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Missing from the 1991 census: a million persons—and £ millions in grants?

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Summary *Under-enumeration in the 1991 census of population in Great Britain was more serious than in 1981 for reasons described in the paper. Possible under-counts are highly significant for the local authorities most affected as many government grants are distributed according to census-associated formulae and related estimates.*

The first component of the two questions that form the title of this article, missing persons, actually exceeds a million. This is the difference between the revised final rebased mid-1991 population estimate for England and Wales issued in August 1993 compared with the census count of usual residents according to the census taken on 21 April 1991. In fact the Registrar General for England and Wales stated in his introduction to the July 1991 preliminary report on the census that the population present on census night (48·96 million) was ' about 2 per cent below the number which had been expected ' (OPCS 1991a). Popular newspapers translated this into a missing million, and asked why, if the Office of Population Censuses and Surveys (OPCS) *knew* the ' true ' number, it was spending £130 million to come up with the ' wrong ' answer.

In this paper we consider how the million went missing and what steps were taken to recover them. We observe difficulties in census-taking in other European countries, and also note alternatives to census-taking. Finally, we deal with the second component of the opening question, showing why numbers are so important to grant-hungry local authorities, mainly but not exclusively within London as one of the areas most seriously affected.

How did the million go missing?

Perhaps at the outset we should ask if a missing million really is a matter for comment. Comparison with the 1981 census suggests that it is. The post-enumeration (or validation) survey taken at the end of June 1981 estimated that the April 1981 national census had missed perhaps 0·45 per cent of the population present in private households on census night, that is about 214,000, with the true value within the range 151,000–277,000 (OPCS 1982). By the 1991 census the missing element had risen five-fold, although at 2·2 per cent is reported to be comparable with the rate in Australia, Canada and the USA (Marsh 1993, 157). And as we shall see later, people missing in 1991 have been translated directly into missing money—actually a differential under-allocation of grant income—because of changes over the decade to the system of financing local government expenditure.

The OPCS had forewarning of possible difficulties in administering the then planned 1991 census when it undertook field tests in 1987 and 1989. It was found to

be harder to contact people in their homes than in 1981, most especially people living in blocks of flats, and wherever people living alone felt insecure when faced with casual callers. At the time of the 1991 census newspapers carried stories about enumerators' difficulties in finding people at home when they called to collect forms. In addition to the insecurity factor, April 1991 happened to be the first anniversary in England and Wales (and the second in Scotland) of the introduction of the community charge or poll tax. Under this the previous local domestic rates charged on the rental value of residential dwellings were replaced by a system which required all adults to be registered, and individually to pay all or part of a personal charge. Many people refused to pay, and were prosecuted for non-payment. Some others, it was supposed, went underground, believing that somehow the strictly confidential census would nonetheless allow comparison of their names and addresses with gaps in the community charge register.

Corroborative evidence of under-registration, although without explanatory powers, came from the publication in September 1991 of electoral registration data for England and Wales (OPCS 1991b; see also Smith 1993). The election registers that came into effect in February that year showed a drop of 66,000 in the year-on-year number of ' attainers ' (those becoming, at 18, eligible to vote during the currency of the register), twice as steep a decline as demographic data suggested. The loss of voters in London happened to be highest in inner London parliamentary constituencies in boroughs which were to declare the highest levels of community charge, such as Camden, Haringey and Lambeth.

The CVS contribution

It is common for national censuses to be followed by a small sample-based post-enumeration survey to check the reliability of the census itself. In Britain this is now known as the Census Validation Survey (CVS), although it was called the post-enumeration survey in 1981. The 1991 CVS took place some six weeks after the April census. In a sample of enumeration districts well-trained interviewers checked households reported as absent or dwellings vacant on census night, re-interviewed households which had returned forms, checked the definitions of households enumerated within multi-occupier households, and also checked buildings described in the returns as non-residential. Diamond (1994; see also OPCS 1993a) has described the four-fold contribution of the CVS to the greater understanding of under-enumeration (see also rows 4 and 5 in Table 1). First, to arrive at the figure of usual residents, about 200,000 people recorded as ' visitors ' were re-assigned to their usual address (row 4 in Table 1, comprising people who called themselves visitors and did not report a home address, or were not reported at their declared home address). Secondly, the CVS showed that enumerators tended to over-estimate the size of absent households (see line 5 i which shows ' over-imputation ', that is people *supposed* to be present who in fact were not present, at 115,000). Thirdly, the CVS estimated some 178,000 persons in households missed or wrongly classified as vacant (line 5 ii). And the final category was of 177,000 persons not shown in census forms but discovered by the CVS (line 5 iii). So, after subtracting line 5 i, the CVS as finally presented pointed to a net balance of about 440,000 people absent from the census count.

