

CARDIFF DEMOGRAPHIC EVIDENCE ADDENDUM

Population Profile & Growth Scenarios

September 2026

EDGE
ANALYTICS

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.

The authors of this report do not accept liability for any costs or consequential loss involved following the use of the data and analysis referred to here; this is entirely the responsibility of the users of the information presented in this report.

CONTENTS

Acknowledgements	i
Contents	ii
1 Introduction	3
Context.....	3
This Report	4
2 Membership Rates	5
Household Projection Methodology	5
2022-based Membership Rates	6
2018-based Rate Adjustments	8
Indicators of Suppression	10
Membership Rate Adjustments	12
3 MYE Update	14
MYEs 2001–2025	14
4 Demographic Scenarios	17
Scenario Definition.....	17
Scenario Outcomes	18
5 Commentary & Conclusions	22
Data Updates	22
Membership Rate Adjustments	22
Population	24
Households & Dwellings	25
Labour Force & Employment.....	26

I INTRODUCTION

Context

- 1.1 Cardiff Council submitted its Replacement Local Development Plan (RLDP) in December 2025. The RLDP makes provision for **1,600 dwellings per year** over the 2021–2036 plan period (26,400 in total with a 10% flexibility allowance). This target is based on modelling undertaken by Edge Analytics in 2020 and 2021.¹
- 1.2 Following the publication of the Welsh Government (WG) subnational population² and household³ projections in November 2025, Cardiff Council commissioned Edge Analytics to produce a Demographic Update report. Published in May 2026, this update provided an overview of the **2022-based projections** (and variants) and the latest demographic evidence for Cardiff.⁴ This included the then-latest mid-year population estimates (MYE) from the Office for National Statistics (ONS), as well as key 2021 Census headlines.
- 1.3 Using Edge Analytics' VICUS forecasting technology, a range of **demographic growth scenarios** were developed for comparison with the official WG 2022-based projections (*Principal* projection and five variants). In each of the Edge Analytics demographic scenarios, household growth was modelled using assumptions derived from the 2022-based WG official household projections for Cardiff. This included household '**membership rates**', which define the proportion of the household population within each household category (by age group and sex). Dwelling (housing) growth outcomes were derived from the modelled household growth through the application of dwelling 'vacancy' rate.
- 1.4 From this analysis, the report concluded that the **RLDP housing target remained broadly appropriate** and that caution should be exercised when relying on demographic scenarios that were based on short-term migration assumptions, owing to the unprecedented levels of **net international migration** seen between 2021 and 2024. Edge Analytics highlighted that the 2022-based WG *Principal*, *High Population*, and *Low Population* scenarios carry forward these high levels of net international migration and that the latest evidence suggests that international migration has begun to return to pre-Census/COVID levels.
- 1.5 The Edge Analytics report was submitted by the Council prior to the Local Plan Hearing Session 1 (Housing Numbers), which took place in June 2026. A range of representations were made in response to the Inspector's pre-hearing questions, including comments on the Edge Analytics report.
- 1.6 Following the housing Hearing sessions, the Inspector requested that further analysis be undertaken to model the potential impact of improved rates of household formation on the outcomes of the Edge Analytics scenarios. This request follows representations submitted by Lichfields (on behalf of Barratt Redrow Homes), which state that the potential for higher or improved rates of household formation amongst young adult age groups should be considered, "[...to address government](#)

¹ Edge Analytics (October 2021) [Demographic Study](#) (Examination document ELDP-35)

² WG (June 2026) [Local authority population projections: 2022-based](#)

³ WG (June 2026) [Local authority household projections: 2022-based](#)

⁴ Edge Analytics (May 2026) [Demographic Evidence Update](#) (Post-submission Examination document CD13)

concerns around overcrowding/concealed households and difficulties of access to the housing market”.

- 1.7 Edge Analytics has therefore used its modelling expertise and demographic forecasting models to evaluate the impact of adjusted 2022-based membership rates on the scenarios produced for Cardiff in May 2026.
- 1.8 Other representations to the RLDP have questioned the **international migration** assumptions used by Edge Analytics and are critical of the inclusion of the ‘unattributable population change’ (UPC) component within the historical international migration estimates (UPC is population change that ONS does not link to any one driver of population growth). In Cardiff, the inclusion of UPC has the impact of *reducing* the historical net international migration estimates, thereby reducing the level of net international migration assumed in the Edge Analytics demographic scenarios.
- 1.9 Although the Inspector has not specifically requested additional modelling be undertaken in relation to international migration, ONS has recently released its 2025 MYE for local authorities in England and Wales, as well as revised 2022, 2023, and 2024 MYE.⁵ These revisions have been made by ONS in light of updated long-term international migration estimates.
- 1.10 Given the focus on international migration within the representations to the RLDP, an overview of the new MYE data and its implications for the scenario modelling is provided in this addendum.
- 1.11 Note that since the May 2026 report was produced, the WG has revised its 2022-based *High Population* and *Low Population* variant scenarios due to “a small error in the national population variant projections that were used”.⁶ Within the demographic forecasting presented in this addendum, these scenarios have therefore been updated to ensure consistency with the official projections, replacing those presented in the May 2026 report.

This Report

- 1.12 It is intended that this addendum report be read in conjunction with the May 2026 Edge Analytics report.
- 1.13 **Section 2** provides an analysis of the 2022-based household membership rates for Cardiff and commentary on the methodology used to adjust these to model higher levels of household growth.
- 1.14 **Section 3** summarises the latest MYE evidence for Cardiff and compares it to the previous evidence.
- 1.15 **Section 4** presents the Cardiff demographic growth scenario outcomes with the adjusted membership rates applied. The implications of the latest MYE evidence for the scenario modelling are also considered through the addition of two update trend scenarios.
- 1.16 A series of conclusions and recommendations are provided in **Section 5**.
- 1.17 The **Appendix** outlines the VICUS forecasting methodology and assumptions.

⁵ ONS (July 2026) [Population estimates for England and Wales: mid-2025](#)

⁶ WG (June 2026) [Local authority population projections: 2022-based](#)

2 MEMBERSHIP RATES

Household Projection Methodology

- 2.1 Released in November 2025, the 2022-based WG local authority household projections provide statistics on the future potential number and type of households that might form between 2022 and 2047, superseding the 2018-based projections. The projections are underpinned by the official population projections and household assumptions derived from successive Censuses.
- 2.2 As stated by WG, the household projections *“are not forecasts, and do not attempt to predict the impact that future government policies, changing economic circumstances or other factors, such as the number of homes built, may have on the number of households.”* Instead, the projections estimate the households that could form if recent population growth trends were to continue, and households were to continue to form as they did between the Censuses.
- 2.3 For the 2022-based round of population and household projections, WG has revised its forecasting methodology, using data from the past three Censuses to generate the household ‘membership rates’, whereas the previous 2018-based projections used only the 2001 and 2011 Censuses.⁷
- 2.4 As summarised in the Edge Analytics May 2026 Report, household growth in Cardiff is *higher* under the 2022-based projections than the 2018-based projections. This is a result of the changes to the methodology, as well as changing demographic trends; **the 2022-based population projections estimate a higher level of population growth over the 25-year projection period compared to the population projections that underpinned the 2018 projections.**
- 2.5 As of September 2026, the technical methodology documentation for the both the population and household projections is yet to be published. From the information that is provided by Welsh Government⁸, the 2022-based household projection methodology can be summarised as follows:
- **Household membership rates** are calculated from historical Census data for each year from mid-2022 to mid-2047. Welsh Government states that a ‘modified two-point exponential model’ was used to produce two sets of membership rates from the 2001 and 2011, and 2011 and 2021 Censuses. A weighted combination of these two sets of rates was then used to generate the final set of membership rates (75% weighting for 2011–2021 and 25% for 2001–2011).
 - The **private household population** is estimated by age and sex by subtracting the communal establishment population (e.g. care homes, prisons) from the usually resident population.
 - The membership rates are applied to the private household population to estimate the size and structure of the household population. To this, household size assumptions are applied and the results aggregated by age group, sex and household type to give the **projected total number of households.**

⁷ WG 2025 [Chief Statistician’s update: new local authority population and household projections](#)

⁸ WG (June 2026) [Local authority household projections: 2022-based](#)

- 2.6 There is a household projection for each of the 2022-based population projection variants, although there is only **one set of membership rates** for each local authority in Wales. The different household growth outcomes associated with the 2022-based household projections variants are therefore a result of the different levels of population growth in each corresponding scenario (rather than differences in the underpinning membership rates, communal population, and average household size assumptions).
- 2.7 Note that the membership rates have been calculated by Edge Analytics as these are not made available by Welsh Government. A rigorous validation process has been carried out to ensure alignment with the official household projections.

