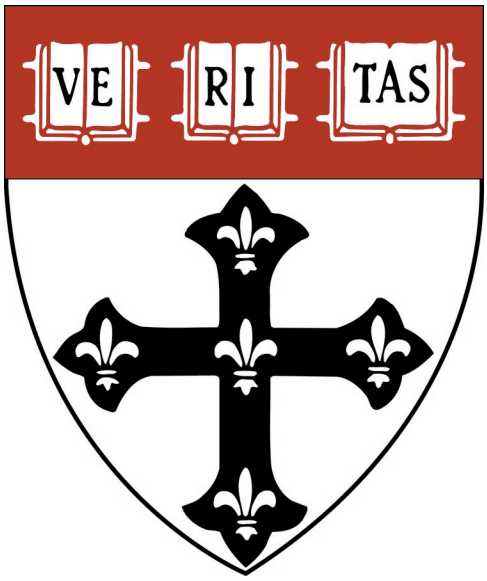

Play Across Boston: Summary Report

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Play Across Boston: Summary Report

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EXECUTIVE SUMMARY

In recognition of the benefits of youth physical activity, schools, community-based organizations, and municipal agencies in Boston have been working to improve opportunities for participation in after-school and summer sports and physical activity programs. However, there have been limited data for these groups to use in evaluating citywide resources and services and to understand and document the needs of the youth they seek to serve. ***Play Across Boston*** was created to address this missing link.

Play Across Boston is a project of the Harvard Prevention Research Center at the Harvard School of Public Health undertaken in collaboration with Northeastern University's Center for the Study of Sport in Society and a broad-based Community Advisory Board. The project has worked since 1999 to describe youth sports and physical activity resources in Boston. Because of limited documentation of the local challenges to physical activity and sport promotion, ***Play Across Boston*** integrated a comprehensive community-based assessment of physical activity resources for Boston youth along with baseline data concerning the presence and condition of publicly accessible parks, facilities and playgrounds. Instruments were developed and data collected for baseline censuses of programs (n=235) and recreational complexes (n=230).

Key findings:

- Boston girls participate in sports and physical activity programs at about half the rate of boys.
- The highest participation levels for girls were in basketball, swimming, tennis, soccer and dance.
- Boys top sports choices were baseball/t-ball, basketball, soccer, swimming and football.
- White youth occupy 32% of the participation opportunities in Boston but only represent 27% of the overall population. Black youth account for 37% of the Boston youth population, yet only occupy 30% of the participation opportunities. Hispanic youth make up 23% of the city's youth population, but only occupy 19% of opportunities.
- Playground quality varies across the city's neighborhoods.

- While Boston has a substantial sports and recreation infrastructure, there are disparities in the number of facilities among the city's neighborhoods. Roxbury and Combined Central Area, encompassing Beacon Hill/Back Bay, Central, Kenmore/Fenway and South End, have the highest numbers of facilities, while Roslindale and North Dorchester have the least. South Boston and Charlestown have the greatest number of facilities relative to their population of youth, while Roslindale and North Dorchester have the fewest facilities relative to their youth population.
- Parts of Boston are as well served with facilities/programs as middle and upper income suburbs.

Implications

The contribution of physical activity to public health has been well documented. Research has shown that improving physical activity levels reduces morbidity and mortality from chronic diseases and improves overall quality of life for all ages. Integrating physical activity into daily life is therefore crucial for all ages, and especially important for youth as evidence suggests that active children are likely to become active adults. Unfortunately, available data and recent policy changes paint a discouraging view of youth physical activity in Boston and the Commonwealth of Massachusetts. In 1996, state lawmakers terminated a requirement for minimum annual hours of physical education (PE) in schools. Prior to this, 80% of Massachusetts and 70% of Boston public high school students attended PE class once or more per week. By 1999, these rates had dropped to 53% and 54% respectively. A report from Sport in Society in 1997 indicated that youth residing in Boston had only one-third the opportunities for after-school physical activities offered in suburban communities. Nationally, youth in the United States are experiencing an epidemic of childhood overweight, and these trends are apparent in Boston youth as well. One recent study found that 20.4% of 4th grade students measured were overweight and an additional 23.6% were at risk for becoming overweight in Boston parochial schools. High school data obtained from the Youth Risk Behavior Surveillance System (YRBSS) via self-report indicate that in 1999 and 2001, 11.1% and 12.4% of youth were overweight, while an additional 16.5% and 17.0% were at risk for becoming overweight.

This report demonstrates a clear need for collective action to increase and sustain participation in youth sports and physical activities in Boston. ***Play Across Boston*** is collaborating with Boston's strong network of community, academic and municipal partners to ensure that interventions addressing these critical public health concerns remain central ***Play Across Boston*** data provide a solid base upon which to build action plans for the future, with the goals of improving community health and reducing observed disparities in access and participation.

INTRODUCTION

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METHODOLOGY

PROGRAM SURVEY METHODOLOGY

Over the period 2000-2001, *Play Across Boston* conducted a thorough, objective study of sports and physical activity programs available to youth during the period September 1999 through August 2000. We administered surveys to a census of 274 programs offering out-of-school time sports and physical activity opportunities for Boston's youth, including both not-for-profit and for-profit programs as well as public and non-public schools. We compiled program names from existing databases, such as the Boston Youth Sports Congress, City of Boston Department of Parks and Recreation, Boston Public Schools- middle and high schools (we did not include elementary schools as we were told they do not offer any after school sports programming), Boston Community Centers and other identifiable sources. Programs completed the program survey either by mail, over the phone, or by an in-person interview.

Program Survey Development

We designed the program survey based on input from Community Advisory Board members and Boston residents attending 14 community meetings organized by Sport in Society and the Boston Youth Sports Congress. All data about what programs offered, where the activities took place and the characteristics of the participants, i.e. their sex, age, race/ethnicity and where they live were obtained from the program survey.

Data were obtained from 235 programs out of 274 approached for an overall response rate of 86%. This includes a response rate of 90% for non-profit programs (n= 165), 71% for for-profit programs (n= 20), 92% for middle and high school Boston public schools (n=35) and 68% for non-public schools (n=15). We did not obtain data from private country clubs, stand alone summer camps or other private clubs.
Data for comparison communities were collected in a similar manner.

Analyses

Descriptive analyses were performed on the program census data. Estimates were adjusted to account for differences due to missing values. Instrument design precluded conducting certain analyses that involved multiple variables; for example, while we were able to examine participation by sex or race/ethnicity, we did not have detailed data by sex within race/ethnicity categories. In addition, census data for 18 year olds may be slightly higher due to the college population.

FACILITY SURVEY METHODOLOGY

During July 2000 and July 2001, PAB staff completed the facility survey at 230 recreational complexes including City of Boston parks, Boston Community Centers* and Metropolitan District Commission (MDC) parks, pools and rinks. We identified these publicly accessible sites using a database of 581 facilities including municipal (i.e., City of Boston Public Schools, Boston Community Centers, and Health Centers, MDC Pools and Rinks) and non-municipal facilities (i.e., Boys & Girls Clubs, colleges & universities,

private schools, churches), cross-referenced with recreational facilities identified in the City of Boston Parks and Recreation Open Space Database (1999), and additional recreational facilities identified through the program survey. We have also added to our database and facilities listings those playgrounds renovated through the Boston Schoolyard Initiative, a public/private partnership that has renovated many Boston Public School schoolyards since 1995.

Facility Survey Development
Using the City of Boston Parks Inspection Program Handbook[5], the Playing it Safe Safety Survey[6], and the playground safety checklist found in The Handbook for Public Playground Safety[7], we created an instrument to evaluate the amenities, recreational facilities, and playground (play lot) features including climbing structures, slides, and swings located at each site.

Playground Quality Score Assessment
We identified and assessed 154 public playgrounds present at 145 separate sites (several sites had more than one playground) including playgrounds maintained by the Boston Parks and Recreation Department, the MDC, and Boston Community Centers. Playgrounds that were inaccessible due to ongoing renovations at the time of survey and those located in locked areas inaccessible to the general public were not included. We also conducted additional analyses using several Schoolyard Initiative sites.

The playground quality instrument included 24 items assessing the climbing equipment, swings, sandboxes and spray pools, and the level of supervision of children in the play areas. The playground rater checked climbing equipment for appropriate safety fall zones (i.e., areas with safety surfacing extending six feet around equipment) and whether this zone was free of debris that could restrict play (e.g., lots of trash) or pose a health hazard (e.g., glass, food, or animal feces). We considered the safety surfacing to be "appropriate" if it was comprised of: (1) unitary surfacing material (a manufactured material such as rubber tiles, mats, or composite rubber material that is poured into place at the playground), (2) loose fill (e.g., sand, wood chips) averaging at least nine inches in depth, or (3) a combination of composite and loose fill material. We measured the depth of loose fill using a minimum of two measurements in the area surrounding the equipment. When measurements did not agree within one inch, an additional reading was used. The depth was reported as the average of the measurements. The height of climbers was measured at a corner post, from the ground level to the height of the highest platform on which children were intended to stand. Raters also assessed climbing equipment for rust, chipping paint, broken or missing parts, and cracks or holes. We defined entrapment hazards as areas such as openings in guardrails or between ladder rungs, where the internal diameter of the bounded space measured between 3.5 and nine inches. Snag hazards consisted of open "S" hooks (i.e., gap or space large enough to admit a dime), small gaps in the equipment, or protrusions or projections that increased in diameter from the plane of the initial surface.

Ratings for the swings in the playground included inspection for appropriate safety fall zones for swings (i.e., area had safety surfacing that extended, in back and in front, twice the height of the suspending bar), the presence of hard or rigid seating materials, sites with more than two swings per bay, and those that had tot swings and child swings in the same bay. Raters took measurements between swings within a bay, and between swings and the supports at a height of 60 inches from the ground.

