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The Varieties of Nonprofit Organizations and Local Hazard Mitigation Efforts

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This study examines how different types of NPOs influence local governments' hazard mitigation efforts. Based on Marquis et al. (2013), we categorized NPOs into three types and analyzed a county-level dataset (N=1,626) with fixed-effect Poisson regression. Findings indicate that counties with a greater number of NPOs working for enhancing the overall community's social welfare are more likely to develop hazard mitigation projects. In contrast, the prevalence of elite-oriented NPOs that focus on selective community constituents is negatively associated with local governments' hazard mitigation project development. This study provides important implications for the critical roles of NPOs in facilitating hazard mitigation efforts in relationships with local governments.

Keywords: Nonprofit Organizations and Hazard Mitigation, Local Hazard Mitigation, Types of Nonprofit Organizations, Disaster Management

Introduction

Nonprofit organizations (NPOs) play key roles in disaster context (Eller et al., 2015; Gajewski et al., 2011; Syal et al., 2021). NPOs have consistently provided disaster response services and recovery assistance including clean up, debris removal, data collection, mass feeding, mental health counseling, rebuilding and repair, and recovery planning (Gajewski et al., 2011; Gibbons, 2007; Hwang & Joo, 2021; Luna, 2001; Meriläinen, 2020; Tierney et al., 2001). There also has been increasing involvement and roles of NPOs in the mitigation and preparedness cycles such as developing hazard mitigation measures, creating advocacy groups for mitigation, or initiating mitigation projects (Benson et al., 2001; Chikoto et al., 2013; Meyer-Emerick & Momen, 2003).

Despite the well-known roles of NPOs in the general disaster context, their specific influence on local hazard mitigation activities still needs empirical scrutiny. Hazard mitigation efforts require constant contributions of diverse NPOs that often represent and connect diverse segments of the community (Heilbrun & Gray, 2001; Robinson & Gerber, 2007). However, most previous disaster studies often focus on large-scale, disaster-relief NPOs such as the Red Cross or the Salvation Army. Otherwise, the nonprofit sector has been often treated as a single homogeneous set in the disaster management context (Brudney & Gazley, 2009; Gibbons, 2007). Despite steady impacts and dominance by such disaster-mobilized NPOs, they do not represent all NPOs working in the context. Furthermore, not all NPOs may equally and actively influence local hazard mitigation efforts as they work in a narrow band of the whole realm of

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disaster services based on their organizational missions and interests (Robinson et al., 2013). Rather than considering NPOs as a single homogeneous set or just limiting the research focus to dominant NPOs, there is an increasing need to examine the more nuanced influences of NPOs according to their varying types in a hazard mitigation context.

This study examines the question of how different types of NPOs influence local governments' hazard mitigation efforts. Drawing on Marquis et al.'s (2013) mid-range typology of NPOs, we categorized NPOs into three different types: (1) NPOs addressing the overall social welfare of community constituents, (2) NPOs providing benefits to selective community constituents, and (3) NPOs with greater social impact but having not clearly defined beneficiaries of their services and activities within the geographic community where they are located. Using this typology of NPOs, we analyze hazard mitigation projects proposed by 1,626 U.S. counties applying to receive the Federal Emergency Management Agency's (FEMA's) Hazard Mitigation Grant Program (HMGP) between 2010 and 2016. We examine the extent to which different types of NPOs are related to local hazard mitigation efforts while controlling for many other county characteristics.

Our results show that counties are likely to make more hazard mitigation efforts when they have more NPOs whose services/activities aim to improve the overall social welfare of community constituents. In contrast, county governments are likely to introduce fewer hazard mitigation efforts when they have more elite-oriented NPOs that serve selective community constituents only or that have social impact but no direct beneficiary within the geographic community. Our findings on the heterogeneous influences of diverse types of NPOs on local governments' hazard mitigation efforts provide important implications for building a whole community approach to local hazard mitigation.

Literature Review

Local Hazard Mitigation Efforts and a Whole Community Approach

Local hazard mitigation efforts include a broad array of activities aiming to reduce long-term hazard risks to property and human health (Godschalk et al., 1998). Hazard mitigation starts with identifying the community's underlying risks and vulnerabilities to known disasters or hazards (Godschalk et al., 1998; Rose et al., 2007), which requires proper understanding of the complex ecology of a community. Local governments are well positioned to identify specific hazard mitigation issues or demands and develop and implement mitigation plans for their communities (Ji & Lee, 2021). In line with hazard mitigation efforts, local governments may participate in multiple external grants or funding programs that support the development and implementation of their mitigation plans (Rose et al., 2007), such as the Hazard Mitigation Grant Program (HMGP), the Flood Mitigation Assistance (FMA) Grant program, and the Building Resilient Infrastructure and Communities (BRIC) program (formerly Pre-Disaster Mitigation program). Such grant and funding programs usually cover a great portion of the total cost for proposed mitigation activities. Hence, the efforts to obtain external mitigation grants and funding significantly reduce the burdens on local stakeholders while creating opportunities for them to improve long-term disaster resilience for their local communities (Cutter et al., 2008; Godschalk et al., 1998; Ji & Lee, 2021).

However, not many eligible local governments take advantage of the external mitigation grant programs. One of the many possible reasons for not applying for such programs is limited capacity and capability of local government. Most grant programs require well-written proposals that are developed based on careful assessment and understanding of hazard vulnerabilities of local communities. Yet, local governments may not have enough resources allocated to prepare for the application packages. It is particularly challenging for a local emergency management department/division with a few employees to develop such a strong

proposal. Furthermore, effective hazard mitigation measures require the identification of detailed community needs and the constant efforts of a whole community with diverse populations. However, unlike the response or recovery phases that have a well-defined timeline and affected people, hazard mitigation does not have a defined timeframe nor constituents. Rather, mitigation is an adaptive process. As community ecology changes over time, so too does associated community vulnerability. This also limits local government's capacity to develop effective hazard mitigation measures.

Therefore, hazard mitigation efforts cannot be "a government monopoly" but rather, a whole community approach (Kapucu, 2015, p. 3). A whole community approach refers to the collective efforts of all possible actors including, but not limited, to "residents, emergency management practitioners, organizational and community leaders, and government officials" for building a shared understanding of and full capacity for hazard mitigation by relying on their resources and capacities (FEMA, 2011, p. 3). A whole community approach supplements the limited capacity of local governments and, further, sets the more effective pathways for local governments to build community resilience (FEMA, 2011). Engaging and empowering "all parts of the community" is one of the key principles for effective local hazard mitigation because doing so could help untangle community complexity, foster relationships among community members, strengthen needed resources and social capital, and thereby empower local hazard mitigation actions (FEMA, 2011, p. 4).

