Roger Beecham

School of Geography
Faculty of Environment
University of Leeds

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roger-beecham.com

EDUCATION

PhD Geographic Information Science, City, University of London, 2011–2014

Understanding cycling behaviour through visual analysis of a large-scale observational dataset

Supervisor: Prof. Jo Wood

Examiners: Prof. John Parkin, Prof. David Bawden, Prof. Artur d'Avila Garcez

BA Geography (1st Class Hons), Durham University, 2003–2006

ACADEMIC EMPLOYMENT

2024– University of Leeds
Director of Research & Innovation, Leeds Institute for Data Analytics

2021– University of Leeds
Associate Professor, School of Geography

2017–21 University of Leeds
Lecturer, School of Geography

2014–17 City, University of London
Postdoctoral Researcher, giCentre, Department of Computer Science

2011–14 City, University of London
PhD Student, giCentre, Department of Computer Science

RESEARCH AREAS

Social data science: visualization, computational statistics, spatial analysis

Transportation planning: active travel, behavioural analysis, infrastructure evaluation

Political/Economic geography: voting behaviour, populism, labour markets

PUBLICATIONS

Journal Articles

2025 Magnuszewski, J., **Beecham, R.**, and Burns, L. (2025). The Auckland Urban Liveability Index: A Mechanism for Quantifying and Evaluating Modern Urban Densification. **Applied Spatial Analysis and Policy**

2024 Tait, C., **Beecham, R.**, Lovelace, R., and Barber, S. (2024). Build it but will they come? Exploring the impact of introducing contraflow cycling on cycling volumes with crowd-sourced data. **Journal of Transport Health**, 35:101758

2023 **Beecham, R.**, Yang, Y., Tait, C., and Lovelace, R. (2023). Connected bikeability in London: which localities are better connected by bike and does this matter? **Environment and Planning B: Urban Analytics and City Science** [code+data]
Tait, C., **Beecham, R.**, Lovelace, R., and Barber, S. (2023). Contraflows and cycling safety: Evidence from 22 years of data involving 508 one-way streets. **Accident Analysis & Prevention**, 179(January):106895 [code+data]

2022 **Beecham, R.** and Lovelace, R. (2022). A framework for inserting visually-supported inferences into geographical analysis workflow: application to road safety research. **Geographical Analysis** [code+data]
Tait, C., **Beecham, R.**, Lovelace, R., and Barber, S. (2022). Is cycling infrastructure in London safe and equitable? Evidence from the cycling infrastructure database. **Journal of Transport & Health**, page 101369. [code+data]
Yang, Y., **Beecham, R.**, Heppenstall, A., Turner, A., and Comber, A. (2022). Understanding the impacts of public transit disruptions on bikeshare schemes and cycling behaviours using spatiotemporal and graph-based analysis: A case study of four London Tube strikes. **Journal of Transport Geography**, 98:103255[code+data]

Zucker, K., Wagstaff, M., Tomson, C., **Beecham, R.**, and Hall, G. (2022). AuguR: A Scalable Open-Source Interactive Web Application for Routinely Collected Data. **Studies in health technology and informatics**, 290:744—747

2021 Radburn, R. and **Beecham, R.** (2021). Mapping deprivation for each and every small area in England. **Regional Studies, Regional Science**, 8(1):269–272
Beecham, R., Dykes, J., Hama, L., and Lomax, N. (2021). On the Use of 'Glyphmaps' for Analysing the Scale and Temporal Spread of COVID-19 Reported Cases. **ISPRS International Journal of Geo-Information**, 10(4) [code+data]
Beecham, R., Dykes, J., Rooney, C., and Wong, W. (2021). Design Exposition Discussion Documents for Rich Design Discourse in Applied Visualization. **IEEE Transactions on Visualization and Computer Graphics**, 27(8):3451–3462 [code+data]

