

5 Averages, Law of Large Numbers, and Central Limit Theorem

Expectation, standard deviation and correlation.

Expectation is the most widely used notion of average in statistics, because of its intuitive interpretations and convenient properties.

Linearity is the most important property of expectation.

The law of large numbers (LLN) and central limit theorem (CLT) are powerful results about the sample mean of a large number of IID RVs.

The LLN says that the sample mean is likely to be close to the theoretical expectation. The CLT says that the sample mean will be approximately Normal.

5.1 Expectation