

Welfare impacts of participation

Deliverable 3.3 of the project:
“Impact of the Third Sector as Social Innovation” (ITSSOIN),
European Commission – 7th Framework Programme

1 September 2015

Deliverable of the
FP-7 project: ITSSOIN (613177)



Suggested citation

De Wit, A., Bekkers, R., Karamat Ali, D., & Verkaik, D. (2015). *Welfare impacts of participation*. Deliverable 3.3 of the project: “Impact of the Third Sector as Social Innovation” (ITSSOIN), European Commission – 7th Framework Programme, Brussels: European Commission, DG Research.

Acknowledgements

We would like to thank our partners within the EU-sponsored project “ITSSOIN – Impact of the Third Sector as Social Innovation” for their extensive support in preparing this report. The partner network consists of the University of Heidelberg for Germany, VU University Amsterdam and the Netherlands Institute for Social Research for the Netherlands, London School of Economics and Political Science for England, Università Commerciale Luigi Bocconi for Italy, Copenhagen Business School for Denmark, ESSEC Business School for France, Masaryk University for the Czech Republic, Universidad da Coruña and Universidad Oviedo for Spain and the Stockholm School of Economics for Sweden. We thank colleagues from the ITSSOIN team at Masaryk University and Gorgi Krlev for helpful comments on a draft version of this report.

ITSSOIN

ITSSOIN is a research project funded under the European Commission’s 7th Framework Programme responding to a call to investigate “The impact of the third sector on socio-economic development in Europe”. The project is a research collaboration between 11 European institutions led by the University of Heidelberg and runs from 2014-2017.

Date:	1 September 2015
ITSSOIN deliverable:	No. 3.3
Authors:	De Wit, A., Bekkers, R., Karamat Ali, D., & Verkaik, D.
Lead partner:	VU University Amsterdam
Contact person:	René Bekkers Center for Philanthropic Studies, VU University Amsterdam r.bekkers@vu.nl +31 (0)20 598 6493

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1. Introduction

What is the impact of the third sector on social innovation? In the current report we narrow down this broad question to the impact of third sector activities by individual participants. As argued in the theoretical framework of the ITSSOIN project by Anheier et al. (2014a), volunteers play an important role in producing social innovation. Here we focus on the potentially beneficial effects of participating in third sector activities for the volunteer him/herself. As the literature on volunteering clearly shows a higher level of well-being among volunteers, the exciting possibility emerges that volunteering may promote the well-being of participants. In this case, volunteering may not only be good for society as a whole, but also for the individual volunteers who spend time doing good works. Sceptics, however, dispute this possibility, arguing that the higher level of well-being among volunteers is not due to their volunteering activities, but merely reflects a higher willingness to volunteer among citizens who also report a higher level of well-being. When people are more satisfied with their own lives they are more likely to contribute to the well-being of others, the argument runs, but it makes no difference to their well-being at all. In this case, pre-existing levels of well-being determine volunteer choices, but are not affected by them.

Which explanation is true? What is the causal relationship between third sector participation and volunteer benefits at the micro level? What is the impact of third sector activities on participants – is it real? How large is the impact?

There are many third sector activities that may have beneficial effects, like memberships, charitable donations and informal grass-roots initiatives. Here we focus on formal volunteering, i.e., engagement in voluntary work for a third sector organisation. Volunteering is an intensive form of participation that constitutes an important part of societal impact of the third sector. The current report is part of the ITSSOIN Work Package 3, which also includes a literature review (Bekkers & De Wit, 2014), a methodological discussion (Bekkers & Verkaik, 2015) and an empirical analysis of organisational strategies to enhance the breadth and impact of voluntary engagement (De Wit et al., 2015). Based on these foundations and the ITSSOIN hypotheses document (Anheier et al., 2014b), we test four hypotheses. In addition to a global evaluation of well-being we focus on three of its dimensions: health, careers, and social networks.

First, we expect volunteering to improve citizen's general life satisfaction as a result of the 'warm glow' of being involved in prosocial behaviour (Aknin et al., 2013; Meier & Stutzer, 2008). We labelled this expectation the

Subjective well-being hypothesis: Volunteering improves subjective wellbeing.

Second, we investigate the contribution of volunteering to the health of participants. A large body of literature has investigated the relation between volunteering and health, as recently summarised by Brown & Brown (2015), Bekkers, Konrath & Smith (2014) and Jenkinson et al. (2013). Based on this literature, we test the

Health hypothesis: Volunteering improves health among volunteers.

Third, we formulate a hypothesis on career outcomes. In analyses with datasets that are also included here, Paine et al. (2013) and Strauß (2009) find weak associations between volunteering and employability in the UK but no effects in Germany. It is expected that volunteers are less likely to lose their job and more likely to (re)enter the labour market from unemployment. Also, volunteers are expected to be better able to cope with ageing and to stay in the labour market even when reaching the retirement age. We test the

Career hypothesis: Volunteering improves career outcomes among volunteers.

Finally, we test the expectation that volunteering strengthens social networks. Through volunteer work, people meet new people, expanding their social circle of friends, acquaintances and professional ties (Musick and Wilson, 2008). We labelled this expectation the

Networks hypothesis: Volunteering increases the size and diversity of social networks of volunteers.

2. Data and strategy

A large body of research has examined the relationship between volunteering and well-being. Unfortunately, many studies trying to estimate the impact of volunteering on the individual level suffer from methodological problems. As pointed out in our critical review of the evidence (Bekkers & Verkaik, 2015), most studies fail to adequately rule out reverse causality and suffer from omitted variable bias. The recent work by Binder & Freytag (2013) is an exception to this general rule.

In the current report we aim to provide evidence on the impact of third sector activities on participants with a reduced risk of reverse causality and omitted variable bias. We analyse data from longitudinal panel surveys to estimate the beneficial effects of volunteering to the welfare of participants, using different datasets from different countries to be able to test theoretical expectations in multiple contexts.

2.1. Datasets

In our analyses we use six large datasets covering fifteen countries in Europe. In total, we analysed 845.733 survey responses from 154.970 different respondents. Table 1 provides details on the datasets we used. In all datasets, only respondents aged 18 and over who participated in more than one wave were selected.

The *German Socio-Economic Panel (GSOEP)* (Wagner, Frick & Schupp, 2007) is Europe's longest running household panel survey, including questions on a wide range of socio-economic issues. The survey started in 1984 with a nationally representative

sample of households in Germany. In 1990 households from Eastern Germany were added to the sample. A sample of immigrants was added in 1994/95 and a sample of wealthy households in 2002. The survey is conducted face-to-face; from 1994/95 onwards computers are used (CAPI). The GSOEP analyses include 451.053 observations from 56.360 participants in 28 waves.

The *British Household Panel Survey (BHPS)* (Taylor et al., 2010) is a long-running panel with questions on a wide range of socio-economic issues. A nationally representative sample is drawn of households in Great Britain, Wales, Scotland and Northern Ireland, whose members are interviewed at their home if possible. At Wave 9 of the BHPS, the survey moved from a pen-and paper (PAPI) mode of data collection to Computer Assisted Personal Interview (CAPI). In 2009 the BHPS was succeeded by *Understanding Society*, for which the same panel of people was asked to join the new survey. The BHPS/US analyses include 111,062 observations from 20,798 participants in 8 waves.

The *Swiss Household Panel (SHP)* (Voorpostel et al., 2014) is an annual survey among a random group of households in Switzerland since 1999. The survey includes questions on a wide range of social and economic issues. Data is collected through Computer Assisted Telephone Interviews (CATI). The SHP analyses include 126,638 observations from 16,628 participants in 4 waves.

Table 1 Datasets and measures

Dataset	Country	Years	N	Health	Subjective well-being	Career	Social relations
German Socio-Economic Panel (GSOEP)	DE	'84-'11	451,053 surveys, 56,360 persons	Satisfaction with health (0-10)	General life satisfaction (0-10)	Paid work (0-1)	Number of close friends
British Household Panel Survey (BHPS) / Understanding Society (US)	UK	'96-'12	111,062 surveys, 20,798 persons	Subjective health (1-7)	Satisfaction with life (1-7)	Paid work (0-1)	Satisfaction with social life (1-7)
Swiss Household Panel (SHP)	CH	'99-'13	126,638 surveys, 16,628 persons	Subjective health (0-10)	Satisfaction with life (0-10)	Paid work (0-1)	Satisfaction with personal relationships (0-10)
Giving in the Netherlands Panel Survey (GINPS)	NL	'02-'14	8,930 surveys, 2,795 persons	Subjective health (1-5)	-	Paid work (0-1)	Position generator (0-14)
Survey of Health, Ageing and Retirement in	AT, DE, SE, NL, ES, IT, FR, DK,	'04-'13	138,971 surveys, 55,657 persons	Subjective health (1-5)	Satisfaction with life (0-10)	Paid work (0-1)	-

Europe (SHARE)	GR, CH, BE, CZ, PL, SI, EE						
Longitudinal Ageing Study Amsterdam (LASA)	NL	'93-'06	9,069 surveys, 2,732 persons	Subjective health (1-5)	CES-D depressive symptoms (reversed, 0-60)	-	Number of people in social network

The *Giving in the Netherlands Panel Survey (GINPS)* (Bekkers, Boonstoppel & De Wit, 2013) is a biennial survey among a representative sample of Dutch households which includes extensive modules on charitable giving, prosocial values, volunteering and informal helping. The first wave of the panel survey took place in 2002. Respondents are in a database of people who agreed to participate in a survey every once in a while and are interviewed online (CAWI). The GINPS analyses include 8,930 observations from 2,795 participants in 6 waves.

In addition to these general population studies, we use two studies specifically among senior citizens.

The *Survey of Health, Ageing and Retirement in Europe (SHARE)* is a large cross-national panel among people aged 50 years or older. We use data from 15 European countries. Some countries joined the survey later than others. For the Czech Republic there are three waves available; for Greece, Poland, Slovenia and Estonia there are two waves available. Data is mainly collected through Computer Assisted Personal Interviewing (CAPI). The SHARE analyses include 138,971 observations from 55,657 participants in 3 waves.

The *Longitudinal Ageing Study Amsterdam (LASA)* (Huisman et al., 2011) is a survey among people aged 55 years or older that runs since 1992/1993 and is conducted every three years. The sample is drawn from the population of 11 Dutch municipalities in three different regions. People are interviewed at their home (CAPI). The LASA analyses include 9,069 observations from 2,732 participants in 4 waves.

2.2. Measures

Metrics. To enable a comparison of the results across different countries in Europe, we aim to use similar measures of the dependent variables in all datasets. Table 1 shows an overview of the datasets and measures. Appendix 1 contains a full description of the survey instruments that are used. Unfortunately, not all the relevant questions were asked in exactly the same manner in the different datasets. All ordinal and interval variables were rescaled so that they range from 0 (lowest) to 1 (highest) and are treated as linear variables.

Volunteering is measured in different ways across the available datasets. In most surveys, only one question on volunteering is included, without an explanation of the

term volunteering. This type of question is likely to yield an underestimate of the total number of volunteer activities when respondents do not recognize their activities as volunteering and because people may forget episodic volunteering activities. Respondents in the BHPS go through a list of possible leisure activities in which ‘unpaid voluntary work’ is included. This measure is similar to the question in the GSOEP (Künemund & Schupp, 2007) how frequently respondents perform volunteer work (‘ehrenamtliche tätigkeiten’). The SHARE includes a dichotomous variable on ‘voluntary or charity work’. The SHP explicitly mentions ‘honorary or voluntary activities within an association, an organisation or an institution’ (SHP), where ‘honorary’ is a translation of ‘ehrenamtliche’, which is a common form of volunteering in German-speaking countries. Both the GINPS and the LASA provide respondents with a list of possible organisations people can be involved in, which is likely to raise the number of people who indicate that they volunteer.

Subjective well-being was not measured with identical questions across datasets. The BHPS, the SHARE and the SHP (from 2000 onwards) all include questions on life satisfaction, which are measured on different scales. Because the response categories are different in the Understanding Society questionnaire we did not use these variables. The GINPS only has life satisfaction in two waves, which does not allow for an analyses that is comparable to the other datasets. The LASA has the Center for Epidemiologic Studies Depression Scale (CES-D) which we use as a reversed measure of emotional well-being. The scale lists 20 depressive symptoms that might have been experienced in the past week, with answers ranging from 0 ‘rarely or never’ to 3 ‘mostly or always’, resulting in a 0 to 60 scale measuring the frequency of depressive symptoms.

Subjective health measures are included in all surveys, typically with response categories on 5 points Likert scales. The GSOEP asks the health question on a 0 to 10 scale. Understanding Society uses different response categories than the BHPS so we only use the latter dataset. The first SHARE questionnaire used two different categorisations and randomly assigned respondents to one of them. In order to have similar categories we only included respondents who were given the scaling that continued throughout other waves.

Career. For the career measures, we used the items indicating whether respondents had a paid job when taking the survey. Additionally, a dichotomous measure of being retired is included in order to distinguish retiring from leaving paid work for another reason.

Social relations. Measuring social relations in an equivalent manner across surveys posed a problem. Three surveys contain measures of the number social contacts; two surveys contain measures on the satisfaction with social relations. The latter type of question reflects not only the availability of friends as a resource, but also reflects the participants’ evaluation of these ties. The results for the evaluative measures may therefore be different and resemble the results for life satisfaction. The LASA includes a measure on the number of people in one’s network, where we take 0 contacts as the minimum and 50 contacts as the maximum possible score. The GSOEP includes a question asking how many ‘close friends’ the respondent has. The number was not constrained; we cut off responses above 50. The GINPS includes a position generator

(Lin & Dumin, 1986). For a list of 14 occupations people are asked whether they have a family member, friend or acquaintance with this occupation. Volunteering is expected to increase the number of friends and acquaintances but not the number of family members, so here the maximum score is 14 friends/acquaintances. The BHPS/US and the SHP both do not have a measure on the network scope but have questions on satisfaction with one's social relations, which is another indicator of the quality of one's network, which is included in the SHP from 2001. Again, Understanding Society changed the answer category scaling and is not included. The SHARE does not have a suitable indicator of the scope or quality of social relations that has been included in multiple waves.

Two control variables are used in the regression analyses. Age is measured as age at the time of the interview. Also we include a dummy variable for being married (no/yes), which is asked as marital status in each wave of the BHPS, the GSOEP, the SHP and the GINPS. The SHARE has a slightly different method, asking people whether their marital status has changed since the last wave they participated in. This may reduce measurement error. Our LASA dataset did not contain a measure of marital status so we used a self-reported variable on having a partner (no/yes), which is less comparable with the measures of the other datasets but does form a reasonable proxy for marital status.

2.3. Strategy

How can we estimate the impact of volunteering on the well-being of participants? As more extensively discussed in Bekkers & Verkaik (2015), there can be two explanations for the finding that volunteers have higher levels of well-being than non-volunteers.

First, there might be a process of *causation* when people who start volunteering become happier than they were before, because they started doing voluntary work. Similarly, when people stop volunteering their well-being may decline as a result of this change. In both cases of joining or quitting, the change in volunteer activity is associated with a subsequent increase or decrease in well-being. In addition, among volunteers changes in the intensity of volunteering could also be associated with changes in well-being. Those who become more engaged could benefit more than those who become less engaged. Processes of causation could have clear public policy implications. If volunteering pays off in terms of well-being, it could be wise to examine strategies that enhance volunteer activities.

However, there might also be a reverse causal process which we tend to call *selection* going on that can explain why volunteers have higher levels of well-being than non-volunteers. If people with higher levels of well-being are more willing to engage in third sector activities, they are more likely to start volunteering when they were not doing so before. Once engaged, those with higher levels of well-being may be less likely to stop volunteering or reduce the intensity of their engagement. In both cases, people with higher levels of well-being are more prevalent in the pool of volunteers than in the pool of non-volunteers. But it may very well be that their level of well-being does not change much in response to their changing level of engagement. In this scenario, people with

higher levels of well-being are more likely to be selected into volunteering and less likely to be selected out of volunteering.

The main challenge for empirical research on the benefits of voluntary engagement is to disentangle these two processes (Bekkers, 2012; Jenkinson et al., 2013). Using cross-sectional survey data it is virtually impossible to do so. In the absence of randomised control trials in which the likelihood of volunteering is manipulated, the analysis of longitudinal panel data is the best available strategy. This research design is a way to compare a self-reported state among volunteers and among non-volunteers at two points in time. Analysing changes within people from both groups is a form of a quasi-experimental design that enables us to sort out the chronology of events. While this analysis does not yield definitive proof for causation, it can show to what extent the differences between volunteers and non-volunteers arise from selection processes (Bekkers & Verkaik, 2015).

In the data analysis we follow the strategy of Van Ingen & Bekkers (2015) and Van Ingen & Van der Meer (2015). The analytical strategy is threefold.

2.3.1. Comparisons between volunteers and non-volunteers

We start by showing cross-sectional comparisons of mean scores on the dependent variables between groups of volunteers and non-volunteers. Such comparisons show the difference between people within and without voluntary engagement, but do not tell anything about causal relationships, because differences could very well be due to selection effects. We should find that subjective well-being, health, career outcomes and the quality of networks are higher among volunteers than among non-volunteers.

2.3.2. Development over time

Then we graphically show how the mean scores on the outcome variables change over the years for four groups: (1) people who always volunteered in the period under investigation, (2) people who quit voluntary work somewhere in these years, (3) people who joined volunteering somewhere in these years, and (4) people who never volunteered during this time span. Respondents who both joined and left volunteering during the years under study are excluded from these graphs. The time trends give us a better picture of the extent to which health, well-being, career status and social relations actually change over time as well as the extent to which this change differs for these four groups.

Figure 1. Hypothetical example of the development of well-being as a result of causal influences of changes in volunteering

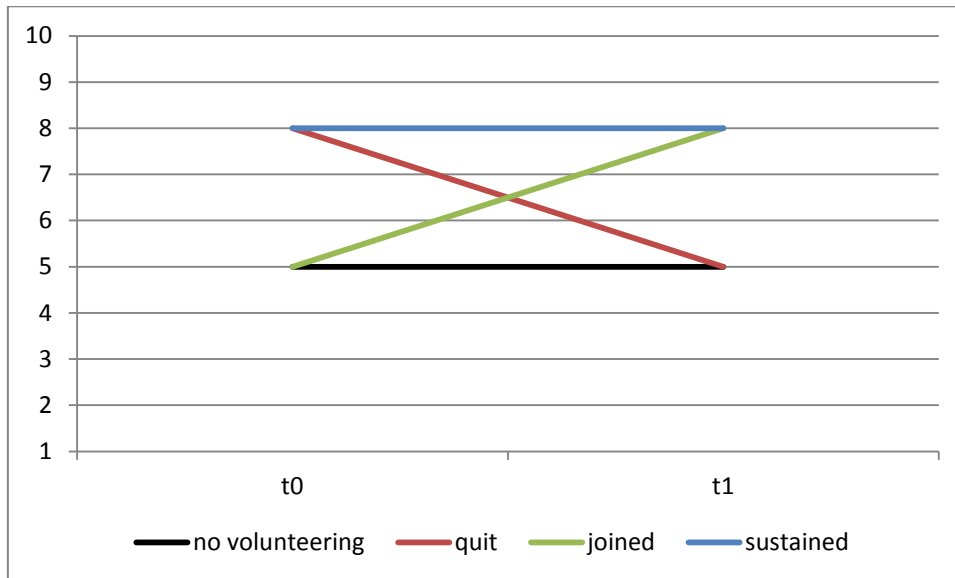


Figure 1 shows a hypothetical example of changes that are consistent with a causative process. If volunteering influences well-being, we should see in these graphs that the lines for those who start volunteering (the green line) slope upwards more strongly than the lines for those who stay out of volunteering (the black line). Also we should find that the lines for those who stop volunteering (the red line) slope downwards more strongly than the lines for those who continue volunteering (the blue line).

In this example, it is assumed that there is no general population trend in the outcome variable; hence, the lines for non-volunteers and sustained volunteers are flat. Also the figure assumes that there are no selection-effects. Those who move into volunteering and those who stay out of volunteering have the same score at t0, and those who quit volunteering have the same score at t0 as those who continue to volunteer.

