Bibliometric analysis of highly cited publications of biomedical and health research in England, 2004–2013

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Preface

This report presents the findings of a bibliometric analysis to support the shortlisting and selection of the National Institute for Health Research (NIHR) Biomedical Research Centres (BRCs) in England. It is intended to assist potential applicants in deciding whether to submit a Pre-Qualifying Questionnaire as part of the open, new competition and to inform the deliberations of the International Selection Panel for the BRCs.

The work presented in this report is a collaboration between RAND Europe and the Centre for Science and Technology Studies (known by the acronym CWTS). RAND Europe is a not-for-profit policy research organisation that aims to improve policy and decisionmaking in the public interest, through research and analysis.[1] CWTS is an interdisciplinary research institute at Leiden University in the Netherlands that studies the dynamics of scientific research and its connections to technology, innovation and society.[2] CWTS has specialized in supporting research assessments with advanced bibliometric analyses.

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1 For more information on RAND Europe, please see http://www.rand.org/randeurope.html (as of 23 November 2015)

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3 For more information on RAND's quality standards, please see http://www.rand.org/standards.html (as of 23 November 2015)

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List of acronyms

BRC	Biomedical Research Centre
BRU	Biomedical Research Unit
DH	Department of Health
HCP	Highly cited publication
HEI	Higher education institution
JSC	Journal Subject Category
MRC	Medical Research Council
NHS	National Health Service
NIHR	National Institute for Health Research
UCL	University College London
WoS	Web of Science

Headline findings

- Biomedical and health researchers in England published 95,928 papers between 2004 and 2013 that made it into the top 20% of highly cited publications (HCPs) worldwide. The citation rate of papers was normalised taking into account publication date, research field and document type.
- These HCPs were distributed across 127 National Health Service (NHS) organisations, 94 higher education institutions (HEIs) and 64 ‘other’ organisations in England.
- Approximately 40% of HCPs in England are collaborations between two or more English organisations (this figure excludes international collaborations). As one would expect, co-located organisations display the highest degree of collaboration.

1. Introduction

1.1. Origins and aims of the report

This data report presents the findings of a bibliometric analysis of biomedical and health research in England for the period 2004–2013. The purpose of the analysis is to support the third NIHR competition for Biomedical Research Centres (BRCs) in England. BRC (and Biomedical Research Unit (BRU)) designation and funding was awarded to single NHS–university partnerships for the first time in 2007/2008 and a second time in 2012, when 11 BRCs and 20 BRUs were designated and funded. For both previous rounds of the competition, an accompanying bibliometric analysis of biomedical and health research in England was produced as part of the procurement process.[4] The Department of Health (DH) has announced a new, open competition to designate and fund NIHR BRCs. This report is intended to assist potential applicants in deciding whether to submit a Pre-Qualifying Questionnaire as part of the procurement process, as well as to inform one of the shortlisting criteria in the deliberations of the International Selection Panel for the BRCs.

1.2. Structure of the report

In Chapter 2, we describe our conceptual approach to the bibliometric analysis and provide a detailed description of the methods and data sources. We also list a number of caveats and limitations of the analysis that should be taken into account when interpreting the data. The key results of the analysis are presented in Chapter 3. In the Appendices, we present further background information, additional technical details related to the analysis as well as some supplementary results.

4 van Leeuwen et al. 2011; van Leeuwen & Grant 2007

2. Methods and data sources

Before the bibliometric analysis could be performed, a number of steps had to be carried out to source and prepare the input data. In this chapter, we set out the process by which this was achieved and highlight the important caveats of the bibliometric methods employed. We have used a similar, but not identical, approach to the one adopted for the reports that accompanied the open competition for BRCs and BRUs in 2012[5] and the designation of Academic Health Science Centres in 2013.[6] These analyses are therefore not directly comparable, due to changes in both the method of analysis and the underlying dataset.

Broadly, the process to carry out the bibliometric analysis consisted of the following three steps:

1. Identify the world's 'top 20%' of publications in biomedical and health research fields (based on the number of citations received) over a period of ten years (2004–2013)
2. Identify which of those publications have author addresses at English institutions
3. Allocate the publications to NHS organisations, HEIs and 'other' organisations using all the author addresses

Further details of the process are described in Sections 2.3 and 2.4.

2.1. What is bibliometrics?

Bibliometrics is one of a number of tools that can help evaluate research. It is based on the use of statistical analysis to measure patterns of publications and citations, generally focussing on journal articles. It is effectively the 'epidemiology' of publications: analysing the generation, transmission and impacts of research.

Derived from databases that record publications and the number of citations from other publications that they receive, bibliometrics can be considered as a 'democratic' approach to the analysis of research performance. Rather than individual assessment of a limited group, it draws on the collective behaviour of the research community in publishing and citing, and thereby building upon a particular piece or body of research. By analysing these patterns of publication and citation we can investigate a range of different issues, such as: how research knowledge spreads, including between disciplines and geographically; patterns of collaboration using co-authorship as a proxy; changes over time in the performance and track record of individuals, organisations or countries; peer esteem and researcher influence (using citations as a proxy for quality); and how fields have developed.

5 van Leeuwen et al. 2011

6 Gunashekar et al. 2013

Bibliometrics can help assess the academic impact of research, as well as help identify leading organisational entities and units within the research community. This can be carried out both at an aggregate level and through focussing on particular fields or research areas. From a practical point of view, it is a helpful technique because it allows us to quantify evidence on research performance in a clear and comparable way, with some caveats (described in the next section). In summary, bibliometrics can be an 'objective' source of evidence for informing prospective R&D decision making, particularly when used in conjunction with other evaluation methods.

2.1.1. Caveats

Bibliometrics provides a set of tools with which to inform and highlight characteristics of research relevant for the evaluation of entities. However, as with all research evaluation methodologies,[7] there are some limitations to bibliometrics analysis,[8] and the results of our analyses need to be used within that context. Below we highlight some of the caveats that need to be taken into account when interpreting the results of the analysis.

- Bibliometrics provides only one indication of the research excellence of entities. Citation behaviour is highly variable, and research may be cited for many reasons, not all of which reflect quality.[9] Therefore, assessment of research quality based on publications and citations alone can be misleading. Although a number of studies have been carried out to try to explain why authors cite in the way that they do, there is no accepted theory to explain the motivations for citing specific work. Furthermore, the tendency to 'self-cite' one's own work[10] could also have implications on assessing scientific impact.[11] In our analysis, we excluded self-citations.
- Linked to the previous point, bibliometrics data should only be used as a measure of research excellence and not to capture the wider range of impacts that research might produce beyond academia. The analysis looks at citations from academic literature, and does not include citations from non-indexed literature and a number of clinical guidelines. Such citations can still be important indications of research quality and impact.
- Different research fields have dissimilar citation behaviours. We correct for this by field normalising bibliometric indicators, meaning that direct comparisons can generally be made among the different research fields. However, there is work ongoing into the ideal level of aggregation for field normalisation in bibliometrics.[12]

7 Guthrie et al. 2013

8 E.g. Ismail et al. 2009; Moed 2005

9 For example, a recent study focusing on papers from the *Journal of Immunology* found that 2.4% of the citations were negative citations, criticizing the findings of the publication they were citing (Catalini et al. 2015).

10 Self-citations occur if one of the authors of a citing paper also appears in the cited paper. Several studies have shown that the rates of self-citation have a tendency to vary by discipline (see, for example, Aksnes 2003a; Glänzel et al. 2004). Self-citations have been excluded from our analysis because they may inflate the assessment of an author's 'impact'.

11 Aksnes 2003b

12 While there is general agreement that citation data should be normalised by field before fields can be compared, the ideal definition and size of fields that normalisation should be carried out on is still under discussion (Wouters et al. 2015).

- The reliability of the results can be affected by bibliometric database coverage, as some research fields are better covered by bibliometric databases than others. For example, those subjects that are not published in journals contained within the bibliometric database being used, in our case Web of Science (WoS),[13] are naturally biased against in this analysis, since their publications cannot be analysed. However, most fields covered by this analysis (i.e. biomedical and health research) have good coverage.[14]
- Attribution of research to authors (or institutions) is a challenging issue because it is not always easy to unravel the contribution of different authors to a particular research paper.[15] In the context of multi-authored publications (in which co-publications could serve as a proxy for collaboration), the degree of contribution of the various authors and, consequently, the contributions of the affiliated institutions to the publication is not always clear. This is assumed to average out at an aggregate level.[16]
- Bibliometric analysis is based on past research outputs and cannot reliably measure future potential of organisations.

With particular reference to this study, the following additional points need be kept in mind when interpreting the analysis:

- In this analysis, research is attributed to NHS organisations and HEIs in England. Many addresses on papers will not directly mention these entities, but may instead give (for example) the name of the hospital or affiliated institute/department; these then need to be disambiguated and matched up to the correct NHS organisation or HEI. This 'cleaning' has been carried out as carefully as possible; however, there is chance that a relatively small sample of papers may not have been attributed correctly, in particular, as affiliations that occur frequently have been more rigorously checked than affiliations that only occur once or twice. In addition, as attribution is based on affiliations provided in publications, the analysis relies on the addresses on publications being correct.
- As the period of this study covers 10 years (2004–2013), the structure of some NHS organisations will have changed during this period. The DH supplied us with a list of current NHS organisations and of the changes which have occurred during the period. This list was used to match organisations in the data gathering process. To the best of our knowledge, the names of NHS organisations used in this study are the current names; that is, we have carried out the analysis by looking at where things stand 'today'.
- If individual authors have moved institutions from the time their papers were published, then these publications will be attributed based on the address provided on the papers.

13 Further details about the bibliometric database are provided in Section 2.2.

14 Moed 2005; van Leeuwen 2013

15 In this study, the number of publications was analysed using full-paper counting, in which each institution listed in the address field of the publication receives one credit for its contribution. If an author lists a joint affiliation, then all of the institutions the author lists receive one credit each.

16 Waltman & van Eck 2015

- As the study is a bibliometric analysis of biomedical and health research across the whole of England, several 'non-HEI' research organisations were identified in the dataset, e.g. the European Bioinformatics Institute, the Wellcome Trust Sanger Institute, Public Health England, and the Medical Research Council (MRC) Laboratory of Molecular Biology. In the report, we have attempted to identify and include – as separate entities – as many as possible of these 'other' organisations.[17] If an author referenced both an 'other' organisation and an HEI in their address, then the paper was assigned to both the 'other' organisation and the HEI.
- Linked to the previous point, we also attempted to subsume the publications of research units and research centres into their corresponding HEI when ownership by the host institution was clear to us.[18]
- Finally, there are different ways in which biomedical and health research publications could have been retrieved to construct the dataset. In our analysis, 80 WoS Journal Subject Categories (JSCs), related to biomedical and health research were identified. We considered only those publications that belong to these JSCs (JSCs are discussed further in Section 2.2.1). Although there are caveats associated with this approach, we think the use of WoS JSCs to build a dataset of highly cited biomedical and health research in England over a period of ten years does provide a useful indication of research excellence. Our methodology is discussed in more detail in Sections 2.3 and 2.4.

2.2. Bibliometric database, classification scheme and the indicator used in the analysis

This section presents details about the bibliometric database, the field classification scheme and the indicator used in the analysis.

2.2.1. Bibliometric database and classification scheme

CWTS maintains a comprehensive database of scientific publications for the period 1981–2015, based on the journals and serials processed for the WoS version of the citation indexes maintained and published by Thomson Reuters (the former Institute for Scientific Information). This database includes the Science Citation Index Expanded (SCIE), the Social Science Citation Index (SSCI) and the Arts & Humanities Citation Index (A&HCI). The construction of this database and the indicators derived from it are described in various scientific publications.[19] CWTS maintains its own version of the WoS databases that includes a number of improvements to the original Thomson Reuters data. Most important among these are the advanced citation matching algorithm[20] and an extensive system for address unification.

17 Although some of these organisations may have close links to HEIs (and indeed may be co-located with HEIs), they are not owned by the HEIs. Where possible, we have included these organisations in the analysis because we believe this information will be helpful for the selection panel. Furthermore, some BRC applications may make reference to these organisations explicitly.

18 For example, the publications for a number of MRC Units which are owned by an HEI (e.g. the MRC Clinical Trials Unit at University College London and the MRC Epidemiology Unit at the University of Cambridge) have been incorporated in the analysis with their associated universities.

19 Moed et al. 1995; van Leeuwen et al. 2001a; van Leeuwen et al. 2003

20 Olensky et al. 2015

Each publication in the WoS is assigned to a particular document type (e.g. article, review, editorial). As scientific papers usually only refer to 'articles' and 'reviews', we only considered these document types in our analysis.[21]

Publications are classified based on the journal in which they are published. The different WoS citation indexes cover about 12,000 journals that are assigned to one or more research fields, the JSCs. There are more than 250 JSCs in the WoS classification scheme.[22] Together, these indexes constitute a comprehensive database of scientific literature in which biomedical and health research is very prominent and relatively well covered.[23] In our analysis, publications are considered only if they correspond to one of the 80 identified biomedical and health research JSCs (this is discussed further in Section 2.3).

2.2.2. Indicator used in the analysis

Bibliometrics can incorporate a range of approaches and indicators. To quantify biomedical and health research excellence in England, our analysis focussed on the use of the bibliometric indicator related to the number of highly cited publications.[24]

Highly cited publications (HCPs): This is a citation-based indicator that measures research excellence based on the identification of 'top-performing' papers in a particular field. In our analysis, it refers to the number of papers that rank among the *world's top 20% most highly cited publications* in the bibliometric database, normalised for year of publication and for field and subfield variations. It is often used as a key 'quality' indicator of research impact (using citations as a proxy). Further details about this indicator are provided in Appendix A.

2.3. Building the publication dataset of biomedical and health research in England

Figure 1 summarises the key steps involved in building the publication dataset to carry out the analysis. As noted previously, publications over a period of 10 years (2004–2013) were captured if they appeared in one of the 80 biomedical and health research JSCs. These 80 categories were arrived at in discussions with the DH and are listed in Appendix B.

The citation distribution of all publications (articles and reviews) in those fields, irrespective of country of authorship, was determined and we selected the top 20% most highly cited publications in the same JSC, published in the same year, and of the same document type. We then identified the papers with an author address in England in this select group. *In other words, our final dataset included all biomedical and health research papers (using JSCs as a proxy) written by an author with an English address that were in the top*

21 Web of Science describes an article as 'Reports of research on original works. Includes research papers, features, brief communications, case reports, technical notes, chronology, and full papers that were published in a journal and/or presented at a symposium or conference.' A review is described as 'a renewed study of material previously studied. Includes review articles and surveys of previously published literature. Usually will not present any new information on a subject.' As of 19 November 2015: http://images.webofknowledge.com/WOKRS520B4.1/help/WOS/hs_document_type.html

22 As of 23 November 2015: http://incites.isiknowledge.com/common/help/h_field_category_wos.html.

23 Moed 2005

24 Waltman & Schreiber 2012

20% most frequently cited publications in the world. We excluded self-citations from the analysis. In Appendix C, we list the number of citations needed for each article or review in a particular JSC to appear in the global top 20% of biomedical and health research publications in terms of citations. It should be reiterated that we are not focusing on the top 20% of England's publications in those categories, but, rather, on the contribution of England to the worldwide top 20% most highly cited publications per field. By taking this approach, we are controlling as much as possible for known differences in citation behaviour between fields. For example, as shown in Appendix C, in 2008, an article in cell biology would need many more citations (citation boundary is 20) to get into the top 20% of publications compared with, say, an article in nursing (citation boundary is 5).

We analysed all publications published between 1 January 2004 and 31 December 2013. We used a citation window of four years, meaning that for a paper published in 2005 we considered citations made in 2005, 2006, 2007 and 2008. However, for publications that came out in 2012 and 2013, a full four-year citation window is not available; instead, we used all citations made before 1 January 2015 (i.e. for a paper published in 2013, we considered citations made in 2013 and 2014).[25] Because we explicitly normalised by year of publication when selecting HCPs, we are able to compare results from different years. We do not include citations from 2015 because there would not be a full year of citations available and there is a variable lag in papers being registered in the Web of Science database.[26]

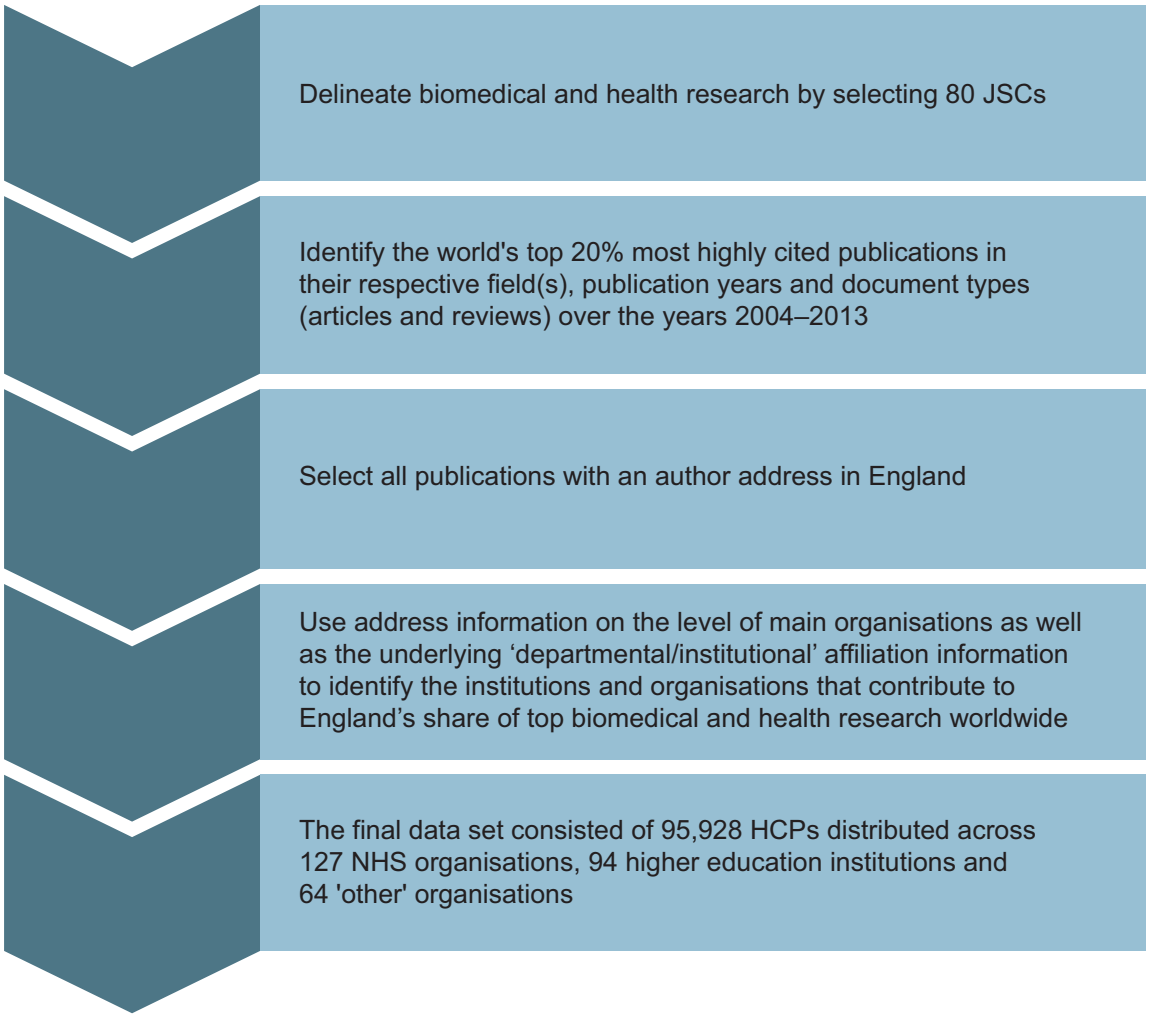
Using this approach, a total of 95,928 unique highly cited publications with an English address were identified in the fields of biomedical and health research over the period 2004–2013.[27] These HCPs were distributed across 127 NHS organisations, 94 HEIs and 64 'other' organisations in England.

25 van Leeuwen 2012

26 CWTS conducted extensive in-house investigations of citation window lengths in different fields before selecting this citation window.

27 Further details of how papers are counted in the analysis are given in Section 2.5.

Figure 1. Summary of the bibliometric data collection process



2.4. Mapping Journal Subject Categories to Highlight Areas

For the current competition, the DH has highlighted 10 clinical areas of particular strategic importance to the health of patients (called Highlight Areas) in which they would particularly welcome applications from NHS/university partnerships with research excellence and critical mass in these fields (see Table 1). In order to analyse the performance of NHS organisations and HEIs in these Highlight Areas, it is necessary to identify the relevant publications for each Highlight Area. Given the timelines for the project and the scale on which the analysis is being carried out (i.e. biomedical and health research in England over a period of ten years) we have used combinations of the JSCs to select sets of papers relevant to each Highlight Area.

Table 1. Mapping of Journal Subject Categories to Highlight Areas

Highlight Area	Associated Journal Subject Categories
Cardiovascular disease	Cardiac and cardiovascular systems Critical care medicine Peripheral vascular disease
Deafness and hearing problems	Otorhinolaryngology
Gastrointestinal (including liver and pancreatic) disease: including inflammatory bowel disease, Crohn's disease, and non-malignant diseases of the digestive system (colon)	Gastroenterology and hepatology
Musculoskeletal disease: including osteoporosis, osteoarthritis, rheumatoid arthritis, and muscular and skeletal disorders	Orthopaedics Rheumatology
Respiratory disease: including asthma, chronic obstructive pulmonary disease, and other, non-malignant respiratory diseases	Allergy Respiratory system
Nutrition, diet and lifestyle (including obesity)	Endocrinology and metabolism Food science and technology Nutrition and dietetics
Dementias	Clinical neurology Geriatrics and gerontology Neuroimaging Neurosciences Psychiatry
Mental health	Behavioural sciences Neuroimaging Neurosciences Psychiatry Psychology, applied Psychology, biological Psychology, clinical Psychology, developmental Psychology, experimental Psychology, multidisciplinary Psychology, psychoanalysis Substance abuse
Oral health/conditions: including chronic mouth and facial pain, oral and throat cancer, oral sores, birth defects such as cleft lip and palate, periodontal (gum) disease, tooth decay and tooth loss, and other diseases and disorders that affect the oral cavity	Dentistry/oral surgery and medicine
Infection and anti-microbial resistance	Immunology Infectious diseases Microbiology Parasitology Virology

The DH approved the JSCs that mapped to the specific Highlight Areas. The aim was to select categories as specific to a topic as possible, while also accepting that some Highlight Areas do not easily correspond to the journal subject classification. Hence, in building and reviewing the mapping categories, it was necessary in some cases to combine multiple categories, some of which were very broad. One example of a complex Highlight Area is Dementia, which does not correspond to a single JSC and hence has been mapped using the following five component JSCs: Clinical neurology, Geriatrics and gerontology, Neuroimaging, Neurosciences and Psychiatry. These JSCs do not necessarily contain journals and papers which are related to dementia, and

therefore this Highlight Area is not as specific as, for example, Oral health/conditions, which corresponds to a single JSC (i.e. Dentistry/oral surgery and medicine). Another point worth noting is that there is some overlap between Highlight Areas, for example, Mental health and Dementias share three JSCs (Neuroimaging, Neurosciences and Psychiatry). Furthermore, profession-based categories, such as Nursing and Social work have not been included in the Highlight Area analysis as the focus is on early translational research. In addition, as far as possible, broad 'basic science' JSCs, such as Biochemistry and molecular biology, which could potentially cut across all the proposed Highlight Areas, have been excluded.

It must be noted that JSCs classify papers by the journal they are in rather than by the content of the paper itself. This leads to two limitations. First, a small subset of papers classified in a certain JSC may not relate closely to that JSC, and, second, papers in general journals are classified to Multidisciplinary sciences (a WoS Journal Subject Category) rather than to the JSC to which they most closely relate. To address this issue where it matters most, we assigned papers in Multidisciplinary sciences to the most relevant JSCs by using the references in these papers.[28]

Finally, it is important to note that alternative methods of partitioning papers into fields exist, e.g. use of hand-picked Medical Subject Headings[29] expert-led text mining.[30] However, they all require considerably more resources and/or are not feasible for this scale of analysis. The method selected was chosen to balance accuracy with feasibility.

2.5. Analyses

Using the compiled dataset of 95,928 HCPs in biomedical and health research in England, we undertook the following four sets of analyses:

- **The number of HCPs between 2004 and 2013 by institution as an indicator of critical mass and quality:** This was based on whole counting of the contributions of each institution to a paper.[31]
- **Co-publication between NHS organisations and HEIs as an indicator of collaboration:** We focused this analysis on the 25 NHS organisations with the highest number of HCPs. We then looked for co-publications with HEIs and limited our analysis to the 25 HEIs with the highest volume of HCPs.

28 That is, each paper was reassigned based on the proportion of cited references that link to publications in journals not being classified to the JSC Multidisciplinary sciences (Glänzel et al. 1999). For example, a publication in a multidisciplinary journal, such as *Nature*, gets reassigned to one of the other WoS JSCs (based on the cited references in the paper), and if the JSC is one of the 80 selected JSCs, then it gets included in the analysis.

29 E.g. Larivière et al. 2013

30 E.g. Thelwall et al. 2015; van Leeuwen et al. 2001b

31 In bibliometrics, two methods of counting articles may be used for attribution to authors: fractional and whole counting. For fractional counting, credit for the paper (or citation) is divided among the collaborating authors or institutions. For whole counting, each author or institution receives one credit for his/her/its participation in the article. We use whole counting to determine the total number of HCPs by institution for all papers within the threshold. However, in the determination of which papers belong to the top 20%, we used fractional counting based on the extent to which papers belong to the upper 20% of the impact distribution. (Due to discrete citation scores, several papers may be 'tied' at a given threshold number of citations. In this case, each will be credited as belonging to the top 20% and will be assigned a fraction that depends on the number of papers 'tied' at the threshold.)

- **The share (%) of HCPs by JSCs to identify world-class biomedical research in specific research fields:** To do this, we examined each JSC and allocated the share of HCPs in our dataset to the institutions.[32] We then identified institutions with more than 10% of HCPs in JSCs with more than 100 HCPs.
- **The share (%) of HCPs by the ten Highlight Areas identified in the Pre-Qualifying Questionnaire (Table 1):** To identify potential areas of institutional concentration within a Highlight Area, we highlighted institutions with more than 5% of HCPs in a Highlight Area.

32 Papers are fractionalised based on the extent to which they belong to the selected JSCs: some papers may be considered as belonging to more than one JSC; in this case credit is divided among the fields.

3. Results of the bibliometric analysis

Having discussed the compilation of the data and its limitations in Chapter 2, in this chapter, we present the results of the bibliometric analysis.

3.1. Number of HCPs

In Figure 2, the volume of HCPs published between 2004 and 2013 is presented for organisations that have, on average, more than 30 HCPs per year (a full list of institutions is shown in Appendix D). On this measure, University College London (UCL), University of Oxford, University of Cambridge, Imperial College London and King's College London lead the field. Table 2 presents the annual number of HCPs per year for NHS organisations that have, on average, more than 30 HCPs per year (sorted by the total number of HCPs). Table 3 lists the corresponding figures for HEIs and 'other' organisations. As is the case for citations in other contexts, the distribution of HCPs across these organisations is skewed, with relatively few organisations being responsible for a large number of HCPs. The five leading NHS organisations, in terms of number of HCPs, are Oxford University Hospitals NHS Foundation Trust, Cambridge University Hospitals NHS Foundation Trust, Imperial College Healthcare NHS Trust, Guy's and St Thomas' NHS Foundation Trust and UCL Hospitals NHS Foundation Trust (Table 2), who together account for 31% of all NHS organisation HCPs. Table 3 shows the dominance of the five leading HEIs, which together account for 41% of HEI and 'other' organisation HCPs.

