Chapter Title: Evaluating the costs and benefits of workplace wellbeing initiatives.

Emike Nasamu,
Norwich Business School,
University of East Anglia,
Norwich,
NR4 7TJ,
United Kingdom.

Email: E.Nasamu@uea.ac.uk
Phone: 44+1603 593014

Sara Connolly,
Norwich Business School,
University of East Anglia,
Norwich,
NR4 7TJ,
United Kingdom.

Email: sara.connolly@uea.ac.uk
Phone: 44+1603 593410

Mark Bryan,
Department of Economics,
University of Sheffield,
9 Mappin Street,
Sheffield,
S1 4D,
United Kingdom.

Email: m.l.bryan@sheffield.ac.uk
Phone: 44+1142223457

Andrew Bryce,
Department of Economics,
University of Sheffield,
9 Mappin Street,
Sheffield,
S1 4D,
United Kingdom.

Email: a.m.bryce@sheffield.ac.uk
Phone: 44+1142223323

Word count: 7,871

Abstract
There is an extensive academic and practitioner literature on what sorts of workplace wellbeing interventions work and for which types of workers (see Daniels et al, 2017; Watson et al, 2018; Whitmore et al, 2018). However, few of these studies include an assessment of the costs of the interventions nor do they provide an approach for evaluating these against the benefits in terms of any improvements in employee wellbeing. This chapter aims to provide an overview of the use of a wellbeing cost effectiveness analysis to evaluate workplace interventions and illustrates the technique using four case study examples of workplace interventions. We explore ways in which costs of interventions might be calculated, how the wellbeing and productivity benefits of interventions might be measured and finally, how the cost effectiveness of the interventions might be assessed.

Keywords
Workplace, wellbeing, interventions, evaluation, cost, productivity, cost-effectiveness, case study

Introduction
Economic appraisals are widely used in welfare economics to inform judgements across investment choices such as the economic impact of hosting a World Cup or the Olympic Games (De Nooji et al., 2013; Preuss, 2004; Rose and Spiegel, 2011). Traditional welfare economics has based economic judgements on the concepts of social welfare and government policy more generally has focused on economic indicators such as GDP, but "During the past decade, there has been growing recognition that the measurement of economic progress needs to extend beyond GDP. The measurement of well-being as a holistic indicator of progress is an appealing alternative generating a good deal of policy interest." (Coyle, 2019, quoted on https://www.bennettinstitute.cam.ac.uk/research/research-projects/measuring-wellbeing/).
This is explicitly recognised in the UK Treasury Green Book (HMT, 2018) and in guidelines offered by equivalent departments in Iceland and New Zealand where Wellbeing Budgets and policy are being pursued (BBC, 2019; The Treasury 2019).

The literature on wellbeing and policy decision-making is in early stages. There are ongoing conversations about how to measure wellbeing and about what aspects of subjective wellbeing should be considered for the purpose of making policy (Helliwell and Barrington-Leigh, 2010; Helliwell et al. 2012). For example, Senik (2011) noted that the three definitions of subjective wellbeing: life evaluation, affect and eudaimonia although related are quite distinct from one another. There is also ongoing discussions in the literature about how wellbeing might be used for policy making purposes and what considerations to keep in mind (Stiglitz et al., 2009; O'Donnell et al. 2014). O'Donnell et al (2014) considered how wellbeing might inform policy decision-making, policy evaluation and management. In a similar vein, Deaton (2018) explored how wellbeing centred policy might be implemented, considering some of the measurement issues related to wellbeing and the sensitivity of decision making to these measurement issues. The Organisation for Economic Cooperation and Development and the UK Office for National Statistics have provided valuable resources to assist in measuring and benchmarking wellbeing at more macro levels (OECD, 2020; ONS 2020).

In the UK, the All-Party Parliamentary Group on Wellbeing Economics identifies improved workplace wellbeing as one of the key priority areas for government and private sector investments in the UK (APPG, 2019). It recommends that employers routinely measure worker wellbeing and publish the results as standard in annual accounts and that employers put policies

in place to train managers on how to promote wellbeing, address the management of mental health problems and give people more control over how they do their jobs.

Work is important not just for the income it generates but also because it provides an avenue for some degree of self-realisation. Over and beyond pecuniary remuneration, other aspects of work which have strong effects on workplace wellbeing include work-life balance, job variety, the need to learn new things and individual autonomy (De Neve and Ward, 2017), as well as managerial competence (Artz et al., 2016). Although people spend most of their time at work, literature has demonstrated that people are not necessarily happy at work (Kahneman et al, 2004, Bryson and McKerron, 2017). Kahneman et al (2004) reported findings in which work, when compared with other activities in the day, is associated with one of the lowest levels of positive affect (the average of happy feelings like warm/friendly and enjoying myself) and one of the highest levels of negative affect (the average of negative emotions like frustrated, depressed, hassled, worried). Furthermore, Kahneman et al (2004) reported that interaction with one's boss is seen as one of the worst interactions in a day; it is associated with the highest level of negative affect and one of the lowest level of positive affect and is ranked worse than being alone.

Since we know from literature that people value things other than money in the workplace, the evidence indicates that improving wellbeing at work does not necessarily have to do with offering people higher pay. Improving people's non-pecuniary workplace experience can yield higher levels of overall wellbeing. The benefits of improved workplace wellbeing does not only accrue to the employees but also to the employers as improved workplace happiness can lead to improvements in key indicators such as turnover rate, sickness absences, presenteeism, productivity (Oswald, Proto and Sgroi, 2014) and organisational performance (Edmans, 2011).

Evaluation methods
Since employers are faced with limited resources and a plethora of possible workplace interventions, it is important to have some method of determining which interventions yield good returns to wellbeing. Whilst the academic literature can offer a good starting point for determining which wellbeing interventions are worth considering, in practice there is limited evidence that providers of wellbeing interventions are collecting the data or undertaking rigorous evaluations themselves (Whitmore et al, 2018). A practical and intuitive method of evaluating the effectiveness of wellbeing interventions is essential.

