

# Kieran Marray

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<b>Interests</b>	<b>Primary:</b> Economics of Networks, Applied Econometrics <b>Secondary:</b> Machine Learning for Economics	
<b>Education</b>	<b>PhD Economics, Vrije Universiteit Amsterdam and Tinbergen Institute</b>	2022–present
	Supervised by Dr Michael König, and Prof. Ozan Candogan (University of Chicago). <i>Thesis:</i> Essays in econometrics of networks.	
	<b>MPhil Economics and Econometrics, Tinbergen Institute</b>	2020-2022
	<i>Major:</i> Econometrics. <i>GPA:</i> 8.42 (summa cum laude).	
	<b>BA Philosophy, Politics, and Economics, University of Oxford</b>	2016-2019
<b>References</b>	<b>Dr Michael König</b> School of Business and Economics, Vrije Universiteit Amsterdam, De Boelelaan 1105, 1081HV Amsterdam <i>m.d.konig@vu.nl</i>	<b>Prof. Ozan Candogan</b> Booth School of Business, University of Chicago 5087 S. Woodlawn Avenue, Chicago, IL 60637 <i>ozan.candogan@chicagobooth.edu</i>
	<b>Prof. Gordon Phillips</b> Tuck School of Business Dartmouth College 100 Tuck Hall, Hanover, NH 03755 <i>gordon.m.phillips@tuck.dartmouth.edu</i>	<b>Dr François Lafond</b> INET Oxford Manor Road Building, Manor Road, Oxford OX1 3UQ <i>francois.lafond@inet.ox.ac.uk</i>
<b>Employment</b>	<b>Predocctoral researcher, Mathematical Institute, University of Oxford</b>	2018-2020
	Supervised by Prof. J. Doyne Farmer and Dr François Lafond	
<b>Academic affiliations</b>	<b>Fellow, Institute for Advanced Studies, University of Amsterdam</b>	2022-present
	<b>Visitor, INET Oxford, University of Oxford</b>	2023
<b>Working papers</b>	<b>Estimating spillovers from sampled connections</b> <i>Job market paper</i> , ArXiv pre-print 2410.17154. <b>Abstract:</b> Empirical researchers often estimate spillover effects by fitting linear or non-linear regression models to sampled network data. We show that common sampling schemes bias these estimates, potentially upwards, and derive biased-corrected estimators that researchers can construct from aggregate network statistics. Our results apply under different assumptions on the relationship between observed and unobserved links, allow researchers to bound true effect sizes, and to determine robustness to mismeasured links. As an application, we estimate the propagation of climate shocks between U.S. public firms from self-reported supply links, building a new dataset of county-level incidence of large climate shocks.	

**Network rewiring and spatial targeting: optimal disease mitigation in multilayer networks** with Ozan Candogan, Michael König, and Frank Takes.

*Resubmission invited, American Economic Review: Insights*

**Abstract:** *We study disease spread on a multi-layered social network where susceptible individuals rewire contacts away from the infectious. Rewiring complements mitigation policy by allowing more intergroup contact as the rewiring rate increases. We then show how to formulate the planner’s problem of targeting lockdowns to prevent disease becoming endemic at minimum cost with rewiring as a semidefinite program that is tractable with many groups and layers. As an application, we compute counterfactual optimal spatially-targeted lockdowns for the Netherlands during Covid-19, building a population-level contact network and estimating the rewiring rate from epidemiological data to do so.*

**Estimating unobserved networks with heterogeneous characteristics, and an application to the Swing Riots**

SSRN pre-print 5338970.

**Abstract:** *Often, researchers do not observe interactions between individuals that mediate outcomes but do observe rich individual-level characteristics. We present an estimator for unobserved networks from individual outcomes and characteristics that determine who links with whom. The estimator recovers the network by decomposing the covariance matrix of outcomes, penalising possible links differently based on pairwise individual characteristics. We provide theoretical bounds on estimation error, and a fast coordinate descent algorithm that makes estimation tractable for large networks. As an application, we estimate which parishes, distributed in space, rose together during the Swing Riots of 1830–1831. We find evidence of a small core of connected uprisings centered on known radical parishes amongst otherwise sporadic unrest. Exposure to different types of uprising polarises elite preferences to expand the right to vote.*

**Research in progress**

**Global competitor networks**

with François Lafond, Gordon Phillips, and Michael König

**Place-based policy in endogenous production networks**

with Xianglong Kong, Katie MacDonald, Peter Ohlinger, and Ruochen Dai.

**Awards, grants, and scholarships**

**Alfred P. Sloan Foundation Minor Grant in Mesoeconomics**

2024

(with Xianglong Kong, Katie MacDonald, Peter Ohlinger, and Ruochen Dai)

**Scholarships:** Full scholarship and tuition waiver, Tinbergen Institute (2020-2022); Laidlaw research and leadership scholarship, value of £10,000 (2018)

**Studentships:** Sloan Foundation studentship in Mesoeconomics, University of Cambridge (2024); ‘Optimisation-Conscious Econometrics’, University of Chicago (2023).

**External travel grants:** Workshop on Firm-Level Supply Networks, University of Oxford (2025); 12th Warwick Phd Conference, University of Warwick (2024); Workshop on Firm-Level Supply Networks, University of Cambridge (2023).

**Invited talks (selected)**

Network Science in Economics conference (poster), **Stanford University**

2025

10th **Monash-Paris-Warwick-Zurich-CEPR** Text-as-Data Workshop

Workshop on Firm-Level Supply Networks, **University of Oxford**

2025

**European Economic Association** summer meeting

2024

**European summer meeting of the Econometric Society**

12th Warwick Phd conference, **University of Warwick**

Complexity Economics Seminar, **Oxford Martin School, University of Oxford**

Workshop on Firm-Level Supply Networks, **University of Cambridge**

2023

1st International Workshop on Population-Scale Social Network Analysis,  
**Institute for Advanced Studies, University of Amsterdam**

<b>Refereeing</b>	<i>Journal of Economic Behaviour and Organisation, Applied Network Science</i>	
<b>Teaching</b>	<b>Urban economics: challenges and policies (Msc), TA</b>	2023-present
	<a href="#">Interactive lecture notes</a> . Lecture on nonparametric/semiparametric estimation.	
	<b>Applied econometrics (Msc), TA</b>	2023-present
	<b>Econometrics I (MPhil), TA</b>	2021
	<a href="#">Introductory R lecture notes</a>	
<b>Programming</b>	Proficient: <b>Julia</b> (preferred), <b>R</b> , and <b>Python</b> , HPC and AWS environments.	
<b>Unprofessional Activities</b>	Rock-climbing, squash	