Let us have a Cox model

$$\lambda(t|X) = \lambda_0(t)\exp\{-X\beta\}$$

and the estimate b of β with variance matrix V.

1. Average covariate change

Say that $\beta_1, \ldots, \beta_n$ form a time series and our goal is to estimate its average decrease $\delta = \frac{1}{n-1}\sum_{i=1}^{n-1}(\beta_i - \beta_{i+1}) = \frac{1}{n-1}(\beta_1 - \beta_n)$. Its natural (ML) estimator is

$$d = \frac{1}{1-n}(b_1 - b_n) = kb, \qquad k = \begin{bmatrix} \frac{1}{1-n} \\ 0_{n-2} \\ -\frac{1}{1-n} \\ 0 \end{bmatrix}$$

with variance $k'Vk$.

1. Average covariate change

Say that we want to compare $\beta_1, \ldots, \beta_n$ with another vector, say $\beta_{n+1}, \ldots, \beta_{2n}$.The average difference can be estimated by

$$e = \frac{1}{n}\sum_{i=1}^{n}(b_i - b_{n+i}) = mb, \qquad m = \begin{bmatrix} \frac{1}{n} \\ \vdots \\ \frac{1}{n} \\ -\frac{1}{n} \\ \vdots \\ -\frac{1}{n} \\ 0 \end{bmatrix}$$

And, again, variance is $m'Vm$.