SF-36: Interim norms for Australian data

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Summary

This working paper presents interim Australian norms for the Medical Outcomes Study Short Form 36 health status questionnaire (SF-36). These norms are based on a sample of 6,903 Australian adults collected during 1994 and 1995 using the Australian Bureau of Statistics Population Survey Monitor.

These norms are described as 'interim norms' because they will be superseded by norms based on data collected from approximately 18,000 Australian adults as part of the Australian Bureau of Statistics National Health Survey. However, the National Health Survey results will not be available until the end of 1996, so the norms published here are intended for use in the interim.

Chapter 1 of this paper presents the background to this analysis and briefly describes the Population Survey Monitor. Chapter 2 is a discussion of the statistical issues involved in using these norms. Chapter 3 is a discussion of the interpretation of these norms and includes a description of each of the data items presented in the tables. Chapter 4 presents the norms classified by age and sex. Chapter 5 presents SF-36 profiles for selected demographic and socio-economic groups. Chapter 6 presents SF-36 profiles for selected health related behaviours and risk factors.

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1. Introduction

1.1 Background

The Medical Outcomes Study (MOS) was a large scale study carried out in the United States in the mid 1980s. One of its purposes was to develop more practical tools for monitoring patient outcomes and their determinants in routine practice. One of the outcomes of this study was the development of a general health survey that was designed to be comprehensive and psychometrically sound, yet short enough to be practical for use in large scale studies of patients in a clinical setting. At first a 20 item questionnaire was developed. After further studies on its use and validity, some items were refined and further items were added. The result was a 36 item questionnaire known as the MOS 36 Item Short Form Health Survey or, more commonly, as the SF-36.

The SF-36 was designed to measure eight different aspects of health, using eight different scales. These are:

- physical functioning
- role limitations because of physical health problems
- bodily pain
- social functioning
- general mental health (psychological distress and psychological well-being)
- role limitations due to emotional problems
- vitality (energy/fatigue)
- general health perceptions

Ware et al (1993) gives full details of the SF-36 and its use and interpretation.

1.2 The need for interim SF-36 population norms

The SF-36 is rapidly becoming the de-facto standard for measurement of health status by interview or survey questionnaire. However, it is difficult to interpret SF-36 data unless there are population norms for comparison.

The Australian Bureau of Statistics (ABS) National Health Survey is collecting SF-36 data, along with an extensive set of health and risk factor data, from about 18,000 people during the one year period from February 1995 to January 1996. The resulting data set will provide an opportunity to calculate Australian norms for SF-36 scales for a wide range of population subgroups. However, these data will not be available until after October 1996.

In 1994 and 1995, the SF-36 was collected by self-completed questionnaire from 6,903 adults as part of the ABS Population Survey Monitor program. This data collection was funded by the Commonwealth Department of Human Services and Health and the results analysed by members of the Population Health Unit of the Australian Institute of Health and Welfare.

The aims of this analysis were:

1. to provide interim population norms for SF-36 scales based on Population Survey Monitor data for use till the National Health Survey results become available; and
2. to study the issues involved in analysing SF-36 data collected using ABS population sampling methodology.

This paper will present these interim norms along with a discussion of some of the statistical issues involved in the analysis.

1.3 The ABS Population Survey Monitor

The Population Survey Monitor (PSM) is a quarterly, national, household survey covering rural and urban areas across all Australian States and Territories. It has the same scope as other ABS household surveys, except that persons living in non-private dwellings and sparsely settled areas are excluded.

The unique feature of the PSM is that it is entirely user funded. Users can pay for questions to be included in the PSM and obtain results directly comparable to those from standard ABS surveys.

The Commonwealth Department of Human Services and Health paid for the collection of data on health risk factors using the PSM in 1994 and 1995. On three occasions this collection included the SF-36. The data were collected using an identical methodology to that of the National Health Survey. This was:

- SF-36 questions were answered using a self-completion questionnaire; and
- other questions covering both household and individual level topics were administered by an interviewer.

The collection dates and sample sizes are listed in Table 1.1

Table 1.1: Collection dates and sample sizes

Date	Sample size
May 1994	2291
November 1994	2193
May 1995	2419
Total sample 1994–95	**6903**

2. Statistical issues

2.1 Age adjustment

Usually different sub-groups in a population will have different age or age-sex structures. These act as confounding variables in any comparison of SF-36 score profiles. There are numerous statistical techniques for adjusting for confounding variables but the discussion in this section will focus on one of the simplest and most robust—direct standardisation. This is the standard technique used for comparisons of population rates such as disease incidence or death rates and it is equally applicable to mean SF-36 scores.

The analyses in this paper are all done separately for men and women, so only age standardisation will be described. However, the formulae are easily extended to age-sex standardisation.

An age-adjusted mean scale score value is calculated in the following way:

$$S_{adj} = \sum_i S_i * p_i \Big/ \sum_i p_i$$

where

S_{adj} = age-adjusted mean score

S_i = mean score in age group i

p_i = number of people in age group i in the standard population.

This adjusted mean score for a particular subgroup is the mean score that the group would have had if it had the same age structure as the standard population.

Age adjustment is important because comparison of unadjusted scores can be misleading. This can be demonstrated by considering, for example, the SF-36 mean score profiles for women classified by highest educational qualification presented in chapter 5 (Table 5.4). A comparison of the unadjusted values indicates a clear gradient in health status, with women whose highest qualification is a secondary school certificate having worse health status than those with a trade certificate or undergraduate diploma who in turn have worse health status than those with a degree or higher. However, the corresponding adjusted profiles show that, after age adjustment, women with a secondary certificate have a very similar profile to those with a trade certificate or diploma. The apparent health status difference shown in the unadjusted figures is attributable to the fact that women with a secondary certificate are on average older than those with a trade certificate or diploma.

This study uses the Australian Bureau of Statistics estimates of the total 1991 Australian population as the standard. These are listed in the appendix. All Australian scale profiles presented in this paper, except for those relating to age-specific groups, have been age-adjusted as described in this section using this standard population.

2.2 Non-normality of SF-36 data

Skewness

The SF-36 is designed to measure health status. Most people in the general population are healthy. This means that the values of SF-36 scales calculated from a population sample will be heavily skewed towards the 'healthy' end of their range, with up to 50 per cent of respondents taking the highest possible scale value.

This is most true of the 'unipolar' scales—physical functioning, role physical, bodily pain, social functioning and role emotional. These are the scales where health status is defined in terms of the presence or absence of limitation or disability. For these scales, the highest possible score of 100 is achieved when no limitations or disabilities are reported. Hence, a high proportion of the general population would be expected to attain this score.

However, skewness also affects the 'bipolar' scales—general health, vitality and mental health. These are the scales which measure a wider range of negative and positive health states. A score in the mid range indicates no limitations or disability while a score of 100 indicates a positive health state or favourable evaluation of health (Ware, 1993 p 3:10–3:11). Most of the general population report no disabilities or limitations, so the majority of their scores will lie above 50, leading to skewness in the score distribution.

Categorical nature of data

Most analysis techniques applied to SF-36 data assume that the scales represent continuous data. However, the method of construction of the scales ensures that each survey unit has a limited number of possible scale values. The physical functioning, general health perceptions, vitality and mental health scales have more than 20 possible levels and may be safely treated as continuous for most analyses. However, the application of analyses for continuous data to the other scales should be treated with caution.

At the simplest level, the categorical nature of the data mean that scales with a small number of levels measure health with less precision than those with a higher number of levels. For example, a difference of around 5 points in the mean for the role-emotional scale, which only has four levels, has less meaning than a similar difference for the physical functioning scale which has 21 levels. In more sophisticated analyses, the categorical nature of the data has implications for the types of analyses which may be used. These are discussed in the next section.

Effect of non-normality and possible solutions

Because of the data skewness and its categorical nature these scale values are not even approximately normally distributed in population survey data. This will not affect inferences made about the estimated mean scale scores because they are approximately continuous and normally distributed. However, linear regression techniques assume normality of the residuals from the fitted model—an assumption which is usually violated by such data. Fitting a regression model in this case will result in unbiased estimates of regression coefficients but biased estimates of the standard errors. Hence any tests of statistical significance will be unreliable.

One approach to this situation is to apply a log or square root transformation to the data to achieve normality. However, experience with SF-36 population data has shown that the transformed data are still significantly skewed, due mainly to the high proportion of the sample taking the highest scale value.

Another approach is to use a different modelling technique. For example, scale values can be grouped into categories and multivariate categorical data techniques such as logistic regression applied. These have the disadvantage that some of the information in the scale is lost, but they do lead to statistically valid inferences. Alternatively, the categorical nature of the data can be explicitly incorporated into the data analysis by treating the scales as ordinal categorical data and applying appropriate models. Agresti (1990) presents a full discussion of such models.

2.3 Sample design

Most standard statistical analysis techniques assume that the sample units represent independent, identically distributed random variables. This effectively means that they have been drawn using a simple random sample. The use of more sophisticated sample designs may invalidate this assumption.

ABS population surveys are examples of a sample design which violates analysis assumptions. The ABS uses a multi-stage, clustered survey design, where households are selected in geographic clusters. The effect of this is that individual sample units may no longer be statistically independent.

Estimates of scale means based on such samples are unbiased, but estimates of variance are biased. This means that the scale profiles can be calculated in the standard way, but using the usual estimates of standard error will lead to unreliable confidence intervals and tests of statistical significance.

Unit record survey files supplied by the ABS do not contain enough information to enable an analyst to adjust for survey design. However, ABS publications routinely contain tables of adjusted standard errors which can be used for confidence intervals and statistical tests for scale means. Alternatively, the estimates of variance can be inflated by the sample 'design effect'.

The design effect for a sample mean is defined as the ratio of the variance of the estimate of the mean under the complex design to its variance under simple random sampling. An approximate variance estimate can be derived by

calculating the variance as if the data were drawn from a simple random sample and then multiplying this estimate by the design effect.

The design effect associated with the SF-36 data in this study lies between 1.5 and 2.0, so all variance estimates have been calculated by multiplying the usual estimates by two.

Skinner et al (1989) present a detailed description of data analysis for complex surveys.

3. Interpretation of the norms

3.1 Interpretation of scale values

Table 3.1, which is taken from Ware et al (1993), describes the health states associated with the lowest and highest possible score for each SF-36 scale. These descriptions are based on item content and the pattern of responses across items necessary to achieve these extreme scores.

Ware et al also suggest that the content of individual items can be used to interpret differences in scale scores between the extremes. This involves plotting responses to a given item across the levels of the scale containing that item. For example, Figure 3.1 shows the percentage of the sample who report being able to walk 100 metres without limitations due to physical health (item 3i of the SF-36 questionnaire) at various levels of the physical functioning scale. For this graph the 21 physical functioning scale levels have been collapsed into 10 levels. At the top three levels nearly everyone (95 to 100 per cent) reported walking with no limitations. At the bottom level less than one per cent reported no limitations in being able to walk 100 metres. From the second to the seventh levels there is a sharp rise in the number of people reporting limitations in walking, from 10.2 per cent to 93.8 per cent.

Figures 3.2 to 3.8 are analogous graphs for each of the remaining SF-36 scales.

Further details of the interpretation of SF-36 scale score values may be found in Ware et al (1993), chapter 9.

3.2 Scale validity

The validity and reliability of the SF-36 has been extensively investigated elsewhere (see, for example, Brazier et al (1992), Jenkinson et al (1993) and McCallum (1995)) and a complete study of its validity is beyond the scope of this paper. However, some limited validity checking can be done with these data and does contribute to the interpretation of the results.

This section examines two features of the validity of the SF-36—the item-scale correlations and the Cronbach alpha values.

Item-scale correlations

One of the oldest methods for checking the homogeneity of a scale is the item-total correlation. This is the correlation of each individual item with its corresponding scale omitting that item. If we did not omit that item from the total score then the correlation would be artificially inflated, since it would be based in part on the item correlated with itself.

It is impractical to actually remove each item from the scale before calculating the correlation because of the large number of items, so the item-total correlations presented here have been adjusted for overlap using a statistical correction suggested by Nunnally (1978) (as reported in Streiner & Norman (1989)). These correlations are shown in Table 3.2. Ware et al (1993) suggest that item-total correlations should exceed 0.4.

Table 3.2 also shows the correlations between each item and the scales to which it does not belong. For the item to have good discriminant validity, these correlations should be significantly less than the corresponding item-total correlations.

The data presented in Table 3.2 support the validity of the SF-36. The item-total correlations all exceed 0.59, with most exceeding 0.7 and the item-other scale correlations are all less than the corresponding item-total correlations.

Cronbach alpha

The Cronbach alpha is a measure of the internal consistency of a scale. Jenkinson et al (1993) note that

> '...an α of 0.5 or above is usually deemed acceptable, although Nunnally recommends values of 0.7 and above. In practice, however, well used scales should ideally gain α values in excess of 0.8.' (p 1438)

Table 3.3 lists the Cronbach alpha values for each of the scales from this study, along with a selection of those reported in the literature for comparison. All of these values are above Nunnally's limit of 0.7, with most in excess of 0.8. The values from this study are also consistent with those reported elsewhere.

3.3 Values reported in the tables and figures

The normative data are reported in tables and figures in the next three chapters. In both the figures and tables, the scales are arranged in order from those most sensitive to differences in physical health through to those most sensitive to differences in mental health. All the tables, except those listing age-specific data, list both unstandardised values and age standardised values. This section defines and discusses each of the reported values.

Unstandardised values

Mean

This is the estimate of the mean for the population covered by the table. It is calculated as a weighted mean of the individual respondent values, using the survey weights.

Standard deviation

This is the estimated standard deviation of the individual score values. It has been adjusted for the sample design and it can be used to assess the spread of the distribution of individual scores. However, the scores are not normally distributed, so any such assessment should be interpreted with caution.

Standard error of mean

This is the estimated standard deviation of the estimate of the mean, corrected for the sample design. It can be used to construct confidence intervals for the true population mean value.

Observations contributing to mean

This is the number of observations on which the estimate of the mean is based. It may vary between the scales because some respondents provided responses for some but not all of the scales.

25th, 50th and 75th percentiles

These are the values below which 25, 50 and 75 per cent respectively of the respondents scale values fall.

Range

This is the range of scale values found in the survey.

%Ceiling, %Floor

This is the percentage of respondents with the highest and lowest scores respectively.

Age standardised values

Mean, standard error

These are the age adjusted mean and standard error estimates, adjusted for survey design. They may be used to construct statistical tests to compare this mean with means from other samples.

Upper and lower 95% confidence intervals

These are the boundaries of the 95 per cent confidence interval constructed using the age adjusted mean and standard error estimates.

Statistical significance of difference with 'base' value

For each set of tables, one population group is chosen as the 'base group'. The scale means for this group are compared with the scale means for each of the

other population groups and the statistical significance of the comparison is reported in this line of the table.

The significance test is done by using the approximate normality of the estimated mean to construct a z score for the difference in means between the base group and the comparison group. This z score is then compared with the 5 per cent and 1 per cent points of the standard normal distribution.

Figures

The age adjusted mean score profiles are plotted in the way recommended by Ware et al (1993). The scales are arranged in order from those most sensitive to differences in physical health through to those most sensitive to differences in mental health. The mean value for each scale is plotted and a line drawn joining each of the values. This line represents the score profile for the particular population group.

This line graph has become the conventional way of presenting SF-36 score profiles. It allows the presentation of several profiles for comparison on the one graph (see, for example, figure 4.4 in chapter 4) which is impractical with alternative presentations such as bar charts or histograms.

In other areas of statistical analysis, line graphs usually denote trends in the plotted data. It is important to note that this is not the case with SF-36 score profiles. The individual scale scores cannot be related to each other and do not form a trend. The line is merely a convenient way of visualising the mean score profile.

Table 3.1: Content based descriptions of the lowest and highest scale scores

Scale	Meaning of scores	
	Lowest value (Floor)	Highest value (Ceiling)
Physical functioning	Limited a lot in performing all physical activities including bathing or dressing due to health	Performs all types of physical activities including the most vigorous without limitations due to health
Role-physical	Problems with work or other daily activities as a result of physical health	No problems with work or other daily activities as a result of physical health
Bodily pain	Very severe and extremely limiting pain	No pain or limitations due to pain
General health	Evaluates personal health as poor and believes it is likely to get worse	Evaluates personal health as excellent
Vitality	Feels tired and worn out all of the time	Feels full of pep and energy all of the time
Social functioning	Extreme and frequent interference with normal social activities due to physical or emotional problems	Performs normal social activities without interference due to physical or emotional problems
Role-emotional	Problems with work or other daily activities as a result of emotional problems	No problems with work or other daily activities as a result of emotional problems
Mental health	Feelings of nervousness and depression all of the time	Feels peaceful, happy and calm all of the time.

Source: Ware et al (1993), p9:2

Table 3.2: Item correlations[a] with SF-36 scales

Item[b]	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
3a	0.71	0.50	0.46	0.51	0.38	0.35	0.27	0.20
3b	0.83	0.55	0.48	0.50	0.39	0.43	0.30	0.22
3c	0.82	0.53	0.47	0.46	0.37	0.41	0.30	0.22
3d	0.82	0.50	0.43	0.51	0.41	0.38	0.30	0.22
3e	0.83	0.49	0.41	0.46	0.37	0.38	0.29	0.21
3f	0.80	0.52	0.50	0.46	0.38	0.38	0.29	0.22
3g	0.83	0.49	0.42	0.46	0.38	0.37	0.27	0.20
3h	0.82	0.46	0.39	0.42	0.35	0.37	0.26	0.19
3i	0.72	0.37	0.32	0.34	0.29	0.32	0.23	0.16
3j	0.59	0.33	0.29	0.28	0.23	0.32	0.23	0.16
4a	0.47	0.83	0.50	0.38	0.36	0.47	0.34	0.22
4b	0.51	0.87	0.49	0.42	0.41	0.47	0.41	0.25
4c	0.59	0.90	0.54	0.45	0.41	0.48	0.38	0.23
4d	0.56	0.89	0.54	0.45	0.44	0.49	0.42	0.25
7	0.50	0.53	0.95	0.47	0.46	0.48	0.31	0.31
8	0.53	0.60	0.95	0.50	0.49	0.55	0.37	0.35
1	0.56	0.46	0.46	0.79	0.53	0.44	0.32	0.37
11a	0.33	0.31	0.34	0.64	0.40	0.39	0.30	0.38
11b	0.39	0.35	0.36	0.77	0.46	0.38	0.25	0.35
11c	0.38	0.29	0.32	0.64	0.33	0.24	0.19	0.23
11d	0.49	0.43	0.45	0.83	0.56	0.45	0.32	0.41
9a	0.42	0.42	0.45	0.53	0.79	0.52	0.40	0.52
9e	0.46	0.43	0.42	0.57	0.80	0.48	0.33	0.49
9g	0.30	0.33	0.38	0.42	0.79	0.47	0.32	0.52
9i	0.29	0.31	0.37	0.43	0.78	0.44	0.31	0.50
6	0.42	0.51	0.49	0.42	0.51	0.89	0.54	0.47
10	0.44	0.47	0.47	0.47	0.54	0.89	0.47	0.52
5a	0.29	0.38	0.30	0.31	0.37	0.50	0.85	0.42
5b	0.33	0.42	0.33	0.33	0.39	0.50	0.88	0.40
5c	0.27	0.32	0.26	0.27	0.30	0.41	0.78	0.33
9b	0.19	0.17	0.22	0.31	0.35	0.35	0.31	0.70
9c	0.24	0.22	0.28	0.35	0.47	0.48	0.39	0.75
9d	0.17	0.21	0.27	0.36	0.53	0.40	0.34	0.73
9f	0.23	0.24	0.32	0.38	0.52	0.48	0.39	0.78
9h	0.13	0.17	0.21	0.33	0.49	0.37	0.29	0.68

(a) Item-total correlation corrected for overlap

(b) Item numbers correspond to the standard SF-36 questionnaire.

Note: Shaded cells represent correlations between each item and its own scale, corrected for overlap. Non shaded cells represent correlations between an item and the scales to which it does not belong

Table 3.3: Comparison of Cronbach alpha values for selected studies.

SF-36 scale	Cronbach alpha values			
	This study	Brazier et al (1992)	Jenkinson et al (1993)	McCallum (1995)
Physical Functioning	0.93	0.93	0.90	0.89
Role-Physical	0.90	0.96	0.88	0.89
Bodily Pain	0.90	0.85	0.82	0.77
General Health	0.81	0.95	0.80	-
Vitality	0.82	0.96	0.85	0.81
Social Functioning	0.75	0.73	0.76	-
Role-Emotional	0.79	0.96	0.80	0.77
Mental Health	0.80	0.95	0.83	0.80

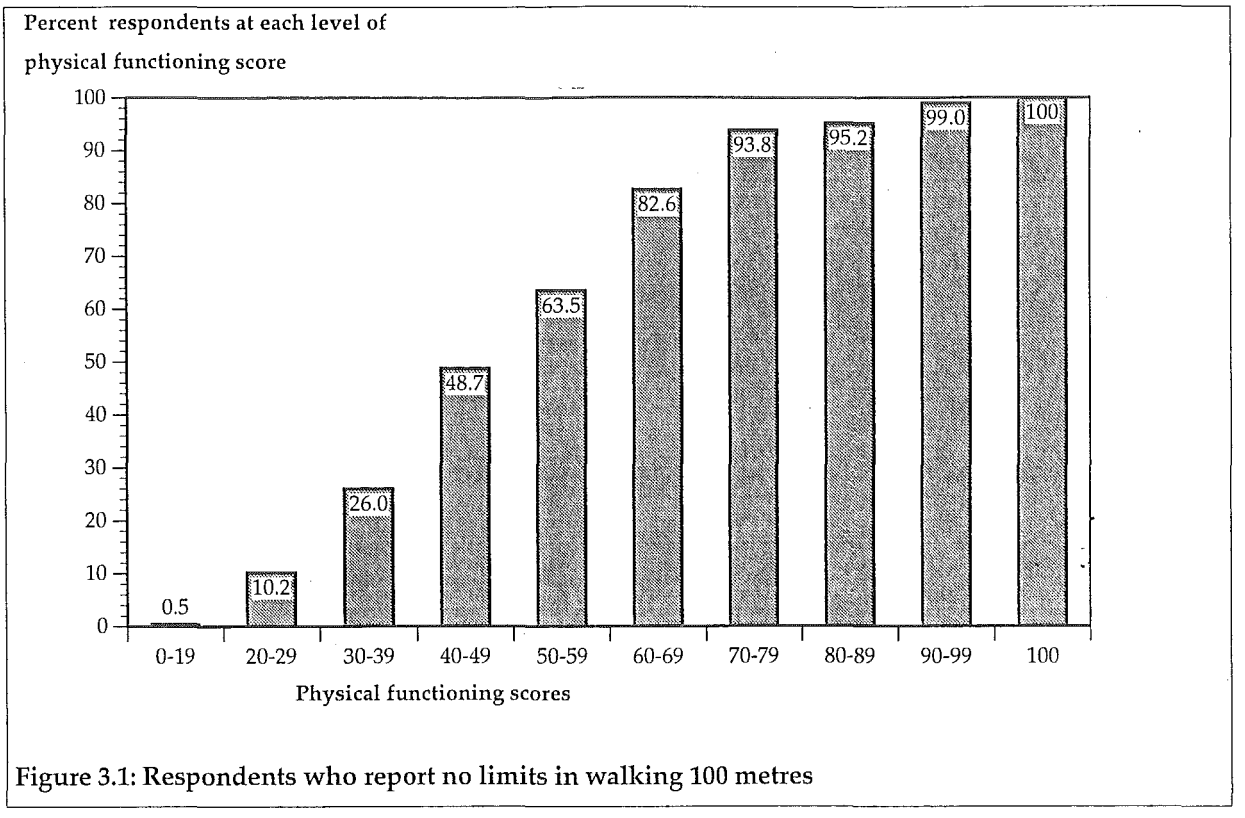


Figure 3.1: Respondents who report no limits in walking 100 metres

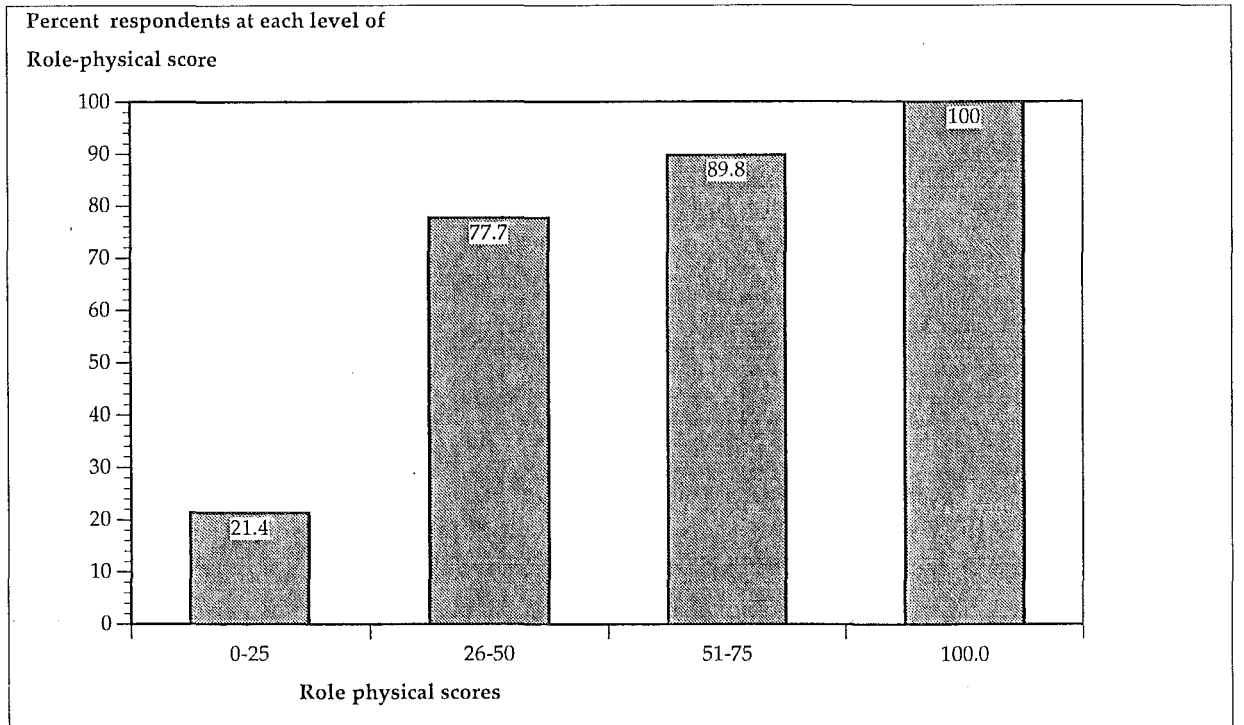


Figure 3.2: Respondents who report not cutting down on the amount of time spent on work or other activities as a result of physical health

