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The science and technology category in London

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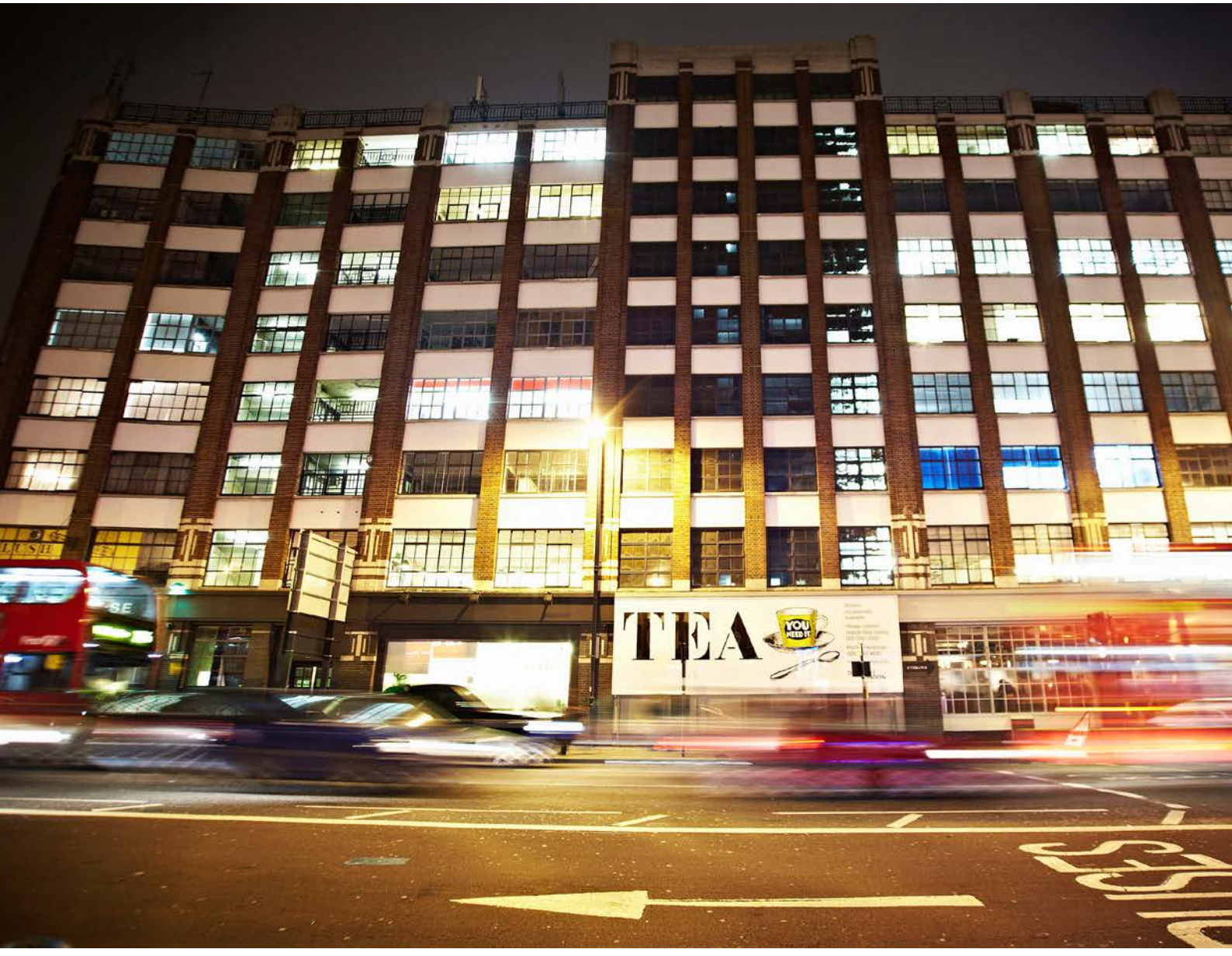

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Executive summary

The Science and Technology category is seen as key for the London economy, as shown by the London Enterprise Panel's Jobs and Growth Plan, where priority three is "Digital Creative, Science and Technology"[1]. The category is heavily represented in the Professional, scientific and technical activities sector which has seen a near tripling of employee jobs in the capital between 1981 and 2013, a period when the number of Manufacturing employee jobs fell by nearly 80 per cent.

However, thus far there has been no agreed statistical definition of what Sections, Divisions, Groups, Classes or Sub-classes in the UK Standard Industrial Classification can be categorised as having a significant "Science and Technology" content. Researchers have therefore been obliged to construct their own definitions but this has been far from satisfactory as the definitions inevitably differed, making collaborative research, validation and comparison very difficult. Now, however, Office for National Statistics (ONS) London statisticians working with the GLA have produced a 'categorisation' of 'Science and Technology'[2]. This is comprised of five sub-categories: Digital technologies; Life sciences and healthcare; Publishing and broadcasting; Other scientific/technological manufacture; and Other scientific/technological services.

Using this we find that in the ten years to 2013, there was a rise of 6.4 per cent in the number of employee jobs[3] in the Science and Technology category in the Greater South East. However, the rise in the number of these jobs in London alone - at 14.6 per cent – was more than twice as great, accounting for nearly 90 per cent of the total rise of 129,800 in the Greater South East.

The biggest sub-category in London in terms of employee jobs is Publishing and broadcasting accounting for 30 per cent of jobs in the Science and Technology category. Life sciences and healthcare (which has grown faster in terms of employees) is close behind. But the fastest proportional growth in employee job numbers in London in the ten years 2003-2013 was in the Digital technology sub-category (up 29 per cent). In the London Boroughs, the rates of growth of jobs in the Science and Technology category have varied widely. Camden saw the strongest growth in employees in absolute terms and also has the highest proportion of Science and Technology category employees in total (at 32.9 per cent).

There has been a rise of over 26 per cent in the number of workplaces[4] in the Science and Technology category in the ten years to 2013 in the Greater South East, a much bigger rise than the noted above rise for the number of employees (up 6.4 per cent), implying a fall in the average number of employees per workplace (which indeed fell from 12.1 to 10.2). As with employees, the rise in workplaces in London (up 37.0 per cent) was stronger than the rise in either the Eastern region or the South East. At least part of the explanation for the fall in the employees to workplace ratio in the Greater South East was the growth in the Digital sub-category, which has a relatively low employee/workplace ratio, and decline in the Other scientific/technological manufacture sub-category, which has a relatively high employee/workplace ratio. For London, the ratios in 2013 were 4.5 for the Digital sub-category and 9.3 for the Other scientific/technological manufacture sub-category.

[1] London Enterprise Panel, April 2013, 'Jobs and Growth Plan for London'.
[2] Harris, J. P., February 2015, 'Identifying Science and Technology Businesses in Official Statistics', Office for National Statistics.
[3] Due to the nature of the data sources used in this analysis all jobs refer to employee jobs only unless stated otherwise.
[4] Workplaces here do not include workplaces of just the self employed as only employee jobs are examined in this paper.

Introduction

Industries with high scientific and/or technological content are very important for London's economy, as progress in Science and Technology leads to capital deepening[5] which raises the productivity of labour[6]. Especially through economies of agglomeration[7], technical and scientific progress boosts productivity, helps to disseminate knowledge throughout London's economy, acts as a spur to innovation and strengthens the capital's international competitive advantage.

Yet despite its economic importance, there has been no agreed statistical definition of what Sections, Divisions, Groups, Classes or Sub-classes in the UK Standard Industrial Classification can be categorised as having a significant "Science and Technology" content. A classification of 'Science and Technology' drawn up by the ONS London statisticians working with the GLA attempts to address this issue. This Working Paper looks at London's employee jobs and workplaces using this classification on the basis of data collected for the Inter-Departmental Business Register (IDBR)[8]. The focus of the paper is extended to the Greater South East region because of the geographically interconnected nature of its economy.

The first section ("*The Science and Technology Category: Background and Definitions*") provides an overview of the category in London. It then sets out the constituents of the Science and Technology category. It contains five sub-categories, designed to be of policy and economic relevance, as follows: Digital technologies; Life sciences and healthcare; Publishing and broadcasting; Other scientific/technological manufacture; and Other scientific/technological services. A full description of the Divisions, Groups, Classes and Sub Classes in the UK Standard Industrial Classification 2007 (SIC07) which are included (or not included) in the "Science and Technology" classification and its sub-classifications can be obtained from the ONS[9].

The second section ("*Employee Jobs and Workplaces in Science and Technology in the Greater South East, London and the Boroughs*") sets out the numbers of jobs and workplaces in the Science and Technology category, as well as in the five sub-categories, and discusses how they have changed over time. It is divided into three subsections. The first subsection looks at employee jobs in the Greater South East region and its constituent parts, namely London, the South East and the East. The second subsection focuses on the London Boroughs. The third subsection focuses on the number of workplaces in the Science and Technology category in London and the Greater South East. It also sets out the data on the ratio of jobs to workplaces.

The final section ("*Mapping Science and Technology employment in the Greater South East, London, Inner London, Oxford and Cambridge*") shows maps of employee job numbers in the Science and Technology category overall and also in two of the sub-categories: Digital technologies and Life sciences & healthcare. Maps of the other sub-categories[10] are not available, as a result of there being very low numbers of businesses in these sub-categories.

[5] That is, capital becomes more productive.
[6] The output that a single worker can produce per hour.
[7] External benefits that arise when economic activity takes place in a concentrated space.
[8] Information about the IDBR is available here: ONS – Introduction to the The Inter-Departmental Business Register (IDBR)
[9] The analysis can be found at: ONS, 'London Analysis, Identifying Science and Technology Businesses in Official Statistics', 13 February 2015. While further details can also be found in the Harris ONS paper.
[10] Publishing and broadcasting, Other scientific/technological manufacture and Other scientific/technological services

The Science and Technology Category: Background and Definitions

Science and Technology is an important part of London's economy with many commentators expecting it to deliver jobs and high rates of growth in the coming years.

Science and Technology businesses have played an important role in the Professional, scientific and technical activities sector an area of London's economy that has seen a near tripling of employee jobs (from 219,000 in 1981 to 617,000 in 2013)[11] in recent decades, a period when manufacturing employee jobs fell by nearly 80 per cent (from 538,000 to 109,000). London's highly skilled labour market has arguably supported the Science and Technology category as well as vice versa. Over half of those working in London hold a degree level qualification[12], and the demand for people with these skills is projected to increase. Around 25 per cent of employed workers in London with a degree are non-UK nationals and of these almost 60 per cent are non-EEA nationals[13].

London also offers Science and Technology firms access to outstanding higher education and research facilities. London has four universities (Imperial College London, University College London (UCL), London School of Economics (LSE), King's College London)[14] in the world top 40, as defined by the Times Higher Education, more than any other world city[15]. London also has six of the UK's top ten research institutions as rated by research excellence (Institute of Cancer Research, Imperial College London, LSE, King's College London, UCL, and London School of Hygiene and Tropical Medicine)[16]. Research and Development (R&D) expenditure in London in 2012 was £3.7 billion which accounted for 1.2 per cent of London's Gross Value Added (GVA)[17].

London is at the forefront of the Life sciences and healthcare sub-category and continues to build on its expertise. For instance, in 2015 the Francis Crick Institute will bring together 1,250 scientists under one roof[18]. It will be Europe's largest centre of biomedical research, a consortium of six of the UK's most successful scientific and academic organisations —the Medical Research Council, Cancer Research UK, the Wellcome Trust, UCL, Imperial College London and King's College London - to boost innovation in new technologies. In south London, the Institute of Cancer Research is creating the world's second largest cancer research campus[19]. Construction is under way at Imperial West, which is co-locating researchers and businesses on 25 acres – a multidisciplinary research space for Imperial College London scientists and engineers, together with state-of-the-art space for translating research ideas into direct applications and spin-out companies. Plans have been unveiled for UCL East on the site of the Queen Elizabeth Olympic Park[20], a cross-discipline enterprise and innovation centre which will

[11] Source: September 1981 & September 2013 Employee Jobs from Workforce Jobs downloaded from NOMIS.
[12] Source: NOMIS - Annual Population Survey for 2013 NVQ4+ working aged employed.
[13] GLA Economics calculation based on: ONS Published ad hoc data: labour market, requests during August 2013: Reference number 001724, 23 August 2013.
[14] The Greater South East has six universities in the world top 40 with the universities of Cambridge and Oxford joining this list.
[15] The Times Higher Education World University Rankings 2014-15.
[16] The Times Higher Education, REF 2014 results: table of excellence, 18 December 2014.
[17] GLA Economics calculation based on: ONS R&D expenditure for London for 2012, and the latest ONS estimate of London's GVA for 2012.
[18] http://www.crick.ac.uk/about-us/
[19] The Institute of Cancer Research, 'Mayor of London visits The Institute of Cancer Research', 18 December 2014.
[20] The site of the 2012 Olympics.

include "biological devices labs – the first of their kind in the UK – focusing on creating implantable devices"[21] amongst many other areas of research. Also in east London Queen Mary University plans to build a life sciences institute in Whitechapel, stretching across its East London campuses. This will act as a beacon attracting partners from higher education, the NHS and industry. Its long term ambition is to address public health issues - such as obesity and cancer - and to realise the promise of personalised medicine. The Greater South East region is at the heart of the world's largest genome-mapping programme, the 100,000 Genomes Project, which will sequence the genetic codes of 100,000 people with cancer or rare diseases and their families by 2017. This major longitudinal study will provide an invaluable set of patient data, advancing an individual-based understanding of how diseases develop and enabling the development of targeted, personalised therapies. Eleven Genomics Medicine Centres are now set up to support the project, including five in London, Oxford and Cambridge.

London has particular strengths in the Digital technologies sub-category: recent research suggested there are over 23,000 Information and Communications Technology (ICT) and software companies based in London, the highest of any European city[22]. The cluster of digital firms in Shoreditch, known as 'Tech City'[23], has received the most attention. London's tech strengths, however, run deeper and broader. Technological developments across other business sectors – from Manufacturing (such as the emergence of 3D printing), to financial technology, medical technology and environmental technology has the potential to transform London's economy and boost productivity across many sectors. So, as can be seen London's Science and Technology category generates significant added value and has the potential to drive innovation and growth across the wider economy.

