Kieran Marray

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Education

Phd Economics 2022-present
VU Amsterdam and Tinbergen Institute
Supervisors: Dr Michael König (VU Amsterdam), Prof. Ozan Candogan (University of Chicago).
Recurring visiting student at University of Oxford, working with Dr François Lafond.
Topic: Econometrics of networks.
Awards: Recipient of Alfred P. Sloan Foundation Minor Grant in Mesoeconomics (with Xianglong Kong, Katie MacDonald, Peter Ohlinger, and Ruochen Dai)
Attended (by invite) Alfred P. Sloan Foundation summer retreat on production networks, University of Cambridge.
Full scholarship for 'Optimization-Conscious Econometrics' summer school, University of Chicago.

MPhil Economics and Econometrics 2020-2022
Tinbergen Institute
Major: Econometrics
GPA: 8.42 (summa cum laude)
Awards: Full scholarship of €14400/yr stipend plus free tuition. Re-awarded for second year based on GPA.

BA Philosophy, Politics, and 2016-2019
Economics, University of Oxford
Awards: Laidlaw Research Scholarship (£10,000) supervised by Professor Rob Axtell, George Mason University

Academic positions

POPNET fellow 2022-present
Institute for Advanced Studies, University of Amsterdam
Affiliatied to 'Population-Scale Social Network Analysis' research group and Department of Methodology, Statistics Netherlands

Research Assistant 2018-2020
Oxford Mathematical Institute, University of Oxford
Supervisors: Prof. J. Doyne Farmer and Dr François Lafond
Topic: Econometrics of Networks

Research in progress

Estimating who trades what with whom in Orbis
(with François Lafond, and Michael König)
We estimate cross-border firm level production network for OECD countries from firm balance-sheet and web data. To do this, we first construct a new dataset of product-relevant webpages for 4 million firms from CommonCrawl, and use them to estimate which firms produce what. Products firms produce restrict who might trade with whom, as each firm only considers a set of potential suppliers based on the inputs that they need. With these consideration sets, we then estimate the network using a new estimator for sparse latent networks in panel spatial-autoregressive models.

Spillover estimates from sampled connections
Most empirical studies estimating spillovers on networks oversample or undersample links between individuals. We show that oversampling and undersampling cause large upward biases in estimates of spillover effects and over-rejection of standard hypothesis tests. We introduce a debiasing procedure for ordinary-least-squares and spatial-autoregressive estimators. The method does not require restrictions on network formation and necessary data is easy to disclose or sample using surveys. Finally, we use

the debiased estimator to correct sampling bias in existing estimates of spillovers on firm-level production networks.

Estimating optimal disease mitigation with endogenous network response (with Ozan Candogan, and Michael König)
We model the spread of disease on a social network when susceptible individuals rewire links to avoid infection. Rewring reduces the spread of disease, and makes optimal lockdowns with shorter and more targeted. To estimate the model, we introduce a new method of moments estimator for parameters in structural models that uses information from a sufficient statistic conditional on parameters to proxy unobserved moment conditions. We use our model to estimate infection and rewiring rates for COVID-19 in the Netherlands using a new population-scale social network dataset and and compute counterfactual optimal lockdowns.

Invited Talks

Eureka seminar, **VU Amsterdam** 2023
Workshop on Firm-Level Supply Networks, **University of Cambridge**
Complexity Economics Seminar, **Institute for New Economic Thinking at the Oxford Martin School**

Workshop on population-scale social network analysis, 2022
Institute for Advanced Studies, University of Amsterdam
Dutch network economics day, **Tinbergen Institute**

Network Economics Research Group, **University of Oxford** 2020

Future of Work Conference, **George Mason University** 2019
Lunchtime Seminar, **Demos**
Networks Seminar, **Oxford Mathematical Institute**

Agent-Based Modelling Seminar, **Oxford Martin School** 2018
Complexity Economics Seminar, **Institute for New Economic Thinking at the Oxford Martin School**
Computational Social Science and Computational and Data Sciences Research Colloquium, **George Mason University**

Other Conferences and Workshops Attended

Optimization-Conscious Econometrics Summer School and Conference 2023
University of Chicago
Dutch network economics day 2021
CREED workshop on motivated cognition 2021
3rd Oxford Workshop on Global Priorities Research, Global Priorities Institute, University of Oxford 2019
Volunteer *Oxford Summer School on Economic Networks*, Oxford Mathematical Institute

Research Groups

Organiser *Prediction and Inference with Machine Learning Reading Group*, Tinbergen Institute (with Stanislav Adveev) 2021-2022
Network Economics Research Group, Department of Economics, University of Oxford 2019-2020
Network Econometrics Reading Group, University of Oxford

Teaching

Urban economics: challenges and policies, VU Amsterdam 2023-present
TA/guest lecturer
Master-level applied econometrics course, focussing on policy evaluation for regional/urban economics.
Course website with interactive lecture notes in Julia available at
`https://kmarray98.github.io/urban_economic_policy/`
Lecture on 'Introduction to nonparametric and semiparametric estimation'.

Applied econometrics, VU Amsterdam, TA 2023-present
Master-level applied econometrics course for spatial economics students.

Econometrics I, Tinbergen Institute, TA 2021
First-year Phd-level econometrics course.
'Introduction to R for Econometrics' lecture notes available at
`https://bookdown.org/kieranmarray/intro_to_r_for_econometrics/`

Programming Experience Proficient in **Julia** (preferred), **R**, and **Python**. Some experience in **SQL**, **Netlogo**, **Stata**, and with AWS compute environments (Athena, Batch, EC2).

Unprofessional Activities Squash, rock-climbing