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# How many of us are there and where are we? A simple independent validation of the 2001 Census and its revisions

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Received 19 April 2005; in revised form 9 August 2005; published online 9 March 2007

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**Abstract.** In this paper I present two simple checks on the geographical validity of the UK 2001 Census and on the revisions of population estimates which have been made after its release. The huge difficulties inherent in estimating simply the population's human geography, let alone its characteristics, are discussed, and I conclude that current estimates may now be as close as they will ever be to a true estimate of the population—but are in places very unreliable. The slightly haphazard way in which the United Kingdom finally arrived at its 2001 population estimates, by the latter half of 2004, is commented upon. The UK population was reported to have passed the 60 million mark twice: once in 2001 and then again in 2004. With such national uncertainty, confidence in local population estimates is obviously low. This uncertainty also raises issues over the practicality of recent attempts to estimate the size of the supposed illegal population living in the United Kingdom, even before any moral objections are raised over attempts to count those whose existence here is deemed to be illegal. An uncertainty principle is introduced whereby, as the population becomes more mobile, observation becomes ever more unreliable. I end the paper by discussing the implications of changing human geography for its enumeration with a suggestion for a revision to the census form in 2011 to allow us to count better in the future. I conclude that comparisons with administrative records are not a panacea for estimating the population of the United Kingdom. Instead, further checks within the census process are suggested for the future.

## Introduction

When the 2001 Census results were first published the Office for National Statistics (ONS) reported that there were 58 789 194 people living in the United Kingdom in spring 2001. This was almost exactly a million more than had been estimated to be living there in 1991—57 770 226 (see Dorling and Simpson, 1993; 1994; Dorling and Thomas, 2004, page 11; Simpson and Dorling, 1994)—but more than a million fewer than had previously been thought to be living in the United Kingdom in 2001 (Browne, 2001). The population had grown by a million in ten years, rather than by more than two million as we had thought. National estimates of population change in the decade appeared to be 105% awry.

Until the new census results were released we believed that international migration had led to a net additional 2092 574 people coming to live in the United Kingdom between April 1991 and January 2001. After the release of the census, that change was revised down to an increase of 1018 968 people between April 1991 and April 2001. The census also cast doubt on the 1991 estimate, and the 2001 Census result was similarly questioned and subsequently the mid-year estimate for the UK population in 2001 was revised up to 59 113 500 people when an additional 324 300 souls were later added to the population removing a third of the discrepancy (for details see Simpson, 2007).

Clearly, the final five or six digits in all the numbers above are, in a sense, non-sense. We cannot know and have never known how many people are living in the United Kingdom to the nearest 100 000; but is what we believe to be the case now correct, especially for where people are living? And should we have any confidence in estimates made of the 'illegal' population which use these data? If the plethora of

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eight-digit numbers above are off-putting then, to understand the core of our problems in answering the key question of this paper, consider these two news stories. They are written 36 months apart, and each refers to a single two-digit number:

**“UK population soars above 60 million**

The population of the United Kingdom has passed 60 million, fuelled by record immigration and increasing life expectancy. It is growing at the fastest rate since the baby boom of the Sixties. Almost all the growth is in the South of England. The number of people living in the North and Scotland is declining. The latest government estimates say the UK population rose from 59,755,700 on 30 June last year to 59,862,800 on 1 January 2001. If that growth rate continued, this country’s sixty millionth resident was born last Tuesday” (Browne, 2001).

**“UK population is poised to pass 60m**

The United Kingdom population looks set to top 60 million before the end of this summer, following figures yesterday from the Office for National Statistics showing it climbed to a record high in 2003. After adjusting the totals for the past three years to take account of people missed during the 2001 census, the population reached 59.6 million in June 2003—400,000 more than the year before. The increase was the same as in 2002 and one more step of this magnitude would have taken the total past 60 million by June this year” (Carvel, 2004).

Unfortunately for the babies born on Tuesday 21 August 2001 none of their number turned out to be the 60 millionth resident of this country. The ONS is now a little more careful with its predictions and so Carvel’s article, written three years later, continued with the caveat: “But since the average annual growth over the past 12 years has been 300,000, the milestone may be passed a little later.” Thus the 60 millionth resident could have been being born as I first typed this paper (late September 2004) or, more likely, will not be a baby at all. Only roughly 1800 babies are born a day in the United Kingdom and at least 300 000 people enter and leave the United Kingdom every day. The 60 millionth resident will almost certainly have been one of them, most probably a former resident returning from a little time spent abroad.

Why does any of this matter and is this not a parochial UK issue (Boyle and Dorling, 2004)? Parochialism is an issue which affects all countries of the world. It is also of great significance to any debate over how many people are living in the United Kingdom illegally—as we clearly do not know how many are living here legally. As I discuss below this may be beneficial as it makes counting the illegal population somewhat pointless from a practical viewpoint. But, in general, if the United Kingdom cannot count then there is a problem for applied quantitative social science everywhere; but how well do we need to be able to count (Martin, et al 2002; Mitchell et al, 2001; NISRA, 2002)?

Our officials forecast the passing of a milestone three years earlier than it probably occurred—so what? The population is in flux so, it is hardly surprising that we cannot count it to the nearest million in three years given that that number of people are coming and going in just three days. Here are just a few reasons why such uncertainty really matters, in no particular order:

1. We cannot be sure if young men in the United Kingdom are more likely to die than they were a few years ago. If there are fewer young men than are estimated then their mortality rates are increasing and it would appear that life in general is becoming worse for young men in the United Kingdom—most of the uncertainty in these figures concerns youngish men (Shaw et al, 2005a; 2005b).

2. We have little idea of whether society is becoming more or less polarised year on year for particular social groups. For example, if a narrowing of the social-class gap in university access is the result of changing patterns of emigration it may not be a 'success'. How can you be sure what proportion of people go to university when you are unsure of the denominator?

3. Are fewer or greater numbers of people choosing to register to vote in the United Kingdom than before? As the data below show, it is almost impossible to know in which direction the trends are moving: towards a society that participates more, in work, education, the electoral process, and so on; or towards a society where individuals may be becoming less participatory over time.

4. If ten years after a census we cannot be sure to the nearest million how many people are here, of what ages and what sex, then knowing where in the United Kingdom they are (by both of those other factors) is even more difficult. If these estimates of population by area are incorrect then billions of pounds are misspent by the government (mostly through local government) and hundreds of people in particular areas lose their livelihoods (teachers, cleaners, nurses, refuse collectors, and so on) while others are employed where there is less need for them to be.

5. All social surveys, all panel surveys, all cohort studies will incorporate an extra bias when their results are grossed up to both an incorrect total of the population and, more importantly, an incorrect demographic description of that population.

6. The error propagates forward in time. A census is asked only every ten years, partly as a check on population estimates. If the census itself is wrong or not good enough to perform that check, errors grow larger with time.

Thus for quantitative social science, and for government and policy, in the United Kingdom a discrepancy such as the one which was discovered after the census of 2001 is a cause of great concern. However, it was not the greatest cause of concern; this was that the census might have overcorrected previous population estimates. Population estimates are the main driver of funding to numerous government agencies and to lower tiers of government itself. Thus, in the three years that followed the census many highly complicated and often contentious 'corrections' were made to the mid-year population estimates (MYEs) for England and Wales (Simpson, 2007). By now it looks as if that process has ended and so we finally have a count and a distribution we can examine for plausibility. Of course, that count has been examined in the process of these revisions exhaustively and in far more detail than I can possibly do here. However, to follow the full process that occurred is near impossible given its complexity and given discrepancies between what was released in public and what was said in private. What I try to do in this paper is to present a simple illustration of why now our estimate is probably almost as good as it gets. I also avoid, for those whose minds find statistical contortion confusing, trying to grapple with statements such as the following: "On 8 July ONS announced that the mid-2003 and revised mid-2002 population estimates will not include any allowance for unattributable population change" (ONS, 2004).

