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Disparities in meeting physical activity guidelines for Asian Americans in two metropolitan areas in the United States

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Abstract

Purpose—Physical activity (PA) levels in Asian American adults may be lower than other racial/ethnic groups. This analysis tested the hypothesis that Asian Americans are less likely to meet PA guidelines than other racial/ethnic groups regardless of location of residence.

Methods—The New York City (NYC) Community Health Survey (2010, 2012) and Los Angeles County (LAC) Health Survey (2011) are cross-sectional surveys conducted with similar sampling strategies (NYC: n=17,462; LAC: n=8,036). Meeting PA guidelines was calculated using self-reported moderate or vigorous minutes/week; multivariable regression models adjusted for demographics, insurance, nativity and language spoken at home. Data were weighted to be representative of their respective geographies.

Results—In both areas, Asian Americans had a low prevalence of meeting PA guidelines (NYC: 42.7 [39.2-46.3]; LAC: 55.8 [51.2-60.2]). Other racial/ethnic groups were more likely to meet PA guidelines versus Asian Americans after adjustment for covariates in NYC (white OR: 1.35 [1.09-1.68]; black OR: 1.61 [1.28-2.02]; Hispanic OR: 2.14 [1.74-2.62]) and in LAC (white OR: 1.45 [1.13-1.86]; Hispanic OR: 1.71 [1.32-2.22]).

Conclusions—Asian Americans were less likely to meet PA guidelines compared to other racial/ethnic groups in NYC and LAC. Description of cultural and neighborhood-level factors and of types of PA in specific Asian subgroups is needed.

Keywords

exercise; Asian Americans; health status disparities; population surveillance; urban health

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Introduction

Physical activity (PA) is a beneficial health behavior, associated with reduced risk of chronic disease. To meet aerobic requirements as recommended by the 2008 Physical Activity Guidelines for Americans (PAGA), adults should engage in 150 minutes/week of moderate-intensity, or 75 minutes/week of vigorous-intensity PA, or an equivalent combination of moderate- and vigorous-intensity PA.[1] According to recent data from a national sample of adults, only 36.1% were aware of the 2008 PAGA.[2] In addition, meeting PA guidelines is suboptimal in the adult U.S. population; according to 2011 data, only 51.6% of adults met the aerobic guidelines.[3]

Asian Americans have been documented to have lower levels of leisure-time PA (LTPA) than other racial/ethnic groups, but the data is sparse. Though Asian Americans have a lower prevalence of obesity (10.8 vs. 32.6-47.8 in other racial/ethnic groups),[4] they are more likely to develop hypertension and diabetes at lower body mass index values than other racial/ethnic groups.[5] This may be because Asian Americans tend to have higher percent body fat for the same body mass index compared to their white counterparts.[6] Any mitigating impact of PA on obesity or related outcomes is of interest for Asian American populations.

The general awareness of the PA disparity among Asian Americans is low. To the author's knowledge, only a few peer-reviewed studies have documented this PA disparity in Asian Americans compared to other racial/ethnic groups;[7-10] some have described PA patterns within Asian subgroups.[11, 12] All prior studies used the California Health Interview Survey (CHIS). The Asian American population includes individuals from vastly different cultural backgrounds (e.g., Chinese, Asian Indians, Filipinos) and further, Asian Americans from these subgroups are differentially distributed across the United States. NYC and Los Angeles County (LAC) each contain large Asian American populations with different Asian subgroup compositions compared to the overall state of California.[13] In addition, both NYC and LAC conduct regional health surveys, with population sampling performed in such a way that estimates may be weighted to be representative of the entire respective area, providing a unique opportunity to examine health behaviors such as PA.

The purpose of this analysis was to examine the prevalence of meeting PA guidelines in adults by race/ethnicity in NYC and in LAC, two areas with differing opportunities to be physically active. The specific hypothesis we were testing was that Asian Americans would have lower levels of PA than all other racial/ethnic groups regardless of their area of residence.

Material and Methods

Data from two municipal surveys were used, one conducted among non-institutionalized adults in NYC and the other in LAC. Both surveys are random-digit-dial, cross-sectional telephone surveys that incorporate both a landline and cell phone sample. The NYC survey has been conducted since 2002, while the LAC survey has been conducted since1997. Both surveys may also be weighted to be representative of their respective populations.

