solution to this problem by including distressed shopping centers in the site analysis. From these forty shopping centers, eleven were chosen for their location within the county's Growth Policy Center. We used ArcGIS Online to understand how many potential adopters could reach these facilities within fifteen and thirty minutes. We then chose the five shopping centers closest to the most people and households.

We present these to Prince George's County as potential candidate sites. The link for the county to access the ArcGIS Online website to view the maps and site locations is:

<http://uofmd.maps.arcgis.com/home/item.html?id=ea8cc7f3ca154064939db517e24b460>

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Background

Prince George's County is searching for a site for a second animal shelter. In December 2016, the county, in conjunction with the municipalities of Berwyn Heights, College Park, and Greenbelt, released a feasibility study on the subject of building a second shelter in the north of the county. The county authorized this study for two main reasons. First, other counties the size of Prince George's, in both geographical area and population, have more than one facility. Second, the current facility is in a remote part of the county, in Upper Marlboro, which has low population density.

The work conducted this semester is a continuation of the PALS project from Fall 2017. During the first semester team's initial meeting with Chief Taylor, he instructed them that the county was most likely to pursue the smallest (and least expensive) facility proposed in the feasibility study. This consisted of an adoption-only facility, which would hold a small number of cats and dogs. He also gave the first semester team the parameters to judge the sites. These included that the land had to be owned by the county, be of sufficient size including parking, be properly zoned, and have access to transportation infrastructure like highways and interstates.

As part of that Fall 2017 project, the team selected four sites. These sites came from a very limited pool that fit the county's criteria. According to zoning research, all four sites required a special exception to operate an animal shelter. After the break, we learned that while this was true, those parcels were zoned residential and that building a facility in these zones would not be possible.

Therefore, the Spring 2018 team approached the project by thinking about how we could expand the number of sites to have the most robust analysis possible for the county. We also considered advanced GIS tools that could help us qualify sites that would serve the highest amount of people. This next section details our research question process and how it evolved through the semester.

Research Questions

At the beginning of the semester, the team brainstormed a list of questions to ask Chief Taylor and his team to help us thoroughly understand the most important features in choosing a location for the county's second animal shelter. The goal was to move beyond the information in the first semester project introductory course to a deeper analysis in the intermediate course. We had the opportunity to provide the county with insight into the costs and benefits of each site using advanced tools.

In a mid-March conference with Chief Taylor, students determined which factors were important to the county:

- minimizing distance or travel time from the primary facility to the new facility (to reduce the cost of transporting animals)
- minimizing distance or travel time to other municipal holding areas
- minimizing distance or travel time to nonprofit foster partners or its pet store adoption partners

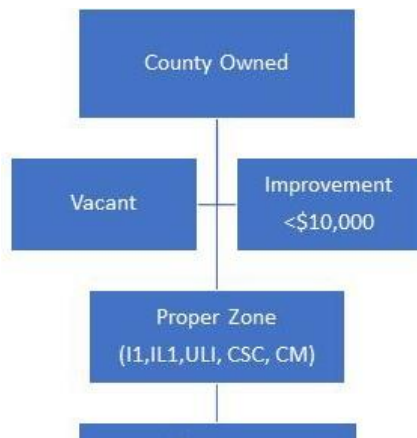
After this conversation, the most important factor remained access to large population centers in the northern county; the other criteria were not necessarily applicable or critical needs. Therefore, the team proceeded with the following research question: **How can we use advanced GIS tools to locate potential sites for a second animal shelter that meet the county's priority of reaching the highest number of people within a reasonable driving time?** The next section addresses the variables chosen to answer this question and the technical process that brought results.

Methodology

The first section of this methodology describes the criteria we applied given the county's wish to locate the shelter on land it currently owns and other necessary criteria. A visual flow-chart can be found below. The second part of this section details the criteria applied to the shopping center sites.

County-Owned Land

To finalize the sites for the second animal shelter, the team downloaded the property and public land shapefiles from the Prince George's County [GIS Open data Portal](#). The property



shapefile includes all parcels in the county and the public shapefile contains of -owned land. Combining the two shapefiles based on unique tax IDs in ArcGIS created a map of county-owned land.

Vacant Land

Prince George’s County was concerned with the cost of building a second facility. Shelters are built to resist the spread of diseases such as parvo and panleukopenia through animals and have specialized structures for this essential purpose. The specialized structures include

separate HVAC systems to prevent the spread of airborne diseases. The primary reason for selecting vacant lands was to offset the high costs associated with the already existing structures. Therefore, we qualified parcels as vacant under two conditions: the property data identified it as vacant and rated its improvements at less than \$10,000.

Zoning

After careful investigation zones were classified into two categories: those in which the use is permitted and those which require a special exception. Three zones permitted the use: Light Industrial (I-1), Heavy Industrial (I-2), and Urban Light Industrial (U-L-I). Two zones require a special exception: Commercial Shopping Centers (C-S-C) and Commercial Miscellaneous (C-M).

Using findings from the Fall semester’s project and the discussion with Chief Taylor, some of the zones that had previously been identified as a special exception cases were not usable due to their residential nature and location, or were classified as water retention areas, floodplains, or parks. These zones were removed from consideration, which also disqualified the four sites identified in the first semester project.

Parcel Size (including parking)

Informed by the ideal size of the “Option A” facility identified in the county’s 2016 feasibility study, the minimum parcel size to accommodate the facility (9,871 square feet) would need to be 11,840 square feet to accommodate parking requirements under the current zoning code. Therefore, sites that were less than 21,750 square feet were eliminated.

Remaining Criteria

The remaining criteria were largely based on three factors: proximity to a highway, public transportation access, and the site’s location and aesthetics.

These criteria were prioritized first, by using the ‘clip’ function in ArcGIS to crop our view to consider points that are only north of the first animal shelter. This helped narrow the search and focus on the north side of the county. Next, the team used a layer that indicated major highways and interstates to see which sites were located near highways. Because very few sites were left it was easy to look at each site individually and calculate their distance from the highway.

The rest of the criteria were more subjective and informal and it wasn’t possible to quantify this data. They were deemed important but did not impact the site selection process to a large extent. One such criterion was public transportation access. Although someone without a car couldn’t take the pet home on public transportation after adopting it, they could at least visit and “window shop” at the facility and could return at another time using ride-sharing services or a family or friend’s car. The team also considered the site’s proximity to parks so it would be easy for volunteers to walk the pets in nearby areas. Finally, the team considered a site’s aesthetics. An industrial area is not a suitable site from a visitor perspective. Unfortunately, after applying these conditions, none of the county-owned sites qualified and thus the team decided to pursue the distressed shopping centers.

Growth Policies

Because the project team was unable to identify county-owned land that fit the vacancy or land value requirements, following a recommendation by Dr. Liu, the team explored distressed shopping centers as an option to site the animal shelter. The team consulted the Prince George’s *Plan 2035 General Plan*, which provides comprehensive recommendations and guidance on the county’s future growth and development. The Plan

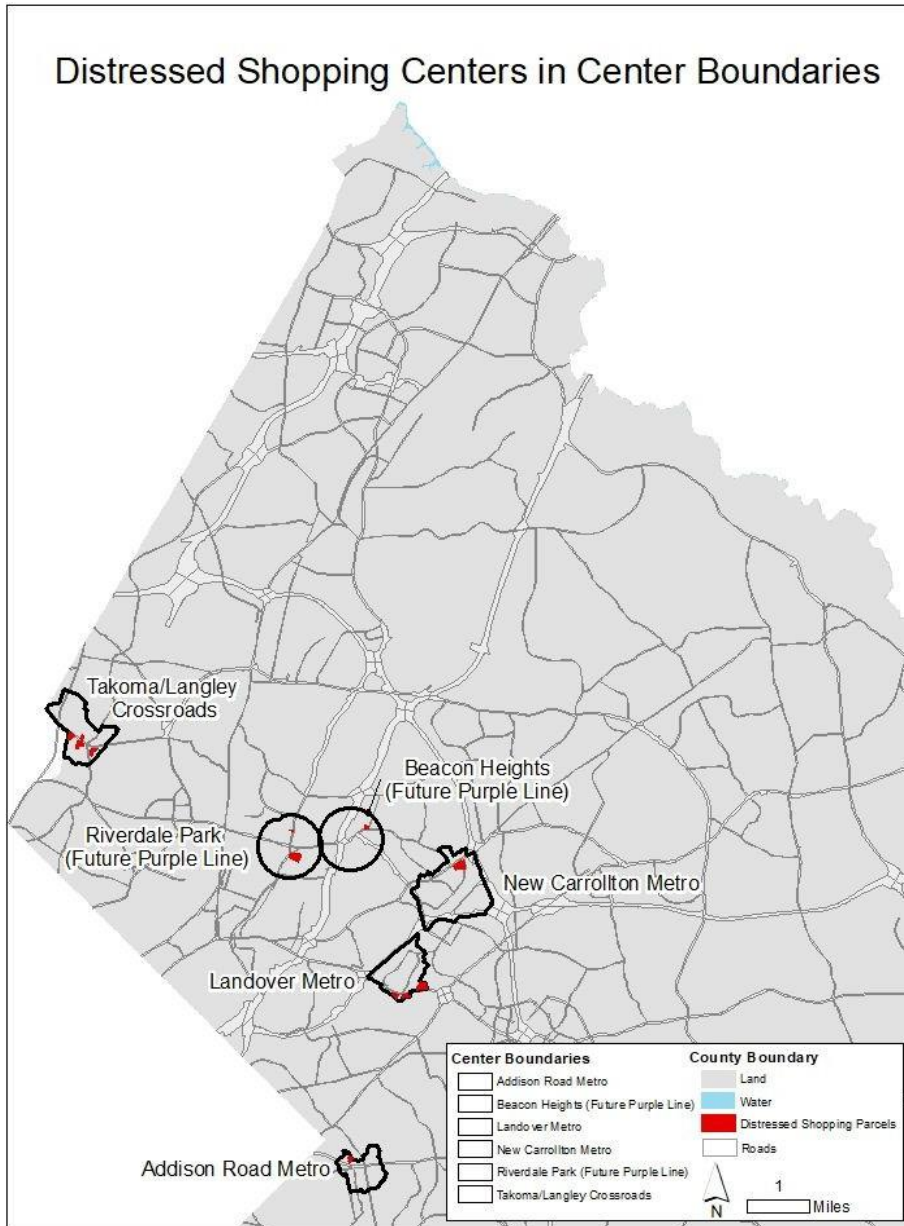
designates eight Regional Transit Districts targeted for planned growth and mixed-use development with the capacity to become economic generators for the county. It also institutes six Neighborhood Reinvestment Areas, which are coordinated areas expected to receive funding and resources for preservation and long-term neighborhood stabilization and investment (The Maryland-National Capital Park and Planning Commission, 2014).

