

Working Paper

Wellbeing and civil society

Estimating the value of volunteering
using subjective wellbeing data

by Daniel Fujiwara, Paul Oroyemi and Ewen McKinnon



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Summary

Volunteering typically falls outside market structures. In common with other non-market services it is seldom priced or valued in economic terms and is not transparently reflected in national accounts such as Gross Domestic Product (GDP). With one in four of the adult population of England volunteering formally on a regular basis, and two in five at least once a year, this represents significant levels of economic and social activity potentially not being fully reflected in relevant decision making. The evidence suggests that individuals do place a positive value on participating in voluntary work (Meier and Stutzer, 2004), but this has rarely been assessed in monetary terms. The risk, as a consequence, is that we undervalue and under-invest in policies which promote volunteering. In contrast, robust valuation could support national estimates and lead to a better reflection of the levels of volunteering activity in our national accounts and economic policies. Furthermore, robust valuation is central to cost-benefit analysis. Effective valuations of volunteering should support policy makers, service commissioners and social investors in their decision making around specific policies, projects and services that have a volunteering dimension.

In the absence of market prices the traditional approach to valuation is to assess the decisions people make through revealed or stated preference techniques. However, these techniques typically assume rational consumer behaviour which has been increasingly challenged over recent years by behavioural economics. An emerging technique that uses people's self-reported levels of subjective well-being may provide a more suitable alternative to traditional approaches in many circumstances. The Wellbeing Valuation (WV) approach estimates the increase in wellbeing associated with a particular good or service and then calculates the equivalent amount of money necessary to give the same boost to well-being (in order to keep well-being constant). The monetary measures derived using this method can be shown to be equivalent to the measures of welfare change measured by more traditional preference based valuation approaches (Fujiwara and Campbell, 2011). In this paper we use the WV approach to value volunteering from the perspective of the participant and we show evidence indicating that the traditional approaches may significantly underestimate the value of volunteering to the individual.

We have estimated the value of volunteering, to the volunteer, using data on life satisfaction and volunteering status in the British Household Panel Survey (BHPS). We have analysed four waves of data (2000, 2002, 2004 and 2008) for people aged over 16 years. Using two stage least squares (2SLS) regression and instrumenting for income, we estimate the value that frequent volunteers place on volunteering to be about £13,500 per year at 2011 prices. Note that this should not necessarily be seen as an amount that people would be willing to pay to partake in voluntary work; it is simply the monetary equivalent of the wellbeing benefit derived from volunteering. Also note that this is an average value which will clearly increase or decrease for different groups across society.

We also estimate that not being able to volunteer equates to a 1.9 per cent reduction in life satisfaction, which is comparable to findings from a German study (Meier and Stutzer 2004). This is not an insignificant figure in light of the fact that all life events and circumstances taken together have been found to only account for about 10-15 per cent of the variation in life satisfaction. The negative impact of not being able to volunteer on life satisfaction is similar to the effect of being divorced and about a third of the effect of being unemployed. From the outputs of Meier and Stutzer's model we can derive an equivalent monetary estimate for volunteering. This turns out to be about £14,500 per year, which despite having a number of caveats is surprisingly consistent with our results.

This provides some degree of confidence in our findings given that we believe the German study to be especially robust due to the (quasi) experimental nature of their data. If we were to aggregate our estimated monetary value to the whole adult population that volunteers frequently we get an estimate of the national value of volunteering, to volunteers, to be in the order of about £70bn per year, which is equivalent to around five per cent of UK GDP.

We also explored the values that different groups place on voluntary work by developing models split by demographic group. However, on the whole this led to insignificant results for income, volunteering and a number of other variables (due to small sample sizes) and therefore we do not report the results in this paper.

In our model we also included a number of variables that are associated with ‘sense of community’ and civil society. We were, therefore, also able to similarly value these elements and to present the results. We find that ‘not being able to meet up with friends a number of times per week’ is equivalent to a cost of £17,300 per year and that the value that people place on ‘living in a society where they feel they can trust’ people is about £15,900 per year. To live in a neighbourhood with ‘severe crime and vandalism problems’ people would have to be compensated £33,700 per year. We have further estimated the cost of unpaid caring to be about £23,600 per year, grossing to £142bn in the UK.

The estimates in this report can help inform businesses cases for interventions related to civil society, or local services which inherently build community trust, promote social interactions between friends and neighbours, or have a volunteering dimension.

1 Introduction and policy context

The levels of informal and formal volunteering in society have long been of interest to policy makers. Volunteering is vital to charities and civil society, helps to strengthen local communities, and improves the wellbeing of individuals who participate. It is not therefore surprising that there have been many interventions to encourage participation in the past, and the present administration in the UK, at the time of writing, is no exception in understanding its importance. In 2010 when the new coalition government was established one of its priorities was to strengthen civil society by increasing social action, devolving power to communities and opening up public services to a plurality of providers, including the voluntary and community sector. National and local levels of volunteering provide important indications that gauge the health and vibrancy of civil society and provide a key measure of societal progress.

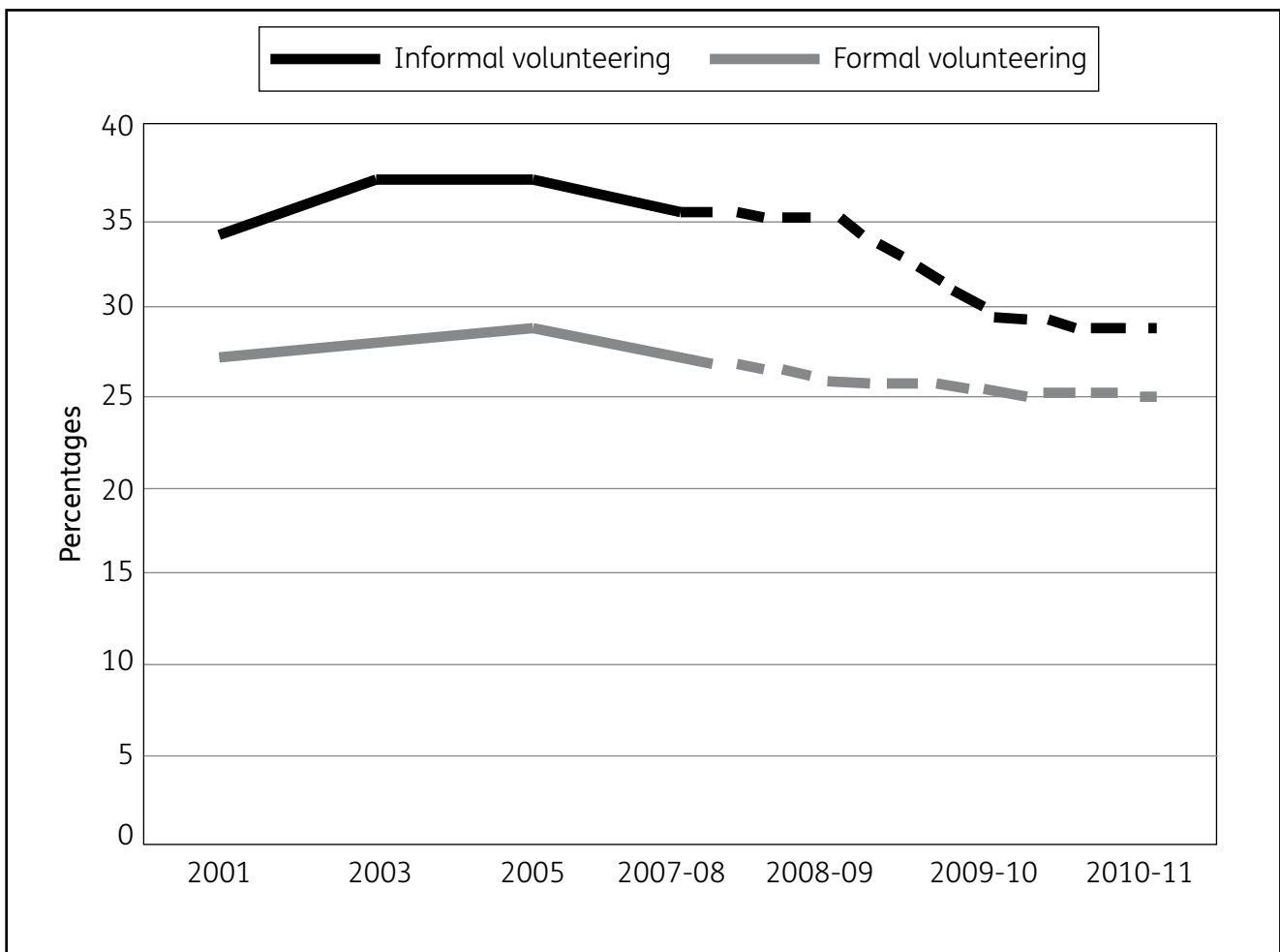
There are, however, a number of challenges related to the levels of volunteering. Firstly, while around 40 per cent of the population volunteer at least once a year, frequent volunteering is lower and has flat-lined in recent years; An estimated 25 per cent of people in England volunteered formally at least once a month in 2010-11 (see Figure 1.1), this is a lower rate than at any point between 2001 and 2007-08 but unchanged on 2008-09 and 2009-10 levels¹. Secondly, some research indicates that there is a minority subset of the population, a 'civic core' of people who contribute a disproportionate amount of time and money; 31 per cent of population provides 87 per cent of voluntary hours and 79 per cent of charitable giving. It is suggested that the geographic distribution of the civic core is uneven, favouring more prosperous areas². Thirdly, some voluntary and community sector organisations (28 per cent) reported having insufficient volunteers in 2010³; and in a tough economic climate a greater proportion of organisations reported having sufficient income and financial reserves, than sufficient volunteers. In response to the challenges the UK government published a Giving White Paper⁴ in 2010, with commitments to invest over £40 million in volunteering and social action over 2011 and 2012.

