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ABSTRACT

DYNAMICS OF SCHOOL PLAYGROUND USE IN LOW-INCOME NEIGHBORHOODS: FOUR CASE STUDIES FROM NEWARK, NEW JERSEY

**by
Caryn Schneider Yaacov**

Physical activity during youth contributes to enhanced health and development, and time spent outdoors is a positive correlate of children's physical activity levels. Despite the importance currently attached to building healthy communities, children in the United States from economically disadvantaged urban neighborhoods often lack access to quality open space. In response to insufficient outdoor play options for children in Newark, New Jersey, several existing inner-city elementary school playgrounds have been rebuilt through public-private partnerships involving the municipal government, school district, and nonprofit agencies. This study explores the extent to which neighborhood children use these renovated playgrounds outside of school hours.

The investigation centers on four playgrounds, three of which were renovated between 1996 and 2003. The study employs an ecological framework to explore the effects of socioeconomic, environmental, and political dynamics on children's after-school playground use. Respondents included fifth-grade students (n=179), their caregivers (n=154), and select school personnel (n=25). Data collection was from surveys, interviews, and playground observations. The themes examined are neighborhood setting, neighborhood perceptions, playground features, school features, and individual user characteristics.

Data analysis revealed that across all four neighborhoods most children lived within walking distance of their school (>75%), were not allowed by their caregivers to be alone on school playgrounds (>55%), and did not use school playgrounds after-school hours (>68%), although the playgrounds were open to public use. Despite a complex interplay among perceived and actual features of school playgrounds and neighborhood settings, a consistent finding across respondent groups was the issue of child safety. The study demonstrates that children in Newark often have limited opportunities to use school playgrounds after-school hours due to potential personal risks arising from threatening conditions such as crime and gang activity in their immediate neighborhoods.

These findings suggest that Newark's current strategy of rebuilding school playgrounds in low-income, minority neighborhoods as a means to bolster children's physical activity levels, while possibly health promoting in many ways, may well be at odds with the everyday circumstances that residents encounter living in a high-risk city. Study results indicate that policy initiatives directed toward promoting leisure-time physical activity among youth need to consider strategic approaches that address individual-environment interactions and are more community specific.

**DYNAMICS OF SCHOOL PLAYGROUND USE
IN LOW-INCOME NEIGHBORHOODS:
FOUR CASE STUDIES FROM NEWARK, NEW JERSEY**

by
Caryn Schneider Yaacov

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Doctor of Philosophy in Urban Systems**

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APPROVAL PAGE

**DYNAMICS OF SCHOOL PLAYGROUND USE
IN LOW-INCOME NEIGHBORHOODS:
FOUR CASE STUDIES FROM NEWARK, NEW JERSEY**

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In Honor of My Beloved Brother

Sheldon Mark Schneider
(1954-1968)

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CHAPTER 1

INTRODUCTION

1.1 Objective

The strategy of rebuilding existing school playgrounds in cities as a response to the present crisis of physical inactivity among youth tends not to consider the effects of contextual forces on playground use. The current work seeks to remedy this deficiency. The objective is to draw attention to the need to consider the larger social and political landscape in which playground use takes place when formulating urban policy initiatives to encourage increased levels of physical activity among children.

This study explores the social, environmental, and political dynamics that affect the use of school playgrounds by children in four low-income neighborhoods in Newark, New Jersey. It investigates the hierarchy of nested relationships across institutional, neighborhood, and individual characteristics and examines how these factors influence children's use of school playground facilities.

1.2 School Playgrounds

In addition to the social and psychological significance of school playground use, a contemporary concern centers on children's physical activity and its contribution to the fostering of healthy lifestyles. In recent years, the role of the school as a health-promoting environment has received increasing recognition (USDHHS, 1996; CDC, 1997; Sallis & McKenzie, 1991; USDHHS, 2000a; Sallis et al., 2001). Numerous school-based intervention programs have been mounted aiming to promote a multidisciplinary and

integrated approach to encourage healthy lifestyles and to increase opportunities for children to be physically active (Parcel et al., 1988; Wechsler et al., 2000; Jones et al., 2003; Story et al., 2006).

This policy attention typically highlights the use of playgrounds, since physical activity tends to be more vigorous out-of-doors than indoors (Sallis & McKenzie, 1991; CDC, 1997; Wechsler et al., 2000). To influence the level and type of activity that occurs, playgrounds need careful planning to accommodate a variety of passive and active play spaces including basketball courts, climbing equipment, running tracks, quiet areas, and seating. Well-designed playgrounds and the provision of game equipment such as balls and jump ropes can provide opportunities for children to challenge themselves with more rigorous physical tasks and to develop important motor skills (Sutterby & Frost, 2002; Sutterby & Thornton, 2005; Verstraete et al., 2006). School playgrounds that are available to children when school is not in session can provide an additional venue for outdoor play.

Substantial evidence suggests that children in low-income, central-city neighborhoods are deprived of opportunities for outdoor play because of the deteriorating quality of the urban environment (Dreier, 2001; Estabrooks, 2003; Karsten, 2003; Wridt, 2004; Lumeng et al., 2006; Miles, 2008). Observers contend that efforts by municipal governments and school officials to provide playgrounds in low-income communities are not meeting the real play needs of the children (Iltus & Steinhagen, 2003; Giuliano, 2005; Schwartz, 2005). Even in situations where local public playgrounds are available, parental anxieties for children's safety in public spaces may discourage their use (Valentine & McKendrick, 1997; Veitch et al., 2006).

Given the often impoverished quality of the supporting public infrastructure in which inner-city schools are sited, the question exists as to whether local elementary school playgrounds can be effectively used to compensate for the general lack of children's outdoor play spaces.

1.3 Newark's Challenges

A once-thriving industrial center, Newark has struggled over the past several decades to address myriad social and financial problems prompted by, among other factors, the decline of its economic base and the departure of its middle-class residents to the outlying suburbs (Newman, 2004). In fact, Newark's pace of deterioration was so precipitous that incoming mayor Kenneth Gibson was prompted to remark in 1970 that "wherever urban America is going, Newark will get there first" (cited in Jackson, 2000:198). By the year 2000, the population in the city had declined from 442,337 in 1930 to 273,546 residents (Sidney, 2003). Newark displays the classic American urban pattern of demographic change, with population growth in the early part of the twentieth century followed by a decline during the latter decades (see, e.g., Teaford, 1986). Despite a half-century of population contraction, Newark is still the largest city in New Jersey.

The challenges faced by the Newark Public Schools shadow the faltering conditions of the city. The current situation has been many years in the making and has involved extensive political patronage and corruption, including the failure of the school system to address problems of poverty and cultural differences between the teaching staff and the schoolchildren (Anyon, 1997). In New Jersey, the breakdown of Newark's school system is of course not unique—other depressed urban centers forced to confront similar

circumstances also fail to provide children with access to a high-quality public education (Massey & Denton, 1993; Dreier et al., 2001; Walker & Gutmore, 2001).

New Jersey has been at the forefront of efforts in the United States to redress inequalities and to increase the parity between urban and suburban education, through various state funding and educational reforms. Foremost in this regard have been a series of state Supreme Court decisions dating from 1985 to 1998, that are collectively known as *Abbott v. Burke* (Sidney, 2003; ELC, 2005). This litigation concerned the measures that the State must take and the resources it must allocate in order to ensure that public school children from the poorest urban communities receive the educational entitlements the Constitution guarantees them (Iltus & Steinhagen, 2003). Despite the notoriety of the Abbott rulings, Walker and Gutmore (2001) argue that they are unlikely to produce the intended outcomes envisioned by the court because they focus primarily on individual school-level changes and ignore the wider structural environment in which the schools exist.

As a so-called Abbott district, Newark Public Schools have benefited from reform measures, although learning outcomes have consistently failed to meet state monitoring standards (Walker & Gutmore, 2001). A state takeover of the Newark school system began in July 1995 under charges of political nepotism, incompetent management, and corruption (Hall, 1998; Silin & Lippman, 2003). Considered a chronically failing school system by the New Jersey Department of Education, the state used its authority to loosen Newark's control over education through reforms that included reorganization, greater accountability, and changes to the management structure of city schools (Walker &

Gutmore, 2001; Burns, 2003). Newark is not alone—other Abbott districts across the state like Paterson, Jersey City, and Camden—are also under state control.

By many accounts, a long-awaited process of urban revitalization began in Newark in 1997 with the opening of the New Jersey Performing Arts Center (Strom, 1999; Kinnell et al., 2006). This nascent resurgence, after more than fifty years of neglect and disinvestment, has led to fierce competition over available land. The prevailing situation—especially pronounced in neighborhoods targeted for renewal projects—is the result of a relatively small municipal area, a political agenda that prioritizes economic redevelopment, and a chronic shortage of housing for low-income residents (Sidney, 2003). For instance, in the West Side Park neighborhood, a popular target for new investments, residents have voiced concern over the seemingly haphazard redevelopment process that is consuming vacant land and leaving little property for public uses such as schools, open space for playgrounds and pocket parks, and recreation facilities (Newman, 2004).

This incipient process of urban revitalization has compounded an obdurate problem in which the residents of Newark have suffered from a severe shortage of safe, public play environments (Iltus & Steinhagen, 2003). Based on recreational standards from the National Recreation and Parks Association (NRPA), Newark, with a population of approximately 275,000 residents, should have 1,700-2,700 acres of open space. However, the city supports only 795 acres of active parkland, indicating an open-space deficiency of 53 to 71 percent fewer acres than NRPA guidelines. Additionally, Newark's four largest recreational areas (Branch Brook Park, Weequahic Park, West Side Park, and Vailsburg Park), encompass approximately 96 percent of available parkland, and are

located near the city's perimeter (Kinnell et al., 2006). The current circumstances are particularly dire for the 34 percent of Newark's children under age fourteen who do not live within one-quarter mile of any type of recreational open space (Harnik, 2004).

1.4 Framework for the Study

A particularly attractive solution to the current dearth of outdoor play space in Newark's park-poor neighborhoods is the rebuilding of existing school playgrounds: the space is readily available, designated, and supervised (Harnik, 2004; Giuliano, 2005). Newark's public educational facilities are typically under the control of the school district and the state with the school principal serving as the on-site administrator responsible for the physical building and its surrounding grounds (Schneider, 2005). Regardless of the opportunities that school playgrounds might be able to provide in Newark's economically disadvantaged neighborhoods, public funding for such facilities has historically been quite limited. Even the recent Abbott litigation that mandates state funding to Newark's schools does not directly address the issue of outdoor play space (Johnson & Steinhagen, 2000).

In response to this situation, individual schools in the city have turned to private organizations—notably charitable, nonprofit groups—to finance playground redevelopment. These intermediary institutions function as change agents and bridge sociopolitical boundaries through the creation of programs involving school personnel, municipal officials, and members of the local community. The direct participation of schoolchildren in the actual design process of many playground renovation projects reflects their passion for outdoor play, enhances chances for the long-term success of new

recreational investments, and conveys a strong message of local ownership. Furthermore, the integration of the playground into both the school's curriculum and the community's recreational space infrastructure can create valuable opportunities for outdoor play activities.

Despite these well-meaning intentions, it is not evident that the mere existence of newly renovated school-managed playgrounds results in active recreation on the part of local children. In other words, the implicit and unproblematized strategy of "build it and they will come" does not consider the sociopolitical and institutional factors that influence playground use (see, e.g., Stokols et al., 2003). The particular qualities of neighborhood context, public school bureaucracy, municipal politics, and public-private interests can either bolster or undermine the efficacy of a school playground.

A comprehensive review of the extant literature on use of school playgrounds suggests that no previous study has addressed questions of power, authority, and control when investigating the usage patterns of these facilities. The intent of this research is to investigate several case studies from Newark and to explore the sociopolitical, institutional, and neighborhood dynamics that affect the use of school playgrounds by urban children and community residents.

Chapter Two traces the history of school playground evolution in the progression of American education and examines the contextual forces and educational philosophies that have influenced playground development in American schools. Next, Chapter Three reviews the relevant literature regarding physical activity behavior and discusses the importance of adopting an ecological perspective to address the broader context in which children's use of the playground occurs. Chapter Four provides an extensive explanation

of the research method including research design, description of case-study sites, participants, data sources, and data collection and analysis procedures.

Chapter Five discusses the association between features of the school playgrounds studied and children's use of the facilities during school and after-school hours and describes the various functions and uses of the playground in the school context. Chapter Six explores the various ways that characteristics of disadvantaged neighborhoods might influence school playground use beyond features of the playground itself. Finally, Chapter Seven highlights the findings gleaned from this study, outlines the strengths and limitations of the study, and discusses policy implications and recommendations for future research.

CHAPTER 2

HISTORY OF THE SCHOOL PLAYGROUND IN THE UNITED STATES

2.1 Introduction

The evolution of schoolhouse architecture in America provides insight into the pedagogical culture of particular historical periods and the contextual societal forces that influenced this process (Graves, 1993; Tanner & Lackney, 2006). The architectural response to changing educational and societal needs is reflected in the changing form of the schoolhouse building—the structure and façade of the edifice, the design and arrangement of interior spaces, and the shape and size of outdoor spaces (McClintock & McClintock, 1970; Cutler, 1989; Armitage, 2005). Although the principle “form ever follows function,” as suggested by American architect Louis Henri Sullivan (1856-1924) in 1896, is not universally true of all building types, it proves relevant for school architecture (Gulliford, 1996). When viewed over time, it becomes evident that a series of distinct stages depict the development of school architecture and that each of these phases connects in some way with different movements in education or significant events in history (Graves, 1993; Tanner & Lackney, 2006).

Convinced that children could not meet their moral obligations or cognitive potential outside the school premises, educators sought to legitimize schooling by tying the physical facility to educational theory and the curriculum, subsequently, making it a full partner in the learning process (Cutler, 1989; Bradley, 1997). The relationship that coevolved through time between school architecture and public education provides insight into the regard with which people held education. In essence, as a social

institution, the school structure is a creation of culture as well as a transmitter of culture, and the child, once within the walls of the building, is transformed into the schoolchild and the subject of this culture (Curti, 1959; Cutler, 1989; Benito, 2003). If schooling represents an attempt by society to induct youth into the group, then the school building itself—one of the most important variables in the educational process—provides “the most tangible link between the child and society” (Nash, 1963; Cutler, 1989:40).

The bulk of the existing literature on the history of the school, school design, and educational architecture pays only passing attention to playgrounds and other spaces outside the main school building (Armitage, 2005). If, as Cutler (1989) contends, the schoolhouse is synonymous with education and symbolic of our national ideals, then the omission of reference to the spaces outside the school building may reflect an educational philosophy that negates the children’s playground as a significant pedagogical factor. The basis for this apparent attitude may be partly rooted in America’s heritage of Puritanism and rugged pioneer history—one that downplayed recreation and perceived “play” as frivolous (Glassberg, 1980; Nash, 1963). In the United Kingdom, on the other hand, educators advocated having formal enclosed outside space for children to occupy when not in the classroom since the beginning of the nineteenth century, with changes in its use reflecting dominant ideologies of the time (Thomson, 2005).

A number of scholars have noted that an understanding of the value of children’s play, as well as an appreciation for its significance in the process of education and learning, is underdeveloped in American culture (Brett et al., 1993; Frost, 1997; Frost et al., 2001; Sutton-Smith, 1967; see also Grover, 1992). This attitude is reflected in many of the concerns raised today by educators and policymakers regarding the role of play in

child development and the need to formally incorporate outdoor recreation, physical education, and recess into the education curriculum (Pellegrini, 1991; Sallis & McKenzie, 1991; Scruggs et al., 2003; Shephard, 1997; Sindelar, 2002; Tyler, 2000). At best, these activities are viewed as a break from academic work and, at worse, as an unnecessary imposition that takes time away from academic pursuits.

Interestingly, many contemporary concerns regarding outdoor play and the role of the school playground have their origins in the historical past. Marie Ready (1930), an assistant specialist in recreational activities for the federal government's Office of Education, describes the movement for the abolition of recess that existed in the United States during 1883-1884—with various educational journals publishing articles both for and against recess. Ready, in her article, also notes that during this same year the annual report of the Commissioner of Education included an article containing the opinions of educators and physicians regarding the value of recess and spontaneous exercise.

As a result of this controversy, the fact was brought out that the school yard was the only place connected with the school which contributed to the health of the children, and that the out-of-door recess needed only supervision to make it a success...They [educators and physicians] recommended that small children should never be kept in school more than one hour without an intermission, and urged that all children should be provided with ample outdoor play during the school day (Ready, 1930:1).

The relationship between school architecture and education provides an instructive lesson in the evolution of a social institution. Review of the historical progression of schooling in America reveals that general acceptance of new paradigms and innovations in educational design usually occurs several years after their introduction, and not without some social and political resistance (Altenbaugh, 2003; Tanner & Lackney, 2006). Realistically some level of confrontation is inevitable since

most educational leaders advance their arguments for increased public support, for certain types of instruction, for particular studies in the curriculum, and for systems of administration, without clearly defining or understanding how their educational policies will affect other social institutions (Curti, 1959). Furthermore, by concentrating on the school and its setting, educational leaders endeavor to overlook the *in-situ*, contextual influences of the community in which the school is located, and the economic and cultural factors that affect student performance (Benito 2003).

This chapter examines several broad issues relating to the history of school construction and playground design, and considers the evolution of school playground development from two major perspectives—physical fitness and health, and childhood development. The physical fitness and health perspective traces its origins to the German gymnasium in the early decades of the 19th century, and the developmental perspective marks its beginnings in the play movement that evolved in America during the latter part of the same century.

The following sections present a succinct history of school playground evolution that follows two periods in the progression of American education: the early years of formalized education (1600-1880), and the equipping of school playgrounds with standardized devices (1900-present). A number of benchmark models of schoolhouse architecture are discussed, and through the use of primary source evidence, an earlier lifeworld is discerned involving students and teachers. This section also seeks to distinguish the contextual social forces and educational philosophy that has influenced the evolution of playgrounds in American schools.

2.2 Early Years of Formalized Education (1600-1880)

In colonial America, New England was the only area where schooling achieved some degree of consistency. The Puritan family was responsible for teaching literacy and for transmitting religious morals—with the educational experience beginning as soon as possible. However ideal this may seem from the perspective of today, the Puritan family did not always fulfill its educational obligations to the satisfaction of religious elders. Frustrated by the family's inability to properly catechize children, the church moved to usurp the family's religious and instructional role (Cremin, 1970). By the middle of the 1600s, schools and masters had accepted responsibility for catechizing, and so schooling assumed both the informal and formal aspects of education (Altenbaugh, 2003).

The first schools in the New England colonies were set up in either private homes or churches, and with increases in population came the establishment of subscription schools supported by parental contributions, tuition, land-rental fees, and taxes (Graves, 1993). In 1647, the government of Massachusetts Bay enacted the first colonial statute establishing a school system and requiring the construction of school buildings (Gulliford, 1996). Thus, it is the invention of schooling that ultimately causes children's educational developmental to be attributed to specific spaces and specific times (Benito, 2003).

2.2.1 The One-Room Schoolhouse

As the population continued to increase in the young nation, a need for mass education that was systemized, consistent, and publicly subsidized gradually evolved, and school design became an educational imperative (Cutler, 1989; Altenbaugh, 2003). The vernacular architecture of the one-room schoolhouse was an appropriate design response

to the trend for formal, institutionalized education, and quickly became prominent features of every settlement (Graves, 1993).

One-room schools often had very simple furnishings, poor ventilation, and relied on oil lamps for light and wood-burning stoves for heat (Tanner & Lackney, 2006). Most schools had no designated playgrounds or fences and during the break for lunch, children were typically allowed to wander as far as they wished as long as they could still hear the school bell (Gulliford, 1996). These box-like buildings were usually located on donated plots of land that were too barren to be used for any other purpose, and not infrequently, they were located at crossroads and exposed to the noise and dust from passing vehicles (Ayres, 1917a).¹

Our forefathers did not seem at all inclined to erect school buildings upon the parish green. The preferred usage was to put a rough one-room structure at the corner crossing where it would interfere least with the more important business of the community. The restricted area of the American playground is, perhaps, a direct inheritance not from the country church yard but from the narrow confines of the common country road (Ayres, 1917b:26).²

2.2.2 Outdoor Gymnasia and Schools: Early Formal Playgrounds

The general movement for educational reform by American scholars and pedagogues, which included efforts to advance and institutionalize physical education, was strongly

¹ In 1917, May Ayres published a series of articles entitled "A Century of Progress in Schoolhouse Construction" in *The American School Board Journal*. The following note in the June issue by the editor of the publication regarding Ayres' academic credentials is self-explanatory. "As a member of the Cleveland School Survey staff and as a graduate student in Teachers College, the author has had an unusual opportunity of consulting the most important collections of early school reports and records, and rare books and periodicals...The article will make clear many present-day precedents in schoolhouse design and the later sections will take up some of the newest developments in city school plants."

² The Ecclesiastical Theory of School Architecture contends that schoolhouses were originally built in churchyards or near them, sharing the lot given to the church. School buildings, consequently, evolved from churches, and inherited many of their architectural features.

influenced by European educational development of the late eighteenth and early nineteenth centuries (Hartwell, 1892; Betts, 1968). As American educators and physicians became increasingly cognizant of the dependence of mental health upon physical well-being—ascribing even the decline in the mortality rate, in part, to physical education—they urged efforts to imitate European educators in promoting vigorous exercise in schools as a priority in curriculum design (Betts, 1968; Albertson, 1979).

When considering the development of the history of physical education in schools, one needs to be aware of the distinction between physical education and athletics. Physical education was primarily thought of in terms of gymnastics and the teaching of health and personal hygiene, whereas athletics, or competitive team games, were believed to fulfill certain functions in the social training of the student, and were included in educational programs only in the latter part of the nineteenth century and early twentieth century (Spring, 1974). Perhaps one explanation for the disparity in acceptance of games and sports in educational programs was the apparent indifference of teachers to these so-called frivolous, non-productive diversions (Spring, 1974; Albertson, 1979; Green, 1986).

Gymnastic training received its first introduction into American schools in 1821 and 1825, when gymnastic equipment was added, respectively, to the Salem Latin School and the Round Hill School at Northampton, Massachusetts (Spring, 1974).³ These events are notable since they are the earliest available records of formal playgrounds—referred to as outdoor gymnasia—in the United States. Outdoor gymnasia were essentially sets of

³ The Latin School was instituted in Massachusetts in 1635. Pupils attending the English Grammar School could begin their studies at the Latin School at ten years of age, and continue for five years. They were taught the rudiments of the Latin and Greek languages, as well as mathematics, geography, history, and English composition, and upon completion, were qualified to attend college.

indoor-type gymnastic equipment adopted for outdoor use, and reserved primarily for older boys (Mero, 1908; Frost, 1989). The motives for the early outdoor gymnasia were linked to providing sedentary older boys in cities opportunities to exercise muscles in danger of atrophy and the fostering of physical development (Park, 1989).

Mero (1908) attributes the initial inspiration for the crude outdoor gymnasium started at the Latin School in 1821, without supervisor or instructor, to New England physical training sources. Frost (1989), in contrast, points out that at least two events suggest probable German influence for the playgrounds. These were the chronological proximity of the development of a German and American outdoor gymnasium and the use of German-type apparatus to form a second Massachusetts playground in 1825 at Round Hill School.⁴ Charles Beck, a former student of Friedrich Jahn in Germany, supervised this playground.⁵

Although an attempt was made early in the spring of 1825 to introduce gymnastics in the Monitorial School for Girls in Boston, no sources dispute the claim that Round Hill School "was the first in the new continent to connect gymnastics with a purely literary establishment" (Hartwell, 1892:26). Physical training was perceived as a

⁴ Under the influence of Jean-Jacques Rousseau (1712-1788), Johann Gutsmuth (1759-1839) introduced outdoor-play and exercise training in Schnepfenthal, Germany, during the first decade of the nineteenth century. In 1812, his ideas were adapted by the Jahn Gymnastic Association to form the first system of school play (Frost & Wortham, 1988).

⁵ Friedrich Ludwig Jahn (1778-1852) the literate son of a Protestant minister was the founder of the Turner movement in Germany. He believed in the importance of complete mental and physical fitness, which could be achieved if a person was educated in both book studies and in physical exercise (called "Turnen"). Two prominent students of Jahn who came to the United States in 1824, were Charles Beck (1798-1866) and Charles Follen (1796-1840). Beck was hired in 1825 to teach calisthenics at Round Hill, while Follen went on to establish the first college gymnasium in the United States at Harvard in 1826 (Green, 1986). Many Turners supported the revolutions of 1848 in Germany, and when these revolutions failed to bring about social change, they found political asylum in the United States and established the gymnastic association referred to as Turnerbund (Hartwell, 1892).

novelty in the education of American boys, and the 1826 circular for Round Hill School stressed the “necessity of uniting physical with moral education” (Park, 1989:138).

In 1825 and the following year or two, outdoor gymnasia were also established at Harvard, Yale, Amherst, Williams, Brown, and in the New York High School, but these attempts were sporadic and by 1830 the enthusiasm for physical education had died down (“A Brief History,” 1915). Consequently, the outdoor gymnasium succumbed to a lack of interest—in part because the fervor for German idealism had waned—and only a few were established over the next half-century (Green, 1986; Frost & Wortham, 1988). Beset by financial difficulties, Round Hill School closed its doors in 1834 (Park, 1989).

2.2.3 Common School Movement (1830-1880)

The inception of the common schools, beginning in Massachusetts in the 1830s, marked the culmination of the shift to formal, institutionalized education through schooling. The Common School Movement had three goals: first, to provide free elementary education for every child; second, to create a trained educational profession; and third, to establish some form of state control over local schools (Altenbaugh, 2003). The rhetoric underlying the Movement called for universal mass schooling to ensure literacy and opportunity as well as to create a stable society (Curti, 1959; Altenbaugh, 2003). The following quote by Barnard (1854:638), superintendent for common schools in the State of Connecticut, clarifies the concept of public schooling.

The public schools of New England are intended for all classes, as to occupation, education, or social position, and are subjected to the utmost publicity as to supervision of management and of observation, for the purposes of information, as to methods and results. They are public, because they are established, supported, and regulated by authority of law.

Common school reformers were convinced that a single system of schools would break down class barriers, and hasten the day of a classless society, while others have argued that the expansion of public schooling was a mechanism for the rescue and social control of the growing urban masses (Curti, 1959; Spring, 1974). Moreover, some reformers perceived schooling as an instrument for Americanization, although these sentiments did not pertain to the African-American, who faced racism in both the North and the South (Altenbaugh, 2003). The lack of central authority over local school districts proved a major obstacle to reform initiatives (Altenbaugh, 2003).

2.2.3.1 Campaign for Schoolhouse Improvement. A key year in American schoolhouse design was 1831, when the reformer William Alcott (1798-1859), an educator from Hartford and early advocate of physical education in schools, won a prize from the American Institute of Instruction for an essay on schoolhouse construction. Among his suggestions for school improvement were the allocation of space around the building for fresh air with fenced-in spacious playgrounds, and the allowance of time for both exercises and recess play (Green, 1986; Gulliford, 1996).

As efforts to establish common school education intensified during the 1830s, numerous educational journals—usually with short-lived publication histories—were started and these venues often included articles about “physical education” and “playgrounds” (Park, 1989). For example, an 1836 piece, published in the monthly paper *Common School Assistant* (1836-1840), discusses schoolhouse location and the role of the playground for student safety.

Attached to every school-house should be a play-ground for the scholars. This will keep them from the dangers of the highway and from the cultivated fields in the vicinity. This ground should be free from everything that might injure the scholars (“Location of School,” 1836:8).

For common school reformers, the physical shortcomings of schoolhouses were graphic symbols of a general disrespect for education (McClintock & McClintock, 1970). William Alcott (1837), in his article entitled "New England Schoolhouses," wrote about the horrific conditions of the school buildings and the lack of regard for their improvement. Alcott also remarks on the school's playground.

In the rear of the building is a play ground [*sic*] of considerable extent, and at the remotest corners two outhouses, independent of each other... This is a noble beginning. Further experience will probably lead to the enlargement of the play grounds (p. 245).

Horace Mann (1796-1859), "father of American public school education," is regarded as the quintessential common school reformer and the movement's most articulate statesman (Cutler, 1989). As secretary of the Massachusetts Board of Education (1837-1848), Mann fought for common school reforms that resulted in an increase in the money allotted to schools, higher teacher salaries, an extended school year, and the state's first normal school (1839).⁶

Convinced of a strong relationship between well-planned school buildings and civic virtue, Mann eloquently expressed reformers' sentiments regarding the importance of agreeable physical conditions in the schoolhouse (Mann, 1841:74).

The voice of Nature, therefore, forbids the infliction of annoyance, discomfort, pain, upon a child while engaged in study... This is the philosophy of children's hating study... The construction of schoolhouses involves, not the love of study and proficiency, only, but health and length of life.

Ayres (1917a:23) notes, "that the decade from 1838 to 1848 marks the growth of country-wide agitation on buildings, sanitation, and equipment." Detailed school surveys

⁶ Normal schools were teacher-training institutions that first began as private academies and seminaries at the beginning of the 19th century, and became state-subsidized with the inception of the common schools (Altenbaugh, 2003).

were undertaken to motivate reform, and muckraking became the order of the day. The annual report of Samuel Young, Superintendent of Common Schools of New York State, from January 13, 1844, indicates the scope of schoolhouse problems that faced practically all educational officials at the time.

The whole number of schoolhouses visited and inspected by the county superintendents during the year was 9,368; of which 8,800 were one room buildings. Suitable playgrounds were lacking in 7,300 cases...And it is in these miserable abodes of accumulated dirt and filth...with no facilities for necessary exercise or relaxation...that upwards of two thousand children scattered over various parts of the State are compelled to spend an average period of eight months during each year of their pupilage! (cited in Ayres, 1917a:23).

A particularly noteworthy text that contributed to the objectives of common school reformers for improved school buildings, especially those in New York and Massachusetts, was *The School and The Schoolmaster: A Manuel for the Use of Teachers, Employers, Inspectors &c., &c., of Common Schools*. This two-part book, written in 1843 by Alonzo Potter (1800-1865) and George B. Emerson (1797-1871), was considered a literary success that added to the cause of education ("The School," 1843). Emerson, the author of Part II, discusses the position, arrangement, and construction of the schoolhouse. By placing emphasis on the importance of allowing ample space around the school building for a playground, Emerson defines the function of the playground in relation to the school's landscape.

Where land is not excessively dear, not less than one fourth of an acre should be assigned for the school lot; so much being essential for the necessary play-grounds [*sic*]. If proper enclosed play-grounds are provided, the master may often be present at the sports, and thus become acquainted with the character of his pupils (Potter & Emerson, 1843:528).

Horace Mann (1843:70) also wrote about the importance of the yards or playgrounds in school construction.

Every schoolhouse lot should be large enough for the rational exercise which the children ought to have, and will take. It would be well to have it large enough to contain some ornamental and fruit trees, with flower borders; which we know children may be taught to cultivate and enjoy.

According to Ayres (1917a:25), Mann remarked that the newly erected Sheafs Street primary school erected on the slope of Copp's Hill in Boston, "might well be called the model schoolhouse of the state...A playground 16 by 53 feet lay between the building and the street. The grounds were divided by grass and flower beds, a large tree stood at each end, and a fountain in the middle." In another example from Massachusetts, Ayres (1917b) notes that the children attending East School in Salem (built circa 1847 and situated between Essex and Bath Streets) used the public common opposite the school as their playground.

2.2.3.2 Henry Bernard: Educational Planner. Henry Barnard (1811-1900), the prominent common school reformer from Connecticut, is credited with popularizing the idea of a "close connection" between education and the school building, and raising the standards of facilities serving the Common School movement (Cutler, 1989; Tanner & Lackney, 2006). Barnard's classic treatise, *School Architecture, Or Contributions to the Improvement of School-Houses in the United States*, published in 1848, presents school plans in the latest architectural styles, addressing exteriors, interiors, yards, mechanical equipment, and furniture.

Barnard's masterpiece grew by accretion beginning in 1838 with published essays citing the deplorable conditions of schoolhouses to become by 1848 a major manual on the art of building and equipping schools and the most thorough treatise on architectural functionalism in America (McClintock and McClintock, 1970). In essence, Barnard strived to establish "a sense of place" to the school building and grounds.

In form, *School Architecture* was a pattern book—not an unusual mode of organization for a building manual published in the 1840s (McClintock & McClintock, 1970). The purpose of pattern books was to distribute design ideas invented or compiled by the author. For those who chose to build such a “designed” school, the intention was to reform the places in which education took place or to adopt the style of the times, or both (Gulliford, 1996).

However, Barnard did more than edit a good pattern book, including in it some of his own designs. He proved to be the architect of a new and more useful educational structure that would help define the character of school architecture in the United States (Curti, 1959). As one of the first educational planners on record, Henry Barnard aspired to transform school building into school architecture by incorporating educational needs into building facilities (McClintock & McClintock, 1970; Spain, 1930).

In *Schoolhouse Architecture*, Barnard expounds on the importance of alternating hours of play with hours of study, and hours of confinement with hours of recreation, as well as the role of the playground in primary and grammar schools. Note Barnard’s reference to the school playground as the “uncovered school-room”—further supporting the belief that playgrounds were integral to the educational system.

In cities and populous districts, particular attention should be paid to the playground, as connected with the physical education of children. In the best conducted schools, the playground is now regarded as the *uncovered* school-room, where the real dispositions and habits of the pupils are more palpably developed, and can be more wisely trained, than under the restraint of an ordinary school-room. These grounds are provided with circular swings, and are large enough for various athletic games (McClintock & McClintock, 1970:81).

Barnard’s chapters on the “Yard and External Arrangements” and “Didactic Designs” are important because they provide a sense of the degree to which playgrounds

had evolved by the middle of the nineteenth century. According to Brett and colleagues (1993), what Barnard is essentially describing in his book are play yards, since the modern playground with its swings and slides, teeter-toters, and monkey bars was not created until the early decades of the twentieth century.

2.2.3.3 Physical Education. Early advocates of physical education in common schools stressed the need for a healthy vigorous body to give energy to the intellect (Albertson, 1979). Horace Mann in the first issue of *The Common School Journal* (1838-1852) warns of the danger of a sedentary lifestyle and the involvement of mind and body, as he expresses dismay in the deterioration of the health of the people.

According to Frost (1989:17), the principal motive for active outdoor play and exercise training was to offset the “grave dangers that threatened physical and mental health through this increasing tendency toward city life.” Among the various types of physical-exercise programs advocated and instituted in some of the schools throughout the early decades of the nineteenth century were German gymnastics, military exercise, calisthenics, and sports and games (Albertson, 1979). Organized exercises became a common part of the American common school system and urban adult life after 1850 (Green, 1986).

Despite obstacles, and even some religious objections, progress in physical culture continued in the following decades. In New York, for example, administrators of state schools recognized the need for muscular exercise, and teachers in almost every school district were said to have access to Andrew Combe’s (1797-1847) *Principles of Physiology Applied to Health and Education* (1834) (Betts, 1968). By 1860, over forty schools in the East had some form of physical education program (Albertson, 1979). In

the post-Civil War era, three events occurred that had a marked effect on the development of physical education in America: enthusiasm for military drill in the schools,⁷ state legislation for physical education,⁸ and the birth of the Progressive Education Movement (Lee, 1983). Barney (1973) points out that even though laws were officially adopted by the schools, they were not wholeheartedly pursued—often they were ignored—at best, they were only sometimes given attention. What is important, however, is that they were the prototypes of state legislation for physical education.

Ideas concerning the value of different exercise programs changed gradually between 1825 and 1880. The early decades of the nineteenth century represented a trial period of various types of exercise programs—usually of European origin—with each type of program appealing to specific groups of educators. As time progressed, schools began selecting elements from various types of exercise programs and adapting them according to the school's location, philosophy, and the teacher's abilities. The latter part of the century became a period of "Americanizing" physical education programs to the interests of each community and school principal. This Americanizing process often included adding some games and sports to the more formalized activities (Albertson, 1979).

⁷ The poor physical condition of the military recruits, especially those from the North, resulted in a renewed drive—backed by leading military men and statesmen—to introduce military training in the schools. In some schools, military training was used as a substitute rather than a supplement to physical education (Lee, 1983).

⁸ In 1866 California passed the first state physical education law, requiring that physical exercise be given to pupils "as may be conducive to health and vigor of body as well as mind" (Lee, 1983:80).

2.3 School Playground Infrastructure

Although there were attempts as early as 1821 to introduce gymnastic equipment onto school playgrounds in the United States, it was not until the start of the twentieth century that a national pattern of equipping school playgrounds with such standardized devices as swings, slides, and climbing structures emerged (Frost & Wortham, 1988). The playground structures of previous eras were replete with hazardous elements—giant strides, tall slides, high climbers, 20-foot swings, dangerous rotating devices, and poorly manufactured equipment mounted over hard-packed earth, packed cinders, or brick (Rivkin, 1995; Frost et al., 2001). As early as 1915, the parents of a young boy sued the school board of Tacoma, Washington, over an injury their son received in a fall from a swing. The verdict required the school board to pay damages for the injury and resulted in the removal of play equipment from many of the schools in the state of Washington, “thus were established patterns of slipshod playground maintenance and of legal suit and liability” (Frost & Wortham, 1988:21).

The first formal effort to develop standards for playground apparatus was made by the Committee on Standards in Playground Apparatus. Commissioned in 1928 by the National Recreation Association (NRA), the Committee decided that it was better to provide separate pieces of equipment rather than the more popular, but dangerously high multifaceted gymnasium frame (Frost, 1986). The guidelines for early public school apparatus—less elaborate than those for public park playgrounds—were hopelessly inadequate, but profoundly influential for decades (Frost & Wortham, 1988).⁹

⁹ The guidelines recommended that elementary school playgrounds include a slide 8 feet high, a giant stride, a balance beam, six swings on a frame 12 feet high, and optional equipment such as seesaws, traveling rings, and low climbing devices...the slide should have an 8-inch platform at the top wide enough for one child, to encourage taking turns (Butler, as cited in Frost and Wortham, 1988:22).

During the 1930s and 1940s, nonresilient materials such as asphalt or concrete gradually replaced packed-earth and other playground surfaces—especially on heavily used areas under and around play equipment—to get rid of mud, and to reduce maintenance time and costs (Hartle & Johnson, 1993; Rivkin, 1995; Loukaitou-Sideris, 2003). Administrators and teachers appear to have been so eager to escape the “dust bowl” conditions of previous playgrounds that they heartily endorsed asphalt as the ideal play surface (Frost, 1986). Although this idea may be practical, it is unacceptable—since falls to surfaces make up the majority of playground accidents. Factors potentially affecting the risk of a fall include student age, supervision, and equipment design (Sosin et al., 1993; CDC, 1999b; Mowat et al., 2006).

The dearth of studies of equipment and surface-related accidents during the 1930s and 1940s, appear to have allowed almost universal acceptance of asphalt as a general playground surface without due regard to surfaces under equipment (Frost, 1986). Perhaps this lack of research literature can be explained by the fact that, following the diversion of steel to war equipment during World War II (1941-1945), playground equipment aged and deteriorated, causing play in schools to focus typically on traditional and invented games (Frost et al., 2001).

Predictably, the consequences of using hard surfaces on playgrounds came to public attention. By the 1950s, injuries and fatalities on the asphalt-covered school playgrounds of Los Angeles led to citizen action and a lawsuit that resulted in the installation of rubber surfacing under playground equipment (Frost et al., 2001). In other instances, school districts reacted to children being injured from falls onto the asphalt-covered surfaces by removing equipment from elementary school playgrounds.

According to this reasoning, if no play equipment is present, then the liability problem does not exist—not realizing that surfaces and sloppy maintenance were probably greater contributors to accidents than equipment per se (Frost, 1986; Hudson et al., 2005).

Denuded of equipment, the asphalt-covered playground does not provide sufficient diversity to satisfy children's basic play needs, with boredom finding expression in social conflict as children use each other and available adults as play objects, and in so-called "vandalism" that in most cases represents children's vain attempts to manipulate their surroundings (Moore, 1980). A prime cause of bullying on playgrounds, according to some assessments, is the lack of other things to do (Rivkin, 1995).

The paving of school playgrounds continued during the turbulent 1950s and 1960s, when school desegregation was accomplished through bussing, and space was often appropriated for bus turnarounds, pickups, and drop-offs (Corson, 2005). Decades later, overcrowding in inner-city public schools often led to the installation of portable buildings on these paved spaces, further reducing playground size (Loukaitou-Sideris, 2003; Corson, 2005).

In the years that followed, many public schools failed to redevelop playgrounds to reflect changing trends in education and childhood development. The unimaginative school playscape of the 1970s is aptly described by Frost and Klein (1979:55), "In the main, school playgrounds are concrete and steel jungles, hazardous, unattractive to the eye, unsuited to developmental play needs, and oriented to two important but limited forms of play, exercise and organized games." This depressing state of school playgrounds was not due to the lack of information about how to design suitable

playgrounds (Weinstein & Pinciotti, 1988). Perhaps the restricting factor in the development of the school playground at the time was the prevailing belief that play is frivolous and detracts from academic success—although a rich body of literature counters this misconception (Frost and Wortham, 1988; Frost et al., 2001; Jarrett, 2002; Sutterby and Thornton, 2005; see, for example, Sutton-Smith, 1967; Hayward et al., 1974; Pellegrini, 1990; Hart, 1993).

During the 1980s, a new playground era emerged. The configuration of school playgrounds gradually changed from stand alone play equipment to composite structures where all the elements are linked together in one large structure (Hudson et al., 2005). These structures facilitated a wide range of designs incorporating complexity, linkage, and challenge, while the use of space-age plastics introduced color and resiliency (Frost, 1989). Disappearing from playgrounds were the traditional stand-alone equipment such as swings (probably due to the space necessary to create a safe-use zone), merry-go-rounds, and seesaws (Hudson et al., 2005).

Concerns for safety—as well as fears of litigation—led to the establishment of guidelines and standards for playground equipment and other features such as surfaces and water fountains. Industry's efforts to meet growing specificity in safety guidelines and standards resulted in playgrounds increasingly taking on an aura of sameness—launching the “standardized era” of playgrounds (Frost et al., 2001). The surge in school renovation and construction during the 1990s brought with it the mandate for accessible facilities, and new playground-safety standards (Corson, 2005).

An unfortunate consequence of these otherwise positive improvements in playground development was that equipment and facilities more generally evolved in

ways that were less attuned to children's basic developmental needs, resulting in the need for renewed emphasis on the importance of play and play environments on development (Frost, 1997; Frost et al., 2001). In other words, a playground that is almost perfectly safe—simply by avoiding risk—is not necessarily a good play environment. Such facilities lack many of the elements necessary for meaningful play: variety, complexity, risk, and adaptability (Wilkinson & Lockhart, 1980).

The inclusion of healthy, risk-taking opportunities adds excitement to the play experience and challenges children to extend their skills. Providing for risk taking does not imply, however, that safety issues are ignored, only that safety should not preclude growth-producing challenges (Henniger, 1994; Rivkin, 1995). The reality is that children will always have falls on playgrounds since exploration and testing of limits are a natural part of child development (Mott & Rolfe, 1997).

CHAPTER 3

THEORETICAL FRAMEWORK AND REVIEW OF THE LITERATURE

3.1 Introduction

Despite the increasing evidence regarding the beneficial effects of physical activity on health promotion and disease prevention, studies suggest a marked decline in physical activity among children in the United States aged 9 to 14 years (Sallis et al., 1995; Pratt et al., 1999; Barnett et al., 2002; CDC, 2003). Among the possible contributing factors to the decline, which has come to the forefront of public health research over the past decade, is the role of *the environment* in influencing children's physical activity (Sallis et al., 2000; Ball et al., 2006; Davison & Lawson, 2006). Environmental influences that may affect physical activity include the physical environment, comprising both the built and natural environments, and also the social, cultural and policy environments (Stokols, 1992).

One increasingly popular approach to understanding the influential factors associated with children's physical activity has been to use ecological models because of their focus on the interrelationships between individuals and their environments (Sallis & Owen, 1999; Spence & Lee, 2003; Elder et al., 2007). Ecological constructs are based on the premise that a variety of environments (e.g., physical, social, and cultural) operate at multiple levels (e.g., individual, interpersonal, organizational, community, and public policy), or at two major conceptual levels—the individual and environment/policy (McLeroy et al., 1988; Stokols, 1992; Humpel et al., 2002). An ecological perspective incorporates a variety of concepts derived from systems theory (e.g., interdependence, homeostasis, and negative feedback). However, it differs from traditional system models

by viewing patterned behavior of individuals or aggregates (rather than organizations) as the outcomes of interest (McLeroy et al., 1988; Stokols, 2000).

The ecological approach is different from other health promotion approaches in that the local area, rather than the individual, is the object of interest (Cochrane & Davey, 2008). In this regard, the concept of *behavior settings* is useful for understanding the context within which behavior occurs (Barker, 1968; Weinstein, 1979; Sallis et al., 1997). For instance, patterns of behavior on the school playground tend to remain constant, even as the users change. It follows that a better understanding of neighborhood influences on the *playground setting* may help explain why some local children use the school playground during leisure time and others do not.

3.1.1 The Need for an Ecological Approach

An ecological perspective postulates the importance of understanding physical activity behavior in the context in which people live, especially as they relate to a specific community (USDHHS, 1996; Walcott-McQuigg et al., 2001). Environmental factors at the neighborhood level may be particularly relevant to children since they have less autonomy in their choices of outdoor play spaces and the time that children spend outdoors is strongly associated with physical activity (Sallis et al., 2000; Ferreira et al., 2007). For example, a sense of safety in the neighborhood is an important determinant for caregivers in deciding whether to allow their children to play in a given location (Sallis et al., 1997; Veitch et al., 2006; Farley et al., 2007). The next logical step is to investigate the mechanisms of place-based factors that, in a variety of ways, may influence the physical activity behavior of children in any one location (Coulton et al., 1996; Drier et al., 2001; Duncan et al., 2002; Boslaugh et al., 2004).

Prevailing strategies to promote higher levels of physical activity among low-income children residing in inner-city neighborhoods tend to rely on interventions that provide physically supportive environments without capturing the other significant influences suggested by ecological approaches (Baker et al., 2000; Iltus & Steinhagen, 2003; Merom et al., 2003; Robertson-Wilson et al., 2008). For instance, the rebuilding of elementary school playgrounds in poor, urban neighborhoods unproblematically presumes they will be used by the target population, with few studies attempting to verify if the playgrounds are actually utilized (or even available) when schools are not in session (Veitch et al., 2006; Farley et al., 2007; Lopez et al., 2008). Although efforts to rebuild playgrounds in disadvantaged neighborhoods are often driven by good intentions, there is limited evidence that interventions developed to increase levels of physical activity by changing the physical environment have an effect on children in general or on children from low socioeconomic groups in particular (Farley et al., 2007; van Sluijs et al., 2007).

In Newark, New Jersey, one strategy to foster higher levels of physical activity among low-income, inner-city children has been the rebuilding of distressed elementary school playgrounds (through innovative public-private partnerships) to compensate for inadequate open space (e.g., backyards, parks, and playgrounds) and neighborhood-recreation facilities (Harnik, 2004; Giuliano, 2005; Kinnell et al., 2006). The physical transformation of the renovated school playgrounds is dramatic and anecdotal evidence suggests that children are more likely to use the playgrounds during after-school hours (Figures 3.1 & 3.2). However, attracting children to the rebuilt school playgrounds is not that simple. Findings from this research suggest that the effect of playground

refurbishment may be less influential on playground use than other issues such as child safety and neighborhood context.

3.1.2 Purpose of Chapter

The purpose of this chapter is to present an ecological-based conceptual framework to address the broader context in which children's use of the school playground occurs. The discussion covered in the following sections will provide insight into the importance of adopting an ecological perspective to explain children's free-time physical activity.

The chapter's introduction, Section 3.1, discusses how environmental influences, analogous to an ecological approach, may affect school playground use. Next, Section 3.2, briefly describes the development and importance of selecting ecological models to guide research on children's physical activity. Section 3.3 introduces SPUNK (School Playground Use and Neighborhood Kids), the ecological model proposed by this researcher to provide a comprehensive conceptual framework within which to assess and evaluate school playground use. Section 3.4 concludes this chapter with a summary of the importance of placing an environmental intervention, such as playground renovation, in a theoretical framework that posits the individual within the multiple interacting contexts of real life.



Figure 3.1 Quincy school playground before renovation, 1998.

Source: Employee of after-school program, Quincy school, Newark, NJ.



Figure 3.2 Quincy school playground after renovation, 1999.

Source: Employee of after-school program, Quincy school, Newark, NJ.



Figure 3.1 Quincy school playground before renovation, 1998.

Source: Employee of after-school program, Quincy school, Newark, NJ.

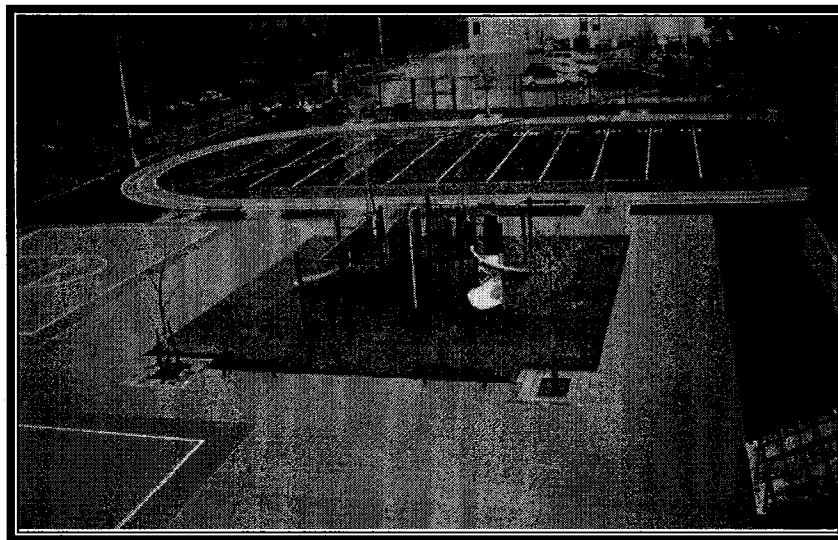


Figure 3.2 Quincy school playground after renovation, 1999.

Source: Employee of after-school program, Quincy school, Newark, NJ.

3.2 A Review of Ecological Models

An ecological perspective has been selected to guide this study because of its focus on people's transactions with their surroundings (Stokols, 1992). In contrast to traditional health behavior theories that focus on the role of personal factors on behavior, ecological approaches to health behavior focus on the dynamic interrelations between people and their social, policy, and physical environments (USDHHS, 1996; Sallis & Owen, 2002; Lee, 2004). An ecological perspective holds that the environment and the individual are inseparable (Green et al., 1996).

The defining feature of an ecological framework is the principle that multiple levels of influence (e.g., family, community, and institutions) regulate the range of individual behavior by promoting or discouraging certain actions (Stokols, 1992; Sallis et al., 1998). Applied to children's physical activity behaviors, an ecological approach could include a health promotion program at schools co-occurring with a community-wide media campaign promoting the benefits of regular exercise and the enactment of policies to alter the local physical environment such as the rebuilding of school playgrounds, to make exercising more feasible.

3.2.1 Conceptual Background of Ecological Models

Numerous theories and models have been used in behavioral and social science research on physical activity (see, for example, Marcus et al., 1996). However, these approaches vary in their applicability. Some models and theories are designed primarily as guides for understanding individual behavior (e.g., learning theories), while others are specifically constructed with a view to understanding the behavior of populations or designing community-wide interventions (e.g., ecological approaches) (USDHHS, 1996).

The current interest in ecological approaches developed out of several historic trends (McLeroy et al., 1988). As described by Stokols (1992), the term *ecology* is derived from biological science and refers to the interrelations between organisms and their environment. From its early roots in biology, the ecological paradigm has evolved in several disciplines (e.g., sociology, psychology, economics, and public health) to provide a general framework (or *ecological perspective*) for understanding the nature of people's transactions with their physical and sociocultural surroundings (Stokols, 1992). Sociologists Park and Burgess (Chicago School) introduced the term *human ecology* in 1921, in an attempt to apply the basic theoretical scheme of animal and plant ecology to the study of human communities (Green et al., 1996). For the purpose of this study, the most relevant conceptual traditions discussed are from psychology and public health.

Despite its focus on individual behavior, the field of psychology has evolved to include ecological approaches. The subdisciplines of social psychology, community psychology, and environmental psychology have emerged to encompass ecological perspectives on individual behavior (Green et al., 1996). In the field of public health, the host-agent-environment triad—clearly an ecological framework—is basic to the analyses of infectious diseases (Sallis & Owen, 2002). It can also be applied to understanding the role of behavior in the causation and prevention of chronic diseases such as high blood pressure and environment-related diabetes (McLeroy et al., 1998).

Kurt Lewin (1936) coined the term *ecological psychology* to describe the influence of the outside environment on the individual. In Lewin's model, the role of the environment is limited in that only perceptions of the external environment are deemed important (Sallis & Owen, 2002). In the area of psychology, B.F. Skinner's position that

antecedent and consequent events directly control behavior is considered an influential forerunner of current ecological models (Sallis & Owen, 2002).

Believing that environments affect behavior, Roger Barker (1968), influenced by Lewin, developed the Behavior Setting Theory. This theory emphasizes the importance of dynamic and interactive real-life settings in which human behavior takes place. Behavior setting researchers rely on observations of behavior in environments, rather than studying personal motivations and characteristics of individuals, and argue that knowledge of the setting in which behavior occurs is the best predictor of a person's behavior (McLaren & Hawe, 2005). However, Scott (2005) states, "even with today's high interest in things environmental, behavior setting theory is still not widely known or understood, particularly by American psychologists" (p. 296).

Barker's concept of behavior settings is applicable to an ecological approach since physical activity and play needs to take place in an appropriate behavior setting where the physical and social context is likely to influence the amount and type of behavior (Sallis et al., 1997; Sallis et al., 1998). The behavior setting construct highlights how physical activity can be promoted or encouraged within some environments while made more difficult or restricted in others (Humpel et al., 2002).

Bandura's (1986) Social Cognitive Theory (first introduced as Social Learning Theory) shares some features with ecological models such as the influence of personal and environmental factors on behavior (Stone et al., 1998; Humpel et al., 2002). A central tenet of Social Cognitive Theory is the concept of self-efficacy, or the degree to which an individual believes he or she can successfully execute a behavior (USDHHS, 1996). For example, self-efficacy is a strong predictor of participation in physical activity among

adults (Marcus et al., 1996). Interventions derived from Social Cognitive Theory focus on the ability of individuals to control their own behaviors by utilizing techniques such as goal setting and decisional balance sheets to promote changes in physical activity participation (Marcus et al., 1996). Social Cognitive Theory has been widely adopted in the area of health promotion (e.g., health belief model), even though Bandura's writings rarely explicate the role of the physical environment on individual behavior (Sallis & Owen, 2002).

3.2.2 Ecological Perspective

One increasingly popular approach to understanding the influence of the environment on physical activity has been to use various types of ecological models (sometimes referred to as transactional models) (Sallis & Owen, 2002; Spence & Lee, 2003). For example, ecological approaches to increasing participation in physical activities place the creation of supportive environments (e.g., bicycle paths and pedestrian walkways) on a par with the development of personal skills and the reorientation of health services (USDHHS, 1996).

One way to address the complexity of an ecological approach is to "stratify the environment and to present distinct research and action agendas for each stratum" (Richard et al., 1996, p. 319). Then, working within an ecological model requires that measurement and assessment take place at more than one level (Spence & Lee, 2003). The discussion that follows examines a number of ecological models that scholars have proposed to conceptualize the synergy between individuals and environments.

The Ecological Systems Theory of Urie Bronfenbrenner (1977, 1989) focuses on understanding both behavior and its individual and environmental determinants in an

ecological perspective using a bioecological model. Bronfenbrenner, whose goal is to understand human development in context, differentiates external influences on the individual into four levels of settings (or nested systems), namely, microsystem, mesosystem, exosystem, and macrosystem. The most proximal setting is the *microsystem* and consists of interpersonal interactions in specific settings, such as with family members and acquaintances. The *mesosystem* refers to interactions among the various settings in which the individual is involved, such as school and work. The *exosystem* refers to forces within the larger social system in which the individual is embedded. Examples might include unemployment rates that effect economic stability. The most distal setting is the *macrosystem*, which includes the larger social system that can affect individuals and settings through economic forces, cultural beliefs and values, and political forces. Not only do these subsystems affect behavior, but also the subsystems themselves may change as their members are replaced or altered.

Bronfenbrenner (1977) also discusses the significance of the environmental context or setting in which research is carried out and remarks that “relevant features of the environment include not only its objective properties but also the way in which it is perceived by the research subjects” (p. 516). However, it is important to note, that Bronfenbrenner’s theory is essentially a systems theory of child development that views development transitions as involving an individual’s biological predispositions and the environmental influences they experience (Holt et al., 2008).

Similarly, Rudolph Moos (1979) developed a social ecological model of health-related behavior and specified four categories of environmental factors relevant for health. The first category is *physical settings*, which can include features of the natural

and built environment. The second is *organizational* (e.g., schools and churches), and the third is the *human aggregate*, which can be thought of as the sociocultural characteristics of the people inhabiting an environment. The fourth category is *social climate* and relates to the perceived aspects of the social environment (Sallis & Owen, 2002).

McLeroy et al. (1988) offer “An Ecological Perspective on Health Promotion Programs” as a framework that identifies multiple levels of influence (factors) in the design, implementation, and evaluation of health promotion programs. This paradigm describes behavior as a dynamic interaction between the individual and the environment and specifies five levels of behavioral determinants. The first level of influence, identified by McLeroy and his colleagues (1988), is *intrapersonal factors* including psychological and biological variables, as well as developmental history. *Interpersonal processes and primary groups* including friends, family, and coworkers constitute the second level of influence. The third level of influence is *institutional factors*; organizations such as companies, schools, or health care facilities. *Community factors*, which includes relationships among organizations, institutions, and social networks within a defined area, comprise the fourth level of influence. The fifth and final level of influence is *public policy*, which consists of laws and policies at the local, state, national and supranational levels.

