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Volunteering Under Crisis: How Resource Perceptions Relate to Formal and Informal Civic Participation Before and During COVID-19

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Abstract: Performing prosocial acts such as volunteering represents a critical aspect of civic infrastructure. Research on this behavior comprises one of the largest sections of nonprofit literature but there remains limited theoretical and empirical understanding of nuanced components including informal behaviors and specific contexts. Our research builds on extant work to analyze the relationship between one's resources and their propensity to report formal or informal volunteering before and during the COVID-19 pandemic. Drawing inspiration from recent critiques, we hypothesize that resources are not objectively determined but rather depend on external and internal perceptions of these facets. We find evidence that, during non-crisis periods, informal volunteering depends less on external perception of one's resources than formal volunteering. During the pandemic, results again support that resources are perceived differently relative to the exact volunteer behavior being performed. Results speak to researchers interested in understanding the microlevel components that comprise civic infrastructure.

Keywords: formal and informal volunteering; times of crises; COVID-19

1 Introduction

Volunteering, defined as helping behaviors directed towards individuals beyond one's immediate family, is a critical aspect of civic infrastructure. Citizens engaging in volunteer behavior reflect and (re)produce key components of this infrastructure, holding implications for service provisions, power tensions, and societal values.

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Understanding the identities and trajectories of volunteers is a necessary step in uncovering the larger dynamics between individuals and the structures they occupy. This is particularly true when considering times of crisis. Civic infrastructure and the individuals that reify its existence are tested during disruptive extreme events. In a crisis, civic life is reorganized to focus on the unfolding situation while the individuals that comprise these structures experience seismic influxes in volunteer demands and, possibly, their own needs. Who volunteers under what conditions contributes to our larger understanding of civic infrastructures and the role that individuals play in shaping community identity and purpose.

Volunteering and the individuals practicing this behavior have long occupied conversations in nonprofit studies (Ma and Konrath 2018). Resource theory is an influential and useful framework in the research of volunteers due to its ability to capture constraints felt by volunteer-dependent agencies and its emphasis on various components that enable an individual to perform work (Einolf and Chambré 2011; Wilson 2000). Recent critiques have called for a fuller conceptualization and expansion of this schism along areas of informal volunteering (Dean 2022) and important contextual settings (Hustinx et al. 2022). Research on informal volunteering, or volunteer behaviors practiced beyond the purview of formal organizations, has historically faced difficulty in operationalization (Lindsey and Mohan 2018) and measurement (Taylor 2005). Additionally, despite early acknowledgements that volunteering is not a monolithic behavior (Cnaan and Amrofell 1994), the field has been slow to provide nuanced findings across various settings and situations. One such understudied context is that of crises, or disruptive events that result in intolerable physical, psychological, or material consequences.

Our research adds to the current dialogue by answering two research questions: (1) Does the relationship between individual resources and volunteer behavior significantly differ by volunteer types (formal, informal, or both) for various contexts? and (2) What is the relationship between individual resources and formal/informal volunteering for those experiencing income instability during a crisis? Three major contributions arise from research into these questions. First, we add to theoretical discussions on resource theory and suggest that the valuation of resources is dependent on external and internal perceptions of these variables. Secondly, we complement this theory by methodologically giving equal attention to recording individuals' formal and informal activities. We further consider two separate contexts to test whether there exist differential relationships between individual resources and their propensity for formal and informal volunteering. Lastly, we expand this research to consider a subset of individuals that experienced financial instability during COVID-19. We perform similar analyses on this cohort to understand the extent to which other individual resources are related to their volunteer behavior. The focus on resources in our analysis is driven by the idea that

these components represent variables that play a substantial role in predicting volunteering (Einolf and Chambré 2011).

There are several important findings from our analysis. During times of noncrisis, individuals that only formally volunteered or only informally volunteered displayed a significantly different collection of resources associated with these behaviors. For example, we failed to find a significant relationship between individuals that only practice informal volunteering and their education and income resources. This aligns with our theory that purports informal volunteering demands less external perception of one's resources. Turning to the COVID-19 pandemic, we again observe a similar conclusion that resources are perceived differently relative to the volunteer behavior being performed. Additionally, during a crisis, we observed a loss of significance in most relationships between resources and volunteer behavior, with only a noticeable increase in significance on the measure of income. We conclude that during uncertain times, economic capital plays the dominant role in volunteering. Finally, we perform a subgroup analysis of individuals that experienced income instability during COVID-19 to provide further clarity on wealth's role in volunteer behaviors. Findings reiterate the importance and differential relationships of financial resources on volunteer behavior during times of duress.

Our results speak to researchers interested in understanding the microlevel components that comprise civic infrastructure. Individuals that volunteer represent a critical part of this infrastructure, reflecting and (re)producing key facets. We propose a theoretical and empirical framework that provides equal emphasis on informal volunteer behaviors and considers the recent disruptive event of COVID-19. We also note that similar research in other settings stand to contribute to a more robust and modern understanding of resource theory. This work is especially relevant to policymakers and practitioners that want to understand prosocial actions during crises. Our findings draw attention to the importance of wealth when determining one's propensity for informal and formal volunteering, suggesting that economic precarity can shape who volunteers and under what condition.

2 Literature Review and Theory

2.1 Resource Theory and Types of Volunteering

Theories on volunteering comprise one of the largest topics in nonprofit studies (Ma and Konrath 2018). In a top-cited piece of this literature, Wilson (2000) categorizes these theories into the three groupings of (1) characteristics of the individual, (2) properties of the individual's relationships, and the (3) community context. He further breaks down the first category into a dichotomy of (1) motives, values, and

beliefs, and (2) human capital. Each sphere of theories points to factors associated with volunteer behavior and purports mechanisms that undergird these relationships. Einolf and Chambré (2011) extend this work to a single hybrid model and note the importance of each concept in predicting volunteering. The most widely developed subgroup within this framework is human capital, or the ability to provide a service as determined by one's assets and capabilities. This human capital, postulated by Wilson and Musick (1997), is required to perform productive work such as that seen in volunteering. This human capital is derived from the measurable characteristics that a person possesses and can, thus, be conceptualized as individual resources (Musick and Wilson 2007). The field has come to call this approach resource theory, and numerous studies complement or fall within this sphere including work on the dominant status model (Smith 1994), rational choice theory, and cost-benefit analysis. The focus of these works is to understand the relationship between resources derived from an individual's characteristics and their propensity to volunteer.

