**From:** Ken (Lamb Consulting) [mailto:[ken@lambconsulting.com](mailto:ken@lambconsulting.com)]   
**Sent:** Tuesday, July 23, 2013 9:52 PM  
**To:** Fine, Deborah M.  
**Subject:** RE: Plots

Hi Deb,

You actually know the answer to this question, you are just not used to seeing it presented in this fashion.  First, think of this as a continuous variable situation where every one-unit increase in X results in a % increase in Y.  For our purposes, we are viewing the log of the hazard ratio, so if we take the log of a hazard ratio of 1 (recall that an odds ratio or hazard ratio of 1 is no difference or effect) equals 0 (ln 1 = 0).  We could deduce that at around PG 100 we see an intersection of 0.  However, what we are really looking for is to determine whether the hazard or in this case the log of the hazard follows a linear trend in order to be treated as a continuous variable.  If you did decided to treat PG as a continuous variable, we would say (based upon the output in tab Main Effects HR: 1.016 (1.011, 1.02)) that for every one unit increase in PG the risk (hazard) of all cause death (E) would increase by 1.6%.  However, what we are really using this plot for is to determine whether we are “in the ballpark” for categorization of our classes: mild (<50), moderate (50-120), and severe (<120).

So, on to the analysis, we actually see this time around that the level of severity (condition) persevered in the multivariate in the presence of age, in the presence of gender, and in the presence of age and gender.  This is interesting that the main effects are independent given that the interaction is NS (interaction tab) based upon the gender\*severity and age\*severity.  This phenomenon in the MainEffects Tab is echoed in the adjusted survival curve tabs (Adj\_E, Adj\_CE) where the curves cleanly separate.  Indeed the mild and moderate converge slightly compared to the univariate, but severe is way off on its’ own.

As an aside, the test for proportionality was NS (they are proportional) and is echoed in the plots.

I have also attached my edits for the SAS manuscript; they are minor.

Please let me know if you have any questions.

-          Ken

**From:** Fine, Deborah M. [<mailto:fined@missouri.edu>]   
**Sent:** Tuesday, July 23, 2013 10:55 AM  
**To:** 'Ken (Lamb Consulting)'  
**Subject:** Plots

Hi Ken,

I don’t think I understand the Log Hazard plot adequately.  A Hazard Ratio compares the risk of a given outcome between two groups right?  So what is the comparison that is being made on the Log Hazard plots?

Deb