The 2017 London Strategic Housing Market Assessment

Part of the London Plan evidence base

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Addendum to the 2017 SHMA – Size mix scenarios

Introduction

A.1. The size mix of new homes is an important consideration in planning policy and therefore a key focus of assessments of housing requirements. However, estimates of the requirement for new homes of different sizes are sensitive to the assumptions used, particularly those concerning the occupancy of the housing stock.

A.2. This addendum to the 2017 London Strategic Housing Market Assessment (SHMA) sets out three variations on the size mix of new homes required in London, illustrating the impact on the identified requirements of the assumptions used.

Scenarios

A.3. Occupation rates of housing are calculated according to the widely used 'bedroom standard', which uses a list of criteria to determine how many rooms a household 'requires'. The bedroom standard allocates one bedroom for each of the following:

- each adult couple
- any other adult aged 21 or over
- two adolescents of the same sex aged 10 to 20
- two children regardless of sex under the age of 10.

For example, a couple with no children would 'require' one bedroom, and couple with two children aged 8 and 12 of different sex would 'require' three bedrooms.

A.4. A household is considered to be 'overcrowded' if they have at least one bedroom fewer than they require according to the bedroom standard. For example, a couple with one child 'requires' two bedrooms, so if they only had one bedroom then they would be overcrowded.

A.5. A household is considered to be 'under-occupying' a home if they have at least two bedrooms more than they require according to the bedroom standard. For example, a couple with no children 'requires' one bedroom, so if they had three bedrooms then they would be under-occupying, but they would not be under-occupying if they had two bedrooms as that is only one bedroom more than they require.

A.6. As paragraph 6.31 of the main report states, "rates of under-occupation are very low for both private and social tenants", at around 8%. However, the rate of overcrowding in all rented sectors is higher, at around 16%, while a further 28% of renting households have exactly one 'spare' room, according to the bedroom standard. Only 56% of renters in London live in homes that are exactly the 'right' size for their household.

A.7. The 2017 SHMA report set out two scenarios regarding housing size mix requirements based on different assumptions about under occupation, which are summarised below. Although not produced in the main SHMA report, following the Technical Seminar prior to the London Plan Examination in Public, the Greater London Authority produced a new

variant scenario. This scenario was created from the position that under-occupation in both the private rented and the low-cost rent sector (as well as homeowners) continues at current rates, without assuming any change in the proportion of renting households with a spare bedroom (which again is very low compared to that in the owner-occupied sector).

A.8. This scenario (reproduced below as Table A1) identifies a need to provide 9,042 family-sized low-cost rented homes a year (6,236 with three bedrooms and 2,806 with four bedrooms or more). This is based on the observed trends in under-occupation rates remaining very low for both private and social tenants, but without taking the more extreme assumption that all renters in London will live in homes that are exactly the 'right' size for their household.

Table A1: Net annualised requirement for new homes, 2016-41, based on current occupancy rates continuing into the future for homeowners, private renters and low-cost rent tenants

	1b	2b	3b	4b+	Total	% of total
Market	4,418	4,355	6,987	7,277	23,037	35%
Intermediate	1,775	4,873	2,939	2,281	11,869	18%
Low cost rent	13,554	8,376	6,236	2,806	30,972	47%
Total	19,747	17,604	16,163	12,363	65,878	100%

A.9. Table 15 in chapter 9 of the main SHMA report set out the results of a variant scenario, in which private renters (as well as homeowners) are assumed to continue to under-occupy their homes at current rates (rates that are much higher for homeowners than for private renters), but all households in low-cost rent occupy the size of home they 'require', with none having a spare bedroom[1]. As shown in Table 15 (reproduced below as Table A2), this change results in a much higher requirement for smaller units, especially in the low-cost rent sector.

[1] A similar assumption which assumed that no households in low cost rent would have a spare bedroom was used to produce the main results of the 2013 London SHMA

Table A2: Net annualised requirement for new homes, 2016-41, based on current occupancy rates continuing into the future for homeowners and if private renters continue to under-occupy at current rates but assuming that all low-cost rent tenants occupy homes that are exactly the 'right' size at the bedroom standard

	1b	2b	3b	4+b	Total	% of total
Market	4,402	4,354	7,015	7,266	23,037	35%
Intermediate	1,921	5,042	2,820	2,087	11,869	18%
Low cost rent	20,631	5,506	2,706	2,129	30,972	47%
Total	26,953	14,902	12,540	11,482	65,878	100%

A.10 If it were possible to ensure that every low-cost rented home was always occupied with no spare bedrooms, as this scenario assumes, there would only be a need for 4,835 family-sized low-cost rented homes a year (2,706 with three bedrooms and 2,129 with four bedrooms or more). However, the reality is that some renting households, even those in low-cost rented homes, will always have more bedrooms than they need. Without a change to current patterns of under occupation in rented homes, which are already very low, there would be a need for 9,042 family-sized low-cost rented homes a year as identified in Table A1.

A.11. The size mix of the requirements set out in the main findings of the 2017 London SHMA (see Table 13 of the main report) was derived using the hypothetical assumption that all renting households occupy only the size of home they require according to 'the bedroom standard' with no renting households having any spare bedrooms, even though in reality some renting households currently have more or fewer bedrooms than they need (see paragraph 6.31). These results are reproduced in the table below (Table A3). Further details on how these results were derived can be found in chapters 6 and 7 of the main report.

Table A3: Net annualised requirement for new homes 2016-41, based on current occupancy rates continuing into the future for homeowners but that all private renters and all low-cost rent tenants occupy homes that are exactly the 'right' size at the bedroom standard

	1b	2b	3b	4b+	Total	% of total
Market	10,682	2,043	4,101	6,210	23,037	35%
Intermediate	4,334	3,434	2,409	1,693	11,869	18%
Low cost rent	21,318	5,311	2,462	1,881	30,972	47%
Total	36,335	10,788	8,971	9,783	65,878	100%

A.12. As this table shows, by taking the assumption that there are no spare rooms in any homes in the rented sector, the overall requirement for family-sized homes reduces by nearly 10,000 per year, from 28,526 in the first scenario (Table A1) to 18,754 in this scenario (Table A3).

A.13. Given that the first scenario outlined above (Table A1) is based on currently available evidence and observed trends in under-occupation rates, this provides a more realistic assessment of London's current and future strategic need for housing than either the second or third scenarios (Table A2 and Table A3). On this basis, where there is no robust evidence of local need, this should be used as the starting point for considering the regional context for the size mix for a particular scheme.

Executive summary

Introduction

0.1. The 2017 London Strategic Housing Market Assessment (SHMA) sets out estimates of London's current and future housing requirements, to inform the development of the Mayor's London Plan and London Housing Strategy. It estimates the number of new homes needed in London by tenure and type, as well as analysing the housing requirements of important sub-groups of the population.

0.2. All of these estimates are provided at the Greater London level only. Local housing provision targets are set out in the London Plan, based on the estimated capacity for new homes in each London borough as reported in the accompanying Strategic Housing Land Availability Assessment (SHLAA).

0.3. The SHMA provides evidence of London's housing requirements, but does not determine the policy response. The Mayor has taken the evidence from the SHMA and SHLAA into account in deciding the policies that are set out in his draft London Plan and draft London Housing Strategy, alongside other relevant factors such as the availability of public funding for affordable housing.

Context

0.4. Since returning to growth in the 1980s, London's population has increased rapidly, surpassing its previous population peak in 2015. This growth has been driven by a rapid expansion in London's economy, linked to its strong skills base and unique position in national, European and global markets.

0.5. For many decades housebuilding in London has failed to either keep up with rising demand or provide enough affordable homes for households in need. A lack of new supply has also left London with a dwelling stock that often fails to meet modern standards of accessibility or energy efficiency.

Economic trends

0.6. In the last decade the number of jobs in London has grown by around one million, a significantly faster rate of growth than seen in the rest of the country, and with particularly rapid growth in the last five years. However, nominal earnings growth has been very low, and below the rate of growth of both consumer prices and housing costs.

0.7. The GLA's labour market projections estimate that employment in London will grow by an average of 49,000 jobs a year between 2016 and 2041, faster than the projected rate of growth of the working-age population.

Demographic trends

0.8. The SHMA is based on GLA's in-house demographic projections, which have been accepted as a sound basis for successive iterations of the London Plan. While all demographic projections are uncertain, the GLA's models combine the best available data

sources with established methods to produce robust and credible estimates of the future population.

0.9. In the last decade London's population grew by 1.2 million people, driven by rising numbers of births, falling deaths and strong net inward migration. According to the GLA's central population projection, London's population is projected to grow more slowly over the next 25 years but still reach around 10.8 million by 2041. The projected rate of population growth between 2016 and 2041 has increased in this SHMA to 79,000 a year from 63,000 a year in the 2013 SHMA.

0.10. The fastest rates of population growth are expected to be among older age groups (due both to the ageing of 'baby boomers' and rising life expectancies), which in turn will accelerate growth in the number of households due to the propensity of older people to form smaller households.

Housing market trends

0.11. Housebuilding has not kept up with rapid population and employment growth in London over the last decade, and housing costs have consequently risen faster than incomes. There has been a particularly sharp deterioration in affordability for private renters (while lower interest rates have boosted house prices but kept mortgage costs relatively low for homeowners)

0.12. Recent years have seen strong supply of market housing, including the emergence of the Build to Rent sector, but a very low supply of affordable housing, particularly for low cost rent. This shortfall in affordable housing supply has contributed to rising numbers of households who are either homeless or 'concealed' due to living as part of another household (a key factor in the 'backlog' of housing need referred to below).

0.13. Homelessness and rough sleeping have all increased sharply in the last five years, though there are recent signs that this growth may be levelling off. Overcrowding rates have fallen slightly in the last couple of years, while remaining very high in comparison to the rest of the country.

Methodology

0.14. The methods used to estimate London's housing requirements in this report closely follow those used in the 2013 SHMA, which was endorsed by the independent inspector at the Examination in Public of the Further Alterations to the London Plan.

0.15. Drawing primarily on data from the English Housing Survey, the 'net stock' method estimates the number, tenure and size of homes required by taking into account projected household growth, the affordability of different types of housing and the 'backlog' of existing need for new homes. Affordability tests take into account income, Housing Benefit, savings and whether or not households are satisfied with their current accommodation.

0.16. After comparing the stock of homes required in future with the current stock, the annual requirement for new homes is calculated by averaging the total net requirement over the period of the study, in this case the 25 years between 2016 and the end of the London Plan's planning period in 2041.

Analysis of housing needs

0.17. According to the GLA's central projection, there are projected to be around 4.8 million households in London in 2041, with the strongest growth among one person households and other childless household types.

0.18. When compared to the estimated 3.4 million households in London in 2016, the annualised growth required between 2016 and 2041 is 55,540 households a year.

0.19. There are around 452,000 households in some form of backlog need (excluding double-counting) but of these only 209,000 have a requirement for additional homes (of whom around 167,000 need affordable housing). Another 147,000 are in market housing but need affordable housing, and 97,000 overcrowded households in affordable housing need to move to an affordable home of a more suitable size.

0.20. When backlog need, affordability and the likely rate of second and vacant homes are taken into account, the net requirement for new homes in London between 2016 and 2041 is estimated to be around 65,900 homes a year. Of this total, 47% would need to be 'low cost rent' (social rent and Affordable Rent) and 18% intermediate (e.g. shared ownership and London Living Rent) based on standard affordability tests. These tests assume that housing costs as a share of household income should return to benchmark levels that are well below what many households in London currently pay.

Table 1: Net annualised requirement for new homes in London, 2016 to 2041

	1 bedroom	2 bedrooms	3 bedrooms	4+ bedrooms	Total	% of total
Market	4,418	4,355	6,987	7,277	23,037	35%
Intermediate	1,775	4,873	2,939	2,281	11,869	18%
Low cost rent	13,554	8,376	6,236	2,806	30,972	47%
Total	19,747	17,604	16,163	12,363	65,878	100%

0.21. The table above is not presented in the main report of this document, but is explained in the Addendum above, and has been included following the range of evidence presented at the Technical Seminar before the Examination in Public, and the Examination in Public itself. It is based on current rates of occupancy in all sectors and tenures of housing, without making assumptions about rates of under-occupation and households having a 'spare room' reducing to zero over the Plan period. A range of alternative assumptions have been explored in the 2017 SHMA, particularly concerning the occupancy rates of private and low-cost rented housing, which are presented in Chapter 9 of this report, and two main variations to the table above are also set out in the Addendum to this

document. The affordability assumptions can also be varied, with higher requirements for affordable housing when we ignore households' satisfaction with their current housing or the availability of Housing Benefit.

0.22. To complement the main analysis of housing needs, this report also analyses the housing costs that renting households in London can afford, using the same benchmark ratios of housing costs to income but ignoring the actual costs of current tenure options. Consistent with the main analysis, this shows a large number of households who can only afford some form of low cost rent, although this result also varies according to the exact affordability test used.

Housing needs of particular groups

0.23. This report also analyses the housing requirements of a number of sub-groups of the population, including older people, families, students, armed forces households and those seeking to build their own homes. Given the particular characteristics of these groups and the limited availability of data in some cases, the results are not necessarily directly comparable with the overall requirements outlined above.

Scenario tests

0.24. The main results set out in this report are based on the 'central' scenario of the GLA's demographic projections, which uses the ten most recent years of migration data. The GLA also produces short-term and long-term variants, which use five and fifteen years of migration data respectively and which can be used as the basis for scenario testing. When the short-term variant is run through the SHMA model it results in a net annual requirement for 69,600 new homes a year (of which 63% would need to be affordable), due to higher rates of assumed population growth. When the long-term scenario is used it results in an annual requirement of 59,900 (of which 68% would need to be affordable), due to lower rates of assumed growth.

1. Introduction

The role of Strategic Housing Market Assessments

1.1. The 2017 London Strategic Housing Market Assessment (SHMA) sets out estimates of London's current and future housing requirements, to inform the development of the Mayor's London Plan and London Housing Strategy. It estimates the number of new homes needed in London by tenure and type, as well as analysing the housing requirements of particular sub-groups of the population. It is published alongside the 2017 London Strategic Housing Land Availability Assessment (SHLAA), which provides evidence of the capacity for new homes in London.

1.2. The report is drawn up in line with the requirements of the National Planning Policy Framework (NPPF), which states that housing needs in a housing market area should be assessed through the preparation of a Strategic Housing Market Assessment that should "identify the scale and mix of housing and the range of tenures that the local population is likely to need over the plan period which:

- meets household and population projections, taking account of migration and demographic change;
- addresses the need for all types of housing, including affordable housing and the needs of different groups in the community (such as, but not limited to, families with children, older people, people with disabilities, service families and people wishing to build their own homes); and
- caters for housing demand and the scale of housing supply necessary to meet this demand".

1.3. The methods used to analyse housing requirements in this SHMA also meet the requirements of Planning Practice Guidance (PPG), which state that such assessments should identify "the scale and mix of housing and the range of tenures that is likely to be needed in the housing market area over the plan period – and should cater for the housing demand of the area and identify the scale of housing supply necessary to meet that demand". For the sake of clarity, this report generally uses the term 'housing requirements' to encompass both the *need* for affordable housing and the *demand* for market housing.

1.4. As PPG sets out, identifying housing requirements is not an exact science, and there is no single approach that will provide a definitive answer. The guidance does propose a standard methodology (and DCLG have recently consulted on an even simpler formula for calculating 'local housing need'[2]), but allows for departures:

> Local planning authorities may consider departing from the methodology, but they should explain why their particular local circumstances have led them to adopt a different approach where this is the case. The assessment should be thorough but proportionate, building where possible on existing information sources outlined within the guidance … Plan makers should avoid expending significant resources on primary research (information that is collected through surveys, focus groups or interviews etc and analysed to produce a new set of findings) as this will in many cases be a

[2] DCLG, 'Planning for the right homes in the right places: consultation proposals'

disproportionate way of establishing an evidence base. They should instead look to rely predominantly on secondary data (eg Census, national surveys) to inform their assessment which are identified within the guidance.

1.5. This SHMA, like its 2013 predecessor, uses existing data from the English Housing Survey and other sources to analyse London's housing requirements. The method followed is set out in chapter 6, but in summary it addresses the requirements of national guidance by taking into account projected household and population growth and identifying the need for different types of housing, including breakdowns by tenure and size (measured in terms of number of bedrooms).

1.6. The use of survey data is particularly important in understanding the existing housing needs of Londoners who already lack their own home, notably the homeless or those who cannot form their own household due to affordability pressures. These types of 'backlog' housing need are more prevalent in London than in other regions, necessitating a method that can fully capture their impact on London's housing requirements.

1.7. As explained in chapter 6, the treatment of backlog need in this report is the main departure from both the method set out in PPG and the standard formulaic method proposed by DCLG in its September 2017 consultation paper 'Planning for the right homes in the right places' (see paragraph 6.35 for further discussion).

Previous estimates of housing requirements in London

1.8. Since the foundation of the GLA in 2000 there have been a series of assessments of London's housing requirements, starting with the report of the Mayor's Housing Commission in November 2000. The GLA developed its own approach to assessing housing requirements in cooperation with Opinion Research Services, resulting in the 2004 London Housing Requirements Study, the methodology of which was further developed in the 2008 SHMA.

1.9. The 2013 SHMA adopted a new approach, broadly followed in this new SHMA, that used a 'net stock' methodology to compare current housing provision with the estimated future requirement (further details are set out in chapter 6). The 2013 SHMA identified a requirement for around 49,000 new homes a year, with the full breakdown set out in Table 1 below.

Table 1: Net annualised housing requirement 2015/16 to 2034/35

	1b	2b	3b	4+b	Total	% of total
Market	2,798	5,791	8,545	6,083	23,217	48%
Intermediate	3,357	2,240	2,506	1,799	9,902	20%
Low cost rent	10,225	1,003	1,774	2,720	15,722	32%
Total	**16,381**	**9,034**	**12,825**	**10,602**	**48,841**	**100%**

1.10. The 2013 SHMA informed the draft Further Alterations to the London Plan (FALP) published in January 2014 and considered at an Examination in Public (EiP) later that year. In his December 2014 report on the EiP, the independent planning inspector stated that "having considered all the evidence and the submissions, [the SHMA and its underlying demographic projections] are reasonable and probably the best available assessment of objectively assessed housing need for London at this time", and that he was "satisfied that the Mayor's population and household projections, SHMA and SHLAA are based on good evidence and robust methodology".

Spatial scale

1.11. Like its predecessors, this SHMA looks at housing requirements at the regional London level only, and does not provide any estimates of requirements at the local level. London boroughs have in the past carried out their own assessments of housing need either locally or in sub-regional partnerships. However, because London can be considered as single housing market area and the London Plan sets capacity-based housing targets at the local level, the draft new London Plan states that boroughs are not required to carry out their own needs assessments. This is consistent with the view of the inspector who examined the FALP, whose report stated that it was the role of the London Plan to determine the housing need for London as a whole and to guide the distribution of housing to meet that need. It is also consistent with the proposals in DCLG's recent consultation on 'Planning for the right homes in the right places'.

Core outputs

1.12. PPG requires that "Plan makers should set out clear conclusions and any assumptions made in reaching these conclusions on the levels of quantitative and qualitative predicted need". The assumptions used in arriving at the results of this SHMA are set out in chapters 6 (Methodology) and 7 (Analysis of housing needs), while the conclusions are set out in chapter 7 and summarised in the Executive Summary.

Use of the results

1.13. It is important to stress that the SHMA provides evidence of London's housing requirements, but does not determine the appropriate policy response. The Mayor has considered the evidence from the SHMA and SHLAA when deciding the policies that are set out in his draft London Plan and draft London Housing Strategy, along with other relevant factors such as the availability of public funding for affordable housing.

Further information

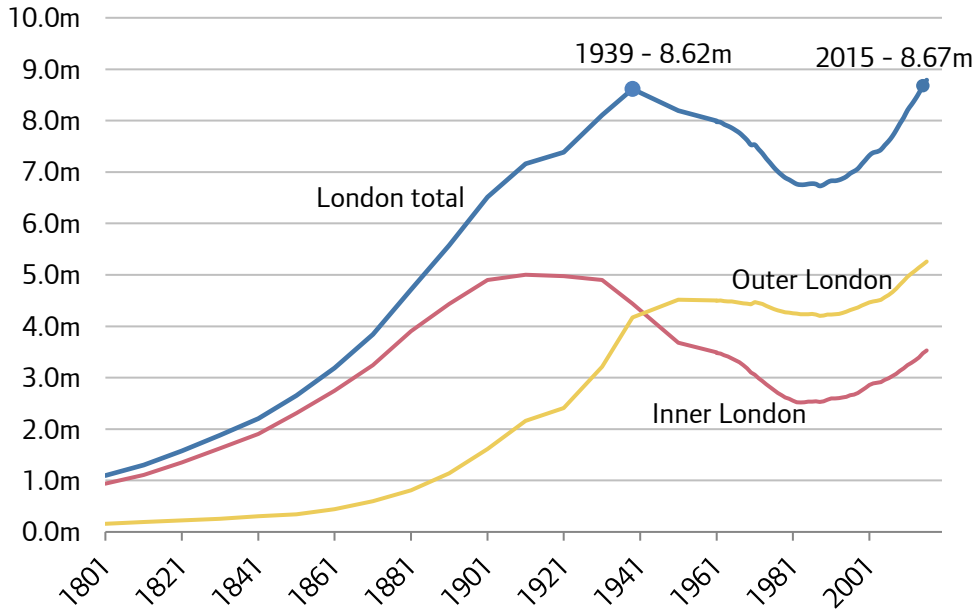
1.14. This report includes analysis of the relevant demographic, economic and housing market context for the SHMA. Further information is available in the draft London Housing Strategy published in September 2017, and in the annual evidence base publication 'Housing in London', the next edition of which is due to be published in 2018.

2. Context

London's demographic and economic resurgence

2.1. London' population rose to 8.62 million in 1939 and then fell for nearly five decades, reaching a new low of 6.73 million in 1988 before beginning a resurgence that has been uninterrupted since the early 1990s (Fig 1). Population growth has accelerated in recent decades: the number of Londoners increased by 438,000 between 1990 and 2000, by 825,000 between 2000 and 2010, and by another 727,000 between 2000 and 2016 alone. In absolute terms, London's population growth of the last decade (an extra 1.19 million people) is the largest on record[3].

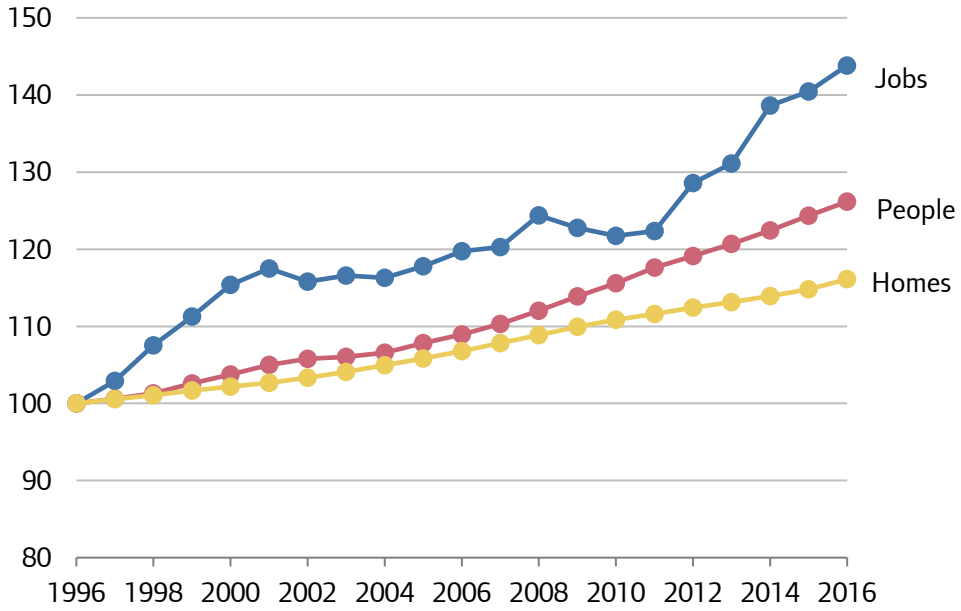
Fig 1: London's population, 1801 to 2016



2.2. In the last two decades even this rapid growth in population was outstripped by the growth of employment in London. Between 1996 and 2016 the number of jobs in London grew by 44% and the number of people by 26% - but the number of homes increased by only 16%[4]. Chapter 4 provides more detail on economic trends.

[3] ONS, Census data and mid-year estimates
[4] For sources see GLA, Housing in London 2017

Fig 2: Indexed trend in the number of jobs, people and homes in London (1996=100)



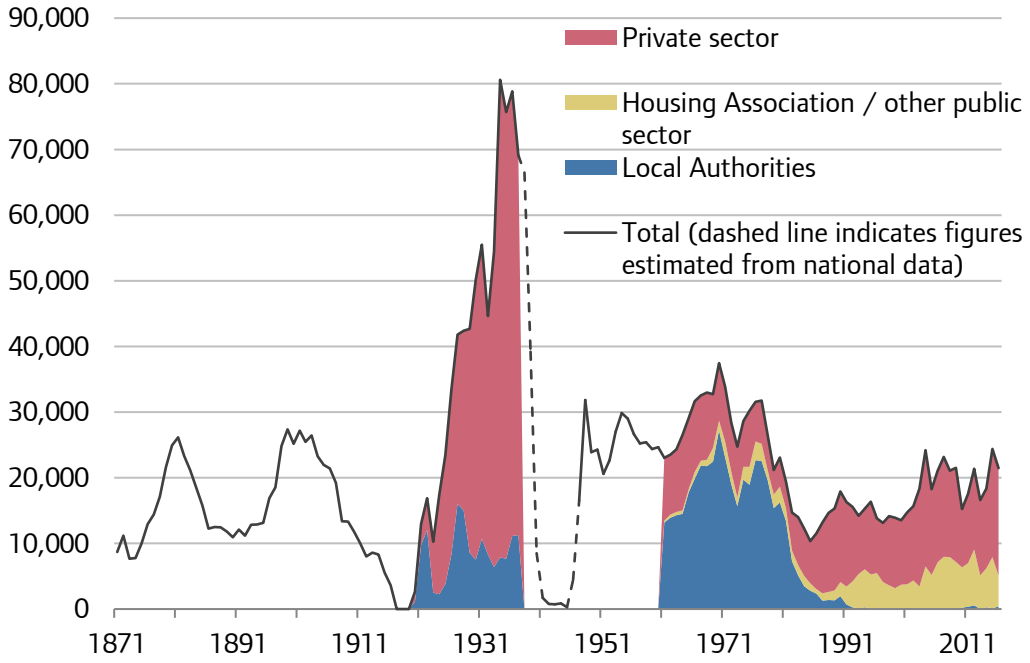
2.3. London's rapid economic growth in recent decades is linked to its specialisation in expanding sectors of the economy, including finance and insurance, information and communication, and professional, scientific and technical activities. London's economy has also benefitted from its relatively high productivity (linked to its skilled workforce, with over half of its workers educated to at least degree level) and a number of factors that give it a unique position in national, European and global markets[5].

Housebuilding

2.4. A long view of housebuilding is provided in Fig 3, though it should be note that this series is known to significantly undercount housing supply in recent years when compared to the GLA's Annual Monitoring Reports (see chapter 5). Housebuilding in London reached a peak in the 1930s with an average of 61,460 homes built each year, a boom that was based on rapid expansion of suburban development. There was a second boom between 1967 and 1977, with an average of 31,400 new homes built. Post-war housebuilding bottomed out at 11,500 new homes in 1986 and has since increased, although not to the levels required[6].

[5] GLA, London's Economic Evidence Base 2016
[6] For sources see GLA, Housing in London 2017

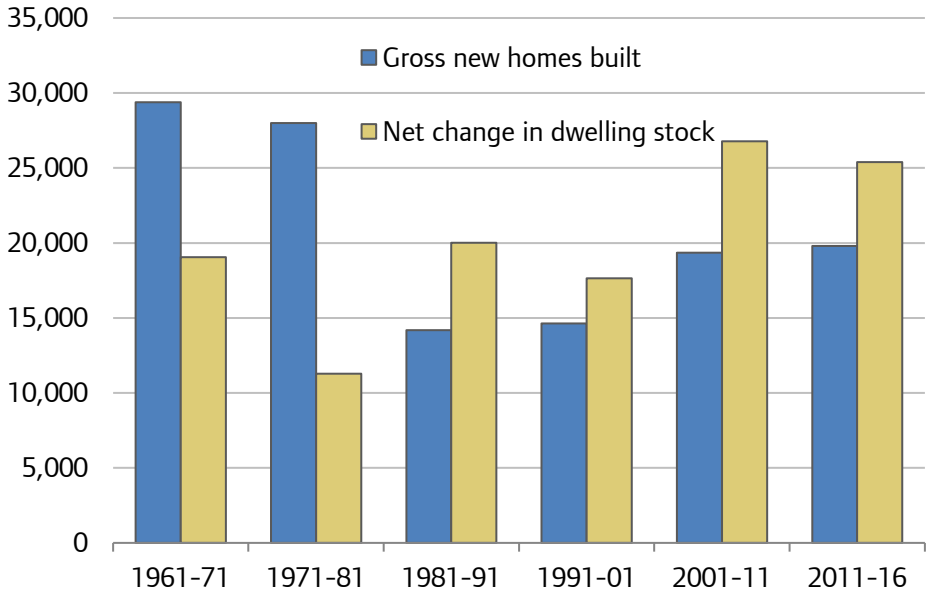
Fig 3: Gross new housebuilding in Greater London, 1871 to 2016



2.5. The net change in housing stock each year is different from the number of new homes built, because homes can be lost through demolition or added through other means such as conversion of houses to flats or of non-residential buildings to housing. Fig 4 shows the net annualised change in London's housing stock for each decade since the 1960s, and for the period 2011 to 2016. The net growth in London's housing stock since the turn of the millennium has been higher than was the case in the 1960s and 1970s, mainly due to the large number of homes demolished in the earlier decades, and the more recent contributions to housing supply of conversions and changes of use[7].

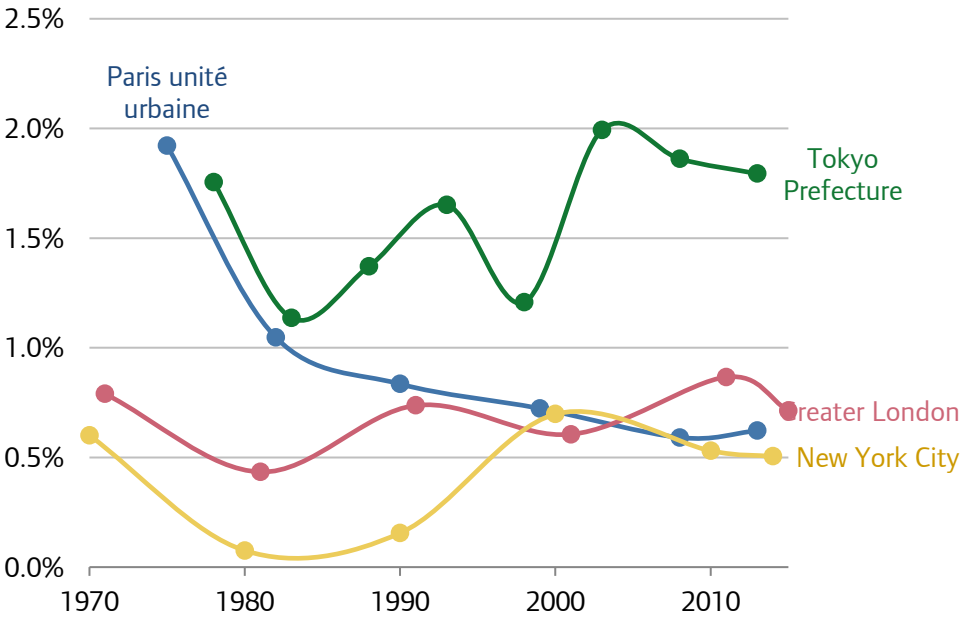
[7] For sources see GLA, Housing in London 2017

Fig 4: Annualised gross new homes built and net change in dwelling stock in London, by decade



2.6. London's current rate of housing stock growth is roughly in line with that of New York City and the greater Paris area, but since the 1970s has been far below that of Tokyo[8].

Fig 5: Annualised rate of housing stock growth in four world cities since 1970



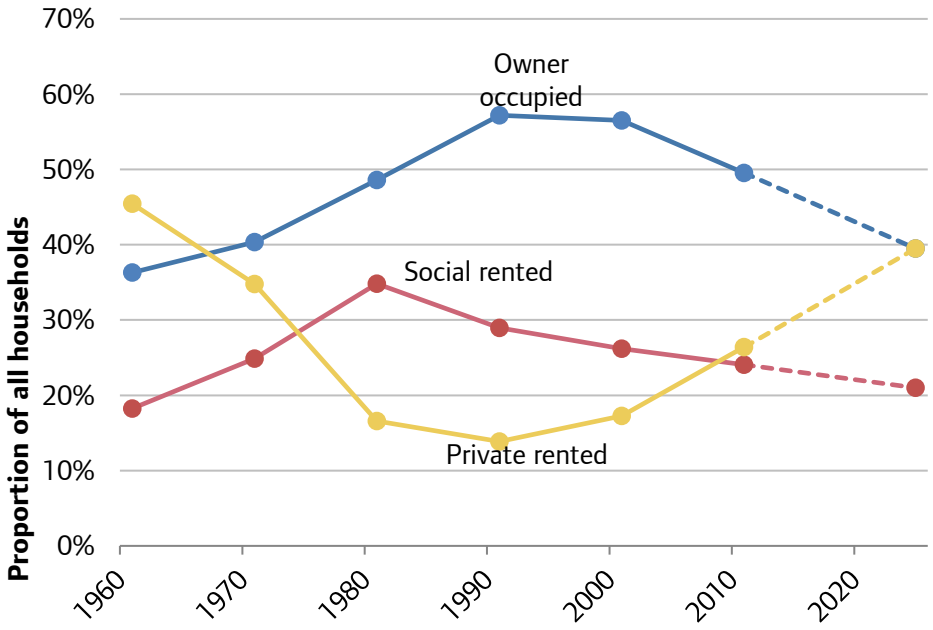
Tenure

2.7. The proportion of London households who own their own home (whether outright or with a mortgage) peaked in the early 1990s but then fell to just under half by the time of the 2011 Census, the first time owner occupiers have been in the minority since the early

[8] GLA, Housing in London 2017

1980s. The private rented sector was once the largest tenure in London but shrank from 46% of households in 1961 to 14% in 1991, before rapid growth brought it back up to 26% in 2011, making it the second largest tenure. In contrast, the social rented sector grew rapidly between the 1960s and 1980s, accommodating 35% of households in 1981, before falling to 24% in 2011.

