Lab 7

Psychology 319 (GCM)

Instructions. Work through the lab, saving the output as you go. If you work in Microsoft Word, you can easily copy any graph to Word via the clipboard. Numerical output may also be copied easily by highlighting, moving it to the clipboard, then copying into Word. However, you should format R output in TrueType Courier New font so that it is *monospaced*. Output from this lab is to be handed in by Friday, April 9. Your output file should be named `LAST_FIRST_LAB7.DOC`, where `LAST` is your last name, and `FIRST` is your first name. Any additional files should have the same naming scheme, except the file extension should be correct. You may add any description text you wish after `LAB7` in the file name.

Preamble. In today's lab, we fit and evaluate a discrete-time hazard model, using the techniques described in Chapter 11 of Singer and Willett.

1 Introduction

The data in the files *bully.txt* and *bully_pp.txt* represent data from a longitudinal study on an educational program designed to "innoculate" boys against playground bullying. Boys in the treatment group were given 3 hour-long presentations on strategies to prevent/escape bullying on the school playground. Boys were then monitored each school year. The event of interest was whether, in that school year, the boy had experienced a bullying episode in which he was the recipient of violence at least as severe as a punch or kick. The study concluded at the 8th grade.

2 Lab Assignment

Begin by computing the following, using the techniques and code presented in Chapters 10 and 11 of Singer and Willett and our class notes.

1. A life table from the raw data for the combined treatment and no-treatment groups, and for the two groups separately.

2. An estimated survival function and hazard function for the combined groups.

3. Life table, survival function, and hazard functions broken down by treatment group. Next

4. Fit a proportional-odds discrete-time survival model using the `glm` model, as presented in class.

5. Compute the baseline model, and the model using treatment as a predictor.

6. Report the deviance and Wald statistics for the hypothesis that the treatment has no effect.

7. Compute and plot the fitted survival and hazard functions for `treat=1` and `treat=0`.

8. How do the fitted values compare with the obtained values in your original life table?

9. Compute a 95% confidence interval on the treatment effect. Describe the substantive effect of the treatment in simple terms.