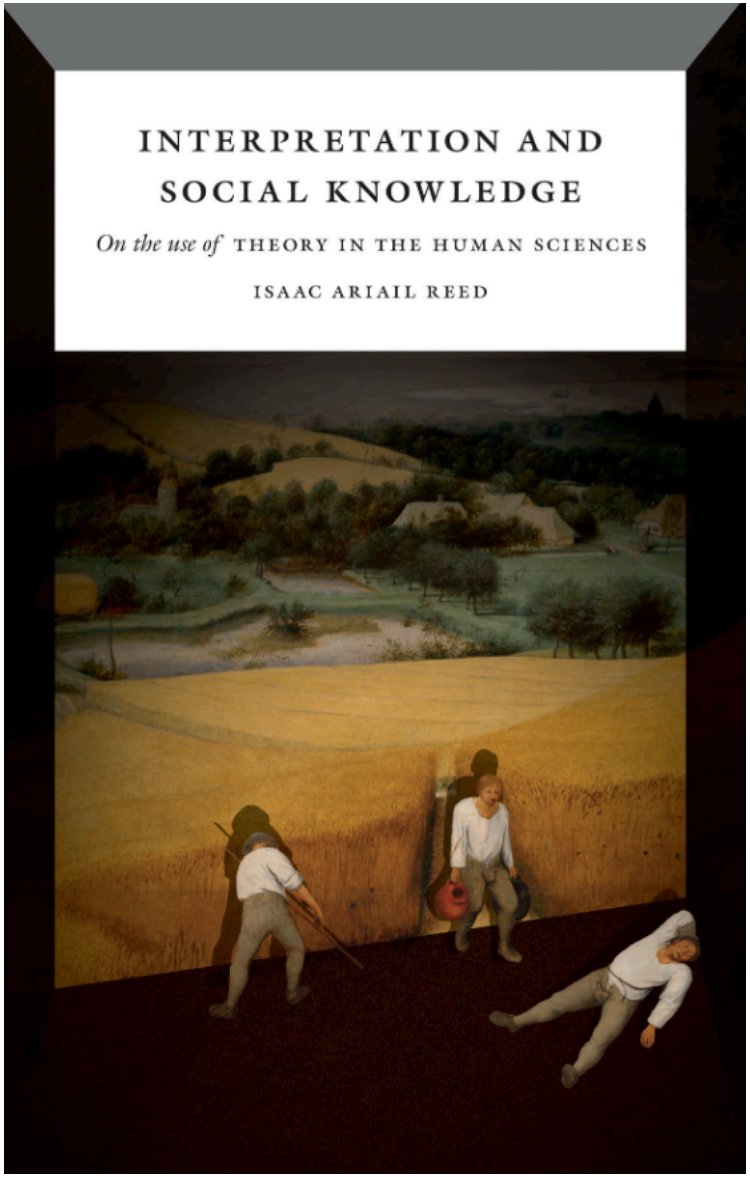
Investigating the Social World

Dr Chao-Yo Cheng

Lecture 4: Using Numbers



"**We have disagreements**, that is, not only about **how we establish the sheer existence** of this or that social phenomenon, but also about **how we can claim to correctly and effectively explain, criticize, or interpret** it. In my view it is these latter disagreements [...] at the core of controversies about social knowledge."

Recap: Producing "knowledge" about the social world(s)

- Using theory in social research
  - The claims can **have different objectives**: Interpretation and/or explanation
  - The claims can **take different forms**: Verbal, formal (mathematical), and combined
- Connecting theoretical claims with (empirical) observations
  - Induction: Using observations to **generate** theoretical possibilities
  - Deduction: Using observations to **evaluate** theoretical predictions
  - Abduction: Using observations to **challenge** existing theories
- Thinking through epistemology: Positivism v constructivism

