

## Abstract

Ecological studies have consistently reported that younger organizations are more likely to close or disband than older organizations. This article uses neo-institutional theory and social capital theory to explore this finding. We derive hypotheses from these perspectives and test them on a panel of nonprofit organizations in Minneapolis-St Paul (USA) using event history analysis. We find that larger organizations and organizations more dependent upon private donations are less likely to close, and government funding reduces the age effect on mortality; that is, older and younger publicly funded organizations are equally likely to survive or fail. However, among older organizations, not having government funding increases chances of survival. In contrast, volunteer staffing accentuates the age effect. Older organizations that were more dependent on volunteers had a lower likelihood of closure than younger organizations dependent on volunteers, while age had no effect on closure for organizations not dependent on volunteers. We conclude by examining our findings in light of the extant thinking on the liability of newness and the role of institutional and network embeddedness on the chances of organizational survival.

## Key words

Institutional theory, nonprofit organizations, organizational ecology, structural embeddedness

# STRUCTURAL EMBEDDEDNESS AND THE LIABILITY OF NEWNESS AMONG NONPROFIT ORGANIZATIONS

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A recurring finding in the literature on organizational closure is the fact that younger organizations are more likely to close than older organizations. Researchers have labeled this the 'liability of newness'. Organizational ecologists have done the most important work on this topic, and a steady stream of studies has found that age is one of the strongest predictors of organizational mortality (Hannan and Freeman 1989). However, there is still no consensus on the underlying causes of the age effect, although there has been much speculation.

This article argues that isolation is a key factor in explaining why younger organizations are more likely to close. If organizations can 'connect' more with stakeholders in their environment, many of the problems associated with the liability of newness can be overcome. Both neo-institutional theory and social capital theory emphasize the importance of organizations and their leaders having ties to others in their environment. Neo-institutional theory emphasizes the importance of garnering legitimacy through ties to gatekeepers or higher status players in the organizational field (Baum and Oliver 1996). This addresses problems of accountability, reliability and reputation. Social capital theory argues that interpersonal and interorganizational networks are key in enabling actors to access resources that others control (Burt 1992; Amburgey and Rao 1996; Lin 2002). Organizations that are viewed by others as more legitimate or that can access needed resources are more likely to succeed than others. In short, newer organizations are simply not as well embedded as older organizations, a condition that threatens their ability to function or compete.

The goals of this article are modest. We review briefly the literature on organizational survival with particular attention to the work on age effects. We then offer an explanation for these effects using neo-institutional and social capital theories. We label this the embeddedness approach. We then use data from a panel study of nonprofit organizations in Minneapolis-St Paul (the 'Twin Cities'), USA, to see which set of predictions is more useful in explaining closure between 1980 and 1994. In addition to testing hypotheses on the direct effects of particular organizational characteristics on survival, our goal is to elaborate the age effect by incorporating neo-institutional and social capital variables into our analysis. That is, we seek to establish that the age effect is mitigated when organizations are socially embedded.

## **ORGANIZATIONAL CLOSURE**

Organizational closure seems like a straightforward topic, but it is fraught with ambiguity. Organizations could be said to be 'dead' when they cease operations, lose their legal identity or lose their capacity to govern themselves (Hager *et al.* 1996). Aldrich (1999: 260) prefers the term disbanding and focuses on the 'disconnecting' of goals, resources and boundaries of an organization. Having a good definition of closure or disbanding is important because many organizations continue to operate long after a 'terminal event', such as bankruptcy, loss of a corporate charter or a change in

ownership. Also organizational activities do not cease operations after formal organizations are acquired by or merge with another organization (Freeman *et al.* 1983).

Equating either absorption or closure with failure is also risky. Mergers or acquisitions in the for-profit sector are often 'success stories' for the owners or managers (Carroll and Delacroix 1982); whether or not this is true in the nonprofit sector remains an empirical question. In their study of closure, Hager *et al.* (1996) found that 20 percent of the nonprofit organizations in the sample that we study here cited program success as a reason for closure. Milofsky (1987) showed that neighborhood-based organizations might decide to close if this action is seen as in the best interest of the community. At the same time, many 'failed' organizations continue to operate for many years after their ability to pursue their mission has been compromised (Meyer and Zucker 1989). This presents a dilemma, because organizational theory typically explains absorption and closure with the same variables that it uses to explain failure; however, distinguishing between successful and unsuccessful closures is important because not all failed organizations close or are absorbed and not all closures and absorptions are failures.

## ECOLOGICAL EXPLANATIONS OF ORGANIZATIONAL CLOSURE

Ecologists argue that organizational closure is a function of an organization's age, size and the density of the population in which it operates. We will discuss all three, but we focus on age and will relegate the last two to control variable status in our analysis.

### Age: The liability of newness

Numerous studies have found that young organizations close at higher rates than older ones (Carroll and Delacroix 1982; Carroll 1983; Freeman *et al.* 1983; Singh *et al.* 1986b; Hannan 1988). Perhaps as a consequence of the ubiquity of this finding, the vanguard of research in the ecological tradition no longer focuses on age dependence and examines other determinants of organizational demise. The age variable, once the central interest in studies of organizational demise, became merely a control variable in new branches of the field.<sup>1</sup>

At the time that the liability of newness was first articulated in the scholarly literature (Stinchcombe 1965), theorists understood that age *itself* was not the cause of failure or success in an organizational enterprise. Rather, the liability of newness was the culmination of a variety of conditions, problems and organizational characteristics that typically accompany youth. Stinchcombe (1965) cites four underlying reasons for why young organizations are more susceptible to closure: (1) the difficulties that new organizations experience in reproducing roles, settling on

operating procedures, creating a culture and learning the skills; (2) the high costs (or inefficiency) associated with inventing roles and structuring relations; (3) problems inherent in establishing working relationships with strangers (particularly employees); and (4) the uncertainty associated with establishing ties to those who use the organization's services.

Ecologists have co-opted Stinchcombe's arguments. Hannan and Freeman (1989: 80) argue that organizations will flounder until stakeholders perceive them as reliable and accountable. That happens when the organization has established routines, control systems and institutionalized roles. Employees will not invest in learning organizational-specific skills until they are convinced that the organization is stable and will be around for a while (Hannan and Freeman 1989). Once they have learned these skills, the cost for employees of switching increases and they have vested interests in the success of the organization. Customers are also concerned about reliability and accountability. They worry if their new supplier can fill orders on time, meet specifications and be cooperative when things go wrong. Reliability and accountability are important to other stakeholders as well. Investors and donors will be slow to invest in or contribute to the organization until it shows that it has the ability to produce quality products and services, keep customers happy and be accountable. Once these internal controls have been established, the liability of newness disappears.<sup>2</sup>

### **Size: The liability of small size**

Freeman *et al.* (1983) empirically disentangled the liability of newness from the liability of small size, effectively demonstrating the differential effects of the two. Independent of age, they found that small organizations have lower survival chances than larger ones. In comparison to the liability of newness argument, the liability of small size argument is under-theorized. Wholey *et al.* (1992) provide a list of intuitive reasons why larger organizations should be able to outcompete smaller ones, including the fact that larger organizations have lower production costs, can diversify their risks in a greater variety of markets and are more attractive to employees because they can offer more benefits. Mason (1996) adds that larger nonprofits are able to attract better leaders and are able to take advantage of economies of scale. Kalleberg and Leicht (1991) suggest that smaller organizations have more difficulties raising capital and meeting government regulations, which put them at greater risk of failure. Galaskiewicz and Bielefeld (1998) argue that large organizations are often bureaucratized, and this prevents organizations from changing. This, in turn, benefits an organization because it ensures that it does not reset its clock and incur the liabilities of newness. Whatever the underlying reasons for the liability of small size, a variety of arguments point to it as a key concern.

