

London labour market projections 2022

Interim update

October 2022



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Introduction

GLA Economics has periodically published long-term employment projections over the past 20 years. A key role of these projections has been to support the evidence base for the London Plan, with the last set published in 2017.¹

The purpose of this 2022 interim update is twofold. First, it supports users of the projections, both within the GLA group and externally, in long-term planning. And second, it provides an updated reference case that can be refined as some of the labour market uncertainties associated with the COVID-19 pandemic become clearer.

As in previous publications, this interim update provides long-term employment projections for London, for the main industry sectors of its economy (up to 2051), and for London boroughs and the City of London (up to 2041). Projections are based on historic productivity trends and assumptions about the future path of economic output. Borough-level projections are also informed by plans for increases in employment site capacity.

The structure of this update is as follows. Chapter 1 develops the main London-level projections. It describes the data, methodology and assumptions for our modelling and compares our results to the previous round of projections from 2017. To check the robustness of our central projection, it also compares our results with estimates from external forecasters, an alternative population-trend based model of employment and a range of different historical scenarios.

Chapter 2 presents the projections for the main sectors of London's economy, and Chapter 3 develops the borough-level projections.

We provide more detailed descriptions of our modelling and key assumptions in the appendices. Appendix A describes how we use statistical modelling to select productivity trends. Appendices B and C provide detailed descriptions of the range of historical scenarios, and alternative population-based modelling used to check on the robustness of results reported in Chapter 1. Appendix D provides more detailed sector results. And Appendix E describes the full process for generating borough-level results.

¹ See <https://data.london.gov.uk/dataset/long-term-labour-market-projections>

Chapter 1: Total London employment projections

Summary

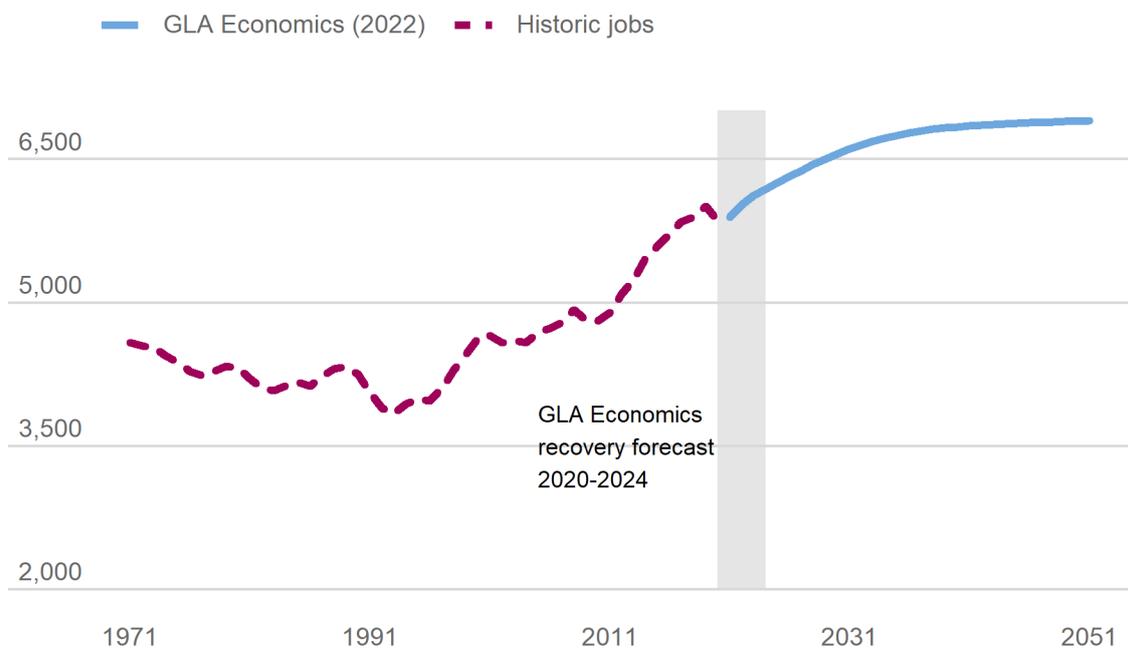
London's economy has generated employment at an unprecedented rate over the past 30 years, adding nearly 2m jobs since 1991. But what can we expect over the next 30 years? This report presents an interim update of GLA Economics' long-term employment projections.

- **We project fast medium-term growth, slowing significantly in the long term.**

Based on historic trends, we project employment in London to rise from 6m jobs in 2021 to 6.6m in 2031, 6.8m in 2041 and 6.9m in 2051.

These results are within a plausible range suggested by three commercial external forecasters; our own alternative population-trend based model; and Office for Budget Responsibility (OBR) forecasts of UK population, economic growth and labour productivity.

Figure 1: London Employment History and Projections (Jobs, 000s)



- **Our results imply downward revisions of previous GLA Economics projections.**

GLA Economics last published long-term employment projections in 2017, with the number of jobs in London then projected to reach 7.1m in 2050.² Long-term employment growth (beyond the range of the projection period) will stabilise at less than 0.1% per year.³ In our 2017 projections, the corresponding employment growth figure was 0.4% per year. The downward revision in this update is

² See <https://www.london.gov.uk/business-and-economy-publications/london-labour-market-projections-2017>

³ This is the case since long-term employment growth equals long-term GVA growth (1.5%) minus long-term productivity growth (1.4%).

mainly due to lower official and market expectations of economic growth in the UK over the long term, partly offset by lower labour productivity growth.

- **We alter our methodology to account for short-term COVID-19 effects, but do not make changes to our approach for the long term.**

While the COVID-19 pandemic significantly reduced employment and output in London, GLA Economics forecast that both will return to pre-crisis levels by 2023-24. We use these forecasts as the starting point for our trend-based projections in 2025.

The COVID-19 pandemic clearly affected working practices, commuting patterns and location choices for businesses and households. However, it is still unclear how strong these effects will be over the long term, and whether in the aggregate they will result in an increase or decrease in the number of jobs located in London.⁴ We take a neutral position and continue to use our existing trend-based methodology for the 2025-51 period.

The ongoing impacts of the COVID-19 pandemic, alongside Brexit and cost-of-living pressures, mean there is a significant degree of uncertainty around these projections. We expect to revisit our key judgements as further data is made available and can be incorporated into our modelling.

- **Our long-term methodology remains based on historic (1971-2019) productivity trends.**

In line with the approach taken in our previous round of projections, we project London's gross value added (GVA) growth rate declining from its forecast of 2.5% in 2024, to match the OBR's forecast for the UK of 1.5% in 2051. We update our productivity trend assumptions to provide more weight to the post-financial crisis stagnation, and less weight to the faster growth rate in the 1990s and early 2000s. We use new statistical analysis to support these choices.

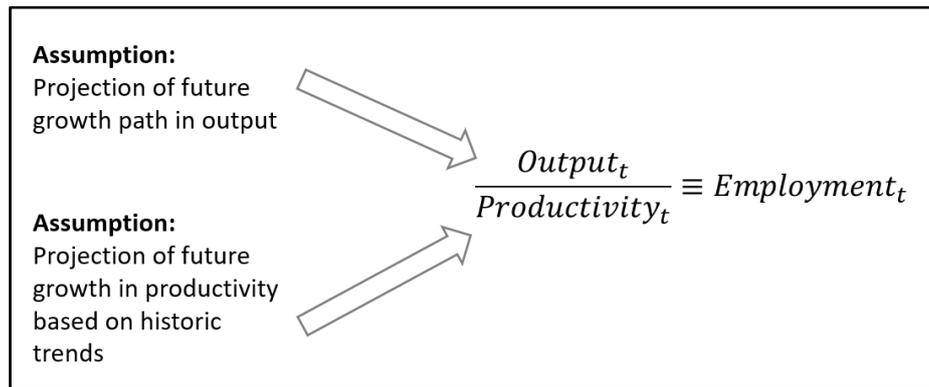
Methodology

Our long-term employment projections for London are trend-based projections that estimate jobs in future years, based on assumed future output growth and the historic productivity relationship between output and jobs. These projections are designed to provide a guide to the long-run (approximately three decades) path of employment based on the data available at the time of construction. They are not intended as forecasts for individual years within the projection period.

Our approach rests on the accounting identity that the growth rate of employment is equal to the growth rate of output minus the growth rate of productivity. Given a projection of future output and future productivity, we can calculate future employment, as shown in Figure 2. This approach only requires data on historic output and employment levels – from which we can identify and then project forward productivity trends – and separately data on future output growth.

⁴ In this report, the terms "jobs" and "employment" are used to refer to the number of jobs located in London or another area. The surveys used to compile the workforce estimates of employment are surveys of employers, and so the figures generally reflect the location of the workplace, not the worker's place of residence.

Figure 2: Schematic of methodology



Because this approach rests on an accounting identity, it deliberately says nothing about causal relationships between the variables. Higher employment, for instance, might have a causal impact on productivity through agglomeration economies that we do not capture or model. Or, likewise, higher labour productivity – by raising returns to labour inputs – might have a positive causal impact on employment and output. We simply note that the output forecast and productivity trends we use provide a valid reference case for employment outcomes, so long as the shocks to these variables and the relationships between them in the past are relatively similar to those in the future.⁵

Other approaches to projecting employment include models that contain multiple variables, such as migration, trade, investment, housing and interest rates; and seek to model the relationships and feedback loops between them. These approaches require a large number of assumptions about the parameters of these relationships, as well as a lot more data; and are complex to model. In general, these assumptions become less plausible the further into the future the projection runs.

The key benefits of the approach taken in this update are that it requires few assumptions; is transparent about those assumptions; and is computationally straightforward. The approach has been shown to perform well when compared to other long-term forecasts (albeit with limited out-turn data).⁶ We also show below that our results lie within a range suggested by three leading external forecasters.

COVID-19 and the projections

In constructing our projections, we are immediately faced with the question of whether to treat the unusually volatile COVID-19 period as data (i.e. to use the GVA and productivity outcomes in 2020 and 2021 to inform our long-term trends) or to focus instead on ‘normal’ years. London GVA fell by 7.1% in 2020, but employment only fell by 2.5% amid government support for jobs through the Coronavirus Job Retention Scheme and other policies.

As a result, treating 2020 and 2021 as data for trend selection would, in our view, result in an underestimate of trend labour productivity growth (GVA per job). Incorporating these data points into our history would generate unduly high jobs forecasts in the short term. We therefore choose to use 2019 as the last historical data point for the purpose of calculating trends for this update.

We also have to consider the jump-off year for our projections. One option would be to choose a pre-pandemic year (2019 or even earlier) and then project forward – an approach that would essentially assume that the economy returns to pre-pandemic trends over time. This would be consistent with previous

⁵ See https://www.london.gov.uk/sites/default/files/current_issues_note_61.pdf for discussion of the performance of previous rounds of London employment projections using this methodology.

⁶ See <https://www.london.gov.uk/business-and-economy-publications/performance-gla-economics-employment-projections-2020-update>

approaches, but forces us to lose what information is contained in the 2020 and 2021 out-turns. Pre-2020 trends might not be appropriate to the immediate post-COVID-19 recovery.

Our second and preferred option is to make use of the GLA Economics macroeconomic forecasts for London's post-COVID-19 period. We use the March 2022 central scenario for GVA and total and sector jobs for the years 2021-24.^{7,8} The first projected year in our trend-based model is therefore 2025.

This approach has the advantage of putting the jump-off point in the medium term, when output and employment can more easily be assumed to have returned to trend.

Data

The data used to construct the historic productivity trends draws on GLA Economics London GVA and London employment series. Both begin in 1971 and have been updated to 2021.

The GVA series was constructed using UK regional nowcasting estimates from the Economic Statistics Centre of Excellence for the years 1971-97; and directly from the Office for National Statistics (ONS) Regional GVA (balanced) data for 1998 onwards.

The London jobs series was constructed using a variety of official data for 1971-95, and ONS Workforce Jobs (SIC sections A-S, employee and self-employment jobs) for 1996-2020. See GLA Economics London Labour Market Projections 2016 (Appendix 7) for full details.⁹

As noted already, for the years 2021-24 we use GLA Economics medium-term forecasts of GVA and workforce jobs (WFJs) in the 'gradual recovery' from COVID-19 scenario.

