

## RESEARCH ARTICLE



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# Social capital and the nonprofit infrastructure; and ecological study of child maltreatment

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## Abstract

Child maltreatment is a significant social problem that responds to neighborhood conditions, including disorder and support. Using administrative sources with the census response rate and geocoded nonprofit tax forms in a cross-sectional ecological design ( $N = 443$ ), this article explores two understudied supportive factors in neighborhoods: aggregate social capital and nonprofit organizations. A series of Poisson models show aggregate social capital and nonprofit density are negatively related to child maltreatment rates, while the relationship between social capital and child maltreatment rates varies by the number of nonprofits present in the neighborhood. The results provide new insights into the ecology of child maltreatment and illustrate the importance of norms and formal organizations when addressing collective action problems.

## KEYWORDS

child maltreatment rates, ecological, generalized linear model, neighborhoods, nonprofit organizations, social capital, youth

## 1 | INTRODUCTION

Scholars have long noted the geographic clustering of child maltreatment and posited the importance of neighborhood processes in determining child maltreatment rates. For this reason, neighborhoods have risen as a particularly important site of study and intervention. Understanding the occurrence of child maltreatment at the

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neighborhood level is important as it may yield an understanding of structural characteristics and contribute to the development of ecological interventions (Freisthler et al., 2006; Kimbrough-Melton & Melton, 2015; Rumping et al., 2022). Motivated by social disorganization theory, scholars have investigated the existence of risk factors for child maltreatment that may degrade neighborhood processes, such as unemployment, vacancy, poverty, with a comparably smaller literature developing related to supportive structures, such as social services. Coulton et al. (2007) suggest neighborhood structures alter social processes which influence the behavior of neighborhood residents, such as families, and scholars have often emphasized the capacity of social processes to protect children and families from an array of outcomes (Coleman, 1988; Ferguson, 2006; Jack & Jordan, 1999; Maguire-Jack et al., 2022; Molnar et al., 2016). While a burgeoning literature related to the role of nonprofits organizations suggests the presence of nonprofits may facilitate network connections and enhance processes at the neighborhood level (Brandtner & Dunning, 2020; Marwell, 2004; Mayer, 2022; Wo, 2019). Following a review of the relevant literature and theory, this study contributes to the literature related to ecology of child maltreatment rates by exploring the role of social capital and nonprofit organizations in child maltreatment rates.

## 2 | LITERATURE REVIEW

The study of child maltreatment in neighborhoods follows largely from social disorganization theory, which posits that social structures may interact with resident characteristics with implications for social processes (Coulton et al., 2007; Katz & Maguire-Jack, 2022; Shaw & McKay, 1942). When features such as poverty or unemployment are rife in a neighborhood, the community has a decreased capacity to achieve goal alignment and solve collective action problems, which all residents would benefit from mitigating (Sampson & Groves, 1989). Importantly, social disorganization posits an indirect link between the ecological characteristics and collective actions problems (namely, crime), where disorganization increases crime by degrading neighborhood processes (Kubrin & Wo, 2015). Consistent with this theory, the cooccurrence of child maltreatment with poverty, vacancy, and other indicators of disorder have become a fact of neighborhoods in the United States (Coulton et al., 1995, 2018; Freisthler et al., 2006; Raissian, 2015). However, just as poverty and disadvantage may reduce the ability of residents to mitigate child maltreatment, the presence of networks connections may produce social capital, empowering residents to establish and enforce norms (Coleman, 1988; Turley et al., 2017). The following sections detail the theory to be tested in this paper, the role of social capital and the possibility that nonprofit organizations may enhance the effects of social capital on child maltreatment.

### 2.1 | Social capital

Specific definitions of social capital vary widely in the literature (Morrow, 1999). Fulkerson and Thompson (2008) describe two camps of social capital theory, the normative and resource social capital traditions, where the former focuses on the mutual benefits of social capital for aggregate groups, while the latter tend to focus on the investment required for future return. Conceptualizations also differ with respect to their focus on the location of social capital (e.g., where social capital is “embodied”), at the individual or community levels (Au, 2019). Concerned with neighborhoods and communities, this study focuses on the normative and community traditions, where the key to the conceptualization of social capital is its location in the social structure, which benefits the community as a whole, and may facilitate collective action for mutual benefit (Au, 2019; Putnam, 1995). For example, Coleman (1990) suggests social capital “is defined by its function. It is not a single entity, but a variety of different entities having two characteristics in common: They all consist of some aspect of social structure, and they facilitate certain actions of individuals who are within the structure” (p. 302). Social capital results from a variety of social relations, which may vary by the types of relationships, with whom the connections are made, and the arrangement of

relations (Adler & Kwon, 2002). These are characterized by network connections, trust, reciprocity, and established norms, which when present in a community or group facilitate the identification and pursuit of common objectives (Putnam, 1995). Yet, at the macro-level, the capacity of trust to facilitate the establishment of norms and coordination toward common objectives are key preconditions for mitigating collective action problems (Kubrin & Wo, 2015; Shaw & McKay, 1942). Since its inception in sociological theory, social capital has generated substantial thought, and higher social capital has been linked to lower mortality and inequality (Kawachi et al., 1997), improved academic performance and graduation rates (Coleman, 1988; Leana & Pil, 2006), as well as lower crime and recidivism rates (Buonanno et al., 2009; Hipp et al., 2010). Fundamentally, theories of social capital emphasize the aggregate benefits of social engagement and the resulting trust.

