
METHODOLOGY OPTIONS FOR THE PRODUCTION OF 2000-BASED HOUSEHOLD PROJECTIONS

Introduction

1. 2000-based household projections are due to be published in August 2002. No changes to the basic methodology from that used for the 1998 projections (i.e. the headship rate method) are being introduced. However, this time round – for the first time – this Group is being consulted on which (and how many) Census years to use for the headship rate projections, and on the adjustments which should be made to the projections before they are finalised.
2. This paper presents (raw) household projections from 2000 to 2014 using four different combinations of census years (referred to hereafter as the 4 methods). The four sets of projections are compared to other sources of data, namely the 2000 household estimates, the Scottish Household Survey results for 1999-2000 and the 2000-based population projections for adults and children.
3. Members are invited to consider the attached analyses and provide advice on the following:

3.1 The most appropriate ‘method’ to use for the official 2000-based estimates.

3.2 Consider whether we should re-base the projections to the 2000 household estimates, and if so how this should be done.

3.3 Consider whether we should adjust to ensure that the minimum number of adults needed to make up the projections is always less – for every council – than the adults projected in the population projections, and if so how this should be done.

Background

4. Raw 2000-based household projections have been produced using the following four methods for projecting forward the headship rates:

- A: 2 point exponential using 1971 and 1991 Census data
- B: 2 point exponential using 1981 and 1991 Census data
- C: 3 point exponential using 1971, 1981 and 1991 Census data
- D: 3 point weighted exponential using 1971, 1981 and 1991 Census data

A detailed explanation of these methods can be found in [Annex 1](#). Throughout the paper they will be referred to simply as methods A, B, C and D.

5. The projections have been produced simply by applying the projected headship rates to the projections of persons in private households. ([Annex 2](#) sets out how the projections of persons in private households were derived.) For the purposes of these analyses no adjustments have been made to the projections. (*In producing the 1998-based projections 3 types of adjustments were made: (A) adjusting so that the all council figures add to the*

Scotland figures, (B) adjusting so that the base year projection was in line with the household estimate for that year, and (C) adjusting so that the minimum number of adults needed to fill the household projected was, for each council, always less than the total number of adults in the population projections. None of these adjustments have yet been made to any of the projections – hence they are “raw” projections.)

6. For each set of projections the following comparisons have been carried out:
- i) Comparison with Household Estimates: base year (2000) projection for total households compared with the 2000 household estimate - for Scotland and individual councils.
 - ii) Comparison with Scottish Household Survey: base year (2000) projection for proportions of each household type compared with the proportions of each household type estimated by the Scottish Household Survey in 1999 and 2000 - for Scotland and individual councils.
 - iii) Comparison with GROS adult population projections: the minimum number of adults required to fill up the households which are projected compared to the population projections of adults in private households (derived from GROS population projections) - for Scotland and individual councils.
 - iv) Comparison with GROS child population projections: the estimated number of children in the households which are projected compared to the population projections of children (derived from GROS population projections) - for Scotland and individual councils.
7. In addition the methods have been compared with each other in terms of the number and proportions of the different types of household that are projected.

Summary of Findings

8. The following table shows how the methods rank, depending on the criteria by which they are assessed, and whether the assessment is at all Scotland level, or considering individual councils

Criteria	Scotland	Councils*
Closeness of projection for 2000 to the household estimate for 2000	D, A, C, B	B, C, D, A
Closeness of the distribution of household types in the projection for 2000 to the distribution of household types found by the SHS	D, A, C, B	D, B, C, A
Length of time into the projection period that the minimum number of adults required to fill the projections remains less than the projected adult population	B, C, A, D	B, C, A, D

* The top ranking method at the council level is that which is best for the highest number of councils.

Comparison with Household Estimates

9. In past years the households projections have been re-based to the official household estimates. The ratio of the base year household projection c.f. the household estimate for that year would be applied to all of the projections throughout the period. The bigger that ratio the greater the extent of the adjustment necessary.

10. **For this round of projections members are asked to consider whether we should adjust to the base year** – how reliable does the group consider the household estimates to be? If it is agreed that some adjustment should be made then the group will wish to consider how much adjusting will be required for each of the four methods.

11. [Chart 1](#) shows, for Scotland as a whole and for each council, how far away the total projected households for 2000 is from the official 2000 household estimate. From this chart, **at the all Scotland level method D gives a 2000 projection which is closest to the 2000 estimate** – followed by methods A, C and B respectively. Looking at the council level data, we can say that:

Method A is closest for only 1 council

Method B is closest for 12 councils

Method C is closest for 10 councils

Method D is closest for 9 councils

12. [Chart 2](#) shows the sum of the absolute differences across each council for each method. Method D has the smallest sum of absolute differences across all councils, followed by methods A, C and B. Interestingly this is exactly the same ranking as when considering the all Scotland differences in Chart 1.

Comparison with Scottish Household Survey

13. The distribution across the 6 main household types of the total projected households for 2000 has been compared to the distribution of households across household type as found by the Scottish Household Survey during 1999 and 2000.

14. [Chart 3](#) and [Table 1](#) show the comparison for Scotland. These show that at the all Scotland level all four methods give similar proportions of each household type in the projection for 2000 to those in the SHS, never being out by more than 2.5 percentage points. Taking the sum of the absolute differences across all household types for each method, **we would order the methods as follows (with smallest difference first): D, A, C, B** (the same order as for all Scotland when comparing total numbers at base year with household estimate).

Table 1: Percent of Households by Household Type: Comparison of Scottish Household Survey and Raw Projection Data (Scotland as a Whole)

Household Type	Scottish Household Survey	Method A		Method B		Method C		Method D	
		Base Yr Proj.	% Point Diff	Base Yr Proj.	% Point Diff	Base Yr Proj.	% Point Diff	Base Yr Proj.	% Point Diff
1 adult	30.6%	31.2%	0.6%	32.7%	2.1%	32.1%	1.5%	30.7%	0.1%
2 adults	30.9%	29.3%	-1.6%	29.9%	-1.1%	29.9%	-1.0%	29.0%	-1.9%
1 adult, 1 child	2.8%	3.0%	0.2%	3.4%	0.6%	3.2%	0.4%	2.9%	0.1%
3+ adults	10.5%	12.3%	1.7%	10.9%	0.3%	11.8%	1.3%	12.7%	2.2%
1 adult 2+ children	2.7%	2.9%	0.2%	3.3%	0.6%	3.1%	0.4%	2.8%	0.1%
2+ adult 1+ children	22.4%	21.3%	-1.1%	19.9%	-2.5%	19.9%	-2.5%	21.9%	-0.6%

Scottish Household Survey figures calculated using 1999 and 2000 data.

Projection base year is 2000

15. [Charts 4-9](#) show the comparison for all councils. Each one of these charts looks at a separate household type. Each chart shows, for each council for each method, the difference between the proportion of that household type making up the 2000 projection and the proportion of that household type among all households in 1999 and 2000 as found by the SHS. Again the closer to the centre 0% line the nearer the projected proportion to the SHS result.

16. Again deriving for each method the sum of the absolute difference in percentage points across all household types for each council, we can say that:

- Method A is closest to SHS for 4 Councils
- Method B is closest to SHS for 11 Councils
- Method C is closest to SHS for 5 Councils
- Method D is closest to SHS for 12 Councils**

Comparison with GROS adult population projections

17. For household projections we can derive a figure for the minimum number of adults required, in each of the projection years, to fill up the households that are being projected. ([Annex 3](#) Describes how the figure for the minimum number of adults is calculated). These minimum adult figures have been compared to the projected number of adults in the private household population – derived from GROS population projections.

18. Members will wish to consider whether the comparison of minimum adults in projected household to projected adult population should be used in assessing the methods. Members will also wish to consider whether adjustments should be made to those councils' projections for the chosen method where the minimum adults in the household projections is greater than the projected adult population. If the answer to at least one of these questions is yes, then the group will wish to consider the comparisons set out in [Charts 10-12](#).

19. [Charts 10a-10d](#) show, for each method, for Scotland, the projected minimum number of adults required to fill up the projected households, and compares this to the projected number of adults in the private household population. The charts show that **the “adult condition” holds (i.e. the minimum adults required for household projection is less than the adult population projection) for the greatest number of years for method B**, followed by methods C, a and then D. Interestingly this is exactly the reverse order of ranking than that given at the all Scotland level when comparing the base year projections with the estimates and the SHS.

20. [Charts 11 and 12](#) show the differences between minimum adults and adult population for each council for the projection years 2007 and 2014 respectively. If the adult condition is met then the bars would be to the left of the 0% line; if it is not met then they will be to the right of the 0% line. [Chart 11](#) shows that for 2007 the “adult condition” is met for all four methods at Scotland level; however, at council level we find that the following numbers of councils would find that their household projections over-project adults:

Method A: 13 councils
Method B: 4 councils
Method C: 8 councils
Method D: 14 councils

21. [Chart 12](#) shows that by 2014 the “adult condition” is not met by any of the four methods at Scotland level, and at council level we find that the following numbers of councils would find that their household projections over-project adults:

Method A: 26 councils
Method B: 15 councils
Method C: 17 councils
Method D: 26 councils

Comparison with GROS child population projections

22. For household projections we can derive a figure for the estimated number of children required, in each of the projection years, to fill up the households that are being projected. ([Annex 4](#) describes how the figure for the estimated number of children is calculated for each projection year.) These estimated numbers of children have been compared to the projected number of children in GROS’ population projections

23. Members will wish to consider whether the comparison of estimated number of children in projected households to projected child population should be used in assessing the methods. If the answer is yes, then the group will wish to consider the comparisons set out in [Charts 13-15](#).

24. [Charts 13a-13b](#) show, for each method, for Scotland, the estimated number of children required to fill up the projected households, and compares these to the projected number of children in the population. The charts show that for methods A, B and D the two figures converge as we move through the projection period. For method C the two figures get further apart – although they actually start much closer and remain much closer than for all other methods until 2009.

25. [Charts 14 and 15](#) show the differences between the estimated children to fill the households and the child population for each council for the projection years 2007 and 2014 respectively. If the closer the estimated children is to the child population projection the shorter the bar on the chart will be. [Chart 14](#) shows that for 2007 each of the methods gives an estimated number of kids closest to the population projections for the following numbers of councils:

Method A: 7 councils
Method B: 7 councils
Method C: 11 councils
Method D: 7 councils

26. [Chart 15](#) shows that for 2014 each of the methods gives an estimated number of kids closest to the population projections for the following numbers of councils:

Method A: 6 councils
Method B: 6 councils
Method C: 9 councils
Method D: 11 councils

Projected Household Types

27. In this section we have compared each method with the others in terms of the numbers (and proportions) of each type of household that they project – at the all Scotland level only. No comparison to other data sources is discussed here. It is difficult to see how information from this section could be used in arriving at a decision about the method to use, since no comparison is being made with other data. However, members of the group may wish to be aware of the difference between the methods in the future trends in the numbers and proportions of each type of household which the projections suggest.

28. [Charts 16a-16f](#) show, for each household type respectively, the numbers of households in Scotland projected by each method. The following points can be deduced from the charts:

- All methods are very close for the two household types “1 adult 1 child” and “1 adult 2+ children”.
- Methods A and D are close for all household types. They are lower than the other two methods for single person households and for 2 adult households; they are higher than the other methods for “3+ adult” and “2+adult, 1+children” households.
- Method B is not increasing as quickly for 3+ adult households as the other methods, but is increasing more quickly for single adult households.
- Method C is decreasing more quickly than the other methods for “2+adult, 1+children” households.

29. [Charts 17a-17d](#), and table 2 [showing for each method the proportion of each household type, for the years 2000, 2007 and 2014] show the proportions of households in Scotland projected by each method. The following points can be deduced from the charts.

- All methods show similar proportions of 1 adult and child(ren) households and 2 adult households throughout the projection period.
- Method B gives a smaller proportion of 3+ adult households throughout the period than the other methods
- The proportion of 2+adult and children households decreasing markedly throughout the period for all methods – however, most markedly for method C.
- The proportion of single person households increases during the projection period for all methods by a similar amount?

