

PATRICK BALLANTYNE – CURRICULUM VITAE

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RESEARCH INTERESTS

Retail Geography | COVID-19 | Location, Consumer and Mobility Data | Consumer Data Analytics | GIS | Spatial Analysis | Geographic Data Science | Data Visualisation | Reproducible Research |

EDUCATION

MSc & PhD Data Analytics and Society, University of Liverpool (Sep. 2018 – 2023)
“Global Retail Centres and Their Composition”. Working with location and mobility datasets from SafeGraph and Geolytix to better understand the geographies of retail centres in the UK and US. Thesis will be comprised of three papers, and an additional supplementary paper:

- A framework for delineating the scale, extent and characteristics of American retail centre agglomerations.
- Integrating the *who*, *what* and *where* of American retail centre geographies.
- Using unstable data from mobile phone applications to examine recent trajectories of retail centre recovery.
- A regional exploration of retail visits during the COVID-19 pandemic (*supplementary*).

BSc Physical Geography, University of Liverpool (Sep. 2015 – Jul. 2018)
“Quantifying nutrient loading from septic tanks and agricultural land-use to streams in the Loweswater catchment” (First Class with Honours).

EMPLOYMENT

Postdoctoral Research Fellow, University of Liverpool (Jun. 2022 – present)
Supporting research activities of Prof. Alex Singleton, particularly working on research projects to do with mobility, geodemographics, retail and urban analytics, co-ordinating research exchanges and facilitating the day-to-day activities of the Geographic Data Science Lab.

Research Assistant, University of Liverpool (Jan. 2021 – present)
Working on various projects associated with the Consumer Data Research Centre (CDRC) “retail futures” theme, including analysis of secure datasets, development of new data products, accompanying teaching materials and blog posts, and basic software development with the mapmaker platform.

Senior Open Day Ambassador, University of Liverpool (Sept. 2017 – Sept. 2019)
Supporting open days and applicant discovery days (ADDs) for the Department of Geography and Planning. Responsibilities included delivery of talks, coordination and demonstration of practical activities and meeting prospective students and their families.

TEACHING

Postgraduate Teaching Assistant, University of Liverpool (Sep. 2018 – present).

Supported teaching on a range of undergraduate and postgraduate modules including GIS and Study Skills, GIS for Human Geography, Geographic Information Science, Exploring the Social World, Population and Society and Undergraduate Dissertation.

Advanced GIS Methods Training: Retail Centres, CDRC (May. 2021).

“Advanced GIS Methods Training: Retail Centres and Catchment Areas”. An online tutorial using R to introduce and explore retail centres, hierarchies and catchment delineation approaches. I was responsible for writing the content of the course in R, and worked with Dr. Les Dolega and Dr. Nick Bearman to co-design and deliver it.

Teaching Assistant, Geospatial Training Solutions (Jun. 2019).

“Introduction to Spatial Data and Using R as a GIS”. Supported delivery of workshop content as a teaching assistant with Dr. Nick Bearman.

RESEARCH

Peer-Reviewed Journal Articles

- **Ballantyne, P.**, Singleton, A. and Dolega, L. 2022. Using unstable data from mobile phone applications to examine recent trajectories of retail centre recovery. *Urban Informatics* (accepted).
- **Ballantyne, P.**, Sanderson, R., Davies, A., Houlden, V., MacLachlan, A., Owen, G., Robinson, C., Shin, H., Wartmann, F., Wilkin, J., Williams, I. 2022. *The Geographical Journal*. DOI: <https://doi.org/10.1111/geoj.12499>.
- **Ballantyne, P.**, Singleton, A., Dolega, L. and Macdonald, J. 2022. Integrating the who, what, and where of US retail center geographies. *Annals of the American Association of Geographers*. DOI: <https://doi.org/10.1080/24694452.2022.2098087>.
- **Ballantyne, P.**, Singleton, A. and Dolega, L. 2021. A regional exploration of retail visits during the COVID-19 pandemic. *Regional Studies, Regional Science*, 8 (1), pp.366-370. DOI: [10.1080/21681376.2021.1973548](https://doi.org/10.1080/21681376.2021.1973548).
- **Ballantyne, P.**, Singleton, A., Dolega, L. and Credit, K. 2021. A framework for delineating the scale, extent and characteristics of American retail centre agglomerations. *Environment and Planning B: Urban Analytics and City Science*. DOI: [10.1177/23998083211040519](https://doi.org/10.1177/23998083211040519).

