

Collaborative Research on Agenda-Setting: Temporal, Institutional, and Cross-Sectional Dynamics of Attention to Disease in the Public Arena

Elizabeth M. Armstrong, Princeton University

Daniel P. Carpenter, Harvard University

Marie Hojnacki, Pennsylvania State University

Project Summary

This proposal offers a radically different approach to studying how and why attention is allocated to problems, an approach that overcomes the limitations of many studies of agenda setting and social problem construction. It both builds and marks an advance on decades of important study devoted to the question of why some social problems draw a great deal of attention from government officials, the public, and the media while other problems receive little notice (Baumgartner and Jones 1993; Best 1990; Blumer 1971; Cobb and Ross 1997; Gusfield 1981; Hilgartner and Bosk 1988; Kingdon 1995; Schattschneider 1975; Schneider and Ingram 1993; Spector and Kitsuse 1973; Walker 1977). One body of work emphasizes the characteristics of problems themselves as important determinants of attention. This research has helped to underscore how the groups in society who are burdened by problems and the organized advocates who take an interest in problems affect the attention those problems receive; problems are constructed through a “social process.” Other work on agenda-setting, however, focuses on aspects of the attention allocation process that help determine which problems receive attention. This research has demonstrated how temporal dynamics as well as the interplay between various sub-agendas (e.g., Congress, the media) affect which problems make their way into the public arena. Despite the evidence that aspects of both process and problem are integral to the phenomenon of attention allocation, researchers have tended to focus solely on one of these dimensions. Thus, empirical generalizations tend to emerge from incomplete or misspecified models.

The proposed project proceeds theoretically from the idea that the phenomenon of allocating attention to problems is a complex function both of problem characteristics (such as problem burden, the size and nature of organized communities associated with a problem, and a problem’s cultural valence), and of process-oriented dynamics (such as the relationships that exist among the agendas of different institutions; the temporal dynamics of agenda setting, and the relationships between different problems jockeying for agenda space). Empirically, the project proposes to compare the attention given to multiple problems over time in different arenas in order to discriminate between the process-oriented and problem-oriented determinants of the attention allocation process. This is accomplished by studying attention to 37 different diseases by the media, by government, and by the scientific community across 25 years. Disease offers a powerful lens to view the problem-specific and process-related dynamics of the attention generating process because diseases are both medical “facts” and social constructions, and because diseases have clearly defined outcomes, like hospitalization or death, so that their “severity” can be gauged with a common metric.

This study of the problem- and process-oriented determinants of agenda setting offers both scholarly and practical rewards. The research design promises to advance the theoretical and empirical understanding of both social problem construction and agenda setting. Moreover, because of the specific focus on disease, the findings will address major policy issues: how the government responds to public health priorities, as reflected in the media and via organized interest groups; how disparities in disease burden by race/ethnicity, sex and age shape priorities; how these priorities inform the complex decisions made by pharmaceutical companies, both in their research and development of new drugs and in their marketing of existing ones; and how government budgetary decisions might reflect (if not magnify) these priorities. More broadly, the proposed project speaks to how societal resources are selectively allocated across a field of seemingly equally attention-worthy social problems.

PROJECT DESCRIPTION

I. Introduction

Social scientists have invested considerable effort to understand why some social problems draw a great deal of attention from government officials, the public, and the media while other problems receive little notice. Most existing work on this topic, however, provides an incomplete picture of the forces that affect the attention allocated to problems. In contrast, this project aims to investigate why some problems get more attention than others with an approach that reflects the complex character of the agenda setting process: we plan to compare the attention given to multiple problems over time in order to discriminate between the process-oriented and problem-oriented determinants of the attention allocation process.

Among the key insights generated by the complementary political science and sociology literatures on social problems and agenda setting is the recognition that social problems and their placement on the public agenda do not necessarily correspond to “objective conditions,” but rather are the result of a distinctly social process. Social problems are the product of “collective definition” and they require “social endorsement” to achieve a place on the public agenda (Blumer 1971). Within this general rubric, researchers have noted that who is affected by a problem as well as how broadly a problem is felt often determines the extent and type of attention it receives. Media scholars have characterized “newsworthy” problems as those that are “new” or current; that affect the general population, or threaten to do so; that are easily described, typically through the use of a “hook” or “human interest” angle; and that can be readily linked to authoritative sources, such as government officials, scientists or physicians (Gans 1979, Tuchman 1978, Schudson 1978). Others have documented the importance of organized advocates and social movements in drawing public and governmental attention to issues (Best 1990; Cress and Snow 2000; Kitsuse and Spector 1973; Kollman 1998; Lerner 2001; Proctor 1995; Wright 1996), although the means through which these entities are most successful in drawing attention to their concerns – a strong organization, large numbers, an ability to provide information, headline-grabbing advocacy tactics – is subject to debate (Gamson 1990; Gandy 1982; Piven and Cloward 1977). What unites this diverse body of work is its emphasis on the characteristics of problems themselves as important determinants of attention.

Other work on agenda setting, however, focuses on aspects of the attention allocation process as determinants of which problems receive attention and how much attention they receive. Early work followed a natural history model, positing that social problem recognition and attention followed an orderly, linear trajectory, akin to evolution. Later observers pointed out that far from following a linear pattern, problems in the public arena are subject to what Downs called the “issue-attention cycle,” in which problems cycle in and out of public view or become more or less salient (Downs 1972). Baumgartner and Jones (1993:251) described this process as one in which long periods of stability could be “periodically punctuated by dramatic change.” To these temporal dynamics, Hilgartner and Bosk (1988:55) added a spatial dimension, by imagining a finite arena in which “interactions *among* problems are central to the process of collective definition.” Thus, problems exist in a fundamentally (and perhaps increasingly) competitive environment (McCombs and Zhu 1995). In addition to these dynamics, scholars also recognized that studying the public agenda meant focusing not on a single agenda, but on the interplay between various sub-agendas (e.g., Congress, the print media), because problems in one arena were likely to be at least partially determined by the attention to those problems elsewhere (Baumgartner and Jones 1993; Wood and Peake 1998).

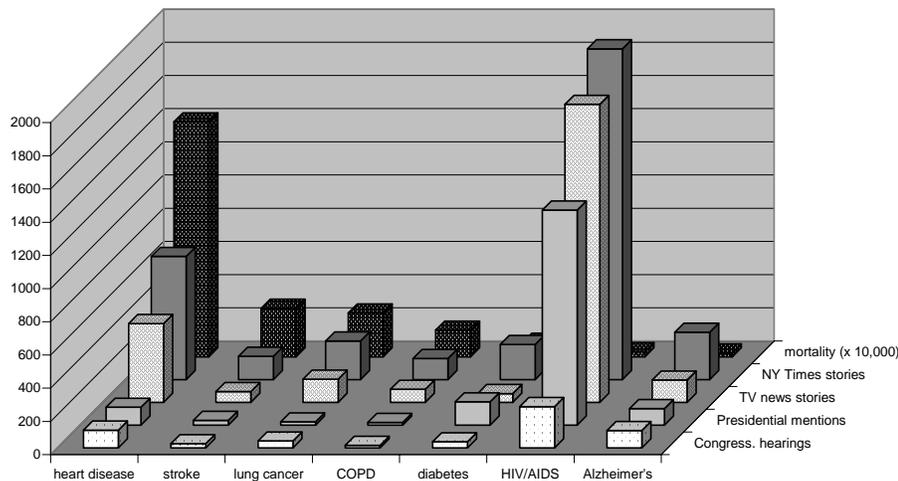
Thus, the accumulated evidence suggests clearly that the phenomenon of allocating attention to problems is a complex function both of problem characteristics and process-oriented dynamics. But scholars typically emphasize only one of these sets of characteristics when they study agenda setting so that empirical generalizations tend to emerge from incomplete or misspecified models of the attention allocation process. For example, work that emphasizes how the agenda process shapes attention allocation can tell us about the responsiveness (or lack thereof) of Congress to presidential initiatives in certain policy areas, but it cannot explain why a given policy area is likely or not to get more or less

attention than other issues that might also be of interest. Similarly, studies of how organized communities interested in a specific problem are instrumental in affecting attention to that problem neglect to account systematically for how attention may shift when another problem emerges. In short, in any single issue study, characteristics of the problem cannot be distinguished from characteristics of the process. Moreover, as others have argued, there is a tendency in studies of single issues or single policy areas to focus on issues that are especially visible, controversial, or otherwise exceptional (Burstein and Linton 2002; Gamson 1990). In this way, atypical cases can structure much of the conventional wisdom about how problems attract attention.

