Southern Illinois University Carbondale
OpenSIUC

Working Papers | Political Networks Paper Archive

6-12-2009

All Politics Is (Not) Local: The Structure of Lobbying in North Carolina

John C. Scott
University of North Carolina at Chapel Hill, jcscott@email.unc.edu

Jeff Summerlin-Long
University of North Carolina at Chapel Hill, summerlinlong@gmail.com

Follow this and additional works at: http://opensiuc.lib.siu.edu/pn_wp

Recommended Citation
Scott, John C. and Summerlin-Long, Jeff, "All Politics Is (Not) Local: The Structure of Lobbying in North Carolina" (2009). *Working Papers.* Paper 25.
http://opensiuc.lib.siu.edu/pn_wp/25

This Article is brought to you for free and open access by the Political Networks Paper Archive at OpenSIUC. It has been accepted for inclusion in Working Papers by an authorized administrator of OpenSIUC. For more information, please contact jnabe@lib.siu.edu.

All Politics Is (Not) Local: The Structure of Lobbying in North Carolina

John C. Scott, JD, PhD
Department of Public Policy, University of North Carolina at Chapel Hill

Jeff Summerlin-Long, JD
Department of Public Policy, University of North Carolina at Chapel Hill

A Paper Presented at the Harvard Political Networks Conference
Cambridge, MA
June 12, 2009

Abstract: As North Carolina becomes more enmeshed in the national and global economy, the local political context might reflect more extra-local ties. Lobbying organizations in the state have significant ties to out-of-state firms, particularly those with offices in Washington, D.C. Examining the structure of lobbying relationships in one state, North Carolina, in terms of both lobbyist-to-client relations and inter-lobbyist relations such as through common clients, this paper assesses the level of relations between local and out-of-state firms. Using social network and standard statistical analysis as well as lobbying data from North Carolina, adjoining states, and federal lobbying data from the U.S. Senate, this project is not only focused on the state level but also on relations between local and national firms. To the best of our knowledge, little research has explored the connections between special interests represented at both the national and state levels. We find that a significant number of lobbying organizations engage in lobbying at the federal level as well as the state level. Moreover, the structure of relations among lobbying organizations appear to exhibit a truncated scale-free distribution of ties in which a small number of organizations garner the majority of ties. Organizations that represent other organizations (as opposed to representing themselves) and that operate at the federal and state levels seem to be the critical nodes in terms of the structure of the overall network.

Introduction and Overview

As North Carolina becomes more enmeshed in the national and global economy, the political context also might reflect more extra-local ties. Lobbying organizations in Raleigh have significant ties to out-of-state firms, particularly those with offices in Washington, D.C., and some consolidation among lobbying firms in Raleigh has occurred recently. Examining the structure of lobbying relationships in North Carolina in terms of both lobbyist-to-client relations and inter-lobbyist relations (such as through common clients), this project would assess the level of relations between local and out-of-state firms, particularly those active in Washington, D.C. Using social network and standard statistical analysis, this project would connect different conceptions of political influence with the changing face of lobbying in North Carolina.

While the ostensible topic concerns state and federal lobbying, this paper is also about time and structure. If social network methods permit us to take a relational view of political life, then we have to ask questions such as: How did this structure of relations come about? What does it look like? And more importantly, what does it mean for political activity? In addressing these questions, we have to consider the role of time. Relationships build over time as actors interact and develop trust, norms, and common perspectives. So in this paper, we are concerned with not just with presence or absence of relations between state-level and federal-level lobbying, but also with the explanations and interpretations of such relations.

This paper begins by providing a review of prior research, and the review has three foci. First, we begin by discussing the importance of studying political activity at the state and local level, particularly the interrelationships among interest groups across jurisdictions. Second, we summarize prior political work from a social network perspective, which provides a rationale for

examining politics from a relational perspective. The review of prior literature provides a foundation for our arguments, which suggest that extra-local ties undergird the structure of relations among lobbying organizations. After a discussion of the data sources and methods, we present our results. We conclude this paper by discussing future work and extensions as well as connecting this project to the concept of political influence.

Prior Research

The structure of political activity has been a focus of social scientists for at least a couple of decades (Laumann and Knoke 1987). However, as Baumgartner and Leech (1998) noted, little work has been done at the state level. This project is not only focused on the state level but also on relations between local and national firms. To the best of our knowledge, little research has explored the connections between interest groups represented at both the national and state levels.

Prior work has not found a great deal of nationalization in state interest group communities. Wolak, Newmark, McNoldy, Lowery, and Gray (2002) created a dataset of state-level lobbying registrations across all 50 states in 1997. They found that while the lobbying techniques show some convergence, communities of special interest groups remain predominantly local.

Similarly, de Figueiredo (2004) and Boehmke (2008) model the variations of state-level interest group activity. In Boehmke's (2008) study, he notes that states that permit direct initiatives have significantly larger interest group populations. Evidence supports the proposed mechanism that state-level initiatives generate mobilization of previously dormant groups, which are usually local in nature. This result might obtain because initiatives are typically state-specific, they foster larger interest group communities that create openings for niche groups,

and as initiatives typically create groups with a short-term focus, higher rates of group exit create openings for new groups.

Lowery and Gray (1996) have used a population ecology framework to measure and model the growth and development of interest group communities at the state level. Two ideas from the population ecology literature are especially relevant: the density of interest group communities and the diversity of such communities.

Lowery and Gray's work also points the way to thinking about connecting micro-level processes (such as mobilization and lobbying techniques) with macro-level structures (such as group density). Specifically, contextual factors from the community level may affect the behavior of policy entrepreneurs who would found an interest group organization or help form a coalition. For example, an interest group might make use of multiple lobbying techniques when the interest group environment is crowded in order to stand out from the crowd of lobbyists and capture the attention of policymakers. A lower density environment in a policy domain may also encourage new group formation when issues in that domain become salient or rise up the policy agenda.

However, there is evidence that suggests significant linkages between the federal and state levels. Baumgartner, Gray, and Lowery (2008) model how federal policy activity stimulates lobbying activity in the states, and their analysis finds that "strong linkages exist between federal policy activities and the subsequent activities of groups in the states" (2008: 13). They document that the pathways that connect federal and state-level policy activity are many and distinct. For example, they find evidence that federal and state policy actors are responding contemporaneously and directly to ongoing events. They also find a substitution effect in which

congressional hearings in one year dampen or stimulate state lobbying registrations in another year, the effect of dampening or stimulation depending both on the kind of state legislature and policy area. However, the "precise mechanisms and timing associated with these factors should be the object of further research" (2008: 13).

In this project, we wish to bridge the prior research discussed above to an entirely separate literature on social networks that provides a relational perspective. A relational perspective stressing social network analysis may be useful in getting at social reality in "dynamic, continuous, and processual terms" (Emirbayer 1997: 281).[1] Social network theory and analysis has a long tradition in political research. For example, the resource mobilization approach uses the patterned links among interest groups to show the structure coalitions, cleavages, and competitive relations among such groups and how political actors are linked to resources (Laumann and Knoke 1987; Wellman 1988; Knoke 1990).

The embeddedness perspective in network analysis "stresses the role of concrete personal relations and structures (or 'networks') of such relations in generating trust and discouraging malfeasance" (Granovetter 1985: 490). "'Embeddedness' refers to the fact that economic action and outcomes, like all social action and outcomes, are affected by actors' dyadic (pair-wise) relations and by the structure of the overall network of relations." (Granovetter 1992: 34). In terms of dyadic or relational embeddedness, reciprocating ties are generally asymmetric, differing in content and intensity, but ties are usually reciprocated in a generalized

[1] "Instead of society, I thus use the term relational setting….As such, it is a relational matrix, similar to a social network" (Somers 1994: 72).

way (Wellman 1988). Ties link network members indirectly as well as directly such that any tie between two actors must be defined within the context of the overall network.[2]

Relational embeddedness typically has direct effects on individual action and leads to trust. Information from a trusted source is cheaper, richer, more detailed, and known to be accurate precisely because continuing relations often become overlaid with social content that carries strong expectations of trust and abstention from opportunism (Granovetter 1985). Embedded exchanges make expectations more predictable and reduce monitoring costs; 'thick' information exchange of tacit and proprietary know-how; and joint problem-solving arrangements that stress flexibility and feedback (Uzzi 1997).

In contrast, structural embeddedness typically has more subtle and less direct effects on action. Multiple independent paths that link pairs of structurally cohesive actors help information flow among organizations in a way that facilitates politically similar activity (Moody and White 2003).[3] Structural embeddedness, which arises from sharing one or more foci of activity with others, is less under the control of individuals and is more stable than the dyad (Feld 1997).

Building on these different theoretical threads, we argue that a policy community is characterized by durable and informal relationships of the participating lobbying organizations, but the strength of the relationship is a property of the group rather than the constituent organizations (Moody and White 2003). Lobbying organizations will vary in terms of their

[2] "In practice, many ties are with network members whom one does not like and with whom one would not voluntarily form a twosome. Such ties are involuntary in that they come as part of the network membership package" (Wellman 1988: 41).

[3] "In saying this I draw on the principle that to the extent that a dyad's mutual contacts are connected to one another, there is more efficient information spread about what members of the pair are doing, and thus better ability to shape that behavior. Such cohesive groups are better not only at spreading information, but also at generating normative, symbolic, and cultural structures that affect our behavior" (Granovetter 1992: 35).

specific strength of ties to each other, but the group has a unique level of cohesion that should persist over time.

Moreover, relationships arise out of shared interests such that an increasing number of shared interests contributing to an increasing level of group-wide relationships. Markovsky and Lawler (1994) identify 'reachability' as an essential idea to group embeddedness, that is, we should be able to trace a path from any group member to any other member. As new relations develop out of shared interests, multiple and independent paths between two lobbyists can be traced through the group (Moody and White 2003).

Multiplicity of ties might be expressed in terms of the number of issues or they might consist of different kinds of relations. These relations can be shared issues, common membership in a trade association, jointly participating in a coalition, and a host of other social actions. The point is that as a group becomes more close-knit in nature, ties or relations expand along different dimensions.

But multiplicity of relations might only exist at only one point in time: For example, lobbyists might come together once, and only once, to discuss five legislative areas of interest, and then depart. Therefore, time also becomes part of the equation. When we see the same lobbyists working on a number of shared issues over time, we could say that they are occupy a set of positions within a web of close-knit relationships. Therefore, I would expect that those lobbyists who operate in one policy area over time would increasingly develop a stable set of shared interests with other, similarly situated lobbyists relative to lobbyists who do not work consistently in a policy area over time.

Our Arguments

We build on prior research just discussed to consider three foci with respect to state-level lobbying. First, while much prior work has considered the overlap of interest groups among states, we are also interested in the overlap in interest group activity between the federal and state levels of government. Despite prior work on inter-state overlap among interest groups, we might expect a higher level of overlap between state and federal levels than among individual states for at least a couple of reasons. Law firms are consolidating and extending their reach across the nation and, indeed, across the world (Warf 2001). If this is the case, it is possible that substantive interests remain distinctly local while the practice of interest group representation becomes increasingly extra-local. In addition, substantive interest groups may be predominantly local or regional in nature but these groups might operate collectively at the federal level. Thus, while North Carolina and Virginia may not have much overlap in terms of substantive interests, each of these interests is operating concurrently at the federal level as well as in the respective state. This speaks to a multilevel of focus of activity within each state but not across state borders.

