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Health and Safety Executive

Work and Enterprise Panel 2

Business survey

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This report is intended to provide up-to-date information on UK business attitudes, intentions and performance vis a vis health and safety in the workplace. In addition, it aims to provide robust empirical evidence concerning any linkages and impacts of health and safety strategy and expenditure on an array of hard and soft performance measures of intermediate and final business performance. We also consider how health and safety issues interact with key strategic decisions in other core business areas to achieve the greatest impact on observable performance.

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HSE Books

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1.1 Aims

This report is intended to provide up-to-date information on UK business attitudes, intentions and performance vis a vis health & safety in the workplace. In addition, it aims to provide robust empirical evidence concerning any linkages and impacts of health & safety strategy and expenditure on an array of hard and soft performance measures of intermediate and final business performance. We also consider how health & safety issues interact with key strategic decisions in other core business areas to achieve the greatest impact on observable performance.

1.2 Data

Derived from an extensive telephone survey of 3,000 UK businesses, the sample reflects the size and sectoral distribution of the UK business population, albeit with a top-up sample of very large businesses. We also allowed for geographical representation according to Government Office Regions. The telephone interviews were carried out in June and July 2004, and the sample was generated by random digit dialling. Interviews were carried out with Chief Executive Officers, managing Directors, Chief Finance Officers or Human Resource Directors in the UK. The study was conducted using Computer Assisted Telephone Interviewing (CATI) and interviews lasted an average of 23 minutes. The response rate was 23.7 per cent.

1.3 Health & Safety Risk and Strategy

We considered how the nature of the industry sector a business operates in affects their strategic positioning vis a vis health & safety. The key survey questions we posed relating to health & safety strategy were;

- Our business views managing health & safety as a strategic activity
- We see good health & safety performance as being cost positive
- There is board level commitment and responsibility for the health & safety track record of our business
- Our business sees health & safety as a critical part of good people management
- We empower our employees to act if they encounter health & safety risks, even if it means stopping work

In each case the respondent is required to state the extent to which they agree or disagree with these statements. One further question is relevant and relates to perceived risk;

- Our business manages significant health & safety risk

As before, respondents state the extent to which they agree or disagree on a five point scale. The basic statistics reveal that;

- Certain sectors, namely construction, retail/hotels/catering, agriculture, other community and utilities all perceive there to be a higher degree of risk
- Medium sized businesses (50-249 employees) tend to operate in environments where they manage health & safety risks to a greater degree than other size classes of business
- We identify a strong correlation between a strategic commitment to health & safety and the belief that health & safety performance is boosting the bottom-line
- Micro businesses, in particular, may be failing to address strategic issues surrounding the management of health & safety in the workplace because they are less likely to believe that it will improve their bottom-lines
- It is also true that key decision-makers in micro firms are reluctant to accept responsibility for health & safety
- The median expenditure on health & safety per annum is £200 per full-time employee.
- Only 29% of businesses have an explicit health & safety budget.
- It appears that businesses make their budgetary decisions first (i.e. do we want to spend any money on health & safety?), then decide how strong their strategic commitment is going to be, which in turn determines the size of the budget allocation.

1.4 Linking Health & Safety Strategy to other Business Areas

In line with our *a priori* hypothesis that integrated and complementary strategy making will yield better performance than isolated decision-making we then tested for basic associations between our health & safety strategy index and five other strategy indices covering shareholders, stakeholders, innovation, customer & markets and, people. This is important as health & safety is not commonly seen as having equal status as other business areas.

- Our health & safety index can explain a significant amount of the variation in our five strategic indices (shareholder, stakeholder, innovation, customer & markets, and people).

- It is more strongly associated with the stakeholder and people indices, and less so with the shareholder index.
- In short, better health & safety index scores are associated with higher index scores in our five other strategic domains.

1.5 Performance Analysis

We tested for the impact of strategy and strategic bundles on a total of 13 alternative measures of intermediate and final business performance. In addition we also tested for any performance enhancements derived from health & safety expenditure, an additional measure of hard commitment to employee welfare. However, as our survey data is essentially cross-sectional in nature, the results should be interpreted as associations rather than indicative of absolute causality. Further research using longitudinal data would provide more robust conclusions. Our key results are as follows:

- In no cases was spending more on health & safety associated with a worsening of performance. The same was true for the H&S strategy index.
- Higher H&S strategic index scores were associated with helping businesses to create a workforce whose skills base are above their industry benchmark.
- In three instances we observed that spending more on health & safety was associated with improved outcomes. Firstly, higher spending was associated with businesses having an increased probability of attracting good quality employees from their industry pool, which may suggest that higher H&S spend sends a positive signal to potential employees.
- Within businesses existing workforces, higher H&S spend was associated with improved employee commitment.
- Higher H&S spend was associated with faster sales growth over three years.
- Taken together, our performance results, across a range of measures, strongly suggest that spending on health & safety (or making a strategic commitment) does no harm to a business and most certainly is associated with tangible improvements in employee related aspects of the business, which in turn can feed through into measurably better bottom line outcomes.

1.6 Conclusion

Our start point was that the key to achieving high levels of business performance is to develop complementary strategies across all areas of the business because it is the overlapping and mutually reinforcing effect of multiple, synergistic practices that have, potentially, the largest impact. To test this hypothesis, we surveyed 3,000 UK businesses. Our initial finding was that health & safety as an issue generally ranks as important or very important for UK businesses. However, we also found that smaller businesses are less likely to have a positive attitude towards health & safety issues, or regard it as a key strategic area.

In terms of complementarities with broad business objectives, we found that health & safety strategy was associated with creating a great place to work, innovation, stakeholder value and business growth. This could suggest that a commitment to health & safety is strongly aligned to a desire to deliver high levels of job enrichment, to create an environment supportive of creativity and innovation, and to engage with the wider community, including suppliers.

On business performance, we find that our health & safety strategic index has one positive association (with helping businesses create a highly skilled workforce). But actual health & safety expenditure is associated with observably higher performance in three areas; having a greater capacity to attract quality employees; higher employee commitment, and; faster sales growth. Taken overall, our performance models, across a wide range of indicators, suggest that a strategic commitment to good health & safety practice does businesses no harm, and a spending commitment is strongly associated with tangible improvements in employee related aspects of the business.

Section 2

Introduction

This report is intended to provide up-to-date information on UK business attitudes, intentions and performance *vis a vis* health & safety in the workplace. Further, it will then go on to provide robust empirical evidence concerning any linkages and impacts of health & safety on an array of hard and soft measures of intermediate and final business performance. This is of great importance given that health & safety has been an area of secondary concern to businesses historically, and a key focus of legislation in recent times.