Modelling Assumptions

For London, the pre-financial crisis experience was one of sustained productivity growth contributing the bulk of the growth in economic output (GVA). After the financial crisis, productivity growth flatlined while almost all the growth in output – also lower than pre-crisis averages – came through increases in employment (also see Appendix B).

The implication for our output and productivity growth assumptions is to revise both downwards from the rates we used in 2017.

Gross Value Added (GVA)

The choice of assumption for long-term London GVA growth has in previous projections been linked to the OBR's forecasts for UK GDP growth. In recent decades the London economy has generally grown faster than the UK average. Our projections have assumed that the rate of London GVA growth will gradually approach that of the UK by the end of the projection period in 2051.

⁷ We use the February 2022 vintage of macroeconomic forecasts as the cut-off date for our analysis. Although more timely data is available at the time of publication, suggesting a different path of GVA and employment in the 2020-24 period, in practice there is only a small (around 1%) difference in both variables by 2024 under the February and August forecasts.

⁸ See <https://data.london.gov.uk/dataset/macro-economic-scenarios-for-london-s-economy-post-covid-19> for GLA Economics macroeconomic scenarios.

⁹ Available at <https://www.london.gov.uk/business-and-economy-publications/london-labour-market-projections-2016>

Since our last round of projections was published (in 2017), the OBR has downgraded its assessment of UK steady-state real GDP growth in its long-term economic determinants. This has declined from around 2.2 to 2.3% in 2017, to 1.5% in its March 2021 report.^{10,11}

We see no reason to deviate from our previous GVA assumption without compelling evidence that London's population or employment rate will grow significantly faster than that of the UK overall. That assumption is an exponential decline from the GLA Economics medium-term forecast GVA growth rate for London (2.5% in 2024) to the (now-reduced) OBR long-term real GDP forecast for the UK of 1.5%. All else being equal, the impact of retaining this GVA assumption with a lower long-run OBR forecast is to reduce the level of jobs projected.¹²

Using a different methodology produces similar GVA forecasts. For example, the GLA Economics macroeconomic forecasts – which run to 2032 – for a gradual recovery from the COVID-19 pandemic show a growth rate falling from 2.5% in 2025 to around 2.1% in 2032. This results in a difference of less than 1% of total GVA at the end of that period.¹³

Labour Productivity (GVA per job)

The OBR has also reduced its forecast for long-term labour productivity growth in the UK after a sustained period of growth falling short of the pre-financial crisis trend. In 2021, the OBR forecast long-term growth in output per hour worked of 1.4 to 1.5% a year.¹⁴ This is significantly down from a growth rate of 2% a year, forecast in November 2017.

In this update, we also follow the OBR and other external researchers in downgrading expectations that productivity in London will return to its pre-financial crisis growth rate. Indeed, statistical analysis of productivity trends identifies a clear break at or just before 2008 (see Appendix A). We therefore use a mix of the trend productivity growth rate before 2008 and trend productivity growth post-2008 as our assumption for the long term.¹⁵

Table 1 summarises the key modelling assumptions used in this update. It also provides comparisons with our previous round of projections for reference.

¹⁰ See <https://obr.uk/efo/economic-and-fiscal-outlook-march-2021/>

¹¹ The OBR's long-run GDP forecast is built from assumptions about future labour productivity growth, along with population growth, hours worked, and employment rates. OBR productivity assumptions have been repeatedly revised to a lower rate since 2012. External forecasters share this view of low long-term productivity growth. In its July 2022 update, the OBR's long-run GDP projection was lowered further, to 1.3% by 2051, due entirely to lower expected population growth. We have retained the 1.5% GVA growth assumption from the OBR's 2021 update until population trends for London become clearer and more information becomes available.

¹² GVA growth is an exogenous variable in the projections model. Thus, all else being equal, a lower GVA assumption for a given productivity trend mechanically reduces the level of employment projected, as would a faster productivity trend for a given GVA assumption.

¹³ See <https://data.london.gov.uk/dataset/macro-economic-scenarios-for-london-s-economy-post-covid-19?resource=a5c05d0a-2176-4d24-abc1-bc5f7cb6f503>

¹⁴ See <https://obr.uk/supplementary-forecast-information-monthly-profiles-and-long-term-determinants/>

¹⁵ In our 2017 projections, when there was less evidence that productivity growth would remain suppressed, the assumption was to use the trend rate from 1993 to 2016 for long-term productivity. See Table 1.

Table 1: Summary of assumptions and changes since 2017

Model Assumption	GLA Economics (2022)	Published 2017
Short-term GVA	GLA Economics 2021-24 forecasts	2.1% per year from 2016-18
Short-term productivity (GVA per job)	GLA Economics 2021-24 forecasts	0.6% per year from 2016-18
Long-term GVA	Decays from 2.5% per year in 2025 to 1.5% per year in 2051	Decays from 2.5% per year in 2019 to 2.0% per year in 2050
Long-term productivity (GVA per job)	60/40 mix of trends from 1981-2007 and 2008-19: growth rate of 1.4% per year	All trend 1993-2016: growth rate of 1.6% per year

Results

The model provides an estimate of 6.9m jobs at the end of projection period in 2051 (see Figure 1). This is an average increase of 29,000 jobs a year.

The 2051 projection represents a 4% decrease, or 300,000 jobs, from the previous GLA Economics projection of 7.2m jobs in 2050. Much of this difference is accounted for by the final decade of the period: in looking at the years 2041-50, we now project jobs growth of around 5,000 jobs per year, down from 28,000 previously. This growth path involves faster additions of jobs in the 2020s – we project an additional 648,000 jobs in 2020-29, compared to 454,000 in our previous publication. That is followed by a pronounced slowdown through the 2030s, which continues to the end of the projections period. In 2031, for instance, our latest projection is 58,000 jobs *higher* than projected in our 2017-round, while in 2041 it is 57,000 jobs *lower*.

This divergence between projection rounds in the 2040s is due to the decline in London’s GVA growth rate we forecast over the projection period. It comes from the assumption in our methodology that output growth declines towards the UK average while productivity remains growing at its trend rate. As GVA growth falls gradually towards 1.5% per year by the end of the projection period, it eventually falls close to the projected labour productivity growth rate, such that long-term employment growth (beyond the range of the projection period) will stabilise at less than 0.1% per year.¹⁶ In our 2017 projections, the corresponding employment growth figure was 0.4% per year as GVA growth settled at 2% per year.

While being a more marked feature of this projection round, this pattern has similarities with both the OBR UK long-term economic determinants and GLA population projections.¹⁷

¹⁶ This is the case since long-term employment growth equals long-term GVA growth (1.5%) minus long-term productivity growth (1.4%).

¹⁷ Note, however, our long-term projections are designed to provide a guide to the long-run (approximately two decades) path of employment – not to act as forecasts of employment in specific years.

The OBR expects 0.1% per year or less population growth after 2043; with real GDP growth of 1.5% or less, and labour productivity of 1.5% a year (together indicating roughly flat employment growth once accounting for hours worked).

GLA population projections imply no change in the London working-age population after 2043 in the 'central lower' scenario; and only a 75,000 increase between 2043 and 2051 in the 'central upper' scenario.¹⁸

Robustness checks

Comparison with external forecasters

We benchmark our results against three external forecasting companies that use computable general equilibrium models.¹⁹ These companies only provide forecasts for a limited period (to 2036, 2040 and 2042, respectively) so a full comparison to 2051 is not possible. This unfortunately includes most of the 2041-51 period where this update of our projections diverges most from previous projection rounds.

Figure 3 shows that our employment projections fall within the range suggested by these external forecasters.

Table 2 shows that External 1 forecasts 6.5m jobs in 2036, 4.1% less than GLA Economics. Its forecast for other variables include much lower GVA (minus 11.9%) and population (minus 4.4%) as well as implied output per job (minus 8.1%)

External 2 forecasts 4.8% more jobs than GLA for 2042, 3.3% higher GVA and 1.4% lower productivity, with a population estimate 2.7% below the GLA 'central lower' forecast.

Closest to our projections is External 3, which forecasts up to 2040. Its jobs forecast is just 0.2% higher, and GVA is 0.6% lower, leaving productivity 0.8% lower. Its population forecast is 1.6% higher.

¹⁸ See <https://data.london.gov.uk/dataset/trend-based-population-projections>

¹⁹ These are forecasts from Cambridge Econometrics, Experian and Oxford Economics, published in the first quarter of 2022.

Figure 3: GLA Economics projections (2022) vs. external forecasters, 2020-51 (Jobs, 000s)

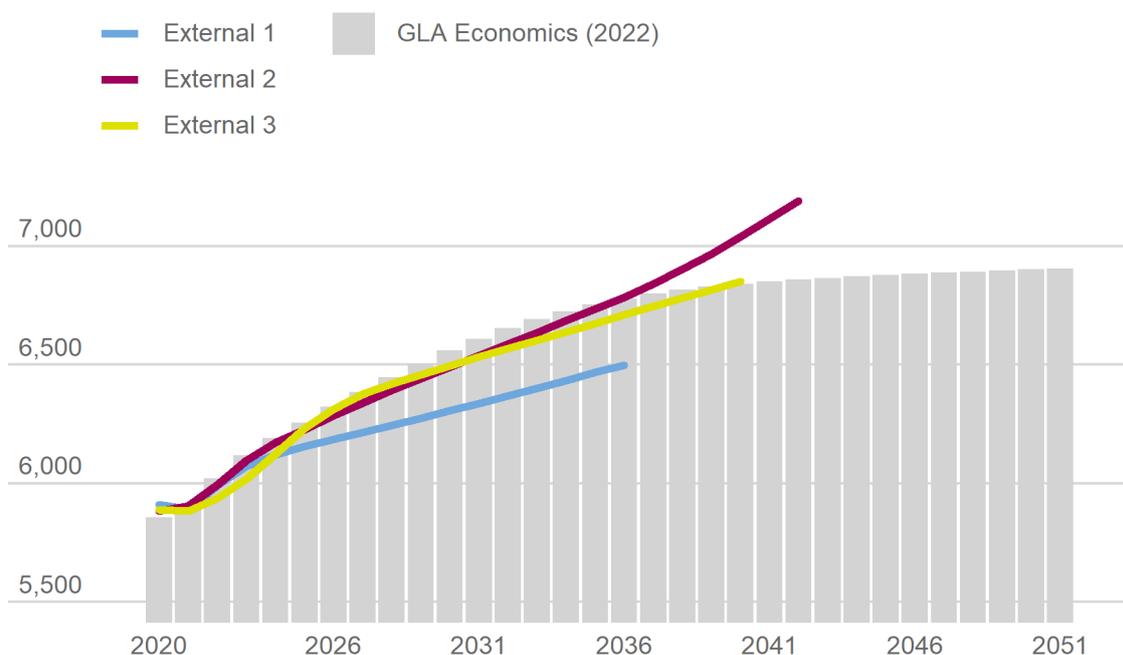


Table 2: External forecasters vs. GLA Economics (2022)

Indicator	External 1 (2036)	External 2 (2042)	External 3 (2040)
Jobs (000s)	6,498	7,190	6,851
Jobs vs. GLA Economics	-4.1%	+4.8%	+0.2%
GVA vs. GLA Economics	-11.9%	+3.3%	-0.6%
Productivity vs. GLA Economics	-8.1%	-1.4%	-0.8%
Population (000s)	9,293	9,756	10,086
Population vs. GLA (Central Lower) ²⁰	-4.4%	-2.7%	+1.6%

²⁰ GLA population (central lower) from 2020-based variant projections (September 2021). See <https://data.london.gov.uk/dataset/trend-based-population-projections>.

