

Hamish Gibbs

PhD Student, Geography

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I am a PhD student studying bias in mobile phone data used to measure human dynamics. My background is in physical geography and remote sensing. I was part of the COVID-19 response at the London School of Hygiene & Tropical Medicine and have experience planning, implementing, and communicating computational research based on large-scale datasets.

Education

- Sep 2021 - Sep 2024 **PhD - Geography**, *University College London, UK*
Studying bias in large-scale mobile phone mobility data. Supervised by: Professor James Cheshire, Dr. Rosalind M. Eggo.
Thesis title: *Addressing bias in measurements of human mobility derived from mobile phones*
- Aug 2018 - Aug 2019 **MSc - Geoinformation Technology & Cartography**, *University of Glasgow, UK*
Thesis title: *Machine learning approaches for multisensor monitoring of grasslands in Colombia*
- Sep 2014 - Dec 2017 **BA - Geography**, *Syracuse University, Syracuse, New York*
Minors: Spanish, Applied Statistics

Employment

- May 2022, May 2023 **Consultant**, *Camden Council & Greater London Authority, London, UK*
Analysed mobility patterns for projects on COVID-19 recovery and nighttime employment in Camden. Co-authored report for Camden & UCL knowledge exchange: *Data for future high streets*.
- April 2022 **Python Developer**, *Harvey Maps, Doune, Scotland (Part-time, Remote)*
Developed a QGIS Plugin to automate loading map layers from an SQL database.
- Nov 2019 - Sep 2021 **Research Assistant**, *London School of Hygiene & Tropical Medicine, UK*
Led research on behavioral responses to COVID-19 travel restrictions in China, the UK, and Ghana. Automated weekly updates to the WHO Public Health and Social Measures dataset. Wrote an R package (published on CRAN) to visualize real-time COVID-19 R_0 estimates.
- Mar - Jul 2018 **Transition Manager**, *Transamerica, Denver Colorado, USA*
Interfaced with corporate clients to allocate assets for new payroll accounts. Wrote VBA macros to prevent asset misallocation during internal transfers.
- Jun - Aug 2016 **Undergraduate Research Fellow**, *UMass Boston, Boston Massachusetts, USA*
Researched the impact of land use variation on freshwater invertebrates in Massachusetts in an NSF-funded Research Experience for Undergraduates.
- 2016, 2017 **Undergraduate Research Assistant**, *Syracuse University, Syracuse New York, USA*
Studied the statistical characteristics of sediment transport in New York rivers.

Other Experience

- Sep 2014 - Dec 2017 **Crew Chief & Dispatcher**, *Syracuse University Ambulance, Syracuse New York, USA*
Led an ambulance crew of four and worked as an Emergency Medical Dispatcher.
- Jan - Jun 2016 **Study Abroad**, *Bahçeşehir University, Istanbul, Turkey*
Studied international economics, geopolitics, and developed proficiency in Turkish. Volunteered at a Syrian refugee center providing donated food aid and childcare.
- Jun - Aug 2015, 2016 **Backcountry Campsite Caretaker**, *Appalachian Mountain Club, New Hampshire, USA*
Managed backcountry campsites in the White Mountains for 12 day periods. Built and maintained surrounding trails, managed occasional search & rescue efforts.

Teaching

- Sep 2023 - May 2024 **Post-graduate Teaching Assistant**, *Centre for Advanced Spatial Analysis, UCL*
Supporting ~60 masters students in practical sessions for **Foundations of Spatial Data Science** and **Building Spatial Applications with Big Data** using SQL, Google Earth Engine, Python, Docker, git, and Quarto.
- Jan - May 2023 **Post-graduate Teaching Assistant**, *Geography Department, UCL*
Provided support and feedback to ~40 undergraduate students in **Cartography** using R and QGIS.
- Nov 2019 - May 2020 **Teaching Assistant**, *Centre for Math. Modelling of Infectious Disease, LSHTM*
Jan - May 2021 Led practical sessions and developed course materials in **Introduction to GIS** (ArcGIS, QGIS) and **Introduction to Programming** for the Health Data Science MSc (Python).

