



HEALTH

***Disparities in School Program Exposure
Among Elementary Schoolchildren***

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School programs can compensate for lack of activity outside of school

- Low-income, racial/ethnic minorities exhibit lower rates of physical activity and higher rates of obesity (Ogden 2008; Troiano 2008)
- School programs can compensate
- Interventions in elementary schools may be effective

Our research questions

- 1) Are low SES children and schools more likely to have *worse* facility provision (gymnasium/playground) or *less* program time (PE and recess)?
- 2) Do schools with *worse* facility provision provide *less* program time (PE and recess)?

The Early Childhood Longitudinal Survey (ECLS-K)

- Conducted by the Department of Education
- Base sample is representative of kindergartners across the United States in 1998-1999
- Our sample includes 9,113 5th graders in 1,453 schools
- Several measures of child/school SES and contextual factors

ECLS-K Measure: Facility Provision

School Administrator reported:

"In general, how adequate is the [facility] for meeting the needs of the children in your school?"

['Do not have', 'never adequate', 'often not adequate', 'sometimes not adequate' and 'always adequate']

Facilities include **gymnasium**, **playground**, cafeteria, multipurpose room and auditorium

We construct two measures:

- 1) whether or not school **has** the facility;
- 2) whether or not facility is **adequate** conditional on the school having the facility

What does adequacy mean?

- Adequacy can refer to:
 - ventilation, space, lighting
 - equipment, safety
- Adequacy may be a function of:
 - Child level measures (e.g. age of children)
 - School level measures (e.g. school enrollment)
 - Contextual measures (e.g. climate zone)

State standards comparison - California*

Location	Facilities	Systems Support	Space
Only outdoors	Hard-surface, turf area and apparatus	NA	Depends on grade and enrollment ^a

Venice, California:



^a e.g 1st grade with 151-300 enrollment should have 2 field areas (90x120), 4 hardcourt areas (60x75), and 3 apparatus areas (3200 sq ft). 4th grade with same enrollment should have 3 apparatus areas (3200 sq ft), 4 field areas (180x180) and 4 hardcourt areas (80x100)

* From "Guide to School Site Analysis and Development" (2000).

State standards comparison – DC*

Location	Facilities	Systems Support	Space
Mostly indoors	Gymnasium	Temperature	NA

Shaw, DC:



* From "DC Master Facilities Plan DRAFT" (2008).