The focus of the paradigm proposed by McLeroy and colleagues “shifts the locus of change from the individual to the system in which the individual resides” (Watts et al., 2001, p. 144). With four determinants pertaining directly to the person’s environment, this perspective is resolutely ecological even if it does not specify physical environment factors (Richard et al., 1996; Sallis et al., 1998). This ecological framework is designed to

guide researchers and practitioners to systematically access and intervene at each level of influence (McLeroy et al., 1988).

Stokols (1992) proposes a model that recognizes person-environment interactions and assumes feedback across different levels of environments and aggregates of persons. Spence and Lee (2003) broadly divide the levels of behavioral influence into intra-individual or person (i.e., individual attitudes, beliefs, and behavior) and extra-individual or environment (i.e., social and cultural context, and policies). Sallis and colleagues (2006) attempt to capture the complexity of environmental influences in their ecological model of “active living” (i.e., physical activity). This model identifies seven broad categories of individual and environmental variables: intrapersonal, social cultural environment, natural environment, information environment, perceived environment, policy environment, and access to and characteristics of behavior settings.

Regardless of the theoretical perspective, the fundamental premise of all ecological models is the concept that individuals are at once embedded in numerous contexts and are members of several social groups, ranging from the intimate relationships found in the family environment to ones that are truly anonymous, as in the wider society (Earls & Carlson, 2001). Notably, the use of an ecological framework to study the interactions between individuals and their environments reinforces the essence of the case study strategy by its investigation of a phenomenon embedded in its real life context (Yin, 1994; Sallis & Owen, 2002).

3.2.3 Interventions

The underlying theme of an ecological framework is to focus attention on the causes of human behavior and to identify intervention strategies that support behavior changes and simultaneously influence multiple levels and multiple settings (McLeroy et al., 1988; USDHHS, 1996). The challenge presented when developing an ecological framework for intervention purposes is that it needs to be tailor-made for each health behavior and population (Elder et al., 2007). For instance, children will perform different physical activities in a setting than adults. According to Sallis and Owen (2002), interventions do not directly change behavior, but may modify the factors that control behavior.

An ecological perspective emphasizes the need to maximize the “person-environment fit,” and in the case of a “poor fit,” proposes intervention strategies that have the advantage of benefiting all people, as opposed to more individually-focused interventions designed to change the behavior of one person at a time (Stokols, 1996; Spence & Lee, 2003). For example, the building of a neighborhood walking trail potentially influences everyone living in the community (Kelly et al., 2006).

Kahn and colleagues (2002) propose three categories of intervention strategies to increase physical activity. *Informational approaches* that focus on changing knowledge and attitudes (i.e., mass media campaigns), *behavioral and social approaches* that focus on creating social environments that facilitate change (i.e., school-based physical education), and *environmental and policy approaches* that focus on changing the structure of physical and organizational environments through the development of public policy (i.e., provision of safe places for physical activity).

3.2.3.1 Environmental and Policy Interventions. Environmental and policy interventions are especially relevant to the promotion of physical activity (Sallis et al., 1998). While environmental interventions promote physical activity by changes in the physical surroundings, policy interventions influence human behavior through legislative actions (Schmid et al., 1995; Sallis et al., 1998). Environmental and policy interventions direct attention from individual-level changes (e.g., home exercise equipment) to interventions that affect sizeable groups of people, such as the building of walking and bicycle trails, improvement of public transportation or provision of green spaces for recreation (Sallis et al., 1998; Macintyre & Ellaway, 2000; Brownson et al., 2001). Moreover, changes made to create an activity-friendly community tend to be more permanent than individually-structured health promotion programs (Kelly et al., 2006).

In the United States, “the role of community-based interventions to promote physical activity has emerged as a critical piece of the overall strategy to increase physical activity behaviors” (Task Force, 2002, p. 67). Since it is unreasonable to expect communities to enact policy changes for which there is no broad-based understanding and support, an essential component of using ecological strategies is active involvement of the target population in problem definition, appropriate interventions, implementation, and evaluation (Schmid et al., 1995; McLeroy et al., 1988). Although there is little research to evaluate the impact of policy change on physical activity, public support for policies to promote physical activity has been reported to be high (>70%) for zoning regulations, government funds for facilities, and mandatory physical education in schools (Sharpe et al., 2004).

Even though environmental and policy approaches for promoting physical activity are being supported widely in the United States and elsewhere, empirical evidence on the uses and effects of community-wide interventions is lacking (Brownson et al., 2001; Troped et al., 2001; Edwards & Tsouros, 2006). The few studies that have tracked the *naturally* occurring impact of an environmental intervention are limited to multi-use trail construction for cycling and walking (Sallis et al., 1998; Evenson et al., 2005). While investigators have not reported any significant changes in trail use, it is probable that subsequent to an environmental intervention a follow-up period of several years may be needed to detect changes in usage (Merom et al., 2003).

3.2.3.2 Environmental Interventions and School Playgrounds. In regard to environmental interventions that have taken place on school playgrounds, the underlying assumption is that well-designed and well-equipped playgrounds promote use and trigger physical activity among children (Barbour, 1999; Sallis et al., 2001; Davison & Lawson, 2006; Verstraete et al., 2006). For example, investigators have observed that children were more likely to be active during recess periods when there were a large number of permanent activity structures (e.g., basketball hoops and swings), activity-related equipment (e.g., balls and flying discs), and playground markings (Stratton, 2000; Ridgers et al., 2007; Farley et al., 2008). Notably, in these instances, a combination of other factors including adult encouragement and supervision may have also contributed to the observed increase in activity.

Environmental and policy strategies to promote physical activity often include providing facilities and programs that were not previously available to the general population. For example, Farley and colleagues (2007) implemented a pilot intervention

in a low-income, inner-city New Orleans neighborhood, in which they opened (at specific hours) a schoolyard with play equipment for local children to use when school was not in session and provided adult supervision for children at play. The comparison site was a nearby district elementary school whose playground remained closed after school hours. The researchers observed children's activity in the intervention and comparison neighborhoods surrounding the schoolyard, as well as the intervention schoolyard.

Findings revealed that for the entire two-year intervention period (2003-2005), 84% more children were outdoors and active in the intervention neighborhood and schoolyard combined than were in the comparison neighborhood (Farley et al., 2007). In other words, the intervention of providing a safe playground for children resulted in a "spillover" effect of outdoor activity into the surrounding neighborhood. The results from this study provide additional evidence that perceived lack of safety in low-income urban neighborhoods may be an important determinant of outdoor play for children (Sallis et al., 1997; Molnar et al., 2004; Lumeng et al., 2006; Farley et al., 2007). This study is important because it demonstrates how the implementation of an environmental intervention (e.g., open playground) for children may be complicated by the need to provide safe environments and supervision (Sallis et al., 1998).

3.3 "SPUNK": An Ecological Model of Playground Use

A systematic literature search for an ecological framework that considers environmental influences and children's use of the school playground found no models that relate to both topics. The proposed model—SPUNK (School Playground Use and Neighborhood Kids)—provides a theoretical framework for school playground use that integrates

concepts from multiple theories and models of ecological strategies previously reviewed in this chapter (Figure 3.3). SPUNK is specifically tailored to advance the conceptual understanding of the multilevel context in which urban children exist in the United States and to guide the evaluation of children's leisure-time use of elementary school playgrounds in low-income, minority communities. The variable categories in italics within the model sections indicate the main connections investigated in this study.

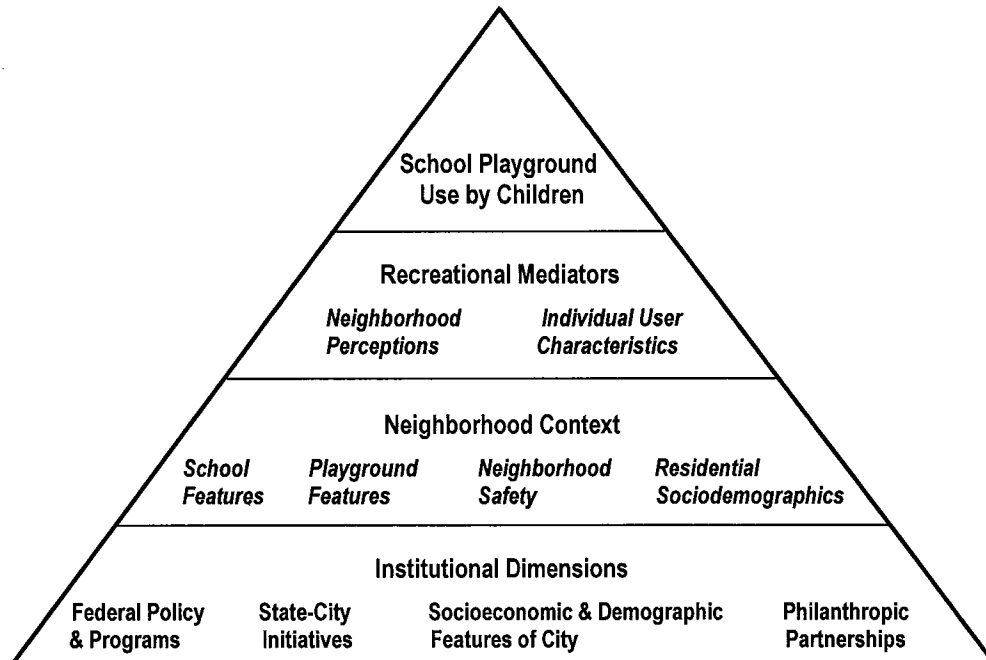


Figure 3.3 SPUNK—proposed conceptual model of school playground use and neighborhood kids.

SPUNK's multilevel ecological framework emphasizes the interconnections of person-environment effects by embedding the target population of neighborhood children within their *real life* context of policy, social, and physical environments; with the

physical environment defined as a combination of both objective and perceived characteristics of the physical context in which children spend their time (e.g., home, neighborhood, and school). The measurement and assessment of environmental influences takes place at three distinct contextual levels: *recreational mediators*, *neighborhood context*, and *institutional dimensions*. The model focuses attention on the association between playground location and playground use.

Two critical ingredients of the proposed theoretical framework is the target population of the intervention (i.e., school playground renovation) and the setting in which the intervention is implemented. One way to address the problem of after-school playground use is to stratify the environment in which children reside into multiple levels of influence. The advantages of stratification are two-fold: stratification reduces the complexity of the interrelationships between the individual and all relevant environmental levels and it simplifies the development and evaluation of interventions (e.g., Richard et al., 1996).

SPUNK organizes the study variables in a hierarchy of relationships within the three contextual levels. The most proximal setting is *recreational mediators* and includes neighborhood perceptions (e.g., fear of crime) and individual user characteristics such as leisure time preferences. The next level is *neighborhood context* and consists of the objective measures of school features, neighborhood safety, and residential sociodemographics, and both objective and subjective characteristics of the school playground. The most distal level is *institutional dimensions* and refers to the larger social/political system that may affect school playground use in low-income communities (e.g., school selection for playground renovation funding).

Additional factors that may affect school playground use, although beyond the scope of this study, are the physical ecology of the local neighborhood (i.e., topology and environmental stressors) and the role biological factors (e.g., body composition and physical fitness) are likely to play in influencing children's physical activity behavior (e.g., Spence & Lee, 2003).

3.3.1 Playground Intervention

This study evaluates the environmental intervention of school playground renovation as a strategy to promote higher levels of physical activity behavior among low-income, minority children residing in inner-city neighborhoods of Newark, New Jersey (Figure 3.4). Depicted in this figure are the three possible outcomes of school playground renovation that are hypothesized to explain children's use of the playground: increased use, unchanged use, or decreased use. The desired behavioral outcome of playground renovation is an increase in playground use by children residing in the neighborhood surrounding the school, which in turn, will lead to a concomitant increase in their physical activity levels (e.g., USDHHS, 1996; Sallis et al, 1998; Brownson et al., 2001).

The city of Newark's current strategy of renovating school playgrounds in low-income, inner-city neighborhoods as a means to bolster playground use assumes an association between the physical environment and the child while paying little attention to the social and policy context in which children's lives are embedded. Such an approach is tantamount to the tenet "build it and they will come," and tends to ignore the reality that children and their caregivers encounter of living in a high-risk city. For example, a child's desire to play on the rebuilt playground cannot be realized if the play space is not safe (Sallis et al., 1997; USDHHS, 2000; Weir et al., 2006; Farley et al., 2007).

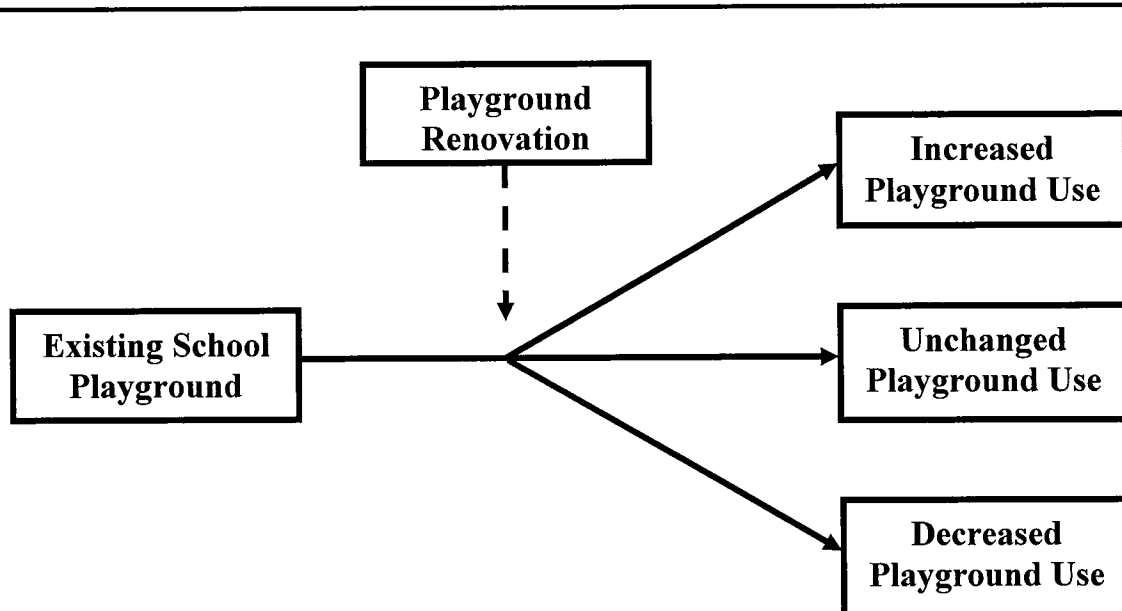


Figure 3.4 Outcomes of an environmental intervention: Hypothesized effects of school playground renovation on playground use by children.

Furthermore, intervention strategies exclusively designed to target the physical environment may not always produce the desired outcome. For instance, renovated school playgrounds may give children a place to engage in physical activities. However, the same playground may give social deviants an attractive location in which to engage in illicit activities (e.g., Spence & Lee, 2003). Intervention strategies need to be carefully planned to ensure that they enhance neighborhood context rather than endanger it. In order to better understand why the unilateral environmental approach of playground renewal may not result in the desired outcome of increased physical activity levels in children, it is essential to examine the contextual forces that shape playground use.

3.3.2 Variables

The selection of variables to be investigated in this research is based on published studies that have examined and measured the relative influence of and interaction between environmental and individual factors that affect the physical activity of children. Figure 3.5 depicts the framework developed to investigate school-playground use by children based on the proposed theoretical model SPUNK.

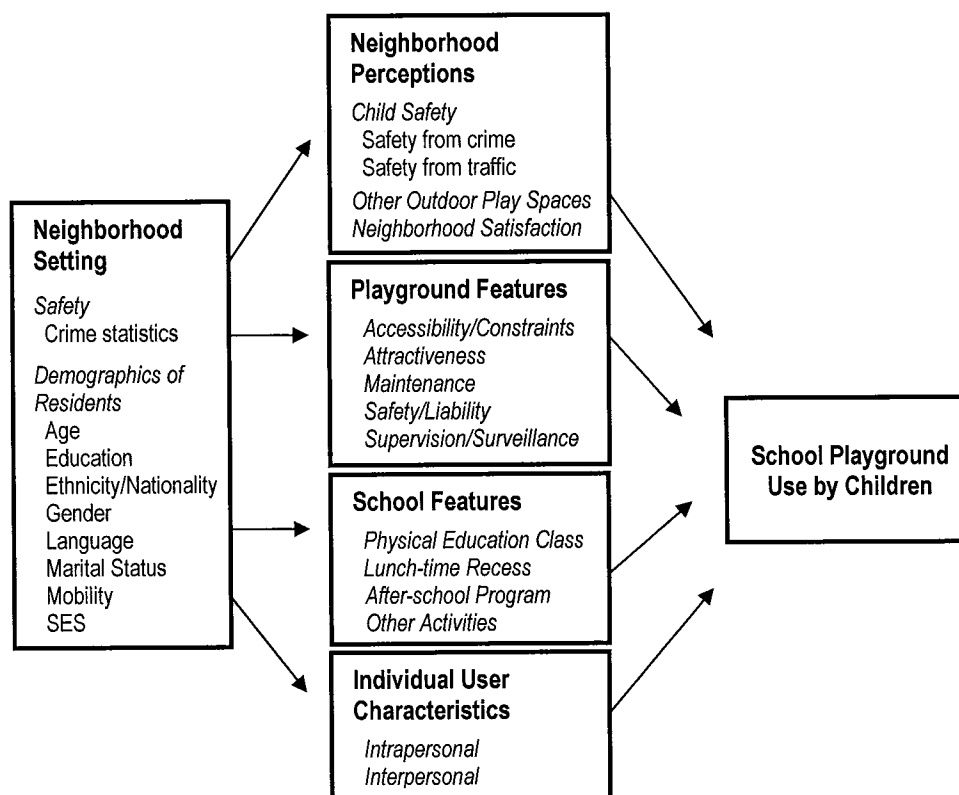


Figure 3.5 Factors affecting school playground use by children in low-income neighborhoods.

The five categories of variables identified as relevant to this study are: neighborhood setting, neighborhood perceptions, playground features, school features, and individual-user characteristics. Since the model conceptualizes playground use as a dynamic process (but implies no determination about which factors are more salient or how they tend to interact), the examination of multiple variables concurrently has the potential to provide much insight into the importance of social, physical, and policy environmental influences on playground use.

This study explores playground use in the micro-environmental settings in which children interact (e.g., families, schools, and neighborhoods) since local circumstances may potentially influence directly and indirectly how children use the school playground after-school hours. The following paragraphs discuss the five variable categories.

- **Neighborhood Setting**

Evidence suggests an association between children's physical activity and the perceived and objective characteristics of the neighborhood context in which they spend their time (Saelens et al., 2003; Burdette & Whitaker, 2005; Lopez & Hynes, 2006; Lumeng et al., 2006). Multiple factors (e.g., crime and traffic) interact to influence children's physical activity, suggesting that area of residence may be affecting the relationship between neighborhood safety and playground use (St. John, 1987; Blakely, 1994; CDC, 2002).

Sociodemographics. Sociodemographic information obtained from fifth-graders and their respective caregivers included age, gender, neighborhood residency, and language generally spoken at home. Additionally, caregivers provided information about marital status, household income, highest education level, and ethnicity/nationality. Prior

research has found significant racial, ethnic, and income disparities in physical activity levels for children (USDHHS, 2000b).

Neighborhood Crime. Data on crimes committed in the case-study neighborhoods were obtained from the Newark Police Department. High neighborhood crime rates have been associated with lower participation in physical activity among adolescents in the United States (Gordon-Larsen et al., 2000). Gomez and colleagues (2004) note the importance of using objective measures in assessing the effect of neighborhood safety on physical activity.

- **Neighborhood Perceptions**

Neighborhood factors such as perceived safety have received increasing attention in recent years as barriers to physical activity (Sallis & Owen, 2002). Residents in low-income urban settings that are from racial or ethnic minority groups are most likely to perceive and rate their neighborhoods as unsafe (Brownson et al., 2001; Boslaugh et al., 2004; Miles, 2008).

Child Safety. Parents' and children's perceptions of the local environment may potentially be an important influence on children's physical activity, mobility through their neighborhoods, and use of public open spaces (Valentine & McKendrick, 1997; Molnar et al., 2004; Timperio et al., 2004; Hume et al., 2005; Veitch et al., 2006).

Safety from Crime. Improving safety conditions in low-income neighborhoods may promote physical activity (Gordon-Larsen et al., 2000; Kerr et al. 2006; Neckerman et al., 2009).

Safety from Traffic. Studies suggest that parental concerns about traffic have a strong influence on whether they allow children to walk, bike, or play within the

neighborhood (Staunton et al., 2003; Timperio et al., 2004; CDC, 2005; Davison & Lawson, 2006).

Other Outdoor Play Spaces. A 1997 study found that parents rank safety as the number one concern as to whether they would allow their children to play in a given area (Sallis et al., 1997). Weir et al. (2006) note that intercity families have significantly higher anxiety about neighborhood safety and their kids have less outside physical activity time. According to Lumeng (2006), parental perceptions of neighborhood safety may be more salient than the child's perception because parents of young children typically exert substantial control over where their children spend time.

Neighborhood Satisfaction. Resident's perceptions of safety may help shape neighborhood satisfaction (Baba & Austin, 1989; Austin et al., 2002).

- **Playground Features**

Accessibility/Constraints. Strategies to increase physical activity among children often include providing enhanced accessibility to recreational facilities (Sallis et al., 2000; Giles-Corti & Donovan, 2002b; Humple, 2002). Cohen et al. (2006) showed that parks with playgrounds were associated with higher levels of non-school physical activity among adolescent girls and that this relationship holds for proximity and amenities. Powell et al. (2004) note the link between availability and usage. A playground that is available but unsafe to play in will not help promote use.

Attractiveness and Maintenance. Humbert and colleagues (2008) note that to increase physical activity among children, recreational facilities must be appealing and appropriate, as well as properly maintained and repaired.

Safety/Liability and Supervision/Surveillance. Playground-safety measures include supervision, age-appropriate design, fall surfacing, and equipment maintenance (CDC 1999b; Peterson, 2002; Kennedy, 2006).

- **School Features**

School environments and policies can influence children's activity levels (Ferreira et al., 2007). For example, schools can affect opportunities to be active through physical education classes, recess periods, and after-school programs.

Physical Education Classes. Studies have found that well-designed and well-implemented school-based programs can improve the physical activity of youth (CDC, 1997; Stone et al., 1998; USDHHS, 2000a).

Recess Periods. Studies reveal that children are more likely to be active during school-recess periods when characteristics of school-play areas (e.g., access to equipment, permanent play structures, and playground markings) facilitated physical activity (Sallis et al., 2001; Stratton & Mullen, 2005).

After-School Programs. Formal after-school programs operated by schools tend to be highly-structured and may limit children's opportunities to be physically active (after-school hours) since their focus is on the provision of educational enrichment classes (Vandell & Posner, 1999).

- **Individual User Characteristics**

Parental physical activity (a frequently studied social variable) appears to be an unrelated determinate of physical activity among children, although there may be situations where parent modeling is an importance influence (Sallis et al., 2000). Indirect influences such as parental encouragement and facilitation are positively related to children's physical

activity (Sallis, McKenzie, et al., 1993; USDHHS, 1996). Sallis et al. (2002) suggest that peer influences on physical activity are important even for young children.

3.3.3 Application

The contribution of the proposed model SPUNK to ecological approaches is its applicability to physical activity research. SPUNK is designed to be inclusive and to address how environmental influences shape children's use of urban school playgrounds when school is not in session. The model addresses the subjective (recreational mediators) and objective (neighborhood context and institutional dimensions) components of real-life environments, and recognizes the importance of playground location. For instance, identifying the correlates that affect children's use of the school playground in low-income neighborhoods could facilitate the development of appropriate and effective intervention strategies to counter the decline in children's physical activity levels (e.g., Baker et al., 2000).

SPUNK's multilevel framework conceptualizes school playground use as a dynamic process, and by positing children within the "natural" neighborhood environment, the relationship between location and playground use becomes more apparent, especially for communities characterized by violence and other forms of anti-social behavior. For example, the placing of playground use in a multilevel context may help us to understand and evaluate how parenting strategies are associated with neighborhood quality, and why neighborhood safety is among the contextual determinants that influence children's outdoor opportunities (e.g., Ceballo & McLoyd, 2002). It could be argued that failure to account for the multilevel context in which

families reside limits our ability to understand probable mediating factors on children's use of school playgrounds.

The application of a multilevel ecological framework such as SPUNK to school playground use is a first step in garnering more knowledge about effective strategies to promote physical activity among children living in low-income communities. Embedding playground use within the dynamic interplay of political, socioeconomic, and environmental influences enhances our understanding of why children may not be prone to use school playgrounds even in cases where the playground is the only proximate recreational space available for outdoor play. Accordingly, the effectiveness of a program directed at promoting physical activity through the rebuilding of school playgrounds may be enhanced using multiple interventions acting at different levels (e.g., Marcus et al., 1996). The value of SPUNK's theoretical framework will depend on how much it advances conceptual understanding of physical activity in low-income neighborhoods and how useful it is at a practical level.

3.4 Chapter Summary

This chapter presents SPUNK (School Playground Use by Neighborhood Kids) a theoretical model that is specifically designed to measure and evaluate children's use of school playgrounds in low-income urban neighborhoods. The conceptual framework identifies key factors that affect children's opportunities to use the school playground and facilitates a better understanding of person-environment effects on physical activity behavior.

The proposed model is based on a multilevel ecological perspective that frames children's use of school playgrounds not as an isolated event, but as one that occurs within the broader environmental context of *recreational mediators*, *neighborhood context*, and *institutional dimensions*. Each sublevel includes variables that are associated with physical activity levels in children, and many of these factors are amenable to change over time (e.g., traffic volume, crime, and neighborhood perceptions). For example, placing school playground renovation into SPUNK's ecological framework highlights the hypothesized association between the subsystems and suggests which factors can be modified to improve school playground use.

The central issue with using playground renovation as a change agent to affect children's physical activity is that the empirical basis for the effectiveness of this type of single-level intervention is quite limited (USDHHS, 1996; Sallis et al., 1998; Brownson et al., 2006). Although further study is needed, the results of this investigation suggest that strategies to increase physical activity levels among children living in low-income urban neighborhoods should be based on research that identifies the critical social, physical, and policy correlates that influence physical activity behavior and endorses multilevel interventions to promote change (USDHHS, 2000b; Sallis & Owen, 2002).

CHAPTER 4

METHOD AND RESEARCH DESIGN

4.1 Research Design

The research design of this study is cross-sectional, relying on multiple data sources and an ecological framework to explore the dynamics of political, socioeconomic, and environmental attributes that mediate children's use of school playgrounds in low-income urban neighborhoods.

The mixed-methods strategy of combined quantitative and qualitative approaches diffuses the weakness of each method alone, provides differing perspectives and new insights on the same phenomenon, and enables identification of a wide-range of potential factors associated with playground use (de Vaus, 2001; Creswell, 2003). The integration of multiple data sources during the presentation of study findings captures the essence of triangulation logic (Berg, 2004). Use of an ecological framework allows the relationship between individual and contextual factors to be represented and explored, and treats playground use as the product of multiple interacting influences.

The purpose of this chapter is to present the procedure used in executing this study. Section 4.2 discusses the study background and research strategy. Section 4.3 describes the study sites. Section 4.4 outlines the procedures used for data collection and analysis. Finally, Section 4.5 summarizes the research process.

4.2. Background

4.2.1 Overview

This section describes the issue that influenced the undertaking of this study, discusses the choice of research design and its suitability, lists the types of documents gathered during the research process, and explains how crime data for Newark and the four study neighborhoods were obtained and analyzed.

In 1995, a national nonprofit organization, committed to land conservation and urban open space development, launched a program to rebuild school playgrounds and parks for underprivileged communities in Newark, New Jersey.¹ The school playgrounds selected for renovation by the nonprofit organization were in disrepair and were underdeveloped due to financial constraints confronting the Newark school district, and were located in neighborhoods where children had little or no access to outdoor play and recreational space. Table J.8 presents the organization's project selection criteria.

The formation of a public-private partnership involving the nonprofit organization, the Newark Public Schools, the City of Newark, local community groups, and several Newark-based philanthropic foundations fostered the political and financial infrastructure necessary for transforming the neglected playgrounds into outdoor spaces with architecturally designed play areas and equipment. The playground design process was highly participatory and involved school children and teachers, as well as other local stakeholders. The first phase of the renovation project encompassed six school playgrounds

¹ School playground and park renovation projects spearheaded by nonprofit agencies are not unique to Newark, and are happening across the United States. According to the nonprofit organization, Newark has fewer park-playgrounds per capita than any other major American city, at a quarter of the national average.

and ended in 2003.²

The researcher's interest in the redevelopment of Newark's inner-city school playgrounds and the effect of playground improvement on local children's use of the sites prompted initial contact with the nonprofit organization in Spring 2005. A meeting ensued, and the attending representatives revealed that comparison data for playground use before and after renovations were not collected, that involvement in other agency projects made it difficult to visit completed sites, and that they were aware of playground maintenance issues.

The agency supported the researcher's proposal for a follow-up study of the completed school playgrounds and provided contact information for three public schools that were recipients of rebuilt playgrounds in Newark's Central Ward. Following initial contact, the school principals consented to school participation in the study. Subsequently, the researcher visited the schools and met with the principals to explain in detail how the study would be carried out, and to learn about playground issues such as the renovation process and the uses of the play space during school hours. The research strategy and instruments designed to execute this study were developed on the basis of these discussions, an extensive literature review, and meetings with other Newark stakeholders.

4.2.2 Research Strategy

The research strategy entailed a mixed-methods approach and the sequential collection of survey, interview, and observational data. Survey instruments included both original

² By the end of 2005, the nonprofit organization had rebuilt six school playgrounds and a park with an investment of \$4.4 million dollars from public and private funding sources. The agency has embarked on its next phase and already raised \$5.7 million toward its goal of \$8.7 million for additional playground and park renovations in Newark.

items and content that was modified from other relevant studies. Fieldwork was conducted from October 2005 to February 2007.³ Question content for the surveys and structured interviews adhered to predetermined central themes: school and playground features, neighborhood safety, residential demographics, neighborhood perceptions, and individual-user characteristics.

Data collection phases (surveys, interviews, and observations) were sequential for each school, and took place from October 2006 to February 2007.

- *Surveys (Phase I)*. The first-phase of the study consisted of surveys and involved fifth-grade pupils and their caregivers. Data on playground features and use, neighborhood environment, and demographics were collected using questionnaires with mostly close-ended questions and some fill-in answers.
- *Interviews (Phase II)*. The second-phase of the study consisted of qualitative interviews for each of the four case-study schools with their respective principals or vice-principals, fifth-grade classroom teachers, physical education teachers, lead teachers (on-site school program directors) of the after-school programs, and (in one school), the school psychologist. The second-phase allowed for in-depth investigation of responses obtained in the first-phase.
- *Observations (Phase III)*. The third-phase of the study was systematic observation of how fifth-graders use the playground during lunchtime recess. The direct observation of children allowed the researcher to obtain real-time data for children's use of the school playground.

4.2.3 Study Approval and Conditions

The study received Institutional Review Board approval from New Jersey Institute of Technology on June 19, 2006 (Appendix A). Approval was renewed in June 2007 and in June 2008.

The Newark Public Schools approved the study in September 2006.

³ Injuries sustained in a pedestrian accident near home caused the researcher to curtail the field study.

- This study involved no risks or other harm to the participants and participation was entirely on a voluntary basis. As outlined in the consent form, respondents could elect to remove themselves from the study at any time.
- Upon completion of the research protocols, a coding scheme was developed for the participants and all personal identifying information (i.e., names) was deleted from the project database.
- There was no deception involved and all respondents were fully informed of the objectives of the study. Participants could choose not to answer questions that made them uncomfortable.
- There was no invasion of privacy or disregard of participant anonymity in any way. Subjects were not asked to reveal any embarrassing, sensitive, or confidential information.
- For all external purposes the subjects are referred to by pseudonyms.

4.2.4 Additional Resources

Supplementary documents and crime data for the city of Newark and the study neighborhoods were obtained.

- Supplementary Documents

Maps: Central Planning Board, City of Newark; and Department of School Ground Maintenance, Newark Public Schools.

Neighborhood street listings for school attendance: Newark Public Schools.

Photographs: All playground photographs (referred to in text as “figures”) were taken by the researcher using digital cameras borrowed from the Library of Architecture, New Jersey Institute of Technology, unless noted otherwise in “source” listed under figures. Photographs were downloaded to home PC.

Renderings of school playgrounds: Nonprofit organization responsible for renovations.

School and student statistical and background information: New Jersey School Report Card Website (<http://education.state.nj.us>); Newark Kids Count (<http://www.acnj.org>); Education Law Center, Newark (<http://www.edlawcenter>); and brochures, school newspapers, and photos from case study schools.

Census data: American Community Survey 2005-2007 (<http://factfinder.census.gov>).

Other: informal discussions with Newark agencies such as Boys and Girls Club of Newark, Ironbound Community Corporation, New Community Corporation, and The Newark Public Schools (i.e., Department of Executive Legal Assistant, and Office of Community Relations).

- Crime Data for City of Newark and Study Neighborhoods

This study is interested in examining the relationships between playground use and perceived neighborhood safety, and comparing the survey results with data on crimes committed in the case study neighborhoods.

Crime data for the city of Newark were obtained from the city's website and the Newark Police Department (<http://www.ci.newark.nj.us>).

Crime data for the study neighborhoods were obtained by special request to the Newark Police, Department of Legal Affairs (Figure G.4). The school neighborhoods were defined by street (based on the Newark Public Schools listing). The requested time frame for data collection was January 2000 to August 2006. Data were compiled by the Newark Office of Research and Planning, and after approval by the Police Director, released to the researcher in January 2007.

Crime data were composed of printouts of Index offenses for each case study neighborhood (Table G.12).⁴ Each incident record included: address, hour of incident, date of incident (day, month, year), and incident type. The names of victims and perpetrators were blacked out.

Data were analyzed using SPSS 14.0 (Certificate of License, Rutgers University, Office of Information Technology). Crime data for neighborhoods were kept in separate files. Data were coded and entered as follows:

⁴ Index offenses include willful homicide, rape, robbery, aggravated assault, burglary, larceny, and motor vehicle theft. Offenses are categorized as primary (violent) crimes and secondary (quality of life) crimes. The Federal Bureau of Investigation collates and publishes an annual Uniform Crime Report based on index offense reports received from individual police forces throughout the United States (Sparks, 1977).

- Case #
- Street
- Month
- Day of month by range (1-7; 8-14; 15-22; 23-31)
- Year
- Time of day by range (00:01-06:00; 06:01-12:00; 12:01-18:00; 18:01-24:00)
- Incident

For evaluation, the listed crime incidents were recoded and grouped into 10 categories (Table G.13).

The total number of recorded incidents during the relevant period (January 2000-August 2006) for each neighborhood was: Anville, 332; Millside, 537; Sparta, 1034; and Quincy, 1155.

Frequency distributions were recorded for the following topics: incident categories by neighborhoods, neighborhood crime incidents by street, incidents by year, incidents by time of day, incidents by day of month, and incidents by season of year (Appendix G).

4.3 Site Selection and Description

Site selection was based on convenience. Newark is the location of the researcher's university, and the schools were selected based on availability and playground features.

4.3.1 Newark City

Newark, New Jersey's largest city, is characterized by high levels of poverty, unemployment, and racial polarization (Newman, 2004). Like other central cities in the United States, it is a predominately "majority minority" municipality and the residents are disproportionately working-class and poor, and have low levels of academic achievement.

4.3.1.1 History. Founded in 1666, Newark is, after New York and Boston, the third-oldest major city in the United States. It remained mostly agricultural until 1800, largely because it was cut off from New York City by vast salt marshes and three large rivers (Hudson, Hackensack, and Passaic). The city slowly developed as a transportation hub and by the time of the Civil War Newark had become a leading urban manufacturing center. The economic boom continued and by 1890, it had become a major center for banking, insurance, and legal and government services. During this period, Newark solidified its ranking as the largest city in New Jersey and one of the dozen most populous in the United States (Jackson, 2000).

The first part of the 20th century was a period of immense economic and population growth for Newark. Newly arriving immigrants constituted a ready labor supply, and different ethnic groups settled in various Newark neighborhoods (Sidney, 2003). By 1910, its population had risen to 450,000 (eighth largest in the United States). Port Newark opened in 1915, Newark Airport in 1928, and Newark's Pennsylvania Station in 1935.⁵ By 1931, both the airport and the local intersection at Broad and Market Streets were touted as the busiest respective locations in the world (Jackson, 2000). The legendary central business district featured three large department stores, several elegant movie theaters, and cultural institutions such as the Newark Museum and the Newark Public Library. Manufacturing thrived, and factories produced a vast assortment of goods ranging from leather and textiles to beer, paint, and chemicals. Newark boasted exciting nightclubs and the Newark Bears baseball team.

⁵ Newark's rail system dates back to 1835. The need to expand the growing railroad business led to the replacement of an older building with the Art Deco building in 1935. The station today serves thousands of commuters and several intercity trains daily (Reilly, 2008).

Like many urban centers in the United States, Newark began to experience a decline in population and employment beginning in the 1930s and this pattern accelerated in the years following World War II. The construction of the interstate highway system made it easy for many families and employers to relocate to the suburbs, a trend that intensified in the aftermath of the 1967 civil disturbances. Physical and fiscal deterioration compounded the overwhelmingly negative image of a city in decay, keeping investment and people out of the city (Sidney, 2003).

Between 1950 and 1970, Newark's population declined by 13 percent, with the white population decreasing 54 percent and the African-American population increasing 183 percent. In 1970, the unemployment rate was twice the national average, due in large part to a decrease in manufacturing jobs of 46 percent from 1950 (City of Newark, 1978).⁶

Historian Kenneth Jackson (2000) cites six reasons for Newark's decline—choices made by city leaders that had lasting negative consequences for the city.

- Failure to expand the city limits in the early 20th century meant that Newark lost people and wealth to nearby suburbs.
- Weak land-use controls contributed to the creation of a toxic and unhealthy environment and deterred residential and commercial investment.⁷
- Redlining by government and private mortgage insurers prevented investment in the city.⁸
- City government was often characterized by corruption, or incompetence,

⁶ Many industries of longstanding in Newark moved to the southern states and overseas to take advantage of cheaper labor and the absence of trade unions (City of Newark, 2004).

⁷ Industries coexisted in proximity to residential neighborhoods, sewers were substandard, and the Passaic River was dangerously polluted.

⁸ Washington's income tax policies concerning mortgage interest deductions and its transportation policies of subsidizing the private car also damaged Newark while benefiting the suburbs (Jackson, 2000).

or for prioritizing short-term gains over long-term goals.

- Devastating racial riots in 1967 compounded the negative image of a city already in decline.
- The willingness of elected officials in Newark to help poor and minority residents at a time when surrounding communities declined to do so resulted in a high concentration of poverty in the city. For example, during the 1930s, Newark became a national leader in building housing for the poor, and later in the decade became one of the first cities to apply for public housing—ultimately building more units per person than any other place in the nation.

Newark's Renaissance. After decades of population loss and economic disinvestment, Newark emerged as a self-declared Renaissance City in the late 1990s. The success of the New Jersey Performing Arts Center, which opened in the downtown area in 1997, has been credited with improving the city's long-tarnished image, and for catalyzing a small investment boom in Newark's central business district (Strom, 1999). Development has not been limited to the downtown—its effects are spread throughout the city as private for-profit and not-for-profit developers build new housing units, and high-rise public housing is demolished to make way for new low-rise, mixed-income communities (Newman, 2004). Despite visual signs of revitalization and enthusiasm about the city's revival, Newark remains a troubled city—with widespread poverty evident in its residential neighborhoods.

4.3.1.2 Wards and Neighborhoods. Newark is comprised of five political wards designated as North, South, East, West, and Central. Each ward contains approximately 55,000 residents and is ethnically quite homogenous. Many Newark residents and employees identify themselves by the ward in which they live or work, and over time the ward-based jurisdictions have been used as a means of land-use planning at a more local

level than the city as a single entity (City of Newark, 2004). Industrial uses, coupled with the airport and seaport lands, are concentrated in the South and East Wards. The East Ward contains Newark's downtown business district, and the commercially successful Ironbound neighborhood, where a significant Portuguese-speaking community resides.⁹ The North, Central, and West Wards are primarily residential neighborhoods. For purposes of this study, the Central Ward and the Ironbound neighborhood are discussed in detail.

- **Central Ward.** The Central Ward is home to many historical sites including the Krueger Mansion, Metropolitan Baptist Church, Lincoln Park, Military Park, and the James Street Commons Historic Districts. The city's university complex is located here, as are several hospitals and a medical school. During the 20th century, Newark built many public housing projects on superblocks in the Central Ward, and several of the streets are no longer arranged in a grid street plan.¹⁰

The Central Ward's residential neighborhoods contain the city's highest concentrations of low-income and unemployed population, and are largely populated by African-Americans (Newman, 2004). Racial disturbances in 1967 occurred in this ward, and vacant lots dating from that period are still evident. Four major public housing projects that were built during the 1960s have been torn down and redevelopment is in progress. In the last 15 years, new housing construction for low- and middle-income people, commercial development, and the expanding programs of non-profit organizations, have begun to transform this part of the city, offering more resources and

⁹ The name Ironbound originated from either the many forges and foundries found in the area in the late 1800s, or the rail tracks that surrounded it when railroads were constructed during the 1830's (Reilly, 2008).

¹⁰ The grid plan is a type of city plan in which streets run at right angles to each other, forming a grid. Grid plans enhance pedestrian movement through neighborhoods (Jackson, 1985).

opportunities for poor families—though public housing demolition has also displaced poor households (Sidney, 2003).

- ***Ironbound.*** The Ironbound is multi-ethnic, largely working-class, and the most densely-populated neighborhood in Newark. Covering four square miles, the neighborhood is sometimes referred to as “Little Portugal,” owing to its large Portuguese-speaking community.

In the 19th and 20th centuries, the Ironbound was an industrial district, home to various immigrant groups (with German, Lithuanians, Italian, and Poles being prominent), and poorer than the rest of Newark. The great influx of Portuguese came during the 1970s (Ironbound, 2009).

The Ironbound avoided the economic decline experienced by most of Newark for several reasons. Highway construction went around the neighborhood, massive public housing high-rises were not built, and immigrant-owned businesses contributed to neighborhood preservation (Ironbound, 2009).

Today, the Ironbound is known for its vibrant commercial district of shops, ethnic restaurants, cafes and clubs along Ferry Street. Despite commercial vitality, Ironbound residents suffer from overcrowded schools, limited affordable housing, poverty, and environmental degradation. Located near residential housing are operating factories and warehouses, and abandoned industrial sites (ICC, h.d.).

4.3.1.3 Demographic and Socioeconomic Characteristics. Newark’s population, which peaked at almost 443,000 in 1930, declined to about 265,000 by 2005. The city’s depopulation was a distinctly racialized process in which white flight and suburbanization transformed a city that was 91 percent white in 1930 to one that is 53

percent African American, 32 percent Latino, and 22 percent white according to census data from the 2005 American Community Survey.^{11, 12} Despite the overall trend in population loss, Newark continues to remain New Jersey's largest city.

Table J.6 outlines a variety of demographic characteristics of the city. The majority of residents are classified as members of minority groups (87%) in contrast to the percent of minorities in New Jersey (45.8%). Newark has a relatively young population (31.2% under the age of 19), a high poverty rate (24% of the total population), and a median household income (\$30,665) about one-half that of New Jersey (\$61,672). Most people living in Newark rent their homes (74.6%), but the proportion of homeowners has risen slightly over the years. Some housing-unit loss has occurred through disinvestment and abandonment, although some has occurred through demolition by the public housing authority (Sidney, 2003). Regarding household type, Newark has about one-half the number of married-couple families and about 14 percent more single-headed families than New Jersey overall.

4.3.2 Newark Public Schools

The Newark Public Schools is the largest school district in the State of New Jersey with 75 public schools, encompassing 54 elementary schools, serving more than 42,000 students. In 2006, student-enrollment profiles indicated that the schools are comprised mainly of students classified as members of minority groups. Approximately 59 percent

¹¹ The 1990s was the first decade since 1950 when a substantial population decline did not occur (Sidney, 2003).

¹² The American Community Survey (ACS) is a nationwide survey designed to provide communities with new perspectives about how they are changing, and a critical element in the Census Bureau's reengineered decennial census program. The ACS collects and produces population and housing information every year instead of every ten years (<http://www.census.gov/acs>).

of the students are African-American, 32 percent are Hispanic, 8 percent are white, and 1 percent are from other groups (NPS, 2006).

Although the overall majority of the student population is African-American and Hispanic, the city's schools are segregated and reflect the racial divisions of Newark's five wards. For example, most of the students attending schools in the Central Ward are African-American, while most of the students attending schools in the Ironbound are "white."

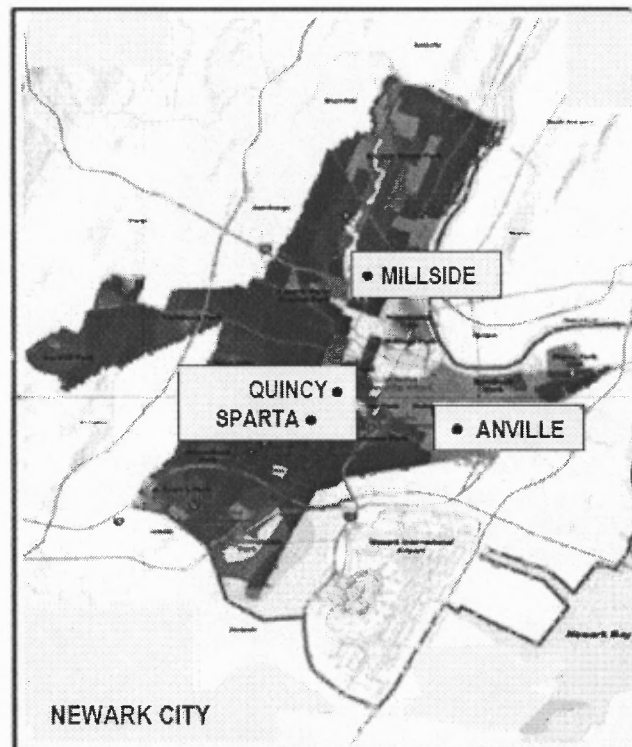
Numerous problems have beset the Newark school system over the years. In 1995, the commissioner of state education ordered the New Jersey Department of Education to assume responsibility for the operations of the Newark public schools for five years, extendible by permission of the legislature, because the schools had failed to address problems with management, government waste, student performance, and school facilities (Burns, 2003).¹³ Despite the State takeover, the Abbott legislation, and Title I funding, many Newark students continue to display low academic achievement and learn in school facilities that are generally deemed as inadequate (ELC, 2004; Schneider, 2004).^{14, 15}

¹³ "In 1987, the New Jersey Legislature enacted a law allowing the State Board of Education to take over responsibility for the operation of chronically failing public school districts....State-operation is reserved for those districts that cannot meet standards *and* do not demonstrate a willingness to improve their performance" (NJDOE, 2006).

¹⁴ The Abbott Legislation obliges the State of New Jersey to allocate resources to ensure that public school children from the poorest urban communities receive the educational entitlements the Constitution guarantees them (Iltus & Steinhagen, 2003).

¹⁵ Title I ("Title One") of the Elementary and Secondary Education Act is to ensure that all children have a fair, equal, and significant opportunity to obtain a high-quality education. To qualify as a Title I school, a school typically has around 40% or more of its students who come from families that qualify under the United States Census' definitions as low-income. Schools receiving Title I funding are regulated by federal legislation, including the No Child Left Behind Act. (U.S. Department of Education, <http://www.ed.gov>). As an Abbott district, the Newark Public Schools' Title I Program is an integral part of the implementation of Whole School Reform, and each school's overall instructional program (NPS, 2006b).

4.3.2.1 Description of Case Study Schools. Four elementary schools with playgrounds adjoining the school building were selected to participate in this study. Figure 4.1 shows the geographic location of the schools. All schools are referred to by pseudonyms to ensure anonymity.



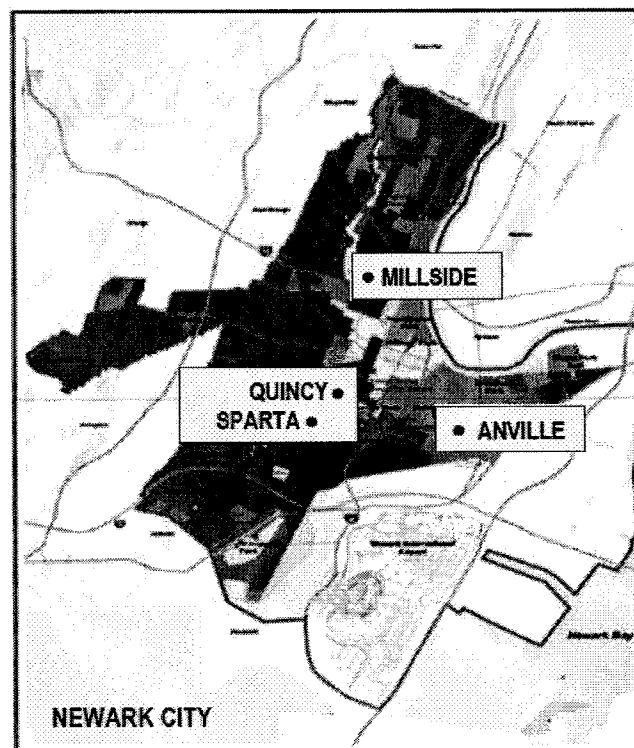
Source: Map from Harnik, 2004

Figure 4.1 Geographic location of case study schools.

- **Anville**
 Located in the *Ironbound*, has a *non-renovated playground*, and was built circa 1890. Anville was selected to participate in the study because it is an outlier—in essence, the opposite image of the other schools regarding school achievement, student population, and playground status. It is a National Blue Ribbon School of Excellence, and the largest bilingual school in the district.

- **Millside**
 Located in the *Central Ward*, has a *renovated playground*, and was built circa 1960. At the time of the study, the school building was undergoing major renovations and construction.

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- **Millside**
 Located in the *Central Ward*, has a *renovated playground*, and was built circa 1960. At the time of the study, the school building was undergoing major renovations and construction.

- **Sparta**

Located in the *Central Ward*, has a *renovated playground*, and was built circa 1970. Sparta is part of Newark's Project Grad Initiative. Any graduate of Sparta who completes four years of high school at Malcolm X Shabazz will be guaranteed a college scholarship.¹⁶

- **Quincy**

Located in the *Central Ward*, has a *renovated playground*, and was built circa 1960. Quincy is unique as a designated "full-service community school." This phrase describes a school that is open most of the time, houses an array of supportive child and family health services provided through partnerships with community agencies, involves parents in significant ways, and serves as the hub of the community (Dryfoos, 2003). Hanna and Nasland (as cited in Musgrave, 1973:167) state that the aim of the community school is to influence the community, "The community school is a unifying force *of the community* rather than merely a social institution *in the community*."

The three case study schools located in the Central Ward are categorized as Title I schools, and offer to eligible students, in addition to free or reduced lunch, supplemental educational services, with academic assistance aimed at ensuring that students increase their levels of academic achievement, particularly in reading, language arts, and mathematics (NPS, 2006b).

Table J.1 outlines a variety of school demographic characteristics for the academic year 2005-2006. The following four characteristics (enrollment, free-/reduced- lunch, student mobility, and first language spoken at home) are important to note since they are considered to be analogous to neighborhood demographics (see section 4.3.2.3).

Enrollment: The majority of children in Anville are white (61%), in Millside are Hispanic (55%), and Black in Sparta (90%) and Quincy (84%). The majority of students in Newark are Black (57%).

Eligible for free-/reduced-price lunch: Anville has the fewest children receiving subsidized lunch (47.8%), while a large percent of children in the Central Ward schools receive subsidized lunch (Millside, 81.3%; Sparta, 73.6%; and Quincy, 83.4%). The Central Ward schools are above Newark's average in this respect (70.3%), and approximately three-fold the state average (27%).

¹⁶ Stated in the New Jersey "Report Card Narratives" (<http://education.state.nj.us>)

*Student Mobility:*¹⁷ The Central Ward schools have the highest percent of mobility (Quincy, 27.1%; Sparta, 25%; and Millside, 21.8%) and Anville the least (15.1%). All four schools are above New Jersey's average (11.9%).

First Language Spoken at Home: For the majority of children in Anville the first language is *not* English (83.3%), while for most children in the Central Ward schools the first language *is* English (Millside, 86.6%; Sparta, 99.3%; and Quincy, 78.4%).

4.3.2.2 Description of School Playgrounds. Table 4.1 outlines a variety of playground characteristics explained in greater depth in Chapter 5, *School Playground Features and Uses*.

Table 4.1 Cross-Case Comparison of School Playground Characteristics

Playground Characteristics	School			
	Anville	Millside	Sparta	Quincy
Size (acres)	1.7	2.0	0.2	2.0
Playground rebuilt by nonprofit	No	Yes	Yes	Yes
Date of renovation	-	2003	1997	2000
Playground description				
Designed play areas and equipment	No	Yes	Yes	Yes
Painted game area/markings	Yes	Yes	Yes	Yes
Perimeter fencing and gate(s)	Yes	Yes	Yes	Yes
Surveillance cameras	No	Yes	No	No
Other Uses				
Parking for teachers	Yes	No	No	No
Portable classrooms	Yes	Yes	No	No
Open to community after school hours	Yes	Yes	No	Yes

During the course of this study, Anville received financing from a state nonprofit organization to paint multicolor game markings on the playground surface (Figure E.2).¹⁸

The renovated playgrounds of the Central Ward schools have similar architecturally designed play areas and content, scaled to area dimensions (Figures E.3, E.4, E.5). Each playground has a large plaque standing near the entrance with the following inscription.

¹⁷ Mobility is defined as the percent of children who entered or left school during the school year.

¹⁸ Playground painting can be a low-cost method of significantly increasing children's physical activity levels (Stratton, 2000).

Community Playground, created by (name of nonprofit), owned by Newark Public Schools, managed by (name of school), funding by (name of foundation(s))

4.3.2.3 Description of School Neighborhoods. There are many interpretations of what boundaries the concept *neighborhood* describes (Warren, 1977; Small & Newman, 2001; Ball et al., 2006). City planners often designate neighborhoods using census tract boundaries or community organizations may define neighborhoods as service areas. Regardless of definition, the concept *neighborhood* has both geographic (place-oriented) and social (people-oriented) components (Porteus, 1977).

In this study, elementary school attendance areas are defined as *school neighborhoods*. This approach was chosen in an effort to avoid constructing an artificial definition of “neighborhood.” Since elementary school children in Newark attend the schools closest to their home, the school attendance areas are, effectively, geographic representations of the city’s demography (Berg & Medrich, 1980).¹⁹ It follows that data for the demographic characteristics of the school children and the families of those children are generally representative of the neighborhoods. Robson (1971:115) notes that the type of school found in an area “is a discriminating indicator of the social composition of the area,” and for young children, the catchment area is likely to be drawn within a tight radius of the school itself.

It is assumed that most study participants *conceive* of their neighborhood as the area within the geographic boundaries of school attendance. According to Porteous (1977:88), “Preadolescent children often conceive of the area between home and school as their neighborhood, but not the area on the other side of the school.”

¹⁹ In Newark, elementary schools draw their student population from a two-mile radius with the school in the center. Elementary children who live further than two-miles from their schools are provided with transportation in the form of bus tickets (NPS, 2006a).

School neighborhood demographics are considered to be similar to school demographic characteristics (Table J.1). The following school demographic categories are used as indexes to measure school neighborhood characteristics:

School enrollment and first language spoken at home → Ethnic population distribution

School enrollment and first language spoken at home are considered measures of ethnic population distribution, and reflect the composition and spatial distribution of residents.

Eligible for free-/reduced-price lunch → Poverty

Eligible for free-/reduced-price lunch is a measure of neighborhood poverty.

Student mobility → Residential stability

Student mobility is a measure of neighborhood residential stability ($100 - \text{mobility}\% = \text{stability}\%$). It may also reveal residents' satisfaction with their neighborhood, or their lack of financial resources to "vote with their feet" and move out.

- School neighborhoods are described using the new indexes of measurement:

Anville neighborhood is predominately white (54%), the majority of people speak Portuguese (54%) and Spanish (28%), approximately 50% of the population is poor; neighborhood stability is 85%.

Millside neighborhood is ethnically mixed Hispanic (55%) and Black (43%), the majority of people speak English (87%), but some speak Spanish (12%), 81% of the population is poor; neighborhood stability is 78%.

Sparta neighborhood is predominately Black (91%), nearly everyone speaks English (99%), 74% of the population is poor; neighborhood stability is 74%.

Quincy neighborhood is mostly Black (84%) with some Hispanics (15%), most people speak English (78%) and some speak Spanish (15%), 83% of the population is poor; neighborhood stability is 73%.

- *Comparison of the neighborhoods* reveals that Anville (2% Black) and Sparta (91% Black) exhibit race/ethnic population extremes, Millside is the most racially mixed

neighborhood, all Central Ward neighborhoods have high levels of poverty and residential stability is between 73% and 85%, with Anville exhibiting the highest stability and Quincy the lowest.

4.4 Data Collection Phases

For this study, three types of data were collected in the following sequence: survey of students and caregivers (Phase I), interviews with school personnel (Phase II), and observations (Phase III). Table 4.2 compares participants by category and school for the different phases of the investigation.

Table 4.2 Cross-Case Comparison of Study Participants by Schools and Data Gathering Techniques

Study Phase	Participant Category	School / Response Rate / Number of Participants			
		Ironbound (non-renovated)	Millside (renovated)	Sparta (renovated)	Quincy (renovated)
<i>Phase I</i> Surveys	Caregivers	82.5% (total n=120)	27.9% (total n=104)	31.6% (total n=57)	18.8% (total n=48)
	5 th Graders	83.6% (total n=122)	42.3% (total n=104)	39.0% (total n=59)	20.8% (total n=48)
<i>Phase II</i> Interviews (School Personnel)	<i>Administrator</i>	Vice Principal	Principal	Principal	Principal
	<i>5th Grade Teacher</i>	5 (total n=5)	3 (total n=5)	2 (total n=3)	1 (total n=2)
	<i>Phys. Ed. Teacher</i>	2 (total n=2)	1 (total n=3)	1 (total n=2)	1 (total n=1)
	<i>After School Director</i>	1	1	1	1
	<i>School Psychologist</i>	Not applicable	Not applicable	Not applicable	1
<i>Phase III</i> Observations	5 th Grade Class	lunch-time recess	lunch-time recess	lunch-time recess	lunch-time recess

All study participants were recruited via the elementary school and signed assent/consent forms to participate in the study. Participants received no compensation for participation. The final decision to participate in the study was voluntary basis. Since no existing instruments included all of the variables needed to address the study, survey instruments were developed by adapting content and methods from previously tested and validated instruments.²⁰

4.4.1 Phase I: Survey of Students and Caregivers

Quantitative survey methods were used to estimate school playground use by fifth-grade children and relied on responses from the child and the child's guardian. The surveys were designed to compare the fifth-grade children's perceptions of their playground and neighborhood with those of their respective caregiver.

