The influence of residential density on socio-cultural perception of ecosystem services and human well-being in midsize cities of southeastern Idaho.

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Abstract

A key component to understanding the mechanisms that drive social ecological systems is human motivation and their associated values. In this project we add fine scale spatial components to traditional surveying methods to better understand how socio-cultural valuations of ecosystem services vary. Our survey was conducted door to door at spatially defined residential densities across southeastern Idaho. Preliminary results suggest social disconnects occurring with valuation of agricultural services across residential densities in southeastern Idaho.

Introduction

Ecosystem services (ES) and the social-ecological systems (SES) that rely on them have become a focal point in academic research. Research conducted in this field primarily focuses on the economic trade-offs and the bio-geo-physical interactions between the landscape and human well-being, however recent studies have started to incorporate social perspectives as a mechanism that drive interactions and conflicts [1]. This approach allows the academic community the ability to better understand the complex interactions, motivations and possible conflicts inherent in these systems. It is with this novel approach that we explore the human motivations that drive residential expansion and their associated perceptions across mid-sized cities in southeastern Idaho.

The objective of this research is to provide a more heuristic and spatially explicit approach based on where people live, how they value the ecosystem services and their perceived well-being in an attempt to better understand the mechanisms that drive residential development across southeastern Idaho. This not only will provide a means of delineating perceptions based on place, but allows us to better understand social disconnects of values and potential social-ecological conflicts across the landscape.

Research Questions

How do individuals in urban, suburban, exurban and rural areas value ecosystem services in southeastern Idaho?

- What are the differences/similarities in perception of ecosystem services and perceived well-being among the groups?
- How can the groups' responses inform policy?

Methods

- Selected a 10 mile radius from mean center of urban density for Idaho falls and Pocatello
- Classified residential densities of each area using method created by Theobald in 2005 [2]
- Generated random sample locations across all residential densities
- Created survey focusing on key components for understanding perceived benefits of ecosystem services and well-being
- Leveraged ArcGIS and SurveyMonkey to collect data door to door at each sample location

Results

Importance/Satisfaction with Ecosystem Services

A total of 348 surveys were collected from ~2,800 homes in the mid-size cities of Idaho Falls and Pocatello, with a total response rate of 13%. Respondents indicated how important and how satisfied they were with 26 ecosystem services found in the area via a Likert scale of 1 to 5. We found that overall the majority of respondents felt that all ecosystem services were important and were satisfied with their current state in southeastern Idaho (Figure 1, Table 1)..

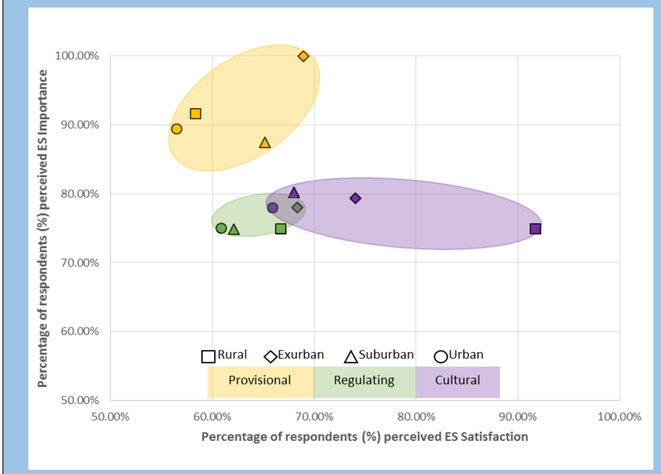

Figure 1: Importance/Performance Analysis of percentage of respondents who perceived service types as important (Y axis) against the same metric for satisfied respondents by residential groups (median).
**Note graph is plotted beginning at 50% for both Y and X axis to aid in visualization.*

Key Findings:

Provisional	
Most Important	Exurban
Least Important	Urban
Least Satisfied	Urban
Most Satisfied	Exurban

Regulating	
Most Important	Exurban
Least Important	Suburban
Least Satisfied	Urban
Most Satisfied	Exurban

Cultural	
Most Important	Suburban
Least Important	Rural
Least Satisfied	Urban
Most Satisfied	Rural

Table 1: Perception of service type by category. Groups were assigned to each category based on percentage of respondents.

Perceived Well-being

Respondents were asked to evaluate their perceived well-being based on a set of twenty questions. These questions were adapted from the framework put forth in the Millennial Ecosystem Assessment [3] (Figure 2).

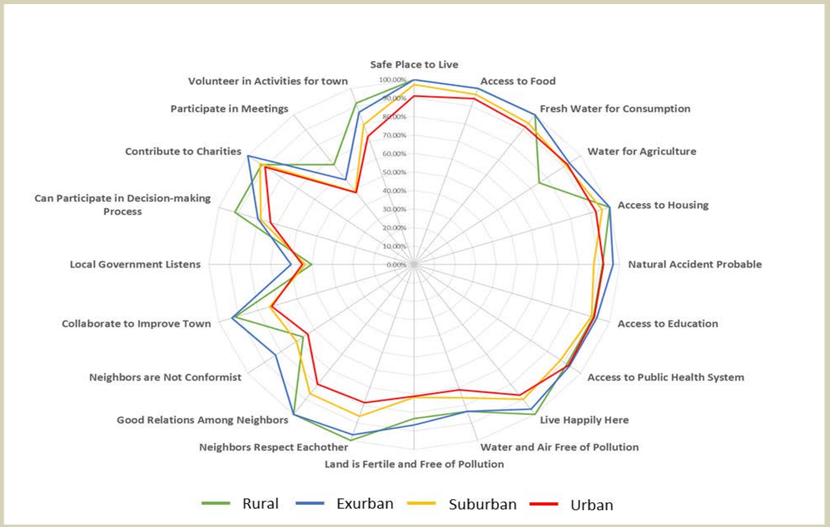

Figure 2: Respondents evaluated their perceived well-being via Likert scale of completely disagree (1) to completely agree (4). The percentage of respondents within the groups that agreed with each statement a population percentage was calculated.

Results cont'd.

Accessibility

In addition to survey data, spatially explicit social barrier data was collect at 1,501 sample locations for homes that could not be accessed to complete a survey. This data provides an additional perspective of groups to determine if one group attempts to control social interactions more then others and to compare it to survey results. The types of barrier included: Dogs, Locked Gates, Safety Concerns, No Soliciting, and No Trespassing (Figure 3).

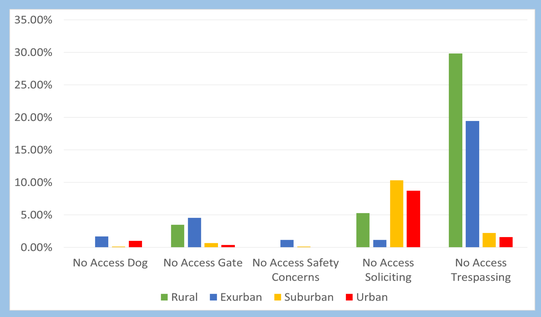

Figure 3: Percentage of homes visited by group where social barriers were in place and what the barriers were.

Conclusion

The results show that there are differences between the groups and most of the social disconnects occur within cultural services. The most prominent occurrences of this is in how satisfied rural and exurban populations are with cultural services and with how important exurban respondents perceive provisional services. Furthermore the differences in the self-esteem, social relations, freedom and choice in their perceived well-being indicate that most of the variation is a product of cultural perception held by respondents that live in rural and exurban areas, and they too exert control over their space more frequently then all of groups. This suggests that cultural perception of ecosystem services and perceived well-being are impacted by where someone lives.

References & Acknowledgements

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