¹ Communities and Local Government (2011) Citizenship Survey.

² Third Sector Research Centre (2011) Mapping the Big Society.

³ Cabinet Office (2011) National Survey of Charities and Social Enterprises.

⁴ Giving White Paper (2010).

Figure 1.1 Levels of volunteering in the UK, Citizenship Survey (2011)

Volunteering is a non-market service. Its value is seldom measured economically and it is not routinely reflected in national GDP figures to the extent, for example, that paid work is. The old adage ‘what gets measured gets done’ applies and it would be interesting to think about what impact the changes in Figure 1.1 might have had on GDP if the economic value of volunteering had been fully reflected within it. Valuing volunteering effectively at a national level could certainly enrich macroeconomic data, and the relevant policies and decisions stemming from it. Beyond this, it could also support more rounded decision making at a microeconomic level. A better understanding of the value of volunteering, both to society and individuals, could strengthen the justification for existing interventions and provide additional evidence to support business cases for further action. It could be especially important in challenging economic climates and where there is strong competition for resources. As governments, like in the UK, look to encourage and support new markets and financial instruments for social investment, valuations will support service commissioners and investors in their decision making. It will enable them to more evenly compare interventions involving volunteering, with other projects that seemingly deliver clearer economic impact.

Volunteering clearly has a value to society in that it delivers important services not efficiently provided by the market. There is evidence that volunteering itself may be a valued activity for individuals involved in provision (Brown, 1999). We term this the **value to the recipient** and the **value to the participant** respectively. Although we discuss the recipient value, the main focus of this study is on the value of volunteering from the point of view of the participant.

There is a long history of valuation in cost-benefit analysis and welfare economics. Traditionally, these methods have been based on ascertaining values for non-market goods from people's preferences and market behaviour (HM Treasury, 2003). Briefly, these methods either ask people to attach a value to a non-market good in a survey (Stated preference techniques) or find data from markets that reveal the implicit value that people place on non-market goods, by for example looking at costs they incur to consume or enjoy the good (Revealed preference techniques). The UK Government has recently started to explore the use of an emerging technique that uses people's self-reported levels of subjective well-being.

The Well-being Valuation approach recently featured in a joint HM Treasury-Department for Work and Pensions Discussion Paper (Fujiwara and Campbell, 2011) and has been incorporated into the HM Treasury Green Book update in 2011. The WV approach uses people's actual experiences with non-market goods, looking at how these goods affect their lives. Statistical techniques are used to find the equivalent monetary value of this impact. There is clear empirical evidence that volunteering and wellbeing are linked and we argue in this paper that this technique has a lot of advantages over the traditional preference-based valuation methods for the topic of volunteering.

This paper therefore uses the WV technique with the objectives of valuing volunteering from the participant's perspective, exploring how the value changes for different groups and shedding light on whether we have been historically over, or under valuing this important national resource.

2 Valuing volunteering

In any valuation exercise the correct measures to seek are compensating and equivalent variations of the non-market good. These are essentially estimates of the monetary equivalent of the impact of the good on a person's utility or welfare. They are often framed in terms of willingness to pay (WTP) for things that have a beneficial effect on welfare (e.g. improved health, environmental amenities) or willingness to accept (WTA) for things that have negative effects on welfare (e.g. pollution, crime). It is vital to measure **maximum** WTP and **minimum** WTA because the true full monetary value of something is the point at which people are indifferent between the monetary sum and the good or 'bad' in question.⁵

2.1 Different approaches to valuation and literature review

2.1.1 Value to recipients

Voluntary work and organisations provide valuable services to society that are not provided by markets. Estimating recipients' WTP for these services is difficult because by definition there is no market price. One possible argument is that voluntary services have no value to society because if they did a market for the service would have naturally emerged. This argument is, however, likely to be flawed. The lack of a formal market for the service simply implies that either (a) WTP is too low (but still positive) to make it profitable for a profit-seeking organisation to provide the service. This could be because the service itself is not valued highly or because the potential recipients are from low income groups and hence cannot pay a high amount even if they highly value the service in question; or (b) the service is a public good that cannot be provided by the public sector because there is no way to exclude consumption or charge for it efficiently. In this case even a highly valued service would not be provided in the market.

Common techniques to measure the recipient value of voluntary work include:

- Using prices of marketed versions of the service output. For example, an organisation that provided meals to the elderly could value the service at price of an equivalent meal in the market (for example, Ironmonger, 2006).
- Volunteer Investment Value Auditing (VIVA). Here the value of voluntary work is calculated as the cost of resources used to support volunteers in their work (e.g. management and training costs) (for example, Teasdale, 2008).
- Estimating the wider impacts of volunteering on health, crime rates and economic growth (e.g. Mayer, 2003).

It is clear that these techniques will not pick up the benefits of volunteering for the participant. For that we need to turn to the preference-based and WV approaches mentioned above.

2.1.2 Value to participants

Participants have been found to derive benefits from volunteering through a number of different ways, including enhanced self-esteem (Omoto and Snyder, 1992); personal development (Schmitz and Schomaker, 1994); occupational experience (Hackl *et al.*, 2007; Knoke and Adams, 1987);

⁵ Economists term things that have positive welfare impacts 'goods' and conversely things that have negative welfare impacts 'bads'.

improved health (Oman *et al.*, 1999; Adelman 1994; Wilson and Musick, 2000); and education and learning (Knoke, 1988; Moore and Allen, 1996). See Chinman and Wandersman (1999) for a full review of the literature.

To understand the (monetary) value people place on volunteering we need to evaluate either how much an individual would be willing to pay to volunteer or how much they would be willing to accept in return for not being able to volunteer. In this context WTP is the amount of money that, after receiving a good, would need to be taken from the individual to leave him just as well-off as before receiving the good. In other words if we assume that volunteering is a valued activity for the individual we would want to know how much money would need to be taken off him to leave him just as well-off as he would be without being able to volunteer. Conversely WTA would be the amount of money that, after being deprived of a good, would need to be given to the individual as compensation to leave him just as well-off as when he had the good. So in other words we would want to know how much money we would need to compensate the individual if suddenly he were not able to volunteer anymore. It should be noted that these two versions of valuation are often not the same even for the same good (Fujiwara and Campbell, 2011) so it is important to interpret valuation figures correctly. Which methodology is suitable will depend on the context of analysis as we discuss in more detail below.

