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Associations between Demographic Characteristics and Physical Activity Practices in Nevada Schools

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Abstract

Schools are important settings for not only providing and promoting children's physical activity (PA) but also for reducing PA disparities. We investigated associations between school-level demographic characteristics (racial/ethnic and socioeconomic composition, urban-rural status, and student-to-teacher ratio) and 16 PA-promoting practices in 347 Nevada public elementary, middle, and high schools in 2014. We found that low-cost and easy-to-implement practices are most prevalent. There is relative demographic equity in ten of 16 PA practices and significant differences in six PA practices in Nevada schools. Schools with comparatively larger percentages of Black students are the most disadvantaged, as they have the fewest PA-supportive practices in place. Higher percent black was associated with lower odds of providing classroom activity breaks (AOR=0.632, 95% CI=0.453-0.881) and bike racks (AOR=0.60, 95% CI=0.362-0.996), greater odds of withholding recess/PE for disciplinary reasons (AOR=1.377, 95% CI=1.006-1.885), and lower odds of having recess supervisors who are trained to promote PA (AOR=0.583, 95% CI=0.374-0.909). Schools with greater percentages of Hispanic students have lower odds of providing before-school PA programs (AOR=0.867, 95% CI=0.761-0.987), whereas schools with greater percentages of low-SES students have greater odds of providing after-school PA programs (AOR=1.135, 95% CI=1.016-1.268). Higher student-to-teacher ratio was also associated with greater odds of providing after-school PA programs (AOR=1.135, 95% CI=1.016-1.268). Urban-rural status was unrelated to all PA practices.

Keywords

Physical activity; children; schools; disparities; demography; Nevada

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Introduction

It is now widely accepted that schools are logical and essential settings for providing and promoting children's physical activity (PA) and for reducing PA disparities (IOM, 2013, Naylor and McKay, 2009; Pate et al., 2006; USDHHS, 2012; Zewditu et al., 2015). Schools reach nearly all children, and children spend more awake hours in schools than in any other context. All school districts participating in the National School Lunch and/or Breakfast Programs are required to develop a local school wellness policy that promotes student health and addresses childhood obesity. Despite this national law, states, and the school districts within them, differentially adopt and implement school wellness practices, including those specific to PA (Lounsbery et al., 2011; Lounsbery et al., 2013; McKenzie & Lounsbery, 2009; Monnat et al., 2014; Slater et al., 2012; USDHHS/CDC, 2015). As a result, the presence of evidence-based PA practices varies substantially across schools (Zewditu et al., 2015).

School demographic characteristics, including racial/ethnic and socioeconomic (SES) composition, class sizes, and rurality may impact schools' abilities to incorporate PA practices into the school day, resulting in disparities that limit children's opportunities to accrue moderate-to-vigorous physical activity (MVPA). A study conducted in 97 elementary schools (Carlson et al., 2014) and one in 36 middle schools (Young et al., 2007) found that students in more affluent schools spent more time engaged in MVPA than students in low-SES schools and that low-SES schools had fewer PA-supportive practices than high-SES schools. As well, a national study found that elementary schools with greater proportions of Hispanic and Black students had inferior recess practices, playgrounds, and gymnasiums compared to predominantly White schools (Turner et al., 2010). Moreover, Black adolescents are more likely than White adolescents to attend schools with lower PA participation (Richmond et al., 2005), and elementary schools with higher percentages of non-White and low-SES students are less likely to offer recess (Beighle, 2012). Opportunities for PA also vary between rural and urban areas, with rural residents obtaining less physical activity than their urban counterparts (Umstattd et al., 2015). A study of middle schools in North Carolina found that low-SES rural schools had fewer environmental resources for extracurricular PA than urban and more affluent schools (Edwards et al., 2013). Another national study found that elementary schools located in rural areas and towns (compared with cities) are less likely to offer recess (Beighle, 2012).

