Peak District National Park

Demographic Forecasts

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Acknowledgements

Demographic statistics used in this report have been derived from data from the Office for National Statistics licensed under the Open Government Licence v.3.0.

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Introduction

Context & Requirements

1.1 The Peak District is one of twelve National Parks in England; covering approximately 1,437 km^2 and capturing land area from nine Local Authority Districts. In 2006, the Peak District Local Authority commissioned population, household and labour force projections for the National Park[1], with outcomes presented to a 2026 horizon. This evidence was underpinned by assumptions from the 2001 Census, the 2004-based population projections from the Office for National Statistics (ONS)[2] and accompanying household projections from the Ministry of Housing, Communities and Local Governments (MHCLG)[3]. A number of demographic-led and dwelling-led forecasts were developed, for the National Park and its constituent areas.

1.2 Since the 2006 evidence, a number of new datasets have become available including:

- 2011 Census statistics, ward and output area definitions
- Mid-year population estimates for the Peak District National Park 2001–2016
- Components of population change 2001–2016
- 2014-based sub-national population and household projections

1.3 The Peak District National Park Authority has commissioned Edge Analytics to develop a range of demographic and housing-led forecasts for the 2016–2026 and 2016–2039 plan periods.

Approach

1.4 A range of demographic and dwelling-led scenarios have been developed for the Peak District National Park using POPGROUP v4.0 technology. This includes the 2014-based official population projection for the National Park, alongside four demographic scenarios based on variant

[1] http://www.dartmoor.gov.uk/__data/assets/pdf_file/0019/90064/populationstats2006.pdf

[2] Previously known as Government Actuary Department (GAD)

[3] Previously known as Department for Communities and Local Governments (DCLG)

assumptions on migration and population growth. In addition, four dwelling-led scenarios have been developed, using dwelling growth targets consistent with the previous analysis undertaken for the Peak District National Park in 2006.

1.5 Historical demographic statistics for the National Park have been derived from 2011 Census Output Area statistics. Output Areas (OAs) are the smallest geographical unit for which Census data are published, aligning directly with local authority administrative boundaries. A proportional split of the OAs has been calculated to estimate the extent to which each falls inside or outside the Peak District National Park boundary. The resultant OA definition has been used as the basis for generating historical demographic statistics, used to developed forecasts for the Peak District National Park.

1.6 Excluding the 2014-based official projection, all scenarios are based on historical evidence for the period 2001–2016. Household and dwelling growth under each of the demographic scenarios is considered using assumptions from the MHCLG's latest 2014-based household projection, scaled for consistency with the National Park geography and using a 2011 Census vacancy rate. In the dwelling-led scenarios, these assumptions determine the relationship between the annual growth in dwellings and the accompanying population change.

Report Structure

1.7 This report provides a 'demographic profile' of the Peak District National Park, together with detail on the scenario definitions, methodology and forecasting outcomes. The report is structured in the following way:

- **Section 2** presents a demographic profile of the Park, giving consideration to each of its nine local authority districts.
- **Section 3** provides a definition of the range of scenarios that have been considered, and presents population, household and dwelling growth outcomes for each.
- In **Section 4**, a brief summary of the scenario analysis is provided.
- **Appendix A** presents scenario outcomes for the extended 2016–2039 plan period
- **Appendix B** provides an overview of the POPGROUP methodology.
- **Appendix C** provides detail on the data inputs and assumptions applied to each of the scenarios.

2 Area Profile

Geography

2.1 Peak District National Park sits within the boundaries of nine local authority districts; Barnsley, Cheshire East, Derbyshire Dales, High Peak, Kirklees, North East Derbyshire, Oldham, Sheffield and Staffordshire Moorlands (Figure 1).

2.2 Demographic statistics from each of these local authority areas has been used to configure the demographic analysis and forecasts for the National Park geography.

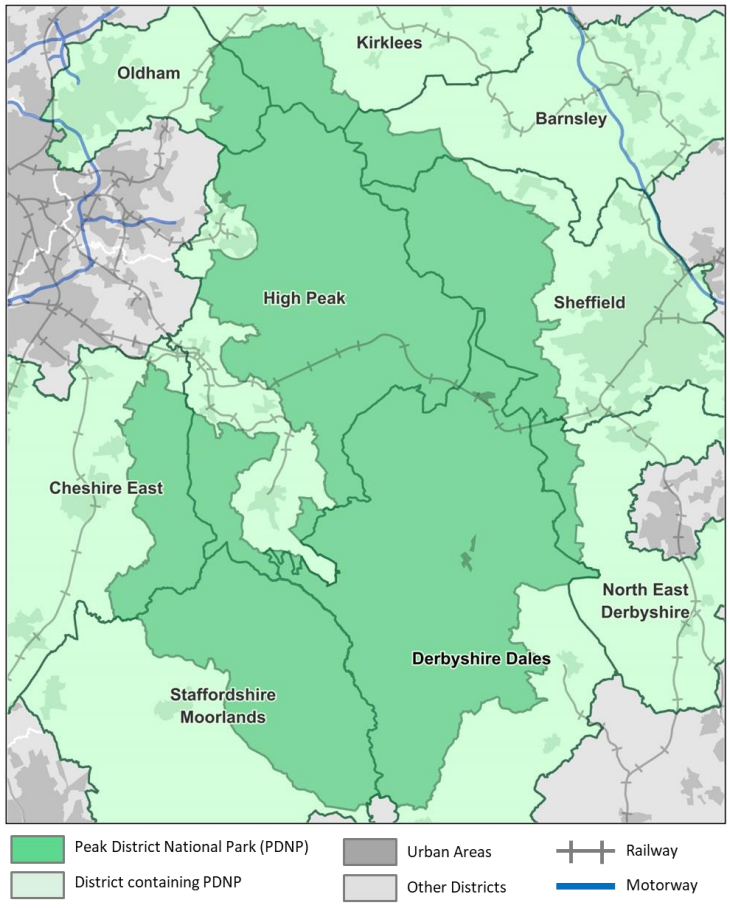


Figure 1: Peak District National Park

Population Change 2001–2016

2.3 The ONS estimates the population of the Peak District National Park in 2016 to be approximately 37,070, making it the third most populated National Park in England (behind South Downs and the Lake District). Over the 2001–2016 historical period, the population of the Peak District National Park reduced by approximately -890 people, a -2.3% decline. Between 2001 and 201 the population of the National Park remained relatively stable at around 38,000, with an average annual decline of -188 per year thereafter.

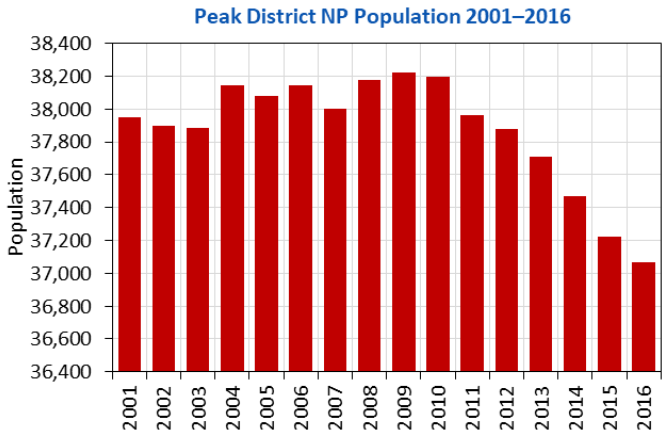


Figure 2: Population Change 2001–2016

2.4 In 2016, the largest proportion of the Peak District National Park's population was resident within Derbyshire Dales (64.6%), High Peak (17.2%) and Staffordshire Moorlands (10.6%), with smaller proportions falling within Barnsley, Oldham and North East Derby (0.3%) (Figure 3).

