Value Sensitive Design: Reflections on Collaborative Systems

Batya Friedman

Value Sensitive Design Research Lab
and
The Information School
University of Washington

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Value Sensitive Design

(Friedman, 1997, 2004; Friedman, Kahn, & Borning, in press)

- Interactional Theory
  - Values are viewed neither as inscribed into technology nor as simply transmitted by social forces
  - Interaction among levels of technology
    - Architecture/Infrastructure
    - Applications
    - Interaction Models/Interface design
  - Interaction between technical features and human behavior (multi-directional)
    - Individual
    - Small groups
    - Institutions/organizational practice
    - Social conventions and expectations
    - Policies, laws and regulations

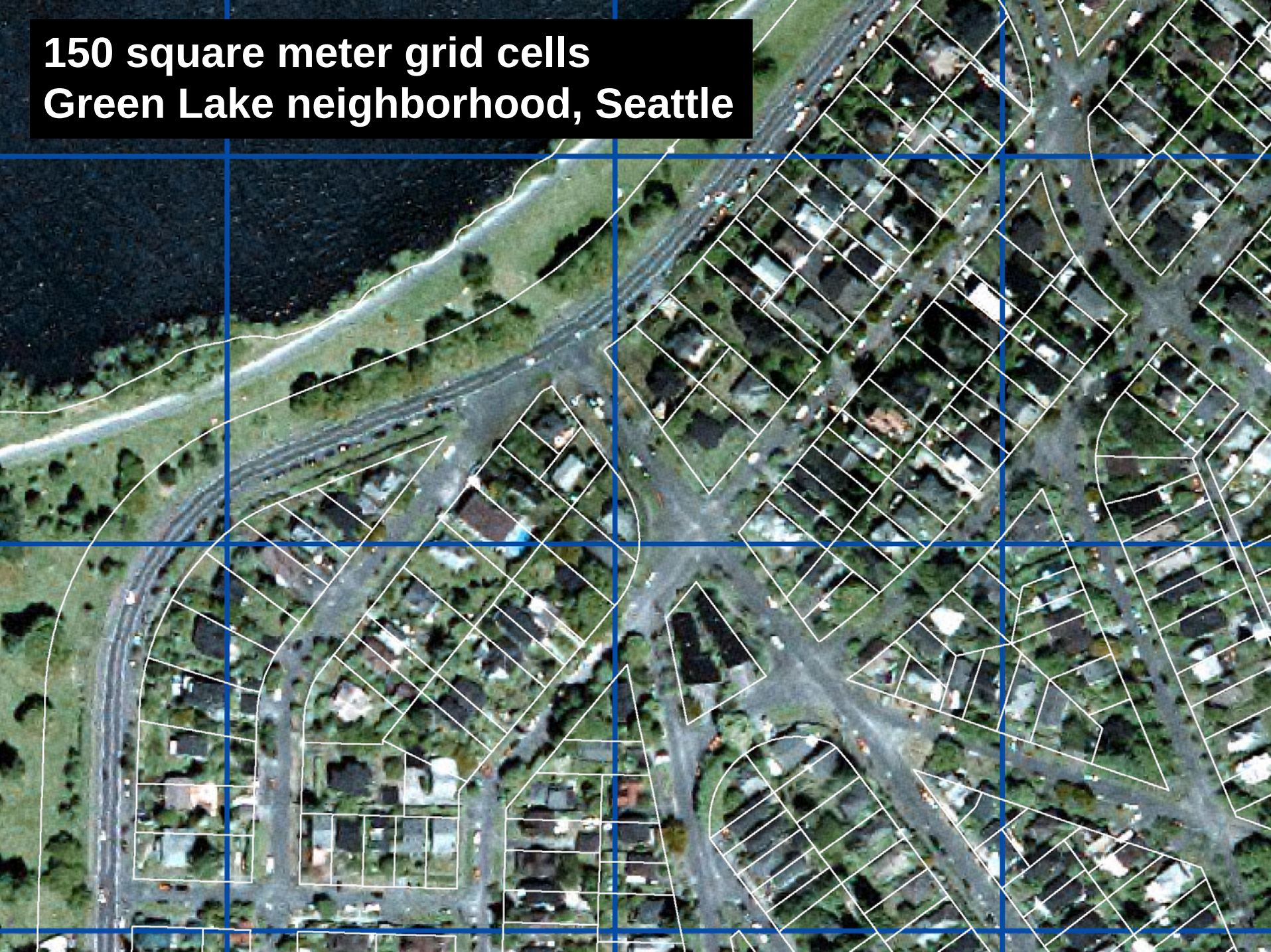
Value Sensitive Design

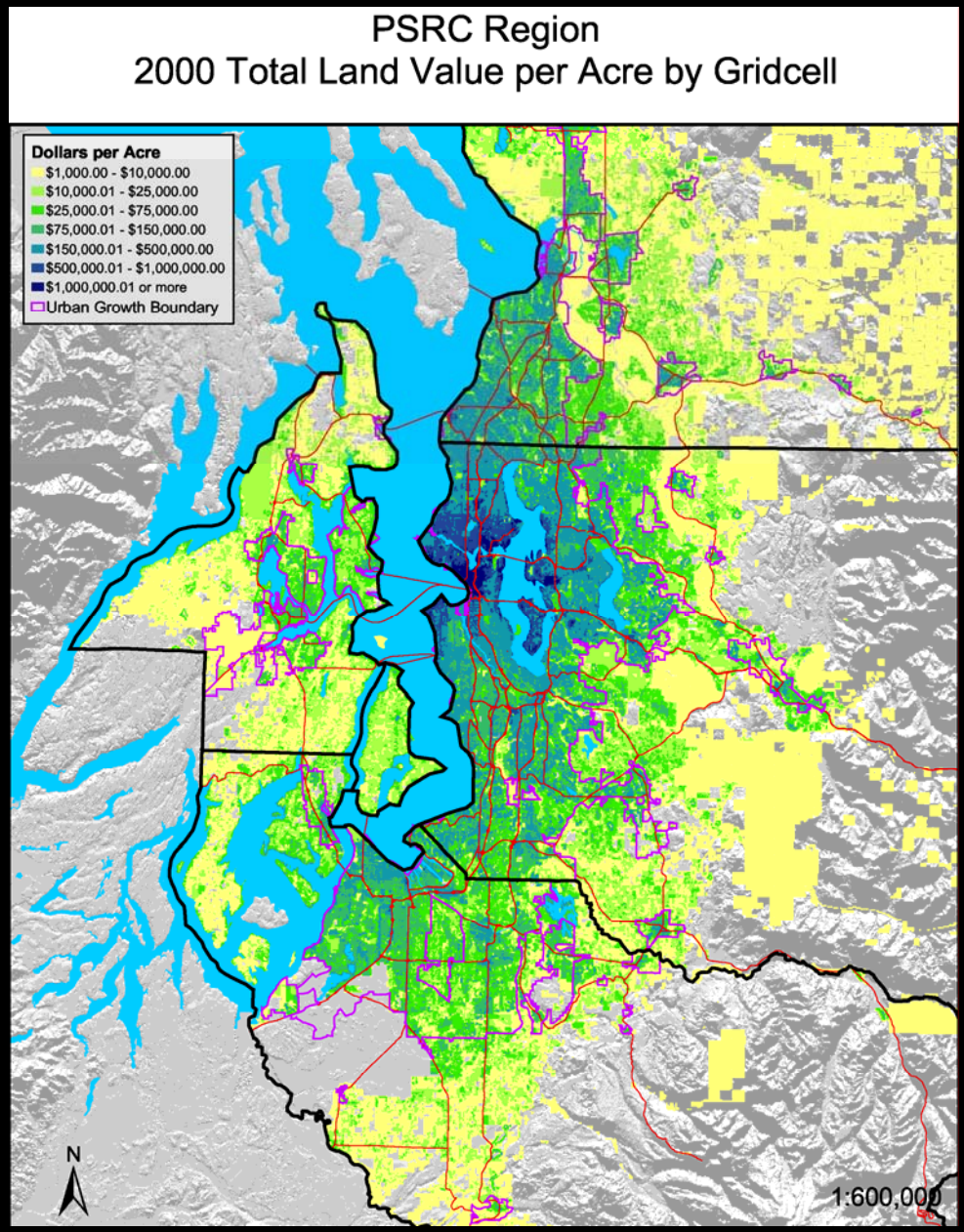
- Stakeholders
  - Direct
  - Indirect
    - Bystander
    - Person-whose-data-is-in-the-system
- Tripartite Methodology
  - Conceptual investigations
  - Technical investigations
  - Empirical investigations