Though informative, insights drawn from these studies have been partially limited by their inclusion of only one school level (e.g., elementary, middle), their inclusion of only one group of PA factors (e.g., recess, extracurricular activities), and/or their focus on only one school-level demographic factor at a time without accounting for concomitant school-level demographic advantages/disadvantages. The current study adds to this growing body of evidence by examining associations between multiple school demographic characteristics and 16 specific PA practices in elementary, middle, and high schools in Nevada. We examined school practices related to general wellness; PE, recess, and classroom-, before-, and after-school activities; PA facilities; and support for active transport. These school practices have been shown to be associated with increased PA at school and/or are aligned with national recommendations or guidelines (Active Living Research 2011; Carlson, 2014;

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IOM, 2013; Lounsbery et al., 2013; USDHH CDC, 2009). Based on the literature cited above, we hypothesized that schools with greater proportions of demographically vulnerable students (Black, Hispanic, low-SES), schools with higher student-to-teacher ratios, and rural schools would be less likely to have PA supportive practices in place.

Nevada State Physical Activity Laws

Nevada currently has no laws requiring schools to provide or promote PA, but the state school wellness policy stipulates that schools must provide opportunities for at least 30 minutes of MVPA during each regular school day. The state requires students to complete four semesters of PE for high school graduation, but it allows PE substitutions (e.g., interscholastic athletics, cheerleading, JROTC) for up to two semesters. Because the state does not require PE at the elementary and middle school levels, Nevada school districts fund PE differentially. Since 2012, Nevada has received Safe Routes to Schools funding, but allocates no other PA funding. With the exception of monitoring PE credits required for graduation, there is no state oversight for school PA. However, school districts are required to report their PA plan as part of the school wellness program report.

Methods

Data

Data were obtained from two sources. First, data on school PA practices came from a web-based survey disseminated by email from district superintendents' offices to all Nevada K-12 public school principals in fall 2014. District superintendents sent follow-up emails with the survey link to non-responding schools three times. Surveys were received from 439 of Nevada's 652 public schools (including state-sponsored charter schools) within 16 school districts/counties. Of those, 27 schools were excluded due to missing school identification, resulting in a sample of 412 schools (63.2% of all K-12 Nevada public schools).

Table 1 lists the PA practices included in this study. These variables were selected for the survey because they align with national recommendations or guidelines (e.g., having a school wellness coordinator, 150 minutes of PE per week, 100 minutes of recess per week) and/or have been shown to be associated with increased PA at school (Active Living Research 2011; Carlson, 2014; IOM, 2013 Lounsbery et al., 2013; USDHH CDC, 2009). Only elementary school principals were asked about recess practices.

We matched school names to data on school demographic characteristics from the U.S. Department of Education National Center for Education Statistics, 2013-2014. The school-level demographic predictors of interest (Table 2) were: student racial/ethnic composition (percentages of Black (non-Hispanic) and Hispanic/Latino students), percentage of low-SES students (i.e., percentage of students eligible for free/reduced price lunch [FRL]), urban-centric locale codes (collapsed into city, suburb, town, and rural due to cell size concerns), and overall student-to-teacher ratio. We considered including total number of students, school eligibility for Title I funding, and school participation in the National School Lunch Program (NSLP). However, we excluded those variables from final models, because 96% of the schools in our sample participate in NSLP (resulting in cell sizes too small for analysis),

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total number of students was strongly correlated with student-to-teacher ratio, and eligibility for Title I funding was strongly correlated with percent low-SES students.

