# Bradford

## Updating the Demographic Evidence

February 2021

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# Acknowledgements

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# Contents

# 1 Introduction

## Context

1.1 The City of Bradford Metropolitan District Council is in the process of preparing its new Local Plan. Additional research and analysis are required to update the Strategic Housing Market Assessment (SHMA), ensuring that its content remains robust and sound in support of Local Plan development.

1.2 The SHMA is to be informed by the latest demographic statistics and forecasts for a 2020–2038 plan period, updating the evidence provided to the Council in July 2019[1]. Further insight is also required into how potential employment growth and economic change in Bradford aligns with the latest demographic evidence and forecasts.

1.3 The National Planning Policy Framework[2] (NPPF) provides guidance to local authorities on how to assess their local housing needs. It states:

> *"to determine the minimum number of homes needed, strategic policies should be informed by a local housing need assessment, conducted using the standard method in national planning guidance – unless exceptional circumstances justify an alternative approach which also reflects current and future demographic trends and market signals. In addition to the local housing need figure, any needs that cannot be met within neighbouring areas should also be taken into account in establishing the amount of housing to be planned for."* (MHCLG, 2019)

1.4 The Office for National Statistics (ONS) 2014-based population and household projections are a key underpinning of the Government's *current* standard method[3] for quantifying future housing need, accounting for projected household growth, historic under-supply and affordability. For Bradford, the current standard method sets out a minimum annual housing need figure of +1,703 dwellings per annum (dpa).

1.5 In 2020, the ONS published its 2018-based sub-national population and household projections, providing a new starting point for the updated SHMA evidence. At the same time, the Government continued to review planning policy and guidance, with a previous proposal to introduce a *new* standard method for assessing local housing need[4]. The proposed method utilised a blend of the latest (2018-based) household projections and housing stock, with an adjustment to account for affordability. Under the previous proposed standard method, the annual housing need figure for Bradford is estimated at +1,211 dpa.

[1] Edge Analytics, July 2019, Updating the Demographic Evidence.
[2] National Planning Policy Framework
[3] Ministry of Housing, Communities and Local Government (MHCLG), July 2019, Housing and Economic Needs Assessment
[4] Ministry of Housing, Communities and Local Government (MHCLG), August 2020, Changes to the Current Planning System

1.6 The Government has now decided to not proceed with the specific changes to the standard method that were consulted on, and has confirmed an 'updated' formula for its standard housing need methodology, which still uses the 2014-based household projections to calculate projected average annual household growth over a 10-year period with an affordability ratio adjustment[5]. This results in a baseline housing need figure for Bradford of +1,703 dpa.

1.7 The updated evidence presented in this report is considered in the context of the 1,211–1,703 dpa range estimated to date.

# Approach

1.8 POPGROUP technology has been used to configure an updated range of scenario evidence for Bradford for the plan period 2020–2038. These scenarios are underpinned by the latest population and household growth assumptions and include both demographic (trend) outcomes and employment-led outcomes, which consider the relationship between Bradford's future employment, population and housing growth. The Regional Econometric Model (REM) for Yorkshire and the Humber provides the base data and assumptions for the employment-led analysis[6].

1.9 Section 2 of the report presents an updated demographic profile for Bradford, including evidence on births, deaths and migration trends, plus a summary of the latest housing completion statistics for the district. Providing the demographic context for the Government's standard method for calculating housing need[7], a limited range of trend scenarios is presented, including the 2018-based round of projections from the ONS and an alternative growth outcome that incorporates 2019 population and migration evidence.

1.10 Section 3 considers the relationship between Bradford's future employment and population growth and its potential impact upon housing requirements. The analysis presents the estimated employment growth associated with the trend scenarios, comparing and contrasting these to employment-led scenarios, configured using the latest economic forecast from the August 2020 REM plus an alternative employment forecast.

1.11 A summary of the evidence is provided in Section 4, with the Appendix providing supplementary detail on the methodology, data and assumptions used in the formulation of the analysis.

[5] Ministry of Housing, Communities and Local Government (MHCLG), January 2021 Housing and Economic Needs Assessment
[6] Experian, August 2020, Regional Econometric Model, Yorkshire and The Humber.
[7] Ministry of Housing, Communities and Local Government (MHCLG), January 2021 Housing and Economic Needs Assessment

# 2 Demographic Profile & Projections

## Area Profile

### Location

2.1 Situated in the west of the Yorkshire and The Humber Region, Bradford borders Craven and the Yorkshire Dales National Park to the north, Harrogate and Leeds to the east, Kirklees and Calderdale to the south and Pendle to the west (Figure 1).

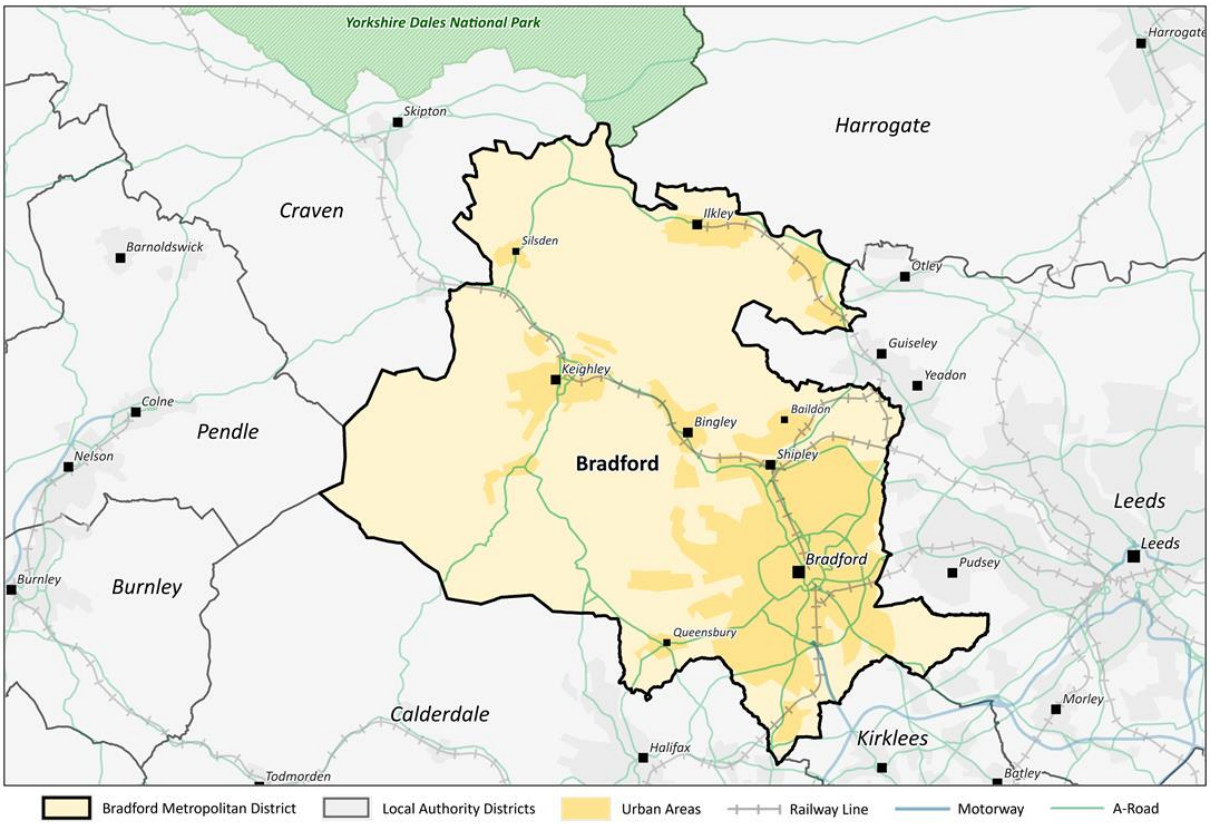





Figure 1: Bradford - Geographical Context

## Population Change

2.2 According to the ONS mid-year estimates, the population of Bradford had grown to 539,776 by mid-year 2019, an increase of approximately 15% since 2001 (Figure 2).

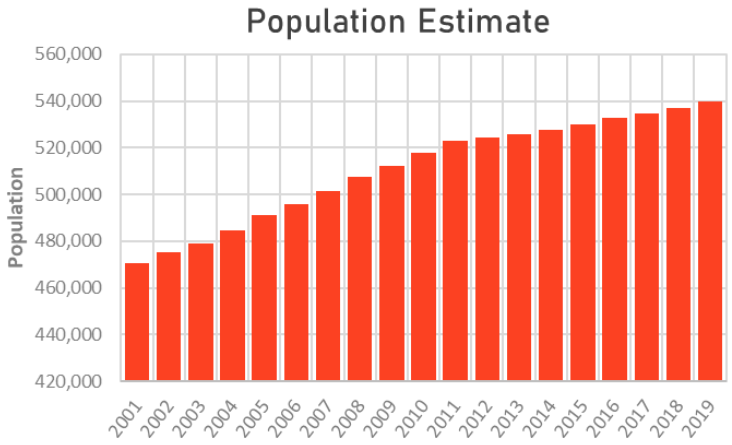



Figure 2: Bradford Mid-Year Population Estimates, 2001–2019 (Source: ONS)

2.3 With average growth across Yorkshire and The Humber of 11%, the population of all local authorities has increased between 2001–2019 (Figure 3). At 15%, Bradford has experienced the third largest population growth across the region since 2001, higher than both the regional and national averages.