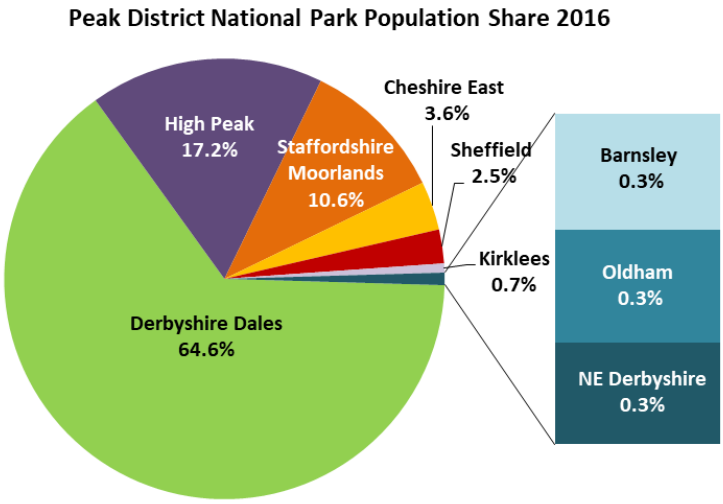


Figure 3: Peak District National Park population share 2016

2.5 The trend of population change experienced in the Peak District National Park contrasts to that estimated for each of the districts intersected by the National Park, all of which have experienced growth over the 2001–2016 historical period. However, MYEs suggest that Derbyshire Dales, High Peak, Staffordshire Moorlands and North East Derbyshire have experienced a lower rate of population change over the historical period.

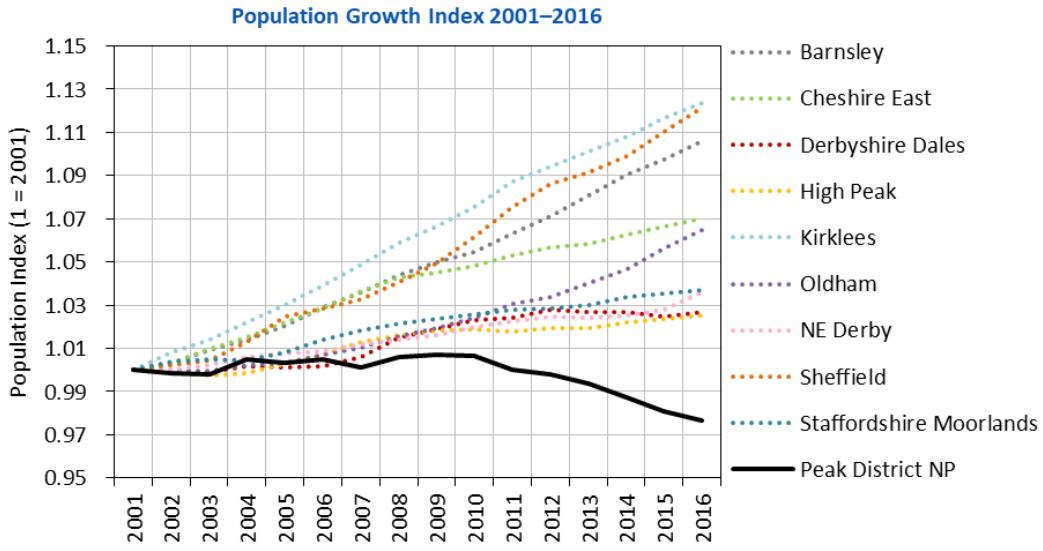


Figure 4: Population growth index Peak District National Park & districts (2001–2016)

2.6 The growth and decline in the Peak District National Park's population is reflected in the 'components of change' profile for the 2001/02–2015/16 period (Figure 5). Natural change is the annual balance between births and deaths; net migration is the balance between the inflow and outflow of population moving to and from the National Park.

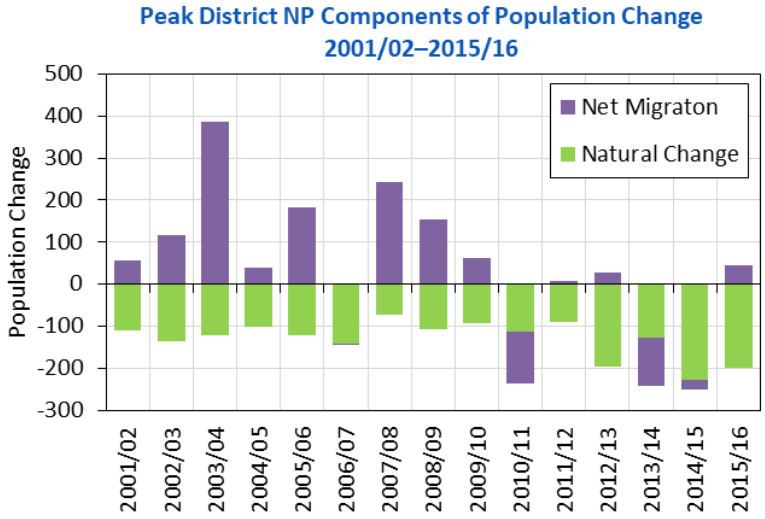


Figure 5: Components of Change 2001/02–2015/16

2.7 Natural change has remained negative throughout the historical period (i.e. a greater number of deaths than births), reflective of the relatively older age structure of the National Park. An increase in deaths, operating in tandem with a reduction in births over the latter years of the historical period, has resulted in an increased net loss of population through natural change.

2.8 Over the 2001/02–2009/10 historical period, net migration had an annual positive impact on population change in the National Park (notwithstanding small net out-migration in 2006/07). Since 2010 net migration has fallen, which when coupled with the annual negative impact of natural change, has resulted in a notable decline in population over the last six years.

Population Age Profile

2.9 In the consideration of future housing needs for the Peak District National Park, the ageing structure of the resident population is an important factor. Over the 2001–2016 period, the profile of the National Park's population has aged, with the proportion of population in the older age groups increasing relative to the younger age groups (Figure 6).

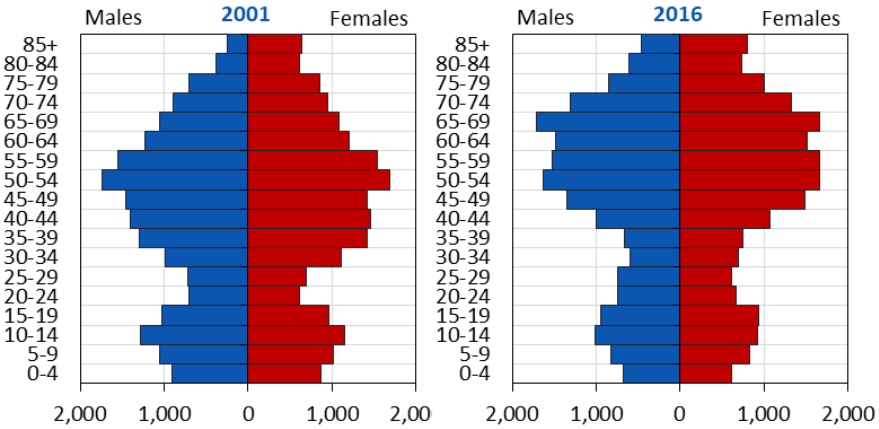


Figure 6: Peak District National Park population age profile 2001–2016

2.10 Between 2001 and 2016, the proportion of the population aged 65+ living in the Peak District National Park increased from 19.5% to 28.2%. The National Park has an ageing population, with a median age of 52 in 2016 compared to 45 in 2001.

2.11 The ageing population profile is reflected in the Old Age Dependency (OAD) ratio which has increased from 31 in 2001 to 48 in 2016. This means that in 2016, the proportion of the population aged 65+ was equivalent to 48% of the population aged 15–64.

