

## **ONS Longitudinal Study**

### **Quality of linkage between the 1981 and 1991 censuses**

The forward linkage rate between the 1981 and 1991 Longitudinal Study (LS) samples was 90.1 per cent. In 1981, 527,956 LS members enumerated at the Census were traced, of whom 466,615 were expected to be found at the 1991 Census. However, the number of 1981 traced LS members actually recorded in 1991 was 420,472.

Between the censuses, 58,618 traced LS members had died, and 2,723 were known to have emigrated from England and Wales. But a further 46,143 traced LS members (8.7 per cent) who had been present at the 1981 Census were not found at the 1991 Census. There was no record of a death or emigration occurring before the 1991 Census for these people.

The 1991 sample of LS members was 543,884, of which 535,015 members (98 per cent) were traced. The change in sample size at the 1991 Census was the result of natural population change (births and deaths) and migrations occurring between 1981 and 1991.

Backward linkage of the 1991 traced LS sample resulted in linking 91.4 per cent of LS members to a 1981 record. This did not include the 65,700 LS members born into the sample or the 8,259 members who immigrated between the 1981 and 1991 Censuses.

The failure to link 8.7 per cent of traced members from the 1981 sample in 1991 may be partly explained by Census under-enumeration combined with unreported emigrations and discrepancies in the recording of LS members' birth dates in the 1991 Census. It is not possible to measure the contribution of each of these factors to the linkage failure. However, it is believed that approximately two thirds of emigrations from England and Wales by LS members were missed between 1981 and 1991.

### **Factors affecting non-linkage between 1981 and 1991**

Linkage of records from the 1981 traced LS sample to 1991 Census records was high (90.1 per cent). A number of factors were associated with non-linkage to 1991 Census records:

- being young and male
- being never married or living in a lone-parent household
- being born outside of the UK
- living in a communal establishment, privately rented or housing association accommodation
- being unemployed, a student or in the economic position 'other inactive'
- being in the armed services

**Table L8191.1 1981-91 traced LS-Census samples: forward and backward linkage rates**

Forward linkage	Number	Backward linkage	Number
1981 Census sample: traced LS members	527,956	1991 Census sample: traced LS members	535,015
Less died before 1991 Census	58,618	Less born after 1981 Census	65,700
Less embarked before 1991 Census	2,723	Less immigrant after 1981 Census	8,259
Eligible to be in 1991 Census	466,615	Should have been in 1981 Census	461,056
Less not found in the 1991 Census	46,143	Less not found in the 1981 Census	39,693
Recorded in 1991 Census	420,472	Recorded in 1981 Census	421,363
Forward linkage rate	90.1%	Backward linkage rate	91.4%

**Notes**

<sup>1</sup> Source: Office for National Statistics Longitudinal Study (LS)

<sup>2</sup> LS members, usually resident in England and Wales

<sup>3</sup> For forward linkage 'traced' means the LS members' records were found on the National Health Service Central Register before or during the 1981 Census Link

<sup>4</sup> For backward linkage 'traced' means the LS members' records were found on the National Health Service Central Register before or during the 1991 Census Link

## **Forward linkage rates between the 1981 and 1991 Censuses: traced members by sex and age**

Of the Longitudinal Study (LS) sample members traced in 1981, males (88.9 per cent linked) were less likely to be linked in 1991 than females (91.2 per cent linked). Linkage failure was concentrated in younger aged groups, aged 10 to 29 in 1981 (20 to 39 in 1991) and among those over 80 for both males and females.

Non-linkage of older age groups may have been the result of embarkation and subsequent deaths that had not been added to the database by the time of the 1991 Census. People in younger age groups were more likely to emigrate between the censuses, which means that some linkage failure may be due to unrecorded emigration. Among the younger groups, linkage was lowest among young males, less than 85 per cent among those aged 10 to 19 in 1981. For example, 82.1 per cent of males aged 15 to 19 were linked. For females, the rate was lower with linkage of 87.6 per cent among 10- to 14-year-olds.

Linkage success was most likely among 40- to 64-year-olds (around 93 per cent), after which age it became less likely for both males and females. Linkage rates were also higher for children aged under five, at 91.7 per cent for males and 91.9 per cent for females.

Linkage rates tended to be higher for females. However, males aged 90 and over were more likely to be linked than females (85.0 per cent of males and 63.8 per cent of females linked). In addition, males and females aged 65 to 69 were less likely to be found than people in adjacent age groups. This cohort effect was also visible in 1971, when the group was aged 55 to 59 (see Table L7181.2 describing forward linkage rates between the 1971 and 1981 Censuses: traced LS members by sex and age in 1971).