2.3.3. Formal tests

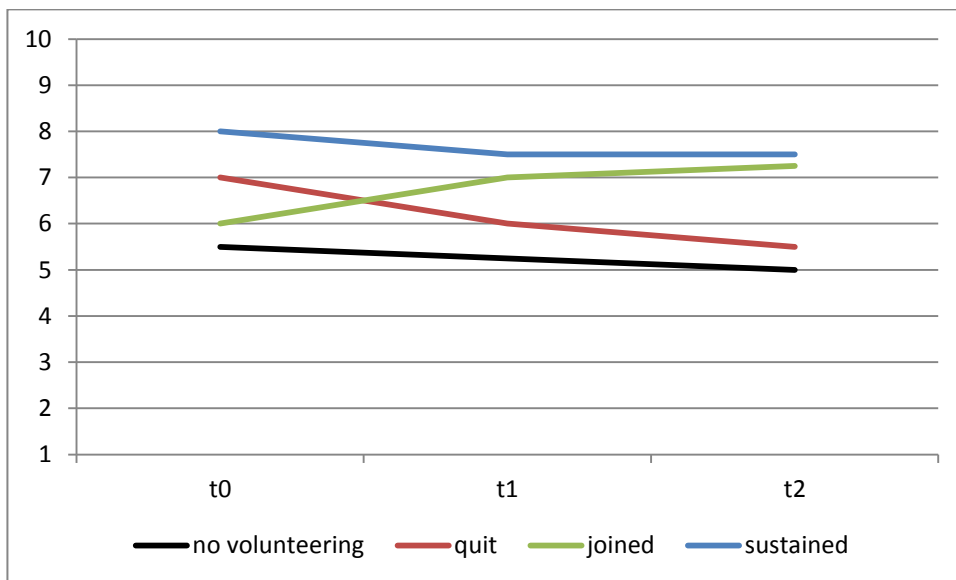
For each outcome variable, we run a set of three regression analyses.

1. We start with a simple OLS or logistic regression on the outcome variable with volunteering (no/yes) as an explanatory variable. This analysis tests whether the differences between volunteers and non-volunteers are significant.
2. Next, we add fixed effects on respondents to account for individual characteristics that do not change over time. This rules out the possibility that the correlation between volunteering and its supposed outcome is due to one category of omitted variables – i.e. those characteristics of persons that are stable, such as gender, birth year, and genetically inherited traits and characteristics transmitted through socialization by parents. To a large extent,

well-being itself is a characteristic of persons that does not change much over time (Headey, 2008). Typically, differences between volunteers and non-volunteers are strongly reduced in this type of analysis (Bekkers, 2012; Lancee & Radl, 2015; Van Ingen & Bekkers, 2015). In this case, selection is a likely explanation for the differences in cross-section.

In figure 2 we have incorporated selection effects by assuming that those who will start volunteering at some later point in time already have a higher score at t_0 than those who remain uninvolved, and those who will quit volunteering have a lower score than those who will sustain volunteerism. Note that this example also includes a general decline in well-being, as most lines slope downwards.

Figure 2. Hypothetical example of the development of well-being as a result of both causative influence of volunteering and selection processes



The pattern in figure 2 reflects a causal influence of volunteering that is constant over time. There are no duration effects in this figure. One could imagine that the effect of volunteering on well-being increases over time, such that the differences between the four groups become larger as time goes by. Such duration effects would be visible from widening gaps between those who remain inactive and those who start to volunteer and between those who remain active and those who stop volunteering.

The pattern in figure 2 also assumes that the positive effect of starting to volunteer is about equal to the negative effect of stopping. Such a symmetry is also assumed in the fixed effects model that we apply. However, it is theoretically possible that the effects of changes in volunteering activity are asymmetric, such that starting to volunteer improves well-being but stopping does not reduce well-being, or vice versa.

3. To test this, the final regression model takes the *change* in the outcome from the previous to the current wave as the dependent variable, and indicator variables for the change in volunteering from the previous to the current wave (remained uninvolved, started volunteering, quit volunteering or remained volunteering) as independent variables. In these first-difference models we account for the correlation structure of the panel data by using population-averaged models in the case of linear regression or clustered standard errors in the case of logistic regression. In each regression model we include age and a dummy variable for being married (no/yes) as controls.

2.4. Limitations

We conclude with a short discussion of what we will not do in this report.

First, we use panel data sets from a variety of countries, but do not analyse the differences between these countries. In appendix A we have included separate graphs for all of the countries studied. While rates of volunteering vary by country, we are not concerned here with the origins of these differences. Neither do we expect the welfare impact of volunteering activities to differ systematically between countries.

Second, we do not go into the mechanisms that may produce the effects of volunteering. Several mechanisms may explain why volunteering affects well-being, including social, psychological, and neurological processes (Musick and Wilson, 2008; Brown & Brown, 2015). If indeed volunteering affects well-being, it is very important to identify how this works (Jenkinson et al., 2013). We leave this task for future research, and seek to answer the question whether there is any influence that needs to be explained.

Third, we do not seek to fully explain well-being. Volunteering is just one potential factor that affects well-being, among many others. We do not test the relative influence of volunteering in a comparison with these other factors. Neither do we explore well-being in all of its dimensions. Due to a lack of comparable measures across datasets, we did not analyse material wealth or income.

Fourth and finally, we do not go into the different dimensions of participation. Several datasets allow us to distinguish between different types of activities that volunteers engage in. A few datasets include measures of the intensity of engagement (hours volunteered) and the frequency of engagement (regular vs. infrequent volunteering). We leave a comparison of these different dimensions of activities for future research.

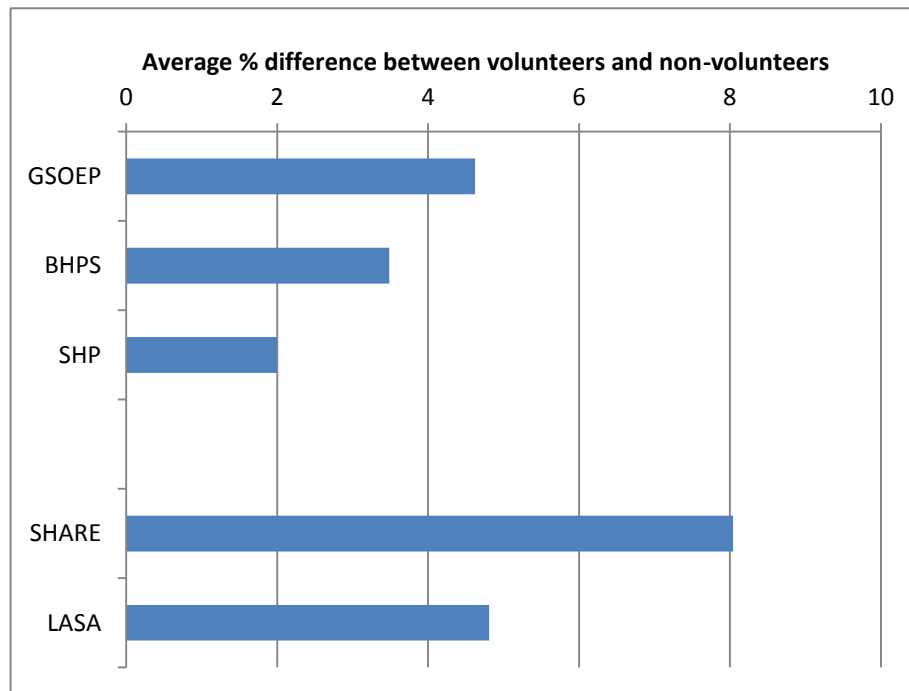
3. Empirical findings

3.1. Subjective well-being

A higher level of subjective well-being is one of the potential benefits of voluntary engagement for participants. Figure 3 confirms that volunteers have higher average scores on measures of subjective well-being than non-volunteers, recoded into a scale from 0 (low well-being) to 1 (high well-being).

Volunteers generally show higher subjective well-being than non-volunteers (see figure 3). On average, volunteers rate their well-being to be 3.8% higher than non-volunteers.

Figure 3: Percentage difference between average scores on subjective well-being among volunteers and non-volunteers



The figures in appendix 2 (A2a) show that the differences are fairly similar between countries. The one exception is again Poland, where volunteers score slightly lower on life satisfaction (not significant in an ANOVA test).

The graphs in appendix 3 (A3a) show the development of subjective well-being among the respondents. On average, there is not too much change in subjective well-being over the years. People who stayed in voluntary work have the highest levels of well-being and people who stayed out of voluntary work the lowest, which holds across the data.

Now we turn to the regression models on subjective well-being and the change in subjective well-being, which provide a formal test of the relationship between changes

in volunteering and changes in subjective. The full results are presented in appendix 4. For each dataset the first column shows the results of an ordinary least squares (OLS) regression model. The second column shows the results of a generalized least squares model including fixed effects (FE) on respondents to account for individual characteristics that do not change over time. The third model is a first difference (FD) model that represents the association between *changes* in health from the previous wave to the current wave and *changes* in volunteering (remained uninvolved, started volunteering, quit volunteering or remained volunteering). All models are controlled for age and marital status (not displayed here).

The regression models confirm that volunteers report a statistically significant higher level of well-being. The fact that the coefficients in the fixed-effects models are much smaller than in the OLS models shows that stable individual-level characteristics are important correlates of well-being. On average, the estimates from the fixed-effects (FE) models are less than a quarter of the OLS estimates, implying that at least 75% of the difference in well-being between volunteers and non-volunteers is due to selection effects. However, when these selection-effects are removed, we still find a positive estimate. On average, volunteering contributes to a 0.7% increase well-being.

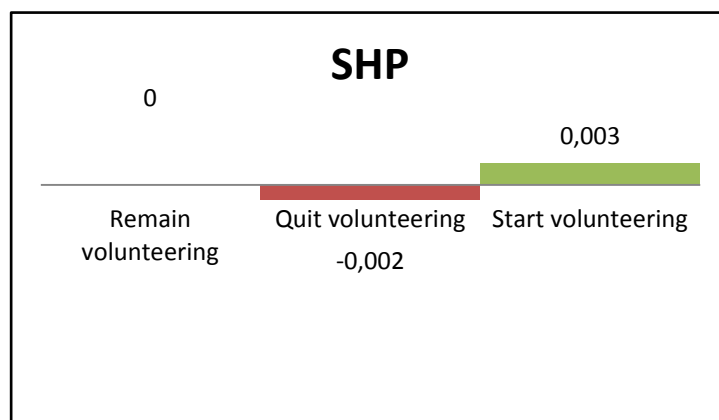
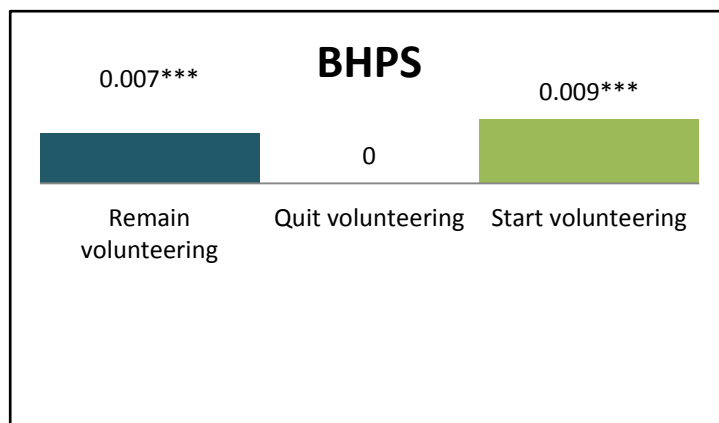
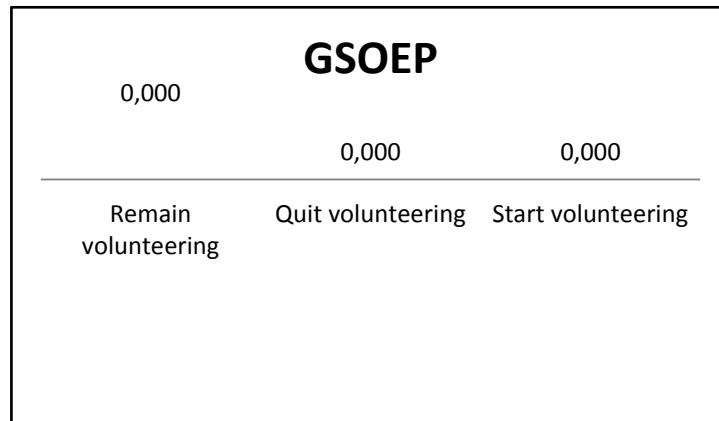
The results from the first difference models show that subjective well-being increases among citizens who start volunteering more strongly than among citizens who remain non-volunteers. This difference is statistically significant in three out of four datasets. The decline in well-being among those who leave voluntary work is significant for the SHARE only.

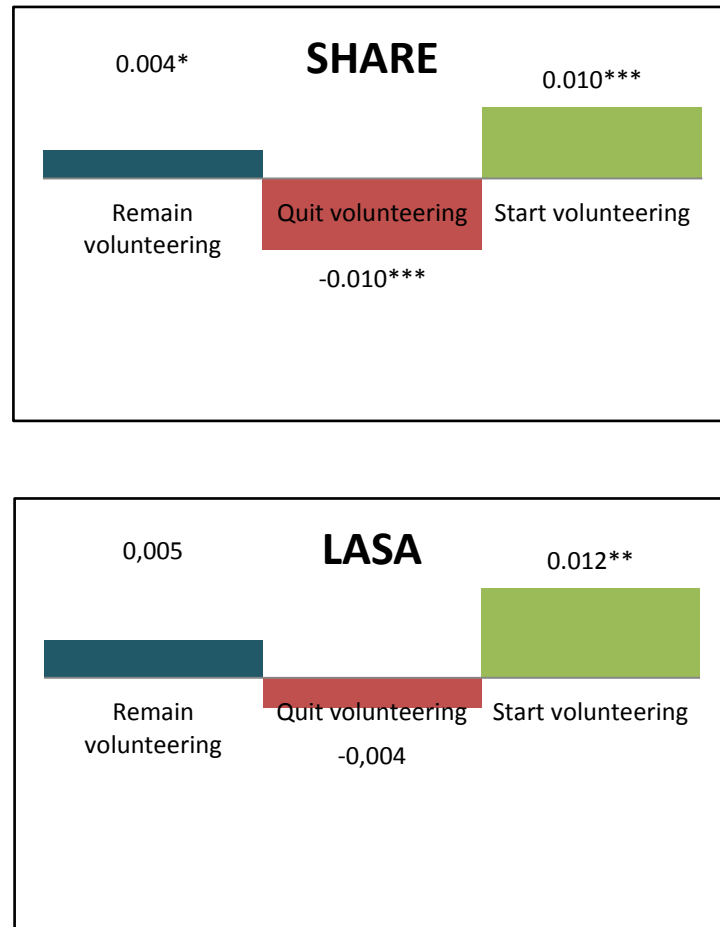
Figure 4 shows the results from these analyses. For each dataset we compare trends for people who never volunteered (the reference group) with people who remained a volunteer in all waves (the dark blue bars), people who quit from one wave to the other (the red bars), people who joined volunteering somewhere between the waves (the light green bars).

In the BHPS people who always volunteered experience an increase in well-being over the years, while the trend among the other groups does not change or goes down, although changes are relatively small and subjective well-being seems to be relatively stable over time. Also, in the SHARE data the people who always volunteered or who joined show less of a decline in well-being than those who quit or never volunteered.

In sum, we find robust associations between volunteering and subjective well-being across countries. Throughout Europe volunteers are more satisfied with their lives than non-volunteers. This difference is to a large extent due to selection processes – persons with higher levels of subjective well-being are more likely to start volunteering and are less likely to stop volunteering after they have become engaged. In addition, however, changes in volunteering do affect well-being, although the contribution is quite small.

Figure 4: Change in subjective well-being for people who remain volunteering, quit volunteering and start volunteering, compared with people who remain uninvolved



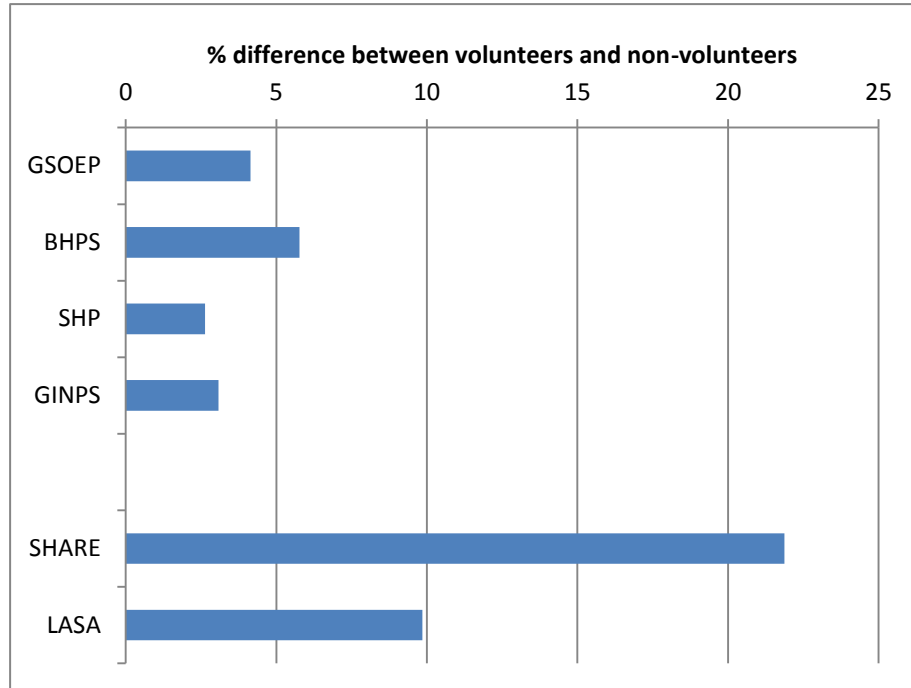


3.2. Health

Figure 5 shows the differences between volunteers and non-volunteers on subjective health. All variables were recoded to 0-1 scales in which a 1 indicated a respondent feeling very healthy. Note that the meaning of the 0-1 scale differs per survey because of different labelling and sampling strategies. The SHARE and LASA data contain only respondents older than 50, while the BHPS/US, GSOEP, GINPS and SHP data also contain respondents younger than 50.

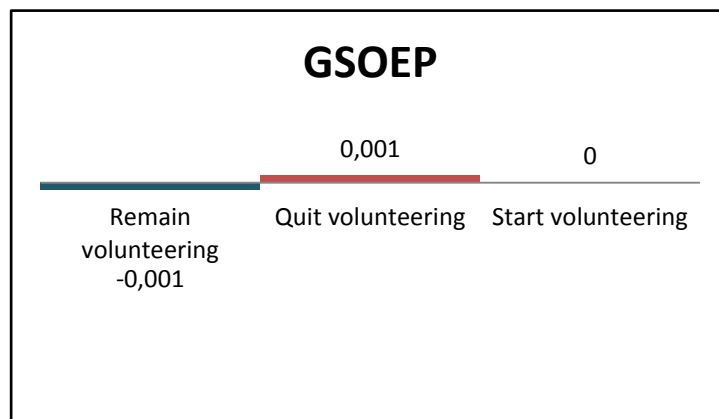
Consistent with the published literature on volunteering, the data we have analysed show that volunteers rate themselves to be in better health than non-volunteers. On average, volunteers rate their health to be about 8% higher. We find the largest difference in the SHARE, where self-reported health is 22% higher for volunteers compared with non-volunteers.

