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Understanding Nonprofit Financial Health: Exploring the Effects of Economic Recession and Environmental Factors (2007–2012)

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During an economic recession, the gaps between community service demands and available resources for nonprofits widen. Nonprofits with financial vulnerability cut back on their services or activities when facing a turbulent economic downturn. To make sense of such situations, drawn from organizational ecology theory, we examine the relationships between environmental factors and a nonprofit's financial health and the moderating role of the Great Recession of 2008 on their relationship. Employing IRS 990 and US census data (2007–2012) on counties, our longitudinal analysis finds that: 1) nonprofits' county-level environmental factors, i.e., service demand and available resources, are associated with their financial health; 2) the impact of economic recession on nonprofits' financial health is particularly severe in communities with greater racial diversity; and 3) nonprofits located in communities with more resources are more likely to be financially healthy and are less affected by the economic recession in the long term.

Keywords: Nonprofit financial health; Environmental factors; the Great Recession; Service provision.

Introduction

Nonprofits hold considerable societal responsibility to serve community needs, as they deliver public services, promote citizens' social participation, and improve responsiveness to community needs where they reside (Anheier, 2009). However, there have been concerns about the gaps between community needs and nonprofit accessibility. Several studies have found that fewer nonprofits are available in communities with low-income and high poverty (Allard, 2009; Grønbjerg & Paarlberg, 2001; Joassart-Marcelli & Wolch, 2003). The gap may grow significantly during economic recessions, due to increasing needs and decreasing resources for nonprofits' service provision in poor communities, where their responsibilities are especially critical. Since financially healthy nonprofits can fulfill their responsibilities and continue to serve communities during normal and economically difficult times, this study examines the effects of environmental factors, i.e., service demand and resource availability, on nonprofit financial health, and the

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moderating effects of economic recession on the relationship between environmental factors and financial health.

Financial health is critical for nonprofits to operate and deliver services effectively (Bowman, 2011; Marwell & Gullickson, 2013), and it is recognized as a robust indicator that predicts how effectively they pursue their mission and provide programs (Lam & McDougle, 2016; Marwell & Gullickson, 2013). A financially vulnerable nonprofit is likely to cut back on their services when they are under financial shocks (Tuckman & Chang, 1991, p. 445); thereby, they are less likely to meet community needs and survive external economic shocks (Bowman, 2011). Environmental factors greatly influence nonprofits' financial health, as nonprofits are deeply embedded in the communities in which they are located, serve community-specific needs, and rely on external funding sources. Thus, environmental factors like household income and racial diversity affect a nonprofit's financial health (Greenlee & Tuckman, 2007; Lam & McDougle, 2016). At the same time, since a community is embedded in larger societal systems and relies heavily on external funding, an economic recession can reshape community conditions, thus influencing nonprofit financial health.

However, in nonprofit management, studies have rarely systematically explored the relationships among recession, community conditions, and nonprofits' financial health. As Prentice (2016a) argues, the current literature predominantly uses a closed-system approach, in which any social structure is isolated from its environment regarding nonprofits' financial health, and emphasizes intraorganizational capacities. In contrast with the closed-system approach, organizational ecology theory explains how organizational birth, growth, and death are influenced by their broader, dynamic environment. This environment encompasses factors like the number of organizations competing for the same resources as well as socioeconomic and institutional conditions legitimated by other population members. Under the influence of these environmental dynamics, organizations occupying the shared niche space defined by industry or geographic area tend to mimic each other's structures and behaviors, thus adopting similar organizational structures and practices (Carroll, 1984; Hannan & Freeman, 1987, 1989). Thus, this theory suggests the impact that environmental factors and macroeconomic factors have on nonprofits' financial health (Besel et al., 2011; Hannan & Freeman, 1977).

Drawing from organizational ecology theory that highlights the influence of environment on organizations, the environmental selection model, and the legitimizing forces associated with density dependence, we ask: 1) how do environmental factors (i.e., demand for public services and available resources in a county) affect nonprofits' financial health? and 2) how does an economic recession moderate the associations between environmental factors and financial health? We used organizational and county-level data from IRS Form 990 and US Census data from 2007 to 2012 to test how county-level measures of resources and demand affect nonprofit financial health. Our longitudinal analyses support the organizational ecology perspective in showing that a) a nonprofit's financial health is significantly affected by demand for services and the available resources in a county; b) the impact of the Great Recession on nonprofits' financial health is particularly severe in counties with greater racial diversity; and c) nonprofits located in counties with more resources are more likely to be financially healthy and to have been less affected by the Great Recession in the long-term. These findings help nonprofits, community stakeholders, and policymakers identify how socioeconomic and macroeconomic environmental factors affect nonprofits' financial health as well as aid their development of strategies to manage their financial resources effectively and support communities with more demand and less resources during times of economic difficulty.

Literature Review

Nonprofit financial health and economic recession

Financial health is a fundamental requirement for nonprofits in fulfilling their missions. It allows a nonprofit to continue to provide goods and services, operate more effectively, and withstand unexpected financial shocks (Bowman, 2011; Hung & Hager, 2019; Tuckman & Chang, 1991). Stable financial resources directly affect nonprofits' ability to provide programs, compensate staff, promote mission awareness (Carroll & Stater, 2009), and secure necessary resources (Lee et al., 2023). However, due to the multifaceted and complex nature of financial management, there is no consensus as to how financial health should be defined and measured. Scholars of nonprofit financial management have defined it differently and measured it with various accounting indicators, focusing on different concepts or dimensions of financial management (Hung & Hager, 2019; Prentice, 2016b). One of the most commonly discussed concepts of nonprofit financial health is vulnerability. Tuckman and Chang (1991) defined a nonprofit organization as financially vulnerable "if it is likely to cut service offerings immediately when a financial shock occurs" (p. 445). The authors argue that an organization can maintain a service offering during financial difficulties if it has adequate equity, diverse revenue streams, greater administrative costs, and a decent size of operating margin. Several studies (Bowman, 2011; Greenlee & Trussel, 2000; Hager, 2001; Hung & Hager, 2019; Keating et al., 2005; Lu et al., 2019; Trussel, 2002) have later focused on nonprofits' financial vulnerability and expanded the prediction model, adding more accounting measures to these four measures, testing them with different data sets, and including factors affecting financial vulnerability. While prior studies have provided mixed results about revenue diversification and administrative costs, scholars generally agree that higher equity ratio and operating margins are positively associated with nonprofits' financial health (Kim, 2017; Kim & Mason, 2022). In this study, we define financial vulnerability as a condition where a nonprofit experiences financial difficulty due to lower operating margins and equity ratios.

