# Imperial College London

| Job Title: | Research Associate in Epidemiology |
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| Department/School/Faculty: | Department of Epidemiology and Biostatistics, School of Public Health, Faculty of Medicine |
| Campus location: | St Mary's Campus (Paddington), moving to White City Campus |
| Job Family/Level: | Academic and Research, Research Associate |
| Responsible to: | Dr Bethan Davies |
| Line Management responsibility for: | N/A |
| Key Working Relationships (internal): | Professor Paul Elliott; Professor Marta Blangiardo, Dr Daniela Fecht and the MRC Centre for Environment and Health, including:<br>• UK Small Area Health Statistics Unit<br>• Environment and Health Statistics Group<br>• Environmental Research Group |
| Key Working Relationships (external): | CHILL Study<br>DISCOVER-NOW Hub for Real world Evidence Synthesis |
| Contract type: | Full time, fixed term to 31 March 2025 |

**Research Programme**

We seek an outstanding postdoctoral researcher to study the impacts of air quality interventions on population health. This post is part of a large-scale project to understand the impact of public health interventions targeting urban air quality on population health. The research will initially focus on the natural experiment of the London Ultra Low Emission Zone as an exemplar Clean Air Zone. This will involve designing, analysing and interpreting findings from large-scale population-based cohorts built from linked routinely collected individual level health data and environmental exposure data.

There will be an opportunity to develop epidemiological and public health expertise through the evaluation of the Ultra Low Emission Zone and the translation of findings to settings across the UK (and beyond). The research will focus on health inequalities across the life-course and multimorbidity.

This role is funded by a Medical Research Council Programme Grant led by Professor Paul Elliott and Professor Frank Kelly. The post-holder will be based in the UK Small Area Health Statistics Unit (SAHSU, www.sahsu.org) and work closely with a team of postdoctoral researchers and PhD students working on health data, environmental exposure data and population cohort data. Key collaborations with be Air Quality modelling experts, Epidemiologists, Biostatisticians, Public Health professionals and Clinicians in the MRC Centre for Environment and Health (https://www.environment-health.ac.uk/) and the Children's Health in London and Luton (CHILL) study (https://www.qmul.ac.uk/chill/).

**Purpose of the Post**

We are seeking a talented epidemiologist or quantitative public health researcher who is familiar with the analysis and interpretation of population-based studies to join the UK Small Area Health Statistics Unit. The post will include the design and analysis of observational epidemiological studies using large-scale linked datasets constructed from health, environmental exposure and socio-demographic data and a range of statistical methods; including natural experiment designs and small-area methodologies.

The research will initially focus on the London Ultra Low Emission Zone as an exemplar clean air zone. The post-holder will be responsible for developing the epidemiological study to characterise spatial and demographic patterns of health outcomes across London at high spatial resolution.

The post-holder will be part of a multi-disciplinary research group and have the opportunity to develop expertise through collaboration with geo-spatial epidemiologists, biostatisticians, public health doctors, environmental exposure scientists and modellers and database managers. You will be part of a project team to creatively share knowledge and experience including in the areas of spatial epidemiology, public health, biostatistics and informatics.

The post-holder will integrate birth, death, health, demographic, socio-economic and environmental data from a range of sources. Population-level healthcare data spanning the life-course will be sourced primarily from the SAHSU research database at Imperial College. This database currently contains over 600 million patient records from data providers including NHS Digital, the Office for National Statistics (ONS) and the Welsh Cancer Intelligence & Surveillance Unit (WCISU). This data is georeferenced and at high temporal and spatial resolution. For further information on SAHSU, please see [www.sahsu.org](www.sahsu.org).

In addition, this project will leverage the emerging WSIC population-based data resource within North West London through an existing collaboration between SAHSU and the Discover-NOW HDRUK Hub for Real-World evidence synthesis led by Imperial College Health Partners ([https://imperialcollegehealthpartners.com/what-we-do/discover-now/](https://imperialcollegehealthpartners.com/what-we-do/discover-now/)).

The post-holder will also have a research co-ordination responsibility, supporting the PIs with activities including protocol preparation, data management, ethical approvals and governance, project milestones and deliverables, public and community involvement. There will be opportunity to engage with and contribute to the wider research programme within SAHSU.