Fig 6: Decadal trend in household tenures, London 1961-2011



3. Demographic analysis

Introduction

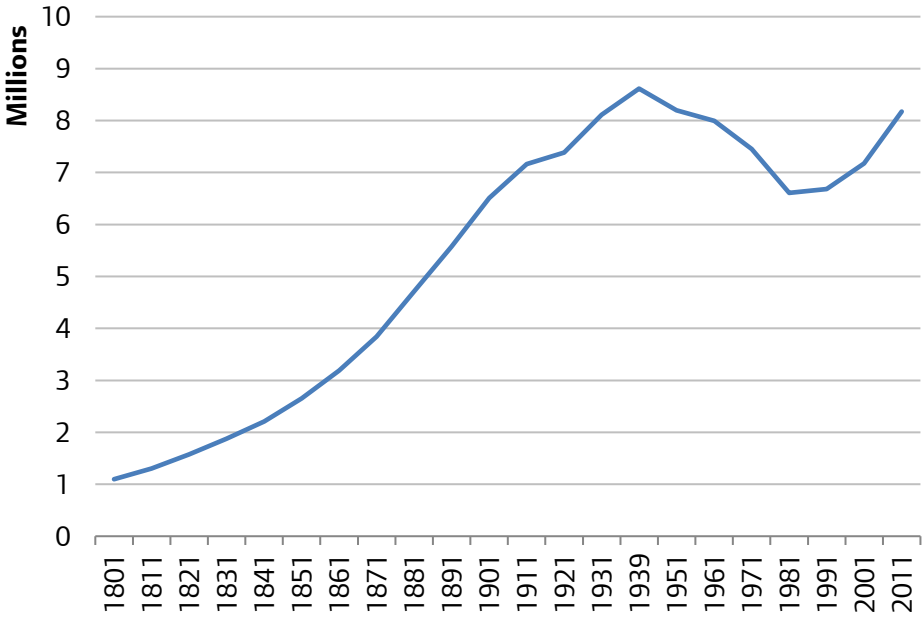
3.1. This chapter sets out the key demographic trends and patterns affecting London's housing market and housing requirements. It also explains the derivation and results of the GLA's demographic projections and how they differ from national projections issued by ONS and DCLG. The household projections set out in this chapter form the basis of the estimates of housing requirements later in the report.

3.2. Since its inception, the GLA has been producing its own in-house demographic projections, using inputs and assumptions that it considers the most appropriate for London. These projections have informed a succession of estimates of London's housing requirements, including the 2013 London SHMA, and have been accepted as a sound basis for successive iterations of the London Plan. In his December 2014 report on the FALP Examination in Public, the independent planning inspector stated that he was "satisfied that the Mayor's population and household projections, SHMA and SHLAA are based on good evidence and robust methodology".

3.3. More recently, in September 2016 the Centre for Population Change at the University of Southampton was commissioned to undertake an independent review[9] of the GLA model. Their report found that, "Overall, the GLA model utilises the best data sources available together with a trusted projection method to obtain credible estimates of future population". The report also noted that the GLA's ability to produce variant sub-national projections, as described below, provides a more robust approach to population projection modelling.

Long-term and short-term population change

Fig 7: London's historic population



[9] https://data.london.gov.uk/dataset/projection-methodology-independent-review

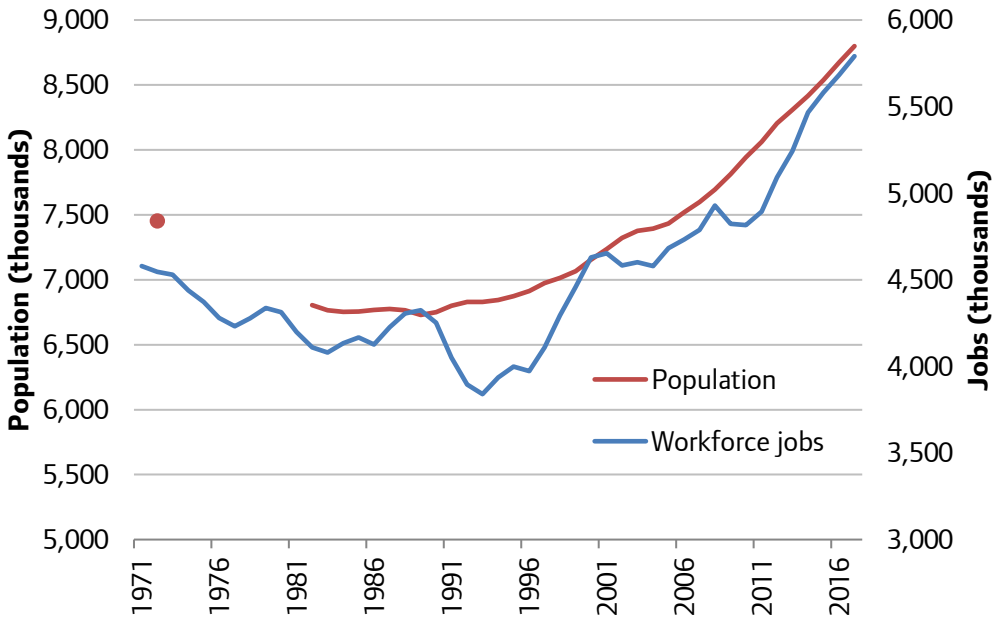
3.4. Official estimates of London's population extend back to the UK's first census in 1801, when the number of residents was put at a little over one million. The population grew at a rapid rate up to the start of the 20th century, standing at over six million by 1901. The Great War dampened but did not reverse this growth, and the population reached a peak of 8.6 million at the start of the Second World War in 1939.

3.5. The war was to prove a turning point for London, as it entered a period of declining population lasting nearly 50 years. The decline was particularly rapid during the 1960s and 1970s, and did not reach its trough 1988 when the population numbered just 6.73 million, back to the levels of the early Edwardian era.

3.6. Since the late 1980s London has returned to a state of continual and rapid population growth. Between 1991 and 2001 the population grew by 492,000 and then accelerated further in the decade that followed, adding over 1 million between 2001 and 2011. The London population surpassed its previous peak of 8.6 million in 2015 and ONS estimated the population to be 8.80 million in mid-2016.

3.7. The renewed growth of London's population appears to be strongly linked to it economic resurgence since the mid 1980s (a resurgence that was interrupted by a sharp downturn at the end of that decade). Fig 8 compares the long-term trend in the number of jobs and the number of people in London. Since 1985 the number of people in London has grown by 28% and the number of jobs by 36%.

Fig 8: Trend in number of people and jobs in London, 1971-2016



3.8. London's population growth has been particularly rapid in the last decade, increasing by an estimated 1.2 million between 2006 and 2016, the fastest growth on record. Strong economic growth again appears to be an important factor, with the number of jobs growing by an estimated 960,000 over the same period (despite the 2007-08 financial crash and associated recession). Other contributory factors include:

- Successive enlargements of the European Union in 2004, 2007 and 2013, leading to higher levels of in-migration from the accession countries
- A 30% increase in the annual number of births in London over the last decade
- A continued fall in mortality rates
- The impact of the 2008 financial crisis on the mortgage market, which is likely to have reduced out-migration from London.

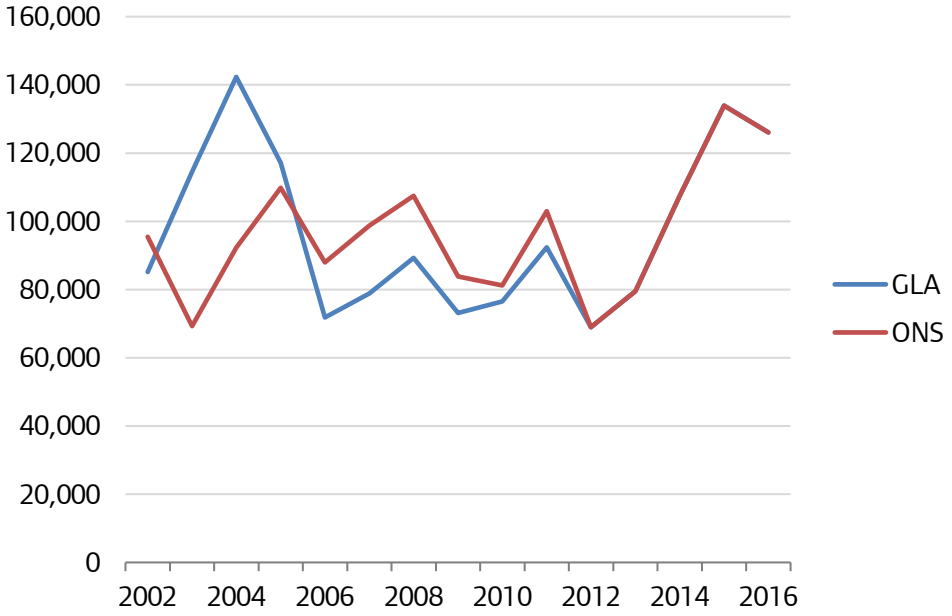
Variations in past estimates of London's population

3.9. Following the 2011 census ONS revised the mid-year estimate backseries (2002-2010) in order to provide a more consistent picture of population change over the decade. It was generally acknowledged that the main sources of error in the existing series were likely to have arisen from international migration estimates in the first half of the decade, and error in the starting 2001 population base. However, ONS felt that insufficient evidence existed to make significant changes to either of these components and so made only very minor adjustments to international migration flows. The majority of the revisions to the population series were instead made by adding in a new component of change labelled as "unattributable other". This effectively took the remainder of the difference between the rolled-forward and census-based mid-year estimates and spread this evenly across the decade. While at London-level this adjustment looks relatively small, for individual local authorities, where the original mid-year estimates did not align well with the census results, this correction factor was quite significant (e.g. 3,000 persons per year in the case of Westminster).

3.10. The use of the unattributable component enables ONS to reconcile the mid-year estimate backseries with the census estimates without amending the existing components of change. However, this approach causes issues in both the analysis of past trends and their subsequent use in population projections, as components of population change projected forward reflect an incomplete view of past changes. The GLA prefers that 'unattributable' change in the official series be redistributed to conventional demographic components, where there is reasonable evidence to do so. Such revisions to the backseries lead to more transparent and robust projections of the future population.

3.11. The GLA considers that the majority of the disparity between the existing backseries and the census estimates was most likely to be the result of errors in international inflow estimates for years prior to the introduction of the migration statistics improvement programme (MSIP) methodology. Therefore, when the GLA produced its own population backseries, the difference was accounted for by directly modifying the assumed international inflows for mid-2001 to mid-2005 rather than including an unattributable component. Fig 9 shows the difference between the GLA and ONS net international migration component of the mid-year estimate backseries.

Fig 9: Comparison of GLA and ONS net international migration backseries



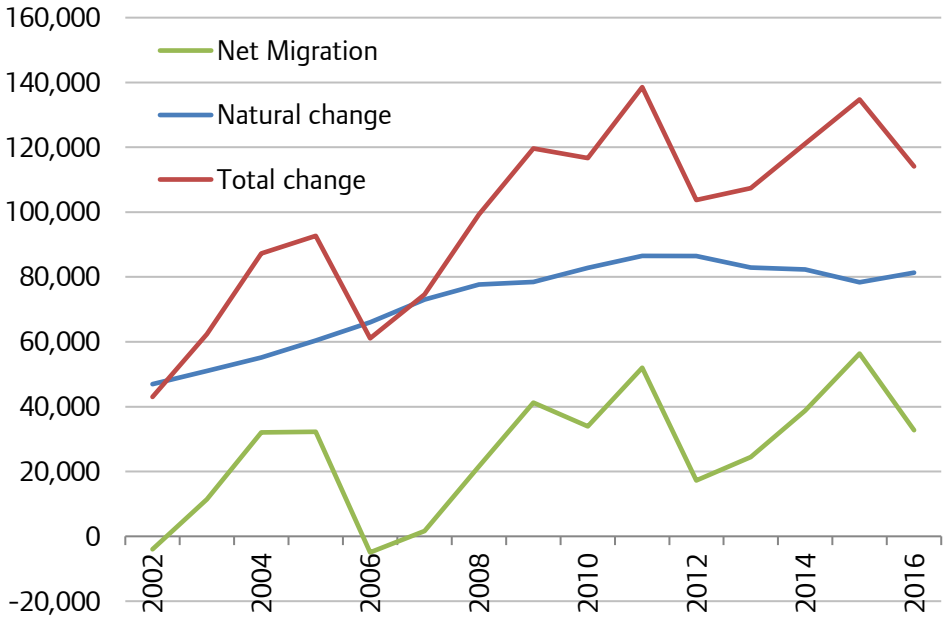
3.12. In addition to changes to the backseries 2002-2010 the GLA have also made minor amendments to the series since 2011. The first is to correct for an identified undercount in the number of 0-3 year olds in the 2011 census, and the second is to reconcile a continuing issue with the international migration component over-estimating flows into the City of London.

Drivers of recent population change

3.13. Every change in population occurs through one of three mechanisms: births, deaths and migration. These are not independent of each other, instead interacting in a way that requires carefully analysis to understand.

3.14. For example, superficially London's recent rapid population growth would seem to have been mostly caused by 'natural change', the excess of births over deaths, which has more than doubled since 2001 to reach 81,000 in 2016. By contrast, the apparent net contribution of migration to population growth is relatively small, averaging 32,000 over the last decade (Fig 10).

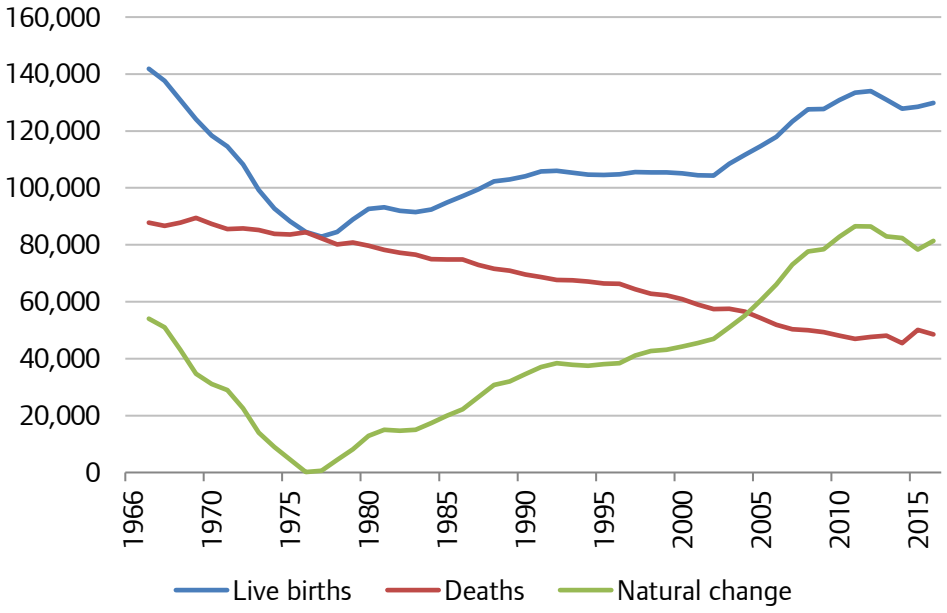
Fig 10: Net migration, natural change and total population change in London, 2002 to 2016



3.15. The direct net effect of migration is relatively small because large inflows from overseas and the rest of the UK are substantially offset by similarly large outflows to the rest of the UK. However, these headline numbers fail to capture the underlying dynamics of London's population and the full impact of migration on London's population growth, as the following section explains.

3.16. The total rate of natural change has risen fairly steadily in London from a net zero figure in the mid 1970s, due to combination of rising numbers of births and a continuous decline in the number of deaths.

Fig 11: Natural change in London, 1966 to 2016



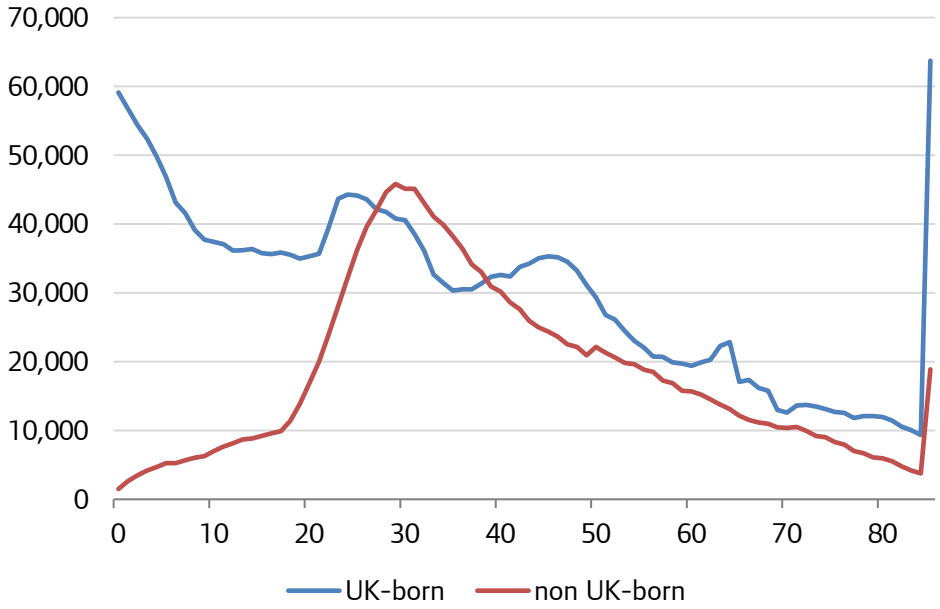
3.17. Births in London fell sharply from over 140,000 births a year in the mid-1960s to approximately 80,000 in 1977, a result of both a declining population and falling fertility rates. They subsequently recovered back to approximately 105,000 per year by the early 1990s where they remained steady over the course of the decade. After 2001, births began to increase rapidly, reaching a peak of 134,000 in the year to mid-2012, before falling back slightly. The most recent years of births data show slight increases. Over the longer-term births are expected to grow steadily resulting from an increasing population of women in the 15-49 age range.

3.18. Much of the apparent decline in UK fertility rates observed in the 1990s was a result of successive cohorts of women postponing having children until older ages. Recorded fertility, measured by the Total Fertility Rate (TFR)[10], fell as a result. However, the overall number of children that women have over their life course has remained largely unchanged and the 2000s saw an upswing in births and TFR as women who had delayed having children in their twenties now 'caught up' in their thirties. This process had largely played out by the early 2010s and both births and fertility rates peaked in 2012. The trend of falling rates of childbearing at younger ages has continued, however, which may lead to lower completed family size for these cohorts due to the reduced time available to catch up at older ages.

3.19. While the fertility characteristics of migrants vary significantly by country of birth and reason for migration, there is a common tendency for women to demonstrate higher rates of childbearing in the years following a move to a new country than in the years prior. Areas with larger numbers of young migrants therefore tend to see a rise in births to those migrants in the years subsequent to their arrival, even for migrants from countries such as Poland that have lower fertility rates than the UK (approximately 1.3 and 1.8, respectively). However, such elevated rates of childbearing may not continue and apparent fertility rates could therefore be expected to decline in areas that have previously seen large migrant influxes. Foreign-born women made up 52% of women aged 25 to 39 living in London in 2011 (Fig 12), and accounted for 57% of live births in the same year.

[10] The number of children a woman would have if the current age-specific fertility rates were applied in each year of her life

Fig 12: UK-born and non-UK-born women living in London by age (2011 Census)

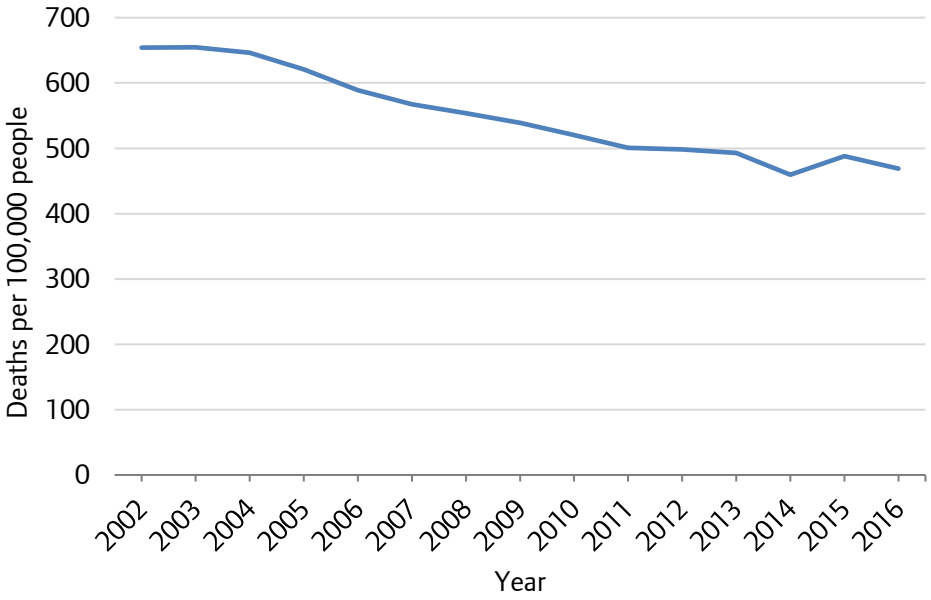


3.20. Deaths have fallen steadily in London since the 1960s and continued to do so throughout most of last decade, reflecting a trend of rising life expectancy across the country as a whole. The consensus among experts is for continued improvements in mortality for the foreseeable future, and this assumption is embodied in the projections produced by both ONS and the GLA.

3.21. However, in 2015 there was a departure from this trend and for the first time an increase in deaths over the previous year. The number of deaths fell again in 2016 but remained higher than the level predicted by historical trend. Like all components of population change the underlying drivers are often complex and can be difficult to identify. The age structure and size of the population plays a large part in mortality and so controlling for age can help to provide a clearer picture of mortality trends. Fig 13 shows age-standardised mortality rates per 100,000 people over time.

3.22. Even when accounting for changes in age structure the increase in mortality in 2015 is notable. While this has raised questions about whether assumed future increases in life expectancy are appropriate, mortality data is prone to year-to-year fluctuations due to the varying severity of winters, flu seasons, etc., and more evidence is necessary to make fundamental changes to the assumptions.

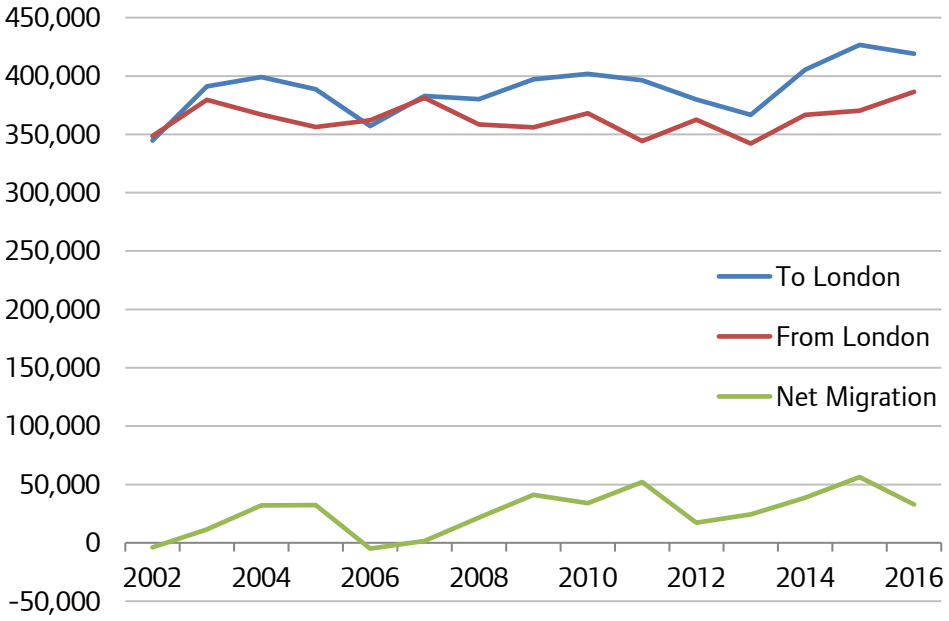
Fig 13: Age-standardised mortality rate in London, 2002-16



3.23. Though the mortality *rate* is assumed to continue falling in the coming years, the *number* of deaths in London each year is projected to rise from the end of the current decade, due to increasing numbers of older people in the population. The increase in the population of older people is a result both of improvements to life expectancy and the ageing of the large cohort of 'baby boomers' born after the Second World War.

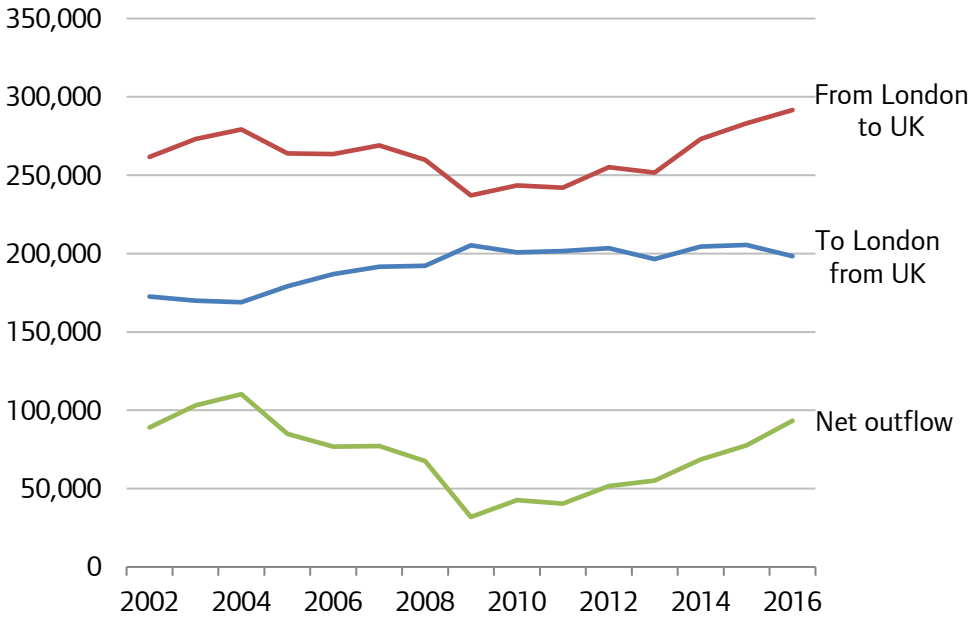
3.24. Migration: The net contribution of migration to London's population consists of a relatively small difference between two very large flows of people, as every year around 400,000 come to London from elsewhere, and a similar number leave. As recently as 2007 these two flows almost exactly balanced, but every year since then the number of incomers has been greater, with a recent peak of net in-migration of 56,400 in 2015 (Fig 14).

Fig 14: Total migration to London, 2002-2016



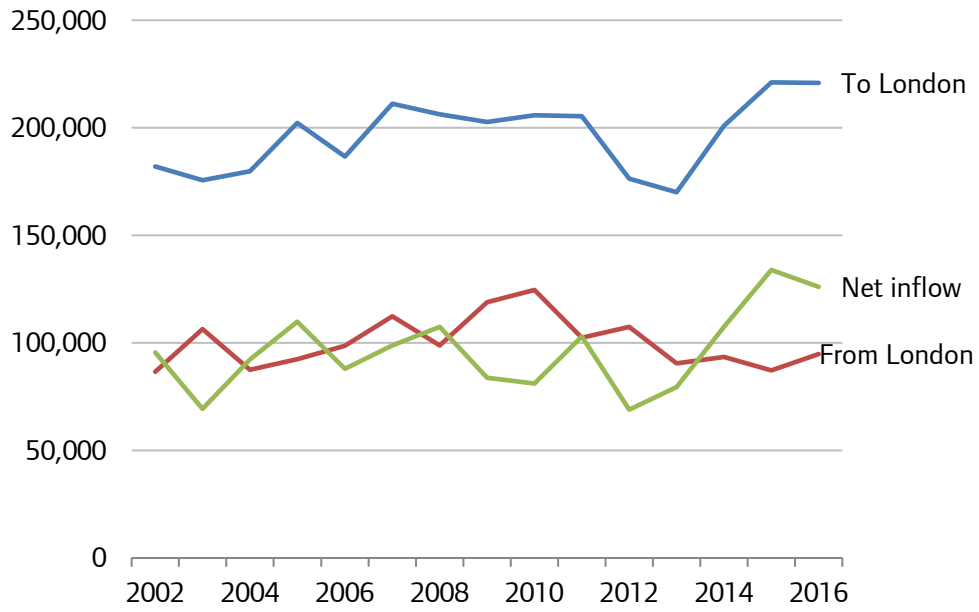
3.25. Domestic migration: The number of people coming to London from the rest of the UK rose from 169,000 in 2004 to 205,000 in 2009, and has remained at around that level since then. The number of people leaving London for the rest of the UK has been higher throughout this period, but fell sharply between 2007 and 2009 from 269,000 to 237,000, probably due in part to the effects of the 'credit crunch' on mortgage availability and in part to the relative resilience of London's economy. Outflows began to rise again in 2013, reaching 292,000 in 2016. As a result of these shifts in both in- and out-migration, net domestic outflows fell from 110,000 in 2004 to 32,000 in 2009 before rising again to 93,000 in 2016 (Fig 15).

Fig 15: Domestic migration to and from London, 2002-2016



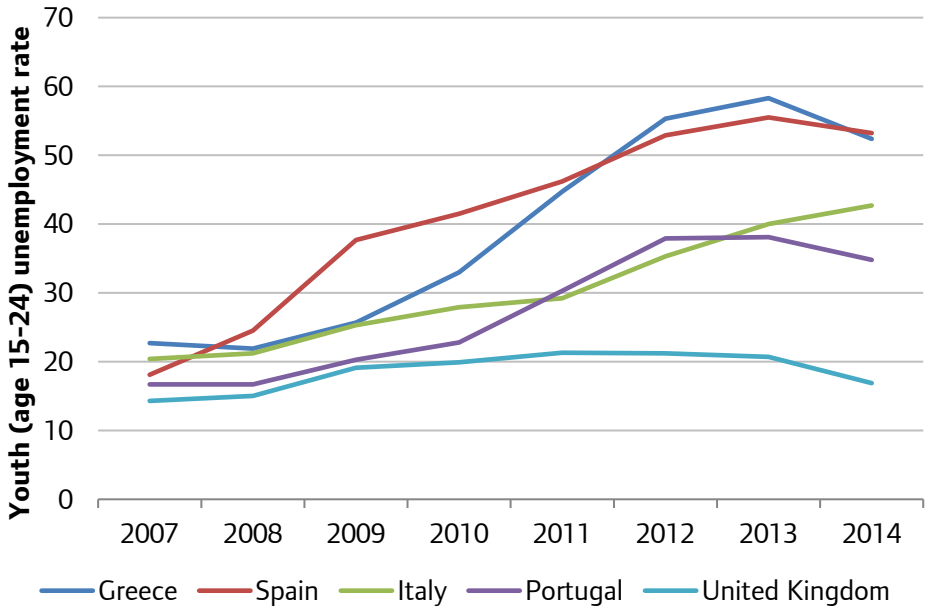
3.26. International migration: Since 2002, the number of people who are estimated to have come to London from abroad has on average been around twice the number estimated to have left for overseas. International arrivals to London have averaged just under 200,000 over this period, but increased relatively sharply recently from 170,000 in 2013 to 221,000 in 2016. Overseas departures averaged 100,000, but have fallen from a peak of 125,000 in 2010 to 95,000 in 2016. The net inflow has therefore risen sharply, from 69,000 in 2012 to 126,000 in 2016 (Fig 16).

Fig 16: International migration to and from London



3.27. London's strong labour market is likely to have been a very strong factor in attracting migrants from the rest of the EU, especially from those countries with high youth unemployment rates, e.g. southern European states since the financial crisis, and relatively low wages, e.g. newly joined EU member states since 2004. Fig 17 compares the trend in youth unemployment rates in the UK since 2007 with four EU states that have suffered economically in recent years. Over the same period the number of London residents who were born in these countries has risen from 109,000 to 197,000.

Fig 17: Youth unemployment rates in UK and selected EU countries

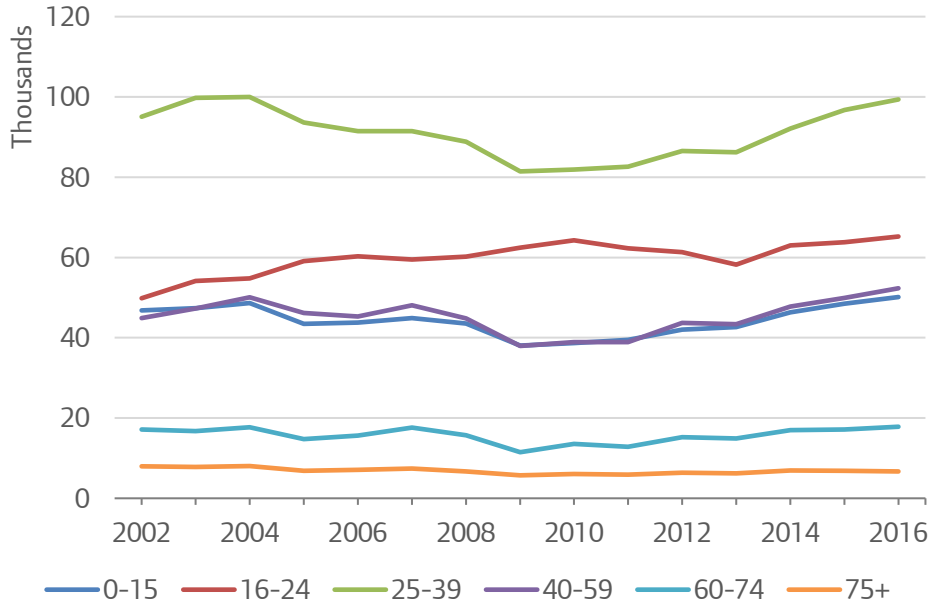


3.28. Fig 18 shows domestic out-migration from London to the rest of the UK by age group. The 25 to 39-year-old group consistently accounts for around a third of all domestic out-migration from London. Outflows of this age group fell over the first decade of the 21st century only to increase again in the last five years, a pattern that is also apparent in the 0 to 15, 40 to 49 and, to a lesser extent, the 60-74 groups.

3.29. In the oldest group (75 and over) out-migration has remained relatively stable since 2002, perhaps suggesting that the drivers of migration in the wider population are less important in older groups.

3.30. The 16-24 group saw consistent growth in outmigration across the period 2002 to 2010 when other groups experienced decreases. This group is heavily influenced by student populations and this trend likely to be linked to increasing take-up of university places in institutions outside the capital.

Fig 18: Domestic migration from London to the UK by age group, 2002-20116



3.31. The likely explanation for this is that the impact of the 2008 financial crisis on migration flows disproportionately disrupted the movement of families out of London.

3.32. Dynamics: Though the magnitudes of flows in to and out of London are similar, differences in their composition give them an influence on London's population structure that is greater than the direct impact on total population.

3.33. Both domestic and international inflows contain high proportions of people aged twenty to thirty, attracted to London for work or education, whereas flows away from London contain a higher proportion of children and older adults (Fig 19 and Fig 20). This reflects an established pattern of migration for London: a tendency for people to move out to the suburbs or surrounding counties to raise families.

