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**Combatting Childhood Obesity in Zip Code 78745  
through Opportunities for Free Physical Activity**

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**by**

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**Report**

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# **Combatting Childhood Obesity in Zip Code 78745 through Opportunities for Free Physical Activity**

by

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The University of Texas at Austin, 2014

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The worldwide obesity epidemic is cause for alarm because of its link to major, life threatening diseases such as cardiovascular disease and Type 2 diabetes. Not only adults, but also children, are suffering from increasing rates of overweight and obesity. This is a matter of serious concern not just because of the specific diseases that are affecting growing numbers of children, but also because overweight and obesity in childhood greatly increase the likelihood that those children will be obese as adults. The incidence of childhood obesity in Texas is significantly higher than the U.S. average. One of the two Austin, Texas zip codes with the highest rates of childhood obesity is zip code 78745. A coalition of concerned residents, government representatives, nonprofit leaders, and religious activists known as Go Austin!/Vamos Austin! (GAVA) has spearheaded an initiative to combat childhood obesity in the zip code. One of GAVA's three foci is physical activity. This professional report analyzes the physical activity opportunities for children in 78745 through free, publicly available recreation facilities and green spaces. It identifies those spaces that are closest to the childhood obesity hotspots and recommends actions that can be taken by the city, the school district, nonprofits, area businesses, and local residents to increase physical activity among area children through existing and proposed opportunities.

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## **Introduction**

Obesity is considered one of the most serious public health challenges of the beginning of the 21st century. The prevalence of overweight and obesity has increased substantially during the past 30 years. Globally, an estimated 170 million children under the age of 18 are overweight. While childhood overweight is most common in upper-middle-income countries, it is rising in almost all countries. This is a serious public health concern. Overweight is a major risk factor for cardiovascular disease, Type 2 diabetes, and many types of cancer including colorectal, kidney, and esophageal cancers.

Furthermore, overweight and obese children tend to experience a poorer quality of life and are at greater risk of teasing, bullying and social isolation. (Sacks et al., 2012, p.13) According to the HBO documentary, *The Weight of the Nation: Children in Crisis*, "This may be the first generation of American children who will have a shorter life expectancy than their parents."

While the obesity epidemic is very serious throughout the United States, it is particularly serious in the State of Texas. Two-thirds of Texans are overweight or obese. The increase in obesity in children has been even more rapid than it has been among adults. According the 2007 National Survey of Children's Health, 20.4% of children in Texas between the ages of 10 and 17 were obese, compared to 16.4% of all U.S. children. In Texas, as in the country as a whole, people with higher levels of education tend to have lower levels of obesity. In 2009, Texans who had graduated from college

had the lowest obesity rates (22.2%). The highest obesity rates were found among Texans who had not completed high school (37.4%). The relationship between income levels and obesity in adults that is found nationwide is also evident in Texas. The highest likelihood of obesity is found among people earning \$15,000 - \$24,999 a year (38.1%). The lowest level is found among people earning \$50,000 or more per year (26.3%). (Combs, 2011) The State of Texas has recognized the importance of attacking childhood obesity with a multi-pronged approach that includes addressing nutrition and physical activity among children. Before 2007, there were no mandatory statewide physical activity standards for school districts. Starting in 2007, all children in Texas in kindergarten through fifth grade are required to spend at least 30 minutes a day engaged in moderate or vigorous physical activity. In 2008, Texas became the first state to use the Fitnessgram, a software program that assesses physical fitness. Over 2.4 million Texas students were assessed in 2008. (Combs, 2011)

How these global, national and statewide concerns, findings, and recommendations apply to a specific zip code in Austin, Texas is the subject of this report. Austin zip codes 78744 and 78745 have been identified by Children's Optimal Health as the two zip codes with the highest childhood obesity rates in Austin. The highest rates are found in the Dove Springs neighborhood, zip code 78744, which is the subject of a detailed report conducted by a graduate class at the University of Texas at Austin taught by Professor Talia McCray. Therefore, this report targets zip code 78745,

which has the second highest childhood obesity rate in Austin. Coalitions of local organizations have been formed to combat childhood obesity in both of these zip codes. The initiative is titled Go Austin!/Vamos Austin! (GAVA). The coalition in 78745, which receives funding from the Michael and Susan Dell Foundation, includes Foundation Communities, El Buen Samaritano, the Sustainable Food Center, Austin Interfaith, and representatives of local governmental departments and agencies, among others. While the coalition has addressed a wide range of topics connected to childhood obesity, this report focuses on a narrower subset of those topics. The focus of this report is on increasing physical activity among elementary school age children through the built environment and afterschool activities. While there are many factors that affect the ability of children to use free public physical activity spaces, some of them are beyond the purview of this report, such as access to transportation and safety considerations.

## **Literature Review**

Much has been written about the connection between health/obesity and physical activity as well as the connection between physical activity and the built environment. While there is a shortage of solid, quantitative, longitudinal, research-based evidence about these connections among children, there is nonetheless quite a bit of literature on different aspects of these relationships. While physical inactivity often leads to higher levels of obesity, the converse relationship is also true, obesity often leads to greater physical inactivity. The built environment can directly affect physical activity. Where children live in safe environments that are in close proximity to green spaces and recreation facilities, the likelihood that they will be physically active increases. When children and their parents perceive their neighborhoods to be unsafe, or where there is a shortage of green spaces and recreation facilities in close proximity to their homes, children are less likely to engage in adequate amounts of appropriate physical activity. Public policies and planning initiatives can promote the development and redevelopment of neighborhoods that encourage physical activity among all residents, including children.

### The Negative Impact of Obesity

Since obesity is directly related to serious health problems, and obesity in children is closely linked to adult obesity, the sharp increase in childhood obesity in the

United States is cause for alarm. Children are considered overweight if they are 10-20% over the appropriate weight for their height and age. They are considered obese if they are 20% or more over the recommended weight. The numbers of obese children and the increase in the percentage of childhood overweight and obesity have been well documented. At the age of six, obese children have a 50% probability of becoming obese adults. Eighty-five percent of obese children will continue to be obese for the rest of their lives. Between 1999 and 2011, the number of overweight children in the United States nearly tripled to over 12 million, approximately one third of US children.

(Academy of Pediatrics, 2009; Brown, 2001; Goran et al., 1999; UC Berkeley School of Public Health, 2011) Physical health problems related to obesity in children include NIDDM (non-insulin dependent diabetes mellitus), joint disease, irregular menstrual cycles, and sleep apnea. (Brown, 2001; Goran et al., 1999)

### The Links between Health/Obesity and Physical Activity in Youth

According to the Academy of Pediatrics, physical inactivity contributed to the high prevalence of overweight (2009). A literature review by faculty at the Tufts School of Medicine examined 20 prospective observational studies about the relationship between physical activity/inactivity and weight in childhood and adolescence. While many of the studies yielded the expected results of a direct relationship between physical activity and healthy weight on the one hand, and sedentary behavior and

adiposity on the other hand, some studies found no relationship, and others found the opposite relationship. The authors believe that many of the unexpected results can be explained through problems with definitions, measurements, sample selection, and statistical methodologies. More and more often in contemporary society, people of all ages multitask. A young person might be talking on the phone while walking outside or playing a video game in a park, thus blurring the lines between active and sedentary behaviors. One of the greatest weaknesses of cross-sectional studies is that they do not examine cause and effect. For example, lack of physical activity may contribute to being fat, but the reverse is also true, since overweight youth often avoid physical activity out of fear of being ridiculed. Statistics from the Centers for Disease Control and Prevention appear to confirm the link between obesity and school-based physical activity. In the 1990s, the percentage of schools offering physical education classes dropped from over 40% to approximately 25%. Research has found that children at schools that did not offer a PE program gained one inch more around the waist and two pounds more overall than children who were involved in a PE curriculum. (Brown, 2001; Must et al., 2005)

### The Links between the Built Environment and Physical Activity

Studies of the links between the built environment and physical activity have often addressed large segments of the population, such as adults, and have sometimes

focused on smaller subsets such as women, teenagers or children. Often the research focuses on a small group of people in a specific locality and is cross-sectional rather than a longitudinal approach. Only the latter is likely to help identify causality. Kaczynski et al. analyzed 1,120 articles, but found only 50 that reported empirical quantitative relationships between parks and recreation settings and physical activity levels. Similar to the Tufts literature review about the relationship between physical activity/inactivity and weight in childhood and adolescence, Kaczynski et al. found that while 40% of the articles documented positive relationships, another 40% reported mixed findings, others did not find significant associations, and only one reported a negative relationship.

Among the studies that examined specific park and recreation area features, trails or paths were the most commonly studied feature and the relationships were almost always positive. The features that seemed to be most closely associated with physical activity were trails, parks, open spaces, golf courses, and natural settings, rather than recreation centers, exercise facilities, or sports facilities. It is significant that most of the articles about the connection between physical activity and parks and recreation facilities involved middle class, mostly white adults living in urban and suburban settings. A 2000 article that analyzed data from close to 18,000 middle school and high school students who participated in the U.S. National Longitudinal Study of Adolescent Health found that use of a neighborhood recreation center was associated with a 75% increase in adolescents who engaged in physical activity five or more times per week.