The preceding discussion illustrates the general benefits of aggregate social capital, however, there are many ways in which social capital may benefit families and children in-particular. This is important, as the effects of social disorder may have disproportionate effects on families and children (Leventhal & Newman, 2010; Sampson & Groves, 1989). As social capital and disorder can alter resource access, the ramifications of social disorder may disproportionately impact families with children as they often require greater support and resources than other residents (Coulton et al., 2007; Garbarino & Sherman, 1980). Social capital can enhance service access by increased information sharing, facilitating awareness of existing services, or assisting residents in identifying service gaps (McKay et al., 2003; Porter & Powell, 2006). Further, connections and the resulting social capital are particularly important for families with children, as stronger social connections can provide valuable access to resources and support in difficult times (Radey et al., 2022). Social capital may create positive feedback creating a larger range of mastery experiences, encouraging the acquisition of additional social resources (Au, 2019).

Individual level studies have demonstrated some benefits of social capital, as it can enhance developmental and behavioral outcomes for high risk children (Runyan et al., 1998), and reduce risk of neglect and domestic abuse (Zolotor & Runyan, 2006). Similarly, Maguire-Jack et al. (2022) find social cohesion is negatively related to physical assault and psychological aggression, and Molnar et al. (2016) find a negative relationship between maltreatment and social networks measured by the number of friends or relatives living nearby. However, no studies of child maltreatment consider aggregate social capital, a crucial limitation of this literature as social capital is a feature located in the social structure of a community (Coleman, 1988; Fulkerson & Thompson, 2008; Kubrin & Wo, 2015). Inclusion in social networks and the resulting reciprocity may also yield numerous opportunities for residents, including access to resources such as employment and child care, which has led scholars to suggest social capital "is a crucial factor in determining the quality of family life and the level of child maltreatment in any community" (Jack & Jordan, 1999; p. 252). This leads to hypothesis one.

**Hypothesis 1:** *Higher aggregate social capital predicts lower rates of child maltreatment.*

## 2.2 | The role of nonprofit organizations

Having services nearby may ease access and encourage uptake by residents (Allard & Danziger, 2002). Consistent with this idea, the child maltreatment literature has primarily focused on service access, including early education, social services, and supportive services for immigrant families, with mixed results (Klein, 2011; Maguire-Jack & Klein, 2015; Seon & Klein, 2021). However, this literature has focused less on nonprofit organizations, which increasingly provide vital services in place of, or in collaboration with government (Smith, 2008). Yet, nonprofits are also important neighborhood actors that provide important benefits that may reach beyond the direct provision of services.

Social disorganization theory has long held that organizational participation may mitigate disorder and enable effective approaches to collective action problems by facilitating goal alignment among neighborhood residents, often called "collective efficacy" (Sampson, 2004; Sampson & Groves, 1989). Nonprofits may enhance

neighborhood processes by increasing political participation and family involvement, or by prodding government into action (Boulding, 2010; Ressler, 2020; Young, 2006). The literature has shown the benefits of nonprofits are not limited to social services, and rather the presence of, and participation in, religious and educational organizations has also provided a propitious ecological intervention for neighborhood child maltreatment rates (Klein, 2011; Mayer, 2022).

Given this study's focus on social capital, accounting for nonprofit presence is a methodological imperative, as nonprofit support may confound the relationship between social capital and child maltreatment, and without accounting for nonprofit presence a result for social capital leaves open the question of confounding constructs (Kubrin & Weitzer, 2003). For example, in their study of social capital moderating the effects aggression on child maltreatment, Saluja et al. (2003) find null results and suggest that prior effects of social capital may be a result of confounding with social support. In sum, this study posits:

**Hypothesis 2:** *Higher nonprofit density predicts lower rates of child maltreatment.*

Organizations often occupy distinct roles in neighborhood life, and nonprofit organizations are particularly strong community actors with a unique capacity to solve communication and collective action problems (Brandtner & Dunning, 2020; Mayer, 2022; Wo, 2018; Wo et al., 2016). Accordingly, regions with high aggregate social capital may also have identified nonprofits as a solution to communication and collective action problems (Saxton & Benson, 2005). While nonprofits have become an increasingly important part of the social safety net and effective governance (Smith, 2008), they also provide auxiliary benefits to residents. In addition to material resources, organizations may store information for community members, providing expertise.