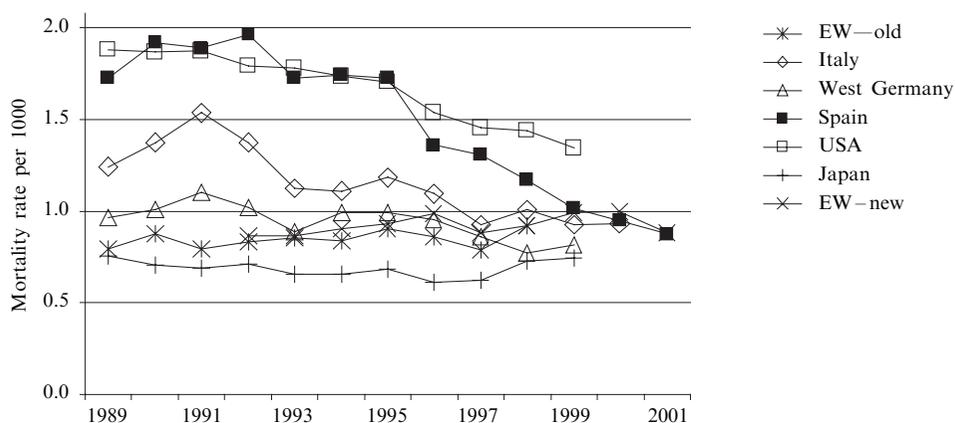
In lay person's terms unattributable population change can be described as 'things that appear to be happening but that we cannot explain.'

The 2001 Census was held on 29 April 2001. Its first results were released in September and October 2002. They suggested that previous mid-year population statistics had overestimated the size of the population of the United Kingdom by roughly a million as compared with the 60 million predicted by ONS and referred to above by Browne (2001) in *The Observer*. Since then many thousands of people have been added to particular places such that the official MYEs for 2001 now differ substantially from the census count (apart from timing and a few tiny differences of definition, there was

supposed to be ‘one number’). Below, I consider how plausible that new one number is and how it may be slightly more reassuring than the original one number. I start with international estimates of mortality rates for young men to illustrate just how much we rely on census figures given the range of outcomes that is plausible. Later, I discuss the implications of all this uncertainty for the debate that arose again in spring and summer 2005 (and which reared its ugly head again in summer 2006 as I corrected the proofs of these words) over uncounted people living in the United Kingdom.

### The plausibility of the national estimates.

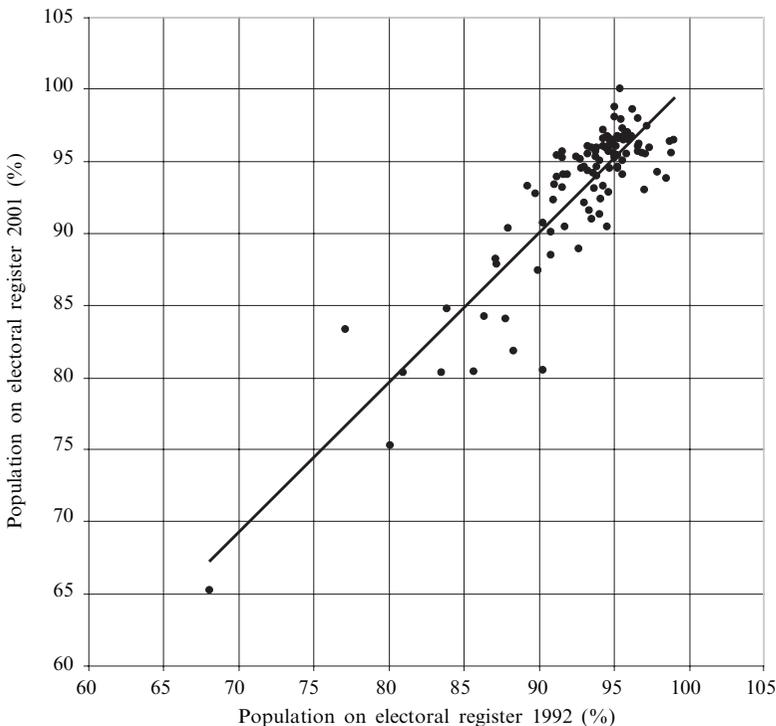
One source of information that can be used to assess the plausibility of the new numbers is the changing mortality rates they suggest for a group for whom population estimates have been changing most rapidly over time. One such group is men aged 27 years. Figure 1 shows the time trends in the mortality rate per year per 1000 men of these ages in England and Wales calculated using the old and new numbers and for five comparator countries. Figure 1 looks a mess when you try to discern the difference between the two England and Wales lines because, compared with international variations and trends in mortality, the differences are so small. Both lines run just under the one man dying per year per 1000 grid line. According to the old data series mortality rates rose between 1994 and 1998 for this age group in England and Wales (slightly); according to the new series they have fallen in more recent years (equally slightly). This is despite the additional possibly artifactual rise that occurred mainly in the late 1990s, when the population at risk (denominator) was lowered to account for the men no longer believed to be living in the United Kingdom. Both trends are plausible, but no light can be shed from trends abroad as to which is most likely to have occurred. All countries appear to be converging towards the one in 1000 rate; but all other countries’ estimates are likely to be just as uncertain as those within the United Kingdom, and more so for many smaller countries as there are fewer deaths there.



**Figure 1.** Mortality rates per 1000 for 27-year-old men in selected countries 1989–2001 [source: World mortality database and England and Wales (EW) updated given estimates revised in 2004].

A far more detailed analysis of mortality rates could be made than this, but I think that the eye-straining that is required to attempt to interpret the overlapping lines in figure 1 illustrates well the great difficulties of attempting to use mortality rates to validate census estimates. For the groups most likely to be missed by a census (the young) mortality rates tend to be low, tend to vary most greatly between countries, and can fluctuate quickly. Validating the national-level population estimates is thus almost impossible by this source, and this source is the ultimate, and final, form of

capture–recapture methodology (the methodology used to try to ensure the accuracy of the 2001 Census). What can be claimed is that there is no evidence from mortality trends that the large number of men thought to be living in the United Kingdom before the census was taken are living in the United Kingdom now. There is also no evidence from mortality data that there are large numbers of people living illegally in the United Kingdom as there has been no great rise in the numbers of people dying here normally resident abroad. All other attempts to validate the national population estimates for the United Kingdom and its four countries succumb to similar problems. It is very hard to tell whether the addition of one third of a million people to the original one number was warranted despite the detailed local studies done to justify that addition in each area. The fact that the census authorities did not claim that the population had been significantly overestimated in a single area suggests that these revisions were made on a partly partisan basis. A local authority complains and if it has a good case its population is raised. It is not in the interest of any local authority to suggest that national statisticians have awarded it higher populations than it has! The major problem for all such local studies is that people, such as students, may live in more than one area and be resident in the local area only for parts of a year. A more fruitful area to investigate is the national geography of the estimates, which I turn to next. It might well be the case that nationally we are assuming that there is a fraction of a percentage of the population more people living here than really do; but if we are doing that, or underestimating the population in other parts of the country, is there any systematic bias to our errors? To explore this I turn from the use of mortality data for national verification to child benefit and electoral registration data for area comparisons. By way of introduction consider figure 2.



**Figure 2.** Approximate electoral registration by area in Britain: 1992 (*x*-axis) and 2001 (*y*-axis) (source: electoral statistics and mid-year population estimates for constituencies and districts).

