

PARTICIPATORY MODELING OF RECREATION AND TOURISM

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Abstract.—Communities involved in recreation and tourism planning need to understand the broad range of benefits and challenges—economic, social, and ecological—in order to make informed decisions. Participatory computer modeling is a methodology that involves a community in the process of collectively building a model about a particular situation that affects participants' lives. This research attempts to combine the diverse perspectives gained through stakeholder involvement with the analytical tools of dynamic modeling to help communities make better-informed decisions regarding recreation and tourism development. A comparison of the developed models and an evaluation of the participatory process will yield a unified general model and inform the direction of future research.

1.0 INTRODUCTION

Recreation and tourism have long been considered “the other economic mainstay” in the Northern Forest [New York, Vermont, and New Hampshire] (Northern Forest Center 2002). Efforts to promote recreation and tourism in the region date back well over 100 years. During that time, tourism has been viewed as a savior and a scourge, and just about everything in between (Albers 2000).

Indeed, recreation and tourism development have led to mixed results. Many communities have come to rely on tourism as a way to diversify incomes in resource-dependent economies, yet tourism has a reputation of being unable to support “living-wage jobs,” providing only minimum wages in the service sector with few opportunities for advancement (Northern Forest Center 2002). Recreation and tourism are sometimes credited with promoting environmental conservation, and often

accused of contributing to environmental degradation. Unquestionably, tourism creates concentrated stress on natural and man-made systems that were not designed to manage large numbers of people and heavy use (e.g., water systems, roads, garbage disposal). Many cultural attractions are supported by tourism and even created for tourists, yet tourism can diminish the small-town charm and sense of place appealing to residents and tourists alike (Krannich & Petrzalka 2003).

Understanding the broad range of benefits and challenges—economic and social, as well as ecological—is essential for communities involved in recreation and tourism planning. Yet the amount of information and conflicting perspectives can be overwhelming. Identifying the intrinsically linked components of tourism is a first step in describing its potential as a development tool. Planning processes are needed that identify both the positive and negative aspects of tourism development and provide research-based tools for decision makers with regard to the type, size, scope, and potential of the development (Lowry, in preparation). The challenge is to bring communities together to create a shared vision that encompasses, but is not limited to, individual perspectives.

1.1 Systems Thinking and Dynamic Participatory Computer Modeling

Computers have long contributed to problem solving by providing decision-making support in complex systems. Dynamic model programming software allows for the quantification of components so that alternative scenarios can be simulated (Costanza & Ruth 1998). For example, the complex system of relationships associated with tourism in a particular community can be mapped out and quantified. Then variables can be changed to examine the effects. Simulations can be created that estimate how an increase in the number of tourists will impact different businesses, traffic patterns, land prices and other variables that can be incorporated into the model—or not—as a community sees fit.

Participatory computer modeling is a methodology that involves a community in the process of collectively

building a model about a particular situation that affects their lives. This approach “emphasizes the interactive involvement of affected stakeholders in the learning process about the complex system they are in” (van den Belt 2004). One of the most important aspects of modeling as a consensus-building tool is the process of its development, setting a stage for stakeholders to work together, share world views and, ideally, come to a common understanding of their shared systems. Computer modeling is a powerful tool to reconcile contrasting points of view, increase shared understanding, and resolve conflicts (van den Belt 2004).

2.0 GOALS AND OBJECTIVES

The overall goal of this research is to help sustain the economic viability and cultural vitality of rural communities in the Northern Forest. By combining the diverse perspectives gained through stakeholder involvement with the analytical tools of dynamic modeling, communities can make better-informed decisions regarding recreation and tourism development.

Specific objectives of the research include:

- (1) Conducting a series of participatory modeling workshops to develop site-specific models illustrating the components and linkages related to recreation and tourism;
- (2) Examining the null hypothesis that a general model exists that encompasses the site-specific models;
- (3) Enhancing community capacity by involving citizens in interactive, facilitated workshops;
- (4) Identifying strengths and weaknesses regarding the potential for sustainable tourism development within communities; and
- (5) Evaluating the usefulness of the modeling process, and the validity and transferability of the models within the Northern Forest region.