## Density dependency

Cyert (1978) contends that organizations facing an environment's diminished capacity to support it have two options: either scale down operations or find another ecological niche. Whetten (1980) notes that the public and educational administration fields have primarily emphasized the 'scaling down' option. In the extreme, organizations fail. According to the ecologists, the dynamics underlying the density effect is an oversupply of providers that find themselves competing against one another for a limited number of customers, funders, donors and other resources. Eventually the 'fittest' survive. It then follows that organizations in less dense niches should have better survival chances because they face less competition.

But this is only part of the story. Organizations operating in sparsely populated niches may suffer due to low levels of constitutive legitimacy afforded those in the niche (Hannan and Carroll 1992). If a new organizational form (e.g. a new cause, or a new way of delivering services) is radically different than existing forms, investors, customers and patrons are less likely to trust it, too few similar forms exist to give it a proper air of legitimacy. As a consequence, few resources flow to niches with low constitutive legitimacy. Therefore, operating in either a densely populated niche (due to competition) or a sparsely settled niche (due to low constitutive legitimacy) can be problematic for an organization, suggesting a curvilinear relationship between population density and organizational survival chances. Indeed, researchers in the ecological tradition have consistently found a nonlinear effect of population density on the survival chances of organizations (Carroll 1987; Hannan and Freeman 1988, 1989; Carroll and Hannan 1989; Delacroix *et al.* 1989; Swaminathan and Wiedenmayer 1991; Hannan and Carroll 1992).

In the past decade, niche theory received renewed attention in the organizational change literature, although the newer formulations address different questions and conceptualize the niche in different ways than Hannan and Freeman (1977). Most notable among the new niche theorists is Baum and his associates (Baum and Singh 1994a, 1994b, 1996; Baum and Oliver 1996). While Hannan and Freeman defined the niche as 'that area in constraint space . . . in which the population outcompetes other local populations' (1977: 947), Baum and his colleagues redefine the niche at the organizational level. Organizational populations encompass multiple organizational niches. That is, in addition to the 'macro-niche' of the population, organizations also have their own individual 'micro-niches', which they share with organizations they most resemble. The survivability of an organization rests largely in its ability to successfully compete or cooperate (or both) with other organizations in its micro-niche space. Baum and Singh (1994a) found that the density of an organizational niche is correlated with the number of foundings and deaths in the niche over time. Galaskiewicz and Bielefeld (1998) adopted the micro-niche approach and found that niche conditions accounted for the growth and decline of earned income and

employees but not donated income and volunteers. However, to date, no one has tested whether the expectations for curvilinearity extend to the micro-niche.

## EMBEDDEDNESS EXPLANATIONS OF ORGANIZATIONAL DEMISE

The ecologists also recognized that linkages to the broader environment are important for organizational survival. Newer organizations especially are not yet 'embedded' in their field and are consequently vulnerable. 'Old organisations tend to develop dense webs of exchange, to affiliate with centers of power, and to acquire an aura of inevitability' (Hannan and Freeman 1989: 81). The ecologists did not explore these issues further and left it to neo-institutional theory and social network analysis to examine the role of structural embeddedness in explaining mortality and survival.

Neo-institutional theory in organizational sociology has focused on organizations' socio-political legitimacy. Organizations (and perhaps especially nonprofit organizations) face a variety of external political elements that might compromise their survival chances. Perhaps chief among these is the ability of an organization to maintain a positive image among its publics. Baum and Powell (1995) labeled this socio-political legitimacy. An organization's life chances are improved when it conforms to the norms and expectations of its institutional environment (Meyer and Scott 1983). An organization can signal conformity by developing ties to well-established societal actors and institutions (Galaskiewicz 1985a, 1985b; Baum and Oliver 1991, 1992). Baum and Oliver (1991, 1992) contend that an organization is more likely to survive if it obtains legitimacy, social support and approbation from external constituents of its institutional environment, a standard claim from institutional theory (Meyer and Rowan 1977; DiMaggio and Powell 1983; DiMaggio 1992).

Studying legitimacy or social support directly is difficult, so researchers often use sponsorships and external referents of legitimation as indicators of socio-political legitimacy. For example, Baum and Oliver (1991, 1992, 1996) studied day care centers in metropolitan Toronto and their relations with community organizations and government agencies. In niches where ties were more extensive, foundings were much higher and death rates were lower. Baum and Singh (1994a) also found that day care centers with relational ties had much lower death rates. Singh *et al.* (1991) studied voluntary social service agencies in Toronto and found that organizations listed in community directories, that had a charitable registration number and had a large board of directors had a lower death rate (see also Singh *et al.* 1986a).

Social capital theory argues that social networks – among both individuals and organizations – add value and thus enhance survival chances, because they help actors access resources that otherwise would be unavailable to them (Bourdieu 1985; Burt 1992; Putnam 1995; Lin 2002). Galaskiewicz and Bielefeld (1998) get more specific. They argue that social networks can provide organizations with favors, access to other people and references. The 'pay-off' of a social relationship is that it provides the trust

that makes it easier for alters to extend favors to ego (with the expectation that they will be reciprocated), introduce ego to their friends and acquaintances (without having to worry about being embarrassed) and be a reference for ego. In this respect social capital theory develops along the same lines as resource dependency theory (Hall 1996) and Burt's (1983) co-optation theory. The resource-dependence framework begins with the assumption that no organization is able to generate all of the resources that it needs, so it must rely on other organizations to provide these resources for them (Aldrich and Pfeffer 1976). Forming network ties to those who control needed resources is a logical strategy for organizations because it increases their survival chances (Pfeffer and Salancik 1978).

The organizational literature has begun to take social capital explanations seriously, although work on the topic is still sparse. In their review of research on the ecology and evolution of organizational populations, Amburgey and Rao note that '[e]cological research on mortality has tended to overlook how existing organisations are relationally embedded in social networks' (1996: 1274). Larson contends that '[t]he key goal for resource-poor entrepreneurial organisations is to build network exchange structures with outsiders that are identified as critical resource suppliers, ones that can stabilize the new firm as a player in its targeted markets' (1992: 100). Larson documents several cases where the presence of exchange relationships was responsible for the growth and success of the organizations she studied. In another study, Weed (1991) found that cooperative relationships and ties to the central office were key in explaining demise among Mothers Against Drunk Driving chapters. Work on ethnic entrepreneurs shows how networks can get business people customers, access to capital and 'favors' (Aldrich and Waldinger 1990). We expect that these kinds of interorganizational relationships are important in explaining the life chances of nonprofit organizations over time.

## **FURTHER EXPLORATION OF THE AGE EFFECT**

The ubiquitous effect of age on survival prompts us to consider if age effects may be conditional on other factors, particularly institutional and/or network ties. In other words, it may be that organizations are particularly vulnerable in the earliest stages of their development for the reasons cited by Stinchcombe (1965) and Hannan and Freeman (1989), and that survival might be enhanced if they are better embedded in their organizational field or community. This also has implications for practice and social policy. These linkages would be important to ensure socio-political legitimacy and a steady flow of resources at a time when organizations are facing problems of accountability, reliability and reputation. As time goes on, embeddedness may not be as critical in explaining survival. With maturity, organizations become institutionalized; their reliability and accountability become firmly established. Having ties to institutional symbols or actors with resources are

not then as critical in explaining survival. The hypothesized interaction is summarized in Figure 1.

In short, age should not have an effect on survival for newer organizations that have extensive institutional ties and social networks in their organizational field or community. Their survival rates will be comparable to older organizations with or without connections. However, if newer organizations are isolated, they should incur the liability of newness and be more likely to close than older organizations. The age effect may be conditional on how deeply embedded organizations are in their organizational fields and communities.

