

# Surfing to help?

An empirical analysis of Internet and volunteering in 27 European societies

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## Article:

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## Abstract

With the spread of the Internet, people are more connected than ever before. Against this background, we evaluate the link between Internet use and volunteering as a rather unexplored aspect of social life. Comparing 27 European societies and using data from the Eurobarometer, we show that Internet use is positively related to the probability of undertaking unpaid work in most voluntary organizations. However, our main result has to be qualified with respect to group-specific effects. First, Internet use seems to elevate less educated and unemployed peoples' propensity to volunteer. Thus, using Internet technologies may trigger helping behavior in social strata, where it is less likely to occur. Second, the positive relationship between Internet use and volunteering is stronger for older adults who are more likely to volunteer when they use the Internet. Third, the positive link between Internet use and volunteering is stronger for citizens living in rural areas than for urban residents.

*Keywords:* Internet, volunteering, voluntary organizations, European Union, comparative analysis

## Introduction

With the spread of the Internet, people are more connected than ever before. Activities such as seeking information, making appointments, communicating, sharing ideas or cultivating personal relationships, which previously required face-to-face interpersonal interactions, can now be performed through digital interfaces. At the beginning of this transformation of society, scholars have warned about possible negative consequences for social interactions and the society as a whole (DiMaggio et al. 2001; Nie and Erbring 2002). They were alerted by the isolating consequences of Internet use as every minute spent on digital media cannot be spent with (offline) contacts such as family members or friends and (offline) activities (Putnam 2000; Nie and Erbring 2002; Stepanikova et al. 2010). In recent years, however, advocates of the so-called utopian thesis argue that Internet use has a positive effect on different aspects of social life such as contacts with friends or family (Boulianne 2009, 2015, 2018). They assume that faster and easier communication increase social contact and reduce opportunity costs to stay in touch (Ellison et al. 2007; Erhardt and Freitag 2019; Quinn 2016; Gil de Zúñiga et al. 2017). Moreover, the Internet even offers opportunities for new forms of social engagement that help to mobilize larger parts of society (Ackermann and Manatschal 2018). Accordingly, Internet use is not an isolating but rather an interactive activity. This view is supported by recent studies and meta-analyses (Ellison et al. 2007; Boulianne 2009, 2015, 2018; Hooghe and Oser 2015).

In this vein, we investigate whether this positive influence of Internet technologies is also present for voluntary work as a special form of social interaction. Empirical evidence on the consequences of Internet use for voluntary work as important aspect of the society is rather scarce (but see Piatak et al. 2018; Filsinger and Freitag 2019). Therefore, it remains unclear whether Internet technologies can help to counter the undermining of the social kit of society, which is already challenged by a growing political and social polarization. According to Putnam (2000, p. 116-117) ‘...volunteering...– our readiness to help others – is by some interpretations a central measure of social capital (...). Thus, any assessment of trends in social capital must include an examination of trends in volunteering’. In this respect, volunteering is a cornerstone of civil society and therefore a positive effect of Internet use would support the social glue that holds society together. Consequently, it is important to investigate whether Internet use positively affects the readiness to volunteer. Scrutinizing this aspect, the question emerges whether the technological transformation affects all parts of society in the same way and whether it has the potential to help to overcome societal cleavages (Filsinger and Freitag 2019). In this vein, we investigate whether the influence of Internet use is moderated by socio-

economic factors, like education and employment status, socio-demographic factors, such as age, and type of community.

Putting our arguments to an empirical test, we evaluate the link between Internet use and volunteering comprehensively in 27 European societies. Our study goes beyond the existing research in three respects. First, while many studies investigated the effect of Internet usage on interpersonal relationships, to date, little research has scrutinized volunteering as a special form of social connectedness. This is surprising given the fact that ‘people who give blood, give money, and have volunteered their time are people who are more connected’ (Putnam 2001, p. 45). Second, as digitalization and Internet use do not affect the entire population in the same way, it is reasonable to assume that the effects of Internet use on volunteering are not uniform. Group-specific Internet effects will therefore be modelled. Third, hitherto, the relationship between the use of Internet technology and social life has mainly been the subject of single country studies.<sup>1</sup> Thus, the general problem of how to comparatively approach the findings beyond the case studies remains. In this respect, analysing 27 societies in a strictly comparative manner, is a step forward towards a broader empirical test.

More broadly, the paper also contributes to our understanding of the determinants of volunteering as a major aspect of social cohesion. We have quite some solid knowledge on the relationship between demographic factors, socioeconomic characteristics, life cycle events as well as structural and institutional contexts and volunteering (Wilson 2000, 2012; Ruiter and de Graaf 2006; Nesbit 2012). Much less is, however, known about whether and how digitalization affects and changes volunteering. Studying the link between Internet usage and volunteering from a comparative perspective will provide us with valuable insights on this question. Moreover, it will help to understand volunteering in the age of digitalization more accurately.

Using data from the Eurobarometer 75.2 with over 20,000 respondents, we show that Internet use is positively related to the probability of undertaking unpaid work in most voluntary organizations. However, our main result has to be qualified with respect to group-specific effects. First, Internet use seems to elevate less educated peoples’ propensity to volunteer. This is also true for people who are not working. In this vein, the use of the Internet seems to lead to more cooperative behaviour in an otherwise rather abstinent group. Second, the positive relationship between Internet use and volunteering is stronger for older adults who are more

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<sup>1</sup> For a notable exception, comparing 13 countries see: Amichai-Hamburger and Hayat (2011).

likely to volunteer when they use the Internet. Third, the link between Internet use and volunteering is stronger for rural than for urban citizens.

### **Theoretical considerations on Internet use and volunteering**

The literature on the social implications of Internet use has grown tremendously in recent years (Boulianne 2009, 2015, 2018). In the late 1990s and early 2000s this research has mainly been concerned with the question whether this technological progress reduces traditional social relations (Nie and Erbring 2002). The authors argued that Internet use decreases social interactions offline as spending time on the Internet means that this time is not available for other activities such as meeting family and friends or doing voluntary work. Leisure time is limited, and thus surfing on the Internet has to be regarded as a competitor of offline interactions.

In recent years, however, these essentially negative conjectures on the social impact of digitalization, have been replaced by a utopian vision. Within this perspective, Internet usage is perceived to be increasing and supplementing, rather than substituting, offline social interactions. In a recent meta-analysis, Boulianne (2018) examines around 300 studies that investigate the effect of digitalization on social relationships. She concludes that the results of these studies indicate that Internet use positively affects social relationships. This echoes earlier conclusions that Internet technologies are supplementing, rather than substituting, offline social interactions (Ellison et al. 2007; Gil de Zúñiga et al. 2017). While online information and communication technologies are certainly used for entertainment, they additionally allow users to actively engage in social interactions (Campbell and Kwak 2010; Quinn 2016). In other words, contrary to the TV, the Internet is perceived to be a tool of integration, allowing ceaseless connectivity. In this vein, Internet use should not be assumed as an isolating activity but has to be regarded as an interactive undertaking, fostering contact and communication between individuals (Hooghe and Oser 2015; Quinn 2016).

Hooghe and Oser (2015), for example, show that TV time in general decreases social capital while Internet use is generally positively related to different facets of social connectedness. In addition, Amichai-Hamburger and Hayat (2011) find that Internet use is positively related to social interactions with different groups such as family, friends, and colleagues. Analyses on social media use, in particular, indicate that Facebook and other social network sites promote interpersonal communication (Ellison et al. 2007; Quinn 2016). Moreover, Piatak et al. (2018) find that Internet access increases the probability of volunteering in the US. Against this background, it could easily be argued that voluntary work can be provided on these platforms

more efficiently. Communication and information acquisition via the Internet are easier and faster than via face-to-face interactions, thus reducing opportunity costs. The reduction of opportunity costs makes it therefore more likely that people or organizations contact possible volunteers on Internet platforms, which can be efficient mobilization tools (Tufekci and Wilson 2012; Hwang and Kim 2015). Consequently, using the Internet is seen as interactive, allowing for faster communication and easier exchange of information, which can benefit the mobilization and coordination of volunteers. Consequently, our first hypothesis is stated as follows:

Hypothesis 1: The more often people use the Internet, the more likely they are undertaking voluntary work.