2020 Lovelace, R., **Beecham, R.**, Heinen, E., Vidal Tortosa, E., Yang, Y. Slade, C., and Roberts, A. (2020). Is the London Cycle Hire Scheme becoming more inclusive? An evaluation of the shifting spatial distribution of uptake based on 70 million trips. **Transportation Research Part A: Policy and Practice**, 140(October):1–15
Beecham, R., Williams, N., and Comber, L. (2020). Regionally-structured explanations behind area-level populism: an update to recent ecological analyses. **PLoS ONE**, 15(3):e0229974 [code+data]
Beecham, R. (2020). Using position, angle and thickness to expose the shifting geographies of the 2019 UK General Election. **Environment and Planning A: Economy and Space**, 52(5):833–836 [code+data][press]

2019 **Beecham, R.** and Slingsby, A. (2019). Characterising labour market self-containment in London with geographically arranged small multiples. **Environment and Planning A: Economy and Space**, 51(6):1217–1224 [code+data]

2018 **Beecham, R.**, Slingsby, A., and Brunsdon, C. (2018). Locally-varying explanations behind the United Kingdom's vote to leave the European Union. **Journal of Spatial Information Science**, 16:117–136 [code]+data]

2017 **Beecham, R.**, Dykes, J., Meulemans, W., Slingsby, A., Turkay, C., and Wood, J. (2017). Map line-ups: effects of spatial structure on graphical inference. **IEEE Transactions on Visualization and Computer Graphics**, 23(1):391–400 [code+data][paper web-site] [23% acceptance rate] [Best Paper Honorable Mention]

2016 **Beecham, R.**, Rooney, C., Meier, S., Dykes, J., Slingsby, A., Turkay, C., and Wong, W. (2016). Faceted Views of Varying Emphasis (FaVVEs): a framework for visualising multi-perspective small multiples. **Computer Graphics Forum**, 35(3):241–249 [paper web-site] [28% acceptance rate]

2014 Wood, J., **Beecham, R.**, and Dykes, J. (2014). Moving beyond sequential design: Reflections on a rich multi-channel approach to data visualization. **IEEE Transactions on Visualization and Computer Graphics**, 20(12):2171–2180 [23% acceptance rate]
Beecham, R. and Wood, J. (2014). Characterising group-cycling journeys using interactive graphics. **Transportation Research Part C: Emerging Technologies**, 47(October):194–206
Beecham, R., Wood, J., and Bowerman, A. (2014). Studying commuting behaviours using collaborative visual analytics. **Computers, Environment and Urban Systems**, 47(September):5–15
Beecham, R. and Wood, J. (2014). Exploring gendered cycling behaviours within a large-scale behavioural data-set. **Transportation Planning and Technology**, 37(1):83–97 [Smeed Prize (1st place)][Taylor & Frances top 10 articles in transport from 2014]

2013 Slingsby, A., **Beecham, R.**, and Wood, J. (2013). Visual analysis of social networks in space and time using smartphone logs. **Pervasive and Mobile Computing**, 9(6):848–864

Books

2025 **Beecham, R.** (forthcoming). **Visualization for Social Data Science**. CRC Press
https://vis4sds.github.io/vis4sds/

Edited Book Series

2023 **Beecham, R.**, Long, J., Smith, D., Zhao, Q., and Wise, S., editors (2023). **LIPIcs, Volume 277, GIScience 2023, Complete Volume**, volume 277 of **Leibniz International Proceedings in Informatics (LIPIcs)**, Dagstuhl, Germany. Schloss Dagstuhl – Leibniz-Zentrum für Informatik

Book Chapters

2015 **Beecham, R.** (2015). Using bikeshare datasets to improve urban cycling experience and research urban cycling behaviour. In Gerike, R. and Parkin, J., editors, **Cycling Futures: From Research into Practice.**, pages 267–283. Ashgate, Farnham, UK

Conference Proceedings

2024 **Beecham, R.** (2024). gridmappr: an R package for creating small multiple gridmap layouts. In **Geographical Information Science Research UK (GISRUK)**, Leeds, UK. Zenodo