The approach usually recommended by economists and undertaken by central governments is to conduct a Cost-Benefit Analysis (CBA) where the monetary costs and the monetary benefits of each intervention are considered and the intervention which yields the higher monetary net benefit is chosen. Businesses might undertake a similar exercise, known as a Return on Investment (ROI), where the ROI provides guidance on the net gain for every dollar, euro, pound, etc. spent. These are both good methods when the costs and benefits of the intervention are easily expressed in monetary terms or there are well established methods to convert non-tangible costs into monetary terms. With wellbeing interventions, however, the CBA will not suffice as benefits are expressed in terms of wellbeing, often life satisfaction or job satisfaction, or measures of mental health, and there are no well-established or reliable metrics for converting wellbeing into monetary values (Clark et al, 2017, O'Donnell et al 2014).

A cost-effectiveness approach still evaluates the costs of interventions in monetary terms but it differs in that the benefits are measured in terms of the broad objectives of the intervention. In the field of medicine, health economists have adopted a cost-effectiveness approach which

weighs the costs of a new drug treatment or medical procedure against the health benefits of additional years of life in perfect health, known as a Quality Adjusted Life Years (QALY), see Bryce et al 2020. In the UK, the National Institute of Clinical Excellence (NICE) set a threshold of £20,000 - £30,000 per QALY when recommending treatments for provision by the NHS.

In wellbeing economics a similar approach is taken but the benefits of the cost-effectiveness approach (CEA) are expressed in non-monetary wellbeing units. Whilst the CBA allows an absolute comparison of costs and benefits in monetary terms, the CEA provides a relative measure, normally expressed as the cost-effectiveness ratio (CER):

$$CER = \frac{(Net\ cost\ per\ participant)}{Change\ in\ wellbeing\ per\ participant}$$

The net cost is a monetary value calculated from the costs of delivery and participation in the intervention minus any benefits in productivity. The wellbeing benefits are captured from any changes in wellbeing for participants in the intervention. The changes in wellbeing for participants can be estimated using a difference in difference approach or a randomized control trial.

Thus, the CER is measured in terms of costs of an intervention measured in pounds/dollars, and wellbeing benefits (Layard, 2016; Peasgood and Wright, 2017). The CER can be used to rank different interventions (assuming that wellbeing is measured in the same way) where an intervention with a lower CER is more cost-effective. An intervention with a negative CER actually saves money. As with a QALY, the CER can been assessed against an agreed threshold; any intervention with a CER below the threshold is considered to be cost effective.

We therefore propose evaluating workplace interventions using CEA. The What Work Centre for Wellbeing (WWCW - https://whatworkswellbeing.org) currently recommends that wellbeing benefits should be measured using life satisfaction (LS) as a common currency. Thus, the wellbeing benefits can be measured by the gain to life satisfaction over the number of years that the benefits of the intervention are expected to last. Since life satisfaction is usually measured on a 0-10 scale, we assume that a one point improvement in LS is equivalent to a 10pp improvement in quality of health, hence is equal to a tenth of a QALY and is sustained for one year. Therefore, an extra unit of life satisfaction over a year converts to a threshold benefit of between £2,000-£3,000 (based on the NICE threshold for health interventions).

Using a common currency of life satisfaction enables different interventions to be compared against each other and also against a CER threshold such as that proposed above. However, this presents a challenge for many workplace interventions, as employers, academics and providers may use other metrics: perhaps the most common is job satisfaction, but others include mental health, self-esteem and social support. Layard (2016) proposed a set of exchange rates to convert between life satisfaction and wellbeing measures, based on observed empirical correlations (see Table 1).

Table 1: Conversion rates of different measures of wellbeing into life satisfaction

Wellbeing measure	Range	Conversion rate
Life satisfaction (ONS[1])	0-10	1
Satisfaction with Life Scale[2]	5-35	0.24
Worthwhile (ONS)	0-10	0.75
Happy (ONS)	0-10	0.72
Anxious (ONS)	0-10	0.35
General Health Questionnaire[3]	0-36	-0.21
Short Warwick Edinburgh Mental Wellbeing Scale[4] [5]	7-35	0.25
Satisfaction with job (BHPS[6])	1-7	0.49
Satisfaction with income (BHPS)	1-7	0.61
Satisfaction with amount of leisure time (BHPS)	1-7	0.57
Satisfaction with use of leisure time (BHPS)	1-7	0.62
Satisfaction with social life (BHPS)	1-7	0.60
Satisfaction with health (BHPS)	1-7	0.63

Source: Bryce et al. 2020
Note: based on Tables 1 and 2 in Layard (2016) and author's own calculations

It will be noted that the measures considered are all likely to be closely related to life satisfaction: some are alternatives measures of wellbeing (such as worthwhileness or quality of life) while others are domain satisfactions that we would expect to feed into life satisfaction. Where we have these types of measures, we propose using these exchange rates. Other types of measures, such as self-esteem or social support, appear much less directly related to life satisfaction (they may capture very different dimensions of wellbeing) and it is doubtful that they can be meaningfully converted to life satisfaction. In these cases, we suggest reporting and considering the benefits and costs separately (see case studies 2-4 below). This can still provide useful information for comparing across interventions, provided that all report the same outcome measure(s).

Implementing CEA in the workplace
Although provision of a workplace intervention will involve monetary costs in terms of delivery and participation, many interventions will yield savings since absence rates and employee turnover may fall, and productivity may rise. It is important to ensure that any estimates of the productivity benefits can be related to the intervention rather than other workplace or economic factors. It is recommended that these are estimated by any changes that occur over time amongst employees who have benefitted from the intervention (a treatment group) in comparison with a group working in the same organisation who have not been part of the intervention (a control group). Therefore, the total costs should be calculated net of these cost savings.