3.2. Co-publication activity between institutions

Between 2004 and 2013, approximately 40% of the biomedical and health research HCPs in England have collaborations with two or more English organisations. (Note that the figures discussed here exclude international collaborations.) Table 4 presents the collaboration activity between the 25 NHS organisations with the highest volume of HCPs and the 25 HEIs and 'other' organisations with the highest volume of HCPs. Each cell in the cross-tabulation indicates the share (%) of the NHS organisation's HCPs with collaborators that have an HEI or 'other' organisation address. The cells highlighted in yellow indicate percentages greater than or equal to 20. For ease of reading, in Table 5 we have listed the top 25 collaborative partnerships between NHS organisations and HEIs or 'other' organisations in terms of the percentage of collaborative HCPs.

As one might expect, there is a high level of collaboration between co-located institutions. For example, 50% of UCL Hospitals NHS Foundation Trust's HCPs are jointly authored with researchers who have a University College London address. This is also illustrated by Figure 3, which shows a network of collaborations between NHS organisations and HEIs and 'other' organisations. Links between organisations are shown if they shared 50 or more HCPs. The network is laid out largely in two vertical lines, showing HEIs and

'other' organisations in blue (the majority shown on the left), and NHS organisations in green (the majority shown on the right). Any organisations that only link to one other organisation are shown on the outside of the two lines. The node size is proportional to the total number of HCPs the organisation had in the period 2004–2013, and the line thickness is proportional to the number of HCPs shared between two research organisations. Appendix E shows the collaboration analysis done by volume of HCPs instead of by share of HCPs.

3.3. Share (%) of HCPs by Journal Subject Category

The shares of HCPs by JSC for NHS organisations with more than 30 HCPs on average a year are shown in Table 6. The corresponding figures for HEIs and 'other' organisations with more than 30 HCPs on average a year are presented in Table 7. Each cell in the cross-tabulations indicates the share (%) of HCPs (within the core dataset of HCPs in England) within the different JSCs that may be attributed to a given institution. Where present, cells with HCP shares of 5% or greater and less than 10% are highlighted in blue, those with shares of 10% or greater and less than 20% are highlighted in green, and those with shares of 20% or greater are highlighted in yellow. For example, in Table 6, the first cell in the first row, for Allergy and Barts Health NHS Trust, is 1.2%. This means that 1.2% of global HCPs with an English address classified within the field of Allergy have an address associated with Barts Health NHS Trust. To simplify interpreting Table 6 and Table 7, in Table 8 we list all those JSC–organisation combinations that have more than a 10% share of papers published in a specific JSC. To limit the number of JSC–organisation combinations and to demonstrate those fields that have a relatively large portfolio, we have restricted this list to fields with more than 100 HCPs.

3.4. Distribution of HCPs by Highlight Area

The shares of HCPs by Highlight Area and organisation are shown in Table 9 (NHS organisations with more than 30 HCPs on average a year) and Table 10 (HEIs and 'other' organisations with more than 30 HCPs on average a year). As in Table 6 and Table 7, where present, cells with HCP shares of 5% or greater and less than 10% are highlighted in blue, those with shares of 10% or greater and less than 20% are highlighted in green, and those with shares of 20% or greater are highlighted in yellow. By means of illustration, in Table 9, if one reads across the Highlight Area of Deafness and hearing, the first highlighted cell one comes to corresponds to the NHS organisation UCL Hospitals NHS Foundation Trust. The highlighted value is 5.1%, meaning that 5.1% of HCPs classified within the Highlight Area of Deafness and hearing have an address associated with UCL Hospitals NHS Foundation Trust. As before, to simplify interpreting Table 9 and Table 10, we have listed in Table 11, the top 5 NHS organisations and the top 5 HEIs or 'other' organisations within each Highlight Area (based on the share of HCPs). Appendix F shows the distribution of HCP shares across institutions for each Highlight Area.

Figure 2. Total number of HCPs for organisations that have, on average, more than 30 HCPs per year, 2004–2013 (sorted by total number of HCPs; HEIs are shown in blue; NHS organisations are shown in green; 'other' organisations are shown in yellow)

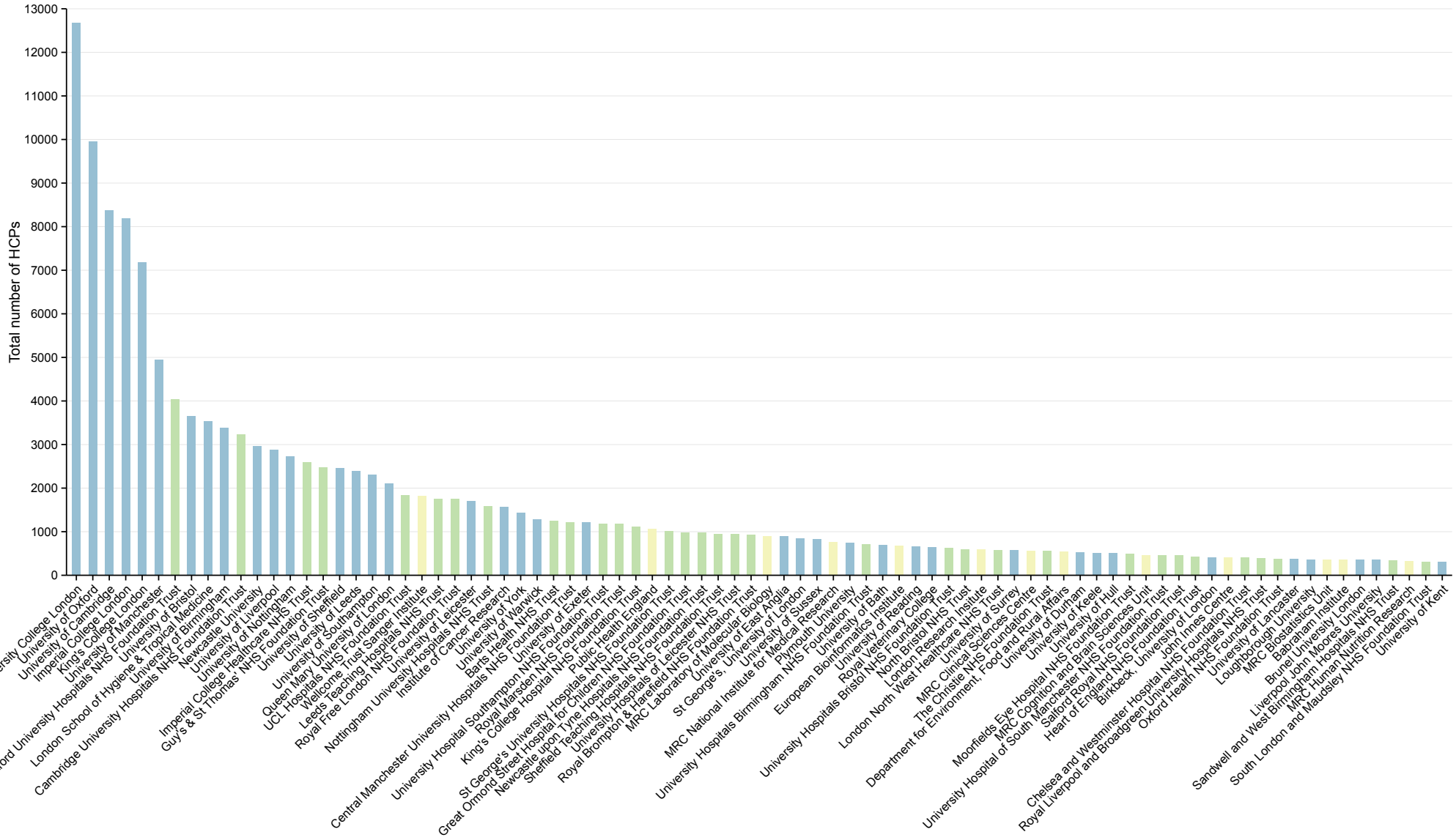


Table 2. Annual numbers of HCPs for NHS organisations that have, on average, more than 30 HCPs per year, 2004–2013 (sorted by total number of HCPs)

NHS organisation	Number of HCPs										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Oxford University Hospitals NHS Foundation Trust	351	362	310	376	390	381	448	421	532	473	4045
Cambridge University Hospitals NHS Foundation Trust	210	243	251	240	269	291	406	422	464	438	3233
Imperial College Healthcare NHS Trust	226	229	260	272	277	248	281	277	251	268	2590
Guy's & St Thomas' NHS Foundation Trust	137	182	193	221	228	218	283	277	352	392	2484
UCL Hospitals NHS Foundation Trust	162	152	138	159	163	159	207	212	216	279	1848
Leeds Teaching Hospitals NHS Trust	128	130	124	177	162	188	203	212	225	212	1762
Royal Free London NHS Foundation Trust	226	182	214	216	197	146	138	149	144	139	1752
Nottingham University Hospitals NHS Trust	141	137	116	151	157	128	176	197	205	173	1580
Barts Health NHS Trust	139	111	124	121	132	119	118	120	130	137	1250
Central Manchester University Hospitals NHS Foundation Trust	99	103	106	92	110	116	130	131	154	176	1217
University Hospital Southampton NHS Foundation Trust	112	101	79	92	104	91	132	138	166	167	1183
Royal Marsden NHS Foundation Trust	58	88	79	97	109	124	131	154	164	177	1180
King's College Hospital NHS Foundation Trust	73	67	92	82	110	105	146	132	141	162	1111
St George's University Hospitals NHS Foundation Trust	178	143	84	96	83	78	79	96	101	77	1015
Great Ormond Street Hospital for Children NHS Foundation Trust	60	75	68	80	100	93	115	123	129	147	990
Newcastle upon Tyne Hospitals NHS Foundation Trust	87	95	88	88	99	93	106	101	119	110	987
Sheffield Teaching Hospitals NHS Foundation Trust	94	90	84	98	94	82	81	111	104	110	949
University Hospitals of Leicester NHS Trust	57	60	62	88	79	115	113	134	118	118	944
Royal Brompton & Harefield NHS Foundation Trust	70	72	78	85	87	80	98	110	118	141	939
University Hospitals Birmingham NHS Foundation Trust	57	57	73	51	77	58	68	79	91	110	720
University Hospitals Bristol NHS Foundation Trust	45	59	53	50	63	63	75	70	63	95	634
North Bristol NHS Trust	45	50	54	53	65	49	78	73	66	71	603
London North West Healthcare NHS Trust	69	75	63	55	55	48	57	57	45	62	585
The Christie NHS Foundation Trust	43	55	52	54	54	48	68	67	66	55	561
Moorfields Eye Hospital NHS Foundation Trust	38	39	31	42	46	41	53	49	67	83	488
University Hospital of South Manchester NHS Foundation Trust	27	32	44	45	36	43	40	58	54	89	468
Salford Royal NHS Foundation Trust	39	47	47	47	41	46	42	44	59	54	466
Heart of England NHS Foundation Trust	48	37	36	36	46	35	46	47	47	51	428
Chelsea and Westminster Hospital NHS Foundation Trust	39	41	39	31	38	36	45	41	49	49	409
Royal Liverpool and Broadgreen University Hospitals NHS Trust	31	38	28	37	36	43	43	50	48	41	394
Oxford Health NHS Foundation Trust	27	32	21	33	43	47	48	34	50	41	377
Sandwell and West Birmingham Hospitals NHS Trust	25	33	20	29	23	32	30	40	60	55	349
South London and Maudsley NHS Foundation Trust	27	15	15	19	19	30	30	51	49	63	316

Table 3. Annual numbers of HCPs for HEIs and 'other' organisations that have, on average, more than 30 HCPs per year, 2004–2013 (sorted by total number of HCPs; 'other' organisations are shown in italics)

HEI or 'other' organisation	Number of HCPs										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
University College London	936	969	1022	1078	1257	1221	1376	1424	1611	1778	12672
University of Oxford	673	682	735	829	960	991	1091	1210	1358	1422	9952
University of Cambridge	608	611	632	725	748	845	953	1039	1109	1101	8370
Imperial College London	550	570	660	714	800	830	942	985	1025	1112	8188
King's College London	448	490	510	585	641	738	764	873	1024	1122	7193
University of Manchester	325	324	397	445	451	502	529	595	675	700	4942
University of Bristol	277	294	274	315	380	404	377	409	462	471	3662
London School of Hygiene & Tropical Medicine	225	227	272	296	369	347	416	415	474	503	3543
University of Birmingham	253	247	279	287	311	335	370	398	453	456	3390
Newcastle University	207	182	237	237	277	282	354	353	416	426	2970
University of Liverpool	209	225	210	247	254	289	305	338	413	392	2882
University of Nottingham	159	199	176	235	287	274	332	348	361	369	2739
University of Sheffield	206	200	224	228	249	235	264	264	287	302	2460
University of Leeds	179	165	179	210	221	233	280	308	303	308	2386
University of Southampton	149	182	173	229	222	217	243	248	287	361	2311
Queen Mary University of London	100	119	150	151	169	204	234	283	352	349	2114
Wellcome Trust Sanger Institute	*97*	*96*	*105*	*138*	*164*	*202*	*248*	*220*	*269*	*281*	*1819*
University of Leicester	144	130	129	129	154	173	174	218	216	237	1706
Institute of Cancer Research	84	116	125	136	161	182	187	195	192	194	1572
University of York	117	109	132	122	138	132	167	159	176	186	1438
University of Warwick	59	69	78	96	146	150	153	170	185	184	1290
University of Exeter	52	51	63	98	113	124	147	167	185	213	1212
Public Health England	*63*	*67*	*91*	*99*	*114*	*115*	*129*	*132*	*144*	*115*	*1068*
MRC Laboratory of Molecular Biology	*94*	*72*	*69*	*96*	*83*	*76*	*92*	*100*	*120*	*103*	*905*
University of East Anglia	37	49	55	53	80	93	89	118	151	171	895
St George's, University of London	26	27	66	81	87	80	123	112	111	131	843
University of Sussex	53	69	77	68	66	90	96	95	103	123	840
MRC National Institute for Medical Research	*71*	*70*	*65*	*52*	*70*	*83*	*75*	*81*	*96*	*93*	*758*
Plymouth University	46	46	51	67	95	102	90	85	85	78	745
University of Bath	63	53	57	63	76	68	82	86	78	79	703
European Bioinformatics Institute	*59*	*66*	*32*	*51*	*52*	*67*	*85*	*62*	*98*	*101*	*673*
University of Reading	64	55	47	61	74	61	73	63	79	93	671

HEI or 'other' organisation	Number of HCPs										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Royal Veterinary College	46	38	48	56	69	57	78	77	84	94	648
London Research Institute	*42*	*57*	*49*	*64*	*65*	*53*	*70*	*66*	*64*	*69*	*598*
University of Surrey	41	46	42	48	69	55	57	53	77	83	572
MRC Clinical Sciences Centre	*40*	*57*	*59*	*62*	*57*	*56*	*71*	*58*	*50*	*60*	*571*
Department for Environment, Food and Rural Affairs	*50*	*44*	*43*	*49*	*60*	*56*	*54*	*61*	*70*	*58*	*544*
University of Durham	45	40	48	41	51	48	60	43	57	97	529
University of Keele	32	27	47	44	63	54	60	61	48	78	516
University of Hull	29	32	47	54	39	61	48	59	76	67	512
MRC Cognition and Brain Sciences Unit	*44*	*50*	*42*	*39*	*41*	*47*	*46*	*51*	*53*	*56*	*468*
Birkbeck, University of London	30	27	33	35	41	46	51	59	44	54	419
John Innes Centre	*42*	*45*	*44*	*44*	*39*	*41*	*47*	*39*	*39*	*38*	*418*
University of Lancaster	36	22	32	34	30	43	44	46	36	48	372
Loughborough University	19	20	24	26	38	38	36	51	47	67	367
MRC Biostatistics Unit	*21*	*28*	*23*	*32*	*31*	*46*	*43*	*56*	*45*	*39*	*366*
Babraham Institute	*40*	*39*	*36*	*32*	*38*	*31*	*35*	*36*	*39*	*37*	*364*
Brunel University London	15	16	32	38	35	47	31	43	47	54	358
Liverpool John Moores University	17	32	18	32	43	46	32	42	46	46	353
MRC Human Nutrition Research	*40*	*34*	*42*	*54*	*46*	*32*	*22*	*20*	*18*	*22*	*329*
University of Kent	21	20	22	20	34	41	37	34	45	42	315

Table 4. Measure of collaboration activity between the 25 NHS organisations and the 25 HEIs or 'other' organisations with the largest number of HCPs, based on the share (%) of NHS organisations' HCPs co-authored with HEIs or 'other' organisations, 2004–2013 (sorted alphabetically; cells with HCP shares of 20% or greater are highlighted in yellow; blank cells represent partnerships for which there are no HCPs; values are rounded to one decimal place, therefore any values less than 0.05 appear as 0.0)

	Imperial College London	Institute of Cancer Research	King's College London	London School of Hygiene & Tropical Medicine	MRC Laboratory of Molecular Biology	Public Health England	Queen Mary University of London	University College London	University of Birmingham	University of Bristol	University of Cambridge	University of East Anglia	University of Exeter	University of Leeds	University of Leicester	University of Liverpool	University of Manchester	Newcastle University	University of Nottingham	University of Oxford	University of Sheffield	University of Southampton	University of Warwick	University of York	Wellcome Trust Sanger Institute
Barts Health NHS Trust	6.8	2.4	5.9	1.9	0.2	1.1	19.9	15.2	2.4	2.8	3.9	0.3	1.7	1.6	1.8	1.5	2.1	2.0	1.1	5.3	1.6	1.7	0.7	0.4	1.5
Cambridge University Hospitals NHS Foundation Trust	4.4	1.3	3.9	1.2	1.0	0.5	1.7	5.6	1.9	2.6	42.9	1.0	1.2	1.1	1.5	0.6	1.7	1.6	0.8	5.7	0.9	1.5	0.5	0.2	4.8
Central Manchester University Hospitals NHS Foundation Trust	3.4	3.8	2.4	2.2		1.7	1.9	6.6	3.1	1.2	5.2	0.3	0.3	1.8	0.6	2.9	38.1	3.0	0.6	5.3	1.5	3.0	0.2	1.4	1.2
Great Ormond Street Hospital for Children NHS Foundation Trust	4.6	1.6	4.5	1.4	0.1	0.4	2.0	49.0	2.9	1.5	3.4	0.3	1.0	1.1	1.6	1.6	2.6	3.4	1.1	4.7	0.5	2.4	0.3	0.3	0.6
Guy's & St Thomas' NHS Foundation Trust	4.5	2.4	38.3	1.7	0.0	0.9	2.6	10.2	2.4	1.5	4.4	0.2	0.6	1.3	1.2	0.8	3.6	2.5	1.2	4.9	1.4	2.0	0.4	0.3	2.0
Imperial College Healthcare NHS Trust	46.1	0.7	4.5	0.9	0.1	0.5	2.2	9.7	1.3	1.3	3.0	0.3	0.6	0.9	0.9	0.7	0.8	1.1	0.5	5.9	0.6	1.0	0.3	0.1	1.4
King's College Hospital NHS Foundation Trust	10.2	0.8	31.9	1.2		1.5	2.6	11.5	1.6	1.0	3.2	0.2	0.3	1.8	0.6	2.4	3.3	2.9	0.9	4.5	2.8	1.4	0.1	0.2	0.4
Leeds Teaching Hospitals NHS Trust	3.4	3.9	2.7	1.2	0.2	0.9	1.7	7.3	3.3	0.9	3.8	0.2	0.4	35.4	1.5	1.6	4.1	3.5	1.2	5.2	2.8	1.8	0.3	2.2	1.6
London North West Healthcare NHS Trust	21.8	2.0	7.0	2.6		0.6	4.7	12.0	4.0	1.6	4.3	0.4	1.3	1.3	1.4	0.9	2.4	2.7	0.7	8.2	0.9	2.0	0.1	0.3	3.3
Moorfields Eye Hospital NHS Foundation Trust	3.4	0.2	4.5	7.0		0.2	2.6	46.7	0.8	2.0	4.8	0.2	0.4	0.5	1.5	1.5	1.9	0.9	0.6	5.7	0.9	1.4	0.1	0.2	1.9
Newcastle upon Tyne Hospitals NHS Foundation Trust	2.0	2.2	5.2	1.0	0.1	0.6	1.4	6.2	2.8	2.2	3.9	0.3	0.4	2.0	1.3	1.1	4.4	39.1	1.7	5.6	2.3	2.6	0.7	1.1	1.5
North Bristol NHS Trust	3.8	0.6	2.9	1.4		1.9	1.5	7.6	1.8	35.1	3.7	0.8	1.7	2.1	0.6	0.8	2.1	1.9	1.7	6.0	1.4	3.6	1.2	0.3	1.3
Nottingham University Hospitals NHS Trust	2.4	2.3	3.4	1.1	0.2	0.5	1.1	5.0	2.4	1.9	3.0	0.4	0.3	1.5	1.9	1.1	2.4	2.4	44.4	4.0	1.7	2.4	0.6	0.6	1.2
Oxford University Hospitals NHS Foundation Trust	5.3	1.0	3.2	2.2	0.2	0.4	2.0	5.6	2.5	2.0	3.8	0.5	1.3	1.2	1.1	1.1	1.8	1.8	1.0	47.5	1.2	1.5	0.7	0.2	2.8
Royal Brompton & Harefield NHS Foundation Trust	56.7	1.1	5.7	1.7			1.1	10.3	1.4	1.1	2.8	0.3	0.2	0.6	1.3	0.7	1.7	1.3	0.6	1.8	0.1	1.0	0.1	0.3	1.0
Royal Free London NHS Foundation Trust	7.0	0.8	5.4	2.6	0.1	2.1	2.7	48.1	2.3	1.6	2.4	0.8	0.3	0.9	0.6	1.2	3.9	1.8	0.8	3.7	0.6	1.3	0.9	0.3	0.2
Royal Marsden NHS Foundation Trust	4.3	38.4	3.0	1.4	0.1	0.1	3.8	8.8	2.7	1.9	6.6	0.2	0.2	2.7	1.0	1.1	2.7	1.5	1.1	4.0	1.7	2.8	1.0	0.4	1.2
Sheffield Teaching Hospitals NHS Foundation Trust	4.2	2.0	2.3	1.0		0.6	1.1	5.4	3.3	1.9	2.3	0.7	0.2	2.2	1.1	2.2	3.4	2.5	3.3	3.6	40.9	1.8	0.4	0.8	1.3
St George's University Hospitals NHS Foundation Trust	7.0	4.0	7.9	2.3		2.0	2.6	14.3	2.5	3.1	3.8	0.6	0.6	2.2	1.8	1.4	2.6	2.3	0.4	5.0	1.6	2.6	0.2	1.1	1.6
The Christie NHS Foundation Trust	3.0	6.9	1.7	0.8		0.0	3.2	8.9	3.8	0.7	2.6			2.5	0.6	2.2	44.1	1.7	0.7	3.9	2.8	2.3	0.4	0.9	
UCL Hospitals NHS Foundation Trust	7.3	0.8	5.3	4.9	0.1	0.6	2.4	49.8	1.7	0.7	2.0	0.2	0.9	0.9	0.3	0.6	2.2	1.6	0.5	4.1	1.2	1.2	0.2	0.3	0.8
University Hospital Southampton NHS Foundation Trust	3.7	3.0	4.0	2.0		0.5	1.5	7.4	1.3	2.2	4.8	0.4	0.9	0.9	1.0	0.6	2.5	2.4	2.1	6.7	1.6	40.1	0.7	0.4	1.9
University Hospitals Birmingham NHS Foundation Trust	3.1	0.5	3.9	1.1		0.8	1.2	8.8	39.9	2.4	3.3	0.4	0.9	1.5	1.6	1.9	3.3	3.0	1.2	5.5	2.3	1.7	2.3	0.1	0.9
University Hospitals Bristol NHS Foundation Trust	4.6	2.8	3.5	2.1		1.0	0.6	7.4	3.6	33.9	3.5	0.3	1.5	2.0	0.3	1.6	2.1	2.7	1.8	5.4	1.1	3.8	0.4	0.2	0.9
University Hospitals of Leicester NHS Trust	5.8	1.1	5.0	2.3	0.1	1.0	4.1	6.1	2.3	2.8	5.3	0.7	1.4	3.5	26.9	1.3	1.9	1.5	2.2	6.2	2.2	1.5	0.9	0.1	4.0

Figure 3. Collaboration network of NHS organisations with HEIs and 'other' organisations (organisations are shown if they share 50 or more HCPs with another organisation)

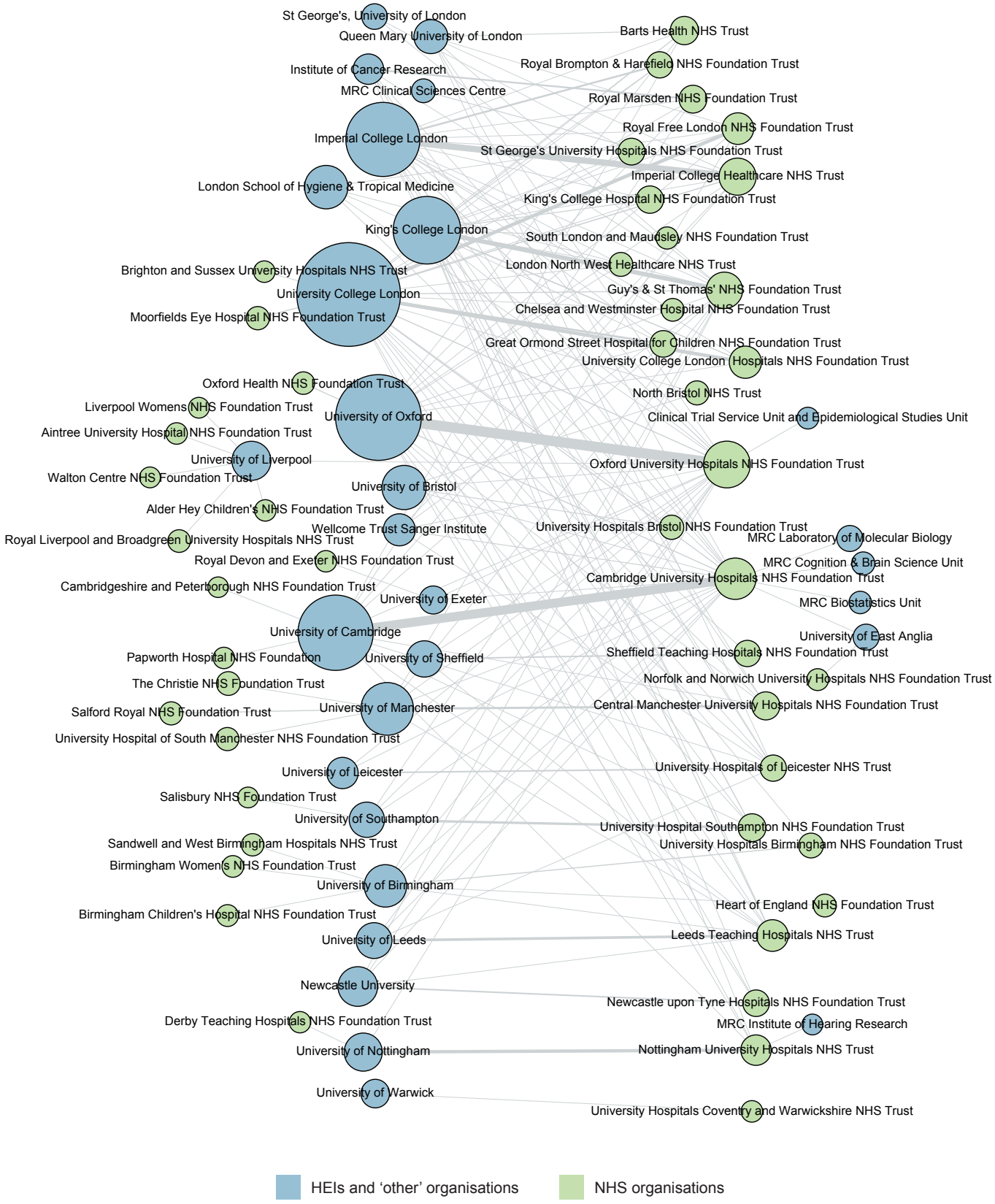


Table 5. Summary of top 25 collaborative partnerships from Table 4 (in terms of the share (%) of NHS organisations HCPs)

