

Science, Evidence, Empiricism

Understanding Political Numbers

Jan 28, 2019



Logistics

R ya ready, kids?

Lecture slides

[Online Schedule](#)

Office Hours

Lecture goals

How do we know stuff?

Empiricism: why it is great

Empiricism: why it isn't everything

But first...

Let $\mathbf{x} = [5 \quad 4 \quad 9 \quad 1 \quad 7]$.

$x_4 = ?$

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New vocabulary:

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- The *length* of \mathbf{x} is 5

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$$x_1 + x_2 + x_3 + x_4 + x_5 = 26$$

$$\sum_{n=2}^4 x_n = 14$$

Ways of knowing

Logic?

Logic?

- Premise: All humans are mortal
- Premise: Michael is human
- Conclusion: Michael is mortal

$$\forall x \quad H(x) \rightarrow M(x)$$

$$\exists x \quad H(x)$$

$$\therefore M(x)$$

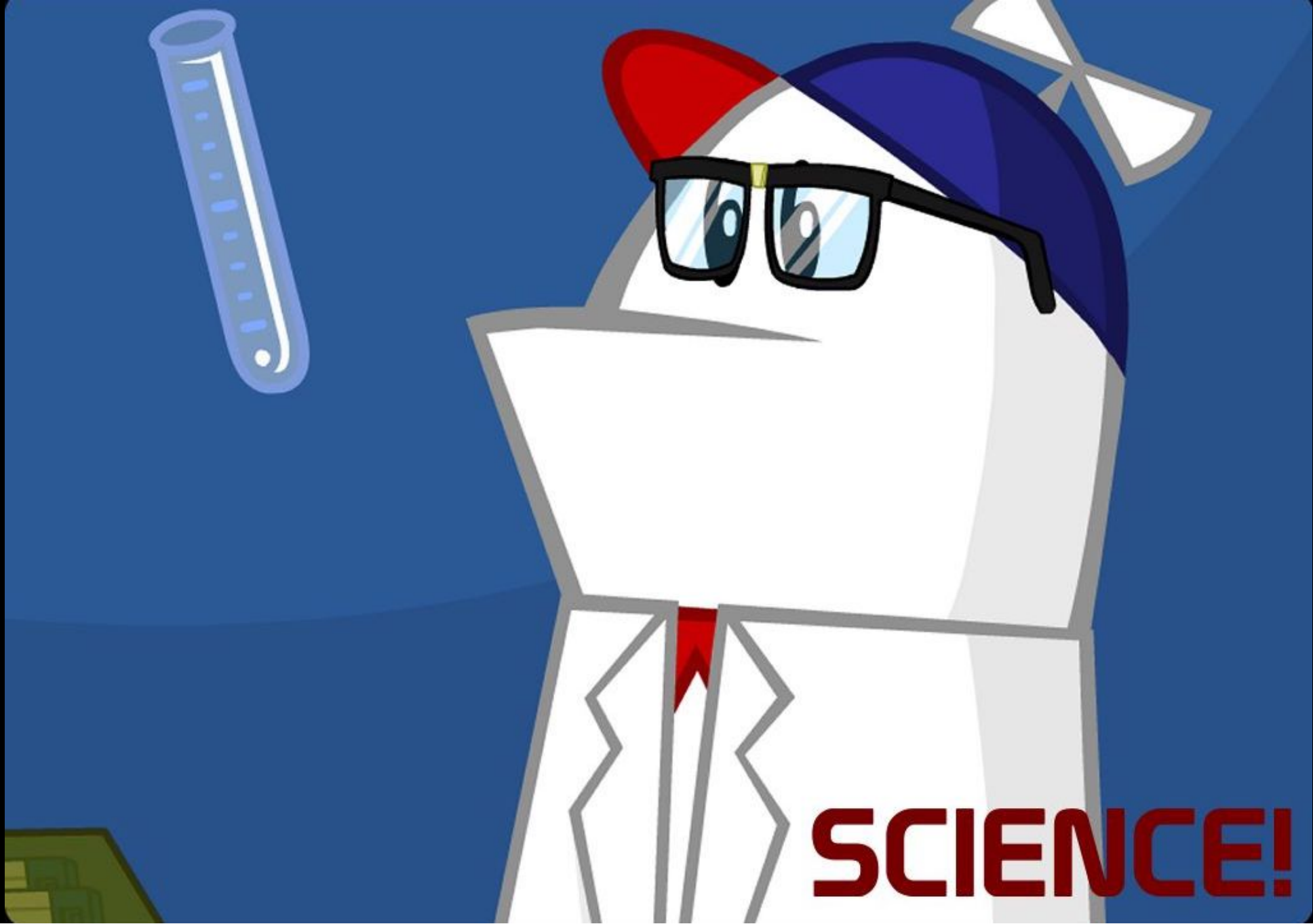
Logic?

