Arlington Heights Park District

Healthy Communities Surveillance and Management Toolkit™ Beta Site Project Year Two Final Report June 2017

GP/RED

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Acknowledgements

This project is a joint effort of a variety of Arlington Heights Park District (AHPD) staff, partners, community stakeholders, consultants, and researchers.

Thank You to all of the Participating Partners and Stakeholders in the Community!

Funding Partners

- Arlington Heights Park District
- Northwest Community Healthcare
- Arlington Heights Memorial Library
- Arlington Heights Park District Parks Foundation
- Arlington Heights School District 25
- Prospect Heights School District 23

Supporting Community Partners

- Village of Arlington Heights
- Arlington Heights Chamber of Commerce Wellness Committee
- And community residents

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Executive Summary –Year Two Report

We are pleased to provide this final summary of a two year process of working with the Arlington Heights Park District, Illinois, and a variety of community partners. In Spring 2015, the District contracted with the GP RED *Healthy Communities Research Group (HCRG)* to become *a Beta Site* for the national *Healthy Communities Surveillance and Management Toolkit (SMT)* project. Multiple trainings, intensive data collection, and facilitated visioning sessions were held. A variety of interim reports have been complied and presented. A *Year One Report* compiled results of the first year of the project. *Year Two* consisted of identifying additional detailed data, and making updates to, and beginning implementation of, an Action Plan to improve health in Arlington Heights. This Year Two Report provides a final summary of all of the work that has been completed to date, along with suggestions for continued efforts.

What is the Project About?

The SMT Project helps parks, recreation, and related departments and agencies assess, analyze, document, and evaluate five elements related to the repositioning of parks and recreation as one of the primary preventative public health providers in the community. The project consists of key systematic focus areas that address how to increase physical activity and reduce obesity, primarily for middle school-aged youth. Steps include evaluating:

- **Creating a Warrant for Agency Action** – Why? Who? What is the Impact?
- **Convening Community Stakeholders and Champions** – Residents? Partners? Providers?
- **Policies, Laws, and Procedures** – What is influencing active living?
- **Fiscal Resources and Distribution** – What funds? How should they be allocated?
- **Inventory of Assets and Affordances** – Programs? Parks? Facilities? Food?

From an analysis of these elements, the project moved from creation of a systems portfolio, strategic concepts for improvement, and future modeling for the purposes of articulation, prioritization, management, and surveillance of outcomes over time.

The Key Elements for Year One of this project were to:

- Create templates to help organize and collect data.
- Focus on ages 10–15 (but templates are scalable for all ages).
- Convene partners and identify champions for this work.
- Collect both qualitative and quantitative data to summarize current findings.
- Have the project be evidence-based, but implementation focused.

From review of all of the data and conversations it must be stated that overall, Arlington Heights is doing pretty well in terms of addressing these issues. Great strides were achieved. A very large amount of pertinent information has been collected, compiled, and shared. The following list highlights some of the positive outcomes already achieved from this project.

Highlights of the Positive Outcomes in Year One

1. Strong increased partnerships for AHPD with the Library, Hospital, Schools, Village, Parks Foundation, and the Chamber Wellness Committee to create an agreement for the newly formed *Arlington Heights Health Action Alliance (AHHAA)*, concentrating actions on conversations and changing policy.
2. The project helped to "create a buzz" among the partners for Year One findings and toward moving into Year Two, including work on the committee's brand identity and tag line.
3. A complete inventory and level of service analysis for all facilities, parks, trails, and programs.
4. The Arlington Heights Youth Focus Group was formed to give youth a voice.
5. Relevant trends, demographics, financial, and key management aspects were compiled.
6. Multiple program and participation enhancements were achieved:
    a. AHPD developed sponsorships with Northwest Community Healthcare beyond this project for Community Events and the Youth Soccer Program.
    b. A Fit Kids series of classes was started, geared toward kids between the ages of 4 and12.
    c. The AHPD incorporated healthy snacks into the preschool program.
    d. The AHPD incorporated pickle ball lines into the gym floor at Pioneer Park for all ages.
    e. The Youth Nutrition program was put in front of approximately 900 middle school students to help to start the conversation toward better nutritional habits.

Year Two Additional Actions and Recommendations

Year Two included a focus on branding, identity, partnerships, and identification of how the AHHAA partners can help, through a variety of facilitate meetings and review of additional data. While there is ongoing room for improvement, there are no glaring gaps in program or asset availability, walkable access is fairly available, and the youth feel fairly safe.

Year Two also included AHPD's involvement in a national Delphi Panel study to validate the role of key preventive health factors that can be addressed by parks and recreation agencies. These key factors identified (in order of priority for Arlington Heights) by the AHHAA stakeholders were:

1. Nutrition
2. Physical Activity
3. Social and Parental Engagement
4. Transportation and Activity Access
5. Safety and Perception of Safety

Two additional factors were identified from the national research in Year Two that were not included in the initial priority ranking, but might be addressed strategically as the Village goes forward:

- ✓ Access to Nature and Nature Dosing
- ✓ Tobacco Cessation

As part of the Delphi Panel, AHPD received open shared access to policies, programs, and additional research from other high performing agencies who are also trying to address these issues. It appears that going forward the largest focus needs to be on continued increases in participation and retention, education of the needs around these topics (both for youth and adults), positive policy adjustments, marketing and branding around these efforts, funds to do so, and continued tracking and assessment to monitor results. Year Two included a detailed update of the particulars of the programming and the assets inventories. This also included adding more detailed analysis of participation by neighborhood service areas, along with analysis of active energy expenditures. The neighborhood service areas showing the highest level of opportunity for additional program locations and participation to improve health for youth are the **Recreation, Pioneer, and Heritage** service areas.

The **Ongoing Action Plan** with responsibility, outputs, and evaluation aspects is provided in *Section IV. Recommendations*. Here is a summary of the recommended ongoing *Goals and Objectives* going forward.

Goals	Specific, Measurable, Attainable, and Relevant Objectives
Goal One: Continue and Enhance the Role of AHHAA	1.1: Define a consensual Mission, Brand, and Tagline
	1.2: Identify and address policies related to all seven health factors (nutrition, transportation, social/parental engagement, safety, physical activity, access to nature, and tobacco cessation)
	1.3: Endorse programs and other activities that meet mission
	1.4: Increase programs for parental modeling/engagement
	1.5: Actively advocate for AHHAA
	1.6: Add partners (public health, safety, other alternative providers)
	1.7: Explore funding options to support and add resources to AHHAA and endorsed activities
Goal Two: Continued tracking of key variables and data to make improvements	2.1: Re-collect detailed program mix analysis
	2.2: Collect detailed AHPD financial analysis for this group
	2.3: Increase participation in AHPD programs for this age group by 5%
	2.4: Increase retention in AHPD programs for this age group by 10%
	2.5: Review Neighborhood Service Area goals, especially for the Recreation, Pioneer, and Heritage service areas
	2.6: Conduct two Youth Focus Groups per year to give youth a voice regarding programs, barriers, and perceptions of safety
Goal Three: Add additional policies and programs to achieve goals	3.1: Demonstrate positive policy practices in centers and programs through staff trainings
	3.2: Identify priority locations for additional programs based on physical activity component basis in GIS and new health factors
	3.3: Collect additional participation data for partners/alternative providers (schools, library, churches, etc.)
	3.4: Align with other alternative transportation planning and barrier analysis in the Village

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I. Introduction

A. Summary Overview of Full Project Methodology and Schedule

This project was initiated between Arlington Heights Park District (AHPD) and GP RED in February 2015, and completed in June 2017. The chart below indicates key project tasks and milestones.

Project Tasks and Milestones	**Dates**
Year One (see Year One Report)	
Initial Planning Meetings with Staff and Stakeholders	February 2015
Data collection and research	March – December, 2015
Conducted a Youth Activities and Nutrition Survey (YANS)	April – May 2015
Staff and Stakeholder initial trainings and information gathering meetings, MAUT exercise	June 2015
Presentation of Summary Findings, Trainings, and Visioning Sessions with Staff and Stakeholders	October 2015
Drafting of Year One Recommendations, Impact Simulation, and Stella Modeling	November 2015 – May 2016
Year One Report of Project to Staff and Stakeholders	June 2016
Year Two	
Facilitated Action Plan Discussions with AHHAA	June 2016
Staff Training on Positive Policy Implementation	September 2016
Facilitated meetings with AHHAA, AH Parks Board, and staff	
Updated detailed program and assets analysis	July – December 2016
Inclusion of AHPD on national Delphi Panel on topic	Sep 2016 – Feb 2017
Drafting of Year Two Report and Updates	Mar – June 2017

Details of each of these steps can be found in the Year One Report (provided in June 2016) and the following sections for Year Two. This full project is also a continuing test, validation, and refinement of Beta testing of the GP RED Healthy Communities Research Group (HRRG) ***Surveillance and Management Toolkit (SMT).***

B. Significance of the Project

Alignment with AHPD Comprehensive Plan

This project is in alignment with the *2014 Arlington Height Park District Comprehensive Plan*, which includes a variety of goals and tasks related to this work. The following goals and objectives are directly tied to this project:

Goal 2.2 Provide quality recreational programs and services which meet the needs of all age groups, and promote a healthy lifestyle in the community.

Specific Tasks from the Comprehensive Plan Goal 2.2

#1. Coordinate with all community partners to implement the agreement with GP RED for the Healthy Communities Surveillance and Management Project.

#14. Offer five new health and wellness programs yearly for youth ages 6-12.

C. Background of the HCRG Surveillance and Management Toolkit (SMT) Project

Since 2009, the ***Healthy Communities Research Group*** (HCRG) has been working together to develop and test the **Healthy Communities Surveillance and Management Toolkit (SMT).** GP RED has been the lead agency since 2011, but has worked over the years with Indiana University Bloomington, along with the Indiana Parks and Recreation Association, the Bloomington Parks and Recreation Department, GreenPlay, Design Concepts, East Carolina University, and North Carolina State University to create, validate, and refine the methods used. The project targets the preventative community aspects that influence obesity and active living that may be modified by parks and recreation (P&R) agencies and their community partners. The initial "alpha project," was in Bloomington, Indiana, and other Beta Sites followed with testing that has been successful. Arlington Heights is the third "Beta Site." The methods are now being integrated into a training process and toolkit to be applied to additional "beta" site communities for further refinement, testing, and implementation around the U.S. in the future.

What is the Project About?

The SMT Project helps parks, recreation, and related departments and agencies assess, analyze, document, and evaluate five elements related to the repositioning of parks and recreation agencies (P&R) as a primary preventive public health providers in the community:

- **Creating a Warrant for Agency Action** – Why? Who? What is the Impact?
- **Convening Community Stakeholders and Champions** – Residents? Partners? Providers?
- **Policies, Laws, and Procedures** – What is influencing active living?
- **Fiscal Resources and Distribution** – What funds? How should they be allocated?
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From an analysis of these elements, the project moves to creation of a systems portfolio, strategic concepts for improvement, and future modeling for the purposes of articulation, prioritization, management, and surveillance of outcomes over time.

The Key Elements of this project were to:

- Create templates to help organize and collect data.
- Focus on ages 10–15 (but templates are scalable for all ages).
- Convene partners and identify champions for this work.
- Collect both qualitative and quantitative data to summarize current findings.
- Have the project be evidence-based, but implementation focused.
- Create focused recommendations for addressing health in Arlington Heights, with leadership through parks and recreation.

This project aimed to position AHPD as a preventive public health provider, working with community partners to address and potentially modify key preventive health factors in middle school aged youth.

D. Arlington Heights Health Action Alliance (AHHAA) Partners

In Year One of the project, a group of partners and potential champions was created and convened. They met quarterly, and minutes were taken. Initial meetings were centered on organizing, familiarization with the project, discussions of additional potential partners, group structure, and review of findings presentations. Contact information was collected, and the group now includes representatives from:

- Arlington Heights Park District
- Arlington Heights Memorial Library
- Northwest Community Hospital
- Arlington Heights Park District
- Arlington Heights Park District Parks Foundation
- Prospect Heights School District 23
- Arlington Heights School District 25
- Village of Arlington Heights
- Arlington Heights Chamber of Commerce Wellness Committee
- And any interested community residents (open meetings, but not advertised publicly)

This group has been heavily involved in each stage of this project, and has become stronger in attendance and action. In April 2016 at the start of Year Two, the group determined that its priority is to **focus on policy** to be the umbrella that brings stakeholders together around the recommendations and Action Plan for Arlington Heights. In addition, there was a strong desire to create an identity, branding, a tag line, and a logo for the group. A sub-committee was created to work on this task with the AHPD Marketing Staff in 2016–17. It is anticipated that this group will continue to work together with AHPD, hopefully in perpetuity, to address these and other important issues.

II. Community Profile

Detailed local demographics and relevant trends were collected as part of the project in Year One to help supplement the findings and potential recommendations. This project was conducted to get actual representative data from Arlington Heights youth to help guide community decisions in the future. A summary is provided here for easy reference.

A. Demographics and Location

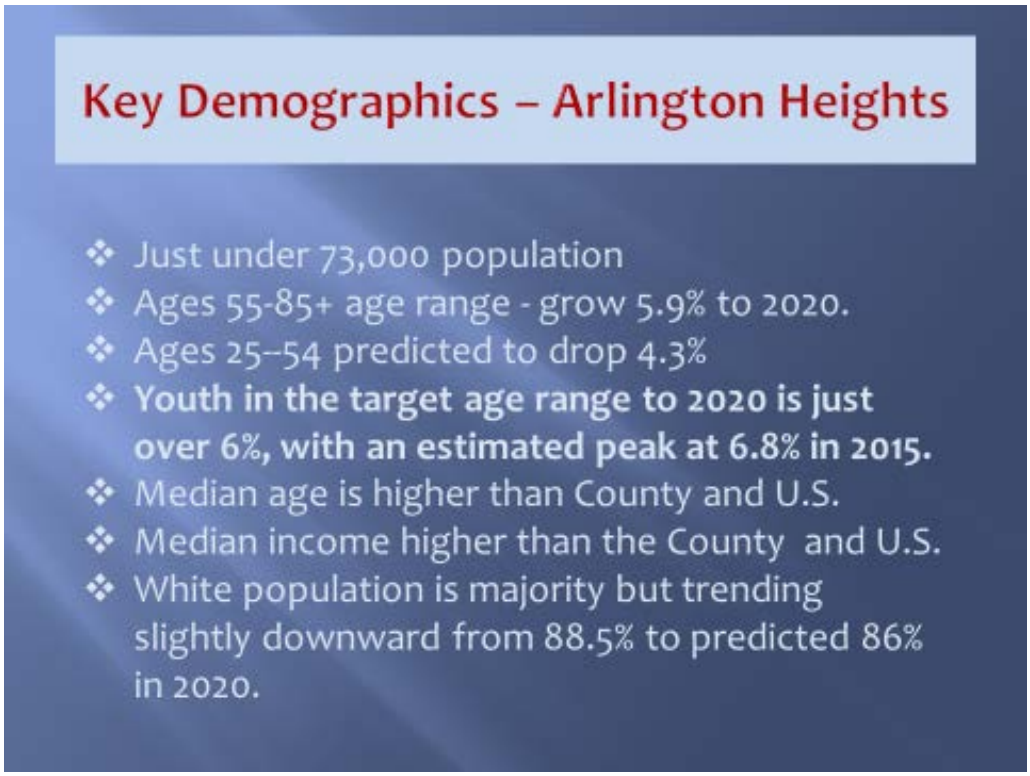
Understanding detailed community demographics and needs is an important component of planning for the Arlington Heights Healthy Community Surveillance and Management Toolkit. The population data used in this demographic profile comes from Esri Business Information Solutions, based on (and projected from) the 2000 and 2010 U.S. Census data. They are similar to (but not exactly the same as) demographics reported by Arlington Heights School District 25 in 2014.

Arlington Heights Park District Boundaries

The 16.2-square mile District is located in northern Cook County and southern Lake County, 27 miles northwest of downtown Chicago. It lies in Elk Grove and Wheeling Townships and is bordered by Buffalo Grove and Wheeling to the north, Elk Grove Village to the south, Rolling Meadows and Palatine to the west, and Mt. Prospect to the east. The District serves most of Arlington Heights and small portions of Palatine, Mt. Prospect, Prospect Heights, Rolling Meadows, and Lake County.

A full demographics analysis was completed in Year One and included in the Year One Report. A summary of key demographics is provided in ***Figure 1***.

Figure 1: Summary of Arlington Heights Demographics



III. Updated Research on Relevant Health Factors

Arlington Heights benefited through participating in *Year Two* as one of 17 Key Informants in a national *Delphi Panel* for concurrent dissertation research conducted by Penbrooke (2017) at North Carolina State University during this project. The research builds upon previous research used by GP RED for the Healthy Communities Beta Sites, and refines and supports indications that the interaction of health factors is complex and varies among communities. The research indicates that additional analysis (such as this specific SMT project) needs to be conducted to help identify how specific local public parks and recreation systems can and should best approach these factors to focus their resources to improve health in their own community (Burns, 2016; Compton, Kim, & Damask, 2010). Once the factors are identified in a specific community through targeted, community-specific research, there is also the challenge of how to prioritize interventions for programs or environmental improvements, given financial and staffing resource constraints.

A summary of the key preventive health factors that have been identified as those that can be addressed by parks and recreation agencies is provided below. This study also included a youth-specific survey in Year One that provided youth-specific answers to questions about most of the health factors as a way to create a baseline of measurement in Arlington Heights. Additional qualitative and quantitative methods, as described in other sections, were used to help flush out the best plan of action going forward. A couple of new health factors were added to this *Year Two* report as a result of this research, and should be considered as Arlington Heights move forward. These include access to nature and tobacco cessation.

The identified health factors are presented in no particular order in this section, but are further explored in the following sections and in the suggested Action Plan. Part of moving forward for Arlington Heights beyond Year Two can be to further prioritize focus on these factors by AHPD and AHHAA.

The Primary Preventive Health Factors

Access to Nature and Health

Claims have long been made of the health-promoting effects of contact with nature, but these claims have only recently been subjected to rigorous scientific testing. A robust body of evidence is now available, and various recommendations have been made using language and phrases such as treating "nature-deficit disorder" (Charles & Louv, 2009; Louv, 2005), forest bathing and nature therapy (Lee et al., 2012), and healing through "eco-therapy" (Delamont, 2016; Shanahan, 2015).

The research has shown that access to green space can help regulate air and water pollution, reduce asthma, improve mental health and cognitive functions, mitigate urban heat effects, and enhance access to nutritious fruits and vegetables (Bratman, Hamilton, Hahn, Daily, & Gross, 2015; Jennings, Larson, & Jun, 2016; Lovasi, Quinn, Neckerman, Perzanowski, and Rundle, 2008; Wells, 2013).

Residential distance from parks has been shown to have the highest positive impacts on residents within a short walking distance from a park, and the number of visits and physical activity minutes are significantly and independently related to distance (Sturm & Cohen, 2014). However, conflicting studies have indicated that effects may not only be related to the distance to greenspace, but may also be related to finer qualitative aspects (Delamont, 2016; Layton, 2016; Saw, Lim, & Currasco, 2015). Some findings suggest that poorly planned parks have the capacity to actually worsen mental health outcomes in some places, effectively doing the opposite of one of their intended functions (Delamont, 2016; Saw, Lim, & Carrasco, 2015). The reason may be that in neighborhoods facing larger social issues like drug usage and crime, parks can simply serve as a place for these things to occur. However, that does not appear to be an argument against building parks and greenspaces in low-income neighborhoods. It just needs to be done in a way that is aware of the issues in the community and includes safe design aspects (Delamont, 2016, GP RED – SRTP, 2016; Shinew, Stodolska, Roman, & Yahner, 2013; Walls et al., 2012; Wells, Evans, & Yang, 2010).

The evidence to date suggests that "dosage" (time and duration of total exposure) is also important. All forms and quantities of exposure appear to be helpful, and the greener the better (Kuo, 2013). Urbanization has many benefits, but it is also associated with increased levels of mental illness, including depression. It has been suggested that decreased nature experience may help to explain the link between urbanization and mental illness (Charles & Louv, 2009; Lee et al., 2012). There is also evidence that in rural settings, levels of nearby nature can moderate the impact of stressful life events on the psychological well-being of children (Wells, 2013),

This section has provided just a brief overview of the benefits of nature and greenspace to health, especially for youth. Extensive additional references can be found through the *Children and Nature Network* (www.childrenandnature.org/research) and in the Penbrooke (2017) dissertation.

Physical Activity

The majority of the current research related to potentially modifying health through P&R is around measuring physical activity (PA) and/or obesity. PA is a key factor (along with nutrition, discussed later) as a determinant of whether someone is of normal weight or obese, along with effects on overall health (CDC, 2016; Sallis et al., 2015). Often, research related to P&R activities and/or out of school (OST) time refers to leisure time PA (LTPA) to indicate time relationship and differentiate it from in-school PA. Related to primary factors of PA, two chief federal sources outline objectives and strategies for increasing PA at a local level. One is the *Healthy People 2020* (2016), through the *U.S. Office of Disease Prevention and Health Promotion*, and the other is the *Centers for Disease Control* reports and webpages (CDC, 2016).

In a nationwide study, the primary outcome measure for PA, a neighborhood supportive of physical activity, was a composite measure derived from individual features related to perceived neighborhood safety; availability of sidewalks or walking paths; and the availability of parks, playgrounds, or recreation centers (National Physical Activity Plan Alliance [NPAPA], 2016; Watson, Harris, Carlson, Dorn, & Fulton, 2016). These general measures are related to ten identified indicators they have related to physical activity in children and youth: 1) overall physical activity, 2) sedentary behaviors, 3) active transportation, 4) participation in organized sports, 5) active play, 6) health-related fitness, 7) family and peers, 8) school, 9) community and the built environment, and (10) government strategies and investments (NPAPA, 2016).

Another strong source of current research in this area that is growing is provided by *Active Living Research*, funded by the *Robert Wood Johnson Foundation* (Active Living Research, 2016). Agencies often have limited information from which to inform the implementation of programs and development of appropriate resources to address health issues in their communities. National-level research organizations look at local systems for potential interventions, and they recommend many programs, site enhancements, and individual methods for increasing PA.

PA confers numerous immediate benefits for youth. To increase the participation in PA, especially with a focus on youth in a sustained physical activity, interventions require a fair understanding and consideration of the influences of this behavior. A systematic review found benefits from PA for overweight/obesity, blood pressure, bone strength, aerobic fitness, strength and endurance, depression, anxiety, and several measures of self-concept among children and youth engaging in PA (Janssen & LeBlanc, 2010). PA during childhood and adolescence is one of the best predictors of adult physical activity, and evidence has shown that promoting and establishing lifestyles that incorporate physical activity among children is often more effective and easier than promoting physical activity among adults (Kushi et al., 2006). It is important, however, to look at the quality and demographics around parks and facilities when they are being planned, as often these subjective and qualitative aspects are more important than just distance and proximity (Layton, 2016).

Activities, Programs, and Screen Time

Researchers have begun to look toward organized youth programs offered during adolescents' out-of-school time (OST) as another ideal setting for promoting youth PA and healthy eating (Edwards, Kanters, & Bocarro, 2014). Along with sports, which are typically perceived to be inherently (but not always) active, other organized afterschool programs (e.g., P&R programs, community clubs, faith-based organizations), which often feature physical recreation as one part of the curriculum, represent a relatively healthy environment compared to alternative OST arrangements (e.g., being home alone). Being home alone typically includes excessive time spent in sedentary activities (watching television or playing video games) and extended opportunities for snacking (Zarrett & Bell, 2014).