NHS organisation	HEI or 'other' organisation	Number of NHS organisations' HCPs sharing the corresponding HEI or 'other' organisation address	Share (%) of NHS organisations' HCPs sharing the corresponding HEI or 'other' organisation address
Royal Brompton & Harefield NHS Foundation Trust	Imperial College London	521	57
UCL Hospitals NHS Foundation Trust	University College London	950	50
Great Ormond Street Hospital for Children NHS Foundation Trust	University College London	558	49
Royal Free London NHS Foundation Trust	University College London	954	48
Oxford University Hospitals NHS Foundation Trust	University of Oxford	2686	48
Moorfields Eye Hospital NHS Foundation Trust	University College London	310	47
Imperial College Healthcare NHS Trust	Imperial College London	1647	46
Nottingham University Hospitals NHS Trust	University of Nottingham	892	44
The Christie NHS Foundation Trust	University of Manchester	240	44
Cambridge University Hospitals NHS Foundation Trust	University of Cambridge	2363	43
Sheffield Teaching Hospitals NHS Foundation Trust	University of Sheffield	418	41
University Hospital Southampton NHS Foundation Trust	University of Southampton	662	40
University Hospitals Birmingham NHS Foundation Trust	University of Birmingham	325	40
Newcastle upon Tyne Hospitals NHS Foundation Trust	Newcastle University	437	39
Royal Marsden NHS Foundation Trust	Institute of Cancer Research	481	38
Guy's & St Thomas' NHS Foundation Trust	King's College London	1173	38
Central Manchester University Hospitals NHS Foundation Trust	University of Manchester	592	38
Leeds Teaching Hospitals NHS Trust	University of Leeds	730	35
North Bristol NHS Trust	University of Bristol	232	35
University Hospitals Bristol NHS Foundation Trust	University of Bristol	267	34
King's College Hospital NHS Foundation Trust	King's College London	283	32
University Hospitals of Leicester NHS Trust	University of Leicester	446	27
London North West Healthcare NHS Trust	Imperial College London	163	22
Barts Health NHS Trust	Queen Mary University of London	265	20
Barts Health NHS Trust	University College London	202	15

Table 6. Cross-tabulation of share (%) of HCPs by JSC and NHS organisation (results shown for NHS organisations with more than 30 HCPs on average a year; cells with HCP shares of 5% or greater and less than 10% are highlighted in blue; those with shares of 10% or greater and less than 20% are highlighted in green; there are no values greater than 20%; blank cells represent relationships for which there are no HCPs; values are rounded to one decimal place, therefore any values less than 0.05 appear as 0.0)

	Barts Health NHS Trust	Cambridge University Hospitals NHS Foundation Trust	Central Manchester University Hospitals NHS Foundation Trust	Chelsea and Westminster Hospital NHS Foundation Trust	Great Ormond Street Hospital for Children NHS Foundation Trust	Guy's & St Thomas' NHS Foundation Trust	Heart of England NHS Foundation Trust	Imperial College Healthcare NHS Trust	King's College Hospital NHS Foundation Trust	Leeds Teaching Hospitals NHS Trust	London North West Healthcare NHS Trust	Moorfields Eye Hospital NHS Foundation Trust	Newcastle upon Tyne Hospitals NHS Foundation Trust	North Bristol NHS Trust	Nottingham University Hospitals NHS Trust	Oxford Health NHS Foundation Trust	Oxford University Hospitals NHS Foundation Trust	Royal Brompton & Harefield NHS Foundation Trust	Royal Free London NHS Foundation Trust	Royal Liverpool and Broadgreen University Hospitals NHS Trust	Royal Marsden NHS Foundation Trust	Salford Royal NHS Foundation Trust	Sandwell and West Birmingham Hospitals NHS Trust	Sheffield Teaching Hospitals NHS Foundation Trust	South London and Maudsley NHS Foundation Trust	St George's University Hospitals NHS Foundation Trust	The Christie NHS Foundation Trust	UCL Hospitals NHS Foundation Trust	University Hospital of South Manchester NHS Foundation Trust	University Hospital Southampton NHS Foundation Trust	University Hospitals Birmingham NHS Foundation Trust	University Hospitals Bristol NHS Foundation Trust	University Hospitals of Leicester NHS Trust
Allergy	1.2	2.1	1.2	0.1	0.8	4.5	0.6	1.2	0.5	0.6	0.3	0.1	1.1		1.9		0.9	3.1	0.9	0.5		0.2		0.4		0.4		1.6	2.7	4.8	0.1	0.4	1.4
Anatomy & morphology	0.0	0.8	0.3	0.1	0.5	2.2		0.8	0.2	0.5		0.1	0.3		0.9	0.1	2.2	0.2	0.1			0.1		0.2	0.1	0.3		0.1	0.1	0.3		0.2	0.1
Andrology	1.2	2.9	7.2			1.3		2.5					1.2				2.5					1.0		4.3								0.1	
Anesthesiology	0.8	2.4	1.1	2.0	1.2	1.1	0.4	1.5	0.5	1.5	0.1		0.4	1.1	1.6		3.8	0.2	1.4	0.4	0.4	1.1	0.3	0.9		0.7	0.1	2.2	1.7	0.7	0.2	1.6	1.0
Audiology & speech-language pathology	0.8	1.4	0.9		0.9	1.6		0.3		0.0	0.1		0.2	0.3	1.1	0.2	0.4		0.3	0.3				0.4	0.2	0.2	0.1	1.5		0.2	0.4	0.1	0.4
Behavioral sciences	0.3	2.2	0.2	0.0	0.0	0.5		0.6	0.1		0.0	0.0	0.2	0.0	0.3	0.4	0.8	0.0	0.2	0.0		0.3		0.2	0.4	0.0		0.5		0.2			0.0
Biochemical research methods	0.2	2.2	0.3	0.0	0.1	0.7	0.0	0.9	0.2	0.3	0.1	0.1	0.2	0.1	0.4	0.1	2.2	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.3	0.4	0.1	0.3	0.0	0.1	0.2
Biochemistry & molecular biology	0.3	2.5	0.3	0.0	0.2	0.8	0.0	1.2	0.1	0.5	0.1	0.1	0.2	0.1	0.5	0.1	2.5	0.1	0.5	0.1	0.2	0.1	0.0	0.1	0.1	0.2	0.1	0.3	0.0	0.4	0.1	0.1	0.2
Biophysics	0.3	2.3	0.2	0.0	0.2	0.6	0.0	0.9	0.1	0.1	0.1	0.1	0.2	0.1	0.4	0.0	1.8	0.1	0.4	0.1	0.2	0.1	0.0	0.1	0.0	0.1	0.1	0.3	0.0	0.1	0.1	0.0	0.1
Biotechnology & applied microbiology	0.3	2.2	0.3	0.0	0.3	0.7	0.1	0.8	0.1	0.4	0.1	0.2	0.3	0.1	0.7	0.1	2.1	0.1	0.5	0.1	0.2	0.0	0.0	0.1	0.1	0.2	0.1	0.4	0.0	0.3	0.1	0.0	0.2
Cardiac & cardiovascular systems	0.9	1.7	0.7	0.1	1.1	2.4	0.3	2.6	0.9	0.9	0.6	0.0	0.8	0.1	0.4		3.8	5.4	1.0	0.1	0.0	0.1	1.3	0.3		1.8	0.0	3.0	0.5	0.9	1.0	0.7	1.8
Cell & tissue engineering	0.6	3.2	0.1	0.1	1.0	1.1		1.8	0.4	0.4	0.1	0.8	0.8	0.4	0.4		3.1	0.3	0.7	0.1	0.3	0.1	0.0	0.4		0.1	0.3	0.3	0.0	0.5	0.1		0.2
Cell biology	0.4	3.2	0.2	0.0	0.2	0.8	0.0	1.3	0.1	0.5	0.1	0.1	0.2	0.1	0.5	0.0	2.6	0.2	0.5	0.1	0.2	0.0	0.0	0.1	0.0	0.2	0.1	0.3	0.1	0.4	0.1	0.1	0.2
Chemistry, medicinal	0.3	1.4	0.2			0.4		1.6	0.1	0.0			0.0		0.2		1.4	0.2	0.3	0.1	0.1	0.1	0.0	0.1		0.1	0.1	0.1	0.1	0.5	0.0		0.1
Clinical neurology	0.5	2.7	0.7	0.2	1.3	1.5	0.1	2.0	1.1	0.5	0.1	0.2	1.3	0.7	1.0	0.5	3.9	0.1	0.9	0.1	0.1	0.9	0.2	0.6	0.4	0.6	0.1	3.2	0.1	0.8	0.4	0.3	0.4
Critical care medicine	2.5	2.9	0.6	0.5	0.7	2.3	0.7	2.2	0.8	2.0	0.4	0.0	0.5	1.1	1.1		2.3	3.2	1.3	0.4	0.0	0.6	0.6	0.8		1.6	0.0	1.2	1.7	1.2	1.4	0.3	1.5
Dentistry/oral surgery & medicine	1.0	0.1	1.7		0.2	4.4		0.3	0.8	3.6	0.1		0.4	0.0	0.4		0.6		0.2	1.2	0.2	0.0		0.3	0.0	0.4	0.3	8.8	0.2	0.2	0.2	0.8	0.2
Dermatology	1.8	1.3	1.1	0.5	1.6	10.7	0.1	0.7	0.7	2.6	0.1	0.1	1.7	0.3	1.9		2.3	0.1	1.4	0.6	0.3	4.1	0.1	1.9		0.6	0.3	0.3	1.0	0.5	0.8	0.7	0.7
Developmental biology	0.2	2.4	0.7	0.0	0.2	0.9	0.0	1.0	0.0	0.4	0.0	0.1	0.2	0.0	1.0		2.4	0.1	0.3		0.0	0.0		0.1	0.0	0.1	0.1	0.2	0.0	0.6	0.0	0.1	0.2
Emergency medicine	2.2	1.6	1.5	0.5	0.2	1.5	1.9	2.7	0.6	5.6	0.2		0.8	3.7	1.5		2.5	0.2	0.8	0.6		1.5	0.3	1.1	0.0	1.4		0.5	0.4	1.6	2.2	1.4	2.1
Endocrinology & metabolism	1.2	5.1	1.2	0.1	0.3	1.1	0.5	2.3	0.4	0.1	0.2	0.0	0.4	0.3	0.7	0.0	3.8	0.1	0.9	0.2	0.3	0.3	0.1	1.1	0.0	0.4	0.5	0.8	0.2	1.4	0.5	0.2	0.5

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Engineering, biomedical	0.4	1.3	0.2	0.1	0.5	1.7	0.1	1.4	0.1	0.6	0.3	0.2	0.3	0.3	0.5	0.1	1.5	0.2	0.7	0.1	1.4	0.1	0.1	0.4	0.1	0.1	0.4	3.0	0.1	0.7	0.3	0.4	0.1
Food science & technology		0.5	0.2		0.0	0.1		0.1		0.2			0.1	0.0	0.3	0.1	0.4	0.0			0.0	0.3				0.0		0.1		0.2		0.1	0.1
Gastroenterology & hepatology	1.4	2.2	0.7	0.4	0.2	1.3	0.2	2.7	2.8	2.9	3.3	0.0	0.8	0.4	3.1		3.6	0.1	3.9	0.6	0.5	0.6	0.2	1.2		0.6	0.2	1.3	0.6	1.2	1.7	0.4	0.9
Genetics & heredity	0.4	3.5	1.2	0.0	0.9	1.6	0.1	1.3	0.4	1.2	0.4	0.3	0.5	0.2	0.6	0.1	3.4	0.2	0.4	0.1	0.3	0.1	0.0	0.1	0.1	0.4	0.1	0.5	0.0	0.7	0.1	0.3	0.7
Geriatrics & gerontology	0.3	2.3	0.3	0.2	0.0	1.5	0.1	0.6	0.6	0.1	0.1	0.1	1.3	0.5	0.9	0.4	1.7	0.2	1.3	0.4		0.7	0.2	0.7	0.8	0.2	0.1	0.6	0.5	0.9	0.7	0.1	0.8
Gerontology		2.0	0.2	0.2		0.7		0.3	0.4				1.7	0.3	0.4	0.8	1.4		1.7	0.5		0.5	0.0	0.1	1.4	0.2		0.4	0.7	1.0	0.3	0.1	1.0
Health care sciences & services	0.5	0.5	0.3	0.3	0.2	0.6	0.2	1.0	0.3	0.6	0.1	0.1	0.4	0.3	0.7	0.1	1.0	0.1	0.5	0.1	0.5	0.2	0.2	0.8	0.1	0.3	0.2	0.4	0.2	0.4	0.4	0.4	0.5
Health policy & services	0.6	0.1	0.3	0.3	0.1	0.2	0.2	0.9	0.2	0.5	0.1	0.1	0.2	0.0	0.2	0.2	0.7		0.3	0.1	0.2	0.3	0.1	0.2	0.1	0.3	0.1	0.2	0.2	0.4	0.1	0.3	
Hematology	1.8	3.3	1.3	0.2	1.5	2.5	0.5	3.1	1.2	1.7	0.2	0.1	0.9	0.3	0.8	0.0	4.6	0.4	2.1	0.3	0.9	0.1	0.5	0.7		0.7	0.7	1.2	0.0	0.7	0.4	1.0	0.6
Immunology	0.8	2.1	0.7	1.0	0.5	1.9	0.3	1.9	0.5	0.5	0.3	0.1	0.4	0.2	0.6	0.0	5.0	0.5	1.9	0.3	0.1	0.1	0.0	0.2	0.1	0.6	0.1	0.6	0.4	1.1	0.4	0.3	0.5
Infectious diseases	1.0	1.0	0.5	2.0	0.2	1.2	0.8	1.3	0.4	0.9	0.4	0.0	0.3	0.5	0.6		4.1	0.0	2.9	0.4	0.0	0.0	0.2	0.3	0.0	0.7		0.8	0.5	0.4	0.3	0.1	0.3
Integrative & complementary medicine	0.4			0.3		0.8		0.3		0.4			0.2		0.4		0.3		0.2	0.4	0.4		0.8				1.0	2.2		0.4	0.8	1.7	
Materials science, biomaterials	0.5	1.0	0.1	0.1	0.5	1.4		0.1	0.4	0.5	0.7	0.2		0.6	0.7		0.7	0.0	0.9	0.1			0.0	0.2				3.7	0.1	1.1	0.0	0.2	
Mathematical & computational biology	0.3	2.2	0.3	0.1	0.2	0.6	0.1	0.8	0.1	0.1	0.1	0.1	0.2	0.0	0.3	0.1	2.1	0.1	0.1	0.0	0.2	0.0	0.0	0.1	0.1	0.1	0.1	0.2		0.2	0.0	0.1	0.4
Medical informatics	0.6	1.2	0.3	0.1	0.3	0.4		0.9	0.1	0.1		0.2	0.2		0.3	0.2	1.0	0.0	0.1		0.2	0.0	0.1	0.4		0.2	0.2	0.7		0.3	0.4	0.2	0.5
Medical laboratory technology	1.5	2.2	0.9	0.2	0.5	2.3	0.3	1.3	2.5	2.9	1.2	0.1	0.6	0.9	0.7	0.1	2.7	0.7	1.8	0.7	0.8	0.5	0.2	1.4	0.1	1.6	0.4	1.9	1.4	0.7	0.9	0.4	0.7
Medicine, general & internal	0.8	2.2	0.6	0.3	0.5	1.3	0.4	1.2	0.6	0.9	0.3	0.1	0.6	0.3	0.9	0.3	3.2	0.6	1.2	0.1	0.5	0.2	0.4	0.6	0.2	0.5	0.3	0.8	0.2	0.8	0.4	0.4	0.7
Medicine, research & experimental	0.6	3.0	0.8	0.2	0.8	1.5	0.2	2.0	0.4	0.7	0.2	0.2	0.4	0.1	0.5	0.1	4.8	0.3	1.2	0.2	0.3	0.1	0.1	0.3	0.1	0.4	0.2	0.7	0.2	0.7	0.2	0.3	0.5
Microbiology	0.6	0.9	0.4	0.4	0.1	0.8	0.5	0.9	0.2	0.8	0.2	0.0	0.3	0.4	0.7		3.8	0.0	1.2	0.3	0.0	0.0	0.2	0.2		0.5	0.0	0.6	0.6	0.4	0.2	0.1	0.1
Neuroimaging		2.6	0.3	0.1	0.1	0.2		2.9	0.2	0.1	0.0	0.1	0.2	0.2	0.5	1.0	4.2	0.0	0.2	0.0		0.2		0.3	0.8	0.2	0.1	1.8		0.4	0.0		0.2
Neurosciences	0.3	2.6	0.2	0.1	0.4	0.6	0.0	1.7	0.4	0.2	0.0	0.2	0.5	0.3	0.7	0.9	2.4	0.0	0.5	0.0	0.1	0.5	0.0	0.1	0.4	0.2	0.0	1.3	0.0	0.5	0.2	0.1	0.1
Nursing	1.2	0.4	0.7		0.6	0.5	0.3	0.4	0.2	0.8	0.2		0.2	0.2	1.7	0.2	0.9	0.6	0.6	0.0	0.5	0.1	0.1	1.4	0.3	0.8	0.4	0.4	0.2	0.7	0.2	0.3	0.4
Nutrition & dietetics	0.4	3.6	0.4	0.0	0.2	0.8	0.0	1.1	0.3	0.4	0.3	0.1	0.4	0.1	1.0	0.1	1.2	0.1	0.9	0.2	0.1	0.3	0.0	0.3	0.1	0.2		0.2	0.0	2.2	0.1	0.2	0.2
Obstetrics & gynecology	0.9	1.5	1.8	1.0	0.4	2.7	0.3	3.2	5.2	1.1	0.3		0.8	0.8	1.3	0.0	2.3	0.5	1.0		0.5	0.1	0.1	1.3	0.0	1.7	0.2	3.1	0.2	1.0	0.1	0.8	0.7

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Oncology	1.4	2.6	0.8	0.1	0.5	1.6	0.2	1.8	0.3	2.4	0.4	0.1	0.6	0.3	1.7	0.0	3.0	0.3	0.9	0.4	5.9	0.1	0.1	1.0	0.0	0.7	2.5	1.0	0.3	0.8	0.5	0.6	0.9
Ophthalmology	0.6	0.6	2.1		0.5	2.9	0.7	1.2	1.0	0.8	0.1	15.7	0.8	0.0	1.3	0.0	2.1		0.0	2.4			0.9	0.3	0.0	0.3		0.2	0.0	1.1	0.2	1.6	0.3
Orthopedics	2.1	1.2	0.6	0.8	0.4	1.0	0.2	2.1	0.2	4.0	0.3		1.0	1.8	2.6		3.6	0.1	0.3	0.9		0.6	0.0	0.7		0.6	0.1	1.1	0.2	0.8	0.7	0.4	0.7
Otorhinolaryngology	1.2	2.1	3.3		2.3	3.0	0.6	2.2	0.3	0.4	0.5	0.1	3.2	0.7	4.2		0.7	0.3	1.3	0.7	0.6	0.9	0.2	0.5		0.7	0.5	5.1	0.2	0.6	2.4	0.6	0.7
Parasitology	0.1	0.8	0.1	0.1		0.6	0.1	0.6	0.2	0.1	0.1		0.1		0.3		5.4		0.1	0.1		0.0				0.2		0.6	0.0	0.1	0.0	0.0	
Pathology	0.9	2.7	0.7	0.1	0.5	2.1	0.4	1.8	0.9	1.5	0.4	0.3	0.9	0.5	1.9	0.0	3.8	1.0	1.1	0.4	1.8	0.7	0.1	0.4	0.0	0.4	0.6	1.3	0.2	1.2	0.2	0.3	0.6
Pediatrics	0.7	1.7	2.1	0.3	4.6	1.8	0.1	2.1	1.1	1.0	0.3	0.1	1.7	0.7	1.1	0.2	2.4	0.6	0.7	0.1	0.1	0.1	0.1	0.4	0.2	1.0	0.1	0.9	0.2	1.7	0.1	1.5	0.7
Peripheral vascular disease	1.0	4.2	0.7	0.1	0.7	2.5	0.4	2.7	0.7	0.7	0.4	0.1	0.6	0.1	0.5		4.5	1.7	1.1	0.3	0.0	0.1	1.2	0.5		2.0	0.0	1.3	0.2	0.8	0.3	0.7	1.8
Pharmacology & pharmacy	0.9	2.1	0.3	0.5	0.1	1.1	0.4	1.4	0.3	0.7	0.4	0.0	0.3	0.5	1.5	0.5	2.0	0.3	1.2	0.3	0.4	0.1	0.4	0.4	0.3	0.6	0.2	0.7	0.5	0.5	0.2	0.2	0.4
Physiology	0.4	2.3	0.3	0.1	0.2	0.4		1.2	0.1	0.2	0.3	0.1	0.3	0.4	0.6	0.1	2.2	0.3	0.9	0.1	0.0	0.2	0.0	0.1	0.0	0.3	0.1	0.4	0.3	0.5	0.2	0.1	0.3
Primary health care	0.2	0.6	0.4			0.8	0.4	0.9	0.4	0.3			0.6	0.1	0.9		0.3		0.4			0.2	0.3	0.2	0.2	0.6		0.2	0.2	1.2	0.1	0.4	1.2
Psychiatry	0.5	2.4	0.3	0.1	0.2	0.7	0.0	0.9	0.3	0.1	0.0	0.1	0.9	0.2	0.5	2.6	1.1	0.0	0.8	0.0		0.2	0.0	0.1	2.5	0.5		0.8	0.2	0.3	0.3	0.0	0.4
Psychology, applied		0.0			0.5			0.3				0.2			0.1	0.5	0.7								0.0			0.3					0.3
Psychology, biological	0.3	2.5				0.2		0.1	0.0		0.0		0.1		0.3		0.6					0.2		0.2						0.1			
Psychology, clinical	0.1	0.6	0.4	0.1	0.2	0.4		0.3	0.2	0.0	0.1		0.3	0.0		4.0	0.3		0.5	0.1		0.2		0.1	1.6	0.5	0.1	0.1	0.2	0.4	0.0		0.4
Psychology, developmental	0.1	0.5	0.1	0.1	0.7	1.2		0.2		0.1	0.1		0.4	0.0	0.3	0.7	0.3		0.0	0.1				0.1	1.3	0.5		0.2	0.1	0.3		0.2	0.1
Psychology, experimental	0.1	1.4	0.1		0.1	0.2		0.2	0.0			0.0	0.0	0.0	0.1	0.7	0.8		0.1	0.0		0.1		0.2	0.2	0.0		0.4		0.2			
Psychology, multidisciplinary	0.3	1.1	0.1	0.1	0.2	0.3		0.2	0.2	0.0	0.1	0.1	0.2	0.1	0.2	0.8	0.5	0.0	0.4	0.1		0.0	0.0	0.0	0.8	0.1		0.3	0.0	0.2	0.0	0.0	0.4
Psychology, psychoanalysis	1.4	1.5				0.8							0.8			0.8									0.8					0.8			1.3
Public, environmental & occupational health	0.4	1.5	0.3	0.2	0.2	0.4	0.1	0.4	0.2	0.4	0.2	0.1	0.3	0.1	0.3	0.1	2.0	0.1	0.7	0.1	0.3	0.0	0.1	0.3	0.2	0.4	0.1	0.4	0.1	0.7	0.1	0.2	0.4
Radiology, nuclear medicine & medical imaging	0.6	2.6	0.4	0.2	0.7	1.8	0.1	3.8	1.9	1.6	0.9	0.0	0.4	0.1	0.6	0.3	3.4	1.4	0.7	0.2	3.7	0.1	0.0	1.0	0.3	0.9	0.9	3.1	0.1	0.4	0.3	0.2	0.5

	Barts Health NHS Trust	Cambridge University Hospitals NHS Foundation Trust	Central Manchester University Hospitals NHS Foundation Trust	Chelsea and Westminster Hospital NHS Foundation Trust	Great Ormond Street Hospital for Children NHS Foundation Trust	Guy's & St Thomas' NHS Foundation Trust	Heart of England NHS Foundation Trust	Imperial College Healthcare NHS Trust	King's College Hospital NHS Foundation Trust	Leeds Teaching Hospitals NHS Trust	London North West Healthcare NHS Trust	Moorfields Eye Hospital NHS Foundation Trust	Newcastle upon Tyne Hospitals NHS Foundation Trust	North Bristol NHS Trust	Nottingham University Hospitals NHS Trust	Oxford Health NHS Foundation Trust	Oxford University Hospitals NHS Foundation Trust	Royal Brompton & Harefield NHS Foundation Trust	Royal Free London NHS Foundation Trust	Royal Liverpool and Broadgreen University Hospitals NHS Trust	Royal Marsden NHS Foundation Trust	Salford Royal NHS Foundation Trust	Sandwell and West Birmingham Hospitals NHS Trust	Sheffield Teaching Hospitals NHS Foundation Trust	South London and Maudsley NHS Foundation Trust	St George's University Hospitals NHS Foundation Trust	The Christie NHS Foundation Trust	UCL Hospitals NHS Foundation Trust	University Hospital of South Manchester NHS Foundation Trust	University Hospital Southampton NHS Foundation Trust	University Hospitals Birmingham NHS Foundation Trust	University Hospitals Bristol NHS Foundation Trust	University Hospitals of Leicester NHS Trust
Rehabilitation	0.5	0.7	0.3	0.1	0.4	1.4	0.1	0.8	0.2	0.6	0.6		0.6	0.3	1.0	0.4	1.7	0.1	0.1	0.0	0.5	0.3		0.9	0.2	0.5	0.2	0.8	0.1	0.3	0.3	0.0	0.2
Reproductive biology	0.2	1.6	2.9	0.4	0.3	2.6	0.2	2.6	0.4	1.9	0.3		0.6	0.2	2.2	0.1	3.6		0.9		0.1	0.1		1.6		0.8	0.1	1.7	0.1	1.8	0.0	0.6	0.7
Respiratory system	1.2	1.7	0.3	0.3	1.3	1.2	0.8	1.9	0.9	0.7	0.3	0.0	1.0	0.3	1.7		2.0	6.9	1.2	0.2	0.3	0.1	0.4	0.7		1.2	0.3	0.8	2.8	1.4	1.4	0.4	2.4
Rheumatology	0.4	2.6	1.1	0.0	0.8	3.3	0.0	3.3	0.9	5.5	0.3	0.1	0.9	0.4	1.5		2.0	0.3	1.9	0.3		0.9	0.5	0.6		0.3	0.1	0.7	0.1	1.1	0.8	0.7	0.2
Social work	0.3	0.0			0.4	0.1			0.1			0.1		0.1	0.2	0.3			0.1			0.1		0.1	0.1	0.2		0.2		0.0	0.1	0.2	
Sport sciences	1.4	1.6	0.1	0.4	0.1	0.5	0.1	0.8	0.1	0.5	0.5		0.3	0.4	0.9	0.1	1.4	0.3	0.3	0.1		0.2	0.0	0.1		0.7		0.4	0.2	0.3	0.2	0.2	0.3
Substance abuse	0.3	1.4				0.5		0.4	0.1						0.5	0.3	0.1	0.2	1.0					0.1	6.5	0.6			0.2	0.0	0.1		0.1
Surgery	1.6	2.3	1.1	0.3	1.0	2.0	0.5	4.1	1.6	2.8	1.4	0.2	1.6	1.3	1.8	0.0	4.2	0.8	1.8	0.8	0.9	0.5	0.2	1.2	0.1	1.3	0.2	1.8	0.6	0.9	2.1	0.7	1.5
Toxicology	0.3	1.4	0.3		0.1	0.7	0.1	0.7	0.3	0.3	0.2	0.0	0.3	0.2	0.5	0.0	1.5	0.2	0.4	0.2	0.2	0.1	0.4	0.3	0.1	0.3	0.3	0.1	0.3	0.5	0.2	0.0	0.5
Transplantation	1.7	3.7	2.0	0.2	1.9	3.1	0.6	3.2	3.4	1.8	0.3	0.2	1.7	1.2	0.8		5.2	2.1	4.5	0.2	0.3	0.6		0.7		1.1	0.3	0.6	0.2	0.6	4.1	1.3	0.7
Tropical medicine	0.0	0.9	0.1	0.1	0.0	0.3	0.2	0.4	0.1		0.4		0.1		0.2		7.8	0.0	0.2	0.3			0.0			0.3		1.1			0.0	0.1	0.0
Urology & nephrology	1.6	2.9	1.3	0.2	1.3	4.4	0.8	2.6	2.0	2.0	0.5	0.0	1.0	3.8	0.6	0.0	2.6	0.2	2.5	0.3	1.1	1.1	0.1	3.4	0.1	1.0	0.2	2.6	0.1	0.9	1.2	0.4	1.1
Veterinary sciences	0.2	0.5	0.1	0.0	0.0	0.1		0.1	0.0	0.1			0.1		0.1		0.5	0.0	0.1			0.1	0.0			0.1		0.0	0.1	0.1		0.0	
Virology	0.5	1.5	0.1	1.8	0.0	1.0	0.3	1.0	0.3	0.2	0.1	0.0	0.1	0.0	0.8		3.9	0.0	2.4	0.2			0.0	0.1		0.5	0.1	0.5	0.0	0.3	0.2		0.1

