
FoAR 社区环境在儿童活跃的学校通勤、独立出行以及体能活动中的作用

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Research Article

Understanding children's active school commute, independent mobility, and physical activity in Austin, Texas, USA: Roles of physical environments

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01

论文题目

Manuscript Title

Understanding childrens active school commute, independent mobility, and physical activity in Austin, Texas, USA: Roles of physical environments

社区环境在儿童活跃的学校通勤、独立出行以及体能活动中的作用

02

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03

论文摘要

Abstract

Walking to/from school (WTS) is an important form of habitual and healthful physical activity (PA). This cross-sectional study examined the multilevel correlates of WTS among elementary school children in Austin, Texas, and whether WTS and neighborhood environmental factors were associated with increased independent mobility and PA. A parent survey was conducted, and geographic information systems were used to calculate the shortest home-to-school distance. Binary logistic regressions were used to predict the outcomes. Distance, physical barriers (e.g., highway/freeway/busy roads), neighborhood environmental quality, and traffic concerns were significant predictors for WTS. Having a school within the neighborhood and unsupervised play increased the likelihood of independent travel to non-school destinations. Sidewalk availability and condition, having a friend ' s/relative ' s house in the neighborhood that the child visits frequently, and independent travel to non-school destinations predicted an increased likelihood of unsupervised outdoor play. Stranger danger reduced the likelihood of both independent travel and unsupervised play. Easy access to services and unsupervised play increased the likelihood of meeting PA guidelines. This study identified modifiable environmental predictors of WTS, independent mobility, and meeting PA guidelines. Future PA promotion should consider strategies that can encourage not only WTS but also independent travel to non-school destinations and unsupervised outdoor play.

步行上下学 (WTS) 是一种重要的习惯性健康体能活动 (PA)。这项横断面研究考察了与美国德克萨斯州奥斯汀市小学生步行上下学相关的多层次因素, 以及步行上下学、社区环境是否与独立出行及体能活动的增加有关。该研究通过对学生家长进行问卷调查收集数据, 使用地理信息系统计算家到学校的最短距离, 并采用二元逻辑回归模型进行分析。路程距离、社区障碍 (例如高速公路、城市快速路、繁忙街道)、社区环境质量和交通问题都是步行上下学的重要预测因素。社区内设的学校以及无人看护的玩耍都可以增加孩子们独立前往学校之外目的地的可能性。人行道的可用性与状态、社区内有朋友或亲戚家, 以及前往学校之外目的地的独立行程, 都预示着孩子在无人看护的情况下在户外玩耍的可能性的增加。孩子对陌生人的恐惧会降低其独立出行以及无人看护情况下玩耍的可能性。便利的服务设施以及无看护玩耍也增加了实现体能活动标准的可能性。本研究明确了步行上下学、独立出行以及完成体能活动标准的环境预测因素。为了今后进一步提高孩子的体能活动水平, 我们不仅需要提倡他们步行上下学, 还应鼓励他们独立出行前往学校以外的目的地, 以及在无人看护的情况下安全地进行其它活动。

04

关键词

Keywords

Walking to school / 步行上下学

Independent mobility / 独立出行

Play / 玩耍

Physical activity / 体能活动

Neighborhood environment/ 社区环境

Children / 儿童

05

章节标题

Sections Title

1. Introduction / 引言

1.1. Background / 研究背景

1.2. Study aims / 研究目的

2. Materials and methods / 研究内容及方法

2.1. Study design, study settings, and population / 研究设计、环境、人群

2.2. Data collection and analysis / 数据收集与分析

3. Results / 研究成果

3.1. Survey responses and descriptive statistics of the outcome variables / 调查反馈以及结果变量的描述性统计数据

3.2. Research Question 1: what physical environmental factors predicted WTS? / 研究问题 1：哪些社区环境因素可预测步行上下学的意向？

3.3. Research Question 2: do WTS and neighborhood physical environmental factors predict independent travel to non-school destinations (Question 2a), unsupervised outdoor play (Question 2b), and meeting PA guidelines (Question 2c)? / 研究问题 2：步行上下学以及社区环境因素是否能够预测前往学校以外目的地的独立出行（问题 2a）、无人看护情况下的户外玩耍（问题 2b）以及是否符合体能活动（PA）的标准要求（问题 2c）？