Varieties of Nonprofit Organizations and Hazard Mitigation

The whole community approach explicitly highlights NPOs as integral partners for governments in disaster management activities (FEMA, 2011; Kapucu, 2015). By representing different issues, agendas, interests, and populations of a community, varieties of NPOs have engaged in different parts of the whole cycle of disaster management (Eller et al., 2015; Heilbrun & Gray, 2001). NPOs have been active in providing emergency relief and response services in multiple arenas such as mass care (e.g., sheltering, first aid, distribution of goods/supplies), emergency assistance (e.g., evacuation, support for locating family members), housing (e.g., assistance for rent, home repair, loans, and so forth) (Meriläinen, 2020), and human services (e.g., food stamps, medical, counseling, unemployment insurance, legal services) (Eller et al., 2015; Miyazawa & Kikuchi, 2021). These NPOs assist government emergency management personnel, but they also go beyond the supplementary role by deploying critical resources and services directly to disaster-affected populations (Eller et al., 2015).

To leverage the varying capacities and respond to varying needs, NPOs at both the local and national level have formed Voluntary Organizations Active in Disaster (VOAD) which set "a platform for nonprofit organizations to coordinate their activities and share information and resources in helping (potential and actual) disaster-affected people throughout the preparedness, response, and recovery phases of emergency management" (Kapucu et al., 2017, p. 70). Via this structured platform, the varying strengths of each NPO have more effectively communicated with first responders, governments, and the public to identify needs/issues and provide necessary services that sustain life for disaster-affected populations (Kapucu et al., 2017) while avoiding duplication and conflicts in resource/service deployment among NPOs.

Therefore, incorporating a variety of NPOs into the formal mitigation processes would contribute to developing local hazard mitigation plans and advancing a local community's disaster resilience. Some local NPOs may already work towards protecting their clients and properties from potential hazards before local government interventions, thereby reducing demands for hazard mitigation in their communities. Other NPOs may focus on competing issues that serve the broader society rather than focusing on hazard mitigation issues in local communities. Yet, even though many NPOs' core missions and activities are not directly relevant to disaster management, they can contribute to identifying community needs and

demands for hazard mitigation in different areas through their communication and interaction with diverse local clients. Developing mitigation projects to seek out external grants provides a unique context to examine how different NPOs exert varying influence on local governments' hazard mitigation efforts.

Types of Nonprofit Organizations and Local Governments' Hazard Mitigation Efforts

For systematic incorporation of diverse NPOs into disaster mitigation, we relied on a mid-range typology of NPOs developed by Marquis et al. (2013). The typology is primarily based on nonprofit literature within organizational studies (Corbin, 1999; DiMaggio & Anheier, 1990; Odendahl, 1990) that identifies three types of NPOs which reflect differences in the scope of defined beneficiaries of NPOs' services and activities (Marquis et al., 2013).

The first type is NPOs focusing on improving the overall social welfare of their local community by providing necessity goods and services to community members in need. These community welfare NPOs serve a wider range of people within the geographic community by addressing their focal community's social and policy problems and focusing on promoting human rights and altruistic motives (Corbin, 1999). Representative NPOs in this type include advocacy, crime, food security, homelessness, housing, and health care organizations (Marquis et al., 2013). The second type includes the NPOs serving elite interests by providing luxury goods to a comparatively limited group of people within the geographic community who could afford the goods and services from such NPOs (Heilburn & Gray, 2001). NPOs of this type focus on promoting the cohesion of privileged groups of community residents and preserving the elite groups' values, interests, and traditions (Marquis et al., 2013). This type includes NPOs related to arts, culture, and private education. The third type includes diverse NPOs that do not have defined beneficiaries of their services and activities within a specific geographic location of a community. While these NPOs may have social and technological impact on community members in the long term, their current services or activities do not have a local focus. Included among these are NPOs concerned with basic research, business trades, or environmental issues (Marquis et al., 2013).

With respect to the distinctive characteristics of different types of NPOs, we argue that a local government's hazard mitigation efforts, particularly developing mitigation projects to apply for external funding, may be highly contingent upon the prevalence of different types of NPOs within the geographic community. First, the social welfare NPOs' day-to-day functions include responding to multiple demands from a wider range of constituents in the community. Their organizational mission to serve the social welfare of a whole community may facilitate their working together in the same direction as local governments working on hazard mitigation. They may also serve as capable and resourceful partners for local governments in identifying disaster risks and vulnerabilities in their communities and implementing hazard mitigation projects.

These organizations often lack resources and tend to depend on a supportive social and cultural infrastructure that spreads information about local needs and mobilizes support/resources (Galaskiewicz, 1985; Marquis et al., 2007; Salamon, 1987). Due to their high resource dependency on supportive social and cultural infrastructure (Galaskiewicz, 1985, Marquis et al., 2007; Salamon, 1987), social welfare NPOs are likely to seek more external resources and are willing to collaborate with the local government to work more on hazard mitigation in communities. With the growing movement of local governments to contract out social and welfare services to NPOs, the growth of this type of NPO has been closely linked to government funds (Marquis et al., 2007; Salamon, 1987).

Moreover, given the nature of social welfare services, their direct beneficiaries are often vulnerable to disaster risks while social welfare NPOs may be less capable of setting aside extra resources for their hazard mitigation activities to protect their clients and properties. In such

situations, this type of NPO may seek external resources or efforts to protect their clients and beneficiaries from potential hazards. Hence, they are likely to motivate local governments to engage in hazard mitigation efforts. Therefore, we present the hypothesis as following:

> *H1: Greater number of social welfare NPOs in the communities will lead to an increase in local governments' hazard mitigation efforts.*

Second, the elite-oriented NPOs may be self-sufficient enough to have their own hazard mitigation programs and activities. Theories explain the disproportionate level of wealth of elite-oriented nonprofits, mostly through corporate support (DiMaggio & Anheier, 1990; Odendahl, 1990). In addition, serving selective beneficiaries exclusively within a community, this type of NPO may incorporate disaster mitigation components into their services or daily activities to promote the needs of their class (Odendahl, 1990). For example, this type of NPO may have a higher level of property maintenance protocols and practices to ensure the safety of their clients during disasters without a supportive social or cultural infrastructure to fund and implement their hazard mitigation plans (Galaskiewicz, 1985, Marquis et al., 2007). Moreover, since direct beneficiaries of the elite-oriented NPOs often have higher socio-economic status than those served by social welfare NPOs, local governments' hazard mitigation efforts that reduce community-wide vulnerabilities may not accrue direct benefits to them. Rather, elite-oriented NPOs may focus on other competing issues in the aftermath of disasters, such as quick recovery for normal business operations and building a more livable and pleasant community. Therefore, organizations of this type are less likely to motivate local governments to engage in hazard mitigation efforts.