2022-based Membership Rates

- 2.8 Membership rates are defined by sex and 5-year age groups (ages 0 to 85+). Within each age group, the proportion of the private household population that falls into each of the household type categories is defined in each year from 2022 to 2047. For each age group, for males and females separately, the proportions sum to 100%. The table below provides an example of this for the 25–29 age group for Cardiff.

Table 1: Membership rates for ages 25 to 29 (2022 to 2047), Cardiff

Household Type	Males aged 25–29			Females aged 25–29		
	2022	2047	Change	2022	2047	Change
1 person	14.6%	10.9%	-3.7%	11.1%	10.6%	-0.4%
2 person (No children)	39.3%	46.4%	7.1%	38.6%	43.5%	4.8%
2 person (1 adult, 1 child)	0.2%	0.1%	-0.1%	4.7%	3.6%	-1.1%
3 person (No children)	15.9%	17.4%	1.5%	10.6%	12.2%	1.7%
3 person (2 adults, 1 child)	4.2%	1.6%	-2.5%	6.7%	3.5%	-3.2%
3 person (1 adult, 2 children)	0.0%	0.0%	0.0%	4.0%	4.4%	0.5%
4 person (No children)	10.9%	10.9%	0.0%	6.7%	8.2%	1.5%
4 person (2+ adults, 1+ children)	3.4%	1.3%	-2.1%	5.7%	2.7%	-2.9%
4 person (1 adult, 3 children)	0.0%	0.0%	0.0%	1.1%	0.7%	-0.5%
5+ person (No children)	6.1%	6.4%	0.3%	3.9%	5.4%	1.5%
5+ person (2+ adults, 1+ children)	5.4%	4.9%	-0.5%	6.6%	5.1%	-1.5%
5+ person (1 adult, 4+ children)	0.0%	0.0%	0.0%	0.3%	0.1%	-0.25%
TOTAL	100%	100%	-	100%	100%	-

Source: WG. Note that figures may not sum to 100% due to rounding.

- 2.9 The rates can be aggregated across the household sizes for ease of viewing by age group (i.e. 1-person to 5+ person). The 2022-based rates for Cardiff are summarised below in Figure 1 for males and Figure 2 for females. Note that the 2001–2022 history has been included for reference.
- 2.10 Age is closely linked to the types of households that people live in. Children predominantly live in 3-, 4- or 5-person households (i.e. with parents and siblings). The reduction in the proportion of children in 5-person households over time reflects the trend for continued reducing fertility rates and smaller household sizes (i.e. fewer children).
- 2.11 The oldest age groups predominantly live in 1 and 2-person households; this is projected to continue,

albeit with some changes to the balance between 1- and 2-person households. With Cardiff being a university city, the proportions of the 19–24 age groups living in 5+ person households reflects the higher likelihood of house sharing at these ages.

- 2.12 In the young adult age groups, the largest proportion of households are generally 2-person; these proportions are projected to *increase* over time. One-person households in ages 19–39 are generally projected to *decrease*, with the proportion of the largest households decreasing slightly over time.



Figure 1: Cardiff 2022-based membership rates, males
Source: WG, Edge Analytics. Note that the axes ranges differ for ages 60–85+.

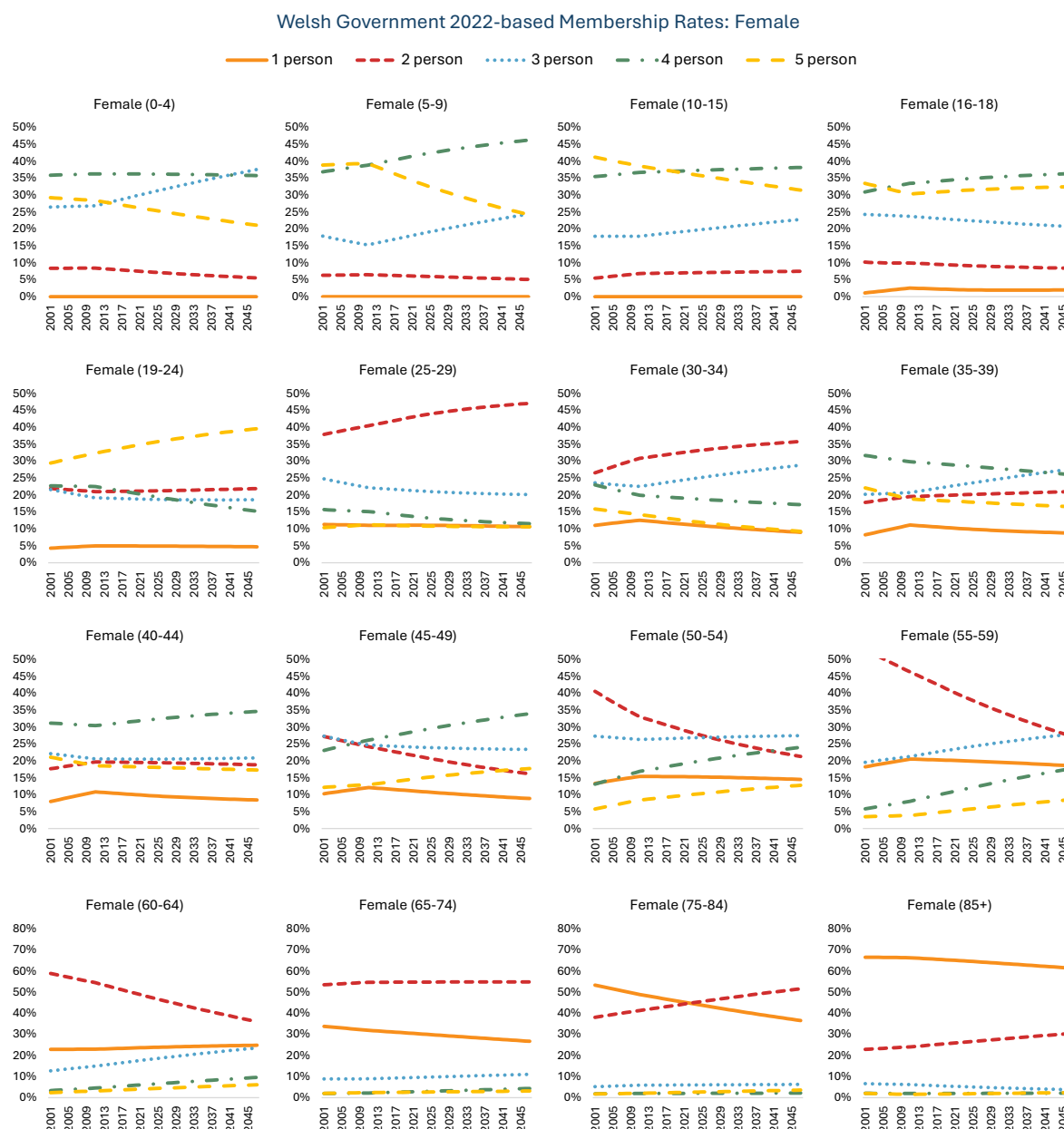


Figure 2: Cardiff 2022-based membership rates, females
 Source: WG, Edge Analytics. Note that the axes ranges differ for ages 60–85+.

2018-based Rate Adjustments

- 2.13 Prior to the release of the 2022-based household projections, in studies elsewhere in Wales (e.g. Monmouthshire), Edge Analytics applied adjustments to the 2018-based membership rates to model an increase in household growth. In several areas, the 2018-based rates projected a reduction in the proportions of smaller households in the young adult age groups, and an increase in the proportions of larger households between 2001 and 2033.
- 2.14 This was interpreted as a potential indicator of ‘suppression’, e.g. young adults not able to move out of house shares/family homes into their own homes. In these instances, an adjusted set of membership rates were generated, ‘returning’ the 2018-based rates in the young adult age groups to their respective 2001 values.

2.15 These adjustments resulted in growth in the proportion of smaller households and a reduction in the proportion of larger households in these age groups. When applied in demographic scenario modelling, the adjusted rates increased the number of households formed compared to the original unadjusted 2018-based rates, through an increase in the number of smaller households.

