



Department
for Work &
Pensions

FRS grossing methodology review and 2011 Census updates

June 2014

Contents

Summary	3
Introduction / Background	4
FRS grossing methodology.....	4
Updates using 2011 Census data	6
ONS review	7
Effects of the changes on FRS estimates	8
Effects of the changes on HBAI estimates	13
Annex 1.	17

Summary

1. The Family Resources Survey (FRS) grossing methodology has been revised following a review and updated to take account of information from the 2011 Census. Corresponding changes have been made to the Households Below Average Income (HBAI) grossing regime.
2. A comparative analysis of data from 2002/03 to 2011/12 shows that the methodological revisions have minor effects on FRS and HBAI estimates. The update to the use of 2011 Census based figures has a small effect on most estimates without significantly altering trends over time.
3. The review and update follows the move to the use of 2011 Census results in the production of mid-year population estimates by the Office for National Statistics (ONS). Other data sources used for FRS grossing, including estimates of number of households and tenure breakdown, have been updated as far as possible to reflect the 2011 Census results.
4. The Office for National Statistics (ONS) Methodology Advisory Service was asked to conduct an initial review of the FRS grossing methodology to determine if a more fundamental review might be required. This initial review concluded that the 2004 FRS grossing methodology was fit for purpose although a number of recommendations for fine-tuning improvements were made. The main recommendations for improvements have been implemented.
5. The 2012/13 FRS dataset and annual report, together with related datasets and publications (HBAI and Pensioners' Incomes series) will use the new grossing regime.
6. Detailed tabulated comparisons for HBAI estimates produced using the old and new grossing factors are published in excel format alongside this publication.
7. A revised back series of FRS and HBAI datasets, including the new grossing factors, will be made available during summer 2014.
8. The new grossing factors should be used for all analysis and comparisons within and between FRS and HBAI survey years.

Introduction / background

1. The last FRS grossing review in 2004 was timed so that any methodological changes could be implemented at the same time as updates to data sources were made following the release of 2001 Census data. Details of the 2004 review are available here:

http://webarchive.nationalarchives.gov.uk/+http://www.dwp.gov.uk/asd/frs/reports/new_grossing_regime.pdf

2. It was decided to follow a similar process to follow the release of 2011 Census data. DWP commissioned ONS Methodological Advisory Service to conduct an initial review of the FRS grossing regime in 2013. The ONS review report is available alongside this paper here:

<https://www.gov.uk/government/collections/family-resources-survey2#documents>

3. Mid-year population estimates for 2011 and 2012 using 2011 Census data were published by ONS in August 2013. These followed the publication of a back series of mid-year population estimates from 2002 to 2010 in April 2013.¹ Most of the other FRS grossing data sources which rely on census data have now also been updated to take account of the 2011 Census results.

FRS grossing methodology

4. Grossing is the process of applying factors to survey sample data so that they yield estimates for the overall population. The simplest grossing system will use a single factor e.g. the number of households in the population divided by the number in the achieved sample. However, it is usually necessary to use a more complex set of grossing factors to correct for differential non-response at the same time as scaling up sample estimates to the overall population.
5. The system used to calculate grossing factors for the FRS divides the sample into a series of control groups representing private households or those living in private households.² The control groups are designed to reflect differences in response rates amongst different types of private households. The population estimates for these groups are obtained from a variety of official sources, many based on census data. See Annex 1 for a complete list.

¹ These figures were for England and Wales. Mid-year estimates for Scotland and Northern Ireland revised for the 2011 Census data were published separately.

² The FRS population of interest is private households. See the FRS annual publication for more details <https://www.gov.uk/government/collections/family-resources-survey--2#documents>.

6. The FRS grossing methodology applies two stages of weighting to produce grossing factors; an initial design weighting stage followed by a calibration weighting stage. The design weighting takes account of the number of households at an address. If only one household was found at a sampled address then the design weight would simply be “1”, if there were four households at the address the design weight would be “4”.