Ever since Tuckman and Chang (1991)'s study, researchers have identified a variety of financial indicators to measure nonprofits' financial health. For example, Keating et al. (2005) proposed a new prediction model with 17 accounting measures after examining three corporate and nonprofit prediction models. Bowman (2011) and Lam & McDougle (2016) proposed models that predict financial health in different time dimensions. Several other scholars (Greenlee & Trussel, 2000; Hung & Hager, 2019, 2019; Keating et al., 2005; Lam & McDougle, 2016; Lin & Wang, 2016; Prentice, 2016a; Trussel, 2002; Weikart et al., 2012) have also adopted multiple financial measures to predict nonprofit financial health. This proliferation of measures of financial health is often confusing, since scholars use different accounting measures and interpret them differently in different studies. However, this is unavoidable because financial performance is complex and cannot be captured by a single measure. In addition, accounting measures are multidimensional and can be interpreted differently (Prentice, 2016b).

Nonprofits' financial health is greatly affected by macroeconomic factors. Many nonprofits increasingly face significant challenges to their financial health as they operate in a more complex and turbulent environment. For example, the Great Recession of 2008 put many nonprofit organizations' financial stability to the test, as the recession significantly increased demand for social services and decreased financial resources (Brown et al., 2013; Joseph, 2011; Lin & Wang, 2016). Because nonprofits are typically dependent on external financial resources (e.g., private contributions, government grants, commercial activity, and investment revenue) that are susceptible to economic shock, a large number of nonprofits experienced a dramatic reduction in their financial revenue during the Great Recession of 2008 (Salamon et al., 2009). While struggling with a shortage of necessary resources for service provision, the community demand for public services that nonprofits traditionally provide increased significantly during this recession (Bridgeland et al., 2009; Lin & Wang, 2016). According to the Johns Hopkins Nonprofit

Listening Post Project, more than 70% of Michigan nonprofits reported increasing demand for their services, while 50% experienced a decline in their financial support during the Great Recession (Salamon et al., 2009).

While the Great Recession of 2008 affected the overall nonprofit sector across the nation, the impact seems to be nonuniform. Never (2014) found that nonprofits in a community with a higher minority population and fewer resources significantly decreased their expenditure after the recession. Brown, McKeever, Dietz, Koulish, and Pollock (2013) also reported that nonprofits in poor communities were more likely to cut their services and staff or take other drastic steps to reduce their expenses during the recession. These studies and reports suggest that nonprofits in poor communities are predominantly impacted by economic recession and suffer an increasing imbalance between revenue and expenses. While the effects of macroeconomic factors are generally discussed in the literature, their impact on financial health has been studied as a control variable and has not been systematically examined (Prentice, 2016a).

Specifically, in the current literature, few studies systematically address how community-based environmental and macroeconomic factors simultaneously influence a nonprofit's financial health. Previous studies 1) predominantly focus on community-based environmental factors and ignore macroeconomic effects such as economic recession, 2) rely on a single indicator of nonprofit financial health, and 3) examine only a specific geographic region or service.[1] To meet the societal responsibilities facing turbulent environments, it is vital to understand the effects of an economic recession on nonprofits' financial health in communities with various levels of community needs and resources and to develop financial strategies for coping with challenging economic times and future recessions.

Organizational ecology perspective and factors influencing financial health

The organizational ecology perspective (Hannan & Freeman, 1987) views organizations as open systems in which they continually interact with their environment to survive, adapt, and grow. From this standpoint, environmental conditions assume a role in selecting organizations deemed most compatible. Concurrently, driven by environmental pressures, organizations mold their structures and practices to harmonize with the ecological environment (niches) where their daily operations unfold. Since organizations are influenced by all environmental factors and conditions, their performance and survival depend upon selection processes and the extent to which they fit with environmental conditions (Galaskiewicz & Bielefeld, 1998). Organizations in the same niche might share a common organizational fate because they experience the same resource constraints and opportunities (Hannan & Freeman, 1977). This perspective has been widely used to explain how the environment in which an organization is located influences organizational outcomes, making a major contribution to the study of population dynamics and organizational mortality (Galaskiewicz & Bielefeld, 1998). Scholars in nonprofit management have also examined the

[1] For instance, while Prentice (2016a) explored the effects of GDP (as a macroeconomic factor) on nonprofit financial health, the study was conducted before the recession and did not show how significant economic downturn, spread across the economy, is associated with nonprofit financial health. As we are living in a turbulent economic environment, examining the relationships between financial crisis and nonprofit financial health contributes to understanding how nonprofits cope with and adapt to economic distress. Also, Never (2014)'s work is one of the first studies to examine the relationship between community-based factors and nonprofit financial distress before and after the Great Recession of 2008. It contributes to a better understanding of the impact of this recession on nonprofit financial distress and its geographic variation. However, the analysis is limited to descriptive statistics, and financial distress is only measured by nonprofit expenditure. Last, only a few scholars have studied the effects of environmental factors on nonprofit financial health, and the research is often limited to a specific geographic region or service. For example, Lam and McDougle (2016)'s work is limited to nonprofits in San Diego County, and Knight (2017) studied the impact of the economic recession on education finance but limited to schools in Texas.

effects of environmental factors on nonprofits' founding and mortality rates (Corbin, 1999; Grønbjerg & Paarlberg, 2001b; Kim, 2015; Saxton & Benson, 2005; Twombly, 2003). Recently, some scholars (Guo & Brown, 2006; Lam & McDougle, 2016; Prentice, 2016a) have used this view to explain more short-term organizational performance such as financial health.

Utilizing the organizational ecology perspective, we examine how environmental factors relate to nonprofits' financial health. Specifically, we analyze how service demand and resource availability in niches influence financial health. As organizations compete for various resources (e.g., grants, technology, donations, labors, and customers), their performance or survival depends upon the attributes of the socioeconomic setting in their niches (Baum & Oliver, 1996; Baum & Singh, 1994; Galaskiewicz & Bielefeld, 1998). We also explore how legitimizing forces associated with density dependence shape financial health. Furthermore, we consider the moderating role of the Great Recession, a macroeconomic force reshaping niches by intensifying service demand, constraining funding sources, and augmenting resource competition.

Environmental factors influencing financial health: Demand for services

According to organizational ecology theory, organizations must have a good fit with their external environment to survive and thrive. Environmental fit refers to the alignment of an organization's strategies, structures, and resources with the demands of niches (Galaskiewicz & Bielefeld, 1998). Nonprofit organizations, guided by their profound understanding of local community needs, exhibit a distinct commitment to catering to their specific locales. Positioned as problem-solvers for instances of market and government failure, these organizations undertake the role of bridging the gaps between demand and service provision in a community. This multifaceted role involves cultivating public trust through adherence to nondistribution constraints, rectifying inefficiencies inherent in government systems, and precisely targeting services in response to expressed needs (Anheier, 2009; Steinberg, 2003).

