# **Appendix Report B** FACT-8D utility algorithm and scoring instructions

This appendix contains instructions for calculating FACT-8D utility scores from FACT-G responses, whether collected from the FACT-G or any related FACIT questionnaire containing FACT-G items.

STATA and SPSS syntax to implement this utility scoring algorithm with Australian utility decrements is also provided.

Australian utility decrements are included in Table 1 and the STATA and SPSS syntax, but the general principles hold for utility sets from other countries.

## Instructions

For any patient *p* who has provided responses to the nine FACT-G items in Table 1 (whether via completion of the FACT-G or any related FACIT questionnaires containing these items), that patient’s FACT-8D utility score is calculated as follows.

First, determine the corresponding level *l* for each dimension *d* and the associated utility decrement(*wdl*), following the mapping of FACT-G items levels to Australian FACT-8D utility decrements in Table 1 (estimated from the Australian general population).

## FACT-8D scoring algorithm

A utility score of 1 is assigned to patients whose FACT-G scores indicate they are at level 1 of all 8 dimensions of the FACT-8D. For all other health states, the utility score is 1 minus each the utility decrement (*wdl*) for each level down from no problems in each of the 8 FACT-8D dimensions.

$$FACT–8D\_{p} =1-\sum\_{d=1}^{8}w\_{dl}| FACT–8D\_{dlp}$$

For example, a health state with *quite a bit of* *pain*, *somewhat lacking energy,* *not at all able to work*, *feeling a little bit sad*, getting *very much emotional support from family* and *a little support from friends, sleeping very (much) well*, *no nausea*, and *not at all worried that condition will worsen*, would be valued at 1 minus the decrements for *Pain* level 4, *Fatigue* level 3, and *Work* level 5 = 1 – 0.186 – 0.056 – 0.185 ) = 0.573. The best possible health state has a value of 1, and the worst possible state has a value of -0.54 (1 – 0.398 – 0.130 – 0.282 – 0.112 – 0.185 – 0.176 – 0.134 – 0.132).

STATA and SPSS syntax to implement this utility scoring algorithm is provided below.

**Table** **1** FACT-8D descriptive system: how the dimensions and levels map to the 9 component FACT-G items, and associated Australian utility decrements

|  |  |  |
| --- | --- | --- |
| **FACT-8D Dimension** (*d*)*FACT-G question* | **FACT-G item** | **FACT-G item level** (*l*) **and associated utility decrement** (*wdl*) |
| **Level 1****BEST** | **Level 2** | **Level 3** | **Level 4** | **Level 5****WORST** |
| **Pain** *I have pain* | GP4 | Not at all0 | A little bit-0.047 | Somewhat-0.085 | Quite a bit-0.186 | Very much-0.398 |
| **Fatigue (lack of energy)***I have a lack of energy* | GP1 | Not at all0 | A little bit0 | Somewhat-0.056 | Quite a bit-0.130 | Very much-0.130 |
| **Nausea** *I have nausea* | GP2 | Not at all0 | A little bit-0.091 | Somewhat-0.104 | Quite a bit-0.195 | Very much-0.282 |
| **Sleep***I am sleeping well* | GF5 | Very much0 | Quite a bit0 | Somewhat0 | A little bit-0.112 | Not at all-0.112 |
| **Work** *I am able to work (include work at home)* | GF1 | Very much0 | Quite a bit-0.051 | Somewhat-0.051 | A little bit-0.087 | Not at all-0.185 |
| **Support\***  *I get emotional support from my family and support from my friends*  | GS2, GS3 | Very much0 | Quite a bit-0.009 | Somewhat-0.009 | A little bit-0.104 | Not at all-0.176 |
| **Sadness***I feel sad* | GE1 | Not at all0 | A little bit0 | Somewhat-0.070 | Quite a bit-0.111 | Very much-0.134 |
| **Worry my health will get worse** *I worry that my condition will get worse*  | GE6 | Not at all0 | A little bit-0.087 | Somewhat-0.087 | Quite a bit-0.103 | Very much-0.132 |

\*For the Support dimension, take the better of the two items.

## STATA syntax

**STATA code to calculate FACT-8D utility scores from FACT-G responses using Australian utility set**

Written by Richard Norman richard.norman@curtin.edu.au

9th December 2019

\* This code is designed to convert FACT-G responses into FACT-8D utility weights.

\* It uses the Australian DCE-derived weights developed by [removed to prevent

\* unblinding during peer-review].

