Supplementary Online Content

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eTable 1. ELSA Achieved Interview Sample Counts for Core Members and Study Response Rates
eFigure. Achieved Sample Size at Baseline (2002-2003)
eTable 2. Sample Size and Attrition Rates by Wave of Assessment, England, 2002-2013
eTable 3. Comparisons of Baseline Characteristics Comparing the Completers With Those Who Died and Dropped Out, England, 2002-2003
eTable 4. Proportion of Remaining Life Spent Without Disability and Without Chronic Diseases According to Affective Wellbeing, England 2002-2013
eTable 5. Odds Ratios for Disability Transition From Multinomial Logistic Models, England, 2002-2013
eTable 6. Odds Ratios for Chronic Disease Transition From Multinomial Logistic Models, England, 2002-2013
eTable 7. Life Expectancy, Disability-Free Life Expectancy and Life Expectancy With Disability According to Affective Wellbeing Among Men, Complete Sample, England 2002-2013
eTable 8. Life Expectancy, Disability-Free Life Expectancy and Life Expectancy With Disability According to Affectve Wellbeing Among Women, Complete Sample, England 2002-2013
eTable 9. Life Expectancy, Chronic Disease-Free Life Expectancy and Life Expectancy With Chronic Disease According to Affective Wellbeing Among Men, Complete Sample, England 2002-2013
eTable 10. Life Expectancy, Chronic Disease-Free Life Expectancy and Life Expectancy With Chronic Disease According to Affective Wellbeing Among Women, Complete Sample, England 2002-2013
eAppendix. Computation of Healthy Life Expectancy
eReferences

This supplementary material has been provided by the authors to give readers additional information about their work.
**eTable 1  ELSA Achieved Interview Sample Counts for Core Members and Study Response Rates**

|          | Wave 1     | Wave 2     | Wave 3     | Wave 4     | Wave 5     | Wave 6     |
|----------|------------|------------|------------|------------|------------|------------|
|          | (2002-2003)| (2004-2005)| (2006-2007)| (2008-2009)| (2010-2011)| (2012-2013)|
| Interviewed| 11,391    | 8,780      | 7,535      | 6,623      | 6,242      | 5,659      |
| Response rate| 67%       | 82%        | 73%        | 74%        | 69%        | 66%        |

*The ‘study response rate’ at a given wave is the proportion of the remaining eligible cohort interviewed at that wave.*
**eFigure  Achieved sample size at baseline (2002-2003)**

Sample size at wave 1
2002-2003
N=11,391

Excluding 158 proxy interviews

Sample size at wave 1 excluding proxy
N=11,233

1096 people permanently dropped out of the study after wave 1

Sample size after excluding permanent drop-out
N=10,137

226 missing data on both depression and enjoyment of life
150 missing data on wealth

Achieved sample size at wave 1
N=9,761

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### eTable 2 Sample size and attrition rates by wave of assessment, England, 2002-2013

|                  | Wave 1 (2002-2003) | Wave 2 (2004-2005) | Wave 3 (2006-2007) | Wave 4 (2008-2009) | Wave 5 (2010-2011) | Wave 6 (2012-2013) |
|------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Interviewed      | 9,761               | 7,469               | 6,291               | 5,447               | 5,063               | 4,484               |
| Dropped out*     | 2,107               | 2,935               | 3,411               | 3,356               | 3,278               |                     |
| Died*            | 185                 | 535                 | 903                 | 1342                | 1966                |                     |
| % Attrition§ due to drop-out | 21.6% | 30.1% | 34.9% | 34.4% | 33.6% |

*Cumulative drop out and deaths (note that 78 deaths occurred after wave 6).
§Attrition is defined as the prevalence of cases that dropped out at each wave (excluding deaths).