A second focus of this paper is on the topology of the interest group space at the state level and possible connections between this particular topology and federal-level representation. Just a cursory examination of the state-level data for this paper suggests a scale-free network in which certain lobbying firms, individual lobbyists, and principals hold the bulk of relationships. If this is indeed the case, what accounts for this distribution? If a new principal is seeking representation, for example, what kind of lobbying organization would it like to hire? One possible explanation (just to take the case of lobbying organizations) is that certain local firms

have over time built up a level of expertise over policy and process, a certain reputation for influence, and a number of clients or principals that affirm the reputations for expertise and influence. As noted in other fields, when status and reputation strongly influence the choices of relationships, scale-free networks are likely to form (Pollock 2004; Aldrich and Kim 2007). Another possible explanation is that lobbying firms that operate at both the federal and state levels may have greater resources than purely local lobbying firms, and a greater level of resources may enable more effective lobbying techniques. National lobbying firms also may have a greater supply of clients from which to generate business at the state level. In either case, we expect that principals that are seeking representation will hire the lobbying organization that has the greatest level of existing resources/reputation/ties such that lobbying organizations with more pre-existing ties to principals are more likely to attract new clients (subject to capacity). In social network terms, we expect a process of preferential attachment. Our argument here is that while state interest group communities remain parochial (Wolak et al. 2002), a growing role for nationally-focused organizations can be found if we consider the structure of relationships within an interest group community.

Finally, a third focus for this project is the question of community. Can we characterize the particular shape and distribution of relationships as a community? If so, what does that mean for the practice of politics at the state level? Prior work by Gray and Lowery (1996) discusses community in terms of density and diversity of interests, but this project centers the discussion of community on the idea of relationships. Under our perspective, relationships that are durable lead to community stability. Durable relationships within a community enable enhanced information flow among community members and an increased likelihood of joint

and coordinated activity. How does this process work? Durable relationships within a community arise out of continued interaction over time and reputation for effectiveness. Those interest groups that are present more often and have more multilevel interests are more likely to provide the foundation for durable relationships. We argue that a network of durable and dense relationships undergirds a community of interest groups at the state level.[4]

Data and Methods

Conceptual Approach: This project proposes to use multiple methods and data sources in performing the research. Because our focus is on relations within a community of policy actors, we rely primarily on social network concepts and methods. However, statistical procedures are used to assess the significance of associations. The statistical procedures are both the standard statistical methods as well as a new modeling method for longitudinal network data. In using multiple methods, we hope to provide as complete a picture of a state-level lobbying community as the limited data will allow.

In addition, this study is multilevel in nature. We have data on principal organizations (organizations that hire or employ lobbyists), lobbying organizations (organizations that hire themselves to principals or that are self-representing), and individual lobbyists. The long-term aim of this project is to assess the community of lobbying in North Carolina on each of these levels. However, this version of the paper focuses primarily on lobbying organizations.

[4] A planned contribution of this project is a joint emphasis on interests and representation or lobbying. This project will explore the relationship between the spread of interests in a community and the nature of representation at the organizational level. What connections might there be? Gray and Lowery (1996) discuss niches in a community of interests, and we might think about niches in representation connected to niches in interests. Thus, are lobbying relations stable, and if so, are stable relations connected to well-developed issue specialization? Per Gray and Lowery (1996: 29), is 'over-specialization' associated with a lack of relations? To answer these questions, we will be coding variables for types of interests, but we have not done so at this stage of the project.

Finally, we have collected data on organizations over time. Publicly available data from the state of North Carolina runs from 1993 to 2008 while federal level lobbying data spans 1999 through 2008. As noted above, this longitudinal data enables us to explore the durable quality of relationships within the community of lobbyists.

Data: In terms of data, our primary source is lobbyist registration data from the North Carolina Secretary of State. Lobbyists – individuals and organizations – are required to register with the Secretary of State and file periodic reports. Periodic reports must identify clients that hire lobbyists as well as the amount paid for lobbying services. These reports are publicly available,[5] but they do require data manipulation and recoding. Reports were downloaded for the following time periods: the two year periods of 1993-94; 1995-96; 1997-98; 1999-00; 2001-02; 2003-04; 2005-06. Beginning in 2007, reporting requirements switched to annual reporting such that we have data for 2007 and 2008.[6]

In addition, this project used publicly available disclosure reports that were filed by lobbying organizations on an annual basis with the U.S. Congress over a ten-year period (1999-2008).[7] We collected reports only for registered lobbyists such that the study excludes organizations that are represented by registered lobbyists and do not have lobbyists themselves (what we in this paper are calling 'principals') or that are not required to register.[8]

---

[5] http://www.secretary.state.nc.us/lobbyists/thepage.aspx.

[6] We understand that the time periods do not completely match up in terms of duration, and we hope to remedy this disjuncture in future iterations of the project. However, we do not believe that different durations detracts from the main points of this paper.

[7] Lobbying for registration purposes is relatively narrow as it only includes informal contacts between lobbyists and policy makers (Furlong 1998). Also, because of expenditure minimums, groups relying on volunteers, those active only for a short time, or those active on a single issue may not be required to register (Baumgartner and Leech 2000).

[8] The website for the federal lobbyist registration reports is http://sopr.senate.gov/.

Variables: Dependent variables are centered on participation and position within the lobbying community in North Carolina. Aside from descriptive measures of the prevalence in North Carolina of lobbying organizations that lobby at the federal level, we use social network analysis to create variables indicating the position of organizations within the lobbying community. One network-wide indicator is the presence of the 'giant' or main component. Because actors are not always connected to every other actor in a network, we often observe several clusters or components of connected actors. In this analysis, we focus on the largest or main component of connected lobbying firms. In our descriptive analysis, we will be looking these main components.

A second set of dependent variables touch on how central is an actor in the network. We use three measures, degree centrality, closeness centrality, and betweeness centrality. Degree centrality for this paper is the number of ties to an actor divided by the maximum number of possible ties (this referred to as normalized degree centrality). Closeness centrality is calculated for each actor by looking at how 'far' that actor is from everybody else in the network. The farness of an actor is the sum of the lengths of the ties to every other actor. The reciprocal of this farness measure is closeness centrality. The normalized closeness centrality of an actor is the reciprocal of farness divided by the minimum possible farness expressed as a percentage. Betweeness centrality captures the number of paths passing through a particular actor. Specifically, betweeness is therefore a measure of the number of times an actor occupies a particular path that connects two other actors.[9]

[9] "The normalized betweenness centrality is the betweenness divided by the maximum possible betweenness expressed as a percentage" (Borgatti, Everrett, and Freeman 2002).

In terms of key explanatory variables, we code lobbying firms according to lobbying activity at the federal level. To determine this, we employed some rules. Trade or membership organizations that were state-wide chapters but which has a national-level body would count as lobbying at the federal level if the national body was registered at the federal level. For example, AARP and the North Carolina Medical Society lobby in North Carolina, but their national-level counterparts (AARP and the American Medical Association, respectively) have a presence in Washington. Therefore, AARP-NC and the North Carolina Medical Society are coded as being active at the federal level. A sub-state affiliate (e.g., the City of Charlotte Chamber of Commerce) would not be coded as lobbying at the federal level despite the existence of a national level entity (e.g., the U.S. Chamber of Commerce).

We also include attributes of the organization. In particular, two explanatory variables are counts of the number of years that an organization is active in both North Carolina and Washington, D.C. A variable for 'for-hire' status is also used. For-hire status is indicated for any time period when a lobbying organization is representing another organization.

Methods: Our plan of analysis covers several steps. We first provide descriptive statistics for the community of lobbying organizations in North Carolina and correlations between key variables. We then provide results from social network analysis that gives an exposition of the power law properties, if any, of the different levels of actors.

In addition, social network analysis will be used to create some of the variables of interest, as discussed above. Social network analysis will also be used to illustrate the pattern of relations among lobbyists, among principals, and the structure of geographic locations of lobbying firms.

For the modeling of longitudinal social network data, we use the actor-oriented statistical network model as expressed in the software program SIENA, which was developed to describe and explain the development of closed networks over time (Snijders, 1995, 1996, 2001, 2005; Snijders & Van Duijn, 1997). The model describes the development of a social network through time as a result of the rational actions of individual actors. Given the restrictions determined by the structure of the network and the distribution of actor and dyadic attributes, the model assumes that actors maximize their individual utility. The models combine random utility models, continuous time Markov models, and simulation (Snijders, 1995).

We have as data a number of adjacency matrices, called $L_{ij}(t)$, in which cell ($_{ij}$) stands for the existence of tie between ego *i* and alter *j*; ego and alter either have a relationship or they have not, and (*t*) denotes the moment in time the collaboration network is observed (in this paper there are three periods of observation). Actors *i* and *j* are in a range from 1 to n (in our case, n = 678 lobbying organizations that are involved in common principal relationships with each other). The individual attributes (i.e., total number of years lobbying in North Carolina, total years lobbying in Washington, and for-hire status) are constant over time.[10]

Each actor maximizes a utility function based on substantive arguments and constructed such that it represents the costs and rewards for an actor to be in a specific state at a certain moment in time. Because the individual utility functions include elements that are not represented in the model by measured variables, this is modeled as a random component. Therefore, the utility function contains statistical parameters that have to be estimated from real observed data.

[10] Covariates may be time-dependent, but we have not finished coding these variables as of the writing of this version of the paper.

For each actor, a set of admissible actions is defined. These actions may refer to relations with the others in the network. In our case, lobbying organizations may start, consolidate, or dissolve an affiliation through a principal with all potential lobbying organization partners. The actors choose their actions according to a random utility model in which the actor chooses among the possible actions with probabilities that are an increasing function of the expected utility as calculated from the variables in the model. These types of models are called discrete choice models. Discrete choice models are models for situations in which the dependent variable is a discrete set of choices, such as, in our case, whether to affiliate with a lobbying organization. In general, the choice of action for actor *i* at time = *t*, a_{it}, from a set of allowed actions *A*, is based on a number of independent variables. If an action can be described as a function of one or more substantive utility arguments, it is assumed that the actor is able to determine the expected effects of future actions. Therefore, each decision is associated with a change in utility, $\Delta U_{it}(a)$. Because the choice of action can also be based on utility arguments that are not explicitly modeled in the utility function and because of measurement and/or specification errors, it is assumed that ego chooses the action that maximizes $\Delta U_{it}(a) + E_{it}(a)$, in which $E_{it}(a)$ is random error term. Under certain conditions on the distribution of $E_{it}(a)$, this leads to the model:

$$P_{it} = \frac{\exp(\Delta U_{it}(a)/\sigma)}{\Sigma^{A}_{a=1} \exp(\Delta U_{it}(a)/\sigma)}$$

This model states that, in case the expected change in utility is approximately the same for all actions, ego's choice is more or less entirely based on pure chance. However, if, compared to other actions, one action is associated with a relatively large increase of expected utility, the probability that ego chooses this specific action is also relatively large.

The model contains unknown parameters that have to be estimated from observed data by a statistical procedure. Because of issues associated with the classical maximum likelihood estimation procedures and testing methods, Snijders (1996) proposed the method of moments and computer simulation. The procedure to analyze and to approximate expected values of relevant statistics, called theta (*Θ*), is based on the recursive Robbins-Monro stochastic approximation method and adapted by Snijders (2001). Because this procedure provides the researcher with estimates of these statistics and its covariance matrix, a test can be applied using

$$t = \Theta\text{-hat}_j / \text{S.E.}(\Theta\text{-hat}_j)$$

in which the standard error (*S.E.*) can directly be obtained from the covariance matrix of the thetas. Snijders (1996, 2005) proposed to use an approximate standard normal distribution.