The above terminology clearly indicates that we need to understand people's changes in welfare due to consumption (or lack thereof) of a good or service. Welfare in economics is synonymous with the term 'utility' and will be used interchangeably here. There are two distinct frameworks that can be pursued to estimate WTP and WTA in these welfare terms: **valuation through preference satisfaction and valuation through wellbeing.**

Preference satisfaction approach

The preference satisfaction account of welfare claims that changes in people's welfare can be understood from how many of their preferences are being satisfied. Preference satisfaction can be measured in monetary terms through the logic of two arguments: (i) that the intensity of desire is a measure of the utility derived and (ii) that income is a surrogate for desire: how much a person is willing to pay for something (or to accept for selling something) is an index of how much they desire it (Pigou, 1932; Sumner, 1996).

Provided that a number of assumptions hold preference satisfaction can be used to derive monetary value estimates for non-market goods. These assumptions (known as the axioms of revealed preference) are that people's preferences are rational (i.e. they are stable and consistent) and that people seek to maximise utility in their choices. The axioms allow people's preferences to be represented by a well-behaved utility function, where we can prove that satisfying a rational preference is utility-increasing. Because people aim to maximise utility then we can conclude that any policy, good or service that satisfies more of people's preferences is welfare-increasing. Within the preference satisfaction methodology there are two distinct techniques for valuation.

(i) Revealed preference techniques

In revealed preference techniques estimates of value are uncovered using evidence of how people behave in the face of real choices in complementary or substitutive markets; values attributed to non-market goods can be inferred from market transactions in private goods.

In the case of volunteering this technique can be used by looking at transactions in the labour market. A value for volunteering can be estimated from the market wage foregone by people who volunteer. Here we are saying that people reveal a preference for voluntary work over paid work and, therefore, provided preferences are rational we can assume that people value their time

volunteering at least as much as the foregone wage rate. Using this technique, the Department of Communities, Australia (Ironmonger, 2006) estimates the value of voluntary work to be about A\$17.50 per hour. In 2004 average volunteering hours among adults aged 18 and over were 220 hours per year. The value of volunteering would, therefore, be A\$3,900 per year for the individual (about £2,500 per year).⁶ However, hours spent volunteering has steadily increased in Australia by about 11 per cent per year (Ironmonger, 2006). **Based on this projection, the value of volunteering would be about A\$8,100 per year or about £5,100 per year. Uprating this to 2011 prices would derive a figure of £6,100 per year.**

The method of using labour market wages as proxies of value has a long history in economics starting with the pioneering work by Rosen (1986). There are, however, a number of problems with the revealed preference technique, the main ones of which are discussed here. For a full discussion see Fujiwara and Campbell (2011) and Loomes (2006).

Irrational preferences

Evidence from behavioural economics and psychology has recently challenged the validity of the preference axioms that underlie the preference satisfaction approach. In essence the psychological literature has demonstrated that preferences constructed at the time of elicitation and are context-dependent (Slovic, 2000). For example, people's preferences can be reversed by a simple manipulation of the elicitation format (Poundstone, 2010) and the value people place on goods and services (even everyday consumer goods) are heavily anchored by irrelevant cues (Ariely *et al.*, 2003). Furthermore, there are long-standing arguments in welfare economics that moral goods, of which volunteering may be an example, do not enter the standard utility function and therefore the value of such goods cannot be ascertained from traditional preference-based valuation techniques (Sen, 1992). For a full review of the literature see Fujiwara and Campbell (2011), Hastie and Dawes (2010).

There is counter evidence that some of these anomalies are reduced with experience in the market (e.g. Bateman *et al.*, 2006; Braga and Starmer, 2005; List, 2003). However, any such behaviour that contradicts the assumptions of underlying stable and coherent preferences would imply that we cannot be sure that a given revealed preference or choice indicates an increase in welfare or utility for the individual. The upshot for revealed preference techniques for valuing volunteering is that a choice of spending time volunteering rather than working may have no connection at all to a person's welfare and, therefore, may reveal very little about how much they value volunteering.

Market equilibrium

A second problem with revealed preference techniques is that the substitutive market needs to be in equilibrium to reveal useful information. In equilibrium, market prices will reveal the true value (WTP) that people place on things. Hence, in the labour market the market wage rate will reflect the value that people place on the time they use at work. However, markets may be in disequilibrium due to, for example, market frictions or lack of information which would signify that prices would not relate well to the value people place on things, i.e. the wage would be a poor proxy of the value of time.

Furthermore, it is not just the wage that people substitute in order to undertake voluntary work. There is evidence to suggest that work has a value to the individual over and above any financial benefits (Clark and Oswald, 2002; Winkelmann and Winkelmann, 1998). This could be due to positive impacts on health, self-esteem, social contact and purpose (Jahoda, 1982). As a result it could be argued that people are substituting both the going wage and the non-financial benefits of paid work to volunteer and hence wages on their own are likely to understate the value of volunteering to the individual. Therefore, we feel that foregone market wages should not be used as a proxy to place a value on volunteering.

⁶ At October 2011 exchange rates.

(ii) Stated preference techniques

Stated preference methods use specially constructed questionnaires to elicit estimates of the WTP for or WTA a particular outcome. In essence a hypothetical market is presented to questionnaire respondents with a detailed description of (a) the good, (b) how it will be provided, and (c) the method and frequency of payment. Following this, questions are posed in order to infer a respondent's WTP or WTA. The key outcome of the analysis is an estimate of the average WTP or WTA across the sample of people surveyed. If the sample is representative of the target population, then this estimate can be aggregated to obtain an estimate of the total value of the outcome or good. These types of valuation study are used extensively in valuing the environment and its different aspects. Readers are directed to Champ *et al.* (2003) for a detailed description of the technique.

We are only aware of one stated preference study that has specifically looked at the value of volunteering. Before discussing these results we cover the main problems that are likely to surface for any such valuation study. Again this is just a brief description of some of the main issues and readers are directed to Fujiwara and Campbell (2011) and Loomes (2006) for further discussion.

Irrational preferences

Above we discussed the problems posed by the phenomenon of context-dependent preferences. This problem has been clearly visible in the stated preference literature. For example, WTP and WTA values have been shown to be anchored on the opening figure presented in the elicitation process, i.e. the higher the opening figure (e.g. would you be willing to pay £x) the higher the valuation estimates are for a given good (e.g. Duborg *et al.*, 1997). See Plassman *et al.* (2007) for neurological evidence of anchoring effects in stated preference studies. And people have been shown to reverse preferences and levels of valuations between market and non-market goods in these surveys (Stachtiaris *et al.*, 2011).

At a more general level it could be argued that people will not have any notion of an underlying preference for volunteering. This statement is related to work by Daniel Ariely and colleagues. Ariely *et al.* (Ariely *et al.*, 2006) elicited valuations for listening to a poetry recital with one simple manipulation; one half (randomised) of the group were asked for a valuation in a WTP format and the other half in a WTA format (i.e. how much would you be willing to pay to attend the recital versus how much would you be willing to accept to have to sit through the recital). Although the service on offer (the recital) was identical the elicitation format heavily influenced people's views on the value of the event; when it was later announced that actually there would be no payment taken or given for the event those who had had the WTP format turned up, but those who had had the WTA format stayed away. Although no study has tried this, it could be strongly argued that volunteering is very much a type of good/phenomenon that could easily be susceptible to this type of manipulation in a survey. Depending on how the elicitation format is framed (i.e. WTP versus WTA) a given type of voluntary activity could be manipulated to show that it is valuable (people would be willing to pay to do it) or costly to people (people would have to be compensated to do it).

Survey biases

The survey format in stated preferences can create additional problems. Two of potential relevance here would be hypothetical bias and protest valuations. The hypothetical nature of the good in question and the payment mechanism can lead to inflated values in surveys. It is widely believed that individuals overstate their valuation of a good by a factor of two to three when comparing hypothetical versus actual payments for goods (Murphy *et al.*, 2005). The reasons for hypothetical bias are not fully determined. One reason is attributed to non-commitment bias; respondents may overstate their true WTP because they do not face a budget constraint and they do not consider substitute goods within the world of the hypothetical scenario.

Respondents with a positive true WTP may put forward a zero stated valuation due to, for example, ethical objections to the idea of paying for the good under consideration. This could be especially relevant for the case of valuing voluntary work because many volunteers would likely reject the idea of being paid for the work. This issue is connected to Sen's arguments on morality in the utility function discussed above. With protest values we would get an underestimate of the benefits of volunteering.