Thus far, there has been no agreed statistical definition of what Sections, Divisions, Groups, Classes or Sub-classes in the UK SIC07 can be categorised as having a significant Science and Technology content. This may be because so many classes of the SIC07 have a Science and Technology element. Thus until now, researchers have been obliged to spend time constructing their own definitions but this has been far from satisfactory as the definitions inevitably differed, making comparison, validation and collaborative research very difficult[24]. For these reasons, the ONS London statisticians working with the GLA have now produced a Science and Technology category (henceforth abbreviated to STC) from SIC07

The objective of the STC is to analyse business statistics. Data sources such as the IDBR, the Business Register and Employment Survey (BRES) and the Annual Business Survey (ABS) are collected and analysed using SIC07 but they contain little or no information about the occupations of the people those businesses employ. Therefore the ONS statisticians took the decision to classify an entire business as STC (or not STC) based solely on its industrial classification. While we expect many or most employees in businesses classified as "Science and Technology" to have specialist skills, or work with scientific or technological content, there will be some employees, in particular staff such as administrators, caterers or maintenance staff, who do not themselves do scientific or technological jobs. The reverse is also true: some employees who are not working in "Science and Technology" businesses will have specialist skills, or will work with a technological content, but we expect those employees to be in the

[21] UCL News, 'UCL has announced a second campus – UCL East – on Queen Elizabeth Olympic Park', 2 December 2014.
[22] Theseira, M. January 2012, 'London's Digital Economy', GLA Intelligence Unit.
[23] Also known as Silicon Roundabout.
[24] Examples of other definitions that have been generated can be found in: Harris, J. P., February 2015, 'Identifying Science and Technology Businesses in Official Statistics', Office for National Statistics.

minority in those businesses, and they are not providing the primary function or output of the business[25].

The STC has been designed to create a broad definition of "Science and Technology". It contains five sub-categories, designed to be of policy and economic relevance, as follows:

Digital technologies: the manufacture and repair of computers and electronic components, and computer services including software development, internet services, and computer consultancy, design and publishing of computer games and other software;

Life sciences and healthcare[26]: medical healthcare services (both human and veterinary), medical research and development (including biotechnologies), and manufacture of pharmaceuticals, medical treatment machinery and optical precision instruments;

Publishing and broadcasting: the manufacture and repair of communication equipment and the use of this by means of broadcasting, publishing and telecommunications, specialist graphic design and marketing services, advertising agencies, photography;

Other scientific/technological manufacture: precision engineering and the manufacture and repair of equipment for aerospace, defence, automotive, chemical products, engines and machinery (both electrical and non-electrical);

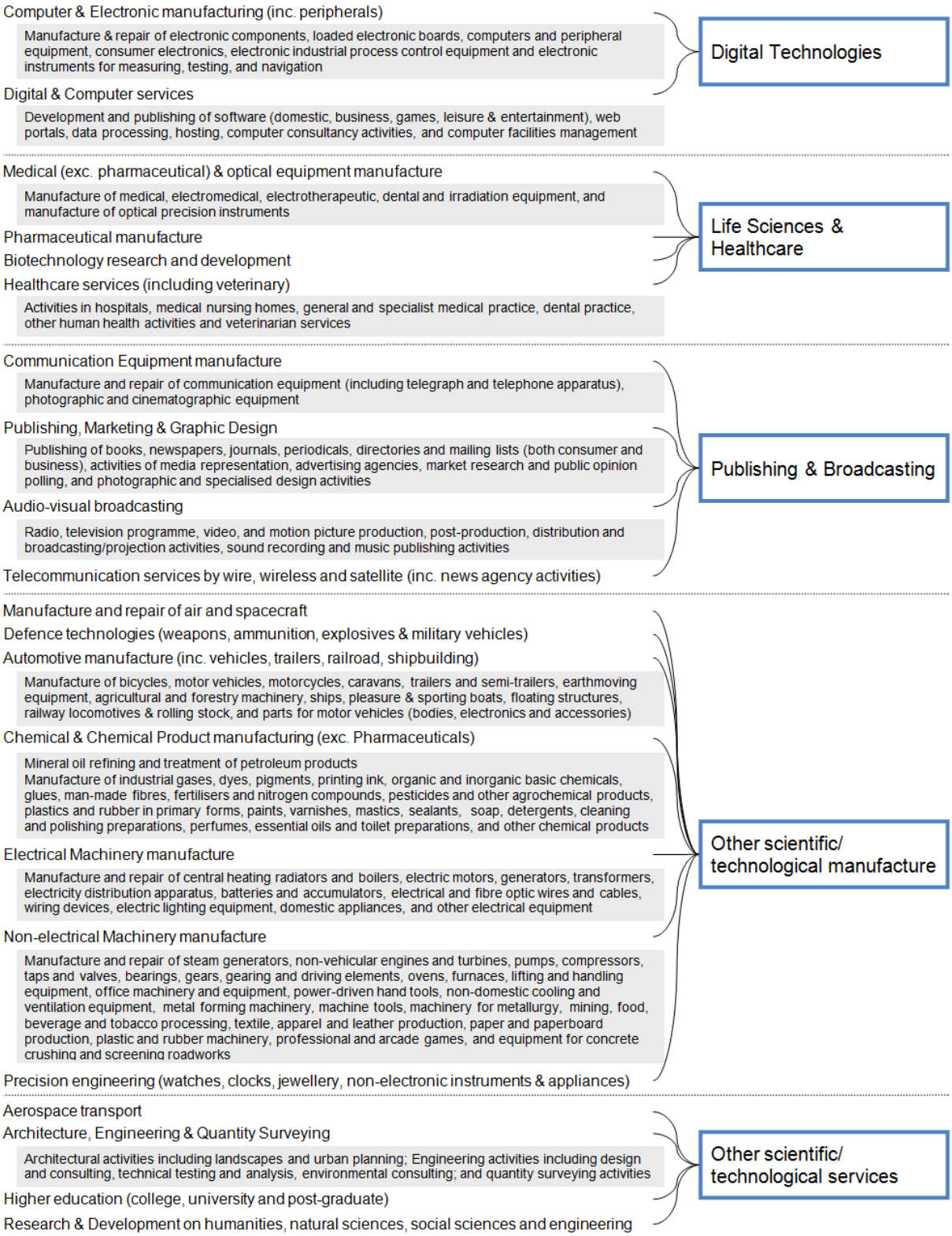
Other scientific/technological services: knowledge-intensive services including higher education, engineering, architecture, quantity surveying, aerospace transport services, and non-medical research and development.

The schema below (Figure 1) gives more detail about the topics within the five sub-categories that make up the STC. As can be seen a wide variety of Sections, Divisions, Groups, Classes and Sub-classes in the SIC07 are included in the STC.

[25] The precise constituents of STC can be found at: ONS, 'London Analysis, Identifying Science and Technology Businesses in Official Statistics'

[26] Healthcare is included because it includes activities which are closely allied to life sciences, while healthcare providers often also carry out life science research themselves, even if it is not their primary function.

Figure 1: Sub-categories of the STC



Any new definition will inevitably generate debate. Some will think it too broad, others too narrow, some will want certain parts excluded, or other parts included. However, time and effort has been spent to gather the 'general understanding' both of the terms involved and the topics of interest in order to derive a single 'official' definition that should be suitable for everyone's purposes.

Employee Jobs and Workplaces in Science and Technology in the Greater South East, London and the Boroughs

This section shows the results of applying the STC to the IDBR.

(i) Employee Jobs in Science and Technology in the Greater South East and London

Table 1 shows a rise of 6.4 per cent in the number of employee jobs in the STC in the ten years to 2013 in the Greater South East. Because of the geographically interconnected nature of parts of the STC (for example the area between London, Oxford and Cambridge has been referred to as the 'Golden Triangle'[27] while the interconnection is also shown by the large commuter flows within the wider region), it makes analytical sense to focus on the Greater South East. This comprises the three regions (formerly Government Office Regions) of the South East, the East of England, and London.

The rise in the number of employee jobs in Science and Technology in the ten years in London alone - at 14.6 per cent – was more than twice as great in percentage terms as that in the Greater South East. The rise of 115,200 in the number of employee jobs in the STC in London accounted for nearly 90 per cent of the total rise of 129,800 in the Greater South East.

Table 1: Employee jobs in the STC

	London	East	South East	Greater South East
2003	786,700	450,000	805,800	2,042,500
2008	810,400	446,700	790,100	2,047,200
2013	901,900	449,200	821,200	2,172,300
Change 2013/2003	115,200	-800	15,400	129,800
% change 2013/2003	14.6	-0.2	1.9	6.4

Source: ONS - IDBR[28] and GLA Economics calculations

In 2013 London had just over 900,000 employee jobs in Science and Technology, around 21 per cent of total employee jobs in London according to the IDBR.

As a proportion of total employee jobs, Table 2 shows that the number in London in Science and Technology has been broadly constant over the past ten years. In the East it has fallen by 2 percentage points, in the South East by 1.3 percentage points and in the Greater South East it has fallen by 1 percentage point.

[27] For example see: http://www.nature.com/naturejobs/science/articles/10.1038/nj7047-144a

[28] The raw data used in this analysis can be found at: ONS, Published ad hoc data and analysis: Business and Energy, requests during February 2014: Reference 002418, 27 February 2014.

Table 2: Employee jobs in Science and Technology as % of Total Employee Jobs

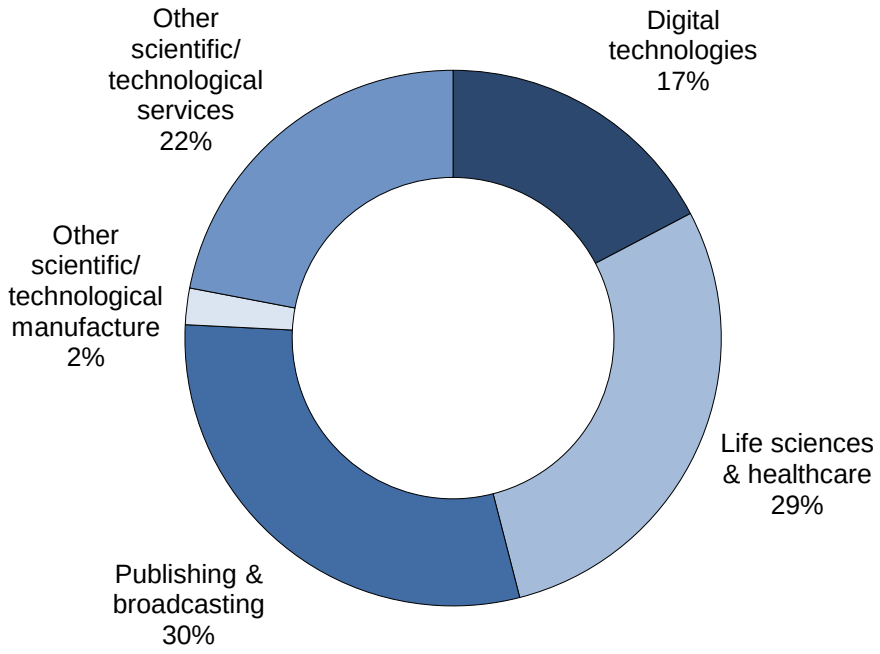
	London		East		South East		Greater South East	
	Science and Tech	% of Total	Science and Tech	% of Total	Science and Tech	% of Total	Science and Tech	% of Total
2003	786,700	20.8%	450,000	20.8%	805,800	23.6%	2,042,500	21.8%
2008	810,400	20.4%	446,700	19.3%	790,100	21.9%	2,047,200	20.7%
2013	901,900	20.6%	449,200	18.8%	821,200	22.3%	2,172,300	20.8%

Source: ONS - IDBR and GLA Economics calculations

As discussed above, the STC can be further subdivided into five 'sub-categories': Digital technologies; Life sciences and healthcare; Publishing and broadcasting; Other scientific/technological manufacture; and Other scientific/technological services.

The biggest sub-category in London in terms of employee jobs is Publishing and broadcasting, as shown in Chart 1. Life sciences and healthcare (which has grown faster in terms of employees) is close behind.

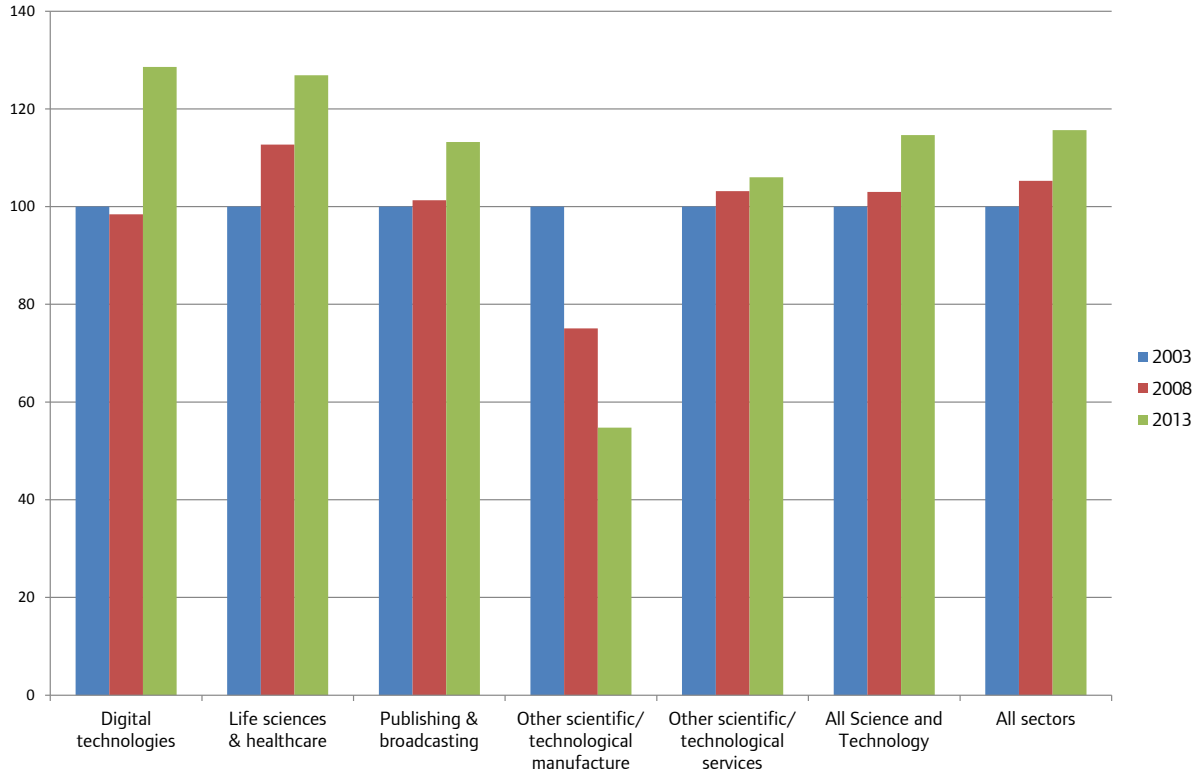
Chart 1: Breakdown of Science and Technology employee jobs in London, 2013



Source: ONS - IDBR

As shown in Chart 2 the fastest proportional growth in employee job numbers in the STC in London in the ten years 2003-2013 was in the Digital technology sub-category, where employee jobs increased by 29 per cent. This was closely followed by the Life sciences and healthcare sub-category, with a 27 per cent increase (though this sub-category had the biggest increase in the absolute number of employee jobs (this included strong growth in the NHS)). Publishing & broadcasting and Other scientific/technological services show a lower increase in employee jobs. There was a big fall in the number of employee jobs in the Other scientific/technological manufacture sub-category, in line with the fall in the numbers employed in the Manufacturing sector overall in London.

