

Comparative study

Reducing back injuries and costs while improving productivity: What every Board wants to hear

While workplace safety will always be a priority, increasingly safety managers are investing greater attention on methods for reducing injury and costs, improving productivity, and improving the safety culture and education of workers. Whether you have a workforce working in remote mine sites in harsh and challenging landscapes or city offices with a more sedentary work environment, mitigating risk and improving the health and wellbeing of your workers has never been more important. As workplace culture around health and safety shifts, so too must the strategies to equip safety managers with modern solutions for a contemporary workforce.

Work related injuries are a US\$250 billionⁱ problem in the United States alone and lower back injuries account for nearly 20% of workplace injuries in the US, Australia, and the UK. Safe Work Australia has re-estimated the total economic cost of work related injury to the Australian economy to be A\$61.8 billion representing 4.1% of GDP for the same periodⁱⁱ.

Beyond the obvious economic burden to companies, workplace injuries significantly impact workplace culture, candidate recruitment and employee retention. It is not surprising then, that reducing workplace injury and lower back injury specifically can have a major beneficial impact on the overall health and wellbeing of an organization and it's productivity.

Global French construction business, VINCI Construction UK, was able to introduce a highly effective solution to reduce high risk and repetitive movements that cause back soreness and chronic pain with its bricklayers in its UK division. Low back pain is more commonplace with continuous bending, twisting and heavy lifting. A study conducted in 2012 found bricklaying to be associated with multiple risks including energetic load (exceeding 25% heart

rate reserve), load on the lower back (exceeding the NIOSH-threshold value of 3.4 kN), repetitive force exertions of the upper extremities, frequent bending with trunk flexion exceeding 60° and working with the arms more than 60° elevated^{iv}. For VINCI Construction UK, addressing back pain was a process of rethinking how they work.

Lower back pain, strain and injury might be typical for bricklayers, but that doesn't make it acceptable. VINCI Construction UK has created a culture where its workforce is empowered to be actively involved in improving the working environment and workplace activities with the aim of minimising risk.

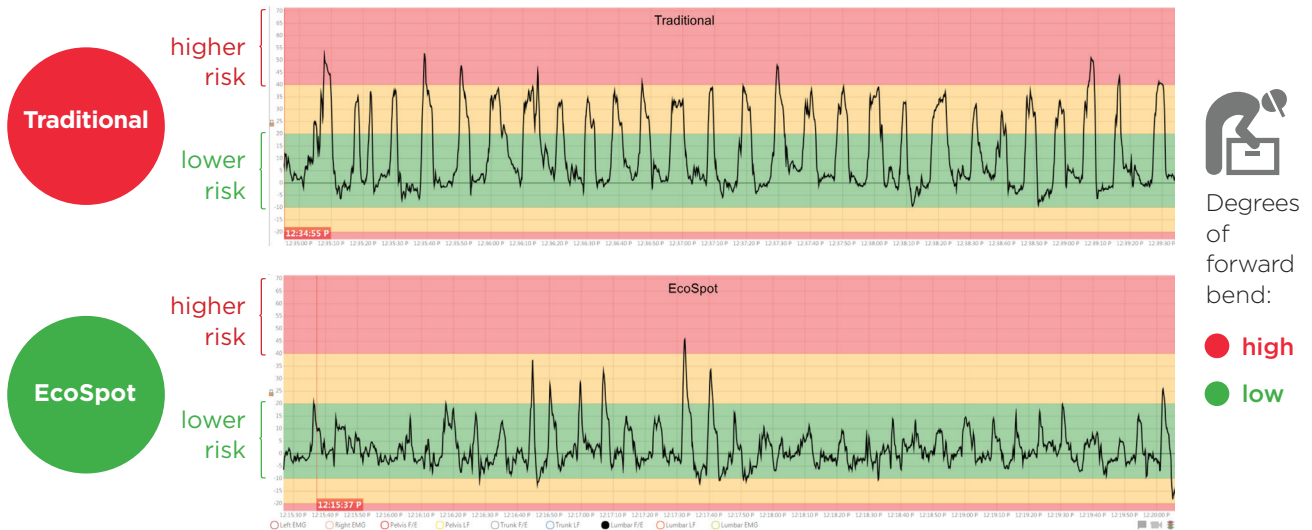
The EcoSpot is a scaffold-mounted mortar board designed to reduce repetitive bending. While the concept is intuitive in its simplicity, proving the benefits scientifically was ultimately required to support its introduction.

ViSafe is a wearable sensor technology that is able to discretely measure movement and muscle activity in real time and on the job in an employee's actual work environment.



ViSafe quickly and effectively measures human movement in a way that gives companies easy to interpret data that can be turned into measurable results. ViSafe was used to objectively measure and validate whether the EcoSpot could help ease worker burden and reduce risk of injury, particularly to the lower back.

Bricklayers wore small sensors during their work day and switched between using the traditional mortar board and the EcoSpot. Data was transmitted wirelessly in real time and allowed assessors to measure muscle activity and body movement.



