Project

# Overview

The goal of the project is to explore a dataset, identify a story revealed by the data, and prepare a report that tells that story compellingly, including effective data visualizations.

The target audience is other people in the class, or members of the general public with a comparable level of stats knowledge.

# Format

The goal of the project is to identify a problem – something that needs to be answered. You’ll then source some data, do your analysis, and interpret your results. A good way to phase this (borrowed from Allen Downey – the author of the ThinkStats book):

* Q: motivating question; what is the purpose of the experiment?
* M: methodology; how did you implement the experiment (at an appropriate level of detail)?
* R: results; what happened when you ran the experiment?
* I: interpretation; how do you interpret the result as an answer to the question?

Note: The intent of this project is to be a realistic application of the concepts we covered this term. The exact set of tools and techniques that each of you use will be different – you’ll need to select the correct approach for your topic and your data, figure out how to apply it, and interpret the results.

# Topics and Data

You may choose almost anything that suits your fancy. There are a few things to keep in mind when selecting a data source:

* There should be an interesting question you’re answering. By interesting, I mean something that someone would talk about, write an article about, or use that information for some real purpose.
* It does not need to be ground-breaking. This is not a PhD thesis, you do not need to solve a novel problem. Answering something that society has already answered is OK.
* You want to demonstrate your mastery of the material – a question that is answered by simply taking an average or generating a histogram doesn’t.

There is a list of data source and topic ideas in Moodle that is a good starting point. If you are not sure what to do, choosing a suggested topic is 100% OK.

# Deliverables

In advance of committing to a topic, preferably well in advance of the project due date, you must show me your idea, and engage in a brief discussion. This is only to try to ensure that you don’t choose something that wastes your time.

You will turn in a Jupyter notebook file, containing:

* The code and explanatory text, structured “as a web page”, that illustrates your process and findings.
* Commentary, in the text cells, that presents your question, methodology, results, and interpretation.
* Someone should be able to read your notebook page start to end, and it should make sense and communicate everything.

# Grading

The grading on this project will be somewhat more demanding than previous, smaller assignments. The expectation is that you generate a cohesive, impactful, and well-presented product.

|  |  |  |
| --- | --- | --- |
| Category | Weight | Description |
| Topic and Question | 10% | Have you chosen something that is interesting and useful? |
| Data – Sourcing and Processing | 10% | Have you chosen suitable data, loaded and preprocessed it correctly in your program to the point that your analysis can begin? |
| Analysis | 40% | Is your analysis of the data:   * Suitable. * Sufficient. * Correctly applied. * In pursuit of an answer to the question. |
| Presentation and Writeup | 20% | Is your notebook well-presented and does your written material do a good job of clearly explaining the goal, what you’ve done, and the result |
| Overall Quality and Ambition | 20% | A subjective evaluation of how impactful your overall project is. Did you do a good job of communicating something interesting to me. |

Note: This grading scheme is obviously quite subjective. If you feel that things are erroneously graded and not adequately explained by my comments, please ask about it. The one caveat is that if you are making an argument about your grade, it must be supported – stating “I tried really hard and though I did better” isn’t a well-supported argument; asking “my analysis grade was low, but I actually did do a regression. The regression itself wasn’t well explained, but the results were how I formulated my conclusion” is well supported.