

July 2014

Modelling report:

Economic analysis of workplace policy and management practices to improve the health of employees

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Economic analysis of workplace policy and management practices to improve the health of employees

This note sets out the identified and available economic evidence demonstrating the impact of workplace policy and management practices targeting the health of employees on the financial performance of firms. By using a 'logic chain' model this note seeks to identify and illustrate the economic impacts of different types of line management interventions with respect to the health of employees, and the financial impact on firms. This approach highlights where evidence is available, the quality of this evidence and where alternative assumptions and related materials can be used.

This note also presents a set of illustrative ready reckoners which can be used by firms to assess the financial viability of various interventions. These models illustrate the level of effectiveness which various interventions would need to achieve to yield a positive financial return.

The note is structured as follows: Section 1 outlines the context for this work and develops a typology of interventions illustrating their operation. Section 2 articulates and illustrates our approach. Section 3 presents our economic modelling.

1. Context: Workplace Interventions and Employee Health Outcomes

The health of working age people can be determined by a range of genetic, lifestyle, social, environmental and workplace factors. Whatever the causes, ill-health among working people is likely to have an impact on the effectiveness with which they perform their jobs and their availability for work. A challenge for employers is to invest in workplace interventions which will have – all other things being equal – a meaningful and measurable impact on employee health which will then have a positive impact on operational or business outcomes to which it attaches an economic value. These will include attendance, retention, performance (e.g. quality of work, customer satisfaction/retention) and productivity (e.g. output per hour worked). The literature tells us that several workplace interventions might reasonably be expected to have a direct impact on workforce health outcomes, even if the causes of ill-health are not exclusively work-related. These include:

1. **Health and safety interventions.** These may be investments in safety related equipment and facilities which reduce exposure to hazardous materials and other environmental risks (noise, heavy loads, temperature, light etc.). These will often accompanied with training (e.g. manual handling) and supported by clear policies, practices, risk-assessment and other regulatory interventions. Health and safety interventions can prevent and reduce both exposure and risk of injury.
2. **Ergonomic interventions.** The physical demands of work can increase the risk of injury or, over time, the development of musculoskeletal disorders (MSDs). Over 40 million EU workers have MSDs¹ which are caused by their work. Preventative adjustments by employers to workstation design and the use of assistive technologies can reduce the risk of repetitive movements and strain caused by twisting, stretching or bending.
3. **Line manager awareness.** Several employers are investing in training focused awareness-raising among line managers in the field of workplace health (e.g. BT, EDF Energy). These relate to increasing awareness of the early symptoms of mental illnesses such as depression and anxiety and are intended to accelerate early referral and to support efforts to re-design work (i.e. job demands, working-time, phased rehabilitation) in ways which support job retention and return to work. Some employers are also adopting similar approaches in relation to MSD risks.
4. **Early referral & intervention.** Workplace practices which encourage and support early interventions which allow early referral and diagnosis can help maximise job retention and rehabilitation, and prevent short-term absences becoming long-term absence or permanent

¹ See for example <https://osha.europa.eu/en/sector/agriculture/msds>

job loss. Thus, access to an employer-funded Employee Assistance Programme (EAP) can help employees self-refer to a source of support if they have a health or other problem which might affect their attendance, performance or productivity. Similarly, if an employer provides access to an Occupational Health service then early interventions of referrals to other services (e.g. physiotherapy) can be managed & coordinated. OH services can also ensure that the process of returning to work is managed in a way which matches job demands to the functional capacity of the employees which, in turn, returns them to full productive capacity without relapse as soon as possible.

5. **Lifestyle change interventions.** For employees who wish to make lifestyle changes which are likely to have positive health benefits, some employers invest in interventions which support them. Thus, smoking cessation, weight loss, increased physical activity, alcohol reduction and healthy eating interventions, if sustained, will have positive health benefits and may be worth employer support.

Taking this broad perspective reaches beyond the initial terms of reference for this project, but reflects the advisory group's broad interest in this agenda. If well designed and effectively implemented, each of these groups of interventions can have a positive impact on employee health outcomes either by preventing ill-health or by providing rapid access to appropriate medical interventions.

This paper looks to illustrate comparisons between the costs and benefits of these interventions. The financial costs of these interventions include new equipment (in the case of health and safety and ergonomics) and training activities (especially in the case of line manager awareness) as well as the costs associated with changing workplace practices and its associated upheaval. The research looked to identify cost estimates and benchmarks for each of the five types of intervention above. Our assessment of benefits focuses on financial impact at the firm level, achieved through reduced staff absence, reduced staff turnover and increased productivity.

2. Approach

Our research has not identified any study which develops both reliable cost estimates and analysis of financial benefits to individual firms from workplace policy and management practices targeting the health of employees. However, by using a logic chain approach, we have been able to build up a picture of costs and benefits by combining multiple sources.

A logic chain framework is built around consideration of attributable relationships between six elements of a project or intervention²:



1. **Problem** – What challenges are the interventions designed to target? In this case the problem relates to the negative impact (loss of output) on the business caused by health issues of its employees.
2. **Inputs** - What time, money, resources, etc. do you have at your disposal? What resources would be allocated to the interventions? For the types of interventions covered here, it is important to estimate both direct costs (such as the cost of hiring a training provider), and the indirect costs (such as the additional time required by managers to support workers in adapting their role to handle a health-related condition or disability such as a musculo-skeletal disorder. It is also necessary to consider separately both incurred costs and opportunity costs, such as other organisational initiatives not pursued because of spending the allocated funds on line manager interventions to improve workplace health.

However, the evidence base on costs in this area is very poor, reflecting both limited identification of resources involved and their unit costs. Extrapolating from the limited evidence base and with a high degree of uncertainty limits the accuracy of our estimates. This gap could be usefully addressed in future research which could focus on either building additional benchmarks from case studies, or the greater incorporation of cost estimates into

² For further information on the logic chain approach please see HM Treasury (2011) The Magenta Book: Guidance for evaluation, available from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220542/magenta_book_combined.pdf

research into the effectiveness of these interventions. However, for illustration, we have drawn from a wider evidence base to generate a number of intervention cost examples:

- **Costs of Health & safety interventions.** The Health and Safety Executive has gathered a number of case studies from across sectors and occupations detailing the costs associated with various interventions (HSE (2006)). These illustrations include:
 - a. Staff time to participate in training courses
 - b. Purchase of equipment
 - c. Overtime payments
 - d. Manufacturing costs for new equipment.

However, the heterogeneity between cases suggests that it is not possible to identify meaningful illustrative costing data in this area.

- **Line manager awareness.** Mental health first aid is a well-known workplace intervention to train managers to spot the early signs of depression etc. We have identified a number of typical examples of the costs³.
- **Lifestyle change interventions.** Though beyond the scope of the systematic reviews, the guidance NICE has developed on the costing of workplace smoking cessation interventions offers some illustrative benchmarks. These include providing NRT chewing gum at a price of £150 per employee, or the costs of providing paid leave to attend group sessions at £12.55 per hour (NICE (2007)).
- **An alternative approach** to thinking about the costs of interventions would be to model changes in the average costs associated with occupational health within an organisation. For example, the Occupational Health Clinical Effectiveness audit (Royal College of Physicians) found that the annual per capita costs of occupational health within the NHS ranged from £51 to £93, with an average of £70. One approach would be to consider the potential gains associated with a 10%, 20% or 30% increase in this spending.