**Table 1.** Validation of the 2001 Census against the child benefit register in Britain by area.

Children who appear registered (%)	Child benefit population count (0–14 years)	Census population count (0–14 years)	Country, county, or local authorities. <sup>a</sup> Final mid-year estimate (given only for top and bottom 3 areas)	
99.7	10 702 633	10 734 286	England and Wales	
99.8	905 325	906 882	Scotland	
105.7	87 043	82 346	Liverpool LA	81 400
105.2	123 388	117 279	Manchester and Trafford	120 900
104.8	48 530	46 290	Wolverhampton LA	46 200
103.3	24 755	23 963	Dundee City UA	
103.1	102 068	98 961	Salford and Wigan	
102.6	43 138	42 050	Haringey LA	
102.6	117 605	114 648	Dudley and Sandwell	
102.6	61 690	60 149	Wirral LA	
102.5	39 787	38 805	Harrow LA	
102.5	41 692	40 681	Wandsworth LA	
102.5	42 083	41 065	Hounslow LA	
102.2	104 762	102 460	Bradford LA	
102.2	97 395	95 329	Lambeth and Southwark	
102.1	162 898	159 514	Durham	
102.0	42 450	41 635	Havering LA	
101.9	52 533	51 545	Walsall LA	
101.7	55 345	54 394	Enfield LA	
101.7	40 045	39 357	Swansea UA	
101.7	53 893	52 985	Bolton LA	
101.6	100 325	98 740	Worcestershire	
101.6	88 358	86 973	Bexley and Greenwich	
101.6	103 645	102 031	Newham and Tower Hamlets	
101.5	99 017	97 537	Barnsley and Doncaster	
101.3	198 013	195 568	Tyne and Wear LAs	
101.1	54 517	53 904	Northumberland	
101.1	25 615	25 332	North Ayrshire UA	
101.0	171 890	170 120	Leicestershire	
101.0	272 790	270 009	Argyll and Bute, East Dunbartonshire, Glasgow City, North Lancarkshire, South Lanarkshire and West Dunbartonshire	
100.8	146 030	144 918	Bristol, South Gloucestershire and Bath, and North East Somerset	
100.8	189 198	187 772	Nottinghamshire	
100.7	41 535	41 229	East Ayrshire and South Ayrshire	
100.7	166 937	165 728	East Riding and North and North East Lincolnshire UAs	
100.7	186 705	185 400	Cheshire	
100.5	188 282	187 377	Oldham, Rochdale, Stockport, and Tameside	
100.5	179 675	178 817	Derbyshire	
100.4	194 168	193 391	Staffordshire	
100.4	49 042	48 857	Brent LA	
100.4	24 638	24 549	Neath Port Talbot UA	
100.3	215 735	214 987	Birmingham LA	
100.3	139 693	139 212	Kirklees and Wakefield	
100.2	48 958	48 864	Rotherham LA	
100.2	48 612	48 521	Hillingdon LA	
100.1	306 045	305 630	Essex	
100.1	45 048	45 009	Hackney LA	
100.0	118 863	118 824	Wiltshire	
100.0	201 903	201 880	Hertfordshire	
100.0	186 487	186 481	North Yorkshire	
100.0	185 342	185 339	East Lothian, East Renfrewshire, Edinburgh, Inverclyde, Midlothian, Renfrewshire, Scottish Borders	
99.9	39 080	39 106	Solihull LA	
99.9	92 148	92 235	Warwickshire	
99.9	32 372	32 411	Aberdeen City UA	
99.9	124 712	124 868	Northamptonshire	
99.9	38 417	38 471	Calderdale LA	
99.8	125 660	125 896	East Sussex	
99.8	128 017	128 265	Barking and Dagenham, Redbridge, and Waltham Forest	

**Table 1** (continued).

Children who appear registered (%)	Child benefit population count (0–14 years)	Census population count (0–14 years)	Country, county, or local authorities. <sup>a</sup> Final mid-year estimate (given only for top and bottom 3 areas)
99.8	184 153	184 594	Devon
99.7	30 495	30 573	Islington LA
99.7	305 970	306 875	Kent
99.7	85 085	85 351	Knowsley and Sefton
99.6	85 342	85 656	Cumbria
99.5	272 960	274 208	Lancashire
99.5	49 338	49 589	Lewisham LA
99.3	91 382	92 071	Sheffield LA
99.2	115 592	116 479	Bedfordshire
99.2	67 075	67 649	Angus, Clackmannanshire, Perth and Kinross, and Stirling
99.1	110 098	111 074	Oxfordshire
99.1	302 517	305 251	Hampshire
98.9	133 610	135 100	Norfolk
98.9	120 868	122 230	Blaenau Gwent, Caerphilly, Merthyr Tydfil, Monmouthshire, Newport and Torfaen
98.8	133 662	135 322	West Sussex
98.7	54 745	55 444	Bromley LA
98.7	136 577	138 374	Buckinghamshire
98.7	122 157	123 823	Somerset (less Bath and North East Somerset)
98.6	42 242	42 842	Eilean Siar, Highland
98.6	35 898	36 423	Bury LA
98.5	112 993	114 752	Dorset
98.4	102 752	104 385	Gloucestershire (less South Gloucestershire)
98.4	59 848	60 803	Aberdeenshire and Moray
98.4	80 550	81 864	Ealing and Hammersmith and Fulham
98.3	22 113	22 500	Isle of Wight
98.2	82 008	83 533	Shropshire
98.2	113 828	115 945	Lincolnshire (less North and North East Lincolnshire)
98.1	32 083	32 702	West Lothian UA
98.1	66 962	68 265	Croydon LA
98.1	62 730	63 955	Fife UA
98.1	189 938	193 707	Surrey
98.0	130 278	132 894	Cambridgeshire
98.0	150 162	153 208	Bridgend, Cardiff, Rhondda, Cynon, Taff and Vale of Glamorgan
97.9	26 027	26 581	Falkirk UA
97.7	84 537	86 538	Cornwall
97.6	152 093	155 875	Berkshire
97.3	58 002	59 638	Coventry LA
97.0	34 375	35 453	Sutton LA
96.8	58 148	60 049	Barnet LA
96.8	140 032	144 689	Conwy, Denbighshire, Flintshire, Gwynedd, Isle of Anglesey, Powys, and Wrexham
96.6	30 778	31 853	Herefordshire
96.6	7 803	8 076	Orkney Islands UA, Shetland Islands
96.6	25 108	25 991	Dumfries and Galloway UA
96.3	129 048	133 992	Leeds LA
96.0	32 888	34 257	St Helens LA
95.5	118 695	124 300	Suffolk
94.9	32 825	34 585	Merton LA
94.1	53 680	57 063	Kingston upon Thames, and Richmond upon Thames
93.9	5 700	6 073	Rutland
93.1	60 682	65 167	Carmarthenshire, Ceredigion, and Pembrokeshire
88.5	27 665	31 265	Camden LA
83.8	39 962	47 693	City of London, Kensington and Chelsea, and Westminster

<sup>a</sup> Country, county, local authorities (LA), or unitary authorities (UAs) are merged to be made up of whole constituencies where local authority and constituency boundaries are not coincident.

Figure 2 shows an almost perfect relationship over time between the rate of voter registration around the time of the 1992 general election and that around the election of 2001. The details of how figure 2 was constructed are given below. What matters for the argument being made here is how remarkably little change over time and space appears to have taken place over the course of ten years.