3.0 PARTICIPATORY MODELING IN THE NORTHERN FOREST

Funding from the Northeastern States Research Cooperative supported a proposal on Participatory

Modeling of Tourism and Recreation in the Northern Forest between October 2003 and June 2006. The participatory modeling research team included a modeler with more than 20 years' experience in modeling dynamic systems and a facilitator specializing in recreation and tourism, both of whom are faculty at the University of Vermont. Six communities were selected using a snowball sampling method: Saranac Lake, New York; Wilmington, New York; Northeast Kingdom, Vermont; Franklin County, Vermont; Colebrook, New Hampshire; and Carroll, New Hampshire. Key representatives involved in tourism and recreation were contacted in each state and asked to suggest communities that would be interested in such a study and to aid researchers in making contacts. The six communities were ultimately selected based on their level of interest and responsiveness to initial queries regarding the project. Once a key contact was established in each community, the researchers worked with them to identify between 10 and 20 community representatives to take part in the participatory modeling workshops. An effort was made to include a diverse set of stakeholders, including elected officials, business owners, and those that represented both advocates and opponents of recreation and tourism development.

A full-day workshop was held in each community with the intent of building a scoping model unique to each community. Each workshop followed the same agenda. The day began with a session in which community members were asked to brainstorm about tourism in their community. Initially, the facilitator encouraged each member of the community to participate in the discussion systematically. Before the brainstorming session was concluded, the conversation became more nebulous. In the afternoon, the focus turned to building a scoping model. Based on the information provided by the morning session, the modeler began to lay out the basic structure of the model using STELLA software. The modeler projected the computer screen so that all participants could see and participate in the building of the model. Community members were encouraged to interject and were frequently called upon to help define the connections and variables in the model. At the end of the workshop each participant completed an evaluation survey. Based on the information collected,

the modeler continued to refine the models following the first workshops.

4.0 COMPARISON OF MODELS AND DEVELOPMENT OF THE GENERAL MODEL

The six site-specific scoping-level models were broken into sectors containing one or sometimes two state variable(s) (i.e., a resource stock) and its associated fluxes (i.e., withdrawals from and deposits to the resource stock) and influencing variables. This was done to achieve coarse categorization of the subsections of the models, as well as to make the models more amenable to visual comparison. Sectors were then named according to their main state variable, and aliases (i.e., ghosts) were used to maintain the relationships with variables that also were found in other sectors. The complexity of the models was determined based on the number of sectors a model contained and the number of components within each sector.

The models comprised five to seven sectors, and six prototypical sectors were identified: quality of life, culture, nature, economics, service, and infrastructure. The Saranac and the Wilmington models had the prototypical complement of six sectors, four of the six models had one or two unique or missing sectors, but all six of the models had a “quality of life” sector and a “natural resources” sector. The Northeast Kingdom model did not include a “cultural” or social capital sector and had a unique “risk management” sector. The Carroll model was missing an “infrastructure” sector, and the Franklin County model had an additional “trust” sector while lacking “service.” Besides these differences, the Colebrook model was the most anomalous. It did not include an “economics” or “infrastructure” sector, and it had three unique sectors not found in other models.

This model comparison led to the construction of a general model (still in progress) which combines the similarities while reconciling the differences of the six site-specific models. The result will be one model that is based on shared insights on local development dynamics as perceived by six rural communities in the Northern Forest. The general model will be coded to allow the differences among the communities to be explored

through the use of scenarios and through inputting data. In creating the general model, we will produce an economic planning tool for rural communities in the Northern Forest that is applicable beyond the communities that helped us to conceive it.

5.0 EVALUATION

Herman et al. (1987) distinguish between two different types of evaluation: summative and formative. Summative evaluations review the long-term effectiveness of a program to meet its goals. Formative evaluation is conducted earlier and repeatedly, focusing on program improvement. A formative evaluation helps determine gaps in understandings, and is often completed through self-evaluations mediated by a facilitator (Boston 2002). Our evaluation here is formative, as the research and management models have not been finalized, and we are not yet able to assess how the model will be used to aid in community decision-making.

We set out to build social capacity and help communities make better-informed decisions about tourism and recreation, with the ultimate goal of helping sustain the economic viability and cultural vitality of rural communities in the Northern Forest. Here, we will evaluate the extent to which we were able to accomplish this goal in the scoping model phase.

