4 The Outlook for London's Economy and Risks

Main findings

- GLA Economics' long run central projections to 2036 estimate that employment will grow at an average annual rate of 0.69 per cent, equivalent to 40,800 net additional jobs per annum over the period. These projections suggest the London economy will perform strongly in future years but they are dependent on a range of underlying assumptions, not least future productivity trends in London. While productivity as measured by GVA per worker is considerably higher in London (£66,638) than the UK average (£48,703), concerns have been raised about the weak productivity growth seen in London (and the UK) since the recession.

- In terms of the future sectoral make-up of London's economy, GLA Economics' projections suggest that London will continue to specialise in service sector activities going forward. Business and professional services are expected to generate nearly two-fifths of the total increase in jobs in London to 2036. Strong employment growth is also expected in administrative and support services, accommodation and food services, and information and communication – collectively accounting for just over half the expected total increase in jobs to 2036.

- There are upside and downside risks to these projections which could mean London follows a different growth trajectory. In the near term, risks to global economic growth which could impact on London include the ongoing Eurozone crisis, a slowdown in the Chinese economy and other emerging markets, or geopolitical events. Similarly, London's economy could be affected by events in the UK such as a tightening of monetary policy, reductions in government spending, or the outcome of the forthcoming referendum on Britain's membership of the EU.

- Looking longer term, the agglomeration benefits currently enjoyed by firms in London may be tempered by the diseconomies of agglomeration (or so-called 'congestion costs') that are the consequence of a mass of businesses and people competing over scarce resources. If the costs of agglomeration begin to exceed the benefits then future growth and/or wellbeing in London could be undermined. Issues covered in this chapter include:

    * The cost of living and its impact on labour supply – there are high vacancy rates in some lower paid sectors such as health and social care.
    * The cost of business accommodation - office occupancy costs in prime central markets are higher than many other competing global cities.
    * Pressures on the transport network - Londoners spend more time idling in traffic than their counterparts in European cities; many parts of the tube and rail network suffer from significant crowding at morning peak, and London has limited airport capacity.
    * Pressures on infrastructure - the scale of growth expected in London will mean an estimated 20 per cent increase in overall energy demand by 2050. Moreover, without intervention it is predicted that London will have a deficit in water supply of half a billion litres over this period.

Introduction

London's dynamic economy attracts businesses and skilled workers on a scale like no other city in the UK. The employment projections in this chapter show that there are good prospects for continued growth in London over the next 20 years. In 2014, there were around 5.554 million jobs in London and this is projected to reach 6.418 million by 2036, equivalent to 40,800 net additional jobs per annum.

However, there are both upside and downside risks to this projection which mean London's economy could follow a different growth trajectory. There are global, or 'exogenous', threats to London's growth such as the Eurozone crisis, climate change, or geo-political events that could disrupt world trade. As one of the UK's most open economies, London is arguably more exposed to any slowdown in the global economy than other cities in the UK. These global risks are by their nature difficult for policymakers to predict or control.

There are also more localised, 'endogenous', risks to London's growth, many of which are the product of its attractiveness as a place to do business and to live. The agglomeration benefits of being based in London are a key feature of its success. Proximity to other firms and access to deep labour markets helps to reduce transaction costs, fosters collaboration and competition, and supports the development of formal and informal networks. This in turn leads to knowledge spillovers (positive externalities), higher productivity and growth. However, there are also costs associated with agglomeration. A growing concentration of businesses and people raises demand for factor inputs which in turn raises prices in these markets. Moreover, population growth places additional demands on local services and transport which may increase the costs and/or affect the quality of service provision. These costs associated with higher densities are sometimes termed the diseconomies of agglomeration or congestion costs.

Businesses make informed decisions about whether the benefits of operating in London (e.g. higher profits) outweigh the costs (e.g. higher rents). Similarly, workers make decisions about whether the benefits of working in London (e.g. higher wages or better career opportunities) are sufficient to compensate for the costs (e.g. higher cost of living or longer commuter journeys).

Given London's impressive growth performance it would appear that the agglomeration benefits continue to outweigh the costs – but for how long? Growth cannot be taken for granted. It is easy to forget that for much of the period after the Second World War through to the 1980s, London's population was in decline – a consequence of de-industrialisation, suburbanisation and population dispersal policies[1].

If businesses find that it becomes harder to recruit skilled workers, to find suitable work premises, or to move goods, services, and people around, then they may reconsider their location in London and look to alternative cities. For firms operating in international markets this is likely to mean relocating to a global city outside the UK.

From a public policy perspective, the full costs and benefits to society of London's growth need to be considered not just those to private firms and individuals. For example, if workers are forced to make longer and busier commutes, there may be negative impacts on wellbeing or the environment[2]. There are also equity considerations such as the distribution of wealth created by London's growth.

The degree to which London's competiveness is eroded by rising costs and/or the quality of life of its citizens deteriorates depends to a large extent on London's capacity to accommodate additional growth. In this respect, the public sector has an important role to play enabling growth through investment in infrastructure, public services, via the planning system and other policy interventions. London's success needs to be carefully managed if the capital is to remain internationally competitive and for growth to be sustained.

The Outlook for London's Economy

Long run projections of employment in London to 2036

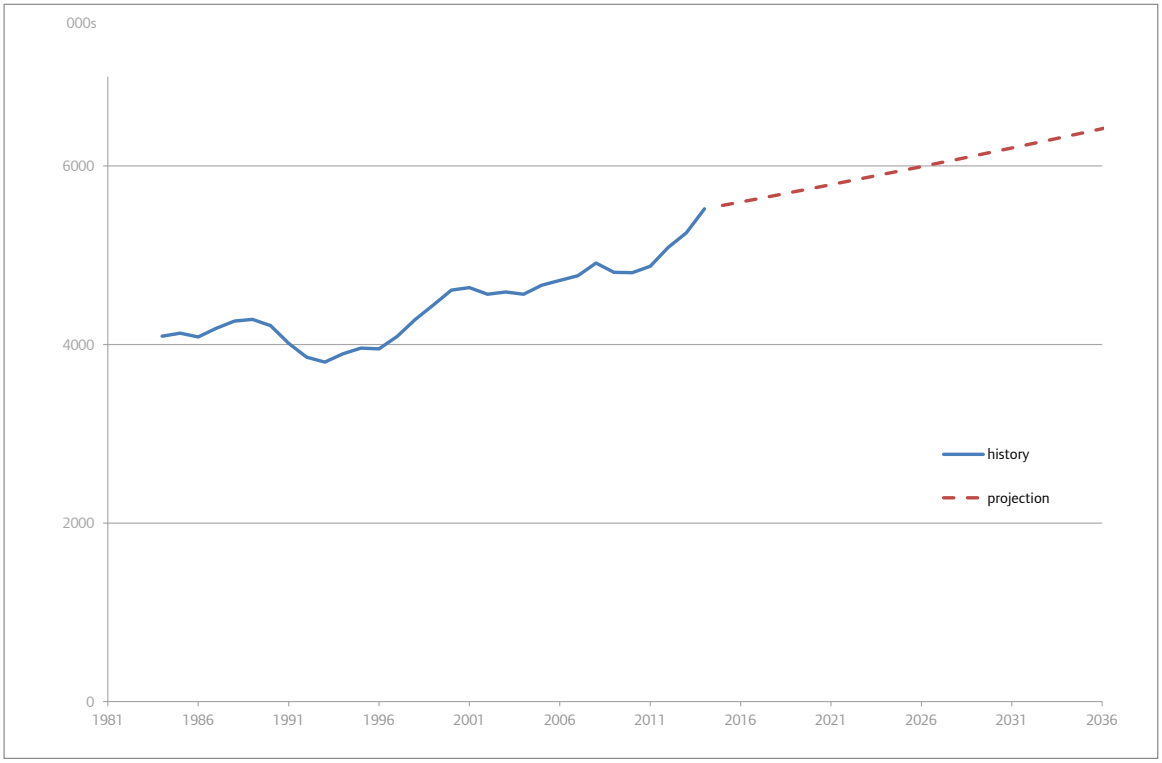
Chapter 1 examined the change in London's industrial structure over time, demonstrating that London has become increasingly specialised in services. Financial and insurance services accounted for the largest share of economic output in London in 2014, around 19.0 per cent, while Professional, scientific and technical activities provided the largest proportion of jobs in London.

In the short to medium term, the economic outlook for London's economy is positive with the latest GLA Economics forecast predicting growth of around 3.4 per cent in 2015, 3.2 per cent in 2016, and 2.7 per cent in 2017.

Since the 2008/09 recession output growth has been sluggish by historical post-recession standards. However, employment growth has been unexpectedly strong. Following a fall in jobs in 2009/10, jobs growth in the capital has strengthened significantly. In 2014, there were around 5.554 million jobs, a 5 per cent increase compared with 2013, and 12 per cent higher than the pre-recession peak.

Looking ahead, recent strong growth in jobs is expected to slow although employment is forecast to grow over the long term[3]. Projections estimate that employment will grow by an annual average rate of 0.69 per cent between 2015 and 2036, equivalent to 40,800 jobs per annum, to reach 6.418 million in 2036 (Figure 4.1).

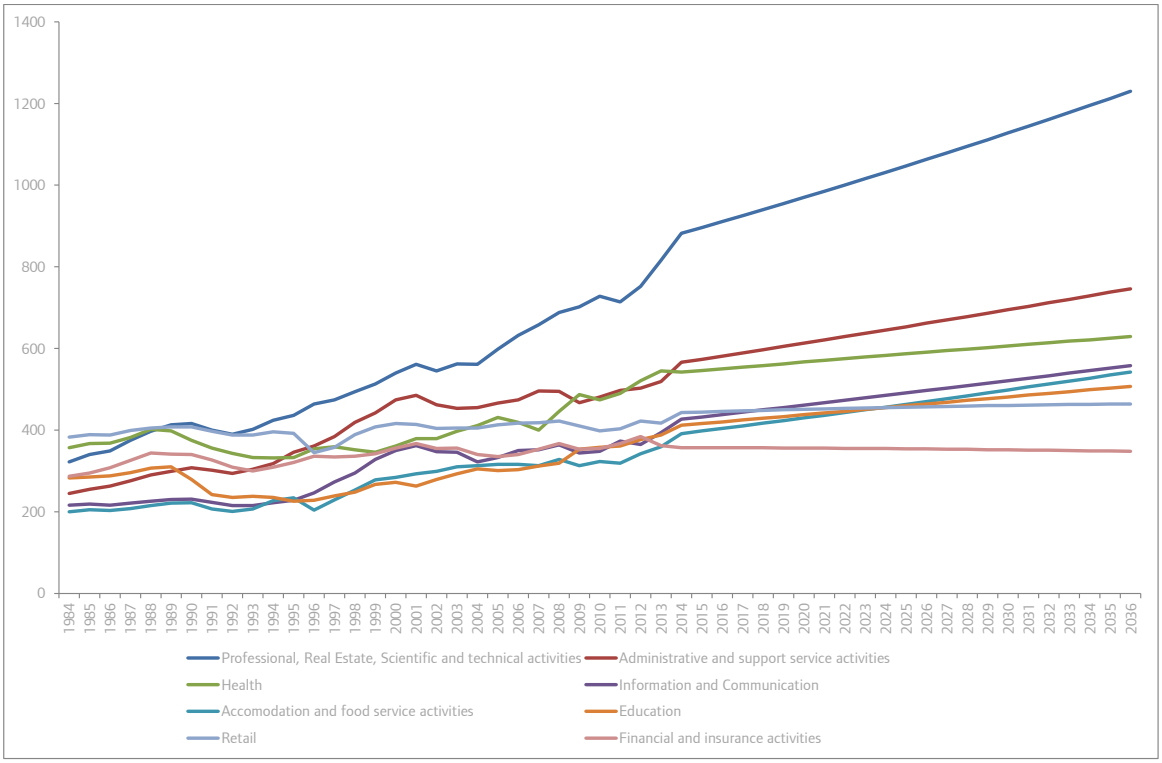
Figure 4.1: The GLA Economics long-run employment projection to 2036



Source: GLA Economics

In keeping with previous trends, business services (professional, real estate, scientific and technical activities) are expected to drive jobs growth, accounting for nearly two-fifths of the total increase in London to 2036 (Figure 4.2). Strong employment growth is also expected in administrative and support services, accommodation and food services, and information and communication sectors – collectively accounting for just over half the expected total London increase to 2036.

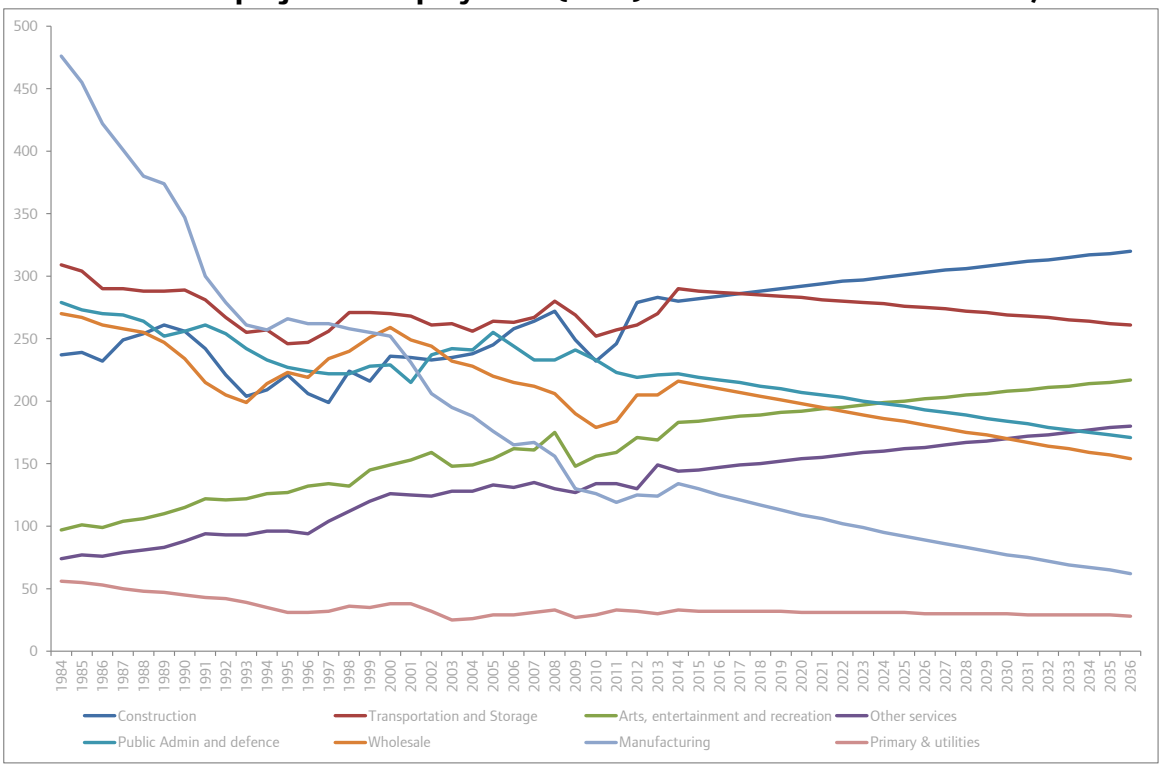
Figure 4.2: Historic and projected employment (000s) in London's largest sectors, 1984 to 2036



Source: GLA Economics

Conversely, employment in primary and utilities, manufacturing, wholesale, and public administration and defence sectors are all expected to decline over the period to 2036 (Figure 4.3).

Figure 4.3: Historic and projected employment (000s) in London's smaller sectors, 1984 to 2036



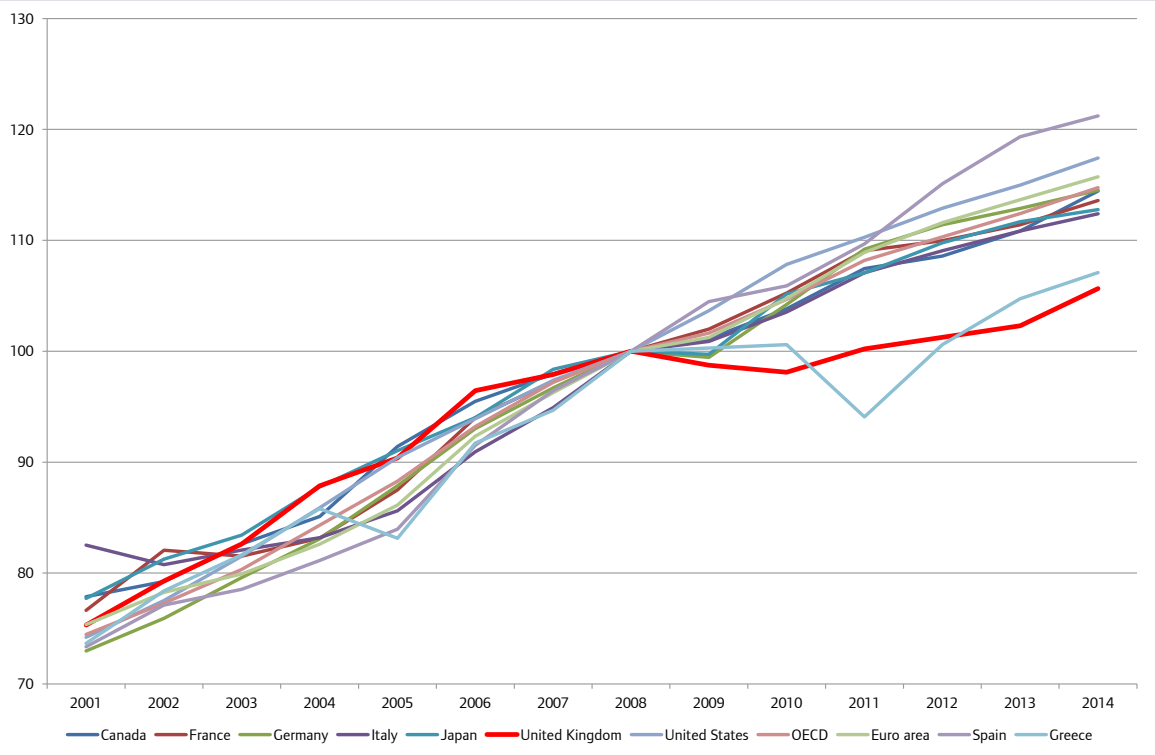
Source: GLA Economics

Box 4.1: Recent productivity performance in London and the UK

Despite London's impressive GVA performance[4] since 2008 (see Chapter 1, Box 1.1), concerns have been expressed about the long-term prospects for UK, and by extension London's, economic growth, due to the slow growth in productivity that has occurred in the UK since the recession. This is demonstrated in Figure 4.4 which shows that output per hour has been relatively static in the UK since 2008 compared to some other developed economies.

Examining this in more detail between 2000 and 2008, UK GDP per hour worked increased on an average annual basis of around 4.2 per cent, virtually identical to the OECD average of 4.3 per cent. However, between 2008 and 2014 the UK's average annual increase in output per hour worked stood at 0.9 per cent, compared to an OECD average of 2.3 per cent. Thus, although productivity declined in both the UK and OECD countries the decline was greater in the UK in the post-recession period. While in other analysis, the ONS observed that "output per hour worked in the UK was 17 percentage points below the average for the rest of the major G7 advanced economies in 2013; the widest productivity gap since 1992. On an output per worker basis, UK productivity was 19 percentage points below the average for the rest for the G7 in 2013"[5].