In a comparative sense the UK has a good health & safety record within the EU, and is second only to Sweden in terms of fewest fatalities. Yet we still recorded 235 fatalities in 2003/04 and 159,809 other non-fatal injuries (Health & Safety Executive). Further, there is tremendous variation across industry sectors, with construction, agriculture and transport being sectors with relatively poor records on health & safety (Health & Safety Executive). With this in mind, sectoral patterns in terms of the importance of health & safety as an area of strategic decision-making will be a primary focus of this report. In addition, we will also investigate how strategy varies across different size classes of business. This is an area where robust statistics are less available, yet of huge importance given the numerical dominance of very small businesses in the economy who represent 46.8% of employees in work. However, what research there is (see for example Fenn and Ashby, 2004; Pegula, 2004) suggests that the self-employed and smaller businesses have higher accident rates, as do non-unionised businesses or those without health & safety committees

In terms of the background and thinking behind our work, the current study intends to build upon a 2003 Work Foundation report that looked in detail at how synergistic business strategies, when combined together over a wide range of functional managerial and strategic areas, could improve the productivity of UK businesses (Harding et al, 2003). This was deemed of vital importance to the UK economy, as it is only improvements in the productivity of UK business that can deliver sustainable increases in competitiveness, incomes and welfare for the UK and its population.

In 2004 a new study was commissioned which took an even broader remit in terms of its strategic scope (Cowling et al, 2005). However, the basic premise remained the same, that the key to achieving high levels of productivity and performance is to

develop complementary strategies across all areas of the business because it is the overlapping and mutually reinforcing effect of multiple, synergistic practices that have, potentially, the largest impact. The current study can be seen to have two fundamental objectives: Firstly, it can be seen to provide up-to-date evidence of the current state of UK business in terms of corporate objectives, strategy and performance and how health & safety issues interact with these strategic decisions and outcomes. Secondly, it aims to identify complementary bundles of strategies, including those on health & safety, that are associated with observable high performance.

Thus our hypothesis is that health & safety is a key area of strategic decision-making that cannot be considered in isolation by businesses, and one that must be integrated into other areas of strategy to ensure not only consistency in terms of planning, but to achieve maximum impact on business performance. To achieve this we conducted an extensive telephone survey of 3,000 UK businesses. This report contains the findings from our investigation of the data, and raises issues that are of importance to businesses and government policy-makers.

Section 3

Sample Characteristics

In this section we present the summary statistics for the telephone survey. This is designed to give the reader a general feel for how businesses set their objectives, determine appropriate strategies, and the nature of the markets they operate in. To facilitate a better, and more complete, understanding of the UK business sector we disaggregate our reporting by broad industry sector (13 in total) according to Sector Skills Development Agency guidelines.

This report is based on 2,902 telephone interviews. The sample was drawn up to reflect the size and sectoral distribution of the UK business population. However, due to the small proportion of large businesses, we included a top-up sample to ensure adequate numbers for meaningful analysis. We also allowed for geographical representation according to Government Office Regions. The telephone interviews were carried out between June and July 2004 by IFF Research Ltd on behalf of The Work Foundation.

The sample was generated by random digit dialling, but quotas were set, as discussed above. Interviews were carried out with Chief Executive Officers (CEOs), Managing Directors (MDs), Chief Finance Officers (CFOs) or Human Resource Directors in the UK, in establishments of all sizes.

The study was conducted over the telephone using Computer Assisted Telephone Interviewing (CATI). Interviews lasted an average of 23 minutes. The response rate was 23.7 per cent.

3.1 Firm Characteristics

Figure 1

Employment Size Distribution by Industry Sector

	Employment Size Band %				N obs
	0-9	**10-49**	**50-249**	**250+**	
Agriculture	71.57	19.29	5.58	3.55	197
Construction	40.00	37.95	14.36	7.69	195
Personal Household	62.60	20.20	10.80	6.40	500
Hotels	47.06	31.55	12.30	9.09	187
Transport	39.05	28.40	20.71	11.83	169
Finance	23.71	32.99	19.07	24.23	194
Real Estate	49.87	21.55	15.79	12.78	399
Education	33.17	44.23	20.19	2.40	208
Health	34.17	37.50	25.83	2.50	120
Other Community[1]	48.55	27.17	15.61	8.67	173
Mining	41.57	27.53	16.85	14.04	178
Manufacturing	29.93	23.03	21.05	25.99	304
Utilities	44.87	25.64	12.82	16.67	78
Total	45.66	27.33	15.68	11.34	2,902

As we observe from Figure 1, there is tremendous variation in terms of the size distribution in our sample. For example, in agriculture and the personal household sector micro businesses dominate. By comparison, in finance, education, health and manufacturing micro businesses have a low representation. At the opposite end of the size distribution there is a comparatively high representation of large businesses in manufacturing, finance, utilities and mining. Not surprisingly, these are all sectors where economies of scale are important.

[1] Other Commmunity includes: Sewage and Refuse Disposal and Sanitation; Activities of membership orgnaisations; Recreational, cultural and sporting activities; Other service activities; Private households employing staff.

Average business size, as measured by sales turnover, exhibits substantial variation across industry sectors. Broadly, there are seven sectors where average sales are well in excess of £25m per annum (finance, transport, construction, mining and manufacturing) and six sectors where sales are well below £15m (utilities, other community, health, education, hotels and agriculture). However, we note that the median business in all sectors bar finance, transport, manufacturing and mining is has sales of £1m or less per annum. Or put another way, the typical business in most industries is very small.

Figure 2
Distribution of Head Quarters Location by Industry Sector

	UK	**Europe**	**Rest of World**
Agriculture	90.00	0.00	10.00
Construction	86.96	13.04	0.00
Personal Household	79.37	12.70	7.93
Retail/Hotels /Catering	100.0	0.00	0.00
Transport	67.50	17.50	15.00
Finance	50.88	12.28	36.84
Real Estate	72.04	8.60	19.36
Education	89.13	2.17	8.70
Health	100.0	0.00	0.00
Other Community	93.55	6.45	0.00
Mining	56.00	18.00	26.00
Manufacturing	50.00	20.41	29.59
Utilities	52.38	19.05	28.57
Total	72.18	11.58	16.24

From Figure 2, we observe that, in total, the vast majority of businesses operating in the UK have their head quarters in the UK (72.18%). A further 11.58% have European head quarters and 16.24% are based outside the UK and continental Europe. Yet these aggregate figures hide some considerable variation across the different industry sectors. For example, agriculture, construction, retail/hotels/catering, education, health and other community (social and personal services) are dominated by indigenous businesses. This strongly contrasts with finance, mining, manufacturing and utilities in which businesses are, broadly speaking, equally likely to be located in foreign countries. Whilst this may, in part, reflect the different stages and patterns of globalisation and production across sectors, it might also be indicative of the sectors where UK businesses need to be more productive to compete on an international basis. It also suggests that Europe and the UK are more integrated in business terms than the UK and North America where only 9.32% of businesses have their HQs located.

We also observe that only in the finance sector do the majority of businesses operate at a single operating site. In agriculture the reverse is true. Here only 13.3% of businesses operate at a single site. For most sectors, between 60% and 70% of businesses operate at multiple sites. This might imply that co-ordination problems are an important feature of business activity in most sectors (Cowling and Harding, 2003).

