

HOUSEHOLD ANALYSIS REVIEW GROUP: COMPARISON OF HOUSEHOLD PROJECTIONS AND THE 2001 CENSUS RESULTS

Purpose

1. At the last HARG meeting, HARG members agreed that GRO(S) should begin a review of the household projections methodology. To begin with, it was agreed that GRO(S) should compare the results of previous household projections with the results of the 2001 Census, to identify areas where there were particular strengths and weaknesses. These results are presented here.
2. HARG members are asked to comment on these findings, and any other analysis that should be considered.

Results

3. **Total number of households (Table 1 and Chart):** These figures show a comparison of the 1992 to 2002-based household projections and the 2001 Census, for all households in Scotland. Each year's household projections over-estimated the overall number of households, by 1-2%. Similar figures were produced for each household type, age group and council area, and a summary of the results is shown in Tables 2-4, described below.
4. **Household types (Table 2):** The biggest discrepancies were in households with three or more adults, and households with one adult and two or more children, which were both substantially over-estimated. These groups both comprise relatively few households, which may partially explain why the projections were not as accurate as for other groups. In contrast, households with two or more adults and children, which make up 22% of all households, were substantially under-estimated – the 2000-based household projections under-estimated the number of households of this type by around 11%.
5. **Age of head of household (Table 3):** In general, the household projections over-estimated the younger age groups and under-estimated the older age groups. The discrepancies were most extreme for the very youngest and oldest groups – the 2000-based household projections over-estimated the number of households in the 16-24 age group by 33%, and under-estimated the 85+ age group by 10%. Again, the figures for these groups are smaller (under 4% of all households in Scotland) which may partially explain why the projections are less accurate.
6. There may be a link between the overestimation of households where the age of head of household is 16-24, and households containing three or more adults. The Census reveals fewer young adults living in households with three or more adults (possibly students) than the household projections estimated.
7. To an extent, these results reflect the population projections, which also over-estimated the number of people in younger age groups (particularly men) and under-estimated the number of people in older age groups (particularly aged 80 and over). As the population projections feed directly into the household projections, it is inevitable that any inaccuracies will be reflected there.

8. **Council area (Table 4):** As expected from the fact that the household projections over-estimated the number of households overall, there were more councils where the projections over-estimated the figures than under-estimated them. Because the overall number of households is adjusted to the latest set of household estimates every two years, the overall figures for each council are more accurate than the figures broken down by household type or age, which have not been adjusted in this way. In 13 councils, the 2000-based household projections over-estimated the number of households by at least 2%, with the biggest over-estimation of 4% being in Aberdeen City and Eilean Siar. In six councils, the 2000-based household projections under-estimated the true number of households by 1-2%, with the biggest difference, of 2%, being in Stirling.

Comparisons between 1991 and 2001 Census results

9. Tables 5-7 show a comparison of the number of households recorded in the 1991 and 2001 Censuses, by household type, age group and council area. In some cases, this highlights where the household projections were wrong – for example, the household projections predicted increases in the number of households consisting of three or more adults, and households headed by people aged 16-24. In both of these groups, the Census actually showed a decrease, explaining why the household projections resulted in substantial over-estimates.

Conclusions

10. Some of the groups where the predictions were least accurate had the smallest numbers of households (e.g., less than 4% of households were headed by people aged under 24, or over 85). Therefore, while there may be demand for producing projections for smaller groups, such as 5-year age bands, instead of the bands currently used, the advantage of this must be weighed against the possibility that the results could be less accurate.

11. Inevitably, any inaccuracies in the population projections will also affect the household projections. An advantage of the household projections now being produced by GRO(S) is that we can work more closely with the demography branch which produces the population statistics.

12. In the current projections methodology, the overall numbers of households are adjusted to the current year's household estimates, which improves the accuracy of the overall figures. However, because the information on household type and age comes from the Census, these figures cannot be updated in this way. Therefore, changes in trends in household formation can have a substantial impact on the accuracy of the household projections. This suggests a strong case for using more recent data, such as Scottish Household Survey results, to provide more up-to-date information on trends in household composition between Censuses.

