

COMMUNITY CASE STUDY

Play Across Boston: A Community Initiative to Reduce Disparities in Access to After-School Physical Activity Programs for Inner-city Youths

Cynthia Hannon, MSW, Angie Cradock, ScD, Steven L. Gortmaker, PhD, Jean Wiecha, PhD, Alison El Ayadi, MPH, Linda Keefe, Alfreda Harris

Suggested citation for this article: Hannon C, Cradock A, Gortmaker SL, Wiecha J, El Ayadi A, Keefe L, et al. Play Across Boston: a community initiative to reduce disparities in access to after-school physical activity programs for inner-city youths. *Prev Chronic Dis* [serial online] 2006 Jul [date cited]. Available from: URL: http://www.cdc.gov/pcd/issues/2006/jul/05_0125.htm.

PEER REVIEWED

Abstract

Background

In 1999, the Centers for Disease Control and Prevention (CDC) funded Play Across Boston to address disparities in access to physical activity facilities and programs for Boston, Mass, inner-city youths.

Context

Local stakeholders worked with the Harvard School of Public Health Prevention Research Center and Northeastern University's Center for the Study of Sport in Society to improve opportunities for youth physical activity through censuses of facilities and programs and dissemination of results.

Methods

Play Across Boston staff conducted a facility census among 230 public recreational complexes and a program census of 86% of 274 physical activity programs for Boston inner-city youths aged 5 to 18 years during

nonschool hours for the 1999 to 2000 school year and summer of 2000. Comparison data were collected from three suburban communities: one low income, one medium income, and one high income.

Consequences

Although Boston has a substantial sports and recreational infrastructure, the ratio of youths to facilities in inner-city Boston was twice the ratio found in the medium- and high-income suburban comparison communities. The low-income suburban comparison community had the highest number of youths per recreational facility with 137 youths per facility, followed by Boston with 117 youths per facility. The ratio of youths to facilities differed among Boston neighborhoods. Boston youths participated less in school-year physical activities than youths in medium- and high-income communities, and less advantaged Boston neighborhoods had lower levels of participation than more advantaged Boston neighborhoods. Girls participated less than boys.

Interpretation

Play Across Boston successfully developed and implemented a rigorous needs assessment with local relevance and important implications for public health research on physical activity and the environment. Boston Mayor Thomas M. Menino called the Play Across Boston report a "playbook" for future sports and recreation planning by the city of Boston and its community partners.

Background

In 1999, the Centers for Disease Control and Prevention (CDC) funded Play Across Boston (PAB), a collaborative project of local stakeholders, the Harvard School of Public Health Prevention Research Center (HPRC), and Northeastern University's Center for the Study of Sport in Society (Sport in Society) to address the following four aims in Boston, Mass:

1. To document sport and physical activity resources during nonschool hours through censuses of all facilities and programs in Boston and comparison communities
2. To understand how community resources affect youth participation in physical activities and sports
3. To identify potential solutions for gaps in programming and resources and for barriers to participation
4. To monitor youth access to and participation in sports and physical activities

Inner-city youth sports and physical activity programs may provide a mechanism for reducing disparities in chronic disease outcomes related to sex, race and ethnicity, and socioeconomic level. Physical activity among children and adolescents is important because of the related health benefits (e.g., cardiorespiratory function, blood pressure control, weight management) and because a physically active lifestyle adopted early in life may continue into adulthood (1). Insufficient levels of physical activity may contribute to the current epidemic of childhood overweight and associated health risks. National data indicate that the percentage of young people who are overweight has more than doubled in the last 20 years. Of children and adolescents aged 6 to 19 years, 16% are considered overweight (2).

Boston youths may be underserved by youth physical activity opportunities compared with other communities in Massachusetts, and girls in Boston are particularly underserved, according to an unpublished pilot study conducted in 1997 by Sport in Society. In 1999, fewer high school students in Boston reported participating in team sports than did their statewide counterparts on the 2001 Massachusetts Youth Risk Behavior Survey (MYRBS) (3). In 1999, 51% of Massachusetts' female and 61% of male high school students reported participating in one or more sports teams in the previous 12 months, whereas in Boston, 36% of female students and 53% of male students reported participating in sports teams (3).

