What is Due & When?

Fall 2019

You are expected to come to each class meeting prepared, which means that you will have done the readings and DataCamp assignments that are due for that date *before* coming to class.

Readings

Readings will primarily be from two free, open-source, completely online textbooks:

1. **MODERN DIVE into Data with R (MD)** (http://moderndive.netlify.com)
2. **R for Data Science (R4DS)** (http://r4ds.had.co.nz)

These books will be supplemented by blog posts, YouTube videos, and several open-access articles, including from:

- A special PEERJ issue called "Practical Data Science for Stats" (https://peerj.com/collections/50-practicaldatascistats/), and
- Nature: Points of Significance (https://www.nature.com/collections/qghhqm/pointsofsignificance)

DataCamp

Be sure to check the **DataCamp** link above for more details on the DataCamp (DC) assignments.

Search:

Weekday	Date	CM / Block	Readings	DataCamp	Hom Mi
Tues	September 25	1.1: Summarizing data	- MD Ch 2: Getting Started (http://moderndive.com/2-getting-started.html) - MD: Markdown Tutorial (https://www.markdowntutorial.com) - R4DS: R Markdown (http://r4ds.had.co.nz/r-markdown.html) - R4DS: Workflow Projects (http://r4ds.had.co.nz/workflow-projects.html)		
Thurs	September 27	1.2: Visualizing distributions	- MD Ch 3: Data Visualization (http://moderndive.com/3-viz.html) - MD Ch 4: Tidy Data (http://moderndive.com/4-tidy.html) - MDCh 5: Data Wrangling (http://moderndive.com/5-wrangling.html) Optional: - R4DS: Data Visualisation (http://r4ds.had.co.nz/data-visualisation.html) - R4DS: Tidy Data (http://r4ds.had.co.nz/tidy-data.html) - R4DS: Data Transformation (http://r4ds.had.co.nz/transform.html)	Intro to the Tidyverse(All) (https://www.datacamp.com/courses/introduction-to-the-tidyverse)	
Tues	October 2	2.1: Simple linear regression	- MD Ch 6.1: Basic Regression (https://moderndive.com/6-regression.html#model1) - Nature POS: SLR (https://www.nature.com/articles/nmeth.3627)	Working with Data in the Tidyverse (All) (https://www.datacamp.com/courses/working-with-data-in-the-tidyverse)	
Thurs	October 4	2.2: Simple linear regression	- MD Ch 6.2-3: Basic Regression (http://moderndive.com/6-regression#model2.html) - PEERJ: Data for Collaboration (https://peerj.com/preprints/3139/)	Intro to Modeling in the Tidyverse (Ch 1 + 2) (https://www.datacamp.com/courses/modeling-with-data-in-the-tidyverse)	
Tues	October 9	2.3: Linear models (general)	- Nature POS: Uncertainty (https://www.nature.com/articles/nmeth.2613) - Nature POS: Error bars (https://www.nature.com/articles/nmeth.2659) - Nature POS: MLR (https://www.nature.com/articles/nmeth.3665) - MD Ch 7.1: Multiple Regression (http://moderndive.com/7-multiple-regression#model3.html) - Discovering Statistics: Linear Models (https://www.discoveringstatistics.com/repository/linearmodels.pdf)	Intro to Modeling in the Tidyverse (Ch 3 + 4) (https://www.datacamp.com/courses/modeling-with-data-in-the-tidyverse)	
Thurs	October 11	2.4: Multiple regression	- MD Ch7.2: Multiple Regression (http://moderndive.com/7-multiple-regression#model4.html)	Exploratory Data Analysis Case Study (Ch 1 + 2) (https://www.datacamp.com/courses/exploratory-data-analysis-in-r-case-study)	HW1 (hw/HW
Tues	October 16	2.5: LM diagnostics/outliers	- Nature POS: Outliers (https://www.nature.com/articles/nmeth.3812) - Nature POS: Diagnostics (https://www.nature.com/articles/nmeth.3854)	Exploratory Data Analysis Case Study (Ch 3 + 4) (https://www.datacamp.com/courses/exploratory-data-analysis-in-r-case-study)	
Thurs	October 18	3.1: Probability	- All of Statistics: Chapter 2 (reference/Wasserman-all_of_stats.pdf)	Foundations of Probability in R (Chap 1 + 2) (https://www.datacamp.com/courses/foundations-of-probability-in-r)	
Tues	October 23	3.2: Discrete Probability Functions		Foundations of Probability in R (Chap 3 + 4) (https://www.datacamp.com/courses/foundations-of-probability-in-r)	
Thurs	October 25	3.3: Continuous Probability Functions	- MD Ch 8: Sampling (http://moderndive.com/8-sampling.html)		

