# BMI 706 Project

## Learning Goals

- Apply skills acquired in task analysis, design space exploration, and software implementation for a data visualization projects.
- Create a Shiny app for interactive, exploratory visualization of a complex, heterogeneous data set.

## Deliverables

- **Due April 19**
  - Data set if you are allowed to share it.
  - Description of data set with tasks.
- **Due April 26**
  - Five design sheets.
  - Description of implementation strategy.
- **Due May 3**
  - Complete process book.
  - Source code for Shiny app.
  - Presentation with live demo.

## Step 1: Identify a data set and visualization tasks (due 4/19)

1. Identify a data set of interest for your visualization project.
2. Describe what kind of information can be derived through exploratory visualization analysis of the data set.
3. Identify the target audience for the visualization tool that you will build.
4. Develop a list of visualization tasks for the data set.
5. Describe the data types present in your data set (temporal, networks, multivariate matrices, etc.).

## Step 2: Apply Five Design Sheet Methodology (4/26)

1. Apply Five Design Sheet Methodology.
2. Describe potential visualization challenges.

Note that your design may go beyond what you will actually implement in your Shiny app.

## Step 3: Describe Implementation Strategy (due 4/26)

Write a short paragraph describing how you are planning to implement your application and how different components of your visualization will be interacting with each other.

## Step 4: Implement Shiny Application (due 5/3)

Implement your application using R, Shiny and Plotly. You may also create static ggplot2 visualizations in exceptional cases (e.g. if there is no appropriate Plotly plot available for your data).

## Step 5: Prepare and Present a Live Demo (due 5/3)

1. Describe your data set.
    a. Why was the data collected?
    b. How was it collected?
    c. What are the characteristics of the data?
2. Provide rationale for a visual exploration tool.
    a. Why is a visualization tool necessary?
    b. What can we expect to learn?
3. Discuss your final design and justify your design decisions.
    a. Why did you choose your visual encodings?
    b. What kind of interactions did you implement and why?
    c. Does your visualization scale with the size of the data?
4. Provide a live demo that illustrates key features of your Shiny app

## Process Book

Your process book will include the following:

- Write up for Step 1.
- Write up for Step 2 and the five design sheets.
- Write up for Step 3.
- Screenshots with captions and optional annotations that are representing the live demo illustrating the key observations that you made with your tool.
- Any ideas for future work and sketches in addition to the five design sheet exercise.

The final process book can be either a PDF file or a self-contained HTML file (e.g. knitted from an RMarkdown file).

**What to submit?**

1. PDF or self-contained HTML file of your process book.
2. Presentation slides.
3. Data files (if you have permission to share them).
4. Source code for your Shiny app (single ZIP archive).

# Administrative

**When is it due?**

- See dates for individual steps above, at 11:59 pm

**How do I hand in my solutions?**

- Email required materials to bmi706.2018@gmail.com.

**What if I have questions?**

- Please use Piazza (https://piazza.com/harvard/spring2018/bmi706/home) to ask questions about the class project. Please avoid sending messages for clarification directly to the instructors.