



Role title	Early Career Researcher - Analyst - Advanced Epidemiological Modeller
Salary	PhD stipend will be covered by UKHSA, buying a 3 months extension.
Grade	Senior Executive Officer
Contract type	Fixed term 3-month placement
Business area	UKHSA Data Analytics and Surveillance
Type of role	Analytical
Working Pattern	Flexible working, Full-time, Job share, Part-time
Number of posts	7
Apply before	05/12/2022

## Summary

COVID-19 has reinforced the impact that threats to health can have on society and the economy and driven health security as a critical component of our national security architecture. The United Kingdom Health Security Agency (UKHSA) is a system leader for health security; taking action internationally to strengthen global health security, providing trusted advice to government and the public and reducing inequalities in the way different communities experience and are impacted by infectious disease, environmental hazards, and other threats to health.

UKHSA's remit, as an agency with a global-to-local reach, is to protect the health of the nation from infectious diseases and other external threats to health. As the nation's expert national health security agency UKHSA will:

- Prevent: anticipate threats to health and help build the nation's readiness, defences and health security
- Detect: use cutting edge environmental and biological surveillance to proactively detect and monitor infectious diseases and threats to health
- Analyse: use world-class science and data analytics to assess and continually monitor threats to health, identifying how best to control and mitigate the risks

- Respond: take rapid, collaborative and effective actions nationally and locally to mitigate threats to health when they materialise
- Lead: lead strong and sustainable global, national, regional and local partnerships designed to save lives, protect the nation from public health threats, and reduce inequalities

UKHSA's immediate and most important priority is to continue the response to the COVID-19 pandemic. In the longer term, UKHSA will build on the legacy of the COVID-19 response to ensure resilient and scalable infrastructure to secure the UK in the strongest position to protect the public from future threats to health.

UKHSA mission is challenging, innovative and in the spotlight. To achieve our objectives effectively and fairly, we commit to representing modern Britain and all its diversity. UKHSA recognises that diversity of background and life experience brings different insights, creates challenge and encourages change and innovation. This in turn produces more accountable and trusted public services and better decisions; better because they are more attuned to the needs and interests of all our communities. Differences of thought and outlook are not only respected but expected. We want all our employees to feel that they can be themselves at work and that they are valued.

### **Job Description**

The Early Career Researcher (ECR) programme aims to improve organisational capability by bringing in specialist and expert skills to the UK Health Security Agency (UKHSA) and serves to attract a pipeline of future talent and strengthen organisational links with academia. These time limited ECR placements are invaluable for both the organisation and the individual. UKHSA benefits through increased organisational capability, linkages and expertise provided by students and their institution, whilst ECRs gain professional experience in a world-class public sector research organisation. As well as work experience, the placement also provides a pastoral and development programme, with opportunity to shadow senior colleagues, receive technical oversight and benefit from line-manager input and support.

There will also be opportunities for technical skills development for ECRs, such as opportunities to attend training courses, conferences, and Hackathons. This placement gives the opportunity for the ECRs to increase their knowledge, expand their technical and work-based skillset and directly influence public health security policy within the UK.

The roles are available in the Public Health Science: Infectious Disease Modelling team within the All Hazards Intelligence directorate. This is a multi-disciplinary analytical directorate of more than 70 individuals, working at the forefront of the response to the ongoing COVID-19 and Monkeypox outbreaks.

The work of the directorate spans a range of analytical objectives and themes across descriptive epidemiology, genomics, cluster analysis, vaccines, behavioural science, infectious disease and biostatistical modelling, strategic research partnerships and innovation, environmental monitoring, health protection, and product development/delivery.

The directorate has strong links to other areas within UKHSA, as well as connections across Government with the NHS and DHSC, and with academia.

There are 7 roles available, with start dates staggered throughout the year, with at least two ECRs in post during each placement phase. Phase 1 will begin in January 2023, Phase 2 in May 2023, and Phase 3 in September 2023. Depending on your skill set, preference and our needs, you could be placed into any of these phases.

The posts will provide scientific support in infectious disease modelling to the epidemiological investigation of incidents and outbreaks of COVID-19 and Monkeypox, in collaboration with partners. This will include technical and analytical aspects of epidemiological outbreak investigations and modelling. The posts will also provide scientific support to our developing work packages in modelling climate-sensitive infectious diseases, in collaboration with the Centre for Climate and Health Security and academia. This will include technical aspects of ecological modelling, epidemiological modelling, and geospatial data analysis.

The post holder will take a lead role in epidemiological modelling, public health scientific analyses and writing reports on specific projects, regular and ad hoc commissions, and publications. This will include writing code, analysing data, and adhering to version control/software management practices.

Duties will include estimating and forecasting the state of the outbreaks, compiling evidence, including area and population context, developing novel methods, and data analytics. The post holder will be expected to run and calibrate statistical models, process and analyse data, and write reports for operational product delivery. They will also be expected to engage with partners in wider government, academia, and the private sector to gain access to new data sources and information. The post will enable the ECRs to develop their research and professional skills, as well as expand their professional network in health science.