### eTable 3 Comparisons of baseline characteristics comparing the completers with those who died and dropped out, England, 2002-2003

| Characteristics                                      | Completers | Dropped-out | Died |
|------------------------------------------------------|------------|-------------|------|
| N (%)                                                | 4440 (45.5)| 3277 (33.6) | 2044 (20.9) |
| Mean age                                             | 62         | 62          | 74   |
| Men (%)                                              | 44.59      | 43.21       | 53.13|
| Women (%)                                            | 55.41      | 56.79       | 46.87|
| Affective wellbeing                                  |            |             |      |
| Low enjoyment of life and depressive symptoms (%)     | 9.7        | 10.4        | 14.8 |
| High enjoyment of life and depressive symptoms (%)    | 3.6        | 3.8         | 6.3  |
| Low enjoyment of life and no depression (%)           | 29.8       | 31.2        | 34.7 |
| High enjoyment of life and no depression (%)          | 56.9       | 54.6        | 44.1 |
| Disability (%)                                       | 9.7        | 9.5         | 25.6 |
| Chronic diseases (%)                                  | 51.2       | 37.1        | 68.1 |
| Low wealth (%)                                       | 24.8       | 31.1        | 45.9 |
| Middle wealth (%)                                     | 34.7       | 35.8        | 30.4 |
| High wealth (%)                                       | 40.5       | 33.1        | 23.7 |
| Not cohabiting with a partner (%)                     | 26.4       | 24.8        | 43.9 |
eTable 4 Proportion of Remaining Life Spent Without Disability and Without Chronic Diseases according to Affective Wellbeing, England 2002-2013

| Affective wellbeing | Proportion without disability* % (95% CI) | Proportion without chronic diseases* % (95% CI) |
|---------------------|------------------------------------------|-------------------------------------------------|
| **Age 50 men**      |                                          |                                                 |
| Low enjoyment of life and depressive symptoms | 71.9 (70.2; 77.1) | 40.6 (29.7; 49.7) |
| High enjoyment of life and depressive symptoms   | 82.8 (79.2; 84.5) | 49.7 (33.7; 62.7) |
| Low enjoyment of life no depression            | 86.1 (85.3; 87.1) | 51.8 (46.3; 56.9) |
| High enjoyment of life no depression          | 89.1 (88.4; 89.7) | 58.8 (52.9; 63.4) |
| **Age 60 men**      |                                          |                                                 |
| Low enjoyment of life and depressive symptoms   | 64.2 (62.3; 68.4) | 21.3 (11.8; 29.4) |
| High enjoyment of life and depressive symptoms | 73.8 (70.1; 77.4) | 13.8 (4.2; 30.3) |
| Low enjoyment of life no depression            | 81.9 (81.0; 83.3) | 37.9 (32.7; 43.9) |
| High enjoyment of life no depression           | 86.5 (85.5; 87.2) | 47.4 (42.2; 53.1) |
| **Age 70 men**      |                                          |                                                 |
| Low enjoyment of life and depressive symptoms   | 48.1 (44.6; 51.1) | 18.5 (8.6; 31.4) |
| High enjoyment of life and depressive symptoms | 62.3 (59.7; 69.0) | 8.5 (0.2; 26.0)  |
| Low enjoyment of life no depression            | 76.4 (75.1; 78.2) | 25.6 (20.3; 32.9) |
| High enjoyment of life no depression           | 81.4 (79.9; 82.5) | 31.3 (24.8; 37.9) |
| **Age 80 men**      |                                          |                                                 |
| Low enjoyment of life and depressive symptoms   | 46.4 (41.8; 53.3) | 10.5 (0.0; 26.2) |
| High enjoyment of life and depressive symptoms | 66.7 (63.8; 71.7) | 14.4 (0.0; 34.3) |
| Low enjoyment of life no depression            | 67.2 (64.9; 70.0) | 27.5 (18.5; 35.8) |
| High enjoyment of life no depression           | 75.9 (71.4; 77.6) | 30.0 (20.6; 37.2) |
| **Age 50 women**    |                                          |                                                 |
| Low enjoyment of life and depressive symptoms   | 67.2 (65.0; 70.0) | 36.2 (29.5; 44.6) |
| High enjoyment of life and depressive symptoms | 76.9 (74.2; 79.5) | 45.6 (31.4; 57.7) |
| Low enjoyment of life no depression            | 82.4 (81.4; 84.1) | 49.3 (43.5; 55.8) |
| High enjoyment of life no depression           | 86.0 (85.0; 86.7) | 57.3 (51.3; 62.3) |
| **Age 60 women**    |                                          |                                                 |
| Low enjoyment of life and depressive symptoms   | 59.6 (58.6; 63.8) | 22.7 (14.5; 30.3) |
| High enjoyment of life and depressive symptoms | 70.7 (67.1; 73.2) | 24.1 (11.3; 36.9) |
| Low enjoyment of life no depression            | 77.2 (75.4; 78.6) | 35.9 (29.5; 42.5) |