Conference Papers

- **Ballantyne, P.**, Singleton, A., Dolega, L., Macdonald, J. 2022. Integrating the *who, what* and *where* of American retail centre geographies. *GIS Research UK (GISRUK) Annual Conference 2022*.
- **Ballantyne, P.**, Singleton, A., Dolega, L., Macdonald, J. 2021. American Retail Centre Geographies: Centres, Characteristics and Catchments. *American Association of Geographers (AAG) Annual Meeting 2021*.
- **Ballantyne, P.**, Singleton, A., Dolega, L., Macdonald, J. 2021. American Retail Centre Geographies: Centres, Characteristics and Catchments. *Royal Geographical Society (RGS) Annual Conference 2021*.
- **Ballantyne, P.**, Singleton, A., Dolega, A., Credit, K. 2021. A Framework for Delineating the Scale, Extent and Characteristics of American Retail Centre Agglomerations: The Case of

Chicago Metropolitan Area during COVID-19. *GIS Research UK (GISRUK) Annual Conference 2021*.

- **Ballantyne, P.,** Singleton, A., Dolega, A. 2020. An updated measure of the ‘e-resilience’ of retail centres. *GIS Research UK (GISRUK) Annual Conference 2020*.

Research Activities and Professional Membership

- **Peer Reviewer:** Journal of the Royal Statistical Society Series A (Statistics in Society), Environment and Planning B (Urban Analytics and City Science), Regional Studies, Regional Science (RSRS), International Journal of Geographic Information Science (IJGIS)
- **Postgraduate Fellow:** Royal Geographical Society.
- **Postgraduate Representative:** Quantitative Methods Research Group (QMRG), of the Royal Geographical Society.
- **Early-Career Committee Member:** GISRUK Annual Conference 2022.
- **Social Media Co-ordinator:** Geographic Data Science Lab Twitter and LinkedIn feeds.
- **Representative:** Centre for Doctoral Training Liverpool ‘Buddy’ Scheme.

Other Research Activities

- **Ballantyne, P. 2022.** Retail Indicators I. Identifying ‘clone towns’ across the UK. *CDRC Stories*. Available at: <https://data.cdrc.ac.uk/stories/retail-indicators-i-identifying-clone-towns-across-uk>.
- **Ballantyne, P.,** Sanderson, R., Davies, A., Houlden, V., Maclachlan, A., Owen, G., Robinson, C., Shin, H., Wartmann, F., Williams, I., Wilkin, J. 2021. The Ups and Downs of a PhD and Beyond. *Panel Session at the RGS Postgraduate Mid-Term Conference, sponsored by the Quantitative Methods Research Group*.
- **Ballantyne, P. 2020.** Moving the lab home: changes to research and data resulting from COVID-19. *Resilient and Sustainable Cities Podcast*. Listen at: <https://open.spotify.com/episode/2OHngRBoOxoYMPxMzZ8N6c>.
- **Ballantyne, P. 2020.** An approach to retail centre delineation based on graph structures and H3 geometries. *MethodsX Twitter Take-Over*.
- **Ballantyne, P. 2019.** Book Review: An introduction to R for Spatial Analysis and Mapping (2nd Edition) *International Journal of Geographic Information Science (IJGIS)*. DOI: [10.1080/13658816.2019.1647541](https://doi.org/10.1080/13658816.2019.1647541).