3. **Activities** – What did the organisation, the department, or team actually do? Were unplanned things done? In this case this relates to the introduction and the nature of the specific interventions. i.e. The five activities identified in the context section above include: investments in health and safety equipment and user training, investments in ergonomic

³ . For example: A 12 hour course – run over 2 days – costs £1500 (<http://www.restore.org.uk/our-services/training> accessed 15/05/2014). The Mental Health Foundation charge £200 per participant for a 1 day event (<http://www.mentalhealth.org.uk/our-work/training/mental-health-awareness-training/mental-health-awareness-training-course-details/> accessed 15/05/2014).

furniture and machines and implementing related policies, management training and changes as well as implementing changes in a broad range of workplace policies and practices.

4. **Outputs** – what happened as a result of the activities? Which of these can be quantified? In this case this revolves around the assessment of the implementation of the initiatives. i.e. did they achieve their safety, training, or workplace practice objectives? In this case these are the changes in the health and wellbeing of the workforce. As illustrated below these include: fewer injured workers, workers who perceive their wellbeing to be higher, and higher levels of staff-satisfaction.
5. **Outcomes** – What longer term changes have happened as a result of these outputs? How have changes in health and wellbeing impacted on the firm's levels of labour turnover, absence rates and staff productivity?

For the logic chain framework the key question here is what has been the **effectiveness of the intervention**. How large an impact have the interventions had through changes in the health and wellbeing of the workforce? The idea of effectiveness used in this paper therefore reflects areas three, four and five (activities, outputs and outcomes).

6. **Impacts** - The things that are happening as a result of the interventions. And are these what was intended? To what extent have these interventions tackled the original economic problem? In this case these relate to the financial implications of changes in the outcome indicators above. Our calculations are based on evidence in three areas:
 - a. Labour turnover – estimated based on typical costs associated with hiring new staff.
 - b. Absence rates – estimated based on standard costs associated with staff absence.
 - c. Productivity – an important financial variable for most firms.

These impacts may be causally linked. For example, there appears to be a relationship between high absence rates and the subsequent departure of employees from a firm. An initiative which brings down absence rates could also have an indirect impact on staff turnover. These effects complicate the causal logic chain, but have received limited attention by researchers to date. It is important to note that the implication is that any study which looks at just one impact may under-estimate the scale of the effect.

This logic chain model is illustrated in the figure overleaf:



Health and safety interventions

- Investments in equipment
- Related training
- Developed processes and practices

A safer working environment resulting in:

- Fewer injuries in the workplace

- Reduced staff absence



Ergonomic interventions

- Investments in furniture and equipment
- Associated policies and practices

An improved working environment resulting in:

- Injuries prevented
- Quicker and more sustained return to work

- Reduced staff absence



Line manager awareness

- Training of managers
- Implementing new management practices

Stronger awareness of issues amongst line-managers resulting in: Better support for staff & a stronger ability to adapt role. This includes changes in job demands, deadlines etc.

Resulting in

- Higher levels of staff satisfaction / engagement
- Lower levels of psychological distress
- Improved health

- Reduced staff absence
- Lower staff turnover
- Improved productivity of workers
- Reduced presenteeism



Early referral and intervention

- Training of managers
- Implementing enhanced referral systems (either self referral or manager based)

Resulting in

- Health issues becoming less severe
- Health issues resolved more quickly
- Impact of health issues on work activities better managed

- Reduced staff absence
- Lower staff turnover
- Improved productivity of workers



Lifestyle change interventions

- Costs depend on specific initiatives, schemes or changes in choice architecture

Depending on interventions can result in staff with more / better:

- Energy and vitality
- Hydration
- Sleep
- Concentration

Interventions target long-term health rather than particular workplace-relevant health conditions. We would therefore expect direct health effects on staff absence, turnover and productivity to be lower.

However, indirect effects through increased job satisfaction may be high.



Limitations to the approach:

While we think this is the most appropriate way to approach this research, we have identified a number of issues and limitations which it has been difficult for us to respond to and therefore we feel are worth flagging:

- Limited cost data – as illustrated above it is difficult to develop standardised cost measures for many types of intervention. Where these do not exist we have sought to use a ‘what if’ approach to our modelling.
- Weak controls and stratification – Different organisations may respond in a diverse range of ways to similar interventions. Health and wellbeing interventions around ergonomics, for example, might appeal most to companies with a greater proportion of older workers. Those on high incomes may respond differently to those on low incomes. Levels of trust and quality of relationships with various levels management could also conceivably influence the performance of such schemes. Many forms of economic analysis rely on sophisticated approaches to either control for or consider a broad range of specifics and factors such as:
 - Age
 - Income
 - Occupation
 - Industry
 - Baseline levels of staff health / absence / turnover / productivity etc.

However, because our approach involves combining multiple pieces of evidence from different sources to tell a single story, and because the story is likely to change from firm to firm, this level of sophistication is not possible. Nevertheless, we hope that any businesses looking at these models would be able to consider how these factors might modify the baseline results in their own organisations. We have therefore set up the models with multiple additional fields which users can vary themselves.

- Reporting bias – Companies which deliver successful health oriented interventions may be more willing to share research into the performance of these schemes. This could skew the research base towards highly effective schemes which achieve their objectives. To form a balanced and reasonable view of the potential effectiveness of a scheme it is important to be able to draw on the full range of performance. If the literature reports predominantly those studies where the intervention has a positive effect then, overall, the results will be biased upwards. Interventions may not be as effective or as cost effective for firms as the literature would imply.

One way for companies using our models to handle this issue might be to think of the results as reflecting successfully implemented initiatives, and incorporate an organisation specific risk factor into to their calculations reflecting the likelihood of establishing successful interventions in their particular organisations.

- Interaction effects – there is potential for interactions between the outcome variables identified above. Isolating the effect of an intervention on productivity rather than staff absence or staff turnover could be particularly challenging. For example an intervention which reduced staff absence might enable teams to work better together, driving up productivity. The modelling presented in the next chapter seeks to mitigate this risk by focusing on direct effects.

3. Economic modelling

The aim of the calculations presented in this section is to illustrate the evidence presented in the annex by developing worked examples of the logic chain framework. Where possible they draw together evidence on costs of interventions, their effectiveness and their financial impact.

Of these three measures the strongest data were available for financial impact of staff absence or turnover. Data on costs and effectiveness appear to be less complete. For this reason the models are each presented as a ‘what-if’ scenario. They consider two of the three areas (costs and financial impact or effectiveness and financial impact) and estimate a break-even figure for the unknown variable. This is a figure which managers could think of as a spending ceiling (the maximum level of spending for which they could expect a positive net return), or a minimum effectiveness level (the minimum performance impact that a potential scheme must achieve to cover its costs).

Each model considers staff absence, staff turnover and productivity in isolation. They do not consider the potential for combined effects. However, this is something which a manager looking at these models could readily infer.

These models are based on estimates of costs and benefits per 1,000 staff. This was selected as a scale at which the estimates were easy to understand, and matches the approach used in relevant previous studies.⁴ However, the models presented here are based on the assumption of constant returns to scale as there are no data available on the relative costs or effectiveness in large or small schemes. This means that the results can be presented just at the level of the individual, per 10 or per 100 workers, and the spreadsheet model includes an option to change the scale of analysis.

It is intended that organisations considering introducing new initiatives in this area can use these models to assess their potential viability. The accompanying spreadsheet tool contains a range of benchmark values drawn from the literature, such as typical staff turnover and costs of absence. The spreadsheets have been designed to allow firms to replace these benchmark values with data relating directly to their organisation and the schemes which they are considering.