Nonprofits also provide a place where community members meet and participate in civic life, creating and maintaining social networks (Marwell, 2004), facilitating political activity, and may emerge from activated networks (Sampson & Wilson, 2012; Young, 2006). Nonprofits may also enhance material conditions: reducing poverty, disadvantage, or inequality (Berrone et al., 2016; Crubaugh, 2020), which can enhance trust and goal alignment within communities. Regarding the effects of a strong organizational presence on resident relations, McQuarrie and Marwell (2009) argue that organizations "have an independent role in the production, reproduction, and arrangement of urban social relations, neighborhood conditions, and individual outcomes and identities" (p. 247). This suggests that organizations can facilitate systemic social processes, imprinting on communities and enhancing aggregate social capital through improved communication, concretization of norms, and the maintenance of social networks. This leads to hypothesis three.

**Hypothesis 3:** *The relationship between aggregate social capital and child maltreatment varies by nonprofit density.*

### 3 | CURRENT STUDY OVERVIEW

Social capital may reduce child maltreatment rates through information sharing and an enhanced ability to establish and enforce norms. However, few studies exist linking social capital with child maltreatment, particularly at the neighborhood level. This represents an important gap in the literature, Kubrin and Wo (2015) suggest "there is a pressing need to identify the general effect that social capital has on crime rates across aggregate units of analysis" (p. 130). A key contribution of this study is to test the Hypothesis 1: a negative relationship between aggregate social capital and child maltreatment rates. Nonprofit organizations are strong neighborhood actors that often provide vital services while supporting social and economic networks as well as political activity. Accordingly, this study hypothesizes a negative relationship between nonprofit density and child maltreatment rates. Although a burgeoning literature exists describing patterns of organizational activity and crime including child maltreatment, no

studies were found that have tested the possibility that nonprofits may enhance the effects of social capital by formalizing advocacy, improving communication, and problem-solving channels. Accordingly, the third hypothesis of this study suggests the relationship between social capital and child maltreatment varies by the neighborhoods level of nonprofit density. The following sections detail the data, ecological design, and methods used to test the hypotheses.

## 4 | METHODS AND MATERIALS

The hypotheses are tested using a cross-sectional ecological design, where all data are measured at the census tract, a widely used proxy for neighborhoods (Coulton et al., 2018; Wo, 2018). The study region is Cuyahoga County Ohio, a US county with a population of roughly 1.25 million that covers an area of over 1200 square miles. The measure of social capital used in this study relies on information from the US Census Bureau's decennial census, and as a result all data are aggregated to 2010 census boundaries.

### 4.1 | Dependent variable: Child maltreatment

The outcome of this study is the number of unduplicated child maltreatment reports in the census tract. A child maltreatment report is considered "substantiated" when the agency determines that maltreatment has occurred, "indicated" when the agency has a high level of suspicion that maltreatment occurred but lacks necessary evidence, and "unsubstantiated" otherwise. However, children in all categories appear at similar risk of recidivism (Kohl et al., 2009), which has led researchers to consider all cases of child maltreatment (Coulton et al., 2018). Accordingly, this study considers all reported cases of child maltreatment that occurred in a census tract. Data on all cases were retrieved from NEOCANDO, a data tool housed at the Center on Poverty and Community Development at Case Western Reserve University which provides unduplicated counts of child maltreatment reports based on information from the Department of Children and Family Services (Total maltreatment cases Census Tract, 2010). Unduplicated counts provide a strong measure of risk as they emphasize the number of children, rather than occurrences (Coulton et al., 2018). The use of agency records is limited to the extent that cases of child maltreatment are not reported or screened out by workers.

### 4.2 | Independent variables

#### 4.2.1 | Aggregate social capital

Social capital has been measured in a variety of ways in empirical studies, including the level of parental involvement, a person's subjective belief that others would provide help, opportunities for involvement, and interactions with neighbors (Dika & Singh, 2002; Keele, 2005). At the neighborhood or community level, there are several substantial limitations with these measures. As with all survey methods, they are subject to nonresponse, additionally, when aggregated over the region uncertainty is introduced which may require a separate methodology (Mayer & Fischer, 2022). Martin and Newman (2015) propose solving these issues using the decennial census self-response rate (CRR) as a measure of aggregate social capital. In the United States, the constitution directs the population to be enumerated every 10 years to assist in governance activities. The US census is legally required to count every person, and refusal to participate can result in fines. Despite the legal mandate, the decennial census never receives full participation, and often undercounts in similar ways on each occurrence (Williams, 2010). However, the choice to respond to the census indicates social cooperation as the census is a highly valued public

good used for a variety of purposes in politics and government, and therefore a response to the census indicates a willingness to cooperate and contribute (Thompson, 1991).