Handy and Srinivasan (2004) asked hospital volunteers in the US their willingness to pay for the benefits they perceive they will acquire through volunteering. Response rates in the survey were fairly low with a number of zero and extreme positive values. Although reasons were not assessed in the study this could be a sign of protest values on the one hand and hypothetical bias on the other. **Average WTP was \$180 per year, significantly lower than the value derived through wages foregone.** It should be noted that respondents were asked to only value a subset of benefits related to volunteering (these were job progression and building social contacts) and hence many of the other potential benefits like improved health and self-esteem were ignored. The authors note that this is likely to be an underestimate of WTP and a review of the survey clearly demonstrated that respondents found it very difficult to attach a value to the impacts, placing doubt on the viability of stated preference surveys as a tool for valuing voluntary activity.

Valuation through wellbeing

The approach adopted in this paper is the WV approach.⁷ The WV approach uses people's actual experiences, rather than preferences and choices, to assess the value people place on things. In essence we evaluate the impact of a good or service on someone's wellbeing and calculate how much money they would need to derive an equivalent change in wellbeing. There are a number of important reasons for favouring this approach for the current study. The wellbeing approach does not rely on people's preferences as indicators of wellbeing. Nor do we require any assumptions about equilibria in markets. Respondents are simply asked to provide a subjective assessment of their overall well-being which is then matched with objective measures of the determinants of well-being. People are therefore not required to have perfect information about the good/service being valued and there is no need for them to reveal or state a preference. Value estimates will be calculated on the basis of how people are **actually** affected by the good/service.

Furthermore, preference anomalies, such as preference reversals, and contextual factors like anchors will be irrelevant. Finally, there is no hypothetical market involved, as in the stated preference method and survey biases are eliminated; it would be near impossible for a respondent to manipulate a wellbeing survey/questionnaire to the extent that they are able to give a protest value for example. For a full discussion on the merits of the WV approach see Fujiwara and Campbell (2011).

⁷ Also often referred to as the Life Satisfaction Approach.

The cornerstone conjecture of this approach is that measures of subjective wellbeing are good proxies of people's welfare or utility. With this in mind a wellbeing function can be estimated statistically and the coefficients on the volunteering and income variables can be used to estimate the marginal rates of substitution, which provide estimates of monetary values.

More formally, we would estimate:

$$W = \alpha + \beta_1 M_i + \beta_2 V_i + \beta_3 X_i \varepsilon_i \quad (1)$$

where W is a measure of subjective wellbeing. This is usually a global measure like life satisfaction. M is the income of individual i , V is a variable to indicate whether volunteering or not and X is a vector of individual characteristics and other factors that impact on wellbeing. The monetary value of volunteering is given by equation (2):

$$\text{Value} = -\frac{\beta_2}{\beta_1} \quad (2)$$

Usually income enters in logarithmic format in (1) to account for diminishing marginal utility of income. The calculation for monetary value then becomes more involved and this is presented below. Before setting out the empirical analysis and results, we discuss the main issues involved in undertaking the WV approach.

Issues and caveats

We cover issues related to the validity of the life satisfaction measure and the techniques used in statistical analysis. These topics are covered in brief and the reader is directed to Fujiwara and Campbell (2011) for a full discussion.

(i) Subjective wellbeing as a measure of welfare

The general trend in the WV approach has been to use **life satisfaction** as the measure of wellbeing, probably in part because of its broadness compared to other measures of wellbeing that focus more on certain elements such as emotions or reward. Life satisfaction can be seen as being made up of a balance of affect (positive and negative emotions and feelings) together with a cognitive assessment of how well one's life measures up to aspirations and goals (Diener, 1984; Kahneman and Krueger, 2006).

There are, however, a number of problems with the life satisfaction measure that have been highlighted in the literature. First, thinking about life satisfaction requires remembering past experiences and a number of biases have been discussed such as the tendency to evaluate experiences based only on the peak emotion and the experience at the end (peak-end rule) (Kahneman *et al.*, 1993; Schwarz, 2010). Second, life satisfaction reports can be influenced by contextual factors that should have no relevance, such as the weather that day, current moods, survey question order and who is present during the survey (Schwarz and Strack, 1999).

But there is also a variety of evidence to suggest that overall life satisfaction is a good measure of well-being. Schimmack and Oishi (2005) Eid and Diener (2004) Fujita and Diener (2005) find mood and contextual effects to be limited. Sandvik *et al.* (1993) Urry *et al.* (2004) demonstrate that there is a strong positive correlation between well-being ratings and emotions, such as smiling and frowning, and neurological activity in expected regions of the brain. Furthermore, life satisfaction has been found to be a good predictor of health (Fujiwara and Campbell, 2011).

(ii) Technical problems with statistical methods

It is critical when estimating values in equation (2) to ensure we have estimated the coefficients in a robust manner, where they have a causal interpretation. In other words we need to be sure that we have estimated the causal effects of volunteering and income on life satisfaction. The key issue will be whether the explanatory variables are independent of the error terms in the model.

Explanatory variables like income and volunteering are unlikely to be exogenously determined. There are likely to be unobserved factors that will impact both on the explanatory variable and life satisfaction. For example, people who are likely to be more satisfied with life may also earn more and hence any correlation between income and life satisfaction cannot be attributed to causality running from the former to the latter. This will also apply to the volunteering variable. This creates a correlation between the explanatory variables and the error terms in the life satisfaction model (1).

Furthermore, if explanatory variables are measured with error this will also create a correlation with the error term. There are a number of techniques available for tackling these issues which we discuss in the results section of the paper.

2.2 Evidence on volunteering and wellbeing

There is a large body of evidence demonstrating a positive relationship between membership in (non-church) organisations and wellbeing (Dolan *et al.*, 2008). Just focusing on volunteering, evidence is mixed with some studies finding no relationship with wellbeing (e.g. Haller and Hadler (2006)) and others finding a positive relationship (e.g. Greenfield and Marks (2004) and Meier and Stutzer (2004)). Inferring causality from volunteering to wellbeing is of course an issue and has been discussed by Thoits and Hewitt (2001) and Dolan *et al.* (2008).

A crucial study for our paper is Meier and Stutzer's (2004) study of the impact of not volunteering on life satisfaction in Germany. It is the only study of which we are aware that has managed to assess the impact of volunteering in a manner that provides a causal interpretation. They use the reunification between East and West in Germany to provide a natural experiment for an exogenous change in volunteering status. Meier and Stutzer (2004, p.11) state that:

'After the breakdown of East Germany, a large fraction of the infrastructure for volunteering collapsed. In East Germany, where volunteering was widespread, many opportunities were linked with the old structures, e.g. sports clubs were connected with nationally owned companies. Due to the reunion, these structures disappeared and many volunteers were 'forced' to stop volunteering.'

This makes an ideal testing-ground for measuring the impacts of volunteering because people were 'forced' to stop volunteering irrespective of any underlying factor or personality trait that may jointly affect the probability of volunteering and life satisfaction. They find that losing the opportunity (or not being able to continue) to volunteer weekly or monthly leads to a 0.23 index point drop in life satisfaction on an 11-point scale (i.e. 0 = 'completely dissatisfied' and 10 = 'completely satisfied'). This amounts to about a two per cent change in life satisfaction. This is not an insignificant figure in light of the fact that all life events and circumstances taken together have been found to only account for about 10-15 per cent of the variation in life satisfaction. Most of the variation has been found to come from underlying personality characteristics (Lyubomirsky, 2001). Compared to other life events and circumstances in Meier and Stutzer's model, the negative effect of not being able to volunteer is similar to the effect of being divorced and about a third of the effect of being unemployed.

