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**Abstract**. While not all interest groups participate in coalitions, some groups join multiple coalitions to form portfolios of coalition memberships. We test hypotheses that the composition of coalition portfolios increases the influence of interest groups over public policy when: (1) the number of coalitions in a group's portfolio gets larger; (2) the average size of the coalitions in a group's portfolio gets larger; and (3) a group's portfolio improves its position within the overall network of coalitions. We evaluate these hypotheses using a study of 115 interest groups involved in the debate over the Medicare Modernization Act of 2003. The results support hypothesis three; groups gain influence over the policy process when their coalition portfolios increase the extent to which they are situated between other groups in the coalition network. However, the ability of groups to proactively augment their coalitional betweenness may be muted by feedback in the policy process.

**Keywords**: Interest groups, coalitions, policy feedback, policy implementation, Medicare, social networks.

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An interest group coalition exists whenever two or more interest groups collaborate in advocating their public policy agendas. Working together in coalition is one of the most common tactics that interest groups use in attempting to influence the policy process (Baumgartner, Berry, Hojnacki, Kimball, and Leech 2009; Hojnacki, Kimball, Baumgartner, Berry, and Leech 2012; Scholzman and Tierney 1986). Interest groups turn to coalitions as a mechanism to pool resources (Hula 1999), to demonstrate to policymakers that they have resolved their internal differences and achieved a consensus on a position (Mahoney 2008; Nelson and Yackee 2012), and to aggregate political intelligence (Heaney 2006). Interest groups sometimes choose not to participate in coalitions when they view the costs of participation – such as the need to compromise with coalition partners, reduced autonomy, and risks that the group will suffer from the coalition's missteps – as outweighing the potential benefits of collaboration (Browne 1990; Hojnacki 1997; Holyoke 2011; Wilson 1995). Nonetheless, coalition participation has grown in recent years because the increasingly crowded universe of interest groups makes it difficult for individual groups to attain prominence when acting alone (Leech, Baumgartner, La Pira, and Semanko 2005; Salisbury 1990).

Empirical research on coalitions generally focuses on whether or not interest groups use the coalition strategy *at all* (e.g., Baumgartner et al. 2009; Hojnacki 1997; Mahoney 2008), how much they participate within a given coalition (e.g., Hojnacki 1998; Hula 1999; Strolovitch 2007), the size and stability of a given coalition (e.g., Holyoke 2011; Nelson and Yackee 2012), or else provides in-depth analysis of strategies and tactics within a small number of coalitions (e.g., Levi and Murphy 2006; Heaney and Rojas 2008; Hula 2005). Each of these approaches conceptualizes interest group strategy vis-à-vis a *single* coalition or toward coalitions generically. In doing so, they provide valuable insight into the relationship between interest groups and coalitions.

In the everyday world of lobbying and interest group politics, advocates are confronted with opportunities to join, participate in, or lead *multiple* coalitions that touch on aspects of their policy

agendas. This multi-coalitional reality, however, is not reflected in the extant literature. While it is certainly true that some interest groups choose to join only one coalition or to eschew coalitional involvement entirely, it is more often that groups are challenged with finding a balance among multiple coalitional involvements. Should an interest group become involved in a coalition for every issue on its agenda? Or, should it be more selective by focusing only on coalitions engaged on a few of the group's core issues? Perhaps joining a variety of coalitions is a way for a group to amplify the value of its limited lobbying resources. Or, instead, is it possible that too many coalitional involvements weigh down a group's staff with the concerns of other organizations? Different interest groups answer these questions for themselves in different ways. Yet the extant literature offers little guidance on how groups make these decisions or what consequences they have.

In order to account for interest group involvement in multiple coalitions, we introduce the concept of the *coalition portfolio*, which is *the set of all coalitions within a given area of public policy in which an interest group participates at a particular point in time*. The portfolio concept recognizes that interest groups may have a wide variety of coalition strategies depending on the mix of coalitions that they join. Moreover, coalition portfolios evolve over time as coalitions form and dissolve, and as political conditions adjust over the course of the policy process.

This article addresses the question of how differences among interest groups in their coalition portfolios affect their ability to influence policy. We examine three potential explanations for the relationship between coalition portfolios and influence: (1) Influence expands as the number of coalitions in a group's portfolio gets larger; (2) Influence expands as the average size of the coalitions in a group's portfolio gets larger; and (3) Influence expands as an interest group's portfolio improves its position within the overall network of coalitions. We assess these explanations using data from a study of interest group advocacy surrounding the Medicare Modernization Act of 2003.

This article proceeds, first, by developing a theory of coalition portfolios and articulating our hypotheses for how the composition of a portfolio allows interest groups to influence the policy process. Second, we review the Medicare Modernization Act of 2003 and explain how it provides an appropriate context for testing hypotheses derived from our theory. Third, we explain our research methods for gathering data on coalition participation, interest group influence, and other aspects of coalition politics. Fourth, we explain our empirical models and report the results of statistical analysis using negative binomial regression and ordinary least squares regression. Fifth, we consider how the shifting context of the policy process from enactment to implementation affects the nature of coalition portfolios. The article concludes by considering the implications of our work for coalition politics and the participation of interest groups in the policy process.

## A Theory of Coalition Portfolios

The coalition is a highly flexible form of organization available to interest groups. Interest groups may establish an ad hoc coalition for the purpose for addressing a single, non-recurring policy event, such as a coalition to defeat an amendment to one particular bill. Or, they may establish a coalition to engage a wide-ranging set of issues that can be resolved only over a number of decades, such as the Leadership Conference on Civil and Human Rights (2012). Coalitions may be largely informal – sometimes based only on a verbal understanding among participants – or may be relatively formalized – perhaps having bylaws and paid staff. Coalitions vary in their tactical specialties, with some concentrating on lobbying and others focusing on grassroots mobilization, amicus curiae briefs (Box-Steffensmeier and Christenson 2011), get-out-the-vote drives, or media advertising (Boatright 2007). Coalitions may be large or small, be hierarchical or egalitarian, concentrate on one issue or many, and have a membership that is homogenous or heterogeneous.

Given the diversity of forms that coalitions may take, interest groups may use coalitions for a variety of purposes. An interest group may join one coalition to help advertise its issue positions to

the public, a second coalition to lobby on an important provision of a pending bill, and a third coalition to advance its interests in the courts. In doing so, it assembles a coalition portfolio.

Crafting a coalition portfolio not only requires a group to weigh the costs and benefits of coalition participation for each coalition that it considers joining (Hojnacki 1997), but also requires the group to factor in how memberships in diverse coalitions *interact* with one another. Do the functions performed by different coalitions complement or contradict one another? Are coalitional memberships redundant? Or, do they ally the group with an unmanageable set of partners? Further, each coalition membership taxes the interest group's limited staff resources such that participation in one new coalition may imply less effort devoted to other coalitions in its portfolio. If an interest group becomes embroiled in a coalition that does not serve its interests well, then its attention may be diverted generally from other advocacy activities, not only those related to coalitions. Indeed, any coalition portfolio may contain both valuable and toxic assets.

While interest groups form coalitions to advance their own goals, coalitions also serve the interests of policymakers. Coalitions signal to policymakers that a set of interest groups – the members of the coalition – have reached a consensus on the issue at hand (Nelson and Yackee 2012). This signal reduces the transaction costs to policymakers of dealing with the groups in the coalition. Rather than having separate meetings with a wide array of groups, policymakers can meet with a subset of relevant groups at once. Since the groups have already worked out their differences – on one issue at least – the policymakers may be able to avoid becoming embroiled in internecine squabbles. If the policymaker and the coalition have similar goals, then the coalition may subsidize the policymaker's attention to the coalition's issue (Hall and Deardorff 2006) by doing work that might normally be required of legislative staff, serving as a clearing house for information on the topic, mobilizing grassroots activists, or exerting pressure on other policymakers that may not be aligned with the coalition's position. Just as an interest group may benefit from joining a single

coalition that serves the interests of policymakers well (Leifeld and Schneider 2012), so too we expect that an interest group may benefit from constructing a coalition portfolio that meets policymakers' needs.

Coalition portfolios are modified over the course of the policy process both because individual interest groups change their strategies and because of shifts in the overall political environment that are beyond the control over individual groups. As public policies change, they feed back onto the policy process in ways that alter the overall configuration of interests (Beland 2010; Browne 1990; Campbell 2003, 2011; Schattschneider 1935; Skocpol 1992). Paul Pierson (1993, p. 601) explains that:

> Not only do public policies create incentives for interest group activities, they may also provide resources that make that activity easier. The political influence of groups varies dramatically; some are central actors in the development of policy, while others are ineffectual, forced to accept gains and losses determined elsewhere. Public policies can clearly "feed back" into politics in this respect, too. Policies can have an effect on the resources of groups and the ability of groups to bring those resources to bear on decision makers.

Patashnik (2008, p. 30) expands on Pierson's argument by noting that policy feedback affects interest group politics by creating constituencies, which may be accomplished by increasing or decreasing political cohesion among interests, altering the cognitive mindsets of preexisting groups, or tarnishing the public image of a group. These dynamics may prompt the realignment of coalitions, sparking the formation of new coalitions or pushing other coalitions out of the policy domain. Thus, the exact composition of coalition portfolios depends on timing, since the coalitional options available to groups vary over the different stages of the policy process.

In light of these considerations, the question arises as to *how* an interest group's coalition portfolio affects its ability to influence the policy process. Does an interest group expand its influence the most by simply joining as many coalitions as it can, or does it benefit more by joining one set as opposed to another? Can an interest group proactively increase its policy influence by modifying its coalitional portfolio?

We consider three possible answers to these questions. The first possible answer functions as the null hypothesis. We hypothesize that as an interest group joins more coalitions, it exerts more influence over the policy process. This notion is implicit in much of the interest groups literature that assumes that groups join coalitions when their benefits outweigh their costs (e.g., Hojnacki 1997). If this hypothesis is true, then interest groups further their objectives any time they add coalitions to their portfolio. Moreover, if this view captures the principal way in which portfolios matter, then a theory of coalition portfolios would be largely unnecessary, since a theory for why an interest group joins a single coalition would be sufficient to account for its participation in multiple coalitions.

The second possible answer draws upon the recent work of Nelson and Yackee (2012). They argue that coalitions are influential because they increase the uniformity of the messages sent by interest groups to policymakers. According to Nelson and Yackee, coalitions are more influential when they are larger because they signal more clearly to policymakers that the position taken by the coalition is viable. Thus, we hypothesize that interest groups exert more influence over the policy process when they join coalitions that are larger than when they join coalitions that are smaller. If this hypothesis is true, then Nelson and Yackee's (2012) arguments about coalition success apply at the interest-group level as well. According to this view, adding a coalition to its portfolio helps an interest group more if the coalition includes a large number of other groups than if it includes a small number of other groups.

The third possible answer invokes social network theory to account for the value added of joining coalitions. When interest groups work together in a coalition, this relationship is a type of social network tie (Ansell, Reckhow, and Kelly 2009; Heaney 2004). At a minimum, coalitional co-membership affords two groups common access to inside information about the coalition's activities, strategies, and plans. Co-members of a coalition become linked in the minds of audiences that are attentive to the coalition's activities. For example, if co-members of a coalition mutually sign a letter to legislators advocating a position on pending legislation, then the legislators reading the letter have reason to believe that the groups work together. Coalition co-membership may involve deeper relationships between interest groups – perhaps including intimate communication and collaboration – though the degree of closeness between groups varies from group to group and from coalition to coalition.

