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School Wellness Programs: Magnitude and Distribution in New York City Public Schools

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Abstract

BACKGROUND—Public schools provide students with opportunities to participate in many discretionary, unmandated wellness programs. Little is known about the number of these programs, their distribution across schools, and the kinds of students served. We provide evidence on these questions for New York City (NYC) public schools.

METHODS—Data on wellness programs were collected from program websites, NYC’s Office of School Food and Wellness, and direct contact with program sponsors for 2013. Programs were grouped into categories, nutrition, fitness, and comprehensive, and were combined with data on school characteristics available from NYC’s Department of Education. Numbers of programs and provision of programs were analyzed for relationships with demographic and school structural characteristics, using descriptive statistics and multiple regression.

RESULTS—Discretionary wellness programs are numerous, at 18 programs. Little evidence supports inequity according to student race/ethnicity, income, or nativity, but high schools, new schools, co-located schools, small schools, and schools with larger proportions of inexperienced teachers are less likely to provide wellness programs.

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Human Subjects Approval Statement This study was deemed exempt by New York University’s Institutional Review Board and NYC Department of Education Institutional Review Board.

CONCLUSIONS—Opportunities exist to further the reach of wellness programs in public schools by modifying them for high school adoption and building capacity in schools less likely to have the administrative support to house them.

Keywords

policy; research; statistics; nutrition; wellness

BACKGROUND

Many American young people have nutrient-poor diets, are at an unhealthy weight, and are physically unfit.¹⁻³ Among suggestions for improving these conditions, school-based programs, focusing on nutrition, fitness, or overall wellness, hereafter “wellness programs,” are popular. The United States Department of Agriculture (USDA)⁴ requires school districts to have a wellness policy that includes goals for nutrition promotion and education, physical activity, and other activities that bolster student wellness. Federal legislation also mandates the designation of a district or school official to ensure that each school complies with the district wellness policy. Schools may elect to participate in wellness programs to better enable them to meet their required wellness policy goals. These discretionary wellness programs can be sponsored by school districts, community-based organizations, foundations, and charities. As examples, *Garden to Café*,⁵ sponsored by multiple government and non-profit organizations, promotes vegetable consumption and increased knowledge of the local food system; *Mighty Milers*,⁶ sponsored by the New York Road Runners, promotes increased physical activity and decreased obesity; and the Alliance for a Healthier Generation’s *Healthy Schools Program*,⁷ sponsored by the American Heart Association and the Clinton Foundation, promotes a healthy school environment and decreased childhood obesity.

The logic for advancing school-based wellness programs is clear. Children attend school for much of the year, where they are a captive audience for interventions aimed at improving their wellness. Moreover, as places of learning, schools are natural sites to teach good habits. Despite the compelling logic, there is limited evidence on the kinds of schools that offer or provide discretionary, unmandated wellness programs, and the factors associated with provision.

Three studies provide some background on school characteristics associated with adoption of school wellness programs. Crowley and Lui (2008)⁸ found that the adoption of state policies on child obesity was correlated with state health, socioeconomic, and political characteristics such as low adult obesity rates, high proportions of African-Americans, and democratic governors. Based on Porter’s 2013⁹ review of literature on nutrition, health, and physical education programs in schools, the following factors were among those found to predict program adoption or implementation: the simplicity of the program, the representation of staff trained in the program area, age and sex of key decision makers such as principal and/or teachers, grade span served such as elementary, middle, or high, program cost, method of advertising the program such as building networks and establishing opinion leaders compared to print media campaigns, and time taken away from core subjects.

Finally, Schwartz *et al* (2012)¹⁰ reviewed wellness policies in a sample of Connecticut school districts and found that individual schools in districts with strong, comprehensive policies are more successful in implementing nutrition and physical education policies. In addition, some demographic variables predicted strength or comprehensiveness of district policies as, for example, both the percentage of students eligible for free or reduced price lunch and majority of voters being democrats were positively associated.

