Author’s response to reviews

Title: A Comparison of Methods to Estimate the Survivor Average Causal Effect in the Presence of Missing Data: a Simulation Study

Authors:

Myra McGuinness (myra.mcguinness@unimelb.edu.au)
Jessica Kasza (jessica.kasza@monash.edu)
Amalia Karahalios (emily.karahalios@unimelb.edu.au)
Robyn Guymer (rh.guymer@unimelb.edu.au)
Robert Finger (robert.finger@ukb.uni-bonn.de)
Julie Simpson (julieas@unimelb.edu.au)

Version: 2 Date: 23 Apr 2019

Author’s response to reviews:

We thank the reviewers and editors for allowing us to submit a revised copy of our manuscript. Our response to comments and log of changes that have been made have been uploaded in a supplementary file. Responses have also been summarised below.

1. The reference to pseudo-always survivors has been removed to reduce confusion about up-weighting surviving participants (via the use of standardised weights) to represent deceased participants with similar characteristics as discussed on page 11 from line 191.

2. The SACE is estimated as the average causal effect across all always-survivors. Therefore, the value of tau needs to be constant for all values of the baseline parameters.

We have adapted these methods from Egleston et al (2007) who state:

If tau were chosen to depend on X, then the sensitivity analysis would become too complicated to display. Under the conceptualization of the problem of Hayden and others (2005), we would need many more tau-like parameters, even with our monotonicity assumption, to identify our estimand, particularly when dealing with continuous outcomes. Hayden and others (2005) reduce the dimension of the sensitivity parameters in their work by assuming proportionality across all levels of X.

Other sensitivity analysis methods to estimate the SACE also use a constant value of tau.

3. Bootstrap confidence intervals have been estimated for each simulated dataset and coverage rate reported in Table 1.
4. Text has been added to elaborate on the results. Columns have been added to Table 1 to give the level of coverage for the MSM approach.

5. We intended to show the benefits and limitations of using an MSM approach. Text has been added to clarify.

6. Additional text has been added and sentence referred to in the comment has been removed to clarify the relationship between unmeasured survival-outcome confounders, principal strata and survival bias.