When an interest group joins a new coalition, it may change its position in the overall network of coalition relationships among groups. If the membership of the new coalition is not perfectly redundant with the membership of another coalition of which it is a member, then joining this coalition links the group in a distinct way to other interest groups, thus modifying its network position. An interest group's network position also depends on the decisions of other groups. If *A* and *B* are both interest groups in a coalition network, then *A*'s position may change when *B* adds or drops membership in a coalition. For example, *A* may become relatively less central in the network when *B* joins coalition *P*; or, *A* may become relatively more central in the network when *B* withdraws from coalition *Q*. *Each interest group has a position in a coalition network that is defined by its coalition portfolio in conjunction with the portfolios of all other interest groups in the network at a given point in time.*

The position of an interest group in a coalition network may be of value to that group for three reasons. First, the group's position matters for its *access to information* within the network (Granovetter 1973, 1985; Carpenter, Esterling, and Lazer 2004). Second, the group's position shapes

its *opportunities for brokerage* in the network (Burt 1992; Fernandez and Gould 1994; Freeman 1979; Heaney 2006). Third, the group's position reflects its *status* in the network (Laumann and Knoke 1987; Podolny 2005).

Recognizing the importance of network position, we hypothesize that interest groups with greater *betweenness* in the coalition network exert greater influence over the policy process than do interest groups with lesser betweenness in the coalition network. A group's betweenness depends on the degree to which it is positioned on the shortest paths between others in the network (Freeman 1979; Wasserman and Faust 1994). If a group lies on the shortest path between other actors, then it is more likely to gain access to timely and sensitive information, be sought out as a broker in the network, and occupy high status. For these reasons, previous studies of interest group politics rely on betweenness to conceptualize variations in network position (Ansell, Reckhow, and Kelly 2009; Grossmann and Dominguez 2009; Heaney 2006). We anticipate that policymakers are more likely to rely on interest groups with high betweenness as contacts that minimize their transaction costs for managing the advocacy community than they are to rely on interest groups with low betweenness. Thus, we hypothesize that these high-betweenness groups are more likely than other groups to be able to exploit their network position to their own advantage in gaining influence over the policy process.[1] If this hypothesis is true, then the ability of interest groups to leverage their coalition portfolios to achieve influence depends not only on the decisions that they make to join coalitions

[1] Network position may be conceptualized in a large number of possible ways, each of which emphasizes a different aspect of network structure, such as prominence or connectedness. For an extensive discussion, see Wasserman and Faust (1994). In this article, we focus on betweenness because it best accounts for the aspects of network position that we think are especially important in interest group politics: access to information, potential for brokerage, and status.

or not, but also on the participation decisions of other groups in the network. According to this view, the value of a group's coalition portfolio is not exclusively within its control.

Although we conduct a competitive test of our three hypotheses – which focus on number of coalitions, average coalition size, and network position, respectively – these hypotheses are not mutually exclusive of one another. It is possible that an interest group simultaneously gains influence by joining more coalitions, increasing the average size of its coalitions, and improving its network position. There is no deterministic relationship between these concepts. For example, as a group expands the number of coalitions that it is in, it may either increase or decrease the average size of its coalitions, and it may either improve or worsen its network position. The objective of our research is to determine which, if any, of these explanations account for how the composition of coalition portfolios enables interest groups to exert influence over the policy process.

## The Medicare Modernization Act of 2003

The Medicare Prescription Drug, Improvement, and Modernization Act was signed into law by President George W. Bush on December 8, 2003. It is generally referred to by its short title, the Medicare Modernization Act, or its abbreviation, MMA. The MMA is principally known as the legislation that established a prescription drug benefit in Medicare (also known as Medicare Part D), settling a more than decade-long dispute on the topic and fulfilling a significant domestic policy campaign promise by President Bush. At the same time, the MMA was major legislation that addressed broader issues in Medicare and health care generally. It created the Medicare Advantage program to replace Medicare + Choice as the way to deliver private health benefits to beneficiaries that choose this option (also known as Medicare Part C). It made a variety of incremental changes to the ways that hospital services and physician services are delivered and paid for by Medicare (Parts A and B), such as by altering the rules for covering preventive health services, competitive bidding for durable medical equipment, and the reimbursement of physician-administered drugs for multiple

sclerosis patients. Beyond Medicare, the law addressed the importation of prescription drugs and authorized the formation of tax-preferred health savings accounts. Overall, the MMA had broad consequences for the operation of Medicare and other federal health programs in the United States.[2]

President Bush and Republican leaders in Congress put their credibility on the line in promoting the law, while the Democratic Party was split in its opposition to the law. Democrats and Republicans divided over the role private insurance companies in the administration of Medicare, with Republicans pushing for a larger role and Democrats desiring a smaller role. As a result, the MMA passed the House and Senate by narrow margins, with the procedural legitimacy of the final vote in the US House of Representatives in dispute (Iglehart 2004).

The MMA remained contentious in the aftermath of its passage (Oberlander 2007). This contentiousness manifested itself in disputes over the implementation of several major provisions, such as the regulation of Medicare Advantage, the rule for providing subsidies to low-income beneficiaries, and the evaluation of demonstration projects set in motion by the law. Some interest groups, such as associations representing health insurance companies, took the position that they had a great deal at stake in the success of the MMA and, thus, tried to promote its effective implementation. Other groups, such as liberal advocacy organizations, approached the implementation process as one more opportunity to revisit the policy debates lost during the law's enactment. Nonetheless, the fundamental structure of the MMA remained essentially intact almost ten years after the law's enactment. The Affordable Care Act of 2010 (also known colloquially as "Obamacare") somewhat altered the rules that govern Medicare Advantage and closed the so-called "donut hole" of prescription drug coverage under Part D. Other aspects of the MMA have been incrementally modified since 2003, but the MMA has not been subject to the kind of unraveling that sometimes befalls landmark reforms (Patashnick 2008).

[2] See US House of Representatives (2003) for details on the MMA's provisions.

The political process surrounding the MMA makes it an excellent case around which to evaluate the effects of coalition portfolios on interest group influence. By the time of the MMA debate in 2003, the consensus politics that surrounded Medicare during the early decades of its existence (Marmor 2000) had been replaced by competitive interest group politics (Oberlander 2003, 2007). Hundreds of interest groups from across the political spectrum became involved (to varying degrees) in the political contest over the MMA. The issues surrounding the law were complex and multifaceted, involving a mix of distributive, redistributive, and regulatory concerns. To address these concerns, interest groups formed a plethora of coalitions on matters large and small. The topics engaged by the MMA spanned multiple government agencies including, but not limited to, the Department of the Treasury, the Federal Trade Commission, and the Department of Health and Human Services. The MMA remained high on policymakers' for several years, allowing us to observe changes in the policy process from enactment to implementation of the law. In summary, examination of the MMA allows the observation of wide variation in types of interest groups, coalitions, and political configurations over the policy process.

The politics of health care are certainly not typical of the policies of other policy domains in the United States (Heinz, Laumann, Nelson, and Salisbury 1993). As Carpenter (2012) argues, health politics are more amenable to redistributive arguments and moral claims than are politics in other domains, and bureaucratic agencies are more engaged in the administration of health policies than they are in other policy areas. However, because health politics are broad and diverse enough to permit the observation of variation in the essential dimensions of our question, they provide an appropriate context for our investigation.

## Research Design

In order to study the relationship between interest group influence and coalition portfolios, it is essential to select a sample such that the interest groups in the sample share many coalition

memberships. A random sample of interest groups would not accomplish this objective because randomly selected groups are unlikely to work on many issues in common. Moreover, much information about coalition participation is not advertised publicly, though it circulates throughout the policy community. As a result, it is necessary to obtain information about coalition participation through personal interviews, which are time- and resource-intensive to conduct. These two considerations call for a research design that focuses on a limited number of interest groups engaged within a coherent area of public policy. Along these lines, Laumann and Knoke (1987) set the standard for selecting the most active interest groups within a policy domain. In this article, we follow Laumann and Knoke's protocol to identify the most active interest groups that participated in the debate over the MMA from 2003 to 2006. This approach allows us to examine the dynamic participation of a diversity of interest groups and coalitions in a major public policy debate. Importantly, it permits the observation of how policy feedback from the passage of the MMA reconfigured coalition structures and, thus, altered the opportunities of interest groups to influence Medicare policy from enactment to implementation of the law.

To select a sample of the most active groups participating in the MMA debate, we relied on a variety of sources. Specifically, we examined: (1) interest groups that testified before Congress on Medicare-related issues between 2001 and 2005 (LexisNexis 2001-2005); (2) the 120 interest groups with the largest reported lobbying expenditures that lobbied Congress on Medicare or Medicaid between 2001 and 2005 (US Senate, Office of Public Records 2001-2005); (3) the 50 interest groups with the largest reported lobbying expenditures that lobbied the Centers for Medicare and Medicaid Services between 2001 and 2005 (US Senate, Office of Public Records 2001-2005); (4) interest groups that were mentioned in articles about Medicare appearing in *Congressional Quarterly Weekly Report*, *Roll Call*, *The Hill*, and *The New York Times* (between 2001 and 2005); and (5) interest groups

that announced a public position either for or against the MMA, according to the congressional leadership offices of the Democratic and Republican parties (obtained by personal interviews).

Compiling multiple sources led to the identification of 378 interest groups that had at least some notable involvement in the debate over the MMA. We selected all interest groups with three or more mentions across all the sources we examined, which yielded a sample of 106 interest groups. We then selected an additional nine interest groups for inclusion in the study based on our subjective judgment that these were important players on the issue, yielding a total sample of 115 interest groups.[3] This list of organizations is provided in Online Appendix A. We contacted lobbyists representing all 115 organizations between May and August 2006 to request a personal interview. We were ultimately able to conduct interviews with 102 of these organizations, for an interview participation rate of approximately 89 percent.[4] The interviews lasted between 30 minutes and 90 minutes, with a typical interview running approximately 45-60 minutes.

[3] For example, we added the National Association for the Advancement of Colored People (NAACP) to the sample because it was involved in an effort to educate the African American population about the benefits entitled to them under Medicare Part D. Our formal count of mentions in multiple sources did not suggest that NAACP should be included in the study, yet we judged its work to be sufficiently important as to merit inclusion. In the section on robustness analysis below, we report that including a dummy variable for these cases in the regression model does not change the conclusions drawn from our empirical analysis.

[4] Nonparticipation in the study seems to have been due to lack of interest in the study or the inconvenience of participating in a personal interview. We were unable to detect any systematic selection biases caused by nonparticipation. For example, nonrespondents were not disproportionately from one ideological perspective, industry, or organizational type.

During the interest group interviews, we extracted four pieces of information that are relevant to the study at hand.[5] First, we asked respondents to list the MMA-relevant coalitions that they participated in during the debate over MMA implementation from 2004 to 2006 and to provide either a list of participating members of the coalition or contact information for a source within the coalition that could provide that list. Second, we asked respondents to rate the partisan composition of their lobbying contacts on MMA-relevant issues on a five-point scale from almost entirely focused on Democratic contacts (=1) to almost entirely focused on Republican contacts (=5), with an even balance between the two extremes providing the midpoint for the scale (=3). Third, we asked respondents to examine the list of 115 interest groups to assess which ones "stand out as especially influential and consequential in formulating Medicare policy" during the enactment of the MMA and then during the implementation of the MMA, giving us one measure of influence during each period.[6] Fourth, we asked respondents if any organizations that they think of as especially

[5] The interviews also included other questions which are not directly relevant to this article. The complete interview schedule is available in Online Appendix B.

