

Professor Nick Malleon

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Personal

Dr Malleon is a Professor of Spatial Science at the Centre for Spatial Analysis and Policy at the School of Geography, University of Leeds, UK. He has a PhD in Geography and undergraduate degrees in Computer Science (BSc) and Multidisciplinary Informatics (MSc).

Most of his research focuses on the development of computer models that help to understand and explain social phenomena. He has a particular interest in simulations of crime patterns, and in models that can be used to describe the flows of people around cities. More recently, he has become interested in how 'big data', agent-based modelling, and smart cities initiatives can be used to better understand the daily dynamics of cities and reduce the impacts of phenomena such as pollution or crime.

Education

PhD. School of Geography, University of Leeds, 2010.

MSc Multidisciplinary Informatics (distinction). School of Computing, University of Leeds, 2006.

BSc Computer Science (2-i). School of Computing, University of Leeds, 2005.

Recent Employment History

Apr 2019 – present. Professor of Spatial Science, University of Leeds.

Jan 2016 – Apr 2019. Associate Professor of Geographical Information Science, University of Leeds.

July 2012 – Jan 2016 . Lecturer in GIS, University of Leeds.

Feb 2010 – July 2012. Research fellow, University of Leeds.

Main Funding Received

As Principal Investigator:

£390k, Alan Turing Institute, *Understanding and Quantifying Uncertainty in Agent-Based Models for Smart City Forecasts* (<https://www.turing.ac.uk/research/research-projects/uncertainty-agent-based-models-smart-city-forecasts>).

£291k, British Academy (GCRF) Urban Infrastructures of Wellbeing, *Urban Transport Modelling for Sustainable Well-Being in Hanoi* (<https://urban-analytics.github.io/UTM-Hanoi/>).

€1.5M (£1.3M) ERC Starting Grant entitled *Data Assimilation for Agent-Based Models* (<https://dust.leeds.ac.uk/>).

£400k Alan Turing Institute grant entitled *Understanding and Quantifying Uncertainty in Agent-Based Models for Smart City Forecasts*

£312k ESRC Future Research Leaders grant entitled *Understanding Urban Movements through Big Data and Social Simulation* (<http://surf.leeds.ac.uk/>).

As Co-Investigator:

£6.7M, ESRC, *Consumer Data Research Centre*

£5.5M, HEFCE, *N8 Policing Research Partnership: Innovation and the Application of Knowledge for More Effective Policing*

Relevant Journal Articles

Halford, E., A. Dixon, G. Farrell, **N. Malleson** and N. Tilley (2020) Crime and coronavirus: social distancing, lockdown, and the mobility elasticity of crime. *Crime Science* 9 (11).

Malleson, N., K. Minors, Le-Minh Kieu , J. A. Ward , A. West and A. Heppenstall (2020) Simulating Crowds in Real Time with Agent-Based Modelling and a Particle Filter. *Journal of Artificial Societies and Social Simulation* 23 (3)

Martin A. Andresen, **N. Malleson**, W. Steenbeek, M. Townsley and C. Vandeviver (2020). Minimum geocoding match rates: an international study of the impact of data and areal unit sizes. *International Journal of Geographical Information Science* (online first) <https://doi.org/10.1080/13658816.2020.1725015>

Kieu, Le-Minh, **N. Malleson**, and A. Heppenstall (2019). Dealing with Uncertainty in Agent-Based Models for Short-Term Predictions. *Royal Society Open Science* 7(1): 191074.

Crols, T. and **N. Malleson** (2019) Quantifying the Ambient Population using Hourly Population Footfall Data and an Agent-Based Model of Daily Mobility. *GeoInformatica* 23(2): 201–220.

Malleson, N., Vanky, A., Hashemian, B., Santi, P., Verma, S.K., Courtney, T.K., Ratti, C.. (2018). The characteristics of asymmetric pedestrian behavior: A preliminary study using passive smartphone location data. *Transactions in GIS* 22(2): 616-634.

Ward, J., A. Evans, **N. Malleson** (2016) Dynamic calibration of agent-based models using data assimilation. *Royal Society Open Science*. 3:150703.

Malleson, N., and Andresen, M.A. (2016) Exploring the impact of ambient population measures on London crime hotspots. *Journal of Criminal Justice* pp 52-63.

Malleson, N., Andresen, M.A. (2015). The impact of using social media data in crime rate calculations: shifting hot spots and changing spatial patterns. *Cartography and Geographic Information Science* 42, 112–121

Malleson, N., A. Heppenstall, L. See and A. Evans (2013). Using an Agent-Based Crime Simulation to Predict the Effects of Urban Regeneration on Individual Household Burglary Risk. *Environment and Planning B: Planning and Design* 40 405–426.

Malleson, N., A. Heppenstall and L. See (2010). Crime reduction through simulation: An agent-based model of burglary. *Computers, Environment and Urban Systems* 31(3) 236-250.

Book

Crooks, A., **N.Malleson**, E. Manley and A. Heppenstall (2019) *Agent-Based Modelling and Geographical Information Systems: A Practical Primer*. Thousand Oaks, CA: SAGE Publications.