The purpose of this paper is to document the types and numbers of discretionary, non-mandated wellness programs in a large urban school district, analyze the factors associated with the distribution of programs across schools, and recommend changes for how sponsors of wellness programs identify schools for provision and how schools and districts promote wellness programs. Given the limited literature on provision of discretionary wellness programs in schools and the importance of the problems addressed by these programs, this paper focuses specifically on four important, unanswered research questions in the context of New York City (NYC) public schools. First, how many different discretionary or non-mandated wellness programs are provided in NYC public schools? Second, how are discretionary wellness programs spread across schools? Are they concentrated in some schools and missing in others? When schools provide multiple programs, to what extent do they address different or similar goals? Third, are wellness programs equitably distributed among schools with respect to student poverty, race and ethnicity, and nativity? Fourth, are wellness programs targeted to schools where needs are greatest? That is, do physical education programs target schools with less fit students? Do nutrition programs serve schools whose students are disproportionately obese?

METHODS

Participants

Participants are NYC public schools operating in the 2012-2013 school year (2013) and all the sponsors of discretionary school wellness programs provided in a significant number of schools in 2012-2013. NYC, home to the largest school district in the U.S. with over one million public school students and more than 1,400 regular schools and another 300 specialized schools, educates children that are similar to those of other large urban school districts: predominantly poor, with over 30% black and Hispanic students, a sizable share of Asian students, and many foreign-born and English language learners.

A large, but unknown number of wellness programs are provided in only a small number of schools or serve few students. This paper focuses on the set of “significant” school-based programs, where significant is defined by two criteria. First the programs must operate in more than 25 schools overall or about 2% of all NYC schools or an equivalent percentage of schools of a specific school level, such as elementary school. Second, programs must take place during the school day, serve an entire grade or provide an opportunity for all students to participate at least once during their school tenure. Thus, programs provided to only one or two classes or exclusively after-school are excluded.

Instruments/Procedure

School-level data on NYC public schools are collected from the NYC Department of Education's (NYCDOE) publicly available databases and from the New York State publicly available report card data. Data are merged on teacher characteristics from the NYC Independent Budget Office and student-level data, provided by NYCDOE, on obesity and fitness from the NYC FITNESSGRAM data, aggregated to the school level.

Data on schools that provide wellness programs in 2013 were collected for program sponsors that appeared on a comprehensive list originating with the Bronx Borough President's office¹¹ and supplemented by the NYC Offices of School Food and School Wellness Programs. Program information was gathered by a search of sponsor internet sites, direct email, phone contact, or a combination of all three, for all programs potentially significant according to our criteria.

Data Analysis

Programs are grouped into three categories based on program goals: nutrition education and demonstration, physical education and activity, and comprehensive wellness. Nutrition education and demonstration programs teach students about characteristics of healthy foods and/or teach them how to obtain and prepare such foods. Physical education and activity programs aim to increase the amount of time that students are physically active. Comprehensive wellness programs have a more global purview through the promotion of school-wide wellness policy development and/or including nutrition as well as physical activity initiatives.

Descriptive statistics, mean, standard deviation, minimum, and maximum, are provided on the location, grades served, and student and teacher characteristics for all NYC public schools. The percentage of schools offering each significant program, overall and by grade level served as well as descriptive statistics by the number of wellness programs provided are also presented. These descriptive analyses are followed with regression analyses that associate program provision with school characteristics to explore the extent to which programs are distributed equitably by income, race/ethnicity, and nativity status. Coefficients on these latter three indicators are commonly used in equity studies in education to measure fair treatment. A second set of regression analyses explores if program provision is related to student needs, for example whether schools with a disproportionately high percentage of obese students more likely to have physical education programs? Linear probability models estimated with robust standard errors to account for heteroskedasticity are presented. Logit analysis yielded qualitatively similar results. Linear probability model results are reported because of the ease in interpreting variable coefficients.