Martin and Newman (2015) argue the CRR solves the two problems stated above by measuring nonresponse, when response to the census reflects “prosocial, trusting, civic-oriented behavior” (p. 626), suggesting a higher CRR indicates higher aggregate social capital. Their analysis of the CRR among census tracts finds it positively and highly correlated with the results from the Social Capital Benchmarking Survey and the Social Capital Community Survey, across all subscales. For these reasons, the 2010 CRR is used as a measure of aggregate social capital. With the release of the new census geographies with the 2020 decennial census, the US census bureau began releasing the CRR for all years with 2020 census geographies. To align the CRR with the other data used in this study, the CRR for the 2010 census geographies are obtained using area-weighted interpolation, which computes weights based on the area overlap of the geometries (Pebesma, 2018; Walker, 2022).

## 4.2.2 | Nonprofit density

Organizational density is measured as the number of organizations present in a region and industry or sector (Carroll & Hannan, 2000). The measure is limited as it does not provide a directly measure organizational activity, and treats organizations equally (Amburgey & RAO, 1996). However, data on organizational activity are sparse and many organizations are not required to submit financial information, which may provide stronger measures of size. As a result, the number of nonprofits in a geography has been identified as the choice measure of density among nonprofit scholars (Joassart-Marcelli & Wolch, 2003; Mayer, 2022; Yan et al., 2014). Data on the number of nonprofit organizations are obtained from the National Center on Charitable Statistics business master file. The business master file includes all exempt organizations that file any variety of tax documents (e.g., 1023, 1024, or 990), however, private foundations and supporting organizations are excluded as they often have drastically different relationships to residents. Additionally, nonprofits that have not submitted tax documents in the past 2 years are excluded as they are unlikely to be active. After cleaning the addresses listed by nonprofits, organizations were geocoded and placed in their respective census tracts using 2010 boundaries. In the event that an organization listed a post office, the post office was used (Mayer, 2022; Yan et al., 2014), resulting in a successful geocoding rate of over 99%.

## 4.3 | Control variables

Child maltreatment, nonprofit density, and social capital share a variety of common determinants that must be taken into account. Primarily, these include measures of disorder: poverty, disinvestment, and instability in a neighborhood. These features are likely to alter the existing social capital of a neighborhood in at least two ways. When disorder is high, residents may choose to exit a neighborhood, depleting the social capital and disrupting existing social ties (Sampson, 2004). Community resources, such as neighborhood income, also determine the neighborhood's social capital (Brisson & Usher, 2005). Nonprofit organizations are differentiated from their for-profit counterparts by an inability to distribute profits and the requirement of a mission outside of profit maximization. While the specific objectives of nonprofit organizations vary widely, they are often founded in response to unmet needs in communities (Carman & Nesbit, 2013), and consequently neighborhood disorder is a strong determinant of nonprofit location (Joassart-Marcelli & Wolch, 2003; Wo, 2018).

The presence of these relationships presents a problem and increases the likelihood of finding spurious relationships. To address this problem several control variables are included that have been demonstrated to have strong relationships with child maltreatment. These include the vacancy, poverty, and unemployment rate of the neighborhood (Coulton et al., 1995, 2018; Raissian, 2015). The mobility and diversity of the neighborhood are also

important and may disrupt the ability of residents to coalesce around common goals and develop trust, decreasing their capacity to solve collective action problems such as child maltreatment (Klein & Merritt, 2014; Shaw & McKay, 1942). For this reason, the mobility, and racial and ethnic diversity of the neighborhood are included. Mobility is measured as the percent of residents in the same home as one year ago, while the ethnic and racial diversity of the neighborhood is measured by creating a Herfindahl–Hirschman of four racial and ethnic groups: white, Asian, Black or African American, and Hispanic/Latino, and subtracting the result from one (Wo, 2018).

#### 4.4 | Empirical model

The Poisson model, estimated by maximum likelihood, provides many desirable properties for empirical models of child maltreatment. When paired with the canonical log link function, the number of children in the neighborhood can be incorporated through an offset term, modeling the maltreatment rate, a meaningful quantity commonly found in child welfare research (Freisthler et al., 2006). Further, although the Poisson distribution is restrictive and unrealistic for prediction (i.e., the conditional moments of the outcome), the interest of this study is inference for conditional mean parameters, and inference for parameters of the conditional mean are robust to the violation of the Poisson distributional assumptions (Wooldridge, 2010). Consequently, this study uses the Poisson model paired with heteroskedastic consistent estimation of variance.

