

28 March 2003

Mr Rodger R McConnell
Director
Development and Regeneration Services
Glasgow City Council
229 George Street
Glasgow G1 1QU

Dear Mr McConnell

Further to my letter of 26 February 2003, I now attach a paper which addresses the concerns you had raised in your letter of 5 February regarding the accuracy of the Census based population estimates for mid 2001, which were published on 30 September 2002.

I apologise for taking so long to produce a substantive reply but my experts here have had to give priority to the revision of the population estimates series consequent upon the Census population results and to the release of the detailed Census results.

I have given careful consideration to your representations. My conclusion is that none of the alternative evidence that has been provided makes a convincing case that there are significant inaccuracies in the Census based estimates. I have made every effort to ensure that the figures represent the best unbiased estimates from the information at my disposal.

At the request of Jan Freeke who represents Glasgow City on the ScotStat Committee on Population and Migration Statistics – the main forum for consultation between GROS and customers on such matters – GROS has agreed to include your concerns as an agenda item at the next meeting on 3 April. The meeting is chaired by David Orr, who is head of the Statistics Division here. I believe that it is best to maintain technical dialogue about the methods used for compiling population estimates and I remain happy for any general concerns to be taken up through the Committee or for specific Glasgow issues to be handled in bilateral discussions with this office.

My aim is to make best use of all available information in deciding the best estimate of the population for each mid year. Ultimately it is a matter for you to decide on what basis to allocate your funds for service provision and for the Scottish Executive to be aware that you may decide to ignore my official population estimates for some purposes.

I am copying this reply to Christie Smith at the Scottish Executive.

Yours sincerely

J N RANDALL

2001 CENSUS BASED POPULATION ESTIMATES FOR GLASGOW CITY

GENERAL REGISTER OFFICE FOR
SCOTLAND RESPONSE TO POINTS MADE
IN REPORT BY GLASGOW CITY
COUNCIL FORWARDED TO GROS BY
DIRECTOR OF DEVELOPMENT AND
REGENERATION SERVICES ON 5
FEBRUARY 2003

General Register Office for Scotland
March 2003

Glasgow City Council writes (para 4.2):

The 1999/2000 Scottish Household survey results for Glasgow show an average household size of 2.135. This figure, adjusted downwards to 2.115 due to the timing difference, can be applied to the estimated number of households in Glasgow for 2001 (275,200, a dwelling-based estimate). This gives an estimated population in households of 582,050. Adding an estimated 12,200 institutional population to this gives a population total of 594,250 which is 16,400 above the estimated population on Census day.

GROS Response:

The 2001 Census day population estimate for Glasgow is 577,869, of which 565,974 live in households and 11,895 live in communal establishments (this includes staff and families of staff). The households with residents count from the census was 271,596, giving an average household size for Glasgow of 2.08.

Glasgow Council's equivalent calculations show 275,200 households (a dwelling-based estimate) with an average household size of 2.115 (adjusted Scottish Household Survey figure) and a communal establishment population of 12,200. This gives a total Glasgow population of 594,250, which is almost 16,400 more than the Census based estimate.

The SHS is based on a sample of 1,700 households in Glasgow compared with a nearly complete Census plus a Census Coverage Survey which targeted almost 4000 occupied households in Glasgow. The household size estimate from the SHS compared with Census has a slight bias against 1 person households and towards larger ones. This higher proportion would impact on the calculation of household size from the SHS tending to bias it upwards.

It is also not clear how the Glasgow Council estimate has handled vacant addresses. The number of vacant dwellings in Glasgow as recorded by the Census is 10,080, which is 3.57% of the number of household spaces. This percentage is in fact less than that for Edinburgh (4.07%), Dundee (4.48%) and Aberdeen (6.61%), so gives little evidence that the Census counted occupied households in Glasgow as vacant.

Conclusion

It is not advisable to place reliance on the household size values estimated by the SHS owing to sampling error and the lack of adjustment for response bias.

Glasgow City Council writes (para 4.3):

The City assessor has been “cleaning out” the electoral roll, removing entries from the roll where there was evidence that the electors no longer lived at a given address. This has resulted in a sizeable drop in the City’s electorate from 485,158 in July 2001 to 450,512 in July 2002. It would appear that this process is more or less complete, as changes in the last quarter have been small. The 2001 population estimates show a population aged 17 and over of 465,194. This implies an extremely high rate of electoral registration for Glasgow City, especially as asylum-seekers do not qualify for inclusion on the electoral roll and students, living in households and with a home address outside the City are less likely to appear on the City’s electoral roll.

