The SF-36

### Age Cohorts
Younger, Mid-age and Older

### Surveys
All

### Definition
See sections describing the Component Scores and Subscales

### Statistical form
Continuous variable

### Prepared by
Anne Russell, Jean Ball and Melanie Spallek

### Derived Variables - Subscales

<table>
<thead>
<tr>
<th>Subscales</th>
<th>Index Number</th>
<th>Index Numbers for Source Items</th>
<th>Source Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Functioning (PF)</td>
<td>SF36-037</td>
<td>SF36-003 to SF36-012</td>
<td>PF1 to PF10</td>
</tr>
<tr>
<td>Role Physical (RP)</td>
<td>SF36-038</td>
<td>SF36-013 to SF36-016</td>
<td>RP1 to RP4</td>
</tr>
<tr>
<td>Bodily Pain (BP)</td>
<td>SF36-039</td>
<td>SF36-021 &amp; SF36-022</td>
<td>BP1 &amp; BP2</td>
</tr>
<tr>
<td>General Health (GH)</td>
<td>SF36-040</td>
<td>SF36-001, SF36033- to SF36-036</td>
<td>GH1 TO GH5</td>
</tr>
<tr>
<td>Vitality (VT)</td>
<td>SF36-041</td>
<td>SF36-023, SF36-027, SF36-029, SF36-031</td>
<td>VT1 to VT5</td>
</tr>
<tr>
<td>Social Functioning (SF)</td>
<td>SF36-042</td>
<td>SF36-020 &amp; SF36-032</td>
<td>SF1 &amp; SF2</td>
</tr>
<tr>
<td>Role Emotional (RE)</td>
<td>SF36-043</td>
<td>SF36-017 to SF36-019</td>
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</tr>
<tr>
<td>Mental Health (MH)</td>
<td>SF36-044</td>
<td>SF36-024 to SF36-026, SF36-028 &amp; SF36-030</td>
<td>MH1 to MH5</td>
</tr>
<tr>
<td>Health Transition (HT)</td>
<td>SF36-045</td>
<td>Not applicable</td>
<td>HT1</td>
</tr>
</tbody>
</table>

### Derived Variables - Component Scores

<table>
<thead>
<tr>
<th>Component Scores</th>
<th>Index Number</th>
<th>Index Numbers for Source Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Component</td>
<td>o PCSA</td>
<td>SF36-046</td>
</tr>
<tr>
<td>Scores:</td>
<td>o PCSWHHA</td>
<td>SF36-048</td>
</tr>
<tr>
<td></td>
<td>o PCS_ABS</td>
<td>SF36-050</td>
</tr>
<tr>
<td></td>
<td>o PCS_US</td>
<td>SF36-052</td>
</tr>
<tr>
<td>Mental Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Component</td>
<td>o PCSA</td>
<td>SF36-047</td>
</tr>
<tr>
<td>Scores:</td>
<td>o PCSWHHA</td>
<td>SF36-049</td>
</tr>
<tr>
<td></td>
<td>o PCS_ABS</td>
<td>SF36-051</td>
</tr>
<tr>
<td></td>
<td>o PCS_US</td>
<td>SF36-053</td>
</tr>
</tbody>
</table>
Background
The SF-36 is a self-report, 36 item survey measuring health-related quality-of-life. Thirty-five items are used to construct 8 scales. An additional item measures health transition.

Survey response codes are re-coded according to standardised procedures (details over). Generally, scores for each scale are calculated for respondents completing 50% or more of the items within a scale. Among these respondents, the value for any missing item is imputed as the mean value for non-missing items. The names of the scales, scale abbreviations, the number of items included in each and the maximum number of items imputed are shown below.

<table>
<thead>
<tr>
<th>SF-36 Scales</th>
<th>Abbreviation</th>
<th>Number of items in scale</th>
<th>Maximum number of items imputed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Health</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Functioning</td>
<td>PF</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Role Physical</td>
<td>RP</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Bodily Pain</td>
<td>BP</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>General Health</td>
<td>GH</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td><strong>Mental Health</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vitality</td>
<td>VT</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Social Functioning</td>
<td>SF</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Role Emotional</td>
<td>RE</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Mental Health</td>
<td>MH</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

Raw scores are calculated as the sum of (re-coded) scale items and transformed to a 0 to 100 scale according to the formula:

\[
\text{Transformed score} = \frac{\text{Raw score} - \text{Minimum possible raw score}}{\text{Possible raw score range}} \times 100
\]

If scores for all 8 scales are available, two summary measures known as component scores are derived: the Physical Health Component Score and the Mental Health Component Score.

All scales and the component scores are positively scored so that higher scores represent better health-related quality-of-life.

The text of SF-36 items and a summary of how the scales and component scores are constructed are given in following sections.
Physical Functioning
The following questions are about activities you might do during a typical day. Does YOUR HEALTH NOW LIMIT YOU in these activities? If so, how much?

<table>
<thead>
<tr>
<th>Code</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes, limited a lot</td>
</tr>
<tr>
<td>2</td>
<td>Yes, limited a little</td>
</tr>
<tr>
<td>3</td>
<td>No, not limited at all</td>
</tr>
</tbody>
</table>

**ALSWH re-coding of missing items**
Sets of related items within the physical functioning sub-scale establish the level of function for particular activities: overall activity level (PF1 to PF3), climbing (PF4 and PF5) and walking (PF7 to PF9). Where a higher level of functioning in each set is ‘Not limited’ but an item for a lower level of the related function is ‘missing’, the lower level of functioning is re-coded to ‘Not limited’. Conversely, where a lower level of functioning is ‘Limited a lot’ and the item for a higher level of the related function is ‘missing’, the higher level of functioning is re-coded to ‘Limited a lot’.