One complication with ecological studies of child maltreatment has been the prevalence the spatial correlation in maltreatment rates (Coulton et al., 2007). In this study, the presence of spatial autocorrelation is assessed using Moran's I, a measure of global spatial autocorrelation, and dealt with using spatially lagged independent variables. This is a simple approach to address spatial autocorrelation that involves a transformation of observed variables. First, a row-standardized weight matrix is created using neighbors constructed using “queen” contiguity, defining first order neighbors on all sides. Second, this matrix is multiplied by the matrix of observed variables, which results in spatially weighted variables, a weighted sum of the surrounding neighborhoods. The empirical model can be written as:

$$y \sim \text{Poisson}(\lambda)$$

$$\lambda = \exp(\ln(c) + \gamma + WX\beta_1 + X\beta_2)$$

Where  $y$  is the total number of child maltreatment cases in 2010, and  $c$  is the number of children in the census tract, entered as an offset term.  $\gamma$  is the constant estimated from the data, while  $W$  is the row standardized weight matrix constructed from the adjacency matrix constructed allowing queen contiguity,  $X$  is the matrix of observables, including nonprofit density, aggregate social capital, and other neighborhood features included as control variables. Three models are fit, a model with an additive mean model without spatially weighted variables, a model with additive mean and spatially weighted variables, and finally a model that includes an interaction between nonprofit density and the CRR. The models are evaluated in two ways, the first is using the Akaike information criterion (AIC), a measure of out-of-sample prediction error. The second is a Moran's I, including a hypothesis test that Moran's I is greater than zero in the residuals of the fitted model.

## 5 | RESULTS

A description of the variables used in this study is shown in Table 1. The table shows the average tract has nearly 21 nonprofits and 31 reported cases of child maltreatment, with a child maltreatment rate of 4.5%. Several tracts have high nonprofit density, as indicated by the maximum and standard deviation, consequently, it is log transformed in all empirical models. The average CRR, after interpolation, is nearly 65.5%, and no tract achieved 100% participation

**TABLE 1** Descriptive statistics for study variables in Cuyahoga County in 2010 (N = 443)

Variable	Mean	SD	Maximum	Minimum	Source
Child maltreatment <sup>a</sup>	31.117	29.745	279.000	1.000	DCFS
Total child population	678.86	356.928	2877.000	12.000	ACS
Nonprofit density	20.779	47.553	573.000	1.000	NCCS BMF
Census response rate	65.470	13.223	87.400	32.100	DC
Racial and ethnic diversity	0.291	0.208	0.742	0.000	ACS
Vacancy rate	8.558	6.743	36.087	0.215	USPS
Mobility	83.886	9.738	100.000	30.317	ACS
Employment rate	15.772	7.032	51.754	4.421	ACS
Poverty rate	18.982	15.813	81.155	0.305	ACS

Abbreviations: ACS, US Census Bureau American Community Survey (2006–2010); DC, US decennial census; DCFS, Cuyahoga County Department of Children and Family Services; NCCS BMF, National Center for Charitable Statistics Business Master File; SD, standard deviation; USPS, United States postal service.

<sup>a</sup>Includes all reported unduplicated cases, retrieved from NEO CANDO provided by the Center on Poverty and Community Development at Case Western Reserve University.

in the 2010 census. The average tract also has a vacancy rate of just over 8.5%, with nearly 16% unemployment and a 19% poverty rate.

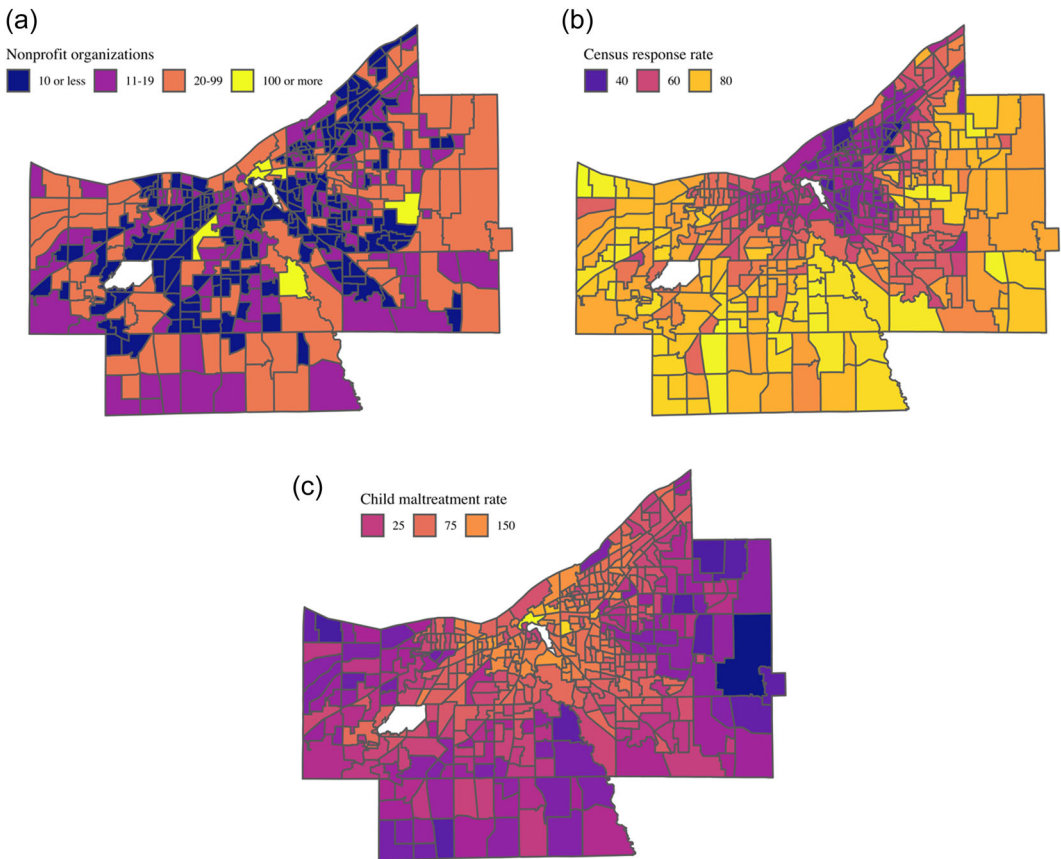
The spatial dynamics of the three key variables are shown in Figure 1, which shows the distribution of nonprofit organizations (panel a), the CRR (panel b), and the child maltreatment rate per 1000 children (panel c). The figure shows clear spatial dynamics in all three variables, with particularly striking patterns in the spatial distribution of the CRR and child maltreatment rates, which appear negatively correlated. The observed Moran's I for child maltreatment rates (per 1000 children) is just over 0.42 ( $p < 0.001$ ), demonstrating the presence of spatial autocorrelation.