Table 7. Cross-tabulation of share (%) of HCPs by JSC and HEI or 'other' organisation (results shown for HEIs or 'other' organisations with more than 30 HCPs on average a year; cells with HCP shares of 5% or greater and less than 10% are highlighted in blue; those with shares of 10% or greater and less than 20% are highlighted in green; those with shares of 20% or greater are highlighted in yellow; blank cells represent relationships for which there were no HCPs; values are rounded to one decimal place, therefore any values less than 0.05 appear as 0.0)

	Babraham Institute	Birkbeck, University of London	Brunel University London	Department for Environment, Food and Rural Affairs	European Bioinformatics Institute	Imperial College London	Institute of Cancer Research	John Innes Centre	King's College London	Liverpool John Moores University	London Research Institute	London School of Hygiene & Tropical Medicine	Loughborough University	MRC Biostatistics Unit	MRC Clinical Sciences Centre	MRC Cognition and Brain Sciences Unit	MRC Human Nutrition Research	MRC Laboratory of Molecular Biology	MRC National Institute for Medical Research	Public Health England	Queen Mary University of London	Royal Veterinary College	St George's, University of London	University College London	University of Bath	University of Birmingham	University of Bristol	University of Cambridge	University of Durham	University of East Anglia	University of Exeter	University of Hull	University of Keele	University of Kent	University of Lancaster	University of Leeds	University of Leicester	University of Liverpool	University of Manchester	Newcastle University	University of Nottingham	University of Oxford	Plymouth University	University of Reading	University of Sheffield	University of Southampton	University of Surrey	University of Sussex	University of Warwick	University of York	Wellcome Trust Sanger Institute
Allergy	0.1		0.1	0.1	0.2	15.7			5.5	0.1	0.2	1.5		0.1				0.7	0.2	0.3	0.7		0.9	3.8	0.3	1.1	1.8	2.0	0.1	0.1	0.5		0.1	0.1	0.1	0.4	2.2	1.3	4.5	1.6	2.4	2.2	0.3	0.0	0.8	5.8	0.0	0.0	0.2	0.3	0.7
Anatomy & morphology	0.3	0.2	0.3		0.2	5.1	0.3	0.2	6.0	0.5	0.8	0.1	0.1	0.1	1.1	0.3		0.6	2.5		0.9	3.0	0.6	10.0	0.6	1.5	3.1	8.5	0.5	0.7	0.7	2.0	0.2	0.1		1.2	0.5	3.5	5.1	2.6	2.9	6.6	0.1	0.5	1.9	0.9	0.0	0.9	0.4	1.6	1.8
Andrology	1.2		1.2			4.2	2.5		2.4			1.2		1.1									0.0	8.0		2.7	1.3	10.1		1.2	2.3					1.2	0.0	1.2	3.4	1.2		4.7	1.1	0.0	9.8						1.2
Anesthesiology		0.0	0.2			4.4			3.3	0.3	0.1	0.2	0.0	0.2	0.1	0.2		0.1	0.0		0.7		0.4	8.7	2.6	0.6	1.2	1.3	0.2	0.0	1.0	0.1	1.5	0.1	0.6	1.7	0.9	1.7	1.9	0.8	1.3	5.8	1.3	0.1	0.8	0.8	0.1	0.2	0.8	0.6	0.1
Audiology & speech-language pathology		0.4	0.4			1.8			2.3	0.0		0.2	0.4		0.5	3.2		0.2			0.5		0.1	14.7	0.1	0.3	2.7	8.2	0.6	0.3	0.4	0.4	1.1	0.0	0.1	0.1	1.0	0.3	6.5	1.9	2.4	4.9	0.4	1.0	4.0	3.9	0.4	2.1	0.3	3.4	0.6
Behavioral sciences	0.2	1.1	0.5	0.0	0.2	2.5		0.0	6.6	0.4		0.3	0.6	0.1	0.2	3.1	0.1	0.2	0.2	0.0	0.7	0.2	0.2	13.7	0.4	1.4	3.9	10.9	1.4	0.3	1.7	0.6	0.1	0.3	0.3	1.7	0.7	2.5	2.5	2.1	1.4	9.5	0.8	0.6	1.8	1.1	0.6	1.9	0.6	1.3	0.8
Biochemical research methods	0.5	0.6	0.3	0.3	3.3	7.8	1.0	1.0	2.8	0.1	0.6	0.7	0.1	0.2	0.4	0.1	0.3	2.1	1.2	0.5	1.0	0.2	0.2	6.6	0.4	1.6	1.3	10.5	0.4	0.6	0.7	0.2	0.2	0.2	0.2	1.2	0.9	1.7	3.9	1.7	1.5	10.8	0.3	0.7	1.4	1.2	0.2	0.6	1.1	1.6	4.8
Biochemistry & molecular biology	0.7	0.7	0.1	0.1	2.0	6.4	1.7	1.3	3.4	0.1	1.3	0.6	0.0	0.1	0.7	0.1	0.4	2.8	1.3	0.2	1.3	0.2	0.2	6.8	0.6	1.6	1.7	10.3	0.4	0.8	0.7	0.1	0.2	0.2	0.2	1.6	1.8	1.6	3.4	1.9	1.6	10.2	0.2	0.5	1.6	1.2	0.2	0.9	0.9	1.0	3.3
Biophysics	0.4	0.8	0.2	0.1	1.2	6.9	1.2	0.8	3.1	0.1	1.1	0.3	0.1	0.1	0.5	0.0	0.8	4.5	1.5	0.2	1.4	0.3	0.3	7.0	0.4	1.4	1.8	11.0	0.4	0.7	0.6	0.2	0.4	0.3	0.1	2.3	1.3	1.2	3.2	1.7	1.6	11.4	0.1	0.5	1.7	1.4	0.3	0.8	1.1	1.6	1.8
Biotechnology & applied microbiology	0.3	0.2	0.1	0.8	3.3	6.7	1.3	1.5	2.3	0.0	0.5	0.8	0.1	0.2	0.5	0.0	0.1	1.4	0.8	0.8	1.3	0.3	0.2	6.1	0.6	1.7	1.4	9.3	0.4	0.6	0.6	0.1	0.4	0.4	0.3	1.5	0.9	1.6	3.4	2.4	2.2	9.2	0.2	0.7	1.4	1.1	0.4	0.5	1.1	1.1	6.2
Cardiac & cardiovascular systems	0.1	0.0	0.2	0.0	0.0	9.4	0.1		4.1	0.4	0.1	1.6	0.0	0.2	0.6		0.2	0.1	0.1	0.0	1.3	0.1	1.8	7.5	0.1	3.4	2.2	3.7	0.0	0.4	0.4	1.5	0.1	0.0	0.0	1.3	1.8	0.8	1.9	0.9	0.6	6.3	0.3	0.1	1.0	0.5	0.1	0.2	0.5	0.2	0.4
Cell & tissue engineering	1.0				0.3	7.8	1.7		4.8	0.3	1.2	0.1	0.2	0.1	1.4			0.5	1.5		2.8	0.3	0.1	7.5	0.3	1.2	1.4	12.5	1.9	0.0		0.0	2.1		0.1	0.9	0.8	1.0	3.6	3.7	1.8	5.6		0.2	3.5	1.0	0.1	0.1	0.4	0.7	3.9
Cell biology	0.9	0.6	0.1	0.1	0.8	6.8	2.4	1.4	3.2	0.0	2.1	0.4	0.0	0.0	0.9	0.1	0.3	3.3	1.7	0.1	1.3	0.2	0.3	7.5	0.3	1.5	1.8	11.6	0.5	0.6	0.5	0.1	0.2	0.2	0.1	1.4	2.0	1.4	3.7	1.9	1.5	9.3	0.2	0.2	1.5	0.9	0.2	0.9	0.6	0.7	2.7
Chemistry, medicinal	0.0	0.5	0.1	0.0	0.5	7.1	3.5	1.0	3.3	1.3	0.0	1.9	0.7		0.2		0.2	1.0	1.5		1.4	0.1	0.4	7.8	1.9	1.4	1.6	7.7	0.2	1.2	0.7	0.2	0.5	0.4	0.1	1.2	1.2	2.0	4.6	2.4	3.8	9.8	0.3	0.6	2.2	2.3	0.5	0.6	1.7	1.2	0.6
Clinical neurology	0.1	0.2	0.1	0.0	0.0	4.4	0.1		6.7	0.1	0.1	0.8	0.1	0.3	0.7	0.8	0.0	0.2	0.1	0.1	1.0	0.1	0.7	15.6	0.5	1.3	1.5	5.8	0.1	0.2	0.6	0.2	0.5	0.1	0.2	0.7	0.7	1.1	2.5	3.2	1.3	6.6	0.5	0.2	1.1	1.2	0.4	0.3	0.4	0.3	0.3
Critical care medicine	0.1	0.1	0.2	0.1	0.2	10.0	0.0	0.1	2.3		0.1	2.0		0.1	0.0	0.0		0.2	0.6	0.3	2.1	0.1	0.7	6.1	0.2	2.3	1.2	3.9	0.1	0.1	0.2	0.1	0.3	0.1	0.1	1.8	1.9	1.8	2.5	1.0	1.1	2.8	0.3	0.0	1.1	1.2	0.0	0.4	0.9	0.2	0.5

	Babraham Institute	Birkbeck, University of London	Brunel University London	Department for Environment, Food and Rural Affairs	European Bioinformatics Institute	Imperial College London	Institute of Cancer Research	John Innes Centre	King's College London	Liverpool John Moores University	London Research Institute	London School of Hygiene & Tropical Medicine	Loughborough University	MRC Biostatistics Unit	MRC Clinical Sciences Centre	MRC Cognition and Brain Sciences Unit	MRC Human Nutrition Research	MRC Laboratory of Molecular Biology	MRC National Institute for Medical Research	Public Health England	Queen Mary University of London	Royal Veterinary College	St George's, University of London	University College London	University of Bath	University of Birmingham	University of Bristol	University of Cambridge	University of Durham	University of East Anglia	University of Exeter	University of Hull	University of Keele	University of Kent	University of Lancaster	University of Leeds	University of Leicester	University of Liverpool	University of Manchester	Newcastle University	University of Nottingham	University of Oxford	Plymouth University	University of Reading	University of Sheffield	University of Southampton	University of Surrey	University of Sussex	University of Warwick	University of York	Wellcome Trust Sanger Institute
Dentistry/oral surgery & medicine	0.1			0.1		1.0	0.1		12.7	0.0		0.7	0.1		0.0					0.4	3.3	0.1	0.1	8.7	0.1	5.3	3.7	0.3	0.1	0.2	0.5	0.1	0.1	0.1		2.7	0.1	3.7	8.0	5.9	0.1	0.6	0.8	0.1	4.1	0.1	0.0	0.1	0.6	0.2	0.0
Dermatology	0.1	0.1	0.1		0.0	2.2	0.6	0.1	7.1	0.2	0.5	0.9			0.0				0.2	0.1	2.2	0.5	0.4	2.7	0.6	0.5	1.0	1.9	0.6	0.1	0.2	0.1	0.2	0.1	0.1	1.3	1.5	1.3	9.1	2.4	2.0	2.9	0.1	0.1	1.9	1.1	0.1	0.2	0.2	0.3	0.7
Developmental biology	1.3	0.1	0.1	0.0	1.0	5.9	1.7	1.7	4.8	0.0	2.0	0.2		0.1	1.3	0.0	0.0	2.0	3.4		0.7	0.7	0.2	8.4	0.7	1.3	1.1	14.1	0.3	0.6	0.5	0.2	0.2	0.0	0.0	0.9	1.4	1.0	3.6	1.9	2.4	8.1	0.1	0.4	1.9	1.0	0.0	1.0	0.7	0.7	4.2
Emergency medicine			0.1			2.2			1.2	0.1		0.6								0.1	0.4	0.0	0.5	1.5	0.1	1.6	1.7	1.6	0.3	0.2		0.1	0.4	0.0	0.4	5.0	1.4	1.5	3.0	0.2	0.5	2.8	0.6		3.0		0.2		2.7	0.6	
Endocrinology & metabolism	0.2	0.1	0.1	0.0	0.1	6.3	0.5	0.0	3.7	0.1	0.1	0.7	0.2	0.1	0.6	0.0	0.6	0.3	0.5	0.0	1.7	0.5	0.4	6.2	0.2	2.5	2.9	8.1	0.2	0.4	1.7	0.2	0.2	0.1	0.1	1.0	1.0	1.1	3.0	2.1	1.1	6.9	1.0	0.4	3.2	2.7	0.6	0.1	1.4	0.4	0.8
Engineering, biomedical	0.1	0.3	0.6	0.0	0.1	10.0	1.4	0.0	4.2	0.1	0.0	0.0	0.5	0.1	0.4	0.4	0.1	0.1	0.1	0.5	2.8	0.5	0.1	11.0	0.9	2.1	1.7	5.7	0.3	0.2	0.5	0.2	1.0	0.3	0.3	2.7	0.4	2.5	3.8	1.5	2.0	5.9	0.1	0.2	2.2	2.9	0.6	0.5	0.6	1.1	0.1
Food science & technology		0.2	0.1	1.8	0.2	3.0	0.0	0.7	1.2		0.1	0.8	0.8		0.1		0.3	0.4	0.1	1.9	0.4	1.2	0.1	2.1	0.5	1.9	4.7	2.7	0.3	1.6	0.3	0.1	0.3	0.6	0.2	4.9	0.9	1.6	1.9	3.0	5.9	3.4	0.8	7.8	0.3	1.9	1.7	0.6	1.0	3.3	0.6
Gastroenterology & hepatology	0.1	0.0	0.0	0.1	0.0	6.7	0.6		3.0	0.1	0.5	0.7		0.1	0.4		0.1	0.2	0.3	0.4	3.2	0.1	0.2	4.9	0.1	2.5	0.8	3.2	0.4	0.6	0.3	0.3	0.0	0.0	0.1	1.5	0.7	2.2	1.5	3.2	2.5	4.1	0.3	0.2	0.9	1.4	0.2	0.1	0.2	0.2	0.7
Genetics & heredity	0.5	0.1	0.1	0.1	1.3	5.5	1.8	0.8	4.1	0.0	0.6	1.0	0.0	0.2	0.6	0.0	0.1	0.9	0.8	0.1	1.6	0.2	0.6	6.6	0.5	1.4	1.7	9.2	0.2	0.4	1.1	0.1	0.2	0.1	0.1	1.3	1.6	1.2	2.6	2.0	1.2	9.7	0.5	0.3	1.3	1.1	0.1	0.8	0.5	0.5	5.7
Geriatrics & gerontology	0.1	0.1	0.3	0.0	0.2	3.2	0.1		8.0	0.2	0.2	1.1	0.3	0.9	0.3	0.6	0.6	0.2	0.2	0.0	0.5	0.3	0.5	11.5	0.2	1.9	1.5	6.4	0.2	0.8	1.5	0.4	0.3	0.7	0.2	0.7	1.0	1.1	4.1	4.8	1.7	4.1	0.9	0.6	1.8	3.4	0.3	0.2	0.8	0.6	0.6
Gerontology	0.2	0.0	0.6		0.2	2.5			9.4	0.4	0.1	0.9	0.3	1.3	0.3	0.6	0.5	0.0	0.2	0.0	0.1	0.2	0.5	13.0	0.2	0.9	1.8	6.6	0.4	0.5	2.8	0.7	0.6	1.3	0.5	0.4	0.9	1.0	4.2	4.7	1.2	4.1	1.3	0.4	1.4	2.8	0.2	0.4	1.6	0.5	0.8
Health care sciences & services		0.1	1.0	0.0	0.0	3.6	0.2	0.0	3.6	0.1		5.5	0.2	1.2	0.0	0.0	0.0			0.6	1.0	0.0	0.4	5.3	0.3	3.2	2.8	2.5	0.5	1.2	2.0	0.4	1.0	0.3	0.8	2.4	1.9	2.8	4.1	2.7	1.7	5.3	1.6	0.2	5.3	2.3	0.5	0.5	2.1	5.6	0.0
Health policy & services		0.1	1.2	0.0		3.8	0.1	0.0	3.5			9.7	0.1	0.7					0.1	0.3	1.0		0.4	6.5	0.6	2.2	2.7	2.4	0.5	1.1	1.7	0.1	0.5	0.5	0.2	2.3	1.2	3.0	4.2	2.8	1.5	6.2	1.3	0.1	5.2	1.8	0.6	0.5	2.4	6.5	0.0
Hematology	0.4	0.1	0.1	0.0	0.2	6.5	1.5	0.1	4.4	0.1	0.5	0.3	0.0	0.2	0.6	0.0	0.1	0.4	0.6	0.2	2.8	0.1	0.4	6.6	0.2	3.4	1.8	5.8	0.3	0.2	0.2	0.1	0.2	0.0	0.0	1.1	1.7	0.9	2.1	2.1	0.8	7.1	0.1	0.2	1.2	1.7	0.1	0.1	0.2	0.4	1.4
Immunology	0.5	0.1	0.1	0.7	0.2	9.4	0.3	0.2	3.4		0.9	4.8	0.1	0.1	0.3		0.1	1.0	1.8	2.3	1.5	0.5	0.6	7.0	0.4	2.5	1.4	4.9	0.1	0.3	0.3	0.1	0.2	0.1	0.1	0.6	1.1	2.1	2.2	1.0	1.3	10.1	0.2	0.1	1.0	1.6	0.1	0.3	0.4	0.4	1.5
Infectious diseases	0.0	0.1	0.1	1.4	0.2	8.0	0.0	0.1	1.1	0.0	0.1	10.3	0.1	0.1	0.0		0.0	0.2	1.0	7.8	0.7	0.4	0.8	7.6	0.4	1.5	1.5	2.4	0.2	0.6	0.5	0.0	0.1	0.0	0.1	1.0	0.5	4.8	1.7	0.6	1.1	8.7	0.1	0.1	0.6	0.5	0.1	0.3	0.5	0.5	1.5
Integrative & complementary medicine		0.3	1.2			3.4			6.7	1.3		1.2									0.1			6.5		1.7	2.5	1.8	0.1	0.5	7.6	0.4	1.7	0.2	0.9	1.5	0.1	0.2	2.9	1.5	1.5	3.1	5.6	2.6	1.7	7.8	0.3	0.1	0.6	5.5	
Materials science, biomaterials		0.2	0.2	0.1	0.0	9.9	0.1		2.7	0.1			0.6	0.1			0.1	0.0			3.5	0.3	0.1	10.2	1.3	3.0	3.0	6.8	0.4	0.5	0.3	0.2	1.0	0.6	0.3	3.4	0.1	3.5	8.2	1.3	3.1	3.5	0.3	0.5	3.2	3.1	0.3	0.3	0.7	0.8	0.2
Mathematical & computational biology	0.3	0.4	0.3	0.2	4.0	7.3	0.9	0.9	2.2	0.1	0.1	2.1	0.1	1.7	0.3	0.1	0.1	1.1	0.6	0.6	0.7	0.2	0.2	7.1	0.5	1.4	2.4	10.5	0.3	0.8	1.1	0.2	0.1	0.2	0.3	1.4	1.4	1.8	4.0	1.6	1.5	11.1	0.3	0.7	1.3	1.0	0.2	0.4	1.6	1.3	5.6

	Babraham Institute	Birkbeck, University of London	Brunel University London	Department for Environment, Food and Rural Affairs	European Bioinformatics Institute	Imperial College London	Institute of Cancer Research	John Innes Centre	King's College London	Liverpool John Moores University	London Research Institute	London School of Hygiene & Tropical Medicine	Loughborough University	MRC Biostatistics Unit	MRC Clinical Sciences Centre	MRC Cognition and Brain Sciences Unit	MRC Human Nutrition Research	MRC Laboratory of Molecular Biology	MRC National Institute for Medical Research	Public Health England	Queen Mary University of London	Royal Veterinary College	St George's, University of London	University College London	University of Bath	University of Birmingham	University of Bristol	University of Cambridge	University of Durham	University of East Anglia	University of Exeter	University of Hull	University of Keele	University of Kent	University of Lancaster	University of Leeds	University of Leicester	University of Liverpool	University of Manchester	Newcastle University	University of Nottingham	University of Oxford	Plymouth University	University of Reading	University of Sheffield	University of Southampton	University of Surrey	University of Sussex	University of Warwick	University of York	Wellcome Trust Sanger Institute
Medical informatics		0.0	1.0		0.3	6.7	0.4		2.9			4.6	0.2	5.6	0.0	0.3	0.2			0.9	0.8	0.0	0.3	7.7	0.3	2.6	4.3	6.6	0.6	0.4	0.8	0.2	0.8	0.1	0.4	1.6	3.6	2.2	3.3	1.5	1.4	5.9	0.9	0.8	3.6	1.8	0.3	0.1	2.4	4.9	0.0
Medical laboratory technology		0.2	0.0		0.5	4.1	0.7	0.1	3.6	0.4		1.4	0.0		0.1		0.2	0.1	0.7	0.1	1.8	0.1	1.5	7.4	0.0	2.0	1.4	3.8	0.1	0.2	0.5	0.3	0.2	0.0		1.0	1.4	1.7	1.9	1.4	1.1	6.8	0.4	0.1	0.9	1.1	0.7	0.1	0.4	0.3	1.0
Medicine, general & internal	0.1	0.0	0.2	0.1	0.1	5.5	0.7	0.0	3.6	0.1	0.1	6.0	0.1	0.5	0.1	0.1	0.1	0.1	0.3	0.8	1.7	0.1	0.5	7.4	0.3	2.6	3.0	4.8	0.2	0.8	1.0	0.3	0.5	0.1	0.2	1.0	1.2	2.4	2.4	1.5	1.5	9.3	0.6	0.1	1.1	1.5	0.2	0.3	1.0	1.2	0.9
Medicine, research & experimental	0.4	0.1	0.1	0.3	0.3	7.9	1.3	0.1	3.8	0.1	0.8	2.4	0.0	0.7	0.7	0.0	0.2	0.9	1.3	1.1	1.7	0.3	0.5	8.3	0.4	2.6	1.7	7.4	0.2	0.3	0.4	0.2	0.3	0.1	0.1	1.0	1.6	1.6	2.3	1.5	1.2	10.1	0.2	0.2	1.1	1.2	0.3	0.2	0.6	0.6	1.9
Microbiology	0.0	0.3	0.0	1.7	0.3	7.4	0.2	1.3	1.2	0.0	0.3	4.4	0.1	0.0	0.1		0.1	0.8	1.5	5.1	1.0	0.5	0.7	4.2	0.9	2.6	1.8	3.9	0.1	1.1	0.8	0.1	0.1	0.3	0.4	1.4	0.7	3.0	2.7	2.5	2.2	9.4	0.2	0.7	1.4	0.9	0.3	0.4	1.6	1.0	2.6
Neuroimaging		0.5	0.1			6.9			9.0	0.0		0.7	0.0	0.0	1.9	3.7		0.0			0.1	0.0	0.2	21.1	0.1	1.0	0.7	6.7	0.3		0.3	0.3	0.1	0.0	0.2	0.0	0.5	0.7	2.6	1.0	2.4	12.2	0.2	0.6	0.7	0.5	0.3	1.0	0.9	0.9	0.1
Neurosciences	0.4	0.7	0.2	0.0	0.1	4.7	0.1	0.0	7.5	0.2	0.2	0.3	0.1	0.1	0.8	1.8	0.1	0.8	0.6	0.0	0.8	0.1	0.3	18.1	0.5	1.4	2.4	9.2	0.4	0.1	0.5	0.3	0.4	0.1	0.2	0.8	0.9	0.8	3.1	2.0	1.8	9.1	0.3	0.3	1.1	1.1	0.3	0.9	0.6	0.6	0.8
Nursing		0.1	1.1			1.0	0.1		7.8	0.6		1.4	0.7				0.0			0.0	0.4		0.9	2.6	0.3	1.5	0.7	1.0	0.2	1.0	0.1	1.7	0.5		0.7	2.3	0.7	1.9	5.5	0.6	3.0	2.1	2.2	0.5	4.5	3.6	1.2	0.2	0.7	2.3	
Nutrition & dietetics	0.1	0.1	0.2	0.1	0.1	5.9	0.1	0.1	4.2	0.2	0.0	2.6	1.4	0.2	0.2	0.0	2.9	0.1	0.2	0.1	0.9	0.3	0.4	7.8	0.3	1.6	3.9	6.7	0.3	1.8	0.9	0.1	0.1	0.2	0.2	1.7	0.5	1.8	1.0	2.1	1.8	6.4	0.7	3.6	0.5	5.1	2.5	0.3	0.6	0.5	0.6
Obstetrics & gynecology	0.4	0.1	0.1		0.0	4.1	0.4	0.0	3.9		0.0	2.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	1.3	0.1	0.7	5.7	0.1	2.1	2.0	4.0	0.2	0.1	0.6	0.9	0.3	0.0	0.1	1.2	0.7	2.5	2.3	1.5	2.1	5.9	1.1	0.1	1.4	1.8	0.5	0.2	0.9	1.1	0.3
Oncology	0.2	0.0	0.1	0.0	0.2	4.8	5.9	0.0	2.5	0.1	0.9	0.8	0.0	0.1	0.2	0.0	0.4	0.3	0.3	0.1	2.5	0.1	0.5	4.8	0.1	1.9	1.0	6.3	0.2	0.2	0.1	0.1	0.2	0.1	0.1	1.6	1.4	1.2	2.7	1.8	1.4	6.3	0.1	0.1	1.5	1.0	0.3	0.6	0.3	0.5	1.2
Ophthalmology		0.2	0.1		0.0	1.8	0.0		2.4	0.0	0.1	3.2	0.2	0.0	0.0	0.1	0.0	0.0	0.0		0.3	0.0	0.3	16.4	0.1	1.3	2.1	2.2	0.3	0.5	0.3	0.0	0.0	0.1	0.2	0.3	0.6	1.6	3.5	1.0	1.7	4.0	0.3	0.1	0.6	1.1	0.2	0.2	0.1	0.3	0.1
Orthopedics			0.4			4.9			1.5	0.1		0.1	0.1	0.1			0.1			0.0	2.1	0.8	0.2	3.0	0.4	0.8	2.4	1.2	0.2	1.0	0.7	0.2	3.3	0.2	0.1	4.5	0.3	1.1	2.0	1.4	2.2	5.3	0.5	0.0	0.7	2.0	0.1	0.1	0.8	0.5	0.0
Otorhinolaryngology		0.0	0.1		0.0	1.8	0.4		1.3		0.1	0.4				0.9		0.2		0.1	0.2	0.1	0.1	5.9	0.1	0.8	1.4	2.9	0.0	0.4	0.2	0.2	0.5	0.3	0.1	0.1	0.7	1.9	3.5	3.2	2.2	1.6	0.1	0.2	0.7	2.0	0.1	1.1	0.5	1.0	0.3
Parasitology	0.0	0.0	0.0	0.7	0.3	9.8	0.2	0.4	0.9	0.0	0.3	13.6	0.0	0.1	0.0		0.1	0.7	2.5	1.0	0.5	1.1	0.3	2.2	0.8	1.0	2.2	5.3	0.6	0.3	0.7	0.1	0.4	0.1	0.4	1.1	0.3	8.2	1.3	0.9	1.5	14.1	0.2	0.3	0.5	0.4	0.2	0.4	0.6	1.7	4.0
Pathology	0.1	0.0	0.1	0.4	0.3	5.1	3.1	0.0	4.0	0.0	0.8	0.7		0.1	0.2		0.1	0.7	0.5	0.2	2.8	0.5	0.4	8.3	0.2	1.6	1.8	7.1	0.2	0.2	0.2	0.0	0.1	0.1	0.2	1.3	1.0	1.6	3.3	2.2	2.0	5.8	0.2	0.1	2.1	1.4	0.3	0.1	0.4	0.2	1.2
Pediatrics	0.0	0.3	0.2	0.0	0.0	5.1	0.1		4.7	0.1		2.3	0.2	0.1	0.6	0.1	0.2	0.0	0.2	0.6	0.8	0.0	0.4	10.0	0.3	1.3	4.0	3.2	0.2	0.1	0.9	0.1	0.3	0.0	0.1	0.9	1.2	2.3	1.9	1.8	1.5	5.1	0.6	0.4	0.8	2.6	0.2	0.2	0.9	0.6	0.3
Peripheral vascular disease	0.2	0.0	0.1	0.0	0.1	7.4	0.3		5.2	0.4	0.1	1.2	0.0	0.2	0.7	0.0	0.2	0.1	0.2		2.3	0.1	1.4	6.9	0.2	3.4	3.0	6.7	0.1	0.3	0.5	0.2	0.1	0.1	0.0	1.3	2.3	0.7	2.1	1.1	1.2	7.9	0.3	0.2	0.9	0.8	0.2	0.1	0.5	0.2	0.6
Pharmacology & pharmacy	0.1	0.1	0.1	0.3	0.3	6.4	0.6	0.2	5.6	0.3	0.1	1.5	0.2	0.1	0.3	0.1	0.1	0.6	0.5	2.0	1.6	0.3	0.7	7.8	1.1	2.0	2.7	6.0	0.3	0.7	0.5	0.2	0.3	0.3	0.1	1.5	1.3	3.0	4.4	1.6	3.0	6.0	0.4	0.6	1.3	1.2	0.5	0.5	0.5	0.5	1.0
Physiology	0.5	0.1	0.9	0.0	0.3	5.7	0.4	0.1	2.9	1.4	0.2	0.4	1.2		0.6	0.4	0.4	0.8	0.5	0.0	1.0	0.8	0.4	11.0	0.8	2.6	3.5	7.5	0.4	0.3	2.0	0.2	0.5	0.2	0.1	2.1	1.5	2.3	3.5	2.0	2.3	7.9	0.3	0.4	1.4	0.9	0.7	0.7	0.9	0.7	1.1
Primary health care			0.4			3.3		0.2	5.7			1.4	0.3	0.2					0.0	0.4	0.8	0.0		4.3	0.4	5.1	5.2	4.5	0.7	1.2	2.2	0.4	4.1		0.1	0.9	2.6	2.8	8.1	1.4	4.0	5.1	1.2	0.2	2.1	3.8	0.5	0.2	2.4	2.4	0.0
Psychiatry	0.1	0.4	0.2		0.1	3.6	0.1		19.7	0.2		1.2	0.0	0.3	0.5	0.7	0.0	0.0	0.1	0.1	1.0	0.0	0.4	9.2	0.3	1.5	2.9	7.9	0.2	0.3	0.7	0.3	0.1	0.2	0.2	0.6	0.9	1.0	3.9	1.8	1.7	7.4	0.3	0.5	0.8	2.0	0.3	0.7	0.6	0.7	0.7
Psychology, applied		1.0	3.0			1.4			2.4	2.0		0.9	4.2			0.3				0.3	0.6			6.8	1.4	2.5	1.5	3.4	1.7	0.7	2.4	0.8	0.0	0.9	2.2	2.7	1.5	0.6	3.0	0.2	3.7	4.7	0.2	1.2	4.9	1.7	2.3	1.1	1.3	0.2	0.2
Psychology, biological		0.7	1.0		0.7	1.9			4.9	0.9		0.7	0.3			3.5		0.2	0.3		0.9	0.0	0.2	11.3	0.0	1.2	5.7	12.6	2.0	0.2	1.7	1.0		0.4	0.5	2.4	0.5	4.3	1.8	2.4	1.9	9.5	0.9	0.8	2.0	0.9	0.9	2.7	0.4	0.8	0.5