There were no significant differences in student racial/ethnic composition, percentage of low-SES students, or average student-to-teacher ratio between schools that did versus did not submit a survey. Schools not submitting surveys (and therefore excluded from analyses), were significantly more likely to be located in a rural area than those submitting surveys. Overall, 65 (15.8%) surveys had a missing response on at least one PA measure. The number of surveys with a missing response ranged from 7 (1.7%) (school has a school wellness coordinator) to 36 (8.7%) (school provides before-school PA programs). There were only two systematic differences between schools with complete versus incomplete surveys; schools with missing information on at least one PA practice were significantly more likely to report that the school provides before-school PA programs but significantly less likely to report that the school has active travel plans. To ensure comparability of samples across each PA practice, and to avoid the risk of introducing significant bias into the models by imputing sixteen different outcome variables without access to strong auxiliary variables (Allison, 2012), we conducted complete case analysis (e.g., listwise deletion), resulting in a final analytic sample of 347 schools (221 elementary, 55 middle, 71 high) nested within 16 districts.

Statistical Analysis

Binary logistic regression was used to determine the odds ratios (OR) and 95% confidence intervals (CI) for associations between each school demographic characteristic and each school PA practice (all dichotomous outcomes), controlling for each of the other school demographic characteristics. We also controlled for school level (elementary, middle, high) and district fixed effects (i.e., dummy variables for school districts). In addition to accounting for the clustering of schools within school districts, including fixed effects enabled us to control for unobserved district-level factors on school PA practices. We compared the results of these models with random-effects multilevel regression models, and results were consistent. Because nearly all elementary schools reported providing loose equipment (98.6%) and strategic playground markings (96.8%) for recess, we did not conduct regression analyses on these two practices.

Second, we calculated a total count of the 14 PA measures (excluding recess measures) and used ordinary least squares (OLS) regression to determine associations between school demographic characteristics and total count of PA practices, again controlling for school level and district fixed effects. The PA practice count was normally distributed (mean=9.8; SD=2.3; min=2; max=14). A comparison of the OLS model to models for count outcomes (i.e., poisson, negative binomial) indicated that the OLS model produced a better fit.

All analyses were conducted using SAS software (version 9.4; SAS Institute Inc., Cary, NC).

Results

The percentages of schools reporting each PA practice overall and by school level are presented in Table 1. The most prevalent PA practices included the provision of bike racks,

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availability of indoor and outdoor PA spaces, use of certified/licensed PE teachers for PE, and provision of classroom activity breaks (at the elementary school level). In addition, small percentages of elementary and middle schools reported that PA was compromised for space reasons. The least prevalent PA practices included provision of before-school PA programs, use of active travel plans (e.g., walking school bus, Safe Routes to Schools), requirement that students participate in PE at least 150 minutes/week, provision of classroom activity breaks (among middle and high schools), use of traffic calming mechanisms (among middle and high schools), provision of recess at least 100 minutes/ week, and training recess supervisors to promote PA (among elementary schools).

The first section of Table 3 presents adjusted odds ratios (AOR) and 95% confidence intervals (CI) from binary logistic regression models associating the four continuous school demographic characteristics (student-to-teacher ratio and percentages of Black, Hispanic, and low-SES students) with the 16 school PA practices. For practical interpretability, the coefficients for student-to-teacher ratio represent the difference in odds associated with a five-unit (five-student) increase in student-to-teacher ratio. The coefficients for percent black, percent Hispanic, and percent low-SES represent the difference in odds associated with a ten-unit (ten percentage point increase) in each respective factor.

Results showed that none of the school demographic characteristics were significantly associated with having a school wellness coordinator, distributing a wellness policy to staff annually, requiring all students to participate in PE at least 150 minutes/week, the teaching of PE by a licensed/certified PE teacher, compromising access to recess/PE for academic or space reasons, availability of both indoor and outdoor spaces for PA, having active travel plans, having traffic calming mechanisms in place, or providing recess at least 100 mins/ week.

Student-to-teacher ratio was significantly associated only with providing after-school PA programs; net of controls, each five-student increase in student-to-teacher ratio (e.g., moving from 25:1 to 30:1) was associated with a 50% increase in odds of providing after-school PA programs (AOR=1.499, 95% CI=1.070-2.100). Student-to-teacher ratio was also associated with reduced odds of withholding recess/PE for academic reasons, but that association was just beyond the bounds of traditional statistical significance (AOR=0.746, 95% CI=0.513-1.083).