	A positivist approach	*A constructivist approach*
What is 'reality'?	A definable 'reality' or 'truth' exists and is observable	There is no 'reality' or 'truth' beyond our experiences
What is the goal of academic enquiry?	Acquisition of the 'truth'	A more informed construction of the world
How are the researcher and the 'researched' related?	The researcher is independent of the 'researched'	The researcher is not independent of the 'researched'
What should be the role for values?	None - objectivity sought	Part of 'reality' - subjectivity celebrated
What kind of approach?	Predominantly based on observability or measurability and with the aim of seeking 'evidence'	Predominantly based on discourse and meaning with the aim of seeking a more informed understanding of the world
What kind of data is preferred?	Predominantly quantitative	Traditionally associated with a predominantly qualitative approach
Examples of such studies in Development Studies	Dollar and Kraay (2002) *Growth is Good for the Poor*	Narayan *et al.,* (2002) *Voices of the Poor*

Wrapping up loose ends: More on deduction

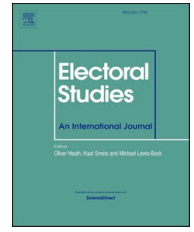
- Testing a theory v testing a hypothesis
  - A hypothesis is an "observable" implication we derive from our theoretical claims
  - But the same may be explained by more than one theoretical conjecture
  - To "formalize" the idea: Theory is the **sufficient** condition for the hypothesis, and rejecting the hypothesis does not mean we have to reject the theory
- Empirics for critical tests
  - Ruling out the rival or competing explanations
  - Additional tests are needed to making a compelling theoretical claim based on your findings
  - A good example is medical checks – having a cold can mean so many different things

Do different electoral systems influence the use of mass repression in dictatorships?

Contents lists available at ScienceDirect

Electoral Studies

journal homepage: www.elsevier.com/locate/electstud



Electoral institutions and repression in dictatorships☆

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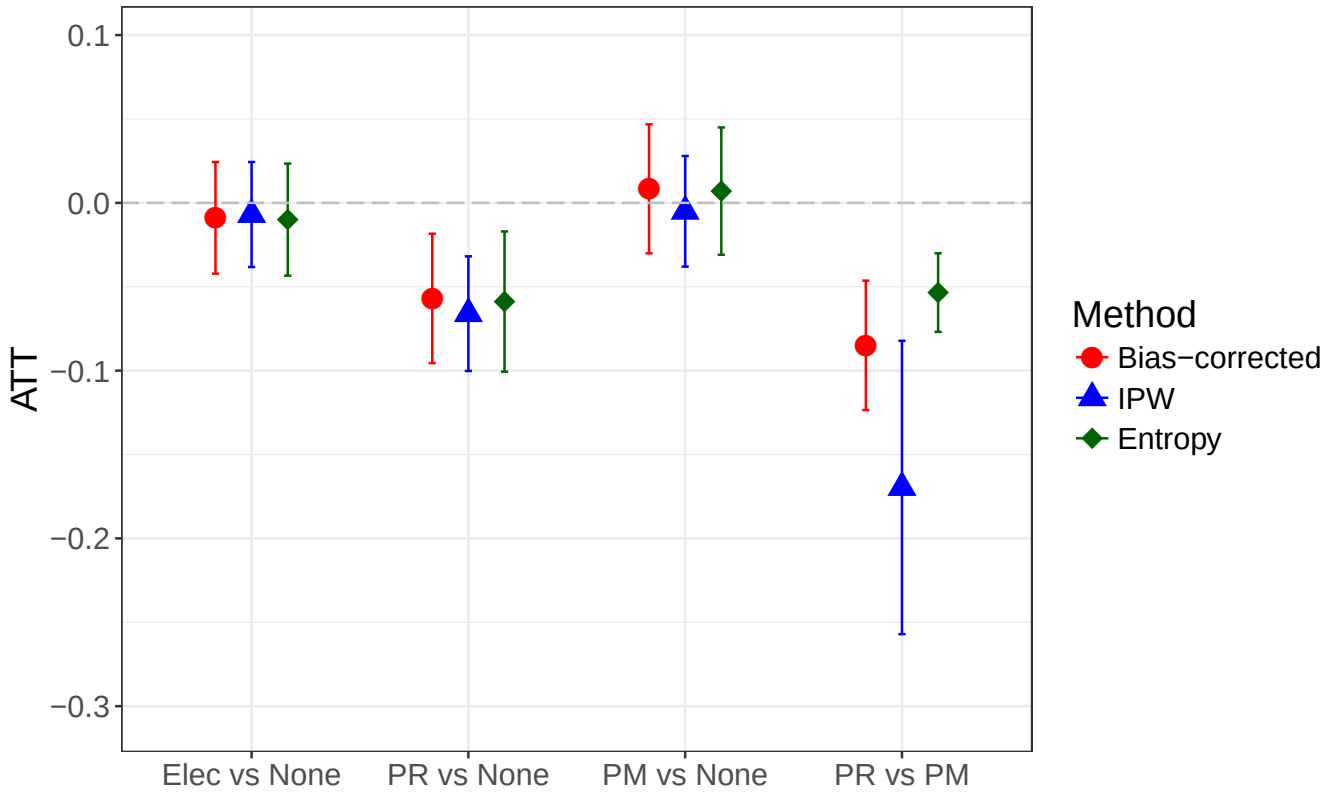
ABSTRACT