Table 1: Age profile indicators in 2001 and 2016 (Source: ONS)

Indicator	*2001*	*2016*
Percentage 65+	19.5%	28.2%
Percentage 80+	5.0%	7.0%
OAD*	31	48
Median Age	45	52

**OAD = Old Age Dependency Ratio (Population aged 65+/population aged 15–64)*

Housing Completions

2.12 Since 2001/02, 1,037 new dwellings have been built in the Peak District National Park, with the majority completed between 2001/02 and 2011/12 (Figure 7). Whilst a comparison of the National Park's *annual* population growth with a history of *annual* housing completions reveals some disparity in trends, a larger resident and relatively stable population (approximately 38,000) to 2009/10 reflects higher housing completions. Over the latter six years of the historical period to 2015/16, an annual decline in population also correlates with lower annual dwelling completions. As population statistics are only available to 2016, it is uncertain as to whether the higher dwelling completions evident in 2016/17 will manifest themselves in population growth in the National Park.

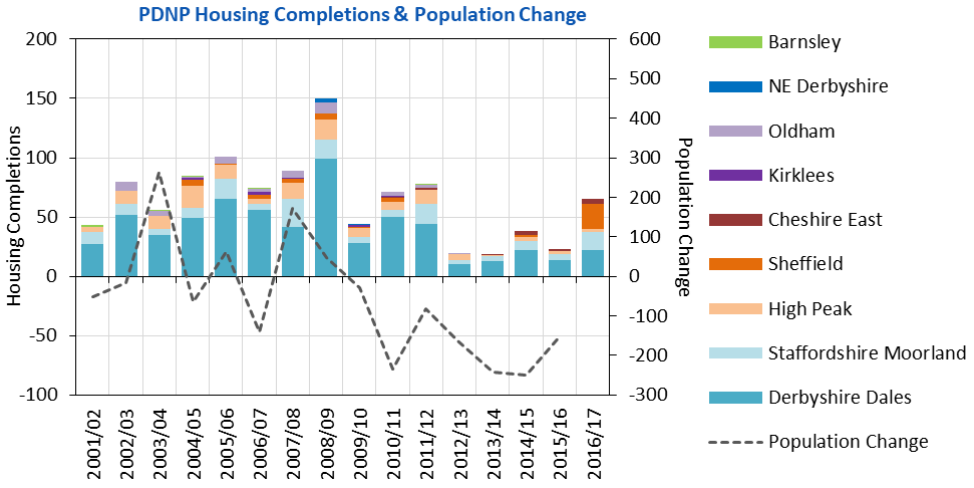


Figure 7: Peak District Housing Completions by Local Authority District (Source: PDNPA)[4]

2.13 Approximately 89% of housing completions since 2001/02 have been in Derbyshire Dales, Staffordshire Moorlands and High Peak. Whilst historically Sheffield has contributed a small

[4] Housing completions data is provided by the Peak District National Park Authority by financial year, population statistics are for mid-year to mid-year

proportions of annual dwelling completions (0%–6% of total completions per annum), the latest 2016/17 data suggest approximately 32% were allocated to Sheffield local authority area.

Commuting Ratio

2.14 In terms of travel-to work commuting flows, the 2011 Census recorded 19,099 workers aged 16–74 living in the Peak District National Park and 17,835 people aged 16–74 working within the Park. This imbalance between the number of resident workers and the number of workplace-based employed in the National Park results in a commuting ratio of 1.07, a net out commute from the Park (Table 2).

Table 2: Peak District's travel-to-work statistics 2011 Census

Peak District NP	2011 Census
Resident Workers	19,099
Jobs	17,835
Commuting Ratio	1.07

2.15 Of the 19,099 resident workers, 56% work within the National Park (including those who work at or from home), 28% commuting to the districts intersected by the National Park, with the remaining 16% working elsewhere in the UK, offshore or abroad. Of the 17,835 people working in the National Park, 60% also live in the Park, with 28% coming from the districts intersected by the National Park (Figure 8).

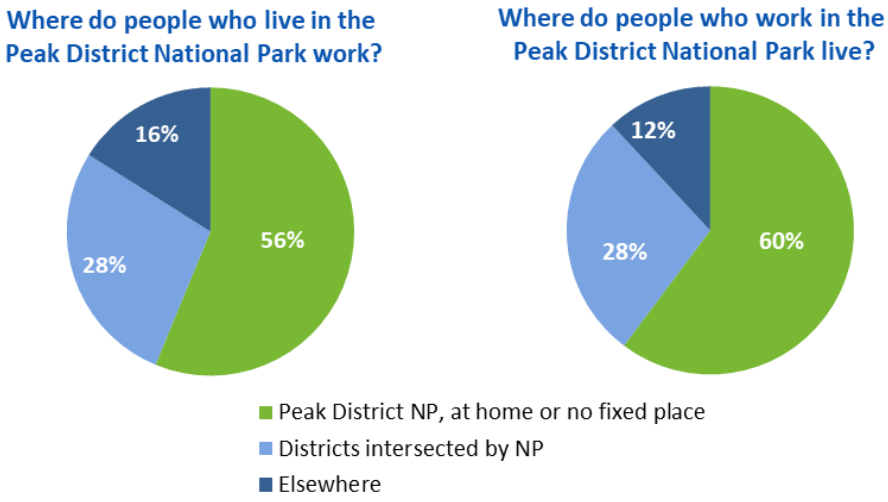


Figure 8: Peak District National Park travel-to-Work dynamics (source: 2011 Census)

3 Demographic Scenarios

Approach

3.1 There is no single definitive view on the likely level of growth expected in the Peak District National Park. Ultimately, a mix of demographic and local policy issues will determine the speed and scale of change.

3.2 POPGROUP v4.0 has been configured for the area of each of the nine districts covered by the Peak District National Park (Figure 1 on page 6). A range of scenarios has been developed for the 2016–2026 plan period, with outcomes also presented for the 2016–2039 period in Appendix A.

3.3 Eight demographic and dwelling-led scenarios have been developed and are presented alongside the ONS 2014-based sub-national population projection, disaggregated to the part of the districts that sit within the Peak District National Park. Under the demographic scenarios, household and dwelling growth has been estimated using key assumptions drawn from the MHCLG 2014-based household projection model and evidence drawn from the 2011 Census on the National Park's dwelling vacancy rate. In the dwelling-led scenarios, these assumptions have been applied to determine the relationship between annual dwelling growth and population change.

Scenario Definition

3.4 The 2014-based sub-national population projection (SNPP) provides the 'benchmark' growth outcome, to which other scenarios are compared. Three migration trend scenarios have been developed using migration assumptions based on (1) 'balanced' flows, (2) derived from a fifteen-year (2001/02–2015/16) history and (3) derived from a six-year (2010/11–2015/16) history. A further demographic scenario has also been developed, in which the population of the Peak District National Park remains at its 2016 value (i.e. 37,066). This 'Zero Population Growth' scenario provides an indication of the migration and dwelling growth impact of a stable population.

3.5 Four 'dwelling-led' scenarios have also been developed in which population change is determined by the annual growth in the number of dwellings over the plan period. The annual dwelling growth targets are consistent with those identified in the 2006 analysis for the National Park[5] and allocated to the Peak District National Park areas in Derbyshire Dales, High Peak and Staffordshire Moorlands only.

3.6 Under all scenarios (excluding the SNPP-2014) historical population is defined for the 2001–2016 period. The list of scenarios is as follows:

- **SNPP-2014:** The ONS 2014-based SNPP disaggregated for the Peak District National Park.
- **PG Short Term:** Migration assumptions have been derived from a six-year period prior to 2016 (i.e. the latest year for which National Park population statistics are available).
- **PG Long Term:** Migration assumptions have been derived from a fifteen year period prior to 2016 (i.e. from 2001/02).
- **Net Nil:** Migration inflows and outflows are balanced throughout the forecast period, resulting in zero net migration.
- **Zero Population Growth:** Total population of the National Park is maintained at its current population.
- **Dwelling-led (0 dpa):** Zero dwelling is assumed throughout the plan period.
- **Dwelling-led (48 dpa):** Annual dwelling growth of +48 for the National Park is assumed in each year of the plan period (i.e. from 2016/17 onward). This annual dwelling growth is allocated between Derbyshire Dales (+33 dpa), High Peak (+9 dpa) and Staffordshire Moorlands (+6 dpa). No dwelling growth is assumed in all other areas of the National Park.
- **Dwelling-led (95 dpa):** Annual dwelling growth of +95 for the National Park is assumed in each year of the plan period. This annual dwelling growth is allocated between Derbyshire Dales (+67 dpa), High Peak (+17 dpa) and Staffordshire Moorlands (+11 dpa). No dwelling growth is assumed in all other areas of the National Park.