However, it is often difficult to accurately capture productivity and unmeasured gains in productivity leads to under-estimation of the CER. Similarly, we will under-estimate effects

---

[1] Office of National Statistics (ONS, 2011)

[2] Pavot and Dienner (2008)

[3] Goldberg and Williams (1988)

[4] Kamman and Flett (1983)

[5] Stewart-Brown et al. (2009)

[6] British Household Panel Survey (Taylor et al., 2018)

if there are unmeasured positive spillovers to the wellbeing of other workers (not receiving intervention), family members or the wider community. Finally, it is important to have an understanding of the duration of any effects of an intervention. Knowing how long effects last may be crucial (noting longer term effects and costs should be 'discounted' i.e. adjusted for present value over the lifetime of a project to allow for inflation and depreciation of capital equipment) and may alter the acceptability decision.

For many organisations undertaking a randomised control trial is administratively difficult and expensive. Pilot studies are often used as a good second best, as these at least allow a contemporaneous control for changes that may arise outside of the intervention. Furthermore, interventions are rarely a single item initiative; rather they form part of a bundle of practices or organisational change. As a consequence, it is hard in practice to establish causality or to attribute wellbeing or productivity improvements to a particular intervention (Patey et al, forthcoming). In such cases, it is possible to still be guided by the principles of CEA using the costs of the intervention alongside any before and after changes in key metrics. Here the final decision making will not be made in terms of a CER, rather it will be based on an assessment of key information which reflect costs and outcomes.

Bryce et al (2020) have developed a cost effectiveness calculator which can be used to evaluate workplace wellbeing interventions. The calculator provides detailed guidance on estimating and interpreting the CER. It is of most use when interventions are randomised control trials, where the calculator can use before and after measures for both a treatment and control group to calculate the CER. It is still very effective when the treatment and control groups are not chosen randomly, as it uses a difference-in-difference calculation which takes account of level differences in wellbeing or sickness absence/productivity before the intervention. This not only provides estimates for the CER but also confidence intervals which allow us to assess the upper and lower values which are compared against the threshold of £2,500 per year of life satisfaction. The calculator provides the user with the flexibility to either use total costs of an intervention where they are already known, or to follow prompts to enter relevant costs and changes in productivity. It also allows users to provide details on a range of wellbeing measures which are then converted into life satisfaction using the conversion rates in Table 1. Daniels et al (work in progress) used the calculator in their evaluation of a randomised control trial of two mindfulness apps across five police forces in England and Wales (Fitzhugh et al, 2019).

Case studies
We use four case studies to illustrate how a cost-effectiveness approach might be used to evaluate a wellbeing intervention. The case studies cover a range of interventions in different organisational settings. They are a mix of workplace interventions and human resource management (HRM) practices and vary in terms of scale, scope and therefore cost. None capture the full set of information or data required to conduct a comprehensive cost effectiveness evaluation; only one case study uses data collected in a randomised control trial, with the others using before and after comparisons. The examples are chosen to illustrate how the technique might be applied in more real-world business situations and how they might inform decision making.

The first case study uses data collected in a randomised control trial and provides the best evidence of a causal effect of a wellbeing intervention. The second case study uses data collected where a new HRM tool was piloted in part of a workforce; here we can have some confidence in the results because we are able to contrast the experience of the intervention

group with those working elsewhere in the same organisation. The final two case studies simply use before and after data.

In each case, the costs of the intervention are split into three types: participation, delivery and other costs. For participation and delivery costs, we estimate the amount of time that was spent engaging with the intervention both by participants and those involved in delivering the intervention, and the overall costs of this time. Other costs might include planning, guidance, travel, room hire, or any other costs incurred in the intervention. In making the final estimate of time costs, we add 25% in order to account for non-wage labour costs (National Insurance, pensions etc).

As noted above, it is important to take account of any impact that the intervention has upon productivity. Productivity benefits might include direct measurable improvements in output or be more indirect, accruing because there are fewer days lost to absences or lower levels of staff turnover. In these cases, we estimate a pro-rata value using 8 hours for 5 days per week[7] evaluated at hourly rates of pay within the organisation. We only use hourly wages to estimate productivity savings based on changes in days lost or staff turnover; in the case of staff turnover we recognise that there may be further cost savings (National Insurance or pensions) or costs accrued (advertising and recruitment) and there may similarly be other costs/savings associated with absence rates which will be difficult to accurately assess and are not included in the examples below. Furthermore, whilst in a randomised control trial or a pilot study, it is possible to associate changes to a particular group of participants, it will not be possible where data is collected at a more aggregate before and after basis, meaning that any results should be treated with caution.

The net costs are estimated as: $\dfrac{Total\ costs - Productivity\ benefits}{Number\ of\ participants}$

Finally, as mentioned above, wellbeing data is not necessarily collected in all interventions. We only have data on life satisfaction in the first case study. The other case studies illustrate how the general principles might be applied where other measures might be used as imperfect proxies (employee engagement, feeling of control, confidence).

(1) Goal setting and planning
This first case study is an example of a standalone wellbeing initiative that could be offered to staff within an organisation. The intervention is a specially designed online version of a clinically proven well-being intervention on goal setting and planning (GAP) for working age adults[8]. The programme helped employees:
- to identify goals linked to their personal values
- develop steps to move towards selected goals
- anticipate and deal with obstacles
- maintain motivation.

The case study uses data collected as part of a Randomised Control Trial on the effectiveness of the online training with 330 public sector employees across the UK. There were 158 employees in the intervention and 149 in the control group. Participants in the intervention

---

[7] For simplicity, we assume a standard working pattern of full-time work, obviously an organisation would be able to collect a full breakdown of the staff involved and their associated paygrades.

