

Household Analysis Review Group (HARG)

2012-Based Household Projections – Principal Projection: Provisional Results

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The results presented in this paper are provisional.
 They are likely to differ from the final household projections published.
 Please treat these figures as 'restricted' until after publication on 30 July, and do not use them or pass them on to anyone else without prior agreement from National Records of Scotland (NRS).

1. Purpose

This paper describes the draft 2012-based household projections, due to be published by the National Records of Scotland (NRS) in July. It discusses the methodology used and results obtained, as well as looking at differences from the 2010-based household projections.

2. Methodology

2.1 Data

The 2012-based household projections for Scotland are based on the 2012-based sub-national population projections published by NRS in May 2014. The number of people living in communal establishments is collected from a range of administrative data sources ([Paper 4 HARG 2014\(4\)](#)) and subtracted from the population projection to estimate the number of people living in private households. Information on the types of households, in the form of headship rates, is taken from 1991, 2001 and 2011 censuses. When projecting these headship rates, the distribution of households across the seven household types used in the projections is considered. Information on this comes from the 2012 Scottish Household Survey. The household projections are constrained to the 2012 and 2013 household estimates and in this paper provisional household estimates for 2013 have been used.

2.2 Method

The method has changed significantly since the 2010-based household projections, as agreed at the last Household Analysis Review Group (HARG) meeting. The 2010-based projections only used headship rates from two censuses, while the 2012-based projections use headship rates from the 1991, 2001 and 2011 Censuses. This has meant the method of projecting the headship rates has changed. We project two sets of headship rates both using a modified two-point exponential formula, the first using 1991 and 2001 Censuses and the second using 2001 and 2011 Censuses. These two sets of headship rates are combined using weights that are chosen so that the distribution of household types in 2012 is as close as possible to the 2012 Scottish Household Survey data. The combined headship rates are then applied to the estimated population living in private households to get raw household projections by type of household, age of head of household and Council area.

Council area figures are then constrained to the Scottish household projections, and the 2012 and 2013 household estimates. Minimum adult/child adjustments are made to ensure that there are enough people in the population projection to fill all the households. The way minimum adult/child adjustments are done has also changed since the 2010-based projections. Previously if a Council area required minimum adult/child adjustments in any year of the projection period then the household projection for that Council was adjusted in every year of the projections, now only the years that require an adjustment are adjusted. Once these adjustments have been performed we have the final set of household projections.

The household types and age groups used are given in [Table A](#).

Table A: Age groups and household types used in the final projections

Age of head of household	Household types
16-19	
20-24	1 Adult – Male
25-29	1 Adult – Female
30-34	2 Adults
35-39	3+ Adults
40-44	1 Adult + 1 Child
45-49	1 Adult , 2+ Children
50-54	2+ Adults, 1+ Children
55-59	
60-64	
65-69	
70-74	
75-79	
80-84	
85-89	
90+	

2.3 Variant Projections

As agreed at the last HARG meeting two variant projections will be produced alongside the principal household projection. These projections use the low and high migration variant population projections, otherwise the method used for these projections is identical to the method used for the principal projection.

3. Results of the provisional household projections with comparison to the 2010-based projections

The weights that produced projections with the most similar distribution of households by type in 2012 were 77 per cent towards headship rates projected using 2001 and 2011 Census data, and 23 per cent towards rates produced using 1991 and 2001 Census data.

The only council that required adult adjustments was Eilean Siar, where adjustments were made to the household types from 2031 to 2037. No minimum child adjustments were required.

3.1 Scotland

3.1.1 Total number of households

2012-based household projections for each council area are presented in [Table 1](#). [Figure 1](#) compares the projected total number of households in the provisional 2012-based projections with the 2010-based projections, as well as showing the household estimates since 2001. The provisional 2012-based projection shows a projected increase of 392,830 households (16 per cent) by 2037 for Scotland, an average annual increase of 15,713 households. This annual increase is considerably lower than what was projected in the 2010-based projections (over

21,000 households) and also lower than the average annual increase from 2001 to 2013 in the household estimates (17,000 households). However the projected annual increase in the provisional 2012-based projections is higher than the average annual increase since 2007 (13,735 households), when the economic downturn began.

3.1.2 Households by type

There are noticeable differences between the 2010-based and provisional 2012-based projections in the number of households in each type of household. [Figure 2](#) compares the number of households of different types for 2035 in both sets of projections, the 2012 figure from the 2012-based projections has also been included to give an indication of trends.

In both sets of projections the number of '1 adult', '2 adult' and '1 adult with children' households are increasing while '2+ adults with children' and '3+ adults are decreasing'. However the rate of change in the 2012-based projections is much slower than in the 2010-based projections.

This affects '1 adult' households the most in absolute numbers, with the 2012-based projections being lower by around 164,600 (12.8 per cent lower). [Figure 3](#) shows the number of households of each type broken down by the age of the head of household. This shows that the younger age groups are where most of the difference can be found for '1 adult households', with the 2012-based projections having 96,723 fewer '1 adult' households with a head of household under 35. It is likely that a lot of this difference is due to young adults being more likely to live at home with their parents. Looking at the number of '3+ adult' and '2+ adults with children' households headed by someone aged 45-74 supports the idea of younger people living at home with parents as there are increased numbers in the 2012-based projections when compared to the 2010-based projection. The 2012-based figures show fewer young adults living in other household types, too – they show few 3+ adult households, or households with 1 adult living with children, which are headed by people aged under 35.