Considering these various roles, financial health emerges as a pivotal consideration for nonprofits in fulfilling their mission. However, research indicates a discrepancy between demand for services and available resources. Scholars suggest that communities with high service demands and limited resources might paradoxically witness a scarcity of nonprofits due to the substantial expenses in service provision and the relatively constrained resource pool (Allard, 2009; Never, 2014; Walker & McCarthy, 2010). Examining the effects of demand-side and supply-side determinants on nonprofit sustainability, Valentinov and Vaceková (2015) illuminate that nonprofits frequently encounter obstacles stemming from resource inadequacy, which results in larger gaps between the demand for services and nonprofit service provision. The gaps between the demand for services and resources in a community have been discussed in nonprofit management literature (Bielefeld, 2000; Esparza, 2009). For example, Walker and McCarthy (2010) found that community-based nonprofits in resource-deprived communities operate in a "vicious cycle" because they lack the resources required for survival and service provision. Although nonprofits are expected to represent community needs and improve equitable service provision, demands for services are often overridden by lack of resources in poor neighborhoods (Grønbjerg & Paarlberg, 2001). Thus, nonprofits need to seriously consider whether they have the financial stability to support communities with higher demands.

Poverty in a community: Poverty is a key indicator of a community's economic performance and demand for services (Kim, 2015; Saxton & Benson, 2005). Given the critical role of nonprofits as service providers and advocates of community needs, they are expected to have sufficient financial resources to provide social service programs in poor neighborhoods. However, numerous researchers have found fewer nonprofits in poor neighborhoods, meaning that a lower quantity and quality of nonprofit services are available in those communities (Allard, 2009;

Grønbjerg & Paarlberg, 2001; Twombly, 2003). In a study of nonprofits in metropolitan regions in the United States, Bielefeld (2000) also found that communities with higher poverty had fewer human service nonprofits with fewer financial resources, while wealthier communities had a higher number of nonprofits with sufficient financial resources. Regarding its effects on financial health, the literature shows contrasting findings. While some report a significant positive correlation between median household income and financial distress during the Great Recession (Never, 2014), others find no significant relationship between them (Lam & McDougle, 2016; Prentice, 2016a).

The impact of the Great Recession is more severe in communities with higher poverty rates, which increases demand for services and the financial burden on nonprofits. For example, Knight (2016) found that public schools in poor neighborhoods in Texas were disproportionately impacted by this recession in 2008, experiencing greater inequitable funding, staffing cuts, and increased local taxes. Although these studies are limited to specific regions and service fields, we expect that the Great Recession across the nation and service fields will impact poor neighborhoods more. Thus, the following hypotheses are developed:

H1: Higher poverty levels in a community will be negatively related to a nonprofit's financial health.

H1-1: The negative effects of higher poverty levels on financial health will be stronger during the Great Recession.

Racial Diversity: High racial diversity indicates more heterogeneous demands in a community, since diverse population groups seek different types of public services (Corbin, 1999; Grønbjerg & Paarlberg, 2001; Kim, 2015). Since the nonprofit sector serves the heterogeneous demands unfulfilled by the government, more nonprofits are expected to expand public service choices in diversified communities (Salamon, 1987). However, the heterogeneous demands of the community can raise nonprofits' expenses for service provision and increase the financial burden on the nonprofit. Lam and McDougle (2016) found that human service nonprofits located in minority communities in San Diego, California, have lower current- and long-term financial capacity, meaning that they often do not have adequate reserves or savings in the case of an emergency or disruption in funding. However, we still do not understand how racial diversity in a community is associated with nonprofits' financial health in other regions and how the economic recession has affected the relationship between racial diversity and nonprofits' financial health.

This study further examines the effects of racial diversity on nonprofit financial health during economic hardship. The Great Recession of 2008 predominantly impacted minority communities, since communities with higher diversity rates were more vulnerable to high poverty and lower income level (Williams et al., 2013). Nonprofits are expected to provide diverse services for various populations in racially diverse communities. However, Never (2014) found that human service nonprofits in minority communities were more likely to reduce their expenditure after this recession. Lam and McDougle (2016) also found a negative correlation between current- and long-term financial capacity and the minority population among nonprofits in San Diego County. Based on the current literature, we propose that nonprofits in racially diverse communities will be more financially vulnerable, and that the economic recession will further deteriorate nonprofits' financial health in those communities.

H2: Racial diversity in a community will be negatively related to a nonprofit's financial health.

H2-1: The negative effects of racial diversity on financial health will be stronger during the Great Recession.

Environmental factors influencing financial health: Resource availability

Density of nonprofits: From the organizational ecology perspective (Hannan & Freeman, 1987), the density of an organization in which an organization operates is an important resource because it relates to institutional and competitive forces. According to ecologists' density dependence theory, a higher number of nonprofits in a niche improves organizational viability and birth rates because of increasing constitutive legitimacy, which improves their social acceptance based on widely shared values and norms (Galaskiewicz & Bielefeld, 1998). Constitutive legitimacy is cognitive and describes the process in which organizations adopt the same form when there is high density of a certain form of organizations in a niche. Also, nonprofits are important social capital or social assets in a community, as they promote cooperation, trust and reciprocity, and norms and belief systems (Putnam, 2000). A greater density of organizations increases the likelihood of collaboration, opportunities for mutual learning, acquisition of resources, and capacity to solve community problems (Berrone et al., 2016). Thus, an increase in density enhances organizational legitimacy and sustainability (G. R. Carroll & Hannan, 1989; Galaskiewicz & Bielefeld, 1998; Hannan & Freeman, 1989).[2]

We also expect that nonprofit density in a community will positively affect a nonprofit's financial health, because this study examines the effects of nonprofit density in a wide range of services in a community rather than in a specific service area. According to Saxton and Benson (2005), the density of organizations in a wide range of industries has positively impacted the founding of nonprofits, because they are not necessarily in direct competition with one another. In addition, not all organizations within a population compete against one another, unless they compete for the same resources (Galaskiewicz & Bielefeld, 1998; Hannan & Freeman, 1977).

However, we postulate that a high density of nonprofits in a community would have negatively affected a nonprofit's financial health during the Great Recession, because economic recession intensifies competition over limited resources while dramatically increasing demand for services. According to the Johns Hopkins Listening Post Project, about 58% of all respondents to the survey indicated that they were experiencing increased competition for financial resources when the recession started (Salamon et al., 2009). Under economic recession, more nonprofits in the same niche might experience greater competition for limited resources, such as grants, donations, staff, volunteers, and community attention. Although greater density enhances constitutive legitimacy and opportunity to acquire more resources, as ecologists argue, competition will significantly increase under economic hardship, ultimately leading nonprofits to become more financially vulnerable due to greater administrative spending to secure resources or respond to economic shock. For example, Harrison and Thornton (2014) found that nonprofits are more likely to spend more money on fundraising as the number of nonprofits increases in a community. Few studies have systemically studied the relationship between density and nonprofits' financial health during the economic recession. Thus, we develop the following hypotheses:

H3: The density of organizations in a community will have a positive relationship with a nonprofit's financial health.

H3-1: The positive effects of density of organizations will be weaker during the Great Recession.