The questionnaires were pre-tested in June 2006 at Sparta with fifth-graders in the after-school program and their respective caregivers, and were modified for clarity.

4.4.1.1 Study Participants. Study participants were all fifth-graders (excluding special education fifth-graders) and their respective caregivers.

Fifth-graders (excluding special education) aged 10-11 years, and their respective caregivers were recruited via the classroom teacher. The reason for selecting this population is three-fold: (1) accuracy of recall for children younger than about age 10 may give restricted and inaccurate information about their activities; (2) as children move from childhood to adolescence physical activity levels decline, and since playground use is often associated with physical activity, it is probable that use also declines; and (3) this

²⁰ For questions about perceptions of neighborhood safety, items were adopted from the Neighborhood Environment Walkability Scale (Sallis, 2002)

is an age group that is often studied in investigations of children's physical activity (Freedson & Evenson, 1991; Sallis, 1991; Sallis et al., 1996; Stratton, 1999; Barnett et al., 2002; Verstraete et al., 2006).

Caregivers for fifth-graders were invited to participate along with their fifth-grader in the study.

- **Consent/Assent Forms.** Caregivers' consent forms were returned to the interviewer via the contact person/class teacher before questionnaire distribution.

Fifth-graders: Written informed consent from the fifth-grader's caregiver was necessary for child participation. Additionally, each child was required to sign the assent document attached to the survey questionnaire to confirm that he/she agreed to participate in the study (Figure B.2).

Caregivers: The consent form stated that the caregiver "agrees" to participate and "permits" her/his fifth-grader to participate in the study (Figure B.1). Caregiver's active (signed) consent for child study participation was required. In the event that the caregiver had more than one fifth-grader participating in the study, a consent form for each child was necessary. Caregiver consent forms and survey questionnaires were available in English, Spanish, and Portuguese, so that limited English-language skills were not a barrier to study participation.

4.4.1.2 Survey Instrument. Two types of survey questionnaires were used in this study: a fifth-grader survey (C.1), and a caregiver survey (C.2) each available in English, Spanish, and Portuguese. Questionnaires consisted mostly of closed-ended questions with some open-ended items. Surveys were slightly modified for Anville participants to account for the differences in playground status between Anville and the Central Ward

playgrounds. Table C.1 compares research questions by group and school, and shows the types of scales used to measure the items on the survey.

Table 4.3 outlines the questions used to measure the constructs and the respective respondent group. The *dependent variable*, school playground use, was assessed with two items on the fifth-graders' questionnaire: "Do you ever use the school playground when the school building is closed?" and "Is the school playground open for you to use whenever you want?" Respondents were asked to respond on a categorical scale: yes, no, sometimes.

4.4.1.3 Survey Administration. Due to awareness that school principals are occupied with school-related issues during the day, the investigator requested that each school assign a contact person to act as liaison between the investigator and the school (i.e., teachers). The investigator believed that an appointed "insider" could help facilitate study execution in the schools through continuous on-site contact, enhance legitimization of the study in the eyes of other staff members, and encourage teacher cooperation. These advantages would help to promote study participation among the children.

The investigator proposed to the principals that she be permitted to personally administer the questionnaires to the children during school hours, but ultimately, the survey administration procedure was the decision of the school and teachers.

- **Anville.** The contact person was the vice principal. He was appointed playground-project head, managed execution and teacher cooperation, and was the administrator interviewed in Phase II.

The school decided that all participating students would complete questionnaires at home rather than during the school day because of academic priorities. Prior to the

distribution of the materials, the vice principal received copies of the assent/consent forms and survey questionnaires to share with the teachers. The investigator was informed that the survey content would not be problematic for the children and teachers with bilingual classes would assist with English-language difficulties.

Caregiver consent forms were distributed to the teachers via the vice principal. Children were informed by their teachers that study participation was voluntary, but all caregiver consent forms, regardless of participation, had to be returned to school within 3-4 days after receipt. The investigator received the consent forms from the vice principal, and a few days later brought him the surveys for distribution. Teachers distributed the child and caregiver surveys to participants and reviewed the child survey with the participating children to ensure that they understood the instructions and questions. Teachers requested children to return their survey and their caregiver's survey within 3-4 days of receipt. The following week the investigator received the children's and caregivers' completed surveys from the vice principal.

- **Millside.** The contact person was the physical education teacher for the fifth-graders. He introduced the investigator to the teachers and the investigator explained the purpose of the study. The investigator left the caregiver-consent forms with the physical education teacher and stayed in contact by telephone. After approximately two weeks the investigator returned to the school to collect the consent forms and to speak directly with the fifth-grade teachers regarding the importance of signed consent forms. The investigator left more forms with the teachers because many children had misplaced them.

Table 4.3 Factors Investigated in Survey of Students and Caregivers

TOPIC	CONSTRUCT	MEASUREMENT BY QUESTION TYPE	RESPONDENT	
Playground Features	Accessibility / Constraints	• Distance from home to school	Child/ Caregiver	
		• Mode of travel to and from school	Child	
		• Playground open to use	Child	
	Attractiveness	Selected Characteristics Gendered spaces Natural areas Places to sit and socialize		Child
				Child
				Child
		• Rating of play areas, renovated playgrounds	Child	
		• Importance of play spaces, non-renovated	Child	
		• Rating of playground	Caregiver	
		• Differential scaling of playground attractiveness	Child	
	Safety / Liability	Playground equipment, renovated playgrounds Fear of falling from equipment Equipment safety		Child
				Caregiver
		• Hurt while playing on playground	Child/ Caregiver	
		Supervision / Surveillance	• Importance of adult supervision	Child/ Caregiver
• Child allowed to go alone to playground	Caregiver			
School Feature	After School Program	• Attendance of after school program	Caregiver	
	Individual User	Intrapersonal	• Ranking of different outdoor play spaces	Child
Interpersonal		• Use of playground when school not in session	Child	
		• Outdoor play on Saturday mornings	Child	
Neighborhood Perceptions	Neighborhood Satisfaction	• Neighborhood is great place to live	Child/ Caregiver	
		• Neighborhood is messy	Child/ Caregiver	
	Child Safety	• Guardians preferred outdoor play spaces	Caregiver	
		• Safety from Crime Accompaniment of child to and from school Neighborhood walkability, daytime / after dark	Child Child/ Caregiver	
Demographics	Mobility	• Attend same school last year	Child/ Caregiver	
		• Years lived in neighborhood	Caregiver	
	Age		Child/ Caregiver	
	Gender		Child/ Caregiver	
	Marital Status		Caregiver	
	Language	• English proficiency	Child/ Caregiver	
	Household Income	• Poverty indicator	Caregiver	
Education Level		Caregiver		
Ethnicity / Nationality	• Neighborhood homogeneity	Caregiver		

Three weeks after the investigator's initial contact with the teachers, arrangements were made for survey distribution. Four out of five teachers received consent forms back from the children. Two teachers decided that they would administer the children's surveys during class hours and would return the surveys to the contact person. One teacher decided that the children would do the child survey as a homework assignment and she would return the surveys to the school liaison. The fourth teacher decided that the investigator would administer the surveys to the children during class hours.

Caregiver surveys were distributed to the children participating in the study to take home and return to their teacher. The investigator visited the school every couple days to collect the surveys from the teachers and to remind the children to return the consent forms.

- **Sparta.** The contact person was the fifth-grade vice principal. A meeting was arranged and the investigator met with the teachers to explain the project. The vice principal was resigning that year and rarely available. The principal suggested that the investigator make arrangements directly with the teachers. The investigator administered the surveys to the children during class hours at the convenience of the teachers.
- **Quincy.** The contact person was the director of the community agency that had partnered with the school. During the study period this person was changed three times, and the principal assumed study management. Caregiver-consent forms were left with the principal's secretary for distribution to the teachers. The investigator was in contact with the school office regarding collection of the surveys. When it was time to distribute the surveys, the investigator left the caregivers' and children's surveys together with instructions to the teachers regarding administration of the surveys, with the principal's

secretary. The investigator had no contact with either of the two fifth-grade teachers. The investigator later learned that surveys had been administered during the children's free time.

4.4.1.4 Data Management and Analysis

- All consent forms were coded and the codes were recorded on the respective child and caregiver surveys so that the investigator could identify the participants' school, classroom, and child-caregiver pair.
- Table J.2 outlines information about the number of sample participants who did and did not complete the survey. The majority of respondents from Anville participated in the survey. For the Central Ward schools, more fifth-graders than (respective) caregivers participated. In Millside, many of the children who had consent were absent when the surveys were administered by the teachers. At Sparta, the investigator tried on three separate occasions to administer the survey to children not in class. Quincy was especially problematic and one of the classroom teachers was continuously absent. The investigator left questionnaires with the secretaries on three separate occasions, but many were not returned.
- **Data Analysis.** Data were analyzed using SPSS 14.0. Data for neighborhoods were kept in separate files, and survey responses were coded by question for data entry. The investigator used frequencies to analyze data because of small sample sizes.

Demographic Information. The demographic information for study participants is displayed in Tables J.3 and J.4. Highlights are:

Mobility: Approximately 50% of residents have lived in their neighborhood for six or more years.

Highest Education Level: For comparison, see Table J.7, educational level for Newark.

Ethnicity / Nationality: Figure 4.2 depicts the relationship between school neighborhood and race/ethnicity of the fifth-grader's caregiver (see also Figures J.1 and J.2).

First Language Spoken at Home: Note the similarity between the school profile results and the caregiver population (Figures J.3 and J.4).

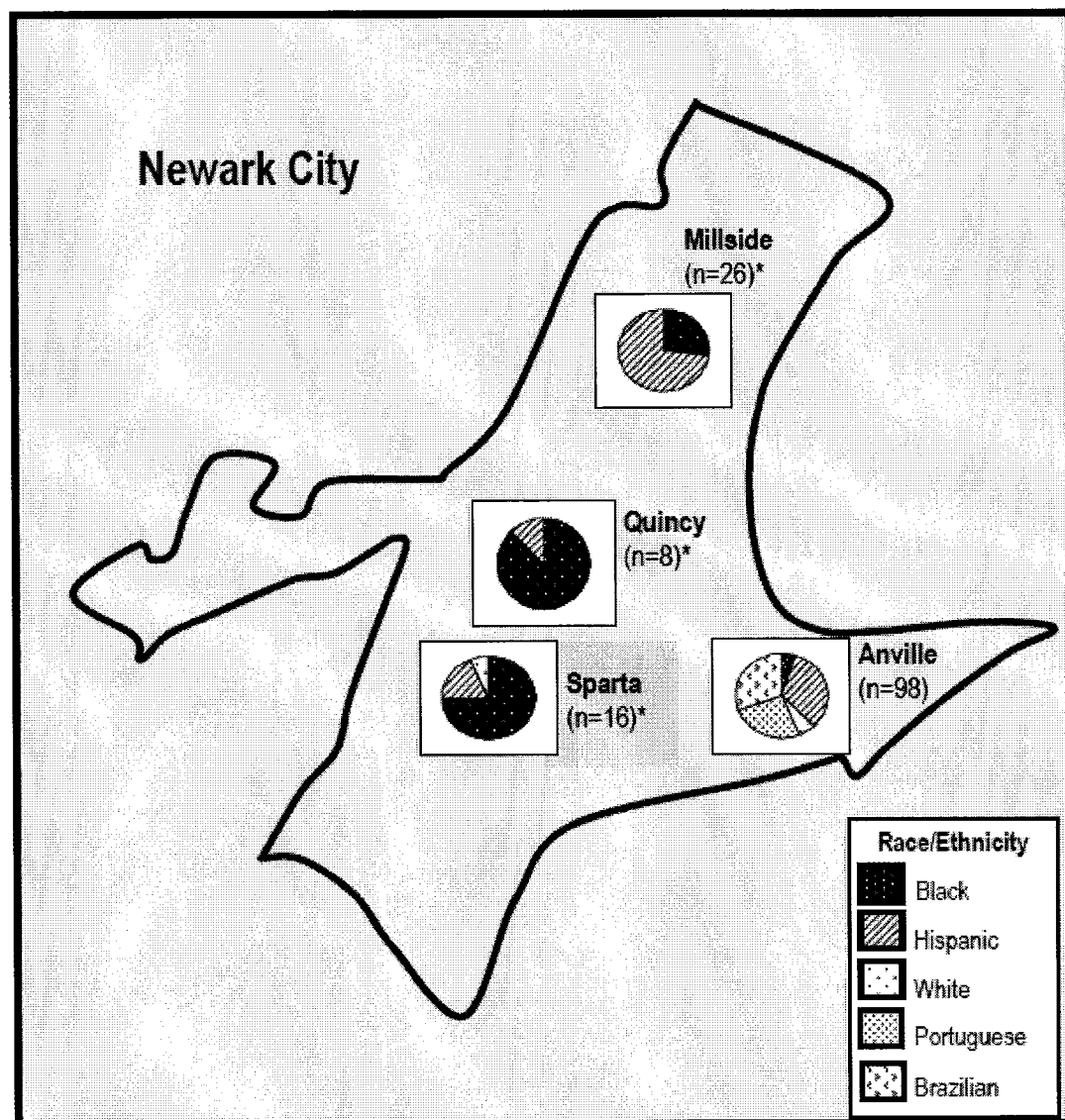


Figure 4.2 Schematic map depicting the relationship between school neighborhood and race/ethnicity of caregivers. Note the homogeneity within the neighborhoods and the differences between the neighborhoods.

Defining the neighborhoods as elementary school districts revealed similar demographics for caregivers and perhaps suggests that people prefer homogeneity and to live near people like themselves (Porteus, 1977).

Playground Features. Results are discussed in Chapter 5, *School Playground Features and Uses*.

Neighborhood Factors. Findings are presented in Chapter 6, *Neighborhood Safety and Playground Use*.

4.4.2 Phase II: Interviews with School Personnel

The purpose of collecting interview data was to compare the perceptions of the fifth-graders and their caregivers regarding school playground use to those of their teachers.

The views of the teachers can help impart meaning on the survey findings.

4.4.2.1 Study Participants. In Newark, the principle caretaker of the school playground is the senior administrator of the school. Since the study population in this investigation is fifth-graders, it is appropriate that the categories of people chosen to be interviewed were those who have contact with and are aware of the fifth-graders' use of the school playground. The five categories of interviewees for each of the four case studies are the school principal, fifth-grade teachers, the fifth-grade physical education teacher, the director of the after-school program, and the school psychologist.

- **School Principal:** as chief administrator of the school, the principal is responsible for determining maintenance and general usage periods of the school playground during the year. The principal is the overseer of the school playground as well as the school's primary community-contact person.
- **Fifth-Grade Teachers:** as the primary contact people with the fifth-grade children, the fifth-grade teachers observe the activities of the children on the playground and are aware of how the playground and its different play areas are used by the children. Due to the small number of fifth-grade classes (there were between three and four classes for each of the four case studies) it was determined that all fifth-grade teachers for each case study would be interviewed.

- Physical Education Teacher: as the person in charge of directing and overseeing the fifth-graders' activities on the playground during physical education classes, the physical education teacher is aware of how the children use the playground during such times.
- Director of the After-School Program: as the person in charge of the after-school activities of the program's participating children (among which are the fifth-graders) the director is aware of how the playground and its different play areas are used by the children during after-school hours.
- School Psychologist: as the person who collaborates with educators and teachers to help create a safe and healthy supportive environment for the children, the psychologist is aware of children's behavioral issues and at times may observe their activities in the playground setting.

4.4.2.2 Interview Instrument. The aim of the interview protocol was to investigate more thoroughly the results of the quantitative phase (Appendix D). Due to the nature of the study design, the themes explored in the interviews are related to the content of the quantitative surveys. The semi-structured interview instruments consisted of approximately twenty questions and were individualized for participant category.

Interview questions were grouped into the following seven categories:

- **Background Information.** These questions asked participants to talk about themselves, prior teaching positions, and how the school playground compares with playgrounds at other schools with which they were familiar. The aim of these questions was two-fold: to serve as an opening introduction to the study, and to obtain details about the participants.
- **Accessibility/Constraints.** Several questions focused on exploring playground availability/constraints during the school day and after-school hours.
- **Surveillance/Supervision.** This category of questions explored the role of the school in providing children with a safe, supervised playground environment and included items about child safety and playground maintenance.
- **Safety/Liability.** A few questions were asked about children's playground injuries.
- **Attractiveness.** Several questions were related to participants' likes/dislikes regarding the playground and their suggestions for changes.

- **Playground Use/Neighborhood Perceptions.** A number of probing questions asked about neighborhood-crime level and whether the school playground is a play-space option for children after-school hours.
- **General Information.** The last set of questions encouraged the participants to introduce playground issues not discussed previously.

4.4.2.3 Data Collection and Analysis. Interview participation was voluntary and all respondents signed school personnel consent forms (modified to reflect each respondent's status) before interview commencement (Figure B3). The informal face-to-face interviews took place during the school day at the convenience of the interviewees and all participants were interviewed separately. Interviews were conducted by the investigator and lasted for approximately twenty minutes. All interviews were tape recorded and the voice files were transferred to the investigator's personal computer. The interviewer also made handwritten notes during the interview.

- Table J.5 outlines the demographic characteristics for the qualitative study participants by schools and categories.
- Interviews were transcribed by the investigator and coded for the following themes:
 - Playground accessibility/constraints
 - Playground-maintenance issues
 - Other uses of the school playground
 - Children's playground activities during recess
 - Effects of playground renovations
 - Suggestions for playground improvements
 - Child safety/liability and playground injuries
 - Perceptions of local neighborhood dangers
 - Supervision/surveillance
 - Children's health and the school

4.4.3 Phase III: Observations

Through observation of people's behavior in a physical setting, data were generated about their activities and the opportunities provided by the environment to support such activities. According to John Zeisel (1985), awareness of how people use a physical setting is important for designing settings that are suited to what people actually do in them.

The purpose of this research phase was to systematically observe and record fifth-graders using their school playground during the fifteen- to twenty-minute lunchtime recess. The investigator assumed the role of a *non-participant observer*, observed the different playground areas and their users, and recorded the various types of activities taking place within each area. Observations took place during the months of November and December, 2007, at the convenience of the teachers and during suitable weather conditions. In general, the temperature was in the low to middle 50s (degrees Fahrenheit) and the children were outside in jackets.

4.4.3.1 Observational Protocol. A modified version of SOPLAY was used for observations (McKenzie et al., 2000).²¹ The investigator observed fifth-graders' playground activity during recess on two separate occasions at each school.

- **Target Areas.** A map for each school playground was partitioned into designated target areas. These locations were likely to provide opportunities for children to be active. Anville had five target areas and each Central Ward school playground had eight target areas based on architecturally designed divisions (Figures E.2, E.3, E.4, E.5).

²¹ SOPLAY is a validated direct observation tool for assessing physical activity and associated environmental characteristics in free play settings.

- **Recording Procedures.** On the observation form, the investigator entered the school name, date, time, and weather (Figure E.1). The contextual variables of the target areas were recorded using the codes at the bottom of the form. The investigator walked through the playground areas following the numbered sequence route as displayed on the playground map. At each area, the investigator stopped for about one minute and scanned the area from left to right. The first scan was to observe girls and to record their activities using the codes at the bottom of the form. The procedure was repeated for boys. The investigator made at least two complete walks around the playground during recess. Additionally, the investigator noted the overall level of activity taking place on the playground.

- Recorded items included:
 - Area and surface type
 - Activity taking place in area for both children and playground supervisors (possible activities are listed on the record form). If no activity is taking place in an area, this too was noted.
 - Number and gender of children participating in activity.
 - Number and gender of playground supervisors.
 - Additional information was recorded under comments.

- The two separate observations for each school were compared and an average for the variables of activity type, activity level, and gender were calculated. Findings were summarized and the results recoded by activity category: energetic activities, activities in equipment area, less active activities, and threatening actions (Table E.2). Activity levels were compared across schools by place, percent of children, and gender. Observational findings are discussed in Chapter 5, *School Playground Features and Uses*.

4.7 Chapter Summary

A key feature of this study is to provide insight into the dynamics surrounding children's school-playground use by the incorporation of multiple data sources, including

city-crime statistics, population demographics, survey questionnaires, focused interviews, and playground observations. Predetermined research themes were used to design survey and interview instruments, and data were collected sequentially and analyzed independently with data consolidation in the interpretation phase of the study. The mixed-method approach is an appropriate strategy for the ecological framework adopted in this study since it assumes that children's playground use is affected by multiple influences including caregivers, schools, and communities.

This study demonstrates the need for a high degree of flexibility when working with Newark Public Schools. For example, the research strategy identified the investigator as survey administrator, but ultimately it was the teachers' decision how the children completed the questionnaires. For the Central Ward schools, the process of quantitative data gathering was especially difficult and participation was low compared to Anville.

The advantages of employing mixed-methods designs when exploring complex research questions are documented. However, the process of combining quantitative and qualitative techniques in a single study can significantly prolong the time an investigator is involved in data collection and interpretation.

CHAPTER 5

SCHOOL PLAYGROUND: FEATURES AND USES

5.1 Introduction

Playgrounds are a common amenity at thousands of schools across the nation (Kennedy, 2006). They are an important part of the child's environment given that children spend approximately 180 days per year at school, with designated periods of each school day within the confines of the playground.

For most children, the playground is a highly significant space in the school awarding opportunities for play and fun, a break from school work, and most importantly, a chance to get together with friends (Burke & Grosvenor, 2003). Additionally, school playgrounds can make an essential contribution to the enhancement of children's health and development by providing recreational opportunities (Sallis et al., 2001; Sutterby & Frost, 2002). Related to this is a concern for child safety and facility maintenance (Evans, 1990; Tinsworth & McDonald, 2001).

Outdoor play provides many benefits for children (Henninger, 1994; Rivkin, 1995; Frost et al., 2001). The more time youngsters spend outdoors, the more opportunity they have to be active, and the less time they are in indoor environments where physical activity is likely to be constrained (Sallis, McKenzie et al., 1993; Anderson et al., 1998; Sallis et al., 2000; Burdette et al., 2004b). School playgrounds that are planned and designed to encourage active play, and that are accessible to children after-school hours, have the potential especially to provide children living in overcrowded urban neighborhoods with much needed quality play spaces (McKendrick, 1999; Stratton, 1999; Iltus & Steinhagen, 2003).

The purpose of this chapter is to investigate the association between features of the school playground and children's use of the playground during the school day and when school is not in session. To address these issues the study draws from data gathered from the children and their respective caregivers, from interviews with select school personnel, and from observations of children during lunchtime recess. Table 5.1 presents the survey and interview questions—grouped by playground issue and construct—that were used in this investigation, and is the framework for the following data analysis (see Table 4.1 for cross-school comparison of playground characteristics).

The discussion in the following sections provides an overview of how school playgrounds are used by fifth-graders. The chapter's introduction, Section 5.1, discusses the significance of the school playground. Section 5.2 discusses how playground attributes such as accessibility, attractiveness, and safety can affect children's use of the play space. Included in this section is a summary of playground observations for children's "free play" during lunchtime recess. Section 5.3 describes the various functions and uses of the playground in the school context and after school, when children have leisure-time. Finally, Section 5.4 summarizes the association between playground features and uses and children's preferences for outdoor play options.

5.2 School Playground Features

School playground features such as location and types of play apparatus can influence children's choices among leisure-time play options. Inasmuch as different physical settings elicit different play behaviors, it is important to identify those playground features that meet the needs of children (Barbour, 1999; McKendrick, 1999).

Table 5.1 Questions on School Playground Features and Uses

SURVEY OF STUDENTS AND CAREGIVERS					
Issue	Construct	Question	Response Format	Respondent	
Playground Features	Accessibility/ Constraints	• Distance from home to school	Categorical (close, far)	Child	
		• Mode of travel to and from school	Interval (miles)	Caregiver	
		• Playground open to use	Categorical (walk, car)	Child	
	Attractiveness	• Selected Characteristics	Gendered spaces	Categorical (Y/N)	Child
			Natural areas	Categorical (Y/N)	Child
			Places to sit and socialize	Categorical (Y/N)	Child
		• Rating of play areas, renovated playgrounds	Ordinal (good, poor)	Child	
		• Importance of play spaces, non-renovated	Ordinal (important)	Child	
		• Rating of playground	Ordinal (good, poor)	Caregiver	
		• Differential scaling of playground attractiveness	Interval	Child	
	Safety/ Liability	• Favorite play area, renovated playgrounds	Categorical	Child	
		• Favorite things to do, non-renovated playground	Fill-in	Child	
• Condition of playground		Categorical (Y/N)	Child/Caregiver		
School Feature	After School Program	• Attendance of after-school program	Categorical (Y/N)	Child	
		• Playground equipment, renovated playgrounds	Categorical (Y/N)	Child	
Individual User	Intrapersonal	Fear of falling from equipment	5 point Likert scale*	Child	
		Equipment safety	5 point Likert scale*	Caregiver	
	Interpersonal	• Hurt while playing on playground	Categorical (Y/N)	Child/Caregiver	
INTERVIEW WITH SCHOOL PERSONNEL					
Issue	Construct	Question	Response Format	Respondent	
Playground Features	Accessibility/ Constraints	• Use during the school day	Open-ended	All School Personnel	
		• Use before and after school			
	• Use during the after-school program				
	• Community use				
Attractiveness	• Likes / Dislikes	Open-ended	All School Personnel		
	• Changes / Improvements				
Maintenance	• Daily upkeep	Open-ended	All School Personnel		
	• Repairs				
Safety / Liability	• Playground injuries	Open-ended	All School Personnel		
	• Supervision / Surveillance				
Child Safety	• Types of supervision	Open-ended	All School Personnel		
	• Supervision responsibilities				
Miscellaneous	Other Uses of Playground	• Parking	Open-ended	All School Personnel	
		• Portable classrooms			

*Five-point Likert scale in conjunction with face scale

*Categorical scale (Yes/No/Sometimes)

5.2.1 Section Overview

Playground features can influence children's preferences concerning how to spend leisure-time outdoors on the school playground. The creation of a supportive physical

environment that is easily accessible, attractive, and properly maintained may encourage children to visit the school playground during after-school hours. This study investigated a number of playground features that may influence facility use. Playground features are grouped into the following three categories: accessibility and constraints, attractiveness, and safety and liability.

5.2.2 Accessibility and Constraints

Playground accessibility is particularly relevant for children, since their activity is often limited to distances that they can either walk or bicycle (Cohen et al., 2006). Previous research on the influence of the physical environment on physical activity suggests that spatial access is positively correlated with physical activity behavior (Brownson et al., 2001; Giles-Corti & Donovan, 2002).

5.2.2.1 Synopsis. This subsection presents findings for the playground category “accessibility and constraints.” Spatial accessibility to the school playground was measured by distance from home to school (playground location) and mode of travel to school. The purpose was to investigate if distance acts as a barrier to playground use. Playground availability was measured by “open” to use.

5.2.2.2 Distance from Home to School. Both the fifth-graders and their caregivers were asked to estimate the distance from home to school. Fifth-graders were asked to respond to the question “What is the distance from your home to your elementary school?” using the categorical scale of “close,” “a little far,” and “far” (Figure 5.1).

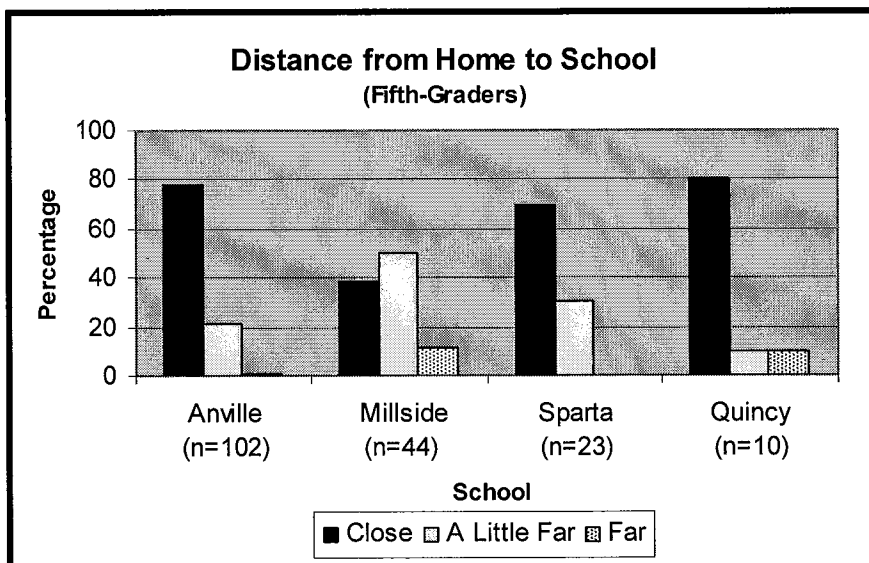


Figure 5.1 Distance from home to school as perceived by fifth-graders.

Caregivers were asked to respond to the question “What is the distance from your home to the school?” using an interval scale of “less than $\frac{1}{4}$ mile,” “between $\frac{1}{4}$ mile and $\frac{1}{2}$ mile,” “between $\frac{1}{2}$ mile and 1 mile,” and “more than 1 mile” (Figures 5.2, F.1; Table F.1).

The results from both groups were compared. Findings suggest that the caregivers’ perceptions of distance in miles are similar to the responses from the majority of children. Overall, most children perceive that they live “close” to the school and the majority of caregivers estimate the distance from home to school to be “less than $\frac{1}{2}$ mile.” A large proportion of children actually live within $\frac{1}{4}$ mile of the school.

5.2.2.3 Mode of Transportation to and from School. Fifth-graders were asked to respond to the question “How do you usually get to and from school?” by choosing among the following options: walk, bike, car, school bus, and public bus. Findings show walking, as opposed to traveling by car, is the usual mode of transportation to and from

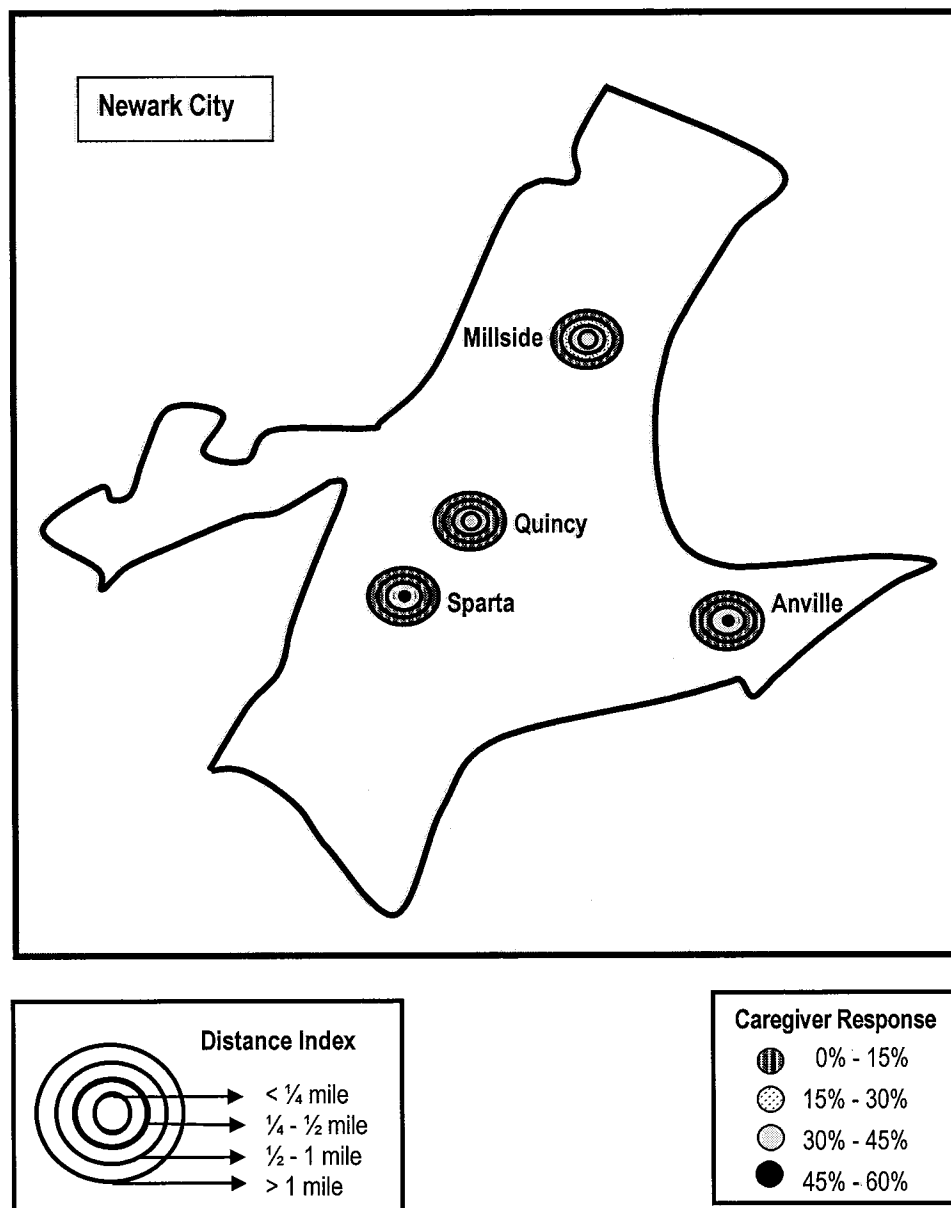


Figure 5.2 Schematic map depicting spatial access to school playgrounds as perceived by caregivers.

school for most children from Anville (60%), Millside (63%), Sparta (83%), and Quincy (50%) (Figure 5.3). Alternative modes of transportation are generally not used (e.g., bike). Buses are rarely used for transportation, with the exception of one child from Anville (1%) and one child from Quincy (10%) traveling by public bus, and one child from Millside (2%) traveling by school bus.

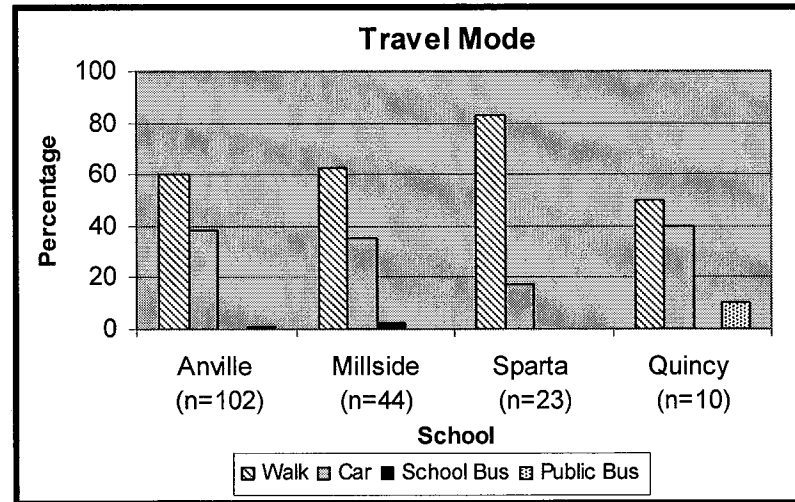
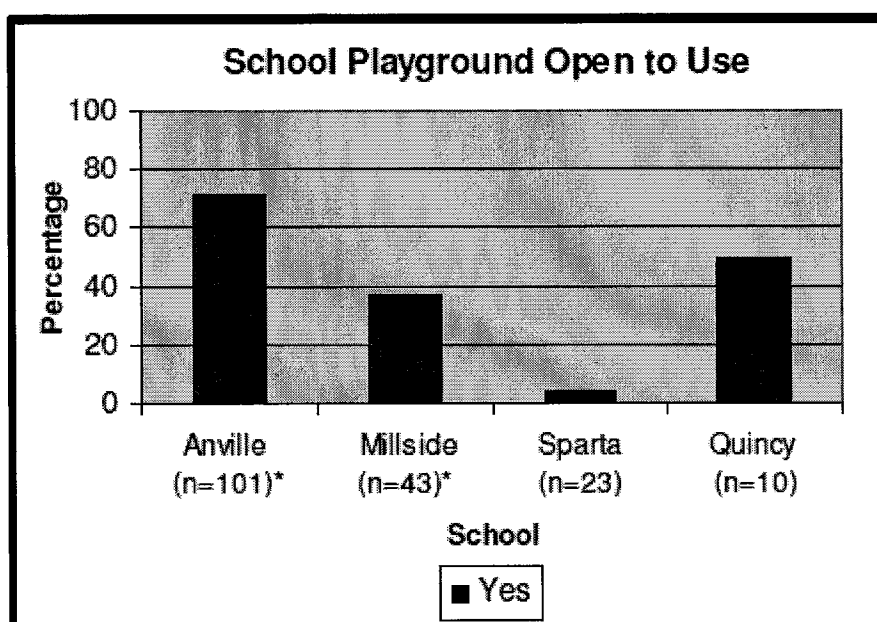


Figure 5.3 Comparison of children’s usual mode of travel to and from school.

Some factors that can influence the mode of travel to and from school are distances from home to school, caregivers’ perceptions of safety, and time pressures (CDC, 2002). Walking to and from school, also referred to as “active commuting,” has sharply declined in the United States over the past several decades. In 1969, approximately half of all school children walked or bicycled to or from school, and 87% of those living within 1-mile of school walked or bicycled, whereas, today, fewer than 15% of children and adolescents use active modes of transportation (CDC, 2005). Wen and colleagues (2007) note that safety concerns can lead to increased road congestion when parents, in an effort to protect their own children from car traffic, drive them to school. This has the unintended consequence of increasing the traffic volume in a school’s vicinity and adds to hazards.

5.2.2.4 School Playground Open to Use. Fifth-graders were asked to respond to the question “Is the school playground open for you to use whenever you want?” using the categories “Yes/No” (Figure 5.4, Table F.2). Findings reveal that most children from Anville (71%) perceived the playground as open for them to use whenever they wanted, while the majority of children from Millside (63%), Sparta (96%), and Quincy (50%), reported that the playground was not open for them to use.



*Missing data (NR) has been eliminated and the total percentage adjusted for Anville and Millside. The total population for schools missing data is: Anville, n=102; Millside, n=44.

Figure 5.4 Percent of children who agreed the school playground is open for them to use whenever they want.

The following quotes from the teachers refer to playground availability before school and when school is not in session.

Before commencement of the school day. According to school personnel, the playgrounds are available to the children in the morning before the commencement of the school day, although on cold or inclement days, early arrival is discouraged.

“The principal did tell them [children] today that it is cold and she doesn’t know why they came so early.” (Anville school, classroom teacher)

“Open before the school day at 7:45, if weather conducive.” (Quincy school, principal)

Although there is limited evidence to suggest that children’s habitual activity behavior exhibits seasonal variations, a reduction in temperatures and intermittent inclement weather, especially during the winter months, is likely to affect children’s opportunities to play outdoors (Stratton, 1999).

When school is not in session. After school hours, all the playgrounds, except for Sparta, are open to the community. At Sparta, there is one exterior gate to the playground, but it is kept locked when school is not in session, except for special school and community events. Although the outside gates along the perimeter of the Anville, Millside, and Quincy school playgrounds may appear locked, usually one gate at each school is unlocked (although kept closed), when school is not in session (Figures I.6, I.9). Notably, the schools with renovated playgrounds (Millside, Sparta, and Quincy) have an agreement with the nonprofit organization to allow community access to the playgrounds.

“We have children from other areas coming after school. When I leave at 4:00, 4:30 always someone on the playground...It is a public playground and is open to the community. We aren’t crazy about it but it is [open].” (Anville school, vice principal)

“Free access, that is our agreement with [non-profit organization]. The community is allowed to use the building depending on their business, but need to acquire a permit.” (Millside school, principal)

“It’s not used a great deal by the community when school is not in session. However, when they request to use it, it’s always available.” (Sparta school, principal)

“The playground is definitely open to the neighborhood.” (Quincy school, principal)

At Quincy, they try to keep local children from using the playground when the after-school program is in session.

“After school there is a security guard. It [gate] is not locked but the security guard tries to keep everyone away until about 5 or 6.” (Quincy school, classroom teacher)

A noteworthy incident took place at Quincy after playground renovations were completed in June 2000. The school locked the outside entrance gate to prevent the community, mainly people living in the nearby (now defunct) public housing projects, from coming inside. But the fence could not keep out the community (to date, the damaged entrance gate has not been fixed). In the following, the interviewee is referring to incidents that took place after the playground was newly renovated.

“One of the big concerns was will the community come in and destroy it [playground]? Will it be a hang out for the non-desires? Will they pull up the green stuff [turf]? So they [school] locked the door the first couple of months. The kids was climbing over the gate...then they found a little hole in the gate. So they said, you know what, let’s open it and see. To their amazement, the community came in...they use it...not one tree got pulled up, none of the grass got disturbed, no graffiti no where on the wall, they picked up the garbage and put it in the containers. We were like so surprised, especially for this type of community we live in. Much larger [the community at that time] and a lot of activities, different things goin’ on [gangs]. We all were just surprised that the community respected it...after that we stopped locking the gate.” (Quincy school, after-school program, employee)

5.2.2.5 Summation. Overall, findings reveal that most children in this study live within one-half mile of their elementary school, usually walk to and from school, and (according to the children) the school playground is not always open to use whenever they want (Figures 5.2, 5.3, 5.4). A notable discrepancy exists between the responses of the children and the teachers regarding playground availability. According to school personnel, the playgrounds (Anville, Millside, and Quincy) are open to community use after school hours. Sparta is closed, but available upon request.

The agreement between the non-profit organization responsible for playground renovations and the schools (Millside, Sparta, and Quincy) states that school playgrounds should be open to public use, “Commitment to public access to the new playground” (Table J.8). It is unknown why so many children from Millside and Quincy perceive their school playground as “not open.”

The investigator contacted the Newark Public Schools to clarify district policy regarding playground availability after school hours, the response follows:

“In response to your inquiry, please be advised that the district does not have a written policy regarding the use of its playground by the local community when school is not in session.

The district has a policy and procedure regarding the use of its schools and equipment by non-profit and profit organizations.

Generally, when schools are not in session, the district’s playgrounds are not closed or off limits to the local community.” (Executive Legal Assistant, Newark Public Schools, email communication)

5.2.3 Attractiveness

The physical environment of the school playground is important for children’s development and enjoyment and can affect their movement around the playground, and the type and degree of activity in which they engage (Moore, 1985; Pellegrini, 1987; Barbour, 1999). Additionally, playgrounds are more likely to attract children and stimulate activity if they are aesthetically pleasing rather than barren open spaces (Corti et al., 1996). For example, studies involving park usage found that users and potential users prefer proximate, attractive, and larger public open spaces (Wendel-Vos et al., 2004; Corti et al, 2005; Davison & Lawson, 2006).

5.2.3.1 Synopsis. This subsection presents findings for the playground category “attractiveness.” Different composite measures (i.e., single indicator scale, Likert scale, and semantic differential scale) were used to measure children’s playground preferences. School personnel responded to questions regarding how children use the playground and maintenance issues.

5.2.3.2 Selected Playground Characteristics. Children were asked to respond “Yes/No” to the following questions regarding different kinds of playground space designations for gendered spaces, natural play areas with greenery, and places to sit and socialize.

- Does the school playground have enough places for you to sit and talk with your friends?
- Does the school playground have enough play space for girls?
- Does the school playground have enough play space for boys?
- Is it important to have a play area with plants, flowers, and grass on the school playground?

The children’s responses to the above questions are compared in Table F.4 (Appendix F). The findings reveal that most children contend that boys have more play space than girls, that the majority of children from schools with renovated playgrounds have enough places to sit and talk, and that greenery on the playground is important to the majority of children from Anville and Sparta.¹

Results also reveal that most of the children from Anville (86%) would like places to sit and talk with their friends. Children, evidently, feel that having areas to sit and socialize while on the playground is important.

¹ Taylor et al. (1998) found that urban green spaces in play areas help promote healthy behavior (i.e., higher levels of activity and play creativity) among children. Notably, this research finding about the importance of greenery in play areas is generally consistent with the view of the children in this study.

5.2.3.3 Rating and Importance of Play Areas. Children who attend schools with renovated playgrounds (Millside, Sparta, and Quincy) were asked to circle the group of stars that best describes how they *rate the different play areas* on the playground using a 4-point scale of “excellent,” “good,” “fair,” and “poor,” (with corresponding stars 4, 3, 2, and 1, respectively) (Table F.5).

For evaluation, the four categories were recoded into the categories of “excellent/good” and “fair/poor.” The findings show that only the children from Millside and Quincy consistently gave high ratings to the different play areas on the school playground (Table 5.2). In general, the play space with the highest rating among the three schools was the play-equipment area, while the play space receiving the lowest rating was the painted game area.

- *Children from Anville* (non-renovated playground) were asked to circle the group of stars that best describes how they *rate the importance of having different play areas* on the playground using a 4-point scale of “very important,” “important,” “somewhat important,” and “not important,” (with corresponding stars 4, 3, 2, and 1, respectively) (Table F.6).

For evaluation, the four categories were recoded into the categories of “very important/important” and “somewhat important/not important.” The findings show that the majority of children think it is “very important/important” to have play spaces on their school playground (in descending order) for play equipment, a running track, basketball, and a painted game area (Table 5.3).

Table 5.2 Rating by Children of Different Play Areas on Renovated Playgrounds

Question School, Group, Number of Respondents	Response Category (%)	
	Excellent/ Good	Fair/ Poor
Circle the group of stars that best describes how you rate each play area on the school playground.		
• Basketball		
<i>Millside</i> children (n=41)*	75.6	24.4
<i>Sparta</i> children (n=23)	30.4	69.6
<i>Quincy</i> children (n=10)	80.0	20.0
• Running Track		
<i>Millside</i> children (n=40)*	57.5	42.5
<i>Sparta</i> children (n=22)*	36.4	63.7
<i>Quincy</i> children (n=10)	80.0	20.0
• Play Equipment		
<i>Millside</i> children (n=41)*	75.6	24.4
<i>Sparta</i> children (n=23)	34.7	65.2
<i>Quincy</i> children (n=10)	90.0	10.0
• Painted Game Area		
<i>Millside</i> children (n=41)*	53.7	46.3
<i>Sparta</i> children (n=23)	21.7	78.3
<i>Quincy</i> children (n=10)	50.0	50.0

*Missing data have been eliminated and the total percentage adjusted.

The total population of children for schools missing data is: *Millside*, n=44; *Sparta*, n=23.

Table 5.3 Importance of Play Spaces on Anville Playground

Question School, Group, Number of Respondents	Response Category (%)	
	Very important/ Important	Somewhat important/ Not important
Circle the group of stars that best describes how important you think it is to have the following play spaces on the school playground.*		
• Basketball		
<i>Anville</i> children (n=100)	57.0	43.0
• Running Track		
<i>Anville</i> children (n=99)	72.7	27.3
• Play Equipment		
<i>Anville</i> children (n=99)	78.8	21.2
• Painted Game Area		
<i>Anville</i> children (n=99)	56.6	43.4

*Missing data (NR) have been eliminated and the total percentage adjusted.

The total population for *Anville* children is n=102.

For the children of Anville, it seems that playground equipment will continue to remain on their wish list.

“Equipment would be great but I don’t think that is on their [school] priority list to be honest.” (Anville school, classroom teacher)

“We don’t have the place for equipment. They [children] need to line up before they enter the building.” (Anville school, vice principal)

“They’re not outside that much that it [equipment] makes a difference. They’re only out 15 minutes.” (Anville school, classroom teacher)

“Equipment could cause fights...they’re not that good at sharing.” (Anville school, classroom teacher)

Also safety concerns regarding playground equipment were mentioned.

“A jungle gym would be tremendous if the little kids could have something to play on...but then again, one of the number one broken bones is monkey bars.” (Anville school, physical education teacher)

“Probably better that there isn’t equipment because of safety.” (Anville school, classroom teacher)

- *Caregivers from the four schools were asked to rate the school playgrounds (in general) using the above mentioned 4-point scale of “excellent,” “good,” “fair,” and “poor,” (with corresponding stars 4, 3, 2, and 1, respectively) (Table F.3). For evaluation, the four categories were recoded into the categories of “excellent/good” and “fair/poor” (Table 5.4).*

- *Comparison of children’s and caregivers’ rating responses.* Rating responses of the children with renovated playgrounds (Tables 5.2) were compared with rating responses of the caregivers (Table 5.4). Findings reveal that the majority of children and caregivers from Millside rated the playground “excellent/good.” The children and caregivers from Sparta and Quincy expressed opposing ratings of the playground. For

Sparta, the majority of children rated each of the four play spaces as “fair/poor,” while the majority of caregivers rated the school playground as “excellent/good.” For Quincy, the majority of children rated each of the four play spaces as “excellent/good,” while the majority of caregivers rated the school playground as “fair/poor.” Notably, Anville’s playground (non-renovated, with playground markings) received an “excellent/good” rating by the majority of caregivers.

Table 5.4 Rating of School Playgrounds by Caregivers

Question School, Group, Number of Respondents			Response Category (%)	
How do you rate the school playground?			Excellent/ Good	Fair/ Poor
Anville	caregivers	(n=98)	60.2	39.8
Millside	caregivers	(n=28)*	75.0	25.0
Sparta	caregivers	(n=15)*	66.7	33.3
Quincy	caregivers	(n=9)	44.4	55.5

*Missing data have been eliminated and the total percentage adjusted.

The total population of guardians for schools missing data is: Millside, n=29; Sparta, n=18.

According to the teachers, the different play areas on the renovated playgrounds have positively influenced the play behavior and activities of the children during recess.

“This playground has absolutely influenced their activities...before they were all over the place...now they have the basketball courts...the swing sets...it’s more encouraging for them to play.” (Millside school, classroom teacher)

“The children are sliding and on the monkey bars...children have more constructive play because they have things to utilize. More children use the equipment so I think they’re more active.” (Sparta school, classroom teacher)

Some teachers remarked that the renovations resulted in fewer playground confrontations among the children.

“A whole lot more activities that take place because of the playground [renovations]. A lot more fights were breaking out because there was nothing to do...just by horsing around and more fights...now a lot less contention...they are more spread out...if not getting along go do something else on another end of the playground.” (Quincy school, classroom teacher)

“The playground is an attraction...they [children] realize that they have options when they go out to play...different stations eliminate friction between students.” (Quincy school, principal)

Although Anville’s playground lacks many of the amenities found on the renovated playgrounds, it does have a variety of playground markings (Figure I.1). Some of the teachers noted the difference in the children’s play behavior after the multicolored markings were painted on the playground.

“Before the markings they [children] would just walk around...now there are activities for them to play.” (Anville school, classroom teacher)

“Painted markings are great...games give them something to do during the short amount of time they’re out there.” (Anville school, classroom teacher)

“The painted games are fantastic. Before there would be just one big ball of children, now the children are spread out. Each of the paintings involves at least 10 children and there are about 8 to 10 different games...so at least 80 children can be entertained.” (Anville school, classroom teacher)

Studies that have assessed the before and after effect of playground markings have found a significant and positive increase in children’s energy expenditure and physical activity level, and a decrease in playground confrontations (Stratton, 2000; Stratton & Mullen, 2005; Ridgers et al., 2007).

5.2.3.4 Favorite Play Areas. Children from Millside, Sparta, and Quincy, were asked to choose their favorite play area on the renovated school playground. Play areas were listed according to playground features: running track, basketball, playground markings, benches, play equipment, and other. Findings suggest that the favorite play area for

children from Millside (33%) and Sparta (30%) is the play equipment, while most children from Quincy are divided between the running track (30%) and the basketball court (30%) (Table F.7). For all three schools, the least favorite play areas are the painted game area and the open space area.

The teachers' comments seem to reflect some of the children's responses regarding play area preferences.

"Like to play football...love basketball, tag, and swings. (Millside school, classroom teacher)

"Some kids after lunch want to relax. Other kids want to use games on the playground. Other kids want to play football and be rough. Other kids want to just run around." (Millside school, classroom teacher)

"They love football, basketball, jump rope...you can kinda look at certain areas...like some kids you might see steppin' or jumping rope." (Sparta school, classroom teacher).

"They like to play football and walk around the track, jump rope, kick ball...The younger children are pretty much on the jungle gym and the older kids on the basketball court." (Quincy school, classroom teacher).

- *Anville playground.* Since the Anville playground does not have specially designated play areas, the children were requested to write their favorite thing to do on the playground (F.8). The majority of Anville children responded that they like to play ball games (28%), play on the playground markings (25%), and socialize (25%) with friends.

The teachers in Anville commented on how the children tend to play ball games and games using the painted markings.

"Children bring their own balls...some use the things that are painted." (Anville school, classroom teacher)

"Always play soccer and tag...have pretend goals...a few kids stand where the goals would be...I think they play on all the paintings that we did." (Anville school, classroom teacher)

5.2.3.5 Differential Scaling of Playground Attractiveness. Children were asked to “circle the number closest to the word that best describes your school playground” (F.9). This question rated the children’s feelings about the playground using a semantic differential scale and 4 adjective pairs (fun/boring; important to me/not important to me; beautiful/ugly; and dirty/clean).

Overall, for the adjective pair *Fun/Boring*, results reveal that Millside (renovated playground) is the only school where most children (65%) responded that their playground is “fun.” Many children from Anville (41%), Sparta (39%), and Quincy (30%) did not think that their playground is either “fun” or “boring,” but rather “in-between.” The largest number of children who responded that their playground is “boring” is from Sparta (39%) and Quincy (30%). This finding is especially notable since both of these playgrounds are renovated.

Overall, for the adjective pair *Important to me/Not important to me*, results showed that the response “important to me” was selected by the majority of children, regardless of school, with the largest percent from Anville (73%). Sparta has the greatest number of children (22%) who responded that the playground is “not important to me.” These findings suggest that regardless of school playground status, most children consider the playground to be an important place.

Overall, for the adjective pair *Beautiful/Ugly*, findings reveal that for the three renovated playgrounds, Millside is the only school where most children (54%) responded that their playground is “beautiful,” while Quincy children (40%) and Sparta children (78%) responded that their playground is “ugly.” The majority of Anville children (53%) believe that their school playground is somewhere “in-between” beautiful and ugly. The

findings for Sparta and Quincy are interesting since the renovated playgrounds were designed together with the children.

Findings for the adjective pair *Dirty/Clean*, revealed that only the children from Sparta thought that their playground is “dirty.”

Some of the teachers remarked about the children’s feelings toward the playground.

“The children like the playground.” (Millside school, classroom teacher)

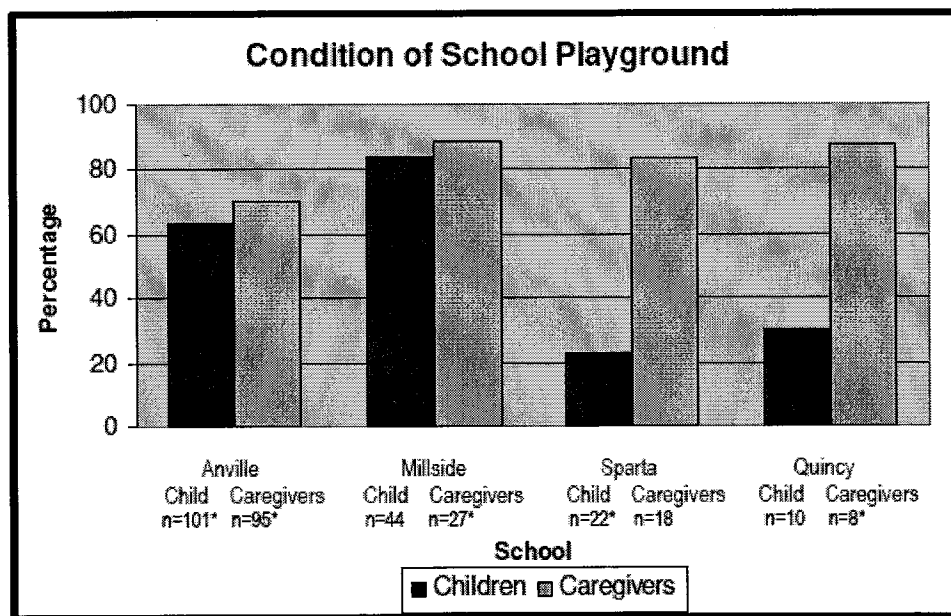
“The kids love the playground...they can’t wait to get outside...it’s a very nice place to play.” (Sparta school, principal)

“I think it’s just very popular.” (Quincy school, principal)

Notably, according to the study findings, the children from Sparta and Quincy do not appear to like the playground as much as the principals think they do.

5.2.3.6 Condition of School Playground. Children and caregivers were asked to respond to the question “Is the school playground in good condition?” using the categorical response scale of “Yes/No” (Figure 5.5, Table F.10). For the schools Millside and Anville, most children and caregivers agree that the playground is in “good” condition, with Millside displaying the highest percent of people who “agree.”

For the schools Sparta and Quincy, the caregivers and children display conflicting views on the condition of the playground. For both schools, the majority of caregivers responded that the playground is in “good” condition, and the majority of children responded that it is “not in good condition.” This finding perhaps suggests that caregivers may be unaware of the actual conditions and maintenance problems that their children encounter on the playground.



*Missing data (NR) has been eliminated and the total percentage adjusted. The total population for schools missing data is: Anville, children n=102, caregivers n=96; Millside, caregivers n=29; Sparta, children n=23; Quincy, caregivers n=9.

Figure 5.5 Comparison of percent of children and caregivers responding that the school playground is in good condition.

A teacher from Millside made the following comment regarding playground condition.

“Of course, there isn’t a perfect playground...but an issue perhaps for all playgrounds is the maintenance issues...we cannot let this playground rot away.” (Millside school, classroom teacher)

A few teachers had suggestions for playground improvements.