In addition, the gap in life expectancy between men and women is falling. This leads to fewer '1 adult female' households among the older age groups, and more '2 adult households' when compared to previous projections, as well as a slightly higher number of '1 adult male' households.

3.1.3 Households by age of the head of household

[Figure 4](#) compares the number of households by the age group of the head of household for Scotland in the 2010 and 2012-based projections. This shows that the number of households headed by someone in the youngest age groups is lower in the provisional 2012-based figures than in the 2010-based projections. The number of households in each age group generally becomes more similar in the two-sets of projections as the age groups get older.

Again, this is likely to be due to the reasons given in Section 3.1.2.

3.2 Council areas

Figure 5 shows the percentage change in the number of households for each council in the 2010 and provisional 2012-based projections. Most councils are still showing a projected increase in the number of households, but the increase is generally smaller than in the 2010-based projections. Only two councils, East Renfrewshire and Dundee City, have a projected increase that is greater than in the 2010-based projections.

Three councils are projected to see the number of households decrease in the 2012-based projections (Inverclyde, Argyll & Bute and North Ayrshire). In the 2010-based projections Inverclyde was the only council with a projected decrease. Despite this, Table 2 shows that all councils are projected to see a fall in average household size, with this ranging from 1.78 in Eilean Siar to 2.29 in Aberdeenshire in 2037, though this fall is not as great as in the 2010-based projections.

There are two main factors for the projected number of households generally being lower, firstly the trends in household formation have changed after introducing 2011 Census headship rates, as the fall in average household size was not as great as had been projected based on trends seen between 1991 and 2001. Secondly, the 2012-based population projections for some councils are quite different from the 2010-based population projections. A comparison of the percentage change in population in the two sets of population projections is given in Figure 6. For some councils this can cause quite a dramatic effect, for example in Clackmannanshire where there is a five per cent increase in the 2012-based household projections compared to a 28 per cent increase in the 2010-based figures. However this is reasonable when the population projections are considered, as the population of Clackmannanshire is projected to decrease in the 2012-based projections while a 14 per cent increase was projected in the 2010-based figures.

4. Conclusion

There are some fairly large differences between the 2010 and 2012-based household projections. However the differences are not unexpected given the changes to the method used in the projections and differences between the 2010 and 2012-based population projections. This suggests that there is no need for further changes to the methodology used to produce these projections.

5. Other issues

We are planning to include some analysis of the differences between the 2010 and 2012-based household projections in the publication itself. NRS is also planning to publish a paper looking at changes in the figures on households and living arrangements between the 2001 and 2011 Censuses.

In the past, we have rounded our household projections to the nearest ten, in an effort to emphasise that these projections cannot be precise. As an example, 2,779,038 households would be rounded to 2,779,040. However, we suspect that this doesn't make much difference, but it does make it harder for us and for users to use the figures, as rounded figures don't necessarily add up. Therefore, we are proposing to publish unrounded figures for the 2012-based household projections.

6. Next Steps

NRS will produce final 2012-based household projections using finalised input data. They will be published on 30th July 2014.

Household Analysis Review Group (HARG) members are asked to note the initial findings and state whether they are satisfied with the approach used, or have any other comments or suggestions.

