Balancing acts of kindness: Reassessing the relationship between informal helping and formal volunteering

Qvist, Hans-Peter Y.

Published in:
Acta Sociologica

Publication date:
2024

Document Version
Accepteret manuscript, peer-review version

Balancing acts of kindness: Reassessing the relationship between informal helping and formal volunteering

Hans-Peter Y. Qvist*, *Department of Sociology and Social Work, Aalborg University*

This paper is accepted for publication in:

Acta Sociologica

This accepted manuscript includes my revisions after peer review, prior to any typesetting for the journal.

To access the publisher's version:

Insert DOI when published online

Balancing acts of kindness: Reassessing the relationship between informal helping and formal volunteering

Although time is a finite resource, much sociological research suggests a positive association between engagement in informal helping activities and formal volunteering. However, it remains unclear whether this relationship is causal and, if so, in which direction the causality runs. To address these issues, I draw on two-wave panel data from Denmark. Using a cross-lagged panel model, I find no evidence that formal volunteering hours affect informal helping activities. However, in the reverse direction, I find evidence of a right-skewed inverse U-shaped relationship. Specifically, the time individuals dedicate to formal volunteering marginally increases with time allocated to informal helping activities, but only as long as their informal helping obligations remain modest. However, once these informal helping obligations reach approximately twenty hours, the time individuals spend on formal volunteering decreases with informal helping hours. These findings suggest that even exceptionally helpful individuals, often referred to as "super-helpers," must balance their acts of kindness and their available time and energy. Moreover, I argue that while many people are motivated to engage in formal volunteering to benefit others, those with family and friends requiring assistance tend to prioritize these responsibilities before volunteering.

Sociologists often suggest a positive connection between formal and informal forms of prosocial behavior. In support of this notion, much evidence supports that informal helping and formal volunteering are positively associated, implying that they are complementary activities rather than substitutes (Burr et al., 2005; Choi et al., 2007; Hank and Stuck, 2008; Jegermalm and Grassman, 2009, 2011; Lee and Brudney, 2009; Plagnol and Huppert, 2010; Taniguchi, 2012). Here, *informal helping* [1] refers to help or assistance given directly to another person outside one's household, for example, family, friends, or neighbors. In contrast, *formal volunteering* refers to any contribution of unpaid time to the activities of organizations (Musick and Wilson, 2008).

Scholars have proposed three related theories to explain why informal helping and formal volunteering would be complementary activities. First, they have argued that extraordinary people, dubbed "super-helpers," have personal qualities that make them highly committed to helping others in private and public domains (Burr et al., 2005). Second, they have argued that people who experience helping behavior making a difference to others become increasingly motivated to engage in similar behavior in other domains (Burr et al., 2005; Choi et al., 2007). Third, they have reasoned that people who engage in helping behavior in one domain may form social ties that encourage them to also engage in similar helping behavior in another domain (Burr et al., 2005; Choi et al., 2007).

However, while previous cross-sectional research has found evidence that informal helping and formal volunteering are positively associated, we know little about the nature and direction of the relationship. Longitudinal studies are essential in providing such knowledge but are few. One exception is an influential panel study that Wilson and Musick (1997) conducted in the United States. The study showed that formal volunteering was positively related to informal

helping, whereas the results provided no evidence of a relationship in the reverse direction. However, Musick and Wilson (2008) later conducted a cross-sectional study that considered the time people spent on each helping activity. Unlike their previous study, this study suggested that the relationship between weekly informal helping and volunteer hours was inverse U-shaped. However, because of the study's cross-sectional nature, it offered little insight into the causal nature and direction of the relationship.

Against this background, this study draws on two-wave panel data from Denmark to provide novel evidence on the causal nature and direction of the relationship between informal helping and formal volunteering. Overall, I make two key contributions to the literature. First, like Musick and Wilson (2008), I account for the time people spend on the two types of activities. This information is essential because being highly committed to one activity reduces the time available for other types. Moreover, in contrast to Musick and Wilson (2008), I provide longitudinal evidence, which is vital in determining the nature and direction of the relationship. Second, by focusing on the case of Denmark, I add to the evidence pool from a context where scholars have conducted little research on these topics.