Designing for Value Conflicts: The Case of UrbanSim

(Borning, Friedman, Davis, and Lin, 2005)

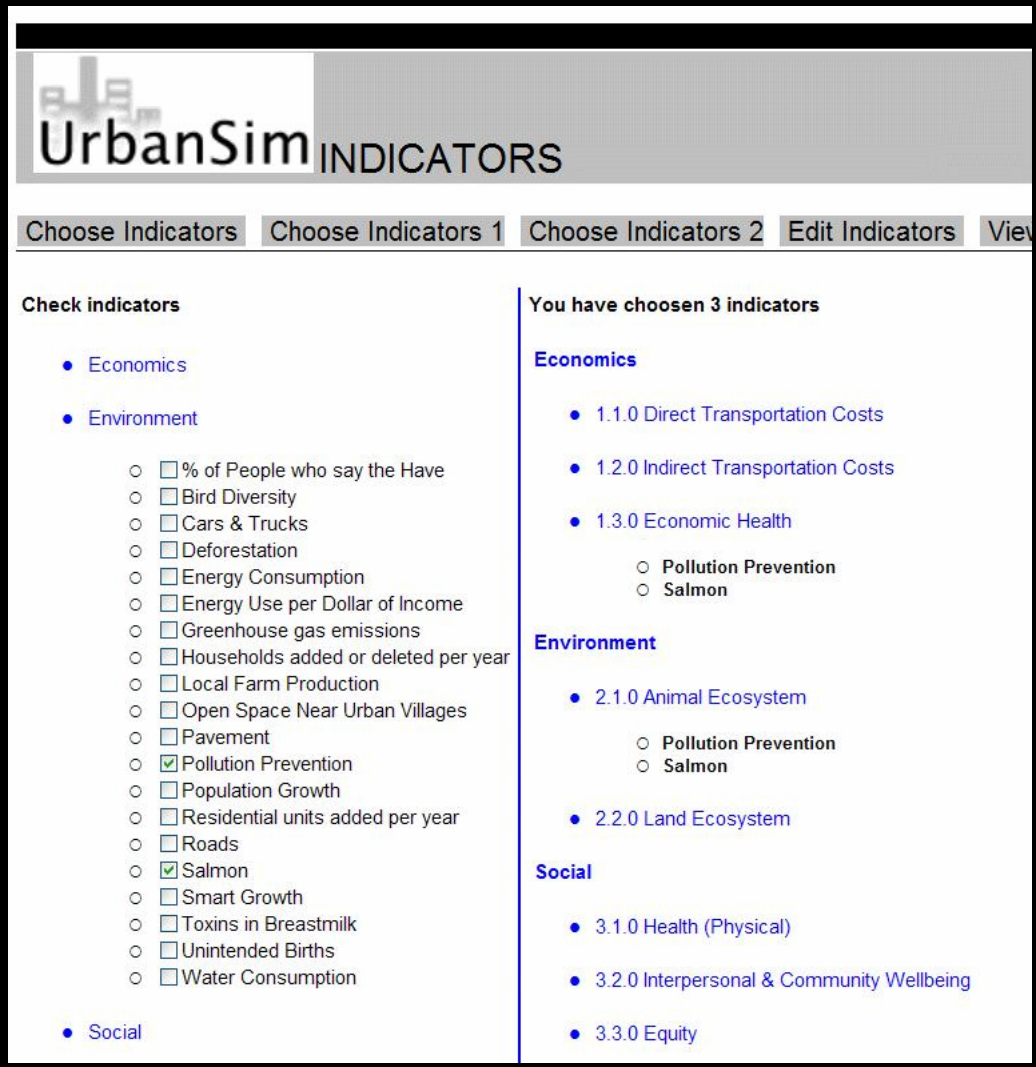
- Integrated land use and transportation models can provide an important tool for exploring policy alternatives and possible urban futures
- Analogy: SimCity, but with requirements for realism
- The system is fully operational and documented, and is distributed under the GNU Public License via the project website www.urbansim.org
- Used experimentally in Honolulu, Hawaii; Eugene, Oregon; Salt Lake City, Utah; Houston, Texas; Puget Sound Region, Washington; Paris, France; Tel Aviv, Israel

