1 Hands-On Exercises #11 (02 October 2013)

1.1 A – competing estimator – simulation experiment

Recall the Hodges-Lehmann estimator considered in H-O#11A, a competing robust estimator for the one-sample problem. Compare the performance of the Hodges-Lehmann estimator to the sample mean and median, when the underlying distribution follows the Student t-distribution. Compare the MSEs of the estimators for varying sample sizes and values of the degrees of freedom parameter. That is, let $\hat{\theta}_k^{(i)}$ represent the value of estimator $k = 1, 2, 3$ (mean, median, H-L) for sample $i$. The Mean Square Error (MSE) of estimator $k$ is $\sum_i (\hat{\theta}_k^{(i)} - \theta^*)^2$ where $\theta^*$ is the true value. (Since there’s no real reason to generate from a mean different from zero, so in this case $\theta^*$ will be zero.)

1.2 B – generating the Poisson regression model

In H-O#11B, you generated from the Poisson distribution to follow the common Poisson regression model. Examine the performance of MLE’s using the `glm` function to estimate:

$\text{glm}(y \sim x, \text{family} = \text{poisson(link = "log"))}$

jfm, 02 October 2013