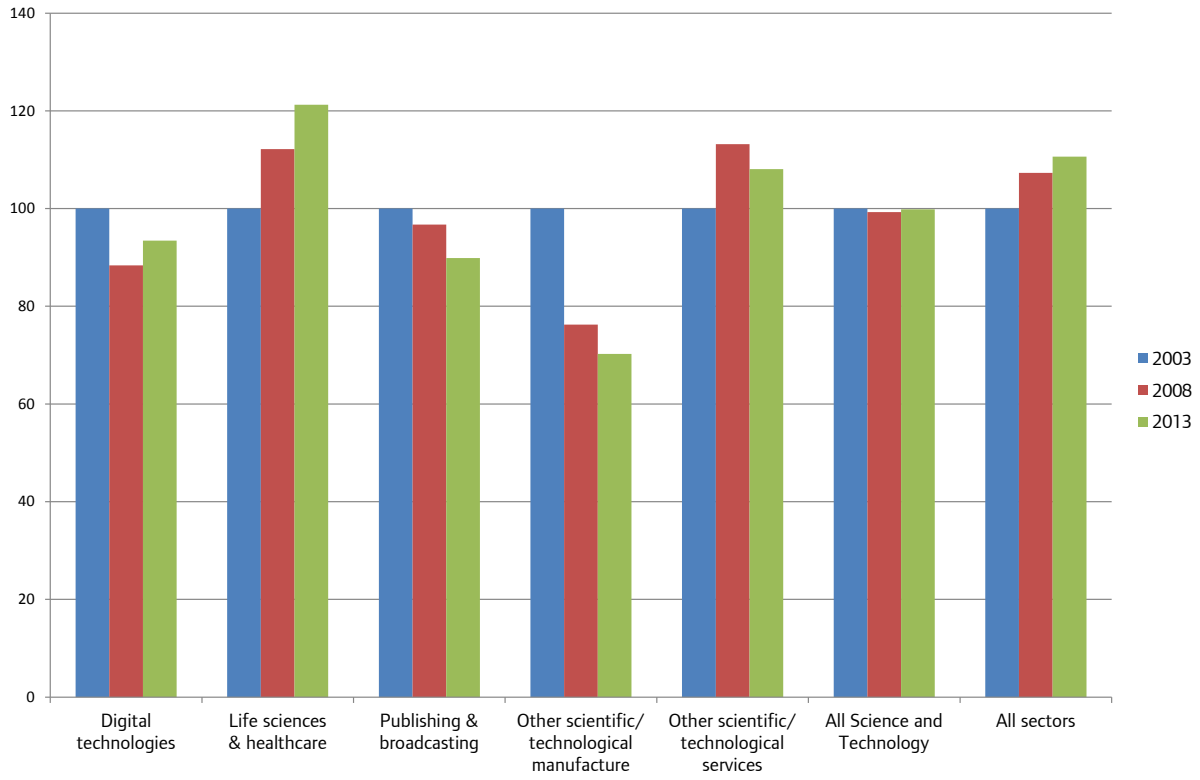
Chart 2: London: Employee jobs in Science and Technology sub-categories (indexed to 2003=100)



Source: ONS - IDBR and GLA Economics calculations

In the East region (Chart 3) the fastest proportional growth over the ten years from 2003 to 2013 was in the Life sciences and healthcare sub-category, where employee jobs increased by 21 per cent. As in London, there was a big fall in the number of employee jobs in the Other scientific/technological manufacture sub-category. However, unlike London, employee jobs also showed declines in Publishing & broadcasting (down 10 per cent) and Digital technologies (down 7 per cent).

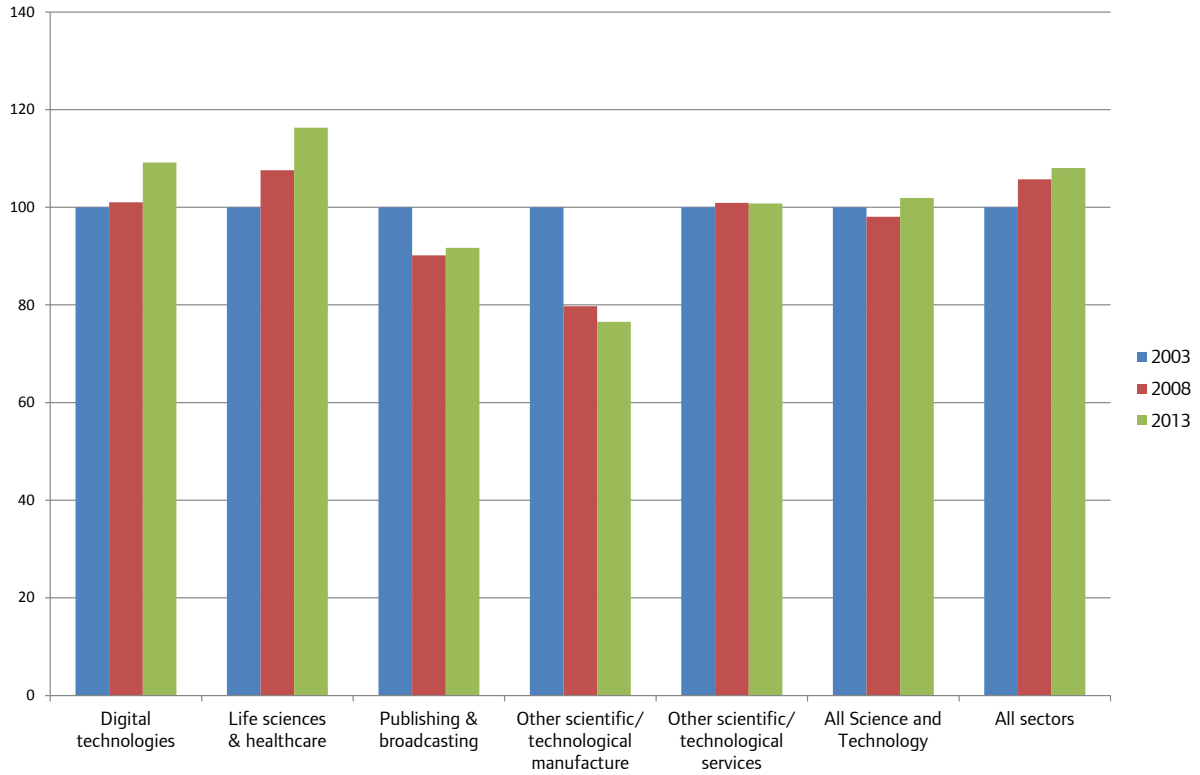
Chart 3: East Region: Employee jobs in Science and Technology sub-categories (indexed to 2003=100)



Source: ONS - IDBR and GLA Economics calculations

In the South East region (Chart 4) the fastest proportional growth was also in the Life sciences and healthcare sub-category, where employee jobs increased by 16 per cent. As in London and the East Region, there was a big fall (down 23 per cent) in the number of employee jobs in the Other scientific/technological manufacture sub-category. However, unlike London, there was also a decline in Publishing & broadcasting (down 8 per cent).

Chart 4: South East Region: Employee jobs in Science and Technology sub-categories (indexed to 2003=100)



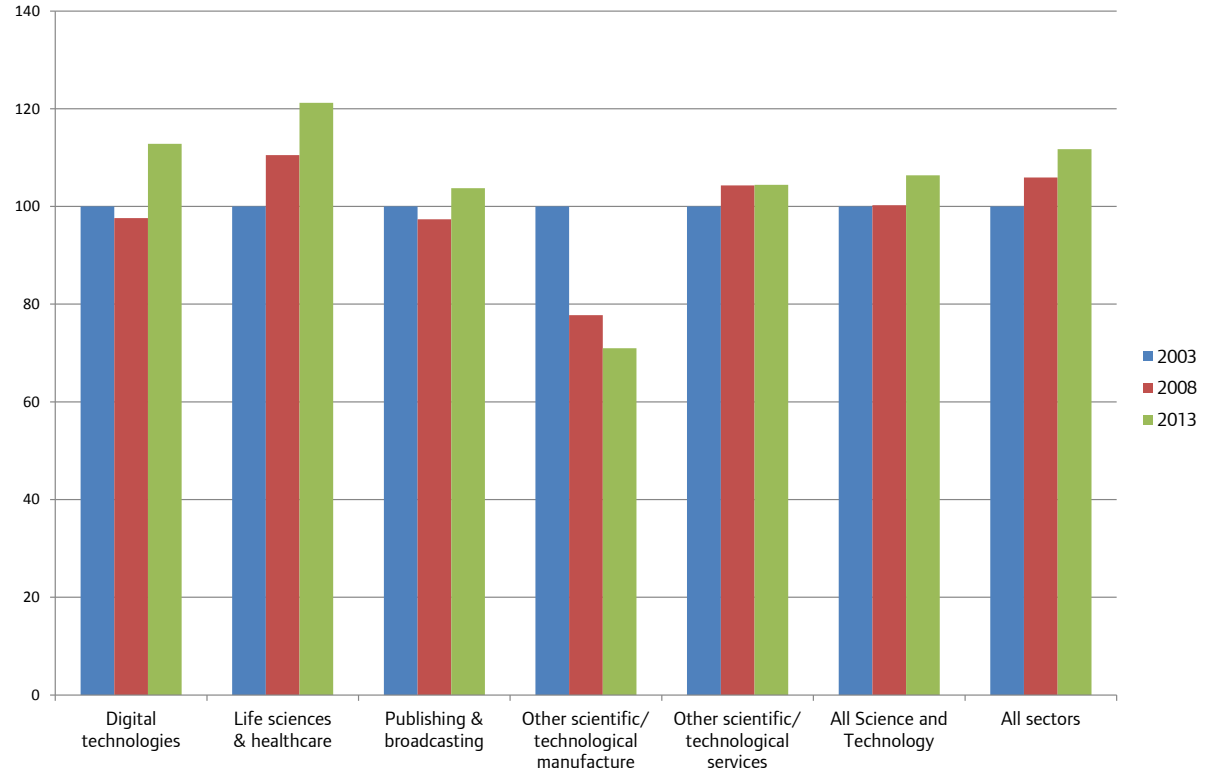
Source: ONS - IDBR and GLA Economics calculations

Taking all three of the above regions together, in the Greater South East region (Chart 5) the fastest proportional growth in the ten years 2003-2013 was in the Life sciences and healthcare sub-category (up 21 per cent), where (as seen above) there was strong growth in all three regions. In absolute terms, this was an increase of 123,600 employee jobs[29].

In the Greater South East Region there was a big fall (down 29 per cent) in the number of employee jobs in the Other scientific/technological manufacture sub-category, reflecting falls in all the three component regions, as noted above.

[29] Note that the **total** change in Science and Technology employee jobs over the period was 276,600, of which a large part of was owing to Life sciences and healthcare (123,600), but Other scientific/technological manufacturing fell by 73,400. Taking account of changes in all sub-categories the **resultant** change in Science and Technology employee jobs over the period was 129,800.