Raters also looked for features of the playground that allowed for improved supervision of children using the equipment: (1) whether adults were present when children (i.e., youth who appeared to be 12 years of age or younger) were using the equipment, (2) whether children could be viewed at all times when on the climbing equipment (e.g., no solid rails), and, (3) whether children could be viewed in the crawl spaces beneath the equipment. Raters additionally determined whether sandboxes and spray pools/sprinklers were free of hazards that could harm children (e.g., glass) or restrict their use (e.g., low or no water pressure, excessive debris).

Data for comparison communities were collected in a similar manner.

Playground Quality Analysis
We calculated the playground quality score to be the proportion of the items assessed that were in accordance with the standards and definitions used for rating. Thus, a score of 60 should be interpreted as 60% of the items rated at the site were in compliance with the playground standards used for this assessment. Sites with more than one playground were averaged to provide a score for the given site.

Neighborhood Definitions
For neighborhood analyses and maps, we used Boston Redevelopment Authority (BRA) boundary definitions except where we have defined the Combined Central Area to include Beacon Hill/Back Bay, Central, Kenmore/Fenway, and the South End. These neighborhoods were combined because of small numbers of youth and to be consistent with our program census results.

SOURCES OF ERROR IN ESTIMATES
Because data collected in ***Play Across Boston*** consist of censuses of programs and facilities, and high response rates were achieved, error in estimates due to sampling variability is not a significant factor **. For the facility survey, all parks and facilities that were in the sampling frame were visited. For the program survey, the overall response rate as noted above was 86%.

There are other potentially important sources of errors in estimates. For the program surveys, appropriate individuals associated with programs were required to estimate the number of youth participants, characteristics of participants, and program attributes. Although estimates from program staff are a potential source of error, we have limited data to use in confirming their accuracy.

One important validation source has been members of our community advisory board who reviewed estimates for different sports and programs to make sure they fit with their knowledge of programs. It is also important to note that overall estimates of youth participation (e.g. for the city as a whole or for a neighborhood) are based upon estimates derived from reports from all programs, and not simply one or two programs.

Another potential source of systematic error in estimates is differential missing data on survey items (e.g. different amounts of missing data for sex, age, neighborhood, or ethnicity of youth participants). We have estimated the total number of youth participants based on program data that were available by neighborhoods. We assumed a similar total of programs with completed data for other tabulations by sex, age, and race/ethnicity.

We have only limited information on the reliability and validity of our estimates of youth participation in physical activities, or of facility characteristics. However, one other important source of data on youth physical activity is the Youth Risk Behavior Survey, funded by the CDC. Recent results from the 2001 Massachusetts Department of Education[8] include data for the following question: During the past 12 months, on how many sports teams did you play? (Include any teams run by your school or community groups.). Response choices included: A. 0 teams B. 1 team C. 2 teams D. 3 or more teams. Results for Massachusetts high school students on this question indicated that 54% of respondents reported being on a sports team in the past year, including 23% on 1 team, 15% on 2 and 16% on 3 or more teams. These data indicate that, for every 100 respondents, 54 of them in fact took part in a total of 101 (23 + 15*2 + 16*3) "sports participation opportunities." To convert the ratio of these "sports participation opportunities" per 100 youth (101/100 youth) into an overall youth participation rate (i.e. the 54% of respondents who reported being on a sports team), we need to multiply this ratio of 101/100 by the fraction 54/101 or 0.53.

The ***Play Across Boston*** data indicate that, for the 15-18 year old group (similar to the YRBSS sample of high school youth), there were 26,800 participants during the year, and 28,977 youth were counted in the 2000 U.S. Census in this age group. Thus, the total number of sports participation opportunities per 100 youth is 92 per 100. If we assume that youth in Boston have the same distribution of multiple sports as do students in Massachusetts, we can estimate the rate of youth ages 15-18 in high school in Boston

who participate in any sports team over the course of a year at about 0.92*0.53 = 49%. The actual estimate for Boston youth from the CDC YRBSS survey in 2001 was 45%. Given that the YRBSS data come only come from youth in public high schools in Boston, while the ***Play Across Boston*** estimates apply to all youth in the city, the similarity of these estimates (49% and 45%) provides a reassuring check on their validity. We assessed inter-rater and test-retest reliability of the playground quality scale. All raters simultaneously coded a sub-sample of five sites to examine inter-rater reliability. The raters agreed on 75% of the 25 items used to create the playground safety scale. In addition, assessments at seven sites were repeated at a 4-month interval. There was agreement on 82% of the items.

Data sources:
Data sources used in ***Play Across Boston*** analyses include the ***Play Across Boston*** program survey, facility survey and the U.S. Census 2000.

**Boston Community Centers include community centers housed within Boston Public Schools and free standing community centers*

***In typical random population sample surveys, only a small fraction (e.g.0.1%) of the population is sampled. This means that different samples will produce different results, and thus the sampling itself is a source of random variability in estimates. Census data, however, is not subject to this source of variability.*

DEFINITIONS:

Activity: An organized sport specific activity offered at a program site (e.g. basketball team, dance classes, etc.).

Complex: A site with one or more sport or activity specific facilities (e.g. Fallon Field, Franklin Field).

Estimated Number of Participants: An estimate of total participants calculated using the midpoints from survey responses offering ranges of participants in each activity. Individuals participating in more than one activity would be counted more than once.

Facility: A single sport or activity-specific resource (e.g. basketball court, pool).

Playground Quality Score: The proportion of items assessed using the playground quality index that were in accordance with the standards and definitions used for rating (e.g. 60 would indicate that 60% of the items rated were in accordance with the standards used).

Program: An established organization offering physical activity or sports opportunities for youth (activities). (Includes private and public non profits, for profits, and schools).

Youth: Youth between ages of 5 and 18 years.

Youth participation days (YPDs): A measure of the duration of youth participation in physical activity at programs. This measure is compiled by multiplying the estimated number of participants per activity by the number of days per week the activity meets by the number of total weeks the activity lasts.

RESULTS

How many youth participate in sports and physical activity programs in Boston?

Boston is home to a large and diverse youth population. Of the 95,251 inhabitants counted in the U.S. Census in 2000 between the ages of 5 and 18, 49% are female and 51% are male. Boston is ethnically and racially diverse. More than one third of youth are Black (37%), slightly more than one-fourth are White (27%), over one fifth are Hispanic (23%), while Asian youth and youth from other racial/ethnic groups each comprise 7%. Neighborhood distribution is varied; the neighborhoods with the largest number of youth are Roxbury (14,801) and South Dorchester (14,367). Neighborhoods with the least number of youth include Charlestown (2,096) and West Roxbury (3,970). See Chart 1 for neighborhood U.S. Census youth population totals and estimated youth participants in physical activity programs.

The ***Play Across Boston*** census of sports and physical activity programs indicates that 54,500 non-unique youth (ages 5-18) participated in school year physical activities in Boston in the year 1999-2000 during the after school hours. In addition, there were an estimated 42,400 participants in summer programs, for a total of 96,900 participants over the course of the 1999-2000 year. Substantial numbers of youth participated from both sexes, all age groups, race/ethnic groups and neighborhoods.

Youth Participation by Neighborhood

Chart 1 shows the number of youth that participated by neighborhood and the number of youth living in that neighborhood, as recorded by the census. Many youth participated from all neighborhoods across Boston. However, certain neighborhoods have higher youth participation levels than others; this is most evident when comparing the percent total of the estimated participants with the percent total of the census population made up by each neighborhood.

As seen in Chart 1, Allston-Brighton, for example, contributes 3,200 participants to the total estimated number of participants, which accounts for 3%. The total youth population living in Allston-Brighton, however, is 5,509, approximately 6% of the total Boston population. The ratio of participants to population indicates that Allston-Brighton youth participate at a lower level than youth from other neighborhoods. Additional neighborhoods where the proportion of youth participants is lower than the proportion of youth population include Roxbury, South Dorchester, Mattapan, and Hyde Park. Conversely, in other neighborhoods including East Boston, South Boston, Jamaica Plain, North Dorchester, Roslindale, West Roxbury and Charlestown ratios of participants to population are greater than one.

Youth Participation by Sex

The total estimated number of participants by sex is illustrated in Chart 2. There are twice as many male participants as female participants: 64,800 males and 32,100 females. Putting the participation levels into perspective by taking into consideration the size of the population, we see that females occupy only 33% of total participation opportunities whereas they account for 49% of Boston's youth population. Conversely, males occupy 67% of total participation opportunities and account for 51% of the youth population. Boston females thus participate in sports and physical activity programs at about half the rate of boys; this trend, as seen in Chart 3, also exists when examined separately during the school year and summer.

Another important aspect of participation by sex is comparing the sports and activities that males and females play, presented in Charts 4 and 5. The five highest-ranked sports for females on the basis of participation numbers are: 1) basketball 2) swimming 3) tennis 4) soccer 5) dance. For males, the top ranked sports are 1) baseball/t-ball 2) basketball 3) soccer 4) swimming 5) football. The fourth ranking male sport, swimming, attracted more participants than the top ranking female sport, basketball. The highest-ranked male sports each attract far more participants than the highest-ranked female sports.

Youth Participation by Age Group

Boston's youth population is fairly evenly distributed across surveyed age groups. Chart 6 shows estimated numbers of youth participants by age group. The percentage distribution of census data indicates that 13% of youth are age 5 - 6, 29% age 7 - 10, 27 % age 11-14 and 30% are within the 15 – 18 age group. The percent of total participants from each age group loosely follows this same pattern with 12% of participants age 5 - 6, 28% age 7 - 10, 33% age 11 - 14 and 27% age 15 - 18.

