

**Building Economic Development Networks in Detroit:
A Comparison of Methods of Social Network Analysis**

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Abstract:

The use of social network analysis, which explores personal networks among individuals, has expanded across a number of disciplines because it makes substantial contributions about relationships underlying collaborative efforts. It also provides information on how information travels and on the most important actors in a network. While there has been some work applying social network analysis to economic development policy, the opportunity exists to make greater use of this tool, especially as recognition grows about the importance of networks for successful policy.

The Detroit region (here defined as the city plus the counties of Wayne, Washtenaw, Oakland, and Macomb) provides an ideal setting for a test of social network analysis in economic development policymaking. During the previous century, southeastern Michigan experienced decades of extreme growth followed by slower but no less extreme decline. Both the causes – the rise and fall of the automobile industry – and its consequences – a pocket of poverty in an emptying city surrounded by more resilient suburbs – are well-known. For the last several decades, there have been conscious efforts by elected officials, philanthropic individuals and organizations, advocacy institutions, universities and community colleges, average citizens, and others to renew Detroit; many of these programs have been multi-actor efforts uniting different organizations and people in an attempt to change the city's conditions. There has also been a growing recognition that the suburban communities need to work with those in the city of Detroit in order to focus on the region, rather than on individual cities or townships.

This paper will apply two methods of social network analysis – board interlock theory and a survey of economic development policymakers – to the Detroit region, and compare the results produced. Looking at the networks among board members in the corporate, nonprofit, and foundation communities in the region demonstrates how information and new ideas can be transmitted among a region's influential actors, while survey results offer information about the existing networks among policymakers and how such networks may be strengthened. These methods analyze slightly different questions related to social networks; both methods have their advantages and disadvantages, and the choice between the two can involve a trade-off between the types of networks considered, accuracy, and the time and resources involved.

ECONOMIC DEVELOPMENT AND NETWORK THEORY

A number of literatures within the urban policy field detail the importance of networks, and the focus of these studies is moving from formal, rigid networks (known as “iron triangles” at the federal level) to a more fluid and open conceptualization about informal relationships. Most definitions of a “network” are similar to that of O’Toole (1997) in that “Networks are structures of interdependence involving multiple organizations or parts thereof Networks exhibit some structural stability but extend beyond formally established linkages and policy-legitimated ties” (p. 45). There are many names for networks, including strategic alliances (Smith-Doerr & Powell, 2004), partnerships and task forces (McGuire, 2006), and coalitions.

There are disagreements about the composition of networks. While authors distinguish between different types of networks, there are many overlaps in both theory and practice; for example, social network analysis can be used to describe the relationships underlying various policy networks. There are also questions about how formalized relationships must be in order for them to be considered “networks” – Mandell (1999), for instance, argues that network structures include task forces or coalitions, which imply a formalized relationship, but does not include highly formalized relationships such as public-private partnerships or contracts; others emphasize the informal nature of the relationship (André, 1994).

Networks perform many tasks. Agranoff and McGuire (2001) identify the major functions of a network as activating participants and issue stakeholders, framing issues, mobilizing participants, and synthesizing the environment in order to achieve the network’s goals. Chisholm (1996) finds that, in the New Baldwin Corridor Coalition in Pennsylvania, “Participants identif[ied] embodying and maintaining vision, serving as a forum, promoting changes in attitudes and perceptions, and communication as key network functions” (p. 216).

Networks often develop when parties realize they are unable to solve a particular problem alone (Mandell, 1999). The use of networks in urban policy will continue to grow because, as O'Toole (1997) and others argue, policy problems are growing more complex and there often is limited support for direct government action.

Network Contributions to Urban Economic Development

This challenge of complex, interlinked problems provides fertile ground for networks in urban policy and economic development, partly due to, as Agranoff and McGuire (1998b) note, “mutually reinforcing trends like fiscal decentralization and localization of policy responsibility” (p. 67). Networks also increasingly dominate urban governance and economic development policy because of the wide variety of organizations – both public and private – that have knowledge about the city and the capacity to move development efforts forward (Bartik, 2003; McGuire, 2000). Networks in an urban area develop to access these multiple sources of knowledge, money, and skills, and also, in some cases, to avoid duplication of effort. Networks also will develop when like-minded individuals or organizations come together in order to change or stabilize local conditions (Cox & Mair, 2011).

One of the most frequently cited benefits for organizations and individuals participating in networks is increased communication and the advantages that accrue from it – past relationships and non-hierarchical information flows offer access to new information that standard operating environments such as markets or corporate structure may not provide (Powell, 1990). Smith-Doerr and Powell (2005) find that, for businesses working in partnerships, networks provide increased access to diverse sources of information and opportunities to develop new ideas from that information. Saxenian (1990) finds that networks present in Silicon Valley

in the 1980s allowed new semiconductor-producing companies to form and be competitive with existing manufacturers, both in the region and internationally, because individuals were able to share information about the technology and development sources and also to develop new manufacturing ventures.

While much of the academic work demonstrating the contributions of networks has been focused on private businesses, there has been some work on the benefits networks provide in urban economic development. Using surveys, questionnaires, and archival data, Ha, Lee and Feiock (2010) find that there are statistically significant benefits for networks in local economic development and that networks involving both the public and private sectors tend to interact more often than those focused on just the public or private sectors. Cooke and Morgan (1993), moreover, find that highly-networked regions “include: a thick layering of public and private industrial support institutions, high-grade labour-market intelligence and assorted vocational training, rapid diffusion of technology transfer, a high degree of interfirm networking and, above all, receptive firms well-disposed towards innovation” (p. 562).

There have been some studies specifically on the role of networks in economically-troubled urban areas. De Socio (2010) examines Akron and Cleveland and finds that network leaders often represent newer industries such as high-technology manufacturing as well as individuals from civic organizations; he thus argues that traditional manufacturers tend to be marginalized in urban regime networks in Rust Belt cities. Agranoff and McGuire (2001) note both the positive and negative effects of networks in the redevelopment of Baltimore’s Inner Harbor. Metzger (1998) explains how networks among community development corporations in Pittsburgh helped revitalize the city through efforts such as building financial support for

projects, developing private sector jobs, and linking manufacturing/economic development and community development organizations.

Role of Social Networks

Social network analysis can contribute to the understanding of the role of networks in economic development. The relationships between people and how they interact with one another – both the actors themselves as well as their connections to each other – are important in social network analysis, which first developed in sociology and anthropology but has spread to other fields including public policy (Knoke & Kuklinski, 1982; Scott, 2000). Its contributions include developing an understanding of the “properties of social systems that cannot be measured by simply aggregating the attributes of individual members” (Knoke & Kuklinski, 1982, p. 11).

The theory underlying the contribution of social network analysis is that, as Indergaard (1996) notes, “Networks build on social relationships, identities, and norms” (p. 176). These interpersonal relationships can be the building blocks for common efforts but also can provide insurmountable barriers if there are personal conflicts. Galaskiewicz and Zaheer (1999), who look at social networks among employees at different firms, argue that networks increase a firm’s competitive advantage because, “Even though two actors at the table may have a very different agenda, if there is a personal tie between them, they can at least trust that the other portends them no harm and respects their interests” (p. 257).