2023 Hama, L., **Beecham, Roger**, and Lomax, N. (2023). TGVE: a Tool for Analysis and Visualization of Geospatial Data. In Hoellt, T., Aigner, W., and Wang, B., editors, **EuroVis 2023 - Short Papers**. The Eurographics Association

2021 Doppler, J. H., Pohl, M., **Beecham, R.**, and Dykes, J. (2021). Strategies for Detecting Difference in Map Line-Up Tasks. In Lamas, D., Loizides, F., Nacke, L. E., Petrie, H.,

Winckler, M., and Zaphiris, P., editors, **INTERACT 2021 - 18th International Conference on Human-Computer Interaction, Bari, Italy, August 30th-2nd September, 2021, Proceedings**, volume 12934 of **Lecture Notes in Computer Science**. Springer

2019 Lovelace, R., Hama, L., and **Beecham, R.** (2019). Reproducible road safety research: an exploration of the shifting spatial and temporal distribution of car-pedestrian crashes. In **Geographical Information Science Research UK (GISRUK)**, Newcastle, UK

2017 Rooney, C., **Beecham, R.**, Dykes, J., and Wong, W. (2017). Dynamic Design Documents for supporting applied visualization. In **Poster presented at IEEE VIS**, Phoenix, USA [Best Poster Award]
Beecham, R. and Dykes, J. (2017). Map LineUps: implications for spatial analysis. In **Geocomputation 2017**, Leeds, UK
Beecham, R., Slingsby, A., Brunsdon, C., and Radburn, R. (2017). Spatially varying explanations behind the UK's vote to leave the EU. In **Geographical Information Science Research UK (GISRUK) 2017**, Manchester, UK

2016 **Beecham, R.**, Wood, J., and Turkay, C. (2016). Towards explanatory model building in social data science. In **Royal Geographical Society Annual International Conference 2016: Urban Analytics**, London, UK

2015 **Beecham, R.**, Dykes, J., Slingsby, A., and Turkay, C. (2015). Supporting crime analysis through visual design. In **Poster presented at IEEE VIS**, Chicago, USA
Dykes, J., Rooney, C., **Beecham, R.**, Turkay, C., Slingsby, A., Wood, J., and Wong, W. (2015). Multi-Perspective Synopsis with Faceted Views of Varying Emphasis. In **Poster presented at IEEE VIS**, Chicago, USA

2014 **Beecham, R.**, Dykes, J., Turkay, C., Slingsby, A., and Wood, J. (2014). Map Line Ups: Using Graphical Inference to Study Spatial Structure. In **DECISIVe: Dealing with Cognitive Biases in Visualizations, a workshop at IEEE VIS**, Paris, UK
Beecham, R. and Wood, J. (2014). Towards confirmatory data analysis? Deriving and analysing routing information for an origin-destination bike share dataset. In **46th Annual Universities Transport Study Group (UTSG) Conference**, Newcastle, UK

2012 **Beecham, R.**, Wood, J., and Bowerman, A. (2012). Identifying and explaining inter-peak cycling behaviours within the London Cycle Hire Scheme Conference. In **Progress in Movement Analysis: Experiences with Real Data**, Zurich, Switzerland
Kachkaev, A., Dillingham, I., **Beecham, R.**, Goodwin, S., Ahmed, N., and Slingsby, A. (2012). Monitoring the Health of Computer Networks with Visualization - VAST 2012 Mini Challenge 1 Award: Efficient Use of Visualization. In **IEEE Conference on Visual Analytics Science and Technology**, Seattle, USA
Beecham, R., Wood, J., and Bowerman, A. (2012). A visual analytics approach to understanding cycling behaviour. In **Poster presented at the IEEE Conference on Visual Analytics Science and Technology (VAST)**, Seattle, USA

Technical Reports

2010 Radburn, R., **Beecham, R.**, Dykes, J., Wood, J., and Slingsby, A. (2010). Using spatial treemaps in local authority decision making and reporting. In **IEEE Conference on Information Visualization (InfoVis), Discovery Exhibition**, Utah, USA