Percent Black was significantly associated with four PA practices: reduced odds of providing classroom activity breaks (AOR=0.632, 95% CI=0.453-0.881) and bike racks (AOR=0.600, 95% CI=0.362-0.996) and with increased odds of withholding PE/recess for disciplinary reasons. A 10 point increase in percent Black is associated with a nearly 38% increase in the odds that the school withholds recess/PE for disciplinary reasons. Elementary schools with higher shares of Black students also had significantly lower odds that recess supervisors are trained to promote PA (AOR=0.583, 95% CI=0.374-0.909).

There was only one significant association with Hispanic student composition. Percent Hispanic was associated with reduced odds of providing before-school PA programs (AOR=0.867, 95% CI=0.761-0.987). Although the association just missed meeting the

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conventional requirement of statistical significance, it is also worth noting that schools with greater percentages of Hispanic students are more likely to compromise PE/recess for space reasons (AOR=1.231, 95% CI=0.998, 1.518).

Similarly, there was only one significant association with school SES. The percentage of low-SES students was associated with greater odds that the school provides after-school PA programs (AOR=1.135, 95% CI=1.016-1.268).There were no significant urban-rural status differences in any of the PA practices. For space reasons, we do not present those ORs and 95% CIs in the table, but they are available from the authors upon request.

Finally, we examined associations between each of the school demographic characteristics and total count of PA practices (excluding recess). The only significant predictor of total PA count was percent Black, but the effect size was small (table not shown, but available from authors upon request). Net of controls, a ten point increase in percent Black was associated with a 0.388 point decrease in total count of PA practices (β= -0.388, SE=0.132, $P<0.05$). To put this into perspective, a 30 point increase in percent Black was associated with the school having about one fewer PA practice.

Sensitivity Analyses

All sensitivity analyses generated results consistent with those presented here. Analyses using random effects for school districts, total number of students in lieu of student-to-teacher ratio, and Title I eligibility in lieu of percent low-SES did not result in differences in either levels of significance or magnitude of estimates.

Discussion

Schools are essential settings for increasing PA among children and reducing disparities in PA opportunities. Our findings related to demographic disparities in PA practices in Nevada schools, however, are mixed. There were not significant demographic disparities in ten of the 16 PA practices we examined: designation of a school wellness coordinator, distribution of a school wellness policy, requiring PE at least 150 minutes/week, teaching of PE by a licensed/certified PE teacher, compromising/withholding PE or recess for space or academic reasons, availability of both indoor and outdoor PA spaces, active travel plans, traffic calming mechanisms, and providing recess at least 100 mins/week. In some cases, the lack of demographic disparities may reflect the reality that these are widespread practices across the whole state. For instance, PE is taught by a certified PE teacher in 88% of Nevada schools completing the survey, PE/recess are compromised for space reasons in only 10% of reporting schools, and both indoor and outdoor PA facilities are available in 83% of reporting schools, with even higher prevalence in middle and high schools. Conversely, our finding of no demographic disparities in requiring at least 150 PE minutes/week and providing at least 100 recess minutes/week may highlight the low statewide occurrence of these practices; perhaps no disparities were evident because so few schools have these practice in place (only 37% of schools overall and 21% of elementary schools provide PE at least 150 mins/week; only 41% of elementary school provide recess at least 100 mins/week).