**NRS: Household Estimates and Projections Branch
May 2014**

Table 1: Provisional 2012-based household projections for Scotland, 2012 – 2037

Local authority	2012 2017 2022 2027 2032 2037						Average annual change ¹			Change	
	2012	2017	2022	2027	2032	2037	2012-2022	2022-2037	2012-2037	2012 - 2037	
Scotland	2,386,207	2,475,875	2,563,484	2,641,983	2,713,642	2,779,038	17,728	14,370	15,713	392,830	16%
Aberdeen City	103,923	110,915	117,765	124,629	132,180	140,182	1,384	1,495	1,450	36,259	35%
Aberdeenshire	105,964	110,968	115,953	120,567	124,837	128,764	999	854	912	22,800	22%
Angus	52,036	53,201	54,160	54,814	55,042	54,957	212	53	117	2,921	6%
Argyll & Bute	40,253	40,562	40,340	39,769	38,830	37,734	9	-174	-101	-2,519	-6%
Clackmannanshire	22,818	23,371	23,803	23,998	24,018	23,932	98	9	45	1,114	5%
Dumfries & Galloway	68,356	69,417	70,076	70,243	69,853	69,212	172	-58	34	857	1%
Dundee City	69,355	72,272	75,328	78,310	81,545	85,139	597	654	631	15,784	23%
East Ayrshire	54,164	55,647	56,837	57,596	58,089	58,367	267	102	168	4,203	8%
East Dunbartonshire	43,803	44,573	44,968	45,051	44,907	44,489	117	-32	27	686	2%
East Lothian	43,442	45,578	48,033	50,415	52,699	54,908	459	458	459	11,466	26%
East Renfrewshire	37,528	38,622	39,769	40,828	41,716	42,463	224	180	197	4,935	13%
Edinburgh, City of	224,322	240,727	257,855	275,576	293,802	312,047	3,353	3,613	3,509	87,725	39%
Eilean Siar	12,784	13,171	13,411	13,591	13,645	13,576	63	11	32	792	6%
Falkirk	69,172	71,467	73,948	76,155	78,226	80,026	478	405	434	10,855	16%
Fife	161,845	166,316	171,076	175,253	179,036	182,296	923	748	818	20,451	13%
Glasgow City	285,984	298,120	311,699	324,974	339,071	353,346	2,571	2,776	2,694	67,362	24%
Highland	103,256	107,234	110,501	113,154	115,085	116,300	725	387	522	13,044	13%
Inverclyde	37,379	37,232	36,765	36,017	35,013	33,721	-61	-203	-146	-3,658	-10%
Midlothian	35,528	37,295	38,915	40,419	41,886	43,251	339	289	309	7,723	22%
Moray	40,466	41,641	42,475	43,023	43,202	43,204	201	49	110	2,738	7%
North Ayrshire	62,567	63,204	63,534	63,354	62,701	61,750	97	-119	-33	-817	-1%
North Lanarkshire	146,935	151,213	155,184	158,336	160,609	162,058	825	458	605	15,122	10%
Orkney Islands	9,838	10,286	10,701	11,025	11,262	11,494	86	53	66	1,657	17%
Perth & Kinross	65,122	68,363	72,175	75,953	79,347	82,657	705	699	701	17,536	27%
Renfrewshire	80,934	83,750	85,788	87,230	88,354	89,251	485	231	333	8,317	10%
Scottish Borders	52,746	54,074	55,318	56,106	56,471	56,614	257	86	155	3,867	7%
Shetland Islands	10,078	10,575	11,047	11,450	11,782	12,023	97	65	78	1,945	19%
South Ayrshire	51,490	52,392	53,273	53,862	54,097	54,056	178	52	103	2,566	5%
South Lanarkshire	140,347	144,661	148,453	151,337	153,498	155,101	811	443	590	14,754	11%
Stirling	37,856	39,684	41,779	43,777	45,513	47,095	392	354	370	9,240	24%
West Dunbartonshire	42,157	42,575	42,911	42,955	42,841	42,577	75	-22	17	420	1%
West Lothian	73,761	76,769	79,643	82,217	84,487	86,445	588	454	507	12,684	17%

Table 2: Average household size by council, 2012-2037

Local authority							Change	
	2012	2017	2022	2027	2032	2037	2012-2037	
Scotland	2.18	2.14	2.11	2.08	2.06	2.03	-0.15	-7%
Aberdeen City	2.08	2.05	2.05	2.04	2.02	1.98	-0.10	-5%
Aberdeenshire	2.39	2.36	2.33	2.32	2.31	2.29	-0.10	-4%
Angus	2.21	2.16	2.12	2.10	2.07	2.05	-0.15	-7%
Argyll & Bute	2.10	2.02	1.99	1.96	1.95	1.92	-0.17	-8%
Clackmannanshire	2.20	2.16	2.12	2.10	2.07	2.04	-0.16	-7%
Dumfries & Galloway	2.18	2.12	2.08	2.06	2.03	2.01	-0.17	-8%
Dundee City	2.05	2.02	2.00	1.99	1.97	1.93	-0.12	-6%
East Ayrshire	2.24	2.18	2.14	2.11	2.08	2.05	-0.19	-8%
East Dunbartonshire	2.39	2.33	2.28	2.25	2.21	2.18	-0.21	-9%
East Lothian	2.28	2.26	2.24	2.23	2.22	2.21	-0.06	-3%
East Renfrewshire	2.41	2.35	2.30	2.26	2.23	2.20	-0.21	-9%
Edinburgh, City of	2.08	2.04	2.02	1.99	1.95	1.92	-0.16	-8%
Eilean Siar	2.13	2.02	1.94	1.88	1.83	1.78	-0.35	-17%
Falkirk	2.24	2.22	2.19	2.17	2.15	2.13	-0.11	-5%
Fife	2.21	2.19	2.17	2.16	2.14	2.13	-0.09	-4%
Glasgow City	2.02	1.99	1.97	1.95	1.92	1.89	-0.14	-7%
Highland	2.22	2.16	2.13	2.10	2.07	2.04	-0.17	-8%
Inverclyde	2.13	2.06	2.01	1.97	1.93	1.88	-0.25	-12%
Midlothian	2.34	2.30	2.29	2.28	2.26	2.25	-0.09	-4%
Moray	2.24	2.18	2.13	2.09	2.07	2.04	-0.20	-9%
North Ayrshire	2.17	2.13	2.09	2.05	2.02	1.99	-0.18	-8%
North Lanarkshire	2.28	2.23	2.18	2.13	2.10	2.06	-0.22	-10%
Orkney Islands	2.16	2.08	2.04	2.01	1.98	1.95	-0.22	-10%
Perth & Kinross	2.20	2.18	2.16	2.15	2.15	2.14	-0.06	-3%
Renfrewshire	2.13	2.06	2.02	1.99	1.96	1.93	-0.20	-9%
Scottish Borders	2.13	2.09	2.05	2.03	2.00	1.98	-0.16	-7%
Shetland Islands	2.28	2.21	2.16	2.12	2.09	2.06	-0.22	-10%
South Ayrshire	2.16	2.11	2.08	2.05	2.02	1.99	-0.17	-8%
South Lanarkshire	2.22	2.17	2.13	2.09	2.07	2.04	-0.18	-8%
Stirling	2.29	2.18	2.07	1.98	1.90	1.84	-0.45	-20%
West Dunbartonshire	2.13	2.08	2.04	2.01	1.97	1.93	-0.20	-9%
West Lothian	2.36	2.32	2.29	2.27	2.25	2.24	-0.12	-5%