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Psychology, clinical		0.7	0.5			1.9	0.1		18.4	0.1		0.8	0.6	0.1	0.1	2.2	0.1	0.0	0.1	0.1	0.3		0.2	6.9	0.9	1.1	1.2	4.0	0.1	0.9	1.9	0.4	0.5	0.5	0.4	1.5	0.8	1.1	4.8	1.7	1.6	10.7	0.5	0.9	1.6	2.7	0.4	1.6	0.5	1.2	0.3
Psychology, developmental		4.1	0.6		0.1	1.4			17.7	0.4		1.0	0.3	0.2	0.1	0.8		0.0	0.1	0.1	0.2		0.3	12.3	0.7	1.3	2.8	7.1	1.3	0.1	0.8	0.3	0.3	0.7	0.6	0.5	0.8	0.6	3.5	1.3	1.8	7.8	0.5	1.8	1.4	3.2	0.6	1.0	1.3	3.3	0.1
Psychology, experimental	0.0	2.3	0.6		0.0	1.2			3.7	0.5		0.2	0.1		0.2	5.0					0.2		0.2	18.5	0.3	2.2	2.9	7.6	2.2	0.2	1.3	1.2	0.3	1.0	0.9	1.1	0.5	1.0	3.6	0.8	1.8	9.1	1.5	0.8	1.3	1.3	0.6	2.2	1.4	4.0	0.2
Psychology, multidisciplinary	0.0	2.1	0.8		0.1	1.7	0.1		10.9	0.8		0.9	0.9	0.3	0.1	2.5		0.1	0.1	0.0	0.7	0.0	0.3	12.4	0.7	2.7	2.7	5.9	1.1	0.3	2.0	0.4	0.4	1.1	0.6	1.3	1.1	0.9	3.4	1.3	1.9	6.5	1.3	0.6	1.6	1.8	0.7	1.7	1.3	2.2	0.4
Psychology, psychoanalysis		2.0				4.6			15.4			0.0						0.1			5.9			28.0			1.5	3.9	1.5		3.7					1.5	1.5		4.6	2.9		1.5	1.5		1.5	2.3			0.8		
Public, environmental & occupational health	0.0	0.1	0.4	0.3	0.1	5.8	0.6		3.1	0.2	0.1	11.2	0.5	1.0	0.0	0.0	0.6	0.1	0.3	1.7	1.5	0.2	0.5	8.3	0.6	1.7	4.6	5.6	0.7	1.0	1.1	0.2	0.3	0.2	0.6	1.5	1.3	3.3	2.1	1.7	1.7	8.1	0.5	0.2	1.4	1.7	0.4	0.4	1.1	1.6	0.9
Radiology, nuclear medicine & medical imaging	0.0	0.2	0.1	0.0	0.0	6.9	2.4	0.0	5.8	0.1	0.0	0.4	0.0	0.0	1.4	1.3		0.1	0.0	0.6	0.5	0.0	0.5	11.7	0.1	1.0	0.4	4.3	0.2	0.2	0.3	0.3	0.1	0.1	0.2	0.9	0.3	0.7	2.6	0.6	1.5	7.8	0.4	0.2	1.2	0.3	0.6	1.0	0.4	0.4	0.1
Rehabilitation		0.4	1.1			2.5	0.1		6.0	0.3		0.1	0.5		0.1	0.3				0.0	0.7	0.2	1.3	6.2	0.4	2.9	1.2	3.0	0.5	1.0	1.1	0.5	2.6	0.7	1.6	1.7	0.9	1.1	4.3	2.8	2.2	3.8	0.8	0.8	2.0	3.1	0.8	0.5	0.9	1.2	0.0
Reproductive biology	1.3	0.1	0.1	0.1	0.3	3.5	0.1	0.1	2.4	0.1	0.0	0.8		0.1	0.1	0.0	0.0	0.2	0.3	0.0	0.4	2.2	0.4	5.8	0.2	2.0	1.2	7.0	0.2	0.1	0.3	0.9	0.1	0.1	0.1	1.7	0.7	2.3	3.3	2.5	4.5	7.9	0.2	0.4	2.9	2.7	0.2	0.0	1.0	1.5	0.7
Respiratory system	0.0	0.1	0.1	0.2	0.1	13.0	0.1	0.0	2.9	0.0	0.1	2.4	0.0	0.2	0.1		0.0	0.2	0.8	0.5	1.1	0.2	1.1	6.3	0.2	1.9	1.4	2.9	0.0	0.4	0.2	0.4	0.3	0.0	0.1	0.4	1.7	2.0	3.1	1.0	2.1	2.6	0.1	0.0	1.0	1.8	0.1	0.2	0.3	0.2	0.4
Rheumatology	0.0	0.0	0.1		0.0	4.5	0.1		4.8		0.0	0.3		0.4	0.1		0.1	0.1	0.3	0.0	1.1	0.3	0.1	5.2	0.5	3.3	1.9	2.6		1.0	0.5	0.0	1.5	0.1	0.0	7.1	0.3	0.8	7.2	2.2	2.3	4.5	0.4	0.1	1.5	1.6	0.0	0.1	0.3	0.5	0.2
Social work		0.1	1.7			0.0			6.8	1.0		1.1	0.4			0.0					0.4		0.2	2.9	0.9	2.2	3.2	0.9	3.8	2.4	0.5	1.0	0.8	2.3	3.7	0.8	0.8	1.5	3.6	0.7	3.2	2.5	2.0	0.4	2.4	2.8	0.1	1.1	1.2	7.1	
Sport sciences	0.1	0.0	2.5			3.5			1.7	5.1		0.2	6.9	0.0	0.1	0.0	0.1		0.1	0.0	1.5	0.7	0.5	3.8	2.5	3.4	2.2	2.7	0.1	0.7	4.2	1.7	1.1	0.4	0.2	1.8	0.6	1.0	0.9	1.2	2.6	2.1	0.3	0.2	0.4	1.5	0.9	0.1	0.3	0.1	0.1
Substance abuse		0.0	0.4			2.8	0.2		12.7	0.9		5.6	0.2	1.1	0.2	0.4	0.2	0.1	0.2	0.3	1.1		1.1	11.1	1.2	2.1	7.1	6.8	0.3	0.3	0.8	0.1	0.1	1.2	0.5	0.9	0.6	2.1	0.8	1.4	3.0	3.1	0.5		1.7	0.4	0.4	1.3	0.3	1.3	0.3
Surgery	0.0		0.1		0.0	6.2	0.2	0.0	2.5	0.1	0.1	0.7	0.0	0.4	0.1	0.1		0.1	0.0	0.1	1.4	0.1	0.5	4.9	0.1	1.3	0.9	2.3	0.2	0.4	0.4	0.4	0.3	0.0	0.1	1.3	0.9	1.3	1.8	1.4	0.7	4.1	0.3	0.0	0.8	0.6	0.3	0.1	0.3	0.3	0.1
Toxicology		0.2	1.3	1.2	0.6	6.5	1.9	0.1	3.8	1.3	1.4	1.7	0.1		0.3	0.0	0.2	1.0	0.5	0.4	1.0	0.2	0.8	4.8	0.8	3.4	1.2	4.0	0.3	0.2	2.3	0.1	0.2	0.1	0.6	2.1	2.5	3.6	3.0	2.7	1.8	5.1	2.0	1.0	1.3	1.8	1.1	2.4	0.5	1.5	1.1
Transplantation	0.1				0.1	5.6	0.1	0.1	4.0	0.1	0.2	0.8	0.0	0.4	0.3			0.2	0.1	0.1	1.0	0.0	0.5	5.3	0.1	2.6	1.1	3.5	0.3	0.1	0.1	0.1	0.5		0.1	0.4	0.9	0.3	1.2	1.9	1.0	6.6	0.1	0.0	1.0	0.8	0.1	0.3	0.3	0.3	0.1
Tropical medicine			0.0	0.3	0.1	7.5	0.1		0.3	0.1		28.1		0.1	0.0		0.0		0.9	0.7	0.3	0.1	0.4	2.7	0.3	0.3	0.6	3.8	1.2	0.3	0.1		0.5	0.0	0.3	0.5	0.2	11.1	0.5	0.1	0.7	15.3	0.1	0.1	0.3	0.5	0.0	0.2	0.3	1.0	2.4
Urology & nephrology	0.1	0.0	0.0	0.0		4.6	1.1	0.1	3.0		0.1	0.7	0.0		0.1		0.1		0.1	0.0	1.2	0.0	0.5	8.3	0.1	1.6	2.2	2.7	0.0	0.1	0.3	0.1	0.2	0.0	0.1	0.6	1.1	0.5	1.5	2.0	1.3	3.3	0.3	0.0	1.9	0.9	0.5	0.1	0.9	0.2	0.2
Veterinary sciences	0.1	0.0	0.0	11.9	0.3	2.8	0.0	0.0	0.4	0.1		1.6		0.0	0.0			0.0	0.3	0.6	0.4	16.2	0.3	1.6	0.2	0.3	10.3	7.2	0.3	0.2	0.7	0.1	0.3	0.1	0.2	0.5	0.2	11.9	0.9	1.7	3.6	3.0	0.3	0.9	0.4	0.6	0.2	0.3	2.0	1.1	0.9
Virology		0.0	0.1	1.3	0.3	10.1	0.2	0.7	2.1		0.6	5.1	0.0	0.2	0.1		0.0	0.9	2.9	2.7	0.7	0.4	0.7	9.2	0.5	2.6	1.1	6.8	0.1	0.4	0.6	0.0	0.1	0.2	0.0	1.0	0.4	2.7	1.2	0.7	1.6	12.4	0.2	0.4	0.5	0.4	0.2	0.4	0.8	0.5	2.5

Table 8. Institutions with more than 10% of HCPs in JSCs that have more than 100 HCPs

Journal Subject Category	Organisation	Number of HCPs in 2004–2013	Share (%) of HCPs in 2004–2013
Allergy	Imperial College London	176	16
Audiology & speech-language pathology	University College London	79	15
Behavioral sciences	University College London	348	14
Behavioral sciences	University of Cambridge	276	11
Biochemical & research methods	University of Oxford	586	11
Biochemical & research methods	University of Cambridge	572	11
Biochemistry & molecular biology	University of Cambridge	2071	10
Biochemistry & molecular biology	University of Oxford	2052	10
Biophysics	University of Oxford	514	11
Biophysics	University of Cambridge	495	11
Cell & tissue engineering	University of Cambridge	107	12
Cell biology	University of Cambridge	1641	12
Clinical Neurology	University College London	1528	16
Dentistry/oral surgery & medicine	King's College London	198	13
Dermatology	Guy's & St Thomas' NHS Foundation Trust	185	11
Developmental biology	University of Cambridge	498	14
Engineering, biomedical	University College London	188	11
Engineering, biomedical	Imperial College London	171	10
Geriatrics & gerontology	University College London	190	11
Gerontology	University College London	83	13
Immunology	University of Oxford	1001	10
Infectious diseases	London School of Hygiene & Tropical Medicine	665	10
Materials science, biomaterials	University College London	90	10
Mathematical & computational biology	University of Oxford	371	11
Mathematical & computational biology	University of Cambridge	348	10
Medicine, research & experimental	University of Oxford	704	10
Neuroimaging	University College London	391	21
Neuroimaging	University of Oxford	227	12
Neuroscience	University College London	2714	18
Ophthalmology	University College London	381	16
Ophthalmology	Moorfields Eye Hospital NHS Foundation Trust	363	16
Parasitology	University of Oxford	391	14
Parasitology	London School of Hygiene & Tropical Medicine	378	14
Pediatrics	University College London	430	10
Physiology	University College London	416	11
Psychiatry	King's College London	1464	20
Psychology, biological	University of Cambridge	50	13
Psychology, biological	University College London	45	11
Psychology, clinical	King's College London	277	18

Journal Subject Category	Organisation	Number of HCPs in 2004–2013	Share (%) of HCPs in 2004–2013
Psychology, clinical	University of Oxford	161	11
Psychology, developmental	King's College London	274	18
Psychology, developmental	University College London	191	12
Psychology, experimental	University College London	451	19
Psychology, multidisciplinary	University College London	466	12
Psychology, multidisciplinary	King's College London	409	11
Public, environmental & occupational health	London School of Hygiene & Tropical Medicine	914	11
Radiology, nuclear medicine & medical imaging	University College London	613	12
Respiratory system	Imperial College London	498	13
Substance abuse	King's College London	84	13
Substance abuse	University College London	74	11
Tropical medicine	London School of Hygiene & Tropical Medicine	516	28
Tropical medicine	University of Oxford	280	15
Tropical medicine	University of Liverpool	205	11
Veterinary sciences	Royal Veterinary College	423	16
Veterinary sciences	University of Liverpool	312	12
Veterinary sciences	Department for Environment, Food and Rural Affairs	310	12
Veterinary sciences	University of Bristol	270	10
Virology	University of Oxford	420	12
Virology	Imperial College London	342	10

Table 9. Cross-tabulation of share (%) of HCPs by Highlight Area and NHS organisation (results shown for NHS organisations with more than 30 HCPs on average a year; cells with HCP shares of 5% or greater and less than 10% are highlighted in blue; there are no values greater than 10%; blank cells represent relationships for which there were no HCPs; values are rounded to one decimal place, therefore any values less than 0.05 appear as 0.0)

	Barts Health NHS Trust	Cambridge University Hospitals NHS Foundation Trust	Central Manchester University Hospitals NHS Foundation Trust	Chelsea and Westminster Hospital NHS Foundation Trust	Great Ormond Street Hospital for Children NHS Foundation Trust	Guy's & St Thomas' NHS Foundation Trust	Heart of England NHS Foundation Trust	Imperial College Healthcare NHS Trust	King's College Hospital NHS Foundation Trust	Leeds Teaching Hospitals NHS Trust	London North West Healthcare NHS Trust	Moorfields Eye Hospital NHS Foundation Trust	Newcastle upon Tyne Hospitals NHS Foundation Trust	North Bristol NHS Trust	Nottingham University Hospitals NHS Trust	Oxford Health NHS Foundation Trust	Oxford University Hospitals NHS Foundation Trust	Royal Brompton & Harefield NHS Foundation Trust	Royal Free London NHS Foundation Trust	Royal Liverpool and Broadgreen University Hospitals NHS Trust	Royal Marsden NHS Foundation Trust	Salford Royal NHS Foundation Trust	Sandwell and West Birmingham Hospitals NHS Trust	Sheffield Teaching Hospitals NHS Foundation Trust	South London and Maudsley NHS Foundation Trust	St George's University Hospitals NHS Foundation Trust	The Christie NHS Foundation Trust	UCL Hospitals NHS Foundation Trust	University Hospital of South Manchester NHS Foundation Trust	University Hospital Southampton NHS Foundation Trust	University Hospitals Birmingham NHS Foundation Trust	University Hospitals Bristol NHS Foundation Trust	University Hospitals of Leicester NHS Trust
Cardiovascular disease	1.2	2.7	0.7	0.2	0.9	2.4	0.4	2.6	0.8	1.0	0.5	0.0	0.7	0.3	0.6		3.8	3.8	1.1	0.2	0.0	0.1	1.2	0.4		1.9	0.0	2.1	0.6	0.9	0.8	0.7	1.8
Dementias	0.5	2.6	0.6	0.2	1.1	1.5	0.1	1.8	1.0	0.5	0.1	0.2	1.3	0.7	1.0	0.5	3.6	0.1	1.0	0.1	0.1	0.9	0.2	0.6	0.5	0.6	0.1	2.9	0.2	0.8	0.4	0.3	0.5
Infection and anti-microbial resistance	0.7	1.4	0.5	1.1	0.2	1.3	0.4	1.3	0.3	0.6	0.2	0.0	0.3	0.3	0.6	0.0	4.4	0.2	1.9	0.3	0.1	0.0	0.1	0.2	0.0	0.6	0.1	0.6	0.4	0.6	0.2	0.2	0.3
Mental health	0.3	2.1	0.2	0.1	0.3	0.5	0.0	1.1	0.2	0.1	0.0	0.1	0.4	0.2	0.5	1.3	1.6	0.0	0.5	0.0	0.0	0.3	0.0	0.1	1.1	0.2	0.0	0.9	0.1	0.3	0.1	0.1	0.2
Musculoskeletal disease	1.0	2.2	0.9	0.3	0.6	2.5	0.1	2.9	0.7	5.0	0.3	0.0	1.0	0.9	1.9		2.5	0.2	1.4	0.5		0.8	0.4	0.6		0.4	0.1	0.9	0.1	1.0	0.8	0.6	0.4
Nutrition diet and lifestyle	0.9	4.3	0.8	0.1	0.3	0.9	0.3	1.8	0.3	0.2	0.2	0.0	0.4	0.2	0.7	0.0	2.8	0.1	0.8	0.2	0.2	0.3	0.0	0.8	0.1	0.3	0.3	0.6	0.2	1.5	0.4	0.2	0.4
Deafness and hearing	1.2	2.1	3.3		2.3	3.0	0.6	2.2	0.3	0.4	0.5	0.1	3.2	0.7	4.2		0.7	0.3	1.3	0.7	0.6	0.9	0.2	0.5		0.7	0.5	5.1	0.2	0.6	2.4	0.6	0.7
Gastrointestinal disease	1.4	2.2	0.7	0.4	0.2	1.3	0.2	2.7	2.8	2.9	3.3	0.0	0.8	0.4	3.1		3.6	0.1	3.9	0.6	0.5	0.6	0.2	1.2		0.6	0.2	1.3	0.6	1.2	1.7	0.4	0.9
Oral health/conditions	1.0	0.1	1.7		0.2	4.4		0.3	0.8	3.6	0.1		0.4	0.0	0.4		0.6		0.2	1.2	0.2	0.0		0.3	0.0	0.4	0.3	8.8	0.2	0.2	0.2	0.8	0.2
Respiratory disease	1.2	1.8	0.5	0.2	1.1	1.9	0.7	1.7	0.9	0.7	0.3	0.0	1.0	0.2	1.7		1.7	6.0	1.2	0.2	0.2	0.1	0.3	0.6		1.0	0.3	1.0	2.8	2.1	1.1	0.4	2.2

Table 10. Cross-tabulation of share (%) of HCPs by Highlight Area and HEI or 'other' organisation (results shown for HEIs or 'other' organisations with more than 30 HCPs on average a year; cells with HCP shares of 5% or greater and less than 10% are highlighted in blue; those with shares of 10% or greater and less than 20% are highlighted in green; blank cells represent relationships for which there were no HCPs; values are rounded to one decimal place, therefore any values less than 0.05 appear as 0.0)

	Babraham Institute	Birkbeck, University of London	Brunel University London	Department for Environment, Food and Rural Affairs	European Bioinformatics Institute	Imperial College London	Institute of Cancer Research	John Innes Centre	King's College London	Liverpool John Moores University	London Research Institute	London School of Hygiene & Tropical Medicine	Loughborough University	MRC Biostatistics Unit	MRC Clinical Sciences Centre	MRC Cognition and Brain Sciences Unit	MRC Human Nutrition Research	MRC Laboratory of Molecular Biology	MRC National Institute for Medical Research	Public Health England	Queen Mary University of London	Royal Veterinary College	St George's, University of London	University College London	University of Bath	University of Birmingham	University of Bristol	University of Cambridge	University of Durham	University of East Anglia	University of Exeter	University of Hull	University of Keele	University of Kent	University of Lancaster	University of Leeds	University of Leicester	University of Liverpool	University of Manchester	Newcastle University	University of Nottingham	University of Oxford	Plymouth University	University of Reading	University of Sheffield	University of Southampton	University of Surrey	University of Sussex	University of Warwick	University of York	Wellcome Trust Sanger Institute
Cardiovascular disease	0.1	0.0	0.1	0.0	0.1	8.8	0.2	0.0	4.2	0.3	0.1	1.5	0.0	0.2	0.6	0.0	0.2	0.1	0.2	0.1	1.7	0.1	1.5	7.1	0.2	3.2	2.3	4.8	0.1	0.3	0.4	0.8	0.1	0.1	0.0	1.4	2.0	0.9	2.1	1.0	0.9	6.3	0.3	0.1	1.0	0.7	0.1	0.2	0.6	0.2	0.5
Dementias	0.1	0.2	0.2	0.0	0.1	4.3	0.1		6.9	0.1	0.1	0.9	0.1	0.4	0.6	0.7	0.1	0.2	0.1	0.1	0.9	0.1	0.7	15.0	0.5	1.4	1.5	5.9	0.1	0.3	0.7	0.2	0.5	0.2	0.2	0.7	0.8	1.1	2.7	3.4	1.4	6.2	0.6	0.3	1.2	1.5	0.4	0.3	0.4	0.3	0.4
Infection and anti-microbial resistance	0.2	0.1	0.1	1.2	0.3	8.7	0.2	0.5	2.0	0.0	0.5	6.7	0.1	0.1	0.1		0.1	0.7	1.7	4.1	1.0	0.5	0.7	6.3	0.5	2.2	1.6	4.4	0.2	0.5	0.5	0.1	0.2	0.2	0.2	1.0	0.7	3.5	2.0	1.2	1.5	10.3	0.2	0.3	0.9	1.0	0.2	0.4	0.8	0.7	2.1
Mental health	0.2	1.0	0.4	0.0	0.1	3.6	0.1	0.0	10.9	0.3	0.1	0.7	0.3	0.2	0.6	2.0	0.0	0.3	0.3	0.0	0.7	0.1	0.3	14.7	0.5	1.6	2.7	8.2	0.7	0.2	0.9	0.4	0.3	0.4	0.3	0.9	0.8	1.0	3.3	1.7	1.8	8.5	0.5	0.6	1.2	1.5	0.4	1.2	0.8	1.2	0.6
Musculoskeletal disease	0.0	0.0	0.2		0.0	4.6	0.1		3.7	0.0	0.0	0.2	0.0	0.3	0.1		0.1	0.1	0.2	0.0	1.5	0.5	0.1	4.4	0.5	2.4	2.0	2.1	0.1	1.0	0.6	0.1	2.1	0.1	0.0	6.2	0.3	0.9	5.4	1.9	2.3	4.8	0.4	0.1	1.2	1.7	0.0	0.1	0.4	0.5	0.1
Nutrition diet and lifestyle	0.1	0.1	0.1	0.2	0.1	5.9	0.4	0.1	3.6	0.1	0.1	1.2	0.5	0.1	0.4	0.0	1.1	0.2	0.4	0.2	1.3	0.5	0.3	6.2	0.3	2.2	3.4	7.2	0.2	0.9	1.3	0.2	0.2	0.2	0.1	1.6	0.8	1.3	2.4	2.2	1.8	6.4	0.9	1.9	2.2	3.2	1.2	0.2	1.2	0.8	0.7
Deafness and hearing		0.0	0.1		0.0	1.8	0.4		1.3		0.1	0.4				0.9		0.2		0.1	0.2	0.1	0.1	5.9	0.1	0.8	1.4	2.9	0.0	0.4	0.2	0.2	0.5	0.3	0.1	0.1	0.7	1.9	3.5	3.2	2.2	1.6	0.1	0.2	0.7	2.0	0.1	1.1	0.5	1.0	0.3
Gastrointestinal disease	0.1	0.0	0.0	0.1	0.0	6.7	0.6		3.0	0.1	0.5	0.7		0.1	0.4		0.1	0.2	0.3	0.4	3.2	0.1	0.2	4.9	0.1	2.5	0.8	3.2	0.4	0.6	0.3	0.3	0.0	0.0	0.1	1.5	0.7	2.2	1.5	3.2	2.5	4.1	0.3	0.2	0.9	1.4	0.2	0.1	0.2	0.2	0.7
Oral health/ conditions	0.1			0.1		1.0	0.1		12.7	0.0		0.7	0.1		0.0					0.4	3.3	0.1	0.1	8.7	0.1	5.3	3.7	0.3	0.1	0.2	0.5	0.1	0.1	0.1		2.7	0.1	3.7	8.0	5.9	0.1	0.6	0.8	0.1	4.1	0.1	0.0	0.1	0.6	0.2	0.0
Respiratory disease	0.1	0.1	0.1	0.2	0.1	13.6	0.1	0.0	3.5	0.0	0.1	2.2	0.0	0.2	0.0		0.0	0.3	0.7	0.4	1.0	0.1	1.0	5.8	0.2	1.7	1.5	2.7	0.1	0.3	0.2	0.3	0.3	0.1	0.1	0.4	1.8	1.9	3.4	1.2	2.1	2.5	0.2	0.0	0.9	2.7	0.1	0.2	0.3	0.2	0.5

