Group Model Building to Support Welfare Reform
Part II: Dutchess County

Robert Allers, Commissioner
Department of Social Services
Dutchess County

Robert Johnson
Office of Temporary and Disability Assistance
New York State

David F. Andersen, Tsuey Ping Lee, George P. Richardson,
John Rohrbaugh, Aldo A. Zagonel-Santos
Nelson A. Rockefeller College of Public Affairs and Policy
University at Albany, SUNY

This paper continues the effort to document how group model building takes place at the University at Albany, as a follow-up to last year's report presented in Istanbul (Rogers *et al*., 1997). The product of this work is a model elicited from groups of county managers responsible for implementing federal and state mandates regarding welfare reform. Preliminary results suggest that the group model building (GMB) method is a valuable tool to overcome the complexity involved in the welfare system, to focus group discussions, and to help build and sustain interorganizational relationships (IORs) among the public and private agents involved in delivering social services.

Approaches to systems thinking (Senge, 1990; Richardson *et al*., 1994; Morecroft & Sterman, 1994) and strategic planning (Bryson, 1995; Eden, 1989) increasingly are coming to rely on the practice of building a system dynamics (SD) model directly with a group as a method to accelerate a management team's work (Vennix *et al*., 1992; Vennix, 1996). Drawing upon nearly two decades of experience with decision conferences (McCartt & Rohrbaugh, 1995; Reagan-Cirincione *et al*., 1991; Rohrbaugh, 1992), researchers at the University at Albany recently have set out to document a particular approach to building SD models directly with groups (Richardson & Andersen, 1994; Andersen & Richardson, 1997). These efforts have been part of a larger movement both to document how various consultants build models with groups (Richmond, 1987), as well as to document the outcomes of these efforts (Huz *et al.*, 1997).

Welfare Reform in New York State

In 1996 President Clinton signed into law the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) that mandated broad changes in how welfare would be administered in the United States. In brief, the act ended federal entitlement, and it limited benefits to a cumulative five-year period per family --after which the family looses eligibility to the federally-funded Temporary Assistance to Needy Families (TANF) program. The law also switched the funding mechanism from matching- to block-grant, thus providing states and localities with more managerial flexibility. In 1997 New York State (NYS) Governor Pataki proposed a package of reforms at the state level that would provide for the implementation of federal reforms within the specific NYS context. The NYS reform maintained the "entitlement"

by creating the Safety-net (SN) program, thus, respecting Article 17 of the NYS Constitution, which mandates that the state provide for its poor.

As Governor's Pataki's reform package was scheduled for debate in the NYS Legislature, researchers within the NYS Department of Social Services (DSS) approached the University at Albany with a proposal to undertake a series of group model building sessions designed to focus on how local providers might respond to both federal and state reforms. (In NYS, it is the counties that actually provide social welfare services, and those services must conform to state and federal guidelines and funding policies.)

These group modeling sessions were scheduled to take place in one rural county, one medium-sized county, and one large county. The purpose of these efforts was three-fold: (1) to assist the three participating counties to think through welfare reform strategies using a SD modeling framework, (2) to provide state policy makers with opportunities to observe the group model building process and, hence, to learn how local communities were responding to state and federal initiatives, and (3) to create a "management flight simulator" for welfare reform viewed from the county level. The three NYS counties directly involved in this project were Cortland, Dutchess, and Nassau.

Drawing upon the collective knowledge of "management teams,"[1] the "modeling team" [2] at the University at Albany produced a series of SD models. In Cortland, the focus of our discussions was on TANF; in Dutchess, it was on the safety-net. In preparation for Nassau, we developed a combined TANF and safety-net model. In building these models, we followed the GMB method devised in Albany (Richardson & Andersen, 1994; Andersen & Richardson, 1997; Rogers *et al*., 1997).

A Glimpse At The Model's Structure

The full model contains 30 views and 642 equations, as illustrated in Diagram 1. The first seven views describe the patterns of client-flow through the welfare system, as conceptualized by the management teams in Cortland County and Dutchess County.

---

[1] The "management teams" are the practitioners engaged in the group modeling effort. In this project, the participants were primarily, but not exclusively, high-level local managers of social welfare services. Other agencies involved were Health, Mental Health, Labor, and Education. State personnel often observed the sessions and sometimes participated more actively (in particular, when the combined TANF and safety-net model was being built). On occasion, a local legislator was present. Some non-governmental actors also participated (in particular, representatives of private charities). At each site, the results of the modeling work were presented to a broader group of community leaders.