“Add some colors...markings also in the fence. They could add cardboard or wood and then paintings...the walls could be painted...make it more inviting.” (Millside school, classroom teacher)

“I would love to see flowers. It looks nice now, but aesthetically it would be so nice.” (Quincy school, classroom teacher)

5.2.3.7 Maintenance of School Playground. On a daily basis, the schools are responsible for playground maintenance.²

² Compliance to the New Jersey Playground Subcode 5:23-11.1 is the responsibility of the manager of the playground facility (<http://www.nj.gov/dca/divisions/dhcr/rec/pdf/recplaygroundsafety.pdf>).

- *Anville*, for example, installed open bins for the children to throw their trash.

“Playground is kept up neat now. The principal put in the garbage cans, so the kids are getting use to just throwing their garbage into the garbage cans while before they threw everything on the floor. Less broken bottles...” (Anville school, after-school program, lead teacher)

But even good maintenance cannot prevent the water drainage problems that hinder Anville’s children from enjoying the playground after it rains (Figure I.2). The investigator noted that there are not any storm drainage points along the perimeter of the playground.

- *At Millside*, the principal notes that the school is responsible for playground maintenance (Figure 5.6).

“We are responsible for the upkeep, if something beaks we replace it...we keep it clean...our custodian staff.” (Millside school, principal)



Figure 5.6 Trash heap near the entrance to the Millside playground.

In addition to the renovated playground, the school has other play areas that require—but do not necessarily receive—upkeep (Figure I.4).

Millside has also encountered maintenance problems with its equipment and other playground features (Figures 5.9, I.5).

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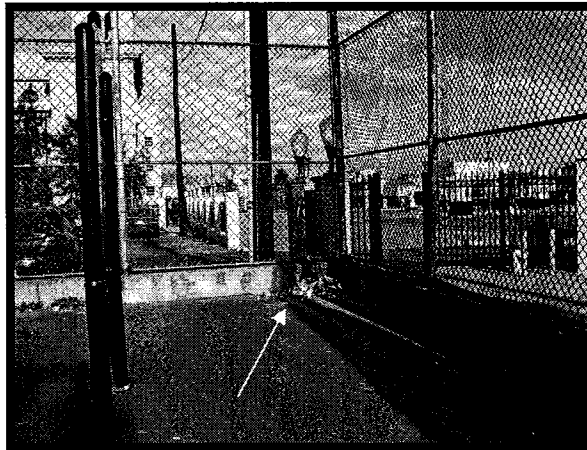


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“We were down to 0 swings, but 2 weeks ago they came out and put 3 swings up [room for 4]. I think when the guys came to fix it they didn’t have that one more they needed. If they’re coming back to do it, I don’t know.” (Millside school, physical education teacher)

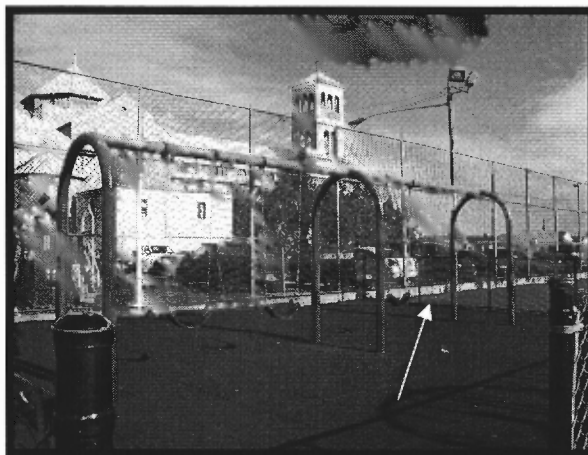


Figure 5.7 Missing swing and deteriorating surface tiles at Millside.

- *At Sparta*, the custodial staff and children are responsible for the playground’s daily upkeep.

“We tell our children on a regular basis that we have to maintain it [playground] in a very, very clean manner and they do.” (Sparta school, principal)

- *At Quincy*, the dilemma of playground maintenance is especially problematic for the school administration (Figures 5.7, 5.8, I.10, I.11, I.12).

“When things get damaged it needs to be immediately repaired or taken down. Maintenance tries to do the best they can. Parents do not take part in maintenance. The security guards put the rug up [to prevent use of sliding board]. We don’t know who is to fix it up. The school doesn’t have a budget. Since Board of Education don’t put it there... [they said] it’s not their responsibility to get it repaired...it’s all about the money. Once you start letting the place go, we be back where it was before.” (Quincy school, after-school program, employee)

“We were down to 0 swings, but 2 weeks ago they came out and put 3 swings up [room for 4]. I think when the guys came to fix it they didn’t have that one more they needed. If they’re coming back to do it, I don’t know.” (Millside school, physical education teacher)

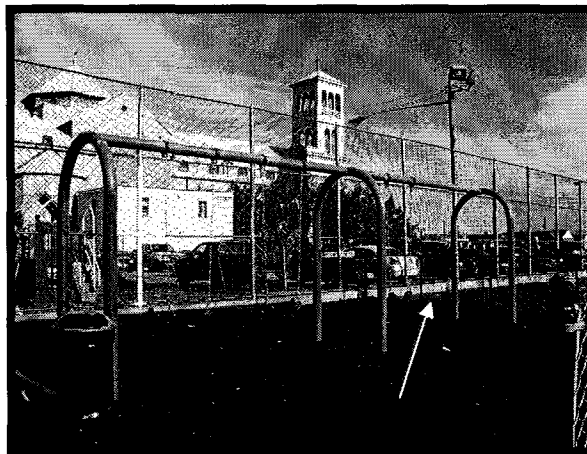


Figure 5.7 Missing swing and deteriorating surface tiles at Millside.

- At *Sparta*, the custodial staff and children are responsible for the playground’s daily upkeep.

“We tell our children on a regular basis that we have to maintain it [playground] in a very, very clean manner and they do.” (Sparta school, principal)

- At *Quincy*, the dilemma of playground maintenance is especially problematic for the school administration (Figures 5.7, 5.8, I.10, I.11, I.12).

“When things get damaged it needs to be immediately repaired or taken down. Maintenance tries to do the best they can. Parents do not take part in maintenance. The security guards put the rug up [to prevent use of sliding board]. We don’t know who is to fix it up. The school doesn’t have a budget. Since Board of Education don’t put it there... [they said] it’s not their responsibility to get it repaired...it’s all about the money. Once you start letting the place go, we be back where it was before.” (Quincy school, after-school program, employee)



Figure 5.8 Rug prevents use of damaged sliding board at Quincy.

The sliding board, unusable for over one year, was eventually replaced by the school board in 2008, but only after the national non-profit organization threatened to withdraw financial support from further school playground renovations in Newark. New playground projects now include a budget for maintenance (personal conversation with agency employee).



Figure 5.9 Gaping hole where a tree once stood at Quincy.



Figure 5.8 Rug prevents use of damaged sliding board at Quincy.

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Figure 5.9 Gaping hole where a tree once stood at Quincy.

The interest in the rejuvenation of the Central Ward school playgrounds overlooked the necessity for financial resources to maintain the sites. The upgrading of undeveloped playgrounds to playgrounds with equipment, AstroTurf, trees, and other amenities requires maintenance to ensure the quality and function of the sites. Lack of financial resources to repair equipment and other items can put children at risk (Kennedy, 2006).

The schools with renovated playgrounds are faced with the problem of maintaining sites for which the Newark Public Schools does not allocate funding. According to a personal conversation with an agency employee, the national non-profit that organized the rebuilding of the playgrounds believed that the schools and the district would assume direct responsibility for playground maintenance. In some instances, school budgets have allowed for small playground repairs, but major repairs of equipment and play areas that have either broken or worn-out from daily use are problematic. It unfortunately appears that insufficient thought was given to how these playgrounds would be maintained.³

5.2.3.8 Summation. There is an interplay among factors influencing playground use—some related to the facility itself and others related to the individual. Findings reveal that children's play area preferences (e.g., equipment, basketball, and running track) on the renovated playgrounds vary for the different schools, but for all schools the least favorite areas are the painted markings and open space. These results suggest that some specially designed play areas do not reflect the play preferences of the children in

³ In New York City, a similar situation was encountered during the 1960s when hundreds of newly built vest pocket parks deteriorated because there was no plan or budget for maintenance (Hart, 2002).

this study, although school children were active participants in designing the playgrounds during renovation.

Overall, findings indicate that the school playground is important to most children, regardless of the playground's physical constraints, design, and condition. Notably, the schools with renovated playgrounds face maintenance issues for equipment, surfacing, and general "wear and tear" due to financial constraints.

5.2.4 Safety and Liability

Statistics show that 79% of all playground accidents are due to falls, and that most of these (68%), are due to falls to the surface and 10% are from falls to the equipment itself (Peterson, 2002). According to Tinsworth & McDonald (2001), the design and use of playground equipment may affect associated patterns of injury. The safety of playgrounds can be improved by the posting of rules, separating play spaces, and maintaining the appropriate depth (at least 9 inches) of loose fill material under equipment (Kennedy, 2006).

5.2.4.1 Synopsis. This subsection presents results for the playground category "safety and liability." Equipment safety is measured by children's fear of falling and caregivers' perceptions of the equipment as safe. Also discussed are the causes and types of injuries that children sustain on school playgrounds during normal use.

5.2.4.2 Safety of Playground Equipment. The children from schools with renovated playgrounds (Millside, Sparta, and Quincy) were asked to respond "Yes/No" to the question "Are you afraid of falling from the playground equipment on the school playground?" (Table 5.5).

• *Caregivers' perception of equipment safety.* Caregivers from the schools with renovated playgrounds were asked to respond to the statement "The equipment on the school playground is safe," using a five-point Likert scale (with corresponding faces) of "strongly agree," "agree," "neutral," "disagree," and "strongly disagree." The data were collapsed from a five-point scale to a three-point scale ("strongly agree" and "agree" = "agree"; "neutral"; "disagree" and "strongly disagree" = "disagree") (Table 5.5).

Table 5.5 Comparison of Children's Fear of Falling from Play Equipment with Caregivers' Responses Regarding Safety of Play Equipment

Question School, Group, Number of Respondents	Response Category (%)		
	Yes	No	
Are you afraid of falling from the play equipment on the school playground?			
<i>Millside</i> children (n=44)	31.8	68.2	
<i>Sparta</i> children (n=23)	47.8	52.2	
<i>Quincy</i> children (n=10)	30.0	70.0	
	Agree	Neutral	Disagree
The equipment on the school playground is safe. [^]			
<i>Millside</i> caregivers (n=29)	58.6	41.4	0.0
<i>Sparta</i> caregivers (n=18)	77.8	16.7	5.6
<i>Quincy</i> caregivers (n=7)*	71.4	14.3	14.3

[^]Collapsed from five-point scale (strongly agree, agree, neutral, disagree, strongly disagree) to three-point scale.

*Missing data (NR) has been eliminated and the total percentage adjusted. The total guardian population for Quincy is n=9.

Overall, findings indicate that most children are not afraid of falling from the equipment and the majority of caregivers "agree" that the playground equipment is safe. But on closer investigation, it is evident that a large percent of Sparta children (48%) are afraid of falling from the equipment, although most Sparta caregivers (78%) "agree" that the playground equipment is safe. The investigator does not know why the children are

afraid of falling; the equipment appeared satisfactory but the dimensions may not be appropriate for their age group.

- *Use of playground equipment.* Improper use of equipment can result in playground-related injuries (Tinsworth & McDonald, 2001). Teachers were asked if children receive instructions at the commencement of the school year regarding the proper use of the playground equipment.

“From what I heard they were instructed on how to use the playground and the rules and regulations.” (Millside school, classroom teacher)

“Most of the time it’s correcting them...they are abusing the playground. For example, climbing up the sliding board the wrong way...jumping...they just need to be corrected.” (Millside school, physical education teacher)

“I’m not sure if they were shown how to use the equipment.” (Sparta school, classroom teacher)

“When it first opened up [2002] the children were all taken outside and there was a whole orientation of how to use the playground. They didn’t know. There aren’t neighborhood playgrounds like this...There was a whole orientation how to use the sliding board...don’t go down backwards...they don’t do this anymore, it’s kinda understood.” (Quincy school, classroom teacher)

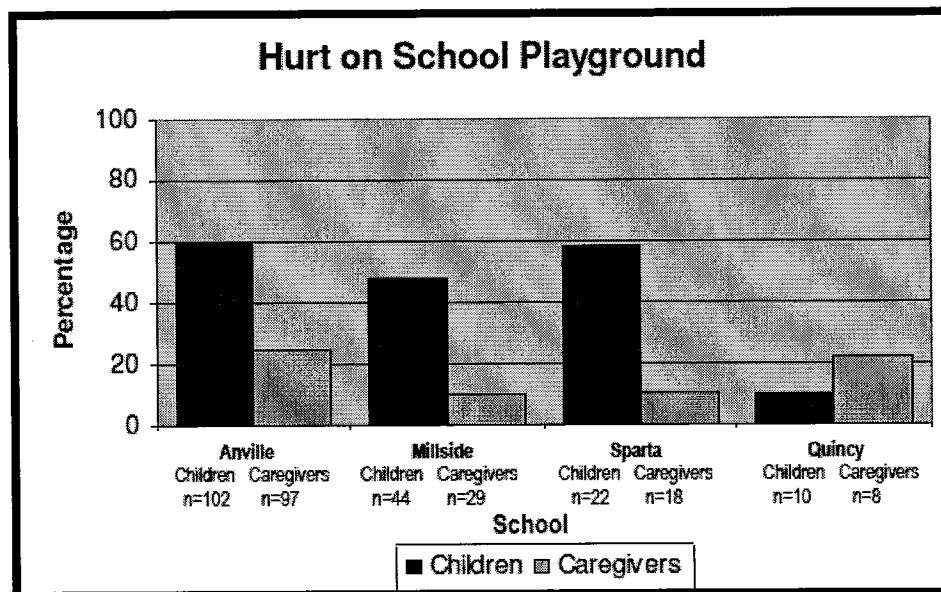
“In the beginning of the year, I spoke with the children regarding the proper use of the equipment...for example...they know they shouldn’t climb up the front of the sliding board.” (Quincy school, physical education teacher)

5.2.4.3 Injuries Incurred on School Playground. Children were asked to respond “Yes/No” to the question “During this, or last school year, did you hurt yourself while playing on the school playground?” Caregivers were asked to respond “Yes/No” to the same question. Additionally, caregivers who responded “Yes” were requested to elaborate on the type of injury that their child received.

Comparison of responses from children and caregivers for “hurt while playing on the school playground” revealed discrepancies (Figure 5.6). Overall, children were more likely than caregivers to respond that they have been hurt while playing on the school

playground. Although more Quincy caregivers than children responded that their child had been hurt, this may be an artifact resulting from the small sample size. The largest number of children who responded that they have not been hurt is from Quincy (90%).

Overall, the majority of children's playground injuries that were reported by caregivers appear to occur during normal play activities (e.g., running, ball games, and falling), but some injuries may be related to playground bullying and confrontations with other children (Table F.12).



Missing data (NR) has been eliminated and the total percentage adjusted. The total population is: Anville caregivers, n=98; Sparta children, n=23; Quincy caregivers, n=9.

Figure 5.10 Comparison of percent of children and caregivers responding that fifth-grader was hurt while playing on the school playground.

Teachers were asked about the occurrence of playground-related injuries during the school day.

Some injuries are the result of participation in everyday playground activities.

“Every once in a while we have a child that falls because they are running and playing and jumping and things of that sort...but not very often. When [children] do get injured it is because they are freely running around...doing the regular things that children do. We take them to the school nurse [on duty all day]. No broken bones...cuts, and bruises, and scrapes...normal everyday things.” (Sparta school, principal)

Other injuries may have been avoided with supervision.

“Injuries are mostly from fooling around.” (Millside school, physical education teacher)

“[Child was] hurt on the concrete...was tackled playing football. Mom doesn’t want him playing quite that rough.” (Millside school, classroom teacher)

Aggressive activities and confrontations on the playground can lead to injuries.

“I think that [injuries occur] when they get careless...at times when a fight might erupt. I cannot speak to anything specifically.” (Sparta school, classroom teacher)

“The children only get hurt if they don’t behave...because they may be pushing.” (Quincy school, physical education teacher)

Recollections of past events regarding playground injuries can conflict.

“Broken arm...somebody pushed a child off one of the pieces. I wasn’t there.” (Millside school, physical education teacher)

Minor problems, nothing horrible...I had one arm break. I don’t know if it’s due to the playground or horseplay. I’m not going to blame it on the playground.” (Millside school, principal)

A playground can become a place of danger when the equipment provided puts children at risk (Kennedy, 2006). According to national data, poor equipment maintenance is responsible for one out of three playground accidents (Peterson, 2002).

At Quincy, faulty playground equipment has resulted in injuries.

“When the sliding board wasn’t working properly one of the kids got a scratch and we went out and looked. The custodians roped off the sliding board...but that didn’t help...they took an old rug and wrapped it around” (see Figure 5.7). (Quincy school, principal)

“For a while they [children] were not able to use that jungle gym because one Saturday somebody got hurt on it and it was tied up for a long time. I don’t know the extent of the injury...but it was a sharp end...somebody got like a cut...no broken arms.” (Quincy school, classroom teacher)

“There is also a bar on the play equipment that no one is allowed to use because one of the boys fell and broke his arm.”(Quincy school, physical education teacher)

To minimize playground injuries, Anville has restricted the size of playing balls and games permitted during school hours.

“Not let them play ball [reference to large balls] because too small a space and people were getting hurt...nothing serious, sprained ankles. They can use small rubber balls.” (Anville school, vice principal)

“Only allowed to bring small balls to play on painted areas...not allowed to play kill” [aggressive version of the game dodge ball]. (Anville school, after-school program, lead teacher)

5.2.4.4 Playground Supervision. Children are supervised by adults, usually teacher aides, when they are outside on the playground during lunchtime recess. The role of the playground supervisors is to prevent confrontations and to ensure that the children do not endanger themselves or others. In general, the adults do not mingle or play with the children, or direct the children’s play activities. The recess period is for unstructured “free play.”

“Teacher aides are out there and usually an administrator goes out there 10 minutes before the end...about 3-4 aides on the perimeter and walk around solely to watch the children...don’t play with them.” (Anville school, vice principal)

At Millside, parents also help supervise the playground.

“Security guards that walk around and teacher aides as well...we have a parent volunteer program at our school and they do in fact go on to the playground to assist with supervision during the day.” (Millside school, principal)

Occasionally, teachers and aides do play with the children during recess.

“When it’s cold, I don’t wanna go out there, you know what I’m saying...when it’s nice a number of us go out. As far as me intermingling...I don’t want to break my leg...you know what I’m saying...I saw myself mingling one time with basketball, and before I know it I was lookin’ up from the ground...now that was embarrassing...the kids are in excellent condition, us adults is another thing.” (Sparta school, classroom teacher)

“Some of the lunch aides play right along...some initiate the games of basketball and football...and others just kind of stand there.” (Quincy school, classroom teacher)

Playground confrontations are usually avoided by having an appropriate number of aides on site supervising.

“For purposes of making sure that all children are safe we want the appropriate number of staff out there...you don’t want those large number of students out there. There is a greater opportunity for something to happen...friction...scatter lunch period so that all students not out there at the same time that are on that particular lunch period...maybe 80 [children] to 5 adults.” (Quincy school, principal)

“I know that there have been confrontations but not to the level that I have to be brought in.” (Quincy school, psychologist)

According to Evans (1990), the policy of nonintervention during recess should be encouraged since children need time and space to play—but this does not suggest that the presence of the teacher is unnecessary. As we know, the playground is not always harmonious and adult intervention may sometimes be necessary.

5.2.4.5 Summation. According to the CDC (1999b), in order to provide a safe environment, playgrounds must have adequate supervision, be maintained continually, and be equipped with age-appropriate equipment and resilient surfaces.

Overall, findings reveal that the majority of injuries sustained by children on the school playground are usually the result of normal playground activities such as running, pushing and falling. In some instances, children increased their risk of injury by playing irresponsibly (i.e., tackle football on an asphalt surface or use of broken equipment). The most severe injuries reported involved falls from the playground equipment.

5.2.5 Section Summary

School playground features such as access, aesthetics, and safety affect how children use different playgrounds. Factors such as distance and availability represent potential barriers to playground use. To illustrate, findings reveal that most children live close to

the school but perceive the playground as not open to use. Additionally, failure to maintain and supervise playgrounds, can transform the play space into a place of danger, and put children at risk. For example, lack of equipment maintenance and on-site supervision has resulted in several children being injured from equipment-related falls to the playground surface and from their own irresponsible behavior (i.e., pushing and playing tackle football). Overall, findings suggest that regardless of playground status, children consider the school playground to be an important play space.

5.3 School Playground Uses

The school playground is the site of various activities throughout the school year. In addition to recreational uses, the playground provides the setting for special school events such as parades and graduation ceremonies, as well as community functions such as barbeques. The playground is also a space that some schools appropriate for teachers' parking and additional classrooms. Yet, the playground is not an integral part of the school context, and is rarely used by the teachers.

"Playground is not used during instructional time." (Anville school, classroom teacher)

"Sometimes we utilize the playground to talk about the environment. I'm the [5th grade] science teacher. [Your own class?] During the day, I don't really take the students out." (Millside school, classroom teacher)

"I use the playground on Friday at the end of the day. We paint, we write, we have a fun day...during good weather. It is very motivational." (Millside school, classroom teacher, special needs)

"With permission from the administration, teachers are allowed to take children out to the playground at other times during the day." (Sparta school, principal)

[Ever use the playground during therapy?] "No, but that's a good idea." (Quincy school, school psychologist)

5.3.1 Section Overview

This section on “school playground uses” presents qualitative findings from interviews of select school personnel. The interviews provided a unique opportunity to explore the importance of this space. Playground use is grouped into the following categories: physical education, recess, the after-school program, after-school hours, and miscellaneous uses (e.g., school-related events and portable classrooms).

5.3.2 Physical Education

The State Board of Education first adopted the New Jersey Core Curriculum Content Standards for Comprehensive Health in Physical Education in 1996. But New Jersey’s commitment to physical education is long-standing. N.J.S.A.18A:35, adopted in 1917, requires all pupils in grades 1-12 to participate in two and one-half hours per week of instruction in health, safety, and physical education (NJCCCS, 2004). Each school is responsible for fulfilling the law’s stipulations, but besides Anville, the other schools seem less likely to do so.

“150 minutes mandated...50 in health in classroom with teacher...100 with us in the gymnasium. It’s up to us whether we want to take them outside.” (Anville school, physical education teacher)

“The average class has physical education once a week...50 minutes. I believe the standard is 100, but we are a little short-handed. The teacher gives health in the classroom 50 minutes. We meet the state mandate.” (Millside school, physical education teacher)

“Each class receives one physical education class per week. I don’t teach health.” (Quincy school, physical education teacher)

One teacher referred to restrictions on physical education classes because of academic pressures.

“5th graders meet one time per week...period. I am for giving them more...but with all the new restrictions on the teachers [reference to No Child Left Behind]...150 minutes per week ...that’s three days...so the teachers will teach health. They get around it. If you noticed in the booklet it says “phys ed slash health.” If I have them one day that means they [classroom teachers] have to make up 100 minutes supposedly up there in the class. I teach strictly phys ed...the teachers are suppose to teach health.” (Sparta school, physical education teacher)

He also mentioned how it was in the past.

“At one time there was about 1400 kids. We had three gym teachers at one time. I believe that there might have been gym two days a week...but never more than two. Health was always the responsibility of the teacher.” (Sparta school, physical education teacher)

It may be possible that Millside, Sparta, and Quincy are infringing on the mandated hours for physical education/health classes with the teaching of academic subjects so that the schools can achieve State proficiency levels—a goal already attained by Anville.

The teachers were asked if the school playground is used for physical education classes.

“If the weather is permitting we can take them outside...have gym uniforms, wear shorts and tee shirts across the board... what is conducive to what will make them chilly outside.” (Anville school, physical education teacher)

“I use the playground but the slides and stuff I use mainly for the younger children. We have an agenda or standard from the district. If a lunch period is outside we stay to the side...we don’t want to mix with the other grades.” (Millside school, physical education teacher)

“Occasionally we use the playground, but then again we really don’t have a playground either. We got that little thing around the corner there which is too small to use for any games. Our gym is big enough and sufficient enough to do what we need to do. Lunchtime is not for everyone at once, so even if I had a class and want to use it the kids are out there for lunch. It’s not useless, but it’s not to my standards as far as my class is concerned...I got fourth, fifth, sixth, seventh, and eighth.” (Sparta school, physical education teacher)

“If the physical education teacher is doing an activity with them and needs to go outside she will utilize the playground.” (Quincy school, principal)

5.3.3 Recess

Recess is the time of day set aside for children to take a break from their class work, engage in play with their peers, and take part in independent, unstructured activities (Sindelar, 2002). In fact, recess contributes significantly to children's learning and growing physically, socially, emotionally, and intellectually (Guddemi, 2000).

The lunchtime-recess period for each school is approximately 30 minutes. Children are allowed one 15- to 20-minute recess each day after lunch (the length of time may vary by how fast they eat!). If the weather is conducive, the children go outdoors to play on the school playground. Some teachers remark about the weather conditions and playground use.

"They go outside all the time – even when it's cold out. Most part from what I've seen they have to go outside." (Sparta school, classroom teacher)

"They have to go out...they may not have to do anything...about 32 degrees they don't go out...have rec room." (Quincy school, classroom teacher)

Observations of children's activities on the school playground during lunchtime recess took place on two separate occasions. The results from the observations were combined and compared across schools for percent of children, gender, and place with activity. The following findings are based on Table E.2.

- Boys tend to be more physically active than girls during recess.
- Girls are more likely to participate in activities that allow for socializing and relaxing such as sitting, walking, and standing than boys.
- More girls than boys sit during recess.
- Towards the end of recess children tend to be less physically active
- The observed confrontations took place among boys.

- In the three schools where there are basketball courts, only boys played basketball.
- In the three schools where there is equipment, more children use the equipment in the beginning of recess than towards the end of recess.
- At Millside, the only playground with swings, there were mostly girls swinging.
- At Anville, a small group of boys always played “soccer” with an empty plastic water bottle during the entire recess (note: the bottle was probably retrieved from the open trash basket located on the playground, since they are not supposed to have food and drinks on the playground at recess).
- The children from Sparta used the matted area underneath the play equipment to wrestle. Usually after a few minutes they were chased away by adult supervisors since this activity is forbidden (Figure I.7).

Although gender differences in activity have been documented, little is known why boys are more active than girls (Baranowski et al., 1993). Pellegrini (1992) remarks that boys’ play groups may be segregated by gender because they enjoy rough activities while girls do not. Boulton (1992) in his observations of eight- and eleven-year old children on a playground in England, found that girls spend significantly more time in sociable activities and less time alone than boys.

Teachers made the following comments regarding how boys and girls choose to play on different areas of the playground and to engage in different activities during recess.

“Most of the boys are more active than the girls are...the boys use the equipment a little more.” (Sparta school, classroom teacher)

“Boys love football and the artificial turf and the basketball courts and the track field.” (Millside school, classroom teacher)

“Girls will walk and talk or sit on the wall and talk and socialize.” (Anville school, classroom teacher)

“The girls jump rope and all...they mostly talk, play hand games and jump rope.” (Sparta school, classroom teacher)

The girls tend to be less active...the girls pretty much stand there and talk about the boys...they just stand.” (Quincy school, classroom teacher)

Occasionally boys and girls play together.

“Sometimes boys let girls play soccer with them.” (Anville school, classroom teacher)

“The girls who want to play basketball can usually play with them [boys] but not football.” (Quincy school, classroom teacher)

Ultimately, boys require more playground space for their activities.

“Boys are dominating the playground.” (Millside school, classroom teacher)

Moore (1985) notes that play behaviors are affected by the physical environment, the social characteristics of the children, and the interaction between physical and social variables. Moreover, playgrounds with different sub-components will elicit different types of behavior (Pellegrini, 1987).

There is the likelihood that the children’s normal playground behavior was affected by the presence of this researcher observing their activities, even though many of the children were accustomed to seeing me and knew that I was there with the consent of the school authorities.

5.3.4 After-School Program

The after-school program in Newark schools is free, runs from October to June, and takes place between the hours of 3:00pm to 6:00pm, when school is in session. The purpose of the after-school program is academic enrichment, and lead teachers (the school program directors) follow the strict protocol provided and monitored by the Newark Public

Schools administration. Attendance of the after-school program by school children is optional.

The number of children who can attend the after-school program is usually limited by funding constraints.

“All of us have 29 children, from second to fifth grade. Our program is free. We are not supposed to do homework. Only get fifteen minutes of homework, but if we finish our lesson and there is twenty minutes left we don’t start something new I let them finish their homework. I have about eighty kids on waiting list...it is a lottery. At this point because of funding we can’t extend. Didn’t cut any teachers, but did cut our subs. If someone is out then one teacher will take all the kids.” (Anville school, after-school program, lead teacher)

“177 children attend [our] after school program, sixty-one are fifth-graders, seven teachers, four aides, two security guards and four cafeteria workers. I also have a waiting list of about 80, because there is a ratio per teacher. There is criteria...those that are already in the program cannot miss but only so many days, of course we can’t have any fighting, of course this is an evening program from 3-6 so there is no weaponry. Attendance is busting loose at the seams, ‘cause we also provide food...which is excellent. Most of our students are at a low level so they need additional help.” (Millside school, after-school program, lead teacher)

“In the after-school program I have three teachers under me and a tutoring program associated with us. We have registered like 157 but we might average 100 a day. Open to grades first to eighth...have 20 fifth graders. This year with me, put an application in, they got in. Twenty-five kids per teacher but I could do like maybe thirty or forty because you know, everybody is not going to show up every day. My numbers had to do with the number of teachers they allowed me to hire.” (Sparta school, after-school program, lead teacher)

As a community school, Quincy encourages parental involvement in the school, so every parent who has a child participating in the after-school program signs a contract to volunteer in the school for three hours a month.⁴

“We are funded by [name of organization]. You have to be a student of Quincy because that’s where the funding is at. Any child their parent sign ‘em up [for school] can come and sign up for after school. There just got one stipulation, since the program is free and you got all these good things going on...in order for the child to be in the after-school program their parent at least has to do three hours of volunteer service a month.” (Quincy school, after-school program, employee)

⁴ See Chapter 4, Methods, for explanation of community school. Quincy’s after-school program is managed by a NJ non-profit organization whose staff provides programs and services to the greater Newark community.

- *Attendance at the after-school program.* Children were asked to respond “Yes/No” to the questions “Do you attend an after-school program?” and “Do you attend an after-school program at your school?” (Table 5.6).

Findings reveal that the majority of children from schools with renovated playgrounds attend an after-school program, with Millside and Quincy children attending the after-school program at their schools. Of the children from Sparta who attend an after-school program, approximately 50% attend the after-school program at their school. Although the majority of Anville children do not attend an after-school program, of those who do, almost all of them attend the after school program at their school. Notably, other organizations (i.e., Boys and Girls Club), in addition to the schools, operate after-school programs.

Table 5.6 Percent of Children Who Attend an After-School Program

Question School, Group, Number of Respondents			Response Category	
			Yes (%)	No (%)
Do you attend an after school program?				
Anville	children	(n=101)*	26.7	73.3
Millside	children	(n=44)	52.3	47.7
Sparta	children	(n=23)	65.2	34.8
Quincy	children	(n=10)	80.0	20.0
Do you attend an after school program at your school?				
Anville	children	(n=101)*	24.8	75.2
Millside	children	(n=44)	54.5	45.5
Sparta	children	(n=23)	34.8	65.2
Quincy	children	(n=10)	80.0	20.0

*Missing data (NR) has been eliminated and the total percentage adjusted. Total sample for Anville is n=102.

- *Regarding playground use during the after-school program.* Lead teachers are required to adhere to the after-school program agenda, and even when play is scheduled, children have the option of not going outside to the playground.

“If it is not cold out we do go outside, all of September and half of October, only starting at 5. During colder months go to the gym...can’t switch the program around...other children can use the playground outside when after-school program is in session. When we do go outside everyone goes out [children and staff].” (Anville School, after-school program, lead teacher)

“Our playground time is in shifts...the little ones go out right away...4:00-4:45 our intermediate level [3rd,4th,5th] 4:45-5:50 upper class [6th,7th,8th]. If they don’t want to go outside they can go to arts and crafts on the inside.” (Millside School, after-school program, lead teacher)

“We don’t go outside, we use the gym. I just follow protocol. When the weather is warm in Spring they may go outside.” (Sparta School, after-school program, lead teacher)

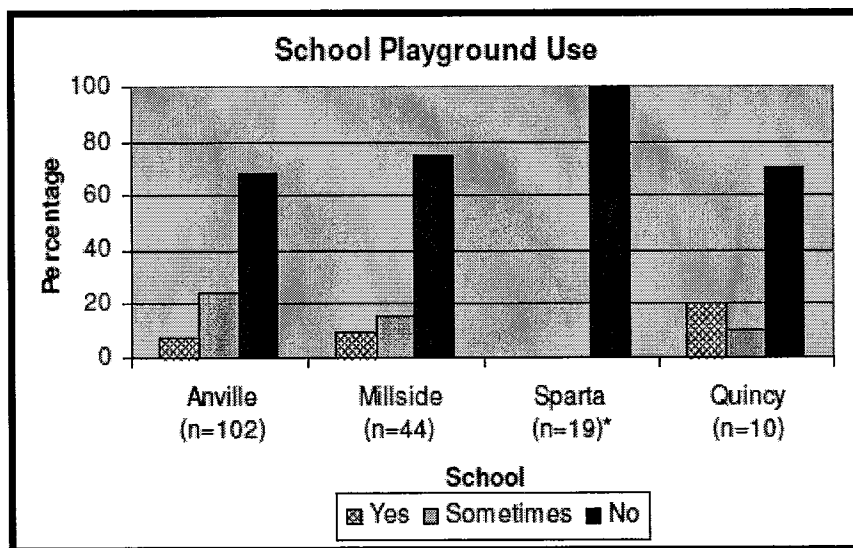
“We go out and have relay races, volleyball, basketball. We have a schedule. They [program teachers] would be out there with 3rd, 4th and 5th from about 4:30-5:00. If don’t go outside have other activities.” (Quincy School, after-school program, employee)

Vandell and Posner (1999) note that highly structured after-school programs, in conjunction with highly-structured classroom experiences, may deprive children of the time needed for independent activities, physical activity or “down time.” It is unknown if attendance at the after-school program is taking time away from children’s leisure-time use of the school playground following completion of the school day.

5.3.5 After-School Hours

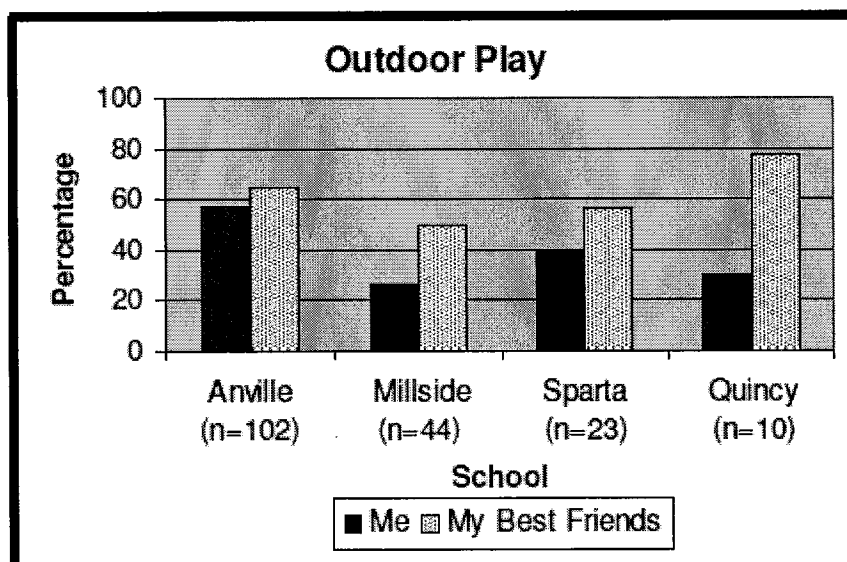
The fifth-graders’ use and preference for the school playground as an outdoor play space option during leisure-time was investigated. Children were asked to respond “Yes/No/Sometimes” to the question “Do you ever use the school playground when the school building is closed?” (Figure 5.11).

Overall, the majority of children from Anville (68%), Millside (75%), Sparta (100%), and Quincy (70%) responded that they do not use the playground when the school building is closed.



*Missing data (NR) has been eliminated and the total percentage adjusted. The total sample of children for Sparta is n=23.

Figure 5.11 Use of school playground by children when the school building is closed. Notably, Sparta children do not have the opportunity to use the playground since it is locked when school is not in session.



* Adjusted for missing data

Figure 5.12 Comparison of children with their best friends for outdoor play on Saturday mornings. Most children perceive their best friends to be outdoors playing when they are indoors.

- *Outdoor play during leisure-time.* Since children do not attend elementary school on Saturday mornings, the researcher was interested in knowing if children and their best friends play outdoors or indoors during their leisure-time. The children were asked to respond “Indoors/Outdoors” to the questions “On Saturday mornings, where do you play?” and “On Saturday mornings, where do your best friends usually play?” (5.12).

Overall, findings reveal that the largest percent of children who play outdoors on Saturday mornings is from Anville (57%), while the majority of children from the schools with renovated playgrounds play indoors (Millside, 74%; Sparta, 61%; and Quincy, 70%).

Pellegrini (1992) remarks that children differ consistently by gender in their choices of leisure-time activities, and that boys’ preference to play outdoors is probably related to their preference for vigorous play. Clements (2004) discusses how a survey conducted in Japan that examined fifth- and sixth-graders’ play behaviors found that 40 percent of the children preferred playing indoors rather than outdoors.

Interestingly, regardless of school, the children’s response percentage for “best friends play outdoors” is consistently larger than for those children who responded that they play outdoors. Why most children in this study perceive their friends to be outdoors when they are indoors is notable, and probably not an artifact of small sample size since the phenomena appears for each group. Further consideration of this issue is beyond the scope of this investigation, though it is perhaps noteworthy to observe that such sentiments may be due to wishful thinking on the part of the children concerning playing indoors.

- *Preferred outdoor play space.* Fifth-graders' outdoor play space preferences were explored using a preferential ranking scale of different outdoor places. Children were requested to rank in decreasing order the following six (common) outdoor play spaces: street, sidewalk, your yard or someone's yard, neighborhood park/playground, school playground/ground, and empty lot/vacant lot. They were instructed to give "6" to their favorite place, "5" to their next favorite, and so on. For evaluation, the 6 outdoor play spaces were grouped into 3 levels of preference: "most preferred" (6, 5); "preferred" (4, 3); and "least preferred" (1, 2). Results indicated that this question was difficult for many of the children, even though the teachers stated that the children were familiar with this question type.

Overall, findings were similar for the children from each school (Table F.13). The *most preferred* outdoor play places were "neighborhood park/playground" and "your yard or someone's yard." The *preferred* outdoor play places were "school playground/grounds" and "sidewalk." The *least preferred* outdoor play places were "empty lot/vacant lot" and "street." The children's preference hierarchy is in keeping with what might be reasonably expected.

It is clear from these results that the children do prefer certain outdoor play areas over others. However, within the preference scale some areas were not significantly different, hence, the decision to regroup the responses into a three-item scale ("most preferred," "preferred," "least preferred"). It should be borne in mind, that although the preference scale may measure what the children *would do*, the actual choice behavior may reflect what the children *can do* when they go outdoors to play.

5.3.6 Miscellaneous

The school playground provides the setting for various school-related activities, in addition to recess and physical education classes, throughout the academic year.

In the mornings, before school, the playground is a gathering place for the children.

“They [the children] need to line-up before they enter the building.” (Anville school, vice principal)

At Millside, the playground is used by the school buses as a drop-off point and turn-around area, potentially endangering the welfare of other children.

“In the morning the school buses come through the gate onto the playground when other kids are walking in and it’s pretty dangerous...need some type of turn around.” (Millside school, physical education teacher)

The school playground is the site of special events. On Halloween, the Anville playground is transformed into a parade venue, and on field day the Millside playground becomes an arena for aspiring athletes with booths and balloons adding to the merriment. At Sparta, the playground is the location of Project Graduation Day, and the place where the ice cream truck passes by on warm days. The summer-school program at Quincy uses the playground to set-up small swimming pools for children to escape the heat, and the community uses it for holiday barbeques.

“If you come in after a holiday, especially Memorial Day, you will see that the playground must have been packed. There must have been cook-outs right there on the playground. That’s a good thing...you know...because it’s there...why not utilize it? I think it’s just very popular.” (Quincy School, principal)

- *Appropriation of playground space.* In addition to the events that take place on the playground, there is the appropriation of playground space for other purposes such as portable classrooms (trailers) and parking.

Due to overcrowding at Newark public schools, and the concomitant use of portable classrooms, playground space where children could play is sometimes reallocated (Figure 5.13). The dilemma of play space versus classroom shortage is recognized by the teachers.

“The 6th graders use to be in the trailers but now the 5th graders are in the trailers. There are 6 trailers...5 for 5th graders and 1 self-contained. Trailers took the place of basketball courts.” (Anville School, vice principal)

“We do have a trailer out back, which I wish wasn’t there. It was supposed to be temporary. In the beginning it was an additional classroom for special needs...that was about 5 years ago...now it [class type] varies every year.” (Millside School, physical education teacher)



Figure 5.13 Portable classroom appropriates recreation space at Millside.

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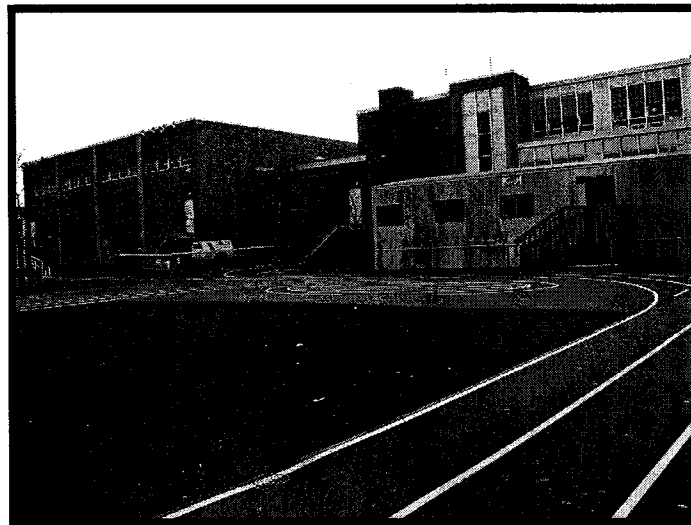


Figure 5.13 Portable classroom appropriates recreation space at Millside.

The lack of street parking in inner-city neighborhoods, in addition to concerns about personal and vehicle safety, provides the rationalization for using playground space as parking lots for the school teachers. For Anville, the parking situation during the school day is especially acute (Figure 5.14).

“Need to use one-fourth of the playground for faculty parking. Residents don’t have garages and need to park on the street. In Ironbound there are no parking facilities other than the street and many of the homes do not have garages simply because years ago no one had cars to put in garages. No places to park on the street, especially on Wednesday and Thursday when there is street cleaning and can only park on alternate sides of the street. This has been so for the last 10 or 12 years. This building is about 125 years old and never had any parking facilities. Older buildings do not have parking areas. Even 30 years ago they built parking lots.” (Anville School, vice principal)



Figure 5.14 Limited street parking compels Anville children to share their school playground with the teachers’ cars.

Source: New Jersey Department of Environmental Protection, <http://www.nj.gov/dep/gis/depsplash.htm>

At the end of the school day, the temporary barriers that are placed to separate the cars from the children are removed (Figure I.3).

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Source: New Jersey Department of Environmental Protection, <http://www.nj.gov/dep/gis/dep splash.htm>

At the end of the school day, the temporary barriers that are placed to separate the cars from the children are removed (Figure I.3).

The teachers from Sparta also use designated play areas for parking. One teacher notes that parking cars on playground areas started around the 1980s.

“The opening outside my class [inner courtyard] use to be used as a field [blacktop], but now it’s being used as a parking lot because cars were being stolen...this was about 20 years ago.” (Sparta School, physical education teacher)

Another teacher from Sparta remarked that administrators from the Newark school board are parking their cars on the playing area located alongside the fence of the renovated playground (Figure I.8).

“They [Newark School Administration] moved their offices to the school and park all along the football field...it’s an extension of the school playground...it was brought to their attention, but they don’t care...go through the playground to their rooms.” (Sparta School, after-school program, lead teacher)

At Quincy, the parking problem was solved during playground renovation when it was decided that the space directly adjacent to Quincy’s neighboring school would be used as a parking lot for both schools, and the space adjacent to Quincy would be designed as a play area for children from both schools (Figure 3.2).

5.3.7 Section Summary

The school playground is a significant component of the school environment. It is used by the school for curriculum-related activities such as physical education and recess, special events such as field day and parades, and as a gathering place for children before the commencement of the school day. If the need arises, the school, as proprietor of the playground, can appropriate the children’s play space for additional classroom space (portable classrooms) and teachers’ parking. Furthermore, findings reveal that the majority of fifth-graders do not rate the school playground as a “most preferred” leisure-time outdoor play space and tend not to use the playground after-school hours.

5.4 Chapter Summary

The school playground forms part of the total school environment, yet, it is not an integral component. It is both functionally and qualitatively different from other play environments because it is used mostly at specific periods during the day (i.e., lunchtime recess), under adult supervision, and usually, in great density (Pellegrini, 1987; Firlik, 1997). Moreover, school playgrounds, by their design and structure, and by the way relevant authorities manage them, provide cues to children about how they are to be used during- and after-school hours. Playground features that include accessibility and attractiveness can affect children's recreational opportunities and shape their leisure-time preferences.

In Newark, the enhancement of three existing school playgrounds with different play zones and equipment was an attempt by a national nonprofit organization to create outdoor play spaces that would promote physical activity, be sensitive to children's needs, and be more likely to attract children during leisure-time than undeveloped playgrounds. This chapter provided an opportunity to view four school playgrounds, three of which were renovated (Millside, Sparta, and Quincy), from the perspectives of the children and their caregivers, as well as the teachers.

Certain themes emerged, the strongest among the children being the importance of the playground regardless of its status. However, this does not mean that children are satisfied with their playgrounds. Many children from Anville (non-renovated playground), Sparta, and Quincy did not think their playground was a "fun" place, and a large percent of children from Sparta and Quincy perceived their playground as "ugly." The findings for Sparta and Quincy are especially notable since children were active

participants in the playground design process during renovations. Perhaps this suggests that playground infrastructure, although built with significant financial investments, cannot continue indefinitely to meet children's changing activity needs.

Related to the theme of importance are the concepts of playground accessibility and playground preference as an outdoor play space. Findings reveal that the majority of children live within $\frac{1}{4}$ mile of their school playground, perceive the playground as closed when school is not in session (which is true only for Sparta), do not rank the school playground as their "most preferred" outdoor play space, and tend not to visit the playground when the school building is closed. These findings are significant because the aim of the nonprofit organization's fundraising campaign—to rebuild and transform school playgrounds into active outdoor play sites of school and community use—appears to be inconsistent with children's leisure-time behavior.

CHAPTER 6

NEIGHBORHOOD SAFETY AND PLAYGROUND USE

6.1 Introduction

There is increasing evidence that attributes of the neighborhood environment can influence how and where people spend their time (Ross & Sung, 2000; Duncan et al., 2002). Safety-related characteristics can affect residents' movements through neighborhoods, and concerns about safety may act as an environmental barrier that leads residents to limit outdoor activities and to stay indoors as much as possible (USDHHS, 1996; Sallis, Johnson, et al., 1997; Boslaugh et al., 2004; Miles, 2008; Miles et al., 2008). Parents, for example, may view children's indoor activities (e.g., television and computer games) as a proactive means of avoiding danger (Davison & Birch, 2001).

Crime and its associated fears may have pervasive and damaging influences on people's health and physical activity, with the adverse effects of living in unsafe neighborhoods being greatest among older persons, women, racial/ethnic minorities, and persons with a high school education or less (CDC, 1999a; Kaplan & Kaplan, 2003). Unfavorable neighborhood conditions might help explain why residents of disadvantaged neighborhoods have high rates of chronic disease related to lack of physical activity (Lopez & Hynes, 2006; Weir et al., 2006; Neckerman et al., 2009).

Neighborhood safety is a complex concept with objective and perceived factors contributing to people's evaluations of the neighborhood environment (USDHHS, 1996; Wilcox et al., 2003; Molnar et al., 2004). Objective measures of the neighborhood are comprised of actual data, while the perceived environment reflects personal impressions or perceptions of the surroundings, and may be biased by knowledge of the area

(Estabrooks et al., 2003). According to St. John (1987), discrepancies can arise between objective data and perceptions when individuals or groups of people use different standards for evaluating the level of safety in a neighborhood “based on what people think they deserve, expect, or may reasonably aspire to” (p. 378).

A recent study conducted by McGinn and colleagues (2008) lends support to the idea that both objective and perceived measures of crime have important, independent associations with levels of outdoor leisure activity, and that both types of measures are necessary to develop interventions that influence physical activity levels. Although Kawachi and Berkman (2003) agree about the importance of collecting both subjective and objective data, they note that the subjective rating of neighborhood crime may be a stronger predictor of behavior than the actual crime rates. For instance, parental perceptions of neighborhood safety may be shaped by signs of physical degradation rather than crime statistics, and these perceptions may influence whether or not children are allowed outdoors to play, which in turn may be linked to levels of physical activity (Sallis, Nader et al., 1993; Burdette & Whitaker, 2004). This example illustrates how perception of crime might make playground use problematic.

Lack of neighborhood safety is a cause of concern among parents in urban settings and is often associated with a reluctance to allow children to play outside for fear of exposure to violence, crime, and drugs (Romero et al., 2001; Lumeng et al., 2006). In many inner-city neighborhoods, a lack of safety may discourage caregivers from allowing children to play on local school playgrounds during after-school hours, despite national recommendations for greater physical activity (Blakely, 1994; CDC, 2002; Carver et al., 2008). Research conducted by Weir and colleagues (2006) in a low-income, inner-city

population in New York City found that children's physical activity levels were negatively correlated with parental anxiety about neighborhood safety and that a safe environment was crucial to increasing physical activity. The affect of neighborhood characteristics on children's opportunities to play outdoors suggests the importance of "place" in influencing the relationship between safety and playground use (Coulton et al., 1996; Dreier et al., 2001; Duncan et al., 2002).

6.1.1 Purpose of Chapter

The purpose of this chapter is to investigate the association between features of neighborhoods and children's use of local elementary school playgrounds when school is not in session. Taking as a point of departure the assumption that neighborhood qualities affect children's opportunities to use the school playground, this chapter uses multilevel data sets that include both objective and subjective measures to investigate the relationship between neighborhood safety and playground use. To address this issue, the study employs crime data from the Newark Police Department, quantitative data gathered from children and their respective caregivers, and qualitative data from in-depth interviews of select school personnel.

The following sections provide insight into the various ways that characteristics of disadvantaged neighborhoods may affect school-playground use above and beyond the features of the playground itself. Section 6.2 presents crime data for the city of Newark and the four case-study neighborhoods to provide a realistic sense of the potentially threatening environment to which residents are exposed on a daily basis. Section 6.3 describes how the physical and social characteristics of disadvantaged urban neighborhoods might affect residents' readiness to spend time outdoors. Section 6.4

draws upon study findings to examine how the perceptions of both residents and teachers of the neighborhood environment are associated with children's use of school playgrounds. Finally, Section 6.5 summarizes the relationship between neighborhood quality and the ability of children to engage in outdoor activities on school playgrounds.

6.2 Urban Crime

Crime, more often than any other issue, is a focus of concern in urban neighborhoods that are characterized by poverty and residential instability (Perkins et al., 1990; Skogan, 1990; Krivo & Peterson, 1996; Sampson et al., 1997). Because the poor are far more likely to be limited in terms of their choice of residence and neighborhood, they are more often victims of crime (Wilson, 1987). High crime rates in poor areas have been identified as barriers to children's physical activity because of potential dangers on the streets (CDC, 1999a; Cragg et al., 1999; Romero, 2005; Roman & Chalfin, 2008).

Relatively few studies have used objective measures to evaluate the influence of crime on children's physical activity (Carver et al., 2008). Gordon-Larsen and colleagues (2000) assessed a large sample of adolescents with data from the 1996 National Longitudinal Study of Adolescent Health and examined the objectively documented crime rate for the communities. They found that high crime levels were significantly associated with a decrease in physical activity among boys and girls. Gomez et al. (2004) in a study of mostly Mexican-American seventh-graders living in an urban barrio of San Antonio, Texas, found subjective assessments of neighborhood safety were insufficient, and emphasized the necessity for objective measures to fully evaluate the influence of neighborhood crime and violence on physical activity. Study findings showed that violent

crime may be a significant environmental barrier to outdoor physical activity for barrio girls.¹

In a comprehensive review of physical environmental influences on children's physical activity, Davison and Lawson (2006) found that local crime was negatively associated with children's physical activity. In a study of household survey data from seven European cities, Miles (2008) linked socioeconomic disadvantage and high physical disorder (i.e., presence of litter and graffiti) with an increased likelihood that a child lives in a neighborhood that fewer parents rate as safe for outdoor play.

6.2.1 Limitations of Crime Data

Interpreting statistics on reported crime incidents involves certain limitations (Sparks, 1977). If a law-enforcement agency changes procedures, reduces the number of personnel performing law enforcement duties, or modifies patrol procedures, the rate of reported crime will likely change even though the actual crime rate in the area may have remained constant (Fletcher, 1983). Additionally, Fletcher notes, if reasons for the victims' not reporting crimes change, such as fear of reprisal or degree of confidence in the law-enforcement agency, the reported crime rate may change even though the actual crime rate may have remained constant or changed at a different rate. According to Perkins et al. (1990) the crime analysis and reporting capabilities of police departments have improved considerably over the years, however, official police data still tend to underestimate actual crime and are often of questionable reliability and validity.

¹ Gomez and colleagues (2004) note that Mexican-American families may attempt to protect the female by shielding her in the home. Conversely, boys may be allowed to play outside despite potential dangers because they are traditionally viewed as being physically tough.

6.2.2 City of Newark

Newark is among the nation's most high-risk cities and it typically ranks at or near the top in most categories of the annual FBI Uniform Crime Reports.² Newark's posted crime rates for the year 2005 are twice as high as New Jersey's statewide average (Table 6.1).

Table 6.1 Comparison of 2005 Crime Rates for Newark City, New Jersey, and the United States

Location	Total Crimes	Total Crimes per 100,000 people	Violent Crimes* per 100,000 people	Property Crimes^ per 100,000 people
Newark City	15541	5529.4	1003.7	4525.7
New Jersey	234310	2687.7	354.7	2333.0
National	11556854	3898.9	469.2	3429.8

*violent crimes include murder, rape, robbery, and assault

^property crimes include burglary, larceny, and motor vehicle thief

Source: U.S. Dept. of Justice, Federal Bureau of Investigation, retrieved June 29, 2007, from <http://www.fbi.gov/ucr/ucr.htm>

Data for the years 2000-2006 show that despite the decrease in the overall extent of crime in Newark, the murder rate has continued to soar—a reminder of the social ills that plague New Jersey's largest city (Figure 6.1; Tables G.1, G.2).

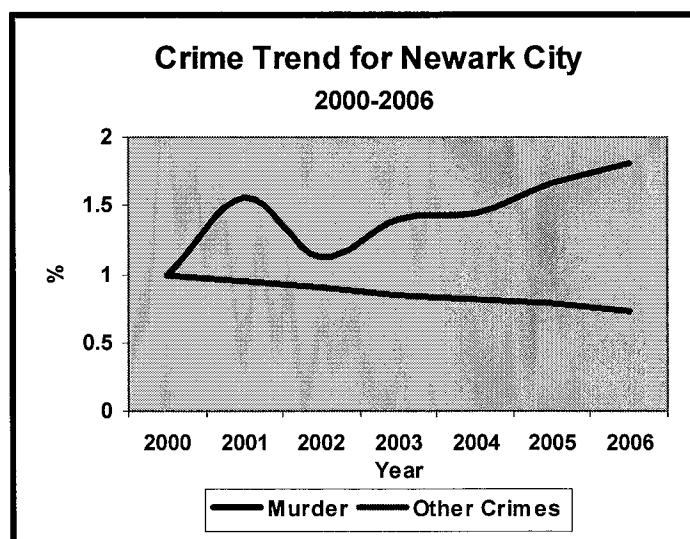


Figure 6.1 Crime trend in Newark for the years 2000-2006. The year 2000 was used as the base year in calculation of the crime trend.

Source: City of Newark Police Department, <http://www.newarkpd.org>

² Even before the riots that swept through the city in the summer of 1967, Newark was generally believed to have one of the worst crime problems in the United States (Sparks, 1977). A 1975 article in Harpers' Magazine rated Newark the worst of all American cities (Louis, 1975).

6.2.2.1 Case Study Neighborhoods. The overall number of reported crime incidents and the crime trend for the years 2000-2006 for the four case-study neighborhoods displays a gradual decrease followed by an increase beginning around the year 2003 (Table 6.2, Figure 6.2, Tables G.3, G.4). According to a police officer who works for Newark's statistical unit, city-crime trends usually display a cyclic pattern of lows and highs over (approximately) a five-year span corresponding to imprisonment and release of local felons. The overall increase in the number of recorded incidents for the year 2006 coincides with Mayor Cory Booker's crackdown on neighborhood crime upon taking office (Malanga, 2007).