3 Empirical methodology

We estimate the value of volunteering using data on life satisfaction and volunteering status in the BHPS. The BHPS is a nationally representative sample of British households, containing over 10,000 adult individuals, conducted between September and December of each year from 1991. Respondents are interviewed in successive waves, and all adult members of a household are interviewed. The sample has remained representative of the British population since the mid-1990s. We restrict our sample to people over 16 years of age. In the empirical analysis, we use four waves of data, these are 2000, 2002, 2004 and 2008. These are the only years for which we have both the life satisfaction and volunteering variables in the BHPS. Life satisfaction is measured using the question '*How dissatisfied or satisfied are you with your life overall?*'. Responses are provided on a scale from 1 (not at all satisfied) to 7 (completely satisfied). The volunteering variable comes from a question that asks '*How often do you do voluntary work?*'. Responses are provided on a five point scale: these are:

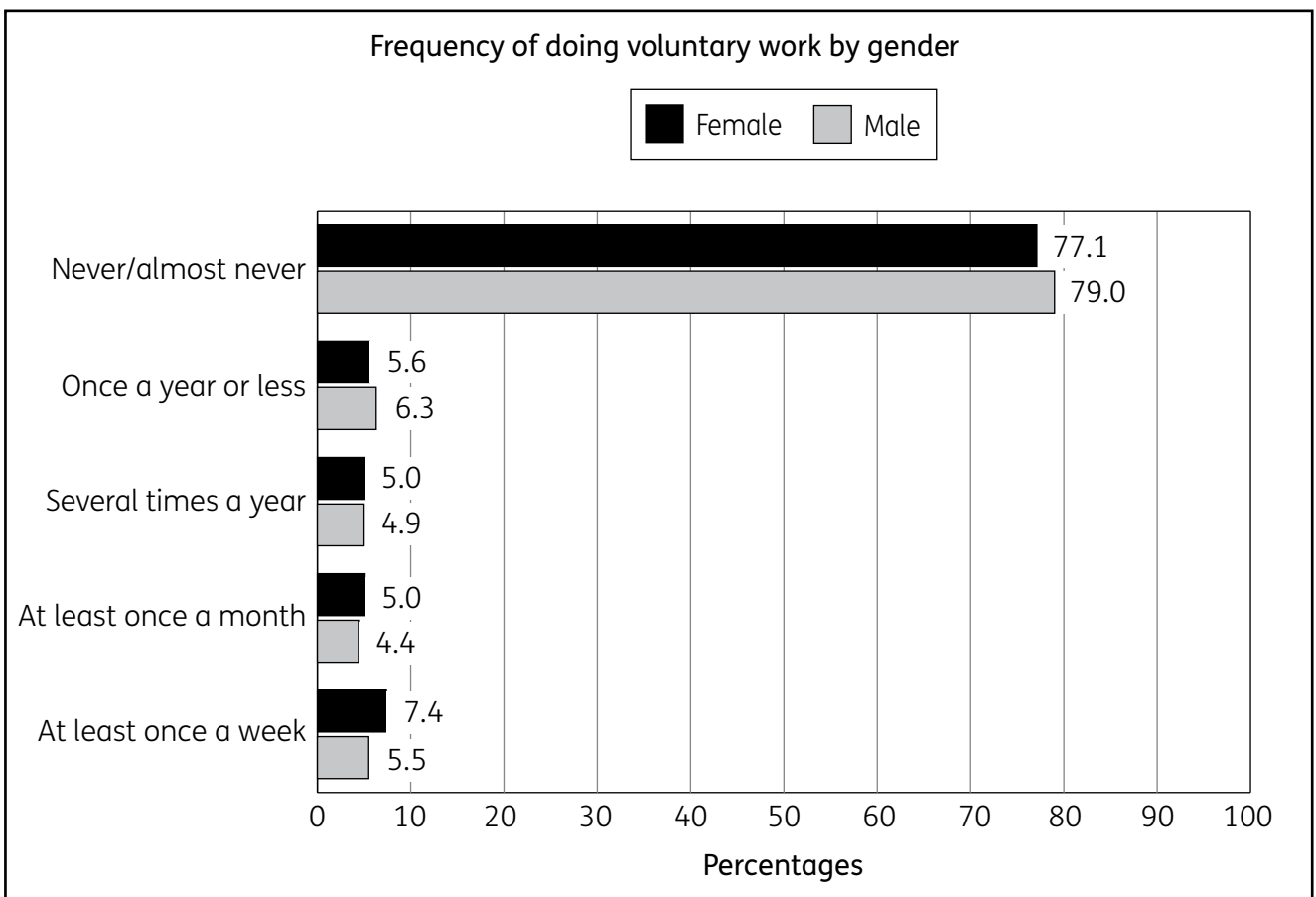
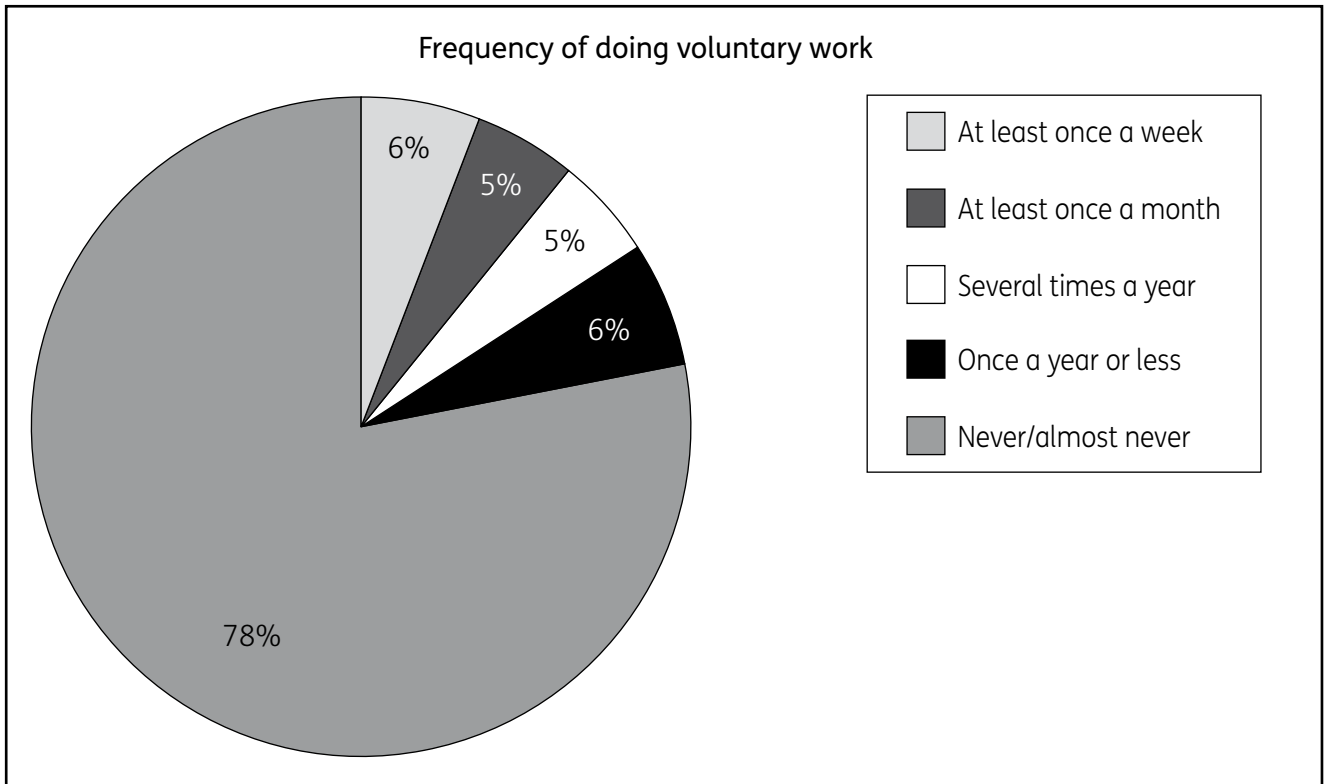
- 1 at least once a week;
- 2 at least once a month;
- 3 several times a year;
- 4 once a year; or
- 5 never.