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Despite relative demographic equity in ten of the PA practices examined, our results also indicate that there were statistically significant school-level demographic differences in six PA-promoting practices. Students in schools with larger shares of Black students face the most disadvantages; they are less likely to receive classroom activity breaks and to have access to bike racks and more likely to have recess/PE withheld for disciplinary reasons. These findings are not surprising given research showing that Black children are more likely than White children to be subjected to punitive control measures in schools (Fenning and Rose, 2007; Horner et al., 2010; Ramey, 2015; Welch and Payne, 2010). Moreover, schools with larger percentages of Black students are less likely to train recess supervisors to promote PA. This is worrisome given research showing that untrained recess supervisors may actually *reduce* PA opportunities during recess (McKenzie et al., 2010). Training recess supervisors to promote PA is likely a low priority for low-resourced schools. It may not occur without robust district-level dissemination of its value and through training that is typically not available without outside funding (e.g., Title I or local health district funding).

Findings related to Hispanic student composition were quite different from those of Black students. The share of Hispanic students was associated with significantly lower odds of providing before-school PA programs. It is possible that schools with higher percentages of Hispanic students dedicate more resources (e.g., time, funding) to specialized services to address English Language Learners' (ELL) academic needs, leaving fewer resources for before-school PA programs. In light of limited resources, it is also possible that these schools make trade-offs between offering after-school versus before-school PA programs. Although the association just missed the conventional requirement for statistical significance, schools with comparatively larger shares of Hispanic students were also more likely to report compromising PE for space reasons. It may be that schools with greater percentages of Hispanic students are older and were originally built for smaller numbers of students, thereby placing increased demand on spaces originally intended for PE. State and school-district policies do not require principals to schedule facilities in specific ways. Therefore site-based management decision-making may be driving this difference. In schools with larger shares of Hispanics, principals may view PE as having less priority than other potential uses for the space, perhaps including the need for ELL instruction space.

Consistent with a study of elementary schools in Seattle and San Diego (Carlson et al. 2014), we found that lower-SES schools were more likely to provide after-school PA programs. Low-income (>30% FRL) schools are eligible to receive Title I funds, which are sometimes used to provide specified after-school academic programming, like tutoring, which may free up funds in the regular school budget to offer PA programs. However, unlike the Carlson et al. study (2014), we did not find advantages for low-SES schools in the provision of recess, active travel plans, and traffic calming mechanisms. Unobserved differences in California versus Nevada state education policy and/or funding contexts may explain these differences in findings between the two studies.

An important, but unexpected, finding was that schools with higher student-to-teacher ratios are more likely to provide after-school PA programs. This finding may suggest an enrollment threshold effect; schools may need to ensure adequate student participation before making an investment in these programs. Higher student-to-teacher ratio was also

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associated with lower odds of withholding recess/PE for academic reasons, although that association with just beyond the bounds of traditional statistical significance. Higher student-to-teacher ratios place more demands on teachers, and even if permitted (by the principal) to withhold PE/recess to help struggling students, teachers may need that time to plan, grade, or to simply take breaks. We were unable to determine whether the student-to-teacher ratio for PE was similar to other classes. Although smaller class sizes are commonly recommended for improving PE (U.S. Centers for Disease Control and Prevention, 2011, IOM, 2013), adopting such a strategy may restrict the overall PA minutes students receive at school (Lounsbery et al., 2013).

Finally, we found that low-investment (in terms of both time and cost) and easy-to-implement PA practices are the most prevalent in Nevada schools. These include bike racks, availability of PA spaces, and loose equipment and game/playground markings for recess. These are promising findings given that school PA space, facilities, and equipment availability have all been found to be important environmental determinants of children's PA (Haug et al., 2008; Jones et al., 2010). Research shows, for instance, that providing bicycle racks is positively associated with students biking to school (Jones and Sliwa, 2016), and student access to space, equipment and playground markings are associated with more MVPA during recess (Loucaides et al., 2009; Ridgers et al., 2007; Stratton and Mullan, 2005; Verstraete et al., 2006). More costly investment practices, such as requiring students to participate in at least 150 minutes of PE/week and providing before-school PA programs, classroom activity breaks (middle/high schools), and recess (elementary schools) at least 100 minutes/week were the least prevalent, suggesting resource shortages in Nevada schools.

