

Homework #16

a. Fit Gehen's data with covariate $X = 1(\text{treat})$ to the semi-parametric PH model and the MLE parametric PH models of Weibull, that is, $S_{Y|X}(t|x) = (S_o(t))^{e^{\beta x}}$, where S_o is Weibull.

b. Obtain the MLEs of $E(Y|X)$ under the previous semi-parametric and parametric assumptions.

Hint: $E(Y|X = x) = \int t f_{Y|X}(t|x) dt$ and $f_{Y|X}(t|x) = -S'_{Y|X}(t|x)$.

c. Check (qqplot and test) whether Gehen's data with covariate treat-control fit the parametric PH models.

d. Do you think the semi-parametric estimate of $E(Y|X)$ is consistent under the PH model ?