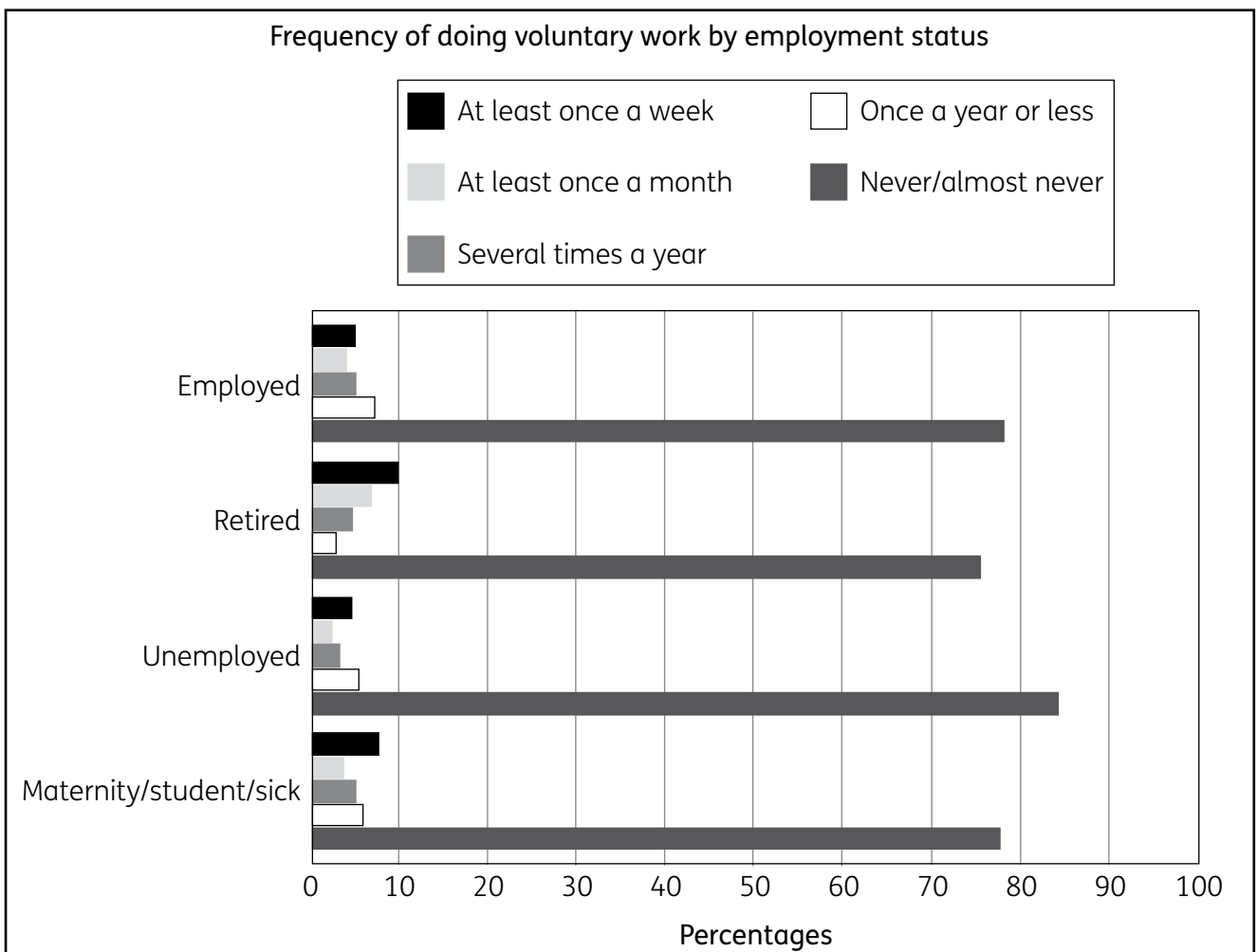
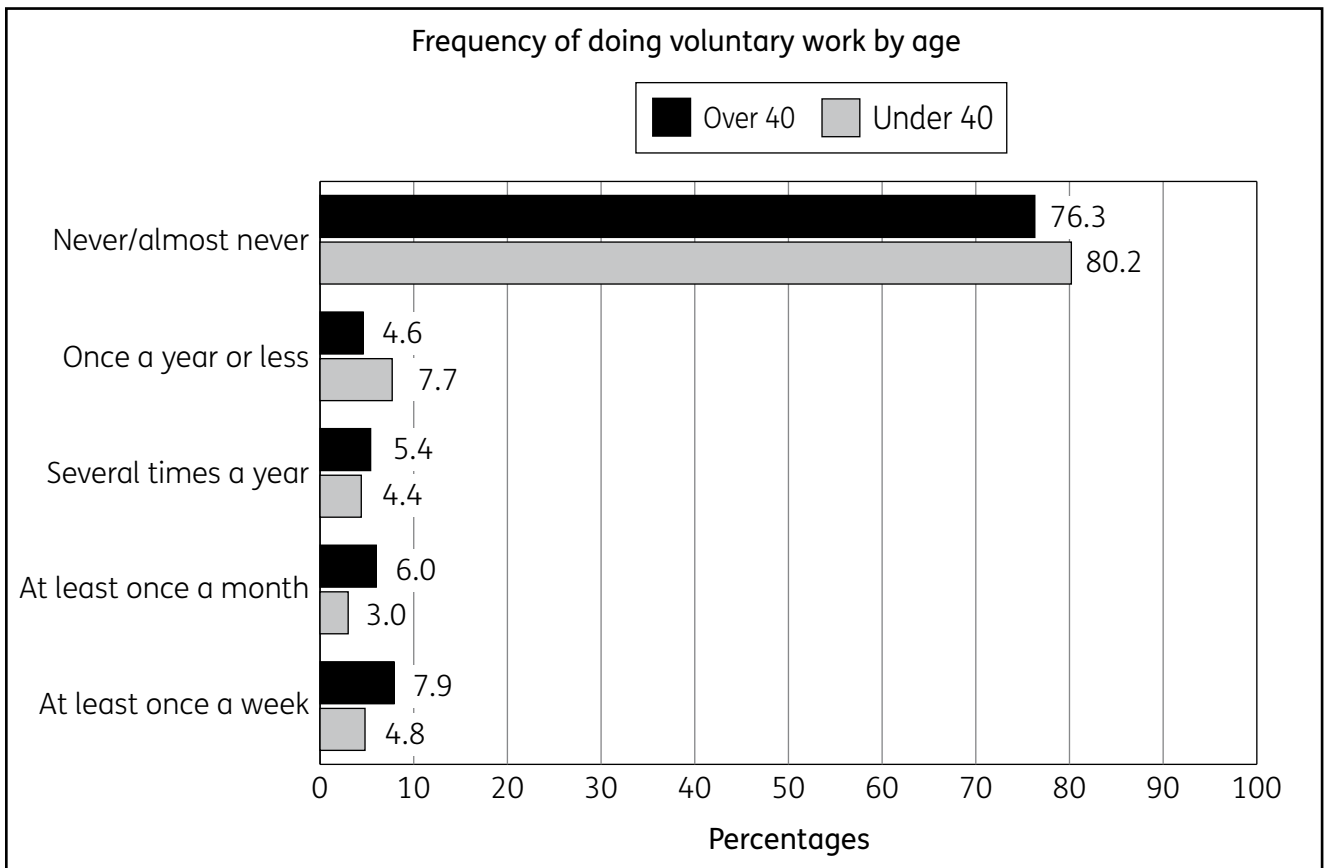
Descriptive statistics of the dependent and independent variables used in the analysis are presented in Table 3.1 and Figure 3.1.

Table 3.1 Descriptive statistics (1)

Variables	Descriptions and coding	Mean	Std. Dev
Life satisfaction	Life satisfaction score, coded on a seven-point scale, so that 1=very dissatisfied, 7=completely satisfied	5.23	1.28
Frequent volunteering	Frequent volunteer = Volunteers weekly or at least once per month	0.11	0.32
Infrequent volunteer	Infrequent volunteer = Volunteers several times or once or less per year	0.11	0.31
Non volunteer	Non volunteer = never volunteers	0.78	0.41
Equivalised Household Income	Equivalised Household Income	9.81	1.04
Does not meet people frequently	Frequency of meeting people: Once or twice a month, or less =1; On most days, once or twice a week=0	0.14	0.35
Social Capital: High trust	Trustworthiness of others: most people can be trusted=1; Can't be too careful, other/depends=0	0.34	0.47
Unpaid Carer	Cares for handicapped/other in household=1; no=0	0.07	0.25
Has internet connection at home	Has a household computer connected to the internet=1; other=0	0.76	0.42
Has qualifications	Has educational or vocational qualifications=1, no vocational or educational qualifications=0	0.79	0.41
Age	Age of respondent	46.24	18.29
Age squared	Squared age of respondent	2,472.49	1,825.69
Couple	Married or living as a couple=1; other=0	0.66	0.48
Single	Never married=1; other=0	0.20	0.40
Employed	Employed=1; unemployed, retired, maternity, full-time student, long-term sick=0	0.58	0.49
Number of GP visits in last year	Number of GP visits in the last year (centered)	-0.01	1.20
Likes present neighbourhood	Likes present neighbourhood=1; other=0	0.94	0.25
Victim of vandalism or crime	Victim of vandalism or crime=1; other=0	0.16	0.37
England	England=1; other=0	0.51	0.50
Scotland	Scotland=1; other=0	0.19	0.39
Northern Ireland	Northern Ireland=1; other=0	0.12	0.32