Datasets

NYC data were from two waves (2010 and 2012) of the NYC Community Health Survey (NYC CHS), a health survey conducted annually by the NYC Health Department in English, Spanish, Russian and Chinese (i.e., surveys were translated into Mandarin, interviewers spoke Cantonese and Mandarin). The NYC CHS includes self-reported health data on approximately 9,000 participants each year. Data from the 2010 and 2012 survey years were combined (n=17,462). Participants missing the primary outcome of meeting PA guidelines were excluded from the analysis (n=1,166), resulting in an unweighted sample size of n=16,296 (Asian Americans: n=1,328). For logistic regression analyses, the final sample size was n=14,178.

LAC data were from the 2011 LAC Health Survey (LACHS; n=8,036); the sixth iteration. The LACHS is a health survey conducted periodically by the LAC Department of Public Health. The 2011 LACHS was administered in English, Spanish, Cantonese, Mandarin, Vietnamese and Korean. The survey collects information on demographics, health conditions, health-related behaviors, health insurance coverage, and access to care among county residents. Details regarding the survey design and weighting methodology are reported elsewhere.[14] Participants who were missing the primary outcome of meeting PA guidelines were not included in the analysis (n=171), resulting in an unweighted sample size of n=7,865 (Asian Americans: n=766). For logistic regression analyses, the final sample size was n=7,117.

Physical activity and covariate definitions

In both the NYC CHS and the LACHS, meeting PA guidelines were assessed using a series of questions on moderate and vigorous physical activities. The questions across the two surveys differed slightly but were comparable (Supplemental Table S1). More broadly, the NYC questions use the phrase ‘leisure-time PA’ in wording, while the LAC questions do not and are inclusive of activity at work. The LAC questions include ‘walking’ as a part of question wording for assessing moderate activity, while the NYC questions do not. Continuous values of self-reported PA minutes were used to calculate a composite variable of meeting PA guidelines, or performing 150 minutes of moderate or 75 minutes of vigorous exercise per week; participants were categorized as being sufficiently active, insufficiently active, or inactive.

Race/ethnicity was assessed using questions on Hispanic origin and race group, and was categorized as non-Hispanic Asian American, non-Hispanic white, non-Hispanic black, Hispanic, or non-Hispanic other (hereafter referred to as ‘Asian American’, ‘white’, ‘black’, or ‘other’). All other covariates (age, sex, poverty group, education, insurance type) were self-reported. Household poverty was grouped according to federal poverty guidelines (<200%, 200-399%, ≥400% of the federal poverty level). Insurance type was defined as private, public, uninsured or other. Nativity was defined as being born in the U.S. or elsewhere. Puerto Ricans and those born in U.S. territories were defined as being foreign born. The length of time spent in the U.S. was assessed in foreign-born adults (<10, ≥10 years). A diverse array of languages spoken at home was ascertained in both surveys, but

due to sample size and a general lack of heterogeneity across languages, this variable was collapsed as English or non-English.

Statistical analyses

Results were weighted to be representative of the NYC and LAC adult, non-institutionalized populations. The prevalence of meeting PA guidelines (sufficiently active) was assessed in each dataset and stratified by covariates. Multivariable logistic regression models were used to assess the association of race/ethnicity with the odds of meeting PA guidelines adjusted for age, sex, poverty, education, insurance type, nativity and language spoken at home. To assess which sociodemographic covariates were independently associated with meeting PA guidelines within Asian Americans, analyses were restricted to Asian Americans. Specific Asian ethnicity (i.e., Chinese, Korean, Filipino, South Asian, Vietnamese, Japanese) was not assessed in U.S. born Asians in the 2010 NYC CHS. Thus Asian American-specific analyses were conducted in NYC CHS 2012 and in LACHS data only. To compare PA levels across NYC and LAC, prevalence estimates were run area-wide (city or county) and stratified by race/ethnicity. Statistical comparisons between NYC and LAC were made by examination of 95% confidence intervals; non-overlapping confidence intervals were noted. SUDAAN (version 11.0; Research Triangle Institute, Research Triangle Park, North Carolina) was used for all analysis.