Limitations

Strengths of this study include the involvement of a large percentage of schools in Nevada and the assessment of associations between several school demographic characteristics and 16 specific PA practices. Nonetheless, the results should be considered in light of some limitations. First, the study was confined to Nevada, and with variation in state policies, funding, and demographic characteristics, findings may have limited generalizability to other states. With an aim toward establishing a national database on school PA practices, we encourage researchers to conduct comparable studies in other states. Second, the sample underrepresents Nevada's rural schools, which may partly explain not finding rural-urban differences in any PA practices. If rural schools without PA practices were the same schools that did not complete a survey, our findings underestimate rural disparities in PA practices. Third, we did not control for specific district-level policies that may influence school-level practices. However, our inclusion of district-level fixed effects accounts for the totality of district-level differences that may influence associations between school demographic characteristics and PA practices. Fourth, although we intended that principals complete the survey, it is possible some delegated the task to another employee. Moreover, principals may not be the most informed person about PA practices in a school. Relatedly, respondent social desirability bias is possible. Finally, our brief survey included practices previously identified to have positive associations with children's PA in schools. Nonetheless, there may be demographic disparities in other important practices not captured here, including adherence

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to PA schedules, PE course substitutions, and PE curriculum content. Future research should investigate disparities in these and other practices.

Conclusions

It is encouraging that significant demographic disparities were not found in ten of 16 PA practices we examined. Additionally, it is promising that low-SES schools are more likely to provide after-school PA programs, thereby holding promise for reducing SES disparities in children's MVPA. Particular attention, however, should be paid to schools with higher percentages of Black students because they had fewer PA-supportive practices in place. This is of particular concern given high obesity prevalence among Black children compared to other racial/ethnic groups (Freedman et al., 2006). Further study is needed to better understand the role of other potential school-level factors, including principal decision-making and site-based management practices, on differences in PA practices.

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Abbreviations

PA	physical activity
PE	physical education
MVPA	moderate to vigorous physical activity
FRL	free and reduced price lunch

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Highlights

- Schools are essential settings for promoting children's physical activity (PA).
- There were demographic disparities in 6 of 16 PA school practices.
- Urban-rural disparities in school PA practices were not found.
- Schools with larger proportions of Black students had fewer PA practices in place.
- Low prevalence of high-cost practices suggests schools have resource barriers.

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Table 1

Prevalence (%) of Physical Activity Practices and Environmental Characteristics Overall and by School Level, 2014, Nevada

	Total (N=347)	Elementary (N=221)	Middle (N=55)	High (N=71)
School has an individual designated as the school wellness coordinator[b]	73.2	78.7	65.5	62.0
A school wellness policy is disseminated to staff annually[c]	71.8	77.8	60.0	62.0
PHYSICAL EDUCATION				
School requires all students to participate in PE at least 150 mins/week[abc]	36.6	21.3	69.1	59.2
PE is taught entirely by PE specialists (i.e., licensed/certified PE teacher)[c]	87.9	83.7	96.4	94.4
PHYSICAL ACTIVITY THROUGHOUT SCHOOL DAY				
Both indoor and outdoor physical activity spaces are available[b]	83.0	77.8	96.4	88.7
School provides opportunities for students to participate in daily PA during the school day through[abc]:				
Classroom activity breaks	65.7	80.5	40.0	39.4
Before-school programs	36.6	40.7	29.1	29.6
After-school programs	67.2	61.1	80.0	76.1
Student access to PE and recess is compromised by[b]				
Disciplinary reasons	32.0	35.8	27.3	23.9
Academic reasons	22.5	24.0	29.1	12.7
Physical activity space not being available	9.5	6.8	12.7	15.5
School supports active transport (e.g., walking, bicycling to/from school) by[b]:				
Providing bike racks or storage	94.2	96.8	98.2	83.1
Facilitating active travel plans (e.g., walking school bus, Safe Routes to School)	62.5	68.8	69.1	38.0
Implementing traffic calming measures (e.g., cross guards, speed bumps)	69.2	77.4	50.9	57.8
Total Count of PA Practices (mean and standard deviation) (max=14)	9.84 (2.32)	9.98 (2.18)	9.85 (2.30)	9.38 (2.70)
RECESS			N/A	N/A
Provided to all students at least 100 mins/week (in addition to lunch break)[b]		40.7		
Characterized by the provision of ample loose equipment (e.g., balls, jump ropes)[c]		98.6		
Characterized by the provision of strategic playground markings[c]		96.8		
Characterized by the provision of the training to playground supervisors[b]		57.9		