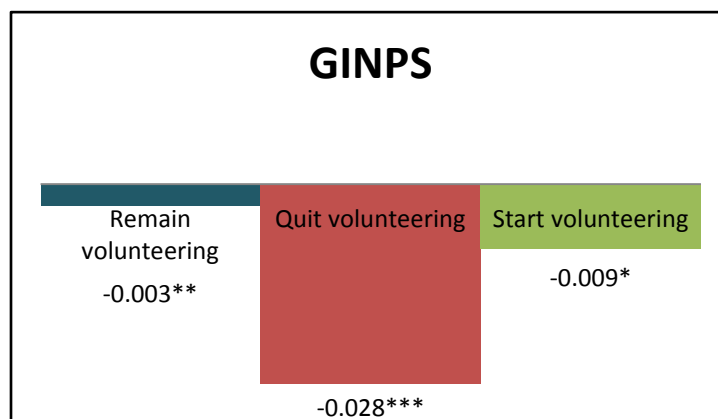
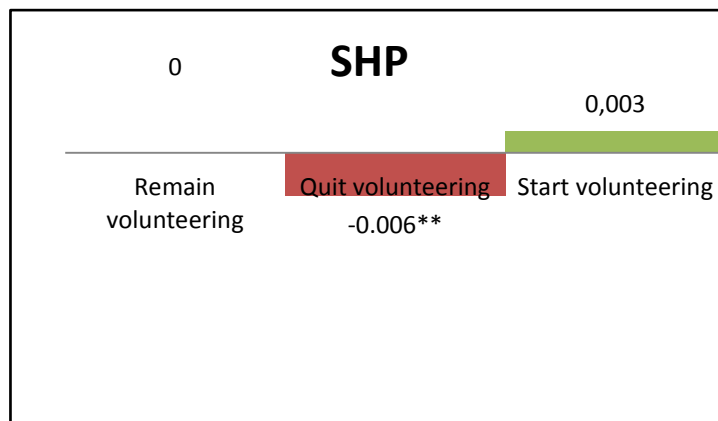
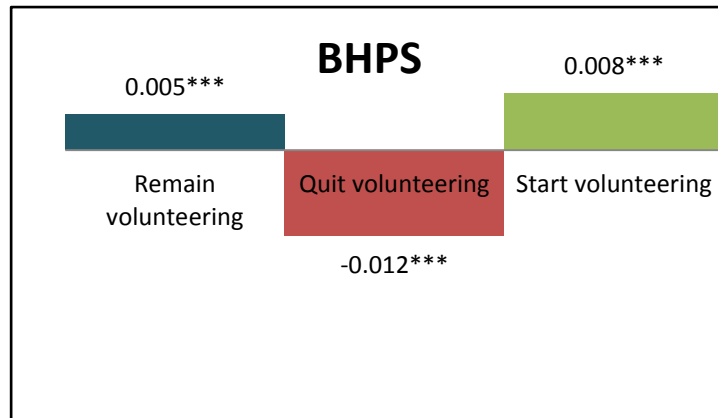
Figure 5: Percentage difference between average scores on self-rated health among volunteers and non-volunteers

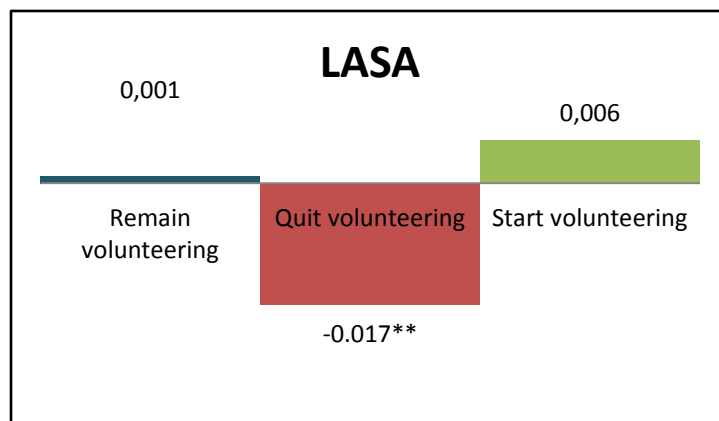
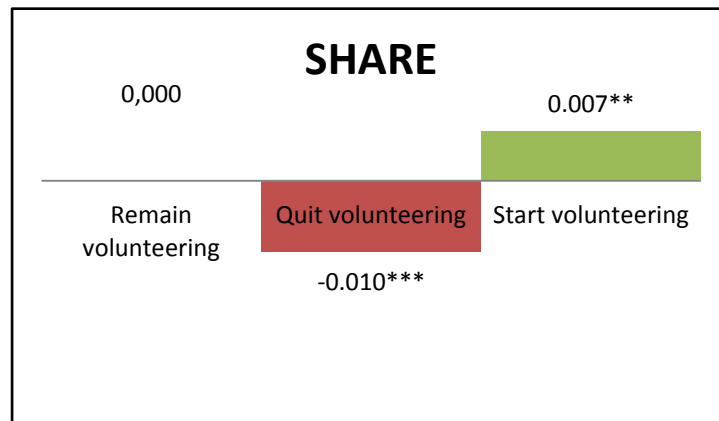


The figures in the appendix (A2b) show that in almost all countries the average scores on subjective health are higher among volunteers than among people who do not volunteer. An exception is Poland, where the mean score is slightly higher among non-volunteers. This difference, however, is not statistically significant.

Figure 6: Change in self-rated health for people who remain volunteering, quit volunteering and start volunteering, compared with people who remain uninvolved







Next, we examine the changes in subjective health. How big are the changes, and do we see different patterns between people who stayed in voluntary work and people who quit volunteering, and between people who never volunteered and people who joined voluntary work? Figure 6 shows the differences between these groups in different surveys.

In most countries we observe that people who start volunteering (the green bars) display an increase in health relative to those who remain uninvolved. Conversely, those who quit volunteering (the red bars) tend to display a decline in health relative to those who continue to volunteer. We see this pattern clearly in the UK (BHPS), Switzerland (SHP), among senior citizens in Europe (SHARE) and the Netherlands (LASA). The exceptions are Germany (GSOEP), where changes in volunteering are not associated with changes in health, and the Netherlands, where the group of respondents who started to volunteer displayed a decline in health relative to the group of respondents who remained uninvolved. The group of respondents who quit volunteering, however, displays the largest decline in subjective health. This is in line with the health hypothesis.

As the figures in the appendix (A3b) show, the four groups persistently differ in the subjective evaluation of their health. Looking at the differences between the groups at baseline, we see that people who always volunteered typically are in the best health and

people who never volunteered feel the least healthy. Those who start to volunteer report to be slightly healthier than those who quit volunteering.

In the BHPS we see an initial decrease in subjective health among the people who reported volunteering in all the waves they participated in, after which health increases. There is a similar slightly declining trend for people who joined and people who quit volunteering. There is no clear trend among people who never reported doing voluntary work.

In the Giving in the Netherlands Panel Survey (GINPS) people in all groups report a declining health, which is probably an ageing effect. People who volunteer in an early wave but leave voluntary work in a later stage initially have a better health than people who always volunteer, but their health declines more strongly over time.

In the LASA and SHARE data among the elderly, too, people generally feel less and less healthy over the years. The decay is stronger among people who quit than among people who stay in voluntary work.

The Swiss Household Panel (SHP) shows no clear differences between the four groups, although people's health generally becomes slightly worse over time.

A formal test of the relationship between changes in volunteering and changes in subjective health is given by the regression models in appendix 4. The coefficients from all datasets point in the same direction. The OLS results confirm the picture in figure 1 that volunteers generally are in better health. The difference between volunteers and non-volunteers becomes somewhat smaller when we account for omitted time-invariant variables by adding fixed effects. Starting volunteering goes together with a stronger increase in health when compared with people who stay out of voluntary work in four of our five datasets. In the GINPS, people who join volunteering experience a smaller increase than people who remain uninvolved. People who quit volunteering experience a larger decline in health than the other three groups in all our datasets.

In sum, we find evidence for the health hypothesis that volunteering improves health among volunteers. However, the magnitude of this improvement is small. The largest increases in subjective health that can be ascribed to volunteering is 0.022, measured on a scale running from 0 to 1. In other words, we could say that changes in volunteering are associated with a 2% change in subjective health at best. This is not a very large change.

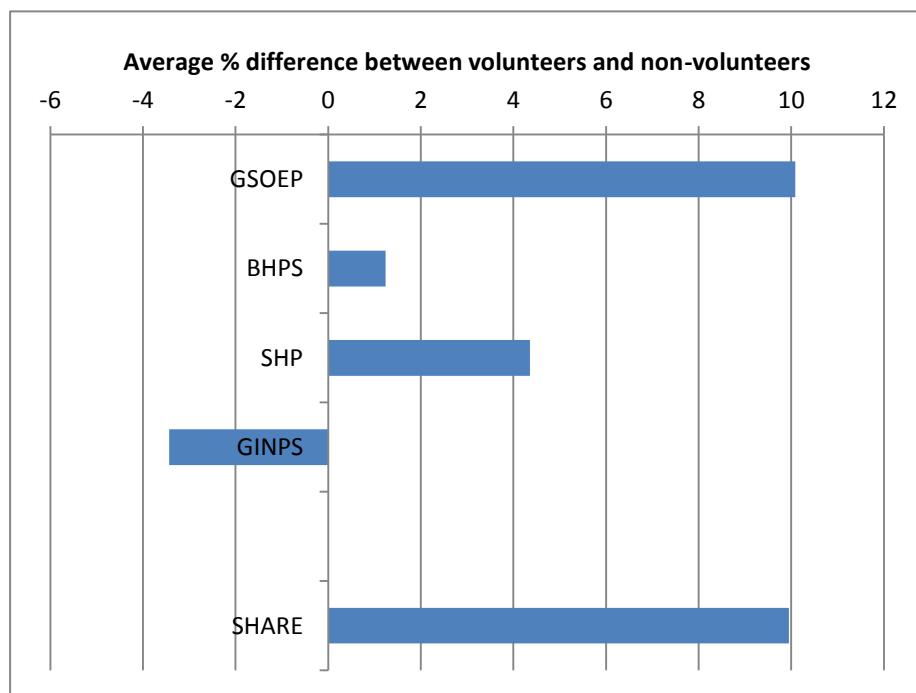
3.3. Career

Does voluntary engagement prevent people from unemployment, and does it help people into employment? In this section we examine the relationship between volunteering and job status, hypothesising that participants who do voluntary work enjoy beneficial effects for their career.

At this point it is important to distinguish between those who are unemployed and those who are retired. The percentages of people having a paid job among the total population would be disturbed by retirees if we look at the total population.

Therefore, figure 7 displays the percentages of people having a paid job among those who are not retired. In the SHARE data, employment is relatively high in the Czech Republic, Denmark, Sweden and Switzerland. These people are 50 years and older and there might be a strong effect of labour market regulations determining the chances of the elderly to stay in employment until their retirement.

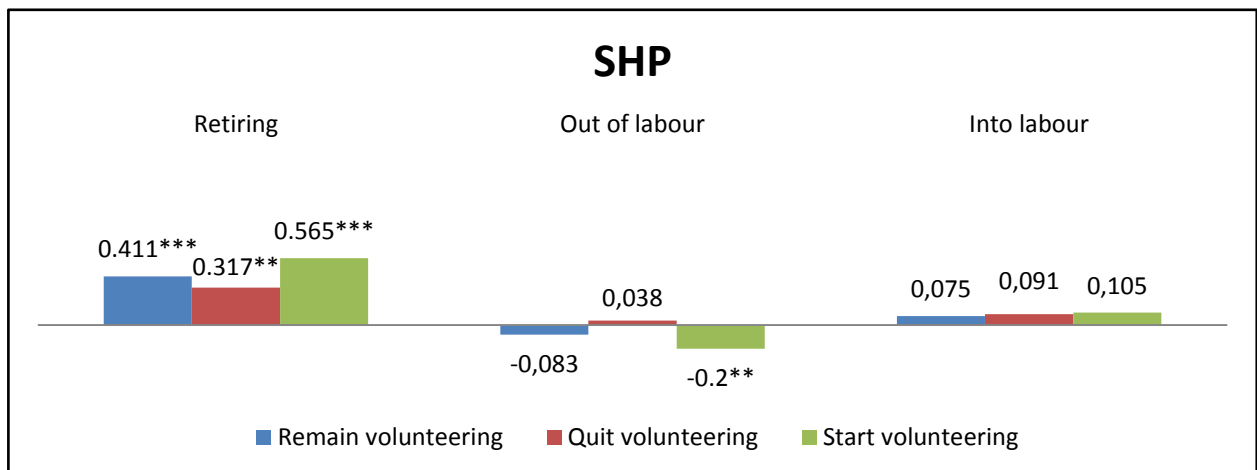
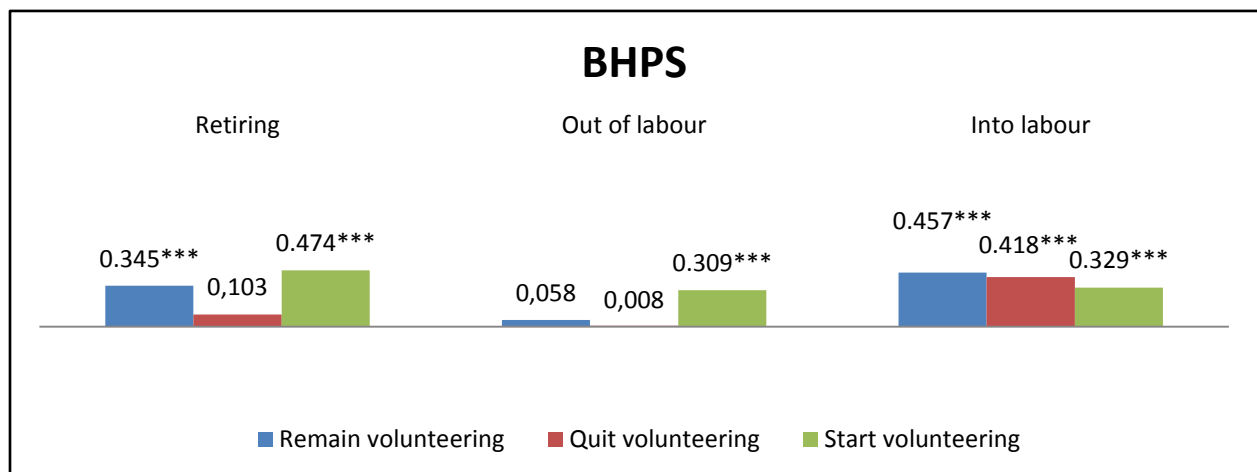
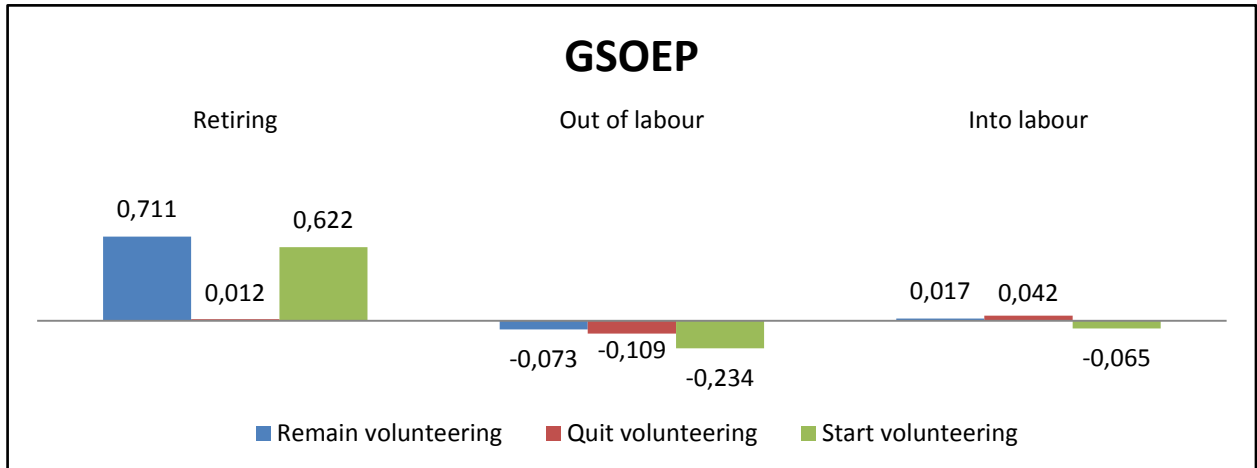
Figure 7: Percentage difference between the share of people in paid among volunteers and non-volunteers

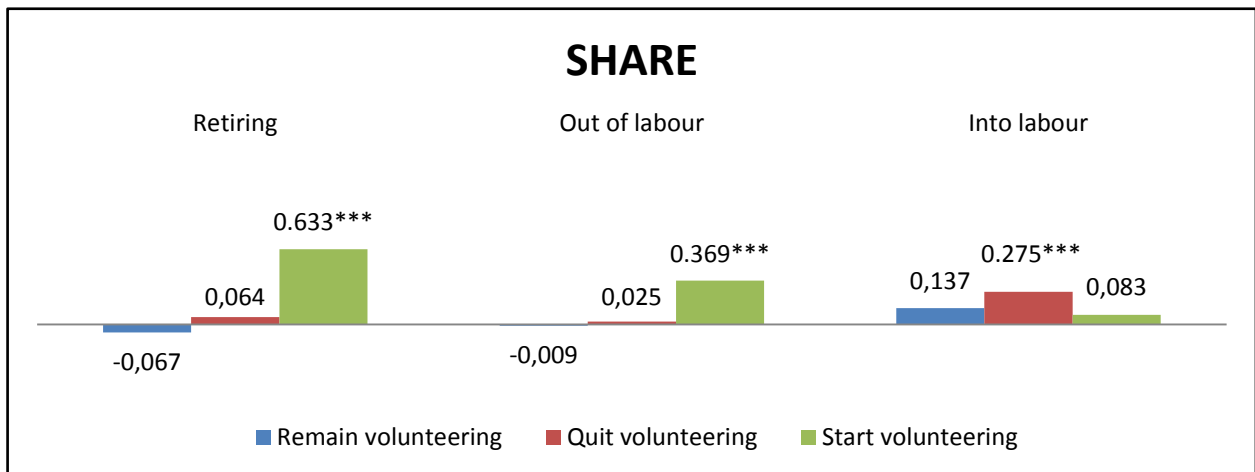
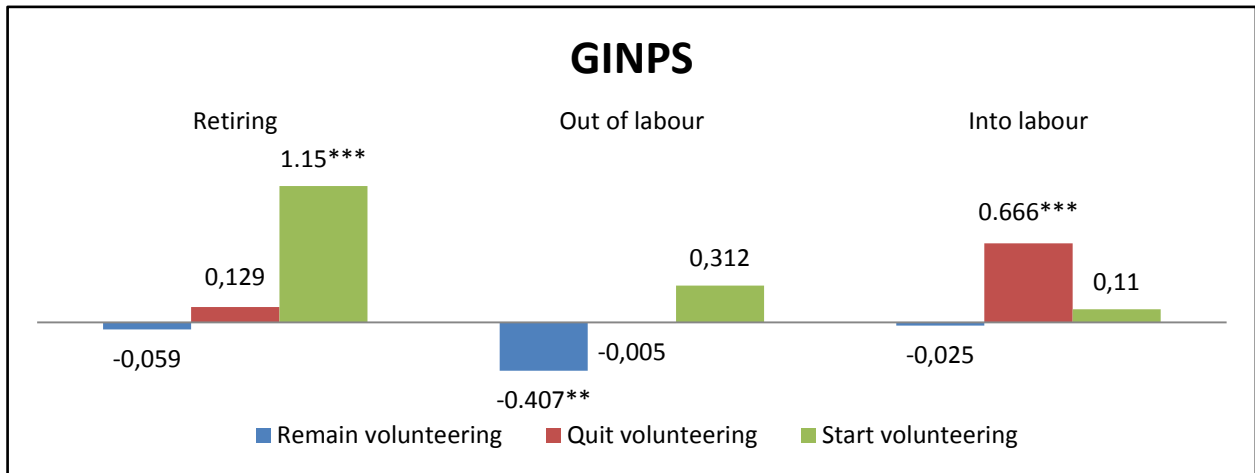


Regarding differences between those who participate in voluntary engagement and those who do not, the pattern is somewhat mixed. In most countries the employment rate is higher among volunteers, but in other countries it is higher among non-volunteers and in some countries there is no difference. Remarkably large differences are found in Italy, Poland, Slovenia and Spain.

On average, volunteers have a 3.7% higher likelihood to have paid work than non-volunteers.

Figure 8: Change in job status for people who remain volunteering, quit volunteering and start volunteering, compared with people who remain uninvolved.





Next, we examine the changes in the proportion of people having a paid job (see appendix A3c). Again, we exclude people who are retired in one of the years they participated in the survey.

In the BHPS, people who do not volunteer or who quit volunteering are more likely to maintain their job. The employment rate of people who join volunteering is almost the highest at baseline but drops more than 9 percentage points from 1996 to 2012, while the trend among people who never start volunteering remains relatively stable.

A similar trend is visible in the GINPS. People who never volunteer are more likely to enter paid work, while people who start doing volunteer work are more likely to drop out of the labour market. The largest increase occurs among steady volunteers.

In the SHARE, all groups contain an increasing number of people in paid labour. The largest increase is among those who never volunteered.

In the SHP, contrary to other datasets, people who keep on doing voluntary work over the years also are the most likely to be in paid employment. Those who never do voluntary work end up as the group with the lowest percentage of people in employment.

The regression models in Appendix 4 (A4c) test whether the differences shown above are robust to selection. The first column shows the odds ratios from a logistic regression model of the likelihood to be in paid work. The model in the second column adds fixed effects on the individual. The last three columns show the odds ratios of a multinomial logistic regression on the change in volunteering. The reference category here is no change (either stay in paid work or stay unemployed) and odds ratios are shown for retiring, leaving employment for another reason, and entering employment. All models are controlled for age and marital status.

Based on the first difference models, figure 8 shows the time trends for people who remained a volunteer in all waves, people who quit from one wave to the other, people who joined volunteering somewhere between the waves, and people who never volunteered.

The GINPS shows a negative correlation between volunteering and having a paid job, while the SHARE and SHP show positive correlations. All coefficients become negative, more strongly negative or less strongly positive when individual fixed effects are included, which indicates that omitted time-invariant variables are positively related with both volunteering and employment.