State standards comparison – North Carolina*

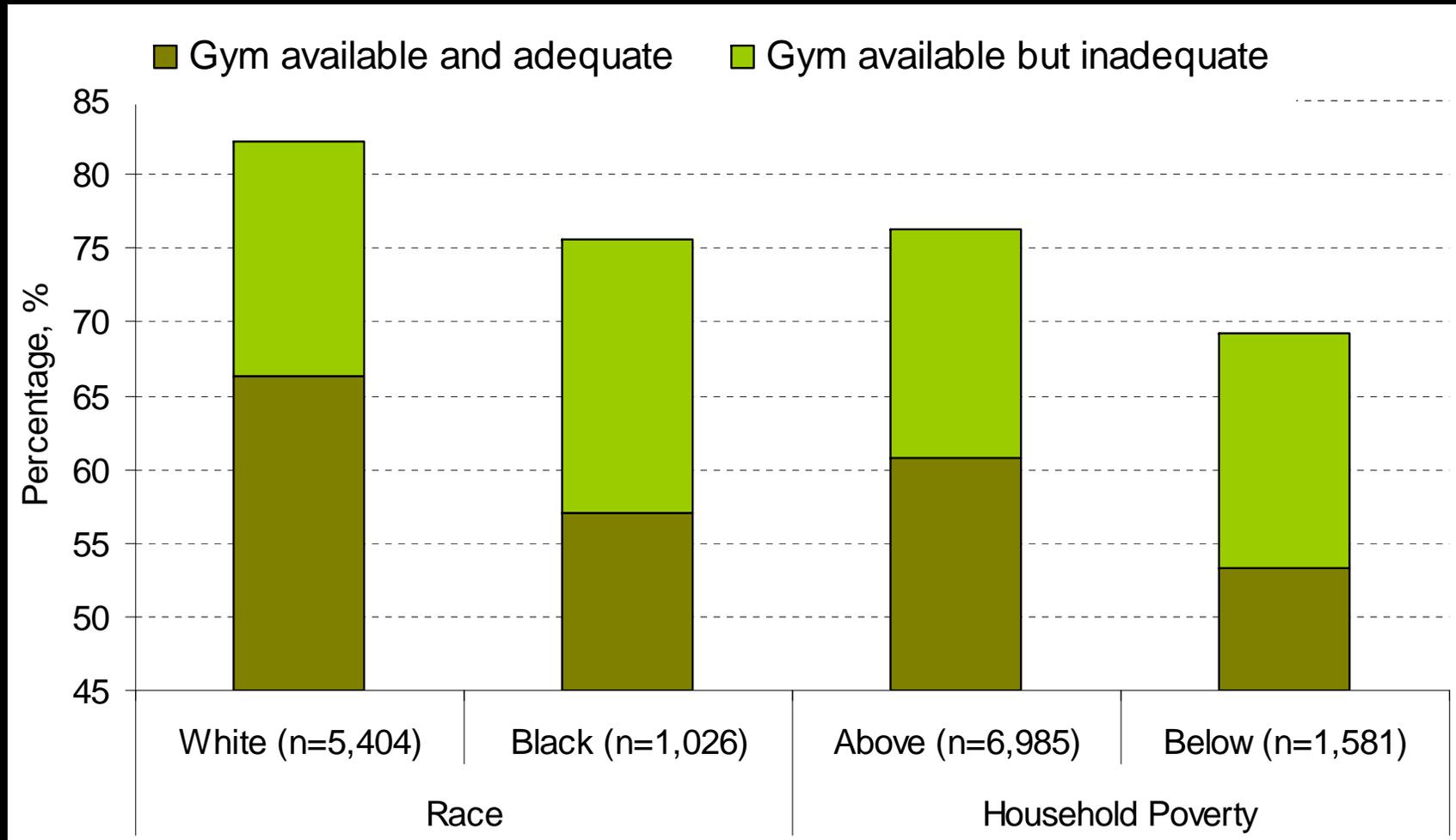
Location	Facilities	Systems Support	Space
Mostly indoors	Multi-purpose room with highly resistant floor; community gym and outdoor playground	Temperature, ventilation, windows for natural light	3,600 sq ft minimum; 4 sq ft per child if over 600 children

Chapel Hill, NC:



From “North Carolina Public Schools Facilities Guidelines” (2003).