Figure 1: Number of households in Scotland: Household estimates, 2010- and provisional 2012-based projections

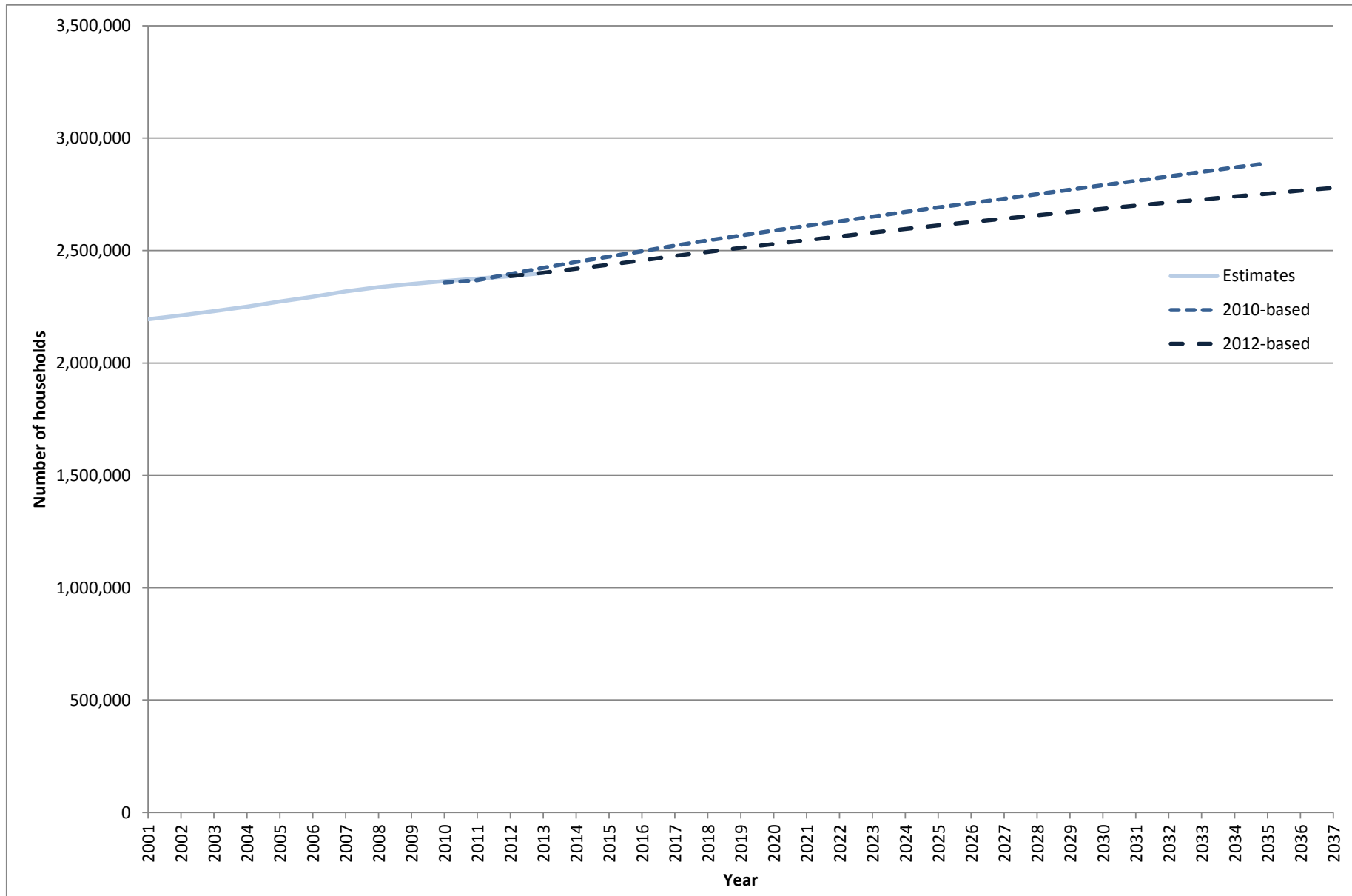


Figure 2: Number of households by type in Scotland in 2012 and 2035: 2010- and provisional 2012-based projections