Fig 19: Domestic migration flows to and from London by single year of age, 2016

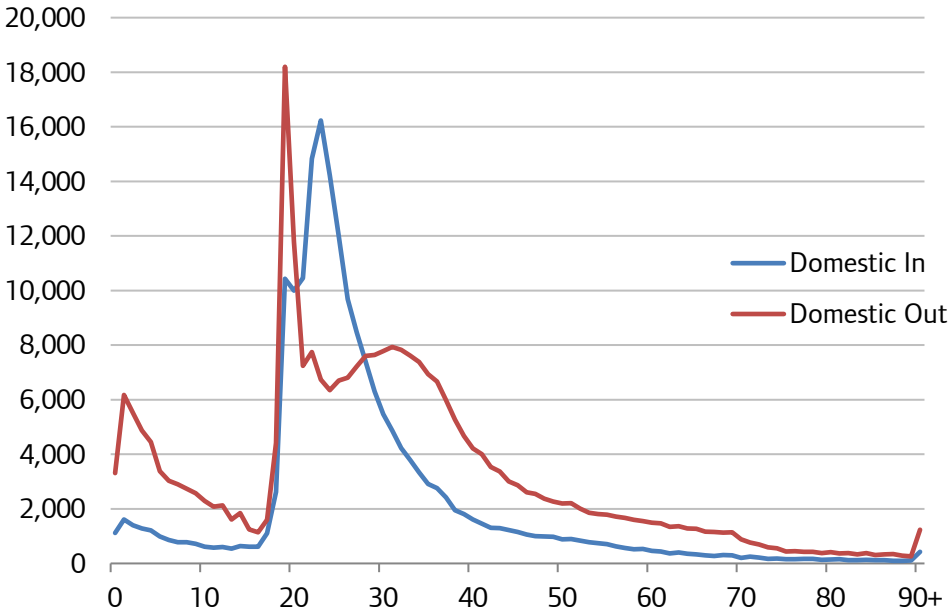
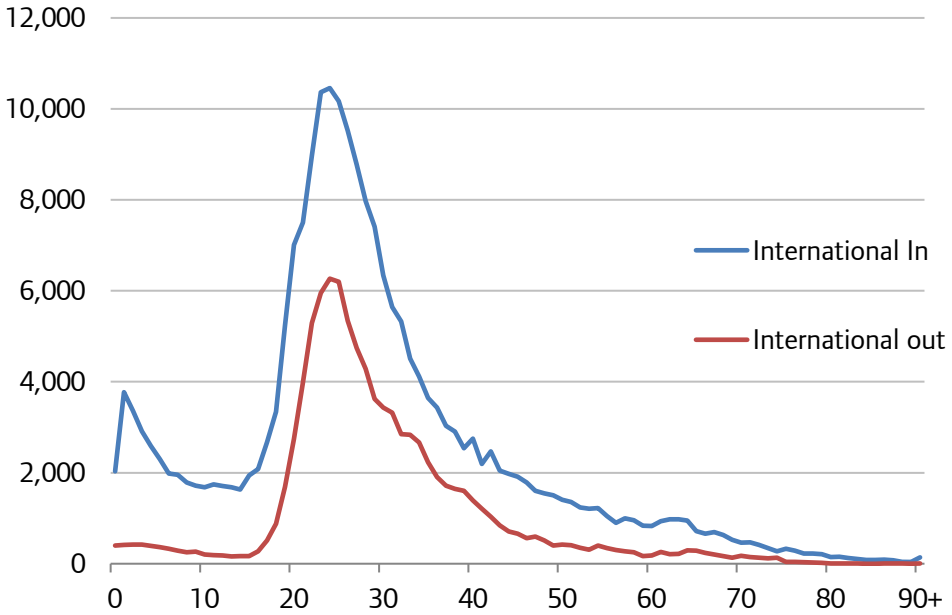
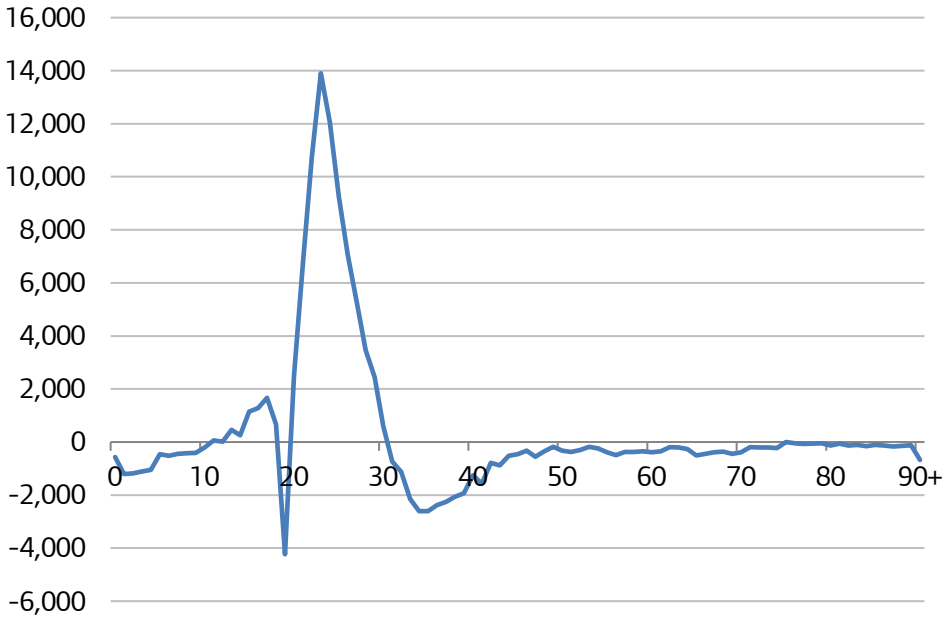


Fig 20: International migration flows to and from London by single year of age, 2016



3.34. The overall effect of these various flows, as shown in Fig 21, is a large net flow into London of people in their 20s (amounting to 73,500 in 2016), and a net flow out of London of those in their 30s and 40s (21,200 in 2016).

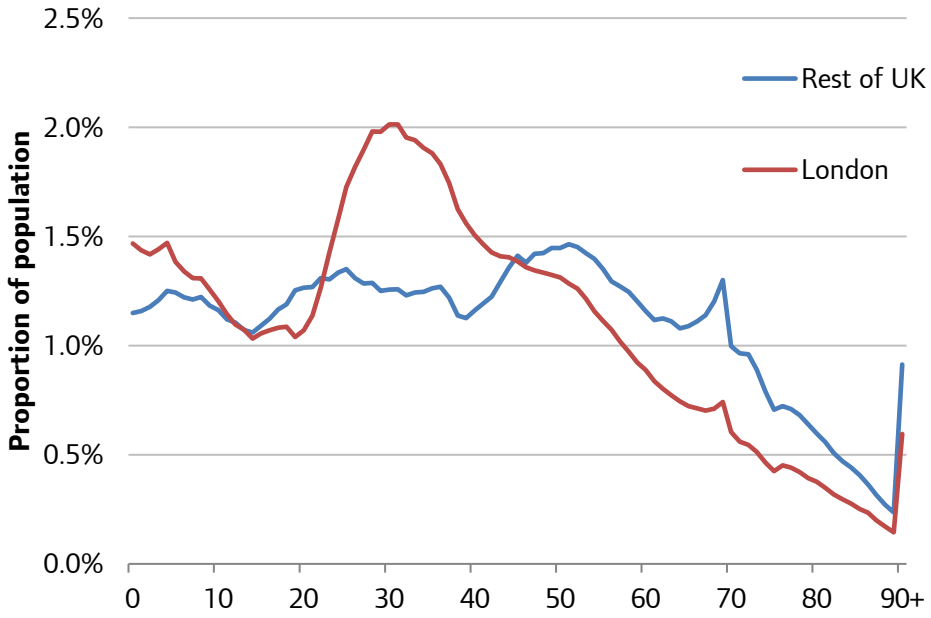
Fig 21: Total net migration by single year of age for London, 2016



3.35. The fundamentals of these dynamics have not changed substantially over the years, though they can be perturbed by events such as the 2008 financial crisis, which temporarily disrupted the movement of families out of London in its aftermath.

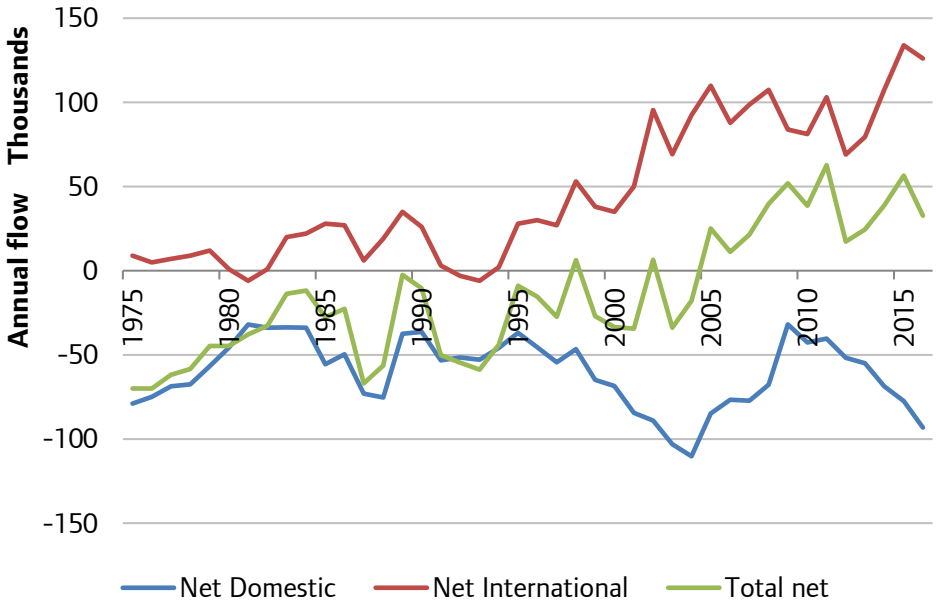
3.36. The difference in the age structures of migration flows gives London a relatively youthful population compared with the rest of the country (Fig 22). As at mid-2016, the population of London had a median age of 34.8 while the UK as a whole had a median of 40.0. This youthful age structure in turn leads to higher rates of growth through natural change in London than in the rest of the country, due to young adults' higher levels of fertility and lower rates of mortality.

Fig 22: 2016 population age structure for London and rest of UK



3.37. Relationship between international and domestic migration: Fig 23, which shows net international and domestic migration to London since 1975, is suggestive of strong links between the two, with increases in net domestic outflows apparently mirrored by higher net international inflows. The relationship is more complex than it might appear, however, as there are a number of mechanisms potentially at work.

Fig 23: Net international and domestic flows to London



3.38. First, it is worth noting that the size of the estimated inflow to London from abroad may be artificially boosted by newcomers who give London as their intended place of residence but who move elsewhere in the UK before being picked up by the administrative systems used to calculate the domestic migration data (see the section below on sources of uncertainty in projections).

3.39. More prosaically, many international migrants eventually follow a similar path to those who move out of London in search of more affordable or spacious housing, in particular when starting a family. In this way, higher international inflows in one year can be expected to lead to higher domestic outflows in later years.

3.40. Such flows out of London are of course related to conditions in the housing market. To the extent that international and domestic migrants to London compete with each other (and with the existing population) for housing, increases in inflows from one source are likely to lead to increases in outflows of the other. If UK-born residents have a stronger preference for more housing space then they may be particularly likely to move out to cheaper areas, though conversely the higher occupation rates of some international migrant groups would also tend to reduce pressure on the housing stock.

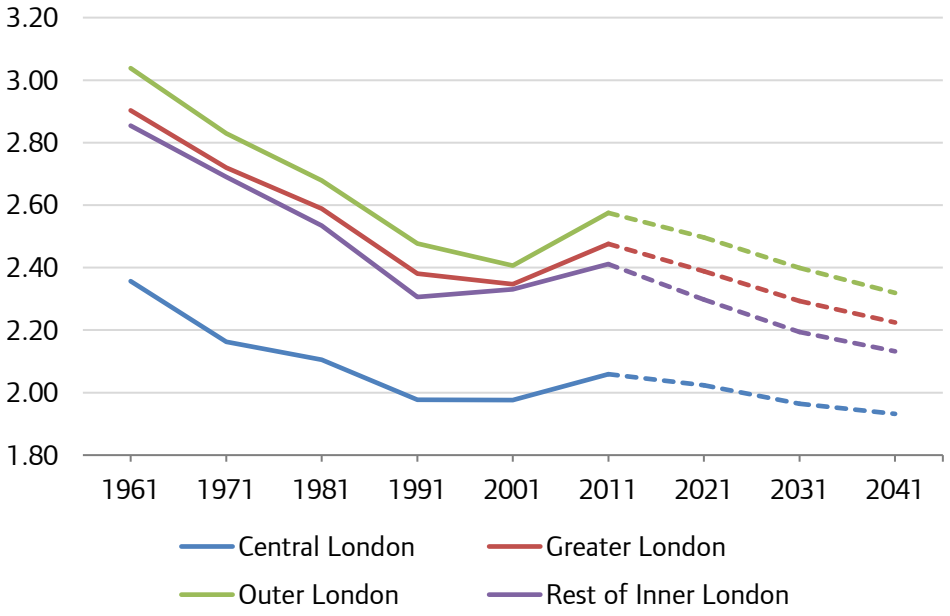
3.41. Finally, different rates of house price growth in different areas offer another potential factor behind migration flows, as higher house prices may enable more London

homeowners to sell up and purchase higher quality homes in areas that have experienced lower price growth.

Trends in household formation

3.42. Over the long term, the average size of households in London has fallen sharply, from around 4.5 people per household at the start of the 20th century[11] to 2.9 in 1961 and 2.4 in 1991. But between 1991 and 2001 this trend stalled, and between 2001 and 2011 it went into reverse, with a slight increase in average household size from 2.38 to 2.47 (Fig 24).

Fig 24: Historic and projected average household size in London, 1961-2041

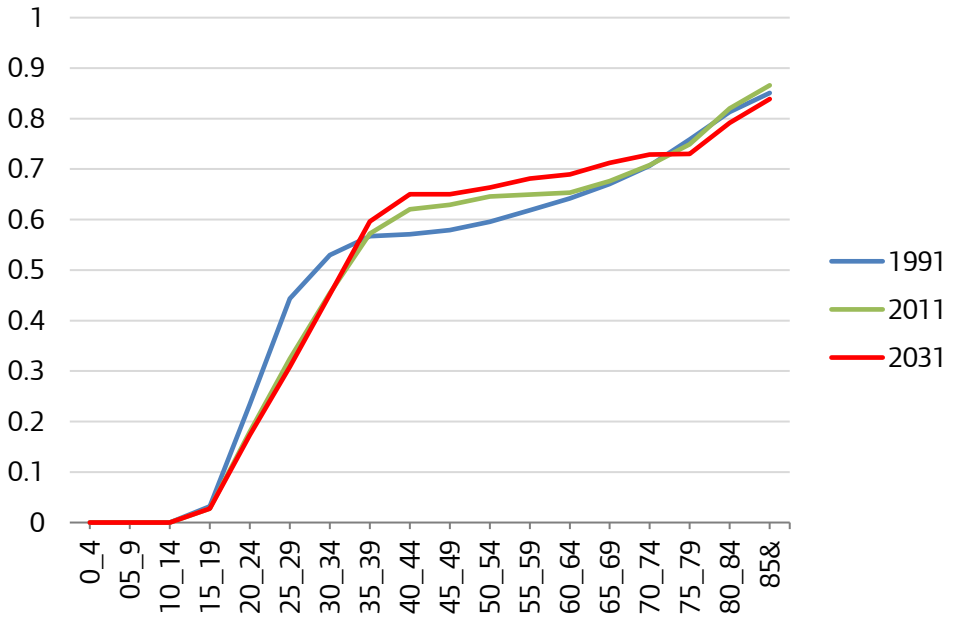


3.43. Both DCLG and GLA projections show London's average household size falling again after 2011. According to the GLA's central projection (which is the basis for the main analysis of housing requirements in this report), the average is projected to fall back below its 2001 value of 2.37 by 2024 and to reach 2.22 by 2041. The variant projections result in different household sizes, with the range at 2041 being between 2.21 for the short-term variant and 2.24 for the long-term.

3.44. This expected fall in average household size is driven by the projected ageing of the population, as older people have a higher propensity to form households of their own. Fig 25 shows estimated and projected household representative rates for London in 1991, 2011 and 2031 (in the central projection). Older people are far more likely to head a household (equivalently they are far more likely to be in small or one-person households), even after we have assumed a proportion of those aged 75 or more will live in communal establishments.

[11] Estimated by dividing the total population of London in 1901 by the number of households

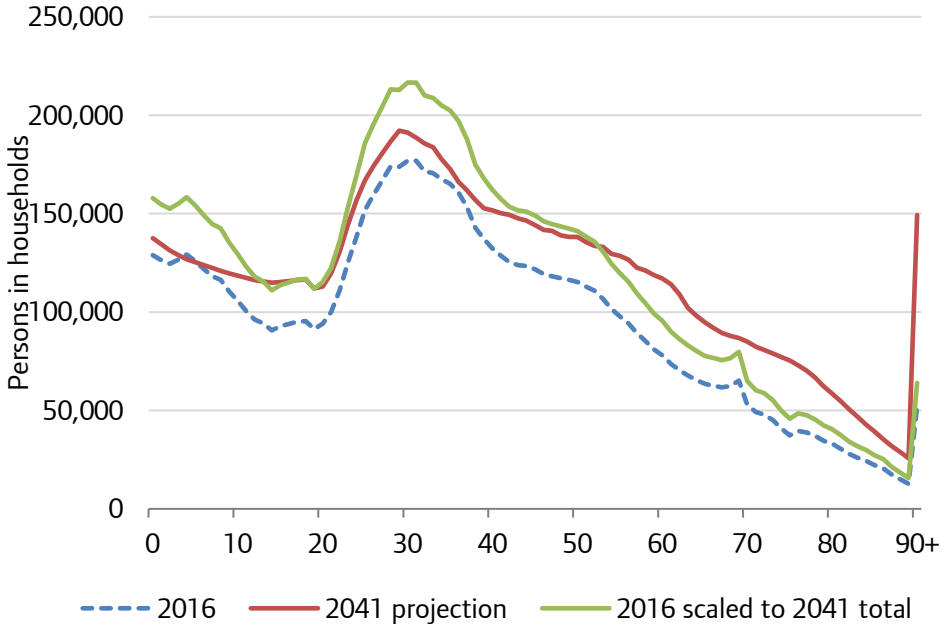
Fig 25: Household representative rates by age group, London 1991 to 2031



3.45. To illustrate the influence of the population age structure on household size and projected household growth we can compare the projected household yield from two populations:

- A projection of the London 2041 population, which has the age structure shown by the red line in Fig 26.
- The 2016 London population scaled up to match the total population from the 2041 projection, but keeping the same age distribution (green line)

Fig 26: Comparison of 2016 age structure with 2041 projection and 2016 structure re-scaled to 2041 population total



3.46. Applying the same household model (using the DCLG assumptions extended to 2041), the estimated household yield from these populations would be 4.79 million and 4.43 million respectively - a difference of over 350,000. Annualising this difference over 25 years implies that the impact of the changing age structure is an additional 14,300 households a year. The reason for this difference is the smaller households that older people tend to form. The average household sizes for the projected and scaled population are 2.30 and 2.41 respectively.

3.47. DCLG projected these propensities forward to 2021 by extrapolating forward historic trends from 1971. The GLA in turn has extended these trends to 2041. The projected changes to these rates have a relatively minor impact on the number of households that are formed, as explained below.

Demographic projections

3.48. To inform estimates of housing requirements in London, the GLA produces household projections using a similar approach to ONS and DCLG in their subnational projections. This approach can be summarised as follows:

1. Produce a set of local authority population projections based on recent trends in fertility, mortality and migration.
2. Project future household formation patterns for each local authority based on past trends.
3. Apply these household formation assumptions to the population to produce projections of households by type for each local authority.

3.49. The GLA's population projection model is based on the standard cohort-component method. The operation of this model is described in Annex 1 and in published methodology documents[12].

3.50. Though conceptually similar, the models used by the GLA and ONS differ in methodology and assumptions. These specific differences are discussed in Annex 2.

3.51. The GLA has produced three population projections based on different migration scenarios. The methodology is the same in each case with the only difference being the period of past migration data used to determine the migration patterns projected forward. These projections are designated as the *short*, *central*, and *long-term* projections and are based on five, ten, and fifteen years of past migration data respectively.

3.52. The central projection is the principal projection used for the SHMA with short- and long-term projections acting as variants for sensitivity testing. A ten-year period of past migration data has been chosen for the central projection as it approximately spans a typical economic cycle and has the benefit of producing more stable results from year to

[12] https://files.datapress.com/london/dataset/2015-round-population-projections/2016-07-04T14:15:19/GLA%20trend%20projection%20methodology.pdf

year than projections based on more recent trends only, making it more suitable for strategic planning purposes[13].

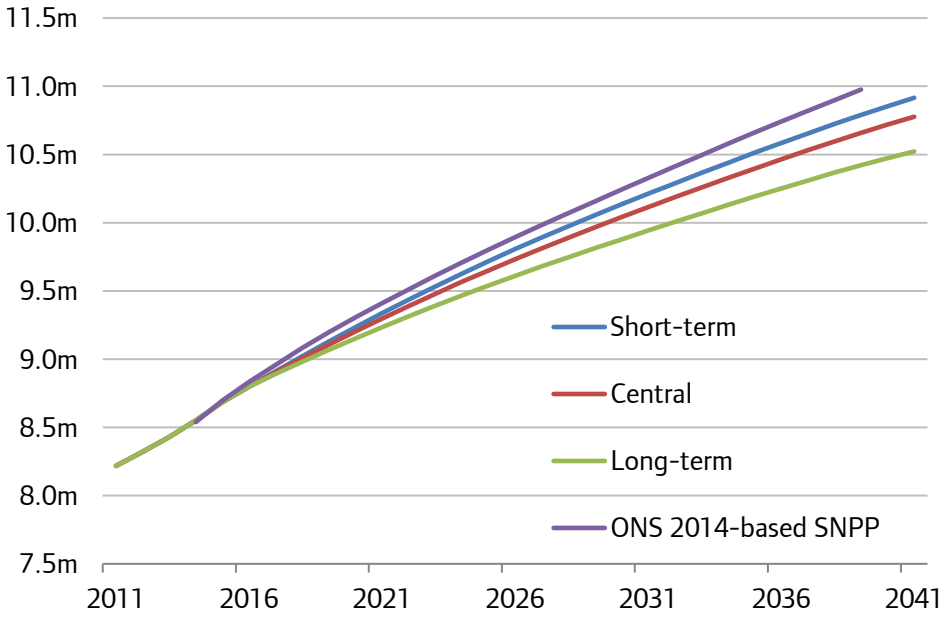
3.53. The model used by the GLA to convert population into households replicates as closely as possible the operation of the most recent DCLG model. Differences between the DCLG and GLA household projections are therefore primarily a result of differences in the underlying population projections.

3.54. Earlier this year it was announced that ONS would be taking over responsibility for producing future household projections. ONS published details of the proposed methodology for consultation in June 2017, and aim to publish their 2016-based subnational household projections in summer 2018. These will be based on the 2016-based subnational population projections scheduled for release in May 2018.

3.55. The following section discusses the key results of the population and household projections and looks at the drivers of projected growth for each. Though the projection outputs cover all local authorities in England, this document is concerned only with the results as they relate to Greater London.

3.56. Population overview: Fig 27 shows the projected growth of London's population for the three variants of the GLA's 2016-based projections and the 2014-based ONS subnational projection. The central projection gives a 2041 London population of 10.8 million, representing an annualised growth rate of 79,000 relative to the base of the 2016 population.

Fig 27: Projected total London population, 2016-based GLA projections



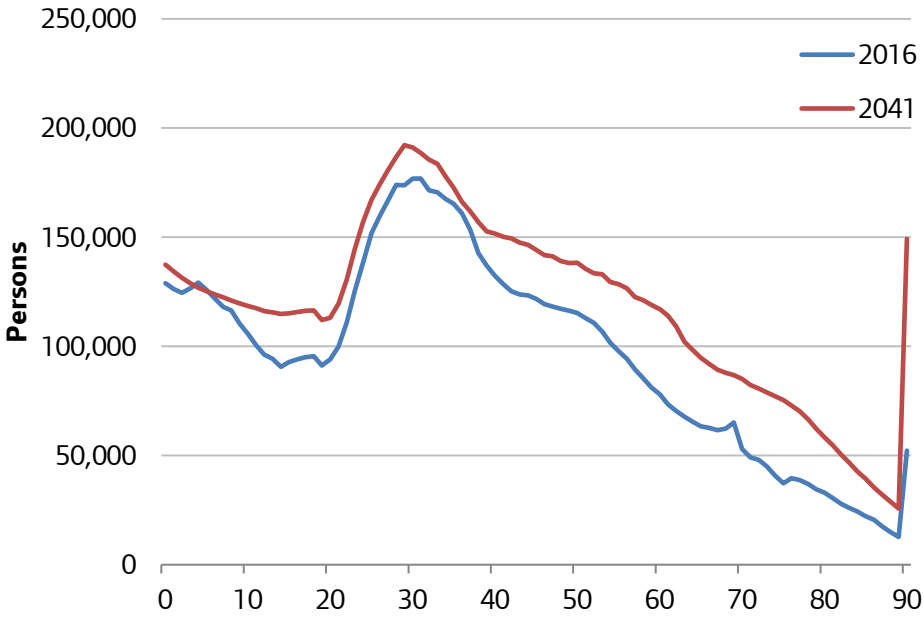
[13] The relative volatility of projections based on different length migration trends was explored in Appendix A of the GLA 2014 round trend-based methodology report https://files.datapress.com/london/dataset/2014-round-population-projections/2015-10-09T09:02:51/update-04-2015-2014rnd-trend-proj-methodology.pdf

3.57. The short- and long-term variants produce higher and lower growth rates, respectively. The short-term variant gives a 2041 population of 10.9 million (growth of 85,000 a year) and the long-term variant 10.5 million (69,000 a year). ONS's 2014-based projection shows higher growth to its end point of 2039 than any of the GLA outputs (93,000 a year, compared to 87,000 a year for the GLA short-term scenario).

3.58. The differences between the four projections can primarily be ascribed to the different periods of migration data used. This has the direct impact of affecting the number of people moving into and out of an area. Fertility and mortality rates are consistent within the three GLA variants, but the number of births and deaths occurring will vary as a secondary consequence of the different migration levels. A more detailed explanation of the variations is included in Annex 2.

3.59. Fig 28 compares London's population by age according to the central projection in 2016 and 2041. Almost three quarters of the projected growth is among those aged 40 or more, and the number of people aged 80 or more is projected to double.

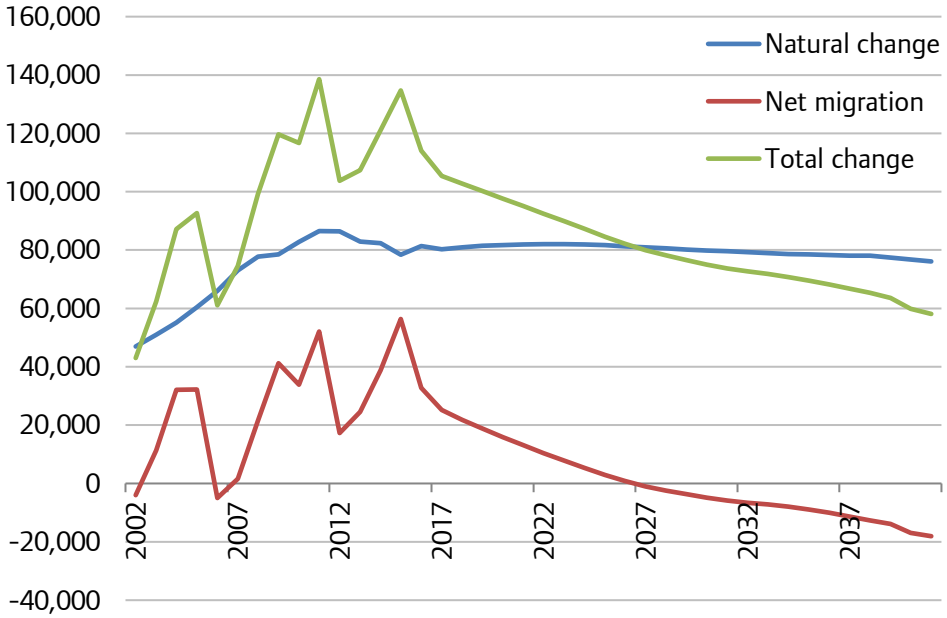
Fig 28: Projected population by age in 2016 and 2041, GLA 2016-based central trend



3.60. Components of population change: Fig 29 shows the projected components of population change for the central projection. Total population growth is projected to fall from 105,000 in the year to mid-2017 to 58,000 for the year to mid-2041.

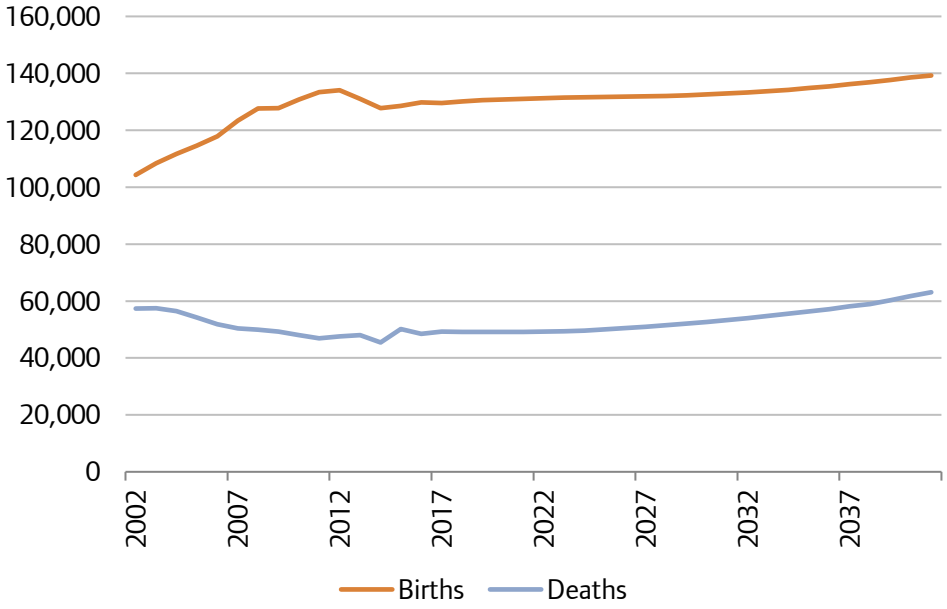
3.61. Over this period, the contribution of natural change is steady at approximately 80,000 a year. The slowing of the growth rate is therefore due to the changing contribution of migration, projected to fall from a net inflow of 25,000 a year to a net outflow of 18,000.

Fig 29: components of population change, GLA 2016-based Central Trend



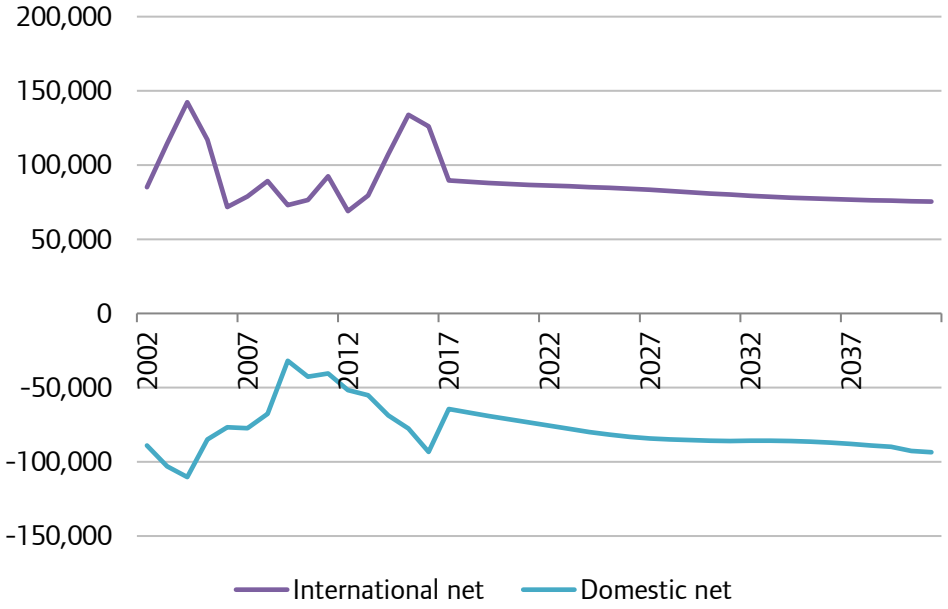
3.62. Fig 30 shows projected births and deaths. Both show modest rises over the projection period that largely offset one another, resulting in a steady natural change figure. The growth in the total number of births and deaths is a function of the increasing size of the population – in fact both fertility and mortality rates are projected to fall over the projection period in line with the ONS national population projection rates.

Fig 30: Components of natural change, GLA 2016-based central trend



3.63. Fig 31 shows projected net international and domestic migration for London from the GLA's central projection. Two thirds of the change in overall net migration is accounted for by domestic migration and the remainder by international. Net international migration falls from 90,000 to 75,000 a year. Net domestic outflow is projected to increase from 64,000 to 94,000 a year.

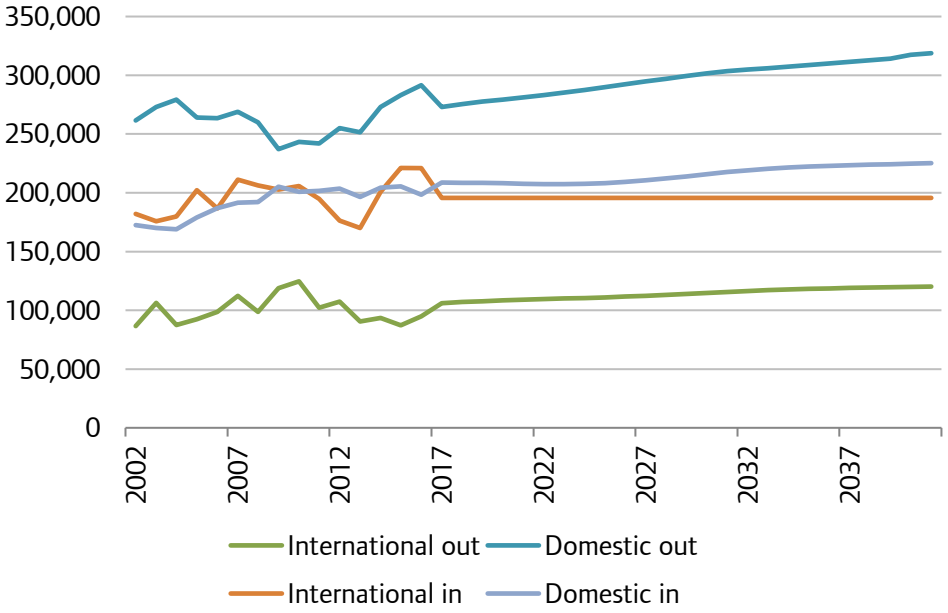
Fig 31: net international and domestic migration, GLA 2016-based central trend



3.64. Fig 32 splits international and domestic net migration into their individual gross migration flows.

- International inflows remain static at 196,000 a year
- International outflows increase from 106,000 to 120,000 a year
- Domestic inflows increase from 209,000 to 225,000 a year
- Domestic outflows increase from 273,000 to 319,000 a year

Fig 32: projected gross migration flows, GLA 2016-based central trend



3.65. These trends reflect the projection methods adopted in the model. International inflows are fixed at a constant level based on an average of previous estimates, but all other flows

are projected by applying migration rates to the population, which determine the likelihood of moving between any two locations. These rates remain fixed over the period of the projection and migration flows change in line with the population at the origin.

3.66. As projected international and domestic outmigration flows are linked to London's population by a fixed set of probabilities, these flows will tend to increase in line with the growing population of the city. These increases in outflows are partially offset by increased domestic inflows (linked to growing populations in districts outside of London). Because London's population is growing at a faster rate than other regions of the UK, net domestic outflows are projected to increase over time. Similarly, as international outflows increase in line with population, but inflows remain fixed, net international inflows are projected to fall over time.

3.67. For these reasons, overall net migration tends to fall over the period of the projection, with the increase in domestic outflows proving to be the most significant factor in explaining the projected decline in London's growth rate.

3.68. Projections produced by ONS exhibit similar behaviour. However in their projections, international outflows are projected as being a constant number, just as with inflows, so that all of the decline in London's growth is a result of the changing balance of domestic migration flows. The GLA considers that an approach in which the size of international outflows is linked to the size of the resident population is more robust in areas (such as London) where international migration is a significant element of population change.