We argue that the relationship between authoritarian elections and repression depends on the electoral system in use. Proportional representation (PR) systems co-opt more heterogeneous political groups to contest and receive seats in the legislature and thus, dictators are less likely to use broad-based repression. Under plurality rules, by contrast, the regime has more incentives to mobilize turnout and deter collective action. Examining electoral systems from 1990 to 2010, we find that elections only reduce broad-based repression under PR systems, which are less commonly used in non-democracies. Our results highlight the importance of formal institutions in shaping political outcomes even in dictatorships.

- **Argument**
  - Dictators use plurality or majoritarian systems to demonstrate control and signal invincibility
  - Dictators use proportional representation (PR) to engineer political co-optation
- **Main hypothesis**: Electoral dictatorships using proportional representation are less repressive than other dictatorships
- **Additional testable implications** for PR electoral dictatorships
  - More electoral integrity
  - More participation and non-ruling parties
  - More selective or targeted repression
- **Empirics**: Case studies, multiple regression and causal inference (matching and instrumental variables)


0.1
0.0
−0.1
−0.2
−0.3
ATT
Elec vs None
PR vs None
PM vs None
PR vs PM
Method
Bias−corrected
IPW
Entropy

"**Quantitative and qualitative approaches are only different in style**, not in the fundamentals of scientific research. All research must be **systematic and scientific**. This books aims to show researchers (especially social scientists) how to approach studying phenomena and answering questions. Inference (descriptive or causal) is vitally important in defining social science research. There are four main components of research design: the research question, the theory, the data, and the use of the data."

- Positivism and quantitative social research
- What we do with numbers
- Challenges and potential solutions

Positivism and quantitative social research

- Epistemology is about **how we perceive the world**, **what we seek to gain from our enquirers**, and **how we relate to the "researched."**
  - One reality v multiple realities? Is reality independent of our thoughts?
  - Single, generalizable, and universal truth?
  - Are we independent of what we are studying – the research "objects?"

- We may not be able to find a common ground, but in reality we are usually "somewhere in between"
  - The contrast between positivism and constructivism may **NOT** have much to do with the contrast between quantitative and qualitative
  - The "rigor" of your research depends on how aware you are of what you attempt to do
  - Quant research is neither (more) scientific nor (more) objective

	Economics	**Politics**	**Sociology**	**Social Anthropology**
What is reality?	One reality exists; reality is *independent* of our thoughts; what is observable is real	One reality exists. reality is *independent* of our thoughts	One reality exists; reality is *independent* of our thoughts, but much of reality is unobservable	There are *different* realities associated with different standpoints and cultures
Goal of enquiry?	Acquisition of a *single* truth -- a universal, general law	We can establish truths or *generalizations* about human beings	Truth needs to be understood in terms of *practical adequacy*	*Interpretation* of local meanings; there is *no universal truth*
How are the researcher (you) and the "researched" related?	The researcher is *objective* and is *independent* of the "researched"	The researcher is *subjective* and is *not independent* of the "researched"	The researcher is *subjective* and is *not independent* of the "researched"	The researcher is *subjective* and is *not independent* of the "researched"

