

# Valuing the Impact of Adult Learning

An analysis of the effect of adult learning on different domains in life

Daniel Fujiwara



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NIACE has a broad remit to promote lifelong learning opportunities for adults. NIACE works to develop increased participation in education and training, particularly for those who do not have easy access because of class, gender, age, race, language and culture, learning difficulties or disabilities, or insufficient financial resources.

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# Contents

Foreword.....	iv
The impact debate .....	v
Getting involved.....	vii
Acknowledgements .....	viii
1. Introduction .....	1
2. Key findings.....	2
3. Methodology .....	3
4. Data.....	6
5. Results.....	12
6. Caveats .....	17
7. Conclusions.....	18
Annexes.....	19
Annex A: The Well-being Valuation approach.....	19
Annex B: Statistical results .....	21
Annex C: Adult learning questions in the British Household Panel Survey (BHPS) .....	26
References .....	27

# Foreword

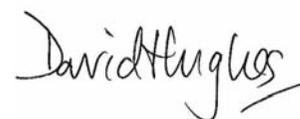
Adult learning has made a difference and creates value in many different ways. As adult educators we all know this and have seen it throughout our careers. For many people involved in adult education it is what motivates us. The impact of adult education is messy, irregular and very personal. It is probably best illustrated by the breath-taking stories of change which we highlight during Adult Learners' Week. Our challenge is how we document this impact in a clear and systematic way that meets the needs of decision makers in these challenging times.

This short paper sets out a new way of proving the impact of adult learning and we are delighted to place it in the public domain to influence and shape the debate. The measurement of subjective well-being using econometrics is a new and unfamiliar area for those in adult learning and not without its controversy.

Our view at NIACE is that we need many forms of evidence for different circumstances: from organisations such as ourselves, from government, from providers, from inspectors and, most importantly, from learners themselves.

This paper launches a national discussion on identifying the evidence needs to prove the impact of adult learning for decision making at local and national level. As this paper shows, adult learning adds value to many wider agendas: we need to support our members to make this wider case.

I hope that this paper initiates responses from many perspectives. I look forward to your response to help develop the thinking in this emerging field.



*David Hughes*  
Chief Executive, NIACE

# The impact debate

The ‘What counts as evidence?’ dilemma is a familiar one that we have been grappling with for a number of years, but is now more critical than ever because of the increased pressure on budgets nationally and at a local level. We hope the evidence in this paper shows a model that supports the case for protecting adult learning and illustrates the true impact of the policy of investing in community learning – it is a starting point for the exploration of a new evidence base in a developing field.

However, it is so much more important than solely influencing national policy makers. We are entering an age where social value is moving to centre stage in appraisals of all public spending. This means that we need to be able to articulate and quantify what adult learning provides over and above the basic contractual requirements. We need to know the contribution that adult learning makes to health and well-being if we are to influence the local public health changes and the new health and well-being boards; equally, we need to know the impact on community and civic engagement if we are to influence the localism agenda. We need to quantify the first steps on the journey to employability. As we do this we must engage with the new and often unfamiliar language of other key stakeholders.

## Context

This piece of research flows from two pieces of NIACE work: on behalf of the Local Government Association exploring the changing strategic role of adult learning and skills in communities; and our work for the Skills Funding Agency completing Social Return on Investment analyses with a sample of Adult and Community Learning Funding projects, in partnership with the SROI Network. From these analyses the wider outcomes that show the impact of adult learning were grouped into a number of categories, or outcomes domains. We commissioned the testing of the econometric model on the four most critical domains to influence current work in localities: health, social relationships, volunteering, and employment/ employability.

## What the research shows us

Excitement mingled with apprehension when we saw the results of the research: we are obviously holding the early sapling of a new evidence tree that could yield a great deal, but how do we use these emerging results from a new methodology to nurture adult learning in a time of austerity and influence local and national decision makers?

This book explores the methodology in detail, but for those who are new to this field a couple of issues may challenge the thinking on first reading. To understand the research one needs to accept the common practice of using a value of adult learning expressed in monetary terms for comparative purposes for those items that do not have a market value. This is a fundamental principle of the Government's approach through its Green Book methodology in order to capture the social benefits of wider policy initiatives.

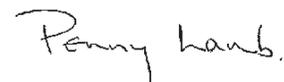
The model uses the British Household Panel Survey (BHPS) data and tests statistically the relationship between the answers given to questions on adult learning and our chosen domains to estimate life satisfaction and well-being; this is then given a value expressed in monetary terms. It means that the results show the impact of adult learning in terms of well-being and outcomes domains through statistical modelling.

We can see the significant impact of the value of taking part in a part-time adult learning on social relationships, volunteering, health and employment expressed in monetary terms. As the field is new, there not yet comparator values of these domains to set against the impact of adult learning: it is cutting-edge research in this respect.

The model provides us with a systematic approach to assessing the value of adult learning. We do not think this stands alone and in no way does it replace evidence gained from local impact studies but it complements local findings and provides a framework by which we can balance and judge locally derived data in the context of national research.

The paper concludes with a discussion of the further needs for exploration of using the model.

Our challenge is now how to use the results to shape decision making: we hope you will join us in helping develop the thinking.



Penny Lamb

Head of Policy Development, NIACE



Jeremy Nicholls

Chief Executive, SROI Network

# Getting involved

NIACE will update information on this work at [www.niace.org.uk/influencing-policy](http://www.niace.org.uk/influencing-policy). To register your interest to be actively involved in future discussions or share your thoughts contact [penny.lamb@niace.org.uk](mailto:penny.lamb@niace.org.uk) or follow us on Twitter: [@NIACEHQ](https://twitter.com/NIACEHQ) [#impactAL](https://twitter.com/NIACEHQ)

# Acknowledgements

This analysis was conducted using British Household Panel Survey (BHPS) data collected by the Institute of Social and Economic Research (ISER) and supplied under licence by the Economic and Social Data Service (ESDS). Responsibility for the analysis and interpretation of these data is solely that of the author.

I would like to thank Francesco Arzilli for his research assistance in this project.

