

## **ONS Longitudinal Study**

### **Quality of linkage between the 1991 and 2001 Censuses**

The forward linkage rate between the 1991 and 2001 Longitudinal Study (LS) samples was 88.0 per cent. At the 1991 Census, a sample of 543,884 LS members was enumerated as resident in England and Wales, of whom 535,015 (98.4 per cent) were traced. The sample of 1991 traced LS members expected to be found in the 2001 Census was 475,378 but the actual sample found was 418,204.

Between the censuses, 57,650 traced LS members had died and 1,987 were known to have embarked from England and Wales. But a further 57,174 traced LS members (11.6 per cent) who had been present at the 1991 Census were not found at the 2001 Census. There was no record of a death or embarkation occurring before the 2001 Census for these people.

The 2001 Census sample of LS members was 540,082, 99.3 per cent of whom were traced (536,377 cases). The change in the sample size at the 2001 Census was the result of natural population change (births and deaths) and migration.

Backward linkage of the 2001 traced LS sample resulted in 90.7 per cent of LS members being linked to a 1991 record. There were 461,614 traced LS members present in 2001 who should have been found in the 1991 Census. This excluded new births (59,820) and immigrations (14,943) to England and Wales during the decade. However, 418,562 were actually recorded in the 1991 Census.

The failure to link 11.6 per cent of traced members from the 1991 sample in 2001 may be partially explained by census under-enumeration, unreported embarkations and discrepancies in birth data. It is not possible to measure the contribution of each of these factors to the linkage failure.

#### **Factors affecting non-linkage between 1991 and 2001**

Linkage of records from the 1991 traced LS sample to 2001 Census records was high (88.0 per cent), although lower than in previous LS-census linking exercises. A number of factors in 1991 were associated with non-linkage to 2001 Census records:

- being young and male
- being never married, divorced, or living in a lone-parent household
- being born outside of the UK
- being a member of an ethnic minority
- living in a communal establishment, private rented accommodation or social housing
- being unemployed, on a government scheme, a student or in the economic position 'other inactive'
- being in the armed services

**Table L9101.1 1991-2001 traced LS-Census samples: forward and backward linkage rates**

| Forward linkage                       | Number  | Backward linkage                      | Number  |
|---------------------------------------|---------|---------------------------------------|---------|
| 1991 Census sample: traced LS members | 535,015 | 2001 Census sample: traced LS members | 536,377 |
| Less died before 2001 Census          | 57,650  | Less born after 1991 Census           | 59,820  |
| Less embarked before 2001 Census      | 1,987   | Less immigrant after 1991 Census      | 14,943  |
| Eligible to be in 2001 Census         | 475,378 | Should have been in 1991 Census       | 461,614 |
| Less not found in the 2001 Census     | 57,174  | Less not found in the 1991 Census     | 43,052  |
| Recorded in 2001 Census               | 418,204 | Recorded in 1991 Census               | 418,562 |
| Forward linkage rate                  | 88.0%   | Backward linkage rate                 | 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> For forward linkage 'traced' means the LS members' records were found on the National Health Service Central Register before or during the 1991 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 2001 Census Link

## **Forward linkage rates between the 1991 and 2001 Censuses: traced members by sex and age**

Among 1991 traced Longitudinal Study (LS) members who were not known to have died or embarked before the 2001 census, 88 per cent were linked to a 2001 Census record. Males (86.4 per cent linked) were less likely to be found than females (89.5 per cent linked). For both sexes, linkage failure was most likely among young people aged 10 to 29 (20 to 29 in 2001) and among those over 75.

Non-linkage of older groups may result from embarkations and possibly subsequent deaths that were not added to the database by the time of the 2001 Census. Late death registrations are a likely explanation for particularly high linkage failure among males aged 90 and over (66.7 per cent linked).

People in younger age groups were more likely to embark between censuses which means that some linkage failure may be due to unrecorded embarkation. Among the younger groups, linkage was lowest among young males, less than 80 per cent among those 10 to 24 in 1991. For example 76.1 per cent of males aged 15 to 19 were linked. For females, linkage was lowest among 10- to 14-year-olds at 83.7 per cent.

Linkage was most successful among 40- to 69-year-olds (over 91 per cent) after which age it becomes less likely for both males and females. Linkage rates were also higher for children aged under 10. For example among 0- to 4-year-olds, 88.6 per cent of males and 88.2 per cent of females were successfully linked.

Among males, those aged 15 to 19 in 1991 were less likely to be traced than those in the adjacent age groups. Among females, this was true among 10- to 14-year-olds. The least likely group to be traced was people of 90 and over (66.7 per cent for males and 74.4 per cent for females).

**Table L9101.2 Forward linkage rates between the 1991 and 2001 Censuses: traced LS members by sex and age in 1991**

| Age and sex in 1991 | Position by 2001 Census               |                                     |  |                           |                       | Linkage success rate (%) |
|---------------------|---------------------------------------|-------------------------------------|--|---------------------------|-----------------------|--------------------------|
|                     | LS Members present and traced in 1991 | Died or embarked before 2001 Census | Eligible to be enumerated in 2001 Census | Not linked at 2001 Census | Linked at 2001 Census |                          |
| <b>Males</b>        |                                       |                                     |  |                           |                       |                          |
| 0-4                 | 18,020                                | 122                                 | 17,898                                   | 2,043                     | 15,855                | 88.6                     |
| 5-9                 | 17,090                                | 91                                  | 16,999                                   | 2,165                     | 14,834                | 87.3                     |
| 10-14               | 16,465                                | 125                                 | 16,340                                   | 3,436                     | 12,904                | 79.0                     |
| 15-19               | 17,704                                | 177                                 | 17,527                                   | 4,188                     | 13,339                | 76.1                     |
| 20-24               | 19,080                                | 251                                 | 18,829                                   | 3,978                     | 14,851                | 78.9                     |
| 25-29               | 20,379                                | 294                                 | 20,085                                   | 3,242                     | 16,843                | 83.9                     |
| 30-34               | 19,445                                | 365                                 | 19,080                                   | 2,748                     | 16,332                | 85.6                     |
| 35-39               | 17,961                                | 417                                 | 17,544                                   | 2,073                     | 15,471                | 88.2                     |
| 40-44               | 19,391                                | 622                                 | 18,769                                   | 1,813                     | 16,956                | 90.3                     |
| 45-49               | 16,673                                | 856                                 | 15,817                                   | 1,419                     | 14,398                | 91.0                     |
| 50-54               | 14,979                                | 1,309                               | 13,670                                   | 1,177                     | 12,493                | 91.4                     |
| 55-59               | 14,052                                | 1,974                               | 12,078                                   | 896                       | 11,182                | 92.6                     |
| 60-64               | 13,466                                | 3,053                               | 10,413                                   | 784                       | 9,629                 | 92.5                     |
| 65-69               | 12,241                                | 4,296                               | 7,945                                    | 584                       | 7,361                 | 92.6                     |
| 70-74               | 9,296                                 | 4,761                               | 4,535                                    | 391                       | 4,144                 | 91.4                     |
| 75-79               | 7,001                                 | 4,707                               | 2,294                                    | 330                       | 1,964                 | 85.6                     |
| 80-84               | 3,958                                 | 3,276                               | 682                                      | 110                       | 572                   | 83.9                     |
| 85-89               | 1,507                                 | 1,383                               | 124                                      | 21                        | 103                   | 83.1                     |
| 90+                 | 425                                   | 413                                 | 12                                       | 4                         | 8                     | 66.7                     |
| <b>Total</b>        | <b>259,133</b>                        | <b>28,492</b>                       | <b>230,641</b>                           | <b>31,402</b>             | <b>199,239</b>        | <b>86.4</b>              |
| <b>Females</b>      |                                       |                                     |  |                           |                       |                          |
| 0-4                 | 17,470                                | 92                                  | 17,378                                   | 2,043                     | 15,335                | 88.2                     |
| 5-9                 | 16,283                                | 71                                  | 16,212                                   | 2,026                     | 14,186                | 87.5                     |
| 10-14               | 15,655                                | 84                                  | 15,571                                   | 2,545                     | 13,026                | 83.7                     |
| 15-19               | 17,124                                | 109                                 | 17,015                                   | 2,684                     | 14,331                | 84.2                     |
| 20-24               | 19,838                                | 271                                 | 19,567                                   | 2,644                     | 16,923                | 86.5                     |
| 25-29               | 21,277                                | 260                                 | 21,017                                   | 2,384                     | 18,633                | 88.7                     |
| 30-34               | 19,613                                | 297                                 | 19,316                                   | 1,863                     | 17,453                | 90.4                     |
| 35-39               | 18,005                                | 332                                 | 17,673                                   | 1,573                     | 16,100                | 91.1                     |
| 40-44               | 19,929                                | 468                                 | 19,461                                   | 1,489                     | 17,972                | 92.3                     |
| 45-49               | 16,589                                | 593                                 | 15,996                                   | 1,204                     | 14,792                | 92.5                     |
| 50-54               | 14,509                                | 727                                 | 13,782                                   | 1,040                     | 12,742                | 92.5                     |
| 55-59               | 13,977                                | 1,195                               | 12,782                                   | 851                       | 11,931                | 93.3                     |
| 60-64               | 14,176                                | 2,108                               | 12,068                                   | 834                       | 11,234                | 93.1                     |
| 65-69               | 14,357                                | 3,336                               | 11,021                                   | 810                       | 10,211                | 92.7                     |
| 70-74               | 12,216                                | 4,346                               | 7,870                                    | 728                       | 7,142                 | 90.7                     |
| 75-79               | 11,130                                | 5,945                               | 5,185                                    | 680                       | 4,505                 | 86.9                     |
| 80-84               | 7,668                                 | 5,490                               | 2,178                                    | 249                       | 1,929                 | 88.6                     |
| 85-89               | 4,231                                 | 3,668                               | 563                                      | 104                       | 459                   | 81.5                     |
| 90+                 | 1,835                                 | 1,753                               | 82                                       | 21                        | 61                    | 74.4                     |
| <b>Total</b>        | <b>275,882</b>                        | <b>31,145</b>                       | <b>244,737</b>                           | <b>25,772</b>             | <b>218,965</b>        | <b>89.5</b>              |