Figure 1. FRS grossing control totals for Great Britain and Northern Ireland following 2004 review

Great Britain	Northern Ireland
<p>Individuals split by Age group (13 categories), by Sex (2 categories), and by Region (11 categories) (286 categories in total). Source: ONS.</p> <p>Benefit Units: with dependent children split by geographical region (2 categories: England and Wales, and Scotland). Source: HM Revenue and Customs (HMRC). lone parents split by Sex (2 categories). Source: Labour Force Survey.</p> <p>Total Households/Dwellings: Households split by geographical region (3 categories: London, Scotland, Rest of Great Britain). Source: Department for Communities and Local Government. Households split by tenure type (3 categories: Local Authority, Private and Housing Association renters, Owner-Occupied). Source: Department for Communities and Local Government. Dwellings split by broad Council Tax Band (4 categories: Band A & Not valued separately, Band B, Bands C and D, and Bands E to I). Sources: Valuation Office Agency and Scottish Government.</p>	<p>Individuals split by Age group (12 categories) and by Sex (2 categories). Source: Northern Ireland Statistics and Research Agency (NISRA) and HMRC (for estimates of 16-19 dependents).</p> <p>Benefit Units: lone parents Sources: NISRA and ONS.</p> <p>Total households. Source: NISRA</p>

7. The calibration stage then adjusts the design weights to match the set of pre-determined control totals. Since the 2004 review the calibration totals have been as outlined in Figure 1.
8. The calibration weights are calculated using a computer program called CALMAR, which was developed by the French National Statistical Institute.
9. DWP maintains and updates the grossing factors for Great Britain while the Department for Social Development Northern Ireland (DSDNI) is responsible for the grossing factors for Northern Ireland.

10. A further description of FRS grossing methodology is available in the FRS annual report which is available here:

<https://www.gov.uk/government/collections/family-resources-survey--2#documents>

Updates using 2011 Census data

11. The new and revised 2011 Census-based mid-year population estimates from 2002 to 2012 provided the basis for revising the grossing factors for the FRS and associated datasets for 2002/03 to 2011/12.
12. The most significant differences between the 2011 mid-year population estimates for Great Britain based on the 2011 Census and those based on the 2001 Census were:
- an increase in the population (509,000, 0.8 per cent)
 - more young adults aged 20-39 (159,000, 1 per cent),
 - fewer pensioners (47,000, 0.4 per cent).
 - fewer households (372,000, 1.4 per cent).³
 - some regional changes, particularly an increase in the London population 264,000 (3.3 per cent) and more young adults in London aged 20-39 (171,000, 6.1 per cent).⁴
13. Similar differences are apparent in the revised back series of mid-year population estimates and for Northern Ireland census data. The various other producers of data used in FRS data grossing have now published updates to take in to account the 2011 Census data. For example, estimates of the numbers of households in England, Wales, and Scotland were published by the Department for Communities and Local Government (DCLG), the Welsh Government, and the Scottish Government respectively.
14. Switching to using the new 2011 Census based population estimates, related data sources and back series for FRS grossing control totals means that revised FRS grossed-up estimates reflect these differences.⁵

³ The 2001 Census-based figures for total number of households is a projection – calculated by the DWP – based on the DCLG estimates for years up to 2008. DCLG did not published equivalent 2001 Census-based projections for years 2009-2012.

⁴ For more details see:

<http://www.ons.gov.uk/ons/rel/pop-estimate/population-estimates-for-england-and-wales/mid-2011--2011-census-based-/stb---mid-2011-census-based-population-estimates-for-england-and-wales.html#tab-Comparison-with-2001-Census-based-estimates>

⁵ After adjusting for the number of private households.

ONS review

Methodological review

15. The Office for National Statistics (ONS) Methodology Advisory Service was asked to conduct an initial review of the FRS grossing methodology to determine if a more fundamental review might be required. This initial review concluded that the 2004 FRS grossing methodology was fit for purpose although a number of recommendations for fine-tuning improvements were made. The main recommendations for improvements have been implemented. These were:

- A. Ensure that the design weighting includes the different rates of sampling in the England and Wales, Scotland and Northern Ireland (high priority).
- B. Work with population totals in their original values, rather than artificially scaled values (high priority).
- C. Implement an initial scaling of the design weights to population totals prior to calibration (high priority).
- D. Consider re-categorising the tenure breakdown to avoid uncertainty around Local Authority (LA) and Housing Association (HA) split (high priority).
- E. Consider introducing more detail into the regional breakdown of households (medium priority).

A. Ensuring design weights reflect different rates of sampling in England and Wales, Scotland and Northern Ireland

16. Boosts to the respective sample sizes in Scotland and Northern Ireland mean that addresses in these countries have a higher probability of inclusion in the FRS sample than addresses in England and Wales. The 2004 grossing regime does not adjust for this at the design weighting stage. Not doing so introduces some small bias in regional estimates. Therefore, the ONS recommendation has been taken onboard and the new methodology includes a sample-based weighting step to reflect different rates of sampling by country.

