E-PARCC
COLLABORATIVE GOVERNANCE INITIATIVE
Syracuse University
Maxwell School of Citizenship and Public Affairs
Program for the Advancement of Research on Conflict and Collaboration

Strategic Network Management in a Community Collaborative: A Simulation

Teaching Notes

Background Information

A growing expectation today for public or nonprofit organizations is that they engage in partnerships with other organizations as a way to achieve stated goals. Although leveraging resources by engaging in partnerships has long been a predominant activity for public managers (Blau and Rabrenovic 1991,717), the extent to which collaboration is expected today seems to be reaching levels greater than in the past (Gittell and Weiss 2004; Rethmeyer 2005; Samaddar and Kadiyala 2005; Agranoff 2006). O'Leary, Gerard, and Bingham (2006,8) note that "public managers now find themselves not as unitary leaders of unitary organizations…instead they find themselves convening, facilitating, negotiating, mediating, and collaborating across boundaries." Additionally, technological innovations have increased the ability for everyone to interact in a more flexible, real-time environment (Wellman et al. 2001).

This simulation was a first place winner in our 2008 "Collaborative Public Management, Collaborative Governance, and Collaborative Problem Solving" teaching case and simulation competition. It was double-blind peer reviewed by a committee of academics and practitioners. It was written by Danielle M. Varda of University of Colorado-Denver and edited by Khris Dodson. This simulation is intended for classroom discussion and is not intended to suggest either effective or ineffective handling of the situation depicted. It is brought to you by E-PARCC, part of the Maxwell School of Syracuse University's Collaborative Governance Initiative, a subset of the Program for the Advancement of Research on Conflict and Collaboration (PARCC). This material may be copied as many times as needed as long as the authors are given full credit for their work.

While collaboration is embraced within the public sector (for example, it is common today that funders require evidence of collaboration before awarding and providing funds for program activity as a precondition to applying for funding (Lasker 2003)), there is little guidance on how managers might consider the cost of this new expectation. Currently, the costs for collaboration are rarely budgeted for by public managers, leading to complaints that "funding agencies [do] not recognize the cost [of collaboration] incurred…budgets [do] not support the extra coordination efforts needed (Cummings and Kiesler 2005, 717)." Rather than investing in *ad hoc* collaborative relationships, public managers would be well advised to think about these collaborations strategically. However, there is currently a shortage of strategic management research and techniques to guide public managers' thinking and decision-making processes.

One approach to alleviating this gap is to utilize strategic network management. Strategic network management of interorganizational relationships suggests operationalizing partners as a "network"; that is, not just a single relationship between two organizations, but an entire network of organizations and the many connections that exist between all of them as a whole. This approach measures each single relationship between two organizations in terms of the way they are embedded in a larger social network. In the strategic management literature, this approach to identifying partners based on their value is equivalent to "consideration of the strategic benefits from optimizing, not just a single relationship, but the firm's entire network of relationships" (Gulati et al. 2000, 4).

In this work, we operationalize public health collaboratives (PHCs) as "networks" of three or more organizations. This approach allows us to consider methodology such as Social Network Analysis (SNA) and apply network theories used in other fields in order to identify how organizations are positioned within a network and to evaluate the quality and impact of the exchanges among them. While using network analysis is relatively new to the field of public health systems research, other areas of public health (e.g., disease transmission, peer networks for knowledge exchange) have successfully employed these approaches (Luke and Harris 2007, Provan et al. 2005, Kwait et al. 2001). Luke and Harris (2007) distill networking in public health into three broad categories: 1) transmission networks, 2) social support networks, and 3) organizational networks. While the study of transmission and social support networks has become more common, the study of organizational networks in the field of public health systems research has been relatively uncharted territory.