Chart 5: Greater South East Region: Employee jobs in Science and Technology sub-categories (indexed to 2003=100)



Source: ONS - IDBR and GLA Economics calculations

(ii) Employee Jobs in Science and Technology in the London Boroughs

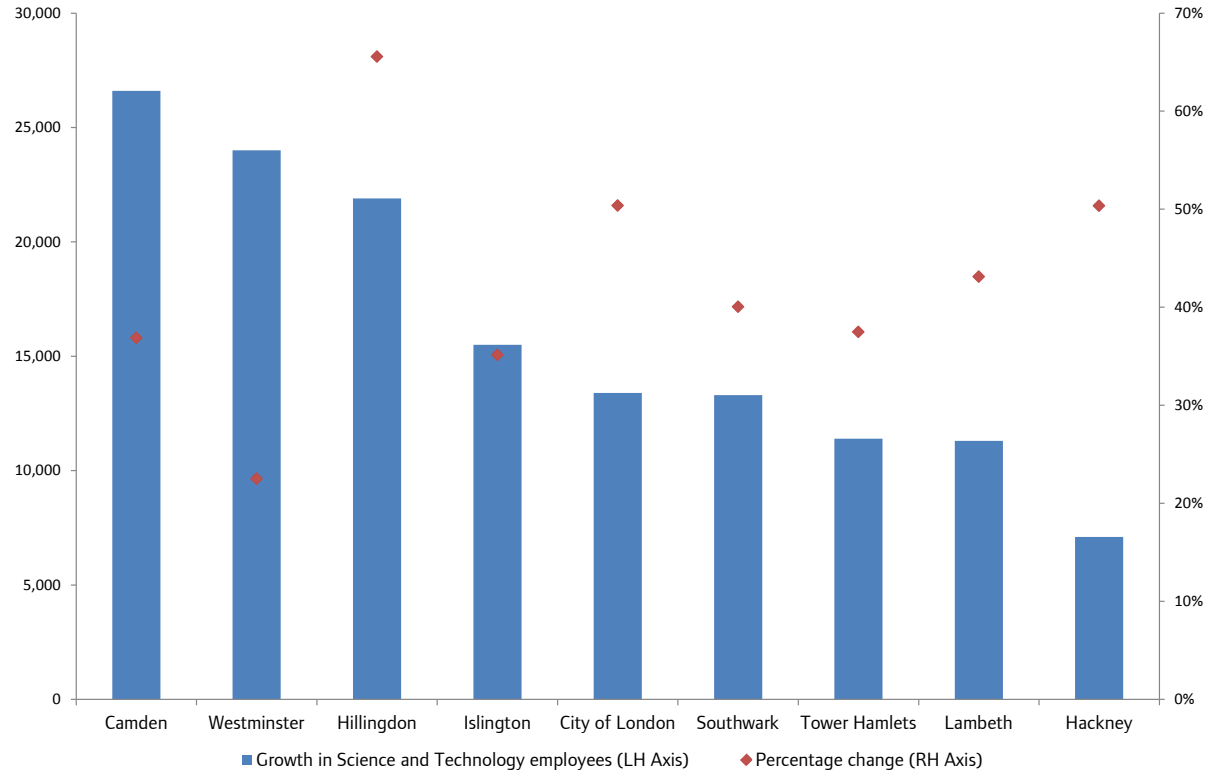
Turning to the London Boroughs, the rate of growth of employee jobs in the STC over the ten years 2003-2013 has varied widely. Chart 6 shows the boroughs where growth has been strongest. Camden saw the strongest growth in employee jobs in absolute terms, but in proportional terms Hillingdon saw the strongest growth. Camden also has (as of 2013) the highest proportion of any borough of Science and Technology employee jobs as a percentage of total employee jobs, at 32.9 per cent. On the other hand, some boroughs saw a fall in employee jobs numbers in the STC over the ten years 2003-2013. Three boroughs saw a fall of more than 5,000: Bromley, Croydon and Hounslow. In Hounslow the fall was as high as 25,000 though this still left Science and Technology employee jobs at 25.2 per cent of the total in the borough, down from 39.3 per cent in 2003 (which was the highest proportion of any borough in 2003). Only five boroughs[30] had a higher proportion than Hounslow of Science and Technology employee jobs in 2013.

Notable changes in employee jobs in Science and Technology sub-categories over the ten years 2003-2013 included significant rises in the numbers in the Life sciences and healthcare sub-category in Camden (up 9,000), in Lambeth (up 6,400), in Tower Hamlets (up 4,200) and in Southwark (up 4,000). Also in Camden, the number of employee jobs in the Publishing and

[30] Camden; Islington; Hammersmith and Fulham; Hillingdon; and Lambeth.

broadcasting sub-category rose by 9,900 and in the Other scientific/technological services sub-category by 5,900. In Hillingdon there was a big rise (up 23,100) in the number of employee jobs in the Other scientific/technological services sub-category and in Hounslow a big fall (down 30,600) in the number of employee jobs in the same sub-category. It may be that there was a relocation of one or more big aerospace-related companies around Heathrow that caused the fall in Hounslow/rise in Hillingdon but the precise explanation is not clear from the data[31].

Chart 6: London Boroughs with growth (2003-2013) of over 7,000 employee jobs in Science and Technology



Source: ONS - IDBR and GLA Economics calculations

(iii) Workplaces in Science and Technology in the Greater South East and London

The IDBR also provides totals of workplaces. Table 3 shows a rise of 26.3 per cent in the number of workplaces in the STC in the ten years to 2013 in the Greater South East, a much bigger rise than noted above for the number of employee jobs (which was up 6.4 per cent), implying a fall in the average number of employee jobs per workplace (which indeed fell from 12.1 to 10.2). A possible explanation might be that the fast growing Digital technology sub-category has a lower employee-to-workplace ratio than the declining Other scientific/technological manufacture sub-category.

[31] Note that the purpose of this paper is to highlight the STC and not necessarily explain all the causes of changes in employee jobs in this sector/sub-sectors. Thus although some hypotheses will be put forward for some of these changes this analysis will necessarily be brief.

As with employee jobs, the rise in London (up 37.0 per cent) was stronger than the rise in either the Eastern region or the South East.

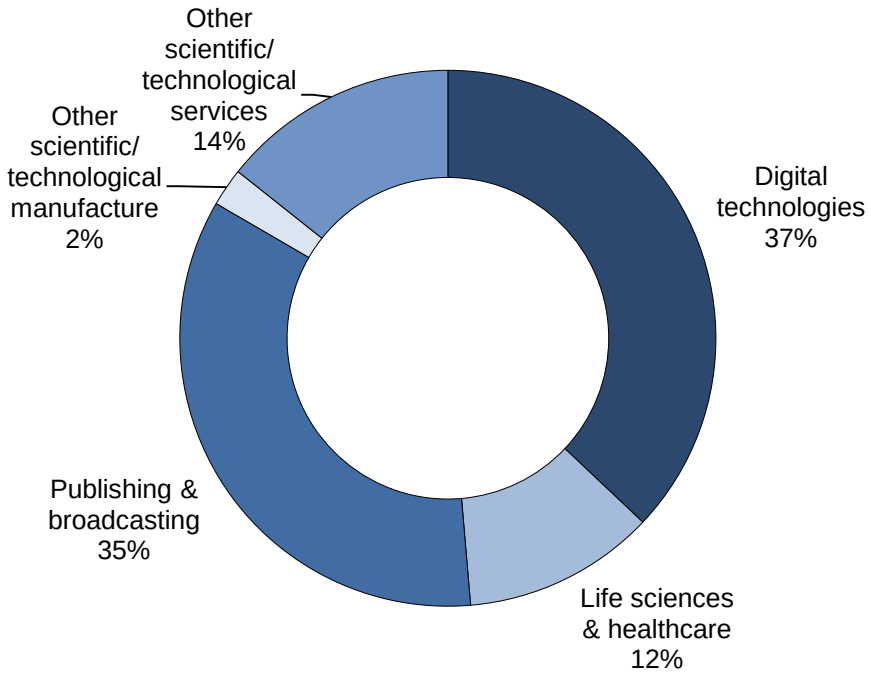
Table 3: Workplaces in the STC

	London	East	South East	Greater South East
2003	67,845	36,635	64,920	169,400
2008	75,685	39,755	69,905	185,345
2013	92,965	43,035	77,980	213,980
Change 2013/2003	+25,120	+6,400	+13,060	+44,580
% change 2013/2003	+37.0	+17.5	+20.1	+26.3

Source: ONS – IDBR and GLA Economics calculations

Chart 7 shows the breakdown into sub-categories of the workplaces in London in the STC in 2013. Comparing it with Chart 1 (Breakdown of Science and Technology employee jobs in London, 2013) it can be seen that while the Digital technology sub-category accounts for 37 per cent of London's Science and Technology workplaces, it only accounts for 17 per cent of London's Science and Technology employee jobs. Life sciences and healthcare is the opposite, accounting for only 12 per cent of Science and Technology workplaces but 29 per cent of Science and Technology employee jobs. Publishing and broadcasting – like Digital technology – accounts for a higher proportion of workplaces than of employee jobs. However, Other scientific technological services – like Life sciences and healthcare – accounts for a lower proportion of workplaces than of employee jobs.

Chart 7: Breakdown of Science and Technology workplaces in London, 2013



Source: ONS - IDBR

Table 4 shows the same data as Charts 1 and 7 in tabular form. As noted above, the data reveals that the number of employee jobs per workplace is very different in the different sub-categories of the STC in London. The Digital technology sub-category has an average of just 4.5 employee

jobs per workplace. The Publishing and broadcasting sub-category – at 8.3 - also has a lower average of employee jobs per workplace than the STC in London overall. But the Other scientific/technological services and Life sciences and healthcare sub-categories both have high numbers of employee jobs per workplace. In the case of the Life sciences and healthcare sub-category, this may reflect the large size of teaching and other hospitals in London.

As suggested above, the Other scientific/technological manufacture sub-category does indeed have a higher employee job to workplace ratio than the Digital technology sub-category. With the former sub-category declining in the ten years 2003-2013 (in both employee job and workplace terms) but the latter sub-category growing (in both employee job and workplace terms), this provides at least part of the explanation for the fall in the average number of employee jobs per workplace in the STC in the Greater South East in the ten years 2003-2013. For the Greater South East, the employee jobs-to-workplace ratio for the Digital technology sub-category is 4.9 and that for the Other scientific/technological manufacture sub-category is 18.3 – an even wider gap than for London.

Table 4: Numbers of workplaces and employee jobs in Science and Technology categories in London, 2013

STC	Workplaces	Percent of total	Employees	Percent of total	Employee jobs per workplace
Digital technologies	34,400	37	155,600	17	4.5
Life sciences & healthcare	10,780	12	259,200	29	24.0
Publishing & broadcasting	32,275	35	268,900	30	8.3
Other scientific/ technological manufacture	2,180	2	20,200	2	9.3
Other scientific/ technological services	13,330	14	198,100	22	14.9
Total	**92,965**	**100**	**901,900**	**100**	**9.7**
All employee jobs	**426,880**		**4,371,000**		**10.2**

Source: ONS - IDBR and GLA Economics calculations

Mapping Science and Technology employment in the Greater South East, London, Inner London, Oxford and Cambridge

This section of the report presents maps[32] of employee job numbers in the STC.

First it presents maps for the category as a whole, then for the Digital technology sub-category and finally for the Life sciences and healthcare sub-category. Maps of the other sub-categories[33] are not available due to the low numbers of businesses in these sub-categories.

For each of the three categories/sub-categories, maps are shown for five geographic areas: the Greater South East, London, Inner London, Oxford and Cambridge. The purpose of this work is to emphasise the geographical concentration of the STC highlighting for instance any possible agglomeration effects. Detailed examination of the causes of these concentrations will not be examined although concentrations around universities etc. should be self-explanatory.

[32] Note that these maps are based on the MSOA (Middle layer Super Output Areas) geography. This was used in this mapping as it provides the best granularity to non-disclosure geography available. For more details on the MSOA geography see: ONS. 'Super Output Area (SOA)'

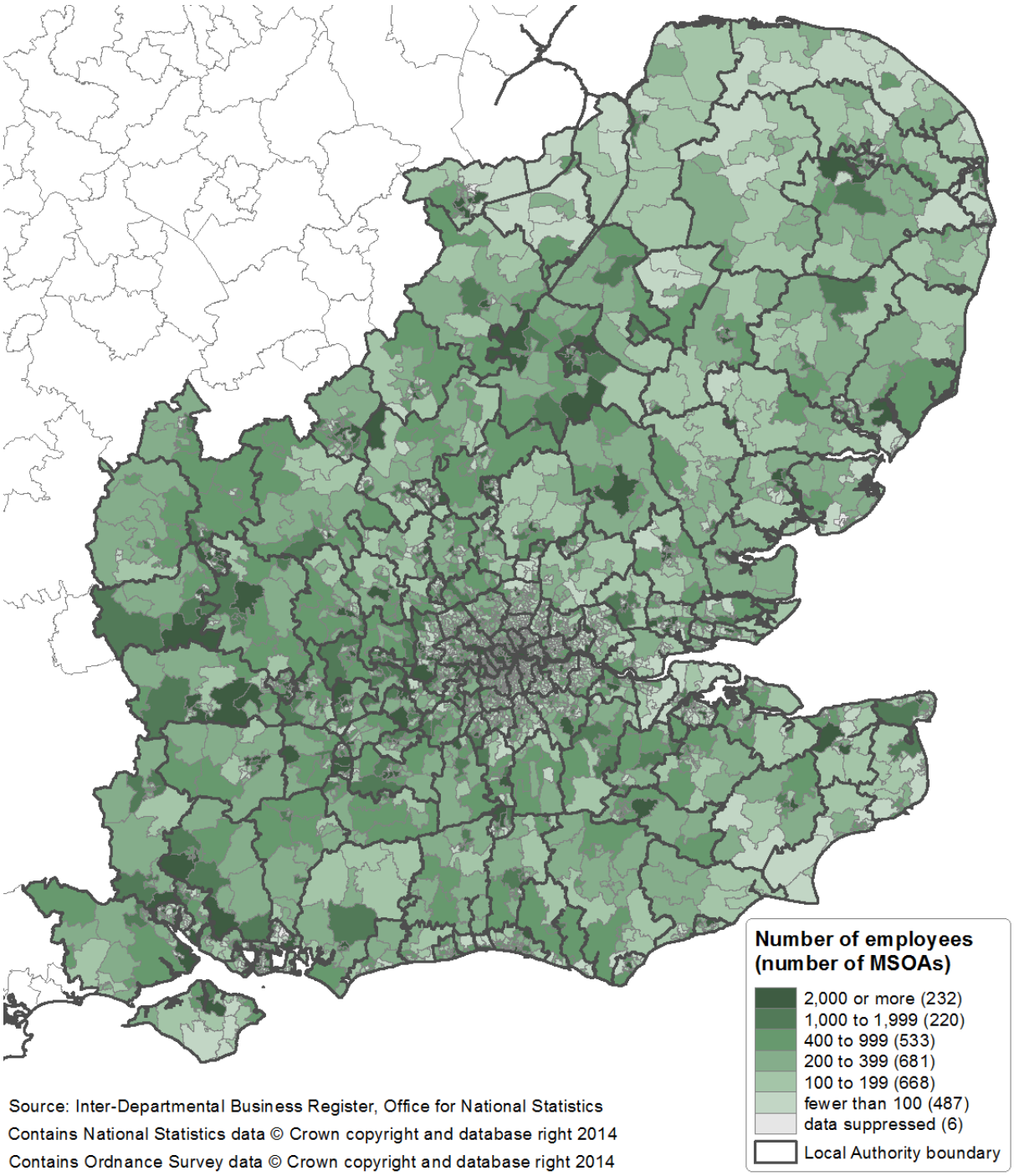
[33] Publishing and broadcasting; Other scientific/technological manufacture; and Other scientific/technological services.

Science and Technology: Employee Jobs

Greater South East

Map 1 shows a concentration of Science and Technology employee jobs along the M4 Corridor and around Southampton and Norwich and Cambridge.