**Table L8191.2 Forward linkage rates between the 1981 and 1991 Censuses: traced LS members by sex and age in 1981**

Age and sex in 1981	Position by 1991 Census					
	LS Members present and traced in 1981	Died or embarked before 1991 Census	Eligible to be enumerated in 1991 Census	Not linked at 1991 Census	Linked at 1991 Census	Linkage success rate (%)
<b>Males</b>						
0-4	16,378	171	16,207	1,345	14,862	91.7
5-9	17,919	164	17,755	1,800	15,955	89.9
10-14	21,014	207	20,807	3,656	17,151	82.4
15-19	22,135	258	21,877	3,913	17,964	82.1
20-24	19,795	274	19,521	2,880	16,641	85.2
25-29	18,152	275	17,877	2,202	15,675	87.7
30-34	19,704	371	19,333	1,922	17,411	90.1
35-39	17,062	463	16,599	1,488	15,111	91.0
40-44	15,532	586	14,946	1,289	13,657	91.4
45-49	14,903	934	13,969	1,020	12,949	92.7
50-54	15,204	1,775	13,429	935	12,494	93.0
55-59	15,058	2,909	12,149	811	11,338	93.3
60-64	13,020	3,754	9,266	629	8,637	93.2
65-69	12,074	5,072	7,002	719	6,283	89.7
70-74	9,333	5,366	3,967	311	3,656	92.2
75-79	5,778	4,223	1,555	162	1,393	89.6
80-84	2,695	2,302	393	53	340	86.5
85-89	944	884	60	11	49	81.7
90+	313	293	20	3	17	85.0
<b>Total</b>	<b>257,013</b>	<b>30,281</b>	<b>226,732</b>	<b>25,149</b>	<b>201,583</b>	<b>88.9</b>
<b>Females</b>						
0-4	15,438	170	15,268	1,230	14,038	91.9
5-9	17,080	127	16,953	1,509	15,444	91.1
10-14	20,127	123	20,004	2,488	17,516	87.6
15-19	21,168	194	20,974	2,492	18,482	88.1
20-24	19,408	238	19,170	1,990	17,180	89.6
25-29	17,886	253	17,633	1,659	15,974	90.6
30-34	19,804	291	19,513	1,442	18,071	92.6
35-39	16,730	295	16,435	1,180	15,255	92.8
40-44	14,888	413	14,475	1,054	13,421	92.7
45-49	14,719	610	14,109	1,048	13,061	92.6
50-54	15,145	1,067	14,078	915	13,163	93.5
55-59	16,099	1,795	14,304	931	13,373	93.5
60-64	14,577	2,502	12,075	784	11,291	93.5
65-69	14,798	3,776	11,022	995	10,027	91.0
70-74	12,822	5,111	7,711	617	7,094	92.0
75-79	10,018	5,776	4,242	398	3,844	90.6
80-84	6,138	4,603	1,535	187	1,348	87.8
85-89	2,901	2,577	324	54	270	83.3
90+	1,197	1,139	58	21	37	63.8
<b>Total</b>	<b>270,943</b>	<b>31,060</b>	<b>239,883</b>	<b>20,994</b>	<b>218,889</b>	<b>91.2</b>

**Table L8191.2 Forward linkage rates between the 1981 and 1991 Censuses: traced LS members by sex and age in 1981**

Age and sex in 1981	Position by 1991 Census					Linkage success rate (%)
	LS Members present and traced in 1981	Died or embarked before 1991 Census	Eligible to be enumerated in 1991 Census	Not linked at 1991 Census	Linked at 1991 Census	
<b>All people</b>						
0-4	31,816	341	31,475	2,575	28,900	91.8
5-9	34,999	291	34,708	3,309	31,399	90.5
10-14	41,141	330	40,811	6,144	34,667	84.9
15-19	43,303	452	42,851	6,405	36,446	85.1
20-24	39,203	512	38,691	4,870	33,821	87.4
25-29	36,038	528	35,510	3,861	31,649	89.1
30-34	39,508	662	38,846	3,364	35,482	91.3
35-39	33,792	758	33,034	2,668	30,366	91.9
40-44	30,420	999	29,421	2,343	27,078	92.0
45-49	29,622	1,544	28,078	2,068	26,010	92.6
50-54	30,349	2,842	27,507	1,850	25,657	93.3
55-59	31,157	4,704	26,453	1,742	24,711	93.4
60-64	27,597	6,256	21,341	1,413	19,928	93.4
65-69	26,872	8,848	18,024	1,714	16,310	90.5
70-74	22,155	10,477	11,678	928	10,750	92.1
75-79	15,796	9,999	5,797	560	5,237	90.3
80-84	8,833	6,905	1,928	240	1,688	87.6
85-89	3,845	3,461	384	65	319	83.1
90+	1,510	1,432	78	24	54	69.2
<b>Total</b>	<b>527,956</b>	<b>61,341</b>	<b>466,615</b>	<b>46,143</b>	<b>420,472</b>	<b>90.1</b>

**Notes**

<sup>1</sup> Source: Office for National Statistics Longitudinal Study (LS)

<sup>2</sup> LS members, usually resident in England and Wales

<sup>3</sup> 'Traced' means the LS members' records were found on the National Health Service Central Register before or during the 1981 Census-LS Link

**Forward linkage rates between the 1981 and 1991 Censuses: traced members by sex and marital status**

Linkage was most successful among married Longitudinal Study (LS) members in 1991 (92.4 per cent linked). Among males, lowest linkage rates were found for divorced LS members (85.1 per cent linked) but among females, linkage was more likely for divorcees (91.1 per cent linked).