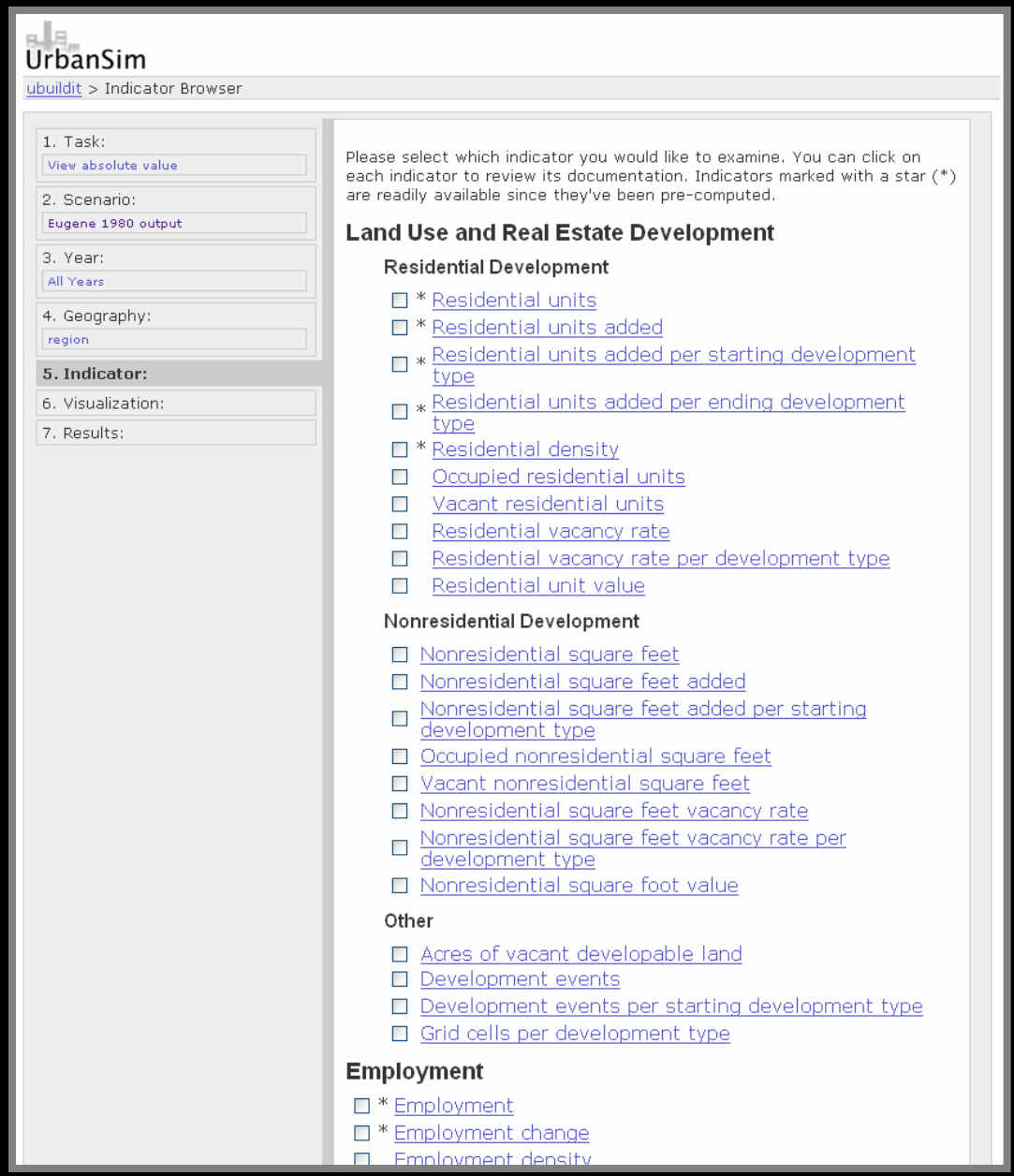

150 square meter grid cells
Green Lake neighborhood, Seattle

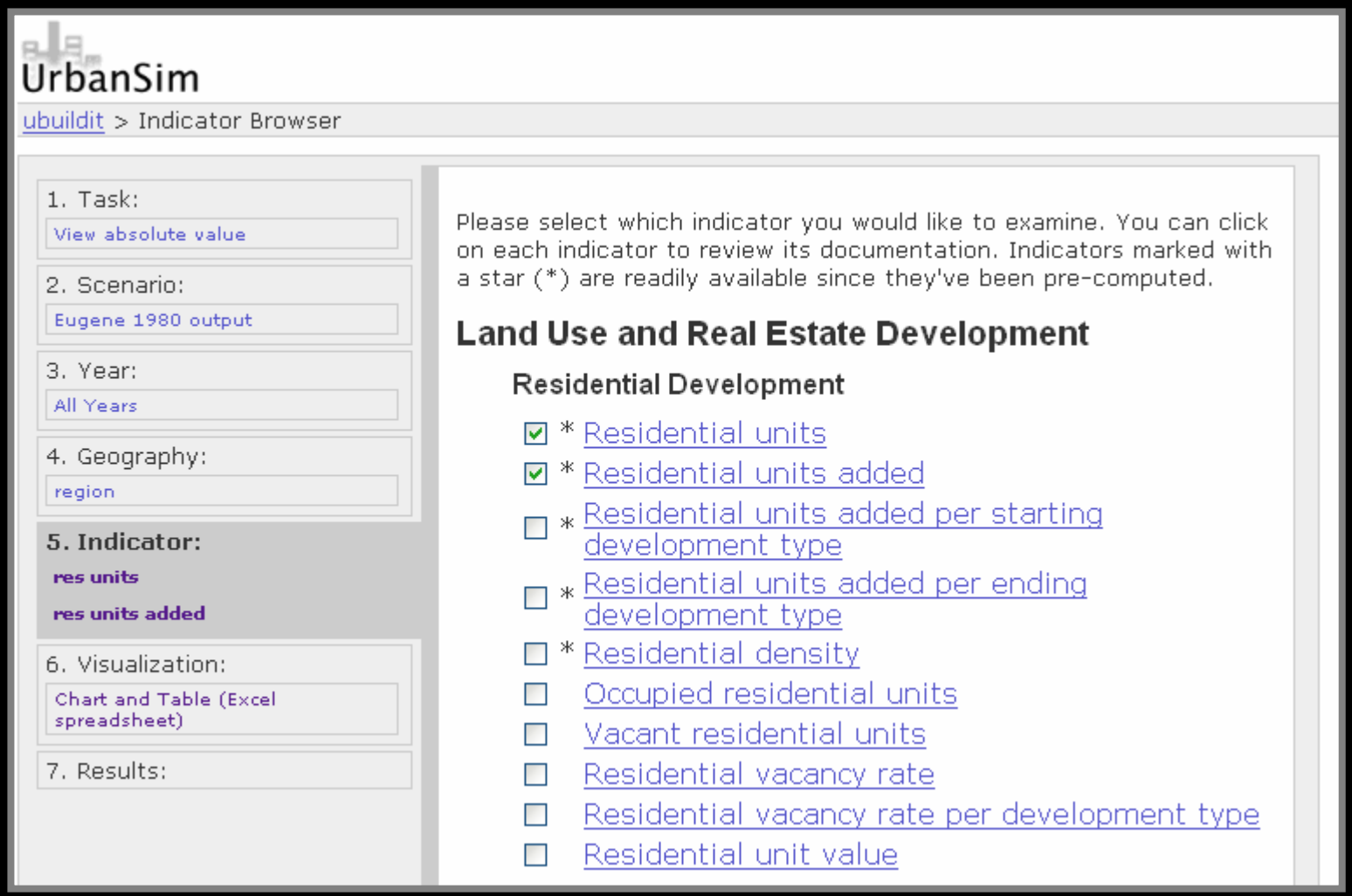


Example simulation output: Map-based indicator display for Puget Sound region

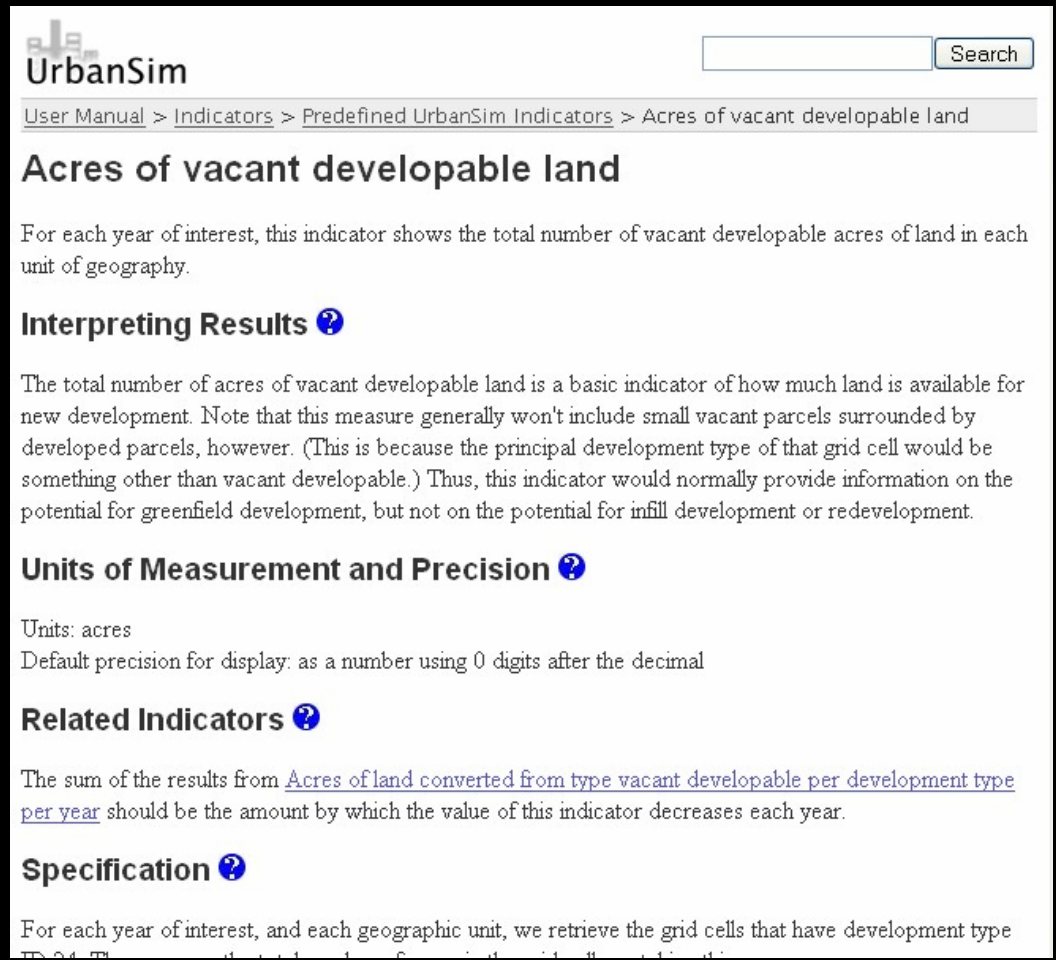
Indicator Browser – Prototype 2







Technical Documentation – Example



UrbanSim

Search

User Manual > Indicators > Predefined UrbanSim Indicators > Acres of vacant developable land

Acres of vacant developable land

For each year of interest, this indicator shows the total number of vacant developable acres of land in each unit of geography.

Interpreting Results

The total number of acres of vacant developable land is a basic indicator of how much land is available for new development. Note that