2.16 The 2022-based rates for Cardiff are compared to the previous 2018-based rates for the young adult age groups below (Figure 3). Note that the 2018-based assumptions were applied in the 2021 Edge Analytics study (and informed the RLDP scenario development). Although there are reductions in the proportions of 1-person and 3-person households in the 2022-based rates (particularly for ages 25–39), the changes are not as pronounced as in some local authority areas, and the proportion of 2-person households increases for ages 25–39.

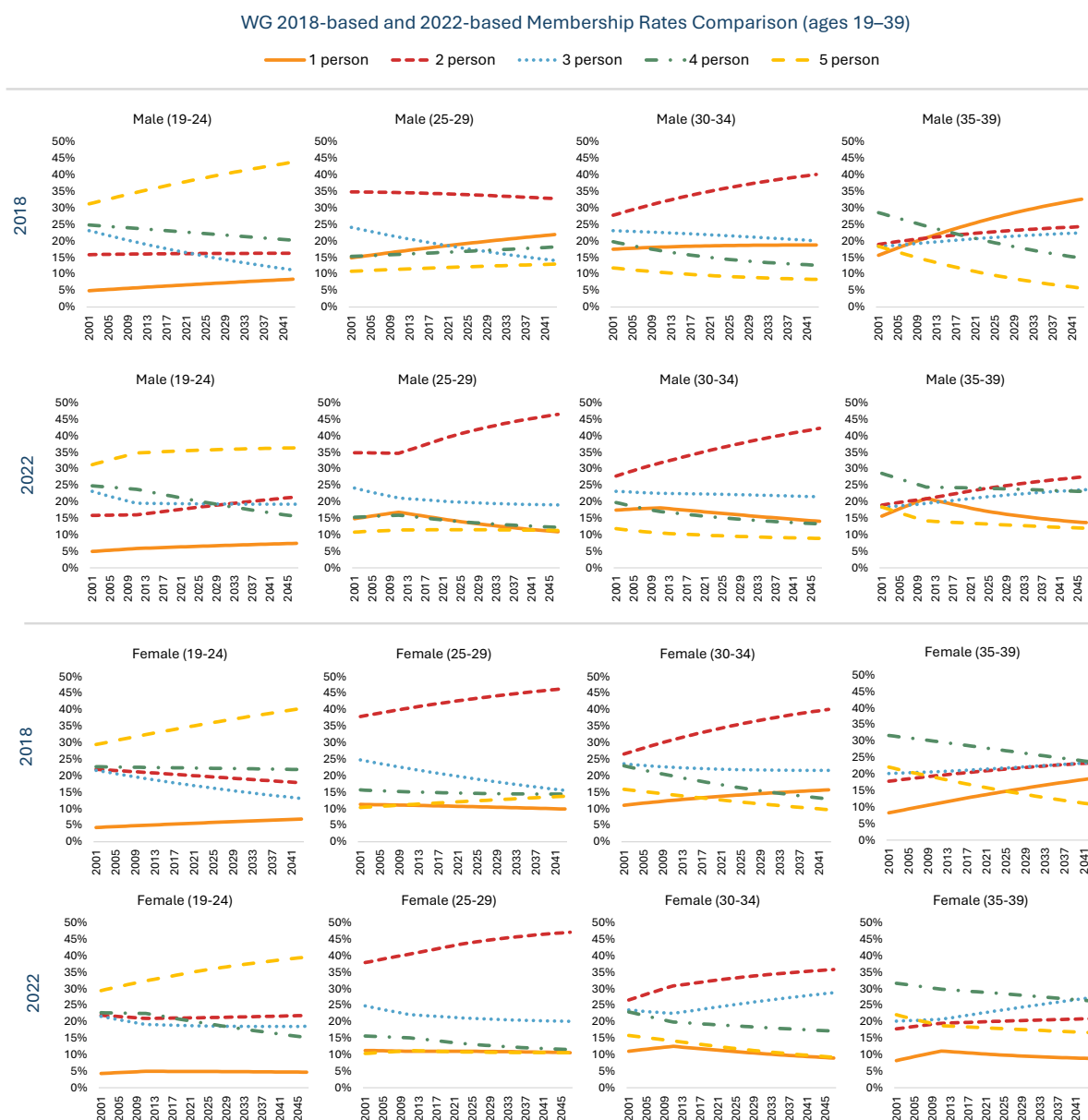


Figure 3: Cardiff 2022-based membership rates comparison, 2018-based and 2022-based
Source: WG, Edge Analytics.

Indicators of Suppression

- 2.17 The differences between the 2018-based and 2022-based WG membership rates and the projected changes over time reflect the Census data and assumptions used by WG to inform their projections. The trend-based nature of the household projections means that if household formation has historically been ‘supressed’ or constrained, that this will be carried forwards in the projections.^{9,10}
- 2.18 A metric often used as an indicator of suppressed household formation is an increase in the **average household size**, or average household sizes that remain relatively static.¹¹ In Cardiff, the average household size decreased between 2001 and 2011, in line with national trends, but remained static at 2.35 between 2011 and 2021 (Figure 4).

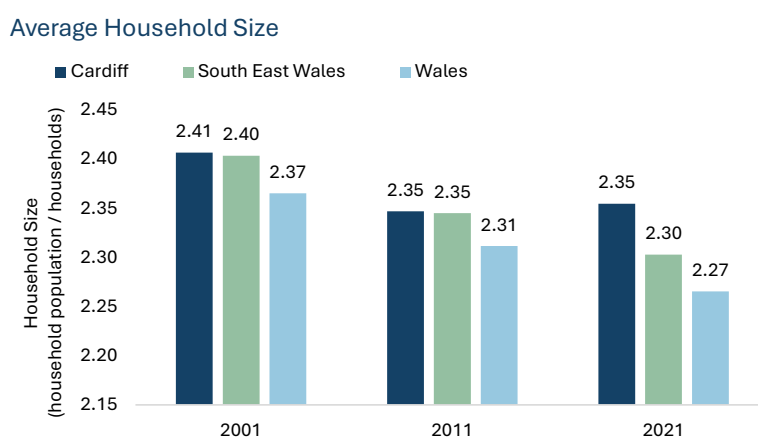


Figure 4: Census average household size

Source: ONS

- 2.19 This trend is carried forwards in the 2022-based projections. As highlighted in Table 7 of the May 2026 Edge Analytics report, the average household size in the 2022 projections is *higher* than under the previous 2018-based projections and declines only slightly over the 25-year plan period. Whilst these characteristics may be indicative of suppressed household formation, they may also reflect the relatively youthful nature of Cardiff’s population.
- 2.20 Another indicator of suppressed household formation is an increase in **overcrowding and concealment**.¹² Between 2001 and 2011, the proportion of concealed families increased from 1.3% (1,057 families) to 1.9% (1,681 families). Although the number of concealed families increased to 1,757 between 2011 and 2021, the proportion stayed the same, at 1.9% (Figure 5). At UK level, the proportion of young adults living with parents has increased; in 2025, 7.2 million adults aged 15 to 34 lived with their parents compared to 6.6 million in 2015. This represents an increase from 39.7% of young adults to 42.4% and reflects “*a trend of adults reaching milestones later in life*”.¹³
- 2.21 Overcrowding (where a household has fewer bedrooms than required) in Cardiff has decreased since

⁹ University of Liverpool (2018) [Evaluating the validity of population and household projections](#)

¹⁰ Welsh Government (2025) [Estimates of additional housing need \(2025-based\): quality report](#)

¹¹ Lichfields (2022) [Making sense\(sus\) of it](#), Savills (2022) [Census 2021: Households and Projections](#)

¹² A concealed family is a secondary family unit living within a multi-family household whose head does not qualify as the primary household reference person (ONS).

¹³ ONS (2026) [Families and households in the UK: 2025](#)

2011, in line with national trends. Rates of overcrowding are however higher in Cardiff than the national average. When viewed by age, rates of overcrowding are higher in the younger adult age groups than in the older ages (Table 2).

