Agenda

1. Introductions
2. Introduction
3. Logistics
4. Software

Introductions

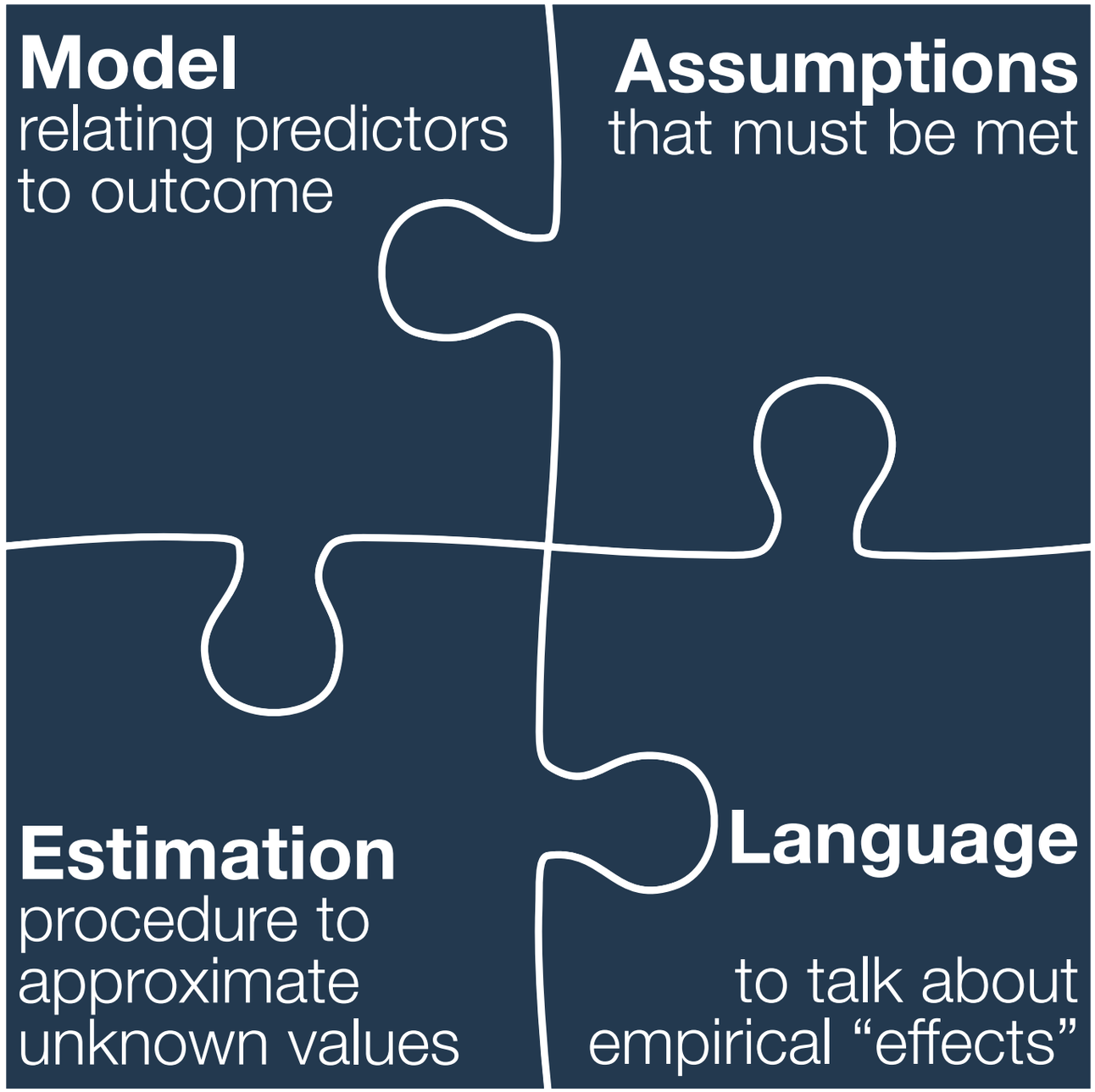
Introduction

Multiple Least Squares

$$y_i = \alpha + \beta_0 x_{0i} + \beta_1 x_{1i} + \varepsilon_i$$

Introduction

Multiple Least Squares



$$y_i = \alpha + \beta_0 x_{0i} + \beta_1 x_{1i} + \varepsilon_i$$

Introduction