The 1991 mid-year estimates

Table 1 presents in its bottom row the ' revised final rebased mid-1991 population estimate for England and Wales ', and the complexity of that title hints at the

Table 1 Steps taken in deriving the revised final ' all ages ' mid-1991 population estimate for England and Wales from the 1991 census count

		Thousands of persons
1991 census count of usual residents for England and Wales		49,890
a	Adjustment for definitional difference	
	1 Net student balance	+54
b	Allowance for changes between census day and mid-1991	
	2 Natural change	+34
	3 Net migration	+9
		+43
c	Allowance for census visitors omitted from usual resident count	
	4 Visitors with no [identifiable] usual address	+200
d	Allowance for under-enumeration in the census	
	5 Census Validation Survey adjustment (excluding 4 above)	
	i Over-imputation in processing	−115
	ii Net under-enumeration missed etc dwellings	+178
	iii Net under-enumeration in responding households	+177
		+240
	6 Enhancement of census count of infants (registrations)	+21
	7 Enhancement of census count of armed forces	+42
	8 Modification of census count of elderly residents	+63
	9 Enhancement of census counts of people aged 1–44	+547
		+913
Revised final rebased mid-1991 population estimate for E & W		51,100

Source: Adapted from Office of Population Censuses & Surveys, *OPCS Monitor PP1 93/2*, 19 August 1993

Note: The sequence (a)–(d) broadly reflects the order in which corrections were made by the OPCS

laborious revisions required to get that far. If we disregard rows 1 to 3, we see that there is a difference of 1,113,000 people between the April 1991 census numbers and the revised population estimates for mid-1991 issued in August 1993. It is these mid-year estimates which are so important for the distribution of government grants among local authorities. The OPCS produces annual mid-year estimates for the nations of the United Kingdom and for local and health authority areas, and uses the decennial census and CVS to re-calibrate the figures.

Also shown in Table 1 are adjustments made in relating 21 April 1991 census-night data to the 30 June 1991 date to which the estimates are tied. The first adjustment in row 1 allows for students' places of residence; the second, rows 2 and 3, compensates for the discrepancy of ten weeks between the census and the mid-year dates. Rows 4 and 5 have been modified by the CVS as described already. Row 6 implies that infants were insufficiently recorded in the census.

Of particular interest is row 8, which suggests that the census under-enumerated elderly people, and row 9 which reports a large under-enumeration of young people (particularly males in their twenties). In fact three successive OPCS monitors were issued for the mid-1991 estimates: in October 1992, and June followed by August 1993 (see also Table 3). One reason for undertaking revisions was the observation by

Buckinghamshire County Council of a mis-match between their own anticipated age–sex population ratios in 1991 and those presented in the provisional estimates provided by the OPCS. Following investigation, the OPCS then found that sex ratios calculated for young adults were improbable across England and Wales at large (for the number of births and deaths are highly reliable). Therefore the figure given in row 9 was boosted from 402,000 to 547,000 between the June and August 1993 monitors. (For a graphical presentation of the difference between the sex ratios rolled forward from the 1981 census and the 1991 census count which under-represents younger men by 5 per cent or more, see OPCS 1993b.)