[2] Richardson and Andersen (1995) refer to the "modeling team" in a GMB session as ideally composed of individuals performing five roles: (1) facilitator, (2) modeler/reflector, (3) process coach, (4) recorder, and (5) gatekeeper. Except for the gatekeeper, a role filled by "a person within, or related to, the client group" (p. 115), all of the other roles are performed by Rockefeller College faculty and students. In addition to these five roles, this particular intervention had a model builder (6), and it was supported with model calibration (7) and interface development (8). On occasions, the modeling team was joined by a substance expert (9), Irene Lurie, an economist who is also a specialist in social welfare policy.

Diagram 1: Sample view of the model

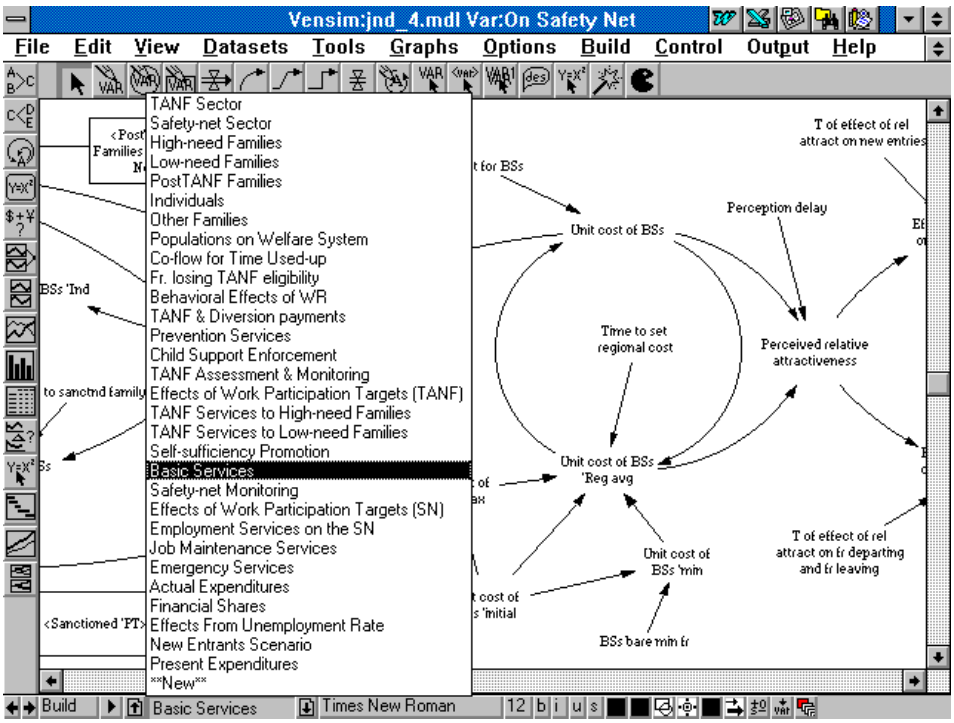


Diagram 2 is a summary view of the "stock-and-flow" structure. The model contains a TANF sector and a safety-net sector. Within each sector, the clients are distinguished according to: TANF high and low-need families; and post-TANF families, individuals and other families on the safety-net.[3]

The main stock-and-flow dynamic of both sectors is:

- the inflow from the mainstream economy (and in TANF, the enrollment into the program);
- the "pumping" of clients on assistance to employment outcomes; and
- the subsequent return of clients on to the rolls via recidivism (and in TANF, also via going back at risk).

The consequence is that, at any one point in time, only a fraction of the clients served actually make it back into the mainstream economy.

Two other stock-&-flow processes were important to the Cortland and Dutchess management teams: (1) the possibility of diverting many of the potential TANF enrollees, and (2) sanctioning, as an important monitoring tool.

[3] "Post-TANF" families are those families that exhausted their TANF eligibility (after five cumulative years on the TANF rolls) and, therefore, fell into the NYS safety-net program. The "individuals" constitute the clientele of the existing home-relief program, now incorporated into the safety-net. "Other" families are those families that do not qualify for TANF, such as legal aliens.

Diagram 2: TANF and safety-net client "stock-and-flow"