Social network analysis can be directly extended to studies of networks in urban areas, since, as Pflieger and Rozenblat (2010) find, “The cohesion of cities is generated by the cohesion of their social networks, which are created through face-to-face meetings and supported by

extant means of transport and communication” (p. 2728). Bartik (1994) also contends that personal relationships among those working in the field directly contribute to urban economic development efforts. Thurmaier and Wood (2002), for example, use interviews in the Kansas City region to analyze interlocal agreements there and find that elected and nonelected officials tend to participate in different networks, which could have implications for development, and also that long-term reciprocity can be a bigger motivation for local governments to sign interlocal agreements than the benefits accruing from economies of scale.

An important component of the role of social networks in economic development is the fact that, while some development efforts may be open to all interested parties or else are structured deliberately to bring in specific groups or individuals, many networks are built on preexisting relationships (Smith-Doerr & Powell, 2005). Huxham and Vangen suggest that “In practice few community collaborations seem to be convened in any sort of thoughtful way; instead membership tends to be created out of existing contacts and evolves in a rather unplanned way as new issues suggest new partners or new contacts become drawn in” (p. 12). Therefore, analyzing the networks underpinning economic development efforts provide insights about the interests represented in urban governance.

Types of Social Network Analysis

Social network analysis examines the depth and breadth of personal relationships in a network through both visual representations as well as quantitative investigation. The issues of concern in social network analysis are both how individual pairs of actors are connected as well as how the overall network is shaped (including which actors are included or left out of the network). There are many different ways to gather data on social networks. Two of the more

popular methods, and the two compared in this study, are interlocking directorates and surveys measuring personal relationships. These methods analyze slightly different questions related to social networks; both methods have their advantages and disadvantages, and the choice between the two can involve a trade-off between the type of network considered, accuracy, and the time and resources involved.

Interlocking directorates occur when a member of one board of directors also sits on another board (Mizuchi, 1996); interlocks can also occur when members of two different boards of directors sit together on a third board (Smith-Doerr & Powell, 2005). Participation in an organization's board of directors provides a forum for influential members of a local community to communicate their ideas to one another, influence the operations of the organization, and build agreement for necessary actions (Mizuchi, 1996); board members who attending meetings can therefore act as networks to communicate new policy proposals and implementation plans concerning issues that are larger than just the organization on whose board they serve. Many studies of interlocks focus on public corporations (especially banks, which are perceived to be key players in corporate development), but they have also been extended to other sectors for which board membership is available, such as nonprofit organizations. Salzman and Domhoff (1983) compare interlocking directorates among national corporations and nonprofit organizations and find that nonprofits are central when looking at all network links, but corporations dominate and nonprofits recede to the periphery when examining strong ties among organizations.

Studies of interlocking directorates have been a popular tool used to provide information on the networks underlying economic development in urban areas, especially in those regions challenged by economic decline, since they show how influential organizations are, or are not,

connected in urban areas. Safford (2004) compares networks among business and civic organizations in Allentown, Pennsylvania, and Youngstown, Ohio, in 1950 and 1970 as policymakers dealt with major turning points in the cities' declining industries. By inspecting how the economic and civic networks of major organizations differed and overlapped, he concluded that civic ties can connect actors otherwise not linked economically, allowing for the diffusion of ideas among those who otherwise might not communicate; in addition, dense and interconnected networks linking the same individuals in the same ways may limit the transmission of new ideas. He argued that these networks might explain the differing trajectories of the two cities in the post-industrial era. De Socio (2010), in the study cited above, also uses interlocking directorates to show that emerging sectors were better represented on the boards of civic organizations in Akron and Cleveland and, therefore, may have been able to direct economic development to better serve their industries' interests.

There are a number of conceptual concerns with using board interlocks to study networks, especially with regard to the types of organizations and individuals analyzed but also questions such as if the individuals actually discuss the issue of interest. Despite these concerns, interlocking directorates have become an accepted method of describing communication pathways and *potential* network linkages, even though they may not result in casual conclusions. The use of interlocking directorates in social network analysis continues, however, for a number of reasons, primarily centering on the theory that, through the board networks, individuals are assumed to communicate ideas across institutions. First, individuals asked to serve on a board are typically those who have wealth or influence in the greater environment or have been influential to the organization's own operations; therefore, they typically would have the influence or power necessary to see new ideas developed and implemented. In addition, while the organization itself

may not be directly involved in an issue, the individuals serving on the board may be concerned about the matter and would therefore utilize their resources to further their interests. Finally, the study of interlocking directorates usually demands less access to network members as well as time and funding, which can be in limited supply.

The other method of network analysis considered here – surveys of the personal relationships of network members – may offer more opportunity to draw conclusions on the effects of a network if the survey asks questions concerning if and how often the actors discuss the issue of concern. However, surveys also put more of the onus for data production on the potential members of the network rather than on the analyst (as compared to the data needed to study interlocking directorates) and can be affected by self-reporting biases or other inaccuracies. The decision to use different methods of social network analysis – here, interlocking directorates and surveys – therefore must balance the information on the network being sought as well as the investigator's time, resources, and ability to obtain the participation of network members.

McGuire and Agranoff (1998a and 1998b) and McGuire (2000) use two surveys, one designed and administered by the ICMA (International City/County Management Association) and a second that McGuire and Agranoff designed and administered, to study the networks in 237 cities in Illinois, Indiana, Michigan, Ohio, and Wisconsin.¹ The surveys were sent to the chief administrative officers in the cities, and the primary focus was on which organizations the city governments interacted with concerning local economic development issues. Agranoff and McGuire (1998b) find that multiple development networks may exist in a city, depending on the city's goals. They also discover that, while networks can be diverse in different cities, the networks typically are not very large, and the primary networked partners of cities tend to be

¹ They also conducted six case studies of cities that they felt stood out with regard to their local economic development networks.

county governments, Chambers of Commerce, and local development corporations, while organizations such as foundations and township governments are usually only involved in very dense networks. Agranoff and McGuire (1998a), meanwhile, note that city officials consider state governments the most important other institution with regard to economic development, as compared to other local governments (whether other cities, counties, townships, or special districts), the federal government, and nongovernmental entities. McGuire (2000) finds that city governments are more likely to work with partners depending on the type of local economic development policies enacted.

Surveys can also be used within one specific jurisdiction to look at how the various individuals perceive their interactions, rather than examining similar networks across jurisdictions. Reid and Smith (2009) determine the shape of the economic development network in the Toledo Metropolitan Statistical Area (MSA) by compiling a list of people officially involved in economic development (such as elected officials or those at the local Chamber of Commerce or universities) and asking each to identify who on the list they collaborated with during the past year and to provide names of any individuals not included. Their work shows that there is little regional interaction within the Toledo MSA and that many of the people identified were not the heads of their organizations. Feiock, Lee, Park, and Lee (2010) conducted a survey of government economic development officials in the Orlando-area and found that costs restrain network growth and that collaboration can be affected by geographical distances between jurisdictions.

Measuring Social Networks

Although the terminology sometimes differs, there are a number of generally recognized concepts in social network analysis. (See Scott, 2000 or Wasserman & Faust, 2009.) Each actor in the network is a node; the lines connecting the nodes are known as links or edges and represent the connections between the individuals. Relationships within the network can be either directed, in which a relationship between two actors may be of different intensity or show the flow of information or power, or undirected, which means that the direction of the relationship does not matter.