Sports are frequently regarded as a potentially effective mechanism for promoting positive youth development, increasing PA, and serving as a way to increase health (Bocarro, Kanters, Edwards, Casper, & McKenzie, 2014). However, the effectiveness of this mechanism depends upon a variety of community-specific programmatic and contextual factors. (Edwards, Kanters, & Bocarro, 2014; Jones, Edwards, Bocarro, Bunds, & Smith, 2017). Some studies have suggested that some organized sports fail to meet suggested guidelines for physical activity (Leek et al., 2010), and therefore, contribute little to the prevention of obesity. However, there are conflicting studies. Other research has shown that youth spend 43% of sports practice inactive, and fewer than one-fourth of youth obtain the recommended 60 minutes of moderate-to-vigorous activity during practice (Bocarro, Kanters, Edwards, Casper, & McKenzie, 2014; Zarrett & Kelly, 2014).

Research also indicates that individual entertainment, passive screen time, and social media is increasing, and increased screen time is typically related to increased body mass (Stamatakis et al., 2015). Some studies have suggested that the type of sedentary behavior, such as screen time, might be more important than just overall sedentary time in relation to youth health (Larson, Green, & Cordell, 2011; Stamatakis, et al., 2015). To address screen time, there have to be attractive and accessible options available, along with education regarding the dangers of prolonged sedentary screen time.

Analysis of a national study, the *National Kids Survey*, conducted by the USDA Forest Service, found gender differences for reasons that youth do not spend more time outdoors (Larson, Green, & Cordell, 2011). Interest in music, art, reading, and similar activities was the highest percentage reason given by girls (64 percent) for not spending more time outdoors, while for boys it was video games and watching DVDs and television (54 percent). In addition, not having neighborhood access to outdoor areas, not having a friend to go with, and not having transportation were reasons for not spending more time outdoors given more frequently by girls, while not feeling safe was more likely as a reason for boys.

Nutrition and Food Availability

While it has not always been seen as a primary focus of P&R agencies, nutrition is a key factor for the youth obesity equation (DeMattia & Denny, 2008; Ferder, Ferder, & Inserra, 2010; Papas et al., 2007). Disparities in access to healthy foods have been identified, particularly in the United States (Morland & Evenson, 2009). While nutrition is often considered personal choice, there are a number of system level factors that can be addressed at a local level to address nutrition. Availability of foods, minerals, vitamins, and water can be addressed through zoning and public services, and awareness and culture can be impacted by meal planning education, economic interventions, and food safety preparation methods (DeMattia & Denney, 2008; Glanz & Sallis, 2006).

The role of P&R agencies in community nutrition availability and education, especially for youth, has not been clearly defined. Some options may include educational after-school classes and camps, adopting food policies for all P&R programs and vending, and providing spaces to increase availability of fresh foods, such as community gardens and farmers' markets. Many cities such as Chicago, Seattle, New York, and several of the other national Delphi Panel agencies (Penbrooke, 2017) have adopted citywide healthy vending policies and policies around the food that is available for agency programs and activities.

While obesity is not a focus for all P&R agencies, and a very complex topic to address, it is often a key outcome used as a measurement related to health and often viewed as a subset of the PA and nutrition equations, as it is related to energy consumption, expenditure, and resultant energy. Over the past four decades, the prevalence of obesity has more than tripled for youth aged 6-11 years and has more than doubled for youth aged 12-19 years (Ogden et al., 2016). If this pattern continues into adulthood, as it often does, it will likely lead to an unprecedented rate of premature death and disability, diminished workplace productivity, and staggering financial repercussions for families, insurers, health care providers and society. In the short-term, poor nutrition and sedentary lifestyles cause serious health issues, lower youth's self-esteem, may lead to social and psychological problems, and contribute to poor academic performance. In addition, research shows that the current generation of youth are the first that will most likely have a shorter lifespan than their parents primarily due to the effects of being overweight or obese (Compton & Kim, 2013).

The literature indicates that obesity is an increasing topic for community attempts at intervention, and it is often seen as one of the greatest health threats currently facing the United States. It contributes significantly to a variety of serious diseases including heart disease, diabetes, stroke, and certain cancers, as well as poor general health and premature death (CDC, 2016). Equity in communities also has a role in obesity, as the prevalence of obesity is typically lower in areas that have supermarkets and higher in area with only small grocery stores or fast food restaurants. Studies show that types of food stores and restaurants influence food choices and, subsequently, diet-related health outcomes (Morland & Evenson, 2009).

While there are signs of potential improvements in some populations in the U.S. such as early childhood (Ogden et al., 2016), obesity among older youth remains a very serious problem (CDC, 2016). Research findings support the importance of promoting regular breakfast consumption among adolescents, as breakfast-eating frequency typically declines through adolescence and has been inversely associated with body weight in cross-sectional studies, (Bruening, Larson, Story, Neumark-Sztainer, & Hannan, 2011). In addition, research has indicated a potential correlation between drinking sugar-sweetened beverages, eating meals at home with family or in other settings, and other factors around consumption and youth obesity (Cordain et al., 2005). Clearly, P&R agencies can have a strong role in addressing community systems and education around nutrition and obesity.

Transportation and Access to Programs and Facilities

Youth below the age of 16 are especially affected by availability of transportation, as they do not drive and have to rely upon parents or other forms of transportation if they cannot walk or bike. Results across various studies have shown that a youth's participation in PA is positively associated with publicly provided recreational infrastructure (access to recreational facilities and schools) and transportation infrastructure (presence of sidewalks and controlled intersections, access to destinations and public transportation). At the same time, transportation infrastructure (number of roads to cross and traffic density/speed) and local conditions (such as perceived crime) are negatively associated with youth participation in PA (McGrath, Hopkins, & Hinckson, 2015).

Locals P&R systems can address the cultural education and the policy side of transportation patterns by improving access to safe trails and sidewalks, along with facilitating and promoting availability, timeliness, and cleanliness of public transportation, and removing barriers to access. This may have important benefits for increasing community expended PA, along with pollution control and climate change concerns as well (Ng & Poplin, 2012, Sallis et al., 2006).

Improving cultural views around daily PA and transportation options for local community resident use requires integrated policies that include different but complementary interventions and integrated infrastructure provisions. Requiring enhanced bike/pedestrian plans, along with addressing constraints such as perceived and real barriers to walking, can be good policy steps to help increase PA in local communities (GP RED – SRTP, 2016; NRPA, 2016; U.S. Department of Health & Human Services, 2015).

Safety and Perceptions of Safety

The perception that a community or local environment may be unsafe can lead to a reduction in physical activity and decreased fitness over time. This can be through perceptions or realities of crime or other unsanctioned behaviors, or related to traffic and transportation. For example, one barrier to activity participation may be the safety or perception of safety from parent or youth around how youth get to an activity location (Friedan & Dietz, 2010). Research has shown that unsupervised OST is associated with various negative youth outcomes. Juvenile crime rates and other non-sanctioned behaviors occur most frequently between 3 and 6 p.m. in the afternoon, just after students are released from school and when they have nothing to do. (Kremer, Maynard, Polanin, Vaughn, & Sarteschi, 2014). Many studies suggest that during this time period, youth are most likely to become victims of crime; engage in destructive behaviors (graffiti, vandalism); be in or cause car accidents; and engage in risky behaviors, such as smoking, alcohol abuse, drugs, and sexual intercourse (NIOST, 2015).

There is evidence to suggest that community-based OST programs, such as those often offered by P&R and other providers, can provide alternative positive activities that can help improve safety and health of youth (Godbey & Mowen, 2010; Kremer et al., 2014; NIOST, 2015). While actual crime rates have not been strongly correlated with physical activity, *fear of crime* or perception of safety has been shown to be related to lower physical activity and outdoor recreation (Shinew, Stodolska, Roman, & Yahner, 2013). Increasing police and adult presence in parks and other recreation and trails areas, along with positive messaging and creation of a safe culture, has been recommended. Moreover, efforts must be made to reduce any gang problems. Working closely with public safety officials can be key to establishing strong positive community environment (Newman, Fox, Flynn, & Christeson, 2000).

Social Components and Parental Engagement

While peer behavior often becomes more important with age, the role of modeling and support by parents and guardians are still key determinants for behaviors by youth. (Lederer, King, Sovinski, & Kim, 2015). Research has indicated that the role of parents, including monitoring, negotiating of unsupervised time, and establishment parental trust is correlated with establishing desired behaviors. In addition, it is important to monitor the amount of bullying in recreation, parks, schools and the community. Often overweight and obese youth are more likely to be the victims and perpetrators of bullying behaviors than their normal-weight peers. Strategies to address this component can include training and program elements to incorporate identifying and working through these types of behaviors in all situations. Education and modeling related to family rules can greatly impact youth health factors related to eating habits, sedentary behaviors, and weight status (Lederer et al., 2015).

Tobacco Cessation

While not widely represented in the literature or typically thought of as a primary role for P&R agencies, some research suggests that P&R agencies may be able to play a positive role in addressing smoking prevention and cessation, especially among youth. In the United States, more than 600 municipalities now have smoke-free parks, and more than 100 have smoke-free beaches (Leung et al., 2013). In 2016, the National Recreation and Park Association (NRPA) released typical objectives for an outdoor smoke-free policy that include protecting against secondhand smoke, supporting a normative message that smoking is harmful, motivating smokers to quit, and mitigating tobacco-related sanitation costs (Leung et al., 2013). The position statement (NRPA – Tobacco, 2016) includes:

> "Attitudes and opinions about the consumption of tobacco have shifted in recent decades, and scientific research has repeatedly confirmed the danger of tobacco use. As park and recreation agencies seek to improve public health, protect the environment, and uphold public trust, prohibiting the use or consumption of tobacco at our ball fields, recreation centers, parks, splash pads and walking trails will go a long way towards encouraging healthier lifestyles among the families and communities we serve. The benefits of a tobacco prohibition include:
>
> - Healthier recreational environments that promote physical activity, encourage personal development, and minimize exposure to tobacco use and secondhand smoke.
> - Less tobacco use and initiation among child and adult visitors at park and recreation facilities.
> - More public awareness about the dangers of tobacco use and secondhand smoke exposure.
> - Better health equity and fewer health disparities among visitors to park and recreation facilities.
> - Cleaner parks that contribute to a high quality recreation experience because they are free of tobacco, secondhand smoke and cigarette butts.

- Fewer carcinogens, toxic metals and poisonous gases from secondhand smoke and tobacco products that impact human health, worsen air quality and impair physical activity necessary to fully enjoy park and recreation facilities.
- Fresher air, smoke-free facilities and better respiratory health for all visitors to park and recreation facilities."

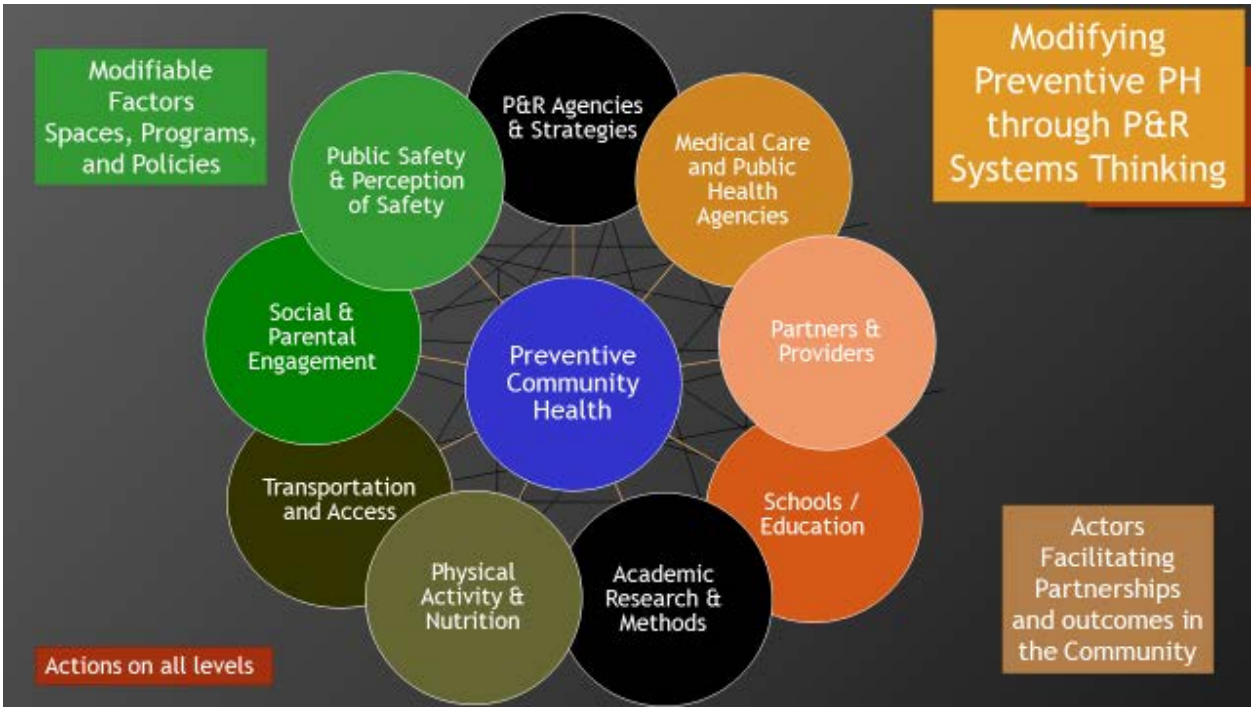
A Systems Thinking Approach

Theoretically, this *Surveillance and Management Toolkit* used in Arlington Heights for this project is part of a larger effort by GP RED to change the way in which P&R agencies address their role in preventive public health in the communities they serve. The goal is to utilize evidence-based research, along with proven practices from the professional planning, management, and public health realms to adopt a more strategic way to address the factors through P&R agencies, though plans for allocating resources, approaching partnerships, and providing services.

General System Theory, which was initially conceptualized by Ludwig von Bertalanffy (1968), provides an analytical framework which can be used to describe some of the many factors involved in community development and management. This theory has evolved and been adapted for many business and organizational management aspects (Stermann, 2000) and is often referred to as *Systems Thinking*. In recent years, it has been applied by various researchers to health systems (e.g., De Savigny & Adam, 2009; Leischow et al., 2008; Sarriott & Kouletio, 2015).

Figure 2 provides a model depicting interaction of the various key factors and actors within a local P&R system (adapted by Penbrooke, 2017).

Figure 2: Systems Thinking Model for Parks and Recreation for Addressing Preventive Health



Adapted by Penbrooke, 2017

IV. Additional Trainings, Data, and Findings

The *Year One* portion of the Healthy Communities ***Surveillance and Management Toolkit (SMT)*** included strong focus on collecting the initial data that was available, and compiled this data into Findings for future action. An Action Plan was provided for Year Two (see the Year One Report).

Year Two included special focus on key areas from the Action Plan. In summary, this included:

- Staff training for AHPD in the concepts of Positive Policy practices and concepts.
- Identification of the Northwest Community Hospital Northwest Community Hospital 2016-2018 Community Health Needs Assessment and Implementation Plan.

A. Staff Training on Positive Policy

In Year Two at a training meeting of all Arlington Heights Park District (AHPD) staff, GP RED recommended that the staff consider a careful examination of existing policies and practices to use Positive Policy concepts. The purpose of this type of examination is threefold:

1) Determining which existing government or district policies are affecting customer experiences in a negative manner.
2) Cataloguing current policies and practices that directly and negatively affect customer's perception of services (programs, leagues, lessons, etc.) offered by AHPD.
3) Constructing positive policies and practices that can replace those deemed negative and affecting the customer experience and retention.

Positive Tenets of Engagement: A proposition

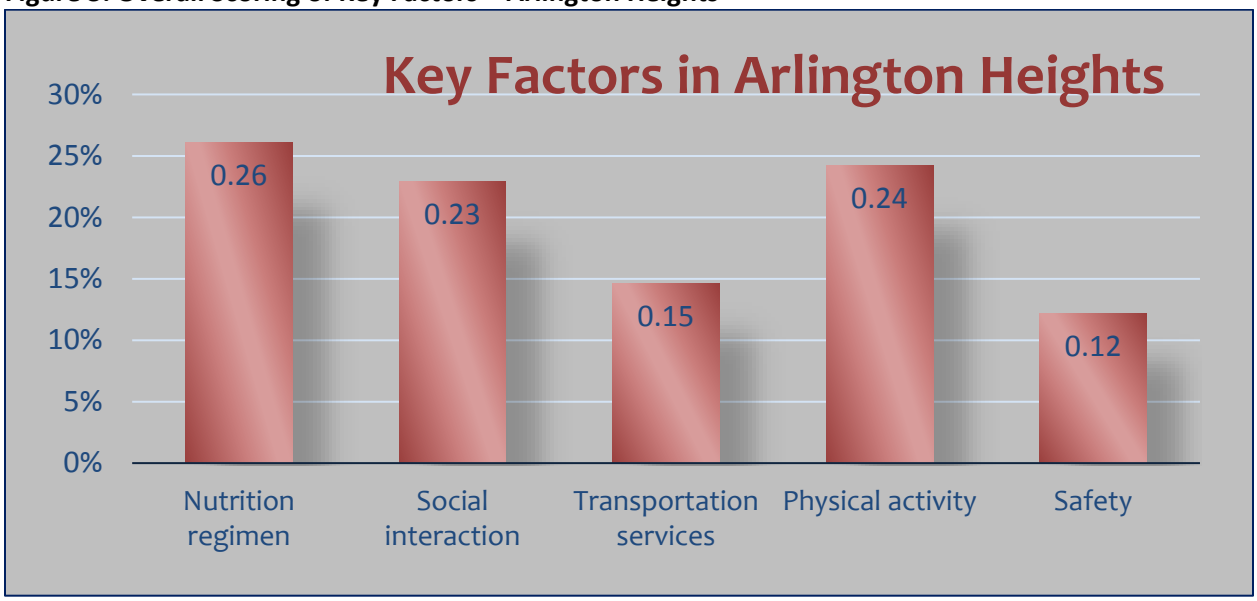
As the AHPD staff continues efforts to create and sustain a model "healthy community" there are a few propositions that staff should address. First, the District is encouraged to create, with citizens representing varying age groups, a set of tenets of engagement to insure they reflect the "voice of the customer." Once vetted by staff and citizen representatives, these tenets should become a written commitment by AHPD staff, volunteers, and any individual who registers for services, or is an occasional user of facilities and services. ***Appendix B*** includes an overview of Positive Policy Practices, examples, a sample exercise, and a template for policy examination created by Dr. David M. Compton for this project.

B. Identified Key Factors and Indicators for Physical Activity and Obesity in Arlington Heights

In Year One, GP RED facilitated an exercise with key stakeholders in Arlington Heights to identify the health factors that appear to be most relevant for potential modification related to increasing physical activity and reducing obesity through parks and recreation and related community level systems interventions. These factors are based on the prior work by GP RED and were ranked in Arlington Heights through the use of the Multi-Attribute Utilities Technique (MAUT) nominal group process analysis in multiple communities (see www.gpred.org and the ***November 2015 Year One Findings Report– MAUT Report for Arlington Heights*** for more information).

These factors included the potential factors of nutrition, activity types, perception of safety, transportation, and social/parental engagement factors. An update was not conducted in Year Two to include the two additional identified factors of Access to Nature and Tobacco Cessation, but this could be addressed again, if desired, to include these factors and to determine priority changes over time. ***Figure* 3** identifies the perceived priority importance of these Key Factors by the AHHAA members in Arlington Heights in Year One. Note that nutrition, and policy around nutrition, was deemed most important to address, followed by programs and facilities to increase physical activity, addressing social/parental engagement, access and availability of transportation, and finally, the perceptions of safety. This indicates that the representatives feel that overall, Arlington Heights is a relatively safe community for youth, but there is still work to be done on all factors.

Figure 3: Overall Scoring of Key Factors – Arlington Heights



C. Relevant National and Regional Trends

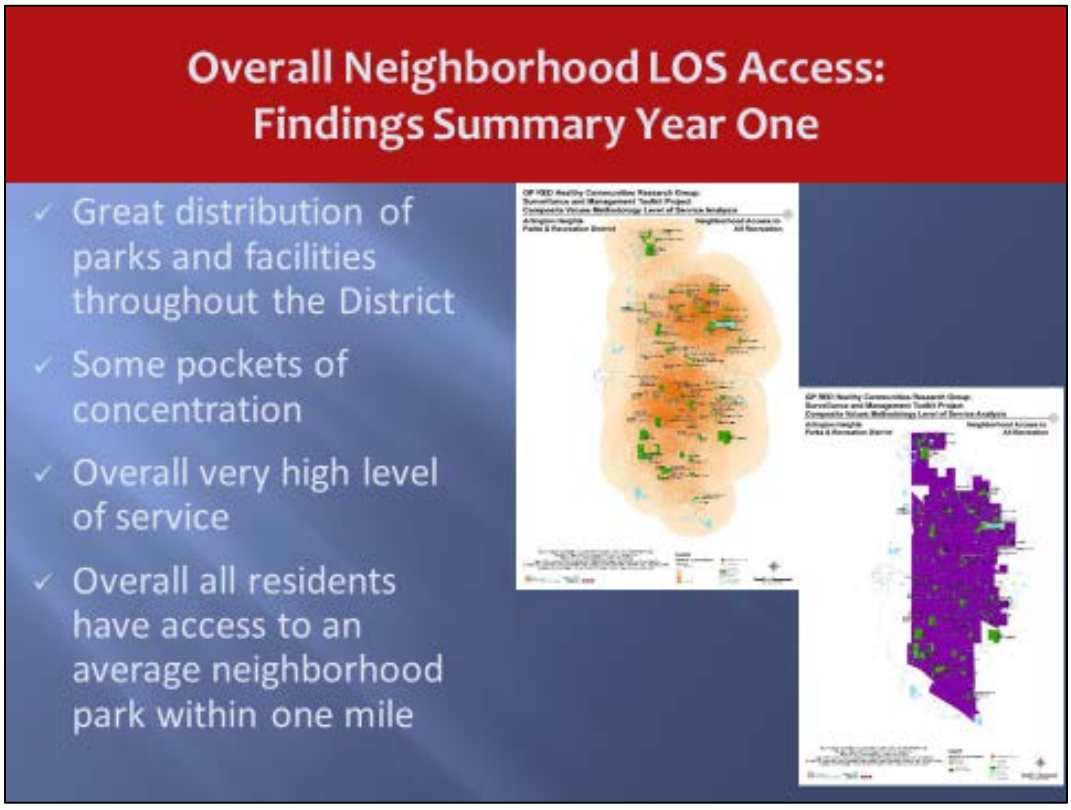
Relevant national and regional trends important related to this target age group and topic were examined. A *full* ***Trends Report*** *was provided as an appendix to the* ***YANS Findings Report*** *in November 2015, and can be obtained from AHPD or at: http://www.gpred.org/initiatives/healthy-communities-research-group/*

V. Updated Assets and Facilities Analysis

In Year One a detailed digital inventory of public and semi-public physical assets and facilities that are available for recreational use by the Arlington Heights community was assembled for a Level of Service (LOS) analysis. This asset inventory was created to serve the District in a number of ways. It can be used for a variety of planning and operations tasks, such as asset management and land acquisition, as well as future strategic and master plans. The assets inventory currently includes public parks, recreation areas, and indoor facilities managed by the District. Additionally, it was recognized that alternative providers such as schools and other agencies, contribute to neighborhood recreation opportunities that can be reached via walking. Due to limitations of time and resources, a selected sampling of alternative providers was included in the full inventory and level of service analysis.

