Hypothesis Testing, Probability and Distributions

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Normality, Probability and Significance

- Why did we focus on normality?
  - The **normal distribution** is a key tool for determining the probability of a given value occurring in a population that follows this distribution.
- It allows us to make inferences about a population by calculating how likely it is for data to fall within certain ranges.
- Many statistical tests assume data follows a **normal distribution**, which helps in determining **significance** and making reliable conclusions.

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Hypothesis Testing

- All inferential tests use a formula that calculates a **test statistic**, quantifying the relationship or difference you are testing.
- The variance σ^2 is calculated as:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

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