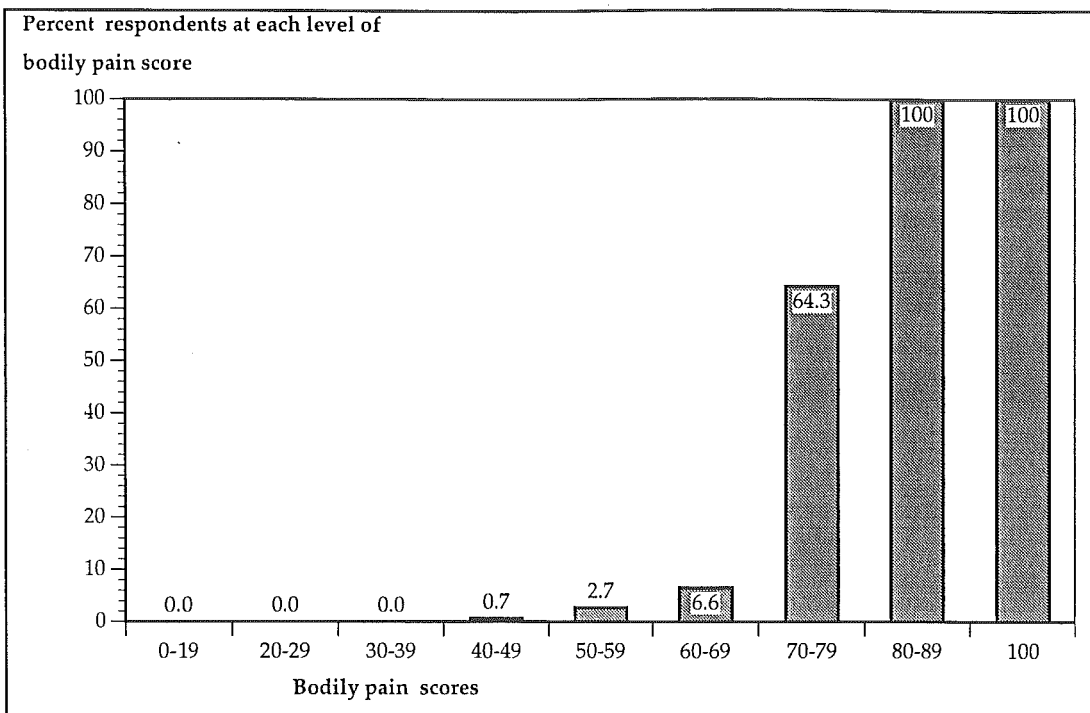


Figure 3.3: Respondents who report no or very mild bodily pain

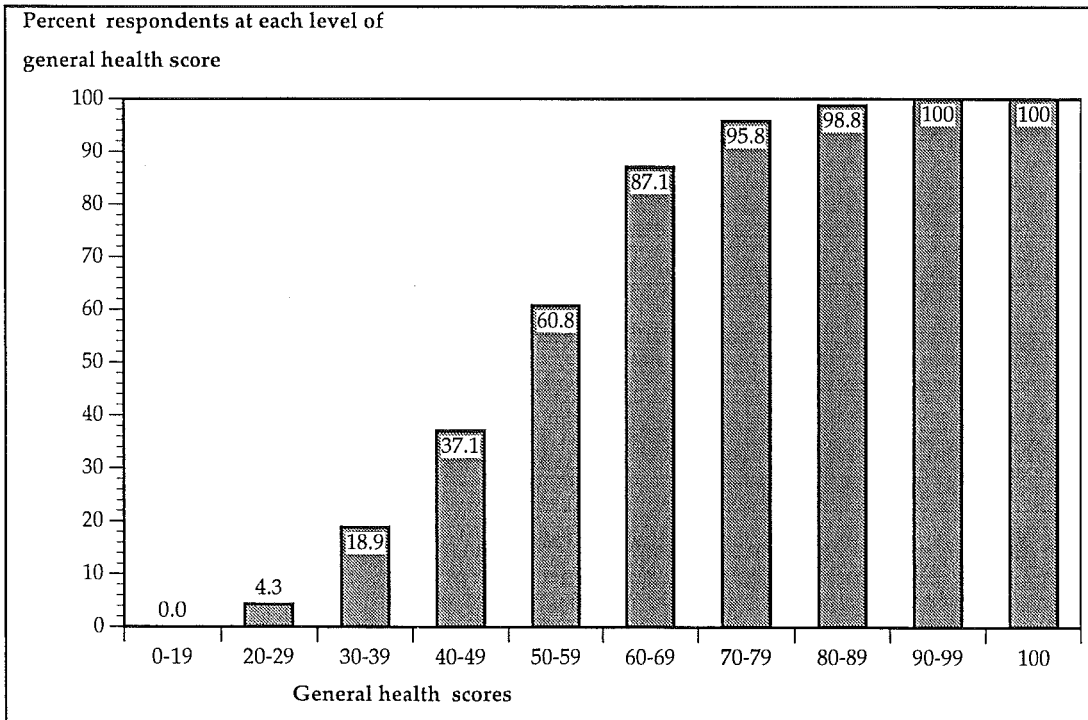


Figure 3.4: Respondents who report good, very good or excellent health

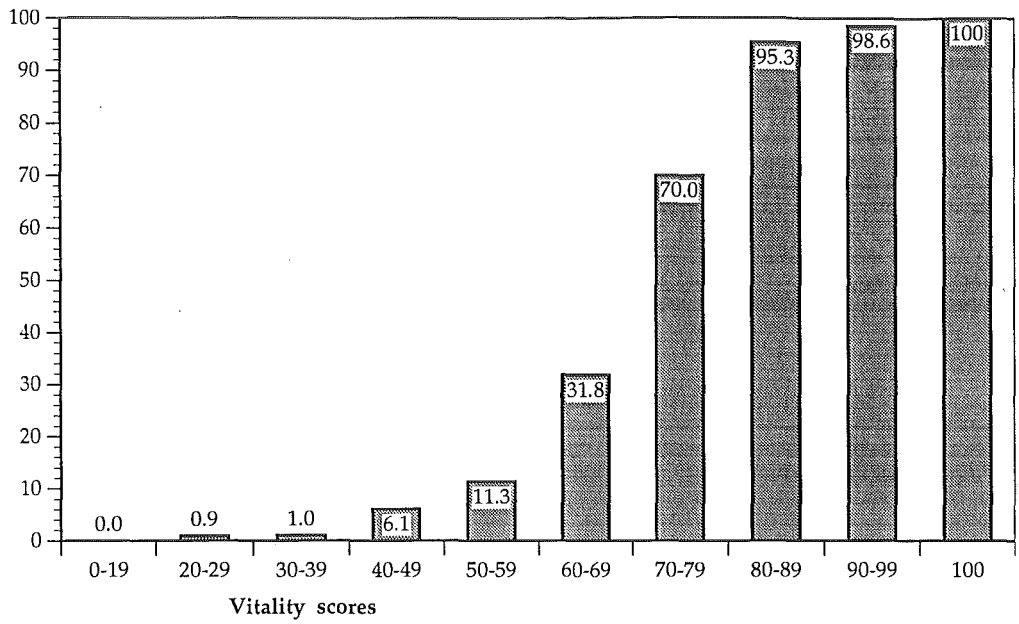


Figure 3.5: Respondents who report having a lot of energy all or most of the time.

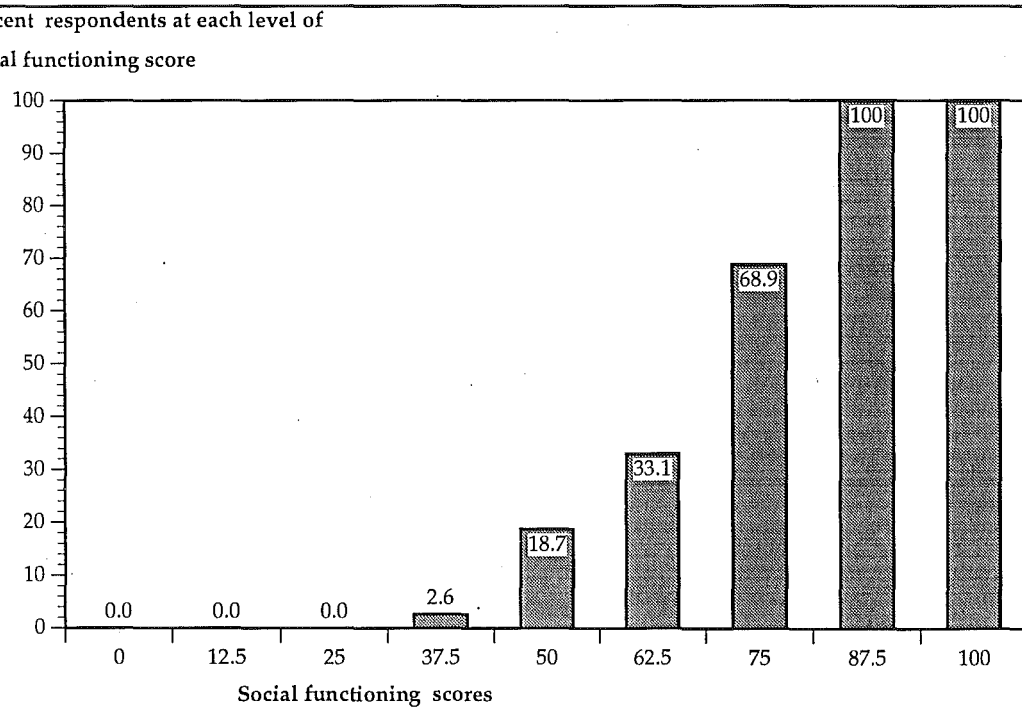


Figure 3.6: Respondents who report that their physical health or emotional problems interfere with their normal social activities little or none of the time

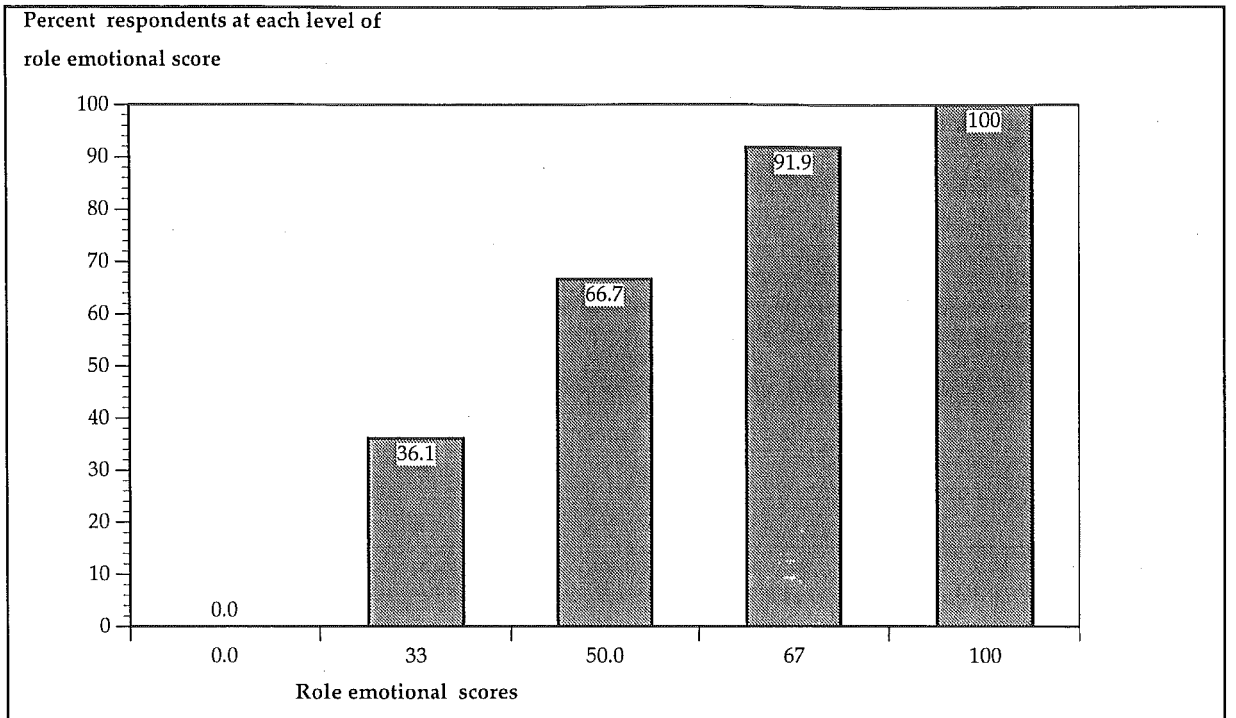


Figure 3.7: Respondents who report not cutting down on the amount of time spent on work or other activities as a result of emotional problems

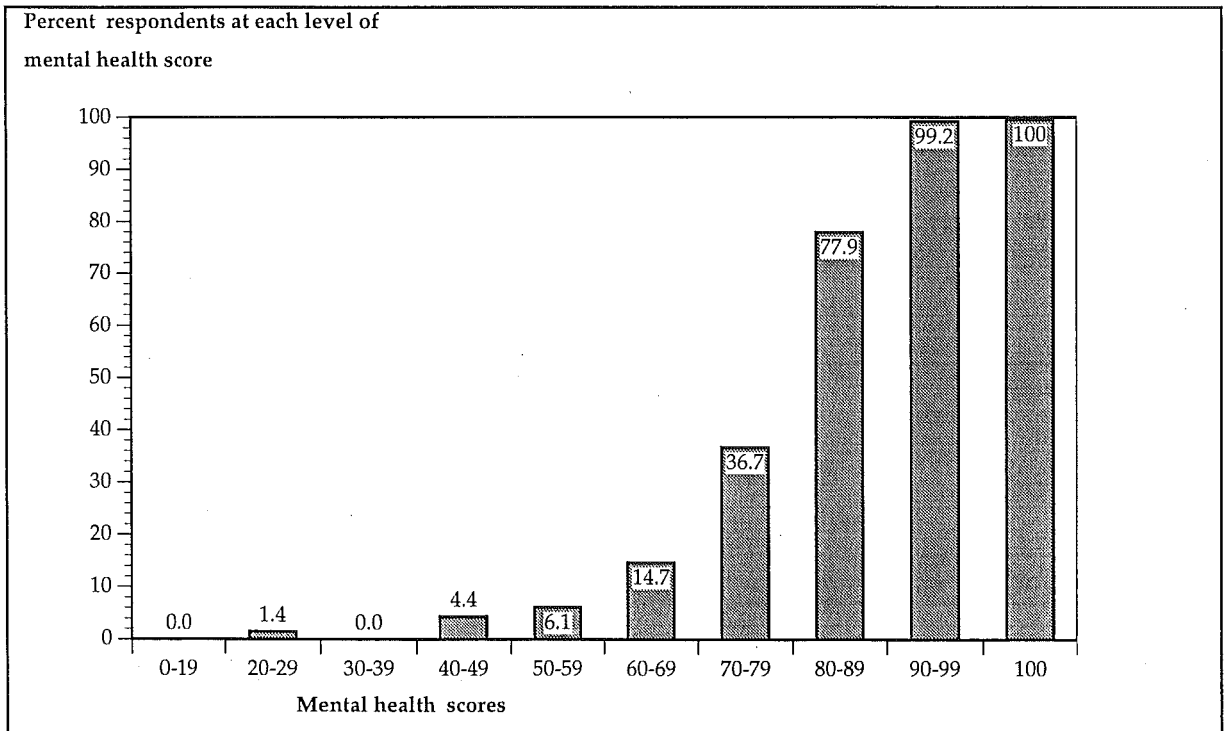


Figure 3.8: Respondents who report feeling calm and peaceful all or most of the time

4. General population norms

This section presents norms for SF-36 scales for the total Australian population and age-specific and total norms for men and women separately. These data are presented in Tables 4.1 to 4.4 and Figures 4.1 to 4.5. The data for men, women and all adults given in Table 4.1 have been age-adjusted while the age-specific data presented in Tables 4.3 and 4.4 have not.

Population norms by gender

Table 4.1 lists the SF-36 norms for men, women and persons. Figure 4.1 shows the SF-36 age-adjusted mean score profiles for men and women. Figure 4.2 shows the same profiles based on data from the USA. The USA data are for a 1990 sample of the total USA population and are taken from Ware et al (1993).

An interesting feature of the Australian data are that the differences between the scores for men and women are smaller for each scale than the corresponding USA data. Further, while the scores for American women are uniformly below those of American men, the score for Australian women is above that for Australian men for the general health perceptions scale. This feature is true of the profiles calculated separately for each of the three PSM collections and is also true for at least one other Australian survey (Watson 1995).

Reported health transitions

Table 4.2 and Figure 4.3 show the reported health transition over the previous year for the total population. This is the item on the SF-36 instrument which does not contribute to any of the eight scales. It was included to estimate change in health status from a cross-sectional administration of the SF-36. Results reported by Ware et al (1993) suggest that it provides useful information about actual changes in health status in the year prior to the administration of the SF-36 but it is not commonly included in the published analyses of SF-36 data.

Population norms by age

Tables 4.3 and 4.4 and Figures 4.4 and 4.5 present SF-36 norms by age for men and women. The scores measuring predominantly physical health exhibit the expected decline with increasing age, though the decline is less marked for women under 55 years than for men. The decline is less marked for the scores measuring predominantly mental health. In fact the mental health score shows an increase in mental health for the oldest age group.

These results are consistent with population SF-36 scores measured in other studies and also with what would be expected on theoretical grounds from a population health measure.

Table 4.1: SF-36 scale profiles by sex

1. Men

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	85.4	80.6	77.8	70.9	65.6	85.5	84.8	76.9
Standard deviation	22.5	34.4	24.9	20.8	19.3	21.6	29.8	16.2
Standard error of mean	0.6	0.9	0.6	0.5	0.5	0.6	0.8	0.4
Observations contributing to mean	3013	3007	3006	3022	3007	3013	3004	3007
25th percentile	80.0	75.0	62.0	57.0	55.0	75.0	66.7	68.0
50th percentile	95.0	100.0	84.0	72.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	41.2	68.1	40.5	6.2	2.5	55.4	73.4	4.9
%Floor	0.8	11.4	0.9	0.1	0.3	0.6	7.1	0.1
Age standardised values								
Mean	85.1	80.3	77.7	70.8	65.5	85.3	84.6	77.0
Standard error of mean	0.5	0.9	0.6	0.5	0.5	0.6	0.8	0.4
Upper 95% confidence interval for mean	86.1	82.0	78.9	71.8	66.5	86.4	86.1	77.8
Lower 95% confidence interval for mean	84.1	78.6	76.4	69.8	64.5	84.2	83.1	76.1

2. Women

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	81.9	78.8	76.0	72.1	62.3	83.8	82.7	74.5
Standard deviation	24.1	35.8	25.5	20.7	19.4	22.7	31.9	16.5
Standard error of mean	0.6	0.8	0.6	0.5	0.4	0.5	0.7	0.4
Observations contributing to mean	3810	3800	3797	3826	3798	3812	3800	3796
25th percentile	70.0	75.0	62.0	60.0	50.0	75.0	66.7	64.0
50th percentile	90.0	100.0	84.0	77.0	65.0	100.0	100.0	76.0
75th percentile	100.0	100.0	100.0	87.0	75.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	34.9	65.8	37.3	7.5	1.5	51.6	70.6	3.3
%Floor	0.6	12.6	1.0	0.2	0.4	0.8	8.9	0.1
Age standardised values								
Mean	82.3	79.0	76.1	72.3	62.3	83.8	82.7	74.5
Standard error of mean	0.5	0.8	0.6	0.5	0.4	0.5	0.7	0.4
Upper 95% confidence interval for mean	83.2	80.5	77.2	73.2	63.2	84.8	84.2	75.2
Lower 95% confidence interval for mean	81.3	77.5	75.0	71.4	61.5	82.8	81.3	73.7
Statistical significance of difference with mean for men	**	-	-	*	**	-	-	**

- p>0.05, * p<0.05, ** p<0.01

Table 4.1: SF-36 scale profiles by sex (continued)

3. Persons

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	83.6	79.7	76.9	71.5	63.9	84.6	83.7	75.7
Standard deviation	23.4	35.1	25.2	20.8	19.4	22.2	30.9	16.4
Standard error of mean	0.4	0.6	0.4	0.4	0.3	0.4	0.5	0.3
Observations contributing to mean	6823	6807	6803	6848	6805	6825	6804	6803
25th percentile	75.0	75.0	62.0	57.0	50.0	75.0	66.7	68.0
50th percentile	95.0	100.0	84.0	75.0	65.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	37.7	66.8	38.7	6.9	1.9	53.3	71.9	4.0
%Floor	0.7	12.1	1.0	0.1	0.4	0.7	8.1	0.1
Age standardised values								
Mean	83.6	79.6	76.8	71.5	63.9	84.6	83.6	75.7
Standard error of mean	0.4	0.6	0.4	0.3	0.3	0.4	0.5	0.3
Upper 95% confidence interval for mean	84.3	80.7	77.7	72.2	64.5	85.3	84.7	76.3
Lower 95% confidence interval for mean	82.9	78.5	76.0	70.9	63.2	83.8	82.6	75.1

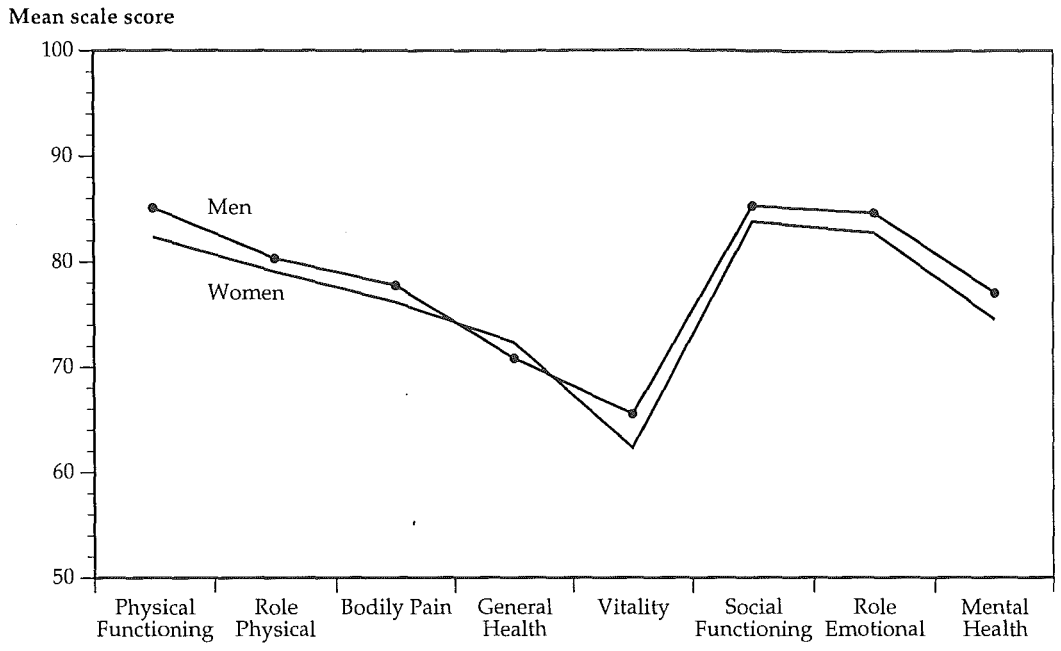
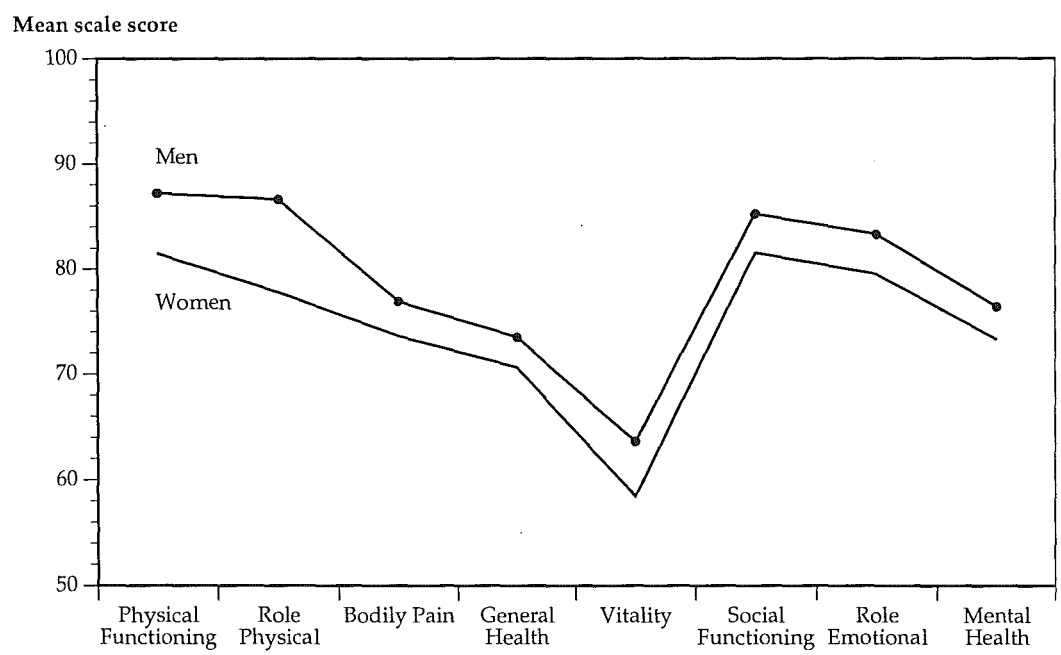


Figure 4.1: SF-36 mean score profiles by sex



Source: Ware et al (1993)

Figure 4.2: SF-36 mean score profiles by sex, USA data

Table 4.2: Reported health transition, compared with one year ago, by sex

	Health status compared with one year ago				
	Much better	Somewhat better	About the same	Somewhat worse	Much worse
Men					
Unstandardised					
Estimated proportion (%)	8.6	10.8	68.5	10.2	1.9
Observations contributing to estimate	260	325	2066	307	56
Age standardised					
Estimated proportion (%)	9.0	10.5	68.4	10.4	1.7
Women					
Unstandardised					
Estimated proportion (%)	11.7	12.1	62.8	11.4	2.0
Observations contributing to estimate	447	462	2397	433	75
Age standardised					
Estimated proportion (%)	11.2	12.5	63.6	11.1	1.6
Persons					
Unstandardised					
Estimated proportion (%)	10.35	11.53	65.4	10.84	1.92
Observations contributing to estimate	707	787	4463	740	131
Age standardised					
Estimated proportion (%)	10.1	11.55	65.9	10.78	1.68

Notes: 1. The estimated proportions are calculated using the survey weights and represent estimates of the proportion for the total Australian population.

