

The Economics of Volunteering.
Measurement Techniques and Labour
Outcomes.

Matías Golman

`matias.golman@nottingham.ac.uk`

Abstract

This dissertation aims to explore volunteering from an economic point of view. As with many non-market activities, volunteers' contributions to society have been historically underestimated. The research agenda entails an in-depth literature review of measurement methods of volunteers' economic value, individuals' motivations to undertake volunteer activities, and potential private benefits obtained from them. Further, two empirical analyses are provided: using the UK Household Longitudinal Study, the economic value of volunteering activity is computed, by using diverse methodological approaches. In addition, an econometric estimation of the long-term volunteering impact on wage levels is presented. The ultimate goal of this dissertation is to generate preliminary conceptual and empirical input for further and more comprehensive PhD research on volunteer work.

Keywords: volunteer work; measurement techniques; labour outcomes

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1 Introduction

There is a famous quote by Peter Drucker that states that “if you can’t measure, you can’t improve it”. In the same line as household production, volunteering activities are performed in a non-market environment, hence there is a lack of a price valuation. By not accounting for this activity, a relevant share of production and services that is being created for the well-being of typically vulnerable individuals remains almost invisible.

By missing a price reference, the economic worth of these activities is quantitatively undefined and depends on the perspective of the observer (the volunteer, an organisation, its beneficiaries, or society as a whole). This ambiguity calls for imputation of the value under the consideration of an eclectic range of procedures, such as the Replacement Cost approach or the Opportunity Cost methodology. The premise is that the examination of diverse perspectives would shed light on the absence of the economic value dilemma. It is not the intention of this article to define which is the best valuation but to conceptually and numerically define the range of economic values.

In that sense, a major contribution of this study is to provide an interval of volunteering work value, emphasizing the importance of this free human resource when a value is imputed to the hours dedicated to volunteering. It is worth noting that the strategy of imputation is not at all unusual in accounting techniques. In fact, near 15 per cent of US Gross Domestic Product is imputed, with the rental value of owner-occupied housing accounting for the majority of the contribution (Abraham and Mackie, 2006).

Understanding the economic value of volunteer work is of paramount importance for all involved stakeholders, such as financial contributors to volunteering programmes or charitable organisations. Accounting for the hidden benefits of the volunteer workforce allows partners to perform a more comprehensive cost-benefit analysis, and therefore improve the efficiency and sustainability of their projects.

While the conceptual approach of the dissertation will encompass acknowledged motivations to volunteering, outcomes expected out of the volunteering activity, and a broad discussion about measurement methods, the empirical

strategy will focus on two main perspectives: it will explore diverse measurement techniques to account for volunteers' economic value while assessing the impact of volunteering on specific labour outcomes. In particular, it will compute the effect of having experienced long-term volunteering in the past on current individual hourly wage.

The remainder of the paper is structured as follows: In Section 2, the broad literature regarding volunteers' motivations and expected benefits out of participating in non-paid activities is summarised. It follows with a detailed list of measurements techniques in section 3, continuing with a description of the data utilised and the UK's main facts regarding volunteer work in sections 4 and 5. Section 6 presents the results of the measurement techniques implemented. The article follows with a short introduction to an econometric estimation of volunteering experience in wages, with its methodology and results explained in sections 7 and 8, respectively. Finally, conclusions are presented.

2 The motivation of volunteers and their expected benefits

The most acknowledged definition of volunteer work is provided by the International Labour organisation. It considers volunteering as *unpaid non-compulsory work*; that is, time individuals give without pay to activities performed either through an organisation or directly for others outside their household (ILO, 2011). An essential feature of volunteer work that differentiates it from other types of unpaid work such as household activity is that it mainly takes place through established institutions, which are deemed to be well within the production boundary of the economy even though their non-profit feature (ILO, 2011). It could, nonetheless, include irregular volunteer work done directly for individuals, as long as it is not directed to their household benefit. Finally, it is considered as regular volunteering when the individual performed the activity at least one hour within a four-week reference period, and as occasional when this happened between one and twelve months (McGarvey, Jochum, Davies, Dobbs, and Hornung, 2019).

The reasons for individuals to voluntarily provide unpaid work have been broadly researched. While the decision to undertake a volunteer action is intrinsically multifaceted (Clary and Snyder, 1999; Cnaan and Goldberg-Glen, 1991;), diverse social sciences –from sociology, psychology or economics– had applied a wide range of frameworks to identify what induces this decision. To understand what drives individuals to offer their time for free, the analysis requires an acknowledgement of a variety of personal and social benefits that individuals hope to obtain out of the helping experience. This does not imply that all the expected benefits are met during the volunteer experience, but they work as incentives for potential volunteers both for starting the activity and for not quitting.

As per definition, there is no payment involved in the offer of volunteers' time, the gains expected by the individual in the short-run are usually not material. In fact, individuals may even pay to undertake voluntary work. Handy and Mook (2011), for example, schematise that rational and *impure altruistic* volunteers would provide unpaid assistance even if there were positive private net costs, as they also care about the public benefits of their actions. Following Wilson (2000) and Schindler-Rainman and Lippitt (1971), a two-category model can be formulated, where reasons are driven either by *personal* or *pro-social* reasons:

If the main driver is given by **personal-level factors**, it could be expected that the volunteering activity generates a *joint production*. There is relevant literature on helping behaviour that states that volunteers gain the most from helping relationships, even more than the direct receivers of their efforts (Riessman, 1965). Among the reasons that induce individuals to pursue private benefits while volunteering, the *Investment Model* and the *Search of Private Goods* Approach could be highlighted.

The first of these views entail that individuals are willingly working for no pay as they are attempting to increase their human or social capital. Depending on their stage in the labour market, by involving in an organisation, individuals may expect to gain work-related experience or update their employment skills as to re-entry into the labour market. Volunteering may be perceived by future employers as a demonstration of civic skills, thereby enhancing an individual's employability (Haldane, 2014).

In addition, they may expect to boost their social interactions and expand their networks. By meeting new people, they increase the chance of receiving information about new labour opportunities.

The second perspective, also known as Consumption Model, emphasises short-term benefits that the individual may be trying to obtain, not necessarily related to labour market outcomes. For example, individuals have been reported to be highly motivated to volunteer in order to meet their psychological and emotional needs. In other words, the call for mutual support, for self-development, self-understanding, to feel useful and needed, or the *warm glow* sentiment, where individuals just feel better about themselves when helping others. The positive effect of helping others may result in a lower risk of morbidity among volunteers (Handy and Mook, 2011). In the same line, in a recent study, Stuart et al. (2020) found that there is a positive association between volunteering and higher life satisfaction, increased happiness and reduced symptoms of depression.

Other private goods include the desire to increase community status. By volunteering, individuals aim to boost their prestige, show care or demonstrate patriotism. Finally, while some individuals get involved in a non-paid activity because their family unit consumes the collective good, many others get involved as a hobby, to occupy their spare time.

The **pro-social** model, on the other hand, proposes that individuals are motivated to participate as volunteers for purely benevolent reasons. In this scenario, the action generates a *public good*, and individuals are motivated by non-pecuniary intentions. The basis of this model is that there are no *selfish* purposes behind volunteers' participation decisions. Altruism, the eagerness to provide a service to society, to help others, to improve the community, or even religious/spiritual motivations are argued to foster individuals into volunteering.

3 Measurement techniques

The price system is an expression of the consensus on the value of diverse market goods and services. In a competitive environment, labour market wage payments reveal how much employees and employers agree to value the

exchange of work. Volunteering activities, on the contrary, are performed in a non-market environment, where typically no price valuation exists. They are neither paid by the organisation they attend to nor by the direct beneficiary of the service or good provided, so there is no market-determined indication of the value that is placed on their work (Salamon, Sokolowski, and Haddock, 2011; Brown, 1999).

Volunteer labour and non-profit organisations are generally dedicated to filling in gaps in service provision that markets do not reach. Not only is it the case that many of the outputs produced by them are non-market, but also the beneficiaries are usually in an economic situation in which their willingness to pay for the free services provided hardly reaches prevailing market values (Brown, 1999). Even if there is no monetary exchange for a volunteer's work, the value is not observed, it does not mean that the services have no value.

There are a variety of methodologies that aim to account for the economic worth of volunteers' work that differs on the focus of the measurement, the approach followed to collect the information and the valuation strategy. Data accessibility is one of the major reasons to select one methodology or another. Before providing the empirical study, a detailed description of each dimension is given.

3.1 Focus of measurement

As in market environments, the economic value of a good or service can be identified by measuring the inputs involved in its creation or the outputs that flow from it (Salamon et al., 2011).

