

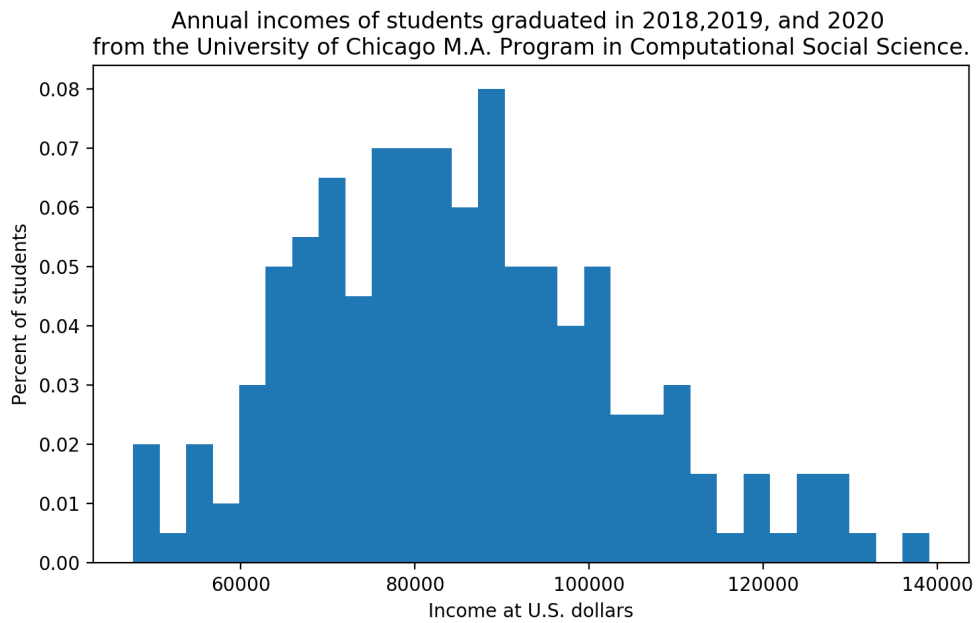
Problem Set #2

MACS 30100, Dr. Evans

Wanlin Ji

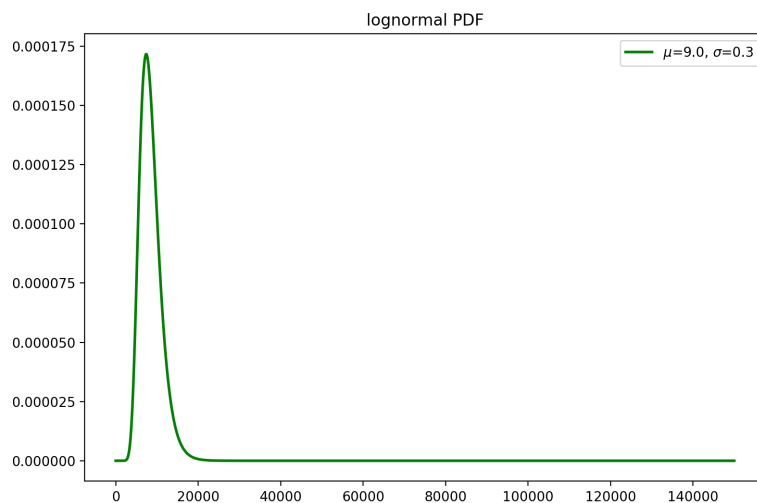
Problem 1 Some income data, lognormal distribution, and hypothesis testing

(a)

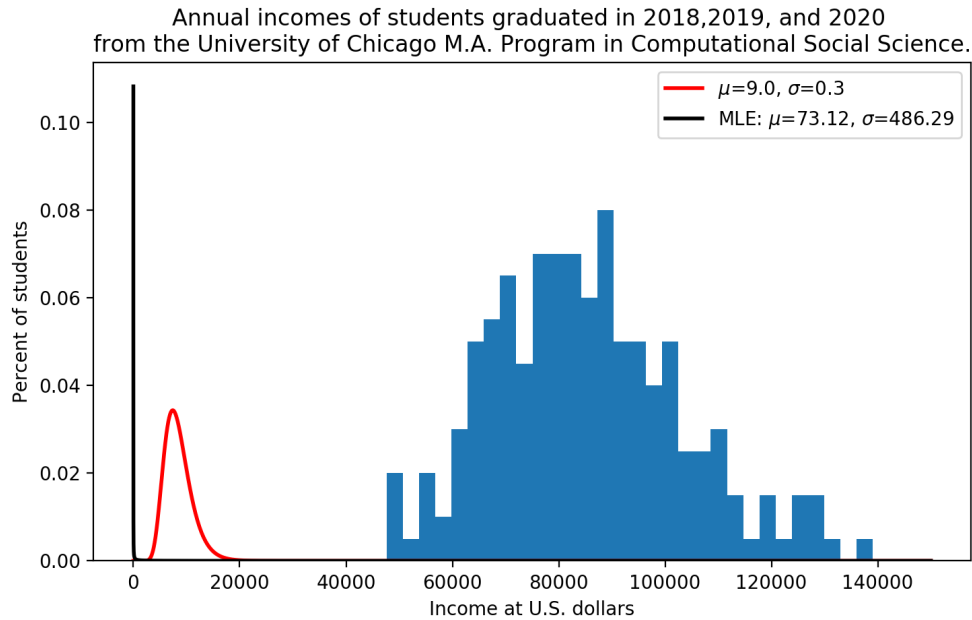


(b)

The lognormal distribution with mean=9 and sigma=0.3



(c)



The value of likelihood function is 3671.05

The variance-covariance matrix of MLE is: $\begin{bmatrix} 0.98487621 & -0.12216633 \\ -0.12216633 & 0.01517955 \end{bmatrix}$

(d)

The probability is less than 0

(e)

The probability I will earn more than \$100,000 is 0.1958

The probability I will earn less than \$100,000 is 0.3077

Problem 2 Linear regression and MLE

(a)

$\beta_0, \beta_1, \beta_2, \beta_3 = 0.252, 0.013, 0.4, -0.01$