# 1 Introduction

Adult learning may impact positively on people's lives in a number of ways which would be valuable to the individual. In this study we assess and value the impact that adult learning has on four different domains or areas in life: (i) health; (ii) employment; (iii) social relationships; and (iv) volunteering.

There is very little research on the monetary value of adult learning and almost certainly nothing on the value of the impact of adult learning on different domains in life. The only related studies of which we are aware are Liao and Chiang's (2008) contingent valuation study to estimate the value of (willingness to pay for) IT courses in Taiwan and Matrix's (2009) valuation of formal and informal part-time learning using the well-being valuation approach.

Contingent valuation studies ask people their willingness to pay (WTP) for a good or service in a hypothetical setting. For the current study this would involve asking people their WTP for any benefits they would accrue from adult learning in terms of the four different domains in life. In other words, we would ask people to place a value on the health-related or employment-related benefits of adult learning. This requires that people have a set of underlying preferences for these types of benefits and can report their values accurately, and that in the survey we can define the exact impact on, for example, health for people to value. However, people's preferences are often not well defined, and without further research we do not know the impact of adult learning on the four domains.

Using valuation methods that we developed in recent HM Treasury Green Book guidance (Fujiwara and Campbell, 2011), we attach monetary values to the impacts of adult learning on these four domains using a new alternative method that provides a solution to these two problems. The Well-being Valuation (WV) approach estimates monetary values by looking at how a good or service impacts on a person's well-being and finding the monetary equivalent of this impact. Here, we would look at the impact of adult learning on well-being via the four domains, where first we look at the effect of adult learning on a domain like health and then seek to measure the impact of the change in health (due to adult learning) on well-being. People are therefore not asked to consult their preferences and state a value themselves as the model itself will calculate the impact of adult learning on the four life domains. We believe, therefore, that the WV approach represents the best method for valuing impacts in these domains and will provide the most credible results for use in policy-making.

## 2 Key findings

Participating in adult learning is found to have significant positive effects on individual health, employability, social relationships, and the likelihood of participating in voluntary work. In turn these four domains have positive impacts on individual well-being.

Using the latest methods as recommended in recent HM Treasury Green Book guidance (Fujiwara and Campbell, 2011), it is possible to place a value on these positive impacts. This study finds that, for adults, participating in a part-time course leads to:

- **improvements in health**, which has a value of **£148** to the individual;
- **a greater likelihood of finding a job and/or staying in a job**, which has a value of **£231** to the individual;
- **better social relationships**, which has a value of **£658** to the individual; and
- **a greater likelihood that people volunteer on a regular basis**, which has a value of **£130** to the individual.

The values derived in this paper represent average values. In other words, they are representative of the value derived from adult learning for the average person involved in part-time courses.<sup>1</sup> Overall, there is strong evidence that people benefit from undertaking adult learning in a number of diverse ways and that this is highly valued by individuals. The results demonstrate that the most valuable aspect of adult learning is the role it plays in improving social relationships for people. Courses that encourage social relationships, therefore, will be more valuable to learners. For instance, this could be through promoting more group work and exercises in class and providing social events during the course, where people have the opportunity to mix even further.

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1. Due to issues with sample sizes it was not possible to estimate values broken down across different groups. Future studies should seek to assess these values across different socioeconomic groups and for people with different educational and employment backgrounds.

# 3 Methodology

We estimate the impact of adult learning on four domains or areas of life:

- health;
- employment;
- social relationships; and
- voluntary work.

The monetary value of any positive effect of adult learning on these life domains is estimated using the Well-being Valuation (WV) approach. In essence, the WV approach derives monetary values for non-marketed goods, like health and social relationships, by estimating the amount of money required to keep individuals just as happy or satisfied with life in the absence of the good. In terms of the present study, we can estimate the amount that income would need to be increased to get the same increase in well-being as that gained from an increase in health or employability due to participation in adult learning. The WV approach can derive estimates of value that are theoretically consistent with the requirements of welfare economics and cost-benefit analysis<sup>2</sup> and it has gained popularity recently in UK Government policy-making, as demonstrated by new HM Treasury Green Book guidance on valuation techniques (Fujiwara and Campbell, 2011). A more detailed discussion of the approach can be found in Annex A.

The WV approach is preferred to more standard valuation methods such as contingent valuation (CV) surveys. In the surveys, people are asked their willingness to pay for a given good or outcome. The value of the impact of adult learning on different domains could in theory, therefore, be assessed in a CV survey by asking people how much they would be willing to pay for the positive impact of adult learning on each domain. However, CV requires that people have perfect information about such impacts and that they have a coherent set of preferences regarding these impacts. Only then can they derive a true estimate of the monetary value they place on these impacts. For the current study we would require detailed information about how adult learning affects the four different domains so that we could ask people to place a value on them, which would require detailed separate statistical analysis. In addition, in practice, people's preferences are often not complete or coherent and we find that the values elicited in CV surveys are therefore highly susceptible to the way questions are framed and information is provided.<sup>3</sup> In the WV approach people are not required to evaluate their

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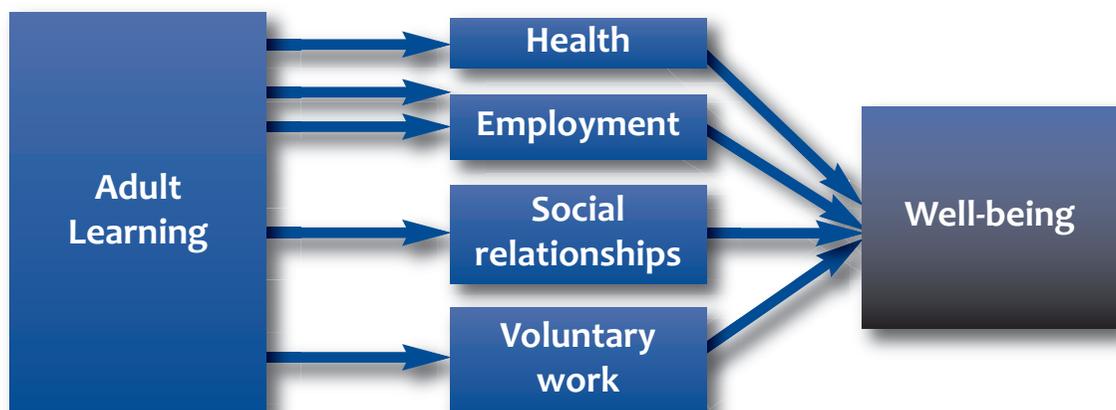
2. For a full discussion see Fujiwara and Campbell (2011).