### DATA COLLECTION

Our research is based on a study of public charities headquartered in the Minneapolis-St Paul, USA metropolitan area (the ‘Twin Cities’) from 1980 to 1994. Since no comprehensive list of Twin Cities nonprofit organizations had been compiled when we began our research, we extracted Twin Cities organizations with public charity designations from *U.S. Government Publication 78, The Cumulative List of Organizations* (US Department of the Treasury 1979).

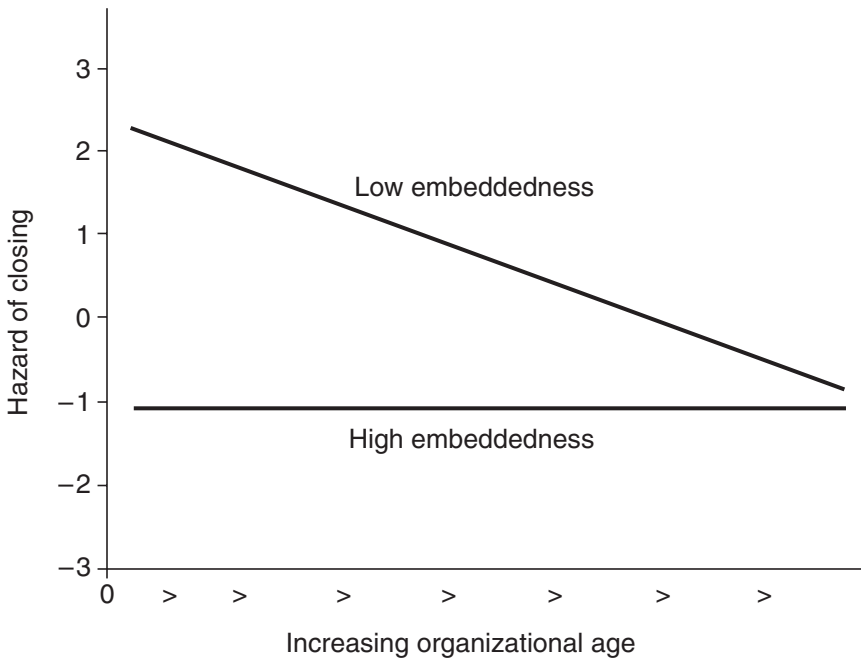


Figure 1: Hypothesized interaction of closure, age and social embeddedness



The resultant sampling frame in 1979 numbered 1,601 organizations.<sup>3</sup> We divided the alphabetized sample among eleven functional areas: cultural, educational, health and welfare, environmental, civic, mass media, recreational, legal, housing/urban development, miscellaneous and unidentified. We drew a stratified random sample, resulting in 326 organizations.

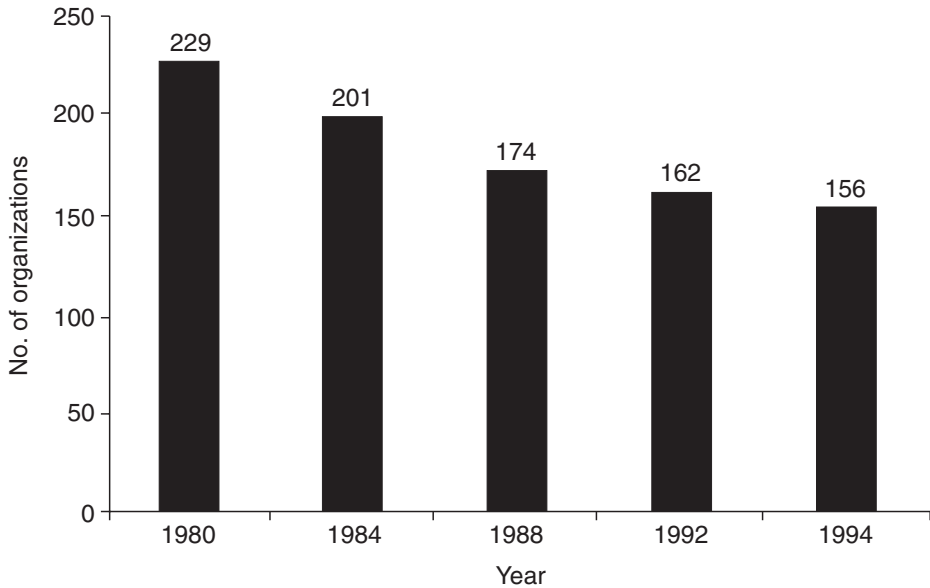
From 1980 to 1982, we conducted a face-to-face interview with a prominent representative from each organization or a member of their boards of directors. We collected data from 229 organizations, a 70 percent response rate. The lengthy survey instrument included questions on activities and mission, numbers of employees and volunteers, composition of the board, perceptions of funding availability, income sources and amounts and other questions presumed theoretically relevant to explaining growth and decline among nonprofit organizations. Of the ninety-seven organizations not interviewed, forty-two could not be located or a contact person could not be found. Only fifteen of the ninety-seven were excluded due to refusal to participate. Several organizations were determined to be strictly religious organizations, for-profits or government agencies. The remainder of the organizations that were not interviewed were either identified as defunct or paper organizations (trusts) with no program activity.

## ATTRITION FROM THE PANEL STUDY

Of the 229 organizations interviewed in 1980, we returned to 201 organizations in 1984, 174 in 1988, 162 in 1992 and collected financial data from 156 in 1994.<sup>4</sup> Figure 2 graphically represents attrition from the panel study.

An organization was removed from the panel if it met the following criteria. First, it had neither program activities nor a board meeting in the primary year of interest (e.g. 1984) or the year following (e.g. 1985). Second, it had become a for-profit business or government agency by 1 January of the primary year of interest. Third, it had relocated outside of the Twin Cities metropolitan area by 1 January of the primary year of interest. Finally, it merged with or was acquired by a for-profit or another nonprofit by 1 January of the primary year of interest and no longer had its own board of directors. We retained an organization even though it had no activity in the primary year of interest if it demonstrated signs of life in the following year. We also retained an organization if it changed its name while maintaining similar program activities, or if it merged with or was acquired by another organization but retained its own board of directors.

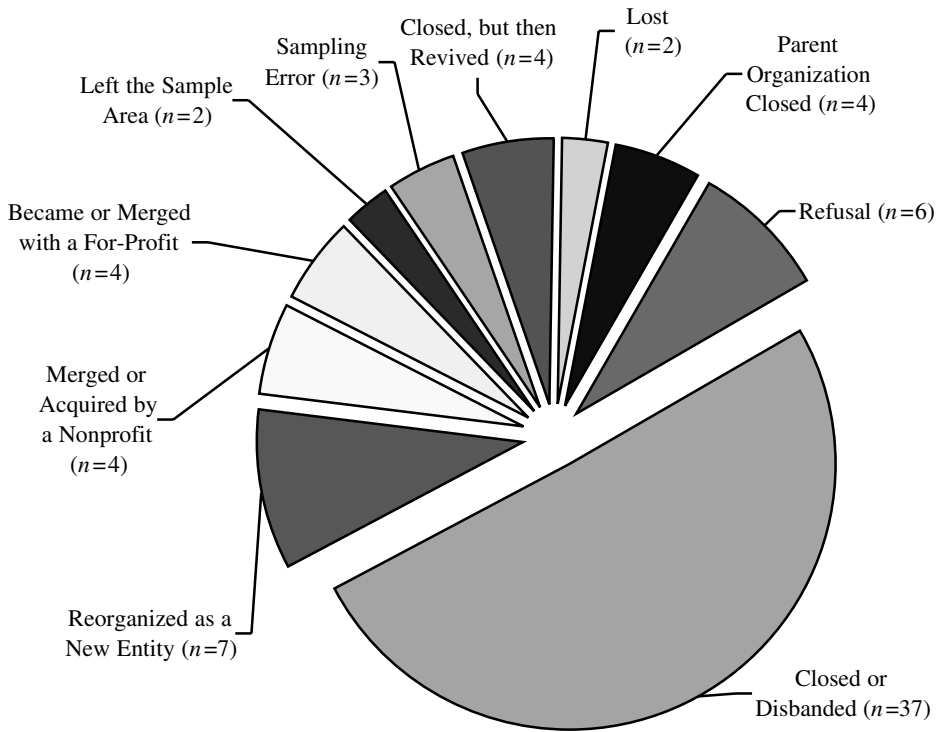
Of the twenty-eight organizations exiting the panel by 1984, only three left due to refusal. The remaining twenty-five were not interviewed because they no longer met our criteria for being 'alive.'<sup>5</sup> Some lost their nonprofit status due to reorganization or merger with other corporations, but thirteen organizations had simply closed or disbanded between 1980 and 1984. Between 1984 and 1988, three more were lost to