- Premise: All humans are mortal
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$$\begin{aligned}\forall x \quad & H(x) \rightarrow M(x) \\ \exists x \quad & H(x) \\ \therefore & M(x)\end{aligned}$$

Pitfalls of logical "validity"

- Premise: All Michaels are wizards
- Premise: Your TA is a Michael
- Conclusion: Your TA is a wizard



Empiricism?

Knowledge from "sensory experience"

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A priori and *a posteriori*

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Skepticism

Empiricism?

Knowledge from "sensory experience"

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"Show me the data"

Empiricism?

Knowledge from "sensory experience"

A priori and *a posteriori*

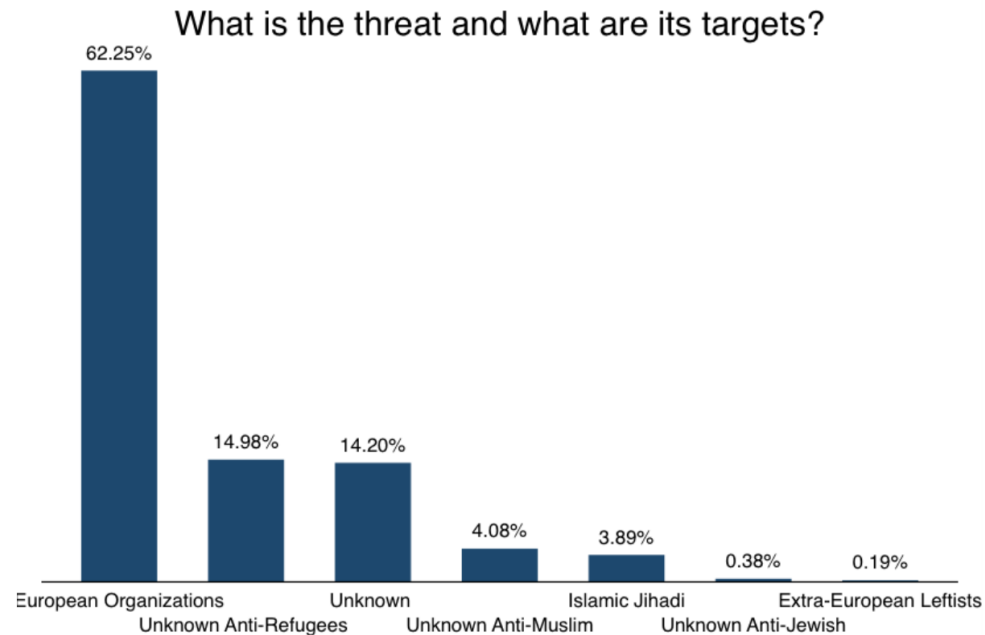
Skepticism

"Show me the data"

Beware of motivated reasoning

Power of science: "observable implications"

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Note: This graph shows the percentages of terrorist attacks in the European Member States between 2014-2015 by origin of their perpetrators and when perpetrators are unknown by type of targets.

"Is Radical Islam the Main Terrorist Threat to the EU?"
(Belgioioso reading)

- Perpetrators?
- Lethality?

"Ban the box" (Ajilore reading)

- What is it?
- Does it work?
- Why or why not?