3. For a full discussion see Fujiwara and Campbell (2011).

## 4 Valuing the Impact of Adult Learning

preferences; instead they simply have to provide an evaluation of their life currently and we derive the values that people place on goods through separate statistical analysis. Therefore, many of the pitfalls associated with the CV approach can be avoided (Fujiwara and Campbell, 2011).

Figure 1 describes the modeling framework for our approach. Adult learning is assumed to have positive impacts on health, employment, creating better social relations and the likelihood of doing voluntary work. For instance, participating in a course may improve self-esteem and mental health; new skills may improve the chances of finding a job or staying in one; the course may increase interaction with people and provide individuals with a chance to make new friends; and a greater sense of community involvement may lead to an increased likelihood of participating in voluntary work. In turn, the evidence suggests that these four domains will impact on the individual's well-being (Dolan *et al.*, 2008).



**Figure 1:** Structural equation approach to modelling the impact of adult learning

A system of five equations is estimated in a recursive structural equation model (SEM). Kline (2005) demonstrates that recursive SEMs can be estimated with standard multiple regression techniques. We estimate an equation for each domain and one overall well-being equation.<sup>4</sup> For each domain we are looking to find the effect of adult learning on that domain. In turn, we then estimate the effects of all the domains on well-being. The methodology can be summarised as follows:

$$(1) \text{ Domain}_{ki} = g_k(x_{ki}, Al_i)$$

$$(2) \text{ Wellbeing}_i = f(X_i, y_i, \text{Domain}_{ki}, \dots, \text{Domain}_{ki})$$

Where there are  $K = 4$  domains;  $i$  represents each individual;  $Al$  is adult learning;  $x$  is a set of determinants of each  $k$  domain;  $X$  is a set of determinants of well-being and  $y$  is income. The indirect effect of adult learning on well-being (via any domain  $k$ ) can be estimated as the product of the derivatives from equations (1) and (2) (Kline, 2005):

$$(3) \frac{\delta \text{Wellbeing}}{\delta Al} = \frac{\delta \text{Wellbeing}}{\delta \text{Domain}} \cdot \frac{\delta \text{Domain}}{\delta Al} = f_{\text{Domain}} \cdot g_{Al}$$

Using the WV approach the monetary value of the impact of adult learning on a given domain can be estimated as follows using equations (2) and (3):<sup>5</sup>

$$(4) \text{ Value} = \frac{f_{\text{Domain}} \cdot g_{Al}}{f_y}$$

This is simply the ratio of the marginal utility of adult learning (via the domains) to the marginal utility of income. Annex A provides the derivation of equation (4).

4. As discussed in a later section we actually had to estimate two well-being regressions because the volunteering model required a different sample of the dataset.

5. See Annex A for further details.

# 4 Data

The data used to estimate equations (1) and (2) comes from the British Household Panel Survey (BHPS). The BHPS is a nationally representative sample of more than 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.

## 4.1 Domain models (equation (1))

### Adult learning

The BHPS contains a number of variables related to adult learning, including whether someone is taking a part-time course, has received a qualification and the reason for undertaking the learning.<sup>6</sup> These variables can be used as in equation (1). We tested the significance of all variables related to adult learning in the four domain regressions and found that the variable indicating whether the individual had taken a part-time course was consistently significant across all the regressions and so we use this variable in this study. This question asks respondents ‘*Have you taken part in any other training schemes or courses at all since September 1st [of the previous year] or completed a course of training which led to a qualification?*’. It was introduced in wave 8 of the BHPS and so the analysis here is restricted to waves 8 to 18.

### Health

The World Health Organization (1994; 2012) claims that a large number of factors affect the health of individuals. They find the main determinants of health to include:

- the social and economic environment:  
Dora (1999) finds that transport policies have important health consequences through their effects on air pollution, noise, injuries, climatic change, and their ability to improve safe conditions for pedestrians and cyclists.
- the physical environment (e.g., safe water and clean air):  
Thomson *et al.* (2002) and Wilkinson and Marmot (2003) found that housing conditions and urban development can impact on health, in particular mental health.

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6. See Annex C for a description of adult learning questions in the BHPS.

- the individual's characteristics and behaviours:  
Elinder *et al.* (2003) and Pheby *et al.* (2002) find that agricultural policies have an important impact on a number of relevant health determinants, such as consumption of food and other agricultural products, like tobacco and alcohol, food safety and security, as well as the environment.
- income and social status (higher income and social status are linked to better health);
- education (usually low education levels are related to poor health); and
- social support networks (people who have higher support from families, friends, as well as from local communities experience better health).

The data available in the BHPS does not allow us to control for all of these variables, especially those related to policy and environment, but our health model does proxy for most of these variables. Social and economic environment and physical environment can be picked up through regional dummies and people's perceptions of their neighbourhood. For the other factors we include income, employment status, marital status and education which are either direct proxies or are correlated with the determinants of health.

Using these explanatory variables we add variables for adult learning, and we estimated a number of models using different proxies for health. Our preferred model uses satisfaction with health as the domain variable. Here respondents are asked to rate their health on a scale of 1 to 5. This measure is preferred as it is broad and covers both physical and mental health changes. The health satisfaction question asks:

*Please think back over the last 12 months about how your health has been. Compared to people of your own age, would you say that your health has on the whole been ...*

1. Excellent
2. Good
3. Fair
4. Poor
5. Very poor

## 8 Valuing the Impact of Adult Learning

We also found that adult learning is significantly correlated with reductions in drug and alcohol problems and heart and blood pressure problems, as reported by the respondent themselves,<sup>7</sup> and therefore report these results, but do not use them in the valuation model.