### 5.1 | Inferential results

The results of all models are shown in Table 2, which include the additive mean model (model 1), an additive mean model with spatially lagged variables (model 2), and the inclusion of an interaction term (model 3). The models shown in Table 2 have sequentially decreasing AIC, suggesting the inclusion of spatially lagged variables, and the interaction, are important components of the phenomenon. The first model shows large positive estimates for the racial and ethnic diversity of the census tract, as well as the unemployment rate. The estimate for the poverty rate of the tract is positive as well, however, with high variance. In model 1, the two key predictors of this study, the CRR and nonprofit density, show significant and negative relationships with child maltreatment. However, model 1 shows evidence of slight spatial autocorrelation in the residuals, with a Moran's I of 0.05. The addition of spatially lagged variables reduces this to 0.043. Model 2 shows the racial and ethnic diversity of neighboring tracts is positively related to the maltreatment rate, while nonprofit density in neighboring tracts is negatively associated with child maltreatment rates.

Model 3 shows the results of a model which allows an interaction between the CRR and nonprofit density. Model comparison shows this is an important component, with a substantial reduction in AIC, and reduction in global spatial autocorrelation of 0.013. In this model, the key predictors maintain their negative relationships with child maltreatment rates. Without accounting for the interaction, a 1% increase in the CRR predicts a decrease of





**FIGURE 1** Census tracts in Cuyahoga County ( $N = 443$ ), showing (a) nonprofit density, (b) the census response rate, and (c) child maltreatment reports per 1000 children. Spatial distribution of (a) nonprofit organizations, (b) census response rate, (c) child maltreatment rate per 1000 children observed by census tract in Cuyahoga County Ohio in 2010.

3.2% in the child maltreatment rate, while a 1% increase in nonprofit density predicts a decrease of over 14%. The spatial lag suggests a 1 % increase in the nonprofit density of surrounding regions predicts a decrease of 8.5% in the child maltreatment rate, as well. Finally, the interaction shows the predicted decrease in the child maltreatment rate for each unit increase in the CRR is larger when nonprofit density is high. The interaction is visualized through prediction in Figure 2.

Figure 2 shows the predicted maltreatment rates for varying levels of nonprofit density and social capital measured by the CRR. Clearly, when nonprofit density is high, the maltreatment rate drops faster as a function of social capital. Yet, as nonprofit density decreases, the gradient for social capital begins to level off.

## 6 | DISCUSSION

Child maltreatment represents a major social welfare problem, disrupting the lives of children and families. Scholars have long believed that social capital, constituted by trust, reciprocity, and the establishment of norms, can contribute to solving collective action problems by giving families access to resources and strengthening neighborhood processes (Buonanno et al., 2009; Jack & Jordan, 1999; Kubrin & Wo, 2015; McKay et al., 2003).