Philanthropic Support: Philanthropic culture, which is a distinctive and unique feature of American society, is an important financial resource for nonprofit organizations, but scholars have noted regional variations in generosity or charitable giving patterns (Bielefeld, 2000; Corbin, 1999; Schneider, 1996; Soskis, 2018; Wolpert, 1988, 1993). For example, Schneider (1996) shows the regional variation of generosity level based on classified political culture developed by Elazar

(1980). Wolpert (1989, 1993) conducted a comprehensive study on regional variation in generosity levels across US cities and found that a regional variation in the amount of private giving to social service nonprofits exists, and that a high level of private donation to nonprofits is associated with a larger nonprofit sector in a community and its financial health. Because nonprofits are locally supported, the level of philanthropy support in a community is an important environmental factor influencing nonprofit financial health. Approximately 85% to 90% of donations are raised and spent locally (Wolpert, 1993), and the level of human service gifts and grants in a community is negatively related to financial vulnerability (Bielefeld, 2000). Based on prior studies, we propose that nonprofits in communities with high amounts of contribution are more likely to be financially healthy.

However, the level of philanthropy donation in a community is also affected by macroeconomic and political factors (Bielefed & Roony, 2014), and it is therefore more sensitive to changes in economic and political conditions (Keatin et al., 2005). According to USA Giving 2009, total giving to human services in the United States dropped by 13.5% during the recession (Marx & Carter, 2014). As such, we expect that nonprofits in a community with higher philanthropy donations will be less likely to be financially healthy during the recession.

H4: Philanthropy donation in a community will be positively related to a nonprofit's financial health

H4-1: The positive effects of philanthropy donation on financial health will be weaker during the economic recession.

Government Expenditure: Higher government expenditure positively affects a nonprofit's financial health by increasing financial resources. Since the government provides financial resources to nonprofits delivering public services through contracting and grants, numerous studies support a complementary view of the nonprofit sector and show the positive relationship between government spending and the size of the nonprofit sector (Corbin, 1999; Grønbjerg & Paarlberg, 2001; Lecy & Van Slyke, 2012; Walker & McCarthy, 2010). Since government funding is a stable financial resource for nonprofits, a government with higher expenditure can support nonprofits and improve their financial health. For example, some nonprofits in revenue environments with strong government support, such as public safety and disaster relief or food and nutrition, had a lower rate of financial distress (Never, 2014). Twombly (2003) also found that welfare reform and increased government support have encouraged the growth of human service nonprofits in the United States, where state and local governments are especially responsible for providing public services. The Urban Institute's (2015) study shows that most of the state and local government budgets (61%) are spent on social services, education, and health (*State and Local Expenditures*, 2015). Thus, nonprofits in communities with higher state and local government expenditures will be financially more stable and healthier.

Although nonprofits experience delays in government payment and may lose a contract during economic recession, government funding is relatively more stable than other financial resources, such as private donations (Brown et al., 2013; Salamon et al., 2009). Thus, we propose that nonprofits in a community with higher government expenditure are more likely to be financially healthy.

H5: Government expenditure in a community will be positively related to a nonprofit's financial health.

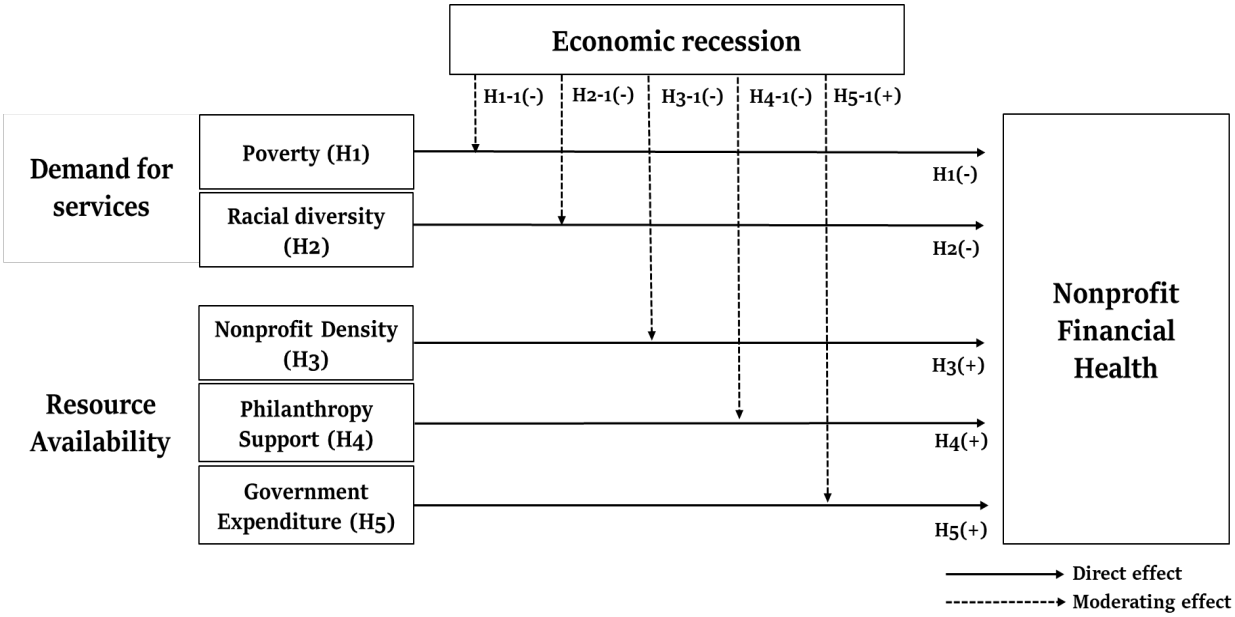
H5-1: The positive effects of government funding on financial health will be stronger during an economic recession.

Figure 1 shows the hypothesized effects of community demand for services and resource availability on nonprofit financial health and the moderating effects of economic recession on the relationships between community-based environmental factors and financial health.

Method

We examined all 501(c)(3) public charitable nonprofit organizations in the United States using the IRS 990 data set and US Census data (N = 74,310). The study years are from 2007 to 2012.

Figure 1. Conceptual framework and hypotheses



Model Specifications

A panel data analysis has been used to identify the effect of environmental factors on nonprofit financial health and show how the effects change depending on economic conditions. The research question involves a hierarchy of two levels. At the higher level of hierarchy (level 2) are county-related variables,[3] such as poverty and racial diversity. Variables at a lower level of the hierarchy, nonprofit organizations' characteristics, such as revenue diversification and nonprofits' age (level 1), are nested within level 2 groups and share in common the effects of level 2 variables. We used varying-intercept hierarchical linear modeling with nonprofit id-fixed effects. HLM allows for nested data structures where smaller units (organizations) are nested within larger units (counties). At the same time, it assesses whether individual nonprofits are systematically different from each other over time (i.e., within variation). We further used clustered standard errors by nonprofits.

Data

We combined data sets to test our hypotheses. First, we used the IRS 990 data set for organizational-level data. All tax-exempt organizations whose (1) gross receipts are greater than or equal to $200,000 or (2) total assets are greater than or equal to $500,000 are required to submit the form annually (IRS 990 Form Instruction, 2019). Specifically, we used the Core Fiscal Year Trends file maintained by the Urban Institute from 2007 to 2012. Over 250,000

organizations are included in the data set for each year. There are slight variations in the composition of organizations across these years due to the presence of missing values. We restricted our observations to public charitable organizations, using data from all 501(c)(3) organizations. The form reports an organization's financial information and its characteristics, such as address, type of organization, year of formation, mission, and governance.