The results from the multinomial logistic regression with the BHPS data are highly interesting. People who start voluntary work are more likely to either exit or enter the labour market compared with people who remain uninvolved. People who quit volunteering are more likely to find a job. Steady volunteers are more likely to either retire or enter employment.

In the BHPS, GINPS and the SHARE, people who start volunteering are more likely to quit their job compared with those who remain uninvolved in voluntary work, while people who quit volunteering are likely to enter the labour market. This is in line with earlier results (Hank & Erlinghagen, 2010) and points to a substitution effect rather than that volunteering increases one's chances on the labour market.

In the SHP, people who start volunteering are less likely to go out of labour, contrary to the findings in the other datasets. People who remain not involved in volunteering are substantially less likely to retire.

In sum, there is no robust evidence that voluntary engagement keeps people in employment, or brings them back into labour after unemployment.

3.4. Social relations

Having many, diverse and useful social relations is a fourth possible benefit of being engaged in third sector activities. Figure 9 shows the average scores on our indicators of social relations, which are somewhat different for each dataset. Because the SHARE does not include a social network indicator for multiple waves we only have data for the Netherlands, Switzerland and the United Kingdom. Note that the SHARE and measures include an evaluative dimension as the question referred to the satisfaction with social relations.

Despite the difference in the wording of the questions on social relations, we can see a fairly consistent pattern. Volunteers have a larger, more diverse and higher-quality network than non-volunteers. On average, volunteers score 14.8% higher than non-volunteers on the measures of networks. Switzerland, however, is an exception to this pattern.

Figure 9: Percentage difference between average scores on social relations indicators among volunteers and non-volunteers.

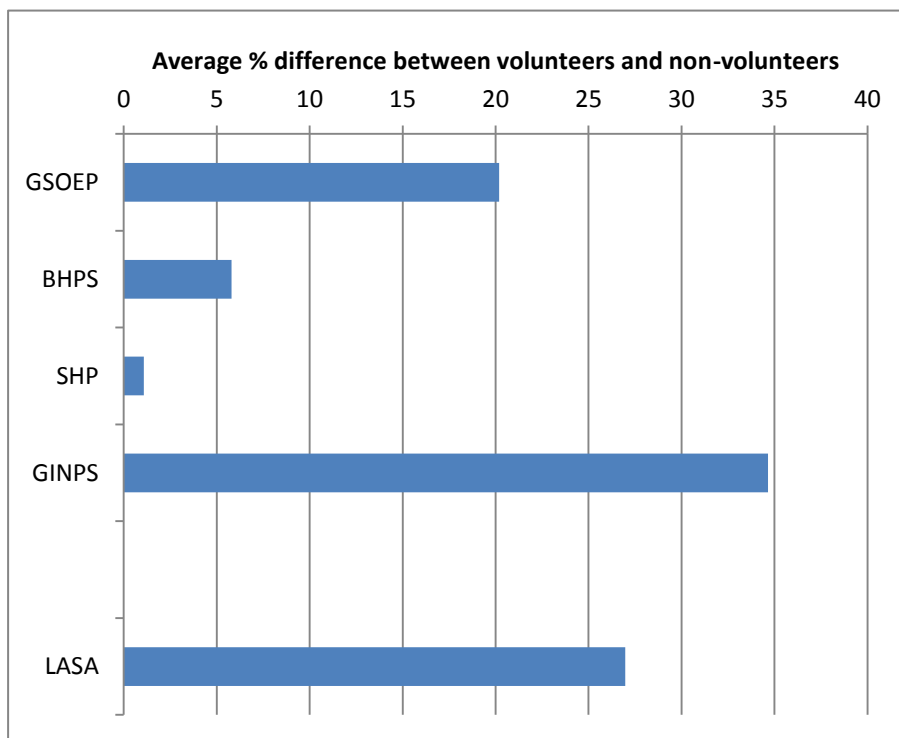
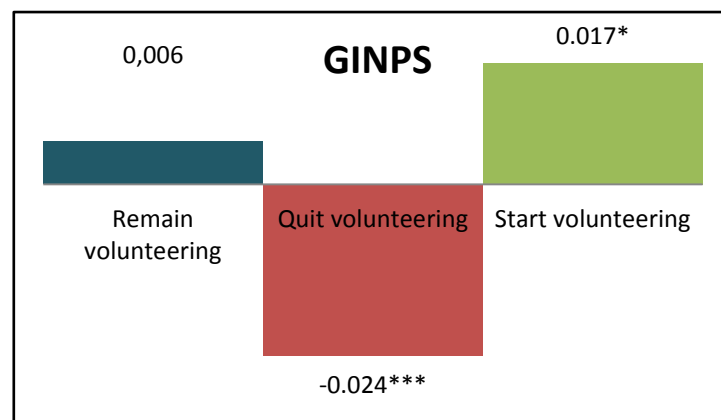
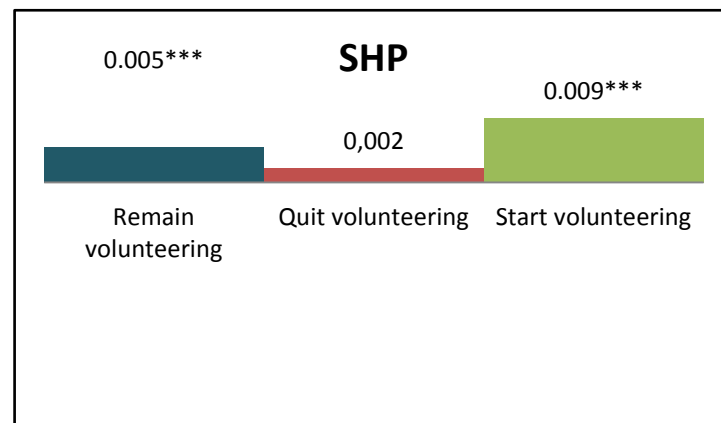
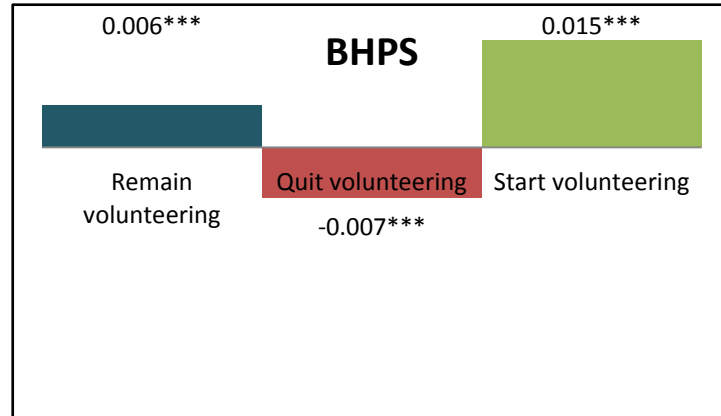
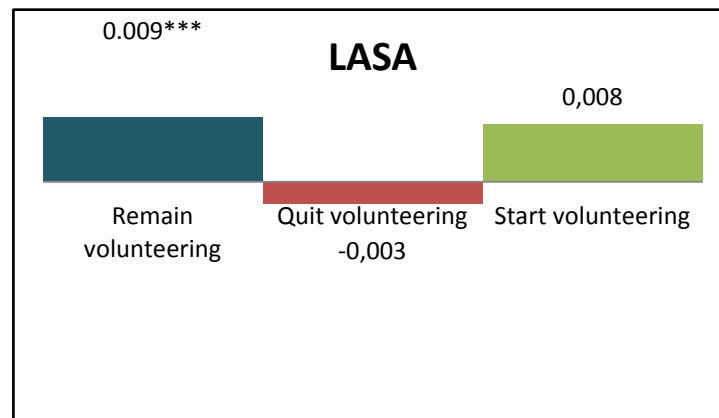


Figure 10 shows the time trends for the different indicators of the scope and quality of social relations. People who remain engaged in volunteering across the years have the largest, most diverse and most satisfying network. In the BHPS (satisfaction with social life) and LASA (number of people in network) the quality and size of the networks of steady volunteers show the largest increase. In the GINPS, people who join volunteering have the largest increase in network scope.

Figure 10: Change in social relations indicators for people who remain volunteering, quit volunteering and start volunteering, compared with people who remain uninvolved





In the regression analyses we find that across datasets, volunteering is positively correlated with the scope and quality of social relations. The fixed-effects coefficients are about 30% of the OLS regression coefficients, indicating that about 70% the correlation is due to time-invariant third variables.

People who start volunteering increase the scope and quality of their network more strongly than those who remain uninvolved, a difference that is statistically significant in both the BHPS (satisfaction with social life), the GINPS (network scope) and the SHP (satisfaction with personal relationships). Leaving voluntary work is significantly related with negative changes in social relation indicators in the BHPS and the GINPS. People who stay voluntary engaged generally seem to maintain a stronger social network than people who drop out of volunteering.

The results confirm our theoretical predictions but again, the coefficients are quite small and it does not provide enough basis to say that voluntary engagement has a huge impact on the social networks of participants.

4. Conclusions

Research on volunteering often claims that voluntary engagement in third sector activities has positive outcomes for participants. In this report we analysed associations between volunteering and subjective health, subjective well-being, career outcomes and social relations in six panel surveys from the period 1984 - 2011, covering 15 countries and including 845.733 survey responses from 154.970 different respondents.

Table 2 summarises the results. We find quite robustly positive associations between changes in volunteering and changes in subjective health, subjective well-being and social relations. The impact on career outcomes is less clear. Findings from the BHPS, the GINPS and the SHARE point to a substitution effect between volunteering and paid work, while in the Swiss Household Panel (SHP) people who start volunteering are more likely to find a job.

Table 2 Summary of findings

	Health	Subjective well-being	Career	Social relations
GSOEP	+	+	+	+
BHPS	+	+	-	+
SHP	+	0	+	+
GINPS	+	n/a	-	+
SHARE	+	+	-	n/a
LASA	0	+	n/a	0

The analyses thus support the hypothesis that volunteering improves health, subjective well-being and social relationships. The hypothesis that volunteering benefits careers must be rejected. The magnitude of the impact of volunteering on well-being is small. On average, the increase in subjective health and subjective well-being benefit due to changes in volunteering is about 1%.

These estimates are much smaller than the average difference in well-being between volunteers and non-volunteers because well-being influences decisions to become engaged in volunteering and to remain active. Thus, selection processes are responsible for at least 70% of the difference in well-being between volunteers and non-volunteers. Most of the outcome variables turned out to be quite stable over time, so changes in one's life cycle like entering or leaving voluntary work do not have a large impact on one's health, well-being, career or social relations. A failure to take selection processes and the stability of well-being into account leads to gross overestimation of the welfare impact of volunteering.

In sum, voluntary engagement does enhance people's welfare, but we should not expect miracles from participation in third sector activities.

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Appendices

Appendix 1 Survey items

Variable	Question	Response categories
British Household Panel Survey (BHPS) / Understanding Society (US)		
Subjective health	Here are some questions about how you feel about your life. Please tick the number which you feel best describes how <u>d</u> issatisfied or satisfied you are with the following aspects of your current situation. [...] - Your health	1 Not satisfied at all 2 3 4 5 6 7 Completely satisfied
Satisfaction with life	Using the same scale how <u>d</u> issatisfied or satisfied are you with your life overall?	1 Not satisfied at all 2 3 4 5 6 7 Completely satisfied
Paid work	Can I just check, did you do any paid work last week - that is in the seven days ending last Sunday - either as an employee or self employed? [If no:] Even though you weren't working did you have a job that you were away from last week?	1 Yes 2 No 1 Yes 2 No 3 Waiting to take up job
Satisfaction with social life	Here are some questions about how you feel about your life. Please tick the number which you feel best describes how dissatisfied or satisfied you are with the following aspects of your current situation. [...] - Your social life	1 Not satisfied at all 2 3 4 5 6 7 Completely satisfied
Volunteering	We are interested in the things people do in their leisure time, I'm going to read out a list of some leisure activities. Please look at the card and tell me how frequently you do each one. [...] - Do unpaid voluntary work	1 At least once a week 2 At least once a month 3 Several times a year 4 Once a year or less 5 Never/almost never

Variable	Question	Response categories
Giving in the Netherlands Panel Survey (GINPS)		
Subjective health	What do you think about your health in general?	1 Excellent 2 Very good 3 Good 4 Poor 5 Bad
Paid work	Which of these descriptions match your situation the best at this moment? (multiple answers possible) [...] - I have a paid job (incl. part-time)	1 No 2 Yes
Position generator	Which of these professions do you encounter in daily life? We will show you a list with jobs, and ask you to report for each of these jobs whether: Anyone in your family has got the same job?; A friend has got the same job?; An acquaintance has got the same job? An acquaintance is someone whom you have a chat with when you meet him/her on street. If you don't have family, friend or acquaintance(s) with these jobs, fill on 'no'. If you know more people with these jobs, fill in whether they are family member, friend or acquaintance. - Doctor - A construction worker - Manager of a company - Accountant - Musician/artist/writer - Journalist - Truck driver - Police officer - Secretary - Teacher - Cleaner - Staff member - Mechanic/Technician - Salesman	1 Family 2 Friend 3 Acquaintance 4 None
Volunteering	Now the question is whether you are a volunteer for an organization. With volunteer work, we mean tasks you do not receive a salary for, but possibly an expense allowance. Are you a volunteer at an organization on the following fields:	1. Sports. 2. Health care 3. Social work, legal assistance, probation and victim service. 4. Education: schools, adult education. 5. Culture and arts. 6. Community work. 7. Neighbourhood association and interest group, housing/ tenants association. 8. Environmental

		protection 9. Nature conservation 10. Animal welfare 11. Politics. 12. Trade Union, professional organization. 13. Refugee assistance, human rights. 14. Religion. 15. Organization for ethnic minorities 16. Recreation, hobby. 17. Developmental aid 18. Other 19. None of the above.

Variable	Question	Response categories
Longitudinal Ageing Study Amsterdam (LASA)		
Subjective health	In general, would you say your health is...	1 Excellent 2 Very good 3 Good 4 Fair 5 Poor
CES-D depressive symptoms	<ul style="list-style-type: none"> - During the past week I was bothered by things that usually don't bother me. - During the past week I did not feel like eating; my appetite was poor. - During the past week I felt that I could not shake off the blues even with help from my family or friends. - During the past week I felt that I was just as good as other people. - During the past week I had trouble keeping my mind on what I was doing. - During the past week I felt depressed. - During the past week I felt that everything I did was an effort. - During the past week I felt hopeful about the future. - During the past week I thought my life had been a failure. - During the past week I felt fearful. - During the past week my sleep was restless. - During the past week I was happy. - During the past week I talked less than usual. - During the past week I felt lonely. - During the past week people were unfriendly. - During the past week I enjoyed life. - During the past week I had crying spells. - During the past week I felt sad. - During the past week I felt that people dislike me. - During the past week I could not get "going". 	1 Rarely or never 2 Some of the time 3 Occasionally 4 Mostly or always
No. of people in social network	<p>I would like to ask a number of questions about those in your household who are at least 18 years old. For that reason, will you please give me the name(s) of (each of) the person(s) aged 18 and over with whom you live?</p> <ul style="list-style-type: none"> - We would like to know whether you are in touch regularly with (each of) your child(ren) (and his / her partner) (and their partners) and whether she / he (they) is (each are) important to you. If this is the case, will you please give me his / her (their) first name(s) and the first letter of his / her (their) last name(s)? - Next, will you please provide me with the names of those family members with whom you are in touch regularly and who are important to you? "Family members" are 	

	<p>parents and parents-in-law (if they are still alive), siblings, cousins, nieces and nephews, in-laws (both on your side of the family and on the side of your partner), aunts and uncles (and grandchildren). They must be at least 18 years old. I would like to have the first name and the first letter of the last name of each.</p> <ul style="list-style-type: none"> - Now, please provide me with the names of those neighbors and others living nearby with whom you are in touch regularly and who are important to you? I would like to have the first name and the first letter of the last name of each. - Please provide me with the names of those (ex-) colleagues, and others you know through volunteer work or school with whom you are in touch regularly and who are important to you. I would like to have the first name and the first letter of the last name of each. - Please provide me with the names of those you meet through church, a sports association, political organizations, and other voluntary associations with whom you are in touch regularly and who are important to you. I would like to have the first name and the first letter of the last name of each. - Perhaps there still are people (friends and acquaintances for example) with whom you are in touch, and who you have not been able to mention in response to earlier questions. Please provide the names of others with whom you are in touch regularly and who are important to you. I would like to have the first name and the first letter of the last name of each. <p>There may be certain family members, neighbors or others with whom you are in touch frequently and who are important to you, but may have forgotten to mention earlier. This is the opportunity to name them as yet. I would like to have the first name and the first letter of the last name of each.</p>	
Volunteering	<p>Are you a member of or involved in one of these organisations?</p> <ul style="list-style-type: none"> - Association for the elderly, such as senior association, association for elderly, senior committee or elderly committee - Trade union, employers organization, or professional club - Political party, organization or association - Church or organization with a religious or life contemplation goal - Neighborhood organization, committee or district committee - Organization for women (men), committee for 	

	<p>women (men) or an association for women (men)</p> <ul style="list-style-type: none"> - Organization for helping the elderly, neighbors or handicapped - Action committee or organization with a social purpose - Association or organization for patients - Organization for singing, music or theatre - Organization for leisure or hobby - Sports club - Other organization, namely <p>If yes, how much time do you spend on participation in administrative work (e.g. being chairman, treasurer) and in volunteer work (e.g. making coffee, organizing playing card matches)?</p>	

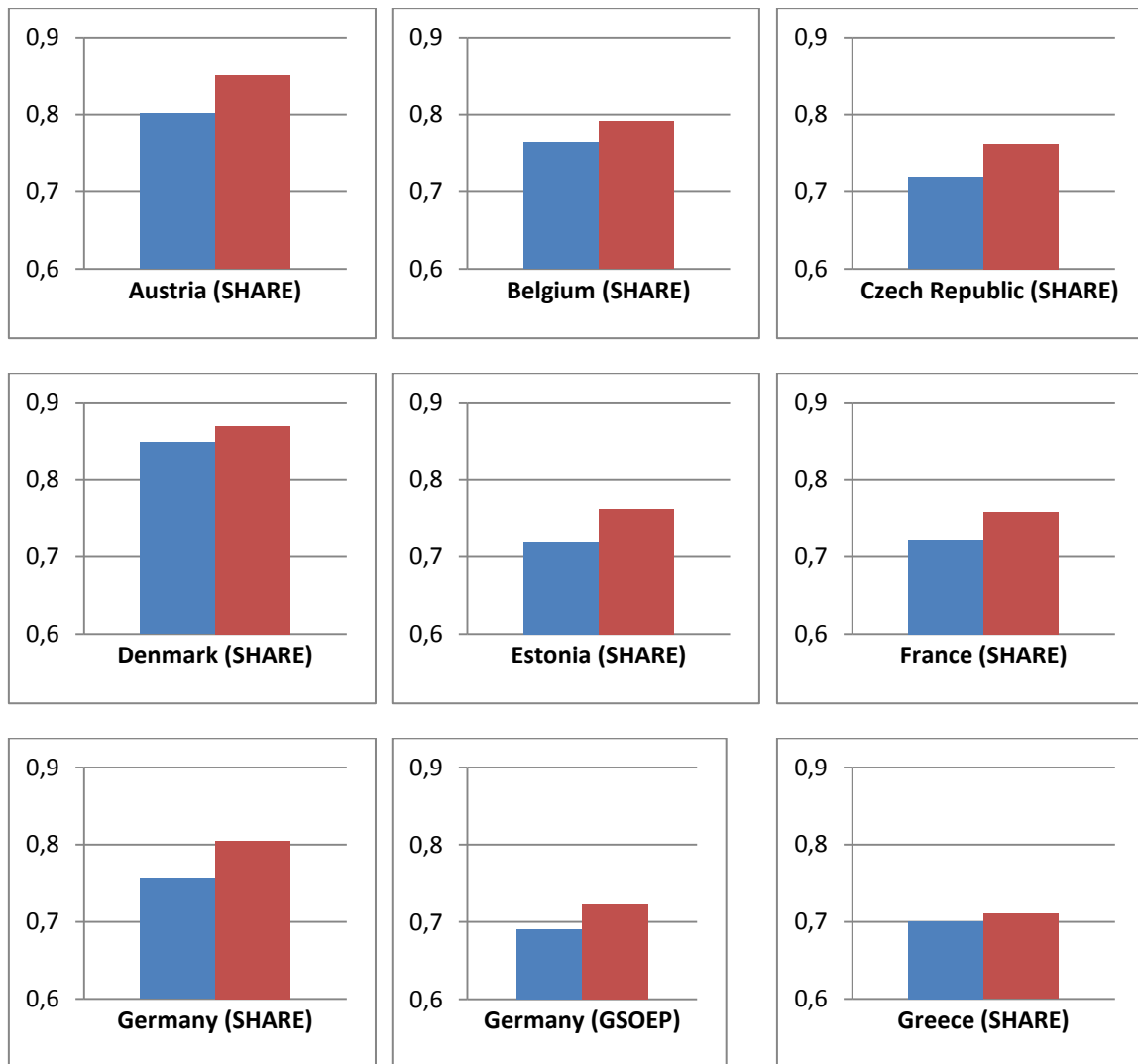
Variable	Question	Response categories
Survey on Health, Ageing and Retirement in Europe (SHARE)		
Subjective health	Would you say your health is...	1 Excellent 2 Very good 3 Good 4 Fair 5 Poor
Satisfaction with life	On a scale from 0 to 10 where 0 means completely dissatisfied and 10 means completely satisfied, how satisfied are you with your life?	0 Completely dissatisfied 1 2 3 4 5 6 7 8 9 10 Completely satisfied
Volunteering (0-1)	Which of the activities listed on this card - if any - have you done in the past twelve months? - Done voluntary or charity work	1 No 2 Yes

Variable	Question	Response categories
Swiss Household Panel (SHP)		
Subjective health	How satisfied are you with your state of health, if 0 means "not at all satisfied" and 10 "completely satisfied" ?	0 Not at all satisfied 1 2 3 4 5 6 7 8 9 10 Completely satisfied
Satisfaction with life	In general, how satisfied are you with your life if 0 means "not at all satisfied" and 10 means "completely satisfied"?	0 Not at all satisfied 1 2 3 4 5 6 7 8 9 10 Completely satisfied
Paid work	Did you get paid for working, even if only for ONE HOUR, last week, either as an employee, self-employed or an apprentice? [If no:] Although you didn't work last week, were you however, employed, self-employed or apprenticed?	1 Yes 2 No 1 Yes 2 No
Satisfaction with personal relationships	How satisfied are you with your personal, social and family relationships, if 0 means "not at all satisfied" and 10 "completely satisfied"?	0 Not at all satisfied 1 2 3 4 5 6 7 8 9 10 Completely satisfied
Volunteering	Do you have honorary or voluntary activities within an association, an organisation or an institution?	1 Yes 2 No

Appendix 2 Average scores on outcome variables

Figure A2a: Average score on subjective well-being scale (0-1) for non-volunteers (blue bars) and volunteers (red bars)

As explained in section 2, we used different measures in different surveys. Comparing the SHARE data in different countries, in which one single measure of well-being is available, people in Austria, Denmark, Sweden and Switzerland report the highest levels of well-being.