There are several ways to measure the relationships within a network. Density, a measure of the general linkages among the actors in the network, is a popular measure of network connectedness. Density is a ratio of the actual number of links within a network to the total possible number of links – with values ranging from zero to one, the lower the density, the less connected the network is. The degree of a node is the number of other nodes to which it is directly connected and provides information on the power or importance of the node. While degree is useful within a graph, however, it is a relative measurement and, without normalization, cannot be used to compare two different networks to each other. Another method of calculating the importance of various nodes is through measures of centralization – two popular measurements are degree and betweenness centrality, which measure power differently. The first, degree centrality, simply determines which node has the most ties (usually direct) to others in the network, while the second, betweenness centrality, measures the number of shortest paths between two actors on which the node of interest lies. Betweenness centrality measures which actors sit a major communication points on the network and, therefore, have the potential to withhold or provide information to others in the network. In order to compare centrality

among various networks, the scores need to be normalized; the closer a normalized centrality score is to one, the more important the actor.

Networks can also be depicted visually – depending on the size of the network and the number of connections among the nodes, this can make it easier or more difficult to provide information about the relationships among the actors. The visual depiction of the entire network is a graph; connected sets of nodes are called components, while nodes unconnected to any others are called isolates. In visual representations, the placement of the nodes and links often is a matter of making it easier to interpret the relationships and, in these cases, does not provide information about the relationship between the actors besides the presence or absence of a link. In some cases, however, the size or color of the lines or nodes may be used to indicate strength of relationships or importance of nodes; in addition, in directed relationships, the direction of the relationship may be indicated by arrows on the links.

COLLABORATION IN DETROIT

The city of Detroit and the region (defined here as Wayne, Washtenaw, Oakland, and Macomb Counties)² shared a similar fate in the early part of the twentieth century as they grew rapidly to accommodate the thriving automotive industry and other manufacturing efforts. However, with the decline of the industry in the latter half of the century, the fortunes of the city and its surrounding counties diverged. Whereas the city had contained more than half (58.7%)

² Defining the “region of Detroit” is a complicated endeavor. Considering the city of Detroit as a sole entity ignores the strong interconnections among the city and the counties surrounding it and has, according to some, been one of the causes of the city’s decline; extending the definition only to include Wayne County, in which the city is located, overlooks the economic connections between it and adjoining counties. During interviews with numerous economic development policymakers in the region conducted in 2009 and 2010, many cited the “region” as encompassing the four counties listed above. While arguments could be made for extending this area to the Detroit–Warren–Livonia Metropolitan Statistical Area (MSA), they were rarely heard since most of the population indeed lives and much of the industry occurs in these four counties (and because the MSA excludes Washtenaw County and, hence, Ann Arbor, which is gaining in economic importance in the region).

the region's population in 1950, by 2009 that share was down to 21.1%, according to the U.S. Census Bureau. Likewise, the poverty rate for families in the city was 28.3%, compared to 9.9% nationally; in Wayne County, which includes the city of Detroit as well as other jurisdictions, the poverty rate was only 16.9%, while in the other three counties it was below 7% (U.S. Census Bureau, n.d.). The challenges facing the city are well-known, and were catalogued in a report published by the University of Michigan Ross School of Business – in a twelve-month period, *Forbes* magazine ranked Detroit: #2 for the Worst Cities for Jobs; #1 for America's Most Miserable Cities; #5 for America's Most Obese Cities; #1 for America's Most Murderous Cities; #1 for Weakest U.S. Housing Market; #3 for America's Most Expensive Commutes; and #2 for Ghost Cities of 2100 (Alexander, Jones, Gore, Nawrocki, & Powers, 2008, p. 28).

Those within the region continue to make plans and design projects in an attempt to renew and revitalize the city. Many times these efforts are independent – the city and each county, for example, have their own economic development departments or agencies. However, there are also a number of recent cooperative efforts, in addition to traditional local collaborations such as those run by or through, for example, the Detroit Regional Chamber of Commerce or the United Way for Southeastern Michigan. Recent joint economic development projects include:

- The “Shifting Gears” program, which trains corporate executives (primarily from the automotive industry) to work in smaller businesses and includes private-sector economic development organizations, local community college and universities, and county development organizations;

- The New Economy Initiative, which is funded by ten private foundations and focused on increasing the prosperity of the region and its citizens by transitioning to a knowledge-based economy;
- The Detroit Region Aerotropolis, which was an attempt by local governments, corporations, economic development organizations, and a museum to develop two local airports into a major transportation hub also incorporating the nearby U.S.-Canadian border, railroads, and interstate highways;
- Re-Imagining Detroit, which is headed by the Kresge Foundation and is rationalizing the work of multiple organizations in diverse sectors to limit duplication of effort with regard to different development objectives; and
- The Economic Development Strategies Task Force convened by SEMCOG (the Southeast Michigan Council of Governments) and the Metropolitan Affairs Council, which recently published *Increasing Jobs and Prosperity in Southeast Michigan* and is comprised of over 40 people including both appointed and elected local government officials and representatives from local industry advocacy groups, regional economic development organizations, and private corporations.

There have also been collaborative efforts to develop the river front, mend local neighborhoods, and maintain COBO Hall, a long-time downtown convention center.

There continues to be difficulty in working together across the region – both among the different jurisdictions as well as among various sectors. Economic development policymakers interviewed in fall 2009 and spring 2010 frequently voiced the belief that regional cooperation was better now than in the past; however, they also raised concerns about continuing problems in collaboration. Some cited the region’s racial history to explain such problems, while others noted

that the region's resource wealth (largely due to the automotive industry) made such collaboration virtually unnecessary. One policymaker explained that the aerotropolis project, which had the backing of numerous organizations, had not taken off due to a disagreement among the county governments concerning the distribution of tax free zones.

Therefore, the Detroit region provides an ideal venue for exploring the networks that exist among economic development policymakers. As those in the region attempt to stabilize and, ideally, restore the city, they face the necessity of working together. This paper will be devoted to identifying and measuring networks that can contribute to economic development policy in the region.

Networks in the Redevelopment of Detroit

Within the Detroit region, the past effectiveness of development networks has been limited. Several studies have focused specifically on the role of networks within attempts to revitalize Detroit during the mayoralties of Coleman Young (1974-1994) and Dennis Archer (1994-2001). Orr and Stoker (1994) look at cooperation between the private and public sectors during Young's term and argue that he found limited success in working with private interests on downtown revitalization due, in part, to the fact that downtown development was a secondary goal for private interests and because they did not act cohesively. They also identify the goals and challenges underlying two collaborative efforts – the Detroit Strategic Plan by Detroit Renaissance and the Detroit Compact, in which the state, the city, the public school system, and private interests tried to further education goals.