The HPRC is part of CDC's Prevention Research Center program, a network of academic centers, public health agencies, and community partners that conduct applied research in disease prevention and control (4). Our mission is to work with local partners to develop, implement, and evaluate methodologies and interventions to improve nutrition and physical activity and reduce overweight and chronic disease risk among youths. The HPRC uses community-based participatory research methods (5) to involve nonacademic stakeholders in the design, implementation, and use of data to generate solutions and promote the sustainability of program improvements. Sport in Society is an intermediary organization that promotes the health and well-being of urban youths through sport, physical activity, and healthy development initiatives.

This article describes how local stakeholders worked with the HPRC and Sport in Society to improve opportunities for youth physical activity through the creation of facility and program censuses and dissemination of results.

Context

Boston is a densely populated city; 589,141 residents were reported in the 2000 census (6). Fifteen percent of families live below the federal poverty level. Of the 95,251 school-age youths (aged 5 to 18 years), 37% are black, 27% are white, 23% are Hispanic, 7% are Asian, and 7% identified as another race or ethnicity (7). More than half (51%) of Boston youths live in four of the 16 neighborhoods in Boston. Two thirds of Boston school-age youths attend one of 131 public schools (8).

In 1997, Boston Mayor Thomas M. Menino convened a national conference on urban youth sports; the national conference was followed by a citywide Boston Youth Sports Congress (BYSC) in 1997 and in 1998 to examine after-school sporting opportunities for Boston youths. More than 600 coaches, parents, elected officials, corporations, members of Boston's professional sports teams, and directors of community centers, Boys & Girls Clubs, and YMCAs participated in the BYSC events. After the 1997 event, a pilot needs assessment conducted by Sport in Society, one of the organizers of the BYSC, estimated that Boston youths had one third the number of sports opportunities of suburban youths and identified possible sex disparities and likely barriers to participation (J. McDevitt, unpublished data, November 1997). Although these data suggest a lack of

opportunity for sports programs among Boston youths compared with their suburban peers, policy makers and program providers decided that a comprehensive needs assessment would strengthen their ability to allocate funds, develop programs in areas of need, and add appropriate staffing.

Following the 1998 BYSC, the HPRC submitted a proposal to CDC as part of a Prevention Research Initiative to collaborate with Sport in Society and community partners to address disparities in access to physical activity facilities and after-school programs in Boston. The proposal was funded in October 1999, and PAB was created. As an outgrowth of the BYSC, PAB was envisioned as a study to assess community need and provide information to inform coordination and programming decisions in the community-based programs over which BYSC members had oversight and influence. Thus, the focus of PAB was limited to after-school physical activity programming.

Methods

Project resources and organization

PAB's major activities included convening an open-door community advisory board to allow for PAB growth; designing and implementing a facility and program census; and replicating abbreviated censuses in three comparison communities. Active BYSC participants who had grassroots experience setting up programs and city officials who were involved in strategic planning for Boston youths were invited to join the community board. Members included stakeholders at city departments (e.g., Boston Parks and Recreation Department, Boston Community Centers, Office of Community Partnerships), Boys & Girls Clubs, YMCAs, neighborhood programs, and organizations working with special-needs youths. All members of the community board were also staff members at programs included in the study. During the study, there were 25 community advisory board members; 14 men and 11 women; nine members represented minority and special-needs populations. The community board met formally four times per year, from October 1999 through September 2002.

From the beginning, the community board had great influence on the study's research design and methodology. Although the identification of physical activity programming was an original research aim, the board requested

that PAB also identify and survey recreational facilities to increase understanding about the distribution and use of the facilities across neighborhoods. Additionally, board members insisted that PAB expand its sampling frame to include comparison communities outside of Boston. Project staff from HPRC and Sport in Society, as well as the principal investigators, attended 14 community meetings to engage the community and inform research methods. Incorporating feedback from the community meetings and the community board, project staff drafted the PAB program and facility censuses and created abbreviated forms for use in the comparison communities. All census instruments and protocols were reviewed, edited, and approved by the community board to ensure that data collection strategies were feasible and efficient. The facility and program censuses were completed by a full-time project manager and a part-time research assistant at the HPRC and three part-time community liaisons at Sport in Society, with guidance from the community board.