The median age of businesses can be an indicator of the relative maturity and stability of the business stock and markets, which may in turn be an important factor in the way businesses formulate their strategies. The median business in the aggregate sample is 20 years old. In a comparative sense, education, health, mining and utilities have a relatively young business stock. This contrasts with agriculture, construction and manufacturing where the median age of the business stock is 10 years older than the UK median.

Next we consider the proportion of the business stock in each industry sector which is younger than 5 years old i.e. genuinely new businesses. This might be considered as an indicator of the level of dynamic, entrepreneurial competition and/or the absence of significant barriers to entry. The results are interesting and highlight some very significant sectoral differences. In the hotel sector, for example, new business entry is highest at 15.4% of the total current stock. In personal household, utilities, mining, and other community sectors new business presence is also

comparatively high with figures in excess of 10% of the total stock. Yet in health the equivalent figure is only 3.7%. Low figures are also apparent in manufacturing (4.3%), education (4.7%), agriculture (4.9%) and construction (6.0%). Relationships between strategy and new business entry into markets will be explored in more detail in subsequent sections of the report.

Next we focus on the nature of corporate governance, here differentiated by size class (measured by employment). This is important as it provides detailed evidence on the nature of ownership and control in business, an issue which lies at the heart of agency theory. The size class definitions are standard and defines a micro business as having 0-9 employees, a small business as 10-49, a medium-sized business 50-249 employees and a large business as 250+ employees. From Table 3, we observe that board size increases with size class of business. Micro businesses, typically owner-managed, typically have two owners who both act as directors and managers. This form of governance is termed ‘closely held’ and is associated with a perfect alignment of ownership and control which means that there is no scope for managers to pursue their own interests to the detriment of owners as they are one and the same. There is little evidence either that this form of very small business has any outside input into its decision-making process as very few have outside non-executive directors (NEDs).

Figure 3

Governance by Size Class of Business

	Micro		Small		Medium		Large	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Working Directors	2.0	2	2.5	2	4	3	10.5	4
Non – Execs	0.5	0	1	0	1.5	1	2.5	1
Managers	2.0	2	6	4	15	10	88	10
Shareholders	753[2]	2	360	2	2,610	2	10,451	1
FTEs	2.5	2	24	22	120	102	4,597	613

As we move up to the small size class of business (10-49 employees), we observe that ownership and control typically remains closely held, but there are additions to the management team beyond the owning group, as more managers are hired to organise the expanded workforce. In the medium size class of business (50-249 employees), board size increases and also tend to include a non-executive director. The size of the management team also increases, but not in proportion to employment. This implies that managerial span of control rises as the organisation of work becomes more formalised and structured and employees become more routinised in terms of the tasks they fulfil. A significant minority of medium-sized business also begin to have highly diversified ownership structured as shares are traded on public markets. At this stage the potential for agency problems to arise increase substantially [Cowling, 2003]. This essentially refers to informational problems between owners and managers or more explicitly where a business has lots of shareholders they find it more difficult to control managers and align their interests with the motivations of shareholders.

3.2 Summary

In this section we have presented evidence concerning the basic characteristics of businesses (size, age, location of HQ, single/multiple site, legal status) and disaggregated our statistics by industry to sector to paint a fuller picture of patterns within and across industry sectors. In every aspect measured we observe differences across industry sectors that need to be kept in mind for the remainder of this report.

[2] The large mean number of shareholders in micro businesses is the result of outliers who are likely to have sold shares on secondary stock markets.

Section 4

Health & Safety Risk and Skills

In this section we consider the nature of the industry sectors businesses operate in and consider how businesses sit within this context. Specifically, we explore issues surrounding skills and health & safety, as we *a priori* hypothesise that skills and health & safety might be intrinsically linked. Once again we disaggregate our findings by broad industry sector and by size class of business[3]. The five key survey statements were:

- Our business views managing health & safety as a strategic activity
- We see good health & safety performance as being cost positive
- There is a board level commitment and responsibility for the health & safety track record of our business
- Our business sees health & safety as a critical part of good people management
- We empower our employees to act if they encounter health & safety risks, even if that means stopping work

In each case, the respondent is required to state to what extent they agree or disagree with the statements. Potential responses are (1) strongly disagree, (2) disagree, (3) neither agree or disagree, (4) agree, (5) strongly agree.

Figure 4 depicts how businesses measure up to the industry standard for skills. This is calculated as the average skills level for each industry sector as defined by respondents when asked the question "our industry is characterised by high skill levels" with responses strongly disagree, disagree, neutral, agree, and strongly agree. Then is benchmarked against the reported skill level of each business as stated by the businesses themselves in our sample. We choose to focus on the tail of businesses that fall below the stated benchmark (as defined by each business) to assess the scale of a skills deficient business stock within each industry. The findings suggest the extent of this under-skilled tail varies very significantly across

[3] We note here that survey responses are self-reported and this can potentially lead to an upward bias i.e. more favourable outcomes reported. However, self-reported outcome variables are a common feature of large-scale government surveys (see Workplace Employment Relations Surveys) and analysis of self-reported outcomes is widely accepted by academics and government statisticians. In this survey, for example, on many of our performance variables there is a fairly normal distribution, even on soft performance measures which suggests that respondents are being reasonably honest.

industry sectors. For example, in construction and retail/hotels/catering (both sectors with very different average skills levels) the tail of poorly skilled businesses is very small. Thus nearly all businesses operate around the benchmark for their industry which is intuitively what we might expect. In the former this is a high-skills equilibrium. In the latter this is a, comparatively, low-skills equilibrium.

Figure 4
Skills and Health & Safety Risk

	% businesses below industry skills benchmark	Business manages significant H&S risk (scale 1 to 5)
Sector		
Agriculture	15.48	4.30
Construction	0.83	4.49
Personal Household	5.43	3.77
Rehoca	1.64	4.40
Transport & Comms	5.66	4.04
Finance	12.24	3.04
Real Estate	11.57	3.10
Education	7.41	3.33
Health	10.34	4.21
Other Community	10.14	4.23
Mining	18.52	3.78
Manufacturing	17.24	3.76
Utilities	21.43	4.29
Employment Size		
0-9	9.01	3.67
10-49	9.82	3.80
50-249	5.84	3.94
250+	8.99	3.77

Ignoring utilities due to a small number of cases, we also note that manufacturing, mining and agriculture all have a relatively large tail of businesses that fall below the industry skills benchmark. In each case it is in excess of one in every six businesses. A pairwise correlation (showing the level of association between two variables) shows that external training days are negatively associated with being below the industry skills benchmark (pwcorr = -0.074).

By employment size, we observe that medium sized businesses are the least likely to fall below their industry skills benchmark, despite having the highest skills requirements. With this result excepting, we note that there is very little variation between micro, small and large businesses. It is also a worrying picture for large business, who have a comparatively low skills equilibrium, but still have nearly 9% of businesses struggling to keep up. But the picture overall suggests that the majority of UK businesses are not deficient in skills when compared to their industry average , as less than 10% of businesses in any size class are falling below their industry skills benchmark.

