

# Welcome and Introduction

Advanced Topics in Quantitative Social Research



# Plan for today

## ▶ **Module overview**

- Objectives and arrangements
- Syllabus: Readings and tutorials
- Assessment and presentations (Week 11)

## ▶ **Introduction:** Tell us about yourself

## ▶ **Exercise:** A quick recap on OLS (and will be continued)



# Objectives and arrangements

- ▶ Advanced Quants covers a selection of topics on **model-** and **design-**based statistical inference
- ▶ Students are expected to be familiar with **multiple linear regression** and basic **R programming** before they join
- ▶ The weekly syllabus is **tentative** and can be adjusted depending on our progress
- ▶ The in-person tutorials will be used to
  - Review and answer your questions about the readings and recorded lectures (if any)
  - Give you the chance to implement the analysis in R
  - Help you prepare for the final project (Weeks 5 and 11)

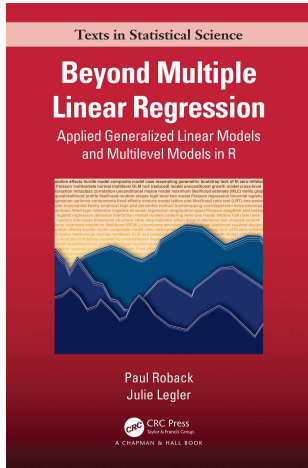


# Weekly syllabus

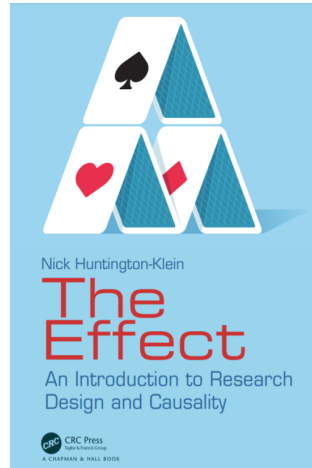
- ▶ Part 1: Generalized linear model
  - From OLS to GLM
  - Logit regression
  - Multilevel/hierarchical modeling (maybe)
- ▶ Part 2: Applied causal inference (maybe)
  - Selection on the observables (matching)
  - Regression discontinuity design
  - Instrumental variable
  - Difference-in-differences
  - Causal learning



Textbooks: Clear explanation without much math (under most circumstances)

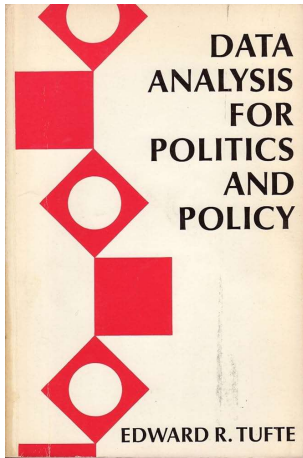


For Weeks 2-4



For Weeks 7-10





The screenshot shows a web browser displaying the GitHub repository page for `ccheng11/BBK_AdvQ`. The repository is public and has 1 star and 0 forks. The page includes navigation tabs for Code, Issues, Pull requests, Actions, Projects, Security, and Insights. The 'Code' tab is selected, showing a file list with the following items:

File Name	Description	Last Update
01 Introduction	Update WK1 slides, readings and README	3 days ago
02 OLS/Readings	Update WK1 slides, readings and README	3 days ago
03 Logit/Readings	Update WK1 slides, readings and README	3 days ago
04 Multilevel/Readings	Update WK1 slides, readings and README	3 days ago
README.md	Update Readme	2 days ago

On the right side of the file list, there is an 'About' section with the text 'Tutorials for AdvQ @ Birkbeck' and a link to [www.bbk.ac.uk/courses/modules/sspo/5...](http://www.bbk.ac.uk/courses/modules/sspo/5...). Below this, there are statistics: 1 star, 2 watching, and 0 forks. A 'Report repository' link is also present.

[https://github.com/ccheng11/BBK\\_AdvQ](https://github.com/ccheng11/BBK_AdvQ)



# Additional resources on Moodle

- ▶ You can find a variety of additional/supplementary resources – the key principle is to be **selectively thorough**
  - Supplementary textbooks: Use them when you find the main text is not clear; feel free to discuss with me if you are interested in purchasing any of them
  - Mathematics refresher: Review key math concepts and terms, especially **basic algebra**, if necessary; **Khan Academy** is a good start
  - R Programming: Help yourself when you have a hard time; pick one of the books and use the online community (e.g., **R-bloggers** and **Stack Overflow**) to keep yourself updated
  - Podcasts: Get a sense of how quant social researchers present and discuss their work





# Assessment

- ▶ **Exercises I and II** (20% each): Students will complete **two short data analytical exercises** based on the weekly tutorials
- ▶ **Final project** (60%): Students will complete **a quantitative research note** of about 4,000 words, excluding footnotes, bibliography, and appendices (R script and supplementary information); more will be discussed in **Week 5**



## Next week

- ▶ We will review OLS and discuss why we need GLM (non-linear multiple regression)
- ▶ Before you come to class
  - Install *R* and *RStudio* on your laptop and bring it to class
  - Read the assigned chapters (either *Beyond Multiple Linear Regression* OR *The Effect*)
  - Watch the recorded lecture (uploaded on Thursday or Friday)

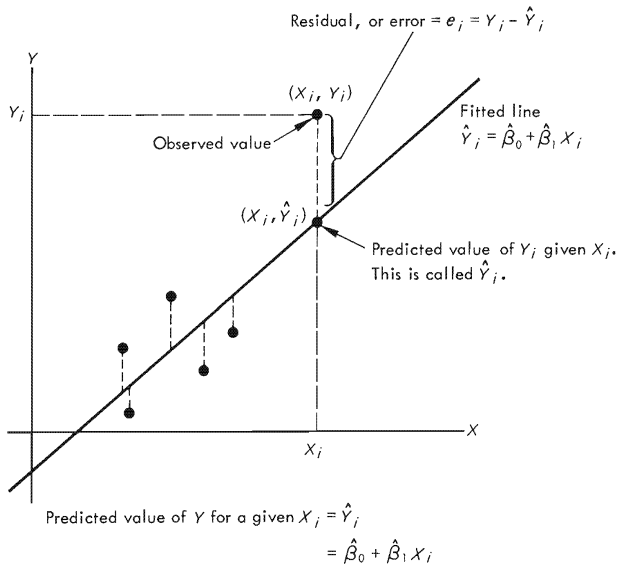


# Introduction

- ▶ Please share your name, course, and subject area (e.g., political science) with us
- ▶ Please share your experiences with quant social research. What are some of the most rewarding and/or challenging moments?
- ▶ Please share your potential research ideas for the final project. Any datasets you plan to study? We will continue the discussion on your research ideas in Week 5



# Recap: OLS



## Recap: OLS

- ▶ Go through the **two-dimensional scatterplot**; locate and define/explain the following concepts:
  - Explanatory and dependent variables
  - Data point or individual observation
  - Fitted line (intercept and slope)
  - Residuals and goodness-of-fit
  - Model specification
- ▶ What is the idea behind the name of ordinary least squares (OLS)?