**Key Responsibilities**

**Research Duties**

- To work collaboratively as part of a multidisciplinary research team
- To apply suitable techniques for the analysis of health, socio-demographic and environmental exposure data at small-area level and/or population-based cohorts
- To conduct and interpret data analysis, and prepare suitable summary outputs of the analysis
- To conduct and plan own scientific work with appropriate supervision
- To maintain accurate and complete records of all work and findings
- To ensure that the data are valid, reliable, and up to date at all times
- To present findings to colleagues and at conferences (including participating in SAHSU research meetings and internal seminars)
- To prepare statistical summaries of the data suitable for publications in peer-reviewed scientific journals
- To write reports for submission to research sponsors
- To draft and submit publications of the findings to suitable refereed journals
- To attend relevant workshops and conferences as necessary
- To develop contacts and research collaborations within the College and the wider community
- To actively participate in the wider research programme of SAHSU, including research funding proposals

**Other Duties**

- To support the study PI with research co-ordination activities
- To contribute to the smooth running of the Unit's research infrastructure
- To undertake other appropriate administration tasks
- To undertake any necessary training and/or development
- To assist in the teaching and/or supervision of undergraduate and postgraduate research students and research assistants as required
- To lead public and community involvement and engagement activities relevant to the research
- To promote the reputation of SAHSU, the Department of Epidemiology and Biostatistics and the College
- To comply with the College, Division, and Unit safety practices and to attend courses on safety when appropriate
- Any other duties commensurate with the grade of the post as may be deemed reasonable by Head of group as well as Head of Division/Department/Section

**Work Environment**

The **UK Small Area Health Statistics Unit** (SAHSU) is a nationally and internationally recognised institution for research into environment and health. SAHSU maintains a unique large data collection of health records and population-based data and has world-leading expertise in handling health data at small area (neighbourhood) level. SAHSU brings together the work of epidemiologists, statisticians, database managers, computer programmers, and experts in exposure assessment to harness large-scale health data to address urgent public health issues. SAHSU's work includes substantive epidemiological enquiries of environmental health problems and methodological research. SAHSU studies may involve (as necessary) environmental modelling and monitoring as well as biomarkers (of exposure, effects and genetic susceptibility) in addition to the analysis of routine health statistics, to aid interpretation of causal inference.

The **Department of Epidemiology and Biostatistics**, within the School of Public Health, is headed by Professor Paul Elliott and forms part of the School of Public Health at Imperial College. Our research covers a number of themes including biostatistics, environmental epidemiology and population collections. Our work is used to inform health policy and understand key issues affecting society. The department contains internationally recognised centres, groups, collaborations and research projects.

**MRC Centre for Environment and Health** The MRC Centre for Environment and Health is a nationally and internationally recognised leader in multidisciplinary research and training on environment and health sciences. It promotes novel cross-disciplinary research approaches, integrating individual-level and small-area analyses of environmental exposures and health, together with experimental data, biomarker and mechanistic studies, and analyses of large population cohorts. The formation of the Centre in 2009 catalysed several new research programmes and the renewal of its funding in 2014 and in 2019 allowed the Centre to build on its key strengths in research and training.

The **School of Public Health** at Imperial College London aims to achieve better health in the population through strengthening the public health science base, training the next generation of public health leaders and influencing health policies and programmes around the world. Obesity, cancer, heart disease, dementia and infectious and parasitic diseases are among today's major global public health challenges. Imperial's School of Public Health, under the Directorship of Professor Deborah Ashby, is committed to improving health in populations at various geographical scales, from local (e.g. the new Imperial White City Incubator) to global (e.g. Wellcome Trust project on health cities pathways). The School of Public Health is unique in combining world-class research at local, national and international level with translational work within the Academic Health Science Centre in the Imperial College Healthcare Trust and translates science and epidemiology into policy, health education and primary care. Together with its research, teaching and evidence-led policy work, the School of Public Health aims to address the major public health challenges of the twenty-first century.

**Imperial College London** provides world-class scholarship, education and research in science, engineering, business and medicine. It is consistently rated among the United Kingdom's top three

universities and has been ranked 9th in the World University Rankings by the Times Higher Education in 2019. The College has over 8,000 staff and approximately 15,000 students from over 125 different countries. Our reputation for excellence in teaching and research in science, engineering, medicine and business attracts students and staff of the highest international calibre. Staff at Imperial are frequently consulted by governments and also act as members of professional bodies, advise industry, offer informed comment to the media and engage with the public through various large-scale events such as the Imperial Festival.

