

# Landscape vegetation in small urban parks and surrounding neighborhoods: Are socioeconomic characteristics a useful predictor of vegetation taxa richness and abundance?

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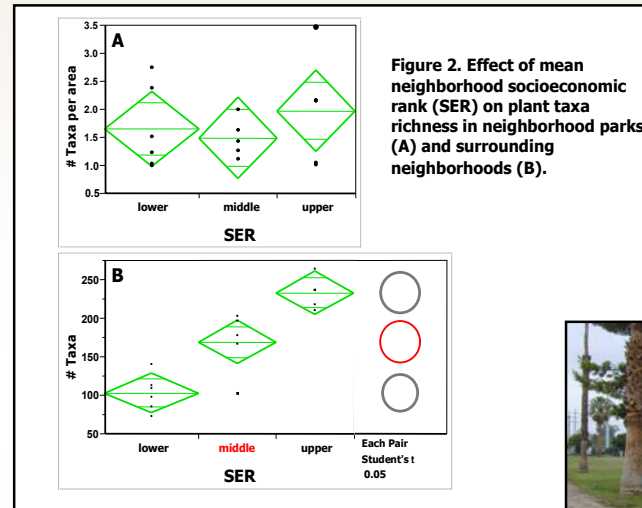
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## Introduction

Humans appear to exhibit strong cultural preferences for different types and amounts of urban vegetation which may vary in predictable ways (Ulrich 1986; Fraser and Kenny, 2000). Humans also differentially possess economic resources to realize their preferences for different urban landscape types. These cultural and economic differences may lead to heterogeneous patterns of biota across an urban matrix of human domicile (Kinzig et al., 2003). Accordingly, we hypothesized that cultural preference and economic wherewithal, defined as socioeconomic rank (SER), could be useful as a predictor of urban vegetation abundance and richness within neighborhood residential landscapes where patterns of vegetation are most under "bottom-up" influence reflecting an integration of local individual choices and actions. But can SER also be used to predict vegetation abundance and richness inside small urban parks that are nested within residential neighborhoods and are designed to service local residents? And within any given SER, will vegetation characteristics inside small urban parks reflect similar patterns existent in surrounding neighborhood residential landscapes? Or do the characteristics of vegetation within small urban parks reflect "top-down" influences, reflecting more broad city-level management strategies?

## Methods

To gain answers to these questions, we studied the composition of vegetation within an array of 16, small urban parks (4 to 15 acres in size – Fig. 1) and their surrounding residential neighborhoods in Phoenix, Arizona during 2000 and 2001. We then analyzed vegetation composition data in terms of neighborhood socioeconomic characteristics to determine if neighborhood SER could be useful as a predictor of landscape vegetation taxa richness and abundance. The urban parks that we studied were distributed within similarly dense residential neighborhoods of three SER: high, moderate, or low. Counts and taxonomic identification of all woody perennial vegetation in each park were made. To approximate composition of landscape vegetation in the neighborhood surrounding each park, counts and taxonomic identification of all woody perennial vegetation were made along four transects distributed away from the park along streets in a northerly, easterly, southerly or westerly direction, respectively. Transects were 80 m in length and extended to a width of about 20 to 30 m away from the edge of either side of the street, or about the depth of a front yard residence.

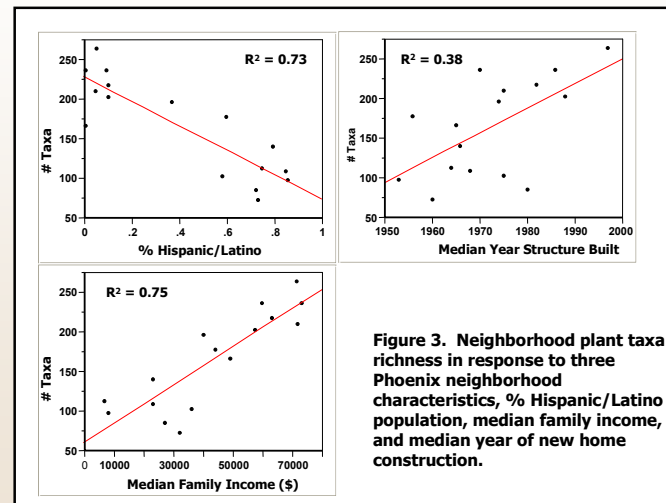


## Results

We found that SER was able to help predict richness of landscape vegetation in neighborhoods surrounding parks, but not in parks themselves. There was a significant positive correlation between neighborhood vegetation taxa richness and neighborhood SER (Fig. 2). Landscape vegetation abundance was highest for neighborhoods with high SER, but was similar for neighborhoods with moderate or low SER (data not shown). Neighborhood vegetation taxa richness was also positively correlated with median family income, but was negatively correlated with number of years since neighborhood development, and the percent neighborhood Hispanic/Latino population (Fig. 3).



Figure 1. Small urban park nested within a residential community, Phoenix, Arizona.



## Conclusions

These data suggest that vegetation composition of small parks in Phoenix was dominated by "top-down" influences reflecting city management. Conversely, vegetation composition of neighborhoods surrounding parks appeared more dominated by integrated "bottom-up" influences of neighborhood residences and socioeconomic factors.

## Literature Cited

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