**CALENDAR**

| **Day** | **Topic** | **Activities** |
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| Day 1 | * Syllabus   + Have read ahead of class   + Just touch on big things on the syllabus * Introduction * Overview of software |  |
| Day 2 | * Data collection   + Purpose of statistics *(1.2)*   + Types of studies *(1.3)*     - Descriptive and terminology     - Present news articles and have discussion   + Sampling bias *(1.2)* | * Data Collection Jigsaw Activity * Data Collection Articles |
| Day 3 | * Data collection (understanding the purpose of the types of studies)   + Recall types of studies   + Scope of conclusions based on type of study *(1.3)*     - Random Assignment | * Purpose of Random Assignment * Association vs. Causation |
| Day 4 | * Data collection (understanding the purpose of the types of studies)   + Recall types of studies   + Scope of conclusions based on type of study *(1.3)*     - Random sampling * Importance of research questions *(1.1)* | * Sampling Presidents |
| Day 5 | * Brief intro to confidence intervals (general introduction)   + Present article/example of interval estimate   + Purpose of interval rather than individual statistic (answer: sampling variability) * Numerical summaries (focusing on variability)   + Mean, median (not calculations), percent, difference in statistics *(2.1, 2.2)*   + Standard deviation *(2.3)* | * Introduction to Confidence Intervals * Introduction to Numerical Summaries |
| Day 6 | * Numerical summaries (focusing on variability)   + Mean, median (not calculations), percent, difference in statistics *(2.1, 2.2)*   + Standard deviation *(2.3)*   + Resistant statistic *(2.2)* | * Which Graph has the Larger Standard Deviation * Numerical Summaries 15 Richest Americans |
| Day 7 | * Confidence intervals using bootstrap techniques (one-sample)   + Start with RQ   + Sampling variability idea (via sampling distributions) – hands-on *(3.1)*   + Creating an interval using the percentile method | * Bootstrap Interval M&Ms |
| Day 8 | * Confidence intervals using bootstrap techniques (one-sample)   + Start with RQ   + Measuring sampling variability: standard error *(3.1)*   + Constructing bootstrap confidence intervals *(3.3)*     - Point estimate +/- margin of error, where margin of error = 2\*SE   + Understanding and interpreting confidence intervals *(3.2)* | * Bootstrap Interval: Body Temp |
| Day 9 | * Confidence intervals using bootstrap techniques (one-sample)   + Start with RQ   + Measuring sampling variability: standard error *(3.1)*   + Constructing bootstrap confidence intervals *(3.3)*     - Point estimate +/- margin of error, where margin of error = 2\*SE   + Understanding and interpreting confidence intervals *(3.2)* | * Bootstrap Interval: College Student Debt – Part I |
| Day 10 | * Confidence intervals using bootstrap techniques (paired)   + Start with RQ   + Constructing bootstrap confidence intervals (Point estimate +/- margin of error & percentile intervals) *(3.3, 3.4)*   + Understanding and interpreting confidence intervals *(3.2)*   + Comparing confidence levels (using percentile interval) *(3.4)*   + When to use percentile vs. regular *(3.4)* | * Bootstrap Interval: Fasting |
| Day 11 | * Confidence intervals using bootstrap techniques (two-sample, independent)   + Start with RQ   + Constructing bootstrap confidence intervals (Point estimate +/- margin of error & percentile intervals) *(3.3, 3.4)*   + Understanding and interpreting confidence intervals *(3.2)*   + Comparing confidence levels (using percentile interval) *(3.4)*   + When to use percentile vs. regular *(3.4)* | * Bootstrap Interval: PISA |