⁴ Such as Boyd, R. Hunt, A and Ortiz, R. (2007)

Modelling time periods

The model allows the user to select between a one to five year analysis timeframe. The versions presented in this note operate on a three-year reference period. This time period was selected as it was seen as a 'goldilocks' reference – short enough for the returns to appear immediate, but long enough for recurring and lasting benefits to show through.

This modelling also draws on the consultants' judgement to differentiate between upfront costs (such as introducing a training initiative) and ongoing costs (such as higher spending on health and safety equipment due to a new policy). This also depends on a judgement about the phasing of benefits. How quickly could a line manager's behaviour be expected to shift? Would this effect dissipate over time? At what rate would turnover amongst supervisors reduce the effectiveness of this training?

Costs and benefits that might arise/accrue in future years have been adjusted using a net present value calculation. For this a discount rate of 8% has been used. This figure reflects a typical rate used by many businesses, it closely approximates to the costs of borrowing (an important consideration if the firm is raising debt to fund these interventions) and is a rate proposed by the Health and Safety Executive when considering the payback periods of various interventions.

<http://www.hse.gov.uk/research/rrpdf/rr491.pdf>

We are aware, however, that many firms may use a different discount rate – for example the consultants have experience working with property firms who use discount rates as high as 19%. For this reason this is a variable which users can change in the spreadsheets.

Model 1: Using costs and benefits of a mental health training initiative to estimate a break-even effectiveness rate

This case illustrates the costs and benefits associated with a training intervention to improve management awareness and understanding of how to support the health conditions of employees.

Costs

To estimate costs, we assume:

- Typical course fees – drawing on the examples included in the annex, a one-off fee of **£150**
- Staff time – Based on a typical course duration of **1.5 days** and a staff absence cost of **£120 per day**. This figure draws on data from the Sainsbury Centre for Mental Health (2007) and is discussed in the annex.
- Opportunity costs – The opportunity cost of staff time is assumed to be equivalent to the staff time-cost above. We have not sought to develop any estimates of organisational opportunity costs (i.e. other initiatives forgone because of constraints on organisational capacity to handle multiple

initiatives) or the costs of implementing the new approaches learned in the training as we have not been able to identify any benchmarks here.

Benefits

The model calculates three alternative mechanisms for financial benefit:

1. Staff absence: Cost estimates from Boyd, R. Hunt, A. and Ortiz, R (2007⁵) of **£42,783** per 1,000 workers used. The spreadsheet then calculates the percent change in this figure required to generate a saving over three years with a net present value of £33,000 per 1,000 workers for a given discount rate (8% used as a default). This is presented in the model as the break-even point. Any higher cost effectiveness rate would imply that the investment had paid off through a reduction in staff absence
2. Staff turnover: Analysis of staff turnover draws on the **£11,625** estimate of the individual cost for hiring a new member of staff identified in data from the Sainsbury Centre for Mental Health (2007). This benchmark is discussed in the annex below, where this figure was identified as the most robust existing benchmark. This cost per worker is combined with the latest **11.9%** estimate of staff turnover from the CIPD (2014) Resource and Talent Planning survey, also identified in the annex below. As above, the spreadsheet calculates the percent change in this figure required to generate a saving over three years with a net present value of £33,000 per 1,000 workers for a given discount rate.
3. Productivity: The productivity figure is calculated using an economy-wide estimate of **£44,100** from the Office for National Statistics of output per worker⁶. As with the other models the spreadsheet calculates the change in productivity that would be required to meet the costs of the intervention.

The model includes analysis of staff absence, staff turnover and worker productivity. These three effects can be combined to see the total impact of any given intervention. However, when doing this it is important to ensure that any figures used relate to the direct impact of the workplace intervention, ignoring any secondary effects or interactions. There is relatively low risk of overlap when considering staff absence and turnover. However, there could be interactions between staff absence and productivity or staff turnover and productivity. Increases in productivity could be a combination of effects including indirect efficiencies gained, increased stability associated with lower staff absence rates and turnover, as well as the direct improvement in performance arising from improved health and wellbeing. It is important therefore to exercise caution when looking at productivity and to focus only on the potential direct impact of a scheme on worker output rather than indirect or secondary effects such as changes in productivity that arise as a result of changes in staff absence rates.

⁵ Boyd R, Hunt A and Ortiz R (2007). A review of cost-effectiveness literature on public health interventions that promote mental wellbeing in the workplace. Report to PHIAC, NICE: London.

⁶ Latest productivity estimate for 2010 drawn from ONS (2014) Labour Productivity, Q4, 2013

The benchmark data used in this model could easily be adapted to use any alternative benchmark costings reflecting other types of scheme. It would be straightforward for an employer to select industry- or company-specific data rather than the national averages presented above. For example, they could tune the model by inserting their own view on productivity per worker in their company, their own estimates of how much they believe hiring new staff costs their organisation, and industry/occupation specific data on the costs of staff absence.

Estimating the likely cost of the intervention

This component seeks to estimate the likely costs of an intervention. This example is populated with benchmark figures for a training course.

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	
Direct costs	£150					i.e. additional spending incurred (Note 1)
Opportunity costs	£180					Such as the value of foregone output while individuals are training (Note 2)
Total cost per participant	£330					
Net Present Value (NPV) of this	£330					
Staff to supervisor ratio	10					(Note 3)
Cost per beneficiary	£33.00					
Cost per 1,000 staff	£33,000					

Reduction in staff absence

This component seeks to estimate the required impact of the programme on staff absence for the intervention to cover its costs. This draws on an estimate of the whole economy costs of staff absence, which should be replaced with an organisation specific value.

Annual cost of absence per 1,000 worker:	£42,783	This benchmark draws on a human capital approach to costing, however the right approach will vary between different organisations and roles (Note 4)				
NPV of intervention cost per 1,000 staff	£33,000					
Gain each year to break even	£ 11,857	£ 11,857	£ 11,857	£ -	£ -	Please note this is a % change, rather than a percentage point reduction
Implied % change in staff absence	27.7%					

The implication is that a training intervention could be expected to yield a positive return through a reduction in staff absence if it could reduce this by 28% or more. i.e. to bring the annual cost of absence per staff below £31,000

Reduction in staff turnover

This component seeks to estimate the required impact of the programme on staff turnover for the intervention to cover its costs. This draws on an estimate of staff turnover from across the economy and the typical costs of replacing staff. Again, it would be sensible to replace these benchmarks with an organisation specific value.

Staff turnover	11.9%	The no. of employees who leave in a year divided by the total workforce (
Cost per hire	£11,625	The organisational outlay including hiring costs and time spent getting up			
Cost of turnover per 1,000 workers	£1,383,375				
NPV of intervention cost per 1,000 staff	£33,000				
Gain each year to break even	£ 11,857	£ 11,857	£ 11,857	£ -	£ -
Implied % change	0.9%				

The implication is that a training intervention could be expected to yield a positive return through a reduction in staff turnover if it could reduce this by 0.9% or more. i.e. to below 11.8%

Increase in productivity

This component seeks to estimate the needed impact of the programme on productivity for the intervention to cover its costs. This draws on an estimate of worker productivity from across the economy and the typical costs of replacing staff. Again, it would be sensible to replace these benchmarks with an organisation specific value.