RESULTS

Table 1 displays descriptive statistics for the 1,463 NYC public schools in this analysis. Information about the sample and definitions of the variables are provided in table notes. Notice that schools are disproportionately located in one NYC borough, Brooklyn (31%), nearly 12% of schools are new, that is opened in last five years, over 41% are co-located,

defined as located in the same building with another school, and 39.8% are elementary level. In the average school, roughly three quarters of all students qualify for free or reduced price lunch – that is, have family income below 185% of the federal poverty line, the best proxy for low income in school administrative data bases. Further, 33% are black and 42 % Hispanic. The average school enrolls 644 students. On average, more than one fifth of students are at or above the 95th percentile of BMI for their age and sex, and the range of one measure of fitness, curl ups, is from 1.5 standard deviations below to 2.9 standard deviations above the mean. Curl-ups are used as a measure of fitness because they are a count variable and are likely subject to less measurement error compared to other fitness assessments that utilize student flexibility measurements. The validity of this particular measure and the advantages of using it over others were discussed with the NYC DOHMH, a city agency that also uses data from the NYC FITNESSGRAM for empirical work.¹² There are two other count variable fitness measurements, the pacer and push-ups, which yield similar or non-significant results in our analyses. Teachers are overwhelmingly women at over 75%, and 12% have been teaching fewer than three years in NYC public schools. Finally, nearly 9% of schools receive D or F grades on city report cards in 2013. Although not shown in Table 1, some of these statistics vary by school level. For example, on average, nearly 90% of teachers are women in elementary schools, much higher than the roughly 55% in high schools, and schools' white students range from 16% (elementary schools) to 7.3% (high schools).

Voluntary Wellness Programs are Numerous

Eighteen wellness programs meet the inclusion criteria and operate in NYC public schools. Table 2 lists each program by category and shows the percentage of NYC public schools by grades served (e.g. elementary) that provided the program in 2013. Websites for each program are referenced in the table. In each broad category in Table 2, there is one program that is most prevalent. Under Nutrition Education and Demonstration programs, *Team Nutrition*¹³ is provided by nearly 49% of schools; among Physical Education and Activity programs, *Mighty Milers*⁶ is provided by nearly 18%; and under Comprehensive Wellness, *Fuel up to Play 60*¹⁴ *Team Nutrition*¹³ in 46%. Moreover, all three of these programs, as is the case for most programs, are offered disproportionately by elementary or elementary-middle schools as compared to middle or high schools. The disproportionate provision at the elementary/middle level is partly due to the share of programs at that level that meet our inclusion criteria for significant programs. Eight of the programs included in our study are available only at the elementary/middle levels while only two are available only in high schools. The remaining eight are offered to all levels.

A Large Proportion of Schools Provide No Programs or Five or More Programs

Table 3 displays school characteristics by number of programs in 2013. Some noteworthy differences stand out. First, 244 out of the 1,463 schools (16.7%) offer no programs at all while 166 (11.3%) have five or more programs. Again, schools that offer no programs are disproportionately high schools (46.8%), probably as a consequence of lower program inclusion in our sample at that level. The maximum number of programs is ten, present in one school, and five schools have nine programs. Correlations between programs offered reveal only a few relatively high correlations in the range of 0.01 and 0.50; not shown but

available from authors. The correlation between *Alliance for a Healthier Generation – Full*⁷ and *Grow NYC*¹⁵ is 0.50 and between *HealthCorps*¹⁶ and *Grow NYC*¹⁵ is 0.44; beyond these, *School Wellness Grants*¹⁷ are correlated near 0.30 with *GrowNYC*,¹⁵ *Garden to Café*,⁵ and *Cookshop Classroom*,¹⁸ but all others are correlated at less than 0.30. Thus, at least when two programs are offered, there are few patterns of specific pairings and, among these, pairings between comprehensive wellness programs, whose objectives are often the whole school wellness environment, and another program are common. Second, the number of programs provided is inversely related to the percentages of Asian and foreign-born students and positively related to the percentages of special education students. In the schools with the most programs, five or more, Asian students comprise 11.0%, foreign-born students comprise 11.0%, and special education students comprise 18.8% of students compared to 13.3%, 19.6%, and 16.5%, respectively, in schools with no programs.