Youth Participation by Race/Ethnic Group

Substantial numbers of youth participated from the various racial/ethnic groups within Boston as well. Shown in Chart 7, the largest numbers of participants are White youth (31,300), followed by Black (29,200), Hispanic (18,300) and Asian (6,900). Chart 8 shows that White youth account for 32% of all participants and 27% of the total youth population in Boston. This difference between the two proportions indicates that White youth are over-represented among participants. Disparities in participation levels are found within both the Black and Hispanic youth groups. Black youth comprise 30% of participants but account for 37% of the population, while Hispanic youth make up 19% of participants and account for 23% of the population. The equal percentages for Asian youth indicate even participation.

Duration of Boston Youth Sports And Physical Activity Programs

Youth participation in sports and physical activity programs varies in terms of the length of programs. Most programs during the school year, for example, last less than two months, while most during the summer last less than one month. To gain a better understanding of how long and how often youth are participating in sports and physical activity, we created a measure entitled 'youth participation days' (YPD). Youth participation days were calculated by multiplying the estimated number of youth participants by the number of weeks the activity meets by the number of days per week it meets.

Charts 9 and 10 present the percentage of school year (Chart 9) and summer (Chart 10) physical activity programs according to the range of days they provide activities. The majority of non-profit programs last 8 to 30 or 31 to 60 days during both the school year and the summer. For-profit programs during the school year are fairly well distributed, while during the summer the majority last between 8 to 30 days. Nearly three-quarters of public school activities run between 31 to 60 days and half of non-public school based activities run the same length of time.

As shown in Chart 11, a total of 2,736,300 youth participation days were calculated for the 1999-2000 school year and an additional 705,000 during summer 2000. This results in an average of 50 youth participation days per youth participants during the school year and an average of 17 youth participation days per youth during the summer, which indicates that the youth participating in organized physical activity programs are doing so at an average of 5 days per month during the school year and 7 days per month during the summer.

Seasonal Differences in Duration of Organized Physical Activity

Analyses show small fluctuations in the distribution of youth participation days across the year, as presented in Chart 12. The average number of total youth participation days per month is 286,800, reflecting the 5 youth participant days per month during the school year and 7 per month in the summer.

Neighborhood Differences in Duration of Organized Physical Activity

Youth from Roxbury contribute the highest number of youth participation days compared to all other neighborhoods (541,100) whereas youth from Allston-Brighton contribute the least number of youth participation days (78,500). As shown in Chart 13, youth from Mattapan had the highest number of average youth participation days during the school year at 8 per month. Youth living in Allston-Brighton, Jamaica Plain, South Boston and West Roxbury had the lowest average participation days per month during the school year, at 4 and 3. Summer rates are similar to the school year, with a couple of notable exceptions: average rates for youth from South Boston and West Roxbury increase by 3 days per month and rates for East Boston fall by 3 days.

Sex Differences in Duration of Organized Physical Activity

Although there are more males participating overall, the females that are participating are involved in sports/physical activities that meet more frequently. When sex differences in participation were examined through estimating youth participation days, we found a total of 1,423,100 days contributed by females and 2,018,200 days contributed by males during the 1999-2000 school year and summer 2000. These averaged 45 total days per participant for males and 59 for females during the school year, and 14 days for males and 22 for females during the summer. These numbers (Chart 14) indicate that females participate in sports/physical activity programs on average 6 days per month during the school year and 9 days per month during the summer, while males participate 5 days per month during the school year and 6 days per month during the summer.

Age Group Differences in Duration of Organized Physical Activity

A similar analysis of differences in duration of participation by age group (Chart 15) shows that the 15 - 18 year old age group contributes the most youth participation days during the school year (1,028,100) and second highest during the summer (197,300). The age group 11 – 14 contributes 855,500 youth participation days during the school year and contributes the most days of any age group during the summer (233,500). The 7 - 10 year old age group contributes 598,200 youth participation days during the school year and 186,800 days during the summer. The youngest age group, ages 5 – 6, accounts for 254,500 school year youth participation days and 87,400 days during the summer.

Racial/Ethnic Group Differences in Duration of Organized Physical Activity

Although White youth account for a higher percentage of participants than all other groups, they participate in sports/activities with lower duration. Looking at youth participation days by racial/ethnic group, we find that Black youth contribute the most with a total of 1,209,725 youth participation days. They are followed by White, Hispanic and Asian youth respectively (938,400, 663,300, and 238,300). Black youth have the highest average participation days for school year sports at 6 days per month (Chart 16) followed by Asian and Hispanic youth at 5 days per month. White youth participate least frequently during the school year at 4 days per month. Summer data show that Black, Hispanic and Asian youth all participate on average 7 days per month while White youth participate 6 days per month.

Differences in Participation by Program Type

Lastly, it is important to look at the distribution of participants and youth participation days by program type. Surveyed programs included non-profit, for-profit, public and non-public schools. As seen in Chart 17, non-profit programs serve the majority of estimated participants (87%) and account for most youth participation days (79%). For-profit programs serve one of the lowest proportions of estimated participants (3%) and account for the fewest youth participation days (4%). Public schools serve 8% of the estimated youth participants and account for 12% of the youth participation days. Within the estimated youth participants served by public schools, 32% are served by middle schools and 68% by high schools. The youth participation days contributed by public schools are 23% for middle schools and 77% for high schools. Boston public elementary schools do not offer after-school sports programming. Non-public schools serve 3% of estimated youth participants and account for 5% of youth participation days.

Discussion of Program Findings

It is apparent that disparities in sports/physical activity participation exist among sex, race/ethnic and neighborhood groups. In terms of overall estimated numbers of participants, females participate less than males. Black and Hispanic youth participate less than White and Asian youth. Youth from Allston-Brighton, Roxbury, South Dorchester, Mattapan, and Hyde Park participate less than their counterparts from other neighborhoods. ***Play Across Boston*** findings on sex and race/ethnic disparities are consistent with distributions of participation levels estimated through the YRBSS[1]. Further analyses can examine how program characteristics and differences in program type influence variations in participation and duration according to sex, age, neighborhood, and racial/ethnic group.

Goals relating to adolescent physical activity within the Surgeon General's Healthy People Initiative 2010 include increasing the proportion of adolescents who engage in moderate physical activity for at least 30 minutes on 5 or more of the previous 7 days and increasing the proportion of adolescents who engage in vigorous physical activity that promotes cardiorespiratory fitness 3 or more days per week for 20 or more minutes per occasion[1]. Findings from the ***Play Across Boston*** baseline program census estimate that on average, Boston youth are participating in organized sports/physical activity programs 5 days per month during the school year and 7 days per month during the summer. YRBSS data indicate that approximately 45% of Boston public high school youth reported playing on at least one sports team during both 1999 and 2001 (1999: 44.1 %and 2001: 45.2%)[2]. The 2001 Boston Youth Survey findings are similar to these results; 47% of teens surveyed played organized team sports.[9] However, YRBSS data from both years also show that nearly 50% of youth in Boston did not exercise at the recommended levels over the seven days prior to survey administration[2]. Although ***Play Across Boston*** data do not reveal what proportion of total activity is accounted for by organized youth physical activity, Boston youth clearly need to be more active, and increasing organized opportunities is likely to help in this regard.

One strategy is to promote open recreation or open gym at community centers, Boys and Girls Clubs and YMCAs. These activities are supervised, allow for large numbers of youth to try different sports, foster skill development and tend to be less competitive than league sports. Open recreation provides an alternative opportunity for non-athletes interested in having fun and being active. If children are provided with an opportunity to learn and practice sports and physical activity associated skills, they will be more likely to have improved capabilities and confidence levels that will help them to participate later in more competitive sports environments.

Other strategies to increase sports and physical activity opportunities are to increase the number of days of participation and to include nights and weekends. Particular focus should be placed on sectors that serve the highest numbers of youth. As non-profit programs serve the majority of youth (87%) and contribute the most youth participation days (79%), interventions targeted to the non-profit sector would likely impact the highest number of youth. Public school-based programs could also play an important role in increasing program participation and duration. A focus on improving opportunities for middle and later elementary school age children could improve both current and future participation levels. However, the role of for-profit organizations should also be further investigated due to their slightly lower response rate in our study.

What Facility Resources are Available to Boston Youth?

Sports and Athletic Facilities

Boston is home to a wide array of parks and recreational facilities. The ***Play Across Boston*** Facility Survey tallied the ball fields, courts, pools, tracks, and many other types of recreational resources at over 200 parks, playgrounds, and community centers (Appendix A). For a comparison of available indicators across neighborhoods, please see Appendix B. Chart 18 shows the variation in the total number of all types of sport and recreational facilities across neighborhoods in Boston. Roxbury and the Combined Central Area house the greatest total number of sport and recreational resources with 126 and 94 facilities, respectively, followed by the South Dorchester neighborhood with 91 facilities. The North Dorchester and Roslindale neighborhoods house the fewest total recreational facilities with 17 and 27 respectively.

To look more explicitly at how resources are distributed according to potential demand across neighborhoods (Chart 19), we divided the total number of youth in each neighborhood by the total number of recreational resource. The areas with the highest youth to facility ratios, indicating that each facility must be shared by a relatively large number of neighborhood youth, are the Mattapan, Roslindale, and North Dorchester neighbor-

hoods where 175, 230 and 347 youth must share each facility, respectively. The smallest average numbers of youth per facility are found in the Charlestown, South Boston, and Allston-Brighton neighborhoods with 48, 62 and 83 youth per facility.

Chart 20 represents Boston's neighborhoods according to tertiles of the ratio of youth per facility. Neighborhoods where relatively more youth share each facility are shaded darkest, while those with more favorable youth to facility ratios are shown in lighter shades.

A preliminary examination of participation days taking place at parks and facilities throughout Boston clearly indicates substantial variation of use (data not shown). These data, coupled with information concerning the size of these complexes and numbers of sport- or activity-specific facilities at each location, will be useful in characterizing how these facilities are used. Indicators of over- and under-used facilities will be identified later with municipal officials.