We propose a radically different approach to studying the attention-generating process, one that allows us to overcome the limitations that have plagued many studies of agenda setting and social problem construction. Specifically, we propose to examine attention to 37 different diseases by the media, by government, and by the scientific community across 25 years. Disease offers a powerful lens to view the problem-specific and process-related dynamics of the attention generating process. First, most diseases are medical facts, which clearly pertain to “objective conditions”; thus, we can make ready inferences about the relationship between the underlying objective condition and its representation in the public arena as a social problem. Second, because diseases have clearly defined outcomes, like hospitalization or death, they allow us to gauge the “severity” of different problems with a common metric (i.e., we can readily compare the mortality rate from one disease to another).¹

Figure 1, based on preliminary data we have collected, shows a set of seven diseases, arrayed from left to right according to the total numbers of deaths attributable to each disease in the U.S. between 1980 and 1998. These diseases all rank among the leading causes of death in the U.S. Yet, clearly, attention to disease from public institutions such as Congress and the mass media does not necessarily reflect the severity or burden of the disease, as measured by mortality. Some diseases, such as chronic obstructive pulmonary disease (COPD which includes asthma, emphysema, and bronchitis) receive little attention in any venue, whereas others such as HIV/AIDS and (to a lesser extent) heart disease receive copious attention in every venue.

Figure 1: Total Deaths and Total Attention, 1980-1998*



*For more explanation of the data, please see the section on Data Collection and Concept Measurement.

That different diseases garner different levels of public attention, then, is indisputable. But *how*

¹ In contrast, consider the problem of assessing whether air pollution has become more “severe” or “widespread” than terrorism, or whether affordable health insurance imposes greater “costs” on citizens or voters than does corporate fraud.

and *why* do some diseases get more attention than others, and how are these variations in attention manifest across different institutions and at different points in time? As with other work on agenda setting and problem definition, much of what is known about how diseases capture public attention is drawn from studies of a single disease, especially AIDS or breast cancer, at a specific point in time (Casamayou 2001; Colby and Cook 1991; Epstein 1996; Lantz and Booth 1998; Lerner 2001). Yet Figure 1 suggests that generalizing about how and why diseases capture attention based on any single case—and particularly on AIDS—could be problematic. Because AIDS generated intense media, scientific and academic attention in the early years of the epidemic, it lent itself to the case study approach. Yet, AIDS is hardly a “typical” disease. Not only does AIDS command a relatively large amount of public attention and cause far fewer deaths in aggregate than many other diseases, it also is associated with a relatively sizable set of organized groups that advocate on behalf of individuals who suffer from the disease. Moreover, AIDS has powerful cultural associations with death because of its nearly 100 percent case-fatality rate and because it strikes most often in the prime of life. Because scholars have generalized from AIDS, the conventional understanding of how any disease gets attention has come to be that the number of deaths associated with it is less important in drawing public attention than is having organized and politically active advocates who work to increase research funding for and public attention to that disease. But in a preliminary analysis of media attention to the diseases shown in Figure 1, we find two “commonly accepted” ideas about attention to disease that cannot be generalized outside the case of AIDS: a positive link between the presence of political activists and media attention, and a negative relationship between the number of individuals who suffer from a disease and media attention (Armstrong, et al. 2003). Yet our preliminary analysis also reveals patterns that are robust across the full set of seven diseases, namely that the media tend to be much *less* attentive to diseases that burden blacks more than whites. There also is evidence that the media are more attentive to diseases that burden women more than men. These results are shown in Table 1.²

Table 1: Selected Results from Prais-Winston Regression of Media Attention with Panel-Corrected Standard Errors, from Armstrong et al. (2003)								
	Total Mortality	Annual Δ in Mortality	Black/White Mortality Ratio	Fem/Male Mortality Ratio	Ann Δ in Black Mortality	Ann Δ in Fem Mortality	# Disease Advocacy Groups	% Groups Registered in D.C.
<i>Dependent Variable: Weekly Seconds of NBC Nightly News Coverage of Disease (N = 4,643 disease weeks)</i>								
Coeff	0.01	-0.21	-8.30	4.91	-0.04	0.14	0.22	0.18
SE	0.02	0.35	3.62	1.60	0.22	0.31	0.26	0.23
<i>Dependent Variable: Weekly Words of Washington Post Coverage of Disease (N = 3,909 disease weeks)</i>								
Coeff	0.55	-49.86	-188.82	93.91	21.22	21.61	9.18	5.19
SE	0.49	24.70	76.54	28.88	10.98	23.52	5.24	4.40
Notes: Estimates based on heart disease, cerebrovascular disease, COPD, diabetes, and Alzheimer’s disease. Bold coefficients signify statistical significance at $p < 0.05$ (two-tailed test). Analysis of CBS and ABC coverage, and <i>New York Times</i> coverage are not reported here. Models also include scientific coverage, year, week, winter and summer dummies, and circulation/viewership aggregates (and changes) for the network/newspaper analyzed. Relationships reported here are robust in fixed effects and random effects models.								

II. The Significance of Cross-sectional (cross-problem) Comparison

We have learned from this recent analysis of our data (Armstrong, et al. 2003) that attention trajectories vary for all diseases. We feel this insight is valuable, since most of the social science

² Table 1 presents estimates based on five diseases: heart disease, cerebrovascular disease, COPD, diabetes, and Alzheimer’s disease. Because we identified HIV as exceptional, we ran our models with and without HIV; results here are from the latter specification. (Observations for lung cancer were automatically dropped from the analysis because data about the advocacy community associated with this disease are not yet available.) The statistically significant results we report in Table 1, however, are robust to the full set of diseases.

literature to date on the attention process to disease has focused on single case-studies of highly salient diseases such as HIV/AIDS, breast cancer, and to a lesser extent, diseases caused by cigarette smoking. In order to estimate precisely the impact of problem characteristics on attention, it is essential that we observe in our data sufficient variation in both characteristics and attention. For example, we hypothesize that intrinsic disease characteristics—whether the disease is severe or mild, common or rare, ancient or newly discovered, acute or chronic, fatal or not, curable or not, infectious or not—help to shape attention to disease. But our seven diseases are all major causes of adult mortality; one of the seven (AIDS) is quite atypical relative to the other six. Thus, these data do not contain sufficient variation to assess precisely how problem characteristics work in conjunction with aspects of the agenda setting process to affect levels of public attention.

For these reasons, we seek to expand the cross-sectional variation we observe (while maintaining the same cross-temporal and cross-institutional focus) by collecting data on the following categories of disease: (1) major causes of mortality for the population as a whole; (2) major causes of morbidity; (3) infectious and particularly emerging infectious diseases; (4) individual cancers; (5) chronic diseases; (6) diseases that cause major mortality but receive little public attention; and (7) diseases that are associated with specific population subgroups. These categories are clearly not discrete—many diseases span one or more of them—but they enable us to conceptualize some of the intrinsic characteristics of disease that may shape attention.

Major causes of mortality, for which we already have nearly complete data series, include: *heart disease*; *cerebrovascular disease*; *COPD*; *diabetes*; and *HIV/AIDS*. Our category of high morbidity diseases includes: *depression*, a disease with a major impact both individually and socially (recent estimates reported by Stewart, et al. (2003) suggest that depression among U.S. workers costs the economy some \$44 billion annually); *arthritis*, a disease that affects a well-organized and politically powerful population subgroup, the elderly, and that, like depression, is a major focus of the pharmaceutical industry; and *alcoholism*, which afflicts some 14 millions Americans and results in estimated productivity losses of \$119 billion annually (Gordis 1996; National Institute on Alcohol Abuse and Alcoholism 1999). Our infectious diseases include: *tuberculosis*, a major cause of mortality worldwide which resurged in the U.S. during the 1980s and 1990s in tandem with the HIV/AIDS epidemic; *mosquito-borne viral encephalitis*, especially West Nile virus, a newly emerging infectious disease; *malaria*, a disease which is practically non-existent in the U.S., but is a major killer worldwide;³ *meningitis*, periodic outbreaks of which draw brief flurries of media attention; and *viral hepatitis*, which is increasing in the U.S., is a major cause of mortality, and is linked to the HIV/AIDS epidemic. We have already collected data on *lung cancer*, the biggest killer among all the cancers, but we propose collecting individual data series on 13 additional major cancers: *breast cancer*, *prostate cancer*, *colon cancer*, *cervical cancer*, *ovarian cancer*, *melanoma*, *non-Hodgkin's lymphoma*, *leukemia*, *bladder cancer*, *cancer of the esophagus*, *cancer of the lip*, *oral cavity and pharynx*, *pancreatic cancer*, and *stomach cancer*. The cancer data will enable us to do two very important things. First, we can compare attention to “cancer” as a category against all other diseases, or other specific subtypes of disease (e.g., infectious, etc). Second, we can make comparisons among attention to specific types of cancer—how does attention to breast cancer, for example, compare with attention to prostate cancer, or skin cancer? We put forward at least two reasons to treat cancer separately, both of them historical. Throughout history, cancer has engendered particular dread and loathing (Sontag 1990); although the stigma of cancer has abated in recent decades, it continues to be a disease with a distinct cultural valence. Moreover, at the federal level, cancer has typically been treated differently from other diseases, from Nixon’s “War on Cancer,” declared in 1971, to the continued existence of the National Cancer Institute as a separate and powerful entity within the National Institutes of Health (NCI is the only disease-specific institute among the 27 institutes

³ The Centers for Disease Control and Prevention reported a total of 1,430 cases of malaria in the U.S. and its territories in 2002. Most of these cases are imported—that is, they are acquired by Americans traveling abroad, or by immigrants arriving in the U.S. (Centers for Disease Control and Prevention 2003).

and centers within NIH).