Little Evidence Supports Inequity According to Race/Ethnicity, Income, and Nativity

Table 4 displays results for linear probability models of provision of at least one program in each of the three broad categories, plus a model of the total number of programs provided, as a function of the school demographic, grades served, and location variables. These results shed light on whether programs are distributed equitably by poverty, race/ethnicity, and nativity. While comprehensive programs and the total number of programs are slightly less likely to be provided in schools with higher percentages of poor students (0.2% and 0.005 fewer programs, respectively), the probabilities of providing nutrition and/or comprehensive programs are slightly higher in schools with higher percentages of black students, and for nutrition programs, of Hispanic and foreign-born students. Also, schools with higher percentages of black or Hispanic students offer very slightly higher numbers of programs, 0.008 and 0.009, respectively. Overall, there are few differences in the distribution of type of program or number of programs by poverty, race/ethnicity, or nativity.

Note that there are some strong relationships with location of schools. Schools located in Queens are considerably less likely to provide programs and also provide 1.4 fewer programs than Manhattan schools, the excluded borough in the regression. Specifically, elementary and elementary-middle schools are the most likely to provide programs and also to provide the largest number on average, 1.9 and 1.6 more, respectively, more than high schools, the excluded group.

School Need, Size, Newness, and Co-location Correlate with Provision

Table 5 displays results for models that allow us to assess the relationship between program provision and needs of students. School demographic variables are included in these regressions, but coefficients are not displayed to save space. Complete regression results are available from authors. Strikingly, some variables associated with provision move in the opposite direction to what students needs would dictate. Schools with larger percentages of fit students (higher z curl up) provide more programs and are more likely to provide nutrition education and comprehensive wellness programs. Schools with higher percentages of obese students provide fewer programs and are less likely to provide comprehensive wellness programs. Beyond these relationships with variables that measure student need, results show that schools with larger percentages of inexperienced teachers are less likely to

provide nutrition programs: holding other things constant, a ten percentage point increase in inexperienced teachers would decrease the likelihood of providing at least one nutrition program by three percentage points. Larger schools are more likely to provide at least one Nutrition Education and Comprehensive Wellness program and to provide more total programs. Schools that differ by 100 enrolled students, holding all else constant, differ by 2 percentage points in the probability of providing a nutrition program and 1 percentage point in providing a comprehensive program. New schools and co-located schools, however, are considerably less likely to provide programs: 16.2 percentage points and 10.2 percentage points less likely for nutrition programs, holding other variables constant, for example. Finally, as before, elementary schools are more likely to provide programs. In a separate analysis, however, conducted to assess the relationship between the eight programs available for provision in *all* grades, the relationship between elementary schools and total programs is attenuated ($\beta = 0.274$, $p < .1$), while the relationships with all other variables remain the same.

DISCUSSION

To the extent that schools in other large school districts provide wellness programs, the results of this work in NYC will be instructive in identifying the characteristics that impede or facilitate program provision. NYC public schools voluntarily provide a large number (18) of significant wellness programs in areas of nutrition, fitness, and comprehensive wellness, although over 16% of schools provide no programs at all and nearly 12% provide five or more programs.

A major finding of this paper is that while these programs are distributed equitably with respect to race/ethnicity, poverty, and nativity, they are largely unassociated, or associated in a perverse direction, with student needs such as fitness or obesity. If wellness programs are effective in changing student behavior, then provision in the perverse direction may serve to widen health disparities. Information on how long each program has been offered in each school is not presently available, requiring a cross-sectional analysis of the wellness program data and not allowing us to gauge success over time.