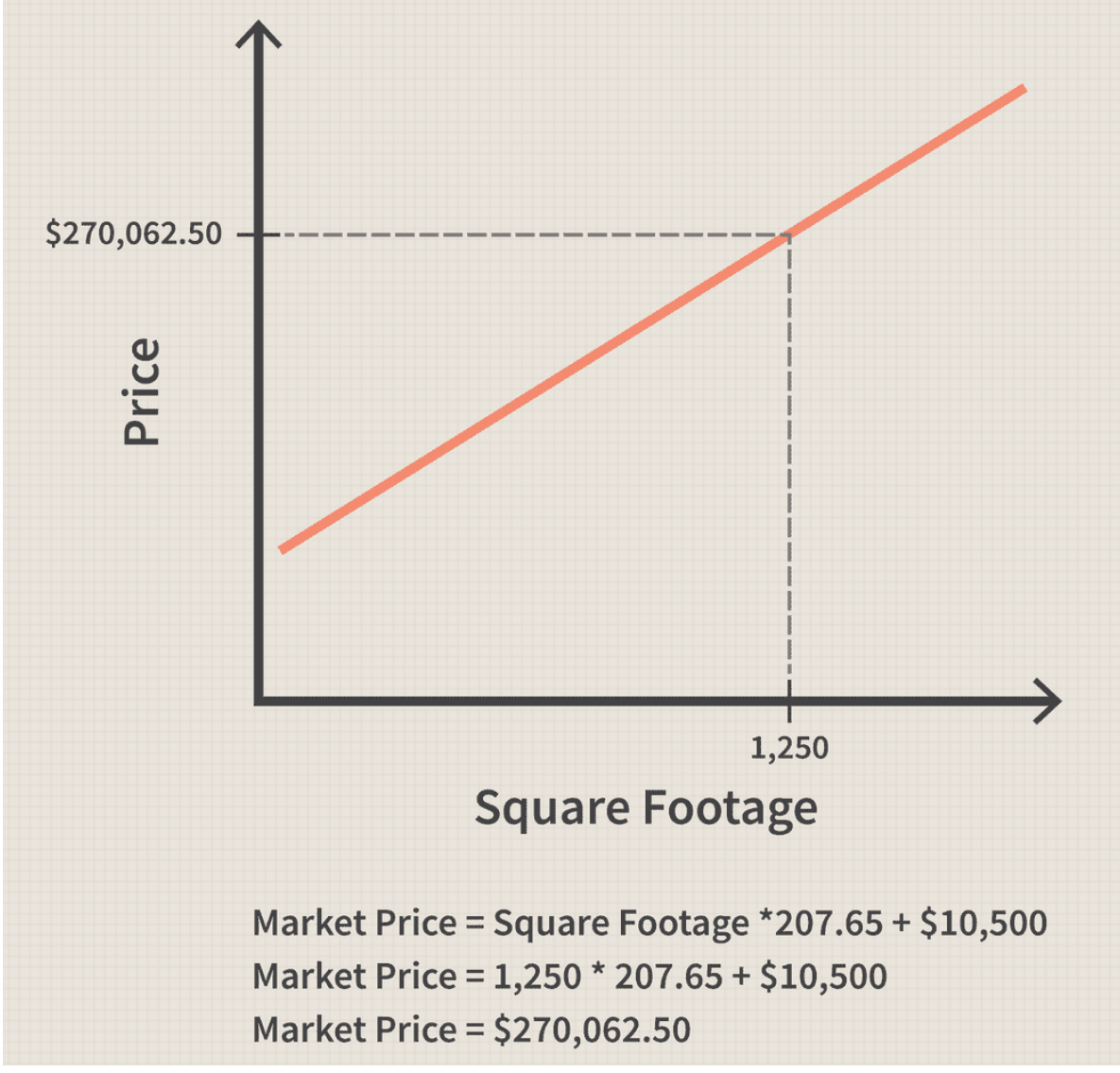
Positivist Constructivist

What we do with numbers

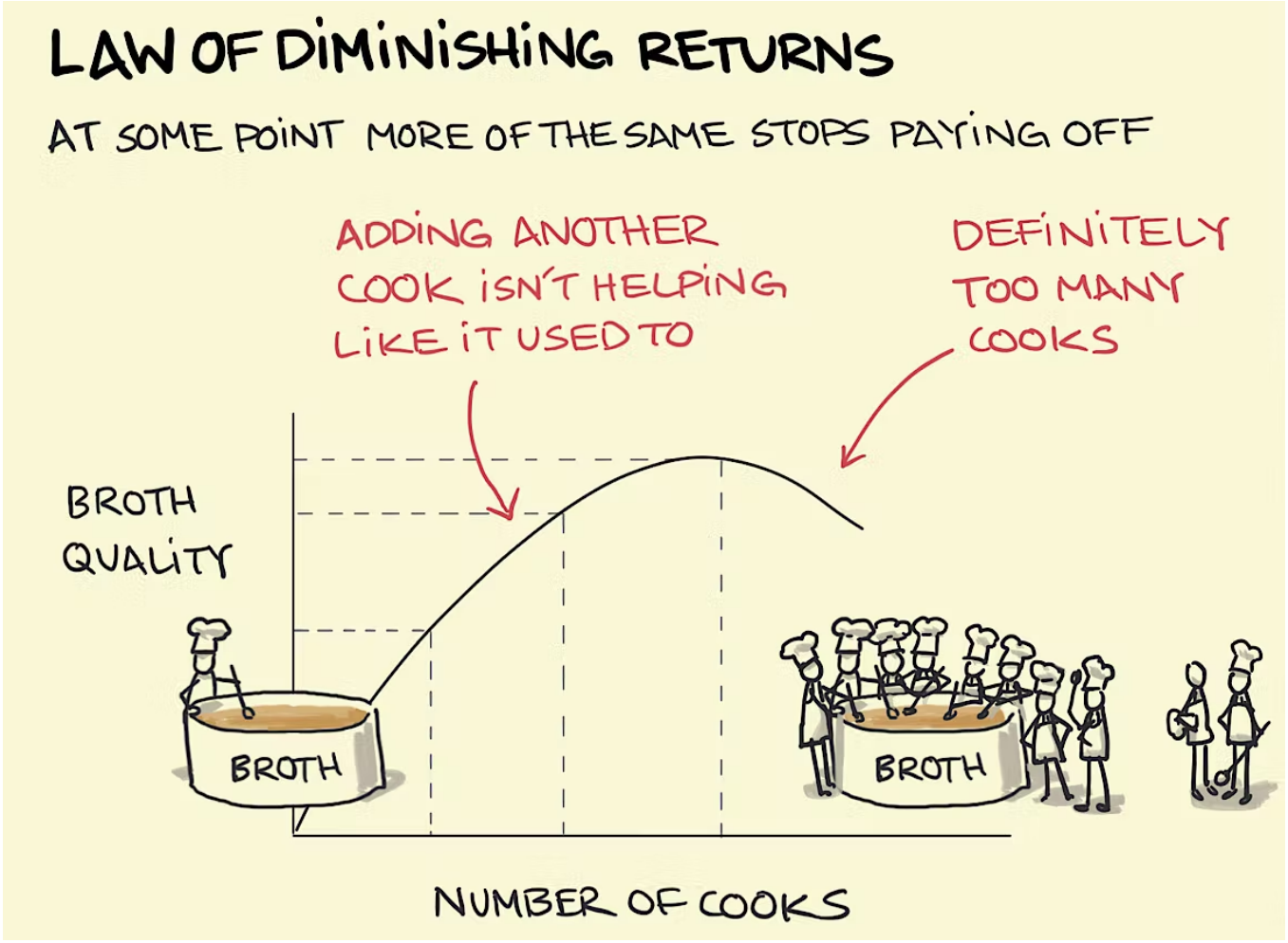
- According to **Edward Tufte**, statistics or quantitative methods are "techniques" that help us
  - answer the substantive questions
  - squeeze the relevant information out of the (quantitative) data
  - learn something new about the social world