GROS Response:

A comparison of the 2001 mid-year estimates with electorate figures published by GROS and electorate figures used by Glasgow City is shown in the table below.

	Glasgow City figs	GROS figs for Glasgow	% of June 2001 MYE	GROS figs for Scotland	% of June 2001 MYE
2001 Electorate (Oct 2000)		490,781	105.50	4,019,192	99.77
2001 Mid-year estimate (17+)	465,194	465,194	100.00	4,028,433	100.00
Electorate (July 2001)	485,158		104.29		
2002 Electorate (Dec 2001 – GROS)		468,568	100.73	3,985,529	98.93
Electorate (July 2002)	450,512		96.84		
2003 Electorate (Dec 2002)		453,487	97.48	3,905,553	96.95

As you can see, the electorate figure is falling over time, despite the fact that the number of deaths is less than the number of new electors each year. This is evidence of either previously inflated electoral registers or significant out-migration.

GROS have lost faith in the electorate as a true guide to population change and have proposed that we cease using it to estimate population, preferring instead to measure population change drawing on patient registration data (which is at least more consistent).

However with the recent falls in electorate, the Glasgow electorate figures are not significantly out of line with those for Scotland when compared with the Census.

Conclusion

GROS conclude that electorate data does not provide any convincing evidence that the Census count of 17+ year olds in Glasgow was deficient.

Glasgow City Council writes (para 4.4):

A comparison with child benefit data (August 2001) shows that, for Glasgow City, the number of children (5 to 14 year old) according to the 2001 population estimate is lower than the number of children for whom child benefit is being claimed ($-487=67,473-67,960$). This seems highly implausible. Firstly, given that parents must produce a birth certificate in order to claim benefit, it is extremely unlikely that there is over claiming of this benefit. Secondly, although the benefit is universal, not all parents will claim benefit. It should also be noted that other cities like Manchester and Liverpool, with sizeable reductions in the new population estimates, have 3% to 5% more children receiving Child Benefit than are shown by the Census-based population estimate.

GROS Response:

Glasgow City Council's results show that the number of children aged between 5 and 14 receiving child benefit is 487 more than the 2001 mid-year estimates. This does seem to imply that the mid-year estimates for Glasgow are slightly (about 1%) underestimated for this age group. However, a straight comparison of the two datasets is not valid without other considerations.

The DWP data will suffer from data quality issues as all administrative datasets will. This includes issues such as timing and whether the two datasets have the same reference point (30 June); the accurate recording of where benefit recipients reside (the majority of benefits are generally paid into bank accounts and families that move may not notify DWP of the new address).

An analysis of the DWP benefits data with the mid-year estimates for all areas in Scotland will reflect these data quality issues. For some areas the DWP data will be higher than the mid-year estimates and others lower. At the Scotland level there are more 5-14 year olds in the mid-year estimates than the DWP data. At best, the DWP benefits can only be used as a benchmark to ensure that the mid-year estimates are within an acceptable range and to raise concern if the mid-year estimates differ significantly. The DWP Benefits are not a gold standard on which to measure the population of 5-14 year olds.

Conclusion

Given the very small difference between the two data sets (<1 per cent) and issues about timing and data quality, there is no strong evidence to suggest that the Census counts for Glasgow are an undercount.

Glasgow City Council writes (para 4.5):

A comparison of the 2001 Census-based population estimates with estimates from the Community Health Index (CHI, date: December 2001) shows that the latter are about 11% higher for Glasgow City. For some categories the estimates are considerably higher, i.e.38% for males age 30-34. While it is recognised that the CHI includes people who have moved away without notifying their doctor, the figures mentioned here appear very high.

GROS Response:

Of the 79 wards in Glasgow, the thirty where the CHI count most exceeds the Census were examined, with a view to finding possible reasons for the large discrepancies between the two data sources and to determine whether list inflation in one age group of 38 per cent, as reported, is unbelievably high suggesting an undercount in the Glasgow City Census counts.

As list inflation of the CHI is predominantly caused by people moving away from an area, especially males, and not re-registering with a GP elsewhere, wards with a high student population are particularly prone to having a much higher CHI population than Census population. This is supported by the figures shown in Table A, where the two wards where the CHI really stands out as being much larger than the Census (Kelvingrove and Hillhead) both have high percentages of resident students according to the Census. In fact, four of the six wards where CHI exceeds the Census by the most can be seen to have high student populations. Other areas with high levels of migration would be expected to show similar characteristics of CHI inflation.