Additionally, high schools, new schools, co-located schools, small schools, and schools with larger proportions of inexperienced teachers are less likely to provide wellness programs. The relationship between high schools and program provision is attenuated when schools exclusively targeting elementary schools are excluded, which suggests that program availability is driving the relationship with high schools. It is not clear why the elementary level has more programs available. Generally elementary school children are the target of school reform efforts, perhaps on the theory that starting young will yield benefits later or that young children are easier to serve.¹⁸ Or perhaps because urban high school students fare badly in terms of high school graduation rates and other common outcomes,¹⁹ priorities at that level are focused on academic programs. For new and co-located schools, perhaps administrators are significantly burdened with working out the kinks of new schools and addressing space sharing issues for co-located schools leaving little time to pursue wellness programming. The result for schools with many inexperienced teachers may reflect disorganized schools—that is, well run schools may have lower teacher turnover, thus more

experienced teachers—or that inexperienced teachers are too overwhelmed to initiate extra initiatives such as providing wellness programs.

There are a number of limitations to this study. First, the data were derived from one large school district and thus findings may not be generalizable to other districts, especially smaller ones. Second, although schools provide programs, they may implement them with different degrees of fidelity and no information on this aspect of programs presently available. Third, provision of a program does not mean that a program is effective in meeting its goals. There are many studies that evaluate individual program effects,²¹⁻²⁷ but data limitations precluded this from the present analysis. Nonetheless, the first step to program efficacy is provision, so that the analyses here should prove useful to districts, schools, and sponsors.

IMPLICATIONS FOR SCHOOL HEALTH

There are implications of this study for sponsors of discretionary wellness programs, schools, and districts. For sponsors, first, assuming programs are effective at meeting their goals, there is a need to target schools where higher percentages of students are obese and less fit and to seek out schools that have less capacity for program provision, such as new, small, and co-located schools and schools with higher percentages of inexperienced teachers. Second, there are a number of programs that have limited reach, with fewer than 10% of schools providing the program.²⁷⁻³⁰ Again, assuming these programs are effective, sponsors should be encouraged to provide them on a larger scale in order to have an overall effect on public school students. Third, program sponsors looking for characteristics of schools that may indicate a need for support should explore middle and, especially, high schools.

For schools, implications are that some schools provide many programs while others provide none. Schools with five or more programs, 16.7% of schools, may be at risk of competing for student attention, especially if there is duplication of effort. Schools with no programs, 11.3% of schools, are ripe for attention. Thus, schools with many programs can look to make sure they are not using resources in duplication efforts, and schools with no programs can reach out to some of the sponsors of programs listed in this paper. Second, high schools in particular need to be proactive in reaching out to sponsors since so few programs are provided at this level and so few are specifically targeted to high schools, where the need is no less pressing.

Districts can help by offering support to schools that wish to provide new programs with personnel expertise from the central office, for example from an office that manages district school wellness policies, or by providing extra start-up funds or, as in NYC, creating a web-based wellness portal³¹ to share program information and offering professional development resources. Districts might also be helpful in working with sponsors and schools to figure out if program designs need any modifications to work at levels other than the elementary school level. Finally, while a great deal of school penetration and provision of discretionary wellness programs has been achieved, districts could help to even out provision across schools.

