Author's response to reviews

Title: Application of Disability-Adjusted Life-Year to Predict the Burden of Injuries and Fatalities due to Public Exposure to Engineering Technologies

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Author's response to reviews: see over
Reviewer: Kavi Bhalla

The authors are thankful to the reviewer for the critical comments.

1. Table 1, which presents disability weights, is very important because the results of the analysis scale directly with the values in this Table. The authors say that they have based the Table on the Australian BOD. I have now looked at the tables on the AIHW website and see very little correspondence between the sequelae categories used in this manuscript and the categories used in the Australian BOD. The manuscript includes a vague statement suggesting that there is not an exact correspondence. The authors need to be precise about how Table 1 was generated. My recommendation is to put footnotes under Table 1 explaining how the disability weights of various sequelae were mapped from the Australian BOD study.

Table 1 has been modified so as to show a mapping between TSSA specific injury types and the source from which these were derived. The authors acknowledge that accuracy is an issue with assumptions made with regards to the disability weights for certain injury types. However, best and sincere efforts have been made to map GBD/ABD diseases with possible TSSA specific injury types.

2. I continue to worry about the implication of using GBD weights for characterizing high-incidence low-disability conditions. The authors say that they are considering revising their disability weights and the manuscript now states that "The current choice of injury types is subject to revision based on short-comings identified in [19] in relation to differentiating high-incidence low-severity injuries from low-incidence high-severity injuries and also based on the improved methodology to measure disability weights [20]." I find this unsatisfactory because it does not provide any indication of the suitability of the choices of DWs that have been used in this paper. The authors need to at least discuss the implications.

Table 1 has been modified so as to readily identify the injury types that represent high incidence, low-disability conditions. The weights and durations have been assumed to be less than 0.02 so as to have these injury types accounted at the same time ensuring that weights are not over estimated. A possible bottleneck and its implication have been discussed in the section on adaptation of the disability weights.

There are sectors that TSSA regulates in which high-incidence low-disability conditions are quite common. In such circumstances, TSSA continues to focus on frequency of system-induced failures and causal reasoning alongside the risk knowledge driven by DALY metric in order to undertake strategic public safety decisions.
Reviewer: Harold Weiss

The authors are thankful to the reviewer.

Grammatical errors and charts have been corrected.

2. Page 3 - Last sentence and figure 2. I am not sure you need to mix your metaphors of icebergs and pyramids. One diagram could suffice for both. Might make it clear what port of iceberg is below water and what is above; icebergs don’t have two water lines.

As per the suggestion, only one diagram is retained.

7. Page 10 - 44.4 years? Please add the units.

Units have been added
Reviewer: Ronan Lyons

The authors are thankful to the reviewer for the critical comments.

The authors conclude, in the results section of the abstract, that the proposed model is generic and yet no metrics are provided to justify this conclusion. Reviewer Kavi Bhalla raised very pertinent questions as to how the TSSA specific injuries were mapped to the disability weights in the Australian BOD study. The authors’ response was to mention a spreadsheet in a reference. This is not good enough. I would expected to have seen a detailed cross-tabulation of each TSSA injury with the corresponding disability weight from the Australian BOD study, and detailed discussion of which fitted exactly or if not why the proposed metric was the best fit.

Table 1 has been modified to show a cross-tabulation of each TSSA injury with the corresponding disability weight from the appropriate source. A possible justification has been given for variances.

The abstract is very unusual. There is a results section but this does not contain any numerical results but a number of assertions and some detail on methodology. For example, it states that DALYs are converted to fatality-equivalents but nowhere in the paper is the formula for this given. (Page 10 includes mention of the median life expectancy of ‘victims’ in Ontario being 44.4 and that this is used in scaling but no detail of the exact method is provided).

The word ‘scaling’ has been replaced to mean dividing the determined DALY by the median life expectancy in Ontario to produce fatality-equivalent for the sake of public safety decision making purposes.