Social Network Analysis as a Methodology for Strategic Network Management

In this simulation, I apply network theory and Social Network Analysis (SNA) to examine the organizational networks in public health partnerships. SNA and network theory is applied to operationalize a set of measurable dimensions that can be used to evaluate the strength of PHCs and the connections (or connectivity) among partner organizations. *Connectivity* is defined as the measured interactions between partners in a collaborative such as the amount and quality of interactions, and how these relationships might change over time. The simulation has a brief overview of SNA to allow students to become familiar with the concept and language. However, the readings from the "recommended reading" list below can help students get familiar and prepare to participate in this simulation.

PARTNER (Program to Analyze, Record, and Track Networks to Enhance Relationships)

Over the last year, and with funding from the Robert Wood Johnson Foundation, a research team designed a tool that focuses on measuring the process of collaboration, particularly the social infrastructure of interactions between involved members of community collaboratives, by measuring connectivity. This tool, PARTNER (Program to Analyze, Record, and Track Networks to Enhance Relationships), uses the principles of Social Network Analysis (SNA) (Scott 1991, Wasserman & Faust 1994). Recent studies illustrate how the quantity and quality of network interactions can affect community capacity to deal with social issues, how different kinds of interactions affect relationship building and network management, how trust and reciprocity can influence various organizational structures (e.g., hierarchical, bureaucratic), and why organizations collaborate (Isett and Provan 2005, Provan, et al. 2004, Provan et al. 2002).

By using the tool, collaboratives demonstrate to stakeholders, community members, and funders how their collaborative activity has changed or improved over time, including how community organizations participate. The results from the analysis of PARTNER help collaboratives strategically plan ways to work together in order to address health issues facing their community. PARTNER is programmed in Visual Basic as an executable file in, and links to, Microsoft Excel's spreadsheet function as the database management.

Important Note: To use PARTNER, you will need to **ENABLE MACROS** in your Excel file. To do this, simply go to *Tools* -> *Macro* -> *Security*. **Set your Macros to "Medium**". Then **close Excel entirely** (not just the workbook that is currently open) and reopen the "Partner_Simulation.xls" file. You should see a message that that asks you whether you would like to ENABLE MACROS. **Choose to enable your macros**. If you still have problems, try the process again, but it is important that you close Excel entirely before reopening the file.

The tool works by helping community collaboratives assess which partners are involved, the ways in which partners exchange resources, and the level of trust among partners. The data collected using the PARTNER survey demonstrates the role of key players in a community collaborative, the way that information is shared within a collaborative, and the way that resources are leveraged and shared in joint programming and coordinated efforts. PARTNER yields an understanding of the amount of effort required to sustain a collaborative, serving as a diagnostic tool. This type of information allows collaboratives to use data on the status and quality of partnerships to develop communication training and strategic actions, including applying for future funding. Further, strategically managing the cost of collaboration (e.g., "relationship budgeting") is impossible without measures of collaboration that account for the specific interactions among participating network members. By systematically measuring connectivity over time, community collaboratives can better understand how resource expenditures are linked to collaboration, thereby providing better accountability to funders.

PARTNER offers many benefits for measuring a collaborative, many of which have not been readily available before. The metrics reported in PARTNER are a combination of well-known social network metrics (e.g. density and centrality) and a number of additional metrics developed by the research team. These additional metrics include measures of trust, value of a partner, and an algorithm to measure the "relative connectivity" of each partner in a collaborative. The metrics were developed through a series of interviews with end-users who assisted in defining and coming to a consensus around appropriate scales and definitions of the metrics used.

Scoring the network.