Generally, output methods compute the value of goods and services produced by organisations or society as a whole. When a market counterfactual is found, the procedure requires precise performance indicators to fully account for the share of service or goods that are produced by the volunteer. Consequently, this breaks down the contributions made by paid workers, capital, and volunteers. In contrast, the logic of the input method lies in attributing a monetary value per unit of time of volunteer work (Sajardo and Serra, 2011). Evidence about the investments made in volunteers' recruitment and training allows for more detailed identification of costs involved in the production

process.

When it comes to potential drawbacks, input methods usually fail in reflecting the full range of tangible benefits of volunteering to society, such as the value of occupational skill development, work-life experience or the contribution to civic engagement (Sajardo and Serra, 2011). Output-based practices, however, may face the lack of a market counterfactual to compare goods and services produced by volunteers (Manetti, Bellucci, Como, and Bagnoli, 2015). Sometimes the substitute can be imperfect, but many organisations generate non-market services, such as the protection of civil and human rights.

The incentives of individuals to perform a volunteering activity plays an important role in the selection of one approach or the other. If volunteers are motivated by pro-social and altruistic reasons, and therefore produce a public good, the value of such services is the sum of the benefits accruing to all concerned parties, recipients and volunteers alike (Brown, 1999). If motivations are driven by individual factors such as socialising or gaining work experience, the value of the experiences produced jointly with the beneficiary needs to be counted in measures of the value of volunteering.

3.2 Information collection

Another core dimension in which measurement techniques vary is the approach followed to collect the information of input or output techniques, and therefore value the worth of the volunteers' contribution (Salamon et al., 2011; Fujiwara and Campbell, 2011; Treasury, 2020). The main approaches are:

- **Observed market proxy**, which entails the identification of an analogous market service or good that can act as a substitute. For example, finding the wage of a paid worker doing a similar job as a volunteer (Salamon et al., 2011).
- **Stated preference method**, in which individuals are directly asked to value the public good in question. They use surveys to ask individuals questions that infer their willingness to pay to achieve an outcome (Fujiwara and Campbell, 2011; Frey, Luechinger, and Stutzer, 2004)

- **Contingent valuation (declared marked proxies)**, which consists in asking stakeholders to put a monetary value on perceived benefits for goods or services received if they were not available for them for free anymore.
- **Choice modelling method**, which focuses on a goods' attributes and their values. It present respondents with a series of alternative descriptions of a good, constructed by varying the levels of the goods' attributes.
- **Revealed preference methods** which, based on actual behaviour and utilise complementary and substitutive relationships between public and various marketed goods to infer the value attributed to public goods from market transactions in private goods.
 - **Travel cost**, where the financial proxy is represented by transport costs; requires verifying how far the average user is willing to travel to gain access to a particular item or service.
 - **Hedonic pricing**, which involves using econometric techniques to estimate people's purchasing decisions in markets related to the non-market good in question.
 - **Averting or mitigating behaviour method**, which relies on observations of damage costs avoided rather than measurement of economic benefits (Rogers et al., 2019).
- **Life satisfaction approach**, in which reported subjective well-being data are used to evaluate utility consequences of public goods (Frey et al., 2004).

3.3 Valuation Strategies

Input and output methods make use of information that can be collected in different manners, and the underlying valuation can follow diverse perspectives. As previously mentioned, the economic worth of these activities depends on the perspective of the observer, such as the volunteer, an organisation, its beneficiaries, or society as a whole. The following section provides a

comprehensive description of the main measurement perspectives found in the literature.

3.3.1 Replacement Cost

This indicator measures *the value of volunteering to the recipient of the volunteer effort*. It focuses on the value of the labour inputs of volunteering and does not attempt to account for the social impact of volunteer activities (Salamon et al., 2011; Cordery, Proctor-Thomson, and Smith, 2011). The methodology involves assigning to each volunteer what it would cost to hire someone for pay to do the work that the volunteer is doing for no pay. Ideally, one should try to identify the closest occupation to the type of work that each volunteer performs, and use the associated wage to that occupation to compute the economic value. This is known as the *specialist approach*. If non-market and market labour are similarly skilled and supplied with similar intensity, the market wage paid to people hired to do the type of work in question may be a reasonable estimate of the replacement cost (Abraham and Mackie, 2006).

Following ILO (2011), the major practical constraint of this measurement tool is its reliance on the capability to translate volunteer activities into standard occupational and industrial codes. This is necessary to allow for additional analysis of the labour market, including the assignment of an economic value to volunteer work. This translation, however, is not entirely straightforward, as one should also hypothesise differences in skill and efficiency between a volunteer and a paid employee doing essentially the same job, not to mention differences in wage rates for similar work in different institutional settings, such as non-profit organisations, government or for-profit businesses.

In the absence of detailed data, several authors have implemented fall-back positions for estimating the wage of volunteers. These include a more limited *specialist approach*, that would only consider average wages by industry or occupation¹ to diverse settings of a *generalist* approach. This entails the possibility of imputing to volunteer hours the average gross wage for the

¹Dostál and Vyskočil (2014) use median wages per occupation.

community. Brown (1999), for example, uses *the average hourly wage for civilian, non-agricultural, non-supervisory workers in the service sector/social service sector* and adds the average value of fringe benefits. Sajardo and Serra (2011), on the other hand, impute to volunteers the wages paid by non-profit organisations in their respective spheres of action.

Other approaches would entail using estimates of wages to differentiate by the skill of the workers; applying a minimum wage or, where no wage data exist at all, interviewing workers in the marketplace to gain at least a rough estimate of wage rates for various occupations.

A non-trivial criticism acknowledged in Bowman (2009) and Cordery et al. (2011) pertains to the assumption of interchangeability between volunteers and paid labour. The authors state that many non-profit organisations intentionally use a mixture of both volunteers and paid labour in practice, hence these may be complementary factors instead of perfect substitutes, invalidating the assumption embodied in the replacement cost model.

By assuming that one-to-one substitution among volunteers and paid workers is too strict, several authors have proposed that the interchangeability is feasible to a certain degree, but not perfectly. In carrying out the same activity as a paid employee, volunteers may be more enthusiastic, but also less capable, as they possess neither the task-specific formal training nor the experience of paid workers (Haldane, 2014; Handy and Srinivasan, 2005). However, some studies have shown that the volunteer workforce is more educated on average than is the employed civilian workforce, and consequently, average hourly wages may tend to understate the value of volunteer time (Hodgkinson, Weitzman, Abrahams, Crutchfield, and Stevenson, 1996).

As to take into account this issue, Abraham and Mackie (2006) recommend estimating the *quality-adjusted replacement cost*, by multiplying the specialist wage by a factor b that accounts for differences between market and non-market providers. This parameter is typically set between zero and one, indicating the shortfall (or, in rare cases, excess) of the volunteer productivity in comparison with the specialist's productivity in that activity. If this is not considered, the replacement costs approach has the potential to over-value volunteers' time (Cordery et al., 2011). Brown (1999), on the contrary, asserts that organisations should value volunteers' non-market time at roughly half

their normal wage rate.

3.3.2 Opportunity Cost

This indicator *measures the economic value of volunteering to the volunteer*. Hence, it considers the value of the volunteer's contribution by reference to the value of the alternative opportunity the individual is passing up in order to volunteer (Salamon et al., 2011). In particular, the opportunity cost of the volunteer activity is considered concerning the same paid activity that the individual is currently performing. In other words, it is reflected in the marginal value of working an extra hour at an individual's own paid job. Instead of considering the value of a worker performing volunteers' tasks as in the Replacement Cost technique, the focus is on the volunteer wage regardless of the task he/she performs in his/her paid job.

The idea behind this method is that, should the volunteer be rational, then to undertake the costs involved in participating (opportunity and direct costs), the experience must provide the volunteer with benefits valued at least that much. Hence, self-wages or incomes forgone during the time spent in the volunteer activity should be considered along with expenses such as transport, childcare or uniform investments, that could be taken as observed proxies of direct costs.

One of the main advantages of this method is that the value measured captures the volunteers' lower-bound gratification out of the experience, which could summarise the volunteers' private and social expected benefits. This strategy does not go without critics; Abraham and Mackie (2006) argue that traditional accounts include the products and services produced by paid workers, but not the enjoyment they may derive from their employment. In order to keep consistency, the authors claim that neither should be accounted for the enjoyment experienced by those who volunteer with non-profit organisations. However, Brown (1999) claims that jobs pleasure or unhealthiness is measured by the value of the special job characteristics through their effect on the wage. Then, a job that one will perform at a wage of zero must offer remarkable levels of satisfaction, and the remarkableness of the volunteer opportunity is measurable by the difference between the volunteer's ordinary

wage and the zero wage accepted in the volunteer opportunity.