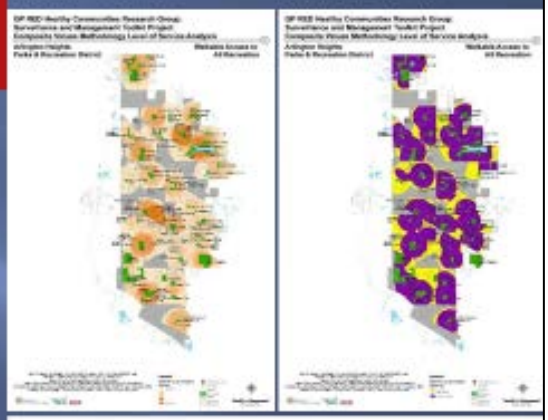
Data from an onsite inventory of all facilities, parks, and lands was entered in GIS, and each facility was given a score based on amenities and proximity to homes. All components of the system (ballfields, playgrounds, pools, etc.) were given a score of one, two, or three. Scores were translated into colored areas on the map of Arlington Heights. Each component has a service area. Service areas were indicated as an orange circle encompassing homes and neighborhood parks. The key analysis was to determine, "Which facilities can I walk to within 1/3 mile or 10 minutes of my home?" A detailed explanation of *the GRASP® Component-Based Methodology* and initial findings were included in the Year One report, with summary findings shown in ***Figure 4***. Detailed findings and large maps are included in the Year One report.

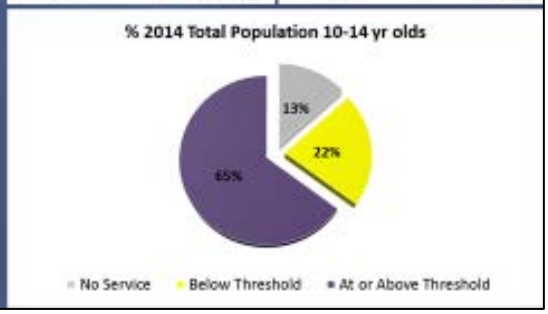
Figure 4: Summaries of Year One GRASP® Perspectives provided in Year One Report



Walkable Access: Findings Summary

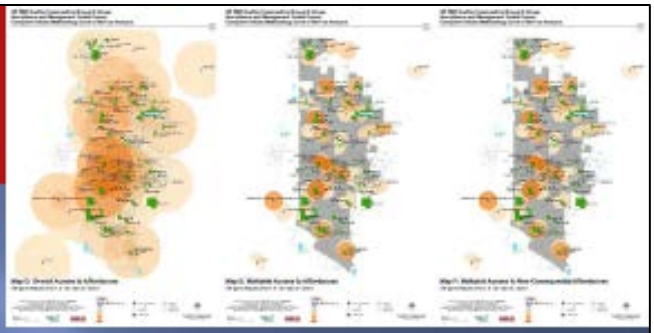
- ✓ Great distribution of parks and facilities throughout the District
- ✓ Some pockets of concentration
- ✓ Some pockets of No Access
- ✓ Overall 87% of age group has walkable access to some recreation opportunity
- ✓ Overall 65% of 10-14 yr olds have access to an average neighborhood park within walking distance

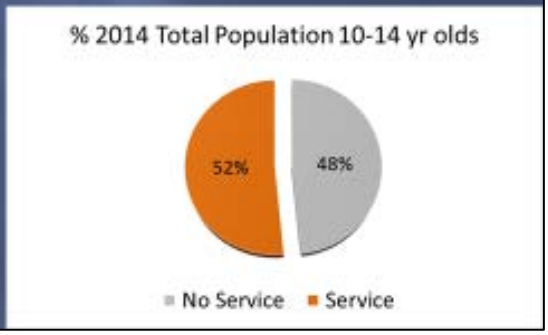




Overall Affordance Access: Findings Summary

- ✓ Great distribution of affordances throughout the District
- ✓ Some pockets of concentration especially in walkable access
- ✓ Some of the gap areas in walkability have existing facilities that possibly could add affordances
- ✓ Over half of age group can walk to at least one affordance

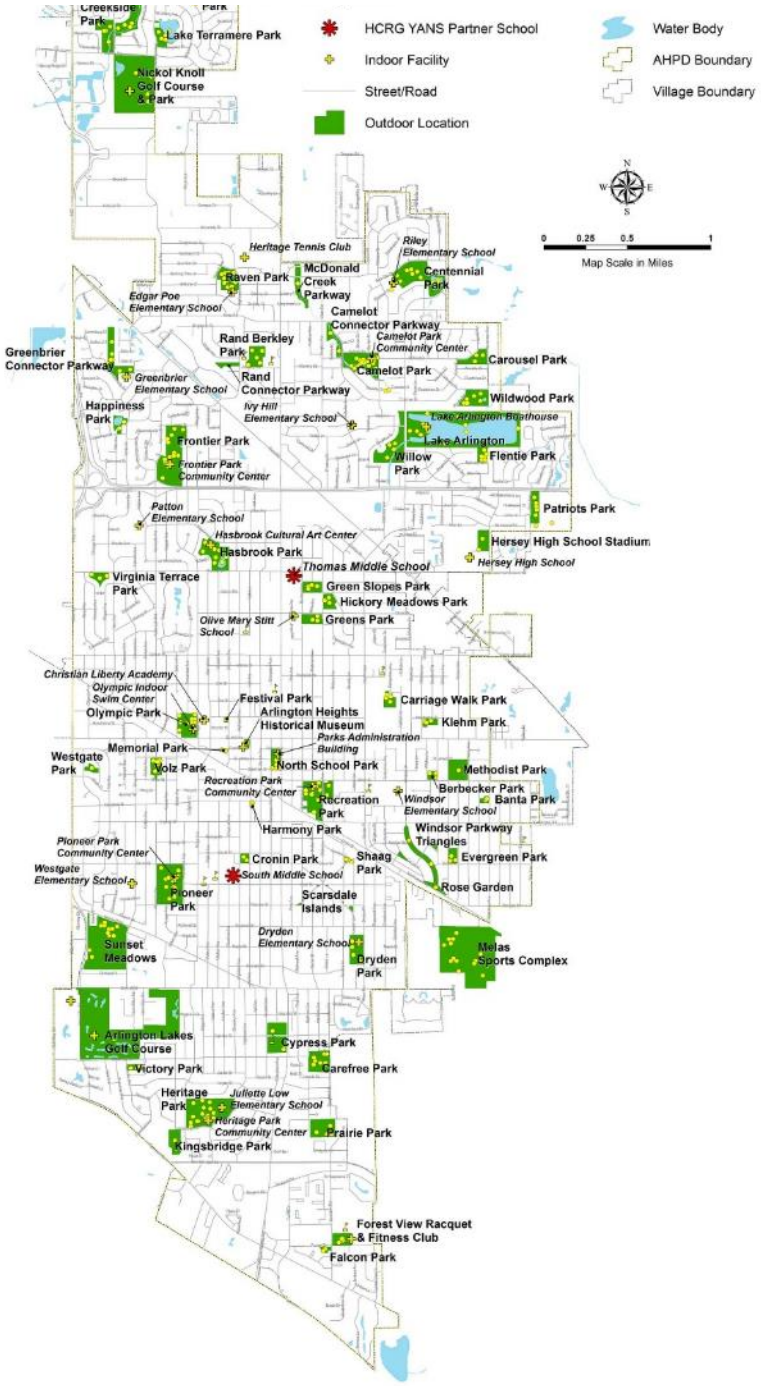




A. Assets and Affordances Update -Year Two

AHPD has made a number of park improvements since the Year Two inventory. As a result, the Year One dataset has been updated based on new site assessments. It was also updated to reflect updates to the standard list of GRASP® components and definitions that have been made since the Year One inventory was completed. For Year Two, a new tool known as GRASP®*Active* was utilized to measure the park system's potential to generate physical activity within the community. The concept is introduced and explained in the sections following.

Figure 5: AHPD Park and Recreation System



Assets

Figure 5 shows the study area and key locations of properties included within the updated Year Two inventory**. Larger maps are included in *Appendix B* and have been provided to AHPD in digital format.**

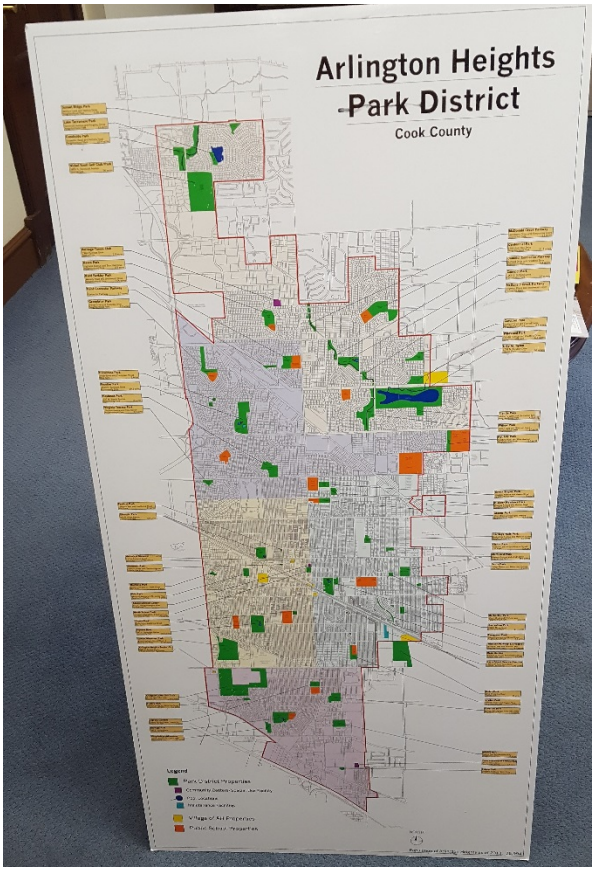
Affordances

The **Affordance (Programs and Services) Inventory Collection Template** was updated for Year Two. AHPD has upgraded its registration and tracking system since Year One, but mapping the locations of programs remains a challenge. The biggest obstacle is a lack of locations tracked for many outdoor programs or affordances. While most of the affordances are delivered in the same indoor facility where registration occurs, there are many that utilize outdoor components, such as rectangles and diamonds, which are not recorded in the current registration system.

B. Performance Metrics for Greenspace and Public Health

Improving and sustaining the general health and well-being of residents was the original impetus behind the parks movement nearly 200 years ago. A rise in obesity and other chronic diseases in recent years has sparked heightened interest in the capacity of parks and other public greenspaces to encourage and facilitate healthy lifestyles. There is emerging evidence correlating greenspace with multiple dimensions of health including physical, mental, social, environmental, and economic domains.

A recent study by members of the GP RED and the GRASP® consulting team applied the latest findings regarding the relationship between greenspace and physical activity to develop a new way to measure the potential of a park system and the components within it to generate and support physical activity within the community. Identified as GRASP®*Active,* the process was developed through an academic study in early 2016 and tested in the summer of 2016 by using it to prepare a new parks and recreation master plan for a city of 20,000 people. Based on those results, the process has been applied to this Year Two study for AHPD.



GRASP®*Active* combines GRASP® component based level of service analysis, such as that used in the Year One study, with empirically derived energy expenditure data to evaluate the parks system for its propensity to generate physical activity within the community. This provides a level of service measure that is a composite indicator based on the quantity, distribution, functionality, and amount of energy expenditure associated with park components, while also accounting for the quality of the overall park setting. The measure can be thought of as the "dosage" of healthy physical activity associated with exposure to the park system and elements within it. With this metric, it is possible to determine the relative strength of the dosage at any location and identify potential gaps or inequities across the system.

C. Determining GRASP®*Active* Values

Recent research has found evidence that park proximity is associated with higher levels of park use and physical activity, and that this is particularly true among youth. Research also suggests that the presence of more parks and more park acreage correlates with higher physical activity levels. However, the contribution of individual features toward physical activity varies. A study published by the North Carolina State Cooperative Extension Service (Floyd et al., 2016) provides a listing of features commonly found in parks and a rating of the total energy expenditure associated with each feature.

This list was matched up with the set of GRASP® components in the updated AHPD inventory to produce an energy expenditure rating for each GRASP® component found in the AHPD system. This rating was then combined with other GRASP® values to generate a physical activity rating for each component that takes into account the quality of the component and its setting. Referred to as the GRASP®*Active* rating, it constitutes a relative value in terms of each individual component's effectiveness at generating physical activity within the population. The value for all components at a single site can be combined and used to compare the performance of one site to another in terms of its contribution to physical health. It can also be used in assessing the total value of all sites within the park system, and to examine at the distribution of assets across a jurisdiction.

Ratings are more fully explained in the Year One report appendices. A complete list of component definitions and their energy expenditure rating can be found in ***Appendix C, Park Metrics and Greenspace Overview***, and in other publications establishing and defining park metrics evidence (Schultz et al., 2016). The examples in Image 1 represent just a few of the components and associated ratings.

Image 1: Active component examples

D. Neighborhood Service Areas

In Year Two, the analysis for Arlington Heights was deepened to a neighborhood level of service. ***Figure 6*** shows five Neighborhood Service Areas identified by the District staff that are used for a variety of planning and administrative purposes. Those were analyzed individually for this study, and the results are reported in sections that follow.

Figure 6: Neighborhood Service Areas

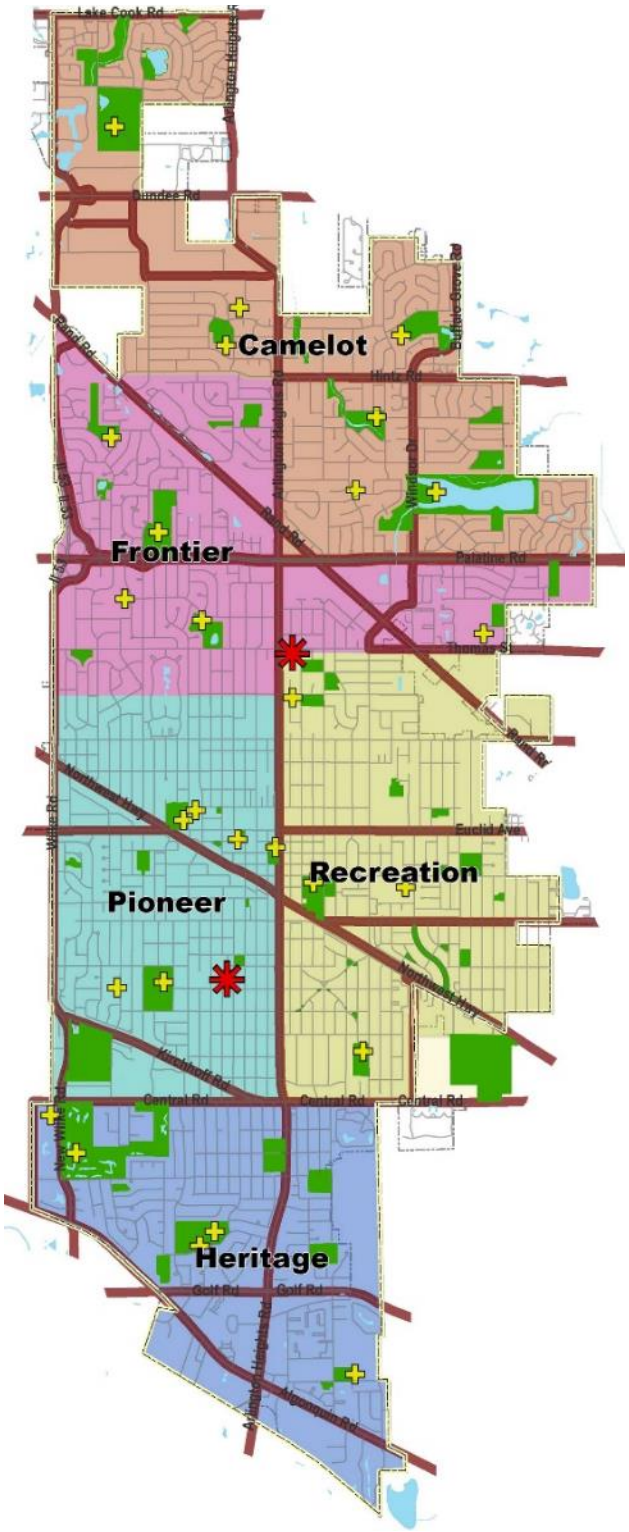


Table 1: Arlington Heights Neighborhood Service Area Statistics
Based on ESRI Business Analysis Online and 2010 US Census data (http://bao.esri.com)

Service Area	Total Acres	2016 Population 10-14-year-olds	2021 population 10-14-year-olds	2016 Population per Acre	2016 Total Population	2021 Total Population	2016 Total Population per Acre
Camelot	2,450	967	846	0.4	14,126	14,132	5.8
Frontier	1,916	848	830	0.4	13,088	13,149	6.8
Heritage	1,816,	700	704	0.4	12,899	12,877	7.1
Pioneer	1,826	1,161	1,132	0.6	17,841	18,923	9.8
Recreation	1,998	1,152	1,028	0.6	15,617	15,788	7.8
AHPD	10,006	4,828	4,540	0.5	73,571	74,239	7.4

Table 1 shows population and size statistics for the neighborhood service areas and the entire study area based on 2016 and projected 2021. ***Figure 7*** shows the relative 2016 population density of the 10-14-year-old age group for each neighborhood study area. Darker shades of red indicate a higher density of 10-14-year-olds per acre. The numbers in each area indicate the total number of 10-14-year-olds in that area.

GRASP® and GRASP®*Active* Analysis may seem complex, but the methods are derived from evidence-based research, and the results help us quantify how the Arlington Heights system is serving its population. AHPD has received all digital files so they can be used in the future.

More information on the methods are provided in appendices in the Year One Findings Report and Final Report, available from AHPD or at: http://www.gpred.org/initiatives/healthy-communities-research-group/

Figure 7: Density of 10-14 yr. old population by census block group

E. GRASP® Analysis and Mapping Findings – Year Two

Neighborhood Proximity to Opportunities for Park-related Physical Activity

A heat map was created using the GRASP®*Active* values to examine access to opportunities for physical activity provided by the park system. The map shows areas of relatively greater or lower GRASP®*Active* value. Darker shades represent higher GRASP®*Active* values. While there is no standard for what the minimum or optimal values should be, one benchmark to consider is the average value generated by a typical neighborhood park in the system. Using this as a threshold, it was found that all of the District except for a small area south of Brook Drive in the far southern tip meets or exceeds the threshold.

The map in ***Figure 8*** indicates that AHPD has a good distribution of GRASP®*Active* values, although the values vary from one location to another. Areas of higher concentration are notable near Lake Arlington, Pioneer Park and Community Center, and Olympic Indoor Swim Center and Park, where numerous developed parks and facilities exist in the immediate areas.

Figure 8: Neighborhood Proximity to Active Parks

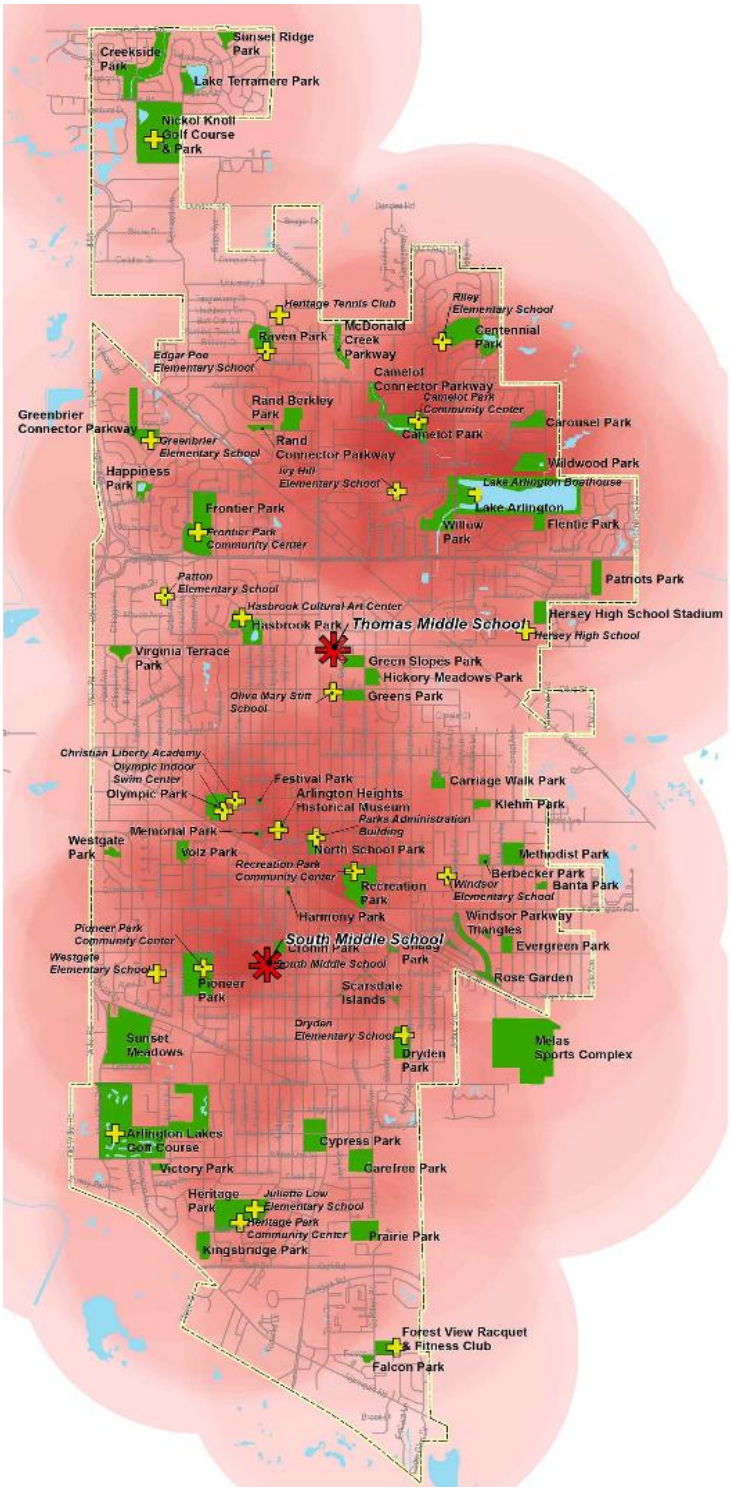


Figure 9: Neighborhood Service Area Analysis

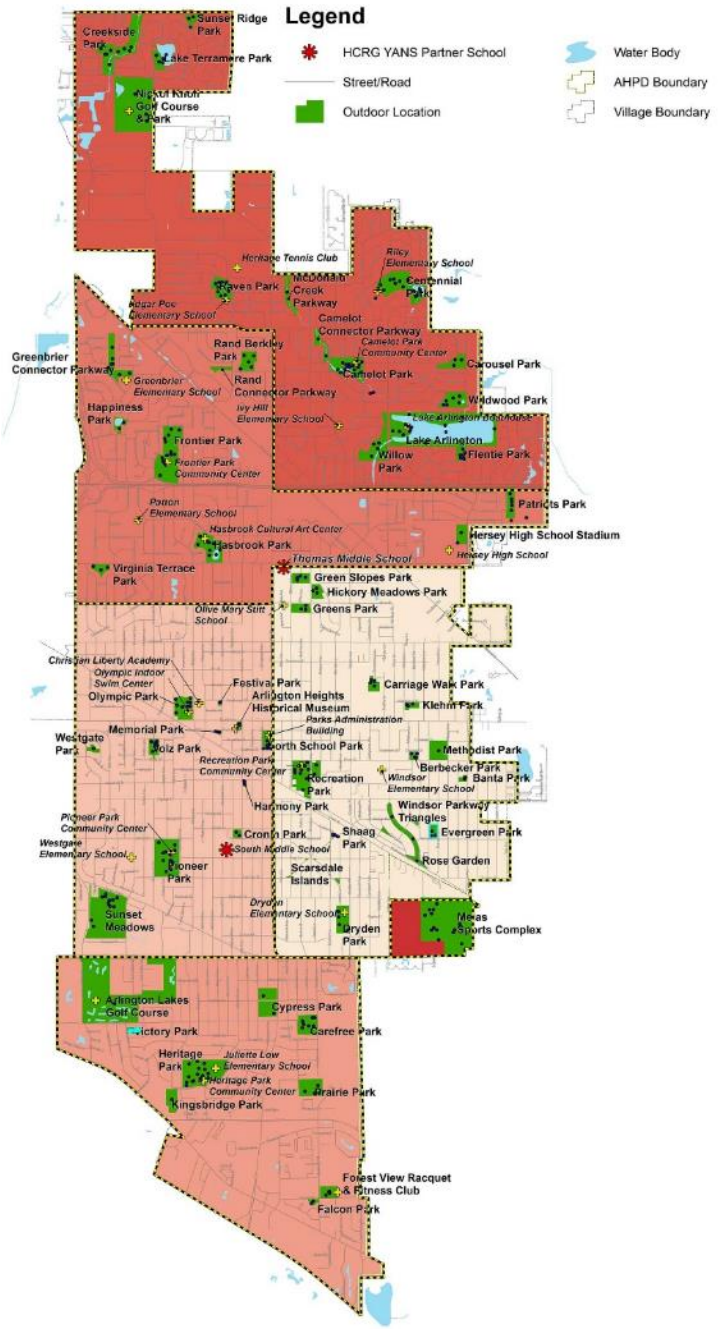


Figure 9 shows the relative ratio of the average GRASP®*Active* value for each Neighborhood Service area on a per-resident basis for the 10 to 14-year-old age bracket. ***Table 2*** summarizes the data in tabular form. While the Pioneer Service Area has the highest average level of service per acre, it also has the greatest number of 10-14-year-olds, thus placing it lower on per capita level of service. Camelot Service Area provides the highest level of service per capita for the 10-14 year age group.