This demonstrates that there are explanations for list inflation but on its own does not provide evidence that the levels of list inflation are believable. But, the male to female sex ratios on the CHI provide a useful, independent, indicator as to whether the list inflation is believable. Sex ratios evaluate CHI data only and do not rely on another data source such as the Census for comparison. The last column of Table A shows the sex ratios by ward for all ages. Many of the wards shown here have sex ratios which are significantly different from the Glasgow and Scotland sex ratios. This is even more pronounced when looking at areas with high student populations and areas with high list inflation.

Table A

Ward Code	Ward name	%age students in 16 - 74 age grp (Census)	%age by which CHI exceeds Census			Male/Female ratio CHI
			Male	Female	All	
	Scotland					.9736
	Glasgow City					.9948
1764	Maxwell Park	10.0	17%	10%	14%	0.96
1760	Crookston	5.2	23%	6%	14%	0.95
1761	Nitshill	5.2	24%	6%	14%	1.02
1778	Carmunnock	7.6	21%	8%	14%	0.97
1731	Wallacewell	4.9	24%	8%	15%	0.97
1724	Ashfield	4.4	20%	10%	15%	0.96
1749	Garthamlock	4.5	25%	6%	15%	1.05
1725	Firhill	16.6	23%	9%	16%	1.03
1736	Parkhead	4.2	22%	11%	16%	1.02
1775	Toryglen	5.0	26%	8%	17%	0.97
1729	Cowlairs	5.2	24%	10%	17%	1.12
1702	Summerhill	6.3	31%	7%	18%	1.00
1742	Barlanark	5.0	28%	8%	18%	1.01
1726	Keppochhill	5.3	30%	8%	18%	1.03
1768	Strathbungo	9.0	27%	10%	18%	1.19
1719	North Kelvin	31.0	30%	9%	19%	1.03
1767	Govanhill	7.4	26%	12%	19%	1.06
1723	Milton	4.5	28%	14%	21%	0.97
1779	Glenwood	5.2	34%	10%	21%	1.03
1713	Hyndland	17.2	28%	17%	22%	1.03
1765	Pollokshields East	11.0	33%	14%	24%	1.14
1717	Anderston	21.9	32%	15%	24%	1.33
1740	Queenslie	5.1	35%	15%	24%	1.10
1766	Hutchesontown	6.4	40%	11%	26%	1.28
1727	Merchant City	41.3	40%	13%	26%	1.23
1728	Royston	7.8	40%	20%	30%	1.10
1718	Woodlands	31.5	49%	25%	36%	1.11
1735	Bridgeton / Dalrnk	3.9	52%	24%	37%	1.00
1716	Kelvingrove	39.6	82%	28%	55%	1.38
1714	Hillhead	36.3	71%	40%	55%	1.11

A further analysis of sex ratios by 5 year age group on the CHI is given in Table B. This shows that the sex ratios particularly for ages 34-59 are significantly different than the Scotland average, for which there is no other explanation than the CHI suffers from particularly high, but believable, list inflation in Glasgow.

Table B

	CHI			Census	
	Glasgow	Scotland		Glasgow	Scotland
Age					
All ages	0.99	0.97		0.89	0.92
0-4	1.06	1.05		1.06	1.06
5-9	1.05	1.05		1.04	1.05
10-14	1.03	1.05		1.07	1.05
15-19	0.99	1.03		0.97	1.02
20-24	0.94	1.03		0.89	0.99
25-29	1.07	1.05		0.89	0.93
30-34	1.14	1.05		0.90	0.93
35-39	1.15	1.04		0.91	0.92
40-44	1.18	1.05		0.94	0.95
45-49	1.17	1.05		1.00	0.98
50-54	1.12	1.03		1.02	0.98
55-59	1.05	1.00		0.96	0.96
60-64	0.94	0.94		0.87	0.91
65-69	0.83	0.88		0.76	0.85
70-74	0.73	0.78		0.70	0.77
75-79	0.62	0.68		0.60	0.66
80-84	0.48	0.54		0.46	0.53
85-89	0.38	0.41		0.34	0.39
90+	0.35	0.30		0.24	0.27

Conclusion

GROS conclude that, although high, the list inflation present in the CHI in Glasgow is not unbelievable and is consistent with a failure of men to de-register when moving away from the city. A further upwards adjustment of the Glasgow Census counts would reduce the list inflation but would not alter the view of sex ratios on the CHI, i.e. they would remain unbelievably high.