INVITED TALKS AND PANELS

2024 **Beecham, R.** (2024). Rigor, imagination and production in data-driven science, at King's Colle London (Panel). London, UK
Beecham, R. (2024). Data Visualization, at HDRC Seminar Series, Bradford City Council. Bradford, UK
Beecham, R. (2024). Data Visualization, at Keynote to Department for Business and Trade. London, UK
Beecham, R. (2024). The Power of Data in Business, at NexusConnect (Panel). Leeds, UK

2022 **Beecham, R.** (2022). Data graphics as statistics? A call to adventure for statistical communication, at 54th Annual Meeting of the French Statistical Society. Lyon, France

2021 **Beecham, R.** (2021). Applications of Data Visualization: Covid-19, at 54th Essex Summer School. Essex, UK
Beecham, R. (2021). Visualizing the pandemic and other health outcomes, i-sense Q&A Series. London, UK

2020 **Beecham, R.** (2020). Glyphmaps for analysing the scale and temporal spread of covid-19 cases, at Annual VizTIG 2020 Symposium, Alan Turing Institute. London, UK
Beecham, R. (2020). Visualization for social data science principles and applications, at 53rd Essex Summer School. Essex, UK

2018 **Beecham, R.** (2018). Maps as Statistics? A call to Adventure for Perception Research in (geo)visualization, at Leeds Institute for Data Analytics. Leeds, UK

2016 **Beecham, R.** (2016). Thinking spatially ... through visualization, TU Vienna. Vienna, Austria
Beecham, R. (2016). Visualising uncertainty (and probability), at Visual Analytics Bootcamp. Middlesex University, London

2015 **Beecham, R.** (2015). Thinking spatially ... through visualization, at Geography Department Seminar Series. University College School, London

2014 **Beecham, R.** (2014). Discovering bike share cycle behaviours through interactive visual analysis. Or why pictures are a necessary part of big data analytics. London School of Hygiene and Tropical Medicine, London, UK

2013 **Beecham, R.** (2013). Exploratory visualization for discovering data stories. Hacks versus Hackers Meetup, London, UK
Beecham, R. (2013). Data visualization. The Power of Data, PPA Digital Publishing Conference 2013, 18 September 2013, London, UK
Beecham, R. (2013). Exploratory visualization for discovering data stories. Hacks versus Hackers Meetup, London, UK
Beecham, R. (2013). Visualization for better data analysis. Transport data visualisations. Transport Statistics User Group, Department for Transport, London, UK
Beecham, R. (2013). Exploring gender and cycle behaviour in a large-scale dataset. King's College London, London, UK

CONFERENCE ACTIVITY

Conference / session organisation

2025 TMCF workshop: Navigating the garden of forking paths, 7th February 2025, Alan Turing Institute, British Library, London.

2024 Challenge Lead to Alan Turing Institute Theory and Methods Fortnight: Theoretical foundations for interactive data analysis in data-driven science.
https://theory4ida.github.io/tmcf/

GISRUK 2024: April 2024, Leeds, UK. Conference Lead

2023 GIScience 2023: September 2023, Leeds, UK. Conference Programme Chair

2021 RGS-IBG 2021: The Presence and Impact of Spatial Boundaries in Transport Geography, September 2021, London, UK. Committee member

2018 GVIZ@GIScience 2018: New Directions in Geovisual Analytics: Visualization, Computation, and Evaluation, August 2018, Melbourne, Australia. Committee member

2017 DECISIVe: Dealing with Cognitive Biases in Visualisations (a workshop at IEEE VIS 2017), 2nd October 2017, Phoenix, USA. Committee member

2015 UTSG 47th Annual Conference, 6th-8th January, City, University of London. Committee member

2014 DECISIVe: Dealing with Cognitive Biases in Visualisations (a workshop at IEEE VIS 2014), 9th November 2014, Paris, France. Committee member.
UTSG 46th Annual Conference, 6th-8th January, Newcastle University. Committee member