Almost half of the studies that looked at proximity to park and recreation settings found a much greater percentage of physically active students in neighborhoods near parks and recreation facilities. It would appear that the specific features of the built environment that are most likely to foster physical activity among adults may be different than the features that most effectively promote physical activity among youth. (Kaczynski et al., 2007)

Several studies have documented links between the amount of physical activity among children and their access to safe play areas, including their yards, cul-de-sacs/streets, playgrounds, parks, and other green spaces. (Academy of Pediatrics, 2009; Active Living Research, 2010; Potwarka et al. 2006; Roemmich et al., 2006; UC Berkeley School of Public Health, 2011; Veitch et al., 2010) Roemmich et al. found that physical activity increased among children age four to seven when they had more parks and recreation areas close to their homes. Potwarka et al. found that children who lived within one kilometer of a park playground were almost five times more likely to have a healthy weight than children who lived near parks that did not contain playgrounds. Veitch et al. found that children were more likely to engage in outdoor play in their neighborhood if the parents thought the neighborhood was safe, the children had many friends in the neighborhood, or the children lived on a cul-de-sac. Children were more likely to play at a park or playground when their parents took them there. A 10-year longitudinal study by staff at UC Berkeley of 3,173 children up to age 18 from 12

communities in Southern California between 1993 and 2003 looked at children's BMI as it related to proximity of the children's homes and schools to park space. All of the statistical models controlled for race, ethnicity, gender, and community of residence. The research concluded that recreational programming affected the children's BMI much more than parkland, but that both significantly reduced the risk of overweight and obesity.

The impact that disparities in access to physical recreational opportunities have on the health of underserved segments of the population is addressed in several studies. (Academy of Pediatrics, 2009; Active Living Research, 2010; UC Berkeley School of Public Health, 2011) A study of studies on the role of parks and playgrounds in promoting active living conducted by Active Living Research, a national program of the Robert Wood Johnson Foundation, summarized existing research and gaps in research about the impact of the availability of parks on the active lifestyles of a variety of populations, including children, lower-income families, and minority groups. While many of the studies were not conclusive, they highlighted the likelihood that proximity of multiple parks leads to higher levels of physical activity, the shortage of park space in lower-income neighborhoods may contribute to lower activity levels, park conditions and perceived safety may affect utilization, existence of organized programs and supervision may particularly affect youth activity, and specific park features tend to affect energy expenditure. The Academy of Pediatrics found that physical activity among

four to seven year-old children and non- overweight children age eight to twelve increased as the percentage of park area in the neighborhood increased. The UC Berkeley report cited a study of urban disparity in funding for local parks and recreation in the Los Angeles area that found local expenditures ranging from \$1 per capita in the poorest communities to almost \$600 in the most affluent communities. The Berkeley researchers estimated that if all of the children in the study had similar access to recreational programs near their homes, up to 9.5% would move from overweight to normal and approximately 2% would shift from obese to overweight. These findings underscore the essential role that policy and planning activities play in ensuring equal access to opportunities for physical activity for all children, regardless of race, income, and disability.

#### Policies and Planning to Promote Physical Activity

Given the importance of access to parks and recreation in promoting physical activity and good health among children, the potentially high cost of creating new recreational facilities in underserved areas, and the multiplicity of public and nonprofit actors, coordination and joint planning and implementation are essential. Particular attention should be paid to the needs of low-income people, minorities, people with disabilities, and other underserved populations. (Academy of Pediatrics, 2009; Bedimo-Rung et al., 2005; Emerine et al., 2005; Goran, 1999; King et al., 2010; The National

Coalition for Promoting Physical Activity, 2012; UC Berkeley School of Public Health, 2011) Bedimo-Rung et al. believe that development of a conceptual model of the relationships among park benefits, park use, and physical activity would create a valuable framework for future research and policy recommendations. They also encourage collaboration among professionals from a wide variety of fields including public health, parks and recreation, psychologists, economists, urban planners, architects, and public safety officers. Goran and the National Coalition for Promoting Physical Activity agree on the primary importance of collaboration between schools and communities both in planning and implementation of policies and programs. Goran believes that the most effective strategies are likely to be theory based and involve families. The Coalition believes communities should ensure that zoning regulations support the creation and maintenance of green space and public parks and coordinate with school boards to ensure maximum utilization of schools and school facilities during non-school hours. Emerine et al. emphasize that the governments' approach should include comprehensive research, planning, design, and implementation in cooperation with all relevant stakeholders. Governments can increase the likelihood of project success by cooperating with other units of government, conducting an open-space inventory, and developing an on-going maintenance plan. Involvement of health professionals is advocated by King et al. and the Academy of Pediatrics. While King et al. developed a set of best practice principles in relation to processes for community

programs, covering the areas of community engagement, program design and planning, evaluation, implementation and sustainability, and governance and transparency, the Academy of Pediatrics urges doctors to advocate for environmental improvements by becoming active in local planning processes.

While many layers of government and nonprofit agencies are involved in the planning, development, and implementation of appropriate recreational spaces and programs, perhaps the two units of government with the greatest direct impact on the physical activity of children are schools and local parks and recreation departments. Therefore, their collaboration is essential in maximizing use of existing resources, avoiding duplication, and identifying areas of unmet need. The National Coalition for Promoting Physical Activity's Physical Activity for Youth Policy Initiative surveyed federal, state, and local policies and programs to develop a list of policy recommendations along with examples of current policies to promote physical activity rates among U.S. youth. The recommendations are divided into four main areas: afterschool programs, community programs, community design, and school programs. Future steps should include appropriate training for professional and lay teachers and coaches, requiring that daily physical activity be incorporated into schools and summer programs, operating school facilities after hours, and requiring schools to implement developmentally appropriate curricula. According to King et al., some of the most effective ways to promote physical activity among children and adolescents include

providing sports equipment, building play areas and athletic facilities, providing nighttime lighting, and developing safe areas for exercise. Researchers at UC Berkeley agree with the importance of creating age-appropriate recreational programs near children's homes, particularly in "park poor" neighborhoods. They also recommend encouraging recreation programs at existing public and nonprofit facilities and neighborhood schools, and converting vacant spaces in built-up communities into pocket parks.

One quick and effective way to promote physical activity among children is to encourage activities that require little to no infrastructure and only minimal investment in equipment. Some children engage in walking and running through school and extra-curricular activities as well as through purposeful activities such as walking to and from school. While many children enjoy biking, this is often not an option for children in low-income or unsafe areas. Impediments include the cost of bikes, theft, lack of sidewalks/bike lanes, traffic, and lack of adult supervision for younger children. On the other hand, there are other fun activities that could and should be more widely encouraged such as jumping rope, hula hooping, and frisbee.

In the 1940s and 1950s, jumping rope was very popular in the United States, including among inner-city children. Interest in jumping rope declined in the 1960s, but began to reemerge in the 1970s. In addition to cardiovascular and bone building benefits, jumping rope develops both hemispheres of the brain, improves spatial

awareness, and increases mental alertness. (The Jump Rope Institute, 2014) The American Heart Association and the American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD) have developed “Jump Rope for Heart”, which is popular in many schools. Rope jumping addresses all six national content standards for physical education for grades K-12. (Hernandez et al., 2009) Another excellent, inexpensive form of physical fitness is hula hooping. It helps reduce stress and improve mood and provides an effective, joint-friendly cardio workout, (Whitman, 2012) Frisbees are yet another inexpensive and easy way to promote physical activity. Besides informal frisbee games, children can play frisbee golf, an activity suitable for individuals or groups, or ultimate frisbee, a team sport which is more physically demanding. (Maxwell, 2004) Jumping rope, hula hooping, and frisbees are all physical activities that can be played by children of all income levels, in urban, suburban, and rural areas, in yards and parks, on the sidewalk, and at school, without training or added supervision. They are an ideal way to promote healthy recreation and deserve to be incorporated into family life, schools, and extracurricular activities. This literature review has brought into sharp focus the severity of the childhood obesity epidemic and the urgency of addressing it. Austin zip code 78745 has the city’s second highest rates of childhood obesity. It has been targeted by the Michael and Susan Dell Foundation for an initiative to reduce childhood obesity. In order to contribute to these efforts, this professional report examines the incidence of childhood obesity in the zip code, the proximity of green

spaces to these obesity hotspots, and specific amenities and facilities available for public use in these green spaces. The hope is that the data and findings of this report will shed light on low cost interventions that have the potential to contribute to greater physical activity and therefore better health among the children who reside in 78745.

## **Analysis Methods**

This professional report grew out of an internship I had with Foundation Communities, a provider of housing and support services for low income individuals and families in the City of Austin. My internship focused on the Go Austin!/Vamos Austin! (GAVA) initiative to combat childhood obesity in zip code 78745. The initiative was divided into three sectors: food/nutrition, schools, and physical activity. My work with the physical activity sector stimulated my interest in the connection between childhood obesity and physical activity. My work with GAVA included helping the community identify opportunities for free physical activity for children residing in the zip code.

The study area boundaries for this professional report were the boundaries of zip code 78745. This report uses a combination of spatial analysis and show and tell analysis to analyze the spatial relationship between childhood obesity hotspots and existing green spaces available for public recreational use at no cost. In addition, I created maps to identify the location of specific amenities, such as drinking fountains and picnic tables, which make it easier for children and families to spend extended periods of time in the green spaces. I also analyzed the availability of sites that could be readily developed into pocket parks.

Data on population characteristics, including household composition, income, and education, were collected from the 2000 census conducted by the U.S. Census Bureau. These data were used to understand the relevant demographic characteristics

of residents of zip code 78745. The City of Austin database provided shapefiles, including land use, flood plains, city limits, bodies of water, parks, major roads, and the zip code boundaries from 2010. Some of the shapefiles, such as bodies of water and green space, are clipped to the 78745 zip code. Other shapefiles, such as roads and recreation centers, are clipped to the 78745 zip code with a 500 foot buffer. This makes it easier for readers to orient themselves in space and identify the boundaries of the zip code and the location of various features within the zip code. The individual maps are meant to be easy for local residents to read so they can find and use the green spaces in the zip code. In addition, the 500 foot buffer includes the Dittmar Recreation Center, a district park, which lies across the street from the southern boundary of the zip code. The amount of information in each map was limited to reduce visual clutter, thus making each map easier to understand. Shapefiles that were not available online, including public drinking fountains, park benches, and picnic tables, were provided by staff at the Austin Parks and Recreation Department. The 2010 facilities data from the City of Austin website apparently contained some misinformation about district parks. Garrison Park was not classified as a recreation center, even though it is in fact a recreation center (district park), and McBeth, a park that does not exist in 78745, was identified as a recreation center.