3.69. Differences between variant projections: Differences in projected growth between the projection variants arise because of the migration patterns being projected forward. Births and deaths also vary between the projections, but only as a second-order effect. Fig 33 and Fig 34 show projected net international and domestic migration for each variant. The trends in net migration over time are similar in each projection, but the starting levels vary between them.

Fig 33: projected net international migration, GLA 2016-based projections

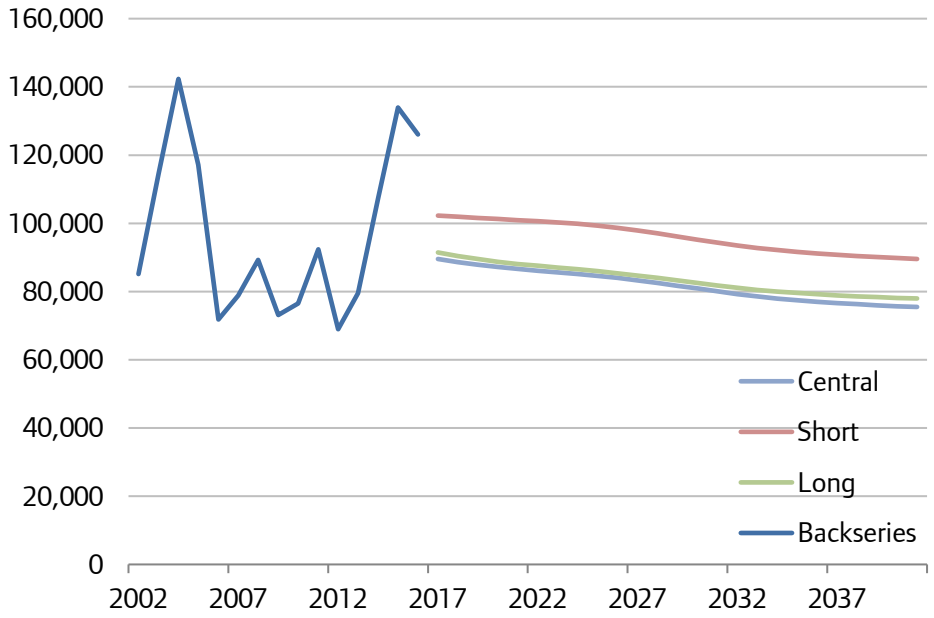
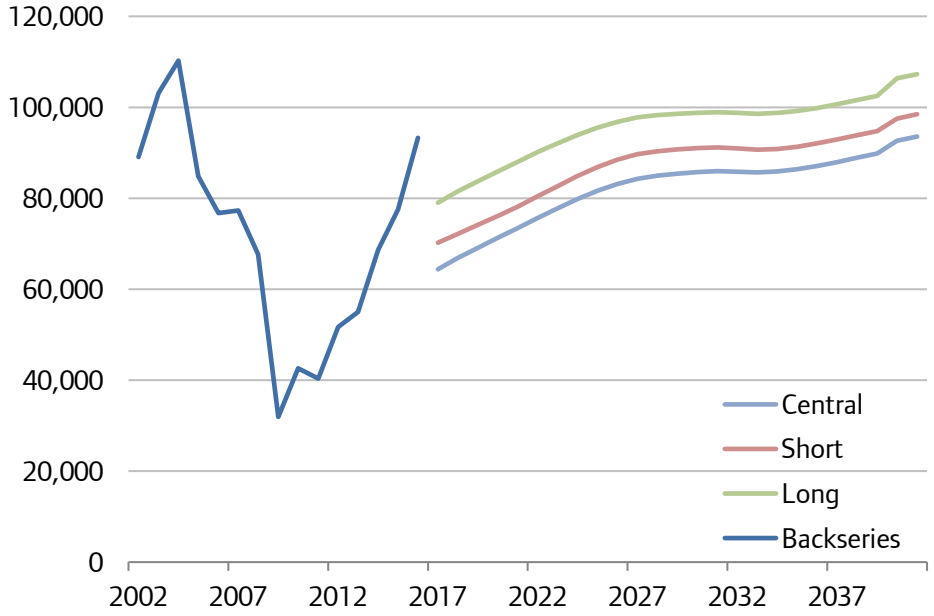


Fig 34: projected net domestic outflow from London, GLA 2016-based projections



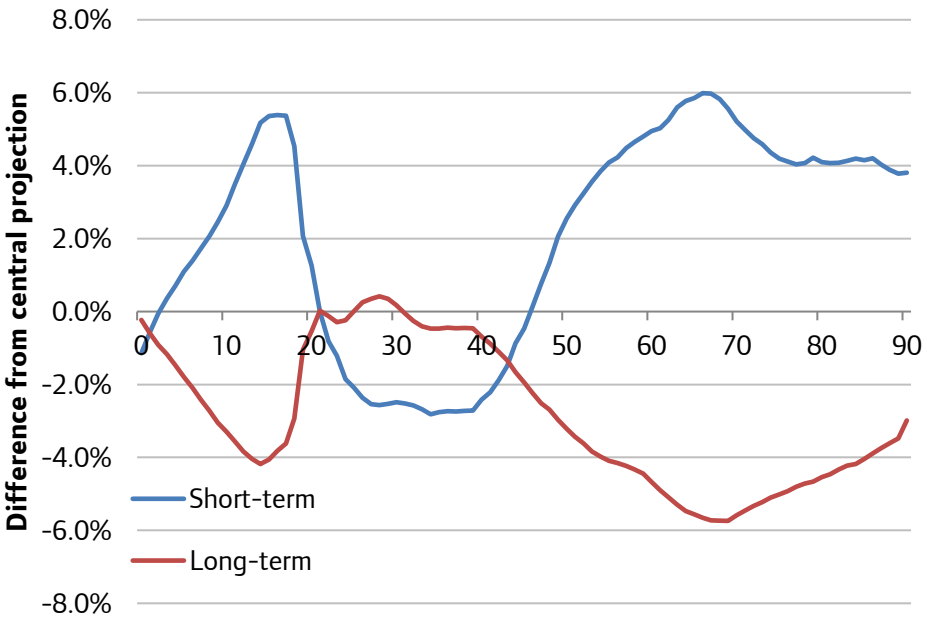
3.70. For net international migration, the short-term projection has the highest starting value at 102,000, followed by the long-term at 91,000 and then the central with 90,000. For domestic migration, the long-term projection has the highest net outflow at 79,000, followed by the short-term with 70,000 and then the central with 64,000. The main reason that the long-term variant produces the lowest growth is that the assumed level of domestic outmigration is higher than for the other scenarios.

3.71. The patterns of migration projected forward in each variant differ in their age structures. A full analysis of the age characteristics of each flow is beyond the scope of this document. However, the aggregate effects can be observed in the final projected population age structure. The projections each give different weights to the importance

of the immediate post-crisis period, with this period having the greatest influence in the short-term variant and the least in the long-term.

3.72. Fig 35 plots the difference in 2041 age structures relative to the central projection for the short- and long-term variants. All three variants yield relatively similar numbers of people in the 21 to 45 age band, with differences being concentrated in the number of older children and in the over-45 population.

Fig 35: Projected gross population by age (difference from central projection), GLA 2016-based projections

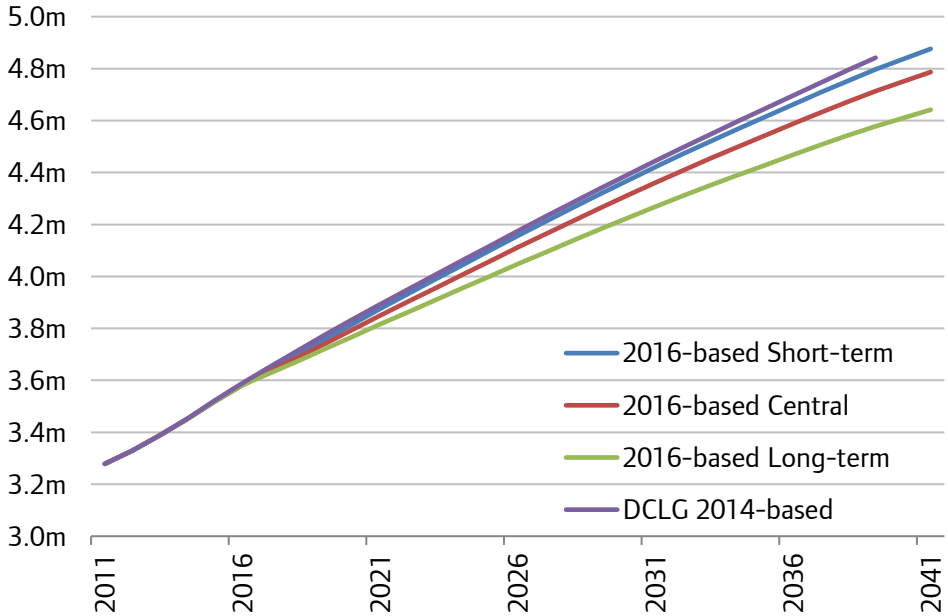


3.73. Households overview: Fig 36 shows the projected trend in the total households for the three GLA projection variants and the DCLG 2014-based household projections. The central projection gives 4.79 million households by 2041, an increase of 1.2 million from 2016 at an annualised rate of 48,200 a year (and an increase from 2011 of 50,300 a year).

3.74. As with the population projections, the short- and long-term variants show higher and lower growth respectively. The short-term variant gives growth of 52,000 households a year over the projection period, and the long-term 42,000 a year.

3.75. DCLG's 2014-based projection shows higher growth from 2016 to its end point of 2039 (54,000 a year) than the GLA outputs. The difference between the DCLG and GLA projections are accounted for entirely by differences in the underlying population bases.

Fig 36: projected total households



3.76. Fig 37 shows estimated and projected households in four broad household types while Fig 38 shows the annualised projected growth over the period 2016-2041 for the same groups. Overall, the number of households in London is projected to increase by 34% over the 25-year period. Households comprising a single person aged 65 or over are projected to grow by 56% but those comprising a single person under 65 by just 10%. The largest proportional growth is projected in the Other category which is projected to increase by 70% over the period.

3.77. The number of family households (i.e. not single people or Other) without dependent children is projected to grow more (45%) than those with dependent children (18%). Across the projection period these two household types are the dominant form of household and account for just over half of total household growth.

Fig 37: projected households by type

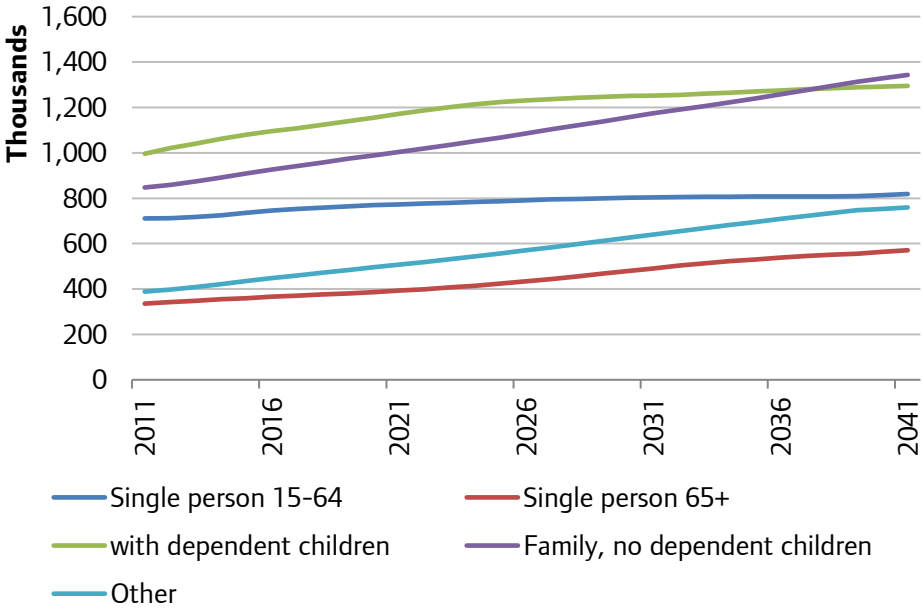
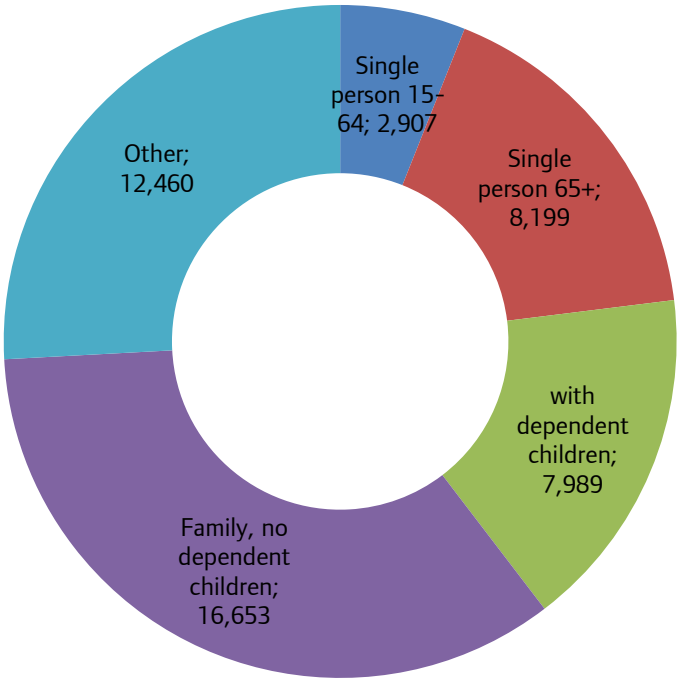


Fig 38: annualised growth in households by type 2016 to 2041



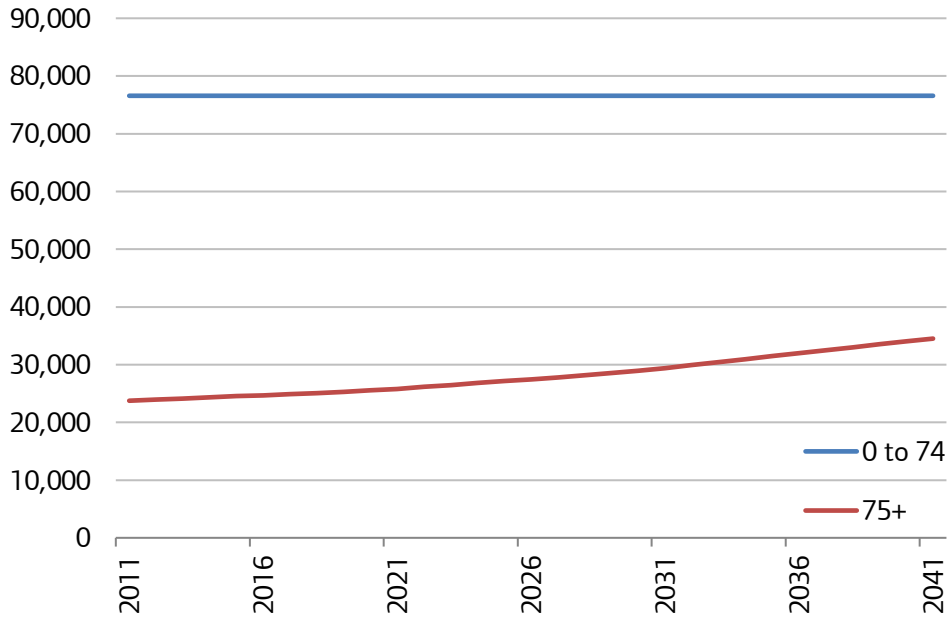
3.78. The proportion of the projected additional households that include children is significantly lower in these projections than in the GLA's 2013 round of projections (around 17% compared to 30%). Some of this change in shares is due to lower projected growth of households with children (200,000 in the 2016 based projections, compared to around 260,000 in the 2013 round), and some due to a higher projected rate of overall household growth (1.2 million compared to 890,000).

3.79. The main drivers of increased growth of households without children are:

- Faster growth in the number of older people in the 2016-based population projection (an increase of 745,000 between 2016 and 2041, compared to 591,000 in the 2013 round of projections), primarily due to updated migration rates. This increases both the number of households (due to older people having higher household formation rates) and the number without children.
- Less significantly, higher household formation rates for older people, due to a longer time series of household formation rates being made available by DCLG.

3.80. Communal establishment (or 'institutional') populations are projected as a static population in the DCLG household model for those aged 74 and under. For those age 75 and over the communal establishment population is calculated as a static proportion of the population meaning that as the total population aged 75 and over increases so too does the communal establishment population (Fig 39).

Fig 39: projected communal establishment population by age



3.81. Average household size is an output of the projection model, arising from the interaction of the population age structure, relationship status, and household formation rates. Fig 40 shows estimated and projected average household size for London from both the GLA and DCLG outputs. A common feature of both is that average household size is projected to fall over the projection period, primarily due to an ageing population. This trend results in a higher projected rate of growth in the number of households than the population (Fig 41).

Fig 40: estimated and projected average household size for London

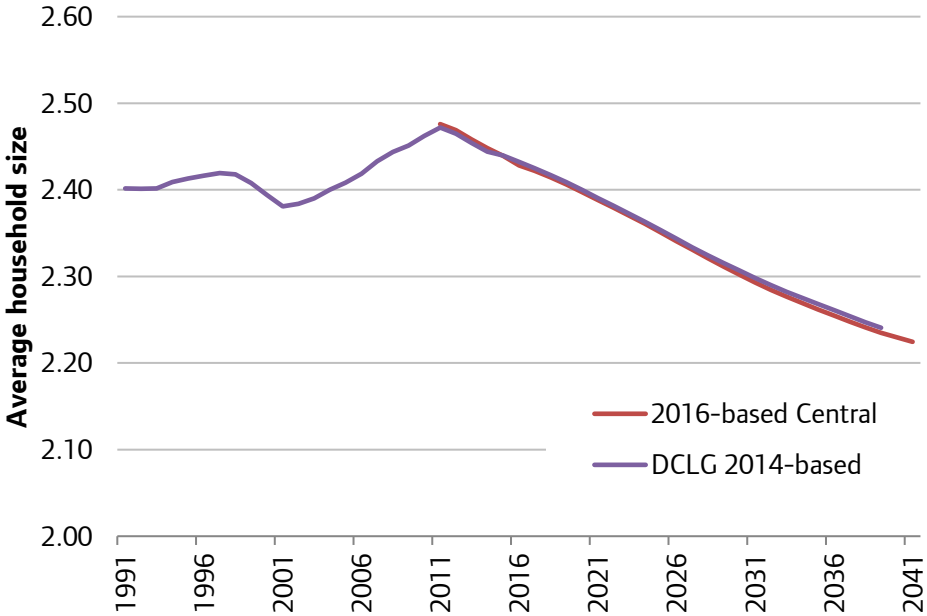
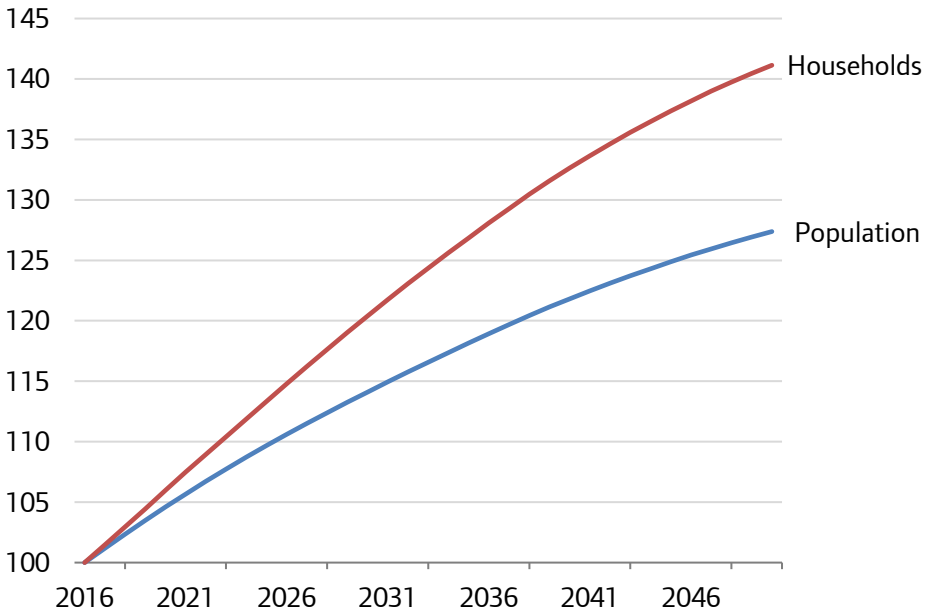


Fig 41: Indexed growth in population and households (2016=100), GLA 2016-based central projection



3.82. A better understanding of the drivers for projected growth in households can be gained by assessing the impact of different elements in the model, which can be separated into:

- Total population change
- Changing age structure
- Changing household formation rates

3.83. To understand the relative importance of each of these factors to the final results, a series of special scenario projections has been run and compared with the standard projection results. Each scenario removes the influence of one of components to enable its contribution to be quantified.

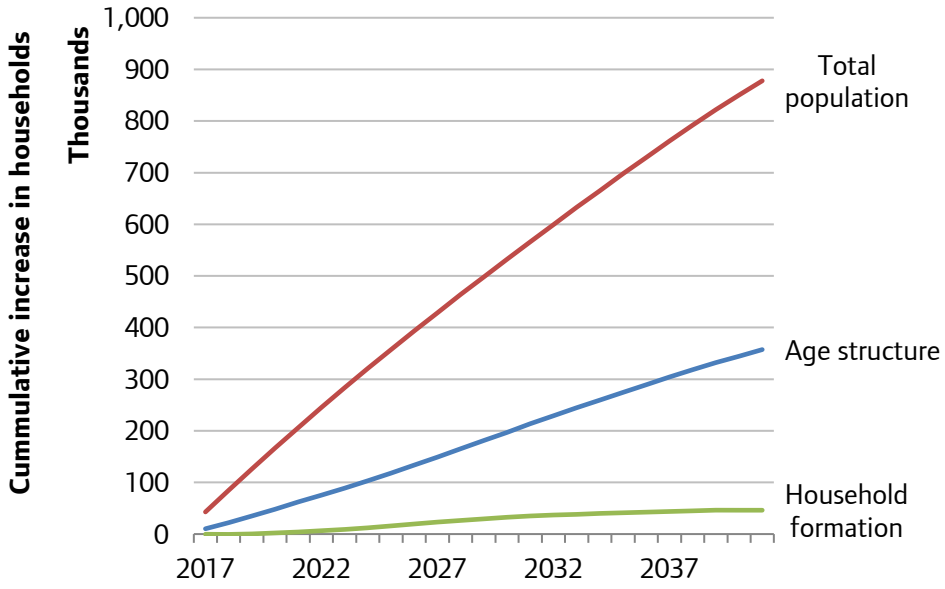
- Age structure: tested using a projected population where the age structure does not change, but the total population grows in line with the central projection.
- Total population: tested by keeping total population constant, but following the changing age structure of the central projection
- Household formation: tested by running the model with the central population projection, but holding household formation rates at 2016 levels

3.84. The sum of contributions from each element measured in this way will not exactly sum to the total growth in households due to interactions between each component. However, an approximate contribution to annualised growth can be calculated by using their relative sizes to attribute annualised household growth from the central projection accordingly. Doing so gives the following contributions to annualised household growth (with the trend shown in Fig 42):

- Changing age structure: 14,300
- Total population growth: 35,100
- Household formation changes: 1,800

3.85. The apparent contribution of projected changes in household formation to growth in the number of households is small. However, this is in part a result of opposing impacts for different age groups offsetting one another. Household formation is projected to continue to fall among young adults, but to increase among the middle aged.

Fig 42: Projected household growth by component

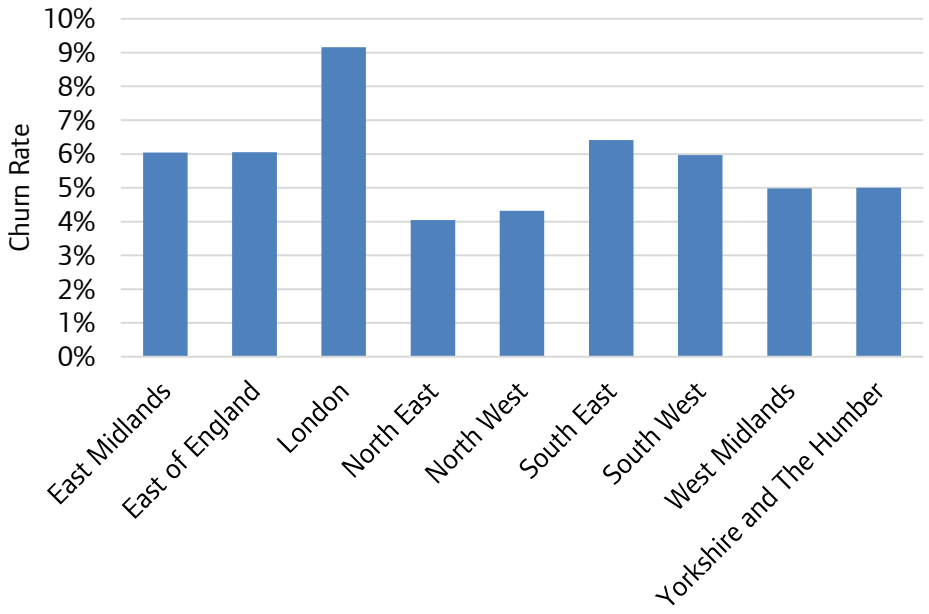


3.86. As has already been noted the relationship between population and households is a function not only of the size of the population but also the age structure. To show the contribution of different age structures to the differences between the GLA and DCLG household projections, the age structure in 2039 from the GLA's central projection has been applied to the ONS total population in 2039. When this population is fed through the DCLG household model it yields 4.86 million households, 14,200 higher than the figure from DCLG's own projections of 4.84 million. Therefore, the impact of the age structure in the GLA model on household formation, when all other variables are equal, is to yield 14,200 households more than the ONS age structure. This explains why the difference between the GLA and ONS population projections is greater than the difference between the GLA and DCLG household projections.

Sources of uncertainty in projections

3.87. The greatest source of uncertainty in projections for London comes from migration. Migration flows are inherently volatile and sensitive to future changes in the economy, government policy, and to major world events, all of which are essentially unpredictable. The scale of population movement in London is also much higher than elsewhere in the country, making projections of its population very sensitive to changes in migration patterns. Fig 43 shows population churn (gross inflows plus gross outflows) as a proportion of population size. London's churn rate in 2016 was over 9% while all other English regions ranged between 4% and 6.5%.

Fig 43: Regional population churn rates, 2016



3.88. Data quality: While estimates of past births and deaths are generally considered robust, the quality of migration data is relatively poor. The results of the 2011 Census showed official population estimates for many London boroughs to be highly inaccurate, a problem that has been widely ascribed to errors in annual migration estimates compounded over the decade since the previous census. Since then, ONS have changed their methodology for producing migration estimates, and the results are now more

realistic for London authorities. However, migration remains inherently challenging to measure accurately due, in part, to reliance on administrative data sources.

3.89. Projected population growth in London is very sensitive to changes to estimates of migration. By way of illustration, the last set of ONS projections (2008-based) produced before the revisions to international migration estimates gave a London projected population of approximately 9 million by 2031; the 2010-based projections, published just two years later, but incorporating the new migration estimates, projected a population of over 10 million by the same point.

3.90. Internal migration estimates are based primarily on moves recorded in the NHS Central Register. This source is fairly accurate for groups that interact regularly with health services, i.e. children and the elderly, but much less so for young (especially male) adults, who may move a number of times before their NHS record is updated. Estimates based on this data source are therefore vulnerable to bias and distortion, with moves by some population groups being more reliably captured than others. The data may include moves that actually occurred several years earlier, when the person in question was younger. Where several moves took place between NHS records being updated, the data will only indicate a single move between the first and last locations. Understanding the full impact of these distortions is challenging.

3.91. The methodologies used to produce international migration estimates were updated in 2011 with the release of the Migration Statistics Improvement Programme (MSIP). The revised methodology has been applied to estimates from mid-2005 onwards. The MSIP methodology combines data from the International Passenger Survey (IPS) with a range of administrative sources to distribute migrants between districts. These sources include:

- Migrant Worker Scan - a count of foreign nationals applying for a National Insurance Number (NINo);
- Lifetime Labour Market database - used to estimate the proportion of the NINo count who are long-term migrant workers;
- HESA administrative data – used to distribute publicly funded Higher Education student flows;
- HESA survey data – used to distribute private Higher Education flows;
- Department of Business, Innovation and Skills and Welsh Government administrative data sources - used to distribute Further Education student flows;
- 2001 Census data – used to distribute UK-born returning migrant flows;
- National Asylum Support Service data – used to distribute asylum seeker flows identified in the IPS;
- Flag 4 data from the GP Patient Register Database – used to distribute the remaining migrants.

3.92. The necessary data is not available to update the estimates prior to mid-2005. Earlier estimates relied more directly on IPS data combined with data from the Labour Force Survey to distribute migrants between regions. This approach was considered to give

inaccurate results for London local authorities in part due to inherent bias in the IPS data that tends to overestimate the number of migrants settling in Central London boroughs and underestimate flows to other London authorities.

3.93. International outflows are the most challenging of all components to measure reliably. ONS's estimates of international outflows at national level are based on the IPS. Due to the small IPS sample size for individual districts, estimates of outflows are created using a regression model. This model identifies local characteristics that are significant determinants of the propensity to out-migrate and uses them as predictors.

3.94. In 2016 the UK voted to leave the European Union. At the time of writing, formal negotiations regarding Britain's future relationship with the EU have yet to reach agreement on the rules governing the movement of people between Britain and countries within the EU, as well as the rights of British and EU citizens already living abroad. The outcome of these negotiations has the potential to dramatically influence future patterns of migration. It is possible to explore some hypothetical scenarios for the country as a whole, assuming a range of future migration flows between the UK and Europe, but the uncertainties are far greater when considering the impact on individual regions or local authorities. As well as uncertainty about the overall level of international migration, there are further questions about how the distribution of those migration flows between UK regions might change and what the knock-on effects on domestic migration might be.

3.95. Typically, trend projections do not attempt to anticipate the occurrence of individual 'shock' events. However, when a major event is considered likely to occur that may have a significant influence on future trends, there are a number of approaches that can be taken.

- An attempt can be made to anticipate the likely impact and include this into the projection directly.
- A number of projection variants can be produced that attempt to capture the possible range of impact.
- Projections can be produced without any attempt to account for the change, leaving the implications of the change to be addressed separately.

3.96. The 2013 SHMA used the second of these options to address the question of how an anticipated economic recovery might affect migration flows. This approach was appropriate because a likely range of response could be reasonably determined and modelled with the available information. However, the same approach is less suitable in the case of Britain's exit from the EU. There are a wide range of plausible outcomes to the negotiations and for each of these there is uncertainty about how they would impact population and household growth.

3.97. At the current time, it therefore does not seem appropriate to attempt to attempt to explicitly account for the referendum result in the projections. The value of making speculative assumptions about the final outcome and its repercussions seems limited. It is

more valuable to ensure that the underlying assumptions for the projections are transparent so that they provide a suitable basis for additional analysis.

3.98. Fertility and mortality variations also add uncertainty into projections, but they are generally of less concern than migration. Changes in mortality rates have been particularly steady, taking place over successive generations. Even if there were to be a significant departure from assumed future trends, the impact on the structure population would take decades to emerge.

3.99. Though measures of fertility can vary significantly over short timescales, much of this volatility is the result of migration effects and transient changes in the timing of births rather than fundamental changes to family formation. Some of the impact of new births on projected households is delayed, as new infants won't begin to form new households of their own until long after they're born. More significant in the near term are the relationships between having children, household formation and migration: for many the decision to have children will be linked to forming a new household and/or moving home.

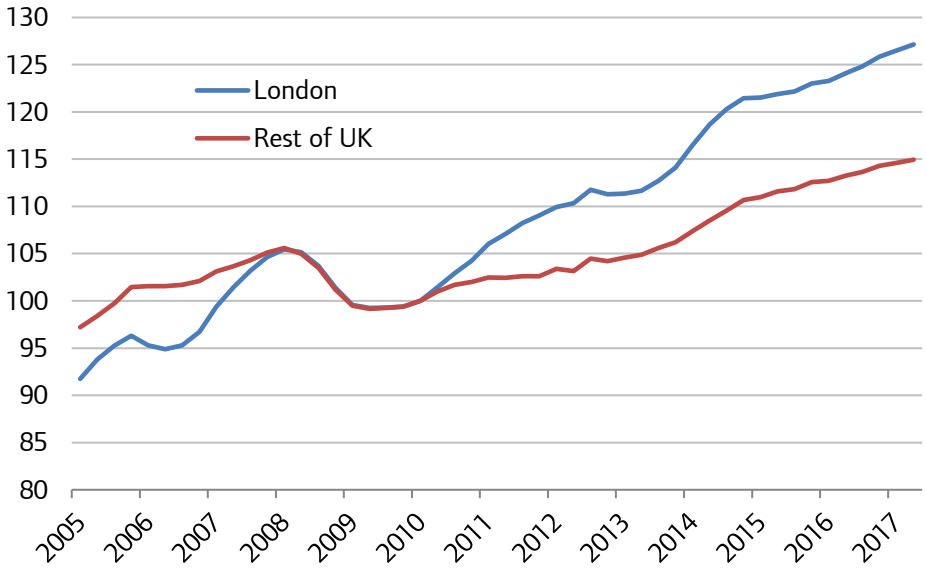
3.100. Projected household formation assumptions from previous sets of DCLG projections were shown to be inaccurate by the results of the 2011 Census, with average household size in London much higher than had been assumed. This reflects the difficulty in projecting something that is influenced so directly by a wide range of social and economic factors, including the supply of housing. The model used by DCLG is relatively simple and does not attempt to explicitly account for determinants of household formation, beyond age, sex, relationship status and local authority of residence.

4. Economic trends

Economic output and employment

4.1. Since the last recession London has experienced a period of rapid and sustained economic growth. Between Q1 2010 and Q2 2017, London's economic output as measured by Gross Value Added (GVA) is estimated to have grown by 27% in real terms, compared to growth of 15% in the rest of the UK[14].

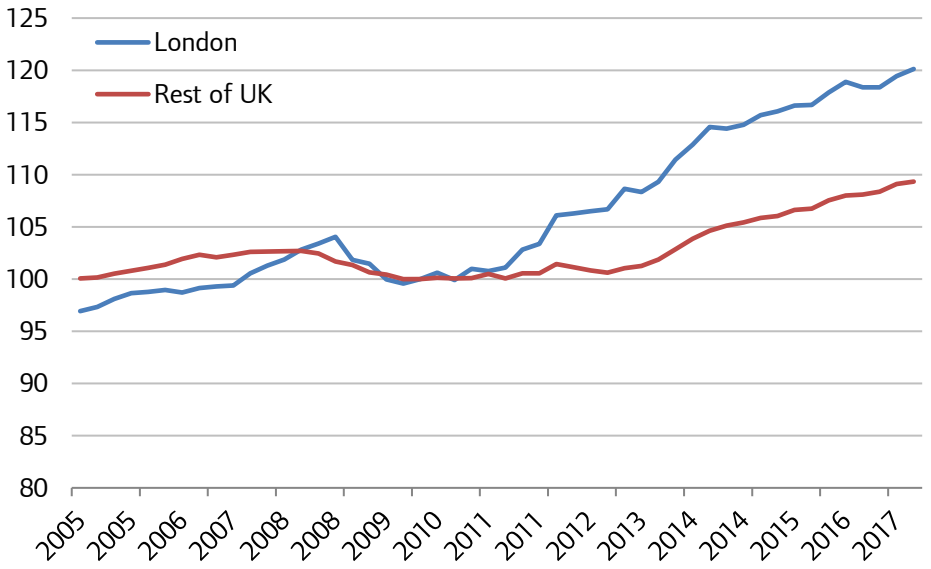
Fig 44: Trend in real Gross Value Added in London and rest of UK (Q1 2010=100)



4.2. This growth in output is reflected in very strong increases in employment over the same period. The number of workforce jobs in London grew by 20% between Q1 2010 and Q2 2017, compared to 9% growth in the rest of the UK. Over this period London accounted for 28% of the UK's entire growth in jobs[15].