The relationship between resources and formal volunteering, defined as volunteering given the oversight of a formal organization, is one of the most covered topics within this theme and we, thus, minimize our review of it. We briefly summarize the most common socioeconomic resources found to be significantly related to formal volunteering before turning to more nuanced volunteer types and contexts (Hustinx et al. 2022). Socioeconomic resources such as education, wealth, and marital status are theorized to afford volunteers more energy, time, or money to participate in unpaid labor. Education is one of the most reliable predictors of such work (Gesthuizen and Scheepers 2012; Wilson 2012). Education improves an individual's technical capabilities while increasing social networks and relevant experiences (Son and Wilson 2012; Steimel 2018). Numerous studies also find a positive relationship between an individual's wealth and formal volunteering (Detollenaere et al. 2017; Hackl et al. 2007). This includes household income as well as to other asset holdings such as homeownership (Rotolo et al. 2010). Gender, race/ethnicity, and the presence of a child in the household represent the other major socioeconomic dimensions commonly investigated in volunteer literature. Women, White individuals, and the presence of children have all been found to be significantly associated with increased formal volunteering. Using resource theory, the supply of formal volunteer labor is driven by the time, energy, and money afforded by an individual's measurable characteristics.

Scholars have long noted the differences between formal and informal volunteering but research on the latter has lagged (Dean 2022; Einolf et al. 2016). Reasons for this dearth include the lower likelihood of informal behaviors to be incorporated into official surveys (Taylor 2005) and difficulties in fully encapsulating these helping behaviors (Lindsey and Mohan 2018; Snyder and Omoto 2008). Despite this lag,

several empirical works derive, albeit sometimes conflicting, conclusions on the relationship between individual resources and informal volunteering. With respect to education, some researchers failed to find an association to informal volunteering (Gundelach et al. 2010) while others find a negative relationship between these variables (Egerton and Mullan 2008). This divide in research is echoed by studies on income (Egerton and Mullan 2008; McCulloch et al. 2012) while there are no studies that investigate its relationship to homeownership. Relative to demographics, and similar to conclusions around formal behaviors, women are found to have higher likelihoods of informal volunteering (Einolf 2011) and the presence of children in the household has been found to increase the demand and supply of informal volunteering (Hook 2004; Rossi 2001). Lastly, there is very little survey research on the relationship between race/ethnicity and informal volunteering but qualitative studies have argued that minority populations are more likely to practice informal volunteering (Rozario 2006). The shortage of research and the lack of agreement on the relationship between informal volunteering and individual resources motivates our exploration of this concept.

2.1 Rethinking Resource Theory: A Function of External and Internal Perception

In addition to its long presence within nonprofit studies, there are several reasons that motivate a focus on resource theory when understanding patterns of modern volunteering. Resource theory aligns with and reflects many facets of current society's emphasis on market fundamentalism and productivity culture. Volunteer-dependent agencies often operate within the confines of this structure; as such, these organizations must recruit and retain people with resources that help meet their goals. The work in these organizations is highly dependent on worker features like education, expertise, and available time. Lastly, this theory draws attention to the relationship between an uneven distribution of resources within society and patterns of volunteering across these groups. The ease at which this framework maps onto dominant labor structures in addition to its implications for unequal distributions of volunteer behaviors motivates its usage.

Despite this rationale, recent scholarship has pushed back on the utility of solely relying on resource theory when considering informal (and formal) behaviors. As previously mentioned, Einolf and Chambré (2011) emphasize that variables from multiple theories, including social roles and contexts, play a substantial and independent part in predicting volunteering. More recent work has warned about the stagnation that occurred given the dominant preoccupation of resource theory (Hustinx et al. 2022). They draw attention to the fact that extant research continually

reconfirms the relationship between resources and volunteering rather than adding new complexity and refinement. Furthermore, they suggest that measures such as social capital (Lee and Brudney 2012) and subjective dispositions (Mitani 2014) may be better predictors of this behavior.

We acknowledge the utility of resource theory while drawing inspiration from recent critiques to propose a more nuanced conceptualization for the relationship between an individual's resources and their propensity to engage in different types of volunteering. In most implementations of resource theory, authors purport that one's resources are determined by measurable characteristics and these antecedents exist as correlates with other dimensions such as community context and social roles. We echo Smith (1994) and, instead, suggest that individual resources are not objectively determined variables that correlate to other social features, but rather, these variables themselves depend on historical and societal contexts that hold implications for the opportunities, roles, and pressures an individual may feel. As such, we propose that individual resources are a function of two components: the external perception of the resource and the internal perception. In other words, the amount of energy derived from a resource for a given volunteer activity is calculated by the external and internal valuing of this resource. Under this premise, resources are not just related to features like one's context, but rather, such features determine the degree to which resources are relevant for formal or informal volunteering.

The decomposition of individual resources into the components of external and internal perception provides a clearer argument for how and why these resources might show differential relationships to volunteering types. The organizational oversight that defines formal volunteering necessitates strong external perception of resources when determining one's volunteer behaviors. An organization must validate and approve an applicant's resources, and this may be a reason that education is one of the leading predictors of formal volunteering. Internal perception of one's resources also exists when considering formal volunteering. Internal perceptions relate to an individual's belief in the abilities afforded by this resource in addition to its associated social obligations. For example, women are found to be more likely to report formal volunteering, and this may be due to their belief in their ability to perform care work (a common volunteering task) in addition to their perceived social obligations for such tasks.