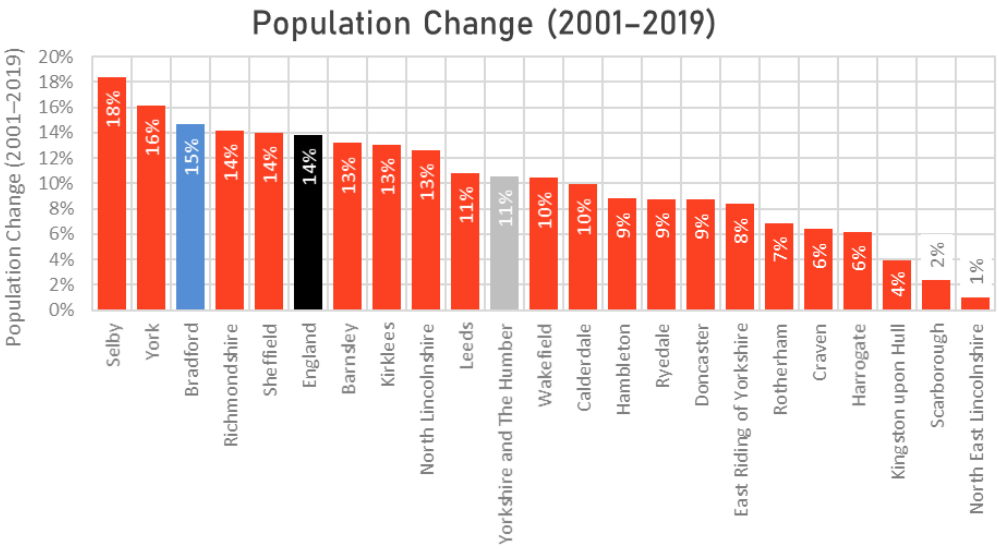



Figure 3: Bradford Population Growth Comparison, 2001–2019 (Source: ONS)

2.4 Although Bradford has experienced positive population growth in all years since 2001 (averaging +3,835 per year), the annual rate of growth reduced sharply after 2011/12, following the publication of the 2011 Census. Bradford's growth has averaged approximately +2,200 per year over the last seven years but its rate of growth has been on an upward trajectory (Figure 4).

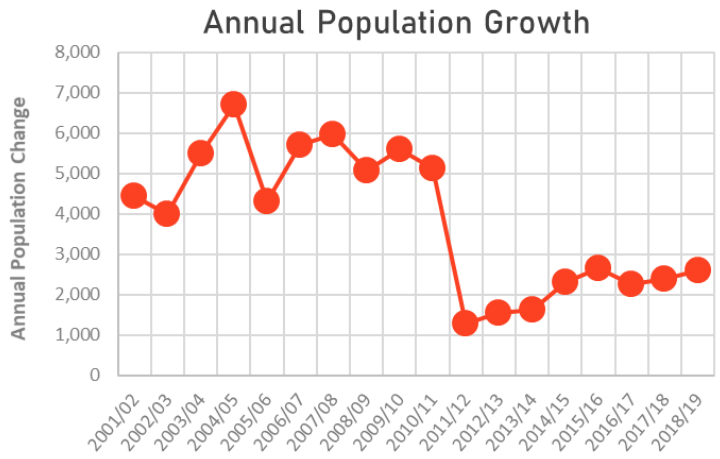



Figure 4: Bradford - Population Change, 2001/02–2018/19 (Source: ONS)

2.5 The disparity in Bradford's estimated growth rate, pre- and post-2011, is a source of uncertainty, particularly when evaluating future housing need based upon historical trends. It is possible that the city's population will be subject to an upward adjustment following the forthcoming 2021 Census.

2.6 The demographic evidence provided to the Council in 2019[8], considered the potential undercount in Bradford's population since 2011. Using data from the ONS' Statistical Population Dataset (SPD)[9] alongside its mid-year population estimates, the analysis concluded that Bradford's population could be subject to an undercount of approximately 5,700 in 2018.

## Components of Change

2.7 Examination of the 'components' of population change for Bradford, reveals the factors that are estimated to have driven the change in population since 2001, including the upward adjustment (unattributable population change) to its population following the 2011 Census (Figure 5).

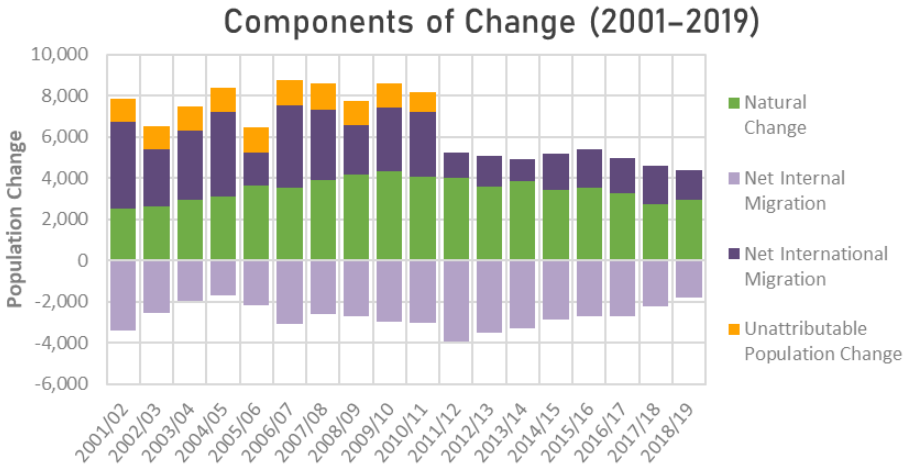



Figure 5: Bradford - Components of Population Change, 2001/02–2018/19 (Source: ONS)

[8] Edge Analytics, July 2019, Updating the Demographic Evidence.
[9] Methodology of Statistical Population Dataset V2.0

2.8 Natural change (the difference between births and deaths) has had a positive impact on the population throughout the historical period, with average annual growth of +3,458 per annum.

2.9 Net international migration (including the UPC adjustments) has averaged +3,114 per year. However, there has been a noticeable fall in net international migration estimates for Bradford following the 2011 Census, from an average annual net inflow of +4,367 per year (2001/02 to 2010/11) to +1,549 (2011/12 to 2018/19).

2.10 Net internal migration (the balance of migration flows between Bradford and elsewhere in the UK) has had a negative impact on population change since 2001, with more people leaving Bradford than moving into the district. Over the 2001/02–2018/19 period, net internal migration has averaged -2,738 per year.

2.11 A closer examination of birth and death trends reveals that births in Bradford have been on a steady downward trend since a peak in 2009/10, falling by an average of -172 pa in the last five years to reach totals that are similar to those experienced in 2001/02. Death numbers have remained lower than births, fluctuating at around +4,500 per year since 2001, contributing to a consistently positive natural change impact upon annual population growth (Figure 6).

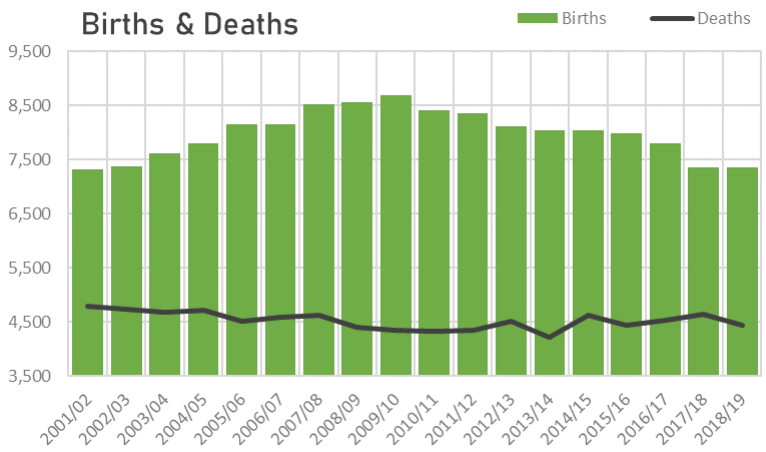



Figure 6: Bradford - Births & Deaths, 2001/02–2018/19 (Source: ONS)

2.12 A more detailed scrutiny of Bradford's internal migration statistics reveals that inflows have averaged at 14,692 between 2001/02 to 2018/19. Outflows averaged 17,430 per year over the same period, resulting in average annual net internal migration of -2,738 per annum. Since 2011 there has been a gradual reduction in the level of net out-migration, driven by a sharper increase in the inflow total compared to a more gradual increase in the outflow total (Figure 7).

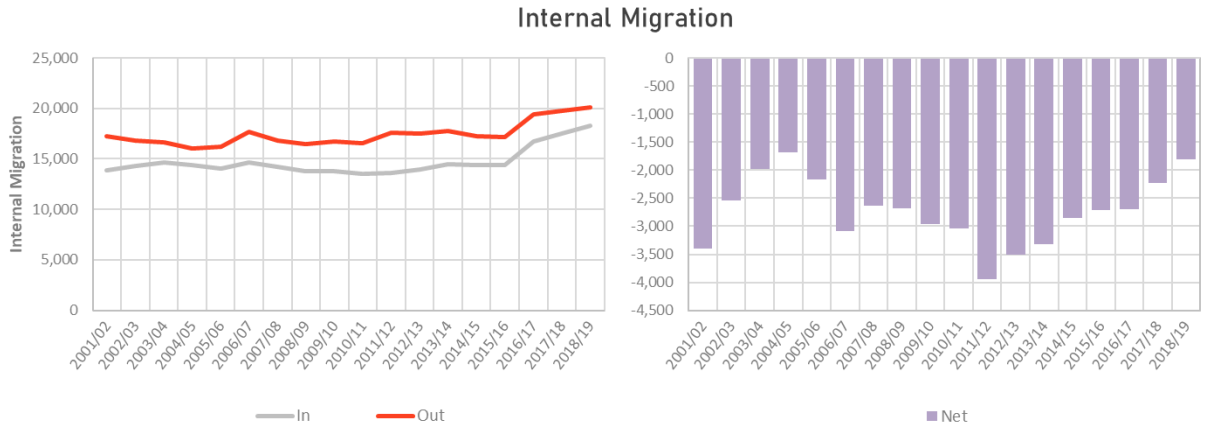



Figure 7: Bradford - Internal Migration Profile, 2001/02–2018/19 (Source: ONS)

2.13 Since 2016/17, ONS estimates of migration between local authority areas have incorporated the Higher Education Leavers Methodology (HELM), introduced to, "*distribute those higher education leavers who have not updated their Patient Register address after leaving higher education, using the movement patterns of students who have previously left higher education*". The new methodology, whilst requiring a considerable degree of imputation, is designed to better reflect the speed and pattern of the movement of students following graduation.

2.14 In Bradford, the HELM approach has resulted in an uplift in both in- and out-migration, with a slightly higher growth in the former, contributing to Bradford's reducing net outflow in recent years.

2.15 Despite the presence of its own higher education institutions, an 18-year average of age-group migration reveals that Bradford experiences a consistent net outflow in the student age-group, averaging in excess of 700 pa. The outflow of students to other universities exceeds its inflow. With the exception of the 75+ age-range, all other age-groups have recorded an average net outflow over the 2001/02–2018/19 period (Figure 8).