Conclusion

30. Members are invited to **consider the points set out in 3.1-3.3 of the introduction** bearing in mind that:

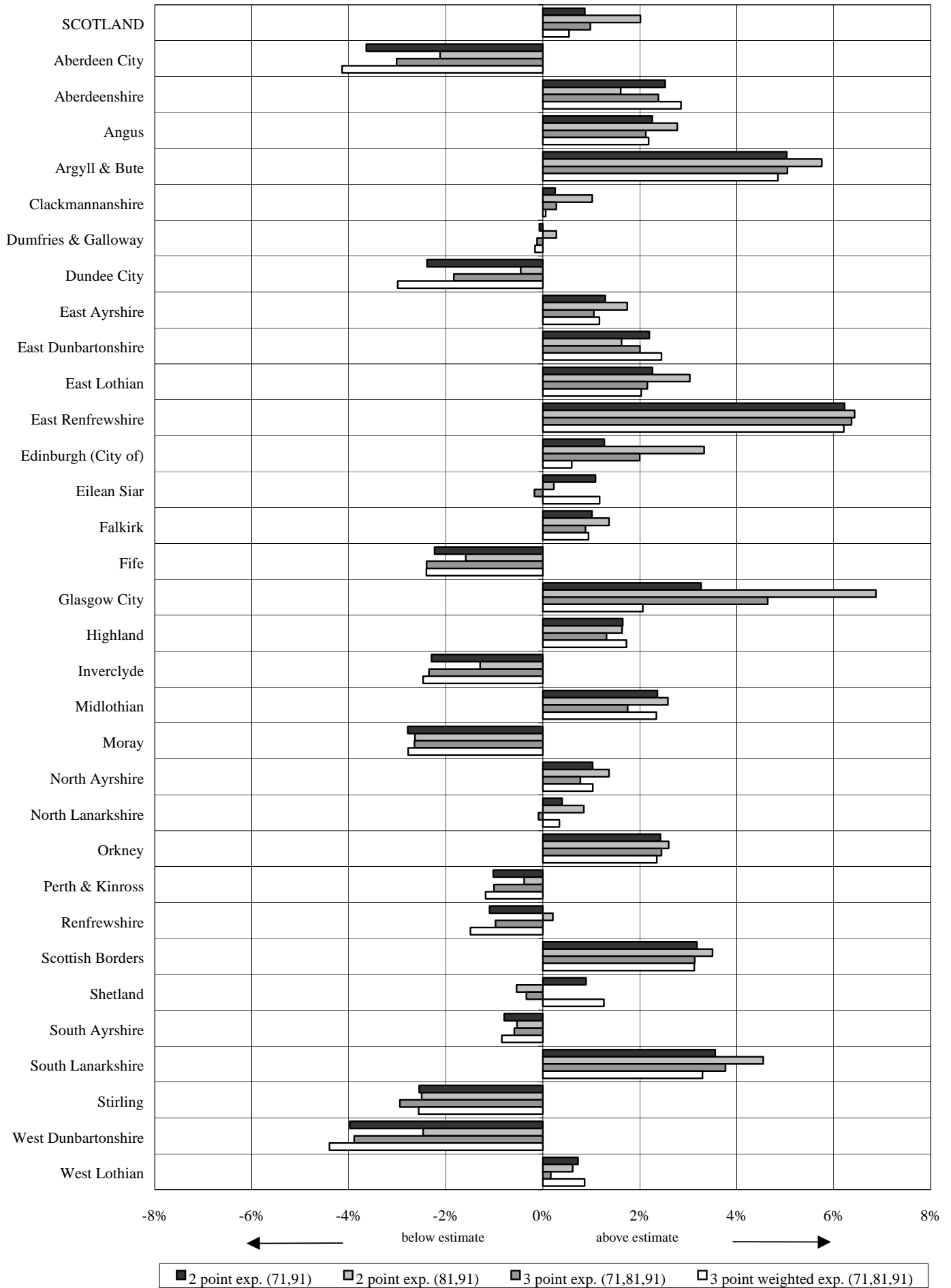
31. Final decisions on the methodology must be made on May 30th so that projections can be finalised in time for the August publication date.

Scottish executive housing statistics branch

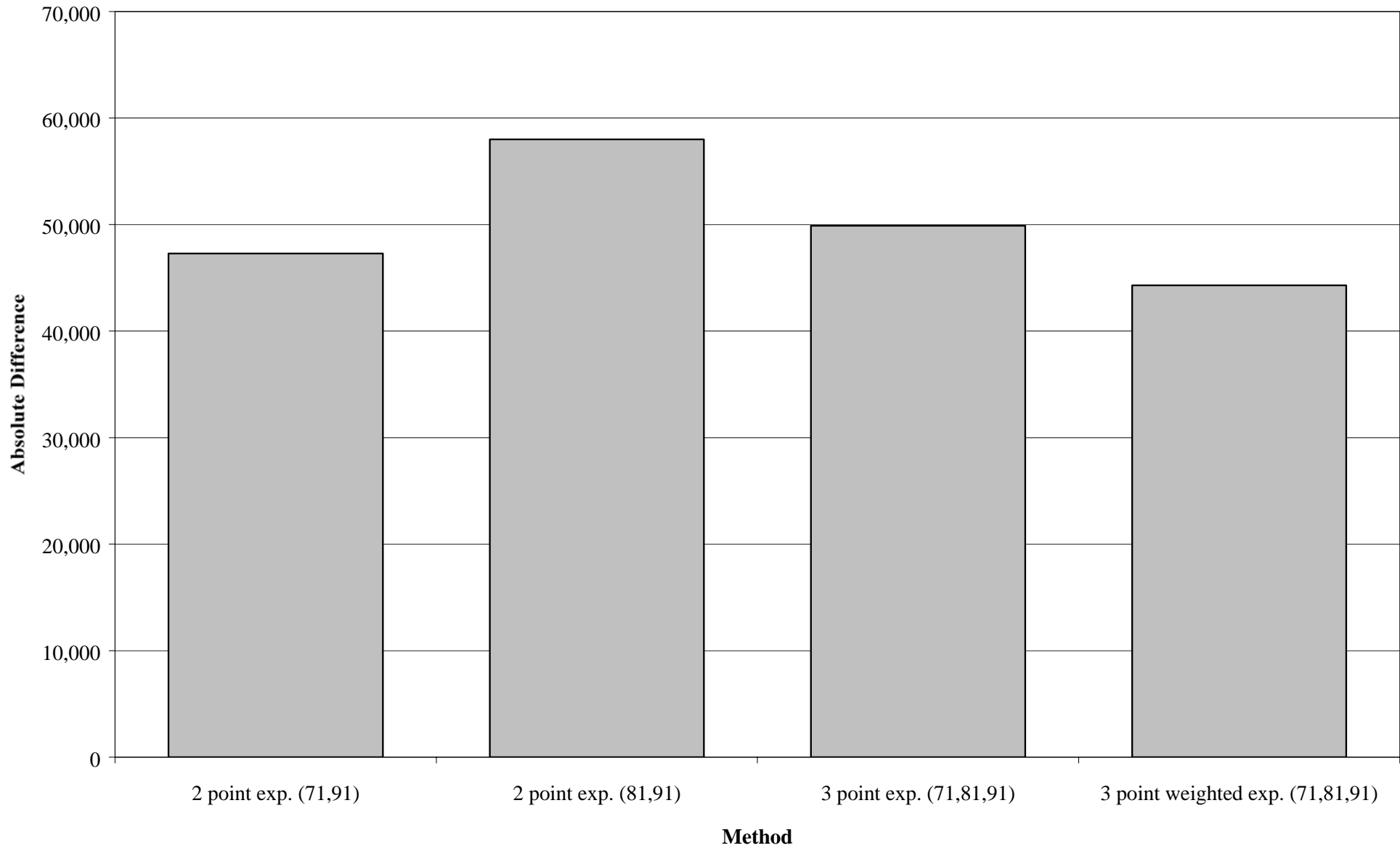
May 2002

CHARTS

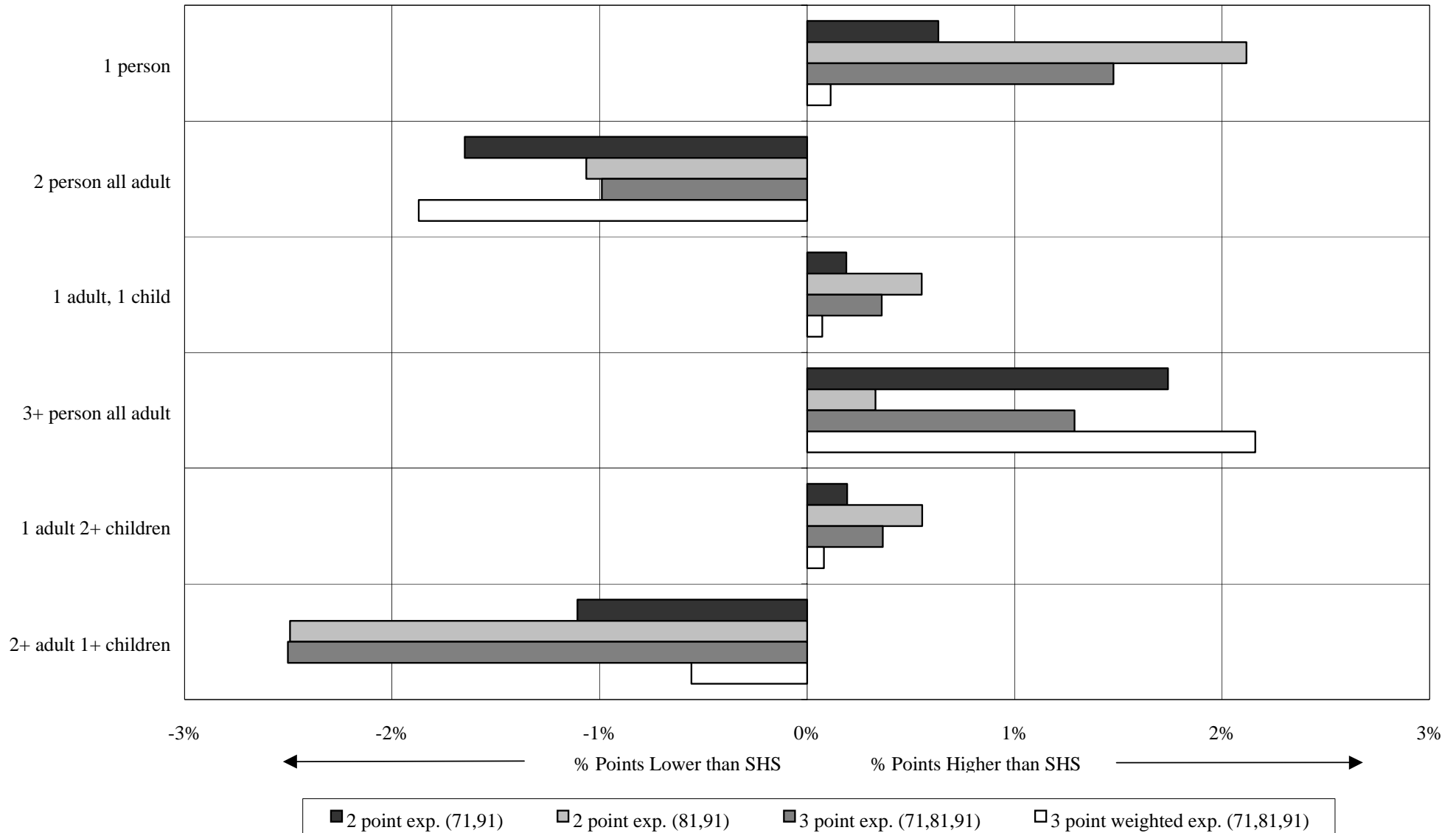
1) Raw Projections: Percentage Difference of Base Year Projection from Household Estimate (2000)



