Notes on Statistics

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1 Distributions from random samples

1.1 Random samples and statistics

The random variables $X_1, \cdots, X_n$ are called a ramdom sample of size n from the population $f(x)$ if they are independent and identically distributed with pdf or pmf $f(x)$, or iid random variables. Let $T(x_1, \cdots, x_n)$ be a real-valued or vector-valued function whose domain includes of sample space of $(X_1, \cdots, X_n)$, then the random variable or random vector $Y = (X_1, \cdots, X_n)$ is called a statistic, whose distribution is called the sampling distribution of Y.

2 Point estimation

3 Hypothesis testing

4 Interval estimation

5 A complete example

6 More examples

7 Linear regression

References