Therefore, even though the market value of volunteers' products is low, volunteers' subjective benefit may be high. If someone with high earnings decides to spend their time volunteering instead of working extra time and then donating the amount earned to the cause, it means that participating provides at least that level of satisfaction. As Brown (1999) exemplifies: if a rocket scientist "*simply wanted the homeless to be fed, she could donate her hour's wage to the soup kitchen and allow them to expand their services by far more than her hour of soup serving does*". The perceived benefit of getting involved can therefore be significantly higher than the real market value of the service produced, which strengthens the idea of *joint production*. This concept underlies the potential difference between this approach and replacement cost whenever higher-wage individuals devote time to tasks for which the market wage is relatively low.

The basic procedure, by using the *observed market proxy* approach, is to assign to the hours of volunteer work the average wage that the volunteer would earn by having worked at her/his regular job for those same hours. The volunteer would then be compensated by the time spent accordingly to her/his regular hourly income. Another approach for valuing the cost of forgone time is by using the *declared market proxy* method, hence asking the volunteers what they consider their volunteer time is worth.

The Opportunity Cost perspective could be refined in many ways: At first, the after-tax wages should be considered, as individuals are passing up their net income when volunteering. Also, by spending an extra hour at their work, there may have been marginal fringe benefits that would have been accrued. This includes both mandatory contributions, such as pension benefits, health, social or unemployment insurance, as well as voluntary contributions. If paid employment generates some quantifiable disutility, it could be accounted for too.

This valuation strategy, however, encounters some conceptual issues when volunteers are inactive or homemakers. Both students or retired people would not have a work-related cost of opportunity for their time. In addition, some analysts assume that the volunteers' time is a substitute for leisure rather than work, in which case the wage assigned to volunteer work is zero, intrinsically

questioning whether volunteering has an economic value.

Before attempting to estimate the value of volunteer time, it becomes of paramount importance to identify individuals' motivation to volunteer to understand which one of the situations is more relevant. Following Arvidson, Lyon, McKay, and Moro (2013), the opportunity cost of volunteering should be higher for those that are replacing paid work rather than leisure time. In case leisure is the predominant replacement activity, the strategy would change into finding the opportunity cost of free time. In that scenario, transportation economics literature using revealed preference methods provides many insights to estimate how people value their non-work time.

3.3.3 Social Benefits

This strategy could be considered as the output counterpart of the Opportunity Cost technique for inputs. It focuses on the societal benefits that volunteer work produces. If the final output has a reasonable market counterpart, an observed market proxy can be assigned for the unit price of that output. Following Salamon et al. (2011), *assuming that the extra amount of that output resulting from the volunteer activity can be determined, this can be considered a reasonable estimate of the economic value of the volunteer work.*

Alternatively, when no market substitute can be found, a declared market proxy can be obtained by requesting managers of volunteers what their willingness to pay is for the goods and services produced by volunteers. Another way of obtaining a declared proxy is to ask the beneficiaries to value the product or service they receive. Conceptually, price and output are inversely related through a demand curve, which shows what beneficiaries are willing to pay Bowman (2009).

It is expected that declared proxies are lower than observed proxies. In instances in which volunteers are helping to provide services available in the market, the fact that the beneficiaries have not purchased these products is evidence that they do not value them at market prices. An alternative way to measure how much beneficiaries might have been willing to pay for volunteer-assisted services is to hypothesise the alternative of being given a choice between those services and cash, and account for the amount of this

transfer that they would spend in the volunteer-assisted service.

Finally, like any other output-based approach, the social benefit measurement technique requires precise information regarding the type and amount of goods or services generated by the volunteers, as well as the share of it that is attributable to volunteers as opposed to paid staff.

3.3.4 VIVA: Volunteer Investment and Value Audit

This indicator aims to expand the Replacement Cost assessment to thoroughly include all the costs associated with the volunteering process (Gaskin and Dobson, 1997). It does not assess the outcomes produced. Initially, it uses the Replacement Cost technique (either computing market wages equivalent to volunteers' tasks or pay scales and rates internal to each organisation). However, it makes use of administrative data provided by stakeholders to comprehensively compute extensive management investments made over volunteers.

It foresees that "for every pound invested in volunteers, there is a return of X pounds in the value of the volunteers" work. While examining inputs and any cost associated with having volunteers and creates a "VIVA Ratio" that express the return on volunteering-related investment (Gaskin, 2011). As a consequence, in addition to volunteers imputed wages, it includes volunteer services managers wages, external paid staff, advertising and recruitment, induction and training, volunteers' expenses, supplies and equipment, food and accommodation and volunteer insurance. Following Bowman (2009), the overall unit cost the expenses invested in volunteers establish a lower bound on the economic value of a volunteer to an organisation.

Sajardo and Serra (2011) established a volunteer accounting scheme for management costs, named Volunteer Cycle perspectives, where diverse phases are stated to comprehensively consider costs involved in the volunteering direction. These include *incorporation, development, assessment, monitoring, and retention*.

There exist even extended versions of the VIVA methodology, that include a wider concept of organisational running costs. The rationale for this is that the volunteers' work is enabled by the overall functioning of the group

or organisation (hence includes some "hidden" costs), not just by its actual investment in direct volunteer management. It aims to account for both regular and non-regular volunteers, thus including management committee members/trustees, occasional/seasonal and fundraising volunteers (Gaskin (2011)). The method then adds a percentage mark up to cover the costs of "employment overheads", thus considering what an employer should pay in terms of national insurance, holiday pay and other benefits.

3.3.5 SROI: Social Return on Investment

This strategy follows a management perspective, which attempts to consolidate both input and output approaches. SROI analysis extends Return On Investment (ROI) techniques to include social impacts. The logic consists in the fact that the creation of value goes in three directions: economic, socio-economic and social, the latter including also the environmental perspective. The value which is measured is an added value². The final indicator represents the return in socio-economic terms for every monetary unit spent on the project and/or in the organisation as a whole.

The indicator is useful to monitor the performance of an organisation, to attract external funding other resources and to reinforce the organisational mission, providing a framework for systematic assessment of achievements (Nicholls, Lawlor, Neitzert, and Goodspeed, 2012).

Although it is technically similar to the cost-benefit analysis, it attempts to be more holistic. In addition, the methodology requires stakeholder involvement and verification of inputs and outputs. Accordingly, the value created is asserted by the outcomes and impacts made and experienced by stakeholders in relation to the activities of the organisation (Arvidson et al., 2013).

Pathak and Dattani (2014) propose technical solutions to the typical challenges that this methodology accounts for. In particular, they discuss issues related to discount rates, the allocation of overhead costs and the determination of a counterfactual scenario.

Often costs for a project are incurred upfront, whereas benefits accrue over

²However it does not consider the social value that would occur even without the social action of the entities considered, but only that one directly or indirectly due to that activity.

a longer period. For any SROI analysis, both costs and benefits must be converted into present value, so they both need to be transformed from current prices to constant prices. They also suggest using a Social Rate of Time Preference discount factor, converting both costs and benefits into present values. Since 2003, the UK government appraisal is set at 3.5 per cent in real terms (Treasury, 2020). However, the application of a standard discount rate may discriminate against organisations that generate a higher proportion of late benefits.

In addition, the selection of an appropriate time horizon is crucial to avoid overestimating benefits. According to Pathak and Dattani (2014), there are two mainstream business valuation techniques to use discounted cash flow methods: the first approach is to take the economic value of future benefit streams only over an explicit period. This could be defined regarding the timescale of the business plan or the stated planning horizon of the key stakeholders. The second method is to project the benefits into infinity using a terminal value, which reflects the present value at a future point in time of all future benefit streams when a stable growth rate in the benefits is expected.

When it comes to overhead costs, an economic treatment of costs allocation may differ from the SROI treatment. The critic made is that taking into account only the direct costs of the volunteering programme underestimates the true costs and overstates the SROI. On the contrary, by accounting for common organisational objectives, it is possible to make a qualitative adjustment for substitution, as percentage deductions from the benefits.

Finally, the determination of the counterfactual or deadweight effect usually relies on estimates measures, as perfect control-group scenarios are often not available. Without a dedicated analysis of the counterfactual, the estimate could lead to anchoring bias, which in SROI analysis is manifested through the use of deadweight percentages from previous studies for consistency and in the absence of specific new research. Moreover, it is also important to acknowledge attribution risk, where it becomes necessary to accurately isolate the impact of the volunteer activity and appreciates other potential projects taken either before that under analysis or consequential to it.

3.3.6 SCBA: Social Cost-Benefit Analysis

The social cost-benefit analysis considers the costs and benefits of a volunteering activity to society as a whole, rather than just to the organisation (as SROI). The wider approach does not only consider the tangible financial evaluation of costs and benefits, but it also includes non-monetary costs and benefits where a value can be estimated. Consequently, intangible outcomes and externalities that the intervention may generate should be considered. It aims to evaluate whether social investments are economically efficient and the interventions are desirable.