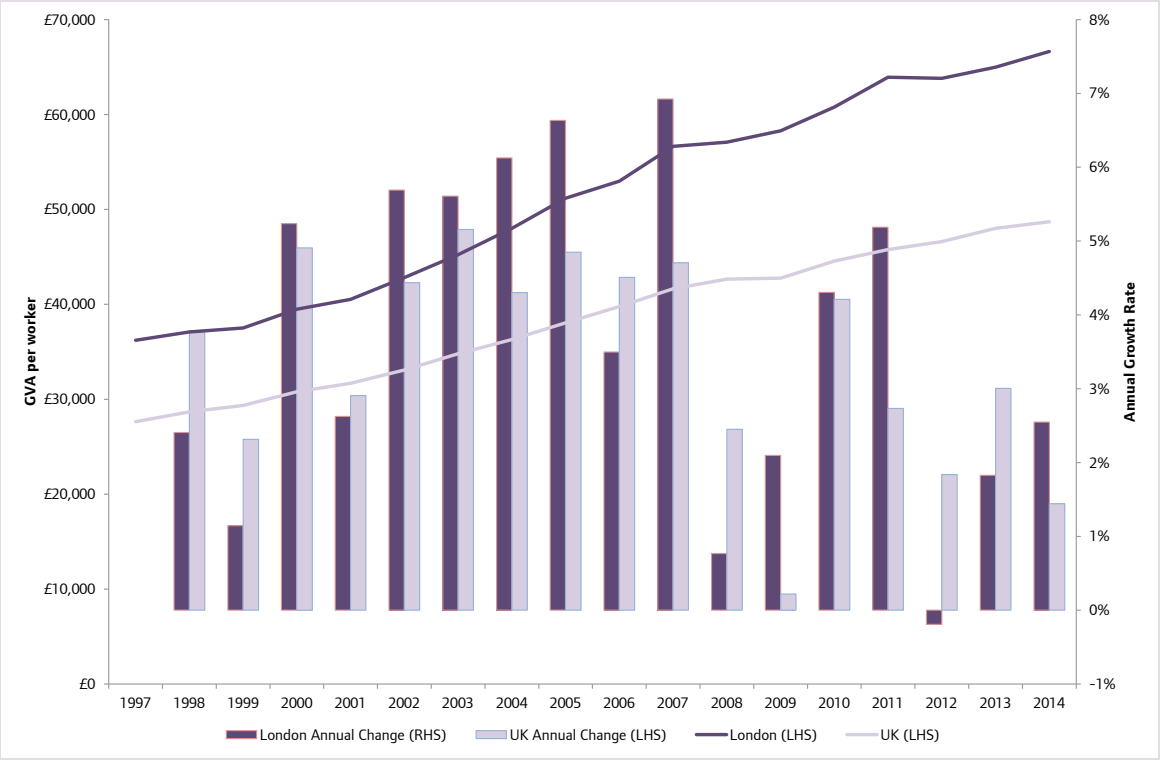
Figure 4.4: GDP per hour worked in selected countries, 2001 to 2014 (index 2008=100)



Source: OECD

As can be observed, GVA per worker (in nominal terms) is significantly higher in London when compared to the UK as a whole (Figure 4.5), standing at £66,638 in 2014 compared to a figure of £48,703 for the UK as a whole[6]. GVA per worker grew by 2.5 per cent in 2014, compared to 1.4 per cent for the UK as a whole[7]. Between 1997 and 2008 London's GVA per worker grew at an average annualised rate of 4.2 per cent compared to a rate of 4.0 per cent for the UK. However, over the years 2008 to 2014 London grew at an annualised rate of 2.6 per cent compared to a rate of 2.2 per cent for the UK as a whole. It is important to note however, that the differences in inflation between London and the UK as a whole may mean that the discrepancies in economic performance between the capital and the country as a whole, reflected in Figure 4.5, could be misleading and should be treated with caution.

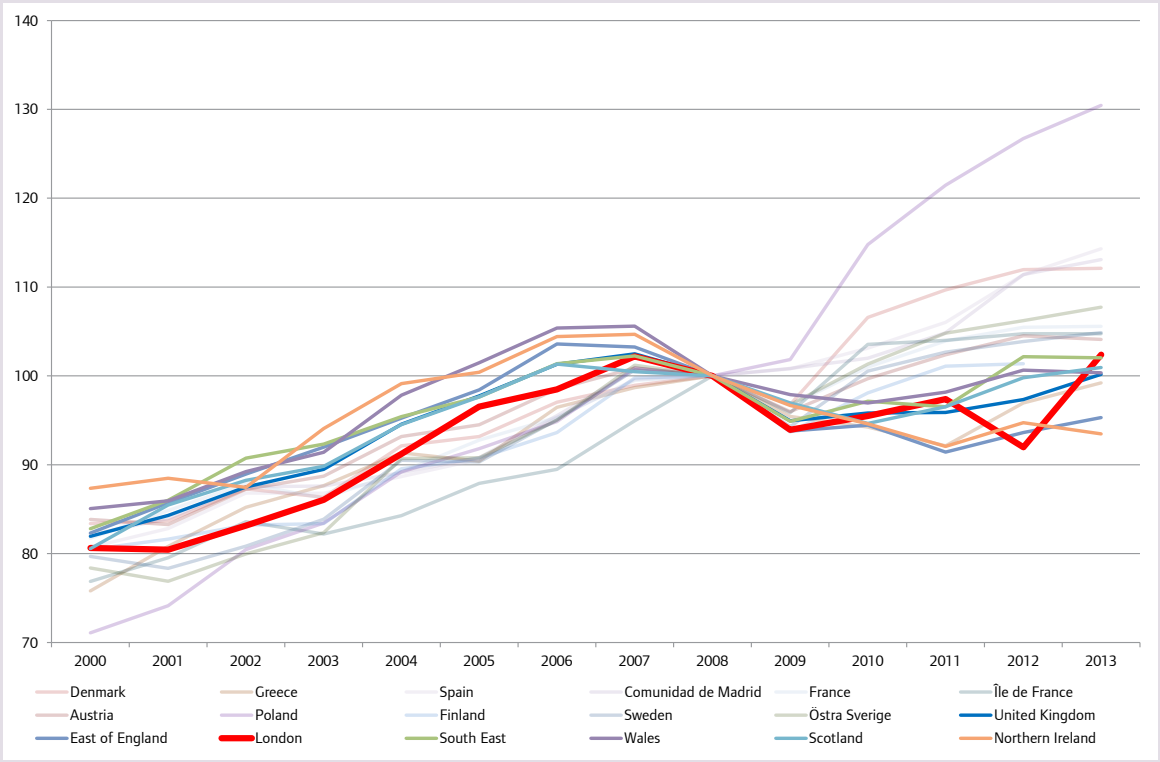
Figure 4.5: Headline GVA per worker (£) and annual percentage change for London and UK 1997-2014[8], current prices



Source: Regional Accounts, ONS, Nomis and GLA Economics calculations

Whilst Figure 4.5 demonstrated the differences in economic performance between London and the UK as a whole in nominal terms, Figure 4.6 shows output per worker in London in real terms compared to selected European countries and NUTS1 regions. As can be observed by 2013 London's output per worker had recovered more strongly than the UK as a whole, but was lagging behind other European regions and countries, however this lag was significantly less marked in 2013 than in 2012.

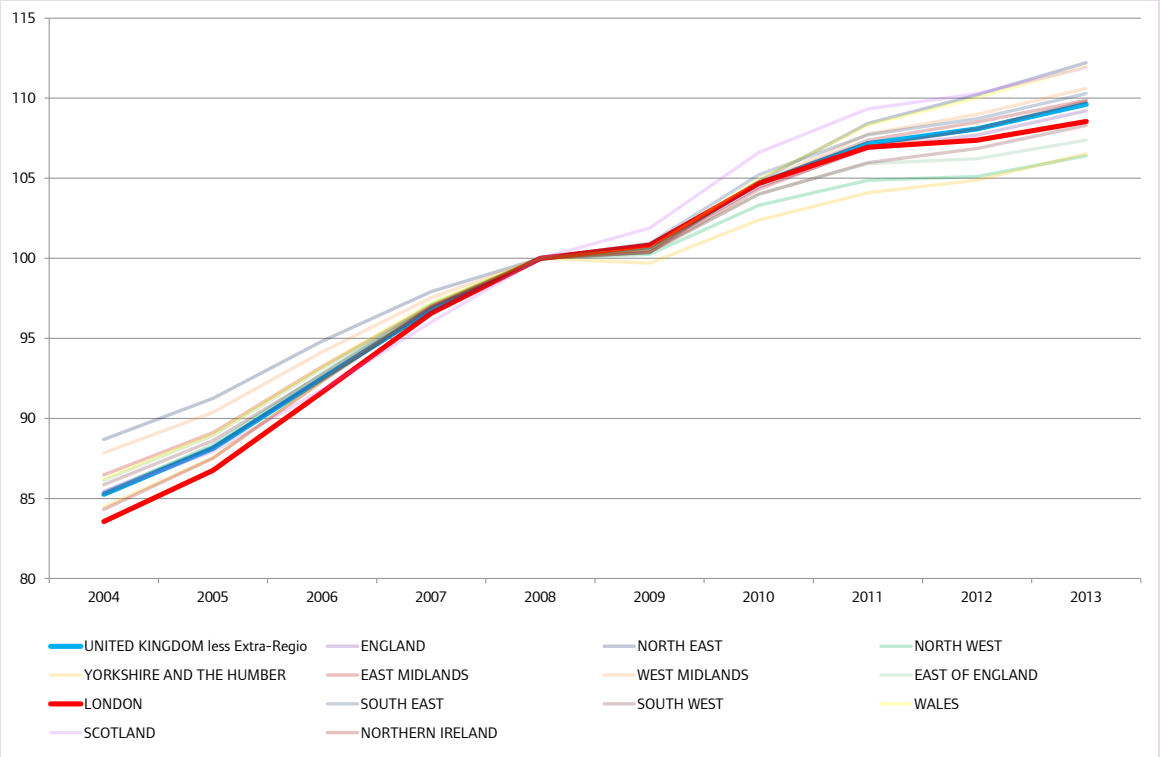
Figure 4.6: Output per worker in selected countries and NUTS1 regions, 2000 to 2013 (index 2008=100)



Source: Eurostat and GLA Economics calculations

London's GVA per hour worked performance is not as good as in a number of other regions of the UK over this period (Figure 4.7). This result may in part be explained by the hypothesis put forward by McCafferty[9], who suggested the UK productivity puzzle was due to a mixture of changes in regulation, changes in business models, a tough trading environment, labour retention and minimum operating scale. Given the different sectoral makeup of London compared to the other regions of the UK, it is possible that some of these issues would have a larger impact on different geographies.

Figure 4.7: Nominal (smoothed) GVA per hour worked in London, the UK and its nations and regions 2004-2013 (index 2008=100)



Source: ONS[10] and GLA Economics calculations

A number of factors have been identified that could account for these differences (see Chapter 1). For example, differences in employment patterns, i.e. jobs are part-time or self-employment jobs, weakness of wage growth (for further details on wage growth by sector, see Chapter 6), weak investment growth in physical capital but also in training and 'intangible' capital. Concentration of job creation in lower skilled occupations could also partially explain the recent trends in productivity at a sector level.

Differences in sector level performance, both in terms of jobs and productivity since the financial crisis, are highlighted in Table 4.1. Looking at evidence across sectors it is clear that despite strong growth in jobs, both wages and productivity have stagnated since the financial crisis. Productivity is measured here using 'GVA per workforce job' and is based on a methodology developed by GLA Economics and the ONS. This captures the proportion of published GVA which is attributable to the activity of the workforce divided by workforce jobs[11].

Sector level productivity estimates, based on GLA Economics' GVA per workforce jobs estimates adjusted for CPI inflation, suggest that productivity performance across most sectors of the London economy was weak between 2009 and 2012 (Table 4.1). Five out of 17 sectors of the economy saw productivity grow over the period. In the Other service activities sector, productivity increased by around 20 per cent between 2009 and 2012, while in both Construction and Public administration and defence productivity grew by nine per cent over the same period.

Table 4.1: Changes in sector level performance in London

	No of London jobs in 2014 ('000)	London jobs contribution in 2014 (ranked: 1=highest, 17 =lowest)	Jobs growth 1996 to 2014 (%)	Jobs growth 2008 to 2014 (%)	Jobs growth 2010 to 2014 (%)	% of jobs done by people with degree or higher (2014)	% of EE jobs paid less than the London Living Wage in April 2015	% change in real wages of EEs 2009 to 2015	% of jobs done by people born in the UK, British Overseas Territories or EEA (2014)	% of jobs done by people born in the Rest of the World (2014)	Productivity change (2009-12) (%)
Primary and utilities	32	17	0	0	14	48	x	N/A	74	26	-14
Manufacturing	134	15	-49	-14	6	38	24	-13	78	22	-1
Construction	280	10	36	3	21	26	15	-14	81	19	9
Wholesale and motor trades	216	12	-1	5	21	33	23	N/A	74	26	-7
Retail	443	4	28	5	11	32	53	-3	67	33	-10
Transportation and storage	291	9	18	4	15	22	7	-4	65	35	0
Accommodation and food service activities	393	7	93	20	22	24	68	-3	62	38	-4
Information and communication	423	5	72	16	22	69	4	-12	76	24	-3
Financial and insurance activities	357	8	6	-3	1	65	2	-0	79	21	-11
Real estate	109	16	58	16	1	44	12	-14	83	18	8
Professional, scientific & technical	771	1	95	30	24	72	6	-11	81	19	-3
Administrative and support service activities	565	2	56	14	17	35	37	-4	68	32	7
Public administration and defence, compulsory social security	222	11	-1	-5	-4	58	2	-8	84	16	9
Education	412	6	81	29	15	67	13	-9	77	23	-5
Human health and social work activities	541	3	53	21	14	53	18	-12	67	33	-9
Arts, entertainment and recreation	187	13	42	7	20	62	31	-6	84	16	-16
Other service activities	144	14	53	11	7	38	25	-16	75	25	20
ALL INDUSTRIES	5,519		40	12	15	50	20	-11	75	25	-3

Source: ONS: WFJ, APS, ASHE, CPI. GLA Economics: GVA per workforce job modelling.
Note: Employee jobs – EE, European Economic Area – EEA

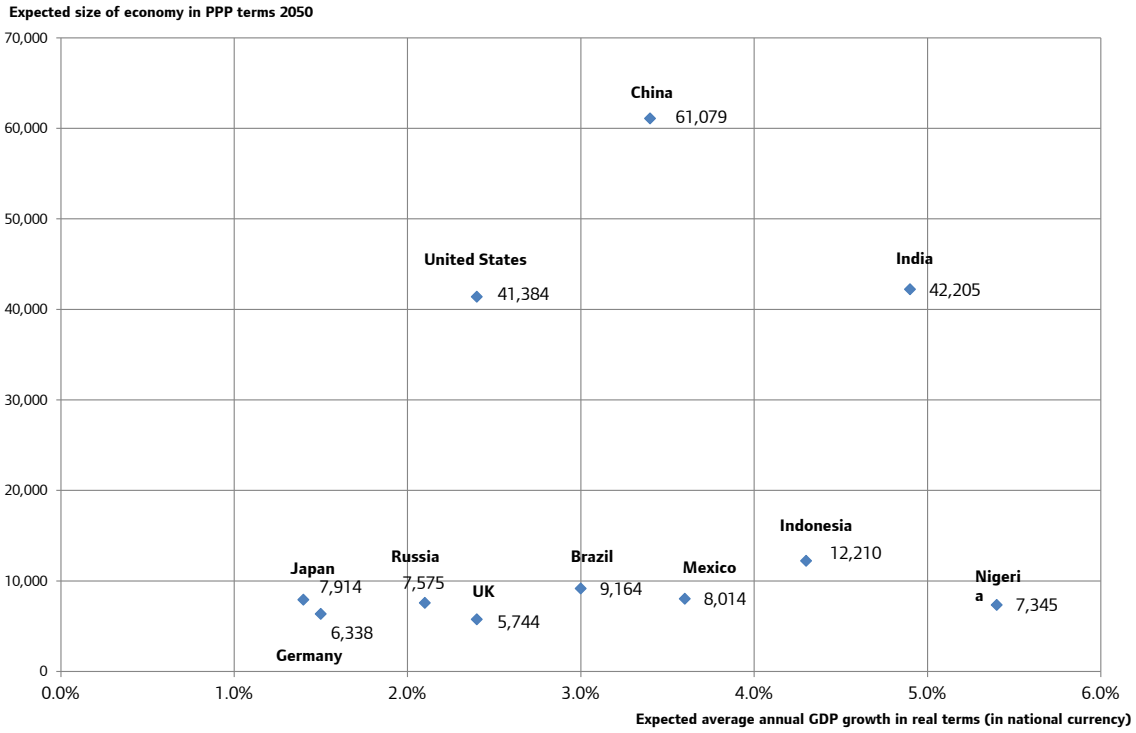
Risks to London's Economy

Exogenous risks

Globalisation and global competition

Globalisation has created massive opportunities for London's businesses evidenced by the significant growth in exports (see Chapter 1). Not only does globalisation create trading opportunities, it exposes London's businesses to international competition forcing them to remain productive and competitive which in turn helps to drive economic growth. As developing countries become wealthier, new trading opportunities will emerge for London's businesses to exploit. For example, opportunities may open up to provide financial services to upwardly mobile populations in emerging markets[12]. Figure 4.8 shows the expected size of major global economies in 2050 together with expected average annual GDP growth.

Figure 4.8: Expected size of global economies by 2050 and their expected average annual GDP growth

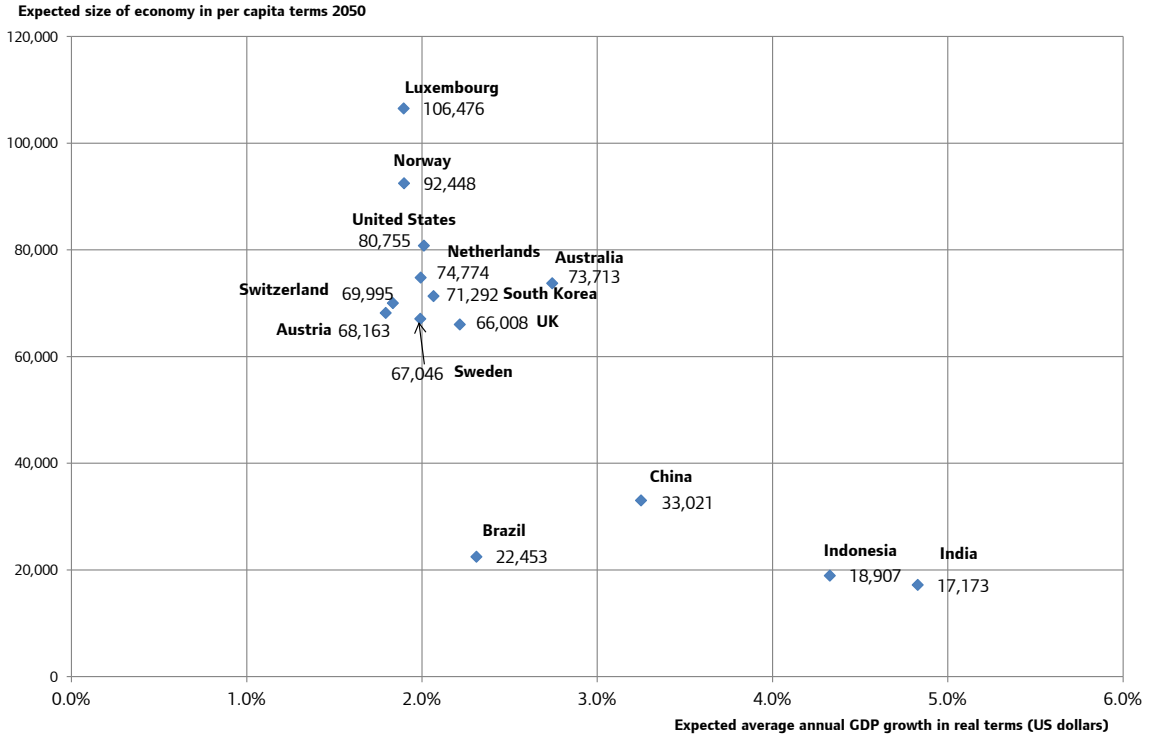


Source: PWC[13]

China is expected to be the largest economy in 2050 in purchasing power parity terms (having overtaken the US in 2013/14). There could also be opportunities for London's businesses in emerging economies such as Nigeria, India and Indonesia, which are forecast to experience high rates of annual GDP growth.

While emerging economies will present new opportunities for London's businesses, developed economies in Europe, Asia and the USA are expected to remain the capital's key trading partners. Figure 4.9 shows that in per capita terms, these economies are expected to remain the largest despite the high rates of GDP growth forecast in developing economies.

Figure 4.9: Expected size of global economies by 2050 in per capita terms and average annual GDP growth



Source: OECD[14]

The downside risk to London's economy is arguably that in markets where London's businesses have enjoyed a comparative advantage, competition will intensify. Firms in emerging economies that have historically competed on cost, specialising in lower skilled activities such as volume manufacturing or low value services, are likely to compete further up the value chain in higher value-added activities[15]. Table 3.3 in Chapter 3 shows rankings of Global Financial Centres[16] identifying London and New York as the dominant financial services hubs. However, cities like Singapore, Hong Kong and Tokyo have similar aspirations. At the same time, rapid economic growth in China over the past three decades has led to Shanghai, Shenzhen and Beijing becoming important financial centres. These centres have moved up the rankings and could compete with London in future years.

City governments across the globe are aggressively targeting and incentivising businesses to relocate to their area. According to research by Deloitte[17], the Hong Kong and Singapore governments spend significantly more than London does on activities to attract Foreign Direct Investment, and in the promotion of tourism. Nevertheless, London is very attractive proposition for international investors and major flows of foreign capital have helped to fund new investment in London's infrastructure as well as new housing and commercial property. While this investment is to be welcomed, it can be more speculative and volatile in nature and any withdrawal would represent a downside risk to London's economy.

The pace of global growth

There is a debate among economists about why growth in advanced economies has continued to stagnate since the financial crisis in 2008. While in the UK, growth rates have improved in recent periods, it is in a policy environment which is far from 'normal' with interest rates at historic lows, quantitative easing (injecting money into the economy) by the Bank of England still in operation, and an expansionary fiscal policy in place[18]. Similar policies are in place across the EU, the USA and in other advanced economies.