* Estimates adjusted for wealth and cohabiting status
## eTable 5 Odds ratios for Disability Transition from Multinomial Logistic Models, England, 2002-2013

| Affective wellbeing | Healthy to unhealthy OR* (95%CI) | Healthy to death OR* (95%CI) | Unhealthy to healthy OR* (95%CI) | Unhealthy to death OR* (95%CI) |
|---------------------|----------------------------------|-----------------------------|----------------------------------|-------------------------------|
| Low enjoyment of life and depressive symptoms | 2.5 (2.2; 2.9) | 1.7 (1.3; 2.1) | 1.5 (1.3; 1.8) | 1.8 (1.4; 2.3) |
| High enjoyment of life and depressive symptoms | 1.9 (1.6; 2.3) | 1.4 (1.0; 1.8) | 1.1 (0.9; 1.4) | 1.3 (0.9; 1.9) |
| Low enjoyment of life no depression | 1.4 (1.2; 1.5) | 1.3 (1.1; 1.5) | 1.1 (0.9; 1.2) | 1.2 (1.0; 1.6) |
| High enjoyment of life no depression | 1 | 1 | 1 | 1 |

**Model fit statistics**

| Statistic | Value |
|-----------|-------|
| AIC       | 25675.445 |
| SC        | 25836.692 |
| -2 Log L  | 25639.445 |

* Estimates adjusted for wealth and cohabiting status
eTable 6 Odds ratios for Chronic Disease Transition from Multinomial Logistic Models, England, 2002-2013

| Affective wellbeing                                      | Transition                                      |
|----------------------------------------------------------|-------------------------------------------------|
|                                                          | Healthy to unhealthy OR* (95%CI) | Healthy to death OR* (95%CI) | Unhealthy to death OR* (95%CI) |
| Low enjoyment of life and depressive symptoms             | 1.3 (1.0; 1.7)                          | 1.7 (1.2; 2.4)               | 1.6 (1.3; 1.9)                |
| High enjoyment of life and depressive symptoms            | 1.4 (0.9; 2.2)                          | 1.8 (1.1; 2.9)               | 1.3 (1.0; 1.7)                |
| Low enjoyment of life no depression                       | 1.2 (1.0; 1.4)                          | 1.3 (1.1; 1.6)               | 1.3 (1.1; 1.5)                |
| High enjoyment of life no depression                      | 1                                         | 1                           | 1                           |

Model fit statistics

|                |        |
|----------------|--------|
| AIC            | 11930.753 |
| SC             | 11947.335 |
| -2 Log L       | 11926.753 |