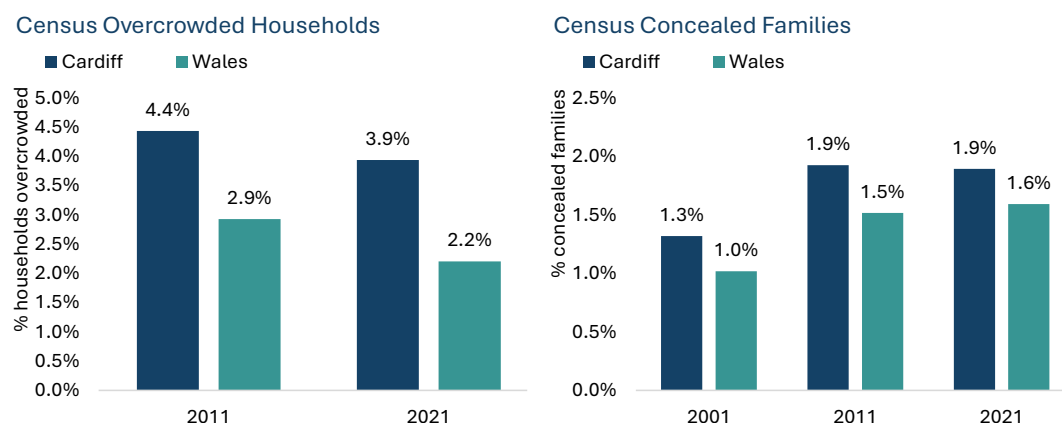


Figure 5: Census overcrowded households and concealed families

Source: ONS, 2011 Census Tables LC4108EW, 2021 Census Custom Table Builder. Note that it is not possible to produce comparable overcrowding statistics for the 2001 Census due to the way in which occupancy was measured.

Table 2: 2021 Census overcrowding by age, Cardiff

Age Group	% of Household Population Overcrowded
15-24	12.8%
25-34	7.9%
35-44	7.2%
45-54	6.0%
55-64	3.4%
65+	1.4%

Source: ONS Census 2021 Custom Table Builder

2.22 The static average household size, the increase in the number of concealed families, and higher rates of overcrowding in young adult households, have occurred over a period of time that has seen worsening housing affordability and increased financial pressures, particularly on young adult households. In Cardiff, house price growth has outpaced the growth in earnings, leading to an increase in the affordability ratios (i.e. worsening affordability) (Figure 6).

2.23 A decline in the proportion of owner-occupied households has also been seen over time. At the 2001 Census, around 69% of households in Cardiff were owner-occupied. By 2011, this had decreased to just under 60%, and by 2021, to 58%, mirroring the pattern seen at a national level.¹⁴ At the same time, the proportion of households in the private rented sector has increased from 13% to 25% (whereas the social rented sector has remained at 17% of households since 2001). Although this data is not available for Wales, the age at which people buy their first home has increased to 34 in England, up from under 30 twenty years ago (English Housing Survey).

¹⁴ ONS 2001, 2011, 2021 Census

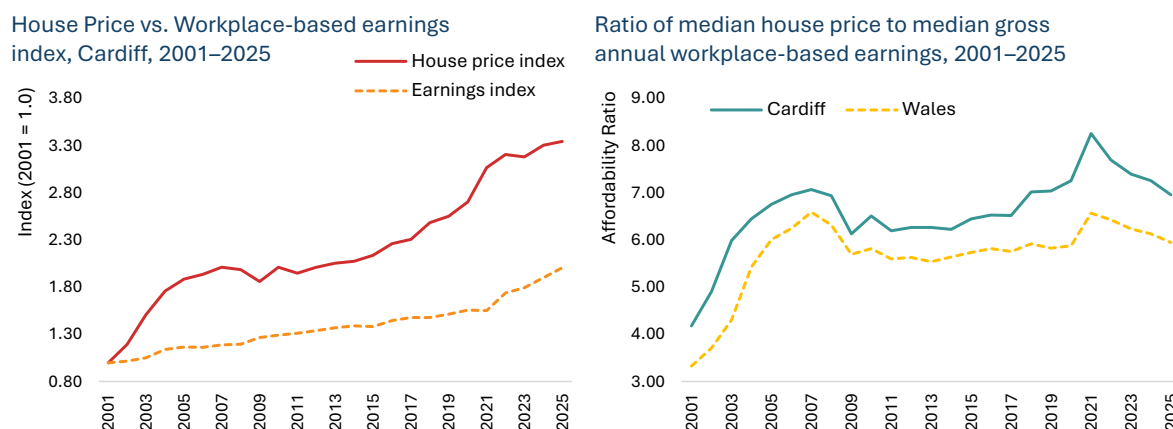


Figure 6: Cardiff housing affordability, 2001–2025

Source: ONS

Membership Rate Adjustments

- 2.24 The range of data presented above highlights an increase in concealment since 2001, higher rates of overcrowding in young adult age groups compared to the older age groups, static average household sizes, and worsening housing affordability.
- 2.25 Acknowledging this, and the changes over time in the proportions of smaller (1-3 person) households in the young adult age groups, a set of adjustments have been applied to the 2022-based WG projections. The same approach that Edge Analytics has applied to the 2018-based membership rates (returning to the 2001 values) is not appropriate here, as 2001 does not represent the high point in the proportion of smaller households in the 2022-based rates.
- 2.26 A number of alternatives were tested, each modelling an increase in the proportion of smaller households in the young adult age groups. Note that the need for the membership rates within each age group to sum to 100% means that increasing the proportions in one (or more) household size categories inevitably results in decline in the other categories within that age group.
- 2.27 In each test case, the end-year (2047) rate to 'return' to from the 2022 base year was derived from the maximum rate in that household category and age group over the full 2001 to 2047 time period. Adjustments were tested in different household sizes (e.g. only 1- and 2-person) and different age groups. All of the adjustments tested result in relatively modest increases in the levels of household growth compared to applying the unadjusted 2022-based rates.
- 2.28 The final set of **adjusted 2022-based membership rates** 'return' the proportions of 1-, 2-, and 3-person households to their respective **highest points** seen between 2001 and 2047 (Figure 7). For 4- and 5+-person households, the residual proportion of growth in the end year (2047) has been distributed based on the original distribution in 2047. The rationale for including 3-person households is the observed decline in this household size (see Figure 3).
- 2.29 Adjustments have been applied in the **19–39 age groups**. The rates in the other age groups remain unadjusted. Note that this extends the adjustments into one additional age group compared to the 2018-based adjustments applied elsewhere (which applied in the 19–34 age groups). The decision to

include the 34–39 age acknowledges that the age at which people typically buy their first home has increased as have the ages at which men and women have their first child.¹⁵

- 2.30 In the scenario modelling presented in the Section 4, these adjusted 2022-based membership rates have been applied to each of the Cardiff scenarios, for comparison with the 2022-based unadjusted outcomes.

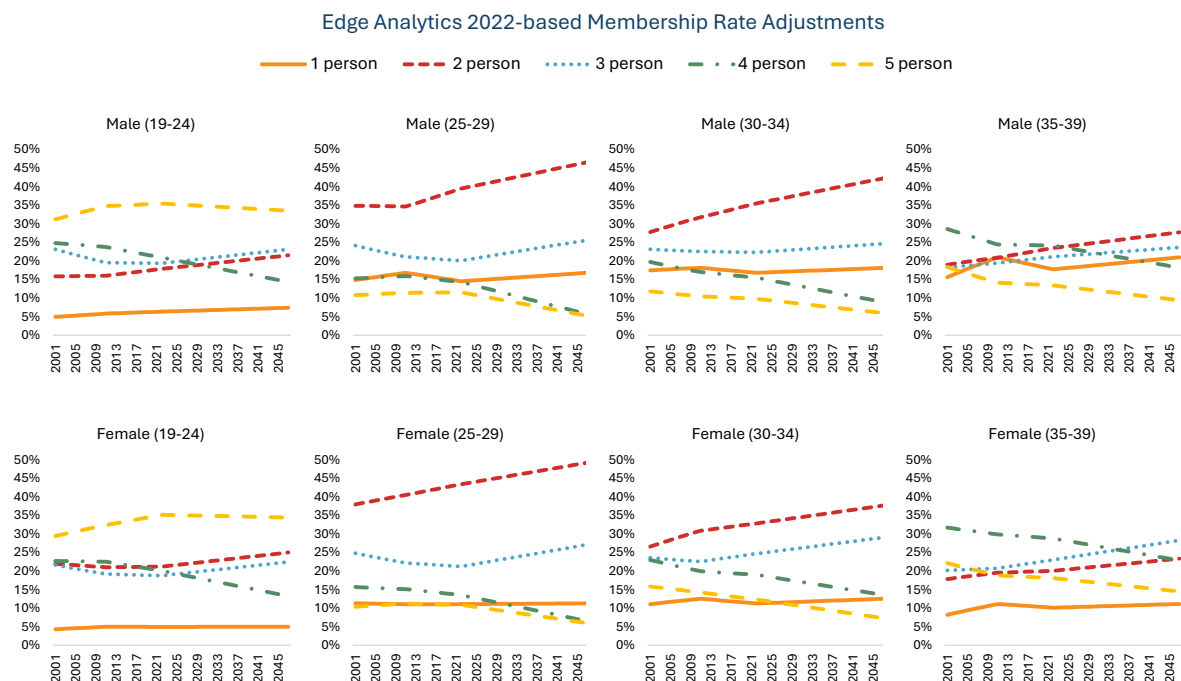


Figure 7: Adjustments to the 2022-based membership rates
Source: WG, Edge Analytics