“The traditional way that bricklayers lay bricks is by stacking the bricks about a foot off the ground and putting a wooden mortar board on the top. Can you imagine bending every day getting mortar constantly from that lower board to build your wall? They’re going to be bending over every time they need to lay a brick, about 2000-2500 times per day. Introducing the EcoSpot, which is adjustable, was great but we needed the proof that it would reduce bending and strain on the back for us to adopt it.”

John Baugh, Senior Construction Manager VINCI Construction UK.

The ViSafe data confirmed the EcoSpot was effective in reducing activities associated with lower back pain compared with traditional methods of laying bricks. In particular:

- Time spent with back bent over 20 degrees **reduced by up to 85%**
- **84% reduction** in lower back muscle activation
- Repetition of higher risk movements **reduced by up to 70%**
- **17% increase** in productivity, measured in bricks per minute

The results of the study were compelling with the EcoSpot resulting in superior performance in terms of safety and productivity compared with traditional methods of working, supporting its implementation. The comparison between alternative means of working using hard data provided by ViSafe showed the obvious benefits of one over the other. By implementing the new and improved way of working, all involved will enjoy its benefits - workers will experience less pain and injury, while employers will see less time lost by injured workers needing time away for treatment, and importantly the 17% improvement in productivity.



Download our video case study for
VINCI Construction UK
<http://get.dorsavi.com/vinci-visafe/>

The Impact of Workplace Back Injury

AUS

1 in 5



Number of serious claims involved an **injury to the back.**¹

UK

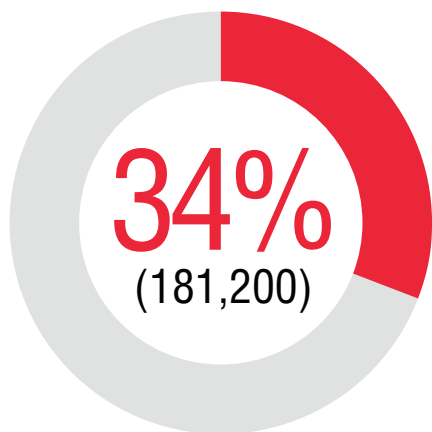


9.5 million

working days lost each year due to **musculoskeletal injury.**

The average days lost per case for musculoskeletal disorders was 17 days, second only to stress, depression or anxiety (23 days).²

AUS

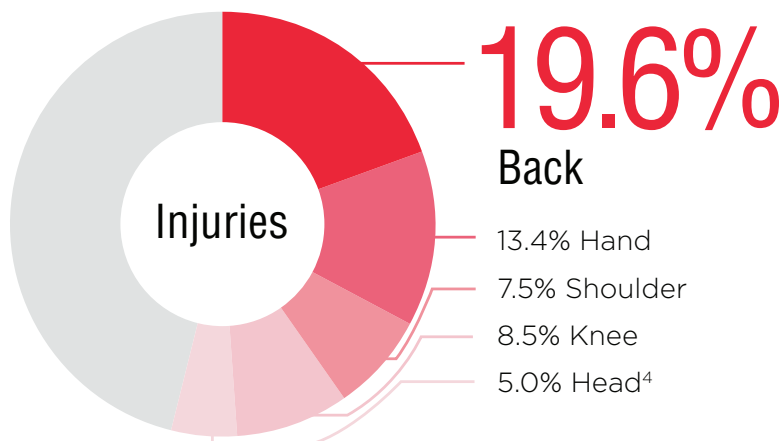


Of the 531,800 persons who experienced a work-related injury or illness, **34%** sustained their injury or illness through **'lifting, pushing, pulling or bending.'**³

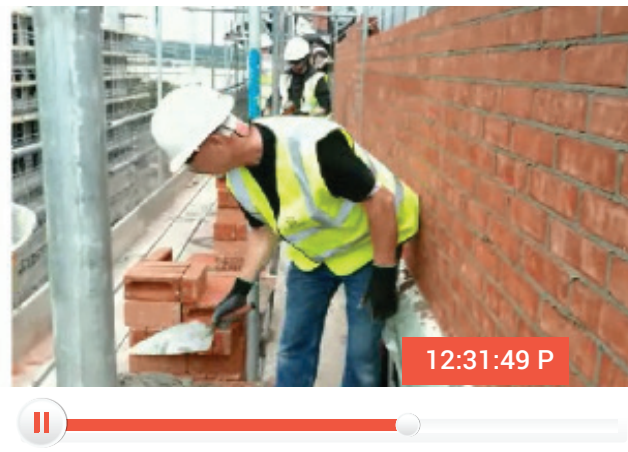
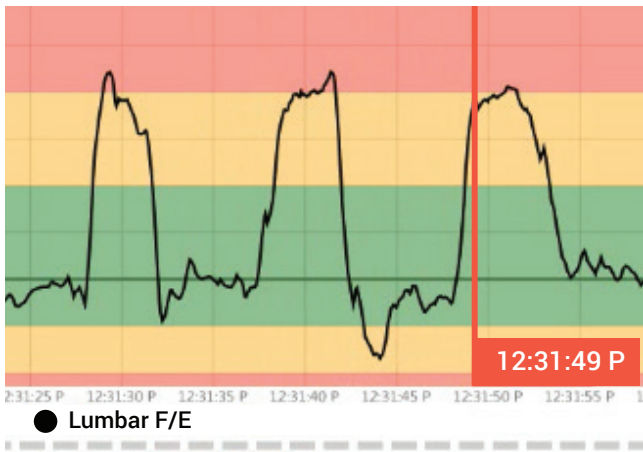


