Chapter 1: Looking at Data- Distributions

Key terms: individuals, **variables**: categorical/quantitative, **distribution**, symmetric, skewed, resistant, density curves, **standard normal distribution**,

Key concepts: How to display distributions (histograms, stemplots, pie charts, etc); how to describe distributions (center, shape, spread, outliers); how to describe distributions with numbers (mean, median, standard deviation, IQR, percentiles, etc); $1.5 \times$ IQR Rule; mean; standard deviation; using density curves, especially the normal distributions; 68-95-99.7 Rule; using z-scores and the standard normal distribution

Chapter 2: Looking at Data- Relationships (skip 2.5)

Key terms: response and explanatory variables; **least squares regression line**; positive and negative associations; **correlation**; scatterplot; extrapolation; lurking variable; residual;

Key concepts: How to display and describe relationships between two quantitative variables (form, direction, strength); how to find and use a regression line; using the correlation coefficient and r^2;

Chapter 3: Producing Data

Key terms: **sample, population**, census, **simple random sample**, **statistic**, **parameter**, **sampling distribution**, observational studies, **experiments**, units, subjects, **treatments**, **control**, bias, **randomization, statistical significance, matched pairs**, double blind, blocks, undercoverage, nonresponse, response bias, **simulation**

Key concepts: what a SRS is and is not; the relationship between samples, populations, statistics, and parameters, principles of experimental design: control, randomize, repeat; types of samples, especially SRS, uses of simulation, the concept of sampling variability,

Chapter 4: Probability and Random Variables (skip 4.5)

Key terms: **probability**, **random**, **sample space**, **event**, **disjoint**, **independent**, **random variable**, **probability distribution**, discrete/continuous **random variables**, **law of large numbers**,

Key concepts: How to compute probabilities of events using the addition rule, complement rule, and multiplication rule; using probability distributions for both continuous and discrete random variables; computing means and variances for continuous and discrete random variables; computing means and variances for linear functions, sums, or differences of random variables

Chapter 5: Sampling Distributions

Key terms: **sampling distribution**, **statistic**, counts, proportions, **binomial setting**, **Central Limit Theorem (CLT)**,

Key concepts: what is a sampling distribution? Using sampling distributions to compute probabilities about statistics; recognizing and using the binomial distribution, including the normal approximation; working with sample means, including use of the central limit theorem

Chapter 6: Introduction to Inference (CIs and HTs)

Key terms: **confidence interval**, confidence level, margin of error, **hypothesis test**, null and alternative hypotheses; **p-value**; test statistic; **statistical significance** and significance level; Type I and Type II errors, **power**

Key concepts: Computing, using, and interpreting confidence intervals; setting up, carrying out, and interpreting hypothesis tests; using p-values; CIs and HTs for μ when σ is known

Chapter 7: Inference for Distributions (skip 7.3)

Key terms: standard error, **matched pairs,** robust,

Key concepts: Using the basic ideas of CIs introduced in Chapter 6, be able to compute and interpret CIs and HTs for a single mean or for the difference between two means; CIs and HTs in the matched pairs setting; using the t distributions; the pooled 2-sample procedures

Chapter 10: Inference for Regression

Key terms: explanatory variable; response variable; predicted value; residual; prediction interval; ANOVA; sources of variation; ANOVA F test; mean square; degree of freedom

Key concepts: review of least squares regression (see Chapter 2.3); statistical model for linear regression; CIs for mean response, Prediction Intervals for individual responses; estimation and tests of model parameters; the concept of ANOVA; partitioning of total sum of squares into Model and Error terms; relationships among ANOVA table elements; mean square; ANOVA F test; use of standard errors of estimates

Chapter 11: Multiple Regression

Key terms: squared multiple correlation (most terms appeared in Ch. 10)

Key concepts: extension of all Ch. 10 ideas to multiple explanatory variables; F and t tests for model components; interpretation of t tests for individual regression parameters

Chapter 12: One-Way ANOVA

Key terms: within group variation; between group variation; coefficient of determination; contrast; multiple comparisons

Key concepts: review two-sample t test (See Ch. 7.2); 1-Way ANOVA model; effective plots for 1-Way ANOVA data; ANOVA table elements; use of ANOVA F test; comparison of treatment means; calculation and use of contrasts; notion of multiple comparisons

Chapter 13: Two-Way ANOVA

Key terms: interaction; main effect

Key concepts: effectively plot 2-Way ANOVA data; extension of all Ch. 12 concepts to two explanatory factors; detecting interaction; interpreting interaction;