[6] We asked respondents both about the enactment period (2003) and the implementation period (2004-2006) during a single interview conducted in 2006. It would have been preferable to conduct two interviews for each respondent – one in 2003 and one in 2006 – so as to minimize problems with recalling key information. However, at the time that the study was conceptualized and planned, it was already 2006, so it was impossible to go back in time to conduct interviews during the enactment period. Thus, the retrospective nature of these interviews is a limitation of the study. However, we do not view it as a major limitation. When we conducted interviews in 2006, we found that all respondents had strong recollections of the events of 2003. The events in question had occurred approximately two-and-a-half years earlier, but they were so crucial to policy debates that, at that time, respondents still discussed them with great passion.

influential and consequential in shaping Medicare policy had been omitted from the list. The fact that no single organization was repeatedly named in response to this question substantially strengthens our confidence that the list of 115 groups we compiled consists of all (or virtually all) of the major interest groups active in the MMA debate.

The data collected from the personal interviews enable us to construct measures of coalition portfolios and interest group influence for each interest group in the study. Coalition portfolios were measured using a multi-step process. After the respondent provided a list of the implementation coalitions in which it participated, we obtained lists of the membership of all these coalitions named by respondents. Lists were obtained directly from the respondents, from a third-party contact affiliated with the coalition, from a coalition letter circulated by the coalition, or from a coalition web site. This approach allows us to estimate the coalition portfolios of organizations that decided not to participate in the personal interview, since these organizations were included on the coalition lists provided by other contacts. It also enables us to include the name of a coalition in an interest group's portfolio even if the group's respondent may have neglected to mention it during the coalition's interview. To obtain the list of coalitions active during the enactment of the MMA, we relied on the list of coalitions provided by Heaney (2006, pp. 917-9), which followed selection procedures comparable to those in this study. On average, each group was a member of 1.84 coalitions during enactment (ranging from 0 to 6) and 4.40 coalitions during implementation (ranging from 0 to 14). In total, we identified 39 coalitions active during the enactment of the MMA and 73 coalitions active during the implementation of the MMA, which are listed in Online Appendix C.[7] The best of our knowledge, this is the largest set of coalitions ever analyzed in a study of interest group politics.

[7] We counted private firms, such as Amgen and Johnson & Johnson, as interest groups in our study, whereas Heaney (2006) did not. As a result, we counted trade associations that had these

The coalitions identified as active during the enactment and implementation of the MMA were widely open to participation by all interested actors. The general philosophy that governed these coalitions was that they were happy to have any other interest group sign on to the coalition as long as they endorsed the stated goals of the coalition (Hula 1999). We did not find the coalitions to be secretive, exclusive, or highly selective with respect to their membership, as might be the case for more volatile issues, such as abortion. Coalitions usually formed around sub-issues of the MMA, such as health savings accounts or the importation of prescription drugs.

A small degree of overlap is present in what constitutes an interest group and what constitutes a coalition in this study. For our purposes, an "interest group" is any nongovernment, organizational actor that was identified by the sources in our data-gathering process as engaged in the debate over the MMA. However, seven of these organizational actors are organized as coalitions that contain other interest groups in the sample. These overlapping actors include several trade associations and the American Federation of Labor-Congress of Industrial Organizations (AFL-CIO).[8]

Interest group influence over public policy is notoriously difficult to measure (Smith 1995). One reason for this difficulty is that policies – especially major legislation like the MMA – have hundreds of components that require the resolution of innumerable issues raised by interested

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private firms as members to be coalitions in our study, which is the one point of difference between our selection methodology and that of Heaney (2006). This difference gave us 39 coalitions during enactment, rather than the 32 reported by Heaney (2006).

[8] To avoid any problems caused by these overlapping seven organizations, we explain below in the section on robustness analysis that we conducted our data analysis both with and without a dummy variable for these seven organizations, yielding the result that the conclusions of the research are not sensitive to their inclusion in the regression analysis.

parties. Because of this complexity, it is difficult for any one observer to collect enough information to reliably judge who influences policy. Instead, knowledge about influence is distributed among the network of active players in the policy domain that collectively observe the exercise of influence within their particular niches. For this reason, we rely on the well-established method of asking interview respondents to rate the influence of other participants in the network (Fernandez and Gould 1994; Gamson 1966; Heaney 2006; Laumann and Knoke 1987; and Leifeld and Schneider 2012). While any one respondent is likely have an incomplete view of the field, respondents collectively are expected to provide a reasonably accurate rating of the levels of group influence.

A skeptical reader may question whether the use of interviewer ratings introduces biases into the measurement of influence. For example, could the personal relationships among interview respondents bias their view of who is influential? While we certainly cannot argue that our measure of influence is perfect, we contend that it is reliable and valid as long as two conditions hold. First, the interview respondents are observers that are uniquely knowledgeable of the inner workings of the policy under examination. Second, the interview respondents consist of all (or almost all) of the major participants on each of the sub-issues in the policy area. If we had conducted a random sample of participants in the policy domain, then these conditions would not necessarily hold. However, by interviewing the leading lobbyists for almost all of the major interests involved in the MMA debate, we have generated an elite sample that meets these conditions and in which the biases in the data reflect the biases of the interest mobilization process (see Schattschneider 1960). To the extent that influence scores are, in part, a product of the reputations that interest groups gain from interacting directly with other interview respondents, we point out, in line with Gamson (1966), that these reputations are a resource to interest groups which and may have a direct effect on their ability to exert policy influence.

A final reason to have confidence in our influence measure is that the empirical results appear to be a reasonable reflection of what other observers reported regarding the leading interest groups on this policy issue. We find that the most influential groups during the enactment and implementation of the MMA were the AARP (formerly the American Association of Retired Persons), the pharmaceutical industry (as represented by the Pharmaceutical Research and Manufacturers of America), and the health insurance industry (as represented by America's Health Insurance Plans). These results are in concordance with qualitative investigations reported by scholars such as Heaney (2006), Iglehart (2004), and Oberlander (2007).

## Empirical Models

We estimate two sets of regression models on interest group influence. In the first set of regressions, we estimate negative binomial panel models on the count of the number of times an interest group was cited by its peers as especially influential and consequential. Because these models explain the *level* of influence, they may not fully account for the fact that awareness about a group's influence accumulates over time. For example, the American Medical Association and the AARP were involved in the debate over Medicare long before the introduction of the MMA (Laumann and Knoke 1987; Starr 1982). To address this potential problem, we estimate a second set of regression models on the change in the number of influence citations from enactment to implementation using ordinary least squares with robust standard errors. In these models, we estimate the effect of changes in our covariates of interest on changes in influence. This second set of regressions allows us to see how changes in coalition portfolios correspond with changes in influence.

To test our three hypotheses, we include variables in our models for the number of coalitions in an interest group's portfolio, the average number of groups in a coalition in an interest group's portfolio, and the network position occupied by a group based on its portfolio. Each of these measures is tabulated by arraying group and coalition memberships in a two-mode network ($C$)

arranged in an adjacency matrix, where actors in the first mode (rows) are interest groups (*i*) and actors in the second mode (columns) represent coalitions (*j*). A tie in *C* between *i* and *j*, denoted as $c_{ij}$ =1, indicates that *i* is a member of *j*. Otherwise, if *i* is not a member of *j*, then $c_{ij}$=0.

We calculate three measures for each *i* in *C*:

1) *Number of Coalitions*

The number of coalitions (*n*) to which group *i* belongs is given as:

$$n_i = \sum_{j=1}^{J} c_{ij}$$

where the set of all possible coalitions has *J* elements.

2) *Average Coalition Size*

The average size (*s*) of a coalition to which group *i* belongs is given as:

$$s_i = \frac{1}{n_i} \sum_{j=1}^{J} \left( c_{i,j} \sum_{i=1}^{I} c_{i,j} \right)$$

where the set of all possible groups has *I* elements.

*3) Betweenness*

*Betweenness* is a descriptive statistic used in the analysis of actors in social networks, first popularized for one-mode networks by Freeman (1977) and elaborated for two-mode networks in Borgatti and Everett (1997). It relies on the concept of a *geodesic path*: a path between two actors in C, is a *geodesic path* (*g*) if it is the shortest path, requiring the fewest number of intermediaries, between those actors. An actor's betweenness is the proportion of *geodesics* between each pair of actors in the network that pass through that actor. Calculation of betweenness for actor *i* in *C* begins by computing $b_i$:

$$b_i = \frac{1}{2} \sum_{a \neq i}^{K} \sum_{b \neq i,a}^{K} \frac{g_{aib}}{g_{ab}},$$

where $K = I + J$, $g_{ab}$ is the number of *g*s from actor *a* to actor *b*, where *a* and *b* are any actors in *C*, and $g_{aib}$ is the number of *g*s from *a* to *b* that pass through *i*. $b_i$ is then normalized by the maximum possible betweenness for any actor, given the actor's mode (*i* or *j*) and the size thereof. For all *i* in *C*, this normalization achieve first by computing:

$$b_{i\,max} = \frac{1}{2}[J^2(s+1)^2 + J(s+1)(2t-s-1) - t(2s-t+3)] \ ,$$

where *s* is equal to the integer resulting from the division $\frac{(I-1)}{J}$ and $t$ is the integer remainder resulting from the division $\frac{(I-1)}{J}$ for a given computation of *s*. For *C*, the betweenness ($b^*$) of group *i* is given by:

$$b_i^* = \frac{b_i}{b_{i\,max}} \ .$$

In each regression, we use a set of control variables that accounts for explanations for interest group influence besides the composition of a group's coalition portfolio. First, we include a variable for the *Number of Registered Lobbyists* working on Medicare that a group has in Washington, DC. We use this variable based on the expectation that when groups devote more effort to lobbying, they will have greater influence over policy, other things equal (Austen-Smith 1993; Bauer, Pool, and Dexter 1963; Birnbaum 1992; Johnson and Broder 1996).

Second, we include a variable for the *Political Party Lean* of the interest group. Although interest groups often prefer to officially maintain a nonpartisan posture, their behavior usually suggests stronger connections with one party than with the other (Greenstone 1969; Kersh 2002; Koger and Victor 2009). We use this variable based on the expectation that interest groups benefit if they are linked to the party in control of Congress, other things equal. Since the Republican Party controlled both houses of Congress during the period of our study (2003-2006), we expect that group connections with Republicans are likely to translate into more policy influence.

Third, we include a variable for whether or not the group endorsed the MMA during the enactment debate (US House Committee on Ways and Means 2003). We use this variable because of statements by the Republican leadership, as part of the so-called K Street Project, that groups supporting the Republican Party agenda would be rewarded while those that did not would be frozen out of the policy process (Chaddock 2003; Confessore 2003). Thus, we expect that interest groups that endorsed the MMA would have greater influence over the policy process than those that did not, other things equal.

Finally, we use a series of dummy variables for key health industries that had notably high stakes in the MMA debate: medical doctors, home care providers, hospitals, insurance companies, pharmaceutical manufacturers, and pharmacies/pharmacists. These categories are mutually exclusive but not collectively exhaustive. Somewhat fewer than half (50) of the groups in the study fall into one of these categories, while 65 groups (such as citizens advocacy organizations) are not affiliated with any of these industries. We do not have specific expectations about which industries are likely to gain/loose influence, but conjecture that influence would vary on an industry-by-industry basis.

