

Eskinasi & Rouwette (2007): Simulating the urban transformation process in the Haaglanden region, the Netherlands

This paper describes a modeling project on the social housing transformation in the Haaglanden region in the Netherlands. The modeling project is examining how the dynamics of construction and demolition of outdated dwellings are having impact on the regional social housing market. The project is based on at 14 months' work of seven involved stakeholders. The paper is written on the case study reporting guidelines introduced by Vennix et al. (2002) and structured in three parts. First, depicting the intervention and embedding it into the literature of urban dynamics. Second, reporting the modeling process and participant involvement. And finally, describing and evaluating the developed model in this project.

Context characteristics and problem description

- Haaglanden: densely populated region in the west of the Netherlands.
- SVH: Association of non-profit housing associations. Aims: 1. Strategic consultancy. 2. Lobby for twenty member organizations.
- Side effects of social housing construction until 1980's:
 - Selective migration out of the city
 - Concentration of low income groups in the city
 - Urban decay
 - Causality: More social housing in the city → additional inflow of underemployed into the city → more pressure on unfilled land → less favorable for other types of construction → lower number of new enterprises → Decline in mature business.
- Transformation: transforming existing houses into better quality housing.
- Greenfield development: Building new houses in previously unoccupied land.
- Changes in the 1990's:
 - New goal: Changing the housing mix (new urban social structure).
 - Deregulation: Housing corporations changed from state subsidized organizations to more independent organizations.
 - Large scale greenfield housing developments have failed to materialize.
- Short term effect: Urban transformation → Increase of pressure on social housing market.
- Long term effect: New constructions → New migration chains. → Increase of social housing supply.
- Policy target: Annual transformation of 2000 existing social dwellings.
- Alternative options: 1. 1500 dwellings in the first year, 2500 in the second year. 2. Changes in the housing allocation system.

The System Dynamics Intervention

- Operative goal of the project: Construction of a quantitative simulation model for testing proposed policy interventions. Implement the best policy solution.
- Top management was involved.
- Participants: Gatekeeper = SVH director, two senior officials, three policy making officials, one senior housing market researcher.

- Ten meetings were divided into four phases:
 - Start: startup and definition of causal relations
→ Beer Game, Central problem, expectations
 - Model construction: data collection, quantitative modeling and model validation → Four basic stocks: social houses, commercial houses, supply of available social houses, waiting list for social houses
 - Simulation: comparing the effects of policy options against base run
→ Main behavior limits to growth archetype (around social housing stock)
→ S-shaped small benefit for long-term larger setback behavior
→ Migration multiplier as important parameter
 - Evaluation: Interviews and formulation of conclusions.
- Follow-up: Two working conferences; work with model as a flight simulator.

Outcome: assessment of effects

- Consensus between stakeholders about how things work and effects of policy interventions.
- New constructions and the migration multiplier as crucial factors.
- Housing allocation had smaller effect than expected.
- Assessment of pre- and posttest questionnaires: Evaluation of actions in the problem, evaluation of outcome, process aspect, process elements, comparison of regular meetings.

Conceptual model evaluation based on framework by Vennix et al. (1996)

- Based on social-psychological theories on attitude change and impact of attitude on behavior
- Beliefs as basis for three concepts of planned behavior (Ajzen; 1991)
 - Attitude toward behavior: Favorable or unfavorable appraisal of a behavior.
 - Subjective norm: extent to which referents approve or disapprove to form behavior.
 - Perceived behavioral control: person's perception to be able to perform behavior.
- Pretest: Asking each respondent to identify relevant actions (e.g. delay the construction of new houses, increasing quality of housing stock, etc.)
→ Two requirements: 1. Participants receive information. 2. Participants are inclined to consider this information.

Results

- Evaluation and beliefs
 - Group membership had only significant effect on attitude and subjective norms.
 - Not a significant effect on perceived control and beliefs
- Comparison to regular meetings
 - E.g. More insight: Score = 4, Faster insight: Score = 3.4 (Likert scale)
→ Positive reactions to use GMB in comparison to regular meetings

- Argument quality
 - E.g. Options: Score = 3.67, Goals: Score = 4.0,
→ Participants were satisfied in general (integrating all policy options, information gathering, goals and values, etc.)
- Process aspects and elements
 - E.g. Open communication: Score = 4.67, Focused approach: Score = 3.17, etc.
→ Most process aspects score satisfactorily