The main problem associated with the use of Social Cost-Benefit Analysis (SCBA) is that it will favour options where benefits can be monetised. The challenge relies on those that are not referenced in monetary terms not to be ignored, such as building social cohesion, gains in self-esteem, or many other intangible benefits (Blaney, Jones, Philippe, and Pocock, 2016).

Several social value measurement techniques can be used to assess intangible benefits. Following Fujiwara and Campbell (2011), Stated Preference, Revealed Preference and Life Satisfaction valuation methods could be used to estimate them.

According to Arvidson et al. (2013), the differences between SROI and SCBA are largely in the style rather than the substance. Its dissimilarity is based on the stronger and explicit emphasis on stakeholders within SROI in contrast with SCBA, the greater use of SROI methodology as a management tool by third sector organisations, and the higher degree of comparability among SCBA across different activities (SROI stakeholder involvement makes it organisational biased).

4 Empirical strategies: source of information

For this study, a central data source will be the UK Household Longitudinal Survey (UKHLS). There are numerous advantages for using this dataset: to begin with, the survey allows for simple identification of volunteer work and the hours spent in it, in addition to the typical employment and wage questions. An interesting asset from the survey is that it incorporates informal

and infrequent volunteering, usually not included in measurement studies.

By collecting information from the same individuals over 10 years, starting in 2009, causality can be better identified than with cross-sectional survey data. With near 40,000 individuals interviewed in the first wave, it is also possible to perform group-specific studies and consequently analyse volunteers based on their age, gender, or occupational status. Variables pertaining to volunteering participation are only available in waves 2, 4, 6, 8 and 10. As each wave has information of two years, by consolidating the 5 waves together it is possible to characterise volunteering for the period 2010-2019.

Regarding the methodologies detailed in the previous section, the UKHLS provides information of observed market proxies such as hourly wages, that enable the study of the input approach. This perspective allows the computation of both individual and organisational *points of view*. However, as the survey does not provide specific information regarding the output of volunteering organisations nor its effect on final recipients, the study does not attempt to quantify social externalities that may arise out of volunteering. Under the difficulty of finding this type of information already processed, a potential path to collect relevant data would be to perform specific surveys to stakeholders involved. With a wider information set, the techniques mentioned (Stated Preference method, Revealed Preference method, or Life Satisfaction approach) could be implemented, as well as the remaining valuation techniques (Social Benefits, VIVA, SROI, SCBA).

As the data set does not collect information about the tasks performed in the volunteering activity nor identifies the organisation where the activity takes place, the Specialist Wage for the Replacement Cost approach is also impossible to compute. Nonetheless, other perspectives can be attempted, including the varieties of the Generalist approach used by Brown (1999) and Sajardo and Serra (2011). In addition, the Opportunity Cost approach for active individuals with current jobs can be computed and complemented with a proxy variable for leisure opportunity cost for those not employed. This could be a resource for an interval of the economic value of volunteering by using the main input-based techniques, which can be considered as boundaries or floor levels for a future more comprehensive analysis (Bowman, 2009; Dostál and Vyskočil, 2014).

5 UK's volunteering features

In the UK, volunteering activity represents an important part of people's life. A strong network of voluntary organisations, charities, community groups and social enterprises exist across the UK, where individuals can join and participate in a variety of social projects. According to the UK Civil Society Almanac 2020 produced by the National Council for Voluntary Organisation, there were 166.592 voluntary organisations in the UK in 2017/2018. Social service remains the largest sub-sector with 32.258 voluntary organisations, followed by culture and recreation (24.024) and religion (15.139) (NCVO, 2020).

According to the NCVO, the total income of the sector was estimated to be £53.5 billion in the period 2017/18. While eight out of ten organisations have an income of less than £100.000, they only account for 4% of total income. In contrast, the top 0.5% of organisations with incomes reported higher than £10 million account for 54% of the sector's income. This includes the top five organisations by income generated *Save The Children International*, *Cancer Research UK*, *Oasis International Association*, *The National Trust*, and *The Capricorn Foundation*.

By using the Community Life Survey (2016) from the Department for Digital, Communication, Media and Sports and the Time Well Spent survey (2019), the NCVO estimated that near 36% of the population (19.4 million people) volunteered at least once during 2018/19. Accordingly, near 22% (11.9 million) volunteered regularly, *i.e.* at least once a month.

UKHLS data provides a more modest estimate. In particular, only 19% of adults that answered the individual survey claimed to have performed a volunteer activity in the last 12 months. This may be explained by the fact that, in UKHLS survey, respondents are not provided with a thorough explanation of what volunteering means, and some respondents who do perform unpaid non-compulsory work were not self-identified with it.

Despite this difference in the share of the volunteer population captured by the survey, characteristics regarding volunteering estimated out of the UKHLS are in line with previous estimations. To begin with, almost 49% of active volunteers participated in this activity at least once a week, and

69% did it at least once a month. In particular, women were involved with more frequency, with 70.5% of active volunteers participating in the activity at least once a month, in comparison to 66.5% of men.

The survey provides a specific question about hours dedicated to volunteering in the previous four weeks. While nearly a quarter of volunteers did not perform any hour in the month previous to being surveyed, 14.1% of adults performed at least 1 hour of volunteer activity in the last four weeks. This share is similar to the self-declared hourly rate (13.06%) reported by the Time Use Survey released in 2017 by the University of Oxford (Gershuny, 2017). The average monthly time spent for those with positive hours was of 15.2 hours.

Table 1 provides a concise description of the volunteer workforce by relevant characteristics. For this, characteristics of those in regular volunteering were considered, hence restricting the analysis to those that volunteered at least one hour in the four weeks previous to being interviewed.

It can be seen that, in comparison to the survey's population composition, when only considering volunteers, there is an over-representation of women, the elder population, highly educated individuals, living in rural areas and with inactive employment status. This over-representation of sub-populations in the volunteer sector is explained by the different involvement rates. To illustrate this, while women are slightly more prone to being a regular volunteer (14.7% vs 13.3%), the older population seem to be more involved: 16.9% of individuals older than 65 and 15.1% of those between 45 and 65 years did some volunteering activity in the previous month, in contrast with only 11.6% of those between 25 and 45 years old and 12.4% of those under 25.

Table 1: Volunteer and population composition by main characteristics

	Volunteers (%)	Population (%)	Difference (%)
Gender			
Men	44.34	47.96	-8
Women	55.66	52.04	7
Age group			
16-24	11.56	14.02	-18
25-44	25.98	31.34	-17
45-64	35.01	32.23	9
65 +	27.44	22.42	22
Education Level			
Degree	38.33	23.87	61
Other higher degree	14.79	11.61	27
A-level etc	18.23	20.76	-12
GCSE etc	16.08	20.1	-20
Other qualifications	6.72	9.94	-32
No qualification	5.84	13.72	-57
Localization			
Rural	28.6	22.76	26
Urban	71.4	77.24	-8
Region			
North East	3.27	4.24	-23
North West	9.66	10.89	-11
Yorkshire and the Hum	8.02	8.86	-9
East Midlands	7.19	7.45	-3
West Midlands	8.34	8.78	-5
East of England	10.24	9.55	7
London	11.46	11.63	-1
South East	16.79	13.81	22
South West	10.54	8.62	22
Wales	4.03	4.92	-18
Scotland	7.8	8.4	-7
Northern Ireland	2.65	2.86	-7
Employment status			
Occupied	50.95	55.51	-8
Unemployed	3.47	4.72	-26
Inactive	45.58	39.77	15

Table 1: Author's creation based on UKHLS.

By combining age and gender attributes, as in Figure 1, it is possible to corroborate that women consistently volunteer more, except for ages 21-24, 27-28 and after 80 years old. While women’s higher volunteer rate is of the order of an extra 1pp until 30 and after 50 years old, in between the difference is of the order of 2.7pp. It is interesting to note that the volunteering rate peaked when individuals are between 65 and 75 years old. However, it does not seem to be a "retirement" effect for women, as the rate starts increasing monotonically before their 60s.