Table 6.2 Comparison of School Neighborhoods with Reported Number of Annual Crime Incidents for the Years 2000-2006

School Neighborhood	Year							Total Crimes Reported
	2000	2001	2002	2003	2004	2005	2006	
Anville	47 (14.2%)	33 (9.9%)	25 (7.5%)	23 (6.9%)	62 (18.7%)	80 (24.1%)	62 (18.7%)	332 (100%)
Millside	133 (24.8%)	72 (13.4%)	58 (10.8%)	62 (11.5%)	74 (13.8%)	67 (12.5%)	71 (13.2%)	537 (100%)
Sparta	272 (26.6%)	131 (12.8%)	125 (12.2%)	106 (10.4%)	41 (4.0%)	158 (15.5%)	188 (18.4%)	1021* (100%)
Quincy	170 (14.7%)	115 (10.0%)	106 (9.2%)	89 (7.7%)	86 (7.4%)	286 (24.8%)	303 (26.2%)	1155 (100%)

*13 crimes recorded did not note the year (Sparta Total = 1034)

Source: City of Newark Police Department

Between 2000-2006, school neighborhoods show variations in levels and types of reported crime incidents with increases in police action and drug-related arrests across all neighborhoods starting around the year 2003 (Tables G.5, G.6, G.7, G.8). Differences in crime are observed not only across the four neighbors but also within the neighborhoods (Figures G.1, G.2, G.3). In a poignant essay on socioeconomic inequity in America,

Jackson (2000) describes how the drug drops along Springfield Avenue (neighborhood of Sparta and Quincy schools) are known even to children, and the illegal drug trade is among the biggest employers of Newark's youth. Another study also pointed to this dangerous area as a well-known haven for neighborhood criminal activity (Henry et al., 1997). The following quotes from school personnel relate to neighborhood crime levels.

"The crime level around the neighborhood is heavy...it's a tough neighborhood...it really is, there's no question about that." (Millside School, classroom teacher)

"Crime level is not good. The area is not a good area, a lot of drugs, a lot of trouble...just last week someone got killed." (Sparta School, physical education teacher)

"I'm sure there's a high crime rate in the neighborhood. We had homeless people trying to come into the school, things like that." (Millside School, principal)

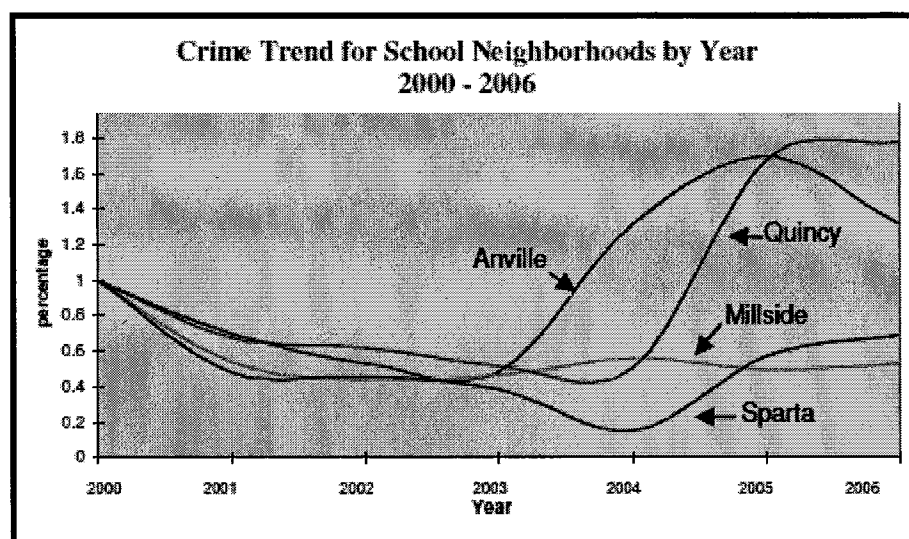


Figure 6.2 School neighborhoods and crime trend for the years 2000-2006. The year 2000 was used as the base year in calculation of the crime trend.

Source: City of Newark Police Department

Sampson and colleagues (1997, 1999) found differences in observed neighborhood-crime trends in Chicago and contend that criminal activity can be contagious in high-crime areas because the social penalties or the probability of arrest

may be lower than in other communities. Variations in crime-levels between and within neighborhoods were also detected by Lewis and Maxfield (1980) in their study of four Chicago neighborhoods. Smith and Jarjoura (1988) suggest that the uneven distribution of crime across social areas is related to a neighborhood's capacity for social control, and variables such as poverty, residential mobility, and racial heterogeneity, are central elements in explaining the variation in community crime rates.³

Additional factors that were investigated in this study and which may influence variations in neighborhood crime include *time of day* (with the hours between 6am and 12pm displaying the least number of incidents and midnight to 6am the most); *time of month* (with more crime incidents reported in the latter part of the month); and *season of year* (with an increase in criminal activity during the warmer months) (Tables G.9, G.10, G.11; Figures G.4, G.5, G.6). Some teachers' comments reflected the association between neighborhood crime and time of day.

"When I'm here late I see older kids like teenagers from the neighborhood...and other people come and break into cars along the strip. It gets to be very dangerous when it becomes dark." (Quincy School, classroom teacher)

"I remember even observing a mugging once myself a few years ago in broad daylight." (Quincy School, principal)

While there is little empirical evidence to support a relationship between lunar cycles and rates of crime, there is some evidence to suggest that the distribution of social assistance checks is related to certain types of crimes, and a plausible explanation for the increase in crime incidents toward the end of the month (Kohm, 2006).

³ In the 1920s and 1930s the pioneering work of Shaw and his associates contributed to the first sociological theory of the distribution of crime. Poverty, residential mobility, and racial heterogeneity are measures of three central theoretical elements in Shaw and McKay's social disorganization perspective (Smith & Jarjoura, 1988).

6.3 Neighborhood Safety and Disorder

While safety in itself is not a physical obstacle, it is plausibly related to characteristics of the social and physical environment of neighborhoods (CDC, 1999a; Humpel et al., 2002). Residents' feelings of vulnerability are directly related to their perceptions of the neighborhood environment and may be affected by urban form (i.e., graffiti, litter, and abandoned buildings), particular land uses (i.e., bars, parks, and vacant lots) and the presence of certain groups or individuals (Alfonso, 2005). Many of these issues plague inner-city neighborhoods and are usually referred to by the term *disorder* (Wilson & Kelling, 1982).

Signs of neighborhood disorder can take two forms: physical disorder such as vandalism and disrepair; and social disorder such as crime or public drinking (Ross & Mirowsky, 2001). Physical disorder refers to ongoing conditions, and involves visual signals of negligence and decay, while social disorder is a matter of behavior and "appears as a series of more-or-less episodic events" (Skogan, 1990:4). Signs of physical and social disorder are evidence of neighborhood destabilization and "reflect powerfully on our inferences about urban communities" (Sampson & Raudenbush, 1999:603).

According to Kelling (1991) disorder is associated with the breakdown of neighborhood regulatory capabilities and institutions. Small and Newman (2001) note that Sampson and his colleagues have collected a wide array of evidence to demonstrate that neighborhoods with high levels of social organization and collective efficacy have lower crime rates, regardless of their poverty level. Since poor neighborhoods tend to be lower on these factors, their crime rates tend to be high. Accordingly, the inability of community structures in Newark to maintain effective social control contributes to high

crime rates and the formation of vicious street gangs (Pizarro & McGloin, 2006; McGloin, 2007).

Living in disorderly neighborhoods is linked with an increased likelihood that children are deprived of time spent outdoors since fewer parents rate the neighborhood as safe for outdoor play, which in turn is strongly related to levels of physical activity (Cragg et al., 1999; Sallis et al., 2000; Miles, 2008). A study by Molnar and colleagues (2004) found that levels of youth physical activity varied according to neighborhood and were lower in communities that were rated as unsafe and had higher levels of physical and social disorder.

Wilcox and colleagues (2003) note that playgrounds can enhance neighborhood disorder and in unstable areas might fuel criminal opportunity by providing gathering spaces for unsupervised youth. One teacher from Anville mentioned how the school playground had provided a haven for illicit night time activities.

“We use to have basketball nets outside where they could play basketball but it was bringing in bad problems at night time ‘cause this is a public playground too...at nighttime there are lights here. When we took down those basketball nets we stopped seeing a lot of the bottles and different things that would show up at nighttime that obviously are not appropriate on the school setting.” (Anville School, physical education teacher)

6.4 Residential Safety Concerns in Newark Neighborhoods

This study assumes diversity among Newark’s inner-city neighborhoods rather than a single urban effect and focuses on the extent to which between-neighborhood variability affects residents’ sense of safety. It also assumes that there is sufficient homogeneity within neighborhoods and sufficient heterogeneity between neighborhoods to differentiate contextual influences on behavior.

Although used less frequently in research than census-derived measures of neighborhood-structural characteristics, subjective measures of the neighborhood context have proven to be reliable and valid assessments of the social environment (Bass & Lambert, 2004). For purposes of data analysis, two sub-groups of perceptions of neighborhood context are considered: perceived neighborhood features and child safety features.

Table 6.3 shows the questions used to measure the constructs *perceived neighborhood features* and *child safety features*.

Table 6.3 Questions about Neighborhood Context

SURVEY OF STUDENTS AND CAREGIVERS			
Construct	Question	Response Format	Respondent
Perceived Neighborhood Features	• <i>Neighborhood Characteristics</i> Neighborhood is great place to live	5-point Likert scale*	Child / Caregiver
	Neighborhood is messy	5-point Likert scale	Child / Caregiver
	Neighborhood walkability, daytime / after dark	5-point Likert scale	Child / Caregiver
	Motor vehicle traffic	Categorical (Y/N/S)	Child / Caregiver
Child Safety Features	• <i>Outdoor Play Spaces</i> Caregivers' preferred outdoor play spaces	Short fill-in	Caregiver
	• <i>Safety from Neighborhood Crime</i> Accompaniment of child to and from school 5 th grader allowed to go to playground alone	Categorical (Y/N/S)* Categorical & fill-in†	Child Caregiver
	• <i>Safety from Traffic</i> Crossing streets alone	Categorical (Y/N/S)	Child / Caregiver
	• <i>Adult Supervision and Playground Use</i> Important that adult watches child Play on playground only if supervised Dangerous for child to be alone on playground	Categorical (Y/N/S) Categorical (Yes/No) 5-point Likert scale	Child Caregiver Caregiver
INTERVIEW WITH SCHOOL PERSONNEL			
Construct	Question	Response Format	Respondent
Perceived Neighborhood Features	• <i>Neighborhood Safety</i> Describe neighborhood crime level	Open-ended	All participants
Child Safety Features	• <i>Playground Use</i> When the school building is closed, do you feel that the playground is a satisfactory play site?	Open-ended	All participants

Five-point Likert scale in conjunction with face scale

*Categorical scale (Yes/No/Sometimes)

†Categorical scale (Always/Sometimes/Never), respondents choosing *never* were asked to explain *why not*.

The construct *perceived neighborhood context* includes measures for neighborhood satisfaction (“great place to live” and “messy”) and neighborhood safety (“walkability,” “traffic,” and “crime level”). The construct *child safety features* includes measures for the caregiver-management strategies of restriction (i.e., “outdoor play space preference” and “crossing streets”) and supervision (i.e., “child accompaniment” and “adult watches”). Consistent with the investigator’s research strategy, the survey and interview questions regarding neighborhood context are interrelated and the data are integrated during analysis.

6.4.1 Perceptions of Neighborhood Safety

One of the major consequences of crime is the urban resident’s fear of crime (Donnelly, 1988). The teachers’ fears of the neighborhoods in this study are reflected in the following statements.

“I really don’t know the [crime] statistics but when the police officers are up in helicopters that doesn’t sound great...[is that often?]...very often.” (Quincy School, school psychologist)

“Teachers are afraid...the High School is nearby and there is gang activity.” (Anville School, vice principal)

“I’m not saying that I don’t feel safe going by myself [to her car on the playground] but last year a few teachers got mugged at 10:30 in the morning going to the [neighborhood] bakery.” (Anville School, after-school program, lead teacher)

Fear of crime results in people avoiding public places in neighborhoods where crime is perceived to be a problem (Fletcher, 1983). At the community level, “disorder and crime are inextricably linked, in a kind of developmental sequence” (Wilson & Kelling, 1982:149). Consequently, fear of disorder is justified, for disorder leads to crime, as illustrated by the following statement.

“Crime rate is very tough. The crime rate is very high. We have abandoned buildings right across the street from our school.” (Sparta School, principal)

Wilson and Kelling’s Broken Windows theory suggests that the appearance of the physical environment provides direct messages that regulate individual behavior. A disordered physical environment is not only a consequence of neglect, but also a signal to others that behaviors that are usually prohibited are tolerated. Since the built environment is externally obvious to residents, especially in comparison to the social structure, it would stand to reason that it is influential in shaping public opinion regarding neighborhood-crime risk (Wilcox et al., 2003). These so-called “signs of crime” cause people to be fearful even if no actual crimes occur, and if not alleviated, their presence can lead to more crime, even more fear, and eventually, neighborhood decline (Wilson & Kelling, 1982).

In 1982, the National Institute of Justice decided to fund empirical research to determine how the police can effectively address the problems of fear, disorder, the quality of police service, neighborhood satisfaction, and crime itself (Williams & Pate, 1987). The police departments in Newark and Houston, Texas, were selected to develop and implement fear reduction programs specifically suited to their local problems. At the time (based on 1983 recorded crime data), Newark had a higher personal crime rate than any of the nation’s ten largest cities and had a total index crime rate higher than all but two of those cities (Williams & Pate, 1987).

The Newark program was designed to improve police services and to reduce residents' fears by increasing community-police contact.⁴ In the course of the program, Newark neighborhoods showed significant improvement for the categories of social and physical disorder, community fear of crime, satisfaction with the area as a place to live, and satisfaction with police performance. Although it is not clear if the program reduced serious crime, the reduction of fear itself was an enormous accomplishment (Kelling, 1991). Notably, the Broken Windows theory (Wilson & Kelling, 1982) rests on evidence from these carefully controlled community-policing experiments.

Several teachers mentioned the notoriety of some of Newark's, now defunct, public housing projects.

"The Stella Wright projects were across the street between the buildings there was a place they called the hole there were more murders and rapes than in the rest of the country." (Sparta School, physical education teacher)

"There was high gang activity in the back of the [school] building when those lower apartment buildings were here but now they are down and that has stopped that." (Quincy School, principal)

6.4.1.1 Neighborhood Walkability. Neighborhoods that have high rates of poverty and disorder compromise the ability of residents to create and maintain order, and to protect themselves and their families, which may drive residents from neighborhood streets—leaving the streets unsurveilled (Kelling, 1991; Miles et al., 2008). As criminologists have long known, there is safety in numbers and underused streets contribute to the cycle of neighborhood fear and decay (Wilcox et al., 2003). Jane Jacobs (1961) in her classic study of urban life during the 1950s noted concern with neighborhood incivility and fear

⁴ Community-policing programs always involve a great deal of contact between police and citizens—the community must help define its problems, and the police need to reassure citizens that they may use the streets (i.e., police spend more time walking the beat) (Kelling, 1991).

of the streets. "This is something everyone already knows: A well-used city street is apt to be a safe street. A deserted street is apt to be unsafe...There must be eyes upon the street" (pp. 34, 35).

Some teachers who grew up in Newark during the 1960s and 1970s recall a time when neighborhoods were safer and children played outside. They recall a personal feeling of safety when playing outdoors.

For instance, a classroom teacher from Anville reminisced about growing up in Newark's Ironbound neighborhood during the 1960s:

"It is not as safe as it used to be. I remember growing up here. We could bike...skate around the block. We use to play ball against the house. The area [playground] is not being used like it used to be. When I grew up here everybody used to sit on the front porch...in the suburbs you don't even know who your next-door neighbor is...down here we all knew who belonged on the block...we saw somebody who didn't belong there...we kept an extra eye out."

The after-school program director from Sparta, who grew up in Newark's projects during the 1970s, also recalled a safer time for outdoor play:

"When I was growing up there was community...of course we played outside...it was different times."

Perceptions of neighborhood safety as measured by street walkability during the daytime and after dark are shown in Table 6.4. Both fifth-graders and caregivers responded to the statements "It is safe for me (my fifth-grader) to walk in my neighborhood by myself during the daytime" and "It is safe for me (my fifth-grader) to walk in my neighborhood by myself when it is dark outside" using a five-point Likert scale ranging from strongly agree to strongly disagree. The data were collapsed from a five-point scale to a three-point scale ("strongly agree" and "agree" = "agree"; "neutral"; "disagree" and "strongly disagree" = "disagree").

Table 6.4 Perception of Neighborhood Safety by Children and Caregivers as Measured by Walkability during the Daytime and After Dark

Question School, Group, Number of Respondents			Response Category (%) ^a		
			Agree	Neutral	Disagree
It is safe for me (my 5 th grader) to walk in my neighborhood by myself during the daytime.					
Anville	children	(n=102)	61.8	14.7	24.0
	caregivers	(n=95) ^b	46.3	16.8	36.8
Millside	children	(n=44)	63.6	20.5	15.9
	caregivers	(n=29)	44.8	13.8	41.4
Sparta	children	(n=23)	43.5	34.8	21.7
	caregivers	(n=18)	38.9	33.3	27.8
Quincy	children	(n=10)	70.0	10.0	20.0
	caregivers	(n=9)	0.0	33.3	66.7
It is safe for me (my 5 th grader) to walk in my neighborhood by myself when it is dark outside.					
Anville	children	(n=102)	8.8	14.7	76.5
	caregivers	(n=97) ^b	7.2	5.1	87.6
Millside	children	(n=44)	13.6	11.4	75.0
	caregivers	(n=29)	6.9	10.3	82.8
Sparta	children	(n=23)	4.3	13.0	82.6
	caregivers	(n=18)	0.0	5.6	94.4
Quincy	children	(n=9) ^b	33.3	0.0	66.7
	caregivers	(n=9)	0.0	0.0	100.0

^aCollapsed from five categories (strongly agree, agree, neutral, disagree, strongly disagree).

^bMissing data (NR) has been eliminated and the total percentage adjusted.

The total caregiver sample for Anville is n=98; and the total children sample for Quincy is n=10.

Study findings regarding walking in the neighborhood during the day reveal that responses for children and caregivers from Anville and Sparta have a similar proportion of respondents for the three response categories (“agree,” “neutral,” and “disagree”), with the majority of children and caregivers from each school agreeing that it is safe. For Millside, there is a noticeable difference between children (16%) and caregivers (41%) who “disagree” that it is safe, but this may be due to a small sample size. Quincy caregivers display the extreme response to neighborhood walkability, where no one (0%)

selects “agree” for safe during the daytime, and everyone (100%) selects “disagree” for safe after dark.

Overall, the findings reveal that more children than caregivers “agree” that the neighborhood is safe during the daytime for children to walk alone. Notably, the majority of children and caregivers “disagree” that it is safe for children to walk alone when dark outside, although for each school, the proportion of children to caregivers who “disagree” is slightly, albeit consistently, less.

6.4.1.2 Neighborhood Disorder and Satisfaction. The study assumes an association between neighborhood disorder and neighborhood satisfaction. These two variables are measured by perceptions of neighborhood quality using the indicators of *great* and *messy*. Both fifth-graders and caregivers responded to the statements “My neighborhood is messy” and “My neighborhood is a great place to live,” using a five-point Likert scale ranging from “strongly agree” to “strongly disagree.” The data were collapsed from a five-point scale to a three-point scale (Table H.1), and recoded dichotomously (“agree” = agree, “neutral” or “disagree” = disagree) based on the researcher’s interest in a possible association between *great* and *messy* (Table 6.5).

Table 6.5 shows that the association between *neighborhood as a great place to live* and *neighborhood as messy* varies for school neighborhoods, as well as among children and caregivers, with children tending to respond more positively about the neighborhood.

If, as suggested by Wilson and Kelling (1982), neighborhood disorder (i.e., social and physical disorder) is linked to crime, then resident’s perceptions of safety may help shape neighborhood satisfaction (Baba & Austin, 1989; Austin et al., 2002).

Table 6.5 Perception of Neighborhood Safety by Children and Caregivers as Measured by Neighborhood Satisfaction and Disorder

Question School, Group, Number of respondents			Response Category (%)	
			Agree	Disagree
My neighborhood is a great place to live.				
<i>Anville</i>	children	(n=102)	76.5	23.5
	caregivers	(n=98)	65.3	34.7
<i>Millside</i>	children	(n=44)	40.9	59.1
	caregivers	(n=29)	34.5	65.5
<i>Sparta</i>	children	(n=23)	26.1	73.9
	caregivers	(n=18)	16.7	83.3
<i>Quincy</i>	children	(n=10)	60.0	40.0
	caregivers	(n=9)	22.2	74.4
My neighborhood is messy.				
<i>Anville</i>	children	(n=102)	29.4	71.0
	caregivers	(n=98)	37.8	62.3
<i>Millside</i>	children	(n=44)	45.5	54.5
	caregivers	(n=29)	20.7	79.3
<i>Sparta</i>	children	(n=23)	52.2	47.8
	caregivers	(n=18)	27.8	72.2
<i>Quincy</i>	children	(n=10)	10.0	90.0
	caregivers	(n=9)	44.4	55.5

Figure 6.3 shows an inverse relationship between caregivers' neighborhood satisfaction (as measured by "great place to live") and crime. For Anville, a high level of neighborhood satisfaction corresponds to a low level of crime. Data for the three Central Ward neighborhoods show that neighborhood satisfaction decreases as crime level increases, with the lowest levels of satisfaction in neighborhoods with the highest levels of crime. Interestingly, the concept "messy," with connotations for physical disorder, does not seem to affect neighborhood satisfaction, especially in the Central Ward neighborhoods.

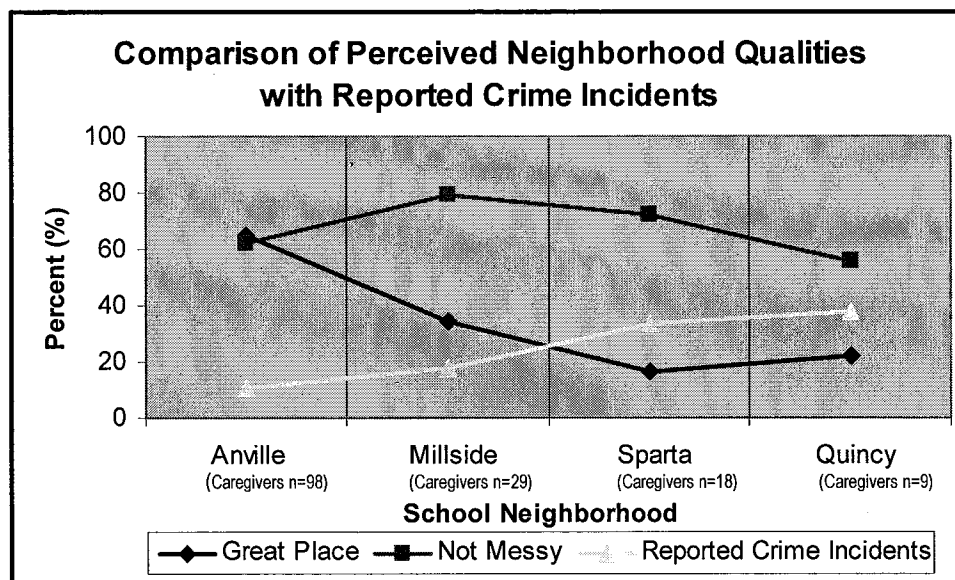


Figure 6.3 Comparison of caregivers' perceptions for neighborhood qualities "great place to live" and "not messy" with neighborhood reported crime incidents. Data for caregivers' perceptions is from Table 6.4, and data for reported crime incidents is from Table G.3. Percent of neighborhood crime incidents is equal to "total number of reported incidents for each study neighborhood" / "total number of reported crime incidents for the four study neighborhoods (n=3058)" for the years 2000-2006.

According to Lewis & Maxfield (1980), fear of crime is not evenly distributed throughout a city. Just as some neighborhoods have more crime than others, residents of some neighborhoods perceive themselves as more at risk than do people who live in other areas. Dreier and colleagues (2001) point out that the link between poverty areas and crime is far from perfect since some poor neighborhoods are safer than others.

6.4.2 Child Safety and Caregiver Management Strategies

There is increasing evidence that unsafe urban neighborhoods significantly affect children's outdoor play activities, and in turn, their level of physical activity (Sallis, Nader et al., 1993; Valentine & McKendrick, 1997; Molnar et al., 2004; Carver et al.,

2008). The mechanism for the association between living in unsafe neighborhoods and outdoor play is that parents fulfill a critical role in determining children's outdoor activities. According to Lumeng and colleagues (2006) parental perception of neighborhood safety may be more salient than the child's perception because parents of young children typically exert substantial control over where their children spend time.

The measures parents take in the interest of protecting their children range from a high degree of vigilance that involves restricting or supervising children's activities outside the home to directing children to protected play areas within and outside the neighborhood (Furstenberg et al., 1999; Hill & Herman-Stahl, 2002; Burdette & Whittaker, 2005). Parental fears of social deviance (i.e., drug trafficking, robbery, sexual molestation, etc.) in public play areas may be one explanation for their under-utilization by children (Blakely, 1994).

The protective mechanisms employed by caregivers to ensure child safety in dangerous neighborhoods are the management techniques of restriction and supervision. The strategy of restriction includes caregivers' selection of permitted outdoor play spaces, not allowing the fifth grader to go alone to the school playground, or allowing the fifth-grader to cross neighborhood streets alone. The management technique of supervision includes adult supervision when the fifth-grader is on the school playground and accompaniment of fifth-grader to and from school.

6.4.2.1 Restrictive Strategies. A 1997 study by Sallis, McKenzie and colleagues found that parents rank safety as the number one concern as to whether they would allow their child to play in a given area. Caregivers in Newark were requested to indicate their

preferred outdoor play space for their fifth-grader by the completion of a “fill-in” (Table 6.6).

Table 6.6 Caregivers’ Preferred Outdoor Play Space for Their Fifth-Grader

Question: Where do you like your 5 th grader to play when he/she is outside? (fill-in)					
School, Group	Place / Response (%)				
	Neighborhood Park/Playground	Yard / Home	School Playground	At Friend / Relative	Other
Anville caregivers (n=97)	48.6	31.8	13.7	3.2	3.2
Millside caregivers (n=27)	22.2	29.6	22.2	11.1	14.8
Sparta caregivers (n=16)	8.3	45.0	15.5	8.3	22.8
Quincy caregivers (n=8)	14.6	14.6	56.3	0.0	14.6

*Missing data has been eliminated and the total percentage adjusted. Total guardian *n* for each school is: Anville, 98; Millside, 29; Sparta, 18; Quincy, 9.

Preferred outdoor play spaces for fifth-graders. Findings reveal that only caregivers from Quincy selected the “school playground” as a first preference (50%) for their fifth graders’ outdoor play space. Anville caregivers preferred the “neighborhood park/playground” (48%) and the “yard/home” (32%) over the “school playground” (14%), while Sparta caregivers preferred “yard/home” (38%) to the school playground (13%). However, the question was problematic for many caregivers as indicated by the high percent of incorrect responses, in particular those from Millside (37%) (Table H.2). The category “incorrect responses” was eliminated from analysis.

If safety is the number one concern of caregivers in Newark when choosing their children’s play space, then caregivers’ responses seem to indicate that playground safety after school hours is viewed as questionable. The teachers also did not consider school playgrounds an appropriate play-space option for after-school hours.

“I don’t blame the parents if they don’t allow the kids to come here when the school is closed...with what goes on in today’s world.” (Anville School, vice principal)

“They (children) are encouraged to go home after school...if for no other reason than to be safe.” (Anville School, classroom teacher)

“After school hours we don’t have security guards that are out there. The children are really supposed to go home and the parents are monitoring that.” (Quincy School, principal)

Neighborhood hazards that might pose barriers to children’s outdoor play include the presence of gangs, crime, motor traffic, and drugs (Romero et al., 2001). For example, in a study of 500 families in Philadelphia, Furstenberg and colleagues (1999) found that the more dangerous the neighborhood, the more restrictive the parents, lending support to their argument that parental management strategies are related to features of the community in which the family resides. According to Osofsky (1999), when parents live in constant fear for the safety of their children, they may become overprotective, hardly allowing their children out of their sight.

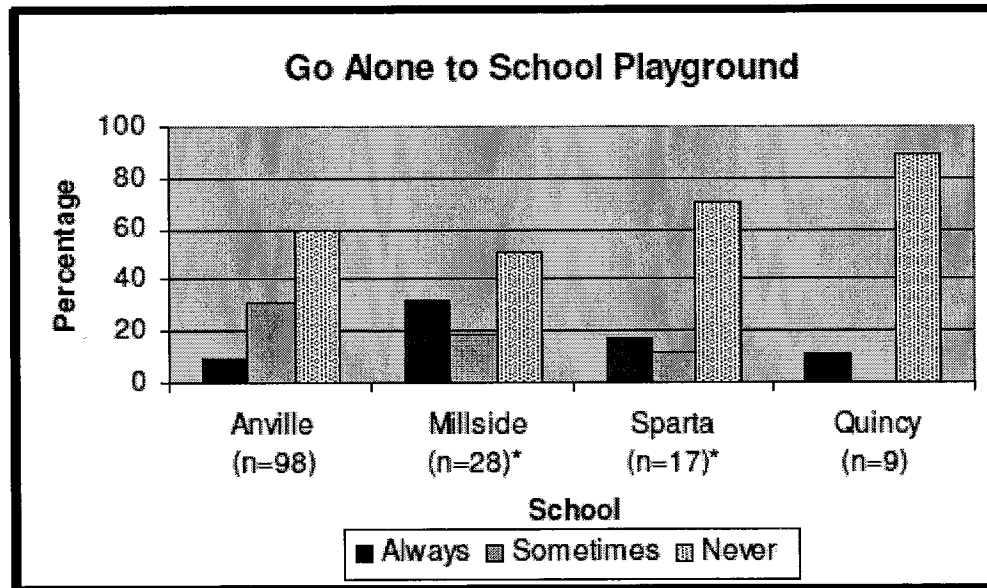
Restrictions on after-school playground use are imposed on children not only by caregivers, but also by teachers. Fear of neighborhood-gang activity has led teachers to insist that children go directly home after school.

“There was an incident that about 70-80 high school student were standing on the playground when school was still in session. The teachers called security...but the Newark police were already outside taking care of the situation. The principal instructed that all children were to remain in school until the high-school students left...and all children were to go home that day.” (Anville School, classroom teacher)

“Normally we would encourage them [children] to stay and play [on playground], but because we have seventh and eighth graders, there’s a lot of gang issues...we are encouraging them to leave school grounds.” (Millside School, physical education teacher)

Child allowed to go alone to the school playground. Newark caregivers were asked to respond to the question “Do you allow your fifth-grader to go to the school playground alone,” using the categorical scale “Always/Sometimes/Never.” The parents

who replied “never” were requested to explain why not. Findings revealed that the majority of caregivers from Anville (59%), Millside (50%), Sparta (70%), and Quincy (89%), responded that they “never” allow their fifth-grader to go alone to the school playground (Figure 6.4, Table H.2).



*Missing data (NR) has been eliminated and the total percentage adjusted.

The total caregiver population for schools missing data is: Millside, n=29; Sparta, n=18.

Figure 6.4 Caregivers’ responses regarding whether fifth-grader is allowed to go alone to school playground.

Teachers agreed that children should not come alone to the school playground.

“I think parents shouldn’t send them [children] unsupervised simply because of the area.”
(Quincy School, principal)

“I think it is a risk today in the best of neighborhoods to send your child alone... pedophiles and predators come in every race, come in every socioeconomic level, and they come in every color and size. I don’t know where it is safe to send your child alone today... We have to secure our kids, watch them, and provide supervision.” (Millside School, principal)

One teacher equated good parenting with not allowing a child to come alone to the playground.

“A good parent is someone who doesn’t let the child come alone...totally different from inner city to suburbs...it’s night and day.” (Anville School, physical education teacher)

In response to the open-ended question, Table 6.7 lists caregivers’ reasons for why their fifth-grader is not allowed to go alone to the school playground.

Table 6.7 Caregivers’ Reasons Why Fifth-Grader Cannot Go Alone to School Playground

SCHOOL	RESPONSE TO OPEN-ENDED QUESTION	CONSTRUCT: CHILD SAFETY (Caregiver’s Concern)
Anville	Someone might take him	Abduction
	From fear, I always go everywhere with her	Neighborhood Safety
	I don’t feel comfortable and safe to let her play alone outside	Neighborhood Safety
	We don’t let our children go out without one of their parents	Neighborhood Safety
	We saw a lot of times teenagers smoking and cars parked inside	Juvenile Delinquency
Millside	Because she’s scared playing alone by herself	Fear (child’s)
	Not safe	Neighborhood Safety
	Because of kidnapers [sic]	Abduction
	Can get hurt	Bodily Injury
	Too young and still needs supervision	Fear
Sparta	I don’t leave my children unmonitored by an adult	Fear
	She’s only allowed if she’s in school	Neighborhood Safety
	The area is not safe for him to be alone	Neighborhood Safety
	Because I feel that children need supervision	Fear
Quincy	It is not good	Neighborhood Safety
	She is not allowed to go out by herself	Neighborhood Safety
	It’s dangerous out there	Neighborhood Safety

The construct is “child safety” and caregivers’ responses are itemized by categories of “concern,” specified by the investigator to document the variety of dangers that caregivers perceive may exist for children walking alone in the neighborhood.

Perception of motor-vehicle traffic and allowing fifth-grader to cross street alone.

Motor vehicle dangers pose a significant barrier to children walking to school and to

other neighborhood destinations (USDHHS, 1999; CDC, 2002, 2005). A review of 33 studies in 2006 showed that traffic hazards and unsafe intersections were linked with lower levels of physical activity (Davison & Lawson, 2006).

Perceptions of neighborhood motor-vehicle traffic level appear to be associated with fifth-graders feeling safe crossing streets alone and caregivers allowing fifth-graders to cross neighborhood streets alone. Both fifth-graders and caregivers responded to the statement “There is a lot of motor-vehicle traffic in my neighborhood” using a three-point categorical scale of “Yes/No/Sometimes” (Table H.4).

Fifth-graders responded to the statement “In my neighborhood, I feel safe crossing the streets by myself” and caregivers responded to the statement “I allow my fifth-grader to cross the streets alone in my neighborhood” using a three-point categorical scale of “Yes/No/Sometimes” (Table H.5).

The data for Tables H.4 and H.5 were collapsed from a three-point categorical scale to a two-point scale and recoded dichotomously (“yes” = yes, “sometimes” or “no” = no) (Tables 6.8, 6.9). Recoding the response scales simplified data analysis and revealed a notable discrepancy regarding children’s perception of neighborhood-traffic levels (most children responded that there *is not* a lot of traffic), and their feeling of safety when crossing neighborhood streets (most children responded that they *do not* feel safe). Based on the children’s responses, it appears that most children want to be accompanied when crossing neighborhood streets, and fear encounters with motor vehicles.

Table 6.8 Perception of Neighborhood Motor Vehicle Traffic by Children and Caregivers

Question School, Group, Number of Respondents			Response Category (%)	
			Yes	No
There is a lot of motor vehicle traffic in my neighborhood.				
Anville	children	(n=102)	44.1	55.9
	caregivers	(n=97)*	76.3	23.7
Millside	children	(n=44)	27.3	72.8
	caregivers	(n=29)	48.3	51.7
Sparta	children	(n=23)	26.1	73.9
	caregivers	(n=18)	88.9	11.1
Quincy	children	(n=9)*	11.1	88.9
	caregivers	(n=9)	77.8	0.0

* Missing data (NR) has been eliminated and the total percentage adjusted. Total n for Anville caregivers is 98; for Quincy children is 10.

Table 6.8 reveals that children and caregivers have opposing perceptions regarding neighborhood-traffic levels. The majority of children responded that there *is not* a lot of traffic, and most caregivers responded that there *is* a lot of traffic. Comparing Tables 6.8 and 6.9 reveals that though most children responded that there is not a lot of neighborhood traffic, they by and large do not feel safe crossing the streets by themselves, and most caregivers do not allow children to cross the streets alone.

A personal conversation with a former Newark resident revealed that the problem regarding children crossing the street is not exclusively related to the neighborhood-traffic level, but is at least in part due to concern about car thieves who drive recklessly through the city to avoid arrest.

Table 6.9 Relationship between Children Who Feel Safe Crossing Streets and Caregivers Who Allow Children to Cross Streets

Question School, Group, Number of Respondents			Response Category	
			(%)	
			Yes	No
In my neighborhood, I feel safe crossing the streets by myself.				
Anville	children	(n=101)*	42.6	57.4
Millside	children	(n=44)	31.8	68.1
Sparta	children	(n=23)	30.4	69.6
Quincy	children	(n=9)*	33.3	66.6
I allow my 5 th grader to cross the streets alone in my neighborhood.				
Anville	caregivers	(n=97)*	49.5	50.5
Millside	caregivers	(n=29)	24.1	75.8
Sparta	caregivers	(n=18)	33.3	61.1
Quincy	caregivers	(n=9)	11.1	88.8

*Missing data (NR) has been eliminated and the total percentage adjusted.

Total n for Anville children is 102; for Anville caregivers is 98; for Quincy children is 10.

6.4.2.2 Supervisory Strategies. Close supervision of children may reflect the fear associated with the inability of parents to control the neighborhood surroundings and which presumably influences the child-environment-parent negotiations that determine children's access to their neighborhoods (Perez & Hart, 1980; O'Neil et al., 2001; Letiecq & Koblinsky, 2003). Evidence shows that elementary school-aged children face crime danger when walking to school significantly more than their older peers (CDC, 2002). Lumeng and associates (2006) emphasize that parents are more likely to base their decisions on whether to send their children outside on their perception of neighborhood safety than on statistics.

Accompaniment of child to and from school. Children responded to the questions "Does someone go along with you to the school building in the morning?" and "Does

someone go along with you when you return home after school?” using a three-point categorical scale of “Yes/No/Sometimes” (Table 6.10).

On the whole, the majority of children who participated in the study reported that they are accompanied to and from the school building. The general trend though is that more children are accompanied home after school in the afternoon than are accompanied to the school building in the morning. Few children walk home unaccompanied in the afternoon, with Quincy school children (90%), who live in a particularly dangerous neighborhood, most often traveling with accompaniment.

The principal of Quincy School mentioned why parents accompany their children.

“There are some parents that have always walked their children to school because of safety issues. Simply because what’s going on in this world. You know the snatching of children, so I understand.” (Quincy School, principal)

Table 6.10 Child Safety as Measured by Accompaniment of Child to and from School

Question School, Group, Number of Respondents			Response Category (%)		
			Yes	Sometimes	No
Does someone go along with you to the school building in the morning?					
Anville	children	(n=102)	61.8	17.6	20.6
Millside	children	(n=44)	50.0	15.9	34.1
Sparta	children	(n=23)	69.6	8.7	21.7
Quincy	children	(n=10)	50.0	20.0	30.0
Does someone go along with you when you return home after school?					
Anville	children	(n=102)	65.7	15.7	18.6
Millside	children	(n=44)	56.8	27.3	13.6
Sparta	children	(n=23)	65.2	21.7	13.0
Quincy	children	(n=10)	90.0	10.0	0.0

Importance of adult supervision on the school playground. Children responded to the question “Is it important for an adult to watch you when you play on the school

playground?’ using a three-point categorical scale of “Yes/No/Sometimes” (Table 6.11). Caregivers responded to the statement “My fifth-grader is allowed to play on the school playground only if he/she is supervised” using a two-point categorical scale of “Yes/No” (Table 6.11). The investigator mistakenly omitted “sometimes” from the response scale.

Overall, most children and caregivers responded that it is important for an adult to supervise when children play on the school playground. The importance of adult supervision on the Quincy School playground is evident, since the response “no” to supervision was not chosen by any of the children or caregivers.

Table 6.11 Comparison of Responses by Children and Caregivers Regarding the Importance of Adult Supervision When Child is on School Playground

Question School, Group, Number of Respondents	Response Category (%)		
	Yes	Sometimes	No
Is it important for an adult to watch you when you play on the school playground?			
<i>Anville</i> children (n=102)	65.7	27.5	6.9
<i>Millside</i> children (n=44)	50.0	34.1	15.9
<i>Sparta</i> children (n=19) [^]	26.3	68.4	5.3
<i>Quincy</i> children (n=10)	60.0	40.0	0.0
	Yes		No
My 5 th grader is allowed to play on the school playground only if he/she is supervised.*			
<i>Anville</i> caregivers (n=98)	89.8		10.2
<i>Millside</i> caregivers (n=29)	72.4		27.6
<i>Sparta</i> caregivers (n=18)	83.3		16.7
<i>Quincy</i> caregivers (n=8) [^]	100.0		0.0

*The category “sometimes” was (mistakenly) not a response option for caregivers.

[^]Missing data (NR) has been eliminated for Sparta children (total population, n=23) and Quincy caregivers (total population, n=9), and the total percentage adjusted.

Supervision of children on playground by the school. The schools in this study do not have security guards to supervise the playgrounds after school hours. Child

supervision after school hours is only for those children participating in the after-school program.

Lead teachers (program directors) for the after-school program describe how they manage child safety issues.

“This is a high crime area. The gates must be locked during the specific hours of my in-house program. That is to keep the undesirables out. Understand me, we have little ones having fun, they’re playing in various areas of the playground we cannot have all exits free. My security guard is on point, he’s at one of the exits, and then he walks around and he rotates...this is for the safety of the child.” (Millside School, after-school program, lead teacher)

“We’ve had to literally sometimes keep our children here during dismissal time of our after school program because we got a call from somebody that they weren’t allowing anybody on the street because someone just got shot.” (Sparta School, after-school program, lead teacher)

Millside is the only school with cameras monitoring the playground area for criminal activity. The monitor is located in the office of the school principal.

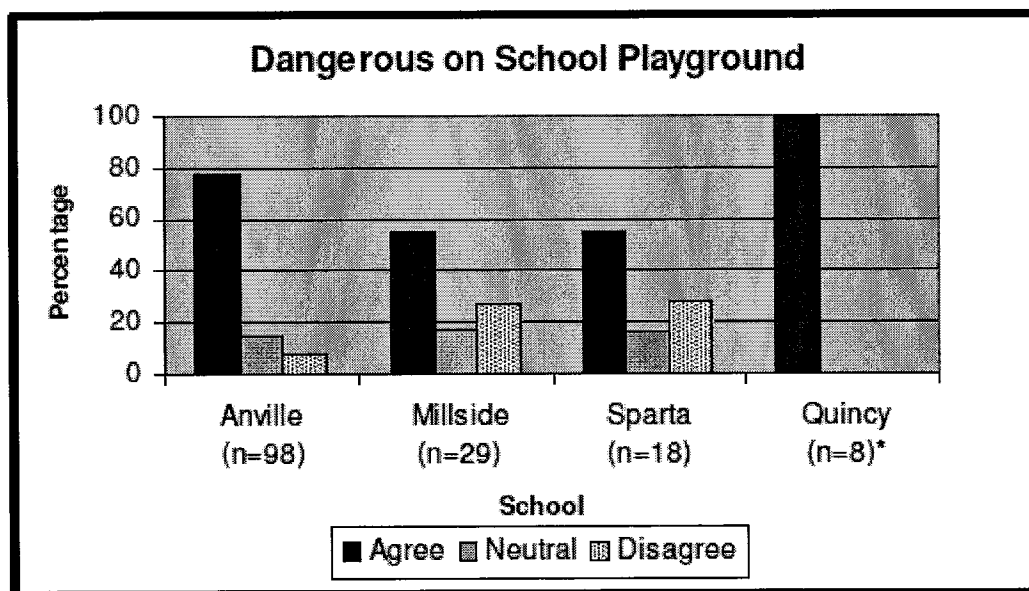
“We have 16 cameras, 5 which face the playground. We have security guards on from 7:30 in the morning to 11:00 at night monitoring the school and the children who are having activities in the school...If our children who are in our charge are on the playground, our security and our supervisors [e.g., aides, vice principal] are there. However, for the community other than our school cameras which aren’t monitored per se for the community, they are on, so if there’s something that occurs out there and they need to reflect back on the event that occurred we would give them access to the footage from it. However, we don’t offer security, that’s the parents of the children who should provide it.” (Millside School, principal)

Newark schools leave playgrounds open after school for community use, but are not required to provide security. The issue of school liability for children’s safety was raised after the murder of three college students on a school playground in August 2007 (Kleinknecht, 2008).

Dangerous for child to be alone on the school playground. Caregivers responded to the statement “It is dangerous for a child to be alone on the school playground” using a five-point Likert scale ranging from “strongly agree” to “strongly disagree.” The data

was collapsed from a five-point scale to a three-point scale (“strongly agree” and “agree” = “agree”; “neutral”; “disagree” and “strongly disagree” = “disagree”) (Table H.3).

Overall, the majority of caregivers “agree” that it is dangerous for a child to be alone on the school playground, with Quincy caregivers agreeing in full (Figure 6.4).



*Missing data (NR) has been eliminated and the total percentage adjusted. Total sample for Quincy is n=9.

Figure 6.5 Need for playground supervision by caregivers as measured by dangerous for child to be alone on the school playground.

One classroom teacher from Millside was particularly adamant about the need for adult supervision when children are on the school playground.

“Young children shouldn’t come without an adult. Teenagers do come. No one under 12 should come in the evening... You’re talking to an overprotective teacher... these children should be coming with a parent. I would not advise coming without a parent due to the community.” (Millside School, classroom teacher)

6.5 Chapter Summary

This chapter investigates the association between features of the neighborhood environment and children’s opportunities to use school playgrounds. It also investigates

how perceptions of neighborhood safety can affect that relationship and explores possible links among neighborhood characteristics, fear of crime, and caregivers' management strategies to protect children.

Study findings indicate that both real and perceived dangers, such as crime and motor-vehicle traffic, play a crucial role in limiting fifth-graders' access to their residential neighborhoods. A sense of caution on the part of either the children themselves or their caregivers (and in some instances their teachers) leads to restrictions on the local sites that children may visit. Caregivers' concerns, and the counter-measures they take in the interest of protecting their children, are probably prudent for the successful prevention of crime and traffic accidents. Results show that caregivers and teachers of the same neighborhood share similar perceptions of the surrounding community in terms of school playground opportunities and potential threats of the social and physical environments toward children. Moreover, caregivers' and teachers' perceptions of probable neighborhood dangers and fears for children's safety are similar across the communities.

One possible explanation for the finding that the fifth-grade boys and girls surveyed in this study consistently report that their neighborhoods are safer than the appraisals maintained by caregivers may stem from the fact that children are not fully aware of the dangers of the street (Timperio et al., 2004; Hume et al., 2005). Alternatively, children may be unwilling to admit that they are vulnerable and that neighborhood dangers inhibit their use of the school playground (despite the confidential nature of the survey). In any event, caregivers' perceptions of neighborhood safety

operate more strongly in determining outdoor play options since child protection is likely to be the main responsibility of the adult.

Neighborhood environments can influence children's physical activity through the environments' effects on caregivers' attitudes and perceptions of safety. Given neighborhood dynamics in Newark, the concept of child safety is a particularly salient issue. Overall, this chapter shows that caregivers' perceptions of potential neighborhood risks are associated with a decreased likelihood of fifth-grade children being allowed to use the school playground when school is not in session.

CHAPTER 7

CONCLUSION

7.1 Introduction

This study has emphasized the importance of environmental influences in the promotion of physical activity among youth. An ecological model (SPUNK or School Playground Use and Neighborhood Kids) guided the investigation of how children in Newark, New Jersey, use school playgrounds outside of school hours. The theoretical framework (Figure 3.3) portrays the interplay among multiple levels of influence on individual behavior and is specifically designed for the school-playground setting (e.g., Barker, 1968; McLeroy et al., 1988; Stokols, 1992; Sallis & Owen, 1999). The model encompasses five themes that influence school playground use: neighborhood setting, neighborhood perceptions, playground features, school features, and individual user characteristics.

The study entailed a mixed-methods approach and focused on giving respondents the opportunity to share their thoughts and voices regarding school playgrounds. However, the picture that emerges from this investigation is incomplete without a better understanding of how school dynamics affected the researcher's on-site investigations, and subsequently, the study findings.

The purpose of this chapter is to highlight the insights gleaned from this investigation. Section 7.2 provides an overview of the study. Section 7.3 discusses why study implementation ultimately depended on the school's level of commitment to the research study and how this affected the investigator's data collection efforts. Section 7.4

presents some significant findings and outlines the strengths and limitations of the work. Section 7.5 discusses policy implications and recommendations for future research.

7.2 Overview of Study

The effort to reverse declining physical activity levels among children is an important public health challenge given the association between sedentary lifestyles and a wide variety of negative health outcomes, including increased risk of obesity (USDHHS, 2000b). In the United States, problems related to inactivity disproportionately affect children from low-income groups and ethnic and minority groups, especially those who grow up in poor urban neighborhoods that lack parks and other recreational facilities (Dreier et al., 2001; CDC, 2004).

In response to insufficient outdoor play options for children living in multiethnic, low-income, inner-city neighborhoods in Newark, New Jersey, several existing elementary school playgrounds have been rebuilt to include architecturally designed play spaces and playground structures. This study employed an ecological model (SPUNK or School Playground Use and Neighborhood Kids) to investigate the extent to which these renovated school playgrounds are used by neighborhood children outside of school hours. Inquiry centered in particular on the sociocultural, environmental, and political factors that influence playground use, operation, and function.

The research design was an exploratory, multiple-case study that involved four Newark elementary schools that differed in the ethnic/racial composition of their respective school populations. Three schools were located in the Central Ward (the residential neighborhoods are among the poorest in the city) and had their playgrounds

rebuilt through a public-private partnership involving the municipality, school district, and nonprofit agencies (Sidney, 2003). The fourth school was situated in the Ironbound neighborhood of Newark (a predominately Portuguese-speaking enclave) and its playground had not been renovated.

The research strategy entailed a mixed-methods approach and the sequential collection of data: surveys, interviews, and observations. The survey phase involved the self-completion of closed-ended surveys by fifth-graders (n=179) and their respective caregivers (n=154). The interview stage consisted of semi-structured informal interviews with select school personnel (n=25), and the observational phase included assessments of the fifth-graders' playground activities during lunchtime recess. Participation was voluntary and respondents received no compensation. All respondents signed consent/assent forms. The project received approval by the Institutional Review Boards (IRBs) of both the New Jersey Institute of Technology and the Newark Public Schools.

Findings reveal that across all four neighborhoods most fifth-graders lived within one-half mile of school, were accompanied to and from school, "agreed" that the playground was important (but did not use it after-school hours), and were not allowed on school playgrounds on an unsupervised basis. Study findings suggest that fifth-graders' physical activity patterns can be modified by environmental interventions such as playground equipment and colored markings, while their usage patterns of playground facilities (after-school hours) point toward the less-modifiable influences of neighborhood qualities, in particular safety-related characteristics.

7.3 Description of School Dynamics

The decision of the school principals to participate in this research created project “legitimacy,” but did not assure successful implementation. Differences in school organizational climate and the power of the principals to effectively discharge responsibility to the teachers affected study outcomes (see also, e.g., Sarason, 1996). Each school represented a social structure and system of its own—of students, teachers, administrators, and service personnel. According to King (1989), the ideology of a school as a community accounts for the differing forms of school organization and the relationships between the principal and the teachers.

In Newark, elementary schools are embedded within a single physical neighborhood from which they draw their students. The features of the neighborhood and the characteristics of the students’ families combine to influence the environment of the school. This rationale attempts to account for school variations in study participation. Also useful in understanding study participation differences are social-capital explanations of school outcomes and the way family background may shape students’ achievements (Bankston, 2004).

The investigator’s strategy of negotiating entry into the school setting through a school-appointed contact person was an important consideration in the development of relationships between the investigator and the teachers. However, in some instances, this approach proved detrimental to the progression of the research. This section describes how the capacity of the school to effectively organize for participation in this investigation influenced data collection and study findings.

- **Anville School (non-renovated playground):** The school has two gymnasiums that are open to community use (for adults 18 years and older) several evenings during the week until 9:00pm. Located within one-half mile of the school playground is Riverbank Park, a tiny spot of green in the most densely populated part of Newark. Barely 10 acres in size, this county playground/park boasts many amenities (e.g., basketball courts, sitting areas, and play equipment).

Up the street from the Anville School is a bakery that the teachers often visit, a corner liquor store that appears always open, and a parochial school with a small playground. The surrounding houses are built close to the sidewalk and densely packed. The school shares its city block with a church that is badly in need of repair. Scattered on the sidewalk near the entrance to the school are papers, pencils, and other trash probably left behind by the building's occupants.

The vice principal was assigned by the school's principal to manage the playground study. I had no further contact with the principal following my initial introduction. The vice principal spoke for the principal during the interview phase of the study. He was always punctual for our meetings and seemed to enjoy introducing me as "the playground lady from NJIT" to the school staff we would meet along the way to his office.

The vice principal undertook this project with great vigor. His objective was to complete his assignment as quickly as possible. He conferred first with me and then with the fifth-grade teachers regarding the best way to implement the study. He told me exactly how many children were in each fifth-grade class and requested that class numbers appear on the survey packets distributed to the teachers.

Parental consent forms were returned to the vice principal via the teachers within two days after distribution to the fifth-graders. The questionnaires (for both children and caregivers) were treated as homework and returned within 5 days. When I asked the vice principal how the teachers managed to have the children return the forms and surveys so quickly he seemed rather puzzled by my question. I proceeded to explain the difficulties I was encountering at the other schools. He replied that Anville relies on "old world culture and discipline." He told the teachers "to do it" and have the material on his desk by a specific date. He also apologized to me for the parents who did not want to participate in the study. I explained to him that the response rate of 84% from his school was considered outstanding.

When the time came to interview the teachers, he took me to the first teacher on his list, proudly introduced the teacher to me, and told her that when I finished she was to take me to A___, and so forth, until all the fifth-grade teachers were interviewed. Afterwards, I was to report to the secretaries and have them contact him so he could take me to the physical education teachers and the after-school director. At no point did anyone refuse to be interviewed. One week later, I returned to the school to observe how children use the playground during recess.

The playground project was organized by the school in a very professional manner and the investigator's entrance and exit from the school was completed within three weeks. Formally, the vice principal was in-charge of the upper grades (6, 7, 8), but this did not affect the willingness of the fifth-grade teachers to cooperate with him and follow his instructions regarding the playground project.

- ***Millside (renovated playground):*** The school building was undergoing extensive renovations during the investigation and only one out of three gymnasiums was available for physical education classes. The other gymnasiums housed temporary classrooms. The (available) gymnasium is open for community use (for adults 18 years and older) on weekdays until 11pm. Located near the western perimeter of the school-defined neighborhood is Branch Brook Park, the famed “Cherry Blossom Land,” with its playgrounds, ballfields, and basketball courts.

Millside School is located at the end of a short, narrow street lined with parked cars. The front of the school building faces a residential high-rise adjoined to a parking lot. A small shopping center runs parallel to the street’s entrance. The road leading to the back entrance of the school traverses a well-kept neighborhood of semi-detached, two-storey houses and finishes at the gate of the renovated playground. A Catholic church and its reconstructed statue-filled courtyard border the playground fence. A few years ago, vandals went on a spree of destruction against the marble statues leaving several of them decapitated and others without fingers or hands.

The fifth-grade physical education teacher was my contact. Gregarious and chatty Mike informed me of his sideline business of building playgrounds—that is (according to him) unbeknownst to the principal. Following our initial meeting, I was escorted around the school and met with the fifth-grade teachers. Noticing my cool reception by some of the teachers, Mike explained that it was his job to inform them of the project and that their attitude is directed at him not me. It turns out, that in his role as school-parking monitor he was responsible for having “M’s” car towed. The teachers’ anger toward him escalated further when he refused to apologize for the towing and did not contribute money to help “M__” get her car out of municipality impoundment.

As time progressed and lack of enthusiasm for the project on the part of the teachers continued, I realized that I would need to try and bond directly with them. I began making regular visits to the school over the next two months. One teacher hinted that I should bring food to their upcoming Christmas party.

Eventually the fifth-grade lead teacher (“D__”) accepted me and decided to speak to the other teachers regarding cooperation. “D__” told me that the principal had slighted the teachers by not speaking with them prior to my coming and that she (as lead teacher) should have been appointed project contact.

Another difficulty encountered by the investigator was trying to find some of the children that had received parental consent to participate. It seemed that a few children, particularly the ones labeled as “troublemakers,” were being traded among the teachers.

Mike in a desperate act to help improve study participation introduced me to the fifth-grade vice principal who was unaware of the project but promised to help—he never did.

Most surprising was the elusive behavior of the principal regarding an interview. Mike, along with his other roles, was also a teachers’ union representative and among the few who had access to the principal. He proved invaluable in helping to arrange the meeting (and did not understand why she was avoiding me). Ironically, during the interview she acted pleased to be able to participate in the study because she felt indebted to the nonprofit organization for the lovely playground. She appeared somewhat agitated by the lack of fifth-grade participation, but could (or would not?) resolve the problem.

- ***Sparta (renovated playground)***: The school has two gymnasiums that are open for community use during the school week until 9pm. On the hill adjacent to the school are basketball courts and play areas belonging to the Boys and Girls Club of Newark.

Sparta School is nestled within a residential area. The older housing is typical of the low-rise brick apartment buildings built during the 1960s with shared open space including grass, shrubbery, and flower beds. New public-housing townhouses are going up across the street from the school. Further down the street are several buildings of high-rise public housing. It appears to be a very quiet neighborhood—eerily so. This is an exceptionally high-risk area with frequent gang action. Twice I was warned by the teachers not to enter the neighborhood because of gang initiation activities. During these times, children are usually kept home for safety reasons. Four months after I completed my study, the pizza delivery man (during school hours) was shot outside the building.

The principal of the school was friendly and accommodating, and always wore a suit. He was pleased that his school had been selected to participate in the study. The investigator pre-tested the survey at his school.

The principal appointed the fifth-grade vice principal as the contact person. A meeting was held and the vice principal introduced me to the teachers. She requested that the teachers encourage their students to participate in the study. The vice principal was in the throes of retirement, frequently unavailable, and disappeared entirely toward the end of the study.

Once when speaking to the principal regarding study progression, he made it clear to me that he had given me access to his school and teachers and that it was my task to negotiate with them regarding study participation. The investigator invested many hours visiting the school and distributing countless consent forms and surveys because the children were always losing them. One teacher even awarded “returners” with candy.

A male teacher had the so-called “exceptional” fifth-grade students. The door to his room was always closed and a posted sign informed potential class visitors that testing was in progress. There were not many classrooms with closed doors. It seemed as if he was trying to protect his students by isolating them from the influences of the other children. I never had the opportunity to interview him. Countless meetings were arranged but when I arrived he would say that he is too busy or that his students are taking a test.