Alternative population-trend based model

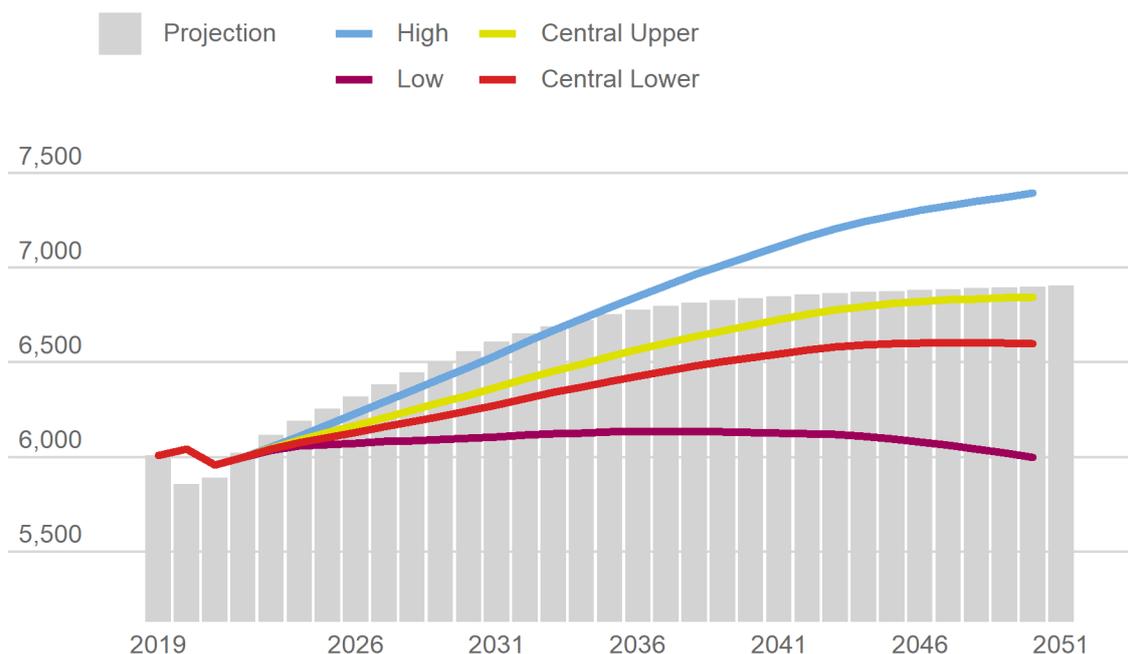
Past rounds of projections have often provided one or more sets of results built on an alternative, population-based methodology. These are provided as a sense-check or benchmark against which to consider our central trend-based projections. An alternative model is particularly important for this projection round, given the heightened uncertainty around GVA and productivity trends, and the COVID-19 pandemic (see above). Population-based approaches have the advantage that they do not depend on explicit assumptions about the future path of macroeconomic variables (GVA, productivity).

In this update we adopt and develop the methodology used in previous rounds. We first take trend-based population projections produced by the GLA demography team and then apply estimates of the employment rate for London residents (by age and sex) to give projections of the growth rate of employed Londoners in each year through to 2050. By making the assumptions that in- and out-commuting rates remain constant, we then apply these growth rates to the number of jobs in London over the period.

The full model and discussion of results can be found in Appendix C.

The results provide a central range of London workforce jobs in 2050 of 6.6m to 6.85m, sitting just below our central productivity trend-based results. The full range of population-based scenarios provide a range of 6m to 7.4m jobs in 2050.

Figure 4: Range of population-based employment projections versus main projection (Jobs, 000s)



Scenarios based on historic economic cycles

Economic outcomes in London since the 2007-08 financial crises have diverged from previous experience. The 2008-19 period has been characterised by relatively low productivity growth, moderate output growth and high jobs growth. Previous economic cycles have followed different trajectories – not just for jobs, but also for productivity.

As a sensitivity test for this round of projections, we run three alternative scenarios, each using the output and productivity growth rates that the London economy achieved in its last three economic cycles: 1979-90, 1990-2008 and 2008-19.²¹

Results – discussed in detail in Appendix B – show that the employment growth we project lies within the range of the outcomes that would be due to growth and productivity assumptions based on the 1979-90 and 1990-2008 economic cycles. The 2008-19 cycle is shown to be an outlier – if our assumptions matched that period, we would project over 11m jobs in London by 2051.

²¹ These cycles have been dated using peak-to-peak (pre-recession) output.

Chapter 2: Employment projections for London's sectors

Summary

There have been significant changes in the industrial composition of London's labour market over the past 30 years. Manufacturing, wholesale, and primary and utilities jobs have declined in absolute and relative terms, while the number of professional services, information and communications and hospitality jobs has grown.

This chapter sets out our long-term projections for each sector over the next 30 years.

- **We project the professional services and other business services sectors to continue to add large numbers of jobs (+335,000 jobs by 2051).**

Fast growth in professional services jobs over the past 30 years has made it by far the largest sector in London's economy. While we continue to expect it to grow at a faster rate than for total jobs in London, it won't be quite as fast as in the past decade, or as fast we expected in our last round of projections.

Other sectors where we project high job gains are health and social work (+244,000 jobs) and hospitality (+96,000 jobs); we also project a high rate of jobs growth in the arts and recreation sector (nearly 1% p.a.)

- **We also project jobs to decline, by 2051, in six sectors: manufacturing; wholesale; retail; transport and storage; finance; and public administration. The only sector that we project will decline in the decade to 2031 is wholesale.**

These are all sectors in which jobs growth has been relatively slow, or in some cases negative, during the past 10 years when London employment as a whole grew rapidly. Since we project lower London aggregate growth in the coming years, it follows that these are the sectors most likely to decline.

- **Comparisons with external forecasters provide confidence in our projections.**

Our sector projections sit within or close to the range given by three external forecasting firms, even for the broad trade grouping of wholesale, retail and transport where we project declining absolute numbers of jobs.

Methodology

We construct sector-level projections for London using a similar, but not identical, approach to that used for London's total employment. That is, by using productivity trends and expected GVA.

The difference between the London and sector projections comes from the lack of a historical sector-level GVA series for London that extends back to 1971, and a forecast of sector-level GVA extending out to 2051.

Instead, we consider trends in sector productivity measured by London GVA per sector-employment job. We carry out the statistical analysis described in Chapter 1 to determine the appropriate trends to project forward in each sector, and then constrain total sector jobs in each year to the total projected London jobs.

Full details of the sector-trends analysis can be found in Appendix D. We also use the GLA Economics detailed jobs series for 1998-2020 to inform sector judgements.²²

Data

We draw again on the London jobs series 1971-2020 described in Chapter 1. The coverage of sectors is available for SIC 2007 sections A-S. Consistent with previous rounds of projections, several sections are grouped. We bring together primary and utilities from sections A, B, D and E; and professional services and real estate from sections L and M.

We also divide section G into separate wholesale (including wholesale, retail and repair of motor vehicles) and retail sectors. In order to apportion employment within wholesale and retail we use an ONS Workforce Jobs detailed breakdown of section G.

Results

Our results are summarised in Table 3, and outlined in detail in Appendix D. They show a striking concentration of jobs gains in a few sectors. More than one-third (37%) of the net 897,500 gain in London jobs from 2019 to 2051 are projected to come from the professional services and real estate sector. Adding the health and social care sector takes this share to nearly two-thirds (65%) of net additional jobs.

Several sectors are projected to lose jobs, notably transport and storage (down 38,000), as well as wholesale, finance, public administration, manufacturing and retail. These are all sectors in which jobs growth has been relatively slow, or in some cases negative, during the past 10 years when London employment as a whole grew rapidly. Since we project lower London aggregate jobs growth as we move through the projection period, it follows that these are the sectors most likely to decline. As shown in Appendix D, the only sector that we project will decline in the decade to 2031 is wholesale.

Despite these shifts, the changes from the previous rounds of GLA Economics projections are small (see Figure 5). We project smaller job losses in four of the six shrinking sectors than in our 2017 round of projections – a result of taking into account sector trends since the previous round. Having previously projected small gains for finance and retail, we now project small losses for both of these sectors. Appendix D provides details on the trend selection in these sectors.

²² See <https://data.london.gov.uk/dataset/london-s-sectors>

Table 3: Summary of sector results

Sector	CAGR London output per sector job 2019-51	Total sector jobs change 2019-51	CAGR sector jobs 2019-51
Professional and property	0.92%	335,000	0.93%
Health and social work	0.77%	244,400	1.09%
Hospitality	1.26%	96,600	0.60%
Construction	1.12%	86,000	0.74%
Administration and support	1.50%	75,900	0.37%
Arts, entertainment and recreation	0.91%	72,000	0.95%
Information and communication	1.46%	67,600	0.40%
Education	1.60%	36,500	0.27%
Other services	1.25%	33,900	0.61%
Primary and utilities	1.26%	8,200	0.60%
Retail	1.98%	-14,500	-0.11%
Manufacturing	2.33%	-18,400	-0.45%
Public administration	2.22%	-25,600	-0.35%
Finance	2.12%	-30,700	-0.25%
Wholesale	2.34%	-30,800	-0.46%
Transport and storage	2.28%	-38,700	-0.40%
Total London	1.43%	897,500	0.44%

Figure 5: Changes in projected annual growth rates, %

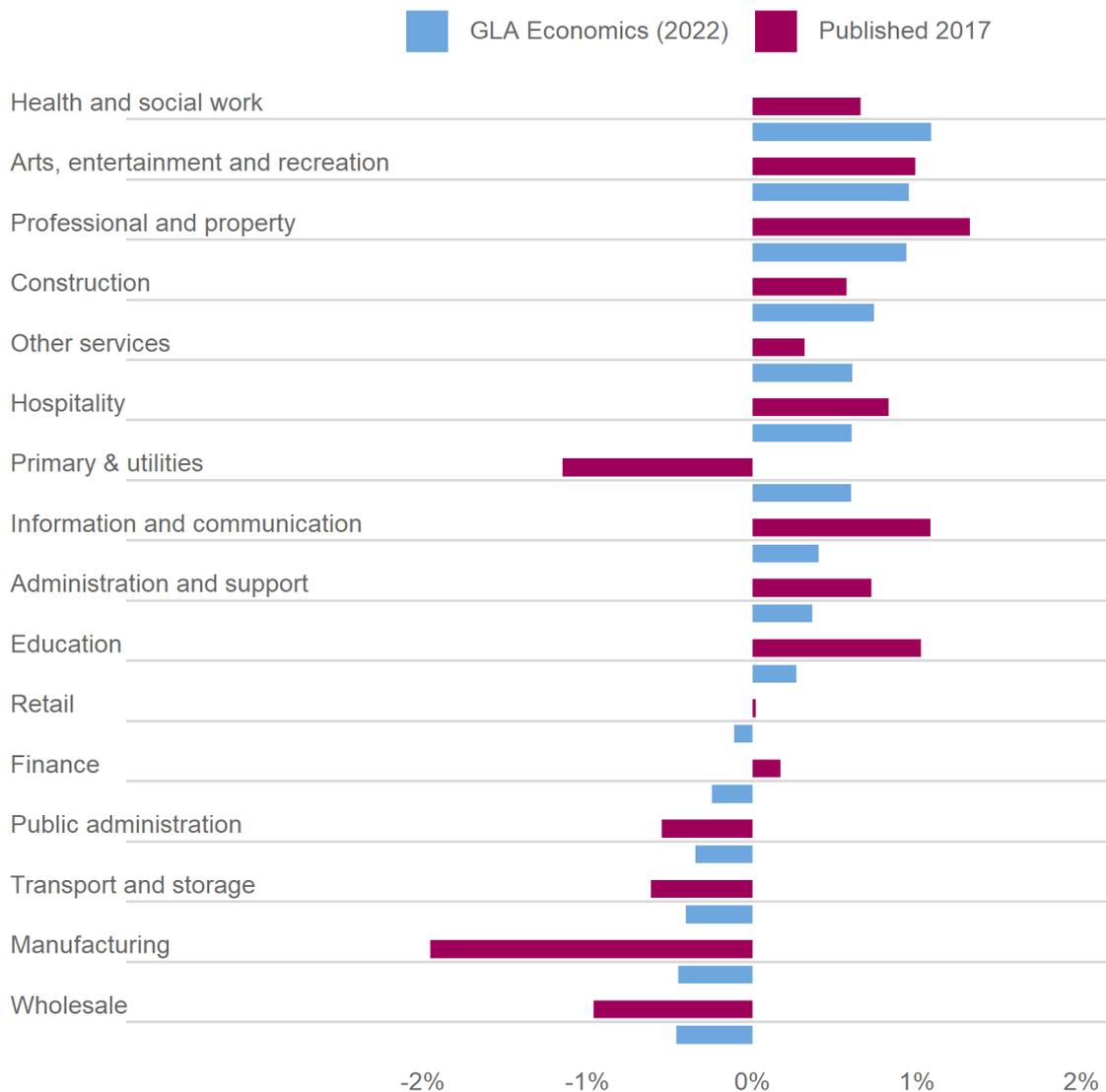


Figure 6 shows a comparison of our projections with three external forecasting firms using broad sector groupings.²³ On this basis, business services provide the bulk of projected job gains, with a smaller contribution from hospitality and recreation. As in the comparison for total London jobs shown in Chapter 1, the external firms only provide data up to 2036, 2042 and 2040 respectively. Over this comparison period our results are closely aligned to at least one of the external forecasts.