The community requested a map identifying green space in relation to the childhood obesity hotspots. Since Children's Optimal Health does not release its data, I

only had access to their maps. Therefore, I used Adobe Photoshop to clip the analysis of the 78745 zip code and, through geoprocessing, was able to fit and connect the image to the roads shapefile from the City of Austin. In places where the Children's Optimal Health legend overlapped the zip code, I cut it out and overlaid the green space data I had already obtained from the City of Austin. The original legend created by Children's Optimal Health was clipped and included on the map alongside my own legend.

I used numbers to label public green space and public schools for grades K-12 on the free recreational opportunities map so it would be easy to use the legend to identify them. The numbering system places schools at the top of the list for easy reference for parents and numbers both public green spaces and schools according to the traditional reading system of left to right and top to bottom. Public schools were visually identified with a green block surrounded by a blue border to indicate the presence of a school with green space that is available to the general public when school is not in session. Borders were rarely used in creating these maps. However, a three point blue border was used to help make the schools stand out. The features on this map were extracted from the 2010 City of Austin Land Use shapefile. The education land use category refers to all buildings associated with education. This includes community colleges and AISD offices, among others. In order to display only public schools in the zip code, I individually selected each parcel, then compared the location to the location of schools in Google maps, and created a new shapefile. Using the City of Austin facilities shapefile,

I selected recreation centers and clipped that shapefile to the shapefile containing the 500 foot buffer around the zip code. Sunset Valley is not legally part of the City of Austin. Therefore, their land area is absent from all City of Austin shapefiles. In order to include them on the map, I used the editor toolbar in ArcGIS and created new polygons using Google maps as a reference.

In order to address GAVA's request to identify potential locations for a new pocket park, I made an initial map identifying all City of Austin owned parcels and all parcels classified as "undeveloped". Once I discovered that this initial map did not contain a single parcel where the parcels owned by the City of Austin overlapped with "undeveloped" parcels, I realized there was no need to include this map in this report. Therefore, I made a new map identifying all City of Austin owned parcels listed as "open space", but not currently classified as "green space". I overlaid a flood plain shapefile on this map, since City of Austin regulations prohibit the building of permanent facilities, including restrooms, in a floodplain. This map shows parcels located partially or entirely outside of the flood plain. The potential pocket park parcels are identified in fuchsia. Since some were so small that they were barely visible, a three point fuchsia border was used to make them stand out.

A reference map highlighting the 78745 zip code within the Austin city limits is placed at the top right corner of all of my maps. I-35 and the Colorado River are used as guides to help viewers locate the zip code in space.

The information in the table of parks and recreation facilities in 78745 was created with data from the 2011-2016 Long Range Plan for Land, Facilities and Programs developed by the Parks and Recreation Department of the City of Austin. The table includes the park names, type, size in acres, and facilities present at each park.

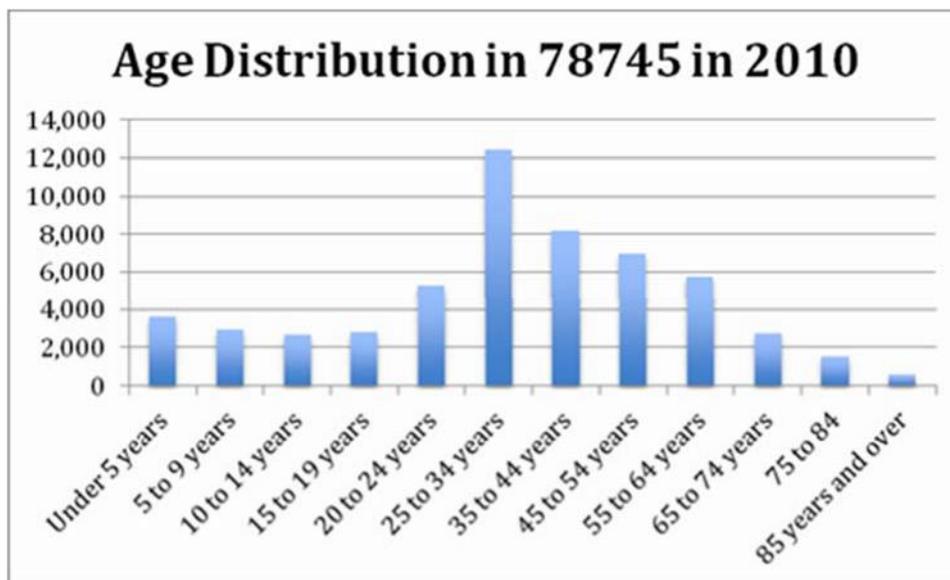
The following green spaces were not included in this table. Sunset Valley Elementary School, Sunset Valley Nature Preserve, and Valley Creek Park were omitted because they are part of a separate municipality. El Buen Samaritano is not included in the table because it is privately owned. However, it appears on the maps because it is available for public use. The following four green spaces were not included in the Long Range Plan and therefore are not listed in the table: Crockett High School, Pleasant Hill Elementary School, Bedichek Middle School, and Piney Bend Neighborhood Park.

## Analysis

### Demographics

Based on a U.S. Census estimate, there were 55,614 people living in 24,081 households in the 78745 zip code in 2010. Of that total, there were 6,059 households with one or more people under the age of 18, including 4,326 children enrolled in elementary and middle school in grades one through eight. The following graph displays the age distribution in zip code 78745 in 2010. It divides children into three separate categories: under five years of age, five to nine years of age, and ten to fourteen years of age of age.

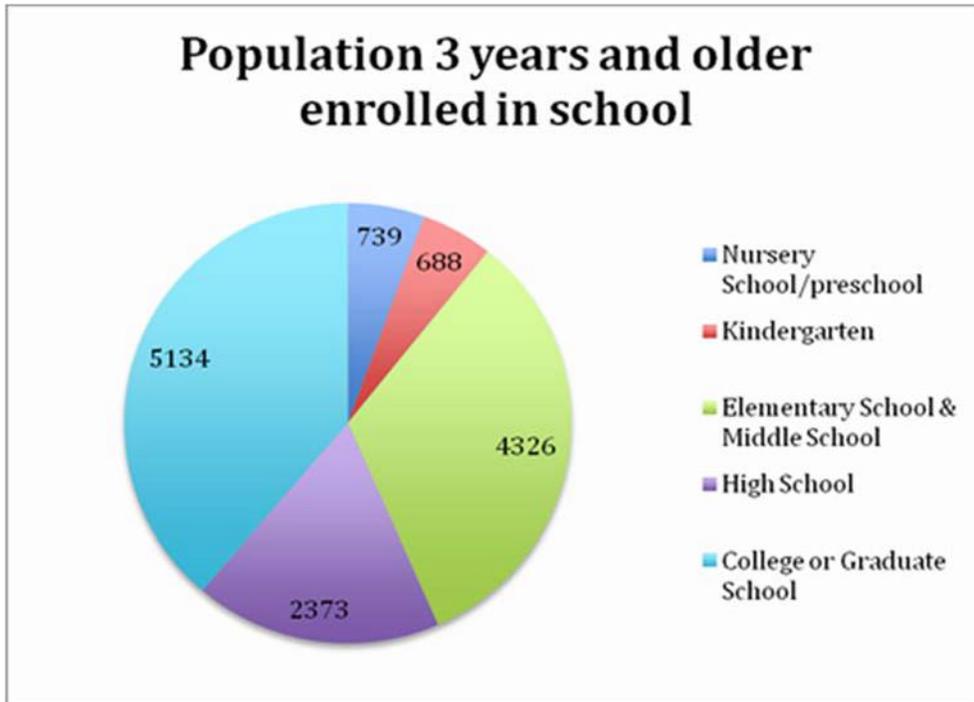
Figure 1: Age Distribution in 78745 in 2010



(U.S. Census Bureau 2010)

The following chart shows the number of students enrolled in school in zip code 78745, age three through graduate school. There are 4,326 children enrolled in grades one through eight in elementary schools and middle schools.

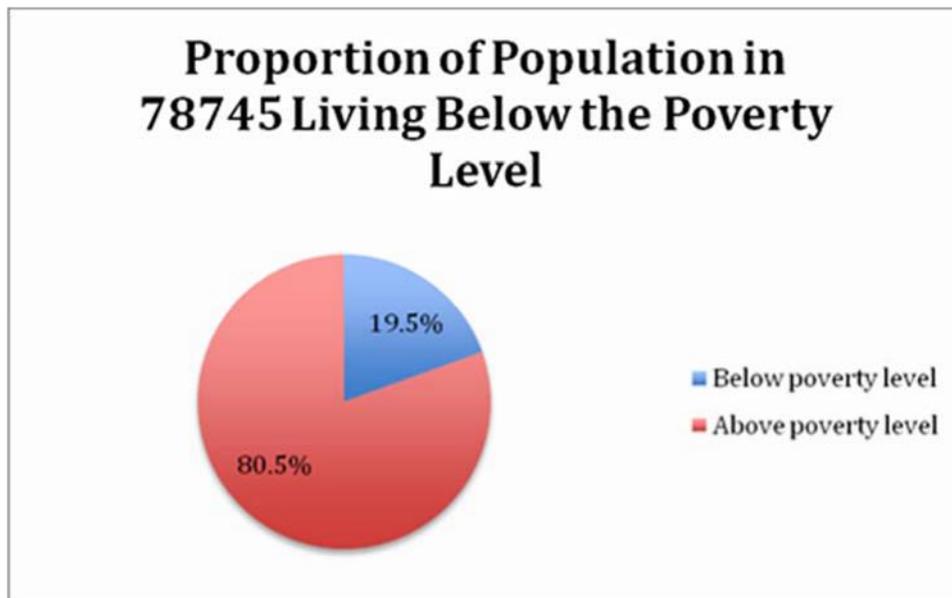
Figure 2: Population 3 Years and Older Enrolled in School



(U.S. Census Bureau 2010)

Of the total population in the 78745 zip code, close to one-fifth (19.5%) lived below the poverty level according to 2010 U.S. Census data. Over half of the poor families (10.9%) had incomes below 50% of the poverty line. Close to 22% of the households made less than \$25,000 a year. Between 2007 and 2011, an average of 2,030 households received food stamps/SNAP benefits each year.