¹⁵ ONS (2026) [Fertility for those born in different years, England and Wales: 2024](#)

3 MYE UPDATE

MYEs 2001–2025

- 3.1 In July 2026, ONS released its 2025 MYE and associated components of change, providing an additional year of population data compared to the evidence used in the May 2026 Edge Analytics report. At the same time, ONS also revised its 2022, 2023 and 2024 MYE, to “*incorporate improved international migration data*”.¹⁶ ONS notes that the revisions to the MYE fall within the confidence intervals for the previous estimates. In Cardiff, the 2022–2024 MYE have been revised *downwards*.
- 3.2 The 2025 MYE population for Cardiff is **381,516**, representing a slight *decrease* from the 2024 MYE of 382,208. This aligns with this national picture; between 2024 and 2025, the population of Wales reduced by nearly 2,800 people. This is the first time the population of Wales has decreased since 2014/15. The decline has been driven by an excess of deaths over births (i.e. negative natural change) and decreasing net international migration.¹⁷
- 3.3 The 2001–2025 MYE and components of change profile for Cardiff is presented in Figure 8.

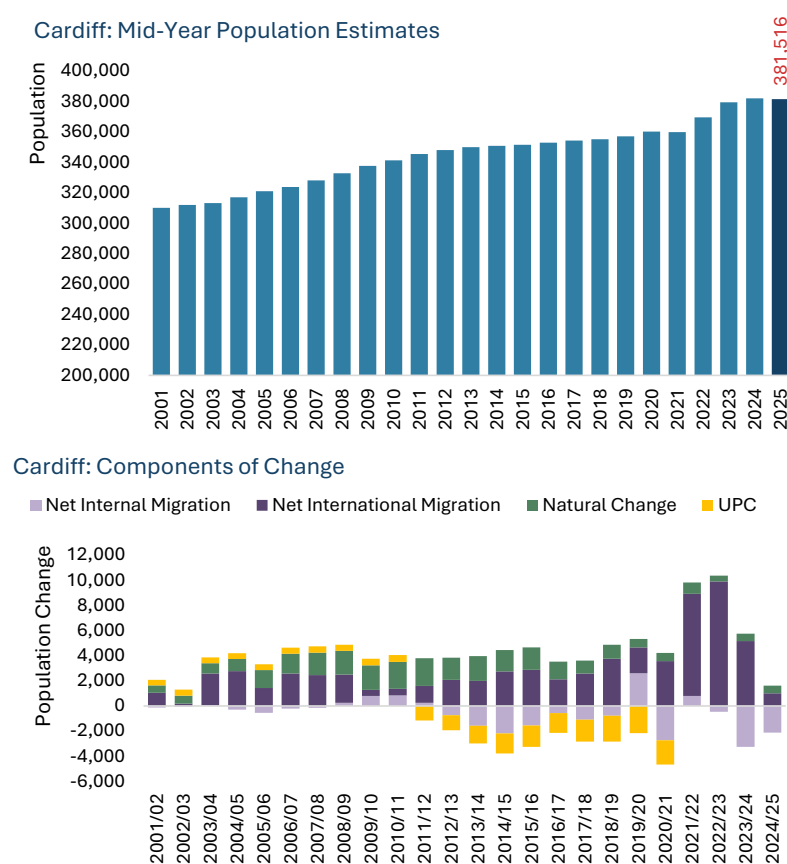


Figure 8: Cardiff MYE and Components of Change 2001–2025

Source: ONS

¹⁶ ONS (July 2026) [Population estimates for England and Wales: mid-2025](#)

¹⁷ WG (2026) [Statistics Wales demography newsletter: September 2026](#)

- 3.4 The population decline estimated between 2024 and 2025 in Cardiff has been driven by **negative net internal migration** (i.e. a net loss of people to elsewhere in the UK). At the same time, **net international migration has reduced substantially** from the unprecedented levels seen between 2001 and 2024, a trend mirrored at national level. As in previous years, natural change contributed to population growth in Cardiff with an excess of births over deaths.
- 3.5 The revised and previous MYE are compared in Table 3. Also included is the population that was projected by WG in its 2022-based *Principal* projection for each year. **The 2025 MYE is over 6,640 people lower than the population projected by WG in 2025.**

Table 3: ONS MYE adjustments, Cardiff

Year	Previous MYE	Revised MYE	Difference	% Change	Projected Population Under WG-2022- <i>Principal</i>
2022	369,851	369,640	-211	-0.1%	369,851
2023	379,739	379,539	-200	-0.1%	379,042
2024	383,919	382,028	-1,891	-0.5%	385,098
2025	381,516	-	-	-	388,165

Source: ONS, WG.

- 3.6 In July 2026, the Chief statistician for Wales highlighted the population reduction seen in Wales in the 2025 MYE and drew attention to the differences between the local authority projections, the National projections and the MYE.¹⁸ In light of these differences, WG has announced plans to *“start updating [its] projections from this autumn. This will include exploring whether [WG] needs to make any changes to [the] methods to ensure coherence with the latest estimates and projections from the ONS”*.

International Migration Adjustments

- 3.7 The revisions to the 2022–2024 MYE in Cardiff have been **solely driven by adjustments to the international migration estimates** from 2021/22 to 2023/2024; natural change and net internal migration remain unadjusted in the latest data release. The result of the adjustments is a decrease in the annual average net international migration over the 2021/22–2023/24 period compared to the previous MYE, from 8,354 per year, to 7,723 per year. In each year of the revisions, the international outflow from Cardiff has been *increased*, as have the inflows in 2021/22 and 2022/23 (Table 4).
- 3.8 In Cardiff, the 2024/25 net international migration estimate is significantly reduced from the previous years, down to 1,000 from the peak of 9,895 in 2022/23. The full 2001/02–2024/25 international migration profile is presented in Figure 9. The drop in net international migration in 2024/25 reflects the UK estimates, which is linked to a reduction in non-EU+ nationals arriving for work-related reasons.
- 3.9 Within the May 2026 Edge Analytics study, it was recommended that **caution should be exercised in relation to the highest growth scenario outcomes** due to their dependence upon the unprecedented levels of international migration captured between 2021/22 and 2023/24. This

¹⁸ WG (2026) [Chief statistician's update: latest population estimates and our plans to update projections](#)

applied to the Edge Analytics *Trend-5yr* scenario, as well as the *WG-2022 Principal, High Population* and *Low Population* scenarios.

- 3.10 This recommendation is further reinforced by the revised MYE and the significant drop in net international migration in 2024/25, as well as the differences between the MYE and the population projected by WG in its Principal projection.**

Table 4: ONS MYE international migration revisions, Cardiff

	2021/22	2022/23	2023/24	2024/25	average 2021/22– 2023/24	average 2021/22– 2024/25
Previous International Migration Estimates						
In	11,922	13,785	12,201	-	12,636	-
Out	3,590	3,901	5,356	-	4,282	-
Net	8,332	9,884	6,845	-	8,354	-
Revised International Migration Estimates						
In	12,045	14,627	11,764	7,587	12,812	11,506
Out	3,924	4,732	6,610	6,587	5,089	5,463
Net	8,121	9,895	5,154	1,000	7,723	6,043
Difference						
In	123	842	-437			
Out	334	831	1,254			
Net	-211	11	-1,691			

Source: ONS

Cardiff: International Migration

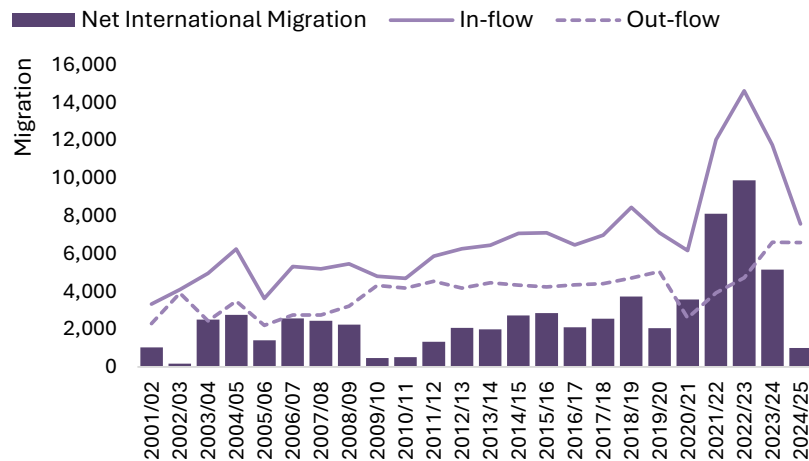


Figure 9: Cardiff international migration 2001–2025

Source: ONS

4 DEMOGRAPHIC SCENARIOS

Scenario Definition

- 4.1 In this Section, the impact of the **adjusted 2022-based membership rates** on the household growth outcomes (and by extension the dwelling growth figures) of the Cardiff demographic scenarios has been evaluated.
- 4.2 The scenario definitions are provided in Table 5. Scenarios that have been added in this Addendum are highlighted in bold. This includes the revised 2022-based *High Population* and *Low Population* scenarios, which have been corrected by WG after an error was found. Two updated *Trend* scenarios have also been included, using the revised 2021–2024 MYE and the latest 2025 MYE.

