Reviewer's report

Title: On the proportional hazards model for occupational and environmental case-control analyses

Version: 2 Date: 23 August 2012

Reviewer: Shulian Shang

Reviewer's report:

The authors propose to use the Lin variance estimator for weighted Cox model for estimating the effects of time-varying exposures. Extensive simulation was conducted to evaluate the performance of this variance estimator, and to compare the weighted Cox model with standard logistic regression. The methods and simulation setting are well described. The manuscript provides a potentially useful method for estimating the effects of time-varying exposure variables in case-control studies.

Two comments should be addressed:

Major Compulsory Revisions:
1. Table 1: simulation results. The authors should report the relative efficiency and RMSE for method WC2. Is the performance better than method WC1 and logistic regression?

Discretionary Revisions
1. In Simulation results, 3rd paragraph, the authors discussed that for the intensity exposure variable, the WC1 and WC2 models were generally more accurate in terms of RMSE than both logistic regression models. But for the other exposure variables such as duration, age at first exposure and time since cessation, the ULR method is often more accurate than the WC methods. The effects for these variables are small in the simulation. It is worthwhile to give these exposure variables stronger effects and discuss how the WC methods compare with the ULR method.

Level of interest: An article of outstanding merit and interest in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests