**SURVIVAL\_ example of a dataset**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Patient study no** | **Age (yrs)** | **Date of diagnosis** | **Date of last contact** | **Vital status at last contact** | **Cause of death** | **No. of complete years of observation (last contact or death)** | **No. of days from diagnosis to last contact** |
| 1 | 39 | 01/01/1989 | 23/10/1992 | A | - | 3 | 1,360 |
| 2 | 55 | 22/03/1989 | 12/02/1995 | A | - | 5 | 2,153 |
| 3 | 56 | 16/04/1989 | 05/09/1989 | D | BC | 0 | 142 |
| 4 | 63 | 23/05/1989 | 20/12/1992 | D | BC | 3 | 1,307 |
| 5 | 62 | 12/06/1989 | 28/12/1995 | A | - | 6 | 2,390 |
| 6 | 42 | 05/19/1989 | 17/12/1990 | A | - | 1 | 468 |
| 7 | 45 | 05/01/1989 | 04/08/1995 | A | - | 5 | 2,129 |
| 8 | 38 | 30/11/1989 | 11/10/1991 | D | BC | 1 | 680 |
| 9 | 53 | 07/01/1990 | 25/10/1990 | D | BC | 0 | 291 |
| 10 | 55 | 03/02/1990 | 31/01/1991 | D | BC | 0 | 362 |
| 11 | 49 | 23/03/1990 | 29/08/1992 | A | - | 2 | 890 |
| 12 | 61 | 28/04/1990 | 13/05/1994 | A | - | 4 | 1,476 |
| 13 | 58 | 14/05/1990 | 01/06/1990 | A | - | 1 | 383 |
| 14 | 45 | 15/07/1990 | 10/09/1993 | D | BC | 3 | 1,153 |
| 15 | 60 | 03/08/1990 | 27/11/1994 | A | - | 4 | 1,577 |
| 16 | 69 | 31/08/1990 | 06/10/1995 | D | O | 5 | 1,862 |
| 17 | 58 | 18/09/1990 | 02/01/1993 | D | BC | 2 | 837 |
| 18 | 54 | 09/11/1990 | 18/06/1995 | A | - | 4 | 1,682 |
| 19 | 56 | 28/11/1990 | 27/06/1995 | D | BC | 4 | 1,702 |
| 20 | 52 | 12/21/1990 | 13/05/1995 | D | O | 4 | 1,613 |
| 21 | 67 | 24/01/1991 | 23/12/1994 | D | BC | 3 | 1,429 |
| 22 | 64 | 17/02/1991 | 06/09/1994 | D | O | 3 | 1,297 |
| 23 | 73 | 21/04/1991 | 24/12/1993 | A | - | 2 | 978 |
| 24 | 48 | 09/06/1991 | 26/06/1994 | A | - | 3 | 1,113 |
| 25 | 42 | 20/06/1991 | 15/03/1992 | D | BC | 0 | 269 |
| 26 | 56 | 25/08/1991 | 19/08/1994 | A | - | 2 | 1,090 |
| 27 | 43 | 01/03/1992 | 06/06/1994 | D | BC | 2 | 827 |
| 28 | 64 | 12/04/1992 | 13/02/1995 | D | O | 2 | 1,037 |
| 29 | 35 | 13/04/1992 | 15/04/1994 | D | BC | 2 | 732 |
| 30 | 77 | 05/05/1992 | 10/05/1995 | A | - | 3 | 1,100 |
| 31 | 59 | 10/08/1992 | 08/11/1992 | D | BC | 0 | 90 |
| 32 | 68 | 13/10/1992 | 21/10/1993 | D | BC | 1 | 373 |
| 33 | 70 | 19/11/1992 | 20/12/1995 | A | - | 3 | 1,126 |
| 34 | 58 | 17/01/1993 | 29/10/1994 | A | - | 1 | 650 |
| 35 | 75 | 02/02/1993 | 10/03/1994 | D | BC | 1 | 401 |
| 36 | 55 | 02/05/1993 | 29/09/1993 | D | BC | 0 | 150 |
| 37 | 45 | 11/05/1993 | 07/02/1994 | D | BC | 0 | 272 |
| 38 | 69 | 09/11/1993 | 26/05/1995 | A | - | 1 | 563 |
| 39 | 70 | 07/12/1993 | 27/05/1995 | A | - | 1 | 536 |
| 40 | 27 | 31/12/1993 | 03/06/1995 | A | - | 1 | 519 |