B. Working with population totals in their original values

17. In the 2004 grossing methodology, for Great Britain, control totals used in the calibration weighting were scaled down by a factor of 250. There are no obvious benefits of this scaling process and the inclusion of this step; therefore it has been removed in the interests of clarity.

C. Implementing an initial scaling of the design weights to population totals prior to calibration

18. In the 2004 grossing regime the design weight for a given observation is a simple adjustment of the multi-household weight i.e. the design weights are not scaled to population totals. ONS recommend using a more conventional

method of scaling whereby the design weights are scaled up prior to calibration by a household factor calculated as;

$$\text{Household Factor} = \text{Total Households} / \text{Weight Sample Households}$$

19. Scaling the design weights up by a household-based scaling factor puts the FRS grossing methodology in line with common good practise.

D. Re-categorising the tenure breakdown to avoid uncertainty around LA/HA split

20. The 2004 grossing regime for Great Britain uses control totals for households broken down into three tenure categories:

- Renters from Local Authority
- Owner Occupied
- Renters from Housing Association/Private Renters

21. There is anecdotal evidence to suggest that following the transfer of local authority housing stock to housing associations a significant number of people continue to self-report renting from a local authority rather than a housing association. To counter this, the tenure breakdown has been revised – local authority and housing association renters are combined as one control total with a separate control total for private renters.

E. Introducing more detail into the regional breakdown of households

22. In the 2004 grossing regime, population control totals are broken down to regional level (i.e. the former Government Office Regions). However, the household control totals are at a broad geographical level;

- London
- Scotland
- Rest of Great Britain
- Northern Ireland

23. The ONS recommendation is that introducing a full regional breakdown for household control totals will more fully account for regional differences in response rate.

Effects of the revisions on FRS estimates

24. Following the collection of all available 2011 Census-based data, the production of revised grossing factors went through a rigorous DWP internal quality assurance process, covering both data input, transformation, control

total and final grossing factor production using CALMAR. The process was then externally quality assured by the Institute for Fiscal Studies (IFS).⁶

25. To assess the effects on FRS estimates of 1) using 2011 Census data, and 2) the methodological changes, a series of analyses were conducted covering comparisons of monetary, other continuous, and categorical variables. The effects of the methodological changes were assessed individually and in combination.
26. The analyses were carried out first using the 2011/12 FRS dataset and then on the back series of FRS data back as far as 2001/2. 2011/12 is the latest year that mid-year population estimates are available on a 2001 Census basis as well as a 2011 Census basis.
27. The conclusions from these analyses are that:
 - Changes to estimates for all key and the vast majority of other FRS variables are small. In most cases these changes are driven by census changes rather than methodological changes.
 - There has been no notable impact on key FRS variable trends over time since 2002/03 – other than those driven by changes to mid-year population estimates.
 - Some regional census change effects are apparent particularly for London estimates – reflecting the increase in estimated London population overall and the estimates of the young adult (20-39 year-old) population.
 - The changes to tenure control totals, while a significant improvement in themselves, do not have a significant effect on variable estimates categorised by tenure.
28. The effect of the changes for key monetary variables is shown in Table 1. Table 1 shows 2011/12 estimates based on three grossing factors:
 - Gross3: the 2004 FRS grossing methodology grossing factor
 - Gross3a: grossing factor produced by updating to 2011 Census and other related updates to data sources
 - Gross4: The final new grossing factor taking into account 2011 Census and other related updates to data and after applying the ONS recommended methodological changes.

⁶ The purpose of the IFS work was to quality assurance the HBAI estimates. However, as part of this quality assurance, all of the data input and transformation work required to produce FRS control totals was quality assured.

Table 1. FRS 2011/12 key monetary estimates – percentage change in estimates as a result of grossing factor changes. All UK households.