[8] Oliver, J.J. and MacLeod, A.K., 2018. Working adults' well-being: An online self-help goal-based intervention. *Journal of occupational and organizational psychology*, *91*(3), pp.665-680

reported improved wellbeing – greater life satisfaction, more positive emotions, less negative emotions, and a greater sense of purpose – five weeks after starting the programme and then three months later.

The intervention was an online version of an existing face to face goal setting and planning training course which the research team adapted and piloted the online version with working age adults. There were 6 online modules, each taking 30 minutes to complete, and participants had the option of follow-up sessions with the research team. There was some travel on the part of the research team in setting up the intervention and the costs of hosting the tool on a website. Estimates for each of the cost elements are shown in Table 2.

Table 2 – Estimated costs for the goal setting intervention

	Goal setting – Randomized Control Trial intervention
Participation costs	Time spent by employees engaging with intervention and time spent following up with the research team. There were 6 online modules and each module took around 30 minutes to complete, so this is estimated as involving 3 hours of work time. Oliver and MacLeod allocated 30 minutes of work time for phone conversations between the research team and the participants.[9] The participation costs are estimated at 3.5 hours of work time. $$158 \text{ employees} \times 3.5 \text{ hours} \times £12.48^{10} \times 1.25$$
Delivery costs	This involved preparation, focus groups and telephone conversations with the intervention group. Oliver and MacLeod estimated that this involved 75 hours of work time for the research team. $$1 \text{ researcher} \times 75 \text{ hours} \times £28.12^{11} \times 1.25$$ There were two focus groups, one involved 30 minutes of work-time for 40 National government administrative employees and the second 2 hours of work time for another group of 10 National government administrative employees, 50 participants in total engaged in 0.5 hours of work-time $$50 \text{ employees} \times 0.5 \text{ hours} \times £12.48 \times 1.25$$
Other costs	• Travel expenses of £300 • Cost of website hosting the intervention of £370
Total costs	**£12,323.05**

There are no productivity benefits recorded as part of this randomised control trial, therefore, the actual overall costs are £12,323.05; there were 158 participants and so the net cost per person per year is £77.99.

Participants reported a 0.48 increase in life satisfaction after 5 weeks and a 0.44 increase in life satisfaction after 3 months. This compares with a decline in life satisfaction of -0.1 for the control group, so the difference is 0.44 – (-0.1) = 0.45.

---

[9] 12 of 158 employees actually took up the offer of the telephone conversation with the researcher, so this is an over-estimate.

[10] The average hourly wage for National Government Administrative Occupations, ASHE 2019.

[11] The average hourly wage rate for Higher Education and Teaching Professionals, ASHE 2019.

$$CER = \frac{Net\ cost\ per\ participant}{Change\ in\ life\ satisfaction\ per\ participant} = \frac{77.99}{0.45} = £173.31$$

This intervention costs £173.31 per extra unit of life satisfaction for a year, it is deemed to be cost effective since the CER falls below the threshold of £2,500.

However, there are limitations: the study was carried out using waitlist control protocols, which means that the control group accessed the training after 5 weeks, and so we have no long-term follow-up on wellbeing for the control group. We therefore, assume that the average life satisfaction for the control group remains the same for a year. For the intervention group, the last follow-up is at three months; we therefore assume that any wellbeing benefits that are apparent at three months persist for a year. A further drawback is that this study did not capture any productivity benefits such as reduced sickness, staff turnover or increased effectiveness at work. Including these may reduce the net cost per participant, hence the CER, and strengthen the case for this sort of wellbeing intervention.

(2) CONNECT+

The second case study illustrates a significant investment in HRM. CONNECT+ is a personal development programme, taking a 'whole person' perspective by incorporating employee wellbeing using a wellbeing diagnostic tool and coaching - leading to personalised wellbeing plans and resources. The case study organisation (Graham, a construction company, https://whatworkswellbeing.org/practice-examples/graham/) rolled out the initiative to a pilot group of 400 from their 1,500 employees, so we treat the remaining 1,100 employees as a control group. Estimates for each of the cost elements are shown in Table 3.

Table 3 – Estimated costs for CONNECT+

	CONNECT+ - before and after pilot to be compared with rest of the organisation
Participation costs	Time spent by employees engaging with personality profiling exercise and workshop, Graham estimated that this involved 2 hours of work time for 400 employees. 400 employees × 2 hours × £14.23 per hour[12]× 1.25 Time spent by employees engaging with personal well-being trainer, Graham estimated that this involved 2 hours of work time for 400 employees. 400 employees × 2 hours × £14.23 per hour× 1.25
Delivery costs	Facilitator time spent training employees on how to engage with personality profiling exercise (DISC workshop), Graham estimate that this involved a 1 hour workshop led by 1 external facilitator with two HR professionals. 2 HR professionals × 1 hour × £15.61 per hour[13] × 1.25
Other costs	Meetings to discuss the possibility and planning of the initiative (DISC personality profiling), Graham estimated that this involved their internal well-being team (6 people) working with the external consultants for 2 hours.

---

[12] We do not have details on the staff composition for the intervention and so use the average hourly wage of £14.23 for the construction sector, ASHE 2019.
[13] The average hourly wage rate for HR Professionals, ASHE 2019.

	6 HR professionals × 2 hours × £15.61 per hour × 1.25 Meetings to discuss the possibility and planning of the initiative (Personal Well-being Coach), Graham estimated that this involved their internal well-being team (6 people) working with the external consultants for 2 hours 6 HR professionals × 2 hours × £15.61 per hour × 1.25 Preparation of formal documentation for the initiative (Connect Plus), Graham estimate that this involved 2 HR staff working for 2 hours per week for 4 weeks 2 HR professionals × 8 hours × £15.61 per hour × 1.25 External consultant's fees = £32,000
Total costs	**£61,279.53**

Graham reports that rates of staff sickness fell by 0.8 day per person per annum (from 1 day per person per annum before the intervention to 0.2 days per person per annum after the intervention). For the 400 employees we record this as -320 days of absence, which we evaluate pro rata at the average rates of pay (-320 × 8 hours × £14.23). Graham reports that rates of staff turnover for the pilot group fell to 1% against the company average of 10%. This amounts to 9% of 400 = 36 fewer people leaving the company per year, evaluated at the average salary (36 × 40 hours a week × 52 weeks× £14.23). However, this estimate may be considered to be conservative in the sense that we only count the productivity benefits in the first year, when perhaps we would expect the benefits of staff retention to last longer than that.