Table 2: Tabular data

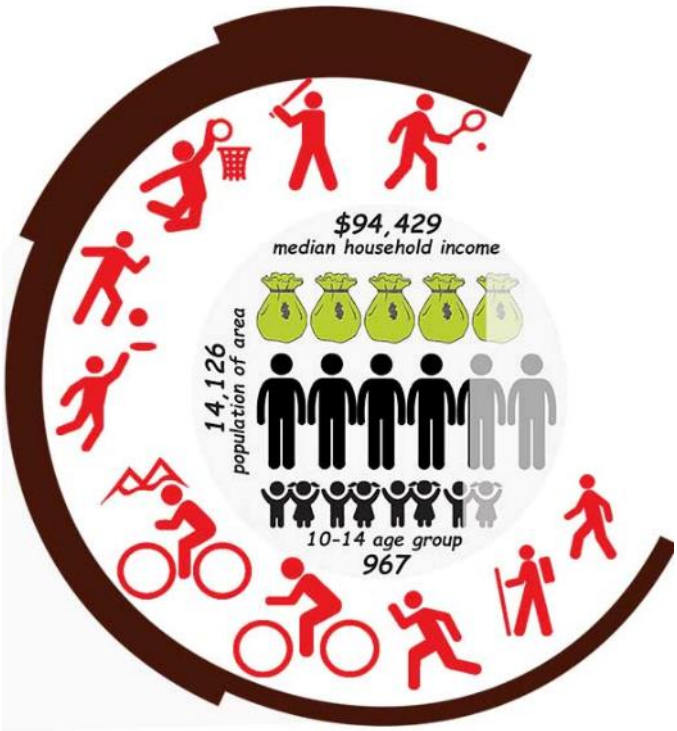
Neighborhood Service Area	Population of 10-14 yr olds	Average LOS per acre	Per Capita LOS
Camelot	967	57.2	144.8
Frontier	848	54.4	122.8
Heritage	700	40.7	105.7
Pioneer	1161	64.1	100.8
Recreation	1152	57.2	99.17

Common Activity Participation

Data available through ESRI (Economic and Social Research Institute) and ACS (American Community Survey) provides insight in regards to household participation in common outdoor activities. ***Figure 10*** shows the percentage of all households in the District that participated in each of ten activities in the last twelve months. For example, nearly ¼ of residents "walked for exercise" in the last 12 months, while less than five percent played Frisbee.

Figure 10: AHPD Activity Participation

Figure 11: Camelot Service Area statistics

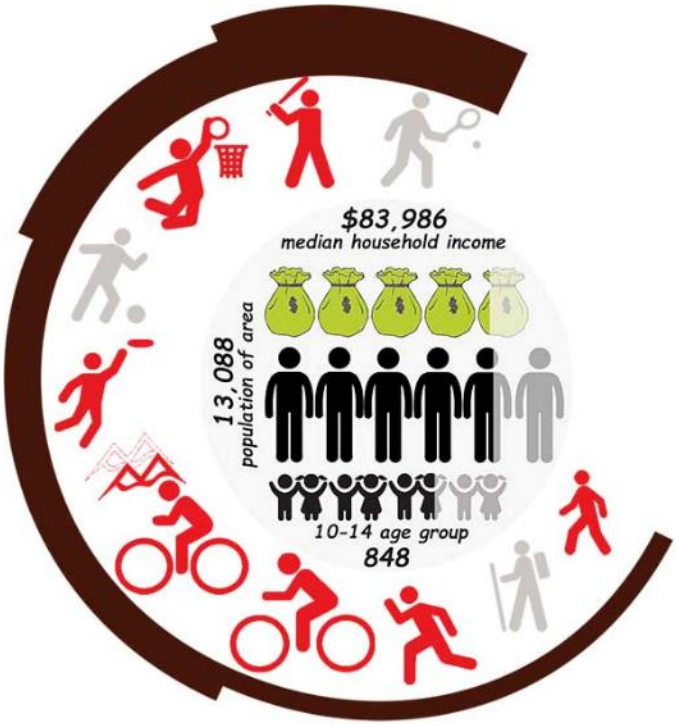


Figures 11 – 15 compare the participation rates for each Neighborhood Service Area to the participation rates of the District. A red activity figure indicates that residents of the service area are more likely than residents of the District to participate in the activity. A gray figure indicates that service area residents are less likely than the average District resident to participate. Also included in each graphic are the median household income, total population, and the 10-14-year-old population.

In the first example (***Figure 11***), Camelot residents are more likely than District residents to participate in all ten of the studied activities. There are 967 youth ages 10 to 14 in the service area and a total population of 14,126. Median household income in Camelot is over $94,000 – the highest of any of the service areas.

In Frontier Service Area (***Figure 12***) residents are more likely to participate in baseball/softball, basketball, Frisbee, mountain biking, road biking, running, and walking for exercise. There are just over 13,000 residents in Frontier with 848 falling in the 10-14 age bracket. The median household income is almost $84,000 in this service area.

Figure 12: Frontier Service Area statistics



Residents in Heritage Service Area (***Figure 13***) are more likely to participate in baseball/softball, basketball, soccer/football, Frisbee, and running. There are just under 13,000 residents in Heritage with 700 10-14 year olds. The median household income is the lowest in the District at $57,733.

Figure 13: Heritage Service Area statistics

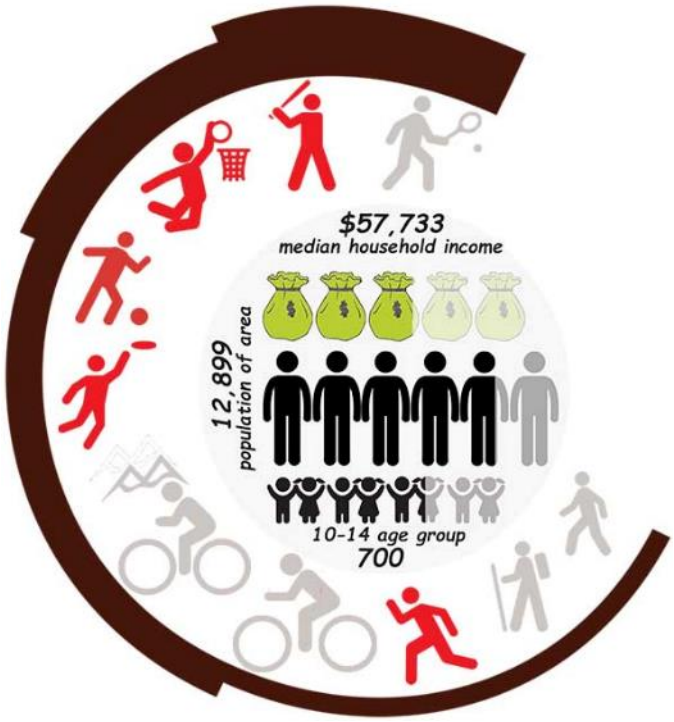
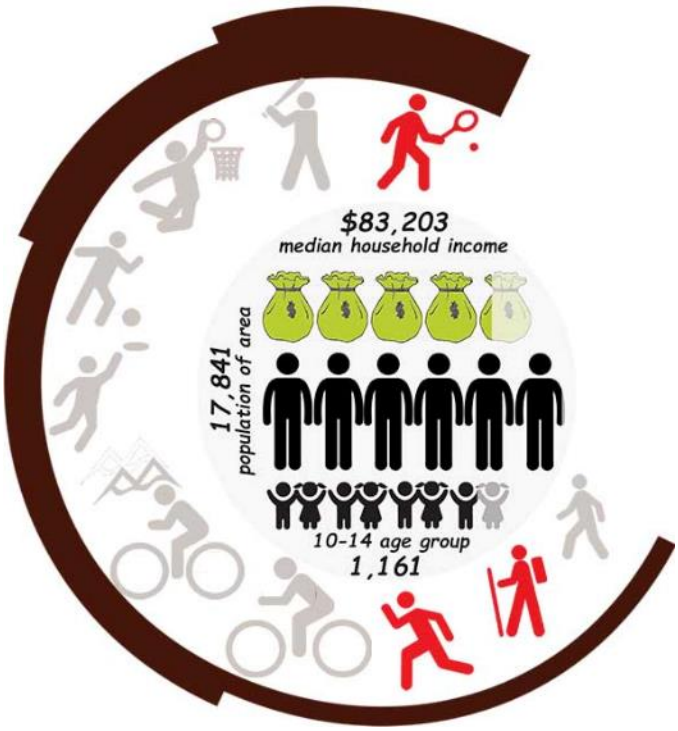


Figure 14: Pioneer Service Area statistics



Residents in Pioneer Service Area (***Figure 14***) fall below District participation rates in most activities. They exceed the District average in tennis, running, and hiking. This service area has the largest total population, and the highest population of 10-14-year-olds. Its median household income is $83,203.

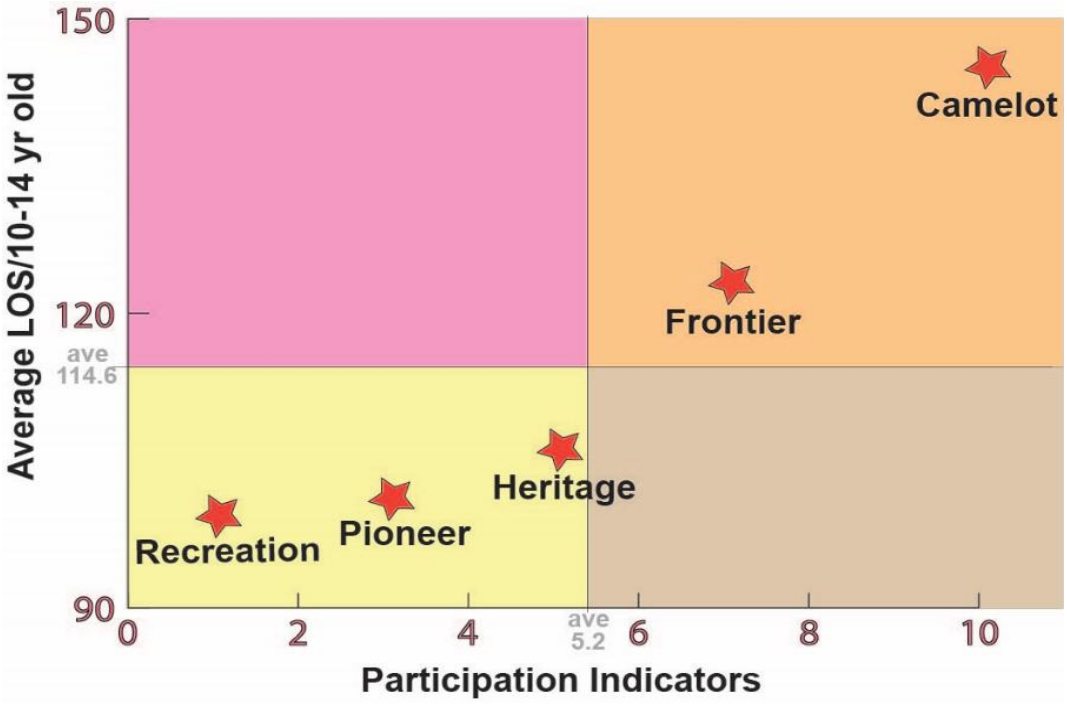
Figure 15: Recreation Service Area statistics

Residents in the Recreation Service Area ***(Figure 15***) fall below District participation rates in all but one activity category – road biking. This service area has the second highest total population, 10-14-year-old population, and median household income.

Combining Level of Service and Activity Participation Analysis

Both the GRASP®*Active* Level of Service analysis and the Activity Participation analysis provide unique gauges on the District and the Neighborhood Service Areas (NSAs). Additional information may also be gained by combining these analyses. ***Figure 16*** shows the level of service (measured as average GRASP®*Active* value per 10-14-year-old resident) on the vertical axis and a participation rating (determined by scoring one point for each activity with participation rates for the NSA that are higher than those for the overall District) on the horizontal axis. Plotting the values for each service area on the map reveals an interesting linear relationship between per capita level of service and activity participation, noticeable in the graph. This could indicate that there is a positive relationship between better access to active parks and an individual's likelihood to participate in an outdoor activity. Alternatively, it could be due to self-selection, whereby people who are more active choose to live in locations that offer more opportunities for activity (less likely for youth). The chart is divided into quadrants based on the averages for each indicator. Recreation, Pioneer and Heritage all fall in the low participation/low level of service quadrant. Frontier and Camelot both indicate high participation and high level of service.

Figure 16: Combined Level of Service and Participation Analysis



This GRASP®*Active* analysis suggests that increasing the levels relative to the population in Recreation, Pioneer and Heritage service areas could increase participation in common activities in those areas, generating more physical activity and healthier living. Additional programming and other efforts to increase participation may also produce results in those areas. Priority should be given to Recreation, followed by Pioneer and Heritage. In the Frontier and Camelot areas, the focus should be on sustaining current levels by ensuring that levels of service for facilities and programs are maintained at their current levels. This may mean adding facilities and programs if the population grows within those areas, and ensuring that current facilities and programs are maintained and not allowed to deteriorate.

F. Updated Analysis of Current Programs

In Year One, a MS Excel template was provided that allowed collection of data on all programs. This template was designed to serve as a program management tool for staff to annually review the performance and program mix. This project focuses on ages 10-15, but the template can work for all ages, if desired. Collection for AHPD focused on this target age range, along with characteristics such as:

- Geographic location and ages served
- Frequency, duration, and cost per unit
- Provider vs. Facilitator Designation
- Benefits (Physical, Mental, Social, Environmental, Consequential, Non-Consequential, etc.)

In Year Two, staff updated the analysis of these programs using new registration software, and now have a complete program listing for this age range. ***Figure 17*** shows snapshot from the dataset of a summary by location. All program locations were geo-coded to allow for spatial analysis. This information has been provided to AHPD.

A summary of key programmatic findings are:

- ✓ In 2016, there were 2,958 programs and activities offered through AHPD open to youth.
- ✓ Of these, 92% were classified as having some sort of non-consequential (not focused on competitive win/lose) aspects.
- ✓ Twenty-xix percent (26%) of the activities offered are partnered programs with other agencies or organizations.
- ✓ There is strong distribution of program locations and program mix throughout Arlington Heights.
- ✓ There are still some challenges in terms of geo-coding activities, as many are recorded as happening at the Administration Center (that is where they registered) or blank.
- ✓ There are some pockets of concentration, especially in walkable access and some of the gap areas have existing facilities that could possibly accommodate additional programs (see previous section).
- ✓ Over half of the target age group can walk to at least one program.

Figure 17: Programs by Location

Administration Center	175
Arlington Lakes Golf Club	3
Betsy Ross School Gymnasium	132
Camelot	380
Centennial	75
Dryden School	1
Falcon	8
Forest View	123
Frontier	306
Green Slopes	2
Greenbrier School	2
Hasbrook	116
Heritage	64
Heritage Tennis Club	298
Historical Museum	43
Internet Site - Arlington Heights Pa	12
Ivy Hill School	2
John Hersey High School	4
Juliette Low School	8
Juliette Low School Gymnasium	2
Lake Arlington	24
Melas	13
Nickol Knoll	10
North School Park	3
Olive School	1
Olympic	347
Patriots	1
Patton School	1
Pioneer	517
Poe School	14
Poe School Gymnasium	5
Public Works	2
Recreation	198
Senior Center	2
South Middle School	3
Sunset Meadows	33
Westgate School	1
Windsor School	6
(blank location)	21
Grand Total	**2958**
Total locations for activities	37
% non-consequential	92%
% partnered	26%

Additional Analysis

In June 2015, through a competitive bid process, the District selected to upgrade its registration software to Active Network. While Year Two included an updated focus and more detail for analysis, especially by geo-coding, the programs analysis could still be enhanced for management purposes going forward. For example, total participation by program area was not yet available, and could be calculated in coming years as emphasis on health factors is determined. This can also include tracking of cost recovery per program area, in line with agency financial goals. The District currently does not have a Cost Recovery Policy, or detailed financial information from which to analyze the costs and expenditures for these program areas.

G. Youth Activities and Nutrition Survey (YANS) Summary

Under the leadership of GP RED team members, AHPD, Arlington Heights School District 25, and through the supervision of school personnel, **950** students from Thomas Middle School and South Middle School participated in an online Youth Activities and Nutrition Survey (YANS) In Year One. **See the full YANS report provided in November 2015 to AHPD staff and the AHHAA for details.**

Note: The GP RED HCRG Research Team is well aware of the potential accuracy challenges of relying upon self-reported data from youth. Given the available resources, and as this information is collected anonymously in an age- appropriate format, this method appears to be the best available method to gather large amounts of community-specific youth data of this type at this time.

This survey was pilot tested and administered in other GP RED Beta Site Communities. The electronic survey was administered by East Carolina University for the Spring 2015 data collection process. Full raw data, statistical methodology, and coding structure is available from the GP RED team. The full report and reference information can be found in the November 2015 Arlington Heights YANS Report, available from AHPD. In Year Two, the AHPD and the Schools elected not to retest.

Note: There are 23 questions on the YANS Survey (some are basic demographics/height and weight). To streamline this report, summary analysis was conducted on the topics that most closely related to the Key Factors and Indicators for AHPD, included in the YANS report. Further analysis could be conducted on other variables, and the survey could be administered again in the future, if desired, for all schools within the District for analysis of changes over time.

VI. Recommendations

The systematic assessment and analysis that has been conducted in Arlington Heights over the last couple of years has led to a deeper understanding of the community and the actions that can be taken to help improve health in youth for the identified preventive health factors. Opportunities for both physical and social activities among youth ages 10-15 could increase by investing more resources into relevant recreation programs and services, locations for additional programs, and/or into the access of transportation to get them there. These could lead to an increase in the number of physical and social programs and activities for youth during time after school, along with increases in participation.

It is projected that an increase in active youth will result in reduction of the number of overweight or obese youth in the community. On the other hand, there will continue to be a significant demand for a collaborative effort across public agencies to provide community youth with more opportunities for physical activities, as sedentary and solitary activity is replaced by sustained engagement in physical and social activities, programs, and services. The prevalence of lifestyle related chronic illnesses/diseases has increased significantly over the past three decades. If children and youth are not provided opportunities to build and retain their physical, social, intellectual, and emotional capacities in the community, it appears that the trend of greater numbers of youth will likely be will likely be overweight, obese, or morbidly obese as they reach adulthood and later life.

A. Noted Outcomes from the HCRG SMT/AHHAA Project

The Year One Healthy Communities work was designed primarily to convene key stakeholders and champions, and to collect community specific data from Arlington Heights that can be used to move forward in Year Two. Great strides were achieved.

In Year Two, the efforts were focused on introducing trainings on Positive Policy concepts to AHPD staff, facilitating AHHAA partner meetings and group identity, updating and enhancing program tracking information, and deepening the information on a neighborhood basis regarding access to and participation in programs and asset locations.

As can be seen from this report, a very large amount of pertinent information has been collected, compiled, and shared. The following list highlights some of the positive outcomes achieved from this project:

1. Strong increased partnerships for AHPD with the Library, Hospital, Schools, Village, and Chamber Wellness Committee.
2. APHD facilitated formation of the Arlington Heights Health Action Alliance (AHHAA) to concentrate actions on changing policy and bringing stakeholders together.
3. A complete inventory and level of service analysis was conducted for all facilities, parks, trails, and programs.
4. Relevant trends, demographics, financial, and key management aspects were compiled.
5. A Youth Activities and Nutrition Survey (YANS) was completed with Schools.

6. Multiple program and participation enhancements were achieved:
    a. AHPD developed sponsorships with Northwest Community Healthcare beyond this project for Community Events and the Youth Soccer Program.
    b. The Youth Nutrition program was put in front of approximately 900 middle school students to help to start the conversation toward better nutritional habits.
    c. A Fit Kids series of classes was started, specifically geared toward kids between the ages of 4 and 12.
    d. The AHPD incorporated healthy snacks into its preschool program, including the removal of juice as a beverage.
    e. The AHPD incorporated pickle ball lines into the gym floor at Pioneer Park, allowing for all ages to play of this game.
7. The AHPD is working to establish more drop in and outdoor recreational programs including a camp out.
8. AHPD established an identity regarding the Walk Arlington campaign debuting in Summer 2017.

From review of all of the data, it must be stated that overall, Arlington Heights is doing pretty well in terms of addressing these issues. Community partners have rallied to create the AHHAA. While there is room for improvement, there are no glaring gaps in program or asset availability, walkable access is fairly available, and the youth feel fairly safe. It appears that the largest focus needs to be on continued increases in participation and retention, education of the needs, positive policy adjustments, marketing and branding around these efforts, funds to do so, and continued assessment to monitor results. Going forward, the AHPD can continue utilizing a systems approach and yearly data collection to allow the AHPD and AHHAA teams to make informed decisions related to:

- Increasing 10-15-year-old youth participation in AHPD programs.
- Decreasing dropout rates for 10-15-year-old youth in AHPD programs.
- Creating, adopting, and implementing positive policies and practices that effect youth and parent/guardian confidence in LPRD staff, programs, services, and venues.
- Using data derived from the YANS study to revise, create, and adopt interagency strategies that increase youth after school time habits (physical, social, nutritional, etc.).
- Documenting changes in healthy behavior of youth, their level of social engagement, rates of physical activity, and guest experience/brand loyalty to AHPD.
- Reducing the incidence/prevalence of youth obesity in Arlington Heights.
- Assigning metrics to cost savings for agency specific, public health outcomes, accrued for engaging and retaining youth in programs, services, and venues.

The AHPD and AHHAA can implement strategies to address increasing dropout rates of 10-15-year-old youth from formal program offerings. Of paramount importance is the need to increase the retention of children (5-9 years of age) in programs, services, lessons, and groups as they age into middle school. These “affordances” offer the opportunity to be physically active and socially engaged and to develop positive habits. The challenges and opportunities related to retention are as follows:

- **Need to prepare a plan of action** to address core issues underlying the retention of youth as they enter the five-year period (10-15 years of age). This is this period in their life where youth may likely drop out; revert to a sedentary lifestyle; or default to electronic devices, potential use and abuse of prohibited substances, or affiliation with gangs.