**Table L9101.2 Forward linkage rates between the 1991 and 2001 Censuses: traced LS members by sex and age in 1991**

| Age and sex in 1991 | Position by 2001 Census               |                                     |  |                           |                       | Linkage success rate (%) |
|---------------------|---------------------------------------|-------------------------------------|--|---------------------------|-----------------------|--------------------------|
|                     | LS Members present and traced in 1991 | Died or embarked before 2001 Census | Eligible to be enumerated in 2001 Census | Not linked at 2001 Census | Linked at 2001 Census |                          |
| <b>All people</b>   |                                       |                                     |  |                           |                       |                          |
| 0-4                 | 35,490                                | 214                                 | 35,276                                   | 4,086                     | 31,190                | 88.4                     |
| 5-9                 | 33,373                                | 162                                 | 33,211                                   | 4,191                     | 29,020                | 87.4                     |
| 10-14               | 32,120                                | 209                                 | 31,911                                   | 5,981                     | 25,930                | 81.3                     |
| 15-19               | 34,828                                | 286                                 | 34,542                                   | 6,872                     | 27,670                | 80.1                     |
| 20-24               | 38,918                                | 522                                 | 38,396                                   | 6,622                     | 31,774                | 82.8                     |
| 25-29               | 41,656                                | 554                                 | 41,102                                   | 5,626                     | 35,476                | 86.3                     |
| 30-34               | 39,058                                | 662                                 | 38,396                                   | 4,611                     | 33,785                | 88.0                     |
| 35-39               | 35,966                                | 749                                 | 35,217                                   | 3,646                     | 31,571                | 89.6                     |
| 40-44               | 39,320                                | 1,090                               | 38,230                                   | 3,302                     | 34,928                | 91.4                     |
| 45-49               | 33,262                                | 1,449                               | 31,813                                   | 2,623                     | 29,190                | 91.8                     |
| 50-54               | 29,488                                | 2,036                               | 27,452                                   | 2,217                     | 25,235                | 91.9                     |
| 55-59               | 28,029                                | 3,169                               | 24,860                                   | 1,747                     | 23,113                | 93.0                     |
| 60-64               | 27,642                                | 5,161                               | 22,481                                   | 1,618                     | 20,863                | 92.8                     |
| 65-69               | 26,598                                | 7,632                               | 18,966                                   | 1,394                     | 17,572                | 92.7                     |
| 70-74               | 21,512                                | 9,107                               | 12,405                                   | 1,119                     | 11,286                | 91.0                     |
| 75-79               | 18,131                                | 10,652                              | 7,479                                    | 1,010                     | 6,469                 | 86.5                     |
| 80-84               | 11,626                                | 8,766                               | 2,860                                    | 359                       | 2,501                 | 87.4                     |
| 85-89               | 5,738                                 | 5,051                               | 687                                      | 125                       | 562                   | 81.8                     |
| 90+                 | 2,260                                 | 2,166                               | 94                                       | 25                        | 69                    | 73.4                     |
| <b>Total</b>        | <b>535,015</b>                        | <b>59,637</b>                       | <b>475,378</b>                           | <b>57,174</b>             | <b>418,204</b>        | <b>88.0</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 1991 Census-LS Link

**Forward linkage rates between the 1991 and 2001 Censuses: traced members by sex and marital status**

LS members who were married in 1991 were more likely than divorced or single people to be found in 2001. Almost 91 per cent of males and over 92 per cent of females who were married in 1991 were linked in 2001.

Table L9101.3 shows that 88.5 per cent of widowers and 90.1 per cent of widows were found in 2001.

People who were unmarried in 1991 were least likely to be found in 2001 (82.4 per cent of males and 86.3 per cent of females), followed by those who were divorced (84 per cent of males and 90.1 per cent of females).