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Table 1

Descriptive Statistics, NYC Public Schools, 2013

	Mean	SD	Min	Max
<i>School Characteristics (%)</i>				
Manhattan	19.5	39.7	0	1
Brooklyn	31.0	46.3	0	1
Bronx	24.5	43.0	0	1
Staten Island	4.4	20.5	0	1
Queens	20.6	40.5	0	1
School < 5 years old (new)	11.9	32.4	0	1
Co-location	41.8	49.3	0	1
Elementary	39.8	49.0	0	1
Elementary-Middle	9.2	29.0	0	1
Middle	18.3	38.9	0	1
Middle-High	5.5	22.7	0	1
High	26.9	44.3	0	1
<i>Student composition (% unless otherwise noted)</i>				
Asian	12.6	17.3	0	95.0
Black	33.2	28.2	0	98.0
Hispanic	42.1	25.7	2	100
White	12.0	19.2	0	92.0
FRL	76.9	22.2	2	100
Special education	17.1	7.2	0	47.8
LEP	14.4	15.5	0	98.0
Foreign born	15.3	14.3	0	97.5
Enrollment (tens)	64.4	52.2	2.9	543.6
zCurl Up (z score)	-0.1	0.5	-1.5	2.5
Obese	20.5	7.0	0	82.2
D or F Progress Report Grade (dummy)	8.9	28.5	0	1
<i>Teacher characteristics</i>				
% female	75.5	16.3	14.3	100.0
% fewer than 3 years exp.	12.0	12.4	0.0	88.0
Number of Schools	1,463			

Notes:

ⁱ Schools are not included if they are charter (154), exclusively special education students (44), in the process of opening or closing with only one or two grades (13), K-12 (2), or K-2 or K-3 (54).

ⁱⁱ Definition of variables: Manhattan, Brooklyn, Bronx, Staten Island, and Queens are the borough location of schools. Schools 5 years or younger are schools that have been in existence for 5 years or less. Co-location is defined as any school that shares an address with any other public school. Elementary schools have a grade 4 and where grade 6 is the highest grade. Elementary Middle schools have a grade 4 and grade 7 but no grade above 8. Middle schools have no grade 4, but a grade 7, and where grade 9 is the highest possible grade. Middle High schools have no grade 4, but grade 7 and grade 10. High schools have grades in the range 9-12, but no grades below. Asian, Black, Hispanic and White are the four categories for race/ethnicity in NYC. F/RL is the percent of students in a school eligible for national free or reduced lunch program. Special education is the percent of students in a school with an IEP. LEP is the percent of students in a school that have limited English Proficiency as defined by . Curl-up is a measure of the Fitnessgram test that measures core strength and zCurl up the mean student standardized curl-up score where the scores are

standardized by age in months, year, and sex. Obese is the percentage of students who are at the 95th percentile or greater for the body mass index of students for their age and sex. The two teacher characteristic variables are from the Independent Budget Office. Fewer than 3 years is defined as the percentage of students who have been teaching in NYC public schools for three years or less.

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Table 2

Percentage of Schools, Discretionary Wellness Programs by School-Level, 2013

Program	Elem	Elem Mid	Middle	Mid High	High	Total
<i>Nutrition Education and Demonstration</i>						
Eat Well Play Hard ³²	6.5	8.9	0.4	0.0	0.0	3.5
Team Nutrition ¹³	62.1	54.8	32.0	27.5	42.4	48.7
GrowNYC ¹⁵	15.3	20.7	8.8	12.5	12.2	13.6
Garden to Café ⁵	5.3	3.0	1.5	5.0	3.8	4.0
CookShop Classroom ¹⁸	20.9	14.1	0.0	0.0	0.0	9.6
CookShop for Teens ²⁹	0.0	0.0	0.0	2.5	2.8	0.8
Fresh Fruit and Vegetable ³³	11.8	12.6	0.0	0.0	0.0	5.9
WITS:Cook for Kids ²⁸	3.6	5.2	2.6	0.0	0.2	2.5
<i>Physical Education and Activity</i>						
NYRR: Developmental Track and Field ³⁴	12.0	12.6	18.4	10.0	0.0	9.9
NYRR: Mighty Milers ⁶	31.0	23.0	14.7	6.3	1.3	17.9
Swim for Life ³⁵	20.1	18.5	0.4	1.3	0.5	10.0
Move to Improve ³⁶	12.1	14.8	0.0	0.0	0.0	6.2
Recess Enhancement Program ³⁰	7.0	4.4	0.0	0.0	0.0	3.2
<i>Comprehensive Wellness</i>						
Alliance for a Healthier Generation – full ⁷	5.3	3.0	1.5	2.5	6.4	4.5
Alliance for a Healthier Generation - materials only ⁷	18.2	14.1	12.5	13.8	12.5	15.0
Health Corps ¹⁶	0.0	0.0	0.0	1.3	3.6	1.0
Fuel up to Play 60 ¹⁴	49.7	51.1	39.3	47.5	43.0	46.0
School Wellness Grant ¹⁷	6.9	5.9	8.1	8.8	8.9	7.7
Number of schools	583	135	272	80	393	1,463