²³ Industry and construction is SIC sections A, B, C, D, E and F. Trade is SIC sections G and H. Business services is SIC sections J, K, L, M, N and S. Public sector is sections O, P and Q. And hospitality and recreation is I and R.

Figure 6: Historic and projected jobs by industry grouping, and comparison to external forecasters (Jobs, 000s)



Chapter 3: Borough employment projections

Summary

- **Borough employment projections are constructed by applying a similar productivity trend-based methodology to that used for London and sectors, and then ‘bi-angulating’ the results with data from the London employment sites database (LESD) through to 2041.**

This approach is appropriate because it takes into account known information – inferred from the LESD – about the future distribution of employment capacity in London. We also provide the trend-only results for years up to 2051 in a data annex.

- **We project rising jobs in every London borough over the 2019-41 period covered by the LESD.**

Annual growth rates range from 0.1% in Lewisham and Sutton, to 2.3% in Newham, compared to the London average of 0.6% a year.

- **Central areas of London are projected to grow faster than outer London.**

The City of London, and the boroughs to its south and east (Hackney, Tower Hamlets, Newham, Greenwich and Southwark), together account for over half of the 842,000 increase in jobs projected over this period. These areas – along with Wandsworth, and Hammersmith and Fulham – all have significant identified employment site capacity.

Methodology

We first turn to the productivity trend-based projections before carrying out bi-angulation with the LESD. Appendix E sets out the detailed methodology and intermediate results.

Borough trend projections are constructed by separately projecting employee and self-employment jobs. The employee component is derived through the same methodology as for London and sectors – in this case using the historic relationship between borough employee jobs and total London GVA with projected London output growth. For the self-employment component, we project forward the trend in the London employment to self-employment ratio. We then apportion self-employment to boroughs based on the 2015-19 borough shares of total London self-employment jobs, which have been stable over time.

This process delivers productivity trend-based projections for London boroughs, which we provide in the data annex on the London Datastore. However, the spatial distribution of jobs also depends on employment site capacity as a strong constraint. We therefore follow a process used in previous projection rounds to bi-angulate the trend-based results with data on expected increases in employment site capacity across London. We treat these capacity-based estimates as our main borough-level projections.

To do this, we add identified increases in employment site capacity at five-year intervals starting in 2021 to the level of borough employee jobs in 2019.

In line with our 2017 projections, boroughs that are in or close to central areas are assumed to have employment limited by capacity constraints. We give more weight to constraints in these boroughs assuming that capacity will be fully taken up even if trend projections are lower; if trend is higher than capacity by up to 10%, we assume that there is flexibility around capacity to meet this trend. For two boroughs, where there are plans for significant increases in employment site capacity, but uncertainty about the pace at which it will be taken up, we take an average of the capacity- and trend-based results. And for other

boroughs, we assume that there is no single, clear alternative explanation for the future path of employment, apart from historic trends, and set employment equal to the trend level.

The employee projections for all boroughs are then constrained such that the total number of employee jobs under bi-angulation is the same as the total for our trend-based projections. Borough employment projections are the sum of the rules-based employee projections and the trend-based self-employment projections.

Appendix E contains further details and intermediate results from the bi-angulation process, as well as details of the process for constructing related Central Activities Zone (CAZ) and Northern Isle of Dogs (NIOD) projections.

Data

We draw again on the London jobs series 1971-2020 described in Chapter 1. Other official statistical series used are:

- employee and self-employed jobs in London, 1971-2020 (ONS Workforce Jobs)
- self-employed jobs by London local authority, 2008-2020 (ONS Annual Population Survey)
- employee jobs by London local authority, 1971-2020 (ONS Business Register and employment Survey (BRES) aligned to ONS Workforce Jobs)²⁴
- employee jobs by lower layer super-output area, 2010-20 (ONS BRES)
- London local employment sites database, 2022 (GLA).

Results

Borough jobs results for 2041 (see Figure 7 and Table 4) show that inner London boroughs are projected to grow faster than outer London boroughs, at 0.7% a year (adding 664,000 jobs in total) compared to 0.4% a year (adding 178,000 jobs). However, within both areas there is wide dispersion in growth rates.

In inner London, jobs growth over the 2019-41 period that we model ranges from less than 10% in Lewisham, Westminster, Kensington and Chelsea, and Lambeth, to over 30% in Hackney, Hammersmith and Fulham, and Tower Hamlets, and to over 60% in Newham. The City of London and the boroughs to its south and east (Hackney, Tower Hamlets, Newham, Greenwich and Southwark) together account for over half (427,000) of the 842,000 new jobs projected in the period. These areas, along with Wandsworth, and Hammersmith and Fulham, all have significant identified employment site capacity.

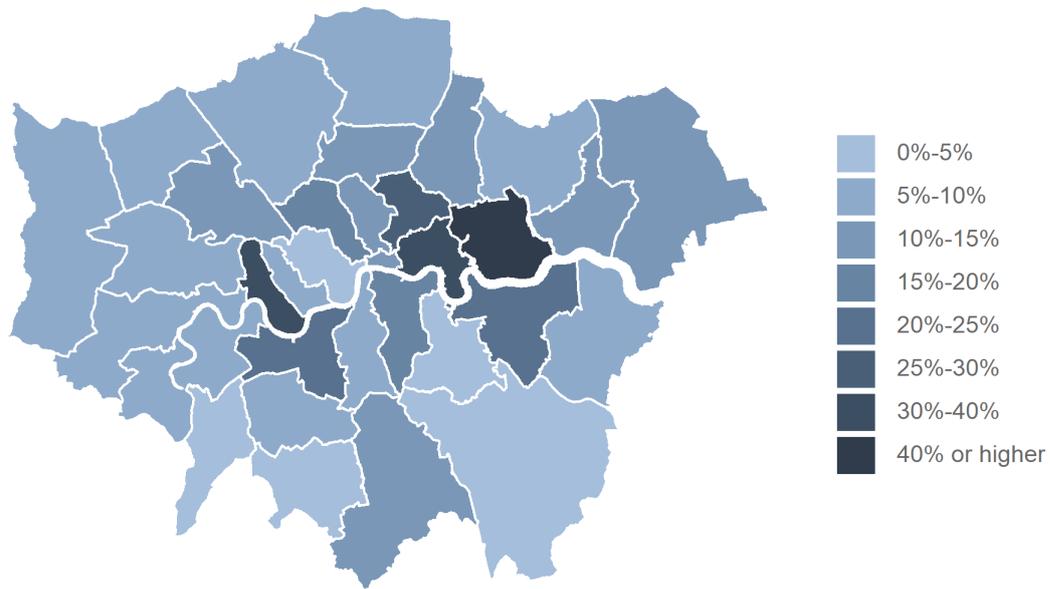
Employment growth is also dispersed in outer London: Sutton, Kingston upon Thames and Bromley all grow less than 5%, while Waltham Forest, Havering, Croydon, Brent, Barking and Dagenham, and Haringey grow at more than 10%.

Employment in the CAZ is projected to grow at 0.5% a year, close to the London average, while the NIOD grows faster at 1.5% a year.

Compared to the previous projections round, employment is projected to be 1% higher in inner London and 4% lower in outer London.

²⁴ See <https://data.london.gov.uk/dataset/borough-by-sector-employee-jobs>

Figure 7: Employment projections for London boroughs, % increase 2019-41



Contains Ordnance Survey data Crown copyright and database right [2015]

Table 4: Bi-angulated borough jobs by year

Local authority	Jobs, 000s		2019-41 change		Annual growth rate (%)
	2019	2041	(000s)	(%)	
Barking and Dagenham	64	73	9	14%	0.60%
Barnet	158	171	13	8%	0.36%
Bexley	97	104	7	7%	0.32%
Brent	148	168	19	13%	0.55%
Bromley	127	132	5	4%	0.17%
Camden	395	454	59	15%	0.64%
City of London	648	733	85	13%	0.56%
Croydon	138	155	17	12%	0.53%
Ealing	88	94	6	7%	0.31%
Enfield	128	137	9	7%	0.31%
Greenwich	102	127	25	24%	1.00%
Hackney	150	194	44	30%	1.18%
Hammersmith and Fulham	154	203	49	32%	1.27%
Haringey	83	92	9	10%	0.45%
Harrow	200	213	12	6%	0.26%
Havering	95	106	11	12%	0.50%
Hillingdon	93	99	6	6%	0.27%
Hounslow	179	194	15	8%	0.37%
Islington	258	292	33	13%	0.56%
Kensington and Chelsea	175	190	14	8%	0.33%
Kingston upon Thames	88	92	3	4%	0.17%
Lambeth	157	169	12	7%	0.36%
Lewisham	81	83	2	3%	0.11%
Merton	151	162	11	7%	0.32%
Newham	126	207	81	64%	2.28%
Redbridge	85	90	5	6%	0.27%
Richmond upon Thames	98	106	8	8%	0.36%
Southwark	307	367	60	20%	0.82%
Sutton	81	83	2	3%	0.11%
Tower Hamlets	334	465	131	39%	1.52%
Waltham Forest	89	99	10	11%	0.50%
Wandsworth	146	177	31	21%	0.88%
Westminster	784	820	36	5%	0.21%
Total London	6,008	6,850	842	14%	0.60%

Appendix A: Choosing historic trend years for productivity growth assumptions

Our approach to identifying London and sector trends in productivity and turning points has been based on informed judgements to identify the years that bookend short-term and long-term trends. We have then chosen a weighting of these trends to provide the key productivity growth assumption.

In this update, we supplement this with statistical approaches that provide a robustness check on our choices. The statistical literature provides many potential tools to identify trend breaks in time series. Here we consider the algorithm of Bai and Perron (2003).²⁵

In our context, this algorithm allows us to compare the fit of a model with a constant linear productivity trend to a linear model with one or more structural breaks.

The approach is a generalisation of the simple Chow test, which tests whether a single linear regression or a segmented regression with an exogenously given breakpoint best fits the data (an F-test that compares the residual sum of squares for the full versus segmented models). We show F-test results for a single break at every point in the series.

We then specify a minimum trend period of eight years in the 1971-2019 period, meaning the model can have up to five break points (i.e. six trend periods). For each number of breakpoints, the abovementioned Bai and Perron algorithm then finds the best-fitting combination of trends. It then chooses the 'optimal' number of breakpoints and the corresponding best-fitting breakpoint years by minimising the Bayesian Information Criterion (BIC). The BIC is a commonly used measure in model selection that prevents 'over-fitting' by penalising the addition of parameters (i.e. additional breakpoints in our context).