\* It is based on the assumption that the underlying data are coded between 0 and 4

\* where 0 means 'Not at all', 1 means 'A little bit', 2 means 'Somewhat',

\* 3 means 'Quite a bit', and 4 means 'Very much'. The coding of the variables

\* is clustered by domain, so Physical Well-Being items are labelled GP1-GP7,

\* Social / Family Well-Being items are labelled GS1-GS7, Emotional Well-Being items

\* are labelled GE1-GE6, and Functional Well-Being are labelled GF1-GF7.

gen pai = gp4

gen fat = gp1

gen nau = gp2

gen sle = 4-gf5

gen wrk = 4-gf1

gen sup = 4 - max(gs2,gs3)

gen sad = ge1

gen wor = ge6

gen paidec=.

replace paidec=0 if pai==0

replace paidec=-0.047 if pai==1

replace paidec=-0.085 if pai==2

replace paidec=-0.186 if pai==3

replace paidec=-0.398 if pai==4

gen fatdec=.

replace fatdec=0 if fat==0

replace fatdec=0 if fat==1

replace fatdec=-0.056 if fat==2

replace fatdec=-0.130 if fat==3

replace fatdec=-0.130 if fat==4

gen naudec=.

replace naudec=0 if nau==0

replace naudec=-0.091 if nau==1

replace naudec=-0.104 if nau==2

replace naudec=-0.195 if nau==3

replace naudec=-0.282 if nau==4

gen sledec=.

replace sledec=0 if sle==0

replace sledec=0 if sle==1

replace sledec=0 if sle==2

replace sledec=-0.112 if sle==3

replace sledec=-0.112 if sle==4

gen wrkdec=.

replace wrkdec=0 if wrk==0

replace wrkdec=-0.051 if wrk==1

replace wrkdec=-0.051 if wrk==2

replace wrkdec=-0.087 if wrk==3

replace wrkdec=-0.185 if wrk==4

gen supdec=.

replace supdec=0 if sup==0

replace supdec=-0.009 if sup==1

replace supdec=-0.009 if sup==2

replace supdec=-0.104 if sup==3

replace supdec=-0.176 if sup==4

gen saddec=.

replace saddec=0 if sad==0

replace saddec=0 if sad==1

replace saddec=-0.070 if sad==2

replace saddec=-0.111 if sad==3

replace saddec=-0.134 if sad==4

gen wordec=.

replace wordec=0 if wor==0

replace wordec=-0.087 if wor==1

replace wordec=-0.087 if wor==2

replace wordec=-0.103 if wor==3

replace wordec=-0.132 if wor==4

gen fact8d = 1 + paidec + fatdec + naudec + sledec + wrkdec + supdec + saddec + wordec

## SPSS syntax

**SPSS code to calculate FACT-8D utility scores from FACT-G responses using Australian utility set**

Written by Daniel Costa daniel.costa@sydney.edu.au

16th December 2020

\* Encoding: UTF-8.

\* Encoding: .

\* This code is designed to convert FACT-G responses into FACT-8D utility weights.

\* It uses the Australian DCE-derived weights developed by [removed to prevent

\* unblinding during peer-review].

\* It is based on the assumption that the underlying data are coded between 0 and 4

\* where 0 means 'Not at all', 1 means 'A little bit', 2 means 'Somewhat',

\* 3 means 'Quite a bit', and 4 means 'Very much'. The coding of the variables

\* is clustered by domain, so Physical Well-Being items are labelled GP1-GP7,

\* Social / Family Well-Being items are labelled GS1-GS7, Emotional Well-Being items

\* are labelled GE1-GE6, and Functional Well-Being are labelled GF1-GF7.

compute pai = gp4.

compute fat = gp1.

compute nau = gp2.

compute sle = 4-gf5.

compute wrk = 4-gf1.

compute sup = 4 - max(gs2,gs3).

compute sad = ge1.

compute wor = ge6.

exe.

compute paidec=$sysmis.

if pai=0 paidec=0.

if pai=1 paidec=-0.047.

if pai=2 paidec=-0.085.

if pai=3 paidec=-0.186.

if pai=4 paidec=-0.398.

compute fatdec= $sysmis.

if fat=0 fatdec=0.

if fat=1 fatdec=0.

if fat=2 fatdec=-0.056.

if fat=3 fatdec=-0.130.

if fat=4 fatdec=-0.130.

compute naudec=$sysmis.

if nau=0 naudec=0.

if nau=1 naudec=-0.091.

if nau=2 naudec=-0.104.

if nau=3 naudec=-0.195.

if nau=4 naudec=-0.282.

compute sledec=$sysmis.

if sle=0 sledec=0.

if sle=1 sledec=0.

if sle=2 sledec=0.

if sle=3 sledec=-0.112.

if sle=4 sledec=-0.112.

compute wrkdec=$sysmis.

if wrk=0 wrkdec=0.

if wrk=1 wrkdec=-0.051.

if wrk=2 wrkdec=-0.051.

if wrk=3 wrkdec=-0.087.

if wrk=4 wrkdec=-0.185.

compute supdec=$sysmis.

if sup=0 supdec=0.

if sup=1 supdec=-0.009.

if sup=2 supdec=-0.009.

if sup=3 supdec=-0.104.

if sup=4 supdec=-0.176.

compute saddec=$sysmis.

if sad=0 saddec=0.

if sad=1 saddec=0.

if sad=2 saddec=-0.070.

if sad=3 saddec=-0.111.

if sad=4 saddec=-0.134.

compute wordec=$sysmis.

if wor=0 wordec=0.

if wor=1 wordec=-0.087.

if wor=2 wordec=-0.087.

if wor=3 wordec=-0.103.

if wor=4 wordec=-0.132.

compute fact8d = 1 + paidec + fatdec + naudec + sledec + wrkdec + supdec + saddec + wordec.

exe.