Figure 3: Proportion of Population in 78745 Living Below the Poverty Level



(U.S. Census Bureau, 2010)

In response to a legislative requirement that school districts annually assess the physical fitness of third through twelfth grade students, the Texas Education Agency implemented the Fitnessgram in public schools during the 2008-2009 school year (Reshaping Texas, 2014). The data used by Children's Optimal Health (COH) to create a city-wide childhood obesity incidence map were derived in part from aggregate Fitnessgram data. These data are categorized as sensitive and not available to the general public. This map shows the proportion of overweight public elementary school students residing in zip code 78745, ranging from residential areas with less than 20% overweight children to more than 70% overweight. The two white areas on the western portion of the map reflect places that were covered by a legend in the original COH map. These areas primarily include Sunset Valley, a legal entity which is separate from the City of Austin, and parklands.

# Childhood Obesity Hotspots in 78745



Rachel Nolley, October 19, 2014. Data from the City of Austin 2010 & Children's Optimal Health. Projection: NAD1983 State Plane Texas Central FIPS4203 (ft)

Parks and Recreation in 78745

Following is a list of parks and recreation areas in 78745. This table was created with data from the 2011-2016 Long Range Plan for Land, Facilities, and Programs developed by the Parks and Recreation Department of the City of Austin. As is evident from the table, 78745 contains over a dozen green spaces. They range in size from 0.6 acres to 147 acres and include neighborhood parks, district parks, a nature preserve, greenbelts, and school grounds. They contain a variety of facilities and amenities, such as playgrounds, ball courts and fields, trails, swimming pools, restrooms, picnic tables, and barbeque pits.

Figure 4: Parks and Recreation in 78745

Park Name	Park Type	Acres	Facilities
Armadillo	Neighborhood	2.46	This park is a wooded area with a few trails.
Battle Bend	Neighborhood	4.90	2 basketball courts, playground, 3 picnic tables, 2 barbeque pits,
Cunningham	School	3.55	4 basketball courts, 2 multipurpose fields, playground, 2 picnic tables , 0.19 trail miles, parking area
Dittmar	District	33.20	6 basketball courts, 1 volleyball court, 1 swimming pool, playground, 2 multipurpose fields, 7 barbeque pits, 12 picnic tables, 0.47 trail miles, restroom, recreation/senior/cultural center, 1 reservable facility, parking
Ellen Higgins	Neighborhood	0.60	1 volleyball court, playground, 1 picnic table

Figure 4 (continued)

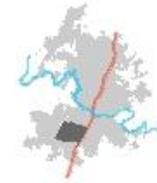
Garrison	District	40.00	3 baseball fields, 1 softball field, 2 basketball courts, playground, 1 picnic shelter, 40 picnic tables, parking, 28 barbeque units, indoor restroom, parking area, municipal swimming pool, wading pool,
Joslin	Neighborhood	5.58	2 multipurpose fields, 2 tennis courts, 4 basketball courts, 1 volleyball court, playground, 2 picnic tables, 0.23 trail
Longview	Neighborhood	20.06	2 basketball courts, multipurpose field, playground, 3 picnic tables, picnic shelter, 1 barbeque pit, restroom, parking area, 0.44 trail miles
Odom	School	4.30	Playground, 2 basketball courts, 2 multipurpose fields, 1 picnic shelter, 6 picnic tables , 0.14 miles of trail, parking area, wading pool
South Boggy Creek	Greenbelt	4.07	
St. Elmo	School	6.20	1 baseball field, 2 basketball courts, multipurpose field, playground, 0.17 trail miles, indoor restroom,
Stephenson Nature Preserve & Outdoor Education Center	Nature Preserve	147.23	4.23 miles of trail

Figure 4 (continued)

Williamson Creek Central Greenbelt	Greenbelt	81.21 acres	
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There are many locations for free recreational opportunities in the 78745 zip code. However, the heaviest concentration is to the west with relatively few opportunities to the east. Schools represent a significant portion of the available recreational space. A few of the parks are relatively small and could easily be overlooked by neighborhood residents. The green space along the creek contains trails, but does not appear to have any facilities. These trails are relatively short and disconnected from one another. Street connectivity is not continuous within the zip code. The Dittmar Recreation Center is relatively disconnected from the rest of the zip code. The same is true of the parks in the Sunset Valley area. City of Austin land use maps omit a significant amount of available green space because the Sunset Valley area, which is a separate legal entity, is not included in the City of Austin data files.

# Free Recreational Opportunities for Children and Families in 78745



1. Joslin Park & Middle School
2. St. Elmo Elementary School
3. Sunset Valley Elementary School
4. Crockett High School
5. Cunningham Elementary School
6. Odom Elementary School
7. Pleasant Hill Elementary School
8. Bedichek Middle School
9. Sunset Valley Nature Area
10. Valley Creek Park
11. Battle Bend Park
12. Garrison Recreation Center
13. Stephenson Nature Preserve
14. Longview Park
15. Armadillo Park
16. Piney Bend Neighborhood Park
17. Ellen Higgins Pocket Park
18. Dittmar Recreation Center
19. South Boggy Creek Greenbelt
20. El Buen Samaritano Green Space\*

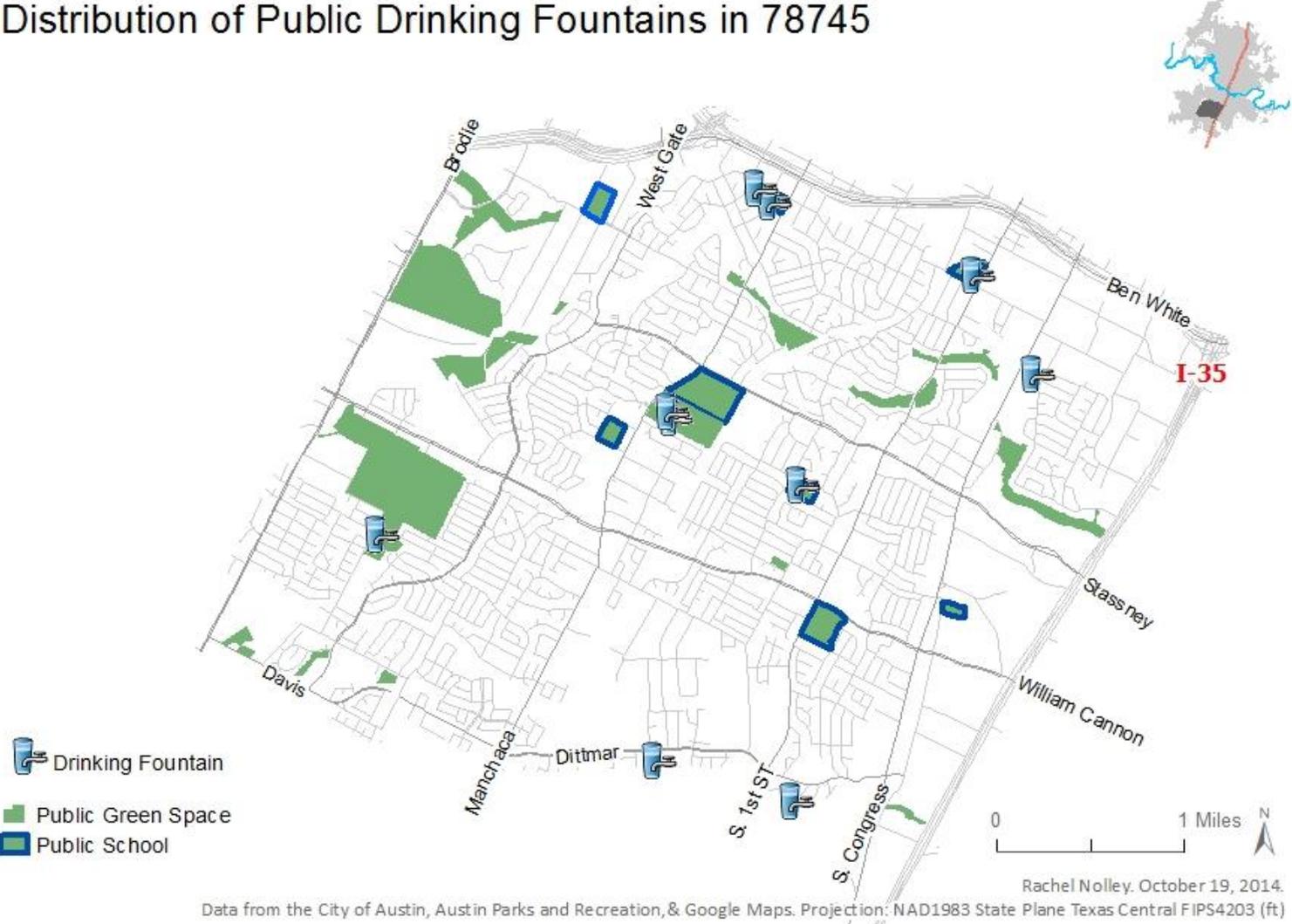
\* Privately owned with green space available to the public