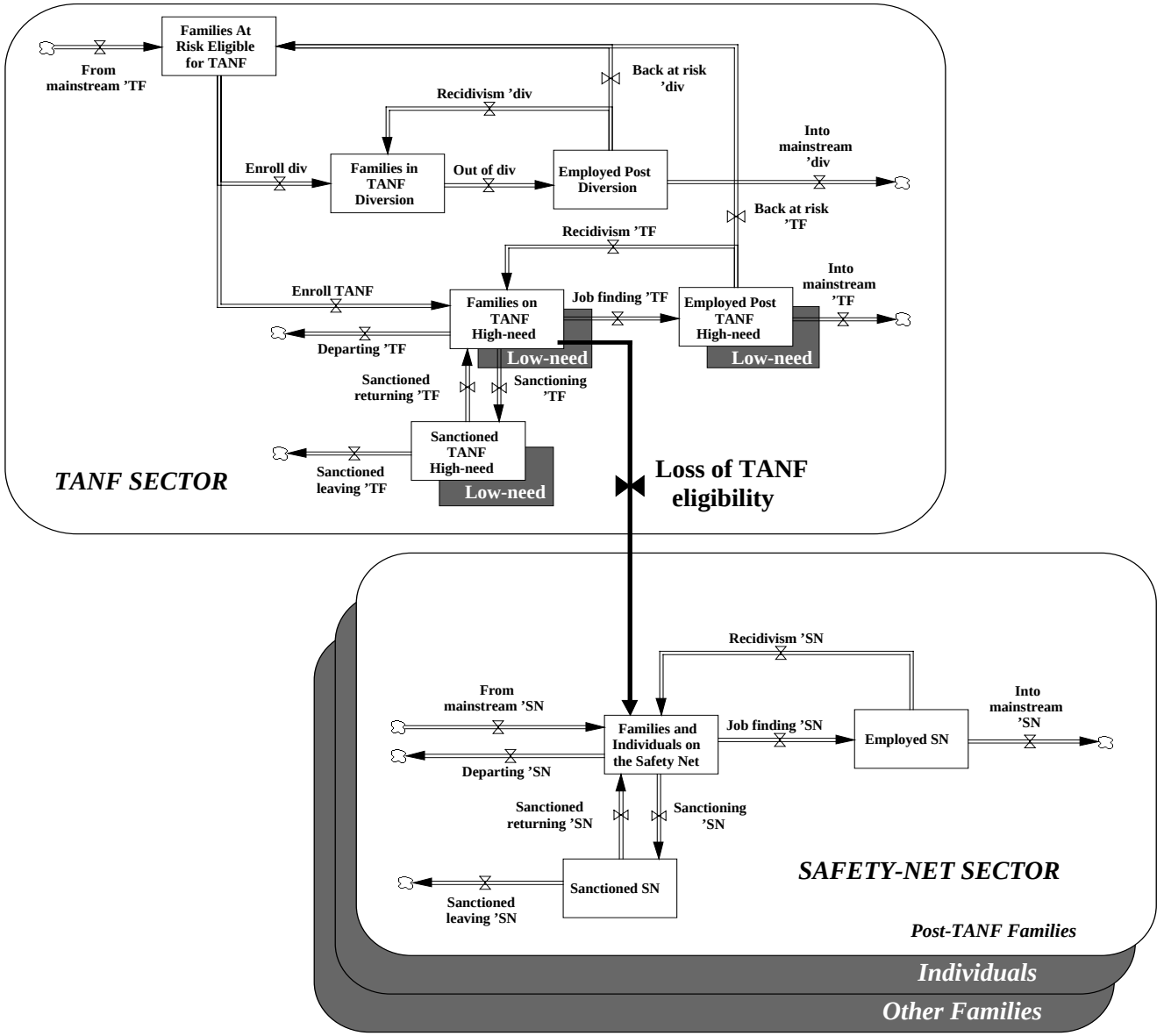


Diagram 3: TANF client "stock-and-flow" with resource impacts and unemployment scenario