*Overall activity level*

<table>
<thead>
<tr>
<th>Vigorous activity</th>
<th>Moderate activity</th>
<th>Lifting/carrying groceries</th>
<th>Re-code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not limited at all</td>
<td>Missing</td>
<td>Moderate activity = Not limited at all</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>Limited a lot</td>
<td>Vigorous activity = Limited a lot</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>Limited a lot</td>
<td>Vigorous activity = Limited a lot</td>
<td></td>
</tr>
</tbody>
</table>
### Climbing

<table>
<thead>
<tr>
<th>Climbing SEVERAL flights of stairs</th>
<th>Climbing ONE flight of stairs</th>
<th>Re-code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not limited at all</td>
<td>Missing</td>
<td>Climbing ONE flight of stairs = Not limited at all</td>
</tr>
<tr>
<td>Missing</td>
<td>Limited a lot</td>
<td>Climbing SEVERAL flights of stairs = Limited a lot</td>
</tr>
</tbody>
</table>

### Walking

<table>
<thead>
<tr>
<th>Walking more than 1 kilometre</th>
<th>Walking half a kilometre</th>
<th>Walking 100 metres</th>
<th>Re-code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not limited at all</td>
<td>Missing</td>
<td>Walking 100 metres = Not limited at all</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Walking 100 metres = Limited a lot</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>Limited a lot</td>
<td>Walking more than one kilometre = Limited a lot</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Walking 100 metres = Limited a lot</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Limited a lot</td>
<td>Walking 100 metres = Limited a lot</td>
<td></td>
</tr>
</tbody>
</table>

The SAS code defining the PF sub-scale is:

```sas
ARRAY PFI(10) PF01-PF10 ;
DO I = 1 TO 10 ;
    IF PFI(I) < 1 OR PFI(I) > 3 THEN PFI(I) = . ;
END ;
PFNUM = N(OF PF01-PF10) ;
PFMEAN = MEAN(OF PF01-PF10) ;
IF PFNUM GE 5 THEN
    DO I = 1 TO 10 ;
        IF PFI(I)= . THEN PFI(I) = PFMEAN ;
    END ;
    IF PFNUM GE 5 THEN RAWPF = SUM(OF PF01-PF10) ;
    PF = ((RAWPF - 10)/(30-10)) * 100 ;
```

---

**ALSWH Data Dictionary Supplement**
Section 2 Core Survey Dataset
2.3 Health-related Quality of Life Variables
SF-36 – Physical Functioning
Role Physical
During THE PAST 4 WEEKS, have you had any of the following problems with your work (including your work outside the home and housework) or other regular daily activities AS A RESULT OF YOUR PHYSICAL HEALTH?

RP1  Cut down on the amount of time you spent on work or other activities
RP2  Accomplished less than you would like
RP3  Were limited in the kind of work or other activities
RP4  Had difficulty performing the work or other activities (for example it took extra effort)

<table>
<thead>
<tr>
<th>Code</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>No</td>
</tr>
</tbody>
</table>

ALSWH re-coding of missing items
If any response to RP1-RP4 is ‘Yes’ and none of these items has a ‘No’ response recorded, all missing items are coded to ‘No’.

The SAS code defining the RP sub-scale is:

```
ARRAY RPA(4) RP1-RP4 ;
DO I = 1 TO 4 ;
   IF RPA(I) < 1 OR RPA(I) > 2 THEN RPA(I) = . ;
END ;
ROLPNUM = N(OF RP1-RP4) ;
ROLPMEAN = MEAN(OF RP1-RP4) ;
IF ROLPNUM GE 2 THEN
   DO I = 1 TO 4 ;
      IF RPA(I) = . THEN RPA(I) = ROLPMEAN ;
   END ;
IF ROLPNUM GE 2 THEN RAWRP = SUM(OF RP1-RP4) ;
RP = ((RAWRP - 4)/(8-4)) * 100 ;
```
### Bodily Pain

**BP1**  
How much BODILY pain have you had during the PAST 4 WEEKS?

<table>
<thead>
<tr>
<th>Code</th>
<th>Re-code(^1)</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.0</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>5.4</td>
<td>Very mild</td>
</tr>
<tr>
<td>3</td>
<td>4.2</td>
<td>Mild</td>
</tr>
<tr>
<td>4</td>
<td>3.2</td>
<td>Moderate</td>
</tr>
<tr>
<td>5</td>
<td>2.2</td>
<td>Severe</td>
</tr>
<tr>
<td>6</td>
<td>1.0</td>
<td>Very severe</td>
</tr>
</tbody>
</table>

**BP2**  
During the PAST FOUR WEEKS, how much did PAIN interfere with your normal work (including both work outside the home and housework)?

*If BP1 and BP2 are both answered.*

<table>
<thead>
<tr>
<th>Code</th>
<th>Re-code(^1) if BP1 =</th>
<th>Re-code</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>'None' (1)</td>
<td>6</td>
<td>Not at all</td>
</tr>
<tr>
<td>1</td>
<td>'Very mild' -'Very severe' (2-6)</td>
<td>5</td>
<td>Not at all</td>
</tr>
<tr>
<td>2</td>
<td>'None'-'Very severe' (1-6)</td>
<td>4</td>
<td>A little bit</td>
</tr>
<tr>
<td>3</td>
<td>'None'-'Very severe' (1-6)</td>
<td>3</td>
<td>Moderately</td>
</tr>
<tr>
<td>4</td>
<td>'None'-'Very severe' (1-6)</td>
<td>2</td>
<td>Quite a bit</td>
</tr>
<tr>
<td>5</td>
<td>'None'-'Very severe' (1-6)</td>
<td>1</td>
<td>Extremely</td>
</tr>
</tbody>
</table>