Figure 3.1 Descriptive statistics (2): Frequency of volunteering data





In estimating the value of volunteering we modify equation (1) to account for the log format of household income and the panel structure of the data.

$$W_{it} = \alpha + \beta_1 \ln(M_{it}) + \beta_2 V_{it} + \beta_3 X_{it} + \varepsilon_{it} \quad (3)$$

Monetary value can be defined as follows using equation (3). Here we assume for the time being that the monetary value is equivalent to WTP :

$$\alpha + \beta_1 \ln(M + WTP) + \beta_2 V^0 + \beta_3 X + \varepsilon = \alpha + \beta_1 \ln(M) + \beta_2 V^1 + \beta_3 X + \varepsilon$$

Where V^0 indicates a state of not undertaking voluntary work and V^1 indicates volunteering. The value is the amount that keeps utility or welfare constant in the absence of not being able to volunteer. Solving for WTP gives us:

$$WTP = e^{\left[\frac{-\beta_2(V^1 - V^0) + \ln(M)}{\beta_1} \right]} - M \quad (4)$$

It has been shown that life satisfaction in equation (3) can be assumed to be cardinal for estimation purposes and, therefore, can be estimated using ordinary least squares (Ferrer-i-Carbonell and Frijters, 2004). For M in (4) we use average sample income of about £28,000. As discussed, income and volunteering are likely to be endogenous to some extent in equation (3). We tackle this through use of instrumental variables techniques. Instrumenting for income has proven to be a notoriously difficult task in the wellbeing literature. The reader is directed to Pischke (2010) for a discussion of previous techniques to instrument for income.

We use spouse's income to instrument for own income. Spouse's employment variables have been used as income instruments by a number of studies in the past (e.g. Chevalier and Lydon, 2002; Dolan and Metcalfe, 2008; Luttmer, 2005). We hypothesise that human capital has positive externalities in that a spouse's education has a positive impact on own levels of human capital (Benham, 1974). Wage income is used as an indicator of the level of the spouse's human capital and so we would expect spouse's income to be positively correlated with own income. Note that instrumental variable estimation usually provides a measure of a local average effect (such as the LATE or LARF⁸), where 'local' refers to the fact that we can only estimate the causal model of interest for compliers to the instrumental variable. In our example this would be those individuals who have a spouse. Technically, therefore, our results are only relevant for people with partners, but it is quite common in the economics literature to implicitly assume that the localised effect is a good estimate of the average treatment effect (ATE) through the assumption of homogenous treatment impacts/effects. In other words, this assumes that the results from an instrumental variable model can be generalised to the population.

In terms of instrumenting for volunteering some possibilities exist such as religiosity or employment status but these variables have been found to be important determinants of life satisfaction in themselves (Dolan *et al.*, 2008) and therefore would not be suitable for use as instrumental variables. We, therefore, leave volunteering un-instrumented with the caveat that it could be correlated with the error terms in equation (3), leading to bias in the coefficient β_2 . We hypothesise that the bias could be positive as more satisfied or happier people may be more likely to volunteer and there could be some unobservable factors that make people more likely to select into volunteering and at the same time be more likely to be satisfied with life anyway. Below we compare our results with Meier and Stutzer's (2004) to evaluate the likely extent of any such bias in our model.

⁸ Respectively, the Local average treatment effect and the Local average response function.

4 Results

4.1 The value of volunteering

Table 4.1 presents our OLS estimates and Table 4.2 presents our preferred model with income instrumented.

Table 4.1 OLS Life satisfaction regression

Dependent variable: Life satisfaction	Coef.	Std. Err.	P-value
In (Equivalent Household income)	0.058***	(0.007)	0.00
Volunteering variables: (reference: frequent volunteers)			
Infrequent volunteer	-0.106***	(0.025)	0.00
Non volunteer	-0.122***	(0.020)	0.00
Does not meet people frequently	-0.176***	(0.018)	0.00
Social Capital: High trust vs. Low or No trust	0.160***	(0.013)	0.00
Unpaid carer	-0.164***	(0.031)	0.00
Has internet connection at home	0.002	(0.016)	0.91
Has qualifications	-0.074**	(0.023)	0.00
Age	-0.073***	(0.003)	0.00
Age squared	0.001***	(0.000)	0.00
Marital Status: Ref (widowed; separated; divorced)			
Marital status: couple	0.453***	(0.025)	0.00
Marital status: single	0.096**	(0.032)	0.00
Employed compared to being unemployed, retired, maternity, full-time student, long-term sick	0.102***	(0.017)	0.00
Number of GP visits in last year	-0.154***	(0.006)	0.00
Likes present neighbourhood vs. other	0.553***	(0.027)	0.00
Victim of vandalism or crime vs. non victim	-0.156***	(0.018)	0.00
Year (Ref: 2008)			
Year 2000	-0.006	(0.019)	0.73
Year 2002	0.018	(0.017)	0.29
Year 2004	0.017	(0.017)	0.31
Country (Ref: Wales)			
England	-0.044*	(0.018)	0.01
Scotland	-0.026	(0.021)	0.22
Northern Ireland	0.156***	(0.025)	0.00

Continued

Table 4.1 Continued

Dependent variable: Life satisfaction	Coef.	Std. Err.	P-value
Constant	5.254***	(0.095)	0.00
Number of observations	31,170		
F (22, 31,147)	142.4		
Prob > F	0.00		
R-squared	0.09		

Legend: * p<0.05; ** p<0.01; *** p<0.001

Using the results in Table 4.1 WTP can be estimated using equation (4). This amounts to a value of £21,500 per year.

Table 4.2 2SLS Life satisfaction regression with income instrumented

Dependent variable: Life satisfaction	Coef.	Std. Err.	P-value
Equivalised Household income	0.173***	(0.020)	0.00
Volunteering variables: (reference: frequent volunteers)			
Infrequent volunteer	-0.116***	(0.024)	0.00
Non volunteer	-0.131***	(0.019)	0.00
Does not meet people frequently	-0.186***	(0.018)	0.00
Social Capital: High trust vs. Low or No trust	0.146***	(0.013)	0.00
Unpaid carer	-0.106**	(0.036)	0.00
Has internet connection at home	-0.030	(0.018)	0.10
Has qualifications	-0.103***	(0.027)	0.00
Age	-0.075***	(0.003)	0.00
Age squared	0.001***	(0.000)	0.00
Marital Status: Ref (widowed; separated; divorced)			
Marital status: couple	0.429***	(0.028)	0.00
Marital status: single	0.076*	(0.035)	0.03
Employed compared to being unemployed, retired, maternity, full-time student, long-term sick	0.044*	(0.021)	0.03
Number of GP visits in last year	-0.151***	(0.006)	0.00
Likes present neighbourhood vs. other	0.539***	(0.033)	0.00
Victim of vandalism or crime vs. non victim	-0.137***	(0.020)	0.00
Year (Ref: 2008)			
Year 2000	0.003	(0.019)	0.85
Year 2002	0.029	(0.017)	0.09
Year 2004	0.023	(0.017)	0.18

Continued

Table 4.2 Continued

Dependent variable: Life Satisfaction	Coef.	Std. Err.	P-value
Country (Ref: Wales)			
England	-0.065***	(0.018)	0.00
Scotland	-0.039	(0.022)	0.08
Northern Ireland	0.145***	(0.025)	0.00
Constant	4.312***	(0.186)	0.00
Number of observations	31,170		
Wald Chi2	2,414.02		
Prob> Chi2	0.00		
R-squared	0.08		

Legend: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

A limited number of tests exist for just-identified instrumental variable models. The instrument for income is highly significant in the first stage regression in the direction anticipated, and it passes Card's (1995) 'Refutability Test'. Instrumenting for income results in a three to four-fold increase in the size of the income coefficient. This is very much in line with findings from previous studies (e.g. Dolan and Metcalfe, 2008; Luttmer, 2005; Oswald and Powdthavee, 2008), which provides further confidence in our instrumental variable. The increase in the income coefficient under IV estimation suggests that OLS estimates are under-biased because more satisfied people tend to work less and earn less (Dolan and Metcalfe, 2008) and/or because income is measured with error.

