

10040/10041 Introductory Statistics (5/4)

Acquire critical thinking and problem solving skills

Identify the characteristics of a well-designed statistical study and be able to critically evaluate various aspects of a study.

Recognize the limitations of observational studies and common sources of bias in surveys and experiments.

Recognize that association is not causation.

Given a research question, formulate null and alternative hypotheses.

Describe the logic and framework of the inference of hypothesis testing.
Make decision using p-value and draw appropriate conclusion.

Interpret statistical significance and recognize that statistical significance does not necessarily imply practical significance.

Perform hypothesis testing with at least one test related to quantitative variable (e.g. t-test for mean) and at least one test related to qualitative variable (e.g., test for one population proportion and chi-square test for independence).

Strengthen quantitative reasoning skills

Compute the probability of compound events, independent events, and disjoint events, as well as conditional probability.

Compute probabilities using discrete and continuous distributions, especially applications of the normal distribution.

Estimate population parameters using point and interval estimates and interpret the interval in the context of the problem.

Summarize the relationship between the confidence level, margin of error, and sample size.

Understand basic concepts of the academic discipline

Summarize univariate and bivariate data by employing appropriate graphical, tabular, and numerical methods and describe the attributes of or relationships between the data. These include: frequency distributions; box plots; scatter plots; correlation coefficients; regression analysis; and measures of center, variation, and relative position.

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