Healthy
ANNAPOLIS

Healthy Annapolis

Nicole Akpedeye, Christine Dunham, Jennifer Hopkins, Daniel Kellman, Alyssa Kurien, David Lipscomb, Diane Patterson, Kacy Rohn, Samantha Sperber, Arica Thornton, Claire Warner

Design by Nicole Akpedeye | Edited by Claire Warner and Kacy Rohn

Instructors:
Charles Bailey, PLA, ASLA and Jennifer D. Roberts, DrPH, MPH

Urban Studies and Planning Studio
The University of Maryland – College Park
Summer 2017

Special thanks to:

Sally Nash, Department of Planning & Zoning, City of Annapolis
Jennifer Jennings, Recreation & Parks Department, City of Annapolis
Pete Gutwald, Department of Planning & Zoning, City of Annapolis

Jon Korin and Alex Pine, BikeAAA
Cathy Umphrey and Dalyn Huntley, Grow Annapolis
Tanya Asman, Anne Arundel County
Shawn Wampler, GIS Coordinator, City of Annapolis
RJ Eldridge, Toole Design Group
J. Phillip Gottwals, ACDS, LLC
Clive Graham, Howard County Office of Transportation
Alyia S. P. Gaskins and Nicholas Wallace, National League of Cities

PALS - Partnership for Action Learning in Sustainability
An initiative of the National Center for Smart Growth

Gerrit Knaap, NCSG Executive Director
Uri Avin, PALS Director
Kim Fisher, PALS Manager

Table of Contents

Executive Summary

Annapolis, Maryland, located in Anne Arundel County, is home to the United States Naval Academy and Saint John's College. The small waterfront capital city is also a popular tourist destination for sailors and history buffs drawn to the nationally recognized historic district. While continuing to focus on preserving the City's historic and natural resources and strong local economy, Annapolis is taking steps to become a healthier city by participating in the Let's Move! Cities Towns, and Counties (LMCTC) initiative, a national campaign to end childhood obesity by providing guidance to elected officials, parents, schools, community leaders, and other stakeholders in order to make healthy living accessible for everyone.

Annapolis has successfully met the five initial program goals for LMCTC, and has achieved All-Star status. This report will help the City pursue three of the four All-Star strategies it is now eligible to pursue after achieving All-Star status. This report highlights disadvantaged communities, as they are more likely to suffer from poor health. In addition to an increased likelihood of health issues, these communities are also less likely to have resources such as education and community support to improve certain aspects of their health.

This University of Maryland PALS summer studio project is meant to help guide the City of Annapolis in creating a healthier city for all residents, and in reaching their LMCTC All-Star strategies. Four chapters were written by groups that focused on health-related aspects of the city that relate directly to areas of focus for achieving All-Star status: 1) updates to incorporate health into the Comprehensive Plan, 2) parks and open space, 3) bicycle infrastructure, and 4) urban agriculture and community gardens. We hope that by providing recommendations for integrating health into the planning process and city design, and by suggesting strategies to make the most effective use of existing tools, Annapolis will be better situated to achieve its LMCTC All-Star strategies.

Healthy City Guidelines

The healthy guidelines team sought to incorporate health concerns into each chapter of Annapolis' Comprehensive Plan. Using an American Planning Association evaluation tool for healthy communities, this team evaluated all of the existing chapters and identified where health language could be incorporated as visions, goals and policies.

Team members individually scored the City's Comprehensive Plan for the presence of health-related language, and then compared results to create a final unified score. The plan performed well in active living goals and policies. The policies, however, often lacked comprehensive and action-oriented strategies, and did not have organized or detailed goals and objectives. After this evaluation, each chapter was revisited and recommendations were made to add unaddressed health issues and policies throughout the plan.

These recommendations should be adopted in future updates to Annapolis' Comprehensive Plan and other guiding documents. These changes will improve the health and lives of residents and better position the City to follow Maryland's "Health in All Policies" approach, adopted in May 2017 as a new framework for the state's policymakers that encourages consideration of health across all policy sectors.

Parks

The City's parks are an important asset for residents and visitors alike. To assess Annapolis' parks and recreation areas, multiple data sources were compiled, organized, and confirmed to make a master list of available facilities. To begin, City and County parks data was consolidated to ensure that all parks and facilities were accounted for. The data was then confirmed and updated using Google Maps, staff input, and existing inventory data. It was then compiled into a parks inventory dataset that was referenced for all other parks-related analyses.

A series of analyses identified issue areas and guided recommendations. Using the newly constructed parks inventory, the team developed a park locator web application was and a park locations map with corresponding inventory matrix, along with two "Park Tours" routes and maps. An assessment of City facilities identified gaps, and a related accessibility analysis determined accessibility to parks for the City as a whole, and specifically for disadvantaged communities. We also assessed the Adequate Public Facilities Ordinance, and made recommendations to improve the language relating to parks and open space.

These analyses identified several issues. The outdated and incomplete parks inventory data was reconciled during the analysis, and new maps and applications were created for use. Facility gaps and parks with low levels of access were identified. To resolve these priority issues, the team developed a list of recommendations, including that the City continually update and maintain their park inventory, and distribute this information to residents via maps and apps.

Bicycles

Investing in bicycling is beneficial for individuals, communities, cities, and the environment. The physical and mental health benefits of a low-impact exercise such as cycling include lower risk of heart disease, cancer, diabetes and other obesity-related illnesses, as well as reduced anxiety, depression and other psychological issues. In addition, increasing a community's bicycle mode share benefits the environment because biking is a carbon-zero form of transportation. Increased emphasis and infrastructure support for bicycling offers many opportunities for positive impacts on the tourism and retail industries; it could expand bicycle-related and friendly businesses; cyclists tend to make frequent shopping trips.

Disadvantaged communities are important stakeholders for bicycle planning, as they are more likely to suffer from poor health and more likely to live in neighborhoods that are geographically isolated from healthy food sources, places of employment, and other important destinations. In addition, these communities often rely on biking, walking, and/or transit out of necessity, but do not always have safe access to these travel modes. Cycling can help improve access to these places and services.

To assist the City in improving the health of residents, the Bicycle Friendly Communities team took a multi-pronged approach. The team participated in two tours with city employees and bicycle advocates to understand current challenges. Additionally, we analyzed the *Annapolis Bicycle Master Plan 2011* to understand the history, proposals, and current progress of the City efforts to promote cycling. We used both quantitative and qualitative methods to assess current conditions of cycling infrastructure

to determine how the City might advance its goals. These methods included crash data analysis, mode share analysis, accessibility analysis, and best practices research.

Our final recommendations focus on the most financially and politically feasible, low-cost, and timely infrastructure actions. We prioritize recommendations based on the social, political, and financial context of bicycling in Annapolis.

Gardens

Community gardens can help reduce public health disparities. Gardens improve access to affordable healthy food for disadvantaged communities, create opportunities to learn about healthy meal preparation, and become community gathering spaces that promote physical activity. Community gardens can boost mental health by relieving stress and improving concentration, and can benefit the broader community by raising surrounding property values and improving air quality and stormwater management.

In recognition of these benefits, Annapolis sought to understand how it can support and implement community gardens. The community gardens team examined the growth potential for community gardens by assessing planning documents, current and past urban agriculture assets, municipal land use and zoning regulations, and local organizations involved with urban gardening.

This assessment indicated several barriers, including limited available land within the City, which drives up costs for non-profit gardens; land use and zoning regulations that do not address urban agriculture; and residents unaware of existing resources. Our recommendations identify solutions to each of these barriers, including adoption language that permits community gardens in many zoning districts; a full land inventory and assessment of Annapolis' open spaces to identify potential community garden locations; creating incentives for gardens on both public and private land; and increasing communication and coordination with residents and organizations interested in gardening.

This chapter presents Annapolis with targeted recommendations for garden implementation, operation, and protection, and acts as a roadmap for the City's pursuit of a healthier community through urban gardening.

Taken as a whole, this report provides the City with the tools it needs to become a healthier community and pursue its LMCTC All-Star strategies. By assessing current conditions and focusing on barriers to the City's health goals, the recommendations were specifically developed to help Annapolis meet its unique challenges, maximize its resources, and ultimately become the healthy city it envisions.

Introduction

About Annapolis

Annapolis, Maryland is the seat of County Government and the capital city of the state of Maryland. It is the historic heart of Anne Arundel County, bordered by the Chesapeake Bay and Severn River. This small capital city, with a population of about 39,000 residents, is home to the United States Naval Academy and Saint John's College, and is a popular tourist destination for lovers of history and sailing.

Annapolis is a racially and economically diverse city, with a relatively high median income of $72,462, and a per capita income of $43,389. While it may skew toward higher-earning households, there is a poverty rate of 10.8%, indicating an economically divided city. Annapolis also skews older, with the median age of around 38, and toward non-Hispanic White residents. Compared to Anne Arundel County as a whole, Annapolis is quite diverse, the population is made up of 53.5% White, 26% Black, 2.1% Asian, and 16.8% Hispanic or Latino. Of note is Annapolis' Hispanic population, which has grown considerably in the recent years, and will have implications for future composition and culture of the City.

As the state capital located on the Chesapeake Bay, Annapolis thrives economically on a combination of government activity, the production of underwater military devices, and communications research and development. With more 18th century structures than any other U.S. city in its pre-industrial colonial district (a National Historic Landmark), Annapolis is also a major tourist destination and home to many local, small businesses. Preserving small businesses and historic character are important considerations for both residents and city leaders.

Working Towards a Healthy Annapolis

In pursuit of a healthier city, Annapolis participates in the nationwide Let's Move! Cities Towns and Counties (LMCTC) initiative, a campaign to eliminate childhood obesity by providing guidance to elected officials, parents, schools, community leaders, health care providers, and others to make healthy living accessible for everyone. LMCTC recommends strategies for building healthy cities that focus on affordable access to healthy foods and increased opportunities for physical activity, both of which involve layers of participation from different stakeholders. Annapolis has successfully met the initial goals for LMCTC, and has achieved LMCTC All-Star status, a higher level of recognition granted to cities that demonstrate the most commitment to enacting health strategies. This report's recommendations will help Annapolis progress in that healthy trajectory and pursue its All-Star strategies.

This report highlights disadvantaged communities, as they are more likely to suffer from poor health. These communities tend to have lower quality living conditions and limited access to affordable healthy food. They are also less likely to have the resources, such as education and community support, to improve certain aspects of their health. By focusing health initiatives and programs on the needs of these communities, Annapolis will be increasing the health and equity within the city overall.

About the Studio Project

This University of Maryland PALS studio project is meant to guide the City of Annapolis in creating a healthier city for all residents, and in reaching their LMCTC goals. Four chapters were written by groups that focused on health-related aspects of the city:

- updates to incorporate health into the comprehensive plan
- parks and open space
- bicycle infrastructure
- urban agriculture and community gardens

We hope that by providing recommendations for integrating health into the planning process and city design, and by suggesting strategies to make the most effective use of existing tools, Annapolis will be better situated to achieve its LMCTC All-Star strategies.

Report Structure

This report primarily consists of four topical chapters that correspond with the research of the Healthy Annapolis PALS studio. These four chapters represent the four health priorities identified by the City of Annapolis:

- Healthy City Guidelines (Chapter 1)
- Parks & Recreational Facilities (Chapter 2)
- Bicycles (Chapter 3)
- Gardens (Chapter 4)

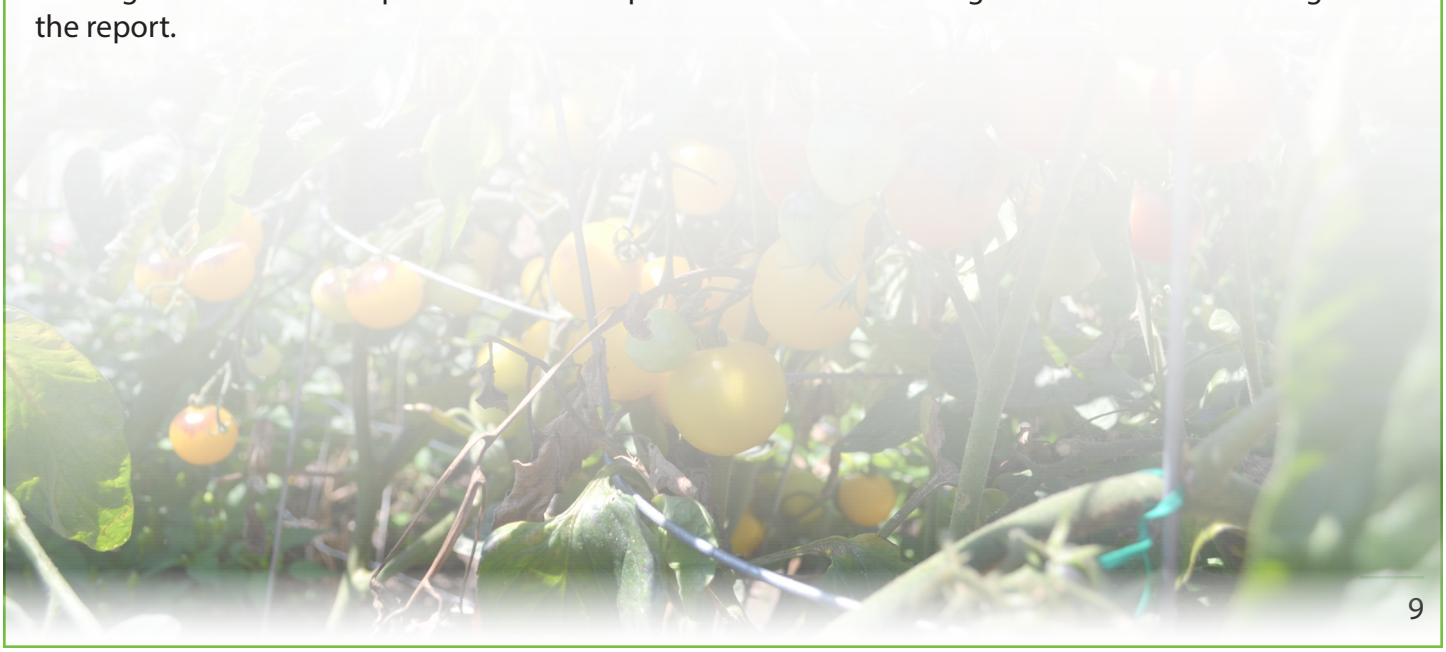
Each chapter begins with an Overview that connects the topic area to public health. This summary is followed by an Approach section that covers the methodology used by each research group, including any evaluation tools; the analysis from the evaluation; and a brief summary of related best practices. Each chapter provides an analysis of current conditions, including the assets and/or challenges that exist within Annapolis. This analysis provides a foundation on which best practices can be integrated into specific recommendations for the City.

Next, each chapter contains an Issues and Recommendations section that highlights the primary challenges facing the City. These issues are followed by recommendations or best practices from other cities that address that obstacle.

The Additional Considerations section includes research limitations for each topic, directions for future research that could provide a more thorough understanding of the topic, and any further recommendations that did not explicitly tie into the primary issues.

Each chapter concludes with an Implementation table, which presents the timeframe, priority, responsible party, stakeholders, metric or indicators, and impact of each recommendation proposed.

Following these four topical chapters, the report concludes with a Summary section that provides broad guidance for the implementation and prioritization of the strategies recommended throughout the report.



Page Intentionally Left Blank

Chapter 1

Healthy City Guidelines

Overview

A jurisdiction's guiding documents define its priorities and provide the vision for where and how the community will grow. The Let's Move! Cities Towns and Counties All-Star Strategies recognize that an important element of health planning is a community's vision, especially in the form of the comprehensive plan. The plan is the foundation for a community to plan for health.

As a result, the city guidelines team began with a review and evaluation of Annapolis' comprehensive plan to determine the extent to which health was incorporated into the City's planning efforts and guiding documents.

The LMCTC program focuses on several areas of city design guidelines, including a jurisdiction's comprehensive plan, guiding documents and zoning, and design standards that promote active living. LMCTC recognizes that a compact city is usually less auto-focused and development and redevelopment patterns can promote or hinder active transportation and healthy lifestyles. Similarly, urban design standards help a jurisdiction move beyond access—whether citizens can walk or bike to destinations and transit, to encouragement—whether they will do so.

City Guidelines and Health

The City's Comprehensive Plan and guiding documents are an opportunity to incorporate health into all aspects of planning and governance. Strategies to address health concerns can augment policies and goals to create more livable and sustainable places to live, work, and play. Health can be incorporated into all chapters, and not just those focused on land use, transportation or parks. The recommendations below are organized by the current plan's chapters and highlight ways to better integrate health into each part of the plan.

Evaluating the Comprehensive Plan

Our evaluation of the plan revealed that the City performed well in some areas, particularly active living goals and policies. The next steps are to bring health clearly into focus, to identify health implications and connections in all chapters, and establish requirements, rather than optional guidelines. The City should also create comprehensive goals and policies that address all components of health, and move toward implementation using strong language, measurable achievements and metrics to illustrate the result of planning, designing and (re) developing for health. Finally, when considering upgrades for areas of directed growth, such as the Opportunity Areas, a prioritized focus on disadvantaged communities will help to reduce pronounced health inequalities.

Approach

Comprehensive Plan and Supporting Tools

Our approach to the Let's Move! Cities Towns and Counties strategy for city design guidelines was to provide recommendations for health related language in the Comprehensive Plan and provide tools to guide redevelopment. We also reviewed ordinances for updates that would enhance the City's healthy design goals. The City will soon be updating the current plan, which was adopted in 2009. The new plan is an opportunity to address not only health as it relates to city design, but to follow State efforts to include "*Health in All Policies.*"

Health in All Policies

This bill, signed on May 4, 2017 by Governor Larry Hogan follows the "Health in All Policies" approach advised by the American Public Health Association. The bill dictates that a workgroup assembled by the University of Maryland School of Public Health's Center for Health Equity (M-CHE) will recommend laws and policies to improve health equity and quality of life for residents in the State of Maryland. The group will also perform a health impact assessment to evaluate access to jobs, education, affordable housing, and other health-related issues.[1]

Methodology

Evaluation Tool

To evaluate the Comprehensive Plan for health, we used a tool developed by the American Planning Association (APA), which has been used to evaluate how health was incorporated into 22 comprehensive or sustainability plans. It is organized by typical comprehensive plan elements: vision, goals, and policies. The tool's 79 questions assess the extent to which a comprehensive plan addresses an overall health vision and six health categories:[2]

- Active Living
- Emergency Preparedness
- Environmental Exposures
- Food and Nutrition
- Health and Human Services
- Social Cohesion and Mental Health

[1] "'Health in All Policies' bill becomes law", University of Maryland School of Public Health, Last modified May 8, 2017, https://sph.umd.edu/news-item/health-all-policies-bill-becomes-law.

[2] Ricklin, A. et. al, Healthy planning: an evaluation of comprehensive and sustainability plans addressing public health (Chicago: American Planning Association, 2012), 10-18.

Three team members independently read Annapolis' Comprehensive Plan and scored it for the inclusion of these six health elements. Their individual results were compiled into a final score. In cases where individuals had different scores, the plan was re-evaluated and re-scored as a group to determine a unified score. Each of the 79 questions was scored according to the following rating system.

Score	Rating	Definition
0	Not present	Absence of health-related goal or policy
1	Present, narrow	Goal is limited spatially and comprehensively OR Policy is lacking specificity and action
2	Present, comprehensive	Goal is spatial and comprehensive OR Policy is specific and action-oriented

Table 1, Evaluation table

Source: Ricklin, A. et al. Healthy Planning, American Planning Association, 2012.

Results

The final score was 60 out of a possible 158 points. (Results are summarized in Figure 1, see Appendix for full results). It is hard to directly compare our results to those from the APA study because APA did not provide scores for each plan reviewed. In addition, Annapolis' plan is not organized by goals or objectives, which made it harder to score questions under this topic. However, using overall ratings, we made general comparisons.

We found that the Annapolis Comprehensive Plan addressed Active Living and Environmental Exposures well (See Figure 1). The plan also put forth a broad health vision. Categories lacking goals and policies were Emergency Preparedness, Food and Nutrition, and Health and Human Services. Policies often lacked comprehensive and action-oriented strategies and weak action words such as "encourage" and "consider" were used throughout the plan.[3] But Annapolis is not alone; all 22 plans in the APA study had similar results, demonstrating that more tools and information on how to address health issues are needed.

[3] Ricklin, A. et. al, Healthy Planning, 18-19.

How to incorporate health?

Three ways to incorporate health into Annapolis' Comprehensive Plan emerged:

- include a separate health element
- incorporate health in all chapters
- include a health element and focus a few key elements on health

We ultimately determined that health in all chapters was the appropriate direction. This approach requires the plan to be consistent across all elements while a separate health element can highlight health and incorporate topics such as "healthy meetings" protocols and planning or health impact assessments. However, without an overall health focus, other policies in the plan may conflict with the health element and make implementation difficult.[4]

Expert Presentations and Literature Review

Several presentations from experts influenced our approach and research to the topics of public health and its relationship to the built environment, land use for health, and tools for implementing planning. The authors of the City's current *2011 Bicycle Master Plan* and *2004 Parks, Recreation and Open Space Master Plan* also presented their framework for these plans as well as their industry experience.

Our approach was also influenced by discussions and interviews with the City about the Comprehensive Plan and efforts to implement current policies. To provide recommendations for the plan and its supporting tools, we performed a literature review of model language and best practices, focusing on recommendations that would satisfy low scoring questions in the APA evaluation tool and were appropriate for a city the size and scale of Annapolis.

[4] Stair, Peter, Heather Wooten, and Matt Raimi, How to Create and Implement Healthy General Plans: A toolkit for building healthy, vibrant communities (ChangeLab Solutions and Raimi + Associates, 2008), 31-2.

Evaluation Tool Summary Results

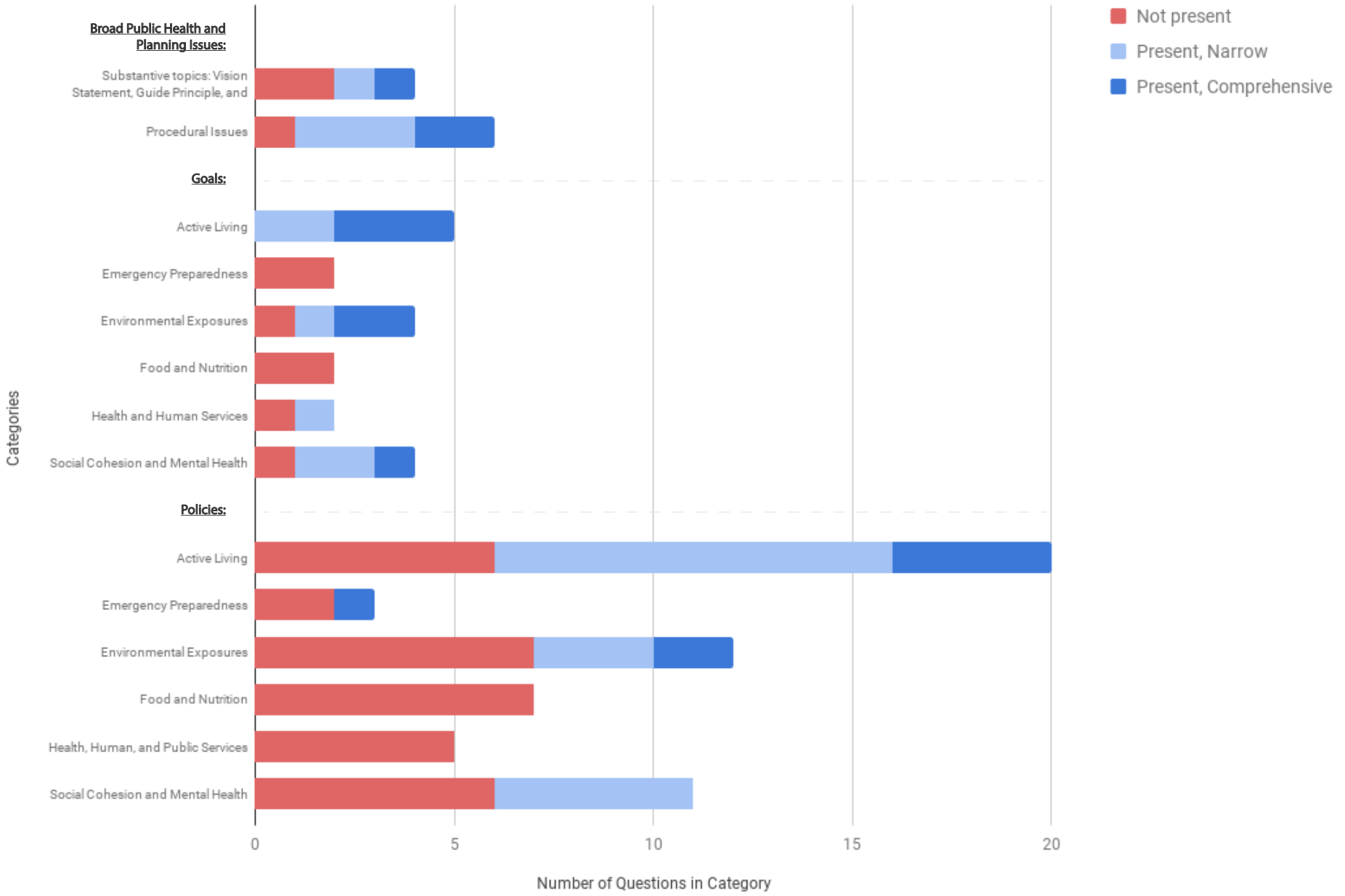


Figure 1, This table shows the number of questions in each category and the rating for each question. For example, under Goals: Active Living, two questions were rated "present, narrow" and three questions were rated "present, comprehensive."

Issues and Recommendations

The following sections are organized by the *2009 Annapolis Comprehensive Plan's* chapters.

Plan Chapter 1: Introduction

The City of Annapolis has identified the importance of creating and integrating a health-related focus into their updated Comprehensive Plan. Providing opportunities to live a healthy lifestyle, enjoy a variety of community gathering places, highlighting natural features and open spaces, as well as providing a well-connected community throughout the City will help guide Annapolis towards achieving their goal.

Issue: The Comprehensive Plan mentions the importance of a green/healthy Annapolis, but does not elaborate on or have a strong vision of how to achieve these goals.

Recommendation: Establish a vision for health with clear goals.

Green spaces and interconnected city networks help promote healthy living and activity. The Plan's Transportation, Environment, and Land Use chapters all cover the importance of creating an active community, safe for pedestrians and cyclists. Taking advantage of opportunities to create additional gardens, parks and plazas (or enhancing existing ones) will also help support healthy lifestyles for Annapolis residents. Along with this, Annapolis should further strive to protect the natural environment by developing stormwater systems to prevent or reduce excess stormwater runoff, designing and upgrading systems and plans to prevent damage to the environment.

Issue: The City lacks sufficient consideration of health in the built environment.

Health should be incorporated to all aspects of Annapolis, including the built environment. By not emphasizing on the importance of health in the built environment the City is not embracing the opportunity to include another health component in the plan.

Recommendation: Connect health to the built environment.

Building healthy environments includes increasing tree canopies, as well as increasing the visibility and access to parks and recreational facilities.[5] New development should embrace existing qualities, preserved sites and historic features into their planning to promote pedestrian and cyclist activity that can help decrease some chronic disease risks.

Plan Chapter 2: Demographics

Features in the demographic element relate to broad public health issues. The APA evaluation tool focuses on two areas: mapping vulnerable populations and using imagery to represent population

[5] Braun, Lindsey, and Anna Read, The Benefits of Street-Scale Features for Biking and Walking, American Planning Association Planning and Community Health Center and Active Living Research, 2015. www.planning.org/nationalcenters/health/streetscale/

data. Imagery may also be used to demonstrate how various groups may be affected by the Comprehensive Plan's policies and recommendations. Visualizing demographic information can provide the City with valuable information for targeting health-related policies.

Issue: Vulnerable populations are not mapped

Vulnerable populations include children, the elderly or disabled, who are at greater health risk from their environment. Considerations of respiratory health, access to services, and accessibility are important for these populations. Those living in poverty are also susceptible to health risks.[6] In disadvantaged communities, low-income populations face socio-economic issues that can affect their physical and mental health.

Recommendation 1: Map demographic data.

Map data for demographic information such as age, income, poverty level, and vehicle ownership to geographically target health-related policies (i.e. transportation, environment, and/or health and human services policies). Maps reflecting residents' poverty level and lack of vehicle ownership are provided in the Bicycle chapter.

Issue: Data is not represented with imagery.

Using charts, imagery, and graphics instead of tables to demonstrate demographic information can help the community visualize trends or other important information.

Recommendation 1: Visualize data using charts and graphics.

Where possible, convert tables to charts and/or provide supportive graphics to illustrate data. In the example below, data from a table in Chapter 2 on population growth is converted to a chart (see Figure 2). The chart clearly shows a similar percent population growth pattern in the City of Annapolis and Anne Arundel County. The same information that is hard to discern from the table.

Population Growth Table

Year	City of Annapolis Population	Percent growth	Anne Arundel County Population	Percent Growth	City as a Percent of County
1900	7,657		39,620		19.3%
1910	8,262	7.9%	39,553	-0.2%	20.9%
1920	8,518	3.1%	43,408	9.7%	19.6%
1930	9,803	15.1%	55,167	27.1%	17.8%
1940	9,542	-2.7%	68,375	23.9%	14.0%
1950	10,047	5.3%	112,361	64.3%	8.9%
1960	23,385	132.8%	206,634	83.9%	11.3%
1970	30,095	28.7%	298,042	44.2%	10.1%
1980	31,740	5.5%	370,775	24.4%	8.6%
1990	33,187	4.6%	427,243	15.2%	7.8%
2000	35,838	8.0%	489,656	14.6%	7.3%
2006 (est.)	36,603				

Figure 2.1 in Annapolis Comprehensive Plan, Chapter 2: Demographics, 2009.

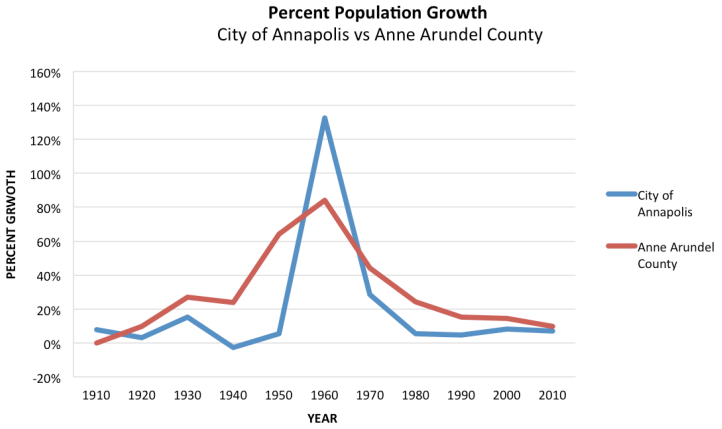


Figure 2, Left: Population Growth Table from *Annapolis 2009 Comprehensive Plan*. Right: Sample chart for percent population growth including 2010 census data. Source: City of Annapolis and U.S. Census Bureau

[6] Stair, Peter, Heather Wooten, and Matt Raimi, How to Create and Implement Healthy General Plans: A toolkit for building healthy, vibrant communities (ChangeLab Solutions and Raimi + Associates, 2008) A4, 1, 69 and City of South Gate, Healthy Community Element, South Gate, California, 2009, http://www.cityofsouthgate.org/192/General-Plan, 277.

Plan Chapter 3: Land Use and Economic Development

Land use is a key component of healthy planning and one of the main areas where health goals can be implemented. This chapter includes the basics for health-focused policy. Health components strengthen arguments for mixed-use; reinforce other principles, such as smart growth; and assist in reaching other goals such as reducing carbon emissions and addressing climate change.

This chapter's strengths include a focus on walkability and moving beyond the auto-centric focus of the last seven decades with a return to a human-scaled city that builds on the past, with an eye toward the future. It recognizes that economic vitality is not correlated with outward expansion. The chapter scored well for policies that promote mixed-use and direct growth to opportunity areas with community character designations. Building on these strengths can promote expanded areas of mixed-use, pedestrian oriented development, densification and expanded design standards. The challenges lie in transitioning to the implementation stage and in making those policies and goals a reality. This would include incentives to catalyze private development within the opportunity areas. Incentives could include increased allowable density, certainty for developers, and an expedited review process.

The City's recommendations in its sector studies for Upper West Street and West Annapolis address health-related topics, such as zoning for mixed-use. Implementing the studies' recommendations would promote pedestrian- and bicycle-friendly areas and a healthier city. Several of this report's recommendations amplify the recommendations from the sector studies and relate them to health. The Upper West Street Sector Study notes that one obstacle is that "many people simply accept the status quo."[7] A health focus is yet another argument against that status quo.

In a literature review of best practices for incorporating health into land use policies, the following practices were frequently noted.

Best Practices in Health-Related Zoning[8]
Transit Oriented Development (TOD)/Pedestrian Oriented Development (POD) Overlay Zones
Increasing Mixed-Use Districts
Restrictions on Liquor Stores, Formula (Chain) and Drive Through Restaurants
Form Based Codes/SmartCode
Unified Code
Traditional Neighborhood Development (TND) with Grid Streets
Inclusionary Zoning/Housing Requirements to Reduce Health Disparities
Street Level Active Uses and Prohibition/Restriction on Auto Uses
Parking Maximums, Parking Restrictions, Standards, Shared Parking, Congestion Pricing

While not all of them may be practical for Annapolis, the City could consider these best practices along with the following recommendations as ways to implement healthier and more walkable areas. This report's recommendations are designed as policies and goals for the Comprehensive Plan chapter, along with associated zoning changes where noted.

[7] Upper West Street Sector Study: City of Annapolis, AECOM, 2016, 28.

[8] Stair, et al. How to Create and Implement Health General Plans.

Walkability and Design

Issue: Walkability and the perception of safety suffer from the lack of design standards.

While basic design guidelines and standards exist for subdivision regulations and the Inner West Street mixed-use district, a comprehensive effort is needed to ensure consistency and to expand standards to other areas.

Recommendation 1: Incorporate comprehensive design standards into a new distinct section of the zoning code to ensure implementation and to default to designing for people, rather than cars.

Examples of jurisdictions whose health policy efforts are connected to design standards include Seattle, WA, Boise, ID and Alexandra, VA, whose historic district is analogous to that of Annapolis.[9,10,11] Design standards incorporate not only issues of building orientation and fenestration, but also pedestrian comfort, such as a continuous urban tree canopy. Urban tree canopy and greening efforts that address stormwater runoff were also recommended in the Upper West Street Sector Study. There are a range of options for adopting comprehensive design standards:

- Minimal Implementation Option: incorporate comprehensive design standards within specific opportunity areas.
- Moderate Implementation Option: incorporate comprehensive design standards within all four opportunity areas.
- Comprehensive Implementation Option: incorporate comprehensive design standards throughout the city, with adjustments made for the historic district.

Design principles help create areas where pedestrians feel comfortable and want to walk. Sample building design principles from the city of Alexandria, VA are shown below as an example of a jurisdiction that builds on its historic district and extends the same design principles throughout the city.

Building Design Principles[12]
Provide Base/Middle/Top Building Hierarchy
Maintain the Small Parcel Scale
Provide Appropriate Transitions Between New/Existing Buildings
Incorporate Multiple Architectural Rhythms in the Building Facades
Provide a Solid to Void Ratio Appropriate to Jurisdiction
Maintain the Building Scale
Maintain the Classic Vertical Proportions
Setback Tower or Vertical Elements from the Street Wall
Create a Skyline with Articulated Building Tops

[9] Seattle Design Guidelines, City of Seattle, Department of Planning and Development, 2013.
[10] Boise Citywide Design Standards and Guidelines, City of Boise, 2013.
[11] Design Principles for City of Alexandria, Transtria, LLC, 2006 (PPT).
[12] Design Principles for City of Alexandria, Transtria, LLC, 2006 (PPT).

Recommendation 2: Create additional connectivity through reduced block size and by establishing connections through larger existing blocks and between cul-de-sacs. Promote traditional neighborhood design and street grids for future development and restrict excessive cul-de-sac-based residential design.

To retain walkability and connect to the historic character, the City should retain smaller block sizes with a goal of 200 feet, which best practices suggest is ideal for walkability.[13] This would require a change to the zoning.

In targeted areas, another goal would be to create paths through existing larger blocks or at shopping centers and to create pedestrian and biking through-ways to connect existing cul-de-sacs to amenities and destinations, which may require acquiring rights of way.[14] Additionally, design standards can promote traditional neighborhood design with street grids, for any future development or redevelopment, in an effort to promote walkability.

Density, Mixed-Use, and Zoning

Issue: Higher density is often needed to make neighborhoods walkable and transit (bus) friendly.[15]

Separated land uses are often designed for cars, not people. They are mainly accessed by cars and don't provide enough destinations within walking distance. Higher densities permit destinations within a reasonable walkable timeframe of five to ten minutes.

Recommendation 1: Adjust zoning to permit higher, but neighborhood-scaled, residential density in additional areas.

Allow for increased small-scale density in line with neighborhood scale and connected with realigned bus routes. As neighborhoods infill and non-historic homes are torn down and replaced, consider adjustments that permit neighborhood-scaled density increases. This works best when combined with home size and scale maximums, to preserve existing neighborhood scale and protect older neighborhoods from out-of-scale homes.

These housing types are scaled to blend with existing homes; examples can be found in traditional neighborhoods developed before cars, such as Eastport. However, Eastport's traditional scale has been altered by out-of-scale modern homes. This recommendation helps maintain historic housing or contributing buildings in historic districts, and can adapt to older non-historic houses, while maintaining the existing streetscape. Scaled increases to neighborhood density are also necessary to help create the required densities for transit, support retail, reduce vehicle miles traveled and promote health benefits such as improved air quality and aging in place.

---

[13] "The 200 foot Block: Creating a more walkable Portland," Portland Bureau of Transportation, accessed 7/9/2017, https://www.portlandoregon.gov/transportation/article/167703

[14] Active Living Design Checklist, Active Living Hennepin County, 2012, 3.

[15] Creating Great Neighborhoods. Density in Your Community, Local Government Commission, US Environmental Protection Agency, 2003, 4-5.

The "missing middle" housing includes a range of housing options designed and scaled to blend with existing housing. Once prevalent forms of housing, it can be found in every jurisdiction developed prior to the 1950s, including Annapolis. They are now considered to be "missing" because by the 1940s, jurisdictions began to outlaw them as single-use auto-focused land uses and neighborhoods became prevalent.[16] The revival of this type of housing can be found as non-historic housing stock is replaced or areas are infilled. There is a range of options for ways to increase neighborhood density:

- Minimal Implementation Option: Accessory Dwelling Unit (ADU) allowance by right
- Moderate Implementation Option: Neighborhood-scaled duplex, triplex and four-plex by right
- Comprehensive Implementation Option: Range of neighborhood-scale housing types by right

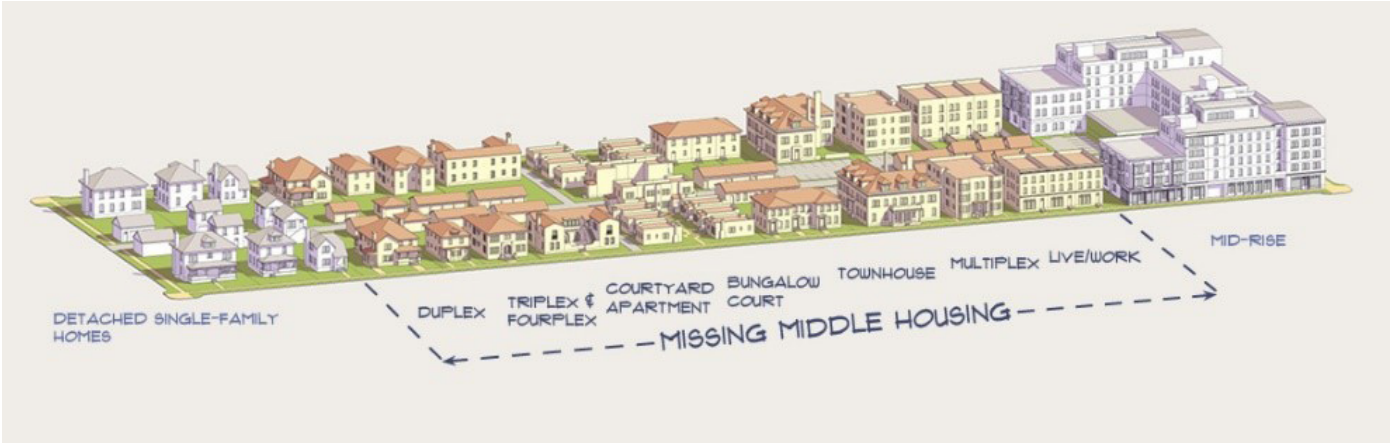


Figure 3, The range of "Missing Middle" housing types.
Source: Missing Middle. Digital Image. Accessed August 15, 2017. http://missingmiddlehousing.com/

Issue: Mixed-use only occupies 20 acres, close to 0 percent of current total city land use.[17]

The aspirational goals for mixed-uses in the Comprehensive Plan and sector studies are not reflected in the current zoning. The Comprehensive Plan and sector studies show a far greater amount of mixed-use zoning than currently exists. To date, the zoning has not been altered to reflect the expanded areas of proposed mixed-use.

Recommendation 1: To catalyze more walkable mixed-use areas in the Upper West Street opportunity area, begin with nodes at the intersections of Upper West Street and cross streets.

Realizing that mixed-use redevelopment and new development will need focus areas and that long stretches of streetfront will not redevelop at the same time, initial efforts should focus on intersections along Upper West Street and grow from there. These areas could also focus on the redevelopment of older strip centers and areas of excessive impervious surface, as recommended in the sector study. Cross connections between these areas and other locations within and adjacent to the study area are also

[16] Parolek, Daniel, "Missing Middle Housing Responding to the Demand for Walkable Urban Living," Missing Middle, Accessed 8/1/2017, http://missingmiddlehousing.com/dev/wp-content/uploads/2015/04/Missing-Middle-Housing-Responding-to-the-Demand-for-Walkable-Urban-Living-by-Daniel-Parolek.pdf.

[17] Comprehensive Plan, Chapter 3, City of Annapolis, 2009, 17.

crucial to prevent auto-focused islands of walkability. Design standards would keep parking behind buildings and maintain the street wall for pedestrians. Bus routes, intersection and infrastructure improvements should also be realigned with these areas.

Recommendation 2: Combine zoning designations under the mixed-use designation.

The City has plans to remake the Opportunity Areas into walkable urban areas, but the goals and policies have not been codified into zoning and implementation has been slow. The two completed sector studies recommend combining the zoning districts. In West Annapolis, Professional Office, Professional Mixed Office and Community Shopping, and in Upper West Street, Community Shopping, Business Corridor Enhancement, Professional Mixed-Use and perhaps General Corridor Commercial Design for Upper West Street, would be combined in the Mixed-Use (MX) district. The Comprehensive Plan's proposed land use map shows significantly more mixed-use, yet the zoning has remained the same in the eight years since the Plan was adopted. (For information on benchmarking against other Maryland jurisdictions, see the Appendix.)

Recommendation 3: Codify the character type designations within the zoning and tie to zoning designations.

The character type designations, as defined in the Comprehensive Plan, identify and illustrate the character, type, and intensity of development. Including these specific characterizations in the zoning, with some flexibility, rather than as merely ideals in the planning documents, would create continuity between plans and zoning designations and would help ensure that the designated development occurs.

Auto-Oriented Uses

Issue: Permitted auto-oriented uses don't correlate with City walkability and health goals. In addition, auto-focused formula (chain) restaurants actively work against health and walkability goals.

Auto oriented uses are those designed specifically for the car and that make walking difficult due to auto-focused design, such as multiple entry points for cars and parking lots next to the street.[18]

Recommendation 1: Move away from auto-oriented uses, where the primary method of access is by car.

This involves excluding self-storage as a permitted use, at a minimum within the opportunity areas, as proposed in the Upper West Street Sector Study.[19] Self-storage units are a very auto-focused use better suited for industrial areas. They typically do not provide active ground level uses nor do they feel comfortable or appear attractive for pedestrians to walk by.

[18] Active Living Design Checklist, Active Living Hennepin County, 2012, 3.

[19] Upper West Street Sector Study, 2.

Recommendation 2: Adopt zoning that restricts drive-through fast-food restaurants in the opportunity areas. If necessary in other parts of the City, designate fast-food restaurants, liquor stores and convenience stores as conditional uses, and require conditional review upon lease renewal or at point of business sale.[20]

Reducing new drive-through restaurants, including those not typically thought of as fast-food, such as coffee shops, would lead to healthier eating options and a more pedestrian-friendly environment. Requiring a conditional review upon lease renewal or at the point of business sale for fast-food, liquor stores and convenience stores could lead to a net reduction in the number of unhealthy or auto-focused businesses. (For sample zoning text, see the Appendix)

Plan Chapter 4: Transportation

Transportation is a major component of a city's health. The available resources, transportation methods, and networks all contribute Annapolis's walkability. This chapter focuses on creating a city that fosters all modes of transportation for people of all kinds. The Comprehensive Plan's transportation chapter mentions pedestrians and the harmful effects of automobile use, but makes no recommendations to mitigate it. In the recommendations below, we provide suggestions for pedestrian and biking facilities for all age groups and types of people. By encouraging more people to walk and bike, especially for short distances, Annapolis will be one step closer to achieving a healthy city.

Overall, the transportation chapter acknowledges the benefits of providing alternatives to automobiles and improving transit systems. The existing policies seek to prioritize, and enhance the city-wide transit system and also address the need to create a more pedestrian oriented city.

Reduce Car Dependency

For more detailed information on the current conditions of biking in Annapolis and specific bicycle-related recommendations, see Chapter 6: Bicycles.

Issue: The Plan fails to address the funding challenges in creating pedestrian and bike infrastructure such as sidewalks, roads, crosswalks, and bike lanes.

Funding for infrastructure improvements, additions, and rehabilitation is limited and is therefore a challenge to making impactful changes throughout the City.

Recommendation 1: Implement impact fees.

To generate additional revenue to fund or recover the cost of infrastructure improvements, Annapolis should establish impact fees for any new development. Impact fees have been established in Laurel, Gaithersburg, Ocean City, and other cities throughout Maryland. Anne Arundel County also has established impact fees that were updated in July 2017 (see Appendix), which provide useful context for the City in determining appropriate rates and legal considerations.

[20] Stair, et al., How to Create and Implement Health General Plans, 44.

Recommendation 2: Embrace new development opportunities.

Use new development as an opportunity to create better sidewalk networks and increase connectivity to existing sidewalks that are fragmented or incomplete.

Recommendation 3: Connect with bike rack programs.

Support a bicycle rack program that allows residents to request that racks be installed in specific locations. This can be a challenge in Annapolis' historic areas, but the inclusion of more bicycle parking will encourage more people to cycle, especially for shorter trips.

Issue: The current transportation system is unbalanced.

The Plan addresses the desire to achieve a transportation system that balances automobile, transit, bicycle, and pedestrian mobility, but has yet to achieve this goal.

Recommendation 1: Focus on more thoughtful pedestrian access.

City planning officials should create more thoughtfully located crosswalks, and pedestrian pushbuttons and signals to promote walkability and bike-ability. This will help cyclists and pedestrians feel safer on the streets and encourage more people to bike or walk. It will also help drivers be more aware of pedestrians in general, and aim to reduce the number of careless accidents involving pedestrians.

Recommendation 2: Embrace Open Streets and Complete Streets policies.

Annapolis should incorporate Complete Streets policies and the Open Streets Project.[21] Complete Streets are streets designed for everyone, which make it easier for pedestrians, motorists, and cyclists to share the streets with cars.[22] These streets allow all users safe access to shops, work, and other destinations within Annapolis by including sidewalks, bike lanes, wider paved shoulders, bus lanes, median islands, and other features that aid alternative means of transportation. The best examples of complete streets include Brockton, MA, Missoula, MT, and Wenatchee WA.[23] To see the list of best Complete Streets policies, see Smart Growth America, The Best Complete Streets Policies of 2016.

Figure 4, A Complete Streets vision for Orlando, FL. Source: O'Connor, Brendon. "Rendering via www.ca-city.com" Bungalower. August 01, 2015. http://bungalower.com/2015/08/01/city-orlando-drafts-complete-streets-policy-language/Rendering via www.ca-city.com

[21] O'Connor, Brendon. "City Of Orlando Drafts Complete Streets Policy Language." Bungalower. August 01, 2015.Accessed August 8, 2017. http://bungalower.com/2015/08/01/city-orlando-drafts-complete-streets-policy-language/.
[22] "What are Complete Streets?" Smart Growth America. June 23, 2016. Accessed August 10, 2017. https://smartgrowthamerica.org/program/national-complete-streets-coalition/what-are-complete-streets/.
[23] "The Best Complete Streets Policies of 2016" Smart Growth America. June 2017. Accessed August 10, 2017. https://smartgrowthamerica.org/resources/the-best-complete-streets-policies-of-2016/.