> *H2: Greater number of elite-oriented NPOs in the communities will lead to a decrease in local governments' hazard mitigation efforts.*

Third, we expect that the third type of NPO may differ from the first two types of NPOs because they do not have defined beneficiaries within geographic locations of local communities. On one hand, since their organizational missions and service beneficiaries of this type of NPOs are not bound to local jurisdictions, community-level hazard mitigation efforts may not be in their direct interest. Due to their focus on extensive socio, economic, medical and/or technological issues, this type of NPO may also work more closely with upper-level governments or nationwide/global networks than they work with local governments. Based on their own information and resources, these NPOs may already be equipped with their own hazard mitigation measures and hence do not have many incentives to join or motivate local government mitigation efforts. On the other hand, it is possible that this type of NPO may be supportive of local governments' hazard mitigation efforts by providing supporting data or advocating local governments' action for community resilience. Their impacts on local hazard mitigation efforts may be materialized in the long-term via evidence-based mitigation policy assistance, technological advancements for mitigation measures, and creation of comprehensive data about community conditions. Therefore, the prevalence of organizations of this type may have varying impacts on the local governments' mitigation efforts.

> *H3: Greater number of NPOs with no defined local beneficiaries in the communities is associated with local governments' hazard mitigation efforts.*

Data and Methods

Data

To assess local governments' hazard mitigation efforts, we focus on the Hazard Mitigation Grant Program (HMGP) as a specific case. The HMGP is designed to assist local governments' hazard mitigation efforts (Government Accountability Office, 2015), and most local hazard

mitigation projects are funded by HMGP (Ji & Lee, 2021). In particular, county governments, the primary applicants for the HMGP, are responsible for preparing the project proposals and implementing the project (FEMA, 2020; Rose et al., 2007). They design a series of mitigation projects to improve community resilience, such as retrofitting buildings, purchasing properties in flood-prone areas, rebuilding culverts in drainage ditches, avoiding new development in vulnerable areas, and educating the public about disaster preparedness systems (Godschalk et al., 1998; Rose et al., 2007). Local governments become eligible to participate in the HMGP contingent upon the occurrence of severe and major disasters warranting Presidentially Declared Disasters (PDD) (FEMA, 2020). PDDs warrant the presidential declaration because the severity of the disaster incident(s) merits a governor's request for federal assistance as effective response is beyond the capacity of the state and its local governments (Rose et al., 2007). Since the HMGP funds become available to disaster-affected counties or the counties in the disaster-affected state receiving the PDD (Ji & Lee, 2021), a county's application for HMGP often coincides with its recovery efforts in the aftermath of major disasters.

Even though FEMA has funded selected governments (Kousky & Shabman, 2017) with a relatively high approval rate,[1] local governments' participation in the HMGP varies despite experiencing the same disaster events, with many eligible local governments not participating at all. Therefore, the HMGP provides a useful context within which to examine varying policy efforts for hazard mitigation among local governments despite their same grant eligibility and experience of disasters.

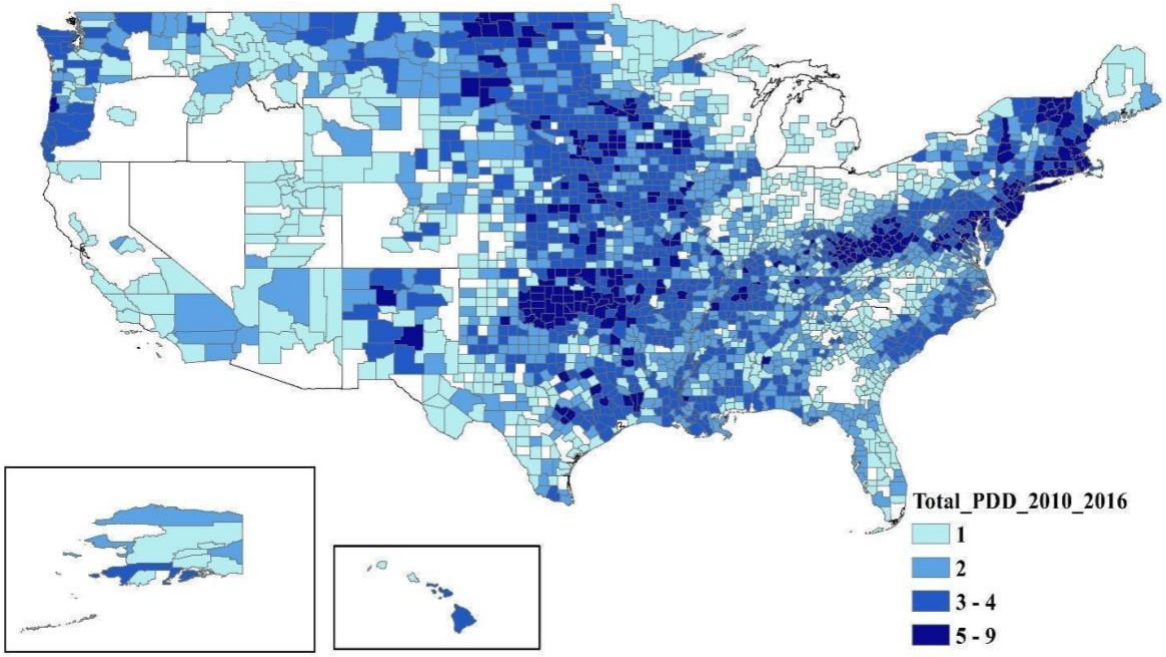
To test our hypotheses, we constructed a county-level dataset for the 2010–2016 period by drawing upon multiple data sources. Relying on the Disaster Declarations Summaries (DDS) of the OpenFEMA dataset, we selected counties that were declared to be eligible for the HMGP due to their experiences with severe natural hazards. We included the selected counties only because we are interested in why county governments show uneven participation in the HMGP despite their common experiences of major disasters. For the selected counties, we collected information on whether the counties applied for the HMGP drawing on the OpenFEMA dataset.[2] We then coupled the county-level HMGP application data with data from four sources: National Center for Charitable Statistics (NCCS) core files, the Spatial Hazard Events and Losses Database for the United States (SHELDUS), David Leip's Atlas of the U.S. House of Representatives election data, and the U.S. Census data. After the data merge, 3,014 county-year observations and 1,626 unique counties remained in our sample. The data period was confined to 2010–2016 because of the NPO data unavailability issues in the NCCS core files. The specific data sources for the variables are discussed in the following sections.