## Person Specification

| Requirements<br>Candidates/post holders will be expected to demonstrate the following: | Essential (E)/ Desirable (D) |
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| **Education** | |
| At Research Assistant level: Near completion of a PhD (or equivalent) in epidemiology, biostatistics, public health (quantitative) or relevant scientific disciplines will be considered. | E |
| At Research Associate level: PhD or equivalent in epidemiology, biostatistics, public health (quantitative) or related discipline | E |
| **Knowledge & Experience** | |
| A thorough understanding of epidemiological concepts in observational studies | E |
| An understanding of the wider determinants of health, including the relationship between environment and health inequalities | E |
| An understanding of applied statistical methods in the context of observational studies | E |
| Knowledge of GIS principles and methods and their applications for health studies on the built environment | D |
| Knowledge of methods used to evaluate of public health interventions | E |
| Knowledge of census data, geographies and protocols | D |
| Knowledge of multi-level, Bayesian and/or mixed-level statistical approaches to small-area studies | D |
| Experience in handling (big) administrative data | E |
| Experience of small area epidemiological methods | D |
| Experience of teaching/training statistical methods | D |
| An understanding of the importance of public involvement in research | E |
| Experience of public engagement and/or involvement | D |
| Experience of working in multi-disciplinary teams | D |
| Experience with appropriate statistical software packages (e.g. R) | E |
| Experience with GIS software (e.g. ArcGIS) | D |
| Knowledge of research ethics and governance frameworks in the UK, as relevant to health data | E |
| **Skills & Abilities** | |
| Excellent organisational skills and ability to oversee the delivery and short- and long-term project milestones | |
| Excellent verbal communication skills and the ability to communicate effectively within a multidisciplinary environment and with internal and external stakeholders (including members of the public) | E |
| Excellent written communication skills and the ability to write clearly and succinctly for publication | E |
| Ability to direct the work of a small research team and motivate others to produce a high standard of work | E |
| Ability to conduct a detailed review of recent literature | E |
| Ability to undertake epidemiological analysis of large-scale datasets with appropriate supervision | E |
| Ability to organise own work with minimal supervision | E |
| Ability to prioritise own work in response to deadlines | E |

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| Ability to develop and apply new concepts | E |
| Creative approach to problem solving | E |
| **Personal Attributes** | |
| Willingness to work as part of a team and to be open-minded and cooperative | E |
| Flexible attitude towards work | E |
| Discipline and regard for confidentiality and security at all times | E |
| Willingness to undertake any necessary training for the role | E |
| Willingness to travel both within the UK and abroad to conduct research and attend conferences | E |

Please note that job descriptions cannot be exhaustive and the post-holder may be required to undertake other duties, which are broadly in line with the above key responsibilities.

Imperial College is committed to equality of opportunity and to eliminating discrimination. All employees are expected to follow the 7 Imperial Expectations detailed below:

1)      Champion a positive approach to change and opportunity
2)      Communicate regularly and effectively within and across teams
3)      Consider the thoughts and expectations of others
4)      Deliver positive outcomes
5)      Encourage inclusive participation and eliminate discrimination
6)      Support and develop staff to optimise talent
7)      Work in a planned and managed way

Employees are also required to comply with all College policies and regulations paying special attention to:
- Confidentiality
- Conflict of Interest
- Data Protection
- Equal Opportunities
- Financial Regulations
- Health and Safety
- Information Technology
- Smoking
- Private Engagements and Register of Interests

They must also undertake specific training and assume responsibility for safety relevant to specific roles, as set out on the College Website Health and Safety Structure and Responsibilities page.

*The College is a proud signatory to the San-Francisco Declaration on Research Assessment (DORA), which means that in hiring and promotion decisions, we evaluate applicants on the quality of their work, not the journal impact factor where it is published. For more information, see https://www.imperial.ac.uk/research-and-innovation/about-imperial-research/research-evaluation/*

*The College believes that the use of animals in research is vital to improve human and animal health and welfare. Animals may only be used in research programmes where their use is shown to be necessary for developing new treatments and making medical advances. Imperial is committed to ensuring that, in cases where this research is deemed essential, all animals in the College's care are treated with full respect, and that all staff involved with this work show due consideration at every level. http://www.imperial.ac.uk/research-and-innovation/about-imperial-research/research-integrity/animal-research/*

*Committed to equality and valuing diversity, we are an Athena SWAN Silver Award winner, a Stonewall Diversity Champion, a Disability Confident Employer and work in partnership with GIRES to promote respect for trans people.*