Results

The characteristics of the NYC CHS and the LACHS participants are displayed in Table 1. The racial/ethnic breakdown between the two areas was similar for Asian Americans and for whites, but differed for blacks and Hispanics. In NYC, the population was 21.6% black and 27.2% Hispanic, while in LAC the population was 8.6% black and 43.7% Hispanic. All other covariates were similar across NYC and LAC.

The crude prevalence of meeting PA guidelines was similar, but slightly lower in NYC (57.9 [56.8, 59.1]) than in LAC (61.8 [60.3, 63.2]; Table 2). In NYC, less than half of Asian Americans (42.7%) met PA guidelines, a prevalence that was lower than all other racial/ethnic groups. In LAC, 55.8% of Asian Americans met PA guidelines, which was significantly lower than the prevalence in whites (61.3, $p<0.001$) and Hispanics (60.2, $p<0.001$). In NYC and LAC, the prevalence of meeting PA guidelines was lower in older age groups; women; and those at higher poverty and lower education levels or who had public insurance. Nativity was significantly associated with the prevalence of meeting PA guidelines; U.S.- vs. foreign-born adults were more likely to meet guidelines in both NYC and LAC. Speaking English at home vs. not was also significantly associated with meeting PA guidelines.

The adjusted odds of meeting PA guidelines are displayed in Table 3. Similar to the crude prevalence results, the adjusted odds of meeting PA guidelines was higher in all other racial/ethnic groups compared to Asian Americans in NYC (white OR: 1.35 [1.09-1.68]; black OR: 1.61 [1.28-20.2]; Hispanic OR: 2.14 [1.74-2.62]). In LAC, whites (OR: 1.45 [1.13-1.86]) and Hispanics (OR: 1.71 [1.32-2.22]) were more likely to meet PA guidelines compared to Asian Americans. After adjustment for all other covariates, nativity was no

longer associated with meeting PA guidelines. In NYC, speaking English vs. a non-English language at home was significantly associated with increased odds of meeting PA guidelines (OR: 1.70 [1.44-2.02]).

Factors associated with meeting PA guidelines in Asian Americans

When data were restricted to only Asian Americans, a few interesting patterns emerged. In Asian Americans in NYC, those living in higher poverty, with lower education levels, and those with public insurance and the uninsured were less likely to meet PA guidelines than their referent groups (Supplemental Table 2). The Chinese Americans in NYC had a strikingly lower prevalence of meeting PA guidelines: only 24.3% (19.5, 29.7) of Chinese Americans reported meeting PA guidelines compared to all other Asian subgroups (Korean: 59.5%; Filipino: 44.1%; South Asian: 52.1%; Vietnamese:18.5%; Japanese: 82.6%, though the estimates for Vietnamese and Japanese adults were highly unstable). This disparity across subgroups was not observed in the LACHS data; nor did it persist after adjustment in multivariable models for age, sex, poverty, education, insurance type, nativity or language spoken at home. In Asian Americans, being U.S.-born was strongly associated with meeting PA guidelines for crude prevalence and adjusted odds ratio models in NYC and in LAC. Language spoken at home was associated with meeting PA guidelines in NYC Asian Americans, only.

Comparisons across NYC and LAC

Nearly 1 in 5 NYC adults and 1 in 10 LAC adults were inactive (NYC inactive: 18.6 [17.8-19.5]; LAC inactive: 12.0 [11.1-13.1]). The prevalence of being sufficiently active among Asian Americans was higher in LAC in comparison to NYC (Asian Americans sufficiently active NYC: 42.7 [39.2-46.3]; LAC: 55.8 [51.2-60.2]. Asian Americans inactive NYC: 23.5 [20.7-26.7]; LAC: 13.2 [10.4-16.6]) and in whites (whites sufficiently active NYC: 60.2 [58.4-61.9]; LAC: 64.3 [62.1-66.5]; whites inactive NYC: 15.8 [14.5-17.0]; LAC: 11.8 [10.3-13.4]).

