Examining Local Land Use Policies That May Affect Active Living Among School Students

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Presentation Overview

• Background and purpose
• Study methods
• Describe active living-oriented provisions contained in local government zoning and land use policies
• Examine the socio-demographic characteristics associated with such provisions
• Conclusions and policy implications
• Resources/contacts
Background

- More than one-third of children ages 10-17 in the U.S. are overweight or obese.¹
- Rates of walking and bicycling to school have declined from 50% to 13% between 1969 and 2009 for children aged 5-14 years old.²
- According to the CDC 2010 State Indicator Report on Physical Activity only 65% of adults are physically active while only 17% of students in grades 9-12 are active.³
- The Task Force on Community Preventive Services recommends community and street-scale urban design and land use policies as a strategy to promote physical activity.⁴
Purpose

• Describe the prevalence of local government zoning and land use policies addressing:
  • Active/passive recreation
  • Walkability/Bikeability
  • Mixed Use
• Describe the sociodemographic characteristics associated with such policy provisions.

Source: www.pedbikeimages.org / Dan Burden
Study Methods
Methods: Policy Collection and Coding

• Policies were collected in 2011 from 315 local governments surrounding 155* secondary schools nationwide (aka, “secondary school catchments”) via Internet research with telephone follow-up.

• Items collected included:
  - Zoning Ordinances
  - Subdivision Regulations
  - General Ordinances

*The sample originally included 157 catchments but two were dropped from policy collection because they were located on tribal lands.

bridging the gap
Policy Coding Instrument

- Policies were reviewed by researchers using a coding instrument to evaluate the extent to which they specifically promote walking/biking, recreation, and mixed use.

Inter-rater agreement was high—ranging from 76% to 98% depending on the item.
Policy Coding Instrument

The policy instrument evaluated the presence of items related to:

- walkability (sidewalks, trails, bike lanes, bike parking, street/pedestrian connectivity, etc.)
- active/passive recreation (playgrounds, sports fields, parks, open space, etc.)

The instrument examines items across 20 different zones/districts and the strength and use type of those markers.

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Methods: Aggregating Policies to Catchment Level

• For each local jurisdiction, two sets of dichotomous (yes/no) variables were created for each category of markers (e.g., street connectivity, pedestrian connectivity, mixed use, etc.) :

  1. Presence of any policy

  2. Required/allowed use policy

• For each marker, a weighted, jurisdiction-level marker was created to reflect the proportion of the catchment youth population exposed to the marker (based on the proportion of the catchment represented by the local jurisdiction).

• The jurisdiction-level, youth population-weighted markers were summed to create weighted, catchment-level markers.
Methods: Analytic Methods

• Descriptive statistics were computed, clustered to account for the sample design, and weighted for the school catchment probability of selection.

• All analyses conducted with SAS v. 9.4

• Catchment demographic/SES estimates were compiled using the American Community Survey and data from the National Center for Education Statistics

• Policy data were missing for one catchment, resulting in an analytic sample of 154 catchments.
Results
### Characteristics of the 2011 Sites (n=154 catchments)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>Northeast</th>
<th>South</th>
<th>Midwest</th>
<th>West</th>
</tr>
</thead>
<tbody>
<tr>
<td>Census Region</td>
<td></td>
<td>21.4%</td>
<td>35.1%</td>
<td>24.7%</td>
<td>18.8%</td>
</tr>
<tr>
<td>Racial/Ethnic Composition</td>
<td></td>
<td>69.5%</td>
<td>30.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urbanization*</td>
<td></td>
<td>16.9%</td>
<td>45.5%</td>
<td>37.7%</td>
<td></td>
</tr>
<tr>
<td>Variable</td>
<td>Mean (SD)</td>
<td>Minimum</td>
<td>Maximum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median Household Income</td>
<td>$56,562 ($22,122)</td>
<td>$28,384</td>
<td>$135,778</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population density (per sq. mile)</td>
<td>2065.0 (3278.7)</td>
<td>1.7</td>
<td>20296.8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*%s may not sum to 100 due to rounding.
Number of catchments by region (N=154)
Prevalence of Policies that Promote Active Living

% of Youth Residing in Catchment* with Policy Provision

- Passive Recreation
- Any walkability/bike related marker (e.g., sidewalks)
- Active recreation
- Mixed use
- Trail, path, or greenway
- Street connectivity
- Crosswalks
- Bike/Pedestrian connectivity
- Bike parking
- Bike lane
- Complete Streets or CSD Policy

