Gov 50: 1. Introduction

Matthew Blackwell

Harvard University

Fall 2018

1/ Welcome and Motivation

Quantitative social science

- **Quantitative social science:** using quantitative data to learn about the social, economic, and political world.

- QSS is basically what the world calls **data science**

  ▶ Facebook, Google, Netflix, etc have massive teams dedicated to doing QSS.
  ▶ Nonprofits and governments becoming very focused on measuring the quantitative impact of policies using QSS techniques.
  ▶ Increasingly digital lives ⤳ quantitative data everywhere.

- This class will give you a hands-on introduction to the tools and techniques of QSS.
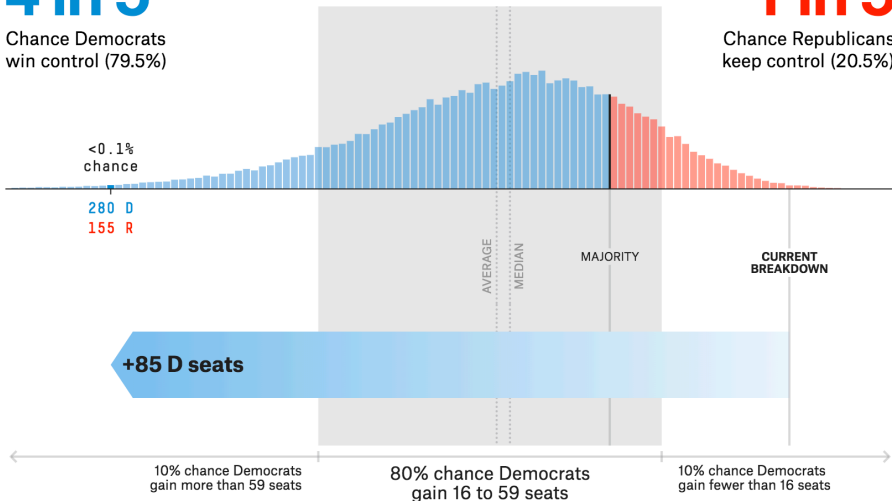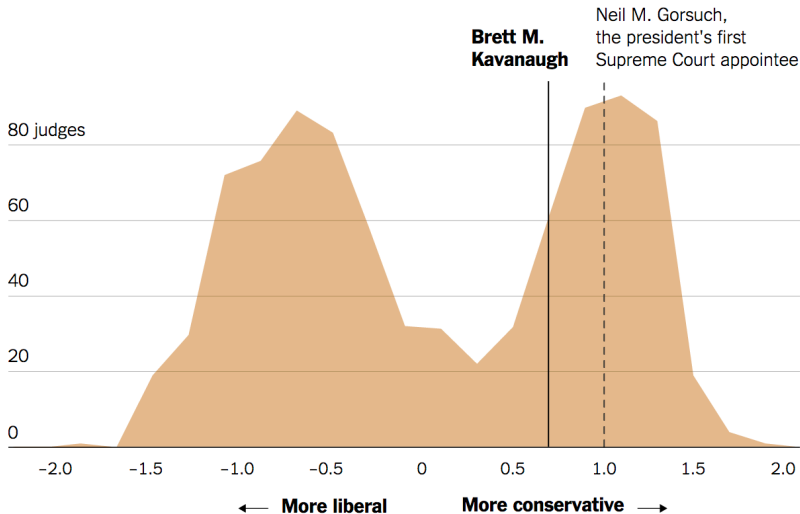
Forecasting the race for the House

4 in 5
Chance Democrats
win control (79.5%)

1 in 5
Chance Republicans
keep control (20.5%)