Playgrounds and Tot Lots

The facility survey also included an assessment of the playground equipment located at complexes in Boston. These complexes included sites owned and operated by the City of Boston (Boston Community Centers and Parks and Recreation sites) as well as those owned and maintained by the MDC. We calculated the 'Playground Quality Score' using 24 items that evaluated playground climbing structures, slides, swings and other equipment located at each site.

Overall, the majority of playgrounds had the required six foot fall zones surrounding the climbing equipment (69%), were free of uncovered footings or other trip hazards (79%), and free of cracks or holes in the equipment (80%). However, frequent problem areas included inadequate safety surfacing, debris in the play area, and excessive height of climbing equipment. Only one third (34%) of the climbing equipment had loose fill of sufficient depth, slightly over half of the sites (52%) were free of debris that could harm a child, and just 50% of climbing equipment was of appropriate height. The safety surfacing was also inadequate in the swing areas. Only 31% of the swings surveyed had safety surfacing that extended, in front and in back, twice the height of the suspending bar and just 38% of sites had solid composite safety surfacing or sand or wood chips averaging nine inches. However, 99% of the swings were made of non-rigid materials thus decreasing the potential for injury from accidental impact. The majority of swing areas separated the tot swings from the child swings (82%). Spray

pools were in working order and sand boxes were free of hazards in roughly half the sites that had this type of equipment. However, adults were present when children were seen on the play equipment 95% of the time.

Chart 21 depicts neighborhoods ranked according to their average playground quality score. North Dorchester, Roxbury, Mattapan and Roslindale had the lowest playground quality where on average fewer than 55%of the items rated met our standards and definitions for playground quality. The Combined Central Area and the West Roxbury neighborhoods ranked highest in overall playground quality, where approximately 75% of the items rated met our standards for a quality playground.

Chart 22 depicts a map of the neighborhoods of Boston according to tertiles of playground quality scores. Those areas with the darkest shading are neighborhoods with relatively higher mean playground quality scores, while those with the lightest shading are areas where playground quality was lower, on average.

How does Boston compare with other communities?

To better assess Boston's baseline sport/physical activity program and facility data, similar surveys were distributed to three randomly selected income-stratified outlying communities, all located within the Route 128 loop; including a low income, medium income and high income community. We used 1990 United States Census median household income as the stratifying variable in deriving tertiles of communities (2000 U.S. Census data were not yet available). The response rates for programs in the comparison communities were: low income 75%, medium income 79%, high income 85%. The median income of Boston residents was lower than that of the low income outlying community.

Chart 23 details the estimated number of school year and summer sport/physical activity participants and youth census population by community. The outlying comparison communities are obviously much smaller. The total

estimated number of participants in Boston is 96,900 (including both school year and summer), 8,300 in the low income community, 10,500 in the medium income community, and 8,600 in the high income community.

To assess differences in participation among the different communities, we looked at the number of estimated participants per 100 youth aged 5-18 by community (Chart 24). When compared to the outlying communities, Boston has the lowest number of school year participants per 100 youth at 57, while the high income community has the highest number of participants at 168 per 100 youth.

Participation by Sex for Comparison Communities

Lower participation rates by females during the school year are found for Boston and all of the outlying comparison communities as seen in Chart 25. In the summer, however, the observed differences are much smaller among the comparison communities while the difference between male and female participation in Boston remains nearly the same. In the case of the middle and high income communities, for example, the summer sports program participation ratios are roughly equal. As noted previously, these estimates do not include private clubs and camps, and thus are likely less accurate for the suburban areas in the summer.

Facility Findings for Comparison Communities

We have also calculated the average number of youth per facility in the comparison communities and contrasted this with Boston overall (Chart 26). The low income outlying comparison community has the largest number of youth for each recreational facility with 137 youth per facility, followed by Boston with 118 youth per facility. The medium and high income suburban comparison communities have more favorable ratios where just 63 and 64 youth share each facility, respectively.

Playground Quality for Comparison Communities

Chart 27 depicts the average playground quality score in Boston and the three comparison communities. On average, 62.2 percent of the items rated in Boston playgrounds were in compliance with the standards and definitions used to define playground quality. In the low-income comparison community the quality score was 67.0, while in the medium- and high-income communities the quality scores were 72.5 and 71.9.

Discussions of Outlying Community Data

The overall figures of participants per 100 youth aged 5 – 18 seem to indicate that the earlier Sport in Society study was on the mark: the ratio for Boston (57 per 100) is about one third of the ratio for the high-income suburban community (166 per 100). In addition, CDC data from Boston high school students indicate that 44% of Boston students played on a sports team in 1999, versus 56% for the students overall in Massachusetts. Furthermore, it appears that the number of school year participants per 100 increases as income goes up. Ratios of summer participants per 100 do not follow a similar trend. Youth living in these outlying communities may have more access to private clubs and summer camps than some of their Boston counterparts.

Facility-specific results comparing Boston neighborhoods to the outlying comparison communities indicate there is much to learn from areas of Boston that have been more successful in developing programming for sports and physical activity for youth. Findings also provide direction for focus on future development efforts.

LIMITATIONS

There are limitations to any study that relies on data collected by individuals. One of the limitations of this study is the potential effect of differential response rates by program type, as detailed in the methodology section. The highest response rate (92%) was for Boston public middle and high school programs and the lowest response rate (68%) was for non public schools. Differential non-response across neighborhoods could have biased estimates as well, albeit slightly. For example, we estimated that programs in Allston-Brighton served several hundred more individuals than shown due to program non-respondents, but adding these numbers in hypothetically did not change the results substantially. Furthermore, we relied on programs to report the neighborhood from which their participants came. Thus, these perceptions of participants' neighborhood are somewhat inexact. Also, due to our program data collection method, self-reports were not validated using objective measures or outside observers.

Additional limitations to the ***Play Across Boston*** findings are directly related to measures of youth participation. The 'youth participation day' measure is calculated using three variables (duration, frequency and participation numbers), variability in any of these three variables contributes to the total estimate. Furthermore, the estimated number of youth participants is in part the result of individual youths that participate in more than one program. With our program data, we cannot identify the number of unique individuals participating. However, as discussed in the methodology section, data on youth participation in multiple sports is available for Massachusetts' public high school students. When we examine ***Play Across Boston*** data taking this information into account, results from ***Play Across Boston*** are consistent with other survey results. The research team hopes to gain further data on the number of sports each youth typically plays over each season through our youth survey, currently underway.

The program survey race/ethnicity categories were different than those of the 2000 U.S. Census. Participants in our 'other race/ethnicity' group may have been categorized differently by the census, which could have lead to modest undercounting in some of the non-White classifications of participants.

Facilities are constantly undergoing maintenance and renovation, and new facilities are being constructed. In this sense our facility data are already outdated. For example, The Schoolyard Initiative, a public/private partnership in the City of Boston, has been working to renovate public schoolyards in Boston since 1995. By 2004, the project expects to complete renovations to 64 schoolyards In tallying the facilities, we have included the renovations to the playgrounds where documented. Additionally, we have completed some preliminary analyses to address the potential impact of the project. These findings suggest sizeable improvements in access to quality playgrounds in the City of Boston. Furthermore, our sampling frame did not include sports or recreation facilities located in private facilities (for example a dance or martial arts studio) or at public schools that were not part of the Schoolyard Initiative or those that did not also host a Boston Community Center. Data from the program, facility and ongoing youth surveys will help further our understanding of how facilities are used, and potentially, how they may be used to maximal benefit.

CONCLUSIONS

Boston is home to a wealth of programs and facilities that provide opportunities for youth sports and physical activity. However, this report also demonstrates substantial disparities and gaps and a clear need for collective action to increase and sustain participation among youth. ***Play Across Boston*** is collaborating with Boston's strong network of community, academic and municipal partners to ensure that efforts addressing these critical public health concerns remain central. Indeed, as we work to change the face of urban youth sports in Boston, ***Play Across Boston*** data provide a solid base upon which to build action plans for the future, with the goals of improving community health and reducing observed disparities in access and participation.

Close collaboration with community residents, organizations and institutions will be key to the success of efforts to reduce disparities in participation levels and facility distribution. Youth, their families and communities have the best understanding of the real-life barriers to (and opportunities for) physical activity.

Boston's strong community of sports and physical activity advocates can utilize ***Play Across Boston*** data in a variety of different ways to work towards reducing observed disparities and encouraging higher participation in physical activity from all youth. ***Play Across Boston*** findings identify numerous targets for potential new efforts - such as program and capital expenditures - to improve youth participation in physical activity and sports in Boston. Findings also provide the opportunity to document improvements over time through monitoring participation and resources.

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CHARTS

Chart 1: Total Estimated Sports and Physical Activity Program Participants and Census Population by Neighborhood 1999-2000

Neighborhood	Estimated Participants		Census Population		Ratio of Participants to Population
	n	%	n	%	
Allston-Brighton	3,200	3	5,509	6	0.58
Mattapan	6,100	6	9,806	10	0.62
South Dorchester	9,600	10	14,367	15	0.67
Hyde Park	5,200	5	6,398	7	0.81
Roxbury	12,100	12	14,801	16	0.82
Combined Central [1]	9,800	10	9,712	10	1.01
Roslindale	6,800	7	6,213	7	1.09
North Dorchester	8,000	8	5,893	6	1.36
West Roxbury	5,500	6	3,970	4	1.39
East Boston	10,000	10	6,821	7	1.47
Jamaica Plain	8,600	9	5,481	6	1.57
South Boston	7,900	8	4,184	4	1.89
Charlestown	4,100	4	2,096	2	1.96
Total	**96,700**	**100**	**95,251**	**100**	**1.02**

[1] Combined Central Area includes Beacon Hill/ Back Bay, Central, Kenmore/Fenway and South End.