### Employment

De Grip *et al.* (2004) identify the main determinants of employability, where employability captures the willingness and ability for the employees to be active in the labour market given the institutional constraints. These include:

- labour market and economic conditions (see also Berntson *et al.*, 2006);
- human capital (i.e. training and level of education);
- accessibility to work (see also Hall, 1996; 1976).

In the employment model we include the year and geographic regions to control for economic conditions and we include education, adult learning and transport together with some demographic variables.

We look at the impact of previous adult learning on current employment status (that is, whether someone is employed or unemployed). This would cover any effect that adult learning may have on (i) getting people into work and (ii) on helping people stay in a job. We also found that adult learning has a positive impact on perceived future job prospects and report these results, but do not use them in the valuation model.

### Social relationships

The literature on the determinants of relationships suggests that individual characteristics play a key role in friendship formation and stability (Fong and Isajiw, 2000). Thompson and Nishimura (1950) and Hallinan and Teixeira (1987) argue that friendships are determined, at least partly, by a compatibility of ideals, values and attitudes between two persons. Sherif and Sherif (1961) and Sigelman and Welch (1991) argue that social status and income are determinants of relationships. More recently, the literature has focused on the role of gender and race (for example, Jackman and Crane, 1986) and marital status.

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7. For example, respondents in the BHPS are asked whether they have any alcohol or drug-related problems.

In our social relationships model we control for marital status, together with a variety of individual characteristics such as education and employment status. We use a fixed-effects model to control for important individual characteristics such as attitudes that are unobservable in the data. The fixed effects also control for gender and ethnicity.

We assess the frequency with which people meet others and the satisfaction with social life. The latter measure is preferred and used in the valuation model as it is broader and will also reflect the quality of people's relationships with others. For this variable respondents are asked 'How *dissatisfied* or *satisfied* are you with your social life' and respond on a seven point scale where 1 = "Not satisfied at all" and 7 = "Completely satisfied".

## Voluntary work

Dekker (2008) argues that married, middle-aged and elderly individuals are more likely to dedicate their time to volunteering. Wilson (2000) describes education as the most consistent determinant of volunteering.<sup>8</sup> More educated people are more likely to participate in volunteering as a consequence of more developed civic skills. Other important factors related to volunteering are employment status and the amount of free time available. However, the relationship between these two determinants and volunteering activities is not clear cut. Markham and Bonjean (1996) showed that there is a negative correlation between paid work and volunteering, as employed people dedicate less time to volunteering activities than the non-employed, and part-time employees seem to volunteer more than full-time workers. On the other hand, Stubbings and Humble (1984) found that the unemployed and homemakers are less inclined to participate in volunteering activities. Volunteering is also correlated with social networks. People with large social networks are more likely to join volunteering organisations and to be active in them (Wilson and Musick, 1997). Finally, volunteerism has been found to be strongly correlated with religiosity. For example, church members are generally more involved in voluntary organisations than non-church members (Ruiter and De Graaf, 2006).

In our voluntary work model we control for age, marital status, education, employment status and social networks (through a variable on satisfaction with social life). In the BHPS, data on involvement in religious organisations are only available in years for which volunteering variables were not recorded and thus we cannot include this factor in the model.

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8. See also McPherson and Rotolo (1996) and Sundeen and Raskoff (1994).

## 10 Valuing the Impact of Adult Learning

We see the impact of adult learning on participation in voluntary work by looking at the frequency of volunteering. The BHPS asks respondents how often they do voluntary work, with responses categorised as:

1. *At least once a week*
2. *At least once a month*
3. *Several times a year*
4. *Once a year or less*
5. *Never/almost never*

We create a binary variable for a *frequent volunteer* that equals 1 if respondents volunteer at least once a week or month (categories 1 and 2) and 0 otherwise (categories 3 to 5). The volunteering variable is only included in alternate waves from wave 6 and so the sample is restricted to these years.

### 4.2 Well-being model (equation (2))

The well-being measure that we use to estimate model (2) is the life satisfaction question that has been well established in the field: '*How dissatisfied or satisfied are you with your life overall?*'. Responses are on a scale from 1 (not at all satisfied) to 7 (completely satisfied). Life satisfaction was added in 1997, so we analyse the period after 1997 in the BHPS.

In terms of the explanatory variables to include in the well-being function (2), we use guidelines set out in recent UK Government guidance which states that the following variables should be included (Fujiwara and Campbell, 2011):

- income;
- age;
- gender;
- marital status;
- educational status;

- employment status;
- health status;
- social relations;
- religious affiliation;
- housing and environmental conditions and crime levels in the vicinity;
- number of children and other dependents (including caring duties);
- geographic region; and
- personality traits (such as extroversion).

There is a significant amount of literature relating to the problem of endogeneity in the income variable in well-being regressions (for example, Frijters *et al.*, 2004; Gardner and Oswald, 2007; Pischke, 2010). Using an exogenously derived income variable leads to a significant increase in the size of the income coefficient (see Pischke, 2010; Powdthavee, 2009, 2010), which is a crucial determinant of the final value estimate in equation (4). In the well-being regressions we employ an over-identified model instrumenting for income with whether the person has a mortgage and whether their spouse is employed. We hypothesise that people with mortgages are required to earn more money relative to people who rent housing. This is because those who rent can accommodate falls in income more readily by switching to lower-rent properties, whereas home owners are far less mobile. Spouses' employment variables have been used as income instruments by a number of studies (for example, Chevalier and Lydon, 2002; Luttmer, 2005; Dolan and Metcalfe, 2008). We assume that human capital has positive externalities in that a spouse's education has a positive impact on own levels of human capital (Chevalier and Lydon, 2002). Employment status is used as an indicator of the level of human capital, so we would expect a spouse's employment to be positively correlated with own income. In auxiliary analysis (not shown here), we find that having a mortgage and a spouse's employment status have no direct effect on own well-being. Our instrumental variable strategy results in an increase in the income coefficient of a similar magnitude to that found in the literature to date.