### **Responsibilities**

UKHSA are looking to recruit 7 PhD students for 3-month placements, with start dates between 1<sup>st</sup> January 2023 and 1<sup>st</sup> September 2023. Facilitated by the Isaac Newton Institute, funding will be provided to your host University to cover 3-months of stipend payments, allowing PhD deadlines to be extended accordingly.

We are looking for candidates who can:

- Work within a multi-disciplinary team of analysts with a range of analysis, assessment and product development responsibilities, often working to tight timelines
- Deliver analytical skills (such as statistical analysis and mathematical modelling) and be adept at finding, analysing and manipulating large scale data sets
- Communicate complex findings to non-technical experts and key stakeholders, from a variety of qualitative and quantitative sources
- Assist communicable disease control, health protection and public health colleagues across the UK during major health protection incidents

- Successfully manage your time and prioritise effectively, working under own initiative and responding to unexpected demands whilst maintaining a professional, calm and efficient manner
- Engage with partners in wider government, academia and the private sector to gain access to new data sources and information
- Establish and maintain positive relationships and collaborations internally and externally and contribute to the culture and development of the All Hazards Intelligence Directorate, the ECR programme and the UKHSA as a whole

The posts offer superb development opportunities and the chance to gain exposure across a broad range of policy areas and with senior officials at the heart of decision making in government.

## **Knowledge and experience**

### **Essential**

- A PhD student who can work across different disciplines, with a strong background in data analysis, Statistics, Mathematics, Biological Sciences, or Social Research
- Experience in either R or Python
- Knowledge and experience of statistics and statistical modelling, including analyses and interpretation of results
- Excellent oral and written communication skills with proven presentation and scientific report writing skills
- Experience of working in an analytical team, demonstrating an ability to work independently
- Experience of working with complex and large datasets and information feeds to draw relevant conclusions
- Experience of working at pace to deadlines across multiple projects, being flexible and adaptable to change
- Able to build and maintain effective relationships with co-workers and key stakeholders across government and other departments to source data, enhance your analysis or set requirements
- Demonstrable experience of strong stakeholder management, both written and verbal, utilising your presentational skills to turn analysis into accessible and engaging products and presenting them to stakeholders

### **Desirable**

- Experience in GIS, network analysis or SQL is desirable
- Experience of building and validating numerical mathematical models (preferably with a Bayesian element), interpreting and evaluating epidemiological data, sensitive health data analyses and performing analytical epidemiology in outbreak situation.
- Demonstrable experience of public health, health protection or epidemiology including epidemiology for outbreak investigations
- Experience of using epidemiological and statistical software packages
- Knowledge of data management, data transmission, data security, data quality, data analysis including descriptive statistics and graphics, and data reporting

## **Essential qualifications**

A 2:1 degree in a relevant discipline (e.g. Statistics, Mathematics, Biological Sciences, Social Research or similar).

Enrolled on a PhD or awarded a Doctorate degree in a relevant discipline (e.g. Statistics, Mathematics, Data science, Research methods, Genomics, Public health policy, Epidemiology, Infectious diseases, Biological Sciences, Social and Behavioural Sciences or similar).

## **Behaviours**

We'll assess you against these behaviours ([Success Profiles - Civil Service Behaviours \(publishing.service.gov.uk\)](https://publishing.service.gov.uk)) during the selection process:

- Delivering at Pace
- Communicating and Influencing
- Working together

## **Technical skills**

Candidates invited for interview will be asked to participate in a task using a data set provided, further information will be provided to those candidates invited to interview.

We'll assess you against these technical skills during the selection process:

- Use of new data sources to solve complex analytical questions, this may refer to a data set presented during the interview for those candidates invited for interview
- Understanding of epidemiological techniques and their application to real-world, complex problems
- Application and interpretation of new or incomplete data sets
- Presentation and visualisation of complex data

**Location** - These roles will be home-based with travel to UKHSA offices if required.

**Applications** - Please send your CV and a Cover Letter stating reasons for applying, research background, and a statement of suitability on knowledge and experience to: [ukhsa.researchandpartnerships@ukhsa.gov.uk](mailto:ukhsa.researchandpartnerships@ukhsa.gov.uk).

Your application may be shared and discussed between UKHSA and representatives from the Isaac Newton Institute and the Newton Gateway to Mathematics, who have helped to facilitate this opportunity.

**Interviews** - will take place w/c 12<sup>th</sup> December 2022 via Microsoft Teams. Candidates will be provided with a technical assessment to complete the hour before the interview.

**Vetting** - Successful candidates will need to undergo vetting process.

**Reserve List** - If more than the required number of suitable candidates pass the interview criteria, you may be kept on a reserve list for 12 months subject to your agreement.