- According to **KKV**, the goal of statistics or quantitative methods is **inference**.
  - **Descriptive**: Use basic statistics (e.g., mean, median, and standard deviations) to describe noticeable patterns in the data
  - **Statistical/causal**: Use statistical model (e.g., linear/non-linear regression) to assess the relationship between **explanatory** (or "independent") and **outcome** (or "dependent") variables

Linear correlation: Larger houses are more expensive (duh)



Non-linear correlation: Diminishing returns (oops)

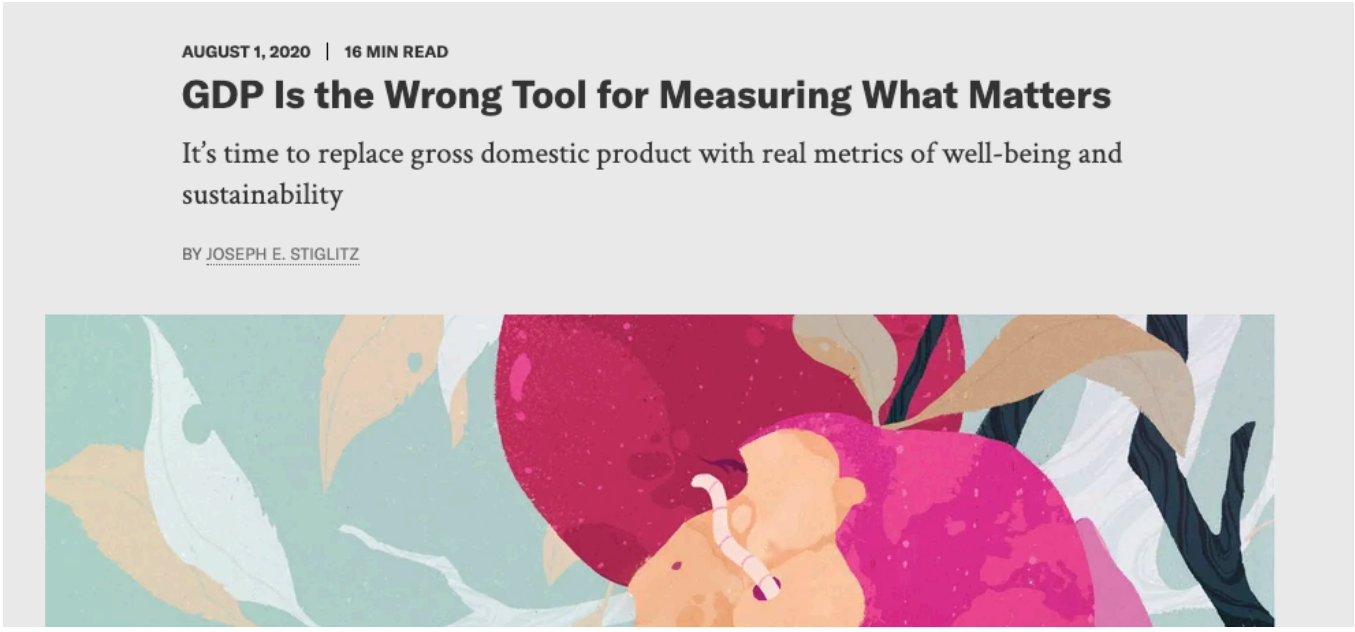


Issues and challenges

- How we quantify the social world matters
- How we construct our data matters
- How we estimate matters

Issues and challenges

- How we quantify the social world matters
  - Building and maintaining consensus over conceptualization and operationalization is hard (e.g., GDP and infant mortality)
  - Existing measures may not be suitable for new political and socio-economic challenges/trends, such as development (Sitglitz, Sen, and Fitoussi 2010) and gender, sex and sexuality (Guyan 2022)
  - Measurement usually requires extensive contextual knowledge (Rukmini S 2021)
- How we construct and process our data matters
- How we estimate matters