*If BP1 is not answered.*

<table>
<thead>
<tr>
<th>Code</th>
<th>Re-code(^1)</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.0</td>
<td>Not at all</td>
</tr>
<tr>
<td>2</td>
<td>4.75</td>
<td>A little bit</td>
</tr>
<tr>
<td>3</td>
<td>3.5</td>
<td>Moderately</td>
</tr>
<tr>
<td>4</td>
<td>2.25</td>
<td>Quite a bit</td>
</tr>
<tr>
<td>5</td>
<td>1.0</td>
<td>Extremely</td>
</tr>
</tbody>
</table>
The SAS code defining the BP sub-scale is:

```sas
IF BP1 < 1 OR BP1 > 6 THEN BP1 = . ;
IF BP2 < 1 OR BP2 > 5 THEN BP2 = . ;
/* RECODES IF NEITHER BP1 OR BP2 HAS A MISSING VALUE */
IF BP1 NE . AND BP2 NE . THEN DO ;
   IF BP1 = 1 THEN RBP1 = 6 ;
   IF BP1 = 2 THEN RBP1 = 5.4 ;
   IF BP1 = 3 THEN RBP1 = 4.2 ;
   IF BP1 = 4 THEN RBP1 = 3.1 ;
   IF BP1 = 5 THEN RBP1 = 2.2 ;
   IF BP1 = 6 THEN RBP1 = 1 ;
   IF BP2 = 1 AND BP1 = 1 THEN RBP2 = 6 ;
   IF BP2 = 1 AND 2 LE BP1 LE 6 THEN RBP2 = 5 ;
   IF BP2 = 2 AND 1 LE BP1 LE 6 THEN RBP2 = 4 ;
   IF BP2 = 3 AND 1 LE BP1 LE 6 THEN RBP2 = 3 ;
   IF BP2 = 4 AND 1 LE BP1 LE 6 THEN RBP2 = 2 ;
   IF BP2 = 5 AND 1 LE BP1 LE 6 THEN RBP2 = 1 ;
END ;
/* RECODES IF BP1 IS NOT MISSING AND BP2 IS MISSING */
IF BP1 NE . AND BP2 = . THEN DO ;
   IF BP1 = 1 THEN RBP1 = 6 ;
   IF BP1 = 2 THEN RBP1 = 5.4 ;
   IF BP1 = 3 THEN RBP1 = 4.2 ;
   IF BP1 = 4 THEN RBP1 = 3.1 ;
   IF BP1 = 5 THEN RBP1 = 2.2 ;
   IF BP1 = 6 THEN RBP1 = 1 ;
   RBP2 = RBP1 ;
END ;
/* RECODES IF BP1 IS MISSING AND BP2 IS NOT MISSING */
IF BP1 = . AND BP2 NE . THEN DO ;
   IF BP2 = 1 THEN RBP2 = 6 ;
   IF BP2 = 2 THEN RBP2 = 4.75 ;
   IF BP2 = 3 THEN RBP2 = 3.5 ;
   IF BP2 = 4 THEN RBP2 = 2.25 ;
   IF BP2 = 5 THEN RBP2 = 1 ;
   RBP1 = RBP2 ;
```
END;
BPNUM = N(BP1,BP2);
IF BPNUM GE 1 THEN RAWBP = SUM(RBP1,RBP2);
BP = ((RAWBP - 2)/(12-2)) * 100;
## General Health

**GH1**  In general, would you say your health is:

<table>
<thead>
<tr>
<th>Code</th>
<th>Re-code</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5.0</td>
<td>Excellent</td>
</tr>
<tr>
<td>2</td>
<td>4.4</td>
<td>Very good</td>
</tr>
<tr>
<td>3</td>
<td>3.4</td>
<td>Good</td>
</tr>
<tr>
<td>4</td>
<td>2.0</td>
<td>Fair</td>
</tr>
<tr>
<td>5</td>
<td>1.0</td>
<td>Poor</td>
</tr>
</tbody>
</table>

How TRUE or FALSE is EACH of the following statements for you?

**GH2**  I seem to get sick a little easier than other people

**GH3**  I am as healthy as anybody I know

**GH4**  I expect my health to get worse

**GH5**  My health is excellent

<table>
<thead>
<tr>
<th>Code</th>
<th>GH3 &amp; GH5</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>Definitely true</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>Mostly true</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Don’t know</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>Mostly false</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Definitely false</td>
</tr>
</tbody>
</table>

The SAS code defining the GH sub-scale is:

```sas
ARRAY GHP(5) GH1-GH5 ;
DO I= 1 TO 5 ;
  IF GHP(I) < 1 OR GHP(I) > 5 THEN GHP(I) = . ; END ;
  IF GH1 = 1 THEN RGH1 = 5 ;
  IF GH1 = 2 THEN RGH1 = 4.4 ;
  IF GH1 = 3 THEN RGH1 = 3.4 ;
  IF GH1 = 4 THEN RGH1 = 2 ;
  IF GH1 = 5 THEN RGH1 = 1 ;
  RGH3 = 6 - GH3 ;
  RGH5 = 6 - GH5 ;
GHNUM = N(GH1,GH2,GH3,GH4,GH5) ;
GHMEAN = MEAN(RGH1,GH2,RGH3,GH4,RGH5) ;
ARRAY RGH(5) RGH1 RGH2 RGH3 GH4 RGH5 ;
IF GHNUM GE 3 THEN
  DO I= 1 TO 5 ;
```
IF RGH(I) = . THEN RGH(I) = GHMEAN ;
END;
IF GHNUM GE 3 THEN RAWGH = SUM(RGH1, GH2, RGH3, GH4, RGH5) ;
GH = ((RAWGH - 5)/(25-5)) * 100 ;
**Vitality**

For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the PAST 4 WEEKS:

<table>
<thead>
<tr>
<th>Code</th>
<th>Re-code VT1 &amp; VT2</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>All of the time</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>Most of the time</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>A good bit of the time</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>Some of the time</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>A little of the time</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>None of the time</td>
</tr>
</tbody>
</table>

The SAS code defining the VT sub-scale is:

```sas
ARRAY VI(4) VT1-VT4 ;
DO I = 1 TO 4 ;
   IF VI(I) < 1 OR VI(I) > 6 THEN VI(I) = . ;
END ;
RVT1 = 7-VT1 ;
RVT2 = 7-VT2 ;
VITNUM = N(VT1,VT2,VT3,VT4) ;
VITMEAN = MEAN(RVT1,RVT2,VT3,VT4) ;
ARRAY RVI(4) RVT1 RVT2 VT3 VT4 ;
IF VITNUM GE 2 THEN
   DO I = 1 TO 4 ;
      IF RVI(I) = . THEN RVI(I) = VITMEAN ;
   END ;
   IF VITNUM GE 2 THEN RAWVT= SUM(RVT1,RVT2,VT3,VT4) ;
   VT = ((RAWVT-4)/(24-4)) * 100 ;
```
**Social Functioning**

**SF1** During the PAST 4 WEEKS, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbours or groups?

<table>
<thead>
<tr>
<th>Code</th>
<th>Recode</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>Not at all</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>A little bit</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Moderately</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>Quite a bit</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Extremely</td>
</tr>
</tbody>
</table>

**SF2** During the PAST 4 WEEKS, how much of the time has your PHYSICAL HEALTH OR EMOTIONAL PROBLEMS interfered with your social activities (like visiting friends, relatives, etc)?