In short, in each area of Britain for which electoral and population statistics can be compared, there appears to have been remarkably little change in the proportion of people registered to vote. Of course, not every adult is eligible to be registered—especially in the extreme area in figure 2 (see table 2 below), whose resident population includes many non-EU overseas citizens—but such caveats hardly matter in the new era of uncertainty we are in. The key question is: is it plausible that this spatial relationship has remained unchanged over a decade? By 2001 far fewer people were interested in voting as compared with those in 1992 (turnout fell between 1992 and 2001), but in 1992 people were deterred from being on the electoral register by the poll tax. Great efforts were made to increase registration in the intervening years. With the exception of those dots (places) which lie a little off the line in figure 2, have all these influences really cancelled themselves out? If it is true that the geographical variation in electoral registration rates has hardly altered over the course of a decade and that the national level of registration remains much the same, then the final 2001 population estimates (made in 2004) are to be trusted. Alternatively, both the final population estimates and the voter registration are missing the same people in the same proportions such that the relationship appears now to be similar to that of a decade ago. Alternatively, again, there were other errors in 1991/92 almost identical to such errors in 2001. Last, the corrections made to the census figures could have helped make the relationship shown in figure 2 more stable. To begin to unravel these possibilities we need to consider particular places. But first consider the largest group of people ineligible to vote and hence not registered and not included in the denominator to figure 2: children.

### **How many children were there in Britain in 2001?**

The 2001 Census estimated that on 29 April 2001 there were some 9827 404 children aged under 15 years living in England and Wales and some 906 882 living in Scotland (the final MYEs added 4000 children to England and Wales and reduced the count in Scotland by over 1000 because of child out-migration between late spring and early summer 2001). Almost four months after the census the annual download of the child benefit register was taken on 27 August 2001. Child benefit in the United Kingdom is a universal benefit for which over 99% of children are eligible and for which the take-up is thought to be over 99%. It is a substantial sum of money over time and has been increased in recent years so even the affluent claim it. The total of all children receiving child benefit aged 0–14 years on that date and of a third of children aged 15 for the same countries was 99.7% and 99.8% of the census totals, respectively. A third of children aged 15 years by late August 2001 was added to reflect those who would have been 14 years some four months earlier (four months being a third of the year). A third of babies was not subtracted from the child benefit data as there is a lag between babies being born and child benefit being claimed. Thus the child benefit data presented here (in table 1) slightly overestimate the number of children in Britain, assuming 100% take-up of this benefit. Table 1 shows, for different areas of Britain, how the two counts of children compare. The table is sorted according to the percentage of children for whom benefit appears to be being claimed.

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Table 1 also suggests that in both Scotland and England and Wales children were, in general, well counted by the census and that the uptake of child benefit is almost universal. The alternative conclusion is that both population estimates have missed similar numbers of children in the same places, which would appear unlikely. Another alternative view is that table 1 shows a wide spread of differences, so child benefit is better than the census as a data source or both are wrong in different ways. Similarly, the reasons for nonregistration for child benefit are likely to be correlated with being missed (recent migration being a key factor). There are some geographical areas where there appear to be significantly more children having benefit claimed on their behalf than were counted in the census. The most extreme of these is Liverpool, where there were 4697 more children for whom benefit was being claimed than the census counted. This is possibly evidence of census underenumeration of children in Liverpool. However, comparison of the 2001 Census and 1996 MYEs for Liverpool suggest that some 6601 children aged 0–9 years in 1996 had left the city in *net* terms by 2001 (Dorling, 2005). Liverpool is an area which has had consistent high levels of child net out-migration over time. The final 2001 MYE of children in Liverpool is 1000 lower than even the census count. Part of this could be explained by fewer babies being born in the few months between the census being taken and mid-year than there were children who turned 15 years, and by continued net out-migration in those months.

If a proportion of the children who leave Liverpool each year continue to be registered for child benefit at their previous address for some time then the child benefit count will be inflated. The inflation rate is very much higher for children aged 5–14 years as compared with those aged 0–4 years (where the two counts are almost identical for that city), adding credence to this possibility. In essence, we are left with a discrepancy for Liverpool which is very difficult to solve. The differences between child benefit and census counts of children living in Liverpool in the spring/summer of 2001 can be used as just one example of when administrative record checks do not help us to ascertain the true population of the area. Liverpool is an extreme example, but if any proposals are put in place to use administrative data to augment the census in the future then Liverpool would be an ideal place to test those proposals. It is also telling that despite claims of a revival of that city, the leaving of Liverpool—now by its children—continues its long tradition of topping tables such as table 1.

Similar processes could well explain the higher numbers of children appearing to receive child benefit in the other local authorities which head table 1. Over and above this, for children to have been missed from the census it is probable that their parents would also have been missed, so we would expect to find similar possible under-counts of adults—which we do not find for Liverpool (see table 2). The final MYEs for 2001, published in September 2004, suggest that (to the nearest five-year band) there were more children aged 0–15 years in all these areas than the estimate of the number of those aged 0–14 years for whom child benefit was being claimed; but these MYEs do reduce the numbers of children estimated to be of ages 0–14 years in particular places (as a result of fewer births between spring and summer in these areas than children turning 15 years, and as a result of net out-migration in those few months).

In comparison with the five areas where there appears to be 3% or more additional children receiving child benefit as compared with the census count, there are fourteen areas where there are at least 3% fewer children receiving benefit than were counted in the census. These areas appear towards the end of table 1, the most extreme area being the combined London boroughs of the City of London, Kensington and Chelsea, and Westminster, which appear to have 7731 fewer children receiving benefit than were counted in the census. Moreover, the corrections to the 2001 Census figures resulted in an estimate of there being 52 600 children aged 0–15 years (50 100 aged 0–14 years)

**Table 2.** Validation of the census against the electoral register in Britain by area.

Percentage registered <sup>a</sup>			Country, county or local authorities <sup>b</sup>	Mid-year estimate <sup>c</sup> (MYE)	Electorate	MYE as a percentage of the electorate
1992	1997	2002				
93.1	92.1	93.1	England and Wales			
93.8	93.5		England and Wales revised population denominators			
96.2	94.7	94.9	Scotland			
95.4	93.8	98.3	Bolton LA	197 400	204 600	96.5
95.1	92.1	98.0	Wirral LA	241 100	247 200	102.5
91.6	91.7	97.6	Manchester and Trafford LA	487 900	473 800	97.1
96.2	94.1	97.1	Rotherham LA			
95.8	96.9	96.9	Fife UA			
95.5	94.0	96.7	Havering LA			
99.0	95.1	96.5	Orkney Islands UA, Shetland Islands			
95.1	94.0	96.4	Bury LA			
96.6	93.5	96.4	Neath Port Talbot UA			
98.8	97.3	96.4	Eilean Siar, Highland			
97.2	97.6	96.2	Isle of Wight			
96.6	93.8	96.0	North Ayrshire UA			
94.7	93.8	95.9	Derbyshire			
97.4	94.8	95.9	East Ayrshire and South Ayrshire			
95.8	93.9	95.8	Durham			
95.6	95.4	95.8	Northumberland			
96.6	95.1	95.7	West Lothian UA			
94.3	92.6	95.7	Blaenau Gwent, Caerphilly, Merthyr Tydfil, Monmouthshire, Newport and Torfaen			
98.8	95.9	95.6	Dumfries and Galloway UA			
96.0	95.0	95.5	Cumbria			
95.9	93.8	95.5	Argyll and Bute, East Dunbartonshire, Glasgow City, North Lanarkshire, South Lanarkshire, and West Dunbartonshire			
94.9	94.4	95.4	Wolverhampton LA			
95.1	93.6	95.3	East Riding and North and North East Lincolnshire UAs			
94.6	92.5	95.3	Swansea UA			
95.2	95.4	95.3	Cheshire			
96.0	94.3	95.2	Dudley and Sandwell			
94.6	94.8	95.2	Worcestershire			
95.7	94.0	95.2	Kirklees and Wakefield			
96.2	94.1	95.2	Solihull LA			
94.3	93.8	95.2	Lancashire			
95.3	94.4	95.2	Somerset (less Bath and North East Somerset)			
94.9	94.2	95.0	Staffordshire			
95.6	95.1	95.0	East Lothian, East Renfrewshire, Edinburgh, Inverclyde, Midlothian, Renfrewshire, Scottish Borders			
95.0	93.9	95.0	Barnsley and Doncaster			
95.7	94.9	94.9	Calderdale LA			
94.3	93.8	94.8	Essex			
93.3	93.5	94.7	Wiltshire			
94.5	94.9	94.7	Lincolnshire (less North and North East Lincolnshire)			
96.7	94.0	94.7	St Helens LA			
94.7	92.0	94.7	Oldham, Rochdale, Stockport, and Tameside			
93.6	93.4	94.6	Gloucestershire (less South Gloucestershire)			
93.9	93.9	94.6	Northamptonshire			
93.8	93.6	94.6	Norfolk			
91.5	92.8	94.4	Devon			
91.6	93.6	94.4	Liverpool LA			
95.0	94.1	94.4	Dorset			
93.8	92.4	94.3	Leicestershire			
96.9	95.0	94.3	Conwy, Denbighshire, Flintshire, Gwynedd, Isle of Anglesey, Powys, and Wrexham			
97.9	93.8	94.2	Aberdeenshire and Moray			
94.0	93.9	94.2	North Yorkshire			
91.3	92.9	94.2	Suffolk			
93.2	92.2	94.2	Salford and Wigan			
94.7	94.4	94.2	Shropshire			
95.2	94.6	94.1	Cornwall			
95.1	94.3	94.1	Warwickshire			
92.5	92.4	04.1	Bedfordshire			