The Plan also identifies Growth Policy areas that identify where and how the county should grow in the next 20 years, and further classifies the areas based on their function and desired density and intensity of development. They include regional transit districts, employment areas, local centers, established communities, future water and sewer areas, and rural and agricultural areas. The Plan also defines Strategic Investment Areas that provide guidance on where and how the county should focus investment, capital improvements, resources, and tax incentives to support growth and revitalization (The Maryland-National Capital Park and Planning Commission, 2014).

As the project refocused to explore distressed shopping centers as potential sites, the project team sought to discover if any of the distressed shopping centers fell within county-identified Growth Policy Areas. Using ArcGIS, the distressed shopping center shapefile was overlaid with the Growth Policy Centers shapefile acquired from the open data portal.

Results identified nine distressed shopping centers within six growth policy center boundaries in the northern part of Prince George's County, one of the main criteria for site selection. Additionally, some of the distressed shopping centers fell within transit centers on future Purple Line stations, which are expected to bring economic growth, activity, and population density to these areas. The six resulting centers are Beacon Heights, Takoma/Langley Crossroads, and Riverdale Park, which are future Purple Line stations. The New Carrollton Metro is also a future Purple Line station), and Landover Metro and Addison Road Metro already have transit service (see Map 1).

Map 1: Distressed shopping centers located within county-designated Growth Policy Centers



Site Scenarios

After running the policy and growth center analysis, criteria such as highest density of people and closest proximity to highways and Metro stations were applied to further the list of distressed shopping centers for site selection. Using ArcGIS Online, the project team measured driving times of 15 and 30 minutes to calculate how many people and households could reach a potential site.

This process was informed by the county's feasibility survey conducted for optimal driving times and was adjusted to reflect "city" driving conditions typical of the northern part of the county. From this process, five locations in the Landover Metro and Riverdale Park growth policy areas were identified as potential sites for the new animal shelter.

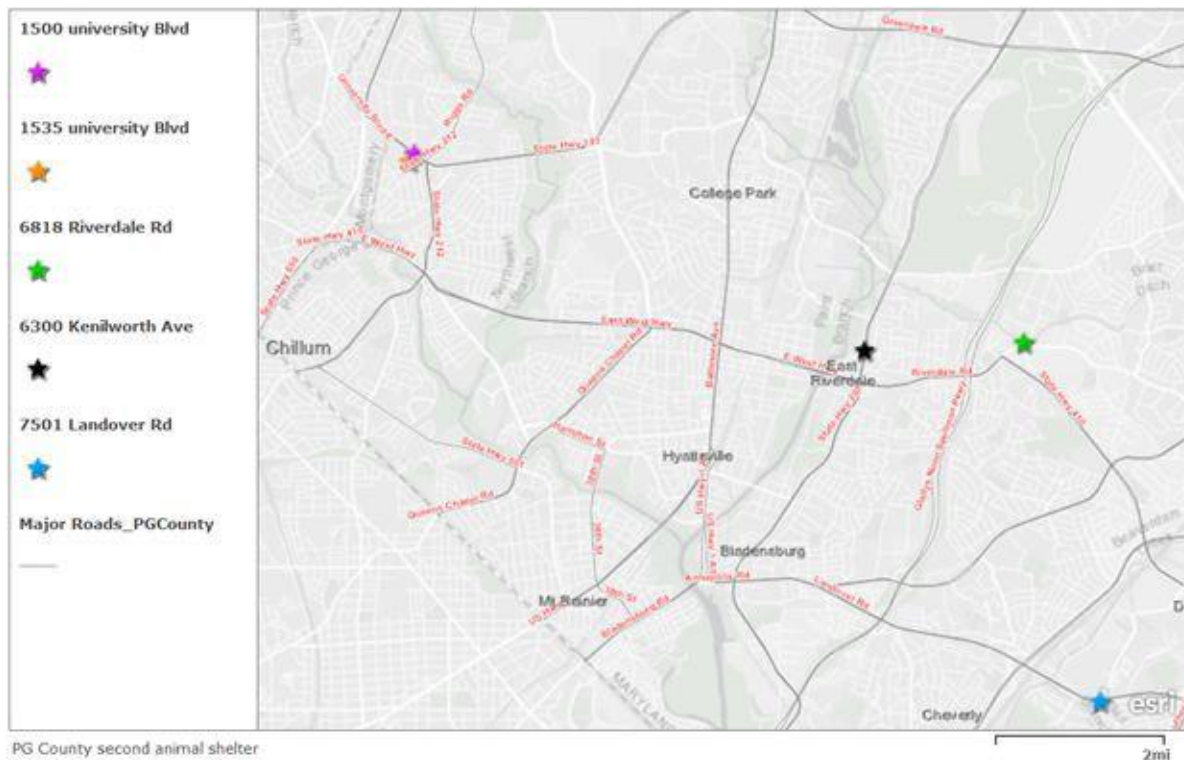
Variables and Analysis

To create 15-minute and 30-minute drive-shed for each of the five potential sites, we wanted to use ArcGIS Desktop's 'Service Area' tool. However, we were unable to obtain a reliable network data set to create a network, and so decided to use ArcGIS Online's 'Drive-Time Area' tool, which also provided the team with the opportunity to learn ArcGIS Online to perform geospatial analysis and obtain resulting maps. The process is described below.

One important consideration in the analysis is that the candidate sites must be near major roads. We overlaid the distressed shopping centers with major roads. Most of the shopping centers were already close to these roads, which is to be expected, as shopping centers need to be accessible. We selected five sites for further analysis from the 11 that were within the growth areas established by the county's 2035 General Plan, based on their proximity to the most population and households (see Map 2).