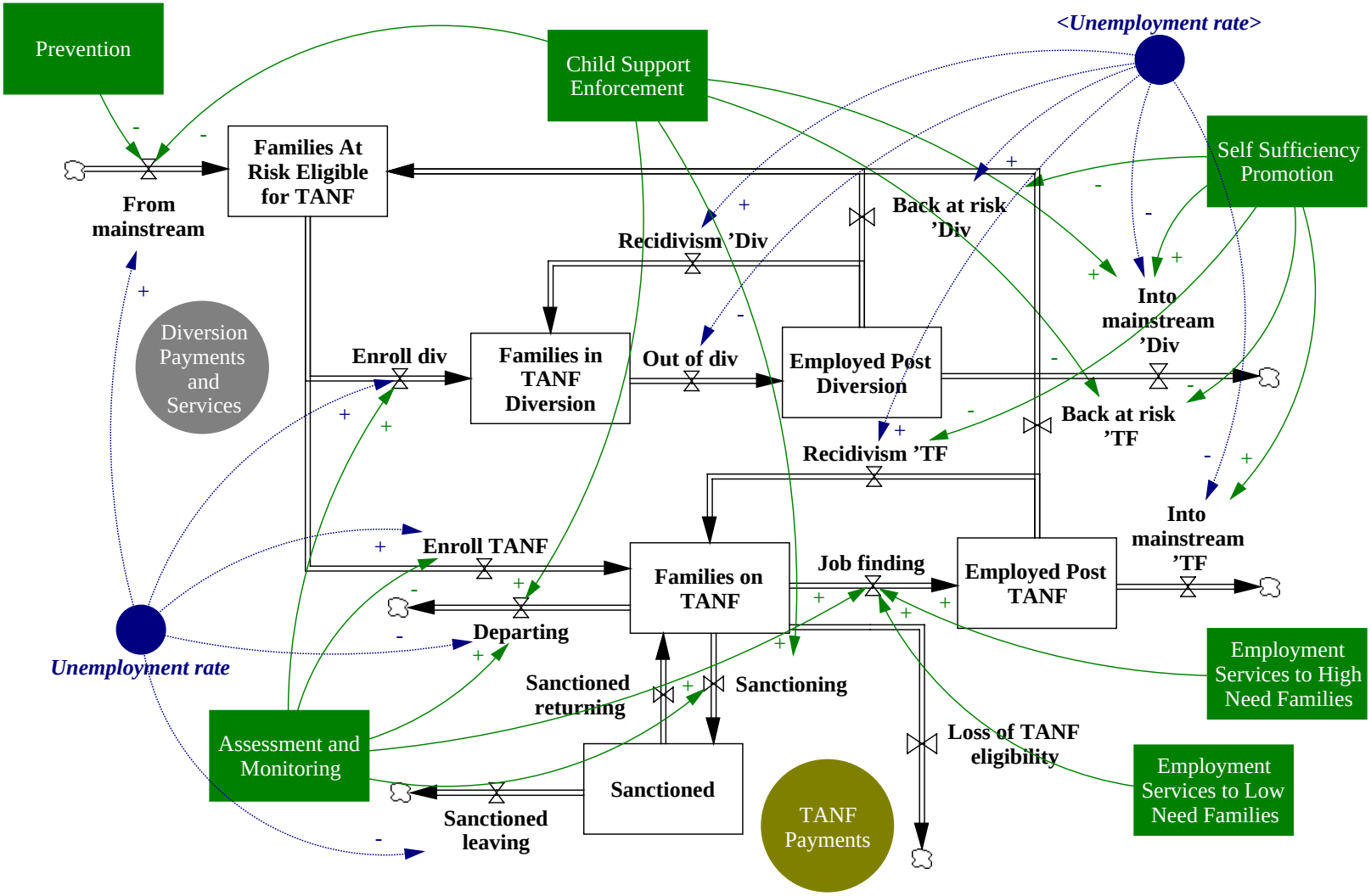
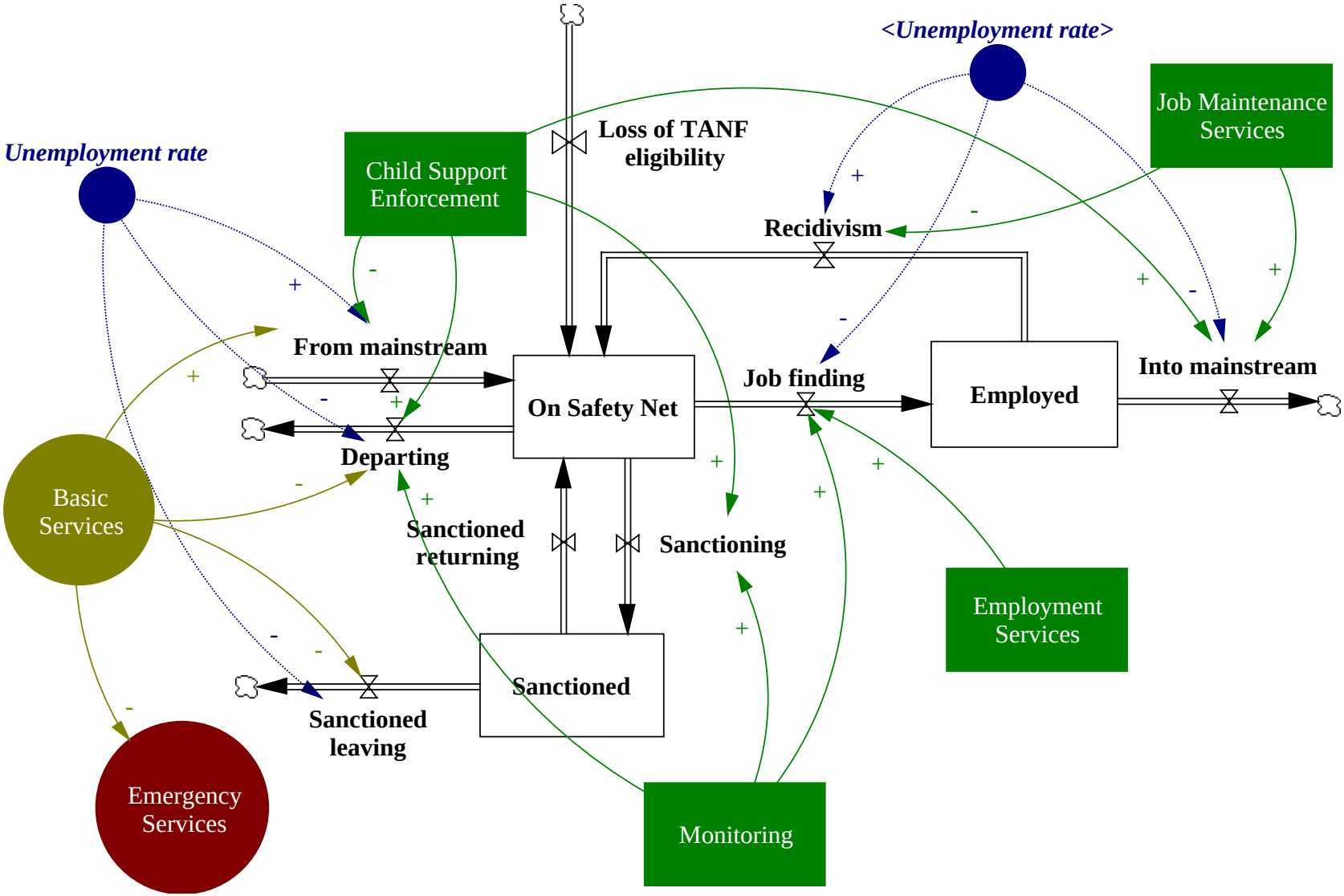