As we observe, perceptions of health & safety risks appear to be an important feature for large numbers of businesses across an array of sectors. In particular, we note that business in the construction, retail/hotels/catering, agriculture, health, other community and utilities sectors all have to manage significant risks surrounding health & safety issues. This strongly contrasts with finance, real estate and education where this is, on average, of much less importance to businesses. A pairwise correlation shows that health & safety risk is positively correlated with average days absence due to illness or injury (pwcorr = 0.149***). However, we note that absence may be unrelated to work issues.

From our business size class data, we observe that from micro to medium sized business there is a fairly linear and positive relationship between managing significant health & safety risk and size of business, and these differences are significant (F=6.58, Prob = 0.0002) using a test of the variance across groups. Yet after this we note that the largest size class of business are less in agreement with the need to manage H&S risk than our small business size class.

4.1 Summary

The key findings regarding health & safety are that certain sectors, namely construction, retail/hotels/catering, agriculture, health, other community and utilities,

Section 5

Health & Safety Strategy

In this section we present our evidence on the relationship between businesses and a number of aspects relating to health & safety. The issues we deal with are: whether health & safety is seen as a strategic activity; whether investment in health & safety is seen as being cost-positive in terms of improving the bottom line; whether it is dealt with at board level; whether it is seen as being a part of good people management; and the degree to which employees have autonomy to act on issues relevant to their health & safety.

Figure 10

Median Expenditure Per Full Time Employee on Health & Safety

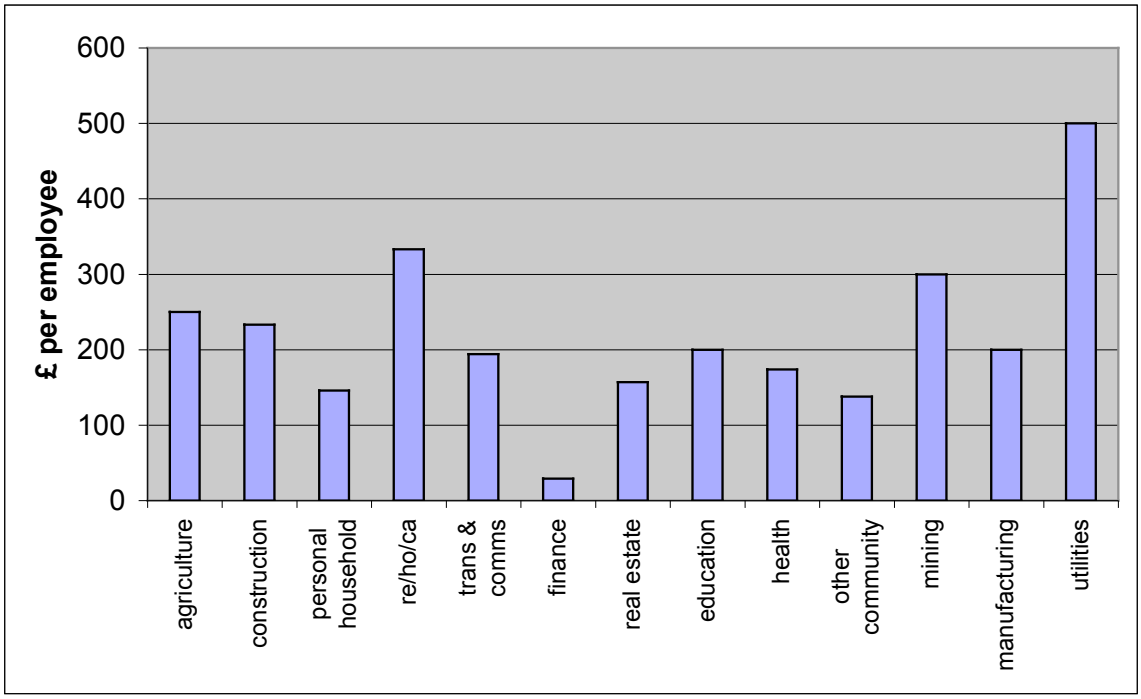


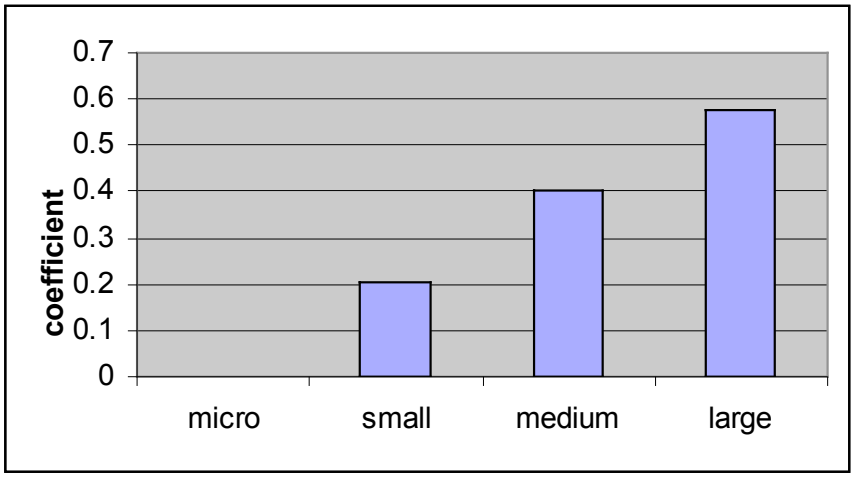
Figure 10 is perhaps a more accurate representation of health & safety expenditure and refers to median spend per fte. Here we observe that the median spend per fte per annum is £200. We note that in utilities this is highest at £500, in retail/hotels/catering £333 and in mining £300. By far the lowest median spend is in finance at £29. Considering business size, we note that the range is much smaller, falling between £175 in micro businesses to £213 in large businesses. However, there is no significant relationship between health & safety spend per fte and health & safety risk as identified by businesses (pwcorr=0.044).

From these five strategic items we can develop a single health & safety index using the standard methodology adopted in a body of human resource and strategy literature dating back thirty years (seminal works include Arthur, 1994, Delery and Doty, 1996, Ichniowski et al, 1997). Assuming that high correlations between variables are indicative of complementarities (see Nunnally and Bernstein, 1994), we note that of the ten correlations all ten are positive and significant at the 1% level. To test for reliability of the five items that form our health & safety index we calculate the Cronbach's alpha, this assesses the reliability of a summative rating scale of the five items specified.

Our scale is simply the sum of the individual item scores. The reliability α is simply the square of the correlation between the measured scale and the underlying factor.