Chart 2: Total Number of Boston Participants by Sex versus Census Population 1999-2000

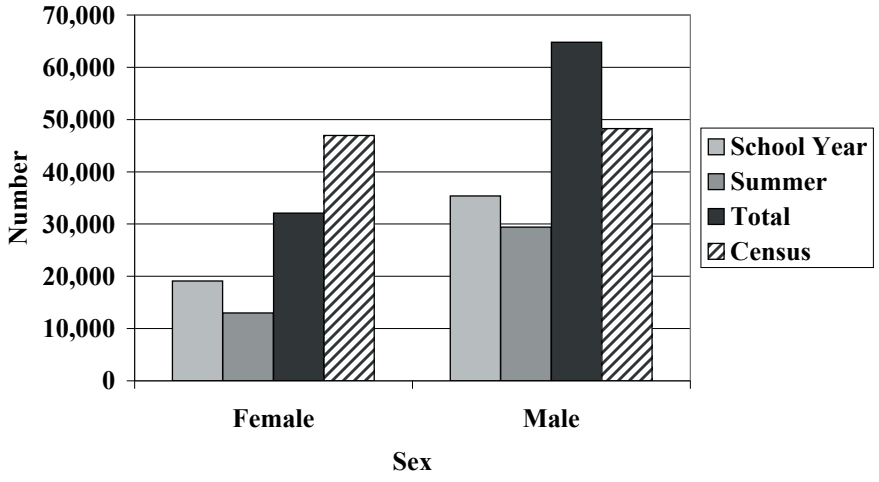


Chart 3: Participation versus Census Populations in Percent by Sex: School Year & Summer 1999-2000

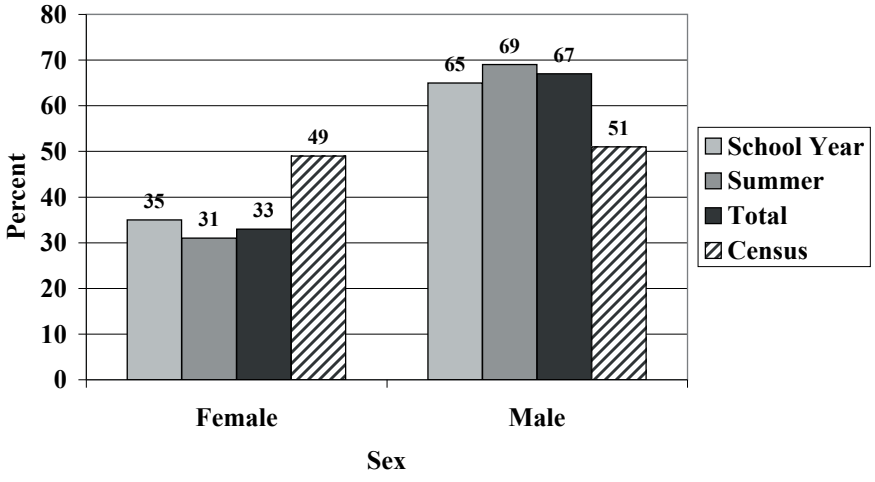


Chart 4: Highest Ranked Sports/Activities for Female Participants by Estimated Number of Participants 1999-2000

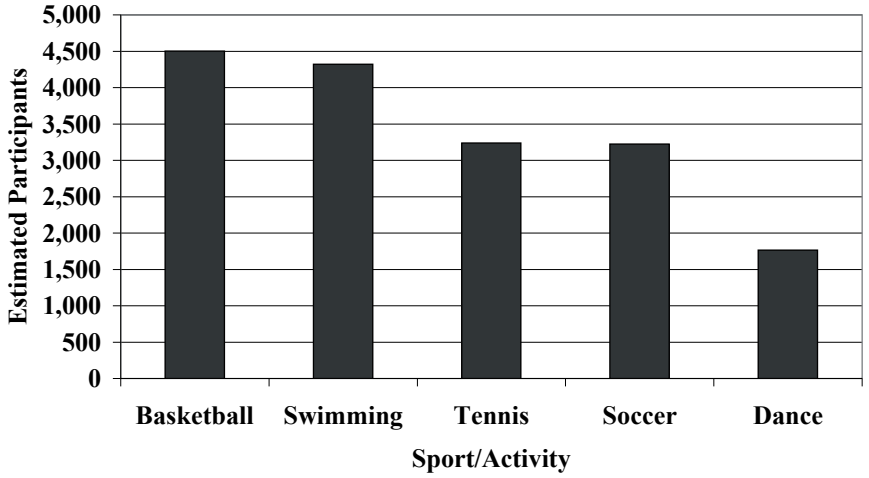


Chart 5: Highest Ranked Sports/Activities for Males by Number of Estimated Participants 1999-2000

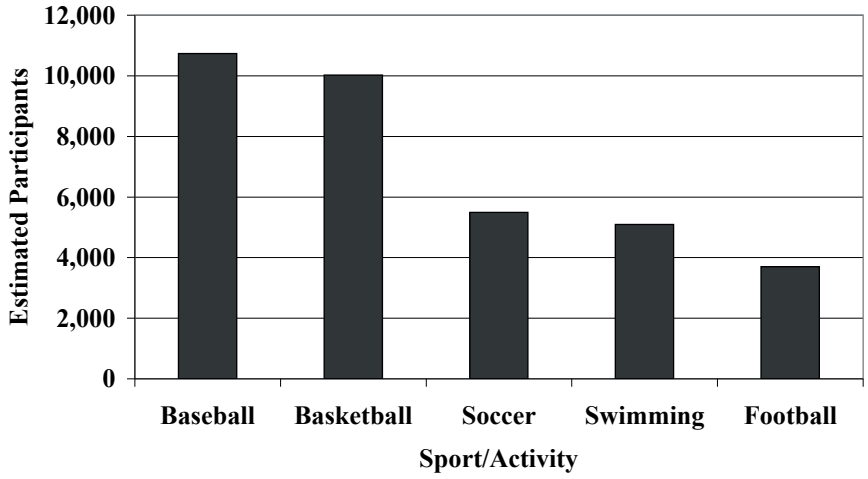


Chart 6: Total Estimated Number of Boston Participants by Age Group Compared to Census Population 1999-2000

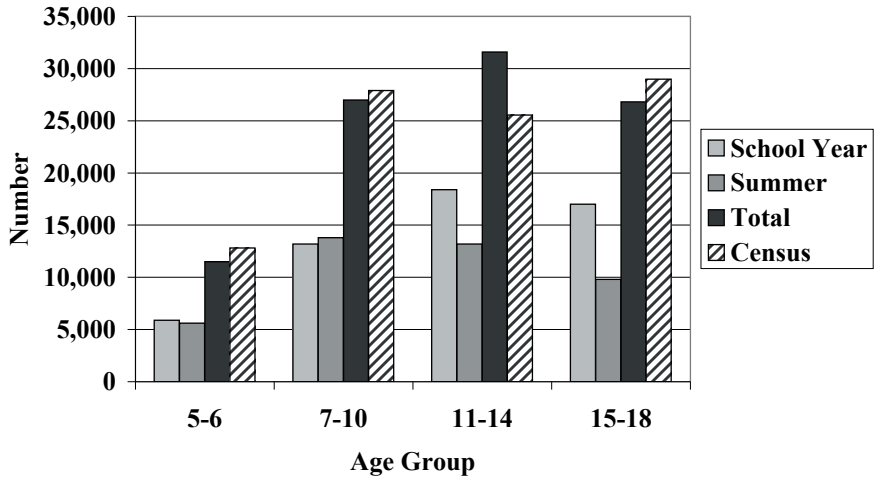


Chart 7: Total Estimated Participants in School Year and Summer Sports and Physical Activity Programs by Race/Ethnic Group 1999-2000

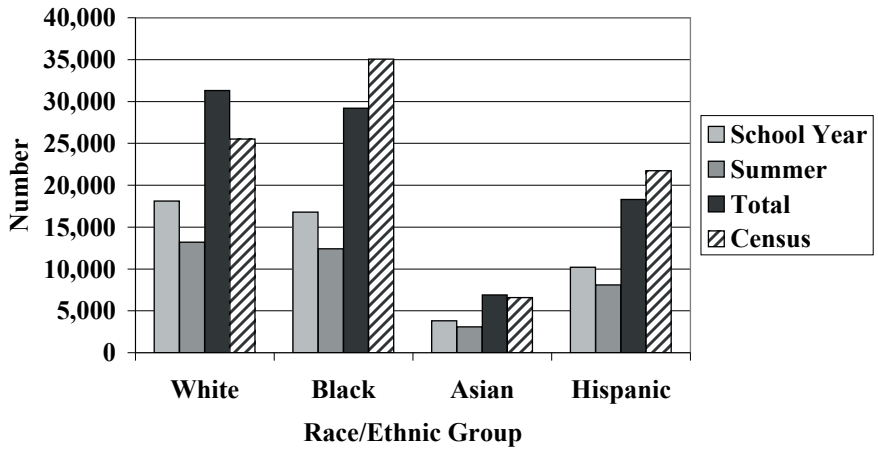


Chart 8: Participant versus Population Distribution of Estimated Participants by Race/Ethnic Group 1999-2000