The other teachers were women and more receptive to the investigator. One teacher told me that there was nothing she could do about the level of study non-participation.

I wanted to arrange an interview with the principal but he insisted that it was not necessary. His door was literally “always open” and he could observe hallway goings-on from his desk. At the end of the day, he would stand either near the exit or in the corridor saying good-bye to the children. I also had the opportunity to see how he interacted with the parents. One could see that he was well-liked and truly enjoyed his position.

There was one disconcerting occurrence. I was outside on the hill above the playground taking photographs when a little girl called to me asking for help. I was surprised to see her since recess was over and the school building was in lock-down. I walked her to the main entrance and later mentioned the incident (“in passing”) to the principal. He did not seem particularly concerned that the child had been unaccounted for by the teacher, and no one had come outside looking for her.

Quincy (renovated playground): The school has a large gymnasium with locker rooms. There is also a playroom for the children on the lower-level. This is a well-developed full-service community school with an adult recreation program in the evening.

The neighborhood is under going an extensive face-lift. Expensive town houses are being built near the school (according to one teacher, parents will probably opt not to send their children to Quincy). On the corner of the street leading to the school are a Mom and Pop convenience store, a small eatery, and an active Mosque (especially at noontime). Adjacent to the limited customer parking behind the small center, and across from the entrance to the school building, is an undersized, broken-down, caged basketball court and a vacant lot over-grown with grass and debris. It is a playing field waiting to happen.

This is a violent neighborhood. In 2002, a youth was killed on the playground in a drive-by shooting during the first week of camp.

The investigator's original contact with the school was via the community agency that shared the building and provided local health and social services, and that was responsible for inviting the nonprofit organization to rebuild the playground. Within the year, circumstances caused the director to change three times. The agency's employees were communicative and enjoyed discussing the playground project.

The principal-approved study was floundering. The investigator's chance hallway meeting with the principal led to her direct involvement in the study. Confusion set-in—the study was being handled on two fronts—eventually the agency uninvolved itself.

The study did not progress well under the direction of the principal, even though she attached personal letters to the consent forms requesting the caregivers to participate in the study. The investigator was permitted inside the school building but not allowed face-to-face contact with the teachers or the fifth-grade children. Relatively few consent forms and surveys were returned.

After two persistent months of running back and forth to the school and numerous rounds of material replenishment, I decided to progress to the interview phase. New barriers were encountered. I informed the principal of my exit from her school at the end of January. She suddenly agreed to be interviewed. Beforehand she was always too busy, and at one point had even showed me her crowded appointment book.

The sociable school psychologist saw me wondering the halls and after a brief conversation volunteered to be interviewed. When the time came, he became concerned that he had not requested the principal's permission—so I took care of it.

The principal placed numerous constraints on the teachers' interviews. They could only take place during the teachers' prep time, but not on Tuesdays and Thursdays—later on, Fridays were added. I communicated with them through letters left in their mailboxes and the secretary. One teacher finally agreed to be interviewed and related that she had not been informed of the study by the principal. The other teacher continually evaded me even though the principal's secretary would call her while I stood in the office below her room. Finally, the interview day arrived. I came early and was informed by the secretary that the teacher had changed her mind because she wanted the principal's personal approval of the project—despite the fact that some of her students had already completed the survey. I tried again the next week but the teacher was absent.

The ideal of the community school is all partners working together.

7.4 Study Evaluation

This study was designed to evaluate the effects of an environmental intervention (playground renovation) and to identify probable factors that mediate the use of school playgrounds by children. Across all four neighborhoods, children's playground use after-school hours was most often associated with neighborhood quality. Findings suggest that safety concerns play a key role in limiting children's use of school playgrounds after-school hours and underscore the basic need for child security to create an environment that supports this activity (Weir et al., 2006; Farley et al., 2007; Miles, 2008). There are also issues about the physical maintenance of the renovated school playgrounds in the context of limited budgets and the appropriation of playground space by the school administration for portable classrooms and staff parking.

The results from this study support the hypothesis that children's opportunities to use the school playground are embedded within multiple environments (e.g., family, community, and school) and dynamics (i.e., sociocultural, environmental, and political). Some significant findings are:

- *Caregivers are the "gatekeepers" of children's playground use.*

Caregivers' survey responses with respect to neighborhood walkability and to whether children are allowed to go alone and to be alone on the school playground strongly suggest that most inner-city caregivers restrict their children's activities in the neighborhood because they perceive their neighborhoods as unsafe.

- *Playground availability is not necessarily linked to usage.*

If neighborhood safety concerns cause most caregivers to restrict children's outdoor activities, it is not surprising to find that most children participating in the study responded that they do not use the school playground after-school hours even though it is open to community use. Another factor that needs to be

considered is children's leisure-time preferences (e.g., playing indoors, watching television, and visiting the local park/playground).

- *Neighborhood environments present actual and perceived barriers to children's playground use after-school hours.*

Research findings indicate that caregivers' concerns about neighborhood traffic-levels and safety have a significant influence on children's playground use, and that child and caregiver perceptions of the local environment are as important as the actual environment.

- *Playground infrastructure improvements may lead to changes in opportunities for physical activity but do not inevitably lead to playground use.*

The findings that most children in the study lived within one-half mile of the school playground, "agreed" that the playground was important, and did not use it after-school hours suggest that spatial proximity to the playground cannot accurately measure use or produce the desired outcome of facility utilization by children living in low-income urban neighborhoods—regardless of attractiveness—since the dimension of distance does not consider the influences of the local environment (Giles-Corti & Donovan, 2002; Burdette & Whitaker, 2004).

Study Strengths

Important strengths of this study are noted.

- The mixed-methods study design provided a strong methodological approach for obtaining rich contextual information on this under-researched topic. The semi-structured design of questions enabled teachers to provide greater depth to issues explored in the quantitative survey.
- The study included both perceived and objective characteristics of the neighborhood environment to evaluate the effects of local context on children's playground use.
- The use of an ecological framework and consideration of influences at the individual, social, and environmental levels showed that school playground use is not determined simply by the provision of playground amenities.
- School populations represented a range of ethnic/racial groups and provided a broad scope for investigating a wide-range of influences on children's playground use.
- Data findings elucidated the significant role of caregivers in determining children's use of the school playground and provided additional evidence of what many people

know intuitively about unsafe neighborhoods and children's outdoor activities; however, this study has investigated the relationship empirically.

- This study is among a small handful of research efforts that have attempted to verify if recreational facilities are actually used after an environmental intervention (see also Troped et al., 2001; Merom et al, 2003). The findings of the current work lend further support to calls for empirical research on children's physical activity since assumptions about the use of existing renovated playgrounds—without evidence—appear to have led to poor policy decisions and even overstated outcomes.

Study Limitations

It is necessary to acknowledge several limitations of this study.

- This research project was conceived as an exploratory investigation, and small sample sizes from four neighborhoods in one city means that findings and neighborhood comparisons should be considered provisional. Further studies of this nature could significantly augment our understanding of the relationship between school-playground use after-school hours and neighborhood context.
- Cross-sectional study design did not allow the investigator to obtain information on possible change in playground use over time (before and after the intervention) that could be obtained from a longitudinal study.
- The variation in the percent of respondents (from the total population) for the different case study schools may have biased the findings of this investigation.
- The four case study schools did not represent a random sample of Newark public schools, possibly limiting generalizability of results. However, school populations did reflect different sociodemographic neighborhood characteristics.
- The results pertained to a select group of youth (fifth-graders) and the focus on this target group likely limits the generalizability of this study to other age groups.
- Most caregiver respondents were female and the results reflect to a greater extent the perspectives of females rather than males. However, it could be argued that the female is typically the primary caregiver and therefore may have the greatest influence over children's outdoor play options.
- The study population was confined to central districts of the city of Newark and this feature of the research may limit the generalizability of the findings to other areas.

Even with these limitations, given the dearth of research that evaluates the effectiveness of environmental interventions at the neighborhood level and the incorporation of objective and subjective measures of local context, the study succeeds in generating insights that can be useful when planning strategies to address physical inactivity among low-income children living in urban communities.

7.5 Implications and Recommendations

Findings from this study suggest that opportunities for children to use school playgrounds after-school hours may be quite limited for many youngsters living in low-income, inner-city neighborhoods. Although these findings are not surprising, they are somewhat disturbing given the health benefits derived from physical activity. Prior to embarking on a larger-scale investigation, implementation issues need to be addressed since an insufficient number of study participants may not allow for a meaningful analysis of research findings.

Some difficulties encountered include:

- *Study Consent*: Passive rather than active caregiver consent can significantly increase the number of children eligible for study participation.
- *Compensation*: Compensation in the form of small tokens of appreciation (e.g., children's art stickers) may increase study participation and encourage individuals to complete surveys in a more timely manner.
- *School Constraints*: Research design needs to account for time constraints under which schools operate during the day.
- *Study Awareness*: Contact with potential respondents before the commencement of field research can be used to create enthusiasm for the study and to learn about concerns connected to implementation. Teachers and caregivers are a potential source of support for the study and need to be aware of study aims before implementation. Children also need to understand their role in the study.

Additional issues that need to be considered when devising policy strategy include:

- *Evaluation of existing playground interventions*: Evaluating the effect of playground renovations can provide information on why the intervention is effective or ineffective and focus attention on measures needed for improvement.
- *Non-use phenomenon of school playgrounds*: Decisions regarding physical activity opportunities for children residing in low-income neighborhoods need to be addressed at multiple levels and to be understood in the context of the family, community, and larger society (see ecological model, Figure 3.3). No one intervention, by itself, is likely to produce large reductions in the prevalence of physically inactive children.
- *School Playground Strategies*: School playground strategies in Newark have been ad-hoc and not generalized as a set of policies that could serve as models for different communities.

Educating children about the importance of physical activity will not be effective if their physical and social environments make it inconvenient or unsafe to play outdoors. Identifying ways in which neighborhood conditions in low-income areas might present barriers to school-playground use is consistent with an ecological approach that considers multiple levels of influence on behavior; it is also the first step toward designing an effective intervention strategy (Sallis et al., 1992; Sallis et al., 1998; Neckerman et al., 2009). The value of the ecological approach is in addressing a long-term rather than a short-term strategy for promoting children's physical activity.

Findings from this study suggest that the single-component intervention of school playground renovation is unlikely to be an effective strategy to increase physical activity levels among inner-city children living in Newark due to a variety of neighborhood concerns including traffic hazards, crime rates, and caregivers' perceptions (Blakely, 1994; Molnar et al., 2004; Burdette & Whitaker, 2005). Since a sense of safety in the neighborhood appears to be an important determinant for children's playground use, the

simple intervention of providing adult supervision may encourage caregivers to allow their children (if they choose to do so) to use the school playground after-school hours (i.e., Farley et al., 2007). The need to address issues relevant to the broader environmental context in which children's physical activity takes place can stimulate research that may provide information useful for designing and testing intervention programs.

Finally, the study findings reported here need to be replicated. If the results from such investigations are consistent with this research project, then it becomes increasingly clear that providing children from low-income urban neighborhoods with rebuilt school playgrounds is not likely to lead to increased levels of physical activity. Multifaceted strategic approaches, tailored to community context, will be needed to bring about desired changes in children's physical activity behavior.

APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL



Institutional Review Board: HHS FWA 00003246
Notice of Approval
IRB Protocol Number: E70-06

Principal Investigators: Caryn Yaacov, Urban Systems
Maurie Cohen, Environmental Policy Science

Title: Dynamics of School Playground Use in Low-Income Urban Neighborhoods:
Four Case Studies from Newark, New Jersey

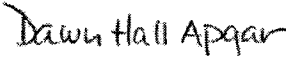
Performance Site(s): NJIT Sponsor Protocol Number (if applicable):

Type of Review: FULL [] EXPEDITED [X]

Type of Approval: NEW [X] RENEWAL [] MAJOR REVISION []

Approval Date: June 19, 2006 Expiration Date: June 18, 2007

1. **ADVERSE EVENTS:** Any adverse event(s) or unexpected event(s) that occur in conjunction with this study must be reported to the IRB Office immediately (973) 642-7616.
2. **RENEWAL:** Approval is valid until the expiration date on the protocol. You are required to apply to the IRB for a renewal prior to your expiration date for as long as the study is active. Renewal forms will be sent to you; but it is your responsibility to ensure that you receive and submit the renewal in a timely manner.
3. **CONSENT:** All subjects must receive a copy of the consent form as submitted. Copies of the signed consent forms must be kept on file with the principal investigator.
4. **SUBJECTS:** Number of subjects approved: 120.
5. The investigator(s) did not participate in the review, discussion, or vote of this protocol.
6. **APPROVAL IS GRANTED ON THE CONDITION THAT ANY DEVIATION FROM THE PROTOCOL WILL BE SUBMITTED, IN WRITING, TO THE IRB FOR SEPARATE REVIEW AND APPROVAL.**


Dawn Hall Apgar, PhD, LSW, ACSW, Chair IRB

June 19, 2006

APPENDIX B
CONSENT FORMS

Figures B.1 to B.3 show consent forms used in this study.

Figure B.1 Caregiver Consent Form

Figure B.2 Child Assent Form

Figure B.3 School Personnel Consent Form

Figure B.1 Caregiver Consent Form

NEW JERSEY INSTITUTE OF TECHNOLOGY
323 MARTIN LUTHER KING BLVD.
NEWARK, NJ 07102

CONSENT TO PARTICIPATE IN A PILOT RESEARCH STUDY**SIGNATURE OF PARTICIPANT**

I have read this entire form, or it has been read to me, and I understand it completely. I am legal guardian of the fifth grader who has been asked to participate in this pilot research study. All of my questions regarding this form or this study have been answered to my complete satisfaction. I agree to participate in this pilot research study.

I agree to fill-out the attached questionnaire and allow my fifth grader to participate in this pilot research study.

Subject Name: _____ Signature: _____

Date: _____

TITLE OF STUDY: *Dynamics of School Playground Use in Low-Income Urban Neighborhoods: Four Case Studies from Newark, New Jersey*

RESEARCH STUDY:

I and my fifth grader have been asked to participate in a pilot research study under the direction of Prof. Maurie Cohen and PhD candidate Caryn S. Yaacov.

PURPOSE:

The purpose of this research is to gain a better understanding of the sociopolitical, institutional, and neighborhood dynamics that mediate the usage patterns of school playgrounds by local children and community residents. The research is designed to help us understand the relation between school playground use and physical activity.

DURATION:

My participation in this pilot study includes a one-time questionnaire that will take approximately 15 minutes to complete. The parent questionnaire format consists of multiple choice and simple fill-in the blanks. The participation of my fifth grader includes a one-time questionnaire that will be administered by the graduate researcher during the school day. The fifth grade questionnaire format consists of multiple choice and simple fill-in the blanks. In addition, the researcher will observe my fifth grader using the school playground while in school during 2 recess periods and 1 physical education class.

PROCEDURES:

I have been told that, during the course of this study, the following will occur:

My questionnaire, as well as my 5th grader's questionnaire and observation forms, will be used for the sole purpose of this research. After data analysis, the questionnaires and observation forms will be destroyed. Both

NJIT

New Jersey Institute of Technology
Approved by the NJIT IRB on 9/26/06.

Modifications may not be made to this consent form without NJIT IRB approval.

9.21.06 1

*Available in English, Spanish, and Portuguese

sets of questionnaires and observation forms will be held in strict confidentiality and will not be revealed to anyone but the researchers. The *Secret Password* blank that appears in the upper right hand corner of the questionnaire is a password that is created by your fifth grader for the sole purpose of allowing the researcher to match the parent/caregiver questionnaire with your fifth grader's questionnaire, in order to carry out statistical analysis. At no time will the researcher request your fifth grader to divulge his/her password, or in any other matter breach questionnaire anonymity.

PARTICIPANTS:

My fifth grader and I will be one of about 450 participants to participate in this pilot study.

RISKS/DISCOMFORTS:

There are no risks and/or discomforts associated with this pilot study.

There also may be risks and discomforts that are not yet known.

I fully recognize that there are risks that I may be exposed to by volunteering in this study which are inherent in participating in any study; I understand that I am not covered by NJIT's insurance policy for any injury or loss I might sustain in the course of participating in the study.

CONFIDENTIALITY:

I understand confidential is not the same as anonymous. Confidential means that my name will not be disclosed if there exists a documented linkage between my identity and my responses as recorded in the research records. Every effort will be made to maintain the confidentiality of my study records. If the findings from the study are published, I will not be identified by name. My identity will remain confidential unless disclosure is required by law.

RIGHT TO REFUSE OR WITHDRAW:

I understand that my participation is voluntary and I may refuse to participate, or may discontinue my participation at any time with no adverse consequence. I also understand that the investigator has the right to withdraw me from the study at any time.

INDIVIDUAL TO CONTACT:

If I have any questions about my treatment or research procedures, I understand that I should contact the principal investigator at:

Maurie Cohen, Assistant Professor of Environmental Policy Science at 973/596-5281 or email at mcohen@njit.edu

If I have any addition questions about my rights as a research subject, I may contact:

Dawn Hall Apgar, PhD, IRB Chair
New Jersey Institute of Technology
323 Martin Luther King Boulevard
Newark, NJ 07102
(973) 642-7616
dawn.apgar@njit.edu



Approved by the NJIT IRB on 9/26/06.

Modifications may not be made to this consent form without NJIT IRB approval.

Figure B.2 Child Assent Form

NEW JERSEY INSTITUTE OF TECHNOLOGY
323 MARTIN LUTHER KING BLVD.
NEWARK, NJ 07102

ASSENT TO PARTICIPATE IN A PILOT RESEARCH STUDY

TITLE OF STUDY: *Dynamics of School Playground Use in Low-Income Urban Neighborhoods: Four Case Studies from Newark, New Jersey*

PURPOSE:

The purpose of this research is to help people better understand how elementary school children use the school playground.

YOUR PARTICIPATION:

- Your participation in this research consists of a one-time questionnaire, as well as being observed 3 different times using the school playground.
- This questionnaire will ask you different questions about your school playground and take about 20 minutes to complete. It is important that you choose the answer that best describes how YOU feel.
- In the upper right hand corner of page 1, there is a line for you to write a secret password. This password is any word or number that you wish it to be. You will also be asked to write the password on the questionnaire that you will take home to your parent/caregiver. The reason I am asking you to do this is so I can compare your answers with those of your parent/caregiver. Since only you will know your password, the answers on your questionnaire will remain a secret, and no one will ever be able to find out your identity.
- In addition, in order to learn about how you use the playground, I will be walking around the playground during 1 or 2 days, and writing down the type of things that you do on the playground while you are at recess or in your physical education class.
- It is important to understand that you do not have to fill-out this questionnaire if you do not want to, or be observed using the playground if you do not want to. If you do decide to participate in this study, and later decide you do not want to participate, you can stop at any time you like. Also, you do not have to answer any questions that you do not want to answer. In addition, you can also ask me at any time, not to write down what you are doing on the playground.
- The important thing you need to know is that by filling out this questionnaire and by allowing me to watch what you do on the school playground indicates that you wanted to do it.

SIGNATURE OF PUPIL

I have read this entire form, or it has been read to me, and I understand it completely. All of my questions regarding this form or this study have been answered to my complete satisfaction. I agree to participate in this pilot research study.

Subject Name: _____ Signature: _____

Date: _____

NJIT

New Jersey Institute of Technology

Approved by the NJIT IRB on 9/26/06.

Modifications may not be made to this consent form without NJIT IRB approval.

9.21.06

Figure B.3 School Personnel Consent Form

NEW JERSEY INSTITUTE OF TECHNOLOGY
323 MARTIN LUTHER KING BLVD.
NEWARK, NJ 07102

CONSENT FOR SCHOOL TO PARTICIPATE IN A PILOT RESEARCH STUDY

SIGNATURE OF PRINCIPAL

I have read this entire form and I understand it completely. All of my questions regarding this form or this study have been answered to my complete satisfaction. As principal of _____ School, I agree to allow the school's fifth grade class and their parent/caregiver to participate in this pilot research study.

Participant's Name: _____ Signature: _____

Date: _____

TITLE OF STUDY: *Dynamics of School Playground Use in Low-Income Urban Neighborhoods: Four Case Studies from Newark, New Jersey*

RESEARCH STUDY:

The _____ School has been asked to participate in a pilot research study under the direction of Prof. Maurie Cohen and PhD candidate Caryn S. Yaacov.

PURPOSE:

The purpose of this research is to gain a better understanding of the sociopolitical, institutional, and neighborhood dynamics that mediate the usage patterns of school playgrounds by local children and community residents. The research is designed to help us understand the relation between school playground use and physical activity.

DURATION:

This pilot study includes two sets of one-time questionnaires and three observations of the fifth grade pupils using the playground. A one-time questionnaire that will be administered by the graduate research student during the school day to fifth grade pupils, and a one-time questionnaire that the pupils will take home to their parent/caregiver to complete and return to school. In addition, the fifth grade pupils will be observed by the researcher during two recesses and one physical education class.

PROCEDURES:

I have been told that, during the course of this study, the following will occur:

The questionnaires will be used for the sole purpose of this pilot study. After data analysis, the questionnaire will be destroyed. Both sets of questionnaires will be held in strict confidentiality and will not be revealed to anyone but the researchers.

12.8.06 1

*Modified to reflect participant's status (i.e., principal, teacher, etc.)

PARTICIPANTS:

About 450 pupils and their respective parent/caregiver will participate in this pilot study.

RISKS/DISCOMFORTS:

There are no risks and/or discomforts associated with this pilot study.

There also may be risks and discomforts that are not yet known.

I fully recognize that there are risks that the pupils and their parents may be exposed to by volunteering in this study which are inherent in participating in any study; I understand that no one is covered by NJIT's insurance policy for any injury or loss they might sustain in the course of participating in the study.

CONFIDENTIALITY:

I understand confidential is not the same as anonymous. Confidential means that name will not be disclosed if there exists a documented linkage between identity and responses as recorded in the research records. Every effort will be made to maintain the confidentiality of all study records. If the findings from the study are published, the school will not be identified by name. The school's identity will remain confidential unless disclosure is required by law.

RIGHT TO REFUSE OR WITHDRAW:

I understand that the school's participation is voluntary and that the school and its pupils and their respective parent/caregiver may refuse to participate, or may discontinue participation at any time with no adverse consequence. I also understand that the investigator has the right to withdraw the school from the study at any time.

INDIVIDUAL TO CONTACT:

If I have any questions about the treatment or research procedures, I understand that I should contact the principal investigator at:

Maurie Cohen, Assistant Professor of Environmental Policy Science at 973/596-5281 or email at mcohen@njit.edu

If I have any addition questions about the school's rights as a research subject, I may contact:

Dawn Hall Apgar, PhD, IRB Chair
New Jersey Institute of Technology
323 Martin Luther King Boulevard
Newark, NJ 07102
(973) 642-7616
dawn.apgar@njit.edu

APPENDIX C

SURVEY QUESTIONNAIRES

Figures C.1 and C.2 show the two types of survey questionnaires used in this study.
Table C.1 compares student and caregiver surveys by respondent group and school.

Figure C.1 Child questionnaire

Figure C.2 Caregiver questionnaire


Figure C.1 Child Questionnaire

Student Questionnaire
_____ Elementary School


Secret Password _____

PLAYGROUND SURVEY


First, I would like to ask you some questions about how you come to school.

1.  What is the distance from your home to _____ Elementary School?

Close
 A Little Far
 Far

2.  How do you usually get to and from school?

Walk
 Bike
 Car
 School Bus
 Public Bus

3.  Does someone go along with you to the school building *in the morning*?

Yes No Sometimes

4. Does someone go along with you when you return home *after school*?

Yes No Sometimes





Figure C.1 Child Questionnaire

Student Questionnaire _____
Elementary School

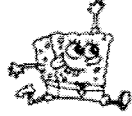
Secret Password _____

PLAYGROUND SURVEY


First, I would like to ask you some questions about how you come to school.

1.  What is the distance from your home to _____ Elementary School?

Close
 A Little Far
 Far

2.  How do you usually get to and from school?


Walk
 Bike
 Car
 School Bus
 Public Bus

3.  Does someone go along with you to the school building *in the morning*?

Yes No Sometimes

4. Does someone go along with you when you return home *after school*?

Yes No Sometimes



5. Do you attend an after school program?



Yes

No

6. Do you attend an after school program *at your school*?



Yes

No

Now, I would like to ask you some questions about where you play.

7. On Saturday mornings, where do you usually play?



Indoors

Outdoors

8. On Saturday mornings, where do your best friends usually play?

Indoors

Outdoors



5. Do you attend an after school program?



Yes

No

6.



Do you attend an after school program *at your school*?

Yes

No

Now, I would like to ask you some questions about where you play.

7.



On Saturday mornings, where do you usually play?

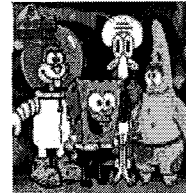
Indoors

Outdoors

8. On Saturday mornings, where do your best friends usually play?

Indoors

Outdoors



9. Rank the following outdoor play places. Start with your *favorite* and give it a 6! Give your next favorite a 5, and so on. Your least favorite play place will get a 1.



FAVORITE	
6	
5	
4	
3	
2	
1	

- _____ Street
- _____ Sidewalk
- _____ Your Yard or Someone's Yard
- _____ Neighborhood Park / Playground
- _____ School Playground / Grounds
- _____ Empty Lot / Vacant Lot

Next, I would like to ask you some questions about your school playground.

10. Do you ever use the school playground when the school building is closed? 

- Yes
 No
 Sometimes

11. Is the school playground open for you to use whenever you want?

- Yes
 No

12. Does the school playground have enough places for you to sit and talk with your



- Yes
 No

9. Rank the following outdoor play places. Start with your *favorite* and give it a 6! Give your next favorite a 5, and so on. Your least favorite play place will get a 1.



<i>FAVORITE</i>
6
5
4
3
2
1

- _____ Street
- _____ Sidewalk
- _____ Your Yard or Someone's Yard
- _____ Neighborhood Park / Playground
- _____ School Playground / Grounds
- _____ Empty Lot / Vacant Lot

Next, I would like to ask you some questions about your school playground.

10. Do you ever use the school playground when the school building is closed?



- Yes
 No
 Sometimes

11. Is the school playground open for you to use whenever you want?

- Yes
 No

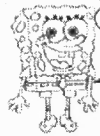
12. Does the school playground have enough places for you to sit and talk with your



- Yes
 No

13. Circle the group of stars that best describes how you rate each play area on the school playground.

<i>Basketball</i>	<i>Excellent</i>  4	<i>Good</i>  3	<i>Fair</i>  2	<i>Poor</i>  1
<i>Running Track</i>	<i>Excellent</i>  4	<i>Good</i>  3	<i>Fair</i>  2	<i>Poor</i>  1
<i>Play Equipment</i>	<i>Excellent</i>  4	<i>Good</i>  3	<i>Fair</i>  2	<i>Poor</i>  1
<i>Painted Game Area or Playground Markings</i>	<i>Excellent</i>  4	<i>Good</i>  3	<i>Fair</i>  2	<i>Poor</i>  1



What is your favorite play area on the school playground?

- 14.
- Running Track
 - Basketball
 - Painted Game Area / Playground Markings
 - Benches
 - Play Equipment
 - Other _____



15. Does the school playground have enough play space for girls?

- Yes No

13. Circle the group of stars that best describes how you rate each play area on the school playground.

<i>Basketball</i>	<i>Excellent</i> ☆☆☆☆ 4	<i>Good</i> ☆☆☆ 3	<i>Fair</i> ☆☆ 2	<i>Poor</i> ☆ 1
<i>Running Track</i>	<i>Excellent</i> ☆☆☆☆ 4	<i>Good</i> ☆☆☆ 3	<i>Fair</i> ☆☆ 2	<i>Poor</i> ☆ 1
<i>Play Equipment</i>	<i>Excellent</i> ☆☆☆☆ 4	<i>Good</i> ☆☆☆ 3	<i>Fair</i> ☆☆ 2	<i>Poor</i> ☆ 1
<i>Painted Game Area or Playground Markings</i>	<i>Excellent</i> ☆☆☆☆ 4	<i>Good</i> ☆☆☆ 3	<i>Fair</i> ☆☆ 2	<i>Poor</i> ☆ 1



What is your favorite play area on the school playground?

14.

- Running Track
- Basketball
- Painted Game Area / Playground Markings
- Benches
- Play Equipment
- Other _____



15. Does the school playground have enough play space for girls?

- Yes
- No

Student Questionnaire, _____ School

5



16. Does the school playground have enough play space for boys?

 Yes No

17. Is it important to have a play area with plants, flowers, and grass on the school playground?

 Yes No

18. Are you afraid of falling from the play equipment on the school playground?

 Yes No

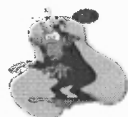
19. Is the school playground in good condition?

 Yes No

20. Did you attend this school last year?

 Yes No

21. During this, or last school year, did you hurt yourself while playing on the school playground?

 Yes No

22. Is it important for an adult to watch you when you play on the school playground?

 Yes No Sometimes



16. Does the school playground have enough play space for boys?

Yes

No

17. Is it important to have a play area with plants, flowers, and grass on the school playground?

Yes

No

18. Are you afraid of falling from the play equipment on the school playground?



Yes

No

19. Is the school playground in good condition?

Yes

No

20. Did you attend this school last year?

Yes

No

21. During this, or last school year, did you hurt yourself while playing on the school playground?



Yes

No

22. Is it important for an adult to watch you when you play on the school playground?

Yes

No

Sometimes

23. Circle the number closest to the word that *best describes your school playground.*

FUN 1 2 3 4 5 BORING

IMPORTANT 1 2 3 4 5 NOT IMPORTANT
to me to me

BEAUTIFUL 1 2 3 4 5 UGLY

DIRTY 1 2 3 4 5 CLEAN

Now, I would like to ask you some questions about the neighborhood where you live.



Please darken the box under the face that shows how much you agree with the sentence.

24. My neighborhood is a *great place to live.*



Strongly Agree



Agree



Neutral



Disagree








Strongly Disagree

Student Questionnaire, _____ School






7

25. My neighborhood is *messy*.
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree26. It is safe for me to walk in my neighborhood by myself *during the daytime*.
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree27. My neighborhood is safe for me to walk in by myself when it is *dark outside*.
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree28.  There is a lot of motor vehicle traffic in my neighborhood. Yes No Sometimes






25. My neighborhood is messy.

				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

26. It is safe for me to walk in my neighborhood by myself during the daytime.

				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

27. My neighborhood is safe for me to walk in by myself when it is dark outside.

				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

28.  There is a lot of motor vehicle traffic in my neighborhood.

- Yes
 No
 Sometimes

Student Questionnaire, _____ School

8



29. In my neighborhood, I feel safe crossing the streets by myself.

 Yes No Sometimes

Finally, I would like to know a little about you.

30. How old are you?

 9 10 11 12

31. Are you a girl or a boy?

Boy



Girl



32. What language is generally spoken at home?

 Spanish Portuguese English Other _____**THANK YOU!**

11.20.06

Student Questionnaire, _____ School

8

29. In my neighborhood, I feel safe crossing the streets by myself.

 Yes No Sometimes

Finally, I would like to know a little about you.

30. How old are you?

 9 10 11 12

31. Are you a girl or a boy?



Boy



Girl

32. What language is generally spoken at home?

 Spanish Portuguese English Other _____**THANK YOU!**

11.20.06

Figure C.2 Caregiver Questionnaire

Parent/Caregiver Questionnaire, _____ School _____ Secret Password _____

PLAYGROUND SURVEY

Hello. I wish to thank you for consenting to participate in this research study. The purpose of this study is to help people better understand how elementary school children use their school playground. Your responses to the following questions will be held in strict confidentiality.

Hola. Yo quiero agradecerles por su participación en esta investigación. La intención de esta investigación es obtener información sobre cómo los niños utilizan las áreas de juegos de la escuela. Sus respuestas son confidenciales.

- 1. What is the distance from your home to _____ Elementary School?**
[¿Cuál es la distancia de su casa a la escuela _____?]

Less than ¼ mile / [menos ¼ milla]
 Between ¼ mile and ½ mile / [Entre ¼ milla y ½ milla]
 Between ½ mile and 1 mile / [Entre ½ milla y 1 milla]
 More than 1 mile / [Más de 1 milla]
- 2. Where do you like your 5th grader to play when he/she is outside?**
[¿Dónde usted quiere que su representado de 5to grado juegue cuando él/ella esta afuera de la casa?]

 - First favorite place / [El primero lugar favorito] _____
 - Second favorite place / [El segundo lugar favorito] _____
- 3. Do you allow your 5th grader to go to the school playground alone?**
[¿Usted permite su representado de 5to grado vaya a las áreas de juegos de la escuela solo?]

Always / [Siempre]
 Sometimes / [A veces]
 Never, why not? / [¿Nunca, por qué no?] _____
- 4. How do you rate the school playground? [¿Cómo evalúas las áreas de juegos de la escuela?]**

☆☆☆☆	☆☆☆	☆☆	☆
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Excellent/Excelente</i>	<i>Good/Bueno</i>	<i>Fair/Suficiente</i>	<i>Poor/Mal</i>

11.20.06 1

*Available in English, Spanish, and Portuguese

5. The school playground is in good condition.

[Las áreas de juegos de la escuela están en buenas condiciones.]

Yes / [Sí] No

6. My 5th grader is allowed to play on the school playground only if he/she is supervised.

[Mi representado de 5to grado tiene permitido jugar en las áreas de juegos de la escuela solamente si él/ella esta vigilado.]

Yes / [Sí] No

7. My 5th grader attended this school last year.

[Mi representado de 5to grado asistió a esta escuela el año pasado.]

Yes / [Sí] No

8. During this, or last school year, has your 5th grader been hurt while playing on the school playground?






[Durante este año escolar o el pasado, su representado de 5to grado fue herido mientras jugaba en las áreas de juegos de la escuela?]

Yes, explain _____
 Sí, explique _____

No






Please darken the box under the face that shows how much you agree with the sentence.
 [Por favor, oscurezca el recuadro debajo de la cara indicando cuánto usted esta de acuerdo con la frase.]

9. The equipment on the school playground is safe. [El equipo en las áreas de juegos es seguro.]

				
Strongly Agree Muy de acuerdo	Agree De acuerdo	Neutral	Disagree Desacuer	Strongly Disagree Muy en desacuer

10. It is dangerous for a child to be alone on the school playground.

[Es peligroso para un niño estar solo en las áreas de juegos de la escuela.]

				
Strongly Agree Muy de acuerdo	Agree De acuerdo	Neutral	Disagree Desacuer	Strongly Disagree Muy en desacuer

Now, I would like to ask you some questions about the neighborhood where you live.

[Ahora, quisiera hacerle algunas preguntas sobre el barrio donde usted vive.]

11. My neighborhood is a great place to live. [Mi barrio es buen sitio para vivir.]



Strongly Agree
Muy de acuerdo



Agree
De acuerdo



Neutral



Disagree
Desacuer



Strongly Disagree
Muy en desacuer

12. My neighborhood is messy. [Mi barrio es desordenadísimo.]



Strongly Agree
Muy de acuerdo



Agree
De acuerdo



Neutral



Disagree
Desacuer



Strongly Disagree
Muy en desacuer

13. It is safe for my 5th grader to walk alone in my neighborhood during the daytime.

[Mi barrio es seguro durante el día para que mi representado de 5to grado camine solo.]



Strongly Agree
Muy de acuerdo



Agree
De acuerdo



Neutral



Disagree
Desacuer



Strongly Disagree
Muy en desacuer

14. My 5th grader is safe walking alone in my neighborhood when it is dark outside.

[Mi barrio es seguro para que mi representado de 5to grado caminar solo cuando esta oscuro.]



Strongly Agree
Muy de acuerdo



Agree
De acuerdo



Neutral



Disagree
Desacuer



Strongly Disagree
Muy en desacuer

15. There is a lot of motor vehicle traffic in my neighborhood. [Hay mucho tráfico de vehículos en mi barrio.]

Yes / [Sí]

No

Sometimes / [A veces]

16. I allow my 5th grader to cross the streets alone in my neighborhood.

[Yo le permito a mi representado de 5to grado que cruce las calles solamente en mi barrio.]

Yes / [Sí]

No

Sometimes / [A veces]

Finally, I would like to know a little about you.

The personal questions that follow are optional. If you do decide to respond to these questions, you may choose to answer any or all of the questions.

[Por ultimo, yo quiero saber algunas cosas sobre usted. Las preguntas que siguiente son opcionales.]

17. Age / Edad

- 18 – 24 25 – 34 35 – 44 45 and over

18. Gender / [Género]

- Male / [Hombre] Female / [Mujer]

19. Marital Status / [Estado Civil]

- Single/Widowed/Divorced/Separated
[Solo(a)/Viuda(a)/Divorciado(a)/Separado(a)] Married/Partnered
[Casado(a)/ En Pareja]

20. What language is generally spoken at home?

[¿Qué lengua hablan generalmente en su casa?]

- Spanish
Español Portuguese
Portugués English
Inglés Other _____
Otra

21. How long have you lived in your neighborhood?

[¿Hace cuántos años vive usted en su barrio?]

- 0 – 1 year/
años 2 – 3 years/
años 4 – 5 years/
años 6 years or more/
años o más

22. Household Income / [Ingresos de la Familia]

- \$10,000 and Below [y abajo]
- Between [entre] \$10,000 - \$19,999
- Between [entre] \$20,000 - \$29,999
- Between [entre] \$30,000 - \$39,999
- \$40,000 and Above [y más]

23. Highest Education Level / [El Nivel Mas Alto de Educación]

- Less than high school / [Menos que secundaria]
- Some high school / [Algo de escuela de secundaria]
- High school graduate or equivalent / [Graduado de la escuela secundaria o equivalente]
- Vocational / technical education after high school / [Vocacional o educación técnica después de la escuela secundaria]
- Some college / [Algun año de universidad]
- College graduate / [Título universitario]
- Graduate or professional school / [Postgrado o escuela profesional]

24. Ethnicity/Nationality [Etnicidad/Nacionalidad]











- Black / non-Hispanic [Negro / No-hispanico]
- White / non-Hispanic [Blanco / No-hispanico]
- Hispanic [Hispanico]
- Portuguese [Portugués]
- Brazilian [Brasileño]
- Asian [Asiático]
- Other [Otro] _____






THANK YOU!
Mil Gracias!

Table C.1 Comparison of Questionnaire Content by Respondent Group and School

Question (organized by topic)	Response Scale	Group / School / Question #			
		Pupil Anville	Pupil Others*	Adult Anville	Adult Others*
Playground: Accessibility / Constraints					
What is the distance from your home to your school? (note: < > symbols written in words, adult)	Close; A little far; Far <¼ mile; ¼-½ mile; ½-1 mile; >1mile	#1	#1	#1	#1
How do you usually get to and from school? (travel mode)	Walk; Bike; Car; School bus; Public bus	#2	#2		
Is the school playground open for you to use whenever you want?	Yes No	#11	#11		
Playground: Attractiveness					
Does the school playground have enough places for you to sit and talk with your friends? Would you want places on the school playground to sit and talk with your friends?	Yes No		#12		
Circle the group of stars that best describes how [note: response "Other" is fill-in] ...you rate each play area on the school playground. ...important it is to have the following play spaces on the school playground.	Basketball; Running track; Benches; Play equipment; Painted game area; Other Excellent Good Fair Poor ★★★★ ★★★ ★★ ★ Very Somewhat Not important important important important ★★★★ ★★★ ★★ ★		#13		
What is your favorite play area on the school playground? What are your favorite things to do on the school playground? (fill-in response)	Running track; Basketball; Benches; Painted game area; Equipment; Other First f...; Second f...; Third favorite		#14		
Does the school playground have enough play space ...for girls? ...for boys?	Yes No	#15 #16	#15 #16		
Is it important to have a play area with plants, flowers, and grass on the school playground?	Yes No	#17	#17		
Circle the number closest to the word that best describes your school playground.	Fun 1 2 3 4 5 Boring Important 1 2 3 4 5 Not important to me to me Beautiful 1 2 3 4 5 Ugly Dirty 1 2 3 4 5 Clean	#22	#23		
Is the school playground in good condition?	Yes No	#18	#19	#5	#5
How do you rate the school playground?	Excellent Good Fair Poor ★★★★ ★★★ ★★ ★			#4	#4

*Others are the three school playgrounds with equipment: Millside, Sparta, and Quincy

Question (organized by topic)	Response Scale	Group / School / Question #			
		Pupil Anville	Pupil Others	Adult Anville	Adult Others
Playground: Safety / Liability					
During this, or last school year, did you hurt yourself while playing on the school playground? During this, or last school year, has your 5 th grader been hurt while playing on the school playground?	Yes No Yes, explain _____ No	#20	#21	#8	#8
Are you afraid of falling from the equipment on the school playground?	Yes No		#18		
The equipment on the school playground is safe.	     Strongly Agree Agree Neutral Disagree Strongly Disagree				#9
Playground: Supervision / Surveillance					
Is it important for an adult to watch you when you play on the school playground?	Yes No Sometimes	#21	#22		
Do you allow your 5 th grader to go to the school playground alone? [fill-in if "never"]	Always Sometimes Never, why not?			#3	#3
My 5 th grader is allowed to play on the school playground only if he/she is supervised.	Yes No			#6	#6
It is dangerous for a child to be alone on the school playground.	     Strongly Agree Agree Neutral Disagree Strongly Disagree			#9	#10
Perceived Neighborhood Context					
Other Outdoor Play Spaces					
Where do you like your 5 th grader to play when he/she is outside?	First favorite place _____ Second favorite place _____			#2	#2
Safety from Traffic					
There is a lot of motor vehicle traffic in my neighborhood.	Yes No Sometimes	#27	#28	#14	#15
In my neighborhood, I feel safe crossing the streets by myself. I allow my 5 th grader to cross the streets alone in my neighborhood.	Yes No Sometimes Yes No Sometimes	#28	#29	#15	#16

Perceived Neighborhood Context [con'L]	Response Scale			Group / School / Question #			
				Pupil Anville	Pupil Others	Adult Anville	Adult Others
Safety from Crime							
Does someone go along with you to the school building in the morning? [child accompanied]	Yes	No	Sometimes	#3	#3		
Does someone go along with you when you return home after school? [child accompanied]	Yes	No	Sometimes	#4	#4		
Setting							
My neighborhood is a great place to live.				#23	#24	#10	#11
My neighborhood is messy.				#24	#25	#11	#12
It is safe for me to walk in my neighborhood by myself during the daytime.							
It is safe for my 5 th grader to walk alone in my neighborhood during the daytime.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	#12	#13
My neighborhood is safe for me to walk in by myself when it is dark outside.				#26	#27		
My 5 th grader is safe walking in my neighborhood when it is dark outside.						#13	#14
School Characteristics							
After-School Program							
Do you attend an after-school program?	Yes	No		#5	#5		
Do you attend an after-school program at your school?	Yes	No		#6	#6		
Individual User Characteristics							
Interpersonal							
On Saturday mornings where do you usually play?	Indoors	Outdoors		#7	#7		
Rank the following outdoor play spaces. Start with your <i>favorite</i> and give it a 6! Give your next favorite a 5, and so on. Your least favorite place will get a 1. Street Sidewalk Your Yard or Someone's Yard Neighborhood Park / Playground School Playground / Grounds Empty Lot / Vacant Lot				#9	#9		
Do you ever use the school playground when the school building is closed?	Yes	No	Sometimes	#10	#10		
Intrapersonal							
On Saturday mornings, where do your best friends usually play?	Indoors	Outdoors		#8	#8		

Demographics of Respondents	Response Scale	Respondents / Question #			
		Pupil Anville	Pupil Others	Adult Anville	Adult Others
Mobility					
Did you attend this school last year?	Yes No	#19	#20		
My 5 th grader attended this school last year.	Yes No			#7	#7
How long have you lived in your neighborhood?	0-1 yr.; 2-3 yrs.; 4-5 yrs.; 6 yrs. or more			#20	#21
Age					
How old are you?	9; 10; 11; 12	#29	#30		
Age	18-24; 25-34; 35-44; 45 and over			#16	#17
Gender					
Are you a girl or a boy?	Boy Girl	#30	#31		
Gender	Male Female			#17	#18
Marital Status	Single/Widowed./Divorced/Separated Married/Partnered			#18	#19
Language					
What language is generally spoken at home?	Spanish; Portuguese; English; Other [fill-in]	#31	#32	#19	#20
Household Income	\$10,000 and below Between \$10,000 - \$19,999 Between \$20,000 - \$29,999 Between \$30,000 - \$39,999 \$40,000 and above			#21	#22
Highest Education Level	Less than high school Some high school High school graduate or equivalent Vocational/technical education after high school Some college College graduate Graduate or professional school			#22	#23
Ethnicity / Nationality	Black / non-Hispanic White / non-Hispanic Hispanic Portuguese Brazilian Asian Other [fill-in]			#23	#24

APPENDIX D

INTERVIEW SCHEDULE FOR SCHOOL PERSONNEL

Name of School: _____

SCHOOL PRINCIPAL INTERVIEW QUESTIONNAIRE

Background Information

1. How many years have you been in the field of education?
2. How many years have you been a principal at this school?
3. Prior to being principal at this school, did you hold a different position here?
4. Based on your prior experience at another school(s), how do you compare that playground with the playground at this school?

Accessibility/Constraints

5. Is the school playground available for use by the children before the official commencement of the school day?
 - a) If yes, please specify who uses the playground.
 - b) If no, please explain why not.
6. On a regular school day, approximately how often does each class have an opportunity to use the playground?
7. Is there a limit to the number of children allowed on the school playground at the same time? If yes, how is this number determined?
8. Are there specific hours or circumstances when the playground is not available for the children to use during the regular school day?
9. In addition to free play and physical education classes, in what other ways is the playground space used during the school day?
10. Is the playground available for use by the school children and community when school is not in session?
 - a) If yes, when (e.g., after school, weekends, vacations)? During these times do you encourage the children to use the playground?
 - b) If no, are there specific hours or circumstances (e.g., presence of adult supervisor) when it is available?

*Modified for participant's status (i.e., classroom teacher, physical education teacher, etc.)

Surveillance/Supervision

11. What type of supervision is provided when the children are on the playground during the school day?
12. Who is responsible for the security and safety of the children when they use the playground after school hours?
13. Who is responsible for the daily upkeep and long term maintenance of the playground?
14. Have there been any incidents of vandalism on the new playground? Please explain.

Safety/Liability

15. How often do children get injured on the playground?
16. How do most children get injured on the playground?
17. Have there been any serious injuries on the present playground? Explain.

Attractiveness

18. What do you like/dislike about the playground?
19. What changes or improvements would you like to have on the playground? Please list them in order of their importance.

Playground Use/Neighborhood Perceptions

20. How would you describe the crime level in the surrounding neighborhood?
21. When the school building is closed, do you feel that the playground is a satisfactory play site for children? Explain.

General Information

22. Please describe your feelings regarding the school playground.
23. What other types of issues regarding the playground are of concern to you?
24. Is there anything that I did not ask that I should have or anything you would like to add?

APPENDIX E

SCHOOL PLAYGROUND OBSERVATIONS AND DIAGRAMS

Figure E.1 shows the observational protocol used.

Table E.2 summarizes school playground observations for lunchtime recess.

Figures E.2 to E.5 are school playground diagrams showing target areas for observation.

School: _____ Date: _____ Time: _____ Weather: _____ P.E. Class Recess

AREA			ACTIVITY	CHILDREN		SUPERVISOR		COMMENTS
Section	Surface	Status		Male	Female	Male	Female	

Status/Condition of Area Type: 1 = excellent; 2 = good; 3 = fair; 4 = poor

Section Type: 1 = spray play; 2 = turf; 3 = multi-purpose; 4 = running tracks; 5 = swings; 6 = double basketball court; 7 = play equipment; 8 = open area

Surface Type: 1 = blacktop; 2 = mats; 3 = carpet; 4 = tiles; 5 = grass; 6 = turf; 7 = other (specify)

Possible Activity: standing, jumping, sitting, wrestling, running, walking, hopscotch, throwing ball, grooming, basketball, fighting, tag, eating, dancing

Figure E.1 Observational protocol for recording children's playground activities.

Table E.2 Cross-School Comparison of Observations for Children's Activities on the School Playground during Lunchtime Recess

Category/ Activity / School	Observation Time* / Place / Proportion of Children [†] / Gender [‡]								
	Interval I after 0-5 minutes outside			Interval II after 5-10 minutes outside			Interval III after 10-15 minutes outside		
	Place	Proportion	Gender	Place	Proportion	Gender	Place	Proportion	Gender
Energetic Activities									
• Running / Chasing									
Anville	All over	Many	MBG	All over	Few	MBG	All over	Least	MBG
Millside	All over	Least	MBG	All over	Least	MBG	All over	Least	MBG
Sparta	All over	Few	MBG	All over	Least	MBG	All over	Least	MBG
Quincy	All over	Few	MBG	All over	Least	MBG	All over	Least	MBG
• Ball Games									
Anville	Markings	Few	MBSG	Markings	Few	MBSG	Markings	Few	MBSG
Millside	Turf	Few	Boys	Turf	Few	Boys	Turf	Few	Boys
Sparta	Open area	Least	Boys	Open area	Least	Boys	Open area	Least	Boys
Quincy	Open area	Least	Boys	Open area	Least	Boys	Open area	Least	Boys
• Other Key Activities									
Hopscotch (Anville)	Markings	Least	Girls	Markings	Least	Girls		None	
Kick plastic bottle (Anville)	Near fence	Least	Boys	Near fence	Least	Boys	Near fence	Least	Boys
Wrestling (Sparta)		None		Mats	Least	MBG		None	
Equipped Areas**									
• Climbing / Sliding									
Millside	Equipment	Many	MBG	Equipment	Many	MBG	Equipment	Few	MBG
Sparta	Equipment	Most	MBG	Equipment	Most	MBG	Equipment	Few	MBG
Quincy	Equipment	Most	MBG	Equipment	Many	MBG	Equipment	Many	MBG
• Basketball									
Millside		None			None			None	
Sparta	BB Courts	Least	Boys	Courts	Few	Boys	Courts	Least	Boys
Quincy	BB Courts	Few	Boys	Courts	Few	Boys	Courts	Few	Boys
• Swinging (Millside)									
	Swings	Least	MGSB	Swings	Least	MGSB	Swings	Least	MGSB
Less Active Activities									
• Walking									
Anville	All over	Least	MGSB	All over	Least	MGSB	All over	Least	MGSB
Millside	All over	Least	MGSB	All over	Least	MGSB	All over	Least	MGSB
Sparta	All over	Least	MGSB	All over	Least	MGSB	All over	Least	MGSB
Quincy	All over	Least	MGSB	All over	Least	MGSB	All over	Least	MGSB
• Standing									
Anville	All over	Least	MGSB	All over	Few	MGSB	All over	Few	MGSB
Millside	All over	Least	MGSB	All over	Least	MGSB	All over	Few	MGSB
Sparta	All over	Least	MGSB	All over	Least	MGSB	All over	Few	MGSB
Quincy	All over	Least	MGSB	All over	Least	MGSB	All over	Few	MGSB
• Sitting									
Anville	Wall	Least	MGSB	Wall	Few	MGSB	Wall	Few	MGSB
Millside	Benches	Least	MGSB	Benches	Few	MGSB	Benches	Few	MGSB
Sparta	Benches	Least	MGSB	Benches	Least	MGSB	Benches	Few	MGSB
Quincy	Benches	Least	MGSB	Benches	Least	MGSB	Benches	Few	MGSB
Threatening Actions									
• Pushing/Confronting									
Anville		None			None		Wall	Least	Boys
Millside		None		Open area	Least	Boys		None	
Sparta	BB Courts	Least	Boys		None			None	
Quincy		None			None		Open area	Least	Boys

*Lunch-Recess is 30 minutes in length, with the time (usually) equally divided between the two activities

**Activity only in equipment renovated playgrounds

[†]Number of children is quantified by proportions: most, many, few, and least

[‡]Gender: Boys; Girls; Mostly boys, some girls (MBSG), Mostly girls, some boys (MGSB), Mixed Boys and Girls (MBG)

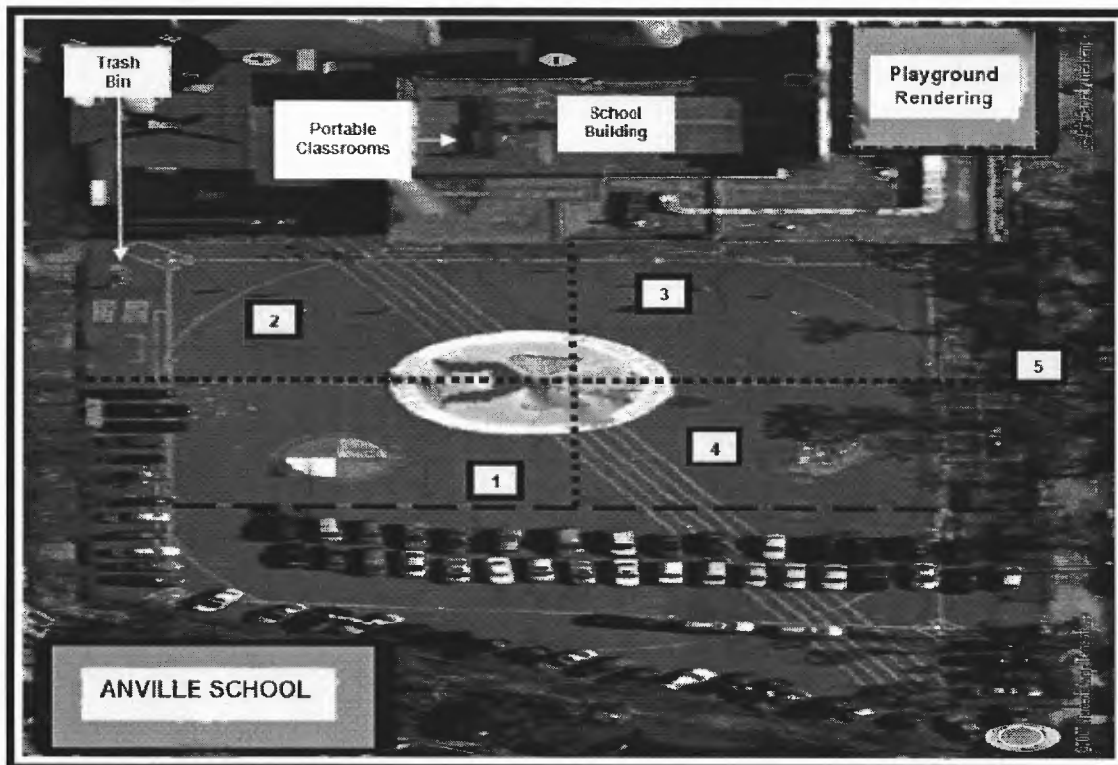


Figure E.2 Aerial view of Anville playground shows target areas for observation.

Source: Flash Earth, retrieved January 22, 2006, from <http://www.flashearth.com>

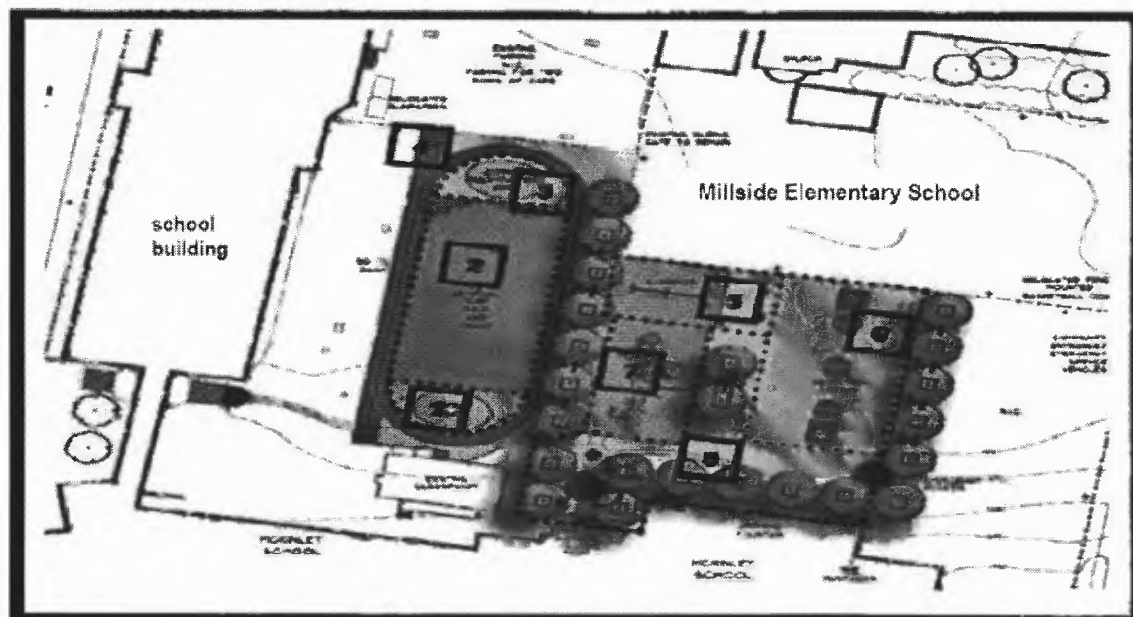


Figure E.3 Playground rendering for Millside Elementary School shows target areas for observation.