<0.1%
chance

280 D
155 R

AVERAGE

MEDIAN

MAJORITY

CURRENT
BREAKDOWN

+85 D seats

10% chance Democrats
gain more than 59 seats

80% chance Democrats
gain 16 to 59 seats

10% chance Democrats
gain fewer than 16 seats

How Kavanaugh's Ideology Compares With Other Federal Judges

Brett M. Kavanaugh

Neil M. Gorsuch, the president's first Supreme Court appointee

80 judges

60

40

20

0

-2.0   -1.5   -1.0   -0.5   0   0.5   1.0   1.5   2.0
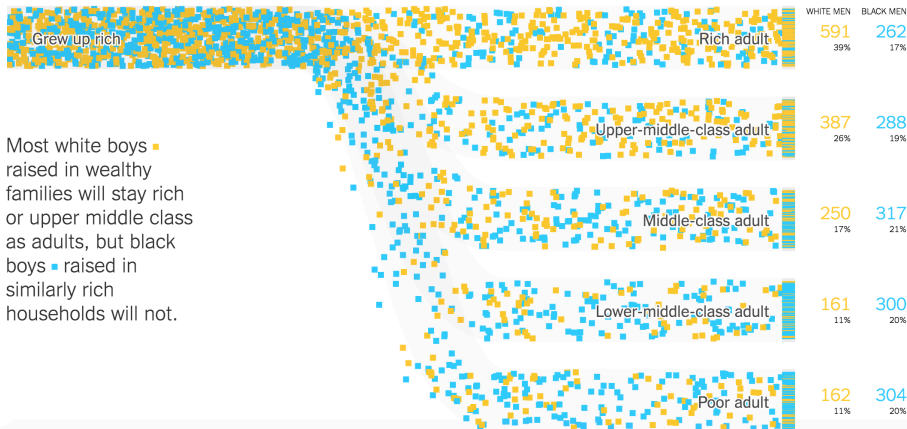
← More liberal   More conservative →

Based on the campaign finance scores of all current and former federal district and court of appeals judges nominated since 1980. | Source: Database on Ideology, Money in Politics, and Elections; Adam Bonica, Stanford University Department of Political Science; Maya Sen, Harvard University, Kennedy School of Government; Adam Chilton and Kyle Rozema, University of Chicago Law School.

Extensive Data Shows Punishing Reach of Racism for Black Boys

By **EMILY BADGER, CLAIRE CAIN MILLER, ADAM PEARCE** and **KEVIN QUEALY**   MARCH 19, 2018

Follow the lives of 5,734 boys who
grew up in rich families . . .

. . .and see where they end
up as adults:

	WHITE MEN	BLACK MEN
Rich adult	591 39%	262 17%
Upper-middle-class adult	387 26%	288 19%
Middle-class adult	250 17%	317 21%
Lower-middle-class adult	161 11%	300 20%
Poor adult	162 11%	304 20%

Grew up rich

Most white boys ■
raised in wealthy
families will stay rich
or upper middle class
as adults, but black
boys ■ raised in
similarly rich
households will not.

Adult outcomes reflect household incomes in 2014 and 2015.

CITY *of* BOSTON | Mayor Martin J. Walsh

CITY SCORE®

Last updated: 8/30/2017

CITYSCORE

CityScore is an initiative designed to inform the Mayor and city managers about the overall health of the City at a moment's notice by aggregating key performance metrics into one number. Here we will provide you with an overview of the CityScore tool and data, but more importantly we will show you how we are using CityScore to make improvements across the City.
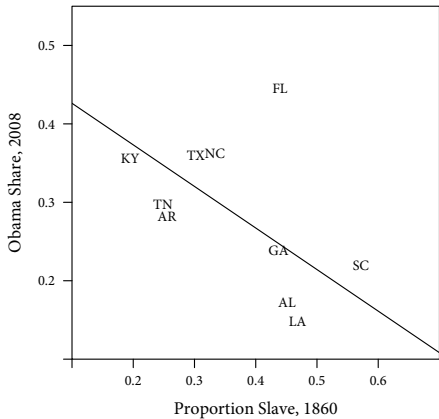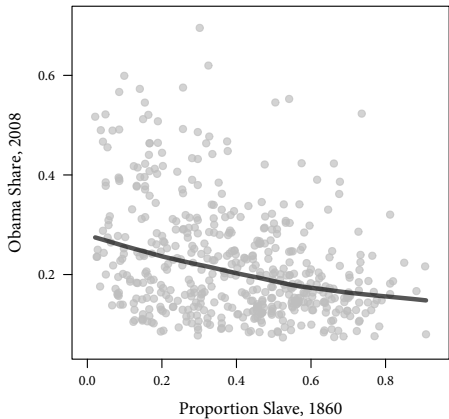
THE SCORE