Table 5: Scenario Definition

Scenario	Description
WG-2022-Principal	Replicates the WG 2022-based <i>Principal</i> projection
WG-2022-HighPop	Replicates the WG 2022-based <i>High Population</i> projection
WG-2022-HighPop Rev	Replicates the WG 2022-based <i>High Population</i> projection (revised June 2026)
WG-2022-LowPop	Replicates the WG 2022-based <i>Low Population</i> projection
WG-2022-LowPop Rev	Replicates the WG 2022-based <i>Low Population</i> projection (revised June 2026)
WG-2022-10yrMig	Replicates the WG 2022-based <i>10-year migration</i> variant
WG-2022-15yrMig	Replicates the WG 2022-based <i>15-year migration</i> variant
<i>Dwelling-led 1600</i> (RLDP Preferred Growth Option)	Replicates the Cardiff City Council RLDP scenario, based on an annual dwelling growth target of +1,600 per year 2021 to 2036. No changes have been made to this scenario; all assumptions from the 2021 study have been retained.
Trend-5yr	Replicates the <i>Trend-5yr</i> scenario from the May 2026 Edge Analytics report. Based on a 5-year migration history up to mid-year 2023/24, with a 2024 base year (i.e. a 2024-based trend scenario).
Trend-5yr MYE25	Migration assumptions calibrated from a 5-year historical period (2020/21–2024/25), including the UPC adjustment in the international migration component of the MYE (2001/02–2020/21). Scenario has a base year of 2025 . Fertility and mortality assumptions derived from the last 5 years of MYE evidence, with long-term changes drawn from the 2022-based WG Principal projection for Cardiff.
Trend-15yr	Replicates the <i>Trend-15yr</i> scenario from the May 2026 Edge Analytics report. Based on a 15-year migration history up to mid-year 2023/24, with a 2024 base year (i.e. a 2024-based trend scenario).
Trend-15yr MYE25	Migration assumptions calibrated from a 15-year historical period (2010/11–2024/25), including the UPC adjustment in the international migration component of the MYE (2001/02–2020/21). Scenario has a base year of 2025 . Fertility and mortality assumptions consistent with <i>Trend-5yr MYE25</i> scenario.

Note that to reduce the number of scenarios for which outcomes are presented, the WG-2018 and WG-2022 scenarios have been left out of this Addendum.

- 4.3 Note that the same VICUS model configuration has been used as in the May 2026 Edge Analytics study. Detail on the assumptions used in the scenarios added as part of this Addendum can be found in the Appendix to this report. For detail on the assumptions used in the other scenarios, please refer to the May 2026 Edge Analytics report.
- 4.4 In each scenario (apart from the *Preferred Growth Option Dwelling-led* scenario which retains its original assumptions), the two different sets of household membership rates have been applied:
- **MR-22**: 2022-based membership rates, unadjusted
 - **MR-22 adjusted**: 2022-based membership rates with adjustments in ages 19–39, as detailed in Section 2.
- 4.5 The projected household growth for each scenario has been converted to an **annualised dwelling growth figure** through the application of a 2021 Census household to dwelling conversion (vacancy rate, at 5.5%)¹⁹.
- 4.6 The **labour force** implications of each population trajectory have also been derived, through the application of 2021 Census economic activity rates, with adjustments from the Office for Budget Responsibility (OBR) to account for changes to the state pension age. Employment growth outcomes have been derived through the application of a commuting balance and unemployment rate. Note that these outcomes are only presented for the scenarios that have been added in this Addendum (as the labour force and employment outcomes are unchanged in the other scenarios).

Scenario Outcomes

- 4.7 The population outcomes for the scenario are summarised in Table 6 and Figure 10. Note that for the scenarios from the May 2026 report, none of the population outcomes have changed. The scenarios that have been added in this Addendum are highlighted in bold.
- 4.8 The revisions to the WG 2022-based *High Population* scenario (*WG-2022-HighPop Rev*) have resulted in an **uplift** in its population growth outcome, from 17% to 18.3% over the 2021–2036 plan period. Conversely, the *Low Population* variant has been revised **downwards** (*WG-2022-LowPop Rev*) from a population growth of 14.2%, to 12.8%.
- 4.9 The two updated *Trend* scenarios that utilise the latest MYE data (including the revised 2022–2024 MYE and the new 2025 MYE) both result in a **lower level of population growth** compared to the *Trend* scenarios based on the MYE up to mid-year 2024 (as presented in the May 2026 report).
- 4.10 The *Trend-5yr MYE25* scenario results in 14.5% population growth, compared to 17.6% under the previous *Trend-5yr*. Net migration under this scenario is reduced, from 3,464 per year to 2,840 per year, a result of the drop in international migration seen in 2024/25 and the adjustment to the international migration estimates between 2022 and 2024. However, net international migration (at 5,395 per year) is still considerably higher than the pre-2021 trend, or that assumed in the *Trend-15yr MYE25* scenario (3,262 per year).
- 4.11 In the *Trend-15yr MYE25* scenario, population growth is reduced to 9.0%, compared to 10.2% in the 2024-based version (*Trend-15yr*).

¹⁹ Note that in the demographic evidence previously produced for Cardiff in 2021, the 2011 Census vacancy rate of 3.7% was applied (this has been maintained in the Preferred Growth Option Dwelling-led scenario included here).

Cardiff Scenario Growth Outcomes

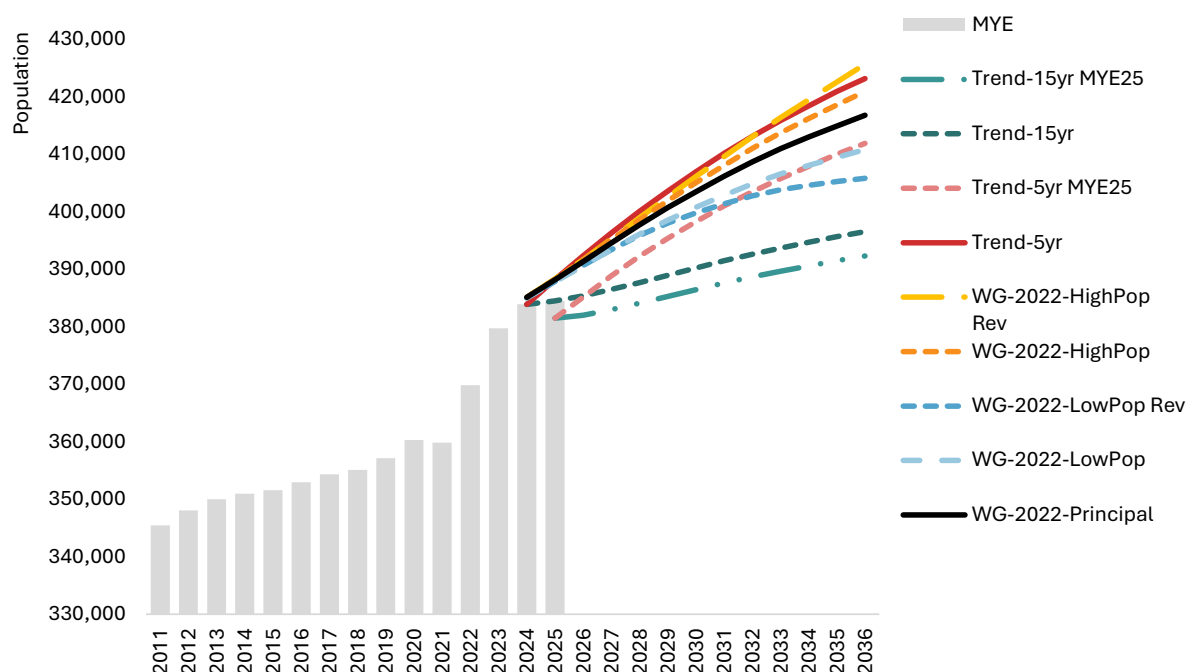


Figure 10: Cardiff scenario population growth outcomes 2011–2036

Source: ONS, Edge Analytics, WG.