Presentations

- Nov 2023 **Demographics and working from home**
Consumer Data Research Centre Partner Forum (Oxford, UK)
- Mar 2023 **Detecting bias within location histories collected from a panel of mobile applications**
American Association of Geographers Annual Meeting (Denver, USA)
- Aug 2022 **Uncertainty in aggregated mobility data derived from mobile phones**
Royal Geographic Society Annual Conference (Newcastle, UK)
- Jun 2022 **EDCTP CSIGN Modelling Research and COVID-19 Response in Ghana**
Presentation for students and researchers at *Noguchi Memorial Institute for Medical Research and Ghana Statistical Service* (Remote)
- Jul 2021 **Use and utility of real-time mobile location data during COVID-19**
UK Cabinet Office, Open Innovation Seminar (Remote)

Posters

- Nov 2023 **CDR aggregation methodology impacts infectious disease models informed by human mobility**
Epidemics 9 Conference (Bologna, Italy)
- Apr 2023 **Detecting bias within location histories collected from a panel of mobile applications**
GIS Research UK Conference (Glasgow, UK)
- May 2022 **Population disruption: estimating changes in population distribution in the UK during the COVID-19 pandemic**
Nov 2021 *The Royal Society, Modelling the COVID-19 Pandemic* (London, UK)
EPIDEMICS8 (Remote)

Awards

- 2022 **Grand Challenges Small Grant Award**. *UCL*.
Awarded £2,000 grant and tested GPS trackers for collaborative research: *Collecting social mixing data in Manicaland, Zimbabwe to inform infectious disease modelling*.
- 2021 **UCL, Bloomsbury, and East London Doctoral Training Partnership**. *UK ESRC*.
Tuition fees and stipend awarded for independent research proposal. Additional funding awarded for research using advanced quantitative methods.
- 2018 **Scholarship for Study in the UK**. *Saint Andrew's Society of the State of New York*.
Tuition fees awarded for MSc study at the University of Glasgow.
- 2017 **Preston E. James Award for Excellence in Geography**. *Syracuse University*.

2016 **CREST—Research Experience for Undergraduates**. *NSF-funded (USA)*.
Awarded funding for undergraduate research fellowship at UMass Boston.

2016 – 2017 **Dean's List**. *Syracuse University*.

Publications

H. Gibbs, R.M. Eggo, J. Cheshire, "Clustering reveals key behaviours driving human movement network structure," *Preprint*, Nov 2023. DOI: 10.1101/2023.11.06.23298140.

H. Gibbs, P. Ballantyne, J. Cheshire, A. Singleton, M.A. Green, "Harnessing mobility data to capture changing work from home behaviours between censuses," *The Geographical Journal*, Oct 2023. DOI: 10.1111/geoj.12555.

H. Gibbs, A. Musah, O. Seidu, W. Ampofo, F. Asiedu-Bekoe, J. Gray, W.A. Adewole, J. Cheshire, M. Marks, R.M. Eggo, "Call detail record aggregation methodology impacts infectious disease models informed by human mobility," *PLOS Computational Biology*, Aug 2023. DOI: 10.1371/journal.pcbi.1011368.

K. Wing, D.J. Grint, R. Mathur, **H. Gibbs**, G. Hickman, E. Nightingale, A. Schultze, H. Forbes, V. Nafilyan, K. Bhaskaran, E. Williamson, T. House, L. Pellis, E. Herrett, N. Gautam, H.J. Curtis, C.T. Rentsch, A.Y.S. Wong, B. MacKenna, A. Mehrkar, S. Bacon, I.J. Douglas, S.J.W. Evans, L. Tomlinson, B. Goldacre, R.M. Eggo, "Association between household composition and severe COVID-19 outcomes in older people by ethnicity: an observational cohort study using the OpenSAFELY platform," *International Journal of Epidemiology*, Dec 2022. DOI: 10.1093/ije/dyab158.

H. Gibbs, N.R. Waterlow, J. Cheshire, L. Danon, Y. Liu, C. Grundy, A.J. Kucharski, R.M. Eggo, "Population disruption: observational study of changes in the population distribution of the UK during the COVID-19 pandemic," *Wellcome Open Research*, Oct 2022. DOI: 10.12688/wellcomeopenres.18358.1.

H. Gibbs, Y. Liu, S. Abbott, I. Baffoe-Nyarko, D.O. Laryea, E. Akyereko, P. Kuma-Aboagye, I. Asante, O. Mitjà, LSHTM CMMID COVID-19 Working Group, W. Ampofo, F. Asiedu-Bekoe, M. Marks, R.M. Eggo, "Association between mobility, non-pharmaceutical interventions, and COVID-19 transmission in Ghana: A modelling study using mobile phone data," *PLOS Global Public Health*, Sep 2022. DOI: 10.1371/journal.pgph.0000502.

D.J. Grint, K. Wing, C. Houlihan, **H. Gibbs**, S.J.W. Evans, E. Williamson, H.I. McDonald, K. Bhaskaran, D. Evans, A.J. Walker, G. Hickman, E. Nightingale, A. Schultze, C.T. Rentsch, C. Bates, J. Cockburn, H.J. Curtis, C.E. Morton, S. Bacon, S. Davy, A.Y.S. Wong, A. Mehrkar, L. Tomlinson, I.J. Douglas, R. Mathur, B. MacKenna, P. Ingelsby, R. Croker, J. Parry, F. Hester, S. Harper, N.J. DeVito, W. Hulme, J. Tazare, L. Smeeth, B. Goldacre, R.M. Eggo, "Severity of Severe Acute Respiratory System Coronavirus 2 (SARS-CoV-2) Alpha Variant (B.1.1.7) in England," *Clinical Infectious Diseases*, Jul 2022. DOI: 10.1093/cid/ciab754.