[5] Population, household and labour force projections for the Peak District National Park Authority and East Midlands Regional Assembly. Alan Marshall and Ludi Simpson. November 2006. http://www.dartmoor.gov.uk/__data/assets/pdf_file/0019/90064/populationstats2006.pdf

- **Dwelling-led (150 dpa)** – Annual dwelling growth of +150 for the National Park is assumed in each year of the plan period. This annual dwelling growth is allocated between Derbyshire Dales (+106 dpa), High Peak (+27 dpa) and Staffordshire Moorlands (+17 dpa). No dwelling growth is assumed in all other areas of the National Park.

Scenario Results

3.7 The population growth trajectories for all scenarios are presented in Figure 9 for the 2001–2026 time period (refer to Appendix A for outcomes for the extended 2039 period). In addition each of the scenarios is summarised in terms of population and household growth for the 2016–2026 plan period, together with the average annual net migration and dwelling change (Table 3).

3.8 Population change over the 2016–2026 period ranges from a -6.2% decline under the **PG Short Term** scenario, to 6.1% growth under the **Dwelling-led (150 dpa)** scenario. Excluding the **PG Short Term** scenario, a balanced or annual net in-migration flow is estimated, ranging from 42 to 406 people per year (2016–2026). The resulting population *decline* in all but the **Dwelling-led (150 dpa)**, **Dwelling-led (95 dpa)** and **Zero Growth** scenarios is a reflection of the ageing population of the National Park, in combination with low migration impacts.

3.9 Under the **SNPP-2014** 'benchmark' scenario, the estimated population change for the National Park is -1.2% over the ten-year plan period, supporting an average annual dwelling growth of +56 dpa.

3.10 Under the **PG Long Term** scenario, in which migration flows are based on the last fifteen years of historical data, an annual net in-migration flow of +71 persons per year is estimated over the 2016–2026 plan period. This net inflow, combined with assumptions on births and deaths (i.e. natural change) in the National Park, results in a population decline of -3.1% (2016–2026), with an associated average annual dwelling growth of +13 dpa. A greater decline in population and dwelling change is estimated under the **PG Short Term** scenario, capturing the net out-migration flows experienced since 2010.

3.11 Under the **Zero Population Growth** scenario, maintaining a stable population has a different effect, as net in-migration is required to replace population lost through natural change (i.e. an

excess of deaths over births). This results in a dwelling growth estimate of 61 dpa over the plan period.

3.12 Under the dwelling-led scenarios, population growth is determined by the annual change in dwellings. Population growth is highest under the **Dwelling-led (150 dpa)** scenario, driven by increased migration flows to fulfil the growth in new houses over the plan period. Under the **Dwelling-led (0 dpa)** and **Dwelling-led (48 dpa)** scenarios, lower net migration flows are required to meet the annual dwelling growth targets operating in tandem with population ageing, result in a population decline of -4.2% and -0.9% respectively.

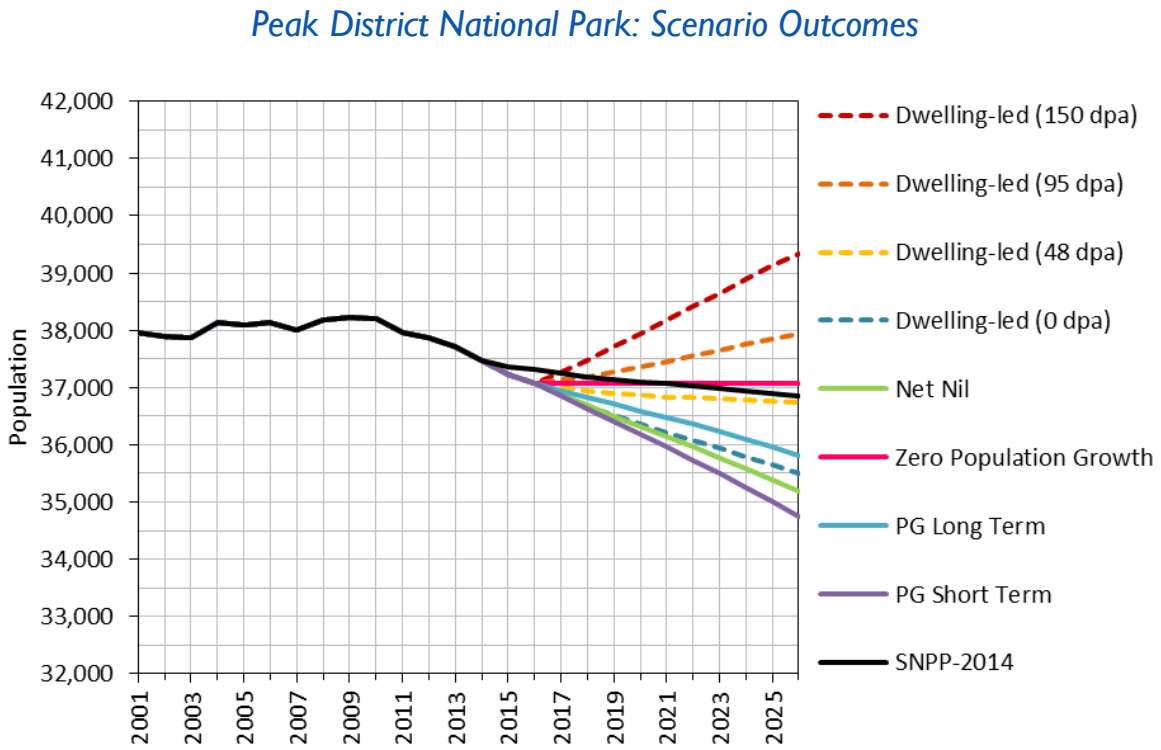


Figure 9: Peak District National Park population 2001–2026

Table 3: Peak District National Park scenario outcomes 2016–2026

Scenario	Change 2016–2026				Average per year	
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings
Dwelling-led (150 dpa)	2,274	6.1%	1,342	8.1%	406	150
Dwelling-led (95 dpa)	870	2.3%	850	5.1%	273	95
Zero Population Growth	0	0.0%	551	3.3%	190	61
Dwelling-led (48 dpa)	-332	-0.9%	429	2.6%	159	48
SNPP-2014	-454	-1.2%	506	3.0%	157	56
PG Long Term	-1,248	-3.4%	120	0.7%	71	13
Dwelling-led (0 dpa)	-1,558	-4.2%	0	0.0%	42	0
Net Nil	-1,885	-5.1%	-211	-1.3%	0	-24
PG Short Term	-2,313	-6.2%	-213	-1.3%	-30	-24

Note: Scenarios are ranked in order of population change over the plan period. Household and dwelling vacancy rate assumptions are derived from the 2014-based projection model and 2011 Census.

Population Age Structure

3.13 The ageing population of the Peak District National Park is a key factor when considering future housing requirements of the area. The change in population age profile over the 2016–2026 plan period for each of the scenarios is presented in Figure 11 on the following page. Under each of the scenarios, the greatest population increase is estimated in the 75+ age groups, reflective of the ageing population of the Peak District National Park.