**TABLE 2** Full results for Poisson models of the child maltreatment rate, including spatially lagged variables and interaction ( $N = 443$ )

	Model 1		Model 2		Model 3	
	Estimate	SE	Estimate	SE	Estimate	SE
Constant	-0.959**	0.298	-0.316	1.011	-0.686	0.976
Racial and ethnic diversity <sup>a</sup>	0.104***	0.026	0.067*	0.028	0.084**	0.026
Vacancy rate <sup>a</sup>	-0.046	0.046	-0.05	0.043	-0.021	0.042
Mobility rate <sup>a</sup>	-0.013	0.036	-0.024	0.035	0.001	0.032
Unemployment rate <sup>a</sup>	0.267***	0.033	0.240***	0.035	0.232***	0.034
Poverty rate <sup>a</sup>	0.077 <sup>†</sup>	0.041	0.069 <sup>†</sup>	0.041	0.057	0.039
Census response rate	-0.031***	0.004	-0.031***	0.004	-0.033***	0.004
Nonprofit density (ln)	-0.086*	0.043	-0.088*	0.040	-0.160***	0.035
Neighboring tracts						
Racial and ethnic diversity	-	-	0.114*	0.058	0.096	0.054
Vacancy rate	-	-	-0.001	0.014	0.006	0.014
Mobility rate	-	-	-0.147	0.809	0.100	0.801
Unemployment rate	-	-	-0.25	1.377	-0.192	1.371
Poverty rate	-	-	0.001	0.006	0.002	0.005
Census response rate	-	-	-0.004	0.009	0.002	0.010
Nonprofit density (ln)	-	-	-0.087 <sup>†</sup>	0.045	-0.091*	0.044
Interaction						
Census response rate <sup>a</sup> by nonprofit density <sup>a</sup> (ln)	-	-	-	-	-0.277***	0.042
AIC	5163.334		5092.447		4863.965	
Moran's I (residuals)	0.051 <sup>†</sup>		0.043 <sup>†</sup>		0.030	

Abbreviations: AIC, Akaike information criterion; SE, robust standard error.

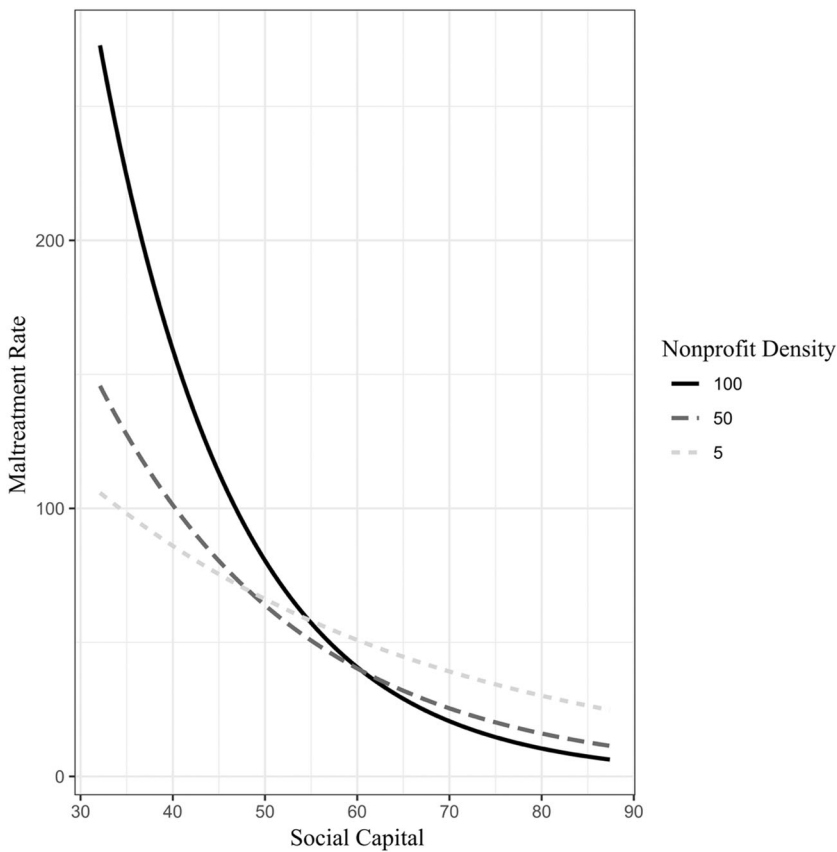
Note: All models include child population as an offset term. Moran's I is a measure of global spatial autocorrelation,  $p$ -value corresponds to a test where the alternative hypothesis states  $I > 0$ .

<sup>†</sup> $p < 0.10$ .

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

<sup>a</sup>Variable is mean centered and scaled to unit variance.

However, few studies exist that consider social capital as a key variable (c.f. Zolotor & Runyan, 2006), and none were found that account for organizational presence or consider social capital in aggregate resulting in an important gap in knowledge related to theories of social disorganization (Kubrin & Wo, 2015). To address this gap, this study conceptualized social capital at the community level, and employed a cross-sectional ecological design to test the hypothesis of a negative relationship between social capital and child maltreatment rates. Operationalizing social capital with the CRR (Martin & Newman, 2015), the results show a strong negative relationship between social capital and child maltreatment. The spatial distribution of social capital and child maltreatment rates shown in Figure 1 show a clear negative relationship, and the results presented in Table 2 show this relationship is not explained away by measures of disorder or spatial autocorrelation.