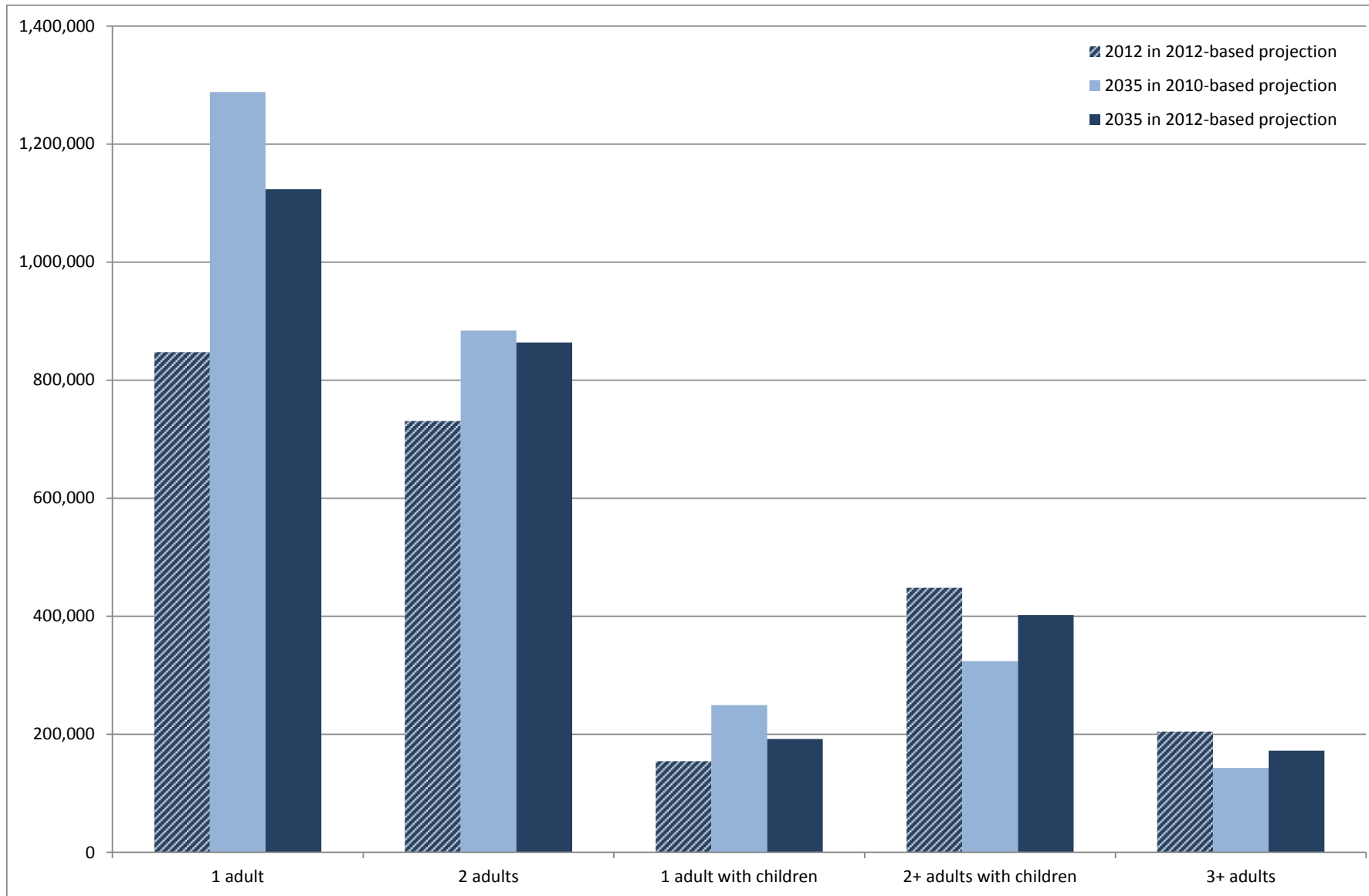


Figure 3: Number of households by age of head of household and household type in Scotland in 2012 and 2035, 2010- and provisional 2012-based projections