Diagram 4: Safety-net client "stock-and-flow" with resources impacts and unemployment scenario



The remaining views of the model contain the formulations of the resources and scenarios that control the rates-of-flow in the stock-and-flow structure, and compute the costs of the welfare system.

Diagram 3 illustrates how the resources and scenarios affect the rates-of-flow in the TANF sector. In the "front-end" of the system, p*revention* resources help to reduce the inflow of families falling from the mainstream economy, into poverty. In the "middle," TANF a*ssessment and monitoring* promotes diversion programs, helps clients get jobs and other services needed to move into employment, and sanctions clients who are not complying with drug-free regulations, and/or mandates to participate in work preparation and work-fare. *Employment services*, in turn, help to "pump" clients into paid jobs.

In the "back-end," *self-sufficiency promotion* helps families maintain the jobs they obtain, move-on to better jobs and, eventually, transition back into the mainstream economy. Finally, *child-support enforcement* has wide-spread effects in the welfare system: it prevents families from becoming at risk; it helps them to depart the rolls; it leads to more sanctioning; and it helps some single-parent employed families rise above poverty level.

As illustrated in Diagram 4, child-support enforcement has similar effects for families in the safety-net sector. And, except for prevention, all other resources have counterparts in the safety-net. These are: *monitoring*, *employment services*, and *job maintenance services*.

In addition to resources, there are also scenarios controlling the rates-of-flow. For example, *unemployment* has wide-ranging effects on the rates. Second, there are environmental responses, and migratory dynamics. Third, "step" and "ramp" changes can be made to the inflow from the mainstream economy. When simulating the model:

1. funds can be reallocated across resources;
2. scenarios can be changed;
3. different budgeting mechanisms can be chosen (from rigid to flexible); and/or
4. modeling assumptions regarding client behavior can be changed.

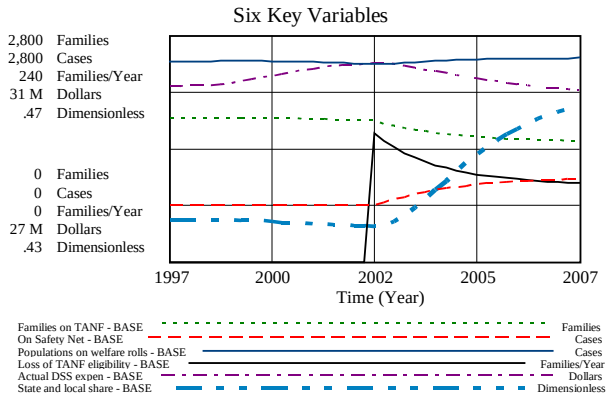
The model computes the costs of managing the system, which includes funding the above mentioned resources, as well as paying for "census-driven" costs --such as *diversion services and payments*, *TANF payments*, *basic services*, and *emergency services*. In all, there are 13 spending categories. The rate of loss of TANF eligibility is controlled by a "co-flow" structure that mirrors the TANF sector of the model, and that keeps track of the time used-up by the clients on the TANF rolls.