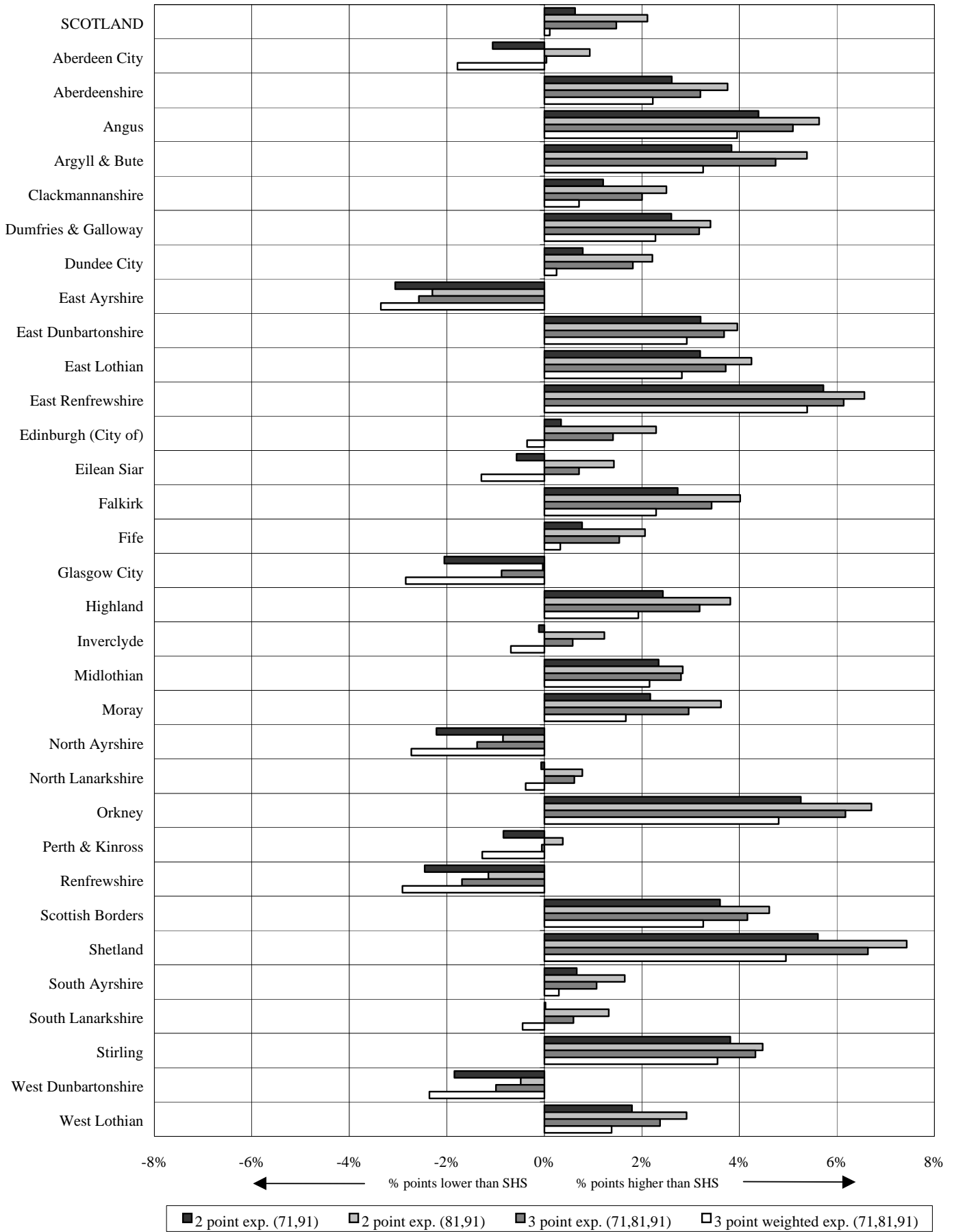
2) Raw Projections: Sum of Absolute Differences for All LAs Household Estimates 2000 vs Household Projections 2000



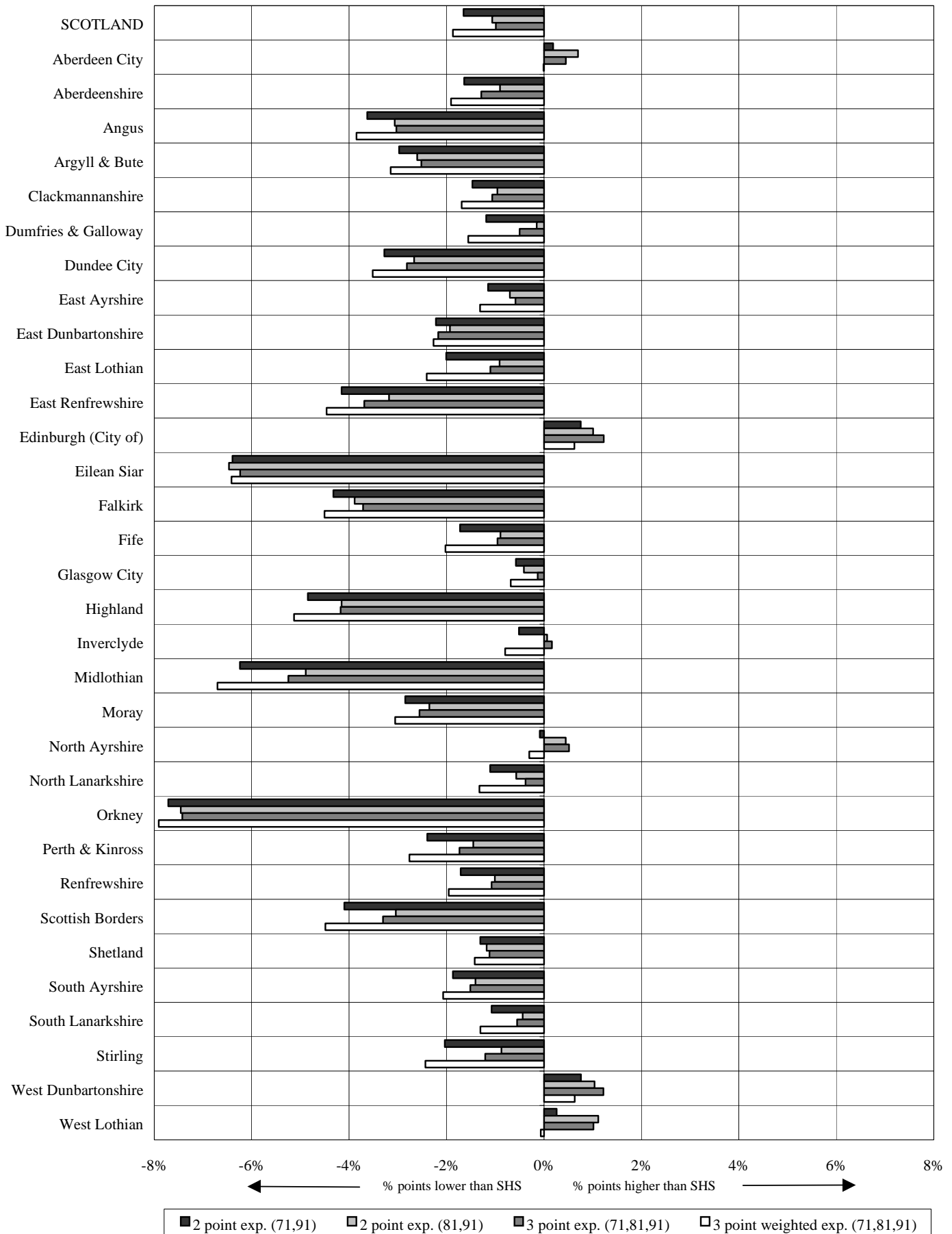
**3) Percentage of Households by Household Type: Percentage Point Difference
(SCOTLAND as a Whole)
of the Projection Methodologies (2000 base year)
from Scottish Household Survey Data (1999 and 2000)**



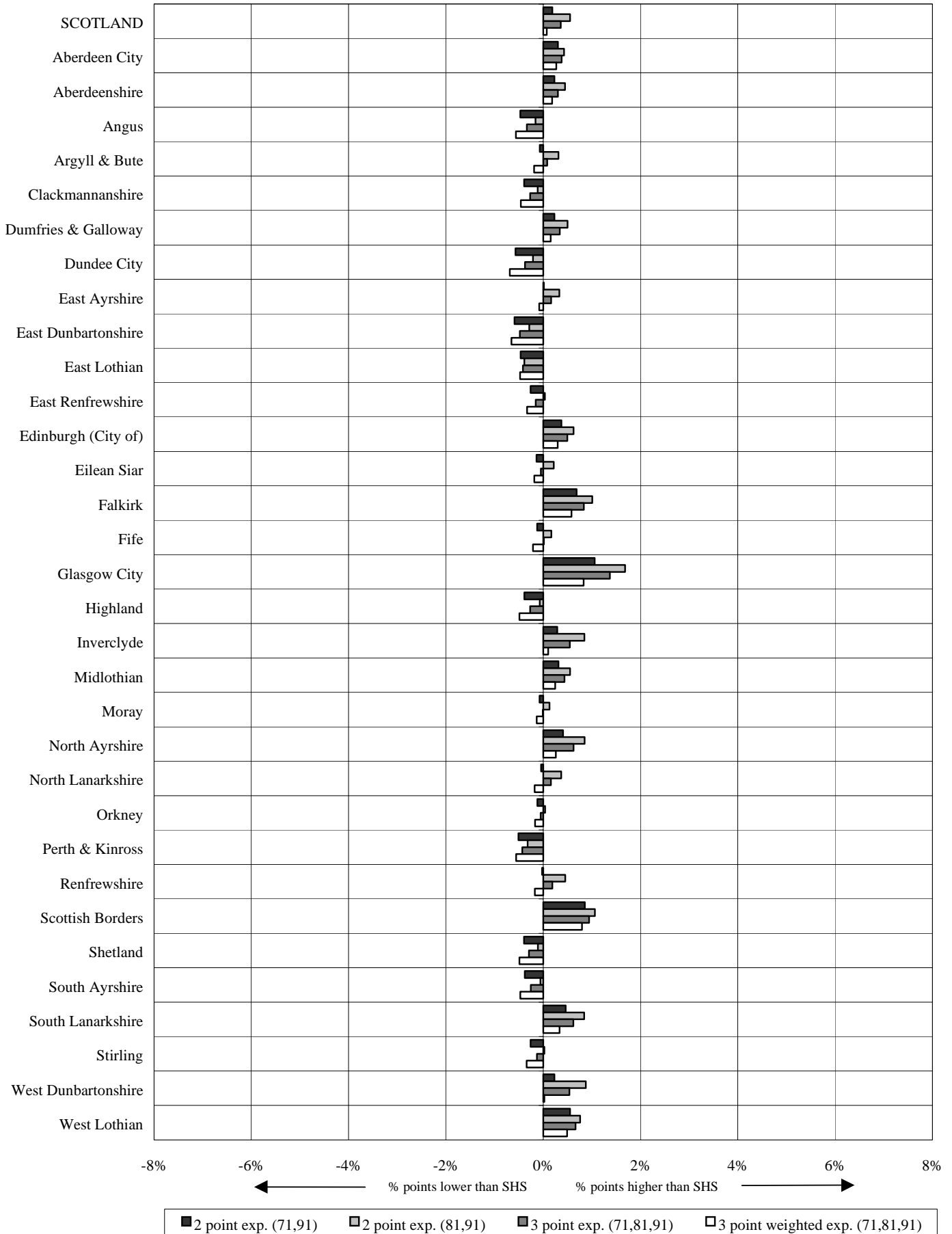
**4) Percentage of Households by Type: Percentage Point Difference
(for 1 ADULT HOUSEHOLDS)
of the Projection Methodologies (2000 base year)
from Scottish Household Survey Data (1999 and 2000)**