### **Expectations on group-specific effects**

Our hypothesis implies that the relationship between Internet use and volunteering is uniform and does not differ across various societal groups. This assumption is probably too strong. Rather, the social benefits of using the Internet might be more pronounced for certain groups in society than for others. For example, Filsinger and Freitag (2019) show that the influence of Internet use varies with the age of the users. Besides age, other potential moderators could influence the relationship between Internet use and volunteering. We will focus on socio-economic status, age and type of community and argue that the beneficial effects of Internet use vary across these factors. They stratify the proficiency in the usage of new technologies but also the potential marginal utility of it. In other words, these factors are crucial in determining whether and how a person benefits from Internet use in terms of volunteering.<sup>2</sup>

With regard to socio-economic status, one can make two competing arguments here. On the one hand, we can expect that those groups with a high social status and a higher affinity to Internet usage know how to make the most out of their digital activities. That means, they will use the Internet more efficiently for seeking information and being connected with others and benefit from that in their offline social engagement. Research shows that socio-economic status stratifies the use of Internet applications. People with less resources use the Internet less frequently and for different purposes than those who are more educated (Zillien and Hargittai 2009; van Ingen and Matzat 2018).

Alternatively, we might expect that the low social status groups benefit most from using the Internet because they can compensate for a lack of resources. Resources in terms of socio-

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<sup>2</sup> We tested whether the other control variables function as moderators, yet these are not significant. Results are available on request.

economic status are among the most prominent explanatory factors of voluntary work and other forms of participation (Verba et al. 1995; Freitag et al. 2016). According to Wilson (2012), for example, education boosts volunteering because highly educated people have broader horizons and larger networks. Therefore, using the Internet to find new contacts and gain additional information could help less educated people to compensate their initial disadvantage. In turn, highly educated individuals might have a lower marginal utility, as they already possess a rich amount of information and contacts. Thus, it is prudent to assume that Internet use benefits those who have a lower socio-economic status in terms of employment status and education levels.

Regarding age, there are also two perspectives. First, one might argue that people who are young or middle-aged will benefit from using the Internet, as they are already experienced users compared to older segments of the population. With regard to Internet use, the respective research reveals that the age of users is important (Hargittai 2010). Older adults are particularly disadvantaged when it comes to Internet use (Friemel 2016). They use Internet application seldom and are often not as skilled with the new technologies as their younger fellow citizens. Consequently, middle-aged people who use the Internet are even more likely to volunteer as Internet applications help them to organize their time more efficiently, while older adults do not profit from Internet technologies as they have problems in using them efficiently.

On the other hand, Internet use could also provide benefits for older adults as they could overcome coordination problems for organizing voluntary work (Mukherjee 2011). Especially, Internet applications might mitigate obstacles such as decreased social contact and mobility of older adults (Musick and Wilson 2008). According to Wagner et al. (2010) older adults put specific emphasis on using the Internet for social support and communication. On the contrary, among younger cohorts – despite being more competent – a huge amount of time is spent on various forms of web-based activities, and there is some concern that this screen time will no longer be available for social activities (Sinkkonen et al. 2014; Boulianne 2015). Older adults can profit from Internet use in form of simplified and faster communication. Moreover, voluntary organizations that offer their members a communicative infrastructure based on Internet applications could streamline their mobilization of older members. In this vein, the Internet can be regarded as a tool of empowerment for older adults, overcoming barriers and obstacles (Hill et al. 2015). In addition, older adults can profit from online communication and mobilization because it decreases the role of mobility, which otherwise poses a problem for older adults (Ehlers et al. 2011). Older people are often intrinsically motivated for helping and the decline in participation is mainly due to a decline in social contact and information gathering

(Tang et al. 2010; Freitag et al. 2016). Consequently, they might be more likely to benefit from Internet mobilization than younger people, who are mainly motivated by egocentric reasons such as positive externalities for their curriculum vitae (Freitag et al. 2016).

Furthermore, the effects of Internet use on volunteering might also vary regarding the community people live in (Stern and Adams 2010). On the one hand, in rural areas, Internet communication might increase information about the demand and the supply of voluntary work, thus increasing the propensity of individuals in rural areas to volunteer their time (Stern and Adams 2010). On the other hand, communication via the Internet could bridge the anonymity within large cities and thus increase the likelihood to volunteer for the normally less engaged urban citizens (Freitag and Ackermann 2016).

## **Data and method**

In the remainder of the article, the relationships presented above will be put to an empirical test. We use different sources of data in order to test our hypotheses. Our individual-level data set needs to fulfill a number of criteria. It needs to provide data on the relevant concepts, Internet usage and volunteering, across multiple countries to allow us to study our research question from a comparative perspective. The Eurobarometer 75.2., which was fielded between April and May 2011 meets these criteria (European Commission 2014). Respondents were selected following a multi-stage, random probability sampling procedure from the total population aged 15 and above and interviewed face-to-face.<sup>3</sup> The sample population is representative at the national level with 26,825 respondents in total. In addition, we use structural indicators on the country level, which are provided by the Comparative Political Data Set (Armingeon et al. 2014). Our dataset includes information for the EU-27.<sup>4</sup>

Our dependent variable is the reported voluntary activity. In the Eurobarometer survey, the respondents were asked if they ‘currently have a voluntary activity on a regular or occasional basis’. In doing so, they could either respond with ‘no’, ‘on an occasional basis’, or ‘on a regular basis’.<sup>5</sup> Figure A1 in the appendix shows the percentage of people who volunteer occasionally

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<sup>3</sup> The multi-stage random probability sampling design included the following steps. First, primary sampling units (PSU) were selected proportional to population size from each of the administrative regional units in every country (NUTS 2). The sampling frames were stratified by the degree of urbanization. Clusters of starting addresses were randomly drawn from each PSU. Then, households were chosen by standard random route procedures and respondents within the households were selected by the closest birthday rule (European Commission 2014).

<sup>4</sup> EU 27: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Germany, Denmark, Estonia, Spain, Finland, France, United Kingdom, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, Latvia, Malta, Netherlands, Poland, Portugal, Romania, Sweden, Slovenia and Slovakia.

<sup>5</sup> Studies on volunteering usually make a distinction between formal and informal volunteering. Both actions describe volunteerism, which, according to Bekkers (2008, p. 641), ‘refers to a broad range of activities that benefit another person, group, or cause and that are carried out by individuals by their own choice and without pay’. In contrast to formal volunteering, informal volunteering relates to activities such as helping and supporting friends,

or regularly in the respective societies. The Netherlands display the highest rate of volunteering with almost 60% of the respondents indicating that they volunteer either on an occasional or regular basis. High rates are present in Northern European countries such as Denmark and Finland but also Germany and Austria. At the lower end of the distribution, Southern European countries like Spain, Portugal and Greece as well as some East European countries like Poland and Bulgaria. To measure the link between Internet use and volunteering, we examine daily Internet use, which is generated using the variable on the frequency of Internet use at home: ‘Could you tell me if you use the Internet at home?’ Possible answers are: Everyday or Almost everyday; two or three times a week; About once a week; two or three times a month; less often; never, no Internet access. We created a dummy variable for those that use the Internet daily or almost daily and those that do not, to distinguish between frequent users and less frequent/non-users users. Figure A2 shows the percentage of daily Internet users across countries. The Netherlands and the Northern European countries like Sweden, Denmark and Finland report the highest percentage of frequent Internet users (60%). At the lower end are again Southern and Eastern European countries with less than 40% of the respondents being frequent Internet users.