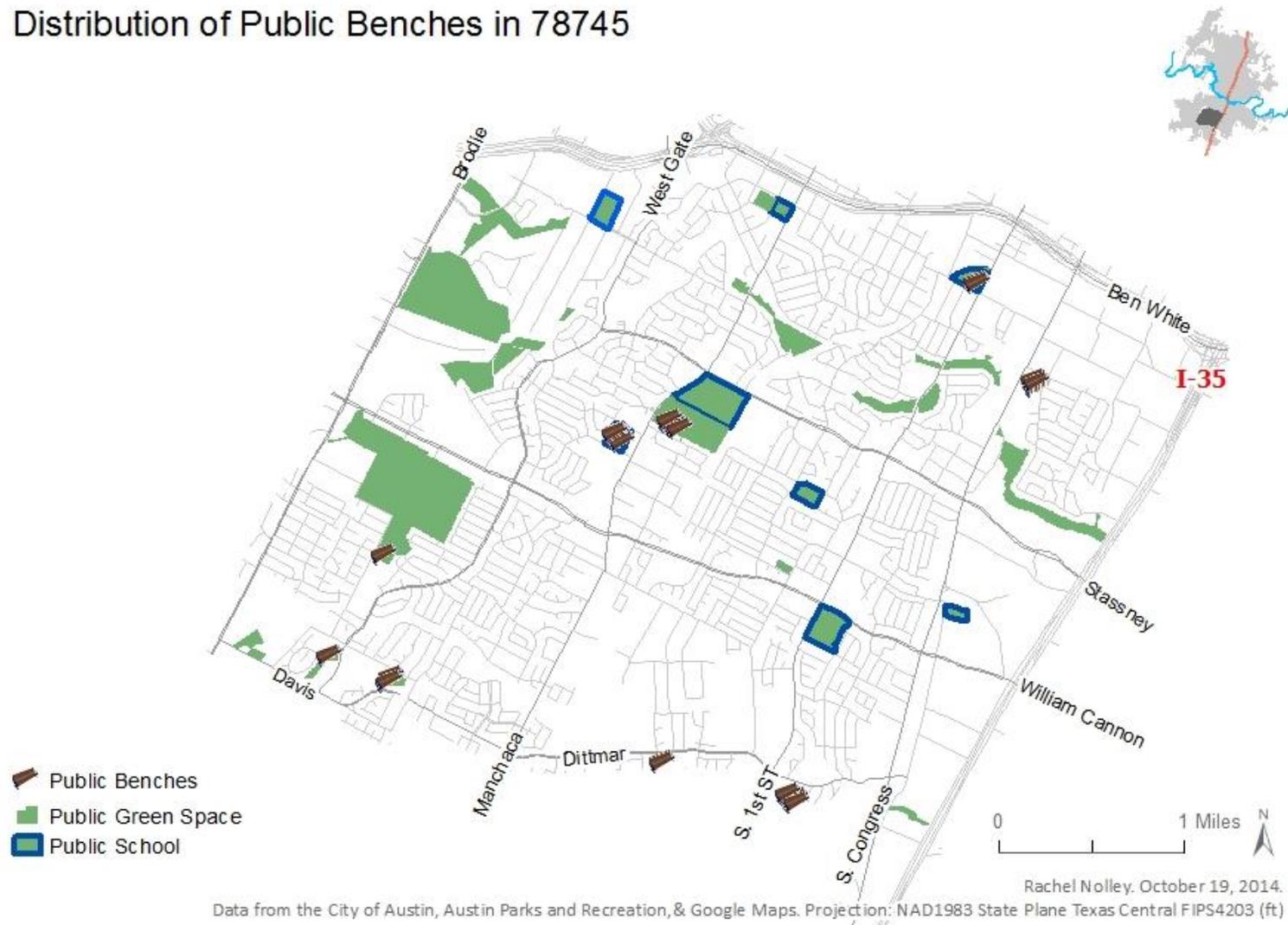
Rachel Nolley. October 19, 2014. Data from the City of Austin 2010, Projection: NAD1983 State Plane Texas Central FIPS4203 (ft)

The following three maps show the distribution of drinking fountains, benches, and picnic tables in 78745. These amenities enhance the public's ability to use and enjoy the recreational areas. Drinking fountains enable people to quench their thirst, which is particularly important for health and safety after physical exertion and during hot weather. Public benches located in green spaces attract visitors of all ages, encouraging people to relax, linger, and socialize. They provide a comfortable place for parents to sit while supervising their children and facilitate socializing among adults, thus helping to build a sense of community. They also provide a place for children to rest and eat between activities. Picnic tables, which are usually accompanied by barbeque pits in 78745, invite families to spend leisurely hours together out-of-doors. They can eat snacks and meals, play table games, and supervise children, whether the children are playing, drawing, reading, or doing homework. Garrison Park, with its 40 picnic tables, extensive acreage, and wide variety of facilities and amenities, is the optimal location for large outdoor gatherings in 78745. On the other hand, many of the other green spaces in the zip code do not contain either drinking fountains or picnic tables.

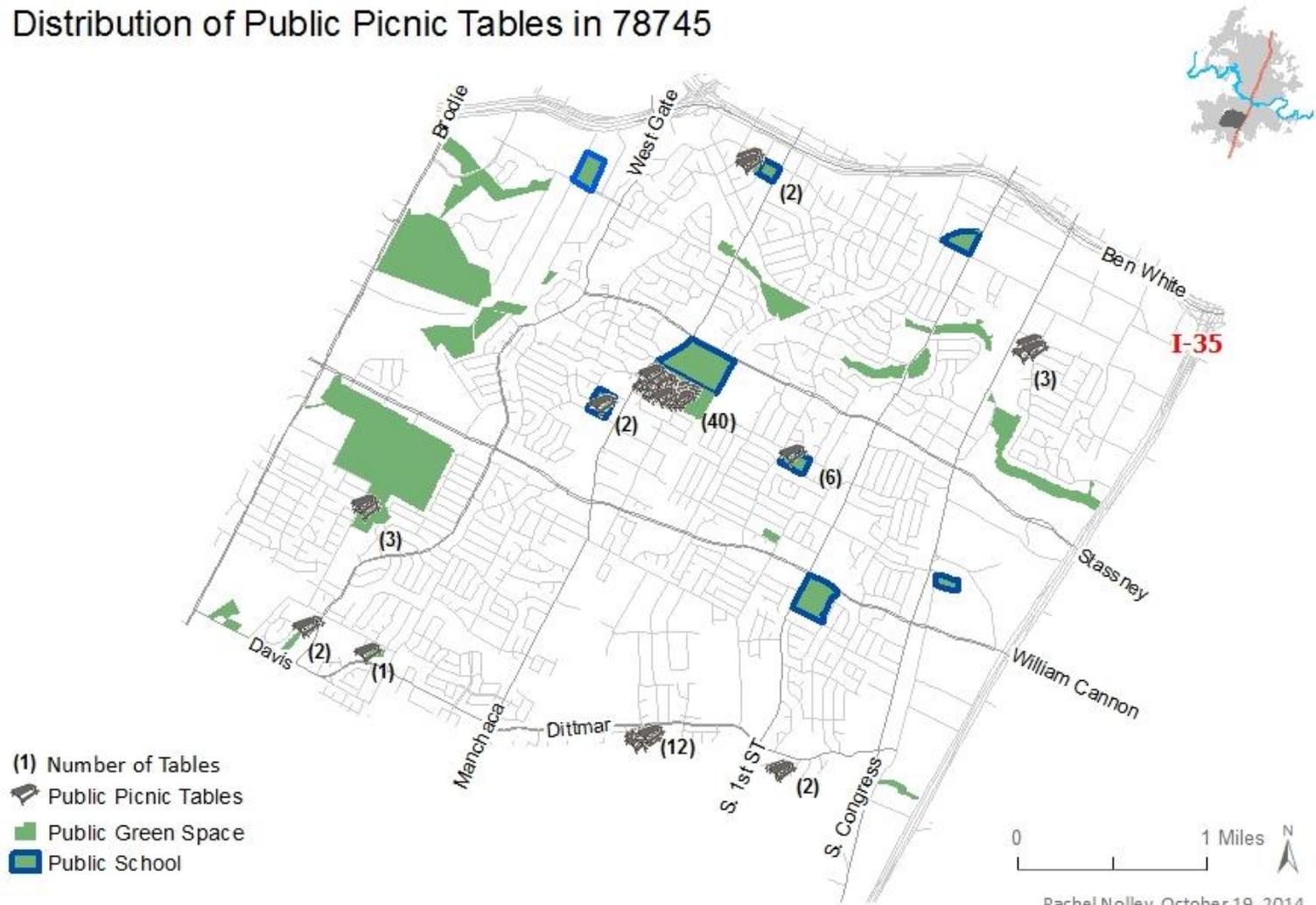
# Distribution of Public Drinking Fountains in 78745