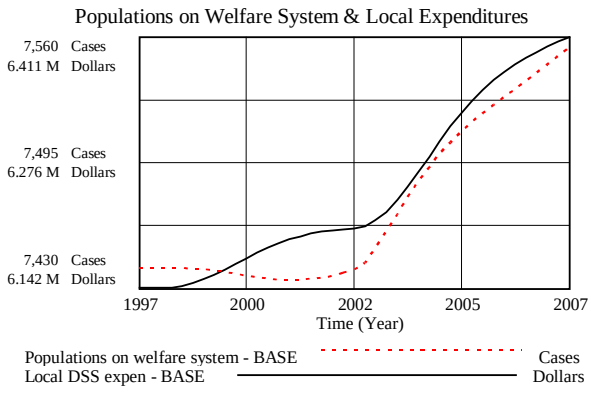
In sum, the richness of the model permits investigation of system performance through testing a wide-range of policies. Within its boundary, the model also helps to identify interdependencies within the welfare system.

The "Base-run"[4]

Graphs 1A and 1B contain the base-run behavior of eight variables. The simulation suggests that there will be a shift in client populations, in particular after the year of 2002, when TANF families begin losing federal eligibility. The size of the TANF and safety-net rolls converge. However, overall, the total populations on welfare rolls does not change significantly. The model shows a spike in the rate of loss of TANF eligibility at the year of 2002, with a subsequent stabilization at a lower level. The increased costs observed between 1998 and 2005 are a function of rising mandated work participation targets (from 25 to 50 percent on TANF, and from 75 to 90 percent on the SN). State and local share of welfare expenditures rise.

Graphs 1A & 1B: The base-run of the model





Graph 1B portrays a discouraging view of welfare reform, in which the total populations in the welfare *system* (sum of all of the population stocks) actually rises by about two percent, while, welfare expenditures funded at the local level of government rise by approximately four and a half percent (between 1997 and 2007). The reason why the model projects this rise is because the safety-net populations are characterized by longer lengths-of-stay, and higher recidivism than TANF populations. Thus, the shift in clients from TANF to safety-net, due to loss of eligibility, results in a larger and more costly welfare system.

Improving System Performance

In order to improve system performance, the local Department of Social Services could resolve to make investments in its current services. In general, DSS has command over resources expended in the "middle" of the welfare system, such as assessment and monitoring, TANF diversion, TANF payments, basic services, and employment services. But, DSS has limited influence over the "front-" or "back-end" of the system. Other actors in the community --public and private-- are better positioned to improve system performance in the areas of prevention and self-sufficiency.

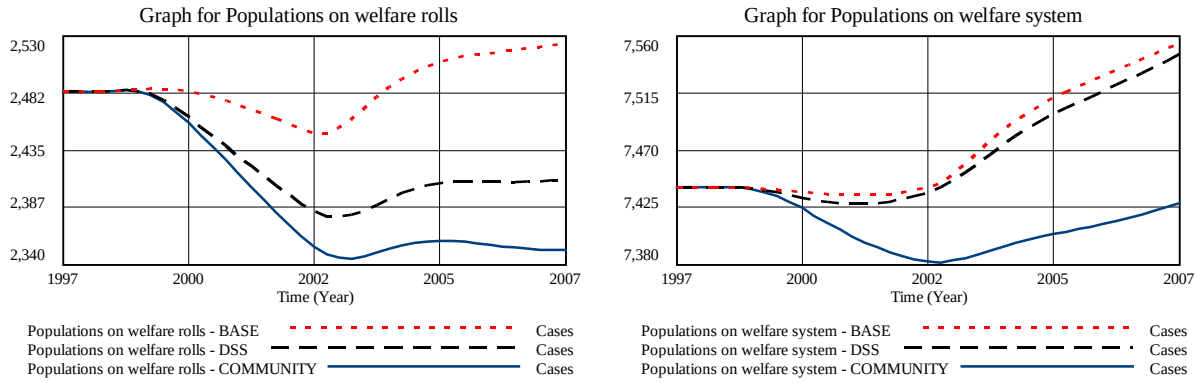
---

[4] The numbers in the graphs reflect what would be happening to a medium-sized NYS county that *did not* implement any policy strategy, under a stable economy over time, and future client behavior --lengths-of-stay, recidivism, etc.-- conforming with historical patterns of behavior.

The two policy runs contrasted below compare a DSS-only to a community-wide investment strategy. In both cases, the investments are of the order of an additional ten percent in the intensity of services (dollars/client). But, while the DSS strategy involves enriching only the middle of the system, the community-wide strategy expands the effort to the front- and back-ends. Of course, the community-wide simulation presumes that all social services agents can agree upon a "coordinated" strategy.