Facility census in Boston

The facility census was created to evaluate the number and types of recreational facilities (e.g., baseball fields, basketball courts), the amenities, and the playground features, including climbing structures, slides, and swings, at the 230 public recreational complexes owned and operated by two city agencies (Boston Parks and Recreation and Boston Community Centers) and one statewide agency (the Metropolitan District Commission [now the Department of Conservation and Recreation]). Staff defined *public* as open to Boston residents with minimal restrictions (i.e., no locked gate and hours of operation not affected by school schedules). The recreational complexes were identified from an official database provided by the city. Each facility was geocoded, meaning that the geographic location (i.e., longitude and latitude) of each site was identified using geographic information systems software (ArcGIS version 8, ESRI, Redlands, Calif) so that facilities could then be located on maps. Project staff visited sites and used the facility census to evaluate each site's recreational facilities, amenities, and playground features between July 2000 and July 2001 (9).

Program census in Boston

The program census identified after-school physical activity and sports programs, activities, and participant characteristics for the 1999 to 2000 school year and sum-

mer 2000 (7). For-profit and nonprofit programs and public and private schools providing sports or physical activities during nonschool hours participated in the census. Study inclusion criteria required that a program operate for more than 1 week per year and serve primarily Boston youths. A list of 481 possible program contacts was developed from the databases of the BYSC and the Boston Parks and Recreation Department; from information on after-school sports teams at public middle and high schools, parochial schools, and charter schools; and from community centers and other sources.

Data collection began in September 2000. Programs that responded by October 20, 2000, were entered into a raffle for \$500. Project staff confirmed the existence of 274 eligible programs; another 207 were duplicates, were no longer in existence, or had outdated contact information. Data collection began with a mailing, followed by contact in person or by telephone during the next 7 months. Data were obtained from 235 (86%) of the 274 programs.

Facility and program census in comparison communities

We used 1990 census data on median household income to stratify all communities surrounding Boston within the Route 128 expressway loop into three tertiles: low income, medium income, and high income. (We used 1990 census data because 2000 census data were not yet available.) From each of the three tertiles, we randomly selected one community. All of the eligible public recreational facilities were assessed in the three comparison communities. The response rates for programs in the comparison communities were 73% in the low-income community, 73% in the medium-income community, and 89% in the high-income community.

Statistical analyses and validity of estimates

Population surveys typically collect data from a sample of the entire population; this sampling procedure may result in randomly variable estimates because any given sample from the same population may produce slightly different results. Data collected for PAB were derived from censuses of facilities and programs, thereby eliminating error in estimates due to sampling variability.

However, there were other potential sources of error in estimates we made for this study. For the program census,

the staff members associated with each program estimated the number of youth participants during the past school year or summer season in each physical activity. They also estimated the characteristics of participants (e.g., age, sex, race and ethnicity) and the attributes of programs (e.g., costs). We estimated the total number of participants in a sport by adding up the estimated number of participants in that sport among all programs. The total participants across all sports were estimated by summing participants among all sports. These approximations provided a potential source of error. We had limited comparable data to confirm the accuracy of estimates; we relied on the knowledge of our community advisory board, whose members reviewed the program data, to ensure that findings fit with their local experiences. The overall estimates of youth participation for the city as a whole or for a neighborhood are thus based on estimates derived from summing reports from individual programs. Finally, estimates of total numbers of program participants reflect an unknown number of nonunique youths because individuals may participate in more than one sport or activity at a given program or in different programs.

