



**UNIVERSITY OF LEEDS**

## **CANDIDATE BRIEF**

**Research Fellow in Agent-based Modelling, School of Geography,  
Faculty of Environment**



**Salary: Grade 7 (£33,797 – £40,322 p.a.) due to funding restrictions this post will be appointed at no higher than spine point 31 - £34,804**

**Reference: ENVGE1122**

**Fixed-term until 30/9/2021**

**We will consider flexible working arrangements**

## Research Fellow in Agent-based Modelling, School of Geography, Faculty of Environment

**Are you an ambitious researcher looking to contribute towards the COVID-19 pandemic response? Do you have an established background in data science and behavioural analysis? Do you want to further your career in one of the UKs leading research intensive Universities?**

The COVID-19 pandemic has highlighted the precarious situation in which healthcare workers find themselves where treating infectious disease. The infectiousness and asymptomatic nature of COVID-19 means that healthcare workers are both at high risk of infection and of transmitting the virus to non-COVID patients within the hospital. To mitigate these risks, a better understanding of the behavioural and spatial factors affecting virus exposure and transmission is needed.

The SAFER project, funded by the Medical Research Council (MRC) on COVID-19 Rapid Response funding, aims to understand patterns of COVID-19 transmission within a hospital setting and develop optimal approaches for reducing transmission risk. To achieve this, the study will track, analyse, and subsequently model the behaviour, activities, and attitudes of a large cohort of healthcare workers at University College London Hospital (UCLH). Participating healthcare workers will furthermore submit to regular COVID-19 testing and supporting virological analysis will enable a detailed spatiotemporal analysis of transmission pathways.

The project is a collaboration between University of Leeds, University College London, and UCLH. There are two Research Fellow positions available at Leeds. The researchers appointed will be expected to work closely with colleagues at UCL to deliver the project objectives.

In this particular role, you will combine analyses of healthcare workers trajectories with qualitative studies on infection control behaviour (conducted by the UCL Centre for Behaviour Change) and develop agent-based models of COVID-19 transmission and infection control at UCLH. These models will be developed for scenario testing, based on the observed patterns of activity at UCLH under COVID-19 conditions. The models will be expected to be available for decision-makers at UCLH (e.g. clinicians, management).



Please note that these positions will be required to start as soon as possible, but we will consider flexible working arrangements.

## What does the role entail?

As a Research Fellow on this project, your main duties will include:

- Development of an agent-based model of healthcare worker behaviour and interaction within a COVID-19 hospital setting;
- Development and simulation of realistic scenarios relating to infection control, including exploring behavioural change, policy interventions, PPE availability, and viral infectiousness;
- Integrating diverse sources of data into the agent-based model, describing realistic patterns of patient (with associated health conditions) and staff behaviour;
- Meeting with regularly and working closely with the research and clinical teams at UCL and UCLH;
- Undertaking training in data security and ethics as required for accessing UCLH data resources;
- Generating and pursuing independent and original research ideas in the appropriate subject area;
- Developing research objectives and proposals and contributing to setting the direction of the research project and team including preparing proposals for funding in collaboration with colleagues;
- Preparing papers for publication in leading international journals and disseminating research results through other recognised forms of output;
- Working both independently and also as part of a larger team of researchers, engaging in knowledge-transfer activities where appropriate and feasible;
- Maintaining your own continuing professional development and acting as a mentor to less experienced colleagues as appropriate.

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.



## What will you bring to the role?

As a Research Fellow you will have:

- A PhD (or close to completion i.e the initial thesis needs to have been handed in at the point of application) in Computer Science, Geography, Epidemiology, Health or Medical Informatics, Mathematics, Transportation, Social Science, or relevant technical discipline, with a significant component of programming and/or data science;
- Experience of developing agent-based models within spatial contexts;
- A strong background in modelling human behaviour and activity;
- Good understanding of theories and models of human behaviour, decision-making, and/or activity choice within workplace, mobility, or spatial contexts;
- Deep knowledge of a programming language appropriate for the development of agent-based models (preferably Python or R);
- A proven ability to work closely with a small group of scientists and collaborate with a wider, multidisciplinary team;
- An ability to communicate effectively with other researchers, particularly those from non-quantitative backgrounds;
- An understanding of the ethical principles associated with tracking human behaviour and knowledge of appropriate data security procedures;
- An ability to think creatively when standard techniques or libraries are not suitable, in order to develop novel, innovative solutions to complex problems;
- Good time management and planning skills, with the ability to meet tight deadlines, manage competing demands and work effectively under pressure without close support;
- A proven track record of peer-reviewed publications in high impact factor journals;
- Excellent written and verbal communication skills including presentation skills;
- A proven ability to work well both individually and in a team;



- A strong commitment to your own continuous professional development.

You may also have:

- Expertise in virus transmission and nosocomial infection;
- Experience in developing models of virus transmission;
- Knowledge of theories and models of behaviour change;
- Experience of pursuing external funding to support further research.

## How to apply

You can apply for this role online; more guidance can be found on our [How to Apply](#) information page. Applications should be submitted by **23.59** (UK time) on the advertised closing date.

## Contact information

To explore the post further or for any queries you may have, please contact:

**Professor Ed Manley**

Email: [E.J.Manley@Leeds.ac.uk](mailto:E.J.Manley@Leeds.ac.uk)

## Additional information

Find out more about the [Faculty of Environment](#) and [School of Geography](#).

Find out more about [Athena Swan](#) in the Faculty.

### A diverse workforce

The Faculty of Environment has received a prestigious Athena SWAN silver award from [Advance HE](#), the national body that promotes equality in the higher education sector. This award represents the combined efforts of all schools in the Faculty and



shows the positive actions we have taken to ensure that our policies, processes and ethos all promote an equal and inclusive environment for work and study.

### **Working at Leeds**

Find out more about the benefits of working at the University and what it is like to live and work in the Leeds area on our [Working at Leeds](#) information page.

### **Candidates with disabilities**

Information for candidates with disabilities, impairments or health conditions, including requesting alternative formats, can be found on our [Accessibility](#) information page or by getting in touch with us at [disclosure@leeds.ac.uk](mailto:disclosure@leeds.ac.uk).

## **Criminal record information**

A criminal record check is not required for this position, however, all applicants will be required to declare if they have any 'unspent' criminal offences, including those pending.

Any offer of appointment will be, in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our [Criminal Records](#) information.