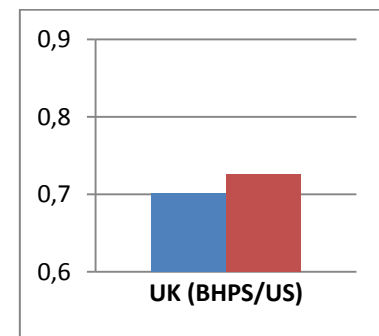
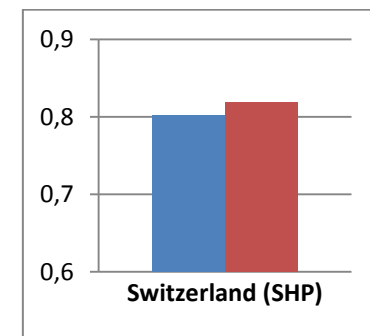
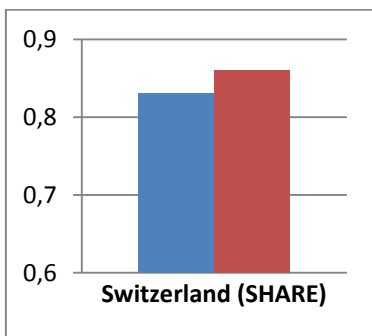
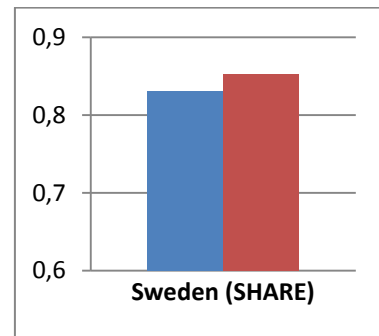
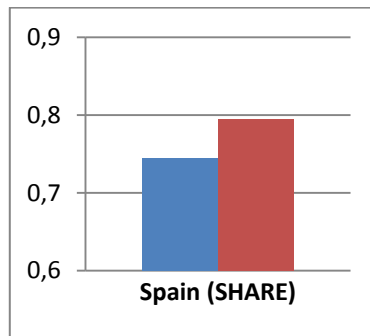
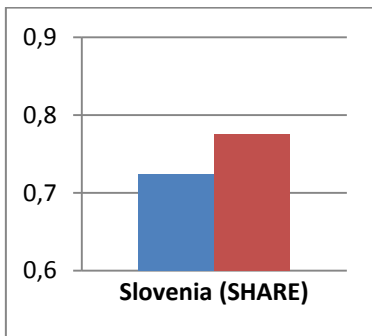
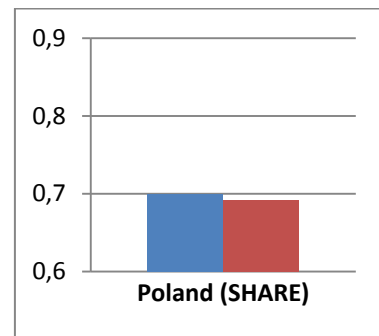
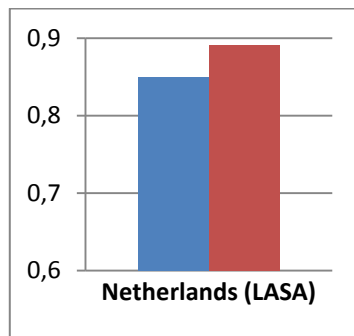
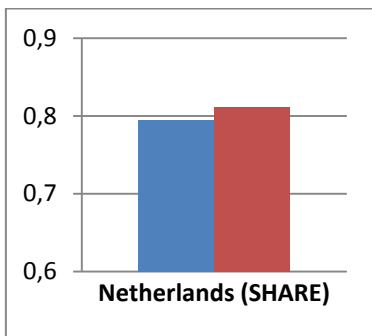
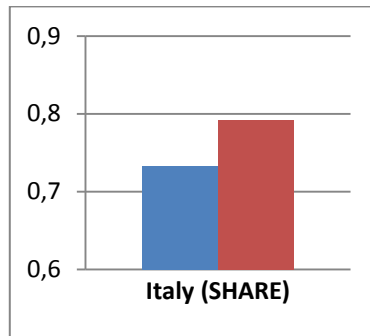
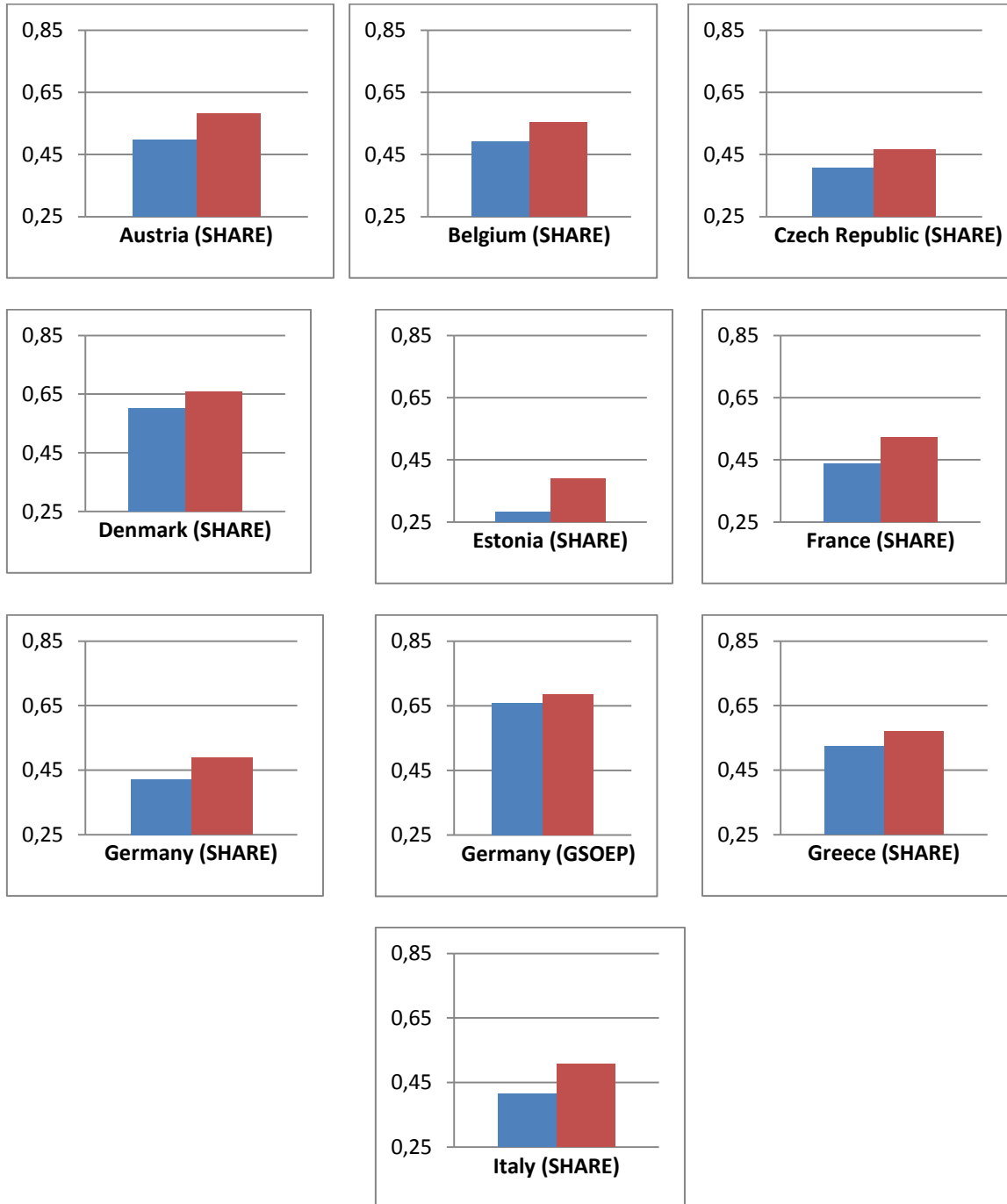
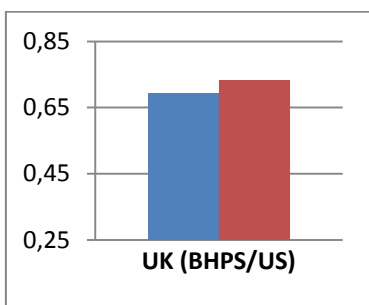
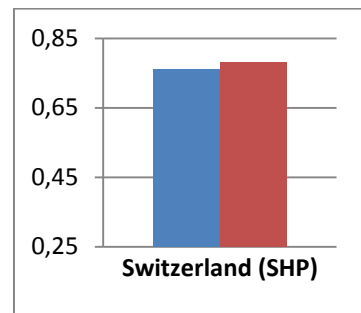
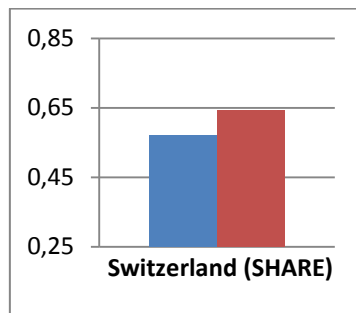
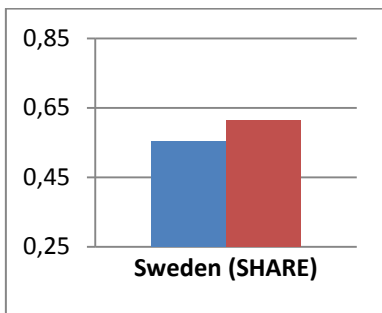
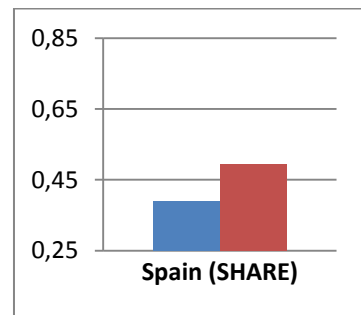
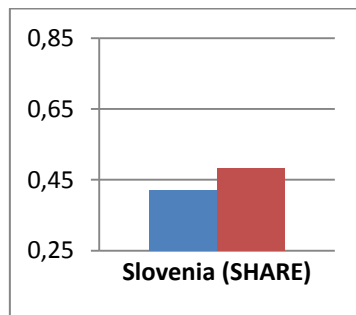
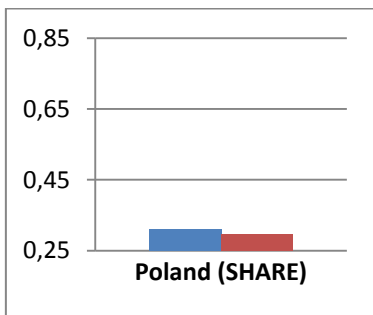
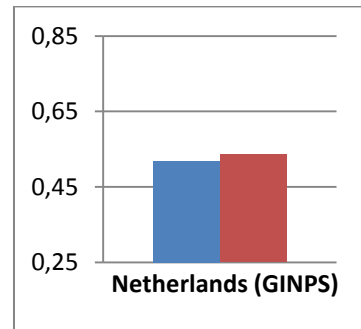
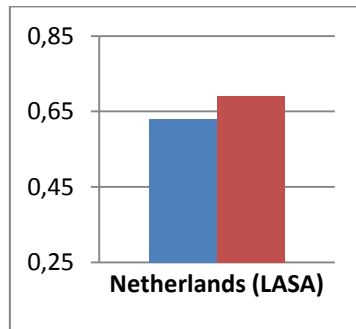
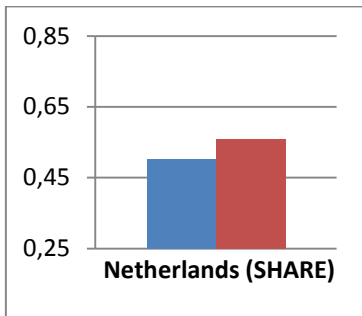


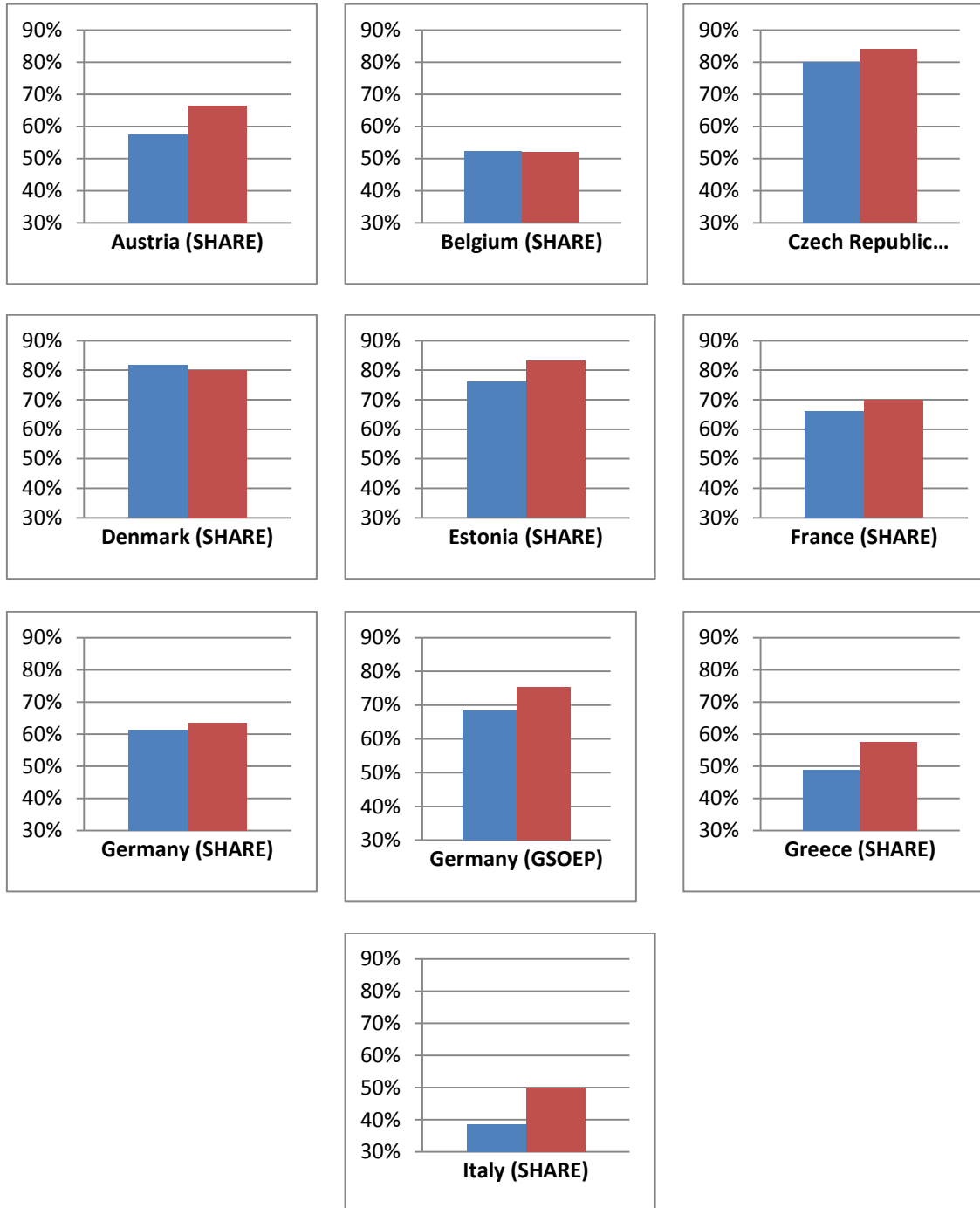
Figure A2b: Average score on subjective health scale (0-1) for non-volunteers (blue bars) and volunteers (red bars)





Comparing the different countries from the SHARE data, we see that the Central and Eastern European countries as well as most Southern European countries score relatively low on health, while people in most Northern countries as well as Switzerland perceive themselves as relatively healthy. Greece is an exception to this pattern, with participants in SHARE scoring even higher than in Germany and similar to the Netherlands.

