Research Methodology for Public Policy

Lecture 1 — Introductions, Syllabus, and Research

Dr. Colin Kuehl

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Northern Illinois University

SCHOOL OF PUBLIC POLICY
CHIANG MAI UNIVERSITY

Welcome & Agenda

Today's Agenda

- Research in action: The Economist's World Cup model
- Getting to know each other
- What is (public policy) research?
- Approaches to empirical research
- Causality: the heart of this course
- What can research actually tell us?
- This course: structure & expectations
- Building your research toolkit
- Key terms
- Looking ahead

Research Warm-Up: The World Cup

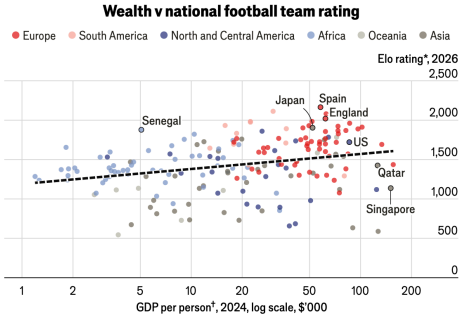
The Puzzle

- Who are my soccer/football fans?
- Since 1930, more than 80 countries have played in 22 World Cups — yet only **eight** have ever won
- Why are such a small number of countries so dominant?
- This is not just a sports trivia question: Xi Jinping and Mohammed bin Salman have both tried to buy or build their way to footballing success
- *The Economist* (June 2026) decided to treat it as an **empirical research problem** and use quantitative analysis to provide an answer.

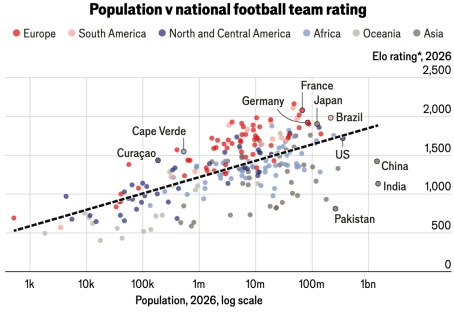
The Economist's Model

- They built a **quantitative model** using national teams' **Elo ratings** — a measure of performance that accounts for the quality of opponents (adapted from chess)
- **Research question**: what factors explain the gap in Elo scores between countries?
- **Variables tested**: national wealth, population size, average height, geography/regional football culture, democratic institutions
- **Key finding**: wealth, population, height, and geography together explain around **70% of the variation** in Elo scores

Visualizing Football Success



Sources: eloratings.net; World Bank *Higher rating=stronger team †At purchasing-power parity



Sources: eloratings.net; World Bank *Higher rating=stronger team

What the Model Found

Variables that matter

- **Wealth** — funds coaching, facilities, youth academies
- **Population** — larger talent pool
- **Height** — optimal ~181cm for outfield players
- **Geography** — South American teams average 640 Elo points more than Asian teams; even after controlling for income/population, the gap is 492 points

Outliers

- The US is rich but most sports money flows elsewhere
- China and India have vast populations but have qualified for just one World Cup between them
- Gulf monarchies are wealthy and football-obsessed — still underperform
- Does Thailand fit expectations?

The Twist: Immigration Matters Most

- After all the expected variables, the most striking finding: **foreign-born players**
- The share of players competing for a country other than their birth country has risen from 9% in 1994 to **24% today**
- Senegal has climbed the rankings not through domestic infrastructure, but through a diaspora trained in French academies — roughly half its squad are sons of Senegalese migrants
- Morocco at the 2022 World Cup: first African team to reach the semis, with 14 of 26 players foreign-born
- One study found that teams with more foreign-born players progress further, even **after controlling for** wealth and footballing tradition

That Article

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Ancestral diversity and performance: Evidence from football data

Michel Beine, Silvia Peracchi [1], Skerdilajda Zanaj *

Department of Economics and Management, University of Luxembourg, 6 Rue Richard Coudenhove-Kalergi, 1359, Luxembourg, Luxembourg

