

Advanced Placement Statistics Course Outline.

1. Exploring Data.

A. Interpreting graphical displays of distribution of univariate data

- Center and spread
- Shape
- Clusters and Gaps.
- Outliers and other unusual features

B. Summarizing distributions of univariate data

- Box plots
- Median, mean
- Range, interquartile range, standard deviation
- Standardized scores, percentiles

C. Comparing distributions of univariate data

- Comparing center and spread.
- Comparing clusters and gaps.
- Comparing outliers and other unusual features.

D. Exploring bivariate data.

E. Exploring categorical data: frequency tables.

A. Planning and conducting experiments

11.1. Anticipating Patterns: Producing models using probability and simulation.

A. Probability as relative frequency

- Discrete random variables and their probability distributions.
- Means and standard deviations of a random variable.

11. Planning a Study

A. Overview of the methods of data collection.

- Census. Sample survey, experiments, and observational studies.

B. Planning and conducting surveys

- Random sampling.
- Characteristics of a well-designed and conducted survey
- Sampling error
- Sources of bias in survey
- Stratifying to reduce variation.

C. Planning and conducting experiments.

111. Anticipating Patterns: Producing models using probability and Simulation.

A. Probability as relative frequency

- Discrete random variables and their probability distributions.
- Means and standard deviations of a random variable.

- B. Combining independent random variables.
 - Independence vs. dependence
 - Mean and standard deviation for sums and differences of
 - Independent random variables.
- C. The Normal Distribution.
 - Properties of the normal distribution.
 - Using tables of the normal distribution.
 - The normal distribution as a model for measurements.
- D. Simulating sampling distributions.
 - Central Limit Theorem.
 - Sampling distribution of a sample proportion.
 - Sampling distribution of a sample mean.

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Statistical Inference: Confirming models.

- A. Confidence intervals.
 - Large sample confidence intervals for a proportion.
 - Large sample confidence interval for a mean.
 - Large sample confidence interval for the difference between two means
- B. Tests of significance
 - Chi-square test for goodness of fit.
 - Logic of significance testing, null and alternative hypotheses
 - Large sample test for a mean.
- B. Special case of normally distributed data.
 - T-distribution.
 - Two –sample (independent and matched pair) “t” procedures.
 - Inference for slope of least squares line.