H. Gibbs, E. Nightingale, Y. Liu, J. Cheshire, L. Danon, L. Smeeth, C.A.B. Pearson, C. Grundy, A.J. Kucharski, R.M. Eggo, "Detecting behavioural changes in human movement to inform the spatial scale of interventions against COVID-19," *PLOS Computational Biology*, Jul 2021. DOI: 10.1371/journal.pcbi.1009162.

T.W. Russell, N. Golding, J. Hellewell, S. Abbott, L. Wright, C.A.B. Pearson, K. van Zandvoort, C.I. Jarvis, **H. Gibbs**, Y. Liu, R.M. Eggo, W.J. Edmunds, A.J. Kucharski, A.K. Deol, C.J. Villabona-Arenas, T. Jombart, K. O'Reilly, J.D. Munday, S.R. Meakin, R. Lowe, A. Gimma, A. Endo, E.S. Nightingale, G. Medley, A.M. Foss, G.M. Knight, K. Prem, S. Hué, C. Diamond, J.W. Rudge, K.E. Atkins, M. Auzenbergs, S. Flasche, R.M.G.J. Houben, B.J. Quilty, P. Klepac, M. Quaife, S. Funk, Q. J. Leclerc, J.C. Emery, M. Jit, D. Simons, N.I. Bosse, S.R. Procter, F.Y. Sun, S. Clifford, K. Sherratt, A. Rosello, N.G. Davies, O. Brady, D.C. Tully, G.R. Gore-Langton, "Reconstructing the early global dynamics of under-ascertained COVID-19 cases and infections," *BMC Medicine*, Oct 2022. DOI: 10.1186/s12916-020-01790-9.

H. Gibbs, Y. Liu, C.A.B. Pearson, C.I. Jarvis, C. Grundy, B.J. Quilty, C. Diamond, R.M. Eggo, "Changing travel patterns in China during the early stages of the COVID-19 pandemic," *Nature Communications*, Oct 2020. DOI: 10.1038/s41467-020-18783-0.

A. Clark, M. Jit, C. Warren-Gash, B. Guthrie, H.H.X. Wang, S.W. Mercer, C. Sanderson, M. McKee, C. Troeger, K.L. Ong, F. Checchi, P. Perel, S. Joseph, **H. Gibbs**, A. Banerjee, R.M. Eggo, E.S. Nightingale, K. O'Reilly, T. Jombart, W.J. Edmunds, A. Rosello, F.Y. Sun, K.E. Atkins, N.I. Bosse, S. Clifford, T.W. Russell, A.K. Deol, Y. Liu, S.R. Procter, Q.J. Leclerc, G. Medley, G. Knight, J.D. Munday, A.J. Kucharski, C.A.B. Pearson, P. Klepac, K. Prem, R.M.G.J. Houben, A. Endo, S. Flasche, N.G. Davies, C. Diamond, K. van Zandvoort, S. Funk, M. Auzenbergs, E.M. Rees, D.C. Tully, J.C. Emery, B.J. Quilty, S. Abbott, C.J. Villabona-Arenas, S. Hué, J. Hellewell, A. Gimma, C.I. Jarvis, "Global, regional, and national estimates of the population at increased risk of severe COVID-19 due to underlying health conditions in 2020: a modelling study," *The Lancet Global Health*, Aug 2020. DOI: 10.1016/S2214-109X(20)30264-3.

S. Abbott, J. Hellewell, R.N. Thompson, K. Sherratt, **H. Gibbs**, N.I. Bosse, J.D. Munday, S. Meakin, E.L. Doughty, J.Y. Chun, Y.D. Chan, F. Finger, P. Campbell, A. Endo, C.A.B. Pearson, A. Gimma, T. Russell, S. Flasche, A.J. Kucharski, R.M. Eggo, S. Funk, "Estimating the time-varying reproduction number of SARS-CoV-2 using national and subnational case counts," *Wellcome Open Research*, Jun 2020. DOI: 10.12688/wellcomeopenres.16006.1.

T. Jombart, K. van Zandvoort, T.W. Russell, C.I. Jarvis, A. Gimma, S. Abbott, S. Clifford, S. Funk, **H. Gibbs**, Y. Liu, C.A.B. Pearson, N.I. Bosse, R.M. Eggo, A.J. Kucharski, W.J. Edmunds, "Inferring the number of COVID-19 cases from recently reported deaths," *Wellcome Open Research*, Apr 2020. DOI: 10.12688/wellcomeopenres.15786.1.