3.14 The greatest decline in population is evident under the **PG Short Term** scenario, with minimal growth or decline estimated in all younger (0–59) age groups. Higher net migration inflows and subsequent population growth estimated under the **Dwelling-led (150 dpa)** and **Dwelling-led (95 dpa)** scenarios, is reflected in the population change profile. A larger population growth is estimated in the 30–39 age groups as a result of the increased in-migration flows required to meet the annual change in dwellings. Furthermore, an increase in these young adult (30–39) age groups also has a positive impact on the 0–4 age groups, as a result of a growth in young families and a greater number of births. A similar age profile is estimated under the **Zero Population Growth** scenario, in which an increase in the 30–39 age groups reflect the increased net migration required to maintain a stable population size.

3.15 The population ageing under each of the scenarios is emphasised in the change in the old age dependency ratio (the ratio between 65+ and 15–64 age-groups). This increases from 48% in 2016 to 59%–67% by 2026 (**Dwelling-led (150 dpa)** and **PG Short Term** scenario respectively) (Figure 10).

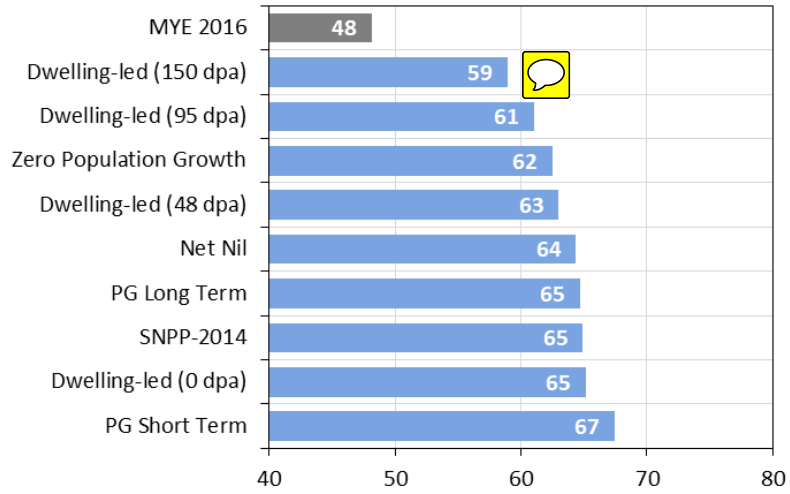


Figure 10: Peak District National Park Old Age Dependency ratio 2026

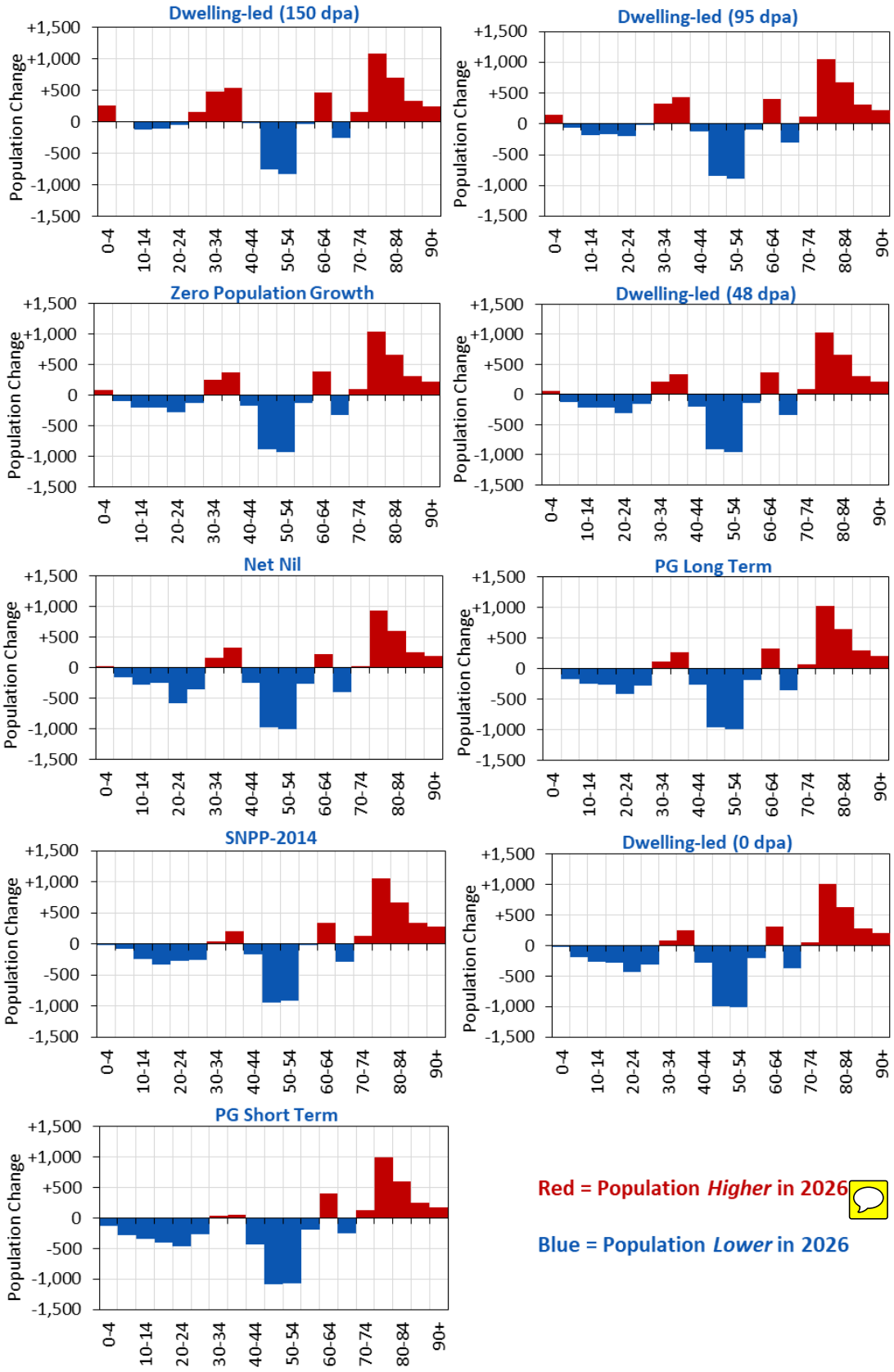


Figure 11: Peak District National Park population change by 5-year age group (2016–2026)

Labour Force

3.16 It is possible to derive the size and structure of the labour force for the Peak District National Park under each of the demographic and dwelling-led population growth trajectories. Economic activity rates determine the proportion of the working-age population (aged 16–89) that are economically active (i.e. the labour force). The labour force includes those who are in work and those who are unemployed. The Office for Budget Responsibility (OBR) has undertaken analysis of labour market trends in its 2017 Fiscal Sustainability Report[6]. Included within its analysis is a forecast of changing economic activity rates for males and females in the 16–89 year-old age groups, extending to a long-term 2066 forecast horizon.

3.17 In the analysis presented here, the economic activity rates (16–89 age groups) derived from the 2011 Census for the Peak District National Park have been adjusted in line with the 2017 OBR forecasts. The population size and age structure under the **Dwelling-led (150 dpa)** and **Dwelling-led (95 dpa)** scenarios is estimated to support a growth in the labour force over the 2016–2026 plan period (+1,095 and +181 respectively). Conversely, the decline and ageing profile of the population under all other scenarios results in a reduction in the size of the labour force over the ten-year plan period (Figure 12).