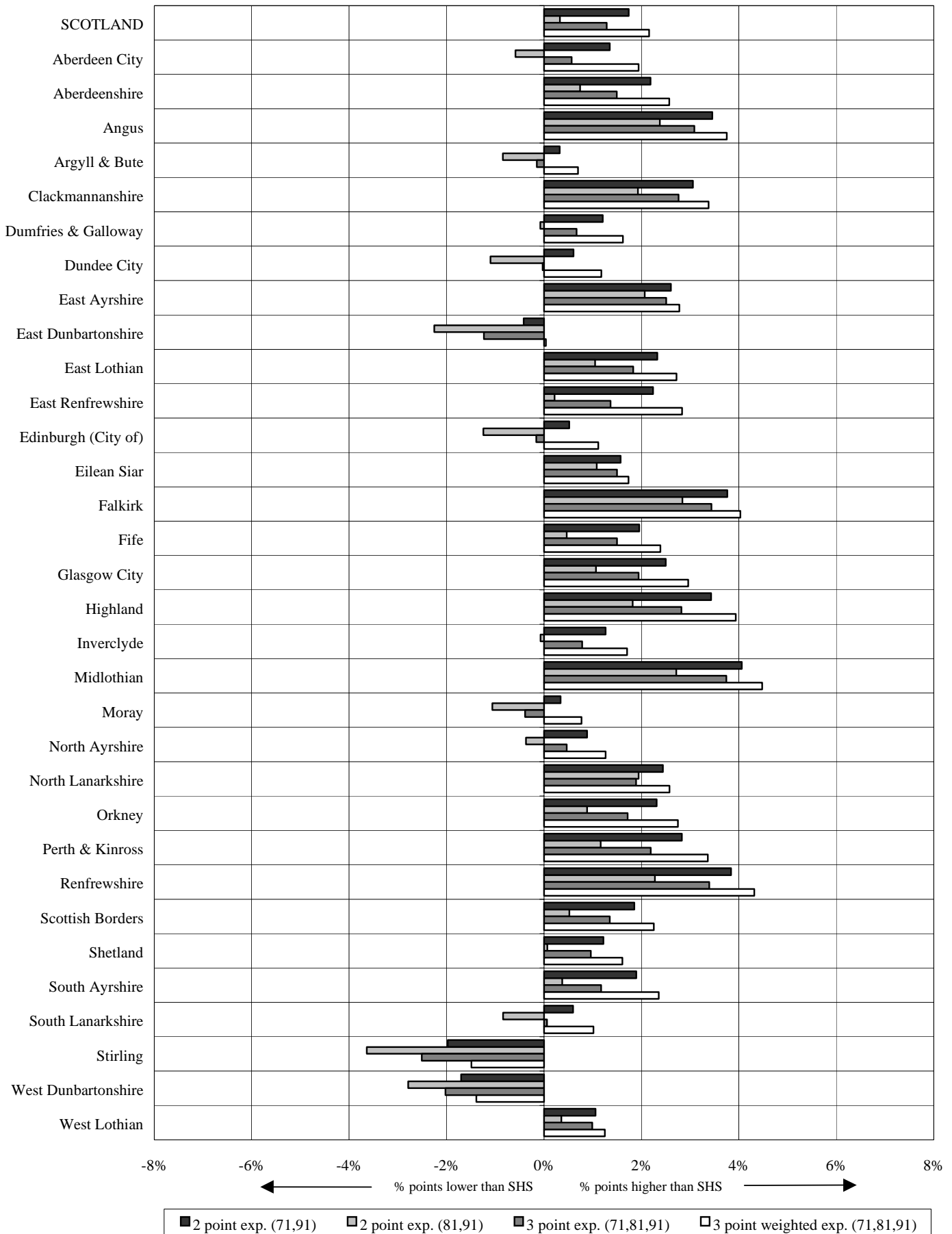
**5) Percentage of Households by Type: Percentage Point Difference
(for 2 ADULT HOUSEHOLDS)
of the Projection Methodologies (2000 base year)
from Scottish Household Survey Data (1999 and 2000)**



**6) Percentage of Households by Type: Percentage Point Difference
(for 1 ADULT & 1 CHILD HOUSEHOLDS)
of the Projection Methodologies (2000 base year)
from Scottish Household Survey Data (1999 and 2000)**



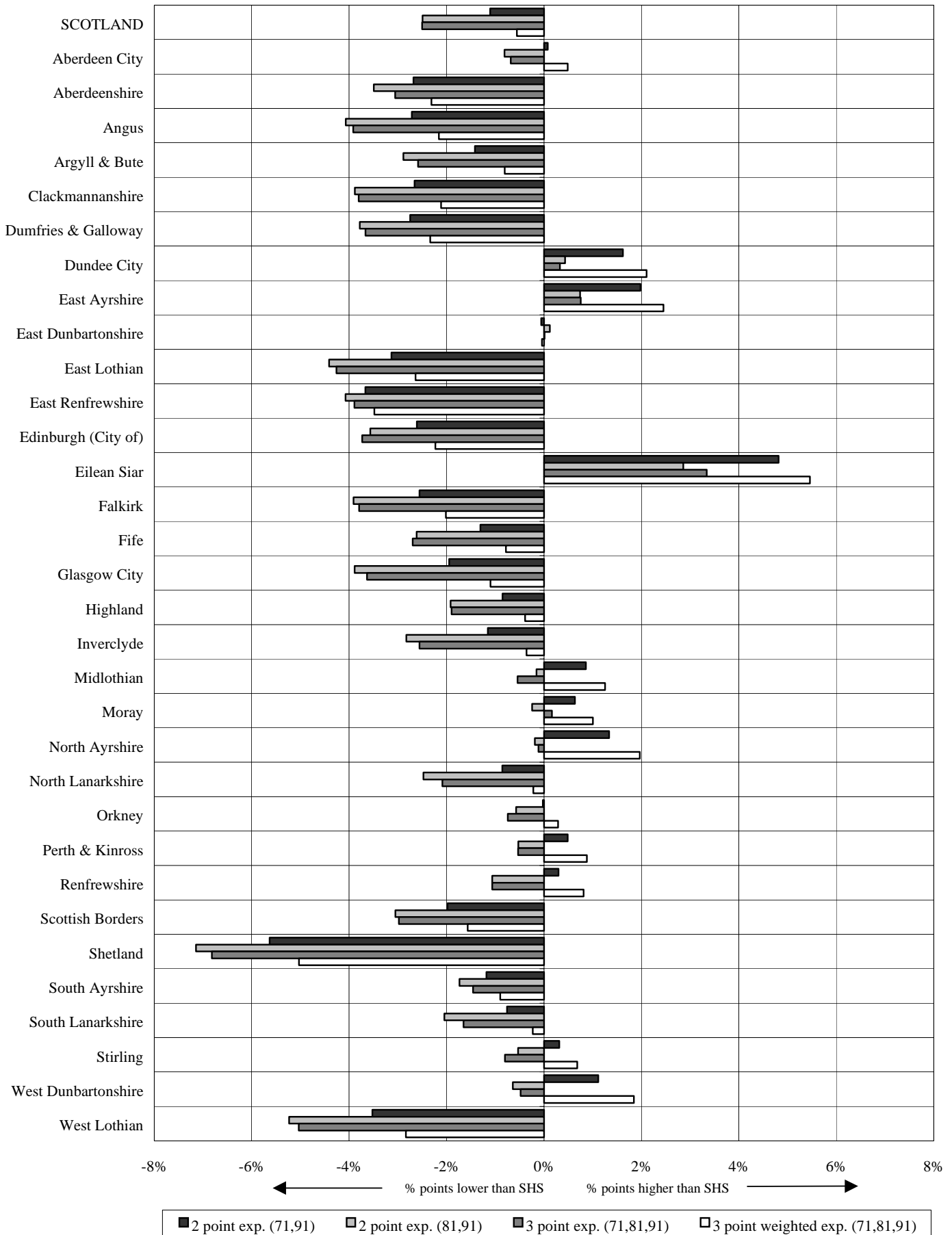
**7) Percentage of Households by Type: Percentage Point Difference
(for 3+ ADULT HOUSEHOLDS)
of the Projection Methodologies (2000 base year)
from Scottish Household Survey Data (1999 and 2000)**



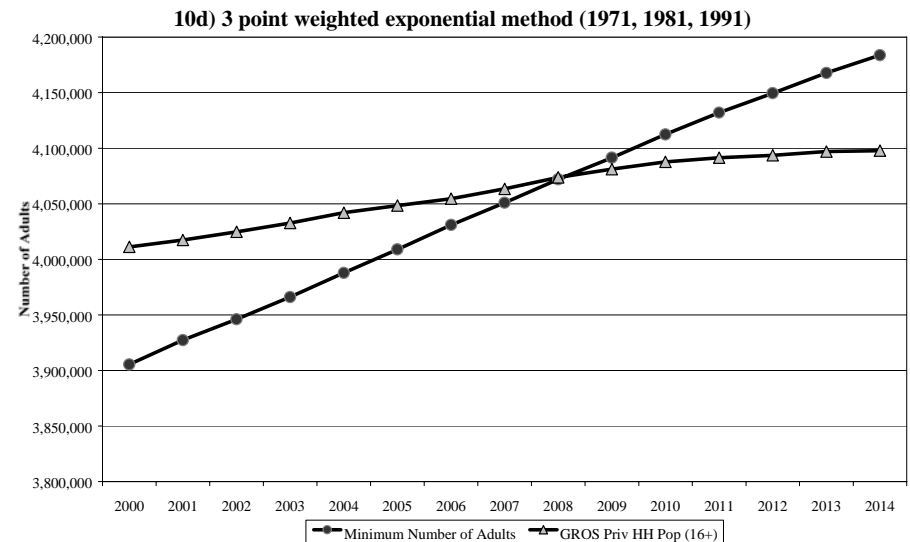
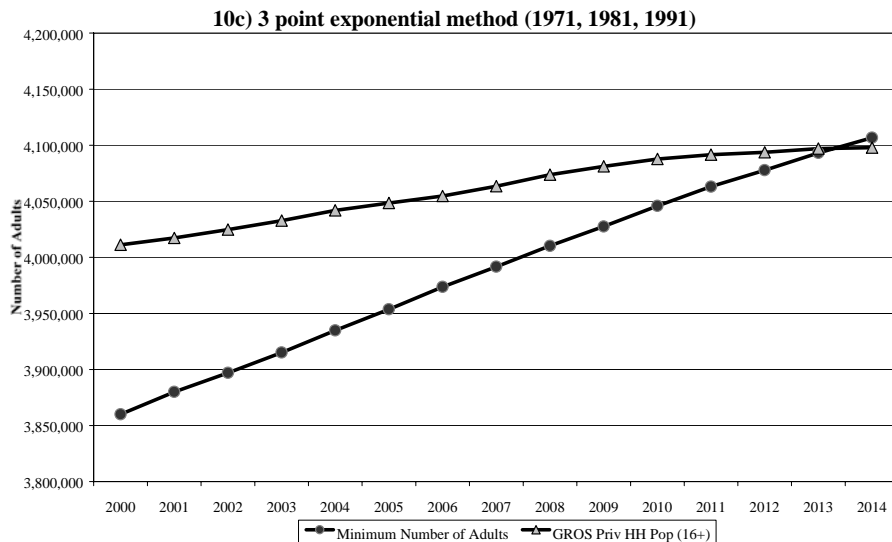
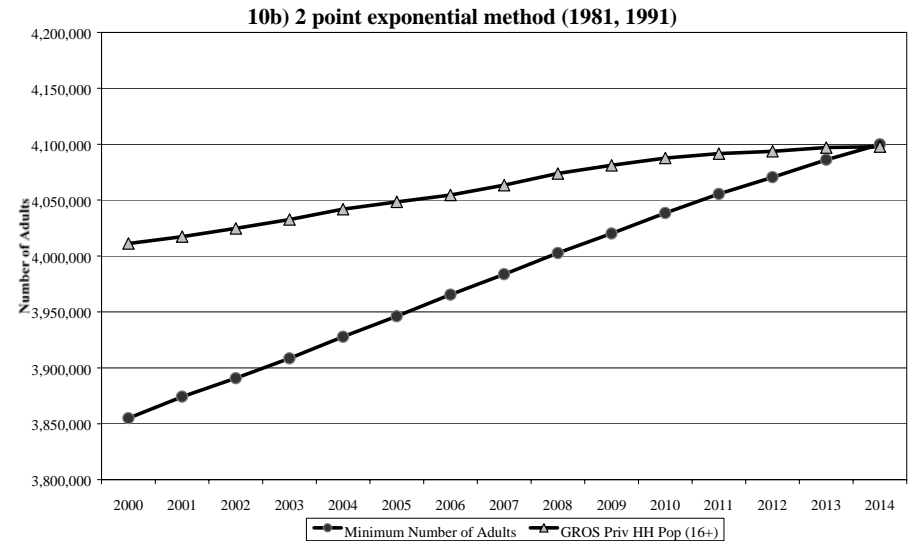
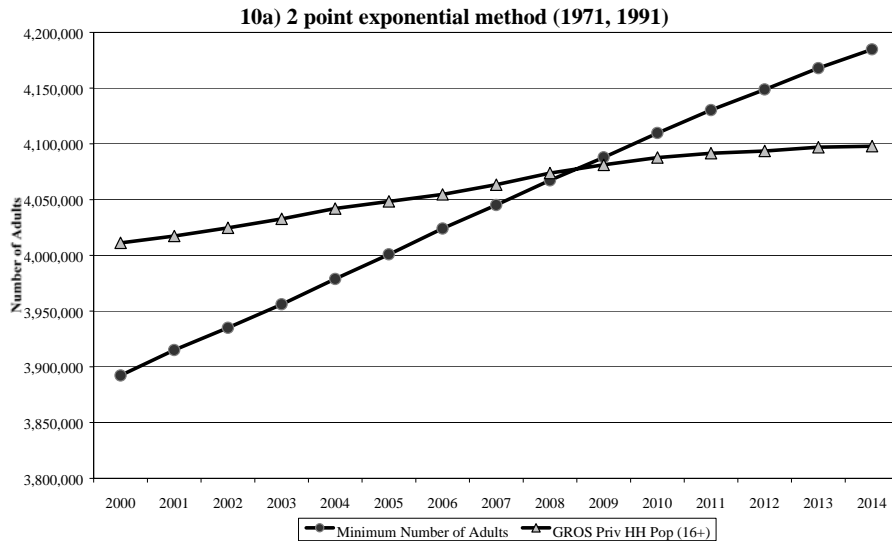
**8) Percentage of Households by Type: Percentage Point Difference
 (for 1 ADULT & 2+ CHILDREN HOUSEHOLDS)
 of the Projection Methodologies (2000 base year)
 from Scottish Household Survey Data (1999 and 2000)**