Table 11. Top 5 HEIs or 'other' organisations, and top 5 NHS organisations within a Highlight Area, based on share (%) of HCPs

	HEIs or 'other' organisations		NHS organisations	
Highlight Area	**Name**	**Share (%) of HCPs in 2004–2013**	**Name**	**Share (%) of HCPs in 2004–2013**
Cardiovascular disease	Imperial College	8.8	Oxford University Hospitals NHS Foundation Trust	3.8
	University College London	7.1	Royal Brompton & Harefield NHS Foundation Trust	3.8
	University of Oxford	6.3	Cambridge University Hospitals NHS Foundation Trust	2.7
	University of Cambridge	4.8	Imperial College Healthcare NHS Trust	2.6
	King's College London	4.2	Guy's & St Thomas' NHS Foundation Trust	2.4
Deafness and hearing problems	University College London	5.9	UCL Hospitals NHS Foundation Trust	5.1
	University of Manchester	3.5	Nottingham University Hospitals NHS Trust	4.2
	Newcastle University	3.2	Central Manchester University Hospitals NHS Foundation Trust	3.3
	University of Cambridge	2.9	Newcastle upon Tyne Hospitals NHS Foundation Trust	3.2
	MRC Institute of Hearing Research	2.8	Guy's & St Thomas' NHS Foundation Trust	3.0
Gastrointestinal (including liver and pancreatic) disease: including inflammatory bowel disease, Crohn's disease, and non-malignant diseases of the digestive system (colon)	Imperial College	6.7	Royal Free London NHS Foundation Trust	3.9
	University College London	4.9	Oxford University Hospitals NHS Foundation Trust	3.6
	University of Oxford	4.1	London North West Healthcare NHS Trust	3.3
	Newcastle University	3.2	Nottingham University Hospitals NHS Trust	3.1
	University of Cambridge	3.2	Leeds Teaching Hospitals NHS Trust	2.9
Musculoskeletal disease: including osteoporosis, osteoarthritis, rheumatoid arthritis, and muscular and skeletal disorders.	University of Leeds	6.2	Leeds Teaching Hospitals NHS Trust	5.0
	University of Manchester	5.4	Imperial College Healthcare NHS Trust	2.9
	University of Oxford	4.8	Oxford University Hospitals NHS Foundation Trust	2.5
	Imperial College	4.6	Guy's & St Thomas' NHS Foundation Trust	2.5
	University College London	4.4	Cambridge University Hospitals NHS Foundation Trust	2.2

	HEIs or 'other' organisations		NHS organisations	
Highlight Area	**Name**	**Share (%) of HCPs in 2004–2013**	**Name**	**Share (%) of HCPs in 2004–2013**
Respiratory disease: including asthma, chronic obstructive pulmonary disease, and other, non-malignant respiratory diseases	Imperial College	13.6	Royal Brompton & Harefield NHS Foundation Trust	6.0
	University College London	5.8	University Hospital of South Manchester NHS Foundation Trust	2.8
	King's College London	3.5	University Hospitals of Leicester NHS Trust	2.2
	University of Manchester	3.4	University Hospital Southampton NHS Foundation Trust	2.2
	University of Southampton	2.7	Guy's & St Thomas' NHS Foundation Trust	1.9
Nutrition, diet and lifestyle (including obesity)	University of Cambridge	7.2	Cambridge University Hospitals NHS Foundation Trust	4.3
	University of Oxford	6.4	Oxford University Hospitals NHS Foundation Trust	2.8
	University College London	6.2	Imperial College Healthcare NHS Trust	1.8
	Imperial College	5.9	University Hospital Southampton NHS Foundation Trust	1.5
	King's College London	3.6	Guy's & St Thomas' NHS Foundation Trust	0.9
Dementias	University College London	15.0	Oxford University Hospitals NHS Foundation Trust	3.6
	King's College London	6.9	UCL Hospitals NHS Foundation Trust	2.9
	University of Oxford	6.2	Cambridge University Hospitals NHS Foundation Trust	2.6
	University of Cambridge	5.9	Imperial College Healthcare NHS Trust	1.8
	Imperial College	4.3	Guy's & St Thomas' NHS Foundation Trust	1.5
Mental health	University College London	14.7	Cambridge University Hospitals NHS Foundation Trust	2.1
	King's College London	10.9	Oxford University Hospitals NHS Foundation Trust	1.6
	University of Oxford	8.5	Oxford Health NHS Foundation Trust	1.3
	University of Cambridge	8.2	Imperial College Healthcare NHS Trust	1.1
	Imperial College	3.6	South London and Maudsley NHS Foundation Trust	1.1

	HEIs or 'other' organisations		NHS organisations	
Highlight Area	**Name**	**Share (%) of HCPs in 2004–2013**	**Name**	**Share (%) of HCPs in 2004–2013**
Oral health/ conditions: chronic mouth and facial pain, oral and throat cancer, oral sores, birth defects such as cleft lip and palate, periodontal (gum) disease, tooth decay and tooth loss, and other diseases and disorders that affect the oral cavity	King's College London	12.7	UCL Hospitals NHS Foundation Trust	8.9
	University College London	8.7	Guy's & St Thomas' NHS Foundation Trust	4.4
	University of Manchester	8.0	Leeds Teaching Hospitals NHS Trust	3.6
	University of Newcastle upon Tyne	5.9	Aintree University Hospitals NHS Foundation Trust	1.8
	University of Birmingham	5.3	Central Manchester University Hospitals NHS Foundation Trust	1.7
Infection and anti-microbial resistance	University of Oxford	10.3	Oxford University Hospitals NHS Foundation Trust	4.4
	Imperial College	8.7	Royal Free London NHS Foundation Trust	1.9
	London School of Hygiene & Tropical Medicine	6.7	Cambridge University Hospitals NHS Foundation Trust	1.4
	University College London	6.3	Imperial College Healthcare NHS Trust	1.3
	University of Cambridge	4.4	Guy's & St Thomas' NHS Foundation Trust	1.3

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Appendix A: Further information about the HCP indicator

Highly cited publications (HCPs): This is a citation-based indicator that provides a quantitative measure of research excellence based on the identification of 'top-performing' papers in a particular research field. In our analysis, it refers to the number of papers that rank among the world's top 20% most highly cited publications in the bibliometric database, normalised for publication year, document type and field and subfield variations. It is often used as a key 'quality' indicator of research impact, using citations as a proxy. Self-citations were removed before we computed this indicator.

HCPs are identified by determining the number of citations needed for a publication published in a certain year to be in the world's top 20% in each field. As a result of the discrete nature of the distribution of citation scores, the citation thresholds in Appendix C do not exactly correspond to the top 20%. The percentage of papers that meet the threshold is almost always (somewhat) larger than 20%. This occurs because the threshold concerns a set of papers that is partially above and partially below the top 20%. In our computation, each paper on the citation threshold was given a weight equal to the fraction in which that set of papers is part of the top 20%.[33]

To illustrate the calculation method we applied to identify the top 20% publications, we use the example in Table 12 below, concerning a hypothetical set of five publications. The table shows the scientific field to which the publication belongs, the year of publication, the document type and the actual number of citations the publication received. The last column of the table indicates, for each publication, the minimum number of citations needed for that publication to belong to the top 20% of all publications in the same field, in the same publication year and of the same document type. Of the five publications, there are two (publications 2 and 3) for which the number of citations received exceeds the top 20% threshold. These two publications are considered top 20% publications. If the number of citations of a publication is exactly equal to the top 20% threshold, such as is the case for publication number 4, the publication is only fractionally counted as a top 20% publication.

Table 12. Hypothetical publications to illustrate the process of identifying HCPs

Publication	Field	Year	Document type	Actual number of citations	Top 20% threshold
1	Surgery	2007	Article	7	8
2	Surgery	2007	Review	37	13
3	Clinical neurology	2008	Article	15	11
4	Hematology	2008	Article	16	16
5	Surgery	2013	Review	0	4

33 Waltman & Schreiber 2012

Appendix B: Biomedical and health research–related WoS Journal Subject Categories used in the bibliometric analysis

Table 13. Biomedical and health research–related WoS JSCs used in the bibliometric analysis

Allergy	Neuroimaging
Anatomy & morphology	Neurosciences
Andrology	Nursing
Anesthesiology	Nutrition & dietetics
Audiology & speech-language pathology	Obstetrics & gynecology
Behavioral sciences	Oncology
Biochemical research method	Ophthalmology
Biochemistry & molecular biology	Orthopedics
Biophysics	Otorhinolaryngology
Biotechnology & applied microbiology	Parasitology
Cardiac & cardiovascular systems	Pathology
Cell & tissue engineering	Pediatrics
Cell biology	Peripheral vascular disease
Chemistry, medicinal	Pharmacology & pharmacy
Clinical neurology	Physiology
Critical care medicine	Primary health care
Dentistry/oral surgery & medicine	Psychiatry
Dermatology	Psychology, applied
Developmental biology	Psychology, biological
Emergency medicine	Psychology, clinical
Endocrinology & metabolism	Psychology, developmental
Engineering, biomedical	Psychology, experimental
Food science & technology	Psychology, multidisciplinary
Gastroenterology & hepatology	Psychology, psychoanalysis
Genetics & heredity	Public, environmental & occupational health
Geriatrics & gerontology	Radiology, nuclear medicine & medical imaging
Gerontology	Rehabilitation
Health care sciences & services	Reproductive biology
Health policy & services	Respiratory system
Hematology	Rheumatology
Immunology	Social work
Infectious diseases	Sport sciences
Integrative & complementary medicine	Substance abuse
Materials science, biomaterials	Surgery
Mathematical & computational biology	Toxicology
Medical informatics	Transplantation
Medical laboratory technology	Tropical medicine
Medicine, general & internal	Urology & nephrology
Medicine, research & experimental	Veterinary sciences
Microbiology	Virology

Appendix C: Number of citations needed to be in the top 20% of cited papers

Table 14. Number of citations needed to be in the top 20% of cited papers for each biomedical and health research–related JSC (excluding self-citations)

Journal Subject Category	Document type	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Allergy	Article	11	11	10	10	12	11	13	12	9	4
	Review	16	15	16	16	15	17	15	17	10	6
Anatomy & morphology	Article	6	6	6	6	5	5	5	5	3	2
	Review	21	22	16	15	15	15	18	13	9	4
Andrology	Article	6	6	9	6	8	7	9	7	5	3
	Review	11	13	16	13	19	39	14	15	14	4
Anesthesiology	Article	8	8	8	8	9	9	9	10	7	3
	Review	15	18	17	15	22	19	22	19	9	5
Audiology & speech-language pathology	Article	5	6	6	6	6	6	6	6	4	2
	Review	14	10	17	14	16	18	17	13	9	4
Behavioral sciences	Article	9	10	10	10	10	10	11	10	6	3
	Review	25	29	29	30	31	33	34	35	27	9
Biochemical research methods	Article	11	12	13	12	13	13	13	12	8	4
	Review	23	21	22	24	23	25	23	22	16	7
Biochemistry & molecular biology	Article	16	16	15	15	14	15	14	14	9	5
	Review	33	31	32	31	31	32	31	28	19	10
Biophysics	Article	11	11	11	10	11	11	11	10	7	4
	Review	32	37	35	35	34	35	35	28	20	10
Biotechnology & applied microbiology	Article	9	9	9	9	9	9	9	9	6	3
	Review	26	27	26	28	29	29	28	27	18	7
Cardiac & cardiovascular systems	Article	12	12	13	12	12	12	12	12	8	4
	Review	22	22	23	25	20	20	20	19	13	6
Cell & tissue engineering	Article	14	15	17	18	21	20	20	18	10	5
	Review	14	25	27	39	31	29	18	15	11	5
Cell biology	Article	21	21	20	20	20	20	20	20	12	6
	Review	42	41	40	41	39	40	36	36	23	10
Chemistry, medicinal	Article	9	10	10	9	9	10	10	8	6	3
	Review	18	20	16	16	21	19	20	17	11	5
Clinical neurology	Article	10	11	11	11	11	11	11	11	7	4
	Review	17	20	19	22	19	20	19	18	12	6
Critical care medicine	Article	15	15	15	17	16	16	17	16	10	5
	Review	16	16	16	17	18	19	16	19	11	6
Dentistry/oral surgery & medicine	Article	6	7	7	7	7	7	7	7	4	2
	Review	13	16	17	19	14	15	17	16	10	4

Journal Subject Category	Document type	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Dermatology	Article	7	7	7	8	8	7	7	7	5	3
	Review	15	16	16	19	17	16	13	14	10	4
Developmental biology	Article	21	21	20	18	18	16	16	16	10	5
	Review	37	36	38	34	28	30	39	28	20	8
Emergency medicine	Article	6	6	6	7	6	6	6	6	4	2
	Review	9	7	8	6	8	7	9	9	6	4
Endocrinology & metabolism	Article	14	14	15	14	14	14	14	14	9	5
	Review	29	32	31	27	29	27	30	28	19	8
Engineering, biomedical	Article	8	9	9	8	8	9	10	9	6	3
	Review	19	18	23	23	20	23	24	27	17	6
Food science & technology	Article	5	6	6	6	6	6	7	7	4	2
	Review	16	18	19	19	18	21	21	20	13	7
Gastroenterology & hepatology	Article	12	12	13	12	12	13	14	14	10	5
	Review	17	19	22	21	21	24	23	24	15	7
Genetics & heredity	Article	15	14	15	14	14	15	14	15	9	5
	Review	44	43	44	42	40	41	36	38	24	12
Geriatrics & Gerontology	Article	9	10	10	10	10	10	10	10	7	3
	Review	19	16	15	12	18	16	20	17	13	7
Gerontology	Article	7	9	9	8	8	8	9	8	5	2
	Review	15	16	17	10	14	11	13	15	10	6
Health care sciences & services	Article	8	8	8	8	8	8	8	8	5	2
	Review	16	16	16	17	16	19	14	16	9	4
Health policy & services	Article	7	8	8	8	8	8	8	8	5	2
	Review	18	18	16	15	15	18	14	15	10	4
Hematology	Article	16	16	16	17	16	16	16	16	10	5
	Review	29	28	26	27	28	26	23	25	14	7
Immunology	Article	16	16	16	16	16	16	16	15	10	5
	Review	38	35	37	37	35	33	31	34	20	9
Infectious diseases	Article	11	12	11	11	11	11	12	11	7	4
	Review	21	23	24	23	25	25	25	23	15	7
Integrative & complementary medicine	Article	5	7	6	6	7	6	7	5	4	2
	Review	10	14	11	11	14	11	12	8	7	3
Materials science, biomaterials	Article	10	13	12	11	12	13	15	16	10	5
	Review	28	52	41	43	38	35	39	49	37	16
Mathematical & computational biology	Article	9	10	10	9	9	9	9	8	5	2
	Review	12	22	21	20	24	20	17	23	14	4
Medical informatics	Article	5	5	5	5	6	6	7	7	4	2
	Review	11	15	18	18	16	14	15	21	15	5
Medical laboratory technology	Article	7	7	7	7	7	7	7	7	5	2
	Review	21	18	15	17	19	20	17	22	12	7
Medicine, general & internal	Article	9	10	10	7	7	7	7	7	5	2
	Review	21	17	21	19	18	17	16	17	12	6
Medicine, research & experimental	Article	9	10	9	10	9	9	10	10	7	3
	Review	21	23	21	19	18	20	20	21	14	6

Journal Subject Category	Document type	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Microbiology	Article	11	12	11	11	11	12	12	11	7	4
	Review	35	37	33	36	38	35	38	32	20	10
Neuroimaging	Article	14	14	16	16	15	16	17	17	11	4
	Review	14	10	19	17	23	25	19	36	21	6
Neurosciences	Article	14	15	14	14	14	15	15	15	9	5
	Review	35	34	33	31	31	31	35	31	21	9
Nursing	Article	5	5	5	5	5	5	5	5	3	1
	Review	7	10	9	9	10	10	8	8	5	3
Nutrition & Dietetics	Article	11	11	11	11	12	12	12	11	7	3
	Review	28	23	24	20	23	20	25	24	15	7
Obstetrics & gynecology	Article	8	8	9	8	8	7	8	8	5	3
	Review	14	14	15	14	14	15	15	15	8	4
Oncology	Article	16	17	16	15	16	16	16	16	10	5
	Review	27	28	28	27	28	27	26	23	16	8
Ophthalmology	Article	8	8	8	9	9	8	8	9	6	3
	Review	15	15	16	15	18	16	12	13	8	4
Orthopedics	Article	7	7	8	7	7	8	8	8	5	2
	Review	10	9	12	12	13	14	13	13	8	4
Otorhinolaryngology	Article	5	5	5	5	5	5	5	6	4	2
	Review	6	7	9	8	10	9	9	9	6	3
Parastitology	Article	5	6	7	7	7	8	9	9	6	3
	Review	19	23	23	20	23	21	25	23	15	8
Pathology	Article	10	10	10	10	9	9	9	10	7	3
	Review	16	17	19	20	20	22	20	18	12	6
Pediatrics	Article	7	8	8	7	8	8	8	7	5	2
	Review	10	12	11	12	12	14	11	12	7	4
Peripheral vascular disease	Article	15	15	15	14	14	13	14	13	9	4
	Review	28	30	31	27	24	23	23	22	16	6
Pharmacology & pharmacy	Article	9	9	10	9	10	9	9	9	6	3
	Review	22	21	21	20	21	21	21	18	13	7
Physiology	Article	11	11	11	11	10	10	10	10	7	3
	Review	48	43	39	38	35	35	33	30	18	8
Primary health care	Article	7	8	8	6	6	7	6	6	4	2
	Review	11	11	12	12	11	10	12	14	8	4
Psychiatry	Article	11	12	12	12	11	11	11	11	7	3
	Review	19	19	20	17	21	18	21	21	13	6
Psychology, applied	Article	5	6	7	7	7	7	7	7	4	1
	Review	16	23	18	16	16	21	24	22	13	4
Psychology, biological	Article	7	9	8	9	8	8	8	9	6	2
	Review	34	69	33	37	48	34	20	38	16	4
Psychology, clinical	Article	8	8	8	8	8	8	8	8	5	2
	Review	14	18	23	19	24	26	26	25	12	5
Psychology, developmental	Article	8	8	9	9	10	10	10	10	6	3
	Review	16	17	20	17	25	19	29	26	11	7

Journal Subject Category	Document type	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Psychology, experimental	Article	7	7	8	8	9	9	9	9	5	2
	Review	40	32	29	33	27	29	38	39	21	8
Psychology, multidisciplinary	Article	7	7	7	7	8	8	8	8	5	3
	Review	29	28	35	36	29	32	33	26	15	6
Psychology, psychoanalysis	Article	3	3	2	3	2	2	2	2	1	1
	Review	6	3	6	3	4	10	1	12	2	7
Public, environmental & occupational health	Article	8	9	8	8	8	8	8	8	5	2
	Review	18	20	21	19	16	17	18	19	11	5
Radiology	Article	9	9	10	10	10	10	10	10	6	3
	Review	16	11	15	14	15	17	14	13	10	5
Rehabilitation	Article	5	6	6	6	6	6	6	6	4	2
	Review	11	11	13	12	11	14	12	12	7	4
Reproductive biology	Article	9	10	10	9	10	10	10	10	6	3
	Review	20	25	24	25	24	25	24	23	14	6
Respiratory system	Article	11	12	12	12	12	12	12	12	9	4
	Review	16	19	20	17	21	17	15	16	12	5
Rheumatology	Article	13	14	13	13	13	14	14	14	9	4
	Review	19	19	20	19	20	20	22	21	13	6
Social work	Article	3	4	4	4	4	4	4	4	2	1
	Review	6	6	8	9	6	10	8	8	5	2
Sport science	Article	7	7	7	8	8	8	8	8	5	2
	Review	15	14	11	14	13	16	15	16	9	4
Substance abuse	Article	8	8	9	9	8	9	9	9	6	3
	Review	23	18	22	22	23	22	21	21	12	6
Surgery	Article	8	8	8	8	8	8	8	8	5	2
	Review	13	13	14	13	13	14	12	13	9	4
Toxicology	Article	8	8	9	9	9	9	9	9	6	3
	Review	28	24	26	24	24	26	21	22	16	7
Transplantation	Article	9	10	10	10	10	10	9	10	7	3
	Review	17	11	12	9	11	14	15	15	10	5
Tropical medicine	Article	6	6	6	7	7	7	7	7	5	3
	Review	18	15	18	16	17	14	18	16	14	5
Urology & nephrology	Article	10	11	10	10	10	10	10	10	7	3
	Review	15	14	18	18	17	17	18	17	11	6
Veterinary sciences	Article	3	3	4	4	4	4	4	4	3	1
	Review	7	7	7	9	11	12	10	9	5	2
Virology	Article	15	15	14	14	14	14	15	14	9	5
	Review	25	28	27	26	25	25	22	19	13	6

Appendix D: Total number of HCPs for all organisations

Table 15. Total number of HCPs for all HEIs, NHS organisations and 'other' organisations, 2004–2013 (sorted by total number of HCPs, rounded to the nearest whole number, therefore any values less than 0.5 appear as 0)[34]

Institution	Type	Number of HCPs
University College London	HEI	12672
University of Oxford	HEI	9952
University of Cambridge	HEI	8370
Imperial College London	HEI	8188
King's College London	HEI	7193
University of Manchester	HEI	4942
Oxford University Hospitals NHS Foundation Trust	NHS organisation	4045
University of Bristol	HEI	3662
London School of Hygiene & Tropical Medicine	HEI	3543
University of Birmingham	HEI	3390
Cambridge University Hospitals NHS Foundation Trust	NHS organisation	3233
Newcastle University	HEI	2970
University of Liverpool	HEI	2882
University of Nottingham	HEI	2739
Imperial College Healthcare NHS Trust	NHS organisation	2590
Guy's & St Thomas' NHS Foundation Trust	NHS organisation	2484
University of Sheffield	HEI	2460
University of Leeds	HEI	2386
University of Southampton	HEI	2311
Queen Mary University of London	HEI	2114
University College London Hospitals NHS Foundation Trust	NHS organisation	1848
Wellcome Trust Sanger Institute	'Other' organisation	1819
Leeds Teaching Hospitals NHS Trust	NHS organisation	1762
Royal Free London NHS Foundation Trust	NHS organisation	1752
University of Leicester	HEI	1706
Nottingham University Hospitals NHS Trust	NHS organisation	1580
Institute of Cancer Research	HEI	1572
University of York	HEI	1438
University of Warwick	HEI	1290
Barts Health NHS Trust	NHS organisation	1250

34 Organisations were cleaned through an iterative process of correction and improvement until we arrived at the final dataset. Post analysis we observed a few inaccuracies in the cleaning. These represented 0.0001% of the HCPs. Organisations where we know this has occurred are marked with a *.

