

Maximum Likelihood Estimation

- Is an alternative estimation method to Ordinary Least Square (OLS) and Method of Moments (MM).
- Suppose y_1, y_2, \dots, y_n are observations that we get from a random sampling.
- Suppose the true mean of a random variable y is _____
- Suppose the true variance of a random variable y is _____

If each y_i is independent from each other, then the probability that we get the "sample" that we draw (out of many possible combinations) is:

1 MLE estimator for μ

We can find an estimator of μ which maximizes $L(\mu, \sigma^2)$ by setting

2 MLE estimator for σ

We also can find an estimator of σ which maximizes $L(\mu, \sigma^2)$ by setting

3 MLE estimator for β

Assumption MLR5 - Conditional of X , u_i are independently and identically distributed as *normal*(0, σ^2). Thus,