* Estimates adjusted for wealth and cohabiting status
| Affective wellbeing | Total LE* (95%CI) | Disability-free LE* (95%CI) | LE with disability* (95%CI) |
|---------------------|-------------------|-----------------------------|-----------------------------|
| **Age 50 men**      |                   |                             |                             |
| Low enjoyment of life and depressive symptoms | 26.1 (24.5; 27.1) | 19.2 (16.9; 20.4) | 6.9 (5.5; 8.6) |
| High enjoyment of life and depressive symptoms | 28.2 (26.4; 31.3) | 23.4 (20.9; 26.2) | 4.8 (3.7; 5.7) |
| Low enjoyment of life no depression | 29.4 (28.4; 30.1) | 25.5 (24.3; 26.3) | 3.9 (3.5; 4.5) |
| High enjoyment of life no depression | 31.9 (30.9; 32.9) | 28.6 (27.6; 29.6) | 3.3 (3.1; 3.6) |
| **Age 60 men**      |                   |                             |                             |
| Low enjoyment of life and depressive symptoms | 17.2 (15.7; 18.0) | 11.2 (9.7; 12.3) | 6.0 (5.2; 7.0) |
| High enjoyment of life and depressive symptoms | 19.3 (17.1; 20.8) | 14.2 (11.7; 16.0) | 5.1 (4.2; 6.0) |
| Low enjoyment of life no depression | 20.8 (19.8; 22.0) | 16.9 (15.6; 17.9) | 3.9 (3.2; 4.4) |
| High enjoyment of life no depression | 23.1 (22.6; 24.1) | 20.0 (19.4; 21.1) | 3.1 (2.7; 3.5) |
| **Age 70 men**      |                   |                             |                             |
| Low enjoyment of life and depressive symptoms | 10.1 (9.3; 10.6) | 4.5 (3.4; 5.5) | 5.7 (4.8; 6.7) |
| High enjoyment of life and depressive symptoms | 12.6 (11.3; 13.4) | 7.9 (6.6; 8.5) | 4.7 (3.6; 5.9) |
| Low enjoyment of life no depression | 12.8 (12.1; 13.3) | 9.8 (9.2; 10.4) | 3.0 (2.7; 3.3) |
| High enjoyment of life no depression | 15.0 (14.6; 15.6) | 12.3 (11.8; 12.9) | 2.7 (2.5; 3.2) |
| **Age 80 men**      |                   |                             |                             |
| Low enjoyment of life and depressive symptoms | 6.3 (5.6; 6.9) | 3.1 (2.6; 3.9) | 3.2 (2.4; 3.7) |
| High enjoyment of life and depressive symptoms | 7.2 (6.6; 8.1) | 5.0 (4.4; 5.6) | 2.2 (1.7; 2.6) |
| Low enjoyment of life no depression | 7.5 (6.9; 8.0) | 5.1 (4.5; 5.4) | 2.5 (2.1; 2.8) |
| High enjoyment of life no depression | 8.9 (8.5; 9.3) | 6.8 (6.5; 7.2) | 2.1 (1.9; 2.2) |

* Estimates adjusted for wealth and cohabiting status
**eTable 8 Life Expectancy, Disability-free Life Expectancy and Life Expectancy with Disability according to Affective Wellbeing among women complete sample, England 2002-2013**

| Affective wellbeing | Total LE* | 95% CI | Disability-free LE* | 95% CI | LE with disability* | 95% CI |
|---------------------|-----------|--------|---------------------|--------|----------------------|--------|
| **Age 50 women**    |           |        |                     |        |                      |        |
| Low enjoyment of life and depressive symptoms | 29.5      | (28.2; 30.7) | 20.2      | (19.2; 21.1) | 9.3      | (8.1; 10.0) |
| High enjoyment of life and depressive symptoms | 31.7      | (30.4; 34.4) | 24.9      | (23.4; 27.1) | 6.8      | (6.2; 8.2) |
| Low enjoyment of life no depression | 33.3      | (32.5; 34.2) | 27.5      | (26.5; 28.7) | 5.8      | (4.9; 6.9) |
| High enjoyment of life no depression | 35.5      | (34.8; 36.2) | 30.6      | (30.2; 31.3) | 4.9      | (4.5; 5.3) |
| **Age 60 women**    |           |        |                     |        |                      |        |
| Low enjoyment of life and depressive symptoms | 21.4      | (19.6; 22.9) | 12.9      | (11.9; 14.2) | 8.5      | (7.6; 9.5) |
| High enjoyment of life and depressive symptoms | 23.4      | (21.6; 25.8) | 16.4      | (14.7; 19.7) | 7.0      | (5.8; 8.2) |
| Low enjoyment of life no depression | 23.6      | (23.0; 24.1) | 18.1      | (17.0; 18.9) | 5.6      | (4.8; 6.7) |
| High enjoyment of life no depression | 26.6      | (25.6; 27.2) | 22.0      | (21.2; 22.6) | 4.6      | (4.4; 5.0) |
| **Age 70 women**    |           |        |                     |        |                      |        |
| Low enjoyment of life and depressive symptoms | 13.5      | (12.2; 14.6) | 6.7       | (5.7; 7.5)  | 6.8      | (6.1; 7.2) |
| High enjoyment of life and depressive symptoms | 14.8      | (13.7; 16.2) | 8.7       | (7.8; 9.9)  | 6.0      | (5.0; 7.1) |
| Low enjoyment of life no depression | 15.6      | (15.1; 16.6) | 10.7      | (10.2; 11.4) | 4.9      | (4.5; 5.3) |
| High enjoyment of life no depression | 17.7      | (17.2; 18.4) | 13.3      | (12.9; 14.2) | 4.3      | (4.1; 4.5) |
| **Age 80 women**    |           |        |                     |        |                      |        |
| Low enjoyment of life and depressive symptoms | 8.3       | (7.7; 8.9)  | 3.2       | (2.5; 3.9)  | 5.1      | (4.5; 5.4) |
| High enjoyment of life and depressive symptoms | 9.4       | (8.4; 10.1) | 4.9       | (4.2; 5.9)  | 4.5      | (3.8; 5.1) |
| Low enjoyment of life no depression | 9.6       | (9.2; 10.1) | 5.9       | (5.6; 6.4)  | 3.7      | (3.2; 4.3) |
| High enjoyment of life no depression | 10.7      | (10.3; 11.0) | 7.2      | (6.8; 7.5)  | 3.5      | (3.1; 3.9) |