Furthermore, we introduce a range of potential control variables both at the micro as well on the macro level that may influence the relationships we study (Musick and Wilson 2008). On the individual level, we control for sex as previous research has shown that women are less likely to volunteer formally (Freitag and Ackermann 2016). Moreover, it is argued that individuals that are middle-aged volunteer more often, since they have settled roles (Wilson 2012). They are more likely to have a stable job, and are married. To account for the non-linearity of the relationship, we also include the squared term into our model. Education has been a strong predictor of voluntary work as resources in terms of skills are important predispositions for volunteering. To account for the economic situation, we include a measure of financial deprivation. Moreover, we also include employment status to control for the

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neighbors, acquaintances and relatives (outside of one’s own household) that take place directly between the people involved and outside of any formally organized structure (Bekkers 2008). Formal volunteering, on the other hand, is carried out within an organizational context such as a club or association and is characterized by a high level of commitment and regularity of social exchange (Wilson 2012). Unfortunately, our data set does not clearly distinguish between the two forms of voluntary work. While the introductory question about voluntary activity (q15) does not differentiate between informal and formal volunteering (‘Do you currently have a voluntary activity on a regular or occasional basis?’), the follow-up question (q16) relates exclusively to formal volunteering (‘In which type(s) of organisation(s) or association(s) do you do your voluntary activity?’). The follow-up question was asked only to those respondents who answered the introductory question positively. Against this background, it can be assumed that the data set equates volunteering with formal volunteering (European Commission 2014).



economic situation. In addition, formal volunteering is generally more common in rural areas (Freitag et al. 2016).

On the country-level, we added a dummy variable for East European societies, because research has shown that their voluntarism rates are usually lower than in Western Europe (Foa and Ekiert 2017). In addition, we also include the change in the unemployment rate (per cent of total labor force) from 2008 to 2011 in our model (Putnam 2000). We included the change in unemployment to grasp economic decline during the financial crisis. In line with previous research we argue that economic problems on the macro level (such as the unemployment rate) negatively affect volunteering because unemployment decreases the availability of resources that are required for civic engagement (Putnam 2000). Unemployment will impair resources on the individual and on the contextual level. Rising unemployment rates decrease the chances of individuals to acquire resources like money, networks and skills at their workplace, which are important predictors for different forms of participation. Moreover, rising unemployment rates will make individuals spend their cognitive and temporal resources on maintaining their professional career and employment. This leaves less room for unpaid voluntary work. On the macro-level, rising unemployment rates might relate to a decrease in the financial and personnel resources of voluntary organizations. The third sector might, for instance, receive less public support. All variables and operationalizations are presented in table A1 in the appendix.

– Figure 1 around here –

As our observations in the data set are nested within countries and therefore not independent, we use multi-level models to account for this hierarchical data structure. Ignoring the clustering of the data structure could lead to biased standard errors that overestimate the significance of our coefficients and thus lead to problematic inferences (Steenbergen and Jones 2002). According to the measurement of our dependent variable (three possible outcomes), we estimate multi-level ordered logistic regression models with random intercepts (Long and Freese 2014).

## **Results**

At first glance, our empirical results provide evidence for our main hypothesis. Figure 1 (table A2 appendix) presents the findings of our first multilevel ordered logistic regression model. Internet use is related to a higher willingness of people to volunteer their time and energy to

help others. The positive relation between Internet use and volunteering contradicts the early findings of Nie and Erbring (2002) that Internet use displaces offline interactions. Volunteering as a form of social interaction is not negatively influenced by Internet use. On the contrary, people who use the Internet are more likely to volunteer their time and effort compared to those who do not use the Internet on a daily basis. Moreover, our findings support recent findings of positive associations between different forms of social interaction and Internet use (Ellison et al. 2007; Hooghe and Oser 2015; Gil de Zúñiga et al. 2017).

Turning to the control variables in model 1, by and large the results are in line with the literature (Musick and Wilson 2008; Rochester et al. 2010). Age is related to volunteering in a non-linear manner following an inverted u-shaped function. Previous research has shown that young respondents are often less likely to volunteer and that among middle-aged respondents the willingness to volunteer is highest (Freitag and Ackermann 2016). With increasing age, the likelihood decreases due to health problems or decreased social contact. Male respondents seem to be more likely to volunteer, yet the coefficient is only significant at the 10% level. Married respondents are more likely to volunteer which corresponds to the findings for age, as marriage constitutes the entry into a settled life phase. Education shows the expected positive relationship with volunteering (Wilson 2012). The older people are when they finish their education, the more likely they do voluntary work. Furthermore, we find that people who are living in urban areas are significantly less likely to volunteer in political and social organizations than those who live in small towns or rural areas (Freitag and Ackermann 2016). In addition, material deprivation – i.e. the difficulties to pay the bills – is negatively related to volunteering although not significantly. Turning to employment status, we see that employed respondents are less likely to volunteer, while the coefficient for people not working is insignificant. Lastly, referring to our macro-level variables, people living in an Eastern European country are not significantly less likely to volunteer than those living in Western European countries, contradicting earlier findings (Foa and Ekiert 2017). Furthermore, the change in the unemployment rate does not exhibit any significant influence.

In sum, model 1 points towards a positive link between Internet use and volunteering. Further analyses show that this positive relationship holds for almost every voluntary organization (Figure 2). Here, the coefficient of Internet use is only insignificant with regard to volunteering in religious, elderly, minority and consumer organizations. The reason for these insignificant effects could be that these organizations do not use the Internet to recruit volunteers. This might be especially the case for traditional religious and elderly organizations. Still, the non-effect could also be the result of the low number of respondents that are volunteering in some of these

organizations. The large confidence intervals for minority and consumer organizations point in this direction. We have argued that Internet use does not affect all societal groups in the same way. Thus, we expect that socio-economic status, age and type of community moderate the relationship. To account for these potential moderators of the relationship between Internet use and volunteering, we tested group-specific Internet effects and included interaction terms between our Internet measure and our different moderating variables: education and employment status for socio-economic status, age and type of community.

– Figure 2 around here –

First, we observe a significant and negative interaction between Internet and education (model 2a; table A3). For people who finished their education at the age of 14, daily Internet use is positively and significantly related to volunteering on a regular basis (upper left panel in Figure 3). For those respondents finishing at age 23, this relationship is still positive but weaker. The relation turns insignificant for those who finish their education at age 24. In this regard, the less educated benefit more from mobilization and communication via the Internet than those who are better educated. Additionally, model 2b shows that there is a significant interaction between internet use and employment status, at least for those respondents who are not working (upper right panel in Figure 3). These findings support the argument that people with a lower socio-economic status could be mobilized for voluntary work through Internet use.

The interaction term between age and daily Internet use is positive and significant (model 2c; table A3). The lower left panel in Figure 3 illustrates the interaction for regular volunteering and the confidence intervals show under which conditions Internet use influences volunteering significantly.<sup>6</sup> With increasing age, daily Internet use exhibits an increasingly positive effect on volunteering. Put differently, daily Internet use is positively related to volunteering for older but not for younger cohorts. We observe no significant relation for respondents younger than 30, but we find that daily Internet use is positively related to volunteering for respondents older than 30 as. Older respondents seem to benefit more from the Internet than younger respondents at least in terms of volunteering. The result can be attributed to two factors that work in conjunction with each other. Older respondents that use the Internet seem to be mobilized for

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<sup>6</sup> It has to be noted, that among the younger cohort Internet use is no distinctive feature. A closer look at the distribution shows that between 60 and 80 per cent of the people younger than 30 use the Internet on a daily basis. Thus, the variation might not be sufficient to explain volunteering among the younger cohort.

voluntary work more efficiently than younger respondents. Moreover, in combination with their intrinsic motivation, this seems to increase their likelihood of volunteering compared to those respondents who do not use the Internet on a daily basis.<sup>7</sup> The results support the contention, that older adults use the Internet to compensate their lack of resources.