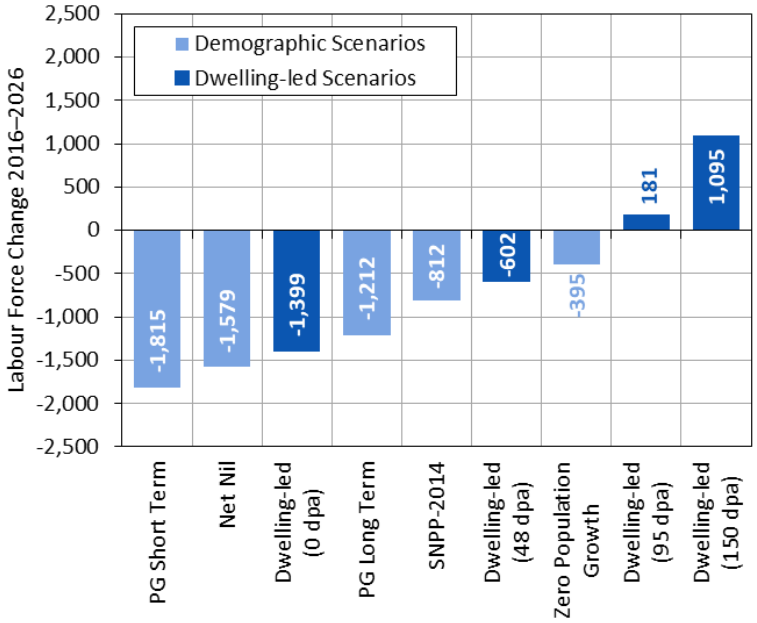


Figure 12: Labour force change under all scenarios (2016–2026)

[6] http://obr.uk/fsr/fiscal-sustainability-report-january-2017/

4 Summary

Approach

4.1 The Peak District National Park Authority commissioned Edge Analytics to provide a range of alternative demographic and dwelling-led scenarios. Scenarios have been developed in POPGROUP v4.0 with demographic statistics been derived from Local Authority, Census Ward and Output Area statistics.

4.2 The latest 2014-based sub-national population projection has been considered, plus alternative trend-based scenarios that derive assumptions from the latest statistics on demographic change. A 'zero population growth' scenario presents the migration and dwelling growth implications of a stable population size, whilst a 'net nil' scenarios has been included to evaluate population change associated with a balanced migration flow.

4.3 Four dwelling-led scenarios have been presented which consider the estimated population change associated with dwelling growth trajectories, underpinned by housing growth targets outlined in the previous, 2006 analysis.

4.4 All demographic scenarios consider household and dwelling growth using assumptions from the MHCLG 2014-based household projections, scaled for consistency with the National Park and a 2011 Census vacancy rate. Under the dwelling-led scenarios, these assumptions are used to evaluate the relationship between a defined annual dwelling growth and population change.

Growth Outcomes

4.5 Over the 2016–2026 plan period, population change ranges from a -6.2% decline under the **PG Short Term** scenario to a 6.1% growth under the **Dwelling-led (150 dpa)** scenario (Figure 13).

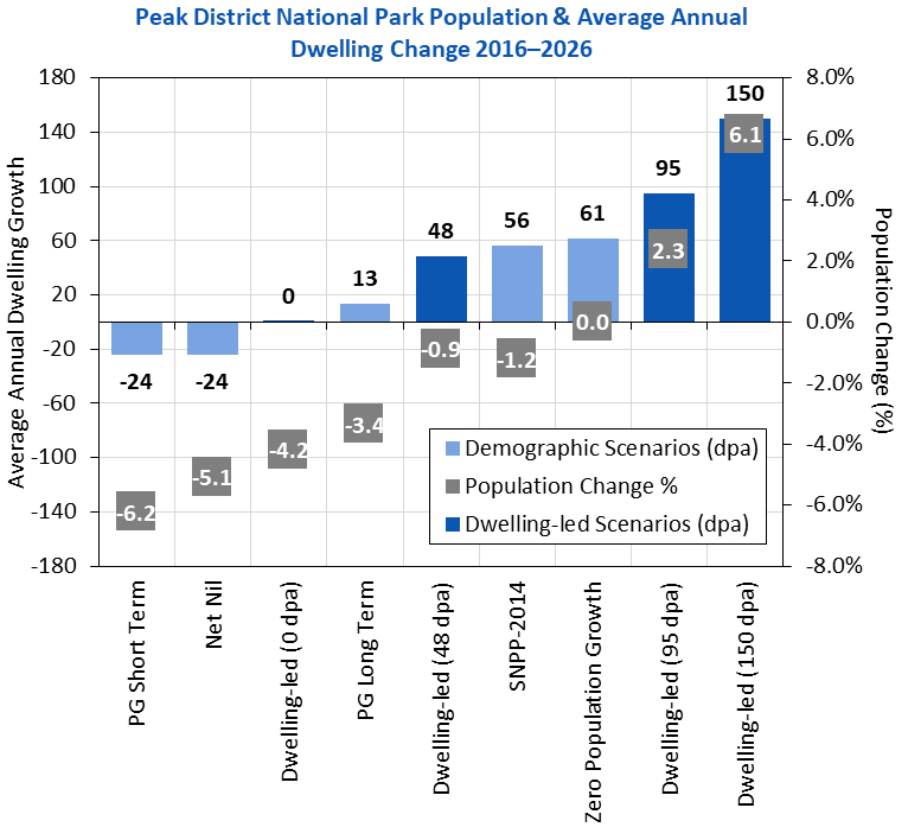


Figure 13: Population change (%) and average annual dwelling growth (2016–2026)

4.6 All scenarios excluding the **Dwelling-led (95 dpa)** and **Dwelling-led (150 dpa)** result in population *decline* over the plan period, driven primarily by an ageing population profile. The **PG Long Term** and **PG Short Term** scenarios are reflective of the fifteen (2001/02–2015/16) and six-year (2010/11–2015/16) historical periods from which their migration assumptions have been calibrated. Under the **PG Short Term** scenario, an annual net *out*-migration flow from the National Park is estimated over the plan period, reflecting the smaller net migration flows evidenced since 2010. An annual net *in*-migration flow is estimated under the **PG Long Term** scenario, resulting in a dwelling growth of +13 per annum (2016–2026).

4.7 To maintain the current size in the population (as in the **Zero Population Growth** scenario), an additional 61 homes would be required each year. This is a reflection of the level of net migration needed to sustain the size of the population, countering the impact of natural change.

4.8 Higher annual dwelling growth targets under the **Dwelling-led (95 dpa)** and **Dwelling-led (150 dpa)** scenarios result in higher net migration inflows and a dampening of the ageing population profile over the plan period. As a result, population *growth* of 2.3% and 6.1% is estimated under the **Dwelling-led (95 dpa)** and **Dwelling-led (150 dpa)** scenarios respectively.

Appendix A Scenario Outcomes (2016–2039)

A.1 The demographic and dwelling-led scenarios presented in Section 3 of the main body of this report are presented here for the extended 2016–2039 plan period. Figure 14 presents the population change under each of the scenarios to 2039. Table 4 outlines the estimated population and household change alongside average annual net migration and dwelling change over the 2016–2039 plan period.