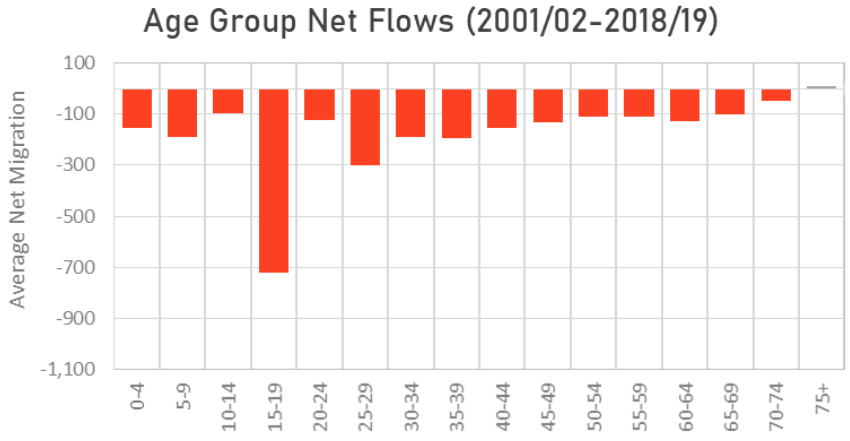



Figure 8: Bradford - Internal Migration Age Profile, 2001/02–2018/19 (Source: ONS)

2.16 When considering the age-group profile for the three years for which the new HELM approach has applied, the net outflow in the 15-19 age range is heightened, whereas the net loss for younger adult age-groups is smaller, contributing to the district's reduced net loss overall (Figure 9).

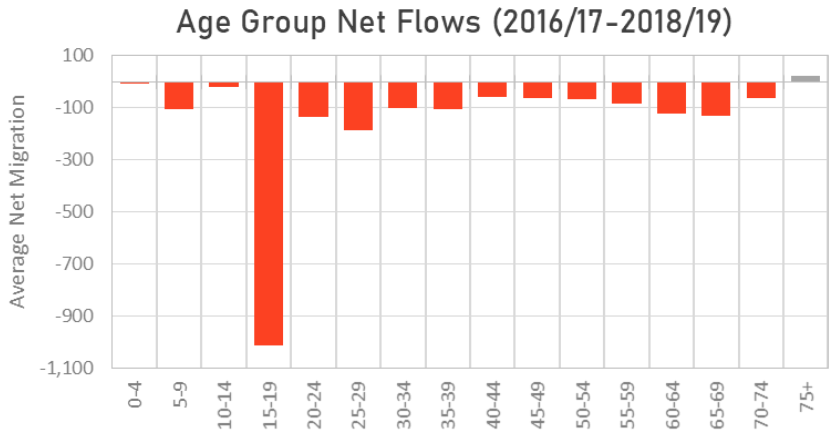



Figure 9: Bradford - Internal Migration Age Profile, 2016/17–2018/19 (Source: ONS)

2.17 Geographically, Bradford's most significant net migration inflow exchange (2001–2019) has been from neighbouring Leeds. Its net migration outflow exchange has been greatest with neighbouring Calderdale, Craven, East Riding of Yorkshire and Kirklees (Figure 10).

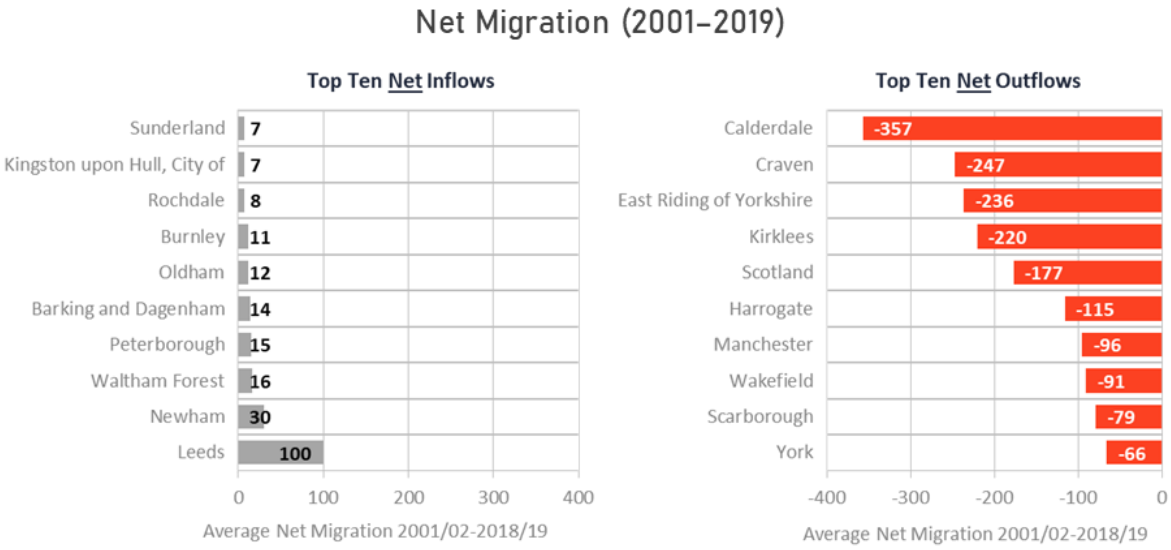



Figure 10: Bradford - Top Ten Net Migration Inflows and Outflows, 2001/02–2018/19 (Source: ONS)

2.18 During the three-year HELM period, the dominant net inflow from Leeds is substantially higher than the 18-year average, whilst the net outflow to Calderdale is reduced, each contributing to the overall reduction in Bradford's net outflow in the latest years of evidence (Figure 11).

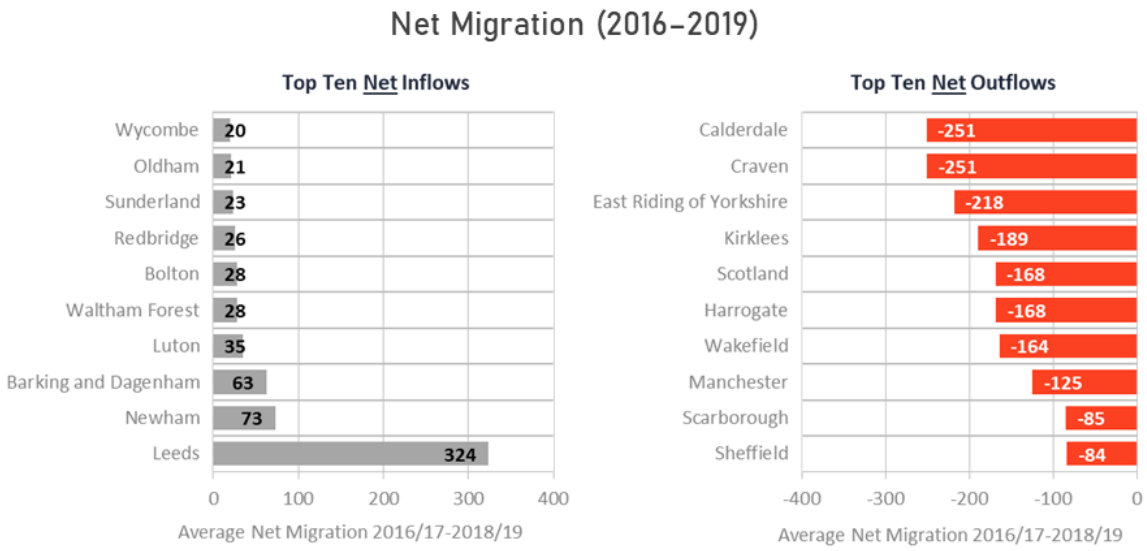
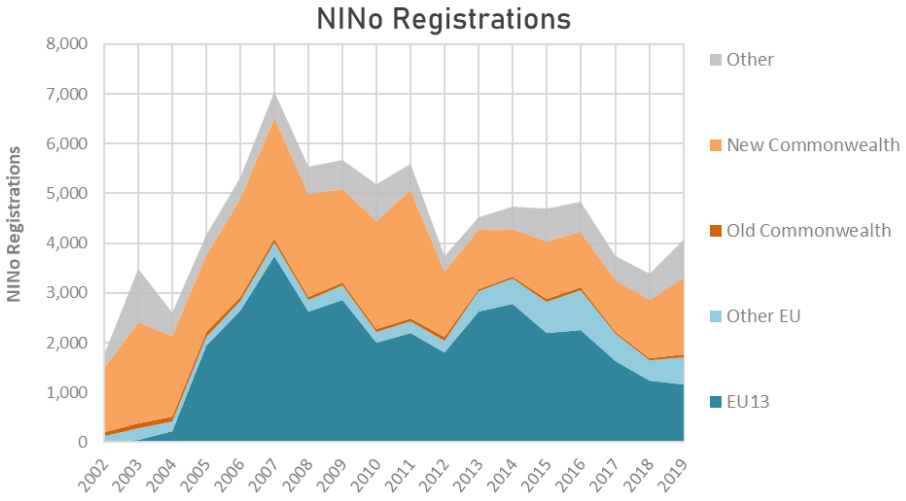



Figure 11: Bradford - Top Ten Net Migration Inflows and Outflows, 2016/17–2018/19 (Source: ONS)

2.19 International migration continues to be the most difficult component to estimate robustly; so much so that the ONS has downgraded its output to 'experimental statistics' status, whilst improvements continue[10]. The International Passenger Survey (IPS) is the mainstay of the UK's immigration and emigration estimates but this is being replaced by a mix of administrative datasets, including the patient register, higher education statistics and national insurance number (NINo) registrations.

2.20 International migration has been a key contributor to population growth since 2001, with an average annual net international migration balance (including the UPC adjustments) of +3,114 per year (Figure 5). NINo statistics provide a complementary illustration of international migration inflows to Bradford; different to the ONS mid-year population estimate statistics in that they refer only to work-based in-migration and include migrants whose stay may be shorter than 12 months (Figure 12).




EU13 refers to countries that have joined the EU since 2004:
Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia

Figure 12: Bradford - NINo Registrations by Country of Origin, 2002-2019 (Source: DWP)

[10] Statement from the ONS on the Reclassification of International Migration Statistics, August 2019

2.21 NINo registrations peaked in 2007 and have fluctuated at around an average of approximately 4,000 pa since 2011, with the majority of contributions from migrants with an EU13 and New Commonwealth country of origin.

## Age Profile

2.22 An index of population growth for each of four broad age-groups, reveals the important demographic changes that are taking place within Bradford, ageing its population over time (Figure 13).