<table>
<thead>
<tr>
<th>Code</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All of the time</td>
</tr>
<tr>
<td>2</td>
<td>Most of the time</td>
</tr>
<tr>
<td>3</td>
<td>A good bit of the time</td>
</tr>
<tr>
<td>4</td>
<td>Some of the time</td>
</tr>
<tr>
<td>5</td>
<td>A little of the time</td>
</tr>
<tr>
<td>6</td>
<td>None of the time</td>
</tr>
</tbody>
</table>

The SAS code defining the SF sub-scale is:

```sas
ARRAY SOC(2) SF1-SF2 ;
DO I = 1 TO 2 ;
   IF SOC(I) < 1 OR SOC(I) > 5 THEN SOC(I) = . ;
END ;
RSF1 = 6 - SF1 ;
SFNUM = N(SF1,SF2) ;
SFMEAN = MEAN(RSF1,SF2) ;
ARRAY RSF(2) RSF1 SF2 ;
DO I = 1 TO 2 ;
   IF RSF(I) = . THEN RSF(I) = SFMEAN ;
END ;
IF SFNUM GE 1 THEN RAWSF = SUM(RSF1,SF2) ;
SF = ((RAWSF - 2)/(10-2)) * 100 ;
```
2.3 Health-related Quality of Life Variables

SF-36 – Social Functioning
Role Emotional

During the PAST 4 WEEKS, have you had any of the following problems with your work or other regular daily activities AS A RESULT OF ANY EMOTIONAL PROBLEMS (such as feeling depressed or anxious)?

<table>
<thead>
<tr>
<th>Code</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>No</td>
</tr>
</tbody>
</table>

**ALSWH re-coding of missing items**
If any response to parts a, b or c is ‘Yes’ and none of these parts have a ‘No’ response recorded, all missing items are coded to ‘No’.

The SAS code defining the RE sub-scale is:

```sas
ARRAY RM(3) RE1-RE3 ;
DO I = 1 TO 3 ;
  IF RM(I) < 1 OR RM(I) > 2 THEN RM(I) = . ;
END ;
ROLMNUM = N(OF RE1-RE3) ;
ROLMMEAN = MEAN(OF RE1-RE3) ;
IF ROLMNUM GE 2 THEN
  DO I = 1 TO 3 ;
    IF RM(I) = . THEN RM(I) = ROLMMEAN ;
  END ;
IF ROLMNUM GE 2 THEN RAWRE = SUM(OF RE1-RE3) ;
RE = ((RAWRE - 3)/(6-3)) * 100 ;
```
Mental Health

For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the PAST 4 WEEKS:

<table>
<thead>
<tr>
<th>Code</th>
<th>MH3 &amp; MH5</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>All of the time</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>Most of the time</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>A good bit of the time</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>Some of the time</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>A little of the time</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>None of the time</td>
</tr>
</tbody>
</table>

The SAS code defining the MH sub-scale is:

```sas
ARRAY MHI(5) MH1-MH5 ;
DO I = 1 TO 5 ;
  IF MHI(I) < 1 OR MHI(I) > 6 THEN MHI(I)=. ;
END ;
RMH3 = 7-MH3 ;
RMH5 = 7-MH5 ;
MHNUM=N(MH1,MH2,MH3,MH4,MH5) ;
MHMEAN=MEAN(MH1,MH2,RMH3,MH4,RMH5) ;
ARRAY RMH(5) MH1 MH2 RMH3 MH4 RMH5 ;
IF MHNUM GE 3 THEN
DO I = 1 TO 5 ;
  IF RMH(I) = . THEN RMH(I) = MHMEAN ;
END ;
IF MHNUM GE 3 THEN RAWMH = SUM(MH1,MH2, RMH3,MH4, RMH5) ;
MH = ((RAWMH-5)/(30-5)) * 100 ;
```
**Health transition**

HT1 Compared to one year ago, how would you rate your health in general now?

<table>
<thead>
<tr>
<th>Code</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Much better now than one year ago</td>
</tr>
<tr>
<td>2</td>
<td>Somewhat better now than one year ago</td>
</tr>
<tr>
<td>3</td>
<td>About the same as one year ago</td>
</tr>
<tr>
<td>4</td>
<td>Somewhat worse now than one year ago</td>
</tr>
<tr>
<td>5</td>
<td>Much worse now than one year ago</td>
</tr>
</tbody>
</table>

The health transition item should be used as categorical variable in statistical analysis.
Standardised Component Scores
The summary measures for physical and mental health known as the Physical Health Component Score (PCS) and the Mental Health Component Score (MCS) may be derived when the scores for all 8 scales of the SF-36 are available. First each scale is standardized to the relevant population, according to the formula:

\[
\text{Standardized Scale} = \frac{(\text{Transformed Scale} - \text{Population mean})}{\text{Population standard deviation}}
\]

Then PCS and MCS are calculated as the weighted sum of standardised scale scores, according to the formula:

\[
\text{Component Score} = (\text{Weighted Sum of Standardised SF-36 scales x 10}) + 50
\]

Two pairs of components scores were included in the ALSWH survey datasets distributed before April 2006. One pair was standardised against data for Australian women of similar age\(^3\)^{}\(^4\) (18 to 24 years, 45 to 54 years and 65 years or more for the Younger, Mid-age and Older women respectively) and are named pcsa and mcsa. Scores were also standardised against the ALSWH sample at Survey 1 (pcswha and mcswha). From April 2006 onwards, an additional two pairs of components scores were added, each standardised against a general adult population. One pair (pcs_abs and mcs_abs) is standardised against the Australian population\(^5\) to allow comparison between cohorts and second is standardised against the US population\(^2\) (pcs_us and mcs_us) to facilitate comparison with international data. The means and standard deviations used in these various standardisations are shown in Table 1.

The factor weights for pcswha and mcswha were derived from analysis of responses at Survey 1; published weights for Australian and US populations were used to calculate the other component scores (Table 2).
Table 1  Mean & standard deviation (SD) for standardization of SF-36 scales

<table>
<thead>
<tr>
<th>SF-36 Scale</th>
<th>Younger</th>
<th>Mid-age</th>
<th>Older</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>PF</td>
<td>90.9</td>
<td>17.5</td>
<td>83.5</td>
</tr>
<tr>
<td>RP</td>
<td>86.7</td>
<td>28.7</td>
<td>84.2</td>
</tr>
<tr>
<td>GH</td>
<td>82.1</td>
<td>20.8</td>
<td>77.8</td>
</tr>
<tr>
<td>VT</td>
<td>73.9</td>
<td>19.5</td>
<td>73.5</td>
</tr>
<tr>
<td>SF</td>
<td>63.4</td>
<td>18.9</td>
<td>64.8</td>
</tr>
<tr>
<td>RE</td>
<td>84.0</td>
<td>20.0</td>
<td>86.5</td>
</tr>
<tr>
<td>MH</td>
<td>73.0</td>
<td>15.8</td>
<td>75.2</td>
</tr>
</tbody>
</table>