Linkage was also lower among never-married people of both sexes (85.8 per cent of males and 89.3 per cent of females linked).

**Table L8191.3 Forward linkage rates between the 1981 and 1991 Censuses: traced LS members by sex and marital status in 1981**

Marital status and sex in 1981	Position by 1991 Census					Linkage success rate (%)
	LS Members present and traced in 1981	Died or embarked before 1991 Census	Eligible to be enumerated in 1991 Census	Not linked at 1991 Census	Linked at 1991 Census	
<b>Males</b>						
Never Married	111,881	3,918	107,963	15,286	92,677	85.8
Married	131,608	21,074	110,534	8,782	101,752	92.1
Divorced	6,192	862	5,330	794	4,536	85.1
Widowed	7,332	4,427	2,905	287	2,618	90.1
Total	257,013	30,281	226,732	25,149	201,583	88.9
<b>Females</b>						
Never Married	99,319	4,289	95,030	10,153	84,877	89.3
Married	132,400	12,007	120,393	8,667	111,726	92.8
Divorced	8,535	731	7,804	691	7,113	91.1
Widowed	30,689	14,033	16,656	1,483	15,173	91.1
Total	270,943	31,060	239,883	20,994	218,889	91.2
<b>All people</b>						
Never Married	211,200	8,207	202,993	25,439	177,554	87.5
Married	264,008	33,081	230,927	17,449	213,478	92.4
Divorced	14,727	1,593	13,134	1,485	11,649	88.7
Widowed	38,021	18,460	19,561	1,770	17,791	91.0
Total	527,956	61,341	466,615	46,143	420,472	90.1

**Notes**

<sup>1</sup> Source: Office for National Statistics Longitudinal Study (LS)

<sup>2</sup> LS members, usually resident in England and Wales

<sup>3</sup> 'Traced' means the LS members' records were found on the National Health Service Central Register before or during the 1981 Census-LS Link

## **Forward linkage rates between the 1981 and 1991 Censuses: traced members by sex and economic position**

The economic position in 1981 of Longitudinal Study (LS) members influenced the likelihood of their being found in 1991. However, this was dependent on their sex. For both sexes, LS members who were employed (91.2 per cent of males and 92.4 per cent of females linked) were more likely to be linked than those in other economic positions. Among females, linkage rates were also high for those looking after their home or family (92.3 per cent linked).

Considering LS members who were economically active in 1981, people in employment were more likely to be linked in 1991 than those out of employment. Among economically active males, those unemployed or waiting to start a job (82.3 per cent linked) were least likely to be linked. Among economically active females, those out of employment due to temporary sickness were least likely to be linked (87.3 per cent linked).

Among the economically inactive in 1981, retired (90.5 per cent of males and 90.3 per cent of females linked) and permanently sick people (89.8 per cent of males and 90.4 per cent of females) were among the most likely to be linked. Linkage rates were much lower among students (77.7 per cent of males and 84.2 per cent of females linked) and those who were counted as 'other inactive' (60.6 per cent of males and 81.9 per cent of females linked).

Overall, linkage was more likely for economically active people (91 per cent) than for economically inactive people (90.1 per cent).

Linkage rates were much lower among the 'other inactive' group between 1981 and 1991 Censuses (66.8 per cent) compared with those between 1971 and 1981 (91.7 per cent). In 1971 the 'other inactive' group included people looking after their home or family. These people higher linkage rates than the other members of this group, for example au pairs and people of independent means.

In 1981, linkage rates for the 1971 sample were comparable for the temporarily sick and the permanently sick. However, in 1991, linkage for the 1981 sample was more likely for permanently sick LS members (90 per cent linked) than for temporarily sick, unemployed members (87 per cent linked).



**Table L8191.4 Forward linkage rates between the 1981 and 1991 Censuses: traced LS members aged 16+ by sex and economic position in 1981**