The net costs per participant of CONNECT+ are estimated as follows:

$$\frac{Total\ costs - Productivity\ benefits}{Number\ of\ participants} = \frac{£61,279.53 - £36,428.8 - £1,065,542.4}{400}$$
$$= \frac{-£1,040,691.7}{400} = -£2,601.7$$

The productivity benefits associated with CONNECT+ are substantial and result in significant cost savings per employee (a monetary gain for the organisation). Since this intervention clearly delivers value for money, other types of evaluations, e.g. CEA, might not be deemed necessary. However, Graham did not record staff well-being (life satisfaction), but we noted that the engagement index rose from an average of 88% in 2017 to 95% in 2018. This is a possible indication of improvements in wellbeing which would reinforce the economic or business case. Furthermore, there were other indications of improved health and wellbeing within the pilot group:
- Uptake on EAP rose from 5% to 10%.
- Participation in wellbeing activities rose from 20% to 50%.
- Risk of heart attack fell from 60% to 50%.
- Risk of obesity fell from 60% to 45%.
- Percentage of smokers fell from 20% to 15%.

These figures might also have longer term implications for improved productivity. In addition, as a construction company the reduced sickness absence, the reduction in staff turnover and increase in staff engagement could imply that company health and safety indicators are performing well. For example, we might anticipate that there are fewer work-related accidents.

These types of gains would be recorded as further negative costs which are not captured in this analysis.

(3) *Flexible working hours*

The third case study illustrates the costs involved in a minor change in HR processes. An office with a workforce of 160 employees, which supports students on taught programs in Higher Education, introduced a programme of Flexible Working hours (Flexi-time) as a first step in their plan to build a healthy work force and a good working environment. The Flexi-time scheme was adopted in response to feedback from staff surveys in which staff expressed dissatisfaction with not having enough control over their workload and work scheduling. The Flexi-time scheme is an opt-in scheme, where eligible staff members[14] are given the option to elect into the programme (132 employees opted in, costs are estimated for this group). The scheme gives employees the option to work flexibly around the core work hours (10am to 6pm), the flexi-time options range from an earlier start at 7:30am to a later finish at 6:30pm. The scheme is managed with employees being trusted to log-in their work hours into a Flexi-time spreadsheet.

The main costs of this intervention relate to the planning and design of the policy and the associated recording system which involved senior administrators and HR personnel. There were some costs associated with the communication of the new policy, team meetings to ensure that staff were fully briefed and time spent engaging with the flexitime intervention. Estimates for each of the cost elements are shown in Table 4.

Table 4 – Estimated costs for the flexi-time intervention

	Flexi-time – before and after comparison

Participation costs	5 minutes for those employees who engaged with the intervention
	    132 employees × 5 mins × £12.71[15] ×1.25 = £174.90
	1 hour for 82 employees who attended briefing on the intervention
	    82 employees × 1 hour × £12.71 ×1.25 = £1302.78

Delivery costs	30 minutes for 1 employee (grade 8) who prepared newsletter; 5 hours, for 3 employees (1 grade 8 and 2 grade 6) who prepared formal documentation and 2 hours for 3 employees (1 grade 8, 1 grade 6 and 1 grade 4) who trained others on how to engage with the intervention = £546.95
Other Costs	7 hours of work time for 19 employees (5 grade 8, 6 grade 6, 8 grade 4) who met to discuss plans, 8 hours for 7 employees (2 grade 9, 5 grade 8) who debriefed and developed the policy and recording system for the scheme = £4,819.63
Total costs	**£6,844.26**

---

[14] Eligibility is dependent upon staff grade.
[15] We use a weighted average (based on the staff composition of the office) of pay grades when estimating the participation costs (27 grade 6 @ £18.68, 7 grade 5 @ £12.68 and 98 grade 4 @ £11.07). The delivery costs and other costs are based on the following pay grades: £33.67 for grade 9 employees, £25.50 for grade 8 employees, £18.68 for grade 6 employees and £11.07 for grade 4 employees.

For this case study, we have before and after sickness absence and staff turnover rates for the office and so we use this average to evaluate changes for the participants. However, since there is no control group, we are implicitly assuming that the counterfactual is zero; i.e. sickness rates and staff turnover would have remained the same in the absence of this intervention. This is likely to overestimate any productivity gains since there may have been a reduction in sickness absence within the organisation or within the sector, due to other factors outside of the intervention, but which we can't measure without a control group. The university teaching support office report that rates of staff sickness fell from 0.84 days per person before the intervention to 0.5 days per person per month after the start of the intervention. There are 132 participants, we record this as -45 days of absence, which are evaluated pro rata at the average rates of pay (-45 × 8 hours working day × £12.71 = -£4,819.63). Rates of staff turnover remained unchanged at 0.6% with 1 employee leaving the service in the 6 months before and after the intervention.

The net costs per employee of Flexi-time are estimated as:

$$\frac{Total\ costs - Productivity\ benefits}{Number\ of\ employees} = \frac{£6,844.26 - £4,575.60}{132} = \frac{£1,354.36}{132} = £17.19$$

In this case study, staff well-being (life satisfaction) is not recorded, so we do not have information on any changes in wellbeing. We therefore have to assume a zero well-being impact. However, we know from staff feedback that they feel more in control of their work and that this is likely to boost individual wellbeing and staff engagement with their work, which may yield further productivity gains which are not captured in this analysis. This is a relatively minor change in HR process; although there were set-up costs to develop the system and brief the team, the ongoing costs are low. The net costs of the intervention were £17.19 per participant and the changes were welcomed by the staff. Although we cannot conduct a full cost-effectiveness analysis, the analysis suggests that this intervention was worth pursuing.