Discussion

In two large, population-based samples of urban adults, Asian Americans were less likely to meet PA guidelines compared to other racial/ethnic groups in both crude analyses and analyses adjusted for sociodemographic factors and for markers of acculturation. The current analysis is consistent with previous studies that have demonstrated lower levels of PA in Asian Americans compared to other racial/ethnic groups, and contributes to the literature by demonstrating these findings in datasets/study populations other than the CHIS/California.[8, 9] The distribution of Asian subgroups in California as a whole (three largest subgroup: Filipino, Vietnamese, Chinese) differs from both NYC (three largest subgroups: Chinese, Asian Indian, Korean) and from LAC (three largest subgroups: Chinese, Filipino, Korean).[13]

Given the low PA levels in Asian Americans observed across both urban areas, the results of this analysis imply that a component inherent in the cultural practices of Asians in America may be affecting PA levels. A few papers have explored the determinants of PA in Asian

Americans. As shown in this analysis, being born in the U.S. was positively associated with meeting PA guidelines, though increasing immigrant generation status (defined as first: U.S.-born with both foreign-born parents, second: U.S. born with one foreign-born parent, third: U.S. born with U.S.-born parents), time spent in U.S. and language spoken at home have shown mixed results.[7-9, 11] It may be that the carryover norms around PA post-migration do not change, but that once a child is born here, they are more likely to follow the PA norms of their American peers. What has not been documented in the literature is whether LTPA as determined by Western definitions of activity are being complemented with traditional exercises such as taichi, yoga or meditation. This may be the case at least in some instances, since according to national data, Asian Americans are more likely to perform taichi and qigong for health compared to whites (OR: 2.02 [1.30, 3.15]).[15]

The low prevalence of meeting PA guidelines in Chinese Americans in NYC is an interesting finding, and one that has been demonstrated previously in other California-based and international studies. An aforementioned analysis of 2007 CHIS data demonstrated that Chinese Americans had a predicted probability of 26.1% of meeting LTPA guidelines and were 118% less likely than whites to meet guidelines.[9] Analyses, including the results of those reported in the current analysis, have demonstrated that about 25-35% of Chinese adults engage in moderate/vigorous PA in quantities to meet PA guidelines.[7, 10] Interestingly, a similar prevalence (28.9%) has been reported in results from the InterASIA study, which includes a nationally representative sample of the Chinese general adult population.[16] A lower prevalence of meeting PA guidelines (14%) was reported in the National Health Interview Survey which includes a countrywide sample of adults in Taiwan.[17] The lack of disparity in Chinese adults in LAC may be explained by differences in place of migration from Chinese areas between LAC and NYC, or by the longer immigration history of Chinese to LAC vs. to NYC. More data on immigration patterns of Chinese Americans and cross-national linkages to origin countries such as China and/or Taiwan are needed.

NYC and LAC differ on two key factors that could bear implication on opportunities for PA. The first factor is geography/urban design. The population of NYC is 8.3 million and covers roughly 300 square miles.[18] The population of LAC is 10.0 million people, and covers 4000 square miles.[19] Similarly, while NYC has been referred to as a vertical city[20] (i.e., small geographic area, traversed by walking or public transportation), LAC was deliberately planned to be horizontal [21] (i.e., large geographic area traversed mostly by car). The second factor is weather; LAC has a more temperate climate than NYC, allowing for more days to be outside (and more PA). The differences in PA level observed between NYC and LAC whereby adults in LAC appear to be slightly more active than adults in NYC implicate built environment factors such as urban design, opportunities for exercise and climate as effectors of activity levels for all adults in both places.

With regards to differences between NYC and LAC, Asian Americans appear to be disproportionately disadvantaged, with lower levels of activity observed in LAC despite any built environment features that may facilitate PA. However results must be interpreted with caution when comparing the results between NYC and LAC for two reasons: 1) differences in question wording and 2) differences in the Asian American populations in both areas. For

instance, the NYC CHS questions do not include occupation or active-transport (i.e., walking) related PA. Asian Americans in NYC differ by socio-demographic and immigration-related factors compared to LAC such that they are more likely to live in poverty, have lower education levels and appear to be 'newer' immigrants according to nativity, years in the U.S. and by language spoken at home variables (Supplemental Table 3). It is logical to conclude, therefore that some of the differences in PA observed in Asian Americans in NYC vs. LAC could be attributed to some of these factors.

