

Data Driven Statistics

An elementary coverage of statistical techniques is augmented at each step with the aid of technology for data processing and analysis in making inferences. Graphical presentation and statistical measures are studied, followed by basic probability concepts leading to binomial and normal distributions. Hypothesis testing is

applied to drawing inferences for one and two population parameters. The course emphasizes applications to the analysis of business, social, health sciences and other data. A graphing calculator or equivalent technology is required.

Learning Objectives

Upon completion of this course, the student will be able to:

- Define the meaning of descriptive statistics and statistical inference.
- Describe the importance of statistics, and interpret examples of statistics in a professional context.
- Distinguish between a population and a sample.
- Explain the purpose of measures of location, variability, and skewness.
- Apply simple principles of probability.
- Compute probabilities related to both discrete and continuous random variables.
- Identify and analyze sampling distributions for statistical inferences.
- Identify and analyze confidence intervals for means and proportions.
- Compare and analyze data sets using descriptive statistics, parameter estimation, hypothesis testing.
- Explain how the central limit theorem applies in inference.
- Calculate and interpret confidence intervals for one population average and one population proportion.
- Differentiate between type I and type II errors.
- Identify and evaluate relationships between two variables using simple linear regression.
- Use regression equations to make predictions.

Keywords

Statistics, frequency, sampling methods, stem plots, histograms, boxplots, data interpretation, probability, random variables, mutually exclusive events, independent, probability calculation, Venn diagrams, combinational probability, normal distributions, sampling distributions, probability density functions, central theorem, inferential statistics, t-distribution, sample averages, estimation, confidence intervals, hypothesis testing, population means, type I errors, type II errors, standard deviation, linear regression, regression model, correlation, standard error of a slope, slope significance

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