Lawless (2002) compares the urban governance systems in Detroit and Jersey City. Through interviews with leading policymakers, he finds that, in both cities, while the mayor is

seen as the central figure, there are a number of other organizations involved in development and government. He uses urban regime theory, which, he argues, includes “the *interrelationships* amongst an élite group of senior representatives from key public- and private-sector institutions” (p. 1330, emphasis added). He ultimately questions if an urban regime is even present in Detroit. Eisinger (2003) focuses on three popular methods of “reimagining” Detroit that were supported by public and private interests but were challenged by the city’s history of racial conflict and the need to serve low-income residents as well as the desired groups of middle-income residents and visitors. One reason the city has been unable to redevelop itself, he argues, is because “the city’s political and business leaders do not self-consciously speak with one voice, nor do they accord city government or any particular private actor or group preeminence in fashioning a vision” (p. 91). Moving past this historical inability to collaborate may be necessary if Detroit is ever to rebound economically.

Brockmeyer (2000) looks at the history of Detroit’s political culture and how it contributed to the city’s designation as one of the first federal Empowerment Zones (EZ) in the 1990s. As part of that culture, she explores the genesis behind United Street Networking and Planning: Building a Community (U-SNAP-BAC), a coalition formed in the late 1980s to develop economic development strategies. It applied for and received federal Community Development Block Grants and an Urban Development Action Grant and contributed to the networks that would later support Detroit’s application for EZ status.

ANALYSIS OF INTERLOCKING DIRECTORATES IN DETROIT

The first method of social network analysis utilized in this paper – interlocking directorates – identifies *potential* participants in the Detroit region’s network of economic

development practitioners as well as ways that ideas can travel through the network. In order to study different types of organizational interlocks, the Crain's Lists of the largest publicly-held companies (by 2008 revenue), the largest nonprofits (by 2008 gross receipts), and the largest foundations (by 2008 assets) were collected from *Crain's Detroit Business* published in December 2009.³ In order to maintain consistency and so that one type of organization was not overrepresented, the top fifteen organizations on each list with their headquarters in the Detroit region were sampled. The Appendix lists the organizations analyzed.

The membership for each organization's board of directors was then gathered through internet searches of the organization's website, Hoover's Company Records (for publicly-held corporations), or IRS Form 990s (for nonprofit organizations and foundations); if these methods were unsuccessful, the organization was then contacted and asked for its board list via e-mail. Individuals serving on multiple boards were then identified.⁴ The interlocking directorates were analyzed using UCINET 6.0 (Borgatti, Everett & Freeman, 1999) and NetDraw.

Findings

Boards of directors in the Detroit region are remarkably independent of one another. As can be seen in Table 1, a number of organizations remain unconnected, including over half of the publicly-held corporations. In addition, very low percentages of the individuals on the boards of the various organizations serve on multiple boards of the same organization type – only 4.7% of those on the boards of publicly-held corporations sat on more than one board of that type, while

³ At the time this study was completed, the 2010 rankings with data from 2009 were not available.

⁴ Names had to be an exact match in order for the person to be identified as someone sitting on multiple boards, since most organizations ask members how they wish their names to be presented. In cases where two names were similar (e.g., one listed with a suffix of "Jr." and another not, or one using a common shortening of a more formal name), the individuals' biographies were reviewed if available online to see if the other board(s) was mentioned; if not, or if no biographies were available, the individuals were considered two different people. Out of the 797 people included in the analysis, only two sets of two individuals (less than one percent) were identified as separate people but could, potentially, be the same people.

5.7% of nonprofit board members and 8.3% of foundation board members sat on boards of organizations of the same type. Table 1 also shows that the density for the network among publicly-held corporations is quite low, which means that the network is relatively not cohesive. However, the networks among nonprofits and foundations are both denser, as to be expected from the higher number of organizations with board members serving on multiple boards.

Table 1 – Results from examination of interlocking directorates

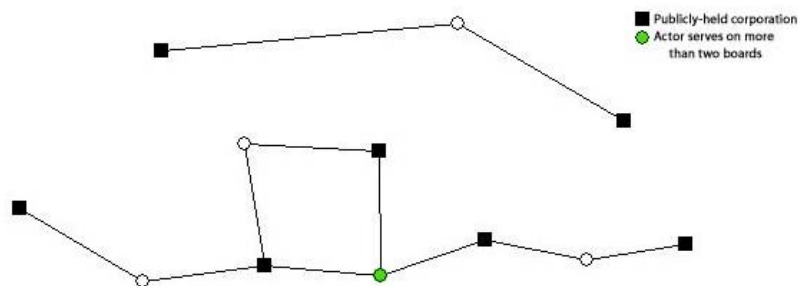
	Number of organizations	Number of organizations with board members serving on multiple boards	Total number of board members	Number of board members serving on multiple boards	Density
Publicly-held corporations	15	5	150	7	0.0745
Nonprofits	15	10	477	27	0.1341
Foundations	15	12	227	23	0.2264
All organizations	45	33	797	78	0.0690

As a second test of board interlocks in the Detroit region, the networks among all publicly-held, nonprofit, and foundation organizations reviewed in the previous section were combined into one larger network, with these results also presented in Table 1. However, while this analysis did find that there were more organizations connected in this larger network (including four that had been unconnected previously) with a higher percentage of individuals serving on multiple boards, the density of this network actually decreased (to 0.069) compared to the type-specific networks; one possible explanation for such a decrease could be if the individuals are connected through many of the same organizations. As a comparison, de Socio (2010) finds that the directorate densities among Akron and Cleveland’s largest public firms, civic organizations, and business policy institutions were 0.190 and 0.113, respectively.

Examining visual representations of the networks outlined above provides additional information about the relationships. In these graphs, the organizations are represented by a square color-coded for organization type, and the board members are shown as circles, with members serving on more than two boards signified by a filled circle. The lines connecting the organizations through the board members are the paths that make up the network. The lengths and angles of the lines do not have any intrinsic meaning – they are drawn in their present locations for ease of viewing. As a further method to make the graphs easier to read, unconnected organizations and individuals are not displayed.

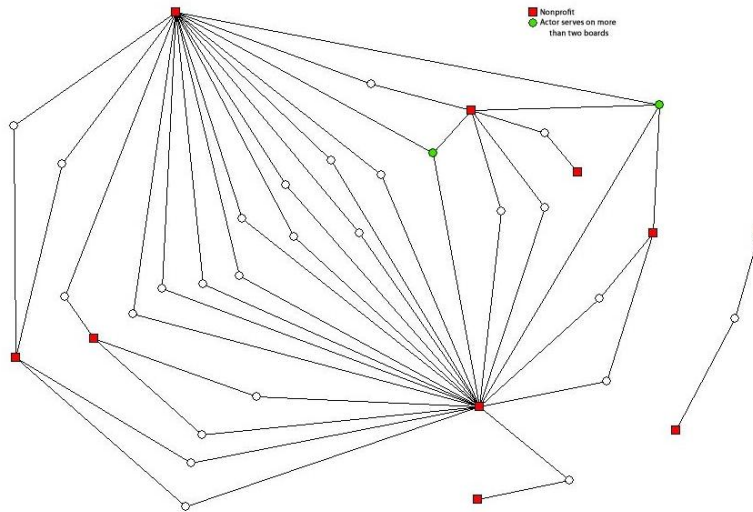
As Figure 1 shows, the boards of publicly-held corporations in the Detroit region are not well-connected, thus making it more difficult to share information among them. There are two components present in the network. The first consists simply of one individual who serves on the boards of two corporations. The second component, however, consists of five corporations connected almost as a chain of four board members, with each pair of boards connected by one member, with the exception of one organization that has three members sitting on other boards and one individual who sits on three boards. This component could be easily broken into unconnected organizations or smaller components, especially by removing the individual sitting on the three boards. Relaying information from one end of the chain to the other could be time-consuming and open to errors in the ideas shared due to the shape of the network.