# 5 Results

## 5.1 Domain models

Adult learning, as measured by people's participation in part-time courses, has positive effects on all four domains. The statistical results for all four models can be found in Annex B.

### Health

(See Table B2 in Annex B)

Participation in part-time courses has a statistically significant positive effect on health. People who are currently undertaking or have finished a course this year:

- report higher levels of health satisfaction: part-time learning has a significant positive effect on health satisfaction (0.023 index-point increase);
- are less likely to report heart and blood pressure problems; and
- are less likely to report an alcohol or drug abuse problem.

### Employment

(See Table B3 in Annex B)

Taking a part-time course in the previous year has a statistically significant positive effect on the likelihood of someone being employed in the current year (3 percentage-point increase). Also, current participation in part-time learning has a significant positive effect on people's job expectations (as proxied by whether people report that they wish to find a better job or employer).

## Social relationships

(See Table B4 in Annex B)

People who are currently undertaking or have finished a course this year report higher levels of satisfaction with social life; part-time learning leads to a statistically significant 0.05 index-point increase. Part-time learning also increases the frequency with which people meet other people in a statistically significant manner. This suggests that experiencing the course encourages people to meet with others more frequently and/or being on the course and meeting people increases frequency of meeting with others because if they had not attended the course they would have done something else on their own instead.

## Voluntary work

(See Table B5 in Annex B)

People who are currently undertaking or have finished a course this year are more likely to become a frequent volunteer (that is, volunteer at least once a month). Undertaking a course leads to a statistically significant 3.9 percentage-point increase in the likelihood of volunteering regularly.

## 5.2 Well-being model

(See Tables B6 and B7 in Annex B)

All four domains have statistically significant impacts on life satisfaction.

- An index-point improvement in *health satisfaction* leads to a 0.17 index-point increase in life satisfaction.
- Being *unemployed* leads to a 0.15 index-point deterioration in life satisfaction.
- An index point improvement in *satisfaction with social life* leads to a 0.37 index-point increase in life satisfaction.
- *Volunteering regularly* leads to a 0.12 index-point increase in life satisfaction (volunteering uses a different sample and thus the results are presented separately in Table B7).

## 14 Valuing the Impact of Adult Learning

This means that all four domains will have a positive value to the individual and thus anything that has a favourable impact on these domains (as adult learning does) will be valuable to individuals.

### 5.3 Valuation

These results from the domain and well-being models can be combined to derive a monetary value for the impact of adult learning on the four domains using equation (4). This calculation requires that we also derive an estimate for the impact of income on life satisfaction (this is the denominator ( $f_y$ ) in equation (4)). In the well-being model in Table 5 of Annex B, we have an estimate of the impact of income (log of equivalised household income has a coefficient of 0.23). Dolan *et al.* (2011) have shown that this estimate is likely to be under-biased because the indirect effects of income cannot be picked up in this model. As in Dolan *et al.* (2011), we hypothesise that income has direct and indirect effects on well-being, as income can lead to improvements in other determinants of life satisfaction that are controlled for in the model. In our empirical work we have assumed that income affects health and satisfaction with social life and thus focus on these indirect effects here. Dropping these two variables from the well-being regression gives some indication of the magnitude of these indirect effects (Groot and van den Brink, 2006; Dolan *et al.*, 2011). Doing so increases the coefficient on the log of equivalised household income from 0.23 to 0.31.<sup>9</sup> We therefore use the larger coefficient of 0.31 for the log of income in equation (4) to calculate the values for adult learning (for the separate volunteering well-being regression the coefficient we used for income after acknowledging these indirect effects is 0.34).

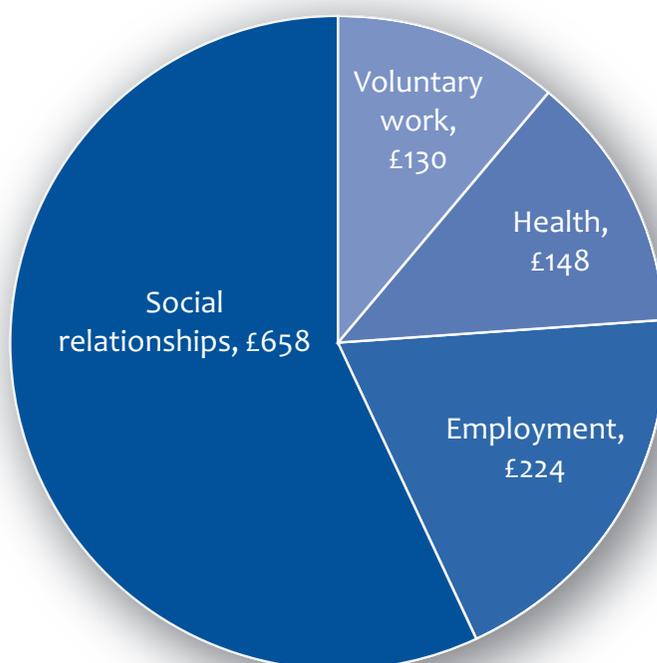
Table 1 and Figure 2 present the monetary value calculations for each domain. The values represent the impact of adult learning on health, employment, social relationships and volunteering. As discussed in section 5.1, undertaking part-time adult learning has positive impacts on all four domains. Adult learning variables are taken on an annual basis in the BHPS, and therefore we can assume that the values are in per-year units. However, on average people who undertake part-time learning take two courses per year and therefore we can divide the annual values by two to get a per-course unit of value. The values per course are the preferred unit of measurement as they provide a more concrete point of reference.

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9. Dropping variables can lead to omitted variable bias, but this is a concise method that has been used widely in the literature before.

Domain	Monetary value of impact of adult learning on domain	
	Overall (per year)	Per course
Health	£297	£148
Employment	£447	£224
Social relationships	£1,315	£658
Voluntary work	£260	£130

**Table 1:** Values of impacts of adult learning on different domains



**Figure 2:** Relative values of adult learning per course

## 16 Valuing the Impact of Adult Learning

### Health

Part-time adult learning has a positive effect on health satisfaction. This effect has a value of £297 *per year* to the individual. We can therefore state that the health impact of part-time learning is worth £148 *per course*.