Average productivity per worker	£44,100	(Note 7)			
Output per 1,000 workers	£44,100,000				
NPV of intervention cost per 1,000 staff	£33,000				
Gain each year to break even	£ 11,857	£ 11,857	£ 11,857	£ -	£ -
Implied % change	0.03%				

The implication is that a training intervention could be expected to yield a positive return through an increase in productivity if it could increase this by 0% or more. i.e. to above £44,112

Notes:	
Note 1	This benchmark is based on a typical course fee for a 1.5 day course
Note 2	This benchmark is based on a typical course duration of 1.5 days and a staff absence cost of £120 per day. This figure draws on Sainsbury Centre for Mental Health (2007)
Note 3	There is no estimate of a whole-economy staff-supervisor ratio. In the consultants' experience, this would be as low as 5:1 in many professional organisations and as high as 20:1 in an environment such as a call centre. It is the consultants' belief that 10:1 would be a reasonable average.
Note 4	Whole economy estimate of staff absence costs drawn from Boyd, R. Hunt, A. and Ortiz, R. An economic analysis of workplace interventions that promote mental wellbeing in the workplace, IOM. The report accompanying this model contains a list of industry and occupation specific benchmarks
Note 5	2013 UK figure drawn from CIPD (2014) Resource and talent planning survey
Note 6	Benchmark drawn from Sainsbury Centre for Medical Health (2007)
Note 7	2010 figure drawn from ONS (2014) Labour productivity, Q4, 2013

Model 2: Using data on the financial benefits of interventions to identify a maximum spend per 1,000 workers

Model 2 uses benchmark data on the effectiveness of various interventions to identify a cost ceiling for spending on interventions targeting the health of their employees – a break-even figure, beyond which a manager could not anticipate yielding a positive rate of return from their investment. Unlike model 1 it is not possible to use a single tool to consider all potential benefits. This is because there are limited data on the combined effectiveness of individual interventions with respect to the multiple outcome measures of staff absence and turnover. However, as with model 1 above it would be appropriate for a manager to add together the two components below for an initiative in which staff absence and staff turnover can be regarded as being independent of each other. Because the review found no reliable benchmarks for the direct effect of such interventions on productivity, this has not been modelled here. Nevertheless we have included the potential to model this within the spreadsheet where independence could be reasonably assumed.

Model 2, Case 1: Reduction in staff absence due to a workplace health promotion programme

This illustration draws on an effectiveness rate for a wellness programme, Aldana (2005). The programme involved multiple individual schemes including encouraging staff to brush their teeth, a holiday weight challenge and staff commitments to sleeping 7 to 9 hours each night.

Model 2 draws on the assumptions used in model one with regard to the cost of staff absence per 1,000 workers. This is multiplied by the estimated reduction to identify an annual saving per 1,000 staff. This is also a break-even point, a maximum cost figure for which a manager could expect an intervention to yield a positive rate of return.

Reduction in staff absence

This component uses benchmark data on the effectiveness of interventions targeting reductions in staff absence to identify a maximum cost for an intervention which could reasonably be expected to be recouped.

Reduction due to interventions	20%	The overall effectiveness of the intervention (Note 1)				
Cost of staff absence per 1,000 workers	£42,783	The typical organisational cost of absence (Note 2)				
		<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>
Implied necessary cost reduction per 1,000 workers	£ 3,074	£ 3,074	£ 3,074	£ -	£ -	

The implication is that a comparable intervention could be expected to yield a positive return through a reduction in staff absence if it costs less than £3,100 per 1,000 workers

Model 2, Case 2: Reduction in staff turnover associated with enhanced supervisor support

This case draws on two estimates of the change in staff turnover resulting from improved support from supervisors. This example draws on an evidence paper identified in the systematic evidence reviews and listed in the meta-analysis table included in the annex.

The spreadsheet then applies this reduction to the same cost of staff turnover figure used in model 1 above.

Reduction in staff turnover

This component uses benchmark data on the effectiveness of interventions targeting reductions in staff turnover to identify a maximum cost for an intervention which could reasonably be expected to be recouped.

Typical reduction from intervention	64%	The overall effectiveness of the intervention (Note 3)				
Cost per hire	£11,625	The organisational outlay including hiring costs and time spent getting up to speed (Note 4)				
Staff turnover	11.9%	The no. of employees who leave in a year divided by the total workforce (Note 5)				
Cost of turnover per 1,000 workers	£ 1,383,375					
		<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>
Implied necessary cost reduction per 1,000 workers	£ 318,101	£ 318,101	£ 318,101	£ -	£ -	

The implication is that a comparable intervention could be expected to yield a positive return through a reduction in staff turnover if it costs less than £318,100 per 1,000 workers

Notes:

Note 1	Benchmark drawn from Aldana (2005)
Note 2	Benchmark is a whole economy estimate of staff absence costs drawn from Boyd. R. Hunt, A. and Ortiz, R. An economic analysis of workplace interventions that promote mental wellbeing in the workplace, IOM
Note 3	Benchmark drawn from Braun et al (2013)
Note 4	Benchmark drawn from Sainsbury Centre for Medical Health (2007)
Note 5	Benchmark is a 2013 UK median figure drawn from CIPD (2014) Resource and talent planning survey

Reflections

This review presents the available evidence base linking workplace interventions targeting employee health and their financial impact at the level of the firm. By taking a logic model approach it is possible to build up and combine evidence from different sources to illustrate this narrative. It has also made it possible to offer an economic modelling framework which businesses can use when considering alternative options for interventions.

Annex: Evidence and analysis

Illustrating the effectiveness of interventions

The table overleaf represents a meta-analysis of the evidence included within the systematic review papers already presented to NICE. These provide a strong source of evidence on the outputs from interventions i.e. their health benefits. The evidence is less strong on the effectiveness of interventions with respect to broader outcome measures (i.e. business Key Performance Indicators such as absence and staff turnover). For this reason we have conducted a broader evidence review, the results of which are presented beneath the table.

Key to table:

- OR = Odds ratio
- CI = Confidence interval at 95%
- B = Regression coefficient
- r = Pearson correlation coefficient
- $p < 0.1 / 0.01 / 0.001$ = Indication of confidence of regression coefficient
- R^2 = coefficient of determination
- F = F-test

Table 1: Meta analysis of evidence covered in the systematic review research

Author (date) (quality rating)	Sample description	Sample size	Country	input variable	outcome variable	Effect size (positive)
Choi and Johantgen (2012) (+)	Nursing assistants	2,254	USA	Supportive supervision	Job satisfaction	OR = 4.09 CI = 3.2 – 5.2
					Intention to leave	OR = 0.53 CI 0.43 – 0.65
Schmidt (2013b) (+)	Employees in a professional services company	285	Germany	Transformational leadership	Psychological strain	B = .33 p<.01
Berkman et al (2011) (+)	Care home assistants	392	USA	Manager support with work/family conflict	Cardiovascular disease risk	OR = 2.11 CI = 0.9 – 4.9
Beutell (2010) (+)	Nursing assistants	3,017	USA	Supervisor support	Work interfering with family	B = .38, p<.01
Braun et al (2013) (++)	University employees	360	Germany	Supervisors' transformation leadership	Job satisfaction	B = .64, p<.01
					Team performance	B = .36, p<.05
Brunetto et al (2011) (+)	Nurses Police officers	164	Australia	Supervisor-employee relationship (LMX)	Wellbeing	R ² = .425
		178				
Campbell et al (2013) (++)	Social workers	343	USA	Supervisor support	Emotional exhaustion	B = -0.22, p<.01
Frenkel et al (2013) (+)	Employees in 10 firms in four sector	1,553	Australia	Supervisor support	Job satisfaction	B = .32, p<.01
					Intention to leave	B = 0.45, p<.01
Giallornardo et al (2010) (+)	Nurses	170	Canada	Supervisor authentic leadership	Job satisfaction	R ² =0.2 p<0.01
Gilbreath and Karami (2013) (+)	Hospital employees	149	Australia	Negative supervisor behaviour	Presenteeism	B = -0.36, p<.01
Munir et al. (2012) (+)	Elderly care staff	188	Denmark	Transformational leadership	Job satisfaction	B = .30, p < .01 F = 2.26, df = (6,119), p < .01 R ² = .10
					Psychological wellbeing	B = .20 p < .05 F = 1.74 df = (6,117), p not significant R ² = 0.08
Nyberg et al. (2009)	Male employees in	3,122	Sweden	Managerial leadership	Ischemic heart disease	HR = 0.63