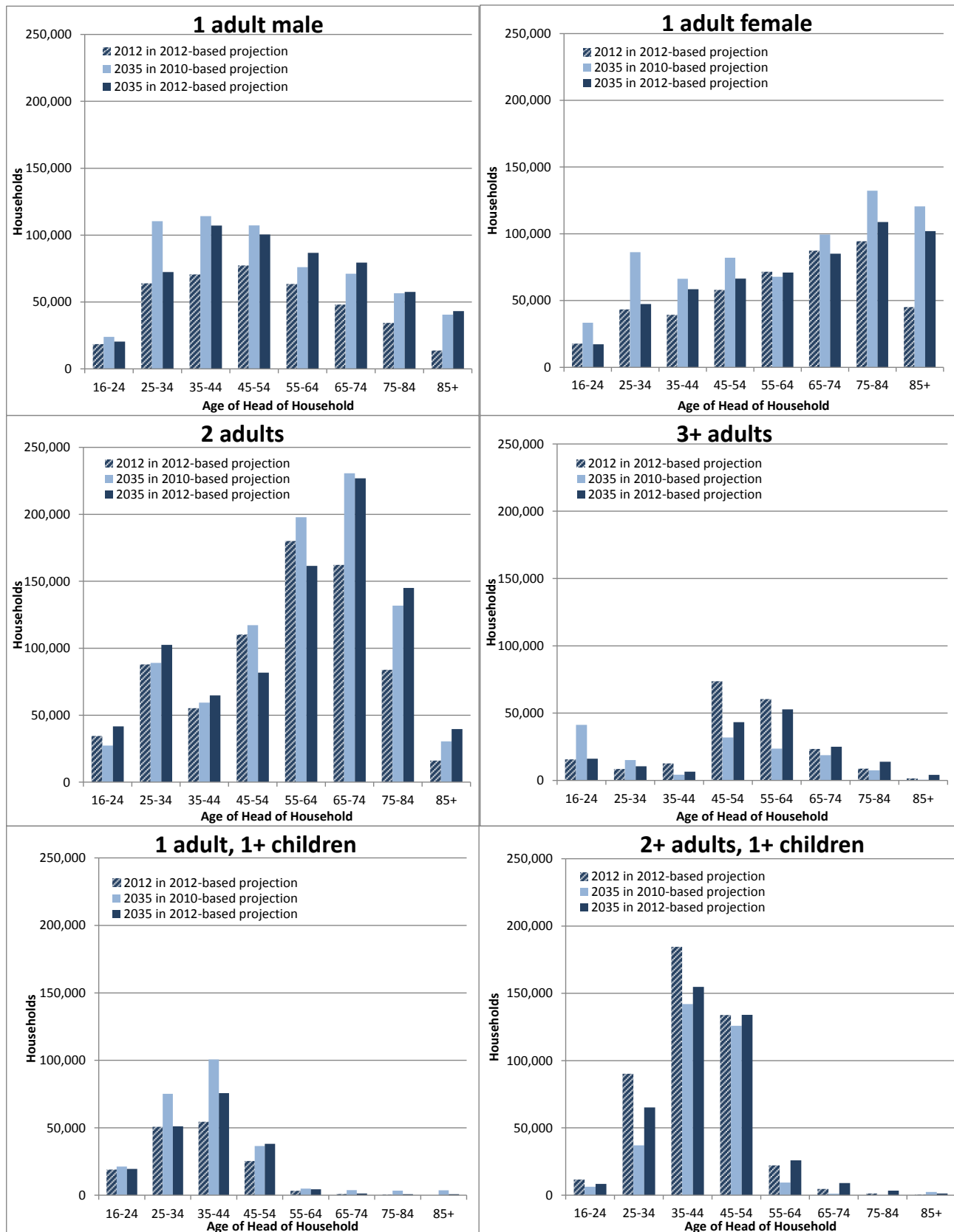


Figure 4: Number of households by age of head of household in Scotland in 2012 and 2035: 2010- and provisional 2012-based projections