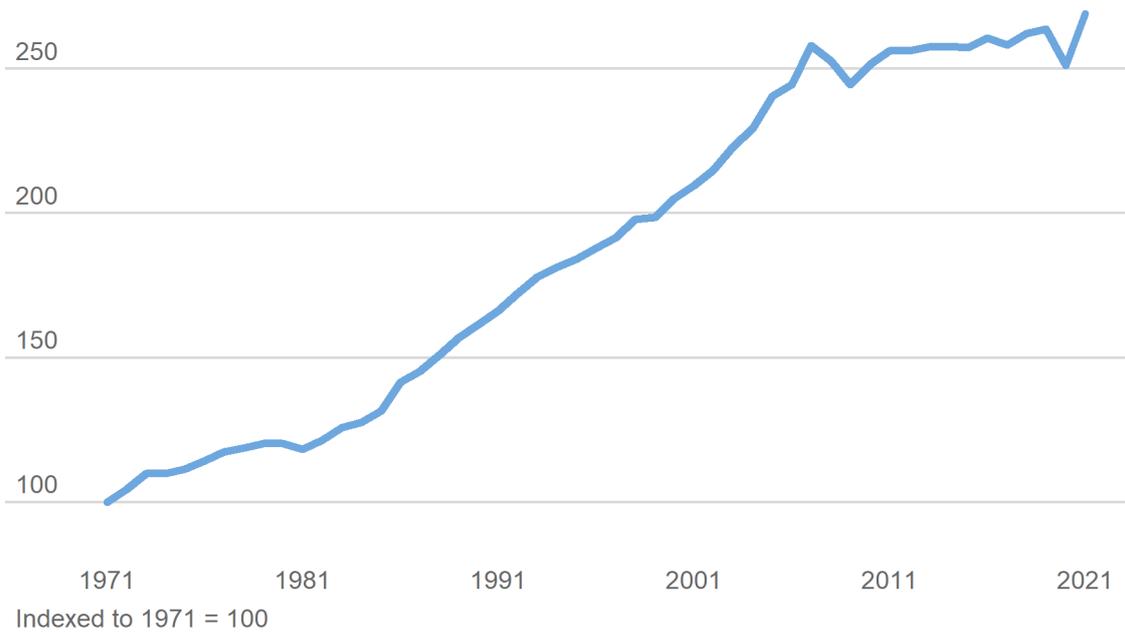
This data-led approach provides a complement to a pure-judgement based approach.

Results

Figure 8 shows the evolution of output per job in London from 1971 to 2021. It is the trends in this measure of productivity that we are seeking to identify.

²⁵ Bai, J., and Perron, P. (2003), "Computation and analysis of multiple structural change models", *Journal of applied econometrics*, 18(1), 1-22.

Figure 8: Historic productivity (GVA per job) in London, 1971-2019



The first step is to plot the F-statistics associated with a Chow test of a single structural break for each year in the series. Inspection of the results indicates a peak starting around 2004 and continuing through to 2008. This fits with wider evidence of a productivity slowdown at or before the start of the financial crisis.

We then use the algorithm. The optimal number of breaks reported by *strucchange* is a four-break division (Figure 9). However, inspection of the coefficients (Table 5) indicates that the entire period 1981-2007 had a relatively constant productivity annual growth rate of around 3.5%, albeit with a slowdown to 2% in the mid-1990s (coinciding with very fast employment growth). The minimum BIC analysis shows that two or three breakpoints have similar explanatory power as four breaks. Given the traditional dating of the global financial crisis slowdown to 2007-08, we take the periods of 1981-2007 and 2008-19 as our trend periods.

Figure 9: Breakpoint analysis of historic London productivity

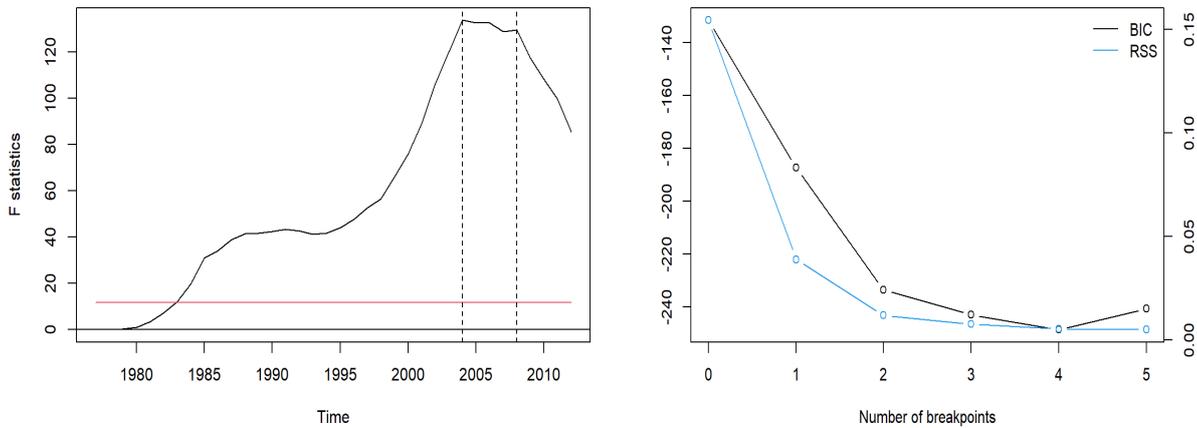


Table 5: Productivity in five segment division

Trend years for 5 segment division	Trend productivity growth, % per year
1971–1980	1.98%
1981–1992	3.57%
1993–2000	2.00%
2001–2007	3.41%
2008–2019	0.48%

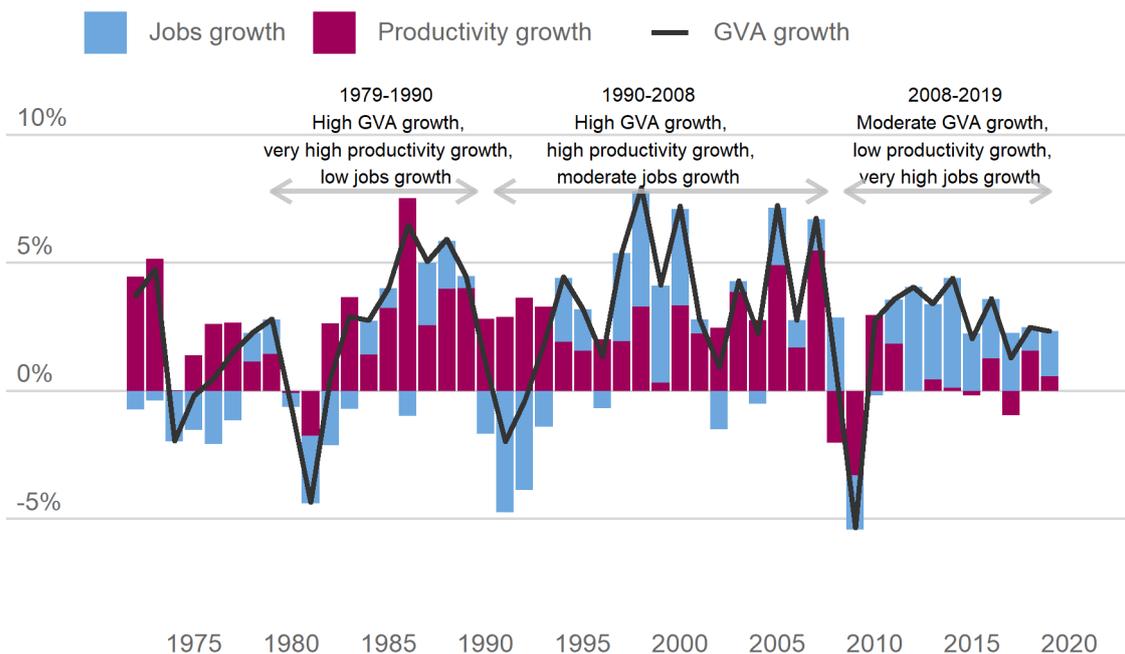
Finally, we are left with a judgement as to how much weight to assign the short-term and long-term trend productivity growth rates. We settle on a 60/40 split. This implicitly assumes that productivity will rise faster than the unusually low recent experience, while striking an appropriate balance between the historical record and the recent period.

Appendix B: Scenarios for London’s output and productivity growth

Economic outcomes in London since the 2007–08 financial crises have diverged from previous experience. The 2008–19 period has been characterised by relatively low productivity growth, moderate output growth and high jobs growth. Previous economic cycles have followed different trajectories – not just for jobs, but also for productivity.

As a sensitivity test for this round of projections, we run three alternative scenarios, each using the output and productivity growth rates that the London economy achieved in its last three economic cycles: 1979–90, 1990–2008 and 2008–19.²⁶

Figure 10: London GVA growth and components, % per year



The upper panel of Table 6 summarises the annual average growth rates recorded during each of these three periods, as well as for our 2019–51 projection period.²⁷

Several points stand out. First, GVA growth in our projection period is lower than in any other period. This is a reflection of the OBR’s more pessimistic stance on growth for the UK, combined with our assumption that growth in London declines to the UK average by 2051. Second, while GVA growth was fastest in the 1990–2008 period, jobs growth was then much lower than in the 2008–19 period, also reflected in higher productivity growth. And third, while we project relatively low jobs growth, the 1980s combined high output growth with even higher productivity growth, resulting in falling jobs numbers.

The lower panel in Table 6 shows what out-turns in 2051 would be under the three scenarios *relative to* the out-turns in our central trend-based employment projection.

²⁶ These cycles have been dated using peak-to-peak (pre-recession) output.

²⁷ Note, we use 2019 as the starting point here as it is a ‘peak’ year, and so the obvious point to roll forward alternative growth and productivity assumptions based on the peak-to-peak methodology.

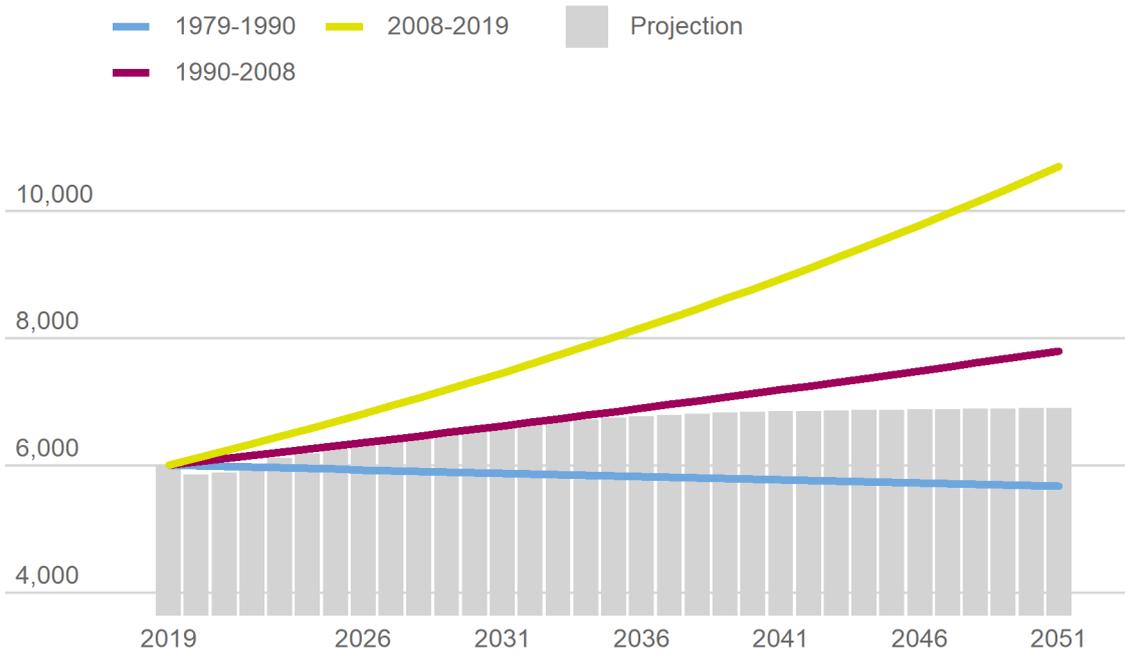
All three scenarios deliver higher levels of economic output (GVA) in 2051 than our central projection, but the balance between productivity and jobs is very different. While jobs would be lower using 1979-90 assumptions, productivity (GVA per job) would be 50% higher. Given the strong empirical link between output per job and average wages, the 1979-90 scenario would likely deliver the highest living standards for residents; the 1990-2008 scenario follows closely on living standards and with many more jobs; and the 2008-19 scenario is associated with lower living standards and a huge increase in jobs.