Figure A2c: Percentage people having a paid job among non-volunteers (blue bars) and volunteers (red bars)



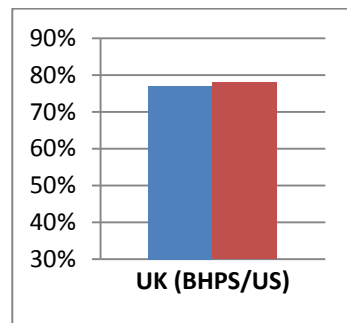
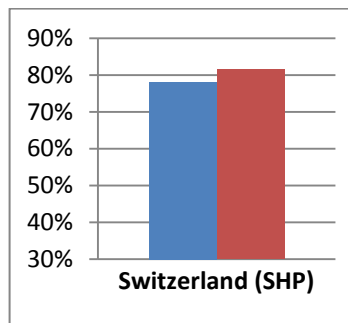
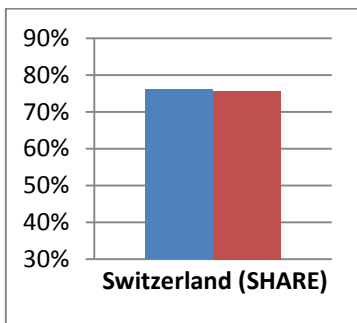
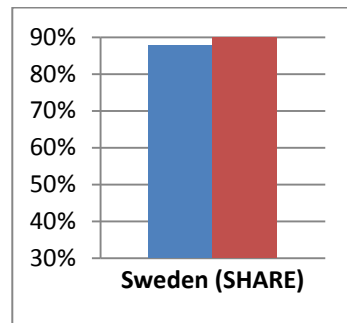
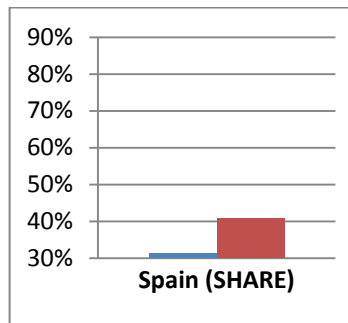
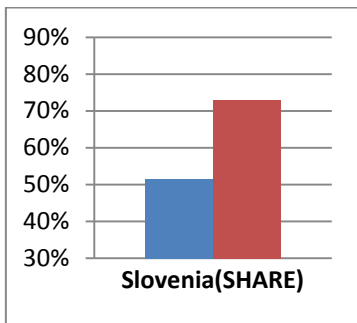
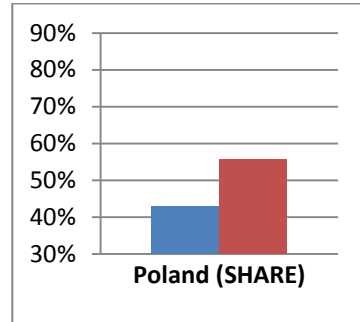
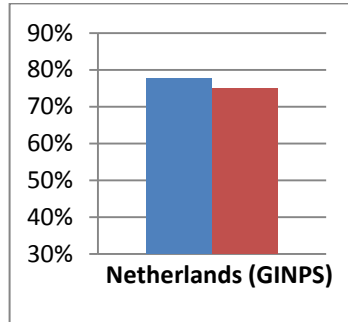
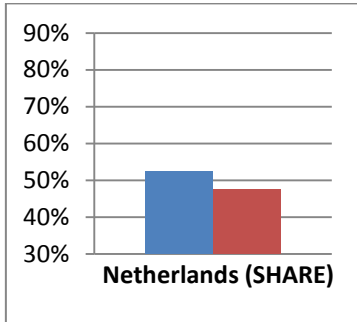
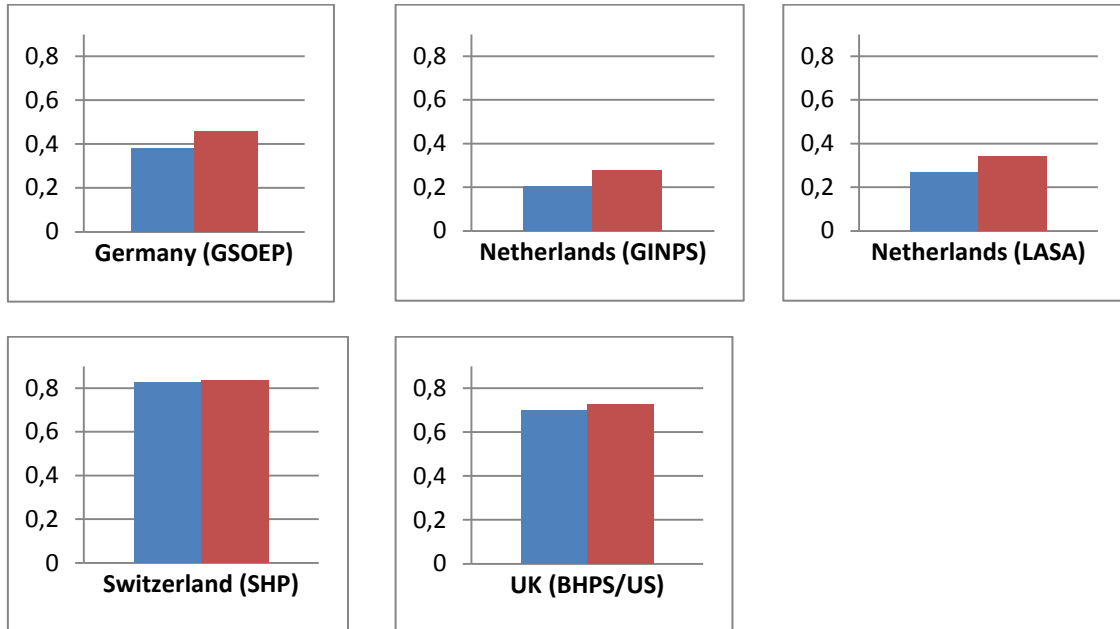
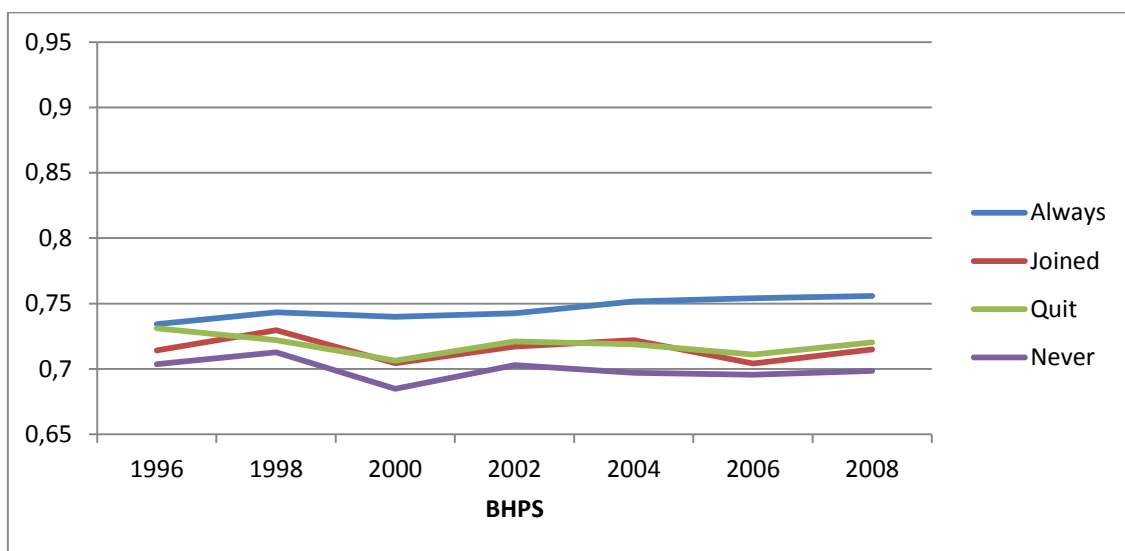
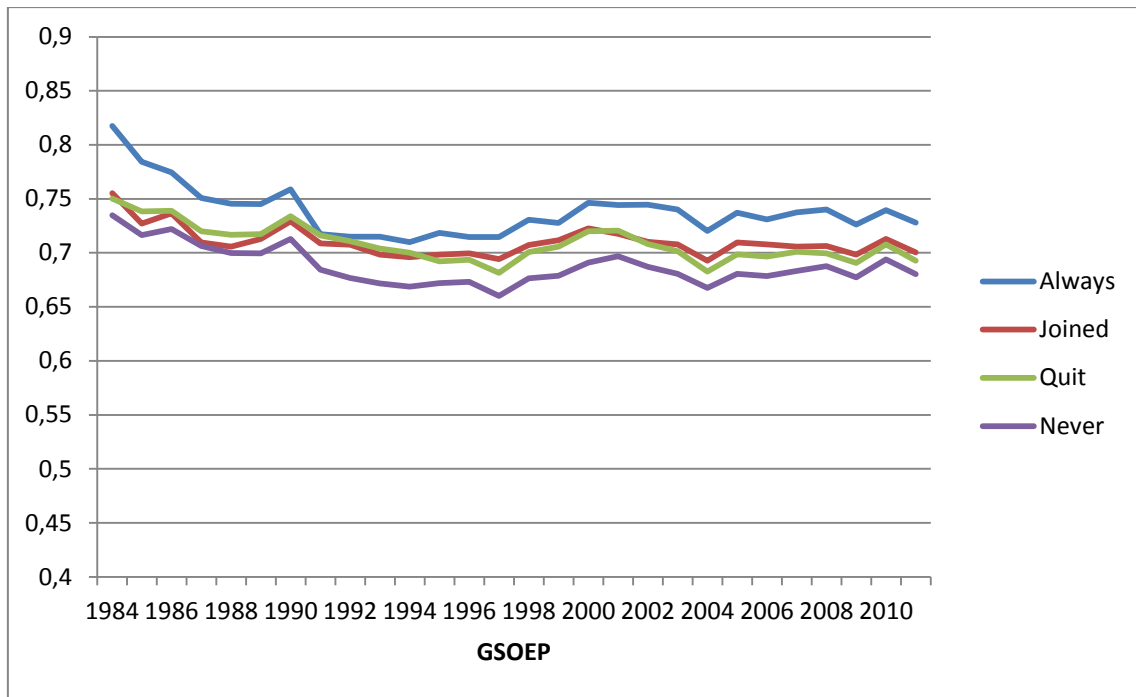


Figure A2d: Average score on social relations scale (0-1) for non-volunteers (blue bars) and volunteers (red bars)



Appendix 3 Trends over time

Figure A3a: Average scores on subjective well-being scale (0-1) among people who always volunteered, people who joined volunteering, people who quit volunteering and people who never volunteered



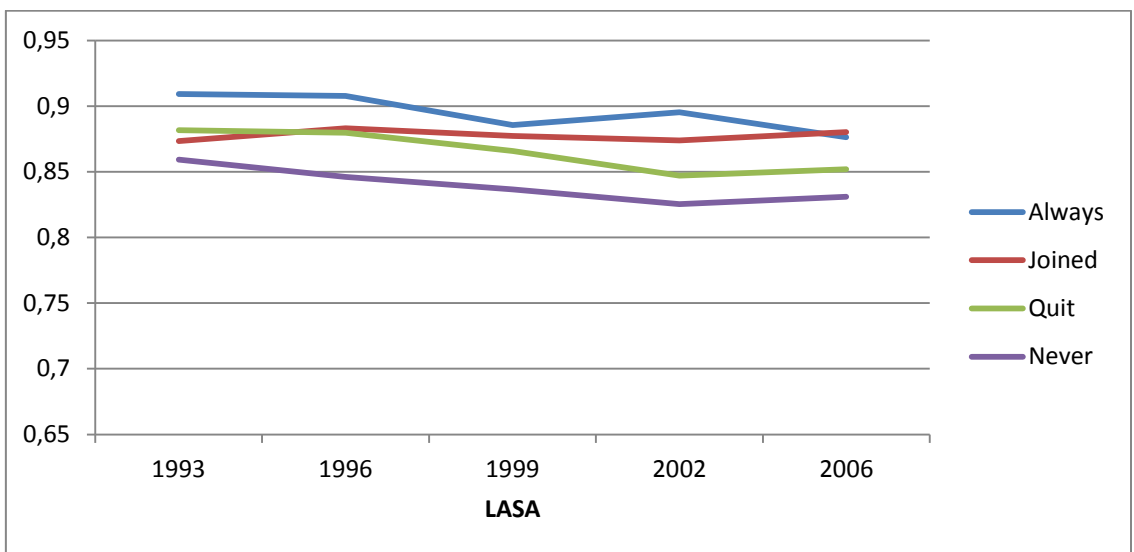
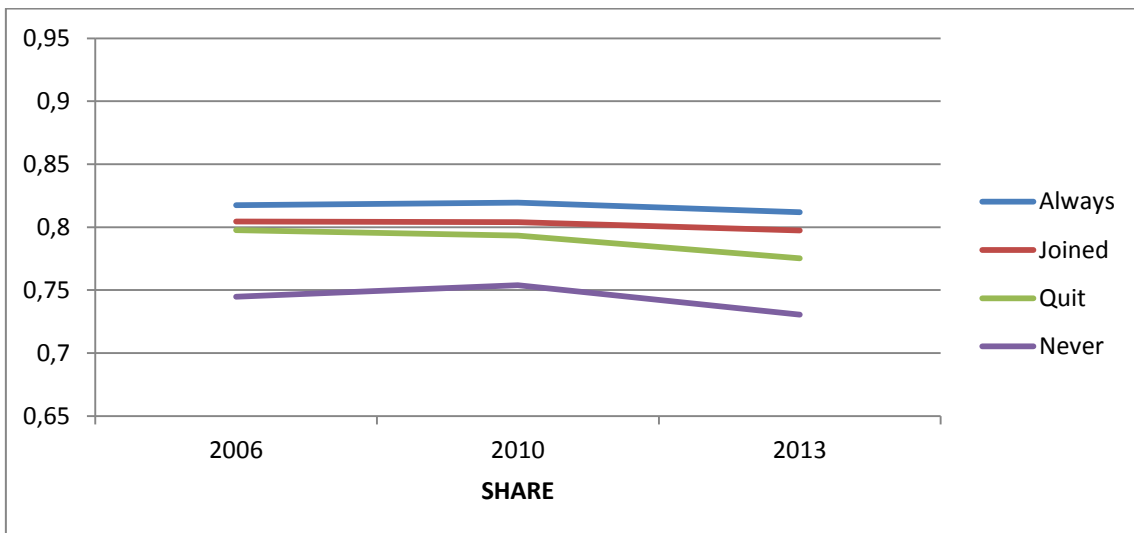
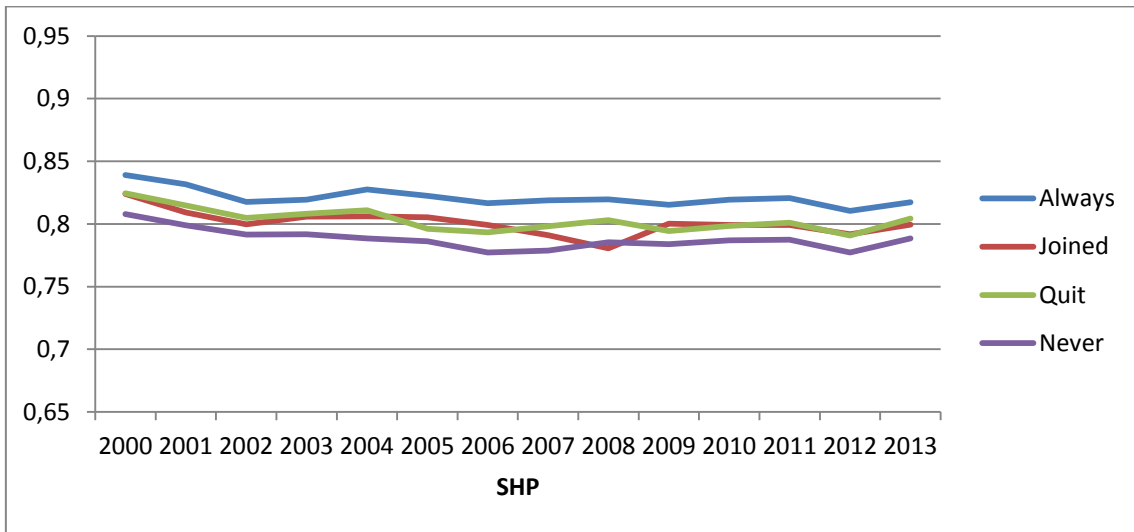
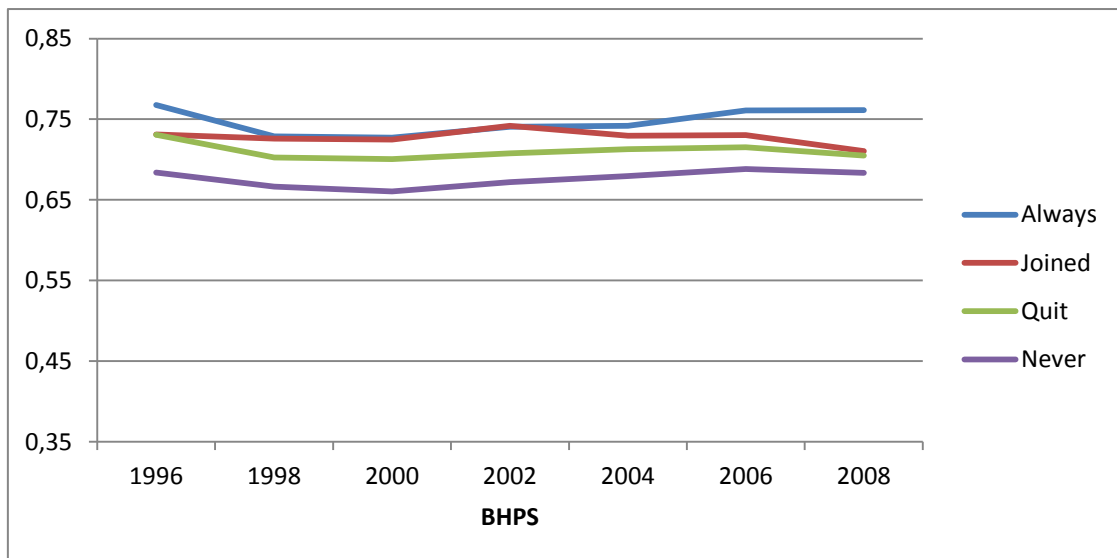
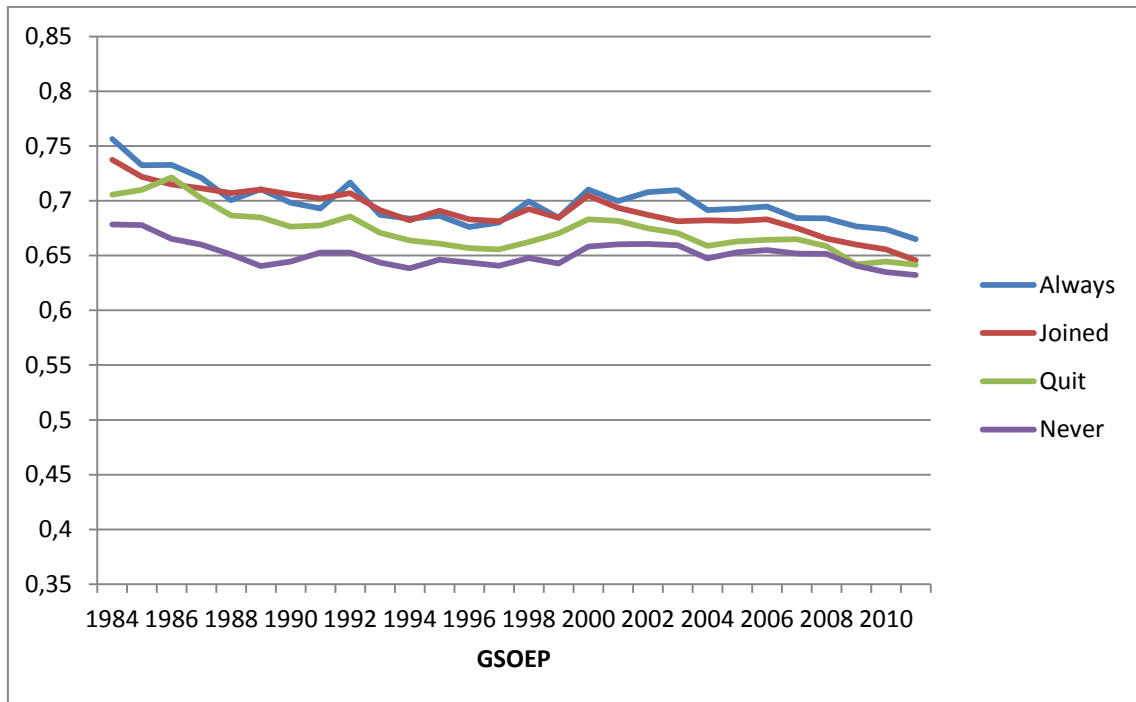
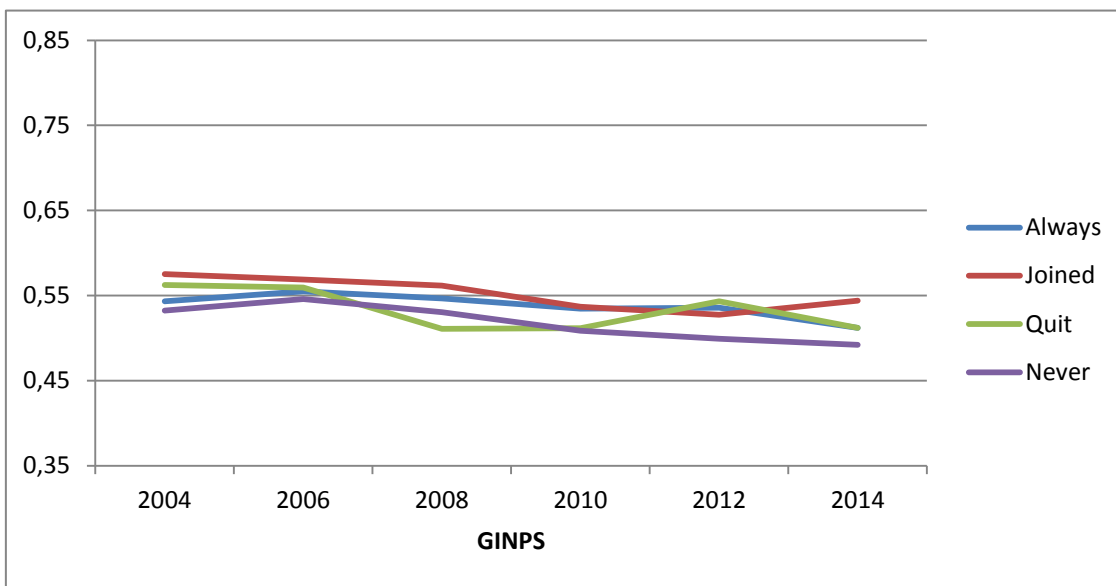
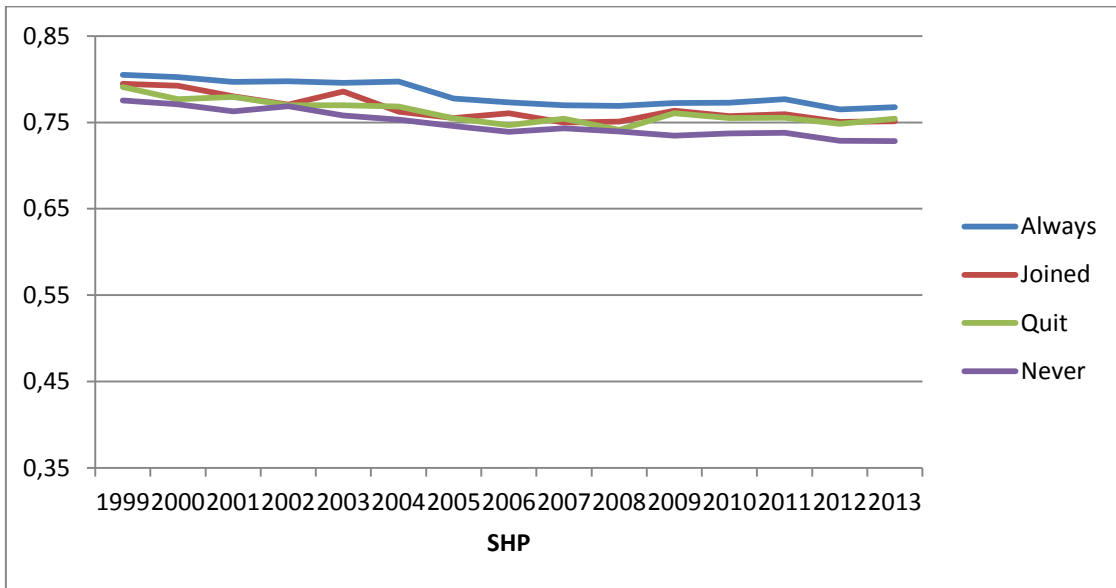