2. The difference between men and women in reported health transition is not statistically significant.

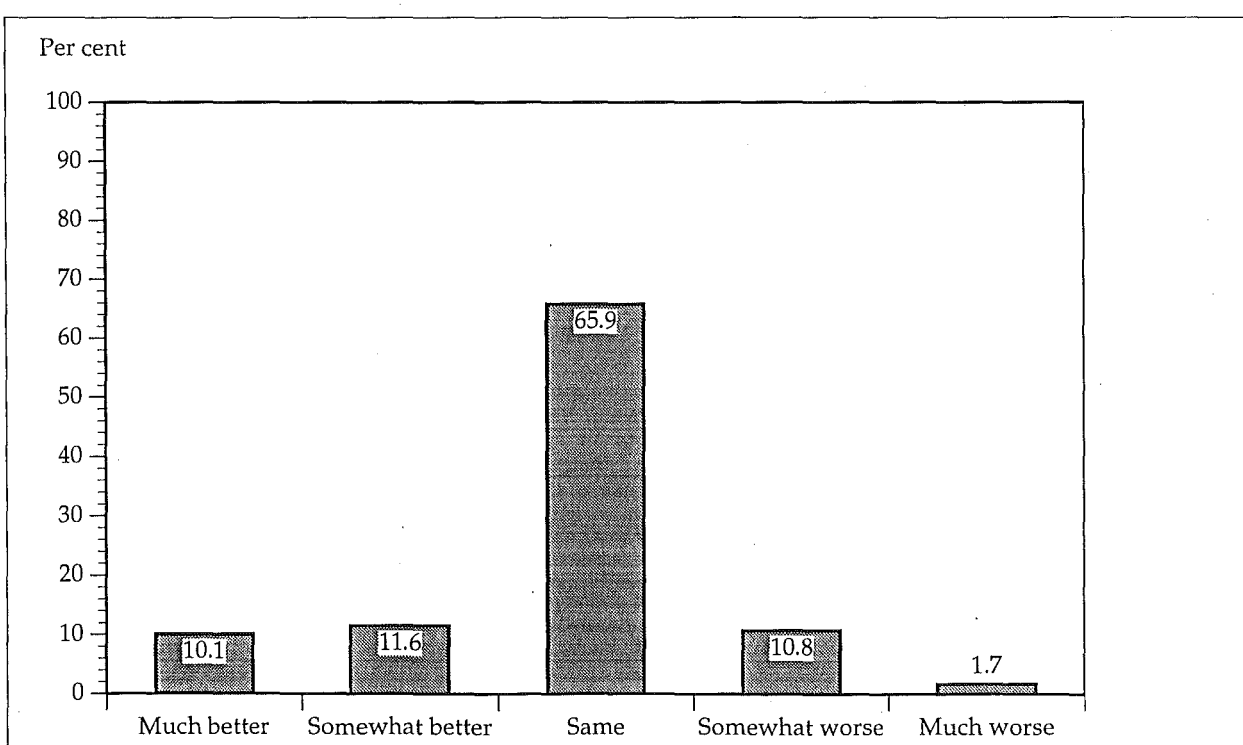


Figure 4.3: Reported health status compared to one year ago for all adults

Table 4.3: SF-36 scale profiles for men by age

1. Age: 18 to 24 years

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Mean	93.8	86.3	80.3	77.5	67.4	87.4	87.3	75.2
Standard deviation	15.0	29.4	22.1	18.1	17.5	18.4	26.1	16.4
Standard error of mean	1.2	2.4	1.8	1.5	1.4	1.5	2.1	1.3
Observations contributing to mean	303	302	303	304	302	303	302	303
25th percentile	95.0	100.0	72.0	67.0	55.0	75.0	100.0	68.0
50th percentile	100.0	100.0	84.0	78.5	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	90.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	10-100	25-100	10-100	25-100	0-100	20-100
%Ceiling	61.6	75.4	43.6	11.5	3.9	57.4	76.7	4.6
%Floor	0.7	6.6	0.3	0.3	0.3	1.6	3.9	0.3
Upper 95% confidence interval for mean	96.2	91.0	83.8	80.4	70.2	90.4	91.4	77.8
Lower 95% confidence interval for mean	91.4	81.6	76.8	74.6	64.6	84.5	83.1	72.6

2. Age: 25 to 34 years

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Mean	92.5	89.8	83.0	75.8	67.6	87.5	88.9	77.5
Standard deviation	16.6	25.2	21.8	17.9	17.7	20.1	26.0	16.0
Standard error of mean	1.0	1.5	1.3	1.0	1.0	1.2	1.5	0.9
Observations contributing to mean	601	602	600	602	600	601	602	600
25th percentile	95.0	100.0	72.0	67.0	60.0	75.0	100.0	72.0
50th percentile	100.0	100.0	84.0	77.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	90.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	5-100	5-100	0-100	0-100	4-100
%Ceiling	63.9	82.5	47.8	8.6	3.0	60.9	80.6	4.1
%Floor	0.3	4.6	0.7	0.2	0.5	0.5	5.3	0.3
Upper 95% confidence interval for mean	94.4	92.7	85.5	77.8	69.6	89.7	91.8	79.4
Lower 95% confidence interval for mean	90.6	87.0	80.6	73.7	65.6	85.2	86.0	75.7
Statistical significance of difference with mean for age 18 to 24 years	-	-	-	-	-	-	-	-

- $p>0.05$, * $p<0.05$, ** $p<0.01$

Table 4.3: SF-36 scale profiles for men by age (continued)

3. Age: 34 to 44 years

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Mean	90.6	83.3	78.7	72.6	66.1	85.7	84.9	76.9
Standard deviation	15.8	33.1	24.8	18.9	18.0	20.8	29.3	15.1
Standard error of mean	0.9	1.8	1.3	1.0	1.0	1.1	1.6	0.8
Observations contributing to mean	689	688	689	692	689	689	688	689
25th percentile	90.0	100.0	62.0	62.0	55.0	75.0	66.7	68.0
50th percentile	100.0	100.0	84.0	77.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	10-100	0-100	0-100	10-100	5-100	0-100	0-100	4-100
%Ceiling	50.4	74.1	43.1	6.6	1.4	55.2	73.8	3.3
%Floor	0.1	9.7	0.6	0.4	0.1	0.7	6.3	0.1
Upper 95% confidence interval for mean	92.3	86.8	81.4	74.6	68.0	87.9	88.0	78.5
Lower 95% confidence interval for mean	89.0	79.8	76.1	70.6	64.2	83.5	81.8	75.3
Statistical significance of difference with mean for age 18 to 24 years	*	-	-	**	-	-	-	-

- p>0.05, * p<0.05, ** p<0.01

4. Age: 45 to 54 years

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Mean	83.9	81.4	77.7	69.7	65.4	86.4	86.8	76.5
Standard deviation	23.0	34.0	25.4	21.0	20.7	22.2	28.0	16.7
Standard error of mean	1.4	2.1	1.6	1.3	1.3	1.4	1.8	1.0
Observations contributing to mean	510	510	509	511	511	511	509	511
25th percentile	80.0	75.0	62.0	57.0	55.0	75.0	100.0	68.0
50th percentile	95.0	100.0	84.0	72.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	5-100	0-100	0-100	0-100	12-100
%Ceiling	37.9	70.6	42.2	4.6	2.3	58.8	75.2	4.8
%Floor	1.4	10.6	1.4	0.6	0.4	0.6	5.6	0.2
Upper 95% confidence interval for mean	86.8	85.6	80.8	72.3	67.9	89.1	90.2	78.6
Lower 95% confidence interval for mean	81.1	77.2	74.6	67.1	62.8	83.7	83.4	74.5
Statistical significance of difference with mean for age 18 to 24 years	**	-	-	**	-	-	-	-

- p>0.05, * p<0.05, ** p<0.01

Table 4.3: SF-36 scale profiles for men by age (continued)

5. Age: 55 to 64 years

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Mean	76.1	72.4	71.6	63.5	64.1	83.3	80.5	76.0
Standard deviation	25.4	39.3	27.3	22.0	19.7	23.1	34.7	17.2
Standard error of mean	1.8	2.8	2.0	1.6	1.4	1.7	2.5	1.2
Observations contributing to mean	382	381	382	384	382	383	379	382
25th percentile	60.0	50.0	51.0	50.0	50.0	75.0	66.7	68.0
50th percentile	85.0	100.0	74.0	67.0	70.0	100.0	100.0	80.0
75th percentile	95.0	100.0	100.0	82.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	5-100	0-100	0-100	0-100	8-100
%Ceiling	20.5	59.5	34.6	4.4	2.1	51.3	69.7	4.6
%Floor	1.3	14.4	1.0	0.3	0.3	0.8	9.7	0.3
Upper 95% confidence interval for mean	79.7	78.0	75.5	66.7	66.9	86.5	85.5	78.5
Lower 95% confidence interval for mean	72.5	66.8	67.8	60.4	61.3	80.0	75.6	73.6
Statistical significance of difference with mean for age 18 to 24 years	**	**	**	**	-	-	*	-

- p>0.05, * p<0.05, ** p<0.01

6. Age: 65 years and over

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Mean	66.1	61.6	70.2	60.9	61.1	80.3	76.4	79.2
Standard deviation	27.9	41.1	27.0	23.7	22.5	25.2	35.6	16.4
Standard error of mean	1.7	2.5	1.7	1.5	1.4	1.6	2.2	1.0
Observations contributing to mean	528	524	523	529	523	526	524	522
25th percentile	45.0	25.0	51.0	45.0	50.0	62.5	66.7	68.0
50th percentile	70.0	75.0	74.0	65.0	65.0	87.5	100.0	84.0
75th percentile	90.0	100.0	100.0	77.0	80.0	100.0	100.0	92.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	8-100
%Ceiling	9.9	43.6	29.7	2.6	3.2	48.0	63.7	8.2
%Floor	1.3	22.8	1.3	0.6	1.1	0.9	11.4	0.4
Upper 95% confidence interval for mean	69.4	66.6	73.5	63.8	63.9	83.3	80.7	81.2
Lower 95% confidence interval for mean	62.7	56.6	66.9	58.1	58.4	77.2	72.1	77.2
Statistical significance of difference with mean for age 18 to 24 years	**	**	**	**	**	**	**	*

- p>0.05, * p<0.05, ** p<0.01

Table 4.4 SF-36 scale profiles for women by age

1. Age: 18 to 24 years

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Mean	90.9	86.7	82.1	73.9	63.4	84.0	84.6	73.0
Standard deviation	17.5	28.7	20.8	19.5	18.9	20.0	29.9	15.8
Standard error of mean	1.2	2.0	1.5	1.4	1.3	1.4	2.1	1.1
Observations contributing to mean	396	396	396	396	396	396	396	396
25th percentile	90.0	100.0	74.0	62.0	50.0	75.0	66.7	64.0
50th percentile	100.0	100.0	84.0	77.0	65.0	87.5	100.0	76.0
75th percentile	100.0	100.0	100.0	87.0	75.0	100.0	100.0	84.0
Range	0-100	0-100	0-100	5-100	5-100	0-100	0-100	4-100
%Ceiling	53.1	78.3	47.4	8.8	1.0	49.6	74.6	2.3
%Floor	0.5	5.8	0.5	0.3	1.0	0.5	6.8	0.3
Upper 95% confidence interval for mean	93.3	90.7	85.0	76.6	66.0	86.8	88.8	75.2
Lower 95% confidence interval for mean	88.4	82.7	79.2	71.2	60.8	81.2	80.4	70.8

2. Age: 25 to 34 years

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Mean	89.6	84.2	79.6	77.0	61.7	84.0	82.9	74.1
Standard deviation	17.6	31.3	24.1	18.2	18.5	21.7	32.0	16.8
Standard error of mean	0.9	1.6	1.2	0.9	0.9	1.1	1.6	0.8
Observations contributing to mean	812	811	812	815	812	813	811	812
25th percentile	85.0	75.0	62.0	67.0	50.0	75.0	66.7	64.0
50th percentile	100.0	100.0	84.0	82.0	65.0	87.5	100.0	80.0
75th percentile	100.0	100.0	100.0	92.0	75.0	100.0	100.0	88.0
Range	5-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	50.7	73.5	43.8	9.3	1.3	49.3	72.5	2.0
%Floor	0.1	8.3	1.3	0.2	0.2	0.4	8.7	0.1
Upper 95% confidence interval for mean	91.3	87.2	82.0	78.8	63.5	86.1	86.1	75.8
Lower 95% confidence interval for mean	87.9	81.1	77.3	75.2	59.9	81.9	79.8	72.5
Statistical significance of difference with mean for age 18 to 24 years	-	-	-	-	-	-	-	-

- p>0.05, * p<0.05, ** p<0.01

Table 4.4: SF-36 scale profiles for women by age (continued)

3. Age: 34 to 44 years

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Mean	88.9	82.8	77.6	75.4	62.8	85.6	86.1	74.3
Standard deviation	17.6	33.0	25.1	18.4	18.1	21.3	29.1	15.9
Standard error of mean	0.8	1.6	1.2	0.9	0.9	1.0	1.4	0.8
Observations contributing to mean	857	856	856	858	856	856	856	856
25th percentile	85.0	75.0	62.0	67.0	50.0	75.0	100.0	64.0
50th percentile	95.0	100.0	84.0	77.0	65.0	100.0	100.0	76.0
75th percentile	100.0	100.0	100.0	90.0	75.0	100.0	100.0	84.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	44.1	73.0	40.6	9.6	1.0	53.1	75.5	2.2
%Floor	0.3	9.2	1.0	0.1	0.2	0.7	7.2	0.1
Upper 95% confidence interval for mean	90.6	85.9	79.9	77.1	64.5	87.6	88.9	75.8
Lower 95% confidence interval for mean	87.2	79.7	75.2	73.6	61.1	83.6	83.4	72.8
Statistical significance of difference with mean for age 18 to 24 years	-	-	*	-	-	-	-	-

- p>0.05, * p<0.05, ** p<0.01

4. Age: 45 to 54 years

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Mean	83.5	84.2	77.8	73.5	64.8	86.5	86.9	75.2
Standard deviation	21.4	32.4	23.5	20.0	18.3	20.8	29.0	15.4
Standard error of mean	1.2	1.9	1.3	1.1	1.0	1.2	1.7	0.9
Observations contributing to mean	612	611	613	614	613	613	612	613
25th percentile	75.0	75.0	62.0	62.0	55.0	75.0	100.0	64.0
50th percentile	90.0	100.0	84.0	77.0	70.0	100.0	100.0	76.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	5-100	0-100	0-100	0-100	4-100
%Ceiling	33.0	72.9	35.7	7.4	1.8	54.6	77.1	2.9
%Floor	0.5	10.8	0.6	0.3	0.3	0.3	7.6	0.2
Upper 95% confidence interval for mean	85.9	87.8	80.4	75.8	66.9	88.9	90.2	76.9
Lower 95% confidence interval for mean	81.1	80.5	75.2	71.3	62.8	84.2	83.7	73.4
Statistical significance of difference with mean for age 18 to 24 years	**	-	*	-	-	-	-	-

- p>0.05, * p<0.05, ** p<0.01

Table 4.4: SF-36 scale profiles for women by age (continued)

5. Age: 55 to 64 years

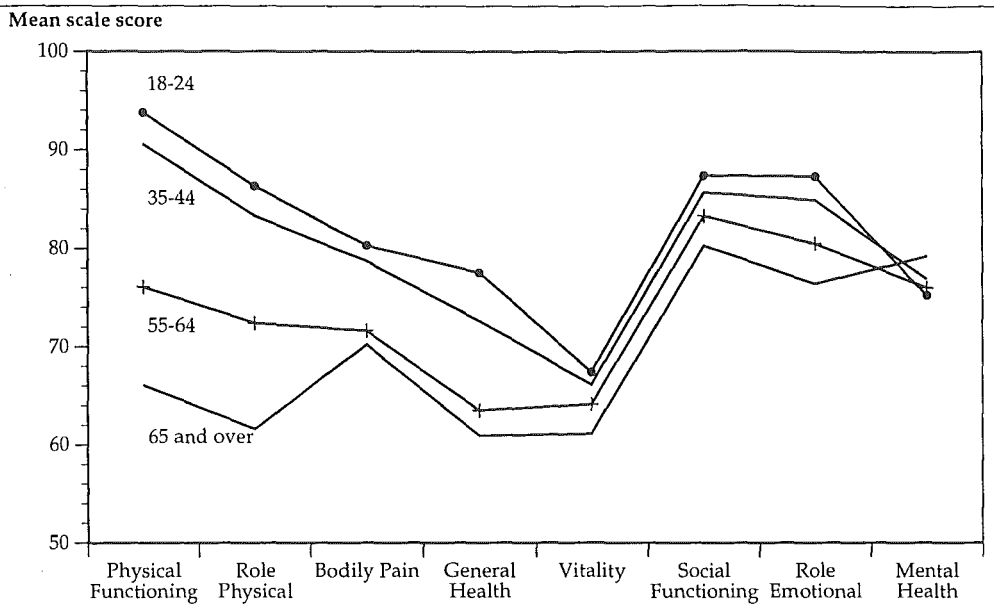
	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Mean	76.0	75.6	70.6	68.5	64.7	85.2	82.4	75.5
Standard deviation	23.8	37.3	26.6	22.7	20.9	23.3	32.0	18.1
Standard error of mean	1.6	2.5	1.8	1.5	1.4	1.6	2.2	1.2
Observations contributing to mean	444	440	443	448	444	446	439	443
25th percentile	60.0	50.0	51.0	53.5	55.0	75.0	66.7	68.0
50th percentile	80.0	100.0	74.0	72.0	70.0	100.0	100.0	80.0
75th percentile	95.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	8-100
%Ceiling	17.9	58.0	28.8	7.1	2.9	57.7	68.1	7.1
%Floor	0.7	13.9	1.3	0.4	0.7	0.9	8.2	0.2
Upper 95% confidence interval for mean	79.1	80.5	74.1	71.5	67.4	88.3	86.6	77.9
Lower 95% confidence interval for mean	72.9	70.6	67.1	65.5	61.9	82.2	78.2	73.1
Statistical significance of difference with mean for age 18 to 24 years	**	**	**	**	-	-	-	-

- p>0.05, * p<0.05, ** p<0.01

6. Age: 65 years and over

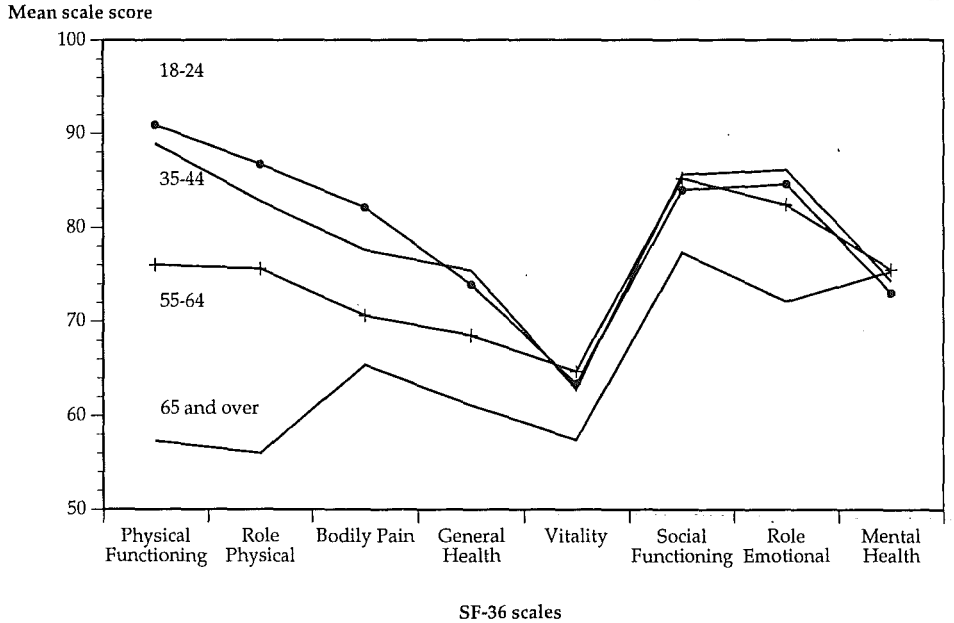
	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Mean	57.3	56.0	65.4	61.1	57.4	77.3	72.1	75.3
Standard deviation	28.8	42.8	28.6	22.4	21.6	27.7	37.0	17.3
Standard error of mean	1.6	2.3	1.6	1.2	1.2	1.5	2.0	0.9
Observations contributing to mean	689	686	677	695	677	688	686	676
25th percentile	35.0	0.0	41.0	45.0	45.0	62.5	33.3	64.0
50th percentile	60.0	75.0	72.0	65.0	60.0	87.5	100.0	80.0
75th percentile	85.0	100.0	100.0	80.0	75.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	12-100
%Ceiling	7.5	39.7	27.0	2.4	1.3	46.8	56.2	5.0
%Floor	1.6	26.4	1.1	0.1	1.0	1.8	14.0	0.3
Upper 95% confidence interval for mean	60.4	60.5	68.4	63.4	59.7	80.2	76.0	77.1
Lower 95% confidence interval for mean	54.3	51.5	62.3	58.7	55.1	74.3	68.2	73.4
Statistical significance of difference with mean for age 18 to 24 years	**	**	**	**	**	**	**	-

- p>0.05, * p<0.05, ** p<0.01



Note: Age groups 25–34 and 45–64 have been omitted from this figure for clarity

Figure 4.4: SF-36 mean score profiles by selected ages, men



Note: Age groups 25–34 and 45–64 have been omitted from this figure for clarity

Figure 4.5: SF-36 mean score profiles by selected ages, women

5. Demographic and socio-economic population groups

The tables and figures in this chapter present SF-36 score profiles for the following demographic and socio-economic groups:

- Marital status
- Highest educational qualification
- Income, both household and personal
- Occupation

Data was also collected in the study for country of birth, classified as 'born in Australia' and 'born overseas', but the SF-36 profiles for these groups did not differ significantly from each other or from the general population norms.

Marital status

Tables and Figures 5.1 and 5.2 list the SF-36 profiles for men and women by marital status.

Men who are divorced, separated or widowed show statistically significantly poorer physical functioning, social functioning and mental health than men who are married or living in a de facto relationship. Men who never married show statistically significantly poorer mental health than men who are married or living in a de facto relationship.

Women who are married or living in a de facto relationship show no statistically significant difference for any of the scales to women who never married. However, women who are divorced or separated have statistically significantly poorer mean scores than women who are married or living in a de facto relationship for all scales except general health and vitality.

Highest educational qualification

Tables and Figures 5.3 and 5.4 list the SF-36 profiles for men and women by highest educational qualification.

There is no statistically significant difference between the scores for men with only secondary school and those with a post-secondary certificate or diploma. However, men who have a bachelors degree or higher have statistically significantly better scores for physical functioning, role-physical, bodily pain and general health.