The tool provides a set of indicators (scores) that can be used to identify baseline measures of progress, areas where improvement can be made, and progress over time. In Table 1, we provide some examples of the types of scores that PARTNER produces (these scores are hypothetical and will be considered positive or requiring improvement based on the individual goals of each collaborative). For example, *density* is the percentage of ties (relationships) present in the network in relation to the total number of possible ties in the entire network. If the collaborative's goals are to improve the number of connections, then more density is considered good. *Centralization* indicates how centralized the network is: the lower the centralization score, the more similar the members are in terms of their number of connections to others (e.g. more decentralized). Some collaboratives will prefer a more centralized structure, others will not. Trust here is interpreted as the relative percentage of how much members trust one another, with higher percentages indicating higher reported trust among collaborative member organizations. Thus, a 100% occurs when all members trust others at the highest level. *Degree centrality* indicates the number of connections to other members of the network. Identifying those with high centrality scores is an indicator of the key players in a network. *Effective network size* measures the number of non-redundant ties in relation to the other members that each organization is connected too. It is often hypothesized that a network with less redundancy is a more efficient and effective network, however the alternative argument states that networks without redundancy are fragile and vulnerable to failure. *Closeness centrality* measures how far the reach is between each member to other members of the network in terms of number of links between each member. A high score (close to 1) indicates members who have the shortest 'reach' between all other members. Finally, *relative connectivity* is based on measures of value, trust, and the number of connections to others, the connectivity score indicates the level of benefit an organization receives as a network member, in relation to the member with the highest level of benefit (100%). Each one of these scores can indicate a different level of connectivity, and depending on the goals of the collaborative, can indicate whether a strategy to alter the existing connectivity is desired. For example, if the network's goal is to remain decentralized, then they might strategize to achieve a "flatter" network structure.

Table 1. Example of how scores are reported in the PARTNER program; different options allow the user to compare the scores that are appropriate for measuring their goals

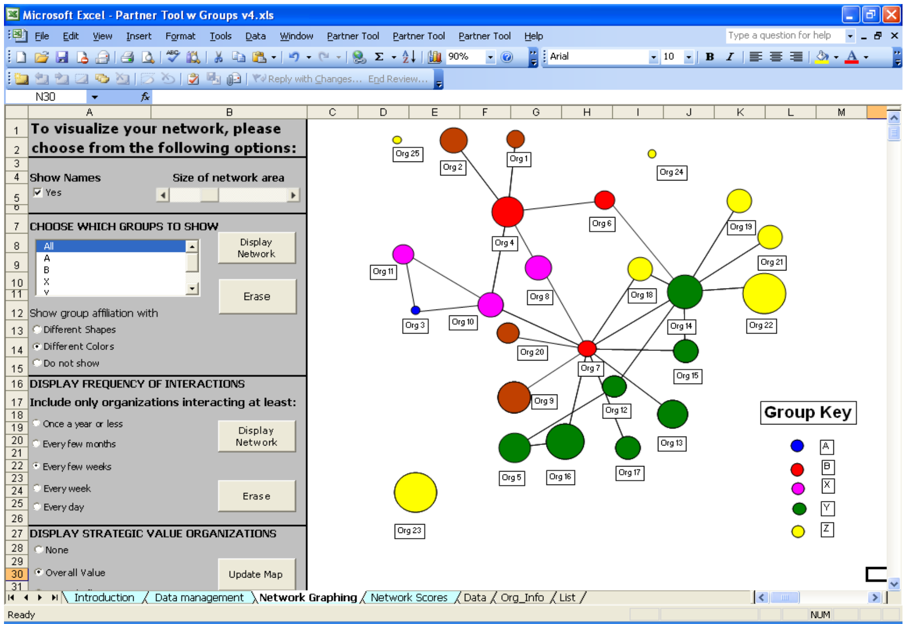
Network Scores		
	Density	up to 100%
	Degree Centralization	up to 100%
	Trust	up to 100%

Individual Scores				
	CENTRALITY/CONNECTIVITY/REDUNDANCY			
	Degree Centrality (max x)	# of Non-Redundant Ties (y)	Closeness Centrality	Relative Connectivity
Org 1	x	x-y	up to 100%	up to 100%
Org 2	x	x-y	up to 100%	up to 100%
Org 3	x	x-y	up to 100%	up to 100%
Org 4	x	x-y	up to 100%	up to 100%
Org 5	x	x-y	up to 100%	up to 100%
Org 6	x	x-y	up to 100%	up to 100%
Org 7	x	x-y	up to 100%	up to 100%

Visualizing the network.