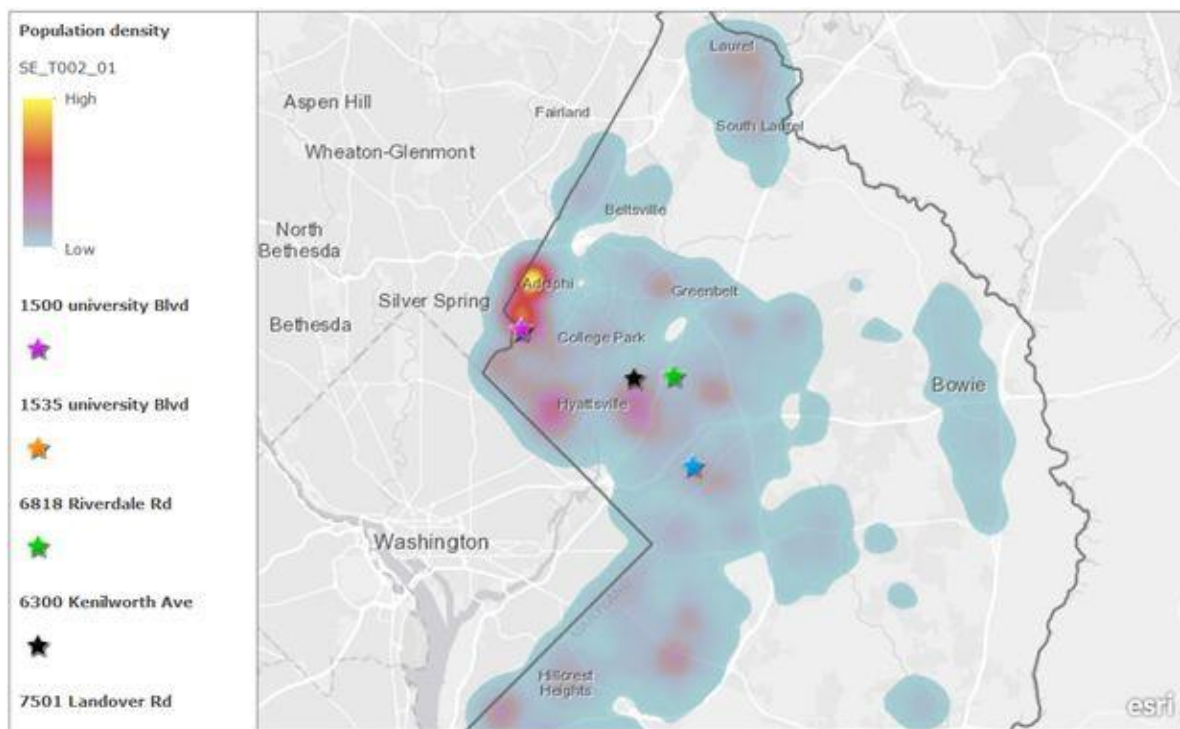
Map 2: Location of final five candidate shopping centers

(Note: The orange star for 1535 University Boulevard is hidden behind the purple star for 1500 University Boulevard; these two centers are directly across from each other.)



Population density data was obtained from the U.S. Census Bureau's 2011-2016 American Community Survey (via Social Explorer). This data was used to create our population density heat map (see Map 3).

Map 3: County population density and the final five candidate shopping centers



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The next step was to develop the 15- and 30-minute drive-sheds for the five candidate sites using 'Drive-Time Area' tool. ArcGIS Online comes with a variety of socioeconomic and demographic data already in the maps. We used this feature to compute the total population, total households, and total households with vehicles for each site at the 15- and 30-minute drive-sheds. Again, this information was used to select the five sites from the original 11. Information for the final five candidate sites can be found in Appendix C and larger maps for each site are in Appendix D.

Research Interpretations

Based on the methodology described above, five potential sites were selected. Two of the sites are located in Riverdale, two in Hyattsville, and one in Landover. For each site, there are two considerations, First, its accessibility, that is, how easy it is to reach by driving or by public transportation. The second consideration is the number of people within a 15- and 30-minute drive ("drive- shed"). Appendix C includes a table detailing each site's total surrounding population, households, and houses with vehicles within a 15- and 30-minute drive.

The county's population density is also used to define the characteristics of the drive- sheds of each site. Besides these two main considerations, the following descriptions point out each site's special features, which the county may use to make its selection.

Site 1: 7501 Landover Road, Landover

This site is convenient to visit by driving. It is within a half-mile of Routes 50 and I-495, two main roads with high daily traffic volumes. This site is also easy to visit via public transportation, with an only 15-minute walk from the Landover Metro Station. Figure 2 shows detailed location information.

Figure 1: Street view of the Site 1 shopping center



Photo source: <https://www.google.com/maps>

Figure 2: Location of Site 1 in Landover

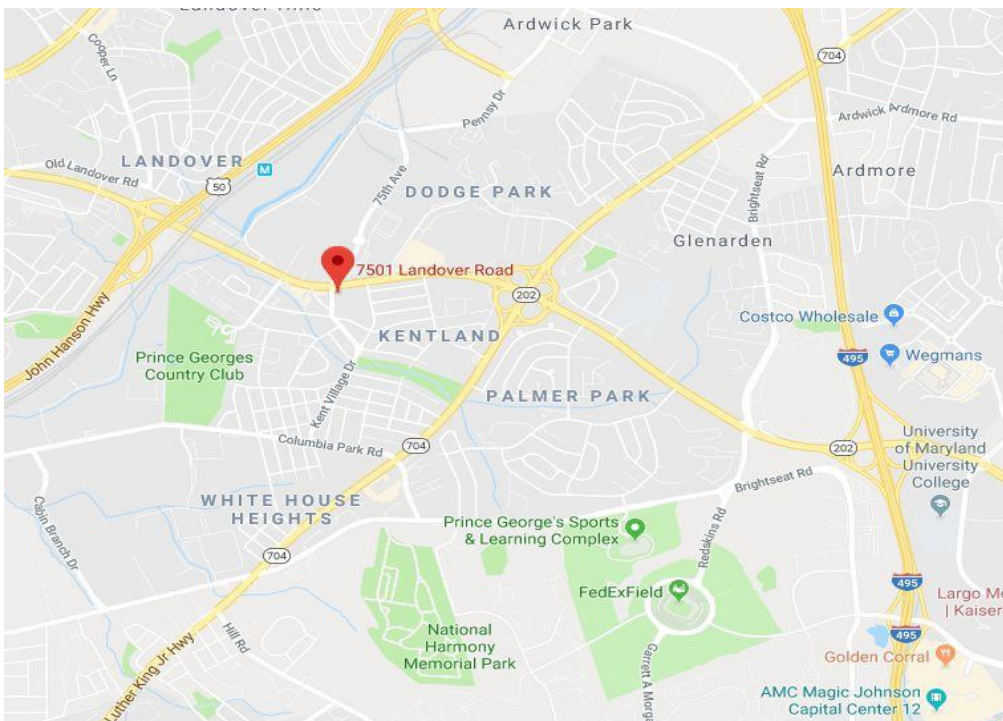
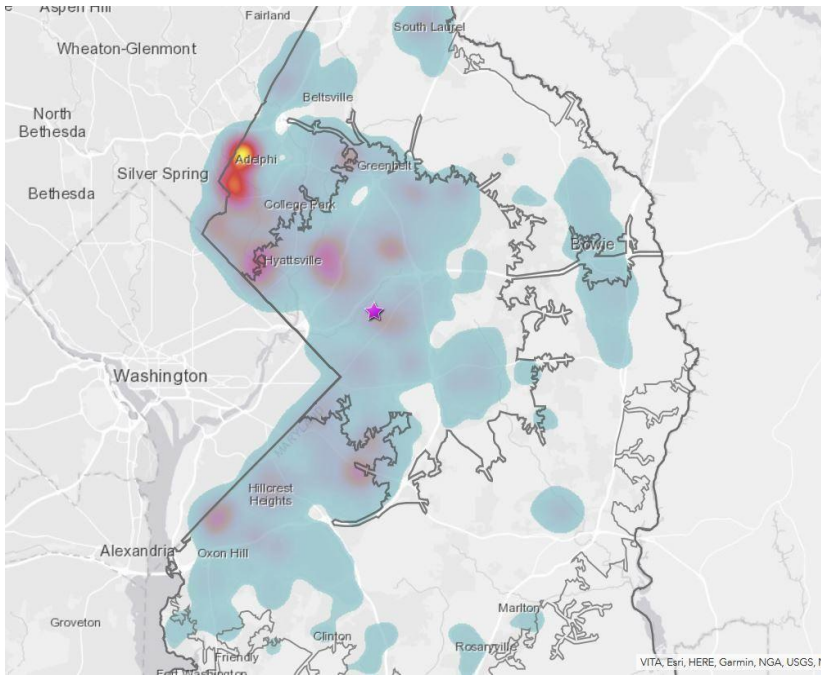


Photo source: <https://www.google.com/maps>

This site is 27,211 square feet², which ranks it among the smaller of the five candidate sites. While the site itself is not that big, it includes the most total population, households, and

households with vehicles within its 15- and 30-minute drive-sheds. As shown in Figure 3, the densest population (red and yellow spots) is covered in the 30-minute drive-shed, in fact, Site 1's 30-minute drive-shed covers almost all of the county's northern region.

Figure 3: Site 1 drive-sheds and population density centers (Blue represents lower population density areas; red and yellow indicate more dense areas).



Site 2: 6300 Kenilworth Avenue, Riverdale

This site is abuts both MD-201 and Riverdale Road (see Figures 4 and 5). At 42,540 square feet² it is the second largest among the five sites. One advantage is that Riverdale Community Park is right behind the site, which gives volunteers enough space to walk dogs.