In addition to the data we have collected on chronic diseases (i.e., diabetes, COPD, heart disease), we also plan to collect data on *obesity* and *asthma*. Although there is debate about whether obesity itself is a disease, there is considerable evidence linking it to major causes of mortality (most importantly heart disease, diabetes and some cancers), its prevalence is sky-rocketing in the U.S. (rising 30 percent in the last 15 years), and public attention to obesity likewise is escalating. Although asthma is included among COPD, we plan to collect data separately for asthma because its incidence is rising, particularly among children, and because the disease has achieved increased media prominence lately. In addition to the data we have collected on *Alzheimer's disease*, which affects the elderly, we plan to collect data on two other diseases which are of particular concern to two subgroups of the population: *lupus*, which primarily affects women; and *sickle cell disease*, which primarily affects blacks. Given our findings on the relative neglect of diseases that affect blacks more than whites, we are particularly interested to investigate attention processes related to a disease that is specifically associated with blacks in the American mind.⁴ Finally, we plan to collect data on a number of diseases that are among the major causes of mortality in the U.S., but that nonetheless receive very little attention in the public arena.⁵ These diseases are: *pneumonia and influenza*; *liver disease*; *septicemia* (blood poisoning); *nephritis* (kidney disease), and *benign neoplasms*.

The collection of information about 37 different diseases across 25 years obviously is an immense undertaking. However, we maintain that the ambitious scope of this project is essential in order to give us leverage on a phenomenon as complex as agenda setting, a phenomenon that is determined, as we describe in detail below, both by its own characteristics as well as the characteristics of problems that seek agenda space.

III. Problem Characteristics and the Allocation of Attention

We will investigate how three characteristics of problems affect the attention they receive: problem burden, cultural valence, and the size and nature of organized communities devoted to specific problems.

Burden. Scholars recognize that social problems are not defined solely on the basis of objective conditions, but they also recognize that the burden a problem inflicts on society can have consequences for the amount of attention it receives. We believe diseases, like other problems, garner attention from policymakers and the public precisely because they have *real consequences* for individuals, for specific groups, and for society as a whole.

There are at least two fundamental dimensions of burden that we argue may affect the attention allocation process. First, the nature of the burden itself may affect attention. The number of people who are affected by a problem, the extent to which they are affected, and the societal resources and government tax dollars allocated to the problem, all can be expected to affect the attention that problem receives. In the case of disease, it is important to know how many people suffer from a particular disease, as well as something about the cost of that suffering to them as individuals and to society as a whole. For our purposes, this information is most readily identifiable in data on disease incidence and mortality, hospitalizations, outpatient visits, and drug utilization, though such data do not begin to capture the complete burden of disease. The point is that diseases do exact some burdens that are measurable, even if the true cost of a particular disease to society is itself immeasurable. Second, we expect attention to problems to depend on the characteristics of the people who are affected by those problems. Few problems affect all sectors of the population equally, and this is certainly true for disease. We

⁴ Sickle cell disease is a genetic disorder that is prominent among people of African ancestry; it also strikes some populations of Mediterranean origin.

⁵ This assertion is not based on mere impressions: we began collecting data on several of these diseases and found that most received no mention whatsoever in the popular press.

hypothesize that not only the numbers of people dying from a particular disease (Adelman and Verbrugge 2000), but also the demographic characteristics of those people (i.e., race, sex and age) matter in the attention process.

As shown in Table 1, our analysis of media attention to a limited sample of diseases provides no evidence that attention is affected by overall mortality, and only some evidence that attention is shaped by changes in overall mortality. But our preliminary analysis *does* demonstrate the impact on attention of racial and gender differences in burden. Specifically, the ratio of female to male mortality rates is *positively associated with coverage*, and the ratio of black to white mortality rates is *negatively associated with coverage*. Although Cohen (1999) has described how little of the nightly news coverage of AIDS through 1993 focused on African Americans, our results suggest that this racial bias in coverage may be even broader: diseases that disproportionately affect blacks simply get less attention by the television news and print media. Given the recent policy attention to racial and ethnic disparities in health, these findings are all the more significant. A central focus of our project is to further investigate how differences in the racial and gender burden of problems affect governmental and media attention to those problems.

Cultural valence. Public policy problems also have important cultural associations that affect how the public and decision makers respond to them (Sparks 2003; Luker 1996; Best 1995; Edelman 2001; Gusfield 1981). These “images” affect how the media frame problems and influence the set of solutions that policy makers envision. This cultural dimension of problem construction is important in the case of disease. Diseases are not merely biological phenomena; they have important cultural meanings as well (Armstrong 1998; Armstrong and Abel 2000; Rosenberg and Golden 1992; Brandt and Rozin 1997). And those cultural meanings may deeply influence the attention process. For example, for years public health advocates have decried the obsessive focus of the popular media on breast cancer as a killer of women. In fact, women are far more likely to die of heart disease than breast cancer, but because breast cancer is a particularly dreaded disease, with deep symbolic links to womanhood and sexuality, its cultural valence seems to resonate more loudly in the public arena than heart disease. We are interested in how the cultural associations of different diseases affect how institutions discuss them, and whether the tenor of decision makers’ responses to and reporting on a particular disease changes over time. Moreover, who suffers from a disease matters not only in terms of demography, but in terms of who is publicly identified with a disease, at the individual and group level. Several studies have documented that when celebrities acknowledge their personal experience with a disease, a flurry of public attention follows (Brown and Potosky 1990, Lane 1989, Nattinger et al. 1998, Pollock 1994, Cram et al. 2003). Thus, the “personhood” of a disease is another aspect of its cultural valence as well.

Organized Advocacy. Any social or public policy problem has associated with it a set of interest groups whose explicit aim it is to draw attention to *their* problem (Best 1990; Kitsuse and Spector 1973). One way that organized interests are expected to secure attention to particular problems is by acting as noisemakers who communicate to policy makers and members of the media the salience of an issue. Relatively large and proactive organizational communities can draw attention to specific issues by communicating, through their claimsmaking and general advocacy activity, a capacity to stir up public attention and interest; through stirring up such interest, they signal that a problem is salient and of concern to a large segment of the public (Caldeira and Wright 1988; Donovan 2001; Kollman 1998; Spector and Kitsuse 1973).

Another way in which organized interests can draw attention to problems is by providing information to subsidize the costs of search for those who control access to attention – that is, reporters and government decision makers (Berry 1999; Gandy 1982; Hall 2000). Members of the media operate under tight time schedules. As a result, the expertise, data, and intelligence available from organizations can both fulfill an important need for reporters and make it easier for them to be attentive to groups’ concerns. Indeed, just as members of Congress grant access to organized interests who have an information provision advantage relative to their competitors (Hansen 1991), organizations may serve as “authoritative sources” about issues, enhancing the likelihood that “their” problems and concerns become part of the media agenda (Colby and Cook 1991; Cook 1998; Gans 1979).

In the case of disease, well-established groups such as the March of Dimes, the American Lung Association, and the American Cancer Society have frequently been credited with drawing public and governmental attention to health-related issues (Lerner 2001, Proctor 1995). However, in recent years, researchers have made organized disease advocates a primary focus of their efforts to understand both the increases in funding for HIV/AIDS and breast cancer research and the substantial public attention paid to these diseases. Casamayou (2001), for example, gives nearly sole credit to the National Breast Cancer Coalition, founded in 1991, for increasing federal funding for breast cancer. Epstein (1996) argues that the demographics of those most directly affected by HIV/AIDS (i.e., politically efficacious, white, middle-class men) made possible a movement of “activist experts” rather than of victims who were a credible source of knowledge apart from the medical establishment about AIDS treatment.