We test each hypothesis independently and in conjunction with the other hypotheses in the study. By estimating a series of models, rather than a single model, we ensure that our results are not an artifact of multicollinearity among the focus variables. Model (1) provides our base model without any coalition portfolio variables on the level of interest group influence. Model (2) tests the hypothesis for the number of coalitions, Model (3) tests the hypothesis for coalition size, and Model (4) tests the hypothesis for network position. Models (5), (6), and (7) test these hypotheses in conjunction with one another. Models (8) through (14) repeat the specifications of the first set of models, but instead switch to *Change in Interest Group Influence* as the dependent variable, along with changes in the time-varying independent variables in the study.

## Results

The results of estimating Models (1) through (7) are reported in Table 1. Our first hypothesis, that an interest group's influence increases with each coalition that it joins, is not supported in any model. Similarly, our second hypothesis, that an interest group's influence expands along with the average size of coalitions that it joins, is not supported in any specification. However, our third hypothesis, that interest groups gain influence when their coalition portfolios afford them a position between other groups in the coalition network, is supported in all three models in which it is tested: Models (4), (6), and (7). This result implies that betweenness augments interest group influence when it appears in the regression in comparison with control variables and while holding constant the number and/or size of coalitions in a group's portfolio.

INSERT TABLE 1 HERE

Several control variables in the model are significant predictors of levels of influence. *Number of Registered Lobbyists* and *Endorser of the MMA* are positive and significant, as expected, in all seven specifications of the regression. However, *Political Party Lean* is not a significant predictor of influence levels in any specification. Insurance companies, pharmaceutical manufacturers, and pharmacies/pharmacists register significantly higher than average levels of influence, other things equal. Our results are mixed for medical doctors, which enter Models (4), (5), (6), and (7) with significant negative coefficients, but fall slightly below the significance threshold in Models (1), (2), and (3). Home care and hospitals do not stand out as significantly different from average levels of influence in any model specification.

The results of estimating Models (8) through (14) confirm the conclusions drawn from the results of Models (1) through (7) with respect to the focal hypothesis of the paper. Our third hypothesis is supported in all instances, but our first and second hypotheses fail to receive any confirmation. Thus, changes in betweenness predict changes in influence, even after controlling for

changes in other aspects of the coalition portfolio. On the other hand, coefficients on several of the control variables differ from the first set of models. *Change in Number of Lobbyists*, *Political Party Lean*, and *Endorser of the MMA* do not significantly correspond with changes in influence reputation. Insurance companies and pharmacists/pharmacies gained influence as the policy process shifted from enactment to implementation. Pharmaceutical manufacturers were viewed as having lost influence as the process transitioned to implementation, although their absolute levels of influence remained high. Coefficients for the home care industry were unstable across models, although medical doctors and hospitals did not experience changes in influence that were significantly different from other interest groups.

INSERT TABLE 2 HERE

The robust conclusion resulting from these analyses is that interest groups increase their influence over Medicare policy when they construct coalition portfolios that situate them between other interest groups in the coalition network. The number of coalitions they join does not appear to matter. Neither does the size of their coalitions.[9] Rather, interest groups tend to be influential when they are positioned strategically in the network of coalitions. A position of betweenness is desirable for gathering information, exercising brokerage, and displaying status. Thus, when interest groups are deciding to become involved in coalitions, they are well advised to consider the overall configuration of interests in the policy area in which they are working. If a coalition places them between interests that are otherwise difficult to connect, then they may be able to reap gains for their constituents by joining that coalition. However, achieving such a position may well be beyond

[9] This finding does not necessarily contradict the analysis of Nelson and Yackee (2012), which shows that coalitions that are larger tend to be more influential. It may be the case that larger coalitions get more of what they want (as Nelson and Yackee show), but that this success does not necessarily translate into direct benefits for individual groups (as we show).

an individual group's reach, as betweenness is determined not only by a group's choices, but also by the structure of the overall coalition network.

Our findings regarding betweenness should not be interpreted prescriptively as implying that interest groups should not join coalitions that do not improve a group's betweenness. Many good reasons may exist to join these coalitions. For example, the interest group's leaders may believe deeply in the cause promoted by the coalition. Or, the interest group's lobbyist may owe a favor to the group that is leading the coalition. Nevertheless, our analysis demonstrates that the interest group is unlikely to improve its own influence by joining such a coalition, other things equal.

**Robustness Analysis**

In addition to the fourteen specifications of our model presented in Tables 1 and 2, we estimated a wide range of alternative specifications of the model. Our guiding principle was to make sure that the arbitrary specification decisions that we made in estimating Models (1) through (14) did not unduly influence the substantive conclusions drawn from the research (Leamer 1983). Among these specifications, we re-estimated each model with and without dummy variables for the nine groups included as part of the judgment sample and, alternatively, the seven interest groups that overlapped between the interest group and coalition samples. In each case, the conclusions pertaining to our focal hypotheses were not sensitive to the inclusion of these observations.

A more involved question of robustness pertains to whether the network effect that we attribute to position in the coalition network is uniquely attributable to coalition participation, or if it is instead the result of some other kind of network participation that is highly correlated with the coalition network. For example, numerous scholars point to the importance of communication networks in understanding the strategic behavior of interest groups (see, for example, Carpenter, Esterling, and Lazer 2004). Could communication networks that underlie coalition networks be the true cause of the influence patterns that we observe?

First, from a theoretical perspective, we think that it is unlikely that coalition networks are simply derivative of communication networks. Communications often occur behind the scenes of politics among people that would never work together in coalitions. For example, lobbyists may have friendships from past positions that connect them informally with those who their organizations are formally aligned against. Alternatively, organizations may form coalitions with some interest groups with which they have little informal contact. In short, we have reason to believe that communications and coalitions are quite different things.

Second, we are able to test our expectations about communications and coalitions by drawing upon additional interview data on behind-the-scenes communications. Specifically, we asked respondents to "place a check mark after the name of all organizations on this list with which your organization discusses Medicare policy matters. Indicate whether these discussions occur occasionally or frequently, and whether they occurred during enactment or during implementation." From these responses, we are able to estimate betweenness in the communications network either on the basis of occasional or frequent communication.

Using the data from our communication networks question, we re-estimate each model with an additional variable for occasional communication and, alternatively, an additional variable for frequent communication. We report the results of the re-estimated models with the frequent communication independent variable in Online Appendix D. The results do not differ significantly when the models are estimated using occasional communication. While the pattern of coefficients on the control variables does differ slightly from our results in Tables 1 and 2, the differences do not affect our finding about the influence advantages of betweenness in the coalition network.

**Portfolio Dynamics from Enactment to Implementation**

The results of our regression analysis demonstrate convincingly that the composition of an interest group's coalition portfolio – particularly the extent to which it situates the group between

other groups in the coalition network – makes a difference for the group's policy influence. However, neither the composition of its coalition portfolio, nor its position vis-à-vis other groups, is entirely within the control of the group itself. These factors depend, in part, on the overall configuration of the coalition network, which changes over the course of the policy process.

We observed the coalition politics of Medicare policy during periods when the political system was debating and, subsequently, implementing a major policy reform. The ways in which interest groups used coalitions changed over this process. During the enactment period, interest group community was divided, in part, over the question of whether or not the MMA should become law. Coalitions formed both to promote and to oppose the chief contours of the proposed reform. Other coalitions emerged to attempt to advance or try to block specific provisions, such as the introduction of a Medicare co-payment by beneficiaries for clinical laboratory services.

During the implementation period, the basic nature of the advocacy game changed. Coalitions no longer revolved around efforts to support or oppose the MMA as a whole. Rather, coalitions formed around the need to educate the public about the provisions of the MMA so as to smooth its implementation. The Medicare Today Coalition, which was formed during implementation and was joined by 33 of the interest groups in our study, was the archetypical example of this type of coalition. Original supporters and opponents of the MMA both had an incentive to participate in this type of coalition. Supporters had put their credibility on the line in pushing for the MMA, so they wanted it to succeed. Given the bill's passage, many opponents, too, wanted to ensure that the MMA served critical populations, such as low-income and home-bound beneficiaries, as effectively as possible. Of course, interest groups still formed coalitions during the implementation phase that focused on attempting to add, delete, or modify targeted aspects of the legislation. However, the divisive politics of the enactment period was largely replaced by a more cooperative implementation phase of policymaking.

In order to better understand the changing configuration of coalitions, we visualize the coalition networks in Figures 1 and 2. In these figures, black squares represent coalitions, white circles represent interest groups, and lines represent the membership of an interest group in a coalition. The size of white circles is scaled in proportion to the number of influence citations that the interest group received in that period. However, the size of the black squares is intentionally held constant. The diagram is drawn using an algorithm that places interest groups closer to one another in the network if they tend to be members of the same coalitions and more distant from one other if they tend to be members of different coalitions (Kamada and Kawai 1989).

INSERT FIGURE 1 HERE

The divisiveness of enactment politics is immediately apparent in Figure 1. The lower right-hand side of the graph, which is somewhat separated from the rest of the network, is dominated by opponents of the MMA. The lower left-hand side of the graph is dominated by supporters of the MMA. The top of the graph largely consists of interest groups that were focused on provisions that were peripheral to the larger MMA debate, such as reimbursements to hospitals and physicians.

The greater consensus of implementation politics is immediately apparent in Figure 2. Rather than organizing along factional lines, the network exhibits a core-periphery structure, which means that groups are clustered around a single center, rather than multiple centers. The implementation network is denser than the enactment network due to the expansion in the number of coalitions from 39 to 73. The evolving structure of the network affected which groups occupied positions of high betweenness in the network.

INSERT FIGURE 2 HERE

To illustrate the consequences of moving from enactment to implementation, we label six groups in the network. We identify two groups that increased betweenness (AARP, American Pharmacists Association), two groups that maintained roughly constant betweenness (Generic

Pharmaceutical Association, American Society of Clinical Oncology), and two groups that lost betweenness (Families USA, American Hospital Association). These changes were both a product of strategic decisions at the group level and macro-level changes in the configuration of the network.

AARP gained betweenness in moving from enactment to implementation as a result of its strategic decision to increase its engagement with other groups. AARP had held back from participating in coalitions during enactment in order to engage in high-powered, private negotiations with Republican leaders in Congress (Iglehart 2004). During implementation, AARP elected to participate in coalitions designed to smooth the implementation of the MMA, given its controversial decision to endorse the legislation during the enactment debate (Heaney 2007). In contrast, the American Pharmacists Association (APhA) gained betweenness because the debate over implementation focused on issues where pharmacists possessed vital expertise, namely, how to manage formularies for the millions of recipients who would start to receive the prescription drug benefit. As the Medicare community addressed implementation, it needed pharmacists to be involved in the conversation. This reconfiguration of coalitions served APhA's interests well.