Table 6: Scenarios: growth rates and out-turns in 2051

	GVA	GVA per job	Employment
Annual growth rates			
GLA Economics (2022)	1.9%	1.4%	0.4%
Scenarios			
1979-1990	2.5%	2.7%	-0.2%
1990-2008	3.4%	2.5%	0.8%
2008-2019	2.2%	0.4%	1.8%
Out-turn in 2051 (scenarios relative to out-turn for central projection)			
GLA Economics (2022)	£830 bn	£120,100	6.9m
Scenarios			
1979-1990	+23%	+50%	-18%
1990-2008	+59%	+41%	+13%
2008-2019	+11%	-28%	+55%

Our projections deliver a balance of these outcomes – productivity improving from the most recent cycle but not reaching previous highs, and jobs gains higher than in the 1980s but slower than in the 1990-2008 period. Figure 11 illustrates the jobs outcomes graphically.

**Figure 11: London jobs projections with historic growth and productivity assumptions
(Jobs, 000s)**



Appendix C: Alternative, population-based employment projections

Summary

- Population projections have declined since the past round of long-term employment projections were published.
- Population-based employment projections imply slightly slower jobs growth than our central productivity trend-based projections, a difference of between 1.5 and 4.5% in 2050.

Background

Previous rounds of projections have provided one or more sets of projections built on an alternative, population-based methodology.²⁸ These are provided as a sense-check or benchmark against which to consider our central trend-based projections. An alternative model is particularly important for this round of projections given the heightened uncertainty around GVA and productivity trends and the COVID-19 pandemic. Population-based approaches have the advantage that they do not depend on explicit assumptions about the future path of macroeconomic variables (GVA, productivity).

In this report we use a similar methodology to that used in previous rounds. We first take trend-based population projections produced by the GLA demography team, and apply estimates of the employment rate for London residents to give projections of the number of employed Londoners in each year through to 2050.

We then make, and test, an assumption that rates of in-commuting and out-commuting to and from London are constant. Taking this approach implies that employment in London on a workplace basis can be projected by estimating the growth in employment in London on a residence basis.²⁹

The approach in 2017 was to hold the working-age employment rate constant at the average of the 1993–2016 rate. We move beyond this simplification to reflect the rapid rise in the employment rate in the late 2010s (see Figure 13), particularly among older age groups and female workers by applying recent (five-year) average rates by sex and five-year age groups (including for workers aged 65 and above).³⁰ While there are early signs that post-pandemic employment rates for older age groups might be falling back, we do not yet have enough evidence to revisit this assumption.

Data

The September 2021 round of GLA population projections consists of four trend-based scenarios (central upper, central lower, high and low)³¹ with population projected for each year, up to 2050, separately by age (up to 90 and above) and sex.³²

²⁸ For example, see <https://www.london.gov.uk/sites/default/files/llmp-2017-final.pdf#page=21>

²⁹ An adjustment also has to be made to account for second jobs. (Alternatively, by assuming that the number of second jobs per employed resident is roughly constant, the approach will be valid without adjustment.)

³⁰ In related work, the OECD ([working paper 1384](#): A revised approach to trend employment projections in long-term scenarios, 2017) separates trend and cyclical components of sex, age, country and time-specific employment rates by exploiting the correlation between employment rates and an exogenous estimate of labour market slack. It is not clear that such a measure is available for London. However, future updates could explore using UK estimates of (for example) GDP versus potential output as estimated by the Bank of England and/or OBR. Alternatively, we could use techniques such as Kalman or Hodrick-Prescott filtering.

³¹ See <https://data.london.gov.uk/dataset/population-projections-documentation> for details of construction.

³² In addition, there are also three housing-led scenarios (housing targets scenario, identified capacity scenario and a past delivery scenario). These projections run to 2041.

We turn to the ONS Annual Population Survey for historical employment rate data (retrieved from Nomis) for calendar years 2004-19 by ages 16-19; and thereafter in five-year age groups up to 80 and above.³³

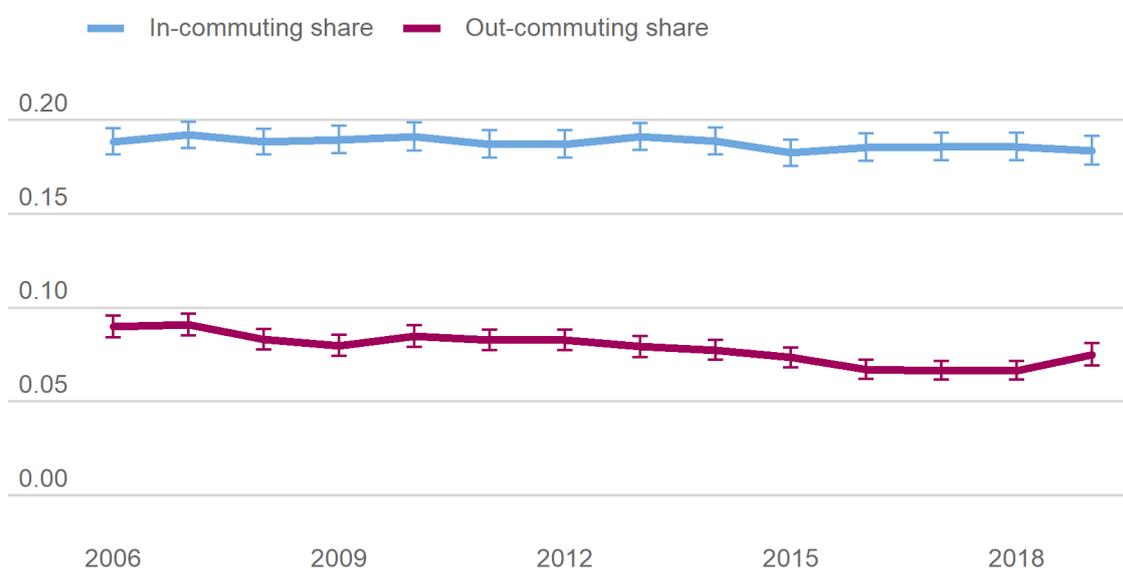
Methodology

The methodology for projecting workforce jobs from resident population data and employment rates is outlined in previous rounds of long-term employment projections.³⁴

To summarise, if we assume that the share of jobs held by Londoners that are based outside of the capital is constant, and that the share of jobs located in the capital that are held by people residing outside of London is constant, then the growth rate of employment among Londoners is the same as the growth rate of workforce jobs inside London.

Figure 12 shows that this assumption broadly holds over the period 2006-19. That is, in-commuting and out-commuting rates have been relatively consistent over this period.

Figure 12: Commuting flows, 2006-19



Source: ONS Annual Population Survey, 2006-2020. In-commuting is non-residents as share of London jobs; out-commuting is residents travelling to work outside London as share London workforce. Error bars represent 95% confidence interval of estimates.

This implies that we can estimate the number of jobs in London by projecting the growth rate of employment for Londoners and applying that to workforce jobs from a base year.

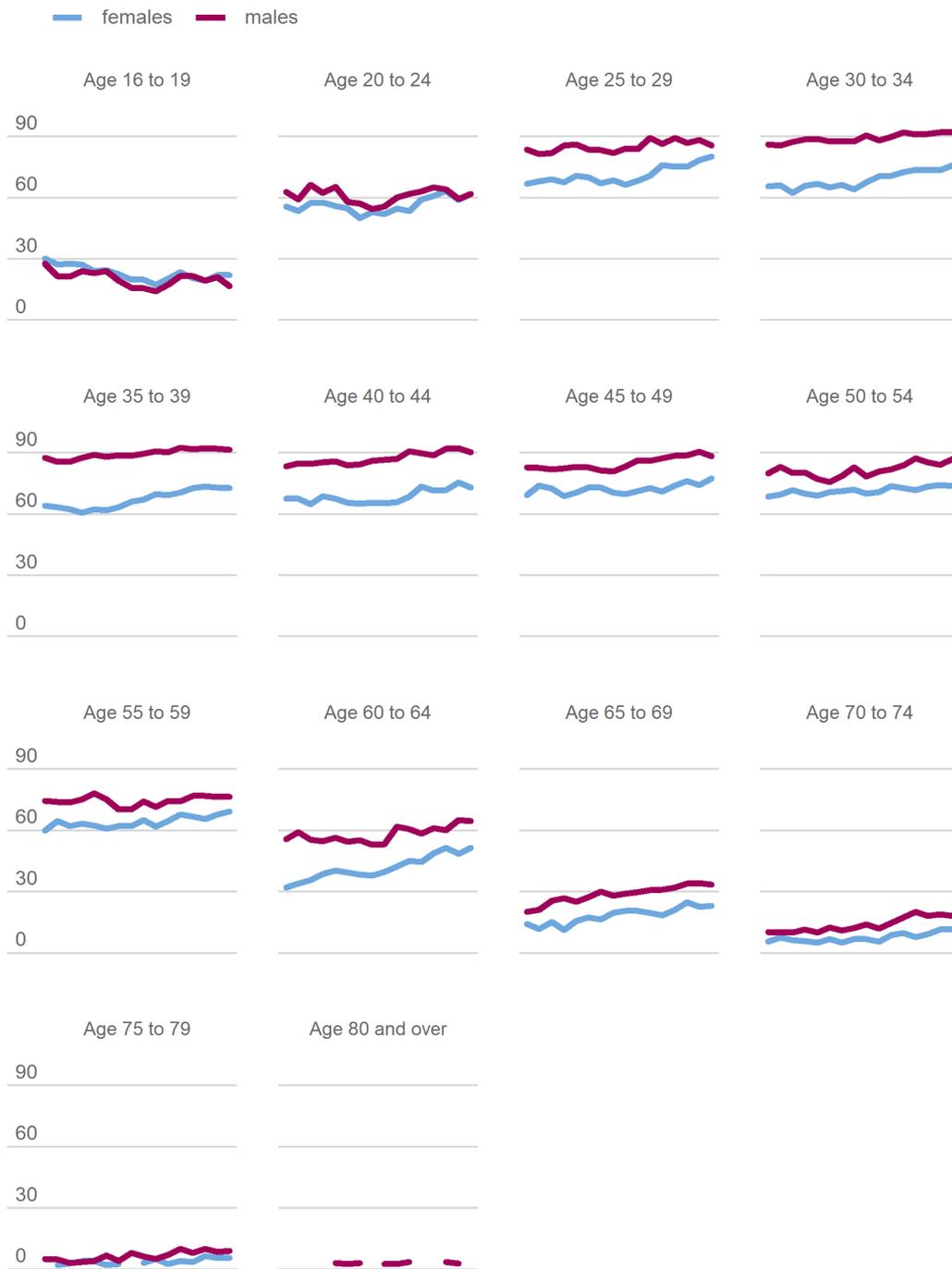
In previous rounds of projections, we have used a long-term average of employment rates (e.g. in 2017, the rate for 1993-2016). However, employment rates have, in general, been rising over the past decade – particularly for females. Employment rates also vary considerably by age, so the changing age structure of the population is also important.

³³ See <https://www.nomisweb.co.uk/datasets/aps170>

³⁴ See <https://www.london.gov.uk/sites/default/files/llmp-2017-final.pdf> (Appendix C)

To estimate the growth rate of employment in London, we therefore apply employment rate data by age and sex to projections of London’s population. For this, we use the average employment rate in each age-by-sex category, over the period 2004-19.^{35,36}

Figure 13: Historic employment rates in London, 2004-19 (%)



³⁵ We have experimented with using both longer (2015-19) and shorter (2017-19) averages, as well as taking 2019 rates, but there is little variation in the results. Possibly this is due to changes in the age composition of the workforce.

³⁶ Although we have 2020 data, we exclude it to avoid the transitory fall in employment during the pandemic. We recognise that post-pandemic rates might not fully return to 2019 levels; however, in mid-2022, we do not yet have enough evidence to suggest otherwise.

Applying the average (resident) employment rates to projected (resident) populations yields estimates of the number of employed Londoners in each projected year. From this we then calculate the annual growth rate.

Finally, we use the constant-commuting assumption and take the total number of workforce jobs in 2019 as our base year (6.08m jobs). On this basis, we apply the resident employment growth rates calculated above to deliver projected workforce jobs. We carry out this process on each of the four population scenarios discussed above: central upper, central lower, high and low.