RESEARCH INCOME

In Review

2024 PHIRST (Co-I) NIHR. In review. £2,500,000.

Funding Gained

2024 INFUZE (Co-I) EPSRC. £5,166,058.

2023 Generating evidence for decision-making on the use of the oral cholera vaccine (Co-I) Wellcome Trust. £2.5m

2021 Digital Twins and the Turing Geovisualisation Engine (Co-I) UKRI/Alan Turing Institute. £120,195

2020 SaferActive: prioritising investment in traffic calming measures for vulnerable road users (Co-I) Department for Transport. £90,000

2018 Creating a Digital Twin (Co-I) UKRI and The Alan Turing Institute. £888,464

Funding Sought

2022 Literate Data Visualization for Spatial Decision Making (Co-I) EPSRC. Not funded. £749,605

2021 RAMPVIS+: Building Data Visualization and Visual Analytics (VIS) Services into Data Research Infrastructure in the UK (Co-I) UKRI. Not funded. £392,085

2020 ESRC Centre for Urban Analytics (Co-I) ESRC. Not funded. £9.9m
Universities as enablers of productivity gains (Co-I) ESRC. Not funded. £40,327

2019 International Exchanges 2019 Round 2. (PI) Royal Society. Not funded. £3,000

2018 Progressing social data science beyond description: a framework for analysis (PI) Leverhulme Trust. Not funded. £44,095

2016 Mapping the Cycling Environment (MaCE): an interactive web tool (Co-PI) Department for Transport. Not funded. £102,444

ENTERPRISE AND KNOWLEDGE TRANSFER

Funded Consultancy Projects

2015 Web-based visualization of bus usage data, Mirror Group. £2,700.
https://www.gicentre.org/getreading/

Open Source Software

2023 `gridmappr` R package. https://www.roger-beecham.com/gridmappr/

`odvis` R package. https://www.roger-beecham.com/odvis/

Other Knowledge Transfer

2024 Challenge Lead to Alan Turing Institute Theory and Methods Fortnight: Theoretical foundations for interactive data analysis in data-driven science.
https://theory4ida.github.io/tmcf/

2021 Advisor to RAMP VIS

2015 UK national report to the International Cartographic Association

AWARDS AND HONORS

2017 InfoVis Best Poster Award. Top 1 of 64 submissions, IEEE VIS 2017, Phoenix, Arizona

2016 InfoVis Best Paper Honorable Mention. Top 3 of 165 papers, IEEE VIS 2016, Baltimore, Maryland

2014 Top 10 Taylor & Francis articles in Transport for the paper 'Exploring gendered cycling behaviours within a large-scale behavioural data-set' (listed under Publications)

2013 Smeed Prize (first place). Best student paper and presentation (14 shortlisted papers), 45th UTSG, University of Oxford

2012 VAST Challenge Award for Efficient Visualization, IEEE Visweek, Seattle, Washington
Nokia Mobile Data Challenge Third best paper from c.100 entries, Pervasive 2012, University of Newcastle

2006 Robin Mills Award. Second highest first in academic cohort, Durham University Geography

RESEARCH SUPERVISION

Postgraduate Researchers

Seán Ó Héir, 2023 – Present [Co-Supervisor]

Juliana Novaes Bueno De Camargo, 2022 – Present [Lead Supervisor]

Juan Fonseca Zamora, 2022 – Present [Co-Supervisor]

Caroline Tait, 2018–23 [Lead Supervisor]

Postdoctoral Researchers / Interns

Aditi Sudhakar, LIDA Data Scientist Development Programme, 2023–2024

Owen Hibbert, LIDA Data Scientist Development Programme, 2022–2023

Layik Hama, PDRA, 2019–2022

Thomas Richards, PDRA + LIDA Data Scientist Development Programme, 2020–2021

Millie Wagstaff, LIDA Data Scientist Development Programme, 2020

Benjamin Wilson, LIDA Data Scientist Development Programme, 2018

COURSES TAUGHT

University of Leeds

Visualization for Geographic Data Science. https://www.roger-beecham.com/vis-for-gds/