Economists have debated whether current low growth rates (principally in the US but also other developed economies) are a temporary phenomenon or reflective of a more fundamental shift towards lower long run rates of economic growth. There are three broad pillars to this debate:[19]

- *Diminished long-run growth potential* – this is the argument that the long-run growth potential of the economy has fallen due to a slowdown in the rate of technological progress and innovation relative to previous eras[20]. Other supply side explanations such as the ageing population and fewer gains from education are also put forward to suggest that the gap between actual GDP and potential GDP is in fact narrow and reflects a downward shift in the long-run growth potential of the economy.

- *Persistent GDP gaps* – this is the view that the economy is operating below its long-run potential growth rate due to demand deficiencies, even with interest rates at close to zero (or negative in real terms)[21].

- *One off supply side damage* – the third pillar emphasises one off changes in the *level* of GDP growth and the damage they cause to the economy, for example, by workers becoming unemployed and human capital depreciating off the job[22]. This argument is more relevant to the US economy than the UK where unemployment rates have remained low.

This debate is important because whether or not global growth (and particularly growth in the US) returns to pre-crisis levels will be an important determinant of London's long run growth trajectory.

The Eurozone crisis

The Eurozone is the UK's main trading partner and a vital one for London's businesses. The sovereign debt problems of a number of countries within the Eurozone, notably Greece, remain a downside risk to the economy. If Greece were to default on its debt obligations, there is a risk that it could be forced to leave the single currency, a situation narrowly avoided in July 2015. While Greece itself is a relatively small economy in the context of the Eurozone, the concern is that the disruption to financial markets could have contagious effects for other larger economies[23]. If the Eurozone were to tip into recession then this would have negative implications for the UK and London in terms of trade and possibly also to the financial system. The level of risk has reduced compared to the start of 2015 following a series of bailout agreements with the Greek Government. However, there remain doubts over Greece's ability to pay back its debts in the long term and commentators have expressed concern that fundamental structural problems in Greece and the wider Eurozone still remain.

Slowdown in China and other emerging markets

For much of 2015, commentators have been predicting a slowdown in emerging markets[24]. Of particular concern, given the size of its economy, is China. Large falls in the Chinese stock market and a number of weak economic surveys (notably factory output) have led Chinese authorities to reduce interest rates and to devalue the currency. The slowdown is having knock-on effects for the economies of those countries that are dependent on exports to China, such as Australia. If this fed through to slower growth in the global economy then the UK and London would not be immune. The direct impacts on the UK and London may be more muted but any financial market contagion or withdrawal of Chinese investment from key infrastructure projects could potentially dampen economic growth[25]. Conversely, if the slowdown is less severe than predicted and if growth in other countries remains steady or improves, this may act to improve global growth forecasts, feeding through to the UK and London.

Interest rate rises

Interest rates in the UK remain at historically low levels; the Bank of England has kept the base rate constant at 0.5% since March 2009. There is continuing speculation about when this period of extremely accommodative monetary policy will end, both in the UK and overseas in key economies such as the USA. Forecasters have continually pushed back their expectations about when the Federal Reserve and the Bank of England will tighten monetary policy principally because inflation has remained low. The risks of restoring monetary policy to more historically 'normal' levels arise from moving either too early or too late. Moving too early could risk undermining the recovery by pushing up the costs of borrowing, particularly as household debt remains high by historic standards. Conversely, normalising monetary policy too late and too gradually could also be a risk if ultra-loose monetary policy leads to a misallocation of resources such as allowing asset bubbles to develop.

Geopolitical events

Ongoing conflict and political uncertainties in parts of the world may have a negative impact on the global economy, which could feed through to the UK and London. The main concerns at present are in the Middle East and Russia/the Ukraine. It is difficult to predict how and when these situations will be resolved and whether or not a worsening of them would impact on global economic growth and in turn, growth in the UK and London.

The attacks on Paris on 13 November 2015 served as a reminder that major European cities including London are targets for terrorist activity. Terrorism is a risk to the safety and security of citizens and also to city economies. It imposes economic costs including: direct costs to human life, damage to property and disruption in the aftermath of the attacks; and indirect costs from changes in behaviour such as discouraged investors, visitors or workers[26]. There are also budgetary costs to government from increased security and anti-terrorism activities. While the short-medium term costs can be substantial, cities such as New York, Madrid and London have shown their resilience over the long term and an innate ability to bounce back from such attacks.

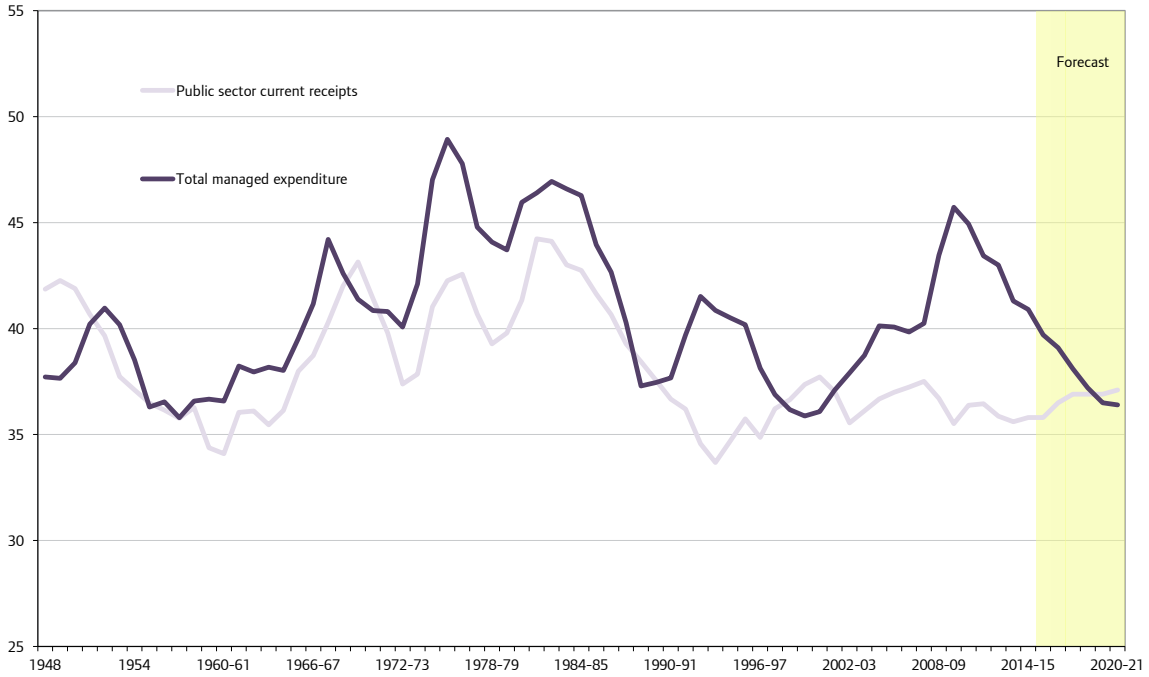
Cyber crime

The rise of the digital economy brings new risks to individuals, businesses, and national security from cyber crime. Individuals and small and medium-sized enterprises (SMEs) are at particular risk due to a lack of awareness of the severity of the threat. According to research by PWC, 74 per cent of SMEs in the UK reported being attacked by an unauthorised outsider in 2014/15, and 16 per cent had their network attacked, losing both sensitive data and the ability to trade[27]. The number of security breaches continues to rise and the average cost of an attack is between £1.46m – £3.14m for a large company and £75k – £311k for a small business.

Fiscal consolidation

Whilst the government continues to run a budget deficit, the net impact on the economy will be expansionary. However, the government's plans to reduce the deficit over time through spending cuts to eventually run a budget surplus may act to dampen economic activity in sectors which are more reliant on public spending. Figure 4.10 shows how government spending as a percentage of GDP has fallen since its peak after the recession in 2009/10 of 45.7 per cent to 40.9 per cent in 2014/15 and on the basis of current plans is forecast to fall to 36.4 per cent by 2020/21 – close to its lowest level since the Second World War[28]. While the impact of this reduction in spending is uncertain, if much needed investment in London's infrastructure were to be deferred or cancelled then London's growth in the long term may be compromised.

Figure 4.10: Total managed expenditure and public receipts as a per cent of GDP over time



Source: OBR

Britain's Membership of the EU

It has been argued that uncertainty over Britain's membership of the EU is a possible risk to London's economy. However, according to findings from the London Business Survey, when asked about the impact on their business of leaving the EU (but remaining part of the single market), 64% of respondents said it would be 'neither positive nor negative'. Of those that did expect an impact, around three-quarters thought it would be negative[29].

The Europe Report[30] considered four different scenarios for London's economy that might arise from a changing relationship with the EU: 1) Business as usual – the UK remains within an unreformed EU; 2) 'A brave new world' – the UK stays in the EU but there are substantial reforms; 3) 'One regime, two systems' – the UK withdraws but does so with goodwill on both sides and pursues a pro-growth reform agenda; and 4) 'Inward looking' – the UK leaves the EU and suffers and the relationship with Europe deteriorates. It found that remaining in the EU but with substantial reforms (scenario 2), or an amicable well-planned departure (scenario 3), generated more favourable economic growth outcomes (both of a similar order of magnitude). The Government has committed to hold a referendum on membership of the EU before the end 2017.

Regulation of financial markets

London is a global hub for financial services which are exported around the world but regulation of the sector has tightened significantly since 2008 in response to the financial crisis. Well-planned regulation is needed to enable London's financial sector to grow at a sustainable rate whilst remaining internationally competitive. However, if financial regulation became too onerous or excessive, this could damage what is a critical sector for London's economy, and the UK economy as a whole. The City of London Corporation has observed that the concentration of financial services activities in London means that UK and EU regulation of the sector has a disproportionate impact on London's economy[31].

Risks to London's financial sector include any additional taxes or levies that could be imposed on the banking sector. The Bank Levy was raised to 0.21 per cent in April 2015 and while the Government announced in the Summer Budget 2015 that the Levy would be reduced from 2016 onwards to 0.1% by 2021, they also announced the introduction of a supplementary tax of 8 per cent on banking sector profits from January 2016[32]. Moreover, regulation on incentive pay for bankers could also hamper the ability of London's firms to attract skilled workers. Any future new EU regulatory initiatives such as a financial

transaction tax could increase transaction costs, making London's banking sector less competitive. This would have significant implications not only for employment in London's financial services sector, but also the many professional and local services firms which supply the sector.

Research for the City of London Corporation modelled a number of different scenarios of future regulatory conditions in the financial services sector and how they could impact on GDP growth in Europe[33]. Under a less challenging regulatory climate which enables the EU financial services sector to grow at 1.9 per cent over the period 2015-2030 (60 per cent of its pre-crisis growth rate), EU GDP would grow by 1.8 per cent annually. In contrast, in a more challenging regulatory environment with near zero growth in financial services, GDP would grow by only 1.5 per cent per annum over the same period[34].

Climate change

The Stern Review estimated that without intervention, the overall costs and risks of climate change will be equivalent to losing at least 5% of global GDP each year[35]. If a wider range of risks and impacts are taken into account, the estimates of damage could rise to 20% of GDP or more. Every five years the UK Government produces a climate change risk assessment with the next due in 2017. The last assessment identified flood risk and particularly heavy downpours as the key climate threats for the UK, alongside stresses on water resources, threats to biodiversity and natural habitats, and the impact on the UK from extreme weather events abroad[36]. See Chapter 5 for more on the environmental challenges in London.

Endogenous Risks

The following section considers some of the more localised 'endogenous' risks to London's growth, which are largely a product of London's success and the increasing demands on its resources. Risk factors considered include:

- **The supply and affordability of workspace** - including the office and industrial sectors and also affordable workspace.

- **Labour supply** - including skills shortages, immigration controls, and the cost of living.

- **Infrastructure** - including congestion on the transport network, the capacity of the water, drainage and energy networks and broadband 'not spots'.

The supply and affordability of workspace

Offices

The employment projections show that office-based services will be the main driver of growth in London in the coming years. Some of the growth in office-based jobs will be accommodated by occupiers reducing their property footprint (e.g. via hot-desking, remote working or more efficient use of space) but nevertheless a considerable quantum of new office space will be required. According to consultants PBA, there will be 575,000 new office-based jobs in London over the period 2011-2036, and this could require up to 7.5m sq.ft of net additional office space[37].

It is vital that London has a ready supply of sites and premises in existing and new office locations to accommodate new office space to keep rents in London at competitive levels. In the London Business Survey, 32% of business units identified the supply of commercial premises as having a negative or very negative impact on their business[38].

London has a large and mature office market with the majority of stock focused in the Central Activities Zone (CAZ) and the North Isle of Dogs (NIOD). The West End with its unique character and prestige remains the hub for head offices of financial and business services companies and this is evident in its high rental values.

Rental values

Office rental values are significantly higher in central London than the rest of the UK and in the most popular locations they are among the highest in the world. Table 2.20 in Chapter 2 shows rental values and total occupancy costs (which includes business rates, service charges and other fees in addition to rent) in different office markets in London. Looking at how London compares internationally, Table 4.2 below shows that the West End is the most expensive office location in the world in terms of total occupancy costs.

Table 4.2: Top 10 most expensive locations by country

2014 Rank	2013 Rank	Country	City	Location	Occupancy costs €/Sq. m/Year	Occupancy costs $/Sq. ft/Year
1	1	United Kingdom	London	West End	2,344	264
2	2	Hong Kong	Hong Kong	CBD	1,636	184
3	5	United States	New York	Midtown (Madison/5th Avenue)	1,162	131
4	6	Brazil	Rio de Janeiro	Zona Sul	1,150	129
5	7	India	New Delhi	Connaught Place	1,064	120
6	3	Russia	Moscow	CBD	1,055	119
7	4	Japan	Tokyo	CBD (5 Central Wards)	1,051	118
8	9	China	Beijing	CBD	926	104
9	10	Australia	Sydney	CBD	878	99
10	8	France	Paris	CBD	860	97

Source: Cushman & Wakefield[39]

Office vacancy rates

As the economic recovery has gathered pace, office vacancy rates in London have fallen and are now low by historical standards. Table 4.3 shows data on historic and forecast office vacancy rates for various global cities.

Table 4.3: Office Vacancy Rate, historic and forecast 2006 - 2019 (per cent of total built stock, ranked on 2013)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Shanghai	8.2	5.5	13.5	16.7	12.0	6.6	5.1	4.3	5.9	6.4	5.9	5.6	5.4	5.1
Hong Kong	7.7	8.9	8.4	10.3	8.0	6.5	6.0	4.9	5.2	5.3	5.0	4.8	4.6	4.5
San Francisco	9.3	8.1	11.6	14.8	14.3	9.3	7.4	6.0	5.9	5.8	5.7	5.5	5.5	5.7
Tokyo	2.7	2.0	3.6	7.2	8.0	7.8	8.4	6.8	5.8	5.0	4.2	4.0	4.0	3.9
London	6.5	6.2	8.2	10.2	8.1	7.3	7.2	7.0	6.1	5.4	5.3	4.6	4.6	4.4
Paris	4.9	4.3	4.9	7.3	7.0	6.9	7.0	8.1	8.1	7.0	6.1	6.1	5.9	5.9
New York	5.9	5.0	6.7	8.3	8.6	7.8	7.9	8.9	8.4	8.0	7.8	7.7	7.5	7.4
Sydney	7.9	3.7	5.4	8.2	8.3	9.7	7.2	9.0	8.8	10.1	12.3	11.9	11.5	11.1
Singapore	10.3	7.3	8.8	12.1	12.1	11.3	9.4	9.9	10.3	9.8	9.3	8.8	8.4	7.7
Madrid	11.2	7.0	8.7	10.3	10.5	11.0	11.3	11.4	11.3	10.9	10.6	9.7	8.5	8.4
Frankfurt	16.7	14.2	13.7	14.3	14.4	13.5	12.1	11.4	11.4	10.8	11.3	10.7	10.3	10.0
Houston	15.0	11.9	14.1	16.5	16.3	16.1	14.4	14.2	14.0	13.9	14.2	14.4	14.3	14.1
Mexico City	11.1	6.8	6.1	7.7	11.3	11.4	10.4	14.6	14.3	18.5	19.0	15.0	12.0	12.0
Washington	10.5	10.0	11.9	14.1	13.7	14.3	14.6	15.4	15.8	15.7	15.4	15.1	14.9	14.8
Mumbai	4.9	2.9	4.3	12.2	14.0	19.3	23.2	23.0	23.0	18.7	16.1	15.1	14.1	13.5

Source: Knight Frank[40]

These figures suggest that London's vacancy rate (5.4%) is relatively low by international standards. Moreover, vacancy rates are forecast to fall to the second lowest of these major cities by 2019. It is important that office supply in the capital responds to falling vacancy rates otherwise rents will become prohibitively high and businesses will look elsewhere.

Office supply

Following the 2008 recession, speculative activity in the office market slowed significantly and this has contributed a current dearth in supply and historically low vacancy rates. Supply in the office sector tends to lag the economic cycle due to the time it takes to start and complete office developments. As the economic recovery has gathered momentum, supply has started to respond. The level of speculative activity is up on previous years with 7.3million sq.ft of floorspace under construction in Q2 2015[41].

The longer term question is the extent to which London's office market can accommodate the expansion in demand such that values do not begin to impact on the competitiveness of businesses. Inevitably some businesses will be priced out of prime central London markets and this is likely to increase demand in fringe locations.

There is a more immediate concern for some London Boroughs that Permitted Development Rights (PDR) legislation, which allows conversion of business premises for residential use without the need for the normal planning procedures, is eroding the supply of employment space (see Chapter 2 for data on the number of conversions).

The CAZ, the NIOD, Tech City and the Royal Docks Enterprise Zone have been exempt from this legislation up until now. However, it has been announced that the exemption will only remain in place until May 2019, after which time the relevant authorities will need to have an Article 4 direction in place to remove the permitted development rights. This means that Central London office locations, as well as locations outside the exemption zone, are at risk of losing strategic employment space.

The retention of these premises and the associated employment floorspace is viewed by some as important for the longer term health of the local economy. The loss of commercial space, in the short-term, may mean that firms find it more expensive to grow or are priced out of the area if the supply of space has been diminished. The counter argument is that some of this office stock may no longer be fit for purpose or can be put to better use by providing valuable new homes. The concern here is that the size and specification of new dwellings being created may not be optimal. The GLA continues to monitor the situation and will release updated figures in due course.

Industrial land supply

London's supply of industrial land (B2 and B8) has been in decline for some time particularly as manufacturing employment in London has fallen. Employment land in many London boroughs is under speculative pressure due to the shortage of housing and the higher values that can be achieved by developers in the residential sector.

The loss of employment land in London's industrial estates is seen as a risk by some commentators, as they can be valuable sources of employment in sectors such as distribution, manufacturing, construction, catering and other light industrial uses.[42] The alternative perspective is that the market should determine the optimal use of industrial land through price signals and these industrial premises may be better located elsewhere in terms of economic efficiency.

One area of concern is the availability of land in the future for distribution and warehousing activities. The need for fast and predictable delivery times – not least due to the rise of online retail - may change the preferred locations for warehousing space. Specifically, firms could increasingly require warehouse space near to their customers so they can offer better delivery options. This may mean firms that have previously used warehouses further away from London seek to establish premises within or close to the capital.

According to forecasts by Experian[43], London will need an additional 0.9 million square metres of comparison goods retail space by 2036, suggesting that the effects of population and income growth will more than offset any e-commerce induced reductions in store portfolios. The report, however, also points to spatial differences in retail floorspace requirements with some boroughs estimated to require less retail floorspace than they currently have. In addition to changes in the use of shop space by retail firms, there are also likely to be changes in the use of warehousing space. Insofar as stores begin to take on more of a 'showroom' function, potentially holding very limited stock for display purposes and relying on stock held elsewhere to fulfil orders, this could increase demand for warehousing space[44].

Affordable workspace for start-ups and SMEs

London has a high rate of business start-ups and also a high rate of business failures (see Chapter 3). This churn of new businesses starting up, some succeeding, others failing, is generally considered to be a characteristic of a healthy economy. New enterprises bring new ideas and technologies to the market replacing old ones. Unproductive firms are forced to either become more efficient or to exit the market - a process known as 'creative destruction'[45] - which in turn helps to drive productivity growth.

There is a concern that the cost of workspace in London is such that start-ups and small businesses cannot find the space they need, and that this may be damaging the economy. The lease terms may be another barrier as landlords tend to prefer tenants that can sign longer leases and that offer good covenant strength – characteristics generally not associated with start-ups.

The London Enterprise Panel recently commissioned research to examine the supply of incubator, accelerator and co-working space in London[46]. Incubator space is typically space designed to support the growth of start-ups or a business in early stage development with associated business support facilities. Accelerator space tends to refer to space for start-ups or existing businesses with high growth potential with support services provided by investors who may then seek an equity stake or some other financial return. Co-working spaces provide a combination of workplace and support facilities at affordable rates on ad hoc or short-term bases with access to meeting rooms or other shared facilities.