Map 1: Employee jobs in the STC in the Greater South East, 2013

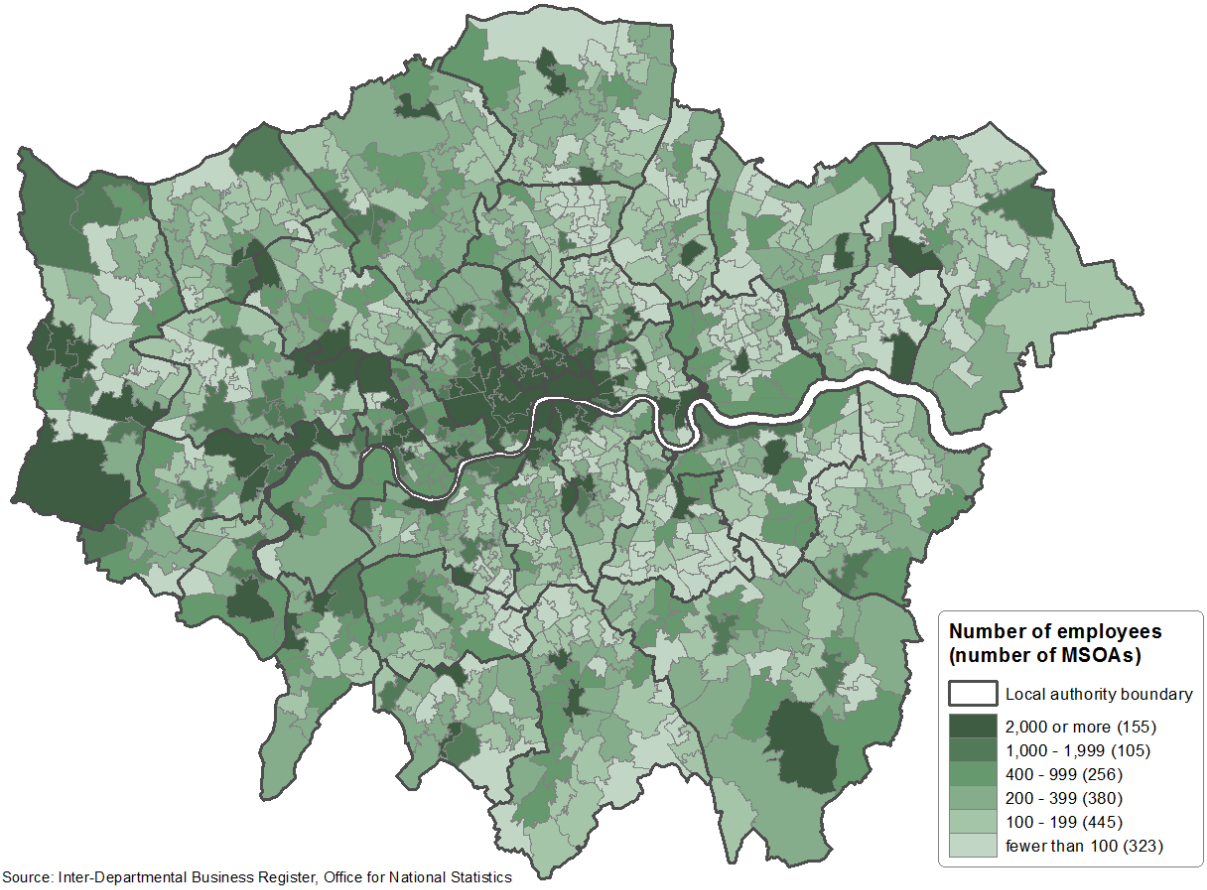


Source: Inter-Departmental Business Register, Office for National Statistics

London

Map 2 shows a concentration of Science and Technology employee jobs in central and western London and in Bromley (most likely related to the Princess Royal University Hospital).

Map 2: Employee jobs in the STC in London, 2013

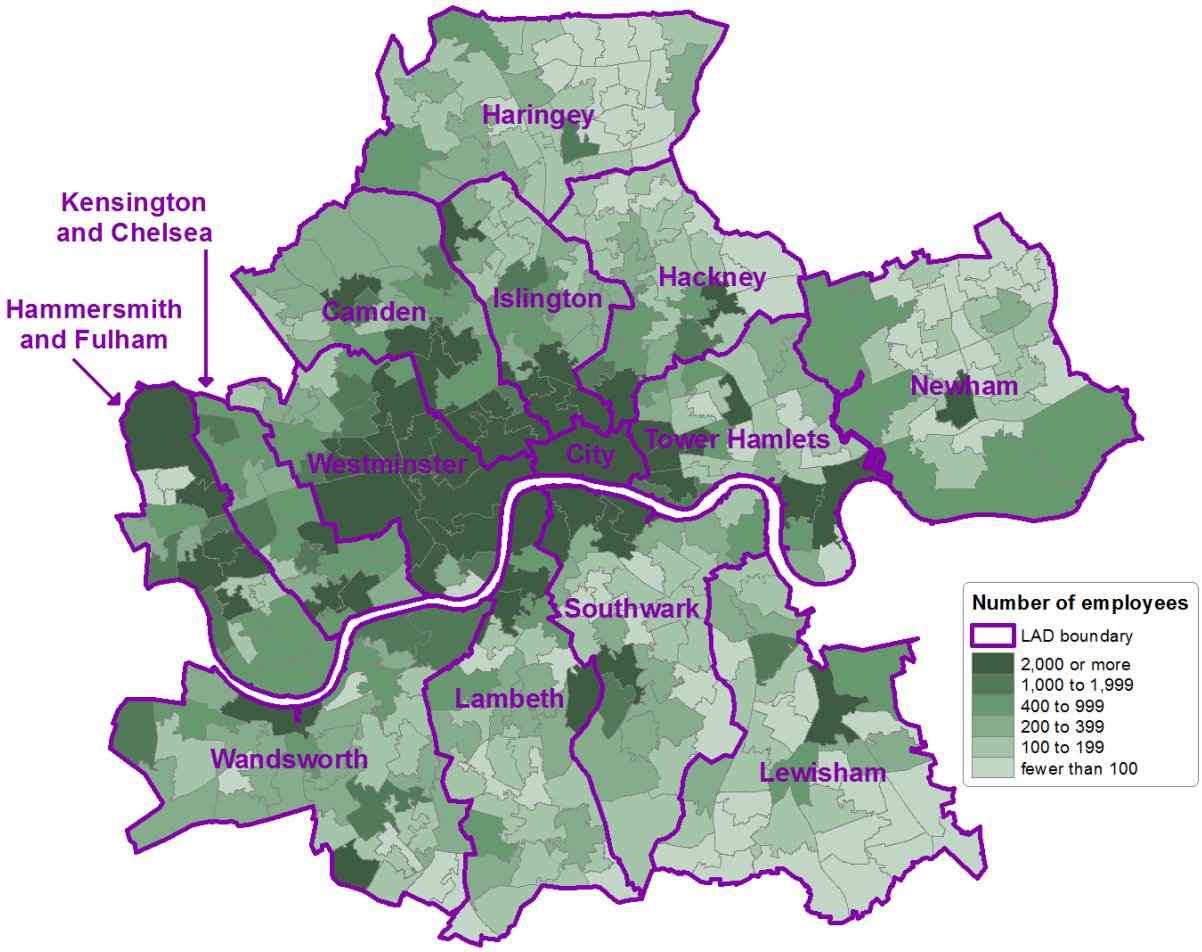


Source: Inter-Departmental Business Register, Office for National Statistics

Inner London

Map 3 shows a concentration of Science and Technology employee jobs bordering each other in the Boroughs of Camden, Islington, City, Tower Hamlets and Westminster, while also stretching slightly across the river towards Lambeth and Southwark, with a further concentration in northern and central Hammersmith and Fulham.

Map 3: Employee jobs in the STC in Inner London, 2013



Source: Inter-Departmental Business Register, Office for National Statistics
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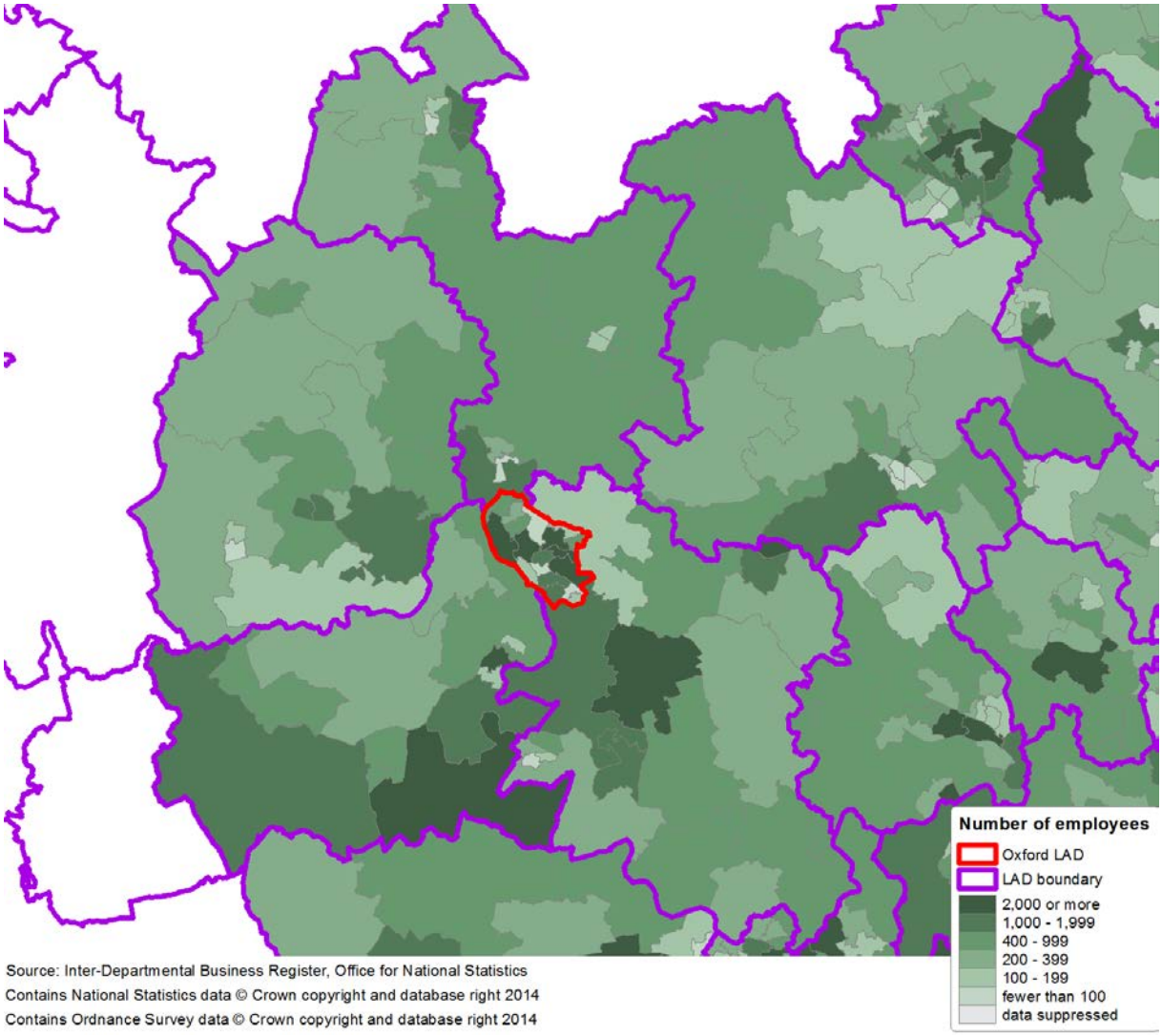
Oxford

Map 4 shows a concentration of Science and Technology employee jobs in and around Oxford.

Map 4: Employee jobs in the STC in Oxford, 2013

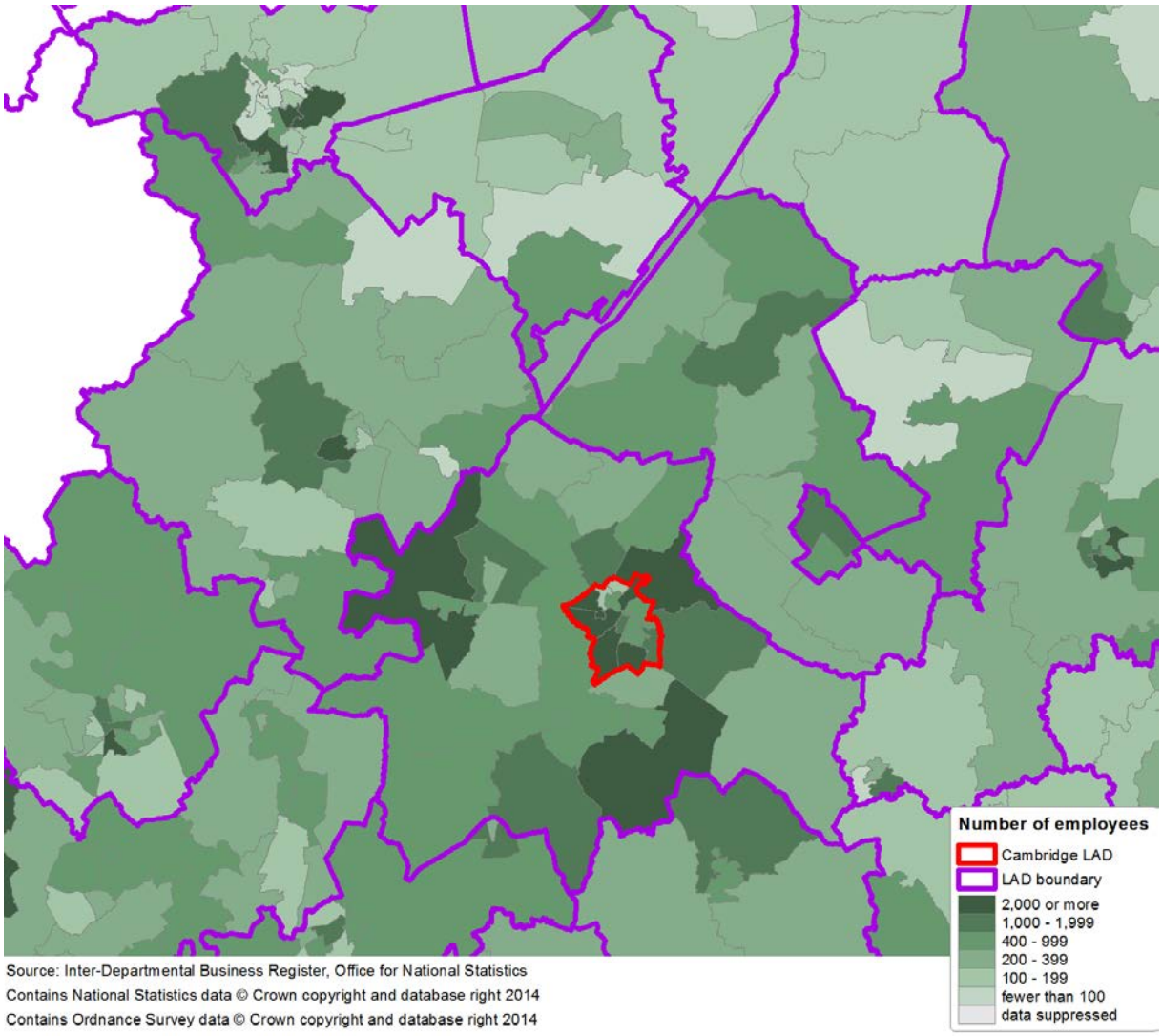


Source: Inter-Departmental Business Register, Office for National Statistics

Cambridge

Map 5 shows a concentration of Science and Technology employee jobs in and around Cambridge and a small concentration towards Peterborough at the top left of the map.