**Vital status**: A= alive D=dead

**Cause of death**: BC= breast cancer O=other

**The actuarlal table**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Years (*i*)** | **No. at start of interval (*ni*)** | **No. of deaths (*di*)** | **No. of losses (*wi*)** | **Effective denominator (*ri*)** | **Probability of dying during the year (*qi*)** | **Probability of surviving the year (*pi*)** | **Cumulative survival (*Πpi*)** |
| **0 –** | **40** | **7** | **0** | **40** | **0.175** | **0.825** | **0.825** |
| **1 –** | **33** | **3** | **6** | **30** | **0.1** | **0.9** | **0.743** |
| **2 –** | **24** | **4** | **3** | **22.5** | **0.178** | **0.822** | **0.61** |
| **3 –** | **17** | **4** | **4** | **15** | **0.267** | **0.733** | **0.447** |
| **4 –** | **9** | **2** | **3** | **7.5** | **0.267** | **0.733** | **0.328** |
| **5 –** | **4** | **1** | **2** | **3** | **0.333** | **0.667** | **0.219** |
| **6 –** | **1** | **0** | **1** | **0.5** | **0** | **1** | **0.219** |
| **Total** |  | **21** | **19** |  |  |  |  |

***qi = di / ri***

***pi = 1 - qi***

***Πpi = pi* x*pi-1***

**A LIFE TABLE**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Age group |  Actual population |  Actual deaths |  ***nMx*** |  ***nqx*** |  ***lx*** |  ***ndx*** | ***nLx*** |  ***Tx*** |  ***oex*** |
| <1 | 600820 | 15501 | 0.0258 | 0.02521 | 100000 | 2521 | 97731 | 7209472 | 72.1 |
| 1-4 | 2250620 | 2586 | 0.00115 | 0.00458 | 97479 | 447 | 388842 | 7111742 | 73 |
| 5-9 | 2680480 | 1766 | 0.00066 | 0.00329 | 97032 | 319 | 484361 | 6722900 | 69.3 |
| 10-14 | 2745930 | 1201 | 0.00044 | 0.00218 | 96713 | 211 | 483035 | 6238539 | 64.5 |
| 15-19 | 2883870 | 2224 | 0.00077 | 0.00385 | 96501 | 371 | 481579 | 5755503 | 59.6 |
| 20-24 | 2986220 | 4900 | 0.00164 | 0.00817 | 96130 | 785 | 478686 | 5273925 | 54.9 |
| 25-29 | 2945160 | 8658 | 0.00294 | 0.01459 | 95344 | 1391 | 473244 | 4795239 | 50.3 |
| 30-34 | 2868290 | 7829 | 0.00273 | 0.01356 | 93953 | 1274 | 466582 | 4321995 | 46 |
| 35-39 | 2592640 | 6997 | 0.0027 | 0.0134 | 92680 | 1242 | 460293 | 3855412 | 41.6 |
| 40-44 | 2189130 | 6791 | 0.0031 | 0.01539 | 91437 | 1407 | 453668 | 3395120 | 37.1 |
| 45-49 | 1797690 | 7932 | 0.00441 | 0.02182 | 90030 | 1965 | 445238 | 2941452 | 32.7 |
| 50-54 | 1344300 | 8504 | 0.00633 | 0.03114 | 88065 | 2742 | 433471 | 2496214 | 28.3 |
| 55-59 | 1054800 | 9543 | 0.00905 | 0.04424 | 85323 | 3774 | 417180 | 2062742 | 24.2 |
| 60-64 | 957090 | 13197 | 0.01379 | 0.06665 | 81549 | 5435 | 394156 | 1645563 | 20.2 |
| 65-69 | 753690 | 16254 | 0.02157 | 0.10232 | 76114 | 7788 | 361100 | 1251406 | 16.4 |
| 70-74 | 533820 | 18016 | 0.03375 | 0.15562 | 68326 | 10633 | 315050 | 890306 | 13 |
| 75-79 | 315480 | 17622 | 0.05586 | 0.24507 | 57694 | 14139 | 253120 | 575257 | 10 |
| 80-84 | 159480 | 14829 | 0.09298 | 0.37722 | 43555 | 16430 | 176698 | 322136 | 7.4 |
| 85-89 | 54880 | 8212 | 0.14964 | 0.54451 | 27125 | 14770 | 98700 | 145438 | 5.4 |
| 90-94 | 11650 | 2712 | 0.23278 | 0.68532 | 12355 | 8467 | 36374 | 46738 | 3.8 |
| 95-99 | 1279 | 448 | 0.35014 | 0.78666 | 3888 | 3058 | 8735 | 10364 | 2.7 |
| 100+ | 80 | 41 | 0.50918 | 1 | 829 | 829 | 1629 | 1629 | 2 |

***nqx* the probability of dying between age x and the next age in the table**