(+)	a range of companies					CI = 0.46 to 0.86, p = 0.005.
Rubin and Brody (2011) (+)	Adult employees	3,504	USA	Relational managerial citizenship	Job satisfaction	B = .271, SE = 0.026
					Mental health	B = .179, SE = 0.030
				Operational competence	Job satisfaction	B = .276, SE = 0.026
					Mental health	B = .093, SE = 0.030
				Family supportive behaviours	Job satisfaction	B = .076, SE = 0.028
					Mental health	B = .096, SE = 0.032
				Ethical behaviours	Job satisfaction	B = .196, SE = 0.024
					Mental health	B = .084, SE = 0.28
Schreuder et al. (2011) (+)	Nurses	570	Holland	Selling leadership style	Number of days of sickness absence	OR = 0.60, CI = 0.41-0.84
					Short episodes of sickness absence	OR = 0.76, CI = 0.65-0.85
					Delegating leadership style	Number of days of sickness absence
					Short episodes of sickness absence	OR = 2.44, CI = 1.26-4.71
					Telling leadership style	Number of days of sickness absence
					Short episodes of sickness absence	OR = 3.02, CI = 1.52-5.98
					Top et al. (2013) (+)	Hospital personnel
Volmer et al. (2011) (+)	Employees in a technology company	378	Germany	Supervisor-employee relationship (LMX)	Job satisfaction (time 1)	r = .50, p < .001
					Job satisfaction (time 2)	r = .27, p < .01

Studies rated + or ++
Results cover all employees in the sample
Results refer to direct relationship between the input variable and output variable

Job satisfaction and labour turnover

Analysis by Barber, Hayday and Bevan (1999) involved a case study of a large retail organisation – dataset of 65,000 employees and 25,000 customers, looking at absence data and turnover over two years. The study sought to construct a causal path model, beginning with a full model that explored all direct and indirect links between selected variables (including employee satisfaction, commitment, company culture, turnover, customer satisfaction and business performance) and then gradually narrowing this down based on those relationships which were found to be statistically significant. The turnover variable did not show a statistically significant relationship to other major outcome variables and was therefore excluded. The major influence in the case study sample was found to be local labour market conditions. The authors suggested the lack of a relationship to other variables may mean there were other influences affecting turnover not captured in the data, or that there were problems with data reliability (p.20-1).

Job satisfaction and absence rates

Barber, Hayday and Bevan (1999) found job satisfaction (termed 'employee commitment') had only a weak, if statistically significant, negative impact on rates of absenteeism. However, this effect was subject to substantial regional variation, with the relationship in Sears stores in the south being much less pronounced than that found in other regions (p.23).

Bevan (2010, 13): There is a growing body of evidence that – at a psychological level – many of the factors associated with sickness absence also affect employee retention. Employees who feel demotivated or disengaged from their work, or who find aspects of their work stressful, or who have poor working relationships with colleagues, or who feel their job is not worthwhile are more prone to periods of absence and are more likely to resign their posts. He also highlighted several organisations that have managed to achieve very high retention rates (i.e. above 80%) among female employees who have taken maternity leave. In fact, BT's work-life balance policy created a £3m saving in recruitment costs in the year to March 2003 since 98% of women returned after maternity leave. Not only does this avoid incurring replacement costs but it retains expertise, knowhow and often high-value customer relationships (p.13). BT's policy focused on more flexible, home-based working. They calculated that this not only saved the company £6000 in overhead costs for each homeworker created, but that there was an average increase in productivity for these workers of 21%, worth at least £5-6 million for the company's bottom line.⁷

Finally, Bevan points to the work of Michael Marmot (Marmot, 2004), who provides evidence that employees in jobs which are less likely to generate commitment (lower status jobs) have worse health. (p.14)

Schreuder et al (2011) investigated the impact of managerial leadership on sickness absence rates in

⁷ Caroline Waters, Flexibility Pays, Accessed 30/ 05/ 14: <https://www.employersforcarers.org/business-case/what-employers-say/item/92-bt-senior-managers-view>

nursing through a case study in the Netherlands. They distinguish between the relationship-oriented democratic ('selling') leader, who addresses the feelings, the attitudes, and the satisfaction of team members and the task-oriented autocratic ('telling' or 'delegating') leader, who focuses on the problem at hand rather than the personal satisfaction of the group members (60).

Unadjusted results reflecting three leadership styles:

1. The leadership style, characterised by high relationship and high task behaviour (selling style on a 2 x 2 matrix covering high / low task behaviour and relationship behaviour), was *inversely* associated with the number of days of sickness absence (OR = 0.60, 95% CI = 0.41–0.84) and short episodes of sickness absence (OR = 0.61, 95% CI = 0.48–0.72).
2. Low relationship and low task behaviour (delegating style) was *positively* related to the number of days of sickness absence (OR = 2.82, 95% CI = 1.50–5.29) and short episodes of sickness absence (OR = 2.40, 95% CI = 1.29–4.46) compared with high relationship and high task behaviour.
3. A low relationship and high task (telling) leadership style was also *positively* associated with the number of days of sickness absence (OR = 2.68, 95% CI = 1.36–5.27) and short episodes of sickness absence (OR = 3.02, 95% CI = 1.52–5.98). (62)

However, it is important to flag that these unadjusted associations explained only 8% of the variance in days of sickness absence, 10% of the variance in short episodes of sickness absence, and 2% of the variance in long episodes of sickness absence. However, this does not necessarily diminish the significance of the finding, especially when averaged out across a large workforce.

Adjusted results:

Ratios were constructed to indicate the quality of the job. The Demand to Control ratio compared a score for job demands with a score for control and autonomy. The Effort to Reward ratio measured the score for work efforts against the score for rewards (p. 61). After adjustment for seniority, hours worked, general health, Demand to Control (DC) ratio, and Effort to Reward (ER) ratio, the relationships weakened, although an inverse relationship (OR = 0.76, 95% CI = 0.65–0.85) remained between the selling leadership style and the number of short episodes of sickness absence. The delegating leadership style also remained positively associated with the number of days (OR = 2.62, 95% CI = 1.36–5.09) and short episodes (OR = 2.44, 95% CI = 1.26–4.71) of sickness absence after controlling for seniority, hours worked, general health, DC ratio, and ER ratio.

The study found that relationship-oriented leaders had lower short-term absence among their nursing staff. It estimated leadership style explained up to 10% of the variance in absence (64). Short-term absences were assumed to reflect "voluntary" absenteeism (that is absence from work without medical impairments). These results "show the importance of nurse manager skills and behaviours in influencing understaffing and therefore the productivity, efficiency, and quality of nursing" (64). The authors suggested organisational efforts to develop relationship-oriented leadership styles among managers.