But as Table 1 illustrates, our preliminary research offers little evidence of the expected positive relationships between first, the number of groups associated with a disease and media coverage, and second, the percentage of those groups who are registered to lobby Congress and coverage. Where we do detect a relationship is in the data on AIDS, suggesting again the difficulties of generalizing about attention allocation process from this single case: the number of organized groups is positively and significantly related to print and broadcast coverage. Because these results are preliminary, we plan to reexamine the relationships between organized community size and attention, and between registered (politically active) groups and attention, using a larger set of diseases and more complete data on organizational communities. However, we also plan to look beyond these indicators to determine whether the relationship between organizational advocates and attention allocation is more complex than existing research has suggested. For instance, increased attention to a given disease might depend on the relative distribution of different types of organizations within a community (e.g., more attention when there are more professional groups versus citizen groups, or more attention when there are more groups focused primarily on disease as opposed to being focused on a broad array of public policy topics); the degree of consensus or conflict among the groups (e.g., more conflict may result in more media coverage but potentially less attention from policymakers); the type of tactics the community employs (e.g., more attention when the community makes use of “insider” tactics such as direct lobbying and presenting testimony or when “outsider” tactics such as demonstrations are used); and the extent to which a community has ties to a special caucus or other champions in Congress.

IV. Characteristics of the Agenda Setting Process and the Allocation of Attention

Our study will examine three features of the agenda setting process that are expected to affect the attention a problem receives: the relationships that exist among the agendas of different institutions (the media, the president, Congress, and the scientific community); the relationships between different problems jockeying for agenda space; and the temporal dynamics of agenda setting. As we describe above, there is considerable research that documents the temporal and cross-institutional dynamics of the agenda setting process. However, because most studies focus on a single issue or a few broad policy areas, they have not been attentive to how these dynamics are affected by the characteristics of problems, and they have not considered the way in which one problem crowds out or increases exposure to other problems. We remedy both of those shortcomings in our project.

Cross-institutional (cross-agenda) dynamics. Like other scholars, we are interested in the cross-institutional endogeneity that prevails in agenda setting (Bartels 1996; Edwards and Wood 1999; Mackie 1997). Teasing out the interrelated attention allocation processes of government institutions, the media, and the scientific community is essential to understanding how congressional hearings on a topic can generate presidential attention, newspaper attention, and so on. Institutions in the public arena consider what other institutions are attending to when they make decisions about whether a particular problem is newsworthy or otherwise merits attention. In addition, when any one institution is attending to a problem, it can create a “market” for that problem as institution members and other consumers of news and information will demand more information about that problem. As a result, institutions that had not been giving attention to the problem could come to find it worthwhile to do so.

One implication of this cross-institutional feedback is that we should expect a high degree of

contemporaneous overlap between the observed attention/coverage portfolios of institutions within the same policy domain (Bartels 1996; Edwards and Wood 1999; Mackie 1997). A second implication is that some institutions may be observed to play a greater role in setting the agenda than others. Thus, we expect that national media conglomerates with large and diverse audiences will function at the interstices of numerous domains, playing a crucial role in agenda-setting. In addition, we expect that the community of experts in a problem area will help drive the agendas of others. The scientific attention process, for example, both determines and is responsive to attention in other arenas. We know that there is a direct link between scientific publication and attention to research findings in the popular media (Bartlett et al. 2002). Yet it may also be the case that attention from organized interest groups may shape the level and direction of scientific attention to a disease, most directly through pressure on government to increase funding levels; this appears to have been the case with breast cancer research. Or it may also be true that high levels of attention to a problem or disease across multiple institutions merely signals the overall salience of the problem to society as a whole, in terms of its significant burden or cultural valence. The design of our project allows us to assess systematically how these variables are interrelated.

Cross-sectional (cross-problem) dynamics. Researchers who study why some problems command more attention than others have only relatively recently begun to explore how media and governmental attention to various public policy problems is affected by the interaction that exists among those problems. Early studies of agenda setting tended to explain the emergence of problems in terms of a natural progression or sequence of development (Blumer 1971, Downs 1972). In contrast, Hilgartner and Bosk (1988:58) theorized that the allocation of public attention to particular problems evolved from competition among an array of problems, “as a complex process of selection established priorities about which should be regarded as important.” For the most part, however, researchers who study the attention given to a single policy area or problem have not been able to tackle empirically the ideas about problem interaction that Hilgartner and Bosk raise. The few studies that consider this dynamic help to underscore its importance for what is known about the process of attention allocation. For instance, McCombs and Zhu (1995) offer evidence of a public agenda that has become increasingly volatile over time. The “faster rate of issue turnover” they observe is made possible by the coexistence of two trends: a non-changing agenda capacity, and an increasingly diverse set of issues vying for space on that agenda. Consistent with this description, Wood and Peake (1998:181) show that presidential and media attention to a foreign policy problem is negatively affected by “critical events associated with competing [foreign policy] issues.”

The comparative framework of our project allows us to examine more systematically how the interrelationships among problems “competing” for agenda space affect the attention they receive. Specifically, we will consider whether attention to one problem will likely reduce attention to others (Wood and Peake 1998), or whether some types of problems induce more attention to others (Hilgartner and Bosk 1988). For instance, we can examine whether a set of diseases that share some characteristic (e.g., infectious diseases; different forms of cancer) facilitate or impede attention to other diseases with that characteristic, and also whether a “crowding out” occurs generally among attention to all diseases or primarily among diseases that differ from one another (e.g., a disease like malaria that primarily affects mortality and morbidity in the developing world versus heart disease which is the primary cause of adult mortality in the U.S.). Our project also allows us to examine whether some types of problems are more likely than others to have long-term as opposed to short-term effects on the attention allocated to other problems. For example, we can explore whether attention to diseases that burden a relatively broad population (e.g., asthma) has more lasting impact on the attention given to other diseases than do diseases that are perceived as burdening a more discrete population (e.g., Alzheimer’s disease). Perhaps most important, our project is designed so that we can examine not only how attention to one problem affects attention to other problems, but also whether and how interactions between problems differ across institutions and over time. One implication of Hilgartner and Bosk’s (1988) contention that each public “arena” or institution has its own “carrying capacity” and “principles of selection” is that the extent and type of interaction that exists between problems will likely differ across institutions. Empirical investigation of the ideas we raise here about interactions between problems is possible only with data

about multiple problems with varying characteristics.

Temporal dynamics. Most studies of agenda setting take as given that problems do not arise and disappear abruptly from the agenda. There are, as Baumgartner and Jones (1993) describe, moments that punctuate and signal shifts in attention cycles. But, in relatively short spans of time, attention in one period is likely to provide good information about attention in a subsequent period. Most often this short term stability is seen to be a product of the inertial nature of agendas. According to Wood and Peake (1998:174), problems that are deemed important enough to merit media or government attention are unlikely to become unimportant in the short term, and problems that are complex are likely to remain unresolved (and thus attention-worthy) for fairly long periods of time. For instance, one act of attention to a problem will raise questions about and prompt further attention to the specifics of a story or a hearing. For most problems, then, we do *not* expect to observe a quick flurry of news reporting, congressional coverage, and so on followed by a slow falloff in attention (an exponential curve). Instead, we hypothesize that institutional attention to problems follows a non-monotonic “cycle” function characterized by slow recognition of a problem, catch-on, then fall-off (more like a gamma-curve; see Carpenter 1996). The fall-off is due to decreasing marginal returns or to boredom that sets in once citizens have consumed considerable quantities of information about the problem.

It is easy to imagine a temporal correlation in attention to disease. For instance, if the print and broadcast media report on a new surgical procedure to treat prostate cancer, coverage of prostate cancer may continue in subsequent weeks as information is made available about how this procedure compares to other existing treatments in terms of risks and side effects, how broadly the procedure is being used, and how individuals with prostate cancer are reacting to the possibility of different treatment. But once this additional information is reported, it is likely that the media will move on from reporting about prostate cancer. In the case of Congress or the president, the temporal correlation in attention is likely to vary across diseases (and problems). For instance, attention to diseases that affect important political constituencies (e.g., the elderly) may show fairly strong temporal dependence whereas that dependence might be minimal for diseases that affect the broader population. Our data will allow us to explore the degree of temporal dependence in attention and how it varies across different institutions and problems.