Results

The results of our alternative, population-based projections provide a central range of London workforce jobs in 2050 of 6.6m to 6.85m.

Our central trend-based model, with its currently chosen parameters, projects 6.9m jobs in 2050 – around 150,000 jobs more than the central upper, and around 300,000 more than the central lower population-based model. It remains, however, around 500,000 jobs below the high population-based scenario of 7.4m jobs; and 900,000 jobs above the low population-based scenario of 6m jobs.

The differences in the central scenarios, of around 0.8% to 4.4% of jobs in 2050, are relatively small over a long-term timeframe, although the gap is wider in the earlier years of the projections. Based on the central-upper population scenario, the difference peaks at around 240,000 jobs, or 3.6% of productivity trend-based projected jobs in 2031.

These gaps are, though, in the range of plausible changes to our in-commuting, out-commuting and employment rate assumptions. Clearly, a change of one percentage point (increase for in-commuting, decrease for out-commuting) to the commuting rates, as a share of jobs, directly adds 2% to the population-based jobs projection. An increase of one percentage point to the working-age resident employment rate would add around another 1%. These changes would put the productivity trend-based projections in the middle of the population-based central range.

Our productivity trend-based projections imply that job rates in 2051 will be around 290,000 jobs below the level projected in 2017. This is of similar magnitude to the decline in the projected working-age population of around 200,000 since the 2017 publication. This provides support for the jobs outcome in the productivity trend-based projection.

Appendix D: Detailed sector historic and projected jobs

This appendix provides details of the productivity trend selection assumptions described in Chapter 2 and in further sector-by-sector results.

Trend selection assumptions

We construct sector-level projections for London using a similar, but not identical, approach as for London's total employment. That is, by using productivity trends and expected GVA.

The difference between the London and sector projections comes from the lack of a historical sector-level GVA series for London that extends back to 1971, and a forecast of sector-level GVA extending out to 2051.

Instead, we consider trends in sector productivity measured by London GVA per sector employment job. We carry out the statistical analysis described in Appendix A to determine the appropriate trends to project forward in each sector, and then constrain total sector jobs in each year to the total projected London jobs.

For some sectors we supplement our analysis using the GLA Economics detailed jobs series for 1998-2020 to inform sector judgements. For instance, when considering trends in the manufacturing sector, we note that a large fraction of job losses since 1998 have been in the printing SIC division, which has fallen from 44,600 jobs to less than 10,000. Meanwhile, the food and beverages division has not seen growth decline over the period – it now makes up nearly one-third of manufacturing in the capital. We therefore place more weight on recent trends rather than the fast decline seen over the long term.

Table 7 provides the trend selection assumptions that we use to project sector jobs.

Table 7: Productivity trend selection for sectors

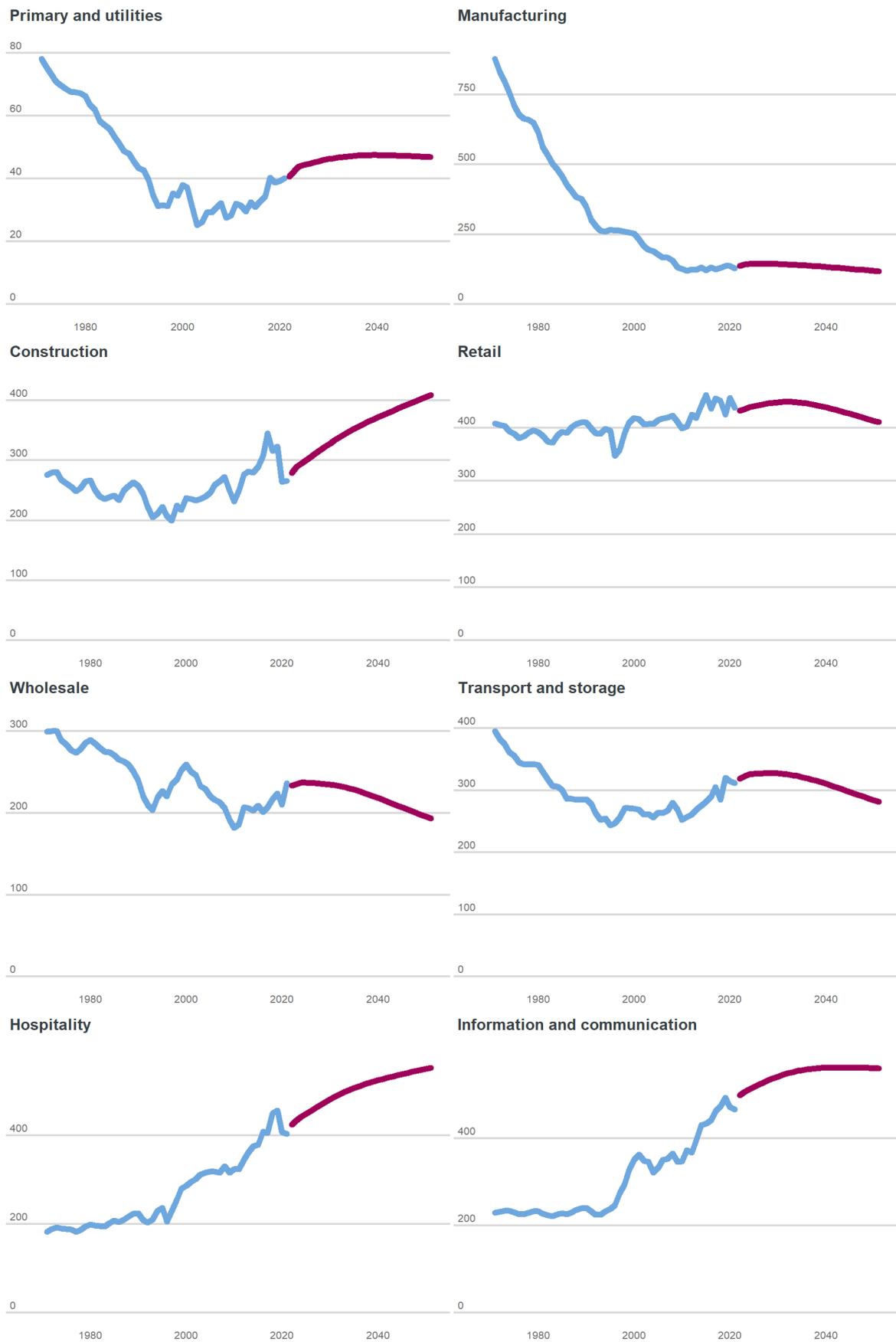
Sector	Long-term trend start year	Long-term trend weight	Short-term trend start year	Short-term trend weight	Productivity growth rate
Primary and utilities	1981	0.15	2003	0.85	1.49%
Manufacturing	1995	0.00	2009	1.00	2.48%
Construction	1997	0.50	2010	0.50	0.51%
Wholesale	1987	0.25	2005	0.75	2.49%
Retail	1996	0.25	2005	0.75	1.97%
Transport and storage	1986	0.40	2008	0.60	2.28%
Hospitality	1999	0.70	2007	0.30	0.90%
Information and communication	2001	0.40	2008	0.60	1.40%
Finance	1989	0.65	2013	0.35	2.10%
Professional and property	1998	0.80	2008	0.20	0.71%
Administration and support	2002	0.45	2009	0.55	1.26%
Public administration	2002	0.65	2013	0.35	2.63%
Education	1991	0.45	2009	0.55	1.59%
Health and social work	1998	0.45	2009	0.55	0.88%
Arts, entertainment and recreation	1991	0.15	2003	0.85	0.59%
Other services	1971	0.25	1997	0.75	1.17%

Further results

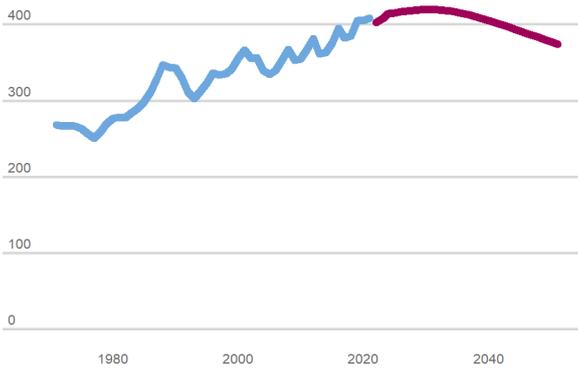
Table 8: Historic and projected employment growth rates by decade

Decade	1971-1981	1981-1991	1991-2001	2001-2011	2011-2021	2021-2031	2031-2041	2041-2051
Primary and utilities	-19%	-32%	-14%	-14%	25%	16%	2%	-1%
Manufacturing	-36%	-46%	-23%	-48%	7%	11%	-8%	-10%
Construction	-9%	-3%	-3%	6%	7%	25%	13%	9%
Wholesale	-5%	-23%	14%	-26%	27%	-1%	-8%	-11%
Retail	-6%	4%	4%	-3%	9%	3%	-3%	-6%
Transport and storage	-17%	-16%	-3%	-4%	21%	5%	-6%	-9%
Hospitality	8%	6%	41%	10%	25%	21%	8%	5%
Information and communication	-1%	2%	56%	3%	25%	17%	3%	0%
Finance	4%	18%	11%	0%	11%	3%	-4%	-7%
Professional and property	9%	38%	34%	27%	33%	15%	10%	7%
Administration and support	3%	34%	58%	2%	8%	20%	4%	1%
Public administration	-13%	-11%	-18%	4%	21%	1%	-9%	-12%
Education	6%	-15%	9%	38%	16%	8%	1%	-2%
Health and social work	11%	3%	4%	30%	38%	11%	8%	5%
Arts, entertainment and recreation	15%	31%	28%	4%	13%	27%	12%	8%
Other services	12%	29%	57%	7%	16%	12%	5%	2%
Total London	-8%	-4%	15%	5%	20%	12%	4%	1%

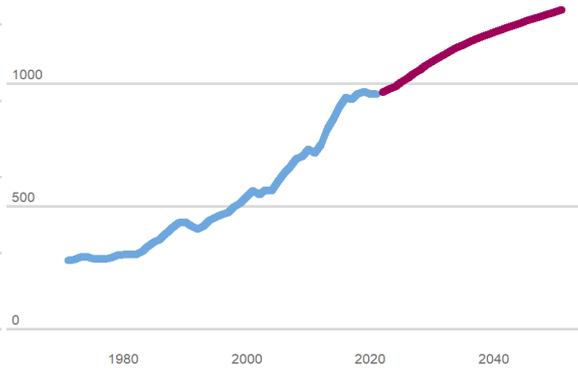
Figure 14: Historic and projected sector jobs (000s)