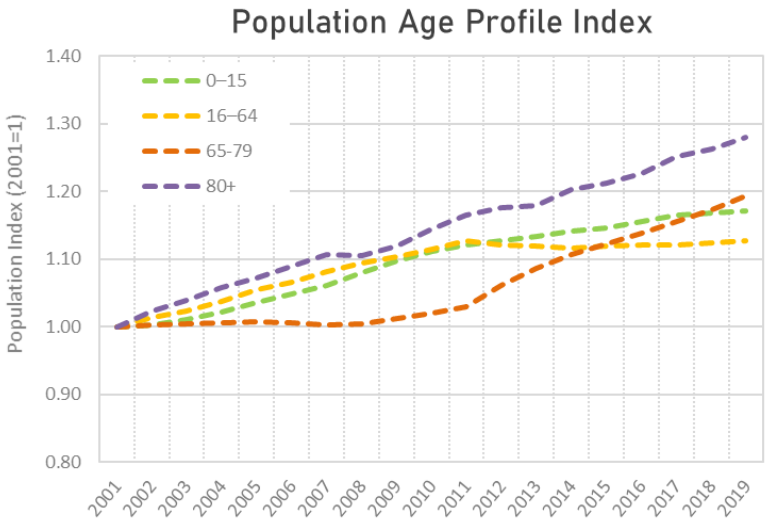



Figure 13: Bradford - Population Age Profile Index, 2001–2019

2.23 There has been significant growth in the older age-groups, 65-79 and 80+, with the number of 80+ year olds in Bradford increasing by over 28% between 2001–2019. Whilst the 0–15 age group has shown an overall growth, the working age population (16–64) has increased since 2001, but with little growth over the last decade.

## Housing Completions

2.24 Housing delivery rates in Bradford slowed substantially from a 2007/08 peak, with an average of +1,616 dpa between 2004–2008, compared to +910 dpa between 2008–2014 (Figure 14). The latest five years of evidence indicate a recovery in the build rate, with annual housing completions at their highest level for a decade

2.25 Recent completion rates compare favourably with the *current* standard method annual housing need figure of +1,703 dpa.

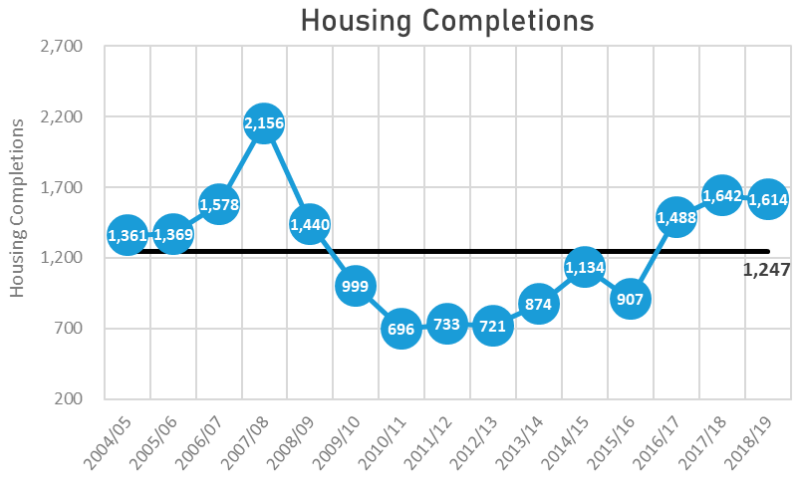



Figure 14: Bradford - Housing Completions,2004/05–2018/19 (Source: AMR 2016/17, AMR 2017/18[11], MHCLG[12])

# Demographic Scenarios

## Scenario Definition

2.26 POPGROUP technology (see Appendix A) has been used to configure a range of demographic scenarios for Bradford, demonstrating how the current and proposed standard method housing need estimates compare to trend projections that are underpinned by recent demographic change.

2.27 The ONS 2014-based projection is included as this provided the basis (with an affordability adjustment) for the current standard method housing needs total of +1,703 dpa. This is compared to the variants that make up the latest (2018-based) ONS sub-national population projection (SNPP) for Bradford. Also presented is a POPGROUP (PG) trend scenario, which incorporates a 2019 base year and considers the growth outcomes based on a continuation of a short-term history of migration (see Table 1 on the following page).

2.28 Under each scenario, population, household, migration and dwelling growth is presented over a 2020–2038 plan period, in line with Bradford's planning horizon.

2.29 Household growth is estimated using assumptions from the ONS 2018-based household projection model. The current standard method estimates are based upon household growth totals derived using MHCLG's 2014-based household model. An additional sensitivity analysis is included here, to examine the household and dwelling growth differences that result from the application of the alternative household model assumptions.

2.30 In modelling the relationship between households and dwellings, a Bradford vacancy rate of 3.8% has been applied, derived from 2011 Census statistics.

[11] Bradford's Annual Monitoring Report 2016/17, Bradford's Annual Monitoring Report 2017/18.
[12] MHCLG Live Table 122.

Table 1: Scenario Definition

| | | |
|---|---|---|
| 1. | SNPP 2014-based | This scenario replicates the ONS 2014-based SNPP, using historical population evidence for 2001–2014. |
| 2. | SNPP 2018-based (Principal) | Replicates the ONS 2018-based SNPP Principal Scenario, using historical population evidence for 2001–2018. |
| 3. | SNPP 2018-based (Higher Variant) | Replicates the ONS 2018-based SNPP Higher Migration Scenario, using historical population evidence for 2001–2018. This variant assumes higher levels of net international migration. |
| 4. | SNPP 2018-based (Lower Variant) | Replicates the ONS 2018-based SNPP Lower Migration Scenario, using historical population evidence for 2001–2018. This variant assumes lower levels of net international migration. |
| 5. | PG Short Term | Uses an ONS 2019 base year and calibrates its migration assumptions from a 6-year history (2013/14–2018/19). |

2.31 The 2001–2038 population growth trajectories for all scenarios are presented in Figure 15. In Table 2, each scenario is summarised in terms of population and household growth for the 2020–2038 period, alongside the average annual net migration and dwelling growth outcomes.

## Scenario Outcomes

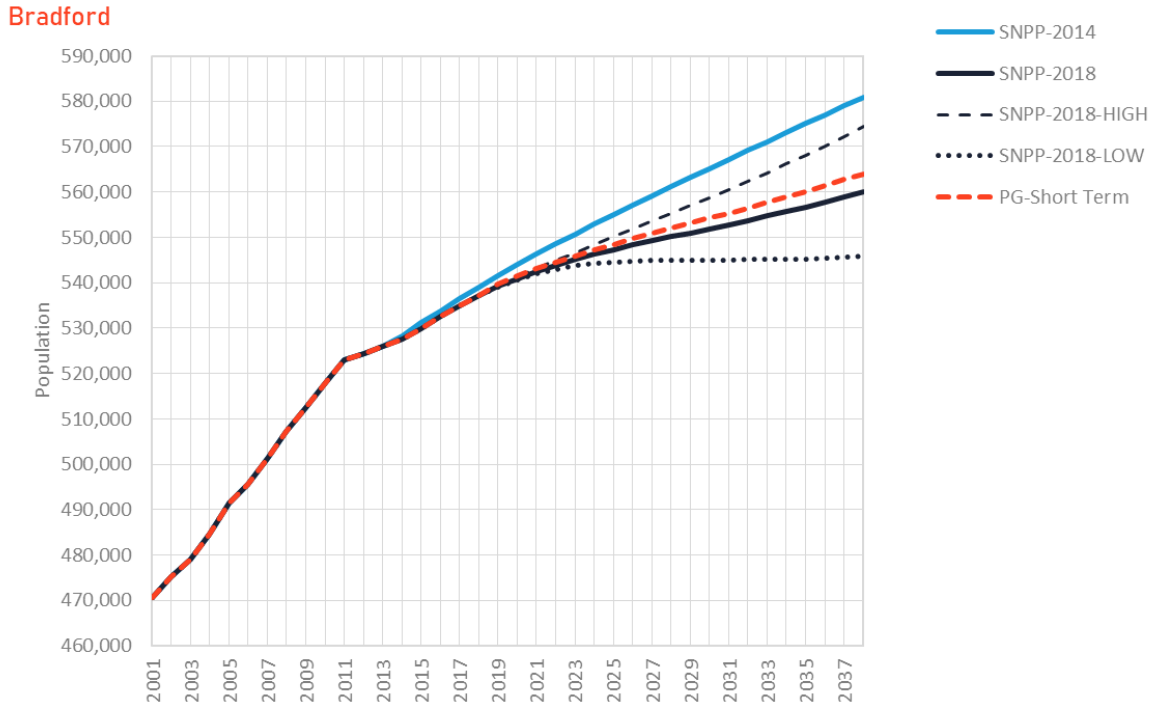



Figure 15: Bradford Population Growth Scenarios, 2001–2038

Table 2: Bradford Scenario Outcomes 2020–2038

| Scenario | Change 2020 - 2038 | | | | Average per year | |
|---|---|---|---|---|---|---|
| | Population Change | Population Change % | Households Change | Households Change % | Net Migration | Dwellings |
| **Standard Method (Current)** | | | | | | **1,703** |
| SNPP-2014 | 37,021 | 6.8% | 23,404 | 11.4% | -1,365 | 1,352 |
| SNPP-2018-HIGH | 33,289 | 6.2% | 23,373 | 11.4% | -590 | 1,350 |
| **Standard Method (Previous Proposed)** | | | | | | **1,211** |
| PG-Short Term | 22,584 | 4.2% | 19,908 | 9.7% | -930 | 1,150 |
| SNPP-2018 | 19,224 | 3.6% | 18,275 | 8.9% | -1,216 | 1,056 |
| SNPP-2018-LOW | 5,146 | 1.0% | 13,173 | 6.4% | -1,841 | 761 |

Note: Scenarios are ranked in order of average annual dwellings.

**Standard Method (Current)** dwelling requirement calculated using the *current* standard method for the 2019–2029 10-year period. This is underpinned by the 2014-based household projection model and includes an affordability uplift.

**Standard Method (Previous Proposed)** dwelling requirement calculated using the *previous proposed* standard method for the 2020–2030 10-year period. The previous proposed method utilised a blend of the latest (2018-based) household projections and housing stock, with an adjustment to account for affordability.

In all other scenarios household growth is estimated using assumptions from the ONS 2018-based household projection model. In modelling the relationship between households and dwellings a Bradford vacancy rate of 3.8% has been applied, derived from 2011 Census statistics.

## Scenario Summary

2.32 The **SNPP-2018** scenario records a 3.6% population growth rate to 2038, a near 50% reduction from the 6.8% increase estimated by the **SNPP-2014** projection. The components of change illustrations for the two scenarios reveal the reason for the differences in growth outcome (Figure 16).