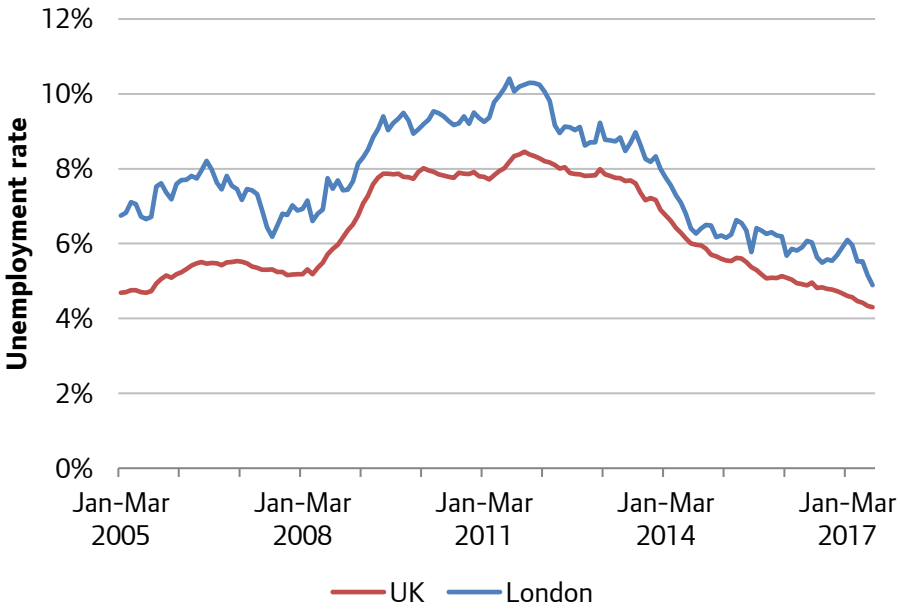
[14] GLA Economics, 'London's Economy Today'
[15] ONS, Workforce jobs by industry

Fig 45: Trend in workforce jobs in London and rest of England (Q1 2010 = 100)



4.3. As a result of the growth in jobs outpacing that of the working age population, London's unemployment rate has roughly halved since its peak in mid-2011, almost converging with the national unemployment rate. By mid-2017 London's unemployment rate had reached 4.9%, its lowest recorded level since this series began in 1992[16].

Fig 46: Unemployment rate in London and UK (16 years and over, resident basis)

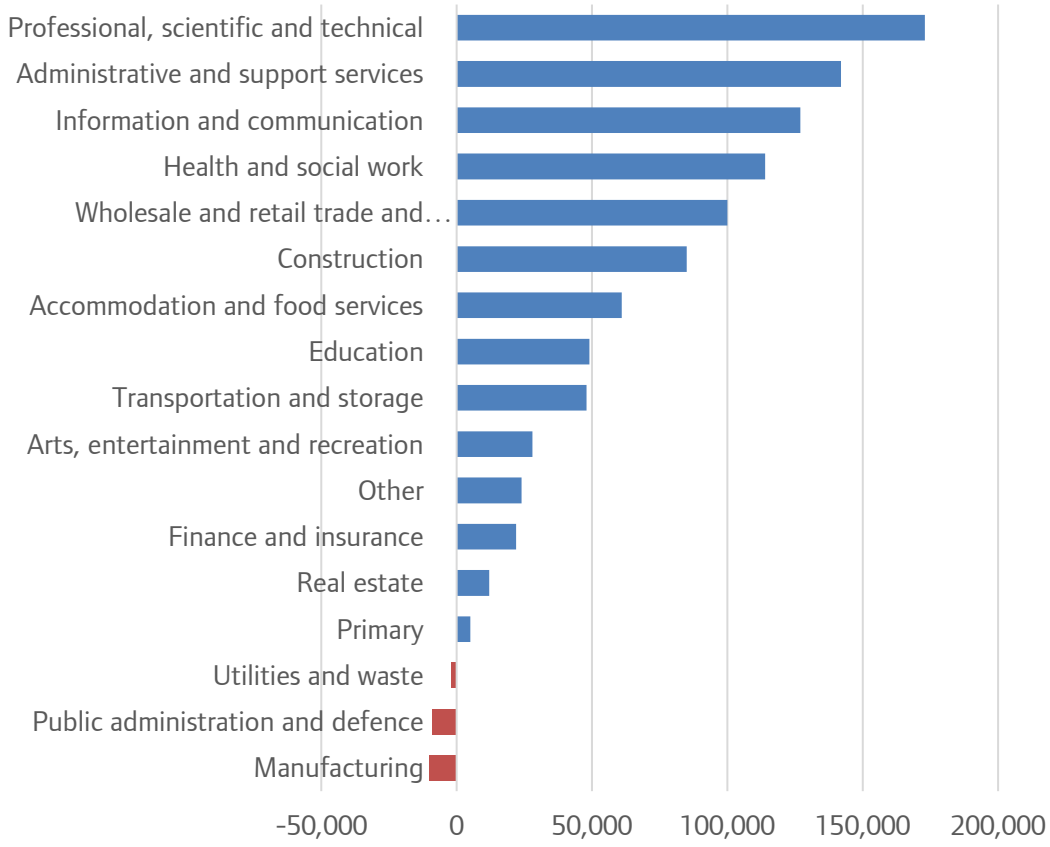


4.4. Since 2010 jobs growth in London has been led by service sectors, with the professional, scientific and technical sector accounting for 173,000 of the extra jobs and administrative and support services another 142,000. London accounts for a third of the UK's jobs in

[16] GLA Economics, 'London's Economy Today'

finance and insurance, but this sector has grown by only 22,000 jobs since 2010, 2% of total jobs growth over the period. The only sectors to shrink in this period were manufacturing, public administration and defence, and utilities and waste. In total, there was a net loss of 21,000 jobs in these three sectors, vastly outweighed by an increase of 990,000 in the remaining sectors[17].

Fig 47: Change in workforce jobs by sector, London 2010 to 2017

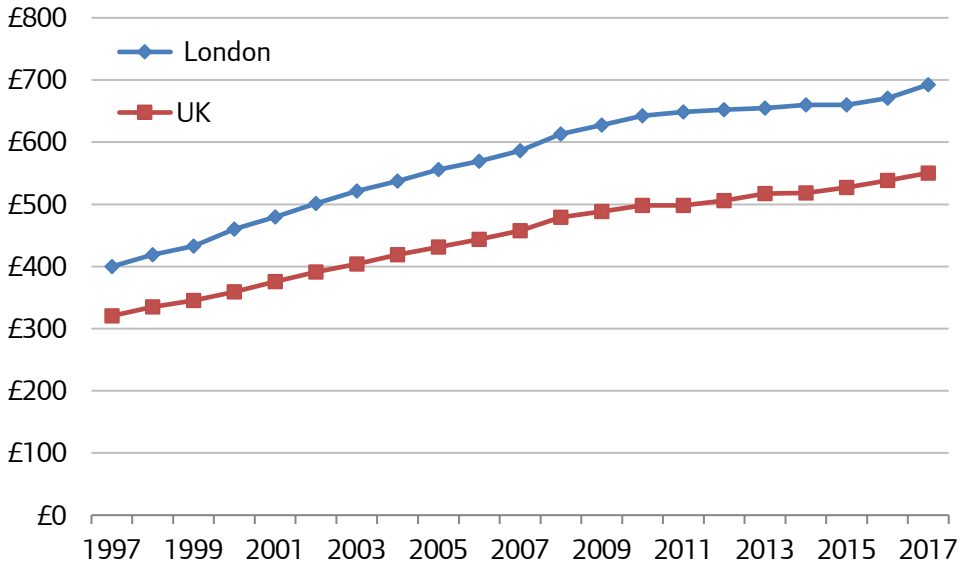


Earnings and income

4.5. In contrast to very rapid growth in economic output and employment, average earnings in London have been relatively flat since the recession. Median full-time earnings in London (by workplace) rose only 2.7% between 2010 and 2015, but rose another 5% in the subsequent two years to end up 7.8% above their 2010 level, compared to an increase of 10.4% for the UK as a whole[18].

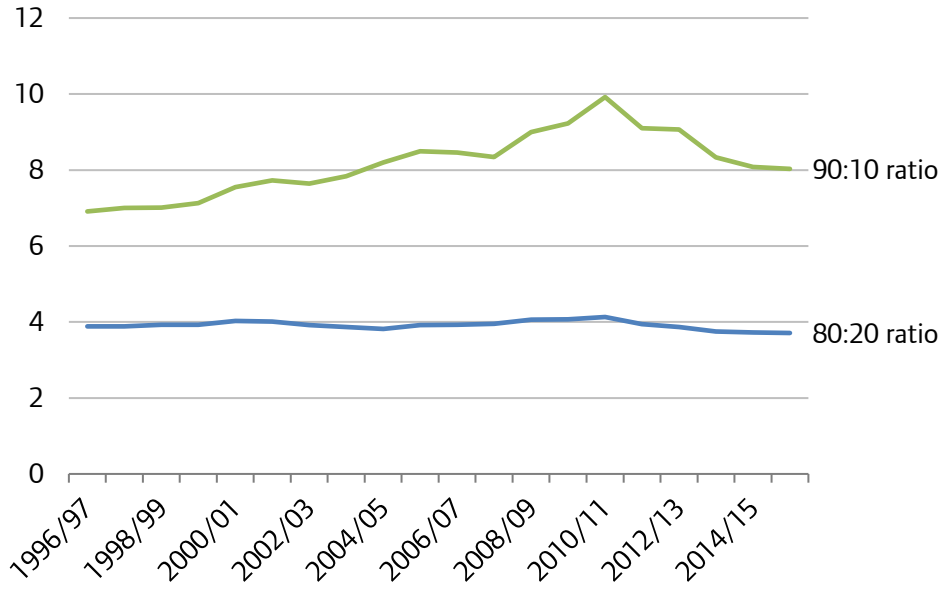
[17] ONS, Workforce jobs by industry
[18] ONS, Annual Survey of Hours and Earnings

Fig 48: Trend in median gross weekly full-time pay, London and UK (by place of work)



4.6. Fig 49 shows trends in the inequality of household income in London, as illustrated by the ratios between the 90th and 10th and the 80th and 20th percentiles of equivalised household income after housing costs. Household income inequality has remained fairly static over time when measured by the 80/20 ratio, but when measured by the 90/10 ratio shows a sharp increase up to the recession and an equally sharp drop afterwards[19].

Fig 49: Trend in household income inequality in London (ratio of 90th to 10th and 80th to 20th percentile equivalised household incomes after housing costs

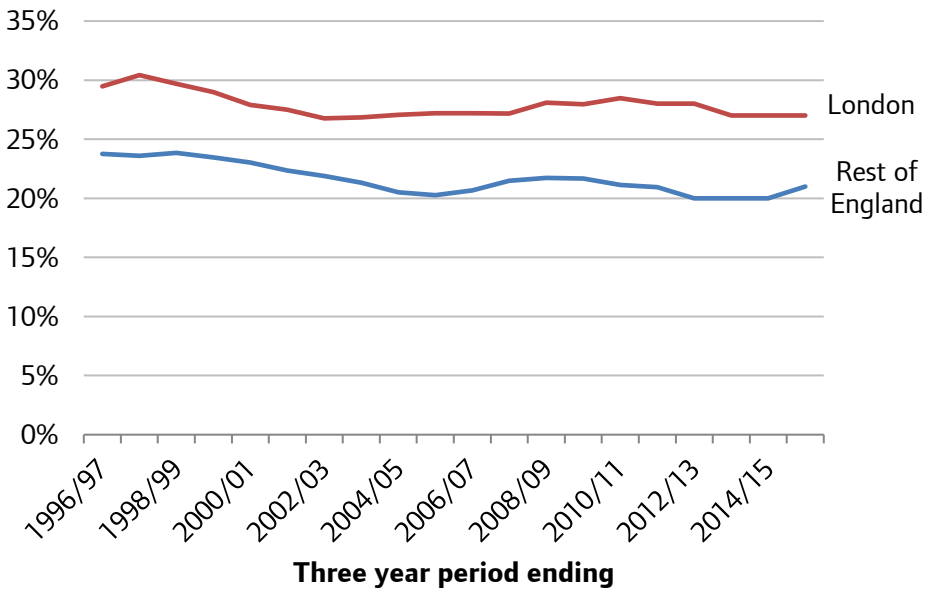


[19] NPI, 'London's Poverty Profile 2017'

Poverty

4.7. While incomes in London are higher than in the rest of the country, the gap in housing costs is even higher. As a result, around 27% of Londoners are considered to be in a household in poverty when housing costs are taken into account, compared to 21% in the rest of England. Poverty is defined here as a household income below 60% of the national median, after adjusting for household size. According to this measure, the rate of poverty in London is at the same level as it was a decade ago (although the absolute number of people in poverty has grown), and lower than in the mid-1990s[20].

Fig 50: Trend in poverty rate after housing costs, London and rest of England



Employment projections

4.8. According to the latest central projection from GLA Economics, the number of jobs in London will increase from 5.68 million in 2016 to 6.91 million in 2041, an increase of 1.22 million or 49,000 a year[21]. The results of sensitivity testing show that assuming a higher or lower rate of economic growth has a substantial effect on projected annual jobs growth, with a low-growth scenario resulting in growth of 25,500 a year and a high-growth scenario in 85,000 a year.

4.9. The GLA's 2017 labour market projections also include an alternative methodology for projecting job growth, which applies an assumed employment rate to projected increases in the working age population. The employment rate used is 68.9%, the average of annual employment rates in London between 1993 and 2016, and the working age population is projected using the GLA's 2016-based population projections.

4.10. Under this alternative methodology jobs in London are projected to reach 6.42 million in 2041, equivalent to growth of 29,500 jobs a year. This estimate is towards the lower end

[20] NPI, 'London's Poverty Profile'
[21] GLA Economics, 'London labour market projections 2017'

of the range indicated by the sensitivity testing described above, which suggests that a faster rate of population growth (and by extension housing supply) might be required to keep up with jobs growth if the central labour market projection turns out to be more accurate. Conversely, a lower rate of jobs growth than indicated by the GLA's employment projections would not necessarily imply that the housing requirements identified in this report are too high.

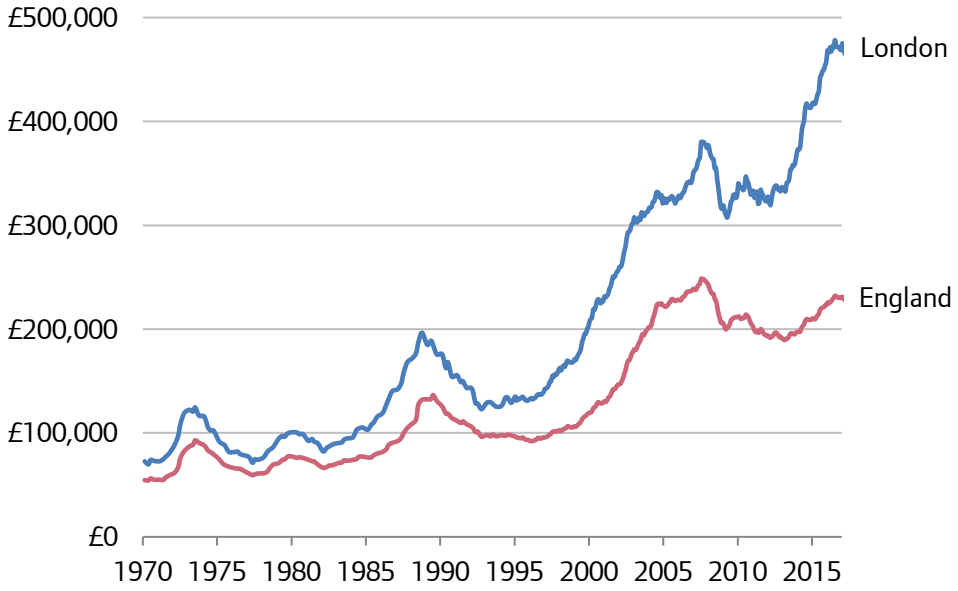
5. Housing trends

House prices

5.1. Rapid growth in population and employment and a persistent under-supply of the required number and mix of new homes have left London with very high housing costs. House prices, which are also affected by the availability of mortgage finance and a range of other factors, are particularly high in London. In August 2017, the average house price in London stood at £489,000, twice the average price of £244,000 in England as a whole. The last year has however seen relatively little growth in London's house prices, with London's average prices up by 2.6% since August 2016 (in nominal terms), less than half the 5.6% rate of growth in England as a whole[22].

5.2. Even when adjusted for inflation, London's average house prices have more than doubled since the early 2000s and quadrupled since the mid-1980s (Fig 51)[23]. It is notable that whereas previous house price cycles featured long post-peak price declines, the price drop following the peak in mid-2007 was relatively small and has been made up by subsequent increases. The implication is that London's prices are under-pinned by strong fundamental factors of high demand and low supply.

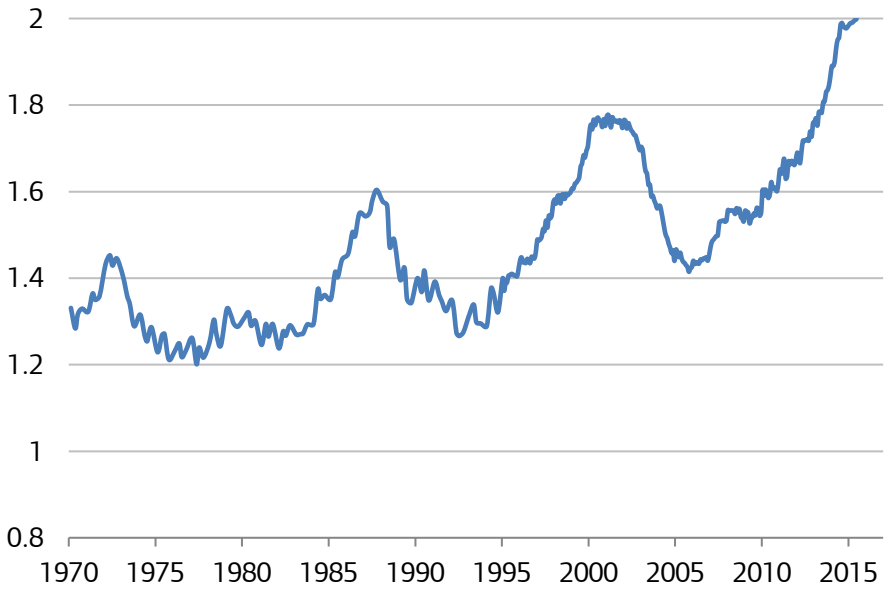
Fig 51: Index of average house prices, adjusted for RPI inflation (Q1 1987=100)



5.3. As is also clear from this chart, the gap between average prices in London and in England as a whole has widened considerably in recent years. In August 2017 prices in London were exactly twice the England average, a figure that has fallen slightly from its peak in early 2016 and may be expected to fall further if previous regional price cycles are any guide. It is notable, however, that the bottom of each previous cycle has left average London prices further above the England average than the one before it, further evidence of a long-term failure of supply to meet demand.

[22] ONS, House Price Index, August 2017
[23] Trend constructed by GLA using UK House Price Index and RPI data

Fig 52: Ratio of average London house prices to England prices



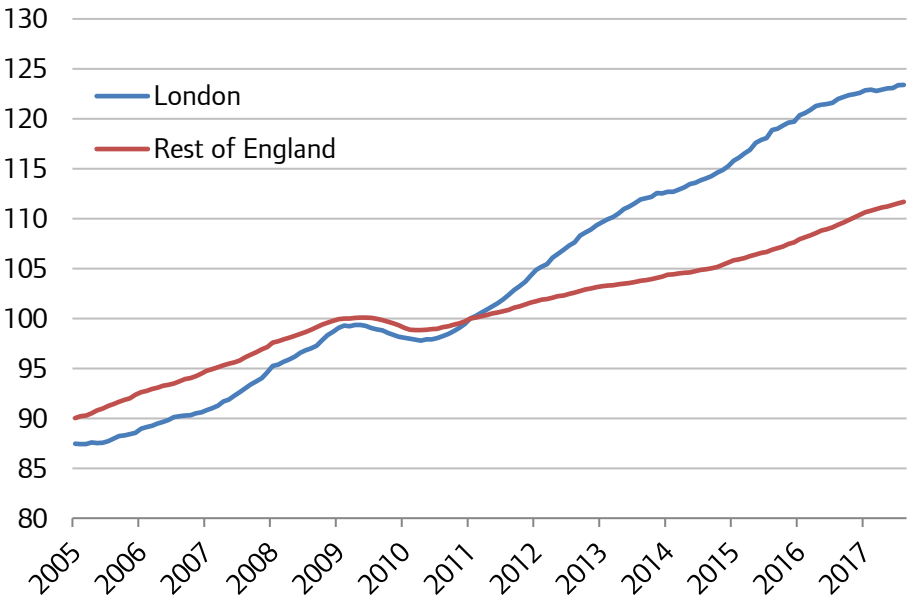
Private rents

5.4. Average private rents in London are also considerably higher than the national average. The Valuation Office Agency (VOA) report a median rent for London (across all dwelling types and sizes) of £1,495 a month, compared to £675 in England as a whole[24]. However, it should be borne in mind that the VOA deliberately exclude from their statistics any cases where the tenant receives Housing Benefit (including Local Housing Allowance)[25]. These cases usually involve below-average rents, so the VOA average tends to over-state the true average private rent as paid by all tenants. This issue informs the choice of rent data for the analysis of housing requirements, as explained in chapter 6.

5.5. Trends in average private rents over time are available from the ONS index of private rents, which is based on a matched and weighted sample[26]. As Fig 53 shows, average rents rose more quickly in London than in the rest of England both before and after the recent recession. In August 2017 average rents in London were 23.4% above their January 2011 level, compared to 11.7% in the rest of England. However, annual rental growth in London has fallen in recent months, from a peak rate of 4.3% in August 2015 to 1.2% in August 2017.

[24] VOA, Private Rental Market Statistics, to March 2017
[25] See VOA, Private Rental Market Statistics Release Notes: http://www.voa.gov.uk/corporate/statisticalReleases/130530_PRM_Release_Notes.html
[26] ONS (2013), 'Index of Private Housing Rental Prices, Historical Series'

Fig 53: Index of average private rents, London and rest of England (January 2011 = 100)



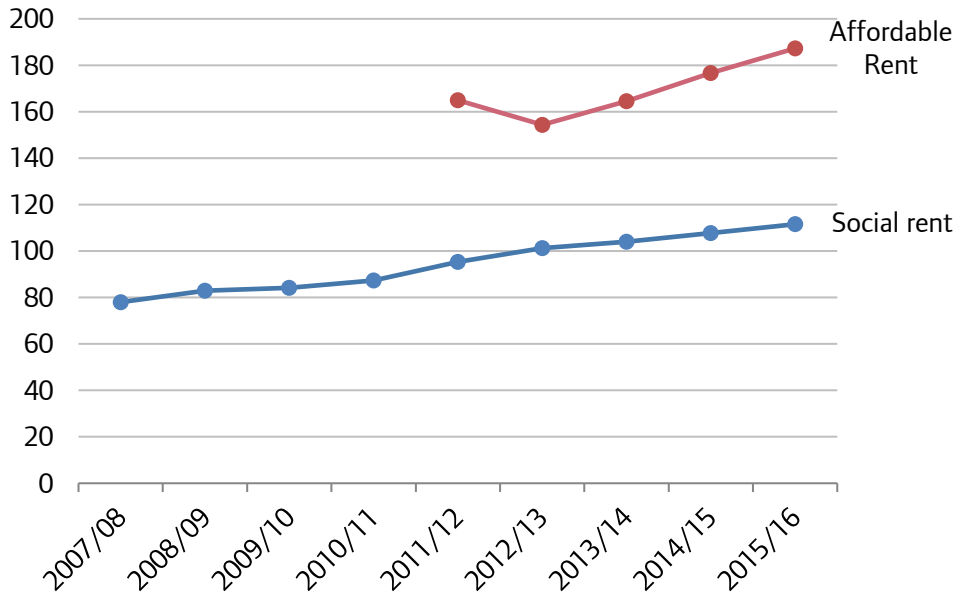
Social and affordable rents

5.6. Rents for new general needs social rent tenancies have risen rapidly in recent years. The average rent for a new social rented tenancy in London in 2015/16 was £112 a week, a 3.6% increase from 2014/15. Average social rents in London are 34% above the England average, a much smaller gap than exists for private rents[27].

5.7. Fig 54 shows the trend in average weekly rents for new social rent tenancies alongside Affordable Rent tenancies, which were first introduced in 2011/12. The average rent for a new Affordable Rent tenancy was £187 in 2015/16, up 6% from 2014/15[28].

[27] DCLG (2016), 'Social housing lettings in England: April 2015 to March 2016'. The figures from this source for both social rents and Affordable Rents exclude service charges.
[28] Ibid.

Fig 54: Average weekly rents for new social rent and Affordable Rent tenancies in London, 2007/08 to 2015/16 (nominal)

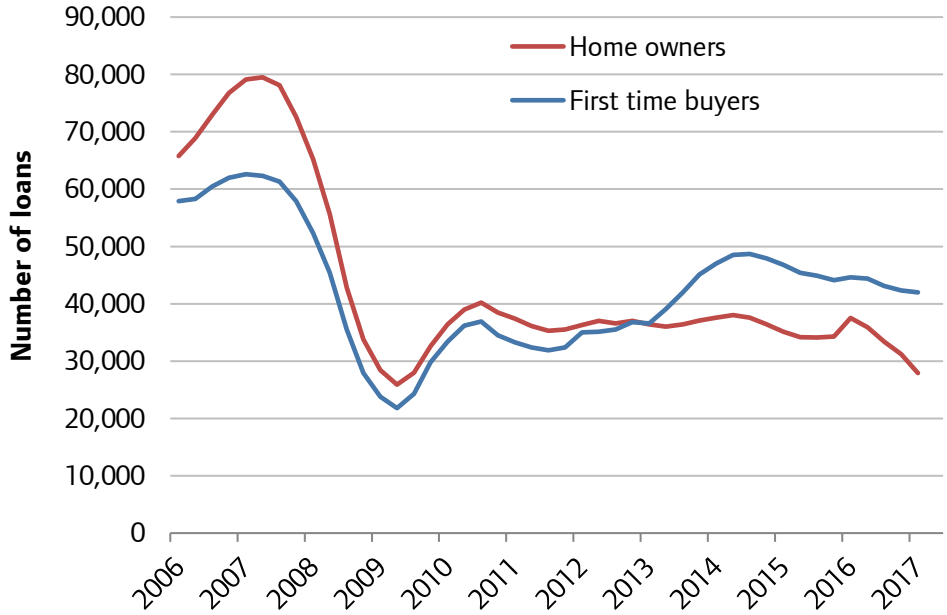


Transactions and mortgage lending

5.8. A prolonged mortgage lending shortfall followed the last recession, with the number of new loans in London falling by more than half relative to pre-recession levels (Fig 55). The number of loans to first time buyers increased to a post-recession peak of 48,700 in the year to September 2015, but has since fallen slightly to 42,000 in the year to March 2017. The number of loans to home movers was relatively steady at around 37,000 for several years, but in the last year has fallen, with just 27,900 loans in the year to March 2017[29].

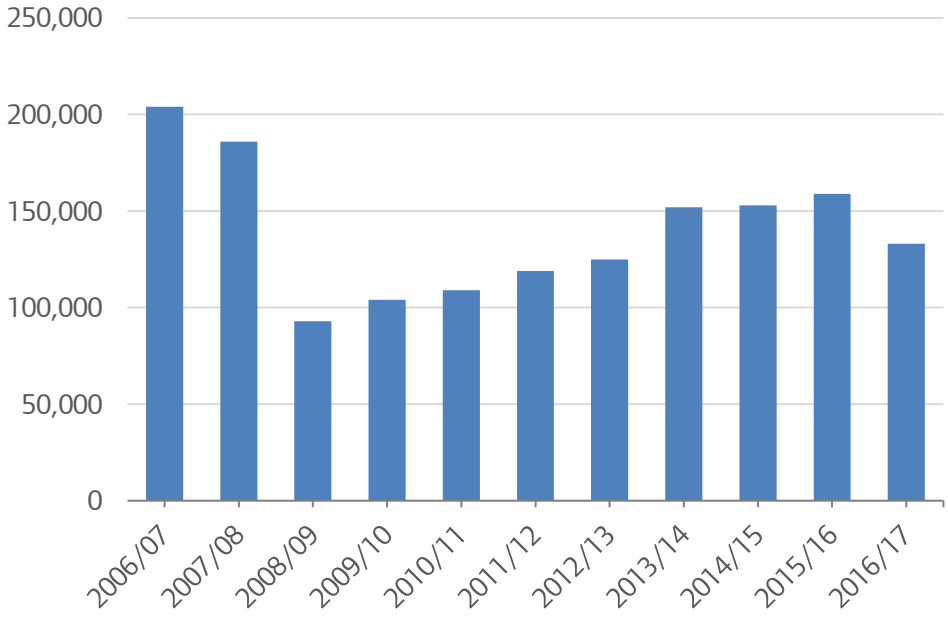
[29] UK Finance, Mortgage lending statistics

Fig 55: Annualised new mortgage advances in London by type of buyer



5.9. While UK Finance statistics show there were around 70,000 new mortgage loans made to first time buyers or home movers in London in the year to March 2017, according to HMRC statistics there were around 133,000 residential transactions in the same period, down from 159,000 in 2015/16 (Fig 56). Assuming no major discrepancies in measurement, the gap of 63,000 presumably comprises sales financed by cash, a Buy to Let mortgage or some other form of loan.

Fig 56: Annual trend in housing sales in London (HMRC)

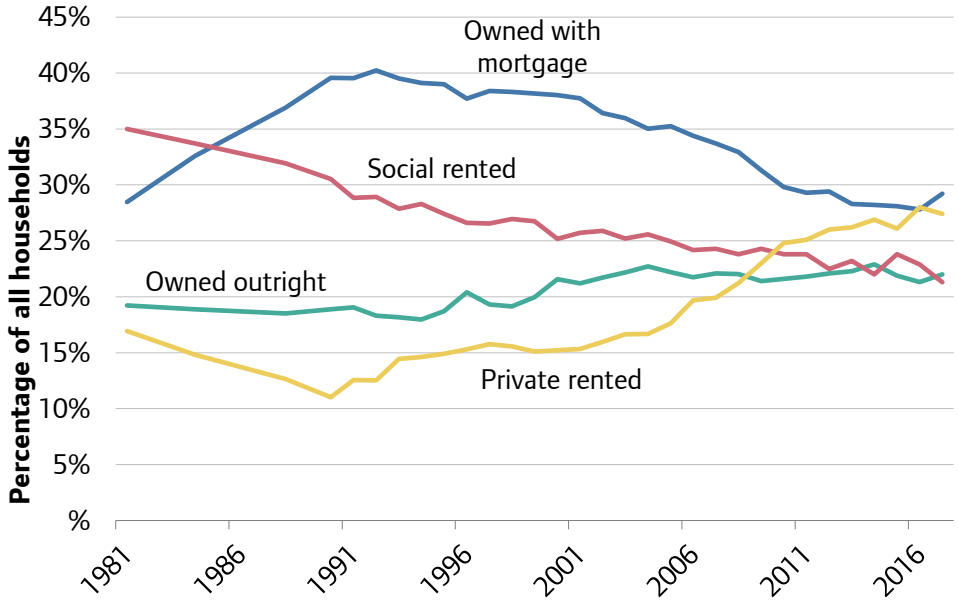


Tenure trends

5.10. The long-term trend in housing tenures was set out in chapter 2, but the shorter-term trends are also relevant to the analysis of London's housing requirements. As Fig 57

shows, growth in the private rented sector has been particularly rapid in recent years, from around 15% of London's households in the early 1990s to around 27% in 2017, while the proportion of households who own their home with a mortgage has fallen from around 40% to around 29%[30].

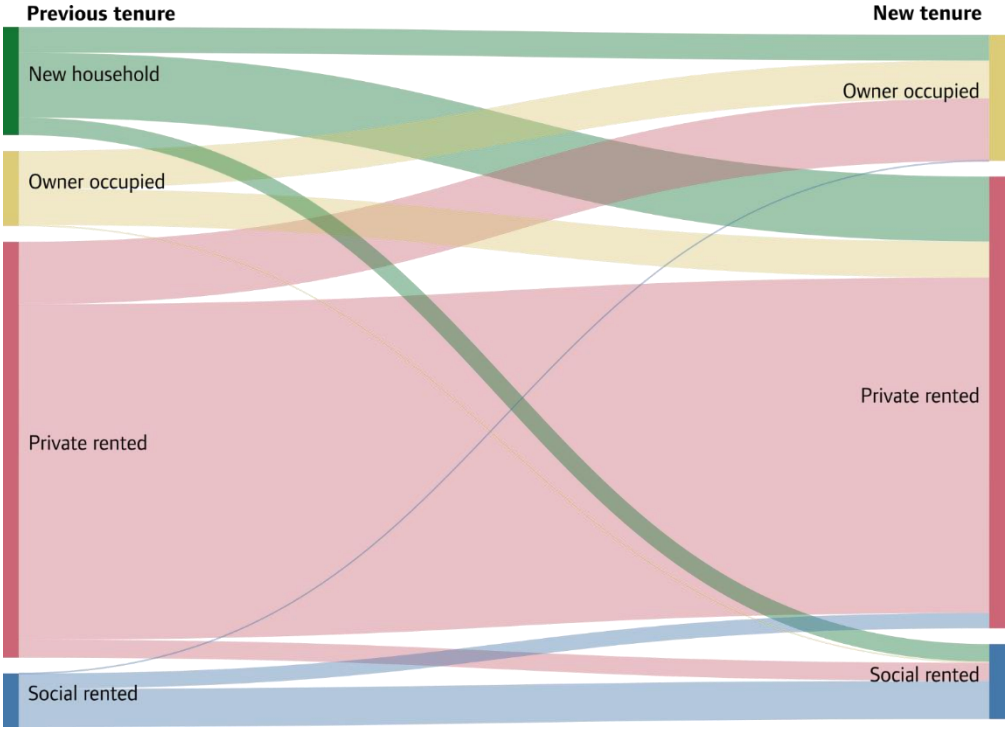
Fig 57: Annual trend in household tenure, London 1981 to 2017



5.11. The scale of moves between tenures helps explain these trends. Fig 58 shows the pattern of moves between tenures in London (and the tenures occupied by newly forming households) in an average recent year[31]. Overall, around 420,000 or one in eight households in London move per year, and 69% of moves are either into or within the private rented sector. More households move from the private rented sector into owner occupation than the other way around, but the private rented sector's share is still growing rapidly because it absorbs so many newly forming households, around 40,000 of the roughly 70,000 that form each year. Social housing receives around 12% of all moves and owner occupied housing around 19%.