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ABSTRACT

The theoretical impact of diversity on performance is ambiguous since it leads to costs and benefits at the collective level. In this paper, we empirically assess the connection between ancestral diversity and the performance of sports teams. Focusing on football (soccer), we built a novel dataset of national teams of European countries that have participated in the European and World Championships since 1970. The ancestral diversity of national teams is measured from genetic distance scores within the team, based on information on every player's origins. Origins are recovered using a matching algorithm based on family names. Performance is measured at the match level. Identification of the causal link relies on an instrumental variable strategy based on past immigration at the country level about one generation before the competition. Our findings indicate a positive causal link between ancestral diversity and national teams' performance. We find that a one-standard increase in diversity leads to a significant increase in the goal difference of 0.77 to 1.79 goals per match (about a 1.30 goal difference per match).

Our First Regression Table

Table 3
Performance and ancestral diversity.

	Dependent variable: goal difference							
	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) IV	(6) IV	(7) IV	(8) IV
Variable of interest								
Bilateral diversity	0.075*	0.018	0.016	0.020	0.777**	1.543**	1.345**	1.786**
	(0.042)	(0.040)	(0.040)	(0.053)	(0.299)	(0.535)	(0.422)	(0.822)
Control variables								
Log of GDP/capita, home		-0.012	0.019	-0.039		0.107	0.079	-0.058
		(0.207)	(0.208)	(0.303)		(0.259)	(0.246)	(0.384)
Log of GDP/capita, away		-0.467**	-0.463**	-0.099		-0.727**	-0.630**	-0.200
		(0.216)	(0.217)	(0.301)		(0.291)	(0.267)	(0.430)
Log immig. stocks, 18y lag, home		0.067	0.050	0.032		0.156**	0.151**	0.196*
		(0.043)	(0.045)	(0.067)		(0.062)	(0.063)	(0.115)
Log immig. stocks, 18y lag, away		-0.096**	-0.100**	-0.064		-0.156**	-0.180**	-0.163*
		(0.045)	(0.047)	(0.065)		(0.060)	(0.060)	(0.094)
Population (mln), home			-0.004	-0.003			0.002	0.006
			(0.003)	(0.004)			(0.004)	(0.007)
Population (mln), away			-0.001	-0.003			-0.008*	-0.013*
			(0.003)	(0.004)			(0.004)	(0.007)
Observations	3877	3568	3568	2832	3877	3568	3568	2832
Kleibergen-Paap LM test					0.00	0.00	0.00	0.00
Kleibergen-Paap F test					51.57	22.32	33.24	9.76
Team FE	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Minute appearances		Yes	Yes	Yes		Yes	Yes	Yes
Geo-political controls			Yes				Yes	
Pair FE				Yes				Yes

Notes: Estimation sample: football national teams from the UEFA affiliation, performing in World Cup and EUROs in the years 1970-2018 (for columns 1 and 5) / years 1978-2018 (for all other columns). Dependent variable: Goal difference. *OLS* results appear on the left (columns 1 to 4). Column 5 to Column 8 display IV results. The first 3 columns of *OLS* and IV include individual team and year fixed effects, as well as a stage dummy Columns 4 and 8 replace individual-team with pair fixed effects. Standard errors are clustered at team pair level. For each IV specification, we present the p-value from the Kleibergen-Paap Lagrange Multiplier test for the instrument relevance, as well as the F-statistics from Kleibergen-Paap F-test for weak instruments. Stars correspond to the following p-values: * p < .10, *** p <

Discussion: Unpacking the Research

What is the research question? What is the dependent variable? What are the independent variables?