**Table 2** (continued).

Percentage registered <sup>a</sup>			Country, county or local authorities <sup>b</sup>	Mid-year estimate <sup>c</sup> (MYE)	Electorate	MYE as a percentage of the electorate
1992	1997	2002				
97.1	95.4	94.1	Carmarthenshire, Ceredigion and Pembrokeshire			
92.8	92.9	94.1	Hampshire			
98.5	95.8	93.8	Angus, Clackmannanshire, Perth and Kinross and Stirling			
91.2	91.7	93.8	Bristol, South Gloucestershire and Bath, and North East Somerset			
92.9	90.3	93.8	Birmingham			
93.3	92.5	93.7	Buckinghamshire			
95.6	92.8	93.6	Tyne and Wear LAs			
95.0	92.8	93.6	Walsall LA			
94.8	91.5	93.5	Bromley LA			
95.3	93.0	93.4	West Sussex			
91.9	90.8	93.3	East Sussex			
93.0	92.4	93.2	Kent			
95.3	96.0	93.2	Herefordshire			
93.9	91.6	93.2	Bridgend, Cardiff, Rhondda, Cynon, Taff, and Vale of Glamorgan			
93.9	92.4	93.2	Knowsley and Sefton			
97.1	94.1	93.0	Falkirk UA			
93.6	92.7	92.9	Hertfordshire			
94.3	91.4	92.6	Bexley and Greenwich			
89.8	89.4	92.6	Harrow LA			
91.1	88.1	92.5	Cambridgeshire			
87.1	86.9	92.5	Wandsworth LA			
89.3	90.0	92.3	Oxfordshire			
91.6	92.0	91.9	Surrey			
93.7	90.3	91.7	Leeds LA			
93.4	87.4	91.7	Hillingdon LA			
94.7	93.1	91.7	Nottinghamshire			
94.1	91.7	91.6	Coventry LA			
94.0	92.2	91.5	Barking and Dagenham, Redbridge, and Waltham Forest			
90.9	89.3	91.3	Berkshire			
93.0	91.1	91.2	Bradford LA			
93.6	93.8	91.0	Aberdeen City UA			
90.8	91.2	90.7	Hounslow LA			
91.7	86.4	90.5	Croydon LA			
90.3	91.0	90.5	Sutton LA			
94.5	92.1	89.2	Sheffield LA			
92.7	93.9	89.0	Enfield LA			
88.0	85.1	88.8	Rutland			
90.8	92.2	88.5	Dundee City UA			
90.0	90.2	88.4	Lewisham LA			
87.2	84.0	88.3	Barnet LA			
87.8	86.8	85.1	Newham and Tower Hamlets			
83.9	82.2	84.9	Kingston upon Thames and Richmond upon Thames			
86.3	87.4	84.9	Merton LA			
77.1	79.2	84.5	Islington LA			
88.3	84.3	84.2	Lambeth and Southwark			
90.3	82.4	81.5	Hackney LA			
85.6	81.8	81.5	Brent LA			
81.0	83.9	81.4	Ealing and Hammersmith and Fulham			
83.5	81.1	81.4	Haringey LA	171 500	142 000	82.8
80.1	80.8	76.5	Camden LA	161 600	127 600	79.0
68.0	66.5	69.8	City of London, Kensington and Chelsea, and Westminster	315 000	209 100	66.4

<sup>a</sup> 1992 % registered = the electoral roll of 1992/population aged 15+ in July 1991 (original MYE). 1997 % registered = the electoral roll of 1997/population aged 15+ in July 1996 (original MYE). 2002 % registered = the electoral roll of 2002/population aged 15+ in July 2001 (original MYE)—note half the attainees are subtracted from the 2002 roll to make it more comparable given the difference in census timing to MYEs and changes in the electoral register.

<sup>b</sup> Country, county, local authority (LA), or unitary authority (UA) are merged to be made up of whole parliamentary constituencies where local authority and constituency boundaries are not coincident.

<sup>c</sup> These last three columns are given only for the top and bottom 3 areas.

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in the City of London, Kensington and Chelsea, and Westminster: some 12 000 higher than the numbers aged 0–14 years being claimed for—and increasing the discrepancy. This is possible evidence of census (and census revision) overenumeration of children in these boroughs, but it may also reflect the high numbers of families living in this part of London who may not satisfy the basic requirement to claim child benefit: “You and your child must usually have lived in Great Britain, Northern Ireland or the Isle of Man for 26 weeks in the last 12 months, and be in Great Britain when you make your claim.” In general, the areas where there appear to be fewer children for whom child benefit is being claimed than children who were counted are more difficult to account for. A combination of explanations all come into play: these include children being ineligible to claim; children not being claimed for (by parents who do not need or object to the benefit); children having migrated to the area and their claim still being registered at their old address (such as in Liverpool); and possible census overestimation of numbers of children (who could easily be put onto two separate census forms if their parents are separated but they live with them on different days of the week). In short, it is not possible to be sure why the two counts of children differ in the few areas where they do significantly differ. One key feature of table 1 which matters is how few these extreme areas are and how little the differences are. Enumeration problems are very place specific.

### **How many adults were there in Britain in 2001?**

To validate the count of adults in the census the electoral roll is used here as briefly discussed in relation to figure 2. Census-based estimates of the electorate are not directly comparable to the number of registered electors, not least because not all adults who are eligible to be registered choose to register despite it being a requirement of law. It is illegal not to complete and return an electoral registration form, for which a fine of up to £1000 can be imposed. However, people who are living at a temporary address, or who are planning to move home in the near future, or who have just moved home and arrive after October (when the relevant roll used to be taken before it became a rolling roll!) may well not be registered (at least not where they live). Furthermore, people who died or who left the country between April (when the census was taken) and October 2001 should not be on the roll but may be on it (although it does include a negligible number of overseas electors). Not everyone is eligible to be on the parliamentary electoral roll. The parliamentary electoral roll (which differs from the European and local government electoral rolls) excludes people who are not British or Commonwealth citizens or not citizens of the Irish Republic who are resident in Britain; people in prison; members of the House of Lords; other EU citizens; anyone found guilty in the last five years of corrupt practices in connection with an election; and people with mental disabilities “incapable of making a reasoned judgement” on polling day (Pattie et al, 1996).