In summary, we observe the affiliation network of lobbying organizations and collect information regarding a number of fixed and changeable individual and dyadic attributes. However, because we have no information about what happens, we simulate what happens in between the measurement points using the random utility model. The organizational actions that make the network develop from one structure into another are the core of the simulation procedure.[11]

Results

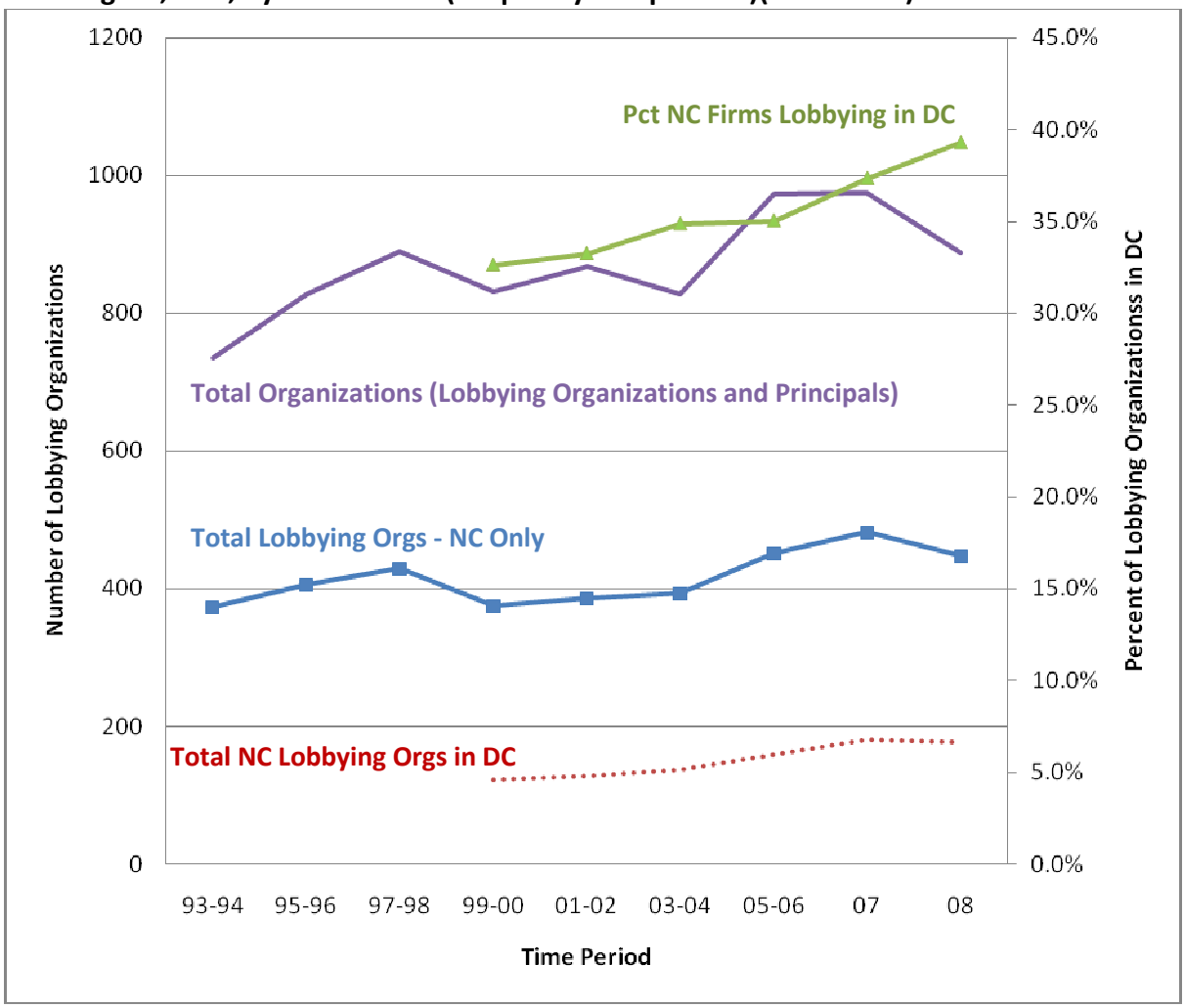
General Description of North Carolina Lobbying: We first provide some numerical and graphical representations of the networks of lobbying firms and hiring principals in North

[11] The software that is used for the estimation is called SIENA, which is part of the network software package STOCNET and can be downloaded for free from http://stat.gamma.rug.nl/siena.html.

Carolina. In terms of numbers, our data includes 2,624 organizations that lobbied or were represented by lobbying organizations in North Carolina over the 1993 through 2008 time period. Of these, 2,292 were principals, and 1,129 were lobbying organizations. The reason that the number of principals and the number of lobbying organizations collectively are larger than for the entire dataset is that many organizations have, at one time or another, been both principals and lobbying organizations. In total, 797 organizations have been in both categories (although not necessarily at the same time).

Of the 1,129 North Carolina lobbying organizations, 339 entities also lobbied at the federal level from 1999 through 2008. The number of North Carolina organizations that lobby at the federal is relatively consistent on a year to year basis. In 1999, the number was 277 but by 2007 the number of North Carolina organizations lobbying in Washington reached 299. Figure 1 below provides a year-by-year picture of the number of lobbying organizations total in North Carolina, the organizations active at the federal level, and the percentage of North Carolina lobbying organizations that are active at the federal level.

Figure 1: Number of Lobbying Organizations in North Carolina Only and in North Carolina and Washington, D.C., by Time Period (frequency and percent)(1993-2008)



In Figure 1 above, the solid purple line indicates the total number of organizations that are registered as either lobbying organizations or principals. In 1993-94, the total number of organizations registered was 735, but this increased to over 900 by the mid-2000s. In addition, the total number of lobbying organizations (the blue line with square markers) shows a slight upward trend over time, but there is quite a bit of variation from one time period to another. The lower (red dotted) trend line is for the number of North Carolina lobbying organizations that also lobby in Washington, D.C., and this line also shows a slight upward trend over the 1999 to 2008 time period. The topmost line (green with triangles) illustrates the percentage of

North Carolina firms that are also active at the federal level, and this line is upward sloping as the number of federal lobbying organizations is increasing when the overall number of lobbying organizations is decreasing. The percentage of organizations lobbying at both levels of government was in the low 30s, but this figure approached 40 percent in 2008. Of course, we cannot say what issues are driving this trend, and we do not have access to data for years prior to 1999. However, multilevel lobbying in North Carolina appears significant. But how does multilevel lobbying fit into the structure of the North Carolina interest group community?

To answer this question, we first consider the role of time. Figures 2 shows the distribution of lobbying organizations across all time periods in North Carolina, and Figure 3 provides the same distribution for lobbying organizations active in Washington, D.C. For organizations in North Carolina, the distribution reflects a large number of organizations that are active for a short period of time but with a significant number of groups that operate across all time periods. In contrast, organizations that lobby in Washington generally work consistently if they do it all. But how do these distributions match up, if at all?

Figure 2: Number of Lobbying Organizations by Number of Time Periods Represented in North Carolina (1993-2008)(n=1,129)

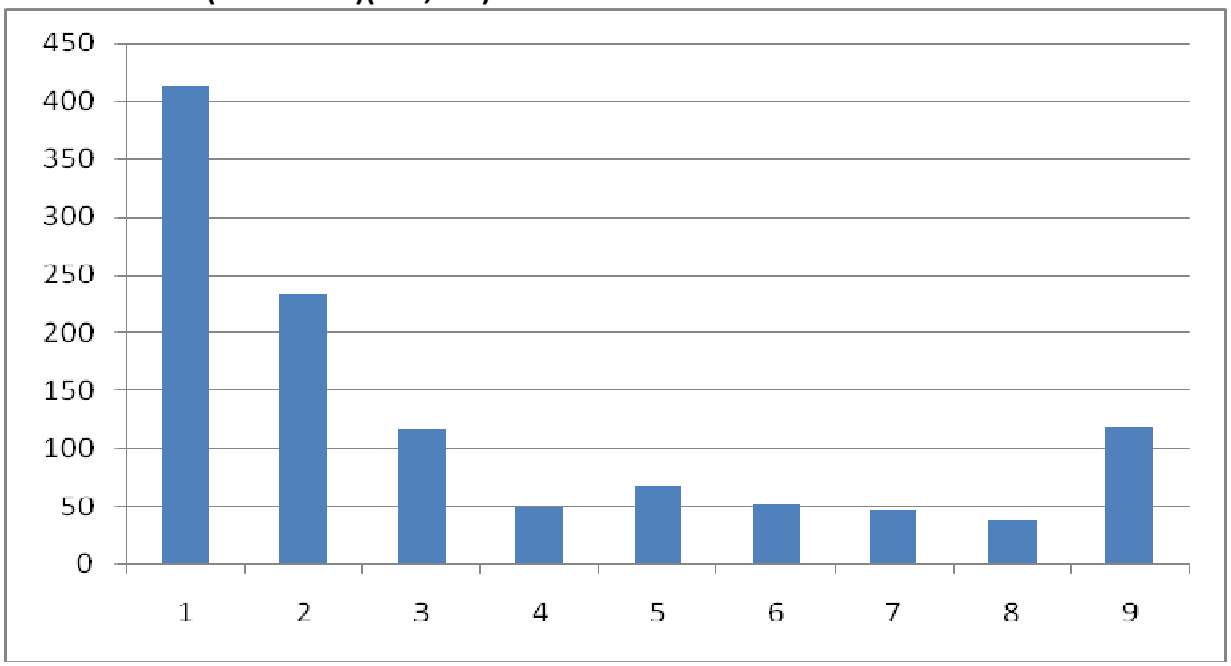


Figure 3: Number of Lobbying Organizations by Number of Years Represented in Washington, DC (1999-2008)(n=339)

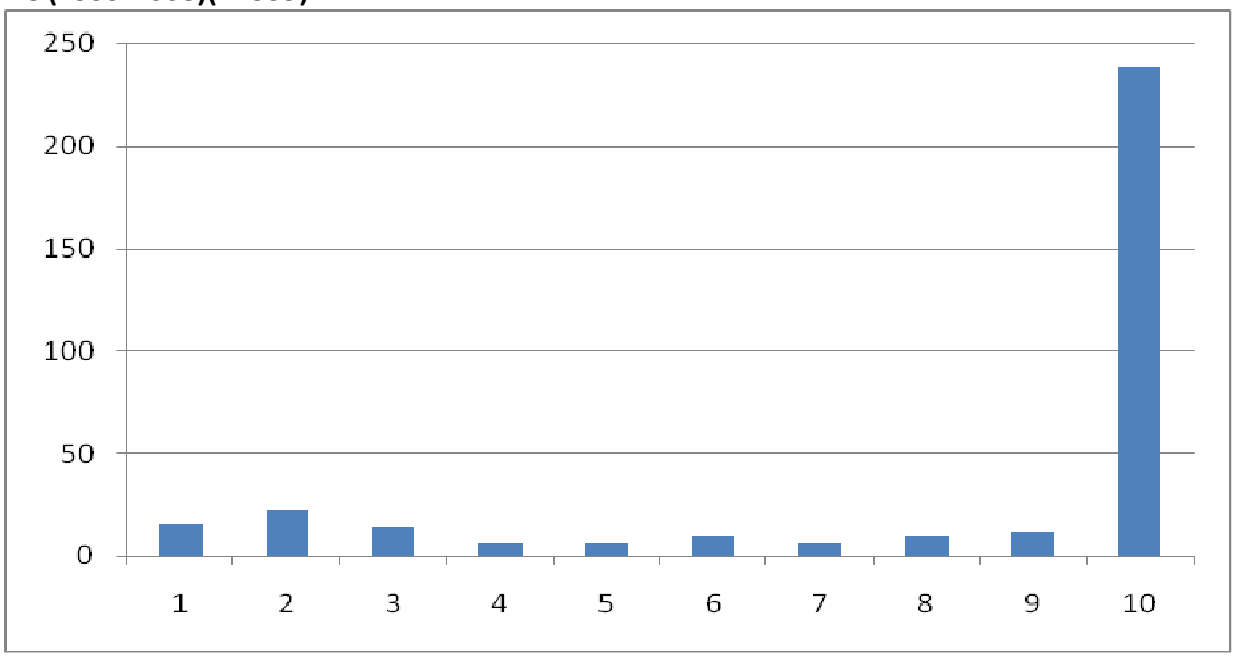


Table 1 below provides a cross-tabulation of lobbying organizations in terms of the number of years spent lobbying in North Carolina versus Washington. There are 915 organizations represented in this table because we are comparing similar time periods (1999 through 2008) so that we have data for both state and federal levels.[12] What we can see from the distribution in the table is that organizations can be characterized generally as either *repeat players or one-shot players* (Galanter 1974-75). About two-thirds of the organizations have no Washington lobbying experience, and of these non-DC organizations, roughly half have little lobbying activity in North Carolina. At the other end of the row, 12.5 percent of all organizations (or 114) were active in North Carolina in every time period but with no DC-level experience.