Families USA is a citizens advocacy organization that helped to lead the charge against the MMA during enactment by arguing that the legislation put corporate profits above the needs of Medicare beneficiaries. By coordinating the opposition, Families USA was well positioned as a broker between smaller interest groups opposing the law and the broader Medicare policy community. After the law passed, its strategy no longer afforded itself an advantageous position vis-à-vis the coalition network, which realigned to emphasize how to make the law work in practice. Likewise, the American Hospital Association (AHA) was an important broker during the enactment of the law when it helped to coordinate groups interested in improving Medicare reimbursement to hospitals. However, AHA and the wider hospital community mostly got what they wanted in the text of the MMA. Since these issues of reimbursement did not involve the kind of administrative

difficulties encountered by the prescription drug benefit and some other provisions, AHA was in a position to disengage from the Medicare coalitions during implementation.

Our analysis does not presume that interest groups know precisely where they are within the structure of the coalition network. Lobbyists need not be able to calculate their network betweenness in order to take advantage of the benefits that it provides. Some actors may understand that they have found themselves to be "well positioned" or "poorly positioned," but benefits from brokerage, access to information, and increased status—or the costs of their absence—are accrued by interest groups regardless of the degree of awareness that they have about the network structure. The groups that are most likely to be able to take advantage of their position in the network are those that gradually adjust their positions and accommodate the interests of others, which is sometimes referred to as "robust action" (Padgett and Ansell 1993).

The reconfiguration of coalitions brought about by the enactment of the MMA is unlikely to be typical of how coalitions realign after the passage of major legislation. The MMA had numerous idiosyncrasies that molded the exact nature of policy feedback. Thus, the precise lesson of this case study ought not to be that coalitions switch from a factional structure during enactment to a core-periphery structure during implementation. This outcome is almost certainly case specific. We believe that a more general lesson to draw is that feedback from legislative enactments does restructure coalition politics, which has implications for the way that interest groups build, use, and employ coalition portfolios. Future research must be attentive to these types of dynamics if it is to appreciate the strategies and consequences of interest group coalition politics.

## Conclusion

Interest group scholars have long recognized the ubiquity of coalitions to interest group advocacy. At their core, coalitions are strategic interactions among multiple groups. However, the extant literature on coalitions models this interaction only to a limited extent, providing little insight

on the common situation in which groups balance their commitments across a set of coalitions. In advancing a theory of coalition portfolios, we establish a framework for understand how group participation in multiple coalitions matters for the influence wielded by individual groups. Our theory models this influence both as a product of the strategies of individual groups and feedback generated by the dynamics of the policy process. More generally, our analysis deepens the extent to which interest group politics are understood as taking place within the structures generated by political networks. If advocacy is undertaken by groups acting as a part of a larger community – rather than as isolated, individual actors – then the study of interest group politics requires theories and methods that explicitly take these communities into account.

Our analysis concludes that the composition of coalition portfolios matters in allowing interest groups to influence policy. Specifically, we find that interest groups are more influential when they are situated between other groups in the coalition network, not simply when they accumulate memberships in many coalitions or join large coalitions. This finding is supported both when examining levels of interest group influence and when considering how influence changes over the policy process. However, this finding does not imply that interest groups can easily modify their coalition portfolios to amplify their influence. Instead, their success depends also on the coalitional choices made by other groups, as they react to feedback from the policy process.

Our investigation of interest group coalitions surrounding the Medicare Modernization Act of 2003 allows us to observe a wide diversity of interest groups and coalitions over significant changes in the policy process. While Medicare represents an important area of public policy, our analysis nonetheless examines only one policy area. Future research would benefit from testing these hypotheses in a diversity of policy areas so as to more thoroughly evaluate the generality of our findings.

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**Table 1. Regression Models of Interest Group Influence**

Negative Binomial Estimator with Panel Data

| **Independent Variable** | (1) | (2) | (3) | (4) | (5) | (6) | (7) | Mean (std. dev.) | Percent Imputed |
|---|---|---|---|---|---|---|---|---|---|
| *Number of Coalitions* | - | -0.002 | - | - | 0.009 | -0.010 | -0.001 | 3.122 | 0.000 |
| | | (0.007) | | | (0.009) | (0.007) | (0.010) | (2.971) | |
| *Average Coalition Size* | - | - | -0.006 | - | (-0.009) | - | -0.007 | 8.187 | 0.000 |
| | | | (0.003) | | (0.005) | | (0.005) | (6.542) | |
| *Coalition Network Betweenness* | - | - | - | 6.165** | - | 6.888*** | 5.527** | 0.008 | 0.000 |
| | | | | (1.791) | | (1.876) | (1.889) | (0.013) | |
| *Number of Registered Lobbyists* | 0.021** | 0.020** | 0.019** | 0.028*** | 0.022** | 0.025*** | 0.026*** | 3.525 | 19.565 |
| (Average per Six-Month Period) | (0.007) | (0.007) | (0.007) | (0.007) | (0.007) | (0.007) | (0.007) | (4.116) | |
| *Political Party Lean* | 0.102 | 0.099 | 0.098 | 0.127 | 0.108 | 0.117 | 0.123 | 3.399 | 11.304 |
| (5-point scale, 1=Democratic, 5=Republican) | (0.073) | (0.073) | (0.073) | (0.071) | (0.073) | (0.072) | (0.072) | (0.895) | |
| *Endorser of Medicare Modernization Act* | 0.366* | 0.373* | 0.395* | 0.319* | 0.380* | 0.343* | 0.350* | 0.461 | 0.000 |
| (Yes=1, No = 0) | (0.155) | (0.157) | (0.157) | (0.150) | (0.157) | (0.153) | (0.152) | (0.500) | |
| *Represents Medical Doctors* | -0.512 | -0.504 | -0.502 | -0.562* | -0.528* | -0.537* | -0.553* | 0.078 | 0.000 |
| (Yes=1, No = 0) | (0.266) | (0.267) | (0.267) | (0.258) | (0.266) | (0.261) | (0.261) | (0.269) | |
| *Represents Home Care Industry* | -0.727 | -0.727 | -0.707 | -0.701 | -0.694 | -0.700 | -0.677 | 0.035 | 0.000 |
| (Yes=1, No = 0) | (0.384) | (0.385) | (0.386) | (0.373) | (0.383) | (0.375) | (0.375) | (0.184) | |
| *Represents Hospitals* | -0.047 | -0.035 | -0.019 | -0.164 | -0.053 | -0.131 | -0.139 | 0.035 | 0.000 |
| (Yes=1, No = 0) | (0.381) | (0.383) | (0.383) | (0.370) | (0.381) | (0.373) | (0.373) | (0.184) | |
| *Represents Insurance Companies* | 0.797** | 0.802** | 0.811** | 0.784** | 0.797** | 0.802** | 0.800** | 0.078 | 0.000 |
| (Yes=1, No = 0) | (0.265) | (0.266) | (0.266) | (0.257) | (0.264) | (0.259) | (0.258) | (0.269) | |
| *Represents Pharmaceutical Manufacturers* | 0.876*** | 0.886*** | 0.925*** | 0.838*** | 0.913*** | 0.873*** | 0.894*** | 0.096 | 0.000 |
| (Yes=1, No = 0) | (0.235) | (0.237) | (0.238) | (0.227) | (0.236) | (0.231) | (0.231) | (0.295) | |
| *Represents Pharmacists or Pharmacies* | 0.608** | 0.613** | 0.646** | 0.597** | 0.645** | 0.618** | 0.642** | 0.113 | 0.000 |
| (Yes=1, No = 0) | (0.220) | (0.221) | (0.222) | (0.213) | (0.220) | (0.215) | (0.215) | (0.317) | |
| *Constant* | 12.900 | 14.637 | 16.714 | 16.189 | 15.061 | 16.156 | 16.577 | - | - |
| | (645.522) | (521.661) | (566.135) | (590.015) | (341.888) | (436.521) | (477.955) | | |

**Table 1 is continued on next page**

**Table 1. Continued from previous page**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| R | 300,924 | 614,818 | 4,740,553 | 3,629,185 | 963,519 | 3,297,278 | 5,057,217 | - | - |
| | ($1.94x10^8$) | ($3.21x10^8$) | ($2.68x10^9$) | ($2.14x10^9$) | ($3.29x10^8$) | ($1.44\ x10^9$) | ($2.42x10^9$) | - | - |
| S | 2.100 | 2.086 | 2.073 | 2.239 | 2.111 | 2.206 | 2.215 | - | - |
| | (0.290) | (0.289) | (0.285) | (0.313) | (0.293) | (0.308) | (0.310) | - | - |
| Log Likelihood | -748.616 | -748.561 | -747.258 | -742.681 | -746.765 | -741.772 | -740.756 | - | - |
| Likelihood Ratio $\chi^2$ | 63.93*** | 63.69*** | 65.92*** | 78.89*** | 67.79*** | 79.72*** | 81.92*** | - | - |
| Likelihood Ratio Degrees of Freedom | 9 | 10 | 10 | 10 | 11 | 11 | 12 | | |

*Note:* *** $p \leq 0.001$, ** $p \leq 0.010$, * $p \leq 0.050$; Number of Groups = 115; Number of Periods = 2; Dependent variable mean = 18.296, std. dev. = 16.677.

**Table 2. Regression Models of Change in Interest Group Influence**

Ordinary Least Squares with Robust Standard Errors

| Independent Variable | (8) | (9) | (10) | (11) | (12) | (13) | (14) | Mean (std. dev.) | Percent Imputed |
|---|---|---|---|---|---|---|---|---|---|
| *Change in Number of Coalitions* | | -0.036 | | | -0.049 | -0.311 | -0.312 | 2.557 | |
| | - | (0.242) | - | - | (0.245) | (0.221) | (0.225) | (2.570) | 0.00 |
| *Change in Average Coalition Size* | | | 0.019 | | 0.022 | | 0.003 | 5.647 | |
| | - | - | (0.047) | - | (0.047) | - | (0.043) | (7.214) | 0.00 |
| *Change in Coalition Network Betweenness* | | | | 99.803** | | 120.508*** | 120.394*** | 0.001 | |
| | - | - | - | (28.544) | - | (18.548) | (18.979) | (0.014) | 0.00 |
| *Change in Number of Lobbyists* | -0.139 | -0.143 | -0.146* | -0.042 | -0.154 | -0.062 | -0.064 | 0.460 | |
| (Average Number per Six-Month Period) | (0.071) | (0.077) | (0.072) | (0.096) | (0.079) | (0.100) | (0.104) | (2.284) | 20.00 |
| *Political Party Lean* | -0.812 | -0.817 | -0.814 | -1.010* | -0.823 | -1.095* | -1.095* | 3.398 | |
| (5-point scale, 1=Democratic, 5=Republican) | (0.510) | (0.514) | (0.509) | (0.442) | (0.514) | (0.447) | (0.449) | (0.909) | 11.30 |
| *Endorser of Medicare Modernization Act* | -0.987 | -0.951 | -1.055 | -0.858 | -1.018 | -0.514 | -0.522 | 0.461 | |
| (Yes=1, No = 0) | (0.874) | (0.833) | (0.883) | (0.858) | (0.856) | (0.797) | (0.819) | (0.501) | 0.00 |
| *Represents Medical Doctors* | 1.923 | 1.977 | 2.007 | 1.615 | 2.097 | 2.023 | 2.037 | 0.078 | |
| (Yes=1, No = 0) | (1.211) | (1.347) | (1.238) | (1.256) | (1.395) | (1.291) | (1.345) | (0.270) | 0.00 |
| *Represents Home Care Industry* | 2.915* | 2.934* | 2.839* | 2.662 | 2.851* | 2.778 | 2.768 | 0.035 | |
| (Yes=1, No = 0) | (1.315) | (1.340) | (1.370) | (1.460) | (1.385) | (1.421) | (1.425) | (0.184) | 0.00 |
| *Represents Hospitals* | 0.840 | 0.862 | 0.916 | 2.247 | 0.960 | 2.734 | 2.744 | 0.035 | |
| (Yes=1, No = 0) | (1.144) | (1.184) | (1.177) | (1.842) | (1.232) | (1.889) | (1.910) | (0.184) | 0.00 |
| *Represents Insurance Companies* | 4.822*** | 4.919** | 4.815*** | 4.844*** | 4.947** | 5.694*** | 5.696*** | 0.078 | |
| (Yes=1, No = 0) | (1.263) | (1.615) | (1.268) | (1.161) | (1.620) | (1.457) | (1.468) | (0.270) | 0.00 |
| *Represents Pharmaceutical Manufacturers* | -3.276** | -3.191* | -3.362** | -3.404** | -3.626** | -2.694* | -2.703* | | |
| (Yes=1, No = 0) | (0.918) | (1.228) | (0.960) | (0.978) | (1.230) | (1.198) | (1.201) | 0.096 | 0.00 |
| *Represents Pharmacists or Pharmacies* | 5.292*** | 5.374*** | 5.146*** | 5.161*** | 5.231*** | 5.848*** | 5.831*** | (0.113) | |
| (Yes=1, No = 0) | (0.900) | (1.172) | (0.981) | (0.823) | (1.193) | (1.068) | (1.079) | (0.318) | 0.00 |
| *Constant* | -0.169 | -0.106 | -0.214 | 0.327 | -0.136 | 0.979 | 0.974 | | |
| | (1.599) | (1.652) | (1.623) | (1.280) | (1.664) | (1.342) | (1.359) | - | - |
| F-test statistic | 13.73*** | 12.52*** | 12.55*** | 16.24*** | 11.70*** | 20.16*** | 18.40*** | - | - |
| F degrees of freedom | (9,105) | (10,104) | (10,104) | (10,104) | (11, 103) | (11, 103) | (12, 102) | | |
| $R^2$ | 0.316 | 0.316 | 0.316 | 0.400 | 0.317 | 0.420 | 0.420 | - | - |