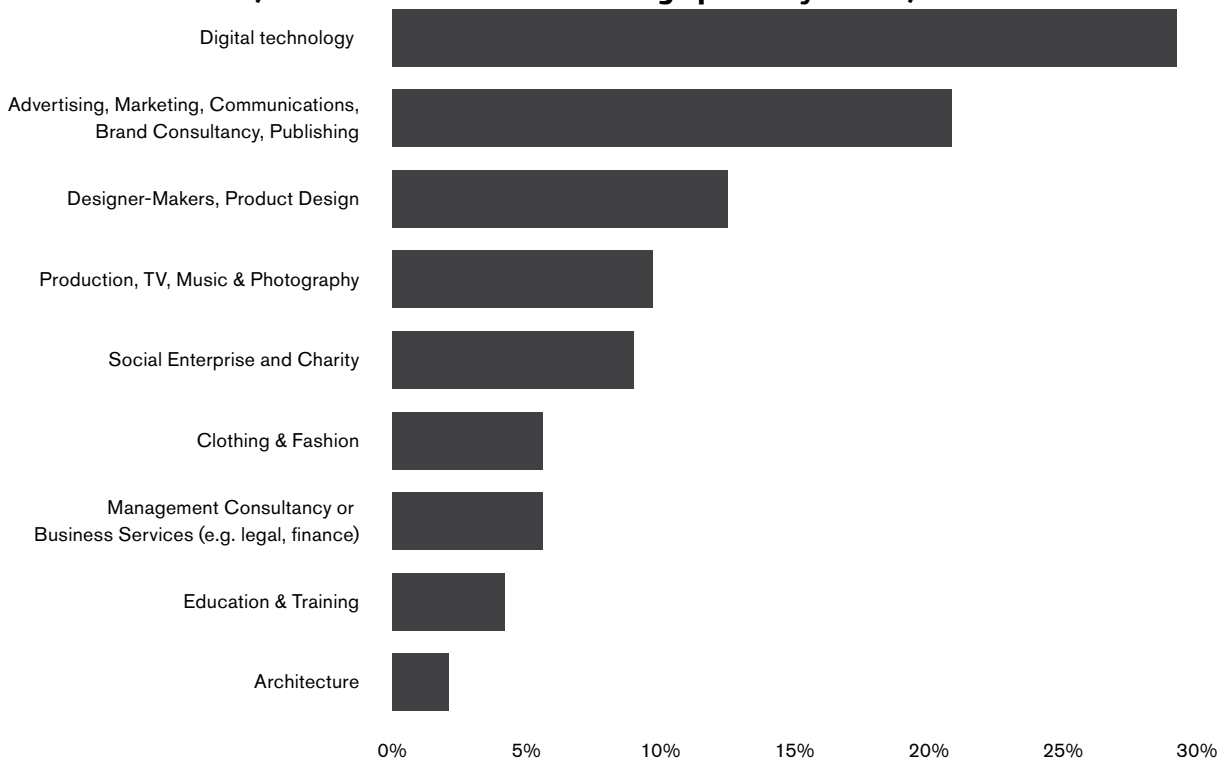
The research found there to be 132 incubator, accelerator and co-working spaces in London which accommodate upwards of 3,800 SMEs in a given working day. Over two thirds offered office space, around a quarter offered workshop space, and less than ten IACs providing laboratory space. Provision is concentrated in the CAZ and CAZ fringe boroughs. Particular clusters were identified in the inner East London area in the boroughs of Islington and Hackney around Old Street roundabout, and extending across the Shoreditch area to Farringdon. Clusters were also identified around Camden (around Bedford Square) and the City of Westminster (mainly around Soho).

Map 4.1: Number of Incubators, Accelerators and Co-working Spaces by borough, 2015

Source: URS

The most popular locations tend to correlate with high concentrations of businesses in digital technology, communication, and creative sectors, which have a higher incidence of start-up activity.

Figure 4.11: Incubators, Accelerators and Co-working spaces by sector, 2015



Source: URS

Coverage in Outer London is much thinner and tends to include facilities with a social focus operating in partnership with local authorities, charities or housing associations. Those that exploit vacant space (such as empty high street shops) for meanwhile or 'pop-up' uses can help to improve the physical environment and have a regenerative benefit. In the absence of a profile of demand, it is difficult to discern whether the

market is failing to provide sufficient affordable workspace provision in Outer London or if this is a reflection of lower demand.

One area of concern expressed by some is the lack of commercial laboratory space for start-ups in medical and biological science. Many of these types of companies begin their lives based in university labs where their initial idea is conceived. However, as companies grow, there is a need for them to move on from these informal, often shared, facilities. Some have argued that the lack of start-up and grow-on spaces in London, particularly laboratory space, is a risk to growth of the science sector[47].

Labour supply

London's ability to attract skilled workers is an important factor in its success but some businesses are concerned that the supply of skilled labour is a potential constraint to future growth. For example, the City of London Corporation highlighted the (lack of) availability of a skilled workforce as one of the factors that could dampen the City's growth in coming years[48]. Being able to meet the skills needs of London's businesses depends first, on a world class education system which maximises the potential of young people; second, on upskilling the existing workforce through ongoing investment in education and training; and third, on being able to attract skilled workers from the UK or internationally.

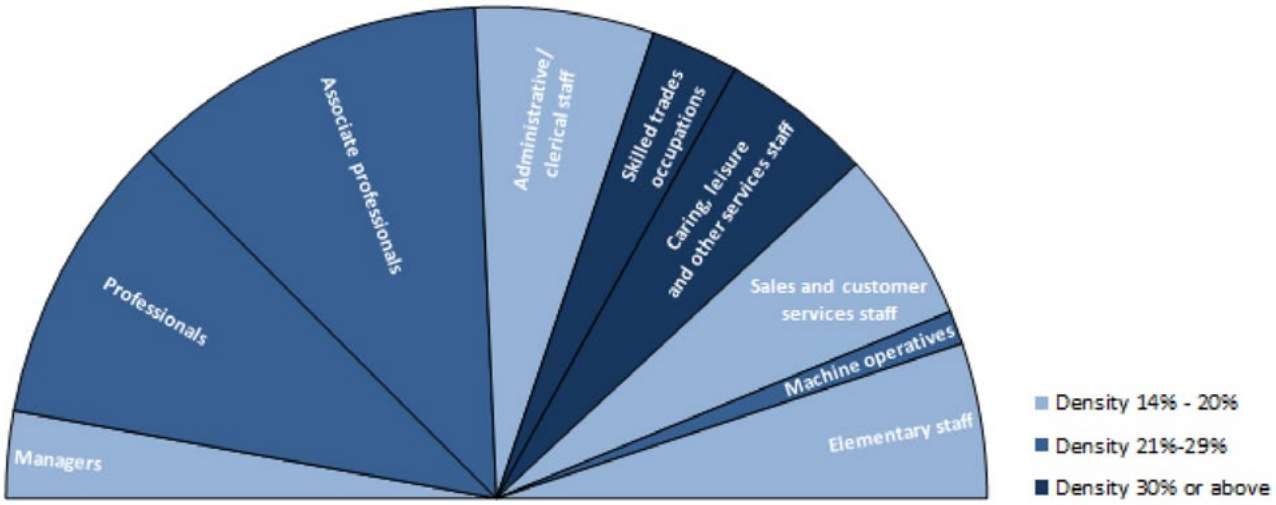
The following considers particular skills shortages and gaps identified by employers in London, and some of the risks to attracting skilled labour to London. A more detailed profile of London's labour market is provided in Chapter 6.

Skills shortages and gaps

According to the London Business Survey, 70 per cent of businesses in London rate the capital highly as a place to do business in terms of the availability of skilled staff, and only 5 per cent rate the capital poorly on this measure[49]. There is some variation in perceptions by size of company with larger firms more positive than small ones. 32 per cent of SMEs (0 to 249 employees) rate London as either adequate or poor in terms of the availability of skills compared to 11 per cent of large firms.

Despite these generally positive perceptions of London's labour market, there is evidence of skills shortages, particularly at middle and high skill level occupations. The 2013 UKCES Employer Skills Survey (the most recent survey) reported just over 135,000 vacancies in London in 2013. As shown in Figure 4.12, the highest proportion of job vacancies were in 'associate professional' (24 per cent) and 'professional' (19 per cent) occupations.

Figure 4.12: Vacancies by occupation and density of skills shortages



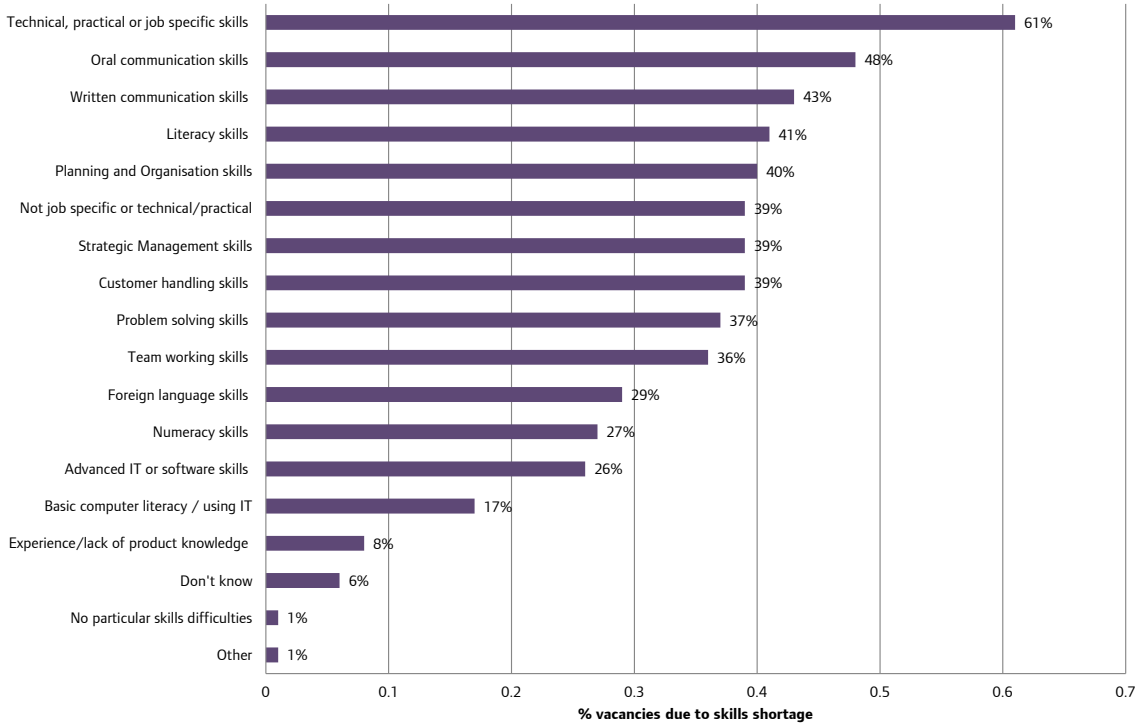
Source: UKCES Employer Skills Survey, 2013

According to the UKCES survey, 28 per cent of vacancies (36,000) were reported by employers as being "hard to fill". Of these vacancies over 82 per cent (around 30,000) were reported as 'skills shortage vacancies' caused by employers being unable to find people with the skills, qualifications or experience for the role. This compares to an estimated 77 per cent of hard to fill vacancies in the rest of the UK.

Figure 4.12 also shows the density of skills shortages defined as the proportion of all vacancies in that occupational category that are skills shortage vacancies. Occupations shaded in darker blue are those with higher densities of skills shortages. As can be seen, the highest densities of skills shortage vacancies are in skilled trades occupations and caring, leisure and other service staff.

The most common types of skills shortages reported by London-based employers relate to technical, practical or job-specific skills (61 per cent). More than 40 per cent of employers in London also cite communication and literacy skills as difficult to obtain from applicants.

Figure 4.13: Types of skills shortages



Source: UKCES Employer Skills Survey, 2013

As a result of skills shortage vacancies, around half of affected employers claim that this has resulted in lost business and delays in developing new products[50].

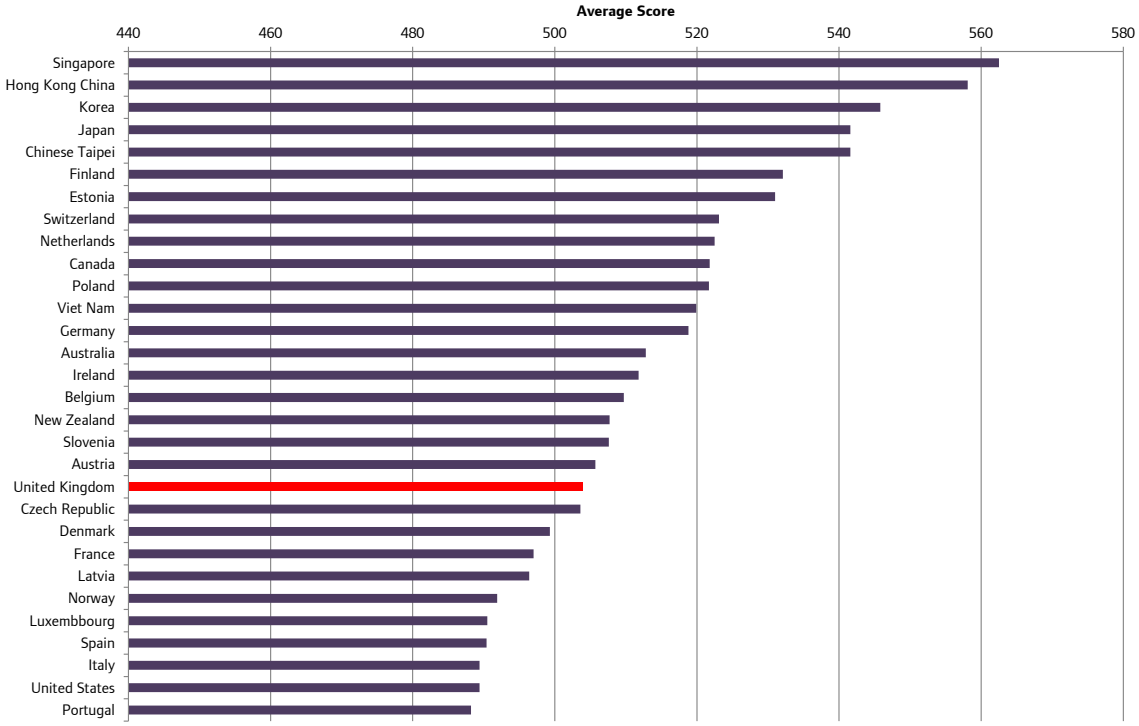
Some London employers also experience skills gaps within their existing workforce. While 5 per cent of establishments (13,600) in London reported having a skills shortage vacancy in 2013, 15 per cent (36,700) suffered from skills gaps within their existing workforce. This is in line with the rest of the UK as a whole where 4 per cent of establishments reported having a skill shortage vacancy and 15 per cent reported having staff who are not fully proficient ('skills gaps').

In total, there are almost 240,000 cases where London employers considered existing staff not to be fully proficient in their roles (equivalent to 5.7 per cent of all those employed). As a proportion of all employment, these skills gaps are most prevalent in elementary, sales and customer service occupations.

Education and training

London's ability to supply businesses with skilled labour depends on having a first class education system capable of nurturing talent for the future. By international standards, UK students (aged 15) underperform in terms of basic skills as Figure 4.14 below illustrates. Countries in the Far East such as Singapore, Korea, Japan, and parts of China, generally outperform UK students on international tests in mathematics and science[51] . However, performance at GCSE level in London has improved in recent years (see Chapter 6).

Figure 4.14: Average performance on international student achievement tests (top 30 ranked countries)



Source: OECD[52]

The cost of living

London is also a costly city to live in. This can be seen from Table 4.4, which shows the relative cost of living in various cities as determined by their price levels. London ranks at number 6 according to this survey by UBS. Examining the affordability of a number of global cities for graduates - an important demographic for future success of the city – Knight Frank ranked London 13th out of 20 cities, behind cities such as Frankfurt, Berlin, Paris and New York, but ahead of Tokyo, Singapore, Shanghai and Hong Kong[53]. While Mercer, ranked London as 12th most expensive out of 207 cities in their 2015 cost of living rankings, behind Luanda (Uganda), Hong Kong, Zurich, Singapore, Geneva, Shanghai, Beijing, Bern, N'Djamena (Chad) and Tokyo, but ahead of New York, Dubai and Paris among others[54].

Table 4.4: Price levels in selected world cities (Index New York = 100)[55]

Rank	City	Excl. rent	Incl. Rent	Rank	City	Excl. rent	Incl. Rent	Rank	City	Excl. rent	Incl. Rent
1	Zurich	108.7	92.6	25	Dublin	70.3	63.1	49	Tallinn	54.4	44
2	Geneva	106.1	91.8	26	Taipeh	67.3	62.7	50	Ljubljana	54	44
3	New York	100	100	27	Brussels	67.2	57.3	51	Bogotá	53.6	43.7
4	Oslo	92.9	79.9	28	Rome	67.1	57.1	52	Jakarta	53.3	41.6
5	Copenhagen	88	74.3	29	Manama (Bahrain)	66.6	55.4	53	Bratislava	53.3	42.6
6	London	84.7	79.5	30	Frankfurt	65.8	55.1	54	Santiago de Chile	52.8	44
7	Chicago	83.5	76.7	31	Munich	65.5	56.1	55	Lima	52.2	42.8
8	Tokyo	83.1	70.6	32	Vienna	65.4	53.4	56	Kuala Lumpur	52	41.2
9	Auckland	82.8	67.6	33	Amsterdam	65.3	55.5	57	Moscow	51.9	45.2
10	Sydney	80.5	72.5	34	Shanghai	64.9	54.3	58	Manila	51.3	41.1
11	Seoul	79.2	64.2	35	Istanbul	64.8	53	59	Vilnius	50.9	40.9
12	Toronto	78.1	63.7	36	Doha	64.8	61.4	60	Nairobi	50.3	40.5
13	Milan	77.9	64.5	37	Lyon	64.8	51.2	61	Warsaw	48.8	39.6
14	Stockholm	76.9	62.8	38	Berlin	63.3	51.3	62	Cairo	48.1	38.7
15	Montreal	76.2	58.9	39	Barcelona	63.2	50.5	63	Budapest	47.6	38.6
16	Miami	76.1	67.7	40	Beijing	61.4	53.2	64	Johannesburg	46.6	40.5
17	Los Angeles	76	67.4	41	Madrid	60.6	50.4	65	Riga	45.8	37.1
18	Helsinki	74.3	63.2	42	Nicosia	60.3	48.4	66	Prague	45.6	36.4
19	Hong Kong	72.9	76.8	43	São Paulo	59.4	49.5	67	New Delhi	45.5	36.9
20	Paris	72.6	63.8	44	Athens	58.9	47.5	68	Mumbai	44.9	37.2
21	Luxembourg	72.3	66.1	45	Rio de Janeiro	57.9	49.2	69	Bucharest	43.8	34.5
22	Tel Aviv	72	61.4	46	Bangkok	57.5	46.4	70	Sofia	39	30
23	Dubai	71.1	66.1	47	Lisbon	55.5	45.3	71	Kiev	38.1	30.3
24	Buenos Aires	70.4	56.1	48	Mexico City	54.7	46.2				

Source: UBS[56]

Housing

As set out in Chapter 2, housing costs have been rising in London at a faster rate than the rest of the UK. According to Demographia's annual survey of international housing affordability the ratio of median house prices to resident earnings in London is high by international standards[57]. Based on national data from Q3 2014, London is rated the seventh least affordable of 86 major metropolitan markets[58] with an estimated median multiple of 8.5. The data suggests that London is not alone in experiencing issues of affordability, with Hong Kong ranked as the least affordable for the fifth year in a row, with a median multiple of 17.0. These figures should however be treated with caution as they do not account for cross-country differences in the measurement of house prices and incomes, or for differences in the size and quality of housing, or for differences in the way the city region is defined[59].

Rents in London are also relatively high compared to other international cities. Data from a UBS 2015 survey of 71 world cities found that London rent levels were, on average, the third highest in the World behind New York and Hong Kong.

Table 4.5: Average monthly rents by selected major city, 2015

	New York	Hong Kong	London	Chicago	Doha	Sydney	Tokyo	Paris	Munich
Normal local rent (£)	£2,530	£1,680	£1,530	£1,440	£1,330	£1,160	£1,120	£1,050	£890
UBS rank	1	2	3	4	6	11	14	16	21

Source: UBS prices and earnings 2015.

Notes: The figures given are values for average rent prices (monthly gross rents) for local households. To capture local standards, the UBS survey asked for the price of a newly built apartment of typical size, location, and amenities for the respective city. US dollar values given in the report have been converted to pound sterling using the exchange rate 1 USD = 0.65 GBP.

The City of London Corporation has raised concerns about the impact of high house prices on labour supply, observing that "the City and London's ability to continue to expand is dependent on the availability of local labour, and ensuring London remains attractive to the best international talent. Property prices in London have increased at a rapid rate in recent years, reducing affordability for workers on lower or average incomes… London's inflated housing market could be damaging to business in the City if skilled workers are discouraged from living within a reasonable commuting distance from the City through unaffordable rents or house prices"[60].