- Methods vocabulary to watch for all term: **model**, **variable**, **correlation**, **causation**, **control**, **regression**, **coefficient**, **generalizability**
- Notice what the model can and can't tell us: it explains 70% of variation, but not 100% — what might be in the remaining 30%?
- The immigration finding is striking — but is it **causal**, or could something else explain it?
- We will return to *every one* of these questions with precision over the next few weeks

Let's Meet Each Other

Introductions

Briefly tell us:

- Your name / nickname
- Your background / where you're from
- Your policy interests/goals from this program
- Your prior experience with research methods, statistics, coding
- Your favorite food or activity in Chiang Mai

About Your Instructor

- Dr. Colin Kuehl - Associate Professor, Northern Illinois University
- PhD in Political Science (UC Santa Barbara)
- Research interests: environmental politics, global governance, pro-environmental behavior, sustainability
- Methods used in my own research: regression (cross-sectional & time-series), surveys, survey experiments, field experiments, factor analysis, process tracing, meta-analysis, text-as-data.
- My goal this summer: make you a confident, critical *consumer and producer* of policy research, learn from you, and have some fun

About Your Instructor

My Classroom Approach

- Rooted in the American(California) style of graduate education
  - More: critical analysis, intuition, discussion, and questions
  - Less: hierarchy, memorization, passive learning
- High Expectations - this hard, but I fully believe you all can do it
- I take the material seriously, but not myself
- If I speak too quickly or use words you don't understand please let me know. I am happy to repeat as many times in as many different ways as needed.
- *This is my first time teaching this course outside of the USA. It will only work if you talk and ask lots of questions*

Questions about me or my teaching approach

What Is (Public Policy) Research?

Social "Science"?

What are we actually doing when we do this kind of research?

- A search for truth about how the social and political world works
- An attempt to describe and explain social and political phenomena — and humans are complicated
- A reasonably standardized set of procedures ("the scientific method") that lets a community of researchers work cumulatively
- A social purpose: the hope that better understanding leads to better policy

Where Policy Research Sits: Subfields

EMPS organizes **Political Science** into a few broad subfields — public policy research draws on all of them:

- **Comparative politics**: comparisons across countries or regions
- **American politics**: behavior, institutions, and history within one political system
- **International relations**: trade, conflict, and political economy at the global scale
- **(Quantitative) Methods**: developing the tools — statistics, computational methods, game theory — that the other subfields rely on *(EMPS Ch. 1.1)*

What Big Questions Does the Field Ask?

Why are some countries democratic and others aren't? Does democratic rule make people better off? What leads to cooperation between countries? Why do people vote and participate in politics as they do? What factors are associated with global environmental cooperation?

- These questions are *big* — progress is real, but rarely final
- "A different interpretation can lead to a different finding" — e.g., what counts as a "best" political outcome: stability, or responsiveness? *(EMPS Ch. 1.2)*
- Public policy research narrows these big questions into something testable

What Kinds of Questions Does Policy Research Ask?

- **Descriptive:** What does the world look like? (How many households are food insecure?)
- **Causal:** What causes what? (Does a cash transfer *reduce* food insecurity?)
- **Evaluative:** Did a policy work? (Did the transfer program achieve its goal, and at what cost?)

Advocacy vs. Analysis

- **Politics / advocacy** uses rhetoric and persuasion to move people toward a point of view
- **Policy research** uses the scientific method to try to uncover the true state of the world
- Both matter in public life — but this course is about the second one
- Good policy analysts can still be persuasive; they are persuasive *because* their evidence is credible
- Our focus here is analysis - ie we are objective scientists

Quality Research -> Effective Public Policy

- We need to know foundational truths about how the social world works in order to make meaningful policy interventions
- Policies based on faulty research won't work

Banning Ice Cream won't prevent shark attacks

The Scientific Method: Popper's Legacy

- We owe much of modern empirical social science to philosopher **Karl Popper**, who pushed scholars toward **falsification** and toward having an explicit *method* for inquiry
- EMPS adapts this into a seven-part structure we will use to read — and to write — research, all term
- *(EMPS Ch. 1.4)*

The Seven Elements: Puzzle and Theory

- **Puzzle:** the research question — "research leads us to expect X, but we observe Y," or two competing arguments that disagree
- "A puzzle is something that is not only unanswered, but interesting. It can somehow tell us about the world in a broader way, even if the question itself is quite narrow." *(EMPS Ch. 1.4)*
- **Theory:** the proposed explanation — usually an outcome explained by some important factor (more on this in Lecture 3)

The Seven Elements: Hypotheses Through Conclusions

- **Hypotheses & implications:** the *testable* predictions that follow from the theory
- **Evidence / test:** how the claim is evaluated — a regression, a difference of means, interview data
- **Falsifiability:** could this theory, in principle, be proven wrong?
- **Conclusions:** what did the study actually find, and how far does that finding generalize?