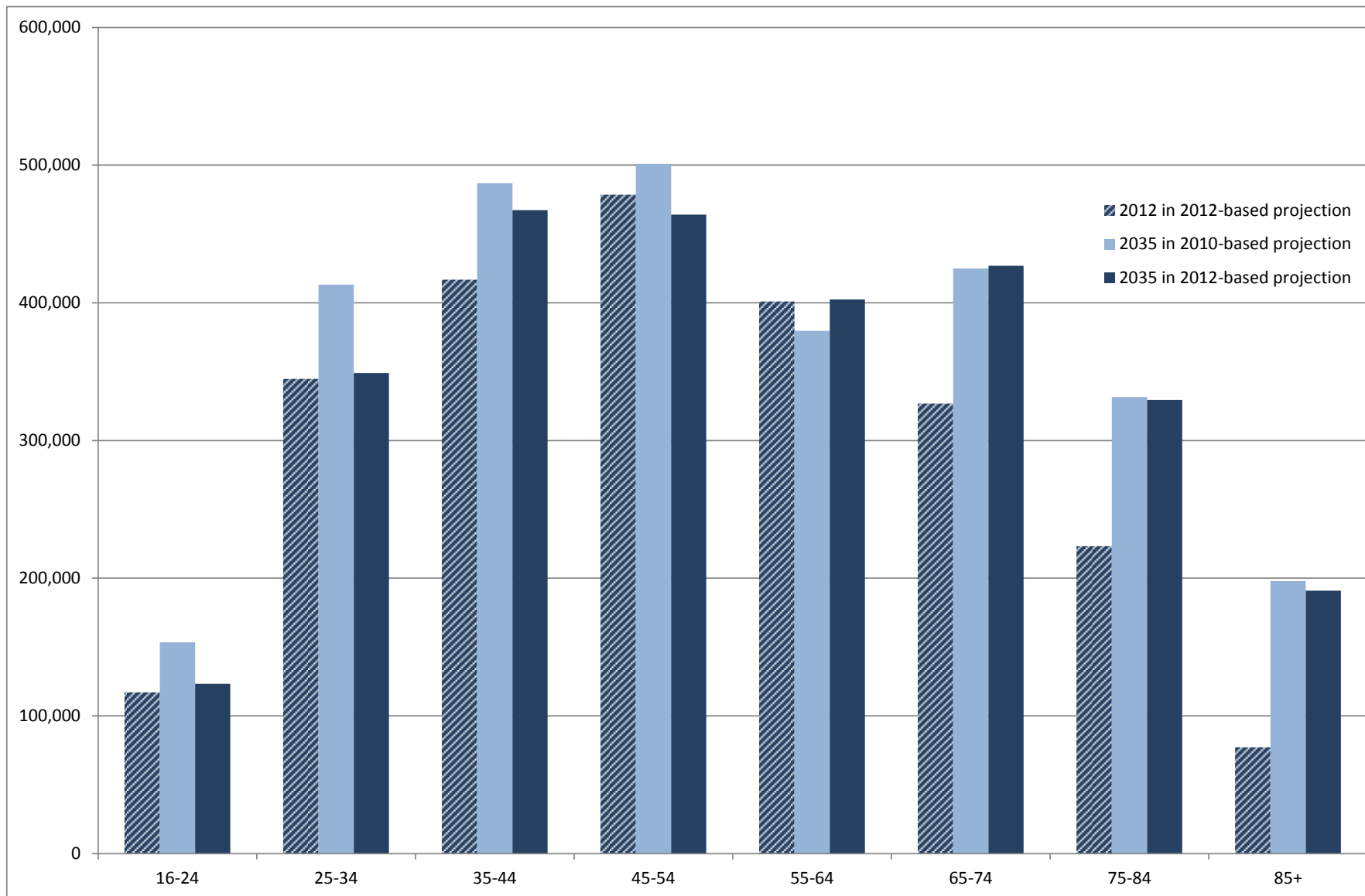
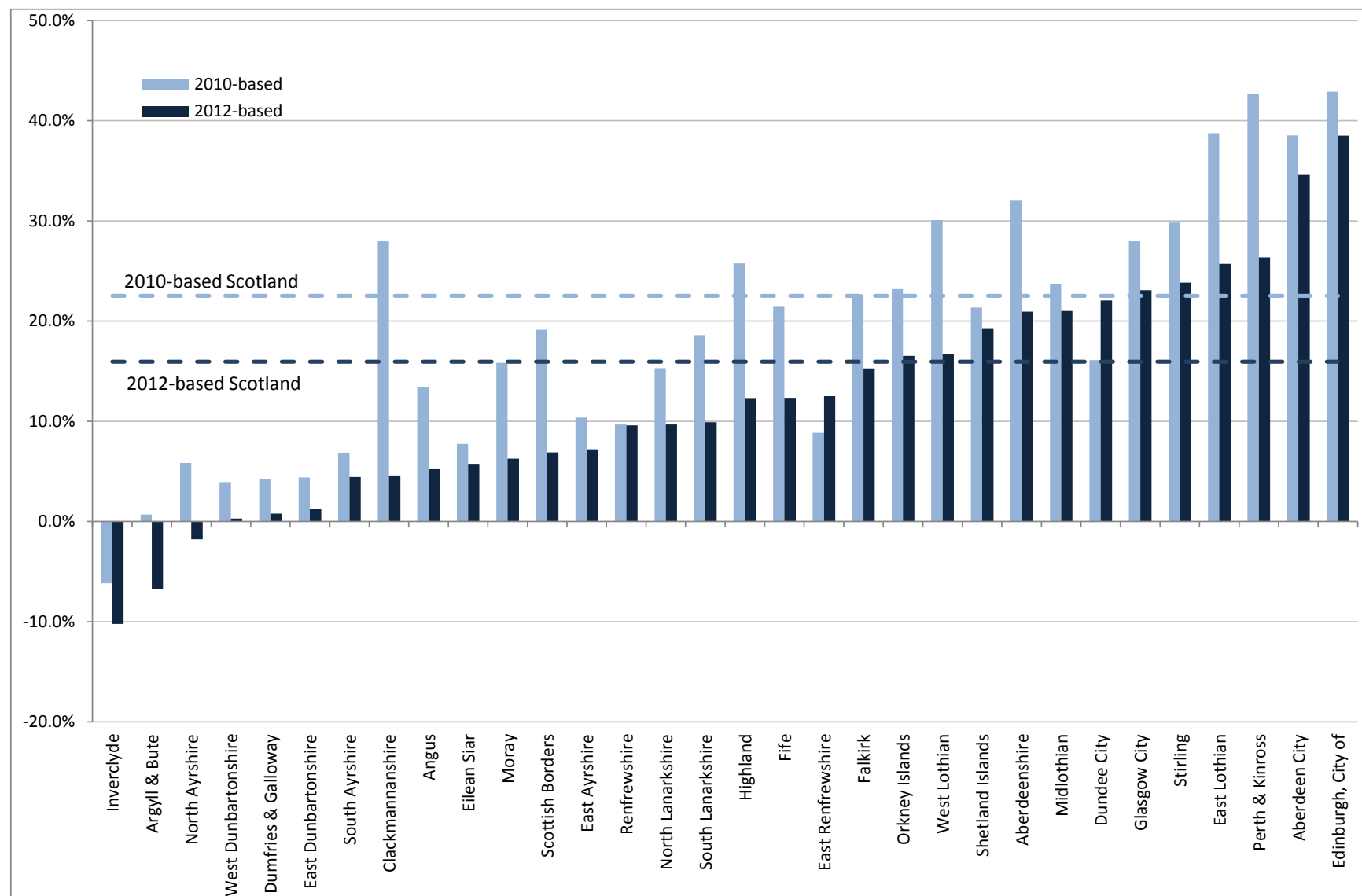


