

Telling Stories with Data

Instructor:

Email: _____

Introduction

The volume and complexity of data continues to increase in the world around us, including science, business, medicine, social media and everyday human activity. This course aims to expose students to visual representation methods and techniques that increase the understanding of complex data. Good visualizations not only present a visual interpretation of data, but do so by improving comprehension, communication, and decision making. Through the technique of data visualization we can express the stories that underlie the data, and identify specific elements that allow us to explain, persuade, and inform ourselves and others.

Course Objectives

There are two major practices of data visualization. One is **exploratory** data visualization, where visualization is used to understand new information. The other is **explanatory** data visualization, where the visualization is used to communicate a specific understanding of data. While the lines between these two practices are not well-defined, this course will focus primarily on **explanatory** data visualization.

This course will also focus on small data, by which I mean datasets that fit within a spreadsheet or within a computer's memory. It will focus on visualization, not data manipulation. And it will focus on techniques rather than on technologies. While software is an essential part of data visualization, the goal of this course is to focus on communicating information to people, and specific software is merely one means to an end.

At the end of this course, you will:

- Be able to analyze a dataset, evaluate potential stories, identify a specific question, and write a creative brief for data visualization.
- Be able to choose appropriate software and other technology for a data visualization given your personal abilities and the goals of the project.
- Have a demonstrable understanding of visualization techniques, types of charts and graph techniques, color theory, and human visual perception.
- Be able to communicate specific messages with data and to use data persuasively. Have a working ability to obtain, analyze, manipulate, transform, and distribute data.

Course Schedule

The course will meet on three Saturdays in September:

Date	Time	Location

Course Materials

As the required textbook, we will use [Data Visualisation, A Handbook for Data Driven Design](#) by Andy Kirk (ISBN 978-1-4739-1214-4). This will serve as a primary reference material for much of what we cover in class. In addition to this book, we will also heavily use online resources and examples, which will be available as links on the course website.

Course Activities

Type	Number	Total Grade %
Visualization Quizzes	3 quizzes (10% each)	30%
Visualization Projects	4 homeworks (17.5% each)	70%

Data visualization is fundamentally a subjective experience, and as such this will not be an exam-heavy course. Instead, much of the work will focus on projects. The course will focus on understanding the techniques of data visualization through developing creative visualizations using tools to solve defined problems.

There will be two categories of assignments for this course:

Visualization Quizzes: **30%**

At the end of each class, you will be given a link to an online quiz. This quizzes will test your knowledge of the material learned.

Visualization Projects: **70%**

During each in-person class, we will be exploring software tools for creating data visualizations. There will be an in-class demonstration and mini-workshop where you will be introduced to the week's tool, and there will also be a take-home assignment for each workshop that builds upon the work done in class. There will be four of these assignments.

Class Policies

Laptops

Laptops will be permitted in class, and will be required for use during technology workshops. Please be respectful of the class and your classmates with your use of laptops by avoiding distracting content.

Attendance

As this course only meets on three occasions, attendance is mandatory. If you must miss class for illness, family emergency, or other valid reason, please let me know **before the class** to make arrangements.

Recording

Most classes will have slides, and those slides will be made available after every class. If you feel the need to record the class, discuss this with me prior to recording. Any recordings made during class are for personal use only, and cannot be distributed in any fashion or format.

Food

Food is acceptable, as our class sessions will be up six hours, but please do not distract your classmates. During our six-hour in-person sessions, a short break will be given for lunch.

Collaboration, Cheating and Plagiarism

Homework and quizzes must be individual work unless otherwise stated. You are encouraged to consult each other on clarification, technical and conceptual issues, and on interpreting the data but you must do individual problem solving and derive your own solutions, including your own computer and design work. If you have any question concerning whether an act is appropriate please consult me or the appropriate university official before acting. The minimum penalty for cheating on an assignment is zero credit for the work submitted, and the maximum penalty is being failed for the course.

You are responsible for being familiar with the university standard for academic honesty and plagiarism. Please see the Penn Student Handbook for information. In order to deter and detect plagiarism, online tools and other resources are used in this class.