Figure 12

Managing Health & Safety is a Strategic Activity (base=micro business)



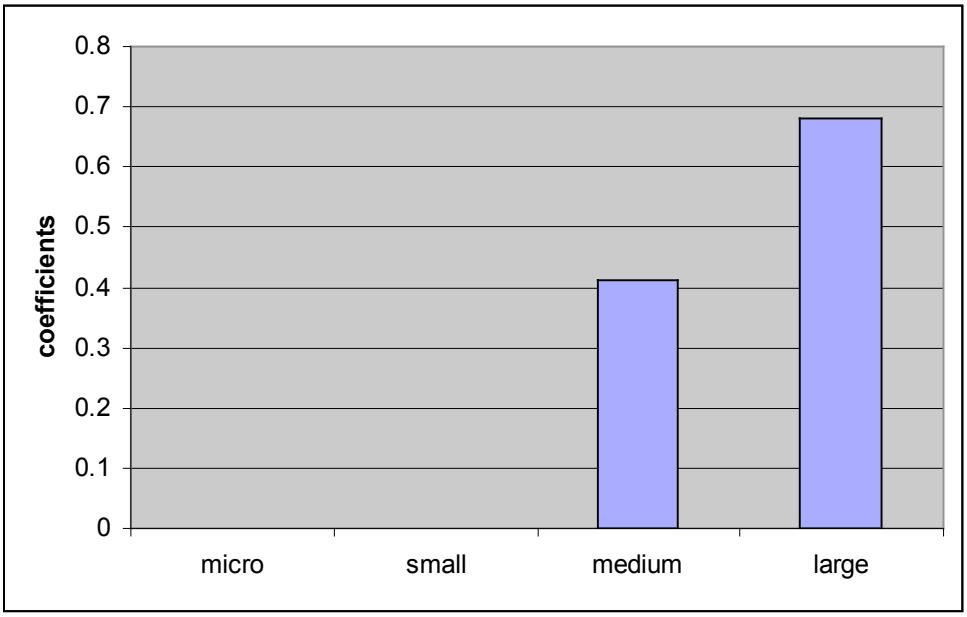
There are also some identifiable regional effects. For example, business located in Wales, Scotland and the North West are significantly more likely to view managing H&S as a strategic activity than businesses in all other areas of the UK. This may suggest that region specific characteristics e.g. culture and/or historical legacy plays an important role. This holds even when age, size, sector and a host of other characteristics are held constant i.e. it is a region specific effect.

At the industry sector level, Fig 13 shows that two sectors are significantly higher than the average in terms of the importance attached to managing H&S as a strategic activity and three significantly lower. The least importance is found in the finance sector, followed by real estate and manufacturing. The greatest importance, on average, is found in retail/hotels/catering and construction. Whilst the latter findings are reassuring due to the comparatively high accident rate in construction the fact that manufacturers place such low emphasis on health and safety management is rather disconcerting. The zero's here indicate no significant difference compared to the reference category.

Finally, we observe that business age is not an important determinant of strategic emphasis on managing health and safety. Nor was country of ownership or part-time share of employment or labour quality. To conclude, we find that business size and sector are the two most critical determinants of how much strategic emphasis businesses place on managing health and safety.

Figure 14

Health & Safety Performance is Cost Positive (base = micro)



As we observe from Fig 14, businesses with less than 50 employees are the least likely to agree that health & safety performance is cost positive. And further, that larger businesses are more likely to agree than medium sized businesses. This might suggest that smaller businesses view health & safety as having a lower level importance rather than as a key area of strategic management that contributes to a healthier level of business performance. As our previous production function analysis shows that health & safety strategies, when bundled with other strategies, are cost-positive, we implicitly assume that smaller businesses are mistaken in their assumptions.

There are also some important regional differences apparent. Here we observe that business located in Wales, Northern Ireland, Scotland and the North West are significantly more likely to agree that health & safety performance is cost positive. These effects are fairly large in magnitude and suggest important unobserved differences.

Industry sector is another area where we might expect to observe substantial differences across businesses in terms of their views on health & safety. Yet in this case we note that only in financial services is there less agreement with the contribution of health & safety to performance.

Figure 15

Health & Safety Performance is Cost Positive and Business Age

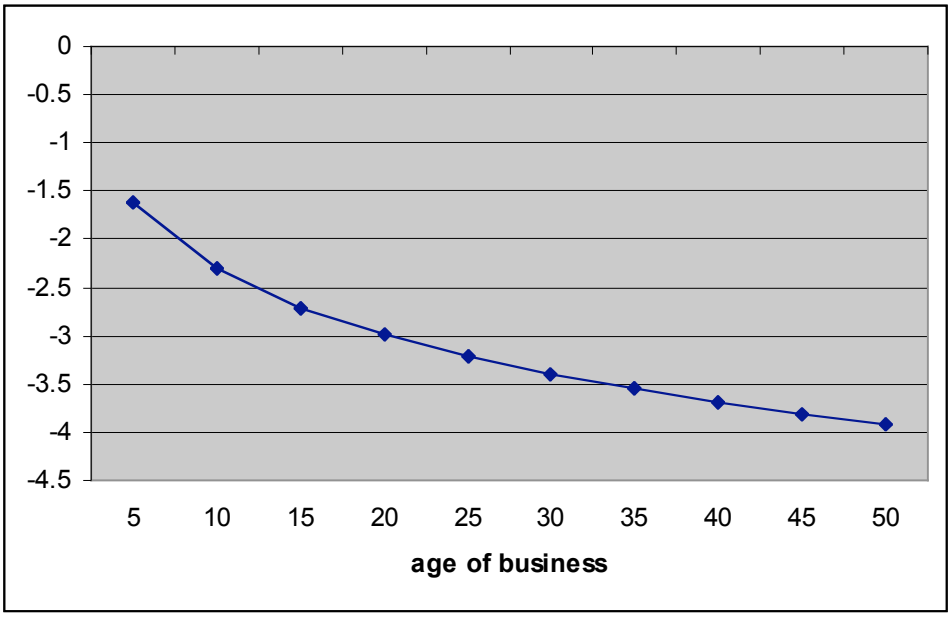
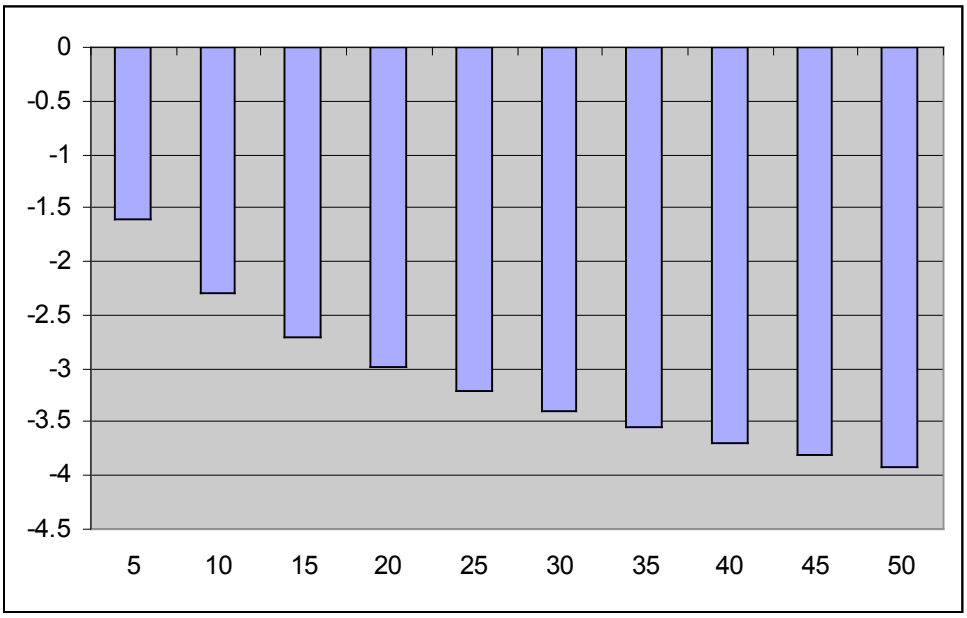