### Employment

Part-time adult learning in previous years increases the probability of finding work and staying in work. To the individual this has a value of £447 *per year* or £224 *per course*. This value signifies the intangible value of being in work and does not include any financial benefit (i.e., wages and pension contributions). It is in addition to any increase in wage they may receive.

### Social relationships

Part-time adult learning improves learners' satisfaction with social life because they may meet people more frequently and/or build better-quality relationships. To the individual this has a value of £1,315 *per year* or £658 *per course*.

### Voluntary work

Part-time adult learning increases the likelihood of participating in voluntary work, which has a positive value. To the individual this has a value of £260 *per year* or £130 *per course*.

The combined value of these four domains for one part-time adult course is £1,160. Although these values can be added, it should be noted that aggregating these values does not provide an estimate of the *overall* value of a part-time course. This is because (a) adult learning may have further impacts through other domains of life that are not included here, and (b) there could also be some negative aspects of adult learning, such as increased time pressures at home, less time with family and studying for examinations, which would have to be netted off to derive the overall value of part-time learning.

Relative to a previous study on well-being valuation for adult learning (Matrix, 2009), which produced large values for part-time formal and informal learning, the values derived in this study are more conservative. Also using the BHPS, Matrix (2009) estimated the annual value of part-time learning to be between £4,066 and £4,740. In comparison with Matrix's (2009) study we have used different instrumental variables for income and have taken into account the indirect effects of income, which we believe provides better monetary value estimates.

# 6 Caveats

First, as with all statistical analyses of observational data, causality can be an issue. In all of the domain models, we have used as many of the determining (explanatory) variables as possible and where suitable have used the panel structure of the BHPS data to control for unobservable (time-invariant) factors. However, we cannot rule out that some of the results may be susceptible to selection bias; people usually choose to undertake (that is, select into) adult learning. It is likely therefore that the results reported here would exceed impacts expected if other members of the population were to receive part-time education (Matrix, 2009). The value estimates derived in section 5.3 should therefore be seen as the upper limit of the values people derive from adult learning.

Second, the values derived in this paper represent average values. In other words, they are representative of the value derived from adult learning for the average person involved in part-time courses. *We found that breaking the models down using different sub-samples leads to a high proportion of statistically insignificant results due to small sample sizes.* Future studies should seek to assess these values across different socioeconomic groups and for people with different educational and employment backgrounds.

Finally, the values derived here are retrospective. The BHPS survey data allows us to determine the impact that adult learning *had* on different domains and areas of life and to put a value on this positive impact. These values may not necessarily accord with what people actually pay or would be willing to pay for the courses they undertake. This is because actual market prices do not usually align with the value people derive from a given product (and hence how much they would be willing to pay for it) because market price is only indicative of how much people would *at least* be willing to pay. Also, people may only be aware of these benefits once they have undertaken or completed the course. In retrospect, therefore, people would highly value the adult learning courses but, *ex-ante*, may underestimate (or even overestimate) its value and hence their willingness to pay. A large amount of literature in psychological sciences supports the notion that predicted and actual experience often diverge significantly (Kahneman and Snell, 1992). In light of this, we therefore feel that the values derived in this study that are based on actual experience are more ‘truthful’ or robust than values that would be derived through a contingent valuation survey (i.e., willingness to pay survey) such as the one employed by Liao and Chiang (2008).

# 7 Conclusions

This study looks at the impact of adult learning on four domains or areas in life: (i) health; (ii) employment; (iii) social relationships; and (iv) volunteering. Adult learning, in the form of taking part-time courses, was found to positively impact on all four domains. In turn the four domains impact positively on an individual's level of well-being. We can conclude therefore that adult learning affects well-being through these four mechanisms.

The results were used to derive estimates of the monetary value of these positive impacts. Using the latest methods as set out in recent HM Treasury guidance (Fujiwara and Campbell, 2011) we found that the impact of adult learning on:

- *health* has a value of £148 to the individual;
- *employability* has a value of £231 to the individual;
- *social relationships* has a value of £658 to the individual; and
- *volunteering* has a value of £130 to the individual.

This study has therefore made considerable progress towards answering the question set out by the *Inquiry into the Future for Lifelong Learning* (Schuller and Watson, 2009), which encouraged future research to analyse the mechanisms through which adult learning impacts on well-being (Matrix, 2009. p.14). Future research should seek to assess and value the impacts of adult learning on other domains in life.

# Annexes

## Annex A: The Well-being Valuation approach

The central assumption of the WV approach is that measures of well-being (here life satisfaction has traditionally been used) are good proxies of an individual's underlying utility. In this sense, the utility function and its level sets (the indifference curves) can be directly observed and it is possible to estimate the marginal rates of substitution (MRS) between income and the non-market good to provide an estimate of value. For example, if a 20 per cent reduction in local crime rates increases the life satisfaction of an individual by 1 index point and an increase in household income of £5,000 p.a. also increases their life satisfaction by 1 index point, then we would conclude that the value of the 20 per cent reduction in crime to them is £5,000 per year. Formally, the two main measures of value in welfare economics – willingness to pay (WTP) and accept (WTA) – are estimated as follows in the WV approach:

$$(A1) \quad v(p^0, Q^1, M^0) = v(p^0, Q^0, M^0 + WTP_{LS})$$

$$(A2) \quad v(p^0, Q^0, M^0) = v(p^0, Q^1, M^0 - WTA_{LS})$$

Where  $v(\cdot)$  is the indirect utility function;  $M$  = income;  $Q$  = the good being valued;  $p$  = prices. The 0 superscript signifies the state before  $Q$  is consumed (or without the good) and the 1 superscript signifies the state after consumption (or with the good). In our analysis in this paper  $Q$  refers to the domain being valued,  $Q^0$  = the state of the domain if people do not undertake adult learning, and  $Q^1$  = the state of the domain after people have undertaken adult learning.