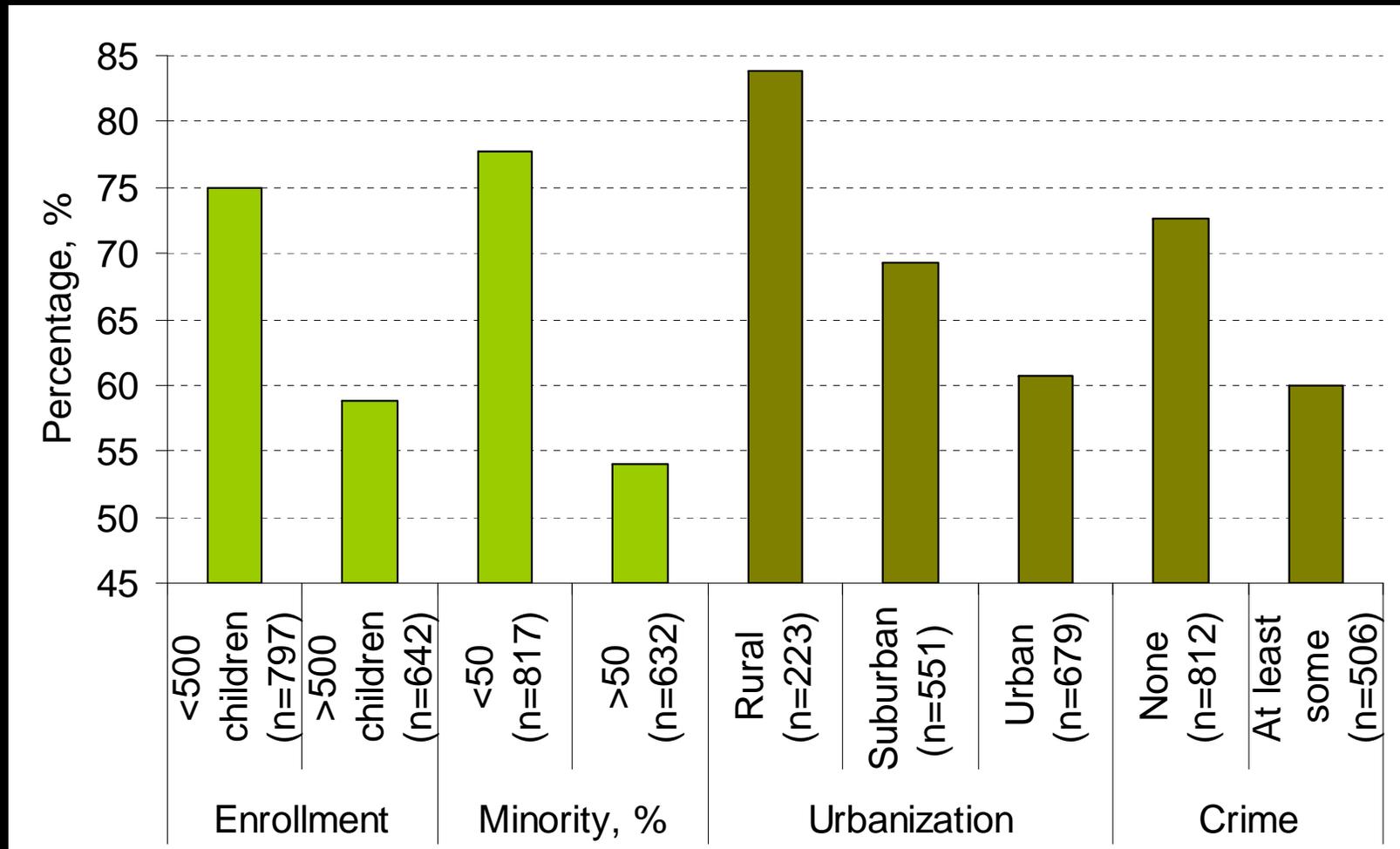
Low SES children have worse gymnasium provision