Institution	Type	Number of HCPs
Central Manchester University Hospitals NHS Foundation Trust	NHS organisation	1217
University of Exeter	HEI	1212
University Hospital Southampton NHS Foundation Trust	NHS organisation	1183
Royal Marsden NHS Foundation Trust	NHS organisation	1180
King's College Hospital NHS Foundation Trust	NHS organisation	1111
Public Health England	'Other' organisation	1068
St George's University Hospitals NHS Foundation Trust	NHS organisation	1015
Great Ormond Street Hospital for Children NHS Foundation Trust	NHS organisation	990
Newcastle upon Tyne Hospitals NHS Foundation Trust	NHS organisation	987
Sheffield Teaching Hospitals NHS Foundation Trust	NHS organisation	949
University Hospitals of Leicester NHS Trust	NHS organisation	944
Royal Brompton & Harefield NHS Foundation Trust	NHS organisation	939
MRC Laboratory of Molecular Biology	'Other' organisation	905
University of East Anglia	HEI	895
St George's, University of London	HEI	843
University of Sussex	HEI	840
MRC National Institute for Medical Research	'Other' organisation	758
Plymouth University	HEI	745
University Hospitals Birmingham NHS Foundation Trust	NHS organisation	720
University of Bath	HEI	703
European Bioinformatics Institute	'Other' organisation	673
University of Reading	HEI	671
Royal Veterinary College	HEI	648
University Hospitals Bristol NHS Foundation Trust	NHS organisation	634
North Bristol NHS Trust	NHS organisation	603
London Research Institute	'Other' organisation	598
London North West Healthcare NHS Trust	NHS organisation	585
University of Surrey	HEI	572
MRC Clinical Sciences Centre	'Other' organisation	571
The Christie NHS Foundation Trust	NHS organisation	561
Department for Environment, Food and Rural Affairs	'Other' organisation	544
Durham University	HEI	529
University of Keele	HEI	516
University of Hull	HEI	512
Moorfields Eye Hospital NHS Foundation Trust	NHS organisation	488
MRC Cognition and Brain Sciences Unit	'Other' organisation	468
University Hospital of South Manchester NHS Foundation Trust	NHS organisation	468
Salford Royal NHS Foundation Trust	NHS organisation	466
Heart of England NHS Foundation Trust	NHS organisation	428
Birkbeck, University of London	HEI	419
John Innes Centre	'Other' organisation	418
Chelsea and Westminster Hospital NHS Foundation Trust	NHS organisation	409
Royal Liverpool and Broadgreen University Hospitals NHS Trust	NHS organisation	394
Oxford Health NHS Foundation Trust	NHS organisation	377
University of Lancaster	HEI	372

Institution	Type	Number of HCPs
Loughborough University	HEI	367
MRC Biostatistics Unit	'Other' organisation	366
Babraham Institute	'Other' organisation	364
Brunel University London	HEI	358
Liverpool John Moores University	HEI	353
Sandwell and West Birmingham Hospitals NHS Trust	NHS organisation	349
MRC Human Nutrition Research	'Other' organisation	329
South London and Maudsley NHS Foundation Trust	NHS organisation	316
University of Kent	HEI	315
Aston University	HEI	290
City University London	HEI	289
Institute of Food Research	'Other' organisation	283
The Pirbright Institute	'Other' organisation	279
Norfolk and Norwich University Hospitals NHS Foundation Trust	NHS organisation	276
Birmingham Children's Hospital NHS Foundation Trust	NHS organisation	272
Clinical Trial Service Unit and Epidemiological Studies Unit	'Other' organisation	257
The University of Bradford	HEI	257
Hull and East Yorkshire Hospitals NHS Trust	NHS organisation	256
Birmingham Women's NHS Foundation Trust	NHS organisation	249
Royal Holloway, University of London	HEI	249
University of Essex	HEI	238
University of Brighton	HEI	232
Royal United Hospitals Bath NHS Foundation Trust	NHS organisation	230
Manchester Metropolitan University	HEI	228
UK Medical Research Council	'Other' organisation	224
Research Councils UK	'Other' organisation	224
University Hospitals Coventry and Warwickshire NHS Trust	NHS organisation	223
Aintree University Hospital NHS Foundation Trust	NHS organisation	222
Brighton and Sussex University Hospitals NHS Trust	NHS organisation	220
Natural History Museum	'Other' organisation	217
London School of Economics and Political Science, University of London	HEI	214
Alder Hey Children's NHS Foundation Trust	NHS organisation	207
Royal Devon and Exeter NHS Foundation Trust	NHS organisation	206
University of the West of England, Bristol	HEI	205
Papworth Hospital NHS Foundation	NHS organisation	203
Sheffield Children's NHS Foundation Trust	NHS organisation	195
Derby Teaching Hospitals NHS Foundation Trust	NHS organisation	195
MRC Toxicology Unit	'Other' organisation	194
University of Hertfordshire	HEI	192
East and North Hertfordshire NHS Trust	NHS organisation	178
University of Portsmouth	HEI	175
Hillingdon Hospitals NHS Foundation Trust	NHS organisation	174
Rothamsted Research	'Other' organisation	172
Plymouth Hospitals NHS Trust	NHS organisation	170

Institution	Type	Number of HCPs
University of Central Lancashire	HEI	170
South Tees Hospitals NHS Foundation Trust	NHS organisation	170
Northumbria University	HEI	164
Nottingham Trent University	HEI	158
The Open University	HEI	158
Portsmouth Hospitals NHS Trust	NHS organisation	155
Oxford Brookes University	HEI	153
Royal Surrey County Hospital NHS Foundation Trust	NHS organisation	148
Royal National Orthopaedic Hospital NHS Trust	NHS organisation	147
University of Salford	HEI	144
Sainsbury Laboratory	'Other' organisation	138
Sheffield Hallam University	HEI	137
University Hospitals of North Midlands NHS Trust	NHS organisation	134
Gloucestershire Hospitals NHS Foundation Trust	NHS organisation	131
National Institute for Biological Standards and Control	'Other' organisation	131
MRC Harwell	'Other' organisation	125
Walton Centre NHS Foundation Trust	NHS organisation	118
Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	NHS organisation	116
Bradford Teaching Hospitals NHS Foundation Trust	NHS organisation	115
MRC Institute of Hearing Research	'Other' organisation	114
Hampshire Hospitals NHS Foundation Trust	NHS organisation	113
Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation Trust	NHS organisation	111
Cranfield University	HEI	109
Royal Cornwall Hospitals NHS Trust	NHS organisation	109
MRC Mitochondrial Biology Unit	'Other' organisation	108
Lancashire Teaching Hospitals NHS Trust	NHS organisation	107
Salisbury NHS Foundation Trust	NHS organisation	106
Liverpool Women's NHS Foundation Trust	NHS organisation	105
Kingston University	HEI	95
Epsom and St Helier University Hospitals NHS Trust	NHS organisation	95
University of Westminster	HEI	89
East Kent Hospitals University NHS Foundation Trust	NHS organisation	87
Northumbria Healthcare NHS Foundation Trust	NHS organisation	86
Royal Berkshire NHS Foundation Trust	NHS organisation	86
University of Greenwich	HEI	86
Leeds Beckett University	HEI	83
Bournemouth University	HEI	81
Lewisham and Greenwich NHS Trust	NHS organisation	81
MRC Prion Unit	'Other' organisation	78
Teesside University	HEI	78
Homerton University Hospital NHS Foundation Trust	NHS organisation	77
Goldsmiths, University of London	HEI	75
Defence Science and Technology Laboratory	'Other' organisation	75
University of Wolverhampton	HEI	74

Institution	Type	Number of HCPs
Cambridgeshire and Peterborough NHS Foundation Trust	NHS organisation	74
De Montfort University	HEI	74
Liverpool Heart and Chest Hospital NHS Foundation Trust	NHS organisation	73
University of Huddersfield	HEI	73
Coventry University	HEI	72
Ipswich Hospital NHS Trust	NHS organisation	71
City Hospitals Sunderland NHS Foundation Trust	NHS organisation	69
York Teaching Hospital NHS Foundation Trust	NHS organisation	69
University of East London	HEI	69
Anglia Ruskin University	HEI	68
Dudley Group NHS Foundation Trust	NHS organisation	68
Cochrane UK	'Other' organisation	66
Royal Orthopaedic Hospital NHS Foundation Trust	NHS organisation	65
London South Bank University	HEI	61
London Metropolitan University	HEI	61
Royal Wolverhampton NHS Trust	NHS organisation	60
Pennine Acute Hospitals NHS Trust	NHS organisation	60
Frimley Health NHS Foundation Trust	NHS organisation	58
Plymouth Marine Laboratory	'Other' organisation	57
Middlesex University	HEI	57
Peterborough and Stamford Hospitals NHS Foundation Trust	NHS organisation	57
Staffordshire University	HEI	55
University of Roehampton	HEI	55
North Tees and Hartlepool NHS Foundation Trust	NHS organisation	54
Buckinghamshire Healthcare NHS Trust	NHS organisation	53
Western Sussex Hospitals NHS Foundation Trust	NHS organisation	53
Poole Hospital NHS Foundation Trust	NHS organisation	50
Waltham Centre for Pet Nutrition	'Other' organisation	50
Fera Science Ltd.	'Other' organisation	49
Clatterbridge Cancer Centre NHS Foundation Trust	NHS organisation	48
Shrewsbury and Telford Hospital NHS Trust	NHS organisation	47
Mid Essex Hospital Services NHS Trust	NHS organisation	47
University of Sunderland	HEI	47
University of Lincoln	HEI	46
Gateshead Health NHS Foundation Trust	NHS organisation	45
Diamond Light Source	'Other' organisation	45
East Lancashire Hospitals NHS Trust	NHS organisation	43
Mid Yorkshire Hospitals NHS Trust	NHS organisation	43
North Middlesex University Hospital NHS Trust	NHS organisation	42
East Sussex Healthcare NHS Trust	NHS organisation	42
University of Chester	HEI	42
Thrombosis Research Institute	'Other' organisation	41
Barnsley Hospital NHS Foundation Trust	NHS organisation	41
Wirral University Teaching Hospital NHS Foundation Trust	NHS organisation	40
University of Bedfordshire	HEI	40

Institution	Type	Number of HCPs
Whittington Hospital NHS Trust	NHS organisation	39
Barking, Havering and Redbridge University Hospitals NHS Trust	NHS organisation	39
Croydon Health Services NHS Trust	NHS organisation	38
Torbay and South Devon NHS Foundation Trust	NHS organisation	37
Maidstone and Tunbridge Wells NHS Trust	NHS organisation	36
Southend University Hospital NHS Foundation Trust	NHS organisation	35
Canterbury Christ Church University	HEI	34
St Helens and Knowsley Teaching Hospitals NHS Trust	NHS organisation	34
National Institute of Economic and Social Research	'Other' organisation	34
European Medicines Agency	'Other' organisation	33
University of Derby	HEI	33
Health and Safety Laboratory	'Other' organisation	33
Luton and Dunstable University Hospital NHS Foundation Trust	NHS organisation	32
University of West London	HEI	31
Northampton General Hospital NHS Trust	NHS organisation	30
Manchester Mental Health and Social Care Trust	NHS organisation	30
Blackpool Teaching Hospitals NHS Foundation Trust	NHS organisation	28
Sherwood Forest Hospitals NHS Foundation Trust	NHS organisation	28
University Hospitals of Morecambe Bay NHS Foundation Trust	NHS organisation	27
Colchester Hospital University NHS Foundation Trust	NHS organisation	27
Surrey and Sussex Healthcare NHS Trust	NHS organisation	26
Worcestershire Acute Hospitals NHS Trust	NHS organisation	24
University of Chichester	HEI	23
Marine Biological Association of the United Kingdom	'Other' organisation	23
Ashford and St. Peter's Hospitals NHS Foundation Trust	NHS organisation	23
County Durham and Darlington NHS Foundation Trust	NHS organisation	23
United Lincolnshire Hospitals NHS Trust	NHS organisation	22
London Business School	HEI	22
University of Worcester	HEI	22
Sussex Partnership NHS Foundation Trust	NHS organisation	21
Queen Victoria Hospital NHS Foundation Trust	NHS organisation	19
National Physical Laboratory	'Other' organisation	19
Campden BRI	'Other' organisation	19
West Middlesex University Hospital NHS Trust	NHS organisation	18
South West London and St George's Mental Health NHS Trust	NHS organisation	17
Met Office	'Other' organisation	17
University of Buckingham	HEI	17
James Paget University Hospitals NHS Foundation Trust	NHS organisation	16
West London Mental Health NHS Trust	NHS organisation	16
National Institute of Agricultural Botany	'Other' organisation	15
University of Gloucestershire	HEI	13
School of Oriental and African Studies, University of London	HEI	12
University of Luton*	HEI	11
University of Bolton	HEI	11
Airedale NHS Foundation Trust	NHS organisation	10

Institution	Type	Number of HCPs
Birmingham City University	HEI	9
PHG Foundation	‘Other’ organisation	9
East Malling Research	‘Other’ organisation	9
Birmingham Community Healthcare NHS Trust	NHS organisation	9
Northern Lincolnshire and Goole NHS Foundation Trust	NHS organisation	8
Oxford Centre for Computational Neuroscience*	‘Other’ organisation	7
Institute for Fiscal Studies	‘Other’ organisation	7
Sir Alister Hardy Foundation for Ocean Science	‘Other’ organisation	5
Culham Science Centre	‘Other’ organisation	5
North Staffordshire Combined Healthcare NHS Trust	NHS organisation	4
Leeds Trinity University	HEI	3
Center for Economic and Policy Research	‘Other’ organisation	3
School of Advanced Study, University of London	HEI	3
National AIDS Trust	‘Other’ organisation	2
BirdLife International	‘Other’ organisation	2
British Trust for Ornithology	‘Other’ organisation	2
Heythrop College, University of London	HEI	2
Cambridge Crystallographic Data Centre	‘Other’ organisation	2
Atomic Weapons Establishment	‘Other’ organisation	1
Overseas Development Institute	‘Other’ organisation	1
Francis Crick Institute	‘Other’ organisation	1
South Staffordshire and Shropshire Healthcare NHS Foundation Trust	NHS organisation	1
Wellcome Trust	‘Other’ organisation	1
Forest Research	‘Other’ organisation	1
UCL Partners*	‘Other’ organisation	1
Moredun Research Institute	‘Other’ organisation	1
University Hospital of North Staffordshire NHS Trust*	NHS organisation	1
Institute of Grassland and Environmental Research*	‘Other’ organisation	1
European Centre for Medium-Range Weather Forecasts	‘Other’ organisation	1
HR Wallingford	‘Other’ organisation	1
King’s Health Partners*	‘Other’ organisation	0
Ealing Hospital NHS Trust*	NHS organisation	0

Appendix E: Additional analysis related to collaborations between NHS organisations and HEIs or ‘other’ organisations

Table 16. Measure of collaboration activity between the 25 NHS organisations and the 25 HEIs or 'other' organisations with the largest number of HCPs, based on the number of NHS organisations' HCPs co-authored with HEIs or 'other' organisations, 2004–2013 (sorted alphabetically; the top 25 cells are highlighted in green; blank cells represent partnerships for which that are no HCPs; values are rounded to the nearest whole number, therefore any values less than 0.5 appear as 0)

	Imperial College	Institute of Cancer Research	King's College London	London School of Hygiene & Tropical Medicine	MRC Laboratory of Molecular Biology	Public Health England	Queen Mary University of London	University College London	University of Birmingham	University of Bristol	University of Cambridge	University of East Anglia	University of Exeter	University of Leeds	University of Leicester	University of Liverpool	University of Manchester	Newcastle University	University of Nottingham	University of Oxford	University of Sheffield	University of Southampton	University of Warwick	University of York	Wellcome Trust Sanger Institute
Barts Health NHS Trust	90	32	79	25	2	14	265	202	32	37	52	4	22	21	23	20	28	27	14	71	21	23	9	5	20
Cambridge University Hospitals NHS Foundation Trust	244	73	216	64	57	27	95	307	106	144	2363	57	65	62	83	31	93	90	46	315	49	83	25	14	267
Central Manchester University Hospitals NHS Foundation Trust	53	58	38	35		26	29	103	49	19	81	4	5	27	9	45	592	47	9	82	24	47	3	21	18
Great Ormond Street Hospital for Children NHS Foundation Trust	52	19	52	16	1	4	23	558	33	17	39	3	11	13	18	18	29	39	13	54	6	27	4	4	7
Guy's & St Thomas' NHS Foundation Trust	137	72	1173	52	1	27	79	312	75	46	135	7	18	41	37	24	110	76	38	150	42	60	14	8	61
Imperial College Healthcare NHS Trust	1647	24	162	31	2	18	77	346	45	45	106	11	22	31	32	26	29	39	18	210	23	37	10	5	52
King's College Hospital NHS Foundation Trust	90	7	283	10		13	23	102	14	9	28	2	3	16	5	21	30	25	8	40	25	12	1	2	4
Leeds Teaching Hospitals NHS Trust	71	81	55	26	5	18	35	152	69	18	78	5	8	730	30	33	85	72	24	108	57	37	6	45	34
London North West Healthcare NHS Trust	163	15	52	20		5	35	90	30	12	32	3	10	10	11	7	18	20	5	61	7	15	1	2	25
Moorfields Eye Hospital NHS Foundation Trust	22	1	30	47		1	17	310	6	13	32	1	3	3	10	10	12	6	4	38	6	9	0	1	13
Newcastle upon Tyne Hospitals NHS Foundation Trust	22	25	58	11	1	7	15	69	31	24	44	3	5	23	15	12	49	437	19	62	25	29	8	12	17
North Bristol NHS Trust	25	4	19	9		13	10	50	12	232	24	5	12	14	4	5	14	12	11	40	9	24	8	2	8
Nottingham University Hospitals NHS Trust	48	47	68	23	5	10	22	100	48	38	61	9	6	31	38	22	49	48	892	79	34	49	12	12	25
Oxford University Hospitals NHS Foundation Trust	297	59	180	126	13	21	113	317	140	114	217	27	74	67	64	63	103	103	59	2686	70	86	38	12	160
Royal Brompton & Harefield NHS Foundation Trust	521	10	53	16			10	95	13	10	26	3	2	5	12	6	16	12	6	17	1	9	1	3	9
Royal Free London NHS Foundation Trust	138	16	107	52	2	42	54	954	46	31	47	15	7	17	12	23	78	37	16	74	13	26	18	6	4
Royal Marsden NHS Foundation Trust	55	481	37	18	1	1	48	111	34	23	83	3	3	33	13	14	34	19	14	50	22	35	13	5	15
Sheffield Teaching Hospitals NHS Foundation Trust	43	21	24	10		6	11	56	34	19	23	7	3	22	11	23	35	25	33	37	418	19	4	8	13
St George's University Hospitals NHS Foundation Trust	62	35	70	21		18	24	127	22	27	34	6	5	19	16	12	23	20	3	44	14	23	2	10	14
The Christie NHS Foundation Trust	16	38	9	4		0	18	48	21	4	14			14	3	12	240	9	4	21	15	13	2	5	
UCL Hospitals NHS Foundation Trust	139	15	100	93	1	12	47	950	32	14	39	4	16	17	6	11	43	30	10	78	22	22	3	5	16
University Hospital Southampton NHS Foundation Trust	61	49	66	33		8	25	123	21	36	79	6	15	14	17	10	40	40	34	111	27	662	12	7	31
University Hospitals Birmingham NHS Foundation Trust	26	4	31	9		6	10	72	325	19	27	3	7	12	13	15	27	24	10	45	19	14	19	1	7
University Hospitals Bristol NHS Foundation Trust	36	22	28	16		8	5	58	28	267	28	2	12	15	2	13	17	21	14	43	9	30	3	2	7
University Hospitals of Leicester NHS Trust	96	18	83	38	1	16	68	100	38	47	88	12	24	58	446	21	32	25	36	103	37	25	15	2	66

Table 17. Summary of top 25 collaborative partnerships from Table 16 (in terms of the number of shared HCPs)

NHS organisation	Higher education institution	Number of NHS institution HCPs sharing the corresponding HEI address	Share (%) of NHS institution HCPs sharing the corresponding HEI address
Oxford University Hospitals NHS Foundation Trust	University of Oxford	2686	48
Cambridge University Hospitals NHS Foundation Trust	University of Cambridge	2363	43
Imperial College Healthcare NHS Trust	Imperial College London	1647	46
Guy's & St Thomas' NHS Foundation Trust	King's College London	1173	38
Royal Free London NHS Foundation Trust	University College London	954	48
UCL Hospitals NHS Foundation Trust	University College London	950	50
Nottingham University Hospitals NHS Trust	University of Nottingham	892	44
Leeds Teaching Hospitals NHS Trust	University of Leeds	730	35
University Hospital Southampton NHS Foundation Trust	University of Southampton	662	40
Central Manchester University Hospitals NHS Foundation Trust	University of Manchester	592	38
Great Ormond Street Hospital for Children NHS Foundation Trust	University College London	558	49
Royal Brompton & Harefield NHS Foundation Trust	Imperial College London	521	57
Royal Marsden NHS Foundation Trust	Institute of Cancer Research	481	38
University Hospitals of Leicester NHS Trust	University of Leicester	446	27
Newcastle upon Tyne Hospitals NHS Foundation Trust	Newcastle University	437	39
Sheffield Teaching Hospitals NHS Foundation Trust	University of Sheffield	418	41
Imperial College Healthcare NHS Trust	University College London	346	10
University Hospitals Birmingham NHS Foundation Trust	University of Birmingham	325	40
Oxford University Hospitals NHS Foundation Trust	University College London	317	6
Cambridge University Hospitals NHS Foundation Trust	University of Oxford	315	6
Guy's & St Thomas' NHS Foundation Trust	University College London	312	10
Moorfields Eye Hospital NHS Foundation Trust	University College London	310	47
Cambridge University Hospitals NHS Foundation Trust	University College London	307	6
Oxford University Hospitals NHS Foundation Trust	Imperial College London	297	5
King's College Hospital NHS Foundation Trust	King's College London	283	32

Appendix F: Profiles of HCP shares in Highlight Areas

This section shows the distribution of HCPs across institutions with at least 1 percent of the HCPs for each of the 10 Highlight Areas. For the convenience of the reader, the Highlight Areas have been listed again in Table 18. Within each graphical distribution (Figure 4 to Figure 13), the blue bars represent NHS organisations, the green bars represent HEIs and the yellow bars represent 'other' organisations.

Table 18. The ten Highlight Areas

Highlight Area
Cardiovascular disease
Deafness and hearing problems
Gastrointestinal (including liver and pancreatic) disease: including inflammatory bowel disease, Crohn's disease, and non-malignant diseases of the digestive system (colon)
Musculoskeletal disease: including osteoporosis, osteoarthritis, rheumatoid arthritis, and muscular and skeletal disorders
Respiratory disease: including asthma, chronic obstructive pulmonary disease, and other, non-malignant respiratory diseases
Nutrition, diet and lifestyle (including obesity)
Dementias
Mental health
Oral health/conditions including: chronic mouth and facial pain, oral and throat cancer, oral sores, birth defects such as cleft lip and palate, periodontal (gum) disease, tooth decay and tooth loss, and other diseases and disorders that affect the oral cavity.
Infection and anti-microbial resistance

Figure 4. Cardiovascular disease: proportion of HCPs by institution (HEIs are shown in blue; NHS organisations are shown in green; 'other' organisations are shown in yellow)

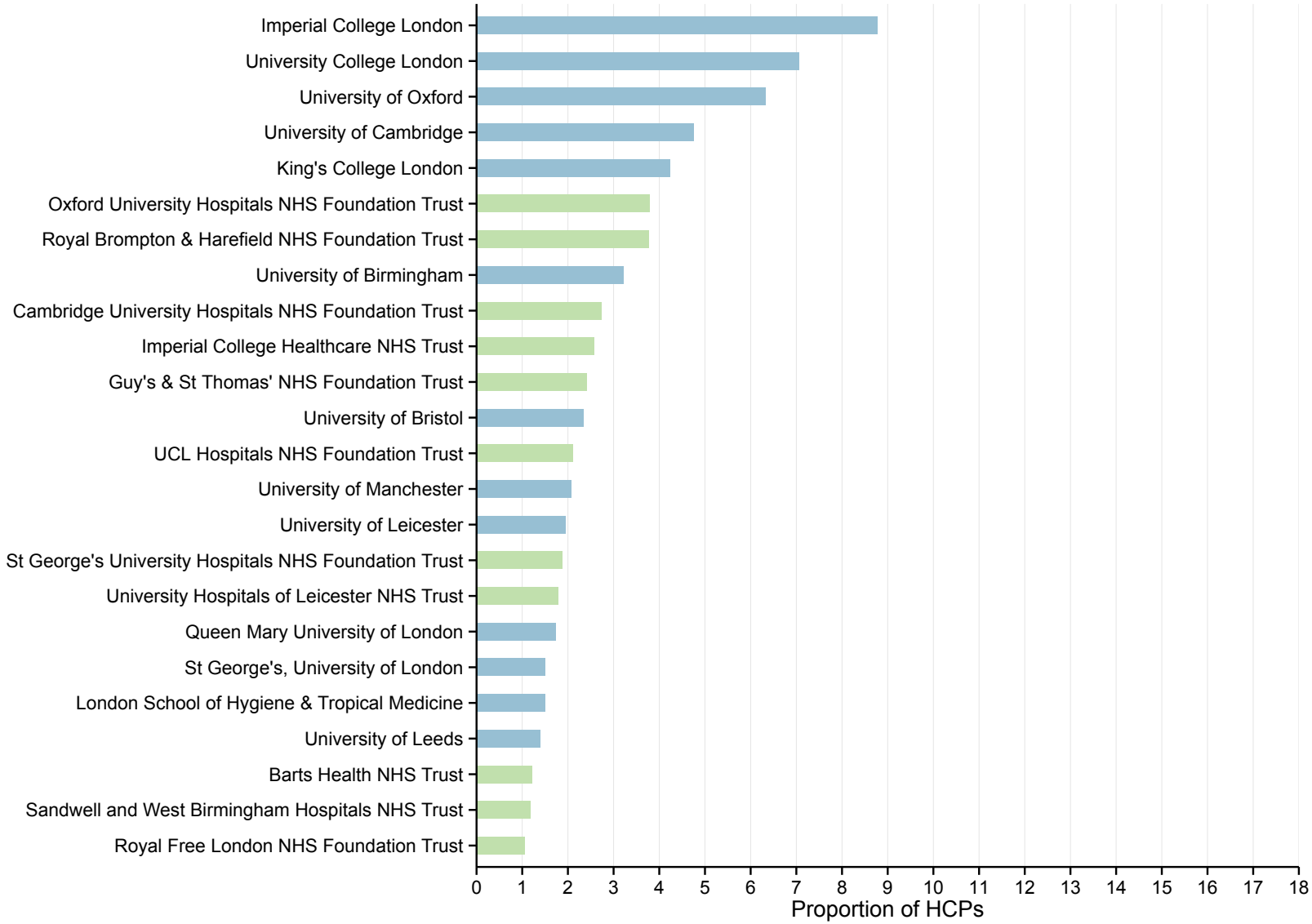

Figure 5. Deafness and hearing problems: proportion of HCPs by institution (HEIs are shown in blue; NHS organisations are shown in green; 'other' organisations are shown in yellow)

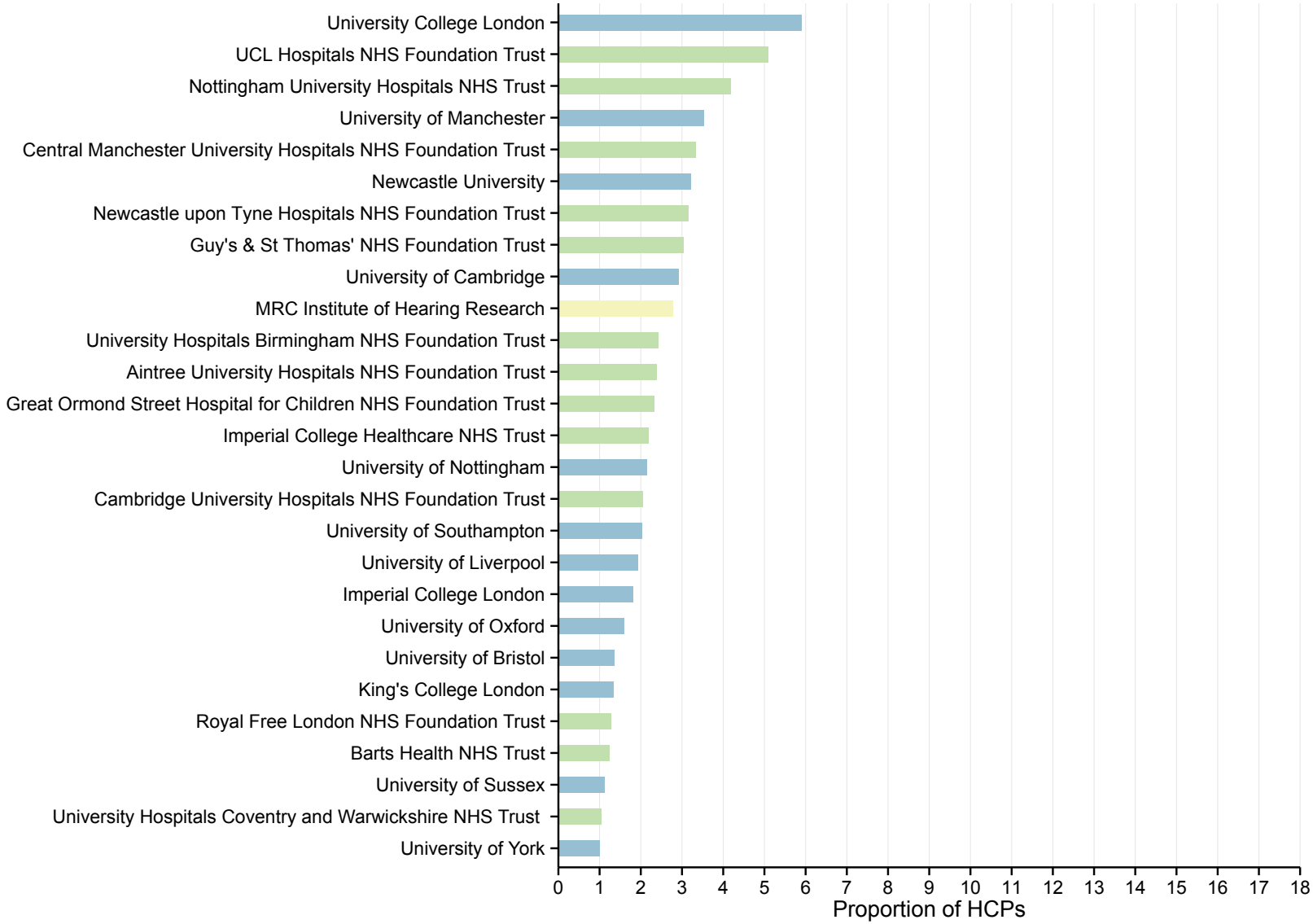

Figure 6. Gastrointestinal disease: proportion of HCPs by institution (HEIs are shown in blue; NHS organisations are shown in green; 'other' organisations are shown in yellow)