Number of Independents at Record High,

In U.S., New Record 43% Are
Political Independents

**The number of independent voters in the state
keeps climbing**

Americans' Identification as
Independents Back Up in 2017

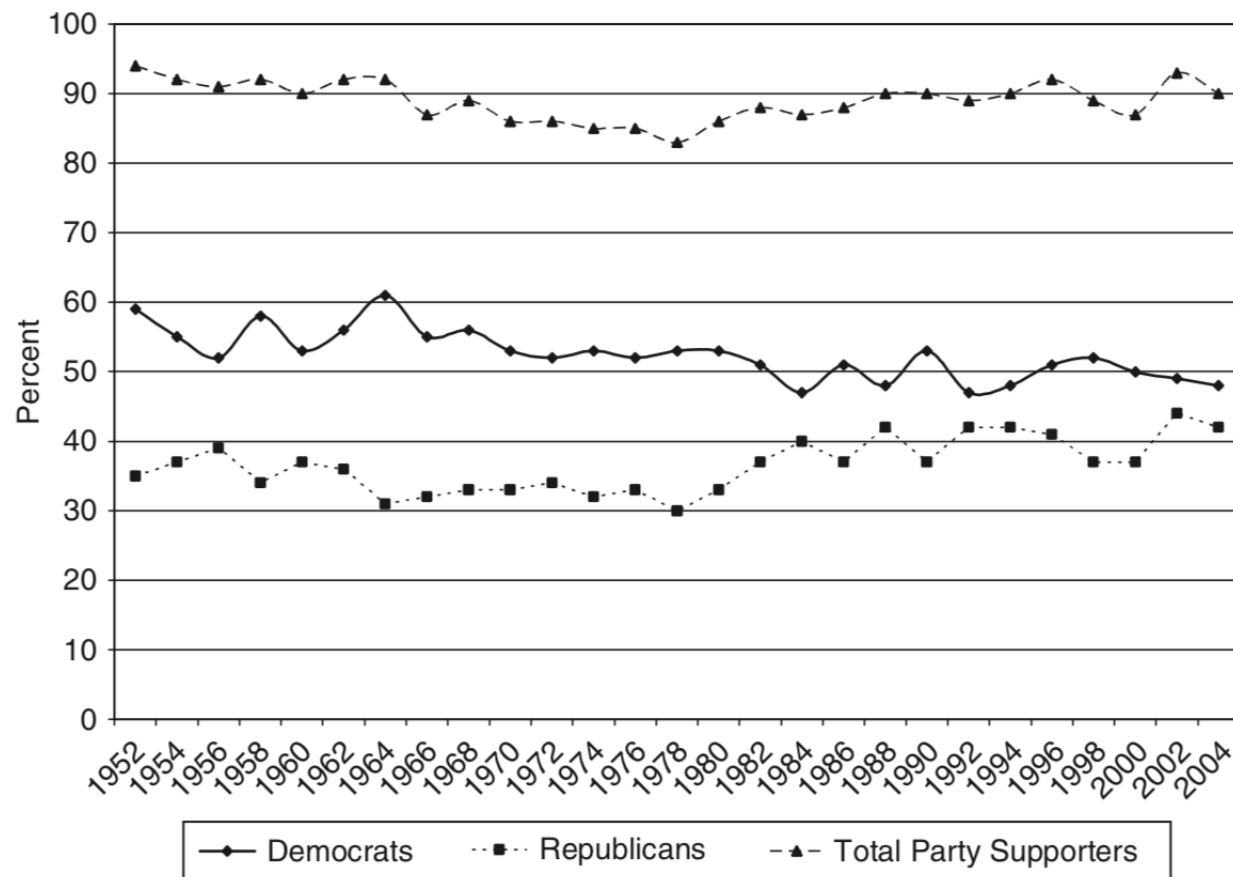


FIGURE 2.3. Party Supporters, 1952 to 2004.

Note: Democrats, Republicans, and Total Party Supporters include strong, weak and leaning partisans. *Source:* ANES from selected years.



Michael G. Miller

@michaelgmiller



Do your country a favor. Today, go to Starbucks and tell them your name is, "True Independents are only 10% of the electorate and they don't vote."

♡ 103 9:15 AM - Jan 28, 2019



💬 34 people are talking about this



Shortcomings of Science

Science is a philosophical problem

"Positivism" and the principal of verification

The problem of induction

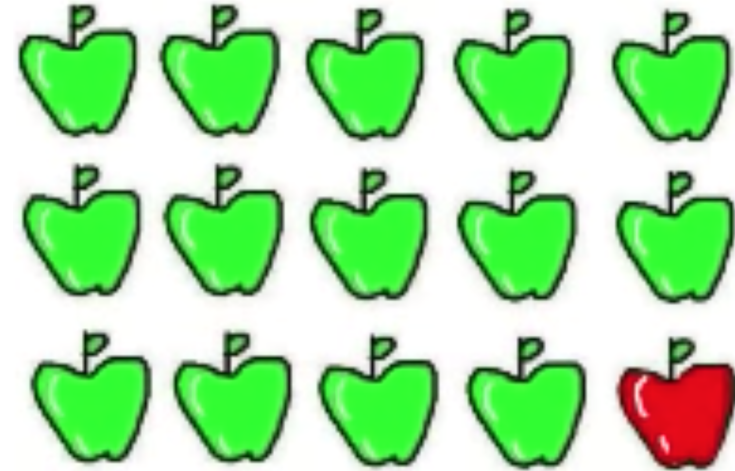
Principal of *falsification*

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"Positivism" and the principal of verification

The problem of induction

Principal of *falsification*



Other "bad science"

Spurious correlation

Random correlation

Selection bias / Non-representative data

Observational equivalence

Lessons from the shortcomings of science

- (1) Scientific "truth" may be impossible?
- (2) Scientific "learning" when ideas are proven *wrong*

Looking ahead

On Wednesday: Theories and Hypotheses

In Section: Basics of R code

Note about dropping...

Until Wednesday...