MRC/CSO Social and Public Health Sciences Unit PhD topics 2021

Please note that topics are indicative. Student-led applications/topics relevant to the Unit and programmes (i.e. on related topics with different supervisors) are also very welcome. Please browse our research programmes and staff listings and approach a potential supervisor before drafting your research proposal.

Places and Health Programme:

The John Muir Award scheme as a system intervention for a healthier planet and people

Supervisors: Professor Rich Mitchell and Dr Ria Dunkley (School of Education)

Connections are increasingly being seen and sought between the issues of environmental sustainability, inequality and population health and wellbeing. The idea that these issues are linked to a wider complex system is not new, but examples and understanding of interventions that can address all three problems are vanishingly rare. The John Muir Award (JMA) is a UK-wide environmental award scheme focused on wild places. It helps people connect with, enjoy, and care for them. It's non-competitive, inclusive and accessible, and is acknowledged to be extremely successful in terms of participation rate, experience, and reach to disadvantaged groups. This studentship would bring a systems perspective to bear on the JMA, seeking to understand whether and how it affects orientation to, and action for, sustainability, inequalities and health. A mixed methods approach will be required, perhaps including participatory systems mapping, focus groups, in-depth interviews, analysis of the JMA's own records on participation, and comparisons with other Trust engagement activity.

Access and support in kind from the John Muir Trust is secured.

Modelling the impact of nature-based Early Learning and Childcare on young children's physical activity behaviours: development and refinement of programme theory

Supervisors: Dr Paul McCrorie, Dr Anne Martin, Dr Jonatan Almagor

Aim: To use Agent Based Modelling (ABM) as a systems-based tool to explore, consolidate, test, and refine our understanding of the theoretical processes and mechanisms that underlie the potential positive short and long term impacts of nature-based early-learning and childcare on young children's physical activity behaviours.

Example PhD layout:

Year 1: Programme theory – what do we already know? Map the systems. Develop Causal diagrams. Some fieldwork visits to observe children and the environments, speak to teachers, and parents.

Year 2: Formalisation of theory into parameterisation - how do we formalise parameters and processes? Where do you get data to guide our thinking? Revisit theory and refine. Borrow from experimental work. Utility may be in the form of an open source output/tool where others can explore our practical formalisation of parameters.

Year 3: How well did we represent our theory? Is the outcome an abstract form of reality? Do we want to validate and reproduce real world results? Test the theory, sensitivity and importance of the parameters. What do we need to know more about? What is weak? Where do we need more evidence?

Human Behaviour and the spread of disease

Supervisors: Dr Rebecca Mancy and Dr Kostas Angelopoulos (Adam Smith Business School)

This project aims to investigate how human behaviour can influence the impact of an infectious disease and in turn be altered by disease. It will use a combination of mathematical and statistical modelling to explore contemporary and historical disease outbreaks to see how social behaviours, including vaccination preference and adherence to public health guidance, are affected by socioeconomic background. It will consider the direct and indirect effects of inequality, and the resultant trade-offs and choices made by sectors of society. Comparisons between past and present disease outbreaks and associated behaviours will be used to investigate the social consequences of epidemics.

Relationships and Health Programme:

Discovering the nuances of sexual consent and consensual sex using mixed methods

Supervisors: Dr Malachi Willis and Professor Kirstin Mitchell

A key component to preventing non-consensual sexual activity is understanding and promoting healthy sexual consent practices. The aim of this PhD would be to examine the prevalence and correlates of people's experiences with sexual consent by analysing data from one of the largest and most detailed scientific studies of sexual behaviour in the world (the British National Surveys of Sexual Attitudes and Lifestyles). Qualitative follow-up interviews with survey participants will explore how people delineate consensual versus non-consensual sexual activity in similar contexts (e.g., when alcohol or drugs are consumed; when one person does not want to engage in sexual activity). Quantitative analysis will focus on factors influencing understanding and practice of consent. The results of

this PhD will inform how sexual health education programmes can address the nuances of sexual consent as well as risk factors associated with sexual violence.

Engaging the public by using deliberation techniques to inform health and social policy decisions

Supervisors: Dr Kathryn Skivington and Dr Gillian Fergie

Public informed deliberation of policy problems, particularly those that are value laden and would benefit from experiential evidence, can be a useful approach at different stages of the policy process, e.g. to support: better understanding of the problem, ideas for solutions, and implementation. Though not without criticism, they have the potential to provide communities with the opportunity to have greater input into policy decisions affecting them locally, enable/encourage citizen ownership, and support interventions to reflect community views. The aim of this PhD would be to develop our understandings of the use of deliberative approaches through systematic review and a case study of a relevant policy problem, likely around income insecurity (e.g. Basic Income and/or Universal Basic Services), by conducting a Citizen's Jury or similar deliberative method to obtain public input on the topic of interest.