	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹	Gross3 to Gross4 ¹
Total Income ^{2,4}	0	0	-1
Gross Income from Employment ²	-1	0	-1
Gross Self-Employment Earnings ²	0	0	0
Pension income ²	0	0	0
Investment income ²	-1	0	-1
Income from income related benefits ²	0	0	-1
Income from non-income related benefit ²	1	0	1
Amount received in disability benefits ²	1	0	1
Amount of Tax Credits Received ²	2	0	2
Gross Rent ^{2,5}	1	-1	0
Total Housing Costs Great Britain ^{3,6}	1	0	1
Gross Council Tax ³	0	0	0

1. Gross3 - Grossing factors based on 2001 Census data

Gross3A - Grossing factors based on 2011 Census data

Gross4 - Grossing factors based on 2011 Census data and including methodological revisions to grossing regime

2. Estimates are at benefit unit level. Benefit unit is defined as “a single adult or a married or cohabiting couple and any dependent children”.

3. Estimates are at a household level. Household is defined as “one person living alone or a group of people (not necessarily related) living at the same address who share cooking facilities and share a living room or sitting room or dining area. A household will consist of one or more benefit units”.

4. Total income includes income from earnings (before tax), self-employment (before tax), investments, retirement pensions, other pensions, disability benefits, income-related benefits, non-income-related benefits, other reported sources.

5. Gross rent is defined as “rent eligible for housing benefit paid by a benefit unit for accommodation”.

6. Total housing costs for GB only. NI households' water and sewage are included in rates and are not separately identifiable for the purposes of deriving housing costs.

29. The effect of the changes for key monetary variables for London households is shown in Table 2.

Table 2. FRS 2011/12 Key monetary estimates – percentage change in estimates as a result of grossing factor changes. Households in London.

	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹	Gross3 to Gross4 ¹
Total Income ^{2,4}	-3	0	-3
Gross Income from Employment ²	-5	0	-5
Gross Self-Employment Earnings ²	-4	1	-3
Pension income ²	2	0	2
Investment income ²	-1	0	-1
Income from income related benefits ²	-1	0	-2
Income from non-income related benefit ²	0	0	0
Amount received in disability benefits ²	1	0	1
Amount of Tax Credits Received ²	5	1	6
Gross Rent ^{2,5}	0	-1	-1
Total Housing Costs Great Britain ^{3,6}	2	-1	2
Gross Council Tax ³	0	0	0

1. Gross3 - Grossing factors based on 2001 Census data

Gross3A - Grossing factors based on 2011 Census data

Gross4 - Grossing factors based on 2011 Census data and including methodological revisions to grossing regime

2. Estimates are at benefit unit level. Benefit unit is defined as "a single adult or a married or cohabiting couple and any dependent children".

3. Estimates are at a household level. Household is defined as "one person living alone or a group of people (not necessarily related) living at the same address who share cooking facilities and share a living room or sitting room or dining area. A household will consist of one or more benefit units".

4. Total income includes income from earnings (before tax), self-employment (before tax), investments, retirement pensions, other pensions, disability benefits, income-related benefits, non-income-related benefits, other reported sources.

5. Gross rent is defined as "rent eligible for housing benefit paid by a benefit unit for accommodation".

6. Total housing costs for GB only. NI households' water and sewage are included in rates and are not separately identifiable for the purposes of deriving housing costs.

30. The effect of the changes for housing tenure proportions is shown in Table 3.

Table 3. FRS 2011/12 Housing tenure proportion estimates compared - using Gross3 (2004) and Gross4 (2014 grossing regime). Households in Great Britain.

	Social Rented		Privately Rented		Owned Outright		Buying with Mortgage	
	Gross3 ¹	Gross4 ¹	Gross3 ¹	Gross4 ¹	Gross3 ¹	Gross4 ¹	Gross3 ¹	Gross4 ¹
2002/03	20	20	10	11	29	29	41	40
2003/04	20	20	10	11	30	30	40	39
2004/05	18	19	11	12	31	31	39	39
2005/06	18	19	12	12	32	31	38	38
2006/07	18	18	12	13	32	31	38	37
2007/08	18	18	13	14	33	32	36	35
2008/09	18	18	14	15	33	32	35	35
2009/10	17	18	16	16	33	32	34	34
2010/11	17	18	17	17	33	33	33	32
2011/12	17	18	17	17	33	32	33	32

1. Gross3 - Grossing factors based on 2001 Census data

Gross3A - Grossing factors based on 2011 Census data

Gross4 - Grossing factors based on 2011 Census data and including methodological revisions to grossing regime

31. Gross4 will be added to all FRS datasets as far back as 2002/03 and should be used for all analysis and comparisons within and between these and further survey years.