* Estimates adjusted for wealth and cohabiting status
eTable 9 Life Expectancy, Chronic disease-free Life Expectancy and Life Expectancy with Chronic disease according to Affective Wellbeing among men complete sample, England 2002-2013

| Affective wellbeing                      | Total LE* | 95%CI  | Chronic disease-free LE* | 95%CI | LE with Chronic disease * | 95%CI |
|-----------------------------------------|-----------|--------|--------------------------|-------|--------------------------|-------|
| **Age 50 men**                          |           |        |                          |       |                          |       |
| Low enjoyment of life and depressive symptoms | 26.0      | (24.9; 27.7) | 11.4                     | (10.0; 14.3) | 14.7                     | (10.7; 16.3) |
| High enjoyment of life and depressive symptoms | 28.5      | (27.0; 31.3) | 14.0                     | (6.7; 18.8)  | 14.5                     | (11.8; 22.2) |
| Low enjoyment of life no depression     | 29.6      | (28.7; 30.5) | 15.5                     | (12.9; 17.5) | 14.1                     | (13.0; 16.5) |
| High enjoyment of life no depression    | 32.3      | (31.2; 33.0) | 18.7                     | (16.9; 20.4) | 13.6                     | (12.2; 15.2) |
| **Age 60 men**                          |           |        |                          |       |                          |       |
| Low enjoyment of life and depressive symptoms | 17.4      | (15.9; 18.6) | 3.7                      | (2.2; 4.1)   | 13.7                     | (12.5; 15.3) |
| High enjoyment of life and depressive symptoms | 18.9      | (18.3; 20.6) | 1.9                      | (0.0; 5.5)   | 17.0                     | (14.0; 20.0) |
| Low enjoyment of life no depression     | 20.8      | (20.2; 21.3) | 7.1                      | (5.7; 8.3)   | 13.7                     | (12.6; 15.2) |
| High enjoyment of life no depression    | 23.2      | (22.4; 24.2) | 10.2                     | (8.7; 11.8)  | 13.0                     | (12.3; 14.2) |
| **Age 70 men**                          |           |        |                          |       |                          |       |
| Low enjoyment of life and depressive symptoms | 10.8      | (9.4; 11.8)  | 1.5                      | (0.6; 2.4)   | 9.3                      | (7.8; 10.5) |
| High enjoyment of life and depressive symptoms | 12.8      | (11.8; 13.8) | 1.5                      | (0.0; 3.0)   | 11.3                     | (9.8; 13.8) |
| Low enjoyment of life no depression     | 12.7      | (12.1; 13.3) | 2.9                      | (1.9; 3.7)   | 9.9                      | (9.5; 11.3) |
| High enjoyment of life no depression    | 15.1      | (14.5; 15.6) | 5.0                      | (4.3; 6.0)   | 10.0                     | (9.4; 10.7) |
| **Age 80 men**                          |           |        |                          |       |                          |       |
| Low enjoyment of life and depressive symptoms | 6.4       | (5.3; 6.6)   | 0.8                      | (0.3; 1.3)   | 5.6                      | (4.4; 6.1) |
| High enjoyment of life and depressive symptoms | 6.9       | (6.3; 8.0)   | 1.1                      | (0.0; 2.6)   | 5.8                      | (4.4; 7.6) |
| Low enjoyment of life no depression     | 7.6       | (7.2; 7.9)   | 2.0                      | (1.6; 2.6)   | 5.6                      | (5.0; 6.0) |
| High enjoyment of life no depression    | 9.0       | (8.3; 9.4)   | 2.6                      | (2.2; 3.6)   | 6.4                      | (5.3; 7.2) |