Graphs 2A and 2B compare the two strategies, to each other, and to the base-run. The simulations suggest that isolated DSS invests can improve system performance. However, only a community-wide effort is capable of "deflating" the welfare system.

Graphs 2A & 2B: Comparative graphs

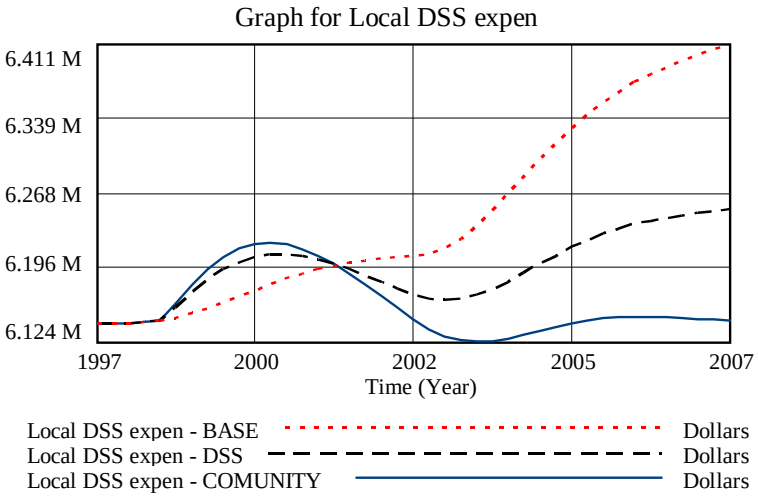


As we would expect, DSS can achieve significant improvements in the middle of the system, where it controls most of the resources. The comparative graphs for *populations on welfare rolls* portray that most of the reduction in the rolls is achieved by DSS alone. However, a DSS-only strategy does little to improve the welfare system as a whole, as suggested in the comparative graphs for *populations on welfare system* (sum of all of the population stocks). Here, the community-wide strategy is much more effective.

Discussion

This project in GMB to support welfare reform has produced a number of interesting insights. Perhaps one of the most important implications of this work is that it suggests that a coordinated community-wide welfare reform effort is more likely to produce favorable results. Developing IORs --horizontally, in the community, and vertically, with NYS agencies-- to arrive at a broader welfare reform strategy can enhance the quality of life of welfare recipients (helping many to transition out of the welfare system and into the mainstream economy, as well as preventing many others from coming in by falling at risk). As suggested in Graph C - Comparative graphs for *local DSS expenditures*, such a strategy may be effective enough, as to offset the shifting financial burden --from federal to state and local-- resulting from PRWORA and its federal time limits.

Graph 3: Comparative graph on local expenditures



In a preliminary evaluation, the leadership of Dutchess County DSS stated that the group modeling sessions provided an opportunity for representatives from several agencies within the community to come together in one setting to plan for welfare reform. As discussions regarding the complexity of social services programs took place, the value of computer support and modeling was amply recognized. The model and the simulations permitted detail exploration of the interactions between different scenarios and alternative welfare reform policies. Finally, the experience to work with the University at Albany modeling team --in the process of model conceptualization, formulation and calibration, for the purpose of examining the impact of changes in the administration of welfare programs-- was both challenging and rewarding.

Photo 1: Dutchess County (Day 4) - The "modeling" team presenting the SN model to the "management" team that conceptualized it

This work is continuing. The model is being refined based upon on-going discussions with the management teams, and a management flight simulator interface is under development for the combined TANF & safety-net model. The direction and scope of the work with Nassau County --a large county neighboring New York City-- is in the process of being defined. Dutchess County is evaluating the prospects of conducting a community-wide resource allocation conference. Procedural scripts to "roll-out" the model "cold" to other NYS counties, and extraneous audiences are being developed. Three doctoral dissertations are underway based upon this work: (1) exploring the group model building terms of building interorganizational relationships; (2) investigating the financing of welfare reform; and (3) developing interfaces, gaming, and learning environments. Finally, these interventions beg a formal evaluation to assess the long-term impact of GMB in term of state and local implementation of welfare reform.

Addendum On Presentations And Other Products

There have been a number of presentations made on this project: to NYS Department of Social Services; Cortland County and Dutchess County community leaders; System Dynamics '97; NYS Social Services County Commissioners; NYPWA - New York Public Welfare Association; Nassau County Department of Social Services; LINKS '98 - Conference on State Governments, State Universities, and the Public Interest; among others.