**Table L9101.3 Forward linkage rates between the 1991 and 2001 Censuses: traced LS members by sex and marital status in 1991**

| Marital status and sex in 1991 | Position by 2001 Census               |                                     |  |                           |                       | Linkage success rate (%) |
|--------------------------------|---------------------------------------|-------------------------------------|--|---------------------------|-----------------------|--------------------------|
|                                | LS Members present and traced in 1991 | Died or embarked before 2001 Census | Eligible to be enumerated in 2001 Census | Not linked at 2001 Census | Linked at 2001 Census |                          |
| <b>Males</b>                   |                                       |                                     |  |                           |                       |                          |
| Never Married                  | 114,133                               | 3,615                               | 110,518                                  | 19,478                    | 91,040                | 82.4                     |
| Married                        | 126,327                               | 18,810                              | 107,517                                  | 10,043                    | 97,474                | 90.7                     |
| Divorced                       | 10,972                                | 1,400                               | 9,572                                    | 1,533                     | 8,039                 | 84.0                     |
| Widowed                        | 7,701                                 | 4,667                               | 3,034                                    | 348                       | 2,686                 | 88.5                     |
| Total                          | 259,133                               | 28,492                              | 230,641                                  | 31,402                    | 199,239               | 86.4                     |
| <b>Females</b>                 |                                       |                                     |  |                           |                       |                          |
| Never Married                  | 102,827                               | 3,608                               | 99,219                                   | 13,633                    | 85,586                | 86.3                     |
| Married                        | 126,470                               | 11,140                              | 115,330                                  | 9,163                     | 106,167               | 92.1                     |
| Divorced                       | 15,201                                | 1,304                               | 13,897                                   | 1,370                     | 12,527                | 90.1                     |
| Widowed                        | 31,384                                | 15,093                              | 16,291                                   | 1,606                     | 14,685                | 90.1                     |
| Total                          | 275,882                               | 31,145                              | 244,737                                  | 25,772                    | 218,965               | 89.5                     |
| <b>All people</b>              |                                       |                                     |  |                           |                       |                          |
| Never Married                  | 216,960                               | 7,223                               | 209,737                                  | 33,111                    | 176,626               | 84.2                     |
| Married                        | 252,797                               | 29,950                              | 222,847                                  | 19,206                    | 203,641               | 91.4                     |
| Divorced                       | 26,173                                | 2,704                               | 23,469                                   | 2,903                     | 20,566                | 87.6                     |
| Widowed                        | 39,085                                | 19,760                              | 19,325                                   | 1,954                     | 17,371                | 89.9                     |
| Total                          | 535,015                               | 59,637                              | 475,378                                  | 57,174                    | 418,204               | 88.0                     |

**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 1991 Census-LS Link

## **Forward linkage rates between the 1991 and 2001 Censuses: traced members by sex and economic position**

The economic position in 1991 of Longitudinal Study (LS) members influenced the likelihood of their being found in 2001. LS members who were employees (90.3 per cent linked) or retired (91.1 per cent linked) were more likely to be linked in 2001 than people in other economic positions.

Linkage failure was high among LS members waiting to start a job (78.1 per cent linked), the unemployed (78.1 per cent linked) and those on a government scheme (81.4 per cent linked).

Linkage failure was highest among people in the 'other inactive' group in 1991, which included people of independent means and those in domestic service. Linkage rates were also relatively low among students, with 73.9 per cent of males and 81.1 per cent of females linked. In contrast to females who were looking after their home or family, among whom 90.3 per cent were linked, males looking after the home or family had low linkage rates (81.1 per cent linked).

Considering all economic positions, females were typically more likely to be found in 2001 than males. However, among retirees, males were more likely to be found.



**Table L9101.4 Forward linkage rates between the 1991 and 2001 Censuses: traced LS members aged 16+ by sex and economic position in 1991**

| Economic position and sex in 1991 | Position by 2001 Census                          |                                     |  |                           |                       |                          |
|-----------------------------------|--|-------------------------------------|--|---------------------------|-----------------------|--------------------------|
|                                   | LS Members present and traced at the 1991 Census | Died or embarked before 2001 Census | Eligible to be enumerated in 2001 Census | Not linked at 2001 Census | Linked at 2001 Census | Linkage success rate (%) |
| <b>Males</b>                      |  |                                     |  |                           |                       |                          |
| Economically active               | 150,204  | 6,999                               | 143,205                                  | 18,246                    | 124,959               | 87.3                     |
| Employees                         | 107,737  | 4,598                               | 103,139                                  | 11,283                    | 91,856                | 89.1                     |
| Self-Employed                     | 23,990   | 1,344                               | 22,646                                   | 2,758                     | 19,888                | 87.8                     |
| On a Government scheme            | 2,083  | 67                                  | 2,016                                    | 437                       | 1,579                 | 78.3                     |
| Waiting to start a job            | 454  | 15                                  | 439                                      | 111                       | 328                   | 74.7                     |
| Unemployed                        | 15,940   | 975                                 | 14,965                                   | 3,657                     | 11,308                | 75.6                     |
| Economically inactive             | 54,250   | 21,132                              | 33,118                                   | 4,724                     | 28,394                | 85.7                     |
| Student                           | 7,865  | 118                                 | 7,747                                    | 2,023                     | 5,724                 | 73.9                     |
| Permanently sick or disabled      | 10,067   | 2,890                               | 7,177                                    | 907                       | 6,270                 | 87.4                     |
| Retired                           | 34,686   | 17,888                              | 16,798                                   | 1,455                     | 15,343                | 91.3                     |
| Looking after home/family         | 1,177  | 191                                 | 986                                      | 186                       | 800                   | 81.1                     |
| Other inactive                    | 455  | 45                                  | 410                                      | 153                       | 257                   | 62.7                     |
| Total                             | 204,454  | 28,131                              | 176,323                                  | 22,970                    | 153,353               | 87.0                     |
| <b>Females</b>                    |  |                                     |  |                           |                       |                          |
| Economically active               | 110,991  | 2,967                               | 108,024                                  | 9,715                     | 98,309                | 91.0                     |
| Employees                         | 95,222   | 2,472                               | 92,750                                   | 7,711                     | 85,039                | 91.7                     |
| Self-Employed                     | 7,122  | 265                                 | 6,857                                    | 666                       | 6,191                 | 90.3                     |
| On a Government scheme            | 1,316  | 28                                  | 1,288                                    | 178                       | 1,110                 | 86.2                     |
| Waiting to start a job            | 376  | 6                                   | 370                                      | 66                        | 304                   | 82.2                     |
| Unemployed                        | 6,955  | 196                                 | 6,759                                    | 1,094                     | 5,665                 | 83.8                     |
| Economically inactive             | 112,455  | 27,913                              | 84,542                                   | 8,909                     | 75,633                | 89.5                     |
| Student                           | 7,812  | 94                                  | 7,718                                    | 1,458                     | 6,260                 | 81.1                     |
| Permanently sick or disabled      | 7,245  | 1,899                               | 5,346                                    | 619                       | 4,727                 | 88.4                     |
| Retired                           | 46,597   | 19,923                              | 26,674                                   | 2,416                     | 24,258                | 90.9                     |
| Looking after home/family         | 50,362   | 5,892                               | 44,470                                   | 4,333                     | 40,137                | 90.3                     |
| Other inactive                    | 439  | 105                                 | 334                                      | 83                        | 251                   | 75.1                     |
| Total                             | 223,446  | 30,880                              | 192,566                                  | 18,624                    | 173,942               | 90.3                     |
| <b>ALL</b>                        |  |                                     |  |                           |                       |                          |
| Economically active               | 261,195  | 9,966                               | 251,229                                  | 27,961                    | 223,268               | 88.9                     |
| Employees                         | 202,959  | 7,070                               | 195,889                                  | 18,994                    | 176,895               | 90.3                     |
| Self-Employed                     | 31,112   | 1,609                               | 29,503                                   | 3,424                     | 26,079                | 88.4                     |
| On a Government scheme            | 3,399  | 95                                  | 3,304                                    | 615                       | 2,689                 | 81.4                     |
| Waiting to start a job            | 830  | 21                                  | 809                                      | 177                       | 632                   | 78.1                     |
| Unemployed                        | 22,895   | 1,171                               | 21,724                                   | 4,751                     | 16,973                | 78.1                     |
| Economically inactive             | 166,705  | 49,045                              | 117,660                                  | 13,633                    | 104,027               | 88.4                     |
| Student                           | 15,677   | 212                                 | 15,465                                   | 3,481                     | 11,984                | 77.5                     |
| Permanently sick or disabled      | 17,312   | 4,789                               | 12,523                                   | 1,526                     | 10,997                | 87.8                     |
| Retired                           | 81,283   | 37,811                              | 43,472                                   | 3,871                     | 39,601                | 91.1                     |
| Looking after home/family         | 51,539   | 6,083                               | 45,456                                   | 4,519                     | 40,937                | 90.1                     |
| Other inactive                    | 894  | 150                                 | 744                                      | 236                       | 508                   | 68.3                     |
| Total                             | 427,900  | 59,011                              | 368,889                                  | 41,594                    | 327,295               | 88.7                     |