Using Agent based modelling to understand how social network interventions work

Supervisors: Dr Emily Long and Dr Umberto Gostoli (supported Dr Eric Silverman and Professor Kirstin Mitchell)

Social network-based interventions capitalize on influential individuals and use relational processes to alter health behaviour. Growing evidence highlights the promise of these interventions across a range of behaviours, including smoking (Campbell et al., 2008), physical activity (Van Woudenberg, Bevelander, Burk, Smit, Buijs & Buijzen, 2018), and sexual behaviour (McCann, Broccatelli, Moore & Mitchell, 2018). In this project the PhD candidate will develop an agent-based simulation framework that will model the interacting factors that influence the success or failure of behaviour change interventions, including the selection and utilisation of influential peers. By modelling these factors explicitly in an ABM, we can better understand the possible effects of planned interventions, and identify areas where interventions can maximise their impact on behaviour. This framework could also provide a means for post-mortem evaluation of interventions by illuminating areas where behavioural effects differed from expectations, and providing possible functional-mechanistic explanations for those differences.

Inequalities in Health Programme:

Childcare quality and characteristics: associations with child health and development and potential to reduce inequalities

Supervisors: Dr Anna Pearce, Dr Michael Green and Professor Kirstin Mitchell

Research evidence from the UK and elsewhere suggests that attending early learning and childcare (ELC) from the age of 3 can be beneficial for children's cognitive and social development. Because of this, children in the UK are entitled to free ELC from the age of three. However less is known about how childcare characteristics (e.g. staff to child ratios, staff qualifications, hours attended and inspectorate quality ratings) effect children's health and development and contribute to population-level inequalities. The study will explore how various aspects of pre-school experience are associated with children's outcomes, including school readiness, socio-emotional development and overweight and obesity. The study will also investigate whether different elements of pre-school protect against the negative effects of socio-economic disadvantage. Carrying out advanced secondary data analysis in the Growing Up in Scotland cohort (linked to Care Inspectorate records), this PhD project will provide evidence on the contribution of pre-school to children's outcomes and inequalities in Scotland. The successful candidate will receive formal and on-the-job training and have the opportunity to shape the project to their expertise and interests. They will be strongly encouraged to apply causal inference methods, publish in peer reviewed journals and, where relevant, to consider ways in which they might extend this research after completion of the PhD.

Evaluation of the Ayushman Bharat (AB-PMJAY) public health insurance scheme in India as a natural experiment

Supervisors: Dr Michele Hilton Boon and Professor Peter Craig

This project will use quantitative (time series) and qualitative (stakeholder interviews) methods to evaluate the effectiveness of the Ayushman Bharat (AB-PMJAY) national insurance scheme in achieving universal health coverage and preventing poverty caused by out-of-pocket healthcare expenses. The study will compare high-performing and low-performing states (e.g. Delhi, Tamil Nadu; Haryana, Uttar Pradesh) to investigate the relationship between the introduction of limited liability government sponsored health insurances schemes and poverty reduction.

Sleep and health in Police officers and staff using the Airwave Health Monitoring Study

Supervisors: Dr Lia Demou, Professor Martie von Tongeren (The University of Manchester), Professor Andrew McIntosh (University of Edinburgh) and Professor Paul Elliott (Imperial College London, Adviser)

Police officers are at increased risk of poor sleep quality due to occupational factors, yet few studies have focused specifically on the prevalence of sleep complaints in police officers. Among police officers, sleep disorders are common and are significantly associated with increased risk of self-reported adverse health,

performance, and safety outcomes. Poor sleep quality has been shown to adversely affect neurobehavior including an increase in depression symptoms and perceived stress and sleep problems are associated with cardiovascular disease, other chronic diseases (e.g. metabolic syndromes), and increased mortality. The recent findings of the first-ever national police wellbeing survey in England and Wales (2019-2020) of over 34,000 police officers and staff showed that almost half of officers reported getting less than six hours sleep a night. The aim of this PhD studentship is to study the relationship between sleep patterns (e.g. sleep duration, chronotype, sleep problems), work factors (stressors, shift work), and health (outcomes of overall health, obesity, diabetes, cognition, and cancer e.g. breast cancer/others) in police officers and staff across the UK using the Airwave Health Monitoring Study (AHMS), to improve our understanding of determinants of health and wellbeing in this workforce.