When considering informal volunteering, we purport that internal perception of the resource plays a larger role than external perception and this differentiation in internal/external perception is the mechanism behind varying formal and informal patterns. The lack of formal institutions during the practice of informal volunteering minimizes the importance of external perception. External judgements may determine whether an individual is asked to participate in informal volunteering, but these external perceptions do not hold any final authority on whether an individual

has the qualified resources to perform this action. It is likely that internal perceptions about the energy endowed by a resource drive their decision. An individual must internally evaluate their resources and determine if they have the time and means to perform an action that is beyond any formal recognition.

2.2 Resources, Volunteering and Times of Crisis Such as COVID-19

To highlight and test this proposition, we consider the contexts of before and during COVID-19. We first ask whether the relationship between individual resources and volunteer behavior significantly differs by volunteer types before the pandemic. If a single resource, such as gender, shows a significantly different association to formal and informal volunteering given a baseline, then this suggests that this resource functions differently given the varying importance of external and internal perception of these resources within formal and informal settings.

Hypothesis 1: The relationship between individual resources and volunteer behavior will significantly differ by volunteer types (formal, informal, or both) before the COVID-19 pandemic relative to the baseline of no volunteer behavior.

Volunteers and their volunteering activities are not monolithic across settings and situations (Cnaan and Amrofell 1994; Nesbit 2017). Despite this fact, many conclusions are derived from regularly scheduled national-level surveys that are assumed to be externally valid for all settings. To test the relevance of our proposition while acknowledging the importance of context, we turn to a crisis time and ask if similar results hold. We conceptualize crisis as a disruptive extreme event that results in extensive or intolerable occurrences of physical, psychological, or material consequences (Hannah et al. 2009). The infectious disease of the COVID-19 virus serves as such an event due to its negative impact on large swaths of society (Guner et al. 2020). During this time, communities experienced increased welfare issues including food insecurity and housing uncertainty (Versey 2021; Wolfson and Leung 2020). Simultaneously, individuals' awareness of their neighbors' needs increased (Choi et al. 2023). Statistics from this period suggest that COVID had a negative impact on formal volunteering behaviors (Cnaan et al. 2022; Dederichs 2023) while informal volunteering increased to address basic physical survival needs (Harris 2021). Given that internal and external evaluation of resources persist during crisis times, we again hypothesize that individual resources hold differential relationships to formal and informal volunteering.

Hypothesis 2: The relationship between individual resources and volunteer behavior will significantly differ by volunteer types (formal, informal, or both) during the COVID-19 pandemic relative to the baseline of no volunteer behavior.

2.3 Income Instability and Volunteering

Another benefit of including the COVID-19 pandemic comes from the attention placed on the individual resource of wealth during this period. Wealth, along various dimensions including salary and homeownership, shows a strong relationship to volunteer behaviors (Detollenaere et al. 2017; Hackl et al. 2007). During the COVID-19 pandemic, many individuals were subject to economic uncertainty such as unprecedented stock market drops and impending workplace restrictions. One of the most salient features of economic uncertainty during the pandemic was income instability, defined as the unpredictable or fluctuating availability of earnings for an individual. Income instability includes life events such as losing a job, getting laid off, or actively seeking employment. Given wealth's strong relationship to volunteering, income instability should be significantly (an inversely) related to such behaviors.

If income instability is significantly related to volunteer propensity, we can also ask whether other resources continue to play a role in volunteer behaviors for this group. One reason for emphasizing income instability is its unique relationship to external and internal perceptions. Income instability has minimal external visibility but strong internal bearing. Unlike race or gender, it is more difficult to ascertain whether an individual is experiencing unemployment or job uncertainty. Alternatively, an individual strongly feels a loss of a job due to immediate shifts in daily routines and personal wealth expectations. Under this premise, we can ask whether this group shows different patterns between other individual resource and volunteer behaviors relative to the general population.

Hypothesis 3: For those that experienced income instability during the pandemic, the patterns between other individual resources and volunteer behaviors will be different than the general population.

3 Data and Methods

This study, funded by the Generosity Commission (Giving USA), analyzed original survey data collected between April 1 and 18, 2022 from a nationally representative

panel of adults living within the United States. The goal of the survey was to understand people's prosocial behaviors before and during the COVID-19 pandemic. The research team partnered with the firm Social Science Research Solutions (SSRS) to test and administer the survey. The questionnaire had a response rate of 43 % with a final dataset of 1,954 observations. Responses were weighted to align nationally with important demographic and socio-economic dimensions including sex, age, and religion. We briefly describe the survey development and administration steps before presenting the independent and dependent variables. Further information on components such as sampling procedures and observation weighting can be found in the appendix.

Questionnaire development and administration was comprised of several key stages. Prior to formulating questions, the research team held focus groups with professional fundraisers, professional volunteer coordinators, and the general population to understand changes in the nonprofit sector during COVID-19. Survey questions were then developed, drawing inspiration from other leading surveys on volunteering and donation behaviors. Special features of the survey included numerous recall mechanisms to mitigate common biases of the field (Cnaan et al. 2011) and equal emphasis on formal and informal behaviors through a disclaimer that stated some individuals perform the listed behaviors while others do not. Open-ended options were provided where necessary to ensure maximum flexibility in responses. Feedback from leading scholars was elicited before finalizing the product. The final survey received IRB approval at the University of Pennsylvania and a copy is available upon request.

Questionnaire administration and data cleaning was aided by SSRS, a full-service survey and market research firm. They coded the survey, performed eleven pretest cognitive interviews, and randomly recruited respondents from their pre-existing panel through mailed invitations and dual-frame random digit dialing procedures. Telephone and online support in English and Spanish were provided, and all procedures met standards of survey quality control. Response monitoring measures were implemented including the notification of abnormal skip patterns and the flagging of out-of-range values.

3.1 Dependent Variables

This study was interested in understanding the relationship between one's resources and their propensity to volunteer. In addition to our theory, we add to extant literature by considering two unique methodological dimensions. The first dimension was the inclusions of data collected during a time of crisis. We operationalize the term crisis by exploiting the occurrence of the COVID-19 pandemic, an extreme

global event. We define the time of crisis as the period starting from March 2020 up to survey administration. We define the time of non-crisis as one year before COVID-19 bounded between March 2019 and March 2020. We asked respondents to report their volunteer behaviors for each period separately.