Table 6: Cardiff scenario population growth outcomes

Scenario	Change 2021–2036		Average per year 2021–2036			
	Population Change	Population % Change	Net Internal Migration	Net International Migration	Net Migration	Natural Change
WG-2022-HighPop Rev	65,835	18.3%	-1,947	4,912	2,966	1,423
Trend-5yr	63,346	17.6%	-2,460	5,924	3,464	759
WG-2022-HighPop	61,115	17.0%	-2,234	4,912	2,678	1,396
WG-2022-Principal	56,992	15.8%	-2,176	4,912	2,737	1,063
Trend-5yr MYE25	52,060	14.5%	-2,555	5,395	2,840	630
WG-2022-LowPop	51,024	14.2%	-2,083	4,868	2,785	616
WG-2022-LowPop Rev	45,988	12.8%	-2,440	4,912	2,473	593
<i>Dwelling-led 1600</i>	39,742	10.7%	-678	2,068	1,390	1,260
WG-2022-10yrMig	39,679	11.0%	-1,779	3,545	1,766	879
WG-2022-15yrMig	38,796	10.8%	-1,262	2,986	1,725	862
Trend-15yr	36,723	10.2%	-1,742	3,573	1,831	618
Trend-15yr MYE25	32,486	9.0%	-1,624	3,262	1,638	528

Scenarios are ranked in order of population change.

- 4.12 The labour force outcomes for the scenarios that are new in this Addendum are summarised in Table 7 with the *Dwelling-led 1600* scenario included as a benchmark.

Table 7: Cardiff scenario labour force & employment growth outcomes

Scenario	Change 2021–2036		Annual Average Modelled Employment Growth 2021–2036
	Labour Force Change	Labour Force % Change	
WG-2022-HighPop Rev	35,893	20.9%	3,032
Trend-5yr MYE25	33,048	19.2%	2,804
WG-2022-LowPop Rev	30,159	17.6%	2,573
<i>Dwelling-led 1600</i>	26,801	13.7%	2,151
Trend-15yr MYE25	22,333	13.0%	1,946

- 4.13 The household growth outcomes for each scenario are summarised in Table 8 and the average annual dwelling outcomes in Table 9. Note that the incorrect *Low Population* and *High Population* scenarios are not included as these have been superseded by the revised versions (identified with the 'Rev' suffix).
- 4.14 **With the adjusted 2022-based membership rates (MR-22_Adjusted), household growth is higher than using the original non-adjusted rates (MR-22).** Under the *WG-2022-Principal* scenario, household growth increases from 16.8% to 18.4% over the 2018–2036 plan period.
- 4.15 The updated *Trend* scenarios, with lower levels of population growth than the 2024-based *Trend* scenarios result in lower levels of household growth.

Table 8: Cardiff scenario household growth, 2021–2036

Scenario	MR-22		MR-22_Adjusted	
	Households Change	Households % Change	Households Change	Households % Change
WG-2022-HighPop Rev	27,922	18.8%	30,314	20.5%
Trend-5yr	27,372	18.5%	29,775	20.1%
WG-2022-Principal	24,916	16.8%	27,254	18.4%
Trend-5yr MYE25	23,573	15.9%	25,934	17.5%
WG-2022-LowPop Rev	21,188	14.3%	23,460	15.8%
WG-2022-10yrMig	18,625	12.6%	20,815	14.0%
WG-2022-15yrMig	18,578	12.5%	20,762	14.0%
Trend-15yr	17,340	11.7%	19,470	13.1%
Trend-15yr MYE25	16,015	10.8%	18,148	12.2%

- 4.16 **The higher levels of household growth under the adjusted 2022-based membership rates (MR-22_Adjusted) result in higher dwelling growth outcomes.** Under the *WG-2022-Principal* scenario, the average annual dwelling growth figure is 1,923 using the adjusted membership rates (MR-22), compared to 1,758 using the unadjusted rates (as presented in the May 2026 report).
- 4.17 The updated short-term trend scenario (*Trend-5yr MYE25*) produces a dwelling growth range of between 1,663 and 1,830, slightly higher than the RLDP figure of 1,600 dwellings per year. With more muted population growth, the updated *Trend-15yr MYE25* scenario produces a dwelling growth range of 1,130 to 1,281, *lower* than the RLDP figure.

Table 9: Cardiff scenario average annual dwelling growth, 2021–2036

Scenario	Average Annual Dwelling Growth 2021–2036		
	MR-22	MR-22_Adjusted	Difference
WG-2022-HighPop Rev	1,970	2,139	169
Trend-5yr	1,931	2,101	170
WG-2022-Principal	1,758	1,923	165
Trend-5yr MYE25	1,663	1,830	167
WG-2022-LowPop Rev	1,495	1,655	160
WG-2022-10yrMig	1,314	1,469	154
WG-2022-15yrMig	1,311	1,465	154
Trend-15yr	1,223	1,374	150
Trend-15yr MYE25	1,130	1,281	150

5 COMMENTARY & CONCLUSIONS

- 5.1 This Addendum report evaluates the impact of **adjusted 2022-based membership rates** on the scenarios developed for the **May 2026 Edge Analytics Demographic Update** for Cardiff, as well as providing an overview of the latest MYE and migration estimates.

Data Updates

- 5.2 Since the May 2026 Edge Analytics report evidence was produced, ONS has released its 2025 MYE for local authorities in England and Wales, as well as revised 2022, 2023, and 2024 MYE.²⁰ These revisions have been made by ONS in light of updated long-term international migration estimates. WG also re-published its *Low Population* and *High Population* scenario variants after an error was identified.
- 5.3 Edge Analytics has used this new evidence to: (i) update the *Low Population* and *High Population* scenarios to reflect the corrected WG error, (ii) generate two new 2025-based *Trend* scenarios that draw their migration assumptions from the latest MYE evidence up to mid-year 2025.
- 5.4 In Cardiff, the 2025 MYE indicated that a small population decline has occurred since 2024, a trend that is mirrored at national (Wales) level.
- 5.5 The revisions to the 2022–2024 MYE resulted in the **net international migration estimates being revised downwards for Cardiff** (apart from in 2022/23 where a small upwards revision was made). Combined with a substantial reduction in net international migration in 2024/25, the updated 2025-based *Trend* scenarios project lower levels of growth compared to the *Trend* scenarios presented in the May 2026 report.
- 5.6 Within the May 2026 Edge Analytics study, it was recommended that **caution should be exercised in relation to the 2022-based WG Principal, High Population and Low Population scenarios**, due to their dependence upon the unprecedented levels of international migration captured between 2021/22 and 2023/24.
- 5.7 **This recommendation has been reinforced by the revised MYE and the significant drop in net international migration in 2024/25, as well as the differences between the MYE and the population projected by WG in its Principal projection between 2022 and 2025.** WG has also announced plans to review its population projections in light of these differences.
- 5.8 Although the *Trend-5yr MYE25* scenario produced by Edge Analytics results in lower growth compared to the 2024-based version, this scenario still draws its migration assumption from a period of **high growth. The same caution should therefore also be applied to this scenario.**

Membership Rate Adjustments

- 5.9 Regarding the membership rate adjustments, the 2022-based rates have been adjusted in the young adult (19–39) age groups, increasing the proportion of 1-, 2-, and 3-person households. Applied in the

²⁰ ONS (July 2026) [Population estimates for England and Wales: mid-2025](#)

scenario modelling, these adjustments result in higher levels of household growth and higher dwelling growth outcomes (Figure 11).