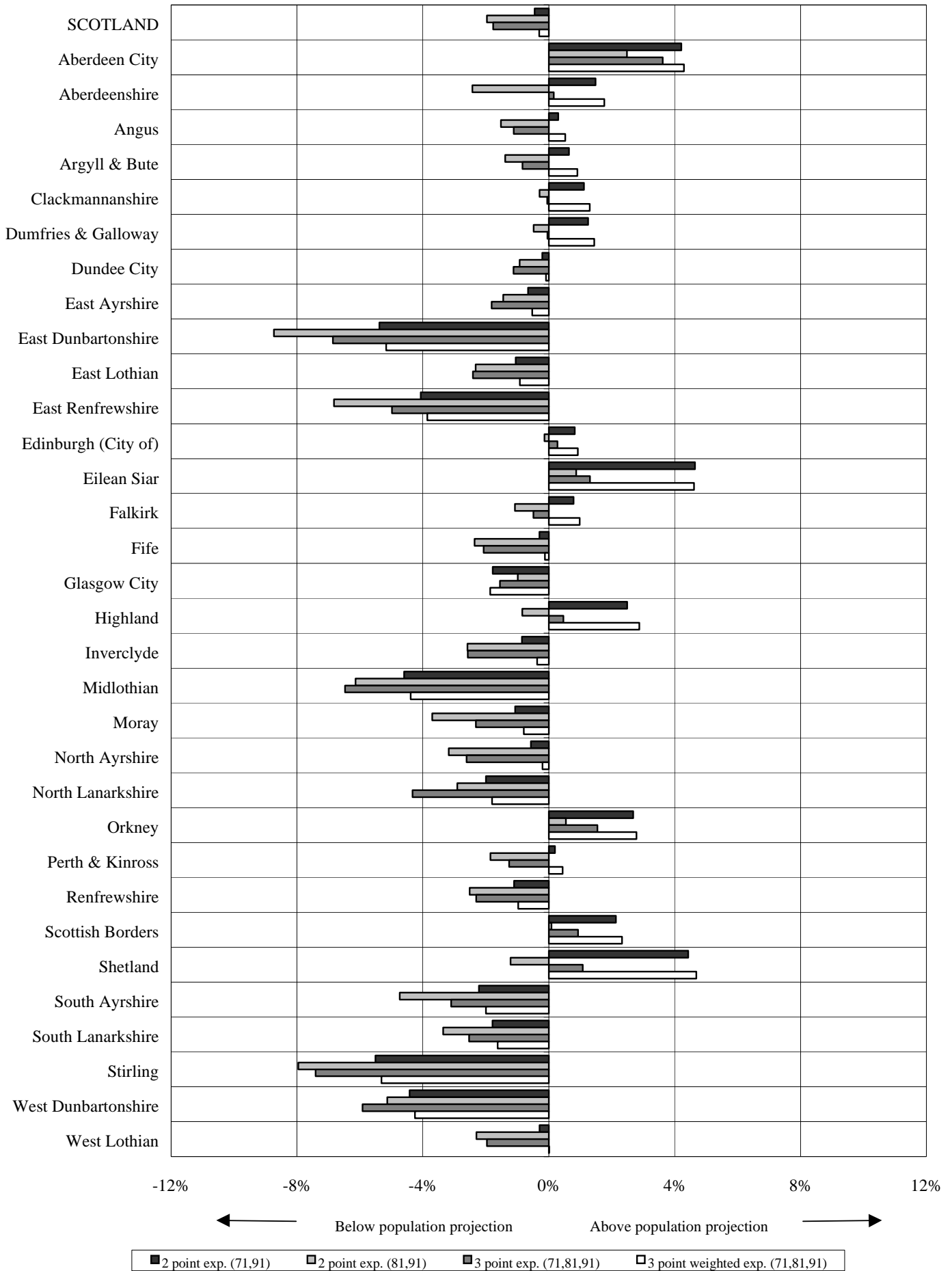
**9) Percentage of Households by Type: Percentage Point Difference
 (for 2+ ADULTS & 1+ CHILDREN HOUSEHOLDS)
 of the Projection Methodologies (2000 base year)
 from Scottish Household Survey Data (1999 and 2000)**



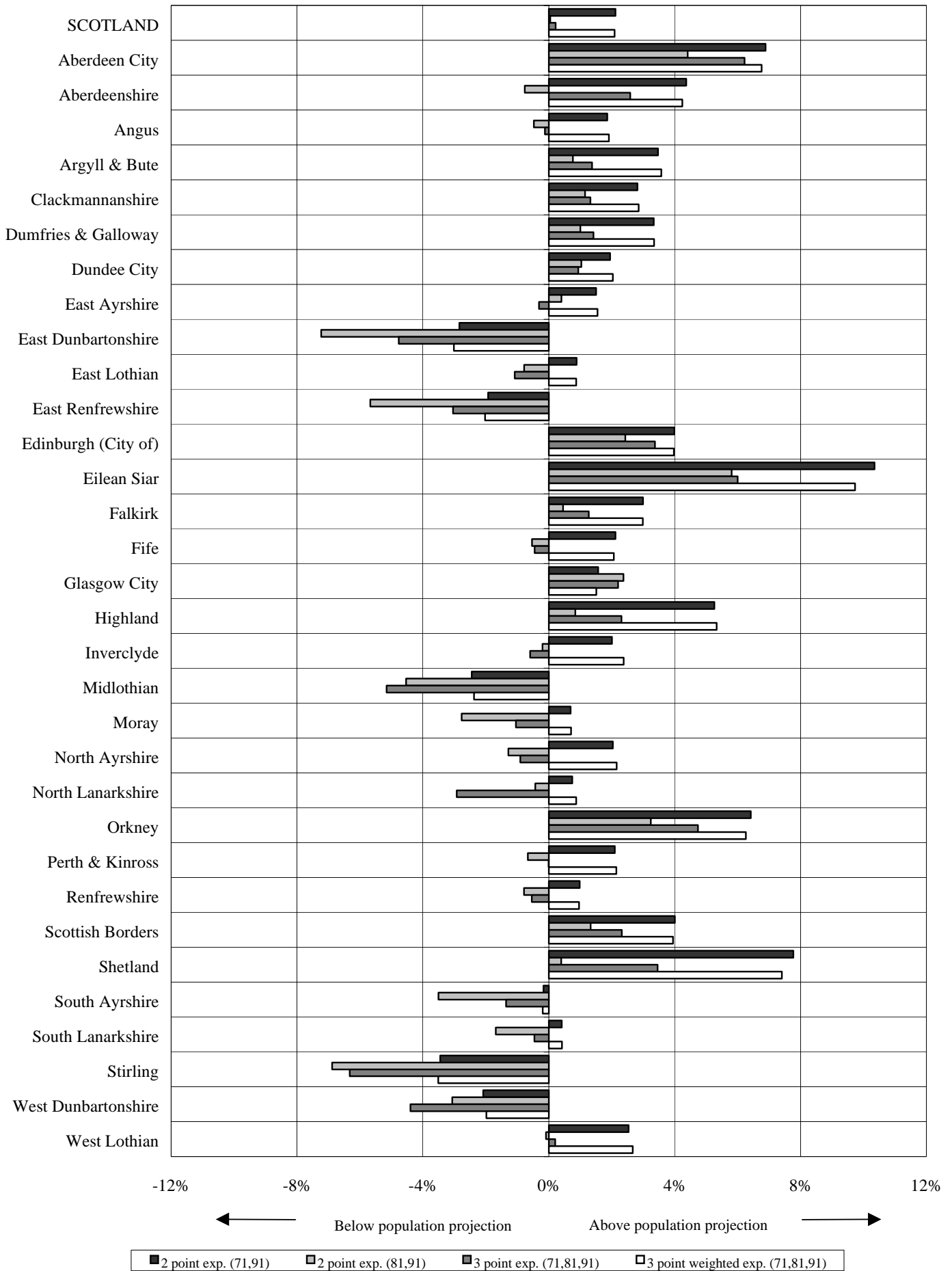
10) RAW PROJECTIONS: NUMBER OF GROS PROJECTED ADULTS AND THE MINIMUM NUMBER OF ADULTS REQUIRED TO FILL PROJECTED HOUSEHOLDS 2000 - 2014: SCOTLAND AS A WHOLE BY PROJECTION METHOD



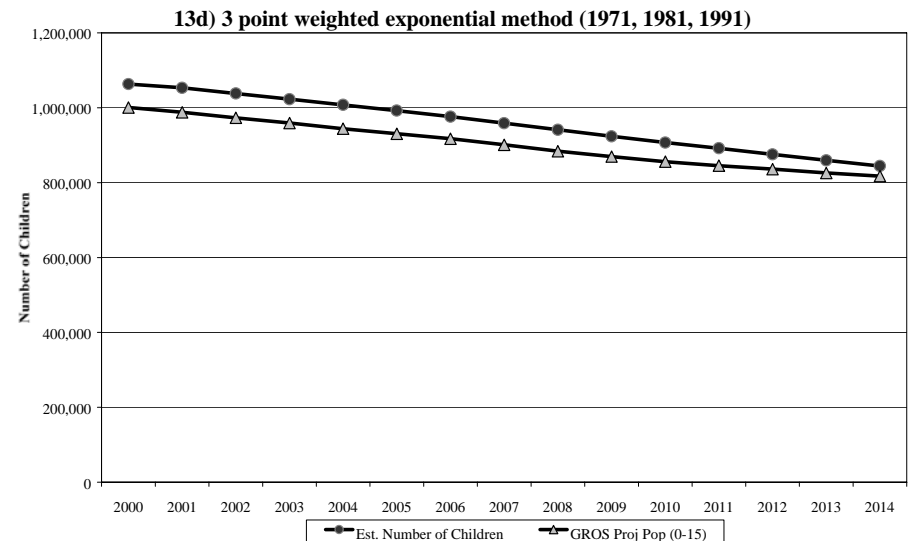
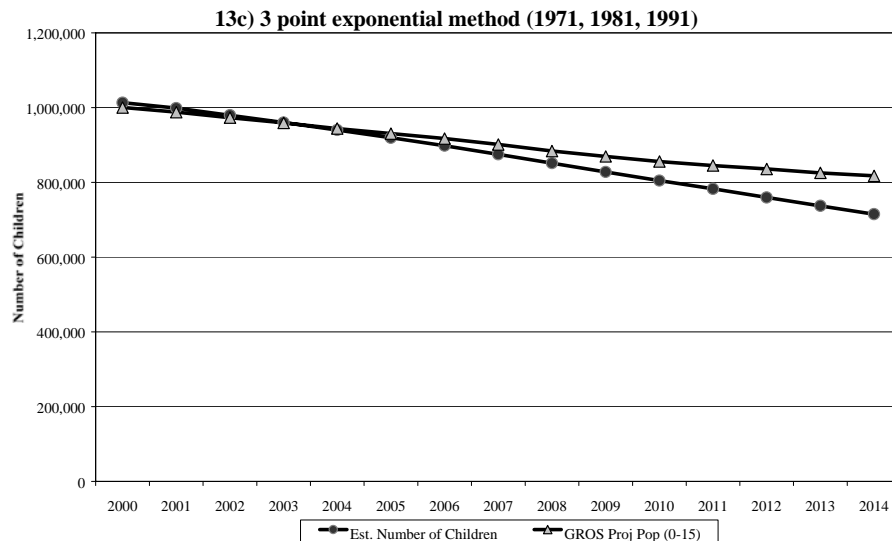
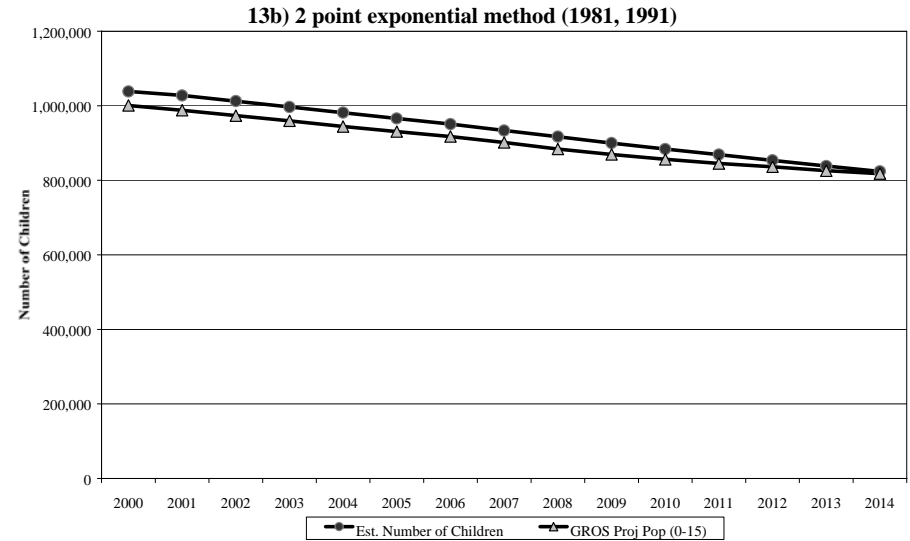
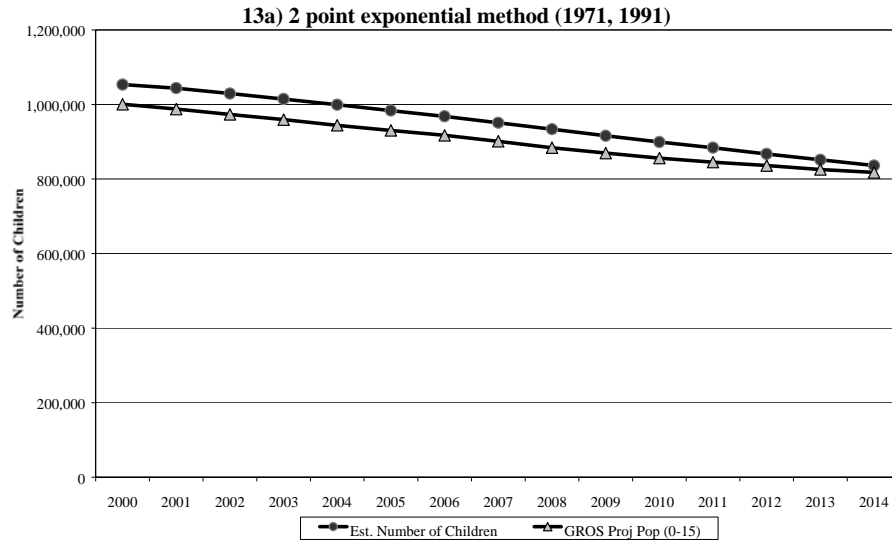
11) Raw Projections: Percentage Difference of Minimum Number of Adults Required to Fill Projected Households from GROS Private Household Population (16+): All Areas, 2007 only