[a]Denotes policy, practice, or activity recommendation by Institute of Medicine (2013)

[b]Denotes policy or activity recommendation by U.S. Centers for Disease Control and Prevention (2009) or (2004)

[c]Denotes policy, practice, or activity recommendation by Active Living Research (2011)

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Table 2

School Demographic Characteristics Overall and by School Level, 2013-2014

Demographic Characteristics	Total (N=347)				Elementary (N=221)				Middle (N=55)				High (N =71)			
	Mean	*SD*	*Min*	*Max*	*Mean*	*SD*	*Min*	*Max*	*Mean*	*SD*	*Min*	*Max*	*Mean*	*SD*	*Min*	*Max*
Students (total #)	800.4	622.4	6.0	3669.0	624.0	342.1	15.0	3669.0	974.2	525.1	6.0	1853.0	1198.5	1031.5	15.0	3166.0
Student-to-teacher ratio	19.3	4.8	2.9	50.0	18.4	3.1	5.5	45.9	21.7	4.4	4.4	27.4	19.7	7.9	2.9	50.0
Percentage of students who are black (non-Hispanic)	9.2	9.9	0.0	66.0	9.3	9.7	0.0	66.0	8.9	9.9	0.0	52.5	9.1	10.8	0.0	42.4
Percentage of students who are Hispanic	37.8	22.4	0.0	96.3	39.0	23.3	0.0	96.3	38.6	22.3	6.2	87.7	33.3	19.3	0.0	93.9
Percentage of students who are low SES[a]	52.6	25.2	0.0	99.7	57.1	26.5	0.0	99.7	51.6	21.9	8.2	87.1	39.2	17.9	0.0	80.0
Urban/Rural Status[b]	%				%				%				%			
City	40.3				41.2				34.2				42.7			
Suburb	31.8				35.8				31.5				19.5			
Town	14.3				11.7				19.2				18.3			
Rural	13.6				11.3				15.1				19.5			
Schools participating in National School Lunch Program (%)	95.1				95.7				100.0				89.0			
Schools eligible for Title I funding (%)	54.4				63.8				54.8				24.4			

Source: U.S. Department of Education National Center for Education Statistics Common Core of Data (CCD) Public Elementary/Secondary School Universe Survey, 2013-2014

SD: standard deviation

[a] Low SES (socioeconomic status) students are defined as those who are eligible for free/reduced price lunch (FRL)

[b] Based on NCES urban-centric locale codes: City = territory inside an urbanized area and inside a principal city; Suburb = territory outside a principal city and inside an urbanized area; Town = territory outside a principal city and outside an urbanized area, but inside an urban cluster; Rural = Census defined rural territory outside an urbanized area

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Table 3

Adjusted[a] Associations between School Demographic Characteristics and School Physical Activity Practices and Environmental Characteristics in Nevada, 2014

