

WG: WEDNESDAY / FRIDAY

ESTIMATING PARAMETERS / MLE AND ITS PROPERTIES

Ch. 5.2. L & M, ch. 5.4.

~~(Using Order stat., Method of Moments)~~

Let $x_1, x_2, \dots, x_n$ be a random sample of size n from a discrete pmf $p_X(x; \theta)$, where θ is an unknown parameter of a distribution.

$\Rightarrow$ Then Likelihood function $L(\theta)$ is defined as product of the pdf, evaluated at the x_i 's

$$L(\theta) = \prod_{i=1}^n p_X(x_i; \theta)$$

If $g_1, g_2, \dots, g_n$ is a sample of size n from a continuous pdf $f_Y(g; \theta)$ then

$$L(\theta) = \prod_{i=1}^n f_Y(g_i, \theta)$$

Maximum Likelihood Estimator of θ is

$\hat{\theta}$ THAT MAXIMIZES FUNCTION L , I.E.

$\hat{\theta}$ IS A SOLUTION TO EQUATION

$$\frac{d}{d\theta} L(\theta) = 0.$$