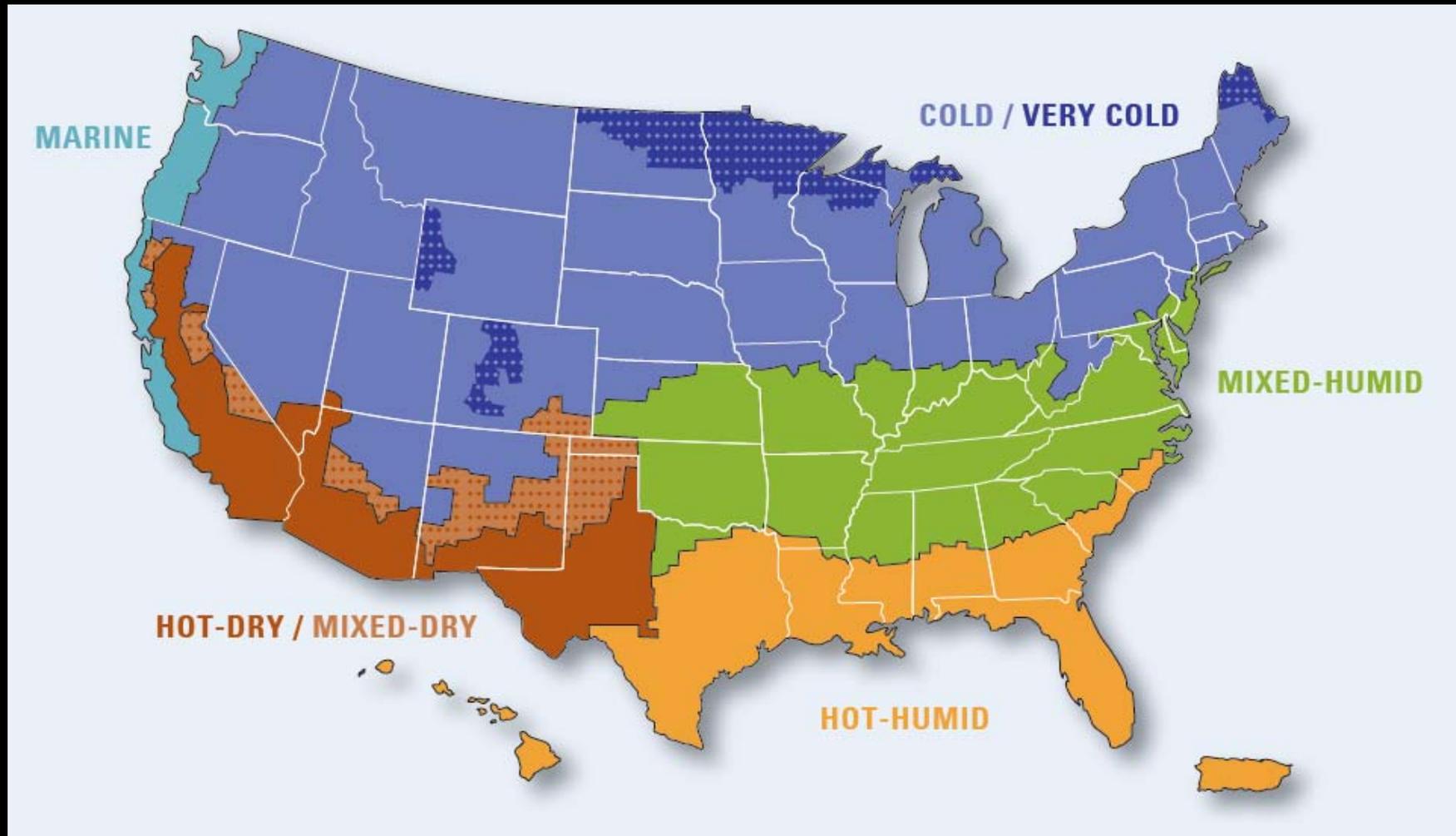
Relationship less clear for health behaviors



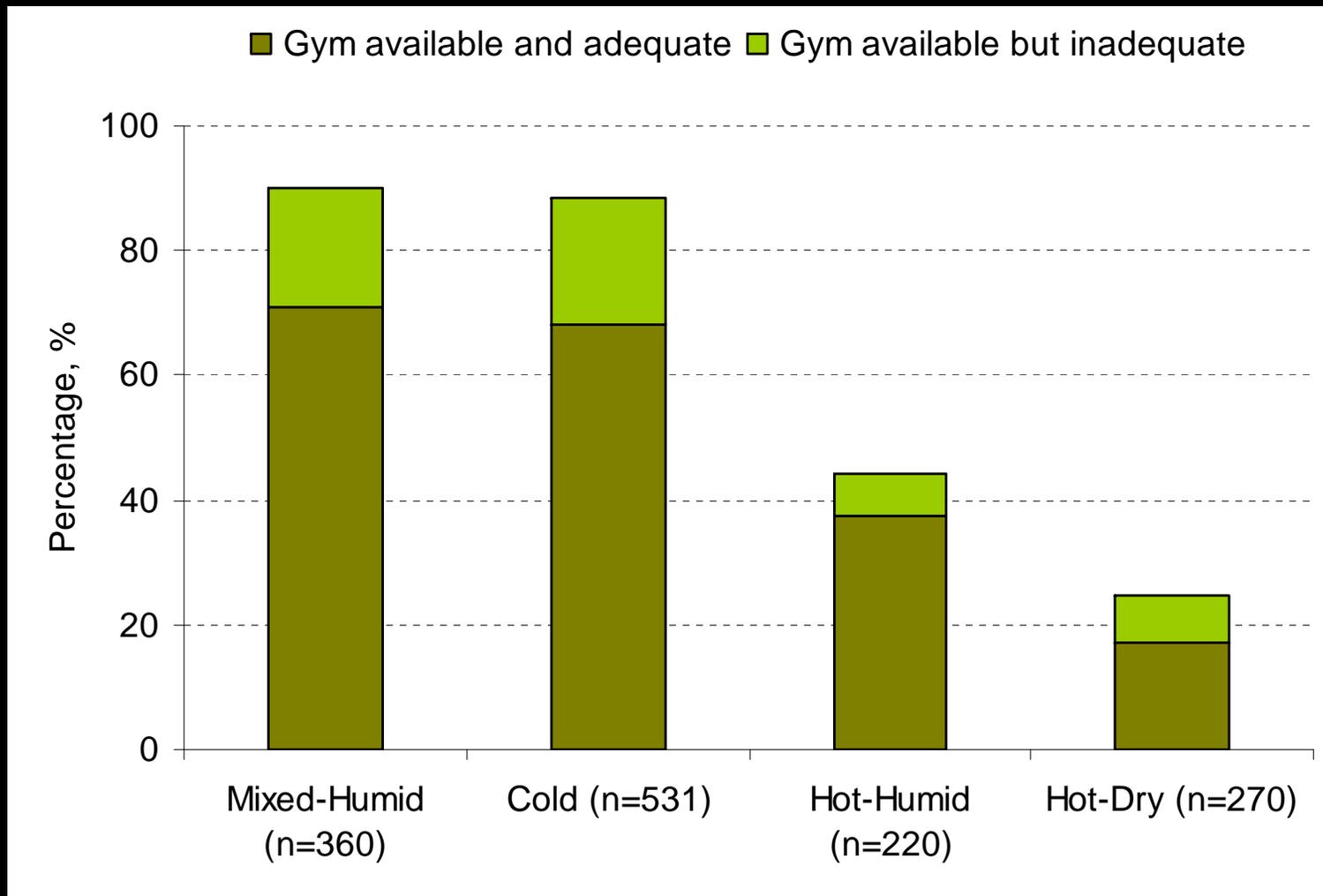
Low SES schools less likely to have a gymnasium