Figure 1 – Networks among publicly-held corporations



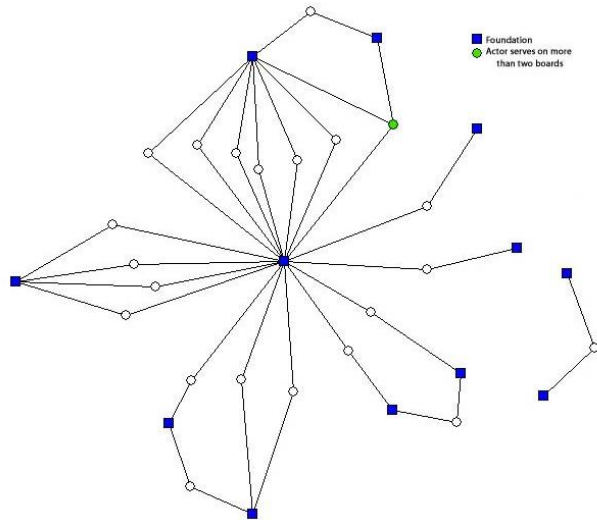
The network among nonprofit organizations in the region looks very different than that of the publicly-held corporations. As shown in Figure 2, there are once again two components in the nonprofit network; one component is simply one individual serving on two boards. However, there is also a larger component among the other eight boards, of which six have multiple linkages with each other. The two with the largest number of board members serving on the boards of other organizations are the Detroit Symphony Orchestra (DSO) and the Detroit Institute of Arts (DIA). This could be a function of the fact that both organizations also have the largest number of board members (89 and 96 members, respectively), although another organization with a similar number of members, the Jewish Federation of Metropolitan Detroit, which has 86 board members, is much less well-connected to the network, with only 3 members serving on multiple boards compared to 16 members from the DSO and 21 members from the DIA. Likewise, two other organizations – the Henry Ford and the United Way for Southeastern Michigan – have much smaller boards (with 20 members and 47 members, respectively) but similar percentages of the membership are connected to other organizations (20% for the Henry Ford and 17.6% for the United Way compared to 18.0% for the DSO and 21.9% for the DIA). An additional explanation for the high number of connections between the DSO and the DIA may be that both are arts organizations and therefore cultivate the same organizational membership, from which they may draw many of their board members; however, this explanation does not account for multiple indirect linkages through non-arts organizations.

Figure 2 – Networks among nonprofits



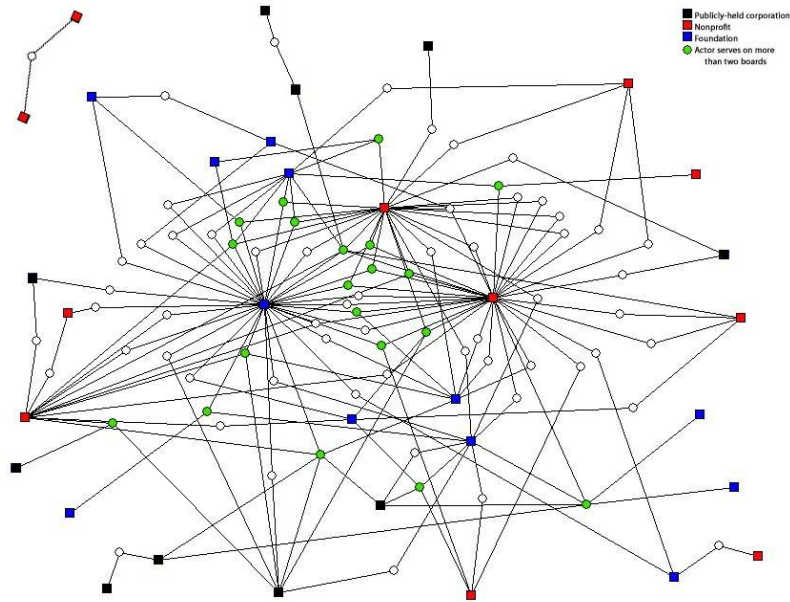
The network among foundations in the Detroit region assumes yet another shape, as shown in Figure 3. For a third time, there is a small component of two boards (this time of family foundations) connected by one individual, but the other organizations form a star shape with the Community Foundation for Southeast Michigan in the center. The Community Foundation is ranked second by Crain’s according to assets, and, according to this network analysis, it is the most powerful foundation in the region, connecting nine other foundations that, in some cases, otherwise would be unconnected – removing the Community Foundation from this network would severely disrupt the linkages among the other organizations. As with the larger component among nonprofit organizations, the importance of the Community Foundation could be a function of its board size (with 56 members, of whom 18, or 32.1%, serve on multiple boards), although the United Jewish Foundation has more members (86) with only 8 (or 9.4%) serving on other boards.

Figure 3 – Networks among foundations



Finally, the combined network shows a much more complex relationship. The two-organization nonprofit component remains, but the individual components seen among publicly-held corporations and foundations are now connected into the larger component. In addition, four other organizations (one nonprofit and three publicly-held corporations) that were previously unconnected are now linked together through other types of organizations. For example, no board members from Kelly Services Inc. sit on the boards of other publicly-held corporations, but one Kelly Services board member does sit on the board of the Community Foundation, while another sits on the board of the United Way. For this larger network, there are four central organizations – the DSO, the DIA, and the Community Foundation as before, but now also the United Way, due both to the number of ties it has to publicly-held corporations and foundations as well as to the number of its board members serving on multiple boards.

Figure 4 – Networks among all organizations



The centrality scores shown in Table 2 confirm the visual importance of the DSO, the DIA, the Community Foundation, and the United Way – each is connected to over half the other organizations in the network. Furthermore, the DIA and the Community Foundation also sit on 25% of the communication pathways between the other organizations. Together, these four organizations – two of which are focused on the arts and two of which are focused on the broader quality of life and economic conditions in the region – can be primary actors in regional development by virtue of their connectedness and importance. Information on methods of building economic development in the region could be easily developed in and communicated through these organizations to the larger community.