Figure 4: Street view of Site 2 shopping center



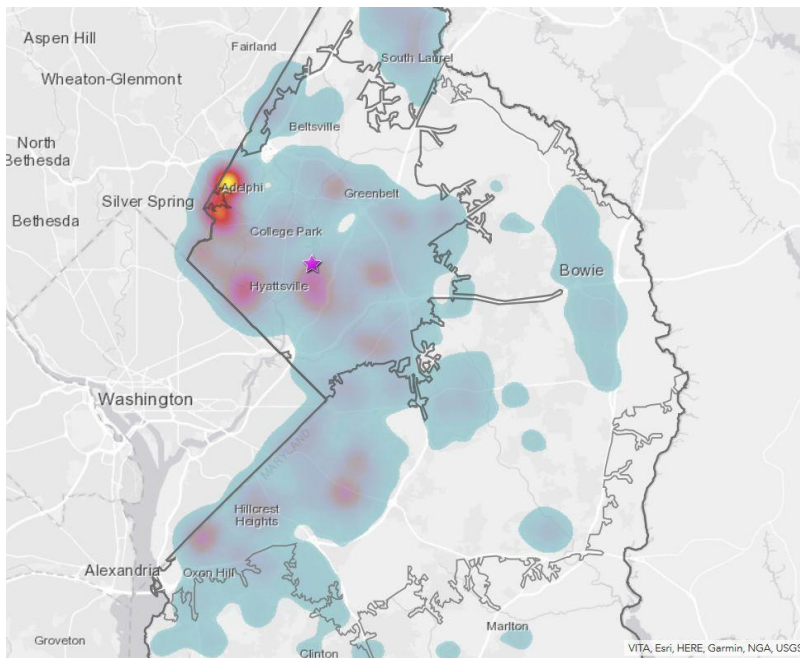
Photo source: <https://www.google.com/maps>

Figure 5: Location of Site 2 in Riverdale



As shown in Figure 6, the 15-minute drive-shed include a large amount of population and high population density spots. In fact, the site's 15-minute drive-shed covers the most total population and households of all five sites. As with Site 1, this site's 30-minute drive-shed also covers most of northern Prince George's County.

Figure 6: Site 2 drive-sheds and population density centers (Blue represents lower population density areas; red and yellow indicate more dense areas.)



Site 3: 1500 University Boulevard E, Hyattsville

This third site has high traffic accessibility settled as it is next to the intersection of Riggs Road and University Boulevard. Both roads carry high traffic volumes (see Figures 7 and 8).

Figure 7: Street view of the the Site 3 shopping center



Photo source: <https://www.google.com/maps>

Figure 8: Location of Site 3 in Hyattsville

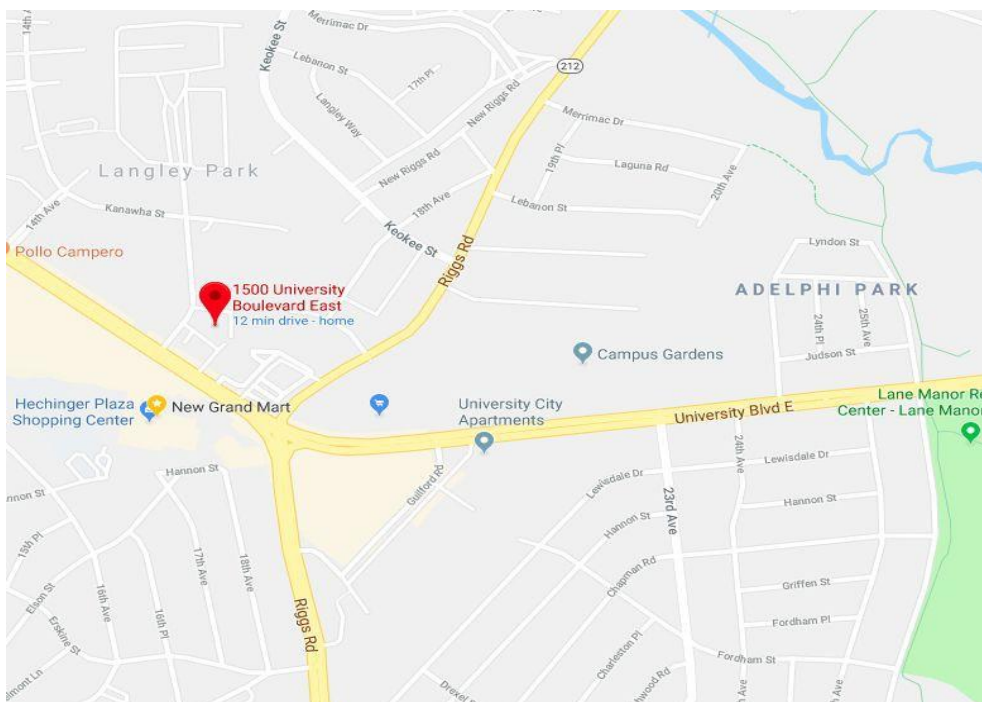
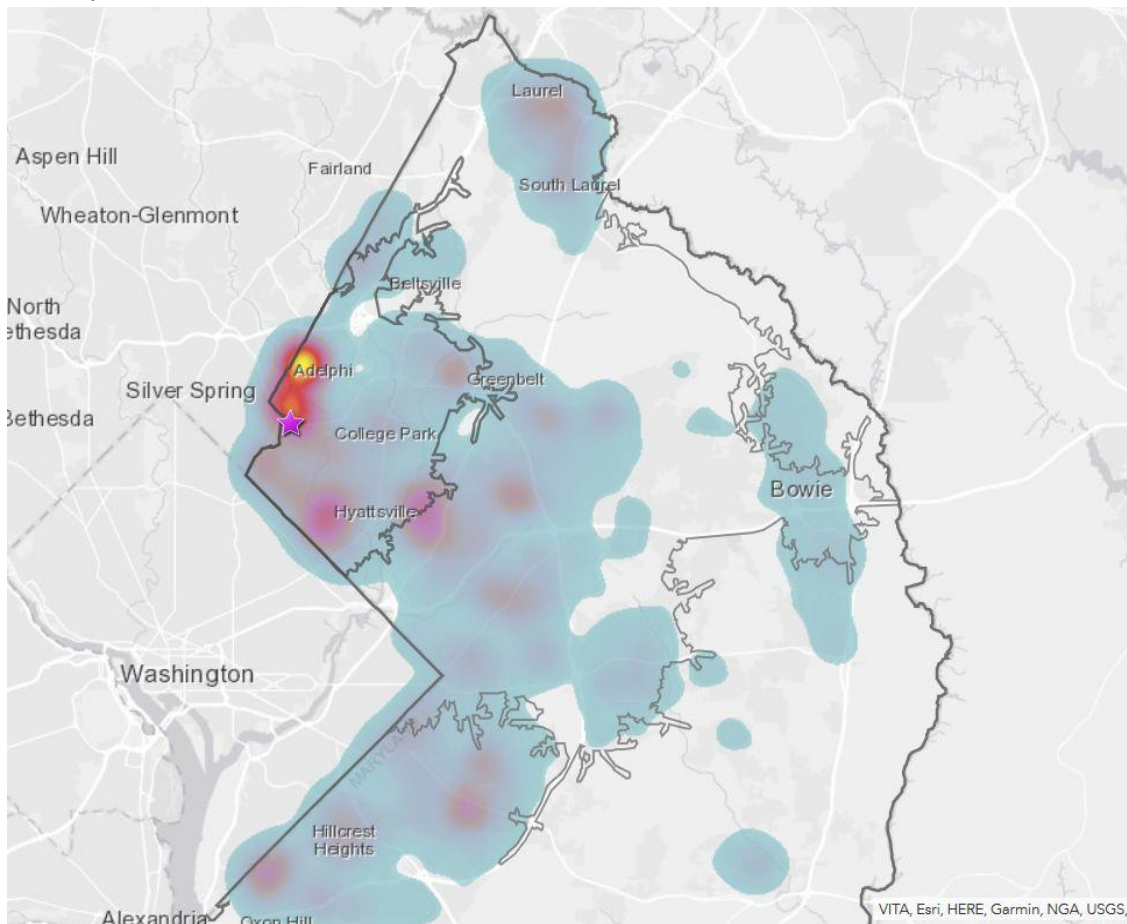


Photo source: <https://www.google.com/maps>

This site has an additional feature that is similar to Site 2. It is one mile from Adelphi Park, which could be used for dog walking, although it is farther away than the park next to Site 2 and could produce some logistical challenges.

Site 3 is 30,161 square feet² and its population and household indicators put it in the middle of the pack among the candidate sites. Its densest population areas are covered within the 15-minute drive-shed but the covered area isn't as large as Sites 1 and 2. Its 30-minute shed covers most of northern Prince George's County.

Figure 9: Site 3 drive-shed of Site 3 and population density centers (Blue represents lower population density areas; red and yellow indicate more dense areas.)



Site 4: 1535 University Boulevard East, Hyattsville

Site 4 is across the road from Site 3. Thus, its population and household indicators are similar to those of Site 3 (see Figures 10 and 11). The crossroads are Riggs Road and University Boulevard, as in Site 3.