V. Public Attention and Policy Outcomes

For members of the media, the decision to give attention to a particular set of problems is perhaps the most significant action they can take. Attention allocation reflects the distribution of scarce seconds of news coverage or columns of newspaper space to some set of problems at the expense of others. Similarly, for scientists, a decision to undertake research on particular topics represents a concrete allocation of resources to those topics. Journal articles reporting such research presumably reflect the allocation of scientists’ time and energy. In the case of policy makers, however, attention might be viewed as simply talk, and cheap talk at that, requiring no expenditure of resources, time, or policy change. We propose, however, that none of the “hard” outcomes of public policy (expenditures, administrative decisions) are exogenous to the amount of attention paid to a problem. For instance, if Congress holds no hearings on public housing issues, and the president makes no mention of public housing, it is very unlikely that either body will allocate more funding to public housing. At the same time, even when policymakers “only talk” about a problem (in a speech, with a hearing, or in introducing a bill), they are presumably doing so at the expense to their time of talking about some other problem (at least in the short term). Moreover, by giving a problem attention they may increase the level of visibility to that problem. Thus, even if their actions are purely symbolic, the words are nonetheless a form of action.

Ideally, our study would examine early stages of the public policy process (attention allocation) and later stages of that process where dollars or other resources are allocated to it. In reality, it is quite difficult to obtain the precise information necessary to do this. It is not possible, for example, to obtain information about NIH appropriations for specific diseases. Congress rarely allocates money in this way,

and NIH reports spending by institute, not by disease.⁶ However, to the extent possible, we would like to examine “hard” outcomes as well as “soft” ones like attention. For this reason we will examine NIH and other grants for federally-funded scientific and medical research, and we will examine approval times for new drugs as reviewed by the U.S. Food and Drug Administration (FDA). We discuss the particular measures below.

VI. Methodological Approaches

As a research team, we have sought to develop as full and multidimensional an account of the attention allocation process as we can. With this in mind, we draw on a variety of methods, each suited to illuminating the relationships among the variables that are central to our project.

Dynamics and VAR Methods. Previous efforts in agenda setting research have employed vector autoregression (VAR) to capture the dynamics of the agenda setting process (Bartels 1996; Edwards and Wood 1999; Freeman, Williams and Lin 1989; Mackie 1997). We aim to estimate a series of equations in which VAR proceeds through specification of constraints and is estimated via one-step seemingly unrelated regression (Stock and Watson 2001). VAR will prove especially useful to our efforts to assess quantitatively the institutional, temporal, and cross-problem dynamics we discuss above.

Count Data and GEE Methods. Some of our attention data may be relatively discrete in nature so that they require count models for estimation. In these cases we will estimate our models using the generalized estimating equations (GEE) technique (Bennett and Stam 2000; Caldeira, Wright and Zorn 1999; Zorn 2001). We believe that GEE models offer the flexibility for different specifications and correlated data corrections that our statistical analyses will require (Zorn 2001).

TSCS Methods. The data we are collecting about attention to multiple diseases over a number of years are structured as a time-series cross-section (TSCS). As part of our analysis, then, we plan to estimate a series of equations for attention in individual public institutions with ordinary least squares (OLS) or Prais-Winsten regression and panel-corrected standard errors (Beck and Katz 1995). These methods will be most useful to our efforts to get estimates of how problem-specific characteristics such as burden and advocacy communities induce more or less attention.

Content analysis. In order to supplement the wealth of quantitative data that we will collect and analyze, we plan to undertake a content analysis of a sample of newspaper and television news stories for a subset of our diseases, exploiting the full text capabilities of Lexis-Nexis and purchasing videotapes and transcripts from the Vanderbilt television news archives. In addition to coding our quantitative media data to indicate celebrity mentions, mortality mentions, and cure/treatment mentions (see below), the content analysis will enable us to investigate important qualitative as well as quantitative temporal shifts in attention: early attention to HIV/AIDS, for example, focused on the threat to gays. Later, the federal government made a concerted effort to broaden concern among the general public. More recently, media attention to HIV has again focused narrowly on the disease among gays, particularly as epidemiologists begin to note a resurgence of risk behaviors in this group. Only content analysis will reveal these qualitative temporal shifts. Armstrong will undertake the content analysis on a subset of our 37 diseases in the summer of 2005.

In-person interviews. In order to provide an important context for the empirical analysis we undertake, we will draw on information we gather from a set of semi-structured, in-person interviews with organizational advocates, and print and broadcast journalists. In conjunction with the survey of organized interests (described below), the interviews with advocates will help us understand the motives and perspectives of those who seek to draw and maintain attention to their interests. The interviews with journalists will help us interpret the quantitative results about attention allocation in terms of the personal,

⁶ At the suggestion of the Institute of Medicine, the House Committee on Appropriations requested that NIH report disease-specific funding for all awards and contracts in fiscal year 1996. Therefore, data on disease-specific funding are available for 1996 only and no other years. These data were exploited in a study that correlated levels of funding with burden of disease (Gross et al. 1999).

social, and institutional imperatives that shape their engagement with a particular topic. These interviews will be conducted by the three PIs during the summers of 2004 and 2005.

VII. Data Collection and Concept Measurement

Our investigation of the process-oriented and problem-oriented determinants of the attention allocation process makes use of data about attention to disease in different institutions; the organizations with an interest in disease; and burden of disease. In the sections below we describe the data we have been and will be collecting about our 37 study diseases across 25 years (1980 to 2004). With only a few exceptions (that will be noted), we already have gathered these data for each of the seven diseases shown in Figure 1 through 1998. Throughout the data gathering process, we learned a great deal about the quirks of various database search procedures, and the limitations of some of our early efforts to measure relevant concepts. We also have come to appreciate the time and labor involved in adding data to this project. In order to add a single disease to our dataset, we need to collect the following data for each of 25 years: mortality (total and by sex, race and age), incidence, and hospitalization; mentions in the three network television nightly news programs; mentions in 12 newspapers; organizational membership in advocacy communities and characteristics of the member organizations; Congressional hearings, both appropriations and non-appropriations; bill introductions; mentions in four scientific journals; and mentions made by the president. But because of the extensive data collection effort we have already engaged in with very limited resources, we have worked through the difficulties we encountered and we have been able to hone the process to maximum efficiency. We have in place written protocols for every aspect of data collection, most of which can be conducted via the internet (as we describe in this section). In sum, while we recognize the work involved in adding diseases to our project, we maintain that only with information about a large number of diseases will we be able to get sufficient leverage on a phenomenon as complex as agenda setting. NSF support would allow us to extend the data collection to the full set of 37 diseases for the entire 1980 to 2004 time period.

Governmental, Media, and Scientific Attention to Disease. Our analysis rests upon indicators of the attention allocated to each disease by each of five institutions: Congress, the president, the television news media, the print news media, and the scientific community. Congressional attention to disease is measured by the number and length of non-routine disease-related hearings held by the House and the Senate each week, and also by the number and type of disease-related bills introduced in Congress each week. Hearings data are available from abstracts of congressional hearings in the *Congressional Information Service Abstracts* for each week and year of the time period covered by our study. Bill introductions will be obtained through the Congressional Bill Introductions Project underway at the University of Washington.⁷ Presidential attention is measured by the presence and number of disease-focused entries each week in the *Public Papers of the President*. Broadcast media attention is captured by the number and length of disease-related stories appearing on the ABC, CBS, or NBC early evening news broadcasts each week. Broadcast attention data are obtained from the *Vanderbilt Television News Abstracts and Indices*. Attention from the print media is being measured by the number and length of disease-focused national newspaper stories each week (obituaries are excluded). The focus of these stories (e.g., whether they emphasize a new treatment, mortality) also is being coded. These data are being gathered from twelve of the top circulating U.S. newspapers through the *General News, Major Newspaper* section of Lexis-Nexis.⁸ Currently, only the *New York Times* and the *Washington Post* stories have been gathered for our initial set of seven diseases. But we believe it is important to broaden our set of media outlets to more accurately reflect the diversity of media in the U.S. Finally, attention to each

⁷ These data, which include sponsorship and other information about all bills introduced since 1946, should be available soon (<http://depts.washington.edu/ampol/navResearch/billIntroProject.shtml>).

⁸ The papers are: *New York Times*, *Wall Street Journal*, *Los Angeles Times*, *USA Today*, *Minneapolis Star Tribune*, *Washington Post*, *Miami Herald*, *Boston Globe*, *Houston Chronicle*, *Cleveland Plain Dealer*, *Arizona Republic*, and *Chicago Sun-Times*.

disease in the scientific community is being measured by the number of articles about each disease appearing each week in the *New England Journal of Medicine (NEJM)*, the *Journal of the American Medical Association (JAMA)*, the *Annals of Internal Medicine (AIM)*, and *Science*. In addition, we plan to use the Science Citation Index database to estimate overall annual research attention levels to each disease (see Anderson et al. 1996 for an example of this methodology). The entries in this series are coded to reflect whether the primary focus of the article is changes in prevalence, incidence, or severity of the disease; a new treatment or cure for the disease (pharmacological or surgical); or prevention of the disease (including screening and diagnostic technologies).

