The impact of expert health and safety advice

– on company performance

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Research summary

Our research and development programme

IOSH, the Chartered body for safety and health professionals, is committed to evidence-based practice in workplace safety and health. We maintain a Research and Development Fund to support research, lead debate and inspire innovation as part of our work as a thought leader in safety and health.

In this document, you'll find a summary of the independent research we commissioned from Glasgow Caledonian University: 'Superior safety performance – OSH personnel and safety performance in construction'. This report forms part of a research series to look at the impact of expert safety and health advice.

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The impact of expert health and safety advice

What's the problem?

Look at the FTSE or the football league tables and you'll see a range of performances. Some companies deliver better financial results than others, and some football teams deliver better sporting results than others. It's the same in health and safety – some organisations are better at health and safety. But what is it that top health and safety performers do differently? In the UK, there is a real lack of research to answer this difficult question.

One idea – the 'Triple ace triangle'* – suggests that there are three key ingredients for leading health and safety performance:

* The 'Triple ace triangle' was developed by Ian Waldram and Nigel Bryson and presented at the Scottish Health and Safety Revitalisers Forum in 2003.

We commissioned Dr Iain Cameron, Dr Billy Hare and Dr Roy Duff at Glasgow Caledonian University to look into this complex issue – and focus specifically on whether there's a relationship between competent health and safety advice and health and safety performance in the construction sector.

Why construction?

- The sector has a poor history on health and safety. With around 30 per cent of worker deaths down to construction, it's an important candidate for improvement.
- High accident rates in construction, compared to, say, banking and finance, mean that we can establish any links between investment in health and safety and performance more confidently.
- Using a single sector means that we can draw conclusions more easily, without having to account for the influence of other industries.

The research had five key goals:

- develop ways to measure the quality and quantity of health and safety personnel
- choose ways to measure health and safety performance
- find out if there is any relationship between these two factors
- if there is, then find out the costs and benefits of the relationship
- look at how health and safety professionals and other key personnel operate in construction companies and how this impacts on health and safety performance.

What did our researchers do?

The team at Glasgow Caledonian University gathered a wide range of information using a questionnaire sent to construction companies sourced through industry contacts, the Health and Safety Executive's Construction Web Forum and IOSH's Construction Specialist Group. We also captured similar information using the Construction Health and Safety (CHAS) database. In total, we gathered data from 101 contractors, employing 660 health and safety personnel and over 200,000 site workers. Turnover ranged from £4 million to £700 million. Seventy per cent had accident frequency rates below the industry average.

Before designing the questionnaire and interrogating the database, we had to decide how to measure quality and quantity of health and safety personnel, health and safety performance, costs and benefits, and how health and safety is managed. This was critical to shape the type of questions we asked.

The quantity measure we used was 1 unit per full-time health and safety practitioner, including a fractional count for part-time staff. We used 0.1 of a unit for consultants. This was based on the actual time spent by consultants working for construction companies – typically two days a month or 10 per cent of a month based on 20 working days a month.

We based the quality measure on the experience and qualifications of health and safety professionals. We used existing survey data to set up a range of representative salaries reflecting both experience and qualifications. This gave us a three-by-three matrix with a salary representing each combination. To give the figures a measure of proportion we presented them as a percentage of company turnover.

Multiplying the quantity measure by the quality measure gives a measure of investment in health and safety professionals. How effective this is depends on other factors at the business.

We measured health and safety performance by using the reportable* accident frequency rate per 100,000 site workers, including sub-contractors, for the most recent financial year. Looking at accidents alone doesn't give the whole picture, leaving aside areas including ill health, plant damage and reputation issues. But we decided to focus exclusively on reportable accidents because information on them is the most consistent and readily available.

We wanted to find out if there was a relationship between investing in health and safety professionals and in the company's health and safety performance. If there was a relationship, we needed to know how strong it was – this tells us how closely the two are related to one another. We were also interested in its direction – this tells us how the two are related. For example, does an increase in one produce a decrease in the other? To do this, we had to calculate a measure of association between investment in professionals and company performance, and also make sure that this relationship is a 'true' one, rather than one of chance, by testing its significance.

* Accidents reportable under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995.

If there was a relationship between this investment and performance, we'd be able to find out what the relationship is between investment and the cost of accidents. For our research, we used an established model* which proposes that if health and safety performance is good, the cost of accidents will be lower but the investment in health and safety management will be higher.