The second contribution of our research was our ability to disentangle formal and informal volunteering. We defined formal volunteering as any unpaid activities (except maybe for expenses) that a respondent performed to benefit others through an organization. This included serving food at a local soup kitchen, packaging gift bags at a church, or coaching a youth soccer league. We defined informal volunteering as any unpaid activities that a respondent performed outside of an organization to benefit others. This involved volunteer activities that occurred without formal oversight such as tutoring neighbors, mentoring youth, and providing emotional support for an acquaintance. For each of these volunteer types and for each time period, respondents were asked to indicate, from a preset list with an open-ended option, all activities they performed.

We created our dependent variables based on these two survey questions. Our outcomes of interest were four-level categorical variables illustrated by Figure 1. Each respondent's volunteer habits can be categorized into either (1) only formal volunteering (FV), (2) only informal volunteering (IV), (3) both formal and informal volunteering (FIV), or (4) no volunteering (NV). An individual was marked as FV if they indicated that they only volunteered through an organization and did not report any informal activities. An individual was marked as an IV if they only reported volunteering without formal oversight of an institution. The third group consisted of FIV individuals that reported volunteering in both formal and informal settings while the last group was NV, comprised of those that did not volunteer at all. We have a dependent categorical variable for each period of before and during the pandemic.

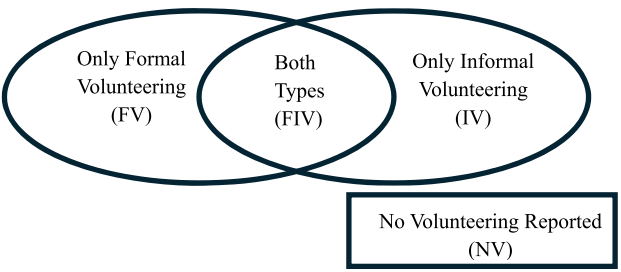

Figure 1: Categorization of volunteer behaviors for survey respondents.

3.2 Variables of Interest

The first part of our analysis was interested in validating many of the previously observed trends between one's resources and formal volunteering behavior while adding an additional layer of nuance to ask whether these resources held significantly different relationships to informal volunteer behaviors. We drew inspiration from empirical models presented by Musick and Wilson (2007) when selecting the features that comprises individual resources. Our models accounted for gender (male or female), race/ethnicity (White non-Hispanic or not White non-Hispanic), age (numeric), education (less than college degree or at least a college degree), and household income (<$25,000, $25,000–$49,999, $50,000–$99,999, or $100,000 or more). It should be noted that household income was reported for the periods of before and during the pandemic. We also investigated the resource features of marital status (married or not married), parent/guardian status (parent/guardian of a child under 18 in the household or not a parent/guardian), and whether (or not) an individual owned their home. All these variables come from a collection put forward by Musick and Wilson. They argue that these objective attributes directly relate to the energy, time, and money that an individual possesses to perform unpaid labor.

The second part of our analysis extended our interest in resources and crises to consider the relationship between income instability and one's volunteer behavior during the pandemic. We marked an individual as experiencing income instability during COVID-19 if they reported a negative economic outcome for one of two survey questions. First, individuals were asked to report whether they had lost their job, gotten laid off, or placed on furlough since the pandemic began. Individuals that answered yes to this question were marked as experiencing income instability. Additionally, respondents were asked: "for most of the time between March 2019 and March 2020, what was your employment status?" Individuals that chose the option of "unemployed and looking for work" for this question were also marked as experiencing income instability. All others were marked as not experiencing income instability. In sum, the independent variable of income instability indicated any individual that lost a job, got laid off, placed on furlough, or unemployed and actively seeking employment after March 2020.

3.3 Control Variables

Lastly, we included several variables often found to be significantly related to volunteer behaviors to control for other possible explanations surrounding the relationship between one's resources and their volunteer behavior. The control variables included political information, religiousness and generalized trust.

Political information was measured by one's political party (Democrat, Republican, Independent, Other). For the other two controls, respondents were asked to indicate, on a scale from 0 to 10, the extent to which religion influenced their daily actions and, on a scale 1–5, the extent to which most people could be trusted. These variables control for social and cultural capital of individuals (Wilson and Musick 1997).

Table 1 reports the summary statistics of variables for the full sample and the subset that experienced income instability during the pandemic. We first focus on the full sample. The first eight lines correspond to the categorical dependent variables of volunteer type before and during the pandemic, respectively. Before the pandemic, about 37 % of individuals volunteered both formally and informally while during the pandemic this dropped to 28 %. The proportion of FV individuals also saw a drop (7 %–5 %) while the proportion of IV individuals increased from 27 % to 32 %. This is in line with the fact that many nonprofits were forced to limit their volunteer opportunities during COVID lockdowns and people sought informal routes to practice prosocial behaviors. Other sociodemographic dimensions such as gender, race, and age align with national trends (as expected due to weighting procedures).

Panel 2 reports summary statistics for a subset of the sample that experienced income instability during the pandemic. About 21 % of our sample experienced income instability. We also ran appropriate univariate statistical tests to compare each variable between these two populations. The dependent variables of volunteer behaviors before and during the pandemic are relatively similar between groups. Despite this similarity, we see that the income instability group has a significantly higher proportion of individuals that are non-white, non-married, or rent their homes. They are also more likely to earn less and have children. These dimensions are statistically different between individuals that experienced income instability and the full sample.

3.4 Empirical Strategy

This study explored the link between sociodemographic resources and the propensity to report the mutually exclusive behaviors of only formal volunteering, only informal volunteering, both formal and informal volunteering, or no volunteering. We build off the previous literature through our ability to differentiate these volunteer types in our dependent variable. Our analysis employed multinomial regression to investigate this relationship. The basic model was:

$$\ln \frac{Pr\ (Y_{i,g} = k)}{Pr\ (Y_{i,g} = K)} = \boldsymbol{\beta}_k \boldsymbol{X}_{i,g} \qquad for\ \ 1 \leq k\ \ \leq K \tag{1}$$

where $\Pr(Y_i = k)$ was the probability that individual i displayed outcome k *and*

Table 1: Summary statistics of variables for full sample and the subset that experienced income instability during the pandemic.