The relatively high transaction costs in the housing market may also be a deterrent to people moving and therefore be a constraint on labour market flexibility. Stamp Duty Land Tax (SDLT) is levied relative to the sale price as are some other transaction costs such as agency fees. Higher transaction costs in London may therefore limit the willingness, or ability to pay, of workers looking to change jobs[61]. Hilber & Lyytikäinen found that the 2 per cent increase in SDLT at the £250,000 threshold can reduce household mobility by 2-3 per cent[62].

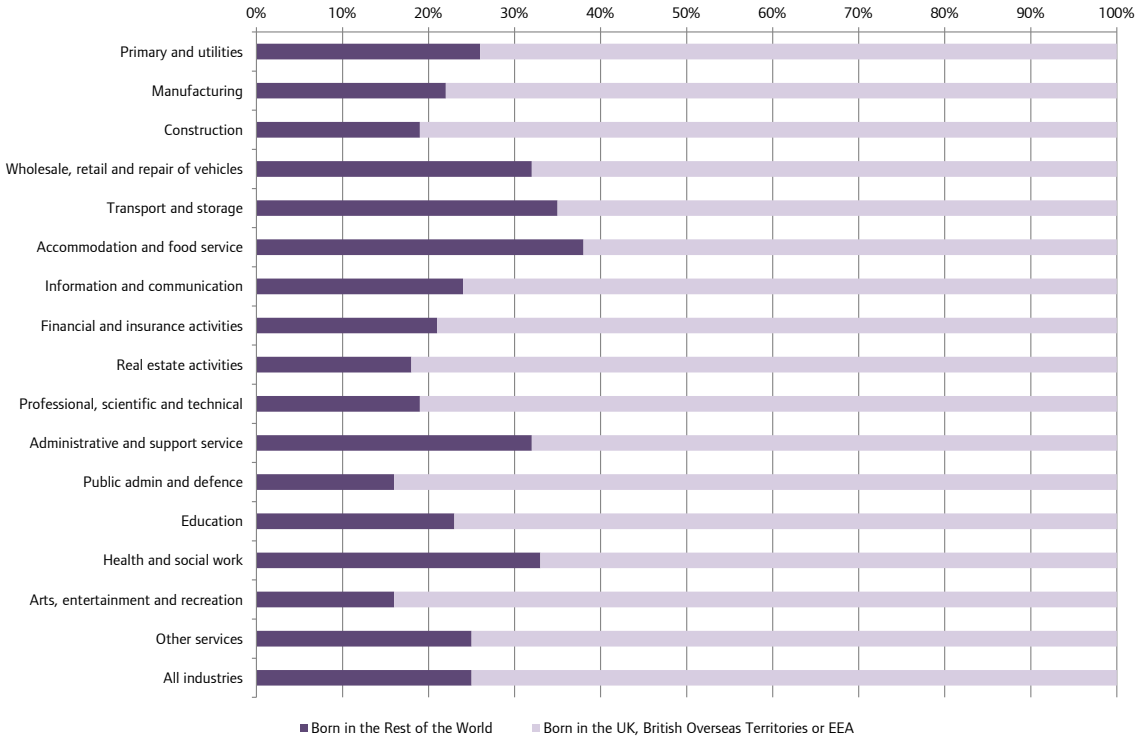
High housing costs can also create inflationary pressures in the economy as workers demand higher wages as compensation for higher rents and house prices. This in turn adds to the cost of doing business in London. Finally, people may be required to take out larger mortgages or other forms of personal debt to pay for housing costs; as discussed earlier in this chapter, Londoners have relatively high average mortgage debt relative to their income. Higher levels of debt mean Londoners are potentially more exposed to increases in interest rates, a property market crash, or changes in personal circumstances such as a loss of employment. Overall it can therefore be seen that issues in the housing market can feed through to the macroeconomy. Indeed, unsustainable house price rises in the USA played a large part in triggering the global financial crisis in 2008. See Chapters 2 and 7 for more on the housing challenges in London.

The supply of international migrant labour

London, and the UK, has benefitted significantly from a flexible approach to recruitment of non-EEA nationals, both in the skills and experience of individuals and as a place for foreign investment. However, a risk identified by some businesses is that stricter immigration controls including the recently introduced annual cap on non-European Economic Area (EEA) migrants could lead to skills shortages.

One in four jobs in London in 2014 were filled by people born outside the UK/EEA[63]. While place of birth is an imperfect indicator of whether someone requires a visa to work in the UK, it gives an indication of the importance of non-EEA workers to London's economy. Figure 4.15 shows the proportion of jobs by sector filled by people born outside the UK/EEA. Accommodation and food (38 per cent), Transport and storage (35 per cent) and Health and social work (33 per cent) have the highest proportions of jobs filled by people born outside the UK/EEA compared to the average for all sectors (25 per cent).

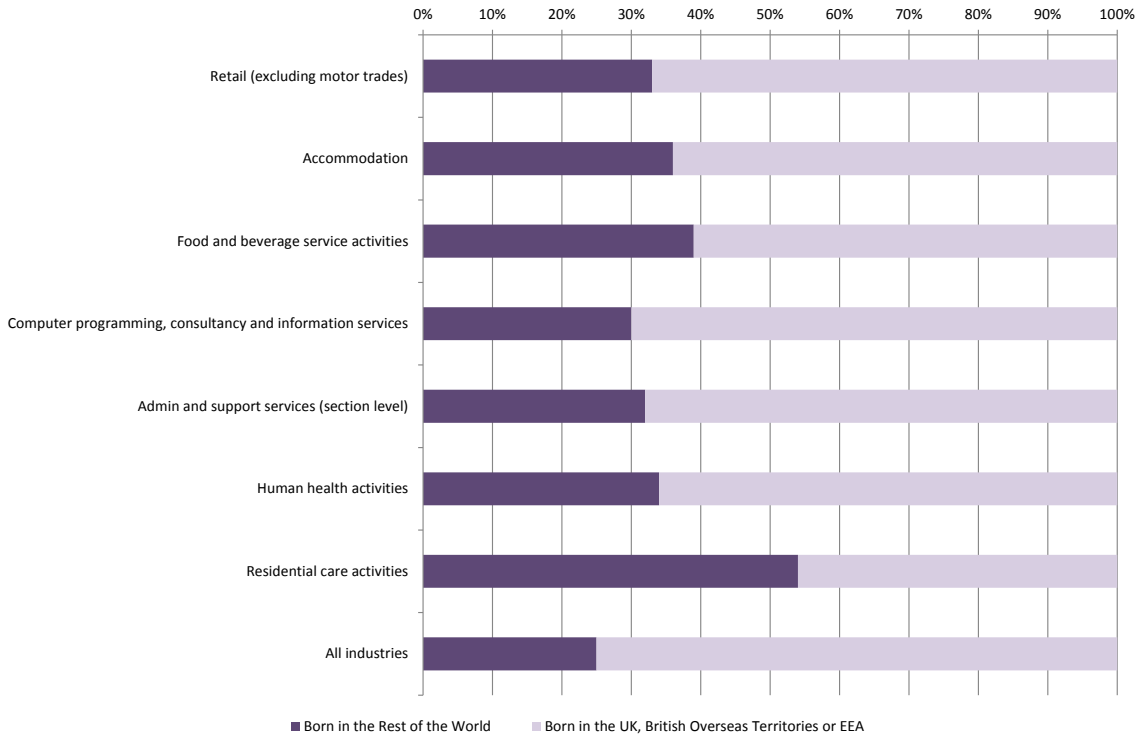
Figure 4.15: Jobs in London by place of birth of job holder by sector (section level[64]), 2014



Source: ONS Annual Population Survey, 2014

Digging deeper into sub-sectors (see Figure 4.16), some 'high value' activities such as Computer programming, consultancy and information services (30 per cent) have above average proportions of jobs filled by non-EEA residents. These are areas where London has a particular specialism and which have seen significant growth.

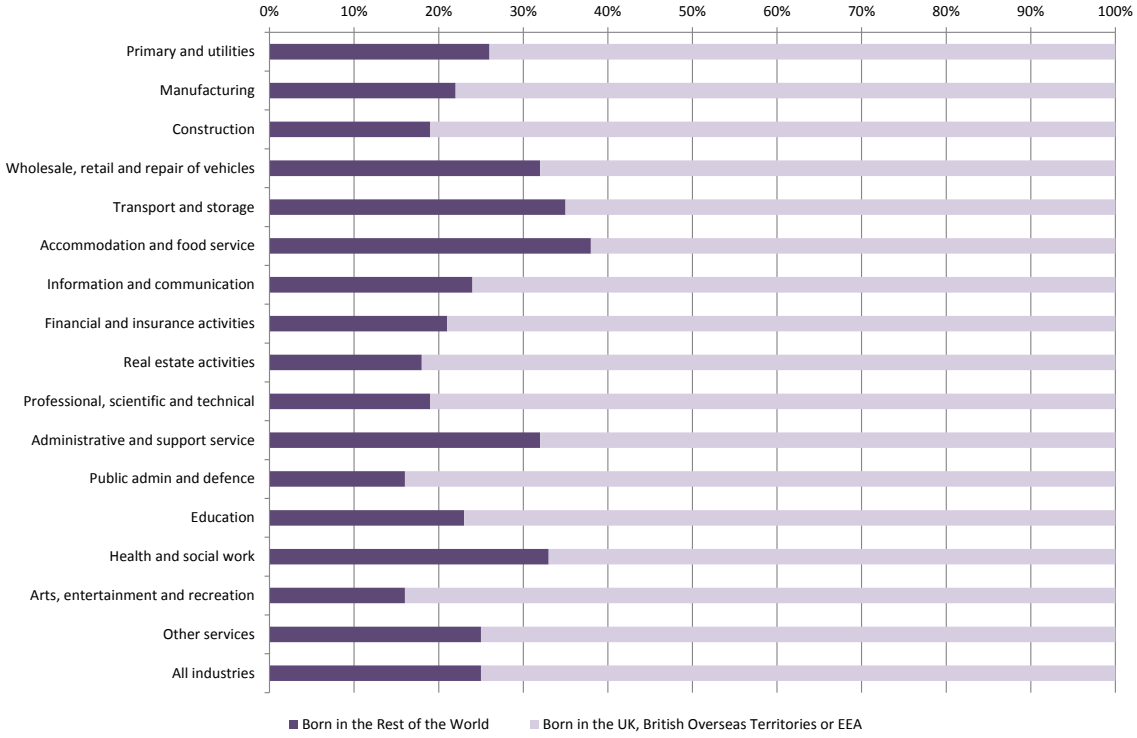
Figure 4.16: Selected sectors (division-level) with high proportions of jobs filled by people born outside the European Economic Area (% of jobs), 2014



Source: ONS Annual Population Survey, 2014[65]

Figure 4.17 shows selected occupations with particularly high proportions of jobs filled by people born outside the EEA. Service professions are especially reliant on people born outside the EEA, notably nursing and midwifery (49 per cent of jobs) and carers (50 per cent).

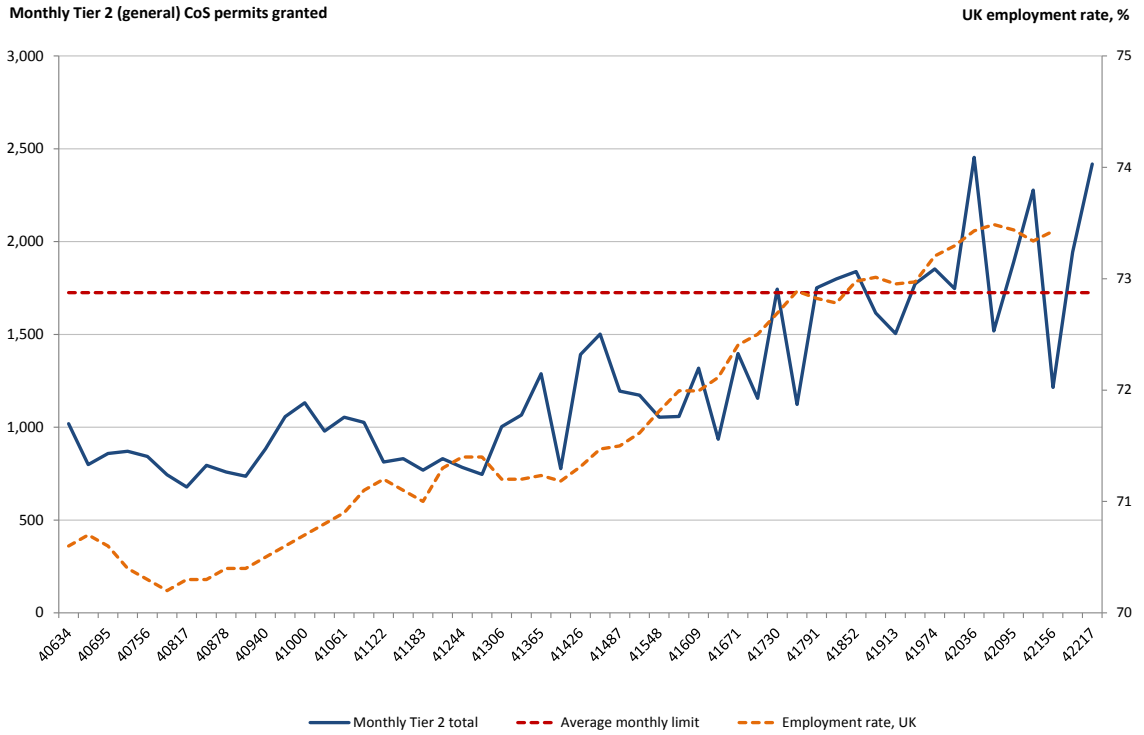
Figure 4.17: Occupations in London with high proportions of jobs filled by people born outside the European Economic Area (% of jobs), 2014



Source: ONS Annual Population Survey, 2014

The main route through which non-EEA workers are permitted to work in the UK is the Tier 2 visa system. Under the Tier 2 scheme there are 20,700 posts available a year (an average of 1,725 per month) – a limit which was set to encourage employers to hire from within the UK. Figure 4.18 shows that as London and the UK's economies have strengthened, there has been a corresponding increase in demand for labour, both from within the UK and from overseas. Tier 2 Certificates of Sponsorship (CoS) allocations have risen and exceeded the average monthly limit on several occasions.

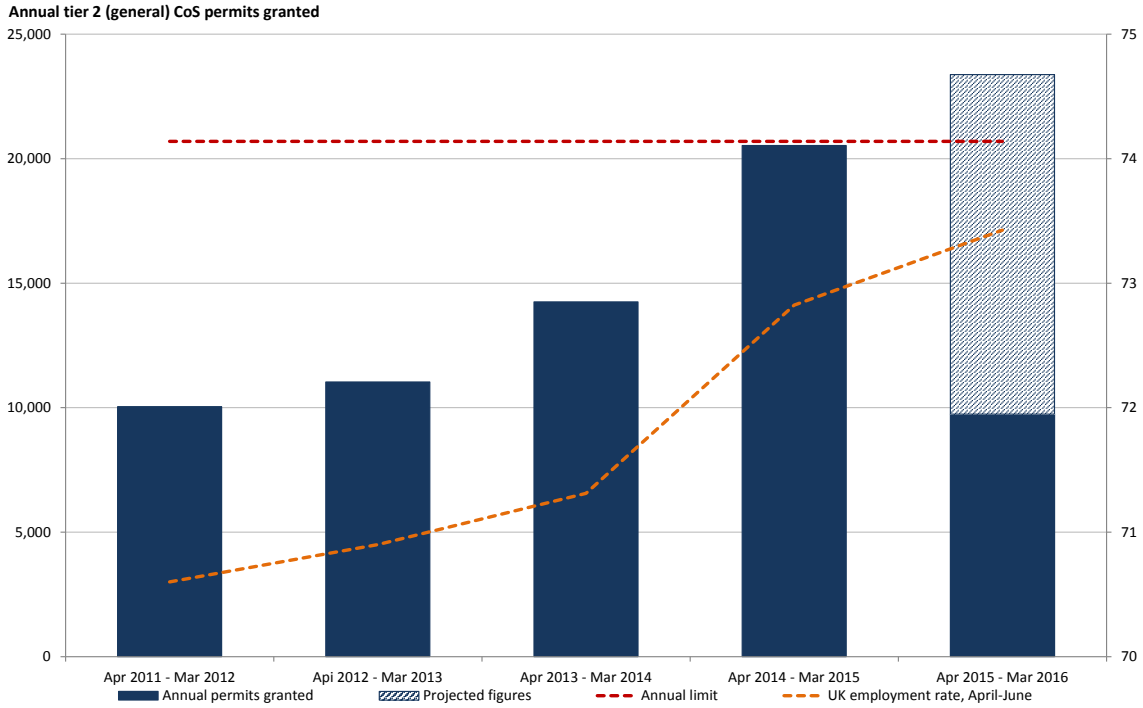
Figure 4.18: The number of restricted certificates allocated to employer sponsors by month, for foreign workers in Tier 2 (General)



Sources and notes: Tier 2 allocations Home Office, allocations of restricted certificates of sponsorship from March 2015. Data prior to March 2015 is taken from a Home Office FOI response on 29 April 2015. There is a small discrepancy between Home Office statistics and the FOI response as the former takes account of unused allocations. ONS data on UK employment rates are taken as the 3-month seasonally-adjusted averages from the start of the corresponding period.

If recent trends continue, in 2015/16, the number of applications from skilled migrants will exceed the 20,700 limit. Assuming that current rules remain in place, the Home Office will select those who can receive a restricted Certificate of Sponsorship based on the current points system, meaning that a higher salary will increasingly be required for skilled migrants to enter the UK. This may make recruitment more difficult for some employers, such as graduate level or public service positions.

Figure 4.19: The number of restricted certificates allocated to employer sponsors for foreign workers in Tier 2 (General), 2011/12 – 2015/16



Source: Home Office[66]

Demand for public services

As population grows there will be increasing demand for education, healthcare and a range of other public services in London. This will mean providing additional social infrastructure such as schools, hospitals and other facilities. It will also mean ensuring there is the necessary supply of skilled labour to provide public services. In the private sector, price signals help to achieve equilibrium in the labour market - rising demand for labour leads to an increase in wages which in turn increases supply, other things being equal. However, in the public sector, wages are not set by the market and so price signals cannot be relied upon to ensure labour demand is matched by supply.

Education

A combination of rising pupil populations, spiralling building costs and lack of available land is putting increasing pressure on central and local government to provide sufficient school places[67]. Table 4.6 shows the net number of additional school-aged children expected over the period to 2050[68].

Table 4.6: Projected additional number of children by age group

	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050
Age 4-10	49,780	54,121	1,500	(14,621)	(10,778)	3,973	39,404	39,483
Age 11-16	34,907	60,489	55,208	11,786	(11,100)	(10,784)	21,684	21,119
Age 17-18	12,294	(7,479)	28,155	12,730	974	(3,567)	3,769	3,422
Total additional population, ages 4-18	96,980	107,131	84,863	9,894	(20,904)	(10,378)	64,857	64,024

Source: Arup/GLA Intelligence Unit[69]

Demand for both primary and secondary school places is particularly acute at the moment and the demographic projections suggest this will continue to be the case through to the early 2020s before tapering off and then increasing again in the 2040s. According to estimates by Arup for the London Infrastructure Plan 2050, this could mean an additional 330 primary schools, 170 secondary schools and 196 sixth form colleges by 2050[70]. Failure to build sufficient new facilities or expand existing ones could mean larger class sizes and potentially poorer performance. In addition to new facilities, there will be a need to recruit

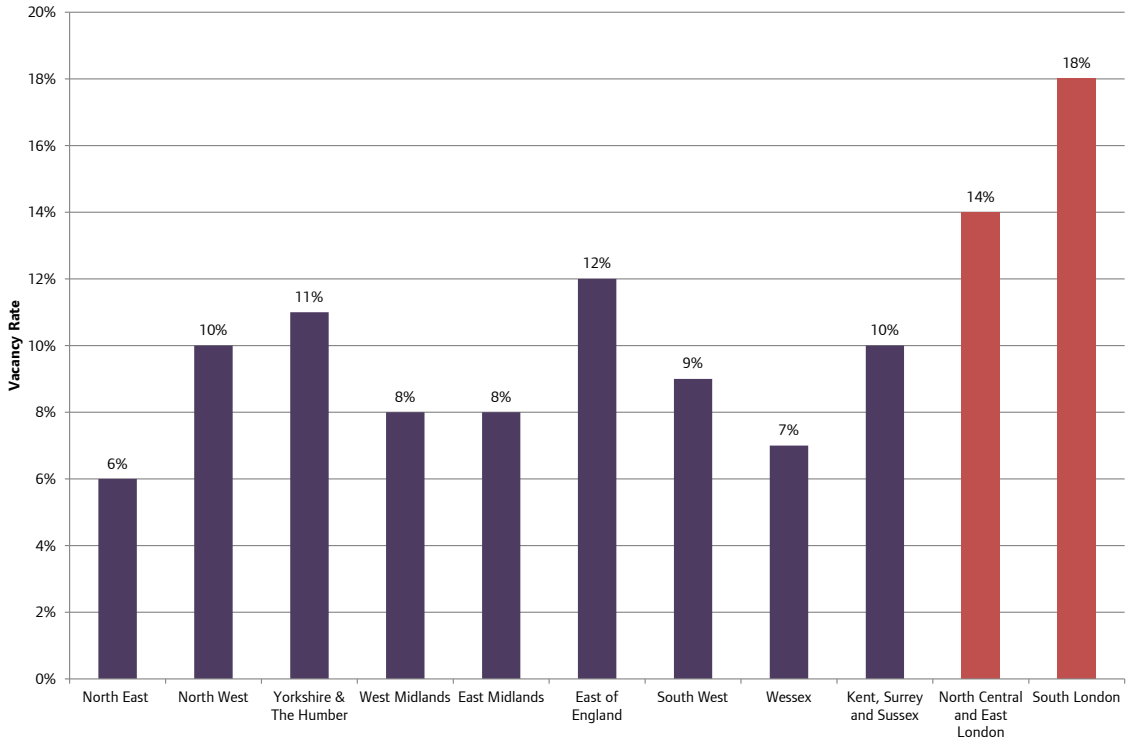
additional teachers, which could be challenging if the cost of living in London were to rise at a faster rate than teacher pay.

