THE INDIRECT COSTS ASSESSMENT OF RAILWAY INCIDENTS AND THEIR RELATIONSHIP TO HUMAN ERRORS: THE CASE OF SIGNALS PASSED AT DANGER

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INTRODUCTION
In this work, Signals Passed at Danger (SPAD) are railway incidents where:
- train passes a stop signal without authority to do so
- there are no passengers hurt and no damage to rolling stock or rails
SPADs result in indirect costs that are difficult to isolate and quantify.

This project introduces a novel framework to quantify the indirect costs of railway incidents and assesses the association between the costs and the associated human errors. This project aims to provide a new dimension on the investigation of railway incidents that could help to allocate more efficiently investments in preventative systems, which would in turn contribute to bringing a safer railway to the society.

DATA & METHODOLOGY

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RESULTS

- The two operators have different total costs, but they have very similar average costs and standard deviations.
- Scenarios that end up with driver dismissals and demotions cost much higher.
- Statistical tests confirm association between cost and outcome of investigation (returned, dismissed, or demoted).

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REFERENCES
Kyriakidis, M. (2013) Developing a Human Performance Railway Operational Index to enhance safety of railway operations. Diploma of the Imperial College (IOIC), PhD, Imperial College London.

CONCLUSION
Industry should invest in more efficient investigation processes, so the relief duration of train drivers is reduced.
Demotions and dismissals are to be avoided, and decision makers should invest more in improved Safety Management Systems that could prevent human errors that could lead to these outcomes.
Further research needs to be conducted to quantify the significance of R-PSFs on each incident in order to investigate this correlation further and in turn suggest the most effective preventative measures.