* Estimates adjusted for wealth and cohabiting status
eTable 10 Life Expectancy, Chronic disease-free Life Expectancy and Life Expectancy with Chronic disease according to Affective Wellbeing among women complete sample, England 2002-2013

| Affective wellbeing                              | Total LE* | 95%CI   | Chronic disease-free LE* | 95%CI   | LE with Chronic disease | 95%CI   |
|-------------------------------------------------|-----------|---------|--------------------------|---------|-------------------------|---------|
| **Age 50 women**                                |           |         |                          |         |                         |         |
| Low enjoyment of life and depressive symptoms    | 29.7      | (27.9; 30.6) | 9.8                     | (6.4; 12.8) | 19.9                   | (15.0; 23.3) |
| High enjoyment of life and depressive symptoms  | 31.8      | (29.5; 33.1) | 13.8                    | (10.9; 17.4) | 18.0                   | (14.9; 20.4) |
| Low enjoyment of life no depression              | 33.1      | (32.3; 34.0) | 15.3                    | (11.7; 17.6) | 17.8                   | (15.3; 20.8) |
| High enjoyment of life no depression             | 35.5      | (34.8; 36.2) | 19.5                    | (17.1; 21.3) | 16.0                   | (13.8; 18.7) |
| **Age 60 women**                                |           |         |                          |         |                         |         |
| Low enjoyment of life and depressive symptoms    | 21.7      | (20.6; 23.0) | 2.9                     | (1.7; 4.5) | 18.7                   | (16.7; 20.6) |
| High enjoyment of life and depressive symptoms  | 22.9      | (22.7; 25.7) | 4.7                     | (1.3; 6.2)  | 18.2                   | (17.6; 24.0) |
| Low enjoyment of life no depression              | 23.7      | (23.0; 25.5) | 6.6                     | (5.0; 7.9)  | 17.1                   | (15.7; 18.5) |
| High enjoyment of life no depression             | 26.6      | (25.8; 27.5) | 10.6                    | (8.7; 12.0) | 15.9                   | (13.8; 18.5) |
| **Age 70 women**                                |           |         |                          |         |                         |         |
| Low enjoyment of life and depressive symptoms    | 13.5      | (12.5; 14.3) | 2.1                     | (1.2; 2.7)  | 11.3                   | (10.3; 12.5) |
| High enjoyment of life and depressive symptoms  | 15.2      | (14.5; 16.6) | 0.7                     | (0.0; 2.6)  | 14.5                   | (12.3; 15.6) |
| Low enjoyment of life no depression              | 15.8      | (15.2; 16.4) | 2.6                     | (1.6; 3.3)  | 13.2                   | (12.2; 14.1) |
| High enjoyment of life no depression             | 18.0      | (17.2; 18.6) | 4.7                     | (3.9; 5.9)  | 13.3                   | (12.6; 14.4) |
| **Age 80 women**                                |           |         |                          |         |                         |         |
| Low enjoyment of life and depressive symptoms    | 8.1       | (7.3; 8.6)       | 1.1                     | (0.5; 2.0)  | 6.9                    | (5.6; 7.8)  |
| High enjoyment of life and depressive symptoms  | 9.5       | (9.2; 10.7)       | 1.2                     | (0.3; 2.3)  | 8.3                    | (7.1; 9.8)  |
| Low enjoyment of life no depression              | 9.6       | (9.1; 10.1)       | 3.0                     | (2.1; 3.6)  | 6.6                    | (5.5; 7.7)  |
| High enjoyment of life no depression             | 10.8      | (10.3; 11.3)      | 2.9                     | (2.3; 3.6)  | 7.9                    | (6.8; 8.8)  |