Figure 1: Volunteer rate by age and gender

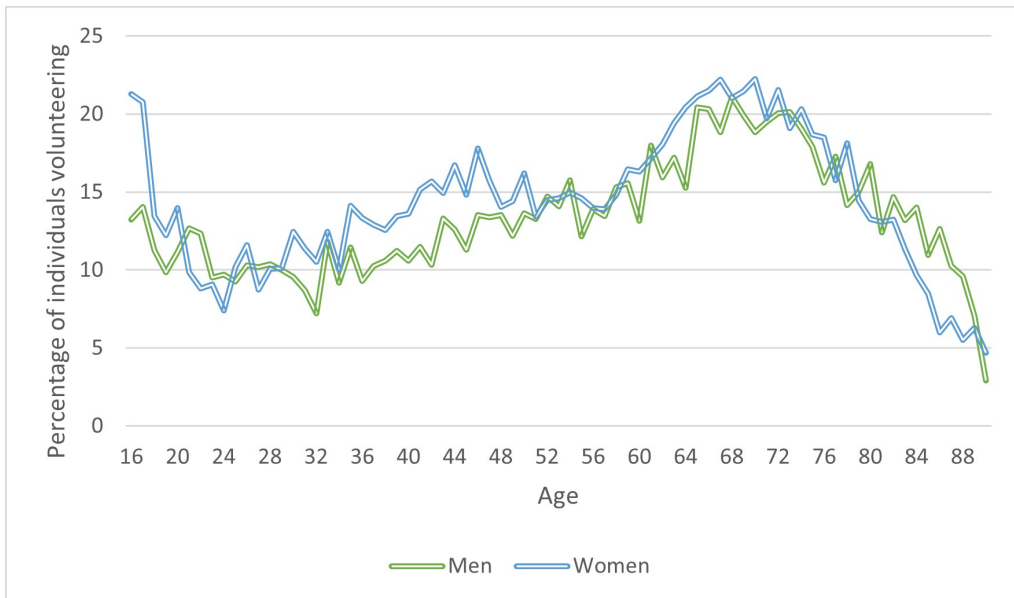


Figure 1: Author’s creation based on UKHLS.

Another interesting topic for future research would be to thoroughly study if the increase in the difference between men and women’s volunteering rate is driven by the increase in the gender inactivity gap or if there are other causal factors behind it. Intuitively, Table 1 shows a relationship between labour status and volunteering. In Table 2 it can be confirmed that those not in the labour market do perform more volunteering activities for both genders. The share of inactive volunteers is higher for women than for men, but this is also true for those occupied and unemployed. However, not only the incidence is higher, but also the weight of inactivity is larger. For example, for those aged

40, only 6.5% of men are inactive while 19% of women are. Undoubtedly there is a composition effect.

Table 2: Volunteer rate by employment status and gender

	Occupied	Unemployed	Inactive
Men	12.22%	10.36%	15.75%
Women	13.74%	10.58%	16.24%
Consolidated	12.97%	10.46%	16.04%

Table 2: Author’s creation based on UKHLS. Occupied volunteers include self-employed, full and part-time employees and workers on maternity leave.

As mentioned before, both retired and self-employed individuals are over-represented in the volunteer population. While the first attribute goes hand in hand with the higher average age of those volunteering, those self-employed may be doing a better use of their potential flexible timetable at work. Unemployed individuals, on the contrary, are less into volunteering.

Table 3: Composition of volunteers and population by work status

	Volunteers (%)	Population (%)	Difference (%)
Self-employed	9.8	7.7	26.4
Paid employment	40.9	47.2	-13.3
Unemployed	3.5	4.7	-26.5
Retired	31.6	24.6	28.3
On maternity leave	0.2	0.5	-61.5
Family care or home	4.3	4.5	-5.3
Full-time student	6.9	6.3	8.7
Long-time sick or disabled	1.8	3.6	-50.4
Government training scheme	0.1	0.1	-28.6
Unpaid. family business	0.1	0.1	40
On apprenticeship	0.1	0.1	-41.7
Doing something else	0.9	0.5	74.5

Table 3: Author’s creation based on UKHLS

According to the survey, the incidence of volunteer population is higher among those with higher education levels. While 22.3% and 17.7% of those with degrees or other higher degrees do a volunteering activity, only 6% of those with no qualification level are volunteers. Three regions came up with higher levels of volunteering incidences: East England, South East and South West with 15.1%, 17.7% and 17.1% respectively. In concordance, rural areas have a more intense volunteering activity (17.7% vs 13% urban). Finally, when taking the volunteering rate by household income into consideration, there is a significant difference between high- and low-income volunteers. In particular, those in the lower 20% have a volunteering rate of 11.5%, but those in the upper 20% income have a volunteering rate of 18.1%. This result is in line with those found by McGarvey et al. (2019) using the Time Well Spent survey, who claimed that one of the major differences between volunteers and non-volunteers was the economic status of individuals.

Summing up, volunteering activity in the UK has a complex characterisation. Incentives for those young individuals that work for free may be different than for the high rate of retired adults. While the younger groups may be motivated by personal reasons such as gaining employability skills, the latter could be thought as being driven by more altruistic feelings or seeking to socialise and keep active. This mixture of reasons to join the activity makes volunteers a heterogeneous group, and support a multifaceted analysis.

6 Estimating the value of volunteering

For the first empirical approach, diverse variants of input-based methods were attempted. As explained in [Section 4](#), by using the UKHLS, there are gains in terms of observations and robustness for the econometric analysis of section 7, but it is not possible to identify output-based indicators. Hopefully, future research will undergo in-field surveys to interview stakeholders and overcome this constraint. The strategy used consisted in imputing both Replacement Cost (RC) and Opportunity Cost (OC) techniques to the longitudinal data set.

6.1 Methodology of the estimations

The Replacement Cost strategy was tested out using both the Generalist Approach and less restricted approximations of the Specialist Approach. This section of the empirical study made use of all the conceptual strategies mentioned in [Section 4](#), feasible with the type of information that the survey provided. The overall strategy relies upon finding the wage of a paid worker doing roughly the same job as a volunteer and imputing this specific hourly wage³ to all volunteers (ILO, 2011; Salamon et al., 2011).

1. *Minimum Wage*: UK's minimum wage setup depends mainly on worker's age and whether they are apprentices. The value is updated annually by the government. To compute the volunteers' worth at the minimum legal salary, the corresponding amount was imputed to each volunteer according to their attributes. Hence, a volunteer aged 27 that took the survey in October 2017 was assigned an hourly wage of £7.83. Then, according to the number of volunteering hours that the individual had undertaken during the previous month, a monthly imputed salary was computed.
2. *The Gross average wage (GAW)*: Before computing wages taking into account a wider set of individual characteristics, a baseline gross average hourly wage was computed for all individuals with positive labour income.
3. *The GAW by gender*: Idem than 2 but differentiating average hourly wages for men and women.
4. *The GAW by gender and region*: Idem than 3 but differentiating average hourly wages by region.
5. *The GAW by gender and region and education level*: Idem than 4 but differentiating average hourly wages by education level.
6. *The GAW of the non-profit sector (by industry)*: Although it is not possible to identify the type of organisations where volunteers work,

³Constant labour income values were taken by inflating reported earnings to 2019 pounds.

an approximate approach entails computing the gross average wage paid in those industries where volunteers are traditionally found. This approach is similar to the one followed by Sajardo and Serra (2011). UKHLS allows the identification of industries by the Standard industrial classification of economic activities (SIC) 2007, at two digits of the code. By proximity of activity, industries 88 (social work activities without accommodation) and 94 (activities of membership organisations) were selected. These two industries include key activities such as social work activities or participation in religious organisations. A four digits desegregation is presented in Table 6 of the Appendix.

7. *The GAW in social work occupations (by occupation)*: If instead of looking at the industry code the focus is made on the type of tasks that workers do as to compute the replacement counterpart, the survey presents the Standard Occupational Classification 2000, which defines jobs by the kind of work performed and the skills required to perform the tasks and duties. The closer classification to volunteers' tasks was found in code 323, which incorporates occupations under the name of *Social welfare associate professionals*.
8. *The GAW following Brown (1999)*: As the author states, most volunteer labour goes to the production of services, rather than goods. The survey additionally classifies jobs by the National Statistics Socio-Economic Classification (NS-SEC). It is coded post-field using the information on the type of employer, managerial duties and training. By combining this variable with SOC 2000 and SIC 2007, gross wage in the non-agriculture, non-managerial workers in the social service sector was computed.
9. *The gross average wage in a charity, voluntary organisation or trust*: One of the main assets of the UKHLS database is the existence of variables regarding the *type of non-private organisation individuals work for*. Hence, it is possible to identify the average wage of those individuals that work for a *charity, voluntary organisation or trust*, and impute it to the rest of the individuals that claim to perform a volunteering activity.

The Opportunity Cost strategy is reflected in individuals' marginal value of working an extra hour *in their own paid job*. As commented in [Section 3.3.2](#), in contrast with the RC, it considers the net income, as it reflects the shadow price for the volunteer and not for the organisation. In the survey, individual net labour income is computed as the gross labour income minus the simulated tax, National Insurance and pension contributions. In this scenario, only those individuals that work and receive an income are considered. That is a drawback from the Opportunity Cost, as those without a labour income are nonetheless passing up other activities such as studying or spending time on leisure activities.