Economic position and sex in 1981	Position by 1991 Census					Linkage success rate (%)
	LS Members present and traced at the 1981 Census	Died or embarked before 1991 Census	Eligible to be enumerated in 1991 Census	Not linked at 1991 Census	Linked at 1991 Census	
<b>Males</b>						
Economically active	154,071	10,528	143,543	13,962	129,581	90.3
In employment	136,942	9,032	127,910	11,252	116,658	91.2
Out of employment: sick	1,552	357	1,195	158	1,037	86.8
Out of employment: other	15,577	1,139	14,438	2,552	11,886	82.3
Economically inactive	43,171	19,160	24,011	3,505	20,506	85.4
Permanently sick	4,920	2,118	2,802	286	2,516	89.8
Looking after home or family	586	212	374	46	328	87.7
Retired	28,830	16,644	12,186	1,153	11,033	90.5
Student	8,230	137	8,093	1,801	6,292	77.7
Other inactive	605	49	556	219	337	60.6
Total	197,242	29,688	167,554	17,467	150,087	89.6
<b>Females</b>						
Economically active	97,184	3,405	93,779	7,434	86,345	92.1
In employment	90,064	3,140	86,924	6,619	80,305	92.4
Out of employment: sick	863	85	778	99	679	87.3
Out of employment: other	6,257	180	6,077	716	5,361	88.2
Economically inactive	116,884	27,197	89,687	7,786	81,901	91.3
Permanently sick	3,371	1,478	1,893	182	1,711	90.4
Looking after home or family	87,182	17,282	69,900	5,362	64,538	92.3
Retired	18,014	8,265	9,749	949	8,800	90.3
Student	8,027	109	7,918	1,252	6,666	84.2
Other inactive	290	63	227	41	186	81.9
Total	214,068	30,602	183,466	15,220	168,246	91.7
<b>ALL</b>						
Economically active	251,255	13,933	237,322	21,396	215,926	91.0
In employment	227,006	12,172	214,834	17,871	196,963	91.7
Out of employment: sick	2,415	442	1,973	257	1,716	87.0
Out of employment: other	21,834	1,319	20,515	3,268	17,247	84.1
Economically inactive	160,055	46,357	113,698	11,291	102,407	90.1
Permanently sick	8,291	3,596	4,695	468	4,227	90.0
Looking after home or family	87,768	17,494	70,274	5,408	64,866	92.3
Retired	46,844	24,909	21,935	2,102	19,833	90.4
Student	16,257	246	16,011	3,053	12,958	80.9
Other inactive	895	112	783	260	523	66.8
Total	411,310	60,290	351,020	32,687	318,333	90.7

**Notes**

<sup>1</sup> Source: Office for National Statistics Longitudinal Study (LS)

<sup>2</sup> LS members, usually resident in England and Wales

<sup>3</sup> 'Traced' means the LS members' records were found on the National Health Service Central Register before or during the 1981 Census-LS Link

<sup>4</sup> 'Out of employment: other' comprises unemployed people and those waiting to start a job

## **Forward linkage rates between the 1981 and 1991 Censuses: traced members by sex and social class**

The pattern of linkage by social class in 1991 differed for men and women. A social gradient in linkage failure is apparent among males, with the highest linkage rate found for those in managerial and technical occupations (92.2 per cent linked), lower linkage for all groups below and the lowest linkage for males in the unskilled class (86 per cent linked). The exception to this pattern is evident for professional males (91.2 per cent linked), among whom linkage success was comparable with those in skilled manual occupations (91.3 per cent linked).

In contrast, linkage rates among females were highest at the lower end of the social classification for those in unskilled occupations (93.1 per cent linked) and in the middle of the classification, for those in managerial and technical occupations (93.1 per cent linked). Women in the professional class were among the least likely to be linked (88.9 per cent linked).

Although women (91.7 per cent linked) were more likely than men to be linked in 1991 (89.6 per cent linked), at the top of the social classification the reverse was true. Men in professional, managerial and technical occupations were more likely to be linked than women.

Table L8191.5 also shows high linkage failure for people serving in the armed forces, with 79.0 per cent of males and 87.3 per cent of females linked. However, there was a sex difference in linkage failure among people whose occupation was inadequately described, with men (78.1 per cent linked) much less likely to be found than women (91.4 per cent linked).

**Table L8191.5 Forward linkage rates between the 1981 and 1991 Censuses: traced LS members aged 16+ by sex and social class in 1981**

Social Class and sex in 1981	Position by 1991 Census					Linkage success rate (%)
	LS Members present and traced at the 1981 Census	Died or embarked before 1991 Census	Eligible to be enumerated in 1991 Census	Not linked at 1991 Census	Linked at 1991 Census	
<b>Males</b>						
I Professional	9,374	852	8,522	746	7,776	91.2
II Managerial and Technical	38,465	4,867	33,598	2,613	30,985	92.2
IIIN Skilled Non-manual	20,939	2,984	17,955	1,443	16,512	92.0
IIIM Skilled Manual	61,445	7,931	53,514	4,665	48,849	91.3
IV Partly-Skilled Occupations	30,950	5,368	25,582	2,611	22,971	89.8
V Unskilled Occupations	11,721	2,391	9,330	1,304	8,026	86.0
Armed Forces	13,033	4,145	8,888	1,863	7,025	79.0
Occupation inadequately described	11,315	1,150	10,165	2,222	7,943	78.1
Total	197,242	29,688	167,554	17,467	150,087	89.6
<b>Females</b>						
I Professional	1,098	61	1,037	115	922	88.9
II Managerial and Technical	21,838	1,468	20,370	1,774	18,596	91.3
IIIN Skilled Non-manual	40,629	1,945	38,684	2,661	36,023	93.1
IIIM Skilled Manual	9,081	805	8,276	640	7,636	92.3
IV Partly-Skilled Occupations	23,092	1,822	21,270	1,778	19,492	91.6
V Unskilled Occupations	7,090	660	6,430	444	5,986	93.1
Armed Forces	13,228	5,116	8,112	1,027	7,085	87.3
Occupation inadequately described	98,012	18,725	79,287	6,781	72,506	91.4
Total	214,068	30,602	183,466	15,220	168,246	91.7
<b>All</b>						
I Professional	10,472	913	9,559	861	8,698	91.0
II Managerial and Technical	60,303	6,335	53,968	4,387	49,581	91.9
IIIN Skilled Non-manual	61,568	4,929	56,639	4,104	52,535	92.8
IIIM Skilled Manual	70,526	8,736	61,790	5,305	56,485	91.4
IV Partly-Skilled Occupations	54,042	7,190	46,852	4,389	42,463	90.6
V Unskilled Occupations	18,811	3,051	15,760	1,748	14,012	88.9
Armed Forces	26,261	9,261	17,000	2,890	14,110	83.0
Occupation inadequately described	109,327	19,875	89,452	9,003	80,449	89.9
Total	411,310	60,290	351,020	32,687	318,333	90.7