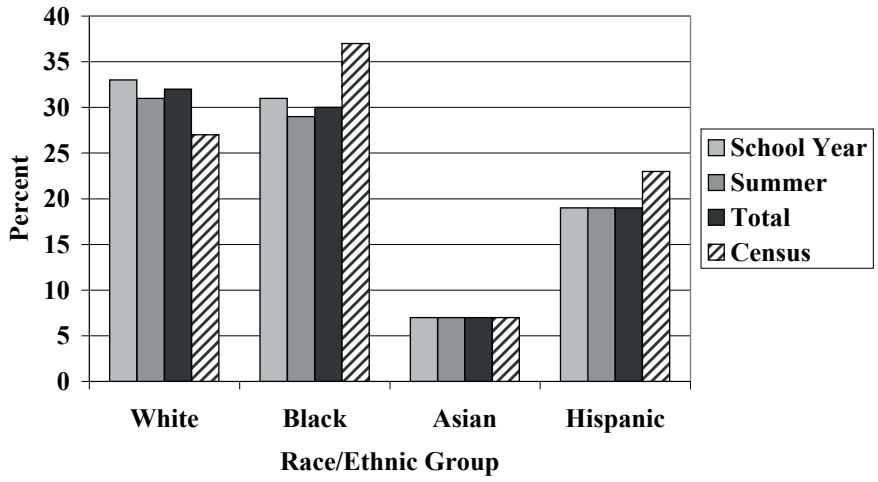


Chart 9: Duration of School Year Activities by Total Number of Days and Program Type 1999-2000 (in percent*)

Program Type	1-7 Days	8-30 Days	31-60 Days	61-90 Days	91 + Days
	%	%	%	%	%
Non-Profit	6	41	25	9	19
For Profit	6	24	29	24	18
Public School	0	3	74	5	18
Non-Public School	0	17	50	12	21

*** Rows may not total 100% due to rounding**

Chart 10: Duration of Summer Activities by Total Number of Days and Program Type 2000 (in percent*)

Program Type	1-7 Days %	8-30 Days %	31-60 Days %
Non-Profit	14	56	30
For Profit	9	73	18

*** Rows may not total 100% due to rounding**

Chart 11: Estimated Youth Participants, Youth Participation Days, and Youth Participation Days by Youth Participants by Program Period 1999-2000

Program Period	Estimated Participants	Youth Participation Days (YPDs)	YPDs per Estimated Participant
School Year	54,500	2,736,300	50
Summer	42,400	705,000	17
Total	96,900	3,441,300	36

Chart 12: Youth Participation Days per Month 1999-2000

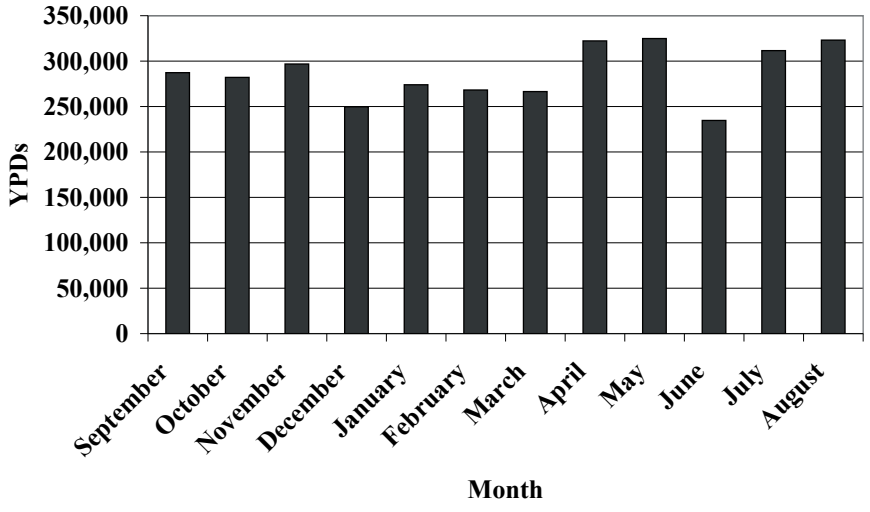
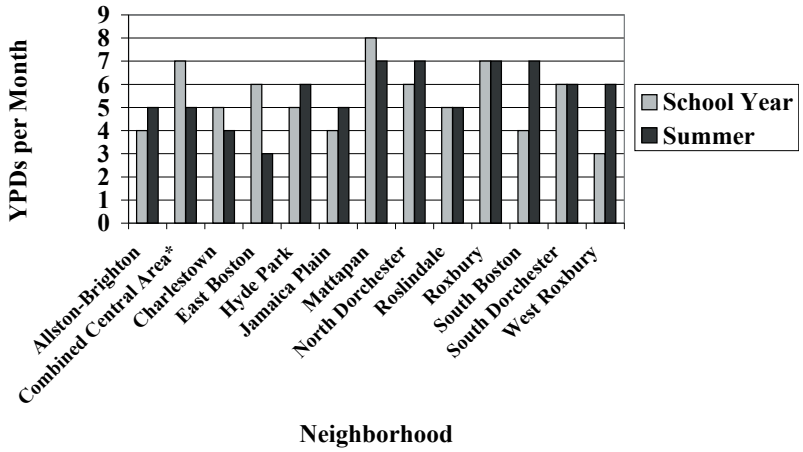


Chart 13: Average Youth Participation Days per Month of Organized Sports/Activity Participation by Neighborhood Participants 1999-2000



* Combined Central Area includes Beacon Hill/Back Bay, Central, Fenway/Kenmore, and South End.

Chart 14: Youth Participation Days per Participants per Month by Season and Sex 1999-2000

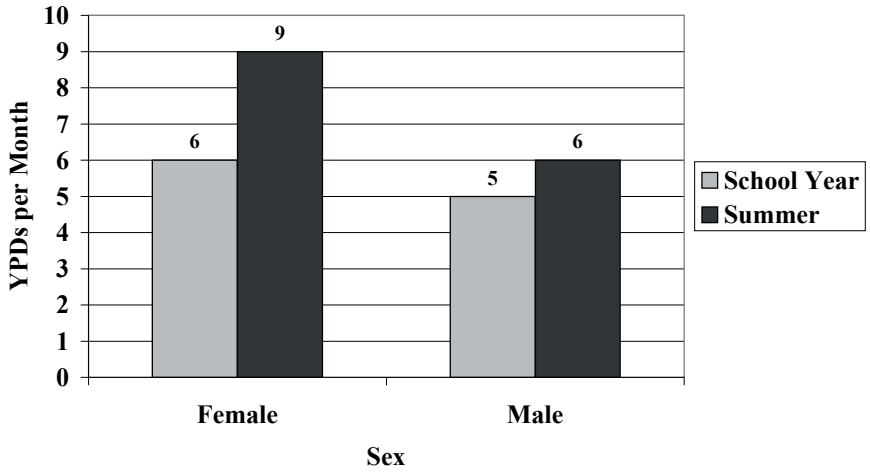


Chart 15: Youth Participation Days per Estimated Participant per Month by Age Group 1999-2000

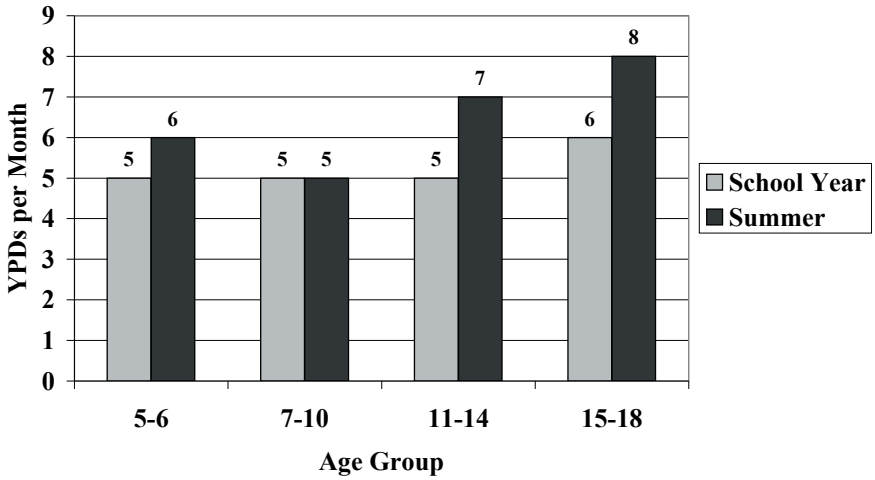


Chart 16: Number of Youth Participant Days per Month by Season and Race/Ethnic Group 1999-2000

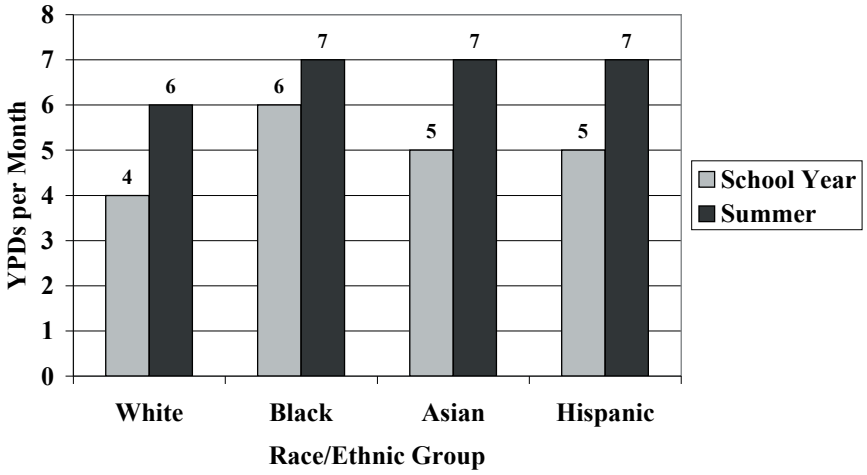
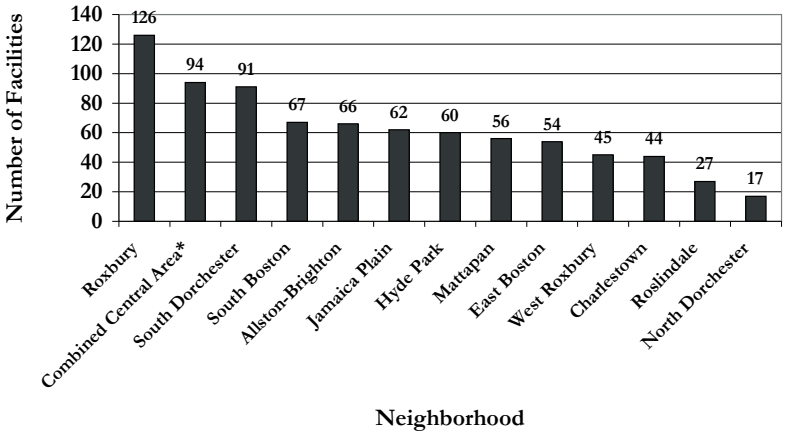