– Figure 3 around here –

The last significant interaction term is between daily Internet use and type of community (model 2d; table A3). The coefficient for daily Internet use is positive and significant if the indicator of community type is zero (rural communities). The interaction coefficient indicates a decreasing effect of Internet use for people who live in urban communities (lower right panel in Figure 3). That is, for people living in rural communities, Internet is positively related to volunteering while for those living in urban areas, the relationship is insignificant. Consequently, here we find a reinforcing effect as people in rural areas who are normally more likely to volunteer, are mobilized through the Internet. In order to evaluate the robustness of our results, we conducted sensitivity analyses documented in the appendix. As suggested by van der Meer et al. (2010), we graphically explored the aggregate relationship between Internet use and volunteering to uncover outlying cases on the country level. The scatter-plot reveals that two countries can be regarded as outlying cases: the Netherlands and Sweden. Following the argumentation of van der Meer et al. (2010, p. 176), however, the exclusion of single level-two units does not always suffice to detect a cluster of influential cases. Instead of excluding these two countries, we follow van der Meer et al. (2010) and re-estimated our models (1, 2a, 2b, 2c and 2d) including a dummy variable for individuals living in one of those two countries into our model. The coefficients for daily Internet use as well as our interaction effects remain stable and significant (see appendix table A4).

### **Summary of the results**

In this study, we examine the link between Internet use on the probability of doing voluntary work. Our key findings are twofold. First, we show that daily Internet use is positively related to the probability to volunteer. Second, our results indicate that this relationship is not universal but varies across certain groups of the population.

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<sup>7</sup> The plot only displays the probability for the category regular volunteering to make the figure more lucid. The probabilities are the same if all categories would have been displayed.

The first result is important because we can demonstrate the link between Internet and volunteering in a comparative manner using a comprehensive data set of 27 European societies. The results of our multi-level ordered logistic regression models show that daily Internet use is positively related with the probability of volunteering across the EU-27 societies. This relationship is present for ten of 14 different voluntary organizations that were included in our dataset. These include organizations ranging from political to sport and youth organizations. It seems that Internet applications complement and foster traditional offline interactions. This finding supports previous studies and shows that this positive influence is also present for voluntary work as a special form of social connectedness.

The second finding of group-specific effects suggests that the social benefits of the Internet are not universal but vary between social groups. Our analyses reveal that socio-economic status, age and residence matter. First, with regard to socio-economic status, our estimations display a decreasing positive link between Internet use and volunteering with increasing levels of education. That is, less-educated citizens seem to benefit more from Internet use than better-educated citizens. Considering that low human capital in terms of education is an obstacle to civic engagement, this engagement gap is diminished by the use of Internet technology. In this vein, the use of Internet technology may trigger helping behavior in social strata, where it is less likely to occur. Supporting this finding of Internet use as social equalizer, we also show that people who are not working are more likely to volunteer their time, when they use the Internet daily.

Second, the link between Internet use and volunteering depends on the age of respondents. People younger than 30 do not experience any Internet effect. However, for respondents older than 35, we find an increasingly positive relation between daily Internet use and volunteering. While young respondents do not profit from using Internet applications, middle-aged and older respondents seem to benefit in terms of volunteering. Particularly for people, who have reached retirement age, Internet use has the potential to counter the tendency to volunteer less and withdraw from social life. The Internet might work as a mobilization instrument for this segment of the population, as it seems to decrease the role of mobility, ease the access to information and increase communication and contact (Filsinger and Freitag 2019). Moreover, older people seem to use the Internet to (re-)connect with contacts as well as their social surroundings, pointing towards the importance of Internet applications as a communicative infrastructure also for older adults (Selwyn et al. 2003; Wagner et al. 2010).

Third, type of community moderates the relation between Internet use and volunteering. While Internet users in rural areas are more likely to engage in helping behavior, a similar relationship cannot be reported for Internet users in urban areas.

## **Discussion**

Our study advances the literature on the social implications of the Internet in several ways. First, we investigate a form of social interaction that has been mainly neglected in previous research but constitutes a cornerstone of social life. In the discussion on the social implications of Internet technologies, displacement of offline social activities is an often-raised concern. Volunteering constitutes a time and resource-intensive form of social interaction and is thus particularly vulnerable to a displacement by online activities. Against this backdrop, it is good news that we are able to show a positive relationship between Internet use and volunteering. Digital technologies do not crowd out offline community activities but they even seem to strengthen them.

Second and contrary to most previous work, we investigate the effects of Internet use on voluntary work in a comparative setting including 27 societies. Although previous single-country studies provide important insights, they do not allow any conclusions about cross-national trends. By contrast, our study shows a robust positive link between Internet use and volunteering across 27 societies indicating that this is a general trend across Europe.

Third, we account for the possibility that Internet use does not affect the whole population in the same way. We model group-specific Internet effects, focusing on socio-economic and socio-demographic group characteristics. The results indicate that particularly elderly, less educated and rural citizens benefit the most from using the Internet on a frequent basis. That means that the Internet is at least partly able to compensate missing resources, such as education, and can be seen as a tool to equalize social participation.

Fourth, we contributed to the broad literature on volunteering by giving insights on how volunteering is shaped in the digital society. Our findings add an additional explanation to the established literature that shows robust relationships between volunteering and demographic factors, socioeconomic characteristics, life cycle events as well as structural and institutional contexts (Ruiter and de Graaf 2006; Nesbit 2012). While many of these previous studies point to factors that create inequalities in volunteering, we identify Internet use as a potential means to overcome these inequalities. Internet technologies are not necessarily threatening the social participation, but on the contrary can help to foster helping behaviour in social strata where it

is normally less likely to occur. Our research, therefore, makes an important contribution to understand the logics of social participation in the digital age.

Fifth, we also investigated whether the relationship between Internet use and volunteering differs across types of voluntary organizations. The results show that Internet use facilitates voluntary work in almost all kinds of organizations. Thus, the positive link not only seems to be a universal phenomenon across societies but also across organizations.

However, our study has several caveats that must be kept in mind when interpreting the results. First, our data base must be critically discussed. We have decided to use data that dates to 2011 because this Eurobarometer data set offers us the rare opportunity to investigate the link between Internet use and civic engagement in a cross-country comparison including 27 European societies. Additionally, the fact that the data has been collected in 2011 makes the question on daily Internet use a well-suited indicator for the frequency of Internet usage. The measure reveals a considerable amount of variance and allows us to distinguish frequent users and technologically affine persons from occasional and less technologically affine Internet users. To make this distinction in 2019, we would need more fine-grained measures because daily use of the Internet has become the norm. Yet, these measures are difficult to obtain (Dvir-Gvirsman et al. 2016). Hence, the data from 2011 can still offer valuable insights of the social consequences of the intensity of Internet use.

Second, we are not able to test all relationships and mechanisms we discuss in our theoretical considerations due to measurement restrictions of the data at hand. For instance, we are not able to differentiate between various forms of digital technology usage. Thus, we include all forms of Internet use, leading to interaction with others or not. As a result, our findings should be refined in the future, advancing the research of Internet applications and of more fine-grained indicators of Internet usage to identify the connective potentials of Internet use in a comparative manner. Moreover, we cannot test the mechanisms we assume to cause the group-specific effects, for instance the stronger effects for elderly, because we lack detailed measures of motivations and purposes of Internet use.

