

THE USE OF WORST CASE SCENARIOS IN DECISION MAKING BY BUSHFIRE FIGHTERS

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Expert decision makers in bushfire settings regularly perform well under complex and hazardous conditions, particularly when situations develop in predictable patterns (Klein, 1998).

But what about extreme events?

Worst case scenarios are low-probability, high-consequence events, which must be considered to ensure safe decision making.

Although disaster prevention and mitigation are critical aspects of decision making in bushfire fighting, little systematic research has been carried out on the impact of worst case scenarios, in either intuitive or deliberative decision making.



Worst Case Scenarios in Naturalistic Decision Making (NDM)

The consideration of worst case scenarios may be particularly difficult for decision makers dealing with the challenges of NDM settings.

The NDM tradition rests on the contention that expertise, developed through considerable experience, is essential to effective decision making (Zsombok & Klein, 1997).

Extreme events, including worst case scenarios, are infrequently experienced. This poses a problem for anticipating such scenarios in real-world environments; more routine experience may bring with it a lower capacity to identify major unexpected extreme events.



A small fire has the potential to escalate into a major disaster

Methodology

To obtain a better understanding of how worst case scenarios are currently involved in decision making, post-incident interviews were conducted with Australian bushfire fighters in the 2004-5 and 2005-6 fire seasons using the Human Factors Interview Protocol (Omodei, McLennan, & Reynolds, 2005).

Findings

Interview analysis found that those in decision making roles often spontaneously mentioned worst case scenarios when relating a recent fire incident. This suggests that worst case scenarios are used during decision making on the fireground, although it remains unclear the extent to which they are consciously considered, or may play an implicit role and are only verbalised later as an explanation.

Common themes from interviews provided insight into the impact of worst case scenarios on decision making at different levels of command. Findings suggest that worst case scenarios are, and can be, used in decision making processes. In addition, considering worst case scenarios may lead to safer decision making.

References

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- Omodei, M. M., McLennan, J. & Reynolds, C. (2005). Identifying why even well-trained firefighters make unsafe decisions: A Human Factors Interview Protocol. In B. W. Butler & M. E. Alexander (Eds.). *Proceedings of the Eighth International Association of Wild Fire Safety Summit*, International Association of Wildland Fire, Hot Springs, SD, CD-ROM
- Zsombok, C., & Klein, G. (Eds.). (1997). *Naturalistic decision making*. Mahwah, NJ: Lawrence Erlbaum.

Further Research

Current research with Australian bushfire fighters will extend these preliminary findings.

A critical incident interview methodology will be used to more fully investigate the use of worst case scenarios in decision making. Interviews will focus on a challenging or unusual incident experienced in the past.

This research aims to better understand how worst case scenarios are used in decision making and how they should be used, with particular attention to improving the consideration of worst case scenarios in decision making.

Outcomes

Overall findings will be carefully developed into training recommendations for fire agencies, with the aim of improving the safety of decision making.



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