Health and social care

Demands on the health and care sectors in London will increase as a result of a growing population that will live longer with more complex health needs than previous generations. Many NHS Trusts are currently running significant budget deficits as they grapple with growing demand for services and a tight budget settlement[71]. Similarly, an aging population will increase demand for adult social care services at a time when local councils face significant budgetary pressures[72]. If further efficiency savings cannot be made, or alternative sources of funding found, there is a risk that the quantity and/or quality of services could suffer.

Research by the London Health Commission suggests that recruitment may also be an issue in the health and care sector in London. Figure 4.20 shows that London has high vacancy rates in the nursing profession relative to other regions in the UK[73].

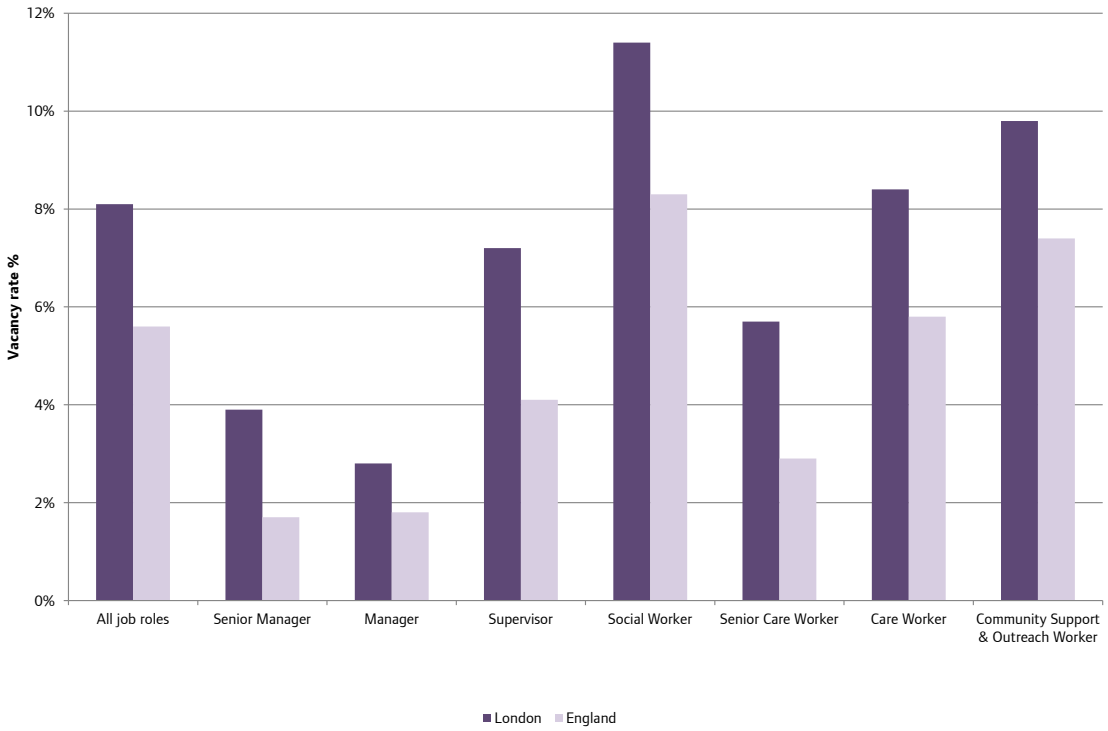
Figure 4.20: Nursing vacancy rates, 2014



Source: London Health Commission[74]

Similarly in the social care sector, vacancy rates in most occupations are above the national average as shown in Figure 4.21.

Figure 4.21: Vacancy rates (%) in the social care sector, London and England



Source: London Health Commission[75]

As well as high vacancy rates, the London Health Commission found that the NHS in London has a relatively high turnover of staff which means NHS Trusts in London incur higher recruitment costs. High vacancy rates and low levels of retention are attributed to the high cost of living, in particular the availability of affordable housing, transport costs and the cost of living[76].

Infrastructure

With London's population and workforce projected to grow over the next 20 years, infrastructure will come under increasing pressure. Whilst transport infrastructure is perhaps the most commonly cited area of concern, increases in energy, waste, and water capacity will also be needed to ensure growth is sustainable. Broadband is also increasingly viewed by businesses and residents as an essential utility.

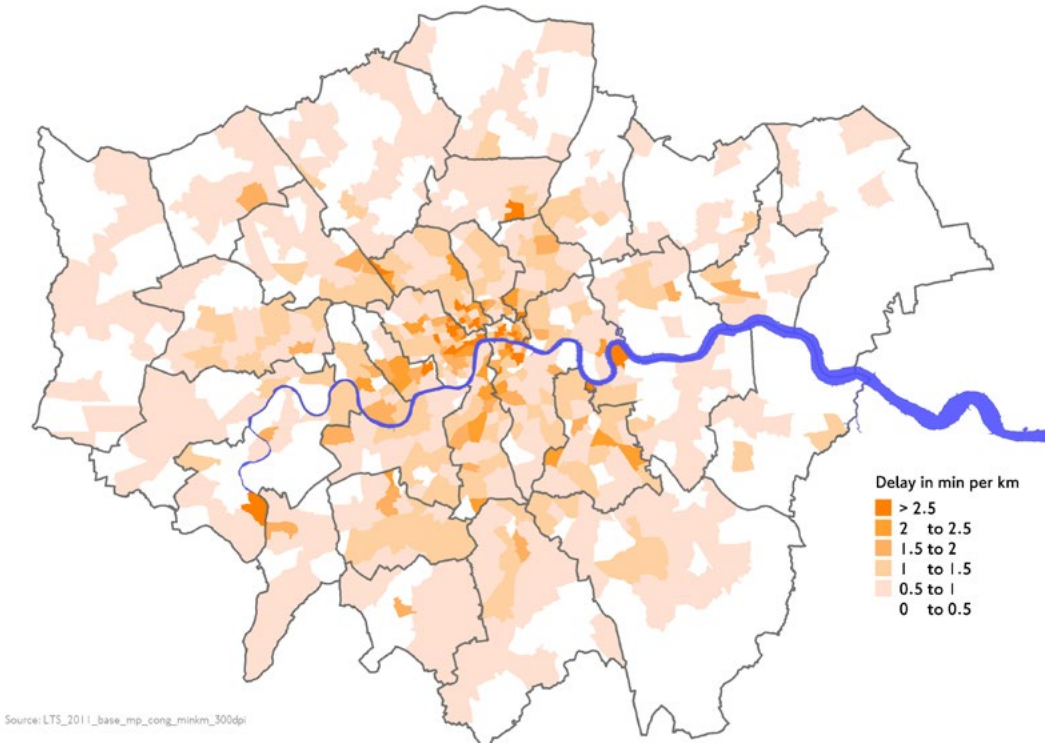
Transport

An efficient and reliable transport network is important for the local economy in a number of ways. First, there are time savings benefits as workers shift from unproductive time spent travelling to more productive or valuable business and leisure activities. Second, there are agglomeration benefits as businesses and people are brought closer together. Third, an efficient transport system can help to provide firms with access to wider markets by lowering transaction costs.

Some level of congestion on London's transport network is arguably the inevitable consequence of having to transport a mass of people to and from Central London. Dispersing economic activity to avoid these congestion costs, while a potentially desirable objective, could mean fewer agglomeration benefits. The question is therefore whether current levels of congestion in London are sub-optimal and whether future investment in transport infrastructure can keep pace with rising demand such that London can continue to grow.

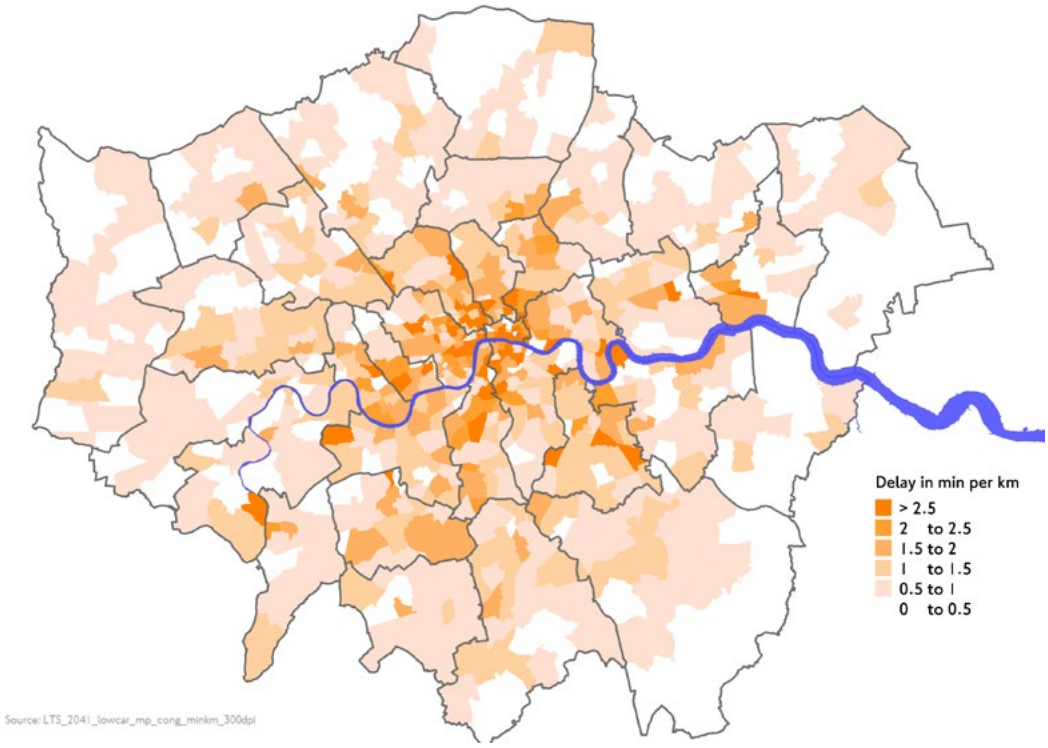
London suffers from congestion on its roads and on public transport at peak periods. Map 4.2 shows highway congestion at morning peak periods in 2011. According to modelling by TfL, congestion is likely to get worse in many parts of London in the coming years, as shown in Map 4.3.

Map 4.2: Highway congestion, morning peak 2011



Source: TfL

Map 4.3: Highway congestion, morning peak 2041



Source: TfL

Highways in London are among the most congested in Europe according to INRIX, a provider of real-time traffic information[77]. London commuter zone drivers wasted an average of 96 hours idling in traffic in 2014 – the highest in Europe (See Table 4.7). Of the 94 European cities analysed in the report, nearly half (48 per cent) experienced an increase in traffic compared to 2013.

Table 4.7: Europe's most congested cities in 2014 (ranked by annual hours wasted)

2014 Rank	2013 Rank	Metropolitan area	Hours wasted in traffic 2014	Difference in comparison to hours wasted in 2013
1	2	London commute zone	96	14
2	1	Brussels	74	-9
3	6	Cologne	65	9
4	3	Antwerp	64	-14
5	5	Stuttgart	64	4
6	10	Karlsruhe	63	10
7	7	Milan	57	1
8	13	Düsseldorf	53	4
9	15	Utrecht	53	5
10	9	Ghent	52	-2
11	16	Gr. Manchester	52	6
12	12	S Gravenhage	51	2
13	14	Hamburg	48	0
14	17	Munich	48	4
15	4	Rotterdam	48	-15

Source: INRIX

Time wasted in traffic in London is significantly higher than the UK average, which was 30 hours in 2014. Indeed, all of the UK's most congested roads, as measure by annual hours wasted, are within London according to INRIX.

Table 4.8: The UK's most congested roads in 2014 (ranked by annual hours wasted)

Rank	Area	Road(s)	From	To	Distance (miles)	Worst peak period	Worst Day/ Hour	Total Delay per Year (hours)
1	London	A217	Rosehill Roundabout	New Kings Road	10.4	AM	Weds 08:00	138.6
2	London	A215	Albany Road: Camberwell	Shirley Road: Croydon	9.6	PM	Fri 18:00	119.7
3	London	A4	Henlys Roundabout: Hounslow	Holborn Circus	14.7	AM	Weds 08:00	113.4
4	London	A4	Aldwych	Henlys Roundabout: Hounslow	14.2	PM	Weds 18:00	108
5	London	A23	Thornton Heath	Westminster Bridge	8.6	AM	Tues 08:00	96.0

Source: INRIX

While parts of London's highway network suffer from congestion, there has been progressive modal shift from private forms of transport to public transport (see Chapter 2). This has meant increased pressure on the public transport network. Map 4.4 below shows crowding on the London Underground and DLR network at morning peak periods in 2011. 'Crowded' parts of the line (marked in orange) are defined by TfL as those with approximately 2-3 passengers per square metre and 'very crowded' lines (marked in red) are those with 3-4 passengers per square metre. Lines in black are where there are more than four people per square metre, considered to be the maximum levels of crowding. Map 4.5 shows the same map but modelled for 2041 factoring in expected demographic and behavioural changes and committed TfL investment, including Crossrail). As can be seen, while Crossrail will provide some relief in Zone 1, many parts of the Underground and DLR network will continue to suffer from significant crowding at morning peak.

Map 4.4: London Underground and DLR crowding, morning peak 2011

Source: TfL

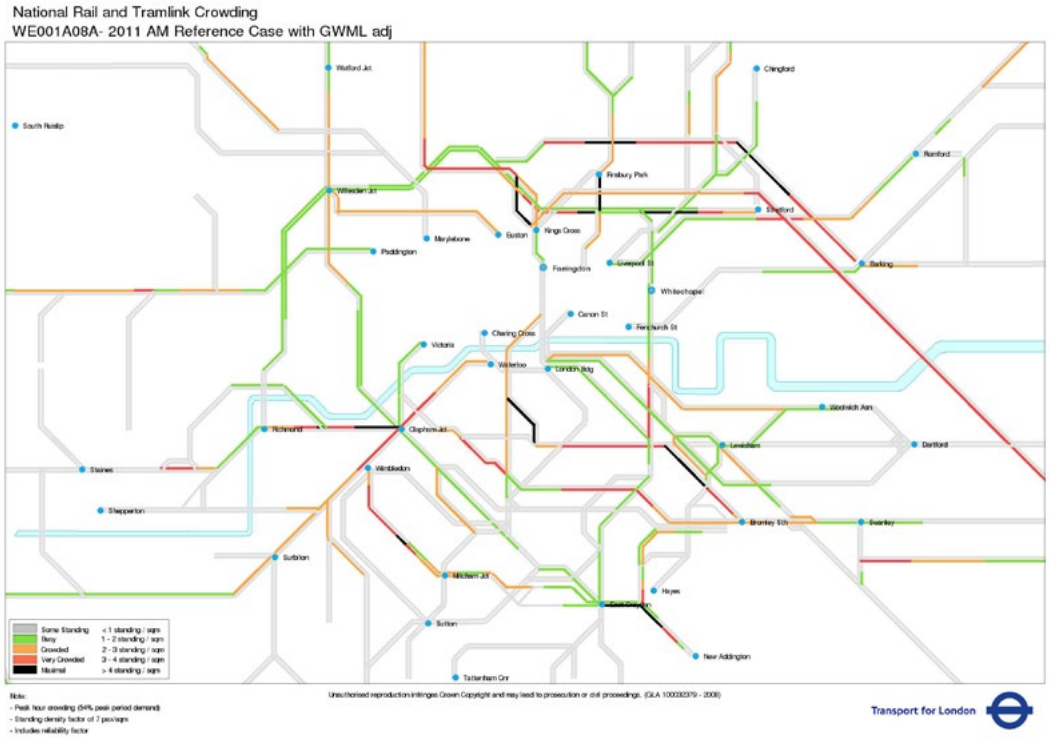
Map 4.5: London Underground and DLR crowding, modelled morning peak 2041

Source: TfL

Similarly, Map 4.6 below shows crowding on national rail routes into London at morning peak. Parts of the network coloured black and red are where four or more passengers have to stand per square metre.

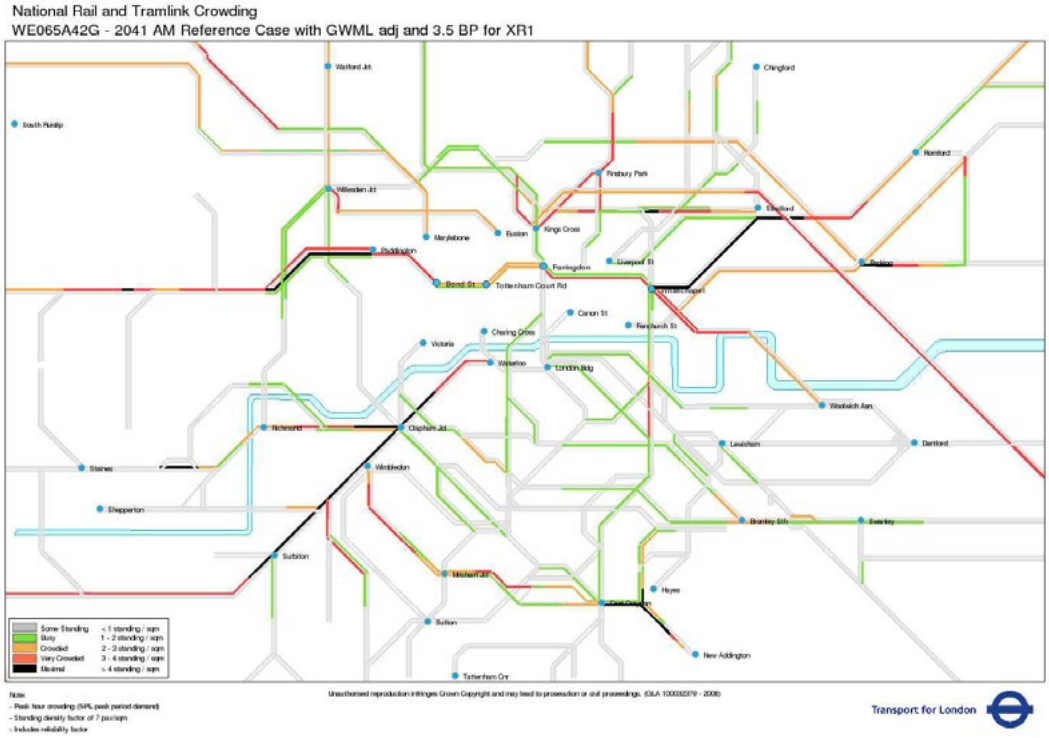
Map 4.7 beneath models the network in 2041 accounting for planned TfL investments including Crossrail. On this basis, crowding is expected to be alleviated on some parts of the network where new investment is planned but wills still worsen on others, for example on trains into Waterloo and Paddington.