	Full sample		Income instability during pandemic	
	Weighted mean or proportion	(S.D.)	Weighted mean or proportion	(S.D.)
Volunteer before (base: no volunteering)				
Both types of volunteering	0.37		0.44*	
Only formal volunteering	0.07		0.07*	
Only informal volunteering	0.27		0.23*	
Volunteer during (base: no volunteering)				
Both types of volunteering	0.28		0.31	
Only formal volunteering	0.05		0.06	
Only informal volunteering	0.32		0.32	
Female (base: male)	0.51		0.52	
Non-White (base: White)	0.37		0.48***	
Age	49.82	(19.57)	42.78***	(18.93)
College degree (base: less than college)	0.34		0.31	
Income before (base <$25,000)				
$25,000–49,999	0.27		0.35***	
$50,000–99,000	0.30		0.31***	
$100,000+	0.18		0.09***	
Married (base: not married)	0.50		0.39***	
Parent (base: not parent)	0.28		0.37***	
Own home (base: rent)	0.63		0.47***	
N	1954		408	

Note: *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$; calculated with appropriate univariate tests.

$Pr(Y_i = K)$ was the probability that individual i displayed the base of no volunteer behavior. β_k was the set of regression coefficients given outcome *k and* $\boldsymbol{X}_i$ represented the set of independent variables in the model. We added further nuance by considering three unique collections of independent variables and/or samples through the variable *g*. Group 1 ($g = 1$) included the whole sample with pre-pandemic variables. Group 2 ($g = 2$) included the whole sample with during-pandemic variables, and group 3 ($g = 3$) was the sample of individuals that experienced income instability during the pandemic with during-pandemic variables. For readability, these unique collections of samples and variables are referenced as Group 1, 2, and 3 throughout the findings.

4 Findings

The first part of our analysis employed the empirical strategy for Group 1 to investigate the relationship between sociodemographic resources and reported volunteer behaviors before the pandemic. This initial analysis importantly verified that our sample, before the pandemic, displayed behaviors and relationships similar to other findings in the volunteer literature while allowing for novel analysis around individuals that only volunteered informally, an often-omitted population. We note that our outcome is a categorical variable, necessitating multinomial regression. As such, the coefficients displayed in Table 2 are interpreted as the change in relative risk ratios for the specified outcome level relative to the outcome level of no volunteering. In other words, the risk ratios represent how much more (or less) likely a person is to fall into a specific grouping compared to the group of non-volunteering individuals. For example, the first row of column 1 shows that the identity of female, relative to male, significantly increases ($p < 0.01$) one's relative risk ratio of belonging to the FIV group by about 39 % compared to NV. Column 1 additionally shows that holding a college degree (1.816, $p < 0.01$), reporting higher earnings, and being a parent (1.423, $p < 0.05$) is significantly related to an increased relative risk ratio of reporting both types of behaviors compared to individuals that do not volunteer. An increase in age (0.988, $p < 0.01$) or identifying as non-White relative to White (0.748, $p < 0.05$) is associated with a lower relative risk ratio. Overall, the findings in column 1 are aligned with the current volunteer literature.

One contribution of this article is the ability to disentangle individuals that only formally volunteer and individuals that only informally volunteer from the larger volunteer population. Column one considers individuals that *both* formally and informally volunteer (FIV) while the remaining panels consider individuals who only practice one of these behaviors. We observe different patterns in the sociodemographic resources significantly associated with each outcome, confirming hypothesis 1. For FV individuals, relative to NV, holding a college degree (1.927, $p < 0.01$) and being a parent (1.775, $p < 0.05$) is significantly related to increased risk ratio while being older (0.990, $p < 0.1$) is associated with lower risk ratios. We fail to observe that gender, race/ethnicity, or income are significantly related to the behavior of only formally volunteering. In considering IV, relative to those who do not volunteer, we see that identifying as female (1.339, $p < 0.05$) and being married (1.685, $p < 0.01$) is significantly related to increased risk ratios while identifying as non-White (0.602, $p < 0.01$), being a parent (0.726, $p < 0.05$), and owning your house (0.718, $p < 0.05$) is associated with lower risk ratios. At a high level, Table 2 confirms that individuals reporting both formal and informal volunteering (the most commonly studied group) follow trends observed in the literature while panels 2 and 3 suggest that FV

Table 2: Relative risk ratios for outcome of volunteer type before the pandemic using multinomial regression (N = 1,954).

	Both types			Only formal			Only informal		
	Exp (coef)		(se)	Exp (coef)		(se)	Exp (coef)		(se)
Female	1.392	***	(0.118)	1.025		(0.206)	1.339	**	(0.126)
Non-White	0.748	**	(0.133)	0.709		(0.222)	0.602	***	(0.145)
Age	0.988	***	(0.003)	0.990	*	(0.006)	0.996		(0.004)
College grad	1.816	***	(0.136)	1.927	***	(0.229)	1.232		(0.149)
Income (base: <$25K)									
$25,000–49,999	1.146		(0.164)	0.707		(0.291)	0.864		(0.171)
$50,000–99,999	1.518	**	(0.172)	1.227		(0.288)	1.099		(0.180)
$100,000+	1.888	***	(0.214)	1.281		(0.365)	1.063		(0.232)
Married	1.033		(0.138)	0.886		(0.244)	1.685	***	(0.148)
Parent	1.423	**	(0.141)	1.775	**	(0.232)	0.726	**	(0.161)
Own home	0.958		(0.140)	0.891		(0.236)	0.718	**	(0.150)

Note 1: *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$. Note 2: AIC = 4,787.9, residual deviance = 4,667.9. Note 3: other controls include political party, religiousness, and generalized trust. Note 4: income was measured before the pandemic. Note 5: base outcome category is no volunteering.

and IV groups hold unique associations with sociodemographic resources. In line with our theory, this suggests that resources are perceived differently across various volunteer behaviors.