It is worth noting, however, that although the CHI suffers from list inflation it is still a valuable source of data for estimating migration. The concerns outlined here are consistent with concerns we have identified about being able to estimate robustly migration out of Scotland to the rest of the world from Council areas. The ONS quality review of international migration, which is due to report shortly, is investigating these concerns.

The CHI data does not, in our view, present evidence about the level of population in Glasgow which is as soundly based as the Census.

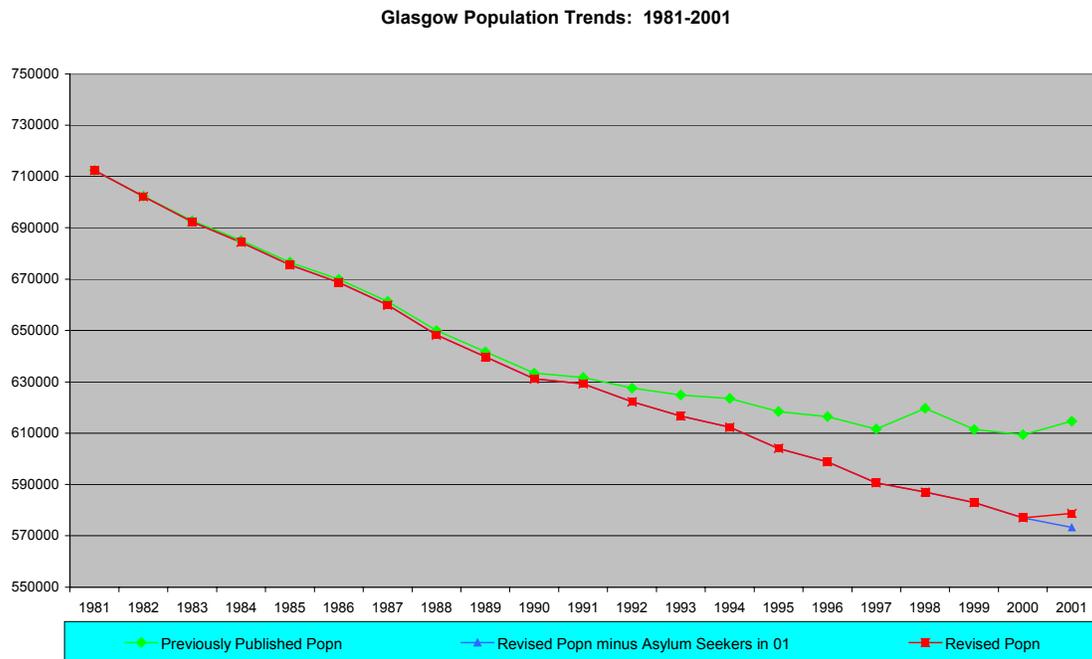
Glasgow City Council writes (para 4.6):

It is difficult to explain, on the one hand, the dramatic fall in Glasgow's population during 1991-2001 implied by the new population estimates and, on the other hand, the sizeable positive population change (+6,500) in the City through net migration in the period 2000-2001. It is recognised that the inflow of asylum seekers is the main reason for this rise, but is difficult to reconcile the two findings. GRO(S) intimated that migration estimates for the 2000-2001 period have been based on current methodology and may be reviewed once migration data from the 2001 Census becomes available.

GROS Response:

Previously published population estimates for Glasgow over the last 20 years (which were rolled forward from 1981 and 1991 Census results) showed a relatively steep decline in population in the 80s, followed by a less marked decline in the early 90s.

The revised population estimates (published on 27 February 2003) show a steady decline from 1981, with a slight increase of almost 1,700 between 2000 and 2001 due to an inflow of asylum seekers outweighing on outflow of other migrants. If the asylum seekers were excluded from the population estimates in 2001 then the trend from 1981 to 2001 would be a continuous, steady decline in population. The changes take account of our assessment of an undercount of emigration during the 1990s. This is illustrated in the chart below.



Conclusion

The recently published revised population estimates show a steady population decline for Glasgow between 1991 and 2001, particularly if asylum seekers are excluded from the population change between 2000 and 2001. The previous rise in Glasgow's population in 1998 is now seen to be an implausible reaction to Glasgow's electorate

data for 1998. Although this information makes use of the CHI for migration between 2000 and 2001, the CHI did not include an adjustment for the amount of outmigration underestimated during the year, which the revisions do. Given the fluctuating nature of migration and the provisional estimate that was made at the time for 2000 to 2001 there is nothing to suggest that this change in 2000 to 2001 implied an underestimate of the population in 2001.