Measures

Dependent Variable. To measure a county's participation in the HMGP, we used two different measures. First, we counted the total number of hazard mitigation projects of each eligible county, contingent upon Presidentially Declared Disasters (PDDs), which applied for the HMGP funding each year. Second, we used the submission per disaster ratio calculated by the number of hazard mitigation projects divided by the number of declared PDDs in a given county in each year. The submission per disaster ratio standardizes the aggregated hazard mitigation efforts by the number of disaster incidences in a given year as more disaster declarations can lead to more applications.

Figure 1 shows the geographical distribution of the total number of presidentially declared disasters during our study period between 2010 and 2016. Figure 2 shows the geographical distribution of the number of hazard mitigation (HM) projects proposed by counties during our study period. Counties that experienced more disasters do not necessarily propose a greater number of HM projects to receive the federal grant. On average, participating counties

Figure 1. Geographical Distribution of the Total Number of Presidentially Declared Disasters Between 2010 and 2016



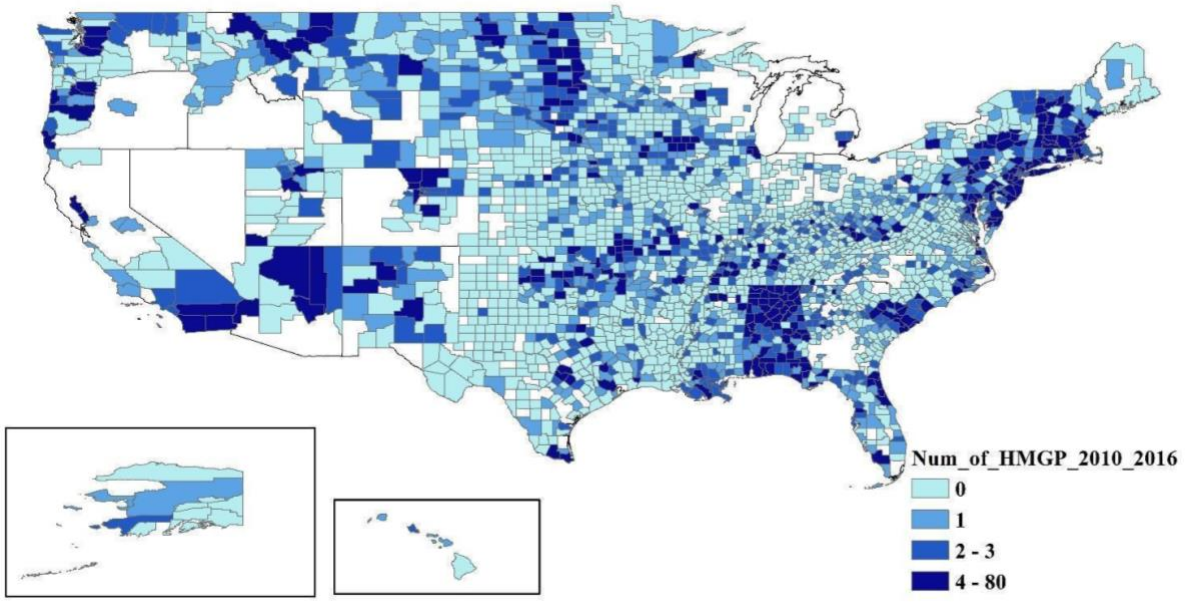
proposed about 4.84 projects, with a minimum of two and a maximum of 47 project proposals. Across study periods, participating counties submitted the lowest number of proposals (2.41) on average in 2016 whereas 2011 showed the greatest number of proposal submissions (6.74) on average.

Independent Variables

Types of NPOs. The county unit NPO data was drawn from county identifiers (Lowry & Potoski, 2004) provided through the NCCS data which is based on information listed on the Form 990.[3] To examine impacts of different types of NPOs on local hazard mitigation, we counted the number of NPOs in each distinctive service area from the Form 990 data. The number of NPOs has previously been used as a proxy for the nonprofit sector's overall social influence in a given jurisdiction (Anheier, 2003). Following the National Taxonomy of Exempt Entities (NTEE) codes (De los Mozos et al., 2016) that assign a unique code to each NPO according to their different activities and services, we identified a total 26 categories of NPOs[4]: animals, food, general health, mental health, housing, human services, public safety, religion, civil rights/advocacy, employment, public/societal benefit, philanthropy, arts, community improvement, crime/legal-related, education, sports/leisure, membership benefit, youth development, environment, medical research, social science research, science & technology, international affairs, voluntary health associations, and others.

While all 26 categories of NPOs are included in our analysis, we grouped those NPOs into the three types classified by Marquis et al. (2013) for a more systematic discussion of results. For example, religion and employment were not discussed in their typology, but we included them as NPOs for the social welfare of the whole community because they address community social problems and altruistic motives. The specific types of NPOs falling into the three types of the typology are presented in Table 1.

Figure 2. Geographical Distribution of the Total Number of HMGP Applications Between 2010 and 2016



Control Variables

We controlled a set of political, governmental, and community characteristics. First, we controlled the political characteristics of each county. When determining whether to participate in the HMGP, county governments may consider the political characteristics of their community constituents (Hall, 2010) because hazard mitigation activities are based on political support (Prater & Lindell, 2000). To control overall political interests, we included *voter turnouts* in each county for the presidential elections in 2008 and 2012,[5] as proxies for general interest in politics in the county. Moreover, how a county population voted for a presidential election could reflect some unobserved region-specific political characteristics of the region (Levernier & Barilla, 2006). In addition, we controlled for the extent to which a county's voters were aligned with the political characteristics of the U.S. House of Representatives (Hall, 2010; Lowry & Potoski, 2004), as it may affect whether the county governments are pushed to participate in the HGMP. A county's representation by a member of the party in control of the House of Representatives is expected to lead to greater federal grant receipts (Hall, 2010). Also, it reflects political ideology, which affects opinions regarding the role of government (Hall, 2010), thus indicating whether the county population would push their local government to leverage more federal funds. In this regard, we considered two variables. One is *control party in house*, the agreement of county voters with the party in control of the House scaled from 0 (0% of the voters were registered to the controlling party of the House) to 100. Another is *representative in control*, a binary variable of whether or not a county was served by a House representative whose political party was the controlling party. Information for both variables were drawn from David Leip's Atlas of the U.S. House of Representatives' election data.