Using accident costs, provided by the HSE, for 'major' (£18,531) and 'over three day' (£562) accidents, we multiplied the number of reportable accidents at each construction company by the relevant cost before converting to a percentage of turnover to give a cost of accidents. We could then relate health and safety performance in cost units to accident frequency rates. We related our calculated investment in health and safety professionals to these rates in a similar way. From this we were able to find a cost–benefit relationship.

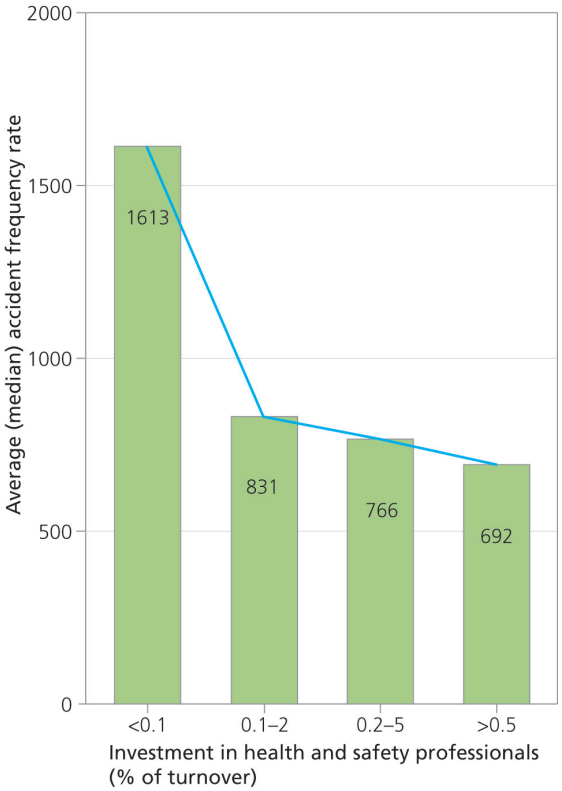
How effective health and safety management is depends on a number of factors, including the role of health and safety professionals. So, finally, we collected information on the level and extent of these factors for each company. We were then able to compare health and safety performance, in terms of accident frequency rate, according to these factors:

- in-house health and safety professionals versus health and safety consultants
- affiliation to an industry or professional body
- in-house health and safety training for workers
- in-house vetting of sub-contractors by health and safety personnel
- authority of health and safety professionals
- line manager training in health and safety
- incentives or reward schemes for health and safety
- clients' interest in health and safety
- health and safety management system
- behavioural safety programme.

* Research by S L Tang, H K Lee and K Wong, 'Safety cost optimization of building projects in Hong Kong', published in *Construction Management and Economics* in 1997, suggested this model.

What did our researchers find out?

When the research team looked at the relationship between investment in health and safety professionals and health and safety performance (in terms of accident frequency rate), it found a small – 0.25* – but significant relationship. So increasing investment in health and safety professionals is linked to a cut in accident rates – or better performance.



The impact of investing in health and safety professionals

The team also found lower average accident rates when it looked at other factors in these construction companies:

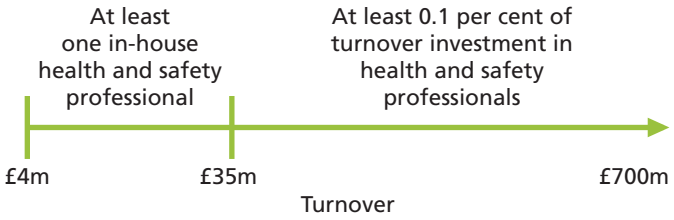
- Companies with in-house health and safety professionals have an accident rate nearly 60 per cent lower than those that only use consultants.
- Using consultants is more common in smaller companies (with a turnover of less than £25 million). In this category, companies that employ a mixture of health and safety staff and a consultant tend to perform best.
- Companies affiliated to an industry body, or with health and safety personnel who have professional body membership, have close to a 50 per cent lower accident rate than those with none.
- Companies with health and safety professionals who train staff in health and safety have accident rates that are one third lower than those that don't.
- Companies with health and safety personnel who vet or assess sub-contractors have close to a 60 per cent lower accident rate than those that don't.
- Companies with health and safety personnel who have significant management authority have a 60 per cent lower accident rate than those with professionals who just give advice.
- Companies with line managers with higher levels of health and safety training and qualification – VQ level 3 or above – have the lowest accident rate. Companies with line managers qualified at VQ level 2 have a higher rate of accidents. Those with the lowest level (up to two days' training) have an accident rate more than eight times higher than companies with the most highly trained or qualified line managers.