5.1 Survey Response

After each workshop, the participants completed an evaluation form to help researchers assess the value of the workshops and the process to the participants. Seventy participants, each attending one of the six workshops, submitted evaluation surveys. The evaluation form asked participants to comment on what they found most and least valuable during the participatory modeling process. In order to quantify the open-ended comment sections of the surveys, comments were allocated into general clusters of comment types. The frequency of comment types and the general patterns and trends were assessed. If one respondent included multiple comments that fit in different comment clusters, each of those comments was counted individually. Therefore, the number of qualitative comments assessed is greater than the number of surveys received.

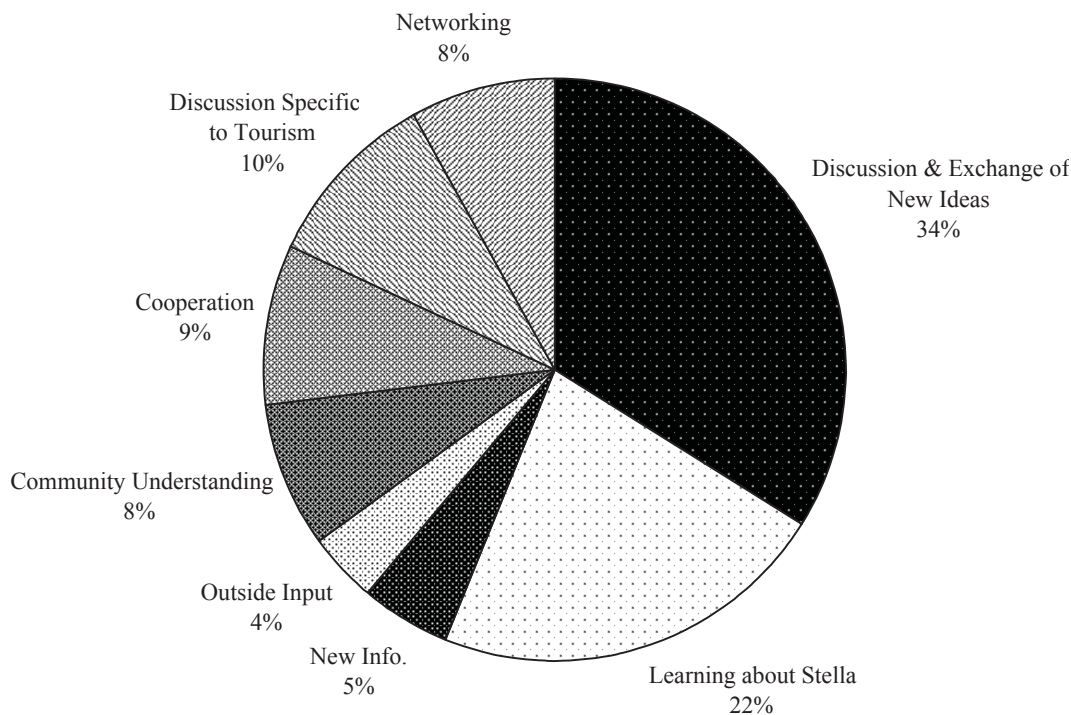


Figure 1.

5.2 Evaluation Findings

When asked what they valued most about the workshops they attended, participants submitted textual comments that were then divided into eight different categories. These categories included the following: 1) learning about the potential for modeling; 2) discussion and open exchange of ideas; 3) meeting people and networking; 4) discussing tourism; 5) interaction and cooperation; 6) better understanding of community and its issues; 7) outside input from the university; and 8) new information/data. All respondents provided some comment in answer to this question. The most commonly reported “valuable aspect” was the discussion and open exchange of ideas (Figure 1). One-third of the submitted comments addressed the importance of this workshop attribute. The second most common response was the value of systems modeling in a community-decision process.

Participants were also asked what they found least valuable about the workshops. Over one-third (35%) of respondents chose not to comment (Figure 2). Comments were clustered in the following categories: 1) no solid product, 2) nothing invaluable, 3) too slow in

starting and more initial direction and focus needed, 5) key people missing, 6) lack of time, 7) the difficulty of learning modeling, 8) lack of data, and 9) miscellaneous. While the comments defining the most valuable aspects of the workshops were largely dominated by two categories, those comments describing the least valuable aspects were more varied and more evenly distributed. An approximately equal number of comments addressed the difficulty of learning modeling, the slow start and lack of initial direction and focus, the shortness of time, and the absence of a solid product (Figure 2).