The major limitation of the study is its cross-sectional design, precluding prospective associations and causal relations. Also, the subjects in the study population were working in the hospital for at least 3 years and may be a selection of nurses who are healthy and enjoy their work, work conditions, and working environment.

Accidents and injuries and absence rates

Bevan (TWF, 2010, 12) highlights the issue of shift work and its associated risks; research suggests that accidents attributable to fatigue cost UK employers up to £240m each year (Danna and Griffin, 1999). Other research has demonstrated that older workers, those in poor quality jobs, those with who take less exercise and those who smoke are also more vulnerable to sleep or concentration problems which increase the risk of accidents.

CBI (2014) highlighted the effectiveness of the John Lewis Partnership's 'early intervention' model when dealing with potential musculo-skeletal issues. Employees can make requests for treatment while still at work and all requests are processed through a central hub, where the case is assessed and a treatment pathway recommended – half of participants are still at work whilst being treated. In the first eight months of the new service, partnership health services has saved 23,000 days of production for the partnership by fast-tracking employees. Employees themselves have reported a 50% reduction in pain, a 21% increase in their movement and increased productivity of 1.1 days per person per week. (20)

Health and wellbeing and labour turnover

Analysis by PWC found that in 18 of 55 cases of firms introducing wellness interventions they reported a positive impact on staff turnover (i.e. a reduction). Reductions in staff turnover ranged from 10% to 25% with the average around 20–25%. This study, however, relies on self-reported assessments of gains and the attribution to the programme by the case study firm itself. PWC (2008), Building the Case for Wellness.

Health and wellbeing and absence rates

Analysis by PWC found that 45 out of 55 case study firms reported a reduction in days lost through sickness absence as a consequence of wellness interventions. This study, however, relied on self-reported assessment of gains by firms and the reductions in lost days varied widely over the evaluation period – (from 10% to 97% with a reported average of 30%–40%). PWC (2008), Building the Case for Wellness.

Aldana's (2005, 136) analysis of the Washoe School District Wellness Programme (in which participants could sign up to voluntary schemes to increase physical activity, eat better and get more sleep) found a 20% difference in absenteeism rates between participants and non-participants. However, given participation was voluntary, potential for selection bias cannot be ruled out.

Chapman (2005, 9) carried out a meta-review of studies on workplace health interventions. Of 25 studies covered, he found on average a 25% change in sick leave absenteeism and an average cost-benefit ratio of 3.5. He suggests this offers strong evidence of the benefits of these types of programmes.

CBI (2014, p.24) highlighted London Overground's health and wellbeing approach as being both targeted and holistic, focusing on five key wellbeing work streams:

- Promoting a healthy lifestyle – encouraging 'small' steps
- Managing employee relations – dealing with issues fairly and promptly
- Addressing health and safety – self reporting and employee working groups
- Utilising occupational health (OH) – helping employees back to work
- Engaging the trade unions – working closely to implement improvements.

Line managers are provided with compulsory training on managing absence and return to work.

The impact on the business following these initiatives includes:

- Attendance has improved from 96.1% to 96.8% in the last 12 months
- LOROL has reduced the number of days lost to absence by 1,600 days in 2012/13, which represents an estimated saving of more than £340,000 for the period
- LOROL's annual employee survey shows the percentage of employees agreeing that their workplace conditions are good has almost doubled since LOROL took over the concession, up from 43% in 2008 to 80.5% in 2013
- 92% of employees agree that the company is committed to providing a safe workplace/surroundings (up from 88% in 2011 and 58% in 2008). (p.24)

BT's absence management policy is also highlighted as good practice by the CBI (p.30). BT works to a three-tier framework with a portfolio of resources/services at each level: primary prevention, secondary intervention and tertiary rehabilitation. The company has a particular focus on mental health and wellbeing, with affected employees offered CBT, either virtually or face-to-face.

Key impacts as a result of BT's wellbeing activity include (p.31):

- 92% of people return to their own role on full duties after company funded rehabilitation.
- BT's sickness absence rate has decreased from 2.29% (March 2013) to 2.20% (December 2013) alongside maintenance of employee engagement levels. The research does not establish the statistical significance of this change.
- Recent surveys showed that 81% of BT employees 'agreed' or 'strongly agreed' that the opportunity to participate in health promotion campaigns made them feel that BT cared about

their health. Fifty-eight percent said it made them feel valued as an employee and 64% said that it made them feel proud to work for BT.

- The metrics used to track progress have shown a gradual improvement against a previously rising trend. BT's wellbeing index has improved from 3.65 (end of financial year 2012/13) to 3.80 (end of December 2013). BT has seen reductions in lost time injury (LTI) rate and work-related ill health which remains significantly below CBI best quartile results.

Analysis of financial impact

The financial impacts of changes in key business metrics is a well-studied area. This section presents the key literature and benchmark values.

Health and wellbeing and productivity

Dana and Griffin (1999) report on American research which suggests that 56% of employees reported being under immense pressure and 48% reported acting on this stress through ways such as cutting corners on quality control, covering up incidents at work, lying about sick days, and deceiving customers.

Barber, Hayday and Bevan (1999) found that a 20% increase in employee commitment led to an increase in sales of 9% per store each month (large single employer case study).

Bevan (2010, 15) highlights aspects of job performance which are demonstrably better if employees are healthy – both physically and psychologically. These include:

- Energy
- Concentration
- Decision-making
- Resilience
- Coping with pressure
- Coping with uncertainty
- Coping with critical feedback
- Coping with change
- Being supportive of colleagues
- Customer-orientation
- Completion of tasks
- Reliability

The financial impact of staff turnover

The Sainsbury Centre for mental health has assessed the average cost to employers of a job change.

They estimate the cost of recruiting, selecting and training a replacement worker at an average of £11,625 (2007 figure). This is based on an estimate of turnover cost at 40% of the average compensation per employee. This is noted as significantly higher than the CIPD estimate of £4,333 for recruitment costs and £7,750 total. This latter figure however appears to be a low estimate compared with US evidence which puts the full cost of staff turnover at 50% of salary. (Sainsbury Centre for Mental Health (2007) Mental Health at Work: Developing the Business Case, London: SCMH, Policy Paper 8, available from http://www.centreformentalhealth.org.uk/pdfs/mental_health_at_work.pdf accessed 02/05/2014 accessed 02/05/2014).

IES (2001) identify four main elements of turnover costs:

- Separation costs (relating to contract termination)
- Temporary replacement costs
- Recruitment and selection costs
- Induction and training costs.

However, these are not quantified.

The CIPD estimates that the direct and indirect costs of replacing a leaver averages almost £6,000 (average of cost of replacing an employee; £4,800; average cost of replacing a manager/professional: £7,000). While there is no standard formula, most experts agree that the total replacement cost can, in some cases, be up to 100% of annual salary. The precise figure will depend on how long the post is vacant and how the work is done during this time, the costs of recruitment (especially if an agency is involved), the costs of training the new post-holder and their initial drop in productivity. (Bevan, 2010, 12).

Clake, R. (undated): More complex approaches give a more accurate and invariably higher estimate of total costs E.g.

- estimating the productivity of new employees/those who have resigned
- value of loss of contacts with customers/relationships

CIPD (CIPD survey, recruitment, retention and turnover 2004) find only 7% of UK organisations currently calculate the cost of employee turnover.