Obstacles to census-taking elsewhere

What has been in the end a likely two per cent under-enumeration in Britain is, in comparison to thwarted census-taking in mainland Europe, but a minor irritant. Largely because of concerns about civil liberties and privacy, the 1981 census in The Netherlands was first postponed and subsequently abandoned. Instead a *Woningsbehoeftenonderzoek* (dwelling needs inquiry) was undertaken to compensate for the lack of household data (Hall 1986). Denmark has not held a national census since 1970 (Redfern 1987), and has pioneered a register-based census by linking data about individuals and dwellings held in separate files by different agencies.

One of the strongest protest movements about census-taking has been found in Germany. The German language has a typical compound noun to describe the process: *Volkszählungsboykott*—a boycott of the population census. The West German census scheduled for 1981 was postponed twice, and finally undertaken in 1987. In the run-up to 1987 an alliance of protest groups operated across the country, mostly associated with greens, ' alternatives ' and citizens' rights groups. A low-price paperback book explained what individuals could do to combat what was perceived as the prying census and microcensus (Rottmann and Strohm 1986). The timing of the census coincided with the introduction of machine-readable identity cards, and many protesters feared that police, civil and military databases would be combined to create a surveillance superstate.

British concerns seem tame in comparison. A parliamentary written answer on 11 March 1992, with ministers and civil servants no doubt mindful of then recent criticisms of the 1991 census, promised a review of users' views towards the conventional decennial census. Respondents to the review have shown little enthusiasm for alternative approaches, whether in the form of a rolling census (in which samples taken over a decade add up to complete national coverage over the period), or for the introduction of population and housing registers, record linkage methods, or for a regular micro-census on specific topics, often of a qualitative kind. The United Kingdom parliament has in fact rejected a mid-term census for 1996, but would seem likely to support a census for 2001 in the usual way.

Why are the population numbers so important?

There is a short answer to this question: numbers are money in the British local government finance system. Any erroneous under-reporting of the population in a given area could translate directly into a significant loss of that area's grant from central government's annually fixed spending in support of local government services (and a corresponding increase to areas that might enjoy over-enumeration for any reason). Figure 1 shows how this arises. A proportion of taxation collected nationally