Second, we considered the financial capacity of the local government. We included the total amount of own-source revenue (defined as general revenue excluding intergovernmental revenue) in each county government, *total revenue per capita,* by drawing on the U.S. Census data.[6]

Third, we also controlled for a set of various community characteristics such as population *density*, *race* and *median income*, average *age*, and the percentage of county residents whose

Table 1. NPOs by Scope of Direct Beneficiary in a Community

Types of NPO	Social Welfare NPOs	Elite-Oriented NPOs	Other NPOs
Defined beneficiaries within a geographic community	Yes	Yes	No
Scope of Beneficiaries	Any/all people in need of the service/goods	Limited group of people who can afford the service	No set scope
Type of services /goods	Necessary goods/Services	Non-necessary (luxury)good/services	Goods/services that have long-term, positive effect
NPOs	· Animals · Civil rights/advocacy · Employment · Food · General health · Housing · Human services · Mental health · Public safety · Public/societal benefit · Philanthropy · Religion	· Arts · Community improvement · Crime/legal-related · Education · Membership benefit · Sports/leisure · Youth development	· Disease, disorders · Environment · International affairs · Medical research · Social science research · Science and Technology

Source: Adapted from Marquis et al. (2013)

education was equal to or higher than a *bachelor's degree*. All community characteristics were drawn from the U.S. Census' American Community Survey data.

Finally, we controlled for the vulnerability to natural hazards (Devlin & Rowlands, 2019; Ji & Lee, 2021; O'Donovan, 2017): *the frequency of presidentially declared disasters* each county experienced for the last five years (from *t–6* to *t–1*) drawing from the DDS of the OpenFEMA dataset and *total property damage* caused by natural hazards (severe storms, atmospheric and hydrological hazards[7]) per 1,000 residents of county population relying on the SHELDUS.[8] Furthermore, *disaster duration*, calculated by the total number of days each county is exposed to natural disasters each year, was included by drawing from the DDS of the OpenFEMA dataset.

Table 2 presents the descriptive statistics of the NPO and control variables used in the analyses.

During our study period between 2010 and 2016, a total of 2,667 counties were presidentially declared eligible for the HMGP, leading to 5,644 observations. However, in the process of merging them with control variable information (e.g., county government revenue, demographic information, and property damage from natural hazards, and so forth), 1,041 counties (2,630 observations) were dropped due to missing variables.

Table 2. Descriptive Statistics

Variable	Mean	S.D.	Min	Max
NPOs				
Animals	3.45	(8.28)	0	164
Civil Rights/Advocacy	0.86	(3.19)	0	51
Employment	1.61	(5.27)	0	91
Food, Agriculture & Nutrition	1.61	(3.64)	0	44
General Health	9.69	(24.17)	0	367
Housing & Shelter	6.83	(21.40)	0	502
Human Services	17.59	(48.09)	0	888
Mental Health	3.54	(11.38)	0	271
Public Safety	3.16	(7.33)	0	66
Public & Societal Benefit	1.60	(5.12)	0	75
Philanthropy	6.03	(18.75)	0	307
Religion	9.80	(32.38)	0	696
Arts	15.16	(50.12)	0	1,022
Community Improvement	6.54	(19.55)	0	325
Crime & Legal-Related	2.45	(7.83)	0	134
Education	26.27	(82.79)	0	1,646
Membership Benefit	0.43	(1.56)	0	25
Sports, Leisure, Athletics	13.09	(36.06)	0	505
Youth Development	3.30	(9.94)	0	215
Disease, Disorders	4.08	(14.80)	0	235
Environment	3.15	(8.40)	0	94
International Affairs	3.02	(12.49)	0	195
Medical Research	1.07	(5.44)	0	98
Science & Technology Research Institutes	0.85	(3.49)	0	73
Social Science Research Institutes	0.31	(1.33)	0	21
Other (e.g., Unknown)	0.20	(0.89)	0	16
Covariates				
Voter Turnout	0.59	(0.09)	0	1
Control Party in House	0.56	(0.20)	0	1
Representative in Control	0.71	(0.45)	0	1
Total Revenue Per Capita ($1,000)	1.31	(1.48)	0	13
Density	261.99	(823.74)	0	14,481
White (%)	83	(17)	9	100
Median Household Income (logged)	10.73	(0.28)	10	12
Bachelor's Degree (%)	19.22	(10.47)	0	70
Age	40.12	(4.55)	23	66
HM Declarations Last 5 Years	3.08	(1.38)	0	10
Property Damage Per Capita, Hydrological Hazards	111.27	(913.23)	0	102,629
Property Damage Per Capita, Storms/Hurricanes	3.29	(16.56)	0	342
Property Damage Per Capita, Atmospheric Hazards	56.65	(702.07)	0	25,810
Disaster Duration (Days)	28.76	(36.66)	0	268

APP_{it} is a vector of HMGP application outcomes of county i in year t. For the total number of HM applications, we use a fixed-effect Poisson regression model. For the average number of HM applications per disaster, we used linear regression models. Since Poisson regression

models the logarithm of the expected count variable on various parameters, it drops observations with zero values of the outcome variable and measured only one time point, thereby using a smaller sample in analysis compared to linear regression. NPO_{it} is the number of active NPOs in different categories, which are located in county i in year t. X_{it} indicates vectors of county-level characteristics for county i in year t. i_i and t_t are county- and year-fixed effects.

The county fixed-effect model may be desirable to examine how each county government makes its HMGP participation decisions in response to changes in NPOs within a county over time. Each county has its own unique characteristics resulting from its geographic, climatic, and cultural conditions, which may significantly affect the community's vulnerability to natural disasters and, thus, its awareness and needs for hazard mitigation. For example, counties in the Gulf Coast region historically have been more prone to hurricanes and tropical storms than other counties. Local governments and community members (e.g., NPOs, residents, local businesses) in those counties may be systematically different from those located in other counties that are less prone to extreme weather events in their perceived needs and consequent efforts for disaster risk mitigation to adapt to and cope with their climatic conditions. To examine the relationship between NPOs and local governments' hazard mitigation efforts, it is important to account for such unique, endogenous county-level characteristics in the estimation. However, data for such characteristics usually do not exist due to difficulty in observation and measurement.