	Student-to-Teacher Ratio[b]		Percentage of Students who are Black (non-Hispanic)[c]		Percentage of Students who are Hispanic[cd]		Percentage of Students who are low SES[ce]	
	AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)
School has individual designated as school wellness coordinator	0.998	(0.637, 1.562)	1.041	(0.568, 1.911)	1.176	(0.956, 1.447)	1.041	(0.891, 1.215)
Wellness policy disseminated to staff annually	1.149	(0.821, 1.607)	0.919	(0.635, 1.330)	1.091	(0.934, 1.274)	1.009	(0.890, 1.143)
All students required to participate in PE at least 150 mins/week	0.921	(0.649, 1.307)	0.932	(0.669, 1.298)	1.042	(0.907, 1.196)	1.005	(0.888, 1.137)
PE taught by licensed/certified PE teacher during all PE lessons	0.927	(0.395, 2.173)	5.615	(0.278, 113.50)	0.833	(0.525, 1.324)	0.930	(0.706, 1.224)
School provides classroom activity breaks	0.792	(0.563, 1.113)	0.632	(0.453, 0.881)	0.997	(0.864, 1.151)	1.061	(0.937, 1.201)
Schools provides before-school PA programs	1.174	(0.811, 1.700)	0.824	(0.600, 1.132)	0.867	(0.761, 0.987)	0.918	(0.822, 1.026)
School provides after-school PA programs	1.499	(1.070, 2.100)	0.905	(0.663, 1.235)	1.082	(0.949, 1.233)	1.135	(1.016, 1.268)
Access to recess/PE compromised for disciplinary reasons	0.890	(0.636, 1.246)	1.377	(1.006, 1.885)	0.989	(0.866, 1.130)	0.991	(0.886, 1.109)
Access to recess/PE compromised for academic reasons	0.746	(0.513, 1.083)	1.274	(0.906, 1.791)	0.984	(0.846, 1.145)	1.004	(0.886, 1.138)
Access to recess/PE compromised for space reasons	1.052	(0.639, 1.732)	0.730	(0.381, 1.398)	1.231	(0.998, 1.518)	1.161	(0.964, 1.397)
Both indoor and outdoor PA spaces are available	1.274	(0.800, 2.031)	0.892	(0.597, 1.331)	0.931	(0.788, 1.100)	1.034	(0.901, 1.187)
School provides bike racks/storage	1.240	(0.756, 2.034)	0.600	(0.362, 0.996)	1.264	(0.769, 2.014)	1.046	(0.819, 1.335)
School has active travel plans (e.g., Safe Routes To School)	1.066	(0.767, 1.483)	0.779	(0.572, 1.062)	1.025	(0.898, 1.170)	1.040	(0.930, 1.162)
Traffic calming measures are in place	1.253	(0.895, 1.753)	0.974	(0.702, 1.351)	1.024	(0.889, 1.179)	0.918	(0.813, 1.037)
Recess provided at least 100 mins/week[f]	0.747	(0.336, 1.662)	1.540	(0.998, 2.375)	1.001	(0.852, 1.176)	0.942	(0.817, 1.087)
Recess supervisors are trained to promote PA[f]	0.958	(0.420, 2.183)	0.583	(0.374, 0.909)	1.102	(0.932, 1.302)	1.140	(0.983, 1.322)

Abbreviations: AOR, adjusted odds ratio; CI, confidence interval; PE, physical education

N=347

[a]Models were adjusted for school-level (elementary, middle, high), school district fixed effects, urban-rural status, student-to-teacher ratio, percentage of students who are black, and percentage of students who are low SES

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[b] Coefficients for student-to-teacher ratio represent the difference associated with a 5-unit increase in student-to-teacher ratio

[c] Coefficients for percentage of students who are black, percentage of students who are Hispanic, and percentage of students who are low-SES represent the difference associated with a 10-unit (10 percentage point) increase in the respective contextual variabl

[d] The models assessing associations with percentage of students who are Hispanic did not control for percentage of students who are low SES because those two variables are strongly correlated.

[e] Low-SES (socioeconomic status) students are defined as those who are eligible for free/reduced price lunch (FRL)

[f] Examined for elementary schools only (N=221)