- **Consequential/non-consequential program offerings**. There should be a careful examination of types of program/services offered to youth. Many are not included in competitive sports offerings around age nine for various reasons (e.g.) level of skills, cost of participation, parental structure, etc. *Consequential* sports are a primary reason children become "dropouts" as they reach 10-15 years of age. There are few formal organized *non-consequential* program options for youth. Current policies support a system of offerings that results in high percentages of youth dropping out and seeking other ways to occupy their discretionary time.
- **Triangulating strategies**. There appears to be a strong opportunity in Arlington Heights to advance an initiative of collaboration between public schools, public health, and parks/recreation. Triangulating health data from public health and schools with geocoded assets and affordances within Arlington Heights, along with youth survey data should yield rich data, which can serve to support planning, resource allocation, and collaborative efforts to increase active living among youth. Some key elements include:
    a. AHHAA and AHPD should continue to identify, address, and measure any written policies and track measures related to the health factors that may be hindering positive outcomes.
    b. AHPD will continue to train staff (full and part-time) in the requirements of practicing positive interaction with youth and other guests. This includes, but is not limited to, the following: 1) A "Welcome" with a genuine and positive tone; 2) name recognition; 3) affirmation of compliant behavior; and 4) responsibility for fair, enjoyable guest experiences each and every time they are in the facility.
    c. The AHHAA and AHPD will use system analytics. In order to comprehend which factors are influencing youth dropout rates, the AHPD, Public Schools, and community partners should consider employing a systems approach to determine impact, progress, and outcomes. Of paramount importance is the compelling fact that changing youth behavior is a complex and multi-factorial issue. Systems analytics have been used by the largest corporations for years. In the past decade, medicine, public health, schools, and service industries have employed systems analytics to monitor in real time what factors are influencing output. In our case, the "output" is preventing youth ages 10-15 years of age from disengaging, defaulting to obesogenic behaviors, and regularly being reprimanded instead of experiencing positive environments, places, people, and service providers.

GP RED continues to move forward with national testing and dissemination of the *Surveillance and Management Toolkit™.* RED's HCRG Director, Teresa Penbrooke, is in final editing stages of her approved dissertation for her PhD on this topic at North Carolina State University, with further evidence-based research and publication of this Toolkit as a primary focus. In addition, RED will add additional Beta Sites in the future. We ask that the Arlington Heights Project Team continue to be available for assistance for presentations (i.e. at NRPA or other conferences, if selected), articles, and continued interaction and representation as a nationally selected GP RED HCRG Beta Site.

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VII. Action Plan for Going Forward

The following page includes a chart of Recommended Goals and Objectives, along with potential responsibility, timing, and financial implications. Note that no capital expense items are currently recommended. Continuing Visioning Sessions with staff and AHHAA can help prioritize and make these objectives SMART (specific, measurable, action oriented, relevant, and time-focused) as an Action Plan.

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Arlington Heights Park District and Arlington Heights Health Action Alliance (AHHAA)
Annual Action Plan Goals and Objectives, 2017

Goals	Specific, Measurable, Attainable, and Relevant Objectives	Timing	Baseline Outputs	Inputs (staff, stakeholders, partners)	Evaluation Measures
Goal One: Continue and Enhance Role of AHHAA	1.1. Define a consensual Mission, Brand, and Tagline	By Sep 2017	draft mission	Facilitate meetings, marketing staff meeting with AHHAA	completion of outputs
	1.2 Identify and address policies related to all seven health factors (nutrition, transportation, social/parental engagement, safety, physical activity, access to nature, and tobacco cessation	Per Year	NA	staff with AHHAA meetings	complete policies inventory and analysis
	1.3 Endorse programs and other provider activities that meet mission	Per Year	NA	staff with AHHAA	criteria for inclusion, along with list (database) of endorsed programs and method to maintain database
	1.4. Increase programs for parental modeling / engagement	Per Year	NA	staff collection and creation of programs/policy	Number of programs for this objective
	1.5 Actively advocate for AHHAA	Continuous	NA	staff/AHHAA	At least two examples of when advocacy for AHHAA has occurred
	1.6 Add partners (public health, safety, other alt. providers)	Per Year	Current partner list and current contractual list	Staff facilitates, AHHAA	Increased number of partners, complete alternative providers list
	1.7 Explore funding options to support and add resources to AHHAA and endorsed activities	Per Year	NA	staff with AHHAA	At least one additional funding opportunity explored
Goal Two: Continued tracking of key variables and data to make improvements	2.1. Recollect detailed program mix analysis	per year by Nov.	Affordances Template	AHPD staff - update affordances - add column headers, update with new registration software capabilities	completion and analysis of program mix
	2.2: Collect detailed AHPD financial analysis for this group	per year by Nov.	NA	add revenue, expense and cost recovery by category	completion and analysis of program mix by Jan.
	2.3: Increase participation in AHPD programs in this age group by 5%	per year by Nov.	See Affordances Template 2016	staff - update Affordances Template, analyze difference in participation rates	completion and analysis of program mix by Jan.
	2.4: Increase retention in AHPD programs for this age group by 10%	per year by Nov.	See Affordances Template 2016	staff - update Affordances Template, analyze difference in participation rates	completion and analysis of program mix by Jan.
	2.5: Review Neighborhood Service Area goals, especially for Recreation, Pioneer, and Heritage	per year by Nov.	GRASPActive	staff - review of program and participation options	completion and analysis of program mix by Jan.
	2.6. Conduct two Youth Focus Groups per year to give youth a voice regarding programs, barriers, and perceptions of safety	Sep 2017 / May 2018	Youth Focus Groups - input, photovoice,	staff - work with library to facilitate meetings	results of Focus Groups
Goal Three: Add additional data and programs	3.1.: Demonstrate positive policy practices in centers and programs through staff trainings	per year	Ongoing staff training on importance of positive policy	staff training/ GP RED materials	Positive Policy Inventory Complete - January
	3.2.: Identify priority locations for additional programs based on physical activity component basis in GIS and new health factors	per year	GRASPActive and Factor Analysis	staff review	Annual Analysis by Jan.
	3.3. Collect additional partner/alternative provider participation data (schools, library, churches)	per year	NA	staff facilitates, AHHAA helps	additional templates with particpation numbers and programs for target age group, at least library and schools
	3.4. Align with other village alternative transportation planning and barrier analysis	per year	NA	Staff and AHHAA - Identify available opportunities, meet with Village, particpate in other plans	Analysis of other related efforts and engagement in at least 2 meetings over the year

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Wells, N., Evans, G., & Yang, Y. (2010). Environments and health: Planning decisions as public health decisions. *Journal of Architectural and Planning Research*, 27(2), 124-143.

Zarrett, N., & Bell, B. A. (2014). The effects of out-of-school time on changes in youth risk of obesity across the adolescent years. *Journal of Adolescence*, *37*(1), 85–96. http://doi.org/10.1016/j.adolescence.2013.11.001.

Appendix B – Positive Policy Examination and Transformation

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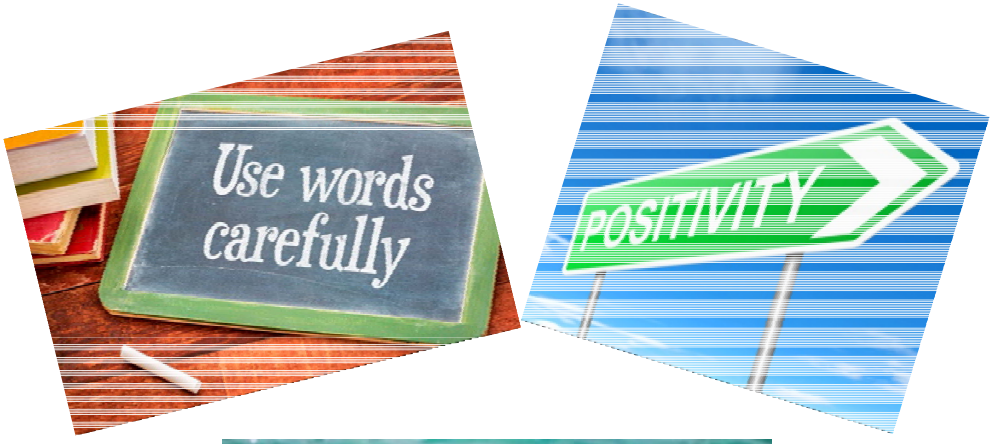
Appendix B. Arlington Heights Park District

Positive Policy examination and transformation



Prepared for Arlington Heights Park District by David M. Compton, MS, MPH, E.D., Professor Emeritus, Department of Environmental Health, Indiana University, Research Consultant for GP RED

Introduction

Following the Year Two meeting, GP RED facilitated a training of Arlington Heights Park District (AHPD) staff. Dr. David M. Compton recommended that the staff consider a careful examination of existing policies and practices. The purpose of this examination is threefold: 1) Determining which existing government or district policies are affecting customer experiences in a negative manner; 2) Cataloguing current policies and practices that directly and negatively affect customer's perception of services (programs, leagues, lessons, etc.) offered by AHPD; 3) Constructing positive policies and practices that can replace those deemed negative and affecting the customer experience and retention.

This appendix includes an overview of the tenets and concepts, a sample inventory sheet and exercise, and a sample policy template that can be used by the District to assess these policies.

Positive Tenets of Engagement: A proposition

As the AHPD staff continues efforts to create and sustain a model "healthy community" there are a few propositions that staff should address. First, the department is encouraged to create, with citizens representing varying age groups, a *set of tenets of engagement* to insure they reflect the "voice of the customer." Once vetted by staff and citizen representatives, these tenets should become a written commitment by AHPD staff, volunteers, and any individual who registers for services, or is an occasional user of facilities and services. Tenets of engagement by citizens and the AHPD staff should be framed around the following:

- Are derived from natural occurring experiences & relations. They form the basis for *positive* experiences & outcomes.
- Engagement in AHPD services by any individual requires knowledge of, and adherence to, the AHPD tenets of engagement.
- Interaction between staff & others is conducted in a civil manner and results in positive outcomes.
- Require mutually agreeable boundaries of behavior within established law, & anchored in customer safety
- Operates on the premise that each person is a custodian of the "experience".
- All experiences while in AHPD sponsored settings or activities create "brand loyal" customers throughout their life

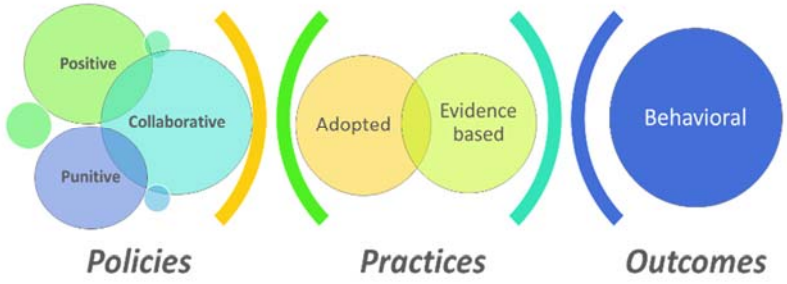
As important as the actual tenets, is the process by which they are created. The emerging tenets should not be the sole product of AHPD staff. Engaging the public in this process is critically important. Participation by individuals from age groups, interest area, location, etc. is vital to insure the final document represents the "citizens" at large. These tents become a part and parcel of all communication to current and potential customers, contractors, sponsors, etc.

Four "P" questions guiding policy reformation

In addressing current policy issues, it is essential to examine four questions. These constitute a basis for rationally determining: 1) What is currently in place?; 2) What ought be done to reform current policies?; 3 What do we expect to occur if changes are made?; and 4) What are the highest needs/priorities? These questions are directed at AHPD staff and the citizens of AH. While it is vitally important that AHPD staff "work" through this brief exercise, it may be more important to carefully

select who else should respond to the four questions. AHPD staff may choose to conduct several "focus group" sessions with representatives of various segments of the population (i.e.) seniors, adults, youth, parents, legal & law enforcement professionals, etc. Securing information to these four questions is deemed important to be able to analyze where gaps in "policy" may occur, or where reform of current policy is essential.

The evolution of policy: Linear dynamics



One of the most important aspects of policy reformation is to comprehend what impact it will have on practice (i.e.) staff performance of duties. While some policies can be interpreted clearly, others are more challenging to implement in to daily practice. There may be wide variation in how a policy is applied, enforced, etc. This creates potential issues if policy application is not consistent across the agency. As well, the practice of applying policy under varying conditions pose challenges to direct service staff, supervisors and administrative personnel. As well, the effect of policies created by law, ordinance or internal management, directly and indirectly affect the customer experience. It is essential to understand that the flow of policy to practice to customer experience outcomes is the most important aspect of policy reformation and installation.

It is suggested that AHPD staff who serve the public through sport programs, aquatic services, social interaction activities for children, youth and seniors engage in a process of examining current policies. Staff analysis and actions should yield reformation of selected policies and professional supervision practices. These reformed practices are required to create optimal customer experience outcomes. This can be accomplished in several ways including:

1. Create a "policy task force" to focus the effort of policy analysis.

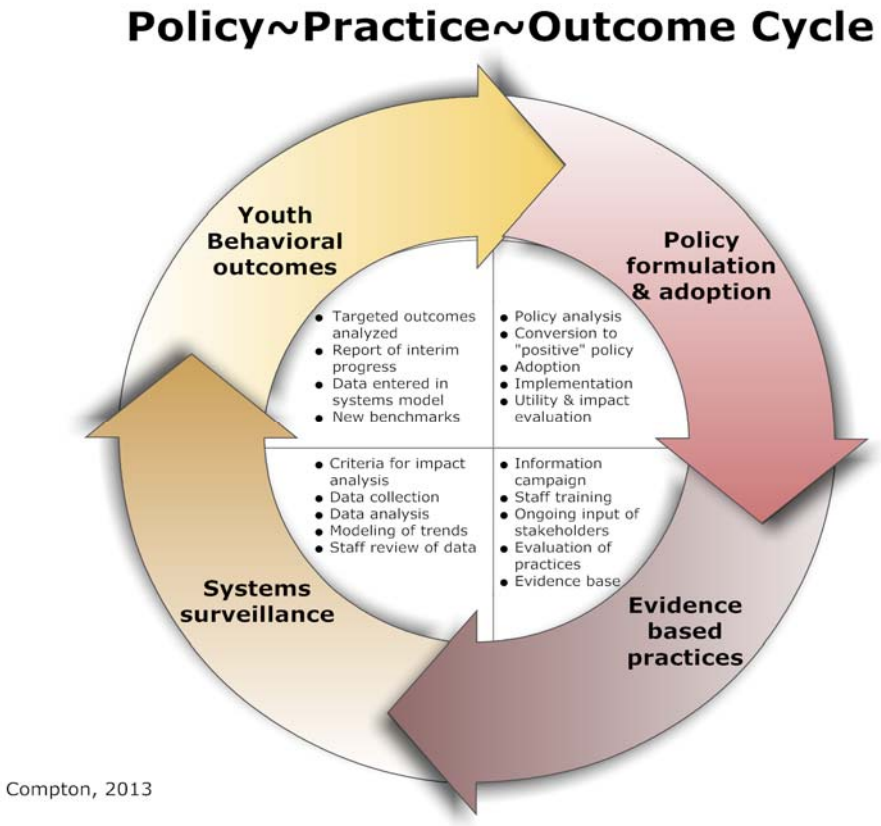
2. Catalogue those policies perceived by AHPD staff to have the most effect on: a) the customer experience in activities; b) the probability of retaining customers over a long period of time.

3. Determine what universal (AHPD system wide) revisions are required to current policies and specific staff practices.

Of importance in this aspect of policy reformation is to understand that the child and/or youth who is engaged today may be gone by age 15! Children and youth ought be the focal point of our customer experience strategies. *Nurture the future*- insure that each child, youth and their parents/guardians are rating your services, programs, and facilities as exceptional- nothing less! Every major business across the globe is anchored in getting feedback from each "customer experience." What do we do to gather and process this vitally important information?

Policy Construction with Youth

One of the more challenging aspects of policy development and enforcement is *listening to the voice of the customer.* Often policies emerge with little or no input from the end user (in this case "youth"). For many agencies youth, especially middle school aged, are not deemed "old enough" to participate in the process. In agencies where the primary end user is a child, youth and their parents, listening to the end user is critical. We believe it is imperative to initiate policy discussions, especially as they relate to programs and services, where youth are involved. On occasion, parents/guardians are invited to be a part of the policy process. Yet rarely are children or youth. In our opinion, it seems long overdue to listen to the needs of youth. Hear their point of view in constructing positive places, programs, and the context for play, sport, learning, etc.



We recommend that middle school youth be engaged in *formal* and *informal* ways. First, there should be representation of youth in a formal "youth advisory council." Second, regular "listening" sessions should be conducted to measure the pulse of their feelings. Third, there should be mutual development and monitoring of the effect policies are having on the following: 1) the quality of their daily experience in AHPD facilities, programs, lessons, etc.; 2) the effect of policies in reducing bullying, hazing, use of foul language, etc.; 3) the effect on their use of free or discretionary time; and 4) constructive engagement of youth via feedback cards following events, lessons, etc.

Working with youth and their families will go far in creating positive experiences. The results of this transformative process should be increased retention of youth in your programs, services, and facilities. The ultimate outcome is a brand loyal customer over a lifetime. Think long term, not just the first few years when Mom & Dad are driving the agenda!

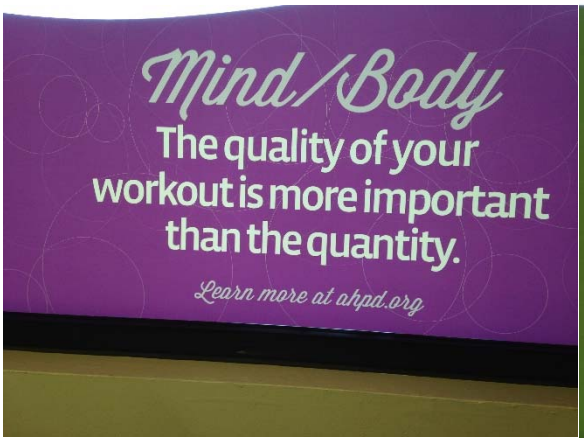
AHPD staff engagement: Consider the possibilities

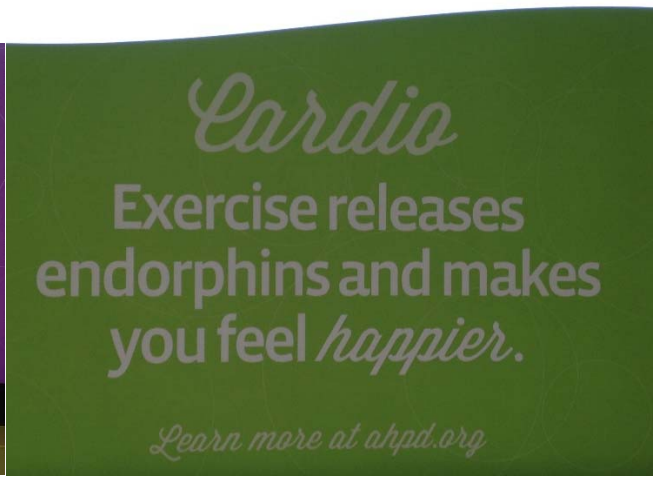
Beside the "Aquatic facility" exercise handed out at the September meeting, attached are three more tasks that AHPD staff might consider.

1. ***Create a catalog of current policies*** (municipal, village, county, etc.) that may impact or affect the experience of your citizens, users and contractors. Exhibit A provides an *Excel* template for AHPD staff to document those codes, ordinances, laws that do or may affect youth participation in AHPD sponsored services. We recommend that staff undertake the process of completing this spreadsheet with local village and county information as well.

2. ***Examine the current staff manuals*** within AHPD and create a separate Excel spreadsheet using the same format. *These two sources of policies are essential to know what is working, and what you feel may need changing.*

3. ***Take an inventory of the current signage*** in each facility (indoor and outdoor areas). Document what signage is present by taking a photo of each (See Attachment A). Label each photo as to its location and the approximate length of time it has been in place. The Attachment A provides details on how to proceed. *In many respects, AHPD has far exceeded other similar public agencies in its positive messaging*. Two AHPD examples are shown below.





Other examples of signage at AHPD facilities and areas are illustrated below. These are representative of signs that may not convey an accurate or positive message.

Summary

The challenge to all municipal agencies is managing their resources and offerings within the legal framework of the law. Not just within the federal, state or municipal structures, but internal agency policies and practices that have been in place for years or decades. Careful examination of the policies that affect practices within an agency are essential. Numerous municipal or village codes, ordinances or statutes affect how the agency operates. Yet the interpretation of these items is often left to chance or historical precedent.

Positive Policy links and sources

http://www.ncpc.org/topics/home-and-neighborhood-safety/positive-change-through-policy

http://www.publicsafety.gc.ca/res/cp/res/bully-eng.aspx

http://www.healthknowledge.org.uk/public-health-textbook/disease-causation-diagnostic/2h-principles-health-promotion/health-promotion-evaluation

http://www.michigan.gov/documents/mde/SBE_Model_AntiBullying_Policy_Revised_9.8_172355_7.pdf

http://www.publicsafety.gc.ca/res/cp/res/bully-eng.aspx

http://www.hyamsfoundation.org/2010%2520Addition%2520to%2520website/PP%2520Logic%2520Model%25205%252013%252010.doc

http://heapro.oxfordjournals.org/content/16/1/79.full.pdf

http://www.academia.edu/782363/Lifestyle_sport_public_policy_and_youth_engagement_examining_the_emergence_of_parkour

http://www.yaleruddcenter.org/what_we_do.aspx?id=8

http://ssw.umich.edu/public/currentprojects/youthandcommunity/youth%2520participation%2520at%2520municipal.pdf

http://www.cssp.org/publications/public-policy/policy-matters-engaging-youth-in-positive-productive-roles.pdf

http://heapro.oxfordjournals.org/content/16/1/79.full.pdf

http://media.education.gov.uk/assets/files/positive%2520for%2520youth.pdf

http://media.education.gov.uk/assets/files/positive%2520for%2520youth.pdf

http://www.collab4youth.org/Policy/PublicPolicy.aspx

http://www.druguseeducation.org/propospubpol.htm

http://www.ucdenver.edu/academics/colleges/SPA/Academics/programs/PublicAffairsAdmin/PhD/Documents/Schneider_and_Ingram_-_3.pdf

http://www.nlc.org/documents/Influence%2520Federal%2520Policy/NMP/nlc-national-municipal-policy-book-2010.pdf

Arlington Heights Beta Site

Suggested Inventory of Policies & Visual Messaging

Introduction

Policies and practices are shaped to a great extent by the visual images present in areas, facilities and documents. These images often take the form of indicating to the customer that certain behaviors, acts or language is prohibited. The message usually contains language that contains a "penalty" phrase. These phrases are typically anchored in government policy, ordinance or law. Rarely will one see signs, pictures or other visual material that validates good behavior, encourages one to "enjoy", "strive to do better", "accomplish a personal goal."

It is clear that federal, state, and local laws must be adhered to in Arlington Heights Park District (AHPD). Yet far too much effort is expended to control bad behavior. Little effort is expended to shape positive behaviors! With this in mind GP RED encourages AHPD staff (at all levels) to inventory what visual messages are being sent to the customers. As well, AHPD is encouraged to assemble focus groups to discuss the evidence gathered by staff. Customers from varying age groups, diverse by gender, ethnicity and other factors would be invited to participate in the focus group sessions. A summary of information gathered from the inventory and focus groups would serve to guide AHPD staff in rethinking policies that impact behavior, retention and AHPD brand loyalty.

