

# Science Landscape Seminar Reports: Population Health Sciences

## Background to the meeting

This seminar is one of a series convened by the [Council for Science and Technology \(CST\)](#), which is working to provide a map of the UK Knowledge Landscape as a whole. This mapping includes all areas of research carried out by academia, industry, charities and others.

The seminar series has brought together diverse sets of experts to discuss eight parts of the research landscape in depth; these areas are roughly aligned with the [UK government's eight great technologies](#).

The aim of this work is to provide decision makers with a clearer picture of the whole landscape and enable better strategic decisions to be made. We would also like the reports to prompt communities to think more about what they can do to ensure their areas continue to make the best case for themselves and operate in a coherent way. The seminar series is limited in scope, but has revealed the importance of a clear articulation of the strengths and requirements of different parts of the UK research landscape. Specific research communities may wish to hold further sessions of their own.

The discussion took place under the Chatham House rule. This document represents the views of this group and is published alongside an infrastructure resource (see below) which reflects the seminar's view of the Population Health Sciences landscape.

This meeting addressed Population Health Sciences research and development, and was asked to consider:

- Strengths and weaknesses of Population Health Sciences research in the UK;
- How the UK compares internationally; and
- What future concerns exist for the discipline.

## 1. Infrastructure list

To seed discussion, attendees were provided with a draft list of infrastructure relevant to life sciences and medical. The list is not exhaustive but does provide a summary of some of the key facilities for life sciences and medical research in the UK. It was updated in the light of discussion at the seminar to include, for instance, a greater diversity of cohort studies. The infrastructure list is available at: [www.gov.uk/government/publications/science-landscape-seminar-population-health-sciences](http://www.gov.uk/government/publications/science-landscape-seminar-population-health-sciences).

## 2. Scene setting

The meeting opened with a broad discussion of the characteristics of the discipline. It is hugely diverse: this is generally a strength, but can create an impression of fragmentation. Population health sciences research tackles a very wide range of issues which impact on the nation's health and welfare. The field's most important assets are people, datasets, and in some cases the institutes that house them, rather than high profile and costly physical infrastructure. The value of population health science infrastructure needs to be considered in terms of the time and effort it would take to reinstate elements should they be lost, rather than in more narrow monetary terms.

## 3. Strengths and weaknesses

The following were considered to be the area's biggest strengths:

- The UK's cohort studies are a particular asset. As additional data is generated, these studies continue to improve. The UK has been a pioneer of cohort studies, and can be credited with the field's inception. The result is that the UK has a truly fundamental understanding of population health sciences, and a strong methodological history that should be maintained. The expansion of cohort studies into the health and biomedical sectors in recent years is an important part of the field's development.
- Very few, if any, countries have access to such a comprehensive source of health information and the NHS in particular represents a "cradle-to-grave" data set on public health. There is huge potential to link these data effectively, provided we build the right informatics infrastructure and heed the issues that would arise for privacy and confidentiality. This brings with it the potential to improve and enhance the performance of the healthcare community.

In spite of these strengths, participants highlighted some challenges which might be addressed:

- The link between the generation and use of evidence is less intrinsic to population health sciences than it is to some other areas of medical science. This means that we may be missing some major opportunities in applied research. Failing to translate the evidence we generate into policy advice loses a key opportunity to improve public health and make considerable downstream savings for the NHS.
- It remains difficult to identify whether data relevant to particular studies is available, and individuals' ability to find and access these data can be very variable. Organisations such as the UK Data Archive and the UK Data Service work hard to combat these issues and are trying to develop an easier way of accessing information on cohort studies.
- It is important that the UK ensures that metadata (the data on the data) for studies is harmonised. This enables public health interventions to be tracked over time, meaning that we can assess their effectiveness.
- There is no central registration process for cohort studies. It is therefore not easy to determine what previous work is relevant to new studies and as a result it may be difficult to extract maximum value from such earlier analyses. A further risk is that research and the expensive process of recruiting cohorts is unnecessarily repeated. Study registration is mandated for clinical research

via the UK Clinical Research Network (UKCRN) study portfolio database. A similar register of cohort studies could act as a gateway to data access.