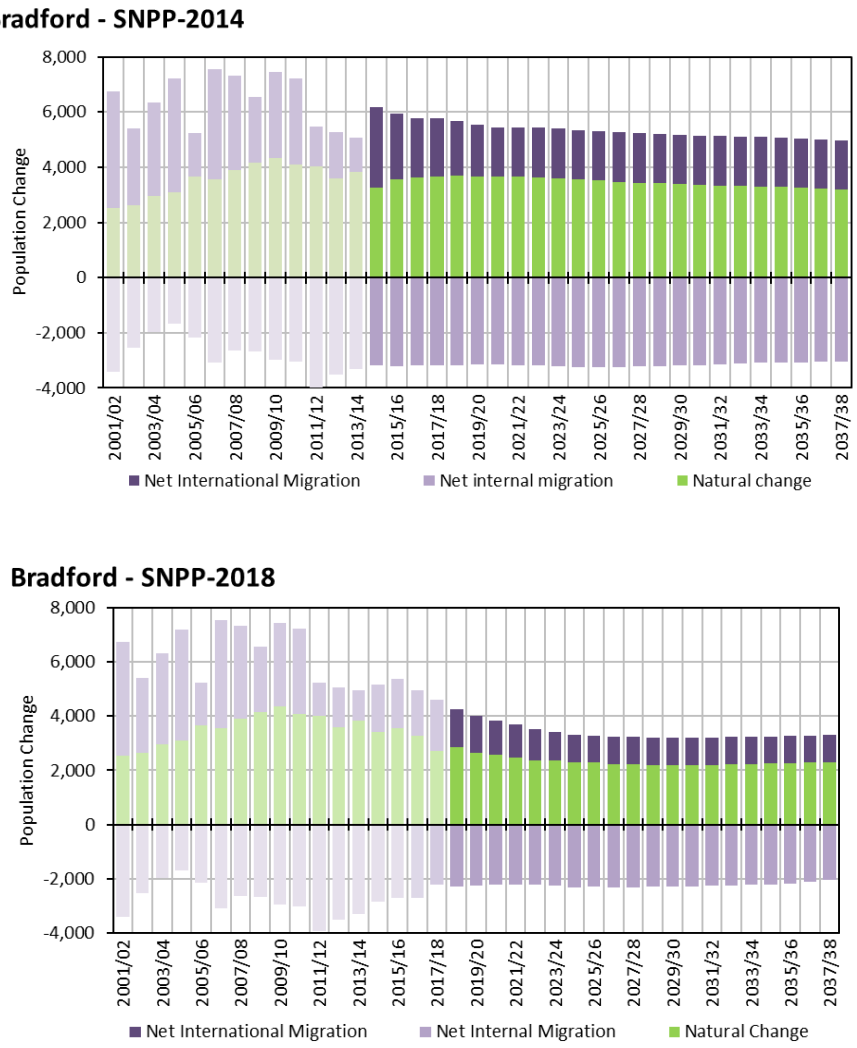



Figure 16: Bradford – Components of Change under SNPP-2014 and SNPP-2018 (Source: ONS)

2.33 The **SNPP-2018** estimates a lower annual net outflow through internal migration compared to **SNPP-2014**. However, this is countered by a reduced net inflow from international migration, plus a substantial reduction in the annual effect of natural change. Across England and Wales, the ONS SNPP-2018 projections have introduced alternative assumptions on the long-term effects of both fertility and mortality, reducing birth estimates and reducing the rate of improvement in life expectancy. As is the case for Bradford, these revised assumptions have generally resulted in a lower growth outlook for local authorities, compared to the 2014-based round of evidence.

2.34 The **SNPP-2018-HIGH** scenario returns a similar growth outlook to **SNPP-2014**, driven by higher levels of net international migration. In contrast, the **SNPP-2018-LOW** scenario, which assumes lower levels of net international migration, estimates the lowest growth.

2.35 With publication of the 2019 mid-year population estimate for Bradford, along with its components of growth, the **PG-Short Term** scenario has calibrated an updated trend outcome for Bradford. This maintains the dampened fertility and mortality assumptions of the SNPP-2018 but estimates slightly higher growth to 2038 as a result of the most recent migration effects upon Bradford's population change.

2.36 In summary, population change for the 2020–2038 period ranges from 1.0% growth under the **SNPP-2018-LOW** scenario to 6.8% growth under the **SNPP-2014** scenario. This range of population growth equates to an estimated dwelling growth of 761–1,352 dpa, compared to the *current* and *previous proposed* standard method targets of +1,703 and+1,211 dpa respectively.

## Headship Rate Sensitivity

2.37 The headship rates underpinning the ONS 2018-based household model are not projected over the full extent of the projection period, limited only to an extrapolation to 2021, remaining fixed thereafter.

2.38 To illustrate the differences between the 2014-based and 2018-based model assumptions, the household and dwelling growth associated with each scenario has been estimated using both inputs (Table 3).

Table 3: Population & Dwelling Growth under Alternative Household Representative Rates

| Scenario | Change 2020 - 2038 | | | | | | Average Annual Dwelling Growth | |
|---|---|---|---|---|---|---|---|---|
| | Population | | Households (2018-Based) | | Households (2014-Based) | | | |
| | No | % | No | % | No | % | 2018-Based | 2014-Based |
| SNPP-2014 | 37,021 | 6.8% | 23,404 | 11.4% | 27,168 | 12.8% | 1,352 | 1,570 |
| SNPP-2018-HIGH | 33,289 | 6.2% | 23,373 | 11.4% | 26,894 | 12.7% | 1,350 | 1,554 |
| PG-Short Term | 22,584 | 4.2% | 19,908 | 9.7% | 23,469 | 11.1% | 1,150 | 1,356 |
| SNPP-2018 | 19,224 | 3.6% | 18,275 | 8.9% | 21,831 | 10.3% | 1,056 | 1,261 |
| SNPP-2018-LOW | 5,146 | 1.0% | 13,173 | 6.4% | 16,764 | 7.9% | 761 | 969 |

Note: Scenarios are ranked in order of population change.

2.39 The 2018-based household assumptions estimate a lower average annual dwelling growth under each scenario, with the **SNPP-2018** outcome reducing by approximately 19%.

# 3 Employment Growth Scenarios

## Linking Population & Employment

3.1 Whilst the standard method identifies a baseline housing need for Bradford, it is appropriate to consider how future employment growth might influence the scale and timing of population change and therefore the likely dwelling growth requirement.

3.2 POPGROUP technology enables the link between population and employment to be modelled, using a combination of assumptions on age-specific economic activity rates, an unemployment rate, plus a commuting ratio. Economic activity rates determine the estimated annual change in the size of the resident labour force, whilst the unemployment rate and commuting ratios link the labour force to *workplace-based* employment.

3.3 Workplace-based employment is a 'people-based' measure, rather than a jobs-based measure of economic activity. The two measures are directly related, but the jobs-based measure is typically reported in employment forecasts, including both full-time and part-time positions. The workplace-based employment figure measures the number of people employed, linking directly to people-based measures of unemployment, commuting and economic activity.

3.4 For comparison with the demographic scenarios presented in Section 2, two 'employment-led' scenarios have been configured using key assumptions on economic activity rates, unemployment and commuting (Table 4).

Table 4: Employment-led Scenario Definition

| | | |
|---|---|---|
| 1. | Employment-led REM | This scenario models the population impact of an employment growth forecast drawn directly from the latest (August 2020) release of the Regional Econometric Model (REM) for Yorkshire and The Humber[13], averaging +1,279 per year over the plan period (2020–2038). |
| 2. | Employment-led 1,600 | This scenario models the demographic impact of an annual *jobs* growth target of 1,600, consistent with the Council's Core Strategy[14]. For use in POPGROUP, this has been converted to a *workplace-based employment* equivalent averaging +1,561 per year over the 2020–2038 plan period[15]. |

[13] Experian, August 2020, Regional Econometric Model, Yorkshire and The Humber.
[14] City of Bradford Metropolitan District Council, July 2017, Core Strategy Development Plan Document.
[15] 'Jobs' have been converted to 'employment' using a ratio of 'workforce jobs' to 'workplace-based employment' drawn from the August 2020 REM.

3.5 In both of the **Employment-led** scenarios, the economic activity rate assumptions have been derived from Census statistics, with adjustments made in line with the OBR analysis of labour market trends in its 2018 Fiscal Sustainability Report[16]. The unemployment rate and commuting ratio assumptions have been drawn from the August 2020 REM (see Appendix B).

3.6 Compared to the demographic scenarios, the **Employment-led REM** scenario achieves relatively low population growth (2.3% by 2038) with an associated dwelling growth estimate of 929 dpa. The **Employment-led 1,600** scenario achieves higher population growth (4.2% by 2038), with associated dwelling growth of 1,146 dpa (Figure 17, Table 5).