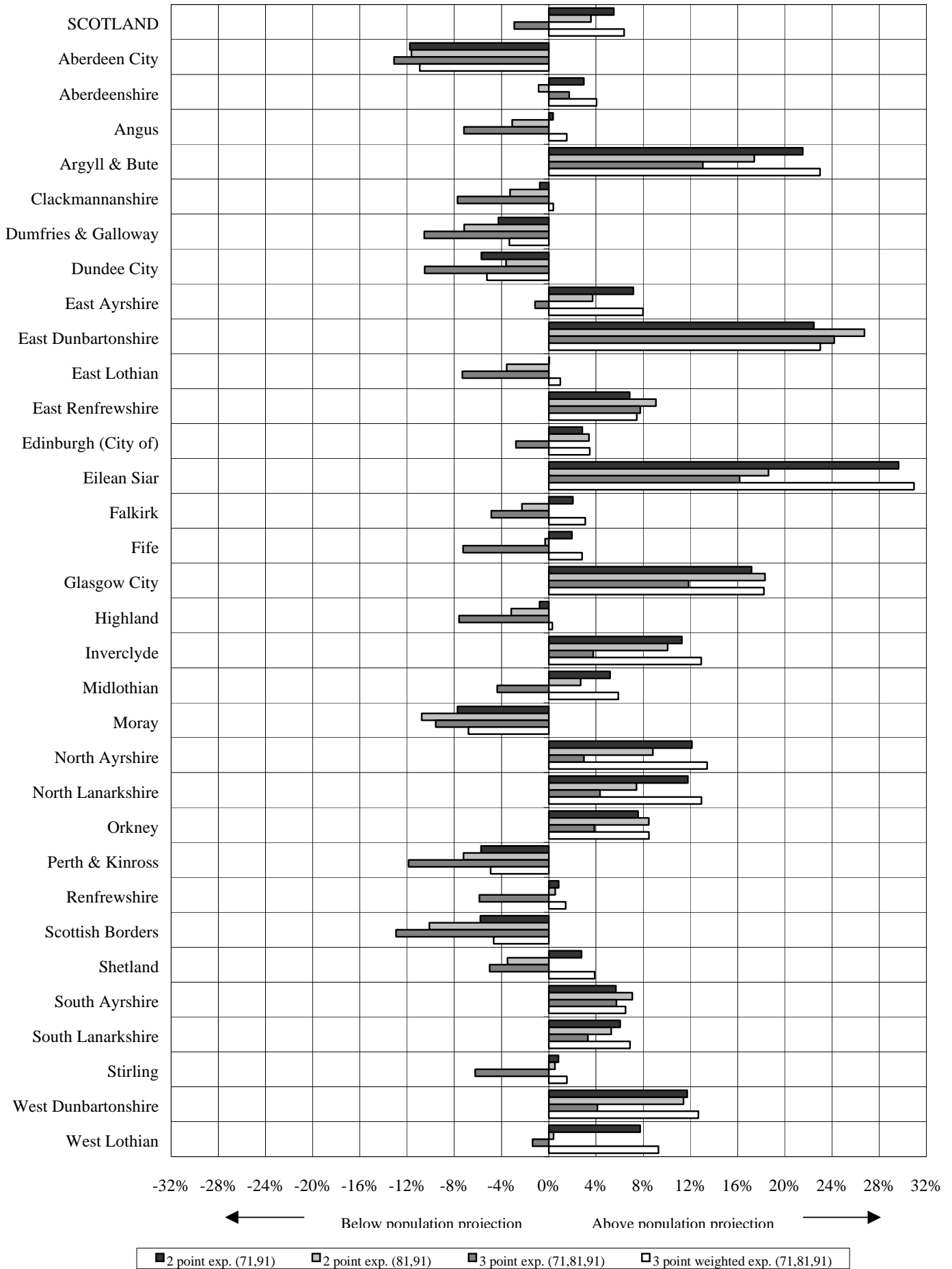
12) Raw Projections: Percentage Difference of Minimum Number of Adults Required to Fill Projected Households from GROS Private Household Population (16+): All Areas, 2014 only



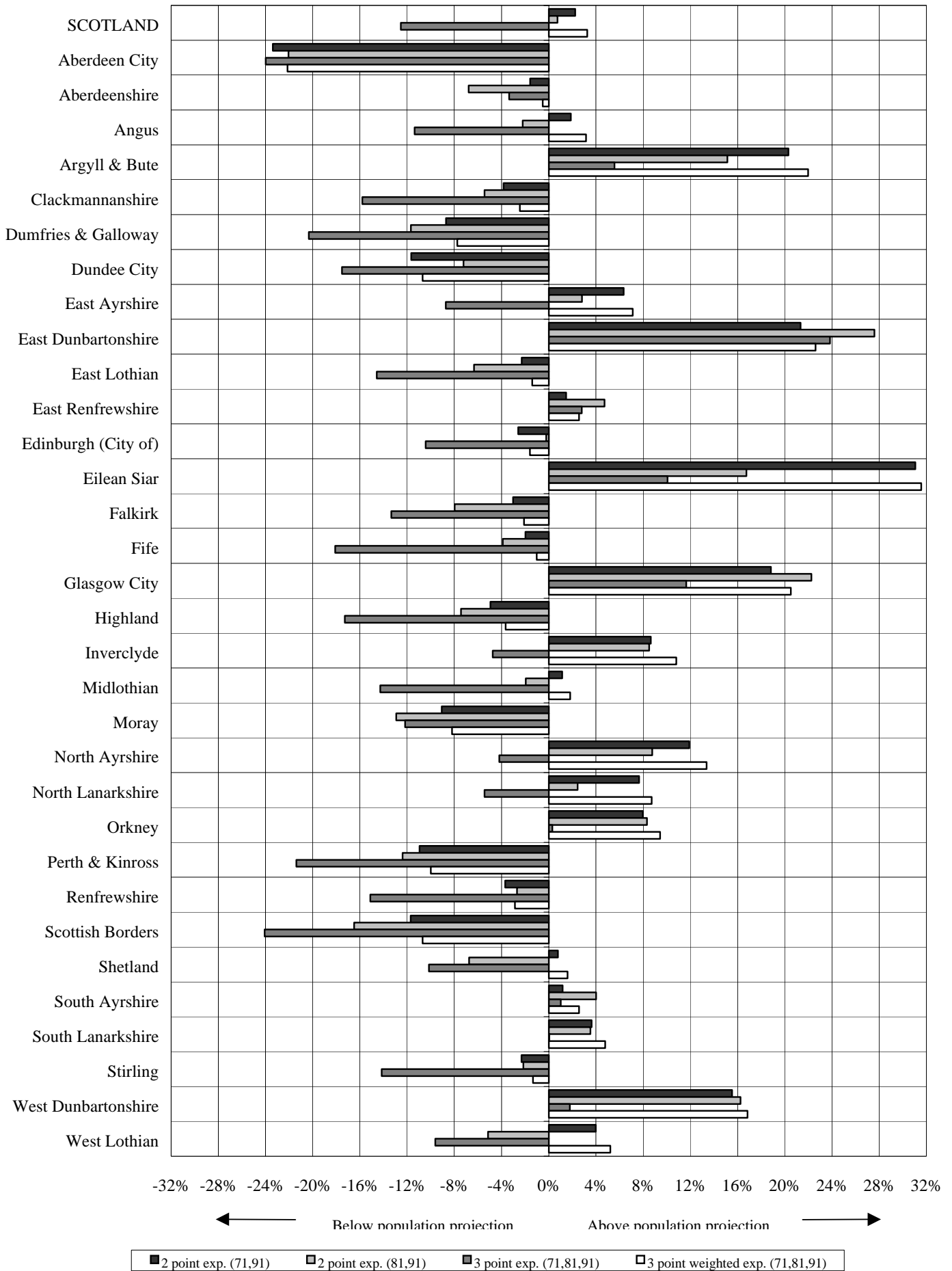
**13) RAW PROJECTIONS: NUMBER OF GROS PROJECTED CHILDREN (0-15) AND THE ESTIMATED NUMBER OF CHILDREN REQUIRED TO FILL PROJECTED HOUSEHOLDS 2000 - 2014:
SCOTLAND AS A WHOLE BY PROJECTION METHOD**