To account for those important but unobservable county-level characteristics, we employ the county-fixed effects models that examine changes in outcome variables in response to changes in independent variables within the same county over time. Inclusion of county dummies would control for unobserved county-specific characteristics that do not significantly change over time, such as geographical, socio-cultural, and institutional characteristics of counties (e.g., county-level weather, community culture, local government autonomy granted by state laws), that may also influence a county government's participation in the HMGP. That is, estimators from our county-fixed effects models indicate to what extent a county government's HMGP participation is likely to be associated with a change in NPOs within a county over time, while controlling for any time invariant, unobservable characteristics in that county.

Results

Table 3 presents the estimation results of fixed-effect models on two outcome variables across all county samples.

Results show that NPOs in the sectors related to animals ($p<0.05$), general health ($p<0.01$), food ($p<0.01$), and human services ($p<0.01$) are positively associated with the number of HM projects a county proposes to receive the grant. Similarly, NPOs in the sectors related to general health ($p<0.05$), mental health ($p<0.01$), and public safety ($p<0.01$) are positively associated with the ratio of HM project applications per disaster. Contrary to our expectation, NPOs in housing shelters ($p<0.05$) are negatively associated with the number of HM projects. Those NPOs are categorized as type 1 NPOs addressing the social welfare of the whole community. Overall, the results provide evidence supporting H1.

By contrast, NPOs in the sectors related to sports/leisure ($p<0.05$) are negatively associated with both the number of HM project applications and the ratio of HM project applications per disaster while NPOs for youth development ($p<0.01$) are negatively associated with the number of HM projects. Those NPOs are categorized as type 2 NPOs serving benefits of limited and/or selective community constituents. Therefore, the results provide evidence supporting H2.

Table 3. Estimation Results by NPOs

NPOs by Sector	Number of Applications	Applications per Disaster
Social Welfare NPOs		
Animals	0.054**	0.085
	(0.023)	(0.062)
Civil Rights/Advocacy	0.070	0.092
	(0.047)	(0.135)
Employment	-0.035	0.001
	(0.039)	(0.108)
Food, Agriculture & Nutrition	0.116***	0.056
	(0.039)	(0.110)
General Health	0.036***	0.089**
	(0.011)	(0.036)
Housing & Shelter	-0.040**	0.013
	(0.016)	(0.043)
Human Services	0.047***	0.044
	(0.011)	(0.032)
Mental Health	0.020	0.193***
	(0.026)	(0.073)
Public Safety	0.036	0.200***
	(0.022)	(0.061)
Public & Societal Benefit	0.012	-0.156*
	(0.029)	(0.084)
Philanthropy	0.009	0.095*
	(0.017)	(0.049)
Religion	0.012	-0.026
	(0.010)	(0.029)
Elite-Oriented NPOs		
Arts	0.015	0.057*
	(0.011)	(0.030)
Community Improvement	-0.009	-0.003
	(0.017)	(0.048)
Crime & Legal-Related	-0.017	-0.117
	(0.029)	(0.087)
Education	0.004	0.015
	(0.007)	(0.017)
Membership Benefit	-0.035	-0.399**
	(0.061)	(0.173)
Sports, Leisure, Athletics	-0.022**	-0.089***
	(0.011)	(0.032)
Youth Development	-0.067***	0.030
	(0.024)	(0.065)
NPOs With No Direct Local Beneficiaries		
Disease, Disorders	-0.023	-0.025
	(0.020)	(0.064)
Environment	-0.186***	-0.298***
	(0.028)	(0.076)
International Affairs	0.001	0.008
	(0.021)	(0.060)
Medical Research	-0.218***	-0.452***
	(0.051)	(0.149)
Social Science Research Institutes	0.206**	0.009
	(0.082)	(0.226)
Science & Technology Research Institutes	-0.099**	-0.089

	(0.045)	(0.110)
Other (e.g., Unknown)	-0.157**	-0.312
	(0.065)	(0.193)
Observations	1,432	3,014
R-Squared	NA	0.167
Number of Counties	535	1,626

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Control variables and time dummies are included for estimation.

The results also show that NPOs in the sector of the environment (p<0.01) and medical research (p<0.01) are negatively associated with both the number of HM projects and the HM submission ratio per disaster in a county while NPOs in science & technology research (p<0.05) are negatively associated with the number of HM projects only. By contrast, NPOs in social science research (p< 0.05) are positively associated with the number of HM projects. Those NPOs are categorized as type 3 NPOs having no direct beneficiary in a community. The varying influences among NPOs in this category provide evidence supporting H3.

Related to control variables, the results suggest that county governments are likely to propose a greater number of HM projects when their jurisdictions have higher voter turnout, voters for the political party in House control, household income, and vulnerability to disasters. By contrast, county governments' HM applications are negatively associated with per capita total government revenue and the average age of residents while their negative associations are no longer significant in the highly vulnerable county sample. Due to limited space, we included a table of the results on the control variables in the Appendix.

Discussion

The roles and functions of NPOs have become more evident in contemporary American society (Powell & Steinberg, 2006; Salamon, 1995), especially in a disaster management context. A significant body of research has identified the importance of NPOs responding to community needs and providing goods and services to multiple areas of society including health, human service, public benefit, religion, and others. However, few studies have explored the potential impact of diversity within the nonprofit sector on disaster management (Robinson & Gerber, 2007).

This study identifies a diverse set of NPOs that are associated with local governments' hazard mitigation efforts in a varied manner even though some of their services or activities are not directly related to disaster management. This suggests that considering the nonprofit sector as a homogenous single factor may mislead decision makers regarding the role NPOs play in the hazard mitigation process. The results of our analysis present empirical evidence of the need to distinguish the types of NPOs to promote understanding of their roles. In addition, based on how they influence hazard mitigation, a more targeted approach to engaging NPOs in mitigation project developments is needed.