**Figure 2: Number of organizations interviewed in each time period**

refusal, leaving twenty-four more exits from the panel. Twelve actually closed while the others left for a variety of other reasons. Twelve more organizations exited between 1988 and 1992, but none of them due to refusal. Seven of the twelve disbanded. We collected 1994 financial data in the summer of 1996, and found that six more organizations left the panel between 1992 and 1994 with five closing. Thus between 1980 and 1994, 156 organizations survived the panel and seventy-three organizations exited the panel.

Figure 3 provides a representation of the variety of ways that organizations exited the panel. The majority exited via outright closure (thirty-seven organizations, or 51 percent). In sum, roughly one-fifth of the organizations exited the panel because of merger, acquisition or reorganization into a new entity. Two organizations left the Twin Cities, and another two could not be located to be classified ('lost'). Three organizations that should not have been included in the 1979 sampling frame are listed as 'sampling error'. They were interviewed in the first wave of data collection but not thereafter. Another four organizations were sufficiently dormant to convince us that the organization should be removed from the panel, but were back in operation when we contacted them in later years for exit interviews. Four organizations closed solely because their parent entity closed; for example, in one case, a nonprofit hospital auxiliary organization closed when the hospital it served closed. Over the course of the study, only six organizations left the panel due to refusal.<sup>6</sup>



Source: Galaskiewicz and Bielefeld (1998: 57)

Figure 3: Representation of the distribution of exits from the panel (N=73)

### EVENT HISTORY ANALYSIS

Survival analysis is a class of statistical methods for studying the occurrence and timing of events (Allison 1995). Survival analysis is ideal for a study of organizational closure because it was designed for the study of failures and requires longitudinal data on the occurrence of events. The dependent variable in a survival analysis is the *hazard rate* for each organization, which can be loosely described as the likelihood that an event will happen to an organization at any particular time. The hazard of a particular event (e.g. closure) is typically described as a *rate* since it is a changing function over time.

The hazard of closure, the dependent variable in the models, is a function of the status of the organization (alive or dead) and the length of time it takes the organization to fail. Organizations that survive the time period as a viable organization or leave the panel for reasons other than closure receive a value of 0 on a status variable, and receive a 1 if they exited the panel due to closure. Further, since the theoretical explanations discussed earlier are concerned with failure rather than generic closure, we noted those

organizations that closed their doors due to success (e.g. completion of mission) rather than failure. Consequently, six successful closures (Hager 1999) received a 0 on the status variable rather than the 1 reserved for failed organizations. Organizations that leave the panel for reasons other than failure are 'right random censored', meaning that the observations are terminated for reasons that are not under the control of the investigator (Allison 1995). Their values until exit contribute to the total number of organization-years tabulated in the estimation of the hazard rate, but these organizations are not counted as having experienced the closure event. Length of time to closure was measured by asking exit interviewees what year their organization closed.

Ecological research through the late 1980s converged on the use of hazard functions and rate models for describing the determinants of demise in populations of organizations (Amburgey and Rao 1996). The goal is to quantify the instantaneous risk that an organization will close at time  $t$ . Since time is continuous, the probability that closure will occur at exactly time  $t$  is 0; however, there is an observable probability that the event will happen in the interval (a full year in the present case) between  $t$  ( $t_1$ ) and  $t + \Delta t$  ( $t_2$ ). The probability is conditional on the organization surviving to time  $t$ , since organizations that have closed are no longer at risk of failure. The hazard function captures this relationship, and is defined as

$$h(t) = \lim_{\Delta t \rightarrow 0} \Pr (t \leq T < t + \Delta t | T \geq t) / \Delta t$$

where  $h(t)$  is the hazard function, and  $T$  is the year of death for a particular organization. The proportional hazards analysis approach estimates the hazard function for each organization, and then uses a variety of independent variables to predict where the organization falls on the survival distribution.

## HYPOTHESES

Hypotheses follow directly from the earlier discussion. The first two hypotheses are derived from the newness and small size arguments that have become firmly entrenched in the literature.

Hypothesis 1: The older an organization, the lower the hazard of closure.

Hypothesis 2: The larger an organization's annual operating expenditures, the lower the hazard of closure.

The third hypothesis concerns organizational resource niches. In short, the features of an organization's niche determine its survival chances. The primary characteristic of niches that are relevant to an organization's survival chances are the number of other organizations that are competing for resources in a niche, thereby increasing the

constitutive legitimacy of the niche. Hypothesis 3 holds that, due to the low constitutive legitimacy of sparsely populated niches, organizations operating in sparsely populated niches are more likely to close than those operating in more dense niches. Also, because of the intense competition in densely populated niches, organizations operating in highly dense niches are more likely to close than those operating in less dense niches. Thus, following common reports of curvilinear effects of macro-niches, we hypothesize a curvilinear effect of micro-niche density on the hazard of closing.

Hypothesis 3: The more organizations in a micro-niche, the lower the hazard of closure up to a point; then the hazard of closure increases with more organizations in the niche.

The next set of hypotheses concerns the value of institutional and network contacts, or embeddedness. We argue that organizations that have these ties are less likely to close. We focus on four types of ties or signals. First, if local elites use the services of the organization personally, then the organization has a way to signal their value and credibility to other consumers. If these high status consumers feel that they can trust these organizations enough to use their services, then others can feel confident that the organization will produce something of value. Their patronage is a signal to other prospective customers of their faith in the organization, the quality of its products or services and its reliability.

Hypothesis 4a: If local elites personally used the services of an organization, the hazard of closure will be lower.

A second indicator of institutional embeddedness is government funding. There are different ways of interpreting government support, but one way is to think of it as a signal of the organization's accountability. Accounts of government reporting demands on funders are legendary (Gronbjerg 1993). Study respondents often complain about filling out forms, keeping detailed records and having to show results. While this is a burden on the organization, others should perceive organizations that have government funding as more accountable.

Hypothesis 4b: If organizations received government funding, the hazard of closure will be lower.

A third type of linkage is through the board of directors. Social capital theory would argue that organizations that have more talented boards not only have access to their skills but also to donations (Galaskiewicz and Rauschenbach 1988), their knowledge about the larger environment (Pfeffer 1972) and their knowledge about their business (Burt 1983). One way of measuring the talent of a board is to look at the occupational prestige of board members. Organizations with higher status board members should not only be viewed as more accountable, but they should also be able to access more resources.

Hypothesis 4c: As board prestige increases, the hazard of closure decreases.