In addition, these are some of the other products available from this work:

1. A TANF model (See CPR - Cortland report, May 1997);
2. A series of systems thinking exercises based upon the "Chugwa" County case-study in welfare reform (CPR - Case-study, June 1997);
3. A safety-net model (See CPR - Dutchess report, August 1997);
4. A TANF management flight simulator (See CPR - User's manuals, Versions 1.0 & 2.0, September & November 1997);
5. A community-wide resource allocation conference for Cortland County (CPR - Resource Allocation, September 1997);
6. The development of model calibration "scripts" and reports (CPR - Model calibration report, October 1997; CPR - Parameter booklet, April 1998; Lee *et al*., 1998); and
7. A combined TANF & SN management flight simulator (in progress).

These presentations and reports have played a useful role in communicating to people who have not been directly involved in the group model building process. We expect to find that the project's communications strategy with regard to the larger community will play an important role in establishing an environment conductive to collaboration and the promotion of IORs.

References:

Andersen, D.F. and G.P. Richardson. 1997. "Scripts for group model building." *In System Dynamics Review* 13(2):107-129.

Bryson, J.M. 1995. *Strategic Planning for Public and Nonprofit Organizations: A Guide to Strengthening and Sustaining Organizational Achievement*. Revised Edition. San Francisco: Jossey-Bass.

Center for Policy Research - CPR. Albany, NY: Nelson A. Rockefeller College of Public Affairs and Policy, University at Albany, State University of New York.

... May 1997. "Welfare reform project: Report of the group model building conferences in Cortland County."

... June 1997. "System Thinking: A case-study on welfare reform in Chugwa County." (NYS Governor's Office of Employee Relations, The Leadership Classroom.)

... August 1997. "Welfare reform project: Report of the group model building conferences in Dutchess County."

... September 1997. "Welfare Reform Project: Report of the Community-wide Resource Allocation Conference in Cortland County."

... September 1997. "Welfare reform project: User's manual to the TANF flight simulator," Version 1.0.

... October 1997. "Welfare reform project: Report of the model calibration meeting in Dutchess County."

... November 1997. "Welfare reform project: User's manual to the TANF flight simulator," Version 2.0.

... April 1998. "Welfare reform project: Parameter booklet for the *combined* TANF & Safety-net model."

Eden, C. 1989. "Strategic options development and analysis." In J. Rosenhead, ed. *Rational Analysis in a Problematic World*. Chichester: John Wiley & Sons.

Huz, S., D.F. Andersen, G.P. Richardson, and R. Boothroyd. 1997. "A framework for evaluating systems thinking interventions: An experimental approach to mental health system change." In *System Dynamics Review* 13(2):149-169.

Lee, T.P., A. Zagonel, D.F. Andersen, J. Rohrbaugh and G.P. Richardson. 1998. "A judgment approach to estimating parameters in group model building: A case-study of welfare reform at Dutchess County." 16th International System Dynamics Conference: July 20-23. Québec City, Canada.

McCartt, A.T. and J. Rohrbaugh. 1995. "Managerial openness to change and the introduction of GDSS: Explaining initial success and failure in decision conferencing." In *Organization Science* 6(5):569-584.

Morecroft, J.D.W. and J.D. Sterman, eds. 1994. *Modeling for Learning Organizations*. Portland, Oregon: Productivity Press.

Reagan-Cirincione, P., S. Schuman and G.P. Richardson. 1991. "Decision modeling: Tools for strategic thinking." In *Interfaces* 21(6).

Richardson, G.P. and D.F. Andersen. 1995. "Teamwork in group model building." In *System Dynamics Review* 11(2):113-137.

Richardson, G.P., E.F. Wolstenholme, and J.D.W. Morecroft, eds. 1994. System Thinkers, Systems Thinking, special issue of the *System Dynamics Review* 10(2-3).

Richmond, B. 1987. *The Strategic Forum*. Hanover, NH: High Performance Systems.

Rogers, J. *et al.* 1997. "Group model building to support welfare reform in Cortland County." 15th International System Dynamics Conference: August 19-22. Istanbul, Turkey.

Rohrbaugh, J. 1992. "Cognitive challenges and collective accomplishments: The University at Albany." In R. Bostrom, R. Watson, and S.T. Kinney, eds. *Computer Augmented Teamwork: A Guided Tour*. New York: Van Nostrand Reinhold:299-321.

Senge, P.M. 1990. *The Fifth Discipline: The Art and Practice of the Learning Organization*. New York: Doubleday/Currency.

Vennix, J.A.M. 1996. *Group Model Building: Facilitating Team Learning Using System Dynamics*. Chichester, England: John Wiley & Sons.

Vennix, J.A.M., D.F. Andersen, G.P. Richardson, J. Rohrbaugh. 1992. "Model building for group decision support: Issues and alternatives in knowledge elicitation." *In European Journal of Operational Research* 59(1):28-41.