- *The Labour and Leisure Opportunity Cost*: For those not working, an opportunity cost for free time was computed. According to the Living Costs and Food Survey made by the Office for National Statistics⁴, on average, families households spent 13.7% of their income on Transport and 13.1% on Recreation and Culture.

In addition, the UK Time Use Survey⁵ provides information regarding the time spent on leisure activities (and their associated travel time). This differs by work status and gender: A retired woman spends 6.9 hours a day on leisure activities, while a retired man spends 7.9 hours a day. If instead of retired their working status would be self-declared as a student, women spend 5.8 hours a day and men 6.6 hours a day. With this information, and by considering each individual's household net income, it was possible to compute an hourly opportunity cost of free time.

The Multiple Imputation technique was proposed as a hybrid approach between RC and labour OC. Instead of computing a leisure opportunity cost for those inactive or unemployed volunteers, the strategy aims to impute wages based on their characteristics, *as if they were working*. To achieve this,

⁴Information can be retrieved from <https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/expenditure/articles/familyspendingexplorer/2020-03-26>

⁵Information can be retrieved from <https://www.ons.gov.uk/economy/nationalaccounts/satelliteaccounts/articles/leisuretimeintheuk/2015>

a Predictive Mean Matching (PMM) method – a semi-parametric imputation technique – was proposed, according to Rubin (2004).

The objective is to assign hourly wages to volunteers by matching them with close observations using the sample variability from gender, age, education and region variables. This methodology defines the closeness based on the absolute difference between the linear prediction for the missing value and that for the complete values. In other words, it replaces missing values with observed values from a respondent with non-missing information on the variable of interest (Little, 1988).

In this study, volunteers that do not have an hourly wage as they do not work were imputed an average net hourly wage from a group of similar respondents with non-zero income. The main difference with the RC method is that, in this methodology, non-working volunteers are imputed *net* wages of demographically similar individuals and not the *gross* wage of those performing similar tasks – which reflected the organisation replacement cost –. Hence, the focus is still on a similar individual shadow price, and not in the organisational cost. In order to give robustness to the imputation, for each volunteer, 100 estimations were made considering the 20 closest observations (individuals). Following Fisher, Fumagalli, Buck, Avram, et al. (2019), the methodology can be synthesised in 4 steps:

1. Regression models for the variable to be imputed are estimated
2. Fitted values are produced
3. Records with missing information (recipients) are matched to donors based on the fitted values computed in (b)
4. Missing values are replaced with observed values from donors.

6.2 Results of the estimations

Since by-wave results remained considerably constant along the period, the analysis is made over the nine years. Results are presented in Table 4, and columns A, B, C and D are explained below the Table. By-wave outcomes are nonetheless presented in the Appendix in Table 5.

**Table 4: Imputation techniques results for the period 2010-2019:
Input-based approach**

			A	B	C	D
Replacement Cost	Generalist Approach (GA)	Minimum Wage	£6.39	£107.9	4.7%	1.2%
		Gross average wage.	£16.26	£249.3	10.9%	2.9%
		— By gender	£16.14	£246.8	10.8%	2.8%
		— By gender and region	£16.09	£247.5	10.8%	2.9%
		— By gender, region and education level	£15.08	£253.5	11.1%	2.9%
	Specialist Approach (SA)	Non-profit sector (industry)	£13.35	£204.6	8.9%	2.4%
		Social work occupations (occupations)	£15.66	£240.1	10.5%	2.8%
		Brown (1999) approach	£15.14	£232.0	10.1%	2.7%
		Charity, voluntary organisation or trust	£15.67	£240.2	10.5%	2.8%
Opportunity Cost		Labour and Leisure Opportunity Cost	£8.68	£115.9	5.1%	1.3%
RC + OC		Multiple Imputation	£12.13	£224.7	9.8%	2.6%

Table 4: Author’s creation based on UKHLS

Column A represents the average hourly value computed to volunteers according to the strategy followed. **Column B** represents the average of the monthly value imputed to volunteers. It is constructed by using the following product:

- For the Replacement Cost techniques:

$$A_{RC} = \frac{\sum(\text{hours volunteering} * \text{average hourly wage})}{\text{number of volunteers}}$$

- For the Opportunity Cost technique:

$$A_{OC} = \frac{\sum(\text{hours volunteering} * \text{own hourly wage})}{\text{number of volunteers}} + \frac{\sum(\text{hours volunteering} * \text{own hourly leisure expense})}{\text{number of volunteers}}$$

- For the Multiple Imputation technique:

$$A_{OC} = \frac{\sum(\text{hours volunteering} * \text{own hourly wage})}{\text{number of volunteers}} + \frac{\sum(\text{hours volunteering} * \text{imputed wage of similar respondent})}{\text{number of volunteers}}$$

This means that, should the hourly minimum wage be applied to the hours that individuals volunteer, the average monthly value would be £107.9.

This value is incremented when considering the Generalist Approach and its variations when introducing more characteristics of the workers to the estimation. When considering the Specialist Approach, replacement values go down, as the average wage of those working in similar industries or performing similar tasks than volunteers are lower than the average when considering the economy as a whole. If organisations should consider volunteers as perfectly replaceable with their own paid workers, (*i.e.* they consider the wage paid in the charity, voluntary organisation or trust sector) an average monthly cost of £240.2 should be accounted for each volunteer.

In contrast, when considering the opportunity cost of those volunteers employed, unemployed and inactive, the average monthly cost is valued at £115.9. If the Opportunity Cost of those with paid employment is computed, it would account for a monthly average of £199.4 per volunteer. The Opportunity Cost of free time was computed as £36.15 per month per volunteer.

As expected, Multiple Imputation Technique lies in between RC and the OC. When considering the net hourly wage of those volunteers working and adding to those not working a wage estimate according to their characteristics, the monthly shadow price of volunteering was computed in £225. It can be thought that, if volunteers were paid to stop volunteering, they should receive a monthly transfer of near that amount, as according to the estimation, is what they, on average, value the time spent in volunteering.

An interesting fact that came from Table 4 is that a higher average monthly value using a certain technique does not necessary means that the average wage with that strategy is higher. This is the case of the Generalist Approach when considering gender, region and education level, which has an average hourly wage of £15.08 and an average monthly value of £253.5. While the value in column *A* is lower than only considering gender and region (£16.09), the value in column *B* is higher (£247.5). The reason behind this is that, when considering education level, many volunteers are assigned a lower wage, taking the average wage down. However, volunteers with higher education and higher imputed wage do volunteer more hours, hence taking the average monthly value up.

In order to understand the relevance of volunteers value in the average labour income received by individuals, column *C* was computed. **It repre-**

sents the importance of column *B* (the average monthly value) in the average monthly labour income. As can be observed, if volunteer income is valued using the gross hourly wage of the non-profit sector, the average monthly value of £204.6 computed represents 8.9% of the average individual labour income, which was computed at £2288 for the entire period. This means that, should individuals get paid for their volunteering contribution, their overall labour income would increase in a quite significant amount.

Finally, Column *D* represents the relevance of column *B* in *C*, when the share of both volunteers-to-population and occupied-to-population are considered. In other words, it *weights* results in *C* by its relevance in the economy. It considers that on average 14.1% of adults volunteered in the previous month and that 53.34% have a labour income. To illustrate this, if the value of volunteers is taken by imputing the monthly average wage for workers performing Social work duties (£240), the rise in income will represent a global increase of 2.8%.

6.3 The relevance of accounting for the volunteering value

Considering the population estimates made by the United Nations and Social Affairs (2019), in 2019 the adult population in the UK was near 55.5 million people. According to the presented estimations, between 10.4 and 10.65 million people performed a volunteering activity in the last year (with a CI of 95%), and between 7.7 and 7.92 million did it in the last month. This result, as mentioned before, is lower than those reported in the UK Civil Society Almanac 2020, which extrapolate the data from the Community life Survey from 2016. In practice, this survey performs more explicit and detailed questions about volunteering, while in the UKHLS is neither guidance nor focus in the question for respondents.

Depending on the valuation method considered, it could account for £830 million to £2007 million per month (between £10 and £24 billion). This result is in line with those found by the Household Satellite Account, who estimated volunteer activity to represent £24 billion in 2006, considering they

estimate a bigger share of the volunteering rate.

Figure 2 presents the average monthly economic value of individual volunteering by selected valuations. As was discussed, when the average value of volunteering is considered using diverse input-based methodologies, there is a range of economic valuation that, in the period 2018-2019, was set between £95 and £253 per volunteer per month.