Of those organizations that do lobby at the federal level, the majority are consistent players: 219 organizations or 23.9 percent of the total have lobbied in Washington throughout the entire period. Perhaps most importantly, however, note that many long-term organizations in North Carolina are also long-term players in Washington as 12.6 percent (or 115) of all organizations active are consistently active at both the state and federal levels. These are the repeat players, the organizations who can be counted on to not only lobby on particular issues but also monitor developments even when activity on their interests is low. In summary, while there is a clear majority of lobbying organizations that do not work at the federal level, we see a significant minority of organizations that not only lobby in Washington but do it consistently. These organizations may be the core set of organizations that coordinate political activity between state and federal levels. With these characteristics of the lobbying community in mind, we now consider the overall shape of the network.

[12] In other words, 214 organizations did not lobby after 1998.

Table 1: Tabulation of Time Periods Lobbying in DC and in North Carolina, in percentages (1999-2008)(n=915)

		Time Periods in NC						
		1	**2**	**3**	**4**	**5**	**6**	**Total**
Time Periods in DC	**0**	19.8	14.3	8.9	6.6	4.8	12.5	66.9
	1	1.2	0.4	0.4	0.0	0.0	0.2	2.3
	2	0.9	0.4	0.4	0.0	0.1	0.3	2.2
	3	0.0	0.3	0.2	0.1	0.3	0.2	1.2
	4	0.6	0.1	0.2	0.3	0.0	0.9	2.2
	5	0.3	0.2	0.2	0.2	0.0	0.3	1.3
	6	3.2	2.3	1.8	1.9	2.3	12.6	23.9
	Total	25.9	18.1	12.2	9.1	7.5	27.1	100.0

The Distribution of Lobbying Relationships and Power Laws: The fact that North Carolina lobbying has a substantial minority that are 'repeat players' and a large number that are one-shot players may translate into a particular distribution in the relationships among organizations. In particular, we argue that the networks of the North Carolina interest group community can be characterized as a scale-free in which a small number of organizations have the majority of ties. In order to show and understand that distribution, we first provide some graphical representations of lobbying relationships. The figures and some subsequent statistics show that connected nature of lobbying relationships. We then focus on the nature of degree distributions of for-hire lobbying organizations and then for lobbying organizations as a whole.

Figures 4 through 9 below illustrate the nature of lobbying relations in North Carolina. Figure 4 is a directed network of the lobbying community in 2003-04 showing both principals and lobbying organizations. (In order to make the picture clearer, we removed the isolated organizations, that is, those organizations that were not tied to other organizations.) An arrow leading from one organization to another indicates that the organization (principal) is represented by the other (lobbying organization) that is receiving the arrow point. Red squares

indicate that an organization does not have a Washington presence while a blue square indicates that the organization lobbies in Washington. Since all the isolated organizations are removed, Figure 4 is a giant component for 2003-04 – All the organizations are connected, however remotely, to each other. Some organizations send out more ties (i.e., hire more lobbying organizations) than others, and some organizations receive more ties (i.e., are hired more) than others. As is expected, there is an imbalance in the distribution of relationship ties.

Figures 5 through 9 focus just on relations among lobbying organizations such that a tie between any two lobbying organizations represents a common principal. Figure 5 shows the different components (coded by color), and as in Figure 4, the network has one very large component with a number of very small components. Darker lines indicate the strength of ties between any two organizations in terms of the number of common principals.

In Figure 6, the affiliation network is coded (as in Figure 4) by federal lobbying (in blue) and by for-hire status (triangle). As in Figure 4, organizations that lobby in Washington are present throughout the network, including the smaller components and the isolated organizations shown on the left edge of the figure.

In Figures 7 and 8 organizations have been re-sized in proportion to the length of time spent lobbying in North Carolina (for the red squares) and the length of time spent lobbying in Washington (for the blue squares), respectively. This giant component is dominated by groups that tend to be consistently active politically. This makes sense if we consider that relationships of representation seem more likely if an organization has a long-term presence in the political sphere. However, we also see a number of long-term organizations outside of the main component in the smaller components and the isolates.

In Figure 9, the organizations are re-sized according to the number of years that an organization both operated on a for-hire basis and lobbied in Washington. Looking at Figure 9, a relative handful of organizations have long-term experience representing other organizations in both North Carolina and Washington. These blue triangles are also at the center of the main component, but for-hire lobbying organizations that do not operate at the federal level (as shown by red triangles) are also present in the center of the main component.

Figure 4:

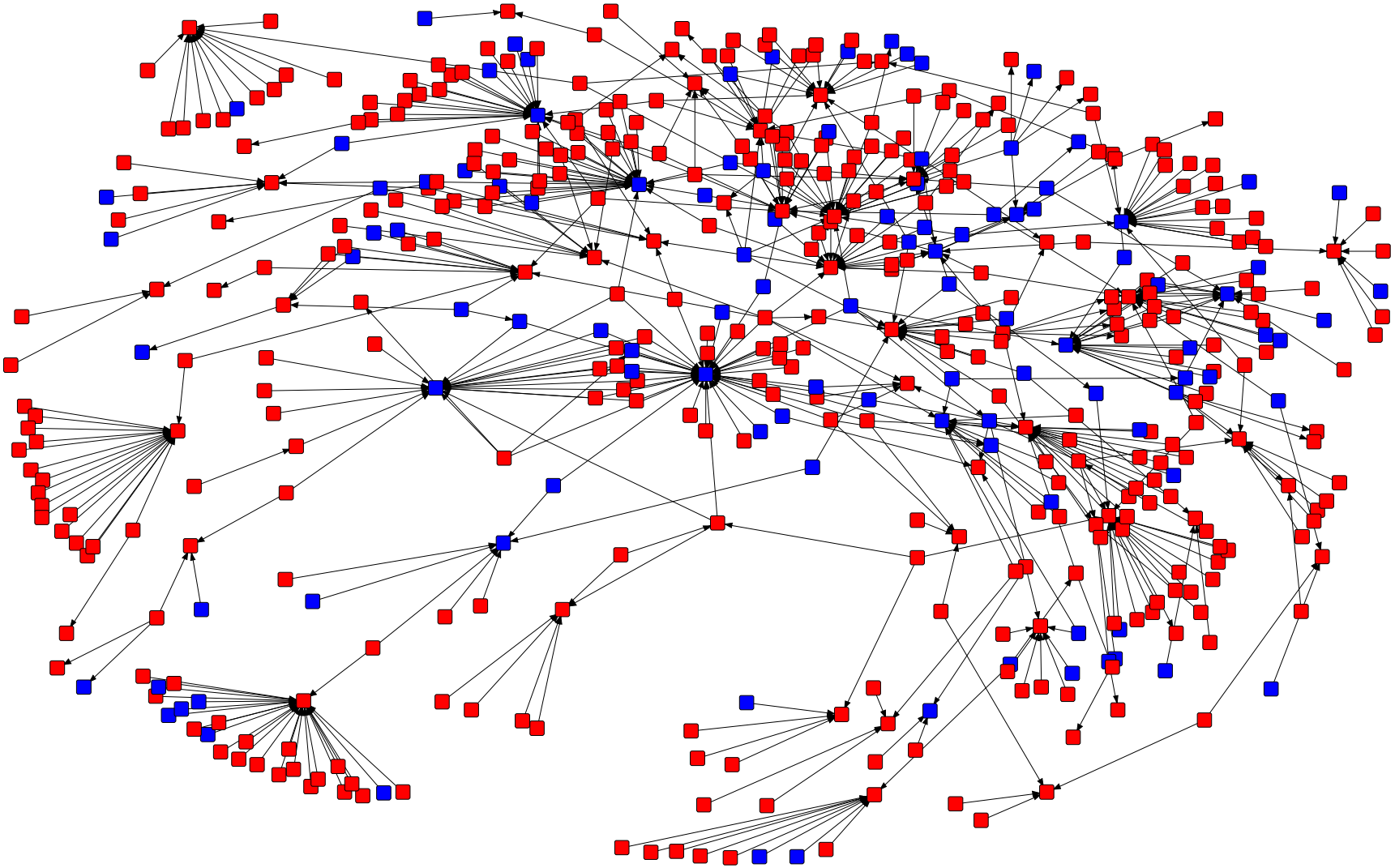


Figure 5: Lobbying Organizations Affiliated by Common Principal Components (2003-04)

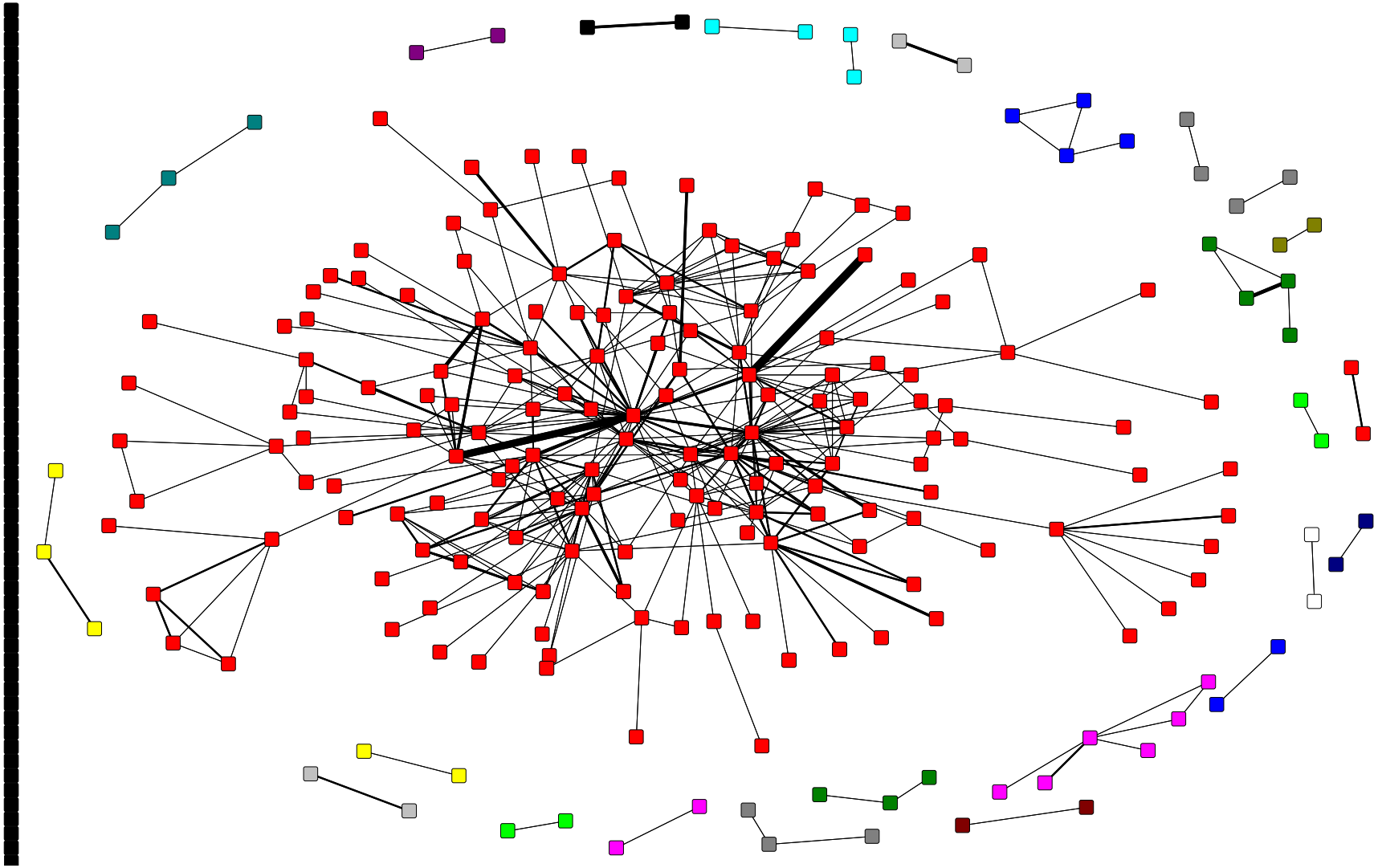


Figure 6: Lobbying Organizations Affiliated through Common Principals and Coded by For-Hire Status (triangle) by DC (blue) and non-DC (red) (2003-04)