Another important caveat is the cross-sectional nature of our data, which makes precise causal claims impossible. To address this issue, we control for the most troublesome confounders that potentially relate to both, Internet use and volunteering, and might therefore impair their relation. Still, our analytical strategy cannot reveal causality or disentangle causal directions. One may argue that Internet use fosters volunteering while it is also possible that those respondents, who volunteer have a larger network promoting the use of Internet applications.

Previous research has shown a positive link between social engagement and network breadth or other indicators of social connectedness (Wollebaek and Selle 2002; Isham et al. 2006). Thus, it is likely that volunteers will use Internet applications to keep in touch with their larger networks. Moreover, volunteering itself increasingly requires web-based communication such as e-mail or social media. Thus, individuals, particularly the elderly, might gain further experiences in handling new technologies and start to apply this knowledge in their private life by using the Internet more intensively. This would be in line with the idea that voluntary work offers learning experiences from which individuals can benefit (Benenson and Stagg 2016). Most likely, both mechanisms are at work and reinforce each other: Internet use affects volunteering and volunteering affects Internet use (Erhardt and Freitag 2019). Erhardt and Freitag (2019) find that Internet use and voluntary participation have a positive, reciprocal relationship inducing a virtuous circle. A stricter test of causality requires longitudinal data. While this data might be available for single countries, there is no panel data set available covering 27 European societies. Consequently, we can only acknowledge the possibility of reversed causation and clarify that no conclusions on the causal direction of the relationships can be drawn from our analysis.

Future research should further investigate the possible role of socioeconomic and socio-demographic factors in moderating the influence of Internet use on traditional social relationships. Moreover, it has to be acknowledged that our Eurobarometer measures of Internet use as well as volunteering do not allow detailed distinctions about how exactly the Internet has been used or what types of voluntary work have been actually done. In particular, social networking sites were not included, thus neglecting a prominent feature of the digital world. Therefore, future research should include fine-grained measurements of Internet habits as well as volunteering.

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## Figures

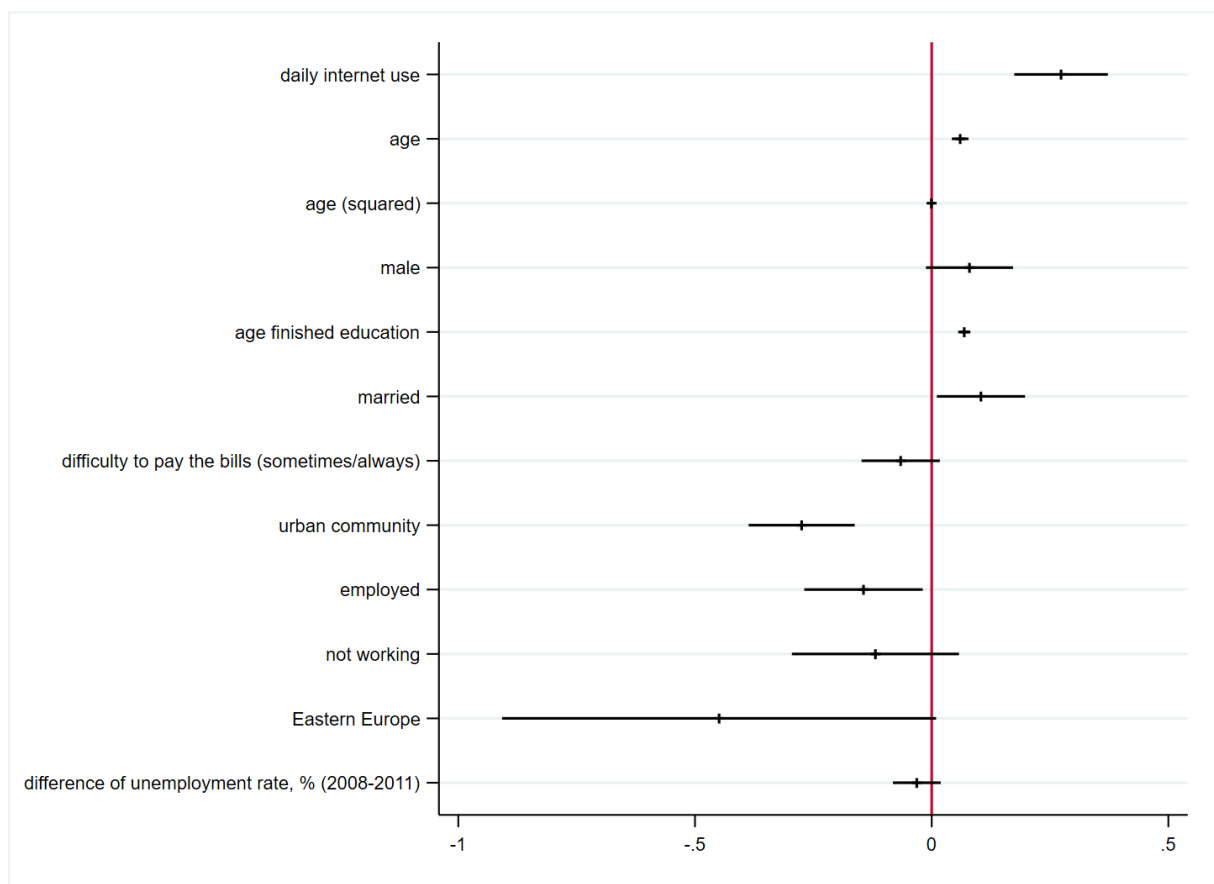


Figure 1 Coefficient plot (with 95% confidence intervals) for the relationship between

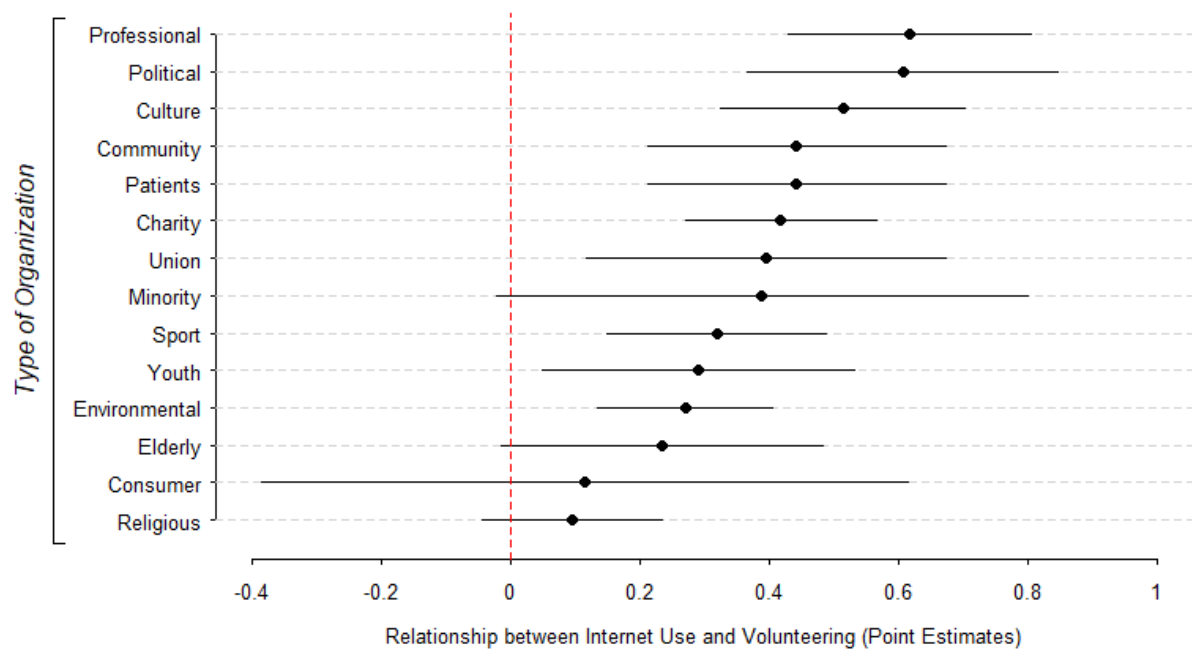


Figure 2 Coefficient plot (with 95% confidence intervals) for the relationship between daily Internet use and volunteering based on multi-level ordered logistic regressions for different voluntary organizations.