In practice, (A1) and (A2) are estimated econometrically using the direct utility function in (A3). The direct utility function is estimated by applying regression analysis to panel or cross-sectional survey data to measure the impact of non-market goods on life satisfaction. Using panel data the following life satisfaction function is estimated:

$$(A3) \quad LS_{it} = \alpha + \beta_1 M_{it} + \beta_2 Q_{it} + \beta_3 X_{it} + \varepsilon_{it}$$

## 20 Valuing the Impact of Adult Learning

where  $LS_{it}$  = life satisfaction of individual  $i$  at time  $t$ ;  $M_{it}$  = income of individual  $i$  at time  $t$ ,  $Q_{it}$  = the level of a non-market good consumed or provided to individual  $i$  at  $t$  and  $X_{it}$  = a vector of individual characteristics and other factors that impact on life satisfaction. The coefficient  $\beta_2$  is an estimate of the impact of the non-market good on life satisfaction. In our analysis this will be the impact of the life domain on well-being. WTP and WTA can be derived by calculating the MRS between income and the non-market good using the estimated coefficients from (A3). Formally WTP can be represented as follows (a similar calculation is used for WTA):

$$(A4) \quad LS(\alpha + \beta_1 M_{it}^0 + \beta_2 Q_{it}^1 + \beta_3 X_{it} + \varepsilon_{it}) = LS(\alpha + \beta_1 (M_{it}^0 + WTP_{LS}) + \beta_2 Q_{it}^0 + \beta_3 X_{it} + \varepsilon_{it})$$

re-arranging to give:

$$(A5) \quad WTP_{LS} = -\frac{\beta_2(Q_{it}^1 - Q_{it}^0)}{\beta_1}$$

In sum, WTP (i.e. the monetary value) is estimated as the ratio of the marginal utilities of the good and income (that is, the marginal rate of substitution) and this is the calculation used in equation (4) of Section 3, Methodology.

## Annex B: Statistical results

**Table B1:** Description of variables

Variables	Description	Mean	Standard deviation
unemployment	=1 if individual is unemployed	0.26	0.44
employment	=1 if individual is employed	0.74	0.44
retired	=1 if individual is retired	0.05	0.22
student	=1 if individual is a student	0.04	0.19
never married	=1 if individual has never married	0.30	0.46
divorced	=1 if individual is divorced	0.05	0.21
separated	=1 if individual is separated	0.02	0.14
widowed	=1 if individual is widowed	0.01	0.11
North	=1 if individual lives in North	0.17	0.37
Midlands	=1 if individual lives in the Midlands	0.18	0.38
London	=1 if individual lives in London	0.06	0.24
Wales	=1 if individual lives in Wales	0.15	0.36
Scotland	=1 if individual lives in Scotland	0.18	0.38
N_Ireland	=1 if individual lives in N. Ireland	0.90	0.29
Year	Year of the interview	N/A	N/A
safe area	=1 if individual lives in a safe neighbourhood	0.82	0.38
low education	=1 if individual does not have a degree	0.48	0.50
high education	=1 if individual has a degree or higher qualification	0.19	0.39
p-t course	=1 if taken any part-time courses this year	0.30	0.46
p-t course (previous year)	=1 if taken any part-time courses in previous year	0.29	0.45
l_indincome	Log of income	9.12	1.09
ln_HHincome	Log of equivalised household income	10.16	0.79
renter	=1 if home is rented	0.29	0.46
safe_area	=1 if vandalism or crime area =2 (no)	0.82	0.38
house_owned	=1 if house owned	0.70	0.46
private transport	=1 if individual uses private transport	0.49	0.50
public transport	=1 if individual uses public transport	0.10	0.30
walk or cycle	=1 if main means of travel to work is bike or walk	0.11	0.31
Seeking work	=1 if looked for work in last 4 weeks	0.01	0.11
good health	=1 if health over last 12 months has been fair to excellent	0.93	0.25
poor health	=1 if health over last 12 months has been poor to very poor	0.07	0.25
satisfaction with social rel.	On a scale of 1 = (not satisfied at all) to 7 (completely satisfied);	4.89	1.43
male	=1 if male	0.47	0.50
ln_age	log of age	35.31	13.08
carer	=1 if individual has caring duties	0.04	0.20
health satisfaction	Subjective health status on a scale of 1 (very poor) to 5 (excellent)	3.94	0.89
debt burden	=1 if individual reports having financial problems	0.16	0.36
regular volunteer	=1 if volunteer more than once per month	0.09	0.28

## 22 Valuing the Impact of Adult Learning

**Table B2:** Results of health regression

	<b>Coefficient</b>	<b>Standard error</b>
constant	3.734***	0.176
p-t course	0.023***	0.014
employment	0.326***	0.02
retired	0.218***	0.034
ln_age	-0.248***	0.036
ln_HH income	0.081***	0.011
never married	0.025	0.024
divorced	-0.053*	0.031
widowed	-0.075	0.057
separated	-0.07	0.043
student	0.151***	0.035
low education	-0.110***	0.018
renter	-0.128***	0.019
safe area	0.121***	0.018
North	-0.078***	0.026
Midlands	-0.032	0.025
London	0.014	0.037
Wales	-0.038	0.027
Scotland	0.013	0.025
year	0.002	0.002
<b>Observations</b>	<b>16,204</b>	

Notes: \*\*\* 0.01 significance level, \*\* 0.05 significance level, \* 0.10 significance level. Pooled OLS regression on the sample aged over 25 (pt-course becomes insignificant for low age groups).