The relationship between informal helping and formal volunteering: Evidence to date

Many cross-sectional studies from the United States and Europe have found positive associations between informal helping and formal volunteering. In the American case, Lee and Brudney (2009), for example, found, based on a sample of Americans aged 20 and above from the 2001 Independent Sector (IS) Giving and Volunteering in the United States, that those who

volunteered formally were more likely to engage in informal helping and vice versa. Likewise, Taniguchi (2012) found, based on data from the American Time Use Survey (ATUS), that informal helping and formal volunteering were positively associated and concluded that they are complementary activities rather than substitutes.

In the European case, large-scale comparative studies have also found evidence of positive associations between informal helping and formal volunteering. In 2007, Pichler and Wallace conducted a study exploring the connections between social network types and helping behavior in Europe. They based their research on data from 27 European countries from the 2004 Eurobarometer survey. The study's findings revealed that formal and informal social capital in Northern Europe tended to complement each other, while in East and Southern Europe, they appeared to substitute for one another. Another comparative study is Hank and Stuck (2008), which examined the interconnections between formal volunteering, caregiving to family members, and informal helping among older Europeans aged 50 and above. Based on data from 11 European countries in the SHARE survey, the study found evidence of strong positive associations between active involvement in one type of helping and the propensity to be engaged in another. Moreover, in a different comparative study, Plagnol and Hubert (2010) examined the relationship between informal helping and formal volunteering in 23 European countries grouped into three categories according to their level of formal volunteering based on the well-being module of the European Social Survey conducted in 2006. The study found a positive relationship between informal helping and formal volunteering in all three country groups, indicating that informal helping and formal volunteering are positively associated, irrespective of whether a low or high rate of formal volunteering characterized the country.

In the Scandinavian case, however, cross-sectional studies have produced mixed results. For example, one study based on nationally representative data from the Swedish population aged 16 to 84 examined the relationship between informal helping and formal volunteering (Jegermalm and Grassman, 2009). The study found a positive relationship between informal helping and formal volunteering and concluded that if someone is a volunteer, it raises the chances that he or she is also an informal helper and vice versa. However, in contrast to the study from Sweden, a study of the Danish population aged 16 and above found no evidence of a relationship between informal helping and formal volunteering (Henriksen et al., 2008). Nevertheless, a more recent Danish study found that time spent on formal volunteering increased the likelihood of engagement in informal helping. However, among those who were engaged in informal helping, the study found no evidence that formal volunteer hours were related to time spent on informal helping (Hermansen, 2016).

While most previous evidence has been cross-sectional, evidence from longitudinal studies is limited to one study. Wilson and Musick (1997) conducted this influential study that examined the relationship between informal helping and formal volunteering using a cross-lagged structural equation model to analyze two-wave panel data from the Americans' Changing Lives (ACL). They measured informal helping with a construct that combined an informal helping index with informal helping hours and used a similar approach to measure formal volunteering. The results suggested that formal volunteering increases informal helping, while they found no evidence of a relationship in the reverse direction. However, it was impossible to disentangle people's likelihood of participation from the time they spent on each activity because they measured informal helping and formal volunteering by latent constructs that combined indicators for participation and hours.

Later, longitudinal studies in gerontology have examined related yet different questions about the nature and direction of the relationship between informal caregiving and formal volunteering. Here, the critical difference between informal helping and caregiving is that the latter includes caregiving for relatives in one's household, most commonly spousal caregiving. One prominent study, for example, examined the relationship between informal caregiving and formal volunteering for Americans aged 50 and older (Burr et al., 2005). Using two-wave panel data from the Americans' Changing Lives (ACL) survey, the study found that caregiving increased the likelihood of formal volunteering among older people. Moreover, the study found that those who spent the most time on caregiving also spent the most time volunteering, providing robust evidence in favor of the complementary relationship. However, a follow-up study that used two-wave panel data from the Health and Retirement Study to zoom in on spousal caregiving and formal volunteering found that female caregivers were less likely to be involved in formal volunteering (Choi et al., 2007).

While most of the literature has only considered the possibility of a linear relationship between informal helping and formal volunteering, Musick and Wilson (2008) later used cross-sectional data from the Independent Sector Survey to examine the relationship between hours of informal helping and formal volunteering (Musick and Wilson, 2008: 159). This study found an inverse U-shaped relationship when they measured hours of informal helping and formal volunteering within the past week. On these grounds, Musick and Wilson (2008) theorized that the more time people spend on informal helping, the more time they spend on formal volunteering, but only up to a point after which time-intensive informal helping obligations force them to cut down on other helping activities. However, because they relied on cross-sectional

data, they could not empirically verify whether the causal direction was from informal helping to formal volunteering, as their theory proposed, or vice versa.