b. PCSWHA & MCSWHA: Survey 1 (1996) responses for the ALSWH cohort

<table>
<thead>
<tr>
<th>SF-36 Scale</th>
<th>Younger</th>
<th>Mid-age</th>
<th>Older</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>PF</td>
<td>90.19</td>
<td>15.42</td>
<td>85.08</td>
</tr>
<tr>
<td>RP</td>
<td>82.82</td>
<td>30.35</td>
<td>79.57</td>
</tr>
<tr>
<td>GH</td>
<td>74.18</td>
<td>21.47</td>
<td>70.65</td>
</tr>
<tr>
<td>VT</td>
<td>68.34</td>
<td>20.56</td>
<td>71.90</td>
</tr>
<tr>
<td>SF</td>
<td>56.64</td>
<td>19.81</td>
<td>58.08</td>
</tr>
<tr>
<td>RE</td>
<td>69.98</td>
<td>37.40</td>
<td>76.96</td>
</tr>
<tr>
<td>MH</td>
<td>67.91</td>
<td>18.27</td>
<td>72.12</td>
</tr>
</tbody>
</table>

c. PCS_ABS, PCS_US, MCS_ABS & MCS_US: Adult Population

<table>
<thead>
<tr>
<th>SF-36 Scale</th>
<th>Australia 1995</th>
<th>USA²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>PF</td>
<td>83.46290</td>
<td>23.22864</td>
</tr>
<tr>
<td>RP</td>
<td>80.28166</td>
<td>34.83783</td>
</tr>
<tr>
<td>GH</td>
<td>76.94163</td>
<td>24.83714</td>
</tr>
<tr>
<td>VT</td>
<td>71.81575</td>
<td>20.35165</td>
</tr>
<tr>
<td>SF</td>
<td>64.47694</td>
<td>19.77187</td>
</tr>
<tr>
<td>RE</td>
<td>85.06929</td>
<td>22.29047</td>
</tr>
<tr>
<td>MH</td>
<td>83.19165</td>
<td>32.15215</td>
</tr>
<tr>
<td>38.16227</td>
<td>16.96210</td>
<td>74.84</td>
</tr>
</tbody>
</table>
### Table 2: Factor weights for component scores

**a. Weights for adult population samples which are applied to all 3 age cohorts**

<table>
<thead>
<tr>
<th>SF-36 Scale</th>
<th>PCS</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>MCS</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Australia 1994&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Australia 1995&lt;sup&gt;b&lt;/sup&gt;</td>
<td>USA&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Australia 1994&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Australia 1995&lt;sup&gt;b&lt;/sup&gt;</td>
<td>USA&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PF</td>
<td>0.44</td>
<td>0.47268</td>
<td>0.42402</td>
<td>-0.20</td>
<td>-0.24358</td>
<td>-0.22999</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RP</td>
<td>0.41</td>
<td>0.38210</td>
<td>0.35119</td>
<td>-0.17</td>
<td>-0.13410</td>
<td>-0.12329</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP</td>
<td>0.32</td>
<td>0.36750</td>
<td>0.31754</td>
<td>-0.08</td>
<td>-0.12414</td>
<td>-0.09731</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GH</td>
<td>0.14</td>
<td>0.18993</td>
<td>0.24954</td>
<td>0.11</td>
<td>0.05271</td>
<td>-0.01571</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VT</td>
<td>-0.08</td>
<td>-0.01883</td>
<td>0.02877</td>
<td>0.34</td>
<td>0.27100</td>
<td>0.23534</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SF</td>
<td>0.02</td>
<td>-0.01324</td>
<td>-0.00753</td>
<td>0.24</td>
<td>0.26460</td>
<td>0.26876</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RE</td>
<td>0.004</td>
<td>-0.14971</td>
<td>-0.19206</td>
<td>0.22</td>
<td>0.35922</td>
<td>0.43407</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MH</td>
<td>-0.31</td>
<td>-0.27145</td>
<td>-0.22069</td>
<td>0.54</td>
<td>0.48753</td>
<td>0.48581</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**b. Weights for each cohort of the ALSWH Sample at Survey 1 (1996)**

<table>
<thead>
<tr>
<th>SF-36 Scale</th>
<th>PCS</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>MCS</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Younger</td>
<td>Mid-age</td>
<td>Older</td>
<td>Younger</td>
<td>Mid-age</td>
<td>Older</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PF</td>
<td>0.42104</td>
<td>0.42505</td>
<td>0.39753</td>
<td>-0.16728</td>
<td>-0.21184</td>
<td>-0.24505</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RP</td>
<td>0.42107</td>
<td>0.31254</td>
<td>0.26911</td>
<td>-0.12072</td>
<td>-0.07672</td>
<td>-0.07208</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP</td>
<td>0.40355</td>
<td>0.37490</td>
<td>0.37008</td>
<td>-0.10649</td>
<td>-0.14692</td>
<td>-0.21559</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GH</td>
<td>0.21642</td>
<td>0.27666</td>
<td>0.24270</td>
<td>0.06805</td>
<td>-0.03099</td>
<td>-0.03739</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VT</td>
<td>0.02994</td>
<td>0.02174</td>
<td>0.13676</td>
<td>0.24627</td>
<td>0.23619</td>
<td>0.11487</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SF</td>
<td>-0.00666</td>
<td>-0.02547</td>
<td>0.02453</td>
<td>0.27640</td>
<td>0.28803</td>
<td>0.24621</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RE</td>
<td>-0.21297</td>
<td>-0.19674</td>
<td>-0.22946</td>
<td>0.37987</td>
<td>0.41369</td>
<td>0.52697</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MH</td>
<td>-0.14783</td>
<td>-0.19583</td>
<td>-0.27163</td>
<td>0.37566</td>
<td>0.43151</td>
<td>0.58489</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The SAS code to compute the component scores is:

```sas
/* **********************************************************
 *                 COMPUTE Z SCORES                    *
 * **********************************************************
 *
 * MEAN AND SD FROM THE FACTOR ANALYTIC SAMPLE OF THE *
 * AUSTRALIAN POPULATION AGED 18 TO 24 YEARS (YOUNGER), *
 * 45 TO 54 YEARS (MID-AGE) & 65+ YEARS (OLDER)         *
 * REF: STEPHENSON                                       *
 */
/* YOUNG */
PF_ZA=(PF-90.9)/17.5;
RP_ZA=(RP-86.7)/28.7;
BP_ZA=(BP-82.1)/20.8;
GH_ZA=(GH-73.9)/19.5;
VT_ZA=(VT-63.4)/18.9;
SF_ZA=(SF-84.0)/20.0;
RE_ZA=(RE-84.6)/29.9;
MH_ZA=(MH-73.0)/15.8;
/* MID */
PF_ZA=(PF-83.5)/21.4;
RP_ZA=(RP-84.2)/32.4;
BP_ZA=(BP-77.8)/23.5;
GH_ZA=(GH-73.5)/20.0;
VT_ZA=(VT-64.8)/18.3;
SF_ZA=(SF-86.5)/20.8;
RE_ZA=(RE-86.9)/29.0;
MH_ZA=(MH-75.0)/15.4;
/* OLD */
PF_ZA=(PF-57.3)/28.8;
RP_ZA=(RP-56.0)/42.8;
BP_ZA=(BP-65.4)/28.6;
GH_ZA=(GH-61.1)/22.4;
VT_ZA=(VT-57.4)/21.4;
SF_ZA=(SF-77.3)/27.7;
RE_ZA=(RE-72.1)/37.0;
MH_ZA=(MH-75.3)/17.3;
```