*Note:* *** $p \leq 0.001$, ** $p \leq 0.010$, * $p \leq 0.050$; Number of Groups = 115; Number of Periods = 1; Dependent variable mean = -2.504, std. dev=4.504.

**Figure 1. Enactment Coalition Network, 2003**

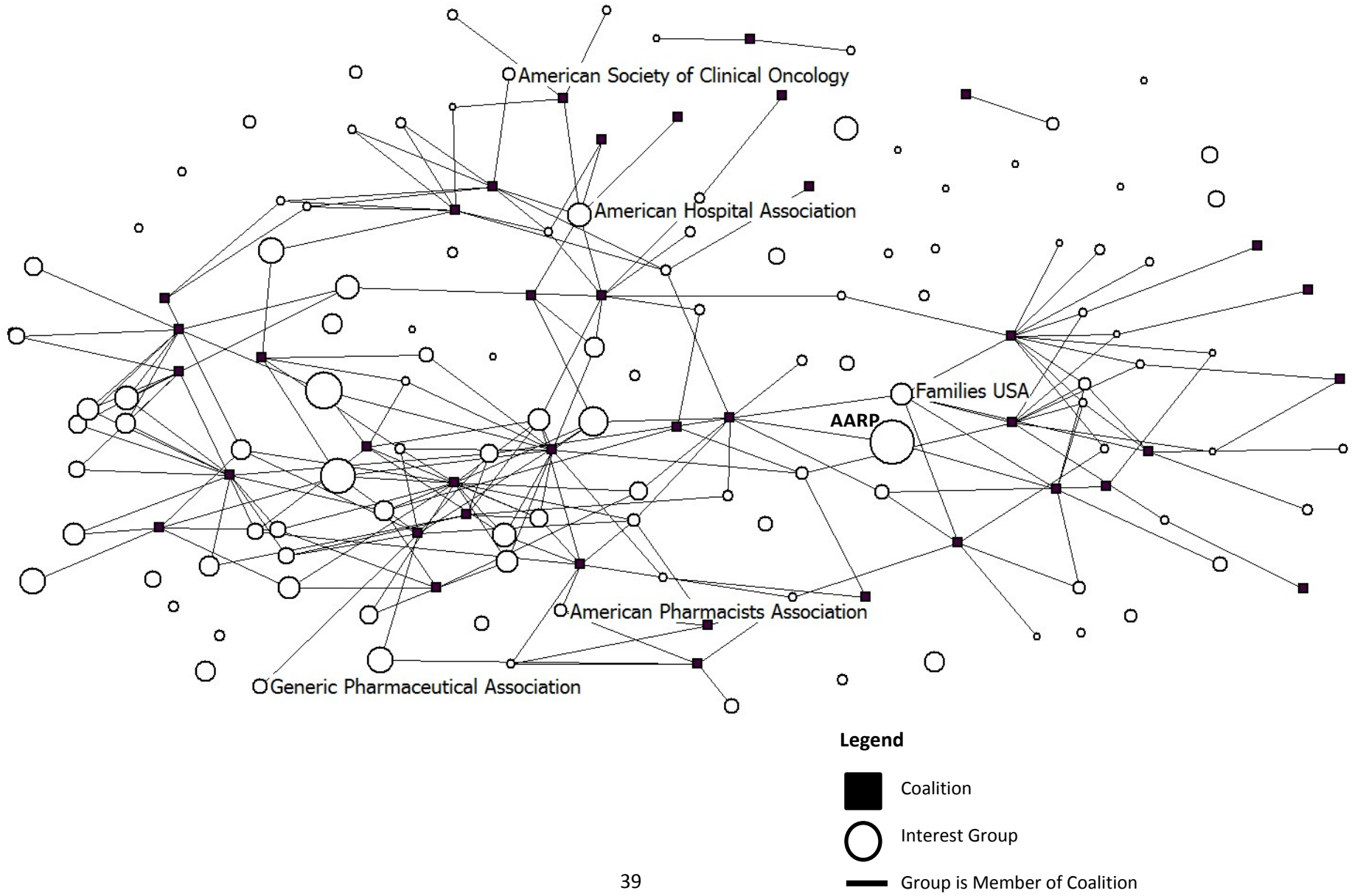
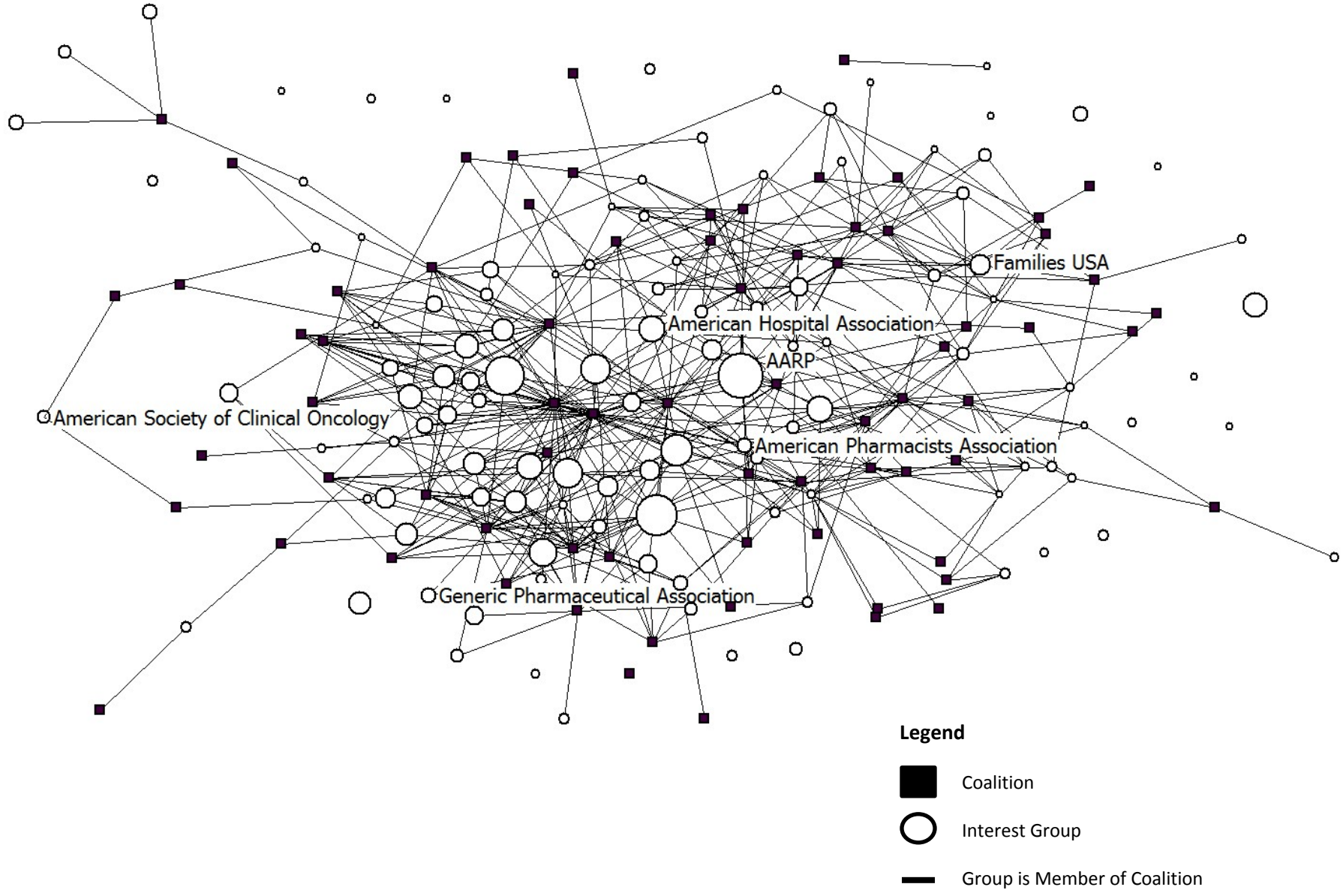


**Figure 2. Implementation Coalition Network**



**Online Appendix A. Organizations Included in Sample of Interest Groups**

AARP (formerly known as the American Association of Retired Persons)
Academy of Managed Care Pharmacy
Advanced Medical Technology Association
Aetna
AFL-CIO (American Federation of Labor-Congress of Industrial Organizations)
Alliance for Retired Americans
Alliance of Specialty Medicine
Alliance to Improve Medicare
Alzheimer's Association
American Academy of Actuaries
American Academy of Family Physicians
American Association for Homecare
American Association of Homes & Services for the Aging
American Association of Orthopedic Surgeons
American Cancer Society
American Clinical Laboratory Association
American College of Emergency Physicians
American College of Physicians
American College of Surgeons
American Enterprise Institute
American Fed. of State, County,& Municipal Employees
American Health Care Association
American Health Quality Association
American Heart Association
American Hospital Association
American Medical Association
American Medical Directors Association
American Nurses Association
American Pharmacists Association
American Physical Therapy Association
American Psychiatric Association
American Society of Clinical Oncology
American Society of Consultant Pharmacists
American Society of Health-System Pharmacists
America's Health Insurance Plans
Amgen
Association of American Medical Colleges
Biotechnology Industry Organization
Blue Cross & Blue Shield Association
Bristol-Myers Squibb
Brookings Institution
Business Roundtable
Caremark Rx
Caterpillar
Catholic Health Association of the United States
Cato Institute