The Open Streets Project leads programs that temporarily close streets to cars and open them to people.[24] The project was created as a collaboration between two groups—8 80 Cities and Street Plans—and has been implemented in cities around the world.[25, 26] Open streets program encourage community members of all ages, abilities and background to interact with each other and increase positive healthier pedestrian activity on city streets.

Howard County, Maryland approved the country's first Complete Streets Policy Statement for 2017, and has encouraged Opens Streets events since 2015[27]

Complete Streets Policy Statement[28]

- Initiative was recommended in both PlanHoward and BikeHoward
- To improve and promote bicycling throughout the county
- Ensure safe and easy walking and cycling for people of all ages and abilities
- Public meetings held bi-weekly

Open Streets Howard County Festival[29]

- Encouraged healthy transportation
- Temporarily took over a lane of the Little Patuxent Parkway and reserved it for "people-powered" transportation
- Food trucks, scavenger hunts, and giveaways were incorporated to promote participation
- About 1,000 people attended the past event

Figure 5, Changes resulting from Howard County's implementation of Complete Streets policies.
Source: Howard County. Digital Image. Accessed August 15, 2017, www.howardcountymd.gov/Departments/County-Administration/Transportation/Complete_Streets

Figure 6, Howard County's active transportation biking event.
Source: The Horizon Foundation,. Digital Image. Accessed August 15, 2017. Open Streets Project http://www.thehorizonfoundation.org/openstreets

[24] "The Movement For Open Streets." Open Streets Project. July 21, 1970. Accessed August 12, 2017. http://openstreetsproject.org/.

[25] "The Beginner's Guide to Open Streets." The Beginner's Guide to Open Streets - Democratic Underground. February 2012. Accessed August 14, 2017. https://www.democraticunderground.com/11302364.

[26] "The Movement For Open Streets." Open Streets Project.

[27] Kittleman, Allan. "Howard County Complete Streets Policy Implementation." Howard County, Maryland. February 1, 2017. Accessed August 14, 2017. https://www.howardcountymd.gov/Departments/County-Administration/Transportation/Complete_Streets.

[28] Michaels, Andrew, "BikeHoward master plan submitted to county planning board for review," Howard County Times, January 06, 2016. http://www.baltimoresun.com/news/maryland/howard/ellicott-city/ph-ho-cf-bike-master-plan-meeting-0107-20160105-story.html.

[29] "Healthiest Practice, Open Streets," Helping Cities Change Their Culture for Health, June 2016. Accessed August 14, 2017. http://www.healthiestpracticeopenstreets.org/.

Many cities have started to implement Complete and Open Street initiatives, including Pittsburgh, Richmond, and Orlando. By encouraging and promoting physical activity through the use of Open and Complete streets, community members gain another option to move towards a healthier lifestyle.[30] Annapolis should consider a Complete Streets policy for all public street projects, including those involving new construction, reconstruction, retrofitting, repaving, and rehabilitation, and should encourage Open Street events. For assistance or suggestions in terms of how to get started, and logistics, visit Healthiest Practice Open Streets.[31]

Recommendation 3: Improve the reliability of the transit system.

Establish more reliable transit schedules and systems so more people are encouraged to utilize available resources. If the system is on time, and takes you where you need to go, more people will utilize public transportation instead of driving. A successful public transportation system is one of the first steps toward alleviating automobile traffic.

People Oriented Infrastructure

Issue: The Comprehensive Plan could further prioritize alternative modes of transportation.

A specific emphasis on alternative methods of transportation encourages citizens to be more active. The current language on alternative modes contains only generic guidelines and recommendations.

Recommendation 1: Focus on access for everyone.

Improvements to the existing transportation system should focus on providing access to all commuters and residents in ways that consider age, place, disabilities, and other potential barriers to use. Annapolis must consider where and how health is incorporated into their transportation system to plan for the entire population and not just for a select few.

Recommendation 2: Better maintain infrastructure to improve safety for pedestrians and cyclists.

Road and sidewalk maintenance creates a safer surface and better overall environment for people to bike and walk, and can help avoid accidents caused by uneven pavement and potholes. Improved street maintenance, expanded connectivity and prioritizing infrastructure maintenance will make a difference when people select their mode of transportation.

Issue: Mobility for all modes of transportation is not addressed.

To create a healthy city, automobiles cannot be the only transportation mode considered when making improvements to the City's infrastructure.

---

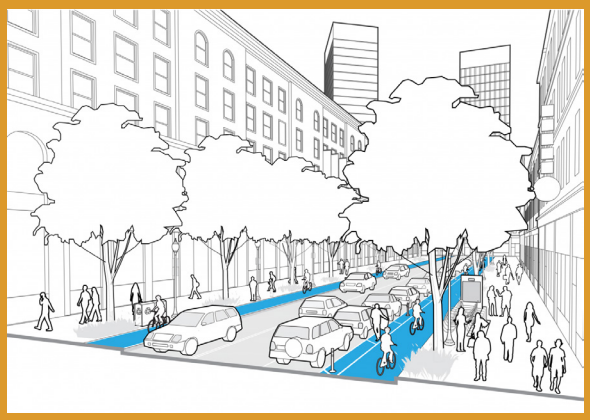
[30] "National Complete Streets Coalition." Smart Growth for America. Accessed August 2017. https://smartgrowthamerica.org/program/national-complete-streets-coalition/what-are-complete-streets/.

[31] "Healthiest Practice, Open Streets," Helping Cities Change Their Culture for Health.

Recommendation: Encourage and increase all modes of transportation.

Walking paths, biking infrastructure, and public transit systems should all be considered in future development.[32] A focus on improving mobility for all modes of travel allows the City to support alternative modes of transportation as being equally important as automobile or transit use. Mobility options will provide a better balance between transportation modes, and in turn, decrease congestion for drivers. When planning new development projects, considerations should include the installation of sidewalks, curb ramps, bike-lane striping, and bike parking.[33] Increasing mobility for all modes helps decrease congestion and increases quality of life by encouraging walking or biking.[34]

Best Practice: City of Boston



A focus on mobility for all modes connects complete streets principles with practical design guidance.

This will be applied to all future street design projects in the City of Boston, and has earned a perfect complete streets score.

Figure 7, City of Boston - complete streets practical design guidance
Source: Jackson, Nick. "National Planning Excellence Award for Boston Complete Streets Design Guidelines." Toole Design Group. April 1, 2015. Accessed August 8, 2017. http://www.tooledesign.com/resources/news/national-planning-excellence-award-boston-complete-streets-design-guidelines

Community Health

Issue: Transportation plans could further emphasize the environmental and health impacts of emissions.

Transportation choices are closely connected to environmental and human health, but current transportation plans don't sufficiently address this connection or aim to reduce the harmful impacts of emissions.

---

[32] Cox, Wendell. "Transportation Policy in Maryland." Transportation Policy in Maryland » Maryland Journal » The Maryland Public Policy Institute. Accessed July 2017. http://www.mdpolicy.org/maryland_journal/detail/transportation-policy-in-maryland.

[33] Merten Nefs, Susana Alves, Ingo Zasada, Dagmar Haase. Shrinking Cities as Retirement Cities? Opportunities for Shrinking Cities as Green Living Environments for Older Individuals. Environment and Planning A 45:6, 2013, 1455-1473.

[34] Jackson, Nick. "National Planning Excellence Award for Boston Complete Streets Design Guidelines." Toole Design Group. April 1, 2015. Accessed August 8, 2017. http://www.tooledesign.com/resources/news/national-planning-excellence-award-boston-complete-streets-design-guidelines.

Recommendation: Closely connect the Transportation chapter to the Environmental chapter

The transportation chapter must be linked to the environmental section of the plan to reinforce the impact of transportation choices on human health and the environment. Parallel efforts should include educating the community members about the impacts of automobile usage and emphasizing why residents should consider alternative modes of transportation, especially for short distances. Beginning these educational sessions with school ages children will encourage kids to use healthier modes of transportation as they age and gain independence.

Plan Chapter 5: Municipal Growth and Community Resources

This chapter outlines areas under consideration for annexation and the opportunity they offer to consider health and the environment when planning for growth. The following recommendations should be incorporated as Comprehensive Plan policies to ensure a focus on healthy community growth.

Issue: Health is not a consideration of growth or annexation.

While annexation criteria are laid out and include the promotion of mixed-use areas, human or environmental health concerns are not considered.

Recommendation 1: Health implications should be formally considered when evaluating potential annexations.

This includes considering the walkability and connectivity of potential annexation areas and the application of smart growth principles. Health assessment tools should be adopted to measure the health impacts of annexation projects as they are for development projects. This includes tools such as health-related checklists for project review, a walkability index as adopted by the City of Alexandria, or a Health Impact Assessment (HIA). An HIA was conducted by Johns Hopkins University for the City of Baltimore zoning rewrite.[35] The state of Oregon also requires municipalities to include health impact assessments within their comprehensive plans.[36]

One metric to consider as a required standard would be a five- to ten-minute walk, or an approximate one-quarter to one-half mile distance, to services, transit, and points of interest for all new development and any annexation projects.

[35] Move This Way: Making Neighborhoods More Walkable and Bikeable. Change Lab Solutions, 2013, 19.

[36] Portland Active Living by Design: Evaluation of Active Living by Design, Portland, Oregon 2003-2008, Transtria, LLC, 2009, 12.

Plan Chapter 6: Recreation & Parks

For more detailed information on the current conditions of park facilities in Annapolis and specific park-related recommendations, see the Parks & Recreational Facilities chapter of this report.

The Parks chapter in the Comprehensive Plan has a clear message of promoting health in Annapolis. The importance of parks and recreation to the health and quality of life of all residents is highlighted in the chapter's introduction. Improvements could be made by including more maps showing public health data, updating park and trails maps to read more clearly, and providing more specific policies and strategies.

According to the Plan, Annapolis satisfied the standard for recommended park acreage per person at the time. Today, the average acreage cited by the National Recreation and Park Association is 9.6 acres per 1,000 residents versus the six acres when the Comprehensive Plan was created.[37] These numbers may continue to change as more municipalities recognize the advantage of open space. Using an acreage standard makes it difficult to plan for the future and also doesn't address the distribution of parks. For example, it doesn't analyze whether some neighborhoods lack pedestrian access to parks, playgrounds, or open spaces.

Active Living

Issue: The Comprehensive Plan lacks specific strategies to expand Recreation and Parks opportunities.

Policy 3 in the Parks chapter focuses on expansion of the park system. Specifically, the City seeks to find "rare opportunities" to bring services to underserved communities, seeking to do so in a sustainable way to avoid an abundance of smaller, low-quality public spaces. The City sees three ways to accomplish park expansion: through redevelopment, annexation, or partnerships with local organizations that have open space resources.

In implementing the Plan, the City has expanded waterfront opportunities by developing street-end parks. Additional park expansion is difficult because undeveloped land is scarce. The following recommendations address specific ways the City can provide recreation and open space opportunities for residents.

Recommendation 1: Require a park or public space, with a playground, within a 10-minute walk of every resident.

Based on mapping, determine neighborhoods with greatest need for access to facilities and prioritize these areas (see Parks chapter for analysis). Montgomery, AL uses pedestrian- shed requirements to fulfill recreation and public space needs, as shown in this excerpt of their zoning code:

[37] "NRPA Agency Performance Review". National Recreation and Park Association. Accessed July 2017. http://www.nrpa.org/publications-research/research-papers/agency-performance-review/.

Montgomery, Alabama Zoning Code[38] (2007):

(a) Each Pedestrian Shed shall assign at least 5 percent of its urbanized area to Civic Space…
(c) Each Pedestrian Shed shall contain at least one main Civic Space. The main Civic Space shall be within 800 feet of the geographic center of each Pedestrian Shed, unless topographic conditions, existing Thoroughfare alignments, or other circumstances require otherwise.
(d) Within 1000 feet of every lot in residential use, a Civic Space designed and equipped as a playground shall be provided.
(e) Each Civic Space shall have a minimum of 50 percent of its perimeter enfronting a Thoroughfare.

Montgomery, Ala., Zon. Code app. C, art. VI, § 10.14.2(2.7.2)(a.-e.)

Recommendation 2: Promote stair use to increase opportunities for physical activity.

Increased stair use is one way to help residents reach daily recommendations for exercise and helps to promote active lifestyles.[39]

Strategies to increase stair use:

- Open public building stairways to the public. Coordinate with the State and County departments to facilitate opening of their public building stairways.
- Provide signage to offices and commercial buildings to encourage stair usage at work.
- Rejuvenate stairways through paint updates and stair treads for safety.[40]
- Encourage new development to highlight stairways, placing them near the main building entrances and close to elevators.[41]

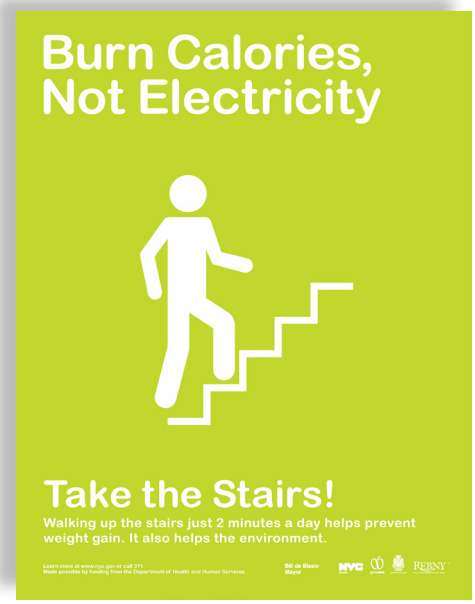


Figure 8, In 2008, the City of New York Health Department began providing stair prompts free of charge to encourage stair usage. Results show a 50% increase in stair use.

Source: Center for Active Design. "Stair Prompt Signage." Accessed August 2017. https://centerforactivedesign.org/stair-prompt.New York City Dept. of Health and Mental Hygiene

Recommendation 3: Open streets for temporary neighborhood play.

Residential permits will allow temporary closure of neighborhood streets for the purposes of play. Streets in historic downtown and at Annapolis Towne Centre can be opened for non-motorized use once a week.

---

[38] Move This Way, ChangeLab Solutions, 44.

[39] Intersections: Health and the Built Environment, Washington, D.C.: Urban Land Institute, 2013, http://uli.org/wp-content/uploads/ULI-Documents/Intersections-Health-and-the-Built-Environment, 47-52, 74.

[40] "Stairwell Appearance," Centers for Disease Control and Prevention, January 6, 2010, accessed August 6, 2017, https://www.cdc.gov/physicalactivity/worksite-pa/toolkits/stairwell/stairwell_appearance.htm.

[41] Intersections: Health and the Built Environment. Washington, D.C.: Urban Land Institute, 2013, 74.

Cities all over the world have enacted play streets. In the U.S., New York City has had play streets since 1914. Recently play streets have received more attention due to the Let's Move campaign, which led to the creation of forty play streets nationwide.[42] 42 Locally, the City of Falls Church implemented a pilot play street program in 2016 and has since implemented "Play Streets Permits."[43]

Figure 9, Alki Avenue play street in Seattle Washington. Source: "Alki Summer Streets 2014." Digital image. City of Seattle. June 2014. Accessed August 15, 2017. http://cosgreenspace.wpengine.netdna-cdn.com/wp-content/uploads/2014/06/AlkiSummerStreets2014.jpg.

Recommendation 4: Coordinate with Anne Arundel County Public Schools and St. John's University to create a joint-use agreement for recreational facilities.

Gaining access to school grounds will provide increased opportunity for physical activity and access to valuable open space. A New Orleans study found that children were 84 percent more likely to play outside in places where school grounds were open versus closed.[44] (For sample joint-use agreements, see the Appendix).

The following aspects of joint-use agreements should be considered:[45]

- Maintenance: Who will be responsible? What are the costs and how are they shared?
- Scheduling: What are the hours? Conditions for use?
- Security: Will cameras or emergency telephones be required?
- Liability: Are Maryland schools protected? If not, joint-use agreements can reduce risks for schools.

Recommendation 5: Include open space requirements in the Subdivision ordinance and define minimums for all residential multifamily dwellings.

Currently, open space requirements are included in planned unit development and multifamily dwellings, not subdivisions. In addition, not all requirements specify a minimum percentage, or definition of use of space (i.e. passive and/or recreational).

---

[42] "Blue Cross and Blue Shield Association Teams with Partnership for a Healthier America to Create New Play Streets across America," Partnership for a Healthier America, July 18, 2012, https://www.ahealthieramerica.org/articles/blue-cross-and-blue-shield-association-teams-with-partnership-for-a-healthier-america-to-create-new-play-streets-across-america-307.

[43] "Play Streets Permit," City of Falls Church Public Works Department. http://www.fallschurchva.gov/1719/Play-Streets-Permit-Pilot-Program.

[44] Active Living Research, "Promoting Physical Activity through the Shared Use of School and Community Recreational Resources," (Robert Wood Johnson Foundation: San Diego, April 2012), 2.

[45] Active Living Research, "Promoting Physical Activity."

A current review of existing standards is listed below:

Annapolis, Maryland Code of Ordinances
Regulations on Common Open Space

Dwelling Unit/District	Amount of Required Common Open Space
Planned Unit Development	20% of total ground area for Residential 5% for Business & Special Mixed
Dwellings, multi-family (BCE District)	Minimum 10% of lot area
Dwellings, multi-family, 6 or fewer units	Passive open space required, no minimum
Dwellings, multi-family, 12 or fewer units	Passive or recreational open space required, no minimum

Universal Design

Issue: Parks and open space policies do not focus on accessibility to all.

To provide access for all residents, portions of parks and open spaces can be made accessible by reducing slopes or providing ramps.

Recommendation 1: Update site design standards for active recreational space.

For example, in Laurel, regulations regarding accessibility appear under standards for dedicated open space in lieu of adequate facilities:

Laurel, Maryland Unified Land Development Code Sec. 20-29.10:

> "(c) Any land to be dedicated as a requirement of this section shall be usable and reasonably adaptable for use for active park and recreation purposed and shall be so located so as to be reasonably accessible to all the residents of the subdivision. Usable within this section means no more than twenty-five (25) percent of the property can be slopes greater than five (5) percent or flood plain or wetlands. Factors used in evaluating the adequacy of the proposed park and recreation areas may include by not be limited to size and shape, topography, geology, vegetation, access, and location. Steep slopes, streams, lakes, watercourses and floodplains may be considered up to twenty-five (25) percent of the recreational land requirement. In all instances, a minimum of seventy-five (75) percent of the recreation land requirements shall be suitable for dry ground recreational use. Seventy-five (75) percent of the dry ground recreation area should not exceed five (5) percent grade."

Plan Chapter 7: Environment

Overall, the Plan's Environment chapter has a clear goal for actions that promote Annapolis as a "Green City," thereby creating a healthier city. There is an overarching vision to preserve the City's natural features and areas and to reduce carbon emissions and energy use throughout the City. The Plan also mentions creating additional parks and recreational space, and expanding options to bike or walk throughout Annapolis.

This chapter also recognizes the importance of educating and including community members in creating a "green" or healthy city. A clear strength of this chapter is the inclusion of policies to realize the listed goals. That there are already programs and organizations established to move towards achieving the listed goals is a further strength. This chapter also identifies the importance of moving away from auto dependency, improving stormwater runoff management, and increasing tree canopy.

Connectivity

Issue: This chapter is disconnected from the other chapters in the Comprehensive Plan.

The Environment chapter can be the bridging chapter in the document because of the other chapters it relates to. It is worthwhile to note where and how it relates to other Plan chapters, in fact, the Environment chapter needs to build on other chapters instead of standing alone.

Recommendation: Acknowledge the interconnectivity of this chapter with the water resource, parks, and transportation chapters.

Interconnectivity can help solidify this chapter, which is unique in that its content connects to some of the Plan's other chapters. For example, transportation affects air quality, air pollution affects water quality, impervious services impact ground water. Also land and water resources, including the Bay area, are managed to restore and maintain healthy air, water, natural systems and resources.

City Partnerships

Issue: A lack of sufficient partnerships and coordination limits available solutions.

Coordinating and enhancing partnerships with private and public organizations would provide more opportunities for identifying and achieving its goals. Partnerships can help reach planning goals efficiently, includes and encourages citizens through the process, and provides stronger solutions and new perspectives.

Recommendation: Encourage partnerships and foster community relationships.

The revised chapter should elaborate on the importance of partnerships and of working with other groups and organizations to achieve the City's specific goals. Private sector, non-county agencies and other governmental personnel should be more encouraged to participate and help achieve these goals.

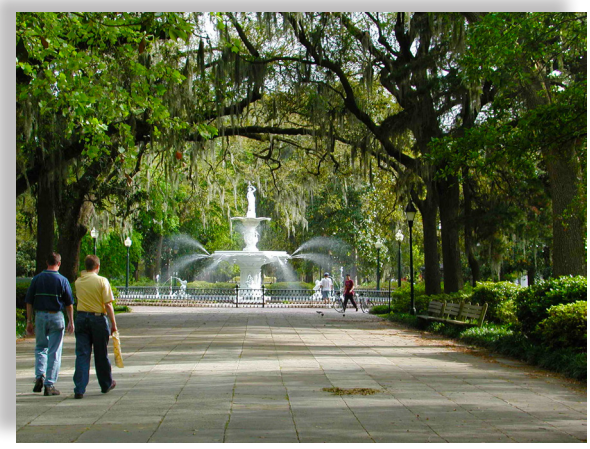


Figure 10, Forsyth Park is a large urban open space area in the downtown historic district of Savannah, Georgia.
Source: Travel US News Travel. Digital Image. Accessed August 15, 2017. http://travel.usnews.com/images/destinations/46/forsyth_park-2015.jpg

Open Space

Issue: Open Space Preservation and Sensitive Development is not addressed as strongly as it should be.

Open spaces provide valuable wildlife habitat and play a major role in the quality of the urban environment and as a result, in the physical and mental health of its residents. Open spaces also help create a sustainable and healthy city, by encouraging people to walk and use the natural features that Annapolis has to offer.[46]

Recommendation 1: Identify and embrace opportunities to preserve open space networks throughout the City.

This includes considering existing tree stands, flood plains, and other natural features as opportunities in redevelopment proposals throughout the City.[47] Examples of Open Space Preservation can be found in Savannah, GA; St. Michaels, MD; and Boston, MA.

In addition, ensure that growth and development fit with the City's natural features. This will help reduce stormwater run-off and related flooding. Investments that aim to increase the percentage of open space should be valued when distributing funding, and when identifying other methods of environmental preservation or enhancement.[48]

Recommendation 2: Take additional actions to prevent degradation of Bay water.

Unique or critical environmental resources should be conserved and preserved in a manner which ensures their protection from adverse impacts. Manage recreational use of the Bay and water in order to prevent degradation of the water and any surrounding natural habitats. Working with the Environment Advisory Board, Environmental Protection Agency, or a local green team to achieve these goals and assist with proper preservation of natural resources.

Plan Chapter 8: Housing

Access to good quality housing within well-designed neighborhoods is important to a community's health. Not only does the quality and maintenance of housing affect physical health, environmental design can lead to improved social cohesion and mental health. The Plan's housing chapter highlights the difficulty of finding affordable housing in Annapolis. People who work in Annapolis struggle to find affordable housing in the City, thereby increasing commute times, which can lead to additional stress.[49]

---

[46] "Open Space Strategy," Environmental and Planning Unit, April 2016. Accessed July 2017. http://www.falkirk.gov.uk/services/environment/environmental-policy/open-space-strategy.aspx.

[47] "Forsyth Park | Savannah Georgia | Getting to Forsyth Park | Fountain," Visit Historic Savannah Georgia, September 18, 2015. Accessed August 10, 2017. http://visithistoricsavannah.com/forsyth-park/.

[48] "Open Space Strategy," Environmental and Planning Unit.

[49] Stair, et. al., *How to Create and Implement Health General Plans*, 48.

Beyond affordability, other key issues the City faces include updates to the 40 to 70 year old public and subsidized housing units as well as an increasingly aging population. Current policies focus on efforts to develop low- and middle-income housing and the revitalization of public housing.[50] Strengths include inclusionary zoning and mixed-income development policies that should continue. Future policies can further these efforts and provide specific strategies for safety, respiratory health, social cohesion, and mental health.

Social Cohesion and Mental Health

Issue: The Plan doesn't include policies that support diverse and lively neighborhoods.

Diverse neighborhoods with a variety of housing options are essential for affordability as well as for accommodating different lifestyles and ages. Nationally, there is a trend toward multi-generational households.[51] The City itself has a growing aging population who should have the opportunity to remain in their community.[52]

Recommendation 1: Allow for non-traditional housing types such as homes on narrow lots and accessory dwelling units in the zoning ordinance.

Small or narrow homes can be an option for affordable home ownership and aging in place. For example, Norfolk, Virginia has historically small lots (around 25-feet wide) and provides home plans to assist in the development of these properties.[53] Providing home plans can make it easier for residents and developers interested in these non-traditional housing options.

To encourage infill housing options, Annapolis should develop and implement a strategy to make better use of narrow lots, including evaluating residential district regulations to reduce minimum lot widths to 25 feet for single-family detached dwellings. With the exception of the R1 district, current standards begin at a minimum of 40 feet and go up to 80 feet.

Accessory dwelling units (ADUs) can be controversial, but resident concerns can be mitigated through a variety of zoning tools.[54]

Figure 11, Developments like King Farm in Rockville, Maryland and Kentlands (shown above) in Gaithersburg, Maryland incorporated accessory dwelling units into the initial design.
Source: Dan Reed, . "Kent Square at Selby, Kentlands." Flickr. July 15, 2006. https://www.flickr.com/photos/thecourt-yard/2785561701/in/photostream/

---

[50] *Comprehensive Plan*, City of Annapolis, 105-114.

[51] Coppage, Jonathan, *Accessory Dwelling Units: A Flexible Free-market Housing Solution*, Policy Study, R Street, March 2017, 2.

[52] *Comprehensive Plan*, City of Annapolis, 10.

[53] *Norfolk Narrow Lot House Plan Catalog*, City of Norfolk, Accessed August 2017, https://www.norfolk.gov/index.aspx-?NID=1093

[54] Cobb, Rodney L, and Scott Dvorak. *Accessory Dwelling Units: Model State Act and Local Ordinance*. Washington, D.C.: AARP: Public Policy Institute, 2000

The AARP's *Model Code for Accessory Dwelling Units* outlines a range of considerations from square footage, maximum and minimum dimensions, location, lot size of existing residence, and parking requirements. Providing design guidelines that speak to the character of the neighborhood can also address resident concerns.[55] However, too many restrictions can hamper redevelopment and careful consideration to the amount of restrictions is important to ensure success. (See Arlington Case Study)

Studies in Portland and the San Francisco Bay Area have shown parking impacts from ADUs to be minimal. Results from a 2013 Portland study showed that only one of five ADUs had a car. For units with ADUs, they found an average of 0.46 cars parked on the streets, even though the City does not require an off-street parking space.[56]

Arlington, Virginia is decreasing limitations on ADUs

The City of Arlington has found that its current code, passed in 2009, is too restrictive. Only 20 units have been constructed since its passage. The City is currently working to lessen restrictions to fulfill the goals of its comprehensive plan.

Current Provisions:	*Desired Updates (As of 4/18/2017):*
• Attached unit only	• Allow detached units (setbacks apply)
• Only in R districts, single-family units	• Allow for townhouses
• 50' minimum lot width	• No minimum lot width
• 750 sq. ft. maximum or 1/3 size of house and unit combined	• 35% of gross floor area, 1000 sq. ft. maximum
• 2 occupant maximum	• 3 occupant maximum
• Owned property for at least 1 year	• No longer need to own for 1 year
• Deed covenant required	• Deed covenant not required
• Parking survey required	• No parking survey required, but off-street space is required

Source: City of Arlington, 2017, https://housing.arlingtonva.us/plans-reports/accessory-dwelling-ordinance-update/

Recommendation 2: Promote universal design strategies in new housing and in redevelopment, as well as sidewalk and infrastructure maintenance.

Universal design includes features such as curb cuts, level on-street entrances or ramped entrances, and wider walkways. Interior features include first floor master bedrooms, wider hallways, and grab bars in the bathroom. Though universal design incorporates accessibility standards, it is a design strategy that is accessible to all users of the built environment.[57]

[55] A Guide to Building a Backyard Cottage, Seattle Planning Commission and Department of Planning and Development, 2010.

[56] Coppage, Jonathan, Accessory Dwelling Units, 5.

[57] Intersections: Health and the Built Environment, Urban Land Institute, 36, 52.

When implementing these strategies, concentrate first on areas around senior housing and facilities.[58]

Recommendation 3: Work with the Housing Authority to seek Medicaid funding for health-related services, available to subsidized residents who are elderly or living with disabilities.

In addition to the services listed under Policy 2 in the Plan's Housing chapter, new programs such as early childhood development and job placement, housing transition and sustaining services can be added. These programs can help residents transition to housing and maintain housing, which is important for those managing chronic conditions. The Center for Medicaid & Medicaid Services is also working to provide these programs to the chronically homeless.[59] Any proposals should also consider the location of these services and how residents will access them.

Environmental Exposures

Issue: Health policies relating to the built environment, including air quality, are lacking.

Exposure to lead, mold, insect and rodent infestation can spread disease and cause poor respiratory health including increased allergies and asthma.[60] IIn the United States, on average, 90 percent of time is spent indoors where contaminant concentration is increased two to five times compared to outdoors.[61]

Recommendation 1: Coordinate with the Anne Arundel County Department of Health and the Maryland Department of Housing and Community Development and Department of Health to disseminate information on indoor health hazards such as lead, mold, insect and rodent infestations, and other contaminants.[62]

Inform residents about the Maryland Lead Hazard Reduction Grant and Loan Program that assists homeowners and landlords needing lead abatement services.[63]

Recommendation 2: Limit exposure to second-hand smoke through ordinances that restrict smoking at workplaces and multifamily housing.

Figure 12, High Point, a Seattle Housing Authority community, was redeveloped in 2000.

Source: Seattle Housing Authority, "Vegetated and Grassy Swale." Digital Image. Accessed August 2017. https://www.seattlehousing.org/about-us/redevelopment/high-point-redevelopment/sustainable-design.

[58] Stair, et. al., How to Create and Implement Health General Plans.

[59] Wachino, Vikki, "CMCS informational Bulletin," Department of Health and Human Services, Centers for Medicare & Medicaid Services, https://www.medicaid.gov/federal-policy-guidance/downloads/CIB-06-26-2015.pdf, June 26, 2015.

[60] Stair,et. al., How to Create and Implement Healthy General Plans, 47-8, A3

[61] Intersections: Health and the Built Environment, Urban Land Institute, 47.

[62] Ricklin, et. al., Healthy Planning, 16-18.

[63] Maryland Department of Housing and Community Development. Lead Hazard Reduction Grant and Loan Program. http://dhcd.maryland.gov/Residents/Pages/lhrglp/default.aspx (accessed August 6, 2017).

This recommendation relates to outdoor air quality surrounding homes and workplaces. A policy to limit exposure to second-hand smoke will decrease exposure to contaminants that can cause respiratory disease and cancer.[64]

Recommendation 3: Educate and encourage homeowners and developers to use green building strategies, such as low-VOC materials, increased access to natural light, and efficient heating.[65]

Annapolis has adopted the 2015 International Building, Residential, and Energy Conservation Codes.[66] However, these codes do not include strategies to improve air quality. Adoption of the International Green Construction Code will address indoor air quality issues. [67] Alternatively, the Environmental Protection Agency (EPA) encourages the use of their Indoor airPLUS specifications to supplement existing building codes.[68]

To incorporate these recommendations into Plan strategies for affordable housing development, the City should coordinate with the Housing Authority to incorporate green building standards for future construction of public housing units, and investigate opportunities to include "Breathe Easy" homes for households with health concerns.[69]

Safety and Security

Issue: Current policies include only limited use of further "Natural Surveillance" strategies.

Plan Policy 2.3 supports Crime Prevention through Environmental Design (CPTED) efforts in the redevelopment of public housing. But aspects of CPTED can be implemented, at little cost, prior to redevelopment to increase safety of residents.[70] Updates to the zoning code and the Housing Authority's policies can ensure these principles are put into effect.

The benefits of Crime Prevention through Environmental Design are:[71]

- decreased crime and anxiety from criminal activity
- renewed neighborhoods are open to investment opportunities
- community stakeholders work together and are invested in success

---

[64] Stair, et. al., How to Create and Implement Healthy General Plans, 47-8.

[65] Stair, et. al., How to Create and Implement Healthy General Plans, 47-8

[66] "Annapolis Building Codes," City of Annapolis, Last modified March 1, 2017. https://www.annapolis.gov/924/Annapolis-Building-Codes.

[67] "An Overview of the 2012 International Green Construction Code," International Code Council, 2012. https://www.iccsafe.org/international-green-construction-code/.

[68] "Indoor airPLUS," United States Environmental Protection Agency. Last modified June 9, 2017. https://www.epa.gov/indoorairplus.

[69] Seattle Housing Authority, "Sustainable Design," https://www.seattlehousing.org/about-us/redevelopment/high-point-redevelopment/sustainable-design, 2017.

[70] Shepherd, Tina, Brooke Cranshaw, and Nancy Howard. "CPTED: It's more than just Lighting." U.S. Department of Housing and Urban Development. March 2016. https://portal.hud.gov/hudportal/documents/huddoc?id=CrimePreventEnvironDesign.pdf (accessed August 6, 2017).

[71] Shepherd, Cranshaw, and Howard, "CPTED."

Recommendation 1: Add CPTED principles to zoning for site plan review. Coordinate with the Housing Authority to update their Development Policy to strengthen CPTED principles. Utilize the Annapolis Police Department in implementation process.

CPTED principles can be added to the zoning and subdivision code to enforce its proper use, including review by the police. Additionally, codes should incorporate "natural surveillance" requirements such as buildings and windows oriented toward the street.[72] Locally, Prince George's County currently requires subdivision plans be reviewed by the police departments for compliance with CPTED principles. A health impact assessment is also required:

Prince George's County, MD Subdivision Code[73]

Sec. 27-527.01 – Referral

- Prior to taking action on the Specific Design Plan, the Planning Board shall refer the plan to the Historic Preservation Commission (Part 14) and to all agencies which the Planning Board deems appropriate for review and comment. The agencies shall include all of those whose action is likely to have a substantive effect on the plan under review. The Planning Board shall maintain a list of referral agencies. The plan shall also be referred to:
    1. the Prince George's County Police Department for review and comment. The Police Department may comment on issues relevant to their mission, including opportunities to implement crime prevention measures, and to enhance the safety and security of residents, employees and other users of a project through implementation of the principles of Crime Prevention Through Environmental Design (CPTED); and
    2. the Prince George's County Health Department. The Health Department shall perform a health impact assessment review of the proposed development identifying the potential effects on the health of the population, and the distribution of those effects within the population, including recommendations or design components to increase positive health outcomes and minimize adverse health outcomes on the community.

Recommendation 2: With the Housing Authority, locate community leaders for an Action Team to enact CPTED efforts relating to maintenance and programming.

Foster opportunities to build social capital through community-driven neighborhood improvement projects and programs that provide opportunities for neighbors to interact.[74]

---

[72] Ricklin, A., et. al., Healthy Planning, 18.

[73] Prince George's County, Maryland Code of Ordinances, https://library.municode.com/md/prince_george's_county/codes/code_of_ordinances, August 2, 2017.

[74] Shepherd, Cranshaw, and Howard, "CPTED."

Examples of CPTED community building activities include:

- cleaning up dense vegetation that blocks bike and pedestrian paths
- encouraging community gardens
- programming open spaces with after-school activities

Plan Chapter 9: Water Resources Chapter

This chapter focuses on the protection of the water supply and identifies possible exposures to the Magothy aquifer and possible surface exposures to the Patapsco aquifers. The following recommendations are suggested as updated policies to the Comprehensive Plan.

Issue: Human health is not a focus of this chapter, nor is health addressed in the context of threats to the aquifer.

This chapter does not mention human health, despite the connection between water quality, safety and human health.

Recommendation: Consider human health and environmental implications in water protection and sourcing, in time frame beyond 2040. Consider adding a policy that dedicates a portion of an impact or development fee for additional water protection and infrastructure.

In response to the chapter's mention of possible exposures to the Magothy aquifer and possible surface exposures to the Patapsco aquifers, consider the human health implications of water safety and protection.

Strategies to accomplish this include:

- adding this as a defined goal, under Policy 1: "Protect and Conserve the Existing Water Supply and Distribution Systems."

- supporting healthy planning efforts with an impact or development fee that includes funding for increased water quality testing to continue to ensure the safety of the drinking water and funding for additional public water fountains as pedestrian streetscape amenities to promote increased water intake.

- tying Policy 3: "Maintain Water Resource Management Areas", and the related best management practices and Low Impact Development focus to both human and environmental health efforts, with a goal that water quality is important for public health.

Additional Considerations

Limitations

Due to limited time and the chosen approach, extensive in-depth analysis and research was difficult. The choice to review and provide recommendations for all chapters in the Comprehensive Plan required a broad review of the material. In addition, we were unable to evaluate whether examples of best practices generated successful outcomes for their policies. The majority of Best Practice materials available focused on model language and public health related propositions in other jurisdictions. Little research is currently available on outcomes and effectiveness of these practices. One means of doing such an evaluation would be to contact other jurisdictions that have incorporated health related language and practices to understand successes and challenges.

There were also limitations in the recommendations provided, due to existing conditions in Annapolis. For example, increased mixed-use development in the Upper West Street opportunity area is difficult, as referenced in the sector study, because of the high land cost, the difficulty of assembling large parcels from multiple sellers, lack of incentives for business owners to move, less certainty in development review and requirements for parking and ground-level retail.

Lastly, due to the current organization of the Comprehensive Plan, it was not possible to include health-related policies for health and human services, as well as healthy meeting and business guidelines in our policy recommendations. This limitation is also related to the chosen approach of incorporating health into all policies instead of including an additional health chapter. The "Additional Recommendations" section below provides suggestions for how to resolve this issue in future comprehensive plans.

Future Analysis

With regards to increasing mixed-use within the opportunity areas, a market analysis of the proposed commercial use would help to determine if the retail projections are feasible and how much of the area might transition to residential use in the future. Further research on incentives that can be used to catalyze increased mixed-use is also needed.

As we did not look at the connections to transit, further study on improving and increasing the transit system is needed, so that it provides better alternatives to individual automobile usage and can help to reach the goal of a walkable and bikeable city.

In-depth interviews are recommended with jurisdictions that have implemented various best practices and the policy proposals noted here. Additional information can also be provided to determine ways to overcome community resistance.

Additional recommendations

Rezoning

The topic of health can be incorporated into the purpose section of the zoning code. In addition, as the City seeks to simplify its zoning, unified land development codes could be an additional consideration. Combining codes makes verifying compliance with the Comprehensive Plan easier.[75] Rezoning would also allow the City to evaluate and update its ordinances all at one time.

Parking

Shared parking can be implemented as one part of the solution to the lack of parking in some areas and excessive impervious surface in others, often in close proximity.

Health Assessments and Public Health Data

In addition to conducting a Health Impact and Development Assessment for new development and redevelopment, a citywide Health Impact Assessment could be completed. Alternatively, the U.S. Department of Housing and Development has developed a Healthy Communities Assessment Tool (HCAT), an online tool for cities to evaluate the health of their city in comparison to others.[76]

Begin tracking public health to evaluate how residents' health changes as policies are implemented. Though the data cannot directly be tied to implemented policies, tracking health will help target future policies and see trends over time. The Anne Arundel County Health Department tracks health indicators by zip code. While Annapolis zip codes extend beyond the City boundary, the information can provide an overall evaluation for the City's health.

Structuring the Comprehensive Plan for Health

We were unable to address all aspects of health-related policy including access to health and human services (a category of the APA Evaluation Tool) and healthy meeting and business guidelines. We recommend that future comprehensive plans include health and human services policies particularly for vulnerable populations who may be lacking vehicle or transit access. To do this, an additional "Community Services" element could be added. The Demographics chapter could be incorporated into the Introduction, which would help connect it to the Plan's overall vision.

---

[75] Move This Way, ChangeLab Solutions, 9.

[76] U.S. Department of Housing and Development, "What is the Healthy Communities Assessment Tool (HCAT)?" Office of Policy Development and Research, Accessed August 2017, https://www.huduser.gov/healthycommunities/node/160058.

Implementation

The table below includes a shortened summary of recommendations from the Issues and Recommendations sections. Recommendations focused on the fact that much of the future development will be redevelopment of existing sites. Recommendations also took into account the political feasibilities and realities of the City, but varied between "low-hanging fruit" and those that may be viewed as challenges. They also took into account prior recommendations made in other reports, such as sector studies.

Recommendation	Timeframe	Priority	Responsible Party	Stakeholders	Metric	Impact
Chapter 2: Demographics						
Map data for demographic information	Short	High	Planning & Zoning	City of Annapolis	Number of targeted policies created based on map results	Allows strategically implementation of health-related policies
Convert tables to charts and provide supportive graphics to conceptualize data	Short	Low	Planning & Zoning	City of Annapolis	N/A	Demographic data is easier to understand and trends can readily be seen
Chapter 3: Land Use and Economic Development						
Incorporate comprehensive design standards into a new distinct section within the zoning code	Medium	High	Planning & Zoning	City Government, Business owners, Building owners	Adopted design standards within zoning. Number of new or remodeled buildings following new design standards	Increased continuity of development, streetscape, and street wall
Create additional connectivity through a reduced block size of 200 feet	Medium	Medium	Planning & Zoning	Property Owners of new or redeveloped sites	Adopted zoning change to decreased block size. Number of blocks at 200 feet.	Promote increased walking
Establish connections through larger existing blocks and between targeted cul-de-sacs; promote traditional neighborhood design	Long	Low	Property Owners. Parks could examine securing rights of way.	Developers, Homeowners Associations, Property Owners	Number of additional connections made	Increased Walkability

Adjust zoning to permit higher density in additional areas	Medium	High	Planning & Zoning	Property Owners, Developers	Zoning change adopted, Number of units built	Additional housing choice, reduced sprawl, increased density
Catalyze walkable mixed-use development in the Upper West Street opportunity area	Long	High	Planning & Zoning, including Economic Development Division	Property Owners, Developers, Business Owners	Number of new mixed-use developments	Increased mixed use, reduced automobile reliance and increased active transport
Combine zoning designations under the mixed-use designation	Short	High	Planning & Zoning	Property Owners, Developers, Business Owners	Reduction in the number of zoning designations.	Increased number of areas zoned for mixed-use
Codify the community character designations within the zoning and tie to zoning designations	Short	High	Planning & Zoning	Property Owners, Developers, Business Owners.	Zoning change adopted	Increased number of areas zoned for mixed-use
Move away from auto oriented uses; disallow use such as self-storage as a permitted use within the opportunity areas	Short	High	Planning & Zoning	Potential Business Owners, Developers	Zoning change adopted	More pedestrian-friendly environments
Adopt a zoning ordinance to restrict drive-through restaurants in the opportunity areas.	Medium	Medium	Planning & Zoning	Business Owners	Zoning change adopted	Healthier food options, more pedestrian- friendly environment
Chapter 4: Transportation						
Establish impact fees for any new development	Short	Medium	Planning & Zoning, Property Owners, Housing Authority	Property Owners, New Developers, Business Owners	Adopted impact or development fee and resulting funding	Additional revenue for new sidewalks, bike paths, etc.

Utilize Open and Complete Streets initiatives	Short	High	Planning & Zoning Mayor's Office, ADA Compliance	City Government New Developers	Zoning and comprehensive plan changes adopted	Increased walking and cycling, community building
Better locate crosswalks, pedestrian, pushbuttons, and pedestrian signals to promote walkability and bikeability	Short	High	Planning & Zoning Mayor's Office, ADA Compliance	City Government Property Owners, New Developers, Business Owners Street Users, Pedestrians, Bikers	Zoning and comprehensive plan changes adopted	Increased pedestrian activity, and more balanced transportation usage. Better environment for mental and physical health.
Allow city residents to request bicycle rack installation locations	Medium	High	Planning & Zoning	City Government Property Owners, New Developers, Business Owners, Bike Rack Programs	Zoning change adopted	Increased biking and pedestrian activity. More bike parking opportunities throughout the city.
Use new development as an opportunity to improve sidewalk networks	Medium	Low	Planning & Zoning Mayor's Office	City Government, Property Owners, New Developers, Business Owners Development Users	Zoning change & impact or development fee adopted	Better sidewalks and infrastructure
Consider mobility for all modes	Short	High	Planning & Zoning Mayor's Office, ADA Compliance	City Government	Comprehensive Plan changes adopted	Balance between the modes of transportation, decreased congestion
Connect the transportation chapter to the environmental chapter; educate community members and emphasize why alternative modes of transportation	Short	Medium	Planning & Zoning, Office of Environmental Policy	City Planning	Comprehensive Plan changes adopted Additional Modes of transportation to points of interest	Healthier modes of transportation, Increased public involvement

Increase transit accessibility	Short	High	Planning & Zoning	City Government	Increased ridership and improved rider satisfaction	Reduced automobile usage
Improve road and sidewalk maintenance	Short	High	Planning & Zoning Mayor's Office, ADA Compliance	City Government	Zoning and City Code changes adopted	Influences mode choice
Chapter 5: Municipal Growth and Community Resources						
Formally consider health implications when evaluating potential annexations.	Medium	High	Planning & Zoning	Property Owners, Developers	Distance to services, transit and points of interest for new development and annexation projects	Adherence to the principles of smart growth and healthy communities.
Chapter 6: Recreation and Parks						
Require a park or public space, with playground, within a 10-minute walk of every resident	Short	High	Planning & Zoning	Residents, Recreation & Parks	Number of new parks or public spaces created, Percent of residents served by a park	Greater access to open space and recreational opportunities
Promote stair use	Short	Low	Government offices, Recreation & Parks	City employees and residents	Number of stairways opened, Number of stair prompts distributed, Observed stair usage before and after	Increased physical activity and health
Open streets for temporary neighborhood play	Short	High	Planning & Zoning, Recreation & Parks	City of Annapolis	Number of permits issued, Number of city events held	Increased opportunities to play and be physically active

Coordinate with public schools and St. John's University to create a joint-use agreement for recreational facilities	Medium	Medium	Recreation & Parks, Anne Arundel County Public Schools, St. John's University	Residents, Public Schools, St. John's University, Recreation & Parks	Number of school grounds opened, Hours open to public	Greater access to valuable open space and recreational activity
Chapter 7: Environment						
Acknowledge the interconnectivity of this chapter with the water resource, parks, and transportation chapters	Short	Low	Dept. of Planning, Zoning, Office of Environmental Policy	Users of the public space, Residents, City Staff, Planning department	Comprehensive Plan revisions adopted	Better coordinated policies within the plan
Encourage partnerships and foster community relationships	Short	Medium	Dept. of Planning & Zoning, Office of Environmental Policy	Users of the public space, Residents, City Staff, Planning department	Comprehensive Plan revisions adopted, Number of city events and meeting held	Increased efficiency & citizen involvement
Identify and embrace opportunities to preserve and conserve open space networks	Medium	High	Dept. of Planning, Zoning, Office of Environmental Policy, City Planners	Users of the public space, community members, city staff, City planning department, Parks & Recreation	Increase percentage of open spaces	Preserved natural features, Reduced stormwater runoff
Chapter 8: Housing						
Allow for non-traditional housing types and accessory dwelling units in the zoning ordinance	Medium	Medium	Planning & Zoning, Committee on Aging	City of Annapolis, SustainaFest	Number of accessory dwelling units built, Number of narrow lot homes built	Increased affordable housing and maintained resident diversity
Promote universal design strategies	Medium	High	Planning & Zoning, Housing and Community Development, Mayor's Office, ADA Compliance	Residents	Number of developments built with universal design strategies, Number of infrastructure updates	Increased accessibility in housing and street infrastructure

Work with the Housing Authority to seek Medicaid funding for health-related services.	Short	High	Mayor's Office, Community Resources, Housing Authority, Committee on Aging	Residents of subsidized housing	Number of residents served by Medicaid funded services	Better access to health and human services.
Limit exposure to secondhand smoke through ordinances that restrict smoking at workplaces and multi-family housing	Short	Medium	Planning & Zoning	Residents of multi-family housing, Businesses	Adoption of ordinance limiting smoking locations	Improved air quality and health for multi-family residents and workers in the city.
Coordinate with health agencies in the County and State to disseminate information on indoor health hazards	Short	Medium	Housing and Community Development, Anne Arundel County Department of Health, State of Maryland	City of Annapolis	Number of website visits, Number of packets disseminated, Number of homeowners that received Maryland Lead Hazard Reduction Grant	Improved air quality and health for residents.
Encourage homeowners and developers to use green building strategies	Medium	Low	Planning & Zoning, Office of Environmental Policy, Housing & Community Development	Homeowners, Developers, Future residents	Number of dwelling units built using green building strategies, Types of strategies used	Improved air quality and health, Energy savings, Reduced environmental impact
Incorporate green building standards for future construction of public housing units. Investigate opportunities to include "Breathe Easy" homes for households with health concerns.	Medium	High	Planning & Zoning, Housing Authority	Developers, Current and future residents	Number of dwelling units built using green building strategies, Types of strategies used	Improved air quality and health, Energy savings, Reduced environmental impact

Add CPTED principles to zoning for site plan review; incorporate "natural surveillance" requirements	Short	High	Planning & Zoning, Police	Developers, Residents	N/A	Improved safety and mental health for residents
Coordinate with the Housing Authority to update their Development Policy to strengthen CPTED principles.	Short	Medium	Planning & Zoning, Housing Authority, Police	Housing Authority Residents	N/A	Improved safety and mental health for residents
Locate community leaders for an Action Team to enact CPTED efforts relating to maintenance and programming.	Short	High	Planning & Zoning, Housing Authority	Housing Authority Residents, Parks & Recreation, Police, Local artists, Mayor's Office	Number of Action Team members, Number of programs created and their results, Maintenance completed	Increased sense of community
Chapter 9: Water Resources						
Consider human health and environmental implications in water protection, sourcing, water quality threats.	Medium	High	Planning and Zoning	Users of the public water supply.	Comprehensive Plan revisions adopted	Better coordinated policies within the plan
Consider a policy that dedicates a portion of an impact or development fee for additional water protection and infrastructure.	Long	Medium	Planning and Zoning	Developers	Adopted impact or development fee; resulting funding.	Increased funding for water quality monitoring and public water fountains
Include a goal that states that water quality is important to both human and environmental health.	Medium	Low	Planning and Zonong	Users of the public water supply, citizens.	Comprehensive Plan revisions adopted	Demonstrated commitment to water quality and human and environmental health

Table 2, Implementation
Source: Christine Dunham, Alyssa Kurien, Arica Thornton


NO PARKING LOADING ZONE 15 MIN
Great Expectations

Page Intentionally Left Blank

Chapter 2

Parks

Overview

Parks & Health

Parks and recreational areas are crucial for mental and physical health. It has been repeatedly found that people exercise more when they have access to parks. In a study published by the Center for Disease Control (CDC), the creation of, or enhanced access to, places such as parks brings about a 26% increase in people exercising three or more days per week.[1] Studies have shown that regular physical activity can reduce a variety of health risks such as premature death, heart disease, and non-insulin-dependent diabetes. In addition, parks and recreational areas can relieve symptoms of depression and anxiety by improving mood, which enhances one's overall mental health.[2] A study by Penn State University showed significant correlations between reduced stress and blood pressure and the amount of time regularly spent in parks.[3] Creating a healthy lifestyle through park events and amenities also enhances positive social experiences for residents.[4] They provide opportunities for learning and exploration while creating a sense of community identity and connection to others.[5]

As is mentioned in Annapolis' current Comprehensive Plan (2009), "...when only considering City-owned facilities, Annapolitans have fewer park acres per person (5.7 acres per 1,000 persons) than the recommended minimum national standard (6.0 acres per 1,000 persons)."[6] The Pip Moyer Recreation Center, Spa Creek Trail, and Poplar Trail have been completed since the Annapolis Comprehensive Plan was published. The nationally recommended standard for park space has since increased to 9.6 acres for every 1,000 residents.[7]

For this study, we analyzed gaps between disadvantaged communities and the City as a whole. We also analyzed accessibility to parks, which helped identify areas that lacked parks and/or recreational space. This study also aims to provide the City of Annapolis with approaches for building a stronger network of parks and recreational facilities for resident and visitor use.