Map 5: Employee jobs in the STC in Cambridge, 2013



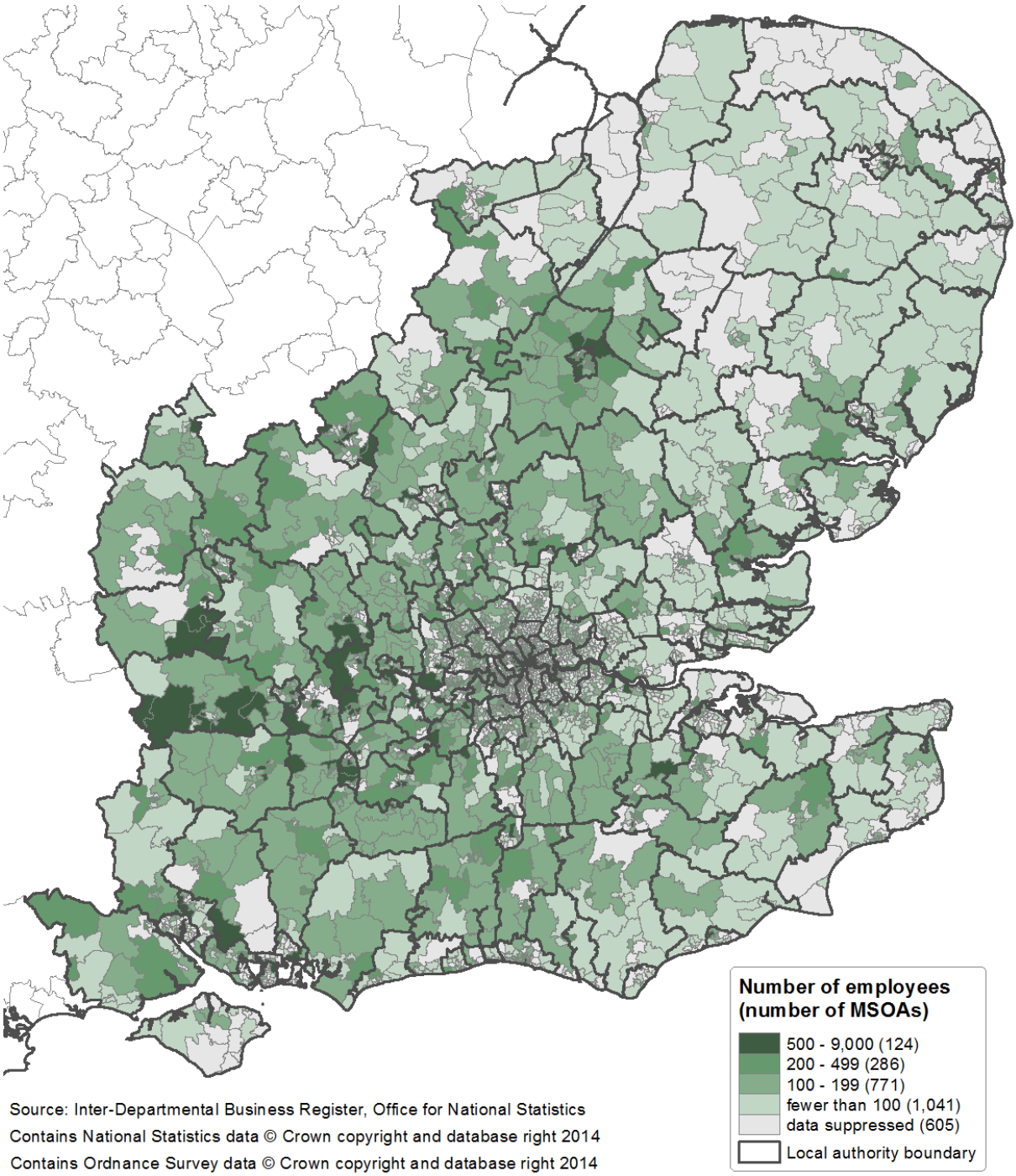
Source: Inter-Departmental Business Register, Office for National Statistics

Science and Technology: Digital sub-category: Employee Jobs

Greater South East

Map 6 shows a concentration of Digital sub-category employee jobs along the M4 Corridor.

Map 6: Employee jobs in the Digital sub-category of the STC in the Greater South East, 2013

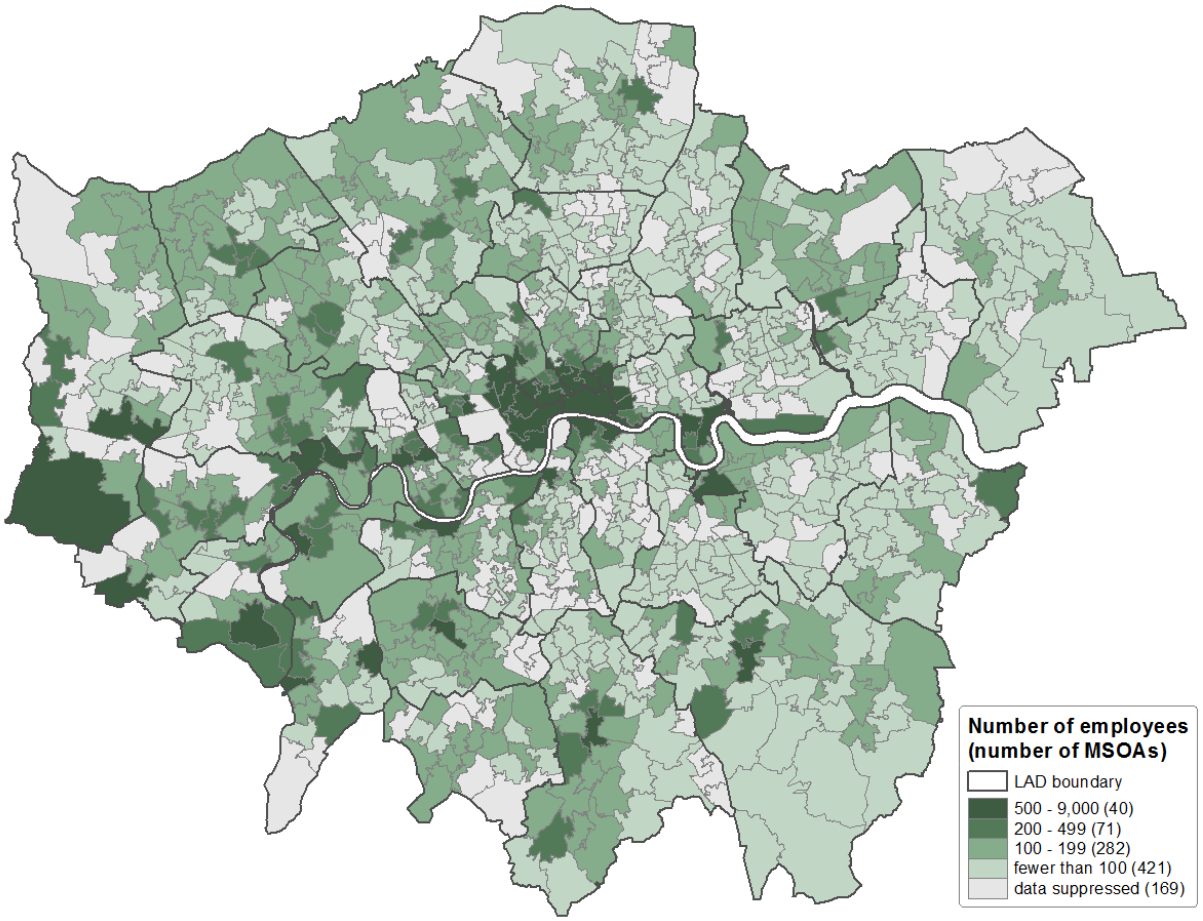


Source: Inter-Departmental Business Register, Office for National Statistics

London

Map 7 shows a concentration of London-based Digital sub-category employee jobs in central London, in the area around Heathrow and also in the Twickenham area.

Map 7: Employee jobs in the Digital sub-category of the STC in London, 2013

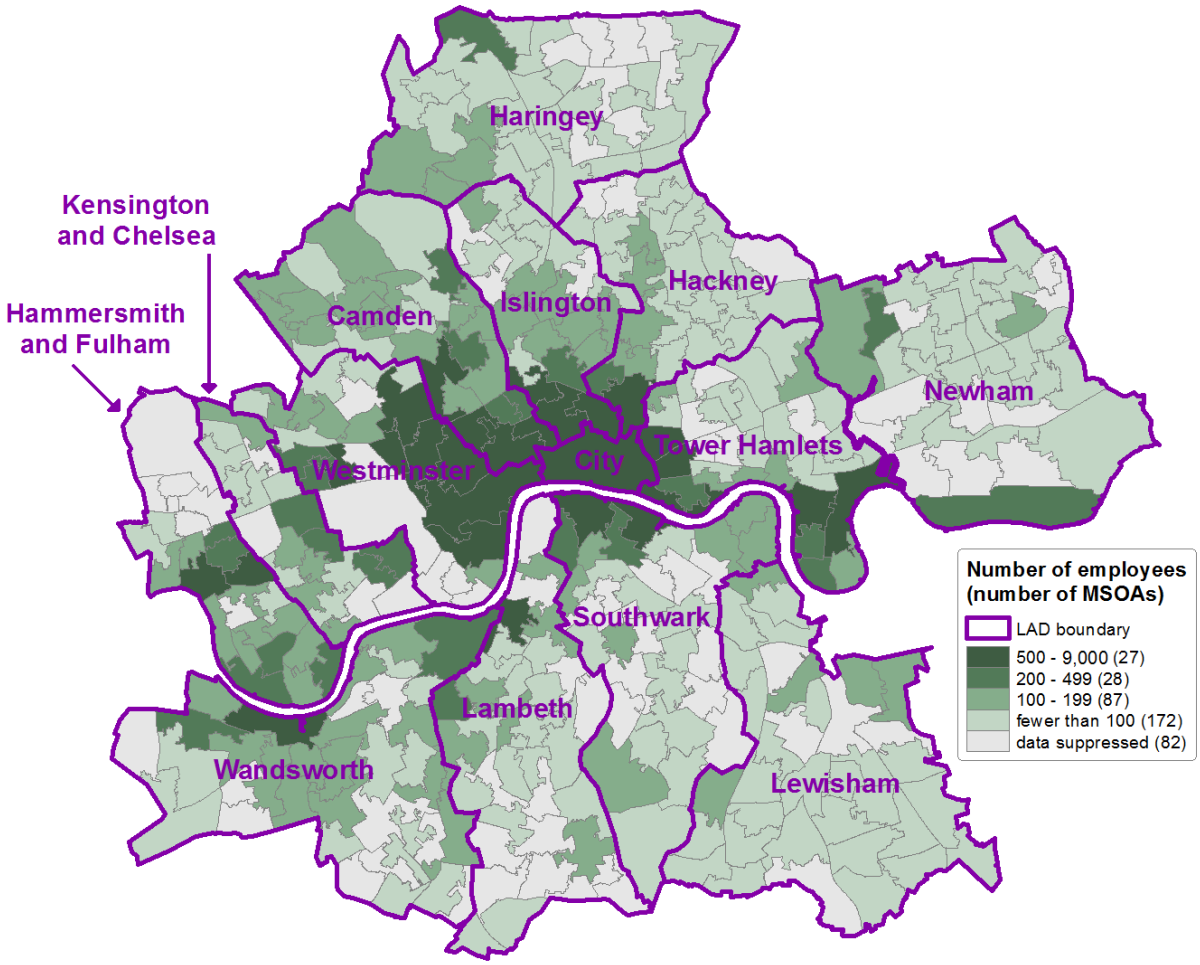


Source: Inter-Departmental Business Register, Office for National Statistics

Inner London

Map 8 shows a concentration of Digital sub-category employee jobs in Westminster, Camden, Islington, City of London, Hackney and Tower Hamlets, with also a slight concentration in the middle of Hammersmith and Fulham, and Wandsworth and Southwark facing the Thames.