4. Discussion / 讨论

4.1. Study limitations / 研究的局限性

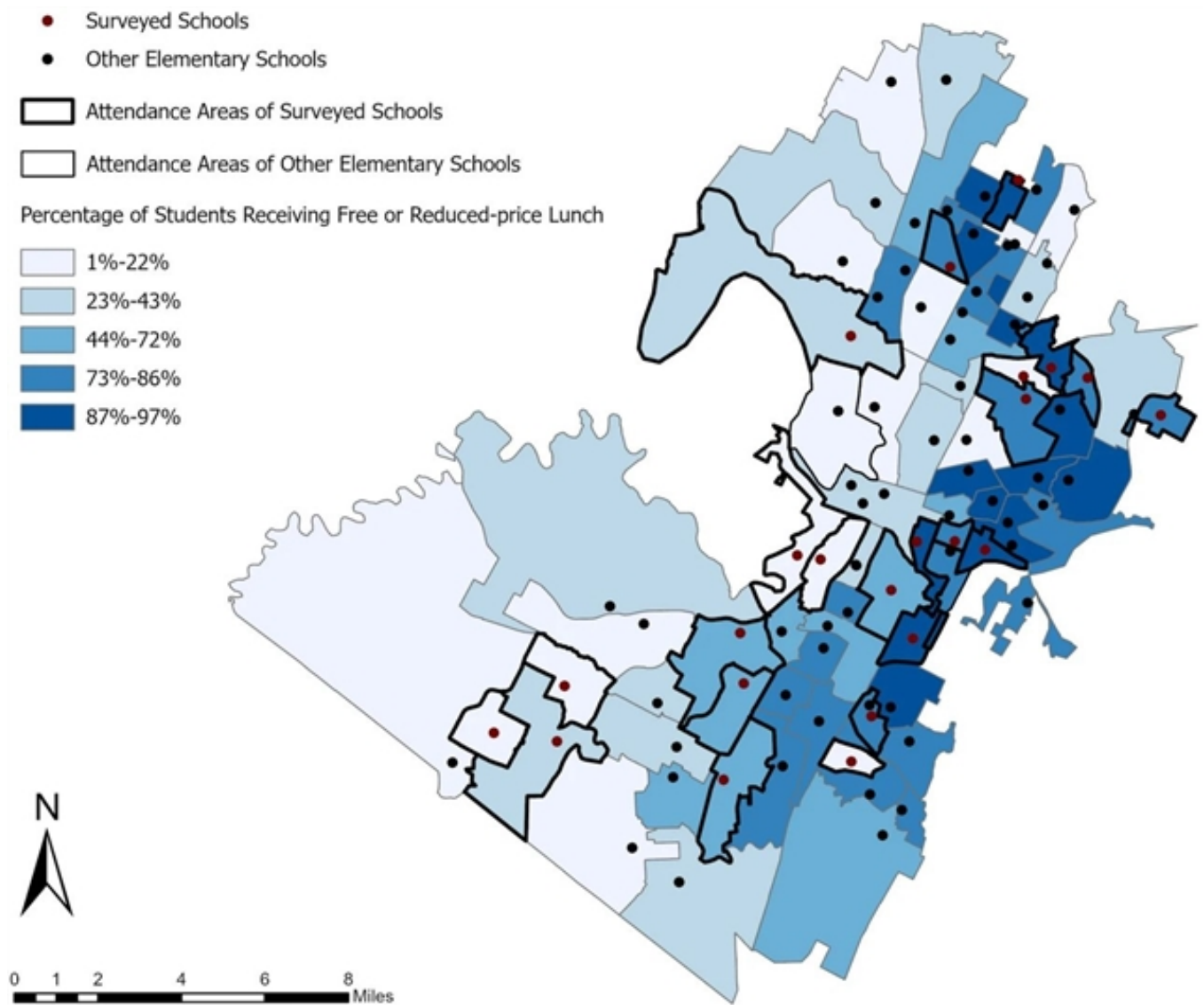
4.2. Key findings and implications for future research and practice / 对未来研究与实践的关键性发现和影响

5. Conclusions / 结论

06

主要插图

Illustrations



图一：奥斯汀独立学区（AISD）内各所学校所在的位置以及有资格享受免费或减价午餐的学童所占的百分比。

	N	Race/ethnicity				Free or reduced-price lunch	Female	Mean grade level
		Hispanic	Non-Hispanic White	African American	Other			
Study population (i.e., all elementary school children in the AISD)	42,599	56.1%	29.0%	6.8%	8.1%	57.0%	48.6%	2.2
Sample frame (i.e., all students in 23 selected schools)	11,771	55.2%	30.7%	5.8%	8.3%	54.0%	48.3%	2.1
Study sample (i.e., survey respondents)	832	45.5%	42.0%	3.2%	9.3%	41.6%	50.7%	2.1

Data sources: National Center for Education Statistics.