The financial impact of staff absence

IOM analysis has developed an estimate of the daily cost to an employer of an unplanned sickness absence. This draws on the Human Capital Method⁸ where the cost of an unplanned sickness

⁸ Please note that this method gives a higher cost figure than the alternative Friction Method. However in this case appears to be appropriate as a measure because of the higher quality of data available, and the challenges associated with estimating.

absence is assumed to be equivalent to the total cost of employing the absent worker. This estimate is drawn from labour cost data, non-labour employment cost data, and typical staff absence rates for all major occupations and industrial section (Boyd. R. Hunt, A. and Ortiz, R. An economic analysis of workplace interventions that promote mental wellbeing in the workplace, IOM, Available from <http://www.nice.org.uk/nicemedia/live/11669/42521/42521.pdf> Accessed 02/05/2014).

Major occupational group	Estimated cost of absence of 1,000 workers, per year
Managers and senior officials	£76,876
Professional occupations	£62,221
Associate professional and technical	£82,590
Administrative and secretarial	£44,076
Skilled trades	Not available
Personal service	£23,406
Sales and customer service	£19,405
Process, plant and machine opp.	£21,011
Elementary	£26,110
All	£41,485

Industry section	Estimated cost of absence of 1,000 workers, per year
Agriculture, hunting, forestry and fishing	Not available
Extractive and utility supply	Not available
Manufacturing	£32,596
Construction	Not available
Wholesale and retail trade	£18,429
Hotels and restaurants	Not available
Transport, storage and communication	£27,679
Financial intermediation	£79,656
Real estate, renting and business services	£40,091
Public admin.	£121,929
Education	£46,140
Health and Social work	£73,314
Other	Not available

All sectors	£42,783
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The Sainsbury Centre for Mental Health (2007) has assessed the costs of sickness absence on firms. They report a CBI/CIPD estimate of £75.80 per day on average in 2007. However they note that this figure is an under-estimate because management systems for recording, analysing and costing sickness absence are under-developed in many companies. The implication is that these companies are more able to estimate the direct salary cost of the sickness absence, but not the indirect impact on the firm including the impact on the output of a whole team, The Sainsbury Centre suggest the true cost may be closer to £120 per day. This estimate is close to a separate CBI figure for both direct and indirect costs of staff absence of £115 per day. (Sainsbury Centre for Mental Health (2007) Mental Health at Work: Developing the Business Case, London: SCMH, Policy Paper 8, available from http://www.centreformentalhealth.org.uk/pdfs/mental_health_at_work.pdf accessed 02/05/2014 accessed 02/05/2014).

A retail case study analysis by Barber, Hayday and Bevan (1999) found that increased rates of staff absence significantly reduced customers' satisfaction with a service (p.23). However, it should be noted this was for a single case.

A seven-case study analysis from IES (2001) indicated that between two and 16% of an annual salary bill may be spent by an employer on absence. As little as half can be attributed to gross employment costs of those who are absent. The remainder of the costs are linked to employer's decisions on how absence is covered, the extent to which absence management procedures are followed and how pro-actively long-term absence is managed. Factors affecting the variability of absence costs include the number of part-time staff, the age profile, the occupational mix of the employees and the company location. However, the limited number of case studies involved, from a range of different sectors, makes findings hard to extrapolate.

Bevan (TWF, 2010) highlights the problems with using aggregate figures (such as £13 billion nationally) and their lack of relevance for employers. They cannot help employers understand the costs to their firm, do not deal with indirect costs, or distinguish between the costs of short-term or long-term absence.

Aldana (2005, 135) found a school district wellness programme led to a 20% reduction in absence amongst participating employees (including both teachers and other staff). In terms of costs, on average, the district paid US\$231/day and US\$103/day for every certified and classified employee, respectively, who was absent due to illness. In addition, US\$75/day was spent to hire substitutes needed to fill in for critical employees who were absent. When the mean absenteeism days for participants were compared with those of the non-participants over the two years of the programme, total cost savings could be estimated based on the number of programme participants. This was

calculated at US\$3,041,290 over the two-year run of the programme.

This value was 15.6 times greater than the total program cost for all wellness programs during the same time period. These program costs included wellness staff, benefits, program costs, and all other costs associated with the program. However, as noted previously, programme participation was voluntary and may therefore have led to an element of selection bias. The authors also conducted a review of literature in this area and concluded that the majority of studies published on the effects of a health promotion program on short-term absenteeism rates demonstrate that participants had lower levels of absenteeism, with reductions of approximately 3% to 16%.

CBI (2014)

The CBI's 2013 absence survey found the average total cost for each absent employee in 2012 was £975, while the median cost of absence per employee totalled £622 (8).

The report also distinguishes between *types* of costs:

Exhibit 1 Direct and indirect costs of absence to business

Direct costs	Indirect costs
Sick pay	Business management and administration time
National Insurance Contributions	Lost output and production
Insurance premiums	Lost knowledge
Provision of cover through temporary or overtime	Lower quality of service
	Attrition and the cost of advertising for a replacement

The study points out that, although it has reduced from previous years, in 2012 the direct costs of absence to the economy were estimated at over £14bn.

In a study of absence management policies within Royal Mail, Marsden and Moriconi (2008) estimate the direct cost savings achieved by such policies across Royal Mail Group. Their results indicated that a 1% reduction in absence saves:

- £34.8 million excluding the cost of replacement labour such as overtime and agency staff costs / £75.9 million including such costs (p.14).
- A 1% reduction in absence at Parcelforce Worldwide saves £1.79 million in direct costs alone (i.e. costs relating to wages for absent employees as well as the cost of fees for agency cover).
- However, the indirect costs of absence are likely to mean that this figure is much higher. In the case of Royal Mail Group, £118,605,600 million would be saved for each 1% that absence is reduced, based on the organisation's estimates for the indirect costs of absence.

The Royal Mail Group has already made significant reductions to absence rates. Estimates suggest that the 2% reduction in absence achieved by Royal Mail Group since 2004 is likely to have contributed to a total saving over the three years of as much as £227million in direct costs. The 2.5% reduction in absence achieved by Parcelforce Worldwide since 2004 is likely to have contributed to a total saving in direct costs over the three years of as much as £6.7 million. (6)

The study distinguishes between the different methods used to account for absence cost. The accounting cost method is commonly used to calculate the financial impact of absenteeism and is used by organisations such as the CBI and CIPD. It is worked out by taking the average daily salary of an employee, and adding on employer's national insurance and pension contributions. Since replacement labour is used to provide cover to ensure that the organisation meets its delivery commitments to customers, this method includes these costs as well. However, this analysis also factored in the 'hidden' effects, such as improved productivity and profitability.

The accounting cost of absence at Royal Mail Group

To calculate the book cost of absence at Royal Mail Group, LSE took the average daily salary of an employee of £85 as of February 2008. The basis for the calculation was as follows: Of 180,000 staff, as at the end of financial 2007, a 1% absence rate amounts to 1,800 people being absent, costing about £153,000 a day.

Estimates of the annual staff cost of 1% short-term absence across the organisation would be: £34.8 million without replacement labour costs. £75.9 million including replacement labour costs.

The improvement in absence rates from around 7% to around 5% achieved by Royal Mail Group between 2004 and 2007 would be equivalent to saving of about £69.7 a year in direct costs of pay for absent employees, or £151.8m if the costs of replacement labour are included LSE's estimates suggest that reducing absence by 2% between 2004 and 2007 would have contributed to a total saving across Royal Mail Group over the three years of as much as £227 million.

