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Household Indicators: Design to Inform and Engage Citizens

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Background

UrbanSim

What if…

- we built a new rail line or a new ring motorway?
- we established an urban growth boundary?
- we adopted congestion pricing in the city center?

UrbanSim is a regional land use and transportation simulation system designed to model patterns of urban development for periods of 20 years or more for different policy alternatives. Its primary purpose is to provide stakeholders with tools to aid in more informed decision-making.

Value Sensitive Design

Value Sensitive Design is a theoretically grounded approach to the design of technology that accounts for human values in a principled and comprehensive way. A key feature is attention to indirect as well as direct stakeholders.

Direct stakeholders interact directly with UrbanSim.

- Urban planners and modelers
- Motivated members of advocacy groups

Indirect stakeholders include all those affected by how UrbanSim is used to inform decisions. These include

- Other citizens of the region
- Elected officials
- Members of the press
- Residents of nearby regions

We aim to increase access to the system, supporting indirect stakeholders in becoming direct stakeholders.

Values in UrbanSim

In developing UrbanSim, we have found it important to distinguish between stakeholder values and explicitly supported values.

Stakeholder values:

- Economic growth
- Housing affordability
- Property rights
- Social equity
- Walkability
- Biodiversity
- and so on…

Explicitly supported values:

- Democratic society
  - Informed deliberation
  - Citizen engagement
  - Legitimacy
  - Transparency
- Freedom from bias
- Accountability

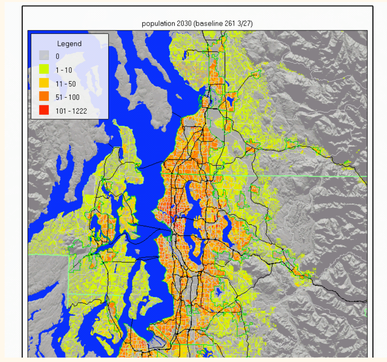
Abstract

Urban simulation systems can be a powerful tool for helping to understand the complex, long-term consequences of urban planning decisions. Simulation results are summarized and reported using indicators, aggregate measures such as population density or total minutes of vehicle delay. To citizens, these indicators may seem abstract and unfamiliar. This poster presents design work in progress on Household Indicators, a new form of indicator designed especially for citizens. Accessed through a web-based interface, Household Indicators are intended to inform citizens by relating simulation results to citizens' life experiences, and to engage citizens by addressing the question, "How will this decision affect me?"

Indicators in UrbanSim

Regional Indicators

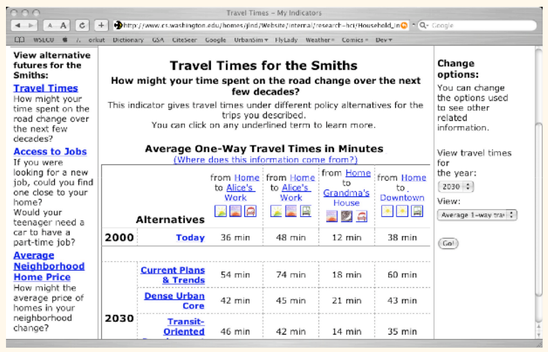
Regional indicators are currently the primary way for urban planners and other stakeholders to interact with UrbanSim results. Maps, charts, and tables of regional indicators present aggregate measures based on UrbanSim results.



"How will this decision affect the region?"

Household Indicators

Household indicators are proposed as a new way for citizens and others to interact with UrbanSim results. The presentation of simulation results is tailored for each user according to informaton he or she provides.



*"How will this decision affect **me**?"*

Design Process

Completed:

- Initial conceptual investigations
- Interviews with 9 Seattle citizens
- Paper prototyping
- Formative user study with 6 Seattle citizens
- Interactive mock-up
- Prototype implementation with UrbanSim results:
  - Population within walking distance
  - Employment within walking distance
  - Land use within walking distance
  - Home value within walking distance

Coming soon:

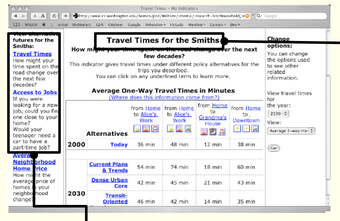
- Travel times

A planned formative evaluation will address questions such as:

- How do users understand the Household Indicators?
- What questions do they have?
- How do Household Indicators affect attitudes of engagement?
- How can we facilitate action?
- What are the system's current biases?

Design Rationale

Design to Engage



Travel Times for the Smiths

Creating a *household profile* and using the household's name throughout the interface is intended to promote a sense of identity.

View alternative futures for the Smiths:

Travel Times
How might your time spent on the road change over the next few decades?

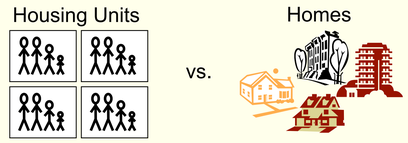
Access to Jobs
If you were looking for a new job, could you find one close to your home? Would your teenager need a car to have a part-time job?

Questions are intended to help the user understand how the information could relate to his or her own life.

The latest version of the prototype also includes ready-to-hand links to related regional indicators, to help users engage in learning about the bigger picture.

Design to Inform

Hypothesis: Household Indicators will be easier for citizens to comprehend because they present simulation results at a human scale.
Preliminary findings support this hypothesis: demand for greater detail and more concrete visualizations.
At the same time, Household Indicators make model abstractions salient:



In some cases, to legitimately present simulation results in everyday terms will require new model abstractions.

Future Work

- More sophisticated visualizations
- Principles for selecting Household Indicators with an eye towards freedom from bias
- Summative evaluation: How engaging and informative are household Indicators?

Acknowledgments

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