Activity: Fisher information

Fisher information

Let $Y_1, ..., Y_n \overset{iid}{\sim} Poisson(\lambda)$. We have previously shown that the MLE is $\widehat{\lambda} = \frac{1}{n}\sum_{i=1}^{n} Y_i$.

1. Compute $Var(\widehat{\lambda})$.

2. For the Poisson, the derivative of the log-likelihood for a single observation is $\frac{d}{d\lambda}\log f(Y|\lambda) = -1 + \frac{Y}{\lambda}$. Compute the Fisher information, and compare with your answer to question 1.