# PROJECT MILESTONE 2: EXPLORING THE DESIGN SPACE

**Directions**

1. Have one member of your team submit **your write-up and code file (.Rmd or .R) to Canvas.** The write-up should be in a PDF, Word, or other well-formatted text document. This write-up should directly include any static visualizations. For submissions involving interactive visualizations, follow the instructions for "How to Submit a Shiny App" from individual homework assignments.
2. **Have one member post your write-up and any evidence of interactive functionality to Piazza, with the title "Group # Project Milestone 2". This is how we will conduct peer reviews next week.**
3. Write-ups must be no longer than 1200 words.

# Milestone Description

Now that you and your team have formulated a motivating goal and have acquainted yourself with relevant literature, it is time to experiment widely with prototype visualization approaches. Regardless of whichever project type you chose, your task in this milestone is to **design and implement prototypes of at least four visualizations that could potentially be used in your final interface or report.**(You are welcome to do more, but you are only responsible for four.) In doing so,**explore a wide variety of approaches.**You might be surprised at how effective some graphical encodings can be in your specialized context; but you won't know until you try.

In addition to instructor feedback on your Milestone 2 submission, you will also receive peer feedback -- we'll do this via Piazza. In Milestone 3, you will account for both peer and instructor feedback, combining and refining your prototypes into a final submission.

### **What do we mean by prototypes?**

For this assignment, we are not asking for the final version of each of your four (or more) visualizations - only "prototypes". P**rototypes must:**

* Use your full, real dataset(s).
* Have plain-language, readable labels and annotations, so a peer can understand how to read the visualization.
* If applicable, have working interactivity. (E.g. don't tell us that "in the next stage of the project we'll add a slider to this."; the next stage is for visual tweaks, not functional ones.)

**Prototypes do not have to:**

* Customize things like color schemes, themes, axes marks, images, backgrounds, fonts, compound layouts, and other visual tweaks/formatting that improve the appearance but not the structure of the visualization. This will be part of Milestone 3.

**Final thoughts on prototypes:**

* **We want you to explore the design space and experiment with a variety of prototypes that could work for your project. Some of these prototypes will be effective, and some of them will be ineffective; this is okay and encouraged, we want you to experiment. Don't be afraid of producing a bad graph in this stage.**
* If you are concerned or confused whether your prototypes meet the requirements listed above, the instructors will be happy to clarify.

### **Written Report**

For each of your (at least four) visualizations:

1. Display the visualization directly in your write-up if it is a static visualization or include evidence of functionality as described in "How to Submit a Shiny App" in previous homework assignments.
2. Explain how to interpret the visualization and how it is relevant to the main questions/purpose of your project. Include at least one specific example of a takeaway a viewer can make from the graph. Please clearly relate your choices to the high-level goals and questions you explained in Milestone 1. If a design choice was inspired by your literature review, be sure to reference the existing visualization.
3. Finally, now that you see the design on your real data, please evaluate at least one strength and one weakness of each design, especially emphasizing cases where one design addresses a problem present in another. For example, there may be trade-offs in how densely packed the marks on a visualization are, how different variables are encoded, how intuitive a visualization is to understand, or how a visualization enables or hinders answering certain sub-questions of interest.

# Recommended Roles

**As always, there are many sub-tasks and responsibilities that go into each group project milestone, and your group is responsible for dividing them appropriately as you see fit.** We also encourage you not to repeat roles from Milestone 1. If you were Coordinator or Writer last time, try something new this time around.

1. **Coordinator + Visualization 1:** Contribute one prototype visualization of a familiar nature.  In addition, set up group meetings and documents, take detailed notes on group communications, document progress and clearly communicate responsibilities; aid Writer in describing Visualization 1; responsible for final formatting/grammar/citation/fact-checking/overall cohesion review of write-up and **submissions to Canvas and Piazza.**
2. **Writer + Visualization 2:**Contribute one prototype visualization of a familiar nature. In addition, primarily responsible for creating and formatting the write-up. This will involve talking with the other three members as appropriate to ensure it effectively communicates the group's cohesive project approach, as well as how the prototype visualizations relate to that central purpose.
3. **Visualization 3:**Contribute one prototype visualization that is more experimental in nature. In addition, aid the writer in discussion of Visualization 3.
4. **Visualization 4:**Contribute one prototype visualization that is more experimental in nature. In addition, aid the writer in discussion of Visualization 4.

# Rubric

Variety of Prototypes (10 points): The proposed designs are well-motivated by Milestone 1’s review, are appropriate to the project goals, and demonstrate a willingness to engage with both familiar and atypical visualization formats.

Critical design evaluation (10 points): The discussion of the implemented designs is sophisticated, including both concrete details and higher-level commentary.

Code logic & style (2.5 points): Appropriate programming and formatting techniques are used to make code concise and readable.

Submission & formatting (2.5 points): Final write-up includes any relevant static visualizations, and any necessary evidence of interactive functionality is included in the submission. Final write-up is well-formatted and readable, important features of included visualizations are easily visible. Submission is posted to both Canvas and Piazza on time.