Armstrong will supervise the collection of the scientific attention and the media attention data at Princeton; Carpenter will supervise the collection of presidential data at Harvard; and Hojnacki will supervise the collection of the two types of congressional attention data at Penn State. Collection of the scientific attention and presidential attention data will be completed during the first year of the grant. Collection of both types of media attention data will begin during the first year of the grant and will be completed by the summer of 2005. The two measures of congressional attention will be gathered during the second year of the grant.

Policy outcomes: In addition to our measures of attention, we will focus analysis upon two vital policy outcomes: the awarding of research grants by the National Institutes of Health (NIH) and the approval of new medicines by the U.S. Food and Drug Administration (FDA). First, using the Computer Retrieval of Information on Scientific Projects (CRISP) database of NIH, we will aggregate (by disease and by fiscal year) the number of research awards granted in which (1) the disease in question is mentioned in the project title, and/or (2) the disease in question is mentioned in the project abstract. CRISP data allows us to perform this search from 1972 to the present. While some awards may be larger than others, we can use NIH data to weight yearly aggregates by the average amount of funding awarded in that year, or conduct a grant-by-grant search to aggregate the total amount of funding awarded. These data will be collected at Harvard with guidance from Carpenter beginning in the autumn of 2004.

Second, we can examine the link between attention and FDA drug approval times (Note that we are not asking for funds to collect these data; Carpenter has already done so under SES-0076452). Carpenter (2002) demonstrated a relationship between increasing media coverage of disease and acceleration of FDA approval times for drugs for that disease. Yet his media data were blunt (annual-level data) and came from just one news source (the *Washington Post*). We will be able to estimate more precisely these relationships. Both of these policy outcomes have vital consequences for healthcare and for policy issues such as the cost of health insurance, the quality of healthcare, the pricing of pharmaceuticals, and the availability of new technologies.⁹

Burden of Disease. Multiple indicators of the burden of each disease in the population also are being collected. First, we focus on mortality as one of the most fundamental measures of the burden of disease. Death, after all, is the ultimate burden that a disease inflicts on the dead, as well as on the rest of us. We recognize that mortality is *not* the sum-total of burden, nor is it even an appropriate measure for many diseases that cause sickness, but rarely death—the common cold, for example, is estimated to cause 45 million days of restricted activity and 22 million days lost from school each year, a sizable burden that cannot be captured in mortality statistics (NIAID 2001). However, using mortality as our initial measure of the burden of disease has among its virtues that we can very precisely identify deaths from these diseases, using national vital statistics. Since deaths are coded by the National Center for Health Statistics

⁹ We also considered gathering data on academic earmarks to research universities (Balla et al. 2002). Yet the rarity of congressional earmarking for disease-specific medical research relative to the NIH granting process, combined with the difficulty of getting data on earmarks to non-academic research institutions (e.g., hospitals and non-profit institutes such as the Lombardi Cancer Center), leads us to set earmark data aside in favor of more readily measurable indices.

using the International Classification of Diseases (ICD-9 and ICD-10) codes, we can accurately match deaths to the 37 diseases in our sample for the entire time series and for specific population groups.¹⁰ Specifically, for each disease we will obtain annual, non-age-adjusted mortality rates that are designed to reflect the likelihood of dying from a disease in a given year for the general population. We use rates that are not age-adjusted because we believe that crude death rates capture more fully how death “appears” in the eyes of the general public. In other words, if deaths from Alzheimer’s disease are increasing either because the population is aging, or because the underlying incidence of the disease is rising, we believe it is important to take into account this apparent increase, even if it is one that demographers or epidemiologists would discount through age adjustment. The mortality data are from National Vital Statistics Reports.

A second measure of burden is incidence. For each disease we will obtain yearly incidence rates as reported in the National Health Interview Survey (NHIS). These rates are designed to reflect the likelihood of suffering from a disease in a given year. A third measure, also obtained from the NHIS, indicates the annual average length of a hospital stay for each disease. A fourth measure of burden indicates the annual number of hospital discharges for each disease. These data are available from the National Hospital Discharge Survey (NHDS). All of these data will be obtained separately for gender and racial subgroups; rates of change in these indicators also will be documented. Mortality data also will be obtained separately for different age subgroups. The four indicators of burden will be collected at Princeton with guidance from Armstrong beginning in January 2005.

Characteristics of Organizational Communities. In order to test our ideas about how organized communities affect the attention allocated to different diseases, we need to identify the organizations that are part of these communities as well as some of their relevant characteristics (e.g., whether they are registered to lobby, the amount of time they spend on disease-related policy issues, organization type, membership size, age, wealth). In order to identify organizations in each community, we have been searching the text of national organization entries in the *Associations Unlimited (AU)* database. Relevant organizations are identified as being either central or peripheral to the disease community depending on whether they have, respectively, a direct interest in some aspect of a given disease (e.g., as treatment providers, patient advocates, or seekers of research funding), or an interest that is orthogonal to their primary organizational objectives (e.g., an organization that advocates civil rights that takes a specific interest in discrimination of individuals with a disease).

Once groups associated with each disease community are identified, information about some of their characteristics can be obtained from various published sources. For instance, *AU* often provides the year an organization formed and its annual budget. Information about the organization’s type (e.g., charity, professional association, service provider) can be obtained from each organization’s website (when a site exists) or sometimes from *AU*. Data about certain political characteristics of groups (e.g., existence of a Washington, DC office, number of hired lobbyists) is available from *Washington Representatives*. However, it is not possible to obtain from published sources information about the composition of the organizational communities in each year of our series, nor is it possible to locate information about other important characteristics of groups. Consider, for example, that when organizations express an interest in disease in 2003, we cannot in all cases determine when they first became interested in that disease. For some organizations such as the American Heart Association, it is clear that they have been interested in a disease since their founding. But for organizations such as the ACLU or the National Association of Black County Officials, it is unlikely that formation dates are equivalent to dates of initial interest in a disease. Similarly, although *Washington Representatives* offers a relatively thorough listing of organizations located in Washington, DC, it does not provide complete

¹⁰ Of course, these national vital statistics are accurate only to the extent that cause of death is correctly reported on death certificates. For a discussion of the accuracy of death certificate reporting, see Smith-Sehdev and Hutchins (2001), Nielsen et al. (1991), and Maudsley and Williams (1996). Although errors certainly do occur on death certificates (as well as arbitrary assignment of cause of death), we believe this misreporting does not affect our results in any particular direction.

information about organizations that are not located there but have hired lobbyists to represent them (and based on the data collected so far, it is somewhat common for disease-related organizations to be located outside of Washington). For data that are not readily available elsewhere, we will rely on a mail survey of the organizations identified through *AU*.

Each organization will receive a survey that includes questions about when the organization began to take an interest in issues related to the relevant disease; whether it engages in various types of advocacy activity (e.g., direct lobbying of government officials, mobilizing supporters and members) and how long the organization has been involved with those activities; and who its allies and adversaries are on matters related to the relevant disease. Draft survey questions, some of which were pre-tested during interviews with the Alzheimer's Association, the American Lung Association, the National Alliance of State and Territorial AIDS Directors, and the National Breast Cancer Coalition over the past year, include:

- During what year did your organization begin to take an interest in issues related to [disease]?
- Please indicate your best estimate of the proportion of your organization's agenda that is devoted to [disease]-related topics or issues as opposed to other topics or issues.
- Please indicate your best estimate of the proportion of your organization's agenda that is devoted to [disease]-related appropriations (including federal funding for research, funding for programs supported by your organization, etc.) as opposed to matters of public policy that are not strictly about appropriations.
- Generally speaking, how important is each of the following resources to the overall efforts of your organization on issues related to [disease]? (Resources will include: mobilizing grass-roots supporters, access to members of Congress of their staff, access to agency staff, contacts with news reporters or other news personnel, financial resources.)
- Does your organization have a designated individual or unit that is responsible for media/public relations? For how many years has your organization had an individual/unit responsible for media/public relations?

The mail survey will continue to be pre-tested through the spring of 2004; it will be implemented by the Survey Research Center (SRC) at Penn State University at the beginning of 2005. The SRC will provide first a postcard reminder and then a complete follow-up by mail. A final telephone follow-up will be made to organization representatives who have not yet responded to our initial requests for information.

All data gathered for individual groups will be aggregated to the level of a community to reflect community characteristics in each year from 1980 to 2004. Community characteristics can change through the entry of new organizations, and through changes in the behavior or character of existing groups.¹¹ A graduate research assistant will work with Hojnacki at Penn State to identify the organizations in each community and gather the organizational data. This task, which must be completed before the survey can be implemented, will begin in January 2004. Undergraduate research assistants at Penn State will help to gather some of the organizational data once the organizations in each community have been identified. The collection of the names and addresses of organizational representatives for the survey mailing list will begin in January 2004. Information about the characteristics of groups will be gathered during the spring of 2004 through summer 2005.