---

[1] Sherer, Paul M. "The Benefits of Parks." The Trust for Public Land. 2006. http://www.eastshorepark.org/benefits_of_parks%20tpl.pdf.

[2] Sherer, The Trust for Public Land

[3] "Why Parks and Recreation are Essential Public Services." National Recreation and Park Association. https://www.nrpa.org/uploadedFiles/nrpa.org/Advocacy/Resources/Parks-Recreation-Essential-Public-Services-January-2010.pdf.

[4] Juli Wilkerson, Nancy K. Ousley, Leonard Bauer, Rita Robinson, Jan Unwin, Lorinda Anderson, Jim Eychander, and Susan Enger. "Planning for Parks, Recreation, and Open Space in Your Community." Washington State Recreation and Conservation Office. February 2005. http://www.rco.wa.gov/documents/manuals&forms/CTED-IAC_parks_rec_plan_guide.pdf.

[5] Wilkerson, Planning for Parks, Recreation, and Open Space in Your Community

[6] "Annapolis Comprehensive Plan." October 2009. https://www.annapolis.gov/DocumentCenter/Home/View/1240.

[7] "The National Recreation and Parks Association." Park Facility Charts | 2017 NRPA Agency Performance Review | Research | National Recreation and Park Association. Accessed August 07, 2017. http://www.nrpa.org/publications-research/research-papers/agency-performance-review/park-facilities/.

Approach

Number of Parks and Facilities

There are forty-six park and recreational areas throughout the City of Annapolis, nine of which are county-owned and thirty-seven city-owned. The Poplar Trail and Spa Creek Trail also contribute to the connectivity of park and recreational areas in the City. Seven disadvantaged communities were identified by the City of Annapolis. These disadvantaged areas were compared to park locations and the City as a whole. Figure 1, below, shows the locations of city parks, county parks, city trails, county trails, and the identified disadvantaged communities.

Methodology

Park Inventory
A park inventory was compiled from county and city GIS data, which included all the available information on parks, trails and recreational areas. A combination of Google Maps data and city staff input was used to identify and confirm the types of amenities inside each park. Sixteen different amenities were identified on the inventory list, which mirrored the inventory categories used by the City of Annapolis in their existing parks inventory matrix.

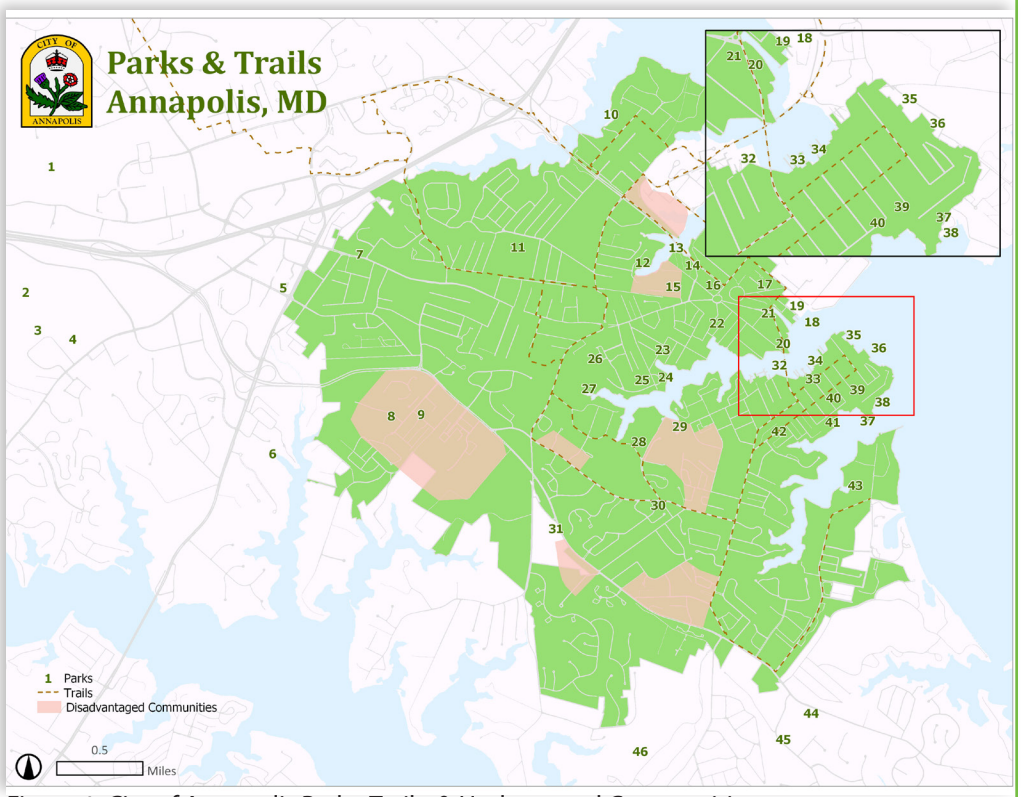


Figure 1, City of Annapolis Parks, Trails, & Underserved Communities
Source: Data was obtained through the City, County ArcGIS's layers and staff input

Facility Gap Identification
We inventoried the amenities/facilities in each park to assess whether there are sufficient facility types available throughout the City. County address point data was used to determine the percentage of city residential addresses within specified buffer distances of each facility type. Baseball fields, basketball courts, outdoor tracks, and playgrounds were assessed.

Accessibility Analysis
An analysis of the level of accessibility to parks was conducted, looking at ¼, ½, 1, and 3 mile distances from parks to the surrounding areas. The ¼ and ½ mile distances represent the typical distance that one is willing to walk to a park or facility, and the 1 and 3 mile distances represent bikeable distances. This analysis assesses park accessibility for both the City as a whole and its disadvantaged communities.

Issues & Recommendations

Parks Map & Matrix

Issue: The current Park Matrix is out of date, and lacks addresses and a clear way to visualize where each park is located.
In addition to the overarching issues, the City wanted us to improve the readability of the park matrix.

Recommendation: Update and distribute Park Map and Matrix for resident and visitor use.
We updated the park inventory through public data that was available. Then we designed an updated park locations map and corresponding parks matrix. Map 2 and Table 1, below, reflect these updates. These maps and tables should be provided in both paper and digital formats to reach all residents regardless of their access to technology.[8]

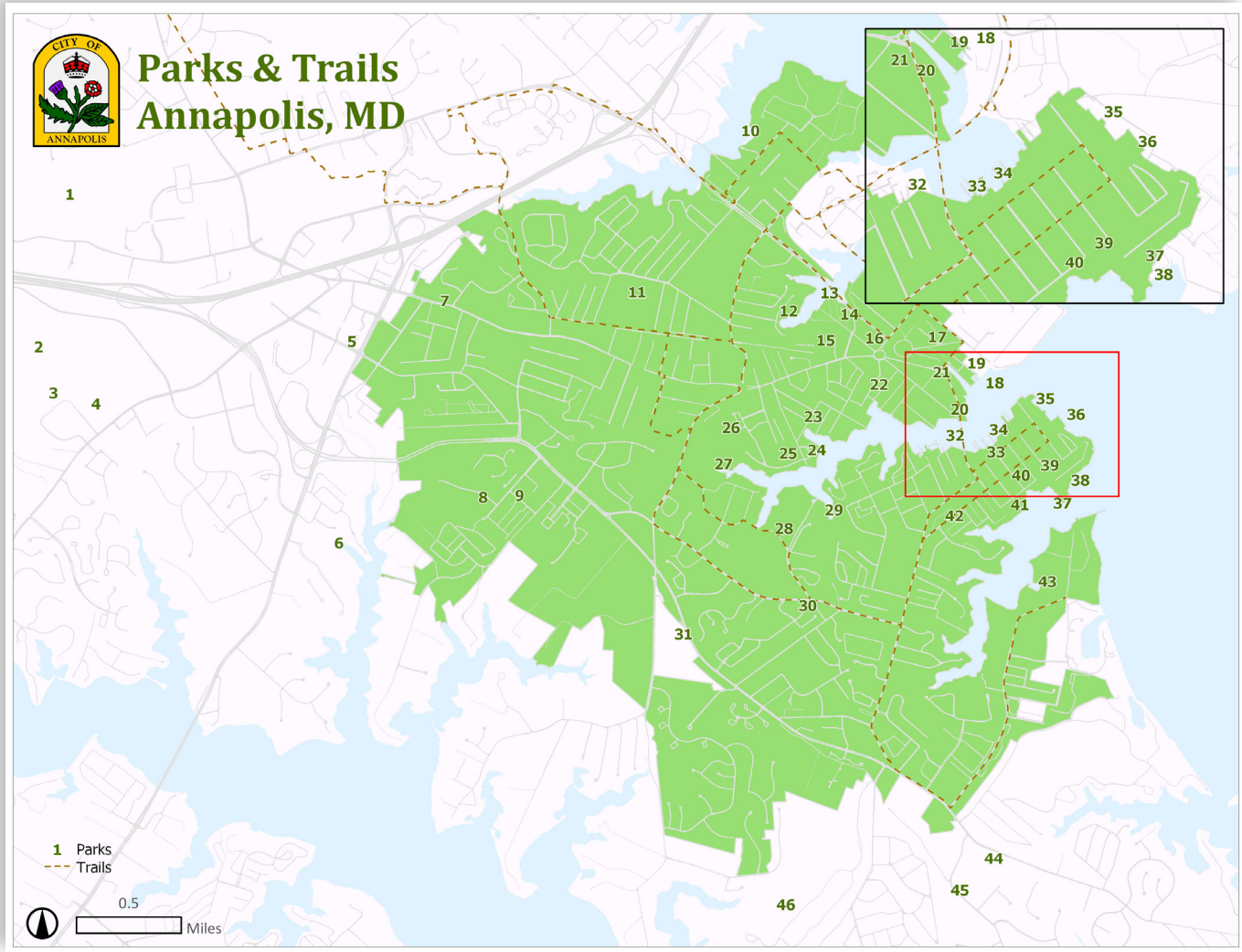


Figure 2, Updated City Park Locations Map
Source: Data was obtained through the City and County ArcGIS's layers

[8] Voight, Alison, Gary Robb, Jennifer Skulski, Deborah Getz, and Debbie Scharven. "Best Practices of Accessibility in Parks and Recreation: A Delphi Survey of National Experts in Accessibility." National Center on Accessibility, May 2008, 9. https://scholarworks.iu.edu/dspace/bitstream/handle/2022/3209/Best%20Practices%20Full%20Report.pdf; sequence=1.

Park Amenities
City of Annapolis, MD

			Restrooms	Playground	Baseball Field	Basketball Court	Multipurpose Field	Tennis Court	Outdoor Track	Hiking	Swimming	Picnic Pavillion	Benches	Water Access	Peir Access	Boating	Floating Dock	Kayak Launch
1	Waterworks Park	260 Defense Hwy	✓							✓		✓	✓					
2	Broad Creek Park	1A Harry S Truman Pkwy								✓			✓					
3	Annapolis High School	2700 Riva Rd	✓		✓	✓	✓	✓	✓				✓					
4	Arundel Olympic Swim Center	2690 Riva Rd	✓								✓		✓					
5	Forest Plaza Parole Green Space	2207 Forest Dr											✓					
6	Homeport Farm Park	11 Home Port Dr		✓									✓					
7	Chambers Park	933 Davis Ln		✓		✓							✓					
8	Kingsport City Park	823 Bywater Rd		✓									✓					
9	Annapolis Walk Community Park	1701 Belle Dr		✓			✓	✓					✓					
10	Tucker Street Boat Ramp	498 Tucker St											✓	✓		✓		✓
11	Annapolis Sports Complex	1411 Cedar Park Rd	✓		✓	✓	✓			✓								
12	College Creek Park	701 Glenwood St											✓	✓		✓		
13	Northwest Street End Park	200 Northwest St											✓					
14	Stanton Community Center	92 W Washington St	✓			✓							✓					
15	Whitemore Park	Clay St & Calvert St											✓					
16	Weisman Park	20 West St											✓					
17	Fleet Street Park	43 Fleet Street											✓					
18	Commodore John Barry Park	60 Prince George St											✓	✓		✓		
19	Susan Campbell Park	110 Dock St											✓					
20 21	Newman Street Park	Newman St & Compromise St		✓		✓							✓					
22	Acton's Cove Waterfront Park	14 N Acton Pl											✓			✓	✓	
23	LaFayette Park	137 Lafayette Ave											✓	✓	✓	✓		
24 29	Hawkins Cove Park	1299 Boucher Ave											✓			✓		
25	Amos Garrett Waterfront Park	10 Spa View Ave											✓	✓	✓	✓		✓
26	Bates Athletic Complex	66 Caraway Ln	✓	✓			✓		✓	✓			✓					
27	Chesapeake Children's Museum	25 Silopanna Rd								✓			✓					
28	Truxtun Park	273 Hilltop Ln	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
30	Primrose Acres Park	91 Edelmar Dr		✓									✓					
31	Annapolis Middle School	1399 Forest Dr	✓	✓			✓						✓					
32	Burnside Park	300 Burnside St											✓	✓		✓		
33	5th St & Spa Creek	301 5th St																
34	Leon Wolfe Park	326 4th St											✓					
35	Severn Ave Park	1 Severn Ave											✓			✓		
36	Horn Point Park	Horn Point Dr & Chesapeake Ave											✓	✓		✓		
37	Annapolis Maritime Museum	723 2nd St											✓	✓	✓	✓		
38	Dick Simms Park	301 1st St											✓		✓	✓		
39	Rev Joseph J. Turner Park	Chester Ave & 3rd St		✓		✓							✓					
40	Davis Park	Chester Ave & 4th St											✓	✓	✓	✓	✓	
41	Sixth and Back Creek Park	6th St & Creek View Ave											✓	✓		✓		
42	Post Office Park	600 Americana Dr				✓		✓					✓					
43	Ellen O. Moyer Nature Park	7300 Edgewood Rd	✓							✓		✓	✓	✓	✓	✓	✓	✓
44	PAL Park	1025 Bay Ridge Rd		✓	✓			✓					✓					
45	Hillsmere Elementary School	3052 Arundel on the Bay Rd		✓		✓							✓					
46	Quiet Waters Park	600 Quiet Waters Park Rd		✓								✓	✓					

Table 1, Updated City Parks Inventory Matrix
Source: Data from https://www.annapolis.gov/DocumentCenter/Home/View/450, and Google Maps

Updated Park App

Issue: Park App does not accurately portray amenities and does not include addresses.
The current park app is not widely publicized, and is not user friendly. People can't route directions to a park and or know what the park looks like through the app.

Recommendation: Update and distribute Park Map and Matrix for resident and visitor use.
To provide the updated park inventory to the public in an interactive and easily accessible way, the city's Park Locator Application has been updated to reflect this new data. This application is accessible on mobile and desktop devices using a web browser. The application can be accessed using the following link: bit.ly/2vG22NN (link is case sensitive).

Park Tour Maps

Issue: No park tour currently exists.
The City has multiple self-guided tours, such as the Historic Annapolis Walking Tour, but there are no park tours or route options provided for bicyclists.

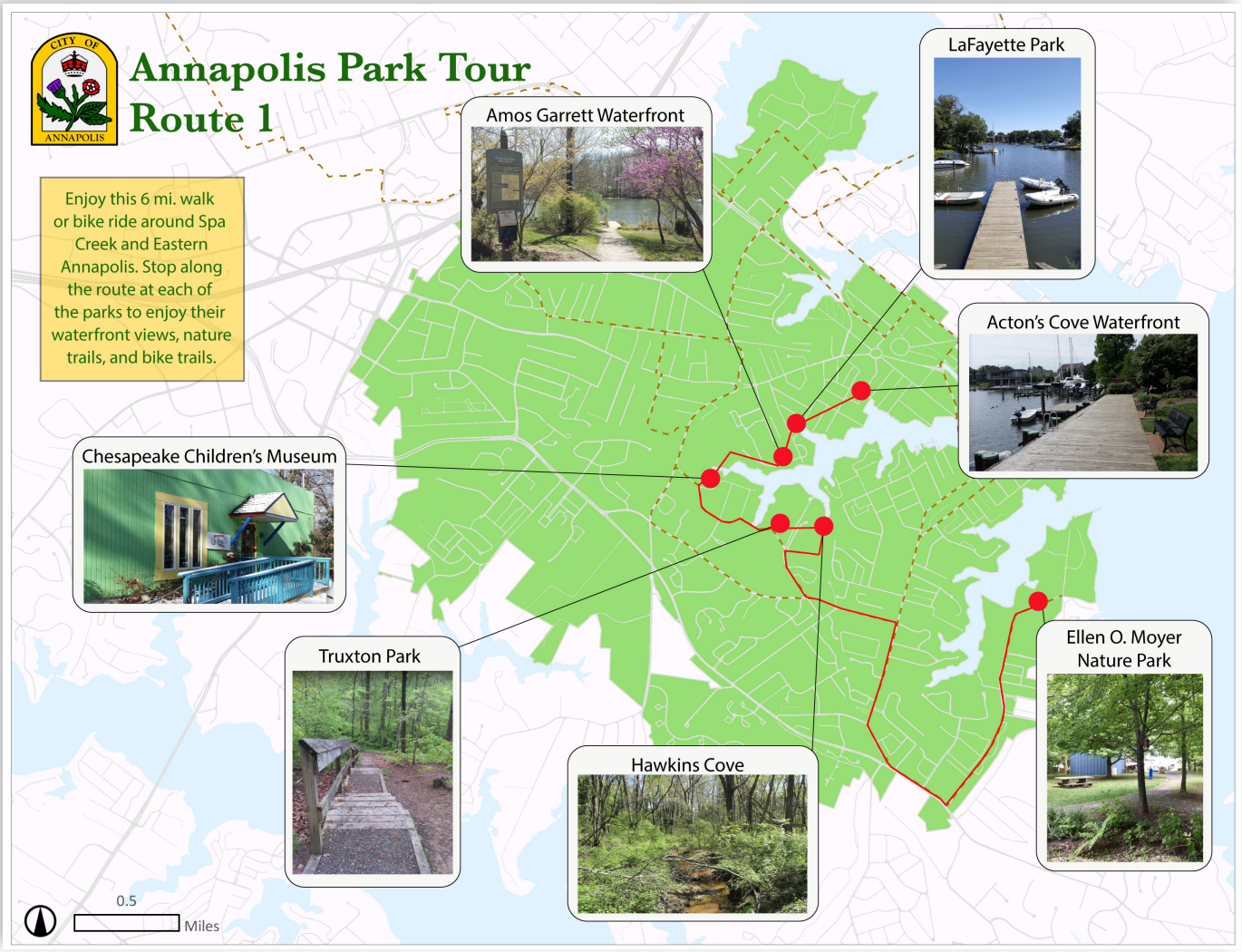


Figure 3, Map of Park Tour Route 1
Source: City ArcGIS Data, County ArcGIS, and Google Maps

Recommendation: Create park tours for residents and visitors to use for recreation and exercise. There are endless park tour routes that could be established throughout the City. We created two park tours as suggested routes for people to follow and tour some City parks and facilities. This encourages residents and visitors to use parks, get outside, and remain active. The routes can be taken by bike or on foot, and the tours can be started at any point along the route. Figures 3 and 4, outline the routes and the parks along them.

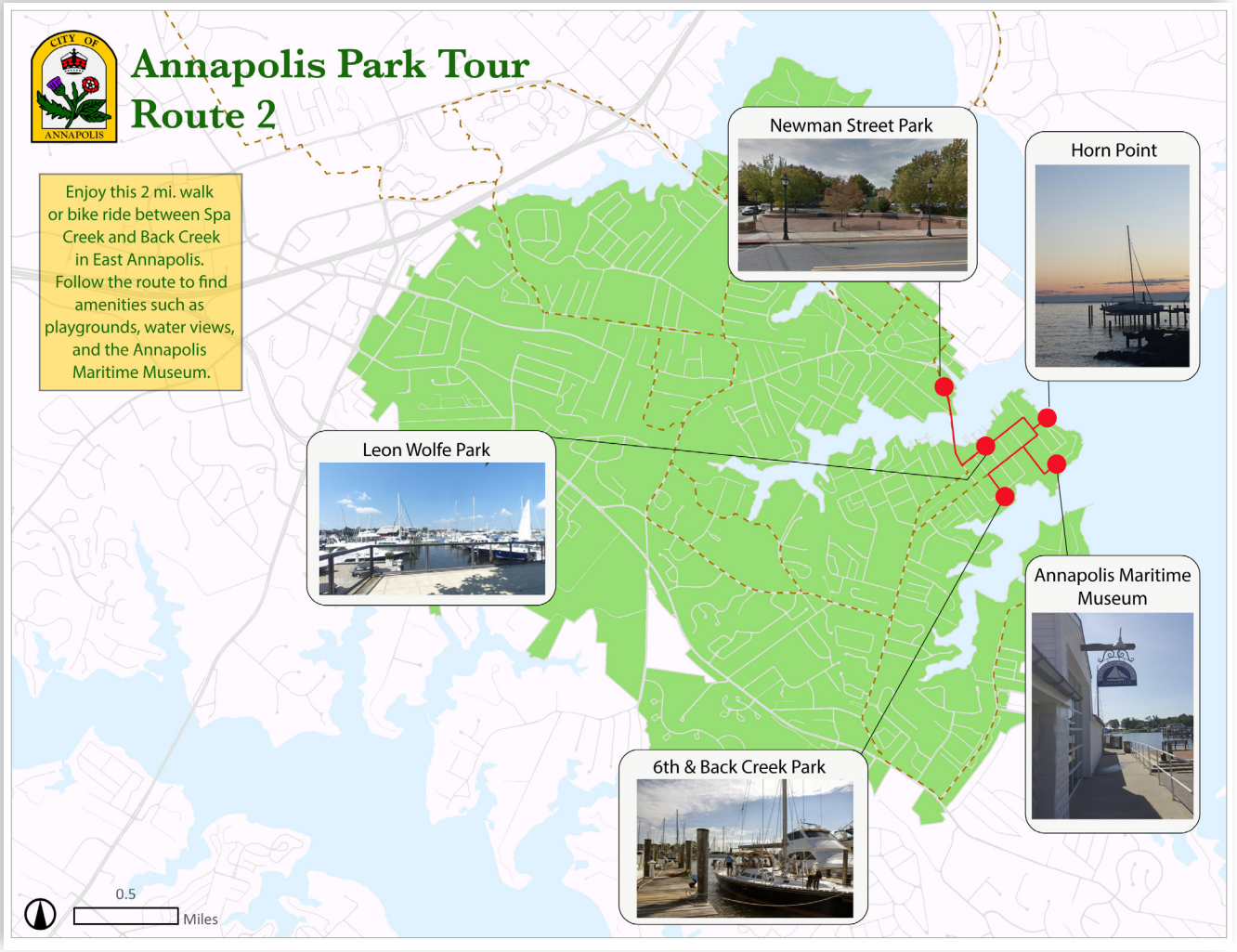


Figure 4, Map of Park Tour Route 2
Source: City ArcGIS Data, County ArcGIS, and Google Maps

Adequate Public Facilities Ordinance

Issue: Current Adequate Public Facility Ordinance lacks definitions of key terms used in Park and Recreation section.

To assess the adequacy of Annapolis' Adequate Public Facilities Ordinance (APFO) in the City's Zoning Code, APFOs from three other Maryland cities were assessed and compared to that of Annapolis. The cities of Laurel, Taneytown, and Mount Airy were selected because each are located in Maryland and each provide a specific section within their Adequate Public Facilities Ordinance related to parks and/

or recreational facilities and/or open space. The three cities were compared to the City of Annapolis to identify deficiencies and strengths of each. Each Adequate Public Facility Ordinance was assessed in regards to the following categories:

1. Definition of APFO Intent/Goals/Purpose
2. Definition of "recreational facilities"
3. Definition of the "adequacy" of parks/recreational facilities/open space
4. Identification of Department Responsible for assessing adequacy of facilities
5. Allowance of developer mitigation fees and/or building of additional facilities in order to offset areas determined to be inadequate
6. Requirement of a Fiscal Impact Analysis
7. Option for assessment of anticipated future improvements for proposed development
8. Open Space Requirements

Recommendation: For each of the topics, the recommendation is listed in the green column on the right on the following pages

Findings from the comparison are outlined in the table below, followed by a comprehensive list of recommendations for improving the City of Annapolis' APFO related to parks, recreation, and open space to ensure that the health of residents is considered all future development and redevelopment.

Define Intent of the APFO		
Annapolis	*The purposes of testing for and certification of Adequate Public Facilities are to:* *1. Assure that development and redevelopment occurs in concert with the Capital Improvement Program and will enable the City to provide adequate public facilities in a timely manner and achieve the growth objectives of the Comprehensive Plan as defined in Title 21.* *2. Assure that proposed development protects the public health and safety, promotes the general welfare of the community, and conserves the environment.* *3. Assure that proposed development fits harmoniously into the fabric of the community.* *4. Encourage new development to occur in areas of the City where public facilities are being provided.* *The goal of adequate recreational facilities is to ensure that proposed projects contribute to and are served by adequate recreational facilities.*	The City of Annapolis clearly outlines the purpose of the APFO as a whole, however the purpose identified for the recreational facilities section is redundant of the title and should be more clearly stated. The statement could be altered to include language highlighting the importance of parks and recreational facilities and why adequacy standards are needed.
Laurel	*It is the intent of this section that public facilities and services should be adequate to preclude danger or injury to the health, safety and welfare and excessive expenditure of public funds unless mitigated by funding requirements for specific public facilities, or the provision of equipment, services, or other means to provide for the inadequate public facilities concluded by the fiscal analysis provided by the applicant or determined by the Planning Commission.*	

Define "Recreational Facilities"		
Annapolis	*"Facilities" means:* *1. Public facilities provided, managed or within the exclusive control of the City of Annapolis and includes:* *a. Fire, rescue, emergency medical and fire inspection services;* *b. Police protection;* *c. Public maintenance services;* *d. Water and sewer services;* *e. Recreational facilities;* *f. Non-auto transportation;* *g. Stormwater management;* *h. City roads.* *2. Public schools managed by the Anne Arundel County Board of Education.*	Annapolis defines "facilities," however not "recreational facilities" specifically. This leaves ambiguity in what is inclusive of recreational facilities--such as private gyms, pools, community centers, etc. A specific list of what is considered a recreational facility should be outlined.

Define "Adequacy" of Parks/Open Space		
Annapolis	*"Adequacy" means that adequate facilities exist or are expected to exist to serve existing development and the proposed project. "Inadequacy" means that adequate facilities are not currently available to serve existing development and the proposed project.* *The standards required to be promulgated pursuant to Section 22.08.010, shall include but not be limited to:* *1. One thousand square-feet of public recreational space per each single-family detached dwelling unit, seven hundred fifty square-feet of public recreational space per each single-family attached dwelling unit, and five hundred square-feet of public recreational space per each multifamily dwelling unit, two-family dwelling unit, or dwelling unit above the ground floor of nonresidential uses, within such proposed project or within a public recreational facility within one-half miles of the proposed project* *2. The fees in lieu of the provision of such public recreation space; or* *3. A combination of the above.*	Annapolis does a good job of identifying adequacy standards for recreational facilities, however fails to identify what in-lieu fees would be sufficient in order to offset inadequate facilities resulting from new development.
Taneytown	*If the Commission determines that all City and regional park facilities are adequate to provide recreational opportunities for the new development, considering:* *[1] Existing population from existing homes;* *[2] Projected population from future building from residences under construction or recorded lots from previously approved preliminary plans for which a permit could be issued at any time in the future;* *[3] Projected population from the new development; and* *[4] Open space and recreational facilities to be provided, on- or off-site, by the developer.*	

Mount Airy	*Parks and open space provisions are adequate if the Parks Department certifies that the ratio of parks and open space acreage to population will meet or exceed at least three acres per 100 persons, considering:* *(a) Existing population from existing homes;* *(b) Projected population from future building from residences approved at the preliminary plan stage;* *(c) Projected population from future building from residences under construction or from recorded lots from previously approved preliminary plans for which a permit could be issued at any time in the future;* *(d) Projected population from residents in the proposed development project.*	

Identify Responsible Department		
Annapolis	*The Director of Recreation and Parks shall be responsible for review and assessment of a proposed project with regard to the adequacy of recreational facilities.*	Annapolis sufficiently identifies the responsible department for identifying recreational facility adequacy for applicants.
Taneytown	*In reaching its conclusion as to adequacy of park facilities, the Commission shall consult with the Department Head of Parks and Recreation, designated staff and/or the Parks and Recreation Advisory Board, as appropriate.*	

Allow for Developer Mitigation Fees and/or Developer Building of Additional Infrastructure/Facilities		
Annapolis	*The fees in lieu of the provision of such public recreation space*	Annapolis fails to identify what in-lieu fees would be sufficient in order to offset inadequate facilities resulting from new development.
Taneytown	*Mitigation through capital improvement plan. The developer or applicant whose plan is subject to denial or delay under this article shall have the opportunity to provide infrastructure funds, improve facilities directly with City approval, or donate necessary public facilities in order to improve the adequacy of public facilities and permit consideration for approval or delayed approval, as appropriate.*	
Laurel	*In-lieu of requiring an applicant to construct or pay the cost of construction of public facilities in connection with the proposed subdivision in situations in which it would not be equitable to impose the entire cost on the applicant because of the limited impact of the proposed subdivision or development on those public facilities, the Planning Commission may require the applicant to pay a fee, or other contribution to the City based on an equitable allocation or apportionment that the proposed subdivision or development proposed would have on those public facilities. The amount of any such fee shall bear a reasonable relationship to the anticipated impact of the proposed subdivision or development on public facilities. Such fees shall be paid to a fund specifically designated for public facilities, and such fund may only be used by the City for such purposes. Such fees may be in addition to the payment of impact fees as provided for by the Mayor and City Council.*	
Mount Airy	*Mitigation through capital improvement plan. The developer or applicant whose plan is subject to denial or delay under this article shall have the opportunity to provide infrastructure funds, improve facilities directly with Town approval, or donate necessary facilities in order to mitigate the existing inadequacy of facilities and permit consideration for approval or delayed approval, as appropriate.*	

Require a Fiscal Impact Analysis		
Annapolis	*N/A*	The City of Annapolis does not require a fiscal impact analysis, which is found in the APFOs of both the City of Laurel and the City of Mount Airy. Such a requirement allows the city to consider the revenue expected to be generated from new development in order to determine if the newly generated revenue could fund the facilities needed to bring an area to a level of sufficient adequacy.
Laurel	*A fiscal impact analysis which shall include anticipated revenues and costs for government services, capital improvements to be provided by the developer and government agencies, staging of development, and staging of programmed facilities.*	
Mount Airy	*C. If a financial analysis demonstrates that revenue, including but not limited to tax revenues and impact fees, considering existing sources as well as that to be generated from the proposed development project, would be sufficient to permit improvement for police and fire and rescue services to an adequate level of services, the preliminary plan may be conditionally approved. In that event, final plan approval shall be deferred for at least six months and until such time as the analysis demonstrates that improvement to an adequate level of services can be accomplished.* *D. If a financial analysis demonstrates that revenue, including but not limited to tax revenues and impact fees, considering existing sources as well as that to be generated from the proposed development project, would be available for a specific capital improvement and would be in sufficient amount to allow improvement to a higher service level within two years from the date construction is scheduled to begin, the preliminary plan may be conditionally approved in part, deferring a final decision of the adequacy of facilities for up to three years pending reconsideration of the adequacy of facilities.*	

Assess Anticipated Future Improvements from Proposed Development		
Annapolis	*N/A*	The City of Annapolis does not explicitly state that future facility improvements from proposed development, within a specified timeframe cannot be considered sufficient for providing adequate facilities. Similar to the fiscal impact analysis, if it is determined that the proposed development will result in improvements extensive enough within a specified timeframe, then a conditional approval could be made.
Taneytown	*If the Commission determines that all City and regional park facilities are not adequate to provide recreational opportunities for the new development, but new facilities are planned to be opened within the City, or are planned by the developer, on- or off-site, which will result in facilities which are adequate within three years from the date development begins, considering:* *[1] Existing population from existing homes;* *[2] Projected population from future building from residences under construction or recorded lots from previously approved preliminary plans for which a permit could be issued at any time in the future; and* *[3] Projected population from the new development.*	
Mount Airy	*If a facility is deemed inadequate or approaching inadequate but is scheduled to be improved to provide a higher service level under any relevant capital improvement program of the Town, state, county or any relevant agency within six years from the date of submission of the plan for the proposed development project, the Planning Commission may conditionally approve the proposed development project but defer a final decision of the adequacy of facilities for up to three years pending reconsideration of the adequacy of facilities.*	

Open Space Requirements		
Annapolis	*N/A*	The City of Annapolis does not reference any requirements for open space. Since "recreational facilities" is not defined, it is not clear as to whether the category of "open space" would fall in that category. Should open space not be included in this definition, an additional section to set adequacy standards for open space would provide great value to the wellbeing of the City of Annapolis
Taneytown	*All subdivisions shall dedicate and convey to the City without charge for use as common open space 10% of the net project area and/or pay a fee in lieu thereof, as set forth in Chapter 82, Building Construction and Fire § 82-8, Open space impact fee. For purposes of this section, "net project area" shall include the total acreage of the property, less the amount of acreage required for the construction of roads, rights-of-way, public utilities, and stormwater management facilities. The determination between dedication of common areas and/or payment of assessment shall be made by the City for each subdivision on a case-by-case basis. To the extent that the City shall determine to charge fees, the same shall satisfy the requirements of § 82-8. In determining whether to require open space or payment of the fee, the City shall determine the need for parks and recreational sites. All open space shall have access to a street in fee simple and be reasonably located to be accessible to the neighborhood. In all instances, a minimum of 85% of the open space shall be suitable for dry ground active recreational uses. The City may require the developer to make adequate provisions for maintenance of the open space. No open space so dedicated may be used for purposes of a deforestation or reforestation without the prior approval of the Commission.*	

We identified the following updates to Annapolis' Adequate Public Facilities Ordinance that could be incorporated to make the language more inclusive of health and fitness, as well as to ensure that future development encourages healthy lifestyles:

1. More clearly define the purpose of the Recreational Facilities section, as in Laurel.

2. Clearly indicate what is included in the category "recreational facilities" by listing what falls in this category.

3. Provide in-depth explanations and specifications of developer in-lieu fees, as well as the facility improvements to be made with the collected fees, as in Taneytown.

4. Assess anticipated improvements from new development that could result in new recreational facilities from generated revenue, that could constitute the approval of a development despite there not being adequate facilities at the time of approval, as is done by both Taneytown and Mount Airy.

5. Specify requirements for open space within the City apart from the requirements for recreational facilities, as in Taneytown's Adequate Public Facilities Ordinance.

Facility Gaps

Issue: There is no current analysis of Facility Gaps.

Without completing an analysis, the City can't easily identify areas lacking specific facility types.

Recommendation: Analyze facility gaps in the City

A facility gap analysis was completed and Table 2, below, provides the findings of this analysis. The findings for Annapolis have been compared to facility standards created by the National Park and Recreation Association for cities with between 20,000 and 49,999 residents. When comparing the City to the National Recreation and Park Association (NRPA) standards, Annapolis has a sufficient number of baseball fields and playgrounds, and an above average number of outdoor tracks and basketball courts.

Number of Residents Per Facility		
	Annapolis	NRPA Standard
Baseball Field	5,549	5,509
Basketball Court	4,855	6,875
Outdoor Track	38,841	29,569
Playground	3,237	3,010

Table 2, Annapolis Facility Gap Identifications
Source: Annapolis population and National Recreation and Parks Association

Accessibility Analysis

Issue: There is no current analysis of accessibility to parks in the City of Annapolis.

Without completing an analysis, the City can't identify the city's level of accessibility to parks.

Recommendation: Analyze accessibility to parks by comparing disadvantaged communities and the city as a whole.

An analysis was conducted to determine accessibility to parks and facility types. Table 3, below, provides the findings of this analysis. The table identifies the percentage of housing units located within a specified distance to provide a clear picture of what facilities are lacking in accessibility for walking and/or biking. The table provides findings for both the entire city as well as disadvantaged communities. Overall, housing unit access to parks is low under a mile, while almost all housing units have access to parks within 3 miles. When looking at individual facilities, disadvantaged communities have very low to no access to baseball fields or outdoor tracks within a half-mile. Disadvantaged communities, when compared the rest of the City, have a higher percentage of access to parks, basketball courts, and playgrounds. This analysis helps the City identify and take the next steps to increase accessibility for residents and visitors.

Housing Unit Access to Parks & Facilities				
Parks	**0.25 mi.**	**0.5 mi.**	**1 mi.**	**3 mi.**
City of Annapolis	26%	55%	86%	99%
Disadvantaged Communities	35%	61%	90%	99%
Baseball Field				
City of Annapolis	2%	13%	40%	98%
Disadvantaged Communities	0%	3%	27%	99%
Basketball Court				
City of Annapolis	10%	36%	74%	100%
Disadvantaged Communities	23%	54%	87%	99%
Outdoor Track				
City of Annapolis	1%	3%	14%	90%
Disadvantaged Communities	0%	0%	6%	99%
Playground				
City of Annapolis	9%	25%	61%	98%
Disadvantaged Communities	19%	39%	85%	99%

Table 3, City Park Accessibility Analysis by Distance
Source: City and County Arc GIS data

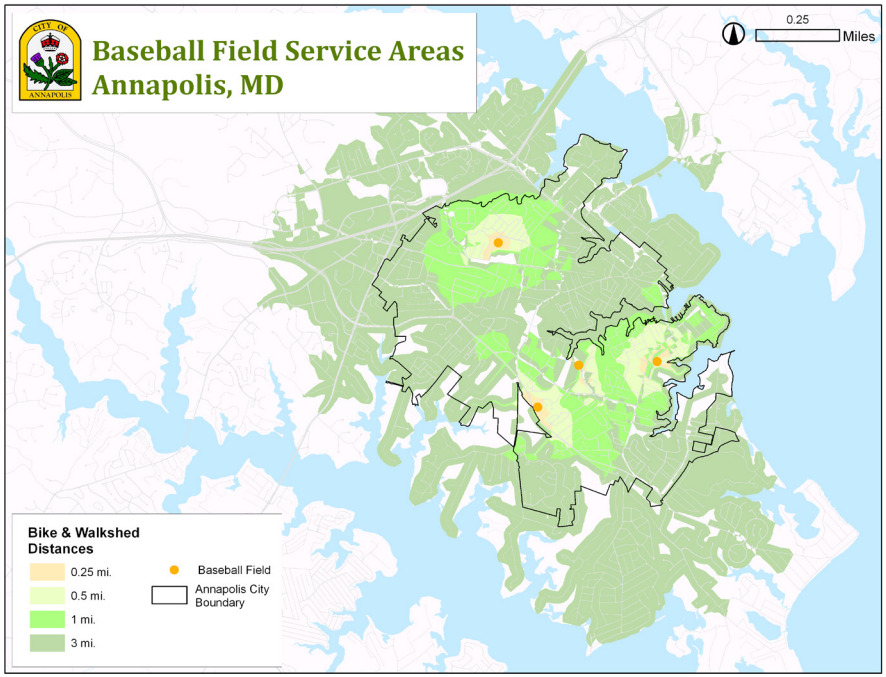


Figure 5, Map of City Baseball Field Accessibility
Source: City and County ArcGIS Data

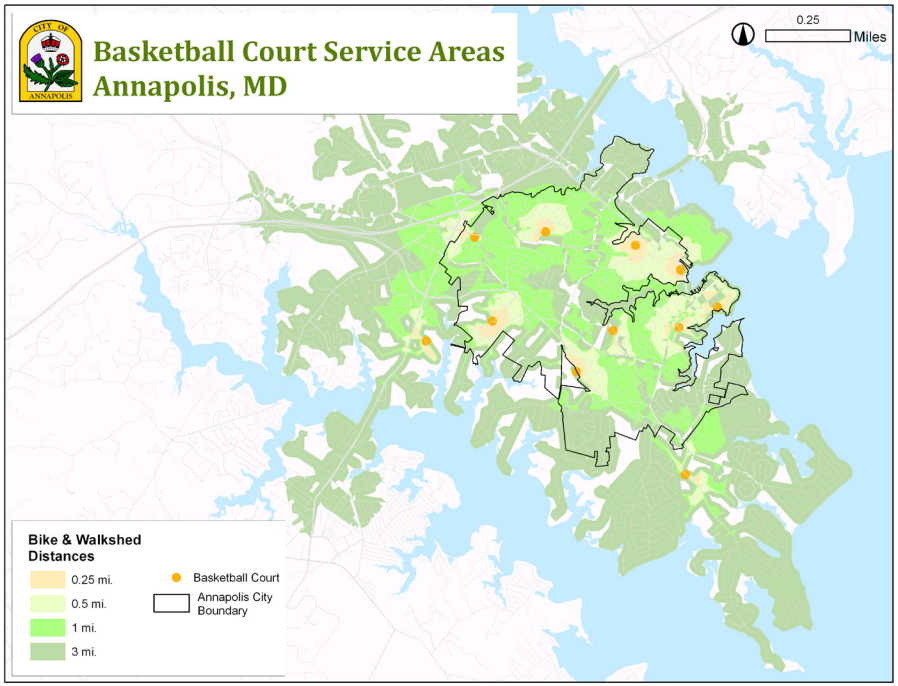


Figure 6, Map of City Basketball Court Accessibility
Source: City and County ArcGIS Data

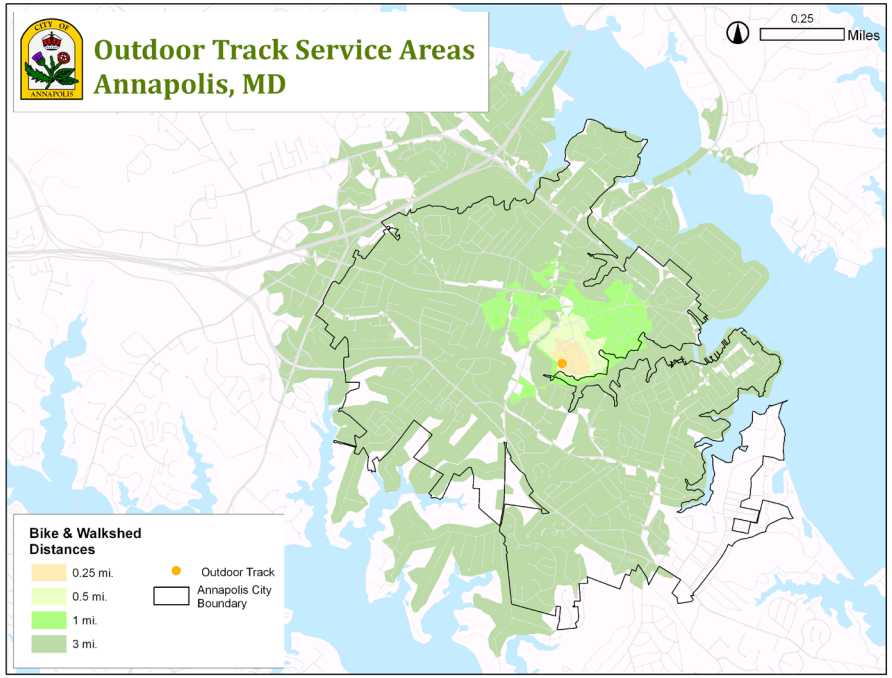


Figure 7, Map of City Outdoor Track Accessibility
Source: City and County ArcGIS Data

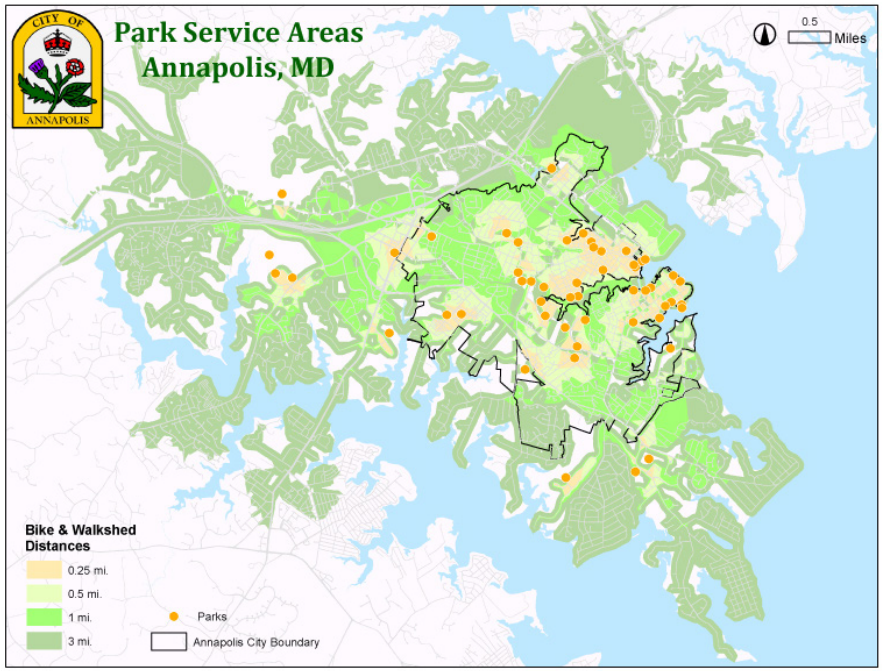


Figure 8, Map of City Parks Accessibility (all parks in city)
Source: City and County ArcGIS Data

Additional Considerations

Limitations

Time constraint on conducting an in-depth, in-person inventory
This creates greater room for errors in the inventory that can only be addressed through physical visits to the parks. The City should conduct a full in-depth, in-person inventory of all parks, facilities, and amenities. To develop the most accurate representation of their parks, facilities, and amenities, Annapolis should conduct a full inventory of City facilities.