The case of Denmark

Like the other Scandinavian countries, Denmark is known for its extensive welfare model. The core principle of this model is an individual entitlement to public sector provisions financed through taxes, which means that the welfare state provides many social services that family and friends or voluntary organizations provide in other welfare regimes.

In early literature, scholars frequently assumed that the presence of an extensive welfare state like the Danish would crowd out informal helping and formal volunteering. However, evidence has consistently disproven any such assumption over the last decades. In contrast, informal helping and formal volunteering are widespread in all the Scandinavian countries (Henriksen et al., 2019). Recent evidence, for example, suggests that about half the population in Denmark has helped someone outside their household within the past year (Jegermalm et al., 2019).

Regarding formal volunteering, evidence likewise suggests that the people in Denmark are highly engaged. According to recent evidence, about 36 percent of the Danish population has formally volunteered within the past year (Espersen et al., 2021). Again, this figure is relatively high in international comparison and only surpassed by other Scandinavian countries such as Sweden and Norway, where more than half of the adult populations are engaged in formal volunteering (Qvist et al., 2019).

While the extensive Danish welfare state does not crowd out informal helping and formal volunteering, it appears to shape the areas where people volunteer. As a result, in Denmark and other Scandinavian countries, most volunteers are engaged in culture- and leisure-oriented activities rather than social service-providing organizations (Qvist et al., 2019; Selle et al., 2019). Accordingly, approximately half of all associations in Denmark are within the field of culture and leisure, most of which are sports clubs. Moreover, religious and social service-providing associations are fewer in Denmark than in countries with liberal welfare regimes, such as the United States (Selle et al., 2019).

Data, measures, and analytical Strategy

Data

I use two two-wave panel data from the Danish Volunteer Survey (DVS). The DVS is a representative survey of the Danish population aged 16–85 that focuses on volunteering, informal helping, and charitable giving. The first wave, collected in 2004, had 3,134 respondents with a response rate of 75 percent. Out of these, 1,981 agreed to participate again in 2012, resulting in a retainment rate of 64 percent. The relatively high response and retention rates resulted from meticulous data collection involving telephone interviews with follow-up interviews at home addresses for people whom the interviewers could not reach by phone. After removing individuals with missing data for any variables included in the analysis, I relied on an analysis sample of 1,972 individuals who responded in 2004 and 2012.

Measures

Formal volunteering. I measure formal volunteering as hours of volunteering during the past month. The survey asked respondents whether they had volunteered in fourteen areas during the past month, corresponding to the International Classification of Nonprofit Organizations (Salamon and Anheier, 1992). These areas include culture, sports, hobby, education, health, social services, environment, housing and community, unions and work organizations, advice and legal assistance, political parties, international organizations, religion, and other areas.

If respondents have volunteered within a particular area, they indicate for how many hours. To compute the formal volunteering variable, I take the sum of their volunteer hours during the past month across all fourteen areas. To limit the influence of extreme observations, I top-coded the variable at 100 hours per month, meaning that respondents who reported more than 100 hours per month were coded as 100.

Informal helping. Similarly, I measure informal helping as monthly hours of informal helping. The survey asked respondents to report: "Do you regularly help someone you do not live with? For example, with shopping, care of children, cleaning, gardening, laundering, banking, postal office, contact to authorities?". If respondents help informally, they report how many hours they have spent during the past month. Again, if a respondent reported more than 100 hours per month, I coded the value as 100.

Control variables. Informal helping and formal volunteering are most prevalent among people with high levels of personal and social resources (Musick and Wilson, 2008). Therefore, I include education, partnership status, and the presence of children in the household as control

variables. Education is a categorical variable with five categories: 1) basic education, 2) vocational training, 3) short-cycle tertiary, 4) medium-cycle tertiary 5) long-cycle tertiary. Partnership status is an indicator variable, with one indicating partner presence and zero otherwise. Children in the household is a categorical variable with four categories 1) no children, 2) preschool children, 3) schoolchildren, and 4) both types of children because age plays a crucial role in this context. Preschool children, who require a lot of time and attention, tend to limit their parents' ability to volunteer. In contrast, parents of school-aged children often become involved in volunteering activities through their children's activities (Musick and Wilson, 2008).