To guide our estimates of total numbers of program participants, we examined the MYRBS as a source of comparable data on youth physical activity. MYRBS data collected in 2001 indicated that of the 54% of youths reporting participation on a sports team in the past year, 23% played on one team, 15% on two, and 16% played on three or more teams (3). Assuming Boston youth have distributions of sports team participation comparable with youths statewide, PAB data indicated that 49% of youths aged 15 to 18 years in Boston participated in at least one sports team during 1 year. The corresponding estimate from the Boston YRBS in 2001 was 45% (3). Given that the Boston YRBS data were based only on youths in Boston public high schools, whereas PAB estimates applied to all youth in the city, the similarity of the estimates (PAB, 49%, and Boston YRBS, 45%) provided a reassuring validity check.

Consequences

PAB provided baseline data that has proven useful as a focus for interventions and as a source of advocacy for programmatic efforts. Although Boston has a substantial sports and recreational infrastructure, the ratio of youths to facilities in low-income Boston neighborhoods was twice

the ratio found in the medium- and high-income suburban comparison communities (Table). The low-income suburban comparison community had the highest number of youths per recreational facility with 137 youths per facility, followed by Boston with 117 youths per facility. We found 63 youths per facility in the medium-income community and 64 youths per facility in the high-income community. The Figure shows how the ratio of youths to facilities also differed among Boston neighborhoods. Neighborhoods with a low density of facilities also had lower median income and larger minority populations. Boston playgrounds also varied in quality across the city, and lower-income neighborhoods and neighborhoods with more ethnic minority populations had poorer quality playgrounds (9).

Of the 235 programs, nine YMCAs, seven Boys & Girls Clubs, and 44 city-operated community centers were identified. Other programs offered were Pop Warner Little Scholars football and cheerleading, Little League baseball, lacrosse, softball, soccer, tennis, dance, and martial arts, among others. Some Boston public middle and high schools hosted intramural and competitive sports teams. During the summer, the Boston Centers for Youth & Families provided golf, swimming, basketball, track and field games, and summer camps at its community centers. Of the 235 programs offered to Boston's youths, more than half cost less than \$20 per session to participate; 65% of programs were free. There were no costs for using the facilities.

On average during the school year, approximately 67% of program participants were boys, and 33% were girls. Boys and whites were overrepresented among participants; girls, blacks, and Hispanics were underrepresented. We calculated the ratio of the total number of male and female participants to the youth census population and found ratios of 1.33 for boys and 0.69 for girls. For racial and ethnic groups, the ratios were 1.23 for white non-Hispanics, 1.05 for Asians, 0.84 for Hispanics, and 0.83 for blacks. The highest reported levels of participation were for youths attending middle school (aged 11 to 14 years) (7). Similar to findings on facilities, participants in neighborhoods with higher median incomes had more favorable outcomes.

The table shows that, compared with the three suburban comparison communities, Boston overall had the lowest ratio of participants to youths (1.02), and Boston's median income (\$39,629) was closest to the median income of the low-income comparison community (\$45,654). The high-