Notes:

i. All information is for 2012-13 except for BIC, UFM, FFVP and Garden to Café, which are 2011-12. Each program was researched via the internet to determine basic program information and to identify the schools that had adopted each wellness program in school year 2012-13. If this information was not available online, the wellness program was contacted and asked to provide a list of schools that had adopted their wellness program in school year 2012-13.

ii. School levels are mutually exclusive and are defined as follows:

Elementary - schools with grade 4 and where grade 6 is the highest grade

Elementary Middle - schools with grade 4 and grade 7 but no grade above 8

Middle - schools with no grade 4, but a grade 7, and where grade 9 is the highest possible grade

Middle High - schools with no grade 4, but grade 7 and grade 10

High - schools with grades in the range 9-12, but no grades below.

Table 3

Mean Characteristics of Schools by Number of Discretionary Wellness Programs, 2013

School Characteristics:	0	1-2	3-4	5+	Total
Free/Reduced Lunch (FRL) (%)	77.7	75.8	78.8	77.1	76.9
Asian (%)	13.3	13.5	10.7	11.0	12.6
Black (%)	37.2	31.1	34.8	33.6	33.2
Hispanic (%)	41.3	42.2	42.2	42.4	42.1
White (%)	8.3	13.0	12.2	12.9	12.0
Foreign born (%)	19.6	16.3	11.9	11.0	15.3
Special education (%)	16.5	16.6	17.9	18.8	17.1
LEP (%)	14.6	14.3	14.0	15.3	14.4
D or F Grade (%)	16.5	6.9	9.1	8.3	8.9
Elementary (%)	16.5	32.8	59.5	71.0	39.8
Elementary-Middle (%)	4.0	7.9	14.4	13.6	9.2
Middle (%)	26.2	22.4	10.8	4.3	18.6
Middle-High (%)	6.5	7.0	3.6	0.6	5.5
High (%)	46.8	30.0	11.8	10.5	26.9
Manhattan (%)	14.5	18.9	21.2	27.2	19.5
Bronx (%)	25.8	23.6	25.5	24.7	24.5
Brooklyn (%)	28.6	28.1	35.0	40.1	31.0
Queens (%)	29.8	24.2	12.4	5.6	20.6
Staten Island (%)	1.2	5.2	5.9	2.5	4.4
N	244	751	302	166	1,463

Notes:

ⁱSchools range in number of programs from 0 to 10.

Table 4

Linear Probability Models of Provision of Wellness Programs on School Characteristics; OLS Models of Number of Overall Programs on School Characteristics