USA

According to the Bureau of Labor Statistics, the **back was the body part most frequently affected** in 2012 private-sector injuries involving days away from work.



1. <http://www.safeworkaustralia.gov.au/sites/SWA/about/Publications/Documents/758/Key-WHS-Statistics-2013.pdf>
 2. <http://www.hse.gov.uk/statistics/at-a-glance.pdf> 3. <http://www.abs.gov.au/ausstats/abs@.nsf/mf/6324.0>
 4. <https://ohsonline.com/articles/2015/09/01/preventing-manual-handling-injuries.aspx>



(LOW BACK BENDING INTO THE RED ZONE)



Data-driven decision making

Chronic musculoskeletal disorders are the **most expensive of all conditions** for workers compensation schemes and have been the focus of preventive campaigns for some time. Currently, OHS interventions focus on physical risk factors using a risk management framework in which hazards are identified, assessed and controlled. This approach is reflected in the national standards set by industry regulators around the world. Despite aggressive efforts to reduce back injuries by diligent safety managers, progress has been elusive. **The lack of quantifiable information** is one of the key factors that has hindered safety managers from making greater strides in reducing injuries.

In the age of the Internet of Things—where machines are equipped with sensors to communicate important data about performance and output—it's understandable that leading companies should start to expect that same level of precise data about their most important assets—their people.

Data-driven decision making is now in the hands of corporate leaders and managers with access to data readily available. For the OHS industry, technology is a powerful response to the growing prevalence of workplace injury and costs, both of which are the leading concerns for business owners,

safety officers and workers compensation insurers.

In a study conducted by the Safety Institute of Australia, more than 36% of OHS personnel surveyed predicted OHS costs to increase and almost 50% said efforts to minimise OHS risks within their organization are compromised by concerns that the solution will have a negative impact on productivity⁴.

Finding a solution that can address both the risk and improve productivity is a powerful combination.

There are many examples of different industries harnessing the power of data to improve performance and create benchmarks to monitor and measure performance.

Collecting and analyzing data that precisely records how workers move is highly valuable in helping to determine which activities or practices might put them at higher risk of injury. That same objective data enables companies to do their own comparative studies to test the efficacy of new tools, new work processes, or proposed preventative solutions. Armed with better data, company leaders can be more agile, and can more confidently make investment decisions to improve their company's bottom line.

Advanced sensor technology such as ViSafe enables significant amounts of information to be collected in a non-invasive manner over short or long periods to remove the guesswork from decision making.

Workplaces can apply the data to compare existing ways of working with new methods to discover which is best, more efficient or safer.



Comparing data to measure the impact of changes in the ways people move or types of equipment being used can provide valuable insights into whether the investment in such changes should be pursued.

Such comparisons and the changes the data and insight can enable will mean safer and more efficient workplaces – benefiting workers, employers and society as a whole.



dorsaVi is an Australian technology company that measures human movement like never before to give companies, clinics and athletes objective, easy to interpret data that can be turned into measurable results.

dorsaVi's Workplace Solutions team works with companies in Australia, the United States and United Kingdom including Crown, BP, Sodexo, Caterpillar, Transport for London (London Underground), Woolworths and Orora.

ViSafe is a wearable sensor technology that tracks and measures how people move in real time work situations. It enables employers to assess risk of injury for its workforce as well as test the effectiveness of proposed changes to workplace design, equipment or methods based on objective evidence. It is one of the only technologies in the world that can accurately measure movement and provide truly objective data to inform workplace decisions.



Further information

www.dorsavi.com twitter.com/dorsavi
[linkedin.com/company/dorsavi](https://www.linkedin.com/company/dorsavi)

- i <https://ohsonline.com/Articles/2012/01/23/US-WorkRelated-Injuries-Illnesses-Cost-250-Billion-Annually-Study.aspx?Page=2>
- ii <http://www.safeworkaustralia.gov.au/sites/SWA/about/Publications/Documents/940/cost-of-work-related-injury-and-disease-2012-13.docx.pdf>
- iii <http://www.hse.gov.uk/statistics/cost.htm>
- iv <http://www.ncbi.nlm.nih.gov/pubmed/20886532>
- v https://sia.org.au/downloads/Surveys/Reports/AIM_Business_of_Safety.pdf