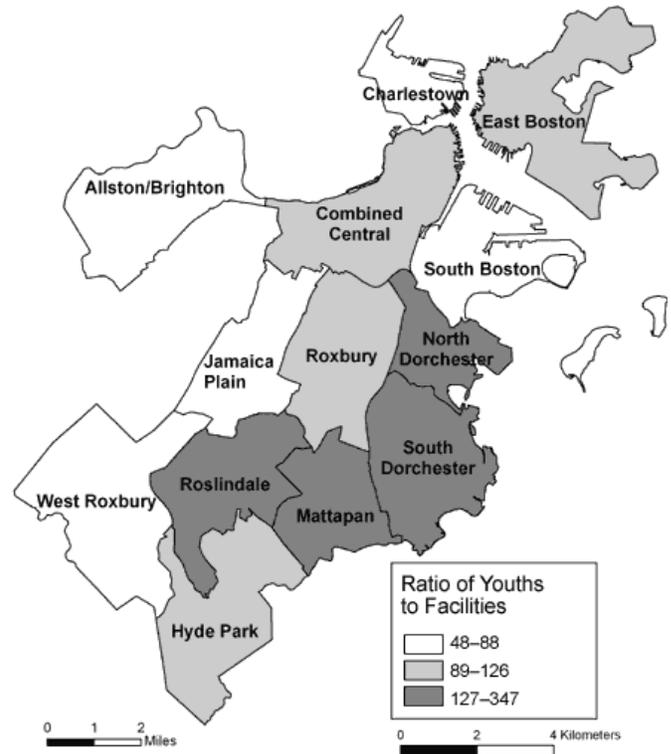


Figure. Ratio of Boston youth aged 5 to 18 years to recreational facilities by neighborhood in 2000 to 2001. Source: City of Boston, Harvard School of Public Health (7).

income community had the greatest ratio of participants to youths (2.00). Lower participation rates among girls than boys in each community indicated a consistent sex disparity.

Interpretation

PAB successfully developed and implemented a rigorous needs assessment with local relevance and important implications for public health research on physical activity and the environment. In December 2002, Mayor Menino hosted a community press conference to release the key findings report (7). City officials, program providers, parents, and youths attended. He applauded PAB's data, calling the report a "playbook" for future sports and recreation planning by the city of Boston and its partners and stating, "For several years we have only had anecdotal information about the need to get more of Boston's young people involved in physical activity. PAB gives us scientific evidence that we have more work to do" (10). To date, more

The opinions expressed by authors contributing to this journal do not necessarily reflect the opinions of the U.S. Department of Health and Human Services, the Public Health Service, the Centers for Disease Control and Prevention, or the authors' affiliated institutions. Use of trade names is for identification only and does not imply endorsement by any of the groups named above.

than 300 copies of the report have been distributed both locally and nationally. PAB also produced Active Facts online (11), a series of neighborhood-specific briefs, to provide information on programs and facilities.

Several local initiatives have incorporated findings to improve programming and resource allocation. Sport in Society uses PAB data as they address disparities in participation by increasing the number of sporting opportunities available. Boston Steps (12), a U.S. Department of Health and Human Services initiative at the Boston Public Health Commission, is adapting PAB methodologies to examine adult recreation. Jump Up & Go (13), a project of Blue Cross Blue Shield of Massachusetts, and the Boston Youth Sports Network (14), a project designed to connect resources for local programs through a youth sports coordinator, have used the data to prioritize neighborhood resource allocation. As a result of the documented sex disparities in PAB, a group of foundations began working with the Women's Sports Foundation in 2003 to award more than \$600,000 to Boston organizations to create and expand youth sports programs for girls from 2004 through 2007 (14). In a change that required no outside funding, the Shelburne Community Center in Roxbury, Mass, implemented biweekly mother-and-daughter aerobics classes as a result. In addition, researchers at HPRC, along with the Women's Law Foundation, cowrote a report on Title IX in Massachusetts (15). In addition, one of the comparison communities used in this study prepared a report for its own city's health alliance for internal planning use.

The city of Boston lists participating PAB programs in The Mayor's Youthline (16), a database of resources for Boston youth and their parents created by Boston teenagers; the Boston Youth Zone (17), a Web-based resource for teenagers and their parents; and the Boston Guide to Youth Services (18), a print resource. These resources help educate parents, teachers, community advocates, pediatricians, and youth about which sports and physical activities are available near where they live.

PAB benefited from strong and creative partners and stakeholders dedicated to improving Boston's after-school resources for youths and their families. The project and its partners continue to be committed to the findings and the process of developing a culture of colearning through the use of community-based participatory research. A hallmark of a genuine participatory process is that the shape

and focus of research over time may change as participants refocus their understanding about what is happening in the community and what is really important to them (19).

Because PAB focused on youth physical activity opportunities outside of school programming, future assessments might also include school-based programs and examine more closely program quality (e.g., staff qualifications, staff-to-participant ratios). Additionally, other factors that may limit access to programs (e.g., costs, hours of operation) and strategies that may produce more reliable estimates of unique numbers of participants and their demographic characteristics (e.g., using standard intake forms for all youth programs, voluntary reporting standards for programs) could potentially improve the assessment protocol. These areas were not fully assessed by our PAB methodology but could be important factors, depending on community interests and needs.

