Activity to explore p-hacking

XX YOUR NAMES HERE

2025-05-23

Hack your way to scientific glory

During the course, we have learned about some of the perils of *dubious practices* such as overfitting models, making errors in extrapolation, and ignoring or misinterpreting null results. While there is not a single way to conduct an analysis, researchers need to be transparent in their decision-making process and acknowledge the limitations behind their research.

Before today's class, you were asked to read the Five Thirty Eight Article "Science Isn't Broken It's just a hell of a lot harder than we give it credit for" (https://fivethirtyeight.com/features/science-isnt-broken).

Today you will be working in pairs to explore the potential problems that arise when a non-ethical process is used to determine what to publish.

You will be working through the interactive visualization "Hack Your Way to Scientific Glory" provided by Five Thirty Eight (https://projects.fivethirtyeight.com/p-hacking), playing the role of a social scientist "with a hunch" about the association between who is in office (Republicans vs. Democrats) and the state of the economy.

An alternative location for the page can be found at https://web.archive.org/web/20250117051842/http://projec
hacking.

Your mission is to come up with a set of analytic choices that lead to a "statistically significant" result (e.g, $p < 0.05$).

Step 0: appoint a leader and a scribe

- The leader will be the person whose birthday is coming up next. The leader is responsible for organizing work on the activity.
- The scribe will be the other person. The scribe is responsible for writing up the first draft of the submission and working with the leader to submit your report.

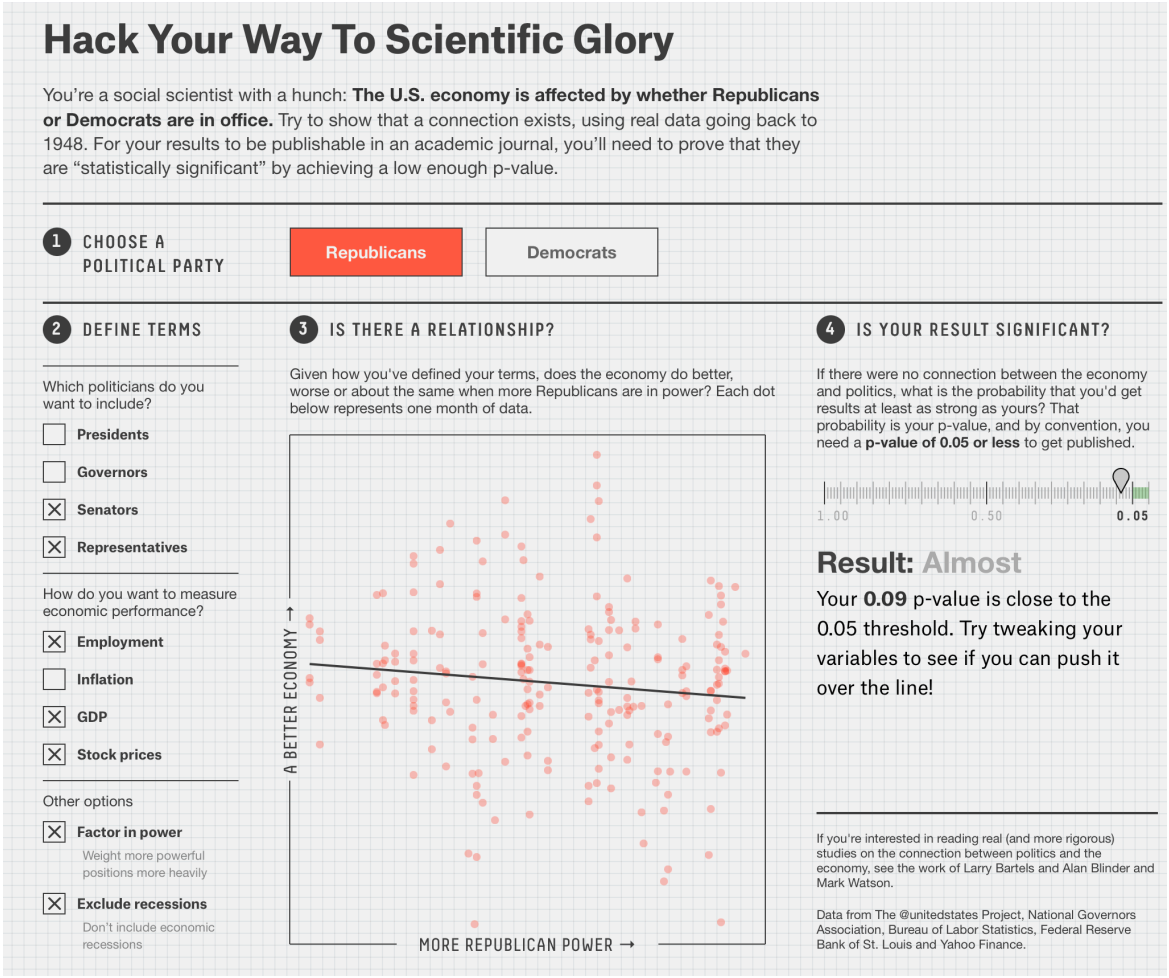

Figure 1: Five Thirty Eight p-hacking explorer

Step 1: Determine which party you will be exploring

- If the leader's birthday is an ODD number, you will be fitting models for REPUBLICANS
- If the leader's birthday is an EVEN number, you will be fitting models for DEMOCRATS

Step 2: Define terms

Once you access the website, you'll need to make some decisions.

- Which politicians do you want to include?
- How do you want to measure economic performance?
- Other options

Step 3: Is there a relationship?

- What do you conclude about the outcome when more REPUBLICANS/DEMOCRATS are in office?

Step 4: Is your result significant?

Step 5: Write up your results

In a brief report (no more than one page, single spaced plus a figure) aimed at an audience of your classmates, summarize your model and your results. Include a screenshot of the scatterplot and the result. What do you conclude? Be sure to discuss the potential issues of p-hacking and the "Garden of Forking Paths"

Step 6: Submit your report