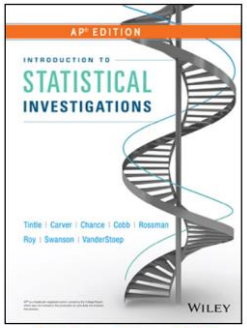
AP® Statistics Course Framework* (CF) Alignment
to
Introduction to Statistical Investigations: AP® Edition



AP, 1st edition, 2019

https://www.isi-stats.com/APindex.html

CF Unit	Title	Chapter and Section References	Description
1	**Exploring One-Variable Data**	**CATEGORICAL** 1.1 Introduction to Chance Models 5.1 Comparing Two Groups: Categorical Response 5.2 Comparing Two Proportions: Simulation-Based Approach 5.3 Comparing Two Proportions: Theory-Based Approach **QUANTITATIVE** P.2 Exploring Data	Frequency tables and bar charts; marginal and joint frequencies for two-way tables; comparing distributions using bar charts Dotplot: center, shape, variability, outliers, and unusual features

		6.1 Comparing Two Groups: Quantitative Response 6.1 Part 2: Comparing Distributions for a Quantitative Response Variable	Dotplot, Stemplot, and Boxplot: center, shape, variability, outliers, and unusual features; summarizing distributions of univariate data (measuring center and variability); comparing distributions of univariate data (dotplots, back-to-back stemplots, parallel boxplots); cumulative frequency plot
		7.2 Simulation-Based Approach to Analyzing Paired Data	Comparing distributions of univariate data (dotplots, back-to-back stemplots, parallel boxplots)
		2.1 Sampling from a Finite Population	Histogram
		2.2 Inference for a Single Quantitative Variable	Measuring center (mean, median, resistance to extreme values)
		1.3 Alternative Measure of Strength of Evidence	Measuring position (quartiles, percentiles, standardized scores (z-scores)
		11.7 Continuous Random Variables and the Normal Distribution	Properties of the normal distribution; using tables of the normal distribution; the normal distribution as a model for measurements
		11.5 Random Variable Rules	The effect of changing units on summary measures
2	**Exploring Two-Variable Data**	10.1 Two Quantitative Variables: Scatterplots and Correlation 10.2 Inference for the Correlation Coefficient: Simulation-Based Approach	Analyzing patterns in scatterplots; correlation and linearity

		10.3 Least Squares Regression 10.3 Part 2 More on Least Squares Regression 10.3 Part 3 Transformations to Achieve Linearity	Least-squares regression line; residual plots; outliers and influential points Logarithmic and power transformations
3	**Collecting Data**	**PLANNING AND CONDUCTING SURVEYS** 2.1 Sampling from a Finite Population 2.1 Part 2 More on Simple Random Samples 2.1 Part 3 Stratified and Cluster Random Samples **PLANNING AND CONDUCTING EXPERIMENTS** 4.1 Association and Confounding 4.2 Observational Studies versus Experiments 4.3 Design of Experiments: Completely Randomized Design 4.2 Observational Studies versus Experiments 4.4 Design of Experiments: Block Design	 Census, sample survey; characteristics of a well-designed and well-conducted survey; populations, samples, and random selection; sources of bias in sampling and surveys; sampling methods (simple random sample, stratified random sample, cluster sampling) Characteristics of a well-designed and well-conducted experiment; treatments, control groups, experimental units, random assignments and replication; sources of bias and confounding including placebo effect and blinding; completely randomized design Generalizability of results and types of conclusions that can be drawn from observational studies, experiments, and surveys Randomized block design, including matched-pairs design
4	**Probability, Random Variables, and Probability Distributions**	P.3 Exploring Random Processes 11.1 Basics of Probability	Interpreting probability, including long-run relative frequency; “Law of Large Numbers” concept; simulation of random behavior and probability distributions