this measure generally won't include small vacant parcels surrounded by developed parcels, however. (This is because the principal development type of that grid cell would be something other than vacant developable.) Thus, this indicator would normally provide information on the potential for greenfield development, but not on the potential for infill development or redevelopment.

Units of Measurement and Precision

Units: acres
Default precision for display: as a number using 0 digits after the decimal

Related Indicators

The sum of the results from Acres of land converted from type vacant developable per development type per year should be the amount by which the value of this indicator decreases each year.

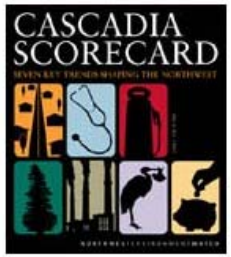
Specification

For each year of interest, and each geographic unit, we retrieve the grid cells that have development type

Indicator Perspectives - Example

NORTHWEST ENVIRONMENT WATCH

Cascadia Scorecard perspective on UrbanSim indicators



The Cascadia Scorecard is Northwest Environment Watch's new gauge of regional progress. The Scorecard puts a spotlight on the long view and the questions that most matter over time: Are we living longer, healthier lives? Are we building strong human communities? Are we handing down to our children a place whose ecosystems are regenerating?

In modeling sprawl, one of the seven key trends monitored by the Cascadia Scorecard, UrbanSim helps us to evaluate possible futures for our cities in comparison to historical trends and where we stand today. By better understanding the impact of public policy on sprawl, we can make better choices for a sustainable future.

Why Is Sprawl an Issue?

Sprawl—dispersed, automobile-oriented urban development—figures into the Scorecard because it contributes to a distressing array of ills. Sprawl locks northwesterners into an auto-dependent

Privacy

(Biggs, 1970; Friedman, 1997, Friedman & Kahn, 2003; Murphy, 1964; Palen & Dourish, 2003; Roberts & Gregor, 1971; Schoeman, 1984; Westin, 1984)

- Psychological Underpinnings
- Empirical Evidence
- Fluidity and Nuance

The Watcher and The Watched: Social Judgments about Privacy in a Public Place

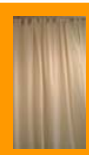
(Friedman, Kahn, Hagman, Severson, and Gill, in press)
(Surveys: N = 750; Interviews: N= 120)

