Nov 09 – Updates & Assignment

Website updates

Checkout the class website bit.ly/statgaps2020, which now has some updates:

- The **Calendar** section now contains the topics for all the weeks and links to PDFs of slides and assignments.
- There is an `Assignments` directory that will contain PDF versions of all the assignments.
- There is a `Reading-materials` directory that will contain PDFs of all the reading materials we will use in this course.
- The `Lectures` directory will contain PDFs of all the lecture slides.

Assignments

Sorry, this is a bunch of things you need to get started. It won't be like this every week. Don't worry.

Part 1: Complete this very short incoming survey

Due: Wed, Nov 11 @ 1p (so that I have time to assign learning groups and pick offline meeting time before class)

Complete the incoming survey bit.ly/statgaps2020_incoming. It is really short.

Also, if you have not already done so, please complete the **signup form** bit.ly/statgaps2020_signup so that I understand your background better.

Part 2: Instal R or Python

Due: Mon, Nov 16 before class (you need this to run scripts in class next Mon)

If you are working and familiar with R:

- Install R, RStudio, and Tidyverse (package); Get familiar with R Notebooks

Or, if you prefer Python:

- Install Anaconda, Python 3.7, Jupyter Notebooks

Resources with detailed instructions are on the **class website** bit.ly/statgaps2020 in the document `Preparatory-materials.md` .

Part 3: Checklist on statistical analysis and reporting rigor

Many good scientific journals are now requiring authors to provide a detailed account of all their statistical analyses and data availability/access along with sufficient information for other scientists to reproduce the findings presented. You can get a quick sense of this checklist by looking at this PDF (in the course website under the directory `Assignments`).

The goal of this assignment is to give you the opportunity to complete such a checklist for **a recent paper relevant to your research**, focusing on **one specific analysis/result**.

The assignment is here: bit.ly/statgaps2020_assignment01.

3a: Choose a paper and a specific analysis

> *Due: Wed, Nov 11 @ 11:59p*

Select a primary research article published by you/your-group in the past 3–5 years that satisfies the following **four** criteria:

1. Has a specific question that is of interest to you.
2. Is based on experimental data (newly generated or previously published). *Note:* You DO NOT need to find and bring the original/experimental data behind the paper. Just make sure the results are based on an experimental dataset.
3. Contains a "Methods" section that contains the description of the methods to answer the specific question.
4. Involves at least 2 different results – described as figures/tables in the main paper – obtained based on statistical data analysis. [THIS IS CRITICAL.]

This article "What is the question?" (PDF in class website in the directory `Reading-materials`) contains a description of different types of questions related to data analysis. Using the terms defined in this article, in the paper you picked, I suggest choosing a question that is Inferential, Predictive, Causal, or Mechanistic.

Some notes
- I suggest choosing a paper authored by you or someone in your group. This is to make sure that the paper is relevant to your research and hence you already have a grasp of the science and terminologies.
- However, if you are having a hard time finding one that fits our criteria, please feel free to use a paper written by someone else in your field that is pertinent to your research interests.
- If you are a junior/developing scientist and if you are still not sure, I strongly recommend asking someone senior in your group (graduate student / postdoc / PI) for suggestions on a good paper.

As soon as you pick one, send me your paper of choice on Slack (via a direct message) also indicating which specific analysis/result/figure you're planning to focus on and we can make sure the paper has enough statistical results to dig in.

3b: Complete the checklist for the chosen analysis in the paper

Due: Mon, Nov 16 before class

Complete the checklist in the google form: bit.ly/statgaps2020_assignment01.
Let me know if you have any questions along the way (by messaging me on slack). Good luck!