AUGUST 1, 2020 | 16 MIN READ

GDP Is the Wrong Tool for Measuring What Matters

It's time to replace gross domestic product with real metrics of well-being and sustainability

BY JOSEPH E. STIGLITZ

"**GDP should be dethroned**; ... each nation should select a **dashboard**, a limited set of metrics that would help steer it toward the future its citizens desired. ... **the dashboard would include metrics for health, sustainability and any other values that the people of a nation aspired to**, as well as for inequality, insecurity and other harms that they sought to diminish" (Stigliz 2020, *Scientific American*).

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Issues and challenges

- How we quantify the social world matters
- How we construct and process our data matters
  - Data generation is not a neutral process
  - States and organizations vary in their **incentives** and **capacity** in producing data (Liu 2009; Jerven 2013)
  - Researchers may take explicit/implicit (or unreported) actions, such as sample selection, when they process their data prior to the analysis stage (Huntington-Klein et al 2020)
- How we estimate matters

The quality of China's GDP statistics ☆

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Benford's Law

ABSTRACT

Since the 1998 "wind of falsification and embellishment," Chinese official statistics on gross domestic product (GDP) have repeatedly come under scrutiny. This paper evaluates the quality of China's GDP statistics in four stages. First, it reviews past and ongoing suspicions of the quality of GDP data and examines the evidence. Second, it documents the institutional framework for data compilation and concludes on the implications for data quality. Third, it asks how the Chinese National Bureau of Statistics could possibly go about credibly falsifying GDP data without being found out. Fourth, it examines if the first- and second-digit distributions of official GDP data conform to established data regularities (Benford's Law). The findings are that the supposed evidence for GDP data falsification is not compelling, that the National Bureau of Statistics has much institutional scope for falsifying GDP data, and that certain manipulations of nominal and real data would be virtually undetectable. Official GDP data, however, exhibit few statistical anomalies (conform to Benford's Law) and the National Bureau of Statistics thus either makes no significant use of its scope to falsify data, or is aware of statistical data regularities when it falsifies data.

Is Democracy Good for the Poor?

Michael Ross University of California, Los Angeles

Many scholars claim that democracy improves the welfare of the poor. This article uses data on infant and child mortality to challenge this claim. Cross-national studies tend to exclude from their samples nondemocratic states that have performed well; this leads to the mistaken inference that nondemocracies have worse records than democracies. Once these and other flaws are corrected, democracy has little or no effect on infant and child mortality rates. Democracies spend more money on education and health than nondemocracies, but these benefits seem to accrue to middle- and upper-income groups.

Issues and challenges

- How we quantify the social world matters
- How we construct and process our data matters
- How we estimate the statistical relations matters
  - Careless research practice may create **biased** and **inefficient** results – that is, the inferred results are (1) drastically different from the "true" value in the population and (2) the results are "unstable" due to high variance
  - Linear or non-linear? Variable selection (garbage can)? Causality or correlation?

INTERSTATE PEACEKEEPING
Causal Mechanisms and Empirical Effects

By VIRGINIA PAGE FORTNA*

MAINTAINING peace in the aftermath of war is a difficult endeavor, and the international community is often called on to help. Arguably the most important innovation in international conflict management since World War II is the practice of peacekeeping: the deployment of international personnel to monitor a cease-fire or to interpose themselves between belligerents to keep peace after a war.[1] During most of its history, peacekeeping was used to help maintain peace after interstate wars. Since the end of the cold war, the practice has been adapted to the context of civil wars, taking on new tasks such as election monitoring, police training, and even providing an interim administration. This article analyzes whether and how peacekeeping stabilizes peace in its traditional interstate setting.

"Previous studies find the UN has no effect on the likelihood that the [fighting] parties will experience another crisis within five years, but they do not consider the issue of **endogeneity**, namely, **that the UN tends to get involved in the most violent and extreme cases**" (Fortna 2004, *World Politics*).