Figure A3b: Average scores on subjective health scale (0-1) among people who always volunteered, people who joined volunteering, people who quit volunteering and people who never volunteered





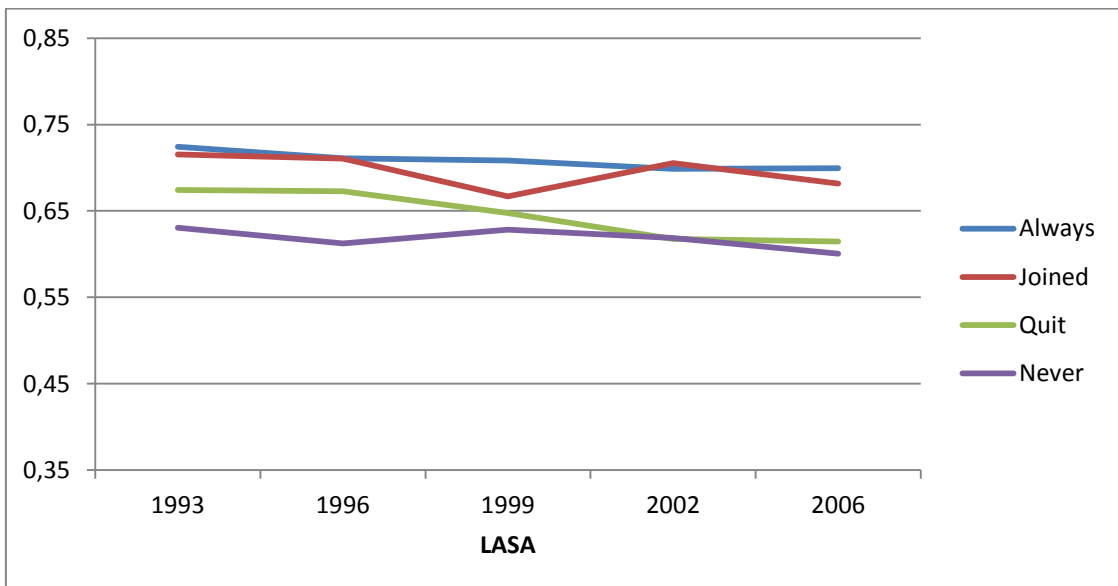
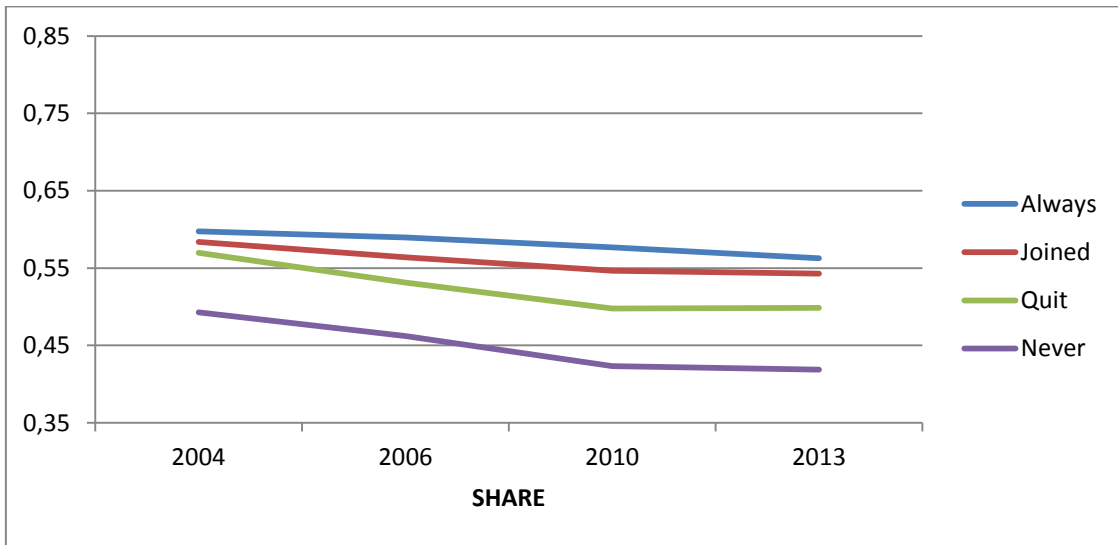
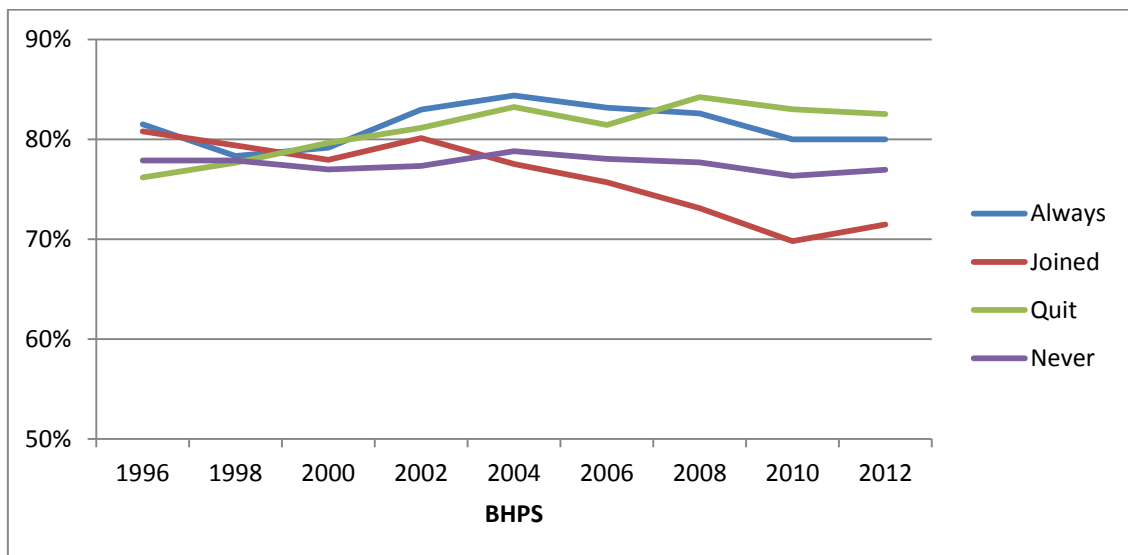
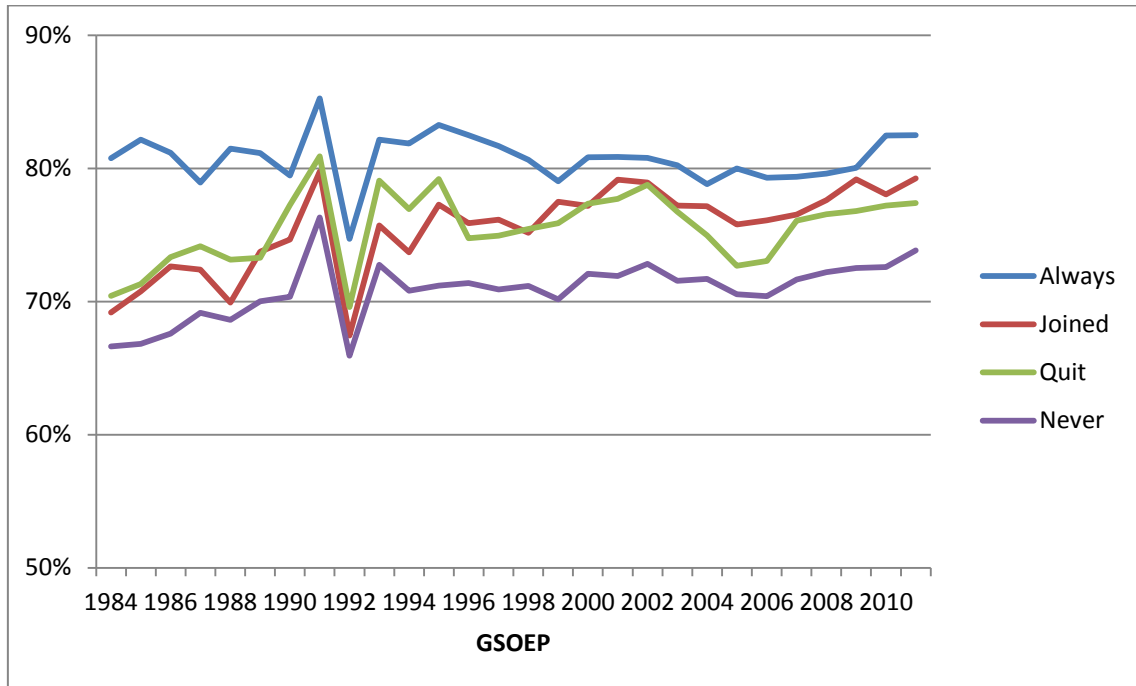
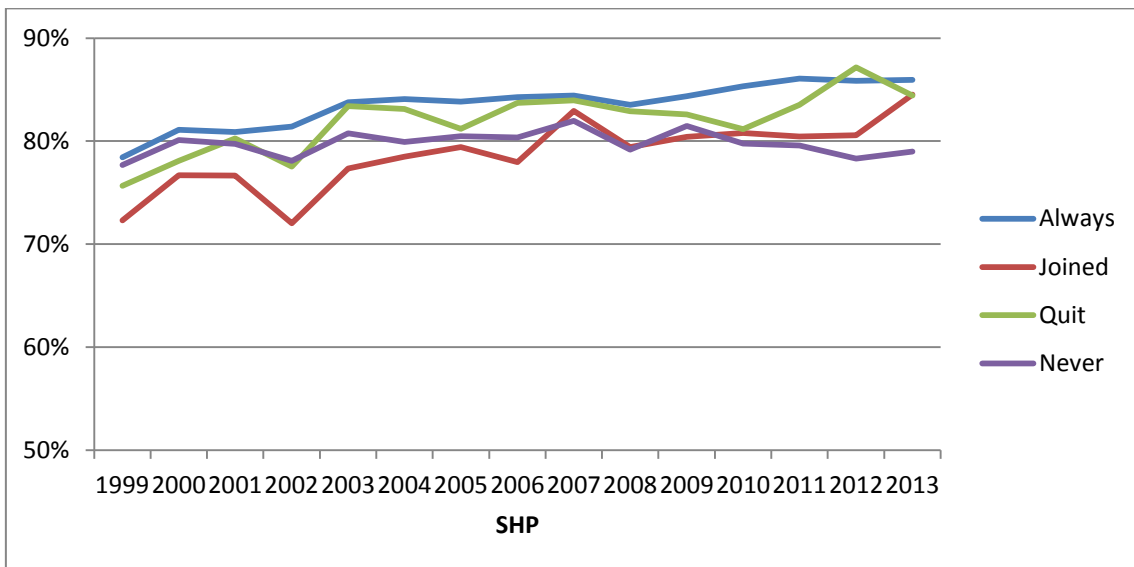
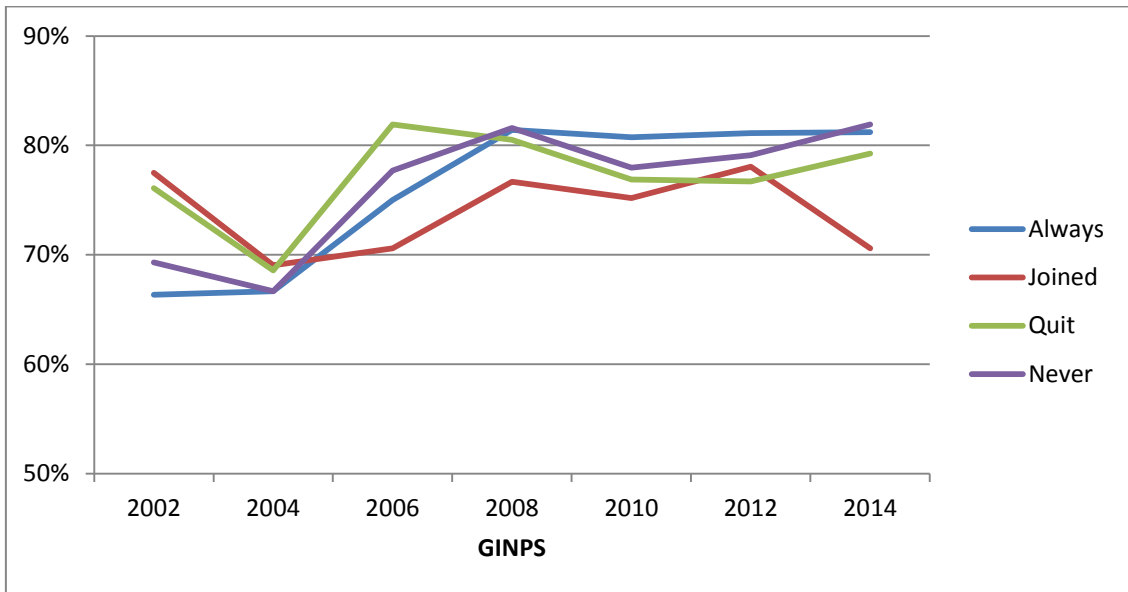


Figure A3c: Percentage people having a paid job among people who always volunteered, people who joined volunteering, people who quit volunteering and people who never volunteered