In addition, as we describe above, about 35 interviews with representatives of organizations that we have identified in different disease communities will be conducted by the three PIs during the summers of 2004 and 2005. We will also interview a small number (about 10) of journalists and media executives about what makes news, particularly on the topic of disease.

¹¹ Because we identify disease-related groups in the present, we cannot account for organizations that existed earlier in our series but have since ceased to exist. Although we could examine old copies of *AU* (previously known as the *Encyclopedia of Associations*) to identify other groups, we would not be able to learn anything about those organizations. We will, in our interviews with organization representatives, make efforts to learn about the extent of organizational exits from the communities of groups we are studying.

VIII. Conclusion: Significance of the Proposed Research

Our project offers a radically different approach to studying agenda setting and social problem construction, one that promises to advance considerably our theoretical and empirical understandings of these phenomena. Specifically, we propose to examine government, scientific, and media attention to 37 different diseases across 25 years. By building cross-sectional variation into our research design with a broad sample of diseases, we are able to examine systematically how characteristics of problems affect the extent to which those problems attract the attention of government actors, experts, and members of the media. This feature of our research design also allows us to explore how attention to any set of problems is affected by the presence of other problems. In addition, because we incorporate the cross-sectional variation into a framework that contains both temporal and cross-institutional variation as well, our project allows us to examine how aspects of the agenda setting process *in conjunction with* problem characteristics shape the attention problems receive. Previous research has tended to emphasize only one of these sets of characteristics, and thus has not been able to tackle empirically how the interaction among problems affects agenda setting.

The results of our research also will have important policy implications. In a context of escalating health costs, pervasive racial/ethnic and socioeconomic disparities in health, and increased social and medical concern about both old and newly emerging diseases, this study will illuminate several key aspects of policymaking in the arena of health and disease. Perhaps most important, our data will make it possible to investigate not only how the attention allocation process is affected by the sociodemographic characteristics of groups who are differentially burdened by different diseases, but also whether observed disparities in attention are magnified or lessened by the organized advocates and experts who take an interest in those problems. In addition, we can investigate whether and how the correlates of attention are linked to more tangible policy outcomes (e.g., the allocation of grants for research by the NIH and the approval of new medicines by the FDA). As important as these specific health policy implications are, we would also claim that policy issues more generally should not be considered outside of the complex dynamics of attention allocation. These dynamics determine what social problems are selected for public interest, media attention and government action. In this regard, then, it is the attention allocation process – the process that this study seeks comprehensively to explain – that defines the parameters within which policy decisions are made.

IX. Results from Past Support

Carpenter has received one previous grant from the NSF (SES-0076452; \$221,283 for 24 months), which began in July 2000. From that grant he has produced two published papers, including an article in *AJPS* that was reported in the *Washington Post* (“What Moves Bureaucrats,” August 4, 2002). He has also written five other papers from that grant, including a formal model currently under invited revise-and-resubmit at the *APSR* and a collaborative paper with Michael Ting. All five have been presented at professional conferences and university seminars and will eventually be published. With NSF funding Carpenter has produced several new formal models of bureaucratic learning and administrative delay that are applicable to a wide range of regulatory problems. Carpenter is writing a book manuscript using the theoretical models elaborated and the data collected under this grant.

Hojnacki is presently a co-investigator (with Frank Baumgartner, Jeffrey Berry, David Kimball, and Beth Leech) on “Lobbying and Issue-Definition,” NSF grant SES-00111224 (\$235,930) which began in July 2001 and continues through June 2004. To date, the investigators have completed over 225 interviews with policy advocates in Washington, DC on 100 different policy issues covering the 106th and 107th Congresses. This data collection began under another NSF grant (SBR-9905195; \$80,569), which covered the period August 1999 through December 2000. The interview data are currently being coded; preliminary results have been presented in five conference papers and a chapter in the 6th edition of *Interest Group Politics* (Leech, et al. 2002). The non-interview data that are being collected about each of the study issues are available at: <http://lobby.la.psu.edu>. Joint work by the co-investigators on a book manuscript will begin in 2004.

References Cited

- Adelman, Richard C. and Lois M. Verbrugge. 2000. "Death Makes News: The Social Impact of Disease on Newspaper Coverage." *Journal of Health and Social Behavior*. 41:347-67.
- Anderson, J., M. MacLean, and C. Davis. 1996. *Malaria Research: An Audit of International Activity*. London: The Trustee of the Wellcome Trust.
- Armstrong, Elizabeth M. 1998. "Diagnosing Moral Disorder: The Discovery and Evolution of Fetal Alcohol Syndrome." *Social Science and Medicine*. 47:2025-2042.
- Armstrong, Elizabeth M. and Ernest L. Abel. 2000. "Fetal Alcohol Syndrome: The Origins of a Moral Panic." *Alcohol and Alcoholism*. 35:276-282
- Armstrong, Elizabeth M. Daniel P. Carpenter, and Marie Hojnacki. 2003. "Whose Deaths Matter? Mortality, Citizen Advocacy, and Attention to Disease in the Mass Media." Princeton University. Typescript.
- Balla, Steven J., Eric D. Lawrence, Forrest Maltzman, and Lee Sigelman. 2002. "Partisanship, Blame Avoidance, and the Distribution of Legislative Pork." *American Journal of Political Science* 46:515-525.
- Bartels, Larry M. 1996. "Politicians and the Press: Who Leads? Who Follows?" Presented at the annual meetings of the American Political Science Association.
- Bartlett, Christopher, Jonathan Sterne, and Matthias Egger. 2002. "What is Newsworthy? Longitudinal Study of the Reporting of Medical Research in Two British Newspapers." *British Medical Journal* 325:81-84.
- Baumgartner, Frank R. and Bryan D. Jones. 1993. *Agendas and Instability in American Politics*. Chicago: University of Chicago Press.
- Beck, Nathaniel, and Jonathan N. Katz. 1995. "What to Do (and Not to Do) with Time-Series-Cross-Section Data in Comparative Politics." *American Political Science Review*. 89:634-47.
- Bennett, D. Scott, and Allan Stam. 2000. "Research Design and Estimator Choices in the Analysis of Interstate Dyads: When Decisions Matter." *Journal of Conflict Resolution*. 44: 653-685.
- Berry, Jeffrey M. 1999. *The New Liberalism: The Rising Power of Citizen Groups*. Washington, DC: Brookings.
- Best, Joel. 1990. *Threatened Children: Rhetoric and Concern about Child-Victims*. Chicago: The University of Chicago Press.
- Best, Joel, ed. 1995. *Images of Issues: Typifying Contemporary Social Problems*. New York: Aldine de Gruyter.
- Blumer, Herbert. 1971. "Social Problems as Collective Behavior." *Social Problems*. 18:298-306.
- Brandt, Allan M. and Paul Rozin, eds. 1997. *Morality and Health*, New York: Routledge.
- Brown, Martin L. and Arnold L. Potosky. 1990. "The Presidential Effect: The Public Health Response to

Media Coverage About Ronald Regan's Colon Cancer Episode." *Public Opinion Quarterly*. 54:317-329.

Burstein, Paul, and April Linton. 2002. "The Impact of Political Parties, Interest Groups, and Social Movement Organizations on Public Policy: Some Recent Evidence and Theoretical Concerns." *Social Forces*. 81:380-408.

Caldeira, Gregory A. and John R. Wright. 1988. "Organized Interests and Agenda Setting in the U.S. Supreme Court." *American Political Science Review*. 82:1109-27.

Caldeira, Gregory A., John R. Wright, and Christopher J. W. Zorn. 1999. "Strategic Voting and Gatekeeping in the Supreme Court." *Journal of Law, Economics and Organization*. 15:549-72.

Carpenter, Daniel P. 1996. "Adaptive Signal Processing, Hierarchy and Budgetary Control in Federal Regulation." *American Political Science Review*. 90: 283-302.

----. 2002. "Groups, the Media, Agency Waiting Costs and FDA Drug Approval." *American Journal of Political Science*. 46: 490-505.

Centers for Disease Control and Prevention. 2003. *Morbidity and Mortality Weekly Report*, 52(31): 747. Aug 8, 2003.

Casamayou, Maureen Hogan. 2001. *The Politics of Breast Cancer*. Washington, D.C.: Georgetown University Press.

Cobb, Roger W. and Marc Howard Ross. 1997. *Cultural Strategies of Agenda Denial: Avoidance, Attack and Redefinition*. Lawrence: University of Kansas Press.