I further include participation in religious activities as a control variable because such participation is associated with informal helping activities and formal volunteering (Wilson and Musick, 1997). Participation in religious activities is measured by how often the respondent attends church, mosque, or synagogue, excluding attendance for weddings, funerals, or baptisms. The variable is treated as an ordinal scaled variable in four categories ranging from "never = 0" to "once a week or more = 3". Additionally, I include work hours as a control variable because people can only spend as much time on helping activities as their work responsibilities permit (Qvist, 2021). Working hours is a categorical variable in three categories: out of the labor force, 1-29 hours per week, 30 or more hours per week. Finally, I include sex, ethnicity, and age as control variables. I include sex as a control variable because, unlike in most countries, more men than women volunteer in Denmark (Qvist et al., 2019). I incorporate immigrant status as a control variable because while immigrants are just as inclined to provide informal help to others outside their households, they exhibit a lower tendency than native Danes to participate in formal volunteering activities (Jørgensen and Qvist, 2023; Qvist, 2018). Lastly, I include age with its

square because evidence suggests that the relationship between age and the likelihood of formal volunteering is inverse U-shaped (Van Ingen, 2008).

Table 1 shows descriptive statistics for all variables included in the analysis.

Table 1 here

Analytical strategy

I use a cross-lagged panel model to examine the relationship between informal helping and formal volunteering. The primary purpose of a cross-lagged panel model is to examine the causal direction of a relationship between two variables (Finkel, 1995). To estimate the model, I regress formal volunteering measured at Time 2 on informal helping and formal volunteering measured at Time 1. Likewise, I regress informal helping measured at Time 2 on formal volunteering and informal helping measured at Time 1. The model's logic is that if previous levels of informal helping hours are associated with future formal volunteering hours when it controls for previous levels of informal helping, it indicates that informal helping affects formal volunteering. Similarly, suppose previous levels of formal volunteering are associated with future levels of informal helping when the model controls for previous levels of formal volunteering, it indicates that formal volunteering affects informal helping.

Monthly hours of informal helping and formal volunteering are count variables, meaning they can only take on non-negative integer values. Poisson regression is the conventional method for modeling such outcomes, but due to the right-skewed distributions of monthly informal helping and formal volunteering hours (see Figure 1), Poisson regression is inappropriate in this context. Moreover, the variables contain many zero values since many individuals are not

involved in each helping activity. Specifically, 52 percent and 73 percent reported zero hours of informal helping and formal volunteering, respectively.

Zero-inflated negative binomial (ZINB) regression models are more appropriate than Poisson regression models for scenarios described above, where the count data contain excessive zeros and exhibit overdispersion (Cameron and Trivedi, 2013). The latter refers to the fact that the variance, contrary to the assumption of Poisson regression, is greater than the mean. To handle the excess zeroes, the ZINB regression model combines two components: 1) a binary component that models the excess zeros and 2) a count component that models the positive counts using a negative binomial distribution (Cameron and Trivedi, 2013). However, unlike a hurdle model consisting of two completely independent parts, a ZINB model assumes that zeroes can arise for two reasons: 1) that people do not engage in informal helping or formal volunteering, 2) that informal helpers or formal volunteers did not allocate hours to these activities during the specific month in question [2].

Figure 1. The distributions of monthly hours of formal volunteering and informal helping in percent in T2.

Figure 1 here

Results

I first examine the cross-sectional correlation between informal helping and formal volunteering in T1 and T2. This preliminary examination suggests that time spent on informal helping and formal volunteering have a significant positive association in T1, $r(1990) = 0.065$, $p < 0.01$, and T2, $r(1990) = 0.056$, $p < 0.05$.

Next, I examine the relationship using cross-lagged ZINB models. Table 2 presents the results, with and without control variables. The models suggest that peoples' engagement in informal helping and formal volunteering is stable over time, meaning that people who spent much time on informal volunteering in T1 were more likely to participate in informal helping in T2 and spent more time on it. A similarly time-stable pattern exists for formal volunteering.

Table 2 here

Next, I inspect the cross-lagged relationships. I first inspect the relationship between informal helping in T1 and formal volunteering in T2. The coefficients from the negative binomial part of the model suggest that informal helping hours are non-linearly related to the monthly hours of formal volunteering. Specifically, the positive main effect of informal helping hours combined with a significantly negative squared term suggests that the relationship is inverse U-shaped.

I now inspect the reverse relationship between formal volunteering in T1 and informal helping in T2. However, the coefficients here provide no evidence that formal volunteering affects informal helping. Overall, the results thus suggest that informal helping affects formal volunteering, while I find no evidence of a relationship in the opposite direction.