(4) Mental Health First Aid

The final case study illustrates the costs of an increasingly common mental health initiative. A local authority in England, with a workforce of 7,561 employees, working in a range of occupations introduced a programme of Mental Health First Aid (MHFA) England Champions as part of their healthy workforce plan. The MHFA programme provides mental health training to managers and employees on how to spot the signs of mental ill-health and how to offer support and signpost individuals to expert help. The local authority aimed to train 300 managers and supervisors in the first year, and by the end of the year they had successfully trained 278. Whilst there is a broad consensus that MHFA training helps increase participants' knowledge of mental health issues, reduces stigma around mental ill-health and increases supportive behavior towards those who suffer from mental ill-health, the evidence of the long term efficiency and cost effectiveness of MHFA programmes is weak (Bell et al., 2018; Bevan and Wilson, 2019; Boocook and Philimore, 2018;).

In addition to the MHFA programme, the local council authority also ran a campaign to promote awareness of existing well-being measures:
- team well-being questionnaire
- in-house mediation
- one-to-one support from in-house well-being officers
- Employee Assistance Programme
- a video about 5 ways to well-being

- email to all new employees outlining well-being support for them

The main costs include tendering for MHFA training delivery, the fee paid to the external facilitator, training materials, room hire for the training sessions, travel, accommodation and subsistence while attending the MHFA trainer course and the time spent by participants undertaking the training. Estimates for each of the cost elements are shown in Table 5.

Table 5 – Estimated costs for MHFA

	MHFA – before and after comparison
Participation Cost	47 hours for grade L, 25 hours for grade E and 208 hours for grade H = £4538.96[16]
Delivery Cost	Lumpsum paid to external facilitator = £8579.40
Other Cost	30 hours for grade L, 20 hours for 2 grade E employees = £991.375 and logistical costs of £8,286.935
Total costs	£22,396.67

One of the aims of this initiative was to spread awareness of good practice and to achieve a snowball effect across the organisation. Those trained as mental health first aiders were selected across different departments and in different roles. Therefore, whilst the costs apply to those who participated in the training, the benefit is intended to be across the organisation. The local authority was able to provide before and after sickness absence and staff turnover rates for their staff. Since there is no control group, we are again implicitly assuming that the counterfactual for these values is zero. The local authority reported that rates of staff sickness absences due to mental health increased from 12,355 to 15,448.60 days per annum. This increase of 3093.6 days is evaluated at the average hourly rate of pay (3093.6 × 8 hours working day × £9.67 = £239,320.90).

The local authority reported that rates of staff turnover fell from 10.29% before the intervention to 10.13% after the intervention = 0.16% of 7561 employees gives us 12.09 fewer employees leaving the local authority per year. We evaluated this cost at the average annual salary of employees of the local council authority (12.09 × £20,111.36 = £243,146.34).

The net costs per employee of MHFA are estimated as:

$$\frac{Total\ costs - Productivity\ benefits}{Number\ of\ employees} = \frac{£22,396.67 + £239,320.90 - £243,146.34}{7561}$$

$$= \frac{£18,571.23}{7561} = £23.21$$

Staff well-being (life satisfaction) is not recorded, so we are not able to calculate the cost-effectiveness ratio. We therefore have to assume a zero well-being impact; however, we know that the key indicator of interest to the organisation – staff engagement - has improved and it is likely that wellbeing has also improved. In the period following the implementation of the MHFA training, the local authority noted increased uptake of in-house mediation (from 7 to 24 requests), increased demand for one-to-one support (from 92 to 135 support sessions), and increased take-up of employee assistance programme (marginal increase from 6% to 6.2%

---

[16] Hourly wage rates were provided by the local authority. Grade L, grade E and grade H were evaluated at hourly rates of £20.61, £8.74 and £11.75 per hour respectively

usage by eligible employees). The local authority regard the increased take-up of employees assistance programmes as a positive development indicating greater awareness amongst employees and support from supervisors and managers. Furthermore, managers reported improved confidence in dealing with employees who experience mental ill-health. However, the MHFA was one of a number of initiatives being implemented at the same time and it is impossible to accurately assign benefits to one single component.

Although the upfront costs look significant, given the size of the workforce, the cost per person was just under £3. The estimated impact upon productivity was mixed: higher sickness days (possibly because of greater acceptance and less presenteeism) but lower staff turnover. The net costs of the intervention were £23.21 and it achieved one key objective which was to improve the confidence of management in responding to employees with mental health problems. This initiative was supplemented with a general awareness raising exercise which has not been costed – there would be relatively minor additional costs associated with the publicity campaign and through the increased uptake of the in-house mediation and employee assistance programme. Although we cannot conduct a full cost-effectiveness analysis, the analysis suggests that this combination of interventions was worth pursuing.

Conclusions
CEA offers a useful tool for decisions makers when considering which workplace interventions to invest in. Not only does this approach allow us to consider like with like values – costs in monetary terms and benefits in wellbeing terms – it encourages organisations to reflect on the full range of costs, including any savings. The comparison of the CER against an acceptability threshold, here we used a value based on health decision making in the UK, but others might be applied, is also a strength, since different thresholds might apply in different sectors.

The CEA is currently developed using life satisfaction as the main wellbeing metric, whilst other metrics may also be used. Therefore, the final calculations will depend upon the reliability or validity of the exchange rate. The absence of longer-term follow-up on the benefits of interventions do mean that simplifying assumptions need to be made; i.e., that they benefits are sustained for at least one year. Finally, the approach does best suit simple rather than more complex or multi-faceted interventions.