Our results support our argument that local government's hazard mitigation efforts, particularly applying for external grants and funding, may be highly contingent upon the prevalence of different types of NPOs with varying capacities and beneficiaries within their jurisdiction. As we hypothesized, when there is a greater number of social welfare NPOs in a community, a local government is likely to put more effort into hazard mitigation. NPOs providing services related to animals, food, general health, mental health, human services, and public safety are particularly influential. Community engagement, community coalition, and cross-sector partnerships between government and NPOs, and between NPOs in the

community are critical components to the whole community approach to hazard mitigation (Eisenman et al., 2014).

Among social welfare NPOs, NPOs in general health show particularly robust associations with local hazard mitigation efforts, with significantly positive associations with both of our outcome variables. These NPOs have worked closely with local health agencies and first respondents to determine risk factors to community health, create "public health social networks," and develop their own strategies to protect their essential facilities from disaster risks (Eisenman et al., 2014, p. 8477). As public health NPOs often serve as a central agency in emergency management networks by connecting various NPOs and public health departments (Eisenman et al., 2014), their roles become more salient in fostering community resilience by building on community assets and partnerships.

In contrast, when there is a greater number of elite-oriented NPOs in a community, a local government develops fewer projects to seek federal grants for hazard mitigation. Our results find significant negative influences of NPOs in the sectors related to sports and leisure. Considering their regular activities and target population, these NPOs are more likely to be self-sufficient due to their closer relationships with local businesses and privileged community constituents (DiMaggio & Anheier, 1990; Odendahl, 1990), indicating that they may be more capable of operating hazard mitigation programs and activities on their own. Moreover, they may be tempted to focus on more high-profile activities, the benefits and/or consequences of which are immediately observed and experienced by their target population, such as disaster relief and recovery. In particular, since sport clubs extensively use outdoor sport facilities (e.g., golf, motor sports, equestrian) that often suffer from long recovery after disasters (Wicker et al., 2013), they may focus more on getting back to normal business operations and building a more livable and pleasant community. In addition, leisure activities have been considered helpful for psychological relief and recovery of affected individuals (Kono & Shinew, 2015). Under these conditions, these sports- and leisure-related NPOs may encourage local governments to focus more on disaster relief and recovery, which may divert limited post-disaster administrative efforts and resources from hazard mitigation.

Finally, the last type of NPOs, which do not have clearly defined beneficiaries in a given local jurisdiction, show inconsistent influence on local hazard mitigation efforts. More specifically, NPOs operating in the field of medical research and science and technology research had a negative association with local government's hazard mitigation efforts whereas NPOs related to social science research had a positive association. NPOs in the former category often rely on funding and support from upper-level governments or private organizations, and their activities and operations hinge on capital investments (e.g., equipment, laboratory, monitoring stations). Such resource affluent NPOs may channel external resources into their local communities to implement hazard mitigation measures even during non-disaster periods to protect their properties and further reduce existing disaster risk and vulnerability factors in their community. In contrast, social science research institutes may provide local governments with grant application support and assistance (e.g., cost-benefit analysis of hazard mitigation projects) contingent upon government requests or as community service in the aftermath of disasters.

It is somewhat unexpected that environmental NPOs were consistently associated in a negative direction with county governments' hazard mitigation project submissions because hazard mitigation is closely aligned with some environmental NPOs' activities, such as natural resource/land conservation and protection. Given the fact that a strong cost-benefit ratio is both desired and required for project submission, it is possible that county governments having more environmental NPOs in their jurisdictions may need to go through a more rigorous process for reviewing and assessing environmental benefits and risks of their proposed projects. Indeed, the most funded mitigation projects are often engineering-based

mitigation measures (e.g., infrastructure protection, property retrofits/acquisition) (Ji & Lee, 2021), which need to prove that such projects would leave no significant environmental harm.

For effective hazard mitigation and, further, disaster management, a whole community approach is a must. Yet, evidence from existing studies may not be sufficient to develop practical policy strategies to incorporate a wide range of NPOs and their services and clients into the whole realm of disaster management (Robinson et al., 2013). Our findings on the varying influences of diverse NPOs on local governments' hazard mitigation efforts contribute to enhancing scholarly understanding of NPOs in a disaster context and developing practical policy and administrative strategies to enhance a whole community approach and improve disaster resilience at the community level.

Conclusion

The central contention of this paper is that diverse NPOs influence local government's hazard mitigation efforts in different ways. The results show that according to the types we developed based on the literature, different types of NPOs have different influences on local government's efforts to seek external grants for hazard mitigation. We suggest that such different directions and significance of relationships may occur based on whether or not the NPOs have well defined beneficiaries in the community and to what extent beneficiaries are relevant to hazard mitigation.

This study provides both practitioners and scholars with important implications regarding the role of NPOs in hazard mitigation areas. Earlier, we noted that previous studies often focus on prominent disaster-associated NPOs such as the Red Cross or Salvation Army, or treat different nonprofit sectors as a single homogeneous set (Brudney & Gazley, 2009; Gibbons, 2007). We found that NPOs may differ based on whether or not they have defined beneficiaries in the community and in the way they engage in hazard mitigation efforts. Based on our findings, we suggest practitioners involve not only prominent disaster-associated NPOs but also diverse 'seemingly-unrelated' NPOs in their hazard mitigation efforts. From the local government's perspective, NPOs focusing on the overall community's welfare could be considered as a good resource to work with, even if their missions are not directly related to disasters. These NPOs include the NPOs providing services related to animals, food, general health, mental health, human services, and public safety. Moreover, from a whole community approach perspective, we suggest local governments engage with elite-oriented NPOs despite their negative association with local governments' mitigation efforts. These NPOs' negative associations may indicate their self-sufficiency in implementing mitigation measures via resources from their loyal clients such as local businesses and privileged community constituents. Through the engagement of elite-oriented NPOs, local governments could connect their resourceful sponsors of such NPOs to the local mitigation efforts. Their engagement, therefore, can lead to expanding local governments' hazard mitigation capacities and resources.

Despite its contributions, our research is not free from limitations. First, as our sample only includes counties that received presidential disaster declarations, those counties that were not declared disasters were not included in the analysis. Even though this filtering process was deemed appropriate so that we could focus on the varying HMGP participation among eligible counties, consideration of the full population (i.e., all counties in the U.S.) may show a different picture regarding local governments' hazard mitigation efforts in general. Moreover, it should be noted that our sample is limited to understanding of counties' HM efforts within the HMGP context only. While the HMGP is the oldest and the largest federal grant program designed to help HM projects at the local level (Ji & Lee, 2021), it could be possible that counties may undertake hazard mitigation projects by relying on their own finances or other funding sources (e.g., state funds) rather than participating in the HMGP. Therefore, it is

worth noting that HMGP participation is not a perfect proxy to account for the entirety of hazard mitigation efforts within a county, and our findings should be limited to local hazard mitigation efforts funded through the HMGP.

