Midnight magpie
Mathematically rigorous notes on basic statistics

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1 Organization of statistics

Outline of statistics — Wikipedia

1.1 Statistical inference

Given random variables sampled from an underlying population with an unkown probability distribution (could be fully parametric, non-parametric, and semi-parametric), what can we say about this distribution?

1.2 Descriptive statistics

Given random variables which are not assumed to come from an underlying population, what can we say about these random variables themselves? (For example, the standard deviation σ is a descriptives statistic.)

2 Mathematical foundations for hypothesis testing

Hypothesis testing (p-values and confidence intervals) $\cdots \leftarrow$ central limit theorems $\cdots \leftarrow$ statistical inference