- Access to commercial data remains a challenge. Researchers have reported numerous unsuccessful attempts to access data collected by industry, while industry often complains about the difficulty in gaining access to public datasets. Continued, long-term dialogue on access to commercial and public data is necessary to tackle this.
- There was a concern that because research groups often compete for the same limited funding, they may not collaborate as effectively as they could. Better understanding is needed of how competition for increasingly scarce resources, both people and funding, has affected both collaboration and skills development in these subjects.

## **4. Skills**

Seminar participants highlighted a range of issues in relation to skills that might be addressed:

- As new challenges develop, skills requirements and training needs will evolve. For example, one major emphasis in the past was on quantitative skills. These are still needed, but coding and computing skills are likely to become increasingly important. Population health sciences will need to look forward in developing training packages and find ways to ensure that these are fit for the future and are appropriately quality assured.
- Fewer Master's students are choosing to specialise in population health sciences. The risk of a lack of graduates with the right skills is worsened by the time it takes to deliver new, up-to-date courses, combined with a lack of places for students on existing courses.
- UK universities tend to attract high numbers of overseas Master's students and fewer domestic students. This means we can build strong international links but creates a risk of insufficient domestic expertise in the future.
- There is a real need to make the case for talented people to move into population health sciences from other disciplines – for instance, expertise from the data and behavioural sciences is needed.
- It remains important to ensure that an understanding of population health sciences is still sufficiently embedded in medical training.
- There are limited incentives to get involved in research strategy and leadership: there is a common perception that engaging with these as well as policy may impact adversely on the individual's core career. However, it is important that there are sufficient skilled individuals to work in this translational role.
- Pathways to careers in population health sciences need to be clearer, as should our articulation of the specific skills needed in different areas.

## **5. The international picture**

The seminar set out the following examples of international excellence in the subject:

- The Scandinavian countries are highly regarded as experts in population health sciences within Europe. For example, Finland has successfully built up

public trust in data collection, and its population is largely happy for its data to be used in research. The Danish population are also largely favourable to data gathering for research. The Netherlands is subject to much tighter data protection controls than the UK; despite this, they still collect large amounts of data. We may wish to draw on these mechanisms in developing our own future data collection processes.

- There are examples outside Europe, Australia has harmonised many of its cohort studies into a much larger, more complete, dataset. Mexico is prepared to do large scale population trials, and to make policy and legislation based on the results of these interventions; a good example of this is a recent trial on dietary sugars contributed by soft drinks.

It was also noted that the translation of EU law into local regulations may make it harder to access data in future. The outcome of current debates on regulation at EU level will be critical.

## **6. Future priorities**

There are a number of areas where the UK can look to ensure that the discipline is most strongly placed in the future. Participants made a number of points:

- The UK should decide which cohort studies it will prioritise for gathering further or new data, and which studies should enter a maintenance phase. It is important to find a balance of spending between initial capital funding for new studies and sustainable funding for their maintenance.
- The discipline needs to identify its grand challenges and specify what studies or work is needed to answer them. The list will most likely include ageing, population growth, the environment and infectious diseases.
- The discipline should consider how it can translate its strengths in gathering and analysing data into a stronger influence on policy-making.
- A clear strategy and agenda for population health sciences is needed, which will help to guard against duplications of effort and help extract best value from funding.
- The discipline, as with many other subjects, would benefit from increased investment in skills and increased computing capacity. At the same time researchers and funders need to continue to consider how they can use existing infrastructure to 'do more with the same'.
- UK funders and researchers will also need to think carefully about how they communicate with and engage the public. A better, open public dialogue on why this data is important and how it could be used would be helpful.



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