Biostatistics 140.623
Third Term, 2017-2018

Laboratory Exercise 4

This exercise concerns time to death for a random subset of infants born in the Nepal Nutrition Intervention Program, Sarlahi (NNIPS-II).

The following are the results for a Cox proportional hazards model describing the hazard of death as a function of key predictors including gestational age.

The **Model** uses:

gestational age (*ga_cat*) (1 - gestational age <36 weeks; 2 - 36-37 weeks; 3 - 38-39 weeks; 4 - 40-41 weeks; 5 - 42+ weeks),

parity (*par_cat*) (0 - no prior live births; 1 – 1 prior birth; 2 2 -4 prior live births; 3 – 5 –8 prior live births; 4 - 8+ prior live births),

indicator of treatment group (*alloc*: 1– beta carotene; 2 - placebo; 3 – vitamin A),

indicator of maternal night blindness (*nblind* 0 – not night blind; 1 = night blind)

gender (*male* = 1 - male; 0 - female; 9 -missing).

```
. stcox i.ga_cat i.par_cat i.male i.nblind i.treat
i.ga_cat          _Iga_cat_1-5        (naturally coded; _Iga_cat_1 omitted)
i.par_cat         _Ipar_cat_0-4       (naturally coded; _Ipar_cat_0 omitted)
i.male            _Imale_0-9          (naturally coded; _Imale_0 omitted)
i.nblind          _Inblind_0-1        (naturally coded; _Inblind_0 omitted)
i.treat           _Itreat_1-3         (naturally coded; _Itreat_1 omitted)

        failure _d:  cens == 1
  analysis time _t:  stime

Iteration 0:   log likelihood = -5331.5528
Iteration 1:   log likelihood = -5240.9443
Iteration 2:   log likelihood = -5234.4384
Iteration 3:   log likelihood = -5234.4341
Iteration 4:   log likelihood = -5234.4341
Refining estimates:
Iteration 0:   log likelihood = -5234.4341

Cox regression -- Breslow method for ties

No. of subjects =         9537                  Number of obs   =      9537
No. of failures =          586
Time at risk    =      1524439
                                                LR chi2(13)     =    194.24
Log likelihood  =   -5234.4341                  Prob > chi2     =    0.0000
```


_t / _d	Haz. Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_Iga_cat_2	.410208	.0535474	-6.83	0.000	.3176074	.5298068
_Iga_cat_3	.3223936	.0494353	-7.38	0.000	.2387066	.43542
_Iga_cat_4	.3232159	.0378524	-9.64	0.000	.2569253	.4066104
_Iga_cat_5	.3459858	.0412471	-8.90	0.000	.2738932	.4370541
_Ipar_cat_1	.5421811	.0716511	-4.63	0.000	.4184612	.7024794
_Ipar_cat_2	.6384453	.0650712	-4.40	0.000	.5228392	.7796134
_Ipar_cat_3	.7866432	.1011147	-1.87	0.062	.6114555	1.012024
_Ipar_cat_4	1.177897	.3278896	0.59	0.556	.6825894	2.032615
_Imale_1	1.008748	.0836131	0.11	0.916	.8574887	1.18669
_Imale_9	1.421911	1.014747	0.49	0.622	.3510845	5.758811
_Inblind_1	1.424597	.1778734	2.83	0.005	1.115352	1.819583
_Itreat_2	.9563635	.0986431	-0.43	0.665	.781316	1.170629
_Itreat_3	.958336	.0964619	-0.42	0.672	.7867551	1.167336

1. Write out the model. What do you conclude about the relationship between the hazard of death and the various risk factors of interest?

2. What does Stata give you if you specify nohr as an option after the stcox command?

3. What is the difference in the log hazard of death for a male infant whose mother has had 9 prior births and a female infant whose mother has had no prior births?

4. What is the relative hazard (hazard ratio) of death for a male infant whose mother has had 9 prior births and a female infant whose mother has had no prior births?

