1. Assessing statistical significance involves using statistical tests to determine the likelihood that an observed result is not due to chance. Common methods include p-values and confidence intervals.
2. The Central Limit Theorem states that the distribution of sample means of any independent, random variable approaches a normal distribution as the sample size increases, regardless of the original distribution. It's important because it allows for the use of inferential statistics on non-normally distributed data.
3. Statistical power is the probability that a test will correctly reject a false null hypothesis (i.e., avoid a Type II error). It depends on factors like sample size, effect size, and significance level. High power is desirable as it minimizes the risk of missing a real effect.
4. To control biases, one can use randomization, blinding, and careful experimental design. It's crucial to be aware of potential sources of bias and implement strategies to mitigate their impact on the results.
5. Confounding variables are extraneous factors that may affect the relationship between the independent and dependent variables, leading to inaccurate conclusions. Controlling for confounding variables through experimental design or statistical methods is essential for valid results.
6. A/B testing is a method used in marketing and product development to compare two versions (A and B) of a variable, typically by testing a subject's response to variant A against variant B, and determining which version performs better.
7. Confidence intervals provide a range of values within which we can be reasonably confident that the true population parameter lies. For example, a 95% confidence interval suggests that if we were to take many samples and calculate confidence intervals for each, we would expect about 95% of them to contain the true population parameter.