Tasks

1.0- Staff take pictures of all signage at each venue (centers, fields, buildings, areas, etc.) and catalog these to prepare a visual "picture" of your messages to customers. This portfolio may be analyzed in several ways including but not limited to the following:

> 1.1- Create a collection/inventory of *signage* by service areas (buildings, natural areas, parking, etc.)
>
> 1.2- Create a collection *warning* signs by the type of instrument (i.e.) printed paper, poster, fixed signs, etc.
>
> 1.3- In contrast to 1.1 and 1.2, create an inventory of all *positive* signage by service area and those instruments identified in 1.2.
>
> 1.3- *Awareness* by customers of signage. This may be done by random "intercepts" of those using facilities, areas, programs, etc. In this task the staff should use an agreed upon protocol for contacting ("intercepting") individuals to ask of their awareness of the signage.

2.0- Staff meet and share their data regarding 1.1-1.4 above. Of primary importance is to *summarize* the prevalence of visual imprints that customers are receiving via signage and/or instruments. The outcomes should address the following:

> 2.1- What messages are we sending to customers that may inhibit or affect their current of future participation in our services?
>
> 2.2- What can be done (within existing laws) to:

2.2.1- Determine the effectiveness of the existing signs?

2.2.2- Understand the customer's awareness of these signs? Comply?

2.2.3- Alternatives to current signage?

2.3- What portion of our messaging to customers is "positive" in nature?

2.3.1- Do customers from various venues and programs desire positive messaging?

2.3.2- Can they identify positive signage and actions by staff?

2.3.3- Do they just ignore the "negative" and go about their activity?

2.4- What do customers desire to make their experience a positive one?

2.4.1- What visual cues (i.e.) posters, cards, signs, etc. might be used to continuously validate the positive nature of their experience in programs, activities, facilities, etc.?

2.4.2- How might staff interact with each customer to accentuate the positive and eliminate the negative?

Summary of Efforts

After collecting information on signage and meeting with customers, the AHPD would prepare a briefing paper for staff to guide policy reformation. Of particular concerns is determining the effect of signage on the behavior of customers. Is there awareness of these signs, warnings, "Do Not's", etc.? Do they result in compliant behavior? Are there other ways of achieving goals of safety, enjoyment, etc.?

AHPD Positive Policy & Practices

Programming Staff Exercise: Reformation of Youth Sports

Assumptions: (1) The majority of youth sport activities offered through AHPD are "consequential" (win/lose); (2) Those participants who have the following are advantaged: a) Two parents; b) high income level; c) time to provide transportation; and d) advanced skills for their age. (3) Most teams are assembled to win, not lose; (4) Children & youth who remain in the "youth sport" pipeline are most likely to be those noted in (2) above.

It is a fact that children & youth who remain in sport have many more friends than those who leave or are not "chosen. As well, 40-60% of all youth in sport drop out by age 15!

Questions: How can we redesign *youth sports* to accomplish the following: (1) retain participants in these programs through ages 16-17; (2) What policies need revision to insure our retention rate is greater than 70%; (3) What AHPD staff, coach and parent practices must be changed to make the youth sport experience "positive", memorable & healthy.

Retention of youth in our programs

What policy changes are required to decrease dropouts?

Instructions: Meet as a group and discuss. Reach agreement on the three (3) most critical policy changes. (List here)

1.

2.

3.

Discussion summary:

Staff practices altering the "player & parent" experience

Special focus on how staff interact with players, parents and sponsors.

Instructions: Identify & prioritize three (3) practices that will modify written & oral discourse between AHPD staff & players, parents or sponsors. (List here)

1.

2.

3.

Discussion summary:

Sample AHPD policy template

Affecting 10-14 year old youth

NOTE: Sample for consideration by AHPD; data are hypothetical, not based on AHPD information

Policy Code#	CAPRA Reference	Title	Brief description		Implications for youth		Interpretive information
	3.3.4.4	Quality Assurance	Describes the monitoring and evaluting standards for the Department's facilities, natural resource areas, programs and services		Opportunities for youth feedback.		
	3.3.1	Weather Related Closings/Cancellations	Procedures of alerting the media and users about cancellations		Keep users informed of cancellations		
	3.3, 3.3.1	Public Information	The guiding policies for the dissemination of public information		The commitment from Agency to communicate with youth & others		
		Funding- Sponsorships	The appropriate procedures for securing and administering sponsorships		Successful sponsorships affect the ability to offer services to youth.		
	3.3.4.2	Marketing Research-General Statement	The Agency's policy for developing target markets, community needs, user profiles, etc.		Important that youth is properly represented in the Agency's understanding of the		
	3.3.42	Market Research-Surveys & Evaluations	Outlined procedures for evaluating services and facilities of Agency from user's point of view.		Ability to impact programs through surveying and input.		
	3.3, 3.3.2, 3.3.3	Community Relations	Statement of commitment and outlined procedures for a community relations plan		An opportunity for youth and youth-focused components to be heard and impact Agency.		
	3.3.4.4	Customer Service-Statement	Provides confirmation of importance customer service; outlines training & some guidelines		Impacts the treatment of youth and all users by the Agency.		
	4.1.4.2.1	Code of Conduct (ethics)	Establishes a standard of behavior for the Agency's staff for ethical conduct and responsible actions		Youth are impacted by Agency's appropriate adherence to these guidelines		
	4.2.5, 7.6.1, 7.6.3, 7.7, 7.8, 8.1, 8.2	Risk Management	Statement of commitment to the safety of all spectators, employees and volunteers and the policies in support of this goal.		Safe environment for youth in Agency's programs and facilities		
		Park Security	Defines the limits of the Agencies law-enforcement responsibilities and describes the procedures for co-ordination with police		Youth are impacted by the Agency's enforcement of park rules, city ordinances, state law and statutes.		
		Handling Disruptive Behavior	Outline for dealing with challenging patrons or disruptive behavior at Agency operations.		These policies will affect youth at facilities and programs.		
	5.1.1	Fee Structures	The philosophies and structures for charging for services. Specifies how to calculate program fees based on various criteria including cost recovery policies for program categories		May increase competition in the marketplace. May discourage some from participating in recreation programs. Supports the operation and offering of recreation programs		Programs are divided into categories; cost recovery goals are set by category; adult softball requiring highest cost recovery percentages.
	5.1.2	Acceptance of Gifts	Outlines procedures for acceptance of gifts and types of gifts. Allows for specific program gifts		Provides opportunities for community to give funds to enhance programs & facilities		
		Co-Sponsored Programs	The policies for splitting responsibilities of joint-operated services		Co-sponsored programs (such as those done in partnerships with Schools, or Not-for-profits) can have a huge impact on youth.		

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Appendix C – GRASP®*Active* Metrics

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Potential Public Health Performance Metrics for Parks and Greenspace Assessments

By:

Robby Layton

Spring, 2016

Department of Landscape Architecture

College of Design

North Carolina State University

Abstract

The concept of parks and greenspace as policy elements with which governments promote the health and well-being of citizens emerged nearly 200 years ago. The importance of this function for parks has varied over the years, but recent concerns for public health has sparked heightened interest in the capacity of parks and other public greenspaces within the built environment to encourage and facilitate healthy lifestyles. For this study, an assessment of the evidence base correlating greenspace with five dimensions of health was conducted. The purpose was to look for potential indicators that could be used to assess the merits of a given site (park, greenway, etc.) or collection of sites in terms of public health outcomes. Based on the strength of the evidence, a decision was made to focus on the single dimension of physical health, particularly in relation to physical activity.

In the study presented here, a proposed measurement was tested to determine its practicality, utility, and efficiency for evaluating the potential of a park to generate physical activity. Using data collected through a direct-observation audit tool, an index was developed to measure the contribution of an individual park or greenspace location towards net physical activity within its surrounding community. The metric is based on ratings for Active Energy Expenditure (AEE) developed by researchers at North Carolina State University and published by North Carolina State Extension after a peer-review process. The proposed index for individual sites can be aggregated to produce performance measurements for a collection of sites or locations, such as that of a park agency, planning district, or other jurisdiction. The scores produced for the case-study parks in this study were analyzed using multiple linear regression to determine the relative contribution of each of three primary variables in predicting the total score for an individual park: park features, park quality, and park quantity (size).

Results show that the measure is feasible and practical to use, and should be refined through further research and testing. Application of the methodology for the metric to the other dimensions of health should also be explored.

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Introduction

Public Greenspace and the Health Imperative

Public parks, as we think of them today, are a special kind of landscape that is a relatively new phenomenon in human history. They were part of a larger reform movement during the 19th century to improve the lives of urban dwellers during the Industrial Revolution. The emphasis on parks and greenspace as policy elements by which governments promote the health and well-being of citizens has evolved over the years, but has re-emerged recently in response to new threats to public health brought about by contemporary lifestyles. Urban lifestyles have improved in many ways since the mid-1800's, but modern living has brought with it new health challenges. While advances in medicine have provided treatments and cures for many infectious and congenital diseases, the removal of physical activity from life through technology has resulted in the rise of new ailments. The sedentary lifestyle made possible through technology has led to new epidemics of behavior-related diseases including obesity, Type 2 diabetes, and others (e.g., Bedimo-Rung, Mowen & Cohen, 2005; Kaplan, 1995; Sallis, Floyd, Rodreguez & Saelens, 2012)

To mitigate this, a new emphasis is being placed on the capacity of parks and other public greenspaces within the built environment to encourage and facilitate physical activity. Along with this interest in physical activity has come new research on other aspects of health that might be associated with parks and greenspace, including psychological, social, ecological, and economic well-being. (Sallis & Spoon, 2015). Much of this research is correlational, looking for associations between individual behaviors and health outcomes. A large body of research is focused on the relationship between characteristics of the physical environment and individual behaviors that promote better health. For example, Bedimo-Rung et al. (2005) propose a

classification scheme for parks comprised of six attributes related to higher use and, by extension, higher levels of physical activity and better health (Figure 1).

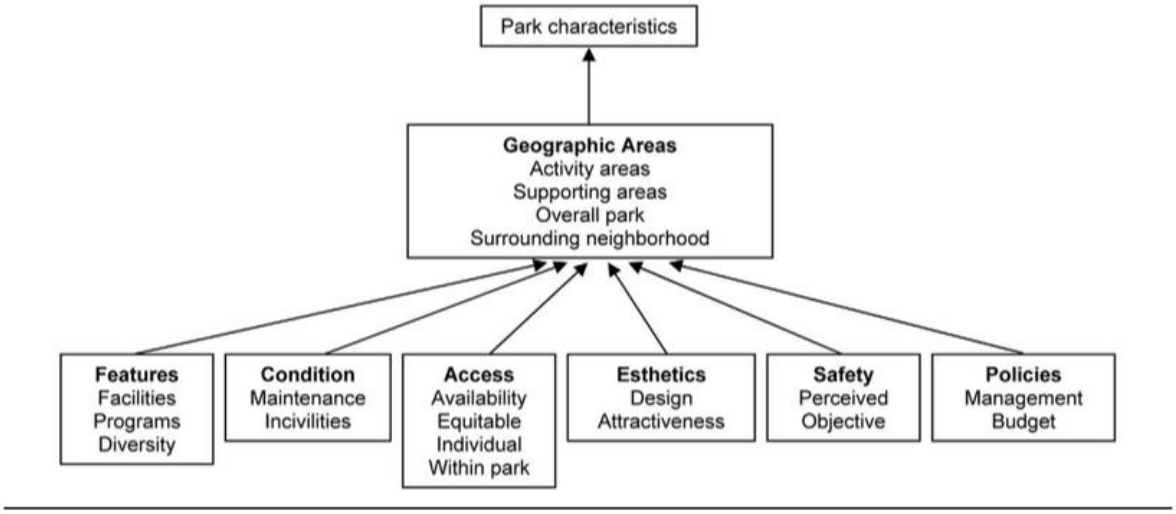

Figure 1. Bedimo-Rung Framework
Source: Bedimo-Rung et al. (2005)

Environmental Audits

The study of correlations between the physical environment and health outcomes requires effective tools for measuring characteristics of the environment (Giles-Corti et al., 2005; Saelens et al., 2006). Dunstan et al. (2005) stress the importance of developing methods that produce "a reliable, valid and genuinely contextual measure of the physical characteristics of a local environment in order to properly investigate the area effects on individual well-being" (294). As a result, a number of audit tools have been developed to assess outdoor environments, including parks, trails, streets, and others. Combined with research findings, these tools can be used to develop metrics and indicators that are correlates of health outcomes.

Intent and Approach for this Study

The approach to this assignment was to review several existing audit tools and the literature on the relationship between the environment and health to look for potential indicators

and metrics that could be used to assess the merits of a given site (park, greenway, etc.) or collection of sites in terms of public health outcomes. A set of metrics were then proposed and tested to assess their application towards further research and the development of policies related to public health goals.

While this topic falls primarily within the socio-cultural category of landscape performance, it encompasses all of the categories listed for this assignment because good health depends upon a healthy environment and economic well-being as well as physical activity. Sound mental health is aided by exposure to places with aesthetic beauty: and such places can also boost economic vitality by attracting creative class workers, tourists, and businesses that seek them out. The sub-category for this paper is, of course, health and well-being. The significance of this topic, as explained earlier, is the urgent need to address chronic diseases now associated with the built environment. As park agencies, community planners, and policymakers look to greenspace as a remedy for these diseases, metrics are needed to guide investments into greenspace and measure outcomes from those investments. Researchers need tools with which to measure characteristics of the built environment to determine how those characteristics are associated with health outcomes. The results of this research may be useful in advancing the state of the art in auditing greenspace and measuring its effectiveness in addressing public health goals. It may also lead to better policies and decisions that support public health and well-being.

The location chosen for this study is Cary, North Carolina. The choice was based partly on convenience and feasibility, but supported by the availability of primary and secondary data available through my dissertation research and professional practice. I was part of the consulting team for Cary's recent parks and recreation master plan, and have since expanded on the data

from that project for my dissertation. The activities proposed as part of this study will enhance the knowledge generated from those related efforts.

Methods

Case Study

The case study presented here tested proposed measurement techniques in a specific location (Cary, NC) to determine the practicality, utility, and efficiency of the measures for providing data that can be used to assess the value of greenspace in addressing health goals.

The tools used to generate the proposed measurements are an extension of the GRASP-IT audit tool developed by myself and colleagues over the past 15 years. That tool is being tested for reliability and validity as part of my current dissertation work, but it has already been applied in the industry to evaluate over 100 park and recreation systems across the USA. The tool was developed primarily to measure recreation value, but this study tests its application to measuring the contribution of a greenspace location towards public health needs.

The procedure was to consider five categories of well-being identified by Sallis and Spoon (2015) - physical, psychological, social, environmental, and economic - in the context of the current state of the literature and develop measurements that can serve as indicators of a site's potential to support public health goals. The measurements derive in part from an earlier study in which I took part and which is just being released (Schultz, Layton et al. 2016). In the current study I refine those into specific measurements that can be applied at the site scale and aggregated to the jurisdictional and larger scales to measure overall efficacy of a greenspace system within a defined boundary.

Comparison of Audit Tools

As explained earlier, a number of audit tools have been developed in recent years to assess the characteristics of parks and other elements of the built environment for purposes of research and policy related to public health and well-being. Table 1 summarizes the characteristics of some of these.

Table 1. Summary of Audit Tools

Audit tool	Use setting	Length (pages [items])	Completion time (minutes)	Park quality	Youth-oriented	Developed with stakeholders	Tested with stakeholders
BRAT-DO	Parks	16 (181)	Not available	Yes	Somewhat	Some	No
EAPRS	Parks	47 (646)	M: 67 Range: 10–258	Yes	Somewhat	Some	No
PARA	Various resources	1 (49)	M: 10 Range: up to 30	Limited	No	No	No
POST	Parks, ovals	2.5 (88)	Not available	Limited	No	Some	No
RFET	Various facilities	5 (61)	M: 20	Limited	No	No	No
SAGE	Various green spaces	2.5 (96)	Not available	Limited	No	No	No
SHAPE	Parks	1 (20)	Not available	Yes	No	Some	No

Source: Kaczynski, et al. (2012)

The tools listed rely primarily on direct observation as opposed to remote sensing and/or secondary data. Direct observation is considered to be a reliable and valid method for collecting such data, but it is not the only one available. Remote sensing, crowd-sourcing, and use of secondary data are other methods that are available and growing in popularity among researchers. Most of the observational tools are intended to be used by trained observers, although new tools, such as eCPAT are being developed for use by citizens, youth, and other constituencies (BEACH Lab, 2016)

No single audit tool is perfect for all applications. Each has its strengths and weaknesses. Some are shorter and take less time to complete, while others are longer and provide greater

depth. Some capture general data on a wide range of features, and others capture more data on fewer features. Testing has found some tools to be more reliable on certain features than others, although direct observation tools have been found reliable on most items (Layton, 2015). In general, reliability is highest for objective items that rate presence and number of features. Reliability tends to be lower for more subjective items and ones that may change over a relatively short timeframe.

The GRASP®-IT Audit Tool

The GRASP®-IT audit tool was developed as part of the composite values methodology for park and recreation master planning (Penbrooke & Layton, 2007). GRASP® is a proprietary brand for the methodology as applied by Design Concepts, CLA, Inc. and GreenPlay LLC; and the GRASP®-IT tool is the audit instrument used to capture data on characteristics of parks and other amenities related to parks and recreation services. The GRASP®-IT tool captures data on approximately 70 individual feature types (GRASP® components) and 15 overall site attributes (GRASP® modifiers). The distinction between components and modifiers will be explained further in a later section. GRASP®-It is designed for use by trained auditors using direct observation. For each item, a score is assigned on a Likert scale of 1 to 3 to rate the item on its "functionality for its intended purpose at that location". The scale ranges from a low of "1" (below expectations) to a high of "3" (exceeds expectations). Validity and reliability testing for the GRASP®-IT tool are underway at this time.

The GRASP®-IT tool was used for this study in order to test its application in the health-based planning of park systems. It has previously been used primarily for measuring levels of service (LOS) and equity related to park and recreation needs, although it has also been used in planning for cost recovery and recreation programming. The increasing focus on health

outcomes related to parks drives the need to develop effective planning tools for park planners, designers, and managers to use in making decisions that will support public health goals.

Approach

The current list of GRASP®-IT items were reviewed for each item's potential relevance to the five categories of health outcomes (Table 2). Each item may contribute to multiple health outcomes. Additional items may be developed in the future to fill gaps identified through studies like this one. The coding was performed by myself, based on professional opinion and knowledge of the literature, and is intended only as an example of how such a coding scheme might look. The coding could be refined through additional research and input from experts through methods such as the Delphi technique (Habibi et al., 2014).

The resulting list of items was compared with the literature to evaluate the evidence base for each item's application to health outcomes. It was though that process that the decision was made to focus on physical health indicators for the purposes of this study. These were used to perform an assessment of several park sites in Cary, NC. The results were analyzed to identify the following for each item:

- Type of data (categorical, ordinal, interval)
- Ease of acquiring the data (is it easily measured in a meaningful way?)
- Usefulness of the data (issues, ambiguities, etc.)
- Strength of the evidence supporting the data

Findings and conclusions to be drawn as to which items and measures have the greatest potential for incorporation into an overall strategy for planning parks and recreation systems with health outcomes in mind are discussed later in this report.

Table 2. Potential Applicability of GRASP® Components to Categories of Public Health

COMPONENT	Physical	Mental	Social	Environmental	Economic
Ballfield					
Basketball					
Batting Cage					
Complex, Ballfield					
Complex, MP Field					
Complex, Tennis					
Concessions					
Disk Golf					
Dog Park					
Educational Experience					
Event Space					
Fitness Course					
Garden, Community					
Garden, Display					
Horseshoes					
Loop Walk					
MP Field, Large					
MP Field, Small					
Multiuse Court					
Natural Area					
Open Turf					
Open Water					
Other-Active					
Passive Node					
Picnic Grounds					
Playground, Destination					
Playground, Local					
Public Art					
Shelter					
Shelter, Group					
Shelter, Shade					
Skate Park					
Tennis					
Track, Competition					
Trail, Multi-use					
Trail, Primitive					
Trailhead					
Volleyball					
Water Access, Developed					
Water Access, General					

The Metrics

Each of the five categories of health were initially examined for this study. An assessment of the evidence base for the correlation of greenspace with each dimension of health resulted in the decision to focus on a single dimension: physical health, particularly as related to physical activity.

Physical Health

The evidence base for physical health is perhaps the strongest of the five categories. Studies have linked the availability of greenspace to increased physical activity and, by extension, potentially lower risk of obesity and other related diseases. Bauman, et al. (2012) report that a review of the literature showed that among a variety of environmental variables, the most convincing relationship to physical activity was found with recreation facilities and locations, followed by transportation environment and aesthetics.

Common metrics for parks and greenspace include total land available, number of park locations available, distance to greenspace, and features within the greenspace. Among these, features within greenspace seems to be emerging as the most significant contributor to park use. McCormack et al. (2010) conclude that "attributes of parks appear to be as important as their location in influencing usage" (725). Two variables that Kaczynski et al. (2016) found to be significantly associated with park use were 1) the number of parks within one mile, and 2) an average park quality index for parks within one mile. However, distance to the nearest park and the amount of park space within one mile were not found to be significantly correlated with park use in their study. In contrast, a summary of existing research published by Active Living Research (ALR) in 2010 cites evidence that park proximity is associated with higher levels of park use and physical activity, particularly among youth (Active Living Research, 2010). That

same summary found evidence that having more parks and more park acreage within a community is associated with higher physical activity levels. Thus, the evidence for distance and quantity of park land and locations as indicators of physical health is inconclusive. The ALR study also indicates that within parks, people tend to be more physically active on trails, at playgrounds and at sports facilities, and that park aesthetics, condition and safety may be associated with park visitation and physical activity levels within parks. While quantitative measures have long been used in research and policy for parks services, the role of qualitative measures such as aesthetics, condition and safety is an emerging aspect of greenspace research. Recent studies, such as Kaczynski et al. (2016) are finding that park quality is an important aspect of park use. Smiley et al. (2015) found a preference for enhanced park quality over the provision of new facilities in a study of minority populations in Houston, Texas.

Thus, evidence from the literature points to park features and park quality as significant attributes associated with visits to greenspace and physical activity, suggesting that a metric which incorporates both the number of features within a park and overall site quality could be useful in assessing the park's contribution towards physical activity. The incorporation of park acreage into the metric is less definitive. While total park acreage within a community has been identified as potentially having an effect on physical activity (Cohen et al., 2010), it may be the greater number of features often found in larger parks that contribute to that effect (Giles-Corti et al., 2005). If so, including park acres in the metric could result in double-counting park features. The way this was addressed in the metrics will be discussed later in this paper.

Park Components and Physical Activity

The contribution of individual features towards physical activity varies. Cohen et al. (2010) found that gymnasiums and baseball fields were the busiest areas, while areas most

frequently used were dog parks, walking paths, water features, and multipurpose fields. The North Carolina State Cooperative Extension Service (Floyd et al., 2016) provides a listing of features commonly found in parks and a rating of the total energy expenditure within each feature by all participants. The list of features can be approximately equated to the set of GRASP® components described earlier. Also included is a rating for the energy expended above and beyond the sedentary rate for each feature and a re-coding of that into categories of low, medium, and high. This results in a relative value for each feature in terms of its effectiveness at generating physical activity within the population. This value was incorporated into a metric that is computed by adding up the physical activity ratings for all of the components within the site.

Once measures for individual parks are computed, they can be aggregated to produce additional metrics that assess the performance of an entire park system or set of greenspaces within a given jurisdiction.

A Proposed Physical Activity Metric

The metric developed for this study is derived from the inventory of features located within site using the GRASP®-IT audit tool, combined with physical activity ratings from the NC Cooperative Extension document. The metric was tested in a case study of parks in Cary, North Carolina.

