AP Statistics

The following learning targets represent the major concepts studied and assessed in this course.

Unit 1
Exploring One-Variable Data

You'll be introduced to how statisticians approach variation and practice representing data, describing distributions of data, and drawing conclusions based on a theoretical distribution.

- Variation in categorical and quantitative variables
- Representing data using tables or graphs
- Calculating and interpreting statistics
- Describing and comparing distributions of data
- The normal distribution

Unit 2
Exploring Two-Variable Data

You'll build on what you've learned by representing two-variable data, comparing distributions, describing relationships between variables, and using models to make predictions.

- Comparing representations of 2 categorical variables
- Calculating statistics for 2 categorical variables
- Representing bivariate quantitative data using scatter plots
- Describing associations in bivariate data and interpreting correlation
- Linear regression models
- Residuals and residual plots
- Departures from linearity

Unit 3
Collecting Data

You'll be introduced to study design, including the importance of randomization. You'll understand how to interpret the results of well-designed studies to draw appropriate conclusions and generalizations.

- Planning a study
- Sampling methods
- Sources of bias in sampling methods
- Designing an experiment
- Interpreting the results of an experiment

Unit 4
Probability, Random Variables, and Probability Distributions

You'll learn the fundamentals of probability and be introduced to the probability distributions that are the basis for statistical inference.

- Using simulation to estimate probabilities
- Calculating the probability of a random event
- Random variables and probability distributions
- The binomial distribution
- The geometric distribution

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Unit 5
Sampling Distributions

As you build understanding of sampling distributions, you'll lay the foundation for estimating characteristics of a population and quantifying confidence.

- Variation in statistics for samples collected from the same population
- The central limit theorem
- Biased and unbiased point estimates
- Sampling distributions for sample proportions
- Sampling distributions for sample means

Unit 6
Inference for Categorical Data: Proportions

You'll learn inference procedures for proportions of a categorical variable, building a foundation of understanding of statistical inference, a concept you'll continue to explore throughout the course.

- Constructing and interpreting a confidence interval for a population proportion
- Setting up and carrying out a test for a population proportion
- Interpreting a p-value and justifying a claim about a population proportion
- Type I and Type II errors in significance testing
- Confidence intervals and tests for the difference of 2 proportions

Unit 7
Inference for Quantitative Data: Means

Building on lessons learned about inference in Unit 6, you'll learn to analyze quantitative data to make inferences about population means.\

- Constructing and interpreting a confidence interval for a population mean
- Setting up and carrying out a test for a population mean
- Interpreting a p-value and justifying a claim about a population mean
- Confidence intervals and tests for the difference of 2 population means

Unit 8
Inference for Categorical Data: Chi-Square

You'll learn about chi-square tests, which can be used when there are two or more categorical variables.

- The chi-square test for goodness of fit
- The chi-square test for homogeneity
- The chi-square test for independence
- Selecting an appropriate inference procedure for categorical data

Unit 9
Inference for Quantitative Data: Slopes

You'll understand that the slope of a regression model is not necessarily the true slope but is based on a single sample from a sampling distribution, and you'll learn how to construct confidence intervals and perform significance tests for this slope.

- Confidence intervals for the slope of a regression model
- Setting up and carrying out a test for the slope of a regression model
- Selecting an appropriate inference procedure