The electoral roll can be inflated because it is legal for people to be registered at more than one address when they have more than one usual address. This is most common for university students, who may be registered at both their home and their term-time addresses. The roll may also be inflated (as compared with the census) by people returning to the country between April and registering in October 2001. Similarly, members of the armed forces have a right to be on the roll although they may be living overseas and a relatively small number of people living overseas are also registered to vote in Britain. Finally, the roll can be inflated by electoral registration officers including people for whom a registration form was filled in in October of the previous year—although this is now discouraged. For these reasons, the comparison of electoral and census data is hazardous. Given all these problems with comparing the

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electoral roll with the adult population it should be clear why the census agencies probably shied away from attempting to use this source to validate the census. Nevertheless, comparisons can be made. The electoral roll does have the benefits of being available for the past and being available for geographically disaggregated areas of Britain—in particular, for the parliamentary constituencies to which MPs are elected. For the geographical comparisons made here, the electoral roll has been aggregated from these constituencies to local authorities (for which census data are first released and revisions are later made), which are perfect aggregations of constituencies, or to groups of local authorities, which are perfect (or near perfect) aggregations of constituencies.

In making comparisons one key difficulty is that, by area, population data are often released for five-year age groups rather than for a single year of age. However, the population aged 15 years or over should, by definition, almost always be higher than the electorate and so it is used below. Of course, people aged 15 or 16 years in April 2001 would not have reached 18 years by April 2002 (the date for which an electoral roll most representative of the population living in 2001 can be constructed, and to which comparisons in the past can be made). Because I am attempting to validate census estimates that were first published, as well as subsequent revisions, the estimates of the electorate made from those first estimates are mainly used here, but where they differ substantially then a comparison is made with the 18+ final MYE figures (which I received from ONS and General Register Office for Scotland in late 2004). Alternating the use of initial 15+ 2001 April populations and final 18+ June 2001 populations to estimate the electorate was found not to alter the results presented here significantly in all but a handful of cases—and those cases are referred to below.

At a national level the 2001 Census estimated that on 29 April 2001 there were some 42 214 512 people aged 15 years and over living in England and Wales and some 4 155 129 people of these ages living in Scotland. An electoral roll was taken some five months later on 15 October 2001 (although surveying for it began at least six weeks earlier) and came into effect on 15 December 2001. If a general election had been held on 29 April 2002 then we can estimate from that roll that the electorate of England and Wales would have been some 39 321 217 people and that of Scotland would have been 3 943 207 people, or 93.1% and 94.9% of the population aged 15 years and over on census day a year earlier, respectively. The final MYEs for 2001 estimated the populations of England and Scotland aged 18+ by summer 2001 to be 40 551 800 and 3 966 600, respectively—suggesting 97.0% and 99.4% of adults were registered in aggregate (of course, some can be legally registered more than once, again students are the usual example given), respectively.

This estimate of the electorate made using the initial census data assumes that in each parliamentary constituency half of all attainers (people who are due to turn 18 years in the coming year and hence would be eligible to vote) would have turned 18 years in the 6 months between October and April. To what extent do these figures help to validate or help to question the census and its subsequent revisions? Answering these questions is made difficult because registering for elections is not as near universal as compared with claiming child benefit and, as discussed above, people can be legally registered twice—in more than one place. However, unlike with child benefit data we have access to previous electoral rolls and so can make comparisons between the census and MYEs of the past. The reason for choosing to compare the census with a hypothetical election held around that time is that elections were held a few months after the 2001 Census and a year after the 1996 MYEs were made, and a year after the 1991 Census was taken.

At a national level the rates of registration recorded for 2001 above (93.1% and 94.9%) can be compared with the rates recorded nationally in 1991 and 1996 by using the same methodology (as compared with the electorates on election days 9 April 1992 and 1 May 1997). In 1991, according to the MYE of that year, the rates of registration in the following general election were 93.1% and 96.2% in England and Wales and Scotland, respectively. For the 2001 Census to be an undercount of the adult population, the rate of registration has to be lower than it was ten years before in England and Wales. Ten years before the poll tax had led to a large number of people deliberately not registering. The census agency for England and Wales has revised its estimate of the population of Britain in 1991 [claiming now that it is likely to be a third of a million lower than previously thought (for details see Simpson, 2007)]. If this is true then the registration rate in 1991 in England and Wales was 93.8% and slightly fewer adults are now registered to vote than were then. The agency in Scotland has not, at the time of writing, revised its previous population estimates. The equivalent rates for 1996 are 92.1% and 94.7% and the revised 1996 rate for England and Wales is 93.5%. If (and it is a very big if!) a constant proportion of adults are registered to vote, then the true population of England and Wales in 1996 lies somewhere between the old and most recently revised MYEs. However, what matters most from this argument is that it hopefully conveys a sense of uncertainty. The more caveats that are added and the more revisions to previous estimates which are used, then the more complicated the checks become, and the more uncertain we appear to be. Amidst this uncertainty there is a curious consistency that has emerged over time in the apparent geography of registration (as shown in figure 2).

Nationally, according to the MYEs of 1991 and 1996 and the census of 2001 the proportion of the population aged 15 years and over who registered a year later to vote in Britain has remained quite consistent over time in England and Wales, and has fallen slightly in Scotland. If the 2001 Census had significantly undercounted the number of adults living in Britain then the electoral registration rates would have had to have appeared to have risen over time (if the same proportion of adults really is registered at each point in time). There have been huge efforts made by governments since 1992 to increase the proportion of adults registered to vote so this would appear unlikely. Another alternative is that increasing numbers of adults are living in Britain but are not registered to vote and are also managing to evade the census enumeration and MYE corrections process. However, as table 2 below shows, they would have had to have achieved this feat to the same extent in most places in Britain. As table 1 shows, albeit only for children, most places in Britain do not appear to suffer greatly from possible overenumeration or underenumeration. Table 2 first provides the figures just described for the countries of Britain, and second provides those same statistics by local authorities and groups of local authorities. The table is sorted according to the 2002 estimated registration rate when compared with the initial census figures. At the extremes of table 2 the final MYE population for people aged 18+ is listed (as was done in table 1 for people aged 0–14 years from that same final source).

The area with the highest electoral registration rate in 2002 was Bolton, where the electorate represented 98.3% of people aged 15 years or over in 2001. Two fifths (or some 6745 people) of the population aged 15–19 years in Bolton in 2001 were probably aged 15 or 16 years. If these are excluded from the denominator then the registration rate in Bolton appears still to be an impossible 101.6%. More adults are registered to vote in Bolton than there were adults to register! This is not necessarily evidence of a census undercount. The excess could consist of students whose home address is in Bolton, other adults who are living and working away from Bolton but are registered to vote there, or could be because of electoral registration officers in Bolton not ‘cleaning’ the new register of old names as thoroughly as they could. The revised

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MYEs added people to Bolton, reducing the rate to a more believable 96.5% as shown in the table; however, they also resulted in the estimate for the Wirral becoming more problematic. An equivalent area to Liverpool for children would be the Wirral for adults if checks of administrative sources against population estimates were to be made in the future. Some children, and university students, leaving Liverpool are not travelling very far when they do so! Note also that yet again our extreme areas of possible underenumeration appear to be clustering in the North West of England.

