Data Science for Public Policy
From Econometrics to AI

Introduction

Dr. Sergio Galletta

ETH Zurich

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- **Causal inference methods** from applied economics and **machine learning techniques** are perfect to evaluate and support better policies

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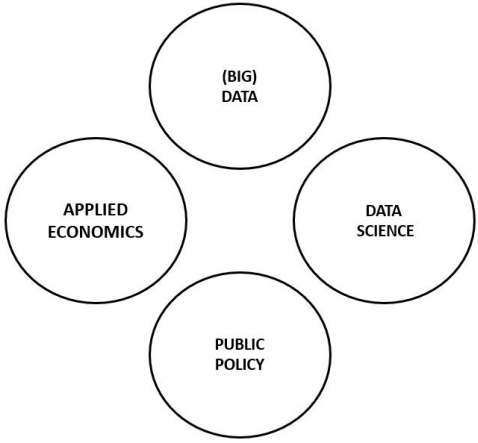

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- Data Science:
  - ML/AI optimal methods to make predictions
  - Perfect for generating risk assessment and tailoring actions

Some Examples

Pinotti 2017 AER - The Effect of Immigrant Legalization on Crime

- Does immigrant legalization reduce crime?

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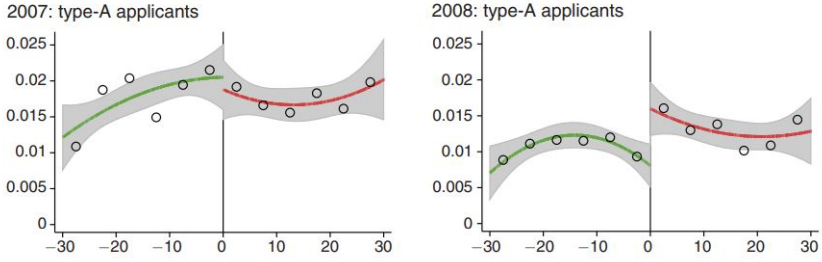

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Altindağ et al 2022 RESTAT - Government-Sponsored Information Campaign on Infant Mortality

- Does government-sponsored campaigns affect health outcomes?

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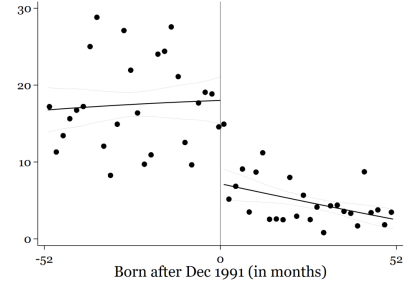

(A) SIDS mortality

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Fig. 1: Comparing Novissi targeting to alternatives.

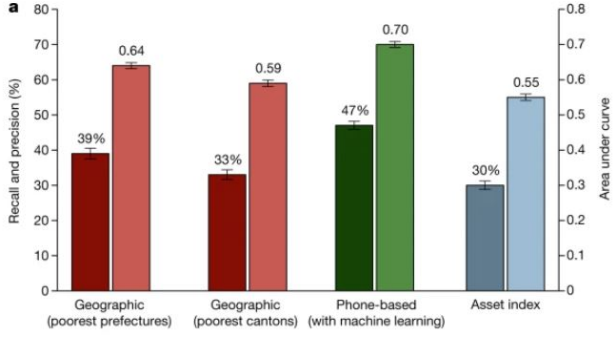

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Table 4: Performance Metrics for Targeted Auditing Policies

	Status Quo (Lottery)		Targeted Audits		Fair Targeting
	(1a)	(1b)	(2a)	(2b)	(3)
Evaluation Sample	All (Sim)	Audited	All (Sim)	Audited	All (Sim)
Corruption Rate, if Audited	0.486	0.458	0.871	0.883	0.868
↪ Ratio over Random Audits			[1.788]	[1.927]	[1.783]
Audit Rate, if Corrupt	0.036	0.036	0.076	0.119	0.074
↪ Ratio over Random Audits			[2.714]	[4.246]	[2.644]

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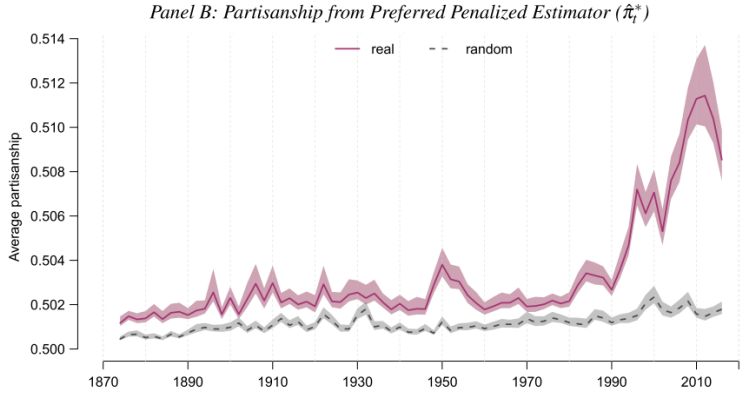

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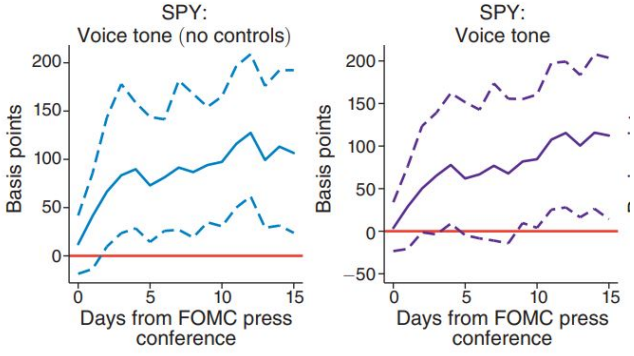

Practical Information

- Instructors: Sergio Galletta (sergio.galletta@gess.ethz.ch) & Elliott Ash (ashe@ethz.ch) & Christoph Gössmann (christoph.goessmann@gess.ethz.ch)
- Lecture Time: Thursdays 12:15-14:00
- Location: In person LFW B 1
- Office hours: By appointment via email
- Most of the important information are in the syllabus and we update the course material on github

Last year projects

- Does the text sentiment of the voting question influence the outcome of Swiss voting? (Paper)
- The causal impact of rainfall on wealth inequality in Vietnam (Paper)
- Who Pays for the Church? Electoral Institutions and Religious Clientelism in Post-War Italy (Paper)
- Modelling Patient Risk and Extraneous Causal Factors in Physician-Decision Making (Paper)
- Renewable Energy Innovation Across the World (APP)