In addition to scores, PARTNER can also produce visualizations of the network (See Figure 1). These can be a powerful representation for the collaborative on how connected they are, where gaps exist among relationships, and how they might allocate or shift resources to strengthen particular relationships. For example, the figure below is a screen shot from the PARTNER analysis tool. The left-hand side of the screen provides a set of options for how the administrator might visualize the data. The visual on the right represents a network map. In a network map, each circle represents an individual person/organization. The lines connecting the dots indicate the presence of a relationship (e.g. in the example below, who works with whom). Each color represents a different workgroup. In this network map, you can see which people/organizations are not connected (where gaps in connections exist) and which people/organizations serve as brokers to connect the various members. The size of each node indicates the value (by reputation) of each person/organization to the mission of the collaborative. This can be an informative characteristic to know, for example if a particularly valuable organization is disconnected from others in the group.

Figure 1. Network visualizations of a public health collaborative



Instructions for how students will incorporate PARTNER into this simulation are included throughout the simulation text.

Recommended Readings for Students (*=mentioned in simulation)

*Burt RS. *Structural Holes: The social structure of competition*. Cambridge: Harvard University Press; 1992.

Gazely, B. and J.L. Brudney. The Purpose (and Perils) of Government-Nonprofit Partnerships. *Nonprofit and Voluntary Sector Quarterly*. 2007; 36(3): 389-415.

*Granovetter MS. The strength of weak ties. *American Journal of Sociology*. 1973;78(6):1360-1380.

Isett K, Provan KG. The Evolution of Dyadic Interorganizational Relationships in a Network of Publicly Funded Nonprofit Agencies. *Journal of Public Administration and Theory*. 2005;15(1):149-165.

Kettl, D. Managing Boundaries in American Administration: The Collaboration Imperative. *Public Administration Review*. 2006; 66(s1): 10-19.

Kwait J, Valente TW, Celentano DD. Interorganizational relationships among HIV/AIDS service organizations in Baltimore: A network analysis. *Journal of Urban Health*. 2001;78:468-487.

Luke DA, Harris JK. Network Analysis in Public Health: History, Methods, and Applications. *Annual Review of Public Health*. 2007;28(16):1-25.

McGuire, M. Collaborative Public Management: Assessing What We Know and How We Know It. *Public Administration Review*. 2006; 66(s1):33-43.

O'Toole, L.J. Treating Networks Seriously: Practical and Research-Based Agendas in Public Administration. *Public Administration Review*. 1997; 57(1): 45-52.

O'Toole, L.J., Meier, K.J., and Nicholson-Crotty, S. Managing Upward, Downward, and Outward: Networks, Hierarchical Relationships, and Performance. *Public Management Reivew*. 2005; 7(1): 45-68.

Provan KG, Nakama L, Veazie MA, Teufel-Shone NI, Huddleston C. Building community capacity around chronic disease services through a collaborative interorganizational network. *Health Education & Behavior.* Dec 2003;30(6):646-662.

Provan KG, Veazie MA, Staten LK. The Use of Network Analysis to Strengthen Community Partnerships. *Public Administration Review (Washington, D.C.)*. September/October 2005 2005;65(5):603-613.

Provan KG, Isett K, Milward HB. Cooperation and Compromise: A network response to conflicting institutional pressures in community mental health. *Nonprofit and Voluntary Sector Quarterly*. 2004;33:489-514.

Provan KG, Milward HB, Isett K. Collaboration and integration of community-based health and human services in a nonprofit managed care system. *Health Care Management Review*. 2002;27(1):21-32.

Roussos ST, Fawcett SB. A review of collaborative partnerships as a strategy for improving community health. *Annual Review of Public Health*. 2000;21:369-402.

*Scott J. *Social Network Analysis: A Handbook*. London: Sage Publications; 1991.

Singer HH, Kegler MC. Assessing Interorganizational Networks as a Dimension of Community Capacity: Illustrations From a Community Intervention to Prevent Lead Poisoning. *Health Education & Behavior*. December 2004 2004;31(6):808-821.