Residential location data was not available
Since residential locations were unavailable, the accessibility analysis relied on residential unit data, rather than locations of residents. The number of residents within a specified distance of parks and facilities could not be identified. Rather, the number of units within a distance was calculated. It is recommended that the City update this accessibility analysis with accurate locations of residents, or by using an estimate of the number of residents per housing unit, to more accurately identify the number of residents who have access to City parks and facilities.

Lack of access to privately owned parks and facilities data
Resident access to private parks and recreational facilities could not be determined or incorporated into the analysis since there was no data to reference. However, when assessing the level of service of a city's parks and recreational facilities, typically only public spaces are considered, as private areas are only accessible to certain portions of the population. Incorporating private parks and facilities into the analysis could lead to a false representation that residents have greater access to parks than is actually the case. Creating an inventory of privately owned parks and facilities could help the City get a better idea of what they currently have, and what privately owned parks and facilities will work well in the City in the future.

Future Analysis

The following points suggest future analysis that would build on this study and further inform the City of the current conditions of their parks. These are the most valuable improvements that could be made using the least resources.

- Field-audit parks and facilities to create a more comprehensive inventory list, as well as an assessment of the state of the facilities (i.e. - poor, satisfactory, good) to further assess how well residents are being served.
- Use current conditions by facility and demographic group to project future demand for type (not just number) of facilities/offerings, through projecting future trends and uses.
- Use the parks inventory to conduct a Park Condition Analysis which is then used to create a priority list of parks and facilities maintenance/renovations based on their condition.
- Create an inventory of private parks to further assess resident access to parks and recreational facilities.

- Assess the City's average spending per resident on parks and facilities and compare with the National Recreation and Park Association's standards.
- Request a free, official ParkScore from the Trust for Public Land to receive a nationally-recognized score for park level of service
- Survey residents to identify areas where parks and amenities are lacking.

Additional Recommendations

Park Signage

Residents and visitors don't have clear direction on inding parks in the City. Residents without internet access may have a difficult time locating parks. In addition, visitors who are not aware of other resources may rely on signage to help direct them to the parks. The City should place park kiosks at street end parks and trails and increase wayfinding signage. In order to highlight the existence of parks and their amenities, it is recommended that the City of Annapolis erect public information kiosks at some or all city parks and trails. These information kiosks would display a map of the city park locations and recreation areas, available amenities, and/or upcoming park events. The aim of this information would be to encourage residents to visit parks and increase community engagement. Additionally, improving informational and wayfinding signage will increase the ease at which residents can navigate to and from parks.

Figure 9, Park Signage
Source: Shelley Signs. Digital Image. ShelleySigns. Accessed August 13, 2017 http://www.shelleysigns.co.uk/overview/information-signs

Enlisting local community members, volunteers, and scout groups to help design, build, and install these signs can reduce costs for the city while at the same time contribute to enhancing the parks and community engagement efforts.

Adopt a Park/Spot Program

There is currently no Adopt a Park/Spot Program in the City of Annapolis. The city has expressed lack of funding for parks and recreational areas, which contributes to parks not being well-maintained and has the potential to fall into disrepair. The City should establish an Adopt a Park/Spot Program. For the City of Annapolis, the intent is to focus predominantly on the street end parks. Maintenance could be provided by volunteers such as local landscape companies, volunteer groups or organizations, or local businesses that would help maintain street end parks through cleanups, and regular maintenance such as pruning trees or planting. Establishing partnerships with numerous organizations throughout the City and County will help to combine efforts and resources in order to make the greatest impact at a lower cost.[9]

[9] Collins, Edward J. "Organizational Assessment of the Parks and Recreation Department: Jamestown, RI." University of Massachusetts Boston ScholarWorks at UMass Boston, November 2013, A-19-28. http://scholarworks.umb.edu/cgi/viewcontent.cgi?article=1029&context=cpm_pubs.

Best Practice: Montgomery County & City of Laurel

Montgomery County and the City of Laurel, in Maryland have implemented a park/spot adoption program.

Montgomery County's program helps to pick up trash in different areas throughout the county, such as at parks, landmarks, and trails.

Montgomery County provides supplies for cleaning the parks as well as a sign to recognize the organization or company providing the services to that area.[10]

The City of Laurel provides a similar program that gives scout groups, families, community groups or individuals the opportunity to get involved with park enhancement projects through the adoption program.[11]

Figure 10, Adopt a Spot
Source: Adopt a spot program. Digital Image. MountgomeryCountyMD. Accessed August 13, 2017 https://www.montgomerycountymd.gov/dot-dir/AdoptARoad/AAS.html

[10] Adopt A Spot Program. Accessed August 07, 2017. https://www.montgomerycountymd.gov/dot-dir/AdoptARoad/AAS.html.

[11] "Adopt-a-Park Program." City of Laurel, Maryland. September 24, 2015. https://www.cityoflaurel.org/parks/facilities/adopt-park-program.

Implementation

Summary of Recommendations Table

In order to implement these changes in a timely and efficient manner, all recommendations have been consolidated into a matrix, below, which identifies the expected timeframe, priority level, responsible party, stakeholders, metric, and impact. The recommendations below summarize the components discussed previously in this chapter. These actions focus on maintaining a park inventory and distributing of that data to residents. Ensuring that park amenity information is updated, reliable, and accessible is key to residents using parks and recreational facilities, which will ultimately prompt a healthier Annapolis.

Recommendation	Timeframe	Priority	Responsible Party	Stakeholders	Metric	Impact
Continue Updating and Maintaining City Park Inventory	Ongoing	High	Department of Parks & Recreation	Dept. of Parks & Recreation, City Residents	Continually add and update parks as they expand	Increase city resident and visitor awareness of city parks and amenities
Distribute Parks Map, Inventory Matrix, and Park Locator Web Application to residents	Short	High	Department of Parks & Recreation	Dept. of Parks & Recreation, City Residents	Ensure all residents and visitors have equal access to park locator resources	Improve access to and awareness of city parks and amenities
Distribute Park Tour Maps	Short	High	Department of Parks & Recreation	Dept. of Parks & Recreation, City Residents	Ensure all residents and visitors have access to park tour maps	Residents and visitors have encouragement and plan for visiting different city parks depending on their interests
Apply recommended changes to Adequate Public Facilities Ordinance	Long	High	City Planning Department	City Planning Department, Dept. of Parks & Recreation, Future Developers	Incorporate APFO recommendations into City code	Create clearer and more stringent APFO

Consider implementing suggested further analyses	Long	Medium	City Planning Department, Dept. of Parks & Recreation	City Planning Department, Dept. of Parks & Recreation	Determine on which analyses are most attainable and valuable to the City and its residents	Increase connectivity and the number of parks and recreational areas
Address Facility Gaps	Long	Medium	City Planning Department, Dept. of Parks & Recreation	City Planning Department, Dept. of Parks & Recreation	Explore options to close Facility Gaps. Refer to National Parks and Recreation Association national standards as a base and see what other areas have implemented	Increase the number of facilities for residents to align with national standards
Address Accessibility Gaps	Long	High	City Planning Department, Dept. of Parks & Recreation	City Planning Department, Dept. of Parks & Recreation	Consult The Trust for Public Land ParkScore methodology and explore options to close accessibility gaps to parks and recreational areas	Implement park connectivity in order to increase park accessibility
Adopt a Park/Spot Program	Ongoing	Medium	Dept. of Parks & Recreation	Dept. of Parks & Recreation, Residents, Potential Volunteers	Create a benchmark for how many Adopt a Park/ Spot areas are achieved each year	Allow residents to take part in maintaining parks throughout the city to increase community engagement
Signage for Parks and Recreational Areas	Short	High	Dept. of Parks & Recreation	Dept. of Parks & Recreation, Residents, Potential Volunteers	Ensure parks have sufficient signage for residents to locate them	Assist residents and visitors in easily finding parks and recreational areas

Table 2, Implementation
Source: Jennifer Hopkins, Samantha Sperber

Page Intentionally Left Blank

Chapter 3

Bicycles

Overview

Bikes & Health

Investing in bicycling is beneficial for individuals, communities, cities, and the environment. Bicycling benefits both individual and community health. Riding bikes is an excellent way to get the recommended daily amount of physical activity. The physical health benefits of low-impact exercise such as cycling include, but are not limited to:

- improved heart and lung health
- lower risk of heart disease, cancer, diabetes and other obesity-illnesses[1]

Increasing vehicle miles traveled (VMT) is highly correlated with growing rates of obesity.[2,3] By contrast, the average person who switches from commuting predominantly by car to biking to work loses 13 pounds within the first year, and on average, cyclists live two years longer than non-cyclists and take 15% fewer days off work because of illness.[4] Despite higher respiratory rates while riding, cyclists also inhale less vehicle emissions and carbon monoxide than motorists, partially because they are more likely to travel on lower-traffic streets.[5] More broadly, physical activity is proven to improve mood and mental health, as well as social and community health due partially to an expanded social circle. Cycling can reduce anxiety, depression, and other psychological issues.[6]

Figure 1, Health Benefits of Biking
Source: "The Health Benefits of Biking in New York." Digital Image. Capital District Physicians' Health Plan: The Daily Dose. September 15, 2015. https://blog.cdphp.com/health-living/health-benefits-of-biking-in-new-york/

[1] Carlos A Celis-Morales, Donald M. Lyall, Paul Welsh, Jana Anderson, et al. "Association between Active Commuting and Incident Cardiovascular Disease, Cancer, and Mortality: Prospective Cohort Study," Bmj J1456: 1456. 2017, http://www.bmj.com/content/bmj/357/bmj.j1456.full.pdf

[2] Gavin R. McCormack, Gavin R and Jagdeep S. Virk. "Driving Towards Obesity: A Systematized Literature Review on the Association between Motor Vehicle Travel Time and Distance and Weight Status in Adults," Preventive Medicine 66 (4): 49–55. 2014.

[3] Sheldon Jacobson H, Douglas M King, and Rong Yuan. "A Note on the Relationship between Obesity and Driving." Transport Policy 18 (5): 772–76. 2011.

[4] "Safety in Numbers: Halving the risks of cycling," CTC: working for cycling. http://www.cyclinguk.org/sites/default/files/ctc_safety_in_numbers_0.pdf

[5] Ole Hertel, Martin Hvidberg, Matthias Ketzel, Lars Storm, and Lizzi Stausgaard. "A Proper Choice of Route Significantly Reduces Air Pollution Exposure — a Study on Bicycle and Bus Trips in Urban Streets," Science of the Total Environment 389 (1): 58–70. 2008.

[6] Yeon Soo Kim, Yoon Soo Park, John P Allegrante, Ray Marks, Haean Ok, Kang Ok Cho, and Carol Ewing Garber. "Relationship between Physical Activity and General Mental Health," Preventive Medicine 55 (5): 458–63, 2012.

In addition to the individual health benefits, biking is generally healthy for the environment. Short car trips cause more pollution per mile than long car trips, due in part to the warm-up period for pollution control devices. Replacing short car trips with bike trips can have large impacts on the environment. For example, a study measuring the health benefits of reduced air pollution in Milwaukee and Madison, Wisconsin, found that eliminating short car trips by 20% could reduce greenhouse gases, air pollution-related health issues, healthcare costs, and morbidity and mortality rates. In addition, replacing these short car trips could reduce respiratory and cardiovascular health conditions, including the number of chronic bronchitis cases, and provide savings of almost $1.5 million in health care costs.[7]

Economic Health

Biking provides multiple economic benefits in addition to the numerous environmental and physical health advantages. With increased emphasis on infrastructure support for bicycling, there are many opportunities for positive impacts to business districts, such as more stops by bicyclists and pedestrians, resulting in more money spent per month at local small businesses.[8]

There may also be positive economic impacts through the manufacturing, sales, and repairs of bicycles at local bike shops, including the creation of retail and construction jobs.[9] Additionally, research shows that there are higher property values along greenways and trails.[10]

Improved infrastructure simultaneously increases the number of cyclists and decreases the number of cars on the road. This in turn saves money on infrastructure improvements and maintenance because bikes impact the road less than cars. For individuals, that means less money spent on car maintenance.[11, 12] Car ownership is expensive (about $10,000 per year) compared to the cost to own and maintain a bike.[13] Similarly, automobile infrastructure is also more costly than bike infrastructure. For example, Portland, Oregon, built 300 miles of bike infrastructure for the same amount of one mile of freeway.[14]

---

[7] Maggie Grabow, Micha Hahn, and Melissa Whited. "Valuing Bicycling's Economic and Health Impacts in Wisconsin". The Nelson Institute for Environmental Studies; Center for Sustainability and the Global Environment; University of Wisconsin-Madison, 2010, https://www.railstotrails.org/resourcehandler.ashx?id=4579

[8] Emily Badger. "Cyclists and Pedestrians Can End Up Spending More Each Month Than Drivers". CityLab, 2012. https://www.citylab.com/transportation/2012/12/cyclists-and-pedestrians-can-end-spending-more-each-month-drivers/4066/

[9] Xinyi Qizn. "Assessing the Economic Impact and Health Effects of Bicycling in Minnesota," Minnesota Department of Transportation Research Services & Library, 2016, https://conservancy.umn.edu/bitstream/handle/11299/185230/Assessing%20Bicycling%20in%20Minnesota.pdf?sequence=3&isAllowed=y

[10] Richard Campbell and Margaret Wittgens. "The Business Case for Active Transportation: The Economic Benefits of Walking and Cycling," Better Environmentally Sound Transportation, 2004. http://esteast.unep.ch/phocadownload/campbell%20wittgens%202004%20business%20case%20for%20active%20transportation.pdf

[11] Campbell and Wittgens, ""The Business Case for Active Transportation: The Economic Benefits of Walking and Cycling," 2004

[12] Lynn Weigand, Nathan McNeil, Jennifer Dill. "Cost Analysis of Bicycle Facilities: Cases from cities in the Portland, OR region." Portland State University, 2013.

[13] Copeland, Larrh. "The cost of owning a car? $9,000 a year," USA Today, 2013, https://www.usatoday.com/story/news/nation/2013/04/16/aaa-car-ownership-costs/2070397/

[14] Weigand, McNeil, and Dill, "Cost Analysis of Bicycle Facilities: Cases from cities in the Portland, OR region," 2013.

Workforce Efficiency

Several studies have shown that health has a significant impact on the economy. The Center for Disease Control (CDC) estimates that $3 of every $4 that employers spend on health costs are used to treat chronic conditions such as obesity, hypertension, diabetes, asthma, and depression. Based on a 2011 Gallup study, as a consequence of these same conditions, workforce absenteeism amounts to $153 billion of lost productivity for U.S. businesses each year.[15]

According to the Ohio Active Commute Worksite Toolkit, bicycling can reduce healthcare costs through increased physical activity, saving 5% to 12% annually in medical costs.[16] Workplaces that encourage physical activity or active transportation experience increased productivity and punctuality, and decreased absenteeism. Physically and mentally healthy employees "are absent an average of two fewer days per year, and maintain jobs where they can remain physically active."[17] Furthermore, with increased bicycling rates for employees, there are reduced parking costs and increased accessibility: 14 bikes can be parked in the space of one car. Encouraging employees to bike, walk, or use other modes of transit can reduce parking needs and costs, and also free parking spaces up for customers.

Disadvantaged Communities: Strategies to Promote Equity and Access

Disadvantaged communities are more likely to suffer from poor health and health issues related to living conditions and level of activity. Residents of these communities are more likely to live in neighborhoods that are geographically isolated from healthy food, places of employment, and other important destinations.[18, 19] In addition to the increased likelihood of poor health, these communities are also less likely to have resources to improve certain aspects of their health, including vehicle ownership.[20] Thus, they would benefit greatly from improved infrastructure and connectivity.

[15] Dan Witters and Sangeeta Agrawal. 2011, "Unhealthy U.S. Workers' Absenteeism Costs $153 Billion". Gallup, http://www.gallup.com/poll/150026/unhealthy-workers-absenteeism-costs-153-billion.aspx

[16] "Ohio Active Commute Toolkit". Ohio Department of Health: Creating Healthy Communities, 2017, https://www.livehealthyloraincounty.com/cms/files/File/2017/Ohio-Active-Commute-Worksite-Toolkit.pdf

[17] "Ohio Active Commute Toolkit," 2017: 6

[18] Brown, A. 2012. "With Poverty Comes Depression, More Than Other Illnesses". Gallup, http://www.gallup.com/poll/158417/poverty-comes-depression-illness.aspx?utm_source=alert&utm_medium=email&utm_campaign=syndication&utm_content=morelink&utm_term=All%20Gallup%20Headlines

[19] "Mobility Challenges for Households in Poverty," National Household Travel Survey, 2014, http://nhts.ornl.gov/briefs/PovertyBrief.pdf

[20] "Mobility Challenges for Households in Poverty," 2014

Approach

To assist the City of Annapolis in reaching its goal of improving the health of residents, the Bicycle Friendly Communities team took a multi-pronged approach. We began with a City employee-guided tour of Annapolis to understand current challenges. For further context, we analyzed the Annapolis Bicycle Master Plan 2011 to understand the history, proposed projects, and current progress of the City's efforts to promote bicycling. Next, we consulted with Bike Advocates for Annapolis & Anne Arundel County (BikeAAA), a well-established advocacy organization with an ongoing relationship with the City, that led a guided bike ride through Annapolis to demonstrate the assets and the challenge areasfirsthand.

The existing Bicycle Master Plan is comprehensive and needs few improvements, but the implementation of its recommendations has stalled. Annapolis is well-positioned to better support transportation and recreational bicycling, but needs to address certain obstacles. Our research focused on making the case for bicycling based on current conditions, and providing practical recommendations for implementing economically and politically feasible bicycle network improvements.

Methodology

Our research involved both quantitative and qualitative methods to assess the current condition of bicycling infrastructure to determine how the City can best advance its goals. These methods included crash data analysis, mode share analysis, and qualitative assessments based on best practices research.

GIS Analysis

We used GIS data to map current bicycle infrastructure, gaps in connectivity, problem areas, and potential demand points for bicyclists. The study area included a 5-mile Euclidean distance buffer around the city boundary for analyzing accessibility to important destinations. The distance was chosen to incorporate areas of interest indicated by City employees and BikeAAA. We analyzed road and bicycling infrastructure within the study area, and created ¼-mile, ½-mile, 1-mile, and 3-mile walksheds and bikesheds around key destinations. These intervals were chosen based on commonly accepted values for walking and bicycling commute distances.

Similar to a walkshed, a **bikeshed** is a land area determined by following a network for a specified distance from a specific point or points outward. The network might include streets, paths, trails, and/or other types of transportation infrastructure. For this study, each analysis uses a lateral search distance of 300 feet along network features (i.e. roads, paths, or trails) to determine destinations or other features that fall within the bikeshed. In other words, the bikeshed shows which areas are considered "bikeable" from any given point.

The walksheds and bikesheds were used to calculate coverage areas for potential bicyclists. We chose residential and mixed-use address points as a proxy for demand points, reasoning that residences will likely be the most popular trip origin locations to the other destinations studied.

To understand the City's demographics, we mapped indicators including commute mode share, short driving commutes, and vehicle ownership rates. We analyzed the locations of concentrated areas of points of interest, retail commercial areas, and bus stops to determine where to install additional bike parking.

To analyze bicycle and pedestrian safety issues, we mapped bicycle and pedestrian crashes, using data from MD iMAP from 2015 to Q1 of 2017, which were the only time periods for which data was available. For all 93 crashes in Annapolis that occurred during this time period, we identified crash hotspots and analyzed potential causes of the crashes from the data. These analyses were used to make recommendations for improving the City's infrastructure.

Current Conditions

Annapolis' current bicycling conditions are best represented by data and maps that visualize the environment for bicycling and walking. The following maps show service area accessibility to important destinations, mode share split, vehicle ownership data, commute travel time, and crash data.

Maps and Analysis

We performed Service Area analysis on 34 features in the study area. Detailed analysis of the four key features selected based on their relative importance to the City's and BikeAAA's goals are provided in this report. Full bikeshed coverages for each feature are listed in Table 1, additional maps are provided in the Appendix, and all analyses are available as a package of GIS resources provided separately.

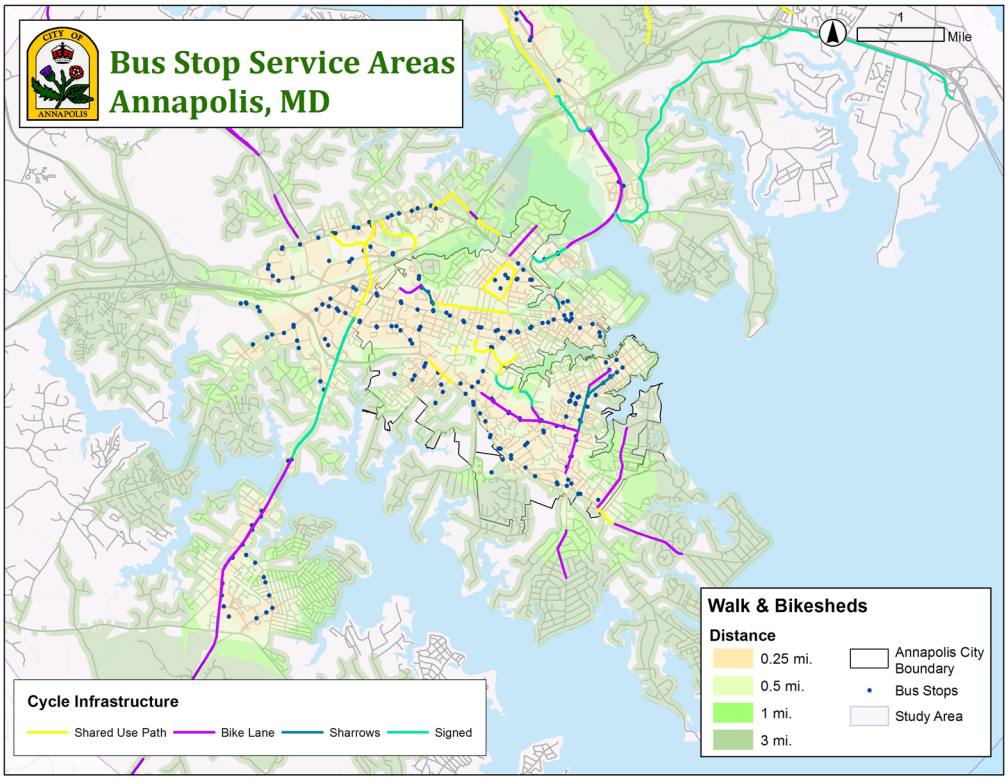


Figure 2, Bus Stops (238 features) | Bikeshed Coverage - 37,381 addresses (74.9%)
Source: GIS Data from Anne Arundel County and City of Annapolis

Annapolis has robust bus stop coverage in the city proper and in nearby areas.

The 3-mile bikeshed around bus stops covers just under 75% of residential and mixed-use addresses, providing access to significant portions of the study area.

There is an abundance of stops around the City that cover many areas without cycle infrastructure.

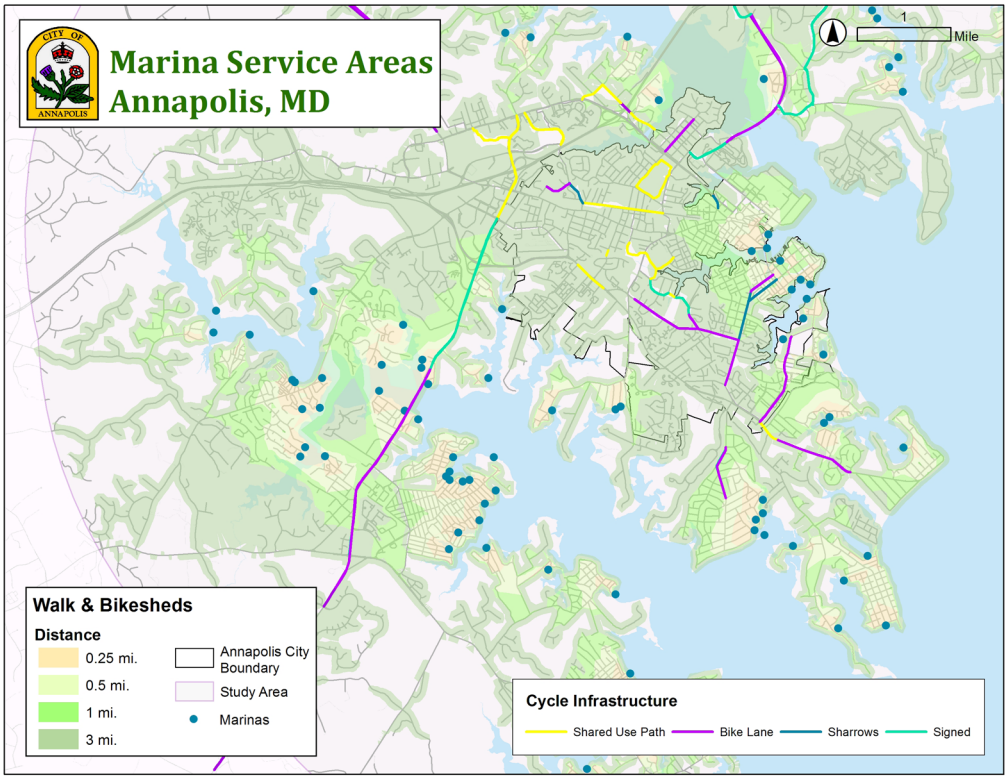


Figure 3, Marinas (133 features) | Bikeshed Coverage - 47,089 (94.4%)
Source: GIS Data from Anne Arundel County and City of Annapolis

Second to churches, the bikeshed around the City's marinas covers the highest share of addresses at 94%.

Marinas provide a unique opportunity for bicyclists to choose their entry points to the City and surrounding area. Almost all the City and County bicycle infrastructure are within the bikeshed, making them accessible to people visiting by boat and who use bikes to travel into the City. The patchy infrastructure, however, makes overall connectivity an issue.

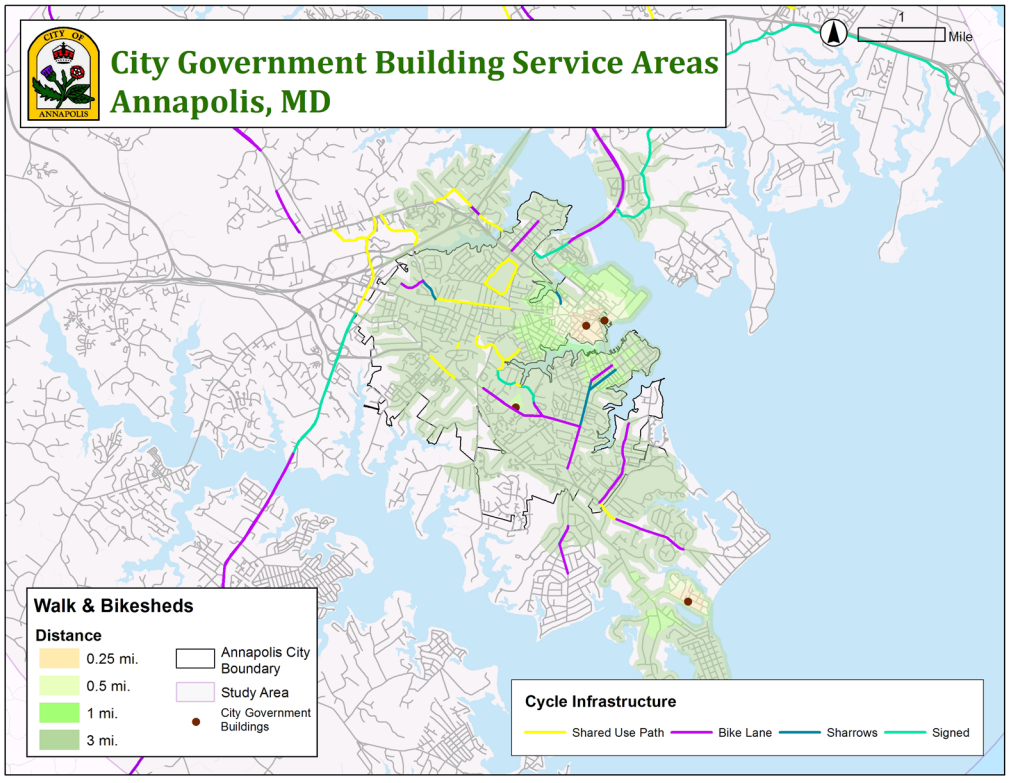


Figure 4, City Government (4 features) | Bikeshed Coverage - 14,090 (28.2%)
Source: GIS Data from Anne Arundel County and City of Annapolis

The bikeshed for City government buildings covers a significant portion of existing bicycle infrastructure. Nearly the entire City falls within the bikeshed.

Again, the patchy connectivity of cycle infrastructure presents challenges to bicyclists traveling safely into the historic district, an area that would benefit from employees and visitors using alternative modes of transportation to help reduce congestion.

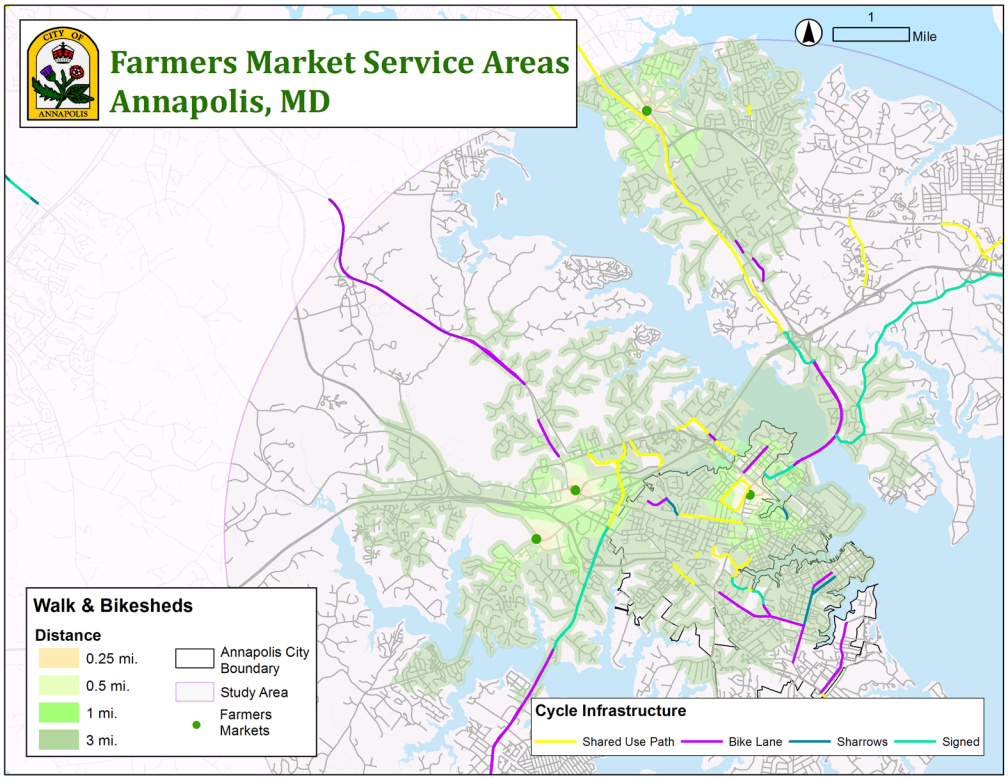


Figure 5, Farmers Markets (4 features) | Bikeshed Coverage - 22,817 (45.7%)
Source: GIS Data from Anne Arundel County and City of Annapolis

The farmers market bikeshed also covers a significant portion of the City and areas beyond, with good coverage of bicycle infrastructure. Two locations are essentially served directly by cycle infrastructure while the other two are not, though some cycle infrastructure is reachable within their walksheds and bikesheds.

The Severna Park Farmers market to the far north is served by a shared use path, which connects to other infrastructure leading all the way to the City.

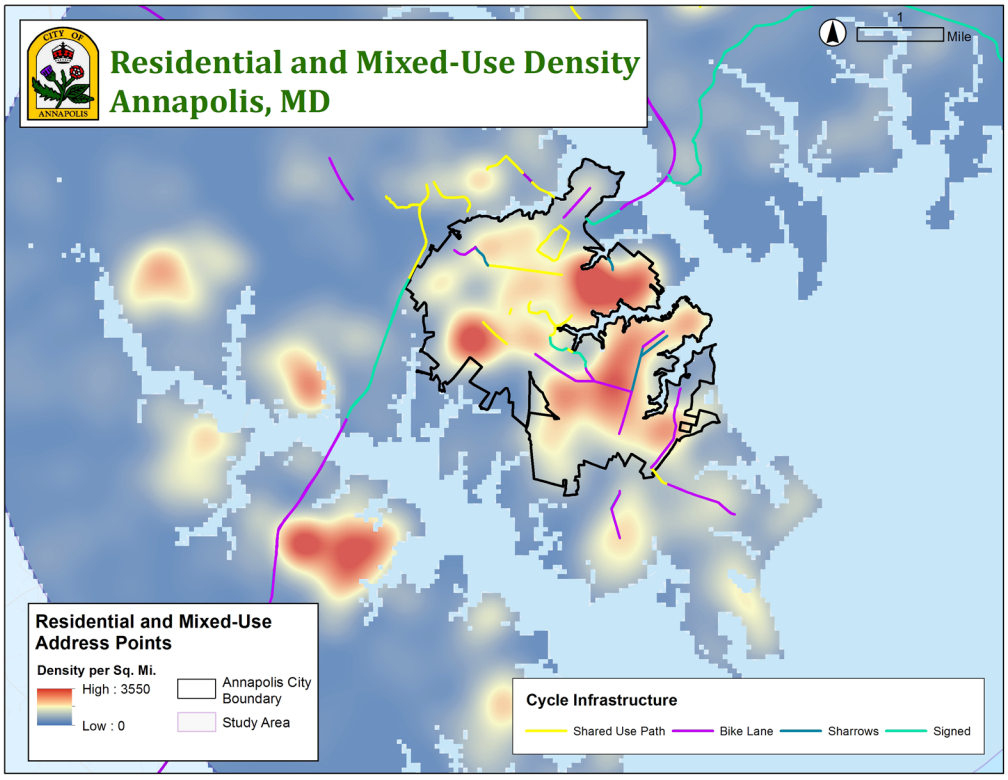


Figure 6, Residential and Mixed-Use Address Density
Source: GIS Data from the 2015 American Community Survey

The City of Annapolis contains several areas with high concentrations of residential addresses including the historic district, Forest Villa, and Eastport. There are additional pockets of addresses in Edgewater, Londontowne, and Woodland Beach southwest of the City just across the South River. The southeastern part of Annapolis is somewhat well-served by cycle infrastructure internally, but the portions that are covered by sharrows or signs are less ideal as they expose bicyclists to automobile traffic.

The neighborhoods across the Severn River are served by a bike lane, which ends immediately after crossing the water, and becomes signed roadway. Overall connectivity remains an issue.

	Within 3-Mile Bikeshed		
Feature	Facilities	Addresses	Percent
Marinas	133	47,089	94.4%
Shopping Centers	38	40,108	80.4%
Bus Stops	238	37,381	74.9%
County Government Buildings	11	31,815	63.8%
Post Offices	11	31,065	62.3%
Farmers Markets	4	22,817	45.7%
Libraries	4	20,709	41.5%
Colleges	4	18,711	37.5%
State Government Buildings	24	18,708	37.5%
Payment Centers	2	15,367	30.8%
Health Centers	4	14,752	29.6%
Federal Government Buildings	10	14,203	28.5%
City Government Buildings	4	14,090	28.2%
Community Rec Centers	1	11,844	23.7%
Hospitals	1	7,976	16.0%
MVA	1	6,261	12.6%
Light Rail Stations	0	0	0.0%
MARC Stations	0	0	0.0%

Table 1, Residential and Mixed-Use Address Coverage within 3-Mile Bikeshed
Source: GIS Data from Anne Arundel County and City of Annapolis

This table lists the 3-mile bikeshed coverage for important destinations in Annapolis. The locations highlighted in green are those with the most bikeshed coverage, and those highlighted in red are the locations with the least bikeshed coverage. This indicates that a high percentage of marinas, shopping centers, and bus stops are bikeable within 3 miles, which can help to show where in Annapolis bike infrastructure would be needed.

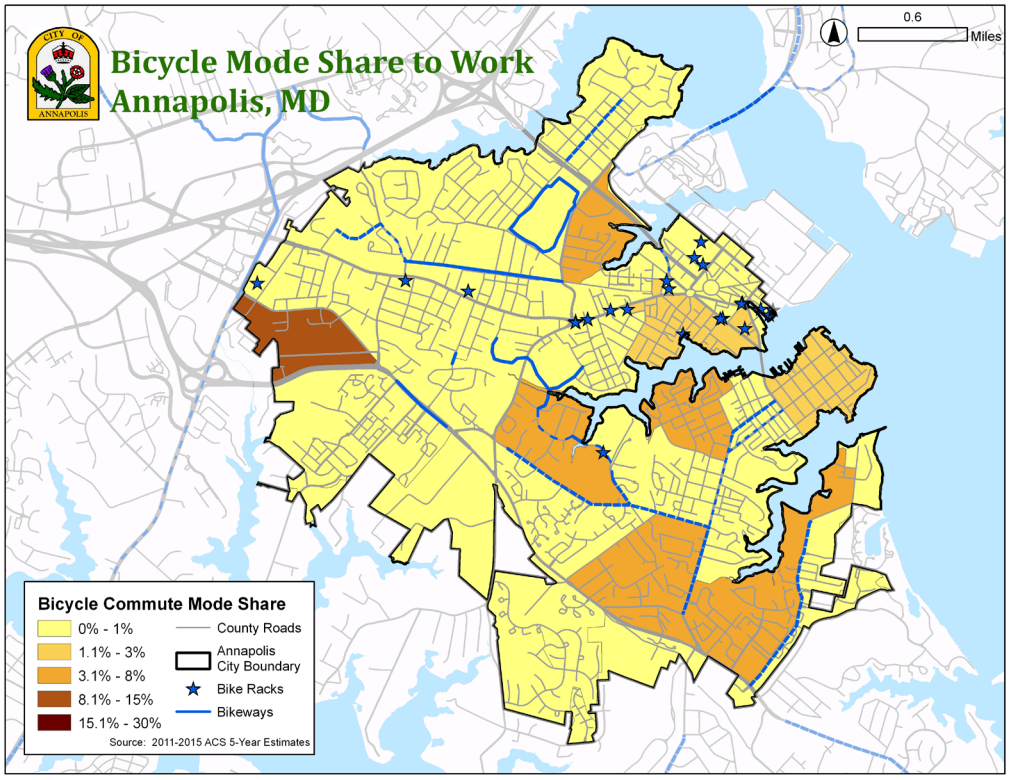


Figure 7, Mode Share Bike
Source: GIS Data from the 2015 American Community Survey

The greatest concentration of bicycle commuters (8.1-15%) is the block group surrounding Hillcrest Memorial Cemetery.

There are no direct bicycle connections from this area to the rest of the City, so further bicycle investments in this would most likely be appreciated by current residents and encourage greater cycling.

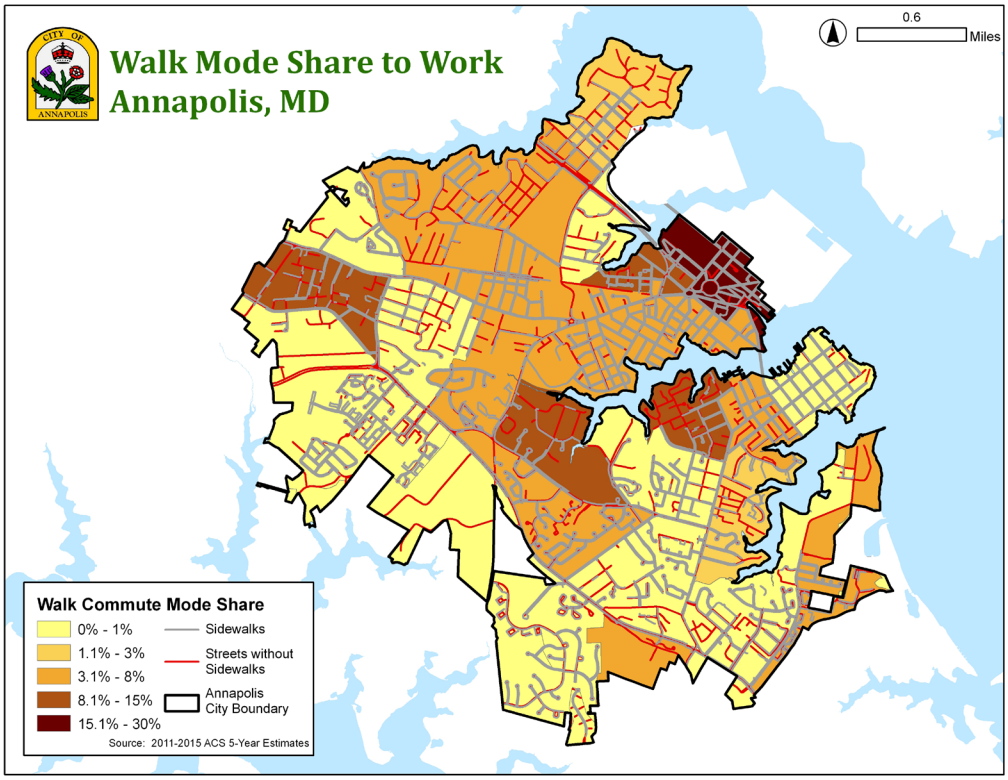


Figure 8, Mode Share Walk
Source: GIS Data from the 2015 American Community Survey

Annapolis has some of the highest walk to work rates in the state due to the presence of the Naval Academy and St. Johns College. After the historic section of Annapolis, walk rates are the second highest in Parole and Eastport.

Historic Annapolis and Eastport have excellent sidewalk coverage and connectivity, but this is not the case throughout the rest of Annapolis.

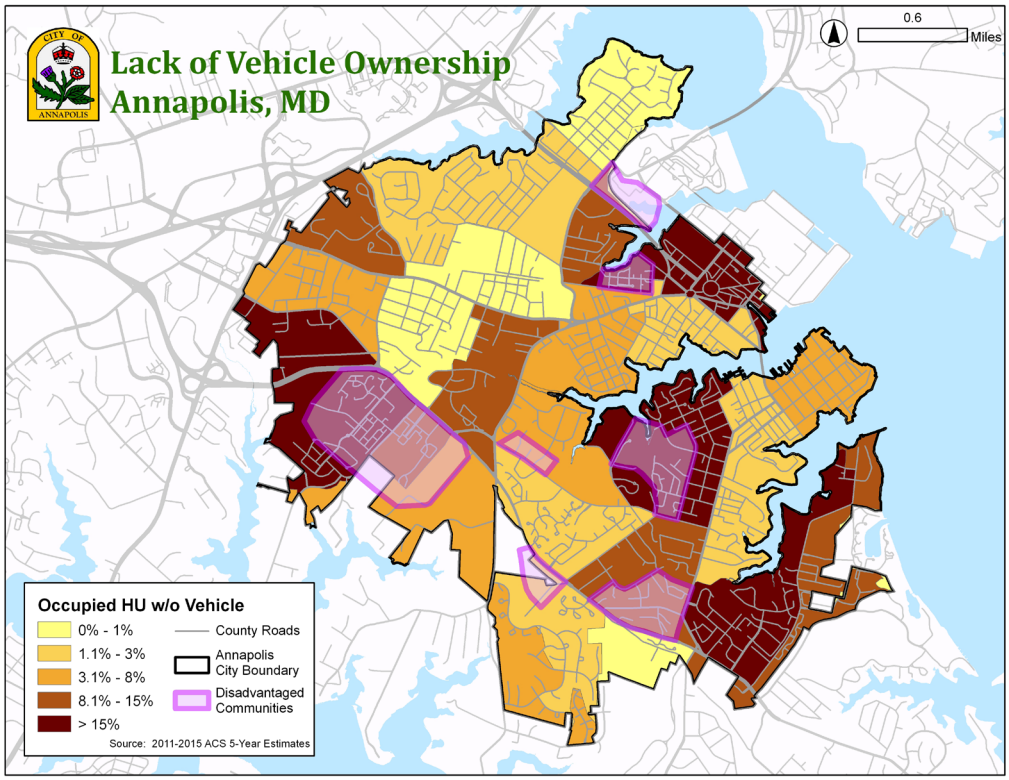


Figure 9, Lack of Vehicle Ownership
Source: GIS Data from the 2015 American Community Survey

The lowest car ownership rates in Annapolis are just west of the historic district, north of West Street.

The second lowest rates of car ownership are in the West and Central/South areas of the city.

Residents without vehicles must use alternative transportation by necessity, not choice, so these areas would most benefit from improved bike and pedestrian infrastructure.

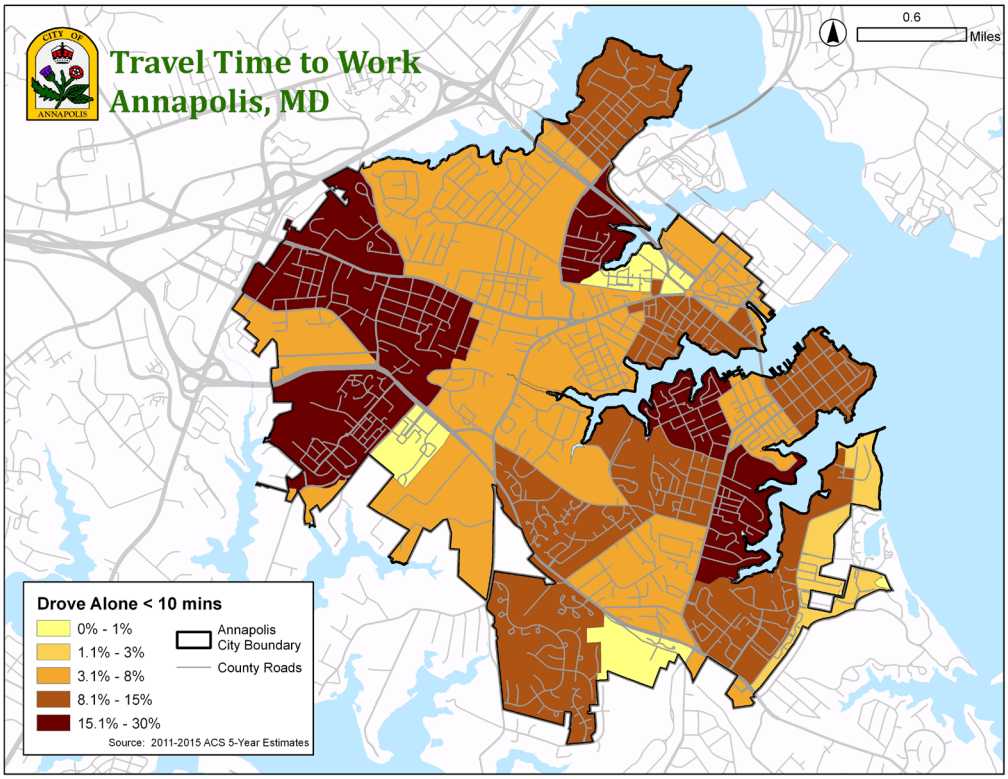


Figure 10, Travel Time to Work (Drive alone LT 10 min)
Source: GIS Data from the 2015 American Community Survey

The western side of Annapolis has the highest concentration of residents who drive alone to work and whose commute times are less than 10 minutes.