[30] For sources see GLA, Housing in London 2017
[31] The data is from the English Housing Survey and uses an average of the three years 2012/13 to 2014/15.

Fig 58: Moves between tenures in London, average of 2012/13 to 2014/15

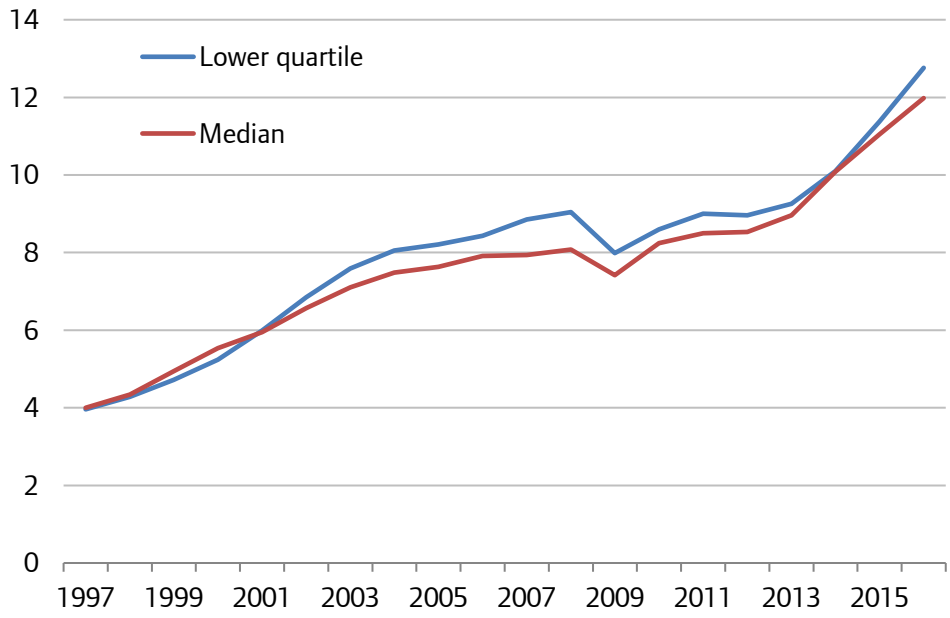


Affordability

5.12. London has serious problems of housing affordability both in historic terms and in comparison to other parts of the country. Fig 59 shows the trend in a standard measure of house price affordability, the ratio of lower quartile house prices to lower quartile individual earnings, alongside the equivalent ratio for median prices and median earnings. According to both measures house prices were four times earnings in 1997, but by 2016 each ratio had risen to around 12. The 2008-09 crash, when prices fell more than earnings, caused only a temporary improvement in affordability[32].

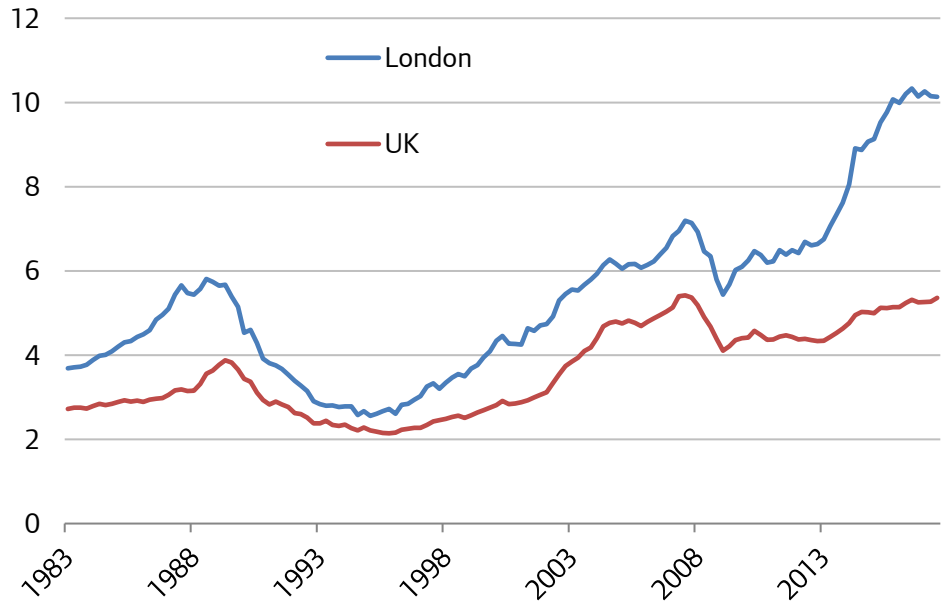
[32] ONS, 'Housing affordability in England and Wales: 1997 to 2016'

Fig 59: Affordability ratios in London - lower quartile and median house prices and earnings (place of work definition)



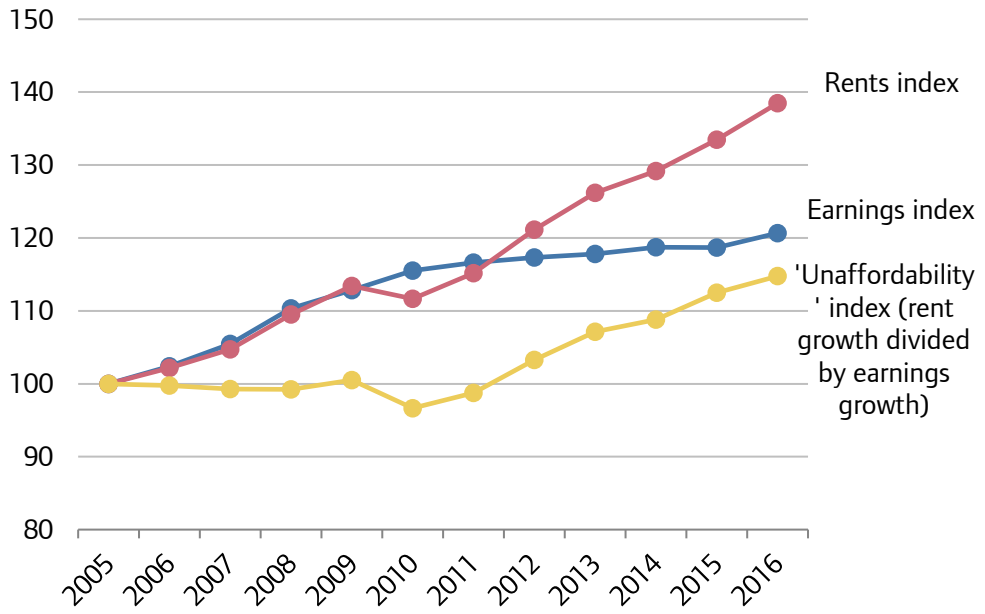
5.13. Similar indicators can be calculated in a variety of ways, and Fig 60 shows the ratio of average first time buyer prices to earnings as calculated by Nationwide, for London and the UK as a whole. According to this measure affordability in London is worse than at any point since 1983, while house prices in the UK as a whole are now roughly as unaffordable as they were prior to the last recession.

Fig 60: Ratio of Nationwide first time buyer prices to average earnings, London and UK, Q1 1983 to Q2 2017



5.14. Private rents have grown rapidly in London in recent years despite relatively stagnant earnings, as shown in Fig 61. For six consecutive years between 2010 and 2016, the growth in private rents as measured by ONS has outstripped growth in median full-time weekly earnings in London (on a place of work basis).

Fig 61: Index of cumulative change in private rents, earnings and implied affordability in London, 2005 to 2016 (2005=100)

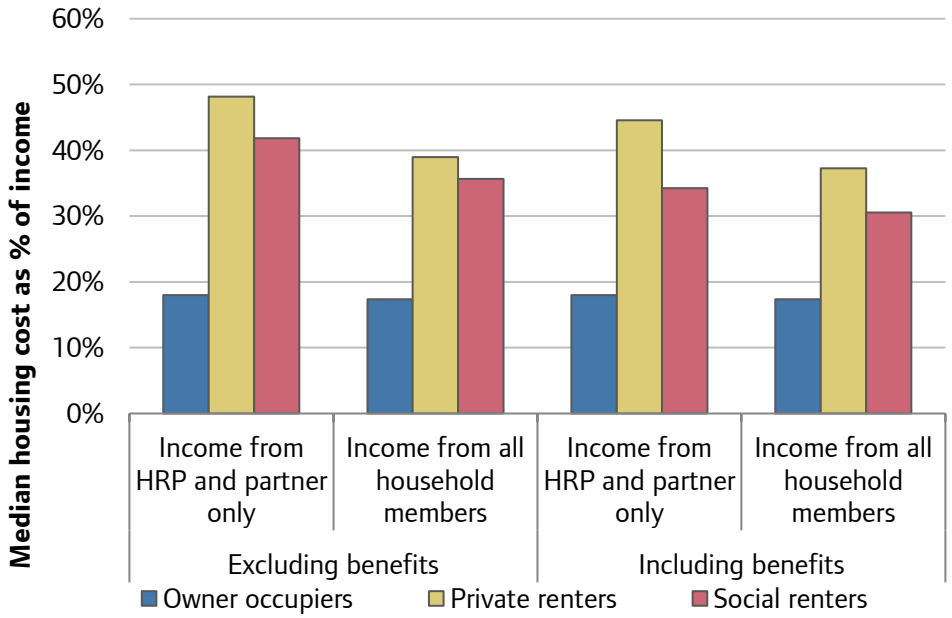


5.15. Recent analysis by the Institute for Fiscal Studies covers a longer period and compares private rent levels with household income (both as reported in the Family Resources Survey). This analysis found that the median private renting household in London spent 37% of its income on rent in 1994-96, a figure that fell to 33% in 2002-04 before increasing again to 40% in 2013-15 (the last period of data available)[33].

5.16. Similar ratios cannot be calculated for rents due to the absence of similar trend data, but affordability can be compared across tenures by calculating housing costs as a proportion of income, as in Fig 62. The burden of housing costs varies by tenure and by whether income is defined as including just the income of the household head and partner or that of other household members too. Taking incomes of all household members into account makes a significant difference for private renting households, due to the number of multi-adult households in the sector. Benefits have the greatest impact on social tenants, reducing their housing costs from 36% to 31% of income using the total household income definition. On any definition, owner occupiers paying off a mortgage have the lowest average housing cost burdens (those who already own their home outright are excluded)[34].

[33] Joyce, Mitchell and Norris Keiller (2017), 'The cost of housing for low-income renters'. IFS and Joseph Rowntree Foundation.
[34] GLA, Housing in London 2017

Fig 62: Median of housing costs as a share of gross household income in London, by tenure and income definition, 2014/15



5.17. The relatively low housing costs burden on owner occupiers largely reflects the current low rates of interest rates, and has also contributed to relatively low rates of repossession and arrears in recent years compared to previous housing market downturns.

Overseas investment

5.18. Research commissioned by the GLA and published in 2017 found that sales to buyers registered overseas accounted for 13% of all new build property sales in London sample between April 2014 and March 2016. When new build affordable homes are included, the research found that sales to overseas buyers comprised 10% of all new homes built in London during the period.

5.19. The research also found that at least 70% of homes bought by overseas buyers were likely bought as rental investments. If these properties are assumed to have close to 100% occupancy, then only around 4% of all the market homes built in London in this period were purchased by overseas buyers and not regularly occupied. Almost no evidence was found of units being left entirely empty[35].

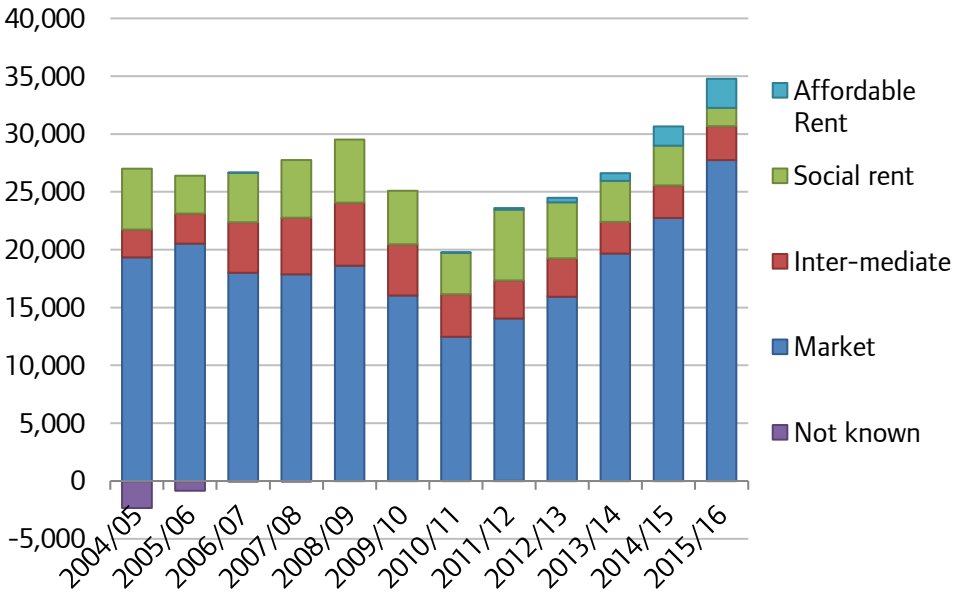
New supply and empty homes

5.20. Chapter 2 described long-term trends in London's housing supply. For more recent trends we can use data from the London Development Database (LDD), which captures a rich range of detail on all housing developments in London[36]. Fig 63 shows the net conventional supply of new housing in London (i.e. excluding bedspaces in non-self-

[35] Homes for Londoners Overseas Investment Sub-Group, 'Consolidated research summary report', June 2017
[36] Data from the LDD is used to compile the housing supply statistics in the GLA's London Plan Annual Monitoring Reports, but as London boroughs frequently revise the data they submit to the LDD the latest totals often do not much those published in past Annual Monitoring Reports

contained accommodation and empty homes returning to use) between 2004/05 and 2015/16[37].

Fig 63: Net conventional housing supply in London, 2004/05 to 2015/16



5.21. New supply by this measure reached almost 30,000 in 2008/09 before falling to 19,800 in 2010/11, since when it has increased every year to 34,800 in 2015/16. Affordable housing's share of total supply has fluctuated, rising from 22% in 2005/06 to 41% in 2011/12 before falling again to 20% in 2015/16. Social rented housing's share of the total reached a peak of 26% in 2011/12 but has fallen sharply since to only 5% in 2015/16, partly reflecting the growth of Affordable Rent to 7% of completions by 2015/16.

5.22. The LDD identifies purpose-built private rented homes (often called 'Build to Rent') where they are recorded as such by London boroughs, and they are included in the market sector in the chart above. However, these developments appear to be undercounted in the LDD, as other evidence from the research firm Molior indicates that there were around 4,000 Build to Rent units completed in 2016/17, up from 2,300 in 2015/16[38].

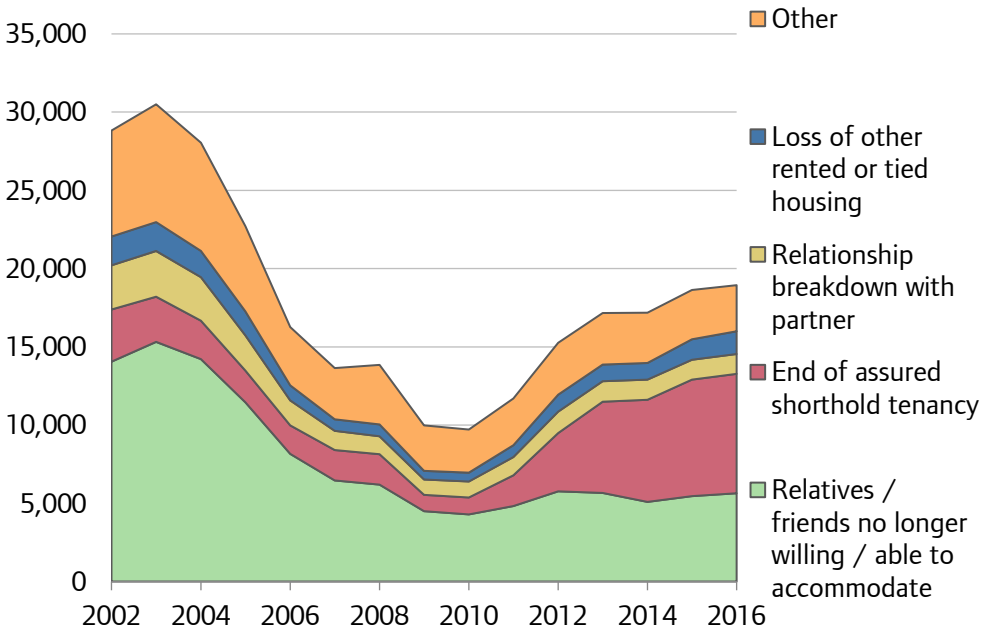
Housing need

5.23. As shown in Fig 64, the number of households accepted as homeless in London has increased sharply in recent years, albeit not to the levels seen at the start of the century. Homeless acceptances reached 30,500 in 2003 before falling to 9,700 in 2010, only to rise again to 18,900 in 2016. Most of this latter increase was due to the ending of an assured shorthold tenancy, typically due to eviction from a privately rented home.

[37] Data from the GLA's London Development Database is frequently updated on the basis of new information from the London boroughs

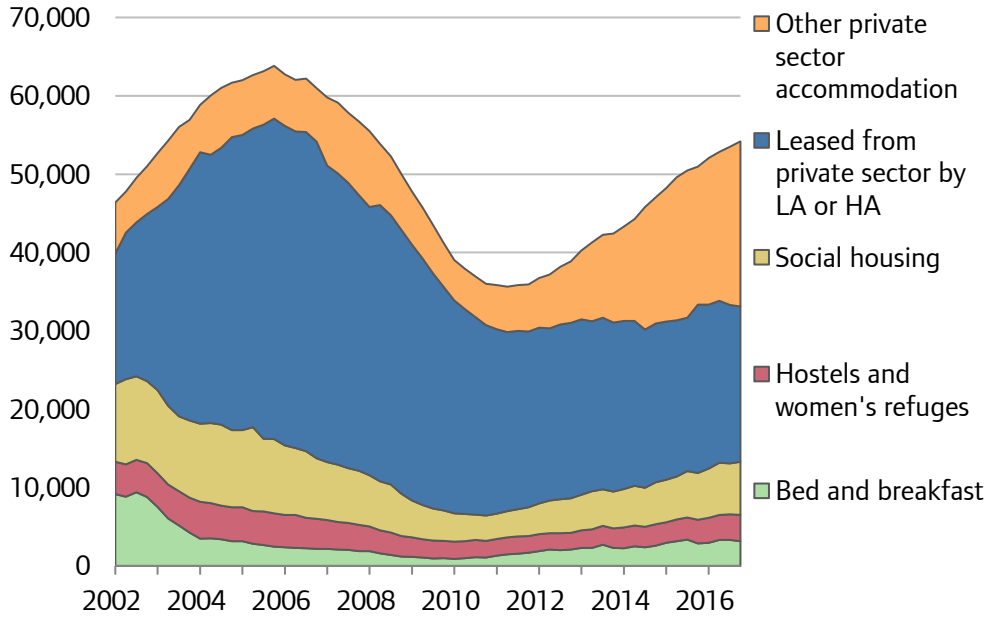
[38] Molior, 'Quarterly Analysis: BTR', May 2017

Fig 64: Households accepted as homeless in London by reason for loss of last settled home, 2002-2016



5.24. Unsurprisingly, the combination of rising numbers of households accepted as homeless and falling completions of affordable housing has resulted in a growing number of homeless households placed in temporary accommodation by London boroughs (Fig 65)[39].

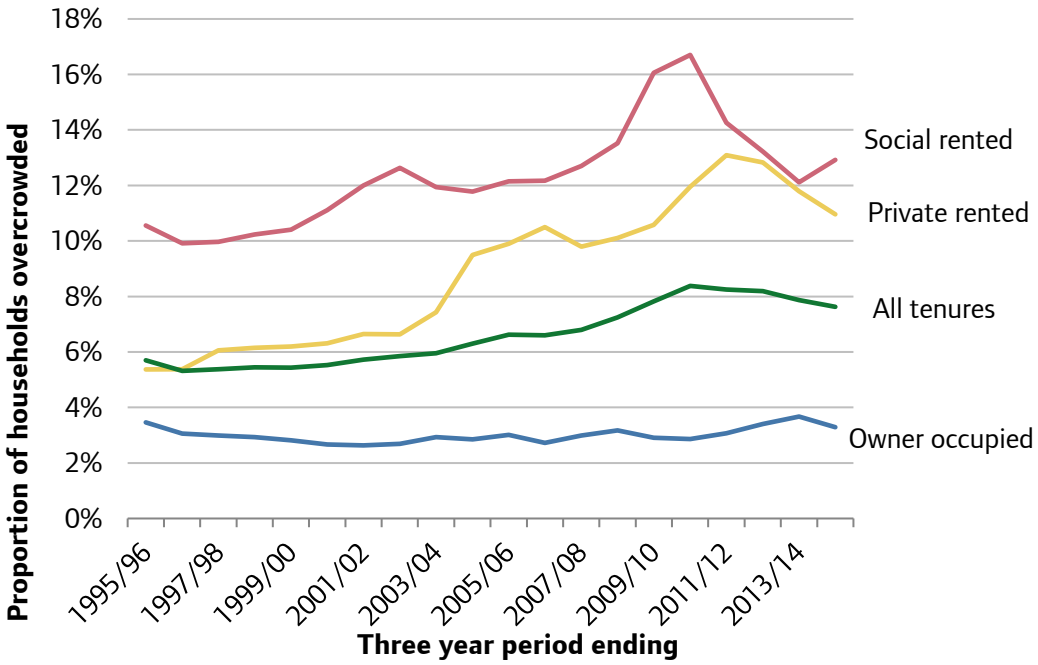
Fig 65: Homeless households in temporary accommodation in London by type of accommodation, 2002 to 2016



[39] DCLG, Live tables on homelessness

5.25. Overcrowding in London has also increased since the start of the century, peaking around five years ago. Around 7.6% of households in London are overcrowded, but this rate varies widely by tenure, from just 3.3% of homeowners to 12.9% of households in social housing[40].

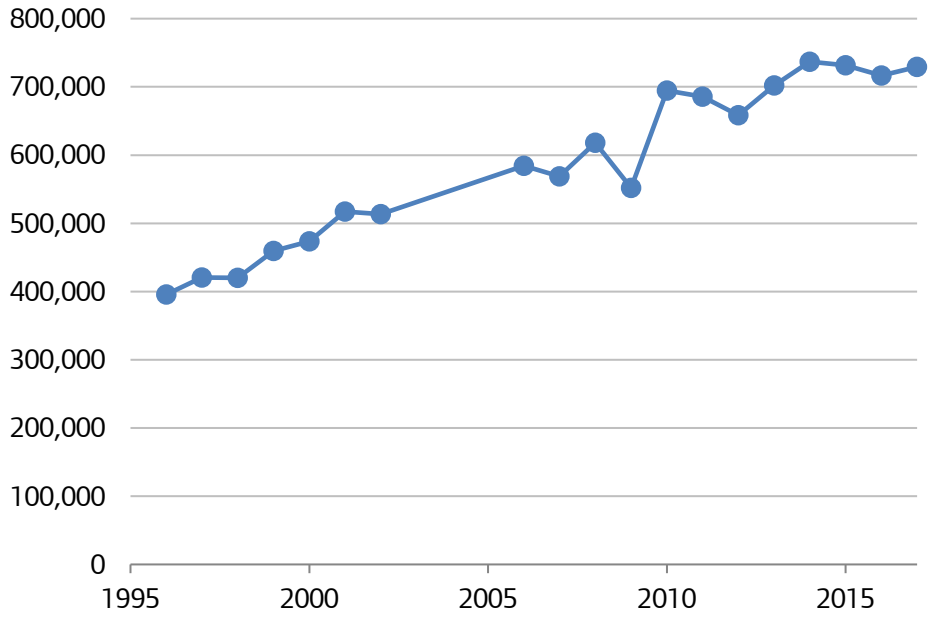
Fig 66: Proportion of households in London overcrowded (according to the bedroom standard) by tenure, 1995/96 to 2014/15)



5.26. The analysis of housing requirements in chapter 7 takes into account the number of 'concealed' households, as defined in Table 9 and measured using data from the English Housing Survey. But a similar concept can be measured over a longer timeframe using the Labour Force Survey (LFS). The LFS counts the number of 'family units' (which includes single people, couples and families with children) who are living within households headed by a member of another family unit and who can therefore be considered 'concealed'. By this measure, the number of concealed family units in London has risen from 400,000 in 1996 to 730,000 in 2017 (Fig 67).

[40] GLA analysis of English Housing Survey data

Fig 67: Trend in number of 'concealed' family units, London 1996-2017



6. Methodology

Introduction

6.1. The methods used to estimate London's housing requirements in this report closely follow those used in the 2013 London SHMA. That report discussed a range of potential methods and elected to follow the so-called 'net stock' approach for reasons (more fully explained in the 2013 report) including data availability and transparency of process and assumptions.

6.2. In his December 2014 report on the Examination in Public of the Further Alterations to the London Plan, the independent planning inspector stated that "having considered all the evidence and the submissions, [the SHMA and its underlying demographic projections] are reasonable and probably the best available assessment of objectively assessed housing need for London at this time", and that he was "satisfied that the Mayor's population and household projections, SHMA and SHLAA are based on good evidence and robust methodology".

6.3. This chapter describes the method followed to estimate London's housing requirements, the data sources used and the assumptions applied, and it highlights any departures (all of which are relatively minor) from the method used in the 2013 report.

Data

6.4. Like the 2013 report, this SHMA uses three years of data from the government's English Housing Survey (EHS) as its main source of data on household characteristics, incomes and housing costs in London. The EHS is a national survey, interviewing a sample of around 13,000 households a year and weighting the results to be representative at the national level. The EHS covers a wide range of housing-related topics in detail, making it a key source of information on topics such as tenure, overcrowding and housing affordability, at national and regional levels. However, a single year of EHS data contains less than two thousand cases from London, not enough to give reasonably precise estimates when disaggregated by tenure and household type. The SHMA model therefore uses averages calculated from the three years 2012/13 to 2014/15[41], as data from 2015/16 was not yet available when the analysis was being carried out.

6.5. Other data that used in the SHMA model include:

- GLA population and household projections, as set out in chapter 3
- House price statistics from ONS
- Statistics on homelessness and social housing lettings from DCLG

6.6. Rent levels in the model are calculated from EHS data on rents. The Valuation Office Agency (VOA) publishes its own data on average private sector rents through its Private Rental Market Statistics. However, these statistics exclude any cases in which Housing Benefit / Local Housing Allowance is used to help pay the rent. This exclusion means that the VOA statistics do not reflect the whole of the private rented market, and leads the

[41] 2011/12 data was published in September 2013, too late to be incorporated in the SHMA model

VOA's average rent figure to be higher than the average paid by all tenants including those in receipt of Housing Benefit or Local Housing Allowance.

Key elements of the method

6.7. The net stock approach to estimating housing requirements comprises three main elements which broadly determine the overall scale and mix of requirements identified:

- Projected changes in the number and mix of households in the area
- The affordability of different types of housing when compared to household incomes (and savings, in the case of home ownership)
- Any adjustments that need to be made to clear backlogs of housing need or to respond to market signals

6.8. These are described in more detail below, and details of how each one contributes to the final estimate of London's housing requirements are set out in the following chapter.

6.9. Household growth is estimated using household projections, which (as set out in chapter 3) are derived by applying household formation rates to projected population growth. The GLA's central population and household projections are used as the basis for the main analysis of housing requirements in this report.

6.10. Both the underlying population projections and the resulting household projections are sensitive to the data and assumptions used. The net stock model used in this SHMA projects requirements for different tenures and sizes of homes by applying the mix of tenures and sizes currently occupied by each household type (taken from analysis of EHS data) to the projected future number of households of that type (taken from the GLA central household projection). In other words, while the number of households of each type changes over time, in line with projections, the mix of homes required by households of each type is assumed to remain the same, unless one of the further adjustments set out below applies.

6.11. Backlog housing need comprises households who are currently in unsuitable accommodation, and whose needs imply a different mix of provision from that suggested by household growth alone. There are a range of types of backlog need but they fall into three main categories, each with a different impact on the final mix of housing requirements:

- Net backlog: Households not currently in self-contained accommodation of their own who will therefore not free up a home for another household when they move. Their requirements add to the total housing requirement as well as changing the tenure and size mix.
- Tenure backlog: Households in self-contained private sector accommodation who need to move to affordable housing. Their requirements change the tenure and size mix but do not add to the total requirement as they free up a home when they move.

- Size backlog: Households in self-contained affordable housing who need to move to a more suitable home. Their requirements change the size mix but do not add to the total requirement or the tenure mix.

6.12. This distinction between different types of backlog need is critically important. If all types of backlog need were added to the total requirement it would make a very big difference, but only by disregarding the homes that become vacant through the moves of households in the tenure or size backlog.

6.13. The backlog housing need for new homes is a 'stock' variable, which should be reduced over time by a 'flow' of net housing completions. The annual flow of completions required is calculated by dividing the total stock of need for new homes by the number of years over which the backlog is to be cleared, with a shorter period resulting in a higher annualised requirement.

6.14. In this context, it is important to note that the scale of backlog need is far higher in London than in the rest of the country. For example, in March 2017 DCLG estimated that 1.5% of all households in London were statutorily homeless and in temporary accommodation, compared to 0.1% in the rest of England[42], while 7.6% of households in London were overcrowded in the three years to 2014/15 compared to just 3.0% in England as a whole[43].

6.15. London has had sizable backlogs of housing need resulting from housing shortages throughout most of its recorded history, and as the next chapter will show the backlog has grown substantially in recent years due to identified housing requirements not being met. To fully clear the backlog of housing need – that is, to reduce to zero the number of overcrowded, concealed or homeless households – would therefore be unprecedented, especially at a time when the population is growing at such a rapid rate. Given these considerations and the advantage of aligning with policy timescales, this study assumes that the backlog is cleared at an annualised rate between 2016 and the end of the London Plan's current planning period in 2041.

6.16. This does not mean that individual households currently homeless or overcrowded are assumed to remain in the same circumstances for 25 years. Nor does it mean that any households becoming homeless or overcrowded over the next 25 years are excluded from the total requirement. Every year there is a 'flow' of households into and out of housing need, and clearing the backlog essentially means increasing the outflow relative to the inflow until the 'stock' of need is reduced to zero.

6.17. Affordability is a critically important factor in determining the tenure mix of the housing requirements identified. The simplest version of the net stock model would predict the tenure of homes required in future on the basis of the mix of tenures currently occupied by each household type. However, this would simply carry forward into the future any affordability problems that currently exist. This study therefore applies a series of tests to

[42] DCLG live table 784
[43] GLA analysis of English Housing Survey

identify which tenure future households will be able to afford. These affordability tests are set out in Table 2, with more detail provided in the subsequent text.

Table 2: Affordability tests

Tenure	Details of test
Owner occupation	Existing outright owner occupiers are assumed to be able to afford to continue to own. Other households can afford owner occupation if: (i) the sum of (a) 3.5 times the income of single earner or 2.9 times the income of joint earners and (b) available savings plus equity exceeds the lower quartile price, and (ii) savings plus equity exceeds 10% of the purchase price.
Private rent	Households can afford private rent if the lower quartile private rent does not exceed 25% of gross household income for households with incomes of less than £40,000 per annum, or 30% for households with incomes of more than £40,000 per annum.
Intermediate	Households are allocated to this category if: (i) they can afford to pay more than the London Affordable Rent (LAR) benchmarks but cannot afford to buy or rent market housing, or (ii) they can afford market rents but are not satisfied with their current tenure and they expect to eventually buy their own home
Low cost rent	Households are allocated to this category if they are unable to afford market housing or intermediate housing.

6.18. The only significant change from the approach used in the 2013 SHMA is that households are assumed to require intermediate housing if they can afford market rents but are not satisfied with their current tenure and they expect to eventually buy their own home. This is intended to identify households who are the target market for low cost home ownership products, which alongside London Living Rent are the main type of intermediate housing. Typically these are households who can afford private renting and who want to buy their own home but are unable to do so, often because of insufficient savings for a full deposit. Shared ownership offers these households a step onto the property ladder through the purchase of a share in a new home, with total costs (including mortgage interest and rent on the remaining share) often equivalent to or even less than the market rent for a similar property. This change has the effect of increasing the identified requirement for intermediate housing at the expense of the requirement for market housing.

6.19. It is also important to note that the requirement for intermediate housing is an ongoing one, so that the stock of intermediate homes would need to be replenished as existing shared owners 'staircase' to 100% home ownership.

6.20. The price thresholds for owner occupation are taken from house price data provided by ONS to the GLA, while the private rent thresholds are derived from analysis of EHS data

and the LAR benchmarks are as set out in the GLA's 2016-21 Affordable Homes Programme funding guidance. The use of LAR benchmarks rather than average social rent levels as in the previous SHMA represents an increase in the threshold for accessing the intermediate sector, and therefore has the effect of increasing the estimated requirement for low cost rented homes.

6.21. The low cost rent category includes both social rent and Affordable Rent, as they are both aimed at the same target group of low-income tenants in housing need. Affordable Rent homes can be let at rents of up to 80% of market rents, but the Mayor has stated that he does not consider 80% of market rents to be genuinely affordable in most parts of London, and is instead supporting the new London Affordable Rent product with benchmark rents based on social rent levels[44].

6.22. Affordability test filters: It should be noted that the affordability tests described above are not applied to all households. If households own their home outright, are headed by a full-time student and/or report being satisfied with their accommodation, for the purpose of projecting future requirements they are filtered out of the affordability test and assumed to continue in their current tenure. The exclusion of outright owners and student-headed households is relatively straightforward to explain: given their low incomes, student households are likely to have transient affordability problems as conventionally measured (and the requirement for purpose-built student accommodation is considered separately in chapter 8), while those who already own their home outright can be assumed to be able to afford owner occupation.

6.23. There are several reasons for filtering out households who are satisfied with their accommodation. First, it brings the net stock model closer to other SHMA methods that tend to implicitly ignore the housing situation of households who do not wish to move or are not likely to do so within the period of analysis (and who are not in backlog need).

6.24. Second, filtering by satisfaction takes into account the fact that some households may be quite prepared to pay more than 25% or 30% of their income on housing given other factors which are not observable with the data available. For example, it is well known that households actively trade off higher housing costs for lower transport costs (and indeed London households do spend a smaller share of their budgets on transport than those in the rest of the country[45]). Looking at housing alone can therefore give a misleading impression of how affordable different locations really are[46]. Some households, for example, may be prepared to pay a considerable share of their income on housing in

[44] For more details on London Affordable Rent see the Mayor's Affordable Homes Programme 2016-21 funding guidance

[45] In London an average of 18% of household expenditure goes on 'net' housing costs (i.e. excluding mortgage interest payments), fuel and power. This is the highest proportion of any region, and compares to a figure of 14% for England as a whole. However, more than half of this gap is offset by households in London devoting a smaller share of total expenditure to transport (11% compared to 14% for England as a whole). See ONS, (2017) 'Family Spending in the UK', table A33

[46] This concept is more widely used in the US, where the federal departments of housing and transport have created a joint analytical tool, the Location Affordability Index, to improve understanding of how combined housing and transportation costs vary from place to place (http://www.locationaffordability.info)

exchange for being able to walk to work, but this should not automatically mean they should be thought to require a move to affordable housing.

6.25. Households also trade off higher housing costs for access to positive amenities such as parks, museums and areas of good architecture. There is strong evidence that London, especially the city centre, boasts particularly high levels of such amenities. This would predict, for a given level of income, higher housing costs in London relative to other regions, therefore worsening affordability as conventionally measured[47].

