Bahan Kuliah Statistics

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• Mata kuliah: Statistics
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Bahan Kuliah
1. Overview
2. Research and statistics
3. Measurement scales
4. Descriptive Statistics: Central Tendency and variability
5. Inferential Statistics: The concepts of hypothesis testing
6. Research Designs
7. Determining sample size and sampling techniques
8. Mid-semester test
9. Parametric and non-parametric statistics
10. Chi square
11. Product moment correlation
12. Rank-order correlation
13. The t-test
14. Anova
15. Validity and Reliability
16. Final exam

List of Topics
What is research?
A systematic approach to finding answers to questions.

Systematic → certain condition must be present in order for the results to be valid and useful.

Should be the most efficient way of answering the questions.
the extent to which the outcome is a function of the factor we have selected rather than other factors we haven’t controlled.
• The extent that the outcome of any research study would apply to other similar situations in the real world.

External validity
Definition: an attribute of a person or of an object which varies from person to person or from object to object.

Scales:

A. nominal
B. ordinal
C. interval
D. ratio
- Independent variable
- Dependent variable
- Moderator variable
- Control variable
- Intervening variable
A. Pre experimental design
B. True Experimental design
C. Quasi experimental design
D. ex-post facto design
E. Factorial design
1. one shot case study
2. one group pretest posttest
3. Intact group design

A. Experimental Designs
1. posttest-only control group design

2. Pretest posttest control group design

B. True experimental designs
Time series designs:

- T1 T2 T3 X T4 T5 T6
- T1 X T2 $\Rightarrow$ T3 O T4 $\Rightarrow$ T5 X T6, etc

Quasi Experimental designs
A. Central tendency
Tells us about the central point in the distribution of scores in the data.

B. Variability
Tells us about the variability among scores or how they spread out from the central point.
• Mode
• Median
• Mean

(The mean is the most commonly used measure of central tendency, because it takes all scores into account)
• Range (subtracting the lowest score from the highest score in the distribution)
• Standard deviation
Some important terms:
- Inferential statistics
- Level of significance
- Directional hypothesis (one tailed)
- Nondirectional hypothesis (two tailed)
- 1. The t-test
  Is used to compare two means
- 2. Anova (comparing means of 2 or more groups)
- 3. Factorial Design
- 4. Chi square
- 5. Correlational analysis

Some statistical techniques