Glasgow City Council writes (para 4.7):

The Census Coverage Survey (CCS) produced an anomalous result for Greater Glasgow in relation to Census response rates for young males by type of area. This suggests that a large number of people may have been missed by both Census and CCS. In addition, the results of matching Census and CCS data appear to indicate the likelihood of an underestimate of non-response *within* households in Glasgow. GRO(S) has adjusted for the above via the creation, for Glasgow, of an extra 2,400 imputed households. However, these results require some more information to establish the reasons for these. Clarification is also to be sought on patterns of non-response in 2001 as compared with 1991.

GROS Response:

The Census Offices acknowledge that there was dependency between the Census and the CCS, that is that people missed by the Census were more likely to be missed by the CCS than people found by the Census. GROS fully adjusted for this at Scotland level and then by area.

For Glasgow, if we had assumed no dependence we would as a result of the Census Coverage Survey have added 21,581 people into households not enumerated by the Census and a further 6,461 into households that were partly enumerated. In adjusting for dependence, the number of people missed was increased over and above the ONC estimate, so that every refusal and non-response household identified by the enumerator was accounted for in the adjusted ONC total. So, for Glasgow City, GROS raised the number of people for imputation into households not enumerated in the Census from 21,581 to 30,923 people.

GROS then made a further adjustment for people missed within Census households over and above the original ONC estimate. The original estimate of such people was 6,461. After considering the evidence available for within Census household dependency this was adjusted to 15,461.

Therefore the ONC adjustment for dependency added an extra 18,342 people, giving a total adjustment of 46,384 people for Glasgow, an 8 per cent adjustment compared with 3.9 per cent for Scotland as a whole.

Conclusion

GROS have taken steps to ensure that people were allocated to every identified household whether or not a form was received. This, together with the further steps to allocate people to households from whom a partial return may have been received,

demonstrates that every effort has been made to adjust for Census underenumeration in Glasgow.

Glasgow City Council writes (para 4.8):

There has been a change in Census methodology with regard to posting-back the Census form, and the counting of students at their term-time address. This may have introduced additional undercount, particularly affecting cities. There are some concerns here, given the sharp decline in population estimates for many cities throughout the UK, including university towns such as Oxford and Cambridge. Although GRO(S) have indicated that, for the Glasgow area, the 2001 Census based estimates of student numbers appear to be consistent with higher education statistics, this issue needs to be looked into.

GROS Response:

A number of changes were made to the methodology for the 2001 Census which may have affected the results, one of which is the introduction of posting back Census forms. Overall, postback can be regarded as a success with 91% of forms received being posted back.

The prime reason for introducing postback was to reduce the numbers of cases where the enumerators continually failed to make contact with a household to complete a form. This problem is most prevalent in city areas where more people live alone and have lifestyles that mean they are often out. Taken together with the follow up arrangements after initial postback and the work of the One Number Census there is no evidence that the introduction of the postback methodology had an impact on the population count for Glasgow.

Another major change in Census methodology was that students were enumerated at their term-time address as opposed to their home address. To ensure that students had been correctly enumerated part of the quality assurance process for the 2001 Census results was to compare them with HESA and SFEFC administrative data. Unfortunately the HESA data was only available by place of institution rather than place of residence of the student. Since many students commute in to Glasgow universities from surrounding council areas it was felt that this analysis would be more comprehensive if it was done jointly for Greater Glasgow, Lanarkshire and Argyll & Clyde health board areas. The results showed that the Census had counted 90% of the students expected from the administrative data.

This analysis was carried out for individual ages from 19 to 29 and then 30+. The pattern of Census result to administrative data did fluctuate with age, but the results for the three health board areas in and around Glasgow were very similar to that of the rest of Scotland. However the Glasgow areas did appear to be consistently lower than the other areas, implying that there may have been some students missed from these areas.

There are a number of reasons why the administrative data would be expected to be greater than the Census results. Firstly, the HESA and SFEFC data show individual enrolments, which, because a student can be enrolled on more than one programme of study, will exceed the number of students. Secondly, not all students who enrolled in August will necessarily still be students by the end of April, i.e. Census day. However, this does not explain why Glasgow is consistently lower than the rest of Scotland. This

may be explained by the very large catchment areas that Glasgow universities and colleges have. Some people from Lothian, Forth Valley and Ayrshire health board areas in particular also commute into Glasgow to go to university.

Conclusion

It is difficult to interpret the differences between Census counts of students and the administrative sources because one is based on term-time residence and the other on area of institution. Given this, the discrepancies are not of an implausible magnitude and so provide no convincing evidence of Census error.