Weekday	Date	CM / Block	Readings	DataCamp	Hom Mi
Tues	October 30	4.1: Sampling distributions	- MD Ch 9: Confidence Intervals (http://moderndive.com/9-confidence-intervals) - Nature POS: Bootstrapping (https://www.nature.com/articles/nmeth.3414) Optional: - The infer R package (video) (https://youtu.be/BCMjVc9ncFo)	Inference for Numerical Data (Ch 1 + 2) (https://www.datacamp.com/courses/inference-for-numerical-data)	
Thurs	November 1	4.2: Bootstrapping (confidence intervals)		Inference for Numerical Data (Ch 3 + 4) (https://www.datacamp.com/courses/inference-for-numerical-data)	HW2 (hw/HW2
Tues	November 6	4.3: Hypothesis testing (resampling)	- MD Ch 10: Hypothesis Testing (http://moderndive.com/10-hypothesis-testing.html) - MD Appendix B: Inference Examples (http://moderndive.com/b-appendixb)	Inference for Categorical Data (Ch 1 + 2) (https://www.datacamp.com/courses/inference-for-categorical-data)	
Thurs	November 8	4.4: Hypothesis testing (classical)	- Nature POS: t-tests (https://www.nature.com/articles/nmeth.2698) - Nature POS: comparing samples (https://www.nature.com/articles/nmeth.2858) - All of Statistics: pp. 92-94 (reference/Wasserman-all_of_stats.pdf)	Inference for Categorical Data (Ch 3 + 4) (https://www.datacamp.com/courses/inference-for-categorical-data)	
Tues	November 13	4.5: Errors, Effect Size, and Power		Inference for Linear Regression (Ch 1 + 2) (https://www.datacamp.com/courses/inference-for-linear-regression)	HW3 (hw/HW3
Thurs	November 15	4.6 & 5.1: General Linear Model and Many Means	- Nature POS: ANOVA (https://www.nature.com/articles/nmeth.3005) - ANOVA (https://arxiv.org/pdf/1412.3416.pdf) - Discovering Statistics: One-way Independent ANOVA (https://www.discoveringstatistics.com/repository/onewayanova.pdf)	Inference for Linear Regression (Ch 3 - 5) (https://www.datacamp.com/courses/inference-for-linear-regression)	
Tues	November 20	5.2: ANOVA by hand	- Discovering Statistics: The Theory of ANOVA (https://www.discoveringstatistics.com/repository/anovabyhand.pdf)		Midterm
Thurs	November 22	NO CLASS			
Tues	November 27	5.3: Contrasts, post-hoc tests, and p-value adjustments	- Nature POS: multiple comparisons (https://www.nature.com/articles/nmeth.2900)		
Thurs	November 29	5.4: Two-way ANOVA/3-way ANOVA	- Nature: p-values (https://www.nature.com/news/scientific-method-statistical-errors-1.14700) - 538: Science Isn't Broken (https://fivethirtyeight.com/features/science-isnt-broken/#part1) - Simply Statistics blog (https://simplystatistics.org/2012/01/06/p-values-and-hypothesis-testing-get-a-bad-rap-but-we/) - Lakens blog (http://daniellakens.blogspot.com/2017/12/understanding-common-misconceptions.html)	Communicating with Data in the Tidyverse (https://www.datacamp.com/courses/communicating-with-data-in-the-tidyverse)	HW4 (hw/HW4
Tues	December 4		- Frank Harrell's Manuscript Checklist (http://biostat.mc.vanderbilt.edu/wiki/Main/ManuscriptChecklist)		
Thurs	December 6	Final presentations	Groups 4, 5, & 1		
Tues	December 11	Final presentations	Groups 7, 2, & 6		
Thurs	December 13	Final presentations	Groups 3, 9, & 8		