The result is that the valuations of volunteering will be significantly reduced compared to the OLS estimates above. Using our preferred results in Table 4.2 we calculate the value of volunteering frequently to be about £13,000 per year. This figure will incorporate some of the costs of volunteering. The coefficient on volunteering represents the net effect of volunteering on life satisfaction after taking into account any losses incurred due to foregoing leisure time. However, income is held constant in the model and so this value does not incorporate any wage losses incurred by individuals. From our data we estimate these expenses to be around £1,400 per year.⁹ This derives a net figure of £11,600 per year. **Uprating this value to 2011 prices would result in a final figure of £13,500 per year.** This is the value that volunteers place on volunteering.

Now, if we were to make the assumption that life satisfaction was a complete measure of utility, then this final figure could tentatively be interpreted as the **willingness to pay to avoid¹⁰ not being able to volunteer on a frequent basis**. If we were to aggregate our estimated monetary value to the whole adult population that volunteers frequently we get an estimate of the national value of volunteering to be in the order of about £70bn per year, which is equivalent to around five per cent of UK GDP.

⁹ This is simply estimated as the difference in labour income between volunteers and non-volunteers. This figure does not include expenses incurred.

¹⁰ In this paper we have framed the issue of value in terms of 'willingness to pay'. This is done so that the money metric derived is comparable to the more standard phenomena of willingness to pay and accept that appear in the valuation literature. It should be noted that this does not imply that volunteers would actually pay this amount to partake in voluntary work; it is simply the monetary equivalent of the wellbeing benefit derived from volunteering.

Since we have employed the same variable for volunteering status (i.e. volunteering frequently) as Meier and Stutzer (2004) we can directly compare our result to their study that exploits an exogenous change in volunteering status. According to Table 4.2 not being able to volunteer results in 0.131 index point reduction in life satisfaction. On a scale of 1 to 7 in the BHPS this equates to a 1.9 per cent reduction in life satisfaction. This is essentially the same as the percentage reduction found in Meier and Stutzer's study. Although the two studies use very different population samples at different periods in time we can draw some confidence in our estimated size of volunteering's impact on life satisfaction despite not being able to instrument for volunteering.

It is possible to estimate a monetary value of the cost incurred from not being able to volunteer using Meier and Stutzer's (2004) study of German reunification, which would be directly comparable to our value estimate. There are two options to monetising Meier and Stutzer's results. First, we can use the income coefficient they estimate in their fixed effects model. This coefficient, however, is likely to be biased because of the effects of time-varying omitted variables. Second, in a similarly motivated paper Frijters *et al.* (2004) estimate the casual effect of income on life satisfaction using the same natural experiment (re-unification) and sample in Germany. Reunification led to exogenous increases in living standards for people in East Germany. We can use the income coefficient from this model with the caveat that although we are taking coefficient estimates for volunteering and income that have casual interpretations, they come from different models that use similar samples and time periods.

The coefficient on the logarithm of income in Meier and Stutzer's fixed effects model is 0.406. The coefficient in Frijters *et al.*'s study for the casual effect of income is 0.5. This increase in the power of the income coefficient is as we would expect. Using equation (4) we estimate the cost of not being able to volunteer to be between 22,120 (using the 0.5 income coefficient) and 25,950 (using the 0.406 income coefficient) Deutsche Marks per year. We convert this into pounds sterling using exchange rates at 1989 and uprate by prices to give an idea of what this figure implies in 2011 terms, which can then be related to our findings. This gives a cost of not being able to volunteer (on a frequent basis) of between £14,500 to £17,000 per year, with the lower figure of £14,500 being the preferable one as it is based on the causal effects of income and volunteering. Although different samples and time periods have been used this figure of £14,500 can be compared to our estimate of £13,500. Our estimates are surprisingly consistent with those derived from Meier and Stutzer's and Frijters *et al.*'s papers, which we believe to be robust due to their model design. We present the different values discussed in this paper in Table 4.3.

Table 4.3 Valuing volunteering using different techniques

Valuation technique	Value of volunteering (uprated to 2011)	Issues
Revealed Preference Techniques	£6,100 p.a. (Australia, 2004)	Excludes many benefits and costs
Stated Preference Techniques	£120 p.a. (USA, 2004)	Underestimates the value of volunteering due to complexity in survey and high non-response rate
Wellbeing Valuation	£14,100 p.a. (Germany, 1989) £13,500 p.a. (UK, 2002-2008)	Preferred approach: Includes a wide range of benefits and costs

Note: Uprated to 2011 value using GDP Deflator. Income loss of £1,400 p.a. applied to UK figure and Meier and Stutzer (2004) figure for Germany. UK figure uprated from mid-point in sample (2005).

4.2 The value of volunteering across different demographic groups

Figure 3.1 shows that there are some differences in the frequency of volunteering across different demographic groups, suggesting that different groups may place different values on partaking in voluntary work. We tested this hypothesis by splitting up the sample by demographic group. However, on the whole this led to insignificant results for income, volunteering and a number of other variables (due to small samples sizes) and, therefore, we do not report the results here.

4.3 The value of other aspects of civil society

It is possible to use the model in Table 4.2 to estimate values for other aspects related to civic participation. These are presented in Table 4.4. It is important to note that the caveats regarding endogeneity will also apply to these variables.

Table 4.4 The value of aspects of civil society

Type of social capital	Value (2011)
Not meeting up with friends	-£17,300 p.a.
High trust in society	£15,900 p.a.
Living in an unsafe neighbourhood	-£33,700 p.a.

Note: Figures derived from Table 4.2 regression. Values uprated to 2011 prices.

Not being able to ‘meet up with friends a number of times per week’ is equivalent to a cost of £17,300 per year. The value that people place on ‘living in a society where they feel they can trust others’ is about £15,900 per year. To live in a neighbourhood with ‘severe crime and vandalism problems’ people would have to be compensated £33,700 per year.

Furthermore, we can also value unpaid caring using our model. The cost of unpaid caring is estimated to be about £23,600 per annum. This cost would be in addition to any wage loss due to caring duties (since income is held constant in the model). This figure is similar to the estimate derived by a study by the University of Leeds in 2011 – which, using a different approach, valued unpaid care at £18,473 (Leeds University and Carers UK 2011)¹¹. Grossed up to the population, we estimate the cost of unpaid care, for six million carers, to be about £142bn per annum.

¹¹ Valuing Carers 2011 Calculating the value of carers’ support, Leeds University, 2011.

5 Methodological conclusions

In this paper we have summarised analytical work using the WV approach by following the guidance in the Green Book discussion paper (Fujiwara and Campbell, 2011). We found it necessary, in applying the methodology, to instrument for income. This is because there is evidence to suggest that income is endogenous in wellbeing functions. This manifests itself, in the analysis, as a correlation between the error term and income variables in the life satisfaction regression and subsequently this overestimates the value of the good/service of interest. Instrumenting for income generally increases the size of the income coefficient and, therefore, reduces the estimated monetary values for non-market goods and services.

In our case the value for volunteering is reduced considerably. Using this methodology we get similar results to another relevant study (Meier and Stutzer 2004). We clearly show that the value of volunteering regularly is substantial and also illustrate how it is potentially underestimated by other valuation techniques. So applied with care the WV approach can produce results that are useful for cost-benefit analysis and related value for money techniques.

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Previous evidence suggests that individuals place a positive value on participating in voluntary work, but this has rarely been quantified in monetary terms and its value taken into account explicitly in policy-making. With one in four of the adult population of England volunteering on a regular basis this represents significant levels of economic and social activity potentially not being fully reflected in decisions.

This paper uses the Wellbeing Valuation approach to assess the benefits that volunteers derive from participating in voluntary work. We monetise these benefits so that the impacts can be used directly in cost-benefit analyses and evaluations of interventions aimed at increasing participation in volunteering. We also look at the values associated with 'sense of community' and civil society, such as social relationships and community trust.

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