**Notes**

<sup>1</sup> Source: Office for National Statistics Longitudinal Study (LS)

<sup>2</sup> LS members, usually resident in England and Wales

<sup>3</sup> 'Traced' means the LS members' records were found on the National Health Service Central Register before or during the 1981 Census-LS Link

## **Forward linkage rates between the 1981 and 1991 Censuses: traced members by sex and country of birth**

Longitudinal Study (LS) members who were born in the UK (91.3 per cent linked) were more likely to be successfully linked in 1991 than those born elsewhere (75.5 per cent linked). Linkage was most successful for people born in England and Wales (90.5 per cent of males and 92.7 per cent of females linked). This group contributes a substantial proportion to the LS linkage success rates because they constitute the overwhelming majority of the LS sample (around 90 per cent of traced member in 1981).

People born in the 'West African Commonwealth' (53.2 per cent linked), the USA (67.4 per cent linked), Bangladesh (69.5 per cent linked) and 'Remainder of the New Commonwealth' (70.3 per cent linked) were among the least likely to be linked. This showed a change from 1981, when people who had stated their country of birth in 1971 as the Caribbean Commonwealth and countries of the old Commonwealth (Australia, Canada and New Zealand) were least likely to be linked. People born in the USA were identified as less likely to be linked at both census points. Lower linkage among people born outside the UK is to be expected as immigrant groups generally have younger age structures, and linkage is less likely among younger people (see Table L8191.2).

Around 15 per cent of LS members who were recorded as born outside the UK in 1981 were born in India. As in 1981, linkage rates among this group were high (81.0 per cent for males, 79.1 per cent for females) compared with people born elsewhere outside the UK. Linkage rates were also high for people born in the 'East African Commonwealth' (81.8 per cent linked), many of whom are of Indian descent.

**Table L8191.6 Forward linkage rates between the 1981 and 1991 Censuses: traced LS members by sex and country of birth in 1981**

Country of birth and sex in 1981	Position by 1991 Census					Linkage success rate (%)
	LS Members present and traced at the 1981 Census	Died or embarked before 1991 Census	Eligible to be enumerated in 1991 Census	Not linked at 1991 Census	Linked at 1991 Census	
<b>Males</b>						
United Kingdom	236,788	28,060	208,728	20,539	188,189	90.2
England and Wales	231,453	27,312	204,141	19,429	184,712	90.5
Scotland	4,077	549	3,528	923	2,605	73.8
Northern Ireland	1,107	177	930	171	759	81.6
Other UK	151	22	129	16	113	87.6
Outside United Kingdom	20,225	2,221	18,004	4,610	13,394	74.4
Irish Republic	2,977	540	2,437	588	1,849	75.9
Old Commonwealth	656	90	566	150	416	73.5
New Commonwealth	10,820	703	10,117	2,610	7,507	74.2
India	3,207	294	2,913	554	2,359	81.0
Pakistan	1,942	66	1,876	536	1,340	71.4
Bangladesh	526	26	500	152	348	69.6
African Commonwealth	1,620	54	1,566	394	1,172	74.8
East Africa	1,187	32	1,155	201	954	82.6
West Africa	342	19	323	165	158	48.9
Southern Africa	91	3	88	28	60	68.2
Caribbean	1,567	135	1,432	441	991	69.2
Mediterranean	873	75	798	216	582	72.9
Remainder	1,085	53	1,032	317	715	69.3
Europe, excluding USSR	3,080	514	2,566	542	2,024	78.9
USA	324	49	275	103	172	62.5
Elsewhere and not stated	2,368	325	2,043	617	1,426	69.8
<b>Total</b>	<b>257,013</b>	<b>30,281</b>	<b>226,732</b>	<b>25,149</b>	<b>201,583</b>	<b>88.9</b>
<b>Females</b>						
United Kingdom	250,805	29,228	221,577	16,716	204,861	92.5
England and Wales	245,538	28,524	217,014	15,747	201,267	92.7
Scotland	3,956	485	3,471	813	2,658	76.6
Northern Ireland	1,136	182	954	134	820	86.0
Other UK	175	37	138	22	116	84.1
Outside United Kingdom	20,138	1,832	18,306	4,278	14,028	76.6
Irish Republic	3,430	488	2,942	571	2,371	80.6
Old Commonwealth	773	92	681	197	484	71.1
New Commonwealth	9,406	407	8,999	2,230	6,769	75.2
India	3,015	167	2,848	596	2,252	79.1
Pakistan	1,252	28	1,224	365	859	70.2
Bangladesh	285	4	281	86	195	69.4
African Commonwealth	1,439	31	1,408	328	1,080	76.7
East Africa	1,099	21	1,078	206	872	80.9
West Africa	255	5	250	103	147	58.8
Southern Africa	85	5	80	19	61	76.3
Caribbean	1,667	81	1,586	397	1,189	75.0
Mediterranean	765	46	719	192	527	73.3
Remainder	983	50	933	266	667	71.5
Europe, excluding USSR	3,878	432	3,446	697	2,749	79.8
USA	339	56	283	79	204	72.1
Elsewhere and not stated	2,312	357	1,955	504	1,451	74.2
<b>Total</b>	<b>270,943</b>	<b>31,060</b>	<b>239,883</b>	<b>20,994</b>	<b>218,889</b>	<b>91.2</b>