		11.2 Probability Rules 11.3 Conditional Probability and Independence 11.4 Discrete Random Variables 11.6 Binomial and Geometric Random Variables 11.5 Random Variable Rules	Addition rule, multiplication rule, conditional probability and independence Discrete random variables and their probability distributions, including binomial and geometric Mean (expected value) and standard deviation of a random variable, and linear transformations of a random variable; notion of independence versus dependence; mean and standard deviation for sums and differences of independent random variables
5	**Sampling Distributions**	1.5 Inference for a Single Proportion: Theory-Based Approach 1.6 Sampling Distribution of a Sample Proportion 11.8 Revisiting Theory-Based Approximations of Sampling Distributions 2.2 Inference for a Single Quantitative Variable 2.2 Part 2 Sampling Distribution of a Sample Mean 11.8 Revisiting Theory-Based Approximations of Sampling Distributions 5.2 Comparing Two Proportions: Simulation-Based Approach 5.3 Comparing Two Proportions: Theory-Based Approach	Sampling distribution of a sample proportion; Central Limit Theorem Sampling distribution of a sample mean; Central Limit Theorem Sampling distribution of a difference between two independent sample proportions

		6.2 Comparing Two Means: Simulation-Based Approach 6.3 Comparing Two Means: Theory-Based Approach Chapters 1-3, 5-8, 10	Sampling distribution of a difference between two independent sample means Simulation of sampling distributions
6	**Inference for Categorical Data: Proportions**	**INFERENCE FOR A SINGLE PROPORTION** 1.1 Introduction to Chance Models 1.4 What Impacts Strength of Evidence? 1.5 Inference for a Single Proportion: Theory-Based Approach 1.7 One-Proportion z-Test for a Population Proportion 2.3 Errors and Significance 3.1 Statistical Inference: Confidence Intervals 3.2 2SD and Theory-Based Confidence Intervals for a Single Proportion 3.2 Part 2 One-Proportion z-Interval for a Single Proportion **INFERENCE FOR A DIFFERENCE BETWEEN TWO PROPORTIONS** 5.3 Comparing Two Proportions: Theory-Based Approach 5.4 Confidence Interval and Significance Test for a Difference Between Two Proportions	 Logic of significance testing; null and alternative hypotheses; p-values; one- and two-sided tests Large sample test for a proportion Type I and type II errors and power Estimating population parameters and margin of error; properties of point estimators, including unbiasedness and variability; logic of confidence intervals, meaning of confidence level and confidence intervals, and properties of confidence intervals Large sample confidence interval for a difference between two proportions Large sample test for a difference between two proportions

7	**Inference for Quantitative Data: Means**	**INFERENCE FOR A SINGLE MEAN** 2.2 Inference for a Single Quantitative Variable 2.2 Part 3 One-Sample t-Test for a Population Mean 3.3 2SD and Theory-Based Confidence Intervals for a Single Mean 3.3 Part 2 One-Sample t-Interval for a Single Mean **INFERENCE FOR A DIFFERENCE BETWEEN TWO MEANS (UNPAIRED AND PAIRED)** 6.3 Comparing Two Means: Theory-Based Approach 6.4 Confidence Interval and Significance Test for a Difference Between Two Independent Means 7.3 Theory-Based Approach to Analyzing Data from Paired Samples 7.4 Confidence Interval and Significance Test for a Difference Between Two Means (Paired Data)	Inference for a single mean Inference for a difference between two means (paired and unpaired)
8	**Inference for Categorical Data: Chi Square**	8.1 Comparing Multiple Proportions: Simulation-Based Approach 8.2 Comparing Multiple Proportions: Theory-Based Approach 8.3 Chi-Square Test for Homogeneity of Proportions and Independence 8.4 Chi-Square Goodness of Fit Test	Chi-Square test for homogeneity of proportions, independence and goodness of fit (one- and two-way tables)
9	**Inference for Quantitative Data: Slopes**	10.4 Inference for the Regression Slope: Simulation-Based Approach 10.5 Inference for the Regression Slope: Theory-Based Approach 10.6 Confidence Interval and Significance Test for the Slope of a Regression Line	Inference for the slope of a regression line

*AP® Statistics Course and Exam Description Effective Fall 2019