Table 2 – Centrality scores of organizations in the largest component

	Degree	Betweenness
Largest Publicly-Held Corporations		
Ford Motor Co.	0.400	0.019
Delphi Holdings LLP	0.100	0.000
TRW Automotive Holdings Corp.	0.067	0.000
Masco Corp.	0.367	0.078
DTE Energy	0.367	0.030
ArvinMeritor Inc.	0.067	0.000

Federal-Mogul Corp.	0.100	0.000
Pulte Homes Inc.	0.067	0.000
Kelly Services	0.100	0.000
Valassis Communications Inc.	0.267	0.067
Largest Nonprofits		
The Henry Ford	0.400	0.039
Barbara Ann Karmanos Cancer Institute	0.267	0.001
Salvation Army-Eastern Michigan	0.100	0.000
United Way for Southeastern Michigan	0.533	0.111
Hospice of Michigan Inc.	0.100	0.000
Detroit Symphony Orchestra	0.567	0.147
Detroit Institute of the Arts	0.700	0.251
Jewish Federation of Metropolitan Detroit	0.133	0.000
Gleaners Community Food Bank	0.067	0.000
Largest Foundations		
Kresge Foundation	0.100	0.000
Community Foundation for Southeast Michigan	0.700	0.251
United Jewish Foundation	0.333	0.026
Skillman Foundation	0.333	0.006
Max M. & Marjorie S. Fisher Foundation	0.167	0.000
McGregor Fund	0.133	0.000
Richard & Jane Manoogian Foundation	0.200	0.000
General Motors Foundation	0.133	0.067
Hudson-Webber Foundation	0.267	0.002
Fred A. & Barbara M. Erb Family Foundation	0.167	0.002
Edsel & Eleanor Ford House	0.200	0.000
Manoogian Simone Foundation	0.200	0.000

SURVEY OF ECONOMIC DEVELOPMENT POLICYMAKERS

The second method of social network analysis used in this study, a survey, analyzes how individuals involved in economic development in the Detroit region actually view their interactions. Beyond simply what networks *may* exist in the region, the survey looks at the networks that *do* exist and which actors and organizations communicate with one another.

As part of a previous project on regional economic development, interviewees were asked to name the ten to fifteen most important individuals with regard to economic development policy in the region. Nine individuals volunteered a total of 54 names; see Table 3 for

information on the individuals identified. In all but 13 cases, the individual identified was the highest-ranking staff member at an organization; if the person was not the president or CEO, he or she usually was a vice president or another high-ranking staffer. Several of the named individuals were elected officials. Importantly for Detroit, none of the individuals identified were representatives from the Big Three automobile companies, their supplies, or the unions representing their employees.

Table 3 – Most important individuals in economic development

Sector-type	Number identified	Number also on board lists
Private business/corporation	11	6 (of whom 3 serve on multiple boards)
Education	11	1
Economic development-specific	11	0
Nonprofit (including foundations)	10	2
Government	9	0
Health care	2	0

All identified individuals except three (who had retired or transitioned to substantially different fields) were then sent an email with a link to an online survey on economic development. The survey included eight questions relating to economic development in the region. On the first pages, the individuals named previously were listed, and respondents were asked to indicate the frequency (frequently, infrequently, or no interaction) they communicated with each as well as identify who, in their view, are the ten most influential individuals in economic development policy; an additional question asked them to identify important individuals not included on the list.⁵ Other questions concerned the respondents' views on economic development networks and interactions in the region and their personal work experience in the field. Respondents were informed that their personal information would be kept confidential, and they would only be identified by their sector.

⁵ Twenty-three additional individuals were identified as important to economic development in the Detroit region.

After follow-up emails and telephone calls, the survey ended with a response rate of 45.1% (23 individuals) of the original contacts.⁶ Table 4 provides a breakdown of respondents by sector type. All of the respondents had worked on economic development in the region for at least two years, with 17 respondents (74.0%) working in the field for more than ten years. In addition, 18 respondents (78.3%) had experience working on economic development policy in the region in sectors other than the one in which they were currently employed. Each of the four counties considered as part of the Detroit region in this paper were also represented by survey respondents (although all organizations located in Wayne County were within the city of Detroit), while some of the respondents' organizations operated in multiple counties; a few of the respondents also worked on economic development policy at the state level but, due to Detroit's role in the state's economy, were considered influential in the region's economic condition. The survey was analyzed using UCINET 6.0 (Borgatti, Everett & Freeman, 1999) and NetDraw.

⁶ In one case, an individual contacted to complete the survey had left the organization; the successor in that position completed the survey instead. In another case, the survey request was forwarded to other members of the staff at one of organizations. None of these responses were included in the analysis.

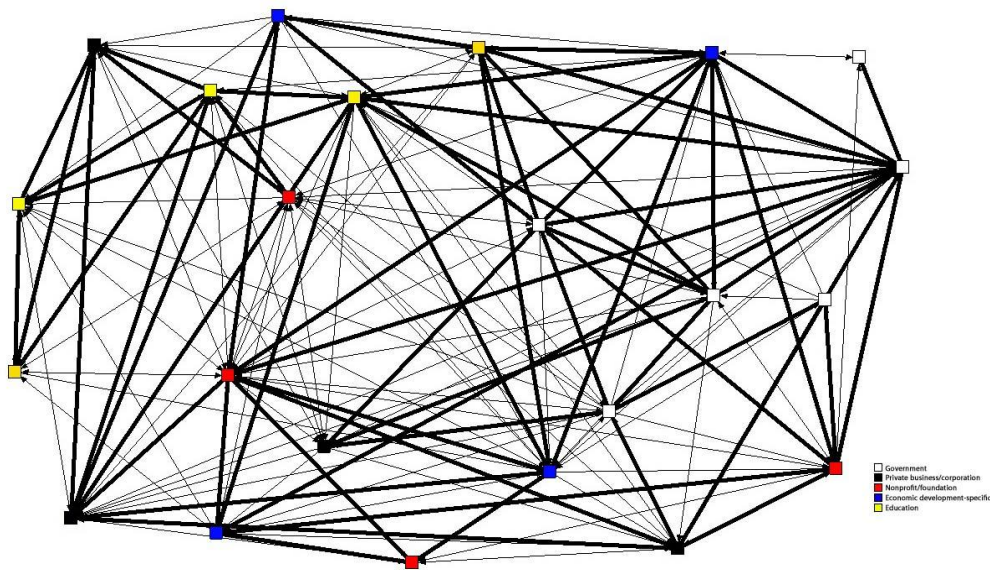
Table 4 – Survey respondents

Sector-type	Number of respondents
Economic development-specific	5
Government	5
Education	5
Private business/corporation	4
Nonprofit (including foundations)	4

Findings

The reported frequencies of communication between the survey respondents show a relatively linked network visually, as shown in Figure 5. Each square on the graph represents a respondent and is color-coded to note in which sector the individual works; lines between the individuals represent their self-reported frequency of communications, with thin lines denoting infrequent communications and thick lines representing frequent communications. Arrows indicate the direction of the relationship.⁷

Figure 5 – Networks among survey respondents by sector



Although in some cases a respondent may be easily identified as not particularly integrated into the network, such as the government respondent in the upper-right corner that

⁷ In cases where the respondent did not indicate their frequency of communication with another respondent, the default relationship was no interaction.

only has three relationships with the other respondents, in this network it can be difficult to discern information about the various relationships and the roles of the different actors.

Measuring the density of the network is one way to evaluate the connectedness of the relationships – the density among survey respondents only 0.4723, while the density among all individuals listed in the survey (including those who did not respond) is 0.3450, which is greater than any of the densities found in the interlocking directorates.⁸ While this higher density might seem self-evident since these individuals are believed to be working toward the same general goal of economic development, they are likely also focused on other objectives, such as educational development of students or wider political aims.

Another way to do examine the relationships in a network is through measures of centrality, as shown in Table 5. In a directed graph such as this network, indegree centrality refers to the communications directed at a specific actor, while outdegree centrality identifies the communications an actor directs toward others. (Once again, frequency of communications is not a factor in these measurements.)

