A Deeper Dive into Data
Independent Project - Core 121 2022

In groups of 4-5 you will complete an independent data analysis to answer a question of your choice. This document includes the details you need to complete the project. We will be adding detail to this document.

The goal is for you to reinforce and solidify your knowledge by applying your growing quantitative reasoning and coding skills to answer a question of your choice. The project includes a detailed proposal articulating and justifying the question you will answer with your data, and evidence of rigorous analyses to answer that question using descriptive & inferential statistics. The final products will be submitted as a polished data visualization, an abstract, and an oral presentation.

Tasks: Collaboratively, in your group, you will:

- select a **dataset** to analyze
- articulate **a question** you can answer with the data available to you.
- choose **variables** to analyze that will answer your question
- **descriptive statistics** that are appropriate to explore and summarize your variables
- creating an **appropriate data visualization** for your data types
- analyze your data with appropriate **inferential statistics**
- Write an **abstract** that interprets how your inferential statistics inform your question
- present your question, analysis and interpretation in an **oral presentation**

Databases: We have compiled a set of databases from which you can choose your variables to analyze. These are all real data, collected by humans, and have relevance to Antarctica or the species we have been focusing on in our problem sets.

Question: After exploring your dataset in R, think of a question of interest to your group that can be answered with the data you have available to you. Work hard to frame that question very specifically in a way that it can be answered with data. We will help you refine these questions. ***As you frame your questions, think about the final goals of your analyses. Envision relevant stakeholders (eg. conservation managers, environmental consultants, climate scientists, a funding agency)***

Variables: What specific variables will you use and why? How will these inform and answer your question?

Descriptive Statistics: You will thoroughly describe the structure of your data with appropriate descriptive statistics.

Data Visualization: Think about what data visualizations will serve to answer your question and communicate most effectively to your audience. Guidelines and Expectations Data Visualization

Inferential Statistics: You will add statistical rigor to your answer to question by applying appropriate inferential statistics that test statistical significance.

Abstract: You will write an abstract that briefly summarizes your question, why it is relevant, your approach to answering it, and your interpretation of the results. Guidelines and Expectations Abstract

Oral Presentation: Your group will have 12 minutes to discuss your project, setting up any background information for why your question is interesting and relevant, your data, analysis and interpretation of results. Guidelines and Expectations Oral Presentations

We will share more details about the expectations and grading criteria for your final data visualizations, abstracts and presentations and add them to this document.

Timeline:

- **Friday, Oct 21:** Meet your team - Introduction to the Project
- **Monday Oct 24:** Decide on dataset, question, variables and ideas of data visualizations - Submit Part 1 of this Google Document before Midnight Oct 25
- ~~**Friday Oct 28**~~ **Changed to Monday, Oct 31 by midnight:** Draft Proposal Due Submit Draft Proposal Doc ***before*** ***Monday 10/31 midnight***
- ~~**Monday Oct 31**~~**Wed, Nov 2:** Peer Review of Proposals (GRADED - 5 points toward individual effort). **Instructor** Feedback on Proposals to groups by Monday Nov 7
- ~~**Wed Nov 9**~~ **Friday Nov 11:** Final Proposal Due (GRADED - 10 points toward collaborative effort). Note, this is a new proposal form with some additional expectations for refinement of your plan. Use this one for submission on Wednesday.
- **Monday Nov 14:** Group work in class, ***draft*** abstract and data visualization due. Here is a folder with a couple example abstracts.
- **Friday Nov 18:** Peer Review of abstracts and visualizations (GRADED - 5 points toward individual effort)
- **Wed Nov 30:** Final abstract and visualizations due (GRADED - 5% of class grade (25 points)). Incorporate this general feedback.
- **Friday Dec 2 OR Monday Dec 5:** Student Presentations (GRADED - 5% of class grade (25 points))
- FINAL PEER EVALUATION FORM

Your collaborative effort is an important component of this project. This is an opportunity for you to practice your skills of collaboration and to support one another. I remind you of the class norms for interaction available at this link. Also, at the end of the project you will complete a statement of collaboration and peer review of the members of your group that is available at

this link. *At the end of the semester you will also complete a peer assessment in which you provide an honest evaluation of your own, and your peers' contributions to this project.*

Grade breakdown for this project. The final products of this project contribute 20% of your total class grade.

- ***Final Data Visualization - 5%***
- ***Abstract - 5%***
- ***Final Presentations - 5%***
- ***Collaborative and individual effort on specific assignments (proposal and peer reviews) - 5%***