

Supervisors:	Dr Karla DiazOrdaz & Prof Ruth Keogh (LSHTM), Dr Arne Wolters (The Health Foundation)
Institution/Division	London School of Hygiene & Tropical Medicine, Department of Medical Statistics
Funding Period	2021-2024
Stipend	17,285 per annum
How to Apply	<p>The application has two stages. For stage 1 please submit your CV and a covering letter outlining the reasons for your interest in the project and your suitability to the first supervisor Karla Diaz-Ordaz (karla.diaz-ordaz@lshtm.ac.uk). The deadline for first stage applications is 5th March 2021.</p> <p>After review, applicants may be invited for an interview. The successful candidate at stage 1 will be supported in making a stage 2 application to the ESRC, and the deadline for this will be 2nd April 2021.</p>
PhD Title	Modern causal methods to estimate the impact of Individual and Group Health Policies using routinely collected data
The Studentship	<p>Policy makers and health services researchers are interested in evaluating the causal effects of health and care policies introduced in GP practices, hospitals or nursing homes. Such policies are often introduced without first conducting a randomised study. Evaluating the impact of such policies therefore usually relies on retrospective observational data, such as electronic health records (EHR).</p> <p>There are several challenges in using EHR data for policy evaluation. Bias can result from inaccurately defining the study populations, interventions of interest and time origins, as well as failure to control for confounding, arising from systematic differences between those exposed and unexposed to the policies. In addition, mis-specification of the relationships between an outcome, the exposure and confounders may result in misleading conclusions that are difficult to diagnose.</p> <p>This PhD project will evaluate and develop methods to estimate the causal effects of different health services and care policies using real world data. To attenuate concerns of model misspecification, we will explore machine learning estimation. The methods will be illustrated using linked data from GP surgeries and hospital records. In collaboration with the Health Foundation (THF), we will identify policy evaluation case studies, which may have direct impact on NHS policy implementations.</p> <p>The student will benefit from the experience and knowledge of the co-funder The Health Foundation, in particular the experts within the</p>

	<p>Improvement Analytics Unit, which provides rapid policy evaluations to health service decision-makers at both local and national level, thus informing policy maker what what is working well and where improvements can be made. The LSHTM supervisory team brings together expertise on statistical methodology for causal inference using EHRs and how to appropriately combine these with machine learning estimation.</p> <p>Skills development</p> <p>This project will enable the student to develop skills in a number of areas:</p> <ul style="list-style-type: none"> • Applying state of the art statistical machine learning and causal methodology to health policy evaluation • Developing statistical methodology and evaluating methods using simulation studies. • Collaborating with clinical and health services research advisors and data and policy experts to refine the research questions. • Transferrable skills including research ethics, scientific writing, presentation skills. <p>Environment</p> <p>The PhD candidate will be part of the Medical Statistics Department and Centre for Statistical Methodology at LSHTM, which include existing PhD students at different stages and other early career researchers, active in similar topics. The project would also involve linking with other experts, via the project partners The Health Foundation: clinical collaborators, health service researchers and policy makers.</p> <p>LSHTM provides a stimulating environment in which to get training in state-of-the-art methodology and conduct high quality and high impact research. The breadth of scientific interests coupled with the geographic diversity of research projects at LSHTM offers a unique opportunity for you to participate with a dynamic and stimulating group of internationally renowned researchers. LSHTM provides a range of activities to support building of supportive student cohorts.</p>
Key Requirements	<p>Ideally, applicants should have an excellent undergraduate degree (first or upper second) in mathematics, statistics or a related field and an MSc in statistics, medical statistics, health data science, or a related field, or equivalents for qualifications gained outside the UK.</p>
Further Details	<p>Potential applicants are encouraged to contact the first supervisor Karla Diaz-Ordaz (karla.diaz-ordaz@lshtm.ac.uk) for an informal discussion and to find out more about the project.</p>
Closing Date	<p>Stage 1: 5th March 2021, 5pm Stage 2: 2nd April 2021</p>

Latest time for Submission of Applications	See above
Details for Submission	See above: How to apply.
Interview date	Week of 8 th March or 15 th March.