Awards and Prizes

- Robin Flowerdew Prize 2021. *Best postgraduate paper in the “Future of Quantitative Geography” sessions at the RGS-IBG Annual Conference 2021*. Blog post: <https://qmrq.github.io/blog/2021/10/12/Ballantyne-bio>.

Future Research Interests

- Expanding my existing technical skillset to incorporate additional tools useful for geographic data science (e.g. PostGres, PostGIS, AWS), interactive data analysis and visualisation tools (e.g. Alteryx, Tableau, R Shiny), and unfamiliar methodologies and approaches in data analytics (e.g. Random Forest Regression, Sequence Analysis).
- Advancing existing technical capabilities with technical skills like Python and SQL, and learning more about basic software development, building on existing knowledge of the CDRC mapmaker platform.
- Development of teaching and training materials for ‘tidy’ geographic data science within R, emphasising the use of the ‘tidyverse’ suite of R packages, alongside ‘sf’ and parallel computing libraries to support computationally effective, and fully reproducible analysis.

- Exploring new ways of disseminating research outputs, notably those from my own research and CDRC data products, particularly in terms of public and policy engagement, and in creation of tutorials to support teaching and learning within the academic sector.
- Working with new datasets to derive additional insights about retail, transportation, economics and mobility, with a keen interest in expanding my existing capability to work with sensitive datasets in secure environments, and other interesting forms of data (e.g. satellite imagery).

TECHNICAL

R ***

Data cleaning and manipulation, data exploration and visualisation, spatial analysis, GIS, mapping and cartography, machine learning, statistics, big data, parallel computing.

QGIS ***

GIS, spatial analysis, mapping, cartography.

GitHub **

Project management, version control, collaboration, research dissemination.

SQL *

Database management, data manipulation and exploration.

Other Technical Skills

Microsoft Office Suite**, Python**, SPSS**, Mendeley**, Docker*, JavaScript*, Davinci Resolve Video Editing Software*.

Training

UK Data Service Safe Researcher Training Course, February 2021.

Introduction to SQL, February 2020.

Intermediate R, January 2020.

Spatial Modelling for Retail Analytics, January 2019.

Introduction to GIS and Spatial Analysis for Retail Applications I, November 2018.

*** *Advanced*, ** *Intermediate*, * *Novice*

SCIENTIFIC SOFTWARE, DATA AND TEACHING MATERIALS

“Advanced GIS Methods Training: Retail Centres and Catchment Areas”

Training course developed with Dr. Les Dolega and Dr. Nick Bearman. Materials consisted of two R markdown files for students to follow, a series of video tutorials and discussions, and an accompanying GitHub repository for flagging of any issues and integrating updates.

Materials available at: <https://data.cdrc.ac.uk/dataset/advanced-gis-methods-training-retail-centres-and-catchment-areas>

GitHub repository: <https://github.com/patrickballantyne/CDRC-Retail-Catchment-Training>.

“CDRC Retail Centre Indicators”

Developed a series of indicators and catchments for the 2021 release of the CDRC retail centre boundaries data product, to be disseminated via the <https://data.cdrc.ac.uk> platform and used in further research and by external organisations (e.g. High Streets Task Force).

Data product available at: <https://data.cdrc.ac.uk/dataset/retail-centre-indicators>.

GitHub repository: <https://github.com/patrickballantyne/CDRC-Retail-Indicators>.

“Tidylodes”: An R package for extracting, processing and ‘spatialising’ data from the US Census Bureau’s LODES database.

Developed a quick R package for working with the LODES database at a time when this was going to be a primary dataset for my research. Package enabled extraction of LODES data in ‘tidy’ spatial formats, for mapping and further spatial analysis.

GitHub repository: <https://github.com/patrickballantyne/tidylodes>.

PERSONAL

Citizenship

United Kingdom.

Location

North West, England.

Other Details

Full UK Drivers Licence.

GCSE’s: 10 A - C (including English and Maths).*

A-levels: ABB (Geography, Music, Biology).

(Updated 16/12/2022)