32. The final control totals applied in the new 2014 grossing regime are displayed in Figure 2.

Figure 2. Final FRS grossing control groups following 2014 review

Great Britain	Northern Ireland
<p>Individuals split by Age group (13 categories), by Sex (2 categories), and by Region (11 categories) (286 categories in total). Source: ONS.</p> <p>Benefit Units with dependent children split by geographical region (2 categories: England and Wales, and Scotland). Source: HM Revenue and Customs (HMRC).</p> <p>lone parents split by Sex (2 categories). Source: Labour Force Survey.</p> <p>Total Households/Dwellings: Households split by geographical region (11 categories: North-East, North-West, Yorkshire and Humber, East Midlands, West Midlands, East England, London, South-East, South-West, Wales, Scotland). Source: Department for Communities and Local Government.</p> <p>Households split by tenure type (3 categories: Local Authority and Housing Association, Private Renters, Owner-Occupied). Source: Department for</p>	<p>Individuals split by Age group (12 categories) and by Sex (2 categories). Source: Northern Ireland Statistics and Research Agency (NISRA) and HMRC (for estimates of 16-19 dependents)</p> <p>Benefit Units lone parents Sources: NISRA and ONS.</p> <p>Total households Source: NISRA</p>

Communities and Local Government.
Dwellings split by broad **Council Tax Band** (4 categories: Band A & Not valued separately, Band B, Bands C and D, and Bands E to I). Sources: Valuation Office Agency and Scottish Government.

Effect of the revisions on the HBAI estimates

33. The HBAI applies widely-used, international standards to the FRS dataset in order to measure low income and inequality.
34. The system used to calculate grossing factors for HBAI mirrors that of FRS grossing with two differences. The first difference with FRS grossing is that the sample of households is smaller for HBAI purposes because households with spouses living away from home are excluded. The second difference is that separate control totals are introduced for 'very rich' households so that the top end of the income distribution is more accurately reflected. This is particularly important for estimates of mean income. The adjustment uses data from HM Revenue and Customs' Survey of Personal Incomes (SPI) to control the numbers and income levels of the 'very rich' while retaining the FRS data on the characteristics of their households.
35. Thus, the new HBAI grossing regime incorporates the same census and methodological changes as the FRS grossing regime (described above). In parallel to the FRS, a back-series of grossing factors incorporating both the 2011 Census-based control totals and the methodological changes described above has been created for the HBAI datasets (back to 2002/03, the earliest year that the FRS covered the whole UK).
36. A set of summary tables showing the previous estimates and the new estimates up to 2011/12 are available on the [HBAI web-page](#). These show that, under the new grossing regime, estimates for children in low income households have slightly increased, whilst for pensioners estimates have slightly decreased. These changes are driven primarily by the move to 2011 Census-based control totals.
37. We examine the effect that the new grossing regime has on some of the HBAI's key estimates, for different grossing variants:
 - **Gross3** - 2001 Census-based, 2004 methodology;
 - **Gross3a** - 2011 Census-based, 2004 methodology; and
 - **Gross4** - 2011 Census, new methodology.
38. As described above, the 2011 Census-based mid-year population estimates for Great Britain were larger than the 2001 Census-based estimates previously used, with some sex, age-groups, and regions showing proportionally greater changes than others. The 2011 Census-based

estimates for the total number of households in GB was lower than the 2001 Census-based estimates.

39. Tables 4 and 5 show that the HBAI estimates for the percentage of children in relative low income are generally slightly higher using the new Gross4 grossing regime. This change is driven primarily by the change to using 2011 Census-based control totals, and not by the change in the methodology. HBAI estimates for working-age adults and pensioners are generally slightly lower when using the new grossing regime. As with children, the changes are primarily driven by the move to using 2011 Census-based control totals.

Table 4. Percentage point change between Gross 3, Gross 3a and Gross 4 by age group for individuals in relative low income and absolute low income Before Housing Costs (BHC) and After Housing Costs (AHC), UK.