[16] OBR Fiscal Sustainability Report 2018

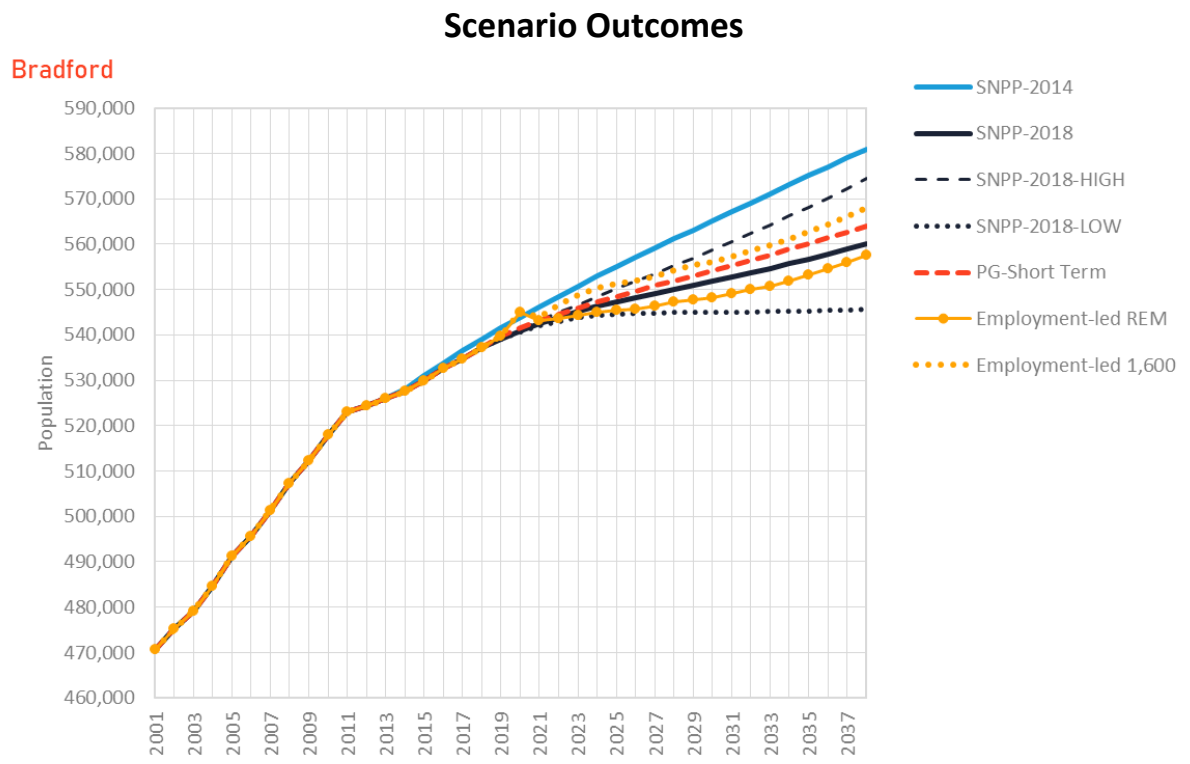



Figure 17: Bradford Population Growth Scenarios, 2001–2038

Table 5: Bradford Scenario Outcomes 2020–2038

| Scenario | Change 2020 - 2038 | | | | Average per year | |
|---|---|---|---|---|---|---|
| | Population Change | Population Change % | Households Change | Households Change % | Net Migration | Dwellings |
| **Standard Method (Current)** | | | | | | **1,703** |
| SNPP-2014 | 37,021 | 6.8% | 23,404 | 11.4% | -1,365 | 1,352 |
| SNPP-2018-HIGH | 33,289 | 6.2% | 23,373 | 11.4% | -590 | 1,350 |
| **Standard Method (Previous Proposed)** | | | | | | **1,211** |
| **Employment-led 1,600** | 22,868 | 4.2% | 19,827 | 9.6% | -1,058 | **1,146** |
| PG-Short Term | 22,584 | 4.2% | 19,908 | 9.7% | -930 | 1,150 |
| SNPP-2018 | 19,224 | 3.6% | 18,275 | 8.9% | -1,216 | 1,056 |
| **Employment-led REM** | 12,599 | 2.3% | 16,086 | 7.8% | -1,524 | **929** |
| SNPP-2018-LOW | 5,146 | 1.0% | 13,173 | 6.4% | -1,841 | 761 |

Note: Scenarios are ranked in order of average annual dwellings.

**Standard Method (Current)** dwelling requirement calculated using the *current* standard method for the 2019–2029 10-year period. This is underpinned by the 2014-based household projection model and includes an affordability uplift.

**Standard Method (Previous Proposed)** dwelling requirement calculated using the *previous proposed* standard method for the 2020–2030 10-year period. The proposed method utilises a blend of the latest (2018-based) household projections and housing stock, with an adjustment to account for affordability.

In all other scenarios household growth is estimated using assumptions from the ONS 2018-based household projection model. In modelling the relationship between households and dwellings, a Bradford vacancy rate of 3.8% has been applied, derived from 2011 Census statistics.

3.7 For comparison, the household and dwelling growth associated with the employment-led scenarios have been estimated using assumptions from the 2014-based household projection model (MHCLG), raising the dwelling growth outcomes to 1,134 dpa (**Employment-led REM**) and 1,356 (**Employment-led 1,600**) (Table 6).

Table 6: Population & Dwelling Growth under Alternative Household Representative Rates

| Scenario | Change 2020 - 2038 | | | | | | Average Annual Dwelling Growth | |
|---|---|---|---|---|---|---|---|---|
| | Population | | Households (2018-Based) | | Households (2014-Based) | | | |
| | No | % | No | % | No | % | 2018-Based | 2014-Based |
| SNPP-2014 | 37,021 | 6.8% | 23,404 | 11.4% | 27,168 | 12.8% | 1,352 | 1,570 |
| SNPP-2018-HIGH | 33,289 | 6.2% | 23,373 | 11.4% | 26,894 | 12.7% | 1,350 | 1,554 |
| Employment-led 1,600 | 22,868 | 4.2% | 19,827 | 9.6% | 24,000 | 11.3% | 1,146 | 1,356 |
| PG-Short Term | 22,584 | 4.2% | 19,908 | 9.7% | 23,469 | 11.1% | 1,150 | 1,356 |
| SNPP-2018 | 19,224 | 3.6% | 18,275 | 8.9% | 21,831 | 10.3% | 1,056 | 1,261 |
| Employment-led REM | 12,599 | 2.3% | 16,086 | 7.8% | 19,629 | 9.2% | 929 | 1,134 |
| SNPP-2018-LOW | 5,146 | 1.0% | 13,173 | 6.4% | 16,764 | 7.9% | 761 | 969 |

Note: Scenarios are ranked in order of population change.

3.8 A final set of summary statistics presents the estimated impact of each *demographic* scenario (from Section 2) upon employment growth within Bradford. The relationship between population and employment is modelled using the same key assumptions on economic activity rates, unemployment and commuting as used in the **Employment-led** scenarios (see Appendix B).

3.9 Application of these assumptions to each demographic scenario across the 2020–2038 plan period results in a range of 'workplace-based employment' growth outcomes, which varies from 1,019 per year under the **SNPP-2018-LOW** scenario, to 1,888 per year under **SNPP-2018-HIGH** scenario (Figure 18). This range of outcomes compares to annual employment growth of 1,279 per year estimated in the latest REM forecast over the 2020–2038 plan period.

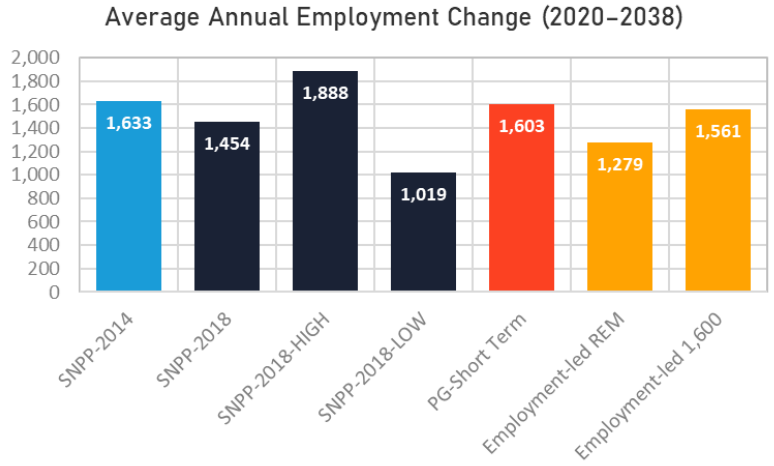



Figure 18: Bradford Average Annual Employment Growth Scenarios, 2020–2038

# 4 Summary

4.1 The City of Bradford Metropolitan District Council is in the process of preparing its new Local Plan. As part of this process, the Council has sought to collate the latest demographic evidence to inform its housing growth options in the light of proposed changes to the standard method allocation of local housing need.

4.2 POPGROUP technology has been used to configure an updated range of scenario evidence for Bradford for the plan period 2020–2038. These scenarios are underpinned by the latest population and household growth assumptions and include both demographic (trend) outcomes and employment-led outcomes, which consider the relationship between Bradford's future employment, population and housing growth.

4.3 In each scenario, household and dwelling growth has been estimated using assumptions from the ONS 2018-based household projection model, in combination with a dwelling vacancy rate of 3.8% for Bradford. Additional analysis has demonstrated the higher dwelling growth resulting from the application of the 2014-based household model assumptions.

4.4 Over the 2020–2038 plan period, population growth of 1.0% to 6.8% is estimated under the range of scenarios. The associated annual dwelling growth ranges from 761 to 1,352 dpa (Figure 19). This compares to the current and previous proposed standard method housing requirement of 1,703 and 1,211 dpa.

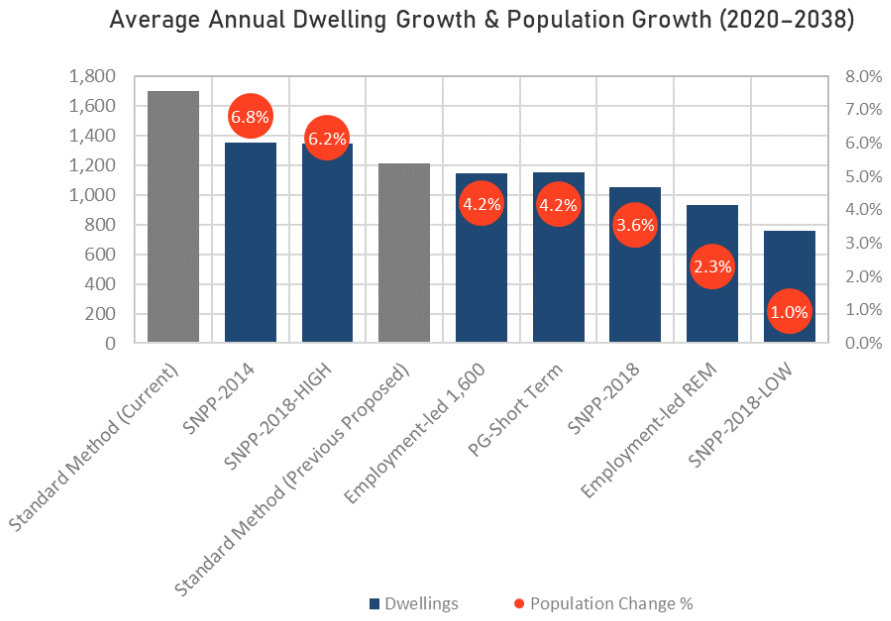



Figure 19: Bradford Growth Scenarios Summary (2020–2038)

# Appendix A POPGROUP Methodology

A.1 Demographic forecasts have been developed using the POPGROUP suite of products. POPGROUP is a family of demographic models that enables forecasts to be derived for population, households and the labour force, for areas and social groups. The main POPGROUP model (Figure 20) is a cohort component model, which enables the development of population forecasts based on births, deaths and migration inputs and assumptions.