6.26. Finally, when making choices in the housing market individuals and households do not have regard only to their current income and housing costs, but instead also take into account their expected future incomes. An individual or household may trade off a low income at present for an expected higher one in the future, particularly in areas such as London with large populations of people in the early stages of their careers and which tend to feature quicker wage progression[48]. A snapshot picture of affordability such as that provided by the EHS can therefore overstate affordability problems when compared to a longer view that takes into account career progression.

6.27. From the available EHS data it is not possible to precisely assess the extent to which households are making these trade-offs. The 2008 SHMA and many similar studies implicitly incorporated satisfaction by asking households whether they needed or intended to move, but that information was not available for the 2013 SHMA or for this report. Filtering out households who are satisfied with their current accommodation can therefore be considered a proxy indicator for the same underlying phenomena.

6.28. However, the satisfaction filter is not applied to households in backlog need, as there is objective evidence that their accommodation is unsatisfactory.

6.29. Housing Benefit: Like its predecessor, this SHMA does not assume that all households currently in receipt of Housing Benefit (HB) require affordable housing, as that assumption would be contrary to the policy of successive governments to support low-income households in the private rented sector with HB. Instead, by including reported levels of HB when assessing affordability, the model effectively assumes that the proportions of households of each type in receipt of Housing Benefit stay the same as in 2012/13 to 2014/15.

6.30. It is worth noting here that the English Housing Survey seems to under-estimate the amount of HB received by households in London when compared to administrative data from the Department of Work and Pensions (DWP). The average weekly amount of Housing Benefit reported by all receiving households in London (whether private or social tenants) was £127 in 2014/15, compared to an average figure per benefit unit of £140

[47] See for example: GLA Economics (2010), 'Working Paper 42 - Valuing housing and green spaces: Understanding local amenities, the built environment and house prices in London'; Ahlfeldt (2013), 'Urbanity' http://www.ahlfeldt.com/WP/GA_Urbanity.pdf; and Gibbons et al (2011), 'Real Earnings Disparities in Britain' http://eprints.lse.ac.uk/33576/1/sercdp0065.pdf

[48] Champion et al (2013), 'How far do England's second-order cities emulate London as human-capital 'escalators''?

from DWP's statistics[49]. The percentage gap between these two weekly figures is 9%, but as there can be more than one benefit unit per household, the per-household gap would probably be higher if that data was available from DWP. It is likely, therefore, that the ability of households receiving Housing Benefit to afford rented housing is somewhat greater in reality than is indicated by the EHS data. The most likely effect is an over-estimate of the requirement for affordable housing and an under-estimate of the requirement for market housing.

6.31. Size requirement: In the main model it is assumed that renting households occupy only the size of home they require according to the widely-used 'bedroom standard', even though in reality some renting households currently have more or fewer bedrooms than they need. This assumption is used because rates of under-occupation are very low for both private and social tenants (at around 8% for both in the three years to 2014/15), due to both cost pressures (particularly in the private rented sector) and social housing landlords' practice of allocating tenants to the size of home they currently require.

6.32. The rate of under-occupation[50] in London is much higher for homeowner households at around 41%[51], because many more homeowners (particularly those who own their home outright) can afford extra space. The model therefore assumes that current patterns of under-occupation in the owner-occupied sector will continue into the future.

6.33. Final steps: Thus far we have assumed that all homes are occupied by a household. In reality, at any given point there are a number of second homes and long-term vacant homes which do not contribute towards meeting housing needs. It is reasonable to assume that second homes and long-term vacant homes will comprise roughly the same proportion of the future housing stock as they currently do. As a final step, we therefore increase the annual net requirement in order to account for expected increases in unoccupied homes, in line with current rates.

Limitations

6.34. Different SHMA methodologies have different strengths and weaknesses. This SHMA does not seek to estimate the kind of dynamic relationships that a full econometric analysis might - for example the impact of different levels and mixes of housing supply on the mix of households or the distribution of prices or incomes in an area. It is important to bear this limitation in mind when interpreting the results, because these dynamic changes can be an important consideration for the policy-making process. For example, a static analysis might identify a large backlog of housing need which standard methods suggest should be cleared as soon as possible (implying a very high affordable housing target), but a dynamic analysis that takes into account the impact of different types of housing supply on housing costs might imply that a low share of market housing in new supply could worsen affordability in the private market, which would tend to increase the backlog.

[49] Data from DWP's Stat Xplore system for April 2014 to March 2015
[50] Defined as households with two or more bedrooms than required according to the bedroom standard
[51] GLA, Housing in London 2017

Comparison with national methods

6.35. The treatment of backlog need in this report is the main departure from both the method set out in PPG and the standard formulaic method proposed by DCLG in its September 2017 consultation paper 'Planning for the right homes in the right places'. Both PPG and the DCLG formula involve making an upwards adjustment to the number of homes required on the basis of 'market signals', which in PPG encompass a range of factors[52] but in the 2017 consultation are reduced to just one, the ratio of median house prices to median earnings. While PPG does not spell out how much of an adjustment should be applied on the basis of market signals, in practice a range of adjustments have been applied by local authorities, up to a maximum of around 25%. By increasing the requirement for new homes to clear the backlog of existing housing need, this SHMA effectively makes a similar upwards adjustment in response to constraints on household formation imposed by the unaffordability of housing.

6.36. The results of this SHMA are compared with the results of the DCLG formulaic method in the next chapter.

[52] Land prices, house prices, rents, affordability, rate of development, overcrowding

7. Analysis of housing requirements

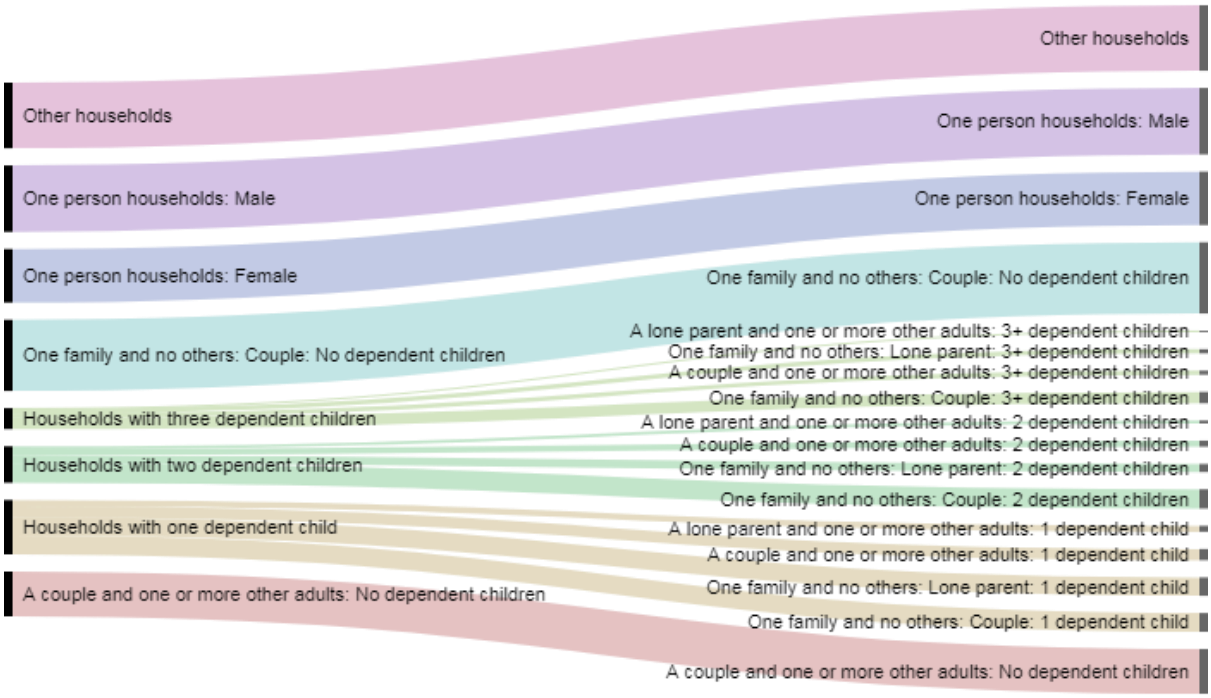
Introduction

7.1. Previous chapters have analysed the projected changes in London's population and employment, as well as relevant trends in the housing market and in housing need. This chapter brings this evidence together with a new analysis of affordability and backlog housing need in London, to derive an estimated net requirement for new homes broken down by tenure and type.

7.2. Chapter 3 set out the assumptions behind the GLA's projections of household growth, and compared the projected number of households by type in 2016 with the projected number in 2041. The 2016 based household projections are divided into eight household types, but a more detailed classification of 17 household types has been created for the housing requirements analysis set out in this chapter to ensure sufficient data on dwelling size requirements. This classification is derived by applying each detailed type's share of the total in its 'parent' category from the 2013 round of GLA demographic projection to each of the eight parent categories in the 2016-based projections.

7.3. For example, according to the GLA's 2016 projections there will be 629,813 households with one dependent child in London in 2041. In the 2013 round of projections, households consisting of one couple and no other adults were projected to account for 34% of the households with one dependent child in 2041. Applying this percentage to the new projection of 629,813 households with one dependent child in 2041, we arrive at a new projected figure of 217,227 households comprising one couple, no other adults and one dependent child in 2041. The results of this exercise are visualised in Fig 68.

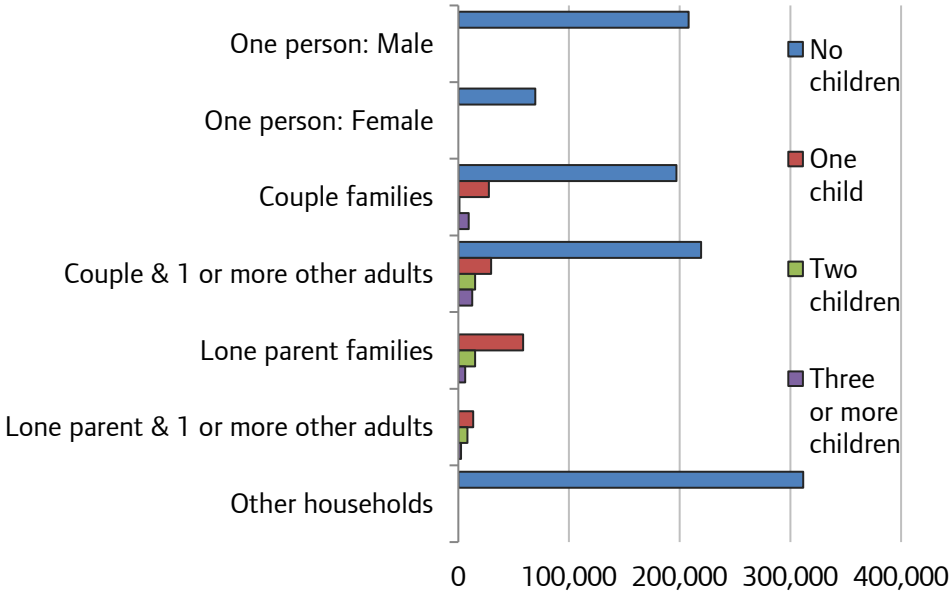
Fig 68 - Visualisation of household allocation procedure



7.4. The projected total number of households in 2041 is 4.79 million, 1.21 million more than the projected 2016 total of 3.58 million. Fig 69 shows the breakdown of this growth by

household type and number of children. The number of households with children is projected to grow by 200,000 over this period, accounting for one sixth of the total change. One person households are projected to grow by 280,000 and 'other' households by 311,000

Fig 69: Projected annualised household growth 2016-2041 by type and number of children



7.5. These different types of households have widely varying propensities to occupy the different household tenures, as shown in Table 3. Across all household types 24% of households live in social housing, but this varies from just 8% of childless couple households to 78% of lone parent households with three or more children. Intermediate housing is still a very small part of London's total housing stock, so accommodates just 1% of households, while 75% of households live in market housing (around two thirds of which is owner occupied, with the remainder private rented).

Table 3: Current tenure by household type

Household type	Market	Inter-mediate	Low cost rent
One person households: Male	68%	1%	32%
One person households: Female	66%	2%	31%
One family and no others: Couple: No dependent children	91%	1%	8%
One family and no others: Couple: 1 dependent child	88%	2%	10%
One family and no others: Couple: 2 dependent children	87%	1%	12%
One family and no others: Couple: 3+ dependent children	69%	0%	31%
One family and no others: Lone parent: 1 dependent child	49%	1%	50%
One family and no others: Lone parent: 2 dependent children	47%	0%	53%
One family and no others: Lone parent: 3+ dependent children	50%	3%	47%
A couple and one or more other adults: No dependent children	85%	0%	15%
A couple and one or more other adults: 1 dependent child	74%	0%	26%
A couple and one or more other adults: 2 dependent children	70%	0%	30%

A couple and one or more other adults: 3+ dependent children	53%	1%	46%
A lone parent and one or more other adults: 1 dependent child	49%	0%	51%
A lone parent and one or more other adults: 2 dependent children	61%	1%	37%
A lone parent and one or more other adults: 3+ dependent children	22%	0%	78%
Other households	74%	1%	25%
Total	**75%**	**1%**	**24%**

7.6. As a first stage in understanding London's housing requirements, we can use this information on the tenure (and also the size) of homes that different households currently occupy to project the type of homes that would be required in future by the projected mix of households. Table 4 shows the gross requirement for homes in 2041 using this method. Unsurprisingly, the mix of homes required according to this calculation is very similar to the current mix, with market housing accounting for 74% of the requirement, intermediate housing 1% and social housing 24%.

Table 4: Gross projected number of households in 2041 by tenure and size, based on current mix

	1b	2b	3b	4b+	Total	% of total
Market	499,967	1,022,406	1,267,819	775,109	3,565,301	74%
Intermediate	16,343	14,921	16,171	0	47,434	1%
Low cost rent	339,340	459,158	309,573	66,036	1,174,107	25%
Total	855,649	1,496,485	1,593,564	841,145	4,786,843	100%

7.7. However, we are primarily interested not in the gross requirement for homes in 2041 but in the net requirement between 2016 and 2041 – that is, the difference between the current stock and that required in future. The next step is therefore to compare the mix of homes we think the projected 2041 households would require with the mix of homes occupied by households in 2016.

7.8. According to the GLA's central 2016-based household projection the projected number of households in London in 2016 is 3.58 million. However, actual survey estimates of the number of households in London are lower, because household formation has been constrained by factors including a shortage of housing. The average estimate from the 2012/13 to 2014/15 (with a mid-point of 2013/14) EHS data used in this SHMA is 3.30 million, and we bring this figure up to the start of 2016/17 by adding on the number of net housing completions in 2013/14, 2014/15 and 2015/16 from the GLA's London Development Database.

7.9. We also make another addition, to account for households who are estimated to have been accommodated in purpose-built student accommodation built since 2011 (when the GLA projections start). 17,372 bedrooms of non-self contained student accommodation have been completed in London since 2011[53], and in line with the analysis set out in chapter 8 we assume that every three bedrooms in student halls frees up one conventional unit that would otherwise be occupied by students. This gives a figure of

[53] London Development Database

5,791, by which we increase the current household figure used for calculating the net requirement, and which we distribute between different tenures and property sizes using the mix of homes occupied by student-headed households in London in 2012/13 to 2014/15.

Table 5: Derivation of 2016 household total

Households in year	Market	Intermediate	Low cost rent	Total
2013/14	2,490,051	34,782	776,985	3,301,819
2014/15	2,509,699	37,546	781,301	3,328,547
2015/16	2,532,318	40,305	786,280	3,358,903
2016/17	2,559,013	43,413	790,130	3,392,556
Plus allowance for students	4,816	0	974	5,791
Final 2016/17 figure	2,563,829	43,413	791,105	3,398,347

7.10. Using this estimate of 3.40 million households in London in 2016/17 (henceforth written as 2016 for convenience) we can calculate a net annualised requirement for new homes between 2016 and 2041, for the moment ignoring second/vacant homes, affordability and backlog need. The resulting figure is 55,540, split by tenure and size in Table 6. As with the gross 2041 figure, this largely follows the existing pattern, the only notable distinction being a small net requirement for intermediate housing due to low projected growth in the type of households most likely to currently occupy it.

Table 6: Net annualised requirement 2016-41 based on household growth and current occupancy only

	1b	2b	3b	4b+	Total	% of total
Market	4,885	11,099	14,659	9,416	40,059	72%
Intermediate	25	-10	150	-4	161	0%
Low cost rent	4,676	5,888	3,892	864	15,320	28%
Total	9,585	16,977	18,702	10,276	55,540	100%

7.11. These figures do not yet represent an accurate assessment of London's housing requirements, as they do not account for a number of important additional factors, the first of which is affordability.

Affordability

7.12. Because households of different types vary widely in the type of housing they can afford, taking affordability into account has a substantial impact on the estimated mix of housing required. Table 7 shows the tenure that households of each type are able to afford, based on the affordability tests set out in chapter 6. Couples with no dependent children are the household type most likely to be able to afford market housing, while lone parent families with three or more children are likely to be able to afford low cost rent only.

Table 7: Tenure households are able to afford

	Market	Intermediate	Social
One person households: Male	59%	4%	37%
One person households: Female	62%	5%	33%
One family and no others: Couple: No dependent children	85%	7%	8%
One family and no others: Couple: 1 dependent child	76%	9%	15%

One family and no others: Couple: 2 dependent children	79%	6%	14%
One family and no others: Couple: 3+ dependent children	64%	6%	30%
One family and no others: Lone parent: 1 dependent child	38%	4%	58%
One family and no others: Lone parent: 2 dependent children	34%	6%	60%
One family and no others: Lone parent: 3+ dependent children	40%	6%	54%
A couple and one or more other adults: No dependent children	81%	6%	13%
A couple and one or more other adults: 1 dependent child	66%	7%	27%
A couple and one or more other adults: 2 dependent children	61%	16%	23%
A couple and one or more other adults: 3+ dependent children	40%	16%	43%
A lone parent and one or more other adults: 1 dependent child	46%	4%	50%
A lone parent and one or more other adults: 2 dependent children	58%	3%	39%
A lone parent and one or more other adults: 3+ dependent children	9%	6%	85%
Other households	67%	9%	25%
Total	**68%**	**6%**	**25%**

7.13. By applying these affordability profiles to the projected 2041 household mix and subtracting the current mix of housing types, we can estimate an affordability-adjusted requirement for new homes between 2016 and 2041, as shown in Table 8. The requirement for market housing now falls to 48% of the total, while the requirement for intermediate rises sharply to 19% and that for low cost rent to 34%. There is also a sharp shift in the mix of dwelling sizes required, with a large increase in the requirement for one bedroom homes because of the assumption of zero under-occupation in all but the owner-occupied homes.

Table 8: Net annualised requirement 2016-41 based on household growth and affordability only

	1b	2b	3b	4b+	Total	% of total
Market	10,976	3,910	5,244	6,270	26,399	48%
Intermediate	4,269	3,030	2,106	1,041	10,446	19%
Low cost rent	14,614	3,750	191	140	18,695	34%
Total	29,858	10,690	7,541	7,450	55,540	100%

7.14. Thus far we have estimated housing requirements by taking into account household growth and affordability. The next section will add to these estimated requirements by incorporating the existing backlog of housing need.

Backlog housing need

7.15. Estimates of households in backlog need have been compiled from a variety of sources. Table 9 lists and defines the different types of backlog need, and provides the estimated number of households in each category.

Table 9: Categories of backlog need (after removing double counting)

Category / type of backlog	Definition and source	Calculation of requirements	Estimated number of households
Net backlog			
Concealed households	People aged 25 or older living as part of a household and who would prefer their own	Tenure affordability calculated using individual incomes	153,588

Category / type of backlog	Definition and source	Calculation of requirements	Estimated number of households
	accommodation, but either can't afford it or say they expect to find something they can afford soon. A given household can contain more than one concealed household, as individuals who are described as belonging to different family units are assumed to belong to separate concealed households. From EHS data.	aggregated by family unit. Housing Benefit is not known so is excluded. Bedrooms required are assumed to equal the number of people in the concealed household.	
Households lacking basic facilities	Households without their own kitchen, bathroom or inside toilet. From EHS data.	Tenure requirements calculated using standard affordability tests	45,863
Sharing households	Households with facilities but currently sharing any part of their accommodation with another household. From EHS data.	Tenure requirements calculated using standard affordability tests	0 - all sharing households also lack facilities so are already counted
Homeless households in non-self-contained temporary accommodation	Homeless households in bed and breakfast, hostels, women's refuges, other nightly paid shared accommodation, 'other types of accommodation' or homeless at home in London in September 2016. From DCLG P1E data.	Assumed to low cost rent. Size requirement calculated from CORE lettings data on size of home households leaving these forms of accommodation move into.	9,170
Non-homeless households in non-self-contained accommodation	Non-homeless households moving from non self-contained accommodation (excluding concealed households), including probation hostels, children's homes / foster care, foyer accommodation, hospitals or rough sleeping. From CORE lettings data.	Assumed to require low cost rent. Size requirement calculated from CORE lettings data on size of home households leaving these forms of accommodation move into.	Stock data is unavailable so the analysis instead estimates an annual flow, starting at 285 in 2011 and rising in line with household growth
Households who need to move due to harassment or neighbour problems	Households moving from non self-contained accommodation (see above) due to racial harassment or other problems with neighbours. From EHS data.	Assumed to require low cost rent. Size requirement calculated from CORE lettings data on size of home households leaving these forms of accommodation move into.	Stock data is unavailable so an annual flow is used, starting at 26 in 2011 and rising in line with household growth
Tenure backlog			
Overcrowded private sector households who need to move to affordable housing	Households in market housing who are overcrowded according to the bedroom standard and who cannot afford appropriately sized market	Tenure requirements calculated using standard affordability tests	74,821

Category / type of backlog	Definition and source	Calculation of requirements	Estimated number of households
	housing. Excludes households in any net backlog category or headed by a student and discounts the bedrooms required by any concealed households. From EHS data.		
Homeless households in Private Sector Leased accommodation	Homeless households in private sector accommodation leased by local authorities, registered social landlords or directly with the landlord in London in Sept 2016. From DCLG P1E data.	Assumed to require low cost rent. Size requirement calculated from CORE lettings data on size of home households leaving these forms of accommodation move into.	34,440
Households containing someone with a disability that need to move to low cost rent housing	Private sector households looking to move somewhere more suitable to cope with disability and who are on a social housing waiting list. From English Housing Survey.	Typical affordability test not applied given the specificity of the home being sought. Assumed to all require low cost rented housing.	3,370
Private sector households in arrears	Households more than three months behind with their mortgage and 'falling further behind', plus private tenants not keeping up with rent payments. Excludes households in other backlog categories. From English Housing Survey.	Assumed to require low cost rent	33,880
Size backlog			
Overcrowded households in affordable housing	Households in affordable housing who are overcrowded according to the bedroom standard. Excludes households headed by students and discounts the bedrooms required by any concealed households. From English Housing Survey.	Assumed to move within current tenure.	96,876

7.16. Some further notes on particular categories are provided below:

- Concealed households: The affordability tests show that some concealed households can already afford market housing. Based on the existing data it is not possible to say why they have yet to move, so they are assumed to require market homes. Because Housing Benefit is excluded due to lack of data, the number that can afford market housing is likely to be under-estimated.
- Facilities: Households lacking basic facilities are assumed to add to the total housing requirement as their current homes are likely to be of such low quality that they would not be suitable for another household when the current inhabitants move out.

- Overcrowding: Households headed by students are excluded because their circumstances are assumed to be temporary. Also, overcrowded private sector households who can afford to move to a more suitably sized home do not change the market housing size mix as they are assumed to be voluntarily choosing overcrowded conditions, perhaps in return for a better location.
- Disability: Around 25,000 households are attempting to move somewhere more suitable to cope with a disability, but only 8,500 of these are on a waiting list and the majority of these are already in social housing. The remainder will free up a home of the same tenure if and when they secure a move to somewhere more suitable.
- Harassment: Households moving within the affordable housing sector due to harassment or other problems with neighbours are assumed to create no change in the mix of requirements as they free up a home of the same size and tenure as the one they move to.

7.17. In line with previous studies, cases of dwelling disrepair are excluded from the backlog of housing need as in-situ solutions are assumed to be possible through non-planning policies such as owner investment, local authority enforcement, equity release, grants and so on. In this context it is worth noting the fall in the proportion of dwellings in London that fail to meet the Decent Homes Standard[54].

7.18. Table 10 shows the estimated tenure and size requirements of households in backlog need. In all there are around 452,000 households in some form of backlog need (excluding any double-counting and the two annual flow categories). Of this total, only 209,000 have a requirement for net additional homes (of whom around 167,000 need affordable housing). Another 147,000 are in market housing but need affordable housing, and 97,000 overcrowded households in affordable housing need to move to an affordable home of a more suitable size[55].

Table 10: Housing requirements of households in backlog need

	Number of bedrooms				
Tenure	One	Two	Three	Four+	Total
Concealed households					
Low cost rent	112,114	6,544	0	0	118,658
Intermediate	536	3,520	0	0	4,056
Market	27,254	3,620	0	0	30,874
Total	**139,904**	**13,684**	**0**	**0**	**153,588**
Households lacking basic facilities					
Low cost rent	29,736	5,063	0	0	34,799
Intermediate	0	0	0	0	0
Market	10,399	0	0	666	11,065
Total	**40,135**	**5,063**	**0**	**666**	**45,863**
Homeless households in non-self-contained temporary accommodation					
Low cost rent	5,726	2,413	870	162	9,170
Intermediate	0	0	0	0	0

[54] GLA, Housing in London 2017

[55] Not all of these households show up in Table 10 because it shows net rather than gross moves, and some of their moves are offsetting. For example, households in one bedroom homes who need to move to two bedroom homes offset by households in two bedroom homes who need to move to three bedroom homes.

Market	0	0	0	0	0
Total	**5,726**	**2,413**	**870**	**162**	**9,170**
Non-homeless households in non-self-contained accommodation (flow)					
Low cost rent	248	30	6	2	285
Intermediate	0	0	0	0	0
Market	0	0	0	0	0
Total	**248**	**30**	**6**	**2**	**285**
Households needing to move due to harassment or other problems (flow)					
Low cost rent	18	5	2	1	26
Intermediate	0	0	0	0	0
Market	0	0	0	0	0
Total	**18**	**5**	**2**	**1**	**26**
Net backlog total (excluding annual flows)					
Low cost rent	147,575	14,020	870	162	162,627
Intermediate	536	3,520	0	0	4,056
Market	37,653	3,620	0	666	41,938
Total	**185,764**	**21,159**	**870**	**827**	**208,621**
Overcrowded private sector households					
Low cost rent	0	19,682	18,777	10,069	48,529
Intermediate	0	6,480	4,688	15,125	26,293
Market	-28,860	-25,609	-18,798	-1,555	-74,822
Total	**-28,860**	**553**	**4,668**	**23,639**	**0**
Homeless households in private sector leased accommodation					
Low cost rent	10,931	14,778	7,236	1,495	34,440
Intermediate	0	0	0	0	0
Market	-10,931	-14,778	-7,236	-1,495	-34,440
Total	**0**	**0**	**0**	**0**	**0**
Households needing to move to low cost rent housing due to a disability					
Low cost rent	0	2,106	1,264	0	3,370
Intermediate	0	0	0	0	0
Market	0	-2,106	-1,264	0	-3,370
Total	**0**	**0**	**0**	**0**	**0**
Private sector households in arrears					
Low cost rent	14,704	9,610	4,927	4,639	33,880
Intermediate	0	0	0	0	0
Market	-14,704	-9,610	-4,927	-4,639	-33,880
Total	**0**	**0**	**0**	**0**	**0**
Tenure backlog total					
Low cost rent	25,635	46,176	32,205	16,203	120,219
Intermediate	0	6,480	4,688	15,125	26,293
Market	-54,495	-52,103	-32,225	-7,689	-146,512
Total	**-28,860**	**553**	**4,668**	**23,639**	**0**
Size backlog total (overcrowded households in affordable housing)					
Low cost rent	-23,875	-24,693	22,312	26,255	0
Intermediate	-817	-1,433	1,821	429	0
Market	0	0	0	0	0
Total	**-24,692**	**-26,126**	**24,133**	**26,684**	**0**

Overall housing requirements

7.19. We can now go on to estimate the total net requirement including backlog need. As discussed above, annualising requirements over a 25 year period implicitly assumes that the backlog is cleared at an even rate over 25 years. Adding backlog clearance increases the total net annualised requirement by 8,761 to 64,301 a year, and increases the requirement for affordable housing (particularly low cost rent) in both absolute terms and relative to market housing.

Table 11: Net annualised requirement 2016-41 based on household growth, affordability and backlog

	1b	2b	3b	4b+	Total	% of total
Market	10,302	1,971	3,955	5,989	22,216	35%
Intermediate	4,258	3,373	2,366	1,663	11,660	18%
Low cost rent	20,942	5,217	2,418	1,848	30,425	47%
Total	35,502	10,561	8,739	9,499	64,301	100%

7.20. So far we have been approximating a requirement for new homes with the change in the number of households requiring accommodation. To move from one to other we need to take account of the fact that not every new home will be occupied by a household, just as some of the existing stock is either vacant or used as a second home. In 2016, 58,906 homes were recorded as vacant, equivalent to 1.8% of the total number of households[56]. An additional 1.8% is therefore added to the requirement for homes of each tenure and type. There were also 46,225 homes recorded as second homes in 2016[57]. Assuming these are all market sector home, an additional 1.9% is therefore added to the requirement for market homes of each size. In total these additions constitute an extra 1,577 homes a year, bringing the total annualised requirement to 65,878, broken down by tenure and size in Table 12.

Table 12: Final net annualised requirement for new homes 2016-41

	1b	2b	3b	4b+	Total	% of total
Market	10,682	2,043	4,101	6,210	23,037	35%
Intermediate	4,334	3,434	2,409	1,693	11,869	18%
Low cost rent	21,318	5,311	2,462	1,881	30,972	47%
Total	36,335	10,788	8,971	9,783	65,878	100%

Alternative assumptions

7.21. A range of alternative assumptions to those used to generate the results outlined in this chapter have also been explored, and the results are set out in chapter 9.

'Product-neutral' analysis of affordability

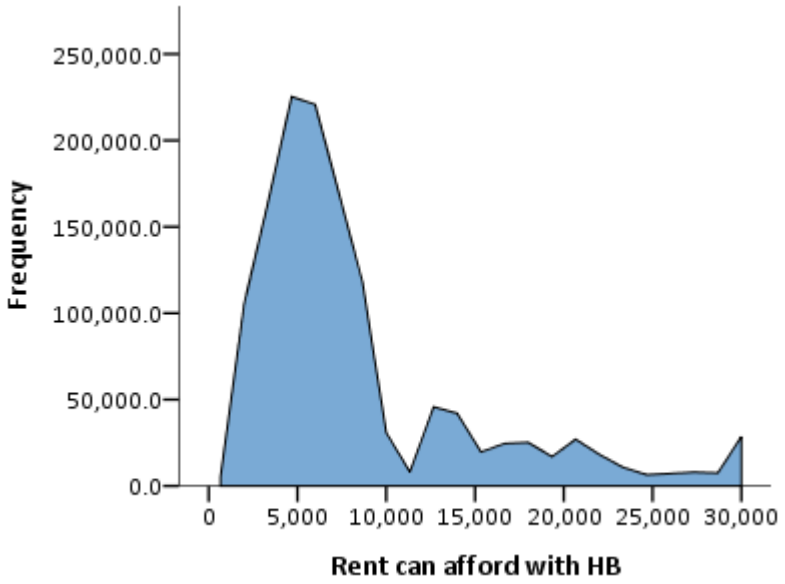
7.22. The results set out above disaggregate total household requirements by tenure based on a comparison of household incomes (and savings and equity, in the case of owner occupied housing) with the costs of different housing tenures. This approach is complicated by the increasing variety of affordable housing 'products', for example the

[56] DCLG, Live tables on dwelling stock, table 615
[57] DCLG, Council Taxbase statistics, 2016

recent addition of London Living Rent to the intermediate category and the range of rents permitted under Affordable Rent.

7.23. As an addendum to the main results, this section therefore provides an illustration of the level of annual housing costs that renting households[58] in London (both private and social tenants) can afford to pay using different affordability tests. **Fig 70** is based on the default affordability tests set out in chapter 6 and used in the main analysis above, i.e. that households with incomes of less than £40,000 should not spend more than 25% of their income on housing and those with higher incomes should not spend more than 30%. Consistent with the large requirement for low cost rent identified in the main analysis, this identifies a large number of households that cannot afford (by this measure) housing costs above £10,000 a year.

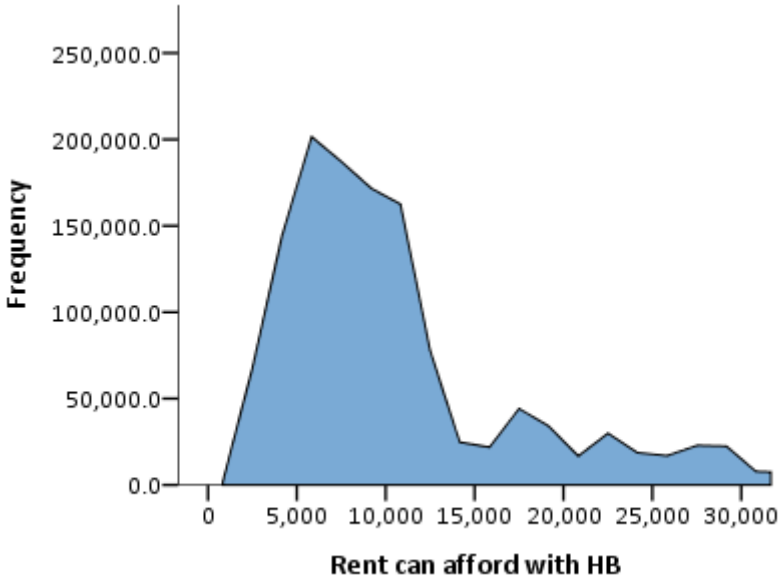
Fig 70: Annual rent that renting households in London can afford to pay using default affordability tests



7.24. **Fig 71** below adjusts the affordability tests used by raising the share of income that households with incomes under £40,000 can pay to 35% and the share that higher-income households can pay to 40%. This shifts the distribution of rents that households can afford to the right.

[58] Filtered to those who are not satisfied with their accommodation and who are not headed by full-time students, for reasons already explained

Fig 71: Annual rent that renting households in London can afford to pay using higher affordability thresholds



Comparison with DCLG formulaic method

7.25. In its September 2017 consultation paper 'Planning for homes in the right places', DCLG proposed a standard method for estimating annual housing requirements in every local authority in England. This method produces an estimated requirement for 72,400 additional homes a year in London over the ten years 2016 to 2026. This timescale is considerably shorter than that used in this SHMA, which covers the period 2016 to 2041. The DCLG formula can however be applied to a longer timescale, as DCLG's 2014-based household projections are available up to 2039. When projected household growth over the full 2016-2039 period of DCLG projections is fed into the formula it produces an annualised figure of 68,455 homes for London, closer to the figure arrived at using the method in this SHMA.

8. Housing requirements of particular groups

Introduction

8.1. This chapter provides extra detail on the housing requirements of different sub-groups of London's population. PPG lists a number of groups that housing need assessments should consider, and a similar analysis was carried out in the 2013 SHMA.