Being supported by donations and relying on the labor of volunteers is another measure of embeddedness. These signal that people or institutions believe enough in the organization to give money and time to the cause. This enhances the organization's reputation and signals its general trustworthiness to the larger community. Another advantage is that organizations are not dependent upon customers for revenues or employees for labor, two key stakeholder groups that can be very demanding. The organization's inputs of money and labor are rooted not in self-interest but in others' commitment to the organization's mission. Having this kind of support is useful because key stakeholders are not strangers who seek personal gain from association with the organization but friends who believe in its mission and are more willing to stand behind it in hard times.

Hypothesis 4d: As dependence on donations and volunteers increases, the hazard of closure decreases.

The final set of hypotheses argues that the age effect is contingent on the degree of structural embeddedness in the early days following its founding. That is, embeddedness should buffer newer organizations from the liabilities of newness (the age effect will be minimal); however, newer organizations without these ties should experience a higher hazard of closure (the age effect will be strong). We argue that embeddedness should help solve some of the problems that newer organizations have with their stakeholders. Elite patronage signals the quality of the organization's goods and services and its reliability to wary customers; government funding signals the new organization's accountability; organizations with more prestigious boards signal access to resources; and if organizations are heavily dependent upon donations and volunteers they have people around them who support their missions and will not abandon them even if they are 'under-institutionalized'. As time goes on and organizations become more routinized and established, these linkages may not be as important in explaining survival as suggested in H4a–H4d and may be important only in the early stages of the organizational life-cycle.

Hypothesis 5a: The effect of age on the hazard of closing will be lower if local elites use the organization.

Hypothesis 5b: The effect of age on the hazard of closing will be lower if organizations receive government funding.

Hypothesis 5c: The effect of age on the hazard of closing will be lower if organizations have more prestigious boards.

Hypothesis 5d: The effect of age on the hazard of closing will be lessened by reliance on donated income and volunteer labor.

## DATA AND VARIABLES

As described earlier, we visited panel organizations in 1980, 1984, 1988, 1992 and 1994. Panel data were gathered in face-to-face interviews with the executive director or operating officer. When the officer did not have the needed data, such as specific financial or personnel numbers, we secured data from others in the organization.

### Age

Although age varies with time, it increases at rates constant for each organization. Consequently, organization age was measured as a non-time-varying covariate. In the first interview year, we asked respondents for the year of founding for their organization and subtracted this from 1980. The distribution of the age variable in 1980 was asymmetric around its mean of 15.2 years.

### Expenditures

Nonprofit researchers typically operationalize organizational size using operating expenditures. In our data this item was highly correlated with other potential measures of size. In 1980, expenditures was correlated with annual revenues  $r = .99$ , number of full-time employees  $r = .99$  and number of part-time employees  $r = .87$ . Fortunately, we had data on organizational expenditures for 1980 through 1988 and for 1991 through 1994. We converted these data into 1994 dollars using the producer price index. This value is our measure of organizational size, which is modeled as a time-varying covariate. To make the interpretation of our results simpler, we divided expenditures by 100,000.

### Niche density

Computation of the organizational niche space was complex; details of the procedure and independent analyses can be found in Galaskiewicz and Bielefeld (1998: 251–67, Appendix B). To operationalize niche variables for our panel, we first had to operationalize densities in the niche space for 1980, 1984, 1988 and 1992. For this we used data from independent cross-sectional surveys current for 1980, 1984, 1988 and 1992. The 1980 cross-section was the initial data collected for the panel and analyzed in this article; cross-sectional surveys in subsequent years, resulting in samples of 266 nonprofits in 1984, 230 in 1988 and 252 in 1992.

For each cross-sectional survey, two pieces of information were used to calculate the density of thirty-two separate niches. For each cross-section organization we computed

the proportion of funding from private, public, commercial and other sources. We also asked respondents to identify their primary activity (health/welfare, education, legal, cultural, recreational, science, housing/urban development and other). We then cross-tabulated source of funding by activities creating a  $4 \times 8$  contingency table that represented the niche space in this community. We completed this procedure for each of the four cross-sectional surveys. Organizations in the cross-sectional sample were assigned to cells depending upon the proportion of their income from different sources and their principal activity.<sup>7</sup> In other words, the counts in the cells were the number of organizations that were dependent upon certain sources of funding and engaged in certain types of activities.

Density is a measure of the degree of crowding or sparseness of organizations in a particular niche. Estimates of niche density were calculated using a main-effects log-linear model where positive residuals (observed minus expected counts) indicated dense (more organizations than expected) niches and negative residuals indicated sparse (fewer organizations than expected) niches. The final step was to assign density scores to the panel organizations. We did this by examining the funding sources and activities of a panel organization in a given year, identifying its niches and then assigning it density scores based on differences in the observed and expected number of organizations in their particular niches for that year. Thus positive scores meant that their niches were densely populated in a given year and negative scores showed that their niches were sparsely settled. The average density scores for the panel organizations were .317 in 1980 (SD = 2.25), .678 in 1984 (SD = 3.32), .588 in 1988 (SD = 3.55) and .797 in 1992 (SD = 4.099). The increase in the size of the standard deviations over the years suggests that the terrain was getting 'bumpier' over time; that is, organizations were less evenly spread out across cells of the niche space. Niche density is modeled as a time-varying covariate.

## **Institutional and social network variables**

### **Elite use of the nonprofit**

Our first measure of embeddedness is based on the local elite's use of the panel organization's services. We surveyed a sample of ninety prominent citizens in the metropolitan area in 1981 and a new sample of 108 elites in 1989. The selection of the 1981 sample was described in Galaskiewicz (1985a: Appendix B); the procedures followed in 1989 were exactly the same. Prominent business people, lawyers, artists, academics, medical doctors, politicians, journalists and athletes were included in the sample. During the course of both the 1981 and 1989 interviews, we handed respondents our lists of panel organizations and asked them to indicate which organizations they or their family members had used in the last couple of years. For each organization we computed the percentage of respondents who said that they (or their families) had used the organization in the past couple of years. The means and



standard deviations were 1.8 and 7.3 in 1981 and 2.7 and 8.1 in 1989. Because the distributions were highly skewed, we dichotomized the variable with a 1 indicating that any of the elite used the organization and a 0 indicating that none did. In 1981 and 1989, 27 percent and 40 percent of the organizations in the panel had at least one elite respondent use its services.

### Government funding

From the data on revenue flows we tallied the total income from federal, state, county and municipal sources in 1979–80, 1983–4, 1987–8, 1991–2 and 1993–4.<sup>8</sup> Only about half the organizations had any government funding: 43 percent in 1980, 47 percent in 1984, 48 percent in 1988, 52 percent in 1992 and 53 percent in 1994. We created a simple dichotomous variable where a 1 indicated that it received government funding in a given year and a 0 if it did not.

### Board member occupational prestige

To estimate the resources of those on the board of directors, we coded the occupations of all board members for 1980 and 1988. During the course of the nonprofit interviews we asked respondents for the names, hometowns, occupations and employers of their directors. If the respondent could only provide the name and occupation of its director, we went to the city directories of Minneapolis-St Paul and their neighboring suburbs for the occupation. We then coded the prestige of each director's occupation using the Siegel-NORC index (Siegel 1983). For each organization we derived an indicator of the board's prestige by averaging the prestige scores of board members. If we were unable to code a director's occupation, the board's prestige score was computed on the directors for whom we had data. Of the 229 nonprofits in 1980, data were missing for twenty-four; of the 174 organizations in 1988, data were missing for sixteen. The means and standard deviations for the two years were 57.3 and 8.1 in 1980 and 57.1 and 7.8 in 1988. These variables were centered at their means.