		2002/03			2009/10			2010/11			2011/12		
		Gross3 to Gross4 ¹	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹	Gross3 to Gross4 ¹	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹	Gross3 to Gross4 ¹	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹	Gross3 to Gross4 ¹	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹
BHC	Relative Low Income	-0.2	-0.3	0.1	-0.1	-0.1	-	-0.1	-0.1	-	-0.2	-0.2	-
	All Individuals	-0.2	-0.3	0.1	-0.1	-0.1	-	-0.1	-0.1	-	-0.2	-0.2	-
	Children	-0.2	-0.4	0.2	0.3	0.2	0.1	0.1	0.1	-	0.2	0.2	-
	Working-age adults	-0.1	-0.2	0.1	-0.1	-0.1	-	-0.1	-0.2	-	-0.2	-0.2	-
AHC	Pensioners	-0.5	-0.5	-	-0.5	-0.4	-	-0.5	-0.3	-0.1	-0.4	-0.4	-
	All Individuals	-0.2	-0.2	-	-	-	-	-0.2	-0.1	-	-0.2	-0.1	-0.1
	Children	-0.2	-0.3	-	0.5	0.5	0.1	0.1	0.2	-0.1	0.1	0.2	-0.1
	Working-age adults	-0.1	-0.1	-	-0.1	-0.1	-	-0.3	-0.3	-	-0.3	-0.2	-0.1
Pensioners	-0.4	-0.4	-	-0.1	-0.1	-	-0.2	-0.2	-	-0.2	-0.2	-	

1. Gross3 - Grossing factors based on 2001 Census data

Gross3A - Grossing factors based on 2011 Census data

Gross4 - Grossing factors based on 2011 Census data and including methodological revisions to grossing regime

Table 5. Percentage point change between Gross 3, Gross 3a and Gross 4 by age group for individuals in absolute low income, Before Housing Costs (BHC) and After Housing Costs (AHC), UK

		2002/03			2009/10			2010/11			2011/12		
		Gross3 to Gross4 ¹	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹	Gross3 to Gross4 ¹	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹	Gross3 to Gross4 ¹	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹	Gross3 to Gross4 ¹	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹
BHC	Absolute Low Income	-	-0.1	0.1	-	-0.1	-	-0.1	-0.1	-	-0.2	-0.1	-
	All Individuals	-	-0.1	0.1	0.4	0.3	0.1	0.1	0.1	-	0.2	0.2	-
	Children	-	-	0.1	-0.1	-0.1	-	-0.1	-0.2	-	-0.2	-0.2	-
	Working-age adults	-	-	-	-0.3	-0.3	-	-0.5	-0.3	-0.1	-0.5	-0.5	-
AHC	Pensioners	-0.1	-0.1	-	-	-	-	-0.2	-0.1	-	-0.1	-0.1	-
	All Individuals	-0.1	-0.2	-	0.4	0.4	-	0.1	0.2	-0.1	0.3	0.3	-
	Children	-	5.4	-5.4	-0.1	-0.1	-	-0.3	-0.3	-	-0.3	-0.2	-0.1
	Working-age adults	-0.1	-0.1	-	-	-0.1	-	-0.2	-0.2	-	-0.2	-0.2	-
Pensioners	-0.1	-0.1	-	-	-0.1	-	-0.2	-0.2	-	-0.2	-0.2	-	

1. Gross3 - Grossing factors based on 2001 Census data

Gross3A - Grossing factors based on 2011 Census data

Gross4 - Grossing factors based on 2011 Census data and including methodological revisions to grossing regime

Tenure

40. As with the FRS, the tenure control totals in the new HBAI grossing methodology have been re-categorised to include local authority renters and housing association renters in one category. Tables 6 and 7 shows that, in the vast majority of cases, where there is a change between Gross3 and Gross4,

this change is driven by the change to using 2011 Census-based control totals rather than the change in the methodology.

Table 6 Percentage point change of individuals in relative low income by tenure – Before Housing Costs (BHC) and After Housing Costs (AHC), UK.

		2009/10			2010/11			2011/12		
		Gross3 to Gross4 ¹	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹	Gross3 to Gross4 ¹	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹	Gross3 to Gross4 ¹	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹
Relative Low Income										
BHC	Owners	-0.3	-0.3	-	-0.2	-0.1	-0.1	-0.3	-0.2	-0.1
	Owned outright	-0.7	-0.7	-	-0.5	-0.3	-0.1	-0.5	-0.5	-0.1
	Buying with a mortgage	-0.2	-0.1	-	0.0	0.0	-	-0.1	-	-0.1
	Social rented sector tenants	-1.2	-1.2	-	-0.4	-0.5	0.1	-0.1	-0.4	0.3
	All rented privately	-0.5	-0.6	-	-0.4	-0.4	-	-0.6	-0.4	-0.2
AHC	Owners	-0.4	-0.4	-	-0.2	-0.2	-	-0.2	-0.1	-0.1
	Owned outright	-0.5	-0.5	-	-0.3	-0.2	-0.1	-0.3	-0.3	-
	Buying with a mortgage	-0.4	-0.4	-	-0.1	-0.1	-	-0.1	-	-0.1
	Social rented sector tenants	-1.4	-1.5	-	-0.9	-0.8	-0.1	-0.8	-0.6	-0.2
	All rented privately	-1.2	-1.0	-0.2	-0.5	-0.5	-0.1	-1.0	-0.8	-0.3