TODAY'S SCORE
1.02

TOPIC	DAY	WEEK	MONTH	QTR
311 CALL CENTER PERFORMANCE	0.81	0.83	0.84	0.85
GRAFFITI ON-TIME %	0.63	0.67	0.72	0.73
MISSED TRASH ON-TIME %	1.21	1.2	1.15	1.18
PARKS MAINTENANCE ON-TIME %	1.16	1.08	1.04	1.01
POTHOLE ON-TIME %	0.73	0.55	0.83	0.94
SIGN INSTALLATION ON-TIME %	0.2	0.63	0.72	0.89
SIGNAL REPAIR ON-TIME %	1.08	1.18	1.14	1.16
STREETLIGHT ON-TIME %	0.8	0.82	0.78	0.82
TREE MAINTENANCE ON-TIME %	1.25	1.24	1.23	1.22
ON-TIME PERMIT REVIEWS	1.17	1.02	0.92	0.86
LIBRARY USERS	1.24	1.11	1.1	1.08
BPS ATTENDANCE	–	–	–	0.97
BFD RESPONSE TIME	0.97	0.9	0.88	0.9
BFD INCIDENTS	1.12	1.06	1.04	1.11
EMS RESPONSE TIME	1.02	0.96	0.95	0.95
EMS INCIDENTS	1.27	1.14	1.08	1.09
PART 1 CRIMES	1.59	1.36	1.29	1.32
HOMICIDES (TREND)	–	–	2.55	2.52
SHOOTINGS (TREND)	1.31	6.13	3.4	2.17
STABBINGS (TREND)	–	1.65	1.8	2.09
311 CONSTITUENT EXPERIENCE SURVEYS	–	1.06	1.1	1.05
CITY SERVICES SATISFACTION SURVEYS	0.75	0.92	0.95	0.89
TOTALS	1.02	1.28	1.22	1.17

States

Obama Share, 2008

FL

KY   TXNC

TN
AR

GA   SC

AL
LA

Proportion Slave, 1860

Counties

Obama Share, 2008

Proportion Slave, 1860

Why take this class?

1. Quantitative skills allow us to answer, big and important questions.

2. These skills are becoming standard across many industries, fields of study.

3. Gov 50 is the most accessible and fun way to get teched up in statistics/data science at Harvard.

Teaching philosophy

- Can't learn statistics or data science without **analyzing data on your own**.

  ▶ But we'll provide a ton of support as you get started.

- In the four homeworks you will work with real data from real academic papers.

  ▶ How does demographic change affect political attitudes? (Homework 1)
  ▶ How does have a girl versus a boy affect a judge's judicial decision-making? (Homework 2)
  ▶ What drives opposition to immigration: economic or cultural threat? (Homework 3)
  ▶ Can we detect election fraud using election returns? (Homework 4)

- Just the tip of the iceberg: many more applications in lecture, section, reading.

- NOT JUST A MATH CLASS!

2/ Course Details

Should I take this course?

- Fulfills the Gov Concentration methods requirement.

- Fulfills the "Empirical and Mathematical Reasoning" requirement for GenEd.

- Material useful to students interested in political science, sociology, economics, public policy, health policy, and many other fields in the social sciences.

Class meetings

- Lectures:
    - ▶ Broad coverage of the course material.
    - ▶ Slides will be posted to Canvas shortly before lecture.
    - ▶ Come with your questions and we can have a discussion.
    - ▶ Videos will be available through Canvas shortly after.
- Section:
    - ▶ Guided practice through problems and concepts led by our amazing TFs.
    - ▶ One section per week taped for Extension School
    - ▶ **Michael Olson**: American politics, legislative institutions
    - ▶ **Hanno Hilbig**: inequality, political economy
    - ▶ More depending on enrollment...

Reading and Perusall

- Have the option to do class reading on an online platform called Perusall
- Can highlight, make comments, ask questions: all visible to other students.
- You can answer others' questions and earn participation credit.

- Describe how a lightning rod works.
- Explain how a metal car may protect passengers inside from the dangerous electric fields caused by a downed line touching the car.

18.8. Applications of Electrostatics

- Name several real-world applications of the study of electrostatics.