Similar arguments that could be applied to the Wirral could also be applied to Manchester and Trafford Local Authorities. However, in the case of Manchester incoming students could easily have inflated the role as student numbers rose in September 2001. Note also, however, that these three areas have more children for whom child benefit was being claimed than were counted by the census. After these three areas it is harder to find evidence which suggests that the census undercounted. Extra adults were added to Manchester, reducing the Manchester and Trafford registration rate to 97.1%, but were not added to the Wirral, where the final registration rate rises to an impossible 102.5% if the MYEs are correct (however, there are unusual clusters of students on the Wirral living there but commuting to Liverpool to study)! Rotherham, the next authority on the list, had 97.1% registration; but it had 96.2% registration ten years earlier. Similarly Fife Unitary Authority, at 96.9%, recorded 95.8% ten years earlier. In fact, there are many places where the registration rates were higher in 1992 than in Bolton in 2002.

Finally, given the clustering of areas of possible underenumeration in the North West, table 3 compares the change in the proportion of the electorate not voting in the parliamentary constituencies of Bolton, Manchester and Trafford, and the Wirral at the general elections of 1997 and 2001 with the proportion not voting in the constituency which had the most similar 1997 abstention rate in England and Wales (and which was not also in the North West of England). As figure 2 suggested, similar areas in the past have tended to behave the same in terms of the proportion of the population registered over time. In all but one of seven Manchester and Trafford constituencies the rise from 1997 abstention rates was greater than in the constituency which had the most similar rate in 1997. In two of the three Bolton constituencies the rise in abstentions was greater, and in three of the four Wirral constituencies it was greater. Either some systematic voting effect led to fewer people voting in these areas in the North West, as compared to a set of constituencies where very similar numbers had not voted before in the past, or the electorates of these seats were inflated and there were in fact fewer adults available to vote here (as the 2001 Census initially suggested) and so the very high increase in abstentions in these areas was a result of the electorate being systematically incorrectly overestimated. It is possible that the total population of the North West really is almost as low as the census suggests but that some of the final MYEs corrections to population there were warranted and also that there is a possibility that in some parts of the North West some underenumeration remains.

At the bottom of the list in table 2 are the same two areas of London as appear at the bottom of table 1: Camden Borough and the group comprising the City of London, Kensington and Chelsea, and Westminster appearing to have the lowest electoral registration rates in the country. Again, this is possible: they will certainly contain many adults not eligible to vote. But, again, this coincidence is worth noting. These areas could have fewer households in them than the census suggested. However, the census very substantially revised down population estimates for these areas as compared with previous estimates (and, as the MYEs in tables 1 and 2 show, the populations have generally been revised upwards again). It would appear most likely that where these 2001 official estimates will be found most wanting in any future work is that there are still slightly

more people living in the North West of England than are currently counted as living there, and slightly fewer people living in central London than are currently counted as living there. Of course, its entirely possible that large numbers of adults, especially men, from the North West of England were living on a temporary basis in London for work while still considering their home to be in the North West. Some of these men

**Table 3.** Constituency turnout comparisons.

Name	Percentage turnout		
	1997	2001	change
<i>Manchester and Trafford</i>			
Manchester Central	46.92	60.87	13.95
Sheffield Central	46.97	51.52	4.55
			<b>9.40</b>
Manchester, Gorton	43.57	57.34	13.77
Camberwell and Peckham	43.29	53.25	9.95
			<b>3.82</b>
Manchester, Blackley	42.54	55.13	12.59
Sheffield, Brightside	42.53	53.30	10.76
			<b>1.83</b>
Wythenshawe and Sale East	36.75	51.40	14.65
Bradford North	36.74	47.31	10.57
			<b>4.09</b>
Manchester, Withington	33.41	48.06	14.65
Ealing, Acton and Shepherd's Bush	33.32	47.38	14.06
			<b>0.59</b>
Stretford and Urmston	30.35	45.05	14.70
Finchley and Golders Green	30.35	42.66	12.32
			<b>2.38</b>
Altrincham and Sale West	26.68	39.34	12.66
Carshalton and Wallington	26.67	39.69	13.01
			<b>-0.36</b>
<i>Bolton</i>			
Bolton South East	34.77	49.88	15.10
Wentworth	34.67	47.25	12.58
			<b>2.52</b>
Bolton North East	27.56	43.97	16.41
Bridgend	27.56	39.83	12.27
			<b>4.14</b>
Bolton West	22.63	37.59	14.96
Ochil	22.60	38.66	16.06
			<b>-1.10</b>
<i>Wirral</i>			
Wirral South	18.99	34.35	15.36
Monmouth	19.24	28.52	9.28
			<b>6.08</b>
Wallasey	26.48	42.45	15.97
Brigg and Goole	26.47	35.38	8.92
			<b>7.05</b>
Wirral West	23.02	35.03	12.01
West Chelmsford	23.01	38.51	15.50
			<b>-3.48</b>
Knowsley North and Sefton East	29.91	47.00	17.08
Portsmouth North	29.86	42.63	12.77
			<b>4.31</b>

lived with their families while in London for some of the time while still claiming child benefit from them at addresses in Liverpool! If that were true it would neatly solve the main anomalies in these tables.

### **Attempts to estimate the numbers of people living illegally in the United Kingdom**

The title of this paper suggests that it is clear who ‘we’ are. The 2001 Census ‘population base’ is of ‘people’ by where they are usually resident. No people are excluded from the definition of ‘people’; there is no concept of citizen or national in the census. Partly because of this, officials at the Home Office and their advisors thought it might be a good idea to attempt to use the census to estimate the number of people living illegally in the United Kingdom (Woodbridge, 2005). Their report suggested that between 310 000 and 570 000 people were living here illegally, and is derived from differencing the counts of the population born in particular overseas countries taken from the censuses from estimates of people granted settlement and various legal rights to remain still living here. Clearly, from the analysis above, the census is not an appropriate source for such estimates even if such estimates were appropriate. The Home Office report is unclear but it does appear from its methodological description that it may have included a large number of US armed forces personnel living and ‘working’ in the United Kingdom. The census does appear to be quite a good source for identifying these people carrying out illegal and lethal activity—especially those living around secret military installations who appear to complete their census forms diligently, stating that they were born in the United States. However, for those of us whom the Home Office was trying to count this clearly is a misguided approach for a misguided study.

A few weeks after the Home Office study the National Audit Office itself reported on estimates, this time of people that the Home Office’s Immigration and Nationality Directorate had not removed from the United Kingdom, who were termed ‘failed asylum applicants’ and estimated to be between 155 000 and 283 500 souls: somewhat lower than the Home Office’s own report (which states it does not represent the views of the Home Office while having the stamp of the Home Office on its cover!). Of course, the definition here of who is not ‘we’—who is illegal and will be deported if caught—is not the same. But, again, these numbers appear almost silly when viewed within the overall level of uncertainty of a country that twice announced that its population had passed the 60 million mark over a period of three years, and that then found it had almost a million fewer people than it thought it did. These numbers are almost silly until you read the National Audit Office report to gain a sense of the callousness of those who conduct these studies. Here are just some of the ways in which these nonpeople make the life of government auditors and Home Office statisticians difficult: “Some will disappear from their last known address making it difficult for the Directorate to find them” (National Audit Office, 2005, page 1). Others “resist removal through disruptive behaviour” on board passenger airplanes when attempts are made to remove them to countries such as Zimbabwe, Iraq, and Burundi (countries the National Audit Office explicitly lists: removals recommenced to Zimbabwe in November 2004 and are made to Burundi via neighbouring countries). These reports are both very nasty, extremely racist and reflect a stupid policy. The numbers of people in the United Kingdom listed in the tables above represent 1% of the world’s adults but 0.5% of the world’s children. Deporting young people from the United Kingdom given its demography is not very clever, but then we find it hard enough simply to count how many of us we are. It is also not possible to comment on the National Audit Office report without stating that the picture on the front cover of this official government report is both crass and cruel. The picture is of a large aircraft taking off. The implication is that mass deportation is desirable.