1. Gross3 - Grossing factors based on 2001 Census data

Gross3a - Grossing factors based on 2011 Census data

Gross4 - Grossing factors based on 2011 Census data and including methodological revisions to grossing regime

Table 7 Percentage point change of individuals in absolute low income by tenure – Before Housing Costs (BHC) and After Housing Costs (AHC), UK..

		2009/10			2010/11			2011/12		
		Gross3 to Gross4 ¹	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹	Gross3 to Gross4 ¹	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹	Gross3 to Gross4 ¹	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹
Absolute Low Income										
BHC	Owners	-0.1	-0.1	-	-0.2	-0.1	-0.1	-0.3	-0.1	-0.1
	Owned outright	-0.2	-0.2	-	-0.5	-0.3	-0.1	-0.6	-0.5	-0.1
	Buying with a mortgage	-	-	-	-	-	-	-0.1	0.1	-0.2
	Social rented sector tenants	-0.3	-0.5	0.2	-0.4	-0.5	0.1	-0.1	-0.3	0.2
	All rented privately	-0.2	-0.2	-	-0.4	-0.4	-	-0.6	-0.5	-0.1
AHC	Owners	-0.1	-0.2	-	-0.2	-0.2	-	-0.2	-0.1	-0.1
	Owned outright	-0.1	-0.2	-	-0.3	-0.2	-0.1	-0.3	-0.3	-
	Buying with a mortgage	-0.1	-0.1	-	-0.1	-0.1	-	-0.1	-	-0.1
	Social rented sector tenants	-0.6	-0.6	-	-0.9	-0.8	-0.1	-0.6	-0.6	-
	All rented privately	-0.6	-0.5	-0.1	-0.5	-0.5	-0.1	-1.0	-0.7	-0.3

1. Gross3 - Grossing factors based on 2001 Census data

Gross3a - Grossing factors based on 2011 Census data

Gross4 - Grossing factors based on 2011 Census data and including methodological revisions to grossing regime

Region

41. The new grossing methodology introduces a finer grain breakdown of household totals (see point above). Tables 8 and 9 shows the effect of the census and the methodological changes on the three-year average estimates for the percentage of individuals in low income (both BHC and AHC) by region for 2009/10 to 2011/12. This shows that the primary effect on the estimates for individuals in low income is the move to the 2011 Census-based control totals, but this varies by region.

Table 8. Percentage point change in the percentage of individuals in relative low income by region – Before Housing Costs (BHC) and After Housing Costs (AHC), UK.

Region/Country (3-year average)	BHC			AHC		
	Gross3 to Gross4 ¹	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹	Gross3 to Gross4 ¹	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹
	England	-0.1	-0.1	-	-0.1	-
North East	-0.3	-0.1	-0.2	-0.6	-0.3	-0.3
North West	-0.1	-0.2	-	-0.2	-0.2	-
Yorkshire and the Humber	0.0	-0.1	-	-0.2	-0.2	0.1
East Midlands	-0.3	-0.2	-	-0.2	-0.1	-0.1
West Midlands	-0.2	-0.1	-0.1	-0.2	-0.2	-
East of England	-0.1	-0.1	-	-0.1	-	-0.1
London	0.1	0.0	0.1	0.4	0.4	-
South East	-0.1	-0.2	-	-0.1	-0.1	-
South West	-0.3	-0.2	-0.1	-0.3	-0.1	-0.2
Wales	-0.1	-0.2	0.1	-0.1	-0.2	0.1
Scotland	-0.2	-0.3	-	-0.4	-0.4	-
Northern Ireland	-0.4	-0.3	-0.1	-0.5	-0.4	-0.1

1. Gross3 - Grossing factors based on 2001 Census data

Gross3A - Grossing factors based on 2011 Census data

Gross4 - Grossing factors based on 2011 Census data and including methodological revisions to grossing regime

Table 9. Percentage point change in the percentage of individuals in absolute low income by region – Before Housing Costs (BHC) and After Housing Costs (AHC), UK.