The Watcher

The Watched

The Camera

Percentage of Participants who Expressed Concern about the HDTV Camera

Evaluation Question	 Int.		 Int.		 Int.		 Int.		 Sur.	
	M	F	M	F	M	F	M	F	M	F
	15	15	15	15	15	15	15	15	384	364
Displaying live video from the plaza in someone's office in MGH…										
1. … Is not all right	0	13	13	13	7	27	13	42	---	---
2. … Is troubling	13	40	13	27	13	33	20	36	17	31
3. … Violates privacy	23	36	20	27	50	47	21	21	17	27
Moreover, it's "not all right" if the live video is displayed on a screen in...										
4. … Office with an outside window in MGH	0	27	27	40	7	46	27	33	19	28
5. … Office without a window in MGH	0	27	13	20	0	7	13	29	21	35
6. … Apartment on University Ave.	0	53	40	67	47	69	21	47	37	59
7. … Apartment in Tokyo	0	53	33	67	33	67	27	50	35	57
8. … Thousands of homes in the local city	7	47	33	53	47	67	27	50	32	52
9. … Thousands of homes in Tokyo	7	40	40	73	53	80	27	57	34	55
10. … Millions of homes across the globe	0	47	33	73	47	73	40	50	33	54

Why Do People Hold These Views?

- For "all right" evaluations (on average):
  - Personal Interest (31%)
  - Functionality (31%)
  - Social Expectations (24%)
- For "not all right" evaluations (on average):
  - Functionality (34%)
  - Social Expectations (30%)
  - Human Welfare/Safety (25%)
  - Privacy (29%)
  - Informed Consent (38%)

Values and System Adoption

(Miller, Friedman, and Jancke, in progress)

- Value Hot Spots
  - When a small percentage of stakeholders feel strongly negative about particular features or policies
  - Do not implement these technical features or policies
- Value Opportunities
  - When a potentially disadvantaged group of stakeholders benefits from or strongly favors particular technical features or policies
  - Implement these technical features and policies as feasible
- Working hypothesis: Applies equally well to deciding technical features as social policies
- Example of co-evolving design of technology and policy

Value Sensitive Design
Proposition I

(Friedman & Nissenbaum, 1996; Friedman, Kahn, & Borning, in press)

We can't anticipate all the value consequences of designing and deploying a particular information technology.

- Use "best practices" but don't demand perfection
- Design systems with the expectation that they will need to be adapted over time

Value Sensitive Design
Proposition II

Forgetting and retelling are key mechanisms for social repair; recording communication hinders both.

- Consider mechanisms and means for non-recorded communication and for removing recorded communication.

Value Sensitive Design
Proposition III

Historically the bulk of our privacy protections have come from the difficulty and cost of accessing and manipulating information.

- When we introduce a technology that enhances access to information, we can expect it to unbalance privacy checks within the social fabric.
- Along side of designing the technology, we will likely need to design social conventions, policies and laws to help re-establish a reasonable balance.

Value Sensitive Design
Proposition IV

(Friedman, Kahn, Hagman, Severson, & Gill, in press)

Most values do not exist in isolation.

For example, the value of privacy is intricately connected to other key values such as security, trust, autonomy, and informed consent. To design for privacy, requires engaging these other values. So, too, for many other values.

Value Sensitive Design
Proposition V

Inference

- It is not just what is specifically known about me, but what can be inferred about me from what is known.
- Informing users of the risks from inference is extremely challenging. This is a hard problem for the field to focus on.

Value Sensitive Design Proposition VI

At-Risk Populations

- Ubiquitous – and particularly location information – may put some groups at greater risks than others (e.g., women, victims of domestic violence)
- Need to design special protections for these populations (perhaps in the form of warnings, usage models, user control, etc.)

Value Sensitive Design
Proposition VII

Opt in?

Or opt out?

(Tied to defaults.)

"Ready-to-hand" opt in/opt out.

Value Sensitive Design
Proposition VIII

Visible?

Invisible?

(This is about surreptitious data collection.)

Value Sensitive Design
Proposition IX

Adaptation

Thanks!

For further information on Value Sensitive Design please see: http://www.ischool.washington.edu/vsd