Name: …………………………………………………………………………………

Student ID: ……………………………………………………………………………

Qualifying Examination

for Doctor of Philosophy (Epidemiology and Biostatistics)

(Duration: 09.00 – 16.00; Total score: 100)

*Students can use books or internet. Communication with anybody else is strictly prohibited.*

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**Part A: Epidemiology** (30 scores)

**Based on the attached article, please answer the following questions:**

1) What is the main conclusion of this paper? (2 scores)

2). What is the magnitude of effect that the author used for answering the primary research question? If there was none or inappropriately reported, please specify what should be reported for the research question? (8 scores)

3). What are biases that could make the results invalid? Please specify name and roles of each bias, i.e., the conclusion could be distorted in what ways and by what mechanisms. (10 scores)

4). Please summarize in one paragraph of less than 10 lines the main points that will improve the quality of this paper- pretending you are writing a letter to the editor of this journal your opinion on this paper. (10 scores)

**Part B: Biostatistics** (40 scores)

5). Based on the article in Part A:

5.1) Please describe methods that were used to obtain the magnitude of effect and comment on their appropriateness. (5 scores)

5.2) Please describe the other alternatives for statistical analysis and suggestion on their advantages or disadvantages. (5 scores)

6) Based on the data set with a description attached at the end of this material, please answer the following questions:

6.1) Plan for data analysis: Please provide a dummy table, the table without number being presented, that is the main finding to answer the research question for this study. (10 scores)

6.2) Perform the analysis: Please provide Stata or R commands (Stata do file or R scripts) to obtain the results for the dummy table you’ve provided. (10 scores)

6.3) Communicate the results: Please write an abstract to report the results. Note that this must be presented with real results obtained from your own analysis. (10 scores)

**Part C: Dissertation in brief** (30 scores)

**Based on your own dissertation, please answer the following questions:**

8) Summarize your dissertation in one paragraph of no more than 300 words (2 scores)

9). How to improve external and internal validity of the study? Please select only the main paper to answer this question. (8 scores)

10) Describe all possible alternative statistical methods that could be efficiently applied to your main paper as well as their advantages and disadvantages and justify why the one you selected is the best choice. (10 scores)

11) What is the main weakness of your thesis and how it affects the main conclusion? (10 scores)

12) What is/are the impact(s) that would be expected from the findings of your thesis? (10 scores)

Attachment

**Marriage Dissolution in the U.S.**

This dataset is based on a longitudinal survey conducted in the U.S.

The unit of observation is the couple and the event of interest is divorce, with interview and widowhood treated as censoring events. We have three fixed covariates: education of the husband and two indicators of the couple's ethnicity: whether the husband is black and whether the couple is mixed. The variables are:

* id: a couple number.
* heduc: education of the husband, coded
  + 0 = less than 12 years,
  + 1 = 12 to 15 years, and
  + 2 = 16 or more years.
* heblack: coded 1 if the husband is black and 0 otherwise
* mixed: coded 1 if the husband and wife have different ethnicity (defined as black or other), 0 otherwise.
* years: duration of marriage, from the date of wedding to divorce or censoring (due to widowhood or interview).
* div: the failure indicator, coded 1 for divorce and 0 for censoring.

**The investigators asked you to help in data analysis, writing the REPORT section of the manuscript, and prepare an abstract. As a doctor who graduated in a PhD in Epidemiology and Biostatistics, please do the best you can to help the investigators.**

\*\*\*\*\*\*\*\*Good luck \*\*\*\*\*\*\*\*