ALSWH Data Dictionary Supplement
Section 2 Core Survey Dataset
2.3 Health-related Quality of Life Variables
SF-36 – Standardised Component Scores
/* MEAN AND SD FROM THE ALSWH SAMPLE (AUSTRALIA) */
/* SEPARATELY FOR EACH AGE COHORT */
******************************************************************************
/* YOUNG */
PF_ZB=(PF - 90.19)/15.42;
RP_ZB=(RP - 82.82)/30.35;
BP_ZB=(BP - 74.18)/21.47;
GH_ZB=(GH - 68.34)/20.56;
VT_ZB=(VT - 56.64)/19.81;
SF_ZB=(SF - 76.03)/23.16;
RE_ZB=(RE - 69.98)/37.40;
MH_ZB=(MH - 67.91)/18.27;
/* MID */
PF_ZB=(PF - 85.08)/18.66;
RP_ZB=(RP - 79.57)/35.22;
BP_ZB=(BP - 70.65)/23.80;
GH_ZB=(GH - 71.90)/20.60;
VT_ZB=(VT - 58.08)/20.94;
SF_ZB=(SF - 81.38)/23.72;
RE_ZB=(RE - 76.96)/36.33;
MH_ZB=(MH - 72.12)/18.00;
/* OLD */
PF_ZB=(PF - 63.35)/25.94;
RP_ZB=(RP - 57.39)/43.24;
BP_ZB=(BP - 65.09)/26.68;
GH_ZB=(GH - 65.36)/22.04;
VT_ZB=(VT - 60.02)/20.90;
SF_ZB=(SF - 81.09)/25.58;
RE_ZB=(RE - 75.80)/37.87;
MH_ZB=(MH - 76.52)/17.21;
******************************************************************************
/* MEAN AND SD FROM AUSTRALIAN ADULT POPULATION */
/* THE NATIONAL HEALTH SURVEY:SF-36 POPULATION NORMS 1995 */
******************************************************************************
PF_ZC=(PF - 83.46290)/23.22864;
RP_ZC = (RP - 80.28166) / 34.83783;
BP_ZC = (BP - 76.94163) / 24.83714;
GH_ZC = (GH - 71.81575) / 20.35165;
VT_ZC = (VT - 64.47694) / 19.77187;
SF_ZC = (SF - 85.05929) / 22.29047;
RE_ZC = (RE - 83.19165) / 32.15215;
MH_ZC = (MH - 75.97772) / 16.96210;

/*************************************************************
* MEAN AND SD FROM US ADULT POPULATION                *
* SF-36 Physical & Mental Health Summary Scales:     *
* A User's Manual                                   *
*************************************************************/
PF_ZD = (PF - 84.52404) / 22.89490;
RP_ZD = (RP - 81.19907) / 33.79729;
BP_ZD = (BP - 75.49196) / 23.55879;
GH_ZD = (GH - 72.21316) / 20.16964;
VT_ZD = (VT - 61.05453) / 20.86942;
SF_ZD = (SF - 83.59753) / 22.37642;
RE_ZD = (RE - 81.29467) / 33.02717;
MH_ZD = (MH - 74.84212) / 18.01189;

/*************************************************************
* COMPUTE SAMPLE RAW FACTOR SCORES WHEN ALL 8 SCALES NON-MISSING *
*************************************************************/
* Z SCORES ARE FROM ABOVE WITH SCORING COEFFICIENTS FROM     *
* A. AUSTRALIAN POPULATION AGE SPECIFIED pg 76 McCULLUM    *
* B. ALSWH SAMPLE AT SURVEY 1                              *
* C. AUSTRALIAN ADULT POPULATION                           *
* D. US POPULATION                                       *
/*************************************************************/
/* YOUNG, MID AND OLD */;
prawa = (PF_ZA * .44) + (RP_ZA * .41) + (BP_ZA * .32) + (SF_ZA * .02) + 
       (MH_ZA * -.31) + (RE_ZA * .004) + (VT_ZA * -.08) + (GH_ZA * .14);

mrawa = (PF_ZA * -.20) + (RP_ZA * -.17) + (BP_ZA * -.08) + (SF_ZA * .24) + 
       (MH_ZA * .54) + (RE_ZA * .22) + (VT_ZA * .34) + (GH_ZA * .11);
/* YOUNG */
prawb = (PF_ZB * 0.42104) + (RP_ZB * 0.42107) + (BP_ZB * 0.40355) +
        (SF_ZB * -0.00666) + (MH_ZB * -0.14783) + (RE_ZB * -0.21297) +
        (VT_ZB * 0.02994) + (GH_ZB * 0.21642);

mrawb = (PF_ZB * -0.16728) + (RP_ZB * -0.12072) + (BP_ZB * -0.10649) +
        (SF_ZB * 0.27640) + (MH_ZB * 0.37566) + (RE_ZB * 0.37987) +
        (VT_ZB * 0.24627) + (GH_ZB * 0.06805);

/* MID */
prawb = (PF_ZB * 0.42505) + (RP_ZB * 0.31254) + (BP_ZB * 0.37490) +
        (SF_ZB * -0.02547) + (MH_ZB * -0.19583) + (RE_ZB * -0.19674) +
        (VT_ZB * 0.02174) + (GH_ZB * 0.27666);

mrawb = (PF_ZB * -0.21184) + (RP_ZB * -0.07672) + (BP_ZB * -0.14692) +
        (SF_ZB * 0.28803) + (MH_ZB * 0.43151) + (RE_ZB * 0.41369) +
        (VT_ZB * 0.23619) + (GH_ZB * -0.03099);