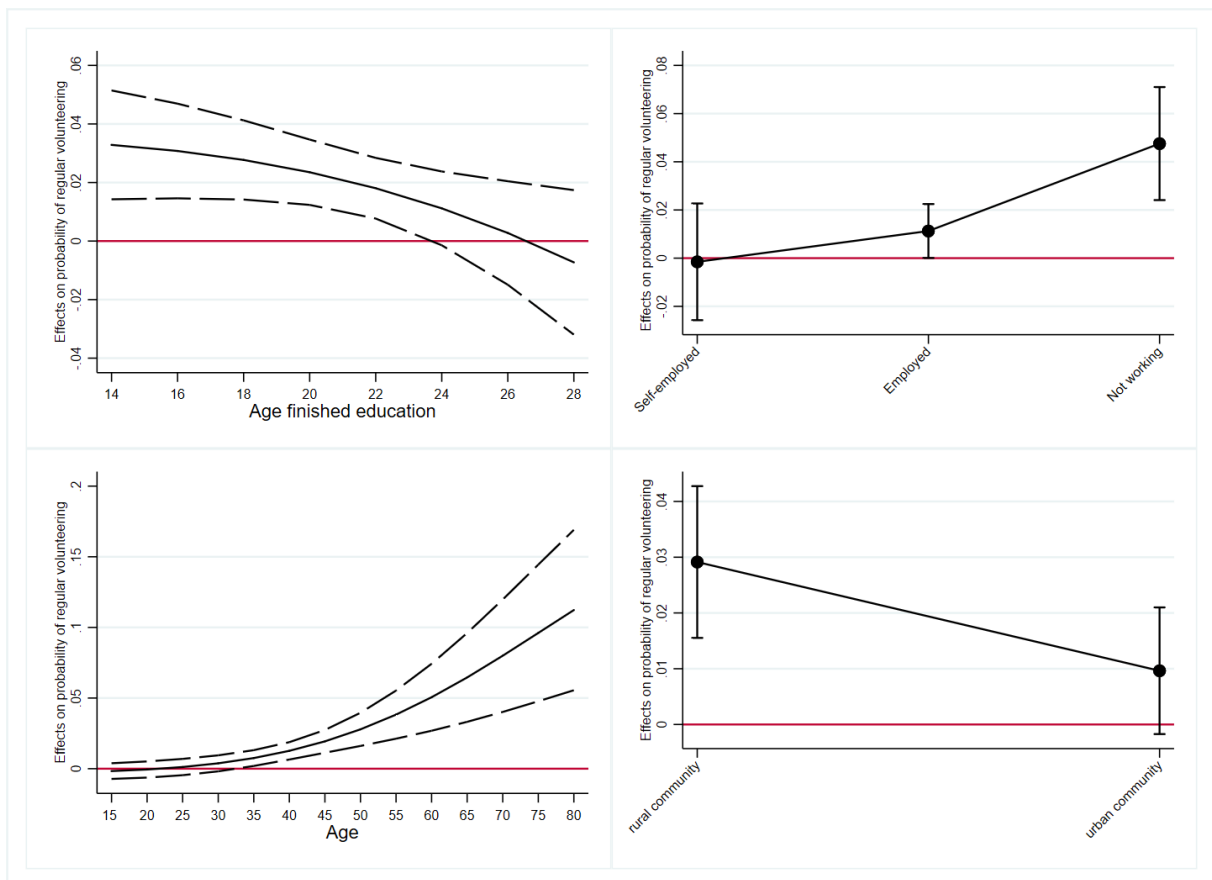


Figure 3 Conditional marginal effect (with 95% confidence intervals) of daily Internet use on regular formal volunteering.

## Online appendix

Article: Information

Filsinger, Maximilian; Ackermann, Kathrin; Freitag, Markus (2019): Surfing to help? An empirical analysis of Internet use and volunteering in 27 European Societies. In *European Societies*.  
<https://doi.org/10.1080/14616696.2019.1663895>