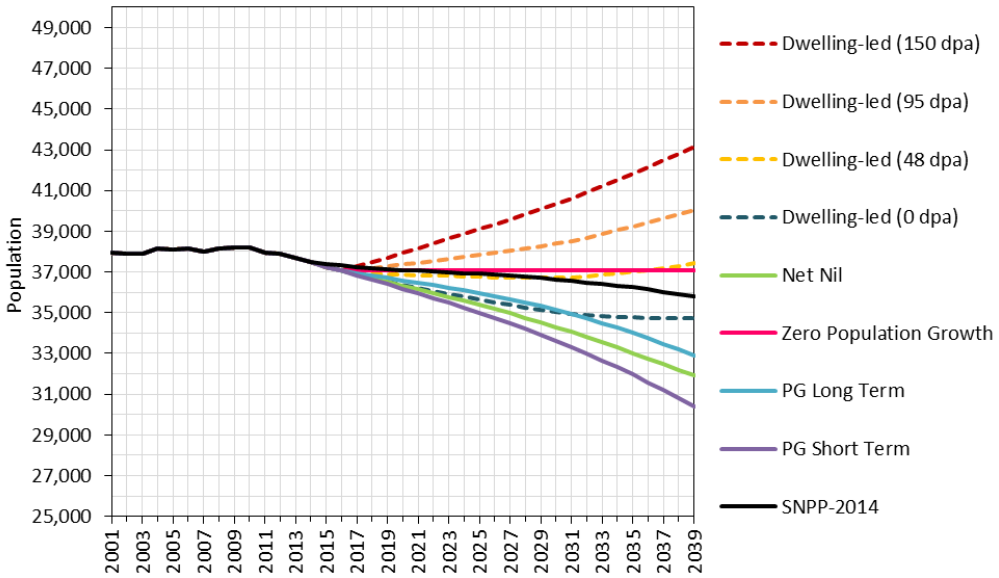


Figure 14: Peak District National Park population 2001–203

Table 4: Peak District National Park scenario outcomes 2016–2039

Scenario	Change 2016–2039				Average per year	
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings
Dwelling-led (150 dpa)	6,092	16.4%	3,086	18.6%	471	150
Dwelling-led (95 dpa)	2,995	8.1%	1,954	11.8%	352	95
Dwelling-led (48 dpa)	347	0.9%	988	6.0%	251	48
Zero Population Growth	0	0.0%	900	5.4%	235	44
SNPP-2014	-1,522	-4.1%	622	3.7%	202	30
Dwelling-led (0 dpa)	-2,354	-6.4%	0	0.0%	147	0
PG Long Term	-4,152	-11.2%	-582	-3.5%	71	-28
Net Nil	-5,155	-13.9%	-1,431	-8.6%	0	-70
PG Short Term	-6,648	-17.9%	-1,380	-8.3%	-27	-67

Note: Scenarios are ranked in order of population change. Dwelling-led scenarios highlighted in grey.

Appendix B POPGROUP Methodology

Forecasting Methodology

B.1 Evidence is often challenged on the basis of the appropriateness of the methodology that has been employed to develop growth forecasts. The use of a recognised forecasting product which incorporates an industry-standard methodology (a cohort component model) removes this obstacle and enables a focus on assumptions and output, rather than methods.

B.2 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 15) is a cohort component model, which enables the development of population forecasts based on births, deaths and migration inputs and assumptions.

B.3 The Derived Forecast (DF) model (Figure 16) sits alongside the population model, providing a headship rate model for household projections and an economic activity rate model for labour-force projections.

B.4 For further information on POPGROUP, please refer to the Edge Analytics website (http://www.edgeanalytics.co.uk/).

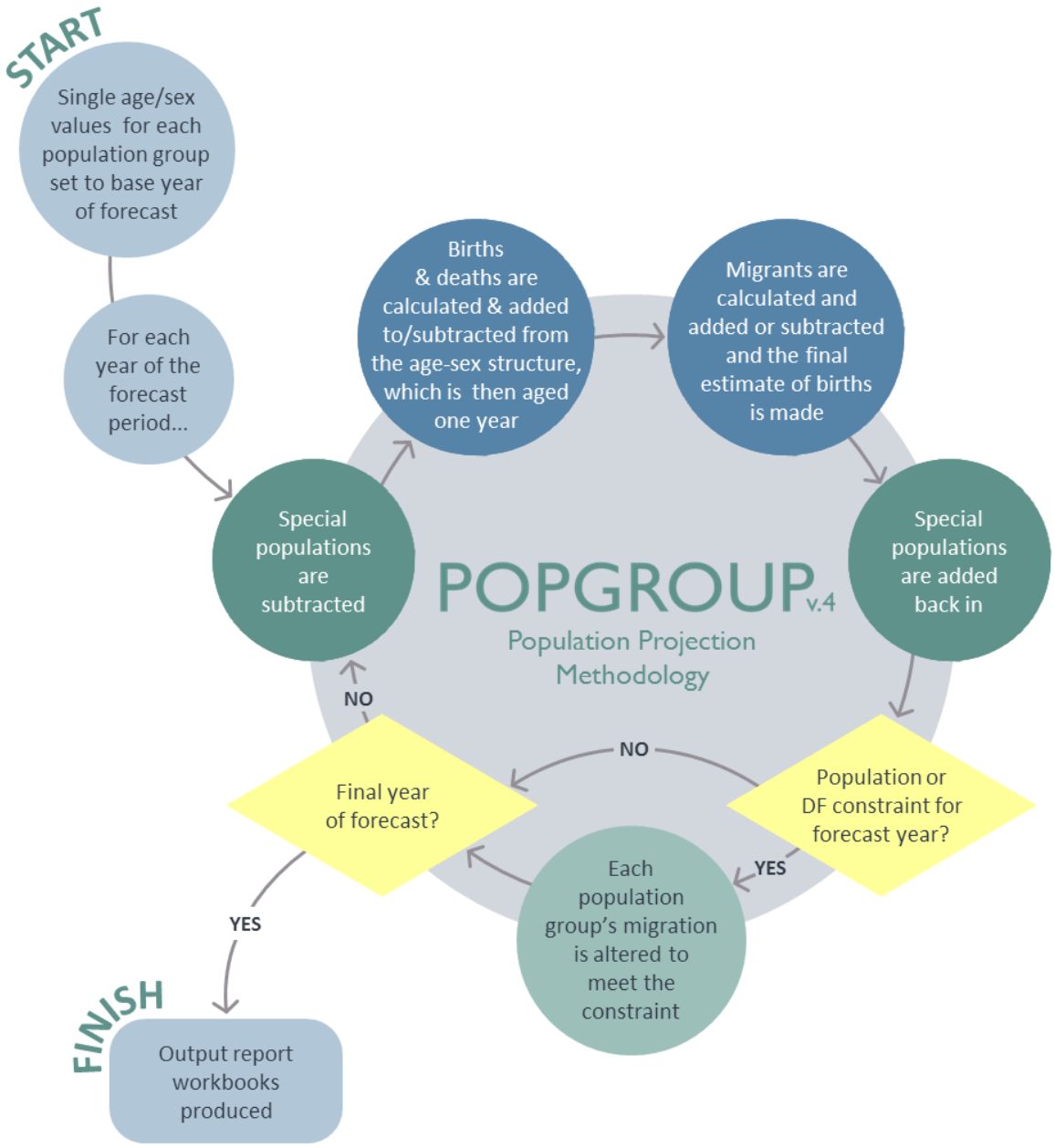
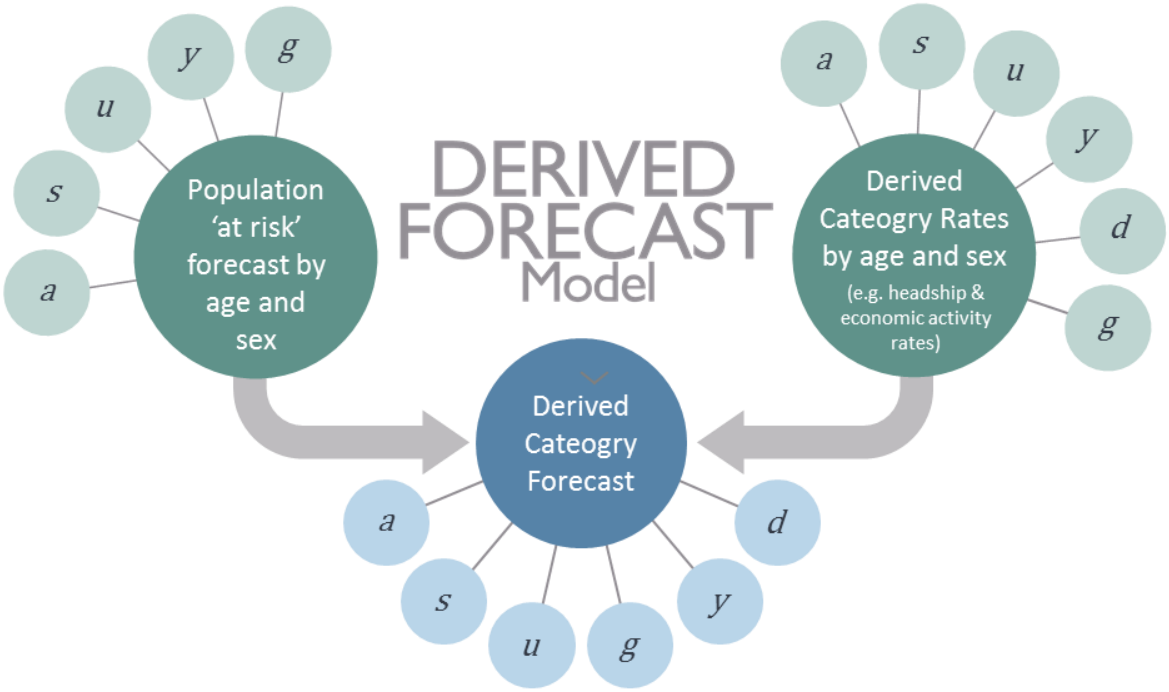


Figure 15: POPGROUP population projection methodology



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

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 16: Derived Forecast (DF) methodology

Appendix C

Data Inputs & Assumptions

Introduction

C.1 Using historical evidence in conjunctions with information from the ONS and Census, a series of assumptions have been derived which drive population and dwelling forecasts for the Peak District National Park.