These commuters could potentially be persuaded to bike or walk to work if more bike and pedestrian connections were created, if they received educational materials about bicycling and walking, and/or if they received incentives to bike or walk to work.

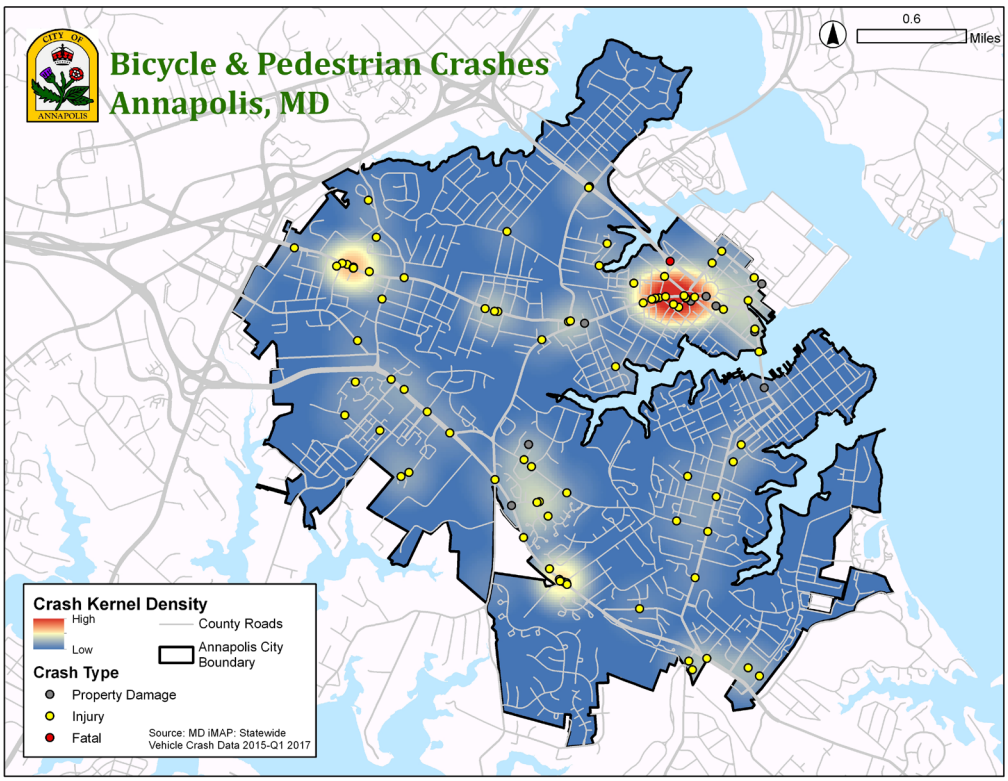


Figure 11, Fatalities / Injuries
Source: Map GIS Data from MD iMAP from 2015 –to Q1 of 2017

Bicycle and pedestrian-related crashes that occurred in 2015 through Q1 of 2017, are concentrated in several areas of the City, including Church Circle, West Street at Parole Street, and Forest Drive at Tyler Avenue.

These intersections would benefit from traffic calming design measures. 88% of all crashes were injury crashes, 11% were property damage crashes, and there was 1 fatal crash.

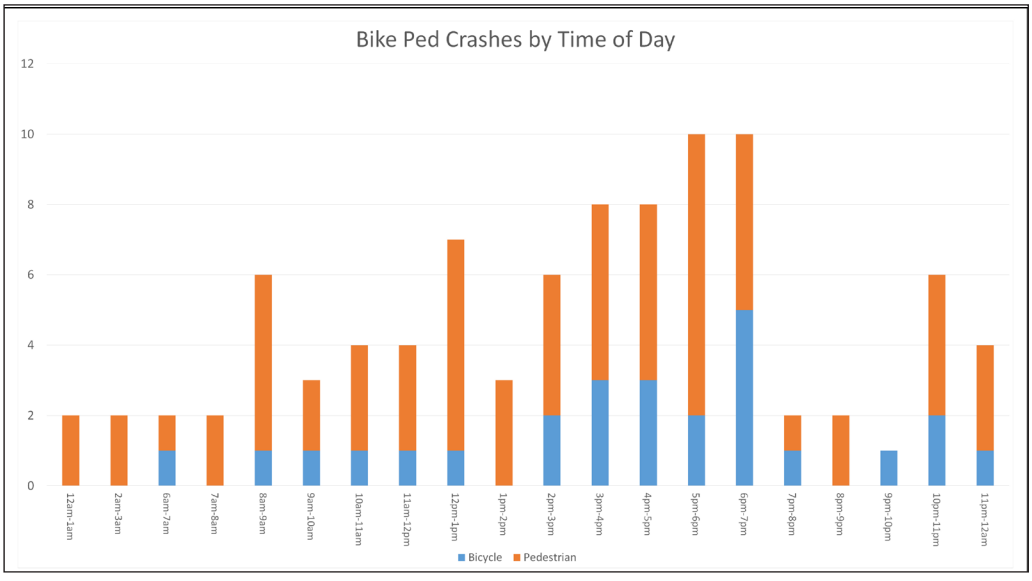


Figure 12, Bike Crashes
Source: 2015 - Q1 of 2017, MD iMAP - Statewide Vehicle Crash

Most bicycle and pedestrian crashes occur during the afternoon peak hours, but there are also peaks during the morning peak and from 10pm to 12am.

Equipping cyclists with bike lights, and either using speed cameras or working with the police to slow or enforce traffic speeds during high crash periods are interim measures that could help reduce crash rates. However, implementing safe street design elements may prove more effective.

Issues and Recommendations

The issues surrounding bicycling in Annapolis are broad. To provide a focus for the City's efforts, we have selected the most pressing issues that can easily be remedied.

Infrastructure and Connectivity

Issue: There is a lack of connected infrastructure in disadvantaged communities.

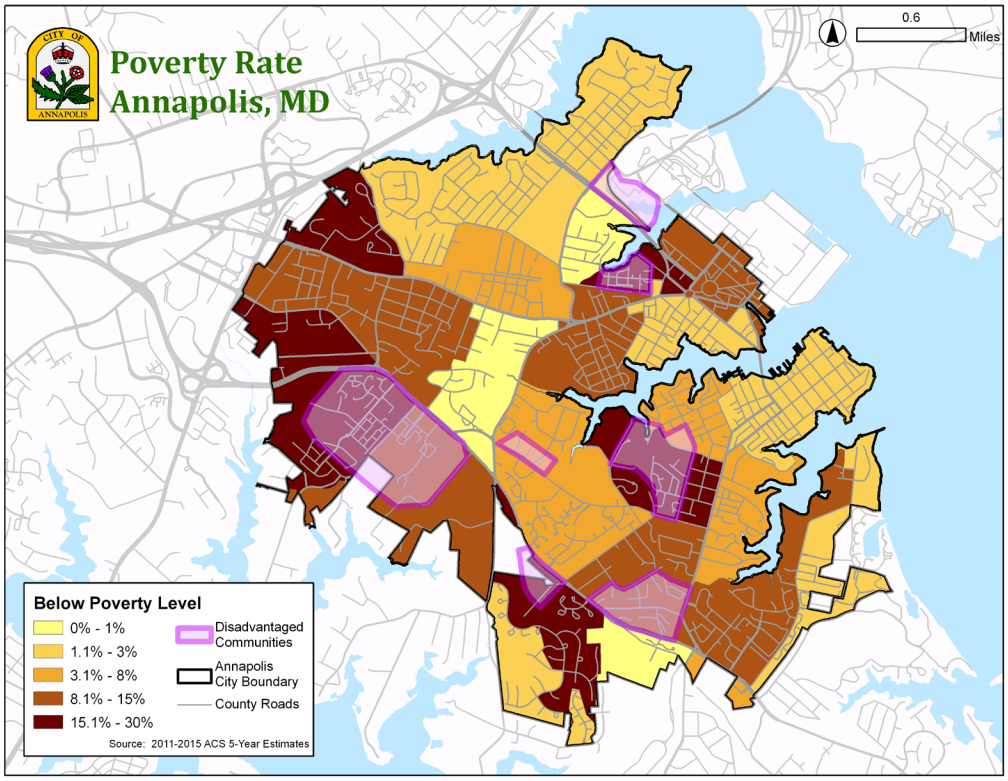


Figure 13, Overlay with Disadvantaged Communities
Source: Map GIS Data from the 2015 American Community Survey

In this map, the purple areas, identified by City staff, are disadvantaged communities compared with ACS poverty rate data.

Block groups with greater percentages of households below the poverty line are dispersed throughout the City, but aside from the area surrounding St. Anne's cemetery and the area around Hawkins Cove, they tend to be found in the City's western and southern areas.

The inclusion of disadvantaged communities requires a strong focus on equity, so that the communities with the least, primarily those of color and/or low-income, get the most attention and infrastructure improvements that provide greater access to opportunity to improve quality of health and lives.[21] Bicycle infrastructure is one of the many strategies to increase opportunity through inexpensive access to transportation. Disadvantaged communities close to the historic district have greater pedestrian connectivity, due to better sidewalk coverage but also to the grid alignment of the streets. However, there are no bikeways in these neighborhoods. Communities to the south and west, which have suburban designs, have sidewalk connectivity within their boundaries, but not to the outside. The Robinwood community is the most isolated, and has no connections to the bicycle network.

[21] Cohen, Josh. "Building a Bikeable City for All". Next City, 2016, https://nextcity.org/features/view/cities-build-bike-lanes-bike-share-bike-equity

Best Practice:
Equity in Los Angeles, California

The Inland Empire, a suburban area east of LA, has a divided population with a section of the bicycling community who are "invisible," and are ignored and excluded from conversations around infra- structure improvements. The goal of the advocacy organizations working on behalf of those disadvantaged communities is to increase connectivity for poor neighbor- hoods by creating protected bike lanes around food markets to improve access for communities in food deserts/swamps.[22]

Figure 14, Eastside Mural Ride
Source: Cardenas, Rafael. "Eastside Mural Rie." Digital Image. Multicultural Communities for Mobility, Facebook. August 4, 2016. https://www.facebook.com/multicultimobility/)

The Latino bicyclists in Los Angeles tend to ride out of necessity, often lack basic equipment, and are not taken into account by many bicycle advocacy groups. City of Lights (Ciudad de Luces), today known as Multicultural Communities for Mobility, is working to "bridge the gap between the movements for Latino social justice and bicycle advocacy" by highlighting the needs of marginalized bicyclists. They work to ensure that underrepresented immigrant bicyclists are included in the decision-making processes that occur around the city and impact the built environment.[23]

Recommendation 1: Partner with trusted community leaders and organizations and Bike AAA to ensure that all communities are represented in the decision-making processes.

Stakeholders in this process include the Housing Authority, residents of disadvantaged communities, and community leaders. This can include simultaneously working with the Annapolis Community Development Division and the Transportation Department, in addition to help from bike advocacy groups, to most effectively reach out to all stakeholders.

Recommendation 2: Identify simple, inclusive solutions to promote connectivity through bike lanes in disadvantaged neighborhoods.

The Transportation and Comprehensive Planning Departments need to coordinate with the Housing Authority and Community Development Division to identity the disadvantaged areas most in need of increased connectivity. Bike advocates and community leaders can help identify these areas.

---

[22] "Race, ethnicity, class, and protected bike lanes: An idea book for fairer cities." PeopleForBikes and Alliance for Biking and Alliance for Biking & Walking, 2014, http://b.3cdn.net/bikes/60e4ef1291e083cada_8ym6ip7pw.pdf

[23] "The New Majority: Pedaling Towards Equity," The League of American Bicyclists and Sierra Club, http://bikeleague.org/sites/default/files/equity_report.pdf

Bike Parking

Issue: There is limited bike parking in areas outside of the historic district.

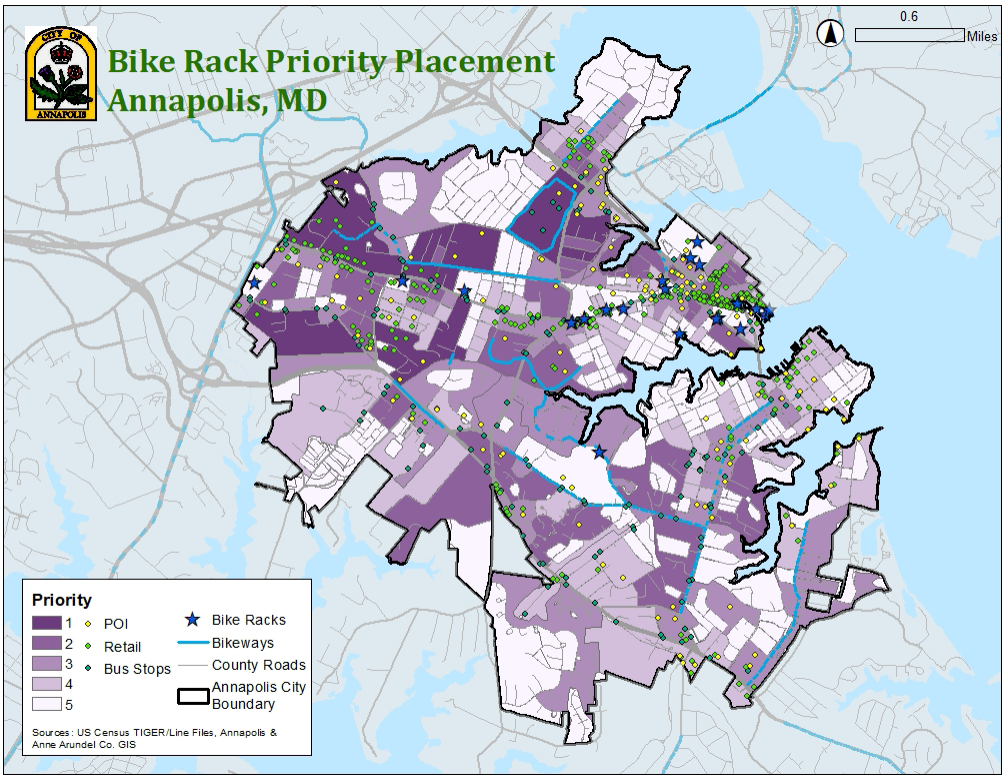


Figure 15, Bike Rack Priority Placement (overlay with retail, points of interest)
Source: US census TIGER/Line Files, and Annapolis & Anne Arundel County GIS

Concentrations of retail, points of interest, bus stops, and proximity to existing bikeways were used to identify census blocks where bike parking is most needed, prioritized from 1 (most needed) to 5 (least needed).

Blocks that already contain bike parking were ranked 5. Priority one blocks are primarily located in the north and west sections of the City.

Recommendation 1: Identify priority bike parking locations .

Annapolis will need to partner with local businesses, organizations and residents to install additional bike parking, especially as sidewalk right of way in the historic district is limited. We suggest targeting areas with high concentrations of important destinations (or points of interest), retail, transit, and existing bikeways, as shown in the map above.

Best Practice: Toronto, Ontario

Based on a 2009 study of the commercial Bloor Street, encouraging the use of bikes is good for business. Per month, people who had biked and walked in the neighborhood reported that they spent more money than those who had driven.[24] Additional bike lanes were shown to increase commercial activity for local businesses. The main issue from critics is that installing bike lanes in place of on-street parking would harm local businesses, but the opposite tends to happen in business districts that make the change.

Figure 16, Eastside Mural Ride
Source: Passmore, Dylan. "Bike lanes on Bloor Street." Digital Image. University of Toronoty Engineering News, photo via Flickr. January 12, 2017. http://news.engineering.utoronto.ca/bike-lanes-bloor-street-u-t-engineering-partners-miovision-city-toronto-help-evaluate-pilot-track-traffic-safety/

Recommendation 2: In the non-auto transportation section of the APFO, add bike parking requirements and reference guide to bike parking to ensure proper installation (see Appendix V).

Specific updates to the APFO bike parking requirements:

- Visitor/short term bike parking (specify ratios: # spaces per sq. ft. or units)
- Long term/secure bike parking (specify ratios: # spaces per sq. ft. or units)
- Showers, lockers and changing rooms for secure bike parking users

Safety

Issue: Many main streets of Annapolis are large thoroughfares that are unsafe for non-auto forms of travel.

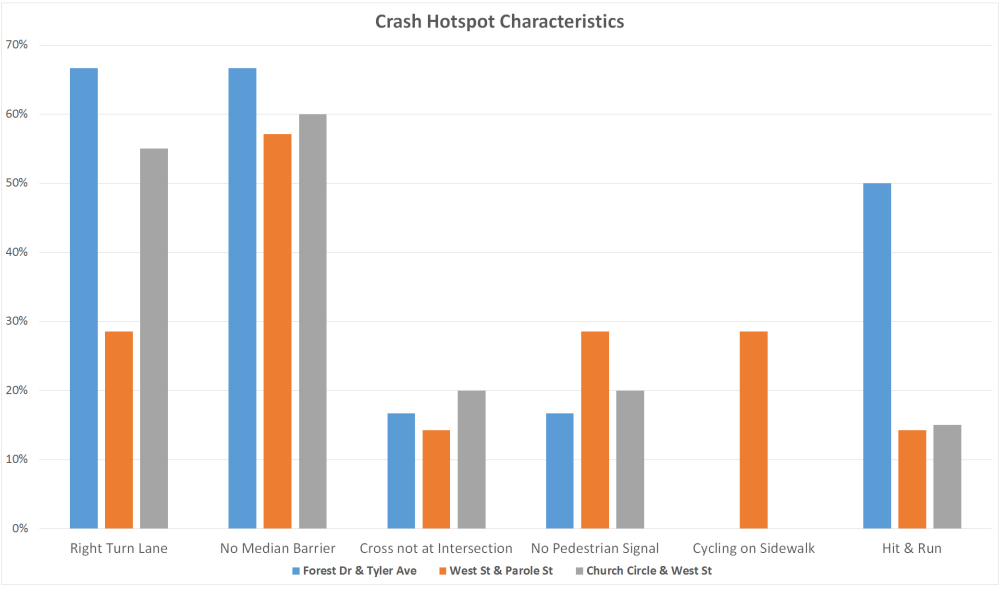


Figure 17, Bike / Pedestrian Crash Hotspot Characteristics
Source: 2015 - Q1 of 2017, MD iMAP - Statewide Vehicle Crash

[24] Darren Flusche. "Bicycling Means Business: The Economic Benefits of Bicycle Infrastructure," Advocacy Advance, http://bikeleague.org/sites/default/files/Bicycling_and_the_Economy-Econ_Impact_Studies_web.pdf

There were 33 crashes at the three crash hotspot areas of Annapolis, with the most occurring near Church Circle and West Street. There are very few median barriers in all three locations, and with the exception of West Street and Parole Street, a majority of crashes occurred in the right turn lane. All of these locations had instances where pedestrians or cyclists were struck while crossing the road mid-block, and crashes at intersections without pedestrian signals. In addition to these issues, in the West Street & Parole Street areas, there were several instances where bicyclists were involved in crashes while riding on the sidewalk.

Best Practice in Complete Streets

An example from **Eugene, Oregon**, shows changes to the local street plan from 1996, including street classifications for width and required connections for cul-de-sacs.

The design elements of the Local Street Plan include narrowing streets, shortening blocks, increasing connectivity, and reintroducing alleys to new developments. These seemingly small changes in street design can increase safety and appeal of a neighborhood.[25]

Figure 18, Complete Street in Eugene, Oregon
Source: "Benefits and Considerations." Digital Image. National Association of City Transportation Officials: Urban Street Design. Accessed August 7, 2017. https://nacto.org/publication/urban-street-design-guide/streets/neighborhood-main-street/)

Recommendation: Implement traffic calming strategies, such as a complete streets model, to increase safety for all non-auto transit.

Complete streets and other traffic calming strategies work to make streets accessible for all users, especially those who are more vulnerable using non-auto forms of transportation.

Curb extensions that allow for the continuation of bike lanes would make intersections with high amounts of right turn lane crashes safer for both bicyclists and pedestrians, as shown in Figure 19.[26]

Because crashes occurred outside of intersections, the City should consider breaking up long blocks, or providing mid-block pedestrian/bicycle crossings with High-Intensity Activated crossWalK (HAWK) signals. In addition, , because there were several crashes at intersections that lacked pedestrian signals, to improve safety, the City should install pedestrian signals at these intersections.

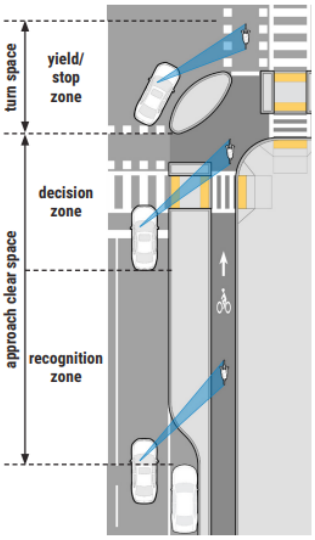


Figure 19, Curb Extensions
Source: MassDOT. "Assigning Priority at Corssings." Digital Image. Separated Bike Lane & Planning Design Guide: Intersection Design. Accessed August 9, 2017. http://www.massdot.state.ma.us/highway/DoingBusinessWithUs/ManualsPublicationsForms/SeparatedBikeLanePlanningDesignGuide.aspx

[25] "Best Practices for Complete Streets." Sacramento Transportation & Air Quality Collaborative, 2005, https://www.smartgrowthamerica.org/app/legacy/documents/cs/resources/cs-bestpractices-sacramento.pdf

[26] "Separated Bike Lane Planning & Design Guide." Massachusetts Department of Transportation, 2017, http://www.massdot.state.ma.us/highway/DoingBusinessWithUs/ManualsPublicationsForms/SeparatedBikeLanePlanningDesignGuide.aspx

Funding

Issue: There are challenges to finding funding and support opportunities for bicycle facilities and infrastructure.

While bicycle infrastructure is considerably less expensive than private vehicle-focused infrastructure and maintenance, it is nevertheless critical to have funding that supports improved facilites.

Recommendation 1: Partner closely with nonprofit organizations for funding opportunities.

Many grant programs are available for nonprofits with a local government partner. By working with educational institutions and local nonprofits like BikeAAA, Annapolis can engage its citizenry in implementing projects and reduce the burden on staff.

Recommendation 2: Create dedicated funding sources for bicycle infrastructure.

In an era of shrinking federal grant programs, Annapolis cannot simply rely on outside funding for bicycle infrastructure, but must set aside City dollars for projects that demonstrate its commitment and make grant applications more competitive. Carving out dedicated funding sources such as specific percentages of development impact fees and parking revenues would create a dependable revenue stream for bicycle infrastructure projects, and make the City more competitive at the state and federal levels.

Adequare Public Facilities Ordinance

Issue: Bike infrastructure and safety is mentioned minimally in the APFO.

Annapolis provides intersection standards to accommodate bikes, pedestrians, bus transit, and other proposed projects. The standards in the Annapolis APFO are limited and lack the clarity of standards used by comparable local cities such as Rockville in Montgomery County, Laurel in Prince George's County, or Arlington, Virginia.

Recommendation: Update APFO to include language for non-auto infrastructure.

Specific updates include:

- clear standards for intersection crosswalk signalling and non-auto curb cuts
- streetscape design to allow for improved non-auto travel
- requirements for developer to build sidewalks and planned/proposed bikeways (from Bicycle Master Plan) on their property, or, if no bikeways are planned, or as an alternative, contribute a fixed amount of money to a bike/ped transportation fund for offsite construction.

See the Appendix to see examples of how other local municipalities have integrated bike facility standards into their APFOs.

Additional Considerations

Limitations and Future Analysis

A major barrier to our analysis was the lack of a complete and accurate road network. We found three road networks that covered the study area, but only one seemed to be sufficiently current and inclusive of existing infrastructure. The road network used for our analysis lacked key pieces of information such as speed limits, traffic counts, lane counts, lane widths, shoulder widths, traffic direction, travel restrictions, travel times, topography, and elevation. The network is likely sufficient for broad analysis, but a more detailed road network is needed for precise calculations. Additionally, we found inconsistent data regarding the presence of existing cycle infrastructure. The lack of data prevented us from analyzing connectivity and accessibility based on the level of comfort or stress that a cyclist or pedestrian might experience on a particular route. We highly encourage the City to invest in more GIS resources to facilitate better analysis.

In addition, the use of address points to assess potential cycling demand is only a proxy. Each address point may represent one or many residential units and current occupancy could not be determined within the given timeframe. This can be partially compensated for with the use of Census population data, but a disconnect between the general and precise location of individual residents in any geographic area remains. Future researchers may consider obtaining an inventory of occupancy at each address point. With 50,000 address points in the study area, this will take considerable time and resources.

In the interest of time and efficiency, we used non-scientific data from City employees to identify disadvantaged communities. Future research should operationalize a definition of disadvantaged communities to better ensure an equitable distribution of bicycle resources.

Access to more stakeholders will be essential in building on this report. The study area covers City, county, and state infrastructure as well as tens of thousands of stakeholders. Previous projects, such as the installation of signage for the East Coast Greenway, demonstrate the need for a collaborative approach to improving bicycle infrastructure. Given time and resource restrictions, we were unable to consult with a representative sample of stakeholders to fully understand bicycle-related issues.

Additional Recommendations

Recommendation: Coordinate scheduled repaving projects with bicycle infrastructure improvements and installation.

Use the opportunity presented by repaving projects to convert wide shoulders on larger roads without on-street parking to bike lanes and/or sharrows. Repaving projects can also be an opportunity to replace drainage grates that run parallel with the road (a crash hazard for cyclists) with grates that run perpendicular.

Best Practice: Infrastructure in Vancouver, BC

Figure 20, Bike lane
Source: Warner, Claire

Vancouver has proved that building more infrastructure will increase bicycle ridership. Between 1990 and 1999, Vancouver spent close to $6 million on an extended bicycle network that increased the total length of bicycle routes from roughly 5.5 to 82.5 miles.

Consequently, the number of cyclists entering downtown in a three-hour period almost doubled from approximately 1,000 to 2,000 from 1991 to 1998. [27]

Recommendation: Coordinate scheduled repaving projects with bicycle infrastructure improvements and installation.

At the time of research, the GIS team had not yet received the Department of Public Works updated repaving schedule, which suggests that more interdepartmental collaboration is needed to make sure that bike projects are included. This would involve coordination and communication between Public Works, the Transportation Department, and developers about the repaving and development schedules to ensure that bike infrastructure is included in those plans.

Recommendation: Use TDM healthy commute tool kit to increase city bike mode share (in Appendix).

The City employees we spoke with were very concerned about increasing traffic congestion, particularly on routes into and out of the City, and with overuse of street parking in lieu of parking garages. Transportation Demand Management (TDM) policies focus on incentives for alternative modes of transportation and disincentives for single-occupancy vehicles. There are various TDM and healthy commute strategies that cities and employers can implement to encourage active commuting. Employers can follow some basic strategies to educate, gain acceptance, and implement a strong bike commuter program. Assessing the workplace environment is necessary to see what actions will make active commuting feasible and accessible for all employees. Some initiatives can be implemented quickly, easily, without a large financial investment and are ultimately beneficial to reduced parking demand. These steps can demonstrate a commitment to environmental stewardship, which is critical for Annapolis given its proximity to the Chesapeake Bay. The healthy commute toolkit included in the Appendix lays out some of the initial actions that employers can take.

[27] Campbell and Wittgens, ""The Business Case for Active Transportation: The Economic Benefits of Walking and Cycling," 2004.

Implementation

The City of Annapolis should focus on the most financially and politically feasible, low-cost, and timely infrastructure actions. While the focus on infrastructure may initially seem like a daunting and expensive task, there are many simple and politically feasible actions that can be implemented in the short-term and have a large impact.

Stakeholders and Advice for Implementation

The driving forces behind an improved bicycle network involve social, economic, and environmental components, many of which we covered in the introduction of this chapter. In addition to these considerations, there are various stakeholders to consider to most effectively address the recommendations. Bicycle infrastructure stakeholders go beyond drivers and cyclists, to include business owners, local and state government officials, bike advocacy groups, environmental advocates, and residents.

According to anecdotal information from a key stakeholder, business owners may be the biggest hurdle that new infrastructure faces because of fears of reduced revenues from a loss of parking. Thus, it is critical to show how bicycling benefits the business community. The values of local businesses should be taken into account with consideration for the larger goals of the local government, residents - particularly those in disadvantaged communities - and the environment.

Based on the social, political, and financial context of bicycling in Annapolis, we are prioritizing the recommendations in Table 2 on the following pages.

Recommendation	Timeframe	Priority	Responsible Party	Stakeholders	Metric	Impact
Partner with trusted community leaders and advocacy organizations to ensure that all communities are represented in the decisionmaking processes.	Short	High	Community Development Division, Transportation Department	Housing Authority of the City of Annapolis, Disadvantaged residents, Community organization, Nonprofit and advocacy organizations	Number of partners worked with	Increased stakeholder engagement in cycle planning processes that affect disadvantaged communities
Identify simple, inclusive solutions to promote connectivity through bike lanes in disadvantaged neighborhoods.	Short	Medium	Transportation Department, Comprehensive Planning Division	Transportation Department, Comprehensive Planning Division	N/A	Increased connectivity of cycle infrastructure in disadvantaged neighborhoods
Identify priority bike parking locations.	Short	Medium	Economic Development Division	Businesses, Residents, Commuters, Tourists, Property owners	Number of bike racks, Number of customers	Increased number of bike parking facilities in prime locations, Increased revenue for business
In APFO, add bike parking requirements and reference bike parking guide to ensure proper installation (in Appendix).	Mid	Medium	City Council	Businesses, Residents, Commuters, Tourists, Developers, Government agencies	Number of bike racks, Number of properties with bike racks, Changes in mode split	Increased number of bike parking facilities, Increased bicycle mode share, Increased efficiency of construction of bike parking facilities
Use healthy commute tool kit to increase city bike mode share (in Appendix).	Short	Low	AA Co Department of Health, Human Resources Department	Commuters, Residents, Businesses, Government agencies	VMT & VHT, Changes in mode split	Increase in non SOV mode share, Decrease in VMT & VHT, Decrease in congestion, Decrease in emissions

Implement traffic calming strategies, such as a complete streets model, to increase safety for all non-auto transit.	Long	High	Comprehensive Planning Division, Transportation Department	Businesses, Residents, Commuters, Tourists, Property owners, Government agencies	Traffic speeds in Annapolis Number of crashes	Decrease in crashes, Decrease in speeds, Increase in bicycle and pedestrian Mode share
Partner closely with nonprofit organizations for funding opportunities.	Short	High	Comprehensive Planning Division	Nonprofit and advocacy organizations, Government agencies, Schools	Amount of funding secured, Number of partners worked with, Number of events /activities	Increase in funding for cycle-related projects
Create dedicated funding sources for bicycle infrastructure.	Long	High	Comprehensive Planning Division, City Council	Nonprofit and advocacy organizations, Government agencies, Schools, Developers, Residents	Amount of funding secured, Number of dedicating funding sources	Increase in funding for cycle-related projects, Better funding security for cycle-related projects
Update APFO to include language for non-auto infrastructure.	Mid	Medium	City Council	Businesses, Residents, Commuters, Developers, Tourists, Government agencies	N/A	Widespread increase of cycle infrastructure, Increase of development-driven cycle infrastructure
Coordinate scheduled repaving projects with bicycle infrastructure improvements and installation.	Long	High	Public Works, Transportation Department	Developers, Government agencies	Miles of bikeways added, Property values near bikeways	Increase in number of miles of bikeways, increase in bicycle mode share increase in property values

Table 2, Implementation
Source: Claire Warner, Diane Patterson, David Lipscomb

Page Intentionally Left Blank

Chapter 4

Gardens

Overview

Community gardens can play a critical role in neighborhood health. In recognition of the important ways that cities can impact gardens' success, the Let's Move! Cities Towns and Counties initiative includes a strategy specifically dedicated to municipal actions that support gardens and urban agriculture.

LMCTC Strategy VII: Community Gardens/Urban Agriculture asks cities to develop and implement policies that support gardening; such as zoning changes, comprehensive plan updates, financial incentives, and to more broadly promote and increase access to community gardens by identifying existing barriers and areas of opportunity for growth.[1]

This chapter reflects our work to set Annapolis on a path to completing this strategy. It presents research on the health benefits of community gardens, existing garden assets in Annapolis, and ways that the City's current policies advance or burden their development. This analysis of current conditions is followed by tailored recommendations, many of which are focused on land use policies.

These recommendations act as a practical guide for Annapolis to promote urban agriculture, encourage gardening, and improve access to healthy foods within the City. By following these suggested actions, Annapolis can meet the requirements for LMCTC Strategy VII and achieve a healthier city that welcomes and encourages community gardens.

Gardens and Health

Community gardens can benefit multiple dimensions of individual and community health; by influencing food choices and improving access to healthy foods, providing opportunities for physical activity, and boosting mental health. Public health professionals recognize community gardens as important components of healthy communities.[2]

Access to Healthy Foods

Community gardens improve access to healthy foods such as fruits and vegetables by providing people opportunities to grow these products. This is especially beneficial for low-income and disadvantaged communities that often lack grocery stores, but are near to convenience stores and fast-food chains.[3]

[1] National League of Cities, "ALL-STARS," accessed August 9, 2017.
http://www.healthycommunitieshealthyfuture.org/all-stars/

[2] "Community Gardens," Centers for Disease Control and Prevention. June 3, 2010.
https://www.cdc.gov/healthyplaces/healthtopics/healthyfood/community.htm

[3] "The Role of Local Government in Creating Healthy, Livable Neighborhoods," Local Government Commission, July 16, 2013.
https://www.lgc.org/community-gardens/

Physical Activity
Gardening can encourage more active lifestyles by providing both children and adults the opportunity to exercise by stretching, bending, walking, digging and lifting tools and plants.[4]

Mental Health
Gardening can be a major stress reducer. Studies show that exposure to natural environments, such as community gardens, relieves mental fatigue, boosts individuals' coping abilities and overall life outlook, and can increase concentration and productivity.[5]

Broader Benefits

In addition to the health benefits, community gardens offer educational, economic, environmental and social advantages. Gardens with the most potential to foster strong and healthy communities are those that provide open space for gatherings and events, offer educational opportunities for youth, target low-income residents, include all races and ethnic groups, allow gardeners to sell produce through a farmer's market, and create a process that promotes the donation of excess produce to food shelters.[6]

Educational Opportunities
Community gardens provide educational opportunities for children and adults who are unfamiliar with healthy eating or gardening. The hands-on exposure provided by gardens is also a great place for children to learn math, business, and communication skills through applied activities and interaction.[7]

Economic Benefits
Community gardens are affordable; little investment is needed to create one.[8] Residents who apply for plots would be responsible for planting and maintaining their plots and the City or non-profit organization in charge of the garden would be responsible for supplying participants with land for gardening, water for irrigation, and tools as a one-time expense.[9] Community gardens can also present economic benefits through enhancing property values of adjacent neighborhoods and yielding profits for gardeners based on food production and sales.[10,11]

---

[4] "The Role of Local Government in Creating Healthy, Livable Neighborhoods."
[5] "Multiple Benefits of Community Gardening," Gardening Matters, 2012.
http://www.lamar.edu/sustainability/_files/documents/Multiple%20Benefits_2012.pdf
[6] "The Role of Local Government in Creating Healthy, Livable Neighborhoods."
[7] Paige Pfleger, "Healthy Eaters, Strong Minds: What School Gardens Teach Kids." NPR, August 10, 2015.
http://www.npr.org/sections/thesalt/2015/08/10/426741473/healthy-eaters-strong-minds-what-school-gardens-teach-kids
[8] "The Role of Local Government in Creating Healthy, Livable Neighborhoods."
[9] "The Role of Local Government in Creating Healthy, Livable Neighborhoods."
[10] Ioan Coicu and Vicki Been. "The Effect of Community Gardens on Neighboring Property Values." 2016. Real Estate Economics. http://furmancenter.org/files/publications/The_Effect_of_Community_Gardens.pdf
[11] "Multiple Benefits of Community Gardening," 2015. Gardening Matters
23https://www.gardeningmatters.org/sites/default/files/u106/Multiple_Benefits_2015_4.pdf

Social Interaction and Community Engagement
Community gardens create community pride and ownership by acting as a focal point for residents to gather and organize, and also as a place for youths to interact with their peers while engaging in beneficial activities.[12]

Environmental Stewardship
Gardens reduce air pollutants by absorbing carbon dioxide and also help reduce stormwater runoff from rain, minimizing surface erosion.[13] Small open spaces in urban areas provide crucial corridors for retaining native wildlife and supporting migratory species.[14]

Urban Agriculture Overview

The term urban agriculture is used to describe the full range of food-growing practices within a city, including anything from a backyard garden to an urban farm. Communities use a variety of terms to describe these practices, but this report refers to the following five types for clarity:

- ***Home Gardens:*** Food-producing spaces on private and residential property (multifamily or single family) used primarily by the property's residents or guests. These gardens are mainly for personal consumption.[15]

- ***Community Gardens:*** Shared gardens that can occur both on private and public property. This allows those who do not own land, or who cannot or chose not to garden on their own property, to garden within the city. These gardens are separated into individual plots, and in some instances, shared plots, for donation or sales.[16]

- ***Small-Scale Growing:*** Growing operations on properties smaller than ¼ acre, such as educational gardening programs, composting, vermiculture, food bank gardening, herb growing, beekeeping, pocket garden, floriculture, or market gardens.[17]

- ***Large-Scale Growing:*** Growing operations on properties greater than ¼ acre, such as urban farms, urban orchards, animal husbandry, horticulture, native plant production, nurseries, and beekeeping. [18] This type is mainly undertaken for the purpose of selling.

---

[12] "Multiple Benefits of Community Gardening." 2015.

[13] "Multiple Benefits of Community Gardening." 2015.

[14] "Multiple Benefits of Community Gardening." 2015.

[15] NPLAN and ChangeLab Solutions, "Seeding the City: Land Use Policies to Promote Urban Agriculture," October, 2011: 4

[16] "Seeding the City," 4

[17] Balmer, Kevin, James Gill, Heather Kaplinger, Joe Miller, Melissa Peterson, Amanda Rhoads, Paul Rosenbloom, and Teak Wall."The Diggable City: Making Urban Agriculture a Planning Priority" (2005). Master of Urban and Regional Planning Workshop Projects. Paper 52. http://pdxscholar.library.pdx.edu/usp_murp/52:23

[18] "The Diggable City," 23

- ***Growing on Impervious Surface or Poor Soil:*** Includes vertical gardening, indoor growing (e.g. sprouts, mushrooms, aquaculture, vermiculture), greenhouses, farm stands, community processing, farmers' markets, container gardening, or hydroponics.[19]

Urban Agriculture

Annapolis has only 3% vacant land, thus there is little room to accommodate large-scale growing practices such as urban farms.[20] The City should therefore focus on smaller-scale food-growing practices such as home gardens, community gardens, small-scale growing and growing on impervious surfaces or poor soil.

The publically owned land within the City offers an opportunity to bring healthy food to disadvantaged communities. There are six public housing and two mixed-income properties within Annapolis.[21] Residents who live in these developments do not have access to private open space and, as a result can't garden as readily as those who live in single-family houses who have access to space for gardening. Low-income residents are less likely to eat healthy foods due to both time and budget constraints.[22] To encourage these residents to take part in gardening, space should be made available for community gardens nearby their homes. Educational programs about gardening and the benefits of eating healthy foods grown in community gardens would help residents maintain their health.

[19] "The Diggable City," 23

[20] City of Annapolis, Annapolis Comprehensive Plan, (Annapolis, MD: 2009): 17

[21] "Property Locations," Housing Authority of the City of Annapolis, accessed August 9, 2017, http://www.hacamd.org/housing/property-listing.html

[22] Steven Bradbard, Eileen F. Michaels, Kathryn Fleming, and Marci Campbell. "Understanding the Food Choices of Low Income Families," Lisboa Associates, Inc. May 30, 1997. https://fns-prod.azureedge.net/sites/default/files/NUTRI.PDF

Approach

Methodology

To understand the opportunities and challenges for community gardens, we reviewed best practices of cities that have adopted urban agriculture, inventoried Annapolis' existing resources, conducted stakeholder meetings with local garden advocates, and explored prospective garden sites within the City.

Review of Best Practices

We found that many U.S. cities have promoted urban agriculture by allowing it as a permitted use in many zoning districts within their city limits. Other cities have provided land for community gardens by hosting these gardens on park land, while others have taken an administrative role by working with local organizations and schools to encourage residents to engage in community gardening. Some very forward-thinking cities have taken an additional step to promote rooftop gardening, bee-keeping, animal husbandry, aquaponics, and hydroponics within their cities.[23]

Asset Inventory

Existing Gardens and Operators

Community gardens in Annapolis are few and far between. The leading local community gardens organization is the non-profit Grow Annapolis. They have operated since 2010, with a mission to foster and sustain community gardens and urban agriculture projects.[24] Over the past seven years, Grow Annapolis has developed and maintained three community gardens in the Annapolis area while also initiating several school-based gardens throughout the public school system. Today, only two community gardens remain; one in Eastport and in Hollywood, across the Severn River. None of the school gardens are still functioning.

Figure 1, Grow Annapolis Logo
Source: Grow Annapolis http://growannapolis.org/

[23] Trish Popovitch, "10 American Cities Lead the Way With Urban Agriculture Ordinances," Seedstock, May 27, 2014. http://seedstock.com/2014/05/27/10-american-cities-lead-the-way-with-urban-agriculture-ordinances/

[24] "Joel Bunker – Founder," Grow Annapolis, accessed August 8, 2017. http://growannapolis.org/?page_id=708

Policy and Planning Documents

The Sustainable Annapolis Community Action Plan (2010) is one of the City's few planning documents to acknowledge the benefits of community gardens and urban agriculture relating to local economic development and generating greater access to healthy foods. While the plan was never formally adopted, it is considered to be a guiding document. The plan raises the need for a zoning update to include community gardens and identifies the potential for underutilized space on rooftops to be used as gardens or green spaces. This plan was developed through extensive stakeholder engagement and emphasizes the priority Annapolis residents place on creating a healthy local food system and access to community gardens.[25]

Food Retail Environment

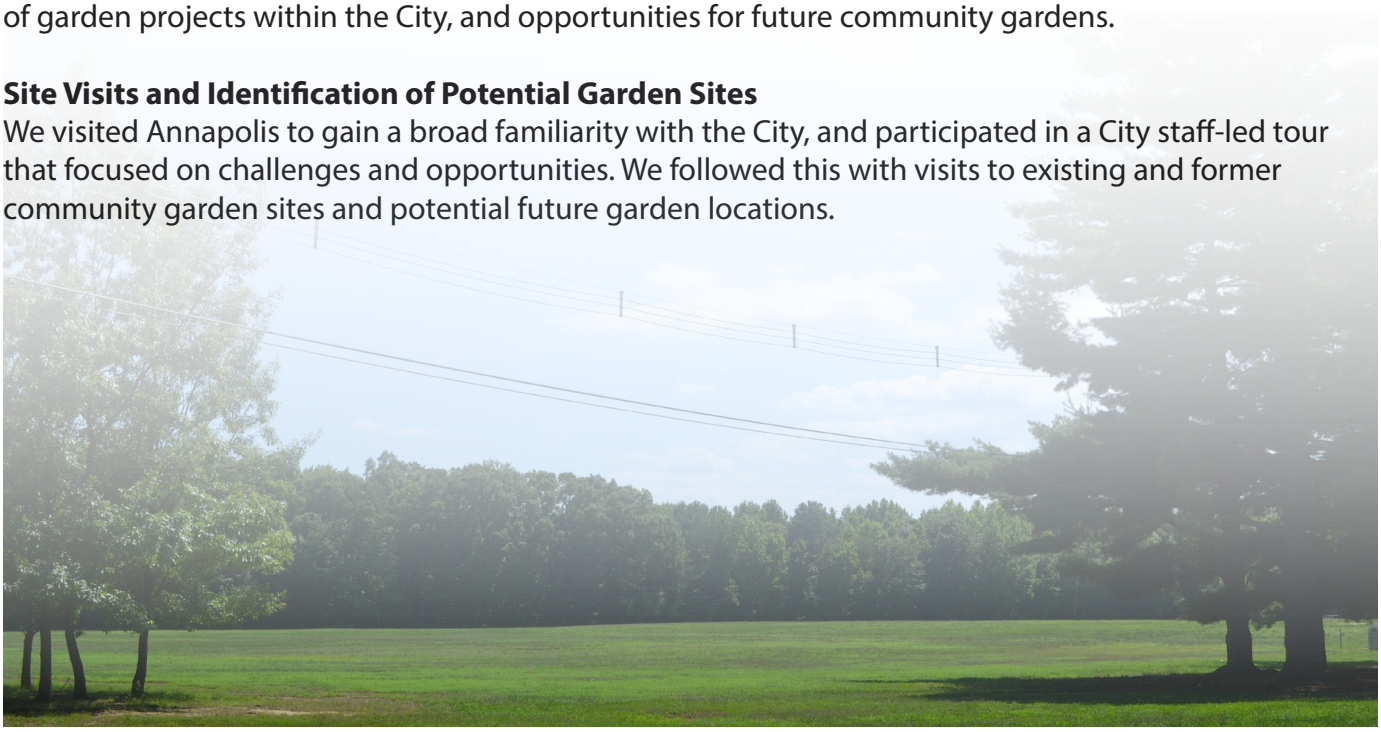
Communities' food retail environments influence access to healthy food and residents' food choices.[26] We assessed the distribution of food retailers within the City to understand existing options for acquiring healthy food (see Figure 2).

Stakeholder Meetings

Due to limited time, resources, and connections to the Annapolis community, broad community engagement was not feasible within the scope of this project. Instead, we met with several agriculture experts and local community garden advocates, including members and leaders of the local non-profit organization Grow Annapolis, to discuss best practices for community gardens, successes and failures of garden projects within the City, and opportunities for future community gardens.

Site Visits and Identification of Potential Garden Sites

We visited Annapolis to gain a broad familiarity with the City, and participated in a City staff-led tour that focused on challenges and opportunities. We followed this with visits to existing and former community garden sites and potential future garden locations.



[25] Rob Savidge. "Sustainable Annapolis - Community Action Plan," The City of Annapolis. May 20, 2010. https://www.annapolis.gov/DocumentCenter/View/488

[26] Centers for Disease Control and Prevention, "Healthier Food Retail: Beginning the Assessment Process in Your State or Community." (Atlanta: U.S. Department of Health and Human Services, 2014): 2.

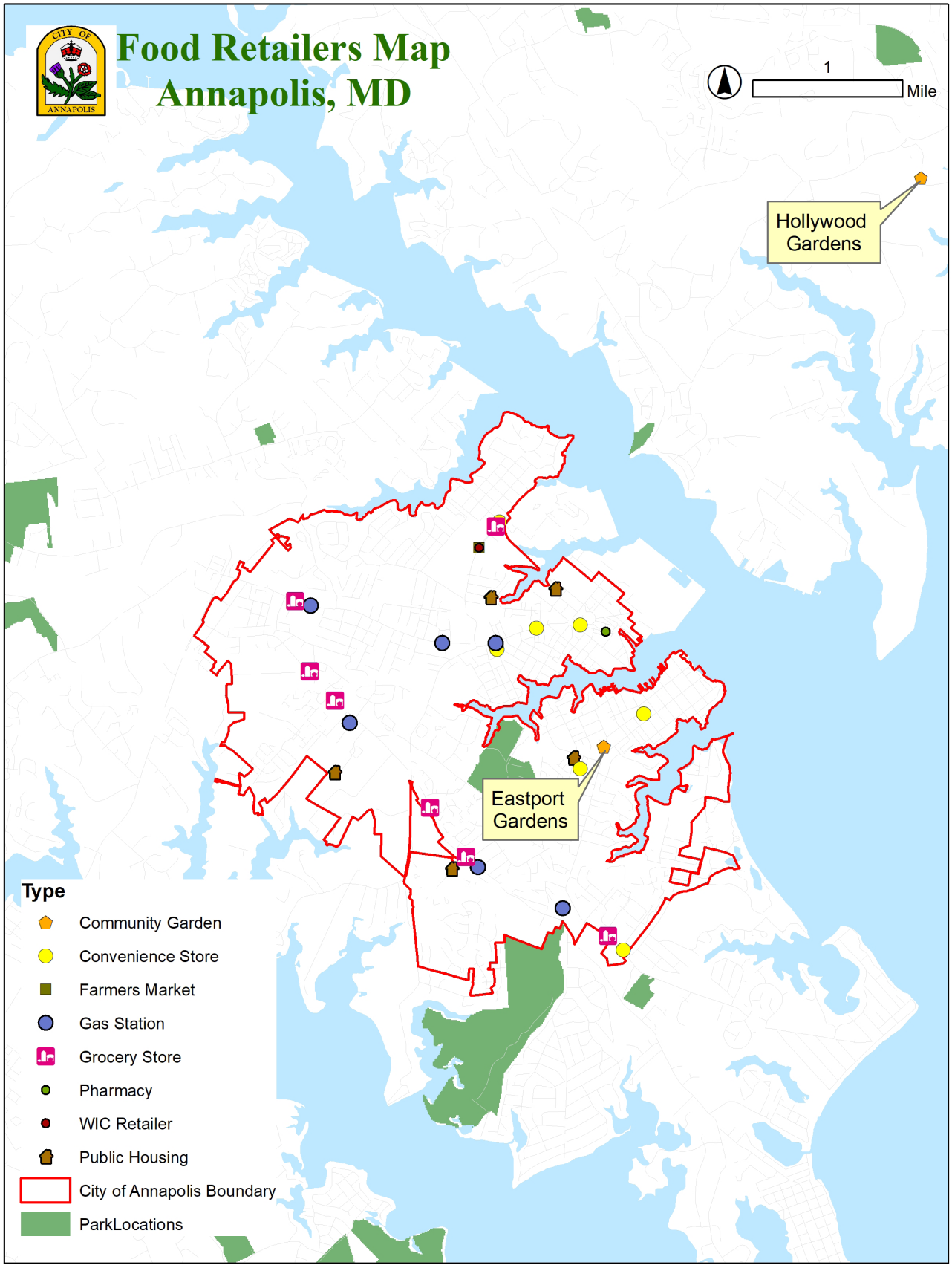


Figure 2, Map of food retail establishments and locations of current community gardens.
Source: Anne Arundel County, City of Annapolis and Google Maps.