Second, for environmental variables, we retrieved county-level information from the American Community Survey (ACS) published by the US Census Bureau. Grønbjerg and Paarlberg (2001) argued that county-level data are advantageous because they allow the researcher to capture a broad range of community characteristics, which include demographic, social, political, and economic conditions. Since nonprofits can provide services in multiple cities, many of them are affected by county-based environments. Also, public health and welfare efforts, as well as other public policy planning and its implementation, are organized on a county basis in many states. Thus, studies using county-level data might be more responsive to socioeconomic characteristics. The data set is designed to improve understanding of community changes for public administrators, including local officials, community leaders, and businesses. It includes information on the population, demographic, and socioeconomic conditions of communities in the United States. After merging the data sets, we winsorized our dependent variables, the operating ratio and equity ratio, by capping them at the 1st percentile and 99th percentile values.

Variables

Dependent Variables

We used two major financial health indicators that affect a nonprofit organization's service provision: operating margin and equity ratio[4] (Tuckman & Chang, 1991). First, operating margin is defined as revenue minus expenditures, divided by revenue (Tuckman & Chang, 1991). It is a simple calculation of an organization's surplus (or deficit) standardized by its revenue size. It refers to an organization's surplus (or deficit) for every dollar of revenue, thereby assessing the profitability of an organization's operations. A low or negative operating margin means that an organization has little or no cash surplus to support and maintain a program (Tuckman & Chang, 1991). Previous studies confirm that higher operating margins expand nonprofits' capacity to maintain and improve a program (Hager, 2001; Trussel, 2002; Tuckman & Chang, 1991; Lee et al., 2023). Since a large operating margin provides a nonprofit with funds that can be saved to build equity, it predicts short-term financial health (Bowman, 2011; Tuckman & Chang, 1991). An organization makes a surplus if the measure is greater than zero; it has a deficit if the indicator is less than zero. The accounting measure has been widely used as the efficiency of earnings and short-term sustainability (Prentice, 2016b).

Second, equity ratio is calculated as total assets minus liabilities divided by total assets (Bowman, 2011; Keating et al., 2005; Tuckman & Chang, 1991). This means the value of an organization's assets is free and clear of outside obligations for every dollar asset. According to Tuckman and Chang (1991), equity balances, i.e., assets minus liabilities, are a critical measure of nonprofits' financial health, because they may need to convert these available resources into cash or seek funds from capital markets relying on equity. As such, higher equity balances indirectly allow flexibility for nonprofits' operations during financial crises. Thus, the higher the equity ratio, the greater the organization's ability to finance its activities and pay debts. Equity ratio is often used to predict long-term financial health (Bowman, 2011; Tuckman & Chang, 1991; Lee et al., 2023). The accounting variable is often used as a solvency measure along with total net assets divided by total revenue (Tuckman & Chang, 1991) and total assets minus total liabilities (Keating et al., 2005; Prentice, 2016b).

Independent Variables
We used five independent variables: poverty; racial diversity; density of nonprofits; philanthropy donations; and government expenditure in a county. First, the service demands are measured by the percentage of the population below a county's poverty level. The federal poverty level is adjusted according to family size, but is the same across the states in the United States. Second, the Shannon–Wiener index is widely used to estimate racial diversity in a county. It is based on the degree of uncertainty predicting a random sample related to diversity or rareness (Schilling, 2002; Weaver, 1949). For example, a group that constitutes 1% of the population is twice as rare as one with 10% of the population.[5] Third, the density of nonprofits is estimated as the number of nonprofits per 1000 population in a county using the FIPS code. As a robustness check, we further used density measure estimated as total size of nonprofit assets in a county. Fourth, philanthropy donation is proxied by the aggregated proportion of contribution out of total revenue in nonprofits at the county level. Last, government expenditure is divided by the population in a county. Total government expenditure includes direct expenditure on current operations, interest on debt, assistance and subsidies, insurance benefits and repayments, capital outlay, and intergovernmental expenditures (U.S. Bureau of the Census).

Moderating Variable
As a moderating variable, we used two dummy variables for economic recession: during economic recession and after economic recession. The first indicator, during economic crisis, identifies observations between 2009 and 2010. The second indicator, after economic crisis, includes observations between 2011 and 2012. The omitted category is before crisis, between 2007 and 2008.[6]

Control Variables
We controlled three organizational-level variables and one county-level variable. As an organizational-level characteristic, we first included revenue diversification. Whether an organization takes revenue diversification or concentration strategy has financial health implications (Carroll & Stater, 2009; Chang & Tuckman, 1994; Frumkin & Keating, 2011; Lu et al., 2019). Some scholars argue that revenue diversification improves revenue stability, but others note that an organization's revenue concentration leads to revenue and organizational growth. Second, we included an organization's age, calculated using the year of formation reported in the IRS 990 form, because this is directly related to many of the outcomes in the nonprofit sector, such as reputation, expertise, and financial capacity (Ashley & Van Slyke, 2012; Johansen & LeRoux, 2013). Third, nonprofit subsectors, categorized using National Taxonomy of Exempt Entities (NTEE) codes, are controlled for. Eleven dummy variables (i.e., 12 categories: arts, culture, and humanities; education, higher; education; hospitals; environment; health; human services; international; mutual benefit; public and societal benefit; religion; and unknown) are included in all models. Last, a county's population size is included as a control variable.

Findings

Table 1 summarizes US nonprofit characteristics (N = 1,452,098) from 2007 to 2012. These summary statistics present an overall picture of the nonprofit organizations' financial health and related variables. The first measure for dependent variable, operating margin, is on average 0.0323, meaning that a nonprofit makes a profit (i.e., surplus). The second measure for dependent variable, equity ratio, is on average 0.215, implying that a nonprofit owns $0.25 free and clear of outside obligations for every dollar asset. The descriptive statistics for independent variables are also presented in Table 1. First, on average, 13.95% of a community's population is below the

federal poverty level. Second, an average degree of racial diversity, measured by the Shannon–Wiener index, is 0.819. The index ranges from 0 to 5, and lower values represent a less diverse community. Third, an average nonprofit density in a county is 0.00139, meaning that a county has, on average, 1.39 nonprofits per 1,000 population. Fourth, an average philanthropy support is 24.95, meaning that a nonprofit in a county relies for 24.95% of its revenue on public and private contributions, on average. Fifth, an average government expenditure is 5.725, meaning that a county spends $5.725 per person on average. The observations are also evenly distributed across years, with 32.22% before crisis, 32.79% during the crisis, and 34.99% after crisis. The summary statistics for the control variables are also presented in Table 1.