表一：研究人群、样本框架以及研究样本的社会人口学特征。

Variable	Frequency distribution of the recorded binary variable		Frequency distribution of the original variable
	Full sample	Subgroup of active commuters	
Walking to/from school	26.4% yes	100% yes	
Independent travel to non-school destinations	49.1% yes	57.2% yes	
Unsupervised outdoor play	45.3% yes	52.4% yes	
Meeting physical activity guidelines	24.0% yes	25.5% yes	

表二：结果变量的描述性统计数据。

07

作者介绍

Authors' Information



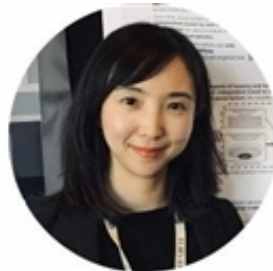
Xuemei Zhu

Professor

Department of Architecture

Texas AM University, College Station, USA

Dr. Xuemei Zhu is a Professor in the Department of Architecture and a Faculty Fellow in the Center for Health Systems Design at Texas AM University. She is also a Presidential Impact Fellow and the holder of the Ronald L. Skaggs, FAIA Joseph Sprague, FAIA Chair in Health Facilities Design, and the Co-director of the research group on Design Research for Active Living. Dr. Zhu ' s scholarship investigates the impacts of the built environment on public health and social equity, with a specific focus on active living, healthy communities, evidence-based healthcare design, school design, and workplace design, using interdisciplinary approaches. Her research is supported by agencies such as the National Institutes of Health (NIH), the Robert Wood Johnson Foundation (RWJF), and the American Institute of Architects (AIA), with a total support of about \$7.3 million. She has published extensively in the fields of environmental design and planning, environment-behavior research, and public health. Her teaching centers on the theme of environment-behavior relationships and strengthens the link between environment-behavior research and design practice.



Lingyi Qiu

Assistant Professor

Huckabee College of Architecture

Texas Tech University, Lubbock, USA

Dr. Lingyi Qiu is an Assistant Professor in the Huckabee College of Architecture at Texas Tech University. She received her doctorate in Architecture and the Certificate in Health Systems Design from Texas AM University and is certified in Evidence-Based Design Accreditation and Certification (EDAC). Her research focuses on healthy housing and communities, healthy buildings, active living research, and environment-behavior research. One of her studies, Impacts of Housing and Neighborhood Environments on Childrens Independent Mobility, addresses an important yet understudied topic: the roles of housing and neighborhood environments in supporting elementary school childrens home-based independent mobility, while also accounting for personal and social factors.



Hanwool Lee

Post-doctoral Research Associate

Department of Landscape Architecture Urban Planning

Texas AM University, College Station, USA

Dr. Hanwool Lee is a post-doctoral research associate at Texas AM University. His major is urban planning and design. He is interested in measuring/quantifying urban form and other elements of urban environments and their impact on pedestrian behavior. He is especially an expert in the handling of GIS data.



Chanam Lee

Professor / Executive Associate Dean

Department of Landscape Architecture Urban Planning

Texas AM University, College Station, USA

Chanam Lee is a Professor of Landscape Architecture and Urban Planning and founding director of Design Research for Active Living (DrAL), at Texas AM University. Lees research focuses on linking the built environment with public health outcomes. Her expertise is in active living research, ' a transdisciplinary area of research that deals with environmental and policy approaches toward promoting physical activity. Lees contributions to this relatively new area of scholarship is significant in: (a) developing methodological and theoretical foundations, (b) bringing attention to high-risk populations, and (c) translating research into tools/guides to facilitate evidence-based policy/design interventions. Lee has led 25 externally funded projects as the PI or Co-PI at TAMU, funded by the Robert Wood Johnson Foundation, National Institute of Health, etc., totaling almost \$15 million. Two of her on-going NIH R01 projects, titled Active Living Austin and Active El Paso, exemplify her current and continued focus on advancing environment-health

research by establishing causality and addressing disparity. Lee (co)ed over 100 peer-reviewed publications in leading journals/books in health and design/planning disciplines, and is among the most cited scholars in her field. She has made almost 300 presentations including 150 conference and 60 invited keynote/plenary presentations. She is the recipient of the Excellence in Research and/or Creative Works Award, Senior Level, in 2020 from the Council of Educators in Landscape Architecture. The significance of her scholarship has been recognized by multiple other awards from American Public Health Association, American Society of Landscape Architects, Scott White Healthcare, and Center for Transportation Studies. Her work has also impacted professional practices in urban planning and landscape architecture, by informing new policy development and by providing evidence-based guides for multiple built and under-construction design projects in the U.S., Japan and Nigeria. These projects range from hospital healing garden designs to large-scale health-oriented community planning projects.

08

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