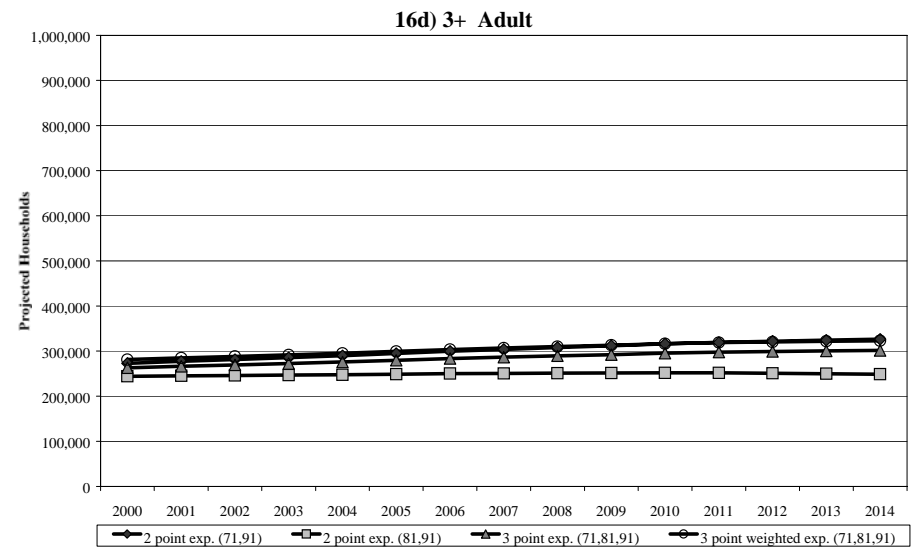
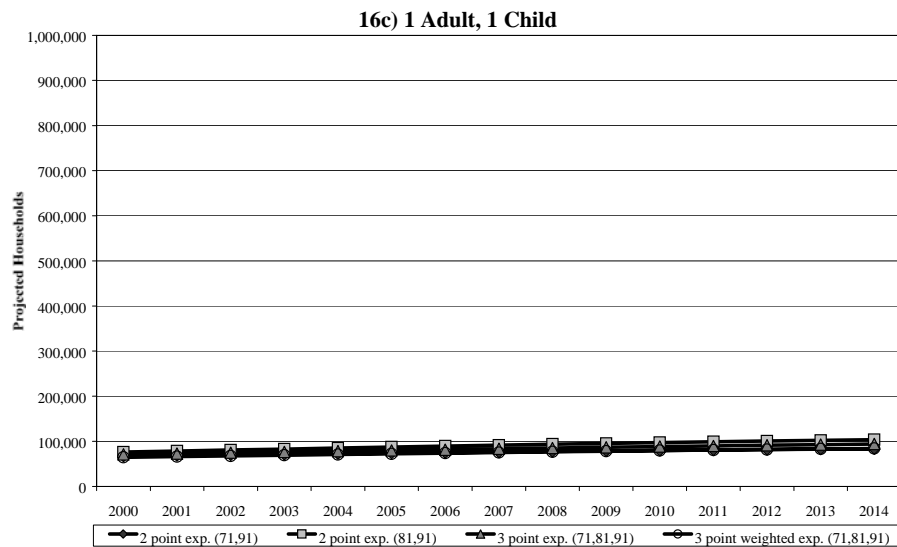
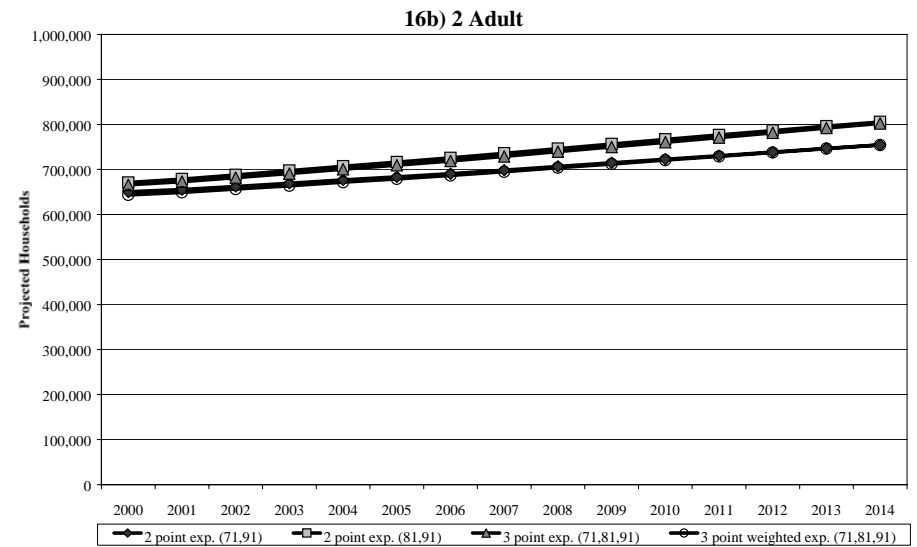
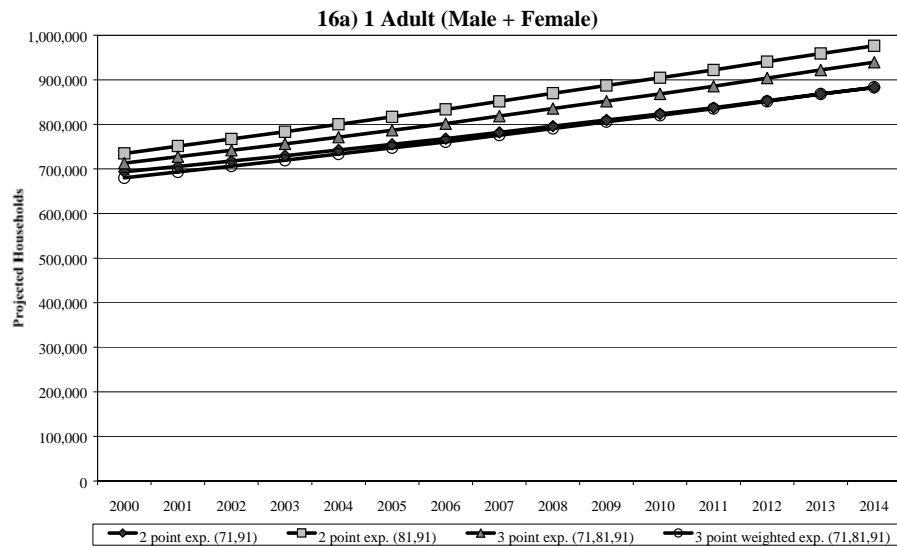
14) Raw Projections: Percentage Difference of the Estimated Number of Children Required to Fill Projected Households from GROS Private Household Population (0-15): All Areas, 2007 only



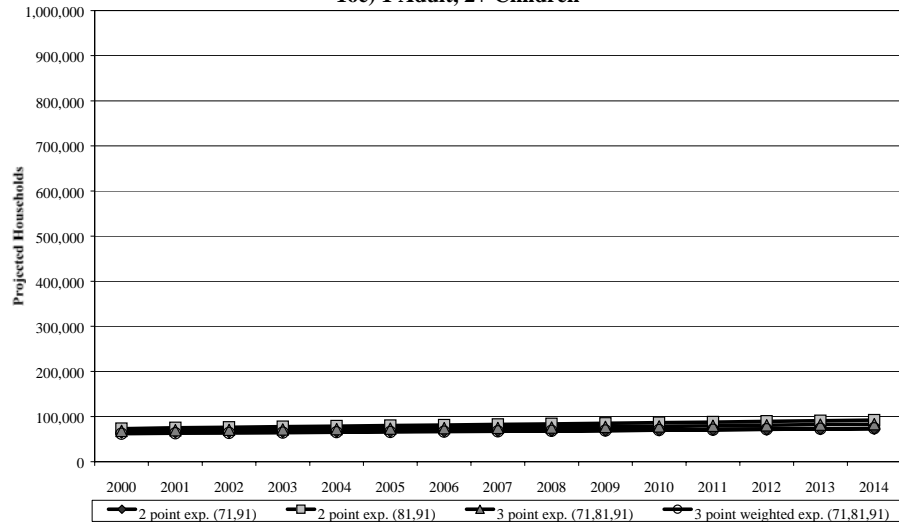
15) Raw Projections: Percentage Difference of the Estimated Number of Children Required to Fill Projected Households from GROS Private Household Population (0-15): All Areas, 2014 only



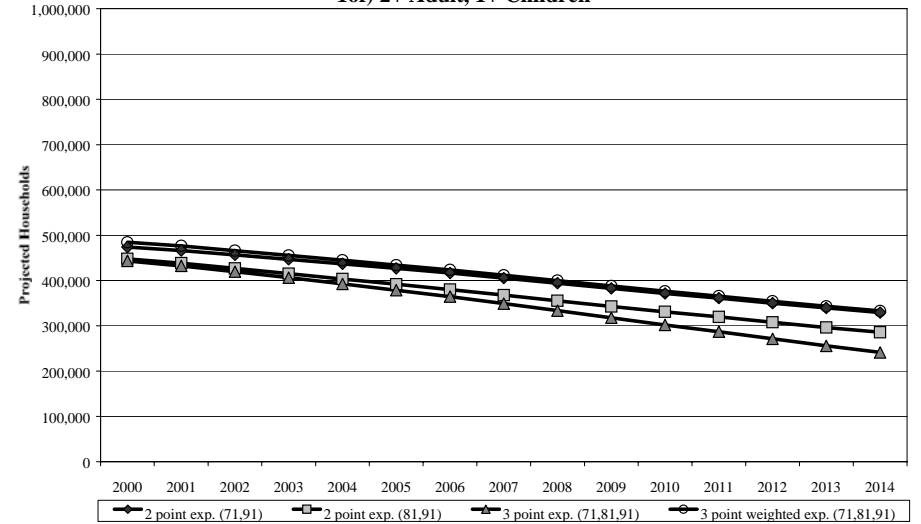
**16) RAW PROJECTIONS: NUMBER OF HOUSEHOLDS BY HOUSEHOLD TYPE, 2000 - 2014:
SCOTLAND AS A WHOLE BY PROJECTION METHOD USED**



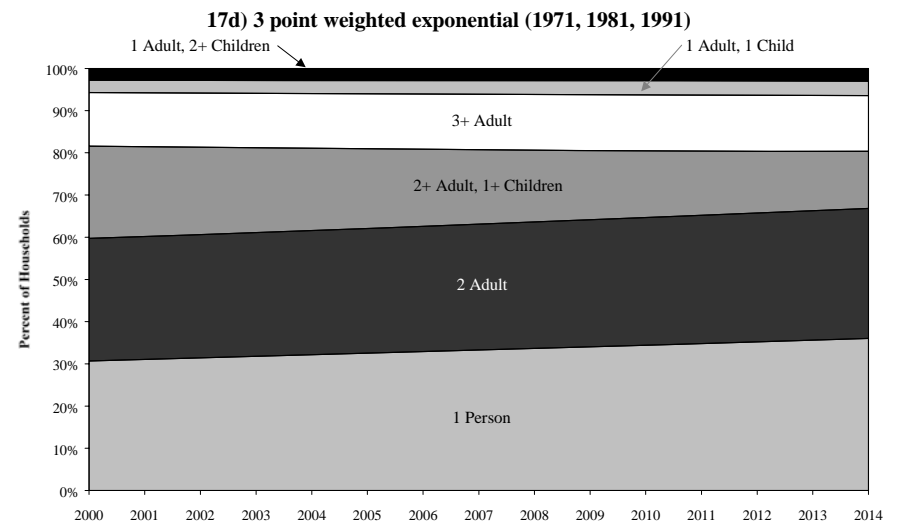
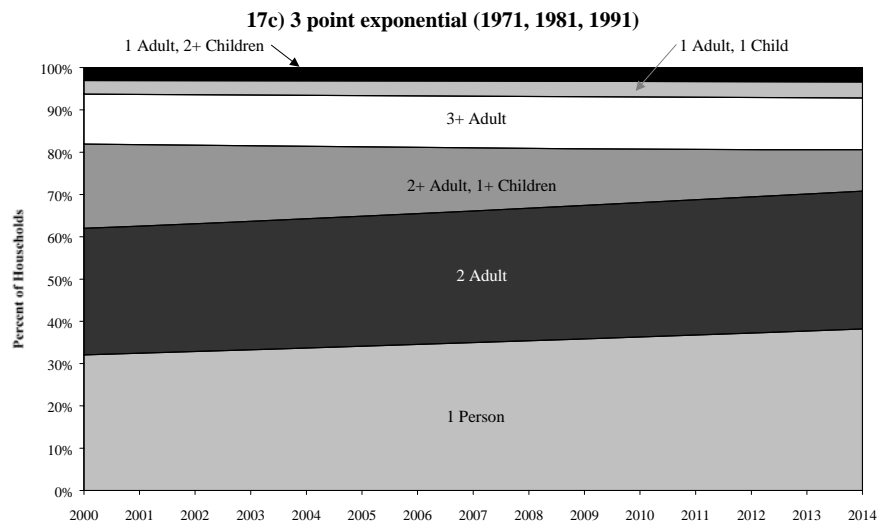
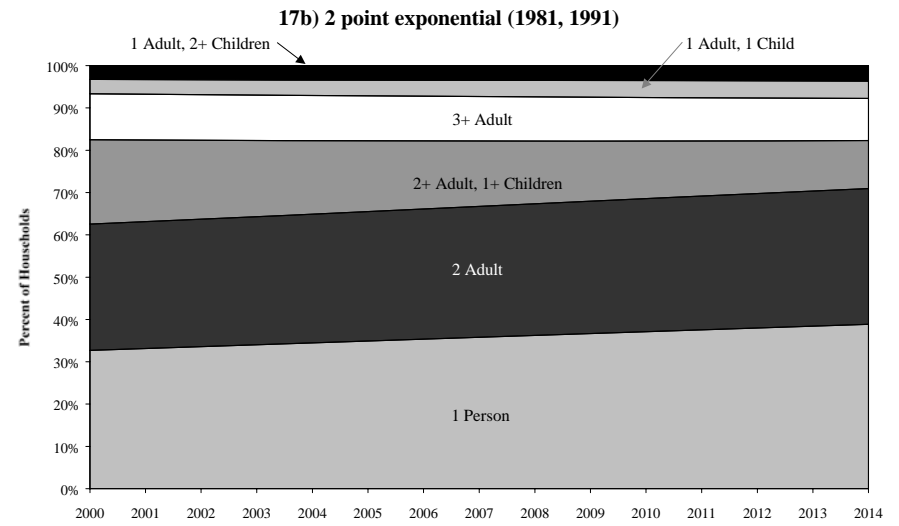
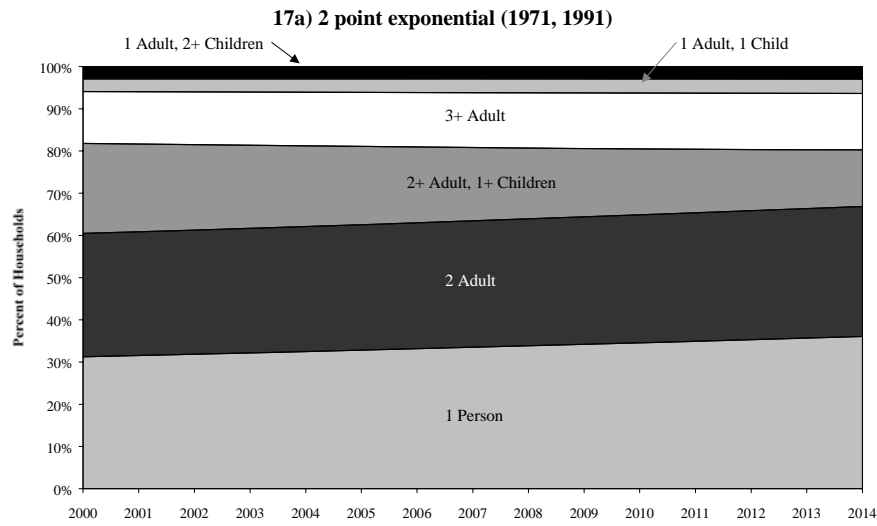
16e) 1 Adult, 2+ Children