US has 5 Major Climate Zones*



Hot climate zones less likely to have a gymnasium



Disparities in program time

- 5th graders experience 77 minutes of PE and 38 minutes of recess per week on average

After controlling for school covariates:

- schools in dry or hot-humid zones spent >30 minutes *more* in PE relative to those in cold regions
- High minority schools have *less* PE *and* recess time
- Schools with high enrollment or high FRL report *less* recess time

Gymnasium availability is associated with more PE time

- Gymnasium availability associated with 11 *more* minutes
- No significant findings for gymnasium adequacy or playground adequacy
- Number of alternate facilities (multi-purpose room, cafeteria, auditorium, classroom) not a significant predictor

Stronger association for schools in hot climate zones

Climate Zone	Available Gym		Adequate Gym	
Cold (n=531)	7.1	3.7	2.2	(3.3)
Hot-Dry (n=270)	20.7 minutes	(9.6)	2.0	(20.1)
Hot-Humid (n=220)	18.4 minutes	(8.1)	8.6	(17.7)
Mixed-Humid (n=360)	-17.5	(10.4)	-0.2	(4.8)

Conclusions

- SES disparities in gymnasium availability
- Indication of disparities in program time
- Facility provision may matter more for schools with environmental constraints (climate and urbanization)

ECLS-K Measure: Program Time

Teacher reported:

How many times each week do children in your class(es) usually have PE/recess?

['Never', '<1 a week', '1-2 times a week', 'daily']

“How much time each day do children in your class(es) usually spend when they participate in PE?”

['Do not participate', '1-15 min', '16-30 min', '31-60 min' and 'more than 60 min']

“In a typical day, how much time does your class spend in [recess]?”

['None', '1-15 min', '16-30 min', '31-45 min', 'longer than 45 min']

ECLS-K Measure: Extracurricular Sports Participation

Parent- reported:

“In the last 12 months, did [child] regularly get exercise through any of the following organizations?”

[‘Public park’, ‘recreation center’, ‘YMCA’, ‘place of worship’, ‘sports league’, ‘health club’, ‘scouts’, ‘farm club’]

“What type of exercise or physical activity did [child] get at the place you just mentioned?”

[‘Individual sports’, ‘group sports’, ‘dance’, ‘recreational sports’, ‘martial arts’, ‘playground activities’, ‘calisthenics/general exercise’]