The method is most appropriate for data collected in interventions where there is a treatment and control group, so that it is possible to compare the difference that an intervention makes to the treatment group, with any changes that arise due to other common factors in the control group. In the absence of a control group, the implicit counterfactual is that wellbeing and productivity will not change in the absence of the intervention.

Like any tool, the value does depend upon the quality of the information that it utilises. The reliability of productivity measures is key to evaluating any savings. Direct reliable measures of productivity are hard to obtain, especially in service sector or white collar occupations. Here we have used indirect measure of days of sickness absence or staff turnover. For these to be reliable measures of changes in productivity, we would need evidence collected in a randomized control trial or in a pilot study (as in our CONECT+ example). In the flexi-time and MHFA case studies we only had before and after measures which may be affected by other factors.

In our set of case studies, we only had evidence on changes in life satisfaction in the Goal Setting and planning (GAP) case study. The other cases took the general framework of the CEA and compared the monetary costs with a benefit that was defined by the main metric of interest to the organisation – employee engagement, control over workload and confidence. Although a full CEA cannot be conducted to give us clear evaluations in these cases, the approach still allows the organisation to assess whether the net costs are acceptable in terms of their own goals.

Taking a wellbeing lens to inform policy decision making has been gathering momentum. Governments in New Zealand and Iceland have been leading the way in developing wellbeing budgets. International organisations (OECD) and parliamentary bodies (the UK All Party Parliamentary Working Group on Wellbeing Economics) also recommend that employers measure wellbeing and implement initiatives which enhance employee wellbeing. Clearly, assessing whether a workplace intervention improves wellbeing is a crucial step that needs to be taken before any initiative is scaled up or rolled out. But, is what we spend on improving wellbeing worth it relative to the number of people helped and how much their wellbeing improves? This chapter illustrates how CEA can be used to inform exactly this sort of question. Integrating CEA into business decision making – as illustrated in these case studies - can help us develop our collective knowledge about what works (or what doesn't) and how much it costs. The resulting evidence can help to design better initiatives which will improve wellbeing in the future.

References

All-Party Parliamentary Group on Wellbeing Economics, APPG (2019), A Spending Review to Increase Wellbeing: An Open Letter to the Chancellor. https://wellbeingeconomics.co.uk/wp-content/uploads/2019/05/Spending-review-to-ncrease-wellbeing-APPG-2019.pdf Accessed 3 Feb 2020.

Artz BM, Goodall AH, Oswald AJ (2017) Boss competence and worker well-being. ILR Review 70 (2): 419-450.

BBC (2019) Iceland puts Well-being ahead of GDP in budget. https://www.bbc.co.uk/news/world-europe-50650155 Accessed 3 February 2020.

Bell N, Evans G, Beswick A, Moore A (2018) Summary of the evidence on the effectiveness of Mental health First Aid (MHFA) training in the workplace. http://www.hse.gov.uk/research/rrhtm/rr1135.htm Accessed 4 September 2020.

Bevan S, Wilson S (2019) Mental Health Training for Mangers? A case of caveat Emptor https://www.employment-studies.co.uk/news/mental-health-training-managers-case-caveat-emptor Accessed 4 September 2020.

Boocock M, Phillimore A (2018) Research exposes 'significant issues' with workplace Mental Health First Aid implementation https://www.iosh.com/more/news-listing/research-exposes-significant-issues-with-workplace-mental-health-first-aid-implementation/ Accessed 4 September 2020.

Brooks R (1996) EuroQol: the current state of play. Health Policy 37(1):53-72.

Bryce A, Bryan M, Connolly S, Nasamu E (2020) Workplace Cost Effectiveness Analysis (CEA) Calculator and Guidance Document. What Works Centre For Wellbeing https://whatworkswellbeing.org/resources/how-cost-effective-is-a-workplace-wellbeing-activity/ Accessed 24 September 2020.

Bryson A, and McKerron G (2017) Are you happy while you work? Economic Journal. 127:106-125.

Clark AE, Flèche S, Layard R, Powdthavee N, Ward G (2017) The key determinants of happiness and misery. CEP Discussion Papers (CEPDP1485). Centre for Economic Performance, London School of Economics and Political Science, London, UK.

Coyle D (2019), Measuring Wellbeing. Bennett Institute for Public Policy Cambridge, https://www.bennettinstitute.cam.ac.uk/research/research-projects/measuring-wellbeing/ Accessed 3 February 2020.

Daniels K, Gedikli C, Watson D, Semkina A, Vaughn O (2017) Job design, employment practices and well-being: A systematic review of intervention studies. Ergonomics. 60:1177-1196. DOI 10.1080/00140139.2017.1303085.

Deaton A (2018) What do self-reports of wellbeing say about life-cycle theory and policy? Journal of Public Economics. 162:18-25.

De Neve JE, Ward G (2017) Does Work Make You Happy? Evidence from the World Happiness Report. Harvard Business Review.

De Nooij M, van den Berg M, Koopmans C (2013) Bread or Games?: A Social Cost–Benefit Analysis of the World Cup Bid of the Netherlands and the Winning Russian Bid. Journal of Sports Economics. 14(5): 521–545.

Edmans A (2011) Does the stock market fully value intangibles? Employee satisfaction and equity prices. Journal of Financial economics. 101(3):621-640.

Elliot-Davies M (2018) Demand, capacity and welfare survey 2018: Headline statistics. Police Federation.
https://www.polfed.org/media/14060/demandcapacityandwelfaresurveyheadlinestatistics2018-06-02-19-v1.pdf Accessed 15 Feb 2020.

Fitzhugh H, Michaelides G, Connolly S, Daniels K (2019) What works in wellbeing: a randomised controlled trial of mindfulness in policing.
https://whatworks.college.police.uk/Research/Research-Map/Pages/ResearchProject.aspx?projectid=673 Accessed 4 Feb 2020.