**Table L8191.6 Forward linkage rates between the 1981 and 1991 Censuses: traced LS members by sex and country of birth in 1981**

Country of birth and sex in 1981	Position by 1991 Census					Linkage success rate (%)
	LS Members present and traced at the 1981 Census	Died or embarked before 1991 Census	Eligible to be enumerated in 1991 Census	Not linked at 1991 Census	Linked at 1991 Census	
All						
United Kingdom	487,593	57,288	430,305	37,255	393,050	91.3
England and Wales	476,991	55,836	421,155	35,176	385,979	91.6
Scotland	8,033	1,034	6,999	1,736	5,263	75.2
Northern Ireland	2,243	359	1,884	305	1,579	83.8
Other UK	326	59	267	38	229	85.8
Outside United Kingdom	40,363	4,053	36,310	8,888	27,422	75.5
Irish Republic	6,407	1,028	5,379	1,159	4,220	78.5
Old Commonwealth	1,429	182	1,247	347	900	72.2
New Commonwealth	20,226	1,110	19,116	4,840	14,276	74.7
India	6,222	461	5,761	1,150	4,611	80.0
Pakistan	3,194	94	3,100	901	2,199	70.9
Bangladesh	811	30	781	238	543	69.5
African Commonwealth	3,059	85	2,974	722	2,252	75.7
East Africa	2,286	53	2,233	407	1,826	81.8
West Africa	597	24	573	268	305	53.2
Southern Africa	176	8	168	47	121	72.0
Caribbean	3,234	216	3,018	838	2,180	72.2
Mediterranean	1,638	121	1,517	408	1,109	73.1
Remainder	2,068	103	1,965	583	1,382	70.3
Europe, excluding USSR	6,958	946	6,012	1,239	4,773	79.4
USA	663	105	558	182	376	67.4
Elsewhere and not stated	4,680	682	3,998	1,121	2,877	72.0
Total	527,956	61,341	466,615	46,143	420,472	90.1

Notes

<sup>1</sup> Source: Office for National Statistics Longitudinal Study (LS)

<sup>2</sup> LS members, usually resident in England and Wales

<sup>3</sup> 'Traced' means the LS members' records were found on the National Health Service Central Register before or during the 1981 Census-LS Link

<sup>4</sup> England and Wales includes people born in 'Other UK'

### **Forward linkage rates between the 1981 and 1991 Censuses: traced members by housing tenure**

Linkage rates by tenure show that people who were owner-occupiers (91.4 per cent linked) in 1981 were most likely to be found in 1991. Among LS members in private households, those living in private rented accommodation in 1981 were at greatest risk of not being found at the 1991 Census (85.8 per cent linked), while 86.4 per cent of LS members living in housing association accommodation were linked. Linkage was lowest for residents of communal establishments (78.7 per cent linked).

**Table L8191.7 Forward linkage rates between the 1981 and 1991 Censuses: traced LS members by housing tenure in 1981**

Tenure in 1981	Position by 1991 Census					
	LS Members present and traced at the 1981 Census	Died or embarked before 1991 Census	Eligible to be enumerated in 1991 Census	Not linked at 1991 Census	Linked at 1991 Census	Linkage success rate (%)
Owner occupied	315,978	30,278	285,700	24,673	261,027	91.4
Local authority	146,216	19,264	126,952	13,340	113,612	89.5
Housing Association	8,328	1,319	7,009	951	6,058	86.4
Renting privately	46,113	6,552	39,561	5,605	33,956	85.8
Communal establishment	11,321	3,928	7,393	1,574	5,819	78.7
<b>Total</b>	<b>527,956</b>	<b>61,341</b>	<b>466,615</b>	<b>46,143</b>	<b>420,472</b>	<b>90.1</b>

*Notes*

<sup>1</sup> *Source: Office for National Statistics Longitudinal Study (LS)*

<sup>2</sup> *LS members, usually resident in England and Wales*

<sup>3</sup> *'Traced' means the LS members' records were found on the National Health Service Central Register before or during the 1981 Census-LS Link*



### **Forward linkage rates between the 1981 and 1991 Censuses: traced members by household size**

There was an association between Longitudinal Study (LS) members' household size and linkage success rates in 1991. People who were living in large households with seven or more people in 1981 (81.5 per cent linked) were less likely to be linked with the 1991 Census than people who had been living in smaller households.