Issues and Recommendations

Local governments can have a powerful impact on the establishment and success of urban agriculture. By implementing policies and regulations that shape the nature, placement, and function of gardens, Annapolis can encourage the types of agriculture that are best suited to the community while addressing potential concerns about gardens' impact on neighborhoods.

The following section highlights the current barriers to the growth of community gardens in Annapolis. Each issue is followed by a series of recommended actions the City can take to ameliorate that barrier. Issues relating to land use are discussed first; updating the Comprehensive Plan and the City code are ultimately the most important ways to formalize support for community gardens in the City's legal framework and future plans. The next set of issues focuses on broader next steps that address the City's limited land availability, gardens' tenuous legal status, and barriers to communication. The recommendations as a whole provide the steps Annapolis must take to ensure that community gardens are successful over time and support a community culture where gardens can thrive.

Comprehensive Plan

Issue: Community gardens are not addressed or promoted in the comprehensive plan.

The current Comprehensive Plan (2009) omits mention of community gardens, but a planned revision offers the opportunity to integrate community gardens as a City priority. The revised plan can outline the connections between community gardens and the City's long-term goals for neighborhood quality and economic vitality. The Plan can establish specific principles and objectives that enhance community gardeners' ability to gain access to suitable land, ease operational and financial burdens, and ensure gardens' long-term existence on established sites. Without the encouragement and infrastructure that inclusion in the Comprehensive Plan provides, community gardens lack emphasis as a priority as well as an implementation plan to ensure they become a reality.

Recommendation: Insert an urban agriculture goal into the Land Use and Economic Development chapter of the Comprehensive Plan.

Annapolis Comprehensive Plan
Chapter 3 - Land Use and Economic Development

Policy 12. Support the development of urban agriculture within the City in order to promote public health, economic development, community connections, and environmental sustainability.

12.1 Foster the stability and longevity of community gardens by protecting current community gardens on public land with long-term lease agreements, and by incentivizing private landowners to do the same.
12.2 Conduct a vacant land and open space inventory to identify prospective sites for community gardens and share this inventory publicly.
12.3 Incorporate community garden space in future redevelopment plans for Housing Authority of the City of Annapolis (HACA) properties and encourage private developers to include gardens in new affordable dwelling units.
12.4 Prioritize the inclusion of community gardens in plans for current and future opportunity areas.
12.5 Revise zoning regulations to establish home and community gardens as a permitted use in all residential and open space districts. Update commercial and industrial, office and mixed use, and waterfront maritime district use tables to indicate status of community gardens.
12.6 Establish site design requirements, operating standards, and guidance on accessory uses to provide clarity to the operations of community gardens.

City Code

Issue: Community gardens operate without clarity or direction from the City Code.

The land use regulations in the City Code are also underutilized tools for the promotion of community gardens. Because community gardens are not currently addressed, they operate in a gray area where the City's requirements and expectations for gardens are not delineated. Gardens' ongoing operations are also placed at risk when their unclear legal status makes them easier to shut down as non-permitted uses, or to be uprooted in favor of development projects that are specifically allowed in that zone, as was the case with the former garden site on city property at the old Annapolis recreation center. The zoning code could offer more clarity to community gardens by directing the preferred scale of gardens, the locations or zones where gardens should exist, and even the design and function of gardens through regulations for operating standards and allowable accessory uses.[27]

Recommendation 1: Insert zoning language that addresses appropriate districts for the operation of home gardens and community gardens.

The following suggested zoning language defines the forms of urban agriculture that should be permitted in appropriate areas of the City, and identifies the zoning district where each form should be allowed.

[27] "Seeding the City," 6-9.

Proposed Home Garden Definition: A home garden is a garden located on single or multifamily residential property that is intended to be used by that property's residents and guests for the cultivation of flowers, fruits, vegetables, herbs, and other food crops.

Proposed Community Garden Definition: A community garden is a garden located on private or public property that is used for the collective cultivation of flowers, fruits, vegetables, herbs, and other food crops by multiple individuals. Community gardens may be divided into separate plots for individual users and can include common areas for shared harvesting or passive enjoyment.

Suggested Zoning Table

	Residential	*Industrial*	*Commercial*	*Mixed- Use*	*Office*	*Waterfront Maritime*	*Open Space*
Home Gardens	P	P	P	P	P	S-Std	P
Community Gardens	P-Std	P-Std	S-Std	P-Std	S-Std	S-Std	P-Std

P = Permitted Use; S = Special Exception Use; -Std = Use Subject to Standards (Chapter 21.64);
A = Accessory Use; Blank = Not Permitted

Recommendation 2: Establish site design requirements for future community gardens.

Site design requirements will help the City shape the appearance of community gardens in ways that can help mitigate potential concerns about negative visual impacts. The City should consider the following elements, and select guidelines for adoption that support the City's goals for visual character:

Size: Community gardens are limited to one acre. Individual raised bed plots should be no more than 5 feet wide and eight to 12 feet long, to ensure that gardeners can reach plants and overgrowth within plots isavoided. Plot length, number of plots, and overall size of the entire garden will vary by site and be dependent on community interest and commitment and available land.

Accessibility: Raised-bed plots should maintain walkways of at least 4' on each side. All gardens should include ADA accessible plots.

Signage: All gardens should display signs displaying operating hours, garden rules, and contact information of the site manager. Signs in community gardens shall be permitted in accordance with the regulations of the underlying zoning district. They should be constructed from durable materials able to withstand the natural elements (paper/cardboard signs will not suffice).

Fencing: Fences in community gardens are optional and shall be permitted in accordance with the regulations of the underlying zoning district. Consider the use of fences, where necessary, for securing gardens from trespassers as well as wildlife.

Visual Buffer: Incorporate local plants harmonious with the adjacent neighborhoods, making gardens a contributor to the neighborhood aesthetic. Especially consider additions of visual buffers when fences are present.

Structures: Storage facilities and structures, such as sheds, should be located on site, or as close to the site as possible. All tools should either be securely locked in the shed or taken home at the end of each day. If in an area with unique character or architecture, sheds, or other structures, should conform to the style or color scheme of the surrounding communities.

Recommendation 3: Establish operating standards for future community gardens.

Zoning revisions should include updating Chapter 21.64 - Standards for Uses Subject to Standards with operating standards for community gardens that offer more clarity on gardens' establishment and operation within the City. For example:

21.64.180 - Community Gardens

A. Soil Testing: Home gardeners are strongly encouraged to test their soil for potential contaminants before growing foods for consumption. Community garden operators must conduct an initial soil assessment before proceeding to site design to determine the presence of any harmful contaminants. Operators of sites where contaminated soil is found must provide a remediation plan to the City if they wish to proceed with gardening on the site.

B. Garden Rules: Community gardens must develop a list of rules that address operating season and hours, site access and security, use of water and pesticides, and plot maintenance; key rules should be posted at the garden site. Garden users must sign an agreement stating that they will adhere to these rules as a condition of their participation in the garden. Each garden must also have a site manager who coordinates on-site operations and serves as a liaison to City Parks and Recreation Staff.

C. Hours of Operation: Gardens shall only be used between sunrise and sunset, as seasonally appropriate.

D. Maintenance: Community gardens must be kept free of overgrown weeds and grass. Fences, signs, and structures should be subject to regular maintenance. Site managers are responsible for monthly visual inspections to ensure upkeep; garden users who fail to maintain their plots may forfeit their right to use the space.

E. Compost & Waste Management: Community garden users must store any compost at least three feet from adjacent properties and in a manner that minimizes visual and olfactory impacts on adjacent properties. Waste should be securely stored and regularly disposed of according to the rules of the underlying zoning district.[28]

Recommendation 4: Address accessory uses that may arise at community garden sites.

Community gardeners may seek to expand the activities that occur on site to include related functions such as produce sales and animal husbandry. The City should consider how these accessory uses will be governed, using the suggestions below as a guideline.

[28] "Seeding the City," 29

Sales: Sales of produce grown on-site are permitted as an accessory use twice per year for the purpose of fundraising to support the community garden. Sales of produce must comply with other relevant local, state, and federal regulations governing the production and sale of food, business licensing, and the collection of taxes.[29]

Chickens: The keeping of chickens at community garden sites is permitted as an accessory use in accordance with the standards established in Chapter 8.04 - Animal Control.

Recommendation 5: Update the APFO for recreational facilities to include community gardens.

The Standards section of the APFO states that new developments shall include 1,000 square feet of public recreational space per each single family-detached dwelling unit, 750 square feet for each single-family attached dwelling unit, and 500 square feet for each multifamily dwelling unit, two-family dwelling unit, or dwelling unit above the ground floor of nonresidential uses.[30] This standard should be amended to clearly allow community gardens to be counted toward the required square footage of adequate recreation facilities.

Recommendation 6: Count community gardens toward Common Open Space Requirements for Planned Developments.

Residential, business, and mixed-use planned developments are currently required to provide common open space. The standard for common open space (21.24.060) should be amended to include community gardens as an accepted form of common open space that meets these requirements.

Land Availability and Cost

Issue: There is limited undeveloped land within the City, so space for gardens is expensive and difficult to obtain.

Many of the limits on community gardens stem from the limited land available within the City. With only 3% of the land area undeveloped, gardens are a low priority for vacant lots.[31] The competition for these undeveloped spaces means that non-profit gardening organizations have to pay high rents to garden on private property. Private landowners are not always willing to reduce their rates in service of a good cause. These high costs are passed onto garden users in the form of high annual fees for garden plots, which can make participation unaffordable for low- and moderate-income families.[32] When gardens are located outside the city limits, farther from residents' homes, the time commitment increases significantly. Both of these factors make gardening less accessible to disadvantaged populations who most need access to healthy food.

---

[29] "Seeding the City," 33, 14-15.

[30] "Adequate Public Facilities," City of Annapolis, accessed August 9, 2017, https://www.annapolis.gov/966/Adequate-Public-Facilities

[31] City of Annapolis Comprehensive Plan

[32] Cathy Umphrey (of Grow Annapolis) in discussion with the authors, July 2017.

Recommendation 1: Incentivize private landowners
To encourage private landowners to offer space to community gardens at affordable rates, some cities have implemented economic policies that incentivize community gardens on private property. Annapolis should study the feasibility of offering private landowners the opportunity to reduce, freeze, or abate their property tax obligations for the period in which a non-profit community garden is in operation on their land.

Best Practice: Washington D.C.

The Urban Farming and Food Security Act (2014), placed Washington D.C. among the leaders in prioritizing urban agriculture projects among U.S. cities. Some of the more notable segments of the bill include: 1) the development of a land-leasing initiative specifically for urban agriculture projects on both private and public vacant lots; 2) the addition of a 3-year minimum lease agreement with District of Columbia properties; 3) District coordination with the Office of the State Superintendent of Education to develop instructional programs for students to promote career opportunities through educational experience working in gardens; and 4) the allowance of a 90% tax abatement to private property owners who lease their land for agricultural use. [33]

Figure 3, Local non-profit DC Greens promotes community gardens, like this one, around the District and supported the passage of this measure as an important tool for their work.
Source: DC Greens. Digital Image. DC Greens. December 8, 2014. Accessed August 16, 2017, http://dcgreens.org/wp-content/uploads/2014/12/chard-sized2.jpg)

Recommendation 2: Dedicate park land
Because of the limited availability and high cost of private land, a key way to ensure that community gardens are affordable and accessible to City residents is to place the gardens on public park land, where the financial and time barriers to use are greatly reduced. Community gardens should be prioritized in the Parks chapter of the revised Comprehensive Plan and any future updates to the *2004 Parks, Recreation and Open Space Master Plan* to ensure gardens are considered in current park redevelopment and future park planning.

[33] Council of the District of Columbia, "D.C. ACT 20-599," January 26, 2015. http://lims.dccouncil.us/Download/31209/B20-0677-SignedAct.pdf

Best Practice: City of Rockville

The City of Rockville is an excellent model for the use of public parks, operating an official community garden at **Woottons Mill Park** with plots available for City residents at a rate of $55 per year.

The garden includes 177 garden plots measuring approximately 20' x 25' including one raised plot that is handicap accessible.[34]

Figure 4, The Woottons Mill Park Community Garden in Rockville
Source: City of Rockville. Digital Image. Accessed August 12, 2017. http://rockvillemd.gov/images/pages/N974/woottonsmillgardenplots.jpg

Recommendation 3: Include community gardens in public housing redevelopment.
The Housing HACA housing developments offer another opportunity to place gardens on public land and close disadvantaged populations. As HACA embarks on a major project to redevelop or reconstruct many of their properties, the inclusion of community gardens in the site planning can help achieve their goals of increasing common recreation space and opportunities for physical activity and improving neighborhood appearance and quality.[35]

Best Practice: City of Frederick

Figure 5, HACF built community gardens
Source: Housing Authority of the City of Frederick. Digital Image. Accssed August 12, 2017. http://www.hacfrederick.org/wp-content/uploads/2015/12/Copy-of-IMG_4736.jpg

The Housing Authority of the City of Frederick (HACF) is a great model of a holistic approach to community gardens. Their **Healthy Families Initiative** supports families by investing in their health, food, and community through four key program areas: 1) community gardens at the Carver and Lucas Village developments; 2) monthly "Community Table" cooking classes where residents share meals and recipes; 3) regular gardening workshops guided by Frederick County Master Gardeners; 4) and a weekly year-round youth garden club managed with the volunteer help of older teens. A HACF staff member, the Healthy Families Initiative Coordinator, manages these programs and strengthens the agency's focus on healthy communities.[36]

[34] "2017 Garden Plot Program at Woottons Mill Park," City of Rockville. Accessed August 12, 2017. http://www.rockvillemd.gov/?nid=653

[35] Housing Authority of the City of Annapolis, Annual and Five Year Plan, 2015 - 2019. 2015. http://www.hacamd.org/home/annual-and-5-year-plan.html?task=document.viewdoc&id=25

[36] "Healthy Families Inititative," Housing Authority of the City of Frederick, Accessed August 9, 2017. http://www.hacfrederick.org/healthy-family-initiative/

Recommendation 4: Bring community gardens on public property under the City's municipal liability coverage.

Insurance can be a major expense for non-profit community garden operators that can drain limited resources better spent on programming and enhancement of the garden itself. The City should study the feasibility of adding the current Grow Annapolis Eastport Fire Station garden to the Annapolis' insurance, along with any future gardens on public land.

Best Practice: New York City

New York City Covers Community Gardens on Public Land under Municipal Liability Insurance.With the aim of reducing the rising costs incurred by community gardeners, the City removed the requirement that gardens carry liability Insurance.

This requirement cost community gardens around $425 per year. Now, New York City has extended municipal liability protection to community gardeners, no longer requiring garden organizations to pay for private insurance policies.[37]

Figure 6, NYC ParksLogo
Source: NYC Parks Logo. Digital Image. NYC Parks. Accessed August 9, 2017.

Recommendation 5: Conduct a land inventory and identify potential garden sites.

The City should inventory open space on both public and private land that might be suitable for gardening and then share the findings publicly. Helping gardeners identify sites can ease a major hurdle toward the construction of future gardens and encourage the consideration of gardening as an appropriate interim or long-term use for vacant and underutilized land.

As Annapolis steers future growth toward the four Opportunity Areas identified in the 2009 Comprehensive Plan, these planned mixed-use development projects are excellent potential sites for community gardens. As part of the land inventory process, the City should look at ways to incorporate community gardens into future plans for these areas and treat them as desired contributions from developers in Planned Community zoning categories. Shared gardens at these sites would help developers incorporate green space, provide amenities for future residents, and support the City's stated objective that these areas use environmentally friendly design.[38]

To help identify potential sites for community gardens, we conducted a preliminary land inventory of the Annapolis area. We used Google Maps to identify open spaces and generated an initial list of 20 sites that best met our initial site selection criteria: 1) available open space, 2) proximity to existing facilities, 3) proximity to disadvantaged communities, and 4) accessibility to nearby neighborhoods.

[37] New York City Department of Parks & Recreation, "City Drops Liability Insurance Requirements for Community Gardeners," March 23, 2006. https://www.nycgovparks.org/news/press-releases?id=19761%20

[38] City of Annapolis Comprehensive Plan, 19.

Our team then conducted site visits, noting the feasibility for future gardens at each location, and identified a final list of five priority sites for future study. The site selection process did not comprehensively cover or consider all open spaces in Annapolis; we recommend that a more thorough site selection process occur in the future. This list is intended to provide the City with diverse examples of spaces that could be used for community gardening. Figure 7 shows the locations of sites with potential to host community gardens, while Table 2 provides a brief description of why each site was chosen.

All of our chosen sites have sunlight exposure, four of the five have strong potential for water infrastructure availability and access, and four of the five sites are immediately accessible to nearby communities without the use of an automobile. This preliminary investigation also indicated that much of the open space in Annapolis is located on Anne Arundel County School (AAPS) properties, as seen at two of our five sites. While none of the selected sites appear on commercial or industrial land, it is important to keep a variety of land use types in consideration for potential garden sites.

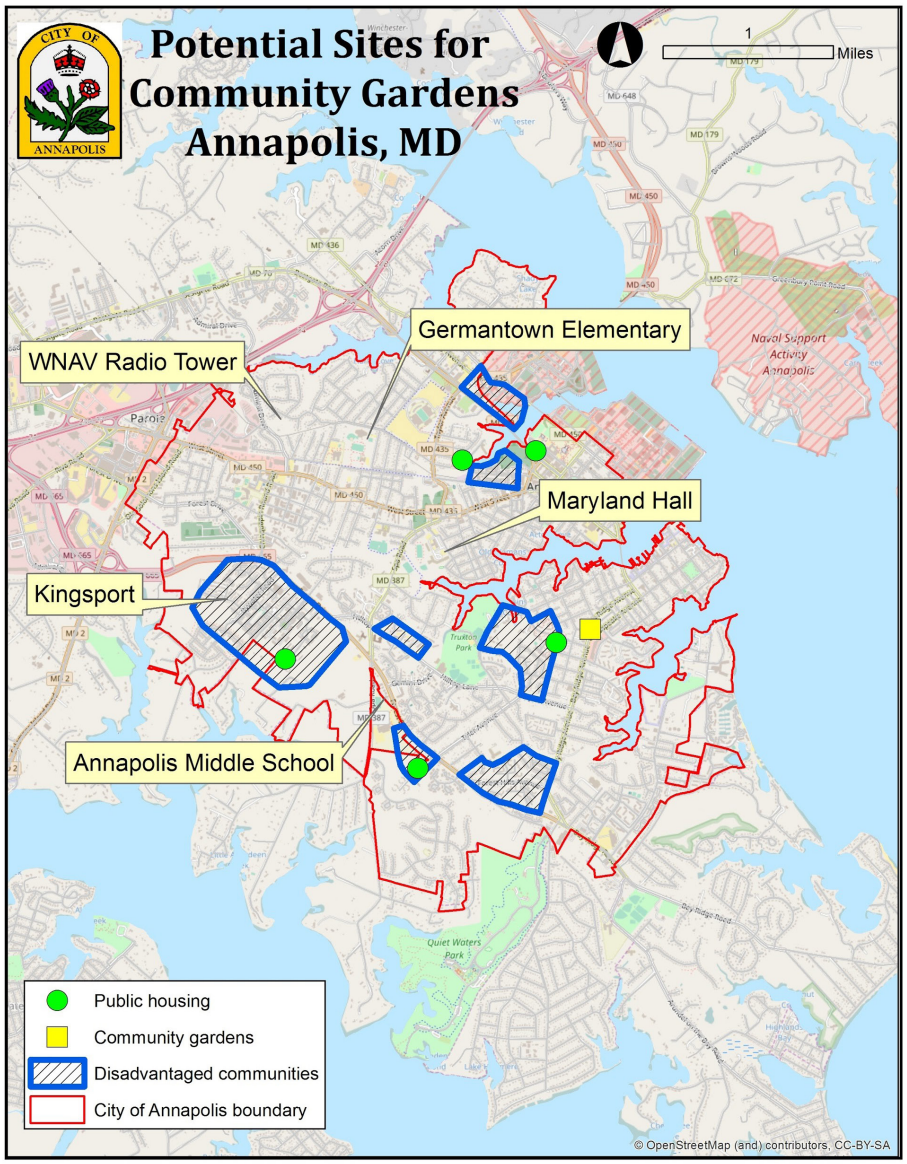


Figure 7, Potential Sites for Community Gardens in Annapolis, MD.
Source: Google Maps, HACA and City of Annapolis

Selected Sites	Land Ownership	Reason for Selection
WNAV Radio Station 236 Admiral Dr. Annapolis, MD	Private	The WNAV station has about 100,000 sq ft of land dedicated for its equipment, but much of this space is unused. The station is within walking distance of multiple neighborhoods, making it easily accessible. Equipment would likely need to be fenced off.
Maryland Hall 801 Chase St, Annapolis, MD	Private	The Maryland Hall site is already a well-established community resource and has multiple areas of open space that could accommodate a garden. It is connected well by paths and trails, has public parking, and is within walking distance of multiple neighborhoods, including disadvantaged communities.
Germantown Elementary 200 Windell Ave, Annapolis, MD	Public	While most is likely used for recreation, Germantown Elementary School has a great deal of open space. This location previously operated school gardens and still retains raised bed infrastructure from previous gardening efforts. The site is well connected to nearby communities by car, bike, transit, foot, and has parking facilities
Kingsport Coordinates: 38.967394, -76.528354	Public	This site, located just between the Kingsport and Bywater communities, has a large quantity of unused space. There are already park facilities (a playground) at the site. The site is easy to access by foot, bike, or car, however there is no available parking. This site may lack accessible water infrastructure.
Annapolis Middle School 1399 Forest Dr, Annapolis, MD	Public	Annapolis Middle School has large quantities of open space. The site has parking, but is not nested within adjacent neighborhoods, making walking access limited, however, parking is available. It is located nearby several disadvantaged communities.

Table 2, Potential Community Garden Sites
Source: Site Visit and Google Maps

Legal Protection

Issue: Gardens are vulnerable to displacement due to the lack of formalized lease agreements.

Figure 8, Grow Annapolis' former community garden at City Dock.
Source: The Baltimore Sun. Digital Image. Accessed August 12, 2017.
http://www.trbimg.com/img-5715476f/turbine/bs-mtblog-261175-grow_annapolis_a_community_gar-MTIMG1/500/500x281

Once gardens are established, having clear legal protections in place becomes important. Nationwide, one of the top concerns of community gardens is the fear of displacement by other development. The displacement of the Grow Annapolis garden at City Dock is an example of this pattern. While the City of Annapolis was very helpful in providing an alternate site at the Eastport fire station, gardeners are still wary about their long-term status on the land. Without a formal lease, the same situation could arise again. This sense of impermanence can deter feelings of ownership needed for well-maintained and successful community gardens.

Recommendation: Support long-term leases of 3 to 5 years for gardens on both public and private land.

Cities like Minneapolis, MN have adopted public leases to help protect community gardens from displacement.[39] These leases are agreements between the landowner, or the city itself, and a non-profit organization to use the land as a community garden. These agreements generally contain the following clauses: the parcel, term (usually 1-5 years) and rent, operation and maintenance of parcel, utilities expenses and taxes, termination, indemnity and waiver of liability, insurance, and general provisions.[40, 41]

Getting the Word Out

Issue: Fragmented communication and coordination hampers gardens' growth and impact.

Successful community gardens have high resident participation and are often a part of larger health and food policy initiatives. To achieve this, residents must be aware of nearby garden resources. In Annapolis, information about garden resources is difficult to find because it is spread across multiple organizations and agencies. It is difficult for garden leaders seeking to recruit new participants to reach disadvantaged populations who are most in need of healthy food. Cultural and language differences enhance these communication challenges.

Recommendation 1: Develop a better understanding of the needs and wishes of City residents, with a particular emphasis on disadvantaged communities with barriers to accessing healthy food.

The planning process for future gardens should begin with open communication between the City, garden advocates, and residents. Before understanding the nature and scale of gardens that will best suit the City, residents should be engaged in a dialogue about gardens and healthy food. Engaging residents early in the process can help build local support and address potential concerns that could derail garden projects.

Recommendation 2: Use the City website as a garden information portal for residents.

The City's Parks and Recreation or Health and Wellness webpages would be excellent places to house information for city residents about community gardens in the area. City residents would be more likely to use community gardens and reap the related health benefits if they knew where and how to access them. This is a low-cost, low-effort solution that will publicly display the City's interest in community gardens and help promote their implementation.

---

[39] "Minneapolis Garden Lease Program," City of Minneapolis, May 22, 2017. http://www.ci.minneapolis.mn.us/sustainability/homegrown/WCMSP-170166

[40] Minneapolis Garden Lease Program

[41] NPLAN and ChangeLab Solutions, "Ground Rules:A Legal Toolkit for Community Gardens," February 2011. http://www.changelabsolutions.org/sites/default/files/CommunityGardenToolkit_Final_%28CLS_20120530%29_20110207.pdf: 8 - 16

Best Practice:
Montgomery County, MD

Figure 9, The Montgomery County Community Gardens website. (Source: Montgomery Parks. Screen Capture. Accessed August 12, 2017. http://www.montgomeryparks.org/services/permits-rentals/apply/community-garden/)

Montgomery County, MD presents information about its community gardens on its own section within the County website. The garden webpage includes: pricing for plots based on plot size, details regarding water access and fencing policies, expectations of gardeners, directions for how to reserve a plot, and links to an online application and gardener agreement.[42] This well organized and informative webpage offers a valuable tool to potential gardeners to learn about current programs and procedures as they search for a community garden to join themselves.

Recommendation 3: Better coordinate community garden goals and policies across City agencies with Anne Arundel County and nonprofit organizations.

The City has many potential partners available to support future efforts to expand community garden programming. To be most successful, gardening programs should be coordinated with:

Grow Annapolis: Grow Annapolis has a deep interest in furthering gardens in the City and broad knowledge about garden planning and management. Coordinating with Grow Annapolis would be a positive and informative first step in understanding the current barriers and successes of gardens in the area.

Anne Arundel County Public Schools: In partnership with Grow Annapolis, the County schools have hosted school gardens within Annapolis in the past and have actively participated in Farm to School programming.[43] To reinvigorate these efforts, Annapolis should engage the school system in a dialogue about ways to locate new gardens on school property and to engage students in gardening activities.

[42] "Welcome to the Community Garden Program," Montgomery Parks, February 6, 2017. http://www.montgomeryparks.org/services/permits-rentals/apply/community-garden/

[43] "2015 Farm to School Census Responses," United States Department of Agriculture, Accessed August 8, 2017. https://farmtoschoolcensus.fns.usda.gov/find-your-school-district/maryland/anne-arundel-co-pub-sch

Anne Arundel County Department of Health: Healthy Anne Arundel Coalition, under the county health department, has several focus areas that overlap with Annapolis' Let's Move! Cities Towns and Counties and healthy living goals.[44] Their emphasis on access to healthy food and increased physical activity could make a strong partnership for promoting local community gardens as a step toward a healthier city and county. More broadly, the health department collects data that can be used to begin to trace the impact of Annapolis' LMCTC efforts on residents' health.

University of Maryland Extension & Master Gardeners: The University of Maryland Extension provides information and direct assistance for communities interested in agriculture, youth education, food systems, health, and gardening. The program has staff and offices in 23 counties, including Anne Arundel.[45] The Extension includes a Master Gardener program, which provides expert volunteer gardeners trained to educate the public about gardening best practices, horticulture, and healthy communities and landscapes. Master Gardeners have contributed to a number of garden, beekeeping, and farm projects within Anne Arundel County in the past year.[46] This no-cost resource could provide physical labor, education, and expertise to shape the future of gardens in Annapolis.

Coordination Among City Agencies: Community gardens cut across many policy areas: health and food access, environmental quality, and neighborhood vitality. Policies to promote gardens could therefore be relevant to a variety of city agencies, including Recreation & Parks, Planning & Zoning, and the Office of Environmental Quality. By coordinating future garden policies across these agencies, the City can maximize benefits of community gardens by ensuring that they meet the goals of multiple actors.

[44] "Healthy Anne Arundel Coalition," Anne Arundel County Department of Health, Accessed August 8, 2017. http://www.aahealth.org/about/healthyannearundel

[45] "About the University of Maryland Extension," University of Maryland Extension, 2017. https://extension.umd.edu/about

[46] "Master Gardener Projects," University of Maryland Extension, 2017. https://extension.umd.edu/anne-arundel-county/master-gardeners/master-gardener-projects

Additional Considerations

Limitations

Zoning Districts

For the purpose of this report, and due to the timeframe, the draft zoning table (Table 2) does not include all the zoning districts that exist within the City. A closer review of the 31 zoning districts would be required to make decisions about which zones home gardens and community gardens would be permitted.

Historic Preservation

The preservation of the historic character of downtown Annapolis is important to City leaders and residents. Because there is limited available land in the Downtown Annapolis Historic District, larger scale gardens aren't likely to find suitable space here. Residents wishing to establish smaller gardens in their yards may still be limited by the Historic District Zoning Ordinance (Chapter 21.56) and the Annapolis Historic District Design Manual. Both of these documents set standards for yard maintenance, plant selection, pesticide use, and fencing that could affect Historic District residents' ability to locate food gardens on their property.

Future Analysis

Cost of Creating Community Gardens

The cost of creating a community garden varies greatly depending on the needs of community and resources available. For example, the Vermont Community Garden Network estimates their standard community garden start-up capital expenses to be approximately $2,450.[47] This estimate reflects the most basic version of a community garden and does not include costs of fences, water infrastructure, or insurance. In contrast, more sophisticated gardens operated by Denver Urban Gardens typically require start-up capital expenses of over $20,000, however, these gardens include the costs of irrigation systems, perimeter fences, and sheds. Gardens that require higher degrees of infrastructure investment (e.g. fences and new water access) will likely incur more capital expenses than gardens that use existing facilities or do not require additional infrastructure. [48]

Community Food Assessment and Food Policy Council

Community gardens can provide an important source of healthy foods, but the establishment of a healthy local food environment that ensures access to healthy, fresh foods for all residents requires a more comprehensive policy approach. To truly understand and improve residents' access to healthy food, the City should conduct a comprehensive community food assessment that provides deep insight into food buying and eating habits, and barriers to accessing healthy food. This assessment should inform the creation of a Food Policy Council that coordinates across governmental agencies and stakeholder communities to work on the many cross-cutting policy areas that influence residents' food environment, from retail taxation to land use choices.

---

[47] Sample Garden Start-Up Estimate," Vermont Community Garden Network. Accessed August 2017. http://vcgn.org/wp-content/uploads/2013/08/SampleGardenCost-VCGN-2013.pdf

[48] Denver Urban Gardens, "Growing Community Gardens: A Denver Urban Gardens' Best Practices Handbook for Creating and Sustaining Community Gardens,"2012. http://www.nccgp.org/images/uploads/resource_files/Best_Practices_for_Community_Gardens_-_Denver_Urban_Gardens.pdf

Best Practice: Prince George's County

The Prince George's Food Equity Council (FEC) is an independent food policy council that seeks to improve the public health of Prince George's County, MD. FEC advocates for food policies and practices that will systematically alter the current food system into one that is more equitable, spurs economic development, and supports environmental sustainability. The Council was established with the support of the County Planning Department, Public Health Department, and Extension Office. Relevant projects include: 1) researching, drafting, and advocating for legislation allowing urban farming into residential uses of the city code; 2) drafting legislation for urban agriculture property tax credit legislation; and 3) partnering with local nonprofits to ensure that students in schools receive meals.[49]

Figure 10, Prince George's County FEC Logo
Source: Prince George's County Food Equity Council. Digital Image. Accessed August 12, 2017. http://www.pgcfec.org/templates/foodequitycouncil/images/logo.png

Additional Recommendations

Beekeeping

Urban agriculture enthusiasts are very interested in beekeeping. Bees are vital to crop fertilization and their populations are being decimated by the increased use of harmful pesticides.[50] Annapolis should consider the feasibility of allowing beekeeping and more pollinator-friendly gardens on public land and educating the public about the importance of pollinators to food.

Council Resolution to Support Gardens

To further demonstrate support for community gardens, the Annapolis City Council should adopt a resolution that identifies community gardens as a priority and an important tool for the City's overall health goals. The Obesity Prevention Subcommittee of the Healthy Anne Arundel Coalition has produced a draft resolution addressing many of these issues that would be an excellent model.[51]

School Gardens

Research has indicated that school gardens contribute to reduced achievement gaps, educate students about healthy eating practices, and provide healthy food access to students.[52, 53] The City should actively pursue the development of school gardening, including programs that can be integrated into the school curriculum.

[49] "Prince George's County Food Equity Council." Prince George's County Food Equity Council 2014. http://www.pgcfec.org/

[50] Chase Cook, "Annapolis, county pledge to protect honeybees, other pollinators," Capital Gazette, September 4, 2016. http://www.capitalgazette.com/news/annapolis/ph-ac-cn-annapolis-bee-city-0903-20160904-story.html

[51] Obesity Prevention Subcommittee, "Healthy Anne Arundel Coalition Subcommittee Reports, October 2012." http://www.aahealth.org/pdf/oct-2012-obesity-subcom-report.pdf

[52] Rashawn Ray, Dana R. Fisher, and Carley Fisher-Maltese, "School Gardens in the City, Does Environmental Equity Help Close the Achievement Gap?" Du Bois Review, 13:2 (2016) 379– 395. http://www.cse.umd.edu/uploads/1/7/9/4/17940149/school-gardens-in-the-city.pd

[53] United States Department of Agriculture, "School Gardens: Using Gardens to Grow Healthy Habits in Cafeterias, Classrooms, and Communities,"June 2016. https://www.fns.usda.gov/sites/default/files/f2s/FactSheet_School_Gardens.pdf

Implementation

The implementation table below summarizes the recommendations outlined throughout this chapter, and provides further direction on the timing, priority level, and party responsible for implementation, and stakeholders invested in the outcome. It also provides metrics that Annapolis can use to measure the effect of these actions, and the anticipated impact if the recommendation is implemented. This table can be used to select and phase actions to achieve Annapolis' overall urban agriculture goals over time.

Recommendation	Timeframe	Priority	Responsible Party	Stakeholders	Metric	Impact
Insert an urban agriculture goal into the Land Use and Economic Development chapter of the Comprehensive Plan	Short	High	Planning & Zoning	City of Annapolis	Adoption of a Comp. Plan that addresses urban agriculture	Establishes an urban agriculture vision and land use actions to achieve it
Add zoning language by district	Mid	High	Planning & Zoning, City Council	City of Annapolis, Residents, Businesses	Acres of land where urban agriculture is a permitted use	Delineates gardens as legal/ allowable uses
Establish site design requirements for future community gardens	Mid	Medium	Planning & Zoning	City of Annapolis, Gardeners	Number of complaints or standards violations	Regulates aesthetic and functional qualities of gardens
Establish operating standards for future community gardens	Mid	Medium	Planning & Zoning	City of Annapolis, Gardeners	Number of complaints or standards violations	Regulates use of gardens
Address accessory uses that may arise at community gardens	Mid	Medium	Planning & Zoning	City of Annapolis, Gardeners	Number of incidents/ vandalism	Dictates implementation and standards of facilities
Update APFO for Recreational Facilities to include community gardens	Mid	Medium	Rec. & Parks	Planning & Zoning, Residents	Allocated space (sq. ft.) for community gardens	Creates more allowable space for garden implementation

Count gardens as Open Space	Mid	Medium	Rec. & Parks, City Council	Planning & Zoning, Developers	Allocated space (sq. ft.) for community gardens	Creates more allowable space for garden implementation
Incentivize private landowners	Mid	High	Planning & Zoning, City Council, Finance	Property Owners, Developers	Acres of private land in use for gardening	Increases amount of available land for gardens
Dedicate park land	Long	High	Rec. & Parks, Planning & Zoning, City Council	Gardeners, Park Users	Acres of public land in use for gardening	Shows garden prioritization and increases amount of available land
Include gardens in public housing redevelopment	Long	High	HACA	Residents	# of public housing developments with community gardens	Increases access to healthy foods for low-income families
Cover public gardens under municipal liability insurance	Long	Medium	City Attorney	Non-Profit Garden Organizations	# of gardens covered under municipal insurance	Reduces operating costs for non-profit community gardens
Conduct land inventory and identify garden sites	Long	High	Planning & Zoning Rec. & Parks	Rec. & Parks AACPS, Private Landowners	% of population living within ¼ or ½ mile of a garden	Identifies vacant/ underutilized land for potential gardens sites
Support long-term leases for gardens	Short	High	Planning & Zoning, City Council	Gardeners	# of leases issued to community gardens	Stabilizes gardens for long term production and community-building
Assess healthy food needs of the public	Long	High	Anne Arundel County Dept. of Health	Businesses Residents City of Annapolis	% of population living within ¼ or ½ mile of a grocery store	Gain insight into residents' food habits, barriers to healthy food access

Create community garden website	Short	High	Office of Communications	Residents	# of city residents engaged in or aware of gardens	Makes garden information accessible to city residents
Improve coordination & communication	Short	Medium	Planning & Zoning, Rec & Parks,Office of Communications AACPS, Anne Arundel County Department of Health	Residents, Grow Annapolis	# of city residents engaged in or aware of gardens	Obtain expertise and assistance, engages residents, improves programming
Study feasibility of beekeeping and pollinator-friendly gardens on public land	Long	Low	Office of Law Office of Environmental Policy	Beekeepers	# of public gardens where beekeeping is permitted	Supports a healthy local ecosystem and synergistic use of garden space
Adopt a resolution that identifies community gardens as a city priority	Short	High	City Council Mayor's Office	Gardeners, Residents	# of community gardens per resident	Communicates gardens as a priority to residents and policymakers
Develop school garden programs	Mid	High	AACPS	Students, Parents	# of schools with active garden programs	Provides students with a great foundation in healthy eating and better food choices

Table 4, Implementation
Source: Nicole Akpedeye, Daniel Kellman, Kacy Rohn

Summary

By actively pursuing LMCTC All-Star strategies, Annapolis has declared its commitment to creating a healthier community. The recommendations made throughout this report detail how this can be achieved: through a specific focus on implementing healthy city planning and design guidelines, by updating park resources and facilities to increase their accessibility and functionality, by improving bicycle infrastructure and cycling awareness to boost active transportation, and by fostering community gardening to bring healthy food and physical activity to City residents.

Annapolis has embraced health-oriented strategies in the past, such as those in the *Bicycle Master Plan 2011*, or the *Sustainable Annapolis Community Action Plan (2010)*. However, the City's health goals have not yet been realized and the strategies recommended in these plans have not been implemented. Though Annapolis has recognized health as a priority and begun taking steps to achieve its broad vision of a healthy community, the City must confront the barriers that could prevent the full realization of these goals. Bringing these positive changes to the City undoubtedly requires the commitment of resources. New programs and infrastructure can be costly, and can require the expenditure of political capital as well as staff time and attention. These typical administrative hurdles are exacerbated in Annapolis by the restricted revenue stream created by the City's limited property tax base.

These challenges make the partnerships, funding strategies, and low-cost solutions identified in this report even more important. Pooling resources with supportive non-profit organizations, such as Grow Annapolis; using the expert knowledge of advocates such as Bike AAA; and requesting free support from national organizations, such as the Trust for Public Land, can go a long way toward implementing healthy changes in the City.

Concern about the lack of time and funding available to implement new programs also highlights the importance of maximizing the City's existing resources and making a greater effort to ensure that they are fully used and supported. In particular, the City can raise residents' awareness and use of the many resources for healthy lifestyles that already exist within the City, such as by deploying the newly-created Park Tours and by supporting employees who want to bike to work.

The City can ensure its health policies have the most impact by prioritizing investments that reduce health disparities for disadvantaged communities. In particular, families living in poverty are more susceptible to health problems and have fewer resources to address them. By increasing access to necessities such as healthy foods and safe sidewalks, reducing barriers to resources like neighborhood parks, and encouraging future development in the form of mixed-income, walkable communities, the City can reduce the health risks of its most vulnerable residents.

Adopting a health-oriented Comprehensive Plan is a concrete step towards realizing the City's health goals, as are revising the City code and implementing the recommended zoning changes. By formally adopting these measures, they become the guide for future development and redevelopment and will shape the healthy future that Annapolis hopes for.

References

Chapter 1: Healthy City Guidelines | Sources

A Guide to Building a Backyard Cottage. Seattle Planning Commission and Department of Planning and Development, June 2010. https://www.seattle.gov/Documents/Departments/SeattlePlanningCommission/BackyardCottages/BackyardCottagesGuide-final.pdf.

Active Living Design Checklist, Active Living Hennepin County, 2012. http://www.hennepin.us/-/media/hennepinus/your-government/projects-initiatives/active-living/active-living-design-checklist.pdf?la=en.

Active Living Research. Promoting Physical Activity through the Shared Use of School and Community Recreational Resources. Robert Wood Johnson Foundation: San Diego, April 2012. http://activelivingresearch.org/promoting-physical-activity-through-shared-use-school-and-community-recreational-resources.

"Alki Summer Streets 2014." Digital image. City of Seattle. June 2014. http://cosgreenspace.wpengine.netdna-cdn.com/wp-content/uploads/2014/06/AlkiSummerStreets2014.jpg.

"An Overview of the 2012 International Green Construction Code," International Code Council, 2012. https://www.iccsafe.org/international-green-construction-code/

"Annapolis Building Codes," City of Annapolis, Last modified March 1, 2017. https://www.annapolis.gov/924/Annapolis-Building-Codes.

"Blue Cross and Blue Shield Association Teams with Partnership for a Healthier America to Create New Play Streets across America," Partnership for a Healthier America, July 18, 2012, https://www.ahealthieramerica.org/articles/blue-cross-and-blue-shield-association-teams-with-partnership-for-a-healthier-america-to-create-new-play-streets-across-america-307.

Boise Citywide Design Standards and Guidelines, City of Boise, 2013. http://pds.cityofboise.org/media/213835/citywidedesignguidelines_chap1-5.pdf.

Braun, Lindsey, and Anna Read, The Benefits of Street-Scale Features for Biking and Walking, American Planning Association Planning and Community Health Center and Active Living Research, 2015. www.planning.org/nationalcenters/health/streetscale/

Center for Active Design. "Stair Prompt Signage." Accessed August 2017. https://centerforactivedesign.org/stairprompt.

City of New York Department of Health and Mental Hygiene. "Burn Calories Not Electricity Poster." The Official Website of the City of New York. Accessed August 2017. http://www1.nyc.gov/nyc-resources/service/1283/burn-calories-not-electricity-poster.

Comprehensive Plan, City of Annapolis, October 5, 2009. https://www.annapolis.gov/562/Comprehensive-Plan.

Cobb, Rodney L, and Scott Dvorak. Accessory Dwelling Units: Model State Act and Local Ordinance. Washington, D.C.: AARP: Public Policy Institute, 2000. http://www.aarp.org/home-garden/housing/info-2000/accessory_dwelling_units__model_state_act_and_local_ordinance.html.

Coppage, Jonathan. Accessory Dwelling Units: A Flexible Free-market Housing Solution. Policy Study, R Street, March 2017. https://www.rstreet.org/wp-content/uploads/2017/03/89.pdf.

Cox, Wendell. "Transportation Policy in Maryland." Transportation Policy in Maryland » Maryland Journal » The Maryland Public Policy Institute. Accessed July 2017. http://www.mdpolicy.org/maryland_journal/detail/transportation-policy-in-maryland.

Creating Great Neighborhoods. Density in Your Community, Local Government Commission, US Environmental Protection Agency, 2003. https://www.epa.gov/sites/production/files/2013-12/documents/density_0.pdf.

Design Principles for City of Alexandria, Transtria, LLC, 2006. https://www.alexandriava.gov/uploadedFiles/planning/info/general_design_principles.pdf.

"Forsyth Park | Savannah Georgia | Getting to Forsyth Park | Fountain." Visit Historic Savannah Georgia. September 18, 2015. Accessed August 10, 2017. http://visithistoricsavannah.com/forsyth-park/.

Foster, Jeremy. From Socio-nature to Spectral Presence: Re-imagining the Once and Future Landscape of Johannesburg. Safundi 10:2, 2009, 175-213.

"'Health in All Policies' bill becomes law." University of Maryland School of Public Health. Last modified May 8, 2017. http://sph.umd.edu/news-item/health-all-policies-bill-becomes-law.

"Healthiest Practice, Open Streets." Helping Cities Change Their Culture for Health. June 2016. Accessed August 14, 2017. http://www.healthiestpracticeopenstreets.org/.

Healthy Community Element. City of South Gate, 2009. http://www.cityofsouthgate.org/192/General-Plan.

"Indoor airPLUS," United States Environmental Protection Agency. Last modified June 9, 2017. https://www.epa.gov/indoorairplus.

Intersections: Health and the Built Environment. Washington, D.C.: Urban Land Institute, 2013. http://uli.org/wp-content/uploads/ULI-Documents/Intersections-Health-and-the-Built-Environment.pdf.

Jackson, Nick. "National Planning Excellence Award for Boston Complete Streets Design Guidelines." Toole Design Group. April 1, 2015. Accessed August 8, 2017. http://www.tooledesign.com/resources/news/national-planning-excellence-award-boston-complete-streets-design-guidelines.

King, David A. @dk2475 Feed David A. King is assistant professor of urban planning in the Graduate School of Architecture, Planning and Preservation at Columbia University. He lives in New York. "3 Big Challenges for Planning Multi-Modal Cities." CityLab. October 09, 2014. Accessed August 09, 2017. https://www.citylab.com/design/2014/10/3-big-challenges-for-planning-multi-modal-cities/381254/.

Kittleman, Allan. "Howard County Complete Streets Policy Implementation." Howard County, Maryland. February 1, 2017. Accessed August 14, 2017. https://www.howardcountymd.gov/Departments/County-Administration/Transportation/Complete_Streets.

"Lead Hazard Reduction Grant and Loan Program". Maryland Department of Housing and Community Development. Accessed August 2017. http://dhcd.maryland.gov/Residents/Pages/lhrglp/default.aspx.

Merten Nefs, Susana Alves, Ingo Zasada, Dagmar Haase. Shrinking Cities as Retirement Cities? Opportunities for Shrinking Cities as Green Living Environments for Older Individuals. Environment and Planning A 45:6, 2013.

Michaels, Andrew. "BikeHoward master plan submitted to county planning board for review." Howard County Times. January 06, 2016. http://www.baltimoresun.com/news/maryland/howard/ellicott-city/ph-ho-cf-bike-master-plan-meeting-0107-20160105-story.html.

Missing Middle. Digital Image. Accessed August 15, 2017. http://missingmiddlehousing.com/

Move This Way: Making Neighborhoods More Walkable and Bikeable. Change Lab Solutions, 2013. http://www.changelabsolutions.org/sites/default/files/MoveThisWay_FINAL-20130905.pdf.

"National Complete Streets Coalition." Smart Growth for America. Accessed August 2017. https://smartgrowthamerica.org/program/national-complete-streets-coalition/what-are-complete-streets/.