The GRASP® methodology assigns a functional score to each of a number of features found within a site. The features are divided into two categories: *components,* which are those things that individuals visit a park to use, such as fields, courts, picnic facilities, and playgrounds, as well as paths, natural areas, open lawns, and other items related to passive use; and *modifiers,* which support and enhance the experience of using the site's components. Modifiers include such things as restrooms, drinking water, seating, shade, and the aesthetic

quality of the site. A full listing of GRASP® components and modifiers is found in the appendix of this report. The theory behind GRASP® is that when an individual visits a park to make use of one or more components found there, such as a playground, tennis court, picnic area, or water feature, that person's experience is enhanced or diminished by the presence or absence of modifiers at the site. For example, if a restroom is available at the park, the person might enjoy their experience of the playground or tennis court more and remain in the park longer or visit more often, thereby realizing more value from the components.

By assigning a physical activity rating from the NC Extension document to each component in the GRASP®-IT audit for a particular site and applying the modifiers found at the site, it is possible to determine a total physical activity value for that site. This value can then be used for a variety of purposes, including comparing the performance of one site to another in terms of its contribution to physical health. It might also be used in assessing the total value of all sites within a community or park system, and to look at the distribution of assets across a jurisdiction. This is an important environmental justice consideration, especially if equitable allocation of assets or the targeting of assets to populations of highest need or risk is a goal.

Demonstration Test Case: Town of Cary

To test the concept of a physical activity performance metric for sites, a set of 32 parks in Cary, North Carolina was used. Descriptive statistics for the parks are shown in Table 3.

Table 3. Descriptive Statistics for Parks in the Study

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Size in Acres	32	274.26	0.63	274.89	50.99	74.66
Number of Components	32	41	1	42.00	11.06	9.94
Modified Value	32	5.6	2.2	7.80	5.59	1.75

The data were derived from a GRASP®-IT inventory of park assets performed as part of a recent city-wide parks and recreation master plan. As described earlier, the GRASP®-IT tool assigns a score for each component at a particular site based on its functionality. Modifier scores are also assigned for the entire site and can be thought of as an index of park quality for the site. The scores of the modifiers are summed and classified into a ranked value for the entire site that is then multiplied by each component's functional score to obtain a total value for that component at that site, referred to here as the Modified Component Value. The total value for all of the components at a site can be summed to obtain a total value for the entire site. Those values were available for Cary's parks from the prior master planning study. However, for this study an additional measure of physical activity was added by assigning an Active Energy Expenditure (AEE) rating from the NC Extension report to each component. The net value of each component is then calculated as follows. (Items in parentheses make up the Modified Component Value):

Component Physical Score (CPS) = (Functional Score of Component x Modifier Value of Site) x AEE Rating of Component

The CPS's for all of components at each park were summed to derive a Total CPS value for the park. The results can be found in Table 4.

Evidence in the literature suggests that the influence of park size on park visitation and usage may be related to the tendency for larger parks to have more features and that it is the features rather than the park size that affect park use (Giles-Corti et al., 2005). Thus, including park size in the physical activity metric could unintentionally be double-counting the influence of park features. To investigate this, the statistical relationship between park size and the total

number of components was analyzed in SPSS. Results show that the number of components in a park is positively correlated with the number of acres with a correlation of r = .600 (R^2 = .360; *P < .01).* While this is evidence of correlation, it does not account for all of the variation in the number of components. It also does not take into account the fact that larger parks might tend to have higher modifier values, so a separate correlation analysis was done for park size and modifier values, yielding a non-significant correlation of r = .264 (R^2 = .070; *P = .072).* Finally, a correlation analysis was run on park size and the CPS for all parks, resulting in r = .548 (R^2 = .300; *P = .001).*

While the statistical analyses show some correlation between park size and park features, there is enough variation left unexplained in the values for Cary's parks to warrant including park size in the metric. Therefore, the CPS for each park was multiplied by the size of the park in acres to arrive at a final Total Physical Health Score for each park. Results are shown in Table 4. Descriptive statistics for the final scores are shown in Table 5.

The resulting scores cover an immense range of values. By transforming the scores to a logarithmic values, the scale is easier to comprehend. This also allows for a clearer picture of the distribution of values, which could offer clues to what a proposed target range for values ought to be. The values were transformed to base 10 logarithms (Log10) in SPSS, and the distribution of values are shown in Figure 2. The Log10 values are shown ascending order in Table 7.

Also, while the scoring algorithm is rooted in evidence in the literature, there is no clear basis for what the target value should be for any given park. In light of that, it makes sense to consider the scores an ordering system rather than an empirical value. One approach would be to divide them into categories of low, medium, and high, as shown in Table 6. While this simplifies the relationship between parks within Cary, it does not solve the question of what the "right"

value is for a given park, nor does it allow for comparison between a park in Cary and one in another community, other than to reveal the relative value of that park compared to others within its own jurisdiction.

Table 4. Metrics for Parks in Cary

Location	Total Components	Modifier Value	AEE Total	CPS	Size in Acres	Total Physical	Log10
Annie Jones Greenway 1	2	4.80	3	28.8	2.66	76.61	1.88
Annie L Jones Park	12	4.80	15	213.6	9.76	2084.74	3.32
Black Creek GW Trailhead	1	4.40	1	8.8	1.22	10.74	1.03
Cary High School	4	2.20	10	8.8	38.96	342.85	2.54
Cary Tennis Park	37	7.80	19	1630.2	18.46	30093.49	4.48
Davis Drive Park	10	4.80	15	230.4	15.72	3621.89	3.56
Davis Drive School Park	9	4.80	24	201.6	55.38	11164.61	4.05
Dorothy Park	1	4.40	1	4.4	0.79	3.48	0.54
Fred G Bond Metro Park	42	7.80	43	1053	274.89	289459.17	5.46
Green Hope Elemen School Park	12	4.80	20	206.4	15.42	3182.69	3.50
Green Hope High School	10	4.80	23	57.6	72.48	4174.85	3.62
Harold D Ritter Park	9	7.80	16	273	34.65	9459.45	3.98
Heater Park	1	4.80	1	7.2	1.49	10.73	1.03
Hemlock Bluffs Nature Preserve	6	7.20	7	122.4	139.85	17117.64	4.23
Koka Booth Amphitheatre	7	7.80	7	167.7	14.11	2366.25	3.37
Lexie Lane Park	3	2.40	5	22.8	2.72	62.02	1.79
Lions Park	4	4.80	7	67.2	6.15	413.28	2.62
MacDonald Woods Park	6	4.80	9	96	14.13	1356.48	3.13
Marla Dorrel Park	13	7.80	17	343.2	17.51	6009.43	3.78
Middle Creek School Park	26	7.20	33	824.4	166.88	137575.87	5.14
Mills School Park	9	4.80	22	187.2	195.79	36651.89	4.56
North Cary Park	19	7.80	22	577.2	60.82	35105.30	4.55
Preston Soccer Fields	2	2.20	6	26.4	14.99	395.74	2.60
Robert V Godbold Park	18	5.20	22	319.8	24.61	7870.28	3.90
Rose Street Park	2	10.80	3	29.4	0.63	18.52	1.27
RS Dunham Park	12	4.80	16	249.6	5.58	1392.77	3.14
Sears Farm Road Park	16	7.80	22	444.6	12.91	5739.79	3.76
T E Brooks Park USA Baseball	23	4.80	37	403.2	224.28	90429.70	4.96
Urban Park	2	4.80	3	31.2	1.15	35.88	1.55
WakeMed Soccer Park	17	7.20	21	547.2	163.3	89357.76	4.95
Walnut Street Park	11	7.20	19	298.8	12.7	3794.76	3.58
White Oak Park	8	7.80	19	257.4	11.83	3045.04	3.48

Table 5. Descriptive Statistics for Total Physical Health Scores for Parks in Cary

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Number of Components	32	41	1	42	11.06	9.938
Modifier Value	32	5.60	2.20	7.80	5.5875	1.75164
AEE Total	32	42.00	1.00	43.00	15.2500	10.62559
Size in Acres	32	274.26	.63	274.89	50.9944	74.66308
Total CPS	32	1625.80	4.40	1630.20	279.3594	347.11601
Total Physical Health Score	32	289455.69	3.48	289459.17	24763.2406	57767.92494
Log10 of Total Physical Score	32	4.92	.54	5.46	3.2922	1.29609
Valid N (listwise)	32					

The histogram in Figure 2 shows clustering around the Log10 values of 1.5 and 3.75. A look at the specific parks around the two clusters shows that the lower value tends to be made up of small parks that the Town of Cary classifies as "Mini Parks" (e.g., Heater, Rose Street, Urban) and one classified as "Neighborhood Park", but which was rated low in the original inventory and considered by Cary parks staff at that time to be an under-performing park. The higher cluster is made up of locations classified as "Neighborhood Parks", which contain more features and are intended to serve a larger area (e.g., Sears Farm Road Park, Robert V. Godbold Park, Marla Dorrel Park). At the highest end of the scale are large parks that Cary classifies as "Community" and "Metro" parks (North Cary Park, Fred G. Bond Metro Park) and venue-type locations classified by Cary as "Special Use Facilities" that have concentrations of sports fields and active-use features (e.g., T.E. Brooks Park USA Baseball and WakeMed Soccer Park).

Table 6. Log10 Values for Parks in Cary

Location	Classification	Log10	Recoded Log10	
Dorothy Park	Mini Park	0.54	1.00	
Heater Park	Mini Park	1.03	1.00	
Black Creek GW Trailhead	Special Use Facility	1.03	1.00	
Rose Street Park	Mini Park	1.27	1.00	
Urban Park	Mini Park	1.55	1.00	
Lexie Lane Park	Neighborhood Park	1.79	1.00	
Annie Jones Greenway 1	Special Use Facility	1.88	1.00	
Cary High School	Special Use Facility	2.54	1.00	
Preston Soccer Fields	Special Use Facility	2.60	1.00	
Lions Park	Neighborhood Park	2.62	1.00	
MacDonald Woods Park	Neighborhood Park	3.13	1.00	Lowest Third
RS Dunham Park	Neighborhood Park	3.14	2.00	
Annie L Jones Park	Neighborhood Park	3.32	2.00	
Koka Booth Amphitheatre	Special Use Facility	3.37	2.00	
White Oak Park	Neighborhood Park	3.48	2.00	
Green Hope Elemen School Park	Neighborhood Park	3.50	2.00	Median = 3.53
Davis Drive Park	Special Use Facility	3.56	2.00	
Walnut Street Park	Special Use Facility	3.58	2.00	
Green Hope High School	Special Use Facility	3.62	2.00	
Sears Farm Road Park	Neighborhood Park	3.76	2.00	
Marla Dorrel Park	Neighborhood Park	3.78	2.00	
Robert V Godbold Park	Neighborhood Park	3.90	3.00	Highest Third
Harold D Ritter Park	Community Park	3.98	3.00	
Davis Drive School Park	Special Use Facility	4.05	3.00	
Hemlock Bluffs Nature Preserve	Special Use Facility	4.23	3.00	
Cary Tennis Park	Special Use Facility	4.48	3.00	
North Cary Park	Community Park	4.55	3.00	
Mills School Park	Special Use Facility	4.56	3.00	
WakeMed Soccer Park	Special Use Facility	4.95	3.00	
T E Brooks Park USA Baseball	Community Park	4.96	3.00	
Middle Creek School Park	Community Park	5.14	3.00	
Fred G Bond Metro Park	Metro Park	5.46	3.00	

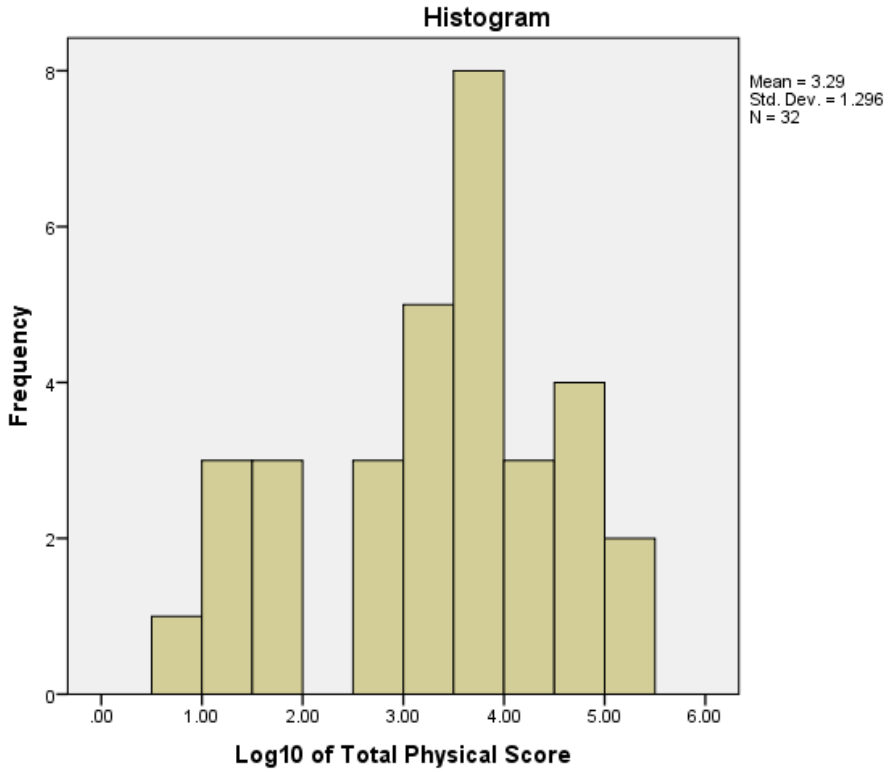

Figure 2. Histogram of Logarithmic Values for Park Physical Activity Scores

Analyzing the Results

Given the inconclusive nature of the evidence for the relationship of park acreage to physical activity, a regression analysis was run to determine the relative effects of the main variables (total AEE, modifier value, and park acreage) in predicting the Log10 Score of a park (Table 7). Results show that the three variables together account for about 80% of the variation in Log10 scores for parks in Cary (R^2 = .822; Adjusted R^2 = .80; F = 43.19; *P = .000).* Total AEE accounts for the largest portion of the variance in the Log10 Score, with the park's modifier value next, and park size as the least important (and non-significant) contributor of the three. Given the empirical values from NCSU Extension and evidence from other sources for the contributions to physical activity from park features, it seems appropriate for AEE to be weighted more heavily in the equation than park quality and park size. The desired relative

proportions of each variable could be appropriately addressed through the Delphi method or other process until more conclusive and empirical evidence is available.

Table 7. Log10 Values for Total Physical Scores

	B	Std. Error	Beta	t	Sig.
(Constant)	0.883	0.346		2.553	0.016
AEE Total	0.077	0.015	0.629	5.028	0.000
Modifier Value	0.195	0.066	0.263	2.945	0.006
Size in Acres	0.003	0.002	0.172	1.482	0.149
a. Dependent Variable: Log10 of Total Physical Score					

Landscape Performance at the System Scale: Aggregated Measures for a Specific Geographical Area and the Role of Proximity

While the performance measurement for individual parks described in this paper is based on the behaviors of people once they are at the park and does not incorporate travel behaviors to and from it, the relationship between parks and their geography should be considered when measuring the performance of parks as a system of landscapes. Access and proximity become part of the performance equation. Recent studies have established a positive link between access to greenspace and public health (Sallis et al., 2012; Kaplan, 1995; Boone et al., 2009), and active transit to and from the greenspace location is an important aspect of this association (e.g., Heinrich et al., 2007; Tilt, 2009; Wang et al., 2013).

The use of standardized buffers to measure access has helped researchers study areal geographic units, such as a park system or jurisdictional region (Brownson, et al., 2009). Numerous studies have used buffers to analyze access to greenspace within walking distance of residences (e.g., Lee and Moudon, 2006; Olaru et al., 2007; Lin and Gau, 2004). While there are a variety of ways to measure walking distances to parks and other greenspace features, there is no adopted standard. The range for what is considered a walkable distance typically falls

between 400 meters and one kilometer (0.25 miles to 0.621 miles), as shown by the sample of studies summarized in Table 8.

Table 8. Comparison of Buffer Methods and Access Distances in Studies

Study	Buffers		Access Distance Referenced	Notes
	Euclidian	Network		
Brownson, et al. (2009)	X		400 to 3200 Meters	400 Meters = 0.25 Miles, 3200 Meters = 1.98 Miles
Chang and Liao(2011)	X	X	Varies	Gravity model uses whatever distance exists
Cho & Choi, 2005)		X	Varies	Gravity model uses whatever distance exists
Dills, et al. (2012)		X	1 Mile	1 Mile = 1609 Meters
Forsyth, et al. (2007)	X		1.00 Kilometer	1 Kilometer = 0.62 Miles
Giles-Corti, et al. (2006)			10-15 Minute Walk	0.25 Miles = 402 Meters (Buffers referenced but not reported)
Godbey (2009)			1 Kilometer and 1 Mile	0.25 Miles = 402 Meters (Buffers referenced but not reported)
Heinrich, et al. (2007)	X		0.80 Kilometers	0.8 Kilometers = 0.50 Miles
Nichols (2001)	X	X	0.50 Miles	0.50 Miles = 805 Meters
Oh and Jeong (2007)	X	X	1.00 Kilometer	1 Kilometer = 0.62 Miles
Smoyer-Tomic, et al. (2004)	X		0.80 Kilometer	0.8 Kilometers = 0.50 Miles
Talen (2010)			5 Minutes (1/4 Mile)	0.25 Miles = 402 Meters (Buffers referenced but not reported)
TPL (2004)	X		0.25 Miles	0.25 Miles = 402 Meters

Similarly, there is no consensus on how distance should be measured. A common type of buffer is referred to as Euclidian (Smoyer-Tomic et al., 2004) or "straight-line" (Cho & Choi, 2005). Another type preferred by some researchers is the network buffer, which is measured along the actual network of streets to the access point of the park. This addresses a disadvantage of the radius method: it assumes parks to be open to access at all points along their boundaries (Nichols, 2001).

However, not everyone agrees that network buffers are always preferable. Smoyer-Tomic et al. (2004) used Euclidian buffers because digital representations of street networks may lack the detail to account for sidewalks, shortcuts and other aspects of travel by foot or bike. Dills et al. (2012) add that pedestrians may sometimes choose routes based on perceptions of walkability rather than shortest distance. In general, Euclidian buffers are likely to over-sample a service area, while network buffers may under-sample them (Layton, 2014).

In the GRASP® methodology, scores for various features are used in aggregate to determine a Level of Service (LOS) value for any given location within a study area or

jurisdiction. The resultant choropleth map, in which shades or patterns represent the measurement of the statistical value being displayed, provides the range of values across the geography as well as the value at any given location. In the GRASP® system, these are referred to as 'Perspectives". This technique can be used to measure aggregate LOS for park physical activity scores. To demonstrate, the physical health values for Cary's parks were used to create a GRASP® Perspective with ArcMap 10.1 (Figure 3).

The recoded Log10 values were used in order to simplify the results, but the full Log10 values, or even the total physical scores could be used to create a more intricate map with greater subtlety between values.

The first step in the process was to enter the values for each park parcel into the attribute table of the park locations layer in ArcMap 10.1. The parcels were then buffered with a ½ mile Euclidian buffer, and the recoded Log10 score for each park was assigned to its corresponding buffer. Using customized GRASP® scripts, the buffers were combined to create a map displaying the composite values that result when the buffers are overlain on one another (Figure 3). The yellow background on the map indicates the geographic corporate extents of Cary at the time the data were collected. The shades on the map represent composite values for recoded Log10 from all parks whose buffer overlays a given location. Total values range from zero (no shading) to 8. Additional performance measures for the entire system of parks can be extracted from the GIS using this information. For example, 30.30 square miles of Cary's total land mass of 55.60 square miles (55%) fall within a buffer, meaning that anyone living within that area can be considered to have walkable access to parks with features that support physical activity. Figure 4 shows areas with value at or above the median recoded Log10 score of 2.