GROS: Household estimates
May 2005

Annex: Comparisons of household projections and 2001 Census

Table 1: 1992 to 2002-based household projections (Scotland), thousands

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
1992-based	2,067	2,089	2,111	2,132	2,152	2,183	2,211	2,226																		
1994-based			2,102	2,126	2,149	2,169	2,187	2,203	2,218	2,233	2,247	2,261	2,276	2,290	2,304	2,319	2,334									
1996-based					2,136	2,154	2,170	2,186	2,200	2,215	2,230	2,243	2,258	2,273	2,287	2,302	2,317	2,332	2,346							
1998-based							2,170	2,187	2,205	2,224	2,242	2,260	2,279	2,298	2,317	2,336	2,356	2,374	2,393	2,412	2,430					
2000-based									2,203	2,222	2,239	2,257	2,276	2,295	2,313	2,332	2,352	2,370	2,389	2,408	2,426	2,445	2,462			
2002-based											2,217	2,225	2,237	2,249	2,261	2,272	2,284	2,296	2,309	2,322	2,335	2,347	2,359	2,370	2,381	
Census (April 2001)										2,192																

Chart 1: 1992 to 2002-based household projections (Scotland)

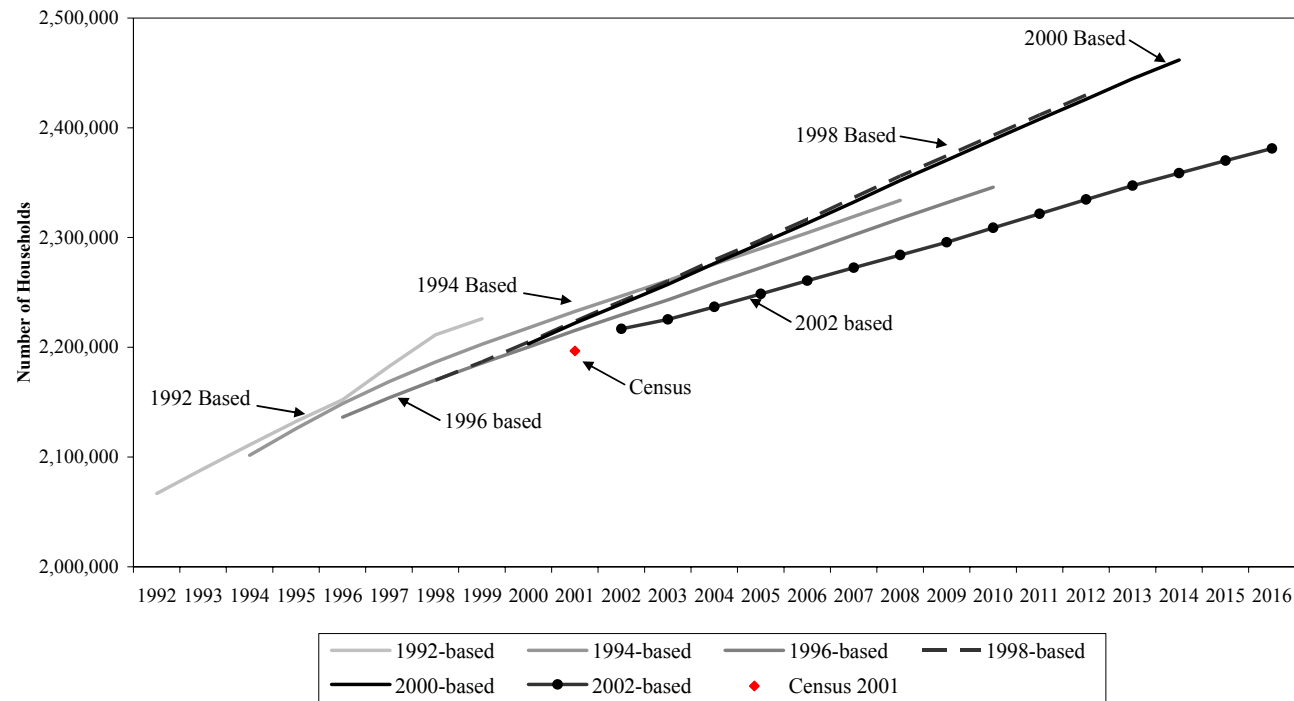


Table 2: Household types

Household type	% of households	Accuracy
1 adult (male)	14%	1994&1996 under-estimated by 5% 1998&2000 over-estimated by 5%
1 adult (female)	19%	1994&1996 under-estimated by 2% 1998&2000 over-estimated by 1-3%
2 adults	30%	Over-estimated by 1-2%
1 adult, 1 child	3%	1994 & 1996 under-estimated by 10% 1998 & 2000 over-estimated by 1-2%
3+ adults	9%	Over-estimated by 35-16%
1 adult, 2+ children	3%	Over-estimated by 5-20%
2+ adults, 1+ children	22%	Under-estimated by 3-11%

Table 3: age group of the head of household

Age group	% of households	Accuracy
16-24	4%	Over-estimated by 22-35%
25-29	7%	Over-estimated by 9-6%
30-34	10%	Over-estimated by 4%
35-44	20%	Over-estimated by 2%
45-54	18%	Under-estimated by 3%
55-59	8%	Under-estimated by 2%
60-64	7%	Accurate
65-74	14%	Accurate
75-84	9%	Under-estimated by 2-1%
85+	3%	Under-estimated by 13-10%