Norfolk Narrow Lot House Plan Catalog. City of Norfolk, Accessed August 2017. https://www.norfolk.gov/index.aspx?NID=1093.

"NRPA Agency Performance Review". National Recreation and Park Association. Accessed July 2017. http://www.nrpa.org/publications-research/research-papers/agency-performance-review/.

O'Connor, Brendon. "City of Orlando drafts Complete Streets policy language." Bungalower. August 01, 2015. Accessed August 8, 2017.

http://bungalower.com/2015/08/01/city-orlando-drafts-complete-streets-policy-language/.

"Open Space Strategy." Environmental and Planning Unit. April 2016. Accessed July 2017. http://www.falkirk.gov.uk/services/environment/environmental-policy/open-space-strategy.aspx.

Parolek, Daniel. "Missing Middle Housing Responding to the Demand for Walkable Urban Living," Missing Middle, accessed 8/1/2017, http://missingmiddlehousing.com/dev/wp-content/uploads/2015/04/Missing-Middle-Housing-Responding-to-the-Demand-for-Walkable-Urban-Living-by-Daniel-Parolek.pdf.

"Play Streets Permit." City of Falls Church Public Works Department, May 2016. http://www.fallschurchva.gov/1719/Play-Streets-Permit-Pilot-Program.

Portland Active Living by Design: Evaluation of Active Living by Design, Portland, Oregon 2003-2008, Transtria, LLC, 2009.

"Recreation and Open Space." Cleveland City Planning Commission. Accessed August 09, 2017 http://planning.city.cleveland.oh.us/cwp/rec_chall.php.

Reed, Dan. "Kent Square at Selby, Kentlands." Digital Image. Flickr. July 15, 2006. https://www.flickr.com/photos/thecourtyard/2785561701/in/photostream/

Seattle Design Guidelines, City of Seattle, Department of Planning and Development, 2013. http://www.seattle.gov/dpd/cs/groups/pan/@pan/documents/web_informational/p2083771.pdf.

Seattle Housing Authority, "Vegetated and Grassy Swale." Digital Image. Accessed August 2017. https://www.seattlehousing.org/about-us/redevelopment/high-point-redevelopment/sustainable-design.

Shepherd, Tina, Brooke Cranshaw, and Nancy Howard. "CPTED: It's more than just Lighting." Choice Neighborhoods Conference, Washington, D.C., March 2016. Accessed August 2017. https://portal.hud.gov/hudportal/documents/huddoc?id=CrimePreventEnvironDesign.pdf.

"Sustainable Design." Seattle Housing Authority, 2017. https://www.seattlehousing.org/about-us/redevelopment/high-point-redevelopment/sustainable-design.

Simon Swaffield, M. Elen Deming. Research Strategies In Landscape Architecture: Mapping The Terrain. Journal of Landscape Architecture 6:1, 2011.

Stair, Peter, Heather Wooten, and Matt Raimi, How to Create and Implement Healthy General Plans: A Toolkit For Building Healthy, Vibrant Communities,. ChangeLab Solutions and Raimi + Associates, 2008. http://www.changelabsolutions.org/sites/default/files/Healthy_General_Plans_Toolkit_Updated_20120517_0.pdf.

"The 200 Foot Block: Creating A More Walkable Portland," Portland Bureau of Transportation, Accessed July 9, 2017, https://www.portlandoregon.gov/transportation/article/167703.

"The Beginner's Guide to Open Streets." The Beginner's Guide to Open Streets - Democratic Underground. February 2012. Accessed August 14, 2017. https://www.democraticunderground.com/11302364.

"The Best Complete Streets Policies of 2016" Smart Growth America. June 2017. Accessed August 10, 2017. https://smartgrowthamerica.org/resources/the-best-complete-streets-policies-of-2016/.

"The Future of Urban Open Space: A Workshop for North Carolina's Urban Planning, Parks and Recreation Professionals." American Planning Association. October 18, 2016. Accessed August 10, 2017. https://www.planning.org/events/eventsingle/9111981/.

"The Movement For Open Streets." Open Streets Project. July 21, 1970. Accessed August 12, 2017. http://openstreetsproject.org/.

Universal Design for Housing. Maryland Department of Disabilities. Baltimore. Accessed August 2017. http://dhcd.maryland.gov/Documents/Other%20Publications/Universal%20Design%20in%20Housing.pdf.

Upper West Street Sector Study. City of Annapolis, AECOM, 2016. https://www.annapolis.gov/DocumentCenter/View/5197

U.S. Department of Housing and Development, "What is the Healthy Communities Assessment Tool (HCAT)?" Office of Policy Development and Research, Accessed August 2017, https://www.huduser.gov/healthycommunities/node/160058.

US News Travel. Digital Image. Accessed August 15, 2017. http://travel.usnews.com/images/destinations/46/forsyth_park-2015.jpg

"Vegetated and grassy swale." Digital image. Seattle Housing Authority. Accessed August 2017. https://www.seattlehousing.org/about-us/redevelopment/high-point-redevelopment/sustainable-design.

Wachino, Vikki, "CMCS informational Bulletin," Department of Health and Human Services, Centers for Medicare & Medicaid Services, https://www.medicaid.gov/federal-policy-guidance/downloads/CIB-06-26-2015.pdf, June 26, 2015.

"What are Complete Streets?" Smart Growth America. June 23, 2016. Accessed August 10, 2017. https://smartgrowthamerica.org/program/national-complete-streets-coalition/what-are-complete-streets/.

Chapter 2: Parks | Sources

"Adopt-a-Park Program." City of Laurel, Maryland. September 24, 2015. https://www.cityoflaurel.org/parks/facilities/adopt-park-program.

Adopt A Spot Program. Accessed August 07, 2017. https://www.montgomerycountymd.gov/dot-dir/AdoptARoad/AAS.html.

Collins, Edward J. "Organizational Assessment of the Parks and Recreation Department: Jamestown, RI." University of Massachusetts Boston ScholarWorks at UMass Boston, November 2013, A-19-28. http://scholarworks.umb.edu/cgi/viewcontent.cgi?article=1029&context=cpm_pubs.

Juli Wilkerson, Nancy K. Ousley, Leonard Bauer, Rita Robinson, Jan Unwin, Lorinda Anderson, Jim Eychander, and Susan Enger. "Planning for Parks, Recreation, and Open Space in Your Community." Washington State Recreation and Conservation Office. February 2005. http://www.rco.wa.gov/documents/manuals&forms/CTED-IAC_parks_rec_plan_guide.pdf.

Sherer, The Trust for Public Land "Why Parks and Recreation are Essential Public Services." National Recreation and Park Association. https://www.nrpa.org/uploadedFiles/nrpa.org/Advocacy/Resources/Parks-Recreation-Essential-Public-Services-January-2010.pdf.

"The National Recreation and Parks Association." Park Facility Charts | 2017 NRPA Agency Performance Review | Research | National Recreation and Park Association. Accessed August 07, 2017. http://www.nrpa.org/publications-research/research-papers/agency-performance-review/park-facilities/.

Voight, Alison, Gary Robb, Jennifer Skulski, Deborah Getz, and Debbie Scharven. "Best Practices of Accessibility in Parks and Recreation: A Delphi Survey of National Experts in Accessibility ." National Center on Accessibility, May 2008, 9. https://scholarworks.iu.edu/dspace/bitstream/handle/2022/3209/Best%20Practices%20Full%20Report.pdf; sequence=1.

Wilkerson, Planning for Parks, Recreation, and Open Space in Your Community "Annapolis Comprehensive Plan." October 2009. https://www.annapolis.gov/DocumentCenter/Home/View/1240.

Chapter 3 : Bicycles | Sources

"Annapolis Bicycle Master Plan 2011". The City of Annapolis. 2011.
https://www.annapolis.gov/DocumentCenter/View/273

"Arlington County Bicycle Parking Standards." Commuter Page. 2016.
http://www.commuterpage.com/pages/special-programs/tdm-for-site-plans/bicycle-parking-standards/#Best_Practices

Badger, Emily. "Cyclists and Pedestrians Can End Up Spending More Each Month Than Drivers". CityLab. 2012.
https://www.citylab.com/transportation/2012/12/cyclists-and-pedestrians-can-end-spending-more-each-month-drivers/4066/

"Best Practices for Complete Streets." Sacramento Transportation & Air Quality Collaborative. 2005.
https://www.smartgrowthamerica.org/app/legacy/documents/cs/resources/cs-bestpractices-sacramento.pdf

Brown, Alyssa. "With Poverty Comes Depression, More Than Other Illnesses". Gallup. 2012.
http://www.gallup.com/poll/158417/poverty-comes-depression-illness.aspx?utm_source=alert&utm_medium=email&utm_campaign=syndication&utm_content=morelink&utm_term=All%20Gallup%20Headlines

Campbell, Richard and Margaret Wittgens. "The Business Case for Active Transportation: The Economic Benefits of Walking and Cycling". Better Environmentally Sound Transportation. 2004.
http://esteast.unep.ch/phocadownload/campbell%20wittgens%202004%20business%20case%20for%20active%20transportation.pdf

Celis-Morales, Carlos A, Donald M Lyall, Paul Welsh, Jana Anderson, Lewis Steell, Yibin Guo, et a. "Association between Active Commuting and Incident Cardiovascular Disease, Cancer, and Mortality: Prospective Cohort Study." Bmj J1456: 1456. 2017.
http://www.bmj.com/content/bmj/357/bmj.j1456.full.pdf

Cohen, Josh. "Building a Bikeable City for All". Next City. 2016.
https://nextcity.org/features/view/cities-build-bike-lanes-bike-share-bike-equity

Complete Streets Guidance. "Case Study: MD 648 Baltimore-Annapolis Boulevard". Anne Arundel County Office of Planning and Zoning. 2013.
http://roads.maryland.gov/index.aspx?pageid=332

Copeland, Larry. "The cost of owning a car? $9,000 a year". USA Today. 2013.
https://www.usatoday.com/story/news/nation/2013/04/16/aaa-car-ownership-costs/2070397/

Flusche, Darren. "Bicycling Means Business: The Economic Benefits of Bicycle Infrastructure". Advocacy Advance. http://bikeleague.org/sites/default/files/Bicycling_and_the_Economy-Econ_Impact_Studies_web.pdf

Grabow, Maggie, Micha Hahn, and Melissa Whited. "Valuing Bicycling's Economic and Health Impacts in Wisconsin". The Nelson Institute for Environmental Studies; Center for Sustainability and the Global Environment; University of Wisconsin-Madison. 2010. https://www.railstotrails.org/resourcehandler.ashx?id=4579

Hertel, Ole, Martin Hvidberg, Matthias Ketzel, Lars Storm, and Lizzi Stausgaard. "A Proper Choice of Route Significantly Reduces Air Pollution Exposure — a Study on Bicycle and Bus Trips in Urban Streets." Science of the Total Environment 389 (1): 58–70. 2008.

Jacobson, Sheldon H, Douglas M King, and Rong Yuan. "A Note on the Relationship between Obesity and Driving." Transport Policy 18 (5): 772–76. 2011.

Kim, Yeon Soo, Yoon Soo Park, John P Allegrante, Ray Marks, Haean Ok, Kang Ok Cho, and Carol Ewing Garber. "Relationship between Physical Activity and General Mental Health." Preventive Medicine 55 (5): 458–63. 2012.

Major Taylor Project. Cascade Bicycle Club. 2017. https://www.cascade.org/learn/major-taylor-project

"Master Transportation Plan". Arlington VA. 2017. https://projects.arlingtonva.us/plans-studies/transportation/master-transportation-plan/

McCormack, Gavin R, and Jagdeep S Virk. "Driving Towards Obesity: A Systematized Literature Review on the Association between Motor Vehicle Travel Time and Distance and Weight Status in Adults." Preventive Medicine 66 (4): 49–55. 2014.

"Mobility Challenges for Households in Poverty." National Household Travel Survey. 2014. http://nhts.ornl.gov/briefs/PovertyBrief.pdf

"NACTO Bike Share Equity Practitioners' Paper #3: Equitable Bike Share Means Building Better Places for People to Ride." National Association of City Transportation Officials. 2016. https://nacto.org/wp-content/uploads/2016/07/NACTO_Equitable_Bikeshare_Means_Bike_Lanes.pdf

"Ohio Active Commute Toolkit". Ohio Department of Health: Creating Healthy Communities. 2017. https://www.livehealthyloraincounty.com/cms/files/File/2017/Ohio-Active-Commute-Worksite-Toolkit.pdf

Qizn, Xinyi. "Assessing the Economic Impact and Health Effects of Bicycling in Minnesota". Minnesota Department of Transportation Research Services & Library, 2016, https://conservancy.umn.edu/bitstream/handle/11299/185230/Assessing%20Bicycling%20in%20Minnesota.pdf?sequence=3&isAllowed=y

"Pedestrian and Bicycle Funding Opportunities." U.S. Department of Transportation Transit, Highway, and Safety Funds. 2016. https://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.cfm

"Race, ethnicity, class, and protected bike lanes: An idea book for fairer cities." PeopleForBikes and Alliance for Biking and Alliance for Biking & Walking. 2014. http://b.3cdn.net/bikes/60e4ef1291e083cada_8ym6ip7pw.pdf

"Safety in Numbers: Halving the risks of cycling". CTC: working for cycling. http://www.cyclinguk.org/sites/default/files/ctc_safety_in_numbers_0.pdf"

Separated Bike Lane Planning & Design Guide." Massachusetts Department of Transportation. 2017. http://www.massdot.state.ma.us/highway/DoingBusinessWithUs/ManualsPublicationsForms/SeparatedBikeLanePlanningDesignGuide.aspx

"The Health Benefits of Biking in New York." Capital District Physicians' Health Plan, Inc (CDPHP). 2015. https://blog.cdphp.com/health-living/health-benefits-of-biking-in-new-york/

"The New Majority: Pedaling Towards Equity." The League of American Bicyclists and Sierra Club. http://bikeleague.org/sites/default/files/equity_report.pdf

"Transportation Demand Management Plan: Fiscal Years 2011-2035." Department of Environmental Services. Arlington County Commuter Services. 2010. http://www.drpt.virginia.gov/media/1241/arlington-tdm.pdf

Weigand, Lynn, Nathan McNeil, Jennifer Dill. "Cost Analysis of Bicycle Facilities: Cases from cities in the Portland, OR region." Portland State University. 2013. http://activelivingresearch.org/sites/default/files/Dill_Bicycle_Facility_Cost_June2013.pdf

Witters, Dan and Sangeeta Agrawal. "Unhealthy U.S. Workers' Absenteeism Costs $153 Billion." Gallup. 2011. http://www.gallup.com/poll/150026/unhealthy-workers-absenteeism-costs-153-billion.aspx

Chapter 4: Gardens | Sources

"2015 Farm to School Census Responses," United States Department of Agriculture, Accessed August 8, 2017. https://farmtoschoolcensus.fns.usda.gov/find-your-school-district/maryland/anne-arundel-co-pub-sch

"2017 Garden Plot Program at Woottons Mill Park," City of Rockville. Accessed August 12, 2017. http://www.rockvillemd.gov/?nid=653

"About the University of Maryland Extension," University of Maryland Extension, 2017. https://extension.umd.edu/about

"Adequate Public Facilities," City of Annapolis, accessed August 9, 2017, https://www.annapolis.gov/966/Adequate-Public-Facilities

Balmer, Kevin, James Gill, Heather Kaplinger, Joe Miller, Melissa Peterson, Amanda Rhoads, Paul Rosenbloom, and Teak Wall." The Diggable City: Making Urban Agriculture a Planning Priority" (2005). Master of Urban and Regional Planning Workshop Projects. Paper 52. http://pdxscholar.library.pdx.edu/usp_murp/52

The Baltimore Sun. Digital Image. Accessed August 12, 2017. http://www.trbimg.com/img-5715476f/turbine/bs-mtblog-261175-grow_annapolis_a_community_gar-MTIMG1/500/500x281

Bradbard, Steven, Eileen F. Michaels, Kathryn Fleming, and Marci Campbell. "Understanding the Food Choices of Low Income Families," Lisboa Associates, Inc. May 30, 1997. https://fns-prod.azureedge.net/sites/default/files/NUTRI.PDF

Centers for Disease Control and Prevention, "Healthier Food Retail: Beginning the Assessment Process in Your State or Community." Atlanta: U.S. Department of Health and Human Services, 2014.

Coicu, Ioan and Vicki Been. "The Effect of Community Gardens on Neighboring Property Values." 2016. Real Estate Economics. http://furmancenter.org/files/publications/The_Effect_of_Community_Gardens.pdf

"Community Action Plan," The City of Annapolis. May 20, 2010. https://www.annapolis.gov/DocumentCenter/View/488

"Community Gardens," Centers for Disease Control and Prevention. June 3, 2010. https://www.cdc.gov/healthyplaces/healthtopics/healthyfood/community.htm

City of Annapolis, Annapolis Comprehensive Plan. Annapolis, MD: 2009. https://www.annapolis.gov/DocumentCenter/Home/View/1240

City of Rockville. Digital Image. Accessed August 12, 2017. http://rockvillemd.gov/images/pages/N974/woottonsmillgardenplots.jpg

Cook, Chase ."Annapolis, county pledge to protect honeybees, other pollinators," Capital Gazette, September 4, 2016. http://www.capitalgazette.com/news/annapolis/ph-ac-cn-annapolis-bee-city-0903-20160904-story.html

Council of the District of Columbia, "D.C. ACT 20-599," January 26, 2015. http://lims.dccouncil.us/Download/31209/B20-0677-SignedAct.pdf

DC Council Logo. Digital Image. Council of the District of Columbia. Accessed August 12, 2017. http://dccouncil.us/

Denver Urban Gardens, "Growing Community Gardens: A Denver Urban Gardens' Best Practices Handbook for Creating and Sustaining Community Gardens,"2012. http://www.nccgp.org/images/uploads/resource_files/Best_Practices_for_Community_Gardens_-_Denver_Urban_Gardens.pdf

Grow Annapolis Logo. Digital Image. Grow Annapolis. Accessed August 9, 2017. http://growannapolis.org/

"Healthy Anne Arundel Coalition," Anne Arundel County Department of Health, Accessed August 8, 2017. http://www.aahealth.org/about/healthyannearundel

"Healthy Families Inititative," Housing Authority of the City of Frederick, Accessed August 9, 2017. http://www.hacfrederick.org/healthy-family-initiative/

Housing Authority of the City of Annapolis, Annual and Five Year Plan, 2015 - 2019. 2015. http://www.hacamd.org/home/annual-and-5-year-plan.html?task=document.viewdoc&id=25

Housing Authority of the City of Frederick. Digital Image. Accssed August 12, 2017. http://www.hacfrederick.org/wp-content/uploads/2015/12/Copy-of-IMG_4736.jpg

Ioan Coicu and Vicki Been. "The Effect of Community Gardens on Neighboring Property Values." 2016. Real Estate Economics. http://furmancenter.org/files/publications/The_Effect_of_Community_Gardens.pdf

"Joel Bunker – Founder," Grow Annapolis, accessed August 8, 2017. http://growannapolis.org/?page_id=708

"Master Gardener Projects," University of Maryland Extension, 2017. https://extension.umd.edu/anne-arundel-county/master-gardeners/master-gardener-projects

"Minneapolis Garden Lease Program," City of Minneapolis, May 22, 2017. http://www.ci.minneapolis.mn.us/sustainability/homegrown/WCMSP-170166

Montgomery Parks. Screen Capture. Accessed August 12, 2017.
http://www.montgomeryparks.org/services/permits-rentals/apply/community-garden/)

"Multiple Benefits of Community Gardening," Gardening Matters, 2012.
http://www.lamar.edu/sustainability/_files/documents/Multiple%20Benefits_2012.pdf

"Multiple Benefits of Community Gardening." 2015. Gardening Matters
https://www.gardeningmatters.org/sites/default/files/u106/Multiple_Benefits_2015_4.pdf

National League of Cities, "ALL-STARS," accessed August 9, 2017.
http://www.healthycommunitieshealthyfuture.org/all-stars/

NPLAN and ChangeLab Solutions, "Ground Rules:A Legal Toolkit for Community Gardens," February 2011. http://www.changelabsolutions.org/sites/default/files/CommunityGardenToolkit_Final_%28CLS_20120530%29_20110207.pdf

NPLAN and ChangeLab Solutions, "Seeding the City: Land Use Policies to Promote Urban Agriculture," October 2011.
http://www.changelabsolutions.org/sites/default/files/Urban_Ag_SeedingTheCity_FINAL_(CLS_20120530)_20111021_0.pdf

NYC Parks Logo. Digital Image. NYC Parks. Accessed August 9, 2017.
https://www.nycgovparks.org/pagefiles/108/logo-vertic-594__57e15b0559109.gif

New York City Department of Parks & Recreation, "City Drops Liability Insurance Requirements for Community Gardeners," March 23, 2006. https://www.nycgovparks.org/news/press-releases?id=19761%20

Obesity Prevention Subcommittee, "Healthy Anne Arundel Coalition Subcommittee Reports, October 2012." http://www.aahealth.org/pdf/oct-2012-obesity-subcom-report.pdf

Pfleger, Paige. "Healthy Eaters, Strong Minds: What School Gardens Teach Kids." NPR, August 10, 2015. http://www.npr.org/sections/thesalt/2015/08/10/426741473/healthy-eaters-strong-minds-what-school-gardens-teach-kids

Popovitch, Trish ."10 American Cities Lead the Way With Urban Agriculture Ordinances," Seedstock, May 27, 2014. http://seedstock.com/2014/05/27/10-american-cities-lead-the-way-with-urban-agriculture-ordinances/

"Prince George's County Food Equity Council." Prince George's County Food Equity Council 2014. http://www.pgcfec.org/

Prince George's County Food Equity Council. Digital Image. Accessed August 12, 2017.
http://www.pgcfec.org/templates/foodequitycouncil/images/logo.png

"Property Locations," Housing Authority of the City of Annapolis, accessed August 9, 2017, http://www.hacamd.org/housing/property-listing.html

Ray, Rashawn, Dana R. Fisher, and Carley Fisher-Maltese, "School Gardens in the City, Does Environmental Equity Help Close the Achievement Gap?" Du Bois Review, 13:2 (2016) 379– 395. http://www.cse.umd.edu/uploads/1/7/9/4/17940149/school-gardens-in-the-city.pdf

"The Role of Local Government in Creating Healthy, Livable Neighborhoods," Local Government Commission, July 16, 2013. https://www.lgc.org/community-gardens/

Savidge, Rob. "Sustainable Annapolis - Community Action Plan," The City of Annapolis. May 20, 2010. https://www.annapolis.gov/DocumentCenter/View/488

Umphrey, Cathy, interview by authors, July 5, 2017.

United States Department of Agriculture, "School Gardens: Using Gardens to Grow Healthy Habits in Cafeterias, Classrooms, and Communities,"June 2016. https://www.fns.usda.gov/sites/default/files/f2s/FactSheet_School_Gardens.pdf

"Welcome to the Community Garden Program," Montgomery Parks, February 6, 2017. http://www.montgomeryparks.org/services/permits-rentals/apply/community-garden/

Appendix I

Additional Resources

Healthy Cities

Center for Active Design
Publications by the Center for Active Design focus on healthy cities and places:
https://centerforactivedesign.org/resources/

Let's Move! All Stars:
A description of the eight strategies under Let's Move! Cities, Towns and Counties (LMCTC) :
http://www.healthycommunitieshealthyfuture.org/all-stars/

Model Policy Language

Healthy planning: an evaluation of comprehensive and sustainability plans addressing public health
Ricklin, A., et. al. Chicago: American Planning Association, 2012.

How to Create and Implement Healthy General Plans: A toolkit for building healthy, vibrant communities
ChangeLab Solutions guidelines for general plans:
http://www.changelabsolutions.org/publications/toolkit-healthy-general-plans

Model Joint-Use Agreements

Joint-Use Agreement Templates
National Policy & Legal Analysis Network to Prevent Childhood Obesity (NPLAN) has created templates for joint-use, which can be found here:
http://www.changelabsolutions.org/publications/model-JUAs-national

Joint-Use Cost Calculator
Developed by the Center for Cities + Schools and The 21st Century School Fund, the following calculator is for schools to determine the costs of joint-use to form better agreements:
http://www.bestschoolfacilities.org/jointusecalc/index.php

Model Open Use Policy for School Districts
ChangeLab Solutions checklist and resources for school districts:
http://www.changelabsolutions.org/publications/open-use-school-districts

Appendix II

Model Code

Accessory Dwelling Units: Model State Act and Local Ordinance
American Planning Association and AARP's model ordinance for ADUs:
http://www.aarp.org/home-garden/housing/info-2000/accessory_dwelling_units__model_state_act_and_local_ordinance.html

Allowing and encouraging diverse housing types within a neighborhood
Information on how to regulate Missing Middle Housing points to form based codes over conventional zoning:
http://missingmiddlehousing.com/about/how-to-regulate/

County Development Impact Fees and Building Excise Taxes in Maryland: Amounts and Revenues
http://mgaleg.maryland.gov/pubs/budgetfiscal/2013-impact-fees-excise-taxes.pdf

Move This Way: Making Neighborhoods More Walkable and Bikeable
ChangeLab Solutions guidelines for healthy code with examples:
http://www.changelabsolutions.org/publications/move-this-way

The following are generic "Model Codes" and are not tied to any jurisdiction.
Pedestrian-Oriented Entrances
Principal building entrances shall be located on the street frontage of the building. However, for buildings fronting other public spaces, such as public squares or plazas, the principal entrance may face the public space; some public entrance must face the public space. In addition, entrances must be provided at intervals no greater than [75] feet along a street to maximize street activity, to provide pedestrians with frequent opportunities to enter buildings, and to minimize any expanses of inactive wall.

Building Facade
1. At least [30] percent of the facade of each story of a building must consist of transparent windows or doors. For windows to be considered transparent, the window glass must transmit at least 50 percent of visible daylight. For retail stores, the ground story must have transparent storefront windows covering no less than [75] percent of its facade in order to provide clear views of merchandise in stores and to provide natural surveillance of exterior street spaces.
2. The building facade shall be built to the [required building/street property] line for at least [80] percent of the building length.

Pedestrian-Oriented Lighting
Lighting shall be designed and located at a pedestrian scale consistent with pedestrian movements and the neighborhood. Lighting shall be placed at [15] feet or lower, and shall be concealed or shielded to avoid glare and off-site impacts on abutting properties.

Street Trees

Each street shall have street trees that provide canopy and shade. Street trees shall be planted along the street tree alignment line at an average spacing not greater than [25-30] feet on center. Open soil surface area shall be not less than [60] square feet (with a minimum of [3-5] feet in any direction) per isolated tree, and connected (tree strip) planting areas are encouraged. At planting, trees shall be at least 4 to 4.5 inches in diameter (4 feet above grade) and at least 12 feet in overall height. Where necessary, spacing allowances may be made to accommodate curb cuts, fire hydrants and other infrastructure elements, however, at no location shall spacing exceed [45] feet on center.

Landscape Buffers

A landscaped buffer strip at least [5] feet wide, planted with street trees and medium height plant materials, shall be established adjacent to streets to provide a buffer to pedestrians and to visually separate uses from the street.

Land Use: Undesirable Uses

Carlsbad, California

a. Drive-thru restaurants are prohibited within all zones in the city, including coastal zone properties. The drive-thru restaurant prohibition applies citywide to all existing and proposed specific plans, master plans, and related amendments. Drive-thru restaurants that are either existing or have received final approvals on January 5, 1998 are allowed to continue in existence subject to the terms and conditions of this code and the conditional use permit or other discretionary permit permitting them and may apply for and may be granted CUP extensions under this code.

Zoning Code. Title 21, ch. 21.42 §21.42.140(B)(50)

Land Use: Residential Infill

Example of adopted code from Portland Oregon addressing residential infill and missing middle housing. Adopted amendments address the following: scale of houses, housing choices and narrow lots. The amendments can also be found at: https://www.portlandoregon.gov/bps/article/620381 Additional information can be found at: Portland Bureau of Planning and Sustainability, Residential Infill Project https://www.portlandoregon.gov/bps/67728

Impact Fee Chart

City	Single-Family (attached or detached)	Multi-Family (condominium or rental)	Commercial/industrial development, addition, redevelopment, other	Application
Laurel, Maryland	$2,500.00 Per Unit	$1,250.00 Per Unit	twenty-five cents ($0.25) per square foot	· New development · Redevelopment
Belgrade, Montana	$14,112 Per Unit	$9,492 Per Unit	$2.18-$11.24 per square foot depending on type	· Water · Sewer · Road · Fire
Frederick, Maryland	$14,747.00 Per Unit		$ 6,291.00 for other residential units	· Accommodate development impacts on public schools and libraries · Ensuring that adequate public facilities are available
Franklin, Wisconsin	$7,810.0 Per Unit	$6,160.00 Per Unit	Twenty-five cents ($0.25) per square foot	· Public health, safety and general welfare of the community · Facilitate the adequate provision for parks, · Playgrounds and other recreational facilities · Fire protection facilities, law enforcement facilities, facilities for pumping, storing · Distributing water, transportation facilities, emergency medical facilities and libraries

County	Single-Family (attached or detached)	Multi-Family (condominium or rental)	Commercial/industrial development, addition, or redevelopment	Application
Anne Arundel	$4,227 - $17,885			· Water capital · Wastewater
Carroll	$12,950	$7,750	Eleven cents ($0.11) per square feet	· Schools · Parks
Frederick	$15,185	$12,380 Duplex/ Townhouses $2,000 Other	seventy-five cents ($0.75) per square foot	· Plumbing · Sewer · Development
Talbot	$6,321	$4,595	$2.69-$4.10 depending on type	· Public facilities · New development · Redevelopment

Benchmarking Against Other Maryland Jurisdictions

In comparing a subsample of other MD jurisdictions, Frederick has the clearest zoning code and, for example, has a pedestrian friendly overlay district and permits several ADUs and duplexes, in a number of districts. Also, within their TND districts, 50-80% of lots must be within a five-minute walk from a civic space and it also employs floating zones as a tool to promote mixed use.

City	Mixed Use designations	ADU apt	ADU	Duplex	Floating Zone	POD	Other
Frederick	Y = 3 (2 floating zones/ district), plus a separate Carroll Creek Overlay District	Y, P=4 C=13	Y, P=8	Y, P=8	Y for MX Use	N, but pedes-trian friendly overlay district	Planned Neighborhood Development, TND; performance based /impact zoning. TND districts, 50-80% of lots must be within a 5-minute walk from a civic space.
Rockville	Y=7	Y	Y	Y	N	N	TND
Bel Air	No *	N	N	Y	N	N	Allows cottage housing; form based zoning with performance standards
Annapolis	Y=2	N	Y	Y	N	N	

*No Mixed-use designations, however mixed use centers subject to special development regulations in 4 zoning districts.

Legend:
P= Permitted Use in # of zones
C= Conditional Use in # zones
ADU = Accessory Dwelling Unit
POD = Pedestrian Oriented Development
TND = Traditional Neighborhood Design

Source: Zoning codes for Frederick, Rockville, Bel Air, Annapolis

Appendix III

Evaluation Tool Results

Broad Public Health and Planning Issues:

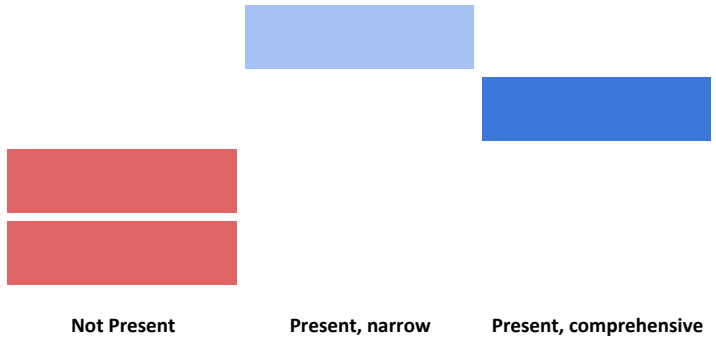
Substantive topics: Vision Statement, Guide Principle, and Background data

Do the Guiding Principles include language indicating the community values public health, social equity, or any of the health topics in this evaluation?

Does the plan include a broad goal to foster all residents' health and well-being in its Vision or Introductory statement?

Does the plan identify the built environment as a factor determining public health outcomes in its Vision Statement?

Does the plan identify chronic disease and/or health inequalities in its Vision or Introductory statement?



Procedural Issues:

Is the plan written in clear, nontechnical language accessible by the average lay reader?

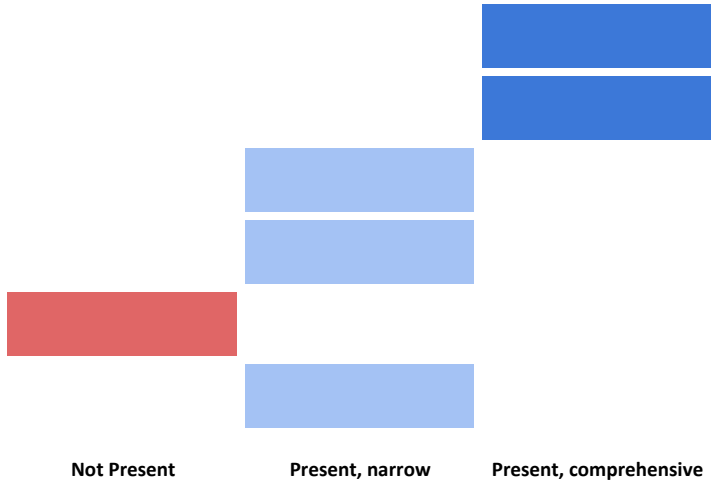
Does the plan identify the importance of considering low-income and other vulnerable populations when planning for the future?

Are images used to illustrate population and geographic data and/or how policies in the plan may impact different populations or geographies?

Is there evidence or description of collaboration with health department and/or other community health stakeholder(s)?

Does the plan identify process and procedures for evaluating/monitoring health impacts of plans & policies?

Does the plan map or otherwise identify locations of vulnerable populations?



Goals

Active Living Goals

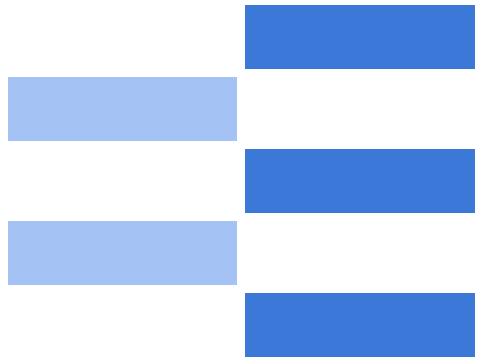
Is there a goal or objective to increase the number of people who walk and bike to daily activities?

Is there a goal or initiative described to reduce car dependency and increase use of active transport?

Is there a goal or objective to create communities with safe and attractive places to exercise?

Does the plan identify active living and/or physical activity (exercise) as an important part of the success?

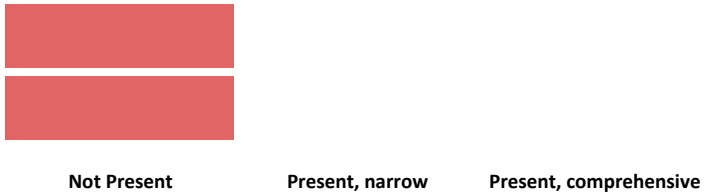
Does the plan prioritize and/or include a goal to prevent or reduce traffic injuries?



Emergency Preparedness Goals

Does this plan identify potential public health effects from natural and human-caused disasters as important considerations in planning for the future?

Does the plan identify potential public health effects of climate change as an important consideration in planning for future?



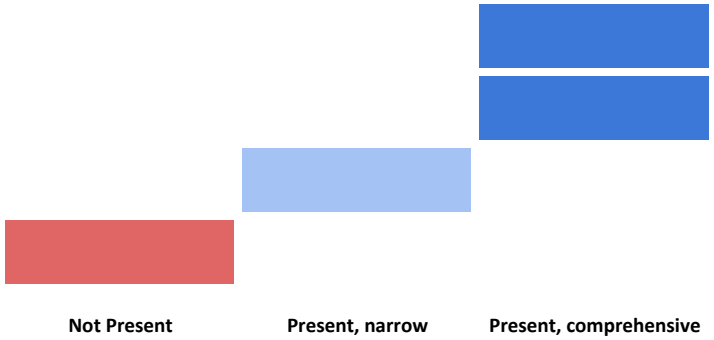
Environmental Exposures Goals

Does the plan include a goal that states water quality is important for public health in their community?

Does the plan identify environmental health concerns as important considerations for the health of their community?

Does the plan include a goal that states clean air is important for the health of their community?

Are brownfields or the improper/unsafe reuse of brownfields identified as a potential threat to human health?



Food and Nutrition goals

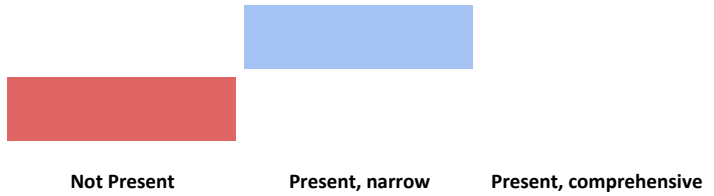
Does the plan identify supporting local food production at any scale as a priority for public health in their community?

Does the plan identify healthy eating and healthy food options as important to a high quality of life in their community?

Health and Human Services Goals

Does the plan identify an aging population as a group needing special considerations, particularly regarding mobility and health care, when planning for the future?

Does the plan identify access to health and human services as an important contribution to a high quality of life in their community?



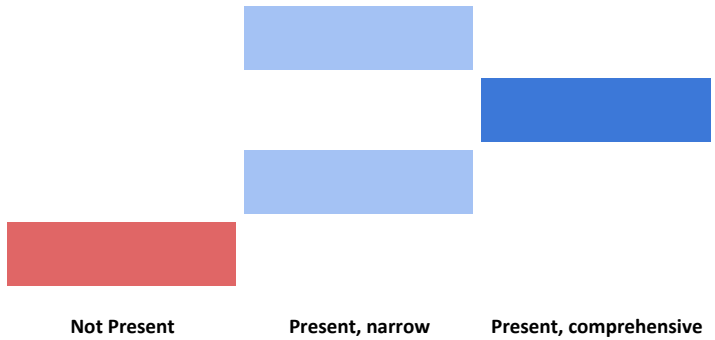
Social Cohesion and Mental Health Goals

Does the plan identify green or open space as important in a healthy community, including promoting mental and social health?

Does the plan identify safety and security as important to fostering a successful community or generally supporting a good quality of life?

Does the plan identify housing and housing quality as a priority for fostering health and a healthy community for all residents?

Does the plan identify the social cohesion (social capital) and/or mental health as important considerations for their community?



Policies

Active Living Policies

Active Living Policies, continued

Does the plan use pedestrian overlay zones or establish a walkability standard?

Does the plan use public health data to identify the percent of the population who achieves the recommended amount of physical activity per week?

Does the plan map or otherwise identify geographic areas with the greatest need for more physical activity?

Not Present **Present, narrow** **Present, comprehensive**

Emergency Preparedness Policies

Does the plan include or identify future intent to develop a postdisaster recovery plan/protocol that will include planning for public health effects of disasters?

Does the plan identify a goal to reduce potential for infectious disease?

Does the plan include goals and strategies to prepare for extreme heat events that can particularly affect children and the elderly?

Not Present **Present, narrow** **Present, comprehensive**

Environmental Exposures Policies

Are there protections for ground and surface water?

Does the plan identify stormwater policies or design standards that address stormwater runoff from features in the built environment, either for existing or future development?

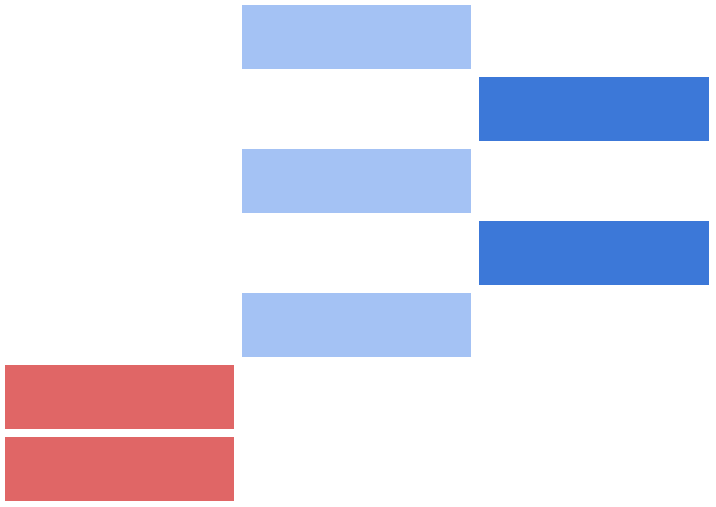
Does the plan include policies for proper maintenance of sewer and/or septic systems to achieve healthy treatment of wastewater?

Does the plan include objectives or programs for increasing the tree canopy for cleaner air, water filtration, and to help the heat island effect?

Is there a policy to utilize fuel-efficient/low-emission vehicles for the local government fleet to reduce local air pollution?

Is there an evaluation of local sources of air pollution?

Are there policies to minimize exposure to particulate matter for existing and/or future sensitive land uses (schools, day care facilities, playgrounds, etc.)?



Environmental Exposures Policies, continued

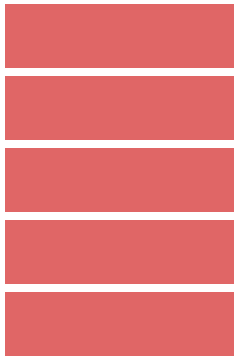
Are potential environmental hazards to human health such as nearby highways, presence of heavy metals, pesticides, etc., considered for new development?

Have brownfield locations been identified and inventoried for their potential liability to human health?

Does the plan include ordinances to limit exposure to second-hand smoke by creating smoke-free spaces?

Is there a plan or program to address insect and rodent infestation in homes, which can spread disease and impact respiratory health?

Does the plan identify brownfield locations that may be opportunities for infill or other new redevelopment if cleaned up?



Not Present **Present, narrow** **Present, comprehensive**

Food and Nutrition Policies

Does the plan include policies to support local food production?

Does the plan identify innovative strategies to increase access to healthy food, especially in low-income communities?

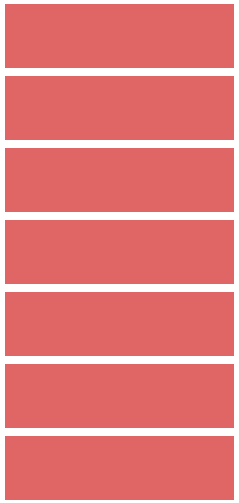
Does the plan inventory and identify potential sites for community gardens/urban farms?

Is there an objective to increase the number of grocery stores in underserved areas through fast-track permitting or other innovative means?

Does the plan call for or cite results from a community food assessment to assess food security, barriers to access, or potential geographic "food deserts"?

Is there a policy that sets bans or limits on convenience stores, fast food outlets, or liquor stores in neighborhoods so that unhealthy food and drink options are not the only options?

Does the plan address access to drinking water or promote installation of water fountains?



Not Present **Present, narrow** **Present, comprehensive**

Health, Human, and Public Services Policies

Does the plan include data on the number of health and human service outlets available to populations in need in their community?

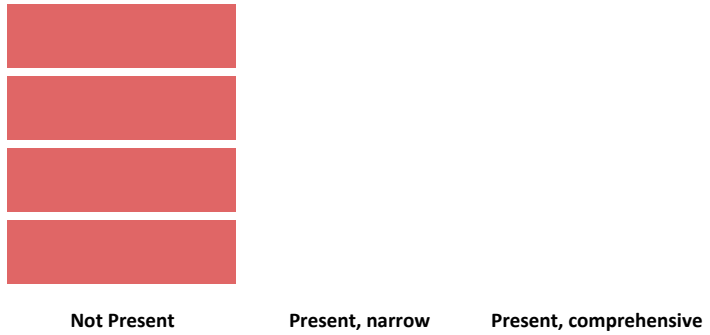
Health, Human, and Public Services Policies, continued

Does the plan include policies to facilitate access to clinical services, health care facilities, and human/social services?

Does the plan include policies to facilitate access to child care services?

Does the plan include policies to support aging in place, such as facilitating access to elder care?

Is there an objective to work with local transit agencies to enhance service that connects residents to health and human services, especially in underserved neighborhoods?



Social Cohesion and Mental Health Policies

Does the plan incorporate a variety of housing types and costs in order to eliminate residential segregation and concentrations of poverty?

Are there policies to create, preserve, and maintain open space near development to increase the number of restorative spaces for mental health (and environmental) benefits?

Does the plan identify noise as a factor impacting human health and include policies to buffer residences and sensitive land uses from loud noise sources?

Does the plan include design guidelines or principles of Crime Prevention Through Environment Design (CPTED) or other design/landuse features to increase safety?

Does the plan include or identify a need test for and remove lead paint or other building contaminants that create serious health problems?

Does the plan include policies to promote and/or remove obstacles to cohousing or other nontraditional housing types which can positively impact social cohesion?

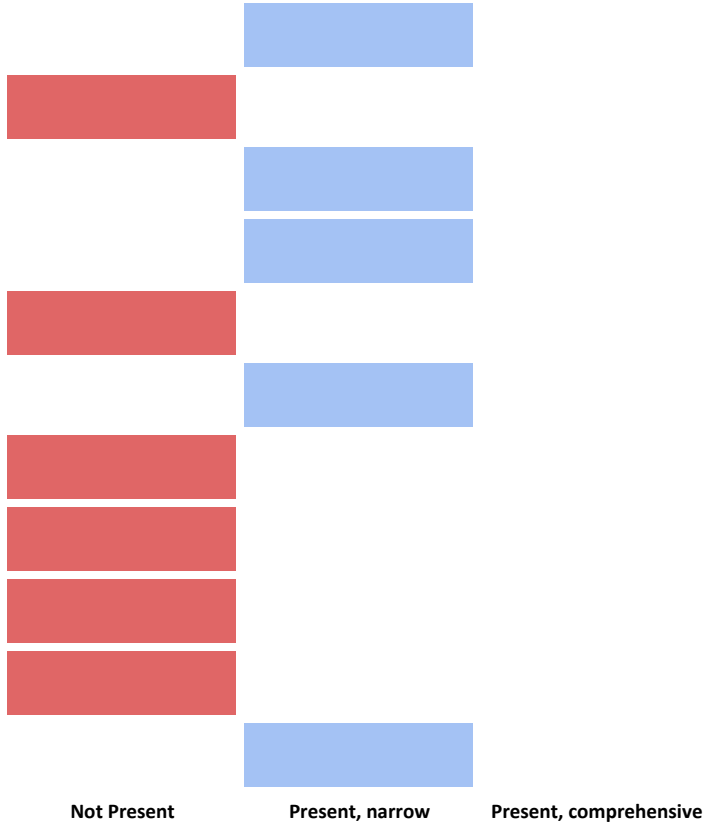
Does the plan cite data related to public safety?

Does the plan link existing or future housing development with employment opportunities and human/social services?

Are there limits on the number of liquor stores that can locate in areas of high crime, high poverty, or near schools?

Does the plan have regulations for orienting buildings to face the street or include windows that face the street ("natural surveillance")?

Has supporting public safety/security specifically been identified as important to promoting active lifestyles and healthy outdoor activity?