A strength of the current analysis is the presentation of analyses in Asian Americans in two geographic areas that include subgroups of Asians not previously represented in analyses of California data. Analyses of both datasets were weighted to be representative of their respective areas, and included large samples of Asian Americans. Asian Americans are often not included in national surveys, and were only recently added to the primary health surveillance dataset, the National Health and Nutrition Examination Survey (NHANES) in the 2011-12 survey wave. While comparisons of demographics, economy and politics across NYC and LAC have been previously and comprehensively documented,[22] less has been done in the vein of health. The limitations of this analysis include the inability to examine structural factors of NYC and LAC given these types of variables did not exist consistently across both surveys. Prior studies have investigated the impact of neighborhood features on PA in Asian Americans and have shown high neighborhood safety and attractive environmental supports (e.g., neighborhood sidewalks, nearby grocery stores) to be positively associated with PA.[11, 12] As stated earlier, differences between question wording in the two surveys should be accounted for when making comparisons between NYC and LAC. An additional limitation is the inability to examine specific Asian subgroups in more detail given small sample sizes. Lastly, another determinant which has emerged in the literature around PA in Asian Americans is social cohesion, in that neighborhood cohesion may mediate activity levels in certain Asian subgroups.[23] Neither dataset included questions on social cohesion, but future studies should address this important factor.

Conclusions

Asian Americans are less likely to meet PA guidelines than other racial/ethnic groups, and PA levels are particularly low in Chinese Americans in NYC. Cultural factors are implicated, but further research through cross-national comparisons, built environment features such as walkability, neighborhood-level factors such as social cohesion, and domains/types of PA are needed in specific Asian subgroups. Though Asian Americans tend to have lower body mass index values compared to other racial/ethnic groups, this advantage is misleading because of differences in body composition, lack of disaggregation of data by Asian subgroup and lack of consideration of globalization on American immigration patterns and disease prevalence.[24] Increasing PA in Asian Americans to reduce future chronic disease morbidity and mortality is a public health priority.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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List of abbreviations

CHIS	California Health Interview Survey
LAC	Los Angeles County
LACHS	Los Angeles County Health Survey
LTPA	leisure-time physical activity
NYC	New York City
NYC CHS	New York City Community Heath Survey
PA	physical activity
PAGA	Physical Activity Guidelines for Americans

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Highlights

- Asian Americans have low levels of physical activity.
- Awareness of this health disparity in Asian Americans is limited.
- In NYC, Asian Americans were least likely to meet exercise guidelines of all racial/ethnic groups.
- In LAC, Asian Americans were less likely than whites and Hispanics to meet exercise guidelines.

Table 1

Demographic characteristics of adults in New York City and Los Angeles County, NYC Community Health Survey 2010 & 2012 and the LA County Health Survey 2011

	NYC		Los Angeles	
	n	weighted %	n	weighted %
Overall	16,296	100	7,865	100
Race/ethnicity				
Non-Hispanic Asian	1,328	13.3	766	15.5
Non-Hispanic white	6,828	35.8	3,381	31.4
Non-Hispanic black	3,668	21.6	846	8.6
Hispanic	4,189	27.2	2,794	43.7
Other	1,328	2.1	78	0.7
Age Group				
18-24	919	13.1	588	13 .8
25-44	4,816	40.6	2,393	39.8
45-64	6,311	31.4	3,173	32.5
65+	4,229	14.8	1,708	13.9
Sex				
Male	6,574	46.7	3,108	48.5
Female	9,722	53.3	4,757	51.5
Poverty/Income†				
<200% federal poverty limit	6,283	44.3	2,980	46.7
200-399% federal poverty limit	2,331	15.3	2,006	24.3
400+% federal poverty limit	5,596	31.3	3,050	28.9
Education^				
Less than High School	2,311	20.3	1,243	23.7
Grade 12 or GED	3,256	23.7	1,148	20.1
Some college	3,022	20.6	1,753	26.7
College graduate	6,702	35.4	3,069	29.5
Insurance Type				
Private	7,671	45.8	4,362	49.9
Public^^	5,902	32.0	2,043	25.4
Uninsured	2,024	19.2	1,354	24.7
Other	526	3.1	n/a	n/a
Nativity				
U.S. Born	9,159	51.0	5,194	54.0
Foreign Born‡	6,822	49.0	2,642	46.0
In US for <10 years	1,029	23.4	331	20.4
In US for ≥10 years	5,764	76.6	2,279	79.6
Language Spoken at Home				
English	12,011	68.2	5,824	60.1