Predictive Analytics. https://www.roger-beecham.com/predictive-analytics/

Geodemoraphics & Neighbourhood Analysis

Professional & Personal Development

Geocomputation

GIS and CAMS postgraduate taught dissertation supervision

Geography undergraduate dissertation supervision

City, University of London

Visual Analytics

Principles of Data Science

Data Visualization

Business Intelligence & Analytics

Workshops and Short Courses

"Visualization for Social Data Science", Two-week course at the Essex Summer School in Social Science Data Analysis, 2021–present. https://www.roger-beecham.com/comp-sds/

"Explaining Brexit and Trump with Tidy Data Graphics", One-day course for the Consumer Data Research Centre, University of Leeds, May 2018. https://www.roger-beecham.com/tidy-datavis/

"Analysing active mobility data", Lecture + lab for invited lecture series, TU Vienna, May 2016.

SERVICE

Academic Journal Editorial Boards

Environment & Planning B: Urban Analytics & City Science, Guest Editor for SI 2025

Lecture Notes in Computer Science, Guest Editor for SI GIScience 2023

Academic Journal Peer Review

Applied Geography
Applied Spatial Analysis & Policy
Cambridge Journal of Regions, Economy & Society
Computers, Environment & Urban Systems
Computers & Graphics
Computer Graphics Forum
Computer Graphics & Applications
Environment & Planning A: Economy and Space
Environment & Planning B: Urban Analytics and City Science
Geographical Analysis
IEEE Access
IEEE Pervasive Computing
IEEE Transactions on Visualization & Computer Graphics
IEEE Transactions on Intelligent Transport Systems
IEEE VIS, ACM CHI, Eurovis
International Journal of Sustainable Transportation
International Journal of Geographic Information Science
ISPRS International Journal of Geo-Information
Journal of Cycling and Micromobility Research
Journal of Transport Geography
Journal of Transportation & Health
Psychological Science
Research in Transportation Business Management
Transportation Research Part C: Emerging Technologies

External Review/Panel Experience

Conference Lead, GISRUK 2024
Program Committee, GIScience 2023
Program Committee and Best Paper Panel, GISRUK 2023
Committee and Panel, LIDA Data Challenge 2020
Program Committee and Best Paper Panel, UTSG, 2014–15
Committee and Panel, GVIZ@GIScience 2018.
Committee and Panel, DECISIVe at IEEEVIS 2014 and 2017.

Service to the University

LIDA Education & Training Committee, 2022–Pres

Digital Education Academic Lead, 2018-Pres

Deputy Director of Centre for Spatial Analysis & Policy (CSAP) research group, 2018-21

LIDA Seminar Committee, 2017–20

Doctoral Committees

Examination

Alfred Long, *Accessibility and Mobility: Enriching and Transforming Existing Big Datasets for Public Transport Analysis*, University College London, External Examiner, September 2023.

Nan Cui, *Using social media data to understand the urban green space use before and after a pandemic*, University of Leeds, Internal Examiner, June 2023.

Anthony Dixon, *Improving problem-oriented policing with natural language processing*, University of Leeds, Internal Examiner, June 2023.

Research Support Group

Kejian Li, University of Leeds, Research Support Group

Zi Ye, University of Leeds, Research Support Group

Amanda Otley, University of Leeds, Research Support Group

Verity Tether, University of Leeds, Research Support Group

Yuanxuan Yan, University of Leeds, Research Support Group

Eugeni Vidal Tortosa, University of Leeds, Research Support Group

PROFESSIONAL EMPLOYMENT

YouGov, Senior Researcher, 2010–2011

Leicestershire County Council, Research Officer, 2008–2010

QA Research, Research Executive, 2006–2008

Updated February 2025