/* OLD */
prawb = (PF_ZB * 0.39753) + (RP_ZB * 0.26911) + (BP_ZB * 0.37008) +
        (SF_ZB * 0.02453) + (MH_ZB * -0.27163) + (RE_ZB * -0.22946) +
        (VT_ZB * 0.13676) + (GH_ZB * 0.24270);

mrawb = (PF_ZB * -0.24505) + (RP_ZB * -0.07208) + (BP_ZB * -0.21559) +
        (SF_ZB * 0.24621) + (MH_ZB * 0.58489) + (RE_ZB * 0.52697) +
        (VT_ZB * 0.11487) + (GH_ZB * -0.03739);

/* YOUNG, MID AND OLD */
prawc = (PF_ZC * 0.47268) + (RP_ZC * 0.38210) + (BP_ZC * 0.36750) +
        (GH_ZC * 0.18993) + (VT_ZC * -0.01883) + (SF_ZC * -0.01324) +
        (RE_ZC * -0.14971) + (MH_ZC * -0.27145);

mrawc = (PF_ZC * -0.24358) + (RP_ZC * -0.13410) + (BP_ZC * -0.12414) +
        (GH_ZC * 0.05271) + (VT_ZC * 0.27100) + (SF_ZC * -0.26460) + (RE_ZC * 0.35922) + (MH_ZC * 0.48753);

prawd = (PF_ZD * 0.42402) + (RP_ZD * 0.35119) + (BP_ZD * 0.37154) + (GH_ZD *
0.24954 + (VT_ZD * 0.02877) + (SF_ZD * -0.00753) + (RE_ZD * -0.19206) + (MH_ZD * -0.22069);

mrawd = (PF_ZD * -0.22999) + (RP_ZD * -0.12329) + (BP_ZD * -0.09731) + (GH_ZD * -0.01571) + (VT_ZD * 0.23534) + (SF_ZD * 0.26876) + (RE_ZD * 0.43407) + (MH_ZD * 0.48581);

/*******************************************************************************/
/* CALCULATE PCS AND MCS */
/*******************************************************************************/

PCS_ABS = (prawc*10) + 50;
MCS_ABS = (mrawc*10) + 50;

PCS_US = (prawd*10) + 50;
MCS_US = (mrawd*10) + 50;
The SAS code the component scores is:

```
/***********************************************************
*                    COMPUTE Z SCORES                     *
************************************************************
*    MEAN AND SD FROM THE FACTOR ANALYTIC SAMPLE OF THE   *
*    AUSTRALIAN POPULATION AGED 18 TO 24 YEARS (YOUNGER), *
*    45 TO 54 YEARS (MID-AGE) & 65+ YEARS (OLDER)         *
*    REF: STEPHENSON *
***********************************************************/

/* YOUNG */;
PF_ZA=(PF-90.9)/17.5;
RP_ZA=(RP-86.7)/28.7;
BP_ZA=(BP-82.1)/20.8;
GH_ZA=(GH-73.9)/19.5;
VT_ZA=(VT-63.4)/18.9;
SF_ZA=(SF-84.0)/20.0;
RE_ZA=(RE-84.6)/29.9;
MH_ZA=(MH-73.0)/15.8;
/* MID */;
PF_ZA=(PF-83.5)/21.4;
RP_ZA=(RP-84.2)/32.4;
BP_ZA=(BP-77.8)/23.5;
GH_ZA=(GH-73.5)/20.0;
VT_ZA=(VT-64.8)/18.3;
SF_ZA=(SF-86.5)/20.8;
RE_ZA=(RE-86.9)/29.0;
MH_ZA=(MH-75.0)/15.4;
/* OLD */;
PF_ZA=(PF-57.3)/28.8;
RP_ZA=(RP-56.0)/42.8;
BP_ZA=(BP-65.4)/28.6;
GH_ZA=(GH-61.1)/22.4;
VT_ZA=(VT-57.4)/21.4;
SF_ZA=(SF-77.3)/27.7;
RE_ZA=(RE-72.1)/37.0;
MH_ZA=(MH-75.3)/17.3;
```

ALSWH Data Dictionary Supplement
Section 2 Core Survey Dataset
2.3 Health-related Quality of Life Variables
SF-36 – Standardised Component Scores
/* MEAN AND SD FROM THE ALSWH SAMPLE (AUSTRALIA) */
/* SEPARATELY FOR EACH AGE COHORT */
***********************************************************************/
/* YOUNG */;
PF_ZB=(PF-90.19)/15.42;
RP_ZB=(RP-82.82)/30.35;
BP_ZB=(BP-74.18)/21.47;
GH_ZB=(GH-68.34)/20.56;
VT_ZB=(VT-56.64)/19.81;
SF_ZB=(SF-76.03)/23.16;
RE_ZB=(RE-69.98)/37.40;
MH_ZB=(MH-67.91)/18.27;
/* MID */;
PF_ZB=(PF-85.08)/18.66;
RP_ZB=(RP-79.57)/35.22;
BP_ZB=(BP-70.65)/23.80;
GH_ZB=(GH-71.90)/20.60;
VT_ZB=(VT-58.08)/20.94;
SF_ZB=(SF-81.38)/23.72;
RE_ZB=(RE-76.96)/36.33;
MH_ZB=(MH-72.12)/18.00;
/* OLD */;
PF_ZB=(PF-63.35)/25.94;
RP_ZB=(RP-57.39)/43.24;
BP_ZB=(BP-65.09)/26.68;
GH_ZB=(GH-65.36)/22.04;
VT_ZB=(VT-60.02)/20.90;
SF_ZB=(SF-81.09)/25.58;
RE_ZB=(RE-75.80)/37.87;
MH_ZB=(MH-76.52)/17.21;

/***********************************************************************/
/* MEAN AND SD FROM AUSTRALIAN ADULT POPULATION */
/* THE NATIONAL HEALTH SURVEY:SF-36 POPULATION NORMS 1995 */
***********************************************************************/
PF_ZC=(PF-83.46290)/23.22864;
RP_ZC=(RP-80.28166)/34.83783;
BP_ZC=(BP-76.94163)/24.83714;
GH_ZC=(GH-71.81575)/20.35165;
VT_ZC=(VT-64.47694)/19.77187;
SF_ZC=(SF-85.05929)/22.29047;
RE_ZC=(RE-83.19165)/32.15215;
MH_ZC=(MH-75.97772)/16.96210;