Second, our data also have a limited ability to distinguish hazard mitigation projects that were developed via collaboration of multiple jurisdictions. It is possible that multiple counties may develop a large-scale, comprehensive mitigation project to apply for the grant. However, even for those multi-jurisdictional projects, the HMGP data indicates a single county as a subgrantee that is responsible for submitting the proposal and once selected, redistributes the hazard mitigation funds to other involved counties. In this case, those non-subgrantee counties were still involved in hazard mitigation efforts in practice but were not included in our sample. Future research may benefit from deconstructing the HMGP data and applying more rigorous coding for different types of HM projects according to the geographical scope of the projects.

Constructing data for a longer period may provide a more complete picture as more counties are likely to be included over a longer time period. However, our analysis was confined to a relatively short time period (2010–2016) due to data availability issues related to NPOs and other county-level information. In particular, the NPO data constrained our ability to examine more recent trends of local governments' HMGP participation. The lack of data in recent years may be because many NPOs report to the Internal Revenue Service (IRS) on a one- to two-year delay, and their information has not yet been updated in the data repository. In addition, those organizations that did not file the full form were not included in the original dataset (NCCS, 2018).

Data limitations also constrained our ability to identify the specific mechanisms underlying the relationship between NPOs and local governments' hazard mitigation efforts. We regret that there is no full data available to consider NPO's revenues or expenditures which could complement the prevalence of NPOs. When considering revenue or expenditures of NPOs in the NCCS data, the number of missing values increases to a great extent. Despite the limitation, we still believe that the prevalence of nonprofits in the community serves as a good proxy of their influence on their community's affairs. First of all, the counts of nonprofits in a community show how much the community could work to address their own issues. If there were no issues or needs for services and activities, then the prevalence of such nonprofits in a community would be less likely. The greater number of a type of nonprofits in a county indicates the prevalence of more relevant social needs in the county, and this leads to more potential interaction/communication/advocacy activities of such nonprofits with local government in order to address the relevant social issues.

Our findings on NPOs that are significantly associated with local HM projects pave the way for future research examining different aspects of the nonprofit sector and delving into specific mechanisms by which given NPOs engage in local HM process and activities. By developing more comprehensive data, we hope to see future studies empirically testing how actual NPO engagement makes a difference in local government's hazard mitigation efforts based on our findings. Local governments may benefit from engaging NPOs in their disaster management planning processes (Brudney & Gazley, 2009) in which they assess their local conditions and identify needed activities to reduce disaster risks along the disaster cycle (Sweikar et al., 2006). NPOs may help local governments utilize their limited resources and expertise more effectively (Kapucu & Van Wart, 2006) and gain more support and participation from community members for local governments' hazard mitigation efforts. Furthermore, NPOs can play critical roles in institutionalizing a culture of hazard mitigation by which community members share perceptions of disaster risks and facilitate policy discourse for reducing risks in their communities on an ongoing basis. Future research may benefit from exploring these mechanisms more closely with NPO activity and financial data or conducting in-depth case studies.

Notes

1. In our HMGP application data between 2010 and 2014, 82% of county government applicants received funding. Section 501(c)(3) organizations sometimes opt to take the 'h election.' To avoid any subjectivity around the meaning of 'substantial' as it relates to 501(c)(3) lobbying activities, organizations can elect to file Form 5768 and have their lobbying measured by an objective expenditures test pursuant to section 501(h) of the IRS Code.
2. Accessed on April 23, 2019, at https://www.fema.gov/data-feeds.
3. Form 990 is the U.S. IRS reporting form that federally tax-exempt organizations must file each fiscal year. It provides the public with the organization's financial information.
4. Descriptions and examples of NPOs in the 26 categories of NTEE are available at https://nccs.urban.org/publication/irs-activity-codes.
5. We used the Citizen Voting Age Population (CVAP) provided by the census to calculate the voter turnout. The CVAP 2005–2009 was used for the 2008 election data, and the CVAP 2008–2012 was used for the 2012 election data.
6. We relied on the census data collected and integrated by Pierson et al. (2015).
7. While the FEMA category includes geological natural hazards, such as earthquakes and landslides, the only geological natural hazard available in the SHELDUS during our analysis time period was landslide, which accounted for less than 1% of the total natural hazard records. Therefore, we excluded the geological natural hazard from our analysis.
8. The SHELDUS provides information on county-level natural hazard losses (i.e., property, crop, human damage) from 16 types of natural hazards.

Disclosure Statement

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

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Appendix A. Estimation Results of Covariates

Covariates	Number of Applications	Applications per Disaster
Voter Turnout	8.321***	9.182**
	(2.170)	(4.034)
Control Party in House	0.533***	1.206**
	(0.198)	(0.523)
Representative in Control	-0.150*	-0.256
	(0.087)	(0.207)
Per Capita Total Revenue	-0.295**	-0.157
	(0.140)	(0.167)
Density	0.001	-0.001
	(0.002)	(0.003)
White (%)	-5.078*	-5.169
	(3.020)	(8.188)
Median Household Income	2.745**	0.342
	(1.294)	(1.993)
Bachelor's Degree (%)	0.020	0.030
	(0.017)	(0.025)
Age	-0.217***	-0.114
	(0.082)	(0.141)
HM Declarations Last 5 Years	0.094***	0.176***
	(0.031)	(0.068)
Property Damage Per Capita by Hydrological Hazards	0.000***	0.000***
	(0.000)	(0.000)
Storms/Hurricanes	-0.003	-0.008
	(0.002)	(0.006)
Atmospheric Hazards	0.000***	0.001***
	(0.000)	(0.000)
Disaster Duration (Days)	0.004***	0.005
	(0.001)	(0.003)
2011	-0.033	0.010
	(0.107)	(0.239)
2012	-0.004	0.225
	(0.138)	(0.298)
2013	-0.100	0.004
	(0.175)	(0.339)
2014	-0.075	-0.031
	(0.189)	(0.377)
2015	-0.238	-0.013
	(0.193)	(0.356)
2016	-1.422***	-0.278
	(0.335)	(0.497)
Constant		-2.241
		(23.473)