* Estimates adjusted for wealth and cohabiting status
**eAppendix. Computation of healthy life expectancy**

The computation of health expectancy using the Sullivan method is usually applied to cross-sectional data, and requires life tables and information on age specific proportions of the population in healthy or unhealthy stages. These proportions are prevalence measures of the actual and current health status of a real population and are used to divide years lived in the life table population. With panel data reliable estimates of life table inputs cannot be obtained. The multi-state life table (MSLT) model has been developed to analyse stochastic processes that involve multiple and recurrent events (typical of longitudinal data), in order to estimate expected duration in various states. MSLT method uses a set of transition schedules from healthy, unhealthy and to death estimated using longitudinal data.

The possible transitions among the health states for disability are represented in the following chart:

![Chart showing transitions among healthy, unhealthy, and death states for disability](chart1.png)

And the transitions among health states for chronic condition in the following, note that recovery is not allowed (from unhealthy to healthy).

![Chart showing transitions among healthy, unhealthy, and death states for chronic condition](chart2.png)

The advantages of multistate life table method are: it is based on incidence measures representing current health transitions; it allows movement in both directions between all surviving health states; it allows death rates to differ by health state so it takes into account the different mortality profiles by health status. The estimation of transition schedules is very important and can be done using logistic regression, multinomial logistic regression or hazard regression.
We used the Stochastic Population Analysis for Complex Events (SPACE)\textsuperscript{1} program in SAS 9.2 to estimate MSLT functions. There are two main components to this program: the data component which prepares the input datasets and the statistical component in which transition probabilities and the MSLT functions and their variances are estimated. Specifically, during the data component age-specific transition probabilities for all possible transitions are estimated from the data using multinomial logistic regression conditional on age, sex, well-being factors, wealth and living with a partner. The package also allows the use of survival analysis, however, given that for disability and chronic conditions we do not have exact dates of diagnosis, while we have exact dates of mortality, this would produce and imbalance, therefore multinomial logistic regression is recommended\textsuperscript{1}. Health expectancies from the age of 50 and over are then calculated based on these estimated transition probabilities using a stochastic (micro-simulation) approach. By using micro-simulation it is possible to simulate the life paths of the members of the population in order to derive several summary statistics of the population dynamics (an example is available on page 136 of reference 4). The program generates individual trajectories for a simulated cohort of 100,000 persons with distributions of covariates at the starting point based on the observed study-specific prevalence by five year age group and sex. Variability for these MSLT estimates (variances, standard errors and corresponding confidence intervals) are computed using a bootstrap method with 500 replicates for the whole analysis process (multinomial analysis and simulation steps). This method takes account of attrition from the study under the missing at random assumption\textsuperscript{1}. More information can be found at http://www.cdc.gov/nchs/data_access/space.htm.

The SPACE manual is available at ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Software/space/SPACE_manual.pdf

The annotated codes can be found at
ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Software/space/sas/MSLT_RAD2COV_S.pdf
ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Software/space/sas/MSLT_SIMxCOV_S.pdf
ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Software/space/sas/MSLT_SIMxCOV_M_DX.pdf
ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Software/space/sas/SMPEM_SIMDUR.pdf
ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Software/space/sas/SMPEM_SIMxCOV_S.pdf

\textbf{eReferences}

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