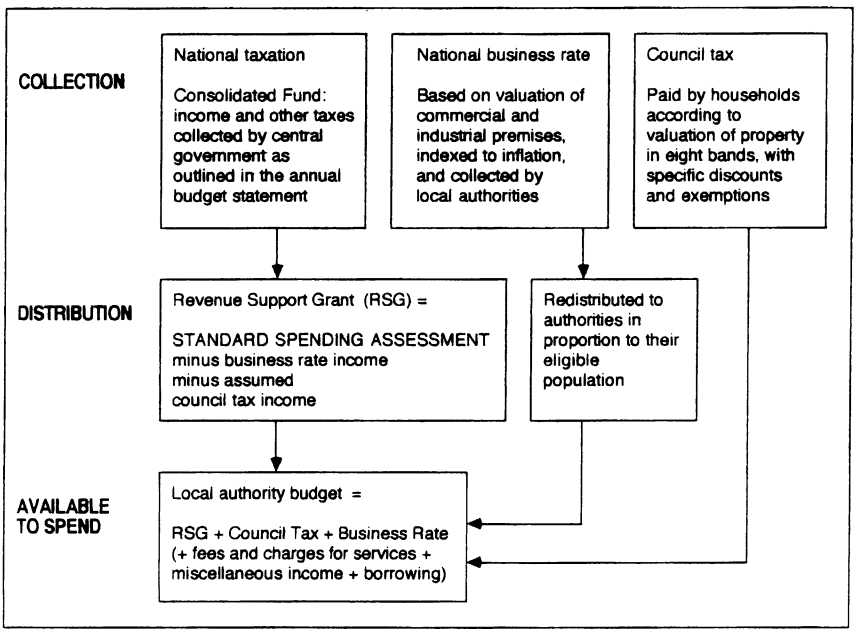

Figure 1 Source of local government income

is redistributed through the Revenue Support Grant (RSG) to each local authority. A major component of this is an annual assessment of the varying need to spend to provide an assumed ' standard ' level of service in each of the components that makes up the Standard Spending Assessments (SSAs). Population factors, whether related to the total population in an area or a particular client group, account for more than half of the SSA total (Bennett and Krebs 1993); the remaining factors relate to physical measures, such as the length of highways to be maintained, or in the case of flood defences actual expenditure. An explanation of how SSAs work is well beyond the scope of this paper, but is provided by Chipping (1993) and by DuBock and Mennell (1994). The key fact is that the formulae used to generate levels of SSAs are driven by data derived either directly from the decennial census, or from the annual population estimates, as shown in Table 2. Thus the annual mid-year estimate for local and health authorities provided by the Registrar General is highly significant in grant allocation. As noted already, the census is crucial in allowing the OPCS to check the accuracy of the mid-year estimate, for it is supposed that errors increase as the years pass between censuses. A provisional estimate of the mid-year population in 1991 was issued in October 1992 (Table 3, row 1) which showed Greater London's population as 6·803 million. However it was at this time that OPCS was becoming aware that under-enumeration was highly significant among the very young, men in their early 20s, and those aged 85 and over.

Under-enumeration was also geographically variable, being greatest in inner London and the metropolitan districts. So by June 1993, when the supposed final mid-1991 estimates were published, Greater London's population was shown to have ' grown ' by 63,000 people—almost one per cent—within an almost static figure for England as a whole (compare rows 1 and 2 in Table 3). In fact the estimated

Table 2 Components of Standard Spending Assessments (SSAs) which are related to the decennial census of population and the annual OPCS mid-year estimates

In the list below,	**data from the decennial census are shown in bold,** and *data from the annual mid-year population estimates in italics*
Service blocks used in the calculation of SSAs	
1 Education	**Children of lone parents; ward-based population density;** *resident population in various age categories*
2 Personal Social Services	**Children of lone parents, people living in shared accommodation; elderly living alone; birthplace of head of household; various physical characteristics of dwellings;** *residents by various ages, esp. children and the elderly*
3 Police	Not currently census related (SSA equals authorised police establishment times the unit cost per officer)
4 Fire & Civil Defence	*Resident* population
5 Highway Maintenance	*Resident* and **working** populations
6 All other services	*Resident* and **working** populations **ward density**
7 (Capital financing is not census dependent)	

Notes: SSAs are calculated for each financial year for each English local authority (including police and fire authorities)
SSAs represent the cost to that authority of providing a standard level of service in that year across the range of services for which it has responsibility
SSAs are calculated in seven principal service blocks according to formulae that use nationally comparable data, and incorporate the cost of providing services in different classes of authority (shire, district, metropolitan district, inner and outer London borough)

population had been redistributed geographically, such that shire areas ' lost ' 84,000 residents, metropolitan areas gained 24,000, and the London boroughs grew by the 63,000 mentioned. As it happens, it was the earlier October 1992 provisional estimates that had been incorporated into SSAs for the financial year 1993/94. Full 1991 census data were later to be used for 1994/95, causing such a lurch in some grants that the case for a special damping mechanism was accepted by government. (The advent of new census data has also been a principal reason for a thorough-going review of SSAs by the Department of the Environment; see the Audit Commission 1993 for some of the technical issues involved.)

Since the total of government grant to local authorities is fixed firmly for each year (so that finding ' missing ' persons would not lead to a pro-rata grant increase, simply a re-distribution of available grant), London would have gained £26,028,000 for what would have been in fact 62,756 newly-found residents, that is £415 per head. Table 4 summarises data that were requested by the London local authority associations and shows that the 12 inner London boroughs and the City of London would have captured £21,495,000 of the extra London grant. As can be imagined, such facts are highly charged politically. Irrespective of party control, London's two representative local government associations, the ALA (Association of London Authorities) and LBA (London Boroughs Association) both press hard for what can be called a fair share for London of national RSG to meet the pressing needs of the capital. Borough political leaders and borough treasurers in both associations gave the strongest possible political and technical exposure to London's shortfall. Of course their

Table 3 Modifications to the estimated mid-year 1991 population based on 1991 census results according to OPCS monitors issued between October 1992 and August 1993