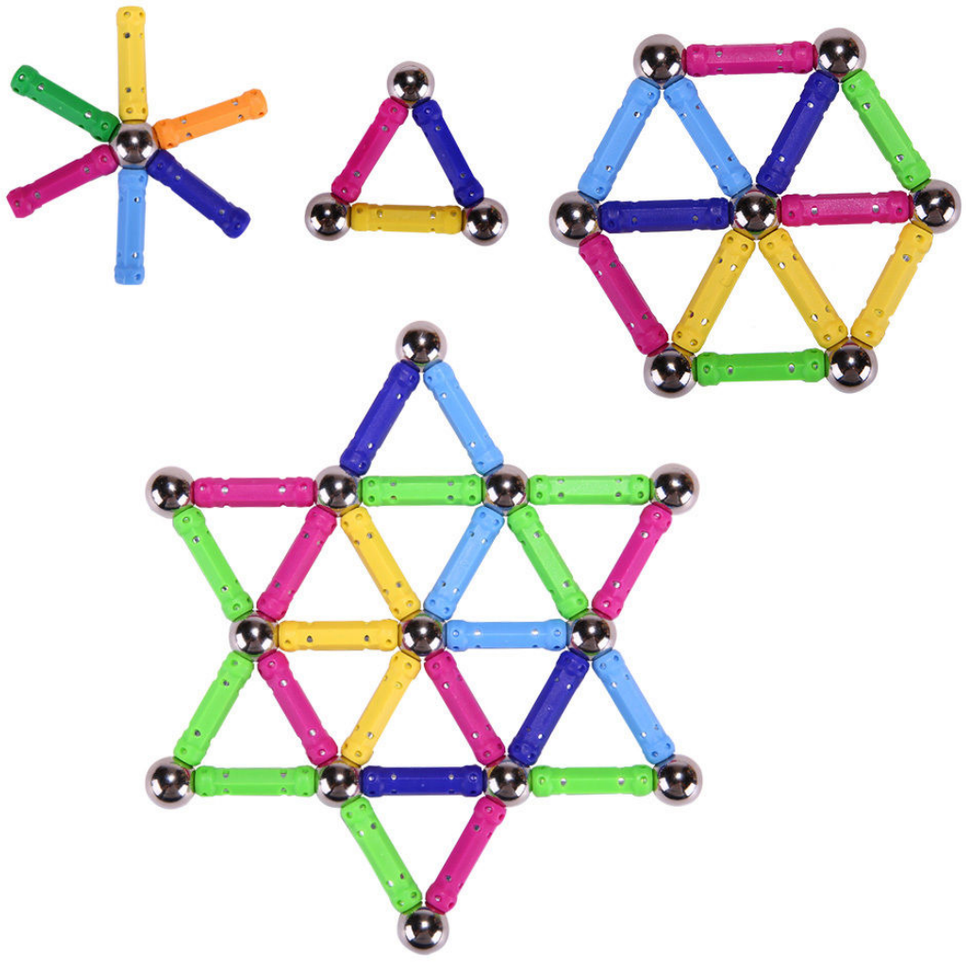
- As social scientists, the model is what we really care about
  'Mental map' of your argument
- Also the fun part
  Building a tiny working model of the social world

- Predictions and measures from model and data
- Technical procedures
  Important, but less sociological
- Ordinary least Squares (OLS)