Source: National Nonprofit Organization

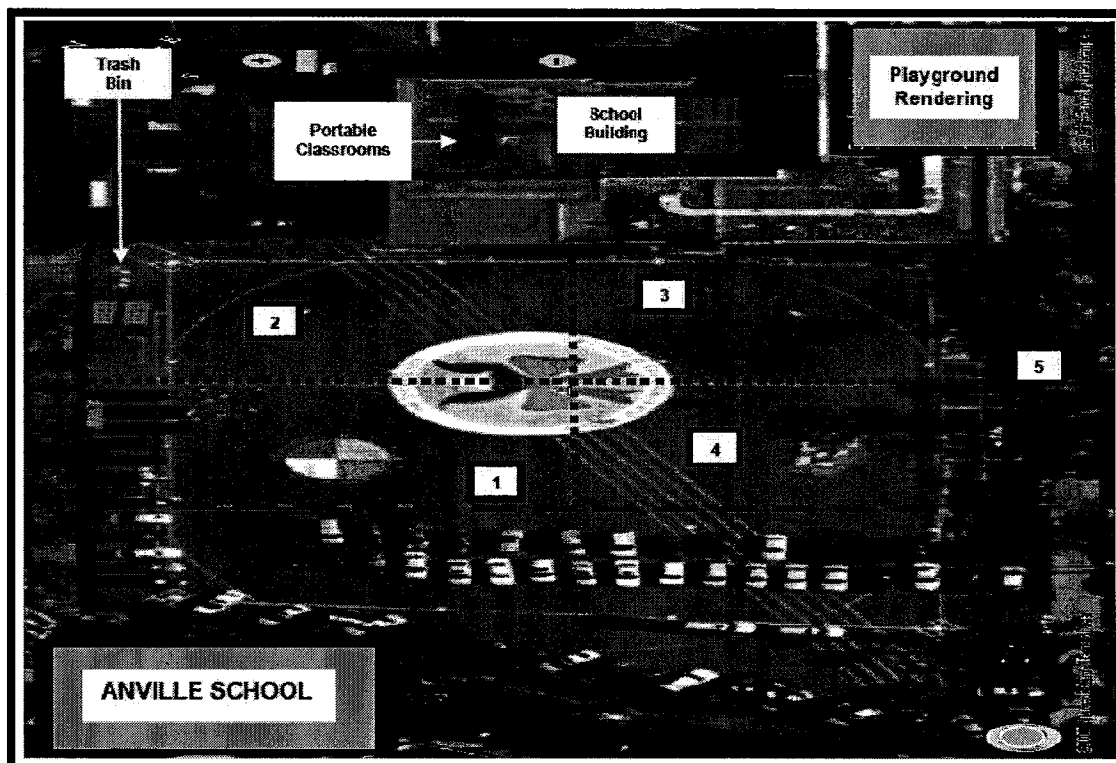


Figure E.2 Aerial view of Anville playground shows target areas for observation.

Source: Flash Earth, retrieved January 22, 2006, from <http://www.flashearth.com>

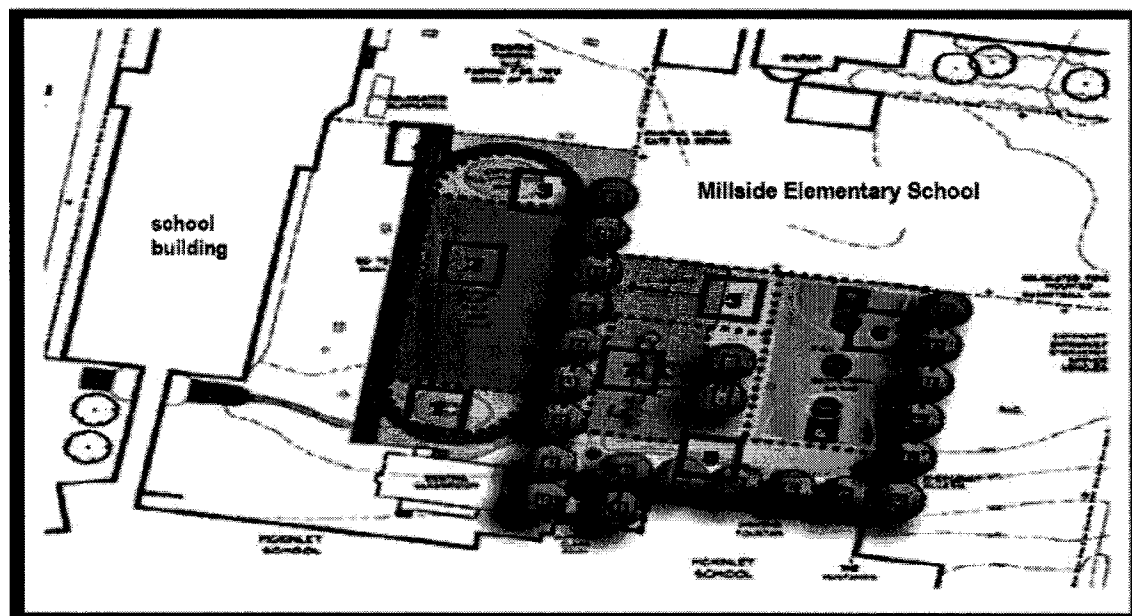


Figure E.3 Playground rendering for Millside Elementary School shows target areas for observation.

Source: National Nonprofit Organization

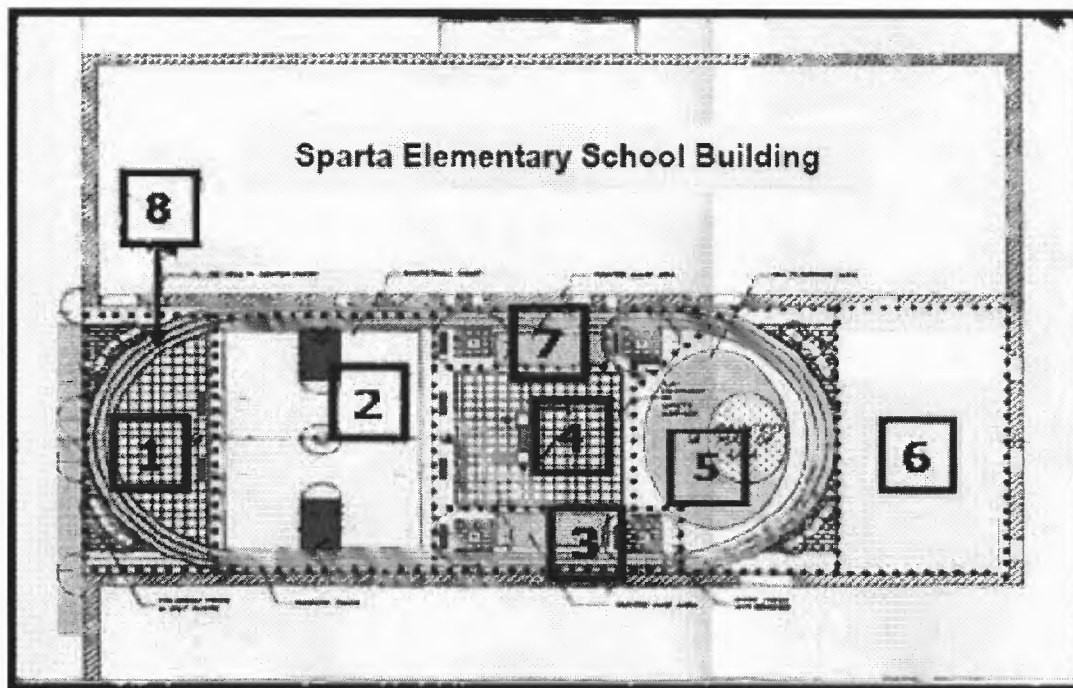


Figure E.4 Playground rendering for Sparta Elementary School shows target areas for observation.

Source: National Nonprofit Organization

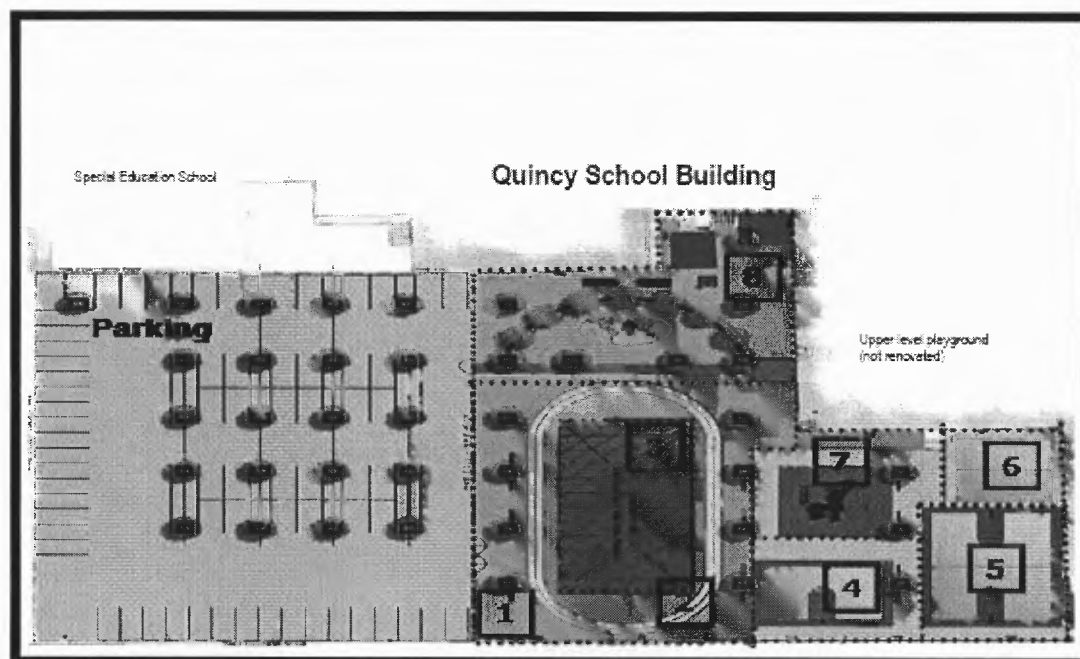


Figure E.5 Playground rendering for Quincy Elementary School shows target areas for observation.

Source: National Nonprofit Organization

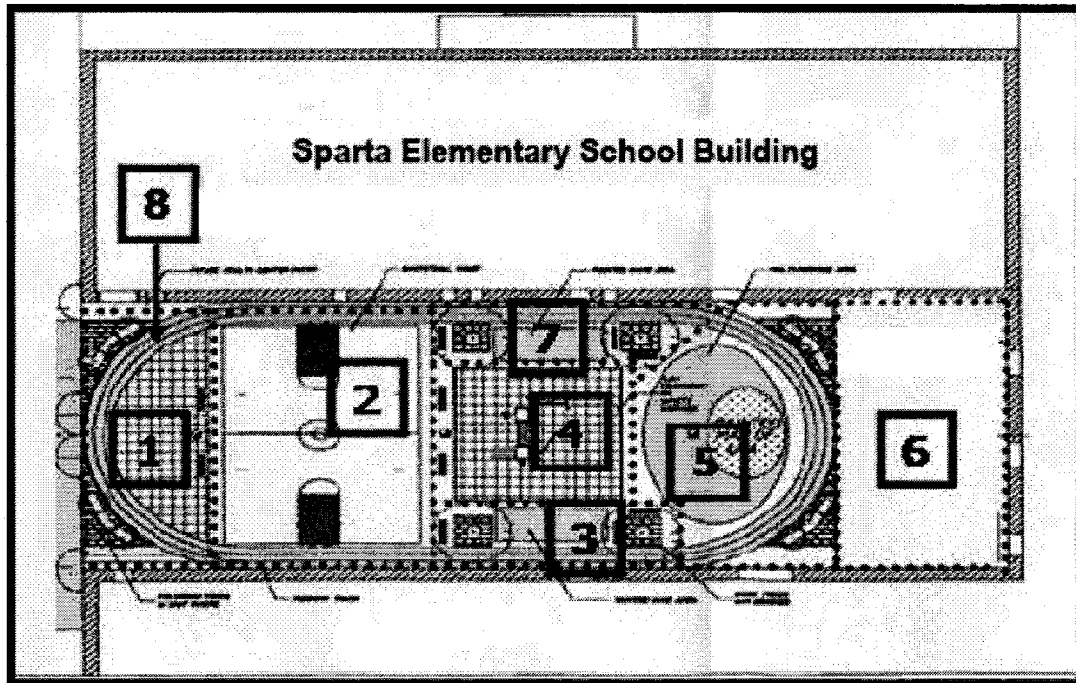


Figure E.4 Playground rendering for Sparta Elementary School shows target areas for observation.

Source: National Nonprofit Organization

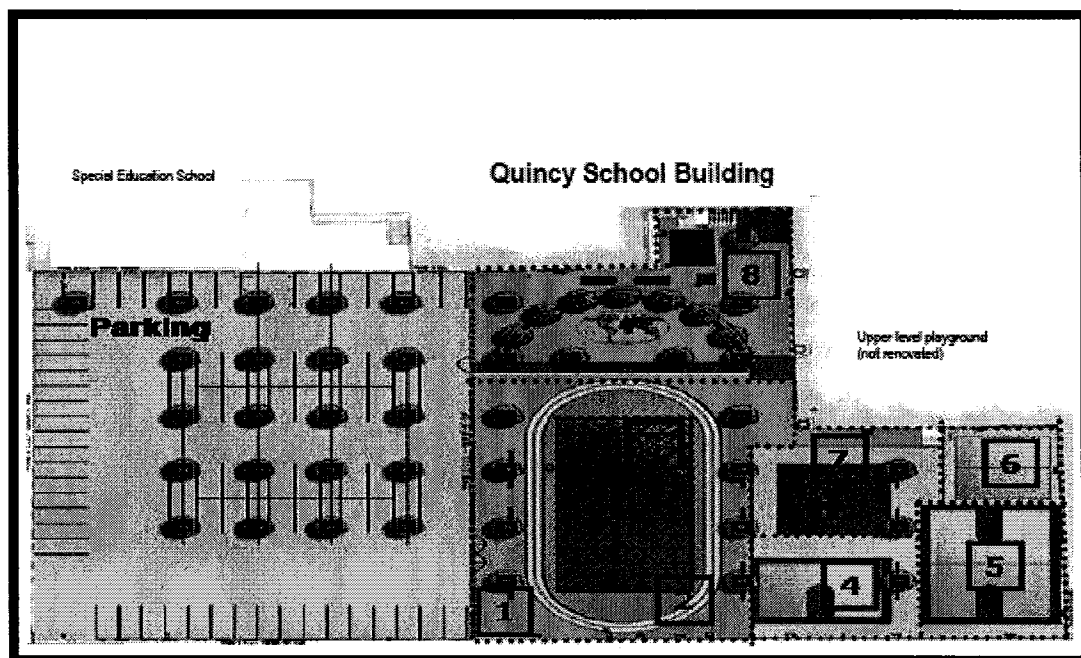


Figure E.5 Playground rendering for Quincy Elementary School shows target areas for observation.

Source: National Nonprofit Organization

APPENDIX F
SCHOOL PLAYGROUND FACTORS

Tables F.1 and F.2, and Figure F.1 show playground accessibility.

Tables F.3 to F.10 show different playground features.

Table F.11 shows outdoor play on Saturday mornings.

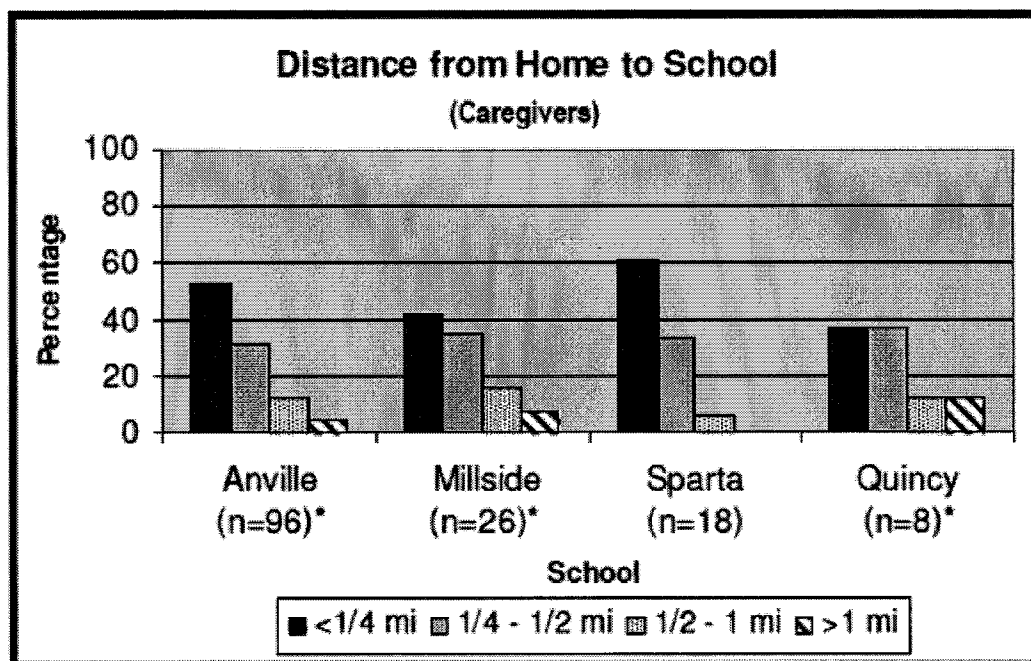
Table F.12 shows caregivers' examples of children's playground injuries.

Table F.13 shows the ranking of different outdoor play spaces by children.

Table F.1 Comparison of Distance in Miles from Home to School as Perceived by Caregivers

Question			Response Category			
School, Group, Number of Respondents			(%)			
What is the distance from your home to your school?			< ¼ mi	¼ - ½ mi	½ -1 mi	> 1 mi
Anville	guardian	(n=96)*	52.1	31.2	12.5	4.2
Millside	guardian	(n=26)*	42.3	34.6	15.4	7.7
Sparta	guardian	(n=18)	61.1	33.3	5.6	0.0
Quincy	guardian	(n=8)*	37.5	37.5	12.5	12.5

*Missing data (NR) for Anville, Millside, and Quincy have been eliminated and the total percentage adjusted. The total guardian population is: Anville, n=98; Millside, n=29; Quincy, n=9.



*Missing data (NR) for Anville, Millside, and Quincy have been eliminated and the total percentage adjusted. The total caregiver population is: Anville, n=98; Millside, n=29; Quincy, n=9.

Figure F.1 Distance in miles from home to school as perceived by caregivers.

Table F.2 Comparison of Children's Responses for School Playground is Open to Use Whenever They Want

Question School, Group, Number of Respondents			Response Category (%)	
			Yes	No
Is the school playground open for you to use whenever you want?				
<i>Anville</i>	children	(n=101)*	71.3	28.7
<i>Millside</i>	children	(n=43)*	37.2	62.8
<i>Sparta</i>	children	(n=23)	4.3	95.7
<i>Quincy</i>	children	(n=10)	50.0	50.0

*Missing data (NR) has been eliminated and the total percentage adjusted for Anville and Millside. The total population for schools missing data is: Anville, n=102; Millside, n=44.

Table F. Results for School Playground Ratings by Caregivers

Question School, Group, Number of Respondents			Response Category (%)				
			excellent ★★★★	good ★★★	fair ★★	poor ★	IR ^a
<i>Anville</i>	caregivers	(n=98)	14.3	45.9	32.7	7.1	0.0
<i>Millside</i>	caregivers	(n=28)*	28.6	46.4	17.9	7.1	0.0
<i>Sparta</i>	caregivers	(n=16)*	12.5	50.0	18.7	12.5	6.2
<i>Quincy</i>	caregivers	(n=9)	22.2	22.2	44.4	11.1	0.0

* The total population for schools missing data is: Millside, caregivers n=29; Sparta, caregivers n=18.

^aIR (incorrect response) several caregivers had difficulties correctly answering this question.

Table F.4 Comparison of Children's Perceptions of Selected School Playground Characteristics as Measured by Playground Attractiveness

Question School, Group, Number of Respondents	Response Category (%)	
	Yes	No
<ul style="list-style-type: none"> Gendered Spaces 		
Does the school playground have enough play space for girls?		
<i>Anville</i> children (n=100)*	63.0	37.0
<i>Millside</i> children (n=44)	63.6	36.4
<i>Sparta</i> children (n=23)	21.7	78.3
<i>Quincy</i> children (n=10)	40.0	60.0
Does the school playground have enough play space for boys?		
<i>Anville</i> children (n=101)*	90.1	9.9
<i>Millside</i> children (n=43)*	86.0	14.0
<i>Sparta</i> children (n=23)	47.8	52.2
<i>Quincy</i> children (n=10)	100.0	0.0
<ul style="list-style-type: none"> Natural Areas 		
Is it important to have a play area with plants, flowers, and grass on the school playground?		
<i>Anville</i> children (n=102)	69.6	30.4
<i>Millside</i> children (n=44)	40.9	59.1
<i>Sparta</i> children (n=23)	60.9	39.1
<i>Quincy</i> children (n=10)	40.0	60.0
<ul style="list-style-type: none"> Places to Sit and Socialize 		
Does the school playground have enough places for you to sit and talk with your friends?		
<i>Millside</i> children (n=44)	72.2	27.3
<i>Sparta</i> children (n=23)	56.5	43.5
<i>Quincy</i> children (n=10)	70.0	30.0
Would you want places on the school playground to sit and talk with your friends?		
<i>Anville</i> children (n=102)	86.3	13.7

*Missing data (NR) has been eliminated and the total percentage adjusted.
The total population for schools missing data is: *Anville*, children n=102; *Millside*, children n=44.

Table F.5 Results for the Rating of Different Play Areas by Children on Renovated Playgrounds

Question School, Group, Number of Respondents			Response Category (%)				
Circle the group of stars that best describes how you rate each play area on the school playground.			excellent ★★★★	good ★★★	fair ★★	poor ★	IR ^a
• Basketball							
<i>Millside</i>	children	(n=43)*	34.9	37.2	7.0	16.3	4.7
<i>Sparta</i>	children	(n=23)	13.0	17.4	26.1	43.5	0.0
<i>Quincy</i>	children	(n=10)	60.0	20.0	10.0	10.0	0.0
• Running Track							
<i>Millside</i>	children	(n=42)*	23.8	30.9	28.6	11.9	4.8
<i>Sparta</i>	children	(n=22)*	0.0	36.4	27.3	36.4	0.0
<i>Quincy</i>	children	(n=10)	50.0	30.0	20.0	0.0	0.0
• Play Equipment							
<i>Millside</i>	children	(n=42)*	45.2	28.6	16.7	7.1	2.4
<i>Sparta</i>	children	(n=23)	13.0	21.7	30.4	34.8	0.0
<i>Quincy</i>	children	(n=10)	50.0	40.0	10.0	0.0	0.0
• Painted Game Area							
<i>Millside</i>	children	(n=43)*	20.9	30.2	23.2	20.9	4.7
<i>Sparta</i>	children	(n=23)	0.0	21.7	17.4	60.9	0.0
<i>Quincy</i>	children	(n=10)	40.0	10.0	30.0	20.0	0.0

* The total population for schools missing data is: Millside, children n=44; Sparta, children n=23.

^aIR (incorrect response) several children had problems correctly answering this question.

Table F.6 Importance of Having Play Spaces on Anville Playground

Question School, Group, Number of Respondents			Response Category (%)			
Circle the group of stars that best describes how important you think it is to have the following play spaces on the school playground.*			very important ★★★★	important ★★★	somewhat important ★★	not important ★
• Basketball						
<i>Anville</i>	children	(n=100)	28.0	29.0	31.0	12.0
• Running Track						
<i>Anville</i>	children	(n=99)	35.3	37.4	17.2	10.1
• Play Equipment						
<i>Anville</i>	children	(n=99)	56.6	22.2	16.2	5.0
• Painted Game Area						
<i>Anville</i>	children	(n=99)	20.2	36.4	18.2	25.2

*Missing data (NR) have been eliminated and the total percentage adjusted. The total population for Anville children is n=102.

Table F.7 Children's Favorite Play Area on Renovated School Playground

Question /Response	School		
	Millside n=42 [^] (%)	Sparta n=20 [^] (%)	Quincy n=10 (%)
What is your favorite play area on the school playground?			
• Running track	4 (9.5%)	4 (20.0%)	3 (30.0%)
• Basketball	4 (9.5%)	3 (15.0%)	3 (30.0%)
• Painted game area	2 (4.8%)	1 (5.0%)	0 (0.0%)
• Benches	2 (4.8%)	0 (0.0%)	1 (10.0%)
• Play equipment	14 (33.3%)	6 (30.0%)*	1 (10.0%)
• Football area	7 (16.6%)	2 (10.0%)	0 (0.0%)
• Swings	8 (19.0%)	none	1 (10.0%)**
• Open area	1 (2.3%)	1 (5.0%)	1 (10.0%)
• No area	0 (0.0%)	3 (15.0%)	0 (0.0%)

[^]Missing data (NR) has been eliminated and the total percentage adjusted. The total child population is: Millside, n=44; Sparta, n=23.

*5 children responded the mat under and around play equipment.

**Not in renovated playground area.

Table F.8 Favorite Things Anville Children Do on School Playground

Anville children (n=102)	Response (%)						
	Socialize	Ball Games	Playground Markings	Running / Jumping	Tag	Other	NR
What is your favorite thing to do on the school playground?	24.5	28.5	24.9	8.8	13.7	4.8	2.9

Table F.9 Children's Perception of Attractiveness as Measured by Semantic Differential Scaling

Question Circle the number closest to the word that best describes your school playground.						
School, Group, Number of Respondents			Response Scale (%) [*]			
• <i>Fun.....Boring</i>			Fun	In-Between	Boring	IR [^]
<i>Anville</i>	children	(n=102)	47.1	41.2	11.8	0.0
<i>Millside</i>	children	(n=44)	65.9	9.1	18.2	6.8
<i>Sparta</i>	children	(n=23)	21.7	39.1	39.1	0.0
<i>Quincy</i>	children	(n=10)	40.0	30.0	30.0	0.0
• <i>Important to me.....Not important to me</i>			Important to me	In-Between	Not Important	IR [^]
<i>Anville</i>	children	(n=102)	72.5	17.6	9.8	0.0
<i>Millside</i>	children	(n=44)	47.8	29.5	13.6	9.1
<i>Sparta</i>	children	(n=23)	56.5	21.7	21.7	0.0
<i>Quincy</i>	children	(n=10)	60.0	30.0	10.0	0.0
• <i>Beautiful.....Ugly</i>			Beautiful	In-Between	Ugly	IR [^]
<i>Anville</i>	children	(n=102)	20.6	52.9	26.5	0.0
<i>Millside</i>	children	(n=44)	54.5	22.7	13.6	9.1
<i>Sparta</i>	children	(n=23)	4.3	17.4	78.2	0.0
<i>Quincy</i>	children	(n=10)	30.0	30.0	40.0	0.0
• <i>Dirty.....Clean</i>			Dirty	In-Between	Clean	IR [^]
<i>Anville</i>	children	(n=102)	10.8	45.1	44.1	0.0
<i>Millside</i>	children	(n=44)	11.3	13.6	63.6	11.4
<i>Sparta</i>	children	(n=23)	69.6	8.7	21.7	0.0
<i>Quincy</i>	children	(n=10)	30.0	40.0	30.0	0.0

* Results collapsed from five-point to three-point scale.

[^]IR (incorrect response), children did not correctly answer the sections to this question.

Table F.10 Comparison of Responses for School Playground is in Good Condition

Question School, Group, Number of Respondents			Response Category	
			(%)	
			Yes	No
Is the school playground in good condition?				
<i>Anville</i>	children	(n=101)*	63.4	36.6
	caregivers	(n=95)*	70.5	29.5
<i>Millside</i>	children	(n=44)	84.1	15.9
	caregivers	(n=27)*	88.9	11.1
<i>Sparta</i>	children	(n=22)*	22.7	77.3
	caregivers	(n=18)	83.3	16.7
<i>Quincy</i>	children	(n=10)	30.0	70.0
	caregivers	(n=8)*	87.5	12.5

*Missing data (NR) has been eliminated and the total percentage adjusted. The total population for schools missing data is: Anville, children n=102, caregivers n=98; Millside, caregivers n=29; Sparta, children n=23; Quincy, caregivers n=9.

Table F.11 Comparison of Children with their Best Friends for Outdoor Play versus Indoor Play on Saturday Mornings

Question School, Group, Number of Respondents			Response Category	
			(%)	
			Indoors	Outdoors
On Saturday mornings, where do you usually play?				
<i>Anville</i>	children	(n=101)*	42.5	57.4
	children	(n=42)*	73.8	26.2
<i>Sparta</i>	children	(n=23)	60.9	39.1
<i>Quincy</i>	children	(n=10)	70.0	30.0
On Saturday mornings, where do your best friends usually play?				
<i>Anville</i>	children	(n=99)*	35.3	64.6
<i>Millside</i>	children	(n=42)*	50.0	50.0
<i>Sparta</i>	children	(n=23)	43.5	56.5
<i>Quincy</i>	children	(n=9)*	22.2	77.8

*Missing data (NR) has been eliminated and the total percentage adjusted. The total sample of children for schools missing data is: Anville, n=102; Millside, n=44; Quincy, n=10.

Table F.12 Caregivers' Examples of Injuries their Fifth-Grade Child Received While Playing on School Playground

School	Response to Open-Ended Question	Injury Type
Anville	Scratch on the knee	Activity injury
	He was hit by a boll [sic]	Injury by projectile
	She got hit by the ball and triped [sic] on somebody	Injury by projectile
	She was raning [sic] and got bumped into and fell	Activity injury
	She fell and scraped her hands	Activity injury
	He twisted his ankle	Activity injury
	The school building leag [sic] where kids sit she trip on it because the boy push her	Bullying / Confrontation
	They were running and she fell	Activity injury
	My son hurt his hand by falling on the ground and someone was running and stepped on his hand	Activity injury
	Unfortunately she hurt her leg	Activity injury
	A boy pushed him into the fence	Bullying / Confrontation
	Injured his arm	Activity injury
	Minor fall abrasions or running collisions	Activity injury
Someone pushed him, broked [sic] his glasses, hurt his arm and face (bleeding)	Bullying / Confrontation	
Millside	Swollen thumb	Activity injury
	By running and playing ruff [sic]	Activity injury
	By falling	Activity injury
Sparta	Bad scraped on palm of hand	Activity injury
	He fell into the water fountain had a gash on his cheek Which the mark is still there	Injury by stationary object
Quincy	Playing around with other kids and hit his head on ground	Activity injury

Table F.13 Preferential Ranking of Different Outdoor Play Spaces by Children

Question School, Place	Most Favorite \longrightarrow Least Favorite					
	Most preferred		Preferred		Least Preferred	
	6	5	4	3	2	1
Rank the following outdoor play places						
<i>Anville</i> children (n=102)						
Neighborhood Park / Playground	34.3	28.4	12.7	7.8	2.9	0.0
Your Yard or Someone's Yard	30.4	17.6	22.5	7.8	4.9	3.9
School Playground / Grounds	13.7	27.5	24.5	11.8	5.9	2.0
Sidewalk	3.9	3.9	12.7	27.5	33.3	3.9
Empty Lot / Vacant Lot	2.9	6.9	8.8	24.5	15.7	27.5
Street	2.0	2.0	3.9	5.9	22.5	50.0
Answered Incorrectly	12.7	13.7	14.7	14.7	14.7	12.7
<i>Millside</i> children (n=44)						
Neighborhood Park / Playground	27.3	18.2	20.5	11.4	6.8	2.3
Your Yard or Someone's Yard	25.0	22.7	22.7	13.6	4.5	0.0
School Playground / Grounds	15.9	31.8	6.8	18.2	11.4	6.8
Sidewalk	9.1	13.6	13.6	9.1	27.3	15.9
Empty Lot / Vacant Lot	6.8	4.5	9.1	22.7	20.5	20.5
Street	9.1	2.3	9.1	6.8	15.9	45.5
Answered Incorrectly	6.8	6.8	18.2	18.2	13.6	9.1
<i>Sparta</i> children (n=23)						
Neighborhood Park / Playground	30.4	26.1	21.7	17.4	0.0	4.3
Your Yard or Someone's Yard	26.1	21.7	21.7	17.4	4.3	4.3
School Playground / Grounds	21.7	21.7	13.0	13.0	8.7	13.0
Sidewalk	0.0	8.7	30.4	21.7	30.4	8.7
Empty Lot / Vacant Lot	8.7	13.0	4.3	17.4	34.8	17.4
Street	13.0	4.3	4.3	8.7	17.4	52.2
Answered Incorrectly	0.0	4.3	4.3	4.3	4.3	0.0
<i>Quincy</i> children (n=10)						
Neighborhood Park / Playground	50.0	20.0	0.0	10.0	0.0	0.0
Your Yard or Someone's Yard	10.0	0.0	20.0	0.0	40.0	0.0
School Playground / Grounds	10.0	40.0	20.0	0.0	10.0	0.0
Sidewalk	0.0	20.0	0.0	40.0	0.0	10.0
Empty Lot / Vacant Lot	0.0	0.0	0.0	10.0	10.0	50.0
Street	10.0	0.0	30.0	10.0	10.0	10.0
Answered Incorrectly	20.0	20.0	30.0	30.0	30.0	30.0

*Although all the children in each school attempted to answer this question, some apparently had difficulty understanding the instructions, as noted by the percent of children who answered incorrectly.

APPENDIX G
CRIME DATA FOR NEWARK AND CASE STUDY NEIGHBORHOODS
FOR THE YEARS 2000-2006

Tables G.1 and G.2 show the Uniform Crime Report for Newark, New Jersey.

Tables G.3 and G.4 compare school neighborhoods by reported crime incidents.

Figures G.1 to G.3 are neighborhood street maps showing reported crime incidents.

Tables G.5 to G.8 compare reported crime incidents for school neighborhoods by category and year.

Table G.9 and Figure G.4 show reported crime incidents by hour of occurrence and school neighborhood.

Table G.10 and Figure G.5 show reported crime incidents by days of month and school neighborhood.

Table G.11 and Figure G.6 show reported crime incidents by seasons of the year and school neighborhood.

Figure G.4 request for Newark crime statistics.

Table G.12 shows Crime Index categories

Table G.13 shows crime categories for neighborhood incidents

Table G.1 Uniform Crime Report for Newark City, New Jersey, for the Years 2000-2006

Crime Categories	Year							Row Total
	2000	2001	2002	2003	2004	2005	2006	
Murder	58 (0.3%)	90 (0.5%)	65 (0.4%)	81 (0.5%)	84 (0.5%)	97 (0.6%)	105 (0.7%)	580 (0.5%)
Rape	95 (0.5%)	91 (0.5%)	88 (0.5%)	85 (0.5%)	73 (0.5%)	83 (0.5%)	87 (0.6%)	602 (0.5%)
Robbery	1923 (9.8%)	1837 (9.8%)	1567 (8.8%)	1304 (7.9%)	1345 (8.4%)	1250 (8.0%)	1288 (9.0%)	10,514 (8.9%)
Aggravated Assault	2016 (10.3%)	1819 (9.7%)	1473 (8.3%)	1261 (7.6%)	1365 (8.5%)	1391 (9.0%)	1359 (9.5%)	10,684 (9.0%)
Burglary	2765 (14.1%)	2552 (13.6%)	2253 (12.6%)	2281 (13.7%)	2159 (13.4%)	2056 (13.2%)	1982 (13.9%)	16,048 (13.5%)
Theft	7364 (37.5%)	6324 (33.7%)	6033 (33.9%)	5562 (33.5%)	5252 (32.7%)	4974 (32.0%)	4377 (30.6%)	39,886 (33.6%)
Auto Theft	5442 (27.7%)	6035 (32.2%)	6335 (35.6%)	6018 (36.3%)	5788 (36.0%)	5690 (36.6%)	5097 (35.7%)	40,405 (34.0%)
Column Total	19,663 (16.6%)	18,748 (15.8%)	17,814 (15.0%)	16,592 (14.0%)	16,066 (13.5%)	15,541 (13.1%)	14,295 (12.0%)	118,719 (100%)

Source: City of Newark Police Department, retrieved July 27, 2007, from <http://www.newarkpd.org>.

Table G.2 Comparison of Murders with Total Crime in Newark City, New Jersey, for the Years 2000-2006

Crime Categories	Year							Row Total
	2000	2001	2002	2003	2004	2005	2006	
Murder	58 (0.3%)	90 (0.5%)	65 (0.4%)	81 (0.5%)	84 (0.5%)	97 (0.6%)	105 (0.7%)	580 (0.5%)
Other Crimes*	19,605 (99.5%)	18,658 (99.5%)	17,749 (99.6%)	16,511 (99.5%)	15,982 (99.5%)	15,444 (99.4%)	14,190 (99.3%)	118,139 (99.5%)
Column Total	19,663 (16.6%)	18,748 (15.8%)	17,814 (15.0%)	16,592 (14.0%)	16,066 (13.5%)	15,541 (13.1%)	14,295 (12.0%)	118,719 (100%)

*includes rape, robbery, aggravated assault, burglary, theft, and auto theft

Source: City of Newark Police Department, retrieved July 27, 2007, from <http://www.newarkpd.org>.

Table G.3 Cross-Neighborhood Comparison of Total Reported Crime Incidents by Category for the Years 2000-2006

Crime Categories	School Neighborhood			
	Anville	Millside	Sparta	Quincy
Robbery with weapon	151 (45.5%)	163 (30.4%)	230 (22.2%)	272 (23.5%)
Homicide non-vehicular	2 (0.6%)	7 (1.3%)	23 (2.2%)	16 (1.4%)
Homicide vehicular	0 (0.0%)	2 (0.4%)	1 (0.1%)	0 (0.0%)
Aggravated assault	4 (1.2%)	4 (0.7%)	18 (1.7%)	6 (0.5%)
Carjacking with weapon	21 (6.3%)	12 (2.2%)	15 (1.5%)	8 (0.7%)
Drugs	19 (5.7%)	37 (6.9%)	357 (34.5%)	438 (37.9%)
Theft / Snatching	30 (9.0%)	13 (2.4%)	18 (1.7%)	34 (2.9%)
Gun activity	34 (10.2%)	113 (21.0%)	317 (30.7%)	134 (11.6%)
Police action	63 (19.0%)	180 (33.5%)	47 (4.5%)	220 (19.0%)
General / Quality of life	8 (2.4%)	6 (1.1%)	8 (0.8%)	27 (2.3%)
Column Total	332 (100%)	537 (100%)	1034 (100%)	1155 (100%)

Source: City of Newark Police Department

Table G.4 Cross-Neighborhood Comparison of Select Reported Crime Incidents for the Years 2000-2006

Crime Category	Year							Row Total
	2000	2001	2002	2003	2004	2005	2006	
<i>Robbery</i>								
Anville	34 (72.3%)	24 (72.7%)	20 (80.0%)	7 (30.4%)	22 (35.5%)	19 (23.8%)	25 (40.3%)	151 (45.5%)
Millside	74 (55.6%)	39 (54.2%)	25 (43.1%)	25 (40.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	163 (30.4%)
Sparta	123 (45.2%)	39 (29.8%)	37 (29.6%)	31 (29.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	230 (22.5%)
Quincy	107 (62.9%)	74 (64.3%)	55 (51.9%)	36 (40.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	272 (23.5%)
<i>Drugs</i>								
Anville	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (3.2%)	9 (11.3%)	8 (12.9%)	19 (5.7%)
Millside	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	6 (8.1%)	19 (28.4%)	12 (16.9%)	37 (6.9%)
Sparta	1 (0.4%)	1 (0.8%)	0 (0.0%)	0 (0.0%)	27 (65.9%)	145 (91.8%)	183 (97.3%)	357 (35.0%)
Quincy	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	13 (15.1%)	188 (65.7%)	237 (78.2%)	438 (37.9%)
<i>Gun Activity</i>								
Anville	7 (14.9%)	3 (9.1%)	2 (8.0%)	11 (47.8%)	6 (9.7%)	3 (3.8%)	2 (3.2%)	34 (10.2%)
Millside	40 (30.1%)	23 (31.9%)	25 (43.1%)	25 (40.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	113 (21.0%)
Sparta	119 (43.8%)	70 (53.4%)	66 (52.8%)	62 (58.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	317 (31.0%)
Quincy	37 (21.8%)	28 (24.3%)	33 (31.1%)	36 (40.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	134 (11.6%)
<i>Police Action</i>								
Anville	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (4.3%)	19 (30.6%)	25 (31.3%)	18 (29.0%)	63 (19.0%)
Millside	0 (0.0%)	0 (0.0%)	0 (0.0%)	5 (8.1%)	68 (91.9%)	48 (71.6%)	59 (83.1%)	180 (33.5%)
Sparta	1 (0.4%)	0 (0.0%)	0 (0.0%)	1 (0.9%)	14 (34.1%)	13 (8.2%)	5 (2.7%)	34 (3.3%)
Quincy	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	67 (77.9%)	92 (32.2%)	61 (20.1%)	220 (19.0%)

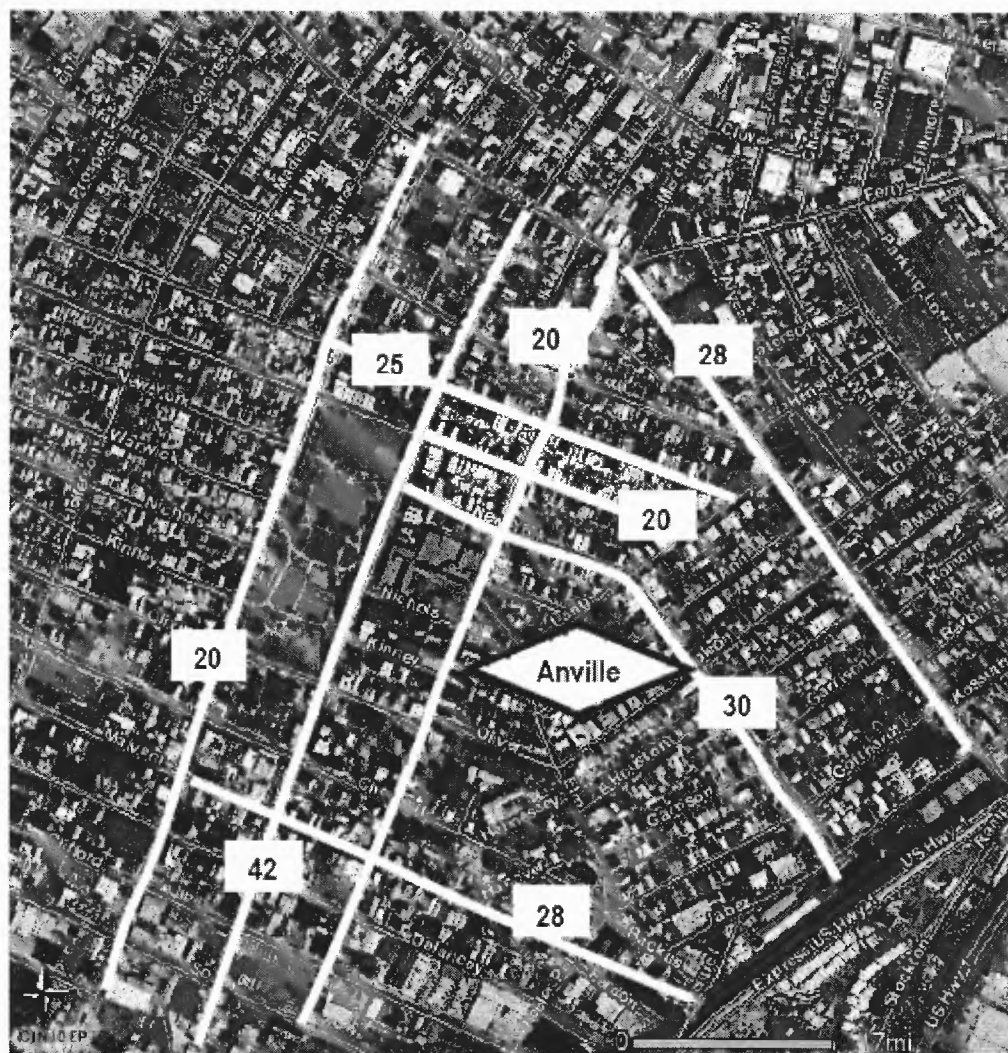


Figure G.1 Streets delineated in white have the highest total number of reported crime incidents in Anville school neighborhood for the years 2000-2006. Diamond with school name shows playground location, and box with number is total reported incidents on street for the six-year period.

Source: i-MapNJDEP, retrieved November 22, 2007, from <http://nj.gov/dep/gis>

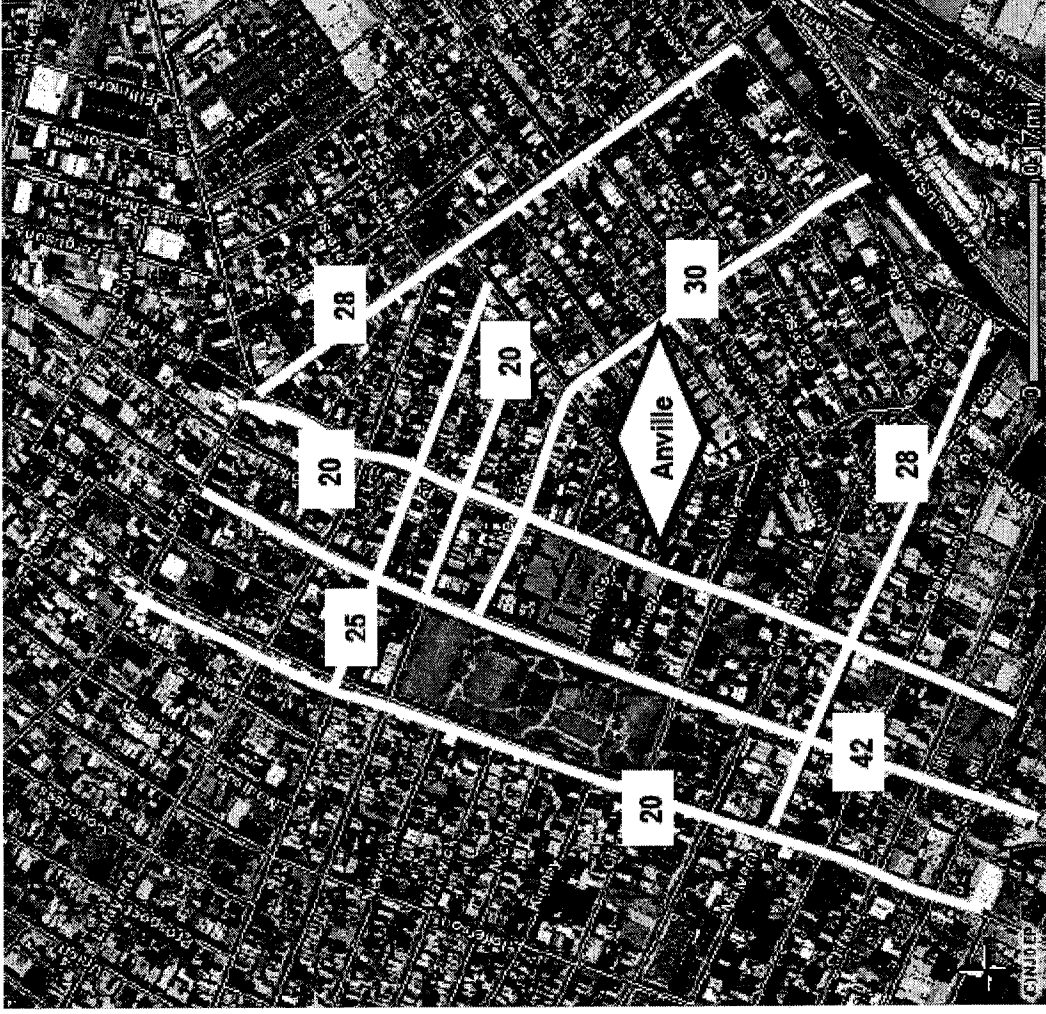


Figure G.1 Streets delineated in white have the highest total number of reported crime incidents in Anville school neighborhood for the years 2000-2006. Diamond with school name shows playground location, and box with number is total reported incidents on street for the six-year period.

Source: i-MapNJDEP, retrieved November 22, 2007, from <http://nj.gov/dep/gis>

Table G.5 Comparison of Reported Crime Incidents by Category and Year for the Anville School Neighborhood

Crime Categories	Anville Street School Neighborhood							Row Total
	year							
	2000	2001	2002	2003	2004	2005	2006	
Robbery with weapon	34 (72.3%)	24 (72.7%)	20 (80.0%)	7 (30.4%)	22 (35.5%)	19 (23.8%)	25 (40.3%)	151 (45.5%)
Homicide non-vehicular	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (0.6%)	0 (0.0%)	2 (0.6%)
Homicide vehicular	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Aggravated Assault	1 (2.1%)	2 (6.2%)	1 (4.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (1.2%)
Carjacking with weapon	3 (6.4%)	2 (6.1%)	1 (4.0%)	2 (8.7%)	2 (3.2%)	7 (8.8%)	4 (6.5%)	21 (6.3%)
Drugs	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (3.2%)	9 (11.3%)	8 (12.9%)	19 (5.7%)
Theft / Snatching	2 (4.3%)	1 (3.0%)	1 (4.0%)	2 (8.7%)	9 (14.5%)	15 (18.8%)	0 (0.0%)	30 (9.0%)
Gun Activity	7 (14.9%)	3 (9.1%)	2 (8.0%)	11 (47.8%)	6 (9.7%)	3 (3.8%)	2 (3.2%)	34 (10.2%)
Police Action	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (4.3%)	19 (30.6%)	25 (31.3%)	18 (29.0%)	63 (19.0%)
General/Quality of Life	0 (0.0%)	1 (3.0%)	0 (0.0%)	0 (0.0%)	2 (3.2%)	0 (0.0%)	5 (8.1%)	8 (2.4%)
Column Total	47 (14.2%)	33 (9.9%)	25 (7.5%)	23 (6.9%)	62 (18.7%)	80 (24.1%)	62 (18.7%)	332 (100%)

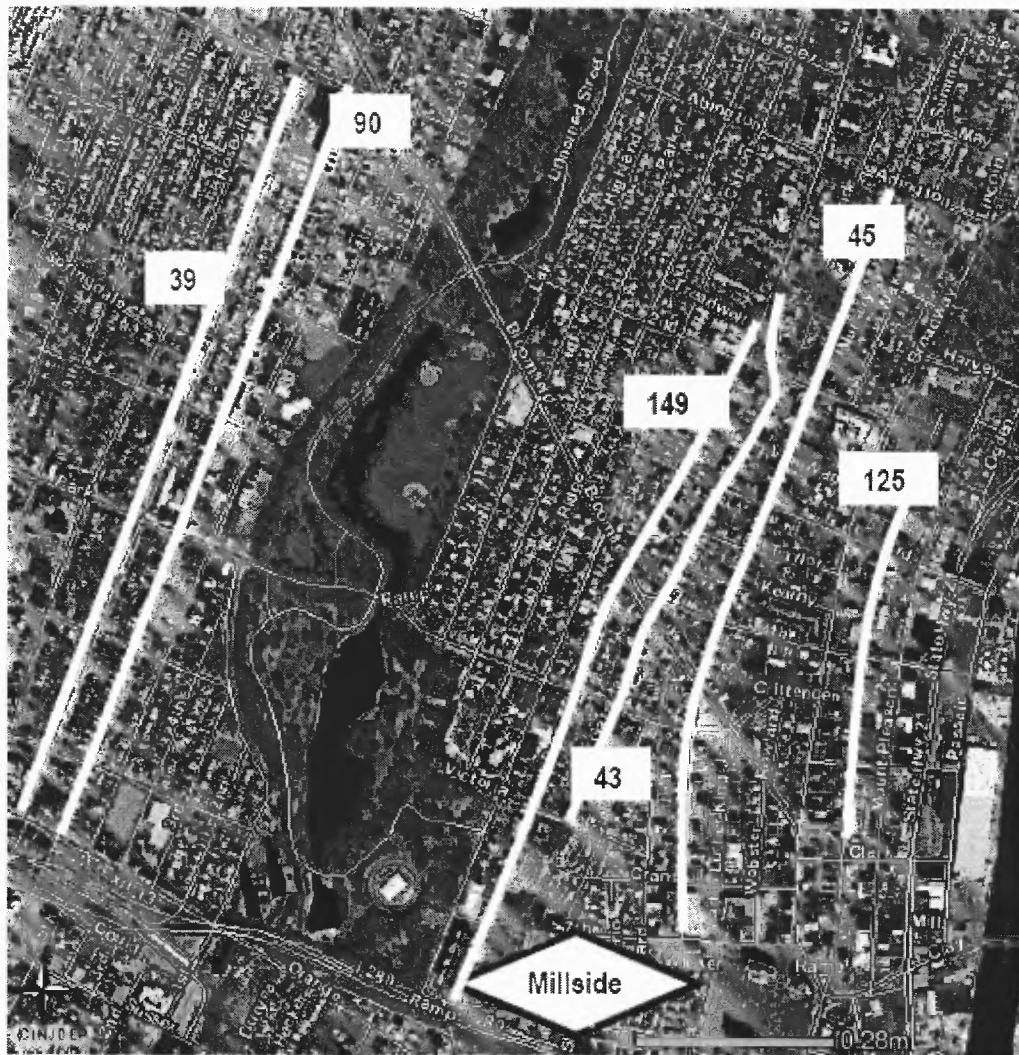


Figure G.2 Streets delineated in white have the highest total number of reported crime incidents in Millside school neighborhood for the years 2000-2006. Diamond with school name shows playground location, and box with number is total reported incidents on street for the six-year period.

Source: i-MapNJDEP, retrieved November 22, 2007, from <http://nj.gov/dep/gis>

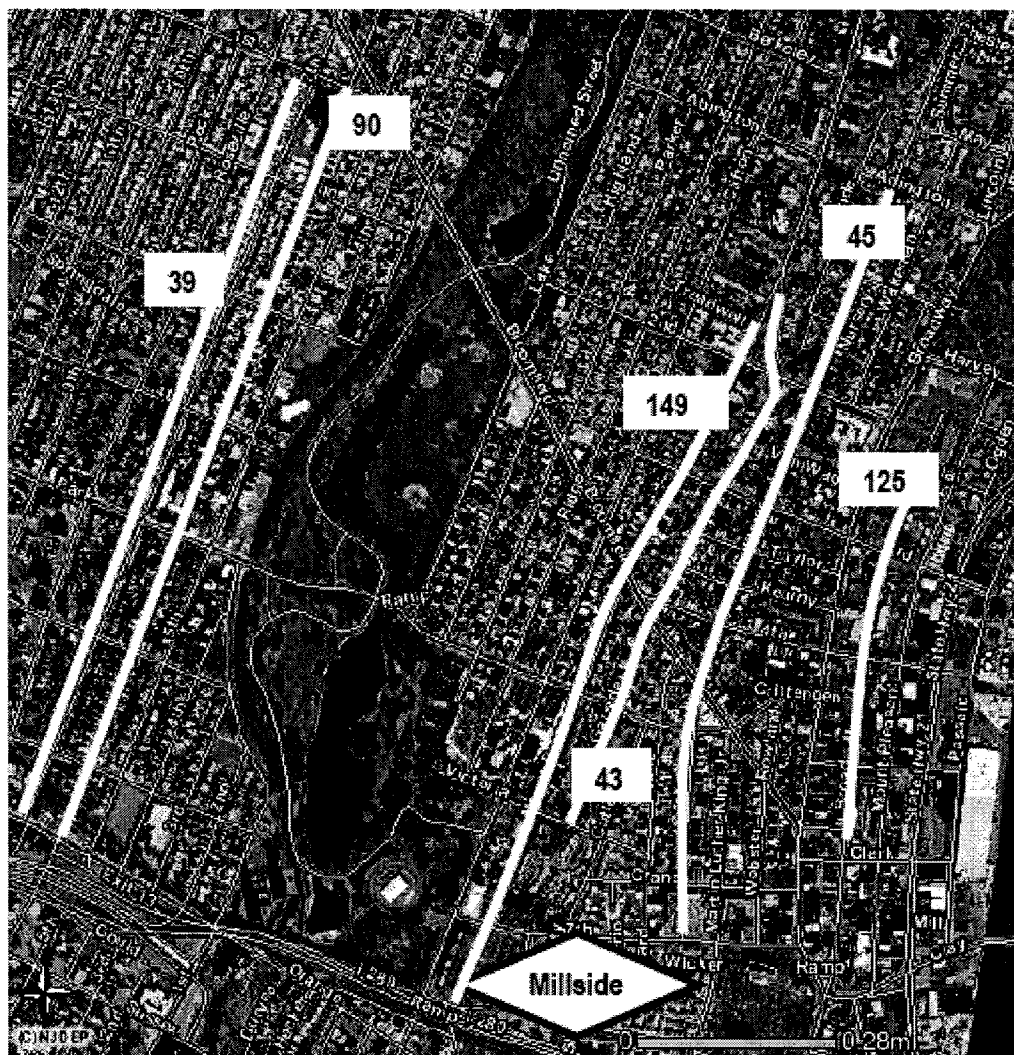


Figure G.2 Streets delineated in white have the highest total number of reported crime incidents in Millside school neighborhood for the years 2000-2006. Diamond with school name shows playground location, and box with number is total reported incidents on street for the six-year period.