Figure 10: Street view of Site 4 shopping center



Photo source: <https://www.google.com/maps>

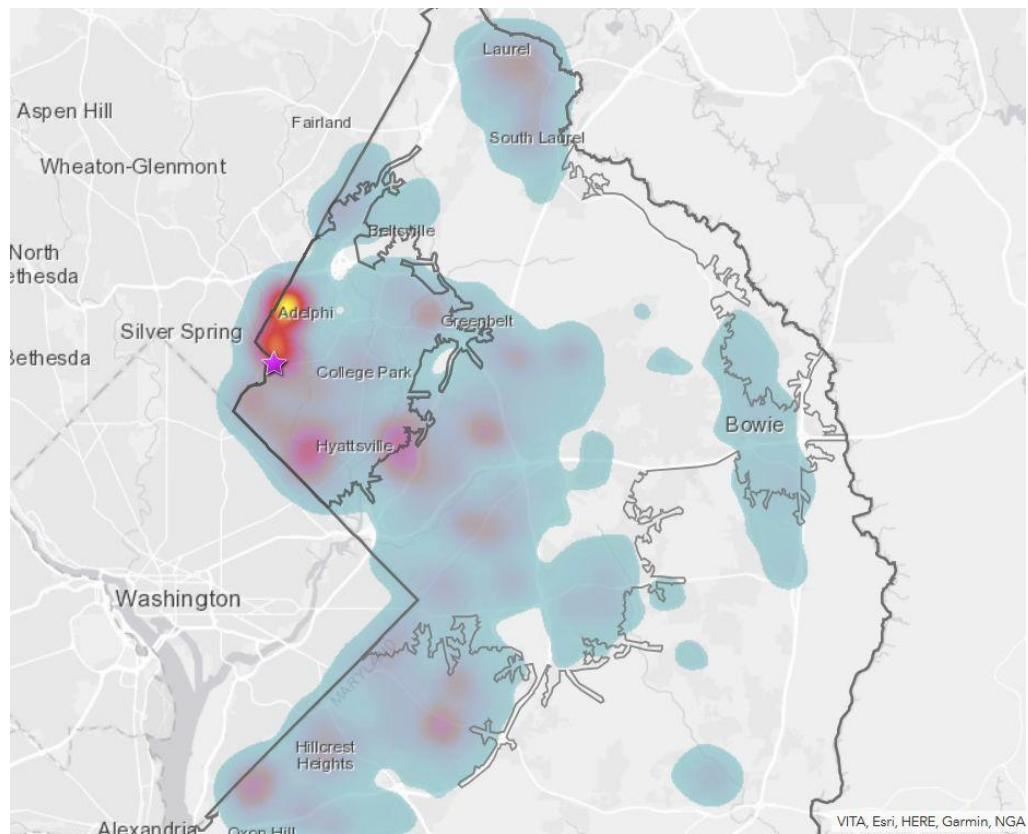
Figure 11: Location of Site 4 in Hyattsville



Photo source: <https://www.google.com/maps>

One advantage Site 4 has compare to other sites is that it is the largest at 99,517 square feet². Another advantage is the empty land behind the site's nearby elementary school that could be repurposed as a dog-walking trail.

Figure 12: Site 4 drive-shed and population centers. (Blue represents lower population density areas; red and yellow indicate more dense areas.)



Site 5: 6808 Riverdale Road, Riverdale

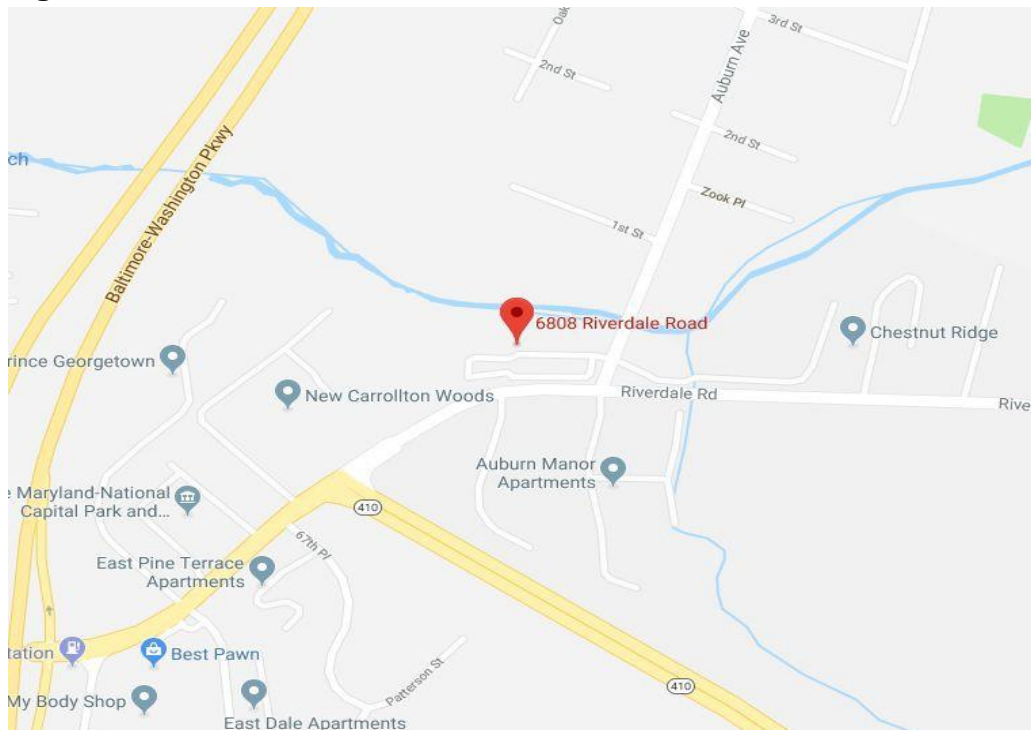
Site 5 is the smallest of the five candidate sites at 24,540 square feet². It has high accessibility from major highways as is less than a half-mile from the Baltimore-Washington Parkway. It is at the intersection of Riverdale Road and Auburn Avenue; the surrounding area is quiet with single-family and multifamily housing in the vicinity. A Metro bus stop is just outside the shopping center (see Figures 13 and 14).

Figure 13: Street view of the Site 5 shopping center



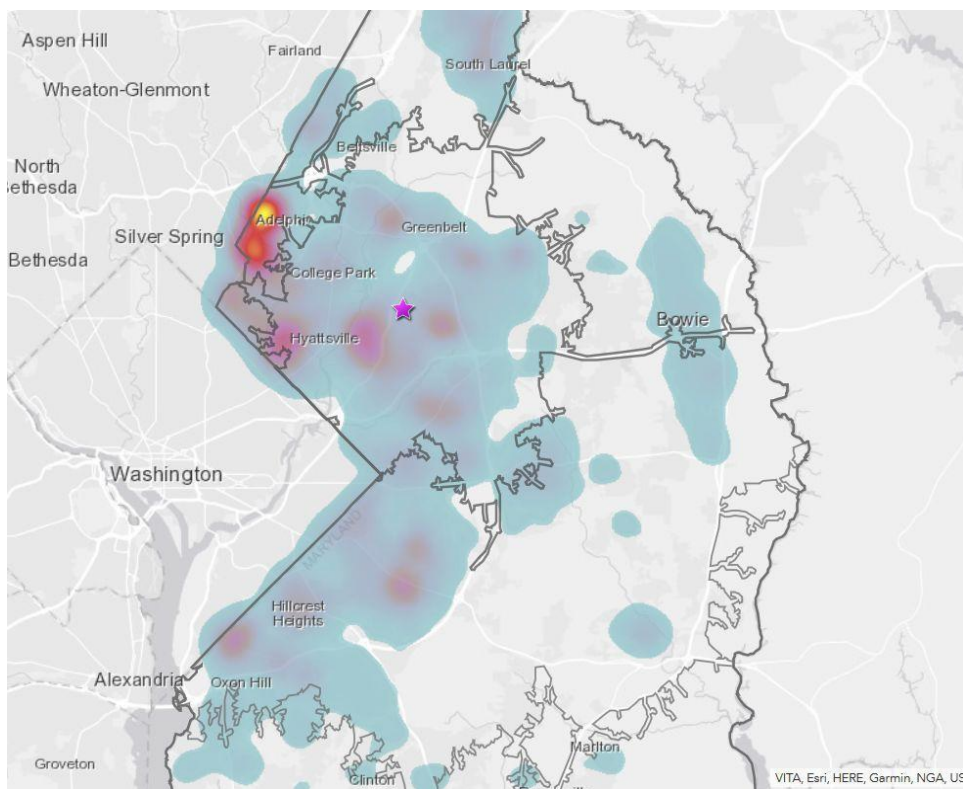
Photo source: <https://www.google.com/maps>

Figure 14: Location of Site 5 in Riverdale



As shown in Figure 15, Site 5's 15-minute drive-shed covers a large area of northern Prince George's County, but leaves several areas of high population density outside. Meanwhile, its 30-minute drive-shed is able to contain most of the area, population, and high-density areas of northern Prince George's County.