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Solutions: Better quantitative social research

- Replicability: Data and code sharing?
- Transparency: Pre-analysis plan (PAP)?
- Knowledge accumulation: Meta-analysis and systematic review?
- Triangulation: Mixed- and multi-method research?

PNAS

RESEARCH ARTICLE | SOCIAL SCIENCES

Observing many researchers using the same data and hypothesis reveals a hidden universe of uncertainty

Nate Breznau, Eike Mark Rinke, Alexander Wuttke, +162, and Tomasz Żółtak Authors Info & Affiliations

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Proceedings of the National Academy of Sciences (2022)

https://www.bitss.org/

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Critical approaches to quantitative social research

- Incorporate "deep" (or "thick") qualitative knowledge into quantitative research (e.g., process tracing), such as **Poor Number** (Jerven 2013) and **Whole Numbers and Half Truths** (Rukmini S 2021)
- Work with quantitative scholars to advance progressive and reform-oriented causes, such as **Maya Sen** (Harvard)
- Question the underlying power dynamics of data generation, such as **The China Mirage** (Liu 2009) and **Data Feminism** (D'Ignazio and Klein 2020)
- Challenge the presumed conceptualization and categorization in quantitative research, such as **The Skeptical Environmentalist** (Lomborg 2001), **Mismeasuring Our Lives** (Stiglitz et al 2010) and **Queer Data** (Guyan 2022)

Is Justice Really Blind? Race and Reversal in US Courts

Maya Sen

ABSTRACT

I use two newly collected data sets to demonstrate that black federal district judges are consistently overturned on appeal more often than white district judges, with a gap in reversal rates of up to 10 percentage points. This gap is robust and persists after taking into account previous professional and judicial experience, educational background, qualification ratings assigned by the American Bar Association, and differences in appellate panel composition. In total, I find that approximately 2,800 additional cases authored by black judges have been reversed over the last 12 years. This study is among the first to explore how higher-court judges evaluate opinions written by judges of color, and it has clear implications: despite attempts to make the judiciary more reflective of the general population, racial disparities in the legal system appear to persist.

Black federal district judges are consistently overturned on appeal more often than their white colleagues, even after the analysis accounts for other factors, such as professional experiences, education, and ABA's qualification rankings (Sen 2015, *JLS*).

Concluding remarks

- Break the (positivist) (or scientific) myth of quantitative social research?
- No more "lone-wolf" academics and/or researchers – cross-border, multi-method and interdisciplinary knowledge co-production is key
- The rise of computational social sciences: What is big data and how is different from the traditional "small" data?

Group discussion: Quantification of ethnicities

- Can and should we measure identity?
- How have (quantitative) social researchers attempted to measure identity?
- Several methods/techniques are discussed in the article. Which one do you prefer (or agree with)? And why?
- Which scholar's comments do you find most compelling? And why?

EDITORIAL | 01 July 2021

The powers and perils of using digital data to understand human behaviour

Computational social science is a powerful research tool. But it needs its different disciplines to find a common language.

https://www.nature.com/collections/cadaddgige

nature human behaviour

LETTERS

https://doi.org/10.1038/s41562-018-0399-z

Evaluating the replicability of social science experiments in *Nature* and *Science* between 2010 and 2015

Colin F. Camerer[1,16], Anna Dreber[2,16], Felix Holzmeister[3,16], Teck-Hua Ho[4,16], Jürgen Huber[3,16], Magnus Johannesson[2,16], Michael Kirchler[3,5,16], Gideon Nave[6,16], Brian A. Nosek[7,8,16]*, Thomas Pfeiffer[9,16], Adam Altmejd[2], Nick Buttrick[7,8], Taizan Chan[10], Yiling Chen[11], Eskil Forsell[12], Anup Gampa[7,8], Emma Heikensten[2], Lily Hummer[8], Taisuke Imai[13], Siri Isaksson[2], Dylan Manfredi[6], Julia Rose[3], Eric-Jan Wagenmakers[14] and Hang Wu[15]

Nature Human Behavior (2018)

“The Turing Way”

https://the-turing-way.netlify.app/collaboration/collaboration

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