Introduction to Electric Charge and Electric Field

The image of American politician and scientist Benjamin Franklin (1706–1790) flying a kite in a thunderstorm is familiar to every schoolchild. (See Figure 18.2.) In this experiment, Franklin demonstrated a connection between lightning and **static electricity**. Sparks were drawn from a key hung on a kite string during an electrical storm. These sparks were like those produced by static electricity, such as the spark that jumps from your finger to a metal doorknob after you walk across a wool carpet. What Franklin demonstrated in his dangerous experiment was a connection between phenomena on two different scales: one the grand power of an electrical storm, the other an effect of more human proportions. Connections like this one reveal the underlying unity of the laws of nature, an aspect we humans find particularly appealing.
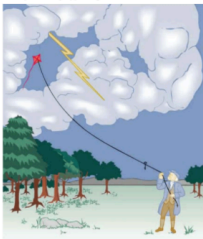

Figure 18.2 When Benjamin Franklin demonstrated that lightning was related to static electricity, he made a connection that is now part of the evidence that all directly experienced forces except the gravitational force are manifestations of the electromagnetic force.

Much has been written about Franklin. His experiments were only part of the life of a man who was a scientist, inventor, revolutionary, statesman, and writer. Franklin's experiments were not performed in isolation, nor were they the only ones to reveal connections.

For example, the Italian scientist Luigi Galvani (1737–1798) performed a series of experiments in which static electricity was used to stimulate contractions of leg muscles of dead frogs, an effect already known in humans subjected to static discharges. But Galvani also found that if he joined two metal wires (say copper and zinc) end to end and touched the other ends to muscles, he produced the same effect in frogs as static discharge. Alessandro Volta (1745–1827), partly inspired by Galvani's work, experimented with various combinations of metals and developed the battery.

Textbook

- "Quantitative Social Science: An Introduction" by Kosuke Imai
- Brand new and very modern, lots of examples from real social science research.
- Most of the concepts apply to qualitative research as well.
- Two ways to get access on Perusall
  - ▶ Rent the book for 6 months ($25)
  - ▶ Buy perpetual access to the book ($50)

Assignments

- Four homeworks throughout semester
  - ▶ Posted on a Tuesday, due following Thursday.
  - ▶ Dates on syllabus/Canvas.
- Two midterm exams on Oct 9th and Nov 15th.
  - ▶ Review sessions in the lecture before these exams.
- No final exam...
- Final group project
  - ▶ Groups of 3-4
  - ▶ Find a dataset, pose a research question, answer it using data.
  - ▶ A couple of pages.

Computing

- We'll use the R statistical environment to analyze data
- Why?
  - ▶ It's free
  - ▶ Extremely popular for data analysis
  - ▶ Academics, 538, NYT, Facebook, Google, Twitter, nonprofits, governments all use R.
  - ▶ Huge benefit to your resume to have R skills.
- Lots of help in section, study halls, office hours.

DataCamp

- Getting practice with R can be overwhelming, so we're using an online platform called DataCamp.
- Guided practice on R, helping to introduce new concepts.
- Six assignments throughout the semester:
  - ▶ Low stakes/stress: graded simply on completion.
  - ▶ Only due in weeks without HW or exams.
- ⤳ HW won't be the first time you're trying some code!

Canvas

- We'll make heavy use of Canvas, especially the message boards.
- Have a question: ask on Canvas and teaching staff and/or other students will respond.
- If you have a private question, email me directly.
- You'll earn participation points for asking and answering questions.

Grades

- Grade breakdown as follows:
  - ▶ DataCamp assignments (10% of final grade)
  - ▶ Homeworks (30% of final grade)
  - ▶ Two midterms (30% of final grade)
  - ▶ Final group project (20% of final grade)
  - ▶ Participation (10% of final grade)
- Final grade is curved (separately for College, Extension School)

Study Halls

- Lecture, section, office hours all great resources, but… I WANT MORE GOV 50!!
- Study Halls: a place to work on Gov 50 and get help.
  - ▸ Will happen weekly, exact number of hours will depend on enrollment.
  - ▸ Peer tutors with experience in statistics and R will be on hand to help you if you get stuck or have question.
  - ▸ Best to come in groups and work together, grab a tutor when stuck.
- Bottom line: we want you to succeed in this class!
- Note: only available to Harvard College students (Extension School offers Math Question Center)

What should you do today?

- Sign up for rstudio.cloud and DataCamp with links on the website.
  - ▶ Start DataCamp assignment 1 for a gentle introduction to R.
- Log into Perusall through Canvas, buy/rent Imai book.
- Start to think about what section times you'd like.
- **Tell your friends** what an awesome class this sounds like and encourage them to join you!