Table 1. Summary statistics

	Mean	SD	Min	Max
Dependent Variable				
Operating margin	0.0323	0.396	-3.412	1
Equity ratio	0.215	0.462	0	5.260
Independent Variable				
Percent below poverty level*	13.95	5.088	1.800	39.80
Racial diversity*	0.819	0.298	0	1.486
Nonprofit density per 1,000 population*	0.00139	0.000860	0.000185	0.00657
Philanthropy support*	24.95	13.88	1.469	96.64
Government expenditure*	5.725	7.214	0.780	56.31
Moderating Variable				
Before economic crisis†	32.22		0	1
During economic crisis	32.79		0	1
After economic crisis	34.99		0	1
Control Variables				
Population (1,000)*	1,193	1,889	62,971	9,963
Nonprofit age	29.29	16.49	5	120
Revenue diversification	.298	0.289	0	1.2

** estimated by FIPS code*
† "before economic crisis" is an omitted category in the analysis throughout the paper.

We examined the direct effects of county-based environmental factors on nonprofit organizations' financial health. Table 2 presents two models based on different measures of a nonprofit's financial health: The operating margin model and the equity ratio model, which focus on short- and long-term financial health perspectives, respectively. Regarding our first hypothesis, we find that a poverty level is positively related to a nonprofit's equity ratio (see the coefficient on *percent below the poverty level* in equity ratio model = 0.001, p-value < 0.001). While this finding contrasts with our expectation (not supporting H1), it indicates that a nonprofit located in a poor neighborhood is financially stable in the long run. Also, we tested whether a racial diversity negatively affects a nonprofit's financial health. Our findings support H2 (see the coefficient on *racial diversity* in the operating margin model = - 0.006, p < 0.05). The result indicates that a

nonprofit does not generate more revenue through its operations from a short-term perspective, because the nonprofit organization needs to engage in various types of service activity in a racially diverse community. Next, we find that a nonprofit located in a county with high nonprofit density is more likely to be financially healthy in the long run, supporting H3 (see the coefficient on *Nonprofit density* in Equity ratio model = 13.420, $p < 0.001$). This finding highlights the importance of organizational legitimation and supportive networks among nonprofits in the same community for their long-term financial health.

However, regarding the expected positive effect of a county's philanthropic culture on a nonprofit's financial health, we do not find any significant results (see the insignificant coefficients on *philanthropy support* in operating margin and equity ratio models), which does not support H4. Our results also show that a county's public service activities measured by the size of the government's tax expenditure are negatively associated with a nonprofit's financial health, which does not support H5 (see the coefficient on *government expenditure* in operating margin model = - 0.001, $p < 0.01$). A nonprofit located in a county with high government expenditure tends to be financially vulnerable.

Before turning to the moderating effects of the economic crisis on the relationship between county-level environmental factors and a nonprofit's financial health, Table 2 shows that the economic crisis worsens a nonprofit's financial health (see the coefficient on during economic crisis in operating margin model = -0.043, $p < 0.001$, and the coefficient on during economic crisis in equity ratio model = -0.005, $p < 0.001$). This suggests that a nonprofit heavily reliant on external resources for its organizational survival experiences increasingly depleted resources during the economic recession (Bridgeland et al., 2009). Also, the results show that the impact of the recession still significantly affects nonprofits' financial health after the recession (see the coefficient on during economic crisis in operating margin model = -0.045, $p < 0.001$, and the coefficient on during economic crisis in equity ratio model = -0.026, $p < 0.001$). This suggests that the impact of the recession was severe, and that it might take a long time to bring financial health back to pre-recession levels.

Table 2. Effects of environmental factors on the financial health of nonprofit organizations.

	Operating margin	Equity ratio
Percent below poverty level	-0.000	0.001***
	(0.000)	(0.000)
Racial diversity	-0.006*	-0.002
	(0.003)	(0.005)
Nonprofit density	1.132	13.420***
	(1.503)	(2.992)
Philanthropy support	-0.000	-0.000
	(0.000)	(0.000)
Government expenditure	-0.001**	0.001
	(0.000)	(0.001)
During economic crisis §	-0.043***	-0.005***
	(0.001)	(0.001)
After economic crisis §	-0.045***	-0.026***
	(0.001)	(0.001)
Revenue diversification	0.014***	-0.116***
	(0.001)	(0.001)
Population	-0.000**	0.000**
	(0.000)	(0.000)

Age	-0.001***	0.000
	(0.000)	(0.000)
Education, higher⁜	0.004	0.112***
	(0.005)	(0.006)
Education⁜	0.021***	-0.042***
	(0.001)	(0.001)
Hospitals⁜	0.015***	0.238***
	(0.004)	(0.005)
Environment⁜	0.024***	-0.054***
	(0.002)	(0.002)
Health⁜	-0.003*	0.043***
	(0.001)	(0.002)
Human services⁜	-0.012***	0.051***
	(0.001)	(0.001)
International⁜	-0.005*	-0.077***
	(0.002)	(0.003)
Mutual benefit⁜	0.077***	-0.009
	(0.006)	(0.008)
Public and societal benefit⁜	0.014***	-0.025***
	(0.001)	(0.002)
Religion⁜	0.010***	-0.022***
	(0.002)	(0.002)
Unknown⁜	0.023*	-0.035**
	(0.010)	(0.012)
Constant	0.113***	0.208***
	(0.003)	(0.006)
Observations	1,452,098	1,452,098
Number of counties	810	810

Standard errors in parentheses
*** $p<0.001$, ** $p<0.01$, * $p<0.05$
§ The omitted category is before crisis, between 2007 and 2008.
⁜ The omitted category is arts, culture, and humanities.
Note: The results are consistent when we use a nonprofit density measure based on the asset size of an organization.