6.0 CONCLUSIONS

Given that community members most valued the discussion and exchange of new ideas, we will proceed by conducting another round of workshops. This will continue the dialogue in the communities that wish to advance further in this process. In these workshops, we will present the participants with the general model and work with them to incorporate the necessary data to tailor it to their community. With the data in place, we will then be able to run scenarios chosen by the participants to illustrate different potential development choices.

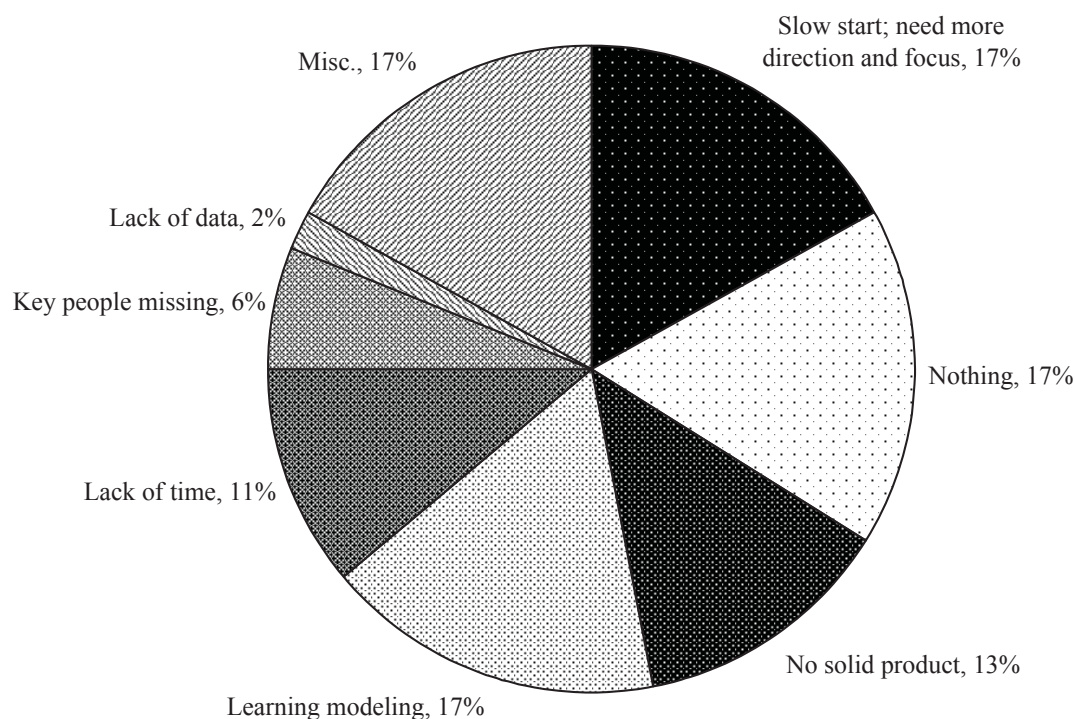


Figure 2.

7.0 CITATIONS

Albers, J. 2000. **Hands on the land: a history of the Vermont landscape**. Cambridge, MA: The MIT Press.

Boston, C. 2002. **The concept of formative assessment**. Practical Assessment, Research & Evaluation. 8(9).

Costanza, R.; Matthias, R. 1998. **Using dynamic modeling to scope environmental problems and build consensus**. Environmental Management. 22(2): 183-195.

Herman, J.L.; Morris, L.L.; Fitz-Gibbon, C.T. 1987. **Evaluator's handbook**. Newbury Park, CA: Sage.

Krannich, R.S.; Petrzalka, P. 2003. **Tourism and natural amenity development**. In: Challenges for rural

America in the twenty-first century. D.L. Brown; L.E. Swanson, eds. University Park, PA: Pennsylvania State University Press.

Lowry, L.L. **Tourism policy, planning, and development: An international case book of best practices**. Manuscript in preparation. University of Massachusetts at Amherst.

Northern Forest Center. 2002. **Northern forest community leadership exchange**. Symposium conducted November 15-16, 2002, Hanover, NH.

van den Belt, M. 2004. **Mediated modeling: a system dynamics approach to environmental consensus building**. Washington: Island Press.