Colby, David C. and Timothy E. Cook. 1991. "Epidemics and Agendas: The Politics of Nightly News Coverage of AIDS." *Journal of Health Politics, Policy, and Law*. 16:215-49.

Cohen, Cathy J. 1999. *The Boundaries of Blackness: AIDS and the Breakdown of Black Politics*. Chicago: University of Chicago Press.

Cook, Timothy E. 1998. *Governing With the News: The News Media as a Political Institution*. Chicago: University of Chicago Press.

Cress, Daniel M. and David A. Snow. 2000. "The Outcomes of Homeless Mobilization: The Influence of Organization, Disruption, Political Mediation, and Framing." *American Journal of Sociology*. 105:1063-1104.

Donovan, Mark C. 2001. *Taking Aim: Target Populations and the Wars on AIDS and Drugs*. Washington, DC: Georgetown University Press

Downs, Anthony. 1972. "Up and Down with Ecology—The 'Issue-Attention Cycle'." *The Public Interest*. 28:38-50.

Edelman, Murray. 2001. *The Politics of Misinformation*, New York: Cambridge University Press.

Edwards, George C., III and B. Dan Wood. 1999. "Who Influences Whom? The President and the Public Agenda." *American Political Science Review*. 93:327-44.

- Epstein, Steven. 1996. *Impure Science: AIDS, Activism, and the Politics of Knowledge*. Berkeley: University of California Press.
- Freeman, John R., John T. Williams, and Tse-min Lin 1989. "Vector Autoregression and the Study of Politics." *American Journal of Political Science*. 33:842-877.
- Gamson, William A. 1990. *The Strategy of Social Protest*, 2nd ed. Belmont, CA: Wadsworth Publishing.
- Gandy, Oscar H., Jr. 1982. *Beyond Agenda Setting: Information Subsidies and Public Policy*. Norwood, NJ: Ablex Press.
- Gans, Herbert. 1979. *Deciding What's News: A Study of CBS Evening News, NBC Nightly News, Newsweek and Time*. New York: Vintage.
- Gordis, E. 1996. "Alcohol Research and Social Policy: An Overview." *Alcohol Health and Research World*. 20:208-12.
- Gross, Cary P., Gerard F. Anderson, and Neil R. Powe. 1999. "The Relation Between Funding by the National Institutes of Health and the Burden of Disease." *The New England Journal of Medicine*. 340: 1881-1887.
- Gusfield, Joseph R. 1981. *The Culture of Public Problems: Drinking-Driving and the Symbolic Order*. Chicago: University of Chicago Press.
- Hall, Richard L. 2000. "Lobbying as Legislative Subsidy." Presented at the annual meeting of the American Political Science Association, Washington, D.C.
- Hansen, John Mark. 1991. *Gaining Access: Congress and the Farm Lobby, 1919-1981*. Chicago: University of Chicago Press.
- Hilgartner, Stephen and Charles L. Bosk. 1988. "The Rise and Fall of Social Problems: A Public Arenas Model." *American Journal of Sociology*. 94:53-78.
- Kingdon, John W. 1995. *Agendas, Alternatives and Public Policies*, 2nd edition. New York: HarperCollins.
- Kitsuse, John I. and Malcolm Spector. 1973. "Toward A Sociology of Social Problems: Social Conditions, Value Judgments, and Social Problems." *Social Problems*. 20: 407-418.
- Kollman, Ken. 1998. *Outside Lobbying: Public Opinion and Interest Group Strategies*. Princeton, NJ: Princeton University Press.
- Lane, Dorothy S., Anthony P. Polednak, and Mary Ann Burg. 1989. "The Impact of Media Coverage of Nancy Regan's Experience on Breast Cancer Screening." *American Journal of Public Health*. 79:1551-1552.
- Lantz, Paula M., and Karen M. Booth. 1998. The Social Construction of the Breast Cancer Epidemic. *Social Science and Medicine* 46:907-918.
- Leech, Beth L., Frank R. Baumgartner, Jeffrey M. Berry, Marie Hojnacki, and David C. Kimball. 2002. "Organized Interests and Issue Definition in Policy Debates." In *Interest Group Politics*, 6th ed., Allan J.

- Cigler and Burdett A. Loomis, eds. Washington, DC: CQ Press.
- Lerner, Barron H. 2001. *The Breast Cancer Wars: Hope, Fear, and the Pursuit of a Cure in Twentieth-Century America*. New York: Oxford University Press.
- Luker, Kristin. 1996. *Dubious Conceptions: the Politics of Teen Pregnancy*. Cambridge: Harvard University Press.
- McCombs, Maxwell and Jian-Hua Zhu. 1995. "Capacity, Diversity, and Volatility of the Public Agenda." *Public Opinion Quarterly*. 59:495-525.
- Mackie, Christopher J. 1997. "Leaders and Followers? Politicians, the Press, and Public Policy," paper presented at the 1997 annual meetings of the American Political Science Association.
- Maudsley, G. and Williams, E.M. 1996. "Inaccuracy in death certification -- where are we now?" *Journal of Public Health Medicine* 18(1):59-66.
- Nattinger, Ann Butler, Raymond G. Hoffmann, Alicia Howell-Pelz, and James S. Goodwin. 1998. "Effect of Nancy Reagan's Mastectomy on Choice of Surgery for Breast Cancer by US Women." *Journal of the American Medical Association*. 279:762-766.
- National Institute on Alcohol Abuse and Alcoholism. 1999. "Alcohol and the Workplace." *Alcohol Alert*. 46.
- National Institute of Allergy and Infectious Diseases, Office of Communications and Public Liaison, and National Institutes of Health, 2001. "The Common Cold," <http://www.niaid.nih.gov/factsheets/cold.htm>, accessed June 20, 2003.
- Nielsen, G.P., J. Bjornsson, and J.G. Jonasson, 1991. "The accuracy of death certificates: Implications for health statistics," *Virchow Archives* 419(2): 143-6.
- Piven, Francis Fox and Richard A. Cloward. 1977. *Poor People's Movements*. New York: Vintage Books.
- Pollock, Philip H. 1994. "Issues, Values, and Critical Moments: Did 'Magic' Johnson Transform Public Opinion on AIDS?" *American Journal of Political Science*. 38:426-446.
- Proctor, Robert N. 1995. *Cancer Wars: How Politics Shapes What We Know and Don't Know About Cancer*. New York: Basic Books.
- Rosenberg, Charles E. and Janet Golden, eds. 1992. *Framing Disease: Studies in Cultural History*. New Brunswick, NJ: Rutgers University Press.
- Schattschneider, E.E. 1975 [1960]. *The Semi-Sovereign People: A Realist's View of Democracy in America*. New York: Harcourt Brace Jovanovich College Publishers.
- Schneider, Anne and Helen Ingram. 1993. "Social Construction of Target Populations: Implications for Politics and Policy." *American Political Science Review*. 87:334-47.
- Schudson, Michael. 1978. *Discovering the News: A Social History of American Newspapers*. New York: Basic Books.

- Smith-Sehdev, A.E. and G. M. Hutchins, 2001. "Problems with proper completion and accuracy of the cause of death statement," *Archives of Internal Medicine* 16(2):277-84.
- Sontag, Susan. 1990. *Illness as Metaphor and AIDS and Its Metaphors*. New York: Anchor Books.
- Spector, Malcolm and John I. Kitsuse, 1973. "Social problems: a re-formulation," *Social Problems* 21:145-59.
- Sparks, Holloway. 2003. "Queens, Teens, and Model Mothers: Race, Gender, and the Discourse of Welfare Reform." In *Race, Welfare, and the Politics of Reform*, eds. Richard Fording, Joe Soss and Sanford Schram. Ann Arbor: University of Michigan Press.
- Stewart, W. F., et al. 2003. "Cost of Lost Productive Work Time Among U.S. Workers with Depression." *JAMA*. 289 (23):3135-3144.
- Tuchman, Gaye. 1978. *Making News: A Study in the Construction of Reality*. New York: Free Press.
- U.S. Dept. of Health and Human Services. 2001. *The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity*. Rockville, MD: USDHHS, Public Health Service, Office of the Surgeon General.
- Walker, Jack L. 1977. "Setting the Agenda in the U.S. Senate: A Theory of Problem Selection." *British Journal of Political Science*. 7:423-45.
- Wood, B. Dan, and Jeffrey Peake. 1998. "The Dynamics of Agenda-Setting in Foreign Policy." *American Political Science Review*. 92: 173-84
- Wright, John R. 1996. *Interest Groups and Congress: Lobbying, Contributions, and Influence*. Boston: Allyn and Bacon.
- Zorn, Christopher J. W. 2001. "Generalized Estimating Equation Models for Correlated Data: A Review with Applications." *American Journal of Political Science*. 45: 470-90.