The second stage of our analysis was concerned with the relationship between sociodemographic resources and volunteer type during a crisis, operationalized as the period during the COVID-19 pandemic. We were interested in understanding the relationship between one's resources and mutually exclusive volunteer practices given the new context of an extreme global event. We note that this sample, denoted Group 2, is the same as the sample in Group 1 and the only differences are that the income variable corresponds to this period and we add a variable denoting whether an individual experienced job loss or uncertainty during the pandemic. Column 1 of Table 3 reports the relative risk ratios for FIV individuals relative to NV individuals. The pattern observed for this group closely follows their pattern before the pandemic with coefficients displaying similar magnitudes and significance levels. Interestingly, gender, age, and being a parent/guardian diminish in significance while, expectedly, the levels of income increase. We also find that individuals who experienced income instability (1.543, $p < 0.01$), relative to those who didn't, were significantly more likely to report the behavior of formal and informal volunteering relative to not volunteering.

Table 3: Relative risk ratios for outcome of volunteer type during the pandemic using multinomial regression (N = 1,954).

	Both types			Only formal			Only informal		
	Exp (coef)		(se)	Exp (coef)		(se)	Exp (coef)		(se)
Female	1.255	*	(0.122)	0.885		(0.224)	1.563	***	(0.117)
Non-White	0.760	**	(0.137)	0.657	*	(0.248)	0.506	***	(0.134)
Age	0.993	*	(0.003)	0.987	*	(0.007)	0.998		(0.003)
College grad	1.863	***	(0.136)	0.966		(0.267)	1.159		(0.136)
Income (base: <$25K)									
$25,000–49,999	1.561	**	(0.194)	0.845		(0.309)	1.178		(0.168)
$50,000–99,999	1.982	***	(0.205)	1.050		(0.334)	1.195		(0.184)
$100,000+	3.045	***	(0.241)	1.004		(0.432)	1.611	**	(0.227)
Married	1.032		(0.143)	1.021		(0.266)	1.340	**	(0.135)
Parent	1.134		(0.145)	1.864	**	(0.250)	0.854		(0.144)
Own home	1.002		(0.145)	0.837		(0.260)	0.860		(0.139)
Income instability	1.546	***	(0.152)	0.908		(0.282)	1.549		(0.146)

Note 1: *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$. Note 2: AIC = 4,717.7, residual deviance = 4,591.7. Note 3: other controls include political party, religiousness, and generalized trust. Note 4: income was measured during the pandemic. Note 5: base outcome category is no volunteering.

The second and third panel for Group 2 consider individuals that only formally volunteered and the group that only informally volunteered, relative to individuals that did not volunteer at all. For individuals that only formally volunteered, age and being a parent remained similarly important as observed before the pandemic. Identifying as non-White was marginally associated with the outcome of only formally volunteering and we failed to find other significant relationships. For those that only informally volunteered, we observed that identity of female, non-White, and being married remained statistically significant. However, during the pandemic, being a high earner was also significantly related to the outcome of practicing informal behaviors. Taken together, Table 3 uncovers several nuances between individual resources and their propensity to volunteer during a time of crisis. Income and income instability were seen to play an increasing role for FIV while identities like female were found to be significantly related to the IV group during the pandemic. Significant differences between resource levels were mainly observed for FIV individuals while FV and IV displayed diminished independent variable significance. The different patterns in the relationship between individual resources and volunteer behavior type confirm hypothesis 2.

Given the extreme and uneven impact of COVID-19 across various populations, it is reasonable to suspect that the relationship between individual resources and

volunteer behavior might differ between resource stable and resource instable individuals. This is motivated by Table 3 that shows a significant relationship between income instability and FIV but fails to find a relationship between other outcomes. To test this conjecture, we ran several additional models that examined the interaction between income instability and variables of interest. Due to space limitations, we briefly discuss these results while model output is available upon request. We failed to find significant interactions between income instability and gender, race or marital status, suggesting that the impact of income instability on volunteer type does not significantly differ between levels of these variables. The interactions between income instability and the variables of being a parent or holding a college degree were significant ($p < 0.01$) for FIV volunteering relative to no volunteering. This suggested that the relationship between income instability and FIV volunteering significantly differed between parents (relative to nonparents) and college-educated (relative to non-college educated). We found similar conclusions for the relationship between income instability and FV volunteering given homeownership ($p < 0.010$).

To expand beyond interactions and build our understanding of income instability's relationship to volunteering, we ran our regression on Group 3, the subsample of individuals that reported income instability during the crisis. Results are presented in Table 4. The most noticeable change in conclusions between this table and previously presented tables is the loss of significance in our variables, failing to provide a convincing argument that other resources are relevant in this setting. We only observe a few strong relationships. Higher income relative to lower income is significantly related to the membership to the FIV group for resource instable individuals. Income is also significantly positively related to the outcome of only informal volunteering. Identifying as non-White relative to White is associated with a lower risk ratio of FV (0.25, $p < 0.05$) and IV (0.41, $p < 0.01$) outcomes. Lastly, owning one's home is significantly related to formal volunteering (3.37, $p < 0.01$) for this subsample. Taken together, these results suggest that financial resources like income and homeownership along with socioeconomic resources such as ethnicity/race are significantly related to volunteer practices of individuals experiencing income instability but other general conclusions about resource theory may not be applicable for this setting. The difference in conclusions around resource relationships provides support for hypothesis 3.

5 Robustness Checks

There are several ways that we tested the robustness of our results. We performed our analyses on the unweighted data and found consistent general trends. We presented weighted data results in this paper since they were calibrated to be externally

Table 4: Relative risk ratios for outcome of volunteer type during the pandemic for individuals that experienced income instability using multinomial regression (N = 408).

