Design and analysis

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- What?
- Why?
- Who?
- How?

What?

- We continue data analysis through coding - “data science”.
- We explore topics by building analysis from basic components.
- Simple regression.
- Multiple regression.
- The nature of statistical inference.
- Predicting new values from old data.
- Confidence intervals.
- Finding the best values with optimization.
- Basic machine learning.

Why?

- Expanding range of analyses using programming.
- Covering wider range of statistical tests (using same 'try it and see' approach).
- Relationship with traditional parametric tests.
- Should should become independent in data analysis:
  - Choosing the right analysis;
  - Finding help for understanding new problems;
  - Designing your own models to test new questions.

Who?

- Programming / data analysis background from “Introduction to programming”.
- Very little mathematics.

How?

- Spring term.
- Tuesday 2-3pm : lecture workshop.
- Thursday 10-10am : lecture / workshop - ditto.
- Working on your laptop (or a class laptop)
- Coding in web browser (Jupyter notebooks) and with editor / command line.
- Good support from TAs.
- Assessments:
  - 10% x 2 coursework assessments; template analyses to fill in.
  - 80% advanced analysis project. You chose your own data to analyse and your analysis approach.

Examples at: https://github.com/matthew-brett/dsfe

Questions?