Women with a post-secondary certificate or diploma score statistically significantly better scores for physical functioning, general health and mental health than women with only secondary school education. Women with a

bachelors degree or higher score statistically significantly better scores for all scales except role-physical, vitality and role-emotional.

Income

Tables and Figures 5.5 and 5.6 list the SF-36 profiles for men and women by personal income, while Tables and Figures 5.7 and 5.8 list the profiles for household income.

For these tables, income was classified into deciles and the highest three deciles classified as high income, the middle four as medium and the lowest three as low.

The profiles for men exhibit the expected gradient with those on high incomes reporting better health than those on middle incomes who in turn report better health than those on low incomes. However, the score gradient is not as clear in the women's profiles.

In the analogous profiles classified by household income both men's and women's score profiles show the expected gradient in health.

Occupation

Tables and Figures 5.9 and 5.10 list the SF-36 profiles for men and women by occupation.

For men, managers, administrators, professionals and para-professionals report statistically significantly better scores for physical health, role-physical and bodily pain than other occupations.

For women, managers, administrators, professionals and para-professionals report statistically significantly worse scores for role-physical and vitality than other occupations

Table 5.1: SF-36 scale profiles for men by marital status

1. Marital status: Married/de facto

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	84.4	80.0	77.2	70.0	65.3	85.9	85.3	78.0
Standard deviation	22.7	34.9	25.4	20.8	19.3	21.6	29.4	15.2
Standard error of mean	0.7	1.1	0.8	0.7	0.6	0.7	1.0	0.5
Observations contributing to mean	1903	1901	1899	1907	1900	1904	1899	1899
25th percentile	80.0	75.0	62.0	57.0	55.0	75.0	100.0	68.0
50th percentile	95.0	100.0	84.0	72.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	5-100	0-100	0-100	0-100	8-100
%Ceiling	39.4	68.8	40.1	5.3	2.2	57.8	75.0	4.2
%Floor	0.6	11.0	0.9	0.2	0.2	0.6	6.2	0.1
Age standardised values								
Mean	86.1	81.1	77.8	71.1	65.4	86.8	85.8	78.7
Standard error of mean	0.6	1.3	1.0	0.7	0.8	0.8	1.1	0.6
Upper 95% confidence interval for mean	87.3	83.6	79.8	72.6	67.1	88.3	88.0	79.9
Lower 95% confidence interval for mean	84.9	78.6	75.8	69.7	63.8	85.3	83.7	77.5

2. Marital status: Divorced/separated/widowed

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	75.1	70.5	72.4	67.0	62.8	79.4	77.1	74.2
Standard deviation	28.6	40.3	27.6	23.4	22.8	26.0	35.7	20.2
Standard error of mean	2.0	2.8	1.9	1.6	1.6	1.8	2.5	1.4
Observations contributing to mean	425	422	420	425	422	423	422	422
25th percentile	55.0	25.0	51.0	50.0	45.0	62.5	66.7	64.0
50th percentile	85.0	100.0	74.0	72.0	65.0	87.5	100.0	80.0
75th percentile	100.0	100.0	100.0	82.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	29.0	56.9	33.7	5.4	2.8	45.9	63.2	9.1
%Floor	1.6	18.5	1.6	0.5	0.7	1.2	12.6	0.2
Age standardised values								
Mean	82.5	74.9	75.8	72.9	65.3	81.3	81.0	72.0
Standard error of mean	1.7	3.3	2.7	1.7	3.0	2.2	2.5	1.9
Upper 95% confidence interval for mean	85.8	81.3	81.1	76.3	71.1	85.5	85.8	75.8
Lower 95% confidence interval for mean	79.2	68.5	70.6	69.5	59.5	77.0	76.2	68.3
Statistical significance of difference with mean for married/de facto	*	-	-	-	-	*	-	**

- $p>0.05$, * $p<0.05$, ** $p<0.01$

Table 5.1: SF-36 scale profiles for men by marital status (continued)

3. Marital status: Never married

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	91.1	85.6	80.9	74.5	67.2	86.2	86.1	74.9
Standard deviation	17.6	29.8	22.3	19.7	17.9	19.7	28.4	16.9
Standard error of mean	1.0	1.6	1.2	1.1	1.0	1.1	1.5	0.9
Observations contributing to mean	685	684	687	690	685	686	683	686
25th percentile	88.9	75.0	62.0	60.0	55.0	75.0	100.0	68.0
50th percentile	100.0	100.0	84.0	77.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	53.5	72.8	45.8	8.9	3.2	54.7	75.1	4.2
%Floor	0.6	8.3	0.3	0.1	0.4	0.3	6.0	0.3
Age standardised values								
Mean	83.4	80.2	80.2	67.9	65.7	84.5	85.0	75.9
Standard error of mean	1.5	2.3	1.6	1.4	1.3	1.5	1.9	1.1
Upper 95% confidence interval for mean	86.3	84.7	83.4	70.7	68.2	87.4	88.7	78.2
Lower 95% confidence interval for mean	80.4	75.8	77.0	65.2	63.2	81.5	81.3	73.7
Statistical significance of difference with mean for married/de facto	-	-	-	*	-	-	-	*

- p>0.05, * p<0.05, ** p<0.01

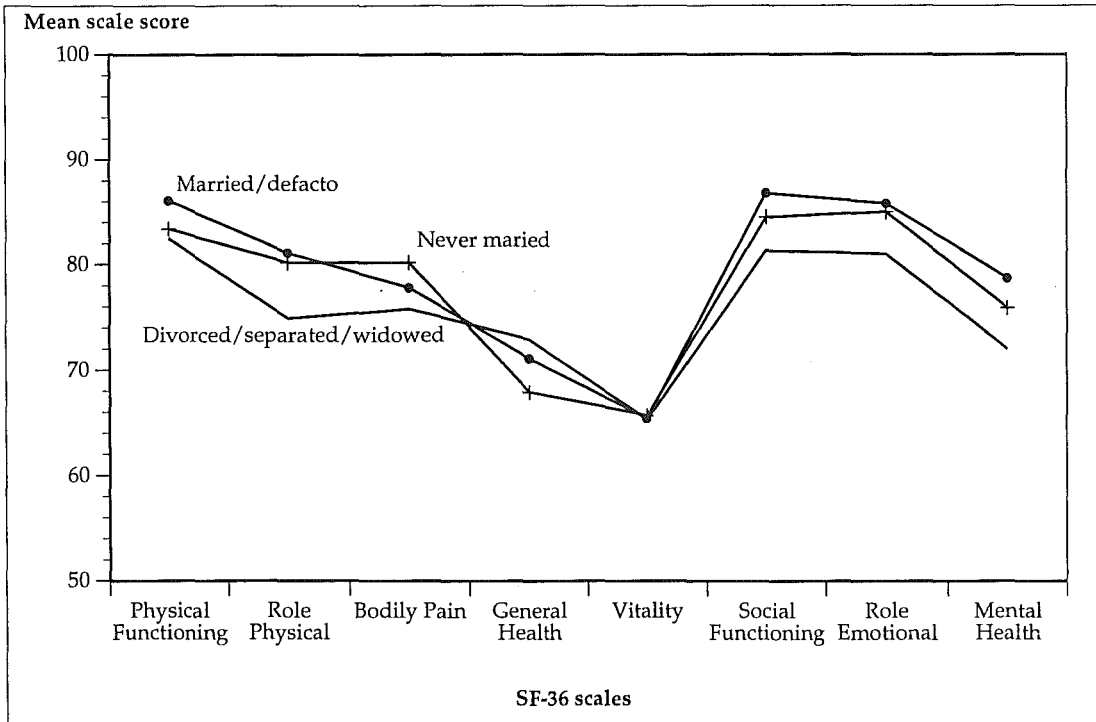


Figure 5.1: SF-36 mean score profiles for men by marital status

Table 5.2: SF-36 scale profiles for women by marital status

1. Marital status: Married/de facto

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	83.2	80.6	76.5	72.9	63.0	85.5	85.1	75.4
Standard deviation	22.6	34.8	25.3	20.3	18.7	21.6	30.0	15.9
Standard error of mean	0.7	1.0	0.8	0.6	0.6	0.6	0.9	0.5
Observations contributing to mean	2219	2212	2214	2224	2214	2219	2212	2214
25th percentile	75.0	75.0	62.0	62.0	50.0	75.0	100.0	68.0
50th percentile	95.0	100.0	84.0	77.0	65.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	75.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	36.8	70.0	38.8	7.5	1.6	55.5	75.2	3.1
%Floor	0.4	10.6	0.9	0.1	0.1	0.7	6.7	0.1
Age standardised values								
Mean	82.3	79.6	76.5	72.1	62.4	84.7	83.9	75.1
Standard error of mean	0.7	1.2	0.8	0.7	0.7	0.8	1.1	0.6
Upper 95% confidence interval for mean	83.7	81.8	78.1	73.4	63.7	86.2	86.1	76.2
Lower 95% confidence interval for mean	80.9	77.3	74.8	70.8	61.1	83.3	81.7	74.0

2. Marital status: Divorced/separated/widowed

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	69.0	65.0	69.2	66.7	58.6	77.6	71.7	72.3
Standard deviation	29.7	41.2	28.2	22.5	22.1	27.1	38.0	18.8
Standard error of mean	1.3	1.8	1.3	1.0	1.0	1.2	1.7	0.8
Observations contributing to mean	1000	997	991	1008	992	1001	997	990
25th percentile	50.0	25.0	51.0	52.0	45.0	62.5	33.3	60.0
50th percentile	80.0	100.0	74.0	72.0	60.0	87.5	100.0	76.0
75th percentile	95.0	100.0	100.0	87.0	75.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	22.6	51.7	31.7	6.5	1.5	45.5	59.1	4.8
%Floor	1.0	19.5	1.6	0.3	1.2	1.2	14.1	0.1
Age standardised values								
Mean	76.6	72.2	71.4	70.4	59.6	76.7	68.4	69.7
Standard error of mean	2.7	2.4	1.8	1.3	1.3	1.9	2.8	1.2
Upper 95% confidence interval for mean	81.9	76.9	74.8	73.1	62.1	80.5	73.8	72.1
Lower 95% confidence interval for mean	71.2	67.4	67.9	67.8	57.0	72.9	62.9	67.2
Statistical significance of difference with mean for married/de facto	*	**	**	-	-	**	**	**

- p>0.05, * p<0.05, ** p<0.01

Table 5.2: SF-36 scale profiles for women by marital status (continued)

3. Marital status: Never married

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	89.9	85.5	80.6	74.6	63.5	83.6	84.6	73.4
Standard deviation	17.9	30.0	21.7	19.6	18.6	20.7	30.1	16.0
Standard error of mean	1.0	1.7	1.3	1.1	1.1	1.2	1.8	0.9
Observations contributing to mean	591	591	592	594	592	592	591	592
25th percentile	85.0	75.0	64.0	62.0	50.0	75.0	66.7	64.0
50th percentile	95.0	100.0	84.0	77.0	65.0	87.5	100.0	76.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	84.0
Range	0-100	0-100	0-100	5-100	0-100	0-100	0-100	8-100
%Ceiling	48.4	73.7	41.0	9.2	1.2	47.2	73.2	1.7
%Floor	0.3	8.5	0.5	0.3	0.2	0.3	8.2	0.2
Age standardised values								
Mean	83.8	82.6	78.7	74.3	64.1	84.2	85.9	76.2
Standard error of mean	1.6	2.6	2.0	1.5	1.5	1.6	2.0	1.2
Upper 95% confidence interval for mean	86.9	87.6	82.6	77.2	67.1	87.4	89.9	78.5
Lower 95% confidence interval for mean	80.8	77.6	74.8	71.5	61.2	81.1	82.0	74.0
Statistical significance of difference with mean for married/de facto	-	-	-	-	-	-	-	-

- p>0.05, * p<0.05, ** p<0.01

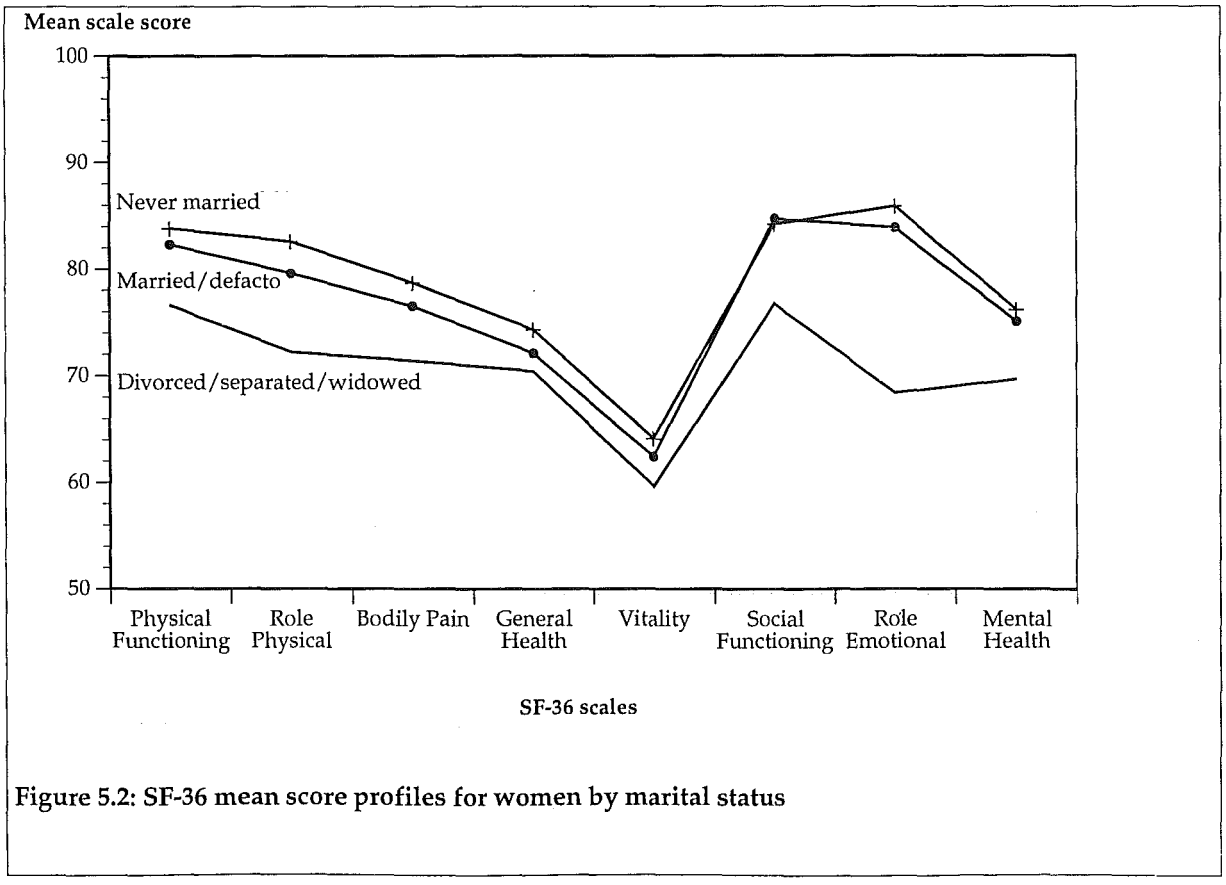


Figure 5.2: SF-36 mean score profiles for women by marital status

Table 5.3: SF-36 scale profiles for men aged 20 years and over by highest educational level

1. Highest educational level: Secondary school

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	82.7	78.4	76.7	69.6	65.4	84.6	84.3	76.9
Standard deviation	24.0	35.9	26.4	21.5	19.7	22.2	30.4	16.4
Standard error of mean	0.9	1.4	1.0	0.8	0.8	0.9	1.2	0.6
Observations contributing to mean	1345	1338	1342	1350	1340	1342	1337	1340
25th percentile	70.0	50.0	52.0	55.0	50.0	75.0	66.7	68.0
50th percentile	90.0	100.0	84.0	72.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	85.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	36.0	63.5	40.9	5.7	2.7	52.3	71.3	5.7
%Floor	0.8	13.7	1.2	0.2	0.5	0.9	8.2	0.2
Age standardised values								
Mean	82.9	78.5	76.8	69.7	65.3	84.6	84.4	77.0
Standard error of mean	0.8	1.3	1.0	0.8	0.7	0.9	1.1	0.6
Upper 95% confidence interval for mean	84.5	81.1	78.7	71.2	66.8	86.3	86.7	78.2
Lower 95% confidence interval for mean	81.3	75.9	74.8	68.1	63.9	82.9	82.2	75.7

2. Highest educational level: Certificate or diploma

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	85.1	79.6	75.8	70.4	65.3	85.0	83.7	77.1
Standard deviation	22.4	34.9	24.8	20.5	19.6	22.1	30.7	16.2
Standard error of mean	0.9	1.5	1.0	0.9	0.8	0.9	1.3	0.7
Observations contributing to mean	1139	1140	1134	1140	1137	1140	1138	1136
25th percentile	80.0	75.0	62.0	57.0	55.0	75.0	66.7	68.0
50th percentile	95.0	100.0	84.0	72.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	5-100	0-100	0-100	0-100	8-100
%Ceiling	41.8	68.4	36.4	5.6	2.7	56.5	73.6	4.8
%Floor	0.8	11.0	0.8	0.1	0.2	0.5	6.6	0.1
Age standardised values								
Mean	84.6	79.2	75.6	70.3	65.2	84.8	83.2	77.2
Standard error of mean	0.9	1.4	1.1	0.9	0.8	0.9	1.3	0.7
Upper 95% confidence interval for mean	86.3	82.0	77.7	72.0	66.8	86.6	85.8	78.5
Lower 95% confidence interval for mean	82.9	76.4	73.6	68.6	63.6	82.9	80.7	75.8
Statistical significance of difference with mean for secondary school	-	-	-	-	-	-	-	-

- $p>0.05$, * $p<0.05$, ** $p<0.01$

Table 5.3: SF-36 scale profiles for men aged 20 years and over by highest educational level (continued)

3. Highest educational level: Bachelors degree or higher

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	91.9	89.5	85.2	75.1	66.8	88.3	87.5	77.7
Standard deviation	17.4	26.8	20.0	19.1	17.8	19.5	27.5	14.7
Standard error of mean	1.2	1.8	1.4	1.3	1.2	1.3	1.9	1.0
Observations contributing to mean	434	434	435	437	436	436	434	436
25th percentile	95.0	100.0	74.0	67.0	60.0	87.5	100.0	68.0
50th percentile	100.0	100.0	100.0	77.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	10-100	5-100	5-100	0-100	0-100	16-100
%Ceiling	52.6	80.9	50.1	8.0	1.1	62.6	78.6	2.7
%Floor	0.5	5.7	0.9	0.5	0.5	0.2	5.9	0.2
Age standardised values								
Mean	89.5	86.7	83.7	73.7	65.7	86.9	86.3	77.5
Standard error of mean	1.6	2.2	1.6	1.6	1.4	1.7	2.3	1.2
Upper 95% confidence interval for mean	92.7	91.1	86.9	76.7	68.5	90.2	90.8	79.8
Lower 95% confidence interval for mean	86.4	82.4	80.5	70.6	62.9	83.6	81.8	75.2
Statistical significance of difference with mean for secondary school	**	**	**	*	-	-	-	-

- p>0.05, * p<0.05, ** p<0.01

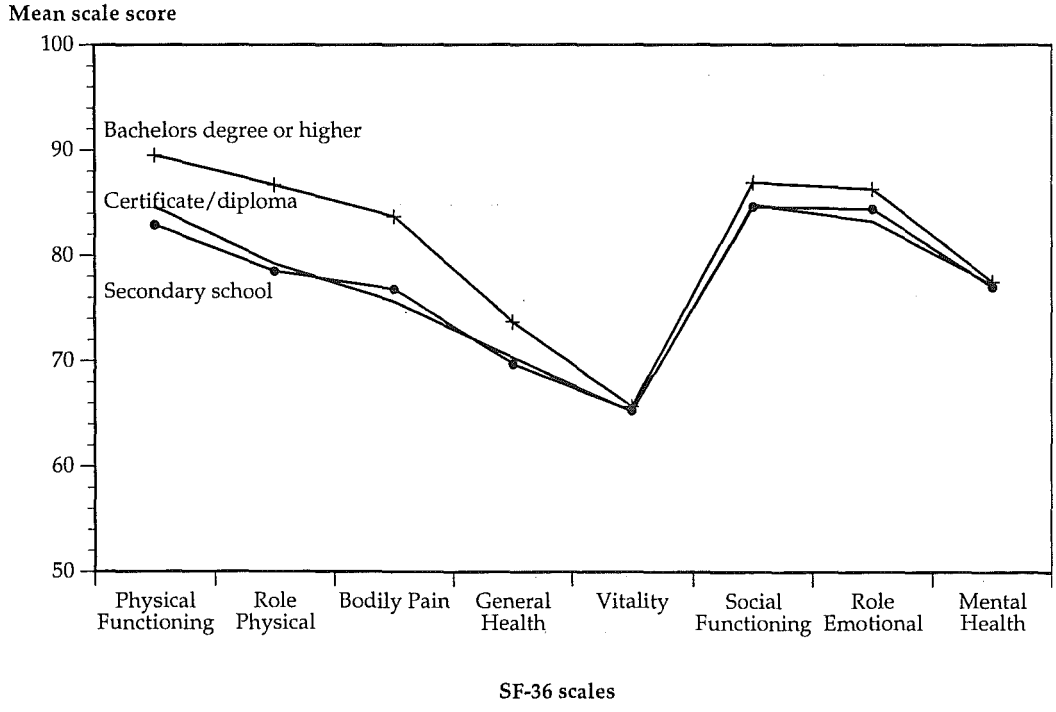


Figure 5.3 SF-36 mean score profiles for men aged 20 years and over by highest educational level

Table 5.4: SF-36 scale profiles for women aged 20 years and over by highest educational level

1. Highest educational level: Secondary school

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	77.8	76.5	74.5	69.7	62.0	82.7	81.6	73.9
Standard deviation	26.4	36.9	26.5	21.6	19.9	23.6	32.7	17.0
Standard error of mean	0.8	1.1	0.8	0.6	0.6	0.7	1.0	0.5
Observations contributing to mean	2228	2220	2217	2240	2218	2228	2222	2216
25th percentile	60.0	50.0	52.0	55.0	50.0	75.0	66.7	64.0
50th percentile	90.0	100.0	84.0	72.0	65.0	100.0	100.0	76.0
75th percentile	100.0	100.0	100.0	87.0	75.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	29.7	62.1	36.4	6.0	1.7	50.4	68.6	3.8
%Floor	0.7	13.9	1.1	0.2	0.5	1.0	9.7	0.2
Age standardised values								
Mean	80.2	78.5	75.6	70.8	62.3	83.3	82.6	73.8
Standard error of mean	0.7	1.0	0.8	0.6	0.6	0.7	1.0	0.5
Upper 95% confidence interval for mean	81.5	80.6	77.1	72.1	63.5	84.7	84.5	74.8
Lower 95% confidence interval for mean	79.0	76.5	74.1	69.6	61.2	82.0	80.7	72.8

2. Highest educational level: Certificate or diploma

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	85.3	79.5	75.6	74.5	62.5	84.7	83.5	75.3
Standard deviation	20.6	35.8	25.1	19.4	19.5	22.6	31.4	16.6
Standard error of mean	0.9	1.6	1.1	0.8	0.8	1.0	1.4	0.7
Observations contributing to mean	1058	1055	1055	1060	1055	1058	1054	1055
25th percentile	80.0	75.0	62.0	62.0	50.0	75.0	66.7	68.0
50th percentile	95.0	100.0	84.0	77.0	65.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	90.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	8-100
%Ceiling	37.5	68.0	35.8	9.3	1.2	53.2	72.6	2.8
%Floor	0.5	12.8	1.2	0.2	0.4	0.8	8.7	0.1
Age standardised values								
Mean	83.8	77.4	74.8	73.7	62.4	84.5	82.6	75.7
Standard error of mean	0.9	1.6	1.1	0.9	0.9	1.0	1.4	0.7
Upper 95% confidence interval for mean	85.6	80.5	77.0	75.4	64.1	86.5	85.4	77.1
Lower 95% confidence interval for mean	82.1	74.3	72.5	72.0	60.7	82.5	79.8	74.3
Statistical significance of difference with mean for secondary school	**	-	-	**	-	-	-	*

- $p>0.05$, * $p<0.05$, ** $p<0.01$

Table 5.4: SF-36 scale profiles for women aged 20 years and over by highest educational level (continued)

3. Highest educational level: Bachelors degree or higher

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	92.5	85.3	82.2	79.0	63.4	86.6	86.4	76.0
Standard deviation	13.8	30.9	21.6	16.6	16.5	18.8	29.1	13.2
Standard error of mean	1.0	2.1	1.5	1.1	1.1	1.3	2.0	0.9
Observations contributing to mean	417	418	418	419	418	419	418	418
25th percentile	90.0	100.0	72.0	72.0	50.0	75.0	100.0	68.0
50th percentile	100.0	100.0	84.0	82.0	65.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	92.0	75.0	100.0	100.0	84.0
Range	0-100	0-100	0-100	20-100	5-100	13-100	0-100	28-100
%Ceiling	52.4	75.7	43.8	11.0	1.0	53.8	75.7	2.4
%Floor	0.2	6.9	0.5	0.2	0.2	0.2	6.4	0.2
Age standardised values								
Mean	89.3	82.5	82.0	79.1	62.9	87.5	87.0	77.3
Standard error of mean	1.5	2.5	1.7	1.3	1.6	1.7	2.4	1.1
Upper 95% confidence interval for mean	92.2	87.4	85.4	81.6	66.1	90.8	91.8	79.5
Lower 95% confidence interval for mean	86.3	77.6	78.7	76.5	59.8	84.2	82.2	75.1
Statistical significance of difference with mean for secondary school	**	-	**	**	-	*	-	**