To further clarify the size and shape of the effect of informal helping on formal volunteering, Figure 2 plots the predicted hours of formal volunteering against informal helping hours calculated across both parts of the zero-inflated negative binomial regression model. The figure shows that the relationship is right-skewed inverse U-shaped. This relationship implies that time spent on formal volunteering marginally increases with time spent on informal helping at a decreasing rate, after which time spent on formal volunteering decreases at an increasing

rate. The turning point is at approximately twenty monthly informal helping hours. Moreover, the results from the separate parts of the model presented in Table 2 suggest that this is mainly the case because informal helping hours affect how many hours volunteer contribute and, to a lesser extent, their likelihood of participation.

Regarding effect size, the predictions based on the model indicate that individuals who dedicate up to 30 hours per month to informal help tend to allocate approximately four hours to formal volunteering. Conversely, those who spend 70 hours or more in informal help tend to allocate one hour or less to formal volunteering.

Figure 2. Predicted monthly formal volunteering hours by informal helping hours at T2 using a cross-lagged zero-inflated negative binomial model.

Figure 2 here

Note: The shaded areas are 95% confidence intervals.

Conclusion and discussion

In this study, I have examined the relationship between informal helping and formal volunteering using two-wave panel data from Denmark. In a cross-sectional context, I found a positive relationship between the two activities. However, using a cross-lagged ZINB model, I found no evidence that formal volunteering affects informal volunteering. Conversely, I found a right-skewed inverse U-shaped relationship in the opposite direction. This relationship suggests that the time individuals dedicate to formal volunteering marginally increases with time allocated to informal helping activities as long as their informal helping obligations remain modest.

However, once these informal helping obligations reach approximately twenty hours, the time spent on formal volunteering decreases with informal helping hours at an increasing rate.

The above findings run counter to most sociological research that has suggested that informal helping and formal volunteering are positively related, implying that they are complementary activities (Burr et al., 2005; Choi et al., 2007; Hank and Stuck, 2008; Jegermalm and Grassman, 2009, 2011; Lee and Brudney, 2009; Plagnol and Huppert, 2010; Taniguchi, 2012). While this discrepancy between my results and those of previous studies could be rooted in contextual differences, it is also possible that common causes of informal helping and formal volunteering have confounded previous estimations. After all, it is well known that informal helping and formal volunteering share many common causes, some of which are hard to adjust sufficiently for, such as personality characteristics. In the Danish case, this likely explains why informal and formal volunteering has a positive association in a cross-sectional context but not in a longitudinal one. Instead, my longitudinal results mirror those obtained by Musick and Wilson (2008), who also found evidence of an inverse U-shaped relationship, albeit in a cross-sectional context where they could not determine the direction of the relationship.

However, it is essential to note that existing studies fall into two groups: studies that examine the broader general population and those that narrow their focus to older populations. While among older individuals, who typically have more available time due to retirement and empty nests, there may be a complementary relationship between informal helping and formal volunteering, it is reasonable to propose that this relationship is not as straightforward in the case of the general adult population. After all, given the finite nature of time, it is understandable that people with extensive helping obligations prioritize helping their family and friends before

volunteering to help unknown others. Ultimately, even exceptionally helpful individuals or "super-helpers" must balance their acts of kindness and their available time and energy.

Although my paper contributes novel evidence on the link between informal helping and formal volunteering, several limitations challenge causal interpretations of my findings. First, to enable a causal interpretation, cross-lagged models depend on the assumption that time-stable and trait-like individual differences do not influence the lagged relationships between the variables in question (Hamaker et al., 2015). While scholars have recently developed more advanced panel models to account for such unobserved time-stable individual characteristics while studying lagged effects, these models require panel data over three or more time points (Allison et al., 2017).

Relatedly, I recognize that the long period between the two waves of panel data is a noticeable limitation since people's informal helping and formal volunteering behavior might have changed between the two periods, increasing measurement noise. Furthermore, the lag structure in the data, at best, only approximates the actual delays in the real-world process where people balance their helping behavior. The potential differences between the less-than-ideal data I use and the real-world process underscore the importance of cautiously approaching my estimates of the relationship between informal helping and formal volunteering (Leszczensky and Wollbring, 2022). As a result of these limitations, I encourage more research on the topic using more extensive panel datasets.