Wasserman S, Faust K. *Social Network Analysis: Methods and Applications*. Cambridge: Cambridge University Press; 1994.

White D, Haray F. The Cohesiveness of Blocks in Social Networks: Node Connectivity and Conditional Density. *Sociological Methodology*. 2001;31:350-359.

Valente TW, Foreman RK. Integration and reliability: Measuring the extent of an individual's connectedness and reachibility in a network. *Social Networks*. 1998;20(1):89-105.

Valente TW, Chou CP, Pentz MA. Community coalition networks as systems: Effects of network change on adoption of evidence-based prevention. *American Journal of Public Health*. 2007;97(880-886).

Varda, D. M., A. Chandra, S. Stern, and N. Lurie. “Core Dimensions of Connectivity in Public Health Collaboratives” *Journal of Public Health Management and Practice*. 2008; 14(5): E1-E7.

Works Cited:

Agranoff, R. (2006). Inside collaborative networks: Ten lessons for public managers. *Public Administration Review* Special Issue: 56-65.

Blau, J. R. and G. Rabrenovic (1991). Interorganizational Relations of Nonprofit Organizations: An Exploratory Study. *Sociological Forum* 6(2): 327-47.

Cummings, J.N. and S. Kiesler (2005). Collaborative research across disciplinary and organizational boundaries. *Social Studies of Science* 35: 703-722.

Gittell, J. H. and L. Weiss (2004). Coordination networks within and across organizations: A multi-level framework. *Journal of Management Studies* 41(1): 127-53.

Gulati, R., N. Nohria, and A. Zaheer (2000). "Strategic Networks" *Strategic Management Journal*, 9(4): 361-374.

Isett K, Provan KG. The Evolution of Dyadic Interorganizational Relationships in a Network of Publicly Funded Nonprofit Agencies. *Journal of Public Administration and Theory*. 2005;15(1):149-165.

Kwait J, Valente TW, Celentano DD. Interorganizational relationships among HIV/AIDS service organizations in Baltimore: A network analysis. *Journal of Urban Health*. 2001;78:468-487.

Lasker, R. D. (2003). Broadening Participation in Community Problem Solving: a Multidisciplinary Model to Support Collaborative Practice and Research. *Journal of Urban Health* 80(1).

Luke DA, Harris JK. Network Analysis in Public Health: History, Methods, and Applications. *Annual Review of Public Health*. 2007;28(16):1-25.

O'Leary, R., C. Gerard and L. B. Bingham (2006). Introduction to the Symposium on Collaborative Public Management. *Public Administration Review* 66(1): 6-9.

Provan KG, Isett K, Milward HB. Cooperation and Compromise: A network response to conflicting institutional pressures in community mental health. *Nonprofit and Voluntary Sector Quarterly*. 2004;33:489-514.

Provan KG, Milward HB, Isett K. Collaboration and integration of community-based health and human services in a nonprofit managed care system. *Health Care Management Review*. 2002;27(1):21-32.

Provan KG, Veazie MA, Staten LK. The Use of Network Analysis to Strengthen Community Partnerships. *Public Administration Review (Washington, D.C.)*. September/October 2005 2005;65(5):603-613.

Rethmeyer, K. R. (2005). Conceptualizing and measuring networks (book review). *Public Administration Review* 65(1): 117-21.

Samaddar, S. and S. S. Kadiyala (2005). An analysis of interorganizational resource sharing decisions in collaborative knowledge creation. *European Journal of Operational Research* 170(1): 192-210.

Scott, J. 1991. Social Network Analysis: A Handbook. London: Sage Publications.
Wasserman, S. and K. Faust. 1994. Social Network Analysis: Methods and Applications. New York: Cambridge University Press.
Wellman, B., J. Witte and K. Hampton (2001). Does the Internet increase, decrease, or supplement social capital? Social networks, participation, and community commitment. *The American Behavioral Scientist* 45(3): 436-55.