- p>0.05, * p<0.05, ** p<0.01

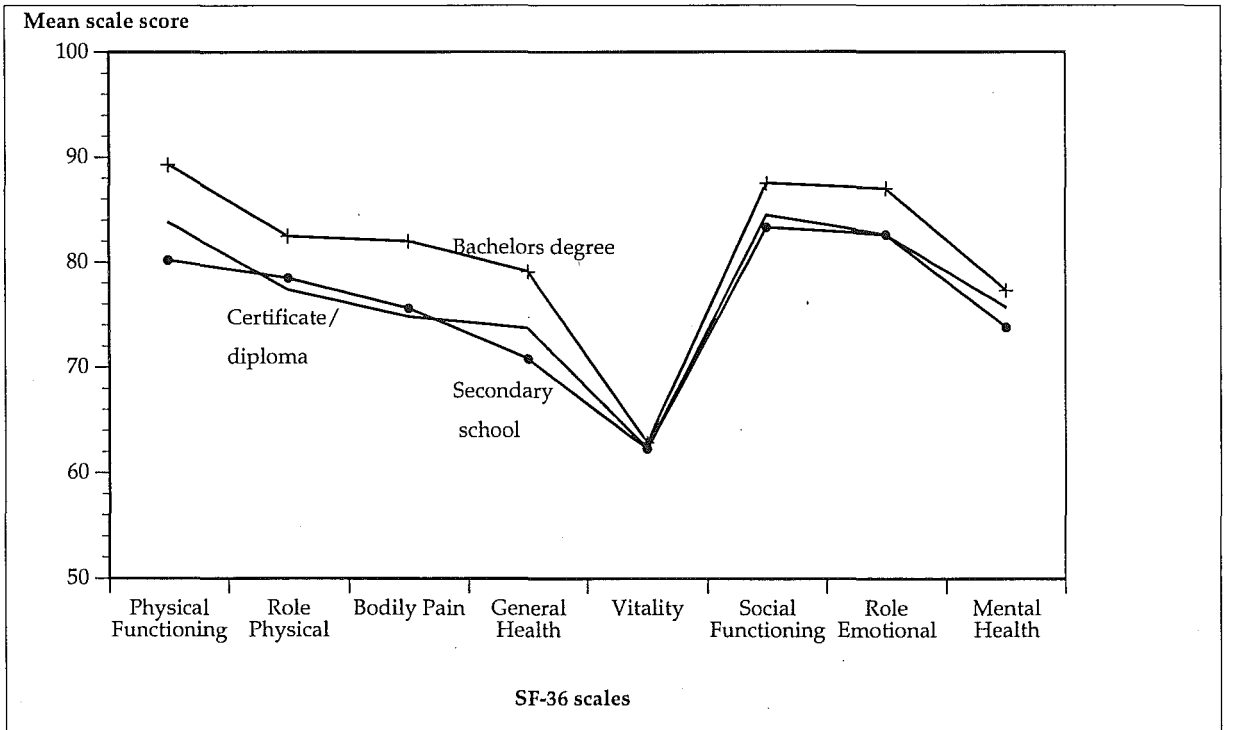


Figure 5.4: SF-36 mean score profiles for women aged 20 years and over by highest educational level

Table 5.5: SF-36 scale profiles for men by personal income

1. Personal income: Low

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	74.6	68.9	72.7	64.1	61.4	79.3	77.9	72.9
Standard deviation	28.1	39.9	28.5	23.5	21.2	25.4	35.3	18.7
Standard error of mean	1.7	2.5	1.8	1.4	1.3	1.6	2.2	1.2
Observations contributing to mean	522	520	521	526	519	522	517	520
25th percentile	50.0	25.0	51.0	45.0	45.0	62.5	66.7	60.0
50th percentile	80.0	100.0	74.0	62.0	60.0	87.5	100.0	80.0
75th percentile	95.0	100.0	100.0	82.0	75.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	22.1	50.4	35.7	3.4	2.5	44.3	62.8	4.7
%Floor	1.3	19.4	2.5	0.4	0.8	0.9	12.5	0.2
Age standardised values								
Mean	76.5	70.7	73.1	64.9	61.7	79.1	76.8	71.9
Standard error of mean	1.9	2.9	2.1	1.7	1.6	2.0	2.8	1.5
Upper 95% confidence interval for mean	80.3	76.4	77.3	68.2	64.9	83.0	82.3	74.8
Lower 95% confidence interval for mean	72.7	65.0	68.9	61.5	58.6	75.2	71.2	69.0

2. Personal income: Medium

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	83.2	78.6	76.8	69.5	64.4	84.2	82.7	76.0
Standard deviation	23.5	35.4	24.8	21.5	20.0	21.9	31.1	16.5
Standard error of mean	1.1	1.6	1.1	1.0	0.9	1.0	1.4	0.7
Observations contributing to mean	971	970	969	975	972	973	971	971
25th percentile	70.0	50.0	61.0	55.0	50.0	75.0	66.7	68.0
50th percentile	95.0	100.0	84.0	72.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	37.2	64.3	39.0	6.6	2.7	51.2	70.3	5.3
%Floor	1.0	13.1	0.6	0.1	0.4	0.7	8.3	0.1
Age standardised values								
Mean	83.2	78.4	76.8	69.3	64.3	83.9	82.5	75.7
Standard error of mean	0.9	1.6	1.1	0.9	0.9	1.0	1.4	0.8
Upper 95% confidence interval for mean	85.1	81.4	79.0	71.2	66.1	85.8	85.3	77.2
Lower 95% confidence interval for mean	81.4	75.3	74.6	67.4	62.6	81.9	79.8	74.2
Statistical significance of difference with mean for low income	**	*	-	*	-	*	-	*

- $p>0.05$, * $p<0.05$, ** $p<0.01$

Table 5.5: SF-36 scale profiles for men by personal income (continued)
3. Personal income: High

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	91.7	88.2	81.2	75.4	68.4	89.2	89.6	79.5
Standard deviation	16.0	28.2	22.2	17.6	17.5	18.5	25.0	14.4
Standard error of mean	0.6	1.1	0.9	0.7	0.7	0.7	1.0	0.6
Observations contributing to mean	1323	1320	1319	1322	1319	1321	1319	1319
25th percentile	90.0	100.0	72.0	67.0	60.0	87.5	100.0	72.0
50th percentile	100.0	100.0	84.0	77.0	70.0	100.0	100.0	84.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	5-100	0-100	0-100	0-100	4-100
%Ceiling	52.7	79.7	44.3	7.1	2.3	63.6	81.0	4.9
%Floor	0.4	6.1	0.5	0.1	0.1	0.3	3.8	0.1
Age standardised values								
Mean	89.5	85.0	80.0	74.2	68.1	88.3	88.5	79.8
Standard error of mean	0.9	1.6	1.2	0.9	0.9	1.0	1.5	0.7
Upper 95% confidence interval for mean	91.2	88.1	82.2	76.0	69.9	90.2	91.4	81.2
Lower 95% confidence interval for mean	87.7	81.9	77.7	72.4	66.3	86.3	85.6	78.4
Statistical significance of difference with mean for low income	**	**	**	**	**	**	**	**

- p>0.05, * p<0.05, ** p<0.01

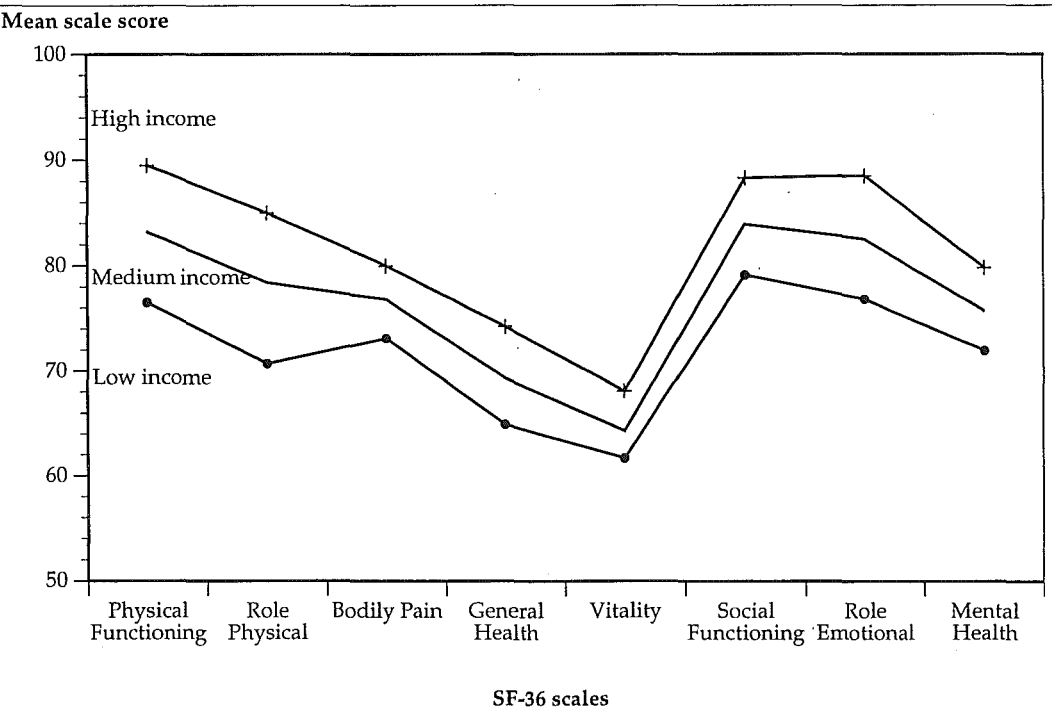


Figure 5.5: SF-36 mean score profiles for men by personal income

Table 5.6: SF-36 scale profiles for women by personal income

1. Personal income: Low

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	78.8	75.9	73.7	69.6	61.9	82.6	81.9	73.8
Standard deviation	25.7	37.7	27.0	21.8	19.9	23.6	32.7	17.1
Standard error of mean	1.0	1.5	1.1	0.9	0.8	0.9	1.3	0.7
Observations contributing to mean	1314	1308	1304	1317	1304	1311	1309	1304
25th percentile	60.0	50.0	52.0	55.0	50.0	75.0	66.7	64.0
50th percentile	90.0	100.0	84.0	72.0	65.0	100.0	100.0	76.0
75th percentile	100.0	100.0	100.0	87.0	75.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	30.6	62.3	36.1	6.5	2.0	50.0	70.4	3.5
%Floor	0.8	14.7	1.4	0.2	0.5	1.1	9.7	0.2
Age standardised values								
Mean	81.2	78.0	75.0	70.9	62.3	83.2	83.0	73.8
Standard error of mean	0.8	1.4	1.0	0.8	0.8	0.9	1.3	0.7
Upper 95% confidence interval for mean	82.8	80.6	77.0	72.5	63.8	85.0	85.4	75.2
Lower 95% confidence interval for mean	79.7	75.3	73.0	69.4	60.8	81.5	80.5	72.5

2. Personal income: Medium

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	82.5	79.6	77.0	72.5	62.0	83.0	80.7	73.6
Standard deviation	23.4	35.1	24.6	20.1	19.5	23.6	33.3	17.2
Standard error of mean	0.9	1.3	0.9	0.7	0.7	0.9	1.2	0.6
Observations contributing to mean	1481	1478	1480	1488	1481	1485	1480	1480
25th percentile	70.0	75.0	62.0	60.0	50.0	75.0	66.7	64.0
50th percentile	90.0	100.0	84.0	77.0	65.0	100.0	100.0	76.0
75th percentile	100.0	100.0	100.0	87.0	75.0	100.0	100.0	84.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	34.8	65.6	37.2	6.7	1.1	50.1	67.8	3.3
%Floor	0.5	12.6	0.7	0.2	0.5	0.9	10.1	0.1
Age standardised values								
Mean	82.5	79.5	76.7	72.6	62.0	83.0	80.6	73.5
Standard error of mean	0.8	1.2	0.9	0.7	0.7	0.9	1.2	0.6
Upper 95% confidence interval for mean	84.0	81.9	78.4	74.0	63.4	84.7	83.0	74.8
Lower 95% confidence interval for mean	81.0	77.1	74.9	71.1	60.5	81.3	78.2	72.3
Statistical significance of difference with mean for low income	-	-	-	-	-	-	-	-

- p>0.05, * p<0.05, ** p<0.01

Table 5.6: SF-36 scale profiles for women by personal income (continued)
3. Personal income: High

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	90.7	84.2	79.6	78.0	63.5	87.3	86.9	77.0
Standard deviation	15.4	31.9	22.7	17.8	17.7	18.8	28.4	13.6
Standard error of mean	0.8	1.7	1.2	1.0	1.0	1.0	1.5	0.7
Observations contributing to mean	688	688	688	690	688	688	687	688
25th percentile	85.0	87.5	72.0	67.0	50.0	75.0	100.0	68.0
50th percentile	95.0	100.0	84.0	82.0	65.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	92.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	15-100	5-100	0-100	0-100	16-100
%Ceiling	46.8	74.6	39.9	11.7	1.0	56.6	76.7	3.0
%Floor	0.1	7.9	1.0	0.1	0.4	0.1	6.5	0.3
Age standardised values								
Mean	88.1	78.9	80.0	76.6	63.7	87.4	87.7	78.0
Standard error of mean	1.3	2.4	1.6	1.3	1.1	1.5	1.8	1.0
Upper 95% confidence interval for mean	90.6	83.5	83.1	79.1	65.9	90.3	91.2	79.9
Lower 95% confidence interval for mean	85.7	74.3	76.9	74.0	61.4	84.5	84.2	76.1
Statistical significance of difference with mean for low income	**	-	**	**	-	*	*	**

- p>0.05, * p<0.05, ** p<0.01

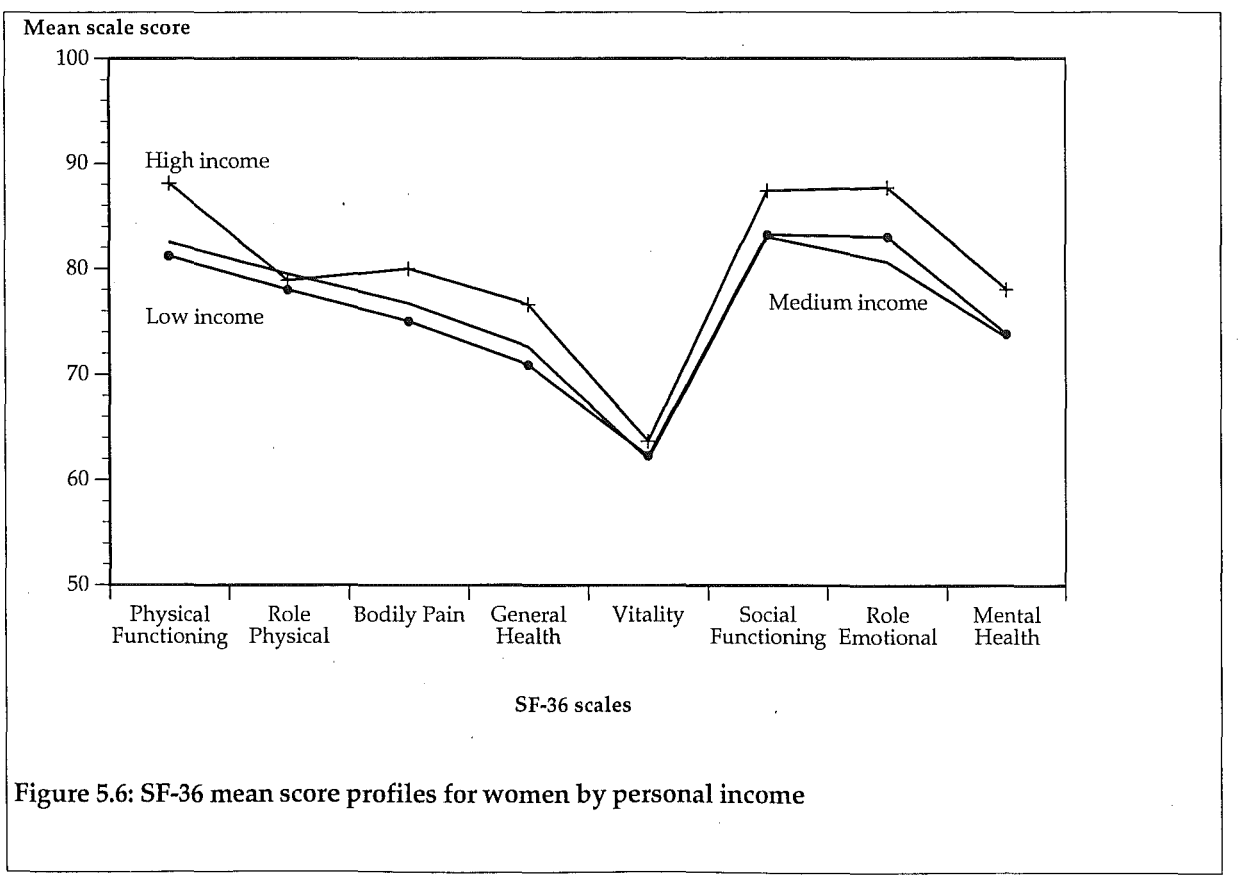


Figure 5.6: SF-36 mean score profiles for women by personal income

Table 5.7: SF-36 scale profiles for men by household income

1. Household income: Low

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	71.0	66.3	70.7	60.8	60.4	78.4	77.7	74.6
Standard deviation	28.4	41.1	28.7	23.7	22.9	25.9	35.4	18.5
Standard error of mean	1.6	2.3	1.6	1.3	1.3	1.4	2.0	1.0
Observations contributing to mean	649	645	645	651	644	647	644	644
25th percentile	50.0	25.0	42.0	42.0	45.0	62.5	66.7	60.0
50th percentile	80.0	100.0	74.0	62.0	65.0	87.5	100.0	80.0
75th percentile	95.0	100.0	100.0	80.0	77.5	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	18.5	49.6	33.6	3.2	2.6	43.1	64.1	6.1
%Floor	1.4	21.2	1.8	0.5	1.2	0.9	12.4	0.2
Age standardised values								
Mean	78.4	74.2	74.8	64.0	62.4	79.6	80.8	72.9
Standard error of mean	1.6	2.4	1.8	1.6	1.5	1.7	2.2	1.3
Upper 95% confidence interval for mean	81.5	78.9	78.3	67.1	65.3	83.0	85.0	75.5
Lower 95% confidence interval for mean	75.4	69.5	71.2	61.0	59.5	76.2	76.5	70.4

2. Household income: Medium

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	86.2	82.4	79.6	71.8	65.8	86.4	85.3	77.4
Standard deviation	21.6	32.8	24.3	20.0	18.9	21.2	29.0	16.1
Standard error of mean	0.9	1.4	1.1	0.9	0.8	0.9	1.3	0.7
Observations contributing to mean	1069	1069	1070	1074	1072	1072	1069	1071
25th percentile	85.0	75.0	62.0	62.0	55.0	75.0	100.0	68.0
50th percentile	95.0	100.0	84.0	77.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	5-100	5-100	0-100	0-100	4-100
%Ceiling	45.9	73.0	44.3	6.4	2.5	59.2	75.3	5.6
%Floor	0.6	8.2	1.0	0.2	0.5	0.7	5.3	0.1
Age standardised values								
Mean	85.1	81.5	79.0	71.2	65.5	86.3	84.9	77.4
Standard error of mean	0.9	1.5	1.1	0.9	0.9	1.0	1.3	0.7
Upper 95% confidence interval for mean	86.9	84.3	81.0	72.9	67.2	88.1	87.4	78.9
Lower 95% confidence interval for mean	83.3	78.6	76.9	69.4	63.8	84.4	82.4	76.0
Statistical significance of difference with mean for low income	**	**	*	**	-	**	-	**

- p>0.05, * p<0.05, ** p<0.01

Table 5.7: SF-36 scale profiles for men by household income (continued)
3. Household income: High

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	91.1	86.3	80.7	75.2	67.7	88.1	87.7	78.1
Standard deviation	16.7	30.2	22.5	18.5	17.7	18.8	27.2	15.1
Standard error of mean	0.8	1.4	1.1	0.9	0.8	0.9	1.3	0.7
Observations contributing to mean	898	897	896	897	894	897	896	895
25th percentile	90.0	100.0	72.0	62.0	60.0	87.5	100.0	72.0
50th percentile	100.0	100.0	84.0	77.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	5-100	0-100	0-100	0-100	4-100
%Ceiling	51.9	77.5	42.9	8.2	2.2	60.3	79.3	3.8
%Floor	0.4	7.4	0.1	0.1	0.1	0.2	5.0	0.1
Age standardised values								
Mean	88.7	83.0	80.2	73.7	67.6	87.2	86.1	78.7
Standard error of mean	1.1	1.9	1.3	1.2	1.0	1.2	2.2	0.8
Upper 95% confidence interval for mean	90.9	86.8	82.8	75.9	69.5	89.5	90.4	80.4
Lower 95% confidence interval for mean	86.6	79.2	77.7	71.4	65.6	84.9	81.8	77.1
Statistical significance of difference with mean for low income	**	**	*	**	**	**	-	**

- p>0.05, * p<0.05, ** p<0.01

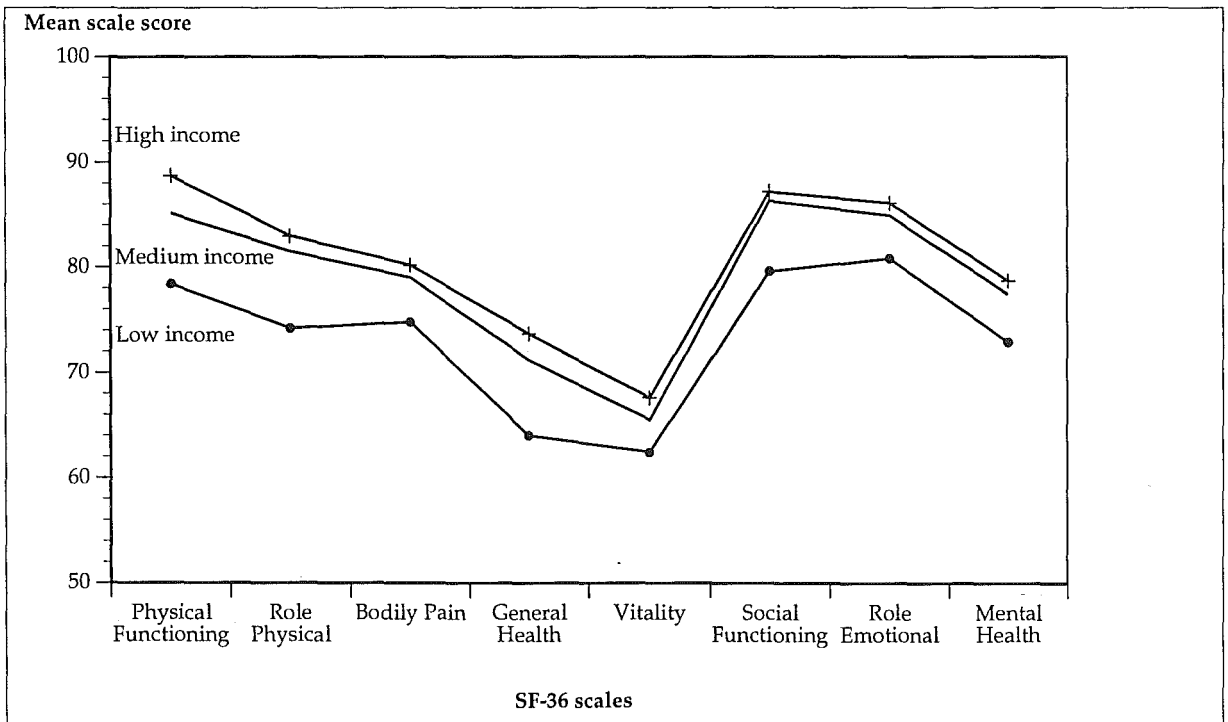


Figure 5.7: SF-36 mean score profiles for men by household income

Table 5.8: SF-36 scale profiles for women by household income

1. Household income: Low

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	68.6	66.2	69.0	64.7	58.9	78.1	74.7	72.6
Standard deviation	28.6	41.7	28.6	22.5	21.4	26.6	36.6	18.0
Standard error of mean	1.2	1.8	1.3	1.0	0.9	1.2	1.6	0.8
Observations contributing to mean	1052	1048	1042	1059	1043	1051	1052	1042
25th percentile	50.0	25.0	51.0	50.0	45.0	62.5	33.3	60.0
50th percentile	75.0	100.0	74.0	67.0	60.0	87.5	100.0	76.0
75th percentile	95.0	100.0	100.0	82.0	75.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	18.9	52.7	31.1	4.6	1.5	44.9	60.9	3.9
%Floor	0.8	19.5	1.4	0.3	0.9	1.4	13.7	0.1
Age standardised values								
Mean	77.6	74.3	73.0	68.2	59.9	78.2	77.7	71.1
Standard error of mean	1.2	1.9	1.4	1.1	1.1	1.4	1.9	1.0
Upper 95% confidence interval for mean	80.0	78.1	75.8	70.4	62.0	80.8	81.4	73.0
Lower 95% confidence interval for mean	75.2	70.6	70.3	66.0	57.8	75.5	74.1	69.1