Figure 15: Site 5 drive-sheds and population density centers
(Blue represents lower population density areas; red and yellow indicate more dense areas.)



Recommendations and Opportunities for Future Research

Based on this report's analysis, there are recommendations for the site selection team. First, the current analysis gives importance to candidate sites whose 15- and 30-minute drive-sheds cover more densely populated areas as identified by 2011-2016 American Community Survey data. The future site selection team should consider researching and modeling where projected future population growth is expected to occur.

Second, due to the small size and narrow shape of northern Prince George's County, almost all of it is covered in the 30-minute drive-sheds of the candidate sites (see Appendix D). The future site selection team could consider inviting community or neighborhood involvement during the site selection process because a site in the county's northern part impacts a majority of the county neighborhoods.

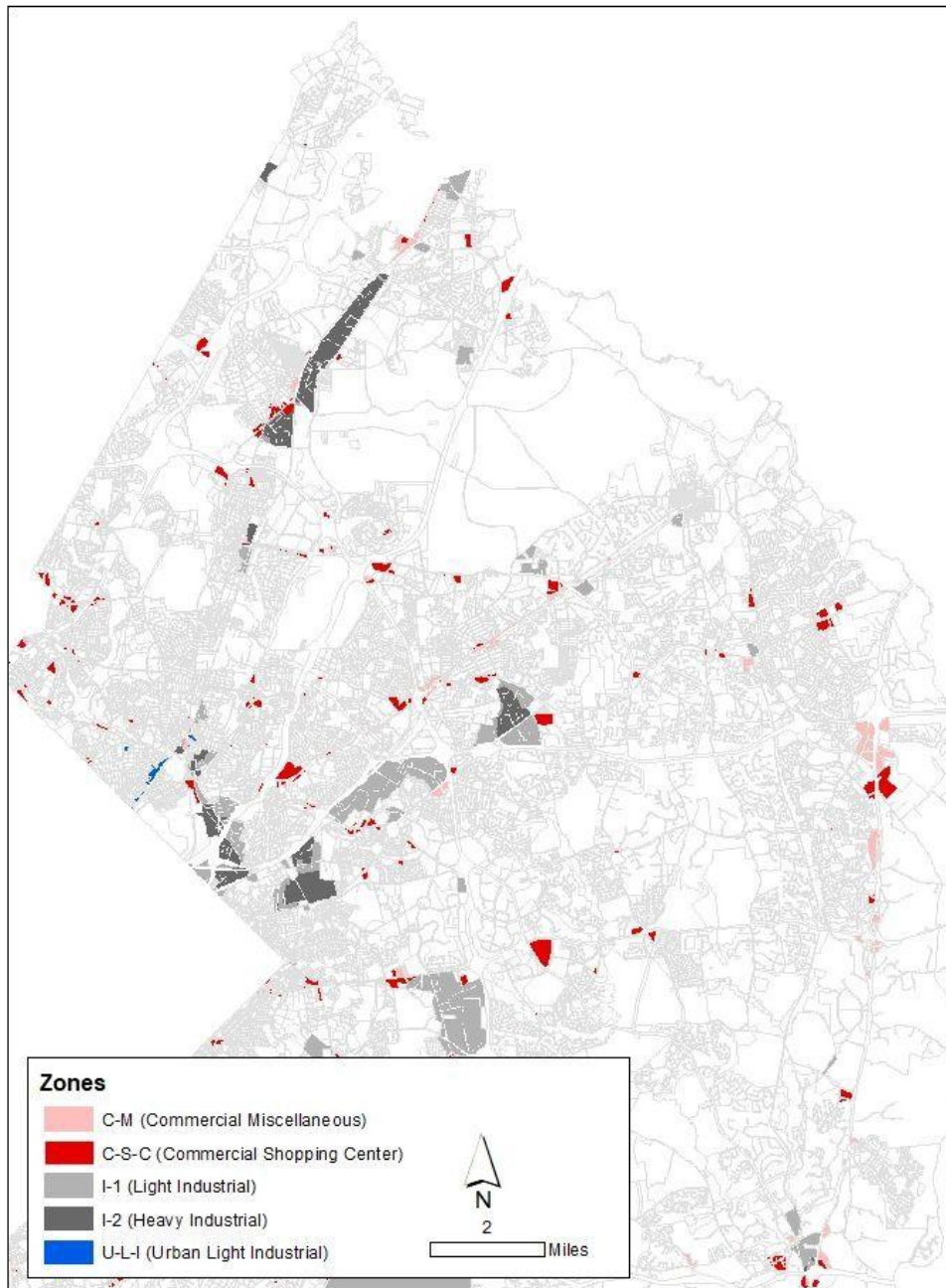
To successfully find a candidate site for a second county animal shelter, the analysis approach provides some opportunities for future research work. This project identifies Growth Policy Centers from the 2035 General Plan and then identified as candidate sites distressed shopping centers in these areas. Future research might explore other types of structures or buildings that could be adaptively reused.

Prince George's County can also investigate developing a public-private partnership with redevelopment sites along the Purple Line. There will be developers wanting to build mixed-use facilities near the stations and the County could work with them to build a new adoption facility on the ground floor of one of these buildings. A local or county government using all or part of ground floor of mixed-use facilities is a growing trend in redevelopment, and investment through a public-private partnership and may enable the county to locate in what is sure to become an important commercial corridor.

Appendix A: Zoning Map

This zoning map was used to qualify county-owned parcels that were vacant or unimproved.

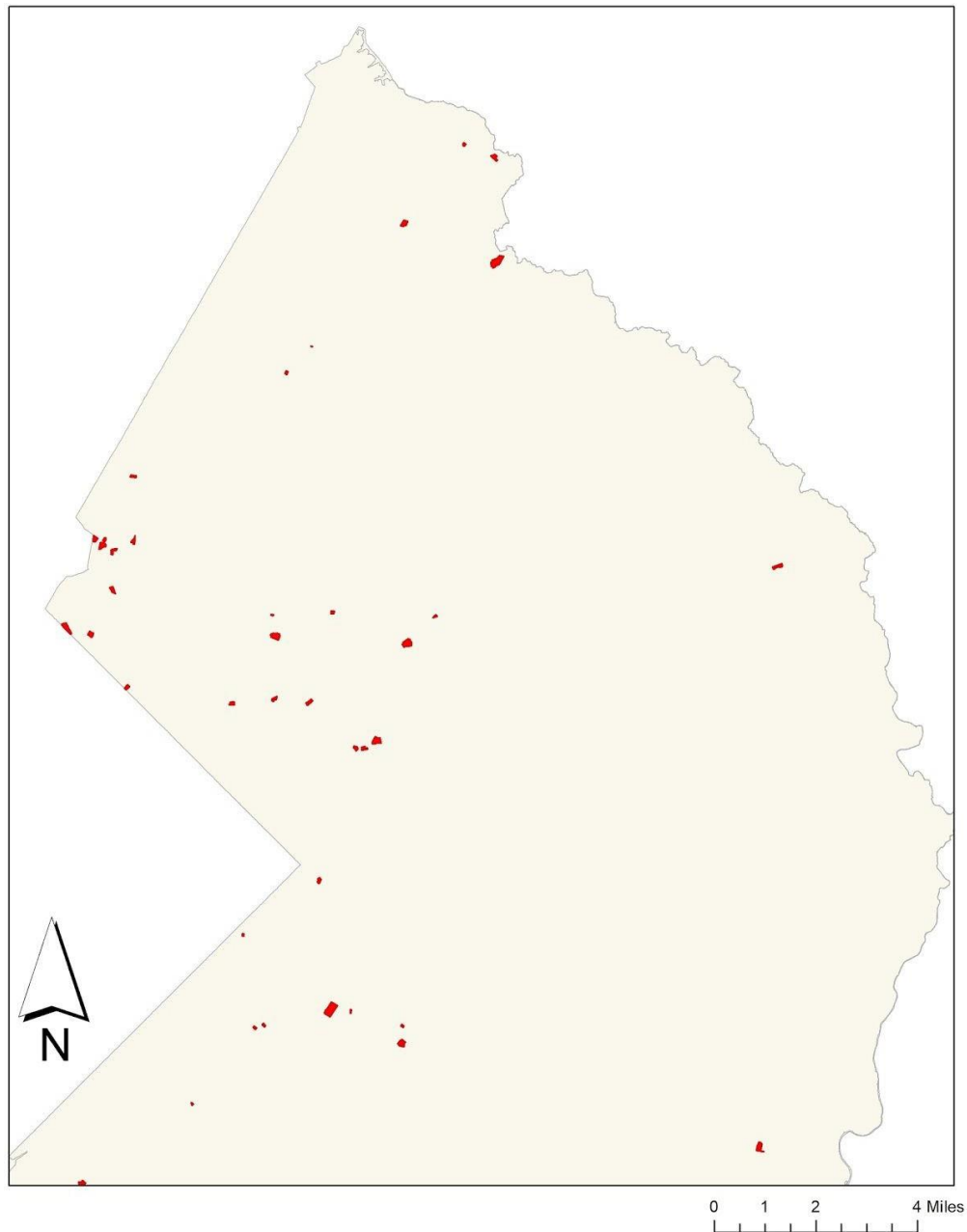
Zones under Consideration



Appendix B: Distressed Shopping Centers

This map illustrates the location of distressed shopping center parcels in the northern part of Prince George's County.