Bayesian data analysis

“Bayesian” approach

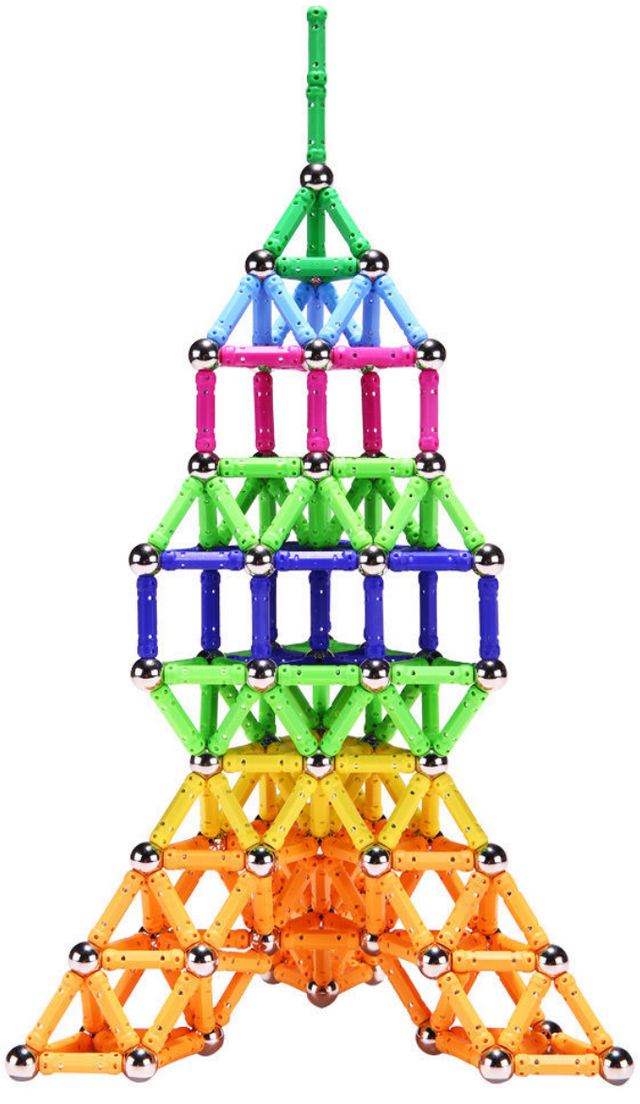
- More intuitive (for most) than “frequentist” approach
  e.g. *p*-values versus Bayesian posterior probabilities
- More flexible



Bayesian data analysis

Why a Bayesian approach

- More intuitive (for most) than “frequentist” approach
  e.g. *p*-values versus Bayesian posterior probabilities
- More flexible



Bayesian data analysis

What does "Bayesian" really mean?

Philosophically:

- Frequentist
  The *probability* of an event is the proportional frequency of that event across the entirety of a given context
- Bayesian
  the *probability* of an event is a rigorous way to quantify subjective uncertainty about that event

Practically:

- Frequentist
  Limitations on types of models that can be used
  Fast computation of estimates for those models
  Difficult to talk about our confidence in estimates
- Bayesian
  Easy to build models and talk about confidence in estimates
  Computationally "expensive"
  Need to specify prior beliefs (more on this next week)

Logistics

Logistics

Syllabus

- https://mcmahanp.github.io/soci620/

Class periods

- First ~hour will be lecture and discussion
  Formal discussion of topics
- Second ~half hour will be lab
  Working in R
- Laptop will be necessary

Open work space

- Work on assignments/projects in the same space as one another (study hall)
  Ask questions, consult, commiserate
- No lecture
- Once per week (needs to be scheduled)
  Monday, Tuesday, or Thursday afternoon/evening
  https://doodle.com/poll/32zudsy8fhqxierg

Logistics

Piazza

- Online discussion forum
  https://piazza.com/class/jpcxmw00x0j3jg

Readings

- Textbook
  Richard McElreath, *Statistical Rethinking*
  One copy on reserve, online access through library
- Topical articles TBD

Logistics

Assignments

- (Mostly) weekly
- Working together is fine, but each person needs to create their own writeup of code and prose
  Copy/pasting code is no way to learn

Final project

- Original research
- Due in pieces
  (precis, proposal, presentation, and writeup)
- Meet with me early in semester to talk about ideas and what is appropriate