# Distribution of Public Benches in 78745



# Distribution of Public Picnic Tables in 78745

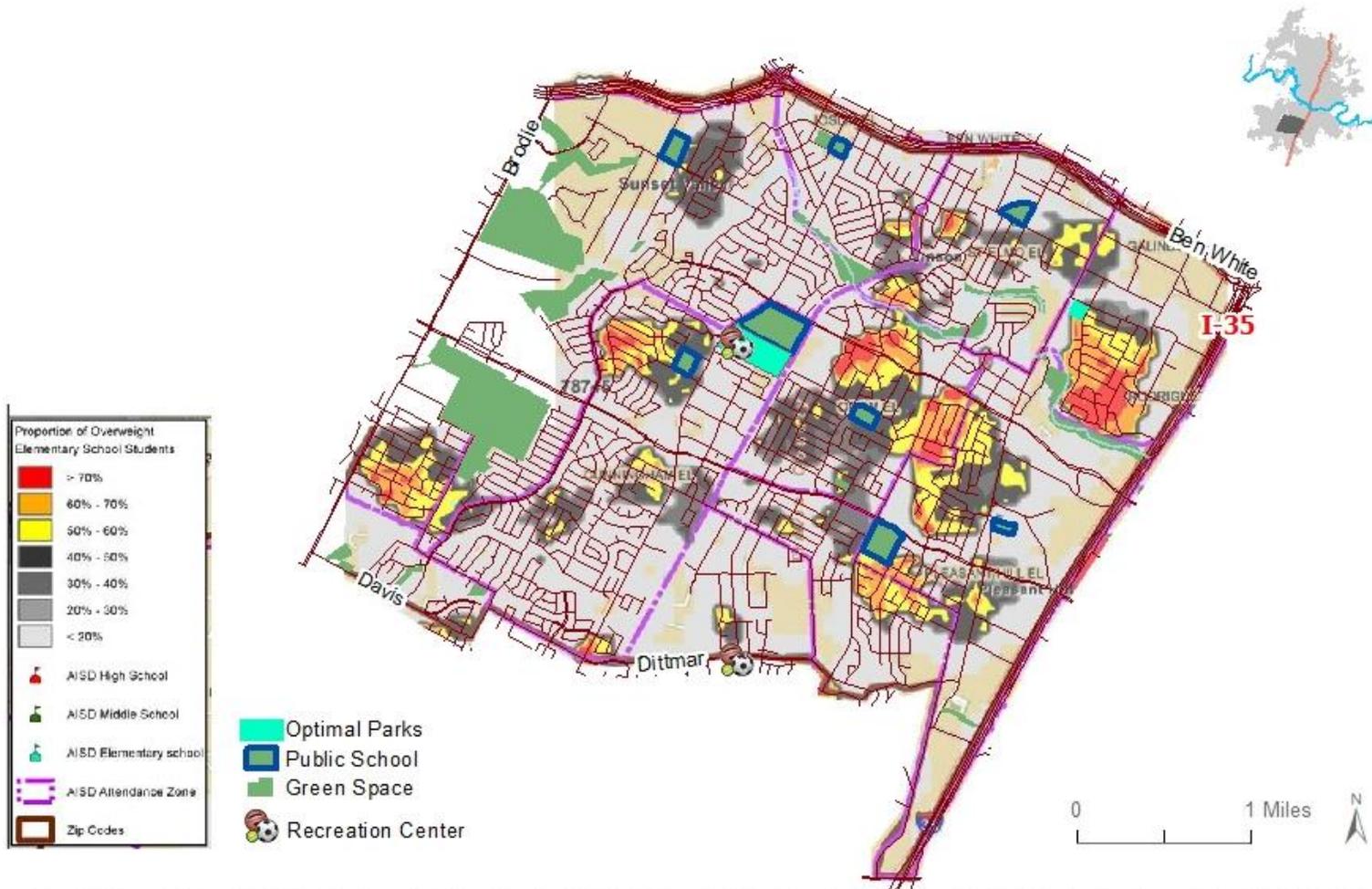


Rachel Nolley, October 19, 2014.

Data from the City of Austin, Austin Parks and Recreation & Google Maps. Projection: NAD1983 State Plane Texas Central FIPS4203 (ft)

The Children's Optimal Health map represents "566 overweight, obese, and severely obese AISD elementary school students within zip code 78745. A total of 1,278 elementary students who reside within 78745 were measured." (Children's Optimal Health, 2010) This hotspot analysis identifies percentages of elementary school age children who are overweight. The data are derived from the AISD 2009-10 Fitnessgram. There is a higher density of childhood obesity on the east side of the zip code. The densest childhood obesity hotspot is located adjacent to the green space along the creek, but the only park that is next to/within this hotspot is Battle Bend Park. Of the two district parks in the 78745 area, Garrison Recreation Center is close to childhood obesity hotspots, but Dittmar Recreation Center is not. Most of the free recreational opportunities in 78745 are not located within childhood obesity hotspots.

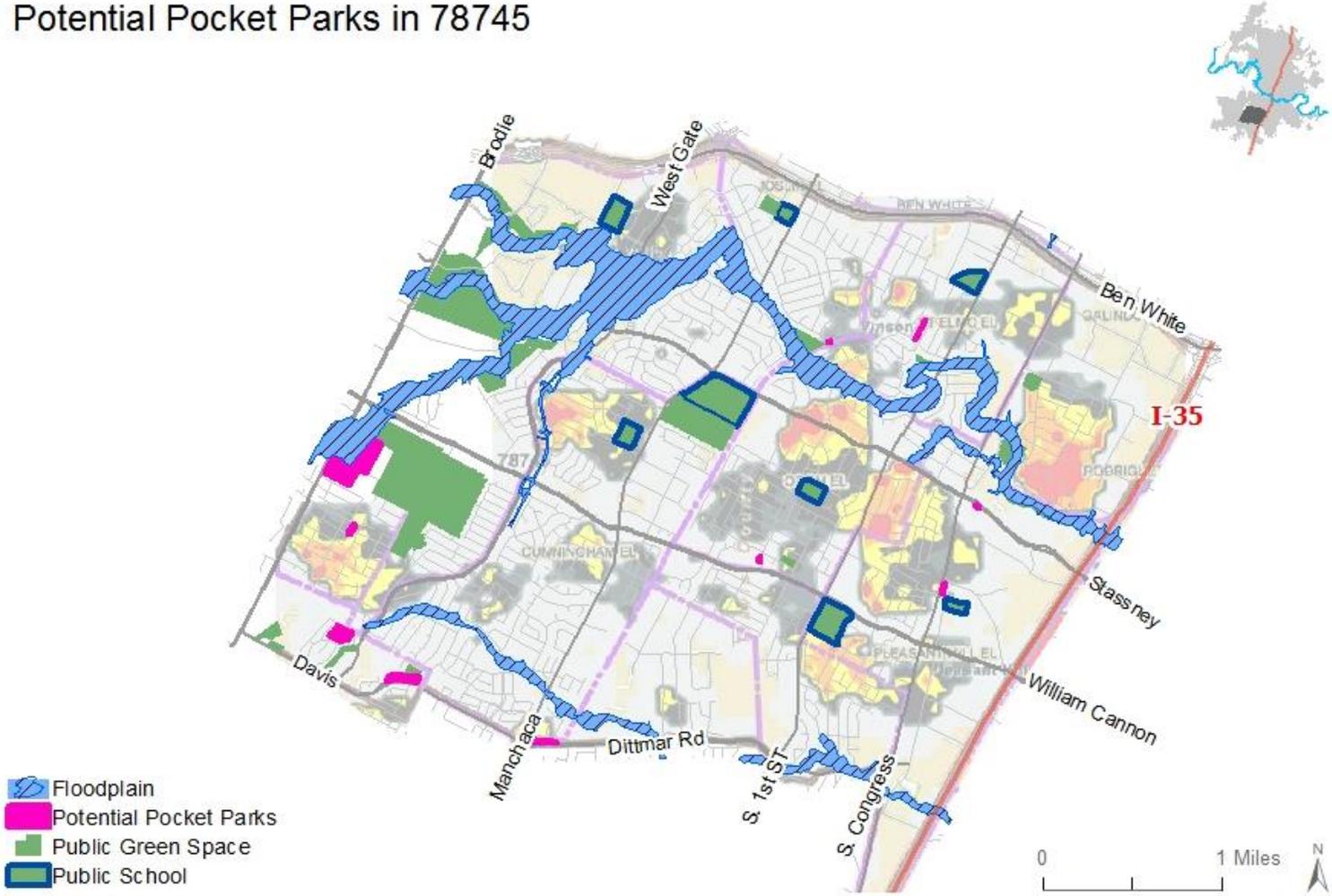
# Green Space in Relation to Childhood Obesity Hotspots in 78745



Rachel Nolley, October 19, 2014. Data from the City of Austin 2010 & Children's Optimal Health. Projection: NAD1983 State Plane Texas Central FIPS4203 (ft)

The two most logical ways to increase the amount of park space in the zip code, particularly in areas closest to childhood obesity hotspots, are to create a new pocket park and to connect the currently disconnected portions of the Williamson Creek trail. The following map shows parcels identified as City of Austin owned open space not currently classified as green space and located outside of a floodplain. These are the most logical places to locate a new pocket park. However, these parcels tend to be located near other green space areas and do not meet GAVA's primary goal of creating a pocket park in an underserved area of the zip code. The floodplains traverse the zip code from east to west. They pass near and through several childhood obesity hotspots. The current trail segments that run through the Williamson Creek greenbelt could be extended and connected if the City of Austin designates additional city land as park land and if other lands are acquired from private owners. Because this is a floodplain, no permanent amenities can be constructed. However, this land is well suited for hiking and biking trails, a high community priority even if these trails are more likely to be used by teens and adults than by elementary age children.