Map 8: Employee jobs in the Digital sub-category of the STC in Inner London, 2013

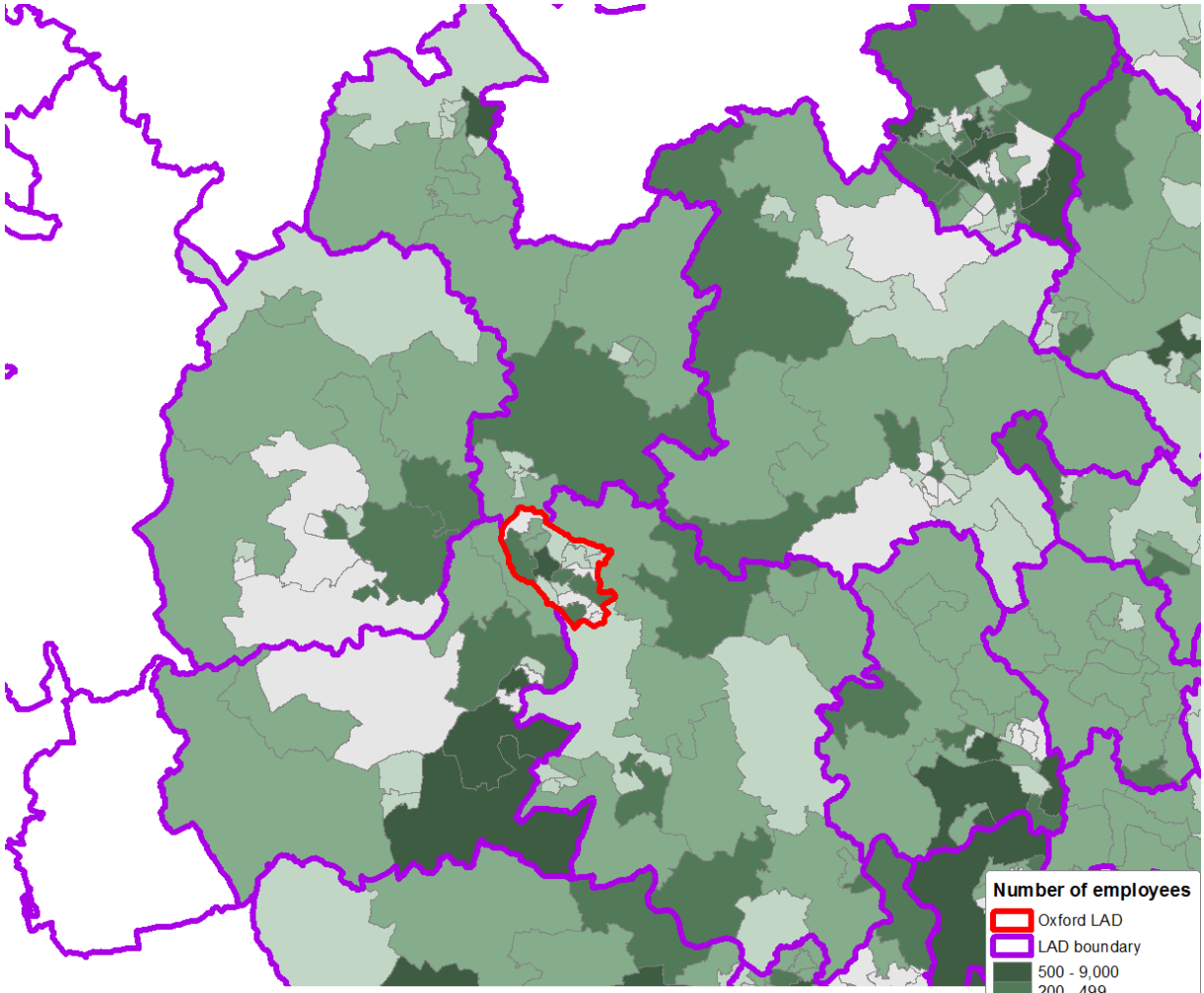


Source: Inter-Departmental Business Register, Office for National Statistics

Oxford

Map 9 shows a concentration of employee jobs in the Digital sub-category in central Oxford. There is a further concentration in the Vale of White Horse and South Oxfordshire, as well as to the top right of the map around Milton Keynes.

Map 9: Employee jobs in the Digital sub-category of the STC in Oxford, 2013



Source: Inter-Departmental Business Register, Office for National Statistics
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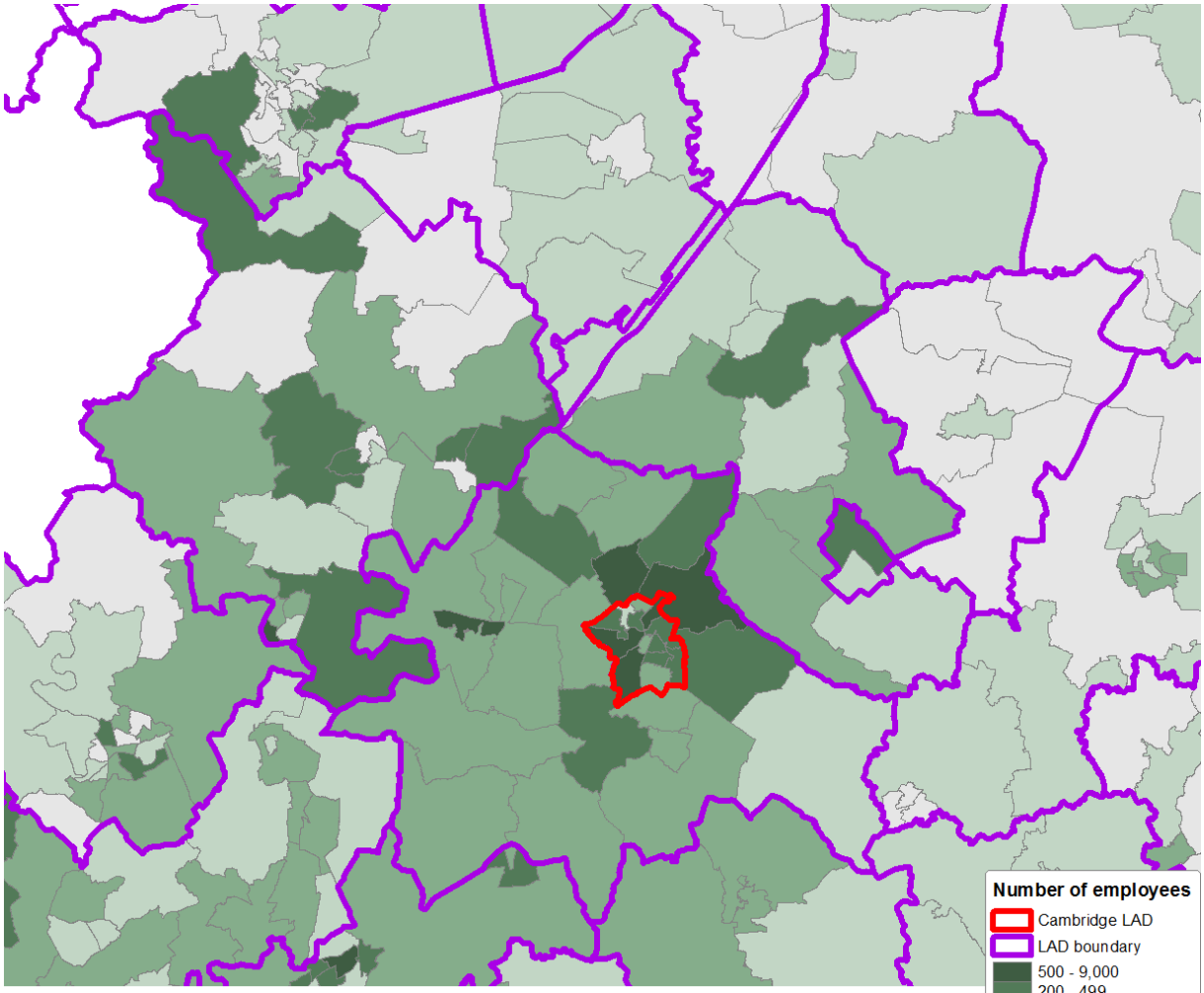
Cambridge

Map 10 shows a concentration of employee jobs in the Digital sub-category in and around Cambridge. The map shows further concentrations in South Cambridgeshire and in the MSOAs bordering on Cambridge, to the North and North East of the city.

Map 10: Employee jobs in the Digital sub-category of the STC in Cambridge, 2013



Source: Inter-Departmental Business Register, Office for National Statistics
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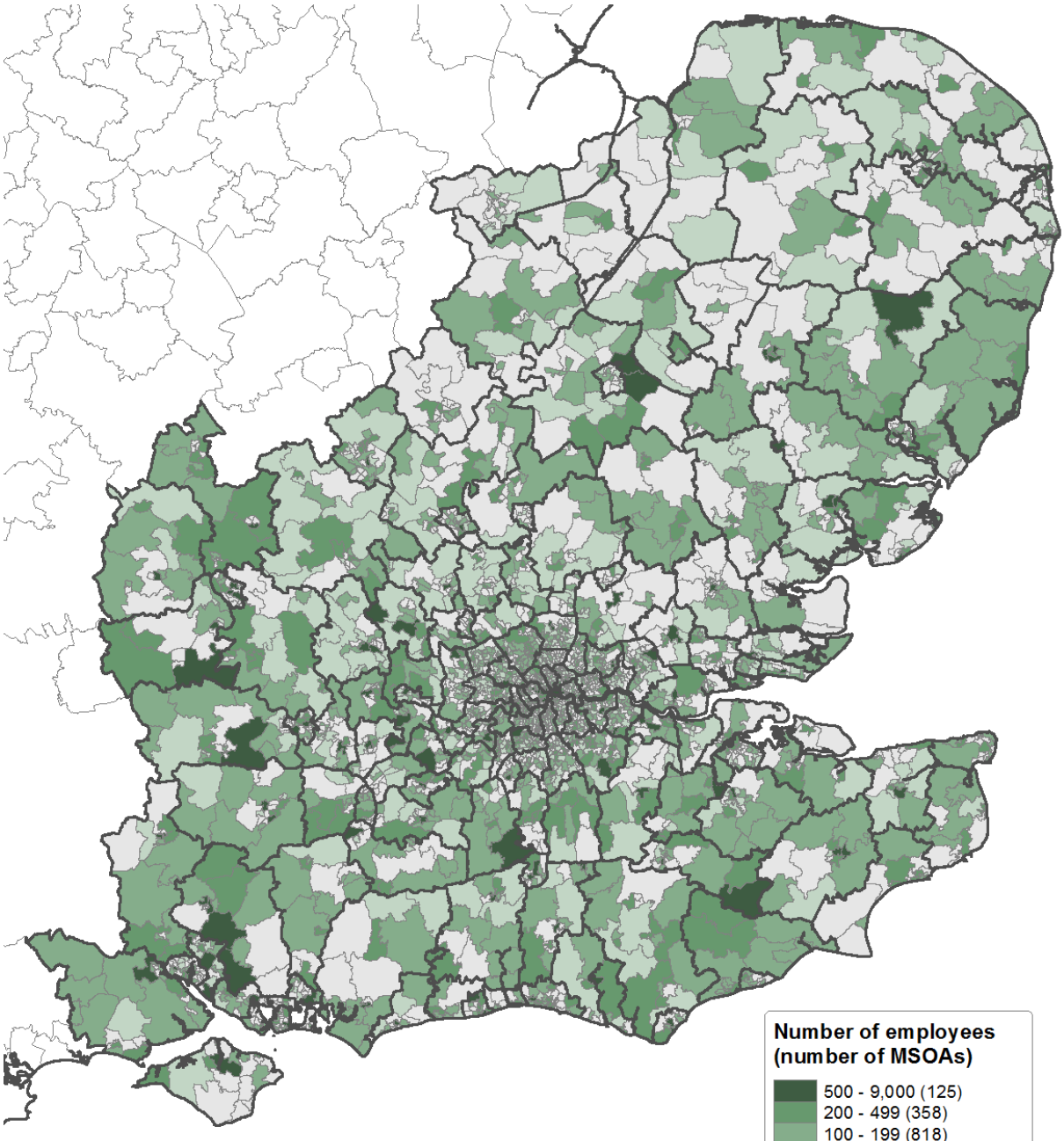
Science and Technology: Life sciences and healthcare sub-category: Employee Jobs

Greater South East

Map 11 shows a concentration of Life sciences and healthcare sub-category employee jobs in the Greater South East, notably in Cambridge, Oxford and London.

Map 11: Employee jobs in the Life sciences and healthcare sub-category of the STC in the Greater South East, 2013

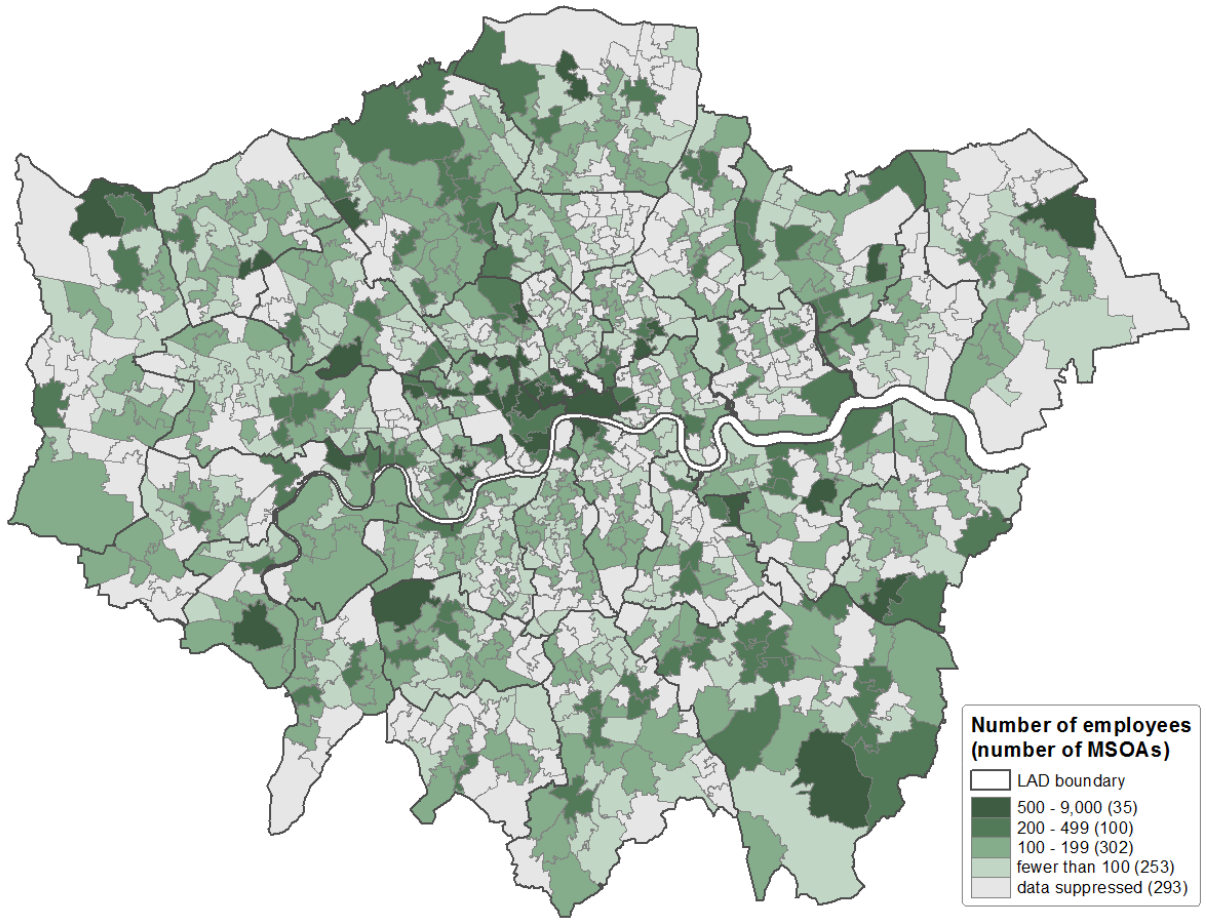


Source: Inter-Departmental Business Register, Office for National Statistics

London

Map 12 shows the concentration of employee jobs in the Life sciences and healthcare sub-category in London. The concentration is in central London and Bromley (which includes the Princess Royal University Hospital). There are also concentrations in MSOAs in Barnet (which includes Edgware General Hospital), Bexley, Brent, Enfield (which includes Chase Farm Hospital), Greenwich, Harrow (which includes Northwick Park Hospital), Havering, Hillingdon (which includes Hillingdon Hospital) and Redbridge (which includes Barking, Havering and Redbridge University Hospitals).