Second, the survey questions I use to measure informal helping and formal volunteering are not entirely comparable. One specific concern is that the question regarding informal helping begins by inquiring whether the individual regularly helps someone they do reside with.

Including "regularly" in the survey question can have created a slight upward bias in the distribution of informal helping hours, as it might have excluded episodic helpers from responding positively. Nevertheless, the histograms in Figure 1 suggest that a large share of those who responded positively spent ten hours or less on informal helping, indicating that the wording of the survey question is a minor issue.

Third, more research is needed to determine whether the effect of informal helping on formal volunteering is heterogeneous. As a first step in this regard, I tried to add interaction terms between informal helping, its square, work hours, and the presence of preschool children in the household. Unfortunately, adding these additional interaction terms resulted in imprecise estimates with large standard errors due to the limited sample size. Furthermore, an important goal for future research is to explore how various types of informal helping activities relate to different aspects of formal volunteering, especially when similar forms of helping behavior might be interconnected.

Notes

1. The term "informal helping" is commonly used in civil society research to refer to acts of assistance provided to individuals *outside* one's household. In caregiving research, a related concept called "informal caregiving" describes the care provision *within* the household, typically to one's spouse.
2. According to the Bayesian and Akaike information criteria, the ZINB model yielded a better fit than the hurdle model, supporting its applicability in this context.

References

Allison PD, Choi NG, Williams R, Moral-Benito E (2017) Maximum likelihood for cross-lagged panel models with fixed effects. *Socius* 3: 1-17.

Burr JA, Choi NG, Mutchler JE, et al. (2005) Caregiving and volunteering: Are private and public helping behaviors linked? *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences* 60: S247–S256.

Cameron AC and Trivedi PK (2013) *Regression Analysis of Count Data*. 2nd edition. Cambridge: Cambridge University Press.

Choi NG, Burr JA, Mutchler JE, et al. (2007) Formal and informal volunteer activity and spousal caregiving among older adults. *Research on Aging* 29: 99–124.

Espersen HH, Fridberg T, Andreasen AG, et al. (2021) *Frivillighedsundersøgelsen 2020*. VIVE – Det Nationale Forsknings- og Analysecenter for Velfærd: Copenhagen.

Finkel SE (1995) *Causal Analysis with Panel Data*. Thousand Oaks, CA: Sage Publications.

Hamaker EL, Kuiper RM, Grasman RPPP (2015) A critique of the cross-lagged panel model. *Psychological Methods* 20: 102–116.

Hank K, Stuck S (2008) Volunteer work, informal help, and care among the 50+ in Europe: Further evidence for 'linked' productive activities at older ages. *Social Science Research* 37: 1280–1291.

Henriksen LS, Koch-Nielsen I, Rosdahl D (2008) Formal and informal volunteering in a Nordic context: The case of Denmark. *Journal of Civil Society* 4: 193–209.

Henriksen LS, Strømsnes K, Svedberg L (2019) Understanding civic engagement in the Scandinavian context. In: Henriksen LS, Strømsnes K, Svedberg L (eds.) *Civic Engagement in Scandinavia: Volunteering, Informal Help and Giving in Denmark, Norway, and Sweden*. Cham: Springer, pp. 1–32.

Hermansen J (2016) Intangible activities—the prevalence of informal helping in Denmark. *Journal of Civil Society* 12: 380–393.

Jegermalm M and Grassman EJ (2009) Caregiving and volunteering among older people in Sweden - prevalence and profiles. *Journal of Aging & Social Policy* 21: 352–373.

Jegermalm M and Grassman EJ (2011) Links between informal caregiving and volunteering in Sweden: a 17-year perspective. *European Journal of Social Work* 16: 1–15.

Jegermalm M, Hermansen J, Fladmoe A (2019) Beyond voluntary organizations and the welfare state: Patterns of informal helping in the Scandinavian countries. In: Henriksen LS, Strømsnes K, Svedberg L (eds.) *Civic Engagement in Scandinavia: Volunteering, Informal Help and Giving in Denmark, Norway, and Sweden*. Cham: Springer, pp. 95-111.

Jørgensen AB, Qvist H-PY (2023) Assimilation disparities in volunteering among immigrants. *SocArxiv*. Epub ahead of print 4 October 2023. DOI: 10.31235/osf.io/n4ae2

Lee Y, Brudney JL (2009) Participation in formal and informal volunteering: Implications for volunteer recruitment. *Nonprofit Management and Leadership* 20: 83–96.