	NYC		Los Angeles	
	n	weighted %	n	weighted %
Non-English	4,227	31.8	2,212	39.9

† "Poverty status as "unknown" is part of denominator but not reported here for the New York City data. Hence percentages do not sum to 100%.

^ Education is restricted to those 25 years of age and older.

^^ Includes Medicaid, Medi-Cal (Los Angeles County), Medicare for those 65+ years

‡ Foreign born includes individuals born in Puerto Rico and other U.S. Territories.

Table 2

Prevalence of meeting 2008 physical activity guidelines, NYC Community Health Survey 2010 & 2012 and the LA County Health Survey 2011

	New York City			Los Angeles		
	%	95% CI	p-value	%	95% CI	p-value
Overall	57.9	(56.8, 59.1)	n/a	61.8	(60.3, 63.2)	n/a
Race/ethnicity						
Non-Hispanic Asian	42.7	(39.2, 46.3)	Ref	55.8	(51.2, 60.2)	Ref
Non-Hispanic white	61.3	(58.9, 63.6)	**<0.001**	64.3	(62.1, 66.5)	**<0.001**
Non-Hispanic black	59.4	(57.2, 61.5)	**<0.001**	59.9	(55.3, 64.3)	0.20
Hispanic	60.2	(58.4, 61.9)	**<0.001**	62.4	(60, 64.7)	**0.01**
Other	62.7	(54.5, 70.3)	**<0.001**	66.2	(51.3, 78.5)	0.16
Age Group						
18-24	70.0	(66.4, 73.3)	**0.01**	77.8	(73.4, 81.7)	**<0.001**
25-44	64.4	(62.5, 66.2)	Ref	64.1	(61.5, 66.7)	Ref
45-64	52.1	(50.3, 54)	**<0.001**	56.1	(53.7, 58.4)	**<0.001**
65+	42.0	(39.7, 44.3)	**<0.001**	52.2	(49.1, 55.4)	**<0.001**
Sex						
Male	62.6	(60.9, 64.3)	**<0.001**	67.0	(64.7, 69.2)	**<0.001**
Female	53.8	(52.3, 55.4)	Ref	56.9	(54.9, 58.8)	Ref
Poverty/Income						
<200% federal poverty limit	50.4	(48.6, 52.3)	Ref	57.4	(54.9, 59.8)	Ref
200-399% federal poverty limit	62.4	(59.5, 65.1)	**<0.001**	62.0	(59, 64.9)	**0.02**
400+% federal poverty limit	67.5	(65.6, 69.3)	**<0.001**	68.7	(66.4, 70.9)	**<0.001**
Education^						
Less than High School	46.3	(43.4, 49.2)	Ref	51.7	(48.1, 55.3)	Ref
Grade 12 or GED	50.3	(47.8, 52.8)	**0.04**	58.3	(54.3, 62.2)	**0.02**
Some college	58.7	(56.1, 61.3)	**<0.001**	59.1	(56, 62.1)	**<0.001**
College graduate	64.3	(62.6, 66.1)	**<0.001**	66.0	(63.7, 68.2)	**<0.001**
Insurance Type						
Private	64.1	(62.6, 65.7)	**0.01**	66.3	(65.1, 69.3)	**0.02**
Public^^	47.5	(45.5, 49.5)	**<0.001**	53.3	(49, 55.1)	**<0.001**
Uninsured	59.6	(56.7, 62.5)	Ref	61.6	(58.3, 65.1)	Ref
Other	62.4	(56, 68.3)	0.43	n/a	n/a	n/a
Nativity						
U.S. Born	63.7	(62.2, 65.2)	**<0.001**	66.3	(64.6, 68)	**<0.001**
Foreign Born‡	52.0	(50.2, 53.7)	Ref	56.5	(54, 59)	Ref
In US for <10 years	52.7	(48.8, 56.7)	Ref	54.3	(47.5, 60.9)	Ref
In US for ≥10 years	51.7	(49.8, 53.6)	0.57	57.1	(54.4, 59.7)	0.44
Language Spoken at Home						
English	63.0	(61.7, 64.3)	**<0.001**	64.5	(62.7, 66.1)	**<0.001**