All figures in thousands	Inner London*	Outer London	Greater London	England & Wales
1 **16 October 1992, Provisional mid-1991 population estimates (PP1 92/1)**	2,566	4,237	6,803	50,955
Changes included enhancement of census counts of persons aged 1–44 and 85+ to give:				
2 **24 June 1993, Final mid-1991 population estimates (PP1 93/1)**	2,616	4,250	6,866	50,955
Recognition that net inward migration 1981–91 was understated led to:				
3 **19 August 1993, Revised final mid-1991 population estimates (PP1 93/2)**	2,627	4,263	6,890	51,100

Note: *The OPCS definition of inner London adds Haringey and Newham but removes Greenwich in comparison with the definition used by the Department of the Environment in SSA tables.

Table 4 Exemplification of grant gains and losses within England if revised population estimates released in June 1993 had been used for 1993/94 SSAs

SSA service block	Education	Personal Social Services	Fire & Civil Defence	Highway Maintenance	Other Services	**Total £'000**
Areas with net loss:						
Shire districts	—	—	—	—	− 14,209	**− 14,209**
Shire counties	− 3,287	− 0,294	− 2,088	− 876	− 6,619	**− 13,163**
Metropolitan areas*	628	− 2,228	− 93	112	751	**− 830**
London's gain:						
London total *of which:*	2,659	2,522	2,181	764	20,081	**28,207**
Inner London & City	2,316	1,388	—	571	17,220	21,495
Outer London boros	344	1,134	—	193	2,882	− 4,533
London Fire & Civil Defence Authority			2,181		− 22	2,159
England as a whole: nil change						**0**

*Metropolitan areas include both metropolitan districts and fire and police authorities in these areas

Note: as the totals as presented in the original do not add exactly, the exemplifications should be regarded as illustrative only

Source: Adapted from unpublished Department of the Environment paper SWG/SSAWG(93)(88), dated 10 August 1993

opponents in the zero-sum English grant distribution—the metropolitan districts, and the shire counties and districts—will also be searching for any inaccuracies or adjustments to the distribution formulae that assist their classes of authority. Table 4 shows how London's potential gain would have been at the expense of other parts of England.

In point of fact the June 1993 monitor was not the final estimate of the mid-year 1991 population. As Table 3 shows, a further revision was issued in August 1993 because it had been discovered that ' the estimates of the amount of net inward migration between 1981 and 1991 were understated ' (OPCS 1993c). The consequence of the discovery was an upward revision of the estimated total population of England Wales.

Conclusions

We have shown why there is a difference of 1,113,000 people between the April 1991 census count of usual residents in England and Wales, and the revised final mid-year estimates for 1991 published in August 1993. The OPCS has taken reasonable steps to identify the census under-enumeration, and to allocate the ' missing ' residents to groups of authorities. It has been shown why local authorities, in London most especially, have been so concerned to recapture the missing residents and thereby enhance their SSAs.

At least the British 1991 census was held within the cost limits approved by parliament, and, within those limits, with tolerable results—certainly when compared with some other European countries. However, there have been various misfortunes in the original count and subsequent validation exercise, and delays in publication.[1] While delay might be unfortunate, missing usual residents can imply losing grant income. An estimated 85 per cent of local authority income now derives from central government grants and payments. Central government must not be surprised in the slightest if local authorities do everything possible to ensure that all available residents are corralled into the census returns and related mid-year estimates for their area. Under-enumeration combined with under-estimation implies under-provision of grant for those dependent on local authority services.

In the past elected local politicians may have regarded local residents primarily as voters and local ratepayers; now, more significantly than ever, residents represent potential grant income from central government. But before materialising as a unit of grant, a resident has to be counted.

Note

1 See, for example, Brian Robson's President's Column, *IBG Newsletter*, 15, Sept. 1992, 1. Otherwise, the post mortem on the 1991 census and CVS remains incomplete. Updates are provided by the *Census Newsletter* produced by OPCS and the General Register Office for Scotland, and the quarterly *Population Trends* (HMSO). See also OPCS/General Register Office Scotland (1994) *1991 census user guide 58: Undercoverage in Great Britain* (OPCS, London and GRO(S), Edinburgh).

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