2. Household income: Medium

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	84.4	81.0	77.3	73.3	61.8	83.4	82.7	73.8
Standard deviation	22.1	34.2	24.7	20.1	19.0	22.9	32.7	16.9
Standard error of mean	0.9	1.4	1.0	0.8	0.8	0.9	1.3	0.7
Observations contributing to mean	1251	1248	1249	1254	1249	1252	1247	1249
25th percentile	80.0	75.0	62.0	62.0	50.0	75.0	100.0	64.0
50th percentile	95.0	100.0	84.0	77.0	65.0	100.0	100.0	76.0
75th percentile	100.0	100.0	100.0	90.0	75.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	41.4	70.6	39.4	8.6	1.3	52.7	74.1	3.3
%Floor	0.5	9.8	0.8	0.1	0.2	0.6	8.3	0.2
Age standardised values								
Mean	82.4	79.2	76.4	72.4	61.5	82.9	81.9	73.7
Standard error of mean	0.9	1.5	1.0	0.9	0.8	1.0	1.4	0.7
Upper 95% confidence interval for mean	84.1	82.1	78.5	74.1	63.1	84.9	84.7	75.2
Lower 95% confidence interval for mean	80.6	76.3	74.4	70.7	59.9	80.9	79.1	72.2
Statistical significance of difference with mean for low income	**	*	*	**	-	**	-	*

- $p>0.05$, * $p<0.05$, ** $p<0.01$

Table 5.8: SF-36 scale profiles for women by household income (continued)
3. Household income: High

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	89.5	85.5	80.4	76.9	64.6	87.8	87.5	76.5
Standard deviation	17.0	30.6	22.9	18.1	17.7	19.0	27.0	14.6
Standard error of mean	0.8	1.5	1.1	0.9	0.9	0.9	1.3	0.7
Observations contributing to mean	868	868	869	870	869	869	867	869
25th percentile	85.0	100.0	72.0	67.0	50.0	75.0	100.0	68.0
50th percentile	95.0	100.0	84.0	80.0	65.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	90.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	5-100	5-100	0-100	0-100	8-100
%Ceiling	46.2	75.3	43.3	9.2	0.6	57.4	77.2	3.0
%Floor	0.5	8.2	0.8	0.1	0.5	0.5	5.2	0.1
Age standardised values								
Mean	85.7	79.9	79.4	75.2	65.4	86.4	87.5	78.3
Standard error of mean	1.6	1.9	1.4	1.2	1.1	1.5	1.7	0.9
Upper 95% confidence interval for mean	88.7	83.6	82.1	77.6	67.5	89.4	90.8	80.0
Lower 95% confidence interval for mean	82.6	76.2	76.8	72.9	63.3	83.4	84.2	76.7
Statistical significance of difference with mean for low income	**	*	**	**	**	**	**	**

- p>0.05, * p<0.05, ** p<0.01

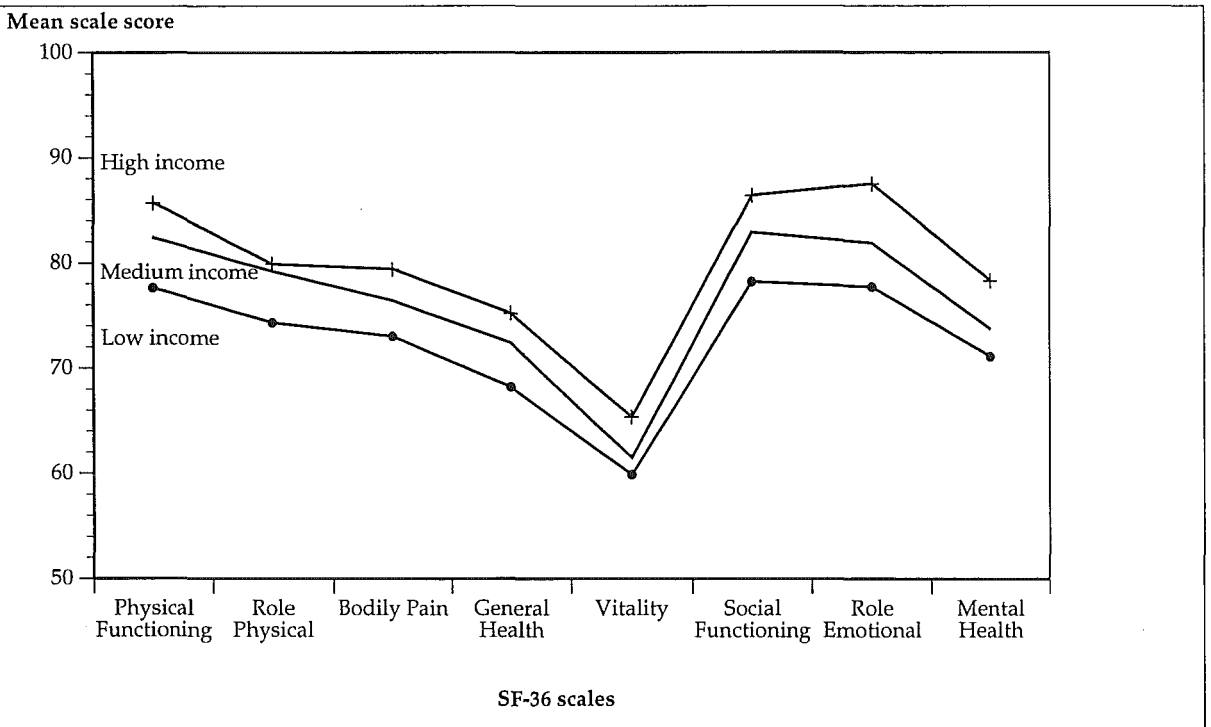


Figure 5.8: SF-36 mean score profiles for women by household income

Table 5.9: SF-36 scale profiles for men aged 18 to 64 years by occupation

1. Occupation: Managers & administrators, professionals and para professionals

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	93.0	89.4	83.4	75.2	67.4	89.3	88.5	78.2
Standard deviation	13.7	25.8	20.7	17.7	17.4	18.1	25.8	14.0
Standard error of mean	0.7	1.3	1.1	0.9	0.9	0.9	1.3	0.7
Observations contributing to mean	768	767	768	769	768	768	767	768
25th percentile	95.0	100.0	74.0	67.0	60.0	87.5	100.0	72.0
50th percentile	100.0	100.0	84.0	77.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	10-100	0-100	0-100	10-100	5-100	0-100	0-100	12-100
%Ceiling	55.7	80.9	47.0	7.2	2.3	61.9	77.9	3.5
%Floor	0.3	4.7	0.3	0.1	0.1	0.4	4.3	0.1
Age standardised values								
Mean	93.5	89.4	83.1	75.7	67.7	89.4	88.8	78.3
Standard error of mean	0.7	1.5	1.3	1.0	1.0	1.1	1.5	0.8
Upper 95% confidence interval for mean	94.8	92.4	85.6	77.7	69.6	91.4	91.7	79.9
Lower 95% confidence interval for mean	92.2	86.5	80.7	73.7	65.8	87.3	85.9	76.6

2. Occupation: Other

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	90.3	85.6	78.6	74.5	67.5	87.7	88.3	77.9
Standard deviation	17.3	30.3	23.9	18.2	18.1	19.2	25.8	15.3
Standard error of mean	0.7	1.3	1.0	0.8	0.8	0.8	1.1	0.6
Observations contributing to mean	1163	1164	1163	1166	1163	1165	1164	1163
25th percentile	90.0	100.0	62.0	62.0	55.0	87.5	100.0	72.0
50th percentile	100.0	100.0	84.0	77.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	10-100	0-100	0-100	0-100	4-100
%Ceiling	51.6	76.1	42.2	7.6	2.5	59.8	80.2	5.3
%Floor	0.5	7.6	0.5	0.1	0.1	0.3	4.0	0.2
Age standardised values								
Mean	89.8	85.4	78.4	74.1	67.5	87.7	88.1	77.9
Standard error of mean	0.7	1.3	1.0	0.8	0.8	0.8	1.1	0.7
Upper 95% confidence interval for mean	91.2	87.9	80.4	75.6	69.0	89.2	90.3	79.2
Lower 95% confidence interval for mean	88.3	82.8	76.5	72.6	66.0	86.1	85.9	76.6
Statistical significance of difference with mean for managers/administrators professionals and para professionals	**	*	**	-	-	-	-	-

- $p>0.05$, * $p<0.05$, ** $p<0.01$

Table 5.10: SF-36 scale profiles for women aged 18 to 64 years by occupation

1. Occupation: Managers & administrators, professionals and para professionals

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	90.9	83.9	79.7	77.0	62.6	86.4	85.6	76.3
Standard deviation	15.2	31.4	22.7	18.1	17.7	18.9	28.9	13.9
Standard error of mean	0.9	1.8	1.3	1.0	1.0	1.1	1.6	0.8
Observations contributing to mean	630	631	632	632	632	632	631	632
25th percentile	90.0	75.0	72.0	67.0	50.0	75.0	100.0	68.0
50th percentile	95.0	100.0	84.0	82.0	65.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	92.0	75.0	100.0	100.0	88.0
Range	5-100	0-100	0-100	10-100	0-100	0-100	0-100	16-100
%Ceiling	48.0	73.5	41.1	10.2	0.5	52.8	75.3	2.0
%Floor	0.2	7.7	0.8	0.2	0.2	0.5	5.8	0.3
Age standardised values								
Mean	90.7	82.7	79.4	75.9	62.4	86.1	84.8	76.0
Standard error of mean	1.0	2.1	1.4	1.2	1.2	1.3	1.9	0.9
Upper 95% confidence interval for mean	92.7	86.9	82.2	78.3	64.7	88.6	88.5	77.8
Lower 95% confidence interval for mean	88.8	78.5	76.5	73.5	60.1	83.6	81.0	74.2

2. Occupation: Other

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	89.4	87.8	80.5	76.1	64.8	87.0	87.6	75.4
Standard deviation	16.7	28.0	22.0	17.4	17.4	19.1	27.7	15.1
Standard error of mean	0.7	1.1	0.9	0.7	0.7	0.8	1.1	0.6
Observations contributing to mean	1251	1250	1251	1252	1251	1251	1251	1251
25th percentile	85.0	100.0	72.0	67.0	55.0	75.0	100.0	68.0
50th percentile	95.0	100.0	84.0	77.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	90.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	5-100	5-100	0-100	0-100	24-100
%Ceiling	46.5	77.4	41.8	9.1	1.1	55.8	78.4	2.9
%Floor	0.2	6.8	0.4	0.1	0.2	0.1	6.1	0.2
Age standardised values								
Mean	89.0	87.6	80.2	76.3	65.3	87.6	88.1	75.9
Standard error of mean	0.7	1.2	0.9	0.7	0.7	0.7	1.1	0.6
Upper 95% confidence interval for mean	90.4	89.9	82.0	77.7	66.7	89.1	90.3	77.1
Lower 95% confidence interval for mean	87.7	85.3	78.3	74.9	63.9	86.2	86.0	74.7
Statistical significance of difference with mean for managers/administrators professionals and para professionals	-	*	-	-	*	-	-	-

- p>0.05, * p<0.05, ** p<0.01

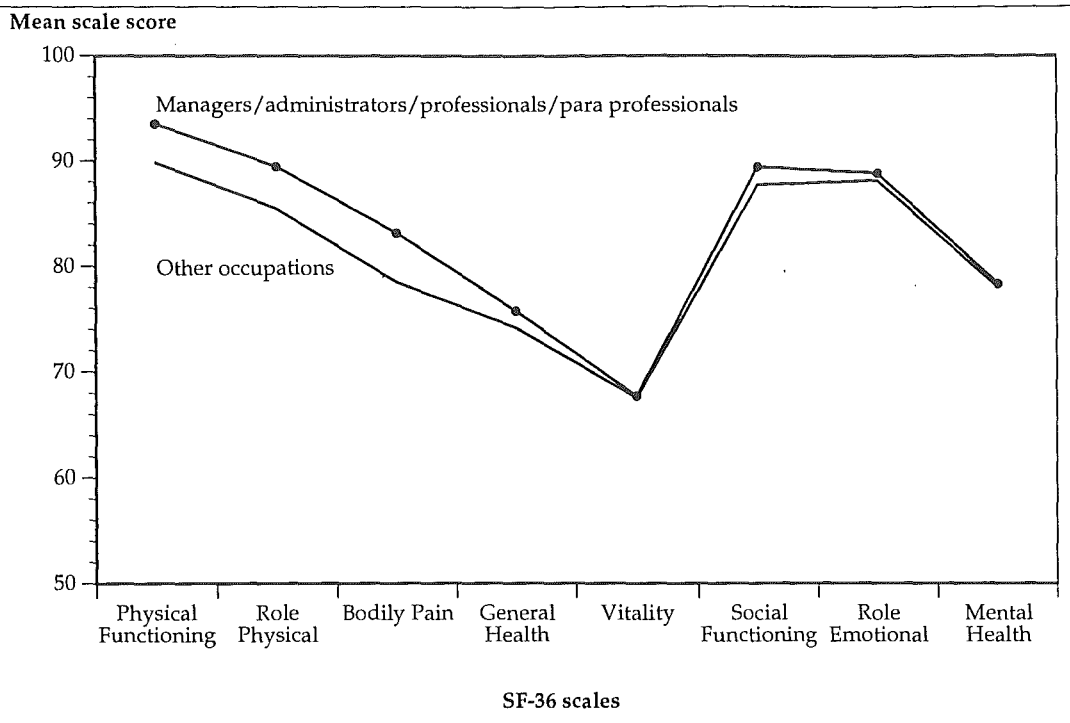


Figure 5.9: SF-36 mean score profiles for men aged 18 to 64 years by occupation

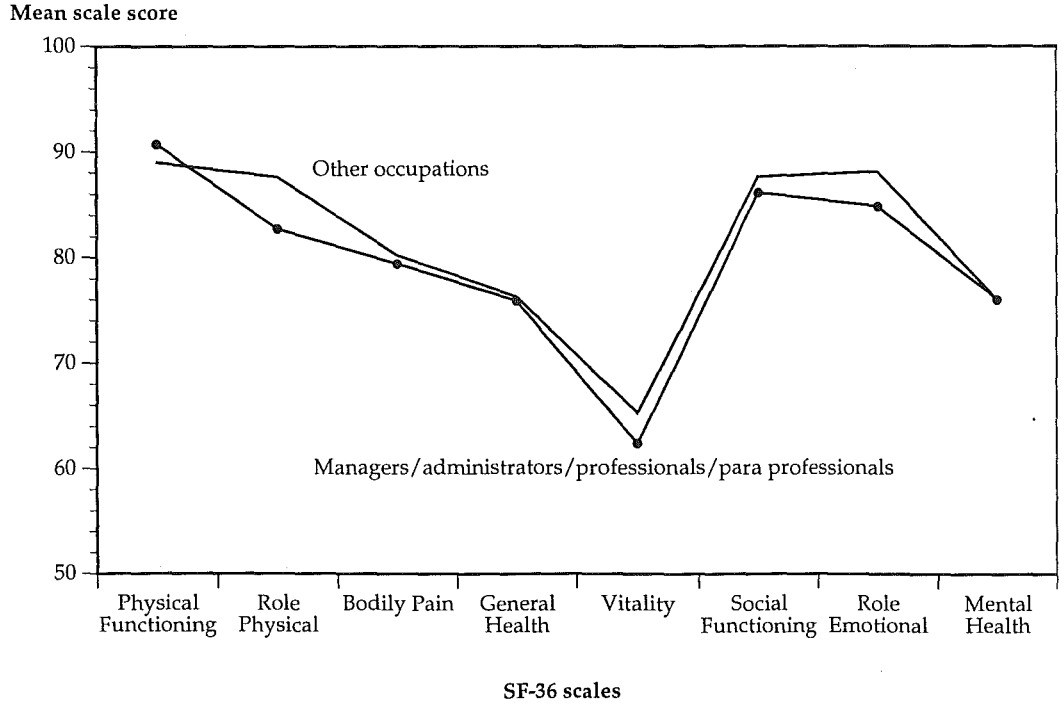


Figure 5.10: SF-36 mean score profiles for women aged 18 to 64 years by occupation

6. Health related behaviour and risk factors

The tables and figures in this chapter present SF-36 score profiles for the following health related behaviour and risk factors:

- Smoking
- Exercise
- Body weight
- Alcohol risk drinking

Smoking

Tables and Figures 6.1 and 6.2 list the SF-36 profiles for men and women by smoking status.

Men who are current smokers report statistically significantly poorer values than non smokers for all scales except role-emotional and mental health.

Women who are current smokers report statistically significantly poorer values than non smokers for general health, social functioning and role-emotional scales.

Exercise

Tables and Figures 6.3 and 6.4 list the SF-36 profiles for men and women by whether they reported walking for exercise and Tables and Figures 6.5 and 6.6 list the corresponding profiles by whether they reported any exercise for sport or recreation.

Men who reported walking for exercise had statistically significantly better mean scores than those who did not report walking for exercise for physical functioning, general health and vitality while women who reported walking for exercise had statistically significantly better mean scores than those who did not report walking for exercise for all scales except role-physical and role-emotional.

Men who reported any exercise for sport or recreation also had statistically significantly better mean scores for physical functioning, general health and vitality than those who did not report exercise for sport or recreation while women who reported any exercise for sport or recreation had statistically significantly better mean scores than those who did not report exercise for sport or recreation for all scales except role-emotional.

Body weight

Tables and Figures 6.7 and 6.8 list the SF-36 profiles for men and women by body weight, classified as having acceptable weight, being overweight or being obese based on their Body Mass Index (BMI). This classification follows the National Heart Foundation's Risk Factor Survey in classifying a BMI of 20 to 25 as acceptable, over 25 to 30 as overweight and over 30 as obese. People reporting a BMI under 20 were excluded from this analysis.

There was a clear gradient in self reported health status for each of the scales for women, with obese women reporting poorer health than overweight women who in turn reported poorer health than women with an acceptable weight. However, there was no clear gradient in the mean scale scores for men.

Alcohol risk drinking

Tables and Figures 6.9 and 6.10 list the SF-36 profiles for men and women by their alcohol risk status, using the National Health and Medical Research Council guidelines. Thus people were classified as non drinkers if they did not drink alcohol, low risk if they drank on average no more than two standard drinks per day (for women) or four standard drinks per day (for men) and high risk if their average daily alcohol intake was higher than this.

The profile for men shows that those with a low alcohol risk reported better health than either people with a high risk or non drinkers. The profiles for women with low and high alcohol risks could not be distinguished, but both reported better health than non drinkers.

It is impossible in a cross sectional study such as this to attribute cause and effect to relationships between health status and reported alcohol consumption. However, these profiles are consistent with the hypothesised health benefits of a low intake of alcohol reported elsewhere.

Table 6.1: SF-36 scale profiles for men by smoking status

1. Current smoker: Yes

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	85.4	80.4	76.3	67.7	64.1	83.9	83.7	75.2
Standard deviation	22.7	34.3	26.6	21.4	20.7	23.5	30.6	17.8
Standard error of mean	1.1	1.6	1.3	1.0	1.0	1.1	1.5	0.9
Observations contributing to mean	876	873	872	877	873	874	873	873
25th percentile	80.0	75.0	61.0	55.0	50.0	75.0	66.7	68.0
50th percentile	95.0	100.0	84.0	70.0	65.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	82.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	42.8	66.1	41.3	5.4	3.3	52.2	70.6	5.2
%Floor	1.0	11.0	1.2	0.3	0.6	1.1	7.8	0.2
Age standardised values								
Mean	82.0	77.0	75.5	66.4	63.0	82.9	82.3	75.7
Standard error of mean	1.2	1.8	1.4	1.1	1.2	1.3	1.7	0.9
Upper 95% confidence interval for mean	84.3	80.5	78.2	68.7	65.3	85.4	85.7	77.4
Lower 95% confidence interval for mean	79.6	73.4	72.8	64.2	60.8	80.4	78.9	73.9

2. Current smoker: No

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	85.3	80.7	78.3	72.2	66.2	86.1	85.3	77.6
Standard deviation	22.4	34.5	24.2	20.5	18.7	20.8	29.5	15.5
Standard error of mean	0.7	1.1	0.7	0.6	0.6	0.6	0.9	0.5
Observations contributing to mean	2137	2134	2134	2145	2134	2139	2131	2134
25th percentile	80.0	75.0	62.0	57.0	55.0	75.0	100.0	68.0
50th percentile	95.0	100.0	84.0	75.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	5-100	0-100	0-100	0-100	4-100
%Ceiling	40.5	68.9	40.2	6.5	2.2	56.7	74.6	4.8
%Floor	0.6	11.6	0.7	0.3	0.2	0.4	6.8	0.0
Age standardised values								
Mean	86.1	81.5	78.8	72.8	66.3	86.3	85.6	77.6
Standard error of mean	0.6	1.0	0.7	0.6	0.6	0.6	0.9	0.5
Upper 95% confidence interval for mean	87.3	83.4	80.2	73.9	67.5	87.5	87.3	78.6
Lower 95% confidence interval for mean	85.0	79.5	77.4	71.6	65.2	85.1	83.8	76.7
Statistical significance of difference with mean for current smoker—Yes	**	*	*	**	*	*	-	-

- p>0.05, * p<0.05, ** p<0.01

Table 6.2: SF-36 scale profiles for women by smoking status

1. Current smoker: Yes

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	83.2	79.7	75.3	70.3	61.6	80.6	79.3	72.9
Standard deviation	22.7	34.8	27.4	21.2	19.3	25.0	35.1	16.9
Standard error of mean	1.1	1.7	1.3	1.0	0.9	1.2	1.7	0.8
Observations contributing to mean	872	868	872	877	873	874	870	872
25th percentile	75.0	75.0	52.0	57.0	50.0	62.5	66.7	60.0
50th percentile	90.0	100.0	84.0	72.0	65.0	87.5	100.0	76.0
75th percentile	100.0	100.0	100.0	87.0	75.0	100.0	100.0	84.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	34.7	66.0	39.7	6.0	1.5	46.9	67.2	3.2
%Floor	0.5	11.3	1.8	0.1	0.7	1.2	12.1	0.3
Age standardised values								
Mean	80.8	77.5	74.4	69.2	61.4	80.2	78.5	73.2
Standard error of mean	1.1	1.7	1.4	1.1	1.0	1.3	1.7	0.8
Upper 95% confidence interval for mean	83.0	80.9	77.1	71.3	63.3	82.7	81.9	74.8
Lower 95% confidence interval for mean	78.6	74.1	71.6	67.1	59.5	77.7	75.0	71.5

2. Current smoker: No

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	81.6	78.5	76.2	72.6	62.5	84.6	83.6	74.9
Standard deviation	24.5	36.1	24.9	20.5	19.4	22.0	31.0	16.4
Standard error of mean	0.6	0.9	0.7	0.5	0.5	0.6	0.8	0.4
Observations contributing to mean	2938	2932	2925	2949	2925	2938	2930	2924
25th percentile	70.0	75.0	62.0	62.0	50.0	75.0	66.7	64.0
50th percentile	90.0	100.0	84.0	77.0	65.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	34.9	65.7	36.6	7.9	1.5	53.0	71.6	3.4
%Floor	0.6	13.0	0.8	0.2	0.3	0.6	7.9	0.0
Age standardised values								
Mean	82.8	79.5	76.7	73.1	62.6	84.9	84.0	74.9
Standard error of mean	0.5	0.9	0.6	0.5	0.5	0.6	0.8	0.4
Upper 95% confidence interval for mean	83.8	81.2	77.9	74.2	63.7	86.0	85.5	75.7
Lower 95% confidence interval for mean	81.8	77.7	75.4	72.1	61.6	83.8	82.4	74.0
Statistical significance of difference with mean for current smoker—Yes	-	-	-	**	-	**	**	-