**Table B3:** Results of employment regression

	<b>Coefficient</b>	<b>Standard error</b>
constant	-7.656***	0.696
p-t course (previous year)	0.243**	0.110
male	0.589***	0.099
age	0.002	0.005
l_income	0.509***	0.046
never married	-0.775***	0.121
divorced	-0.303	0.222
widowed	-0.917**	0.434
separated	-0.335	0.361
low education	-0.007	0.096
house owned	0.356***	0.106
safe area	0.194*	0.119
private transport	3.904***	0.117
public transport	4.031***	0.196
walk or cycle	3.910***	0.177
North	0.039	0.148
Midlands	0.047	0.149
London	0.105	0.236
Wales	0.178	0.148
Scotland	-0.174	0.141
carer	-0.500**	0.227
year	0.114***	0.035
seeking work	-1.948***	0.604
<b>Observations</b>	<b>5,459</b>	

Notes: \*\*\* 0.01 significance level, \*\* 0.05 significance level, \* 0.10 significance level. Logit regression on the sample aged 18 and over.

## 24 Valuing the Impact of Adult Learning

**Table B4:** Results of social relationships regression

	<b>Coefficient</b>	<b>Standard error</b>
constant	9.508***	1.276
pt-course	0.049**	0.024
employment	0.191***	0.030
retired	0.108	0.086
ln_age	-1.542*	0.408
ln_HH income	0.013	0.020
never married	0.256*	0.048
divorced	-0.007	0.091
widowed	0.187	0.207
separated	-0.015	0.092
student	-0.075	0.061
low education	0.006	0.112
good health	0.185***	0.030
poor health	-0.251***	0.049
house owned	-0.020	0.039
safe area	0.068**	0.031
North	0.138	0.119
Midlands	-0.190*	0.105
London	0.023	0.111
Wales	0.052	0.149
Scotland	-0.012	0.166
year	0.019	0.013
<b>Observations</b>	<b>22,452</b>	

Notes: \*\*\* 0.01 significance level, \*\* 0.05 significance level, \* 0.10 significance level. OLS fixed effects regression on the sample aged 18 and over.

**Table B5:** Results of volunteering regression

	Coefficient	Standard error
constant	-4.163***	0.196
pt-course	0.456***	0.068
HH income	0.000	0.000
unemployment	0.211***	0.077
age	0.030***	0.002
health satisfaction	0.004	0.037
Wales	-0.023	0.095
Scotland	0.051	0.086
N_Ireland	0.435***	0.104
satisfaction social rel.	0.116***	0.023
male	-0.269***	0.064
<b>Observations</b>	<b>13,416</b>	

Notes: \*\*\* 0.01 significance level, \*\* 0.05 significance level, \* 0.10 significance level. Logit regression on the sample aged 18 and over.

**Table B6:** Results of well-being regression

	Coefficient	Standard error
constant	1.035	1.142
ln_HH income	0.232	0.102
unemployment	-0.155	0.034
retired	0.128	0.061
age	-0.029	0.030
age2	0.000	0.000
health satisfaction	0.172	0.011
satisfaction social rel.	0.372	0.007
married	0.056	0.036
divorced	-0.296	0.072
widowed	-0.153	0.157
seperated	-0.404	0.076
never married	-0.224	0.040
carer	-0.037	0.054
year	-0.017	0.029
North	0.027	0.090
Midlands	0.065	0.074
Wales	-0.055	0.117
Scotland	-0.309	0.132
N_Ireland	-0.179	0.366
high education	-0.022	0.085
debt burden	-0.077	0.023
<b>Observations</b>	<b>23,557</b>	

Notes: \*\*\* 0.01 significance level, \*\* 0.05 significance level, \* 0.10 significance level. 2SLS over-identified fixed effects regression. Income is instrumented by whether the individual has a mortgage to pay and whether the spouse is in work. Sample aged 18 and over.

## 26 Valuing the Impact of Adult Learning

**Table B7:** Results of well-being regression (for volunteering)

	Coefficient	Standard error
constant	0.382	2.188
ln_HH income	0.319*	0.185
unemployed	-0.123**	0.062
retired	0.008	0.117
age	0.021	0.051
age2	0.001***	0.000
health satisfaction	0.255***	0.020
married	-0.014	0.062
divorced	-0.110	0.124
widowed	0.763**	0.317
separated	-0.339**	0.138
never married	-0.045	0.075
carer	-0.184*	0.100
year	-0.095*	0.050
North	0.025	0.155
Midlands	-0.026	0.131
Wales	-0.052	0.201
Scotland	-0.441**	0.214
N_Ireland	1.419	1.013
regular volunteer	0.118*	0.064
<b>Observations</b>	<b>13,369</b>	

Notes: \*\*\* 0.01 significance level, \*\* 0.05 significance level, \* 0.10 significance level. 2SLS over-identified fixed effects regression. Income is instrumented by whether the individual has a mortgage to pay and whether the spouse is in work. Sample aged 18 and over.

## Annex C: Adult learning questions in the British Household Panel Survey (BHPS)

Variable name	Question
wNTRAIN	Number of part-time courses taken this year
wTRAIN	Whether taken any part-time courses?
wTRMORE1	Whether taken any other course/training since ref date?
wTRPLCE1	Where did educ/training take place?
wTRQLAC1	Whether had any qualifications since reference date?
wTRQLXP1	Course to lead to qualif/part of qualif
wTRWHYA1	Why course?: Help start current job
wTRWHYB1	Why course?: Incr skills in current job
wTRWHYC	Why course?: Improve skills current job
wTRWHYD1	Why course?: Prepare for future job(s)
wTRWHYE1	Why course?: Develop skills generally

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The ‘What counts as evidence?’ dilemma is a familiar one that we have been grappling with for a number of years and is now more critical than ever because of the increased pressure on budgets nationally and at a local level.

We are entering an age where social value is moving to centre stage in appraisals of all public spending. This means that we need to be able to articulate and quantify what adult learning provides over and above the basic contractual requirements. We need to know the contribution that adult learning makes to a variety of agendas if we are to influence the local debates, such as public health changes and the new health and well-being boards. Equally, we need to know its impact on community and civic engagement if we are to influence the localism agenda. We need to quantify the first steps on the journey to employability.

We hope that this paper goes some way towards providing the evidence needed to support the case for protecting adult learning and illustrates the true impact of the policy of investing in community learning. We assess and value the impact that adult learning has on four different areas in life and, using a new alternative valuation method, we are able to attach monetary values to the impacts of adult learning on these four domains.

## Author

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