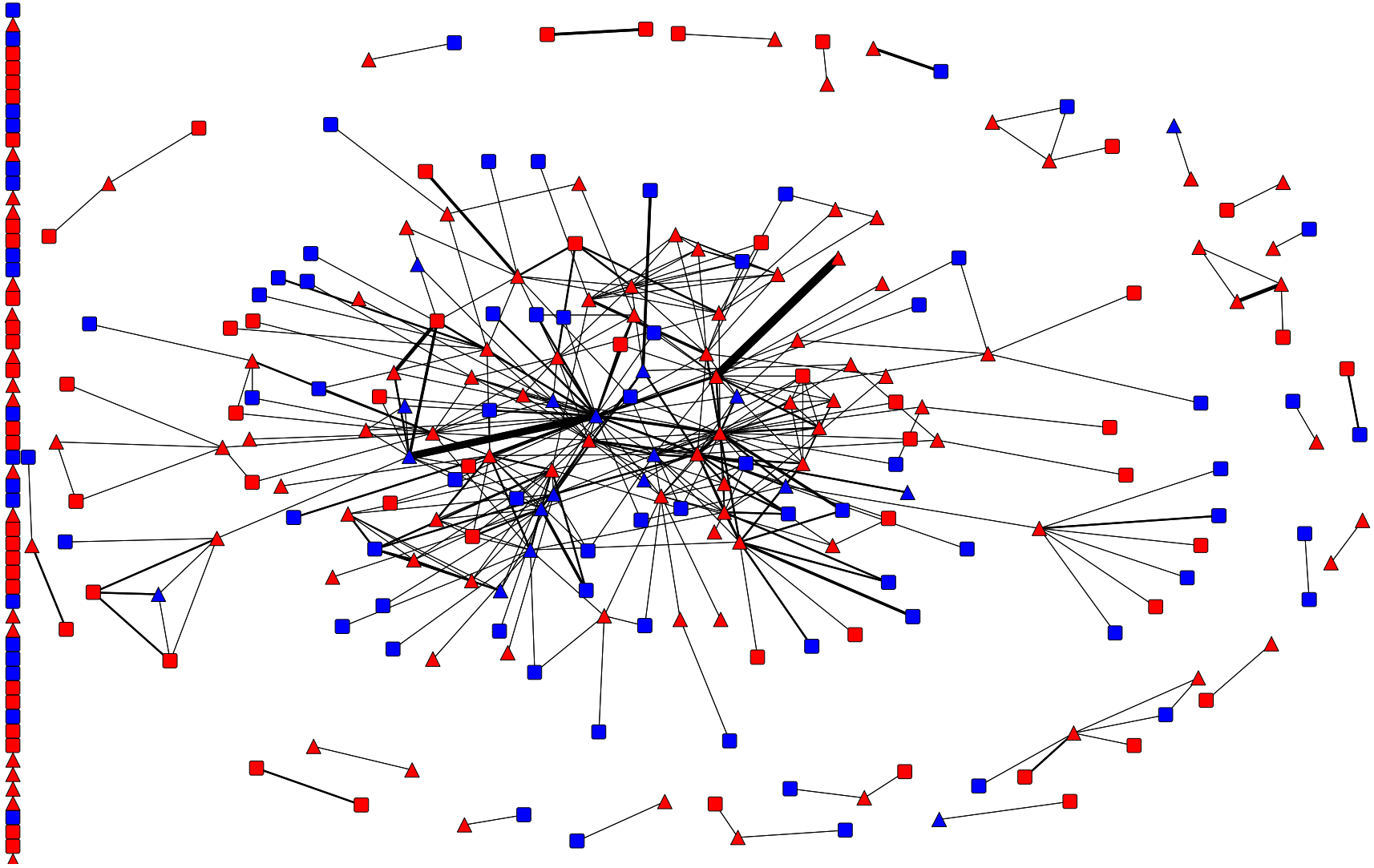


Figure7_: Lobbying Organizations Affiliated by Common Principal and Coded by Years in North Carolina (2003-04)

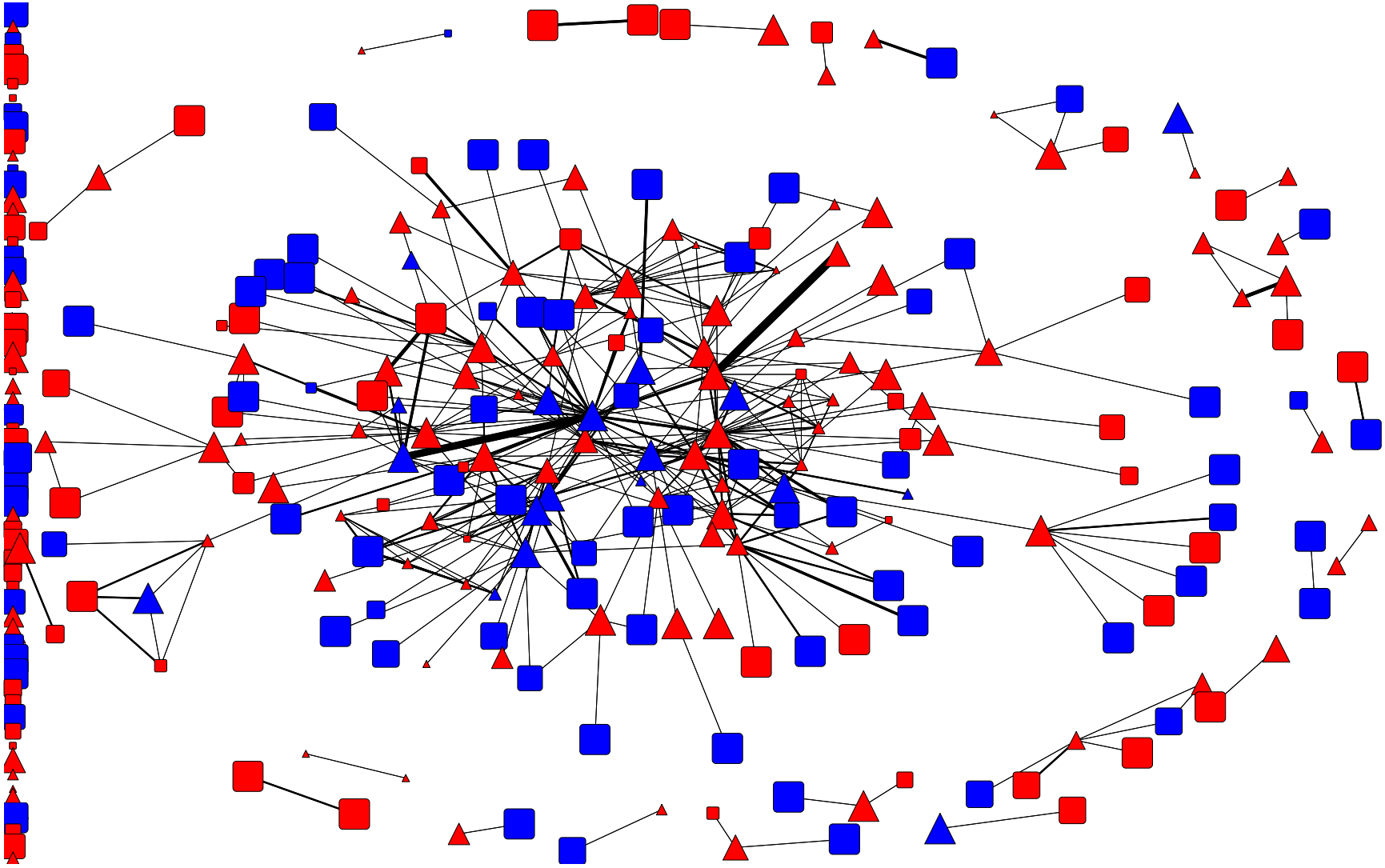


Figure 8: Lobbying Organizations Affiliated by Common Principal and Coded by Years in DC (2003-04)