Figure 15 shows the relationship between age of business and strength of agreement or disagreement with the statement that health & safety performance is cost positive. As we observe, as businesses grow older they are significantly less likely to agree that health & safety performance has a positive impact on overall business performance. This might imply that older businesses are likely to pay less attention to health & safety issues, or that further improvements to health & safety have a declining marginal impact on costs.

Finally, we note that non-European or US owned businesses are less likely to agree that health & safety performance is cost positive. Yet there appears to be no differences between high and low wage businesses, nor those who employ large numbers of part-time workers.

Figure 19

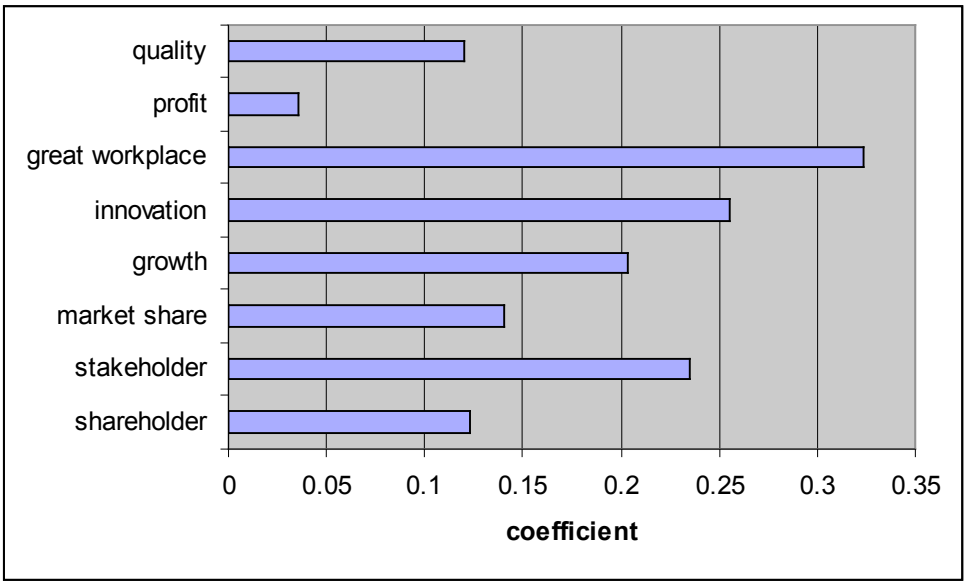
Business Age Effects on Employment Empowerment to Act on Health & Safety



From Fig 19, we note that as businesses get older employees appear to get less autonomy to act on health & safety risks if they occur in the workplace. This, when combined with our finding that older businesses were also less likely to view health & safety expenditure as being cost positive, is potentially disconcerting as businesses may be less likely to invest in health & safety and also less likely to allow employees to act thus creating a generally negative position on health & safety issues. An alternative interpretation is that older businesses have well developed health & safety strategies and procedures and thus the requirement for further commitment is lower.

Figure 20

Correlations between Business Objectives and H&S Strategic Index



Thus we observe the highest correlations between the health & safety strategic index and creating a great place to work, innovation, stakeholder value and growth. The lowest correlation, although it remains statistically significant at the 10% level is with profit. This suggests that a strategic commitment to health & safety is strongly aligned with businesses wishing to deliver high levels of job enrichment to their employees, those wishing to deliver innovative new products and services, and those with high levels of engagement with the wider community, including suppliers.

This study is consistent with a previous and related study on productivity (see Cowling et al, 2005). The key finding from that study was that a composite strategy index, encompassing strategic decisions across managerial functions, including health & safety, was found to be associated with higher productivity. This was taken to be evidence consistent with the hypothesis that bundling of complementary strategies has a greater impact on performance than individual, un-coordinated strategic decision-making. The fact that health & safety strategies formed a large component of the composite strategy index implies that businesses that co-ordinate and align health & safety strategy with other core business strategies will tend to be associated with superior performance.

Section 8

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Figure 21
Performance Measure Definitions

Performance Measure	Item
Business above industry innovation standard	Business innovation level – industry innovation level
Business attracts good quality employees from other companies in the industry	Scale 1-5 (ordered variable)
Our market position, relative to our competitors, is strong	Scale 1-5 (ordered variable)
How many days a year does an average member of staff take off because of illness or injury	Number of days (continuous variable)
The majority of our employees demonstrate a high level of commitment to this business	Scale 1-5 (ordered variable)
Do you sell your products or services in the UK only, overseas, or both	Three responses possible
What % of your total customers are based outside the UK	Percentage (continuous variable)
What % of your total sales was exported	Percentage (continuous variable)
What % of your total sales was accounted for by a product or service that uses technology not available a year ago	Percentage (continuous variable)
Compared to three years ago, has your turnover increased, decreased or stayed the same	Three responses possible (ordered variable)
What % has your turnover increased / decreased from three years ago	Percentage (continuous variable)
Gross Profit (weighted by industry)	Sales – Costs (labour, capital, materials)
Workforce above industry skills standard	Business workforce skills level – industry skills level

Figure 22

Performance Outcomes Summary Table

Performance Measure	Strategy Index					
	Shareholder	Stakeholder	H &S (H&S £/fte)	Innovation	Customers & Markets	People
Technology Benchmark	0	+	0 (0)	+	+	+
Attract Quality Employees	0	0	0 (+)	+	+	+
Competitive Market Position	+	+	0 (0)	0	+	0
Employee Absence	-	0	0 (+)	0	0	0
Employee Commitment	0	+	0 (+)	+	0	+
Exporter	0	-	0 (0)	0	+	0
Export Intensity	0	-	0 (0)	+	0	0
3 year Sales Growth	+	0	0 (+)	0	0	+
Skills Benchmark	0	-	+ (0)	-	0	+
% Foreign Customers	-	-	0 (0)	0	+	0
New Technology Sales	0	0	- (0)	-	0	+
New Technology Sales Intensity	0	0	0 (0)	+	+	0

Section 10

Appendix 2

Figure 23

Sample Statistics

Variable	Mean	S.D	Minimum	Maximum	Median
Gross Output £m	27.70	95.20	0.03	980.0	0.90
FTEs	598.63	6359.38	1.00	9950.0	6.00
Capital £m	10.60	59.50	0.00	3,360.00	0.017
Materials / Output	0.23	0.21	0.00	1.00	0.20