A.2 The Derived Forecast (DF) model sits alongside the population model (Figure 21) providing an associated model for both household and labour-force projections and the basis for the dwelling-led and employment-led scenario options.

A.3 For further information on POPGROUP, please refer to the Edge Analytics website: www.edgeanalytics.co.uk.

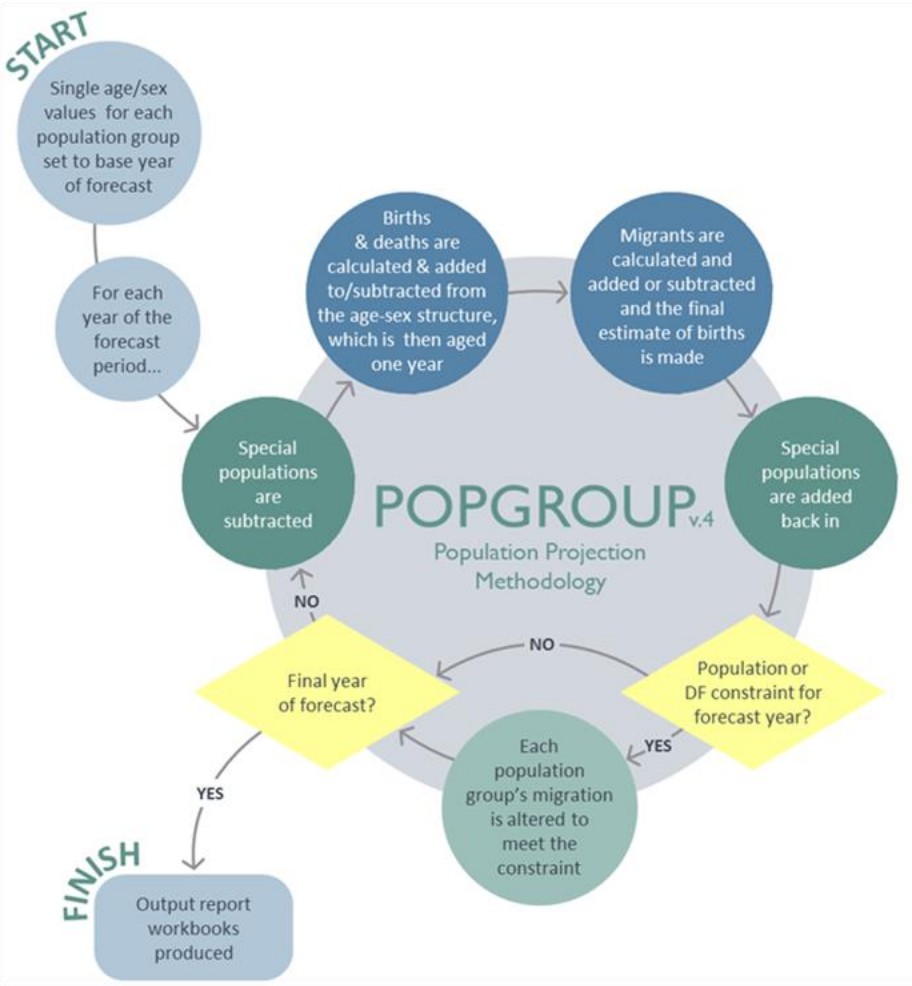
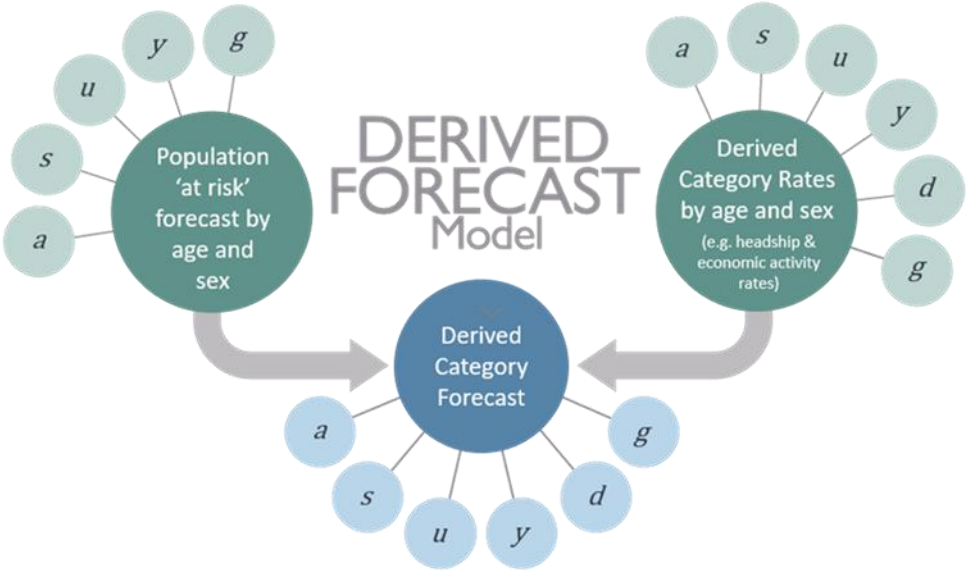



Figure 20: POPGROUP Population Projection Methodology




$$D_{a,s,u,y,d,g} = \frac{P_{a,s,u,y,g}\ R_{a,s,u,y,d,g}}{100}$$

| | | | |
|---|---|---|---|
| $D$ | Derived Category Forecast | $y$ | Year |
| $P$ | Population 'at risk' Forecast | $d$ | Derived category |
| $R$ | Derived Category Rates | $g$ | Group (usually an area, but can be an ethnic group or social group) |
| $a$ | Age-group | | |
| $s$ | Sex | | |
| $u$ | Sub-population | | |

Figure 21: Derived Forecast (DF) methodology

# Appendix B Data Inputs & Assumptions

## Population

B.1 In each scenario, historical population statistics are provided by ONS mid-year population estimates (MYEs), with all data disaggregated by single year of age and sex. The **SNPP** scenarios use MYE populations up until their respective 2014 and 2018 base years. The PG and employment-led scenarios uses an ONS 2019 MYE as their base year.

## Births & Fertility

B.2 In each scenario, historical mid-year to mid-year counts of births by sex have been sourced from the ONS MYEs. Under the **SNPP** scenarios, historical births counts have been used until each scenario's base year.

B.3 For the PG and employment-led scenarios, birth counts are used from 2001/02 to 2018/19. From 2019/20, an area-specific and age-specific fertility rate (ASFR) schedule is derived from the 2018-based National Population Projections (NPP). In combination with the 'population-at-risk' (i.e. all women between the ages of 15–49), these ASFR assumptions provide the basis for the calculation of births in each year of the forecast period.

B.4 In each of the **SNPP** scenarios, the future *counts* of births are specified from their base year onwards to ensure consistency with the respective population growth outcomes.

## Deaths & Mortality

B.5 In each scenario, historical mid-year to mid-year counts of deaths by sex and 5-year age group have been sourced from the ONS MYEs. Under the **SNPP** scenarios, historical deaths counts have been used until each scenario's base year.

B.6 For the PG and employment-led scenarios, death totals are used from 2001/02 to 2018/19. From 2019/20, an area-specific and age-specific mortality rate (ASMR) schedule is derived from the latest 2018-based NPP.

B.7 In each of the **SNPP** scenarios, the future counts of deaths are specified from their base year onwards to ensure consistency with the respective population growth outcomes.

## Internal Migration

B.8 In each scenario, historical mid-year to mid-year estimates of internal in- and out-migration by five year age group and sex have been sourced from the 'components of change' files that underpin the ONS statistics.

B.9 In the **SNPP** scenarios, these historical estimates are used up to each respective base year, with future counts of migrants specified to remain consistent with the corresponding projection.

B.10 Under the **PG-Short Term** scenario, an area and age-specific migration rate (ASMigR) schedule is derived from six years of historical internal migration data (2013/14-2018/19), which then determines the future number of internal in- and out-migrants for the remainder of the plan period.

B.11 Under the **Employment-led** scenarios, future internal migration assumptions have been derived from the full eighteen-year historical period, with migration altered to meet annual employment growth requirements.

### International Migration

B.12 Historical mid-year to mid-year counts of immigration and emigration by five-year age groups and sex have been sourced from the 'components of population change' files that underpin the ONS MYEs.

B.13 In the **SNPP** scenarios, these counts are used up to each scenario's respective base year, with future counts of migrants specified directly from the projection statistics.

B.14 In the **PG-Short Term** scenario, historical counts of immigration are used from 2001/02 to 2018/19. From 2019/20 onwards, an ASMigR schedule of rates is derived from a six-year and eighteen-year migration history respectively and used to distribute future counts by single year of age and sex.

B.15 For the **Employment-led** scenarios, future international migration assumptions are derived from the full eighteen-year historical period.

## Households & Dwellings

B.16 A household is defined as, "*one person living alone, or a group of people (not necessarily related) living at the same address who share cooking facilities and share a living room or sitting room or dining area*". A dwelling is defined as a unit of accommodation which can either be occupied by one household or vacant.

B.17 The household and dwelling implications of each population growth trajectory have been estimated through the application of household representative rates, communal population statistics and a dwelling vacancy rate. These assumptions have been sourced from the 2011 Census and the ONS 2018-based household projection model.

B.18 A household representative rate is defined as the *"probability of anyone in a particular demographic group being classified as being a household representative"*.

B.19 The household representative rates used in the POPGROUP modelling have been taken from the latest ONS 2018-based household projection model, which is underpinned by the ONS 2018-based SNPP. The ONS household projections are derived through the application of projected headship rates to a projection of the private household population. The methodology used by ONS in its household projection model consists of two distinct stages:

- Stage One produces the national and local authority projections for the total number of households by sex, age-group and relationship-status group.

- Stage Two provides the detailed 'household-type' projection by age-group, controlled to the previous Stage One totals.

B.20 Under each scenario, Stage Two headship rates have been applied by age-group, sex and 'household type' (Table 7).

Table 7: ONS 2018-Based Stage Two household type specification

| MHCLG Category | Description |
|---|---|
| One person male | One person households: Male |
| One person female | One person: Female |
| Couple no child | One family and no others: Couple households: No dependent children |
| Cple+adlts no child | A couple and one or more other adults: No dependent children |
| One child | Households with one dependent child |
| Two children | Households with two dependent children |
| Three+ children | Households with three or more dependent children |
| Other households | Other households with two or more adults |

B.21 For each scenario, an alternative set of household representative rates has been applied, modelling the effect of higher household formation rates from the MHCLG 2014-based household projection model.