Figure 2: Average monthly economic value, by type of valuation strategy and wave

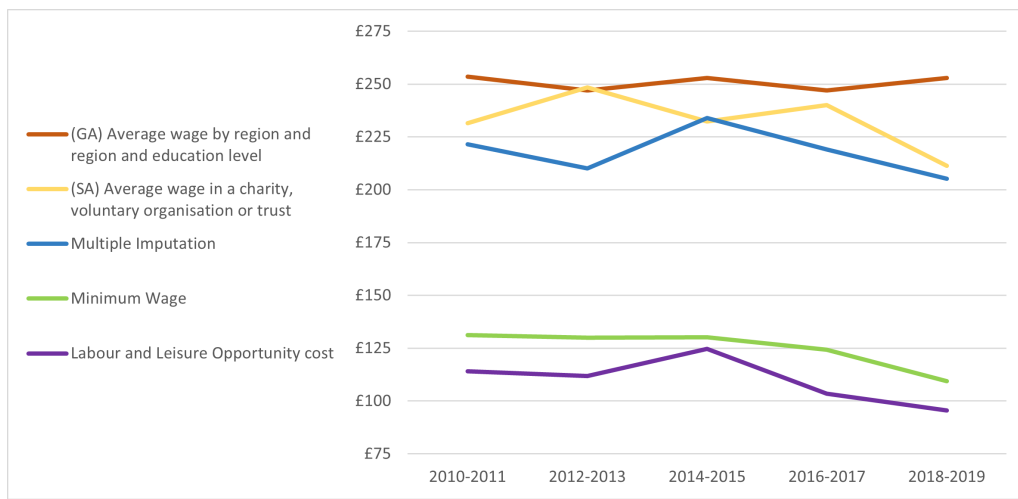


Figure 2: Author's creation based on UKHLS.

7 Long-term volunteering premium

7.1 Conceptual approach

The UK's Helping Out survey of volunteers reported by Low, Butt, Ellis, and Davis Smith (2007) recorded a range of private benefits from volunteering including enjoyment, satisfaction and achievement, meeting people and making friends, broadening life experience, boosting confidence, reducing stress, improving physical health, and learning new skills. This section focus on labour market outcomes.

Following the seminal work of Day and Devlin (1998), most of the literature that tried to empirically test mechanisms through which volunteering enhances

the employment prospectus acknowledged three main channels. These are a) the acquisition of work-related skills and experience, b) the access to social networks and c) the signalling of work-related competencies to employers. In addition, economic, cultural and social capital (in the form of family support, educational qualifications, and access to influential networks, respectively) are acknowledged for their influence on the opportunities that later lead individuals into better-paid jobs.

Studies involving volunteering and labour market outcomes have to necessarily deal with unobserved factors to infer causality. Endogeneity could occur if, for example, more motivated individuals are both more likely to participate in volunteering and to get better-paid jobs. Another potential estimation bias may arise from reverse causality: while participating in volunteer work may influence the likelihood of finding a higher-paid job, earning a higher income may encourage the decision to volunteer. Using longitudinal survey data, it is possible to know the decision of participating in voluntary work ahead of the observed outcome; for example, by lagging volunteer experience by one or more periods (Qvist and Munk, 2018).

In particular, research performed for the UK provides evidence that participating in volunteer work generates positive employment and wage outcomes for volunteers, although there are fewer benefits for women than for men and those individuals with higher levels of education see a stronger effect (Paine, McKay, and Moro, 2013; Cozzi, Mantovan, and Sauer, 2017; Wilson, Mantovan, and Sauer, 2020). However, these studies use the British Household Panel Study (BHPS), which ended in 2008, and results may not represent contemporary effects of volunteering on wages.

When it comes to identification strategies, a diverse range of models have been applied. Paine et al. (2013) estimate a standard wage equation using OLS. Bruno and Fiorillo (2016) implement a self-selection framework of labour market participation that attempts to correct for potential sample selection bias. Cozzi et al. (2017) employ rainfall data as an Instrumental Variable to account for the endogeneity bias when estimating the effect of voluntary work on labour income. Finally, Wilson et al. (2020) utilise Fixed Effects models to estimate within-person changes in earnings while controlling for between-person differences and fixed attributes of individuals.

While some of the papers found a positive relationship between volunteering and wages (Brown, 2016; Wilson et al., 2020), others find mixed or negative results (Prouteau and Wolff, 2008; Qvist and Munk, 2018). However, studies still acknowledged the possibility of a non-random selection into volunteering.

In concordance with the conceptual theories described along with the article, the empirical approach is based on the idea that volunteers are driven into the activity by diverse personal reasons (Clary and Snyder, 1999); Without proper econometric tools as an Instrumental Variable approach, there could be a relevant self-selection issue when comparing those that volunteer with those that do not. For that reason, the perspective of the empirical study will differ from those in the literature, and the analysis will reflect on long-term volunteering experience while contrasting it with short-term exposure. As was mentioned, among the benefits of using UKHLS survey is the identification of individuals' trajectories. This enables the study to further build on existing research by examining wage differentials after persistent volunteering experiences.

7.2 Methodology

As UKHLS collects volunteer information for every two waves, the data corresponds to the waves 2, 4, 6, 8 and 10, corresponding to years 2010-2011, 2012-2013, 2014-2015, 2016-2017 and 2018-2019. The survey provides a comprehensive set of descriptive variables, allowing for extensive control of individuals' observable characteristics. As the econometric analysis focuses on the effect of the long-term volunteering on wages, only respondents between the ages of 15 and 65 were incorporated. The study also drops retirees, long-term sick and disabled, and individuals who did not reply to the employment questions. Following Wilson et al. (2020), to focus on regular employment scenarios, respondents who reported extreme working hours (less than 5 h or more than 70 h a week) were not considered.

To estimate long-term volunteering impact on wages, an augmented Mincer regression was performed. As to deal with self-selection of individuals into volunteering, the analysis does not aim to compare wages of those with

volunteer experience against those without the experience, but rather analyse the trajectory of those with a volunteer experience in wave 2 during the following years. The variable of interest is, therefore, a dummy that takes value 0 if during the period 2010-2017 the individual that volunteered in wave 2 did not perform another volunteer experience, and take the value 1 if along the period it exhibits at least another experience. The terminal value of experience is considered to be until wave 8, in order to deal with potential reverse causality. According to Qvist and Munk (2018) by lagging the volunteer variable one wave, reverse causation through a social status channel can be prevented, as previous volunteer experience cannot be predicted by current wage.

7.3 Econometric model

In this first experimental approach, as a point of departure for later more complex modelling, a cross-sectional OLS model was proposed. The standard Mincer equation predicts wages out of education, labour market experience and a set of demographic variables (Mincer, 1974). However, in terms of contribution to an individual's stock of human capital, the traditional approach does not distinguish volunteer experience from other post-school activities (Day and Devlin, 1998). In this scenario, the Mincer equation was augmented to include a lagged variable of cumulative volunteer experience, such that:

$$\ln(wage_{i,10}) = \beta_0 + \beta_1 Vol_{i,2-8} + \beta_2 EDU_{i,10} + \beta_3 EXP_{i,10} + \beta_4 X_{i,10} + e_i \quad (1)$$

Where $\ln(wage_{i,10})$ is the natural logarithm of hourly wages for individual i in wave 10, $Vol_{i,2-8}$ takes the value 0 if the individual only participated in a volunteer activity in wave 2, and 1 if, in addition, he/she participated any other time in waves 4, 6 or 8. $EDU_{i,10}$ capture the years of education of the individual in wave 10 while $EXP_{i,10}$ captures the years accumulated in wave 10 after leaving school, as a proxy of work experience. The variable $X_{i,10}$ accounts for demographic and work-related characteristics which include gender, age, age square, a dummy for partnership, a dummy for children under 16 in the household, education level and regional controls. The work-related controls include a dummy if it is a job in the private sector and a dummy

if there was a trade union association at the workplace. The error term is considered in e_i , and was computed utilising the robust specification to obtain unbiased standard errors under heteroscedasticity.

To test the intensity of the volunteer experience, a variant of the model was attempted, where instead of testing the predictive power of a single dummy accounting for more than one volunteer experience, a set of dummies accounting for the number of waves that the individual performed volunteer activity between wave 2 and 8 were incorporated:

$$\begin{aligned} \ln(wage_i) = & \beta_0 + \beta_1 Vol_{i,d2} + \beta_2 Vol_{i,d3} + \beta_3 Vol_{i,d4} + \\ & + \beta_5 EDU_{i,10} + \beta_6 EXP_{i,10} + \beta_7 X_{i,10} + e_i \quad (2) \end{aligned}$$

7.4 Econometric Results

This perspective implicitly tries to measure the relevance of the *investment model* motivational approach. If volunteering has an impact on labour market outcomes, rational individuals would probably get involved in the activity looking for its rewards. On the contrary, if labour market outcomes are not significant, individual benefits such as life satisfaction or altruistic reasons may be behind the decisions of volunteering. In this model, it was tested whether volunteering consistently has a relevant effect in contrast with only performing the activity one time.