Leszczensky L, Wolbring T (2022) How to deal with reverse causality using panel data? Recommendations for researchers based on a simulation study. *Sociological Methods & Research* 51: 837-865

Musick MA, Wilson J (2008) *Volunteers: A Social Profile*. Indiana: Indiana University Press.

Pichler F, Wallace C (2007) Patterns of formal and informal social capital in Europe. *European Sociological Review* 23: 423–435.

Plagnol AC and Huppert FA (2010) Happy to help? Exploring the factors associated with variations in rates of volunteering across Europe. *Social Indicators Research* 97: 157–176.

Qvist H-PY (2021) Hours of paid work and volunteering: Evidence from Danish panel data. *Nonprofit and Voluntary Sector Quarterly* 50: 983–1008.

Qvist H-PY, Folkestad B, Fridberg T, et al. (2019) Trends in volunteering in Scandinavia. In: Henriksen LS, Strømsnes K, and Svedberg L (eds.) *Civic Engagement in Scandinavia: Volunteering, Informal Help and Giving in Denmark, Norway, and Sweden*. Cham: Springer, pp. 67-95.

Qvist HY (2018) Secular and religious volunteering among immigrants and natives in Denmark. *Acta Sociologica* 61: 202–218.

Salamon LM, Anheier HK (1992) In search of the nonprofit Sector: the problem of classification. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations* 3: 267–309.

Selle P, Strømsnes K, Svedberg L, et al. (2019) The Scandinavian organizational landscape: Extensive and different. In: Henriksen LS, Strømsnes K, and Svedberg L (eds.) *Civic Engagement in Scandinavia*. Springer, pp. 33-66.

Taniguchi H (2012) The determinants of formal and informal volunteering: Evidence from the American Time Use Survey. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations* 23: 920–939.

Van Ingen E (2008) Social participation revisited: Disentangling and explaining period, life-cycle and cohort effects. *Acta Sociologica* 51: 103–121.

Wilson J, Musick MA (1997) Who cares? Toward an integrated theory of volunteer work. *American Sociological Review* 62: 694–713.

Table 1. Descriptive statistics

	Mean	SD
Formal volunteering hours in T1	4.76	12.98
Formal volunteering hours in T2	4.05	11.48
Informal helping hours in T1	6.55	14.22
Informal helping hours in T2	6.51	14.17
Employment		
Out of the labor force	0.33	0.47
Employed 1-29 hours	0.05	0.22
Employed 30 or more hours	0.62	0.48
Educational level		
Basic education	0.31	0.46
Vocational training	0.32	0.47
Short-cycle tertiary	0.09	0.28
Medium-cycle tertiary	0.18	0.39
Long-cycle tertiary	0.10	0.31
Religious attendance (0-3)	0.74	0.89
Partner	0.69	0.46
Children in household		
No children	0.65	0.48
Preschool children	0.12	0.32
Schoolchildren	0.16	0.37
Both types of children	0.07	0.25
Male	0.46	0.50
Immigrant	0.03	0.18
Age	43.30	14.84

Table 2. Cross-lagged zero-inflated negative binomial regression models predicting monthly formal volunteering and informal helping hours.

	Formal volunteering hours in T2		Informal helping hours in T2	
	Logistic regression	Negative Binomial regression	Logistic regression	Negative Binomial regression
Formal volunteering hours in T1	-0.090***	0.002	-0.003	0.004
	(0.035)	(0.004)	(0.011)	(0.007)
Informal helping hours in T1	-0.006	0.013	-0.021***	0.008***
	(0.012)	(0.010)	(0.006)	(0.003)
Informal helping hours in T1 × informal helping hours in T1	0.000	-0.000*		
	(0.000)	(0.000)		
Formal volunteering hours in T1× formal volunteering hours in T1			-0.000	0.000
			(0.000)	(0.000)
Employment (ref. out of the labor force)				
Part-time	0.288	0.137	0.073	0.117
	(0.333)	(0.302)	(0.274)	(0.198)
Full-time or more	-0.026	-0.154	0.058	0.032
	(0.175)	(0.152)	(0.152)	(0.109)
Education (ref. basic education)				
Vocational training	-0.088	-0.220	-0.167	-0.140
	(0.173)	(0.169)	(0.151)	(0.113)
Short-cycle tertiary	-0.285	-0.472*	-0.159	-0.065
	(0.281)	(0.241)	(0.220)	(0.158)
Medium-cycle tertiary	-0.432**	-0.333*	-0.336*	-0.170
	(0.200)	(0.175)	(0.183)	(0.133)
Long-cycle tertiary	-1.060***	-0.197	0.057	-0.020
	(0.239)	(0.183)	(0.207)	(0.161)
Religious participation (0-3)	-0.302***	0.084	0.021	0.037
	(0.074)	(0.058)	(0.064)	(0.046)
Partner	-0.272*	-0.150	-0.056	-0.048
	(0.156)	(0.136)	(0.136)	(0.100)
Children (ref. no children)				
Preschool children	-0.280	-0.008	0.215	0.033
	(0.214)	(0.194)	(0.192)	(0.148)
Schoolchildren	0.310	0.037	-0.288*	-0.204*
	(0.201)	(0.169)	(0.172)	(0.110)
Both types of children	-0.275	0.254	-0.085	-0.356**
	(0.255)	(0.216)	(0.254)	(0.170)
Male	-0.226*	0.222**	-0.059	-0.222***
	(0.131)	(0.111)	(0.117)	(0.082)
Immigrant	1.281***	0.423	0.230	0.072
	(0.417)	(0.388)	(0.302)	(0.232)