**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 1991 Census-LS Link

<sup>4</sup> The Census population base counts students as resident at their term-time addresses. A total of 1,853 LS members were enumerated as full-time students or schoolchildren studying away from the family home, but were not enumerated at their term-time addresses. This group were not included in this table

## **Forward linkage rates between the 1991 and 2001 Censuses: traced members by sex and social class**

There were contrasting patterns in the rates of linkage by social class for men and women. For men, linkage rates were lower at the lower end of the social classification, with 83.7 per cent of men in unskilled occupations linked, and highest among those in intermediate (89.9 per cent linked) and professional occupations (89.8 per cent linked).

In contrast, linkage was at its lowest among professional women at 89.1 per cent. It was highest among women in skilled, non-manual occupations at 92.1 per cent but was also high among the unskilled at 92 per cent.

Although women (90.3 per cent linked) were typically more likely to be linked than men (87.0 per cent linked), at the top of the social classification the reverse was true. Men in the professional class (89.8 per cent linked) were more likely to be linked than women (89.1 per cent). However, this gap had narrowed compared with previous censuses (see linkage rates by social class in 1981 and 1991).

Table L9101.5 shows that linkage failure was high among people of both sexes in the armed forces (78.3 per cent of males and 80.1 per cent of females linked).

**Table L9101.5 Forward linkage rates between the 1991 and 2001 Censuses: traced LS members aged 16+ by sex social class in 1991**

| Social class and sex in 1991      | Position by 2001 Census                          |                                     |  |                           |                       |                          |
|-----------------------------------|--|-------------------------------------|--|---------------------------|-----------------------|--------------------------|
|                                   | LS Members present and traced at the 1991 Census | Died or embarked before 2001 Census | Eligible to be enumerated in 2001 Census | Not linked at 2001 Census | Linked at 2001 Census | Linkage success rate (%) |
| <b>Males</b>                      |  |                                     |  |                           |                       |                          |
| I Professional                    | 10,738   | 690                                 | 10,048                                   | 1,025                     | 9,023                 | 89.8                     |
| II Managerial and Technical       | 45,473   | 3,268                               | 42,205                                   | 4,259                     | 37,946                | 89.9                     |
| IIIN Skilled Non-manual           | 18,995   | 1,336                               | 17,659                                   | 2,037                     | 15,622                | 88.5                     |
| IIIM Skilled Manual               | 54,167   | 4,216                               | 49,951                                   | 5,967                     | 43,984                | 88.1                     |
| IV Partly-Skilled Occupations     | 27,345   | 2,516                               | 24,829                                   | 3,411                     | 21,418                | 86.3                     |
| V Unskilled Occupations           | 9,266  | 925                                 | 8,341                                    | 1,361                     | 6,980                 | 83.7                     |
| Armed Forces                      | 1,748  | 42                                  | 1,706                                    | 370                       | 1,336                 | 78.3                     |
| Occupation inadequately described | 1,512  | 126                                 | 1,386                                    | 346                       | 1,040                 | 75.0                     |
| Missing                           | 35,210   | 15,012                              | 20,198                                   | 4,194                     | 16,004                | 79.2                     |
| Total                             | 204,454  | 28,131                              | 176,323                                  | 22,970                    | 153,353               | 87.0                     |
| <b>Females</b>                    |  |                                     |  |                           |                       |                          |
| I Professional                    | 2,316  | 64                                  | 2,252                                    | 246                       | 2,006                 | 89.1                     |
| II Managerial and Technical       | 35,783   | 1,244                               | 34,539                                   | 3,203                     | 31,336                | 90.7                     |
| IIIN Skilled Non-manual           | 55,152   | 1,895                               | 53,257                                   | 4,184                     | 49,073                | 92.1                     |
| IIIM Skilled Manual               | 10,692   | 455                                 | 10,237                                   | 926                       | 9,311                 | 91.0                     |
| IV Partly-Skilled Occupations     | 26,200   | 1,182                               | 25,018                                   | 2,273                     | 22,745                | 90.9                     |
| V Unskilled Occupations           | 10,973   | 763                                 | 10,210                                   | 820                       | 9,390                 | 92.0                     |
| Armed Forces                      | 171  | 5                                   | 166                                      | 33                        | 133                   | 80.1                     |
| Occupation inadequately described | 1,279  | 69                                  | 1,210                                    | 163                       | 1,047                 | 86.5                     |
| Missing                           | 80,880   | 25,203                              | 55,677                                   | 6,776                     | 48,901                | 87.8                     |
| Total                             | 223,446  | 30,880                              | 192,566                                  | 18,624                    | 173,942               | 90.3                     |
| <b>All</b>                        |  |                                     |  |                           |                       |                          |
| I Professional                    | 13,054   | 754                                 | 12,300                                   | 1,271                     | 11,029                | 89.7                     |
| II Managerial and Technical       | 81,256   | 4,512                               | 76,744                                   | 7,462                     | 69,282                | 90.3                     |
| IIIN Skilled Non-manual           | 74,147   | 3,231                               | 70,916                                   | 6,221                     | 64,695                | 91.2                     |
| IIIM Skilled Manual               | 64,859   | 4,671                               | 60,188                                   | 6,893                     | 53,295                | 88.5                     |
| IV Partly-Skilled Occupations     | 53,545   | 3,698                               | 49,847                                   | 5,684                     | 44,163                | 88.6                     |
| V Unskilled Occupations           | 20,239   | 1,688                               | 18,551                                   | 2,181                     | 16,370                | 88.2                     |
| Armed Forces                      | 1,919  | 47                                  | 1,872                                    | 403                       | 1,469                 | 78.5                     |
| Occupation inadequately described | 2,791  | 195                                 | 2,596                                    | 509                       | 2,087                 | 80.4                     |
| Missing                           | 116,090  | 40,215                              | 75,875                                   | 10,970                    | 64,905                | 85.5                     |
| Total                             | 427,900  | 59,011                              | 368,889                                  | 41,594                    | 327,295               | 88.7                     |

**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 1991 Census-LS Link

## **Forward linkage rates between the 1991 and 2001 Censuses: traced members by sex and country of birth**

LS members who were born in the UK (89.2 per cent linked) were more likely to be linked in 2001 than those born elsewhere (74.3 per cent linked). Linkage was most successful among people born in England and Wales (89.2 per cent linked). This group contributes a substantial proportion to the linkage success rates of the LS because they constitute the overwhelming majority of the LS sample (around 90 per cent of traced members in 1991).

Linkage failure in 2001 was highest among people born in the USA (59.5 per cent linked) but this group comprised just 0.2 per cent of the entire number of LS members to be accounted for in 2001. Linkage failure was also high among people who were born in the countries of the old Commonwealth (Australia, Canada and New Zealand), at 68.9 per cent.

Linkage was also relatively low among people born in the 'West African Commonwealth' (65.1 per cent found). This is consistent with the finding from the 1991 Census-LS link, where people born in West Africa were least likely to be linked (see Table L8191.6).