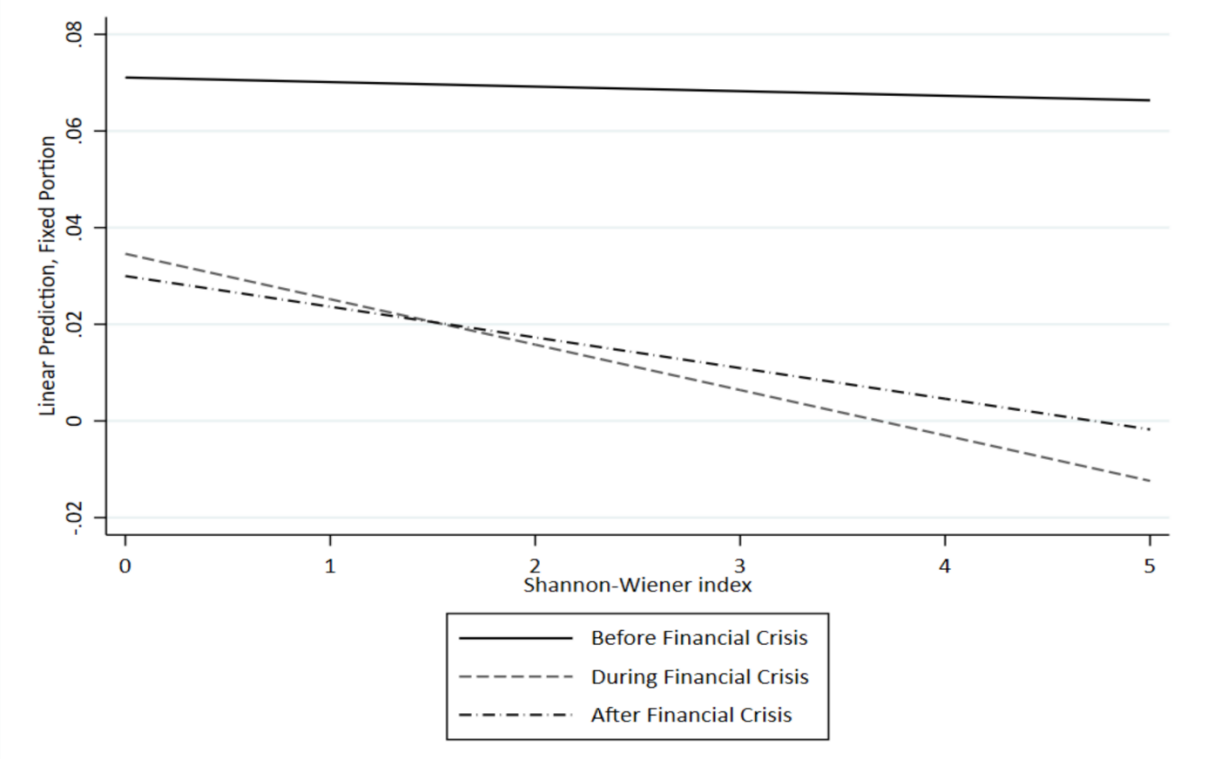
Given the negative impact of the economic crisis on a nonprofit's financial health, we examine how the economic situation moderates the relationship between environmental factors and a nonprofit's financial health. Specifically, Table 3 indicates that high poverty and racial diversity in a county negatively affect a nonprofit's financial health during the economic crisis. Coefficients on both *during economic crisis * percent below poverty* and *during economic crisis * racial diversity* in the operating margin models are negative and significant. However, we cannot find significant effects of poverty rate and racial diversity on equity ratio. Our results support H1-1 and H2-1 only for operating margin, which is a short-term financial measure. During the economic crisis, a nonprofit located in a county with a high poverty rate and high racial diversity tends to be financially vulnerable. Figure 2 presents the predicted values of nonprofit financial health by operating margin and racial diversity of a county. It shows a negative relationship between nonprofits' financial health and a county's racial diversity, regardless of the period. However, the negative relationship is much strengthened during and after the economic recession.

Our findings on the economic crisis's moderating effects on the association between nonprofit density and nonprofit financial health are noteworthy. When facing economic crisis, a nonprofit

becomes financially vulnerable from a short-term perspective when it is located in a county with high nonprofit density (see the coefficient on *during economic crisis * nonprofit density* in operating margin model = -5.614 in operating margin model, $p < 0.001$). However, a nonprofit located in a county with high nonprofit density is more likely to be financially healthy in the long run during the economic crisis (see the coefficient on *during economic crisis * nonprofit density* in equity ratio model = 3.593 in equity ratio model, $p < 0.001$). These findings partially support H3-1.

The moderating effect of the economic crisis on the relationship between philanthropy supports is statistically significant but small in the short run. Also, it is not statistically significant in the long run. The results do not support H4-1.

Figure 2. Predicted values of the nonprofit financial health measured by operating margin and racial diversity in a community



Last, we did not find any significant moderating effects of the economic crisis on the association between government expenditure and nonprofit financial health (see the insignificant coefficients *during economic crisis * government expenditure* in operating margin and equity ratio models), which does not support H5-1.

Table 3. Moderating effects of the economic crisis on the relationship between socioeconomic environmental factors and nonprofit financial health.

	Operating margin	Equity ratio
Percent below poverty level	0.000	0.001**
	(0.000)	(0.000)
During economic crisis	-0.032***	-0.008*

	(0.003)	(0.004)
After economic crisis	-0.037***	-0.027***
	(0.003)	(0.004)
During economic crisis§ * percent below poverty	-0.000*	0.000
	(0.000)	(0.000)
After economic crisis§ * percent below poverty	-0.000	0.000
	(0.000)	(0.000)
Racial diversity	-0.001	-0.001
	(0.003)	(0.005)
During economic crisis * racial diversity	-0.008**	-0.003
	(0.003)	(0.003)
After economic crisis * racial diversity	-0.005	-0.003
	(0.003)	(0.003)
Nonprofit density	4.357**	12.206***
	(1.634)	(3.125)
During economic crisis * nonprofit density	-5.614***	3.593*
	(1.161)	(1.434)
After economic crisis * nonprofit density	-5.189***	3.144*
	(1.122)	(1.385)
Philanthropy support	-0.000***	-0.000
	(0.000)	(0.000)
During economic crisis * philanthropy support	0.000***	-0.000
	(0.000)	(0.000)
After economic crisis * philanthropy support	0.000***	-0.000
	(0.000)	(0.000)
Government expenditure	-0.001*	0.001
	(0.000)	(0.001)
During economic crisis * government expenditure	0.000	-0.000
	(0.000)	(0.000)
After economic crisis * government expenditure	0.000	-0.000
	(0.000)	(0.000)
Revenue diversification	0.014***	-0.116***
	(0.001)	(0.001)
Population	-0.000**	0.000**
	(0.000)	(0.000)
Age	-0.001***	0.000
	(0.000)	(0.000)
Education, higher⁜	0.004	0.112***
	(0.005)	(0.006)
Education⁜	0.021***	-0.042***
	(0.001)	(0.001)
Hospitals⁜	0.015***	0.238***
	(0.004)	(0.005)
Environment⁜	0.024***	-0.054***
	(0.002)	(0.002)
Health⁜	-0.003*	0.043***
	(0.001)	(0.002)
Human services⁜	-0.012***	0.051***

	(0.001)	(0.001)
International⁜	-0.005*	-0.077***
	(0.002)	(0.003)
Mutual benefit⁜	0.077***	-0.009
	(0.006)	(0.008)
Public and societal benefit⁜	0.014***	-0.025***
	(0.001)	(0.002)
Religion⁜	0.010***	-0.022***
	(0.002)	(0.002)
Unknown⁜	0.023*	-0.035**
	(0.010)	(0.012)
Constant	0.106***	0.209***
	(0.004)	(0.006)
Observations	1,452,098	1,452,098
Number of counties	810	810

Standard errors in parentheses
*** $p<0.001$, ** $p<0.01$, * $p<0.05$
§ The omitted category is before crisis, between 2007 and 2008.
⁜ The omitted category is arts, culture, and humanities.
*Note: The results are consistent when we use a nonprofit density measure based on the asset size of an organization, although the coefficients for "during economic crisis * nonprofit density" and "after economic crisis * nonprofit density" in the equity ratio model are not statistically significant.*

Discussion and conclusion

Nonprofits' responsibilities are especially critical during an economic recession because demands for service increases dramatically, while resources for service provision decrease in vulnerable communities. A nonprofit organization's financial health explains its capability to serve the community and operate its mission, since having sufficient financial resources is a fundamental requirement for adequate service provision and organizational survival (Lee et al., 2023). A nonprofit organization's financial health is directly affected by macroeconomic environmental factors, such as economic recession, since nonprofits are heavily dependent on external funding and susceptible to economic shock (Brown et al., 2013; Salamon et al., 2009). Environmental factors also influence this, as nonprofits are deeply embedded in the communities in which they are located and reflect the community's needs and available resources.