Factoring in administrative costs as well as management time, Royal Mail calculated that the direct cost of absence for one member of staff is £289 compared with £85 for direct wage costs excluding replacement labour costs or £185 for direct wage costs including these replacement labour costs.

However, this method does not take account of the indirect costs of absence which relate to the less tangible effects of absence, such as management time for training and providing briefings for agency staff, the cost of administrative time and resource for correspondence and communication with agency staff, as well as reflecting the fact that agency staff will take a period of time to 'learn the ropes' in a particular role, and therefore won't be immediately as effective or efficient as an equivalent full time member of staff. Based on a detailed examination of these additional factors, Royal Mail calculated that the indirect costs of absence is more than three times as much as the direct cost, however few further details were offered.

Evidence on 'hidden costs' of absenteeism

The detailed approach pursued by Marsden and Moriconi is presented here as an illustration of the impact that absenteeism can have on productivity. It is important to distinguish this effect from a direct link between productivity and health and wellbeing. While this case is an illuminating thought experiment it is the consultants' view that the modelling here may be too context specific to be expected to apply in a large number of other cases.

Productivity (p.17):

- At both individual depot and group level, increases in absence make productivity targets harder to achieve, thereby increasing the costs associated with achieving these targets.
- Delivering against more stretching targets will mean managers' costs rise. Over-spending runs the risk that subsequent targets will be revised downwards, reducing managers' leverage in running their operations.

Profitability (net income per head) (p.17)

- At both individual depot and group level, increases in absence make profitability targets harder to achieve.
- At depot level, an increase in the rate of absence by 1% can add £2,300 extra for a depot manager to achieve in terms of his monthly target for income per head.

Unit Costs: (p.17)

- At both individual depot and group level, increases in absence make unit cost targets harder to achieve.
- At depot level, an increase in the rate of absence by 1% can make depot managers' targets for unit costs more expensive to achieve by £762 / month.
- At group level, an increase in the rate of absence by 1% can make the group's targets for unit costs more expensive to achieve by £439,000 per year.
- As above, over-spending runs the risk that subsequent targets will be revised downwards, again reducing managers' leverage in running their operations.

Quality of Service

Quality of Service (QoS) is a measure used by Parcelforce Worldwide to track the number of items successfully delivered on time. In effect, it is a measure of the business' productivity.

Analysis by LSE suggests that for every 1% change in absence, correspondingly QoS rises or falls by 0.08%. Thus, between January 2004 and May 2007 when Parcelforce Worldwide reduced absence by 2.5%, this would have contributed to a 0.2% increase in QoS (23)

Sustaining, and where possible improving, QoS is crucial for controlling costs since late time tracked deliveries are made free of charge. It is also crucial for retaining and winning new customers and

thereby increasing net income or profitability (measured by depots as net income per head per day).

QoS and net income

The analysis reveals that a 1% improvement in QoS corresponds with an improvement in net income of:

- More than £2,900 per month for the average depot
- £1.7 million per year across Parcelforce Worldwide group (48 depots).

LSE analysis indicates that a 1% reduction in absence is worth more than £179,000 to Parcelforce Worldwide each year. It is not, however, possible to state these in percentage terms without additional primary research.

Analysis by LSE suggests that between Jan 2004 and May 2007, improvements in QoS would have contributed at least £672,000 to Parcelforce Worldwide’s annual net income.

**Table 1^{xxxii} The effect of sick absence on the gap between actual and target outcomes on performance indicators
(Based on actual outcome – target outcome)**

	Productivity: items delivered per full time equivalent worker	Unit costs (i.e. the amount it costs the operation to deliver items)	Profitability: net income per head (£)
At individual depot level			
A 1% increase in sick absences is associated with the following effect on monthly depot targets:	Shortfall of 13.6 parcels	Excess of £762 cost	Shortfall of £2,287 net income
At group level (across 48 depots)			
A 1% increase in sick absence is associated with the following effect on annual Parcelforce Worldwide targets:	Shortfall of 7,817 parcels	Excess of £439,000 cost	Shortfall of £1,317,644 net income

Table 2. Effect on key performance indicators of sick absence via use of agency workers 2005-06

	Net income per head / day	Unit costs (£)	Parcels delivered
One person increase in agency usage	£288,146 reduction on an annual basis across 48 depots	Additional unit costs of £186,428 on an annual basis across 48 depots	A fall in parcels delivered on time of 812,791 per year

All estimates are subject to a margin of statistical error. The results on which these figures are based were significant at the 1% level. See the forthcoming technical paper.

Delivery QoS: (QoS is an index which measures the percentage of items successfully delivered on time)	Net income per head / day
1% improvement in QoS...(leads to)	£2.17 improvement (per head per day) at depot level
1% improvement in QoS...(leads to)	£2,993 improvement (per month) at depot level
1% improvement in QoS...(leads to)	£1,724,185 improvement (over the year) at group level

Manual and non-manual employees	Absence rate (%)	Average working days lost per year per employee	Cost per employee per day lost / year (£)	Cost saving per employee per year if absence cut to UK average	Number of employees (% by sector)	Grossed up annual cost for all employees in sector (based on LFS weighted estimates) (£)
Health	5.5	12.6	65.3	274	7.8	579,706,000
Central Government	4.9	11.1	61.1	165	2.6	112,478,000
Housing associations	4.6	10.5	73.8	155	0.9	35,784,000
Charity services	4.6	10.5	74	155	1.4	56,647,000
Other public services	4.6	10.4	70.9	142	5.7	215,977,000
Transport, distribution and storage	4.5	10.3	56.4	107	2.2	60,653,000
Public services	4.5	10.3	71.1	135	0.0	/
Education	4.2	9.6	76.4	92	10.0	248,562,000
Non-profit organisations	4.2	9.6	67.5	81	3.4	/
Food, drink and tobacco	4.1	9.4	52.4	52	1.5	21,011,000
Paper and printing	3.9	8.9	140.4	70	1.8	33,559,000
Care services	3.9	8.9	61.3	31	0.6	5,218,000
Retail and wholesale	3.9	8.8	43.8	18	15.2	69,054,000
Local Government	3.7	8.5	80.2	0	5.5	11,628,000
AVERAGE all sectors	3.7	8.4	78.5	/	26,056,000	/
TOTAL COST SAVING FROM REDUCING ABSENCE RATES IN THE WORST PERFORMING SECTORS TO AVERAGE RATES £1.45 billion						

Source: CIPD Absence Survey 2007 (Based on Tables 1 and 13), and the ONS Labour Force Survey for employment weights. Where the LFS did not provide the necessary detail, the number of organisations responding to the CIPD survey was used to apportion the weights

Note: the matching of LFS employment sectors to those assigned to the organisations responding to the CIPD survey can be only approximate.

Evidence on the financial impact of presenteeism on absence rates

The Sainsbury Centre for Mental Health (2007) estimate that the costs associated with presenteeism (workers spending time at work when they are not well) is approximately three times the cost of absenteeism. The cost relates to payments made to staff who are not well enough to pursue their normal duties, despite being in work. Ashby and Mahdon (2010) explain the scale of this effect arises because presenteeism can delay treatment and recovery, and because it is an effect which appears to be more prevalent with more senior members of staff, who are on higher salaries. It is, however, flagged in the Sainsbury Centre review that these estimates draw heavily on research conducted in the US, with limited UK primary data. The less generous arrangements for sickness benefits in the US compared with the UK may imply that these estimates are an overstatement of costs.

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