### Volunteer support and percentage of donated income

We calculated the percentage of revenues that came from donations and the percentage of organizational personnel that were volunteers. Donative revenues included individual donations, dues, corporate gifts and grants, foundation grants, trusts and bequests, net income from special fund raising events and grants from federated fund drives (e.g. United Way).<sup>9</sup> We computed the percentage of revenues from donated sources in 1979–80, 1983–4, 1987–8, 1991–2 and 1993–4. We also summed the numbers of full-time and part-time employees and volunteers and computed the percentage of personnel that were volunteers and employees for these same years. From these data we created a dichotomous variable for volunteer support. Cases

received a value of '1' if two-thirds of their personnel were volunteers and '0' otherwise (mean = 56 percent; median = 71 percent).

## Control variables

### Service areas

Organizational survival may be a function of the kinds of work organizations do. Nonprofit organizations have many different missions or purposes, and mission or purpose, in contrast to profits, is the defining feature of many nonprofit enterprises. Because mission or purpose is so important, we suspect that this should affect growth and decline. Salamon (2002) reports that health care, social services and arts and cultural organizations grew the fastest between 1977 and 1997, while education and civic organizations lagged behind. Consequently, we surmise that different subsectors have experienced differential ecological pressures that have influenced their survival chances.

Each year of the panel we handed respondents a list of eight service areas: health/welfare, educational, legal, cultural, recreational, scientific, housing/urban development and other. We asked them to rank order them in terms of their organization's priorities. We focus on services that received a ranking of one; however, many respondents indicated that two and sometimes three areas were 'most important'. Based on their responses, we created a dummy variable for each of the service areas.

### Percent commercial income

In addition we computed the percentage of revenues from commercial sources for 1980, 1984, 1988, 1992 and 1994. The numerator includes program service revenue (e.g. individual fees-for-service, private third-party payments and reimbursement from government entitlement programs like Medicaid and Medicare) and net earnings on the sale of unrelated services.

## Missing data

While we had yearly data on date of closure and age, many of our variables are measured only for the panel years (1980, 1984, 1988, 1992 and 1994). Our general practice was to assign values available for the last panel year to subsequent years up to the next panel (or until the year an organization closed). Thus if we had data on government funding in 1980, we assigned that value to 1981, 1982 and 1983. If we had data for a later year, but not an earlier year, we substituted that value for the missing value. If there were missing data for a variable and no values were available for a previous year or a subsequent year, e.g. missing data in 1980, then we used mean

substitution. For expenditures we followed a different practice. Because we had yearly data for many organizations, we made use of linear interpolation to estimate values for a missing year using data that were available for adjacent years, e.g. using expenditure data for 1988 and 1991 to estimate values for 1989 and 1990.

Estimating values for missing data prevented the need to drop entire cases from various analyses. We assigned a value for expenditures in 17 percent of the organization years. We assigned a value for the board's occupational prestige in 10 percent of the organization years. As a safeguard against introduction of error, we created dummy variables to distinguish those cases for which we estimated missing values for these two variables. We included both dummies in our analyses below. For none of the other variables did the percentage of missing values exceed 1 percent of the organization years.

## HAZARD MODELS OF ORGANIZATIONAL CLOSURE

The models are proportional hazards regression models that have been used in a variety of contexts in the social sciences. Each model takes the following form:

$$h(t) = e^{\alpha(t) + \beta_1 X_1 + \beta_2 X_2(t)}$$

where  $h(t)$  is the hazard function,  $\alpha(t)$  is an arbitrary function of time that cancels out of the estimating equations (Cox 1972; Allison 1995),  $\beta_1 X_1$  are coefficients and exogenous covariates measured in a particular year and  $\beta_2 X_2(t)$  are coefficients and exogenous covariates that vary with time and are measured in multiple years. An exponentiated coefficient indicates the amount of change in the hazard rate for a one-unit change in its associated covariate.

Table 1 reports the results from the models estimated to test the first seven hypotheses (H1, H2, H3, H4a–H4d). Model 1 includes the control variables for organization activities and organization age. As expected, age has a significant and negative effect on the hazard of closing; that is, younger organizations had a higher hazard of closure than older organizations. Exponentiation of the parameter estimate for age results in a 'risk ratio' of 0.936. Allison suggests interpreting the risk ratio in terms of the influence of a covariate on the hazard of the occurrence of the dependent variable by subtracting one from the risk ratio and multiplying by 100 (Allison 1995: 117). So,  $100(.936 - 1)$  results in a value of  $-6.38$ , which indicates that for every year of organization age, the hazard of closure decreases by an estimated 6.38 percent. The only other marginally significant effect was the dummy for health/welfare organizations ( $p = .054$ ), signaling that these types of organizations had a lower hazard of failure.

Model 2 adds all the other variables mentioned in hypotheses 2 through 4d. We see that organizational expenditures (our measure of size) had a significant and negative

**Table 1: Partial likelihood estimates on the hazard of nonprofit organization closure**

<i>Independent variables</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>	<i>Model 6</i>	<i>Model 7</i>
	$\beta$ (SE)	$\beta$ (SE)	$\beta$ (SE)	$\beta$ (SE)	$\beta$ (SE)	$\beta$ (SE)	$\beta$ (SE)
Health/welfare	- 1.10(.572)#	- 1.14(.566)*	- 1.17(.569)*	- 1.12(.564)*	- 1.15(.566)*	- 1.23(.577)*	- 1.09(.558)#
Educational	.152(.478)	.185(.482)	.144(.487)	.284(.482)	.186(.481)	.161(.496)	.229(.477)
Legal	- .276(1.07)	.065(1.10)	.028(1.10)	.092(1.10)	.077(1.10)	.102(1.09)	.065(1.11)
Cultural	.155(.567)	- .097(.645)	.001(.649)	- .024(.648)	- .085(.648)	- .069(.652)	- .051(.643)
Scientific	.774(.812)	.810(.853)	.937(.854)	.837(.853)	.770(.857)	.740(.888)	.941(.853)
Recreational	- .667(1.11)	- .626(1.14)	- .473(1.15)	- .356(1.15)	- .518(1.16)	- .117(1.14)	- .593(1.14)
Housing/urban development	- 1.29(1.08)	- 1.90(1.10)#	- 1.94(1.10)#	- 1.88(1.10)#	- 1.88(1.10)#	- 1.97(1.10)#	- 1.84(1.09)#
(H1) Age	- .066(.028)*	- .042(.027)	- .075(.041)#	- .102(.050)*	- .044(.027)	- .018(.025)	- .082(.044)#
(H2) Expenditures/100,000		- .146(.069)*	- .141(.068)*	- .149(.070)*	- .145(.069)*	- .140(.069)*	- .140(.068)*
(H3) Niche density		.039(.096)	.032(.096)	.046(.095)	.041(.096)	.050(.098)	.026(.096)
(H3) Niche density squared		- .031(.022)	- .030(.022)	- .031(.022)	- .031(.022)	- .032(.022)	- .034(.022)
(H4a) Elite use of nonprofit (Y/N)		- .701(.519)	- 1.75(.992)#	- .704(.523)	- .714(.521)	- .661(.527)	- .677(.526)
(H4b) Government funding (Y/N)		.937(.462)*	.922(.463)*	- .231(.803)	.936(.462)*	.934(.461)*	.888(.457)#
(H4c) Board occupational prestige		- .016(.026)	- .018(.026)	- .017(.026)	- .035(.046)	- .016(.026)	- .017(.026)
(H4d) Volunteer support (Y/N)		- .735(.424)#	- .793(.426)#	- .713(.425)#	- .734(.423)#	1.13(.879)	- .745(.426)#
(H4d) Percent donated income		- .013(.007)#	- .012(.007)	- .014(.007)#	- .012(.007)#	- .012(.007)	- .025(.012)*
Percent commercial income		- .005(.006)	- .004(.006)	- .005(.006)	- .004(.006)	- .003(.006)	- .004(.006)
(H5a) Age*Elite use of nonprofit			.061(.048)				
(H5b) Age*Government funding				.085(.052)#			
(H5c) Age*Board occupational prestige					.001(.003)		
(H5d) Age*Volunteer support						- .141(.065)*	
(H5d) Age*Percent donated income							.001(.001)

