The 12-item Short Form Survey (SF-12) is a general health questionnaire that was first published in 1995 as part of the Medical Outcomes Study (MOS). The SF-12 was constructed using questions drawn from each of the 8 dimensions of the MOS 36 item Short Form Survey (SF-36). It is designed to have similar performance to the SF-36, while taking less time to complete.

Two summary scores are reported from the SF-12 – a mental component score (MCS-12) and a physical component score (PCS-12). The scores may be reported as Z-scores (difference compared to the population average, measured in standard deviations). The United States population average PCS-12 and MCS-12 are both 50 points. The United States population standard deviation is 10 points. So each 10 increment of 10 points above or below 50, corresponds to one standard deviation away from the average.

Version 1 of the SF-12 is non-proprietary, and the scores that are calculated are in reference to the United States population profile at the time of the original publication in 1994. Subsequent updates to the SF-12 have been made that align the scores with more recent U.S. demographics. However, these updates are proprietary, unlike the original SF-12. Although differences in scores between different scoring systems for the SF-12 may be minor, clinicians and researchers should note the version of the SF-12 they are using.

There are two versions of the SF-12 which have some differences in scoring so it is recommended that users document which version they are using.

Changes in SF-12 Version 1 to get to SF-12 Version 2

Version 2 of the SF-12 differs from Version 1 in several ways. Changes in the administration of the SF-12 are based on more than 10 years of experience with findings reported in thousands of publications based on the SF-36 and SF-12 (Version 1) Health Surveys (Ware et al., 2002). A brief description of similarities and differences between the two versions is included below:

- Both versions use the same basic 12 questions to measure physical and mental health status. However, changes were made to question wording, instructions and formatting for the second version;
- These changes in the layout and response category options for the second version are meant to make it easier to read and complete the questions, thereby reducing missing responses;
- The second version is designed to provide greater comparability with translations and cultural adaptations that are widely-used in the U.S. and other countries;
- Four items in the second version were changed from dichotomous to five-level response categories;
- Six-level response categories were changed to five-level response categories to simplify items in the Mental Health and Vitality scales.

Scoring the SF-12 Version 1	Scoring the SF-12 Version 2
Code out of range values as missing	Code out of range values as missing
Reverse score Items #1, #8, #9, #10	Reverse score Items #5, #6a, 6b

		Recalibrate #1: 1=>5, 2=>4.4, 3=>3.4, 4=>2, 5=>1
	In general, would you say your health is:	
	During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?	
	Have you felt calm and peaceful? …………….	
	Did you have a lot of energy?…………………	

Create indicator variables	Create 8 scales
Apply weights	Standardize to a 100 point scales
Norm based standardization	Transform to z-scores
Sum the 35 items in the PCS and the 35 items in the MCS scale	Create aggregate scales by applying varimax rotated factor scoring
	Transform to T-scores

References:

Ware Jr, John E., Mark Kosinski, and Susan D. Keller. "A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity." Medical care 34.3 (1996): 220-233.Validation Literature:

Gandek, Barbara, et al. "Cross-validation of item selection and scoring for the SF-12 Health Survey in nine countries: results from the IQOLA Project." Journal of clinical epidemiology51.11 (1998): 1171-1178.
Jenkinson, Crispin, et al. "A shorter form health survey: can the SF-12 replicate results from the SF-36 in longitudinal studies?." Journal of Public Health 19.2 (1997): 179-186.Additional Literature:

Ware, John E., Susan D. Keller, and Mark Kosinski. SF-12: How to score the SF-12 physical and mental health summary scales. Health Institute, New England Medical Center, 1995.

Scoring Algorithm for Version 2

1. Recode out of range values to missing
2. Reverse score items #5, #6a, #6b
3. Recalibrate item #1

Original / Raw value	Recalibrated value
1	5
2	4.4
3	3.4
4	2.0
5	1

4. Create 8 summative scale scores by summing responses to the questions in each scale

Scale	Questions	# items	Highest possible score	Lowest possible score	Range of possible scores
PF	2a, 2b	2			
RP	3a, 3b	2			
BP	5	1			
GH	1	1			
VT	6b	1			
SF	7	1			
RE	4a, 4b	2			
MH	6a, 6c	2			

5. Rescale the 8 scales by the formula:

$$Rescaled\ Scale = \frac{Summative\ Scale - \#items\ in\ scale}{Range\ of\ possible\ values\ in\ Summative\ Scale}$$

6. Transform the Rescaled scored to z-scores using the US Normative Values

$$Z - score = \frac{Rescaled\ Score - US\ mean\ value}{US\ standard\ deviation\ value}$$

Scale	US Mean	US Standard Deviation
PF	81.18122	29.10588
RP	80.52856	27.13526
BP	81.74015	24.53019
GH	72.19795	23.19041
VT	55.59090	24.84380
SF	83.73973	24.75775
RE	86.41051	22.35543
MH	70.18217	20.50597

7. Create Aggregate Scale Score using Factor Weights

Scale	PCS Weight	MCS Weight
PF	0.42402	-0.22999
RP	0.35119	-0.12329
BP	0.31754	-0.09731
GH	0.24954	-0.01571
VT	0.02877	0.23534
SF	-0.00753	0.26876
RE	-0.19206	0.43407
MH	-0.22069	0.48581

8. Transform Aggregate Scale Score to a T-score with Mean=50 and Standard Deviation =10

$$T - score = \ 50 + (Aggregate\ Scale\ Score * 10)$$