Center for Health Transformation
Center for Medicare Advocacy
Center for Studying Health Systems Change
Center on Budget & Policy Priorities
Cigna
Concord Coalition
Consumers Union
CVS
Disease Management Association of America
Easter Seals
Eli Lilly
Employee Benefits Research Institute
Employers Coalition on Medicare
Express Scripts
Families USA
Federated Ambulatory Surgery Association
Federation of American Hospitals
General Motors Corporation
Generic Pharmaceutical Association
Geographic Equity in Medicare Coalition
GlaxoSmithKline
Guidant
Healthcare Leadership Council
Heritage Foundation
HSA Coalition / Archer MSA Coalition
Humana
Johnson & Johnson
Kaiser Family Foundation
Long Term Care Pharmacy Alliance
Medco
Medical Group Management Association
Medicare Rights Center
Medtronic
Merck
National Alliance for the Mentally Ill
National Assn. for the Advancement of Colored People
National Assn. of Public Hospitals and Health Systems
National Association for Home Care & Hospice
National Association of Chain Drug Stores
National Association of Community Health Centers
National Association of Health Underwriters
National Association of Manufacturers
National Association of Retired Federal Employees
National Coalition for Cancer Survivorship
National Comm. to Preserve Social Security & Medicare
National Community Pharmacists Association
National Council on the Aging
National Education Association

National Federation of Independent Business
National Governors Association
National Multiple Sclerosis Society
National Rural Health Association
Novartis
Pacificare
Pfizer
Pharmaceutical Care Management Association
Pharmaceutical Research and Manufacturers of America
Progressive Policy Institute
Project HOPE
Public Citizen
Seniors Coalition
U.S. Chamber of Commerce
United Auto Workers
United Health Group
Urban Institute
Visiting Nurse Associations of America
Wal-Mart
(Washington) National Business Group on Health
WellPoint

## Online Appendix B. Complete Interview Protocol

**Preliminary**. Interviewer records organization name, respondent name, respondent title, date/time/location, and phone/e-mail.

**Part A**. I would like to begin by asking a few open-ended questions about the politics and policies of Medicare over the past few years.

1. From the perspective of your organization, what are the major weaknesses of the Medicare Modernization Act? In what ways has its implementation been ineffective?
2. From the perspective of your organization, what are the major strengths of the Medicare Modernization Act? In what ways has its implementation been effective?
3. How have the major issues of interest to your organization changed in moving from enactment to implementation? Are you working on the same types of problems, or has your policy focus been transformed?
4. What are the major government agencies (such as CMS or the FDA) that you have interacted with during the implementation process? How have your interactions with these agencies changed since enactment?
5. When interacting with members of Congress and their staffs, do you focus your attention (a) almost entirely on Republican members, (b) mostly on Republican members, but sometimes on Democratic members, (c) about evenly on Democrats and Republicans, (d) mostly on Democratic members, but sometimes on Republican members, or (e) almost entirely on Democratic members?
6. Do you find that your relationships with the parties have changed over the implementation of the Medicare Modernization Act? That is, have you grown closer to one party and more distant from the other, or have your relationships remained about the same?
7. What are the principal ways that you relate to party representatives? For example, is working with the majority and minority leaders offices the way to relate to the parties or, for example, do you relate more directly with the RNC or the DNC?
8. Have you joined any coalitions to influence the implementation of the MMA? If so, please name them and describe their work briefly. Have these coalitions been effective? Why or why not? Has the importance of these coalitions increased or diminished since the passage of the MMA?
9. Have you attempted to use grassroots constituents to influence the implementation of the MMA? If so, please describe the nature of you effort? Would you say that these efforts are central to your lobbying effort or peripheral to your larger strategy?
10. Does your organization use electoral and campaign strategies to bolster its position on Medicare issues? If so, please describe the nature of the strategies.
11. Does your organization provide funding or resources to other organizations in order to promote your position on Medicare issues? If so, please describe the nature of these efforts.

**Part B**. In the second part of this interview, I would like to ask you about the organizations that you work with on issues relevant to the Medicare Modernization Act, and the issues were you have focused your priorities.

1. Please look at the following list of organizations active in the Medicare policy network. Please place a check mark after the name of all organizations on this list with which your organization discusses Medicare policy matters. Indicate whether these discussions occur occasionally or frequently, and whether they occurred during enactment or during implementation, by checking the corresponding columns.
2. All of the organizations on this list are very active in the Medicare policy area. But I would now like you to indicate which of these organizations stand out as especially influential and consequential in formulating Medicare policy. Please indicate whether you believe that this influence was exerted during enactment, implementation, or both, by checking the corresponding columns.
3. As you know, the ability of some organizations to influence public policy changes considerably as the policy process shifts from enactment to implementation. Are there organizations on this list that have significantly increased there influence, or seen the influence decrease, since implementation of the MMA began? Please place a "plus" or a "minus" sign next to the name of the organization to indicate this change?
4. Are there any organizations that are especially influential and consequential in formulating Medicare policy, in your opinion, who have been omitted from this list? Please write them at the bottom of the form and indicate your discussion patterns and influence assessment.
5. Now I am would like to ask about the Medicare issues your organization has focused on. Please look at the following list of issues and tell me if these issues have been major or minor concerns for your organization during the enactment and implementation of the MMA. Please check the corresponding columns.
6. Are there any questions that I have not asked you that you think that I should ask you about the politics of the MMA?

Thank you very much for your time and participation.

## Online Appendix C. Coalitions Included in Sample

**Enactment Period, 2003**

Advanced Medical Technology Association
Alliance of Specialty Medicine
Alliance to Improve Medicare
American Federation of Labor - Congress of Industrial Organizations
America's Health Insurance Plans
Anti-Reimportation Coalition
Archer MSA Coalition
Biotechnology Industry Organization
Business Roundtable
Campaign to Preserve – Not Privatize – Medicare
Cancer Leadership Council
Clinical Laboratory Coalition
Coalition for a Competitive Pharmaceutical Market
Coalition for Access to Medical Services, Equipment, and Technology
Coalition for Fair Payments to Health Care Providers Treating Emergency Undocumented Immigrants
Coalition to Protect America's Health Care
Consortium for Citizens with Disabilities
Employers' Coalition on Medicare
Geographic Equity in Medicare Coalition
Independence Through Enhancement of Medicare and Medicaid
Indirect Medical Education Coalition
Leadership Council of Aging Organizations
Low-Income Provisions Coalition
Mental Health Liaison Group
Multiple Sclerosis Prescription Drug Coalition
Niche Hospital Coalition
Opponents of a Home Health Co-payment
Partnership for Safe Medicines
Pharmaceutical Care Management Association
Pharmaceutical Research and Manufacturers of America
Pharmacist Provider Coalition
Pharmacy Benefits All Coalition
Public Hospital Pharmacy Coalition
Rural Hospital Coalition
Rx Benefits Coalition
Rx Health Value
Safety Net Hospitals Coalition
Therapy Cap Coalition
Update Coalition

**Implementation Period, 2004-2006**

304b Coalition
Access to Benefits Coalition
Access to Medical Imaging Coalition
Ad Hoc Coalition on Parkinson's
Advanced Medical Technology Association
African American Enrollment Coalition
Alliance for Better Health Care
Alliance of Specialty Medicine
Alliance to Improve Medicare
AMA Update Coalition
AMA Working Group on Access
Ambulatory Care Quality Alliance
Ambulatory Surgery Center Coalition
American Federation of Labor - Council of Industrial Organizations
Americans United for Change
America's Health Insurance Plans
Assisted Living Coalition
Biotechnology Industry Organization
Business Roundtable
Campaign for America's Future
Campaign for Quality Care
Campaign to Protect-Not Privatize-Medicare
Cancer Leadership Council
Clinical Laboratory Coalition
CMS Payment Rate Coalition
Coalition for a Competitive Pharmaceutical Market
Coalition for Affordable Health Coverage
Coalition for Community Pharmacy Action
Coalition for Patient Centered Imaging
Coalition on Human Needs
Coalition to Ensure Beneficiary Access
Coalition to Preserve Patient Access to Physical Medicine and Rehabilitation Services
Coalition to Protect America's Health Care
Coalition to Protect Choice for Seniors
Consensus Group on Medicare Therapy Management
Consortium for Citizens with Disabilities
Corporate Health Care Coalition
Employers' Coalition on Medicine
Fund to Assure an Independent Retirement
Geographic Equality in Medicare Coalition
Health Policy Consensus Group
Healthcare Administrative Simplification Coalition
Healthcare Leadership Council
Hospital Quality Alliance
HSA Coalition
Informal Coalition for People on the Ground Receiving the Prescription Drug Benefit

Informal Coalition on Home Health Care
Leadership Council of Aging Organizations
Long Term Care Pharmacy Alliance
Low Income Beneficiaries Coalition
Managed Care Choice Coalition
Medicare Access for Patients Rx
Medicare Consumers Working Group
Medicare Rx Education Network
Medicare Savings Coalition
Medicare Today
Mental Health Coalition
Multiple Sclerosis Prescription Drug Coalition
My Medicare Matters
National Coalition on Quality Assessment
National Council for Prescription Drug Programs
National Health Council
National Quality Forum
Pharmaceutical Care Management Association
Pharmaceutical Research and Manufacturers of America
Pharmacist Provider Coalition
Pharmacy Quality Alliance
Physician Consortium for Patient Care Improvement
Preventive Health Partnership
Rural Provider Coalition
Rx Benefits Coalition
Rx Health Value
Section 1011 Coalition on Payments for Undocumented Immigrants

## Online Appendix D. Robustness Analysis

As we explain in the robustness analysis section of the printed article, we add a variable for betweenness in the communication network to each model from (1) to (14). This exercise yields models which are otherwise analogous to the original models.[1] We report the estimates of these models in Tables D1 and D2, below. We report results based on frequent communication. However, estimates obtained based on occasional communication yield substantively identical results.

Examining the results reported in Table D1 (below) yields a very similar pattern to the one reported in Table 1. Betweenness in the communication network has a positive, statistically significant effect in each model in the table. This result implies that that when interest groups are better connected in the communication network they are more successful in achieving influence over Medicare than interest groups that are less well connected. Nonetheless, the positive, statistically significant coefficients on betweenness in the coalition network models (4), (6), and (7) are not affected. This result implies that our conclusion about the positive effect of coalition network position (hypothesis three) is supported in the new models.

Models (5) and (6) yield significant, negative coefficients on average coalition size (in Model 5) and number of coalitions (in Model 6). These "perverse" signs are the opposite of what we predicted in hypotheses one and two. Given the increasing problem with multicollinearlity in a larger model, too much weight should not be given to these perverse findings. We could interpret the findings in one of two ways. On the one hand, we could view them as an even stronger rejection of hypotheses one and two, which predicted positive coefficients. On the other hand, we could view them as evidence that increasing average coalition size or the number of coalitions without

[1] In Model (6) we dropped the variable on number of registered lobbyists due to convergence problems.

increasing communication betweenness leads to a reduction of influence. Either interpretation is consistent with our core finding on the importance of network position in the coalition network.