Map 4.6: Rail crowding, morning peak 2011



Source: TfL

Map 4.7: Rail crowding, modelled morning peak 2041



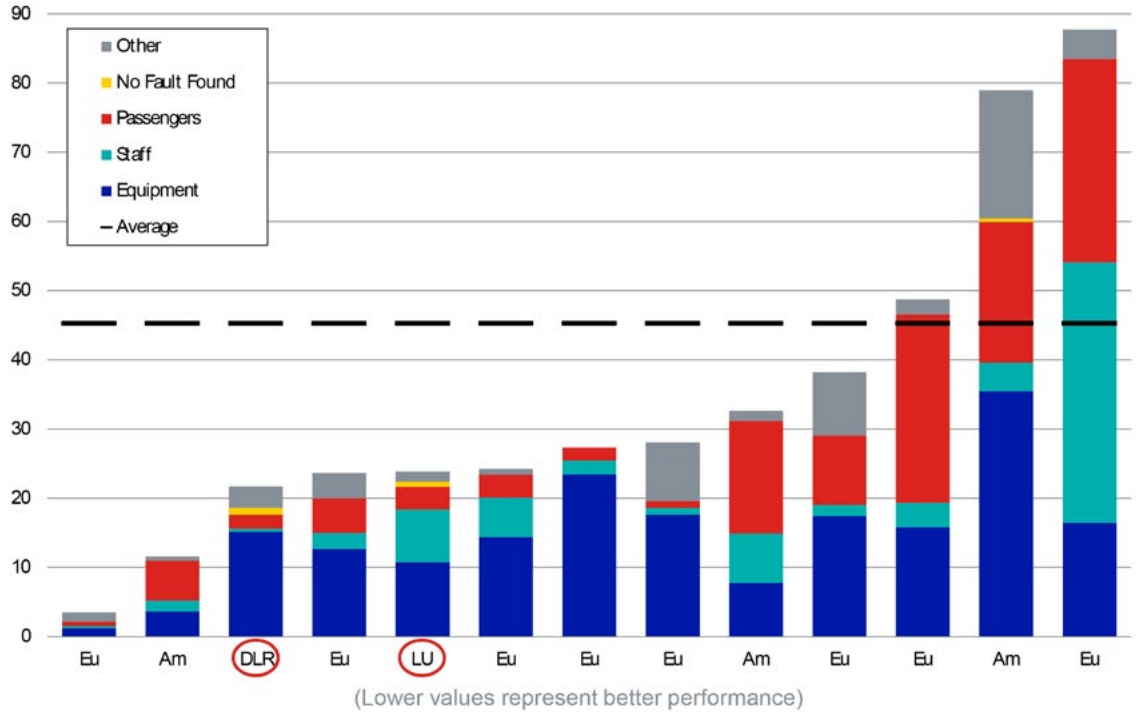
Source: TfL

Overcrowding is first and foremost a safety concern. Research by the University of Greenwich into crowd behaviour in public spaces more generally suggest that crowds of four people per square metre are relatively low risk but if this climbs to six to ten people per square metre it becomes high risk as people become packed so tightly together they are unable to choose how they move.[78] Second, there are economic implications of excessive overcrowding if people are unable to board trains and their journeys are delayed. Third, there may be wellbeing implications from overcrowding; research by ONS suggests that other things being equal, commuters have lower life satisfaction, less of a sense that their daily activities are worthwhile, lower levels of happiness and higher anxiety on average than non-commuters.[79]

Despite the level of congestion and crowding on London's transport network, businesses expressed their overall satisfaction with London's transport network in the London Business Survey. 70 per cent of business units said transport infrastructure within London was good or excellent, 24 per cent said it was adequate and 4 per cent said it was poor[80].

When compared to similar metro systems in Europe and North America, the London Underground and DLR are relatively reliable networks. Figure 4.22 shows incidents causing a five minute delay across Western Europe and North America metro networks[81]. The DLR ranks as the third most reliable and London Underground as the fifth most reliable of the major metro networks in Western Europe and America[82].

Figure 4.22: Incidents causing a five minute delay per million car kilometre (Western Europe and North America, 2013/14)



Source: TfL

Airport Capacity

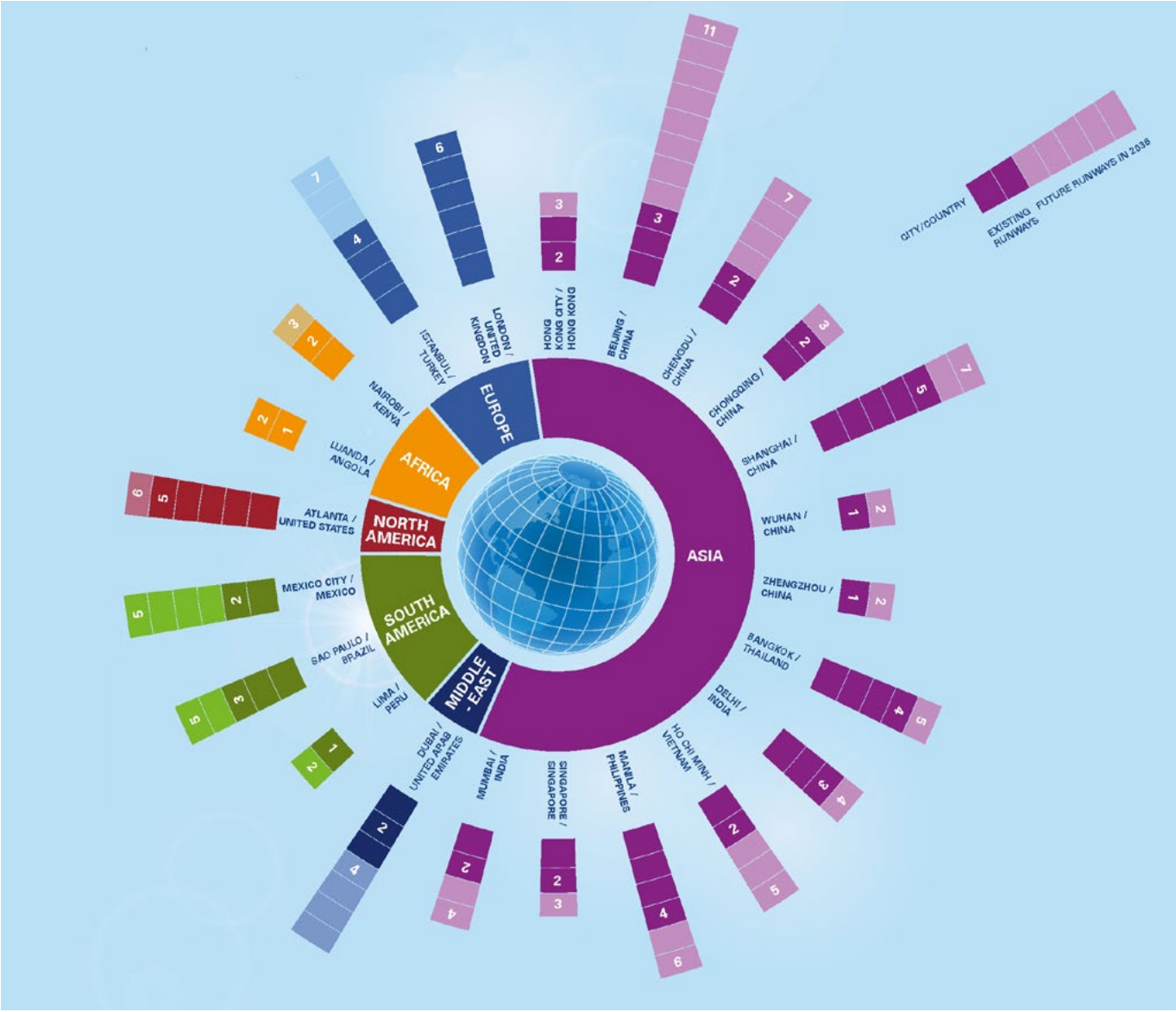
Good aviation connectivity is vital for a global city like London. It promotes trade and investment and in doing so generates employment and helps to improve productivity. London's strong services sector, which generates significant export earnings for the UK, is particularly reliant on aviation. Air transport links are also important for attracting tourists to London and for Londoners to be able to travel abroad for leisure which is good for health and wellbeing[83].

London's airports are amongst the busiest in the world – Heathrow has been at full capacity for many years while Gatwick is operating at 85 per cent capacity and full capacity during peak periods[84]. Capacity constraints have knock-on impacts in terms of delays and unreliability, making London's airports less resilient to disruptions such as adverse weather. They also mean higher fares, less frequent flights and fewer destinations versus competitor cities[85]. Providing more direct routes, higher frequencies of service and lower fares would have beneficial impacts on businesses by providing time savings and facilitating important connections to export markets.

For its Interim Report, the Airports Commission carried out a detailed review of the strength of the links to emerging markets from Heathrow compared to from other European hubs and from Dubai. This showed that Heathrow has comparatively strong links to India (reflecting the UK's historic ties), but poorer links to other emerging economies[86]. By 2040, according to forecasts by the Airports Commission, without expansion London could lose daily connections with up to twenty international cities that it would otherwise have had.

While no new full length runways have been constructed in the South East of England since the 1940s, other international cities are investing heavily in their infrastructure and boosting capacity. Paris has 50 per cent more flights to China with four runways at Charles De Gaulle airport compared to Heathrow's two and Gatwick's one.

Figure 4.23: Runways across world's major cities, now and in 2036.



Source: KPMG (2015)

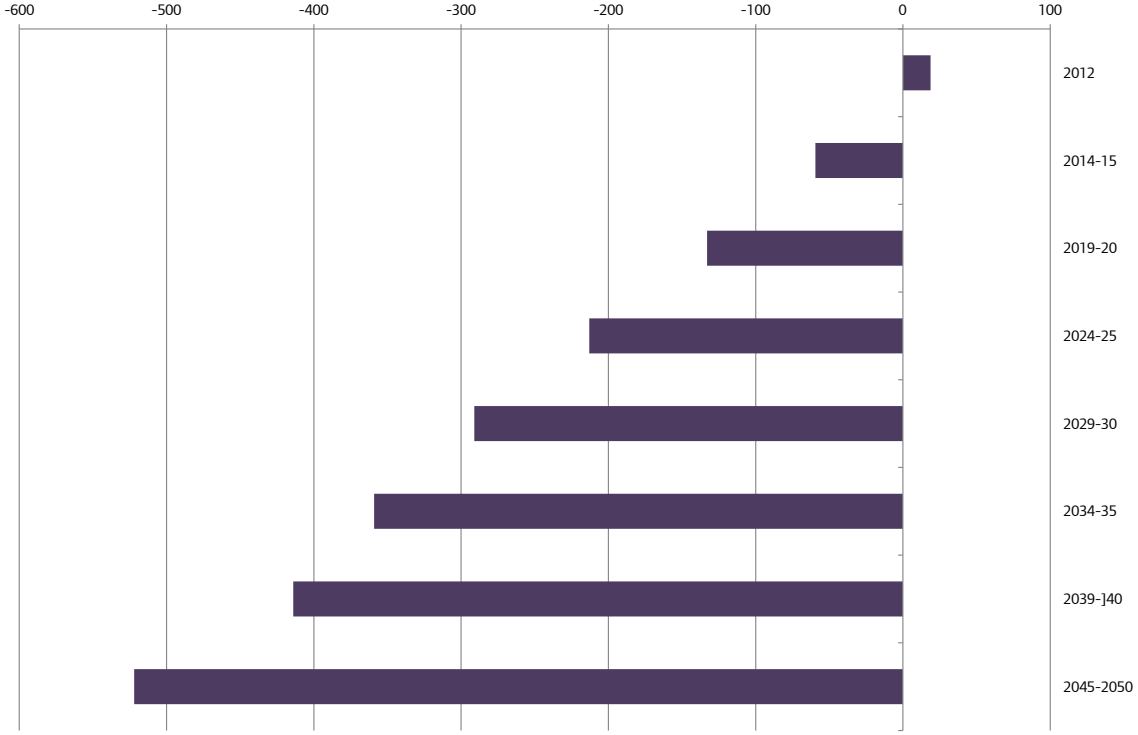
Figure 4.23 above shows airport expansion plans across the world – darker colours show the current number of runways and light colours show those that are planned[87]. By 2036, China will have built 17 new runways to serve its major cities, providing capacity for around 400 million extra passenger journeys per year. Once complete, the Dubai World Central airport project will provide more passenger capacity than all of London's airports combined. Hong Kong, Singapore, Delhi and Mumbai are also all planning to build new runways to serve growing demand and Istanbul is planning a new six runway airport with almost twice the passenger capacity of London Heathrow.

Water supply and drainage

London's Victorian sewerage and water supply network is struggling to cope with the demands being placed on it. Thames Water forecasts that, without significant new investment, demand for water will exceed supply by 10 per cent in London by 2025, rising to 21 per cent by 2040. This will mean a potential deficit of over half a billion litres of water a day by 2050[88]. To address the gap, various supply and demand-side measures will be needed such as improving the water efficiency of existing and new development, better

leakage detection and by encouraging people to become more water efficient through public information[89]. The Environment Agency and the water companies are considering options to boost supply including: new reservoirs, using canals to bring water to the South East from other parts of the UK, purifying effluent from sewage treatments works and potentially more desalination[90].

Figure 4.24: Expected deficit in water supply in London (million litres per day)

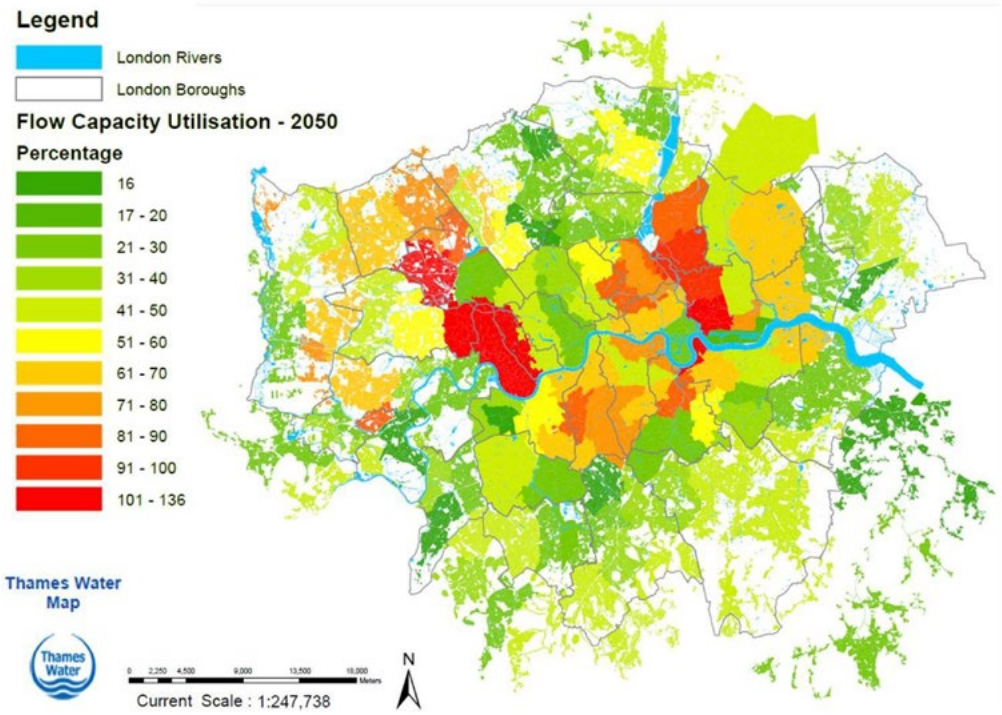


Source: Thames Water

London's combined sewer system, built over 150 years ago, was designed for a smaller, more permeable city. The challenges of London's growing population, changing land uses and changing climate mean that London is outgrowing its drains and sewers. This in turn is a contributing factor towards the increasing and potentially unacceptable risk of flooding (see Chapter 5 for more on flooding).

Thames Water has modelled the impact of London's projected population growth and climate change on its drains and sewers to assess capacity to cope with future drainage challenges[91]. The modelling shows that for a relatively common rainfall event (one that would be expected on average once every other year) some parts of London would not have sufficient drainage or sewerage capacity to manage the expected flows, leading to a risk of surface water and sewer flooding. Areas highlighted in red on Map 4.8 are where the projected flows in the system exceed its capacity and therefore where some flooding is to be expected. The London Sustainable Drainage Action Plan proposes ways to address the drainage issues in London.

Map 4.8: Modelled drainage and sewerage capacity to manage future population growth and climate change in 2050



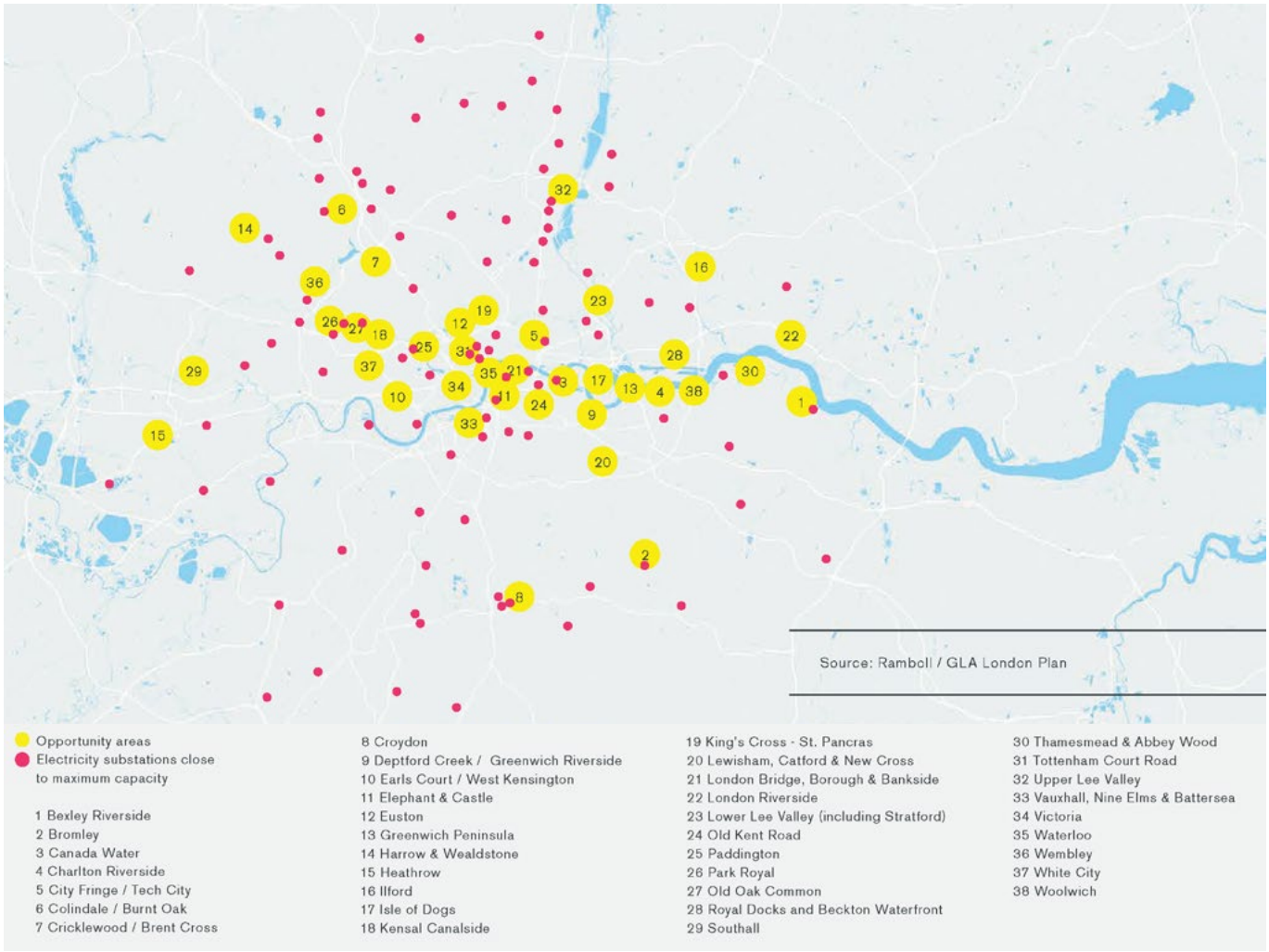
Source: Thames Water

Energy

As London grows, there will be increasing demand for energy to supply the many new homes, offices and other buildings. By 2050, the scale of population and economic growth expected in London will mean an estimated 20 per cent increase in overall energy demand; and with the expected shift away from gas towards electricity, this is likely to mean a doubling of demand for electricity by 2050[92].

As shown in Figure 4.25, many of London's electricity substations are already close to capacity. This can lead to delays and substantial additional costs for developers[93]. Extra capacity will particularly be required around the Opportunity Areas identified in the London Plan (also mapped on Figure 4.25) where significant numbers of new homes and jobs are planned.

Figure 4.25: Electricity substations currently close to capacity



Source: Ramboll / The London Plan

As well as a need to increase supply through new forms of energy generation, there is a need to reduce demand through measures such as retrofitting London's ageing building stock, smart metering and controls, and changing behaviour through public information to reduce peak demand.