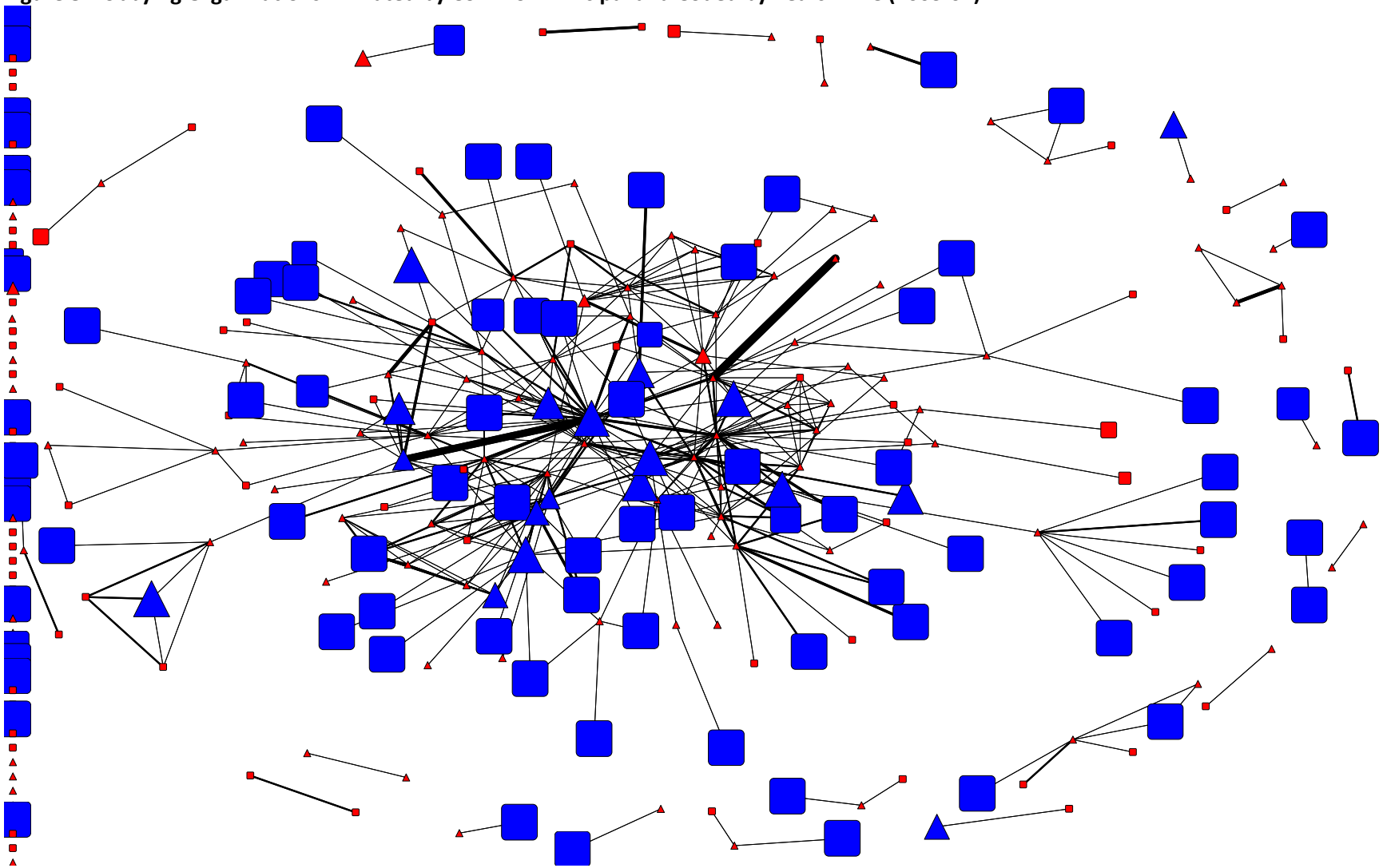
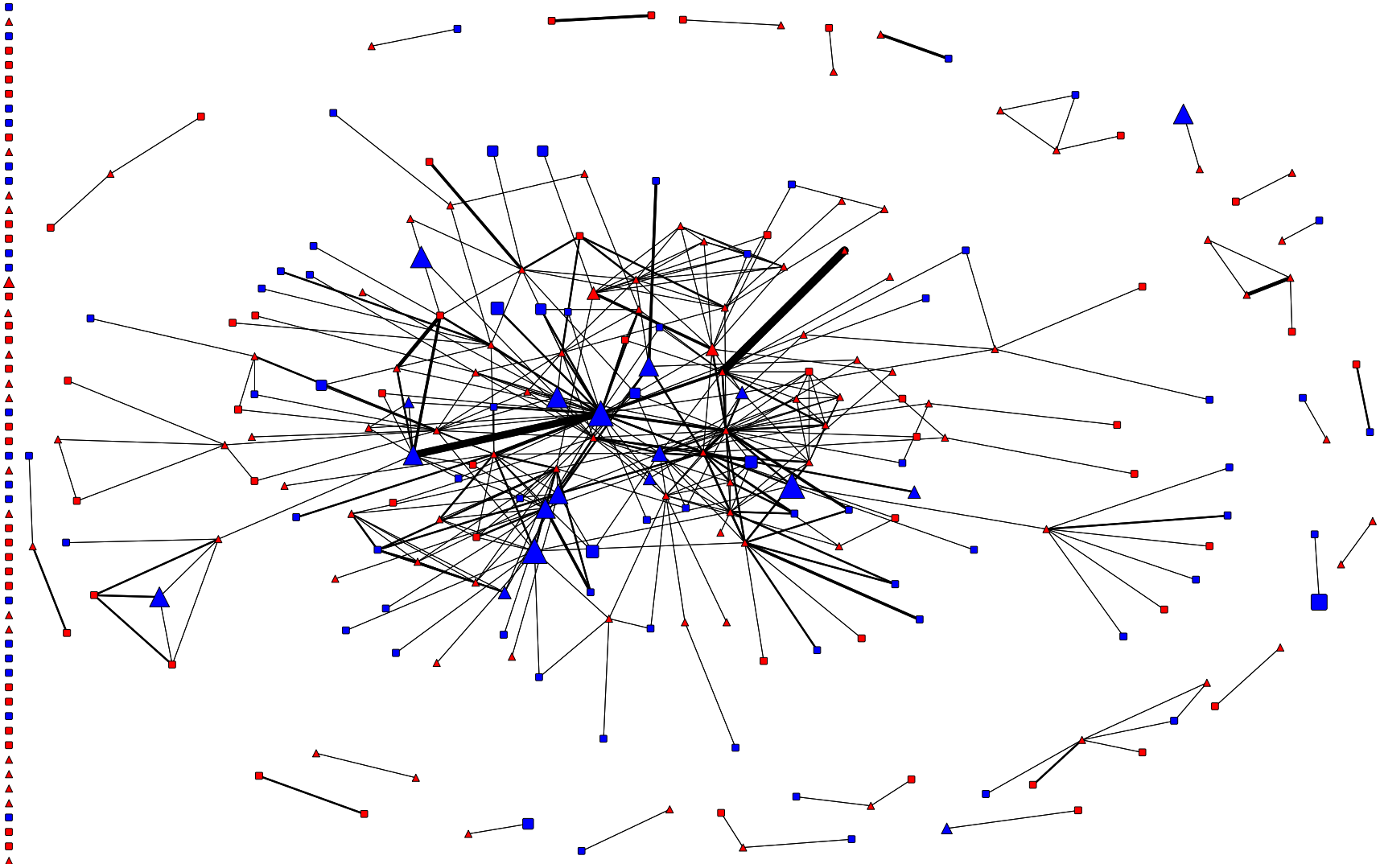


Figure 9: Lobbying Organizations Affiliated by Common Principal and Coded by Years in DC and by For-Hire Status (2003-04)



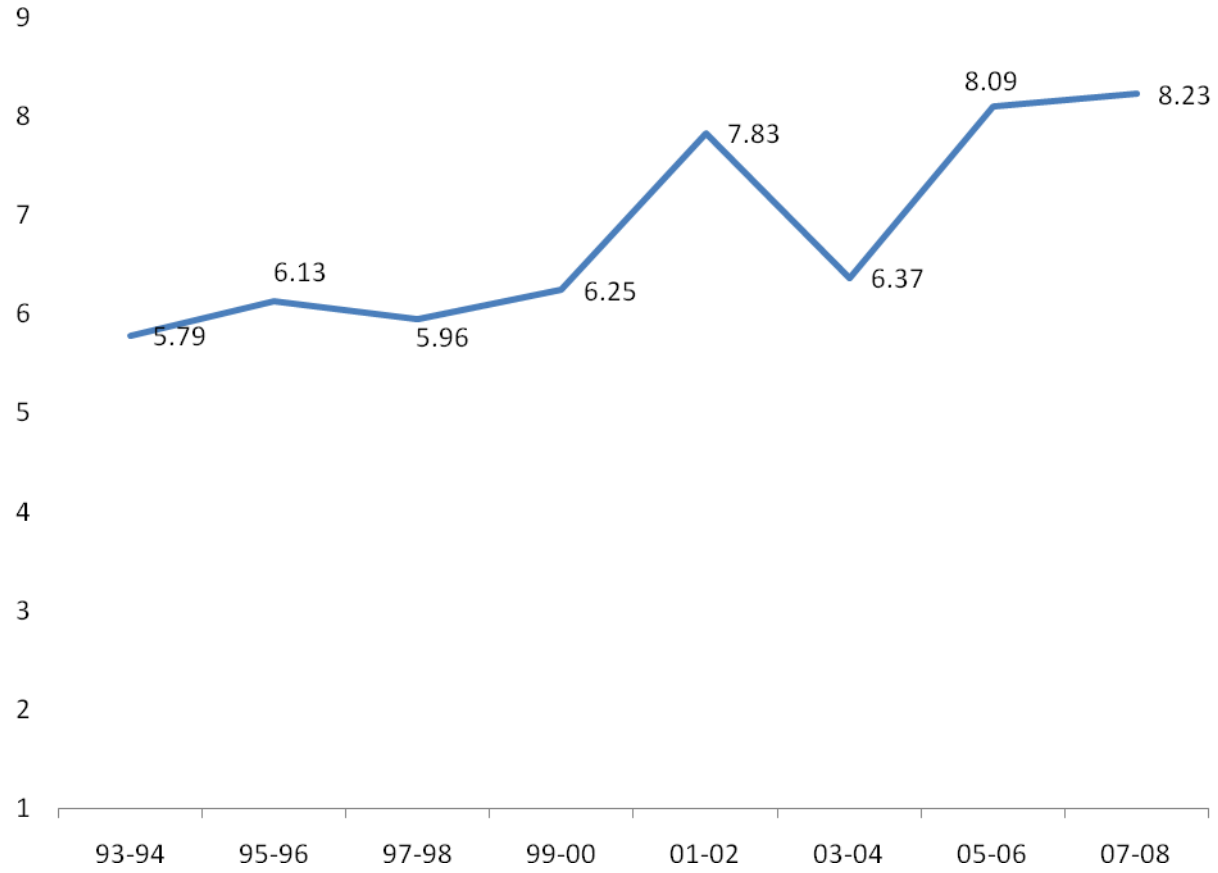
The prior figures focused on the network of organizations for just one period, 2003-04, but is the 2002-04 network a representation that reflects all time periods? First, we note that the presence of a giant component is not restricted to the 2003-04 time period. Table 2 summarizes the size of the giant component over time. Generally 60 percent of organizations active in any particular year are members of the main or giant component.

Table 2: Organizations in Main Network Componet, 1993-2008 (frequency and percent)

	Time Periods								
	93-94	95-96	97-98	99-00	01-02	03-04	05-06	07	08
Number of Orgs in Main Component	443	545	565	538	602	500	610	557	497
All Organizations	735	827	888	831	868	827	972	974	887
Pct in Main Component	60.3%	65.9%	63.6%	64.7%	69.4%	60.5%	62.8%	57.2%	56.0%

What is holding these main components together? In Figure 10 below, we show the average number of in-degrees for for-hire lobbying organizations over the entire time period of the data. The general trend is of an increase in the average number of in-degrees held by these for-hire lobbying firms. Through 1999-2000, the average number of in-coming ties from principals was relatively flat in the range of 5 to 6, but beginning in 2001, the average number of ties held by for-hire lobbying firms increases until it reaches 8.23 in 2008. In other words, relations may be concentrating within a small group of organizations.

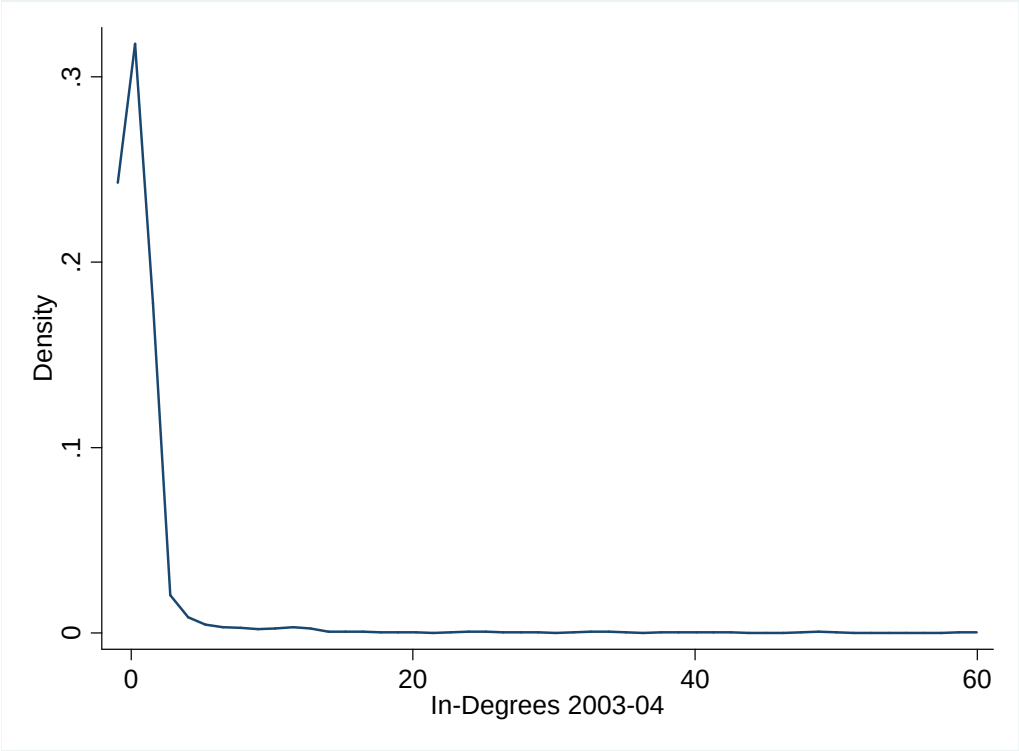
Figure 10: Average In-Degrees Per For-Hire Lobbying Organization, 1993-2008 (n=386)



The foregoing discussion suggests a process of concentration occuring in the lobbying organization network (and other networks as well). Such a concentration of ties in a small group of entities may indicate the presence of a scale-free network or a structure of ties that is characterized by a power law distribution. A power law distribution of ties is characterized by many organizations have few or no ties to others while a small minority have a large number of ties. The network is therefore sparse in terms of its connections. While there are different ways to check for power law distributions (see Barabasi et al. 2002), log-log plots of the distribution of ties (or degrees in network parlance) are often used to check for power law distributions. If the general distribution of ties exhibits a fat right tail (e.g., many organizations

with little or no ties to othes with a minority of organizations holding many ties to others), we would expect power law distribution. For example, Figure 11 gives the in-degree distribution for the 2003-04 network.