Appendix IV

Comparison of Adequate Public Facilities Ordinances

	Bikeways & Sidewalks
Annapolis	*The standards required to be promulgated pursuant to Section 22.08.010, shall include but not be limited to:* *Bicycle Facilities. Proposed projects shall be served by adequate bicycle facilities where necessary throughout the site.* *...* *Signalized intersections adjacent to proposed projects shall have the appurtenances necessary for adequate bicycle, pedestrian, and transit facilities, including but not limited to crosswalks, signals, and non-auto curb cuts.*
Laurel	*Sec. 20-44.6. - Curb and gutter; hiker/biker trails; sidewalk; bike facilities* *(b) Sidewalks. Sidewalks shall be required along urban roads in the following circumstances:* *(1) Arterial—Both sides.* *(2) Collectors—Both sides.* *(3) Commercial/industrial—As determined by the Director.* *(4) Primary residential—On both sides.* *(5) Secondary residential—On both sides.* *A. Sidewalk width. All sidewalks required to be constructed within the City shall be a minimum of six (6) feet in width, except that in residential areas the Director of Public Works may approve sidewalks of a width of four (4) feet.* *...* *E. Bike facilities. Bike facilities shall be required in the City right-of-way, as referenced in the City of Laurel Bikeway Master Plan. Bicycle facilities should extend to the nearest intersection on each side of the permittee's property. Refer to Subsection 20-28.7(e) for bicycle parking requirements.* *[https://library.municode.com/md/laurel/codes/code_of_ordinances?nodeId=CH18BUBURE_ARTVIII-GRCOCO_S18-140LAGRBUST]*
	Visitor Bike Parking
Annapolis	*N/A*
Arlington	*Visitor bicycle parking spaces in the following amounts:* *a. Office uses: one (1) visitor space for every 20,000 square feet, or portion thereof, of office floor area.* *b. Residential uses: one (1) visitor space for every 50 residential units, or portion thereof.* *c. Retail uses: two (2) visitor spaces for every 10,000 square feet...* *d. Hotel uses: one (1) visitor space for every 50 hotel room units, or portion thereof.* *...* *Such facilities shall be installed at exterior locations that are highly visible to, and within 50 feet of, the primary building entrances, unless there are physical obstructions that cannot be changed or moved to accommodate the bicycle parking within the 50-foot distance, in which case they shall be sited as close to the 50 foot distance as physically possible. Such facilities shall not encroach on any area in the public right-of-way intended for use by pedestrians or any required fire egress.*

Laurel	*Sec. 20-28.4. - Standards for design.* *(e) Bicycle parking requirements: All new multifamily, office, and commercial developments must provide at least two (2) bicycle parking spaces, where a single bicycle rack constitutes two (2) spaces. For residential properties, two (2) spaces for every five (5) dwelling units (see (1) Exemptions below). For retail and restaurants, two (2) spaces for every two thousand five hundred (2,500) square feet. For all other commercial or office properties, two (2) spaces for every five thousand (5,000) square feet.* *…* *(2) Racks. Bike racks shall be either an "Inverted U-Style (Bike Arch)" type or a "2-Bike Post and Ring" type and have a powder coat finish. Wave or Grid type bike racks are not permitted. Bicycles must be able to be locked in two (2) places.* *(3) Location. Outdoor bike racks must be located within visual distance of the entrance of the building for which the parking has been designated. Bike parking for office buildings and for residential, is applicable, shall be located indoors.* *(4) Security. Rack area located outdoors must be lighted with a minimum foot-candle of 1.0 as measured on the ground.* *...* *[https://library.municode.com/md/laurel/codes/code_of_ordinances?nodeId=CH18BUBURE_ARTVIII-GRCOCO_S18-140LAGRBUST]*
	Long-Term Bicycle Parking
Rockville	*2. Long Term Bicycle Parking Standards* *(a) Purpose – Long-term bicycle parking provides secure and weather-protected areas to park bicycles for those staying at a site for several hours.* *(b) Standards – Required long-term bicycle parking must meet the following standards:* *(i) Long-term bicycle parking must be supplied through racks or lockers that meet the standards of Section 25.16.09.c.3.* *(ii) Long-term bicycle parking must be covered in accordance with the standards of Section 25.16.09.c.3.(e).* *(iii) Long-term bicycle parking must be positioned on the site or in an area where the closest point is within 300 feet of the principal entrance.* *(vi) To heighten security, long-term bicycle parking must be in at least one (1) of the following locations:* *A. In a locked room;* *B. In an area enclosed by a fence with a locked gate. The fence must be floor-to ceiling or eight (8) feet high;* *C. In an area visible by an attendant or security guard;* *D. Within 100 feet of an attendant or security guard;* *E. In an area monitored by a security camera; or* *F. Contained within a dwelling unit or dormitory unit. If long-term bicycle parking is provided in a dwelling unit or dormitory unit, neither racks nor lockers are required.* *3. Additional Standards for All Bicycle Parking* *(a) Purpose – The purpose of these standards is to ascertain that the design of the required bicycle parking allows bicycles to be locked securely and conveniently, protecting bicycles from damage.* *(c) Bicycle Racks – The Department of Public Works maintains a handbook of racks and site location guidelines that meet the standards of this subsection. Floor, wall, or ceiling racks are acceptable locations for required bicycle parking. Bicycle racks must meet the following standards:* *(i) If both wheels are left on the bicycle, the bicycle frame and one (1) wheel can be locked to the rack with a high security lock;* *(ii) A six (6) foot long bicycle can be securely held with its frame supported, providing that the bicycle cannot be pushed or fall in a manner that will damage the wheels or components; and*

	(iii)The rack must be securely anchored. *(d) Maneuvering and Parking Areas* *(i) Each required bicycle parking space must be accessible without moving another bicycle.* *(ii) To allow room for bicycle maneuvering, an aisle must be placed at least five (5) feet wide behind all required bicycle parking.* *(iii) The area designated for bicycle parking must be hard surfaced.* *(iv) If the bicycle parking is adjacent to a sidewalk, the maneuvering area may extend into the right-of-way. (e) Covered Parking* *(i) Long-term bicycle parking must be covered.* *(ii) If possible, short-term bicycle parking should be covered.* *(iii) Covered parking can be provided by locating the bicycle parking inside buildings, in bicycle lockers, under roof overhangs, awnings, canopies, or within or under other structures.* *(iv) Where required covered bicycle parking is not within a building or locker, the cover must be: A. Permanent; B. Protect the bicycle from rain and snow; and C. Exist a minimum of seven (7) feet above the floor or ground.*
	Showers/Lockers
Laurel	*Sec. 18-140. - Laurel green building standards.* *Alternative Transportation Facility — 2 points.* *(1) Requirements. For commercial or institutional buildings, provide changing/shower facilities (within two hundred (200) yards of the building) for bicycle riders.* *(2) Submittals. Issue a letter signed by architect declaring the eligibility for this point. Provide a brief list of the measures implemented.* *[https://library.municode.com/md/laurel/codes/code_of_ordinances?nodeId=CH18BUBURE_ARTVIII-GRCOCO_S18-140LAGRBUST]*
Rockville	*Section 25.16.09.c.3.(e).* *(iv) Where long-term bicycle parking spaces are required for office use categories, for every 50,000 square feet of Gross Floor Area (GFA), one (1) shower per gender must be installed, up to a maximum of three (3) showers per gender…* *(v) Where long-term bicycle parking spaces are required for office use categories, a minimum of one (1) clothes storage locker per gender must be installed for every long-term bicycle parking space. The lockers must be installed adjacent to the showers in a safe and secured area and be accessible to all tenants.* *3. Additional Standards for All Bicycle Parking* *(a) Purpose – The purpose of these standards is to ascertain that the design of the required bicycle parking allows bicycles to be locked securely and conveniently, protecting bicycles from damage.* *(b) Bicycle Lockers – The Department of Public Works provides standards for bicycle lockers. Lockers must be securely anchored where required bicycle parking is provided in lockers.*

Appendix V

Strategies for businesses to encourage active commuting

1. Provide secure bike parking, shower and locker facilities, and revisions to the dress code
    - If shower facilities are not an option, consider partnering with a nearby health club or gym
2. Host bike safety and maintenance workshop, and provide bike repair kits with:
    - Pump
    - Multi-purpose bike tool
    - Tire patch kit
    - Tire levers
    - Tire tubes in common sizes
3. Send out an endorsement letter from company leadership to lead by example
4. Offer pre-tax benefits through the Qualified Transportation Fringe Benefits, which provides $20 per month to subsidize bike commuting
5. Incentivize bike commuting with subsidies and benefits such as:
    - Pre-tax benefits for bike gear or bus passes
    - One extra hour of vacation leave for every day that an employee commutes to work by biking or walking
    - $25/month to employees who cycle or walk to work 3 days/week
6. Advertise Commuter Connections Guaranteed Ride Home program from MWCOG in case of a bike failure or other emergency
7. For employees who choose to opt-out of a parking space, provide a parking cash out that offers active commuters the cash equivalent to the cost of a parking space
8. Facilitate training and resource sharing, such as an active commute "Lunch and Learn" to educate employees on safety and commuting tips
    - Provide cycling guides and route maps in the lunchroom
9. Start a Bicycle User Group (BUG), a network of cyclists who share routes, tips, and advocate for better bicycling
10. Organize outings and activities to get employees more comfortable with biking
11. Create methods to increase participation in a bike commute program
    - Offer alternative work schedules, such as flextime, compressed schedule, or telework options
    - Partner with neighboring businesses to provide a local commute program
12. Become a business Member of a bike advocacy organization, such as Bike AAA, to advocate for more and safer bicycle infrastructure
13. Apply for Bike Friendly Business designation from League of American Bicyclists[1]

[1] Resources used for strategy list:

Commute Options Program Toolkit: For Small and Medium-Sized Employers. 2016. Massachusetts Department of Transportation. Retrieved from https://commute.com/documents/Commute-Options-Program-Toolkit_June%202016.pdf

Ohio Active Commute Toolkit. 2017. Ohio Department of Health: Creating Healthy Communities. Retrieved from https://www.livehealthyloraincounty.com/cms/files/File/2017/Ohio-Active-Commute-Worksite-Toolkit.pdf

Appendix VI

Parking Guidelines

Short-Term Bicycle Parking

Short term parking is typically defined as unsheltered, unenclosed bike racks intended to be used for less than 2 hours. Short-term parking is intended to provide quick access to short-term destinations, such as shops, offices and civic facilities, and therefore should be convenient and easy to use. The location of bike racks should be in a prominent location, near entrances, and areas with high pedestrian traffic for easy public visibility and access and to deter theft.[2]

Short-term bicycle parking can be located in two locations:

- *Sidewalk*: Bicycle parking on the sidewalk should be located at a sufficient distance from the intersection so that it does not obstruct pedestrian movement.
- *On-Street Parking:* Bike Corrals are ideal in high density areas with small sidewalks and heavy pedestrian traffic. They increase parking capacity for all users, since one car space is equivalent to 8 to 12 bicycle spaces, and increases the visibility of bicycling.[3]

Long-Term Bicycle Parking

Long-term bicycle parking is intended to provide sheltered and secure bicycle storage for residents, employees and long-term visitors who are leaving their bicycles in a residential or commercial building for several hours or longer and therefore need their bicycles to be protected from vandalism, theft and the elements. Long term parking needs to be protected by an enclosure (i.e. shelters, bike rooms, lockers).[4]

There are five types of bicycle parking in residential and commercial buildings:

- Bicycle rooms on the ground floor or in a parking garage: provide high security, long-term parking when there is no place outside to put shelters or lockers. Well suited for residential and commercial use
- Bicycle cages in a parking garage.
- Bicycle shelters and lockers: adding covered bike parking is a "great way" to earn LEED points for facility
- Bicycle racks in a parking garage.

[2] Bicycle Parking Guidelines. 2016. Montgomery County Planning Department. Retrieved from http://www.montgomery-planning.org/transportation/bikeways/documents/DRAFTBicycleParkingGuidelines2016-06-28.pdf

[3] Arlington County Bicycle Parking Standards. 2016. Commuter Page. Retrieved from http://www.commuterpage.com/pages/special-programs/tdm-for-site-plans/bicycle-parking-standards/#Best_Practices

[4] Bicycle Parking Guidelines, 2016.

Long-Term Bicycle Parking Requirements

Acceptable Rack Types:

- U racks
- Vertical racks
- Double-decker/stacked horizontal racks with locking arm

Room Design:

- At least 30% of bicycle parking must be horizontal and at ground level
- Doors must be hollow metal
- Doors must use a heavy-duty cipher lock or electronic lock (keys can be too easily copied)
- For Bike Cages only:
    1. Walls must be made of industrial grade expanded metal or welded wire mesh (chain link is unacceptable)
    2. Walls must reach all the way to ceiling

Long-Term Bicycle Parking Wayfinding

Signs are required to direct bicyclists to parking spaces and can be used to provide information about bicycle support facilities and routes. If a long-term bicycle parking facility is not visible from the street or main building entrance, the property owner must post a sign in a lobby or communal area indicating the location of the bicycle parking. Signs and pavement markings can be used to inform bicyclists and other users of the location of other bicycle support facilities, such as showers, lockers, changing rooms and repair stations, and provide information about bicycle routes in the surrounding area.[5]

Figure 1, Bicycle Parking Wayfinding

Bicycling Support Facilities

Long-term bike parking should also include lockers for storing helmets and clothes, changing rooms, showers and bicycle repair stations with air pumps and tools to complete simple repairs.
Provide mirrors, sinks, toilets in close proximity, outlets, first-aid kits, and hooks.

Requirements:

- 1 shower per gender
- 1 locker per long-term bicycle parking space per gender
- Each locker must be a minimum of 12" wide, 18"deep, and 36" high

[5] Bicycle Parking Guidelines, 2016.

Bicycle Parking Layout Requirements

Bike racks must be properly located to not impede pedestrian travel, access to buildings, and emergency responders.

Each bicycle must be accessible without the need to move another bicycle. Each sidewalk rack must be a minimum of 14 feet from any stand-alone fire hydrant.[6]

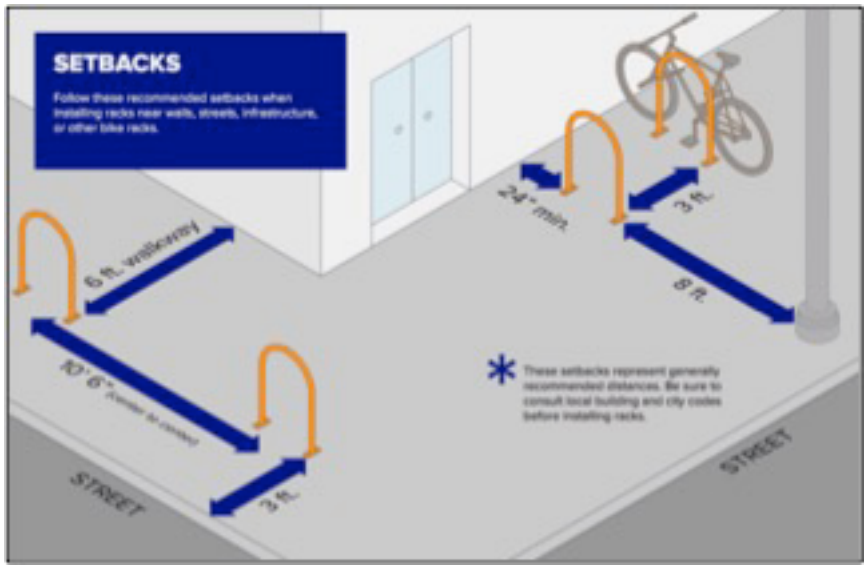


Figure 2, Recommended Setbacks

Recommended Rack Setbacks (Figure 1):[7]

- Parallel to the street
  - 3 feet from the street
  - 10'6" (center to center) between racks
  - 6 feet walkway room between the rack and building/structure
- Perpendicular to the street
  - 3 feet on center between racks that are perpendicular to the street
  - at least 2 feet (24") from the wall or other obstacles
  - 8 feet between the rack and curb when space is available, a minimum of 4 feet[8]

Capacity and Space

Take precautions to ensure sufficient space in allotted bike parking area.

Number of Bikes	Occupied Space
2	32 inches by 84 inches
10	168 inches by 144 inches

[6] Pocket Guide to Bike Parking. 2015. Dero. Retrieved from https://www.dero.com/bike-parking-guide.pdf

[7] Pocket Guide to Bike Parking, 2015

[8] Bicycle Parking Guidelines, 2016.

Rack Selection

Simple, easy-to-use racks are inherently secure because a typical bicyclist is more likely to use them properly. Racks known as "inverted-u" racks (Figure 1) are the preferred style in most cases.

Example of properly used inverted-u rack:	Example of rail mount:
	

Figure 3, Example of Inverted-U Rack and Rail Mount

Preferred Installation Surfaces	Type of Mount Needed
concrete (best option)	Both in-ground and surface mounts work well
asphalt, pavers, tile/brick	Freestanding (rail mount) racks are recommended
mulch, grass, dirt	Rack should be freestanding, or pour concrete footings to embed/anchor the rack[9]

Good bicycle racks should: be at least 18" wide and 33" tall, securely anchored to solid and immovable surface, provide two points of contact for a typical bike, and allow user to lock frame and one wheel with a standard u-lock.[10] Bike racks should also follow specific shapes, materials, and installation procedures depending on the location and surface area. The figure below (Figure 1) provides two images for properly mounted racks, either in brick (left), or concrete (right).[11]

[9] Pocket Guide to Bike Parking. 2015. Dero. Retrieved from https://www.dero.com/bike-parking-guide.pdf

[10] Arlington County Bicycle Parking Standards. 2016. Commuter Page. Retrieved from http://www.commuterpage.com/pages/special-programs/tdm-for-site-plans/bicycle-parking-standards/#Best_Practices

[11] Arlington County Bicycle Parking Standards, 2016

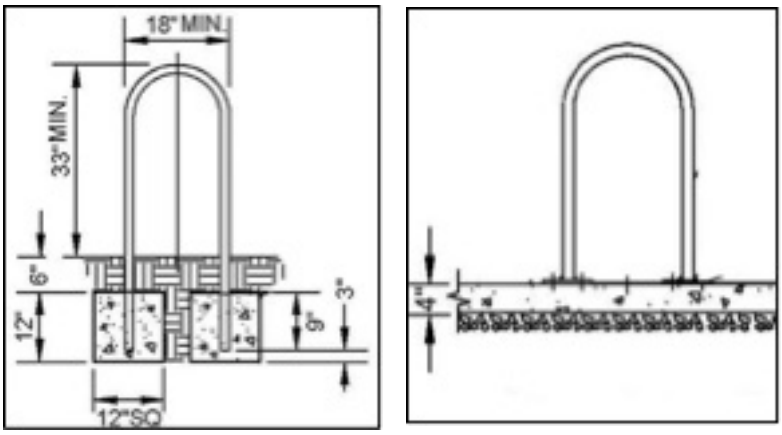


Figure 4, Bike Rack Size Requirements

Added security to deter theft

- Always use tamper-proof hardware for racks bolted to the surface, such as non-standard nuts
- If bicycle racks are being installed after concrete has been poured, the racks should be affixed with tamper-resistant hardware. Anchor bolts should be approximately 6 inches long and drilled into a concrete base.
- Racks should be manufactured with thick exterior walls that resist cutting by tools, including bolt cutters and hand saws
- The rack finish should be rust-resistant, such as powdercoat or thermoplastic[12]

Custom Racks and Branded Parking

Provides increased awareness of the business or government office and shows that the company or local government supports clean, healthy forms of transportation. Ensure that the rack is function when used with a u-lock.

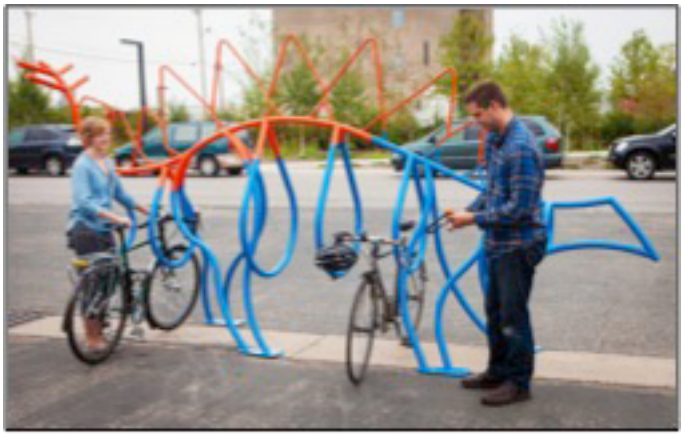


Figure 5: Custom Rack

[12] Bicycle Parking Guidelines, 2016

Bad Bike Racks cradle only the front wheel, are not u-lock compatible, may cause damage to the bike, and should be avoided.[13]

Figure 6: Examples of Bad Bike Racks

Guidelines References

Arlington County Bicycle Parking Standards. 2016. Commuter Page. Retrieved from http://www.commuterpage.com/pages/special-programs/tdm-for-site-plans/bicycle-parking-standards/#Best_Practices

Bicycle Parking Guidelines. 2016. Montgomery County Planning Department. Retrieved from http://www.montgomeryplanning.org/transportation/bikeways/documents/DRAFTBicycleParkingGuidelines2016-06-28.pdf

Pace Commuter Toolkit: Employer Edition. 2016. Pace RideShare. Retrieved from: https://www.pacerideshare.com/Pages/EmployersDevelopers

Pocket Guide to Bike Parking. 2015. Dero. Retrieved from https://www.dero.com/bike-parking-guide.pdf

[13]Pocket Guide to Bike Parking, 2015

Appendix VII

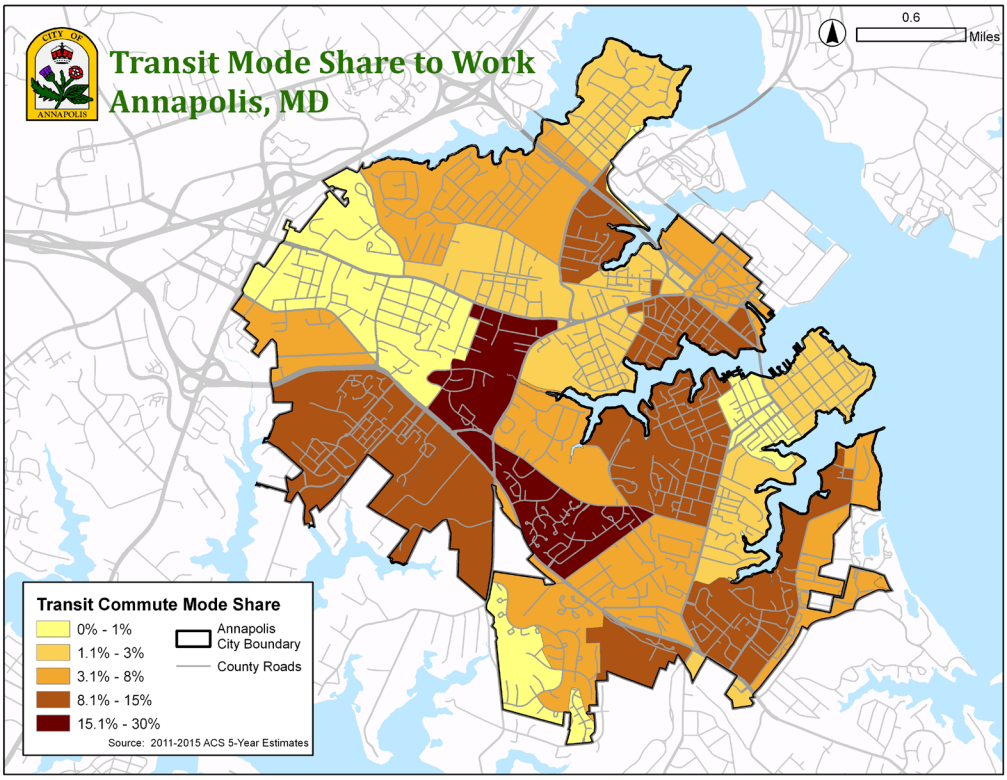
Residential and Mixed-Use Service Area Coverage within 3-Mile Bikeshed

Within 3-Mile Bikeshed			
Feature	**Facilities**	**Addresses**	**Percent**
Churches	82	47,290	94.8%
Marinas	**133**	**47,089**	**94.4%**
Park Entrances	29	45,260	90.7%
Private Schools	39	43,889	88.0%
Assisted Living	30	40,789	81.8%
Shopping Centers	**38**	**40,108**	**80.4%**
Elementary Schools	18	39,970	80.1%
Childcare Centers	41	38,794	77.8%
Fire Departments	14	38,123	76.4%
Bus Stops	**238**	**37,381**	**74.9%**
Senior Housing	9	35,055	70.3%
County Government Buildings	**11**	**31,815**	**63.8%**
Nursing Homes	7	31,213	62.6%
Post Offices	**11**	**31,065**	**62.3%**
Middle Schools	5	24,690	49.5%
Senior Centers	3	24,658	49.4%
Farmers Markets	**4**	**22,817**	**45.7%**
Libraries	**4**	**20,709**	**41.5%**
Colleges	**4**	**18,711**	**37.5%**
State Government Buildings	**24**	**18,708**	**37.5%**
High Schools	3	16,906	33.9%
Police Departments	2	16,080	32.2%
Payment Centers	**2**	**15,367**	**30.8%**
Park and Rides	3	14,816	29.7%
Health Centers	**4**	**14,752**	**29.6%**
Federal Government Buildings	**10**	**14,203**	**28.5%**
City Government Buildings	**4**	**14,090**	**28.2%**
Community Entrances	6	13,457	27.0%
Courts	3	12,238	24.5%
Community Rec Centers	**1**	**11,844**	**23.7%**
Trailer Parks	2	8,270	16.6%
Hospitals	1	7,976	16.0%
MVA	**1**	**6,261**	**12.6%**
Campgrounds	4	4,942	9.9%
Light Rail Stations	**0**	**0**	**0.0%**
MARC Stations	**0**	**0**	**0.0%**

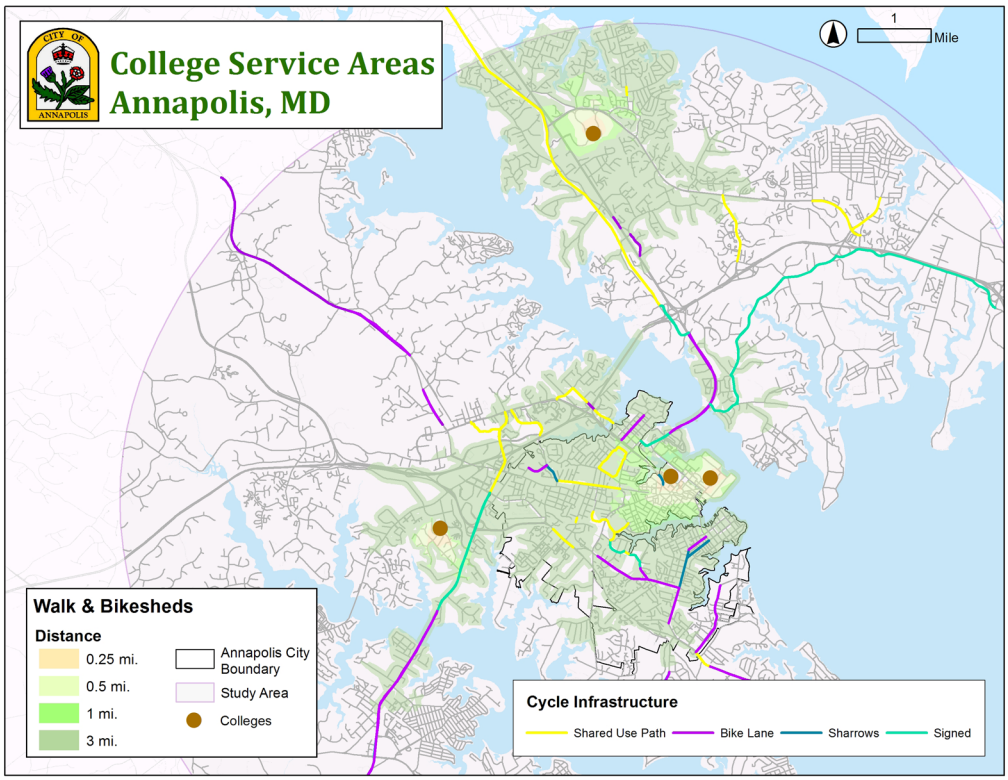
Appendix VIII

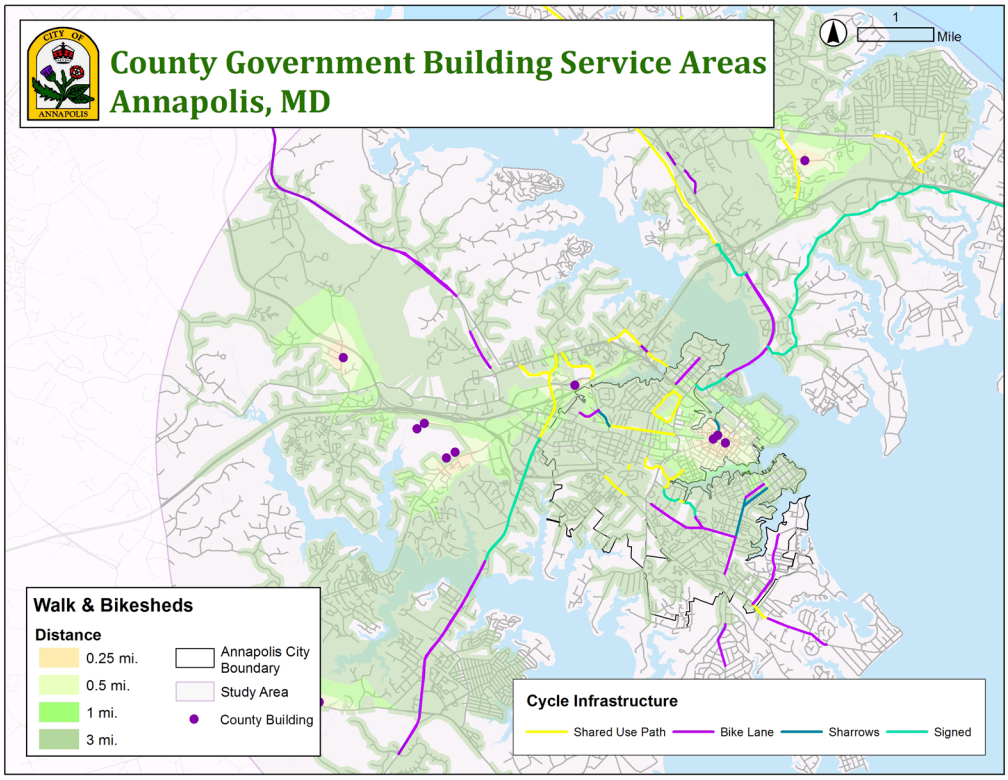
Supplemental Maps

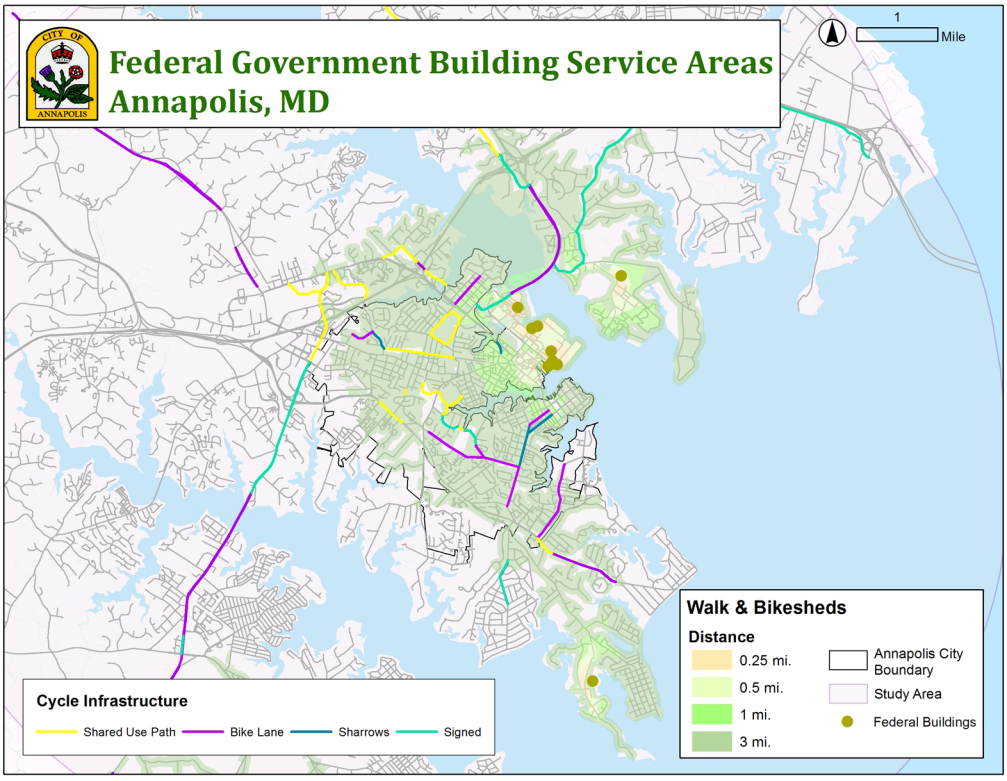
Transit Mode Share

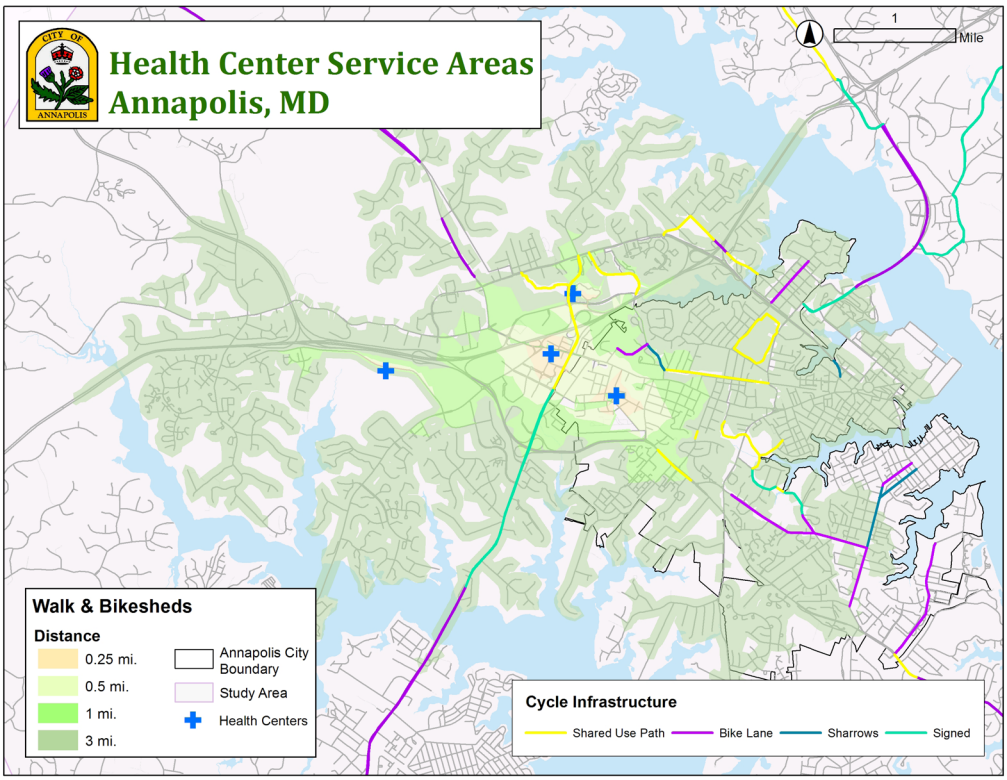


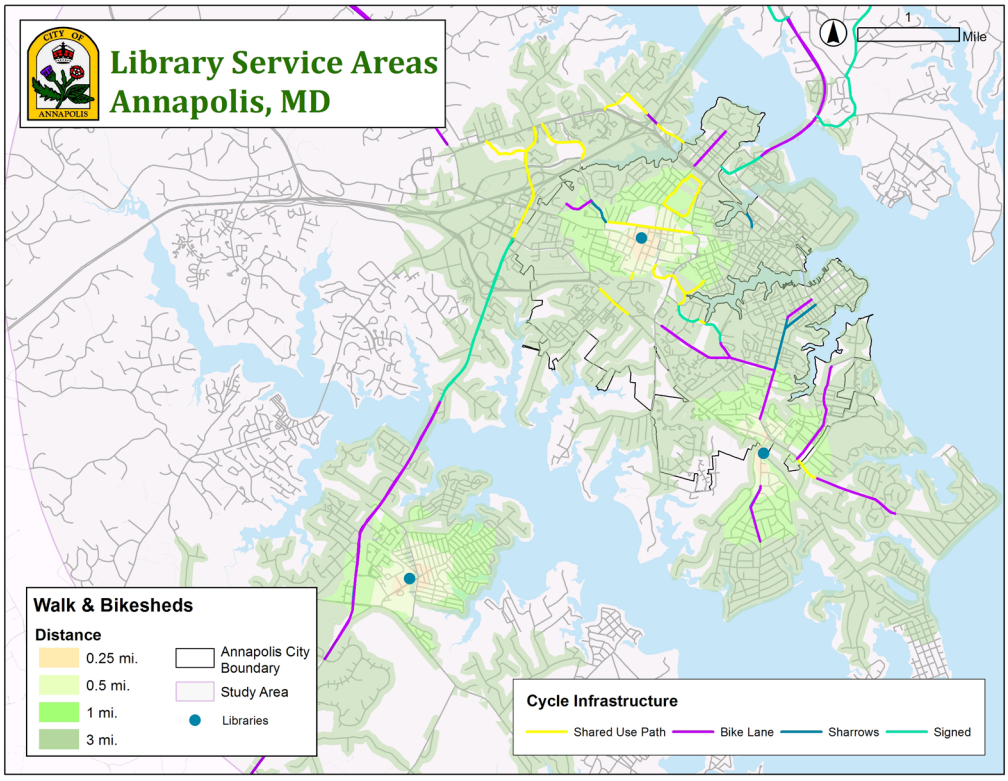
Service Area Maps

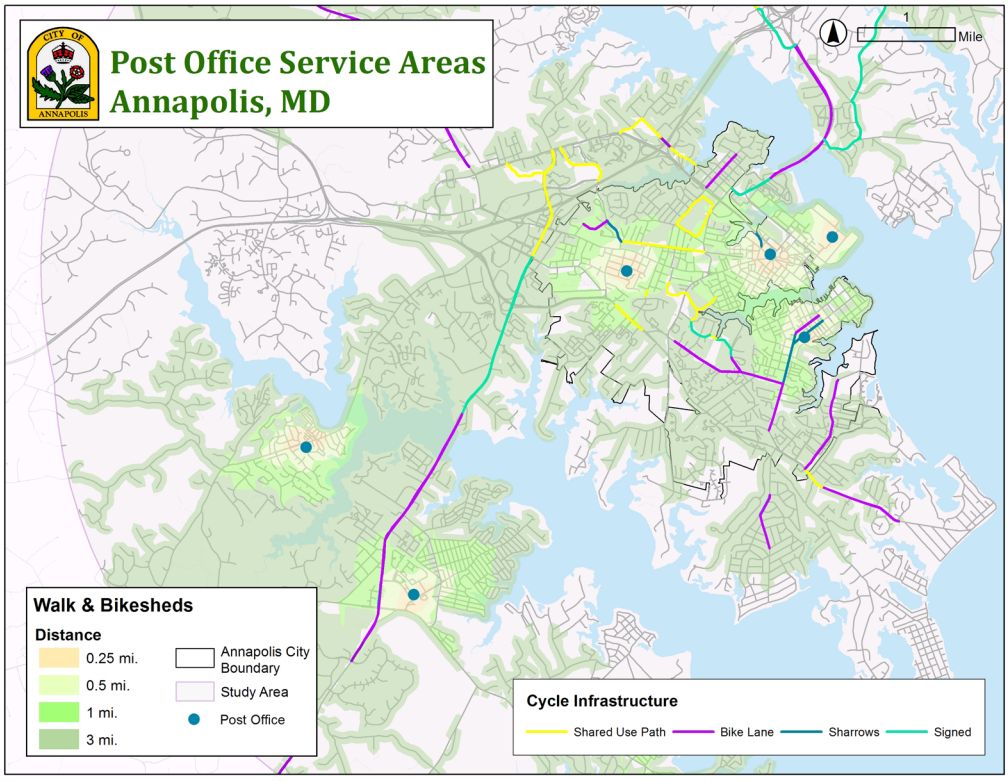


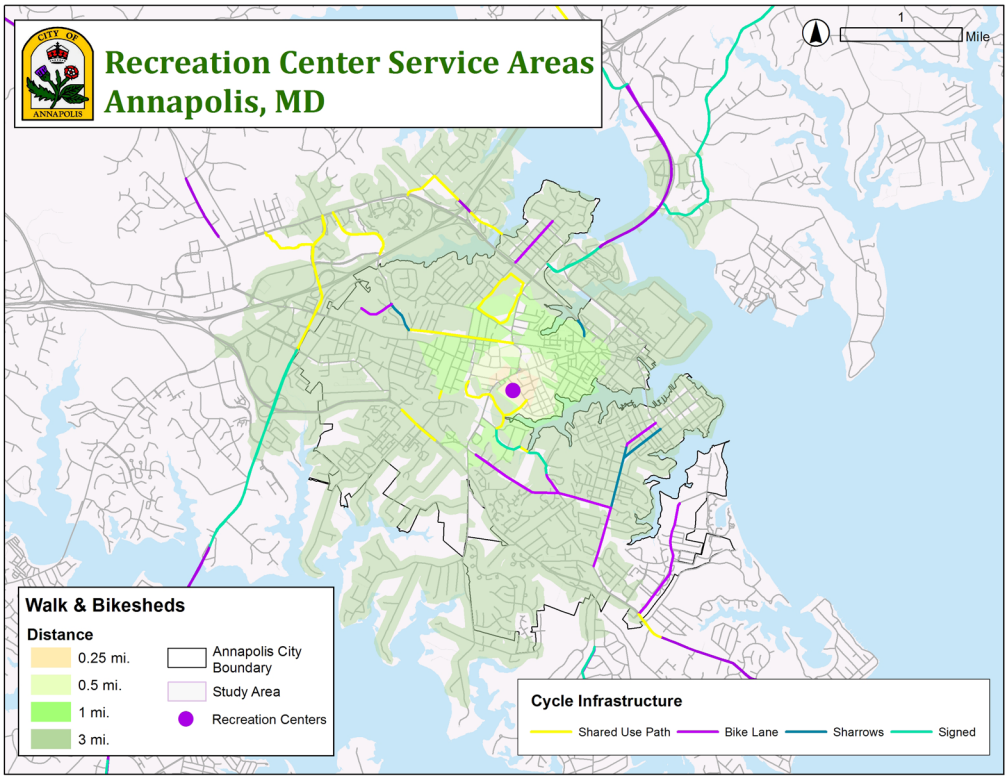


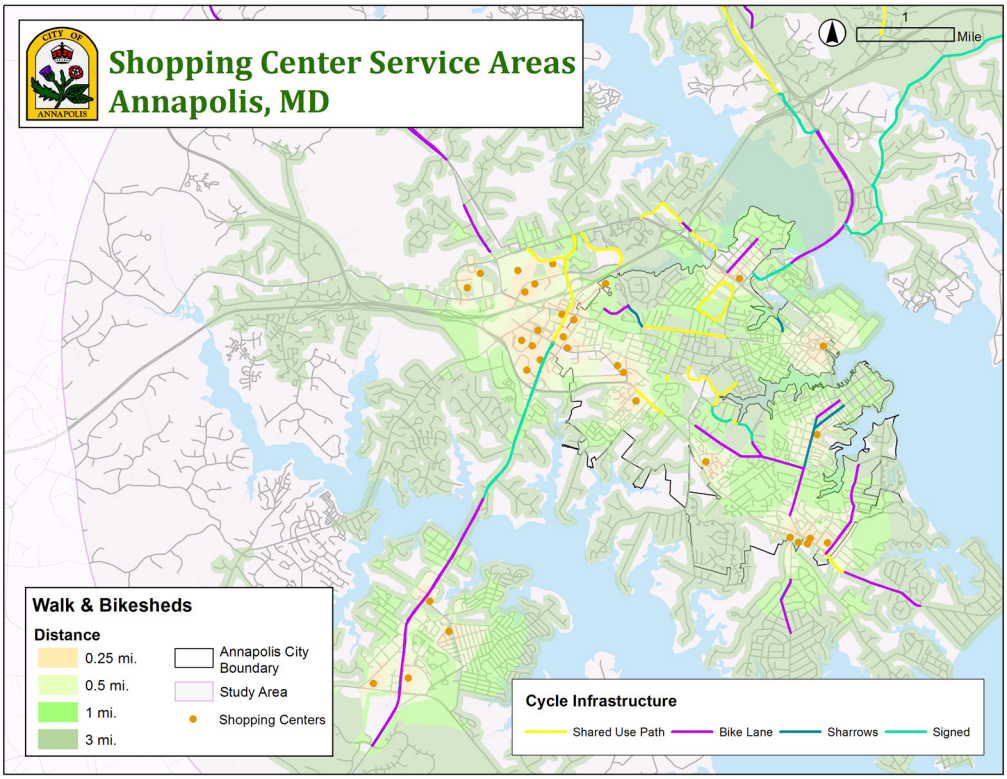

Federal Government Building Service Areas
Annapolis, MD
1
Mile
Walk & Bikesheds
Distance
0.25 mi.
0.5 mi.
1 mi.
3 mi.
Annapolis City Boundary
Study Area
Federal Buildings
Cycle Infrastructure
Shared Use Path
Bike Lane
Sharrows
Signed


Health Center Service Areas
Annapolis, MD
1
Mile
Walk & Bikesheds
Distance
0.25 mi.
0.5 mi.
1 mi.
3 mi.
Annapolis City Boundary
Study Area
Health Centers
Cycle Infrastructure
Shared Use Path
Bike Lane
Sharrows
Signed


Library Service Areas
Annapolis, MD
1
Mile
Walk & Bikesheds
Distance
0.25 mi.
0.5 mi.
1 mi.
3 mi.
Annapolis City Boundary
Study Area
Libraries
Cycle Infrastructure
Shared Use Path
Bike Lane
Sharrows
Signed


Post Office Service Areas
Annapolis, MD
1
Mile
Walk & Bikesheds
Distance
0.25 mi.
0.5 mi.
1 mi.
3 mi.
Annapolis City Boundary
Study Area
Post Office
Cycle Infrastructure
Shared Use Path
Bike Lane
Sharrows
Signed


Recreation Center Service Areas
Annapolis, MD
1
Mile
Walk & Bikesheds
Distance
0.25 mi.
0.5 mi.
1 mi.
3 mi.
Annapolis City Boundary
Study Area
Recreation Centers
Cycle Infrastructure
Shared Use Path
Bike Lane
Sharrows
Signed


Shopping Center Service Areas
Annapolis, MD
1
Mile
Walk & Bikesheds
Distance
0.25 mi.
0.5 mi.
1 mi.
3 mi.
Annapolis City Boundary
Study Area
Shopping Centers
Cycle Infrastructure
Shared Use Path
Bike Lane
Sharrows
Signed

Appendix IX

Site Selection Criteria

The following table includes a list of recommended criteria for the City of Annapolis when selecting sites for potential community gardens. While these criteria are not all mandatory, keeping these criteria in mind during site selection will help Annapolis to develop well-functioning gardens that are accepted by their communities.[14]

Location Criteria

Central Location	Sites should foster a sense of community by being placed in a central and accessible location within a neighborhood, not hidden or placed in an area out of sight.
Local Impact	Gardens, especially those located on public land, must consider impacts on surrounding neighborhoods and potential community opposition. Potential spaces for gardens should be considerate of other recreational activities currently in use.
Water Accessibility	If possible, sites should be located near facilities that offer water infrastructure.
Partnerships	Sites within close proximity to community facilities, schools, or recreation areas can create opportunities for partnerships.
Contribution to Place	Potential gardens should improve or help retain the existing sense and quality of space that previously existed at the location.

Safety Criteria

Centrality	Placing gardens in a central, visible locations may contribute to the safety of individual gardeners and the gardens themselves.
Protection	Sites should consider fences surrounding gardens as well as sheds to store tools to protect against theft and vandalism.

Size Criteria

Reflective of Interest and Need	The size of the proposed parcel must reflect the needs of each individual community, the number of people/families interested, and the aspirations and commitment of the gardeners.
Additional Elements	Space needed for composting, trash disposal, and accessory uses must be considered as part of site selection.

[14] This table was created with guidance from the following sources:

Denver Urban Gardens, "Growing Community Gardens: A Denver Urban Gardens' Best Practices Handbook for Creating and Sustaining Community Gardens," 2012.

Environment and Sustainable Development Directorate, "Community Gardens in the ACT: Draft Site Selection Criteria for Future Locations," ACT Government. 2012.

User Accessibility and Connectivity Criteria

Community Access	Sites should be placed in locations easily accessible and walkable by members of all adjacent communities.
Transportation Accessible	If possible, sites should be accessible by a variety of transportation modes. Selecting sites with trail and sidewalk access and within walking distance of transit allows those without access to personal vehicles to access gardens. Nearby and available parking is also recommended.
ADA Compliance	Sites should have connections to sidewalks or paved paths that allow for ADA accessibility. Paths within the gardens should be wide enough to allow for wheelchair use.

Land Characteristics and Resources Criteria

Sunshine	Sun exposure (at least 6 hours a day) is required for all potential garden sites.
Water Strategy	All sites must have an available water source. If a garden is located near existing facilities, the feasibility for rainwater collection should be considered.
Slope/Grade	Sites should be placed on flat land when possible to avoid higher capital costs.
Drainage	Sites should have adequate drainage and avoid disturbing the surrounding environment or neighboring residents.