Following the summary report (7), the PAB group continued to work with local municipal, educational, and city planners to address *Healthy People 2010* goals on increasing time spent in physical activity and reducing time spent in inactivity and watching television. Current initiatives with Sport in Society, Boston Centers for Youth & Families, and Boston Steps focus on developing a sustainable monitoring system for physical activity resources. Planned uses of PAB data include analyzing facility over- and underuse with the Boston Parks and Recreation Department and improving access to school physical activity spaces and facilities for all people during nonschool hours.

Sparked by the enthusiasm of the BYSC, the energy in Boston was rich for PAB. Communities dedicated to the health of young people and interested in using a community-focused approach to reduce disparities in access to physical activity may benefit from PAB's inclusive participatory methods.

Acknowledgments

The authors thank the city of Boston and all of the participating programs. This work was supported by the Centers for Disease Control and Prevention (Prevention Research Centers Grant U48/CCU115807).

Author Information

Corresponding Author: Cynthia Hannon, Harvard Prevention Research Center, Harvard School of Public Health, 677 Huntington Ave, 7th Floor, Boston, MA. Telephone: 617-432-4679. E-mail: channon@hsph.harvard.edu.

Author Affiliations: Angie Cradock, Steven L. Gortmaker, Jean Wiecha, Alison El Ayadi, Harvard Prevention Research Center, Harvard School of Public Health, Boston, Mass; Linda Keefe, Alfreda Harris, Northeastern University Center for the Study of Sport in Society, Boston, Mass.

References

1. U.S. Department of Health and Human Services. Healthy People 2010. 2nd ed. With understanding and improving health and objectives for improving health. 2 vols. Washington (DC): U.S. Government Printing Office; 2000. Available from: URL: <http://www.healthypeople.gov/Document/tableofcontents.htm#volume2>.
2. Prevalence of overweight among children and adolescents: United States, 1999-2002 [Internet]. Hyattsville (MD): National Center for Health Statistics, Centers for Disease Control and Prevention;2005. Available from: URL: <http://www.cdc.gov/nchs/products/pubs/pubd/hestats/overwght99.htm>.
3. 2001 Massachusetts Youth Risk Behavior Survey results. Malden (MA): Massachusetts Department of Education;2002. Available from: URL: <http://www.doe.mass.edu/hssss/yrbs/01/results.pdf>.
4. Prevention Research Centers [Internet]. Atlanta (GA): National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention;2006. Available from: URL: <http://www.cdc.gov/prc/index.htm>.
5. Israel BA, Schulz AJ, Parker EA, Becker AB, Allen A, Guzman JR. Critical issues in developing and following community-based participatory research principles. In: Minkler M, Wallerstein, N, editors. Community-based participatory research for health. San Francisco (CA): Jossey-Bass; 2002. p. 56-73.
6. U.S. Census Bureau. United States Census 2000. Washington (DC): U.S. Department of Commerce, Economics and Statistics Administration; 2000.
7. Harvard Prevention Research Center. Play Across Boston summary report. Boston (MA): Harvard Prevention Research Center, Harvard School of Public Health; 2002.
8. The Boston public schools at a glance: schools and students [Internet]. Boston (MA): Boston Public Schools;2005 Available from: URL: <http://www.boston.k12.ma.us/bps/bpsglance.asp#students>.
9. Cradock AL, Kawachi I, Colditz GA, Hannon C, Melly SJ, Wiecha JL, et al. Playground safety and access in Boston neighborhoods. *Am J Prev Med* 2005;28(4):357-63.
10. Play Across Boston [Press Release]. Boston (MA): Mayor's Office; 2002 Dec 13.
11. Active Facts. (www.hsph.harvard.edu/prc).
12. Boston Steps [Internet]. Boston (MA): Boston Public Health Commission;[cited 2006 Mar 30]. Available from: URL: <http://www.bphc.org/programs/program.asp?b=2&d=&p=190>.
13. Jump Up & Go [Internet]. Boston (MA): Blue Cross Blue Shield of Massachusetts;1998. Available from: URL: <http://www.jumpupandgo.com/>.
14. Boston Youth Sports Network [Internet]. Boston (MA): Boston Youth Sports Initiative;2004. Available from: URL: <http://www.bostonyouthsports.org/>.
15. National Women's Law Center and Harvard Prevention Research Center on Nutrition and Physical Activity. Keeping score: girls' participation in high school athletics in Massachusetts. Boston (MA): Harvard School of Public Health; 2004. Available from: URL: <http://www.hsph.harvard.edu/prc/keepingscorereport.pdf>.
16. Mayor's YOUTHLINE [Internet]. Boston (MA): City of Boston;[cited 2006 Mar 30]. Available from: URL: <http://www.bostonyouthzone.com/resources/youthline/>.
17. Boston YOUTHZONE [Internet]. Boston (MA): City of Boston;[cited 2006 Mar 30]. Available from: URL: <http://www.bostonyouthzone.com/default.asp>.
18. Boston Centers for Youth & Families. Boston Guide to Youth Services. Boston (MA): City of Boston; 2005.
19. Wadsworth Y. What is participatory action research? *Action Research International* 1998;Paper 2.

