

Using Housing Market Information to Improve Evaluation of Physical Activity

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ABSTRACT

Purpose: Heterogeneity exists in urban neighborhoods. Factors that affect home choice can differ even though socio-demographics are quite similar. It is possible residents' tastes for environment features in home location also predict how well they respond to built-environment changes by increasing physical activity. Observing factors that affect location can contribute to physical activity success in public health. A study area in West Texas appears very homogeneous: 89% Caucasian; 72% registered Republican; 81% families with children; 68% college educated - 87% 'some college;' yet two distinct submarkets exist based on subtle differences in home purchase choices. The area has a high incidence of obesity and diabetes; so landscape changes that might induce physical activity are important. **Methods:** A random sample of 93 residents who purchased homes between June, 2008 and December, 2009 in Lubbock, TX completed the Godin Leisure-Time Exercise Questionnaire Survey. 66 (71%) responded. Using a prior market study, 18 (27%) were members of submarket 1 and 48 (73%) were members of submarket 2. A Spearman Rank Correlation coefficient (ρ) correlated levels of physical activity on two dimension of physical activity dimensions: C1, "mild, moderate, strenuous"; and C2, "seldom, sometimes, often" to a measure of landscape diversity. Wilcoxin Tests compared types. **Results:** For the group, Spearman Rank correlation between landscape diversity and strenuous weekly exercise was significant ($p < 0.054$) and correlation to often active was not significant, but at $p < 0.118$. Comparing types, Type 1 residents exercised more often ($p < 0.067$) and more strenuously ($p < 0.098$) as landscape improved. Type 2 residents showed no improvement in physical activity: sometimes and often were insignificant ($p < 0.68$) and ($p < 0.44$) as well as moderate ($p < 0.63$) and strenuous ($p < 0.29$). The Wilcoxin tests for improvement in each category show Type1 improving on both intensity ($p < 0.022$) and frequency ($p < 0.042$) with greater landscape diversity. **Conclusions:** There is little demographic difference between members of each submarket. So in aggregate, significant improvement on one dimension of physical activity and 88% significance on the other may induce health officials to conclude an improvement in activity occurred for an 'at

risk' population when none occurred. Yet those shown to pay more to live near landscape diversity (submarket1) became more active as diversity increased. Health officials might target built environment improvements better to increase physical activity by observing differences in economic choices as well as demographic variation.

KEY WORDS: Built Environment, Physical Activity, Hedonic Analysis, Market Segmentation, Agent Heterogeneity, Godin Leisure-Time Exercise Questionnaire