Chart 17: Total Estimated Youth Participants and Youth Participation Days by Program Type 1999-2000

Program Type	Total Youth Participants		Total Youth ParticipationDays	
	n	%	n	%
Non-Profit (n=167)	84,000	87	2,712,800	79
School Year	*42,000*		*2,082,600*	
Summer	*42,000*		*630,200*	
For Profit (n=21)	2,700	3	132,600	4
School Year	*2,300*		*57,800*	
Summer	*400*		*74,800*	
Public School (n=35)	7,400	8	411,900	12
Non-Public School (n=15)	2,800	3	184,000	5
Total	96,900		3,441,300	

Chart 18: Total Number of Recreational Facilities in Boston by Neighborhood 2000-2001



* Combined Central Area includes Beacon Hill/Back Bay, Central, Fenway/Kenmore, and South End.

Chart 19: Number of Youth per Facility Across Boston Neighborhoods 2000-2001

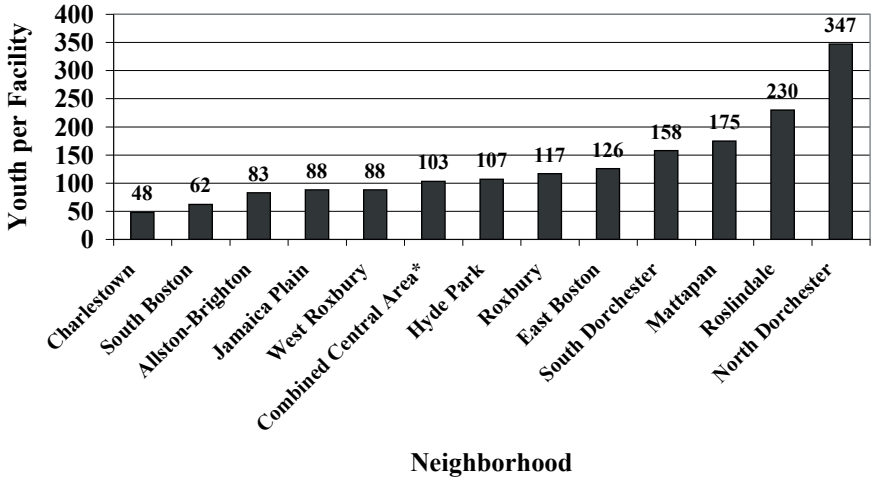
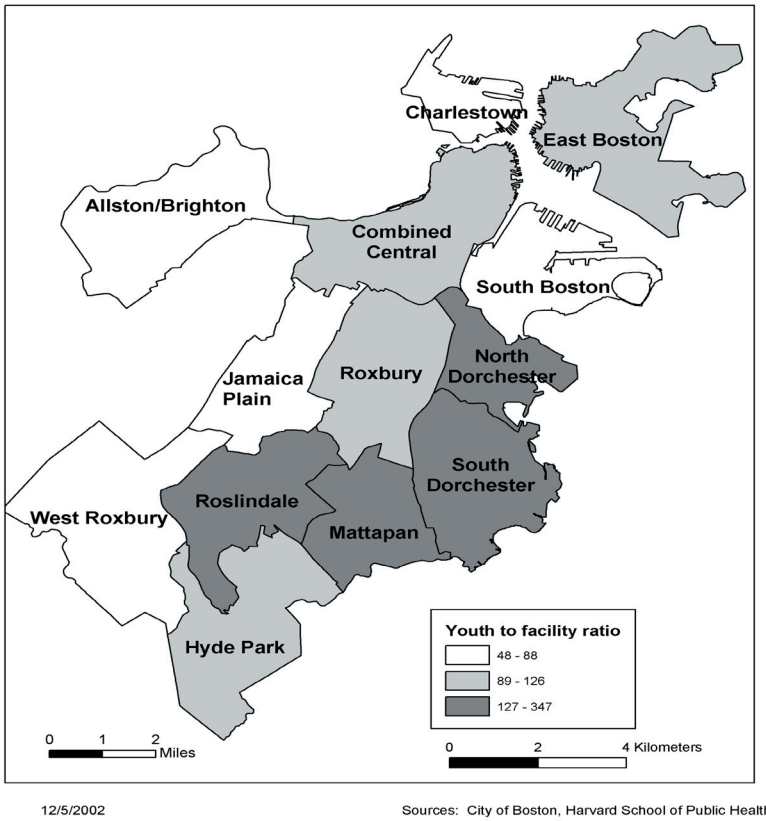


Chart 20: Youth per Facility Ratio Boston Neighborhoods 2000-2001



* Combined Central Area includes Beacon Hill/Back Bay, Central, Fenway/Kenmore, and South End.

Chart 21: Average Playground Quality by Neighborhood 2000-2001

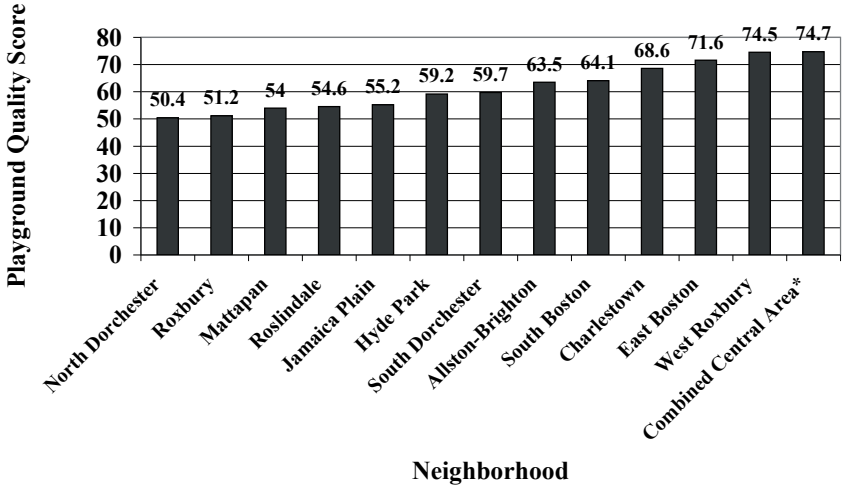
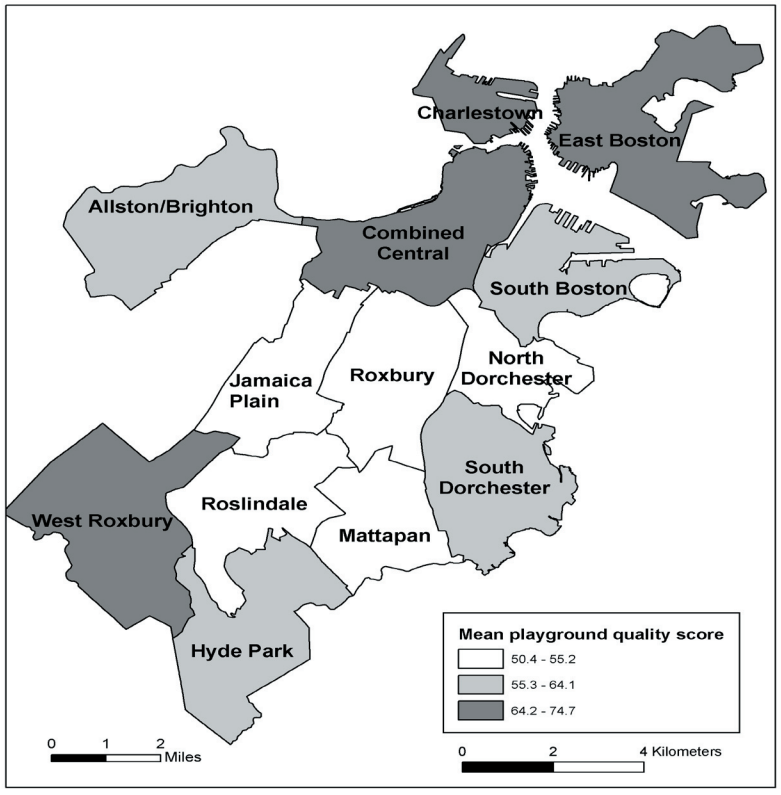


Chart 22: Mean Playground Quality Scores by Boston Neighborhoods 2000-2001



* Combined Central Area includes Beacon Hill/Back Bay, Central, Fenway/Kenmore, and South End.