VARIABLES	Nutrition Education	Physical Education	Comprehensive	Number of Programs
% FRL	-0.001 (0.001)	-0.000 (0.001)	-0.002** (0.001)	-0.005* (0.003)
% Asian	0.002* (0.001)	-0.000 (0.001)	0.002 (0.001)	0.005 (0.005)
% Black	0.002** (0.001)	0.001 (0.001)	0.002* (0.001)	0.008** (0.003)
% Hispanic	0.004*** (0.001)	0.000 (0.001)	0.001 (0.001)	0.009** (0.004)
% Foreign born	0.008*** (0.002)	0.001 (0.002)	-0.000 (0.002)	0.011 (0.007)
% SPED	0.002 (0.002)	0.001 (0.002)	-0.001 (0.002)	0.007 (0.007)
% LEP	-0.005*** (0.002)	-0.002 (0.002)	-0.001 (0.002)	-0.009 (0.006)
Elementary ⁱⁱ	0.414*** (0.042)	0.574*** (0.035)	0.131*** (0.047)	1.896*** (0.150)
Elementary-Middle	0.386*** (0.046)	0.485*** (0.048)	0.131** (0.056)	1.574*** (0.172)
Middle	-0.059 (0.041)	0.299*** (0.031)	0.006 (0.042)	0.181 (0.116)
Middle-High	-0.076 (0.057)	0.129*** (0.043)	0.042 (0.063)	0.074 (0.165)
Brooklyn ⁱⁱⁱ	0.083** (0.034)	-0.149*** (0.033)	-0.253*** (0.040)	-0.387*** (0.141)
Staten Island	0.217*** (0.056)	-0.197*** (0.066)	-0.132* (0.075)	-0.644*** (0.211)
Queens	-0.500*** (0.038)	-0.110*** (0.037)	-0.157*** (0.043)	-1.383*** (0.137)
Bronx	-0.065* (0.035)	-0.128*** (0.033)	-0.060 (0.040)	-0.423*** (0.141)
Constant	0.259*** (0.080)	0.061 (0.083)	0.676*** (0.090)	1.236*** (0.296)
Observations	1,463	1,463	1,463	1,463
R-squared	0.306	0.241	0.054	0.252

Notes:

ⁱ Robust standard errors in parentheses;

p < .01,

**
p < .05,

*
p < .1.

ⁱⁱ High is the excluded category.

ⁱⁱⁱManhattan is the excluded category.

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Table 5

Linear Probability Models of Provision of Wellness Programs on School Need and Capacity Variables; OLS Models of Number of Overall Programs on School Need and Capacity Variables

Outcome	Nutrition Education	Physical Education	Comprehensive Wellness	Number of Programs
zCurl up ⁱ	0.042 ** (0.018)	0.016 (0.022)	0.073 *** (0.024)	0.177 ** (0.079)
%Obese ⁱ	-0.002 (0.002)	-0.001 (0.002)	-0.005 * (0.003)	-0.017 * (0.009)
% FRL ⁱ	0.002 ** (0.001)	0.000 (0.001)	-0.000 (0.001)	0.004 (0.003)
D or F Grade ⁱ	-0.052 (0.039)	-0.007 (0.040)	-0.038 (0.048)	-0.196 (0.151)
Enrollment (tens)	0.002 *** (0.000)	0.000 (0.000)	0.001 * (0.000)	0.004 *** (0.001)
% fewer 3 yrs	-0.003 *** (0.001)	-0.000 (0.001)	-0.002 (0.001)	-0.009 *** (0.004)
% fem teacher ⁱ	-0.000 (0.001)	0.002 (0.001)	0.001 (0.002)	0.002 (0.004)
< than 5 yrs (new) ⁱ	-0.161 *** (0.045)	0.016 (0.034)	-0.089 * (0.049)	-0.198 (0.158)
Co-located ⁱ	-0.105 *** (0.030)	-0.015 (0.029)	-0.046 (0.034)	-0.246 ** (0.114)
Elementary	0.261 *** (0.064)	0.508 *** (0.056)	-0.015 (0.071)	1.441 *** (0.220)
Elementary-Middle	0.205 *** (0.062)	0.425 *** (0.062)	-0.017 (0.073)	1.069 *** (0.222)
Middle	-0.120 *** (0.045)	0.272 *** (0.038)	-0.052 (0.050)	0.025 (0.137)
Middle-High	-0.108 * (0.059)	0.109 ** (0.045)	0.003 (0.066)	-0.009 (0.177)
Observations	1,463	1,463	1,463	1,463
R-squared	0.385	0.244	0.090	0.292

Notes: Robust standard errors in parentheses;

p < .01,

**
p < .05,

*
p < .1

ⁱ Models include dummy variables indicating missing data

ⁱⁱ Models include all school characteristics that were included in models reported in Table 4