As it can be observed in Table 5, when considering the first model proposed, the change in the volunteer status from short to long is related to a 5.8% increase in wages. Of course, these results are relative to wave 1. Hence the meaning of this estimation is that, in contrast with only one experience of volunteering in 2010-2011, wages in 2018-2019 are expected to be 5.8% higher if the individual also did another volunteer experience in between. Model 2 differentiates the intensity of the volunteer experience and recognises a positive influence of 7.8% of volunteering two waves against only one. Interestingly, there is no apparent effect of volunteering in three or four waves in contrast with only one. When contrasting these results focusing on gender, women have a greater coefficient for volunteering in two waves, but the one for men is not significant.

The rest of the coefficients have the sign expected, with experience being positive and education more negative the lower education level (the baseline education level was considered higher degree)

Table 5: Wage regressions

Variables	First Model	Second Model	(2) Women	(2) Men
Long-term volunteering	0.0584* (0.0344)			
Volunteering in two waves		0.0787* (0.0408)	0.0967* (0.0523)	0.0615 (0.0662)
Volunteering in three waves		0.0329 (0.0410)	0.0715 (0.0537)	-0.0125 (0.0635)
Volunteering in four waves		0.0620 (0.0442)	0.0490 (0.0565)	0.0517 (0.0683)
Women	-0.200*** (0.0323)	-0.201*** (0.0323)		
Age	0.0612*** (0.0151)	0.0603*** (0.0151)	0.0512*** (0.0170)	0.0723*** (0.0271)
Age ²	-0.000585*** (0.000164)	-0.000574*** (0.000164)	-0.000477** (0.000190)	-0.000699** (0.000287)
Experience	0.0977*** (0.0148)	0.0974*** (0.0148)	0.0795*** (0.0177)	0.119*** (0.0257)
Partner	0.148*** (0.0316)	0.148*** (0.0316)	0.107*** (0.0370)	0.208*** (0.0596)
Children under 16	-0.0852* (0.0497)	-0.0880* (0.0505)	-0.0837 (0.0521)	-0.271*** (0.0603)
Private Company	0.0779** (0.0371)	0.0780** (0.0370)	0.0526 (0.0483)	0.115** (0.0574)
Trade Union	-0.108*** (0.0360)	-0.107*** (0.0360)	-0.0961** (0.0468)	-0.136** (0.0556)
Other Higher Education	-0.257*** (0.0454)	-0.257*** (0.0453)	-0.276*** (0.0476)	-0.244*** (0.0895)
A-level	-0.262*** (0.0460)	-0.263*** (0.0459)	-0.296*** (0.0622)	-0.217*** (0.0747)
GCSE	-0.408*** (0.0439)	-0.411*** (0.0441)	-0.390*** (0.0562)	-0.438*** (0.0775)
Other qualification	-0.434*** (0.0672)	-0.436*** (0.0669)	-0.520*** (0.0846)	-0.373*** (0.0956)
No qualification	-0.648*** (0.0843)	-0.658*** (0.0883)	-0.604*** (0.0853)	-0.846*** (0.134)
Constant	-0.186 (0.431)	-0.161 (0.431)	0.383 (0.479)	-1.130 (0.774)
Observations	1,235	1,235	729	506
R-squared	0.340	0.341	0.324	0.341

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 5: Author's creation based on UKHLS

8 Conclusions

Along with this article, a thorough literature review of volunteer measurement techniques was attempted. The research was complemented with two empirical strategies: an estimation of volunteer economic value considering two input-based approaches and preliminary estimation of a wage premium for long-term volunteering. Interesting results lead to interesting conclusions.

In particular, volunteer value lower bound goes from £108 to £253 when considering organisational costs, and from £116 to £225 when considering individuals' perspectives. An example of the importance of these numbers can be done by recalling the results of the UK's Civic Society Almanac 2020: the total income of the volunteering sector during the period 2017/18 was declared to be £53.5 billion, and the total spending was declared to be £51.3 billion.

If organisations include volunteers' value in their costs, according to the estimates, they should add an extra £0.8 – £2 billion expenses each month. Even if considering the more modest estimation, paying the minimum wage, the global annual result of the sector would be negative. When the hourly wages of the Specialist Approach are considered, organisations should pay between £13.64 and £15.67 per hour to each volunteer. The sustainability of the volunteer sector, without surprises, relies on the non-paid attribute of the majority of their workforce.

The econometric model found a link between long-term volunteering in the previous 10 years and an increase in wages. Even though several strategies were taken to reduce endogeneity, such as lagging the volunteering variable and only estimating results on individuals who had performed a volunteer experience, better techniques could be used to identify causal effects. Due to time concerns, this preliminary estimation was presented, but an Instrumental Variable (IV) approach considering the geographical location of volunteering organisations as an instrument could be implemented as a source of exogenous variation in the cost of participating in volunteering activities. By finding a suitable source of exogenous variation, a less restrictive analysis could be performed; the results of the cross-sectional estimation performed for this dissertation present a limited interpretation to those already performing a

volunteer activity, and does not take all the advantages that a longitudinal database as UKHLS could offer to perform more sophisticated econometric techniques as the IV method.

As a first experimental approach, this research was intended to provide a background of knowledge for ulterior and profound research on volunteering value, motivations, and effects, both in labour outcomes and in life satisfaction measures. Hopefully, this can be done by focusing on developing countries while accounting for their particularities.

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Appendix

Table 6: Input-based approach - Imputation technique, by survey

	2010-2011			2012-2013			2014-2015			2016-2017			2018-2019		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Minimum Wage	131,2	5,6%	1,5%	129,9	5,8%	1,5%	130,3	5,8%	1,5%	124,3	5,5%	1,4%	109,4	4,9%	1,3%
Basic GA: Gross median wage.	247,5	10,6%	2,8%	244,9	10,9%	2,9%	251,3	11,2%	2,9%	251,4	11,1%	2,9%	233,7	10,4%	2,7%
GA by gender	245,4	10,5%	2,8%	241,6	10,7%	2,8%	248,5	11,0%	2,9%	249,3	11,0%	2,9%	232,1	10,3%	2,7%
GA by gender and region	246,5	10,6%	2,8%	241,6	10,7%	2,8%	247,8	11,0%	2,9%	248,8	10,9%	2,9%	231,4	10,3%	2,7%
GA by region and region and education level	253,5	10,9%	2,9%	246,9	11,0%	2,9%	253,0	11,2%	3,0%	246,9	10,9%	2,9%	253,0	11,2%	3,0%
Gross wage of the non-profit sector (industry)	203,9	8,8%	2,3%	203,4	9,0%	2,4%	205,9	9,1%	2,4%	218,9	9,6%	2,5%	197,1	8,7%	2,3%
Gross wage in social work occupations (occupations)	231,5	10,0%	2,6%	245,0	10,9%	2,9%	239,0	10,6%	2,8%	234,4	10,3%	2,7%	241,3	10,7%	2,8%
Gross wage in following Brown (1999)	229,7	9,9%	2,6%	236,8	10,5%	2,8%	237,9	10,6%	2,8%	242,3	10,7%	2,8%	224,3	10,0%	2,6%
Gross wage in a charity, voluntary organisation or trust	231,5	10,0%	2,6%	248,4	11,0%	2,9%	232,4	10,3%	2,7%	240,1	10,6%	2,8%	211,3	9,4%	2,5%
Labour and Leisure Opportunity cost	114,0	4,9%	1,3%	111,7	5,0%	1,3%	124,7	5,5%	1,5%	103,6	4,6%	1,2%	95,5	4,2%	1,1%
Multiple Imputation	277,1	11,9%	3,1%	264,4	11,7%	3,1%	297,9	13,2%	3,5%	270,5	11,9%	3,1%	258,2	11,5%	3,0%

Table 6: Author's creation based on UKHLS

Table 7: Industry codes - Replacement Cost Approach

88 Social work activities without accommodation
88.1 Social work activities without accommodation for the elderly and disabled
88.10 Social work activities without accommodation for the elderly and disabled
88.9 Other social work activities without accommodation
88.91 Child day-care activities
88.99 Other social work activities without accommodation n.e.c.
94 Activities of membership organisations
94.1 Activities of business, employers and professional membership organisations
94.11 Activities of business and employers membership organisations
94.12 Activities of professional membership organisations
94.2 Activities of trade unions
94.20 Activities of trade unions
94.9 Activities of other membership organisations
94.91 Activities of religious organisations
94.92 Activities of political organisations
94.99 Activities of other membership organisations n.e.c.

Table 7: Source: SIC 2007