

Exploring Child Physical Activity Environments by Income, Race/Ethnicity, and Segregation Across the United States



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Introduction

- Childhood obesity has become a major public health concern in the United States (US).
- Researchers and practitioners have placed increased focus on physical activity (PA) environments as mechanisms to combat childhood obesity.
- Environments that promote PA among children are often not equitably distributed by sociodemographic characteristic or by geographic location.
- Few studies have examined disparities in PA environments by income, race/ethnicity, and segregation across the US using a composite physical activity index.

Purpose

The purpose of this study was to investigate the relationship between child PA environments and income, race/ethnicity, and residential segregation across the country and by four census regions.

Methods

- A PA environment index was created for all counties in the US (N=3,142) using data on four key variables from diverse secondary sources (see Table 1).
- Each county was ranked and assigned a percentile for all variables.
- A total PA environment index score was created by averaging the ranked percentile for each variable.

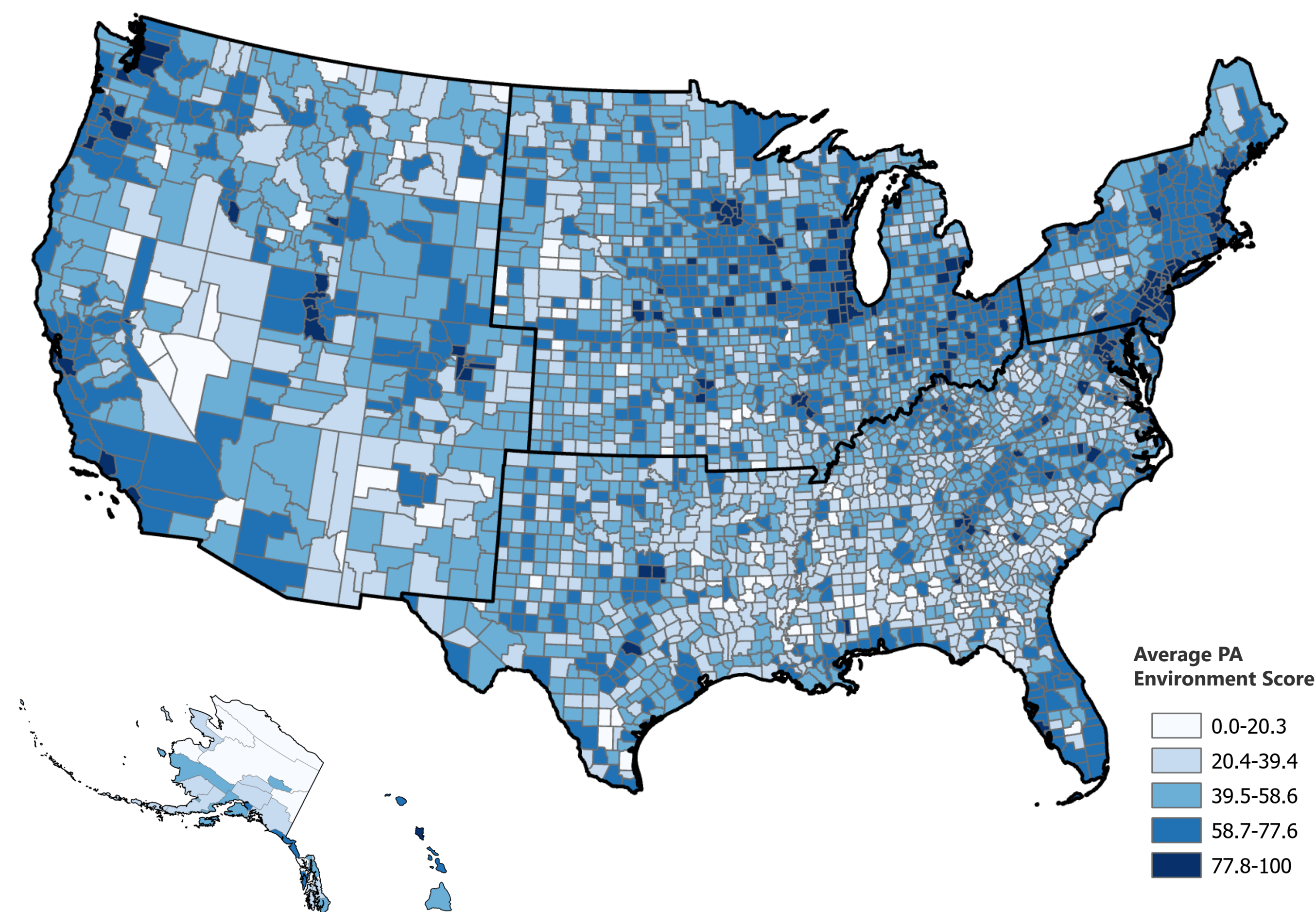
Table 1. Physical Activity Index Variables

| Variable | Data Source |
|------------------------|--|
| Exercise opportunities | County Health Rankings |
| School proximity | National Center for Education Statistics |
| Walkability | EPA National Walkability Index |
| Violent crime* | County Health Rankings |

*Variable was reverse scored

- Spearman's correlation was used to examine the relationship between county PA environment and three county demographic variables derived from the American Community Survey: median household income, percent non-Hispanic white, and residential segregation (between non-white and white residents).
- Analyses were conducted for the entire US and by four US census regions: Northeast, Midwest, South, and West.

Average Physical Activity Environment Index Score by US County (N=3,142)



- **As county income increased, physical activity environments became more favorable, particularly in the Northeast.**
- **As minority population increased, physical activity environments became less favorable, but findings varied by region.**
- **As residential segregation increased, physical activity environments became more favorable.**



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Results

- Overall, the PA environment was related to income, race, and segregation, with income showing the strongest relationship.
- A moderate positive correlation was found between the PA environment and income ($r_s=.53$, $p<0.001$).
 - This relationship was stronger in the Northeast ($r_s=.72$, $p<.001$) than in the Midwest ($r_s=.41$, $p<.001$), South ($r_s=.50$, $p<.001$), and West ($r_s=.40$, $p<.001$).
- A weak negative correlation was found between the PA environment and percent non-Hispanic white ($r_s=-.04$, $p<0.001$), but differed by region.
 - A strong positive relationship was observed in the Northeast ($r_s=.61$, $p<.001$) and weaker relationships in the Midwest ($r_s=.32$, $p<.001$), South ($r_s=-.08$, $p<.01$), and West ($r_s=.04$, $p=.45$).
- An overall weak positive correlation was observed between the PA environment and residential segregation ($r_s=.23$, $p<.001$).
 - Similar findings were observed in the Northeast ($r_s=.21$, $p<.01$), Midwest ($r_s=.26$, $p<.001$), South ($r_s=.20$, $p<.001$), and West ($r_s=-.01$, $p=.88$).

Conclusions

- This study highlighted the development of a unique, composite index of youth-oriented PA environments and existing disparities according to multiple key demographic and geographic characteristics.
- Targeted policies and interventions (e.g., safe routes to schools, joint use) can address inequalities in areas that need them most to ensure safe and equitable PA access for all.

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