Linkage was most successful for two-person households (91.7 per cent linked) and for households containing between three and six people in 1981 (90.5 per cent linked).

**Table L8191.8 Forward linkage rates between the 1981 and 1991 Censuses: traced LS members by household size in 1981**

Household size in 1981	Position by 1991 Census					
	LS Members present and traced at the 1981 Census	Died or embarked before 1991 Census	Eligible to be enumerated in 1991 Census	Not linked at 1991 Census	Linked at 1991 Census	Linkage success rate (%)
1	41,710	14,901	26,809	2,912	23,897	89.1
2	122,587	26,448	96,139	7,948	88,191	91.7
3-6	333,636	15,453	318,183	30,377	287,806	90.5
7+	17,727	548	17,179	3,176	14,003	81.5
Communal establishments	11,321	3,928	7,393	1,574	5,819	78.7
No usual residents	975	63	912	156	756	82.9
<b>Total</b>	<b>527,956</b>	<b>61,341</b>	<b>466,615</b>	<b>46,143</b>	<b>420,472</b>	<b>90.1</b>

*Notes*

<sup>1</sup> *Source: Office for National Statistics Longitudinal Study (LS)*

<sup>2</sup> *LS members, usually resident in England and Wales*

<sup>3</sup> *'Traced' means the LS members' records were found on the National Health Service Central Register before or during the 1981 Census-LS Link*

<sup>4</sup> *'No usual residents' comprises people enumerated at an address other than their usual address (e.g. holiday flats) and domestic servants*

## **Forward linkage rates between the 1981 and 1991 Censuses: traced members by sex and position in household**

The position in the household of Longitudinal Study (LS) members has been examined using 'minimal household units'. Minimal household units are the smallest unit – or group of people – within a household that might be expected to share the same or a similar lifestyle. (For information on minimal household units see LS User Guide 20)

LS members' household circumstances affected the likelihood of their being linked in 1991. LS members enumerated in communal establishments in 1981 were less likely to be linked in 1991 (76.4 per cent linked) than people living in households. However, people enumerated in communal establishments only constituted about two per cent of the traced sample in 1981, which means their impact on overall linkage is not substantial.

Adult LS members in married-couple families were most likely to be linked in 1991. Among adults in married-couple families with no dependent children in 1981, 93.1 per cent of males and 92.9 per cent of were linked in 1991. Among adults in married-couple families with dependent children, 92 per cent of males and 93.1 per cent of females were found in 1991.

Linkage was less likely for LS members who were in lone-parent families in 1981 than for people in two-parent families. Among adults, linkage rates for lone parents (89.6 per cent linked) were lower than for adults in married-couple families with dependent children (92.6 per cent linked). Dependent children living with lone parents were the least likely to be found among the people living in private households (80.3 per cent of males and 86.0 per cent of females linked). These children had much lower linkage rates than dependent children living with two parents (87.9 per cent of males and 90.2 per cent of females linked).

In addition, dependent children were less likely to be linked than adults. Linkage rates by age and sex show that young people in the age range 10 to 34 in 1981 were less likely to be linked in 1991. Dependent children are aged 16 and under (or 17 to 18 and in full time education) and would therefore make up a substantial proportion of this young group.

Linkage rates were lower for adults living alone (87.8 per cent linked) compared with other adults in private households. This instance of non-linkage made a substantial contribution to overall linkage failure, given that over a fifth (23.8 per cent) of all traced LS members were adults living alone in 1981.

## **Reference**

Brassett-Grundy, A. (2003) *LS User Guide 20: Researching Households and Families using the ONS Longitudinal Study*, London: Office for National Statistics

**Table L8191.9 Forward linkage rates between the 1981 and 1991 Censuses: traced LS members  
by sex and position in household in 1981**