Figure 24

Business Performance

Variable	(1) Technology Benchmark		(2a) New Technology Sales (yes)		(2b) New Technology Sales Intensity		(3) Business Attracts Good Quality Employees		(4) Market Position Strong Compared to Competitors		(5) Average Days Off Per Employee	
	Coeff	**Z stat**	**Coeff**	**Z stat**	**Coeff**	**Z stat**	**Coeff**	**Z stat**	**Coeff**	**Z stat**	**Coeff**	**T stat**
Health & Safety Spend per FTE	0.00	0.78	-2.62	0.19	0.00	0.28	0.00	1.97	-0.00	0.70	-3.24	0.13
Region												
West Midlands												
East Midlands	0.06	0.34	0.06	0.29			-0.01	0.08	-0.13	0.85	-0.11	0.95
East	0.09	0.53	-0.06	0.27			-0.35	2.08	-0.01	0.06	-0.09	0.83
London	0.30	1.86	0.19	1.02			0.12	0.76	0.01	0.04	-0.12	1.23
North East	-0.48	2.01	0.02	0.08			-0.31	1.34	-0.08	0.38	-0.50	3.40
North West	-0.08	0.51	0.12	0.63			0.06	0.39	0.02	0.14	-0.14	1.32
South East	0.26	1.71	-0.19	1.00			0.00	0.03	0.19	1.40	-0.10	1.06
South West	0.04	0.22	-0.35	1.68			-0.02	0.12	-0.07	0.48	-0.13	1.23
Yorks & Humber	-0.01	0.04	0.13	0.64			0.04	0.26	-0.04	0.25	-0.08	0.78
Wales	0.19	0.99	-0.19	0.74			0.10	0.54	0.15	0.89	-0.01	0.04
Scotland	-0.04	0.19	0.50	2.04			-0.05	0.26	0.30	1.54	-0.23	1.77
N.Ireland	0.39	1.56	-0.31	0.80			-0.09	0.36	0.10	0.38	-0.10	0.59
Sector												
Agriculture												
Construction	0.02	0.10	0.45	1.91	-0.79	1.92	0.15	0.83	0.20	1.33	-0.13	1.02
Personal	-0.27	1.66	0.49	2.29	-0.88	2.25	0.08	0.47	0.21	1.59	-0.03	0.25
Household												
Retail, Hotels,	-0.46	2.15	0.18	0.63	-0.50	1.03	-0.19	0.87	0.27	1.45	-0.21	1.32

Catering												
Transport	0.02	0.12	-0.17	0.63	-0.25	0.57	0.46	2.33	0.07	0.44	-0.12	0.92
Finance	-0.07	0.34	0.31	1.19	-0.60	1.37	0.06	0.27	-0.27	1.66	-0.22	1.59
Real Estate	0.01	0.04	0.12	0.51	-0.60	1.50	0.26	1.48	0.23	1.66	-0.08	0.66
Education	-0.03	0.13	0.29	1.12	-1.07	2.41	0.26	1.18	0.31	1.83	-0.24	1.63
Health	0.07	0.25	-0.03	0.09	-0.29	0.54	0.14	0.52	0.29	1.42	-0.16	0.92
Other Community	0.17	0.84	0.31	1.16	-0.45	1.04	0.22	1.05	0.37	2.11	-0.03	0.24
Mining	-0.14	0.73	0.19	0.77	-0.45	1.11	0.11	0.58	-0.19	1.20	-0.05	0.37
Manufacturing	-0.08	0.48	0.10	0.45	-0.63	1.57	-0.06	0.35	0.14	0.99	-0.14	1.12
Utilities	0.26	1.02	0.73	2.33	-0.59	1.21	-0.18	0.72	0.11	0.48	-0.12	0.71
Single Establishment	-0.24	2.78	0.06	0.55	-0.20	1.33	0.15	1.70	0.02	0.25	-0.11	2.05
Employment Size												
0 – 9												
10 – 49	-0.16	1.57	-0.28	2.18	0.10	0.52	0.26	2.56	0.04	0.48	0.14	2.28
50 – 249	0.02	0.14	-0.19	1.21	0.49	2.22	0.46	3.62	0.08	0.67	0.32	4.23
250 +	0.00	0.00	-0.14	0.71	0.44	1.58	0.66	4.23	0.23	1.61	0.51	5.41
Part-Time Employment Share	0.04	0.30	0.12	0.73	0.12	0.50	-0.12	0.95	0.15	1.41	0.29	3.28
Ltd Liability	0.10	0.86	0.27	1.80	-0.34	1.67	0.07	0.58	-0.09	0.86	0.01	0.14
Performance Related Pay	-0.01	0.06	-0.17	1.46	-0.21	1.26	0.39	4.25	0.02	0.30	-0.03	0.46
Coverage												
LnWage	0.01	0.41	-0.01	0.17	0.04	0.95	-0.01	0.45	-0.05	1.93	-0.01	0.70
Technology Use												
Tried and Tested												
Develops Own	0.40	4.38	0.53	4.81	0.22	1.25	0.03	0.33	0.31	3.75	-0.05	0.90
Buys in Early Stage	0.55	5.40	0.51	4.27	0.39	2.12	0.23	2.29	0.15	1.70	0.02	0.26
Attitude to Risk												

Averse												
Neutral	0.03	0.34	-0.13	0.00	-0.26	1.65	-0.02	0.19	0.08	1.19	0.04	0.65
Loving	0.02	0.23	-0.00	0.77	-0.23	1.15	0.08	0.76	0.04	0.42	-0.04	0.58
R&D Active	0.06	0.75	0.29	2.86	-0.04	0.21	0.17	2.19	-0.06	0.90	0.01	0.14
Training Active	0.25	2.19	0.22	1.52	-0.50	2.18	-0.08	1.30	-0.14	1.48	-0.05	0.64
LnAge	-0.01	0.24	0.06	1.32	-0.25	3.48	-0.05	1.30	-0.00	0.00	-0.01	0.28
Age squared	0.00	0.27	0.00	1.56	-0.00	0.79	0.00	1.07	-0.00	1.31	0.00	1.22
VAT Registered	0.08	0.70	0.00	0.01	-0.23	1.08	-0.05	0.42	-0.10	1.03	-0.17	2.08
Strategy Indices												
Shareholder	0.05	0.89	0.01	0.08	-0.06	0.59	0.04	0.67	0.16	3.52	-0.08	2.27
Stakeholder	0.18	2.66	-0.01	0.09	0.17	1.40	-0.04	0.65	0.15	2.78	0.01	0.15
Health & Safety	-0.07	1.25	-0.15	2.05	-0.02	0.22	0.01	0.13	0.08	1.60	0.01	0.29
Innovation	0.35	3.22	-0.25	1.78	0.47	2.12	0.20	3.70	0.07	1.54	0.01	0.20
Customers & Markets	0.09	2.04	0.02	0.29	0.20	2.33	0.11	2.58	0.10	2.55	0.04	1.45
People	0.29	3.27	0.22	1.95	-0.11	0.59	0.72	4.83	0.09	1.27	-0.07	0.98
Constant			-2.93	4.88	6.07	5.18					1.60	2.61
N Obs	1090		1372				1086		1585		893	
Prob > $\chi 2$	0.000 01		0.0000 1				0.00001		0.00001		0.00001	
Adj Rsq											0.06	
Pseudo Rsq	0.31						0.10		0.06			