	New York City			Los Angeles		
	%	95% CI	p-value	%	95% CI	p-value
Non-English	47.0	(44.8, 49.1)	Ref	57.7	(42, 57)	Ref

^Education is restricted to those 25 years of age and older.

^^Includes Medicaid, Medi-Cal (Los Angeles County), Medicare for those 65+ years

ǂForeign born includes individuals born in Puerto Rico and other U.S. Territories.

Table 3

Adjusted* odds of meeting 2008 physical activity guidelines, NYC Community Health Survey 2010 & 2012 and the LA County Health Survey 2011

	New York City			Los Angeles		
	Odds Ratio	95% CI	p-value	Odds Ratio	95% CI	p-value
Race/ethnicity						
Non-Hispanic Asian	*Referent group*			*Referent group*		
Non-Hispanic white	1.35	(1.09, 1.68)	**<0.01**	1.45	(1.13, 1.86)	**0.03**
Non-Hispanic black	1.61	(1.28, 2.02)	**<0.001**	1.28	(0.94, 1.74)	0.34
Hispanic	2.14	(1.74, 2.62)	**<0.001**	1.71	(1.32, 2.22)	**0.03**
Other	1.22	(0.78, 1.9)	0.25	1.81	(0.88, 3.73)	0.13
Age Group						
18-24	1.00	(1.00, 1.00)	n/a	1.00	(1.00, 1.00)	n/a
25-44	*Referent group*			*Referent group*		
45-64	0.62	(0.55, 0.7)	**<0.001**	0.68	(0.58, 0.79)	**<0.001**
65+	0.50	(0.43, 0.59)	**<0.001**	0.68	(0.55, 0.83)	**<0.002**
Sex						
Male	1.36	(1.22, 1.51)	**<0.001**	1.46	(1.27, 1.68)	**<0.001**
Female	*Referent group*			*Referent group*		
Poverty/Income						
<200% federal poverty limit	*Referent group*			*Referent group*		
200-399% federal poverty limit	1.29	(1.09, 1.53)	**<0.01**	1.09	(0.9, 1.32)	0.39
400+% federal poverty limit	1.57	(1.33, 1.84)	**<0.001**	1.39	(1.12, 1.72)	**<0.01**
Education^						
Less than High School	*Referent group*			*Referent group*		
Grade 12 or GED	0.95	(0.8, 1.12)	0.59	1.19	(0.93, 1.51)	0.16
Some college	1.13	(0.94, 1.35)	0.15	1.15	(0.9, 1.46)	0.25
College graduate	1.38	(1.16, 1.66)	**<0.001**	1.46	(1.14, 1.88)	**<0.01**
Insurance Type						
Private	1.00	(0.84, 1.19)	0.97	1.09	(0.88, 1.34)	0.44
Public^^	0.79	(0.66, 0.94)	**0.01**	0.78	(0.62, 0.98)	**0.03**
Uninsured	*Referent group*			*Referent group*		
Other	1.03	(0.75, 1.4)	0.76	n/a		
Nativity						
U.S. Born	0.95	(0.83, 1.09)	0.18	1.17	(0.96, 1.42)	0.12
Foreign Born≠	*Referent group*			*Referent group*		
Language Spoken at Home						
English	1.70	(1.44, 2.02)	**<0.001**	1.10	(0.87, 1.39)	0.43
Non-English	*Referent group*			*Referent group*		

* Odds ratios are adjusted for all other covariates in the table.

^ Education is restricted to those 25 years of age and older

^^Includes Medicaid, Medi-Cal (Los Angeles County), Medicare for those 65+ years

≠Foreign born includes individuals born in Puerto Rico and other U.S. Territories.