| Day 12 | * Brief intro to hypothesis tests (general introduction)   + Present article/example of hypothesis tests   + Purpose of hypothesis test *(4.1)*   + Null hypothesis and alternative hypothesis *(4.1)*   + Tying to research question | * Introduction to Hypothesis Testing |
| Day 13 | * Hypothesis tests using randomization techniques (one-sample) *(4.4, 4.2)*   + Start with RQ   + Hands-on randomization test   + Intro to p-value | * Randomization test: ESP Study |
| Day 14 | * Hypothesis tests using randomization techniques (one-sample)   + Start with RQ   + Conducting randomization tests via applet *(4.4)*     - Finding p-values *(4.2)*     - Interpreting p-values *(4.2)*     - Making conclusions *(4.3)*     - Significance *(4.3)* | * Randomization test: Body Temperature |
| Day 15 | * Hypothesis tests using randomization techniques (two-sample)   + Start with RQ   + Conducting randomization tests via applet *(4.4)*     - Comparing confidence   intervals and hypothesis tests *(4.5)* | * Randomization test: Marijuana Users |
| Day 16 | * Hypothesis tests using randomization techniques (two-sample)   + Start with RQ   + Conducting randomization tests via applet *(4.4)*     - Type I & Type II errors *(4.3)* | * Randomization test: Phone Survey Incentives |
| Day 17 | * Review Day |  |
| Day 18 | * Graphical summaries *(2.2)*   + Histograms     - Bin width (applet)     - Interpretation * Revisit sampling distributions (brief)   + Describing distributions: shape, center, variability   + CLT *(5.2)*   + Sample size and sampling variability *(3.1)* | * Matching Histograms * Histogram-Old Faithful |
| Day 19 | * Normal distribution *(5.1, 5.2)* | * Normal Distributions: Human Pregnancies |
| Day 20 | * Confidence intervals – traditional *(6.1, 6.2, 6.4, 6.5)*   + Start with RQ   + One-sample: means | * Confidence Interval: College Student Debt – Part II |
| Day 21 | * Confidence intervals – traditional *(6.1, 6.2, 6.4, 6.5, 6.7, 6.8, 6.10, 6.11, 6.13)*   + Start with RQ   + Two-sample independent: means | * Confidence Interval: College Student Debt – Part III |
| Day 22 | * Hypothesis tests –traditional *(6.3, 6.6, 6.9, 6.12, 6.13)*   + Start with RQ   + Two-sample independent: means | * Hypothesis Test: Memory Game |
| Day 23 | * Hypothesis tests – traditional   + Two-sample independent: proportions   + Deciding one- vs. two-tailed situations * Chi-square between two variables   + Test *(7.2)* | * Chi-Square Test: Anemia and Disabilities |
| Day 24 | * Chi-square between two variables   + Test *(7.2)* | * Chi-Square Test: Junk Food Study |
| Day 25 | * Regression   + Descriptive     - Scatterplots *(2.5)*     - Correlation *(2.5)*     - Simple linear regression equation *(2.6, 9.1)*     - Prediction and residuals *(2.6)*   + Inference     - Slope *(9.2)* | * Baseball |
| Day 26 | * Regression   + Descriptive     - Scatterplots *(2.5)*     - Correlation *(2.5)*     - Simple linear regression equation *(2.6, 9.1)*     - Prediction and residuals *(2.6)*   + Inference     - Slope *(9.2)* | * Happy Planet Index |
| Day 27 | * Regression   + Descriptive     - Scatterplots *(2.5)*     - Correlation *(2.5)*     - Simple linear regression equation *(2.6, 9.1)*     - Prediction and residuals *(2.6)*   + Inference     - Slope *(9.2)*   + Assumptions (transformations?)   + Affects of outliers   + R^2 and adjusted R^2   + Multiple regression?     - ANOVA for regression |  |
| Day 28 | * Regression   + Descriptive     - Scatterplots *(2.5)*     - Correlation *(2.5)*     - Simple linear regression equation *(2.6, 9.1)*     - Prediction and residuals *(2.6)*   + Inference     - Slope *(9.2)* |  |
| Day 29 | * Review Day | * Which Method? |
| Day 30 | **Final Exam** |  |