**FIGURE 2** Predicted maltreatment reports based on 1000 children, as a function of nonprofit density and social capital. Predictions are based on model 3 presented in Table 2. Social Capital is measured by the Census response rate ( $M = 65.5$ ,  $SD = 47.6$ ), nonprofit density is the number of nonprofits in the census tract ( $M = 20.8$ ,  $SD = 47.6$ ).

The presence of organizations in a neighborhood may increase service access, with implications for child maltreatment (Klein, 2011; Maguire-Jack & Klein, 2015; Seon & Klein, 2021). An organizational presence may also support neighborhood processes, facilitating information sharing, and collective efficacy (Sampson, 2004; Small, 2010). Nonprofit organizations are a distinct contributor to neighborhood processes, social support, and aggregate social capital in neighborhoods. Nonprofits may spark activism, fostering or maintaining social networks, and motivating residents to improve their communities (Brandtner & Dunning, 2020; Marwell, 2004; Mayer, 2022; Sampson & Wilson, 2012; Young, 2006). Accordingly, Hypotheses 2 and 3 of this study posit a negative relationship between nonprofit density and child maltreatment rate, as well as variation in the relationship between aggregate social capital and child maltreatment rates by the level of nonprofit density. The empirical results support these hypotheses, with strong negative estimates found for the relationship between nonprofit density in the same tract, as well as for nonprofit nearby. This study has a distinct contribution to this literature by ruling out the possibility that the social capital and child maltreatment is an artifact of unobserved organizational support (Kubrin & Weitzer, 2003). Beyond the direct effects of nonprofit organizations, they may also enhance existing community ties by formalizing or enhancing networks, citizen action, as well as facilitating trust and reciprocity (Marwell, 2004; Powell & Brandtner, 2016; Young, 2006). The results support the claim that nonprofits may enhance the effects of social capital, finding a substantial estimate for the interaction between the CRR and nonprofit density, where the decline in child maltreatment rates for each unit of CRR is highest

among neighborhoods with more nonprofit organizations. This is the first such finding in burgeoning literature related to organizations and child maltreatment.

Social capital represents an important construct that has not received adequate attention in the neighborhood effects literature related to child maltreatment. The results from this study show aggregate social capital is a strong determinant of child maltreatment rates. Yet, nonprofits may enhance the benefits of social networks, and as a result, this study emphasizes the implications of the location choices of nonprofit organizations for neighborhood residents. Nonprofits have the ability to substantially augment neighborhood processes (Mayer, 2022b). However, current research on nonprofit density is limited, primarily to cross-sectional studies, and provides mixed evidence with respect to race and poverty, as current evidence suggests nonprofits may locate in areas with higher or lower need (McDonnell et al., 2020; Wo, 2018). As a result, further research is needed to understand where the benefits of social capital accrue.

Nonprofits represent only one strategy to build social capital in the neighborhood setting. Policy makers and advocates have considered a range of interventions to decrease child maltreatment in the neighborhood setting, including, organizing, community development, and community education. Such initiatives often require governmental and private sector stakeholders, however, can have substantial benefits for residents (Gross-Manos et al., 2022). The results from this study emphasize interventions that may result in enhanced social capital. This may come in the form of altering the resident's beliefs about their neighbors, through enhanced trust, or facilitating connections through neighborhood engagement. This fits with the existing emphasis on a public health approach to child maltreatment (Hawkins et al., 2015). Villalonga-Olives et al. (2018) identify several interventions targeting social capital described in the public health literature, among others, they identify the "Kids First" intervention, which uses hired residents to organize community consultations and develop partnerships, creating relationships and community resources.

There are substantial benefits to considering the CRR as an empirical measure of aggregate social capital (Martin & Newman, 2015), however, there are also benefits for policy makers and advocates. The CRR is publicly available at several geographies of interest, such as census tracts, and has been recently updated following the 2020 decennial census. The results from this study indicate the CRR is a strong predictor of child maltreatment, and consequently may be of interest in the prediction of child maltreatment and the identification of high-risk regions. However, further research on patterns of census response and child maltreatment is needed in other geographic regions. Future research may also benefit from longitudinal designs, or explicit evaluations of interventions targeting aggregate social capital.

## 7 | CONCLUSION

This study has contributed to the literature related to the ecology of child maltreatment by testing three key hypotheses. The results show social capital, measured by the census response rate, and nonprofit density, have strong negative relationships with the child maltreatment rate. The relationship between social capital and child maltreatment also depends on the number of nonprofits in the neighborhood. Social capital has not been widely considered in aggregate in the existing literature, and the results emphasize the relations among residents as well as the location of nonprofit organizations.

## CONFLICT OF INTEREST

The author declares no conflict of interest.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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## PEER REVIEW

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