16f) 2+ Adult, 1+ Children



**17) RAW PROJECTIONS: PERCENTAGE OF HOUSEHOLDS BY HOUSEHOLD TYPE, 2000 - 2014:
SCOTLAND AS A WHOLE BY PROJECTION METHOD USED**



ANNEX 1: BRIEF DESCRIPTION OF METHODOLOGY

Household projections are produced approximately every 2 years. Their purpose is to give an indication of possible future numbers of households if trends observed in the past continue. It is important to realise that projections are not forecasts. The calculation of projected household numbers involves using the following two main sources of information:

- Data on households from previous Censuses of Population can be used to identify trends which have taken place in household formation in the past. Census information is available for the years 1971, 1981 and 1991. This historic information is used to project possible future trends.
- Population projections produced by the General Register Office for Scotland (GROS) give an indication of possible future trends in population. Estimates of the numbers of persons living in communal establishments are subtracted from the total population figures to produce projections of the numbers of person living in private households.

The household projections are then calculated by applying projected trends in household formation, derived from the first of these sources, to projections of the numbers of persons in private households, derived from the second source.

The formulae for the projection of headship rates for each of the three methods used are as follows:

1. Two point modified exponential method

Formula is $y_i = k + a \cdot (b^{x_i})$

where y_i = headship rate in year i

$$x_i = (i - E)/H$$

$$k = 1 \text{ if } y_F \geq y_E$$

$$0 \text{ if } y_F < y_E$$

$$a = y_E - k$$

$$b = (y_F - k)/(y_E - k)$$

E = Earliest of 2 time points eg. 1971, 1981

F = Most recent time point eg. 1991

H = Numbers of years between 2 time points eg. 10, 20

2. Three point modified exponential method

This method is somewhat more complex.

It is first of all necessary to check whether either of the following conditions are satisfied:

- a. $y_G > y_F > y_E$ and $y_G - y_F < y_F - y_E$
- b. $y_G < y_F < y_E$ and $y_G - y_F > y_F - y_E$

where E, F & G refer to the earliest, middle and latest time points, respectively.

If either condition a. or b. is satisfied it is then necessary to make 2 more checks:

- c. $|y_G - y_F| > 0.01$ and $|y_F - y_E| > 0.01$
- d. The absolute value of the 2nd derivative of y_i which equals $[A * (\log_e B)^2 * (B^{x_i})]/100$ is greater than 0.0001 at both y_G and y_E , where A and B are defined in formula (1) below.

Where (a. or b.) and c. and d. are satisfied then the formula below is used:

$$\text{Formula is } y_i = C + A * (B^{x_i}) \quad (1)$$

where y_i = headship rate in year i

$$x_i = (i - G)/10$$

$$A = y_G - C$$

$$B = (y_G - C)/(y_F - C)$$

$$C = (y_F^2 - y_E y_G)/(2y_F - y_G - y_E)$$

Provided conditions (a. or b.) and c. and d. are met then the projected headship rate stands. If this is not the case, then the following method is used:

$$\text{Formula is } y_i = y_G + (x_i * L) \quad (2)$$

where $L = (2y_G - y_F - y_E)/3$

Whichever of formulae (1) and (2) are used, if the formula produces projected headship rates within the range [0,1] then these figures stand. If however any figures are outwith [0,1] then the following formula should be used instead:

$$\text{Formula is } y_i = 1 - (1 - y_F) * \exp[(L * x_i)/(y_G - 1)] \text{ if } L > 0$$

$$\text{or } y_i = y_G * \exp[(L * x_i)/y_G] \text{ if } L \leq 0$$

It should be stressed that, in the above formulae, a value for y_G of 0 or 1 will produce a value of infinity for y_i . It is therefore necessary to bring in an extra condition such that if $y_G = 0$ or 1 then $y_i = 0$ or 1 respectively for all i.

In addition, there are 2 further conditions which must be met with this methodology, namely that if we take the example of a projected headship rate for projection year I, then:

1. $(y_I - y_G)$ must not exceed $0.02 * (I - G)$
2. $(y_I - y_G)/(I - G)$ must not exceed $0.2 * y_G$

If either condition 1. or 2. above are violated then the projected headship rate for year I must be constrained as appropriate - if both conditions are violated then the projected headship rate should be constrained to the minimum value appropriate.

3. The Fleming weighted exponential method

In this instance it is necessary to calculate the 2 point exponential method for as many pairs of data as is required. Suppose it has been decided to calculate projected headship rates using 3 pairs of data. This means we would have 3 figures for projected headship rates which we will call $y_i(1)$, $y_i(2)$ & $y_i(3)$. We would then allocate weights to these headship rates which we will call $A(1)$, $A(2)$ & $A(3)$.

The Fleming weighted projected headship rate would then be calculated as:

$$y_i = [(y_i(1)*A(1)) + (y_i(2) *A(2)) + (y_i(3)*A(3))]/(A(1) + A(2) + A(3))$$

The same principle applies for more than 3 pairs of data.

ANNEX 2: PROJECTION OF PRIVATE HOUSEHOLD POPULATIONS

Private household population is simply the total population minus the number of people living in communal establishments.

As agreed at the HARG meeting on the 5th of March 2002, the number of people living in communal establishment figures that have been used in previous years (and based on 1991 census information) were consulted on for the 2000 based projections. Local Authority representatives from the Population and Migration Statistics Group were given communal establishment estimates. These were calculated by applying communal establishment proportions (put together in 1994) to the 2000 population estimate. Any changes that they felt may be appropriate (based on more recent local analyses that they may have) were applied. The figures calculated in 1994 were made up of the following five communal establishment components:

Medical and care sector

Residents in medical establishments & care sector excluding LA homes + residents in LA homes + residents in residential homes

Residents in med. Estab's & care sector exc. LA homes: (residents in medical and care sector at 1991 census exc. LA and residential homes)*1994 pop est. / 1991 census pop est. (i.e applying census proportion to 1994 pop ests)

Residents in LA homes: Fig from census + (number of elderly in LA homes at March 1994 – number of elderly in LA homes at March 1991).

Residents in residential homes: Fig from census + (number of elderly in private and vol homes at March 1994 – number of elderly in private and vol homes at March 1991).

(The number of elderly residents in local authority, private and voluntary residential care homes in 1991 were provided by Social work stats in January 1996)

Prison service establishments

Calculated by applying 1991 census proportion to 1994 pop ests

Defence establishment

Estimates of the armed forces population used in the mid-94 and mid-91 pop estimates (from GROS) and the number of residents in defence establishments at the 1991-census were used to calculate an estimate of the number of residents in defence establishments at mid-1994. (By assuming that the same proportion of the armed forces living in defence establishments in 1991 lived in them in 1994.

This information was received from GRO in Dec 1995 (1994-based projection weren't published until August 1997! – although was intended to publish in Jan 1997).

Educational establishments

Calculated by applying 1991 census proportion to 1994 pop ests. Except where 31/12/93 figures of numbers of students in university owned residences available (where from??)

Other groups

Calculated by applying 1991 census proportion to 1994 pop ests.

PRODUCING PRIVATE HOUSEHOLD POPULATION PROJECTIONS

The communal establishment projections were calculated by applying the proportions of the 16+ population estimated to have lived in communal establishments in 2000 (in each age group in each authority) to the GROS population projections for each projection year, grouped into the same age groups.

These figures were then simply subtracted from the population projections to give the estimated number of people living in private households.

ANNEX 3: CALCULATION OF THE MINIMUM NUMBER OF ADULTS

Projections of the minimum number of adults were produced by multiplying projected numbers of households within each household type by the minimum number of adults in the household type (e.g. for household type “2 or more adults and one or more children” the minimum number adults would be 2). This minimum was then compared to the number of adults projected to live in private household calculated as set out in [Annex 2](#).

The following example for Scotland, method A and year 2000 explains the method used. This was repeated for each LA for each method and for each of the projection years.

Scotland, Method A	2000	Calculations
1 person male	285,847	(A)
1 person female	407,822	(B)
2 person all adult	650,408	(C)
1 adult, 1 child	67,266	(D)
3+ person all adult	272,875	(E)
1 adult 2+ children	64,411	(F)
2+ adult 1+ children	473,678	(G)
Minimum Number of Adults	3,892,143	(H)=A+B+(C*2)+D+(E*3)+F+(G*2)
GROS Priv HH Pop (16+)	4,011,159	(I) see annex 2
difference (number)	-119,016	(J)=I-H
difference (%)	-3.0%	(K)=J/H

ANNEX 4: CALCULATION OF ESTIMATED NUMBER OF CHILDREN

There are 7 categories of household type being used in the household projections and 3 of these 7 categories involve households with children. Scottish Household Survey data from 1999 and 2000 were used to calculate the mean number of children (aged 0-15) in Scotland for each of the categories available. These were applied to each Local Authority, method and projection year and compared with the GROS population projections for those aged 0-15 years.

The following mean numbers of children were used:

1. 1 adult, 1 child

the number of children in these households will be the same as the number of households

2. 1 adult, 2 or more children

mean number of children in Scottish Household Survey = 2.37

3. 2 or more adults, 1 or more children

mean number of children in Scottish Household Survey = 1.76

The following example for Scotland, method A and year 2000 explains the method used. This was repeated for each LA for each method and for each of the projection years.

Scotland, Method A	2000	Calculations
1 person male	285,847	(A)
1 person female	407,822	(B)
2 person all adult	650,408	(C)
1 adult, 1 child	67,266	(D)
3+ person all adult	272,875	(E)
1 adult 2+ children	64,411	(F)
2+ adult 1+ children	473,678	(G)
Minimum Number of Adults	1,053,593	(H)=D+(F*2.73)+(G*1.76)
GROS Pop (0-15)	1,000,548	(I) from GROS
difference (number)	53,045	(J)=I-H
difference (%)	5.3%	(K)=J/H