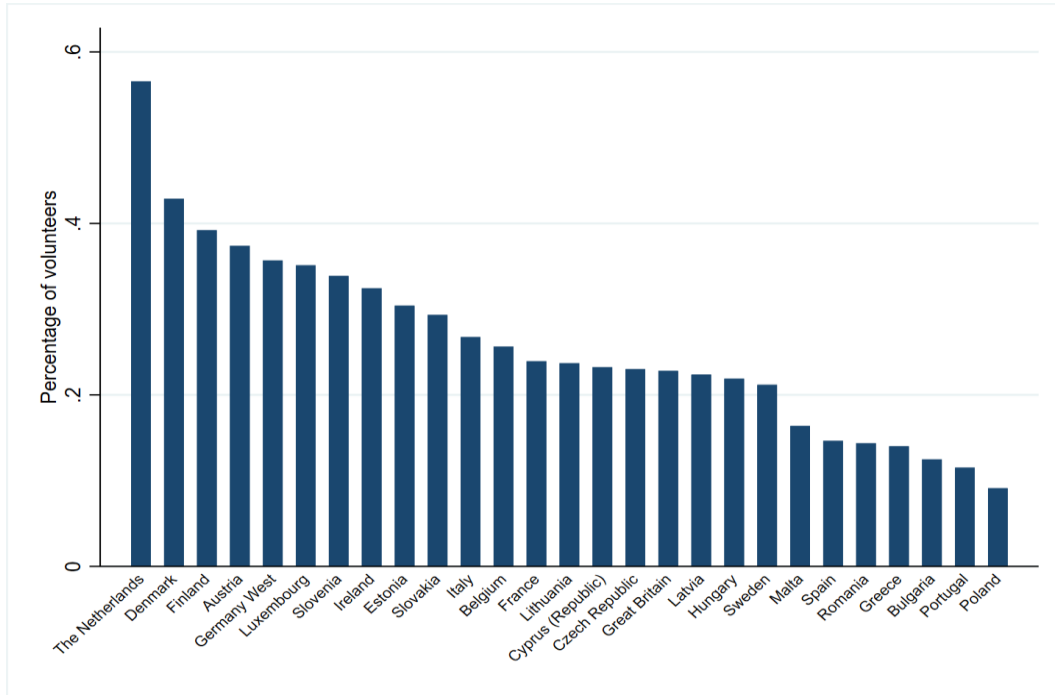


Figure A1 Percentage of volunteers across countries

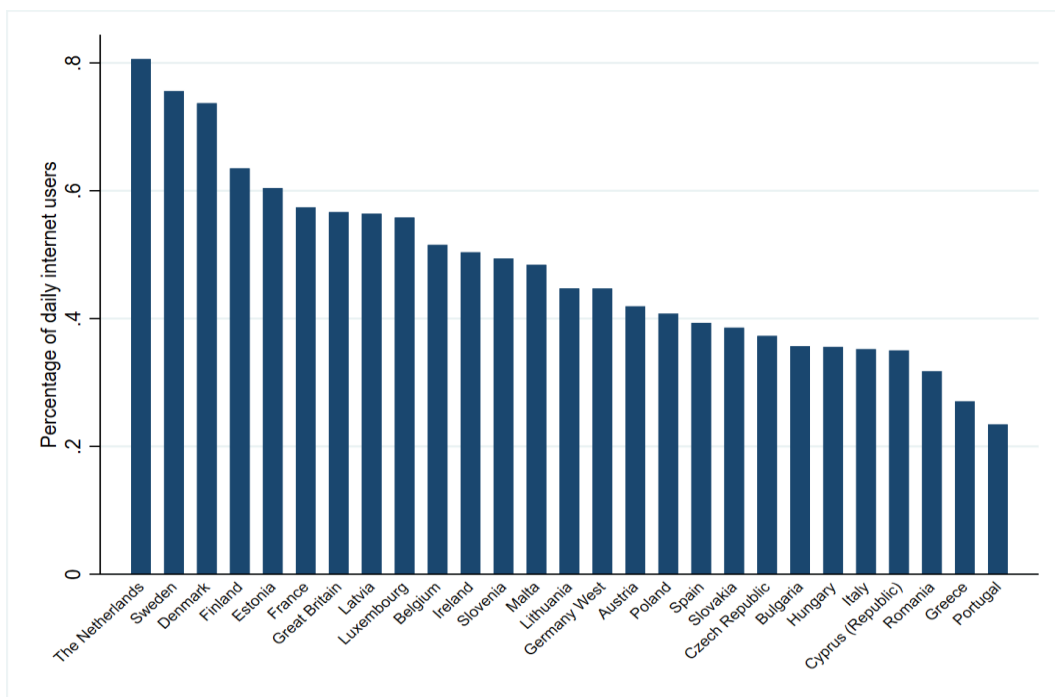


Figure A2 Percentage of daily Internet users across countries

*Table A1 Variables, Operationalization, Descriptive Statistics and Source*

	Operationalization	Mean	Std. Dev.	Min	Max
<i>Level 1 (Individual)</i>					
Daily Internet use	Internet use: Dichotomous variable: 0 = not daily; 1 = daily	.45	0.50	0	1
Volunteering	Do you currently have a voluntary activity on a regular or occasional basis?	-	-	1	3
No (1)		.74	-		
Yes, on occasional basis (2)		.16	-		
Yes, on regular basis (3)		.10	-		
Sex	Sex of respondent: Dichotomous variable: 0= female; 1 = male	0.46	0.50	0	1
Age	Age of respondent: "How old are you?"; Continuous variable	48.36	18.20	15	96
Education	Education of respondent: "How old were you when you stopped full-time education?"; Continuous variable	18.43	3.82	2	30
Community	Type of community of respondent: "Would you say you live in a...?"; Dichotomous variable: 0 = rural; 1 = urban	0.28	0.45	0	1
Marital Status	Marital status of respondent: Dichotomous variable: 0 = not married; 1 = married	0.52	0.5	0	1
Financial Deprivation	Respondent's difficulties paying bills: "During the last twelve months, would you say you had difficulties to pay your bills at the end of the month...?" Dichotomous variable: 0 = no; 1 = yes	0.40	0.49	0	1
Employment status	What is your current occupation status?	-	-	1	3
(1) self - employed		.007	-		
(2) employed		.41	-		
(3) not working		.52	-		
<i>Level 2 (Country)</i>					
Eastern Europe	Geographical region of country: Dichotomous variable: 0 = West Europe; 1 = East Europe	0.39	0.49	0	1
Unemployment	Relative difference of unemployment rate from 2008-2011: Continuous variable	3.77	3.26	-1.6	10.1

Sources: Eurobarometer 2011 (individual level), Comparative Political Data Set 2014 (country level)



Table A2 Multi-level ordinal logistic regression models on formal volunteering

DV: Volunteering	Model 1
Daily Internet use	0.273*** (0.05)
Age	0.06*** (0.009)
Age (squared)	-0.001*** (0.000)
Male	0.08* (0.047)
Married	0.069*** (0.007)
Education	0.104** (0.048)
Difficulties to pay the bills (sometimes/always)	-0.065 (0.042)
Type of community (urban)	-0.275*** (0.057)
Employed	-0.144** (0.064)
Not working	-0.119 (0.09)
Eastern Europe	-0.449* (0.234)
Difference of unemployment rate (2008-2011)	-0.031 (0.026)
Cut 1	3.631*** (0.238)
Cut 2	4.827*** (0.212)
Constant	0.252*** (0.0744)
Observations	22362
No. of Countries	27
AIC	31044.2
BIC	31164.4
Log Likelihood	-15507.1
Wald Chi2	881.3
P >Chi2	0.000

Notes: Reference Category (RF) for daily Internet use = no daily Internet use; RF male= female; RF for married = not married; RF for difficulties to pay bills = never; RF for type of community = rural area, RF for employed and not working = self-employed; RF for Eastern Europe= Western Europe; robust standard errors in parentheses: \* p<0.1, \*\* p<0.05, \*\*\* p<0.01

Table A3 Multi-level ordinal logistic regression models with interaction terms on formal volunteering

	Model 2a	Model 2b	Model 2c	Model 2d
Daily Internet use	1.006*** (0.26)	-0.016 (0.128)	-0.227 (0.17)	0.319*** (0.06)
Daily Internet use # Age finished education	-0.038*** (0.012)	-	-	-
Daily Internet use # Employed	-	0.146 (0.162)	-	-
Daily Internet use # Not working	-	0.551*** (0.134)	-	-
Daily Internet use # Age	-	-	0.01*** (0.004)	-
Daily Internet use # Urban community	-	-	-	-0.19** (0.09)
Age	0.06*** (0.009)	0.057*** (0.009)	0.045*** (0.009)	0.06*** (0.009)
Age (squared)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Male	0.079* (0.047)	0.077 (0.047)	0.074 (0.048)	0.081* (0.047)
Age finished education	0.088*** (0.007)	0.068*** (0.007)	0.067*** (0.007)	0.069*** (0.007)
Married	0.103** (0.047)	0.094** (0.047)	0.095** (0.047)	0.102** (0.047)
Difficulties to pay the bills (sometimes/always)	-0.064 (0.042)	-0.07 (0.043)	-0.069 (0.043)	-0.067 (0.042)
Urban community	-0.274*** (0.058)	-0.272*** (0.057)	-0.273*** (0.057)	-0.174** (0.074)
Employed	-0.149** (0.063)	-0.228** (0.1)	-0.143** (0.064)	-0.145** (0.064)
Not working	-0.121 (0.089)	-0.399*** (0.062)	-0.125 (0.087)	-0.121 (0.09)
Eastern Europe	-0.462** (0.232)	-0.439* (0.233)	-0.439* (0.234)	-0.446* (0.234)
Difference of unemployment rate, (2008- 2011)	-0.031 (0.025)	-0.031 (0.026)	-0.031 (0.026)	-0.032 (0.026)
Cut 1	3.979*** (0.271)	3.372*** (0.221)	3.116*** (0.279)	3.644*** (0.239)
Cut 2	5.174*** (0.243)	4.569*** (0.213)	4.312*** (0.271)	4.840*** (0.214)
Constant	0.246*** (0.0723)	0.249*** (0.0730)	0.251*** (0.0733)	0.252*** (0.0744)
Observations	22362	22362	22362	22362
No. of countries	27	27	27	27
AIC	31028.1	31006.1	31026.4	31039.6
BIC	31156.3	31142.3	31154.6	31167.8
Log. Likelihood	-15498.0	-15486.0	-15497.2	-15503.8
Wald Chi 2	887.9		929.4	931.6
P > Chi2	0.000		0.000	0.000