- p>0.05, * p<0.05, ** p<0.01

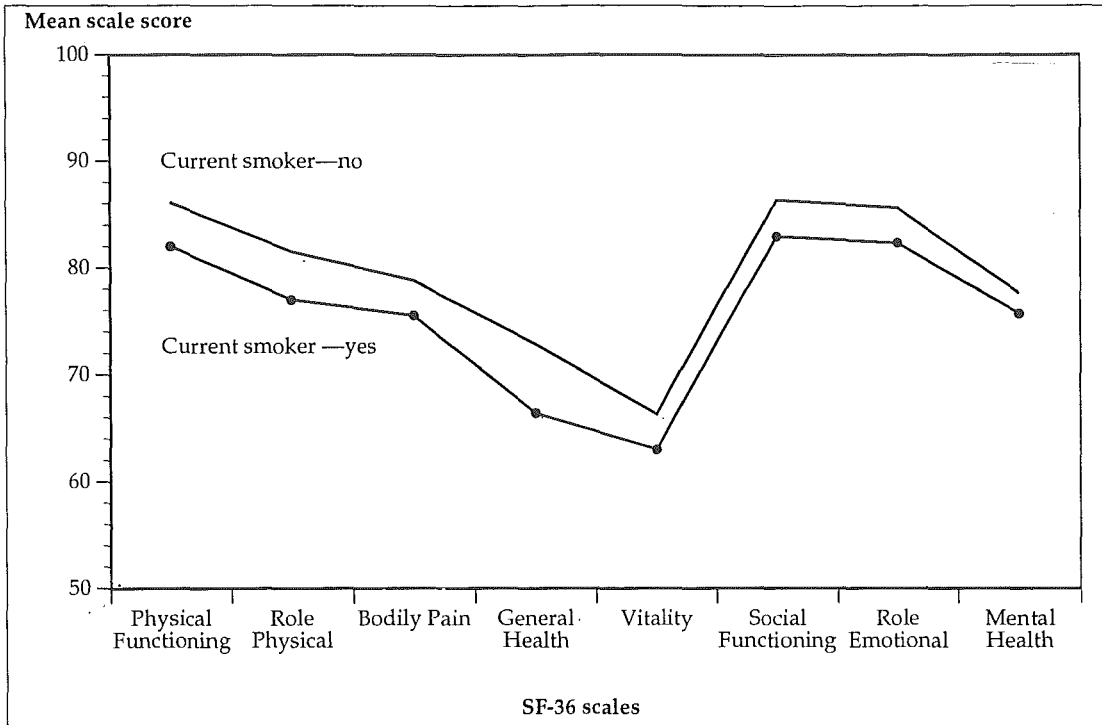


Figure 6.1: SF-36 mean score profiles for men by smoking status

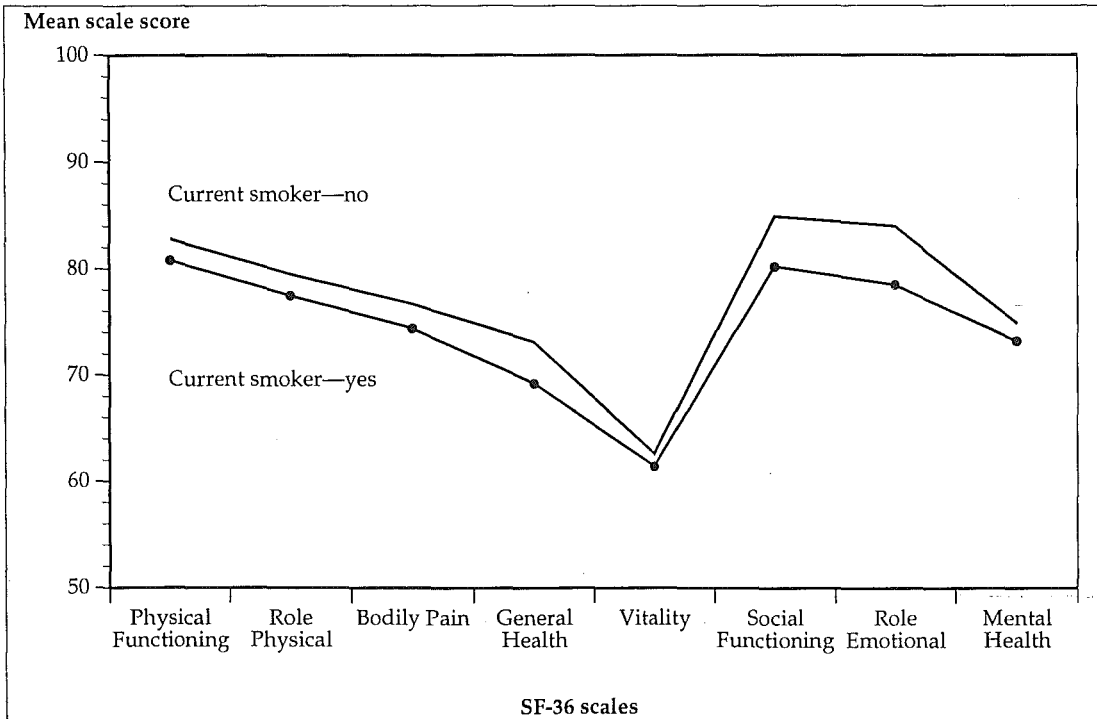


Figure 6.2: SF-36 mean score profiles for women by smoking status

Table 6.3: SF-36 scale profiles for men by walking for exercise

1. Walking for exercise: Yes

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	86.2	80.7	78.1	71.5	66.9	85.8	84.2	77.1
Standard deviation	20.8	34.3	23.7	20.5	18.2	20.7	30.6	15.9
Standard error of mean	0.7	1.2	0.8	0.7	0.6	0.7	1.1	0.6
Observations contributing to mean	1643	1639	1641	1650	1640	1643	1636	1640
25th percentile	80.0	75.0	62.0	57.0	55.0	75.0	66.7	68.0
50th percentile	95.0	100.0	84.0	72.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	5-100	0-100	0-100	0-100	4-100
%Ceiling	39.8	68.4	38.3	6.5	2.6	54.9	73.2	4.7
%Floor	0.2	10.8	0.8	0.1	0.2	0.4	7.5	0.1
Age standardised values								
Mean	86.7	81.0	78.4	72.0	67.1	85.9	84.2	77.2
Standard error of mean	0.6	1.2	0.8	0.7	0.6	0.7	1.1	0.6
Upper 95% confidence interval for mean	88.0	83.3	80.0	73.3	68.3	87.3	86.3	78.3
Lower 95% confidence interval for mean	85.4	78.7	76.8	70.6	65.8	84.4	82.0	76.1

2. Walking for exercise: No

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	84.4	80.6	77.4	70.2	64.1	85.0	85.5	76.7
Standard deviation	24.2	34.6	26.2	21.2	20.4	22.6	29.0	16.6
Standard error of mean	0.9	1.3	1.0	0.8	0.8	0.9	1.1	0.6
Observations contributing to mean	1370	1368	1365	1372	1367	1370	1368	1367
25th percentile	75.0	75.0	61.0	55.0	50.0	75.0	66.7	68.0
50th percentile	95.0	100.0	84.0	72.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	42.8	67.7	43.2	5.8	2.5	56.0	73.6	5.1
%Floor	1.4	12.2	0.9	0.2	0.4	0.9	6.6	0.1
Age standardised values								
Mean	83.1	79.3	76.7	69.5	63.7	84.6	84.8	76.7
Standard error of mean	0.8	1.3	1.0	0.8	0.8	0.9	1.1	0.6
Upper 95% confidence interval for mean	84.7	81.8	78.7	71.0	65.2	86.3	87.0	78.0
Lower 95% confidence interval for mean	81.5	76.8	74.8	68.0	62.2	82.9	82.7	75.5
Statistical significance of difference with mean for walking for exercise—Yes	**	-	-	*	**	-	-	-

- p>0.05, * p<0.05, ** p<0.01

Table 6.4: SF-36 scale profiles for women by walking for exercise

1. Walking for exercise: Yes

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	85.4	80.7	77.3	74.1	64.0	85.1	82.3	75.2
Standard deviation	20.3	34.3	24.1	19.6	18.4	20.9	32.2	15.9
Standard error of mean	0.6	1.0	0.7	0.6	0.5	0.6	0.9	0.5
Observations contributing to mean	2337	2331	2324	2344	2325	2337	2332	2324
25th percentile	80.0	75.0	62.0	62.0	55.0	75.0	66.7	68.0
50th percentile	95.0	100.0	84.0	77.0	65.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	90.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	37.3	68.3	37.6	8.2	1.6	53.4	70.9	3.1
%Floor	0.2	11.1	0.7	0.1	0.2	0.3	8.7	0.2
Age standardised values								
Mean	85.2	80.4	77.2	73.9	63.8	84.9	82.1	75.1
Standard error of mean	0.5	1.0	0.7	0.6	0.6	0.6	1.0	0.5
Upper 95% confidence interval for mean	86.2	82.3	78.6	75.1	64.9	86.1	84.0	76.1
Lower 95% confidence interval for mean	84.1	78.4	75.8	72.8	62.8	83.7	80.2	74.2

2. Walking for exercise: No

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	76.7	75.9	74.1	69.2	59.9	81.9	83.3	73.5
Standard deviation	28.1	37.8	27.3	22.0	20.6	25.0	31.5	17.3
Standard error of mean	1.0	1.4	1.0	0.8	0.8	0.9	1.2	0.6
Observations contributing to mean	1473	1469	1473	1482	1473	1475	1468	1472
25th percentile	55.0	50.0	52.0	55.0	45.0	62.5	66.7	60.0
50th percentile	85.0	100.0	84.0	72.0	60.0	87.5	100.0	76.0
75th percentile	100.0	100.0	100.0	87.0	75.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	8-100
%Ceiling	31.1	61.8	36.8	6.3	1.3	48.8	70.1	3.7
%Floor	1.2	15.0	1.6	0.3	0.7	1.5	9.2	0.1
Age standardised values								
Mean	78.2	77.2	74.7	69.9	60.3	82.4	83.9	73.5
Standard error of mean	0.9	1.3	1.0	0.8	0.7	0.9	1.1	0.6
Upper 95% confidence interval for mean	79.9	79.7	76.6	71.4	61.7	84.1	86.0	74.8
Lower 95% confidence interval for mean	76.5	74.7	72.9	68.4	58.8	80.7	81.7	72.3
Statistical significance of difference with mean for walking for exercise—Yes	**	-	*	**	**	*	-	*

- p>0.05, * p<0.05, ** p<0.01

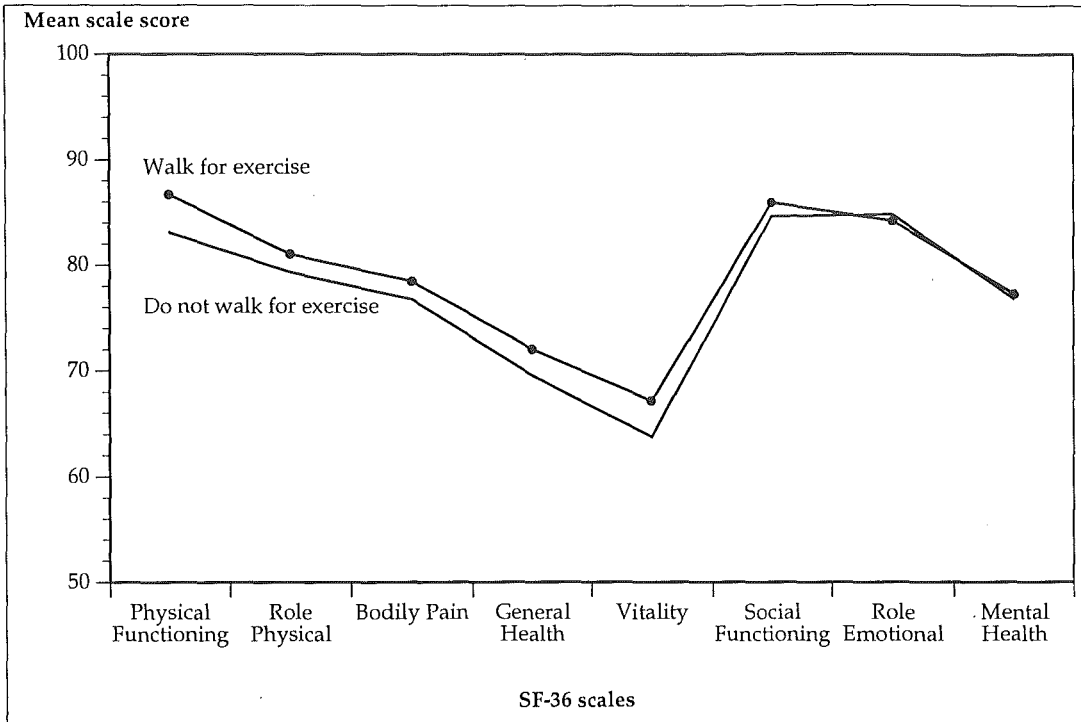


Figure 6.3: SF-36 mean score profiles for men by walking for exercise

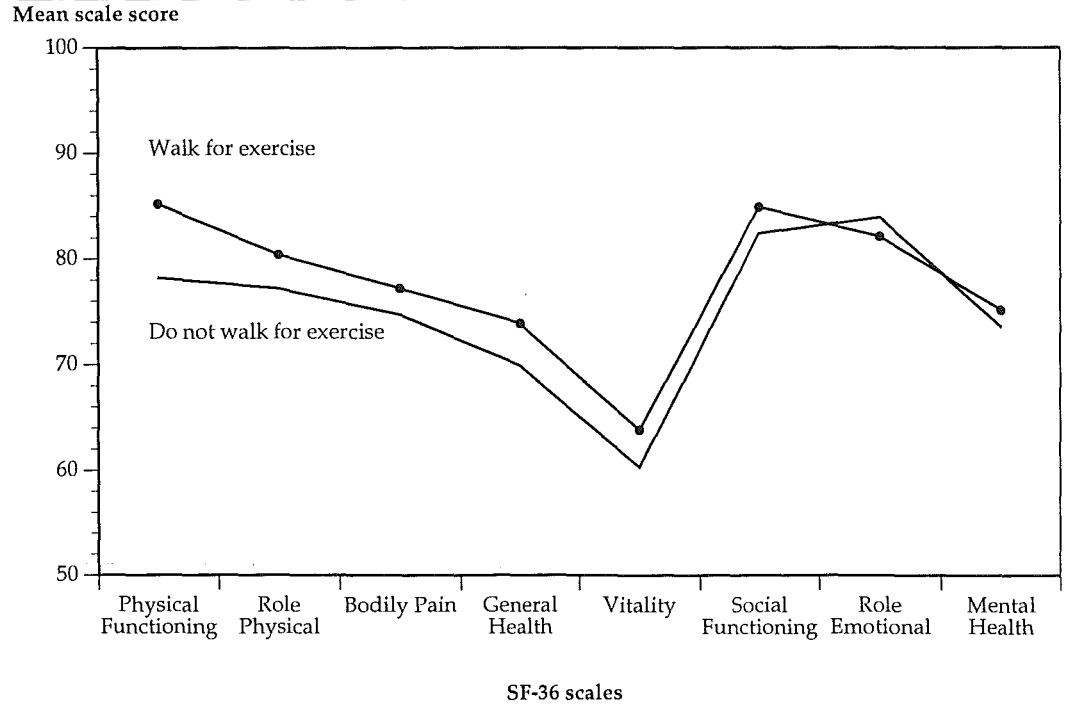


Figure 6.4: SF-36 mean score profiles for women by walking for exercise

Table 6.5: SF-36 scale profiles for men by any exercise for sport or recreation

1. Any exercise for sport or recreation: Yes

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	87.3	81.1	78.4	72.5	67.3	86.3	85.0	77.4
Standard deviation	20.1	34.1	23.7	20.1	18.0	20.4	30.0	15.7
Standard error of mean	0.6	1.1	0.7	0.6	0.6	0.6	0.9	0.5
Observations contributing to mean	2004	2000	2002	2013	2001	2004	1997	2001
25th percentile	80.0	75.0	62.0	62.0	55.0	75.0	100.0	68.0
50th percentile	95.0	100.0	84.0	75.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	5-100	0-100	0-100	0-100	4-100
%Ceiling	42.4	69.5	39.3	7.0	2.8	56.1	74.0	4.8
%Floor	0.2	10.4	0.6	0.1	0.1	0.3	7.1	0.0
Age standardised values								
Mean	87.0	80.8	78.4	72.3	67.3	86.2	84.7	77.5
Standard error of mean	0.6	1.1	0.7	0.6	0.6	0.6	1.0	0.5
Upper 95% confidence interval for mean	88.1	82.9	79.8	73.5	68.4	87.5	86.6	78.5
Lower 95% confidence interval for mean	85.8	78.7	76.9	71.1	66.2	85.0	82.8	76.5

2. Any exercise for sport or recreation: No

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	81.7	79.7	76.5	67.9	62.3	83.8	84.5	76.0
Standard deviation	25.9	35.1	27.1	21.9	21.2	23.8	29.6	17.1
Standard error of mean	1.2	1.6	1.2	1.0	0.9	1.1	1.3	0.8
Observations contributing to mean	1009	1007	1004	1009	1006	1009	1007	1006
25th percentile	65.0	50.0	54.0	52.0	50.0	75.0	66.7	68.0
50th percentile	95.0	100.0	84.0	72.0	65.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	82.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	38.8	65.2	42.9	4.4	2.0	54.0	72.1	5.1
%Floor	1.8	13.4	1.3	0.3	0.6	1.2	7.0	0.2
Age standardised values								
Mean	81.7	79.6	76.6	67.9	62.3	83.8	84.3	76.0
Standard error of mean	1.0	1.4	1.2	0.9	0.9	1.0	1.3	0.8
Upper 95% confidence interval for mean	83.7	82.4	78.9	69.8	64.1	85.8	86.8	77.5
Lower 95% confidence interval for mean	79.7	76.8	74.3	66.1	60.5	81.8	81.9	74.5
Statistical significance of difference with mean for any exercise for sport or recreation—Yes	**	-	-	**	**	-	-	-

- p>0.05, * p<0.05, ** p<0.01

Table 6.6: SF-36 scale profiles for women by any exercise for sport or recreation

1. Any exercise for sport or recreation: Yes

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	85.4	80.9	77.6	74.2	63.8	85.3	82.7	75.3
Standard deviation	20.6	34.1	23.9	19.7	18.4	20.9	31.9	15.8
Standard error of mean	0.6	0.9	0.7	0.5	0.5	0.6	0.9	0.4
Observations contributing to mean	2633	2626	2621	2641	2622	2634	2627	2621
25th percentile	80.0	75.0	62.0	62.0	50.0	75.0	66.7	68.0
50th percentile	95.0	100.0	84.0	77.0	65.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	90.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	38.3	68.5	38.2	8.4	1.5	53.6	71.5	3.1
%Floor	0.2	11.0	0.7	0.1	0.2	0.4	8.4	0.2
Age standardised values								
Mean	84.9	80.4	77.4	74.0	63.7	85.2	82.5	75.3
Standard error of mean	0.5	0.9	0.7	0.5	0.5	0.6	0.9	0.4
Upper 95% confidence interval for mean	85.9	82.2	78.7	75.0	64.7	86.3	84.2	76.2
Lower 95% confidence interval for mean	83.9	78.6	76.1	72.9	62.7	84.1	80.8	74.5

2. Any exercise for sport or recreation: No

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	74.6	74.3	72.5	67.8	59.3	80.7	82.7	72.9
Standard deviation	29.0	38.8	28.1	22.1	21.0	25.8	32.0	17.7
Standard error of mean	1.2	1.6	1.2	0.9	0.9	1.1	1.3	0.7
Observations contributing to mean	1177	1174	1176	1185	1176	1178	1173	1175
25th percentile	55.0	50.0	51.0	52.0	45.0	62.5	66.7	60.0
50th percentile	85.0	100.0	74.0	72.0	60.0	87.5	100.0	76.0
75th percentile	100.0	100.0	100.0	82.0	75.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	8-100
%Ceiling	27.3	59.7	35.3	5.4	1.4	47.2	68.6	3.8
%Floor	1.4	16.2	1.8	0.3	0.8	1.6	9.9	0.1
Age standardised values								
Mean	77.1	76.5	73.7	69.0	59.9	81.5	83.8	72.9
Standard error of mean	1.0	1.5	1.1	0.9	0.9	1.0	1.3	0.7
Upper 95% confidence interval for mean	79.1	79.5	75.9	70.7	61.6	83.5	86.3	74.3
Lower 95% confidence interval for mean	75.1	73.6	71.5	67.3	58.3	79.5	81.3	71.4
Statistical significance of difference with mean for any exercise for sport or recreation—Yes	**	*	**	**	**	**	-	*

- $p>0.05$, * $p<0.05$, ** $p<0.01$

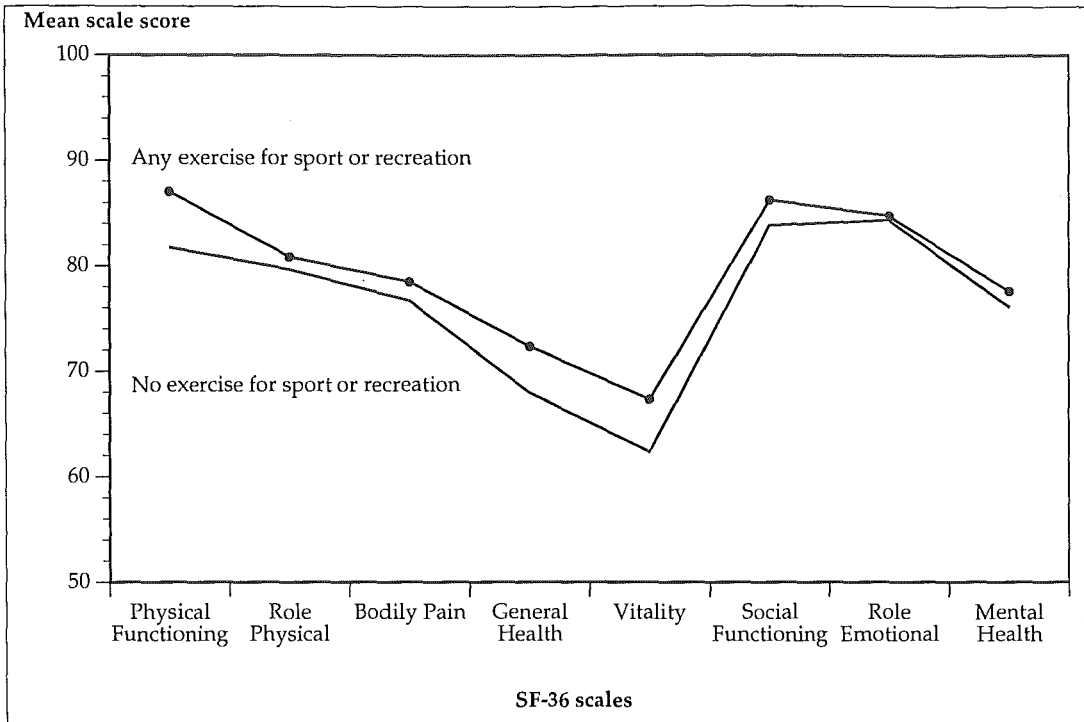


Figure 6.5: SF-36 mean score profiles for men by any exercise for sport or recreation

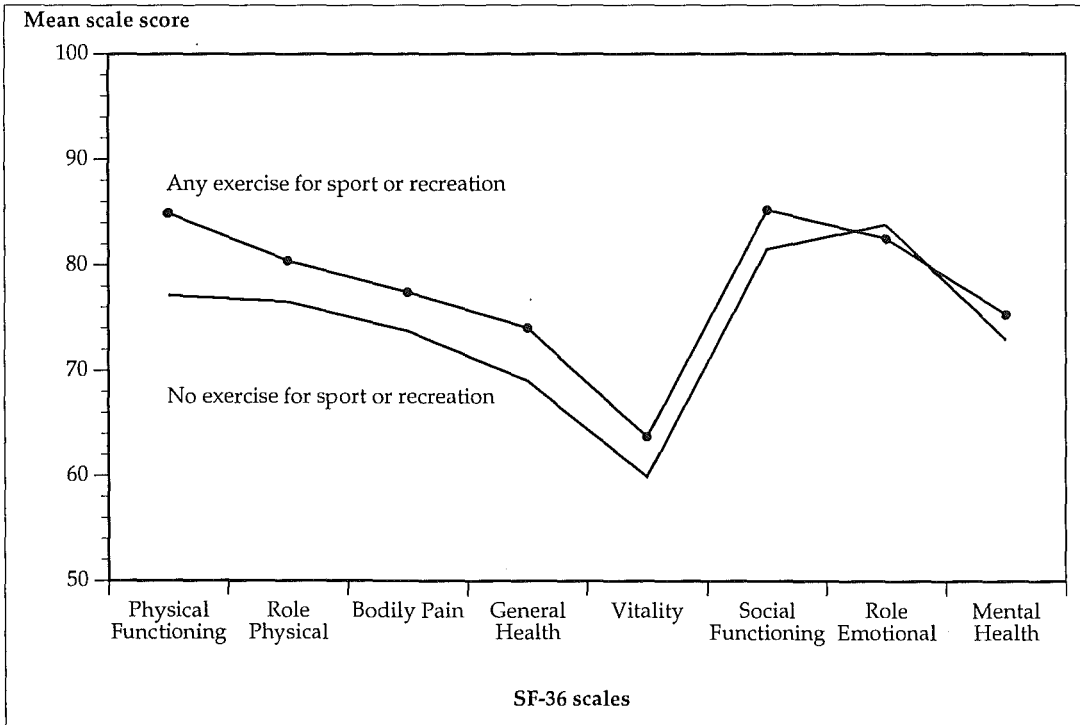


Figure 6.6: SF-36 mean score profiles for women by any exercise for sport or recreation

Table 6.7: SF-36 scale profiles for men by body weight

1. Body weight: Acceptable

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	86.9	81.1	78.7	73.2	66.4	85.5	84.8	76.7
Standard deviation	21.9	34.0	24.7	20.3	18.3	21.5	30.0	15.8
Standard error of mean	0.9	1.3	1.0	0.8	0.7	0.8	1.2	0.6
Observations contributing to mean	1293	1292	1293	1298	1292	1295	1290	1292
25th percentile	85.0	75.0	62.0	62.0	55.0	75.0	100.0	68.0
50th percentile	95.0	100.0	84.0	77.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	45.4	69.3	42.0	7.6	2.3	57.1	74.1	4.4
%Floor	0.5	10.6	0.8	0.1	0.2	0.6	7.4	0.2
Age standardised values								
Mean	86.2	80.4	78.5	72.8	66.4	85.4	84.3	76.8
Standard error of mean	0.8	1.3	1.0	0.8	0.7	0.8	1.2	0.6
Upper 95% confidence interval for mean	87.7	83.0	80.4	74.3	67.8	87.0	86.6	78.1
Lower 95% confidence interval for mean	84.7	77.9	76.6	71.3	65.0	83.7	82.0	75.6