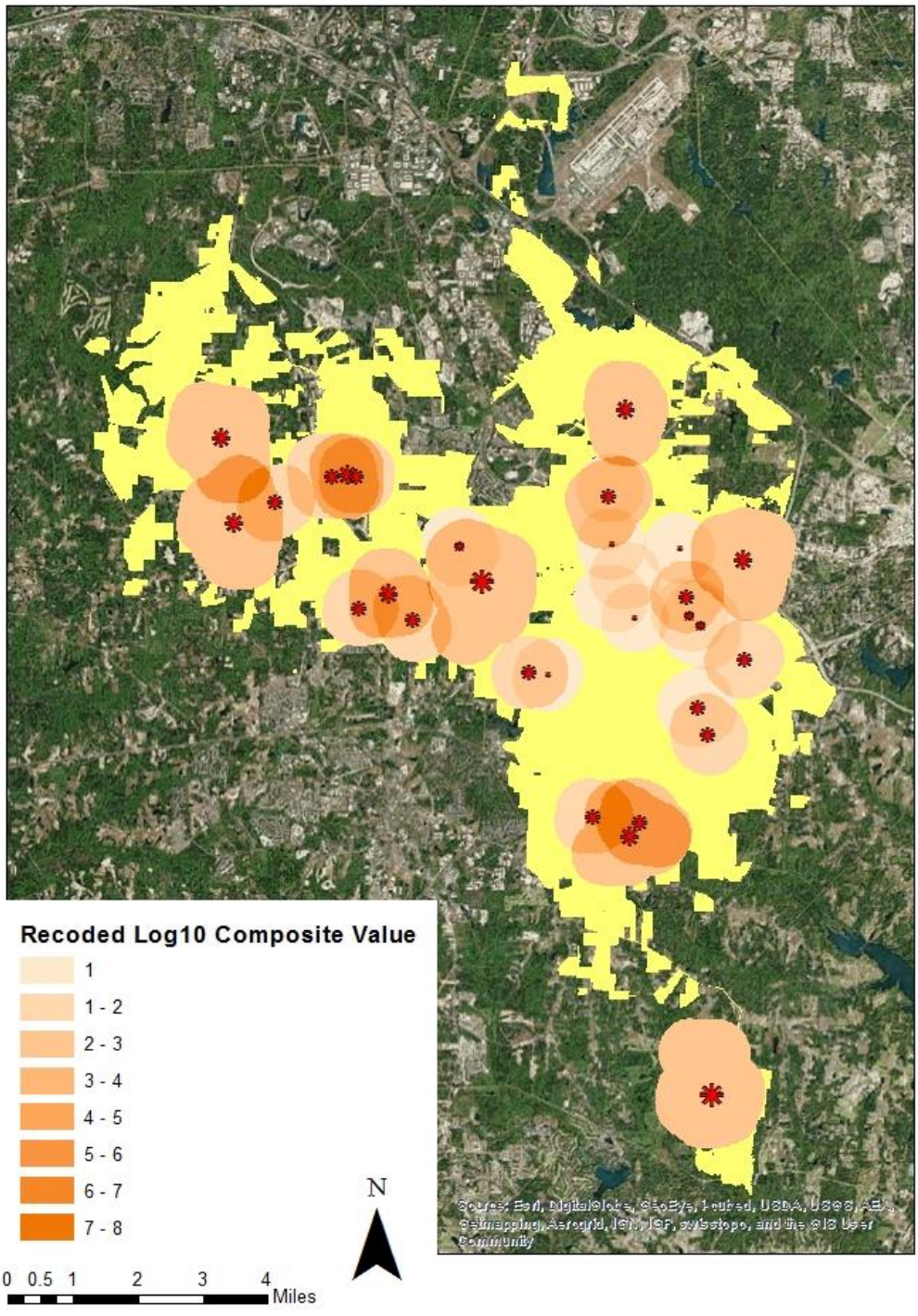

Figure 3. Composite Map of Recoded Log10 Values for Physical Health

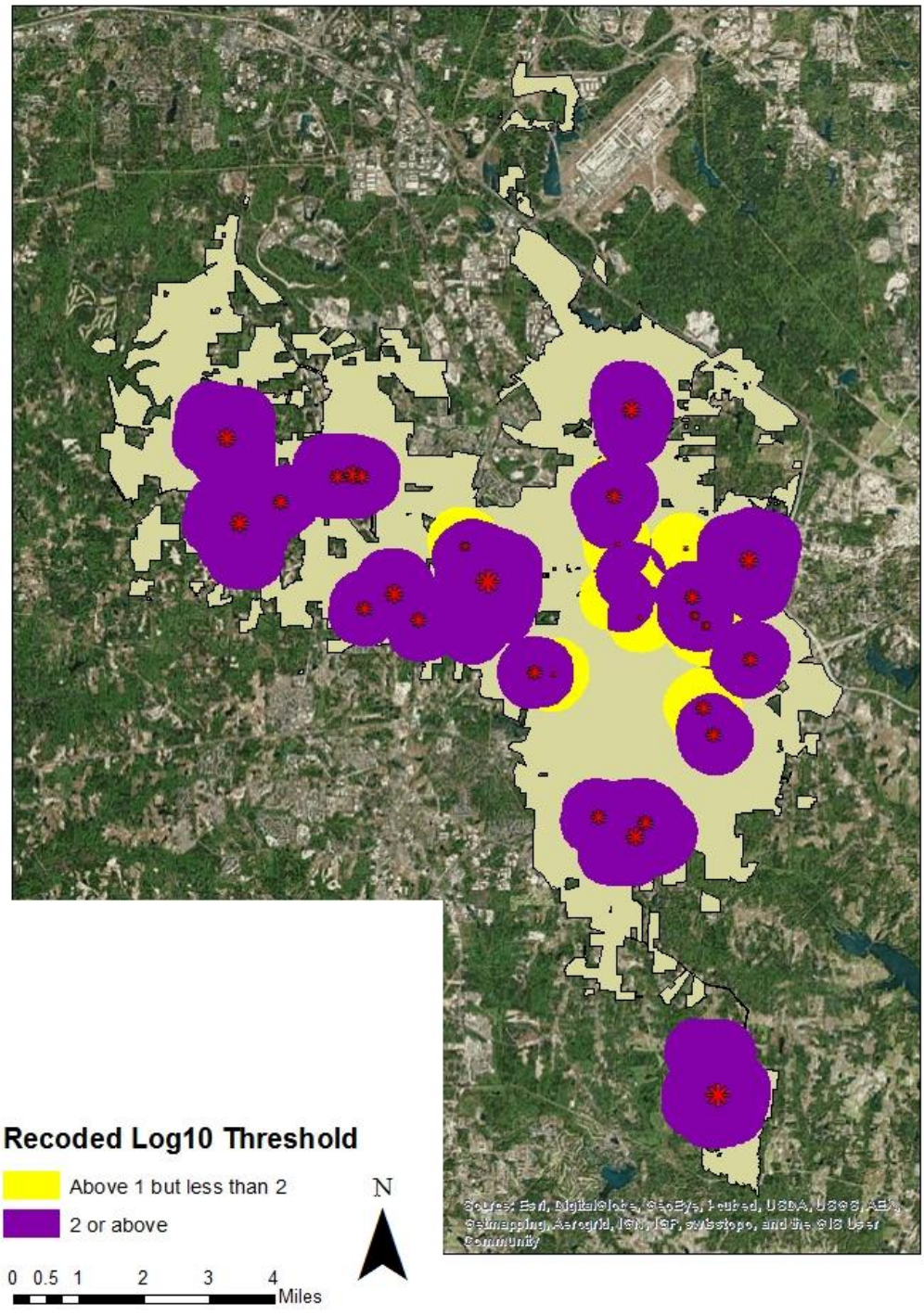

Figure 4. Areas At or Above Median Recoded Log10 Value

A wide variety of possible performance metrics are available once scores have been assigned to parcels and imported into the GIS. It is possible to import census data and determine the demographics of residents who live within different parts of the Town of Cary. Thus, performance measures could target the number of people living within proximity of a certain threshold of physical activity values within a prescribed area.

Extension of the Methodology to other Dimensions of Health

A process similar to the one shown here for physical health could be applied to the other four dimensions of health identified earlier. To illustrate the concept, Figure 5 shows an example in which components have been categorized for health dimensions according to Table 2. The Modified Component Values (Functional Score of Component x Modifier Value of Site) were totaled for each park. (Park size and AEE values were not used in this simplified example.) This example is offered for illustration purposes only, as further research is needed to validate the assumptions on which the categories are assigned and assessed, but it suggests how scores for all of the health dimensions could be blended into an overall performance metric for health goals. GIS mapping could then be used as described above to generate a number of additional metrics, such as percentage of the population served within a given area and the mix or balance of the system in addressing the full range of health dimensions.

LOCATION	Physical	Mental	Social	Environmental	Economic	Site Totals
Fred G Bond Metro Park	20	12	37	5	15	89
Cary Tennis Park	33	1	36	1	3	74
Middle Creek School Park	22	2	26		3	53
T E Brooks Park USA Baseball	17	2	20	1	3	43
North Cary Park	11	3	16	2	6	38
Robert V Godbold Park	12	4	16	1	2	35
WakeMed Soccer Park	10	1	14	1	5	31
Sears Farm Road Park	5	10	9	2	1	27
Green Hope Elemen School Park	10	2	11	1	1	25
Marla Dorrel Park	5	7	8	2	2	24
Annie L Jones Park	10		12			22
RS Dunham Park	9	1	10	1	1	22
Davis Drive School Park	8	1	9	1	2	21
Green Hope High School	10		10		1	21
Davis Drive Park	8	1	10		1	20
Harold D Ritter Park	6	3	8	2	1	20
Walnut Street Park	3	7	6	3	1	20
Mills School Park	8		9		2	19
White Oak Park	5	3	7	3		18
Koka Booth Amphitheatre		3	4	2	4	13
MacDonald Woods Park	3	3	4	2	1	13
Hemlock Bluffs Nature Preserve	1	5	3	2	1	12
Cary High School	4		4		1	9
Lions Park	2	1	3	1	1	8
Lexie Lane Park	3		3			6
Annie Jones Greenway 1	1		2		1	4
Preston Soccer Fields	2		2			4
Rose Street Park	2		2			4
Urban Park	2		2			4
Black Creek GW Trailhead			1			1
Dorothy Park		1				1
Heater Park		1				1
System Totals	232	74	304	33	59	702

Figure 5. Potential Model of Multi-Dimensional Metric

Generalization and Transferability of the Metric

As mentioned earlier, the metric can be used to compare the relative rank of one park in Cary to another in terms of its potential performance at generating physical activity. However, there is no standard set of values against which the Log10 scores can be compared to determine if they are meeting a performance standard. One way to address this would be to perform the equation on a broader sample of parks from a wider range of locations and look for normative values among the results, much like what was done with the histogram in Figure 2. This could then be used to establish a normative threshold or target value for the Log10 score for a park to

be considered adequate for addressing physical activity needs. It is assumed that the AEE values are somewhat generalizable, since they have been published for use in the NCSU Extension report. The GRASP® protocols used in the scoring methodology to assign functional scores for components and modifiers are intended to account for variations in local conditions, preferences, and expectations, and as such do not need re-scaling or calibrating to different locales. While park sizes can vary from one locale to another, there is a certain amount of consistency due to the fact that park systems have historically been developed to normative standards generally adopted by agencies across the country. While such standards are considered obsolete, they persist and are still being utilized. Thus, variations in park sizes from one locale to another should not be problematic for generalization of the metric.

A better way to establish standards is to use the Log10 metric in future research to look for correlations between it and the likelihood of residents achieving recommended levels of physical activity. A threshold might be found where the likelihood of an individual meeting physical activity goals increases when park Log10 values are at a certain level within a given proximity of the individual's residence.

Limitations and Conclusions

The performance metrics described here are rooted in evidence found in the literature relating parks and greenspace to public health goals. The evidence base, however, while expanding, is incomplete and lacking in some dimensions. Until conclusive evidence is found, application of the metrics will be limited to providing suggestions, recommendations, and guidelines for best practices. In the meantime, they may be useful in conducting research that will lead to their improvement and adoption as verifiable tools for evaluating and managing greenspace landscapes and landscape systems.

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Appendix A. GRASP® Outdoor Component List

GRASP® Outdoor Component List	
GRASP® Outdoor Component Type	**Definition**
Adventure Course	An area designated for activities such as ropes courses, zip-lines, challenge courses, etc. Specify type in comments.
Amusement Ride	Carousel, train, go carts, bumper cars, or other ride upon features. Has an operator and controlled access.
Aquatics, Complex	A facility that has at least one immersion pool and other features intended for aquatic recreation.
Aquatics, Lap Pool	A man-made basin designed for people to immerse themselves in water and intended for swimming laps.
Aquatics, Leisure Pool	A man-made basin designed for people to immerse themselves in water and intended for leisure water activities. May include zero depth entry, slides, and spray features.
Aquatics, Spray Pad	A water play feature without immersion intended for the purpose of interacton with moving water.
Aquatics, Therapy Pool	A temperature controlled pool intended for rehabilitation and therapy.
Basketball Court	Describes a dedicated full sized outdoor court with two goals.
Basketball, Practice	Describes a basketball goal for half-court play or practice. Includes goals in spaces associated with other uses.
Batting Cage	A stand-alone facility that has pitching machines and restricted entry.
Bike Complex	A facility that accommodates various bike skills activities with multiple features or skill areas.
Bike Course	A designated area for non-motorized bicycle use. Can be constructed of concrete, wood, or compacted earth. May include a pump track, velodrome, skills course, etc.
Camping, Defined	Defined campsites that may include a variety of facilities such as restrooms, picnic tables, water supply, etc. Quantity based on official agency count. For use only if quantity of sites is available. Use "Camping, Undefined" for other instances.
Camping, Undefined	Indicates allowance for users to stay overnight in the outdoors in informal and/or undefined sites. Receives a quantity of one for each park or other location.
Climbing, Designated	A designated natural or man-made facility provided and/or managed by an agency for the purpose of recreation climbing not limited to childs play.
Climbing, General	Indicates allowance for users to participate in a climbing activity. Receives a quantity of one for each park or other location.
Concession	A facility used for the selling, rental, or other provision of goods and services to the public.
Diamond Field	Describes softball and baseball fields of all kinds suitable for organized diamond sport games. Not specific to size or age-appropriateness.
Diamond Field, Complex	Multiple ballfields at a single location suitable for tournaments.

Diamond Field, Practice	Describes any size of grassy area used for practice. Distinguished from ballfield in that it doesn't lend itself to organized diamond sport games. Distinguished from open turf by the presence of a backstop.
Disc Golf	Describes a designated area that is used for disc golf. Quantities: 18 hole course = 1; 9 hole course = .5
Dog Park	An area designated specifically as an off-leash area for dogs and their guardians.
Educational Experience	Signs, structures, or historic features that provide an educational, cultural, or historic experience. Receives a quantity of one for each contiguous site. Distinguished from public art by presence of interpretive signs or other information.
Equestrian Facility	Area designated for equestrian use. Typically applied to facilities other than trails.
Event Space	A designated area or facility for an outdoor class, performance, or special event including amphitheater, band shell, stage, etc.
Fitness Course	One or more features intended for personal fitness activities. Receives a quantity of one for each complete grouping.
Game Court	Outdoor court designed for a game other than tennis, basketball, volleyball, as distinguished from a multi-use pad including bocce, shuffleboard, lawn bowling, etc. Specify type in comments. Quantity counted per court.
Garden, Community	Describes any garden area that provides community members a place to have a personal vegetable or flower garden.
Garden, Display	Describes any garden area that is designed and maintained to provide a focal point or destination including a rose garden, fern garden, native plant garden, wildlife/habitat garden, arboretum, etc.
Golf	A course designed and intended for the sport of golf. Counted per 18 holes. Quantities: 18 hole course = 1; 9 hole course = .5
Golf, Miniature	A course designed and intended for use as a multi-hole golf putting game.
Golf, Practice	An area designated for golf practice or lessons including driving ranges and putting greens.
Horseshoe Court	A designated area for the game of horseshoes including permanent pits of regulation length. Quantity counted per court.
Horseshoes Complex	Several regulation horseshoe courts in single location suitable for tournaments.
Ice Hockey	Regulation size outdoor rink built specifically for ice hockey games and practice. General ice skating included in "Winter Sport".
Inline Hockey	Regulation size outdoor rink built specifically for in-line hockey games and practice.
Loop Walk	Opportunity to complete a circuit on foot or by non-motorized travel mode. Suitable for use as an exercise circuit or for leisure walking. Quantity of one for each park or other location unless more than one distinct circuit is present.
Multi-Use Pad	A paved area that is painted with games such as hopscotch, 4 square, tetherball, etc. Often found in school yards. As distinguished from "Games Court" which is typically single use.

Natural Area	Describes an area in a park that contains plants and landforms that are remnants of or replicate undisturbed native areas of the local ecology. Can include grasslands, woodlands and wetlands.
Open Turf	A grassy area that is not suitable for programmed field sports due to size, slope, location or physical obstructions. May be used for games of catch, tag, or other informal play and uses that require an open grassy area.
Other	Active or passive component that does not fall under any other component definition. Specify in comments.
Passive Node	A place that is designed to create a pause or special focus within a park and includes seating areas, plazas, overlooks, etc. Not intended for programmed use.
Pickleball Court	A designated court designed primarily for pickleball play.
Picnic Ground	A designated area with a grouping of picnic tables suitable for organized picnic activities. Individual picnic tables are accounted for as Comfort and Convenience modifiers.
Playground, Destination	Playground that attracts families from the entire community. Typically has restrooms and parking on-site. May include special features like a climbing wall, spray feature, or adventure play.
Playground, Local	Playground that is intended to serve the needs of the surrounding neighborhood. Includes developed playgrounds and designated nature play areas. Park generally does not have restrooms or on-site parking.
Public Art	Any art installation on public property. Receives a quantity of one for each contiguous site.
Rectangular Field Complex	Several rectangular fields in single location suitable for tournament use.
Rectangular Field, Large	Describes a specific field large enough to host one adult rectangular field sport game such as soccer, football, lacrosse, rugby, and field hockey. Approximate field size is 180’ x 300’ (60 x 100 yards). Field may have goals and lining specific to a certain sport that may change with permitted use.
Rectangular Field, Multiple	Describes an area large enough to host one adult rectangular field sport game and a minimum of one other event/game, but with an undetermined number of actual fields. This category describes a large open grassy area that can be arranged in any manner of configurations for any number of rectangular field sports. Sports may include, but are not limited to: soccer, football, lacrosse, rugby, and field hockey. Field may have goals and lining specific to a certain sport that may change with permitted use.
Rectangular Field, Small	Describes a specific field too small to host a regulation adult rectangular field sport game. Accommodates at least one youth field sport game. Sports may include, but are not limited to: soccer, football, lacrosse, rugby, and field hockey. Field may have goals and lining specific to a certain sport that may change with permitted use.
Shelter, Large	A shade shelter or pavilion large enough to accommodate a group picnic or other event for a minimum of 13 seated whether or not benches or picnic tables are provided. Lack of seating may be addressed in scoring.
Shelter, Small	A shade shelter, large enough to accommodate a family picnic or other event for approximately 4-12 persons with seating for a minimum of 4. Covered benches for seating up to 4 people included as a modifier in comfort and convenience scoring and should not be included here.

Skate Feature	A stand-alone feature primarily for wheel sports such as skateboarding, in-line skating, etc. May or may not allow free-style biking. May be associated with a playground but is not part of it. Dedicated bike facilities should be categorized as "Bike Course".
Skate Park	An area set aside primarily for wheel sports such as skateboarding, in-line skating, etc. Attracts users from the entire community. May or may not allow free-style biking. May be specific to one user group or allow for several user types. Can accommodate multiple users of varying abilities. Typically has a variety of concrete or modular features.
Target Range	A designated area for practice and/or competitive target activities. Specify type, such as archery or firearms, in comments.
Tennis Complex	Multiple regulation courts in a single location with amenities suitable for tournament use.
Tennis Court	One standard regulation court suitable for recreation and/or competitive play. Specify Quick Start or other non-standard types in comments.
Tennis, Practice Wall	A wall intended for practicing tennis.
Track, Athletic	A multi-lane, regulation sized running track appropriate for track and field events.
Trail, Multi-Use	A trail, paved or unpaved, that is separated from the road and provides recreational opportunities or connection to walkers, bikers, roller bladers and equestrian users. Paths that make a circuit within a single site are "Loop Walks".
Trail, Primitive	A trail, unpaved, located within a park or natural area that provides recreational opportunities or connections to users. Minimal surface improvements that may or may not meet accessibility standards.
Trail, Water	A river, stream, canal or other waterway used as a trail for floating, paddling, or other watercraft.
Trailhead	A designated staging area at a trail access point. May include restrooms, an information kiosk, parking, drinking water, trash receptacles, seating, etc.
Volleyball Court	One full-sized court. May be hard or soft surface, including grass and sand. May have permanent or portable posts and nets.
Wall Ball Court	Walled courts associated with sports such as handball and racquetball. Specify type in comments.
Water Access, Developed	A developed water access point. Includes docks, piers, kayak courses, boat ramps, fishing facilites, etc. Specify in comments including quantity for each unique type.
Water Access, General	Measures a user's general ability to access the edge of open water. May include undeveloped shoreline. Typically receives quantity of one for each contiguous site.
Water Feature	A passive water-based amenity that provides a visual focal point. Includes fountains and waterfalls.
Water, Open	A body of water such as a pond, stream, river, wetland with open water, lake, or reservoir.
Winter Sport	An area designated for a winter sport or activity such as a downhill ski area, nordic ski area, sledding hill, toboggan run, recreational ice, etc. Specify in comments.

Appendix B. GRASP® Methodology Exhibits

Components

Components are elements of greenspace that support, encourage, or facilitate an activity or experience. The activity or experience can be active or passive, structured or unstructured, group or individual. The playground shown here is an example of a component.

Modifiers

Modifiers are elements within greenspace that support, facilitate, or enhance the comfort and convenience of using greenspace components. This includes shade, restrooms, and pleasant surroundings.

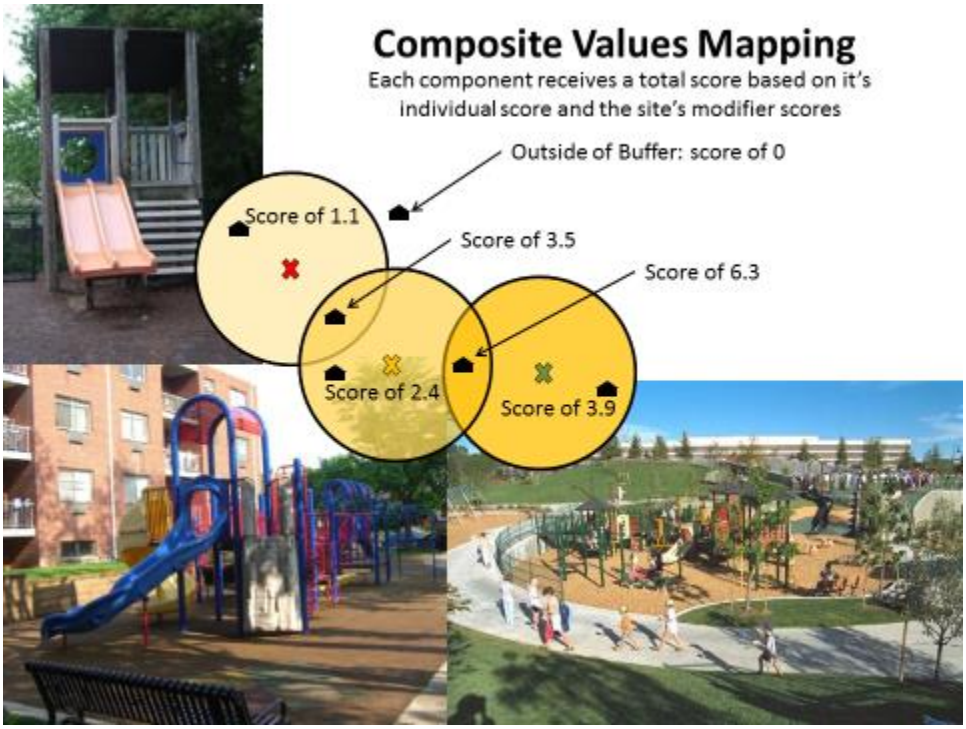
Scoring of Components

Score of 1: Playground is old, unsafe, obsolete, not up to expectations

Score of 2: Meets expectations for size, condition, type of equipment

Score of 3: Has unique features or qualities beyond those expected


Scoring of Modifiers
Low Modifier Score: Poorly located, unattractive, lacks seating
Medium Modifier Score: Attractive setting, with shade and benches
High Modifier Score: Restrooms, drinking fountain, benches, shade


Composite Values Mapping
Each component receives a total score based on it's individual score and the site's modifier scores
Outside of Buffer: score of 0
Score of 1.1
Score of 3.5
Score of 6.3
Score of 2.4
Score of 3.9

Appendix C – Energy expenditure ratings from NCSU Extension

Park Zones Ranked by Cost-Active Energy Expenditure (EE) per Zone

Zone Name	Cost	Cost (recoded)	Active EE (kcal/kg/hr)	Active EE (recoded)	AEE-Cost Ratio (recoded)
Shelter—Small	$25,000	1	7.35	1	1
Multi-court	$20,000	1	9.45	1	1
Open Area—Small	$7,500	1	2.57	2	2
Basketball—Medium	$30,000	1	2.59	2	2
Basketball—Small	$15,000	1	3.25	2	2
Open Area—Medium	$25,000	1	4.69	2	2
Volleyball—Medium	$100,000	2	7.65	1	2
Shelter—Medium	$45,000	2	8.66	1	2
Volleyball—Small	$50,000	2	9.60	1	2
Soccer—Small	$40,000	2	12.39	1	2
Football	$100,000	2	35.93	1	2
Shuffleboard	$3,000	1	0.00	3	3
Handball	$10,000	1	0.00	3	3
Trail—Small	$10,000	1	0.36	3	3
Picnic Area—Medium	$9,000	1	0.41	3	3
Exercise Area—Small	$20,000	1	0.91	3	3
Picnic Area—Large	$30,000	1	1.17	3	3
Picnic Area—Small	$4,000	1	1.50	3	3
Tennis—Small	$90,000	2	3.50	2	3
Shelter—Large	$100,000	2	4.42	2	3
Basketball—Large	$60,000	2	5.02	2	3
Playground—Large	$500,000	3	7.09	1	3
Racquetball	$120,000	3	7.64	1	3
Rink/Skate	$120,000	3	7.74	1	3
Track	$400,000	3	14.77	1	3
Soccer—Large	$115,000	2	16.01	1	3
Amphitheater	$50,000	2	0.00	3	4
Trail—Medium	$30,000	1	0.74	3	4
Color Design/Walkway	$79,794	2	1.09	3	4
Soccer—Medium	$75,000	2	1.73	3	4
Open Area—Large	$90,000	2	1.85	3	4
Playground—Small	$100,000	2	1.92	3	4
Tennis—Large	$270,000	3	2.03	2	4
Tennis—Medium	$180,000	3	3.36	2	4
Softball/Baseball—Large	$400,000	3	4.64	2	4
Playground—Medium	$250,000	3	5.08	2	4
Softball/Baseball—Small	$200,000	3	6.42	2	4
Pool	$7,000,000	3	6.87	2	4
Volleyball—Large	$200,000	3	1.04	3	5
Trail—Large	$150,000	3	1.85	3	5

Note: AEE Cost Ratio was calculated by adding the recoded cost and the recoded Active EE. The result was reduced by 1 to reflect a scale from 1 to 5.