



Mapping Physical Activity Location Availability: A Case Study of Baltimore City, MD



Cockerham A^{1*}, Hager E², Bustad J^{1,3}, O'Reilly N³, Loboda T¹, Black M²

¹University of Maryland College Park ²University of Maryland School of Medicine ³Towson University ⁴University of Maryland School of Social Work

I. Background/Objectives

- Access to places to be active is associated with greater physical activity (PA) and reduced obesity among children and adults [1-5]
- Using Baltimore City as a model, this study aims to: (1) generate cumulative neighborhood-level PA Location Availability Score (PALAS) using geographic information systems (GIS) data/techniques; (2) create city-wide PALAS map; (3) identify neighborhoods with low PA availability

II. Data

- Shapefiles (Department of Recreation and Parks): parks, recreation centers, ballfields, multi-use fields, courts, playgrounds (school and park), ice rinks, soccer pavilions, pools, golf courses, horseshoe pits, outdoor fitness stations, skate parks, kayak/canoe launch points, multi-use trails, paths, and other government/city (gov/city) funded PA locations
- Private (non-profit, for-profit, residential) physical activity locations were identified (218) by two independent reviewers and geocoded
- Shapefile (Department of Planning): Land cover land use (LCLU)

III. Methods

- Nine unique constructs used to create PALAS
- Shapefiles of gov/city-owned PA site locations provided within neighborhood presence of (1) recreation centers, (2) parks (inclusion criteria ≥ 1 acre and having \geq "feature", n=96), (3) school grounds/playgrounds/other city-funded locations/facilities (skate parks, ice rinks, etc.)
- (4) Presence of private PA locations/facilities (for-profit, non-profit, or residential)
- (5) Presence of green space suitable for PA was identified from LCLU data
- Proximity of neighborhoods within a 0.25 mile buffer of (6) parks, (7) recreation centers, (8) school/other government/city owned PA facilities, (9) private PA facilities
- Nine variables converted into binary variables using the threshold definitions for each in Table 1
- Summed to create the PALAS

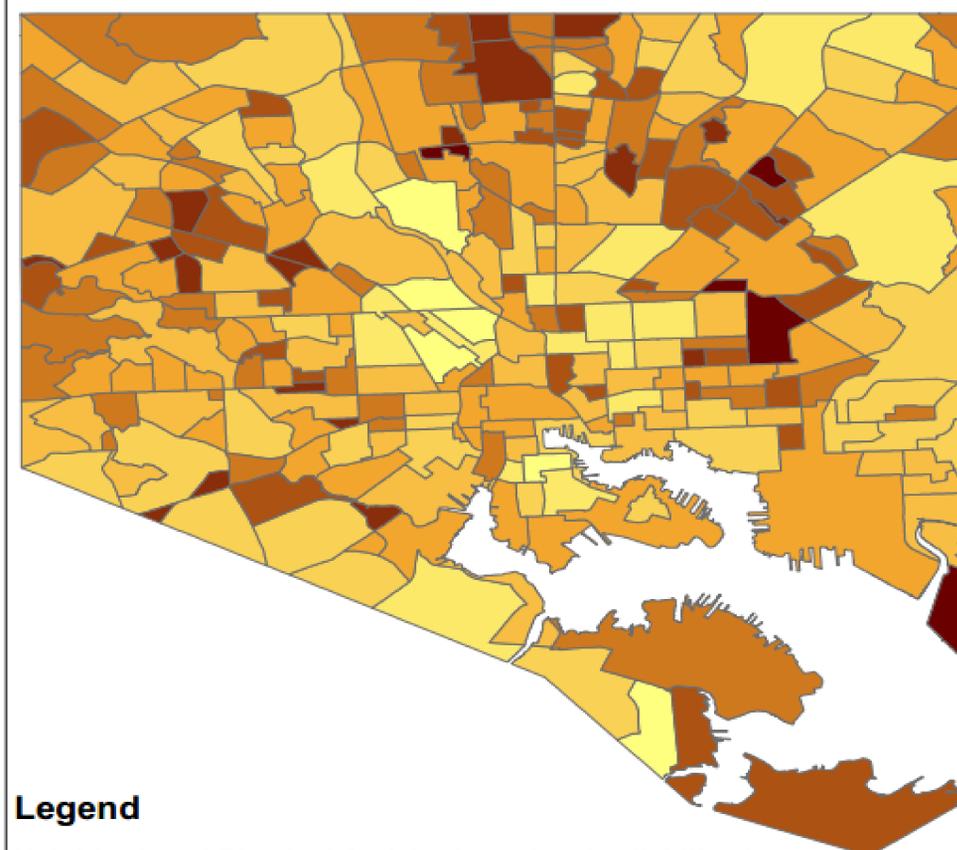
Table 1. PALAS Variables

Layer	Threshold Definition –Y(1)/N(0)
1 Recreation Center	Present In neighborhood
2 Parks (n=96)	Present In neighborhood
3 Other gov/city funded PA facility	Present In neighborhood
4 Private PA facility	Present In neighborhood
5 Green space	Present In neighborhood
6 Park Buffer	0.25 mile buffer intersects neighborhood
9 Recreation Center Buffer	0.25 mile buffer intersects neighborhood
8 Other gov/city owned PA facility buffer	0.25 mile buffer intersects neighborhood
9 Private PA facility buffer	0.25 mile buffer intersects neighborhood

Table 2. Neighborhood Individual PALAS Variable Results

	Recreation Center	Park	Other gov/city funded PA facility	Private PA facility	Green Space	Park Buffer	Recreation Center Buffer	Other gov/city funded PA facility buffer	Private PA facility buffer
N=278									
Access to at least one	57	53	171	77	155	261	158	158	167
Percent (%)	20.5	19.1	61.5	27.7	55.8	93.9	56.8	56.8	60.1

Baltimore City Physical Activity Location Availability Score (PALAS)



Legend

Neighborhood Physical Activity Location Availability Score



IV. Results

- Table 2 shows the number and percent of the 278 neighborhoods that have access to the individual variables that comprise the PALAS
- The map shows the distribution of the PALAS throughout the neighborhoods of Baltimore City (range 0-8)
- The average PALAS is 3.95
- 112 neighborhoods (40.6%) have a PALAS less than or equal to 3, indicating limited availability of locations suitable for physical activity

V. Conclusions

- New and publically available GIS data was used to generate a PALAS for each neighborhood in Baltimore City
- Five neighborhoods (Beverly Hills, Dundalk Marine Terminal, Keswick, Orangeville Industrial Area, and Four by Four) were identified as having a PALAS of 0 indicating no availability of the PA sites identified in this study
- Twenty neighborhoods were identified as having a PALAS of 1 indicating the availability of only one PA site identified in this study

VI. Future Work

- Associations between the PALAS and individual and/or neighborhood-level health outcomes should be investigated
 - Measures of physical activity could yield the most informative analysis with the PALAS if they are temporally equivalent
- The map of the PALAS and the individual layers generated in the calculation of the PALAS may be used by academics and/or policy makers to target neighborhoods for interventions and future physical activity sites

Contact Info: *ammoulden@gmail.com

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