*(continued overleaf)*

**Table 1** (continued)

<i>Independent variables</i>	<i>Model 1</i> $\beta$ (SE)	<i>Model 2</i> $\beta$ (SE)	<i>Model 3</i> $\beta$ (SE)	<i>Model 4</i> $\beta$ (SE)	<i>Model 5</i> $\beta$ (SE)	<i>Model 6</i> $\beta$ (SE)	<i>Model 7</i> $\beta$ (SE)
Dummy: missing cases on expenditures		.213(.794)	.294(.797)	.255(.811)	.221(.795)	.306(.783)	.337(.797)
Dummy: missing cases on board prestige		.665(.582)	.728(.583)	.799(.585)	.653(.583)	.782(.583)	.678(.582)
Log likelihood	– 135.58	– 122.86	– 122.03	– 121.27	– 122.74	– 120.00	– 121.95
– 2 LL model chi-square	21.22***	46.66***	48.32***	49.83***	46.90***	52.38***	48.48***
Number of events	31	31	31	31	31	31	31

\*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$ ; #  $p < .10$

Note: Standard errors in parentheses.

effect on the hazard of closing, providing support for Hypothesis 2. Neither niche density nor its squared term had a significant effect on the hazard rate, thus providing no support for Hypothesis 3. We had hypothesized that micro-niche density would have a curvilinear effect on organizational failure: failure rates would be higher in sparsely and densely populated niches.<sup>10</sup> However, the effect commonly found in tests of density in macro-niches is not confirmed in these data.

Although the association of elites with organizations reduced the hazard of closing, the effect was not statistically significant. Thus Hypothesis 4a was not supported. Surprisingly, Model 2 indicates that government funding increased the hazard of closing. Those nonprofit organizations that had government funding had a hazard rate of closing that was 155 percent higher than those that did not have government funding. In other words, they were two-and-a-half times more likely to close than those without funding. We subsequently conducted a sensitivity analysis for different levels of government funding, and a positive, statistically significant effect persisted. Thus Hypothesis 4b was not supported either.

Board prestige had a negative effect on the hazard of closing, but the effect did not approach statistical significance. Thus Hypothesis 4c was not supported. We find evidence that organizations more dependent upon donations or volunteers were less likely to close, but the coefficients are only marginally significant. Thus Hypothesis 4d received only qualified support. However, the age effect on closure is weaker than in the baseline model ( $-.066$  vs.  $-.042$ ) and no longer statistically significant, showing that the introduction of these additional variables weakened the effect of age on disbanding.

Table 3 also reports five additional hazard models intended to test hypotheses 5a through 5d. Model 3 adds a multiplicative term that tests an interaction between organizational age and elite use of the organization. The interaction is not significant, but the introduction of the interaction term now suggests that elite patronage marginally reduces the hazard of closing for younger organizations. While this result is only suggestive, it is in the direction of the hypothesized effect. Model 4 tests the interaction for age and public funding. The effect is significant at the .10-level, but it is in the opposite direction of what we expected. Figure 4 graphs this interaction. The results indicate that age has no effect on closure for organizations that receive government funding, but age is a liability for those nonprofits with no government funding. Unexpectedly, the results also indicate that having public funding had very little effect on the hazard of closing for organizations that are very young. However, as organizations got older, government funding appears to have a harmful effect on organizations. We return to this point in our conclusions.

Model 5 tests the interaction for age and board prestige. Neither board prestige nor the interaction term is statistically significant. Models 6 and 7 examine the interactions for age and volunteer support and age and donor support. Although both volunteer and donor support had negative effects on the hazard of closing in Model 2, the story changes when they interact with age. The age-by-volunteer support interaction is

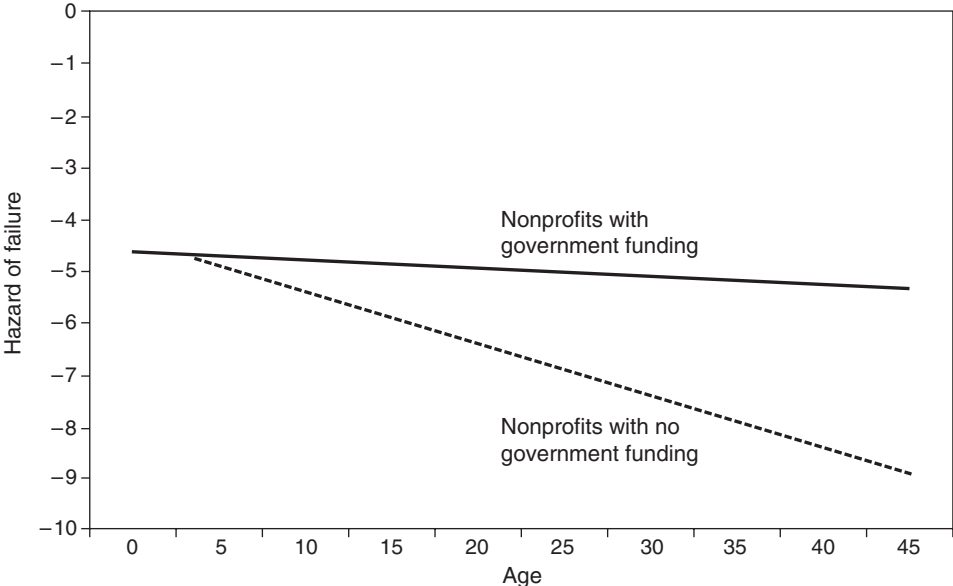


Figure 4: Age and the hazard of failure by government funding

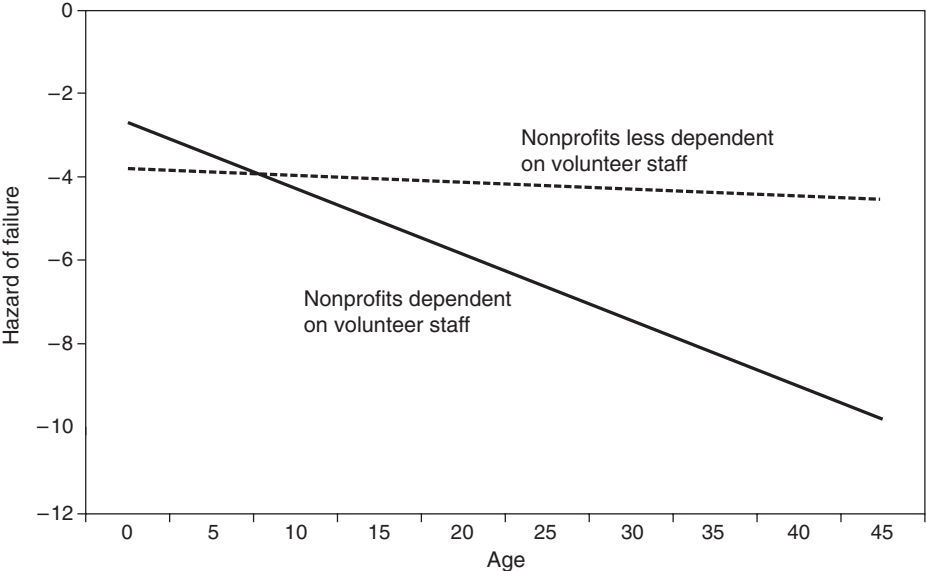


Figure 5: Age and the hazard of failure by percentage of volunteers

significant, but negative. Figure 5 graphs the interaction. We see that age has no effect on closure if the organization does not rely on volunteers, but age affects mortality in those nonprofits where staffing is at least two-thirds volunteer. However, among older organizations, such dependence reduces the hazard of closing dramatically. In contrast, among the very youngest organizations being more dependent upon donations reduces the hazard of closing; however, the interaction effect is not statistically significant. So, while the percentage of donations variable in Model 7 provides further support of Hypothesis 4d, it does not provide independent support for Hypothesis 5d.