The opinions expressed by authors contributing to this journal do not necessarily reflect the opinions of the U.S. Department of Health and Human Services, the Public Health Service, the Centers for Disease Control and Prevention, or the authors' affiliated institutions. Use of trade names is for identification only and does not imply endorsement by any of the groups named above.

Table

Table. Program Participation Among Youths Aged 5 to 18 Years, Recreational Facility Access and Median Income in Boston Neighborhoods and Comparison Communities, Play Across Boston Study, 2000

Neighborhood	Estimated No. of Program Participants	No. of Youths Aged 5 to 18 y ^a	Ratio of Participants to Youths	No. of Youths per Recreational Facility	% Ethnic and Racial Minority ^b	Median Income	Proportion Living in Poverty
Allston-Brighton	3,200	5,509	0.58	83	31.3	38,941	23.0
Mattapan	6,100	9,806	0.62	175	96.7	32,748	22.3
South Dorchester	9,600	14,367	0.67	158	70.4	39,587	17.3
Hyde Park	5,200	6,398	0.81	107	56.9	44,704	10.4
Roxbury	12,100	14,801	0.82	117	95.5	27,133	27.1
Combined central ^c	9,800	9,712	1.01	103	21.8	46,841 ^d	16.9
Roslindale	6,800	6,213	1.09	230	44.3	46,846	13.6
North Dorchester	8,000	5,893	1.36	347	65.1	36,193	20.8
West Roxbury	5,500	3,970	1.39	88	16.4	53,607	6.4
East Boston	10,000	6,821	1.47	126	50.3	31,310	19.5
Jamaica Plain	8,600	5,481	1.57	88	49.1	41,524	20.9
South Boston	7,900	4,184	1.89	62	15.2	40,311	17.3
Charlestown	4,100	2,096	1.96	48	21.8	56,110	17.5
Boston overall	96,700	95,251	1.02	117	50.6	39,629	19.5
Low income	8,300	8,488	0.98	137	27.9	45,654	9.2
Middle income	10,500	7,394	1.46	63	18.9	66,711	9.3
High income	8,600	4,297	2.00	64	8.8	80,295	4.4

^aSource: Census 2000 (6).

^bMinority indicates Hispanic, Asian, and black individuals.

^cCombined central area includes Back Bay/Beacon Hill, Central, Fenway/Kenmore, and South End.

^dMedian household income for combined central area includes \$66,427 for Back Bay/Beacon Hill; \$25,356 for Fenway/Kenmore; and \$41,590 for South End.

The opinions expressed by authors contributing to this journal do not necessarily reflect the opinions of the U.S. Department of Health and Human Services, the Public Health Service, the Centers for Disease Control and Prevention, or the authors' affiliated institutions. Use of trade names is for identification only and does not imply endorsement by any of the groups named above.