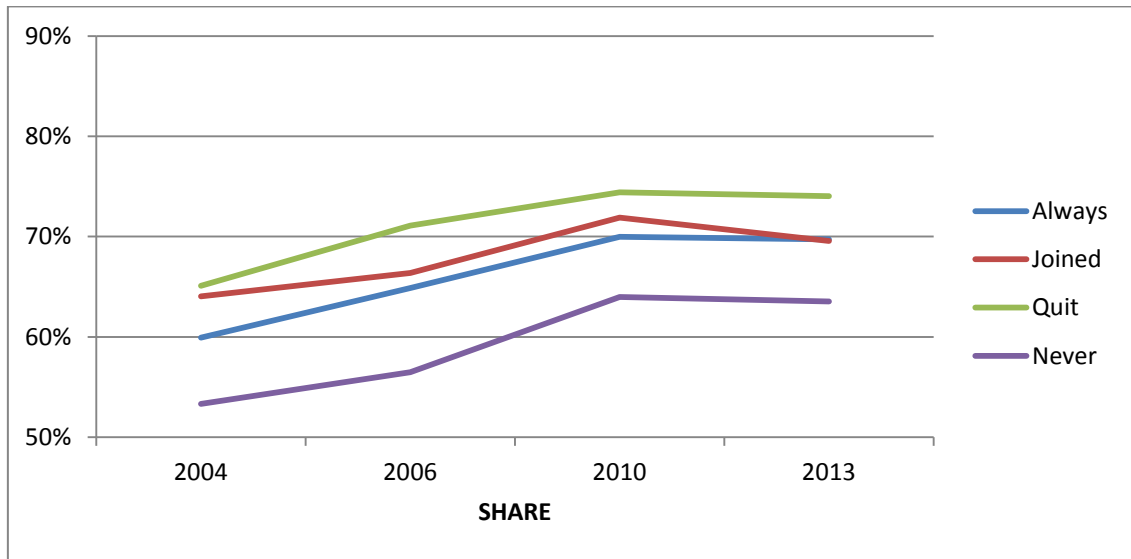
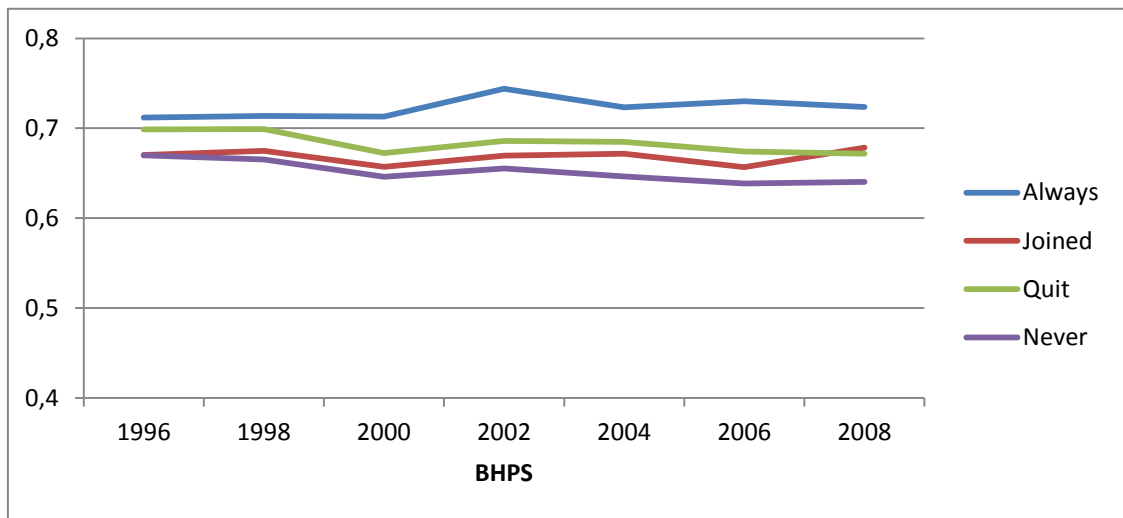
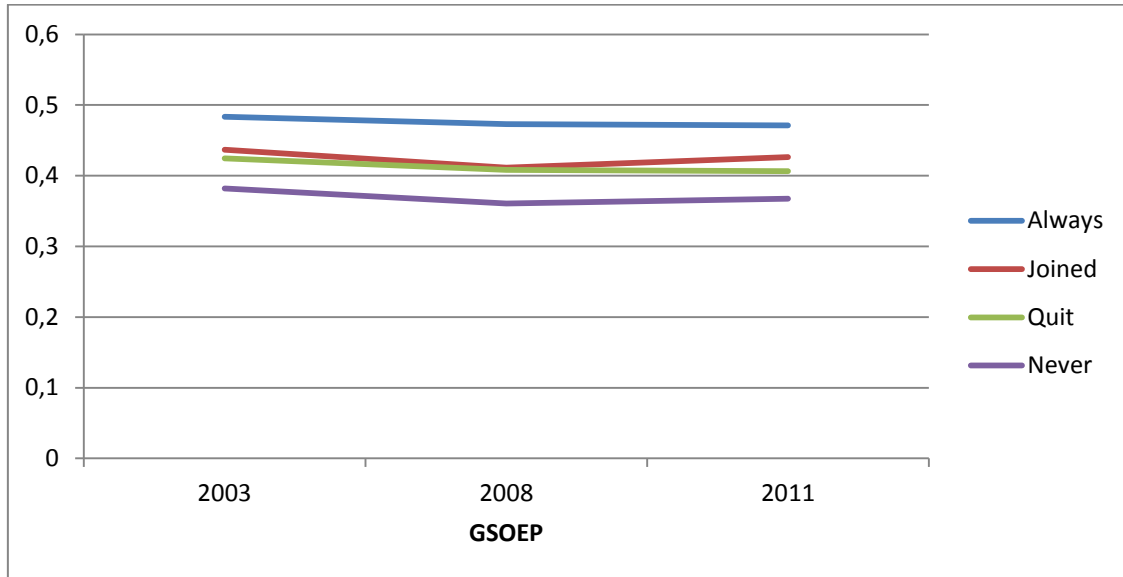
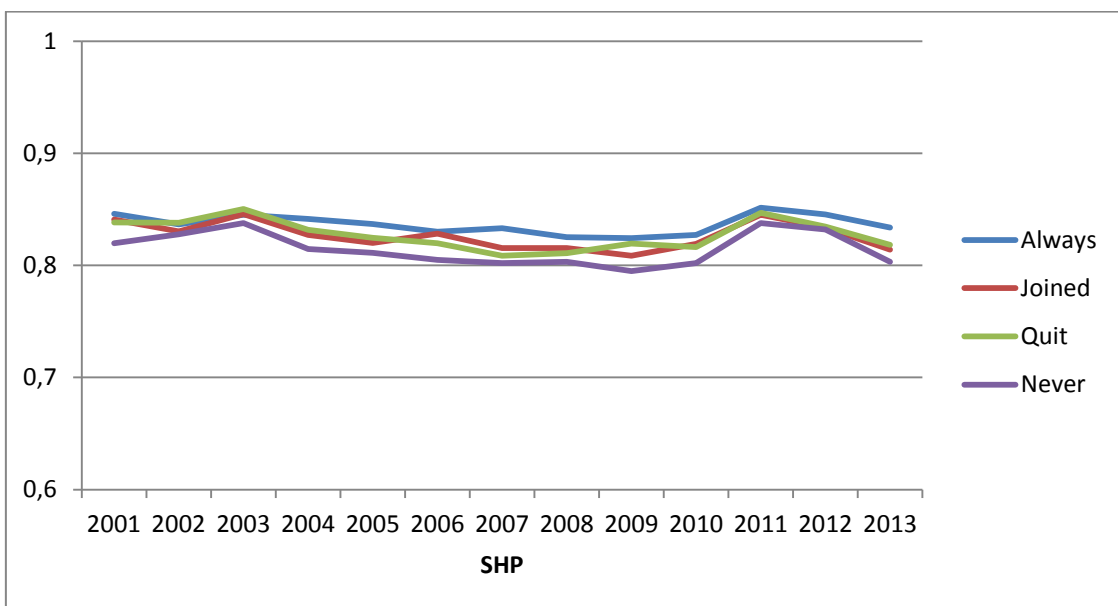
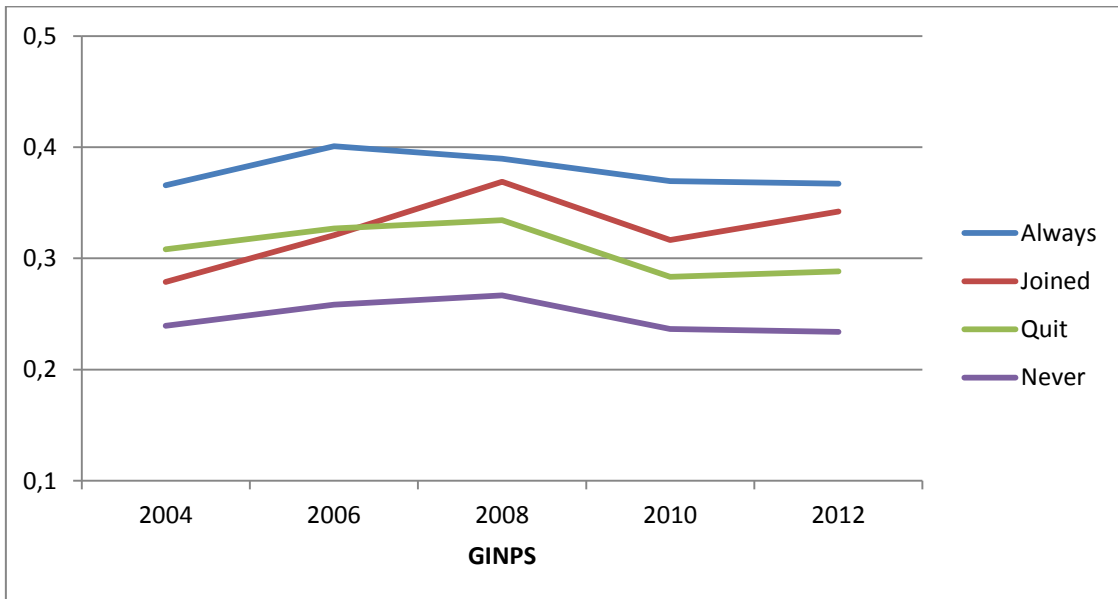
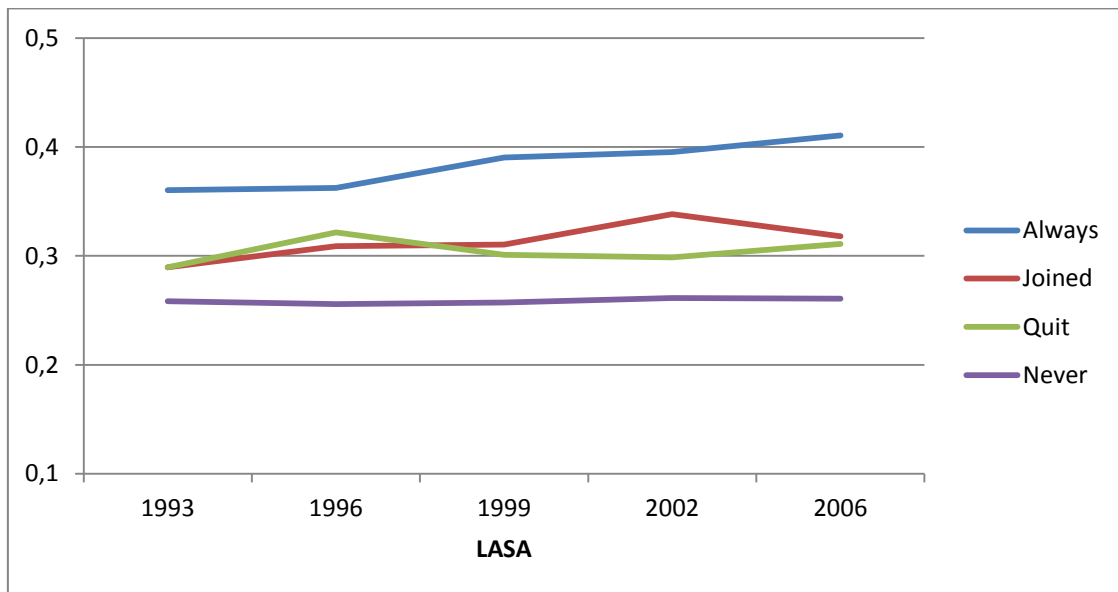


Figure A3d: Average scores on social relations scale (0-1) among people who always volunteered, people who joined volunteering, people who quit volunteering and people who never volunteered







Appendix 4 Regression output

Table A4a Regression coefficients on subjective well-being and changes in subjective well-being

Dependent	GSOEP			BHPS		
	OLS	FE	FD	OLS	FE	FD
	Well-being	Well-being	Δ Well-being	Well-being	Well-being	Δ Well-being
Volunteering	0.029*** (0.001)	0.003*** (0.001)		0.021*** (0.002)	0.006*** (0.002)	
Remain uninvolved						ref
Start volunteering			0.001 (0.002)			0.009*** (0.003)
Quit volunteering			-0.000 (0.002)			0.000 (0.003)
Remain volunteering			0.000 (0.001)			0.007*** (0.003)
(Constant)	0.713*** (0.001)	0.855*** (0.002)	-0.003** (0.002)	0.637*** (0.002)	0.788*** (0.008)	-0.001 (0.002)
Observations	272,672	272,672	113,833	82,791	82,791	61,750
N	41,306	41,306	29,660	19,940	19,940	18,276
Controlled for age and being married (0/1). Standard errors in parentheses. * p<0,01, ** p<0,05, ***p<0,001						

Table A4a Regression coefficients on subjective well-being and changes in subjective well-being

	SHP			SHARE		
	OLS	FE	FD	OLS	FE	FD
Dependent	Well-being	Well-being	Δ Well-being	Well-being	Well-being	Δ Well-being
Volunteering	0.016*** (0.001)	0.002* (0.001)		0.058*** (0.001)	0.010*** (0.002)	
Remain uninvolved			ref			ref
Start volunteering			0.003 (0.002)			0.010*** (0.003)
Quit volunteering			-0.002 (0.002)			-0.010*** (0.003)
Remain volunteering			-0.000 (0.001)			0.004* (0.002)
(Constant)	0.769*** (0.002)	0.890*** (0.006)	-0.004* (0.002)	0.722*** (0.004)	0.768*** (0.014)	0.025*** (0.006)
Observations	56,165	56,165	39,634	106,841	106,841	54,956
N	11,029	11,029	9,053	51,811	51,811	42,370
Controlled for age and being married (0/1). Standard errors in parentheses. * p<0,01, ** p<0,05, ***p<0,001						

Table A4a (continued) Regression coefficients on subjective well-being and changes in subjective well-being

Dependent	LASA		
	OLS Well-being	FE Well-being	FD Δ Well-being
Volunteering	0.026*** (0.003)	0.012*** (0.003)	
Remain uninvolved			ref
Start volunteering			0.012** (0.006)
Quit volunteering			-0.004 (0.005)
Remain volunteering			0.005 (0.004)
(Constant)	0.918*** (0.013)	1.067*** (0.019)	0.046*** (0.016)
Observations	8,896	8,896	6,495
N	2,363	2,363	2,287
Controlled for age and being married (0/1). Standard errors in parentheses. * p<0,01, ** p<0,05, ***p<0,001			

Table A4b Regression coefficients on subjective health and changes in subjective health

	GSOEP			BHPS		
	OLS	FE	FD	OLS	FE	FD
Dependent	Health	Health	Δ Health	Health	Health	Δ Health
Volunteering	0.022*** (0.001)	0.003** (0.001)		0.043*** (0.002)	0.010*** (0.002)	
Remain uninvolved						ref
Start volunteering			-0.001 (0.002)			0.008*** (0.002)
Quit volunteering			0.001 (0.002)			-0.012*** (0.002)
Remain volunteering			0.000 (0.001)			0.005*** (0.001)
(Constant)	0.862*** (0.001)	0.965*** (0.003)	-0.008*** (0.001)	0.800*** (0.002)	0.831*** (0.009)	0.012*** (0.001)
Observations	272,806	272,806	113,904	85,576	85,576	65,088
N	41,312	41,312	29,668	20,091	20,091	18,857
Controlled for age and being married (0/1). Standard errors in parentheses. * p<0,01, ** p<0,05, *** p<0,001						

Table A4b (continued) Regression coefficients on subjective health and changes in subjective health

Dependent	SHP			GINPS		
	OLS Health	FE Health	FD Δ Health	OLS Health	FE Health	FD Δ Health
Volunteering	0.020*** (0.001)	0.003** (0.002)		0.022*** (0.005)	0.008 (0.005)	
Remain uninvolved			ref			ref
Start volunteering			0.003 (0.002)			-0.009* (0.005)
Quit volunteering			-0.006** (0.002)			-0.028*** (0.005)
Remain volunteering			0.000 (0.001)			-0.003** (0.002)
(Constant)	0.838*** (0.002)	0.955*** (0.007)	0.001 (0.001)	0.520*** (0.003)	0.917*** (0.033)	0.012*** (0.003)
Observations	62,973	62,973	42,725	7,837	7,837	5,042
N	12,656	12,656	9,497	2,795	2,795	2,360
Controlled for age and being married (0/1). Standard errors in parentheses. * p<0,01, ** p<0,05, ***p<0,001						

Table A4b (continued) Regression coefficients on health and changes in health

Dependent	SHARE			LASA		
	OLS	FE	FD	OLS	FE	FD
	Health	Health	Δ Health	Health	Health	Δ Health
Volunteering	0.100*** (0.002)	0.011*** (0.002)		0.051*** (0.006)	0.022*** (0.006)	
Remain uninvolved			ref			ref
Start volunteering			0.007** (0.003)			0.006 (0.009)
Quit volunteering			-0.010*** (0.003)			-0.017** (0.008)
Remain volunteering			0.000 (0.002)			0.001 (0.005)
(Constant)	0.860*** (0.005)	0.976*** (0.016)	0.041*** (0.006)	0.714*** (0.024)	1.022*** (0.035)	0.051*** (0.020)
Observations	118,411	118,411	65,954	9,034	9,034	6,661
N	52,372	52,372	47031	2,372	2,372	2,364
Controlled for age and being married (0/1). Standard errors in parentheses. * p<0,01, ** p<0,05, *** p<0,001						

Table A4c Regression coefficients on paid work and changes in paid work

Dependent	GSOEP				
	Logit	Logit FE	Multinomial (ref: no change)		
	Paid job	Paid job	Retiring	Out of labour	Into labour
Volunteering	0.194*** (0.012)	0.155*** (0.020)			
Remain uninvolved					
Start volunteering			0.711*** (0.191)	-0.073 (0.050)	0.017 (0.049)
Quit volunteering			0.012 (0.244)	-0.109** (0.052)	0.042 (0.050)
Remain volunteering			0.622*** (0.139)	-0.234*** (0.039)	-0.065* (0.039)
(Constant)	1.634*** (0.016)		-11.705*** (0.238)	-1.553*** (0.039)	-0.633*** (0.040)
Observations	150,082	136,956	114,315	114,315	114,315
N	17,203	14,579	29,703	29,703	29,703
Controlled for age and being married (0/1). Standard errors in parentheses. * p<0,01, ** p<0,05, ***p<0,001					

Table A4c (continued) Regression coefficients on paid work and changes in paid work

Dependent	BHPS				
	Logit	Logit FE	Multinomial (ref: no change)		
	Paid job	Paid job	Retiring	Out of labour	Into labour
Volunteering	-0.174*** (0.026)	-0.311*** (0.038)			
Remain uninvolved			ref	ref	ref
Start volunteering			0.474*** (0.092)	0.309*** (0.058)	0.329*** (0.058)
Quit volunteering			0.103 (0.100)	0.008 (0.064)	0.418*** (0.055)
Remain volunteering			0.345*** (0.075)	0.058 (0.062)	0.457*** (0.055)
(Constant)	3.702*** (0.025)		-7.390*** (0.094)	-1.538*** (0.052)	-0.791*** (0.051)
Observations	35,079	34,396	83,999	83,999	83,999
N	5,939	5,656	19,792	19,792	19,792
Controlled for age and being married (0/1). Standard errors in parentheses. * p<0,01, ** p<0,05, ***p<0,001					

Table A4c (continued) Regression coefficients on paid work and changes in paid work

Dependent	SHP				
	Logit	Logit FE	Multinomial (ref: no change)		
	Paid job	Paid job	Retiring	Out of labour	Into labour
Volunteering	0.165*** (0.024)	0.071* (0.041)			
Remain uninvolved					
Start volunteering			0.565*** (0.152)	-0.200** (0.085)	0.105 (0.073)
Quit volunteering			0.317** (0.157)	0.038 (0.077)	0.091 (0.076)
Remain volunteering			0.411*** (0.108)	-0.083 (0.050)	0.075 (0.049)
(Constant)	1.538*** (0.042)		-9.185*** (0.210)	-1.243*** (0.074)	-1.290*** (0.076)
Observations	31,293	27,620	42,730	42,730	42,730
N	5,059	3,803	9491	9491	9491
Controlled for age and being married (0/1). Standard errors in parentheses. * p<0,01, ** p<0,05, ***p<0,001					

Table A4c (continued) Regression coefficients on paid work and changes in paid work

Dependent	GINPS				
	Logit	Logit FE	Multinomial (ref: no change)		
	Paid job	Paid job	Retiring	Out of labour	Into labour
Volunteering	-0.293*** (0.094)	-0.522*** (0.145)			
Remain uninvolved			ref	ref	ref
Start volunteering			1.150*** (0.276)	0.312 (0.195)	0.110 (0.228)
Quit volunteering			0.129 (0.333)	-0.005 (0.200)	0.666*** (0.177)
Remain volunteering			-0.059 (0.232)	-0.407** (0.160)	-0.025 (0.159)
(Constant)	0.915*** (0.156)		-7.767*** (0.309)	-1.546*** (0.197)	-1.339*** (0.227)
Observations	8,929	8,929	6,134	6,134	6,134
N	2,795	2,795	2,794	2,794	2,794
Controlled for age and being married (0/1). Standard errors in parentheses. * p<0,01, ** p<0,05, ***p<0,001					

Table A4c (continued) Regression coefficients on paid work and changes in paid work

Dependent	SHARE				
	Logit	Logit FE	Multinomial (ref: no change)		
	Paid job	Paid job	Retiring	Out of labour	Into labour
Volunteering	-0.325*** (0.038)	-0.322*** (0.067)			
Remain uninvolved			ref	ref	ref
Start volunteering			0.633*** (0.049)	0.369*** (0.081)	0.083 (0.103)
Quit volunteering			0.064 (0.064)	0.025 (0.099)	0.275*** (0.100)
Remain volunteering			-0.067 (0.054)	-0.009 (0.083)	0.137 (0.089)
(Constant)	8.345*** (0.183)		-0.081 (0.084)	4.726*** (0.163)	3.064*** (0.216)
Observations	19,738	19,648	75,972	75,972	75,972
N	6,934	6,865	50,898	50,898	50,898
Controlled for age and being married (0/1). Standard errors in parentheses. * p<0,01, ** p<0,05, ***p<0,001					

Table A4d Regression coefficients on social relation indicators and changes in social relation indicators

Dependent	GSOEP			BHPS		
	OLS	FE	*	OLS	FE	FD
	Network	Network		Network	Network	Δ Network
Volunteering	0.075*** (0.002)	0.023*** (0.003)		0.036*** (0.002)	0.014*** (0.002)	
Remain uninvolved						ref
Start volunteering						0.015*** (0.003)
Quit volunteering						-0.007*** (0.003)
Remain volunteering						0.006*** (0.002)
(Constant)	0.451*** (0.003)	0.614*** (0.015)		0.597*** (0.002)	0.827*** (0.009)	-0.009*** (0.002)
Observations	60,714	60,714		82,899	82,899	61,926
N	31,986	31,986		19,934	19,934	18,287
Controlled for age and being married (0/1). Standard errors in parentheses. * p<0,01, ** p<0,05, ***p<0,001						

* For the GSOEP, the first difference model could not be estimated because the questions on networks and volunteering were included in different waves of the survey.

Table A4d (continued) Regression coefficients on social relation indicators and changes in social relation indicators

Dependent	SHP			GINPS		
	OLS Network	FE Network	FD Δ Network	OLS Network	FE Network	FD Δ Network
Volunteering	0.010*** (0.001)	0.003** (0.001)		0.100*** (0.005)	0.023*** (0.007)	
Remain uninvolved			ref			ref
Start volunteering			0.009*** (0.002)			0.017* (0.009)
Quit volunteering			0.002 (0.002)			-0.024*** (0.009)
Remain volunteering			0.005*** (0.001)			0.006 (0.004)
(Constant)	0.807*** (0.002)	0.868*** (0.008)	-0.007*** (0.001)	0.340*** (0.009)	0.424*** (0.043)	0.018** (0.007)
Observations	52,826	52,826	37,252	6,849	6,849	4,054
N	10,639	10,639	8815	2,795	2,795	2,023
Controlled for age and being married (0/1). Standard errors in parentheses. * p<0,01, ** p<0,05, ***p<0,001						

Table A4d (continued) Regression coefficients on social relation indicators and changes in social relation indicators

Dependent	LASA		
	OLS Network	FE Network	FD Δ Network
Volunteering	0.058*** (0.004)	0.008* (0.004)	
Remain uninvolved			ref
Start volunteering			0.008 (0.006)
Quit volunteering			-0.003 (0.005)
Remain volunteering			0.009*** (0.003)
(Constant)	0.365*** (0.018)	0.336*** (0.026)	0.047*** (0.013)
Observations	8,536	8,536	6,099
N	2,350	2,350	2,240
Controlled for age and being married (0/1). Standard errors in parentheses. * p<0,01, ** p<0,05, ***p<0,001			