Figure 25

Business Performance, Part 2

Variable	(6) Employee Commitment		(7a) Exporter (yes)		(7b) Export Intensity		(8) Skills Benchmark		(9) 3 Year Sales Change %		(10)	
	Coeff	Z stat	Coeff	Z stat	Coeff	Z stat	Coeff	Z stat	Coeff	Z stat	Coeff	T stat
Health & Safety	0.00006	1.64	0.00	0.16	0.00	0.14	0.03	0.41	0.0001	2.37		
Spend per FTE												
Region												
West Midlands												
East Midlands	0.22	1.18	0.05	0.25			0.08	0.48	0.02	0.01		
East	0.17	0.98	0.20	0.97			0.03	0.16	0.08	0.06		
London	0.14	0.91	0.64	3.53			-0.17	1.11	-0.50	0.42		
North East	0.37	1.57	0.13	0.48			0.11	0.49	3.03	1.73		
North West	-0.08	0.51	0.23	1.18			0.00	0.02	0.96	0.76		
South East	0.26	1.70	0.27	1.50			0.03	0.24	-0.16	0.14		
South West	0.09	0.54	0.34	1.79			-0.05	0.30	1.76	1.39		
Yorks & Humber	0.06	0.35	0.25	1.22			0.03	0.20	0.99	0.74		
Wales	0.19	0.98	0.16	0.70			0.17	0.09	0.40	0.27		
Scotland	0.36	1.48	0.39	1.54			-0.04	0.22	0.78	0.46		
N.Ireland	0.08	0.27	0.86	2.69			-0.09	0.36	1.25	0.56		
Sector												
Agriculture												
Construction	-0.08	0.44	-0.20	0.89	3.77	0.35	-0.01	0.06	0.67	0.49		
Personal Household	0.13	0.85	0.47	2.52	1.70	0.22	0.47	2.93	-2.01	1.70		
Retail, Hotels, Catering	-0.11	0.55	0.46	1.81	-5.09	0.48	0.58	2.71	-0.90	0.56		
Transport	0.14	0.78	0.56	2.62	13.26	1.54	0.29	1.54	-0.90	0.63		
Finance	0.10	0.52	0.09	0.40	5.51	0.59	0.06	0.31	-3.94	2.61		

Real Estate	0.31	1.87	0.38	1.96	-0.66	0.08	-0.10	0.55	-1.76	1.42
Education	0.30	1.48	0.32	1.37	26.69	2.79	-0.10	0.46	-3.16	2.11
Health	0.46	1.84	-0.65	1.59	-21.65	0.92	-0.37	1.40	0.82	0.46
Other Community	0.51	2.42	-0.19	0.72	-3.51	0.31	-0.02	0.09	-1.73	1.16
Mining	0.17	0.91	1.00	4.73	13.84	1.63	-0.03	0.17	-1.43	1.00
Manufacturing	0.12	0.73	1.07	5.49	9.61	1.21	0.00	0.03	-2.40	1.88
Utilities	0.13	0.48	0.42	1.51	0.94	0.09	-0.43	1.71	-2.36	1.21
Single Establishment	0.21	2.25	0.12	1.20	-0.68	0.18	0.01	0.10	-0.72	1.04
Employment Size										
0 – 9										
10 – 49	-0.41	3.94	0.12	1.07	0.21	0.05	0.05	0.54	0.12	0.15
50 – 249	-0.59	4.61	0.17	1.19	0.46	0.09	0.03	0.26	0.77	0.79
250 +	-0.57	3.67	0.20	1.13	6.05	1.01	0.05	0.36	0.81	0.68
Part-Time Employment	-0.43	3.41	-0.31	2.08	-4.84	0.75	0.34	2.76	-0.01	0.01
Share										
Ltd Liability	-0.04	0.29	0.31	2.24	2.78	0.63	-0.16	1.40	0.39	0.41
Performance Related Pay	0.13	1.40	0.22	2.20	-8.17	2.28	0.06	0.65	0.86	1.26
Coverage										
LnWage	0.02	0.71	0.04	1.09	-0.21	0.18	-0.04	1.42	-0.18	0.88
Technology Use										
Tried and Tested										
Develops Own	-0.08	0.86	0.48	4.74	14.44	3.61	0.02	0.21	1.72	2.44
Buys in Early Stage	-0.06	0.62	0.31	2.74	4.48	1.05	-0.01	0.13	1.15	1.48
Attitude to Risk										
Averse										
Neutral										
Loving										
R&D Active	-0.12	1.52	0.34	3.76	4.45	1.18	0.00	0.03	-1.37	2.28
Training Active	-0.30	2.50	0.07	0.53	-0.14	0.03	-0.19	1.61	-0.22	0.26

LnAge	0.04	1.07	0.11	2.67	1.52	1.03	-0.02	0.70	0.79	2.86
Age squared	-0.00	0.03	0.00	0.28	-0.02	0.36	0.00	0.23	-0.01	0.90
VAT Registered	-0.03	0.28	0.31	2.25	-9.22	1.60	0.13	1.08	-0.76	0.90
Strategy Indices										
Shareholder	0.02	0.42	0.10	1.57	-1.48	0.64	0.04	0.74	1.29	3.17
Stakeholder	0.14	2.30	-0.27	3.76	-6.42	2.29	-0.14	2.18	0.75	1.53
Health & Safety	0.04	0.64	-0.10	1.60	-0.84	0.36	0.12	2.06	-0.57	1.30
Innovation	0.25	4.72	0.03	0.52	3.46	1.69	-0.09	1.78	0.00	0.00
Customers & Markets	-0.07	1.53	0.06	1.13	1.45	0.77	-0.04	0.93	-0.23	0.71
People	0.53	3.96	-0.03	0.32	0.65	0.19	0.31	2.18	2.06	3.13
Constant			-3.38	6.20	17.73				6.91	2.07
Selection term			-0.80	0.10						
N Obs	1596		1442				1098		1620	
Prob > $\chi 2$	0.00001		0.00001				0.00001		0.00001	
Adj Rsq									0.03	
Pseudo Rsq	0.15						0.07			

Section 11

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Work and Enterprise Panel 2

Business survey

This report is intended to provide up-to-date information on UK business attitudes, intentions and performance vis a vis health and safety in the workplace. In addition, it aims to provide robust empirical evidence concerning any linkages and impacts of health and safety strategy and expenditure on an array of hard and soft performance measures of intermediate and final business performance. We also consider how health and safety issues interact with key strategic decisions in other core business areas to achieve the greatest impact on observable performance.

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