Position in household and sex in 1981	Position by 1991 Census					Linkage success rate (%)
	LS Members present and traced in 1981	Died or embarked before 1991 Census	Eligible to be enumerated in 1991 Census	Not linked at 1991 Census	Linked at 1991 Census	
<b>Males</b>						
Adult living alone	58,206	8,021	50,185	7,291	42,894	85.5
Married couple with no dependent children	65,138	17,320	47,818	3,279	44,539	93.1
Married couple with spouse & dependent children	59,694	2,524	57,170	4,546	52,624	92.0
Lone parent	2,305	133	2,172	307	1,865	85.9
Dependent child living with two parents	55,019	554	54,465	6,605	47,860	87.9
Dependent child living with lone parent	8,173	70	8,103	1,598	6,505	80.3
Visitor in a household or communal establishment	5,148	741	4,407	890	3,517	79.8
Living in a communal establishment	3,309	918	2,391	631	1,760	73.6
Total	256,992	30,281	226,711	25,147	201,564	88.9
<b>Females</b>						
Adult living alone	67,553	16,235	51,318	5,121	46,197	90.0
Married couple with no dependent children	65,913	9,785	56,128	3,970	52,158	92.9
Married couple with spouse & dependent children	59,616	1,319	58,297	4,007	54,290	93.1
Lone parent	7,601	211	7,390	686	6,704	90.7
Dependent child living with two parents	53,212	438	52,774	5,158	47,616	90.2
Dependent child living with lone parent	7,857	57	7,800	1,089	6,711	86.0
Visitor in a household or communal establishment	5,370	1,079	4,291	586	3,705	86.3
Living in a communal establishment	3,803	1,936	1,867	376	1,491	79.9
Total	270,925	31,060	239,865	20,993	218,872	91.2

**Table L8191.9 Forward linkage rates between the 1981 and 1991 Censuses: traced LS members by sex and position in household in 1981**

Position in household and sex in 1981	Position by 1991 Census					Linkage success rate (%)
	LS Members present and traced in 1981	Died or embarked before 1991 Census	Eligible to be enumerated in 1991 Census	Not linked at 1991 Census	Linked at 1991 Census	
All people						
Adult living alone	125,759	24,256	101,503	12,412	89,091	87.8
Married couple with no dependent children	131,051	27,105	103,946	7,249	96,697	93.0
Married couple with spouse & dependent children	119,310	3,843	115,467	8,553	106,914	92.6
Lone parent	9,906	344	9,562	993	8,569	89.6
Dependent child living with two parents	108,231	992	107,239	11,763	95,476	89.0
Dependent child living with lone parent	16,030	127	15,903	2,687	13,216	83.1
Visitor in a household or communal establishment	10,518	1,820	8,698	1,476	7,222	83.0
Living in a communal establishment	7,112	2,854	4,258	1,007	3,251	76.4
Total	527,917	61,341	466,576	46,140	420,436	90.1

**Notes**

<sup>1</sup> Source: Office for National Statistics Longitudinal Study (LS)

<sup>2</sup> LS members, usually resident in England and Wales

<sup>3</sup> 'Traced' means the LS members' records were found on the National Health Service Central Register before or during the 1981 Census-LS Link

<sup>4</sup> This table does not include 39 traced LS members, 21 males and 18 females, for whom household circumstances information is missing

## **Inconsistencies between the 1981 and 1991 Censuses**

There were 421,879 traced and untraced LS members found in both the 1981 and 1991 Census-LS samples. The three variables which should not change between two censuses are date of birth, sex and country of birth. However, there were cases of inconsistency in LS members' responses to census questions on these topics between the 1981 and 1991 Censuses.

At the 1991 Census, 11,791 LS members quoted dates of birth which were inconsistent by one year or more with those they had quoted in 1981. This was particularly noticeable among members aged 75 and over in 1981. LS members who stated a sex in 1991 opposite to the one they had quoted in 1981 comprised 0.3 per cent of the sample present at both censuses.

In 1991, 1.2 per cent of LS members stated a different country of birth from that stated at the previous census. The highest proportions of these inconsistencies came from people who had stated their country of birth in 1981 as Scotland, Northern Ireland or a country in the African Commonwealth.

**Table L8191.10 Inconsistencies in the characteristics of LS sample members between the 1981 and 1991 Censuses**

Characteristics in 1981 Census	Characteristics in 1991 Census		Per cent with discrepancy
	Consistent with 1981	Inconsistent with 1981	
<b>Sex</b>			
Male	201,749	514	0.3
Female	218,744	872	0.4
All	420,493	1,386	0.3
<b>Age</b>			
Under 10	58,638	1,733	2.9
10-24	102,618	2,578	2.5
25-59	196,308	5,526	2.7
60-74	45,664	1,498	3.2
75+	6,860	456	6.2
All ages	410,088	11,791	2.8
<b>Country of birth</b>			
England and Wales	385,460	1,153	0.3
Scotland	4,684	612	11.6
Northern Ireland	1,422	189	11.7
Irish Republic	3,968	342	7.9
Old Commonwealth	859	52	5.7
New Commonwealth	13,490	1,154	7.9
India	4,395	321	6.8
Pakistan	2,049	215	9.5
Bangladesh	521	48	8.4
African	2,074	223	9.7
Caribbean	2,083	150	6.7
Mediterranean	1,078	74	6.4
Remainder	1,290	123	8.7
Europe, excluding USSR	4,551	310	6.4
USA	386	26	6.3
All countries	416,959	4,920	1.2

**Notes**

<sup>1</sup> Source: Office for National Statistics Longitudinal Study (LS)

<sup>2</sup> LS members, usually resident in England and Wales

<sup>3</sup> 'Traced' means the LS members' records were found on the National Health Service Central Register before or during the 1981 Census-LS Link

<sup>4</sup> Based on a sample of 421,879 traced and untraced LS members found at both 1981 and 1991 Censuses