	Both types			Only formal			Only informal		
	Exp (coef)		(se)	Exp (coef)		(se)	Exp (coef)		(se)
Female	1.192		(0.270)	1.447		(0.513)	1.130		(0.272)
Non-White	0.889		(0.292)	0.253	**	(0.565)	0.406	***	(0.298)
Age	1.003		(0.008)	1.000		(0.017)	1.012		(0.008)
College grad	0.741		(0.301)	0.740		(0.650)	1.006		(0.306)
Income (base: <$25K)									
$25,000–49,999	2.399	**	(0.359)	0.792		(0.587)	1.783	*	(0.332)
$50,000–99,999	1.832		(0.403)	0.335		(0.709)	0.676		(0.399)
$100,000+	3.366	**	(0.542)	0.285		(1.142)	1.384		(0.550)
Married	1.045		(0.319)	0.615		(0.592)	0.677		(0.319)
Parent	0.672		(0.291)	1.836		(0.531)	0.709		(0.292)
Own home	1.376		(0.288)	3.374	**	(0.545)	1.170		(0.293)

Note 1: *p < 0.1, **p < 0.05, ***p < 0.01. Note 2: AIC = 1,090.6, residual deviance = 970.6. Note 3: other controls include political party, religiousness, and generalized trust. Note 4: income was measured during the pandemic. Note 5: base outcome category is no volunteering.

valid with the population of adults living within the United States. Another robustness check we ran was an increasingly saturated regression model that included additional controls of economic ideology leanings, belief in vaccines, and whether an individual's household size changed during the pandemic. Results were consistent with those presented in this paper. We also changed our measure of income to perceived income where an individual answered the extent to which they could meet basic needs with their current earnings. Results, again, showed no difference between models, and full regression output is available upon request. Lastly, we created a proxy for income instability that indicated if an individual's income decreased between the periods of before and during the pandemic. There were no substantial differences in results.

6 Discussion

This paper investigated the relationship between individual resources and volunteer behaviors. It was particularly interested in understanding whether there exists differential associations between one's resources and their propensity for formal, informal, or both types of volunteering. It drew inspiration from resource theory while also acknowledging modern critiques surrounding this approach to suggest

that individual resources are not objectively determined variables. Rather, individual resources are a function of two components: the external perception of the resource and the internal perception. And given the varying importance of internal and external perception in formal and informal volunteering, one would expect differing relationships between resources and volunteer type.

Our results for the context of before the pandemic largely confirm this conjecture. Significant factors associated with FIV were different than the collection of factors significantly related to FV or IV. Findings for FIV aligned with current volunteer literature, verifying the use of our sample. Interesting relationships arose for the outcomes of only formal volunteering and only informal volunteering. We note that a limitation of the study rested in its inability to further disentangle the influence of external and internal perceptions of a resource. While we can show that the same resource is differentially related to FIV, FV, and IV outcomes, we can only postulate about why this would occur using the framing of external and internal perceptions. For FV, we observed that individuals holding at least a college degree or having children were more likely to report this behavior relative to a baseline. We conjecture that formal volunteering is more dependent on external perceptions of one's resources. As such, college degrees and having children are easy signals for formal institutions to trust and verify. Informal volunteering is less dependent on the external verification of a resource. In line with this hypothesis, we see that identity-based features like gender and race are significantly related to IV. Interestingly, being a parent is significantly and negatively correlated with IV, this may be due to the idea that many parents are asked to partake in formal volunteering for their kids.

A second level of nuance in this research was the ability to observe these relationships during times of crisis. We utilized the COVID-19 pandemic to operationalize a disruptive extreme event and performed similar analyses. We were interested in whether conclusions about resources and volunteer type remained consistent in this context. This analysis, when positioned against the first regression, added further insight into the ways that people from different social groups experienced this disruptive event and the outcome on their formal and informal volunteer behavior. The pattern observed for both formal and informal volunteering closely followed the same pattern as before the pandemic with coefficients displaying similar significance levels and slightly diminished magnitudes. For the outcome of only formal volunteering, identifying as a parent was positively related (and the only variable to pass a 0.05 significance threshold). This significance is probably derived from the fact that children spent a large portion of time at home during the pandemic, necessitating parental involvement in their children's formal education. For the likelihood of only volunteering informally, we saw that identities such as gender and race continued to play a role along with being married, suggesting that these variables are strongly related to internal perceptions of these

resources and the associated roles or expectations. Such social identities faced changing demands in their participation during COVID-19 with women leaving paid work to take care of children (Power 2020) and minorities responding to the Black Lives Matter movement.

One of the most interesting findings for the data during COVID was income's increased significance across FIV and IV outcomes. This suggests that during tumultuous times, individuals that are high earners, relative to low earners, are more likely to engage in volunteer work, aligning with the basic notion in resource theory that individuals with more time, energy, or (in this case) money are more likely to provide this work. Additionally, we found that income instability was strongly related to FIV. Unexpectedly, those experiencing income instability were actually more likely to practice this behavior. This interesting result motivated a sub-analysis on individuals facing financial instability. For financially instable adults during the COVID-19 pandemic, variables of income, race and homeownership showed significant relationships to different volunteer types, but conclusions were largely dissimilar to the results observed for the representative sample. Further work should investigate the role of resources on volunteer behaviors for individuals facing financial instability.

While this study draws from a U.S. setting, its emphasis on informal volunteering, resource instability, and crisis-based volunteer behaviors holds relevance across various contexts, calling on the field to think deeper about the relationship between these components. We highlight the importance and future expansions of this work by considering the example of the Asian region. One main goal of this paper was to draw attention to the significance of measuring and analyzing informal volunteering. In many Asian countries, mutual aid, prosocial behaviors, and community-based volunteering have long histories that extend beyond today's formal institutions (Hakim 2021). Our new proposed theoretical model allows for flexibility in understanding the influence of various resources on the propensity to engage in such informal behaviors by considering the mechanisms of internal and external perceptions. Given the rich presence of informal behaviors in countries like India, the Philippines, and Thailand, these contexts present ripe arenas for academics to disentangle the influences of each perception type for informal behaviors. For example, surveys could ask respondents to report their personal perception of the expectations and roles for various sociodemographic identities and then map this to respondents' reported volunteer behaviors. A benefit of performing such research in the Asian context comes from the idea that these contexts, historically and geographically, are more removed from neo-liberal ideals. Resource theory, largely derived from a Western-centric, market-based lens, stands to benefit from analyses in contexts where informal helping (but not free-market dominance) has strong historical ties.