⁸ This measurement of density is only concerned with whether each pair of actors communicate, not the frequency of communications. Reid and Smith (2009) find a density of 0.04 among 174 individuals involved in economic development in the Toledo MSA. Their method of selecting survey participants differs from that used in this analysis.

Table 5 – Centrality of survey respondents

Sector	Outdegree	Indegree	Betweenness
Nonprofit	0.864	0.955	0.113
Nonprofit	0.682	0.591	0.038
Nonprofit	0.500	0.545	0.037
Nonprofit	0.318	0.318	0.003
Government	0.773	0.727	0.078
Government	0.773	0.500	0.033
Government	0.636	0.500	0.013
Government	0.591	0.545	0.015
Government	0.409	0.182	0.001
Government	0.136	0.182	0.000
Economic development	0.636	0.818	0.068
Economic development	0.500	0.636	0.037
Economic development	0.500	0.500	0.022
Economic development	0.455	0.273	0.006
Education	0.727	0.682	0.047
Education	0.455	0.455	0.008
Education	0.409	0.545	0.012
Education	0.364	0.500	0.006
Education	0.364	0.318	0.004
Business	0.545	0.409	0.009
Business	0.500	0.682	0.036
Business	0.455	0.409	0.012
Business	0.318	0.636	0.010

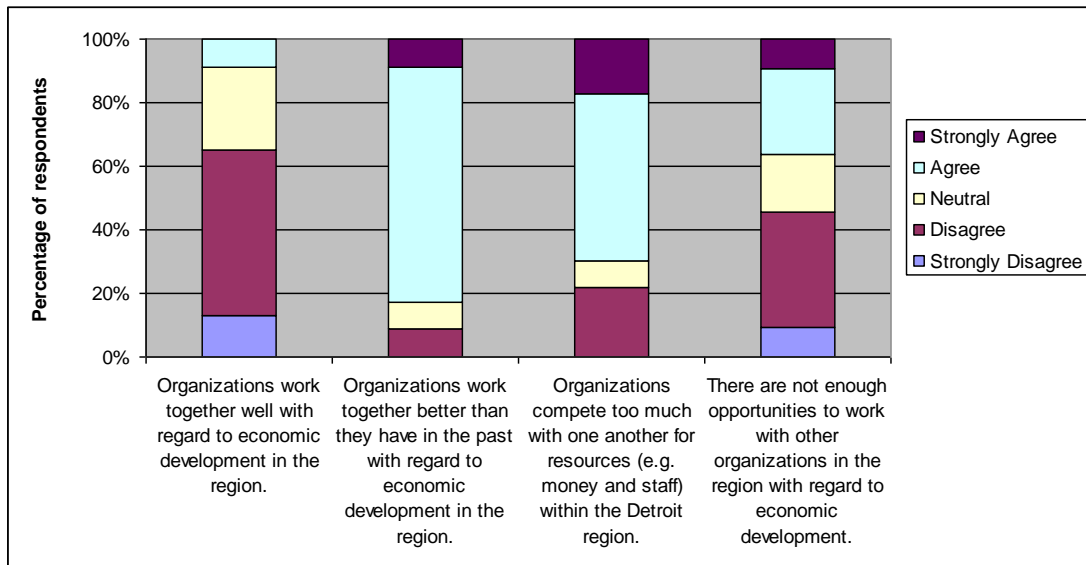
In this network, most of the communications are directed at and come from an actor at a nonprofit organization deeply involved in economic development and other issues. The actor with the lowest indegree and outdegree centrality is an employee of a local government in the region (and another local government employee has the same low level of outdegree centrality). However, using degree centrality does not provide any firm conclusions about the importance of the various sectors with regard to economic development in Detroit, since each sector includes individuals with either high or low values of degree centrality. With regard to betweenness centrality, once again, a local government official has the lowest betweenness centrality score (the same individual, in fact, who ranked lowest on both indegree and outdegree centrality), while the individual at the nonprofit organization deeply involved in economic development in

the region had the highest measure of betweenness. Interestingly, survey respondents who work in the business sector tend to rank relatively low on all measures of centrality, and thus low on measures of importance in the network; the education sector also tends to rank low on measures of importance, but generally ranks higher than the business sector.

DISCUSSION ON NETWORKS IN DETROIT

The city of Detroit has undergone severe stress to its local economy, which also affects its region as a whole. There are a number of attempts in the region – working across counties and across sectors – to build collaborative efforts to strengthen the regional – as opposed to one city’s or county’s – economy. Indeed, as shown in Figure 6, survey respondents overwhelmingly supported the statement that organizations are working better together now than in the past, with 83% of respondents agreeing or strongly agreeing. However, there are a number of difficulties that organizations must overcome to work together successfully, and large majorities disagreed or strongly disagreed with the statement that organizations work well together with regard to economic development in the region, and agreed or strongly agreed that organizations compete too much for resources in the Detroit region. There were a variety of reasons given by respondents for these negative feelings, with the political divide between jurisdictions including the divide between the city of Detroit and its suburbs being mentioned.

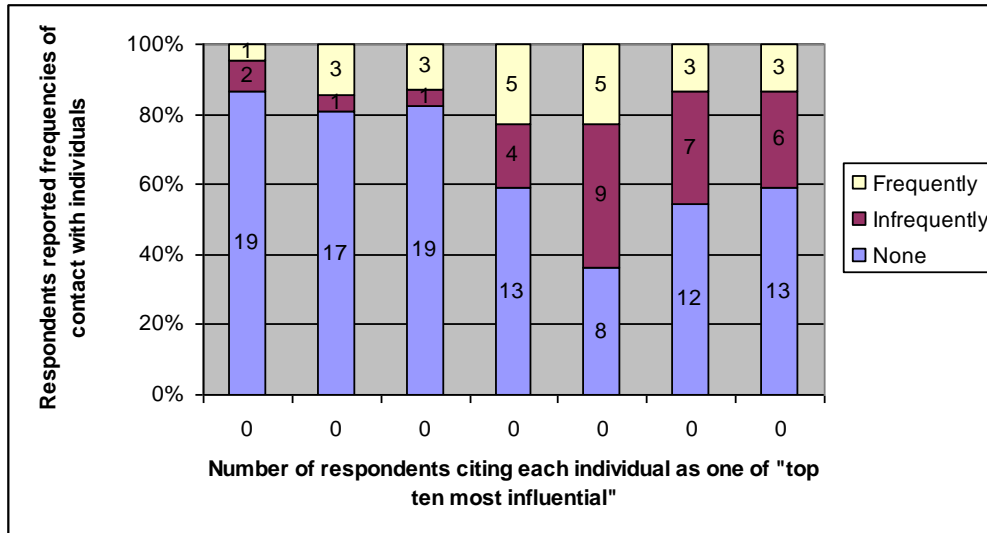
Figure 6 – Organizational collaboration



One aid to building such efforts is the personal relationships among individuals operating in various roles in economic development policymaking in the region. Social network analysis describes personal relationships among actors in regional economic development; collaborative efforts among organizations may then be developed based on these relationships. The results of this study show that, while there are very little connections among board members of different organizations, there are more connections among the people identified as influential in economic development policymaking.