## Communal Population Statistics

B.22 Household projections in POPGROUP exclude the population 'not-in-households' (i.e. the communal/institutional population). These data are drawn from the ONS 2018-based household projections, which use statistics from the 2011 Census. Examples of communal establishments include prisons, residential care homes, student halls of residence and certain armed forces accommodation.

B.23 For ages 0–74, the number of people in each age group 'not-in-households' is fixed throughout the forecast period. For ages 75–85+, the population 'not-in-households' for ages 75–85+ varies across the forecast period depending on the size of the population.

## Vacancy Rate

B.24 The relationship between households and dwellings is modelled using a 'vacancy rate', derived from the 2011 Census using statistics on households (occupied household spaces) and dwellings (shared and unshared). A vacancy rate of 3.8% has been applied and fixed throughout the forecast period. Using the vacancy rate, the 'dwelling requirement' of each household growth trajectory has been estimated.

# Labour Force & Jobs

B.25 The labour force and jobs implications of each population growth trajectory have been estimated through the application of three key economic assumptions: economic activity rates, commuting ratio and an unemployment rate. The economic activity rates determine the estimated annual change in Bradford's resident labour force, whilst the unemployment rate and commuting ratios link the labour force to *workplace-based employment* in Bradford.

## Economic Activity Rates

B.26 Economic activity rates measure the proportion of the population that are actively involved in the labour force, either employed or unemployed and looking for work.

B.27 Economic activity rates by five-year age group (ages 16–89) and sex have been derived from Census statistics, with adjustments made in line with the OBR analysis of labour market trends in its 2018 Fiscal Sustainability Report[17] (Figure 22). The economic activity rate adjustments have been applied to all scenarios.

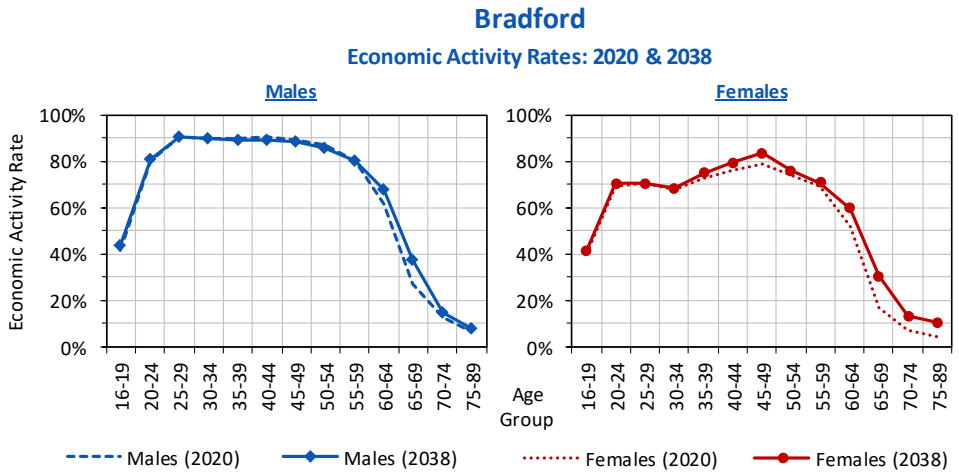



Figure 22: Economic Activity Rates for Bradford (2020-2038)

## Commuting Ratio

B.28 The commuting ratio indicates the balance between the level of employment and the number of resident workers. A commuting ratio greater than 1.00 indicates that the size of the resident workforce exceeds the level of employment available in the area, resulting in a net out-commute. A commuting ratio less than 1.00 indicates that employment in the area exceeds the size of the labour force, resulting in a net in-commute.

B.29 In all scenarios, assumptions on Bradford's commuting ratio (2011–2038) have been derived from the August 2020 Regional Econometric Model (REM) for Yorkshire and The Humber (Figure 23).

[17] OBR Fiscal Sustainability Report 2018

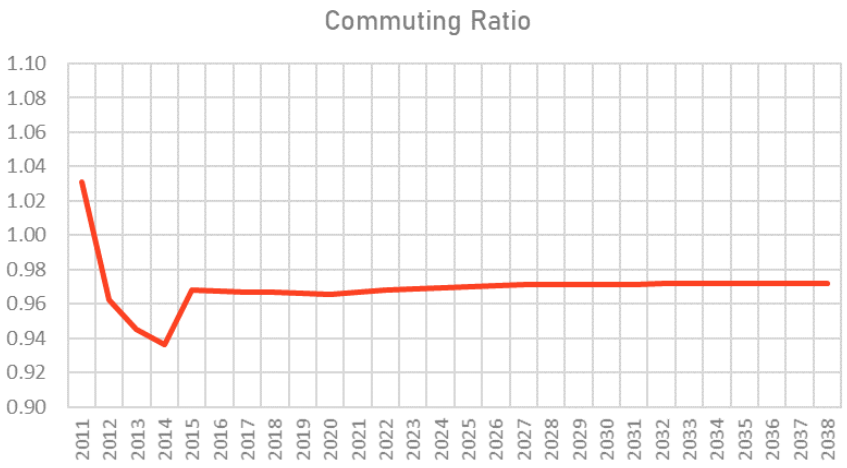



Figure 23: Commuting ratio for Bradford, 2011-2038 (Source: August 2020 REM)

B.30 Under these assumptions, the balance between the number of resident workers and the number of employed workers in Bradford declines from 1.03 in 2011 (indicating a net out-commute), to 0.94 in 2014, rising to 0.97 to 2015 (indicating a net in-commute).

B.31 This compares to a net out-commute of 1.02 in the 2011 census.

## Unemployment

B.32 The unemployment rate is the proportion of unemployed people within the total economically active population. In all scenarios, assumptions on Bradford's unemployment rate (2011–2038) have been derived from the August 2020 REM for Yorkshire and The Humber (Figure 24).


Figure 24: Unemployment rate for Bradford, 2011-2038 (Source: August 2020 REM)

B.33 Between 2011–2018, the unemployment rate declined from 10.7% to 5.4%, returning to 10.7% in 2020 before gradually declining to 5.4% by 2025.

B.34 This compares to an unemployment rate of 6.4% from the ONS model-based estimates for 2019.

## Employment Forecasts

B.35 The **Employment-led REM** scenario models the demographic impact of a projected level of annual employment growth, measured as *workplace-based employment.* Workplace-based employment is a 'people-based' measure, rather than a jobs-based measure of economic activity. The two measures are directly related, but the jobs-based measure is typically reported in employment forecasts, including both full-time and part-time positions. The workplace-based employment figure measures the number of people employed, linking directly to people-based measures of unemployment, commuting and economic activity.

B.36 The **Employment-led REM** scenario models the demographic impact of the annual workplace-based employment growth outlined in the August 2020 REM[18].

B.37 The **Employment-led 1,600** scenario models the demographic impact of an annual *jobs* growth target of 1,600, consistent with the Council's Core Strategy[19]. For use in POPGROUP, this has been converted to a *workplace-based employment* equivalent using a ratio of 'workforce jobs' to 'workplace-based employment', drawn from the August 2020 REM.

B.38 The **Employment-led REM** and **Employment-led 1,600** scenarios are underpinned by average annual employment growth of +1,279 and +1,561 per year respectively over the 2020–2038 plan period, with annual employment growth expected in each year[20].

B.39 The annual change in employment applied under the two **Employment-led** scenarios is illustrated in Figure 25.

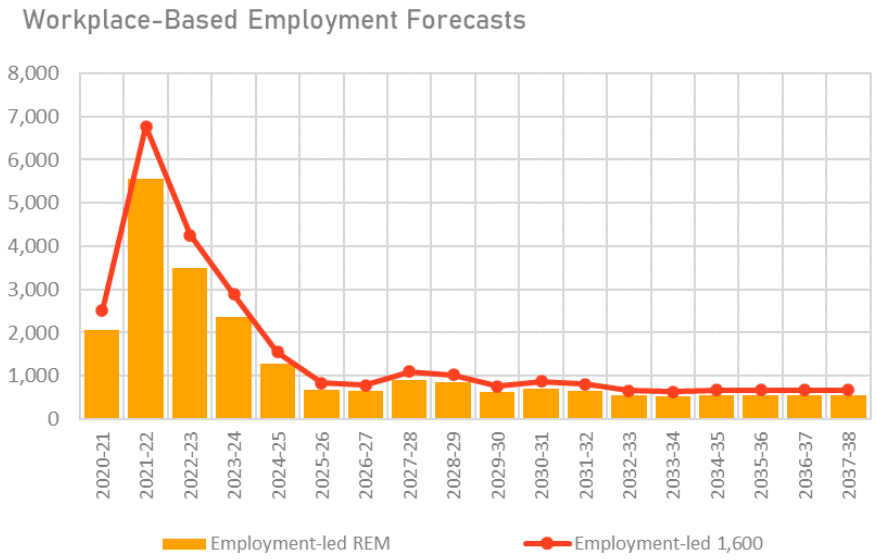
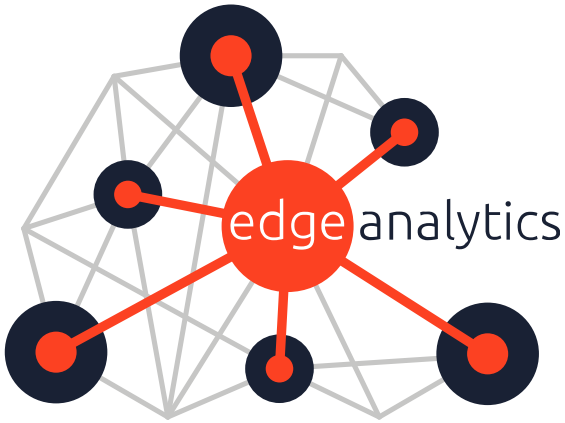



Figure 25: Bradford – Employment Growth Forecasts, 2020–2038

[18] The August 2020 REM provides an annual residence-based employment figure for Bradford. For use in POPGROUP, annual workplace-based employment has been derived from this using the commuting assumptions of the REM.

[19] City of Bradford Metropolitan District Council, July 2017, Core Strategy Development Plan Document.

[20] In both **Employment-led** scenarios, an employment forecast from the REM is included for 2019-20. Beyond 2035-36 the employment growth targets are fixed, enabling the production of scenario forecasts to 2038 (the Local Plan horizon).

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