Among people born outside the UK, linkage was most successful among those born in the 'East African Commonwealth' (80.7 per cent linked) and India (80.0 per cent linked). This was also true in 1991.

**Table L9101.6 Forward linkage rates between the 1991 and 2001 Censuses: traced LS members by sex and country of birth in 1991**

| Country of birth and sex in 1991 | Position by 2001 Census                          |                                     |  |                           |                       |                          |
|----------------------------------|--|-------------------------------------|--|---------------------------|-----------------------|--------------------------|
|                                  | LS Members present and traced at the 1991 Census | Died or embarked before 2001 Census | Eligible to be enumerated in 2001 Census | Not linked at 2001 Census | Linked at 2001 Census | Linkage success rate (%) |
| <b>Males</b>                     |  |                                     |  |                           |                       |                          |
| United Kingdom                   | 238,616  | 26,111                              | 212,505                                  | 26,390                    | 186,115               | 87.6                     |
| England and Wales                | 233,574  | 25,344                              | 208,230                                  | 25,542                    | 182,688               | 87.6                     |
| Scotland                         | 3,916  | 551                                 | 3,365                                    | 654                       | 2,711                 | 80.6                     |
| Northern Ireland                 | 1,126  | 216                                 | 910                                      | 194                       | 716                   | 78.7                     |
| Outside United Kingdom           | 20,517   | 2,381                               | 18,136                                   | 5,012                     | 13,124                | 72.4                     |
| Irish Republic                   | 2,705  | 554                                 | 2,151                                    | 613                       | 1,538                 | 71.5                     |
| Old Commonwealth                 | 696  | 89                                  | 607                                      | 193                       | 414                   | 68.2                     |
| New Commonwealth                 | 11,251   | 855                                 | 10,396                                   | 2,724                     | 7,672                 | 73.8                     |
| India                            | 3,226  | 312                                 | 2,914                                    | 578                       | 2,336                 | 80.2                     |
| Pakistan                         | 2,032  | 118                                 | 1,914                                    | 550                       | 1,364                 | 71.3                     |
| Bangladesh                       | 908  | 39                                  | 869                                      | 293                       | 576                   | 66.3                     |
| African Commonwealth             | 1,836  | 85                                  | 1,751                                    | 439                       | 1,312                 | 74.9                     |
| East Africa                      | 1,312  | 52                                  | 1,260                                    | 253                       | 1,007                 | 79.9                     |
| Southern Africa                  | 409  | 22                                  | 387                                      | 153                       | 234                   | 60.5                     |
| Caribbean                        | 115  | 11                                  | 104                                      | 33                        | 71                    | 68.3                     |
| Mediterranean                    | 1,329  | 169                                 | 1,160                                    | 369                       | 791                   | 68.2                     |
| Remainder                        | 758  | 70                                  | 688                                      | 173                       | 515                   | 74.9                     |
| Europe, excluding USSR           | 2,911  | 517                                 | 2,394                                    | 563                       | 1,831                 | 76.5                     |
| USA                              | 409  | 56                                  | 353                                      | 158                       | 195                   | 55.2                     |
| Elsewhere and not stated         | 2,545  | 310                                 | 2,235                                    | 761                       | 1,474                 | 66.0                     |
| <b>Total</b>                     | <b>259,133</b>                                   | <b>28,492</b>                       | <b>230,641</b>                           | <b>31,402</b>             | <b>199,239</b>        | <b>86.4</b>              |
| <b>Females</b>                   |  |                                     |  |                           |                       |                          |
| United Kingdom                   | 253,986  | 29,057                              | 224,929                                  | 21,047                    | 203,882               | 90.6                     |
| England and Wales                | 248,989  | 28,289                              | 220,700                                  | 20,311                    | 200,389               | 90.6                     |
| Scotland                         | 3,888  | 560                                 | 3,328                                    | 613                       | 2,715                 | 81.6                     |
| Northern Ireland                 | 1,109  | 208                                 | 901                                      | 123                       | 778                   | 86.3                     |
| Outside United Kingdom           | 21,896   | 2,088                               | 19,808                                   | 4,725                     | 15,083                | 76.1                     |
| Irish Republic                   | 3,255  | 596                                 | 2,659                                    | 619                       | 2,040                 | 76.7                     |
| Old Commonwealth                 | 852  | 120                                 | 732                                      | 223                       | 509                   | 69.5                     |
| New Commonwealth                 | 10,832   | 529                                 | 10,303                                   | 2,364                     | 7,939                 | 77.1                     |
| India                            | 3,230  | 210                                 | 3,020                                    | 609                       | 2,411                 | 79.8                     |
| Pakistan                         | 1,630  | 45                                  | 1,585                                    | 403                       | 1,182                 | 74.6                     |
| Bangladesh                       | 900  | 10                                  | 890                                      | 242                       | 648                   | 72.8                     |
| African Commonwealth             | 1,762  | 57                                  | 1,705                                    | 370                       | 1,335                 | 78.3                     |
| East Africa                      | 1,214  | 42                                  | 1,172                                    | 217                       | 955                   | 81.5                     |
| West Africa                      | 421  | 9                                   | 412                                      | 126                       | 286                   | 69.4                     |
| Southern Africa                  | 127  | 6                                   | 121                                      | 27                        | 94                    | 77.7                     |
| Caribbean                        | 1,499  | 133                                 | 1,366                                    | 356                       | 1,010                 | 73.9                     |
| Mediterranean                    | 700  | 42                                  | 658                                      | 149                       | 509                   | 77.4                     |
| Remainder                        | 1,111  | 32                                  | 1,079                                    | 235                       | 844                   | 78.2                     |
| Europe, excluding USSR           | 3,905  | 529                                 | 3,376                                    | 705                       | 2,671                 | 79.1                     |
| USA                              | 466  | 54                                  | 412                                      | 152                       | 260                   | 63.1                     |
| Elsewhere and not stated         | 2,586  | 260                                 | 2,326                                    | 662                       | 1,664                 | 71.5                     |
| <b>Total</b>                     | <b>275,882</b>                                   | <b>31,145</b>                       | <b>244,737</b>                           | <b>25,772</b>             | <b>218,965</b>        | <b>89.5</b>              |

**Table L9101.6 Forward linkage rates between the 1991 and 2001 Censuses: traced LS members by sex and country of birth in 1991**