# Potential Pocket Parks in 78745



Rachel Nolley. October 19, 2014. Data from the City of Austin 2010 & Children's Optimal Health. Projection: NAD1983 State Plane Texas Central FIPS4203 (ft)

Parks and Recreation Department 2011-16 Long Range Plan for Land, Facilities and Programs

The City of Austin Parks and Recreation Department (PAR) 2011-2016 Long Range Plan for Land, Facilities, and Programs was adopted after extensive research and public input. PAR standards define neighborhood and school parks as ranging in size from two to 30 acres, with a service area of one mile radius, providing basic recreational opportunities close to home. District parks range from 31 to 200 acres with a two mile radius service area, providing basic recreational opportunities found in neighborhood parks as well as major indoor and outdoor facilities. Neighborhood and urban pocket parks are up to 1.99 acres in size with a one quarter mile radius service area, providing recreational opportunities in areas where public green/open space is limited or in areas not served by other parks. The department has seven major goals, two of which directly relate to the substance of this report. One is to provide safe and accessible parks and facilities to all citizens, and the other is to foster collaboration, coordination, and partnerships throughout the community. The number one recreational activity identified in both a PAR telephone survey and a PAR online survey was walking/biking trails. This mirrors the findings of Kaczynski et. al, 2008. Another top five priority directly relevant to this report is swimming and general fitness. The common themes expressed in public input meetings included developing parks that are undeveloped or underdeveloped, continuing trail development, skate parks, and pools.

A gap analysis was performed as part of the long range plan using GIS to determine which areas of the city are under-served by park facilities. The gap analysis has several components. The first is neighborhood park service level. To function at the minimal level, a park must have three or more different types of recreational facilities that are commonly found in a neighborhood park. Larger parks can also function as neighborhood parks. The standard service area for a neighborhood park in Austin is one mile. However, the half mile service area is considered more desirable. The population segments with the highest priority needs are low-income, youth, and elderly. In areas where gaps appear (areas that do not have recreational service and have strong demographic need indicators) the goal is to develop existing undeveloped parkland and to acquire land if none is currently available.

Adopted Neighborhood Plans contain recommendations related to PARD. Out of the seven recommendations identified in the plan, four directly relate to the needs of zip code 78745. They are: increase connectivity from neighborhoods to parks, greenways and trails; increase recreational activities and programs for youth and seniors; develop neighborhood pocket parks and greenways; and install more park benches, picnic tables, checkerboard tables, and pet waste stations/trash receptacles. The Neighborhood Planning and Zoning planning process for each neighborhood provided opportunities for residents to offer their input to be used as a guide for existing and future development in their neighborhoods. Out of nine recommendations,

four are directly relevant to this report. They are: increase connectivity from neighborhoods to parks, greenways and trails; develop neighborhood pocket parks and greenways; install more park benches, picnic tables, and checkerboard tables; and promote existing while providing more recreational activities and programs for youth and seniors. The development of this plan took into consideration the facilities and plans of many other public and private entities that provide substantial recreational opportunities within Austin. These include the Texas Parks and Wildlife Department (TPWD), YMCA, Public School District Partnerships, and public/private parks. Greenways and park trails are an integral part of the comprehensive plan. During the public input process, many citizens asked for better connectivity to parks and neighborhoods. The plan includes a detailed list of newly funded trails, near term trail development that does not require additional land acquisition, and long term trail development that does require land acquisition. Master plans have been developed both for Austin trails and for regional park trails. The only greenway in zip code 78745 that is mentioned in the plan is Williamson Creek greenway. Williamson Creek is part of a larger system that includes Onion Creek to the east of IH-35 (outside the boundaries of zip code 78745). The section of the creek west of IH-35 includes several segments of city parkland which are separated by privately owned parcels that prevent a continuous greenway from connecting to the longest stretch of public land along the creek to the east of IH-35 joining Onion Creek and McKinney Falls State Park. The Williamson Creek greenway is

included in the South Congress Neighborhood Plan (2005). The acquisition of additional parkland to fill in the gaps for the greenway accounts for two of the four priority areas addressed by the plan. The most detailed request in the South Congress Neighborhood Plan relates to the Battle Bend Neighborhood Park. It calls for installation of restroom facilities, increased frequency of police patrols, more picnic tables and barbeque pits, and more shade trees. The final item in the neighborhood plan is the acquisition of additional parkland to serve the South Congress Combined NPA.

PARD has shifted the focus of its parkland acquisition program to address growing inner city needs. Pocket parks, also known as “infill” parks, are a priority for parkland acquisition. Citywide recommendations apply to the entire park system and serve as a synopsis of pressing needs for planning, land, facilities, and programs. Eight of the seventeen items are directly relevant to the subject of this report. They are: increasing park trail and greenway connectivity; increasing aquatics opportunities by improving existing facilities and providing new types of facilities; increasing athletics opportunities by renovating existing fields and providing more multi-purpose fields; using playgrounds to increase diversified play opportunities for toddlers, teens, and special needs children; developing new skate parks; ensuring that all existing and new facilities are safe, secure, barrier free, and comfortable for all users; strengthening partnerships with school districts, other city departments, and advocacy groups; and expanding and promoting outdoor and indoor recreational, cultural, and nature

programs.

## Findings

Examination of existing data and maps, combined with creation of new maps, made it clear that there is a wide variety of green spaces in zip code 78745. These spaces range from very small parcels devoid of facilities and amenities to two large district parks with multiple facilities and amenities. Garrison Park clearly provides the largest variety of and space for free recreation in the 78745 zip code. Its facilities cover close to 40 acres. It has one of only seven municipal swimming pools in the entire City of Austin, a wading pool, 28 barbeque pits, 40 picnic tables, three baseball fields, a softball field, two basketball courts, a picnic shelter, a playground, 0.71 miles of trails, a reservable facility, drinking fountains, and indoor restrooms (PARC, 2010). With all of these resources, it should be a clear target for encouraging more public use. It is a great asset to the community that could help create a new culture of recreation providing opportunities for entire families. The barbeque pits and picnic tables, in particular, make this an ideal place for families to gather in the evenings and weekends. With their parents supervising nearby, children can run around and play freely and safely.

Theoretically, Dittmar Recreation Center should provide a wealth of recreational opportunities for the residents of 78745. However, because it is relatively isolated from the major residential neighborhoods, including the main obesity hotspots in the northeastern quadrant of the zip code, it is not targeted for special attention or upgrades in this report.

Parks and green spaces that are most amenable to increased use by neighborhood families and children are typically those connected to public schools. Since Battle Bend Neighborhood Park is close to a public school as well as the densest childhood obesity hotspot in the zip code, it is the second park identified for special attention in this report. This aligns with the community priorities expressed in the South Congress Neighborhood Plan. It is also located on the east side of the zip code where recreational opportunities are more sparse. Battle Bend is listed as a neighborhood park. It encompasses 4.90 acres. It contains one multi-purpose field, two basketball courts, a playground, two barbeque pits, three picnic tables, and a gazebo. (PARD, 2010) It is relatively close to St. Elmo Elementary School, a participant in the GAVA initiative to combat childhood obesity. Battle Bend is listed in the Community Inventory Parks and Recreation report from 2010 as having an unlit basketball court. Community efforts to install park lighting on the basketball court could increase evening use of the park.

According to the PARD plan, a pocket park can be designed for intense use or for aesthetic enjoyment, but the key is that low maintenance is essential. (Austin PARD, 2011, p.22) In conversations between members of the PARD staff and members of the GAVA alliance, it was mentioned that, with enough community support, the city would seriously consider establishing a new pocket park in the area. Pursuant to these conversations, this report has sought to identify suitable locations for a new pocket park

in 78745. To increase the likelihood of success in obtaining a new pocket park, this report focused on several key criteria. Land that is already owned by the city can be developed more quickly and economically than land that needs to be acquired. Zoning limitations on land located in a floodplain include a prohibition on building permanent facilities, including drinking fountains or restrooms. Since that would greatly limit the usefulness to families with children, parcels partially or completely in a floodplain were excluded from consideration. The result was that only two suitable parcels were identified, neither of which was near a childhood obesity hotspot. Furthermore, neither of them is in an area that would meet the PARD definition of “underserved”. Therefore, this report does not recommend pursuing the development of a new pocket park in zip code 78745.

Another key priority identified by PARD is expanding Austin’s network of trails. A map contained in this report shows that linking up the existing trails in Williamson Creek and Onion Creek with City of Austin owned open space parcels that are yet to be classified as trails makes sense as a long term goal. Since a significant portion of this potential trail is not yet owned by the City of Austin, targeting this land for acquisition and development should be treated as a high priority. The creation of a continuous trail following the floodplain has been vocally supported by many community members looking to get more active or to diversify their activities and enjoy the neighborhood. This aligns with PARD findings that trail related activities continue to be the most

popular recreational activities in Austin. (Austin PARD, 2010, p. 10-7)

## **Recommendations and Policy Implications**

The recommendations in this report are summarized under the following categories: physical activity policies for children, facility and amenity improvements, recreation facility management, children's involvement in planning/design of recreation facilities, community partnerships, education about existing opportunities, and planning policies for future development.

### Physical Activity Policies for Children

Current national physical activity guidelines for children recommend 60 minutes a day of moderate to vigorous physical activity. Since 2007, Texas public schools have been required to provide all children in kindergarten through fifth grade with at least 30 minutes daily of moderate to vigorous physical activity during the school day. Since 2008, Texas schools have been using the Fitnessgram to assess physical fitness. Unless the school system changes its requirements, the only way to help children achieve the 60 minute goal is through extra-curricular activities. Schools should offer both individual and team sports on school days. Sports that do not require significant individual outlays for equipment should be encouraged. Activities should also be culturally diverse. The offerings need to appeal to a variety of students and be open to all interested students. Sports activities need to be provided regardless of ability to pay. Sliding fee scales are a good approach, but they will necessitate increased outside funding. Paperwork should

be kept to a minimum so it does not create a barrier, especially for families with limited education or English language skills. Issues of transportation also need to be addressed. One valuable strategy that may not require any additional funding is teaching children during the school day how to use and enjoy all of the playground equipment. This will enable them to get maximum benefit from the equipment in school yards and public parks outside of school hours. The afterschool activities organized by Foundation Communities can serve as a model to others in the zip code.