However, even in this latter conclusion, there are still noticeable holes where people originally named as important in economic development communicate very little with the other survey respondents. In fact, individuals who were not named as among the ten most influential by survey respondents (but who are still considered important to the region’s economic development) generally do not communicate or communicate infrequently with the other respondents, as shown in Figure 7.

Figure 7 – Least influential individuals



Role of the automobile industry and unions in Detroit’s regional economic development

One important issue of note that comes out of both the board interlocks and the survey results is the small role played by the traditional powers in the Detroit region – the automobile companies and the unions. There are a number of methodological reasons for the limited inclusion of these types of organizations in the board interlocks analysis. Of the Big Three automobile companies, at the time of the publication of the Crain’s Lists, Chrysler was owned by a private equity company while General Motors had filed for bankruptcy. Unions would not be included in the board interlocks analysis because they were not among the organization types studied (which this would not be as important a concern in cities not so historically dominated by private-sector unions). So while there were methodological reasons for these industries’ absence from the board interlocks discussion, even the one Big Three automaker included – Ford Motor Co. – did not play a more important role than any of the other publicly-held corporations studied.

In addition, only one individual directly involved with the automobile industry (including the suppliers) or the unions were identified during the survey process – either in the initial information gathering or through the survey itself – as an important policymaker with respect to

economic development in the region. It could be that these organizations prefer to concentrate on the health of the industry in general or their individual corporations specifically, rather than the general economic health of the region, but their limited involvement may signal a shift in the region's leadership on economic development policy, perhaps to those working more in education and technology transfer (similar to the results de Socio [2009] found in Ohio).

CONCLUSION

Social network analysis has become a popular method across disciplines for a number of reasons, including the contributions it makes to communication and information sharing. It demonstrates the ways that information can flow among network participants and identifies important actors. Although its use in the field of economic development has been limited so far, social network analysis can provide readily useful information for urban policymakers dealing with the challenges of troubled local economies.

Two of the most popular methods of social network analysis are interlocking directorates and surveys of network participants. By detailing the connections that exist among board members – who usually wield significant influence and power in a community – analysts using interlocking directorates provide information on the communication pathways through which new ideas can be transmitted and implemented in a community. In comparison, surveys of personal relationships among network participants provide information on the actual relationships that exist in a network and can offer more detailed information on who talks to whom, how frequently, and about which topics.

Both interlocking directorates and surveys have benefits and drawbacks with regard to studying social networks. As noted above, surveys tend to provide more information on the

networks that do exist and allow an analyst to make more conclusions about the role of the network than when the network is analyzed through directorates; however, surveys can be time- and resource-intensive and, if network members are not willing participate, might not provide an accurate picture of the network. Both interlocking directorates and surveys also require conclusions about the characteristics of the network prior to official study – interlocking directorates operate on the assumption that most of the actors in a network are involved in organizations with visible boards of directors (such as publicly-held corporations or non-profits), so actors who are not members of these types of boards will not be included, while, in order to conduct a survey, an analyst has to determine who is in the network in order to decide whom to survey. It may be useful for new studies of networks to start with interlocking directorates in order to identify the most connected individuals in the region or industry, then, after making contact with those individuals, proceed to a snowball survey of network members.

Next steps

An updated version of the survey will be sent to individuals named by respondents as important to economic development in the region but not included in the initial survey; in addition, those individuals who responded to the initial survey will be asked their frequency of communications with these newly-identified individuals.⁹ While beyond the scope of this project, it also would be beneficial to conduct interviews among those surveyed and those identified as interlocked board members to gain their thoughts on economic development networks in the region (as well as to support or discount the theory of interlocking directorates). Similar studies could also be conducted in other Rust Belt cities to see if the networks in the Detroit region are consistent among troubled metropolitan regions. As local governments will

⁹ Non-respondents to the initial survey will also be contacted once more and asked to complete the full survey.

continue to be asked to do more with less, networks will remain an oft-utilized method of accomplishing public policy goals – knowing how such networks operate and who participates in them will be important in increasing their value for economic development.

APPENDIX: ORGANIZATIONS STUDIED FOR INTERLOCKING DIRECTORATES

Organization	Location	Number of Board Members
Largest Publicly-Held Companies (2008)		
Ford Motor Co.	Dearborn	14 [†]
Delphi Holdings LLP	Troy	10
TRW Automotive Holdings Corp.	Livonia	9 [†]
Lear Corp.	Southfield	9
Penske Automotive Group Inc.	Bloomfield Hills	11
Masco Corp.	Taylor	9 [†]
Visteon Corp.	Van Buren Township	9
DTE Energy	Detroit	15 [†]
ArvinMeritor Inc.	Troy	9 [†]
Federal-Mogul Corp.	Southfield	10 [†]
Pulte Homes Inc.	Bloomfield Hills	11
Kelly Services	Troy	10
BorgWarner Inc.	Auburn Hills	12
Borders Group Inc.	Ann Arbor	8
Valassis Communications Inc.	Livonia	10 [†]
Largest Nonprofits (2008)		
Macomb-Oakland Regional Center Inc.	Clinton Township	9
The Henry Ford	Dearborn	20 [†]
NSF International	Ann Arbor	9 [†]
Community Living Services Inc.	Wayne	13
Barbara Ann Karmanos Cancer Institute	Detroit	20 [†]
Lutheran Social Services of Michigan	Detroit	13
Salvation Army-Eastern Michigan	Southfield	47 [†]
United Way for Southeastern Michigan	Detroit	34 [†]
Hospice of Michigan Inc.	Detroit	21 [†]
Detroit Symphony Orchestra	Detroit	89 [†]
Detroit Institute of the Arts	Detroit	96 [†]
Altarum Institute	Ann Arbor	13
Jewish Federation of Metropolitan Detroit	Bloomfield Hills	95 [†]
Presbyterian Villages of Michigan	Southfield	21 [†]
Gleaners Community Food Bank	Detroit	16
Largest Foundations (2008)		
Kresge Foundation	Troy	12 [†]
Community Foundation for Southeast Michigan	Detroit	56 [†]
United Jewish Foundation (2009)	Bloomfield Hills	85 [†]
Skillman Foundation	Detroit	14 [†]
Max M. & Marjorie S. Fisher Foundation	Southfield	6 [†]
McGregor Fund	Detroit	8 [†]

Richard & Jane Manoogian Foundation (2009)	Taylor	3 [‡]
Herrick Foundation (2009)	Detroit	3
General Motors Foundation (2009)	Detroit	21 [‡]
Hudson-Webber Foundation	Detroit	13 [‡]
Fred A. & Barbara M. Erb Family Foundation	Birmingham	7 [‡]
Carls Foundations	Detroit	5
Edsel & Eleanor Ford House (2009)	Grosse Pointe Shores	12 [‡]
Manoogian Simone Foundation (2009)	Taylor	4
Alex & Marie Manoogian Foundation (2009)	Taylor	2 [‡]

[‡] Indicates a member served on more than one listed board.

Sources: *Crain's Detroit Business* (2009). Corporate board lists were obtained from Hoover's Company Records on November 3, 2010. Other board lists were obtained via the organization's website, via email, or on IRS Form 990 on November 3 and 4, 2010. Unless otherwise indicated, board lists are current as of November 3 or 4, 2010.

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