/**************************************************************************/
* MEAN AND SD FROM US ADULT POPULATION *
* SF-36 Physical & Mental Health Summary Scales: *
* A User's Manual *
***************************************************************************/
PF_ZD=(PF-84.52404)/22.89490;
RP_ZD=(RP-81.19907)/33.79729;
BP_ZD=(BP-75.49196)/23.55879;
GH_ZD=(GH-72.21316)/20.16964;
VT_ZD=(VT-61.05453)/20.86942;
SF_ZD=(SF-83.59753)/22.37642;
RE_ZD=(RE-81.29467)/33.02717;
MH_ZD=(MH-74.84212)/18.01189;

/**************************************************************************/
* COMPARE Z SCORES FOR ALL 8 FACTORS NON-MISSING *
***************************************************************************/
* Z SCORES ARE FROM ABOVE WITH SCORING COEFFICIENTS FROM *
* A. AUSTRALIAN POPULATION = AGE SPECIFIED pg 76 MCCALLUM *
* B. ALSWH SAMPLE AT SURVEY 1 *
* C. AUSTRALIAN ADULT POPULATION *
* D. US POPULATION *
***************************************************************************/
/* YOUNG, MID AND OLD */;
prawa =(PF_ZA * .44) + (RP_ZA * .41) + (BP_ZA * .32) + (SF_ZA * 0.02) +
(MH_ZA * -.31) + (RE_ZA * 0.004) + (VT_ZA * -.08) + (GH_ZA * 0.14);
mrawa =(PF_ZA * -.20) + (RP_ZA * -.17) + (BP_ZA * -.08) + (SF_ZA * .24) +
(MH_ZA * .54) + (RE_ZA * .22) + (VT_ZA * 0.34) + (GH_ZA * 0.11) ;
/* YOUNG */;
prawb = (PF_ZB * 0.42104) + (RP_ZB * 0.42107) + (BP_ZB * 0.40355) +
       (SF_ZB * -0.00666) + (MH_ZB * -0.14783) + (RE_ZB * -0.21297) +
       (VT_ZB * 0.02994) + (GH_ZB * 0.21642);

mrawb = (PF_ZB * -0.16728) + (RP_ZB * -0.12072) + (BP_ZB * -0.10649) +
       (SF_ZB * 0.27640) + (MH_ZB * 0.37566) + (RE_ZB * 0.37987) +
       (VT_ZB * 0.24627) + (GH_ZB * 0.06805);

/* MID */;
prawb = (PF_ZB * 0.42505) + (RP_ZB * 0.31254) + (BP_ZB * 0.37490) +
       (SF_ZB * -0.02547) + (MH_ZB * -0.19583) + (RE_ZB * -0.19674) +
       (VT_ZB * 0.02174) + (GH_ZB * 0.27666);

mrawb = (PF_ZB * -0.21184) + (RP_ZB * -0.07672) + (BP_ZB * -0.14692) +
       (SF_ZB * 0.28803) + (MH_ZB * 0.43151) + (RE_ZB * 0.41369) +
       (VT_ZB * 0.23619) + (GH_ZB * -0.03099);

/* OLD */;
prawb = (PF_ZB * 0.39753) + (RP_ZB * 0.26911) + (BP_ZB * 0.37008) +
       (SF_ZB * 0.02453) + (MH_ZB * -0.27163) + (RE_ZB * -0.22946) +
       (VT_ZB * 0.13676) + (GH_ZB * 0.24270);

mrawb = (PF_ZB * -0.24505) + (RP_ZB * -0.07208) + (BP_ZB * -0.21559) +
       (SF_ZB * 0.24621) + (MH_ZB * 0.58489) + (RE_ZB * 0.52697) +
       (VT_ZB * 0.11487) + (GH_ZB * -0.03739);

/* YOUNG, MID AND OLD */;
prawc = (PF_ZC * 0.47268) + (RP_ZC * 0.38210) + (BP_ZC * 0.36750) +
       (GH_ZC * 0.18993) + (VT_ZC * -0.01883) + (SF_ZC * -0.01324) +
       (RE_ZC * -0.14971) + (MH_ZC * -0.27145);

mrawc = (PF_ZC * -0.24358) + (RP_ZC * -0.13410) + (BP_ZC * -0.12414) +
       (GH_ZC * 0.05271) + (VT_ZC * 0.27100) + (SF_ZC * 0.26460) + (RE_ZC * 0.35922) + (MH_ZC * 0.48753);

prawd = (PF_ZD * 0.42402) + (RP_ZD * 0.35119) + (BP_ZD * 0.31754) + (GH_ZD *
### SF-36 – Standardised Component Scores

0.24954 + (VT\_ZD * 0.02877) + (SF\_ZD * -0.00753) + (RE\_ZD * -0.19206) + (MH\_ZD * -0.22069);

\[
\text{mrawd} = (PF\_ZD * -0.22999) + (RP\_ZD * -0.12329) + (BP\_ZD * -0.09731) + (GH\_ZD * -0.01571) + (VT\_ZD * 0.23534) + (SF\_ZD * 0.26876) + (RE\_ZD * 0.43407) + (MH\_ZD * 0.48581);
\]

---

**CALCULATE PCS AND MCS**

---

/* A. AUSTRALIAN POPULATION AGE SPECIFIC pg 76 McCallum */

/* B. ALSWH SAMPLE AT SURVEY 1 */

/* C. AUSTRALIAN ADULT POPULATION */

/* D. US POPULATION */

---

/* YOUNG, MID AND OLD */;

**PCS** = (pRAW*10) + 50;

**MCS** = (mRAW*10) + 50;

**PCS\_WH** = (pRAWb*10) + 50;

**MCS\_WH** = (mRAWb*10) + 50;

**PCS\_ABS** = (pRAWc*10) + 50;

**MCS\_ABS** = (mRAWc*10) + 50;

**PCS\_US** = (pRAWd*10) + 50;

**MCS\_US** = (mRAWd*10) + 50;
Screening for Depression with the SF-36

Both the MH scores\(^6\) and the MCS\(^2\) have been evaluated as screening tools for depression, with recommended cut-points are shown. The appropriateness of these cut-points has been confirmed for depression but not anxiety in a subsequent analysis\(^7\).

<table>
<thead>
<tr>
<th>Cut-point</th>
<th>Area under the ROC curve</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>MH 52 or below</td>
<td>0.77</td>
<td>73.7%</td>
<td>80.6%</td>
</tr>
<tr>
<td>MCS 42 or below</td>
<td>0.76</td>
<td>66.8%</td>
<td>86.2%</td>
</tr>
</tbody>
</table>

References


2. Ware JE, Kosinski M, Keller SD. *SF-36 Physical and Mental Health Summary Scales: A users manual.* The Health Institute, New England Medical Centre, Boston, Massachusetts, December 1994. 4th printing