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## Conclusions

Attempting to validate the census has become an extremely complicated and tedious business and all that I have done above is the most crude of checks, but, hopefully, these illustrate the general problems. In particular, I have, hopefully, provided enough information to show that attempts to enumerate people deemed to be illegal using census data are practically misguided as well as being morally objectionable. I have deliberately not gone into more detail than is necessary. Here are my overall conclusions:

1. Both the initial census results and the final MYEs of the population in 2001 are believable, but clearly rates of error will be greater than were hoped for. We cannot be sure, in particular, of current population estimates in the most densely populated parts of London (currently too high?) and in the North West of England (still a little low?).
2. Given the effort that has gone into creating the final MYEs, they are probably the best source to use. Unless, and until, new sources of data become available we have little means of improving on current estimates or of confirming any suspicions such as those mentioned above. We should though be wary when high rates are reported in future in the North West.
3. However, population geographers should remain suspicious of the process of data correction given that it relied on lobbying from specific councils. In particular, the increase in the populations of districts within the City of London, Kensington and Chelsea, and Westminster cannot be justified from the comparisons made above as those increases have increased the discrepancies. It is highly likely that the population in this centre of the country is now extremely mobile and ephemeral such that central London is becoming more an area of transit rather than of residence.
4. Given the uncertainties in our estimates it is not possible simply to calculate rates of electoral registration or universal benefit uptake given current population estimates. The 2001 Census should teach us to be uncertain about such things. Furthermore, for young adult men estimates of changes to patterns of mortality by area may well be unreliable in the near future.
5. We have no reason not to expect population estimates in the future to go awry as the 2001 Census showed them to have in the past. We may well pass the 61 million mark more than once as we did 60 million! We have a series of problems which need addressing.
6. Attempts to enumerate people deemed to be living in the United Kingdom illegally by using census data are misguided practically given census uncertainty as well as being morally objectionable.

### How to address these problems?

First, given the experience of the 2001 Census and its updates I think we have to conclude that comparisons with administrative records throw up as many problems as they create solutions. We end up not knowing which source to trust when there are discrepancies. Most actors involved in these debates are partisan. They have a particular interest or set of interests at heart (appearing to be competent for the national agencies, wishing to boost their populations for local councils, creating a little mischief and doubt, perhaps, for academics and others).

Second, the range of discrepancies is great enough, even after all revisions have been made, to mean (as explained above) that even basic questions are now difficult to answer: such as what are the rates of 'universal' benefit uptake or electoral registration? We need a more reliable source of population estimates than we have, for academic as well as policy purposes.

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Third, the most reliable check, in hindsight, on the 2001 Census appears to have been the capture–recapture process that was used to give validity to the census internally before it was released. That process had by far the largest influence on the final figures published and subsequent revisions were relatively minor. Even amounting to nearly a third of a million people they made little impact save for a few areas and population groups. Enhanced internal census checking to avoid such subsequent revisions may be a fruitful area for future work.

#### **A proposal to end with!**

Given the uncertainties with administrative data checks outlined above and the overall success of the internal census procedures (given how small subsequent revisions have been) one route forward would be to increase the power of those internal procedures for the next UK census (probably) to be held in 2011. In 2001 two pages of the census form (pages 4 and 5) were devoted to collecting a record of “Household members and their relationships within the household” (Dixie and Dorling, 2002). This was a large part of the form and, as most households contain only one, two, or three people, these two pages mostly collected no, one, or three pieces of information (three being the possible relationships between three people). These pages were a costly new addition to the census for relatively little gain. It is likely that there will be a strong lobby not to include such a question again (or any complex questions).

An alternative to deleting it is simply to change the question so that it collects a great deal of useful information given the same number of pages on the census form. I would propose that the question title is changed to “Household members and their family relationships” and that each household member is required to list the names and postcodes of his or her husband, wife, or partner, father and mother, and sons and daughters, for those relatives who are living. If they are abroad their country of residence should be entered (or ‘unknown’). A case could be made for extending this to siblings. However, even without this extension such a change to the question would both collect almost all the useful information currently collected by the question as it stands and also collect information about the sizes and locations of peoples’ wider family units including a picture of the UK diaspora living overseas. To where have the children leaving Liverpool gone according to their relatives still living there? We should be far more interested in the numbers of our economic migrants now living overseas than in how many of us once lived elsewhere too.

If a general relatives question were asked then people with the same postcodes as the household would obviously be those living there (or next door!) and so household composition could be established. Most importantly, the revised question would allow detailed validation checks to be made on the population estimates arising from the census. The centre of London may well have a population as large as that currently estimated, but if this was not substantiated by people living outside of London saying that they had relatives living there, then the rolled-forward results from current estimates could be doubted (and my suspicions confirmed). The actual process of using such a revised question in the internal validation of the census, along with capture–recapture process again would, of course, be extremely complicated. However, it would provide one defence against a trend we can expect to continue: even if even fewer households complete the census form in 2011 than did in 2001, we could expect, if the question were revised as I suggest, to enumerate directly and indirectly (through the relatives question) a higher proportion of the population than in 2001 and perhaps a higher proportion than even in the heyday of 1971.

What would be the objections to such a question? First there are issues of civil liberties, and these are important. I would argue that a successful census delays the

necessity for identification cards to be issued to the population. Such increased intrusion from a question on relatives would be a lesser evil. Identity cards are time-tabled to be introduced but their introduction will be delayed until after 2011 and it is not impossible that they can be deferred even further. Second, some people may not know who or where their relatives are and the question would cause upset as a result. That needs careful consideration, but any sophisticated process could cope with a great deal of ‘unknowns’ and perhaps we, collectively, need to know the extent to which families do not function. Third, the process would not help to identify households which choose not to fill in the form and that also have no relatives living elsewhere who choose to complete the form (and who also evade capture–recapture procedures). That is correct, but extended families are ever more complex entities and so, as average household size falls, such groups who could easily evade enumeration fall in number also. We would also learn a great deal more about the characteristics of households which did not complete forms than we currently know—in most cases from the parents of young people too busy to fill in forms themselves.

Fourth, if you accept the uncertainty principle hinted at, at the start of this paper, that, as the population becomes more mobile, observation becomes ever more unreliable, then it should be clear that new forms of observation are needed. One such form is to use the population, as a whole, to aid in its enumeration. If the taking of a census is a worthwhile endeavour then it is hard to object to this. Without a census we cannot know how many of us there are and where we are. We cannot plan collectively. If we are to plan collectively we might have to start to count collectively too. However, given the unfortunate attempt in 2005 to use UK census data to determine how many of us are ‘illegal’, perhaps we need to first be sure that these data will be put to good use: computerised census data now have more than a seventy-year history of misuse (Delamarter, 1986). Until we know who we are perhaps we should be wary of counting too carefully.

**Postscript.** “UK population passes 60 m for first time (Filed: 24/08/2006). The UK’s population has passed 60 million for the first time, according to new Government figures. The population grew by 375 000 to 60.2 million in the year to June 2005, the biggest annual rise since 1962, the Office for National Statistics (ONS) said” (source: <http://www.telegraph.co.uk/news/main.jhtml?xml=/news/2006/08/24/upopulation.xml>).

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