Table 4: Council area

Council	% of households	% over-estimate (+) or under-estimate (-)			
		1994 based	1996 based	1998 based	2000 based
Aberdeen City	4%	+5%	+3%	+4%	+4%
Aberdeenshire	4%	+3%	+3%	+2%	+2%
Angus	2%	+2%	+1%	+1%	+0%
Argyll & Bute	2%	+1%	+0%	+0%	-1%
Clackmannanshire	1%	+4%	+2%	+1%	+1%
Dumfries & Galloway	3%	+2%	+1%	+1%	+0%
Dundee City	3%	+3%	+2%	+0%	+0%
East Ayrshire	2%	+2%	+1%	+2%	+2%
East Dunbartonshire	2%	+3%	+2%	+1%	+1%
East Lothian	2%	+1%	+0%	+1%	+1%
East Renfrewshire	2%	+4%	+0%	+0%	+0%
Edinburgh, City of	9%	+3%	+1%	+2%	+3%
Eilean Siar	1%	+7%	+7%	+6%	+4%
Falkirk	3%	-2%	-2%	+0%	+0%
Fife	7%	+1%	+1%	+1%	+1%
Glasgow City	12%	+3%	+2%	+3%	+2%
Highland	4%	+3%	+2%	+1%	+0%
Inverclyde	2%	+1%	+2%	+2%	+3%
Midlothian	2%	-3%	-3%	-2%	-1%
Moray	2%	+2%	+1%	+2%	+2%
North Ayrshire	3%	+4%	+3%	+2%	+2%
North Lanarkshire	6%	+1%	+1%	+1%	+2%
Orkney Islands	0.4%	+5%	+2%	+1%	-1%
Perth & Kinross	3%	+0%	-1%	-1%	-1%
Renfrewshire	3%	+3%	+3%	+4%	+3%
Scottish Borders	2%	+1%	-1%	-1%	-1%
Shetland Islands	0.4%	+6%	+2%	+1%	+2%
South Ayrshire	2%	+0%	+1%	+1%	+1%
South Lanarkshire	6%	+0%	+0%	+0%	+1%
Stirling	2%	-3%	-2%	-2%	-2%
West Dunbartonshire	2%	-1%	+1%	+4%	+3%
West Lothian	3%	+1%	+0%	+1%	+1%

Number of households recorded in the 1991 and 2001 Censuses**Table 5: household type**

Household type	1991	2001	% difference
1 adult male	218,257	305,299	40%
1 adult female	358,893	415,454	16%
2 adults	600,507	649,503	8%
1 adult with 1 child	50,283	75,668	50%
3 or more adults	229,340	204,630	-11%
1 adult with 2 or more children	49,363	62,472	27%
2 or more adults with 1 or more children	512,549	479,101	-7%
All households	2,019,642	2,192,246	9%

Table 6: Age of head of household

Age of head of household	1991	2001	% difference
16-24	100191	88910	-11%
25-29	176598	144205	-18%
30-34	193494	209209	8%
35-44	373467	451386	21%
45-54	319326	411149	29%
55-59	158536	175591	11%
60-64	164433	157153	-4%
65-74	301259	318880	6%
75-84	190944	175415	-8%
85+	41172	60195	46%
All households	2019642	2192246	9%

Table 7: All households in each council area

Council	1991	2001	% difference
Aberdeen City	87,879	97,013	10%
Aberdeenshire	79,911	90,736	14%
Angus	43,435	46,945	8%
Argyll & Bute	36,789	38,969	6%
Clackmannanshire	18,712	20,558	10%
Dumfries & Galloway	59,050	63,807	8%
Dundee City	65,862	66,908	2%
East Ayrshire	48,229	50,346	4%
East Dunbartonshire	39,241	42,206	8%
East Lothian	34,107	38,157	12%
East Renfrewshire	32,031	34,950	9%
Edinburgh, City of	185,531	204,683	10%
Eilean Siar	10,965	11,275	3%
Falkirk	56,344	62,598	11%
Fife	137,004	150,274	10%
Glasgow City	267,031	271,596	2%
Highland	79,185	89,533	13%
Inverclyde	36,007	36,691	2%
Midlothian	29,810	32,922	10%
Moray	32,443	35,803	10%
North Ayrshire	54,004	58,726	9%
North Lanarkshire	120,769	132,619	10%
Orkney Islands	7,693	8,342	8%
Perth & Kinross	51,316	58,323	14%
Renfrewshire	69,910	75,355	8%
Scottish Borders	43,234	47,371	10%
Shetland Islands	8,368	9,111	9%
South Ayrshire	45,075	48,748	8%
South Lanarkshire	115,560	126,496	9%
Stirling	30,761	35,508	15%
West Dunbartonshire	38,565	40,781	6%
West Lothian	54,821	64,896	18%
Scotland	2,019,642	2,192,246	9%