Notes: Reference Category (RF) for daily Internet use = no daily Internet use; RF male= female; RF for married = not married; RF for difficulties to pay bills = never; RF for type of community = rural area, RF for employed and not working = self-employed; RF for Eastern Europe= Western Europe; robust standard errors in parentheses: \* p<0.1, \*\* p<0.05, \*\*\* p<0.01

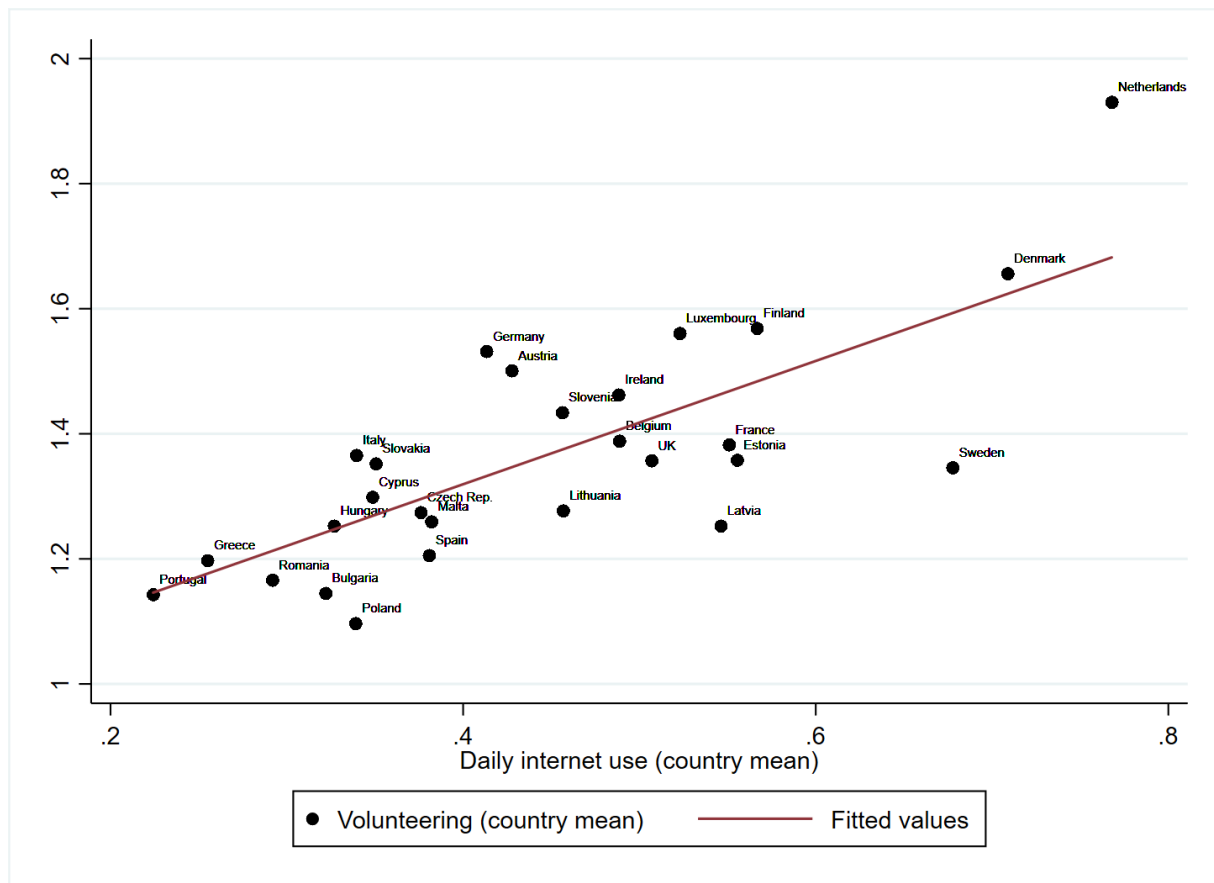


Figure A3 Scatter plot for internet use and volunteering (country means)

Table A4 Multi-level ordered logistic regression models on formal volunteering controlling for outlying countries

	Robustness 1	Robustness 2	Robustness 3	Robustness 4	Robustness 5
Daily Internet use	0.273*** (0.05)	1.005*** (0.259)	-0.016 (0.128)	-0.226 (0.169)	0.319*** (0.06)
Daily Internet use # Age finished education	-	-0.038*** (0.012)	-	-	-
Daily Internet use # Employed	-	-	0.146 (0.162)	-	-
Daily Internet use # Not working	-	-	0.551*** (0.134)	-	-
Daily Internet use # Age	-	-	-	0.01*** (0.004)	-
Daily Internet use # Urban community	-	-	-	-	-0.19** (0.09)
Age	0.06*** (0.01)	0.06*** (0.009)	0.057*** (0.009)	0.045*** (0.009)	0.06*** (0.009)
Age (squared)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Male	0.08* (0.047)	0.079* (0.047)	0.077 (0.047)	0.074 (0.048)	0.081* (0.047)
Age finished education	0.069*** (0.007)	0.088*** (0.007)	0.068*** (0.007)	0.067*** (0.007)	0.069*** (0.007)
Married	0.104** (0.048)	0.103** (0.047)	0.095** (0.047)	0.096** (0.047)	0.102** (0.047)
Difficulties to pay the bills (sometimes/always)	-0.065 (0.042)	-0.064 (0.042)	-0.07 (0.043)	-0.068 (0.043)	-0.066 (0.042)
Urban community	-0.275*** (0.057)	-0.274*** (0.058)	-0.272*** (0.057)	-0.273*** (0.057)	-0.174** (0.074)
Employed	-0.144** (0.064)	-0.149** (0.063)	-0.229** (0.1)	-0.143** (0.064)	-0.145** (0.064)
Not working	-0.119 (0.09)	-0.121 (0.089)	-0.399*** (0.062)	-0.125 (0.087)	-0.121 (0.09)
Eastern Europe	-0.417* (0.226)	-0.431* (0.224)	-0.409* (0.225)	-0.411* (0.227)	-0.414* (0.226)
Difference of unemployment rate (2008-2011)	-0.028 (0.025)	-0.027 (0.025)	-0.028 (0.025)	-0.028 (0.025)	-0.028 (0.025)
Outlier (NLD SWE)	0.325 (0.628)	0.321 (0.622)	0.311 (0.626)	0.297 (0.623)	0.324 (0.629)
Cut 1	3.678*** (0.264)	4.025*** (0.315)	3.416*** (0.236)	3.160*** (0.258)	3.691*** (0.266)
Cut 2	4.874*** (0.244)	5.221*** (0.294)	4.614*** (0.230)	4.357*** (0.252)	4.887*** (0.246)
Constant	0.245*** (0.067)	0.240*** (0.065)	0.242*** (0.066)	0.245*** (0.067)	0.245*** (0.067)
Observations	22362	22362	22362	22362	22362
No. of countries	27	27	27	27	27
AIC	31045.5	31029.4	31007.4	31027.8	31040.9
BIC	31173.7	31165.6	31151.7	31164.0	31177.1
Log. Likelihood	-15506.7	-15497.7	-15485.7	-15496.9	-15503.4
Chi2	888.5	1067.9	926.3	945.1	1025.8
P > Chi2	0.000	0.000	0.000	0.000	0.000

Notes: Reference Category (RF) for daily Internet use = no daily Internet use; RF male = female; RF for married = not married; RF for difficulties to pay bills = never; RF for type of community = rural area, RF for employed and not working = self-employed; RF for Eastern Europe = Western Europe; robust standard errors in parentheses: \* p<0.1, \*\* p<0.05, \*\*\* p<0.01