| Country of birth and sex in 1991 | Position by 2001 Census                          |                                     |  |                           |                       |                          |
|----------------------------------|--|-------------------------------------|--|---------------------------|-----------------------|--------------------------|
|                                  | LS Members present and traced at the 1991 Census | Died or embarked before 2001 Census | Eligible to be enumerated in 2001 Census | Not linked at 2001 Census | Linked at 2001 Census | Linkage success rate (%) |
| All                              |  |                                     |  |                           |                       |                          |
| United Kingdom                   | 492,602  | 55,168                              | 437,434                                  | 47,437                    | 389,997               | 89.2                     |
| England and Wales                | 482,563  | 53,633                              | 428,930                                  | 45,853                    | 383,077               | 89.2                     |
| Scotland                         | 7,804  | 1,111                               | 6,693                                    | 1,267                     | 5,426                 | 81.1                     |
| Northern Ireland                 | 2,235  | 424                                 | 1,811                                    | 317                       | 1,494                 | 82.5                     |
| Outside United Kingdom           | 42,413   | 4,469                               | 37,944                                   | 9,737                     | 28,207                | 74.3                     |
| Irish Republic                   | 5,960  | 1,150                               | 4,810                                    | 1,232                     | 3,578                 | 74.4                     |
| Old Commonwealth                 | 1,548  | 209                                 | 1,339                                    | 416                       | 923                   | 68.9                     |
| New Commonwealth                 | 22,083   | 1,384                               | 20,699                                   | 5,088                     | 15,611                | 75.4                     |
| India                            | 6,456  | 522                                 | 5,934                                    | 1,187                     | 4,747                 | 80.0                     |
| Pakistan                         | 3,662  | 163                                 | 3,499                                    | 953                       | 2,546                 | 72.8                     |
| Bangladesh                       | 1,808  | 49                                  | 1,759                                    | 535                       | 1,224                 | 69.6                     |
| African Commonwealth             | 3,598  | 142                                 | 3,456                                    | 809                       | 2,647                 | 76.6                     |
| East Africa                      | 2,526  | 94                                  | 2,432                                    | 470                       | 1,962                 | 80.7                     |
| West Africa                      | 830  | 31                                  | 799                                      | 279                       | 520                   | 65.1                     |
| Southern Africa                  | 242  | 17                                  | 225                                      | 60                        | 165                   | 73.3                     |
| Caribbean                        | 2,828  | 302                                 | 2,526                                    | 725                       | 1,801                 | 71.3                     |
| Mediterranean                    | 1,458  | 112                                 | 1,346                                    | 322                       | 1,024                 | 76.1                     |
| Remainder                        | 2,273  | 94                                  | 2,179                                    | 557                       | 1,622                 | 74.4                     |
| Europe, excluding USSR           | 6,816  | 1,046                               | 5,770                                    | 1,268                     | 4,502                 | 78.0                     |
| USA                              | 875  | 110                                 | 765                                      | 310                       | 455                   | 59.5                     |
| Elsewhere and not stated         | 5,131  | 570                                 | 4,561                                    | 1,423                     | 3,138                 | 68.8                     |
| Total                            | 535,015  | 59,637                              | 475,378                                  | 57,174                    | 418,204               | 88.0                     |

*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 1991 Census-LS Link

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

## **Forward linkage rates between the 1991 and 2001 Censuses: traced members by sex and ethnic group**

In 2001, linkage failure was higher for LS members from ethnic minorities (73.7 per cent linked) than for White LS members (89.1 per cent linked). Black Africans were least likely of all ethnic groups to be linked (56.6 per cent of males and 66.2 per cent of females linked). This group was characterised as the most transient in 1991, largely comprising people coming to the UK to study.

Linkage rates by country of birth also show that people born in the West African Commonwealth were least likely to be found in 2001 (see Table L9101.6). However, even among those describing themselves as 'Black Other', which is considered largely to comprise the children of first-generation migrants, linkage was relatively low (70.7 per cent of males and 74.8 per cent of females linked).

Among ethnic minority groups, Indians were most likely to be found (80.6 per cent linked), followed by Pakistanis (73.3 per cent linked). People of Asian ethnicities (Indian, Pakistani, Bangladeshi) were typically more likely to be linked than Black people.

In every ethnic group, males were less likely to be linked than females. This difference is greatest among Black Africans (56.6 per cent of males and 66.2 per cent of females linked) and smallest among Indians (80.3 per cent of males and 80.9 per cent of females linked).

**Table L9101.7 Forward linkage rates between the 1991 and 2001 Censuses: traced LS members by sex and ethnic group in 1991**

| Ethnic group and sex in 1991 | Position by 2001 Census                          |                                     |  |                           |                       | Linkage success rate (%) |
|------------------------------|--|-------------------------------------|--|---------------------------|-----------------------|--------------------------|
|                              | LS Members present and traced at the 1991 Census | Died or embarked before 2001 Census | Eligible to be enumerated in 2001 Census | Not linked at 2001 Census | Linked at 2001 Census |                          |
| <b>Males</b>                 |  |                                     |  |                           |                       |                          |
| White                        | 241,460  | 27,625                              | 213,835                                  | 26,657                    | 187,178               | 87.5                     |
| Minority ethnic groups       | 17,673   | 867                                 | 16,806                                   | 4,745                     | 12,061                | 71.8                     |
| Black Caribbean              | 2,451  | 176                                 | 2,275                                    | 802                       | 1,473                 | 64.7                     |
| Black African                | 994  | 47                                  | 947                                      | 411                       | 536                   | 56.6                     |
| Black Other                  | 832  | 16                                  | 816                                      | 239                       | 577                   | 70.7                     |
| Indian                       | 5,689  | 286                                 | 5,403                                    | 1,065                     | 4,338                 | 80.3                     |
| Pakistani                    | 3,239  | 138                                 | 3,101                                    | 887                       | 2,214                 | 71.4                     |
| Bangladeshi                  | 1,179  | 42                                  | 1,137                                    | 370                       | 767                   | 67.5                     |
| Chinese                      | 855  | 44                                  | 811                                      | 252                       | 559                   | 68.9                     |
| Other Asian                  | 1,004  | 65                                  | 939                                      | 328                       | 611                   | 65.1                     |
| Other                        | 1,430  | 53                                  | 1,377                                    | 391                       | 986                   | 71.6                     |
| Total Males                  | 259,133  | 28,492                              | 230,641                                  | 31,402                    | 199,239               | 86.4                     |
| <b>Females</b>               |  |                                     |  |                           |                       |                          |
| White                        | 258,393  | 30,611                              | 227,782                                  | 21,651                    | 206,131               | 90.5                     |
| Minority ethnic groups       | 17,489   | 534                                 | 16,955                                   | 4,121                     | 12,834                | 75.7                     |
| Black Caribbean              | 2,769  | 146                                 | 2,623                                    | 704                       | 1,919                 | 73.2                     |
| Black African                | 1,007  | 23                                  | 984                                      | 333                       | 651                   | 66.2                     |
| Black Other                  | 891  | 11                                  | 880                                      | 222                       | 658                   | 74.8                     |
| Indian                       | 5,491  | 174                                 | 5,317                                    | 1,016                     | 4,301                 | 80.9                     |
| Pakistani                    | 2,865  | 50                                  | 2,815                                    | 695                       | 2,120                 | 75.3                     |
| Bangladeshi                  | 1,206  | 8                                   | 1,198                                    | 309                       | 889                   | 74.2                     |
| Chinese                      | 786  | 26                                  | 760                                      | 214                       | 546                   | 71.8                     |
| Other Asian                  | 1,067  | 61                                  | 1,006                                    | 297                       | 709                   | 70.5                     |
| Other                        | 1,407  | 35                                  | 1,372                                    | 331                       | 1,041                 | 75.9                     |
| Total Females                | 275,882  | 31,145                              | 244,737                                  | 25,772                    | 218,965               | 89.5                     |
| <b>All</b>                   |  |                                     |  |                           |                       |                          |
| White                        | 499,853  | 58,236                              | 441,617                                  | 48,308                    | 393,309               | 89.1                     |
| Minority ethnic groups       | 35,162   | 1,401                               | 33,761                                   | 8,866                     | 24,895                | 73.7                     |
| Black Caribbean              | 5,220  | 322                                 | 4,898                                    | 1,506                     | 3,392                 | 69.3                     |
| Black African                | 2,001  | 70                                  | 1,931                                    | 744                       | 1,187                 | 61.5                     |
| Black Other                  | 1,723  | 27                                  | 1,696                                    | 461                       | 1,235                 | 72.8                     |
| Indian                       | 11,180   | 460                                 | 10,720                                   | 2,081                     | 8,639                 | 80.6                     |
| Pakistani                    | 6,104  | 188                                 | 5,916                                    | 1,582                     | 4,334                 | 73.3                     |
| Bangladeshi                  | 2,385  | 50                                  | 2,335                                    | 679                       | 1,656                 | 70.9                     |
| Chinese                      | 1,641  | 70                                  | 1,571                                    | 466                       | 1,105                 | 70.3                     |
| Other Asian                  | 2,071  | 126                                 | 1,945                                    | 625                       | 1,320                 | 67.9                     |
| Other                        | 2,837  | 88                                  | 2,749                                    | 722                       | 2,027                 | 73.7                     |
| Total                        | 535,015  | 59,637                              | 475,378                                  | 57,174                    | 418,204               | 88.0                     |

**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 1991 Census-LS Link



## **Forward linkage rates between the 1991 and 2001 Censuses: traced members by housing tenure**

Longitudinal Study (LS) members who were living in communal establishments or whose household information was missing, were less likely to be found in 2001 than those living in private households. Among those living in private households, there was wide variation in linkage success. People renting privately were least likely to be found in 2001 (75.5 per cent linked). Owner-occupiers were most likely to be found in 2001 (90.2 per cent linked), while 83.7 per cent of LS members living in social housing in 1991 were linked in 2001.