Fitzhugh H, Michaelides G, Connolly S, Daniels K (2019) Mindfulness in policing. A randomised controlled trial of two mindfulness resources across five forces in England and Wales
https://whatworks.college.police.uk/Research/Documents/Mindfulness_RCT_report.pdf
Accessed 3 Feb 2020.

Goldberg DP, William P (1988) A user's guide to the GHQ (1988) Windsor. NFER-Nelson Publications, UK.

Helliwell JF, Barrington-Leigh CP (2010) Measuring and understanding subjective well-being. Canadian Journal of Economics/Revue canadienne d'économique, 43(3), 729-753.

Helliwell J F, Layard R, Sachs J (2012) World happiness report [2012].

HMT (2018) The Green Book: Appraisal and Evaluation in Central Government.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf Accessed 2 Feb 2020.

Kahneman D, Krueger AB, Schkade DA, Schwarz N, Stone AA (2004) A survey method for characterizing daily life experience: The day reconstruction method. Science. 306(5702): 1776-1780.

Kammann R, Flett R (1983) Affectometer 2: A scale to measure current level of general happiness. Australian journal of psychology. 35(2):259-265.

Layard R (2011) Happiness: Lessons from a new science. Penguin UK.

Layard R (2016) Measuring wellbeing and cost-effectiveness analysis using subjective wellbeing. Discussion Paper 1, Measuring Wellbeing Series, What Works Centre for Wellbeing.

Mind (2015) Blue Light Scoping Survey: Police Summary. https://www.mind.org.uk/media/4849788/blue-light-scoping-survey-police.pdf Accessed 24 April 2019.

Morris S, Devlin N, Parkin D (2007) Economic Analysis in Health Care. John Wiley & Sons, Chichester.

O'Donnell G, Deaton A, Durand M, Halpern D, Layard R (2014) Wellbeing and Policy. Legatum Institute, London.

OECD (2020) Measuring Well-being and Progress: Well-being Research. https://www.oecd.org/statistics/measuring-well-being-and-progress.htm Accessed 3 Feb 2020.

Oswald AJ, Proto E, Sgroi D (2015) Happiness and productivity. Journal of Labor Economics. 33(4): 789-822.

ONS (2020) Well-being. Office for National Statistics. https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing Accessed 3 February 2020.

ONS (2011). Initial investigation into subjective well-being from the opinions survey. Office for National Statistics. http://www.ons.gov.uk/ons/rel/wellbeing/measuring-subjective-wellbeing-in-the-uk/investigation-of-subjective-well-being-data-from-the-ons-opinions-survey/index.html Accessed 02 February 2020.

Patey J, Nasamu E, Connolly S, Daniels K, Nayani R, Watson D (forthcoming) Evaluating Multicomponent Wellbeing Strategies: Theoretical and Methodological Insights. In: Wall T, Cooper C (CBE), Brough P (eds) The Sage Handbook of Organisational Wellbeing. Sage.

Pavot W, Diener E (2008) The satisfaction with life scale and the emerging construct of life satisfaction. The journal of positive psychology. 3(2):137-152.

Peasgood T, Wright L (2017) A guide to wellbeing economic evaluation. What Works Centre for Wellbeing. https://whatworkswellbeing.org/product/a-guide-to-wellbeing-economic-evaluation/ Accessed 3rd February 2020.

Preuss H (2004) In The economics of staging the Olympics. A comparison of the Games 1972-2008. Edward Elgar. Cheltenham, UK.

Senik, C. (2011). Is happiness different from flourishing? Cross-country evidence from the ESS. Revue d'économie politique, 121(1), 17-34.

Speight S, Dunatchik A, Wishart R, Mayer M (2019) Parental wellbeing – what is the relationship with time use? NatCen – Social Research that works for society. http://natcen.ac.uk/media/1828810/Parental-wellbeing-relationship-with-time-use-December-event-slides.pdf Accessed 3 Feb 2020.

Squires H, Rick J, Carroll C, Hillage J. (2012) Cost-effectiveness of interventions to return employees to work following long-term sickness absence due to musculoskeletal disorders. Journal of Public Health. 34(1):115-24. DOI 10.1093/pubmed/fdr057.

Stewart-Brown S, Tennant A, Tennant R, Platt S, Parkinson J, Weich S (2009) Internal construct validity of the Warwick-Edinburgh mental well-being scale (WEMWBS): a Rasch analysis using data from the Scottish health education population survey. Health and quality of life outcomes. *7*(1):15-22.
Stiglitz JE, Sen A, Fitoussi JP (2009) Report by the commission on the measurement of economic performance and social progress.

Taylor MF, Brice J, Buck N, Prentice-Lane E (2018) British household panel survey user manual Volume A: Introduction, Technical Report and Appendices. University of Essex, Colchester.

The Treasury (2019) The Wellbeing Budget 2019. Te Tai Ōhanga – The Treasury. https://treasury.govt.nz/publications/wellbeing-budget/wellbeing-budget-2019-html#section-1 Accessed 3 February 2020.

Rose AK, Spiegel MM (2011) The Olympic effect. The Economic Journal. 121:652–677.

White SC (2010) Analysing Wellbeing: a framework for development practice. Development in Practice. 20(2):158-172. DOI 10.1080/09614520903564199

Watson D, Tregaskis O, Gedikli C, Vaughn O, Semkina A (2018) Well-being through learning: A systematic review of learning interventions in the workplace and their impact on well-being. European Journal of Work and Organizational Psychology. 27(2): 247-268. DOI 10.1080/1359432X.2018.1435529.

Whitmore M, Stewart K, Pollard J, van Belle J, Yang M and van Stolk C (2018) Promising practices for health and wellbeing at work. A review of the evidence landscape. RAND Corporation, Santa Monica, Calif., and Cambridge, UK. https://www.rand.org/content/dam/rand/pubs/research_reports/RR2400/RR2409/RAND_RR2409.pdf Accessed 23 September 2020.