#### Facility and Amenity Improvements

Perhaps the most important improvements that are likely to increase utilization of existing park facilities and amenities involve the addition of more drinking fountains, benches, picnic tables, and restrooms to more parks. More and better lighting in some parks will extend the hours of use, both because of the perceived sense of increased safety and because of expanded accessibility of courts and playing fields. In some locations, tree pruning will increase visibility, accessibility, and sense of safety. As expressed at GAVA meetings, lighting and pruning are particularly important in Garrison Park. GAVA has reported significant community interest in more trails, specifically in implementation of the recommendations of the PARC report on extending and completing the Williamson Creek trail.

## Recreation Facility Management

Making maximum use of existing facilities is much less expensive than developing new facilities. Sometimes, hours are cut at recreation centers due to budget constraints. Partnerships among agencies and organizations, including the private sector, can help supplement limited budgets. “Walking school buses” involve physical activity while minimizing transportation costs from schools to nearby recreation facilities. The city’s Safe Routes to School program is a great resource for promoting purposeful physical activity, including biking, jogging, walking, and rollerblading. Trained and accessible staff at schools, parks, and recreation centers can improve physical fitness by teaching new skills and organizing activities. Some inexpensive activities will also encourage children to be more active at home and on their streets/sidewalks. These include jumping rope, hula hooping, and frisbee. Since this equipment is relatively low-cost, it is ideally suited for sponsorship by local businesses. Children could even be encouraged to take the equipment home. Given that jump ropes exist in many cultures, and that songs and chants exist in many languages, jump rope activities could spread multi-cultural understanding and appreciation. Organizing leagues and competitions of rope jumping, hula hooping, and frisbee adds to the sense of excitement and can lead to increased participation.

### Children's Involvement in Planning/Design of Recreation Facilities and Programs

When children are involved in planning and designing programs and facilities, they have a greater sense of ownership. This increases participation while leading them to take better care of the facilities and equipment. Children from other cultures can contribute new ideas from their homelands. Having their artwork and hand-made signage posted throughout a building creates a welcoming atmosphere and sense of pride. When children have an opportunity to display their newfound skills to adults, it increases their sense of accomplishment while building community support. Examples can include performances at senior centers and neighborhood centers.

### Community Partnerships

In the fall of 2014, members of the GAVA Garrison Park team submitted an application to the Austin Park Foundation's Adopt-a-Park Program to improve Garrison Park. If approved, funding of this grant request is expected to increase usage of the park. GAVA has also been working with PARD management to address park safety issues and small park amenities. Schools and public parks can benefit from partnering with local organizations to provide structured classes that require limited equipment, cater to a variety of fitness levels, and can be offered at little to no cost. These activities could be subsidized by a variety of organizations and tailored towards children. For example, WeViva provides affordable and accessible fitness and nutrition programs to people in

low income communities in Austin. Their bilingual instructors lead classes in zumba, yoga, strength training, and nutrition. They are mobile, traveling around the city, and teach both indoors and outdoors. In addition, partnerships could be established with organizations like Camp Gladiator that provide outdoor bootcamps which can cater to a variety of ages, skill sets, and attention spans. To minimize costs, students from local schools could be trained and encouraged to lead such classes, thus gaining valuable experience. Workout programs need not be restricted to parks and playgrounds. Parking lots can be repurposed for an hour at a time to provide supervised physical activities. For example, programs like this have been organized in Orange County, California. Typically, young adults who work for the city drive a truck full of sports equipment, games and crafts to neighborhood parks, parking lots, and even cul-de-sacs. They organize games and art projects for the local children. (DePaul, 2013)

#### Education about Existing Opportunities

The map showing free recreational opportunities for children and families in 78745 is intended to be used as a handout for neighborhood residents. GAVA plans to translate the primary map into Spanish so it will be useful to a wider segment of the inhabitants of 78745. Other maps from this report may also be translated into Spanish in the future so they can be shared more widely with the community. Many people do not think of public schools as recreation locations available to the general public. The

goal of identifying them as green spaces with a blue outline referring to time restrictions for public use is to help residents perceive them as recreation locations as well. GAVA can promote utilization of recreation sites in the area through a continuing public education campaign.

### Planning Policies for Future Development

The planning policies and priorities identified in the PARD 2011-16 Long Range Plan for Land, Facilities and Programs that are described in detail earlier in this report clearly identify future developments that will be of the greatest benefit to the residents of 78745. In brief, some of the most important ones are: increase recreational activities and programs for youth; install more park benches, picnic tables, trash receptacles, drinking fountains, and restrooms; increase athletics opportunities by renovating existing fields and providing more multi-purpose fields; use playgrounds to increase diversified play opportunities for toddlers, teens, and special needs children; explore the feasibility of developing a skate park in the zip code; ensure that all existing and new facilities are safe, secure, barrier free, and comfortable for all users; strengthen partnerships with the school district, other city departments and advocacy groups; expand and promote outdoor and indoor recreational, cultural, and nature programs; fill in the gaps in the Williamson Creek greenway through the acquisition of additional parkland; and improve Battle Bend Neighborhood Park according to the South Congress

Neighborhood Plan request for restroom facilities, increased frequency of police patrols, more picnic tables and barbeque pits, and more shade trees.

## Conclusions

The United Nations World Health Organization is focusing increasing attention on the growing worldwide epidemic of obesity and overweight because of the strong connection to cardiovascular disease, Type 2 diabetes, and many types of cancer. The problem is particularly serious in developed countries such as the United States. More than 23 million U.S. children and teenagers are overweight or obese (NCCOR, 2009). This has both immediate and long term implications. Children who are obese at the age of six have a fifty percent likelihood of becoming obese adults. For adolescents, this probability jumps to 70-80%. The issue is especially daunting in Texas where two-thirds of residents are overweight or obese. Several approaches have been proven to contribute to maintaining a healthy weight. They include being physically active and eating a healthy diet. One factor that contributes to a physically active lifestyle is availability of green spaces and recreation facilities. Within the City of Austin, the second highest incidence of childhood obesity occurs in zip code 78745.

Within the City of Austin, the second highest incidence of childhood obesity occurs in zip code 78745. This report has identified the locations and amenities of parks and recreation facilities within 78745. This zip code contains over a dozen parks and green spaces ranging in size from a pocket park just over half an acre in size to a nature preserve of close to 150 acres. These recreational areas include spaces under the jurisdiction of the Austin Parks and Recreation Department, the Austin Independent

School District, Sunset Valley municipality, and a private nonprofit organization.

Recreational facilities in these green spaces include playgrounds, ball fields and courts, swimming pools, and trails. Amenities include restrooms, picnic pavilions and tables, benches, and drinking fountains. These recreational areas are not evenly distributed throughout the zip code, with the greater preponderance on the west side of the zip code. On the other hand, a map of the childhood obesity hotspots in the zip code makes it obvious that the greatest concentrations of childhood obesity occur in the east, and especially in the northeast. A coalition composed of representatives of the city, the school district, nonprofits, Austin Interfaith, local businesses, and residents has focused its attention on combatting childhood obesity in the zip code. The initiative has targeted three sectors: food and nutrition, schools, and physical activity. Regarding physical activity, the task force asked for information on the nature of green space available for free public use in the zip code. This report describes and analyzes the location, nature, and amenities of all of the free green spaces in 78745.

Given limited resources, the community wondered how to best target their efforts to increase physical activity among children and families. They wondered if creating a new pocket park might be a valuable approach. They also discussed the advantages of encouraging PARD to connect the disconnected portions of the Williamson Creek greenway. This report recommends against expending scarce financial and human resources to create a new pocket park since no suitable land is readily

available in close proximity to the high priority obesity hotspots. On the other hand, the report does recommend following through on efforts to create a continuous greenway running from east to west through the zip code.

This report has also recommended myriad steps that can be taken by government agencies, schools, and local organizations to promote physical activity among elementary school age children in 78745. These actions include prioritizing physical activity policies for children, improving park and recreation facilities and amenities, working with recreation facility management to maximize the use of existing facilities, involving children in planning and design of recreation facilities and programs, expanding existing and creating new community partnerships, educating residents about existing opportunities, and enhancing planning policies for future development. Given the severity of the childhood obesity epidemic, public and private organizations and citizens are encouraged to act quickly and cooperatively to implement these recommendations for the benefit of Austin's children.

## **Limitations**

The research in this report is limited in many ways. There are factors that affect the use of recreational facilities and green spaces that were not addressed directly in this report. They include access to green spaces through public and private transportation, street connectivity, and safety, both perceived and reported. Examples include data from the police department on crime rates as well as information on lighting of recreational facilities and surrounding areas, information on overgrown trees and shrubbery, and availability of safe walking routes and traffic signals at intersections. Another limitation is related to the differences in the specific age cohorts of children addressed in different research articles and data sources such as Fitnessgram and U.S. Census data. Fitnessgram information is listed as targeted toward third grade and above. When data is reported on elementary schools as a whole, it is not clear which ages are included. This report does not include any information on children who attend private schools or are home-schooled in zip code 78745. Behavior choices are influenced by many factors. This report does not address factors such as the availability of adults to accompany children to green spaces, the distances children are permitted to traverse alone at different ages to reach green spaces, and the language barriers that could interfere with family access to information about available recreational opportunities. Much of the data cited in this report was collected in the year 2010 or earlier. Current data might yield different results. Finally, this report did not investigate the nature of

the relationships between the schools and the city regarding extra-curricular activities and future plans for coordination and cooperation. Budget constraints could affect the amount of time allocated for children of different ages for physical education and free play during the school day. Budget constraints also influence the hours that recreational facilities are open and the amount and type of supervision available.

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