Another focus of our research was the consideration of crisis times when understanding the relationship between resources and volunteer behaviors. Asia is no exception to such phenomena; some of the largest volunteer calls in recent history occurred in Asian countries including in aftermath of the 2011 Japanese earthquake and tsunami (Atsumi and Goltz 2014) and the ongoing Rohingya refugee crisis (Lewis 2021). These wide-spread emergencies induce high levels of demand for goods and services, and policymakers and practitioners stand to benefit from understanding the individuals that give back to their communities during such hardship. We added further nuance to our analyses by considering income instability's influence on volunteering during such a crisis. Our results show that during a crisis, financial resources play an increasing role in determining one's volunteer behaviors. In places like Hong Kong where wealth inequality is high, crises can amplify exclusionary patterns in volunteering and this might have impacts on which social goods and services being provided. The feature of economic precarity should be further explored, especially during crises.

As with any analysis, our project has limitations that call for future research. Our data were collected through individual-level surveys and were subject to typical survey biases including social desirability bias and response bias. We attempted to mitigate these biases through numerous mechanisms including disclaimers that emphasized the neutrality of (not) practicing these behaviors in addition to monitoring abnormal skip patterns and response rates. Our survey was also cross-sectional, limiting our ability to draw causal conclusions or test for reverse pathways of influence. Our main objective was to understand whether significant and differing relationships existed between one's resources and their volunteer behaviors, but we acknowledge that great insight from multiple panels of observations would have been valuable. We also note that our outcome, although nuanced through its ability to discern FIV, FV, and IV, lacked further information on volunteering including time spent performing this activity and frequency of behavior. Lastly, we note that the context of COVID-19 as a disruptive extreme event holds several unique features that may differ from other disruptive extreme events. We found it valuable to consider COVID-19 as a crisis due to its global nature and the extreme ways in which it altered life but acknowledge that future crises may not have the same shape. As such, we call on similar research to consider other crises and expand our conclusions.

7 Conclusions

This paper added to current discussions on volunteer research by investigating the relationship between individual resources and formal/informal volunteering in addition to considering these relationships during disruptive extreme events. It

incorporated modern critiques of resource theory to propose a more nuanced and intricate understanding of resources that depends on the external and internal perception of these variables. At a high level, the paper showed that there exists differential associations between one's resources and their propensity for formal, informal, or both types of volunteering and such associations suggest differential valuations of resources across volunteer types. Patterns for FIV volunteering were consistent with the literature while, when considering a crisis, we observed a diminishing in most relationships besides measures of income. This suggests that economic capital is a significant variable during uncertain times relative to volunteer behaviors. Finally, we performed a subgroup analysis of individuals that experienced income instability during COVID-19 to provide further clarity on wealth's role in volunteer behaviors. We observed diminished relationships between other resources and any type of volunteering. Our results provide a clearer understanding of the microlevel components in a civic infrastructure. Volunteering continues to be a significant part in many communities, especially during times of crisis. Understanding the relationship between an individual's characteristics and their propensity to engage in this civic feature is key to understanding the overall infrastructures of society.

Appendix: Survey Details

Introduction

For this study, an original survey was developed by the research team and a full copy of the survey is available upon request. The research team and Social Science Research Solutions (SSRS) worked together to collect and clean data gathered by the survey. The questionnaire was administered between April 1 through April 18, 2022 through SSRS's opinion panel. The final sample had 2,538 responses with a response rate of 43 %. A total of 68 respondents took the survey in Spanish. 2,026 respondents were administered the entire survey, and the remaining participants were given partial surveys to test recall bias. A final set of 1,954 individuals completed all necessary entries for the analysis related to this paper.

Sample Design

Respondents were recruited either through randomly sampled mailed invitations or dual-frame random digit dialing. Contacts for these individuals were derived from SSRS's opinion panel, a probability-based, nationally representative panel. The SSRS

Omnibus survey platform aided the collection of responses and respondent characteristics. Further information about this sample design is available upon request.

Survey Administration

The final survey was programed by SSRS and housed on Confirmit Computer Assisted Web Interviewing. Correct skip patterns and sample divides were extensively checked. 11 pretest interviews were conducted via phone March 24th through 28th. The survey had a soft launch April 1 with four rounds of reminder emails following the initial invitation. The survey closed on April 18th, 2022. The survey took about 20 min to complete, and individuals were rewarded for their time with an electronic gift card of $5 value.

Quality Control*

To ensure data were accurately recorded, SSRS included the following processes:

- SSRS project managers tested the web program extensively to ensure that skip patterns were working correctly, and the program could be used effectively by the respondents and interviewers. At the end of the field, during the final data checking and cleaning process, SSRS found that the programming specifications in the questionnaire were incorrect for Q22 resulting in 69 respondents not seeing a question they should have been asked. SSRS recontacted these responses and was able to retrieve information from 54 of them.
- After data collection was complete, the data were thoroughly cleaned with a computer validation program that establishes editing parameters to locate any errors including data that do not follow skip patterns, out of range values, and errors in data field locations.
- For each online record, a set of quality control standards were applied.
  - Two respondents who spent less than 3 min on the survey were removed.
  - Four cases were removed due to incorrect responses to two quality control questions.

Weighting Procedures

Patterns of non-response were adjusted through weighting procedures. These adjustments ensured demographic and social characteristics of the sample that matched the U.S. population. SSRS performed this weighting through three major

steps: (1) base wages; (2) non-internet adjustment; and (3) calibration to population. Further information on weighting procedures is available upon request.

*Quality control information comes directly from the SSRS published report.

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