Region/Country (3-year average)	BHC			AHC		
	Gross3 to Gross4 ¹	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹	Gross3 to Gross4 ¹	Gross3 to Gross3a ¹	Gross3a to Gross4 ¹
	England	-0.1	-0.1	-	-	-
North East	-0.2	-	-0.1	-0.4	-0.2	-0.2
North West	-0.2	-0.2	-	-0.2	-0.2	-
Yorkshire and the Humber	0.1	-	0.1	-	-0.1	0.1
East Midlands	-0.3	-0.2	-0.1	-0.1	-	-0.1
West Midlands	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1
East of England	-0.1	-0.1	-	-	0.1	-0.1
London	0.2	0.1	0.2	0.4	0.4	-
South East	-0.2	-0.2	-	-0.1	-0.1	-
South West	-0.2	-0.2	-	-0.2	-0.1	-0.1
Wales	-0.1	-0.2	-	-0.4	-0.5	0.2
Scotland	-0.2	-0.2	-	-0.4	-0.4	-
Northern Ireland	-0.2	-0.2	-	-0.5	-0.5	-0.1

1. Gross3 - Grossing factors based on 2001 Census data

Gross3A - Grossing factors based on 2011 Census data

Gross4 - Grossing factors based on 2011 Census data and including methodological revisions to grossing regime

FRS grossing methodology review and 2011 Census updates

Annex 1. Control Totals

Control totals for Great Britain	Groupings	Original Source	Link	Adjustments made by DWP
Private household population by region, age, and sex	Regions: North East, North West, Yorkshire and Humber, East Midland, West Midlands, East of England, London, South East, South West, Wales, Scotland. Sex and Age: Males aged 0-9, 10-19 dependents, 16-24 non-dependents, 25-29, 30-39, 40-44, 45-49, 50-59, 60-64, 65-74, 75-79, 80+; Females aged 0-9, 10-19 dependents, 15-24 non-dependents, 25-29, 30-34, 35-39, 40-44, 45-49, 50-59, 60-69, 70-74, 75-79, 80+	Mid-year population estimates. Office of National Statistics	ONS	ONS total population figures are adjusted for private household estimates using data supplied by ONS directly to DWP. 16-19-year-old dependents and non-dependent are split using data supplied by HMRC directly to DWP.
Benefit Units with children	Region: England and Wales, Scotland	Families in receipt of child benefit. HM Revenues and Customs	neighbourhood statistics	
Lone parents	Sex; Males, Females	Lone parent estimates. Labour Force Survey	Supplied directly to DWP	Adjusted for FRS survey year (April-March)
Households by region	Region: North East, North West, Yorkshire and Humber, East Midland, West Midlands.	Households by region. Department of Communities and Local Government	gov.uk (for DCLG publication) Welsh Government Scottish Government	Adjusted for FRS survey year (April-March)
Households by tenure type	Tenure (Social Renters, Private Renters, Owner Occupied)	Dwellings by tenure type. Department of Communities and Local Government	gov.uk (for DCLG publication)	Household control totals are calculated using dwellings data published by DCLG, Welsh Government, Scottish Government. Adjusted for FRS survey year (April-March)
Households by council tax band	Council Tax Band (NVS and A, B, C and D, E to H)	Dwellings by council tax band published by Valuations Office Agency.	Valuations Office Scottish Government	Household control totals are calculated using dwellings data published by VOA / Scottish Government, adjusted for FRS survey year (April-

Control totals for Northern Ireland	Groupings	Original Source	Link	Adjustments made by DWP
Private household population by age and sex	Sex and Age: Males 0-19 dependents, 16-24 independents, 25-29, 30-34, 35-39, 40-44, 45-49, 50-59, 60-65, 65-74, 75-79, 80+; Females aged 0-19 dependents, 16-24 non-dependents, 25-29, 30-34, 35-39, 40-44, 45-49, 50-59, 60-69, 70-74, 75-79, 80+	Private household estimates. Department for Social Development in Northern Ireland.	Supplied directly to DWP	
Households		Household estimates. Department for Social Development in Northern Ireland	Supplied directly to DWP	
Lone parents		Lone parent estimates. Department for Social Development in Northern Ireland	Supplied directly to DWP	