Reviewer's report

Title: Estimating the Cumulative Risk of False Positive Cancer Screenings

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Reviewer: yu shen

Level of interest: A paper whose findings are important to those with closely related research interests

Advice on publication: Accept after discretionary revisions

This is an interesting piece of work to estimate the cumulative risk of false positive in cancer screenings. In particular, the authors generalized a previous approach by allowing the probability of dropout to depend on prior false positives. The method was applied to a breast cancer screening trial. Having more discussion for implications of the model fittings (Table 1) in the example will be interesting.

Following comments are discretionary:

2. It is unclear if the notation for R and some related conditional probabilities are necessary on pages 3 and 4, because the essential components are the probabilities of Y with various sets of covariates.
3. On page 5, is the definition for n2+n3 (line 7) accurate?
4. On page 6, in equation (4), is the summation from 2 to 5 or 2 to 4?
5. On page 6, in equation (5), should the first summation be "i=2" instead of "u=2"? And the index of the 3rd sum in (5) may be wrong. Please check the consistency of these indexes between equation (4) and (5).
6. In the last paragraph on page 6, authors emphasized that the two logistic regression models were fitted separately. Can you solve the unknown parameters via the likelihood function in (3), while having some efficiency gain?
7. On page 7, (line 2), should be "discrete survival time."
8. It would be helpful to elaborate the unnecessary work-up in the HIP example.
9. In the analysis of HIP trial, it is interesting to note that in the "Broad FP" model fitting for the first screening examination, the estimated covariate coefficients (with marginal significance) for different age groups have both positive and negative signs and do not have a monotonic trend. How do you interpret the results?

Competing interests:

None declared.