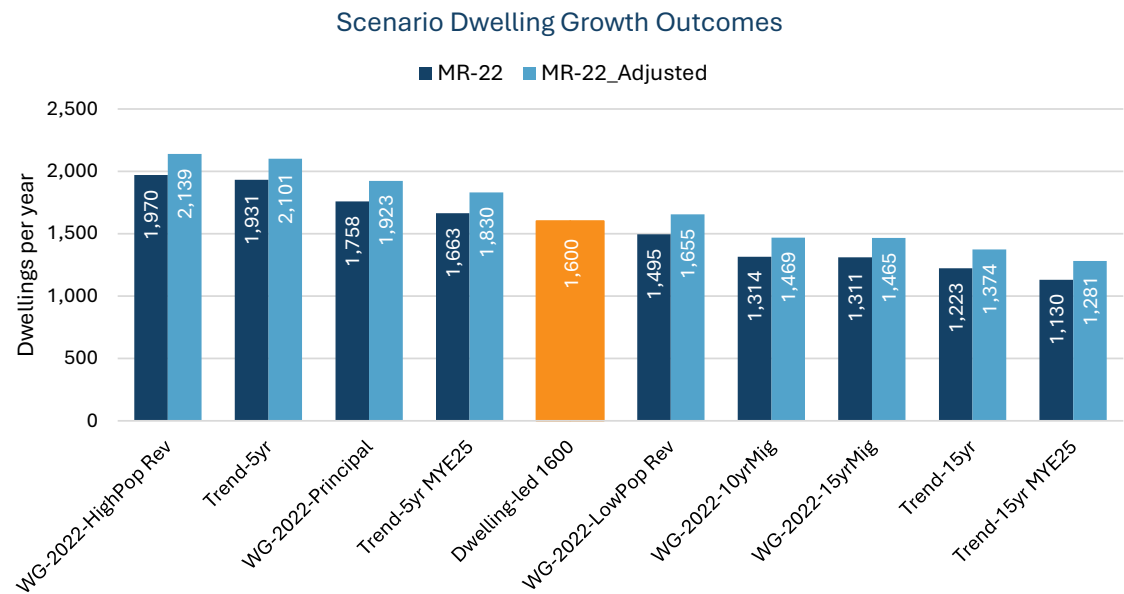


Figure 11: Cardiff scenario dwelling growth summary
Source: ONS, Edge Analytics, WG.

5.10 As was concluded in the May 2026 Edge Analytics report, **the figure of 1,600 dwellings per year is still considered a reasonable growth target for Cardiff** and sits within the middle of the range of outcomes. The scenarios that generate higher dwelling growth outcomes are to be treated with caution due to their reliance on a period of unprecedented growth linked to international migration.

APPENDIX A SCENARIO ASSUMPTIONS

Population

- A.1 In the *Trend-5yr MYE25* and *Trend-15yr MYE25* scenarios, the projection base year is the 2025 ONS MYE, disaggregated by single year of age and sex. From 2025 onwards, future population counts are estimated by single year of age and sex, using the defined assumptions on fertility, mortality, and migration.
- A.2 In the *WG-2022-LowPop Rev* and *WG-2022-LowPop Rev* scenario variants, the 2022 base year and growth trajectories are drawn directly from the corrected 2022-based projections for Cardiff.

Births & Fertility

- A.3 In the *WG* scenarios, projected birth counts are applied from the relevant base year to ensure consistency with the official projections.
- A.4 In the *Trend* scenarios, an area-specific and age-specific fertility rate (ASFR) schedule is derived from a 5-year history of historical births data (2020/21–2024/25). In combination with the ‘population at risk’ (i.e. all women between the age of 15–49), the ASFR assumptions provide the basis for the calculation of births in each year from 2025 onwards. Over the forecast period, the ASFR is adjusted to reflect the annual rate of change in the long-term fertility assumptions of the 2022-based *WG Principal* projection.

Deaths & Mortality

- A.5 In the *WG* scenarios, projected counts of deaths by 5-year age group and sex are applied from the respective base years to ensure consistency with the official projections
- A.6 In the *Trend* scenarios, an area-specific and age-specific mortality rate (ASMR) schedule is derived from a 5-year history of historical deaths data by sex (2020/21–2024/25). In combination with the ‘population at risk’ (i.e. the total population), these ASMR assumptions provide the basis for the calculation of deaths in each year from 2025 onwards. Over the forecast period, the ASMR is adjusted to reflect the annual rate of change in the long-term mortality assumptions of the 2022-based *WG* projection.

Internal Migration

- A.7 In the *WG* scenarios, projected counts of internal in- and out-migration by 5-year age group and sex are applied from the respective base years to ensure consistency with the official projections.
- A.8 In the *Trend* scenarios, an area-specific and age-specific migration rate (ASMigR) schedule is derived from the relevant historical internal migration data (up to mid-year 2024/25), which then determines the future number of internal in- and out-migrants for the remainder of the plan period.

International Migration

- A.9 In the *WG* scenarios, projected counts of international in- and out-migration by 5-year age-group and sex are applied from the respective base years to ensure consistency with the official projections.
- A.10 In the *Trend* scenarios, future counts of international in- and out-migration have been derived from

relevant historical international migration data (up to mid-year 2024/25), including UPC. An ASMigR schedule of rates is derived from the relevant migration history and used to distribute the future counts by single year of age.

Households & Dwellings

- A.11 The 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 room area”.
- A.12 In the forecasting models, a dwelling is defined as a unit of accommodation which can either be occupied by one household or can be vacant.
- A.13 The household and dwelling growth outcomes of each scenario have been estimated through the application of communal population statistics, household membership rates, and a household to dwelling conversion factor (vacancy rate).

Communal Population

- A.14 Within the forecasting models, household projections exclude the population ‘not-in-households’ (i.e. the communal/institutional population). This data is drawn from 2021 Census. Examples of communal establishments include prisons, residential care homes, student hall of residence, and certain armed forces accommodation.
- A.15 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’ varies across the forecast period depending on the size of the population. The communal population statistics are used to derive the size of the private household population in each scenario.

Household Membership Rates

- A.16 Household membership rates are used to calculate the proportion of the household population in each household category by age group and sex, drawn from the WG 2022-based household projection model for Cardiff (Table 10).

Table 10: WG 2022-based household categories

Household Category	
1 person	4 person (No children)
2 person (No children)	4 person (2+ adults, 1+ children)
2 person (1 adult, 1 child)	4 person (1 adult, 3 children)
3 person (No children)	5+ person (No children)
3 person (2 adults, 1 child)	5+ person (2+ adults, 1+ children)
3 person (1 adult, 2 children)	5+ person (1 adult, 4+ children)

Source: WG

- A.17 The household population is then converted into households using average household size assumptions, again drawn from the WG 2022-based household model.

A.18 Two alternative membership rate profiles have been applied to each scenario in this Addendum:

- **2022-based membership rates (MR-22)**, derived from the official projections (these are not published so have been calculated by Edge Analytics using the published and provided data from WG).
- **2022-based membership rates adjusted (MR-22_adjusted)**, derived from the official projections but with adjustments in the 19–39 age groups to model an increase in the proportion of smaller households.

Household to Dwelling Conversion

A.19 The relationship between households and dwellings has been modelled using ‘conversion factors’ derived from 2021 Census evidence. A figure of 5.5% has been applied for Cardiff.

Labour Force & Employment

A.20 Economic activity rates, an unemployment rate and a commuting ratio have been applied to the population growth trajectory to derive the size of the resident labour force, and the level of employment growth that could be supported.

Economic Activity Rates

A.21 Economic activity rates are the proportion of the population that is actively involved in the labour force, either employed or unemployed and looking for work.

A.22 Economic activity rates by five-year age group (ages 16–89) and sex have been derived from 2021 Census statistics. To take account of changes to the state pension age, adjustments have been made to the Census rates in line with the Office for Budget Responsibility’s (OBR) participation rate long-term forecast published in 2025.²¹

Commuting Ratio

A.23 The commuting ratio defines the balance between the level of employment in an area 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 of less than 1.00 indicates that employment in the area exceeds the size of the labour force, resulting in a net in-commute.

A.24 In all scenarios, the 2011 Census commuting ratio of 0.80 has been applied; due to the timing of the 2021 Census during the COVID-19 pandemic and the associated disruption to workplace patterns, the earlier Census figure has been applied.

Unemployment Rate

A.25 The unemployment rate determines the proportion of unemployed people within the labour force. An unemployment rate of 4% has been applied (based on a five-year average of the ONS model-based estimates), fixed throughout the forecast period.

²¹ OBR [Forecasting participation trends: the cohort model](#)



Edge Analytics Ltd

Nexus, Discovery Way
University of Leeds, Leeds
LS2 3AA
0113 819 5087

www.edgeanalytics.co.uk

Registered in England
Registration Number 05478834