* The size of this figure isn't surprising bearing in mind the many other influences on accident rates. A 'perfect' relationship would be 1, and no relationship at all would be 0.

Cost–benefit in our construction research

Using the links between investment in health and safety professionals and accident costs, produced for the cost–benefit analysis, our researchers' findings suggest that there should be a *minimum* investment in health and safety professionals of 0.1 per cent of turnover, resulting in 0.03 per cent accident costs. The average accident frequency rate of companies below this level of investment is more than double of those above.

These results show, on the *cost of accidents* alone,* that a construction company with a turnover of £35 million should invest in salary costs of at least £35,000 for a qualified in-house health and safety professional. But our findings demonstrate (page 05) that *all* construction companies can benefit significantly – in terms of cutting down on accidents – from having in-house health and safety professional expertise.



Investing in health and safety professionals for our sample of construction companies (£4m to £700m turnover)

* Of course, this model doesn't cover the critical legal and ethical reasons for investing in health and safety advice.

What does the research mean?

- Based on our sample, construction companies should consider investing in a suitably experienced and qualified *in-house* health and safety professional – consultants should only be seen as a supplement, not a replacement. Investment of 0.1 per cent of turnover is an absolute minimum as turnover grows to £35 million and above. But, obviously, increasing the number of health and safety professionals indefinitely won't cut accidents to zero.

- We found that bringing in a consultant is an effective way to supplement an existing in-house health and safety professional. Using only a consultant is linked to higher accident rates in construction.

- In companies where line managers are more highly trained or qualified in health and safety, accident rates are lower.

- Health and safety management can be more effective if health and safety professionals also get involved in training, vet sub-contractors and have significant management authority.

- Being a member of an industry or professional health and safety body is linked to a lower accident rate.

Don't forget

Like most studies, this one had some limitations. Having more data would have helped with the large number of organisational issues we tried to explore. The sample was positively skewed towards companies with a lower accident rate – 70 per cent were below the industry average. This isn't surprising, as good performers are more likely to volunteer to take part in a study like this.

You also need to bear in mind that the study didn't take account of *all* accidents and cases of ill health in the sampled companies, or less tangible issues such as reputation damage. The research didn't factor in other influences on accident rates, for example safety culture.

All the costs in this research relate specifically to the construction companies we looked at, so should be considered as indicative only. Our analysis focused on detecting the overall effect of investment in health and safety professionals in construction and didn't distinguish between, for example, whether a large investment in health and safety personnel could be several people with a lower level of qualifications and experience or a few highly qualified and experienced professionals. It would be good to address this issue in future research.

What's next?

This research, carried out for IOSH by Glasgow Caledonian University, is the first of its kind in the UK. Other reports in this series that focus on the impact of expert advice look at the links between health and safety culture, advice and performance, and how health and safety management affects both businesses and the people who work in them:

Cardiff University
'Occupational health and safety: culture, advice and performance', **www.iosh.co.uk/safetyculture**

Organisational culture – 'the way we do things around here' – and competent health and safety advice clearly have an impact on health and safety performance. But does one factor make more difference than the other? This project looks at and compares the contributions culture and advice make to performance.

Loughborough University
'Occupational safety and health: promoting good health and good business', **www.iosh.co.uk/impmanagement**

This project focuses on the impact of health and safety management from two different angles. It considers the organisation's perspective – profit margin, staff turnover and accident and sickness absence rates – and the employee's perspective – job satisfaction and motivation, absence and physical and mental health.

Backing up our arguments for higher standards in health and safety

The findings from the Glasgow Caledonian University research highlight the importance of getting expert advice in health and safety.

To find out more about this issue and our position, see our policies on health and safety assistance at **www.iosh.co.uk/Books-and-resources/Health-and-safety-assistance.aspx** and on accountability at **www.iosh.co.uk/Books-and-resources/Accountability.aspx**.

For more information, download our guides on 'Setting standards in health and safety' (**www.iosh.co.uk/standards**), 'Getting help with health and safety' (**www.iosh.co.uk/gettinghelp**) and 'Consultancy good practice' (**www.iosh.co.uk/goodpractice**).

Our summary gives you all the major findings of the independent project report by Glasgow Caledonian University. If you want to read about the study in more depth, you can download the full report from **www.iosh.co.uk/safetyperform**.

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We set standards, and support, develop and connect our members with resources, guidance, events and training. We're the voice of the profession, and campaign on issues that affect millions of working people.

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