Map 12: Employee jobs in the Life Sciences and healthcare sub-category of the STC in London, 2013

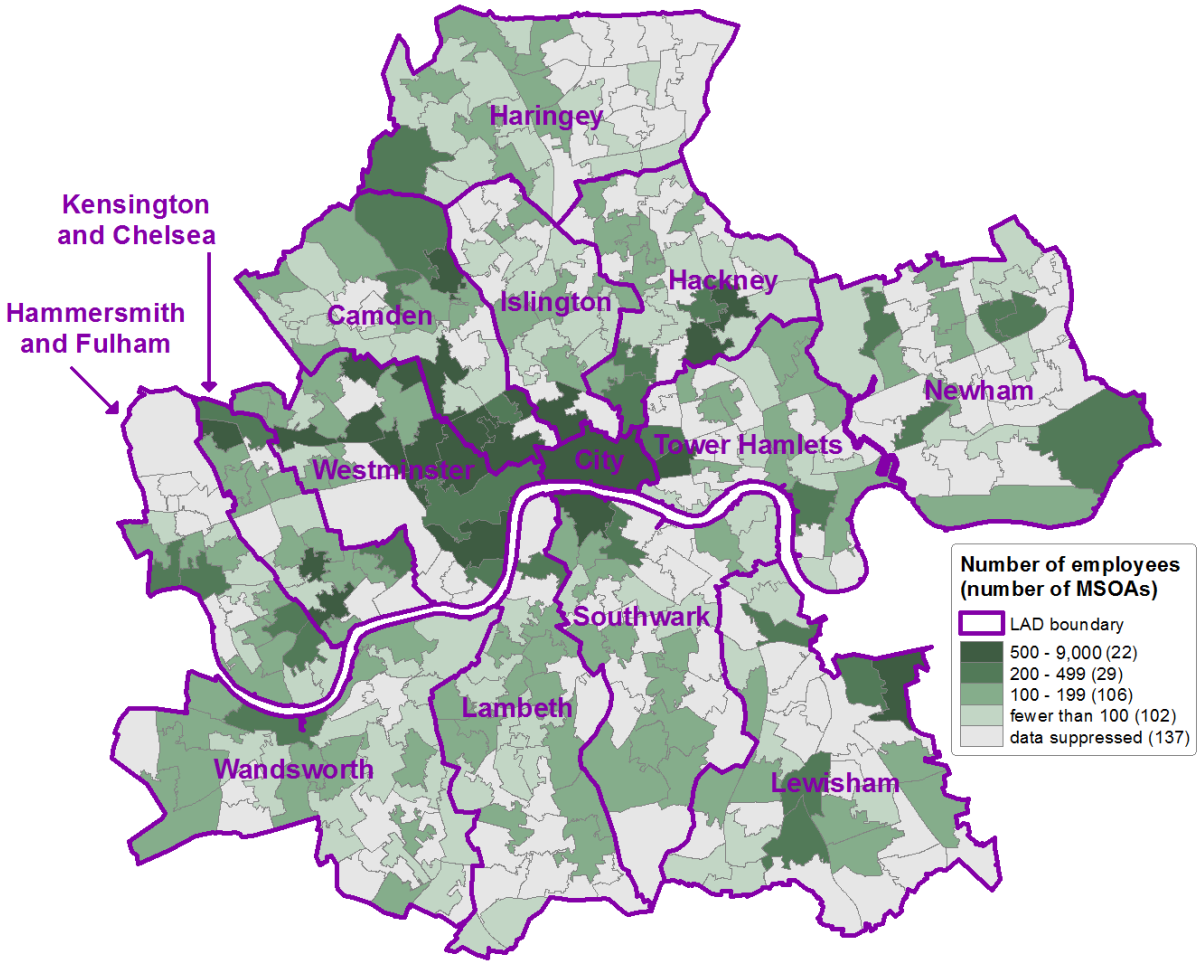


Source: Inter-Departmental Business Register, Office for National Statistics

Inner London

Map 13 shows a concentration of employee jobs in the Life sciences and healthcare sub-category in Inner London in Westminster, City, Camden and Islington.

Map 13: Employee jobs in the Life Sciences and healthcare sub-category of the STC in Inner London, 2013

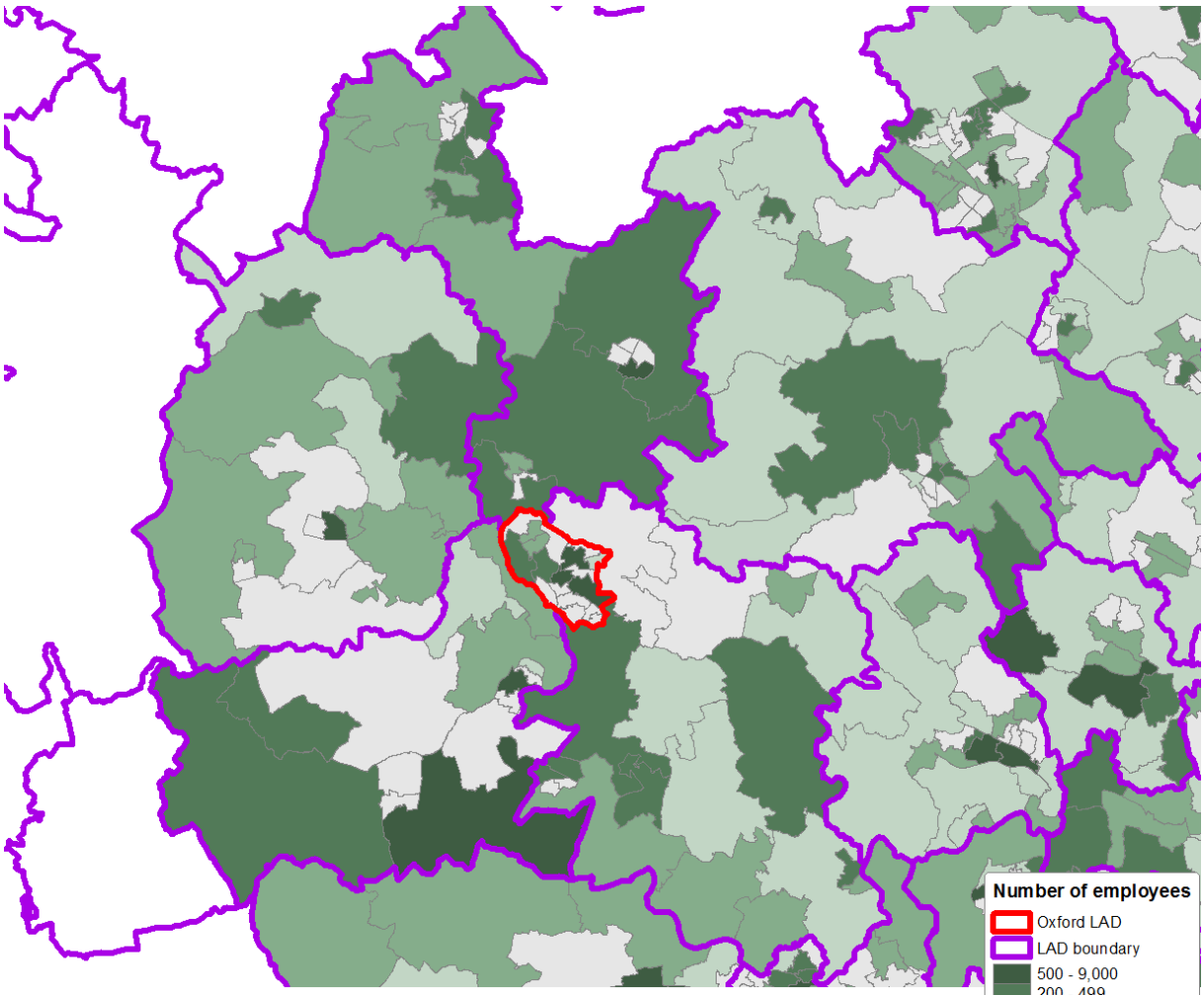


Source: Inter-Departmental Business Register, Office for National Statistics

Oxford

Map 14 shows a concentration of employee jobs in the Life Sciences and healthcare sub-category in central Oxford. There is a further concentration in the Vale of White Horse and South Oxfordshire.

Map 14: Employee jobs in the Life Sciences and healthcare sub-category of the STC in Oxford, 2013

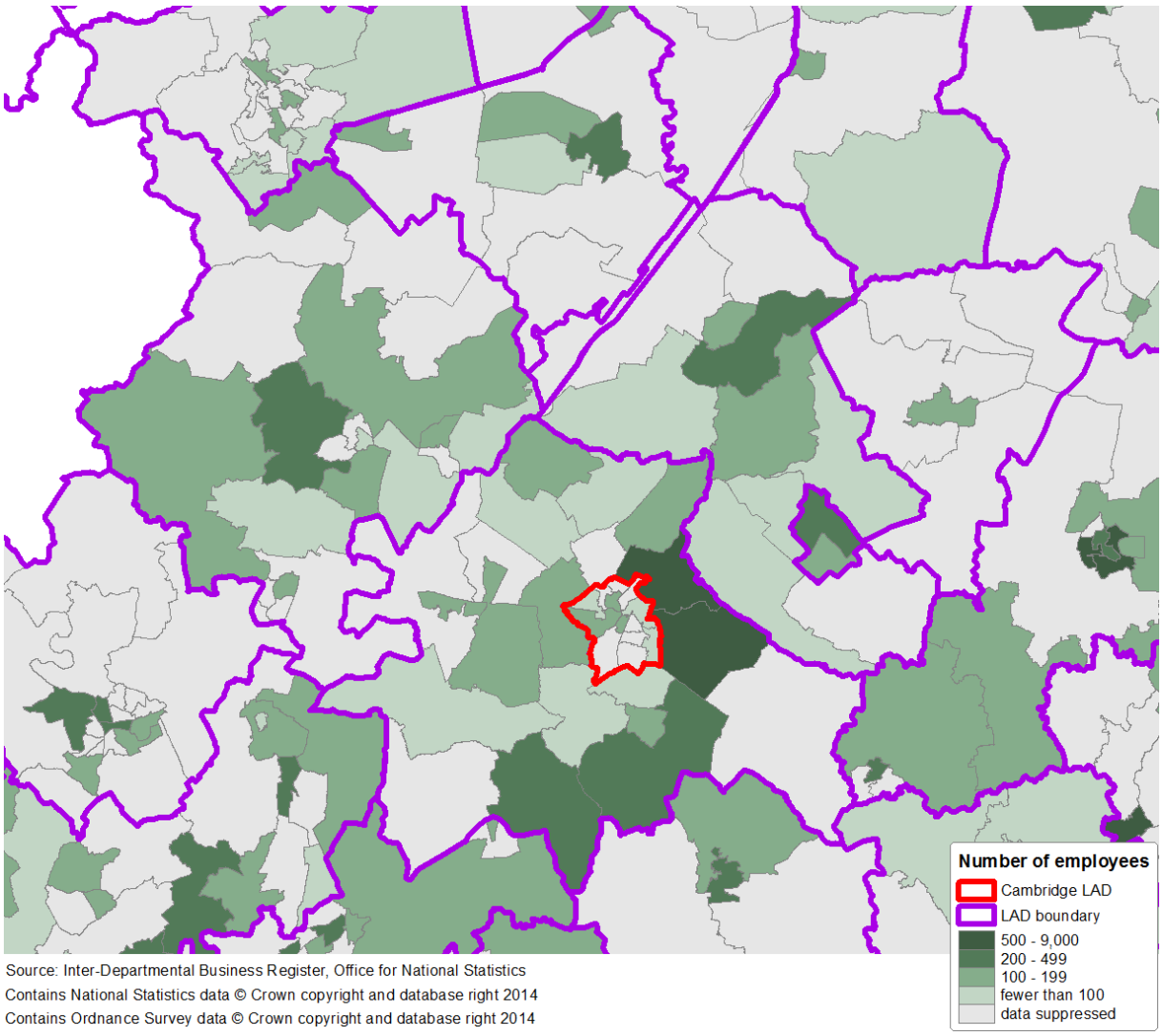


Source: Inter-Departmental Business Register, Office for National Statistics

Cambridge

Map 15 shows a concentration of employee jobs in the Life Sciences and healthcare sub-category in the MSOAs bordering Cambridge to the North East and East. There are further concentrations in South Cambridgeshire.

Map 15: Employee jobs in the Life Sciences and healthcare sub-category of the STC in Cambridge, 2013



Source: Inter-Departmental Business Register, Office for National Statistics

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