

ELIZABETH SANTORELLA

elizabeth.santorella@gmail.com \diamond esantorella.com

EDUCATION

Harvard University

May 2018

PhD Economics

Research focus: econometrics, education, and public economics

Harvard University

November 2015

M.A. in Economics

Massachusetts Institute of Technology

June 2013

S.B. in Physics & Economics

Physics concentration in computer science

GPA: 4.9 / 5.0

RECENT EXPERIENCE

QuantCo

Economist / Data Scientist

Full time December 2017 - present

Part time December 2015 - May 2017

Boston, MA

- I have primary responsibility for estimating a crucial input to pricing over \$2 billion of revenue. I transformed ad-hoc Matlab legacy code into an automated Python machine learning pipeline that now runs at two e-commerce clients. My work on product-ification, model selection, performance optimization, and verifying causality led to substantial performance improvements according to KPIs chosen by the client.
- As a start-up employee, I wear many hats. Other tasks include pricing strategy design, experiment design, supervising an intern, recruiting, interviewing, helping set priorities, and advising teammates.

RESEARCH

Multi-Dimensional Teacher Effects

- I estimate the covariance structure of teacher effects on several outcomes: present and future test scores, present and future attendance, and high school graduation. Teachers have substantial effects on high school graduation, and on test scores and attendance four years in the future. However, long-term effects cannot be predicted well by short-term effects.

Which Value-Added Estimator Works Best and When?

- As value-added estimation spreads to fields outside education, where data sets may be small and experimental validation infeasible, estimators that perform well without millions of observations are increasingly needed. I clarify conditions under which existing methods are identified, sign their biases, and derive asymptotic standard errors, and develop a likelihood-based estimator. Monte Carlo experiments show that the the likelihood-based estimator nearly eliminates bias without increasing variance, and that confidence intervals based on the asymptotic distribution of the estimator give approximately correct coverage.

Bureaucrat Value Added: The Effect of Individual Bureaucrats on Local Economic Outcomes in India

with Jonas Hjort and Gautam Rao

- We use several value-added estimators to study a question relevant to political economy: How much agency do individual bureaucrats have to impact local economic performance? We study high-ranking bureaucrats in the Indian Administrative Service, India's national bureaucracy. These bureaucrats, District Collectors, are quasi-randomly assigned to manage the bureaucracy of an Indian district and often transfer to different districts in the same state. This setting, with relatively few observations and high-dimensional covariates, presents econometric challenges. While point estimates suggest that District Collectors are an important cause of variation in project completion and night light intensity, randomization inference shows that our estimates are in fact insignificant.

SKILLS

Computer Languages	Python (Numpy, Pandas, Scikit-Learn); R; SQL; Matlab; Stata
Other Skills	Econometrics, machine learning, technical writing, performance engineering, numerical optimization, teaching

OLDER WORK EXPERIENCE

Harvard Faculty of Arts and Sciences	January 2016 - May 2016
<i>Teaching Fellow</i>	<i>Cambridge, MA</i>

- Prepared materials and taught for two weekly review sessions and held office hours for Economics 2120, Introduction to Applied Econometrics. Most of the students were PhD students in economics, public policy, or health policy taking their second graduate-level econometrics course.

Harvard Kennedy School of Government	September 2015 - December 2015
<i>Teaching Fellow</i>	<i>Cambridge, MA</i>

- Prepared materials and taught for two weekly review sessions, held office hours, and graded exams for 80 Master's students in API-109, Advanced Microeconomic Analysis I.

HONORS

2015-2016	Subir Chowdhury Fellowship on Quality & Economics
2015	On third place team, world Econometric Game
2014-2015	Rita Ricardo-Campbell Fellowship in Economics
2013-2014	Harvard University Graduate Student Fellowship
2013	Phi Beta Kappa
2013	Sigma Pi Sigma (physics honor society)