Distressed Shopping Center Parcels



Appendix C: Selected Demographic Information by Site

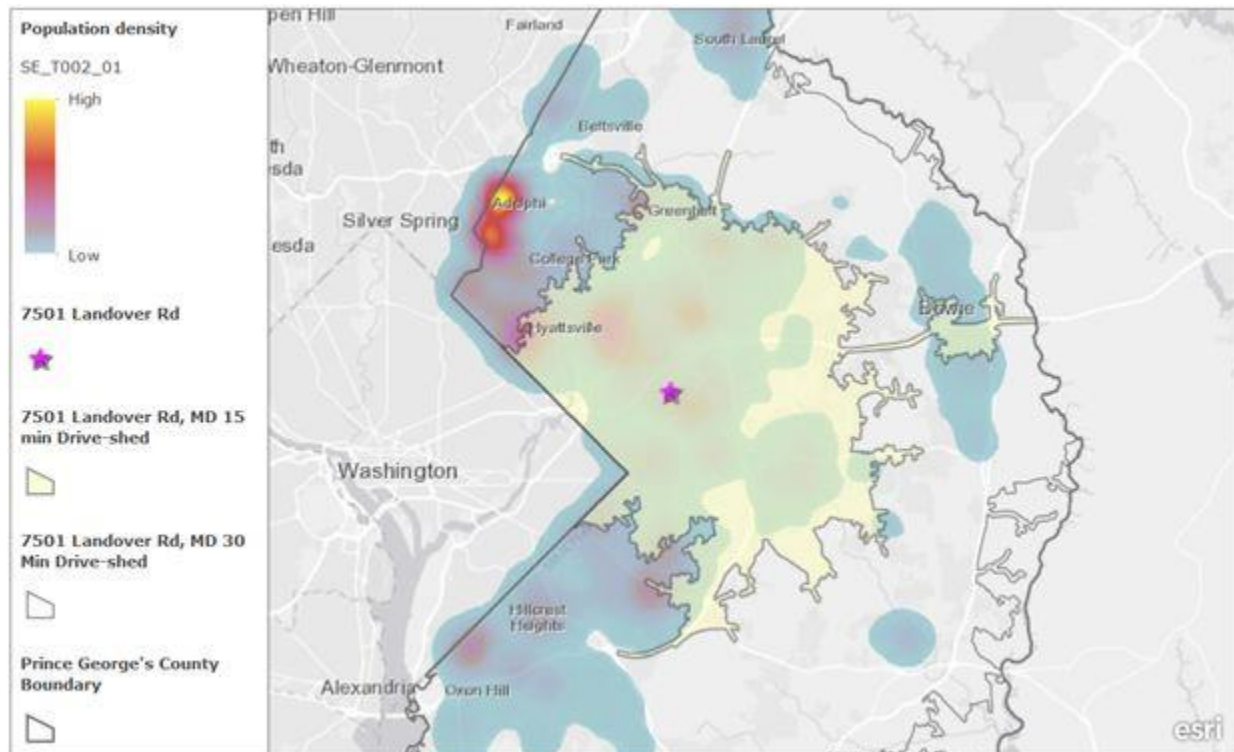
The following table shows the total population, total number of households, and number of households with a vehicle within 15- and 30-minute drives of the facility. Note that it includes only residents within Prince George’s County; although 15- and 30-minute drive- sheds would include parts of Montgomery County or and D.C., the analysis is limited to those residing in Prince George’s County. Bold indicates the variable at that site is the highest among the five sites.

Site	Variable	15-minute drive	30-minute drive
Site 1	Total Population	304,068	852,640
	Total Households	105,517	319,827
	Households with Vehicle	87,205	247,816
Site 2	Total Population	325,125	763,305
	Total Households	113,401	286,739
	Households with Vehicle	83,505	219,534
Site 3	Total Population	178,666	526,129
	Total Households	58,867	191,962
	Households with Vehicle	42,636	147,253
Site 4	Total Population	183,232	535,535
	Total Households	60,668	195,464
	Households with Vehicle	43,944	150,254
Site 5	Total Population	284,379	797,360
	Total Households	102,661	299,457
	Households with Vehicle	75,878	230,157

Appendix D: Detailed Drive-shed Maps

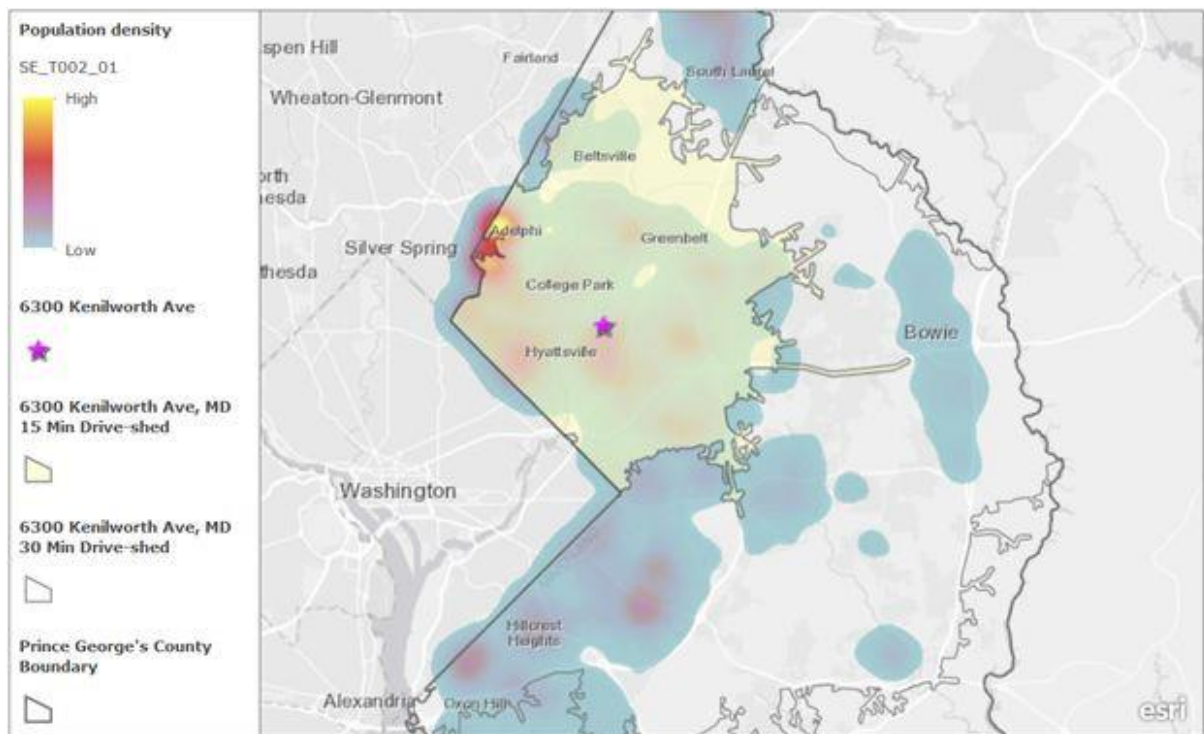
Map 1: Site 1 at 7501 Landover Road.

The 15-minute drive-shed is in yellow. The 30-minute drive shed is transparent, marked by the outer gray line. The county boundary is the thicker black line. Population density runs from light blue (low-density) to bright yellow (high).



Map 2: Site 2 at 6300 Kenilworth Avenue.

