



Job Title: Postdoctoral Research Associate in Geographical Information Science for Environmental Health

Grade: 7

Salary: £34,804 to £40,322 per annum

Department: Centre for Environmental Health and Sustainability (CEHS), Dept Health Sciences

Hours/Contract: Full time, fixed term contract for two years

Reference: 1950

Role Purpose

This specialist post involves using spatial databases and geographical information systems (GIS) to estimate environmental exposures, with a focus on environmental noise and air pollution. You will have experience of manipulating and analysing data within GIS (e.g. ArcGIS; PostGIS; QGIS), applying environmental models using scripting languages (e.g. PostgreSQL, Python, R), and analyzing environmental and exposure data using statistical software (e.g. R, STATA, SPSS).

An important part of this role will be developing datasets and models of environmental exposures. Information on traffic (flow/speed) across the connected road network is essential for both noise and air pollution modelling. The post holder will work with other researchers in CEHS to develop methods to estimate traffic (flows/speed) on roads where this information is missing, especially moderately trafficked and residential roads. The post holder will produce scripts to implement traffic prediction models and integrate the outputs in GIS. The modelled data will be used in research projects within CEHS to improve the representation of road traffic sources in exposure models. You will be involved in enhancing and running our 'in-house' version of the CNOSSOS-EU (Common Noise Assessment Methods in Europe) road traffic noise model to estimate residential noise levels. The post holder will be responsible for developing and maintaining large datasets for specific projects and general methods development. You will assist or lead in the production of scientific and technical reports.

The funding for this post relates to Equal-Life, an EU-funded (Horizon 2020) grant studying the quality of the environment during childhood and its negative and restorative effects on cognition and mental health; University of Leicester are leading a work package on the 'external exposome' to develop detailed data and new, open-source models for the built- and natural- environments, air pollution, and noise.

You will be based in the Centre for Environmental Health and Sustainability (CEHS). CEHS is a new enterprise within the University of Leicester with the overarching aim to improve human health and the health of the environment through cutting edge multidisciplinary research. You will report to Professor John Gulliver who is lead in CEHS on GIS, environmental modelling, and exposure science.

Main Duties and Responsibilities

- Working closely with Professor John Gulliver, other researchers in CEHS, and partner researchers at University of Leicester and other universities, to develop methods to improve GIS datasets used in exposure models, especially data on road traffic flows and speeds
- Develop and apply noise models to undertake exposure assessment for epidemiological studies
- Writing up analyses for publication in peer-reviewed journals
- Participating in seminars and work-in-progress meetings within the Centre and with external partners





- To ensure that all research activities undertaken are in compliance with the 'Research Code of Conduct' operated by the University

Internal and External Relationships

Equal-Life has 20 partners from 11 countries across Europe, for which Prof Gulliver is exposure work package leader. University of Leicester are responsible for monitoring progress and deliverables for 5 of the 20 partners. Professor Anna Hansell (CEHS Director) is an Equal-Life investigator involved in epidemiological studies that will utilise exposure estimates developed by the post holder and other partners.

Planning and Organising

The post-holder will be responsible for the day-to-day management and progress of the various project elements in relation to specified milestones and deliverables. Regular meetings will be held between the post-holder and Professor John Gulliver, which will sometimes involve Professor Anna Hansell (Centre Director) and other researchers within CEHS; occasional meetings will be held, either in person or online via e.g. Skype/Zoom/Teams, with external project partners. The post-holder will be required to effectively manage their time to deliver on the priorities of the post, and arrange meetings as required in order to respond to challenges and to facilitate progress.

Qualifications, Knowledge and Experience

Essential

- A PhD (or equivalent experience) in environmental science, exposure science, GIS, transport modelling, or a relevant discipline*
- Experience of applying environmental models within or linked to spatial databases and/or GIS*
- Experience in modifying and automating GIS processes with PostgreSQL, R, Python or related languages*
- Experience of analysing environmental data using statistical techniques*
- Practical experience of using GIS software in an analytical context*
- Experience of handling large and complex environmental data sets*

Desirable

- A good understanding of the development and use of environmental exposure data in epidemiological analyses*
- Experience of noise and/or air pollution modelling*
- Experience in network analysis (e.g. pgRouting methods in PostgreSQL) research methods, including data pre-processing, analysis and visualisation*
- Experience of establishing parallel processing for models on high performance computers (HPC)*
- Experience of protocol and report preparation*
- Project management experience*
- Experience of preparation of manuscripts for scientific journals*





Skills, Abilities and Competencies

Essential

- An excellent command of computers, and common (e.g. MS Office) and specialist GIS (e.g. ArcGIS, QGIS, PostGIS) and statistical (e.g. R, STATA and/or SPSS) software packages*
- Excellent written and oral communication skills*
- Excellent organisational and time management skills
- Excellent interpersonal skills
- Ability to learn quickly in new areas of work
- Ability to work independently and as part of an international team
- High level of proficiency in English, sufficient to undertake research and administrative activities utilising English Language materials and to communicate effectively with staff and students*

Desirable

- Flexible approach to dealing with research problems as they arise
- Willingness to learn and develop new knowledge and skills

***Criteria to be used in shortlisting candidates for interview**

Reason for Fixed Term Contract

The reason for the fixed term contract is stated in section 1.9 in the summary of contractual terms in your contract of employment.

Criminal Declaration

If you become an employee, you must inform your manager immediately, in writing, if you are the subject of any current or future police investigations/legal proceedings, which could result in a criminal offence, conviction, caution, bind-over or charges, or warnings.

VITAL

The University encourages all staff to live our [VITAL values](#) which are:

Valuing People, Innovators, Together, Accountable, Leaders.

Equality and Diversity

We believe that equality, diversity and inclusion is integral to a successful modern workplace. By developing and implementing policies and systems that challenge stereotypes across all aspects of our work, we have a culture that recognises and values the diverse contributions of our staff which benefits everyone. Our strong values of inclusivity and equality support our efforts to attract a diverse range of high quality staff and students, and identify our University as a progressive and innovative workplace that mainstreams equality, diversity and inclusion.