8.2. On the whole, the specific needs of these groups cannot be analysed using the same approach as used to assess London's overall requirements, due either a lack of data or an inconsistent conceptualisation of 'need'. This chapter therefore takes an eclectic approach, accepting that in some cases the results for particular groups are not strictly comparable with the overall results.

Private renting households

8.3. This SHMA does not attempt to assess the need for private rented housing separately from owner occupied homes. The evidence suggests that the decision on whether to buy or rent market housing is very sensitive to factors beyond the scope of the SHMA, notably mortgage lending practices, macroprudential regulation of lending and overall economic policy. The worsening shortage of housing in London also seems to have driven some of the growth in the private rented sector, including the increase in the number of families sharing privately rented accommodation with other families[59]. If so, this implies that, all else equal, addressing the overall shortage of homes should enable more households to buy who would otherwise be renting.

Self-build and custom housing

8.4. The 2013 SHMA summarised evidence from a range of sources on the current levels custom build activity in London. It concluded that there was high interest but low levels of activity, both of which may be a function of London's uniquely pressured housing and land markets.

8.5. The Self-build and Custom Housebuilding Act 2015 introduced an obligation on local authorities (from April 2016) to maintain a list of people and groups interested in building their own homes. Most London boroughs have now either set up their own registers or use the Local Self Build Register, a platform that facilitates the data gathering process.

Family housing

8.6. If we define families as households with children (ignoring for now concealed families, which are taken into account in the main analysis of housing needs), then there was projected to be just under 1.1 million of them in London in 2016. An estimated 68% of households with children currently live in market housing, 31% in low cost rent and just 1% in intermediate housing.

8.7. The number of households with children in London is projected to grow to just under 1.3 million by 2041, an increase of 7,900 a year (17% of the total growth in households).

[59] According to analysis by the Resolution Foundation, the proportion of families (including single people and couples) in London who are sharing a privately rented home with one or more other families rose from 5% in 1991 to 16% in 2017

8.8. Table 13 shows the projected mix of homes required by households with children in 2041 based on current occupation patterns and using the same affordability tests applied in the main model, but without incorporating a full assessment of backlog need (as the data on backlog need cannot all be broken down by family type). 41% of this gross requirement is for affordable housing, including 7% who require intermediate housing (compared to the 1% of families who currently live in this tenure).

Table 13: Gross projected housing requirement of households with children, 2041

	1b	2b	3b	4+b	Total	% of total
Market	7,852	251,873	303,080	196,431	759,235	59%
Intermediate	776	41,660	32,073	14,840	89,348	7%
Low cost rent	635	247,851	158,236	39,542	446,264	34%
Total	9,262	541,383	493,389	250,813	1,294,848	100%
% of total	1%	42%	38%	19%	100%	

8.9. These figures have not been translated into a set of net requirements by tenure and size, as some of the requirement for family sized homes could be met through moves within the existing stock by families and other household types.

Housing for older people

8.10. As set out in chapter 3, London is expected to experience substantial growth in its older population over the coming years. The number of people aged 65 or more is projected to increase by 73% between 2016 and 2041, and the number of those aged 75 or more by 94%.

8.11. While many older people will continue to live in mainstream housing, a growing number are likely to require specialist accommodation. Research commissioned by the GLA[60] identified a total potential demand across all tenures for just over 4,000 'C3' specialist homes for older people[61] (both extra-care and sheltered housing) every year between 2017 and 2029. Borough-level benchmarks for provision of specialist accommodation based on this research are set out in the draft London Plan.

8.12. The research also identified a need for 870 new 'C2'care home beds a year, including in units designed to support the needs of people with dementia[62].

Households who require accessible or adapted homes

8.13. As reported in chapter 7, there are estimated to be around 3,400 households in market housing who need to move to low cost rented housing due to the disability of a

[60] Available here https://www.london.gov.uk/what-we-do/planning/london-plan/london-plan-technical-and-research-reports

[61] C3 is defined as dwelling houses for (a) those living together as a single household, (b) those living together as a single household and receiving care and (c) those living together as a single household who do not fall within C4 definitions of a house in multiple occupancy

[62] C2 is defined as 'Use for the provision of residential accommodation and care to people in need of care (other than a use within a class C3 (dwelling house). Use as a hospital or nursing home. Use as a residential school, college and training centre'

household member. But as explained in chapter 7, this figure excludes those households who are already in social housing or who or not on a waiting list.

8.14. Altogether there are around 200,000 households in London who require a home adaptation because of the disability of a household member[63]. Of these, around 25,000 households say they are attempting to move somewhere more suitable to cope with a disability. Around 8,500 of these are on a social housing waiting list, of whom around 3,400 are not currently already in social housing.

Student housing

8.15. Population projection: The GLA's population projection model implicitly includes changes in student numbers as part of general population change. The model projects the total population by sex and age based on past trends, so that where there is an ongoing increase in (for example) 18-21 year olds in the London population (likely to be driven in part by changes in student numbers), this trend will be projected forward and the number of individuals in that age group will increase.

8.16. However, as the model does not explicitly identify students, any trends identified in an age group will also include the trends of non-students within that age group, for example those who are moving for reasons of work or family.

8.17. As set out in chapter 3, the population projections model four key components of population change: births, deaths, domestic migration and international migration. For those in 'student age groups' the migration elements form the primary driver of population change.

8.18. Household projection: Following the DCLG household model, the first step in the GLA household projection model is to remove the institutional population from the total projected population to reach the household population. The institutional population is assumed to be a constant for ages 0-74, held at 2011 levels. For ages 75 and above, the proportion of the population who were in communal establishments as of 2011 is assumed to remain constant in the future.

8.19. Once the institutional population is removed the remaining population (known as the 'household population') is put through the DCLG model and converted into households. The model takes no account of additional student halls or other communal establishments built since 2011, or of any additional institutional stock to be built over the projection period. It therefore implicitly assumes that all additional population growth will be accommodated in households.

8.20. SHMA requirement for conventional housing: This SHMA does however take account of the supply of communal establishment accommodation in London since 2011, reducing the requirement for conventional housing accordingly. This is done on the basis of three non-self-contained bedrooms to one conventional unit, a ratio which is discussed in more

[63] Note, this and the other figures on disability in this report are based on data from the 2014/15 English Housing Survey only, because the relevant questions were not asked in 2012/13 and 2013/14

detail in the 2017 London Strategic Housing Land Availability Assessment (SHLAA). However, this calculation makes no assumptions about future growth in communal establishment accommodation, so that future growth in the institutional population is implicitly assumed to result in growth in increasing numbers of households requiring conventional housing.

8.21. Projected need for purpose-built student accommodation: Separately from its mainstream demographic projections, the GLA produces its own projections of London's student population to inform estimates of demand for purpose-build student accommodation (PBSA). These projections look in more detail at the student population, including where students are domiciled (i.e. where the student's home was prior to studying in a London University) and whether they are on an undergraduate or post-graduate course.

8.22. From these projections, the GLA estimates the total student population over the plan period and determines the number of students studying in London that may need to be accommodated in PBSA each year. The assessed number of student bedspaces needed each year is then compared to the current number of purpose built student bedrooms (one bedspace equating to one purpose built student bedroom) in London to estimate the need for additional student rooms over the plan period.

8.23. Need: The estimated number of PBSA bedspaces needed is based on the number of students that are generally considered a priority by universities for accommodating in PBSA and who would be offered a place in university-owned PBSA if there was the capacity. This group essentially comprises those students that are most likely to find it difficult to obtain other forms of accommodation in London and prefer the option of PBSA. It is made up of the following categories:

- 100% of full-time first year undergraduates that are from the UK but domiciled outside London, or domiciled outside the UK. Rationale:
    - An important factor in attracting students to a university is the ability of the university to offer first year undergraduate students PBSA. Navigating the private rental sector in London can be a daunting prospect for new students moving to London and thus having the security of a place in PBSA is important for first year undergraduates.
    - Students already domiciled in London prior to starting their course at a London University are generally not eligible for university managed PBSA as they already have accommodation in the city.

- 25% of full-time second and third year undergraduates domiciled in other EU countries and 40 % of full-time second and third year undergraduates domiciled outside of the EU. Rationale:
    - These groups are likely to have more difficulty than UK domiciled students in renting mainstream market housing, due to the provisions of the 2014 Immigration Act requiring landlords to check that a tenant or lodger can legally rent a residential property in England. They may also experience difficulties in understanding and navigating the rental system in the UK.

- The 25% and 40% figures are chosen because these are approximately the percentages of other EU and non-EU undergraduate students respectively surveyed by ULHS that said they wanted to live in PBSA after their first year.

- 20 % of full-time second and third year undergraduates from the UK but domiciled outside London. Rationale:
  - There is continuing demand for PBSA from a minority of undergraduate UK students that London universities feel are a priority to house in PBSA. These include students whose parents do not own a home (and who therefore, according to current rental practice in London, cannot act as rental guarantors for their children), and students who may, due to a disability or impairment, struggle to find accessible PRS accommodation that meets their needs.
  - The 20% figure is chosen because this is the percentages of undergraduate UK students domiciled outside London surveyed by the University of London Housing Services (ULHS) that said they wanted to live in PBSA after their first year

- 100% of full-time first year postgraduates domiciled outside the UK. Rationale:
  - See 'full-time second and third year undergraduates domiciled outside the UK' above.
  - These students are generally only in London for just under one year as they are on master's degree courses. They are therefore unlikely to want to enter into the traditional 12 month tenancy agreement for private rental or to find flatmates to share a home.

8.24. Added together these categories sum to a total of approximately 109,000 students in 2016, and a projected total of 171,500 in 2041.

8.25. Existing provision: The existing number of bedspaces was estimated by ULHS in 2016, from a variety of data sources including university halls, the London Development Database, Knight Frank and data about charitable halls provided by University of London. After adjusting for double-counting, ULHS estimated that there were currently around 83,000 PBSA bedspaces in London.

8.26. Net requirement: Comparing the current provision with the gross projected need, we arrive at a net need for approximately 88,500 additional PBSA bedspaces between 2016 and 2041, or 3,500 when annualised over the 25-year period.

Armed forces

8.27. Analysis of the housing requirements of members of the armed forces and their families is hampered by their relatively small numbers, especially when relying on sample surveys. Data from the 2012/13 to 2014/15 EHS datasets suggests that there are around 2,500 households in London containing a member of the armed forces, equivalent to less than one in a thousand of all households in London. However, this should be considered a highly imprecise figure due to the very small number of survey cases it is derived from. That caveat applies even more strongly to the following breakdowns of this total figure.

8.28. Just over half of households in London that contain a member of the armed forces are estimated to live in owner occupied housing, with the remainder split fairly evenly between private and low cost rent. Overcrowding rates for armed forces households are broadly in line with those of the overall population.

8.29. Taking affordability into account, just over half of armed forces households are estimated to require market housing, with the remainder split fairly evenly between intermediate and low cost rented housing. As there are no projections of future change in the number of armed forces households, the most reasonable assumption is that both their total requirements and the tenure mix of those requirements will rise in line with overall growth in the number of households in London.

Gypsies and travellers

8.30. As noted in the 2013 SHMA, the London boroughs conducted a joint Gypsy and Traveller Accommodation Assessment in 2009, but have not repeated the exercise on a joint basis since then. Given the very uneven distribution of the Gypsy and Traveller population in London, it was considered in 2013 that an assessment at the London-wide level would be of little value, and that position has not changed. This SHMA therefore does not attempt to measure the London-wide need for Gypsy and Traveller accommodation. It should be noted, however, that the new draft London Plan states that boroughs without a recent Gypsy and Traveller accommodation needs assessment should undertake a new one within the first two years of the Plan period, or should plan on the basis of the midpoint need identified for each borough in the joint 2009 assessment.

9. Scenarios and variant assumptions

Introduction

8.1. A range of alternative assumptions to those used to generate the main results in chapter 7 have been explored, and the results are set out in the 'Variant assumptions' section below. The figures in this section all use the GLA's central household projection, while the implications of alternative demographic scenarios are set out in the 'Demographic scenarios' section that follows.

Variant assumptions

8.2. First, assuming that those who can afford private renters (as well as homeowners) continue to under-occupy their homes at current rates results in a more even split of unit sizes required, as the requirement for one-bedroom market unit falls but the requirement for those of two or more bedrooms increases. This assumption also increases the requirement for larger intermediate units, reflecting the substantial number of households who are assumed to require intermediate housing even though they can afford private rent (see the discussion of affordability tests in chapter 6).

Table 14: Results if private renters continue to under-occupy

	1b	2b	3b	4+b	Total	% of total
Market	4,402	4,354	7,015	7,266	23,037	35%
Intermediate	1,921	5,042	2,820	2,087	11,869	18%
Low cost rent	20,631	5,506	2,706	2,129	30,972	47%
Total	26,953	14,902	12,540	11,482	65,878	100%

8.3. For illustrative purposes only we can also assume that all households occupy only the size of home they require – a rather extreme scenario in which there is no under-occupation and no spare rooms in London. According to this scenario, London already has more homes with three or more bedrooms than it would need in the future, so there is a net requirement for one- and two-bed homes only and a net surplus of larger ones.

Table 15: Results with no under-occupation

	1b	2b	3b	4+b	Total	% of total
Market	52,893	5,326	-19,629	-15,108	23,482	36%
Intermediate	4,780	3,461	1,993	1,654	11,888	18%
Low cost rent	21,050	5,119	2,465	1,881	30,516	46%
Total	78,723	13,906	-15,170	-11,573	65,886	100%

8.4. The affordability assumptions can also be varied, with significantly higher requirements for affordable housing if we ignore households' satisfaction with their current housing and the availability of Housing Benefit, as shown in Table 16.

Table 16: Results ignoring satisfaction and Housing Benefit

	1b	2b	3b	4+b	Total	% of total
Market	9,379	-3,781	580	3,533	9,711	15%
Intermediate	-651	4,448	2,917	3,305	10,018	15%
Low cost rent	27,584	10,014	5,410	2,897	45,905	70%
Total	36,311	10,681	8,907	9,734	65,634	100%

8.5. Next, Table 17 shows the mix of homes required if we take Housing Benefit and households' satisfaction with their accommodation into account, but not their satisfaction with their tenure and any expectations they have of buying their own home. In this scenario, the requirement for market housing is higher because of the substantial number of households who can afford private rent but who are dissatisfied with their tenure and expect to buy, and who are therefore considered in the main set of results to require intermediate housing.

Table 17: Results ignoring satisfaction with tenure and buying expectations

	1b	2b	3b	4+b	Total	% of total
Market	15,503	3,152	5,552	6,621	30,827	47%
Intermediate	14	1,945	858	1,308	4,124	6%
Low cost rent	20,906	5,712	2,588	1,863	31,069	47%
Total	36,423	10,808	8,998	9,791	66,020	100%

Demographic scenarios

8.6. The main results set out in this report are based on the 'central' scenario of the GLA's demographic projections, which uses the most recent ten years of migration data. The GLA also produces short-term and long-term variants, which use five and fifteen years of migration data respectively and which can be used as the basis for scenario testing.

8.7. When the short-term variant is run through the SHMA model it results in a net annual requirement for 69,600 new homes a year (of which 63% would need to be affordable), due to higher rates of assumed population growth.

Table 18: Results with short-term household projection

	1b	2b	3b	4+b	Total	% of total
Market	11,373	2,671	4,837	6,705	25,586	37%
Intermediate	4,458	3,484	2,442	1,703	12,086	17%
Low cost rent	22,020	5,472	2,508	1,885	31,885	46%
Total	37,851	11,627	9,786	10,293	69,558	100%

8.8. When the long-term scenario is used it results in an annual requirement of 59,900 (of which 68% would need to be affordable), due to lower rates of assumed growth.

Table 19: Results with long-term household projection

	1b	2b	3b	4+b	Total	% of total
Market	9,768	992	2,831	5,347	18,939	32%
Intermediate	4,167	3,330	2,336	1,665	11,499	19%
Low cost rent	20,457	4,885	2,257	1,839	29,439	49%
Total	34,392	9,208	7,424	8,852	59,876	100%

10. Annexes

Annex 1: Population model - overview of methodology and assumptions

9.1. The GLA's model is based on a multiregional cohort component approach. The projections are produced from the starting point of the most recent ONS Mid-Year Estimate.

9.2. Each subsequent year's population is generated by the same process, taking the previous year's projected population as the start point. For mid-year to mid-year periods when the total numbers of births, deaths and net migrants are known, the results may be better described as base period estimates.

9.3. The process takes an initial local authority population and generates a projection of the subsequent year's population, as described below and illustrated in the flowchart (Fig 72).

1. The cycle begins with the initial local authority populations by single year of age (0 to 90+) and sex. For the first year, this is the base population, for subsequent years this is the projected population at the end of the previous cycle.

2. The starting population is aged-on and 'survived' to the end of the year by application of age-specific mortality rates.

3. Births are calculated by applying age-specific fertility rates to the female population. As births occur throughout the projection year they are calculated using a combination of the starting and the aged-on and survived female populations at the end of the year.

4. Survival rates are applied to births to project the number that will reach 'age 0' at the end of the projection year.

5. International out-migration is calculated by applying age and sex specific rates to the population and subtracting the result.

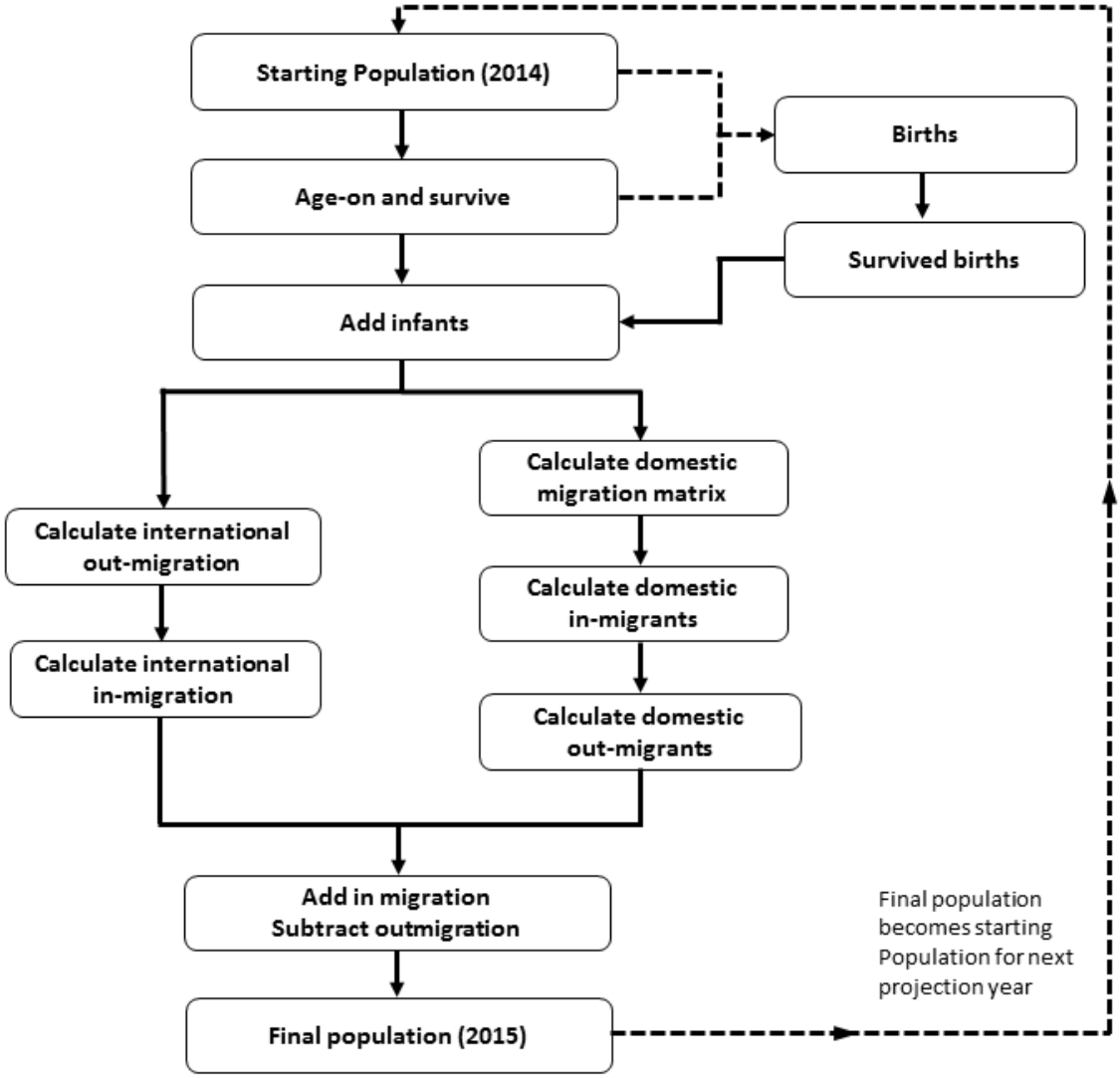
6. Numbers of in-migrants from overseas are projected from the historic record of international migrants and a constant age and sex distribution of the totals.

7. A domestic migration matrix is calculated by applying age and sex specific out-migration probabilities to the population. The matrix includes flows (by age and sex) between all local authorities in England as well as Northern Ireland, Scotland and Wales. Local authority-level in and out migration are calculated by summing the inflows and outflows for each authority.

8. The final population for the projection year is fed back into step 1 as the initial population for the next projection year.

9.4. The model outputs estimated and projected population by single year of age and sex from 2011 to 2050. Additional reporting outputs are also produced, including: births, deaths, total fertility rates, life expectancy at birth, and gross migration flows.

Fig 72: Flow chart of the projection cycle



GLA Demography, 2016

Annex 2: Comparison with ONS methodology

9.5. ONS produces Subnational Population Projections (SNPP), which form the population base for the subnational household projections. The methods and data employed by ONS and the GLA are broadly similar, but deviations in methodology and assumptions lead to differences in the results.

9.6. The main differences between the projection methodologies are:

- Top-down vs bottom-up model hierarchies
- Length of migration trend used
- Rates-based approach to international outmigration

1. Back series used and accounting for unattributable population change

Top-down vs bottom-up models

9.7. The ONS approach is to first produce national-level projections for the home countries and then to produce subnational projections that are consistent with these. This is often referred to as a top-down approach. At each step of the subnational projection process, the sums of births, deaths, and international migration for all districts are forced to match the totals from the national projection. The rationale for using a top-down approach is generally that the higher-level projection is more robust and so imposing consistency on projections for lower-geographies lends them strength.

9.8. In the GLA model, the primary geographic unit is the local authority. Results for higher level geographies are produced by aggregating results for the constituent local authorities. This approach is known as bottom-up.

9.9. The GLA's decision to use this approach for these projections is based on the following factors:

- The availability of demographic data for English local authorities is very good
- Bottom-up models can better reflect variation in the characteristics of the underlying population
- The top-down approach can introduce distortions into the results for individual districts and these tend to be most problematic for outlier areas such as London

9.10. A particular problem with the top-down approach for London is the effect of applying a national constraint to international migration. In ONS's implementation, this effectively creates a mismatch between the assumptions used for international migration and those that apply for domestic flows. International inflows to the UK are determined using a combination of expert judgement and an ARIMA (moving average) model but domestic flows in the subnational model are based on a simple average of the last five years of migration rates. This becomes a problem for areas such as London where large international inflows are balanced by similarly large domestic outflows, potentially leading to projections of net migration that do not align with past estimates.

9.11. The bottom-up approach can be taken further by breaking down and projecting the population at more disaggregate level, e.g. for smaller geographical units or broken down by ethnicity. Doing so can potentially provide advantages in allowing variation in characteristics of sub-groups to be better expressed within the model. However, these advantages must be weighed against issues such as reduced availability and accuracy of data on which to build a more detailed model.

Comparison between GLA and ONS models

9.12. Fig 73 explores how closely the GLA model can re-create ONS outputs when the model is set up with the same parameters as the ONS sub-national model. These parameters are:

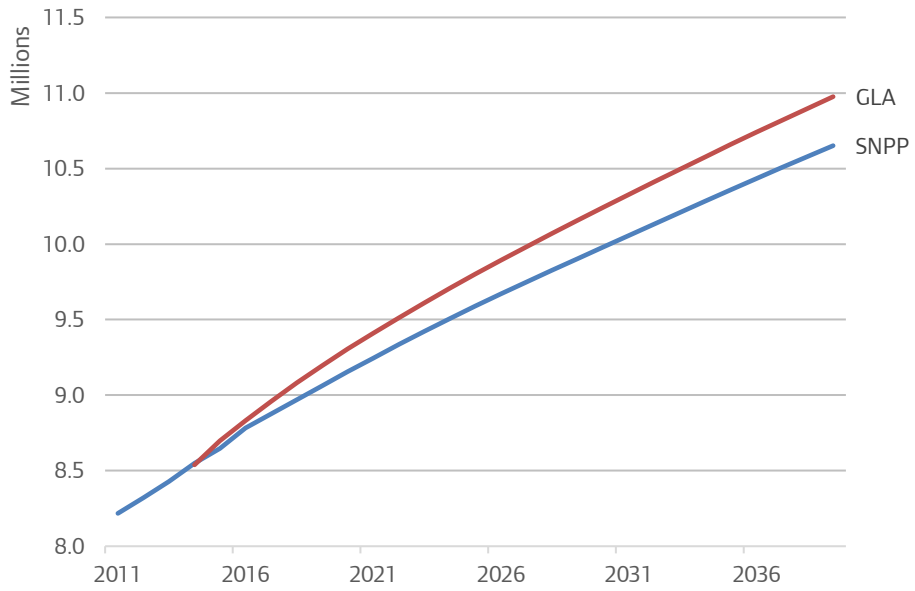
- A base year of 2014 and first projection year of 2015

- A domestic migration trend based on 5 years back data (2010-2014)
- An international migration trend based on 6 years back data (2009-14)
- A static flow of international out-migration

9.13. There remain some differences between the GLA setup and the ONS SNPP. The most significant of these are:

- The ONS model constrains populations and components to national totals
- The ONS model constrains internal migration totals to 'regional migration geographies'
- The GLA model uses a revised mid-year estimate backseries

Fig 73: Projected populations GLA and ONS models



9.14. The ONS projects forecast a London population of 10.98 million in 2039 while the GLA projection has 10.65 million, some 324,000 lower. This is a difference in annualised growth over the 25-year period 2014 to 2039 of 13,400 persons per year.

Length of migration trend used

9.15. The GLA has for some time advocated that use of longer-term trends in past migration should be used to inform projections. The importance of doing so became especially apparent in the years following the 2008 financial crisis. This period saw a very strong, but largely transient, effect of migration outflows from London to the rest of the UK. Projections based only on recent trends, as was the case with those produced by ONS, effectively assumed that these patterns would persist for another quarter of a century.

9.16. Significant issues of year-to-year variability can arise from using short periods of past migration data to project forward. Such variability is undesirable for long-term strategic planning and furthers the case for making use of longer term trends. There now seems

to be a growing consensus among experts in the fields of population and housing analysis around the use of longer term trends to inform planning work, with ten years often being cited as the preferred period to consider.

9.17. The Planning Advisory Service produced a technical advice note[64] on Objectively Assessed Need, which highlighted many of the same issues raised here.

Rates-based approach to international outmigration

9.18. GLA and ONS projections differ in their methodology for projecting future international outmigration. ONS use the same approach as they do for international inflows, holding them at a constant number (though this does change over time somewhat as a result of the process of constraining to the national level projections).

9.19. The GLA instead use the same methodology as for domestic migration, whereby migration rates are applied to the resident population based on past patterns. This approach was recommended for use in the national population projections within a review[65] by the Centre for Population Change, commissioned by ONS.

Back series used and accounting for unattributable population change

9.20. The GLA and ONS have taken different approaches to accounting for differences between annual migration estimates and population change measured between the 2001 and 2011 censuses.

9.21. When ONS revised the inter-censal mid-year estimate series, they elected to leave migration estimates largely unchanged; taking the view that there was insufficient information to attribute the difference to error in individual components. It was instead accounted for by introducing a new component labelled 'unattributable population change', applied evenly across the decade. For many London boroughs, this adjustment was quite substantial (e.g. a reduction of 3,000 persons per year in the case of Westminster).

9.22. The GLA made the judgement that most of the disparity was most likely to be the result of errors in international inflow estimates for years prior to the introduction of the MSIP methodology. When the GLA produced its population backseries, the difference was accounted for by directly modifying the assumed international inflows for mid-2001 to mid-2005.

9.23. The migration flows used in the GLA's central and short-term projections and in the ONS SNPP do not include years prior to 2005. However, differences in estimated population for years in the backseries do affect the migration rates calculated.

[64] Planning Advisory Service, 'Objectively Assessed Need and Housing Targets: Technical Advisory Note', 2015
[65] University of Southampton, 'Migration Assumptions in the UK National Population Projections: Methodological Review', 2012

Annex 3: Household model

Existing DCLG approach

9.24. In order to project future household growth, assumptions about how households form are applied to the projected population. In doing so the GLA makes use of the methodologies and assumptions underpinning the Department of Communities and Local Government (DCLG) household projections. An outline of this methodology follows, and more details can be found in the documentation DCLG produced to accompany their outputs[66].

9.25. The projections use a stage process described below.

9.26. Stage One produces projected numbers of households by age group and relationship status of head of household (single, couple and previously married).

9.27. The starting population projections are disaggregated by relationship status (single, couple, previously married). The disaggregation process makes use of trends derived from ONS's national projections of marital status. These projections have been discontinued and have not been updated since the 2008-based outputs.

9.28. The projected population is split into those living in private households and those in communal establishments. This process assumes that the number of persons living in communal establishments will remain fixed with the exception of those aged 75+, for whom it is assumed that the proportion of the population in a communal establishment will remain constant.

9.29. Household Representative Rates (HRRs) defining the likelihood of a member of the population heading a household based on their age, relationship status and sex are estimated from past (1971 to 2011) census data and projected forward.

9.30. HRRs are applied to the projected private household population to give households by age group and relationship status of head of household.

9.31. Stage Two produces detailed projections of households by type (one person, couple, multi-person, with and without dependent children).

9.32. Headship rates, the proportion of people in each age group categorised as the household representative person, are calculated based on data from the 2001 and 2011 censuses. These rates are projected forward and applied to the projected private household population to produce an initial set of households by type.

9.33. These initial projections are constrained or controlled to match the totals calculated in Stage One for each local authority to give the final projections.

[66] DCLG, '2014-based household projections: methodology', 2016

Proposed ONS approach

9.34. In their consultation paper[67], ONS propose an approach based on modifying the existing DCLG methodology.

9.35. The key change is to simplify the process by removing the first stage of DCLG's two-stage methodology. This stage produced projections of households by age, sex and relationship status to act as 'controlling totals' for Stage 2. In the proposed approach, the outputs from the second stage of the model form the final model results, without being subsequently controlled to the stage 1 results.

9.36. The ONS consultation on the proposed changes ran from January to March 2017 and feedback on the consultation was provided in June 2017[68]. The main issues raised in the consolation were:

- concerns over the use of only 2001 and 2011 census data to inform household representative rates;
- concern over the removal of gender and marital status from the model;
- the desire among users for variant household projections;
- Interest in the household types that would be available in the ONS outputs

9.37. In response to the consolation, ONS have stated that they will seek to:

- Move to using the standard 2011 census definition for Household Reference Person as soon as possible.
- Set up a programme of research to look at how the methodology can be improved in the light of the feedback from this consultation.
- Establish a Household Projections Collaborative Group, including experts from within and outside ONS, to advise and work with ONS on this research and the longer-term development of the household projections.
- Use the current methods as a starting point for the next release of the projections in summer 2018. The programme of research, and the Collaborative Group, will help ONS to identify improvements to the methods that we could make in time for that release.
- Retain the current level of detail in published outputs and seek further evidence of requirements for variant projections.

9.38. The GLA will continue to work with ONS as the household methodology is developed in anticipation of the 2016-based sub-national and household.

Annex 4: Evaluating previous projections

9.39. The 2013 SHMA and 2014 Further Alterations to the London Plan document were informed by the 2013-round of GLA population projections. Three variant projections

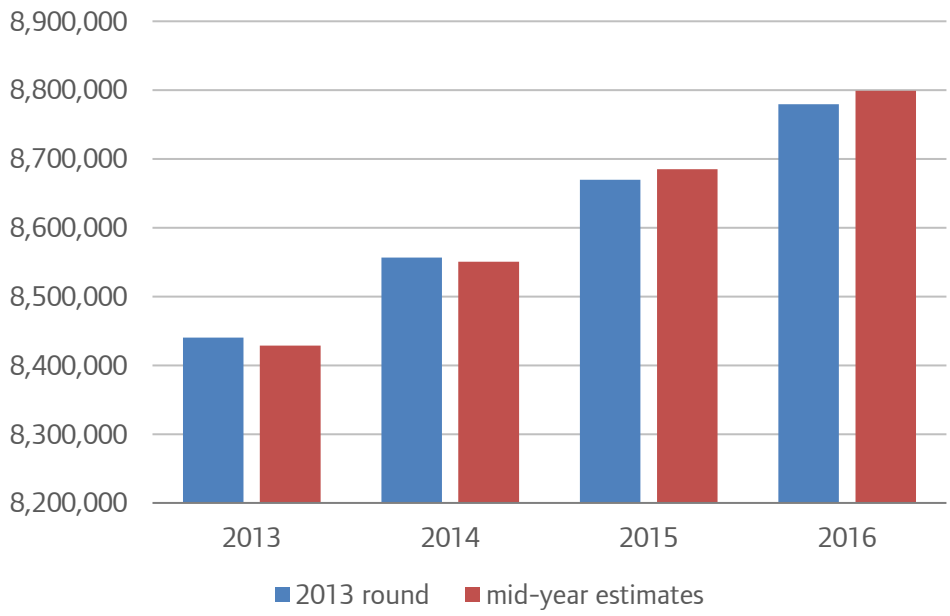
[67] ONS, 'Proposed changes to household projections for England', 2017
[68] ONS, 'Proposed changes to household projections for England: Feedback', 2017

were produced. In each case migration was for the period 2013-2017 was based on a 5-year average while migration beyond 2017 differed according to the variant projection selected.

9.40. In the high variant, the five-year average was used for the post 2017 projection. In the central projection, outflows were increased by 5% and inflows reduced by 3%. In the Low variant outflows were increased by 10% and inflows were reduced by 6%.

9.41. Fig 74 shows the projected populations as per the 2013 round projections for four years (2013-2016) and the subsequent mid-year estimates for those years. In each year, the GLA projection was within 0.2% of the actual. The GLA projection over-estimated in the first two years of the projection (by 11,300 and 6,000) and then under-estimated in the latter two years (15,400 and 19,300).

Fig 74: Comparison of GLA 2013-round population projections and mid-year estimates 2013-2016



9.42. The accuracy of the 2013 round GLA projection suggests that the assumptions and modelling approach were sound. Specifically, that there would be an increase in outmigration in line with economic recovery (the GLA predication was relatively conservative about how long this would take). However, with regard to international migration, inflows rose to levels higher than anticipated in the short term, primarily due to EU accession and an increase in economic migrants from southern nations in the EU15.

Annex 5: engagement with the Wider South East

9.43. The GLA has been working with the leaders and officers in the Wider South East (WSE) area (comprising London, East of England and South East) across a range of strategic planning and economic growth issues. As part of this ongoing relationship the GLA demography team have attending several meetings of the WSE officer working group to provide updates on model development and data releases. In addition, two technical workshops have been held to allow authorities an opportunity to understand and interrogate GLA model outputs. In July 2017, the GLA released the 2016-based population projections. These are the first GLA projections to include populations for local authorities outside London. The GLA continue to work with authorities in the WSE to ensure that their modelling and releases help to support and inform strategic planning across the wider region.