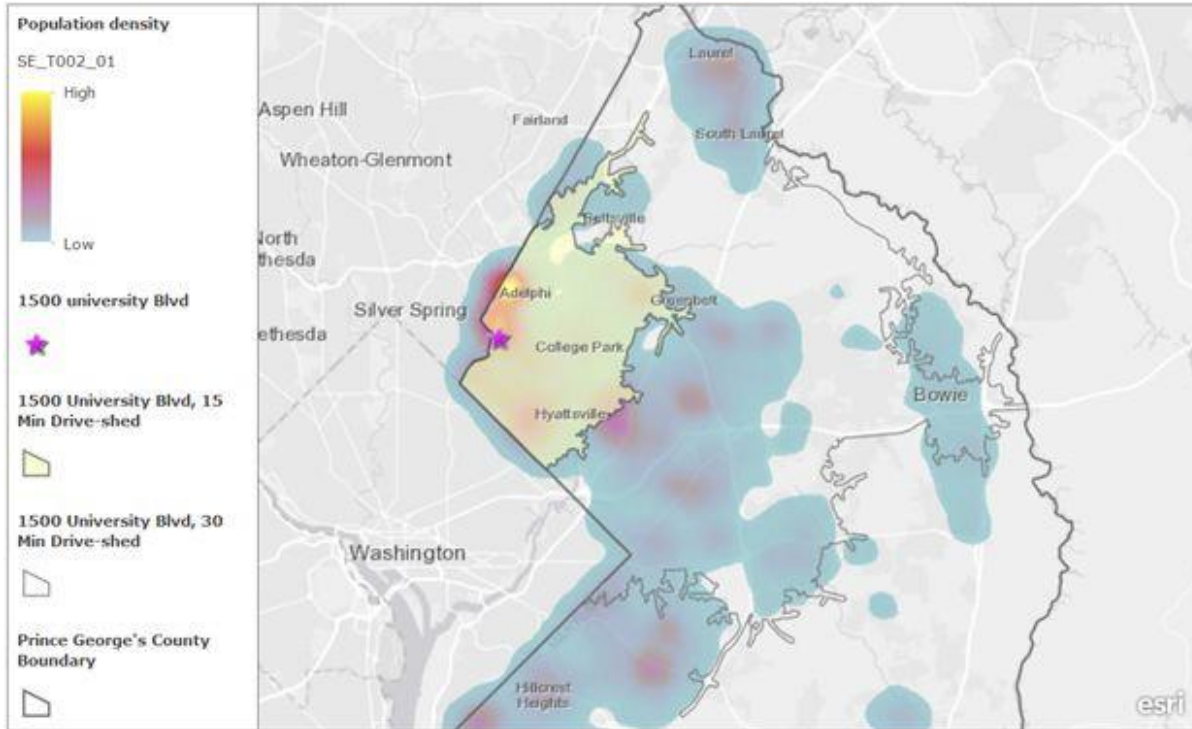
The 15-minute drive-shed is in yellow. The 30-minute drive shed is transparent, marked by the outer gray line. The county boundary is the thicker black line. Population density runs from light blue (low-density) to bright yellow (high).



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Map 3: Site 3 at 1500 University Boulevard

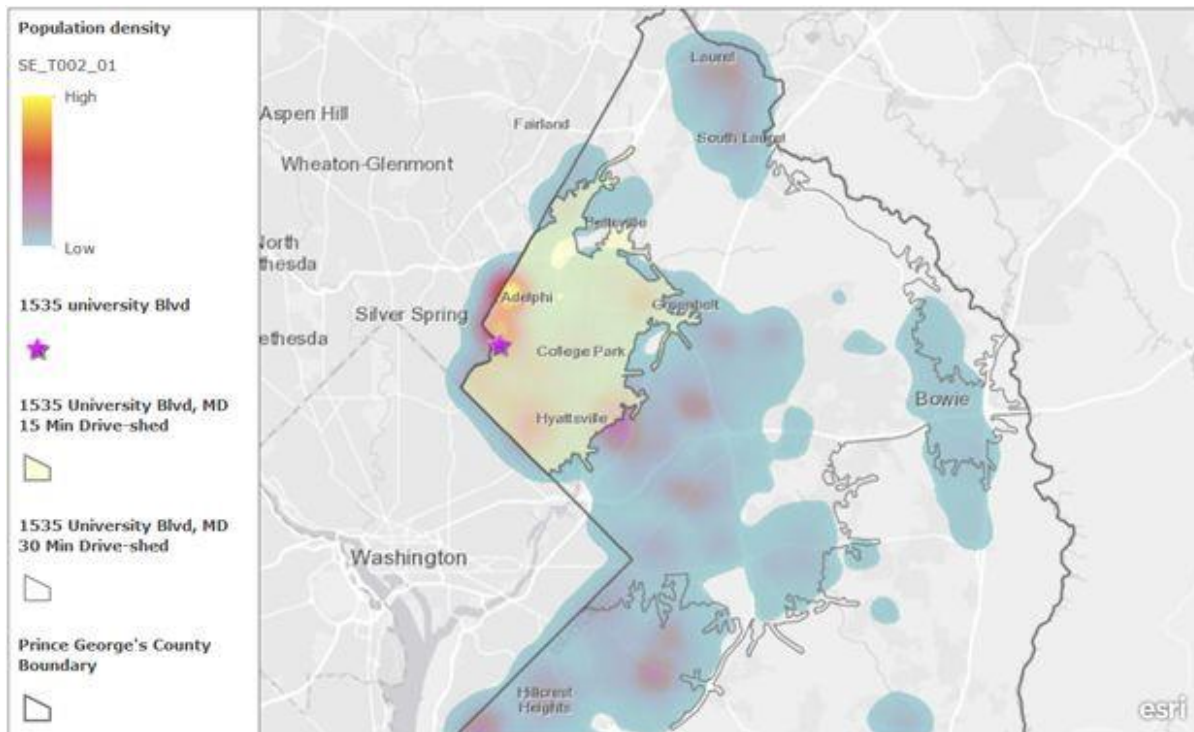
The 15-minute drive-shed is in yellow. The 30-minute drive shed is transparent, marked by the outer gray line. The county boundary is the thicker black line. Population density runs from light blue (low-density) to bright yellow (high).



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Map 4: Site 4 at 1535 University Boulevard

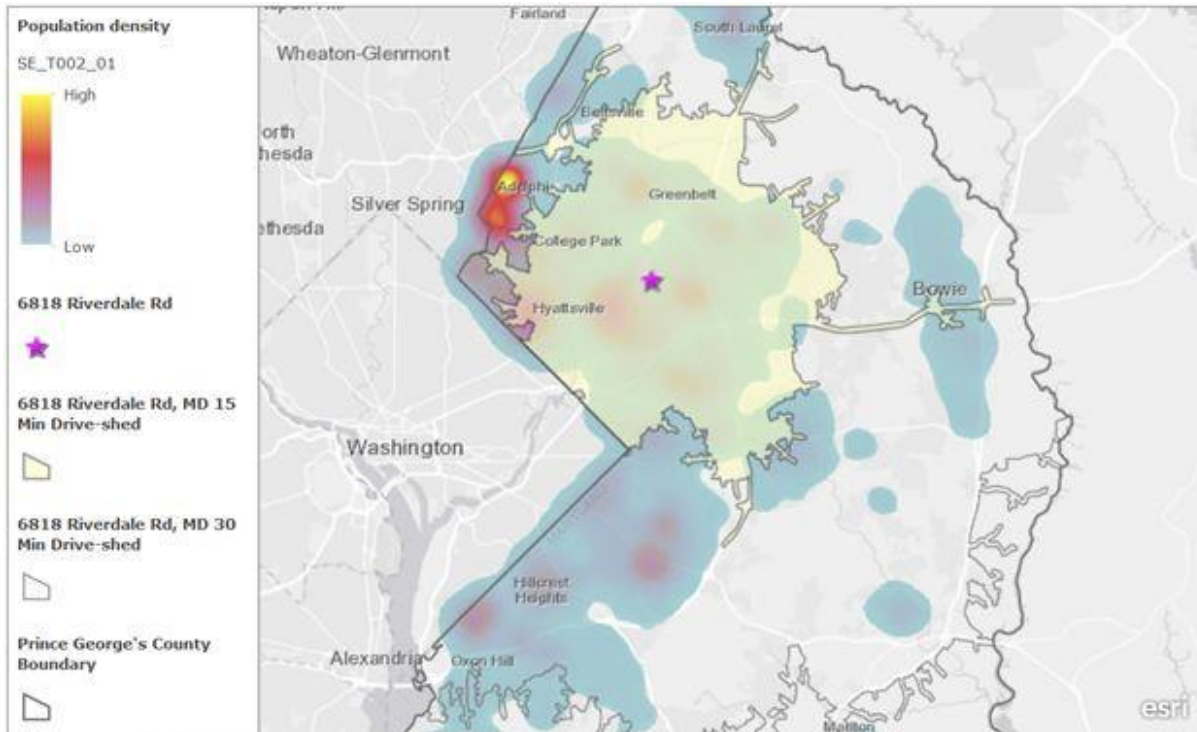
The 15-minute drive-shed is in yellow. The 30-minute drive shed is transparent, marked by the outer gray line. The county boundary is the thicker black line. Population density runs from light blue (low-density) to bright yellow (high).



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Map 5: Site 5 at 6818 Riverdale Road

The 15-minute drive-shed is in yellow. The 30-minute drive shed is transparent, marked by the outer gray line. The county boundary is the thicker black line. Population density runs from light blue (low-density) to bright yellow (high).



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Bibliography

The Maryland-National Capital Park and Planning Commission. (2014). Planned Prince George's 2035 Approved General Plan. Retrieved from http://mncppcapps.org/planning/publications/BookDetail.cfm?item_id=279&Category_id=1

Why does a shelter cost so much retrieved from http://pawmettolifeline.org/donate/campaign/why_does_a_new_shelter_cost_so_much