The Seven Elements: "Do I Buy It?"

- The final, evaluative step: your own critique of the method, execution, or case
- "To criticize something, you must first understand what is being argued." *(EMPS Ch. 1.4)*
- We will use exactly this structure — Puzzle, Theory, Hypotheses, Evidence, Falsifiability, Conclusions, Do I Buy It? — to take notes on every reading this term

Approaches to Empirical Research

Two Broad Traditions

Qualitative

- Few cases, studied in depth
- Interviews, process tracing, case studies, ethnography
- Strength: mechanism, context, meaning
- This approach tends to be more common in European social science . . . and Asia

Quantitative

- Many cases, summarized with numbers
- Surveys, experiments, large-N regression
- Strength: pattern, generalizability, precision
- Strength of "American-style" social science
- . . . I believe these skills will give you an advantage throughout your career

The Methods Menu in Political Science

EMPS organizes quantitative political science into seven families of method:

- Surveys
- Experiments
- Large-N (statistical) analysis
- Small-N (case-based) analysis
- Game theory
- Social network analysis
- Machine learning

(EMPS Ch. 1.3.1)

Where This Course Spends Its Time

- This course covers **Large-N analysis** (most of the term), **Experiments** (Lecture 9), and **Small-N / qualitative methods** (Lectures 10–11)
- "The key focus [is] whether the tool is appropriate for the job." Researchers usually specialize, but should be conversant in several. *(EMPS Ch. 1.3)*
- The research question should choose the method — not the reverse

Why Not Just Pick One Tradition?

> *"There has been a bit of a divide that's arisen within the discipline... However, there is some movement toward what is termed a 'mixed method' or 'multi-method' approach in which both quantitative and qualitative data are used in a research project." (EMPS Ch. 1.3.2)*

- Each method has advantages and disadvantages; combining methods lets you lean on one method's strengths to cover another's weaknesses
- The cost: you (or your team) need real proficiency in more than one toolkit — still worth it for many of the best questions in policy research

Experiments

- Ideal version: the fully randomized controlled trial (RCT)
- **Good for:** identifying causation cleanly
- **Often weaker on:** generalizability and external validity (does the lab or pilot result hold up "in the wild"?)
- We'll spend a full session on this (Lecture 9)

Large-N Analysis

- Look for systematic patterns across a large number of cases
- Usually implemented through some form of **regression**
- Lets us ask: holding other things constant, how much does X matter for Y?

Causality: The Heart of This Course

Causation Is Key

$$X \longrightarrow Y$$

Our goal in this course is **inference**:

- **Inference** is using facts we *do* know to learn facts we *don't*
- **Descriptive inference**: using data to learn about the state of the world
- **Causal inference**: using data to learn about *how* the world works
- Our focus for most of the course will be **causal inference**

The Goal of Policy Research

- Underlying nearly everything we do: the concept of *causality*
- Deterministic causality (it always happens) vs. **probabilistic** causality (it happens more often, on average)
- The recurring logical structure: "all else equal (*ceteris paribus*), an increase in X causes an increase in Y"
- We will learn the tools to set up *and* test causal claims like this
- A recurring tension: establishing causality convincingly often costs us some generalizability

What Can Research Actually Tell Us?