**Table L9101.8 Forward linkage rates between the 1991 and 2001 Censuses: traced LS members by housing tenure in 1991**

| Housing tenure in 1991  | Position by 2001 Census                          |                                     |  |                           |                       |                          |
|---|--|-------------------------------------|--|---------------------------|-----------------------|--------------------------|
|   | LS Members present and traced at the 1991 Census | Died or embarked before 2001 Census | Eligible to be enumerated in 2001 Census | Not linked at 2001 Census | Linked at 2001 Census | Linkage success rate (%) |
| Owner occupied  | 373,876  | 32,649                              | 341,227                                  | 33,573                    | 307,654               | 90.2                     |
| Social housing  | 107,699  | 17,196                              | 90,503                                   | 14,730                    | 75,773                | 83.7                     |
| Rented privately  | 43,089   | 4,611                               | 38,478                                   | 7,092                     | 29,045                | 75.5                     |
| Living in communal establishment or household information missing | 12,692   | 5,181                               | 7,511                                    | 1,779                     | 5,732                 | 76.3                     |
| <b>Total</b>  | <b>535,015</b>                                   | <b>59,637</b>                       | <b>475,378</b>                           | <b>57,174</b>             | <b>418,204</b>        | <b>88.0</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 1991 Census-LS Link*

## **Forward linkage rates between the 1991 and 2001 Censuses: traced members by household size**

The household size in 1991 of Longitudinal Study (LS) members impacted on the likelihood of their being found at the 2001 census. Table L9101.9 shows that people in larger households, with seven or more people (76.7 per cent linked), were less likely to be found than those in smaller households. Linkage was most successful among people in two-person households (90.3 per cent linked).

Linkage rates were lower among LS members living alone in 1991 (86.9 per cent of linked in 2001). This aspect of non-linkage makes a substantial contribution to overall linkage failure as around 10 per cent of traced LS members present in 1991 were living in single-person households.

**Table L9101.9 Forward linkage rates between the 1991 and 2001 Censuses: traced LS members by household size in 1991**

| Household size in 1991 | Position by 2001 Census                          |                                     |  |                           |                       |                          |
|------------------------|--|-------------------------------------|--|---------------------------|-----------------------|--------------------------|
|                        | LS Members present and traced at the 1991 Census | Died or embarked before 2001 Census | Eligible to be enumerated in 2001 Census | Not linked at 2001 Census | Linked at 2001 Census | Linkage success rate (%) |
| 1                      | 54,977   | 17,557                              | 37,420                                   | 4,889                     | 32,531                | 86.9                     |
| 2                      | 141,740  | 25,113                              | 116,627                                  | 11,307                    | 105,320               | 90.3                     |
| 3-6                    | 312,549  | 11,394                              | 301,155                                  | 36,335                    | 264,820               | 87.9                     |
| 7+                     | 11,086   | 284                                 | 10,802                                   | 2,521                     | 8,281                 | 76.7                     |
| Absent from household  | 14,663   | 5,289                               | 9,374                                    | 2,122                     | 7,252                 | 77.4                     |
| Total                  | 535,015  | 59,637                              | 475,378                                  | 57,174                    | 418,204               | 88.0                     |

*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 1991 Census-LS Link*

## **Forward linkage rates between the 1991 and 2001 Censuses: traced members by sex and position in household**

The position of Longitudinal Study (LS) members in the household 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 2001. LS members enumerated in communal establishments in 1991 (71 per cent linked) were less likely to be found in 2001 than those enumerated in private households. However, people enumerated in communal establishments comprised only about two per cent of the 1991 traced LS sample and therefore did not substantially affect overall linkage rates.

Adult LS members in married-couple families were most likely to be linked in 2001. LS members married without dependent children (92.5 per cent of males and 92.8 per cent of females linked) had the highest linkage rate. Married people with dependent children were the group next most likely to be linked, at 89.6 per cent for males and 91.9 per cent for females. Among private households, linkage was least likely for dependent children of lone parents (77.4 per cent linked in 2001). Overall, linkage was less likely for LS members who were part of lone-parent families than for people in two-parent families.

Dependent children were generally 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 1991 were less likely to be found in 2001. 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 group.

Linkage rates were lower for adults living alone (84.8 per cent linked) compared with other adults in private households. This instance of non-linkage made an important contribution to overall linkage rates, given that over a fifth (23.6 per cent) of traced LS members were adults living alone in 1991.

## **Reference**

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

**Table L9101.10 Forward linkage rates between the 1991 and 2001 Censuses: traced LS members by sex and position in household in 1991**

| Position in household and sex in 1991        | Position by 2001 Census               |                                     |  |                           |                       | Linkage success rate (%) |
|--|---------------------------------------|-------------------------------------|--|---------------------------|-----------------------|--------------------------|
|  | LS Members present and traced in 1991 | Died or embarked before 2001 Census | Eligible to be enumerated in 2001 Census | Not linked at 2001 Census | Linked at 2001 Census |                          |
| <b>Males</b>                                 |                                       |                                     |  |                           |                       |                          |
| Adult living alone                           | 59,044                                | 8,095                               | 50,949                                   | 9,449                     | 41,500                | 81.5                     |
| Married couple with no dependent children    | 70,819                                | 16,132                              | 54,687                                   | 4,119                     | 50,568                | 92.5                     |
| Cohabiting couple with no dependent children | 7,700                                 | 387                                 | 7,313                                    | 1,048                     | 6,265                 | 85.7                     |
| Married couple with dependent children       | 49,247                                | 1,494                               | 47,753                                   | 4,952                     | 42,801                | 89.6                     |
| Cohabiting couple with dependent children    | 3,707                                 | 89                                  | 3,618                                    | 724                       | 2,894                 | 80.0                     |
| Lone parent with dependent children          | 1,131                                 | 67                                  | 1,064                                    | 182                       | 882                   | 82.9                     |
| Dependent child living with two parents      | 48,045                                | 315                                 | 47,730                                   | 6,634                     | 41,096                | 86.1                     |
| Dependent child with lone parent             | 9,500                                 | 73                                  | 9,427                                    | 2,354                     | 7,073                 | 75.0                     |
| Visitor to a private household               | 2,841                                 | 189                                 | 2,652                                    | 561                       | 2,091                 | 78.8                     |
| Visitor to a communal establishment          | 2,152                                 | 380                                 | 1,772                                    | 418                       | 1,354                 | 76.4                     |
| Living in a communal establishment           | 2,875                                 | 1,063                               | 1,812                                    | 575                       | 1,237                 | 68.3                     |
| Total  | 257,061                               | 28,284                              | 228,777                                  | 31,016                    | 197,761               | 86.4                     |
| <b>Females</b>                               |                                       |                                     |  |                           |                       |                          |
| Adult living alone                           | 67,677                                | 16,228                              | 51,449                                   | 6,140                     | 45,309                | 88.1                     |
| Married couple with no dependent children    | 69,940                                | 9,279                               | 60,661                                   | 4,393                     | 56,268                | 92.8                     |
| Cohabiting couple with no dependent children | 7,481                                 | 242                                 | 7,239                                    | 747                       | 6,492                 | 89.7                     |
| Married couple with dependent children       | 48,901                                | 833                                 | 48,068                                   | 3,884                     | 44,184                | 91.9                     |
| Cohabiting couple with dependent children    | 3,799                                 | 45                                  | 3,754                                    | 376                       | 3,378                 | 90.0                     |
| Lone parent with dependent children          | 11,032                                | 207                                 | 10,825                                   | 1,389                     | 9,436                 | 87.2                     |
| Dependent child living with two parents      | 46,324                                | 234                                 | 46,090                                   | 5,729                     | 40,361                | 87.6                     |
| Dependent child with lone parent             | 9,398                                 | 48                                  | 9,350                                    | 1,885                     | 7,465                 | 79.8                     |
| Visitor to a private household               | 3,036                                 | 330                                 | 2,706                                    | 386                       | 2,320                 | 85.7                     |
| Visitor to a communal establishment          | 1,962                                 | 522                                 | 1,440                                    | 221                       | 1,219                 | 84.7                     |
| Living in a communal establishment           | 4,434                                 | 2,942                               | 1,492                                    | 382                       | 1,110                 | 74.4                     |
| Total  | 273,984                               | 30,910                              | 243,074                                  | 25,532                    | 217,542               | 89.5                     |