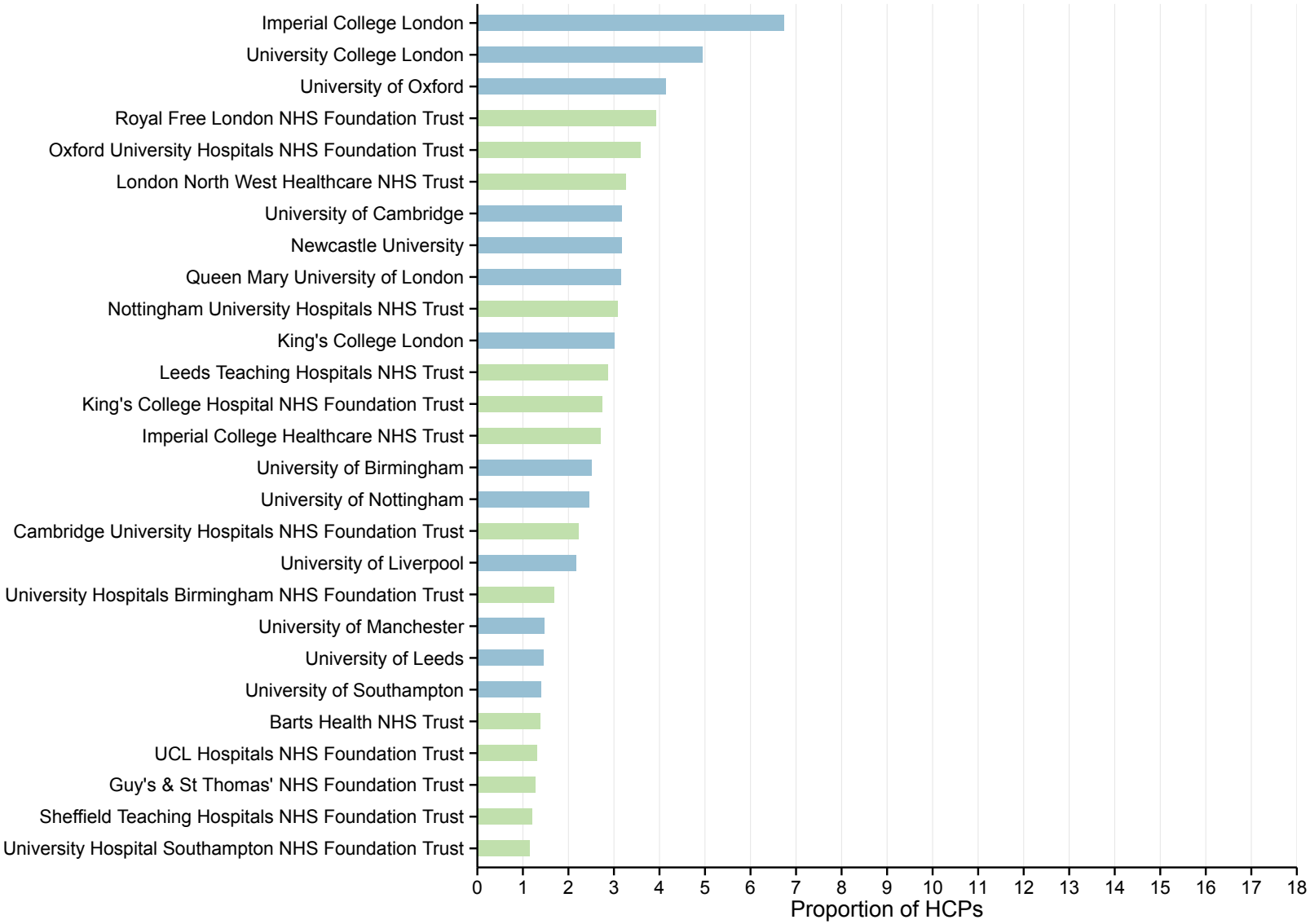

Figure 7. Musculoskeletal disease: proportion of HCPs by institution (HEIs are shown in blue; NHS organisations are shown in green; 'other' organisations are shown in yellow)

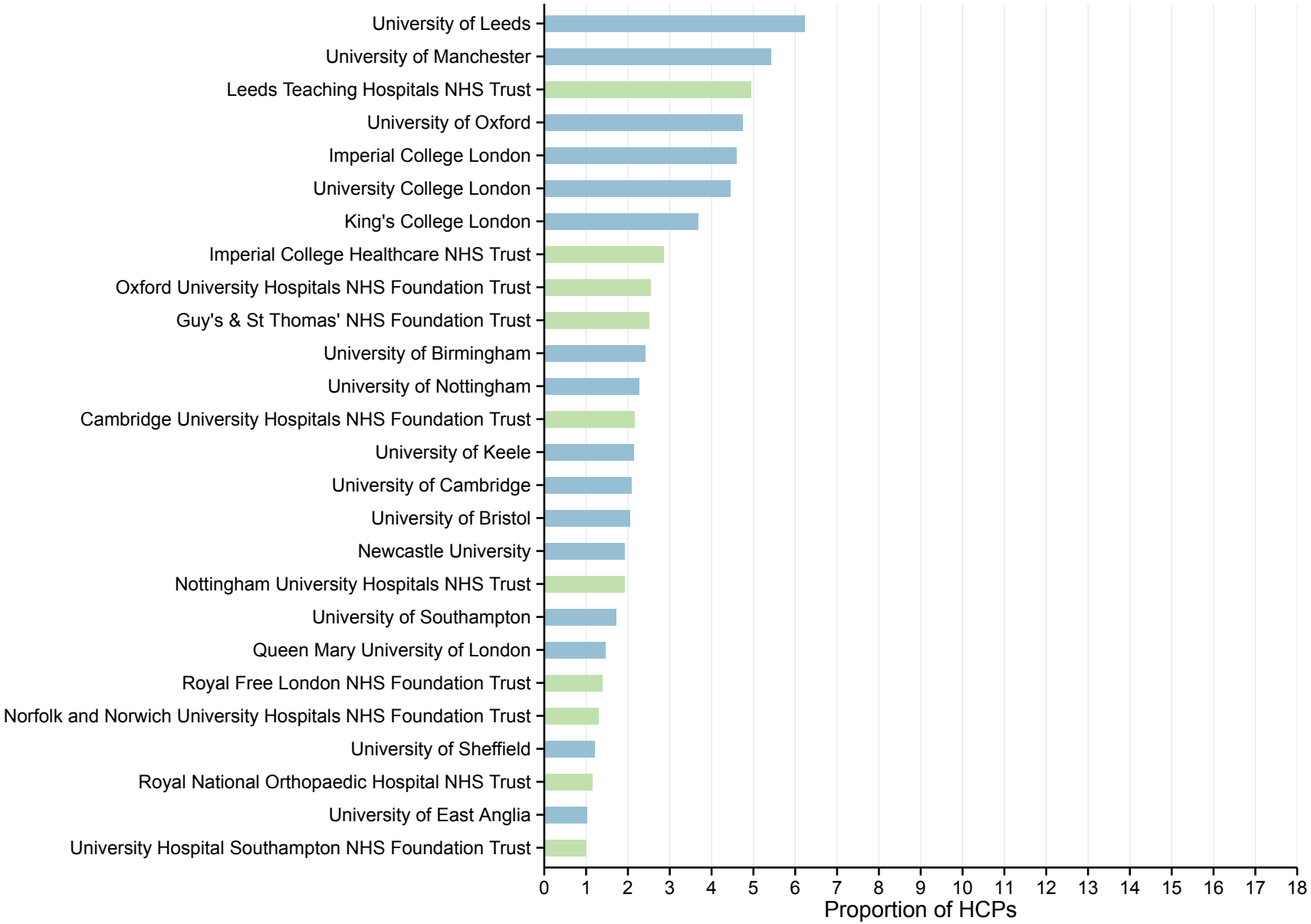

Figure 8. Respiratory disease: proportion of HCPs by institution (HEIs are shown in blue; NHS organisations are shown in green; 'other' organisations are shown in yellow)

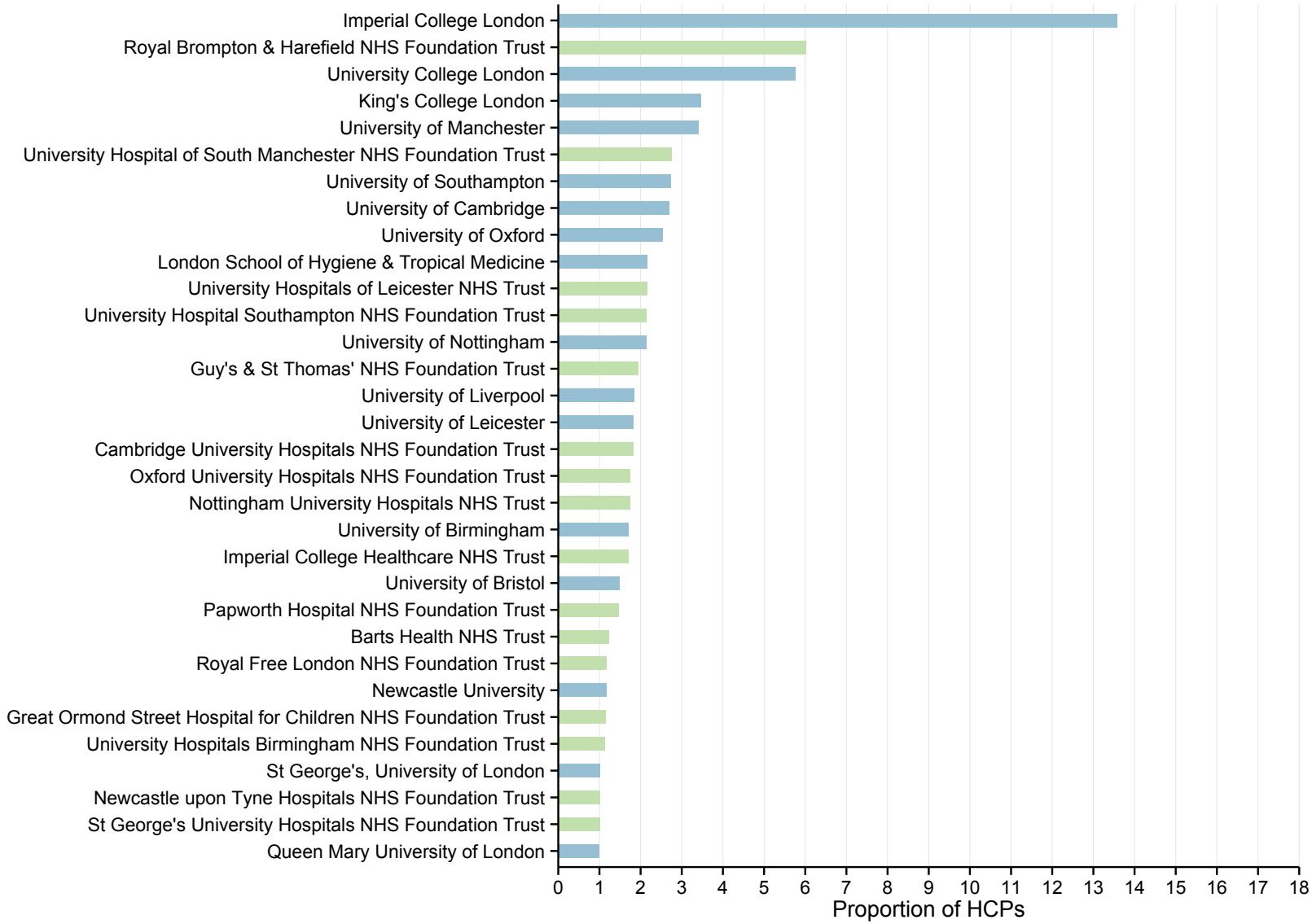

Figure 9. Nutrition, diet and lifestyle: proportion of HCPs by institution (HEIs are shown in blue; NHS organisations are shown in green; 'other' organisations are shown in yellow)

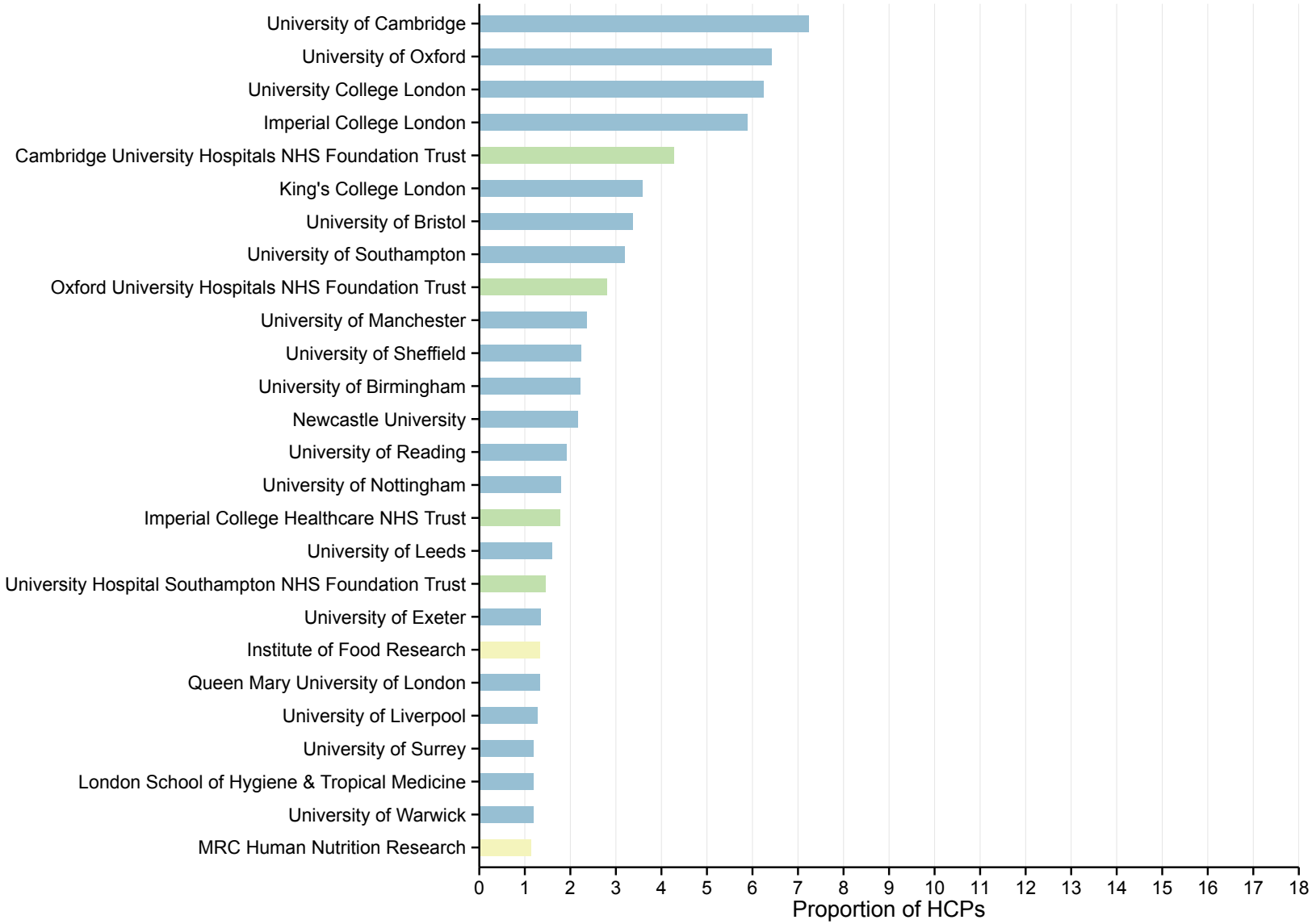

Figure 10. Dementias: proportion of HCPs by institution (HEIs are shown in blue; NHS organisations are shown in green; 'other' organisations are shown in yellow)

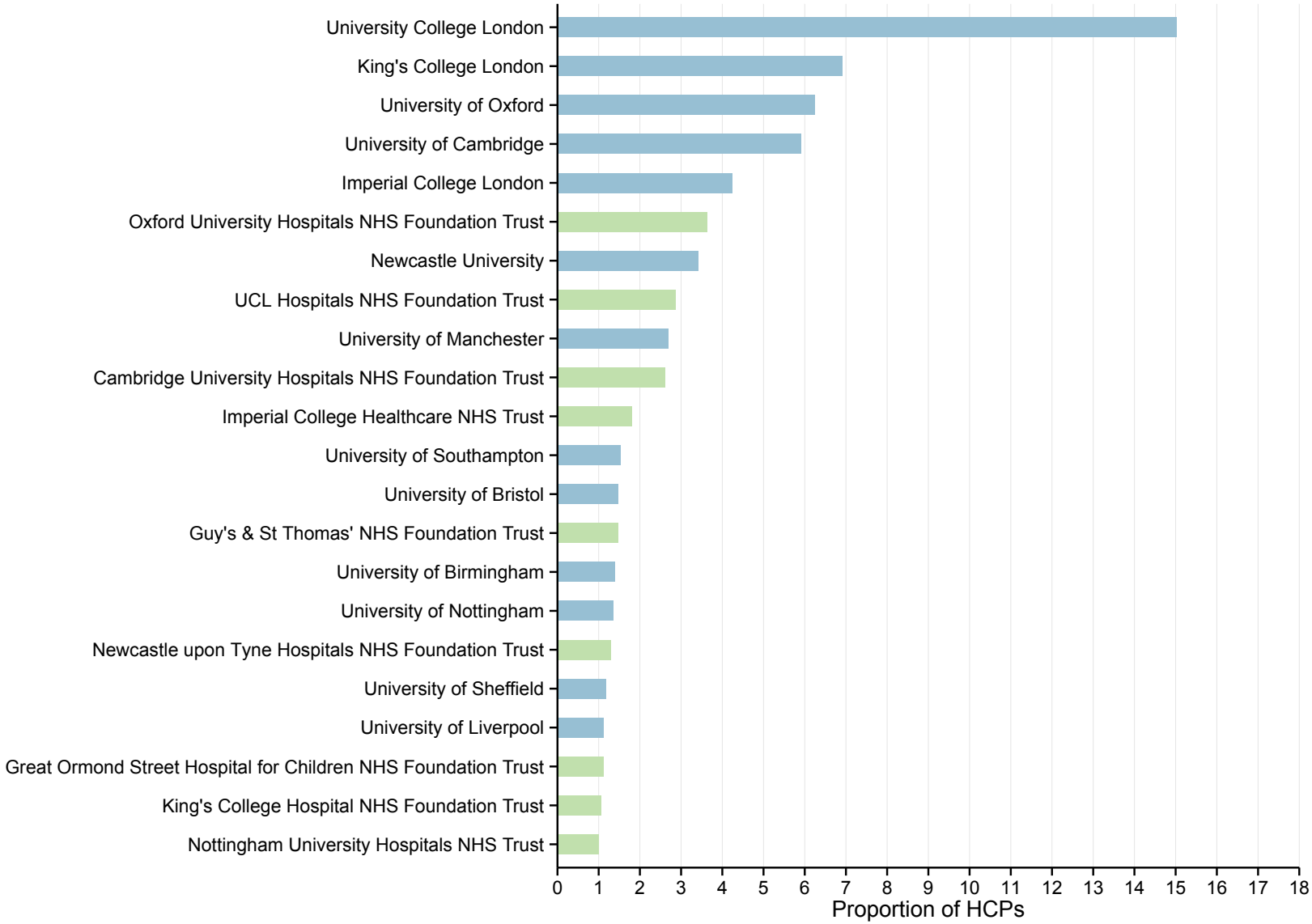

Figure 11. Mental health: proportion of HCPs by institution (HEIs are shown in blue; NHS organisations are shown in green; 'other' organisations are shown in yellow)

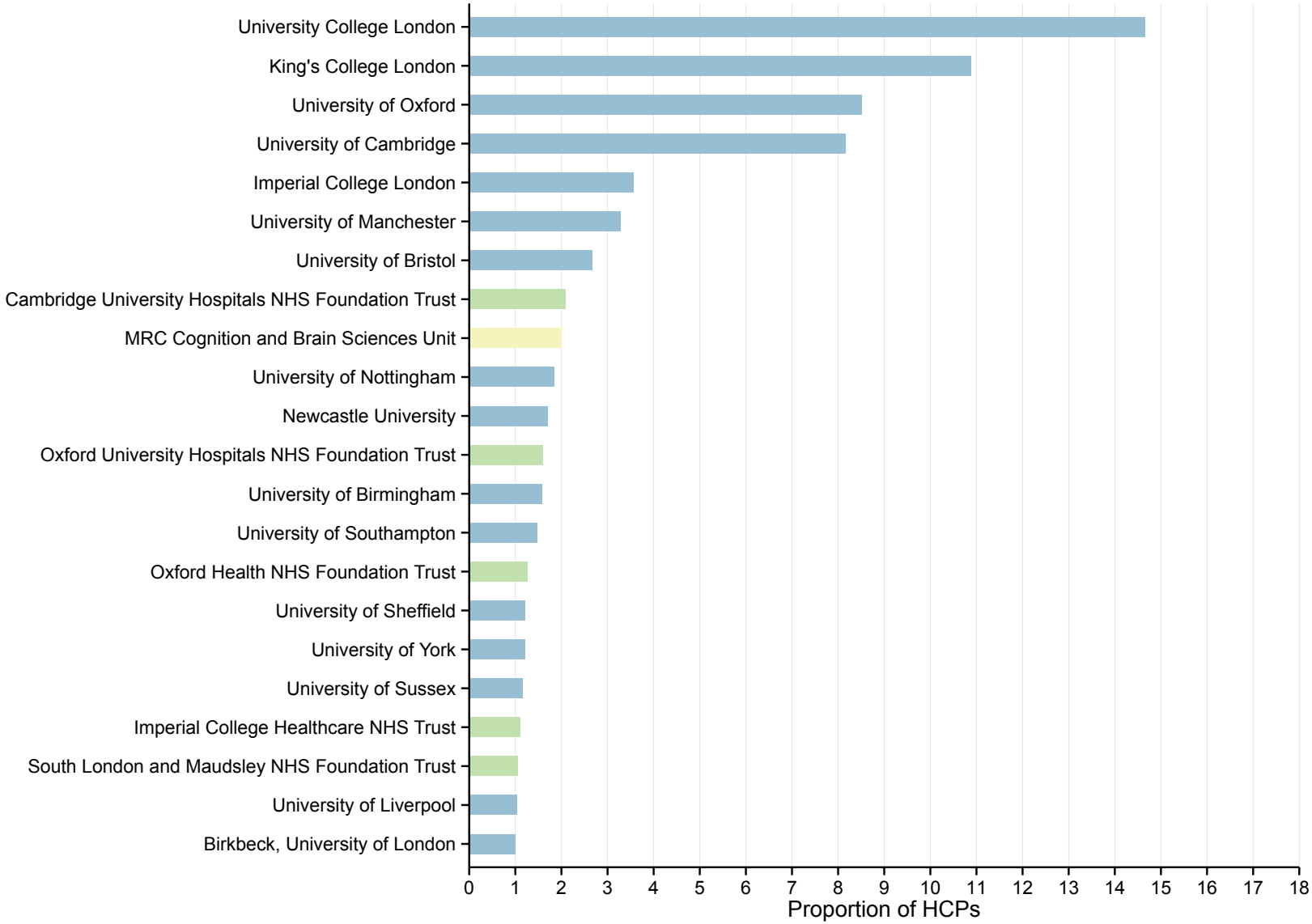

Figure 12. Oral health/conditions: proportion of HCPs by institution (HEIs are shown in blue; NHS organisations are shown in green; 'other' organisations are shown in yellow)

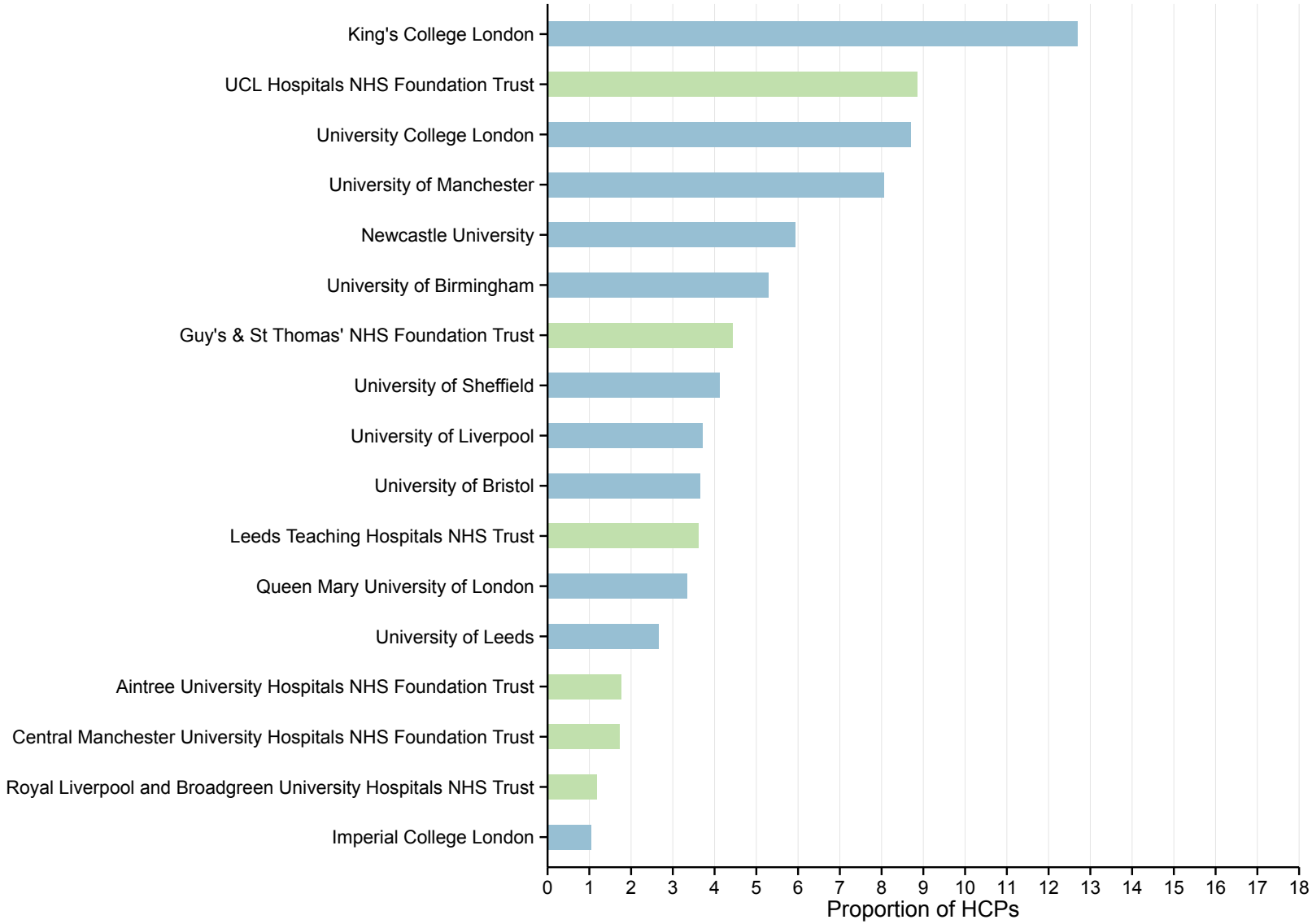

Figure 13. Infection and anti-microbial resistance: proportion of HCPs by institution (HEIs are shown in blue; NHS organisations are shown in green; 'other' organisations are shown in yellow)