

Response to: Making better use of natural experimental evaluation in population health – 600 words

Title: A call for natural experiment guidance for planetary health

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We read with interest the article by Craig and colleagues and reason that separate guidance is needed to support natural experiments in planetary health.

Planetary health describes how the health of humans and other living organisms are inextricably linked and how these in turn depend on Earth systems that sustain life.¹ The field of planetary health has grown substantially in recent years.² However, there is little evidence on the impact of interventions and policies of climate mitigation and adaptation on public health, particularly in LMICs.^{3,4} Further, a UKRI report⁵ prioritised moving towards intervention (mitigation and adaptation) approaches for planetary health, requiring innovation in methods and measurement, and an extension of natural experiment approaches.

There is now an overwhelming body of evidence demonstrating that human activities across the globe have driven increases in greenhouse gas emissions leading to increased temperatures and extreme weather events.⁶ As such, planetary health solutions will come from across ecological, energy, climate, social, economic and cultural domains. However, little guidance is available to help researchers evaluate planetary health policies and interventions which would provide evidence about “what works” for decision-makers to address complex challenges, including the socio-economic determinants of planetary health.

There are many synergies between some of the challenges addressed in the natural experimental evaluation guidance for population health, that also apply to planetary health. For example, handling multiple data sources, aligning timelines of policy implementation and evaluation and identifying appropriate counterfactuals.

However, there are also fundamental differences which we argue need addressed in separate guidance adapted for planetary health research. Box 1 summarises these issues.

For example, a shared language is required to overcome differences of terminology, methods and perspectives to support transdisciplinary and multi-sectoral action.⁷

Natural experiments for planetary health will require methods to assess strategies that aim to mitigate, as well as reduce the vulnerability of populations to, environmental change, such as ecosystem based approaches, and actions across all sectors such as energy, industry, and built environments.⁸ The results of such experiments must also be interpreted differently by policymakers, using decision theory and threshold approaches to reduce risk and assess trade-offs between different outcomes for human health, animal health and the health of the environment.⁸

New methods and data must facilitate real-time action in the face of uncertainty and best available evidence while keeping us within planetary boundaries. Such experiments will involve collecting, analysing and interpreting diverse data including qualitative, quantitative, environmental, human health, with many challenges and uncertainties. Such experiments need to be complemented by data that aims to uncover the pathways between these outcomes, and the implementation processes that provide learning on barriers and levers for change.

Core challenges include the scale, context and fidelity of planetary health policies and interventions. There are issues around lack of validated measurement tools and robust datasets, balancing and synthesising findings from multiple sources for human, animal and environmental health, and defining adequate comparators in a planetary context.

To progress, natural experiments for planetary health guidance must capture and catalyse transdisciplinary approaches to tackling national and global challenges with themes around improving the health of the environment, better human health, tackling infections and NCD risks (including mental health), building healthier and sustainable cities, tackling place based disparities, ethics and data challenges. Bespoke guidance will support the next generation of researchers, policymakers and implementers in addressing this global challenge, sharing failures, and information on context, barriers and facilitators for implementation, and support research contributing to the transformational change that is necessary in evaluating and catalysing uptake of policies and interventions.

Box 1: Challenges for natural experiments for planetary health

1. Developing a shared language for transdisciplinary and multi-sectoral teams
2. Measuring impacts including on equity (timescales; multiple, interacting measures)
3. Improving human and environment policies in an integrated way
4. Integrating mitigation and adaptation strategies
5. Documenting links between human health and health of natural systems through multiple pathways
6. Assessing the co-harms and co-benefits of action
7. Facilitating real-time action in the face of uncertainty and best available evidence
8. Learning from implementation of actions at scale including barriers to and levers for change

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