Figure 11: Distribution of In-Degrees for the 2003-04 Lobbying Organizations



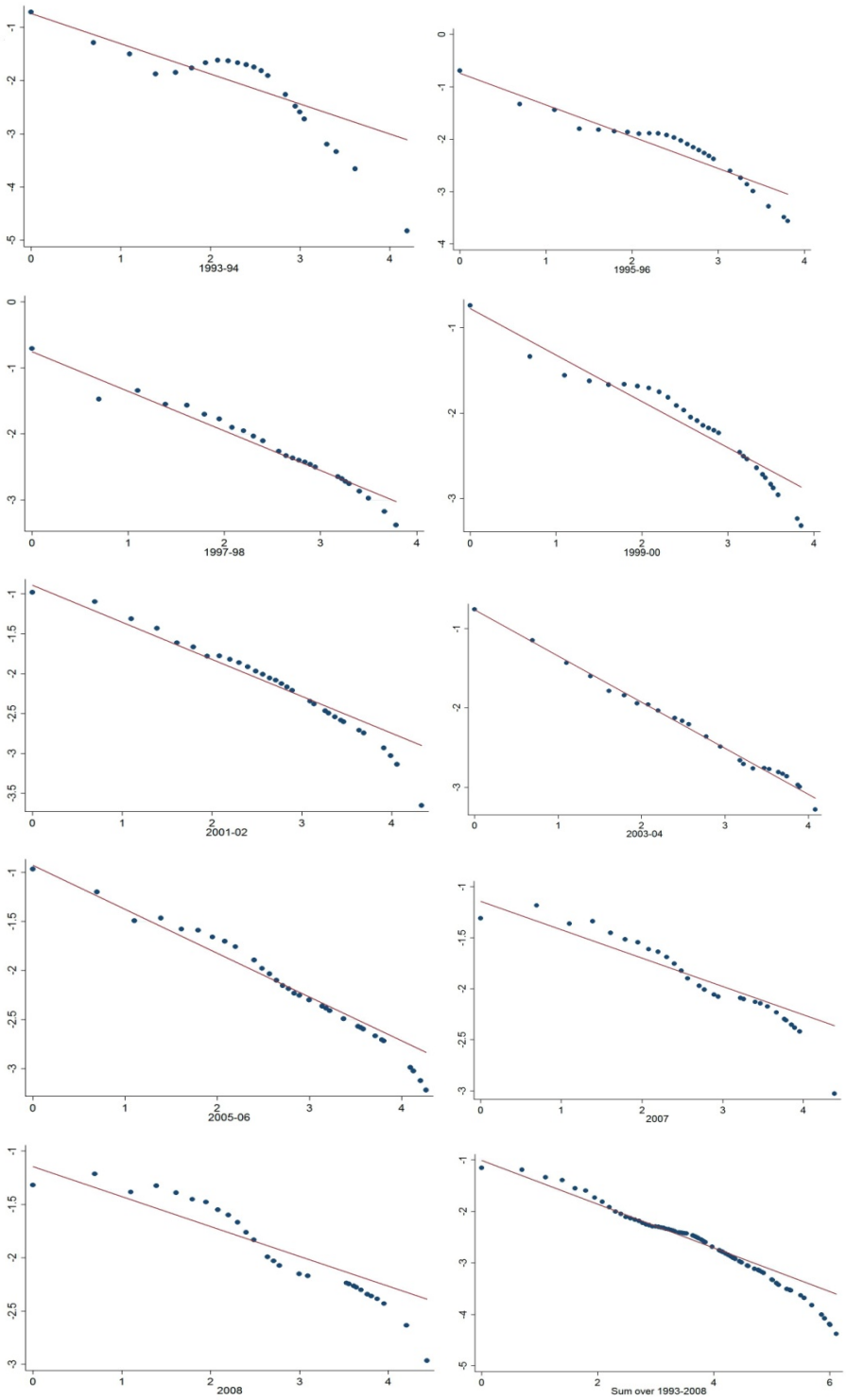
Transforming the general distribution to logarithmic scales should convert the fat tail to a linear relationship. Figure 12 provides log-log plots for the incoming ties to all North Carolina lobbying organizations for all years as well as for the distribution of the sum of ties across all years. Each graph has a scatter of dots for the actual distribution as well as a line that is fitted for the distribution. Looking at the individual years, some distributions exhibit a better fit to the power law distribution than others (such as the graph for 2003-04, which was the example network in Figures 4 through 9 above). However, all graphs exhibit, to a greater or lesser

degree, a power law distribution, and this is certainly true for the last graph, which is the sum of all in-coming ties across all years.

However, note that in many of the graphs in Figure 12 that the 'tail' of the distribution does not follow the fitted line all the way down to the x axis but rather curves down. The scale-free quality of the network is truncated even in cases in which the actual values fit very well to the line. This indicates that the best linked organizations are not getting all the links. Kogut, Urso, and Walker (2007), writing in the context of the venture capital industry, suggest that actors in a truncated scale-free network may tend to recreate prior ties rather than link to the most linked actors. Given the importance of trust in lobbying relationships, it is perhaps not surprising, then, that prior relationships might act as a break on the development of a pure scale-free network in an interest group community.

Why is characterizing the network of lobbying organizations as scale-free important? Such a characeterization indicates a 'winner-take-all' quality to lobbying. Certain organizations seem to garner the majority of business from principals. As discussed in the conclusion, this has implications for the business of lobbying, representation, and influence. But we first ask an intermediate question: Are organizations that lobby at both the state and federal levels driving the structure of relations? Are such organizations the beneficiaries of the power law distribution?

Figure 12: Log-Log Plots of In-Degree Distributions (Directed Ties) for North Carolina Lobbying Organizations, 1993-2008



The Effect of Multilevel Lobbying and Longitudinal Analysis: To explore the effect of organizations that lobby at both the state and federal levels, we employ two analyses. First, we examine differences in network position, specifically measures of centrality, through the use of t-tests. Table 3 below provides a summary of t-tests for measures of network centrality for three groups: For-hire lobbying organizations, lobbying organizations that lobby at the federal level, and organizations that are both for-hire and lobby at the federal level.[13] We check for differences in group means across centrality measures of degree centrality, betweeness centrality, and closeness centrality.

In general, we find statistically significant differences across all groups and measures. For-hire lobbying organizations (the third column) have significantly hire measures for degree and betweeness centralities, but the results for closeness centrality show little if any difference. Groups that lobby in Washington show uniformly higher scores across all three centrality measures. Groups that are for-hire organizations and that lobby in Washington show strong and greater differences for degree centrality and betweeness centrality but mixed results for closeness centrality. For this last group, an interesting finding is that the differences for degree centrality and betweeness centrality are not only statistically significant but are increasing over time, which may reflect the results in Figure 10 above where for-hire lobbying organizations are showing an increase in average degrees over time.

[13] Full results are not reported here in order to conserve space, but they are available from the authors.

Table 3: Summary of T-tests for Network Position by For-Hire Status and Lobbying in DC

Network Centrality	Year	For Hire	DC Lobbying	DC & For-Hire
Degree	**1993-94**	0.1848***		
	1995-96	0.1905***		
	1997-98	0.1425***		
	1999-00	0.2005***	0.0073***	0.2356***
	2001-02	0.2260***	0.0107***	0.3334***
	2003-04	0.1805***	0.0187***	0.3272***
	2005-06	0.2082***	0.0232***	0.3968***
	2007	0.2176***	0.0231***	0.4699***
	2008	0.1928***	0.0189***	0.4628***
Betweeness	**1993-94**	0.0709***		
	1995-96	0.0902***		
	1997-98	0.0745***		
	1999-00	0.0834***	0.0088*	0.1048***
	2001-02	0.1105***	0.0135**	0.1955***
	2003-04	0.0710***	0.0145***	0.1784***
	2005-06	0.1115***	0.2012***	0.2427***
	2007	0.1110***	0.0280***	0.2871***
	2008	0.0971***	0.0232***	0.3327***
Closeness	**1993-94**	0.0002***		
	1995-96	0.0001		
	1997-98	0.0008		
	1999-00	0.0001	0.0010**	- 0.00041
	2001-02	0.0011	0.0013***	0.00178*
	2003-04	-0.0007	0.0017***	0.00136*
	2005-06	-0.0002	0.0022***	0.00184*
	2007	-0.0028	0.0019***	0.00052
	2008	-0.0025	0.0018***	0.00038

To this point, we understand that networks of lobbying organizations appear to display a scale-free distribution, and it would appear that organizations active at the federal level and that represent others are more central in such networks. In order to understand the dynamics of the network of lobbying organizations, we use a model for the evolution of the network and

evaluate the model using the SIENA software package. Because of data and software limitations, this version of the paper provides preliminary results of the longitudinal model for the affiliation network of lobbying organizations for three time periods: 2003-04, 2005-06, and 2007. We use two network parameters – a popularity measure that is the square root of an organization's degrees and a measure for triad membership in order to capture structural effects. We include three actor covariates, which are years actively lobbying in North Carolina, years actively lobbying in Washington, D.C., and total years as a for-hire lobbying organization.

Table 4 provides the number of transitions between time periods. We see relatively few transitions given the size of the network, but this is because of the fact that many organizations are present for only one period and even then they are tied to other organizations. Table 5 below provides the results with models 1 through 4 successively adding parameters and model 5 giving the full model. In this limited and preliminary form, triads and degree popularity exhibit significantly positive results. We can interpret these estimates as meaning that membership in a triad and the 'popularity' of an organization is likely to increase the likelihood of a tie for that organization from one time period to the next. Similarly, more years spent lobbying in North Carolina and more years acting as a for-hire lobbying organization are likely to increase the likelihood of a tie for an organization. However, Table 5 shows that more time spent lobbying at the federal level has little effect on increasing or decreasing the likelihood of a tie for an organization, but this result may reflect the fact that if an organization lobbies at all at the federal level, it is likely to lobby across all time periods. A different specification for federal level lobbying may produce a different result.