Source: i-MapNJDEP, retrieved November 22, 2007, from <http://nj.gov/dep/gis>

Table G.6 Comparison of Reported Crime Incident by Category and Year for the Millside School Neighborhood

Crime Categories	Millside School Neighborhood year							Row Total
	2000	2001	2002	2003	2004	2005	2006	
Robbery with weapon	74 (55.6%)	39 (54.2%)	25 (43.1%)	25 (40.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	163 (30.4%)
Homicide non-vehicular	3 (2.3%)	0 (0.0%)	3 (5.2%)	1 (1.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	7 (1.3%)
Homicide vehicular	1 (0.8%)	1 (1.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (0.4%)
Aggravated Assault	2 (1.5%)	0 (0.0%)	1 (1.7%)	1 (1.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (0.7%)
Carjacking with weapon	6 (4.5%)	3 (4.2%)	2 (3.4%)	1 (1.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	12 (2.2%)
Drugs	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	6 (8.1%)	19 (28.4%)	12 (16.9%)	37 (6.9%)
Theft / Snatching	6 (4.5%)	3 (4.2%)	1 (1.7%)	3 (4.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	13 (2.4%)
Gun Activity	40 (30.1%)	23 (31.9%)	25 (43.1%)	25 (40.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	113 (21.0%)
Police Action	0 (0.0%)	0 (0.0%)	0 (0.0%)	5 (8.1%)	68 (91.9%)	48 (71.6%)	59 (83.1%)	180 (33.5%)
General/Quality of Life	1 (0.8%)	3 (4.2%)	1 (1.7%)	1 (1.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	6 (1.1%)
Column Total	133 (24.8%)	72 (13.4%)	58 (10.8%)	62 (11.5%)	74 (13.8%)	67 (12.5%)	71 (13.2%)	537 (100%)

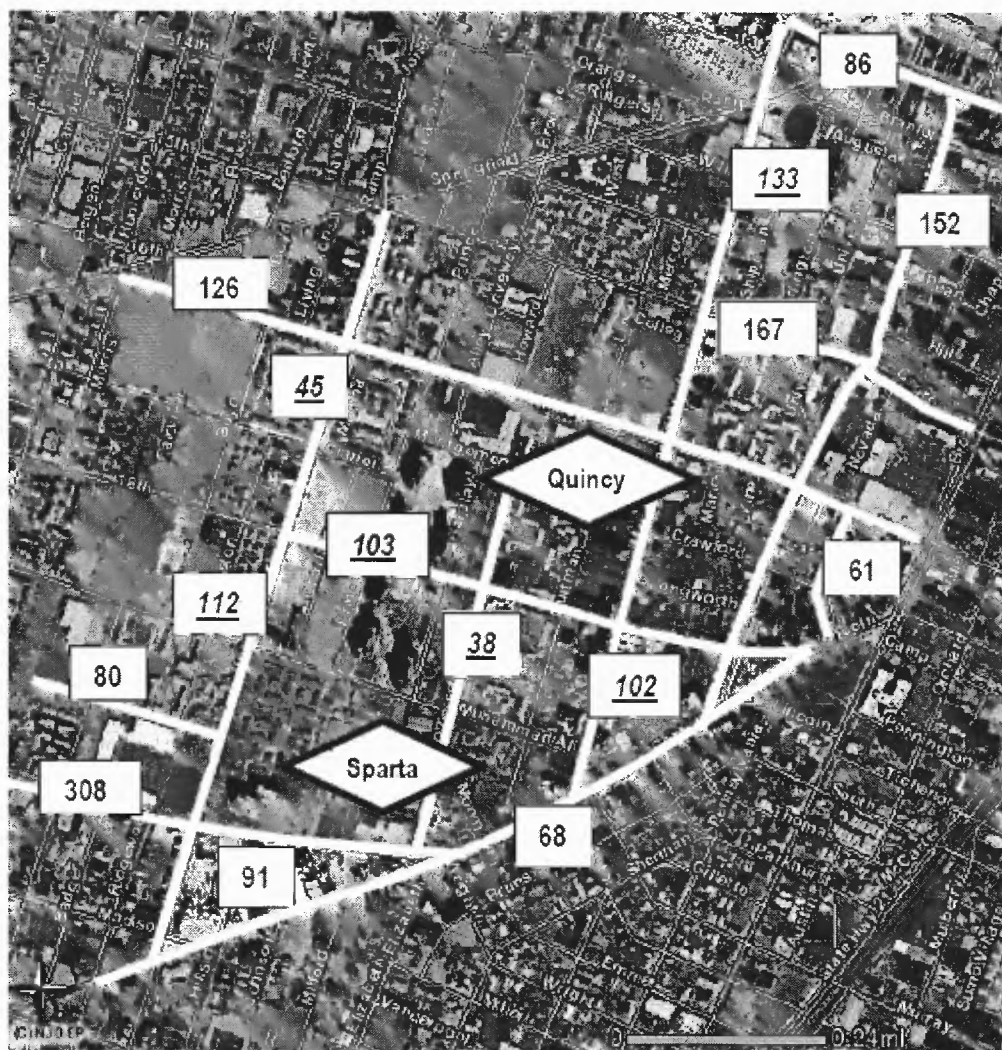


Figure G.3 Streets delineated in white have the highest total number of reported crime incidents in Sparta and Quincy school neighborhoods for the years 2000-2006. Diamond with school name shows playground location, and box with number is total reported incidents on street for the six-year period.

Source: i-MapNJDEP, retrieved November 22, 2007, from <http://nj.gov/dep/gis>

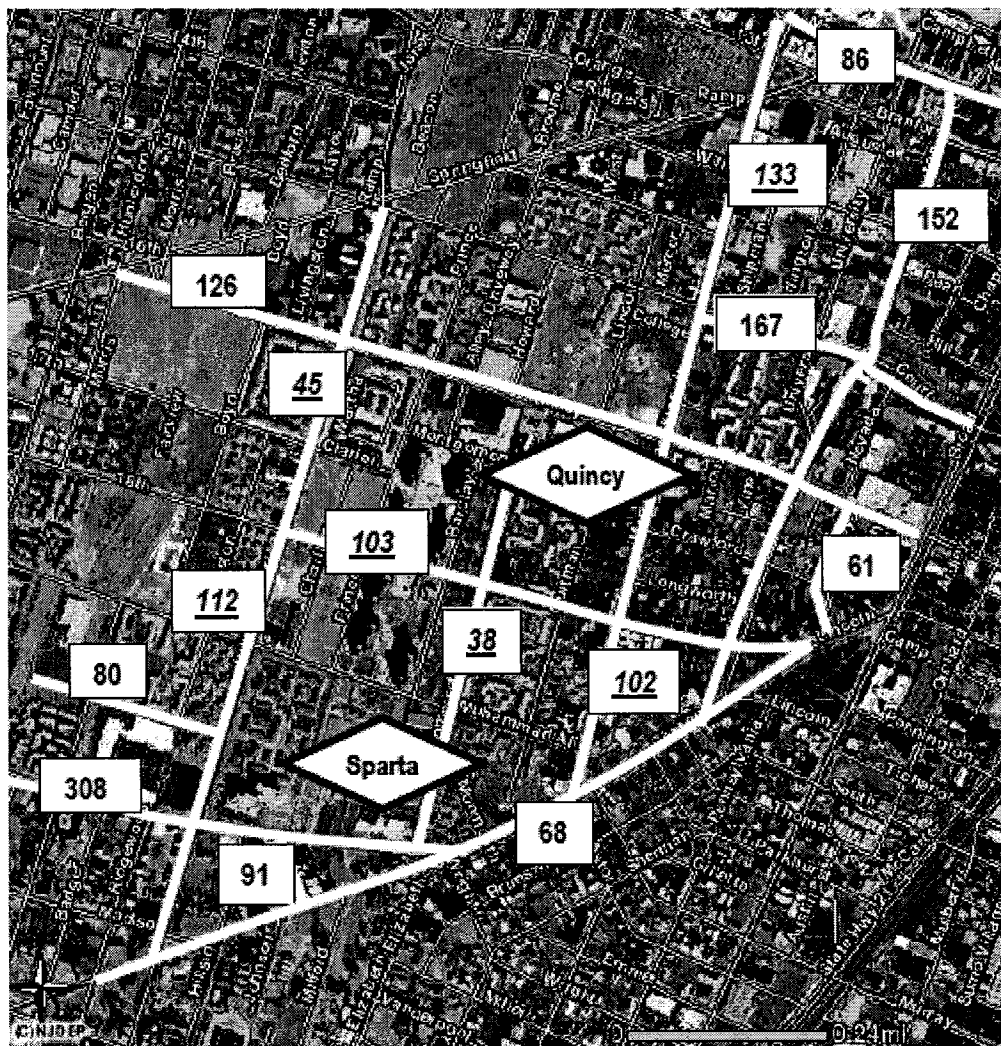


Figure G.3 Streets delineated in white have the highest total number of reported crime incidents in Sparta and Quincy school neighborhoods for the years 2000-2006. Diamond with school name shows playground location, and box with number is total reported incidents on street for the six-year period.

Source: i-MapNJDEP, retrieved November 22, 2007, from <http://nj.gov/dep/gis>

Table G.7 Comparison of Reported Crime Incidents by Category and Year for the Sparta School Neighborhood

Crime Categories	Sparta School Neighborhood year							Row Total
	2000	2001	2002	2003	2004	2005	2006	
Robbery with weapon	123 (45.2%)	39 (29.8%)	37 (29.6%)	31 (29.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	230 (22.5%)
Homicide non-vehicular	6 (2.2%)	6 (4.6%)	7 (5.6%)	4 (3.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	23 (2.3%)
Homicide vehicular	0 (0.0%)	0 (0.0%)	1 (0.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.1%)
Aggravated Assault	6 (2.2%)	7 (5.3%)	2 (1.6%)	3 (2.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	18 (1.8%)
Carjacking with weapon	7 (2.6%)	3 (2.3%)	2 (1.6%)	3 (2.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	15 (1.5%)
Drugs	1 (0.4%)	1 (0.8%)	0 (0.0%)	0 (0.0%)	27 (65.9%)	145 (91.8%)	183 (97.3%)	357 (35.0%)
Theft / Snatching	5 (1.8%)	3 (2.3%)	8 (6.4%)	2 (1.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	18 (1.8%)
Gun Activity	119 (43.8%)	70 (53.4%)	66 (52.8%)	62 (58.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	317 (31.0%)
Police Action	1 (0.4%)	0 (0.0%)	0 (0.0%)	1 (0.9%)	14 (34.1%)	13 (8.2%)	5 (2.7%)	34* (3.3%)
General/Quality of Life	4 (1.5%)	2 (1.5%)	2 (1.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	8 (0.8%)
Column Total	272 (26.6%)	131 (12.8%)	125 (12.2%)	106 (10.4%)	41 (4.0%)	158 (15.5%)	188 (18.4%)	1021* (100%)

*13 reported Police Action incidents did not specify year. The total number of reported crime incidents for the Spencer neighborhood is 1034.

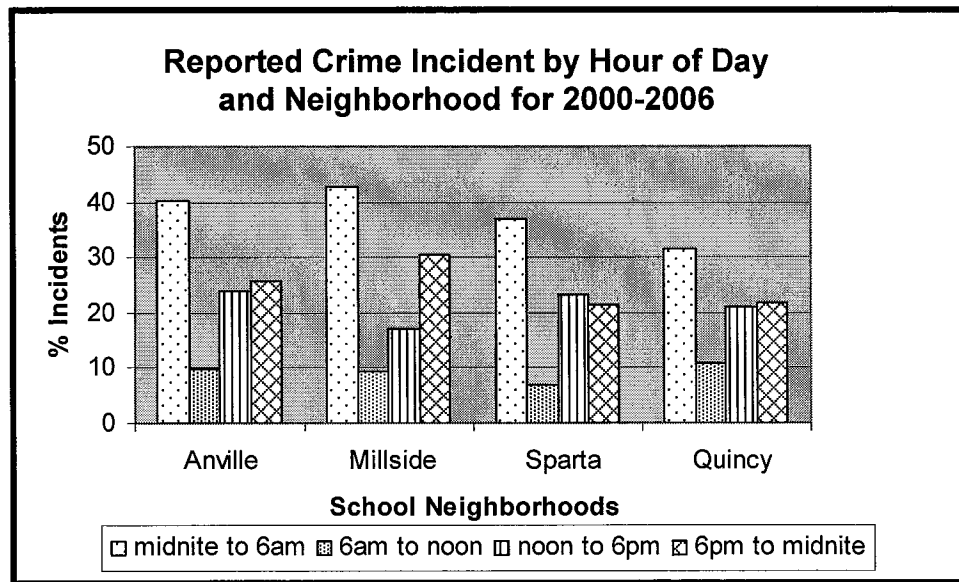
Table G.8 Comparison of Reported Crime Incidents by Category and Year for the Quincy School Neighborhood

Crime Categories	Quincy School Neighborhood year							Row Total
	2000	2001	2002	2003	2004	2005	2006	
Robbery with weapon	107 (62.9%)	74 (64.3%)	55 (51.9%)	36 (40.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	272 (23.5%)
Homicide non-vehicular	6 (3.5%)	2 (1.7%)	1 (0.9%)	7 (7.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	16 (1.4%)
Homicide vehicular	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Aggravated Assault	2 (1.2%)	2 (1.7%)	2 (1.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	6 (0.5%)
Carjacking with weapon	6 (3.5%)	1 (0.9%)	1 (0.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	8 (0.7%)
Drugs	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	13 (15.1%)	188 (65.7%)	237 (78.2%)	438 (37.9%)
Theft / Snatching	9 (5.3%)	5 (4.3%)	10 (9.4%)	10 (11.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	34 (2.9%)
Gun Activity	37 (21.8%)	28 (24.3%)	33 (31.1%)	36 (40.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	134 (11.6%)
Police Action	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	67 (77.9%)	92 (32.2%)	61 (20.1%)	220 (19.0%)
General/Quality of Life	3 (1.8%)	3 (2.6%)	4 (3.8%)	0 (0.0%)	6 (7.0%)	6 (2.1%)	5 (1.7%)	27 (2.3%)
Column Total	170 (14.7%)	115 (10.0%)	106 (9.2%)	89 (7.7%)	86 (7.4%)	286 (24.8%)	303 (26.2%)	1155 (100%)

Table G.9 Cross-Neighborhood Comparison of Reported Crime Incidents by Hour of Occurrence for the Years 2000-2006

School Neighborhood	Hours of Day					Total Crimes (100%)
	00:01-06:00	06:01-12:00	12:01-18:00	18:01-24:00	Unknown	
Anville	124 (37.3%)	31 (9.3%)	74 (22.3%)	80 (24.1%)	23 (6.9%)	332 (100%)
Millside	213 (39.7%)	47 (8.8%)	85 (15.8%)	152 (28.3%)	40 (7.4%)	537 (100%)
Sparta	284 (27.5%)	54 (5.2%)	179 (17.3%)	163 (15.8%)	354 (34.2%)	1034 (100%)
Quincy	265 (22.9%)	91 (7.9%)	176 (15.2%)	181 (15.7%)	442 (38.3%)	1155 (100%)

Source: City of Newark Police Department



*Missing data (unknown) has been eliminated and the total percentage adjusted.

Figure G.4 Cross-neighborhood comparison of reported crime incidents by hour of occurrence in school neighborhoods for the years 2000-2006.

Source: City of Newark Police Department

Table G.10 Cross-Neighborhood Comparison of Reported Crime Incidents by Day of Month for the Years 2000-2006

School Neighborhood	Week (day of month)				Total
	1 (1-7d)	2 (8-14d)	3 (15-22d)	4 (23-31d)	
Anville	67 (20.2%)	73 (22.0%)	92 (27.7%)	100 (30.1%)	332 (100%)
Millside	131 (24.4%)	97 (18.1%)	150 (27.9%)	159 (29.6%)	537 (100%)
Quitman	260 (22.5%)	266 (23.0%)	327 (28.3%)	302 (26.1%)	1155 (100%)
Spencer	219 (21.2%)	249 (24.1%)	273 (26.4%)	280 (27.1%)	1021* (100%)

*13 reported crime incidents did not specify day of the month. The total number of reported crime incidents for the Sparta neighborhood is 1034.

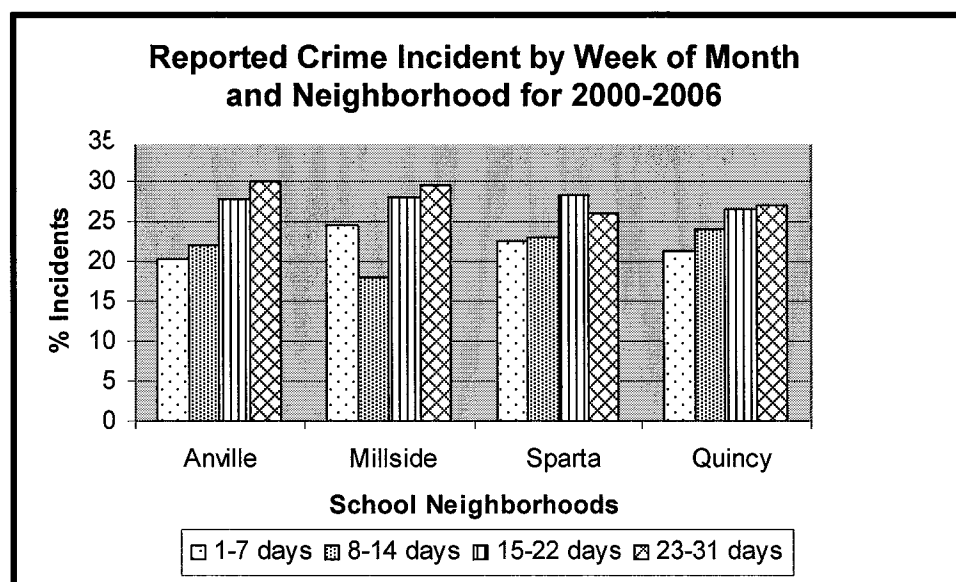


Figure G.5 Cross-neighborhood comparison of reported crime incidents by week of month for the years 2000-2006.

Source: City of Newark Police Department

Table G.11 Cross-Neighborhood Comparison of Reported Crime Incidents by Seasons of the Year for the Years 2000-2006

School Neighborhood	Seasons*				Total Crimes
	Summer	Autumn	Winter	Spring	
Anville	89 (26.8%)	102 (30.7%)	71 (21.4%)	78 (23.5%)	332
Millside	144 (26.8%)	117 (21.8%)	136 (25.3%)	140 (26.1%)	537
Sparta	293 (28.7%)	211 (20.7%)	221 (21.6%)	296 (29.0%)	1021**
Quincy	305 (26.4%)	215 (18.6%)	286 (24.8%)	349 (30.2%)	1155

**Summer:* June, July, August; *Autumn:* September, October, November, *Winter:* December, January, February; *Spring:* March, April, May.

**13 reported crime incidents did not specify month of year. The total number of reported crime incidents for the Sparta neighborhood is 1034.

Source: City of Newark Police Department

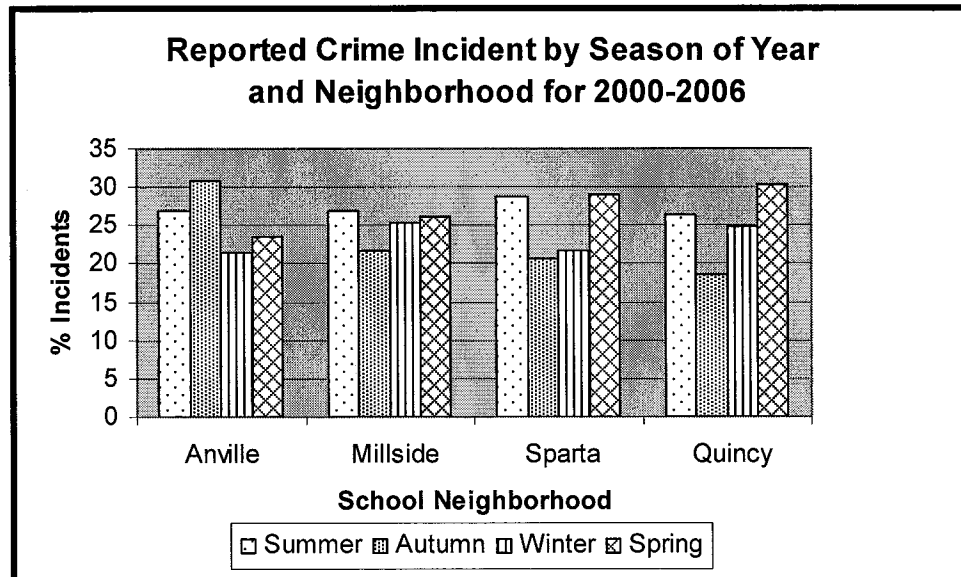


Figure G.6 Cross-neighborhood comparison of reported crime incidents by seasons of the year for the years 2000-2006.

Source: City of Newark Police Department



THE NEW JERSEY SCHOOL OF ARCHITECTURE

A Public
Research University
September 8, 2006

VIA FACSIMILE (973) 733-6255

Ms. Carolyn A. McIntosh, Esq.
Asst. Corp. Counsel
Newark Police Department Legal Affairs
31 Green Street
Newark, New Jersey 07102

Re: August 10, 2006 Letter in Response to Request for Data

Dear Ms. McIntosh,

In continuation to our telephone conversation last month regarding my request for neighborhood crime and traffic data for four school districts in Newark, I am forwarding you a copy of the formal request that was faxed to the Office of the City Clerk.

Attached to the request form please find:

- list of requested crime data (page 1)
- list of requested traffic data (page 2)
- detailed list of the streets for each school district (pages 3 and 4)

The requested data time frame is: January 2000 – August 2006. The data should also specify: 1) time of day of incident; and 2) month and year.

This data is to be included in my study of school playground usage in Newark. If further information is necessary in order to fulfill this request, please do not hesitate to contact me.

I wish to thank you in advance for your kindness and consideration.

Sincerely,

Caryn Yaacov
Email: csy3@njit.edu
Tel.: 973.596.5872
Fax: 973.596.3073

UNIVERSITY HEIGHTS
NEWARK, NJ 07102-1982
973.596.3080

Figure G.4 Request for Newark crime statistics.

Table G.12 Crime Index Categories

CRIME CATEGORIES	
Violent Crimes (primary crime)	Quality of Life Crimes (secondary crime)
Assault	Burglary
Car Jacking	Car Theft
Domestic Violence	Loitering
Drugs	Noise
Gang-Related	Prostitution
Murder	Public Intoxication
Rape	Vandalism
Robbery	

Source: U.S. Dept. of Justice, Federal Bureau of Investigation,
<http://www.fbi.gov>

Table G.13 Crime Categories for Neighborhood Incidents

Crime Category	Description
Assault	aggravated assault, beating, slashing
Car Jacking	with/without weapon
Drugs	possession, possession with intent, sale to undercover
Gun Activity	shots fired, weapon recovered, bullets, shooting hit/no hit, pointing, possession
Homicide	shooting, stabbing, blunt force, felony
Homicide vehicular	
Police Action	arrest, pending, warrant, unfounded, criminal restraint, unlisted
Robbery	knife, gun, other weapon
Theft	chain snatch, purse/bag snatch, cell snatch
General / Quality of Life	crime unspecified, found property, criminal trespassing, terrorist threats, criminal mischief, abduction/kidnapping, graffiti, gambling, suicide, paintball gun, obstruction

APPENDIX H

NEIGHBORHOOD PERCEPTIONS

Table H.1 shows children's and caregivers' perceptions for the neighborhood characteristics of "great place to live" and "messy."

Table H.2 shows caregivers' preferred outdoor play space for their fifth-grader.

Tables H.3 and H.4 show caregivers' responses regarding child safety for "going alone to" and "being alone on" the school playground.

Tables H.5 and H.6 show perceptions for motor vehicle-traffic and child safety when crossing neighborhood streets.

Table H.1 Perceptions of Neighborhood Characteristics “Great Place to Live” and “Messy” by Children and Caregivers

Question School, Group, Number of respondents				Response Category (%) [*]		
				Agree	Neutral	Disagree
My neighborhood is a great place to live.						
Anville	children	(n=102)	76.5	19.6	3.9	
	caregivers	(n=98)	65.3	27.6	7.1	
Millside	children	(n=44)	40.9	25.0	34.1	
	caregivers	(n=29)	34.5	27.6	37.9	
Sparta	children	(n=23)	26.1	17.4	56.5	
	caregivers	(n=18)	16.7	50.0	33.3	
Quincy	children	(n=10)	60.0	10.0	30.0	
	caregivers	(n=9)	22.2	33.3	44.4	
My neighborhood is messy.						
Anville	children	(n=102)	29.4	28.0	43.0	
	caregivers	(n=98)	37.8	18.4	43.9	
Millside	children	(n=44)	45.5	25.0	29.5	
	caregivers	(n=29)	20.7	44.8	34.5	
Sparta	children	(n=23)	52.2	34.8	13.0	
	caregivers	(n=18)	27.8	38.9	33.3	
Quincy	children	(n=10)	10.0	30.0	60.0	
	caregivers	(n=9)	44.4	22.2	33.3	

^{*}Response categories are collapsed from a five-point to three-point scale: agree (strongly agree or agree), neutral (neutral), disagree (strongly disagree or disagree).

Table H.2 Caregivers' Preferred Outdoor Play Space

Question: Where do you like your 5 th grader to play when he/she is outside? (fill-in)						
School, Group	Place / Response (%)					
	Neighborhood Park/Playground	Yard / Home	School Playground	At Friend / Relative	Other	Incorrect Response [^]
Anville caregivers (n=97)	48.3	31.5	13.6	3.0	3.0	1.0
Millside caregivers (n=27)	14.8	22.2	14.8	3.7	7.4	37.1
Sparta caregivers (n=16)	6.2	37.5	12.5	6.2	18.8 [*]	18.8
Quincy caregivers (n=8)	12.5	12.5	50.0	0.0	12.5	12.5 ^{**}

[^] Listed specific playground area or equipment, rather than play space

^{*} Included is one response of “no where”

^{**} 1 caregiver responded “I always take her out”

Table H.3 Responses by Caregivers Regarding Whether Fifth-Grader is Allowed to Go Alone to School Playground

Question School, Group, Number of Respondents	Response Category (%)			
	Always	Sometimes	Never*	NR
Do you allow your 5 th grader to go to the school playground alone?				
<i>Anville</i> caregivers (n=98)	9.2	31.6	59.2	0.0
<i>Millside</i> caregivers (n=29)	31.0	17.2	48.3	3.4
<i>Sparta</i> caregivers (n=18)	16.7	11.1	66.7	5.6
<i>Quincy</i> caregivers (n=9)	11.1	0.0	88.9	0.0

Table H.4 Need for Playground Supervision by Caregivers as Measured by Dangerous for Child to be Alone on the School Playground

Question School, Group, Number of Respondents	Response Category (%)			
	Agree	Neutral	Disagree	NR
It is dangerous for a child to be alone on the school playground.				
<i>Anville</i> caregivers (n=98)	77.6	14.3	8.2	0.0
<i>Millside</i> caregivers (n=29)	55.2	17.2	27.6	0.0
<i>Sparta</i> caregivers (n=18)	55.5	16.7	27.8	0.0
<i>Quincy</i> caregivers (n=9)	77.7	0.0	0.0	22.2

Table H.5 Perception of Neighborhood Motor Vehicle-Traffic by Children and Caregivers

Question School, Group, Number of Respondents			Response Category (%)		
			Yes	Sometimes	No
There is a lot of motor vehicle traffic in my neighborhood.					
Anville	children	(n=102)	44.1	34.3	21.6
	caregivers	(n=97) [*]	76.3	‡	23.7
Millside	children	(n=44)	27.3	36.4	36.4
	caregivers	(n=29)	48.3	41.4	10.3
Sparta	children	(n=23)	26.1	30.4	43.5
	caregivers	(n=18)	88.9	0.0	11.1
Quincy	children	(n=9) [*]	11.1	66.6	22.3
	caregivers	(n=9)	77.8	22.2	0.0

^{*} Missing data (NR) has been eliminated and the total percentage adjusted.

Total *n* for Anville children is 102; for Anville caregivers is 98; for Quincy children is 10.

‡The Anville guardian questionnaire mistakenly omitted the response category *sometimes*.

Table H.6 Relationship between Children Who Feel Safe Crossing Streets and Caregivers Who Allow Children to Cross

Question School, Group, Number of Respondents			Response Category (%)		
			Yes	Sometimes	No
In my neighborhood, I feel safe crossing the streets by myself.					
Anville	children	(n=101) [*]	42.6	35.6	21.8
Millside	children	(n=44)	31.8	38.6	29.5
Sparta	children	(n=23)	30.4	52.2	17.4
Quincy	children	(n=9) [*]	33.3	33.3	33.3
I allow my 5 th grader to cross the streets alone in my neighborhood.					
Anville	caregivers	(n=97) [*]	49.5	‡	50.5
Millside	caregivers	(n=29)	24.1	37.9	37.9
Sparta	caregivers	(n=18)	33.3	0.0	61.1
Quincy	caregivers	(n=9)	11.1	44.4	44.4

^{*} Missing data (NR) has been eliminated and the total percentage adjusted.

Total *n* for Anville children is 102; for Anville caregivers is 98; for Quincy children is 10.

‡The Anville caregivers questionnaire mistakenly omitted the response category *sometimes*.

APPENDIX I
SCHOOL PLAYGROUND PHOTOGRAPHS

Figures I.1 to I.3 are photographs of Anville.

Figures I.4 to I.6 are photographs of Millside.

Figures I.7 to I.9 are photographs of Sparta.

Figures I.10 to I.12 are photographs of Quincy.

ANVILLE SCHOOL PHOTOGRAPHS



I.1 Painted game areas are used to increase children's physical activity levels.



I.2 Water drainage is problematic after a rainfall.



I.3 Temporary barriers separate children from cars.

ANVILLE SCHOOL PHOTOGRAPHS



I.1 Painted game areas are used to increase children's physical activity levels.



I.2 Water drainage is problematic after a rainfall.



I.3 Temporary barriers separate children from cars.

MILLSIDE SCHOOL PHOTOGRAPHS



I.4 Inner-court play area was formerly a maintained playground.



I.5 View of playground equipment. In the empty space near the bench once stood a tree.

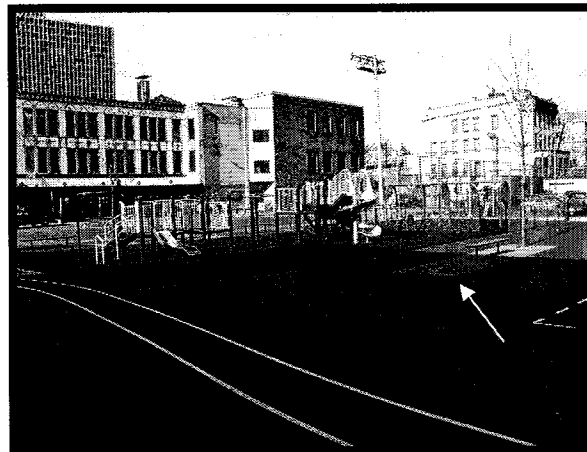


I.6 Perimeter fencing and gate separate the playground from the neighborhood.

MILLSIDE SCHOOL PHOTOGRAPHS



I.4 Inner-court play area was formerly a maintained playground.



I.5 View of playground equipment. In the empty space near the bench once stood a tree.



I.6 Perimeter fencing and gate separate the playground from the neighborhood.

SPARTA SCHOOL PHOTOGRAPHS



I.7 Forbidden wrestling matches take place on the mats under the playground equipment.



I.8 Cars parked on the blacktop play area located outside the perimeter fencing of the renovated playground.



I.9 Fencing separates the inner-court renovated playground from the blacktop play area (foreground). The entrance gate is locked after school hours.

SPARTA SCHOOL PHOTOGRAPHS



I.7 Forbidden wrestling matches take place on the mats under the playground equipment.



I.8 Cars parked on the blacktop play area located outside the perimeter fencing of the renovated playground.



I.9 Fencing separates the inner-court renovated playground from the blacktop play area (foreground). The entrance gate is locked after school hours.

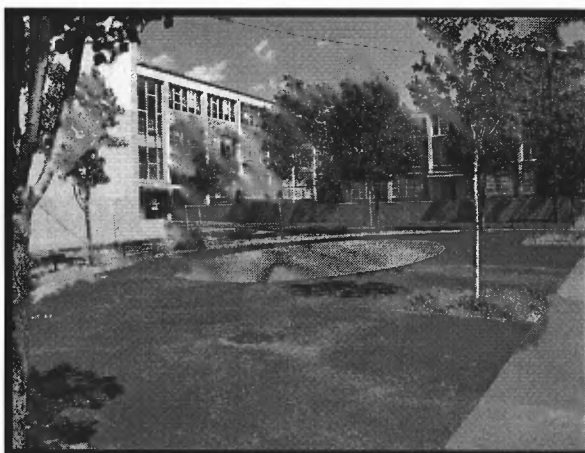
QUINCY SCHOOL PHOTOGRAPHS



I.10 Basketball hoop with missing net (public housing high-rise in background).

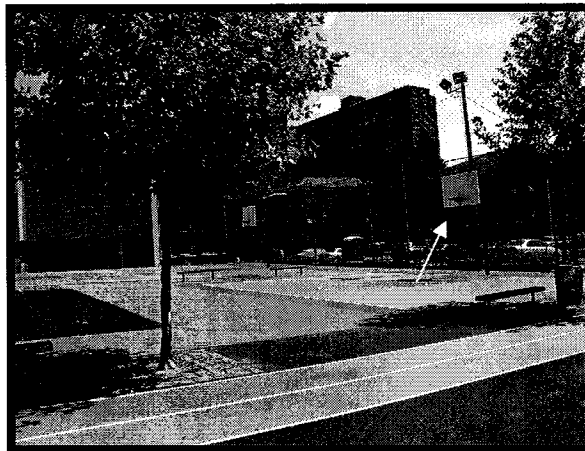


I.11 Bench with no seat.

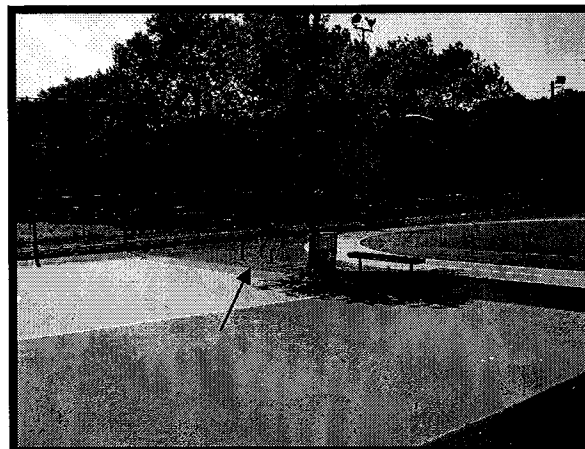


I.12 Painted play area with faded map of the world.

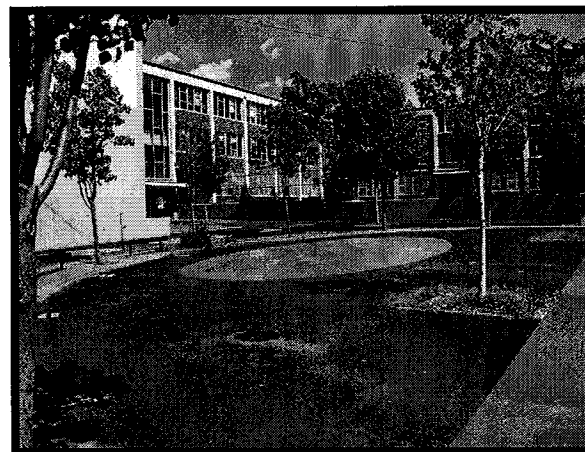
QUINCY SCHOOL PHOTOGRAPHS



I.10 Basketball hoop with missing net (public housing high-rise in background).



I.11 Bench with no seat.



I.12 Painted play area with faded map of the world.

APPENDIX J
DEMOGRAPHICS FOR SCHOOLS AND STUDY PARTICIPANTS

List of tables and figures:

- Table J.1 Profile of Case Study Schools for School Year 2005-2006
- Table J.2 Profile of Quantitative Study Participants
- Table J.3 Demographics of Survey Participants: Caregivers
- Table J.4 Demographics of Survey Participants: General Characteristics for Children and Caregivers
- Table J.5 Cross-Case Comparison of Qualitative Study Participants by Schools
- Table J.6 Comparison of Demographic and Socioeconomic Characteristics of Newark and New Jersey
- Table J.7 Educational Attainment for Newark's Population 25 Years and Over
- Table J.8 School Selection Criteria for Playground Renovation by Non-Profit Organization
- Figure J.1 Total School Enrollment by Race for the School Year 2005-2006
- Figure J.2 Comparison of Caregiver Population by School as Measured by Race/Ethnicity for the School Year 2006-2007
- Figure J.3 School Profile for First Language Spoken at Home for the School Year 2005-2006.
- Figure J.4 Cross-Case Comparison of Caregiver Population for First Language Spoken at Home for the School Year 2006-2007

Table J.1 Profile of Case Study Schools for School Year 2005-2006

Profile	School				City ¹	State
	Anville	Millside	Sparta	Quincy	Newark	New Jersey
Total enrollment	1202	754	707	439	30,171 ²	
Black	2.3%	42.6%	90.7%	84.1%	57.3%	
Hispanic	35.6%	55.2%	9.1%	14.6%	33.7%	
White	61.2%	1.6%	0.1%	0.2%	8.0%	
Other	0.9%	0.7%	0.1%	1.1%	1.0%	
Grade level	Pre-K to 8 & Special Ed	Pre-K to 6 & Special Ed*	Pre-K to 8 & Special Ed	Pre-K to 5 & Special Ed*		
Student/Administrator ratio	400.7	251.3	176.8	219.5		280.9
Student/Faculty ratio	13.7	9.5	9.7	9.3		11.1
Eligible for free-/reduced-price lunch (% of total population)	free 420 reduced 155 47.8%	free 541 reduced 72 81.3%	free 499 reduced 21 73.6%	free 336 reduced 30 83.4%	61.7% 8.6% 70.3%	27%
School status "in need of improvement"	No	Yes (2 yrs not attain AYP) ³	Yes (4 yrs not attain AYP)	Yes (3 yrs not attain AYP)		
5 th grade enrollment	135	107	62	49		
Average 5 th grade class size	27.0	17.8	12.4	24.5	18.2	21.3
Average daily 5 th grade attendance rate	95.9%	93.2%	95.8%	90.8%	93.6%	95.9%
Student mobility (school) ⁴	15.1%	21.8%	25.6%	27.1%	26.7%	11.9%
LEP students (school) ⁵	29.8%	5.8%	0.7% ⁶	8.2%		
First language spoken at home (school)						
English	16.6%	86.6%	99.3%	78.4%		
Spanish	27.5%	12.3%	0.0%	15.3%		
Portuguese	54.4%	0.0%	0.0%	0.0%		
Other	1.4%	1.1%	0.7%	6.4%		

Sources: New Jersey School Report Card 2005-2006 (<http://education.state.nj.us>); Newark Kids Count 2006 (<http://www.acnj.org>); The Newark Public Schools 2005-2006 Annual Report (<http://www.nps.k12.nj.us>); The Newark Public Schools (information by request, Sept. 2007); Food and Nutrition Services, Office of Bilingual Education, Student Information Services

* In 2007, Millside and Quincy became Pre-K to 8.

¹ Public elementary schools only. The total number of public schools in Newark is 75; 54 of these are elementary schools.

² The total enrollment of children in Newark public schools is 41,819: 59.3% Black; 32.0% Hispanic; 7.8% White; and 0.9% Other.

³ AYP, Adequate yearly progress: For Title I schools that are not making AYP, the states are required to institute a progression of measures based on the number of consecutive years that a school did not meet the proficiency levels.

⁴ Mobility is defined as the percent of children who entered or left school during the school year.

⁵ Limited English Proficiency is defined as the percent of students whose native language is not English and who have difficulty speaking, reading, writing, or understanding the English language as determined through a language proficiency test.

⁶ Sparta does not provide bilingual/ESL services.

Table J.2 Profile of Quantitative Study Participants

SURVEY POPULATION	SCHOOL			
	Anville	Millside	Sparta	Quincy
CAREGIVERS				
Total number of 5 th grade families ¹	120*	104	57*	48
Number of caregiver consent forms returned	122	67*	26	29
Declined to participate (self and child)	18	13	0	8
Consent to participate (self and child)	102**	54	26	21
Consented to participate but survey not returned	1	25	7	12
Number of completed caregiver surveys returned	99*	29	18*	9
Survey participants percentage of total population	(83%)	(28%)	(32%)	(19%)
Place survey completed (self-administered)	home	home	home	home/ school [‡]
FIFTH-GRADERS				
Total number of 5 th graders ¹	122	104	59	48
Number of 5 th grade classes	5	5	3	2
Children have consent but not complete survey	0	10	3**	11
Number of completed child surveys returned	102	44	23	10
Survey participants percentage of total population	(84%)	(42%)	(39%)	(21%)
Place survey completed	home (homework)	home/ in class [‡]	in class ^b	in class ^c

¹Special education children excluded.

*Caregiver has more than one child in 5th grade.

**1 family moved; 1 caregiver reneged.

^Includes 7 verbal responses to teacher.

~Children were not in class. PI made three separate attempts to distribute survey.

‡3 caregiver surveys completed during open-school night.

^a1 class, homework assignment; 3 classes, administered by teachers; 1 class, administered by PI.

^bPI administered survey to all classes.

^cTeachers administered survey.

Table J.3 Demographics of Survey Participants: Caregivers

Question, Response Scale	School / Group			
	Anville	Millside	Sparta	Quincy
	Caregivers (n=98) %	Caregivers (n=29) %	Caregivers (n=18) %	Caregivers (n=9) %
Gender				
Male	17.3	10.3	5.6	11.1
Female	80.6	82.8	88.9	77.8
NR	2.0	6.9	5.6	11.1
Age				
18-24	2.0	0.0	0.0	0.0
25-34	23.5	31.0	27.8	33.3
35-44	52.0	41.4	50.0	22.2
45 & over	18.4	20.7	22.2	22.2
NR	4.1	6.9	0.0	0.0
Marital Status				
Single/Widow/Divorce/Separated	18.4	51.7	50.0	55.6
Married/Partnered	79.6	37.9	50.0	22.2
NR	2.0	10.3	0.0	22.2
Household Income				
\$10,000 and below	21.4	31.0	27.8	44.4
Between \$10,000 - \$19,999	23.5	24.1	22.2	22.2
Between \$20,000 - \$29,999	18.4	13.8	33.3	0.0
Between \$30,000 - \$39,999	12.2	0.0	0.0	0.0
\$40,000 and above	13.3	6.9	11.1	11.1
NR	11.2	24.1	5.6	22.2
Highest Education Level				
Less than high school	16.3	13.8	5.6	0.0
Some high school	13.3	31.0	0.0	22.2
High school grad or equivalent	23.4	13.8	27.8	33.3
Vocational/technical education after high school	7.1	13.8	5.6	0.0
Some college	17.3	6.9	27.8	11.1
College graduate	11.2	3.4	5.6	11.1
Graduate or professional school	8.2	3.4	5.6	0.0
NR	3.1	13.8	22.3	22.2
Ethnicity /Nationality				
Black / non-Hispanic	5.1	24.1	66.7	77.8
White / non-Hispanic	6.1	0.0	5.6	0.0
Hispanic	32.7	65.5	16.7	11.1
Portuguese	25.4	0.0	0.0	0.0
Brazilian	30.6	0.0	0.0	0.0
Asian	0.0	0.0	0.0	0.0
Other	0.0	3.4	5.6	0.0
NR	0.0	6.9	5.6	11.1

Table J.4 Demographics of Survey Participants: General Characteristics for Children and Caregivers

Category Question, Response Scale	School / Group							
	Anville		Millside		Sparta		Quincy	
	Children (n=102) %	Caregivers (n=98) %	Children (n=44) %	Caregivers (n=29) %	Children (n=23) %	Caregivers (n=18) %	Children (n=10) %	Caregivers (n=9) %
Mobility								
<i>Did you [your 5th grader] attend this school last year?</i>								
Yes	94.1	95.9	34.1	34.5	73.9	83.3	90.0	88.9
No	5.9	3.1	63.6	65.5	8.7	16.7	10.0	11.1
NR	0.0	1.0	2.3	0.0	17.4	0.0	0.0	0.0
<i>How long have you lived in your neighborhood?</i>								
0-1 year		14.3		20.7		11.1		11.1
2-3 years		25.5		20.7		16.7		11.1
4-5 years		10.2		3.4		11.1		11.1
6 years or more		49.0		48.3		61.1		55.6
NR		1.0		6.9		0.0		11.1
Demographics of Children								
<i>How old are you?</i>								
10 years	59.8		63.6		65.2		50.0	
11 years	37.3		34.1		34.8		40.0	
12 years	2.0		2.3		0.0		10.0	
NR	1.0		0.0		0.0		0.0	
<i>Are you a boy or a girl?</i>								
Boy	45.1		29.5		47.8		40.0	
Girl	53.9		70.5		52.2		50.0	
NR	1.0		0.0		0.0		10.0	
Language Spoken at Home								
<i>What language is generally spoken at home?</i>								
Spanish	27.5	29.6	47.7	50.0	17.4	11.1	0.0	11.1
Portuguese	49.0	51.0	0.0	0.0	0.0	0.0	0.0	0.0
English	19.6	17.3	47.7	36.2	78.3	88.9	70.0	77.8
Other	3.0	1.0	4.3	6.9	0.0	0.0	20.0	0.0
NR	1.0	1.0	0.0	6.9	4.3	0.0	10.0	11.1

Table J.5 Cross-Case Comparison of Qualitative Study Participants by Schools

Category / Participant Status	School / Participant's Demographics			
	Anville non-renovated playground	Millside renovated playground	Sparta renovated playground	Quincy renovated playground
Interviewed	(n=9; 100% of sample)	(n=6; 75% of sample)	(n=5; 83% of sample)	(n=5; 83% of sample)
Administrator	<i>Vice Principal</i> (M, W) 33 yrs. in education 11 yrs. at school 3 yrs. VP	<i>Principal</i> (F, W) 20 yrs. in education 8 yrs. at school and as principal	<i>Principal</i> (M, B) 33 yrs. in education 15 yrs. at school and as principal	<i>Principal</i> (F, B) 28 yrs. in education 10 yrs. at school 5 yrs. principal
Teacher <i>5th Grade Classroom</i>	<ul style="list-style-type: none"> • <i>Anne</i> (F, P) Graduate of Anville (1970s), 13 yrs. teacher and at Anville • <i>Alice</i> (F, W) From Union County 19 yrs. teacher 18 yrs. at Anville • <i>April</i> (F, H) From Union County 20 yrs. ESL teacher 4 yrs. at Anville • <i>Ava</i> (F, P) Graduate of Anville (1980s), 21 yrs. teacher, 19 at Anville • <i>Agnes</i> (F, P) Graduate of Anville (1980s), 7 yrs. teacher and at Anville 	<ul style="list-style-type: none"> • <i>Millie</i> (F, B) From Newark, 20 yrs. teacher and at Millside, 5th grade class coordinator and Lead Teacher for After School Program • <i>Miles</i> (M, H) From Newark area 2 yrs. teacher 1st yr. at Millside • <i>Matt</i> (M, H) From Newark area employed by Teach4 America 1st yr. teacher and at Millside 	<ul style="list-style-type: none"> • <i>Sally</i> (F, B) From Newark 8 yrs. teacher 7 yrs. at Sparta • <i>Sue</i> (F, B) From Newark 17 yrs. teacher 8 yrs. at Sparta 	<ul style="list-style-type: none"> • <i>Queenie</i> (F, H) From Newark 24 yrs. ESL teacher 7 yrs. at Quincy
Teacher <i>Physical Education 5th Grade</i>	<ul style="list-style-type: none"> • <i>Ada</i> (F, W) 14 yrs. teaching and at Anville • <i>Adam</i> (M, W) 8 yrs. teaching 1st yr. at Anville 	<ul style="list-style-type: none"> • <i>Mike</i> (M, W) 10 yrs. teaching 9 yrs. at Millside 	<ul style="list-style-type: none"> • <i>Sam</i> (M, W) Grew up in Newark 37 yrs. teaching, 30 yrs. at Sparta (from opening of school) retires this year. 	<ul style="list-style-type: none"> • <i>Quilla</i> (F, B) From Newark 20 yrs. teaching 9 yrs. at Quincy
After School Program	<i>Lead Teacher</i> (F, P) 1 st yr. as Lead, 3 yrs. in program, 5 yrs as teacher at Anville	<i>Lead Teacher</i> (F, B) 15 yrs. as Lead 5 th grade teacher at Millside, see <i>Millie</i>	<i>Lead Teacher</i> (F, B) 1 st yr. as Lead taught in program crisis teacher at Sparta	<i>Education Specialist</i> (F, B) From Newark 22 yrs. experience 10 yrs. at Quincy
School Psychologist	NA	NA	NA	• <i>Quinton</i> (M, W) 9 yrs. experience 6 yrs. at Quincy
Not Interviewed Classroom Teacher	All teachers interviewed	1 (F, W) 1 (F, H)	1 (M, B)	1 (F, U)

*Abbreviations: F=female; M=male; B=Black; W=White; H=Hispanic; P=Portuguese; U=unknown

Table J.6 Comparison of Demographic and Socioeconomic Characteristics of Newark and New Jersey

Category	Newark City	State of NJ
Population	265,375	8,669,815
Race		
White non-Hispanic	21.6%	69.7%
Black/African American	53.1%	13.6%
Hispanic or Latino	31.7%	15.6%
Other races	2.2%	16.6%
Age Structure		
0-19	31.2%	27.0%
20-44	40.8%	36.9%
45-64	18.7%	22.7%
65+	9.3%	13.2%
Household Type		
Married-couple families	26.7%	52.2%
Single-headed families	36.1%	27.3%
Median Household Income	\$30,665	\$61,672
Total Population Living in Poverty	24.0%	8.7%
Children under 18	32.0%	
Single parents	37.0%	
Female-headed household	38.0%	
Married parents	3.0%	
Occupied Housing Units		
Owner	25.4%	65.6%
Renter	74.6%	32.6%

Sources: City of Newark Website, <http://www.ci.newark.nj.us>; U.S. Census Bureau, American Community Survey 2005-2007, <http://factfinder.census.gov>

Table J.7 Educational Attainment for Newark's Population 25 Years and Over

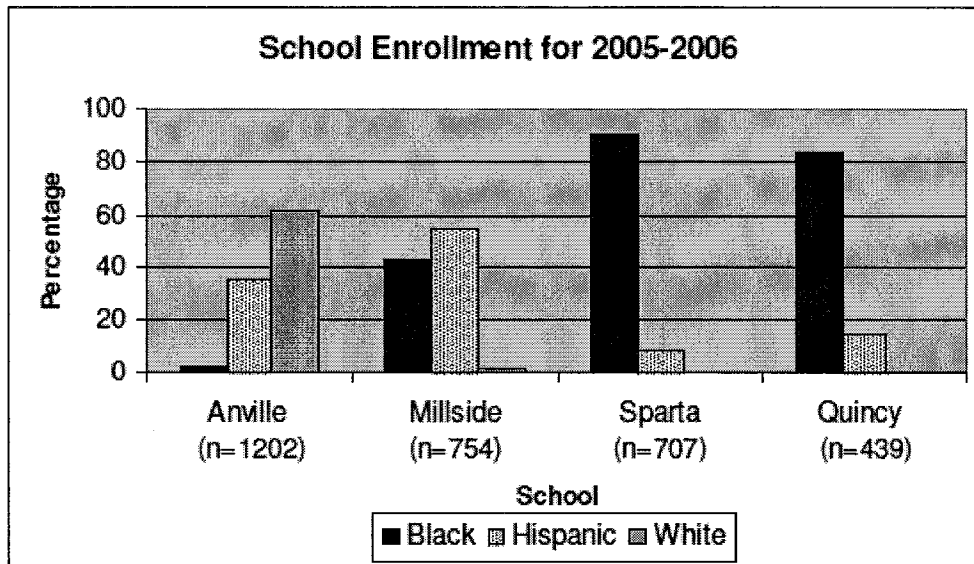
Level of Education	Population	%
Total Population	148,457	
Less than 12 th grade	48,545	32.7
12 th grade, no diploma	7,634	5.1
High school graduate (includes equivalency)	52,487	35.4
Some college, no degree	17,944	12.1
Associate's degree	6,950	4.7
Bachelor's degree	12,910	8.7
Graduate or Professional school degree	5,762	3.9

Source: US Department of Education, National Center for Education Statistics, 2005,
<http://nces.ed.gov/surveys/sdds/>

Table J.8 School Selection Criteria for Playground Renovation by Non-Profit Organization

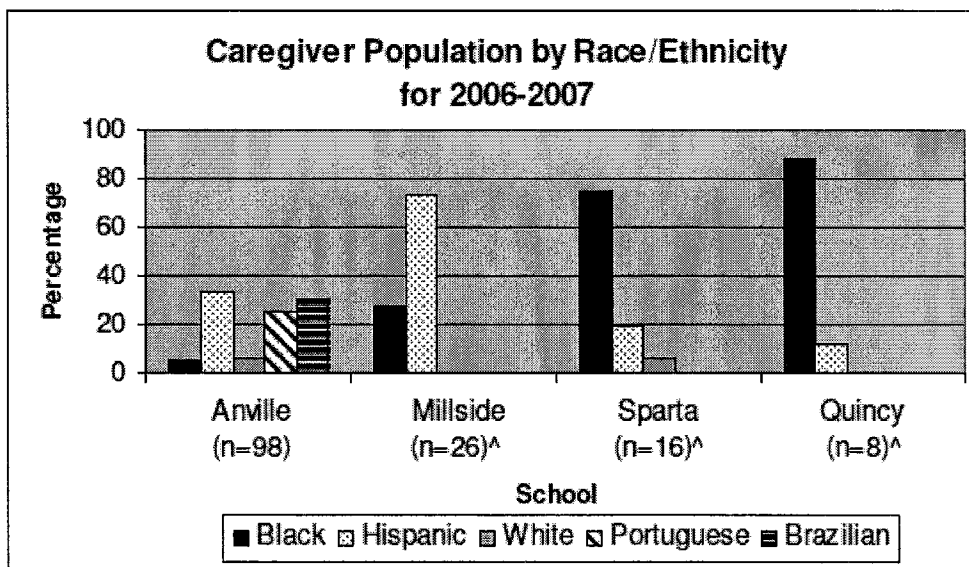
SELECTION CRITERIA FOR PLAYGROUND RENOVATION
<ul style="list-style-type: none"> • Demonstration of need, particularly considered are the following factors: neighborhood is low-to-moderate income large school population no neighborhood parks in vicinity
<ul style="list-style-type: none"> • Strong administrators, staff and community volunteers
<ul style="list-style-type: none"> • Active relationship with surrounding community
<ul style="list-style-type: none"> • Track record of taking excellent care of all existing facilities
<ul style="list-style-type: none"> • Commitment to public access to the new playground
<ul style="list-style-type: none"> • Adequate amount of Department of Education property that can be developed into a playground
<ul style="list-style-type: none"> • Regularly-scheduled youth programs that incorporate recreational and/or environmental activities
<ul style="list-style-type: none"> • Commitment to involving the students and community in the design process
<ul style="list-style-type: none"> • Commitment to and capacity for programming of the proposed playground and sharing of maintenance between the school and the community sponsor

Source: personal communication with program director



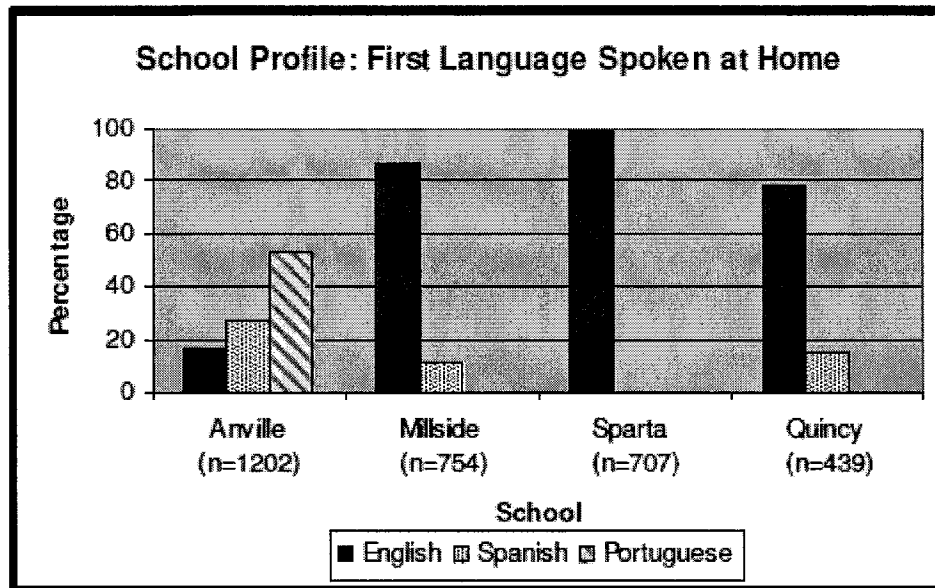
* The category "other" has been eliminated since it is less than or equal to 1.1% of the total for each school
 Source: New Jersey School Report Card 2005-2006

Figure J.1 Total school enrollment by race for the school year 2005-2006.



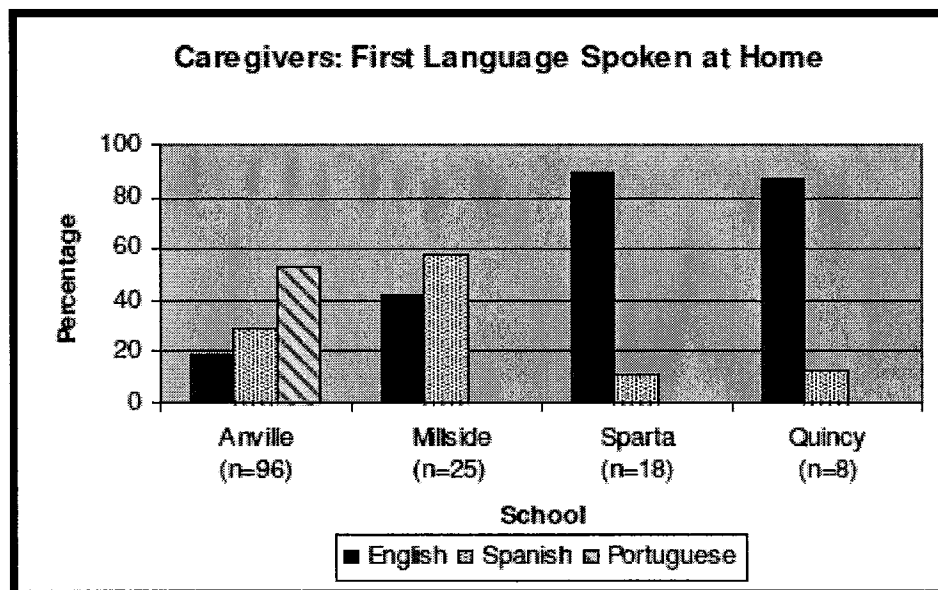
*The category "other" has been eliminated for Millside and Spenser since only 1 person chose this category.
 ^Missing data (NR) has been eliminated and the total percentage adjusted.
 The total caregiver population for schools missing data is: Millside, n=29; Sparta, n=18; Quincy, n=9.

Figure J.2 Comparison of caregiver population by school as measured by race/ethnicity for the school year 2006-2007.



* The category "other" has been eliminated since it is less than or equal to 6.4% of the total for each school
 Source: New Jersey School Report Card 2005-2006

Figure J.3 School profile for first language spoken at home for the school year 2005-2006.



*The categories "other" and "no response" (equal to 2 people or less per school) have been eliminated for Anville, Millside, and Quincy, and the total percentage adjusted. The total caregiver population for schools missing data is: Anville, n=98; Millside, n=29; Quincy, n=9.

Figure J.4 Cross-case comparison of caregiver population for first language spoken at home for the school year 2006-2007.

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