C.2 The following scenarios have been produced for Peak District National Park:

- SNPP-2014
- Net Nil
- PG Long Term
- PG Short Term
- Zero Population Growth
- Dwelling-led (0 dpa)
- Dwelling-led (48 dpa)
- Dwelling-led (95 dpa)
- Dwelling-led (150 dpa)

Population, Births & Deaths

Population

C.3 In each scenario (excluding **SNPP-2014**) historical population statistics are provided by the mid-year population estimates (2001–2016) for Census Output Areas. These data include the revised MYEs for the 2002–2010 period.

C.4 In the **Zero Population Growth** scenario, future population counts are provided in each year of the forecast period to ensure the total population is maintained at its 2016 MYE.

C.5 In the **SNPP-2014** scenario, historical population is provided up to 2014, with future population counts provided by single-year of age and sex thereafter, to ensure consistency with the 2014-based sub-national population projections for the local authorities that are intersected by the Peak District National Park.

Births & Fertility

C.6 In all scenarios, historical mid-year to mid-year counts of births by sex have been sourced from ONS, aggregated and apportioned to Census Output Area statistics. Under the **PG**, **Zero Population Growth**, **Net Nil** and **Dwelling-led** scenarios, historical births are provided for the 2001/02–2015/16 period.

C.7 In combination with the 'population-at-risk' (i.e. all women between the ages of 15–49), the assumptions listed below provided the basis for the calculation of births in each year of the forecast period:

(a) A local authority-level age-specific fertility rate (ASFR) schedule, which measures the expected fertility rates by age in 2016/17, derived from the ONS 2014-based SNPP for the local authority districts that are intersected by the Peak District National Park.
(b) Fertility differentials for the National Park derived from the historical births data up to 2015/16.
(c) Long-term assumptions on changes in age-specific fertility rates from the ONS 2014-based SNPP for the districts that are intersected by the Peak District National Park.

C.8 Under the **SNPP-2014** scenario historical births are provided up to 2013/14. From 2014/15 future counts of births are calculated to ensure consistency with the official population growth trajectory under the 2014-based SNPP.

Deaths & Mortality

C.9 In each scenario, historical mid-year to mid-year counts of deaths have been sourced from ONS, aggregated and apportioned from Census Output Area statistics. Under the **PG**, **Zero Population Growth**, **Net Nil** and **Dwelling-led** scenarios, historical deaths are provided for the 2001/02–2015/16 period.

C.10 In combination with 'population-at-risk' (i.e. the population of the National Park), the assumptions listed below provide the basis for the calculation of deaths in each year of the forecast period:

(d) A local authority-level age-specific mortality rate (ASMR) schedule, which measures the expected mortality rates by age and sex in 2016/17, derived from the ONS 2014-based population projection for each of the local authority districts intersected by the National Park.

(e) A mortality differential for the National Park, derived from the historical deaths data up to 2015/16.

(f) Long-term assumptions on changes in age-specific mortality rates from the ONS 2014-based population projection for the districts intersected by the National Park.

C.11 In the **SNPP-2014** scenario, historical deaths are provided up to 2013/14. From 2014/15, future counts of deaths are calculated to ensure consistency with the official 2014-based SNPP growth trajectory.

Migration

C.12 Other than Census statistics, there are no historical migration statistics available for the National Park. Therefore, migration is calculated as the 'residual' of annual population change, after taking account of births and deaths.

C.13 Using the Census statistics, historical estimates of migration are derived for the National Park by comparing the migration implied by the schedule of rates for all areas (i.e. local authority level) with the pattern of migration observed for the National Park in the Census statistics.

C.14 Once historical estimates of migration have been derived, a weighted average of the last fifteen years (2001/02–2015/16) of estimated migrant counts is used directly as input to scenario forecasts for all years after the latest 2016 mid-year population estimate. Under the **PG Short Term** scenario, historical estimates of migration have been derived from the last six years (2010/11–2015/16) of estimated migration counts.

C.15 In the **Net Nil** scenario, net migration is set at zero for each year in the forecast period (i.e. in- and out-migration still occur but the net balance is zero).

C.16 The **Dwelling-led** scenarios calculate their own migration assumptions to ensure an appropriate balance between the population and the targeted increase in the number of new houses in each year of the forecast (2016/17–2038/39) period. A higher level of migration will occur if there is insufficient population to meet the forecast dwelling target. The profile of migrants if defined by an age-specific ASMigR schedule derived using a weighted average of the last fifteen years of estimated migrant counts.

Households & Dwellings

C.17 The 2011 Census defines a household 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."*

C.18 In POPGROUP, a dwelling is defined as a unit of accommodation which can either be occupied by one household or vacant.

C.19 Apart from in the **Dwelling-led** scenarios, the household and dwelling implications of the population growth trajectory have been evaluated through the application of headship rate statistics, communal population statistics and a dwelling vacancy rate. In the **Dwelling-led** scenarios, these assumptions are used to determine the level of population growth required by the defined dwelling growth trajectory.

C.20 Household and dwelling assumptions have been sourced from the 2001 and 2011 Census and the 2014-based household projection model from the Ministry of Housing, Communities and Local Government (MHCLG).

C.21 The latest MHCLG household projections provide headship rates statistics and communal population statistics, but only at local authority level. National Park household assumptions have therefore been derived using MHCLG local authority level statistics in combination with statistics from the 2001 and 2011 Censuses.

Headship Rates

4.9 Household headship rates (or household representative rates) define the probability of anyone in a particular demographic group being classified as a household representative, given the age-sex profile of the population in that year.

C.22 The household headship rates for the Peak District National Park have been derived from the 2014-based household projections for local authorities intersected by the National Park. National Park statistics on the total number of households are available from the Census. These have been used to scale the MHCLG local authority-level headship rates to National Park totals, ensuring consistency with the total number of households for each of the local authorities in 2001 and 2011.

C.23 Although National Park headship rates are derived, the *trend* in headship rates mirrors that evident in the local authority-level statistics. The trend is applied by household type and age for all years of the projection period.

Communal Population

C.24 Household projections in POPGROUP exclude the population 'not-in-households' (i.e. the communal/institutional population). Examples of communal establishments include prisons, residential care homes and student halls of residence.

C.25 The 2011 Census provides information on the communal establishment population by age and sex for Census Output Areas. By aggregating and apportioning these data for the National Park, the MHCLG local authority-level communal establishment assumptions for 2014 have been updated.

C.26 For ages 0–74, the number of people in each age group 'not-in-households' is kept fixed throughout the forecast period. For ages 75–85+, the proportion of the population 'not-in-households' is recorded. Therefore, the population not-in-households for ages 75–85+ varies across the forecast period depending on the size of the population.

Vacancy Rate

C.27 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).

C.28 A vacancy rate of 10.3% for the Peak District National Park has been applied, fixed throughout the forecast period. Using the vacancy rate, the 'dwelling requirement' of each household growth trajectory has been evaluated.