## DISCUSSION

Ecological theory has made important contributions to the literature on organizational closures and failure. In particular, the accumulated evidence firmly establishes that organizational age affects the survival chances of organizations, and various studies have probed the nuances of this finding. However, it seems clear to us that the stories behind the age effect are not that different from the neo-institutional and network stories advanced by other theoretical traditions. By testing hypotheses from both neo-institutional and social capital theory, we hoped to both test the direct effects of these variables on organizational mortality and see if we could ‘explain away’ some of the age effect. As these variables were entered into the models, we expected them to moderate the effects of age on closure.

We found that the size of the organization, reliance on volunteers and reliance on donated income all reduce the hazard of closure, while government funding appears to increase it. Collectively, these variables reduce the role that age plays in explaining why nonprofit organizations close over time.

We used interaction terms to explore these relationships more directly. We observe a difference in the liability of newness between organizations that receive government funding and those that do not. As shown in Figure 4, the effect of age on organizations that receive government funding is very small, with younger and older organizations exhibiting similar hazard rates. For organizations without government funding, advancing age reduces the hazard of closure. The reduction in the age effect due to public funding confirms Hypothesis 5b. Contrary to our expectations, the effect of age on the hazard of closing was non-significant for organizations that do not rely on volunteers, but significant for organizations when two-thirds of their personnel are volunteers. This interaction was significant at the .05-level. This surprised us, since having volunteers strengthens the positive effects of aging, a finding that is inconsistent with our argument that structural embeddedness mitigates the liability of newness for organizations. The relationship between age, volunteer staff and the hazard of organizational closure is represented in Figure 5. For organizations less dependent on volunteer staff, the lack of slope on the dotted line indicates that the hazard of failure



(*ceteris paribus*) does not decline over time. For organizations more dependent on volunteers however, the initially higher hazard rate declines over time so that older organizations dependent on volunteer staff are at lower risk of failure than equally mature organizations less dependent on volunteer staff.

Finally, board prestige and elite use had no direct effect on the hazard of closing and there was no evidence that they modified the effect of age on the hazard of closing. In contrast, donor support enhanced the survival chances of organizations, but it did not mitigate the age effect on closure as hypothesized.

Some of these findings bear further discussion. Looking at volunteers and public funding, we see that each modified the effect of age on the hazard of failure, but in different ways. Volunteers do not buffer organizations from the liability of newness. However, among older organizations volunteers seem to ward off closure. It may be that volunteers maintain their efforts with an organization long after they have served their initial purpose. Since there are no opportunity costs for keeping a volunteer-based organization afloat, the organization continues. In contrast, there are more urgent payroll demands in organizations that are more reliant on employees, and if employees cannot get paid, they are fired or quit. The role of volunteers in keeping nonprofit organizations alive is an issue that bears further research.

We were more surprised to find that older organizations with public funding were more susceptible to closing. In contrast, public funding had no effect on closure among very young organizations. There are many possible explanations for this, although our data did not allow us to test alternative explanations. For instance, government demands for accountability may choke an organization to death. The cost of meeting these demands may put a nonprofit at a competitive disadvantage vis-a-vis those who do not have these reporting responsibilities. Another explanation is that government funding may be more 'fickle'. Funding is tied both to changes in political regimes and the economy. Organizations can lose their funding through no fault of their own, and loss of funding may not reflect the nonprofit's true value to the community or the quality of its services. Alternatively, government funders may be particularly poor judges of quality and resiliency. In other words, the positive effect on failure may be symptomatic of government's poor judgment in whom they select as partners or to whom they make grant awards. Or, government may tend to fund organizations that are already down the 'slippery slope'. More research is needed on government funding effects.

On a cautionary note, we must be careful not to attribute too much causality to either age or the embeddedness variables. As suggested by an anonymous reviewer, it may be that some organizations are of a 'higher quality' than others or 'more efficient'. As time goes on, they are selected while those of lower quality or that are less efficient simply disappear. That age had an effect on closure simply reflects the distribution of talent in any founding year. Elites, public funding, high prestige board members, volunteers and private donors are attracted to them, but this support may have no real effect on their survival. Meyer and Zucker's (1989) study of permanently failing

organizations reminds us that not all ‘survivors’ are peak performers, and Chambré and Fatt (2002) remind us that some development problems hamper organizational performance well past infancy. The correlations we observe are suggestive of the arguments that generate our hypotheses, but the hypotheses themselves point to complexities that continue to elude organizational researchers.

In sum, we find mixed support for neo-institutional and social capital explanations of organizational survival among a population of nonprofit organizations. However, the influence of some of our embeddedness measures on the liability of newness gives us hope for understanding the kinds of characteristics that new nonprofit organizations must have (or adopt) in order to survive the tough, early years of their founding.

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## NOTES

- 1 More recently, German scholars (Udo 1989; Brüderl and Schüssler 1990; Brüderl *et al.* 1992; Jungbauer-Gans 1994) have shown that organizations are not necessarily at an immediate risk of death after they start out. Rather, they are bolstered by initial stocks of resources and reserved judgment from supporters and decision makers that allow for a ‘honeymoon period’. Once this stock of resources is depleted, however, risk of demise increases. This thesis is termed the ‘liability of adolescence’ argument.
- 2 Hannan and Freeman (1984) argue further that change in established organizations can disrupt internal processes and external relationships such that the changed organization now faces the same liabilities that a new organization might face. Amburgey *et al.* tested this thesis and found that ‘change reset the liability-of-newness clock and increased the risk of failure above what it would have been otherwise’ (1993: 68).
- 3 See Galaskiewicz and Bielefeld (1998) for a discussion of organizational types that were excluded from the sampling frame.
- 4 Data collection in each wave took several years to complete. Consequently, references to 1980 data collection should most properly refer to the range 1980–2. Nonetheless we resort to a shorthand that corresponds with the year in which most questions in the interview schedule refer, which we refer to as a ‘primary year of interest’. That is, whether data were collected in 1980, 1981 or 1982, interview questions centered on events in 1980. Similarly, references to data collected in 1984 were collected in 1984–5; 1988 data were collected in 1988–9; 1992 data were collected in 1994–5; and 1994 data were collected in 1996.
- 5 The data were gathered by project research assistants who were assigned the role of tracking down the organizations for a given year. They ascertained the fate of the organization based on information provided by former personnel of the organization.

- 6 Bielefeld (1994) provided initial descriptive data on organizations that had exited the panel between 1980 and 1988, with special attention to the industries to which these organizations belonged. He noted high levels of exit in the educational and housing industries.
- 7 Often organizations received a proportion of their income from several sources and/or cited more than one activity as 'primary'. In these cases we allocated a fraction of that organization to a given cell depending upon the proportion of its funding from that source and its investment in a given activity area.
- 8 Medicaid and Medicare payments were not coded as government funding, but rather as program service revenue.
- 9 We included dues among donated revenues because some nonprofits in the sample labeled individual gifts as dues and informed us that this is the way they should be treated in our analysis.
- 10 We conducted a preliminary analysis with age, expenditures, density, density squared and the dummy for the missing expenditure items. The squared term was significant at the .09-level. Since density is centered and the squared term is marginally significant, this suggests that the odds of disbanding were less in very sparse niches and very dense niches. This is the opposite of what we hypothesized.

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