Age	-0.000	0.039	-0.093***	0.035
	(0.032)	(0.030)	(0.028)	(0.022)
Age × Age	0.000	-0.000	0.001***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Intercept	1.545***	1.320**	1.565***	1.440***
	(0.582)	(0.570)	(0.498)	(0.380)
Ln(α)		0.432**		0.310***
		(0.207)		(0.080)
N		1972		1972

Note: Table cells show coefficients with standard errors in parentheses. * p < 0.10, ** p < 0.05, * p < 0.01 (two-tailed tests). The parameter α is a negative binomial overdispersion parameter, and its significance indicates that the zero-inflated negative binomial model is more appropriate than the zero-inflated Poisson model.

Figure 1. The distributions of monthly hours of formal volunteering and informal helping in percent in T2.

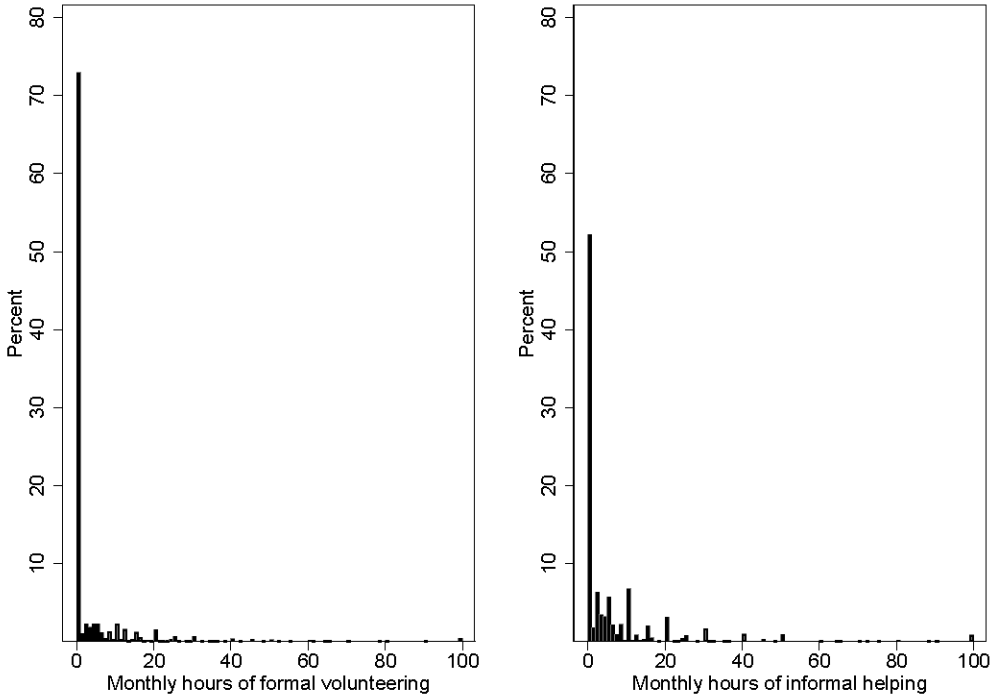

Figure 2. Predicted monthly formal volunteering hours by informal helping hours at T2 using a cross-lagged zero-inflated negative binomial model.