Inequities in Active Travel Infrastructure Coverage across School Neighborhoods in Central Texas

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Background

- Active travel is an important contributor to children's physical activity
- 10% of US children actively commute to school[1]
- Few studies to look at sidewalk and bike lane infrastructure coverage around school neighborhoods[2]
- Limited evidence to reveal inequities in active travel infrastructure across school neighborhoods[3]

[1]Kontou E, McDonald NC, Brookshire K, et al. U.S. active school travel in 2017: Prevalence and correlates. *Preventive Medicine Reports*. 2020;17:101024.
[2]Rothman L, Macpherson AK, Ross T, et al. The decline in active school transportation (AST): A systematic review of the factors related to AST and changes in school transport over time in North America. *Preventive Medicine*. 2018;111:314–322.
[3]Hwang J, Joh K, Woo A. Social inequalities in child pedestrian traffic injuries: Differences in neighborhood built environments near schools in Austin, TX, USA. *Journal of Transport & Health*. 2017;6:40–49.

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Study Aims

To assess pedestrian and cycling infrastructure coverage across school neighborhoods in Central Texas

To determine if neighborhood-level sociodemographic characteristics was associated with infrastructure coverage

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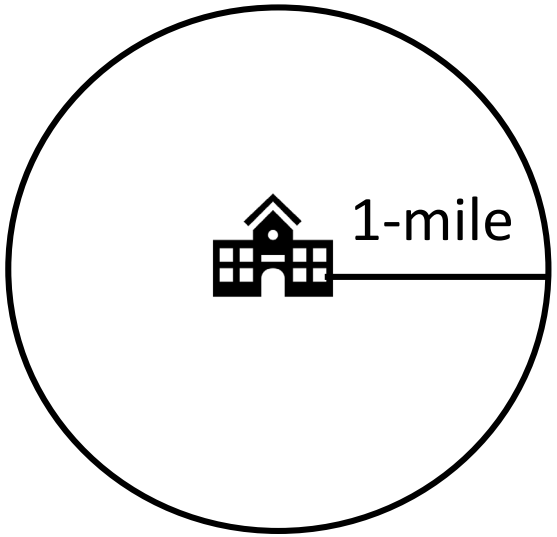
Methods

- Part of STREETS 5-year natural experiment
- Geocoded 94 elementary schools in central Texas
- “School neighborhoods” defined by a 1-mile Euclidean buffer around each school

STREETS
SAFE TRAVEL ENVIRONMENT EVALUATION IN TEXAS SCHOOLS



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Methods

- Publicly available City of Austin, GIS spatial data to create 2 outcomes:
  1. **Sidewalk coverage** (length of sidewalk/length of road)
     - Range: [0 = none to 2 = full coverage, both sides road)
     - High coverage ≥1.5
  2. **Bike lane coverage** (length of bike lane/length of road)
     - Range: [0 = no coverage to 2= full coverage, both sides road]
     - High coverage ≥0.5
- Census data and spatial apportionment to create 2 exposures:
  1. **Median household income**
     - Quartiles
  2. **Percentage of minority residents per neighborhood**
     - Low: <20%, some: 20-50%, high: ≥50%
- Logistic regression models

Results – infrastructure coverage

Sidewalk Coverage

- **68** school neighborhoods
- **57% (n=39)** low coverage

Bike lane Coverage

- **86** school neighborhoods
- **88% (n=76)** low coverage

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Results - Inequities

- High and mid-high income school neighborhoods had **7 (95% CI:[1.5-35.6])** and **12 (95% CI:[2.7-66.2])** times higher odds of high sidewalk coverage compared to low-income.

- Neighborhood-level racial/ethnic composition was not significantly associated with sidewalk coverage.

- Neighborhood-level sociodemographics were not significantly associated with bike lane coverage.

Discussion

Most school neighborhoods low infrastructure coverage

High income neighborhoods higher coverage

Need more investment in active travel infrastructure

Focus on low-income school neighborhoods

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Thank you!

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