However, there has been little empirical evidence of how economic recessions and environmental factors influence the needs and resources of communities and the financial health of nonprofits. Guided by organizational ecology theory, this study makes a significant contribution to the current scholarly literature on nonprofit management, as this is one of the few studies examining how environmental factors and the Great Recession have affected nonprofits' financial health and how the recession moderated the association between environmental factors and nonprofits' financial health. Using the data from IRS Form 990 from 2007 to 2012, our longitudinal analysis shows that 1) environmental factors significantly affect nonprofits' financial health, 2) the Great Recession negatively affected nonprofits' financial health as a whole, but its impact has been more severe in vulnerable communities with higher racial diversity, and 3) nonprofits located in a community with more resources are more likely to be financially healthy but also to be affected by the Great Recession in the long term.

First, drawing on organizational ecology theory, we contribute to understanding of how environmental factors as ecological forces relate to a nonprofit's financial health using long-term (equity ratio) and short-term measures (operating margin). In our data, the density representing the number of similar organizational species in the community strongly affects a nonprofit's long-term health (measured by equity ratio). These findings imply the cumulative benefits of nonprofit density and constitutive legitimation as a source of long-term financial health (Galaskiewicz & Bielefeld, 1998; Guo & Brown, 2006). However, a community's racial diversity representing more heterogeneous public needs negatively affects a nonprofit's short-term financial health (measured by operating margin), suggesting an increasing financial burden on nonprofits and, potentially, a more significant gap between service demand and service provision in a vulnerable community. These findings generate questions as to how community stakeholders and community-based nonprofit managers can play a role in legitimizing their responsibilities collectively, enhancing the community's shared resources, balancing different service needs by community constituency, or collaborating with other nonprofits to meet varied needs more efficiently.

Second, nonprofit density has heterogeneous effects on financial health through legitimation and competition processes. We expected that the density of nonprofits in a community, as an essential community resource, improves financial health because a large number of nonprofits increases organizational constitutive legitimation, as it strengthens internalized values, social obligations, and nonprofit norms in a community (Galaskiewicz & Bielefeld, 1998; Hannan & Freeman, 1977). However, the density of nonprofits becomes negatively related to financial health during the economic recession. More interestingly, while it hurts short-term financial health (operating margin) during the economic recession, it positively affects the long-term measure of financial health (equity ratio). The results imply that the Great Recession dramatically increased competition among nonprofits over resources and led to their financial vulnerability. Organizational ecologists suggest a curvilinear relationship between density and organizational outcome, but the relationship can be influenced by market structure, such as concentration and distribution of resources (Paarlberg et al., 2018; Seaman et al., 2014), and resource overlap between organizations (Baum & Singh, 1994). This study reports that the effects of nonprofit density may differ depending on macroeconomic conditions and the timeframe of financial measures. Also, the results show that nonprofits in densely populated communities immediately face increasing costs for competition during the economic recession, but that they are more resistant to the economic crisis in the long term.

Third, while the Great Recession, i.e., a macroecological force, greatly affected nonprofits' financial health across the nation, the impact was not uniform. Our findings empirically show how ecological interdependence (i.e., the interaction between community factors and recession), within the broader open systems of nonprofits, determines their health. Specifically, we found that it is more severe for nonprofits in a county with greater racial diversity and higher poverty rates. This suggests that the gap between demand for services and nonprofit service provision becomes more severe in vulnerable communities during economic recession. Also, the effects of the Great Recession on a community with high racial diversity and poverty are only significant to operating margin (short-term financial measure). These findings imply that nonprofits in vulnerable communities do not have a surplus with which to support programs, or the financial capacity to meet the increasing demand for services in response to economic shock. Nonprofits located in minority communities often do not have adequate reserves or savings to respond to an emergency or to weather a disruption in funding (Lam & McDougle, 2016). Thus, a nonprofit in a vulnerable community needs more immediate support or government intervention to maintain its programs and meet an increasing demand for services during economic crisis.

While our findings provide valuable insights into community variation in nonprofit service provision when depending on environmental factors, our study has some limitations. First, equity ratio and operational margin are used to predict nonprofits' financial capability of providing programs and serving communities, but they do not explain actual performance outcomes such as quantity and quality of service provision. In addition, measuring financial health is still in a state of conceptual and methodological disarray despite the efforts of scholars (Bowman, 2011; Prentice 2016; Hung & Hager 2019; de Andres-Alonso et al., 2016). Many concepts are used interchangeably and have not yet been fully validated against reality, such as organizational dissolution, defaults, and failure (Park et al., 2021). Although we have used two basic nonprofit financial health measures, operating margin and equity ratio, readers should be mindful that the concept of financial health has multiple dimensions when applying the results.

Second, we focus on exploring the impacts of nonprofit density measured by number of nonprofits per 1,000 population in a county, drawing insights from prior research that emphasize its role as a pivotal community resource based on density dependence theory (Corbin, 1999; Grønbjerg & Paarlberg, 2001b; Kim, 2015; Lecy & Van Slyke, 2012). However, this approach is limited in explaining how resource concentration and distribution within a niche can affect competition and, by extension, nonprofits' financial health (Paarlberg et al., 2018; Seaman et al., 2014). Moreover, our chosen metric of counting the number of nonprofits within a community might overlook certain nuances, particularly the size of organizations. Smaller entities that fall below the threshold for IRS reporting, for example, could inadvertently be excluded (Pennerstorfer & Rutherford, 2019). In light of this, adopting an alternative measure—such as quantifying the size of the nonprofit sector in terms of dollar amounts—could potentially yield a deeper understanding of how the nonprofit sector influences organizational financial health.

Another limitation of this research stems from the use of the IRS Form 990 data. Although the recession predominantly impacted smaller nonprofits, the data set only includes nonprofits whose gross receipts are greater than or equal to $200,000 or whose assets are greater than or equal to $500,000 annual revenue. Also, the data collected from the organizations using a fiscal year for completing Form 990 have different accounting periods from our definition of three periods (pre-, during, and post-recession), which are based on the calendar year. Finally, while employing counties as a unit of analysis in community research offers certain benefits, it comes with potential limitations. One notable consideration is the inherent variability within counties, encompassing factors such as population density, size, urban–rural makeup, and socioeconomic attributes. Treating counties as uniformly homogeneous or as representing cohesive identities could overlook important intracounty variations.

Disclosure Statement

The authors declare that there are no conflicts of interest that relate to the research, authorship, or publication of this article.

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