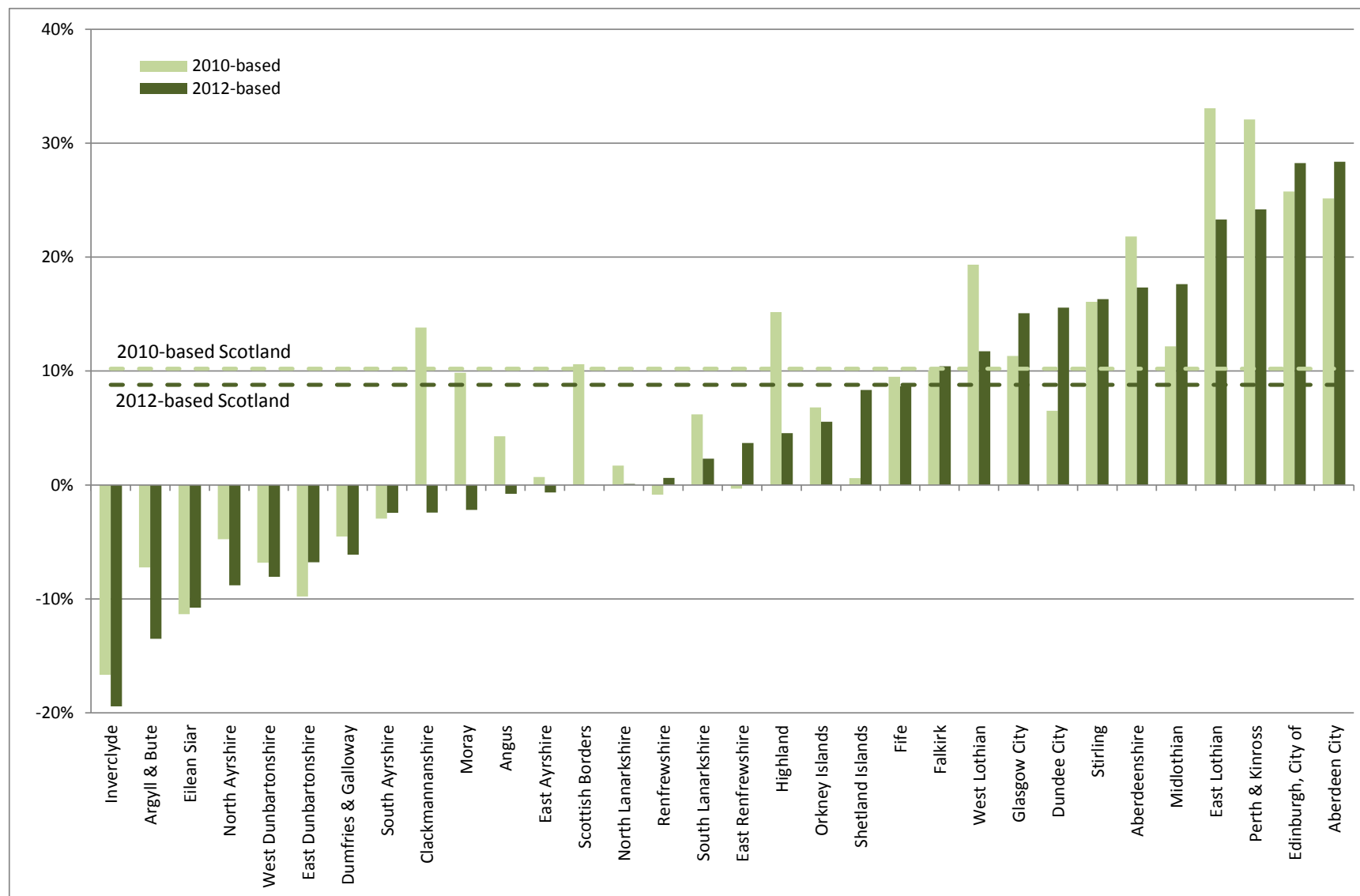
Figure 5: Percentage change in number of households by council: 2010- and provisional 2012-based projections¹



Footnote

1) This chart compares the change from 2010 to 2035 in the 2010-based projections with the change from 2012-2037 in the provisional 2012-based projections.

Figure 6: Percentage change in projected population by council: 2010- and 2012-based projections²



Footnote

2) This chart compares the change from 2010 to 2035 in the 2010-based population projections with the change from 2012-2037 in the 2012-based population projections.