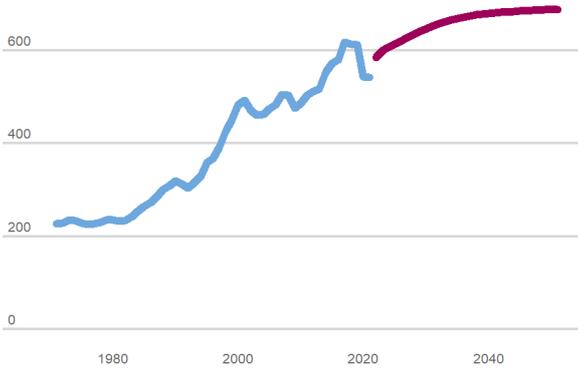
Finance



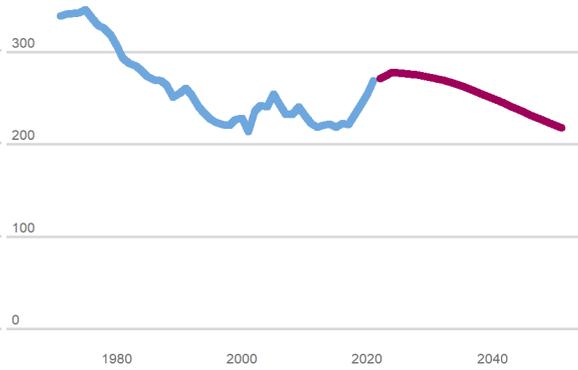
Professional and property



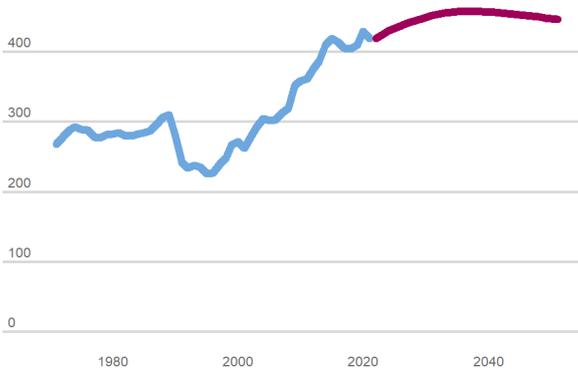
Administration and support



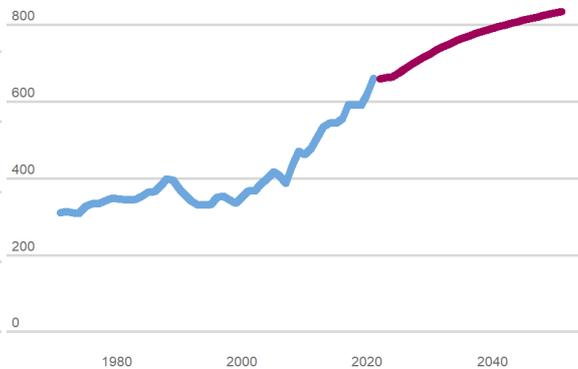
Public Administration



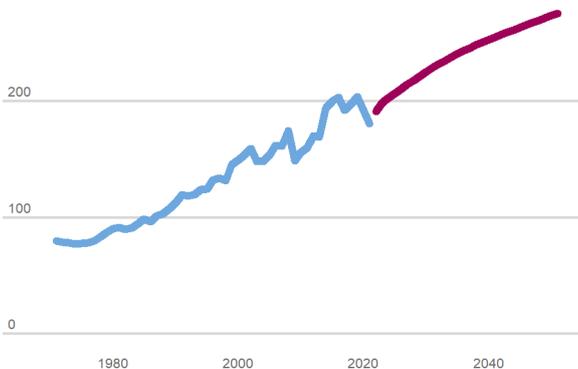
Education



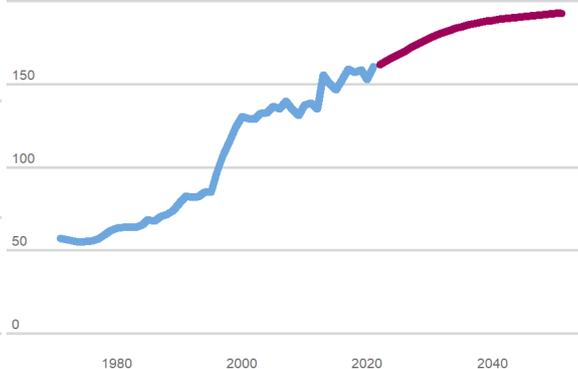
Health and social work



Arts, entertainment and recreation



Other services



Appendix E: Details of borough projections

Methodology

This appendix sets out details, briefly described in Chapter 3, of the three-step process used to project trend-based borough jobs; and the process to bi-angulate these results with the LESD.

Borough trend-based employment projections

Step 1: London employee and self-employed jobs

We combine historical trends in London output per job in each type of employment to project the share of self-employment in total jobs over time, and then apply these shares to the London total jobs projections already produced.

This process is mathematically equivalent to projecting the shares of jobs held by employees and the self-employed. The share of self-employment jobs in London has risen from just over 5% in 1971 to a high of nearly 14% in 2014. Since then, self-employment has ticked down. There has also been a further decline since around the start of the pandemic, but it is not yet clear whether this will be temporary or permanent. Self-employment jobs accounted for 13% of the total in 2019, falling to 12% in 2021.

Given the previously strong and long-lasting upward trend in the self-employment share, we project a continuation, albeit at a shallower rate than previously. Our projection implies that the self-employment share will reach its previous high in around 2040.

Step 2: Borough self-employment jobs

We take the 2008-20 borough shares of total London self-employment jobs and assume that these shares return to their 2016-20 average over the following five years, and then remain at that level from 2026 to 2050. We apply these shares to the total London self-employment jobs projected from Step 1. Self-employment jobs are concentrated in inner London boroughs, with the City of London, Westminster and Southwark alone accounting for nearly 30% of the London total. However, there are also significant numbers in outer London boroughs such as Barnet and Brent.

Step 3: Borough employee jobs

Borough employee jobs data from the ONS BRES differs from ONS WFJs data (which does not have a geographic component below the London level) due to differences in methodology and coverage. To create a jobs series for boroughs, we align the BRES series on a borough-by-sector basis to the WFJ sector series.

That is, for each sector we calculate the share of jobs in each borough, and apply those shares to the WFJ London sector totals. The sum across sectors provides the aligned borough totals.

Mathematically, for each year, workforce jobs are calculated for each borough, b , where sectors are represented by s , using the following equation:

$$WFJ_b = \sum_s \frac{BRES_{sb}}{BRES_s} * WFJ_s \quad \dots (1)$$

Finally, we follow the methodology used for the previous round of projections by selecting detailed borough-specific productivity trend start dates for long- and short-term periods before combining them using weights. We select these trends based on employee jobs growth and borough shares of London jobs,

while using GLA Economics' borough-by-sector employee job series for more granular input.³⁷ The chosen trend dates and weights, along with the implied productivity growth rates, are shown in Table 9.

Projecting these trend rates forward and constraining the totals to the total London employee projections from Step 1 provides our estimate of borough employee jobs.

³⁷ See <https://data.london.gov.uk/dataset/borough-by-sector-employee-jobs>

Table 9: Borough productivity trends for employee jobs

Borough	Long-term trend start year	Long-term trend weight	Short-term trend start year	Short-term trend weight	Productivity growth rate
Barking and Dagenham	1996	0.25	2009	0.75	1.48%
Barnet	1993	0.30	2009	0.70	1.61%
Bexley	2001	0.50	2010	0.50	1.45%
Brent	1996	0.50	2009	0.50	1.07%
Bromley	2008	0.25	2011	0.75	1.74%
Camden	1993	0.80	2013	0.20	0.96%
City of London	1981	0.80	2012	0.20	1.44%
Croydon	1997	0.40	2013	0.60	1.84%
Ealing	2003	0.50	2012	0.50	1.58%
Enfield	2001	0.30	2013	0.70	1.52%
Greenwich	1997	0.50	2009	0.50	1.06%
Hackney	1987	0.75	2007	0.25	1.05%
Hammersmith and Fulham	1999	0.50	2009	0.50	1.62%
Haringey	2001	0.25	2010	0.75	1.83%
Harrow	1991	0.25	2011	0.75	1.87%
Havering	1999	0.50	2010	0.50	1.45%
Hillingdon	1995	0.50	2015	0.50	1.77%
Hounslow	1991	0.70	2012	0.30	1.18%
Islington	1981	0.50	2003	0.50	0.91%
Kensington and Chelsea	2001	0.50	2011	0.50	1.29%
Kingston upon Thames	2001	0.50	2013	0.50	1.58%
Lambeth	1991	0.40	2009	0.60	1.33%
Lewisham	1997	0.33	2011	0.67	1.86%
Merton	1993	0.50	2011	0.50	1.59%
Newham	1987	0.75	2003	0.25	1.15%
Redbridge	1995	0.50	2009	0.50	1.43%
Richmond upon Thames	1991	0.20	2009	0.80	1.54%
Southwark	1981	0.60	2001	0.40	1.07%
Sutton	1993	0.00	2006	1.00	1.75%
Tower Hamlets	1971	1.00	2011	0.00	0.53%
Waltham Forest	1997	0.50	2011	0.50	0.99%
Wandsworth	1991	0.33	2011	0.67	1.42%
Westminster	1997	0.50	2007	0.50	1.42%

Biangulation of trend-based projections with LESD

This process delivers productivity trend-based jobs for London boroughs, which we provide in the data supplement. However, the spatial distribution of jobs also depends on employment site capacity as a strong constraint. We therefore follow a process used in previous reports to bi-angulate the trend results with data on expected increases in site capacity across London, and treat these results as our baseline borough estimates.

Data for this step comes from the 2021 LESD, which provides borough employment site capacity changes at five-year intervals from 2021 to 2041.

The process is as follows:

- We add identified increases in employment site capacity at five-year intervals starting in 2021 to the level of 2019 borough jobs (employee and self-employed) to provide ‘capacity’ projections by borough.³⁸
- We deduct borough trend self-employment projections from the ‘capacity’ estimates to provide employee site capacity. It could be argued that some self-employment jobs take place at traditional employment sites – for instance, consultants working at client offices – and that we should therefore consider self-employment jobs as making up part of site capacity. However, those jobs are potentially less attached to a particular location and are therefore less likely to impinge on capacity constraints. We continue to follow the 2017 methodology and exclude self-employment jobs from the constraints.³⁹
- We apply a set of rules for biangulation of the employee trend-based projections with the capacity projections.
- The rationale for treating borough capacity differently follows that used in the 2017 report: boroughs that are in or close to central areas are assumed to have employment limited by capacity constraints, so we give more weight to planned site additions. We assume these boroughs to be: at capacity if the trend is below capacity; at trend if trend is greater than capacity, but less than 110% of capacity; or 110% of capacity if trend is greater than 110% of capacity. These boroughs are Camden, City of London, Hackney, Hammersmith and Fulham, Islington, Kensington and Chelsea, Lambeth, Newham, Southwark, Tower Hamlets, Wandsworth, and Westminster.
- In two cases, Croydon and Greenwich, there are plans for significant increased employment site capacity but with uncertainty about the pace it will be taken up. For these boroughs we take an average of the capacity and trend projections.
- In all other boroughs, we assume that there is no single, clear alternative explanation for the future path of employment apart from historic trends; and set employment equal to the trend level.

³⁸ Implicit in this step is an assumption that actual borough jobs in 2019 are at capacity. In practice, this means that when interpreting our projected capacity levels in subsequent years these projections are relative to the (unknown) surplus/deficit to capacity that already existed in 2019.

³⁹ We also make no allowance for employee jobs in industries that do not take place at employment sites not covered by the LESD such as construction, transport, etc. We also note that the LESD does not cover small employment sites (those of less than 0.25 hectares).

- Borough employee jobs projections for all boroughs are then constrained such that the total London employee jobs under biangulation are the same as the trend projections.⁴⁰
- Borough employment projections are the sum of the rules-based employee jobs projections and the trend self-employment jobs projections.

Projections for the Central Activities Zone (CAZ) and Northern Isle of Dogs (NIOD)

We use these borough-level estimates to construct a series for the CAZ and the NIOD in a three-stage process.

First, we obtain lower-level super output area estimates of employee jobs from the ONS BRES⁴¹ and calculate the share of borough jobs that the estimate represents.⁴² We calculate these shares for 2015-20 and the average across the period.⁴³

Second, we take the physical land share of each Lower Super Output Area (LSOA) in each borough that lies within the CAZ/NIOD.

And third, we apply these shares to the bi-angulated borough-level jobs estimates.

⁴⁰ This is the same approach as used in previous reports. However, we gave consideration to an approach that would maintain the capacity-constrained boroughs at capacity, with the outer boroughs constrained such that the total number of London employees would remain the same as under trend. Given that trend growth is projected to be significantly slower than capacity in London as a whole, this would have the effect of reducing outer London employment by more than 10% relative to trend; and increasing the share of central employment from its (stable) historical level around 60% to over 65%.

⁴¹ Safeguarded access dataset, downloaded from Nomis.

⁴² We do not have estimates of self-employment jobs by LSOA; and implicit in our treatment is the assumption that self-employment by LSOA, as a share of borough jobs, follows that of employee jobs, i.e. places within boroughs that have a lot of employee jobs also have a lot of self-employment jobs.

⁴³ In previous work we took only the latest year shares; but with the pandemic and year-to-year variation in estimates, we prefer a medium-term average.

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