



**UNIVERSITY OF
CAMBRIDGE**

Department of Engineering

CONSTRUCTION ENGINEERING MASTERS DISSERTATION ABSTRACT

How is construction health and safety considered upstream of the construction stage?

Construction is one of the highest risk industry sectors in which to work in terms of health and safety, with unacceptable standards routinely encountered. In Britain construction accounts for approximately 5% of employees, but in 2012/2013 it accounted for 31% of fatal injuries to employees and 10% of reported major/specified injuries.

Despite significant statistical improvements being made since the introduction of the Health and Safety at Work Act 1974, trends in health and safety within construction in the last 5 years are concerning as the reduction of fatal injuries appears to have reached a plateau and is not showing any further sign of improvement. It is therefore important to understand the optimal approach to reducing health and safety incidents in construction and to question whether this approach is widely understood and adopted, or whether there are untapped opportunities to improve the wellbeing of construction employees. This is the underlying rationale for this research.

This paper reviews established literature into the causation of construction accidents and the direct and indirect costs associated, both to the industry and wider society, before exploring the perceived links between design and construction health and safety performance. There is further discussion of the availability and use of predictive models to help Designers identify health and safety risks within designs along with blockers towards implementation and the role of legislation.

The works of Szymberski (1997) were a key driver for this study. The overall aim was to explore his theory of the positive link between design considerations and health and safety performance; to understand how construction health and safety performance is considered upstream of the construction stage by Designers; and, by comparing current practices with Szymberski's view of best practice, to understand whether there are opportunities to make construction a safer place to work and improve the wellbeing of construction workers through design.

The research concludes that there is a gap between the perceived ideal and current practices as, in many instances, construction health and safety is not actually first considered until after the design stage - at developed design stage or even the construction stage. Two specific opportunities are identified to make construction a safer place to work by: building knowledge of the influence of design on construction health and safety through academic teaching; and by developing tools to help Designers identify health and safety risks within designs.

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