The results reported in Table D2, which includes estimates of models of change in interest group influence, are parallel to the results in Table D1 in terms of direction and significance of coefficients on focal variables. Changes in betweenness in the communication network are positive and significant in each of models (8) through (14), verifying the importance of position in communication networks to interest group influence. However, the inclusion of a measure of the communication network does not alter the conclusion about the importance of position in the coalition network, which is our central finding. In contrast to what we report in Table D2, we do not observe coefficients with perverse signs in these equations.

**Table D1. Regression Model of Interest Group Influence with Communication Network**

Negative Binomial Estimator with Panel Data

| **Independent Variable** | (1) | (2) | (3) | (4) | (5) | (6) | (7) | Mean (std. dev.) | Percent Imputed |
|---|---|---|---|---|---|---|---|---|---|
| *Number of Coalitions* | - | -0.001 | - | - | 0.014 | -0.017* | 0.003 | 3.122 | 0.000 |
| | | (0.007) | | | (0.009) | (0.007) | (0.010) | (2.971) | |
| *Average Coalition Size* | - | - | -0.006 | - | -0.010* | - | -0.008 | 8.187 | 0.000 |
| | | | (0.003) | | (0.005) | | (0.005) | (6.542) | |
| *Coalition Network Betweenness* | - | - | - | 0.108*** | - | 0.120*** | 7.745*** | 0.008 | 0.000 |
| | | | | (0.024) | | (0.026) | (1.911) | (0.013) | |
| *Frequent Communication Network Betweenness* | 3.138* | 3.138* | 3.109* | 4.554*** | 3.432** | 5.500*** | 4.440** | 0.014 | 11.304 |
| | (1.362) | (1.374) | (1.264) | (1.296) | (1.279) | (1.225) | (1.296) | (0.021) | |
| *Number of Registered Lobbyists* (Average per Six-Month Period) | 0.014 | 0.014 | 0.012 | 0.020** | 0.015** | - | 0.018** | 3.525 | 19.565 |
| | (0.007) | (0.007) | (0.007) | (0.007) | (0.008) | | (0.008) | (4.116) | |
| *Political Party Lean* (5-point scale, 1=Democratic, 5=Republican) | 0.090 | 0.090 | 0.086 | 0.118 | 0.100 | 0.069 | 0.112 | 3.399 | 11.304 |
| | (0.071) | (0.071) | (0.070) | (0.068) | (0.070) | (0.068) | (0.069) | (0.895) | |
| *Endorser of Medicare Modernization Act* (Yes=1, No = 0) | 0.320* | 0.320* | 0.346* | 0.237 | 0.323* | 0.298* | 0.277 | 0.461 | 0.000 |
| | (0.151) | (0.152) | (0.152) | (0.142) | (0.150) | (0.146) | (0.144) | (0.500) | |
| *Represents Medical Doctors* (Yes=1, No = 0) | -0.496 | -0.496 | -0.487 | -0.573* | -0.526* | -0.442 | -0.557* | 0.078 | 0.000 |
| | (0.257) | (0.258) | (0.258) | (0.246) | (0.256) | (0.247) | (0.248) | (0.269) | |
| *Represents Home Care Industry* (Yes=1, No = 0) | -0.703 | -0.703 | -0.691 | -0.684 | -0.672 | -0.679 | -0.651 | 0.035 | 0.000 |
| | (0.376) | (0.376) | (0.373) | (0.355) | (0.368) | (0.361) | (0.357) | (0.184) | |
| *Represents Hospitals* (Yes=1, No = 0) | 0.005 | 0.006 | -0.039 | -0.123 | -0.006 | 0.082 | -0.098 | 0.035 | 0.000 |
| | (0.371) | (0.373) | (0.370) | (0.351) | (0.366) | (0.350) | (0.353) | (0.184) | |
| *Represents Insurance Companies* (Yes=1, No = 0) | 0.852** | 0.853** | 0.858** | 0.837** | 0.841** | 0.892*** | 0.853*** | 0.078 | 0.000 |
| | (0.262) | (0.262) | (0.257) | (0.243) | (0.253) | (0.248) | (0.245) | (0.269) | |
| *Represents Pharmaceutical Manufacturers* (Yes=1, No = 0) | 0.932*** | 0.932*** | 0.937*** | 0.884*** | 0.959*** | 1.015*** | 0.950*** | 0.096 | 0.000 |
| | (0.233) | (0.234) | (0.230) | (0.215) | (0.227) | (0.218) | (0.219) | (0.295) | |
| *Represents Pharmacists or Pharmacies* (Yes=1, No = 0) | 0.641** | 0.641** | 0.669** | 0.611** | 0.669** | 0.668** | 0.671** | 0.113 | 0.000 |
| | (0.222) | (0.222) | (0.212) | (0.201) | (0.221) | (0.205) | (0.203) | (0.317) | |
| *Constant* | 6.180 | 6.182 | 15.215 | 16.017 | 14.934 | 16.926 | 18.090 | - | - |
| | (6.234) | (6.275) | (551.617) | (348.057) | (463.523) | (347.707) | (934.729) | | |

**Table D1 is continued on next page**

**Table D1. Continued from previous page**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| R | 147.438 | 147.812 | 1,133,014 | 3,290,370 | 937,287 | 6,351,167 | 26,100,000 | - | - |
| | (891.810) | (899.032) | ($6.25x10^8$) | ($1.15x10^9$) | ($4.34x10^8$) | ($2.21 x10^9$) | ($44x10^{10}$) | - | - |
| S | 2.317 | 2.317 | 2.247 | 2.520 | 2.320 | 2.424 | 2.497 | - | - |
| | (0.438) | (0.444) | (0.321) | (0.366) | (0.336) | (0.351) | (0.364) | - | - |
| Log Likelihood | -745.501 | -745.509 | -744.106 | -735.595 | -743.031 | -736.472 | -734.790 | - | - |
| Likelihood Ratio $\chi^2$ | 65.41*** | 65.41*** | 76.63*** | 100.29*** | 80.57*** | 95.75*** | 101.12*** | - | - |
| Likelihood Ratio Degrees of Freedom | 10 | 11 | 11 | 11 | 12 | 12 | 13 | | |

*Note:* *** $p \leq 0.001$, ** $p \leq 0.010$, * $p \leq 0.050$; Number of Groups = 115; Number of Periods = 2; Dependent variable mean = 18.296, std. dev. = 16.677.

**Table D2. Regression Model of Change in Interest Group Influence with Communication Network**

Ordinary Least Squares with Robust Standard Errors

| Independent Variable | (8) | (9) | (10) | (11) | (12) | (13) | (14) | Mean (std. dev.) | Percent Imputed |
|---|---|---|---|---|---|---|---|---|---|
| *Change in Number of Coalitions* | | 0.011 | | | 0.018 | -0.297 | -0.280 | 2.557 | |
| | - | (0.185) | - | - | (0.187) | (0.161) | (0.161) | (2.570) | 0.00 |
| *Change in Average Coalition Size* | | | -0.010 | | -0.012 | | -0.035 | 5.647 | |
| | - | - | (0.044) | - | (0.044) | - | (0.039) | (7.214) | 0.00 |
| *Change in Coalition Network Betweenness* | | | | 111.647*** | | 131.363*** | 132.966*** | 0.001 | |
| | - | - | - | (18.569) | - | (16.158) | (16.735) | (0.014) | 0.00 |
| *Change in Communication Network Betweenness* | 67.320* | 67.370* | 67.715* | 81.705** | 67.849* | 82.888*** | 84.497*** | 0.001 | |
| | (25.571) | (25.956) | (25.722) | (25.938) | (26.288) | (22.985) | (23.324) | (0.016) | 11.304 |
| *Change in Number of Lobbyists* | 0.077 | 0.078 | 0.079 | 0.098 | 0.081 | 0.070 | 0.079 | 0.460 | |
| (Average Number per Six-Month Period) | (0.123) | (0.126) | (0.124) | (0.108) | (0.128) | (0.105) | (0.107) | (2.284) | 20.00 |
| *Political Party Lean* | -0.423 | -0.420 | -0.423 | -0.528 | -0.419 | -0.629 | -0.629 | 3.398 | |
| (5-point scale, 1=Democratic, 5=Republican) | (0.435) | (0.440) | (0.438) | (0.384) | (0.442) | (0.386) | (0.386) | (0.909) | 11.304 |
| *Endorser of Medicare Modernization Act* | -0.980 | -0.992 | -0.940 | -0.875 | -0.953 | -0.558 | -0.439 | 0.461 | |
| (Yes=1, No = 0) | (0.845) | (0.848) | (0.855) | (0.786) | (0.858) | (0.803) | (0.812) | (0.501) | 0.00 |
| *Represents Medical Doctors* | 1.284 | 1.266 | 1.234 | 0.818 | 1.199 | 1.208 | 1.008 | 0.078 | |
| (Yes=1, No = 0) | (1.385) | (1.441) | (1.410) | (1.456) | (1.480) | (1.385) | (1.419) | (0.270) | 0.00 |
| *Represents Home Care Industry* | 2.875* | 2.871* | 2.923* | 2.536 | 2.922* | 2.583 | 2.734* | 0.035 | |
| (Yes=1, No = 0) | (1.223) | (1.239) | (1.222) | (1.359) | (1.229) | (1.332) | (1.276) | (0.184) | 0.00 |
| *Represents Hospitals* | -1.187 | -1.194 | -1.217 | 0.914 | -1.232 | 1.466 | 1.386 | 0.035 | |
| (Yes=1, No = 0) | (1.512) | (1.545) | (1.516) | (1.806) | (1.558) | (1.810) | (1.788) | (0.184) | 0.00 |
| *Represents Insurance Companies* | 4.662*** | 4.632** | 4.664*** | 4.640*** | 4.615** | 5.444*** | 5.403*** | 0.078 | |
| (Yes=1, No = 0) | (1.185) | (1.395) | (1.193) | (1.114) | (1.407) | (1.268) | (1.280) | (0.270) | 0.00 |
| *Represents Pharmaceutical Manufacturers* | -3.584*** | -3.612** | -3.535*** | -3.764*** | -3.572** | -3.081** | -2.961** | | |
| (Yes=1, No = 0) | (0.865) | (1.059) | (0.892) | (0.889) | (1.065) | (0.973) | (0.994) | 0.096 | 0.00 |
| *Represents Pharmacists or Pharmacies* | 5.261*** | 5.233*** | 5.342*** | 5.098*** | 5.307*** | 5.809*** | 6.035*** | (0.113) | |
| (Yes=1, No = 0) | (0.928) | (1.097) | (1.013) | (0.835) | (1.141) | (0.951) | (1.007) | (0.318) | 0.00 |
| *Constant* | -1.260 | -1.283 | -1.224 | -0.990 | -1.257 | -0.334 | -0.246 | | |
| | (1.417) | (1.444) | (1.463) | (1.119) | (1.479) | (1.139) | (1.166) | - | - |
| F-test statistic | 12.99*** | 11.63*** | 11.58*** | 14.47*** | 10.40*** | 18.31*** | 15.62*** | - | - |
| F degrees of freedom | (10,104) | (11,103) | (11,103) | (11,103) | (12, 102) | (12, 102) | (13, 101) | | |
| $R^2$ | 0.366 | 0.366 | 0.366 | 0.471 | 0.366 | 0.489 | 0.492 | - | - |

*Note:* *** $p \leq 0.001$, ** $p \leq 0.010$, * $p \leq 0.050$; Number of Groups = 115; Number of Periods = 1; Dependent variable mean = -2.504, std. dev=4.504.