Table 4: Number of Changes Between Subsequent Observations

Observed Period	0 → 0	0 → 1	1 → 0	1 → 1
2003-04 to 2005-06	49,073	114	112	156
2005-06 to 2007	51,010	90	129	131

Table 5: Results of Longitudinal Modeling of Lobbying Organization Affiliation Network, 2003-2007 (3 time periods)(n=678)

	1		2		3		4		5	
Parameters	**est.**	**s.e.**	**est.**	**s.e.**	**est.**	**s.e.**	**est.**	**s.e.**	**est.**	**s.e.**
Rate Parameter$_{2003\text{-}04 \text{ to } 2005\text{-}06}$	3.6020**	0.6437	3.8493**	0.4776	3.9119**	0.5070	3.8744**	0.6574	3.9348**	0.5015
Rate Parameter$_{2005\text{-}06 \text{ to } 2007}$	2.6836**	0.2808	3.0695**	0.3673	2.2499**	0.2159	2.6734**	0.2820	2.9357**	0.3324
Degree	-6.5523**	0.1835	-8.4149**	0.5629	-6.5556**	0.1821	-6.7628**	0.1728	-8.1572**	0.4674
Triads	1.0523**	0.0704	1.3961**	0.1015	1.0548**	0.0695	1.0879**	0.0655	1.3664**	0.0979
Degree Popularity	0.6995**	0.0244	0.4916**	0.0177	0.6921**	0.0239	0.7035**	0.0212	0.4748**	0.0181
Total Yrs in NC			1.0588**	0.2149					0.9484**	0.1788
Total Yrs in DC					0.0111	0.0149			-0.0108	0.0104
Total Yrs For Hire							0.0901**	0.0132	0.0699**	0.0145

**p<.01

Discussion and Extensions

This paper has shown some important features of the interest group community at the state level (at least for one state!). The number of organizations with ties to both the state and federal levels is significant. This is not to say that North Carolina is overrun with Washington law firms or that local politics and relations do not matter. Indeed, we saw that a number of lobbying organizations that have a purely state-level focus are prominent in the network. But it is fair to say that multilevel relations are not just present but constitute an important part of the network of lobbying organizations, particularly for those organizations that represent other organizations.

But is the presence of organizations that have multilevel activities important for understanding the nature of the lobbying community? In addressing that questions, we found that the network of lobbying organizations seems to exhibit scale-free properties at the state level. That is, within the main component of the network in each time period, a small number of organizations hold a disproportionate number of ties to other organizations. This finding seemed to appear in each time period.

Finally, this paper provided evidence that supported the idea that for-hire lobbying organizations that are active at the federal level are key nodes in the lobbying network such that they seem to be important constituents of these scale-free networks. Again, organizations with a purely local focus are important as well, but we think that a key link – but not the only link – in creating these scale-free networks are well-placed for-hire lobbying organizations, some of which are active at the federal level.

Why are these findings important? We argue that they touch on the issue of influence in politics. The issues of political power, access, and influence have been theoretical and empirical puzzles for quite some time (Hunter 1953; Dahl 1961; Bachrach and Baratz 1962). But despite the plethora of studies on lobbying, there are few conclusions about the nature and processes of influence (Baumgartner and Leech 1998: 13). A second problem (and probably a reason for the contradictory findings mentioned above) is that there is little or no agreement on exactly what is influence. Is influence the ability to change the contents of a bill? Is influence the power to change a legislator's vote? Evidence for any one conception is unclear and/or contradictory (Baumgartner and Leech 1998; Cigler 1991). The difficulty associated with studying influence is that the underlying quality of influence is one of multidimensionality. Influence is a form of capital – Another term for influence might be political capital. And like other forms of capital such as financial, human, and social, political capital or influence can be created from a variety of sources, stored, and then expended or used for a variety of other purposes. Influence can be created from financial sources, expertise over an issue, credibility, and persuasiveness through interpersonal relations, to name a few. Influence can then be applied to enhance the public visibility of a group, gain access to important meetings, engage in gossip, and help shape the content of policy products. This study argues that social capital translates into political capital or influence.

It might be better to view influence, at least in some political contexts, not so much as an input that creates a political output but rather as a signal (Spence 1976) or mark of status (Podolny 1993) within a political domain characterized by a set of relations. A signal is usually defined as an indicator of quality that has two criteria: the signal must be at least partially

manipulable by the actor and the difficulty of obtaining the indicator must be inversely related to the level of quality (Spence 1976). Lobbying organizations have some control over their reputations, and a reputation for influence is more difficult to obtain if you are not a "player." Status in turn can be defined in this context as the perceived quality or importance of that actor's previous contributions to the development of policy (Podolny and Stuart 1995).

In summary, we would expect political influence, using different measures, to be significantly related to those lobbying firms and individuals that are more centrally located in the local network of lobbying interests and that have stronger ties to national firms and organizations.

There are a number of unfinished tasks associated with this project. We intend to continue collecting data and coding additional variables that can augment the analysis presented here. For example, we would like better organizational and interest attributes. Moreover, we will extend this work to principal organizations and individual lobbyists. In addition, a goal of this project will be to continue to explore how the structure of relationships change over time. Finally, we intend to collect data from other states in order to see whether the findings in this paper can be generalized.

References

Aldrich, Howard E. and Phillip H. Kim. 2007. Small worlds, infinite possibilities? How social networks affect entrepreneurial team formation and search. *Strategic Entrepreneurship Journal*, 1(1-2):147-65.

Bachrach, Peter and Morton S. Baratz. 1962. The Two Faces of Power. *American Political Science Review*, 56(4): 947-952.

Barabasi, A.L., H. Jeong, Z. Neda, E. Ravasz, A. Schubert, and T. Vicsek. 2002. Evolution of the social network of scientific collaborations. *Physica A*, 311:590-614.

Baumgartner, Frank R. and Beth L. Leech. 1998. *Basic Interests*. Princeton, NJ: Princeton University Press.

Baumgartner, Frank R. and Beth L. Leech. 2000. Lobbying Alone or In a Crowd: The Distribution of Lobbying in a Sample of Issues. Paper delivered at the Annual Meeting of the Midwest Political Science Association, Chicago, April 27029. Available at http://www.personal.psu.edu/frb1/mpsa2000-Baumgartner%20and%20Leech.pdf and was accessed on June 9, 2009.

Baumgartner, Frank R., Virginia Gray, and David Lowery. 2008. Federal Policy Activity and the Mobilization of State Lobbying Organizations. *Political Research Quarterly Online First*, September 29, 2008, as doi:10.1177/1065912908322407.

Boehmke, Frederick J. 2008. The Initiative Process and the Dynamics of State Interest Group Populations. Working paper that is available at http://myweb.uiowa.edu/fboehmke/Papers/boehmke2008sppq.pdf and was accessed on May 15, 2009.

Borgatti, Steven P., Martin G. Everett, and Linton C. Freeman. 2002. *UCINET 6.221*. Lexington, KY: Analytic Technologies.

Cigler, Allan, J. and Burdette A. Loomis, eds. 1991. *Interest Group Politics*. 3rd ed. Washington, D.C.: Congressional Quarterly Press.

Dahl, Robert A. 1961. *Who governs? Democracy and power in an American city*. New Haven, CT: Yale University Press.

de Figueiredo, John M. 2004. The Timing, Intensity, and Composition of Interest Group Lobbying: An Analysis of Structural Policy Windows in the States. Paper 68 presented at the Annual Meeting of the American Law & Economics Association. Berkeley Electronic Press, available at http://law.bepress.com/cgi/viewcontent.cgi?article=1082&context=alea and accessed on May 19, 2009.

Emirbayer, Mustafa. 1997. Manifesto for a Relational Sociology. *American Journal of Sociology*, 103(2):281-317.

Feld, Scott L. 1997. Structural Embeddedness and Instability of Interpersonal Relations. *Social Networks*, 19(1):91-95.

Furlong, Scott. 1998. The Lobbying Disclosure Act and Interest Group Lobbying Data: Two Steps Forward and One Step Back. *VOXPOP*, 17(3): 4-6.

Galanter, Marc. 1974-75. Why the 'Haves' Come Out Ahead: Speculations on the Limits of Legal Change. *Law and Society Review*, 9:95-160.

Granovetter, Mark. 1985. Economic Action and Social Structure: The Problem of Embeddedness. *American Journal of Sociology*, 91(3): 481-510.

Granovetter, M. 1992. Economic Institutions as Social Constructions: A Framework for Analysis. *Acta Sociologica*. 35: 3-11.

Gray, Virginia and David Lowery. 1996. *The Population Ecology of Interest Representation*. Ann Arbor, MI: University of Michigan Press.

Hunter, Floyd. 1953. *Community power structure; a study of decision makers*. Chapel Hill, NC: University of North Carolina Press.

Knoke, David. 1990. *Political Networks: the structural perspective*. New York: Cambridge University Press.

Kogut, Bruce, Pietro Urso, and Gordon Walker. 2007. Emergent Properties of a New Financial Market: American Venture Capital Syndication, 1960-2005. *Management Science*, 53(7):1181-1198.

Laumann, Edward O. and David Knoke. 1987. *The organizational state : social choice in national policy domains.* Madison, WI: University of Wisconsin Press.

Lowery, David and Virginia Gray. 2007. Interest Organization Communities: Their Assembly and Consequences. In A.J. Cigler and B.A. Loomis (eds.), *Interest Group Politics, 7th edition*. Washington, DC: CQ Press.

Markovsky, Barry., and Edward J. Lawler. 1994. A new theory of group solidarity. In B. Markovsky, J. O'Brien, and K. Heimer (eds.). *Advances in Group Processes, Vol. 11.* Greenwich, Conn: JAI Press.

Moody, James and Douglas R. White. 2003. Structural Cohesion and Embeddedness: A Hierarchical Concept of Social Groups. *American Sociological Review*, 68:103-127.

Pollock, T.G. 2004. The benefits and costs of underwriters' social capital in the U.S. IPO market. *Strategic Organization*, 2(4):357-88.

Podolny, Joel M. 1993. A Status-Based Model of Market Competition. *American Journal of Sociology,* 98:829-872.

Podolny, Joel M. and Toby E. Stuart. 1995. A Role-Based Ecology of Technological Change. *American Journal of Sociology*, 100(5):1224-1260.

Snijders, Thomas A.B. 1995. Methods for longitudinal social network data: Review and Markov process models. In E.-M. Tiit, T. Kollo, & H. Niemi (Eds.), *New trends in probability and statistics 3: Multivariate statistics and matrices in statistics* (pp. 211-227). Vilnius/Utrecht: Tev/Vsp

Snijders, Thomas A.B. 1996. Stochastic actor-oriented models for network chance. *Journal of Mathematical Sociology*, 21(2), 149-172.

Snijders, Thomas A.B. 2001. The statistical evaluation of social network dynamics. In M. E. Sobel & M. P. Becker (Eds.), Sociological methodology—2001 (pp. 361-395). London: Basil Blackwell.

Snijders, Thomas A.B. 2005. Models for longitudinal network data. In P. Carrington, J. Scott, & S. Wasserman (Eds.), Models and methods in social network analysis (pp. 215-247). New York: Cambridge University Press.

Snijders, Thomas A.B. & M.A.J. Van Duijn. 1997. Simulation for statistical inference in dynamic network models. In R. R. Conte, Hegselmann, & P. Terno (Eds.), Simulating social phenomena (pp. 493-512). Berlin, Germany: Springer.

Somers, Margaret R. 1994. Rights, Relationality, and Membership: Rethinking the Making and Meaning of Citizenship. *Law and Social Inquiry*, 19:63-112.

Spence, Michael. 1976. Informational Aspects of Market Structure: An Introduction. *Quraterly Journal of Economics*, 90(4): 591-597.

Uzzi, Brian. 1997. Social Structure and Competition in Interfirm Networks: The Paradox of Embeddedness. *Administrative Science Quarterly*, 42:35-67.

Warf, Barney. 2001. Global Dimensions of U.S. Legal Services. *The Professional Geographer*, 53(3):398-406.

Wellman, Barry. 1988. Structural Analysis: From method and metaphor to theory and substance. In B. Wellman and S.D. Berkowitz (eds.), *Social structures: a network approach*. New York: Cambridge University Press.

Wolak, Jennifer, Adam J. Newmark, Todd McNoldy, David Lowery, and Virginia Gray. 2002. Much of Politics Is Still Local: Multi-State Lobbying in State Interest Communities. *Legislative Studies Quarterly*, 27(4):527-55.