Two Different Questions, Always

EMPS frames every research finding as answering two distinct questions at once:

1. What relationship does *this* dataset support? (internal to your study)
2. How far does that relationship *generalize* beyond your data? (external to your study)

(EMPS Ch. 1.5)

Support for Hypotheses

- If your sample shows a statistically significant relationship, you have **support** for your hypothesis — not "proof"
- If it doesn't, you have a *failure to find support* — not "disproof"
- "If you had a statistically significant relationship, you would find support for your hypotheses. If you failed to have a statistically significant relationship, you would not find support for your hypotheses." *(EMPS Ch. 1.5.1)*
- Both outcomes are informative. Neither is final.

Generalizability

- The real prize is rarely the sample itself — it's the **population** the sample represents
- "While your sample of, say, 1600 data points may be interesting, it's really only interesting in that it can tell us about the 327 million other data points we don't know anything about." *(EMPS Ch. 1.5.2)*
- This is exactly why *how* you sample (Lecture 5) matters as much as *what* you find
- Being precise about uncertainty *is* part of being a good policy analyst, not a weakness

This Course: Structure & Expectations

This Course, In One Slide

A graduate-level introduction to research design and regression analysis for public policy.

- **Part I:** Research design, measurement, probability & inference — the foundation
- **Part II:** Regression — the workhorse method of quantitative policy analysis
- **Throughout:** qualitative and mixed-methods tools, so you can recognize good research in *any* tradition

After This Course, You Will Be Able To...

- Read and critically evaluate quantitative and qualitative policy research
- Design a research question and a defensible research strategy to answer it
- Conduct basic data analysis and interpret the results correctly
- Recognize common threats to causal claims — and common ways studies go wrong
- Be ready to take on more advanced methods training

Weekly Rhythm

- **Mornings:** concepts, theory, and discussion (this session)
- **Afternoons (Practicum):** hands-on R coding, applying the morning's concepts to real data
  - Exception is Wednesdays(8, 15, 23rd) - We will meet from 1 to 4 on these days to accommodate another class
- Problem sets connect the two — expect to apply each week's concept in code
- Final project will ask you to put it all together
- Expectation that you will be completing readings, working on problem sets, and making progress on final project between class.

Assessment

- **Final Project (40%):**
- **Problem Sets (20%):**
- **Midterm (20%):**
- **Participation (20%):**

Course Policies

- **Communication:** email and office hours are the fastest path to help — ask early
- **Flexibility:** I will be adapting the course as we go. I appreciate
- **Group work:** encouraged for learning, but submit your own work
- **AI tools:** Generally, try to avoid using it.

Questions

Questions?

A Note on Building Your Research Toolkit

What a Researcher's Toolkit Needs

- **Automatic backup** — you will lose work to a crashed laptop eventually; don't let it be your final project
- **Reference management** — organize sources, notes, and citations
- **Statistical software** that is transparent, reproducible, and exportable
- **A writing tool** that can weave text, citations, and analysis output together into professional documents

Software Options

Backup & references

- Dropbox / Google Drive / OneDrive
- GitHub (for code)
- Zotero (citations)

Analysis & writing

- **R** with RStudio
- Quarto (what these very slides are built with!)

Looking Ahead

Before Next Session

Lecture 2: The Importance of Research — Causality and Inference

- Read: EMPS, Ch. 2 (*Causal Inference and the Scientific Method*)
- Read: QUANT, Ch. 1 (*Theories and Social Science*)
- As you read, ask: what is the fundamental problem of causal inference, and why can we never observe a causal effect directly?

Closing Thought

"What is a scientist after all? It is a curious person looking through a keyhole, the keyhole of nature, trying to know what is going on."

— Jacques Cousteau

Questions?

Thank you — see you in the Practicum this afternoon.

Key Terms

Key Terms from Today

- **Research question**
- **Dependent variable** (outcome)
- **Independent variable** (predictor)
- **Hypothesis**
- **Empirical research**
- **Descriptive / causal / evaluative** questions
- **Correlation vs. causation**
- **Inference** (descriptive and causal)
- **Generalizability**
- **Falsifiability**
- **Ceteris paribus** (all else equal)
- **Quantitative / qualitative** methods

(EMPS Ch. 1)

See You in the Practicum