* n=154 catchments

Marker Addressed in Policy
Required or allowed use in policy(ies)

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Mean Percent of Youth Exposed to Required or Allowed Use Active Living Policies by Income

- Mixed Use: 58% at or above median HH income, 54% below median HH income
- Street Connectivity: 60% at or above median HH income, 44% below median HH income
- Trails/Paths: 43% at or above median HH income, 23% below median HH income
- Bike Parking: 35% at or above median HH income, 26% below median HH income
- Bike/Pedestrian Connectivity: 33% at or above median HH income, 25% below median HH income

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Mean Percent of Youth Exposed to Required or Allowed Use Active Living Policies by Race/Ethnicity

- Mixed Use: 54% (green) and 62% (blue)
- Street Connectivity: 54% (green) and 54% (blue)
- Trails/Paths: 32% (green) and 39% (blue)
- Bike Parking: 24% (green) and 46% (blue)
- Bike/Pedestrian Connectivity: 28% (green) and 34% (blue)

Predominantly (≥66%) non-Hispanic White
Not predominantly non-Hispanic White
Mean Percent of Youth Exposed to Required or Allowed Use Active Living Policies Compared by Locale

- Mixed Use: Urban 71%, Suburban 62%, Rural 39%
- Street Connectivity: Urban 69%, Suburban 51%, Rural 48%
- Trails/Paths: Urban 49%, Suburban 38%, Rural 20%
- Bike Parking: Urban 56%, Suburban 33%, Rural 14%
- Bike/Ped Connectivity: Urban 41%, Suburban 29%, Rural 22%
Mean % of Catchment Youth Exposed to Required Street Connectivity Policies by Region

But, only 35% of youth living in the 33 northeastern catchments live in an area that requires street connectivity.

How to interpret this: 61% of the youth living in the 54 catchments located in the South reside in an area that requires street connectivity as part of their zoning/land use laws.

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Mean % of Catchment Youth Exposed to Required Bike/Pedestrian Connectivity Policies by Region

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Mean % of Catchment Youth Exposed to Required Trail-related Policies by Region

[Map showing the percentage of catchment youth exposed to required trail-related policies by region across the United States. States are color-coded with percentage values: 46%, 26%, 25%, and 37%.

Table:

<table>
<thead>
<tr>
<th>Region</th>
<th>Mean % of Youth Exposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>West</td>
<td>46%</td>
</tr>
<tr>
<td>West</td>
<td>26%</td>
</tr>
<tr>
<td>West</td>
<td>25%</td>
</tr>
<tr>
<td>West</td>
<td>37%</td>
</tr>
</tbody>
</table>
Mean % of Catchment Youth Exposed to Required Bike Parking Policies by Region

- 72%
- 15%
- 28%
- 12%
Mean % of Catchment Youth Exposed to Required Mixed Use Policies by Region
Conclusion and Policy Implications
Conclusion

• Passive/active recreation policies are more prevalent than specific walking and biking related policies in local land use laws.

• Communities are more likely to simply address provisions in their local land use laws than requiring them.

• Youth living in higher income communities are more likely than youth living in lower income communities to be exposed to local land use policies that require or allow street connectivity (60% vs. 44%) and trails/paths (43% vs. 23%).

• Youth living in urban communities are more likely than youth living in suburban or rural communities to be exposed to local land use policies that require or allow street connectivity, bike/pedestrian connectivity, trails/paths, and bike parking.

• Youth living in communities in the western region are more likely to be exposed to local land use policies that require bike parking and bike/pedestrian connectivity policies than youth in communities in the midwest, southern, and northeastern region.
Policy Opportunities

• Opportunities exist for local governments to modify their zoning/land use laws to include requirements for structural improvements to increase opportunities for physical activity.

• Zoning/land use policies that specifically address bike parking and bike lanes is an area where improvement is needed.

Source: http://icsw.nhtsa.gov/nhtsa/ImageLibrary/display.cfm
For more information: www.bridgingthegapresearch.org

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Thanks! Emily Thrun ethrun2@uic.edu
References


(4) Heath GW, Brownson RC, Kruger J, et al. The effectiveness of urban design and land use and transportation policies and practices to increase physical activity: a systematic review. *Journal of Physical Activity & Health*. 2006;3(Supplement 1):S55-S76.