**Table L9101.10 Forward linkage rates between the 1991 and 2001 Censuses: traced LS members by sex and position in household in 1991**

| Position in household and sex in 1991        | Position by 2001 Census               |                                     |  |                           |                       | Linkage success rate (%) |
|--|---------------------------------------|-------------------------------------|--|---------------------------|-----------------------|--------------------------|
|  | LS Members present and traced in 1991 | Died or embarked before 2001 Census | Eligible to be enumerated in 2001 Census | Not linked at 2001 Census | Linked at 2001 Census |                          |
| All people                                   |                                       |                                     |  |                           |                       |                          |
| Adult living alone                           | 126,721                               | 24,323                              | 102,398                                  | 15,589                    | 86,809                | 84.8                     |
| Married couple with no dependent children    | 140,759                               | 25,411                              | 115,348                                  | 8,512                     | 106,836               | 92.6                     |
| Cohabiting couple with no dependent children | 15,181                                | 629                                 | 14,552                                   | 1,795                     | 12,757                | 87.7                     |
| Married couple with dependent children       | 98,148                                | 2,327                               | 95,821                                   | 8,836                     | 86,985                | 90.8                     |
| Cohabiting couple with dependent children    | 7,506                                 | 134                                 | 7,372                                    | 1,100                     | 6,272                 | 85.1                     |
| Lone parent with dependent children          | 12,163                                | 274                                 | 11,889                                   | 1,571                     | 10,318                | 86.8                     |
| Dependent child living with two parents      | 94,369                                | 549                                 | 93,820                                   | 12,363                    | 81,457                | 86.8                     |
| Dependent child with lone parent             | 18,898                                | 121                                 | 18,777                                   | 4,239                     | 14,538                | 77.4                     |
| Visitor to a private household               | 5,877                                 | 519                                 | 5,358                                    | 947                       | 4,411                 | 82.3                     |
| Visitor to a communal establishment          | 4,114                                 | 902                                 | 3,212                                    | 639                       | 2,573                 | 80.1                     |
| Living in a communal establishment           | 7,309                                 | 4,005                               | 3,304                                    | 957                       | 2,347                 | 71.0                     |
| <b>Total</b>                                 | <b>531,045</b>                        | <b>59,194</b>                       | <b>471,851</b>                           | <b>56,548</b>             | <b>415,303</b>        | <b>88.0</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 1991 Census-LS Link

<sup>4</sup> This table does not include 3,970 LS members for whom household circumstances information is missing

## **Inconsistencies between the 1991 and 2001 Censuses**

There were 419,096 traced and untraced LS members found in both the 1991 and 2001 Census-LS samples. Three variables that should have a high degree of consistency across censuses are date of birth, sex and country of birth.

Among the LS members present in both 1991 and 2001, 2.4 per cent had dates of birth that were inconsistent by one year or more. This was most pronounced among people aged 75 and over in 1991 (4.2 per cent inconsistent).

Among those present in both 1991 and 2001, 0.1 per cent gave inconsistent reports of their sex. There was no difference between males and females in the proportions reporting their sex inconsistently.

There were inconsistencies in country of birth for 1.3 per cent of LS members found in 1991 and 2001. Inconsistencies were lowest for those giving their country of birth in 1991 as England or Wales (0.9 per cent). Inconsistencies were highest for those giving their country of birth in 1991 as a country in the 'African Commonwealth' (12.3 per cent), Pakistan (11.3 per cent) or a country in Europe (6.6 per cent).



**Table L9101.11 Inconsistencies in the characteristics of LS sample members between the 1991 and 2001 Censuses**

|                         | Consistent<br>with 1991 | Inconsistent<br>with 1991 | Per cent with<br>discrepancy |
|-------------------------|-------------------------|---------------------------|------------------------------|
| <b>Sex</b>              |                         |                           |                              |
| Male                    | 198,788                 | 207                       | 0.1                          |
| Female                  | 218,393                 | 186                       | 0.1                          |
| All people              | 417,181                 | 393                       | 0.1                          |
| <b>Age</b>              |                         |                           |                              |
| Under 10                | 58,244                  | 1,937                     | 3.2                          |
| 10-24                   | 83,576                  | 1,863                     | 2.2                          |
| 25-59                   | 209,034                 | 4,439                     | 2.1                          |
| 60-74                   | 48,462                  | 1,256                     | 2.5                          |
| 75+                     | 9,190                   | 404                       | 4.2                          |
| All ages                | 408,506                 | 9,899                     | 2.4                          |
| <b>Country of birth</b> |                         |                           |                              |
| England and Wales       | 375,267                 | 3,280                     | 0.9                          |
| Scotland                | 5,215                   | 184                       | 3.4                          |
| Northern Ireland        | 1,428                   | 76                        | 5.1                          |
| Irish Republic          | 3,418                   | 125                       | 3.5                          |
| Old Commonwealth        | 893                     | 38                        | 4.1                          |
| New Commonwealth        |                         |                           |                              |
| India                   | 4,393                   | 291                       | 6.2                          |
| Pakistan                | 2,195                   | 279                       | 11.3                         |
| Bangladesh              | 1,115                   | 61                        | 5.2                          |
| African                 | 2,345                   | 328                       | 12.3                         |
| Caribbean               | 1,604                   | 128                       | 7.4                          |
| Europe, excluding USSR  | 4,228                   | 299                       | 6.6                          |
| USA                     | 462                     | 20                        | 4.1                          |
| All countries           | 408,075                 | 5,497                     | 1.3                          |

**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 1991 Census-LS Link

<sup>4</sup> Based on sample of 419,096 traced and untraced LS members found in both the 1991 and 2001 Censuses

<sup>5</sup> This table does not include cases for whom relevant information was imputed in 2001