36-726: Statistical Practice

Introduction

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Outline

- Introduction
- What is this course about?
- Syllabus Stuff
- Class meetings
- Reading Assignment
- Listening/Writing Assignment

Introduction – About Us

- Brian Junker
  brian@stat.cmu.edu
- Valerie Ventura
  vventura@andrew.cmu.edu
- Zach Branson
  zach@stat.cmu.edu
- Brian Macdonald
  brianmac@andrew.cmu.edu

- Office hours (BJ):
  - **Thu 10-11am**
  - …or by appt
  - Zoom Link on Canvas
- Office hours (others):
  - **TBA**
  - …or by appt

What is this course about?

- Teams of 2-5 students work on a single project with one client/collaborator, all semester long
- Each project group will also have one instructor as a faculty mentor
- A primary goal is to learn to be a successful member of your team member, and a successful statistical consultant
- Another goal is to be exposed to the problems other teams will be working on, and to learn from each other how to be better team members and better statistical consultants

What is this course about?

- ***This is a practicum –*** the best way to learn to be a good statistical consultant is to do it
- ***There are no great textbooks*** but here are three that you might find useful:
  - *Ruland, F. (2014). Guide for the New Statsitical Consultant: Some Suggestions and Three Key Questions to Ask.* Seattle: Amazon.com. Available in Kindle (free), or paperback ($5.99).
  - *Glasman-Deal, H. (2021). Science Research Writing for Native and Non-Native Speakers of English, Second Edition*. London: World Scientific Publishing. Available at amazon.com ($25.00).
  - *Cabrera, J. & McDougall, A. (2002). Statistical Consulting.* NY: Springer. Available at amazon.com in hardcover ($70.75) or paperback ($99.99), or from link.springer.com (free, if you access through the CMU campus or VPN networks).
- **Other course materials:**
  Canvas! (canvas.cmu.edu)

What is this course about?

- You will not have all of the statistical or data science tools you need to do your project.
  - "It is better to understand the problem and use what 'tools' you have, than to know every advanced procedure and not quite understand the problem." – Fred Ruland
  - In some cases you will need to learn new tools, on your own and/or with the help of your faculty mentor
- You will use the tools you have (or learn) to tell the stories in the data that are meaningful to your client
  - Or, in some cases, help your client see how to use the data they have, collect better data, and/or implement better methods, to tell meaningful stories in the future

What is this course about?

- A large part of good statistical consulting is communication
  - *Establishing good professional rapport with the client*
  - *Listening and taking notes when the client is talking*
    - *Asking questions when you don't understand*
    - *Echoing ideas back to the client to make sure you've got it right*
  - *Communicating with the client in language the client can understand*
    - *Listening when you are giving the client information to make sure the client understands*

What is this course about?

- Good statistical consulting takes time and patience
  - A semester is actually a fairly short period of time to produce useful analysis and/or advice
- My advice to you
  - Don’t waste time
  - Don’t rush
- You will make mistakes
  - Own them, fix them, and learn from them.

Syllabus Stuff – Work & Rules

- 70% Project and related team activities
  - I will be assigning grades, based on
    - Reports from your faculty mentors and clients
    - Peer evaluation
    - My own observation
- 10% Non-project homework
  - Reading, class-based writing, etc.
- 20% Participation and engagement
  - Unlike 36-617, class attendance is mandatory
  - Participation in class discussions, etc., is essential

Syllabus Stuff – Getting help

- Faculty Mentor
  - You will be setting up regular meetings with your faculty mentor
  - At each meeting you will report on your work and next steps
  - Faculty mentor will offer advice as needed
- Other issues
  - Talk to another 726 instructor, me, and/or Jamie
- Piazza
  - Useful for general technical or non-technical questions
  - No project-specific information should shared here

Reading Assignment

- Sections 2.1 and 2.2 of Cabrera and McDougall
  - We will discuss more on Wednesday
- Note how important good professional rapport is
- Good overall for learning about client's project:
  - How much do you need to know?
    - Continually assess and re-evaluate this question.
  - Ask questions
  - Always ~~be prepared to~~ take notes.

Listening/Writing Assignment

- For the next several lectures, our clients will join zoom session to present their projects.
- You should listen carefully, ask questions, and prepare a summary of each project. The summary should address:
  - Understanding and defining the problem
  - Evaluating the technical knowledge of the client/collaborator
  - Assessing the overall issues and objectives
  - Identifying the statistician's specific contributions to the project
- Each summary will be due approx 22 hours after each presentation.

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