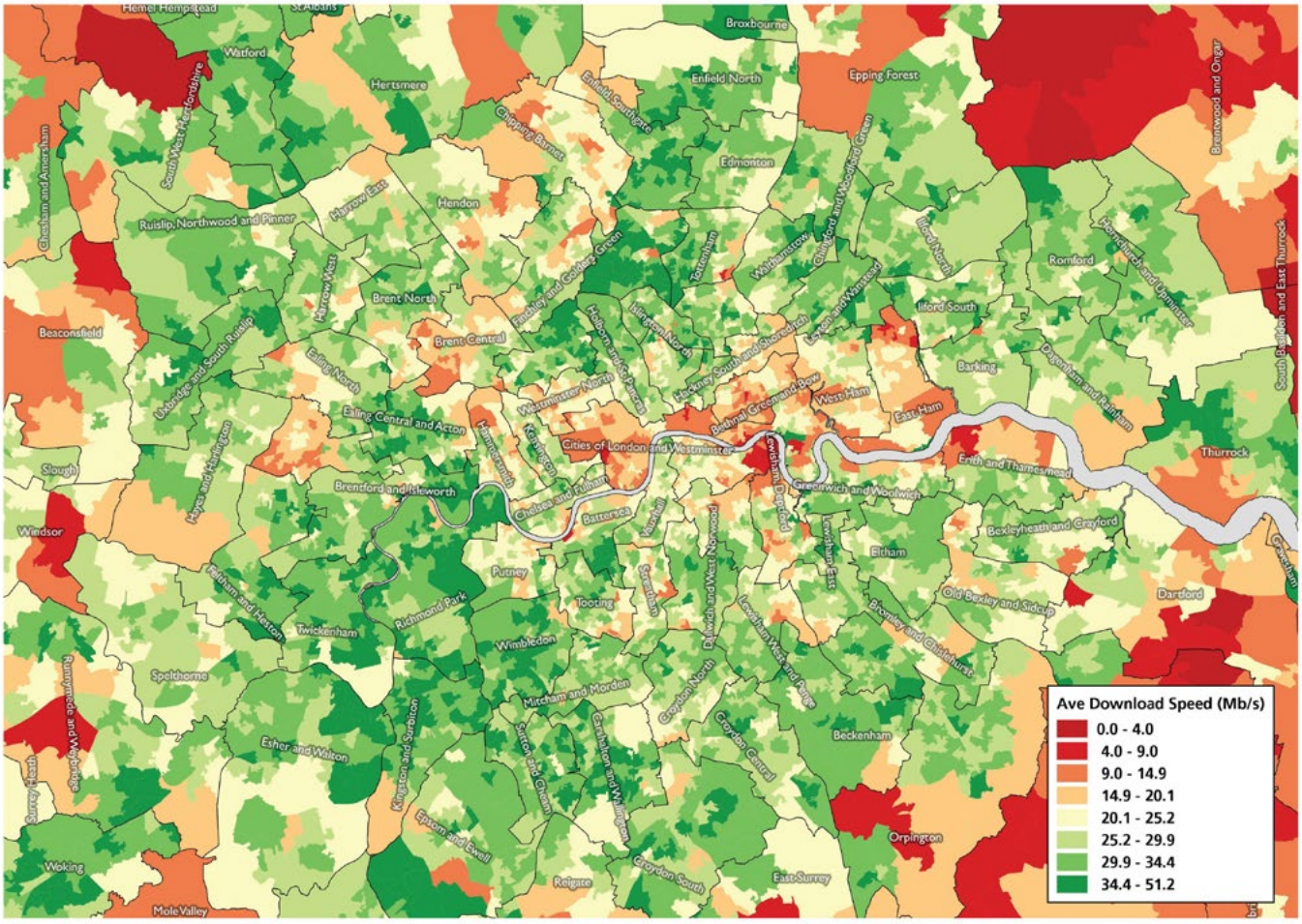
Broadband

Reliable, high quality, fixed and mobile broadband connections are essential to most modern businesses and especially for digital tech and creative companies. High speed internet enables businesses to create new and more efficient business processes, opens up new markets, and supports more flexible working. In future years, demand for high speed connections is likely to grow as firms and households need to transfer ever greater volumes of data.

Ofcom's Infrastructure Report 2014 found that the average download speed for the UK was 23mbps, although speeds available to customers vary considerably. Superfast broadband – speeds greater than 24 mbps – is now available in 75 per cent of UK premises, with take-up of 21 per cent[94]. In London, average speeds were 27.3mbps, the highest of all UK regions.

The Government has set out its ambition of connecting the UK to 'ultrafast' broadband of 100mbps, However, for London to be internationally competitive, gigabit connectivity (1000mbps) is considered the gold standard[95]. Fibre-to-the-premises (FTTP) is offered by some smaller providers and BT is trialling its G.fast technology which could offer 1000mbps. Gigabit technologies are more widely available in other cities such as Hong Kong, which is due to unveil a 10 gigabit service available to over 80 per cent of households.

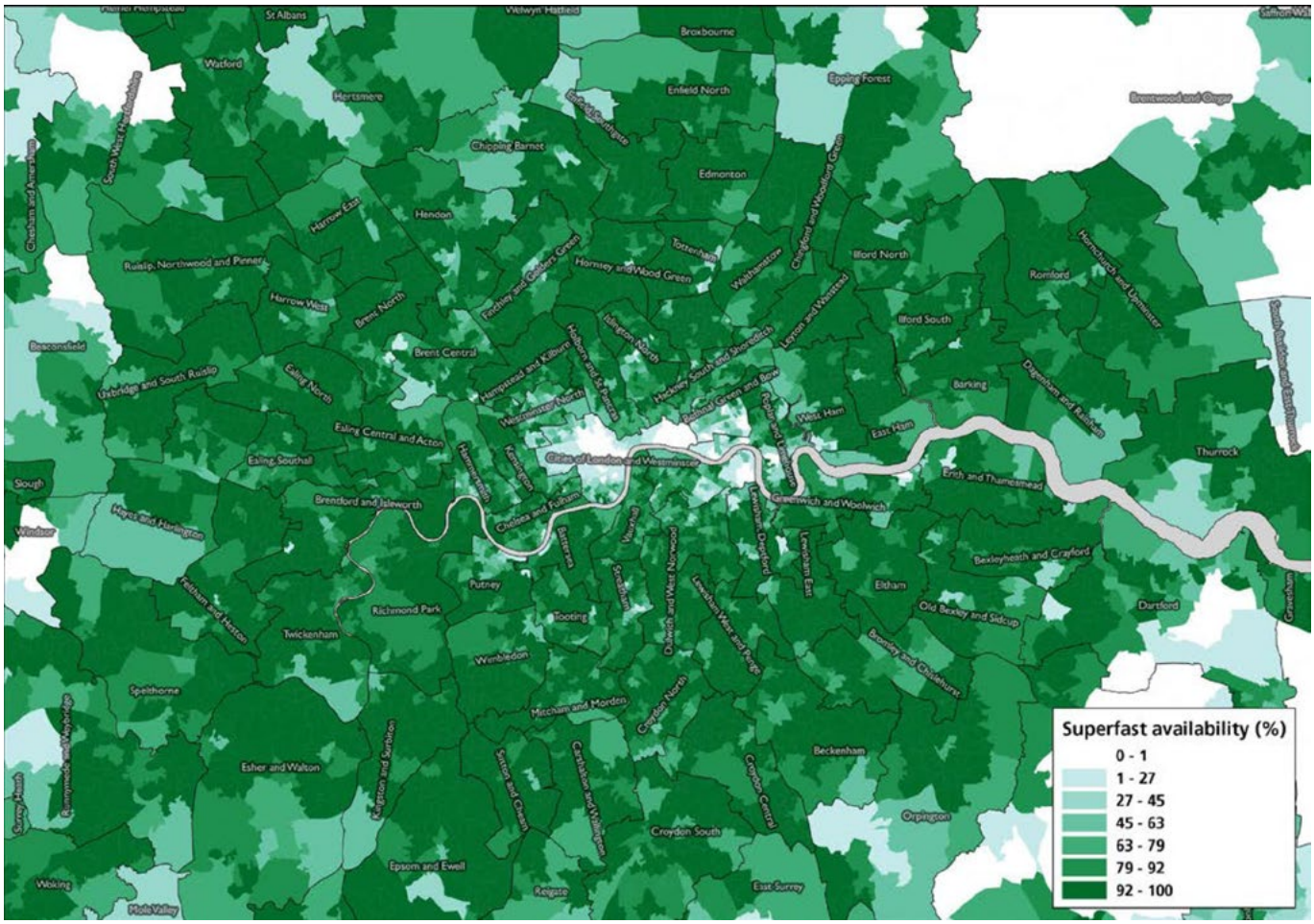
Map 4.9: Average download speed in London, 2014.



Source: House of Commons

In general, London provides good access to high speed broadband however there are some 'not spots' in the city where superfast broadband is unavailable for a variety reasons[96] (see Map 4.10). A House of Commons research note[97] based on Ofcom data showed that only 32 per cent of properties in the City of London and Westminster constituencies have access to superfast broadband. This ranked the City 612th out of 650 parliamentary constituencies in the UK. However, these figures should be treated with caution. In the City, such is the importance of high speed internet, many firms pay for more costly dedicated leased lines. As a consequence, the market is under-served by more traditional 'fibre to cabinet' services, which is problematic for smaller companies and households in these areas who cannot afford the costs and longer contracts of a dedicated line. Other London hotspots have considerably better coverage, with Hackney South and Shoreditch servicing 86 per cent of properties and Hackney North and Stoke Newington 93 per cent, though Bethnal Green and Bow lags at 56 per cent, in the bottom 100 constituencies.

Map 4.10: Superfast broadband coverage in London, 2014



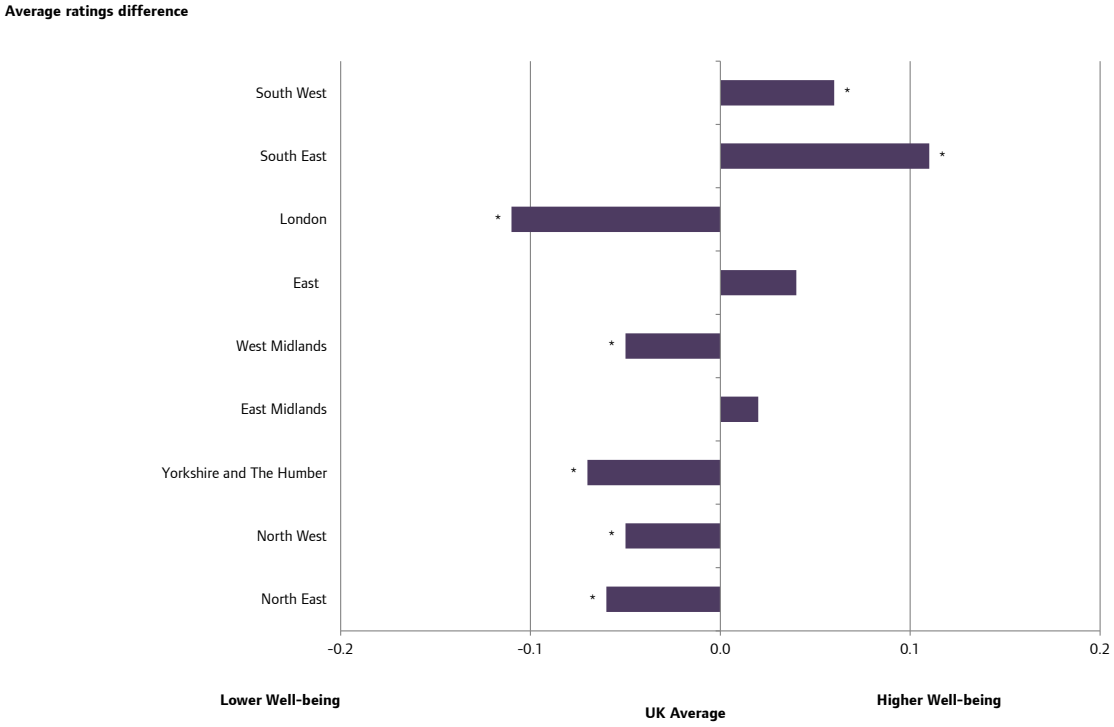
Source: House of Commons

Quality of life

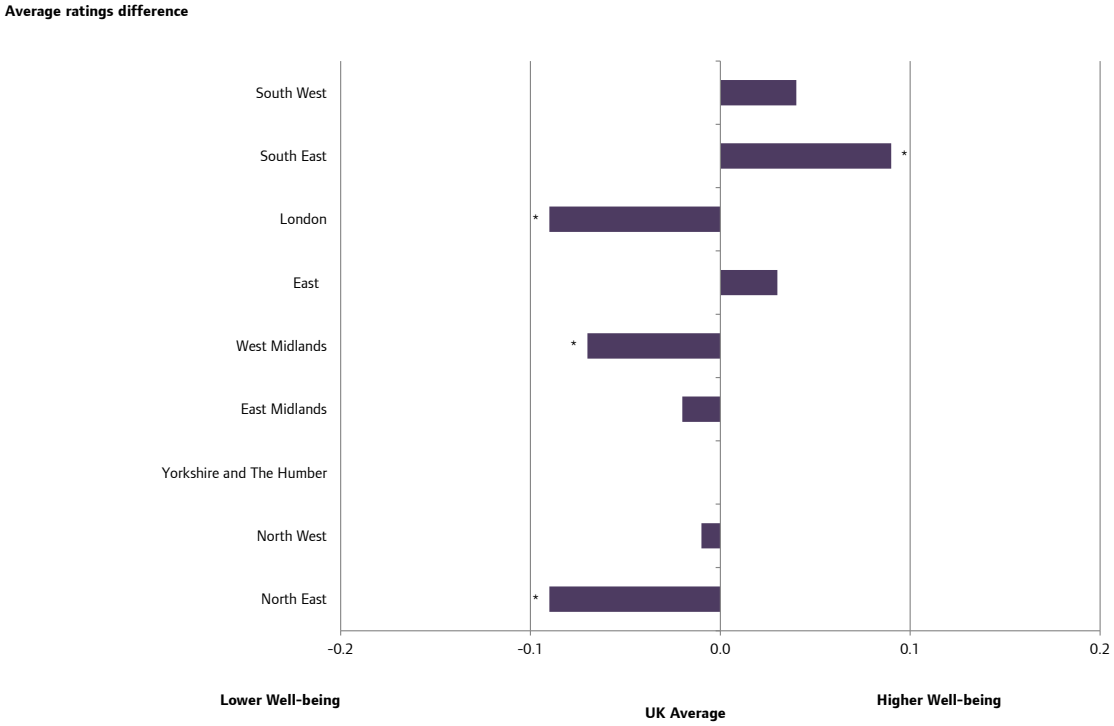
If quality of life in London deteriorates due to congestion, pollution, or other factors, then business and skilled workers could choose other locations over London. London's attractiveness to business and people is dependent on a whole variety of 'quality of life' factors such as its green spaces, culture, sport, music, events, etc. These factors make London a place where people want to live and work, and are also vital to the tourism sector (see Chapters 3 and 5). Despite this, on a number of self-reported measures of wellbeing, Londoners are less satisfied with their lives compared to people in other regions of the UK[98]. Figure 4.26 shows regional variations in four different measures of well-being.

Figure 4.26: Average personal well-being ratings compared to UK averages by English region, financial year ending 2015

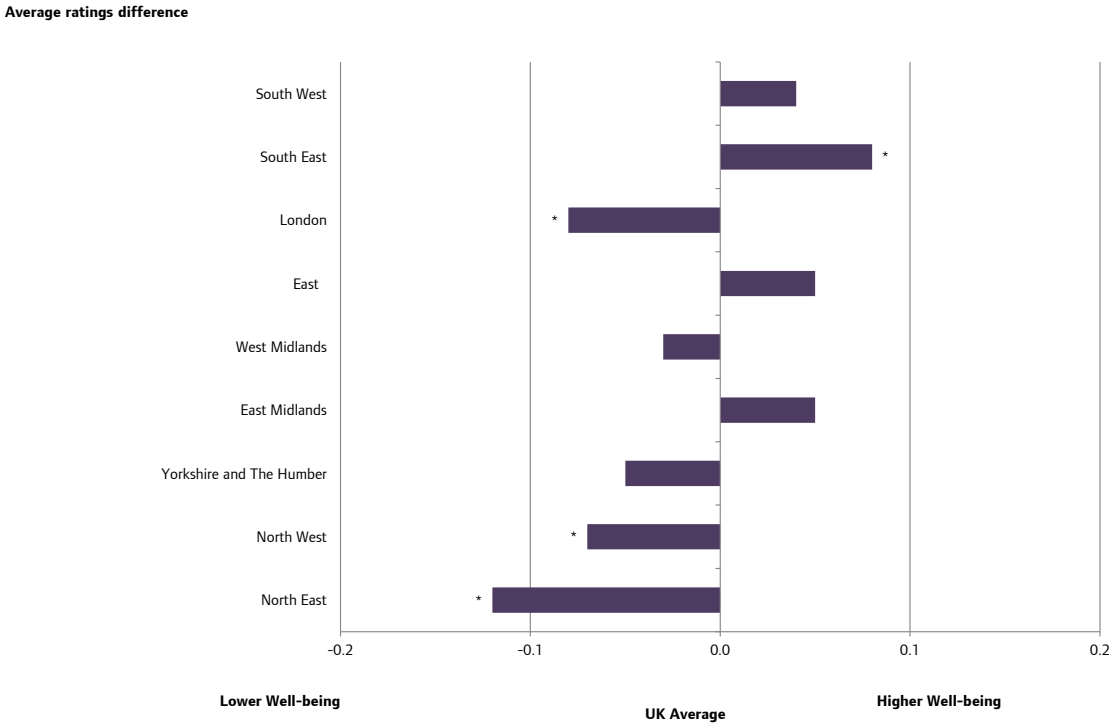
a. Life Satisfaction



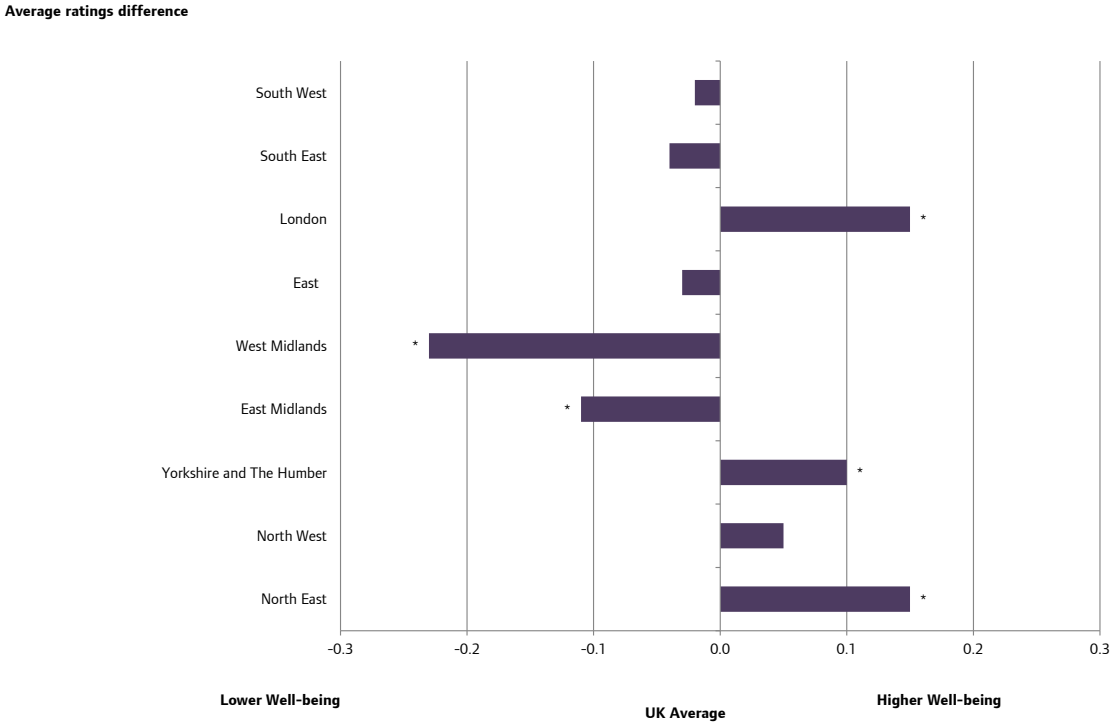
b. Worthwhile



c. Happiness



d. Anxiety



Source: Annual Population Survey, ONS
*Note: * Indicates a statistically significant difference determined on the basis of non-overlapping confidence intervals.*

It should be noted that the differences in wellbeing between regions are fairly marginal so these charts should be treated with caution. According to ONS, other aspects of life such as health and employment status have a more significant impact on peoples' well-being than where they live. However, any deterioration of wellbeing in the future due to longer commuter journeys, more pollution, erosion of green spaces, or other factors that are important to quality of life, could deter people from wanting to live or work in London. Quality of life issues are considered further in Chapters 5 and 7.

Chapter 4 endnotes

1 GLA, 2014, 'Housing in London'
2 ONS. 2014, 'Commuting and Personal Well-being'.
3 GLA Economics, July 2015, 'Updated employment projections for London by sector and trend-based projections by borough' .
4 It is important to note that GVA performance for London data are only available in nominal terms implying that no adjustment has been made to take into account changes in price levels over time.
5 Data drawn from ONS, 20 February 2015, 'International Comparisons of Productivity - Final Estimates, 2013'. Measures of labour productivity measured here are given in two forms, by total hours worked and by numbers of workers in employment. As mentioned in this article, "these two measures can yield different results, reflecting differences in working patterns across countries and compositional movements over time, such as a shift towards part-time working."
6 The official regional GVA estimates are all in nominal terms, implying that no adjustment has been made for inflation. The ONS also publishes a real GVA measure estimated using the production approach. However, these data are experimental and some commentators have suggested that these data are not very robust and reliable.
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