Chart 23: Estimated Number of Physical Activity Participants, Census Population and Ratio of Participants to Population by Community 1999-2000

Community	Estimated Participants	Census Population	Participant to Population Ratio
Boston	96,900	95,251	1.02
Low Income	8,300	8,488	0.98
Medium Income	10,500	7,394	1.46
High Income	8,600	4,297	2.00

Chart 24: Estimated Participants per 100 Youth Aged 5 - 18 by Community 1999-2000

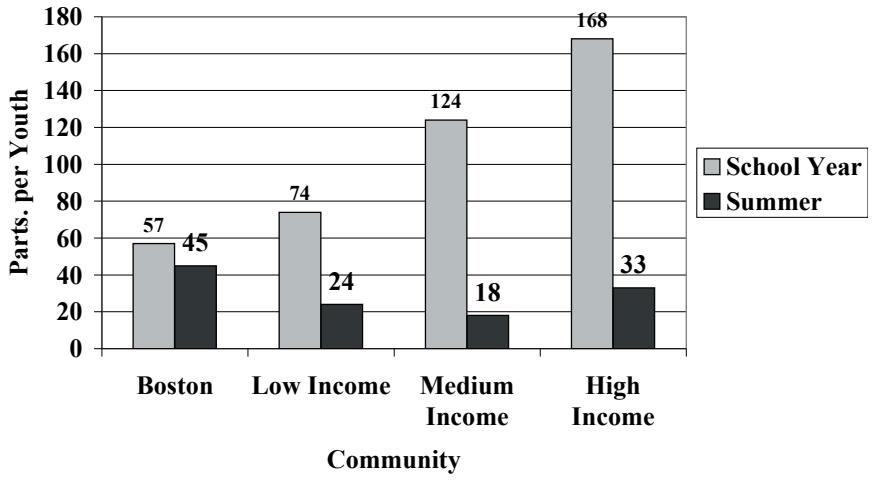


Chart 25: Estimated Participants per 100 Youth Aged 5 - 18 by Sex and Community 1999-2000

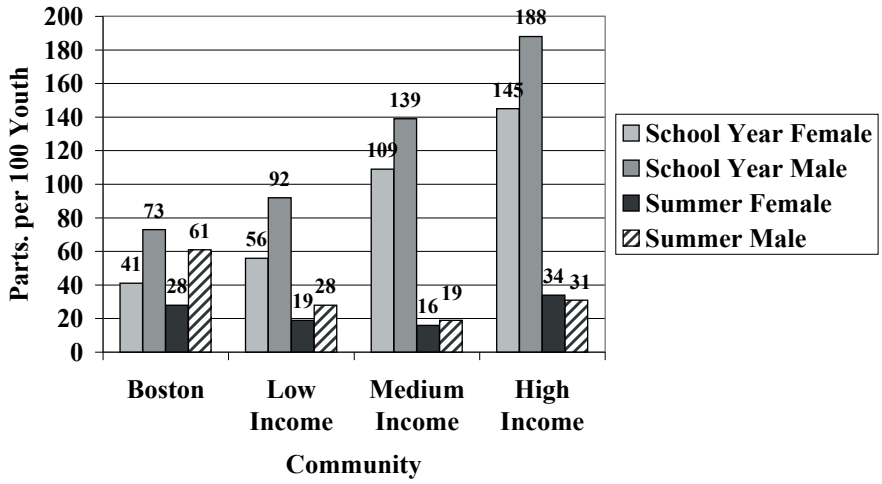


Chart 26: Number of Youth per Facility in Boston and Comparison Communities 2000-2001

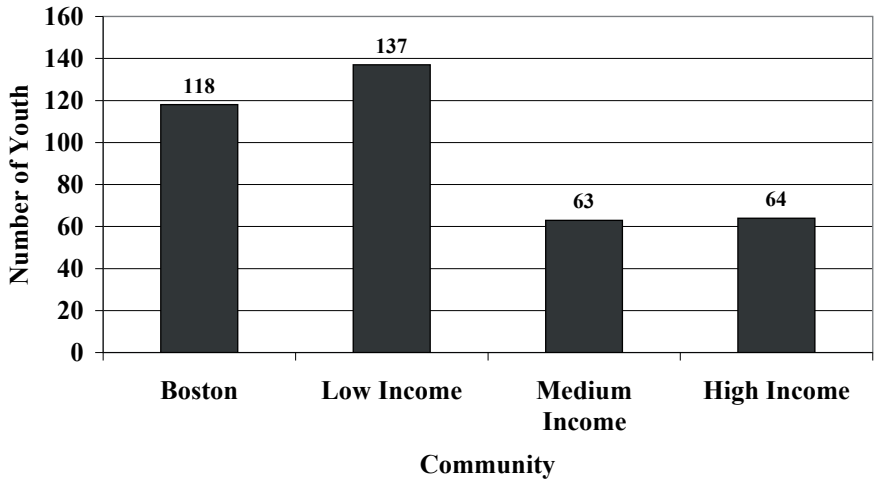
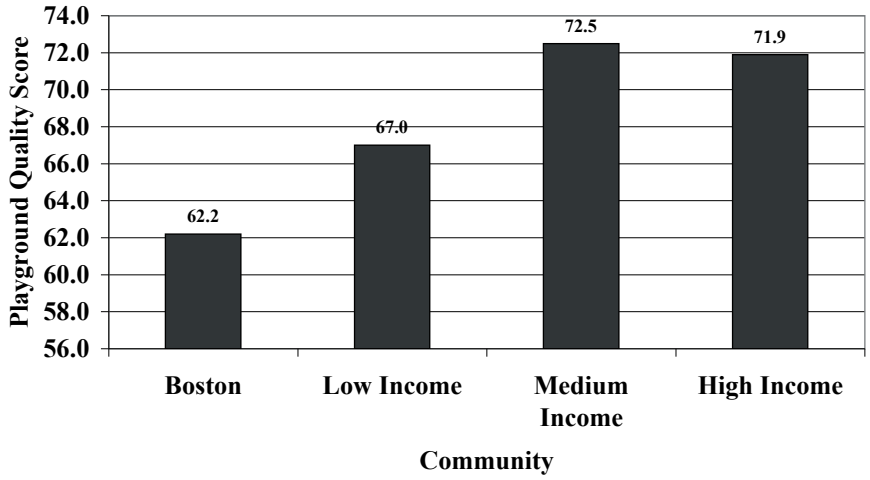


Chart 27: Average Playground Quality Score in Boston and Comparison Communities 2000-2001



APPENDICES

Appendix A:

Total Number of Recreational Facilities by Neighborhood -
Boston 2000-2001

	Allston / Brighton	Charlestown	East Boston	Hyde Park	Jamaica Plain	Mattapan	North Dorchester	Roslindale	Roxbury	South Boston	South Dorchester	West Roxbury	Combined Central Area*	Total
Overall Recreational Complexes	19	11	16	18	20	9	10	9	35	14	21	11	37	230
Ball Fields														
Baseball	4	1	2	3	3	2	1	2	5	4	5	2	2	36
Softball	7	5	4	6	5	3	2	1	11	3	10	4	8	69
Little League	5	1	3	4	3	4	0	3	1	6	6	5	5	46
Football	1	1	1	1	1	0	0	0	2	1	1	1	1	11
Soccer	5	1	2	3	2	5	0	1	4	4	1	3	2	33
Lacrosse	0	0	1	1	0	0	0	0	0	0	0	0	0	2
Cricket	0	0	0	0	0	3	0	0	1	0	1	0	0	5
Track	0	1	1	0	1	0	0	0	2	1	0	1	1	8
Other Field	1	0	0	1	0	0	0	1	1	2	2	1	0	9
Ball Courts														
Tennis	6	4	3	13	4	8	2	3	20	4	7	6	12	92
Basketball (Full)	15	6	12	8	13	14	3	4	33	9	19	6	13	155
Basketball (1/2 -court)	0	0	0	1	1	2	1	0	2	4	7	4	7	29
Basketball (x-court)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Squash	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Volleyball	0	0	1	0	1	1	0	0	0	5	0	0	2	10
Street Hockey	2	3	1	1	1	1	1	1	0	2	3	0	1	17
Handball	0	7	4	0	0	0	0	0	0	3	0	0	4	18
Other Recreational Facility Types														
Pool	2	3	2	2	2	3	0	1	4	1	3	2	3	28
Golf Course	0	0	0	0	0	0	0	1	1	0	0	0	0	2
Ice Rink	2	1	2	2	0	0	0	0	2	2	1	1	0	13
Studio	1	0	2	0	1	0	0	0	1	0	1	0	1	7
Other Recreational Facility	0	2	2	1	7	3	0	1	5	4	2	1	7	35
Playgrounds														
Playgrounds	11	7	9	12	15	7	5	5	23	12	19	6	24	155
Schoolyard Initiative Sites	4	1	2	1	2	0	2	3	8	0	3	2	1	29
Total	66	44	54	60	62	56	17	27	126	67	91	45	94	809

Notes:
*Combined Central Area includes the Back Bay /Beacon Hill, South End, Central, and Fenway / Kenmore neighborhoods
Courts detailed include those that are outdoor or indoor/outdoor (e.g., Charlestown Community Center tennis courts)
Playgrounds include the 154 sites visited and the King School (Roxbury)
Schoolyard sites represent only those Boston Schoolyard Initiative sites that were not visited during the regular site visits and noted as completed on the Schoolyard Initiative website as of 7/02
We have included facilities from the Boston Parks and Recreation Database present at Boston Public Schools not inclued in our sampling frame (Trotter (Roxbury) 1 tennis, 1 basketball court; King (Roxbury) 1 Basketball court, 1 playground)

Appendix B: Summary Table by Neighborhood

Neighborhood	Ratio of Participants to Census	# Youth per Facility	Average Playground Quality Score
Allston-Brighton	0.58	83	63.5
Combined Central Area*	1.01	103	74.7
Charlestown	1.96	48	68.6
East Boston	1.47	126	71.6
Hyde Park	0.81	107	59.2
Jamaica Plain	1.57	88	55.2
Mattapan	0.62	175	54.0
North Dorchester	1.36	347	50.4
Roslindale	1.09	230	54.6
Roxbury	0.82	117	51.2
South Boston	1.89	62	64.1
South Dorchester	0.67	158	57.9
West Roxbury	1.39	88	74.5

* Combined Central Area includes Beacon Hill/Back Bay, Central, Fenway/Kenmore and South End