Evaluating plans for rabies elimination

Supervisors: Dr Nai Rui Chng, Professor Peter Craig, Professor Katie Hampson (Institute of Biodiversity, Animal Health and Comparative Medicine)

The 'Zero by 30' global strategic plan to end human deaths from dog-mediated rabies by 2030 is an ambitious and comprehensive strategy to coordinate international support with national implementation of rabies elimination strategies. The plan advocates Integrated Bite Case Management (IBCM) - intersectoral working between workers in public health and veterinary sectors to assess the risk of rabies among animal bite patients and biting animals - as a way for reducing human deaths. The plan however lacks operational detail on how countries can implement IBCM. At the same time, the evidence-base for IBCM remains weak. The study will explore progress of 3 Low & Middle Income Countries (LMICs) towards 'Zero by 30' by employing an evaluability assessment of their IBCM intervention plans. Through facilitated workshops and interviews with stakeholders, and secondary analysis of IBCM data, the study will critically examine the 'plausibility', 'do-ability', and 'testability' of IBCM evaluation designs. The study will appraise 1) prioritised outcomes 2) data needs and gaps, and 3) evaluation designs for IBCM in the 3 LMICs. The project will therefore support these countries in their Rabies control efforts and contribute to the global strategic plan. The successful candidate will receive formal and on-the-job training, including working closely with national and local Rabies control stakeholders, and have the opportunity to shape the project to their interest.

Complexity in Health Programme:

Sleep and mental health in young people

Supervisors: Professor Sharon Simpson and Dr Anne Martin

In recent years there has been a shift towards reduced sleep among young people. Inadequate sleep can impact on young people's physical and mental health and

wellbeing. This studentship will explore young people's and other key stakeholders (e.g. family, schools) understanding of the links between sleep and mental health/wellbeing, identification of potential leverage points for intervention and could employ a range of methods, e.g. review work, surveys, systems mapping approaches and qualitative work.

Intergenerational intervention development for promoting physical and mental health and wellbeing

Supervisors: Dr Stephanie Chambers and Dr Anne Martin

Across the life-course, individuals and families face different challenges in fostering good physical and mental health and wellbeing. For example, older adults can be at risk of social isolation and managing multiple physical health conditions, whilst children and young people need the opportunity to develop habits that will promote health over a lifetime. There is substantial potential for intergenerational interventions that promote the interaction of these groups with the aim of promoting health and wellbeing in older adults and young people. Interventions may be at the family level (grandchildren/grandparents) and/or at community level, working with relevant community organisations and educational establishments. Research to develop interventions in these areas could include literature reviews, secondary data analysis of cohort studies, qualitative interviews with relevant stakeholders, co-production workshops with children, young people and older adults, and social network analysis.

Adolescent wellbeing within the school context: a systems perspective

Supervisors: Dr Jo Inchley and Professor Sharon Simpson

Adolescents spend a large part of their waking lives in school and schools can play an important role in supporting healthy child development. From a systems perspective, multiple factors at different levels within the school system have the potential to facilitate or impede health outcomes for individuals. This studentship will investigate how school level factors, such as school size, pupil:teacher ratio, organisational practices, school ethos, relationships, environmental factors and health and wellbeing policies and practices may influence pupil health outcomes. A range of outcomes could be considered including mental health, sleep, and relationships with family and friends.

Systems Science Public Health Programme:

What are the key features of mental wellbeing-friendly urban environments?

Supervisors: Professor Petra Meier and Professor Ana Basiri (Geospatial Data Science, UofG Geographical & Earth Sciences and Turing Institute)

Public mental health is a growing concern in the UK, with 25% of the population suffering some form of mental illness in their lifetime. Many jurisdictions, including the Scottish Government, have a strong interest in prevention. Currently, we lack detailed understanding what policy actions, alone and in combination, may contribute to mental wellbeing-friendly urban environments. This study will build on existing mental health research and advances in geospatial data science to first bring together, at small area level, data on the diverse range of social, economic, environmental, structural and individual risk factors. It will then investigate the degree to which combining this data is useful for explaining past area-level improvements or deteriorations in mental wellbeing.

Health and wellbeing impacts of the re-growth of private renting

Supervisors: Professor Petra Meier and Professor Nick Bailey (Urban Studies, School of Social and Political Sciences)

One of the most profound changes in the UK's welfare system over recent decades has been the growing role played by the private rented sector in housing those in poverty, including children (Bailey 2020). The impacts on health and well-being have yet to be fully investigated. Multiple pathways may be at work including: poor physical conditions impacting on physical and mental health; poor management; low security of tenure and hence mobility of households, leading to stress but also loss of valued social supports; or high rents and increasingly restricted housing benefits leading to material deprivations, as well as acting as barriers to employment uptake. On the other hand, the higher mobility from private renting may be a route to employment opportunity with positive health consequences. Using qualitative and quantitative systems modelling approaches, this PhD will investigate how changes to the private rental sector can influence population health and wellbeing and what policy responses may be required to capitalise on benefits and prevent harm.