Additional file 1 — Calculation of the parameters of the different censoring mechanisms.

The censoring mechanism was assumed to be independent uniform $C_i \sim \mathcal{U}\{0, r\}$ or exponential $C_i \sim \mathcal{E}(\gamma)$.

• For a Cox proportional hazards model, the survival function was exponential with parameters $\lambda = \lambda_0 e^{\beta Z}$. In order to determine r and γ for a given value of the expected overall percentage p_c of censoring, we solved iteratively for r_p and γ_p (value of r and γ for a given percentage of censoring p_c, respectively) in the following equations.

Under the null hypothesis ($\beta = 0$), the equations to solve were

$$p_c = \frac{1}{\lambda_0 r_p}\left(1 - e^{-\lambda_0 r_p}\right) \text{ , for a uniform censoring}$$

and

$$p_c = \frac{\gamma_p}{\lambda_0 + \gamma_p} \text{ , for an exponential censoring}$$

Under the alternative hypothesis (i.e. with covariate, $\beta \neq 0$), the equations to solve were

$$p_c = \int_{\mathcal{R}} \left\{ \frac{1}{r_p \lambda_0 \exp(\beta z)} \left(1 - e^{-\lambda_0 r_p \exp(\beta z)}\right) f_Z(z) \right\} dz$$

for a uniform censoring, and

$$p_c = \int_{\mathcal{R}} \left\{ \frac{\gamma_p}{\gamma_p + \lambda_0 \exp(\beta z)} f_Z(z) \right\} dz$$

for an exponential censoring. The function $f_Z(z)$ denote the density of the covariate Z.

• Under a proportional odds model, T had a log-logistic distribution with density $f(t) = \lambda_0 e^{-\beta z}/(1 + te^{-\beta z})^2$. In this case, the equations to solve under the null hypothesis were

$$p_c = \frac{\ln(r)}{r} \text{ , for a uniform censoring}$$

and

$$p_c = \int_0^{\infty} \frac{\gamma e^{-\gamma c}}{1 + c} dc \text{ , for an exponential censoring}$$

Under the alternative hypothesis, the equations were

$$p_c = \int_{\mathcal{R}} \left\{ \frac{\ln(1 + re^{-\beta z})}{r} f_Z(z) \right\} dz$$

for a uniform censoring, and

$$p_c = \int_{\mathcal{R}} \left\{ \int_0^{\infty} \left(\frac{\gamma e^{-\gamma c}}{1 + ce^{-\beta z}} \right) dc \right\} f_Z(z) dz$$

for an exponential censoring.

• For both models, for one subject i and for a uniform censoring, two independent uniform variates $U^i_{0.25}$ and $U^i_{0.5}$ on $\{0, r^i_{0.25}\}$ and $\{0, r^i_{0.5}\}$ were generated, respectively. For an exponential censoring, two independent exponential variates $\mathcal{E}^i_{0.25}$ and $\mathcal{E}^i_{0.5}$ with parameters $\gamma^i_{0.25}$ and $\gamma^i_{0.5}$ were generated, respectively. In both cases, the three variates T^i, $\min(T^i, C^i_{0.25})$ and $\min(T^i, C^i_{0.5})$, with $C^i = U^i$ or $\mathcal{E}^i$, represent the observed times for the subject i in three situations with an expected percentage of censoring equal to 0, 25 and 50%, respectively.