2. Body weight: Overweight

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	85.4	81.2	78.0	69.9	66.3	86.6	85.5	78.0
Standard deviation	21.9	34.1	23.9	20.7	19.7	21.2	29.0	16.3
Standard error of mean	0.9	1.4	1.0	0.9	0.8	0.9	1.2	0.7
Observations contributing to mean	1172	1169	1168	1175	1171	1173	1170	1171
25th percentile	80.0	75.0	62.0	57.0	55.0	75.0	66.7	68.0
50th percentile	95.0	100.0	84.0	72.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	40.2	68.5	39.7	4.9	3.0	56.5	73.8	5.6
%Floor	0.7	11.0	0.7	0.1	0.3	0.7	6.6	0.1
Age standardised values								
Mean	85.7	82.1	78.5	70.4	66.7	86.8	85.6	78.2
Standard error of mean	0.8	1.3	1.0	0.9	0.9	0.9	1.2	0.7
Upper 95% confidence interval for mean	87.3	84.6	80.5	72.1	68.4	88.6	88.0	79.7
Lower 95% confidence interval for mean	84.0	79.6	76.6	68.7	64.9	85.1	83.2	76.8
Statistical significance of difference with mean for acceptable weight	-	-	-	*	-	-	-	-

- p>0.05, * p<0.05, ** p<0.01

Table 6.7: SF-36 scale profiles for men by body weight (continued)
3. Body weight: Obese

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	80.9	79.0	74.4	67.4	61.6	83.7	85.7	75.2
Standard deviation	23.0	35.8	27.4	21.3	20.9	22.6	30.4	16.8
Standard error of mean	1.9	2.9	2.2	1.7	1.7	1.8	2.5	1.4
Observations contributing to mean	303	301	303	304	303	303	301	303
25th percentile	65.0	50.0	51.0	50.0	50.0	75.0	100.0	64.0
50th percentile	90.0	100.0	84.0	67.0	65.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	82.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	16-100
%Ceiling	31.0	65.7	37.9	4.2	1.6	51.3	75.5	2.6
%Floor	1.0	15.0	1.3	0.3	0.3	0.3	8.2	0.3
Age standardised values								
Mean	82.2	79.5	76.7	69.5	62.9	85.1	87.1	76.4
Standard error of mean	2.0	3.2	2.4	1.7	1.9	1.8	2.7	1.6
Upper 95% confidence interval for mean	86.0	85.9	81.3	72.9	66.6	88.6	92.3	79.5
Lower 95% confidence interval for mean	78.3	73.2	72.0	66.0	59.1	81.5	81.9	73.3
Statistical significance of difference with mean for acceptable weight	-	-	-	-	-	-	-	-

- p>0.05, * p<0.05, ** p<0.01

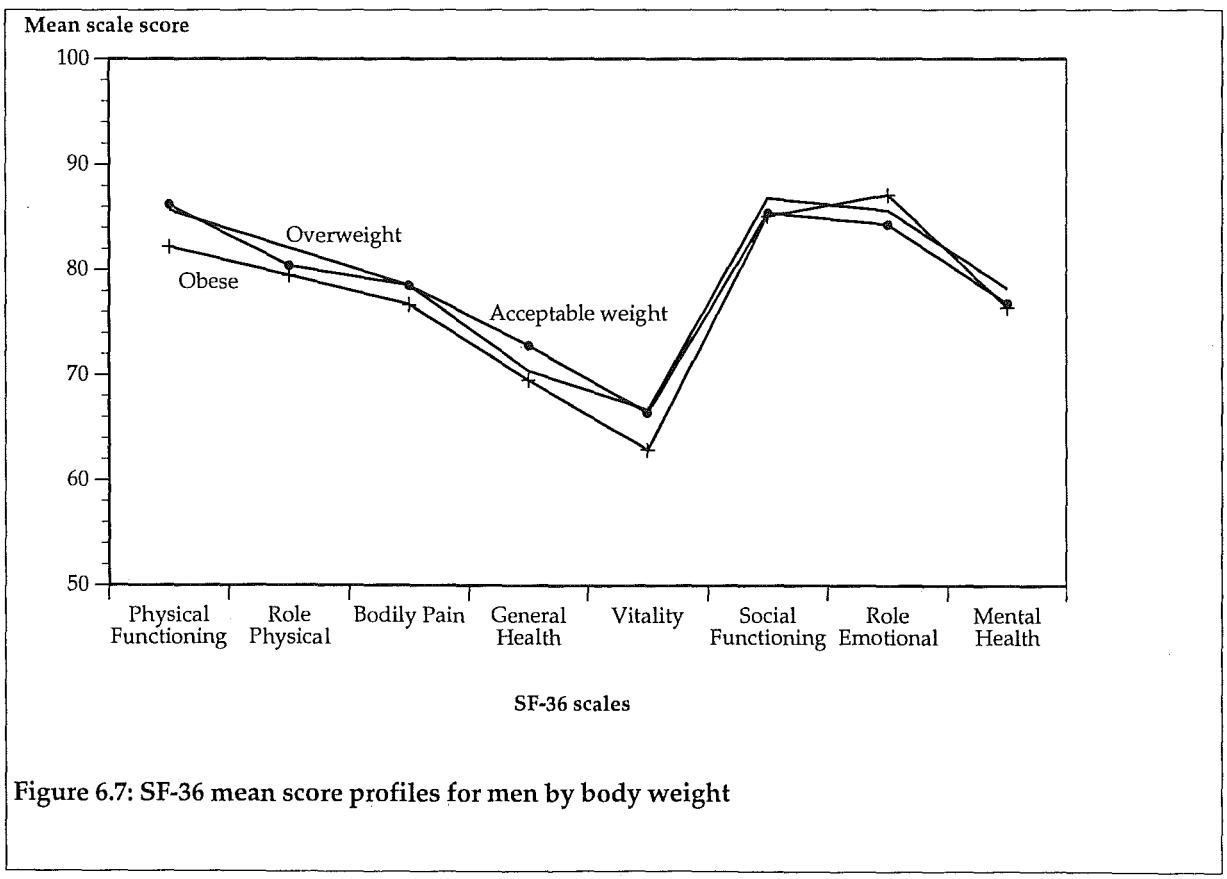


Figure 6.7: SF-36 mean score profiles for men by body weight

Table 6.8: SF-36 scale profiles for women by body weight

1. Body weight: Acceptable

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	85.3	82.3	78.7	75.2	63.8	85.4	84.7	75.3
Standard deviation	22.1	33.1	23.7	19.4	18.6	21.4	30.2	15.7
Standard error of mean	0.7	1.1	0.8	0.6	0.6	0.7	1.0	0.5
Observations contributing to mean	1784	1779	1779	1792	1780	1788	1781	1778
25th percentile	80.0	75.0	62.0	62.0	50.0	75.0	66.7	68.0
50th percentile	95.0	100.0	84.0	77.0	65.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	90.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	8-100
%Ceiling	41.4	69.9	40.5	9.5	1.3	54.2	73.5	3.2
%Floor	0.4	9.9	0.5	0.1	0.2	0.6	7.9	0.1
Age standardised values								
Mean	84.9	81.9	78.3	74.9	63.8	85.3	84.6	75.3
Standard error of mean	0.7	1.1	0.8	0.6	0.6	0.7	1.0	0.5
Upper 95% confidence interval for mean	86.2	84.0	79.8	76.1	65.0	86.7	86.6	76.4
Lower 95% confidence interval for mean	83.6	79.8	76.8	73.6	62.6	83.9	82.6	74.3

2. Body weight: Overweight

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	79.3	75.0	72.2	70.4	61.2	83.5	82.3	75.1
Standard deviation	24.3	37.8	26.4	20.6	19.5	23.5	31.8	16.5
Standard error of mean	1.2	1.9	1.3	1.0	1.0	1.2	1.6	0.8
Observations contributing to mean	808	805	805	809	805	808	805	805
25th percentile	65.0	50.0	52.0	57.0	50.0	75.0	66.7	68.0
50th percentile	90.0	100.0	74.0	75.0	65.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	75.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	28.0	61.1	31.9	5.3	1.1	53.6	69.7	3.1
%Floor	0.7	14.4	1.1	0.1	0.1	1.0	8.0	0.2
Age standardised values								
Mean	81.8	75.8	72.8	71.3	60.7	83.7	82.5	74.8
Standard error of mean	1.0	2.0	1.4	1.1	1.2	1.2	1.7	1.0
Upper 95% confidence interval for mean	83.8	79.8	75.5	73.5	62.9	86.0	85.8	76.8
Lower 95% confidence interval for mean	79.8	71.8	70.0	69.2	58.4	81.3	79.1	72.9
Statistical significance of difference with mean for acceptable weight	*	**	**	**	*	-	-	-

- p>0.05, * p<0.05, ** p<0.01

Table 6.8: SF-36 scale profiles for women by body weight (continued)
3. Body weight: Obese

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	72.5	69.8	69.9	63.8	59.0	81.4	78.2	73.5
Standard deviation	26.6	40.4	27.5	22.8	20.1	24.5	34.7	17.4
Standard error of mean	1.9	2.9	2.0	1.6	1.5	1.8	2.5	1.3
Observations contributing to mean	386	385	385	390	385	386	385	385
25th percentile	55.0	25.0	51.0	50.0	45.0	62.5	66.7	64.0
50th percentile	80.0	100.0	74.0	67.0	60.0	87.5	100.0	76.0
75th percentile	95.0	100.0	100.0	82.0	75.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	8-100
%Ceiling	15.6	56.1	27.8	2.8	1.3	47.4	64.5	2.8
%Floor	1.3	18.1	2.3	0.3	0.8	1.0	12.0	0.3
Age standardised values								
Mean	75.0	72.6	71.9	66.1	59.6	82.0	80.0	73.9
Standard error of mean	1.6	3.0	2.3	1.8	1.7	1.8	2.6	1.3
Upper 95% confidence interval for mean	79.1	78.4	76.4	69.6	62.9	85.6	85.1	76.5
Lower 95% confidence interval for mean	72.8	66.8	67.4	62.6	56.4	78.4	74.9	71.3
Statistical significance of difference with mean for acceptable weight	**	**	**	**	*	-	-	-

- p>0.05, * p<0.05, ** p<0.01

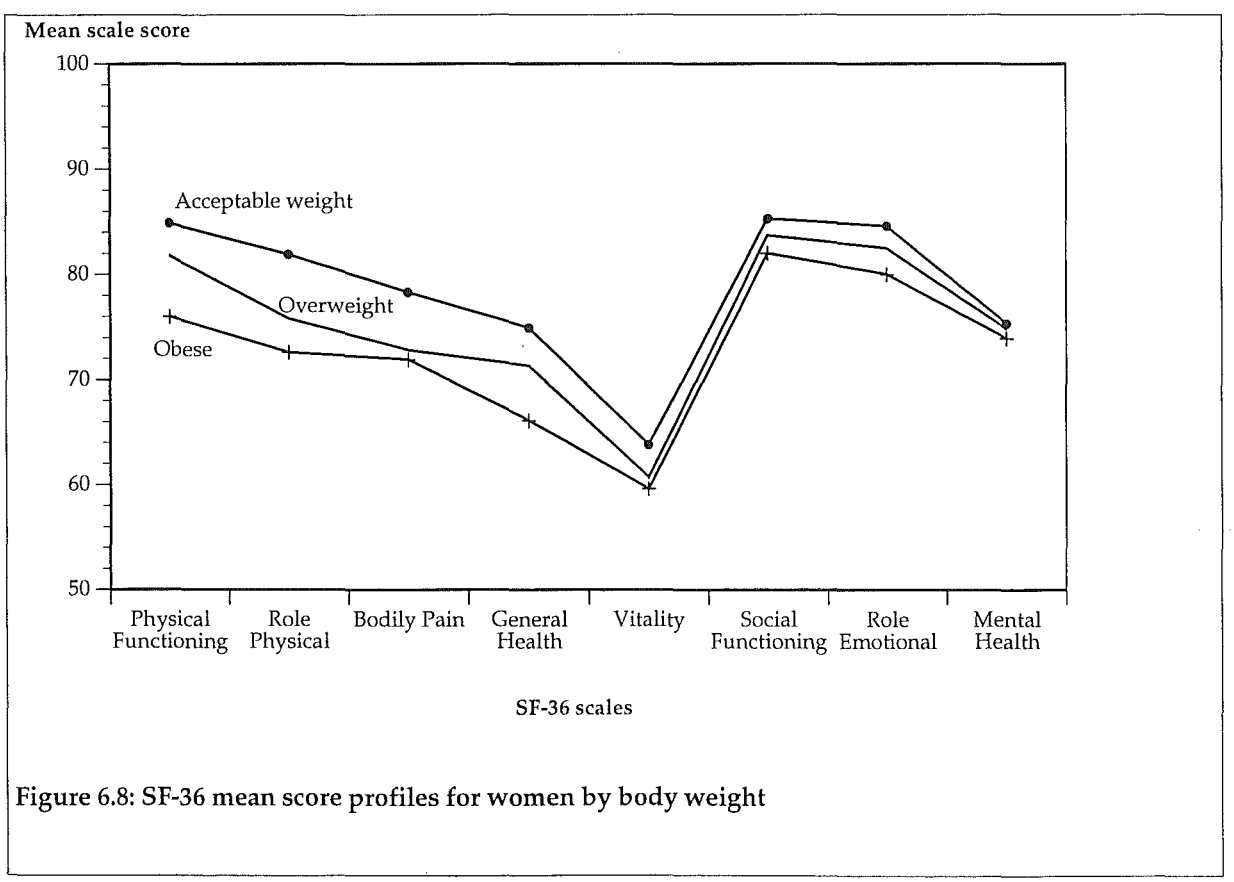


Figure 6.8: SF-36 mean score profiles for women by body weight

Table 6.9: SF-36 scale profiles for men by alcohol risk drinking status

1. Alcohol risk drinking status: Non drinker

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	81.9	76.8	76.7	69.2	64.6	83.0	81.9	76.4
Standard deviation	25.4	37.2	26.3	21.9	20.2	23.3	32.2	17.1
Standard error of mean	1.2	1.7	1.2	1.0	0.9	1.1	1.5	0.8
Observations contributing to mean	943	943	940	950	941	944	940	942
25th percentile	65.0	50.0	52.0	52.0	50.0	75.0	66.7	68.0
50th percentile	95.0	100.0	84.0	72.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	8-100
%Ceiling	37.4	62.8	40.5	5.1	3.1	50.1	68.4	6.6
%Floor	1.1	15.5	1.0	0.1	0.3	0.7	9.3	0.1
Age standardised values								
Mean	82.4	77.3	77.0	69.5	64.8	83.1	82.1	76.5
Standard error of mean	1.0	1.6	1.2	0.9	0.9	1.1	1.4	0.8
Upper 95% confidence interval for mean	84.4	80.4	79.3	71.3	66.6	85.2	84.9	78.1
Lower 95% confidence interval for mean	80.5	74.2	74.7	67.6	62.9	81.0	79.4	75.0

2. Alcohol risk drinking status: Low risk

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	86.8	82.8	78.8	72.1	66.2	87.0	86.7	77.4
Standard deviation	20.8	32.4	23.9	20.0	18.9	20.2	28.2	15.8
Standard error of mean	0.7	1.1	0.8	0.7	0.6	0.7	1.0	0.5
Observations contributing to mean	1753	1749	1750	1756	1751	1752	1748	1750
25th percentile	80.0	75.0	62.0	62.0	55.0	75.0	100.0	68.0
50th percentile	95.0	100.0	84.0	77.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	87.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	42.6	70.7	41.2	6.6	2.3	58.6	76.5	4.2
%Floor	0.5	9.4	0.7	0.1	0.3	0.4	5.8	0.1
Age standardised values								
Mean	86.6	82.2	78.7	72.1	66.1	86.8	86.3	77.4
Standard error of mean	0.6	1.1	0.8	0.7	0.7	0.7	1.0	0.6
Upper 95% confidence interval for mean	87.9	84.4	80.3	73.4	67.4	88.2	88.3	78.5
Lower 95% confidence interval for mean	85.4	80.1	77.1	70.7	64.8	85.5	84.4	76.3
Statistical significance of difference with mean for non drinker	**	*	-	*	-	**	*	-

- $p>0.05$, * $p<0.05$, ** $p<0.01$

Table 6.9: SF-36 scale profiles for men by alcohol risk drinking status (continued)
3. Alcohol risk drinking status: High risk

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	87.9	80.9	75.6	69.7	65.5	85.0	83.6	75.9
Standard deviation	20.0	34.9	26.0	21.6	18.6	22.7	30.4	15.7
Standard error of mean	1.6	2.8	2.1	1.7	1.5	1.8	2.4	1.3
Observations contributing to mean	315	313	314	314	313	315	314	313
25th percentile	85.0	75.0	61.0	55.0	55.0	75.0	66.7	68.0
50th percentile	95.0	100.0	84.0	72.0	70.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	85.0	80.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	5-100	5-100	0-100	0-100	4-100
%Ceiling	44.3	69.2	36.8	6.9	1.9	53.5	71.4	3.5
%Floor	0.9	10.4	1.3	0.6	0.3	1.6	7.2	0.3
Age standardised values								
Mean	85.0	76.7	74.4	67.4	63.7	82.7	81.5	76.2
Standard error of mean	1.7	2.7	2.2	1.8	1.5	1.9	2.5	1.2
Upper 95% confidence interval for mean	88.3	82.0	78.7	70.8	66.5	86.5	86.5	78.7
Lower 95% confidence interval for mean	81.7	71.4	70.1	63.9	60.8	78.9	76.5	73.8
Statistical significance of difference with mean for non drinker	-	-	-	-	-	-	-	-

- p>0.05, * p<0.05, ** p<0.01

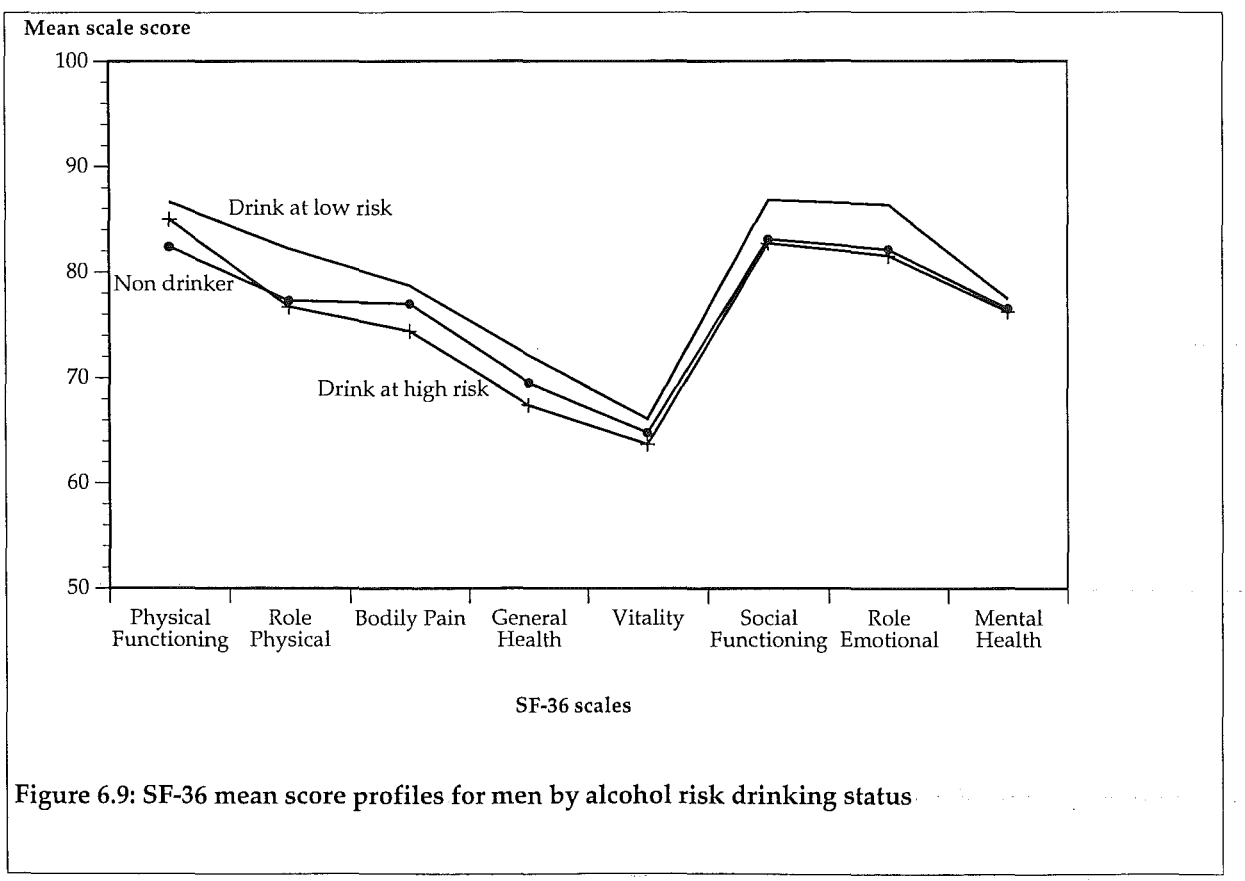


Figure 6.9: SF-36 mean score profiles for men by alcohol risk drinking status

Table 6.10: SF-36 scale profiles for women by alcohol risk drinking status

1. Alcohol risk drinking status: Non drinker

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	77.9	75.1	74.3	70.4	61.6	82.2	81.7	74.2
Standard deviation	26.8	38.0	26.7	21.5	20.3	24.0	32.3	17.0
Standard error of mean	0.9	1.2	0.9	0.7	0.7	0.8	1.0	0.5
Observations contributing to mean	1947	1942	1934	1954	1935	1947	1940	1933
25th percentile	60.0	50.0	52.0	55.0	50.0	75.0	66.7	64.0
50th percentile	90.0	100.0	84.0	72.0	65.0	100.0	100.0	76.0
75th percentile	100.0	100.0	100.0	87.0	75.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	31.0	60.9	36.7	6.5	1.7	49.4	68.0	3.9
%Floor	0.8	15.3	1.3	0.3	0.7	1.1	9.4	0.1
Age standardised values								
Mean	79.8	76.8	75.1	71.2	61.9	82.7	82.5	74.2
Standard error of mean	0.7	1.1	0.8	0.7	0.6	0.7	1.0	0.6
Upper 95% confidence interval for mean	81.3	79.0	76.7	72.6	63.2	84.1	84.5	75.3
Lower 95% confidence interval for mean	78.4	74.5	73.4	69.9	60.7	81.2	80.5	73.1

2. Alcohol risk drinking status: Low risk

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	85.8	82.7	77.6	74.1	63.2	85.7	83.7	75.1
Standard deviation	20.4	32.8	23.9	19.4	18.3	20.9	31.5	15.9
Standard error of mean	0.7	1.1	0.8	0.7	0.6	0.7	1.1	0.6
Observations contributing to mean	1640	1634	1639	1648	1639	1641	1636	1639
25th percentile	80.0	75.0	62.0	62.0	50.0	75.0	66.7	64.0
50th percentile	95.0	100.0	84.0	77.0	65.0	100.0	100.0	80.0
75th percentile	100.0	100.0	100.0	90.0	75.0	100.0	100.0	88.0
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	4-100
%Ceiling	38.5	71.0	37.9	8.6	1.3	54.2	73.7	2.8
%Floor	0.4	9.5	0.7	0.1	0.2	0.4	8.3	0.2
Age standardised values								
Mean	84.9	81.8	77.1	73.6	63.1	85.5	83.1	75.1
Standard error of mean	0.7	1.2	0.8	0.7	0.7	0.8	1.1	0.6
Upper 95% confidence interval for mean	86.2	84.1	78.8	75.0	64.4	87.0	85.3	76.2
Lower 95% confidence interval for mean	83.6	79.5	75.5	72.3	61.8	84.0	80.8	74.0
Statistical significance of difference with mean for non drinker	**	**	-	*	-	**	-	-

- p>0.05, * p<0.05, ** p<0.01

Table 6.10: SF-36 scale profiles for women by alcohol risk drinking status (continued)
3. Alcohol risk drinking status: High risk

	Physical Functioning	Role-Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role-Emotional	Mental Health
Unstandardised values								
Mean	88.9	83.0	79.4	73.1	63.1	84.6	83.3	73.1
Standard deviation	17.0	33.8	23.7	21.0	18.9	22.6	31.4	16.1
Standard error of mean	1.6	3.2	2.2	2.0	1.8	2.1	3.0	1.5
Observations contributing to mean	223	224	224	224	224	224	224	224
25th percentile	80.0	75.0	62.0	61.0	50.0	75.0	66.7	64.0
50th percentile	95.0	100.0	84.0	77.0	65.0	100.0	100.0	76.0
75th percentile	100.0	100.0	100.0	90.0	75.0	100.0	100.0	84.0
Range	0-100	0-100	0-100	15-100	5-100	0-100	0-100	16-100
%Ceiling	42.2	70.2	38.2	8.4	0.4	52.0	70.7	2.7
%Floor	0.9	11.6	0.9	0.4	0.4	0.4	8.4	0.4
Age standardised values								
Mean	87.0	80.4	78.0	72.7	62.7	84.4	82.3	73.1
Standard error of mean	1.7	3.3	2.3	1.9	2.0	2.4	3.2	1.7
Upper 95% confidence interval for mean	90.3	87.0	82.5	76.5	66.5	89.1	88.6	76.4
Lower 95% confidence interval for mean	83.7	73.9	73.5	68.3	58.8	79.8	76.0	69.8
Statistical significance of difference with mean for non drinker	**	-	-	-	-	-	-	-

- p>0.05, * p<0.05, ** p<0.01

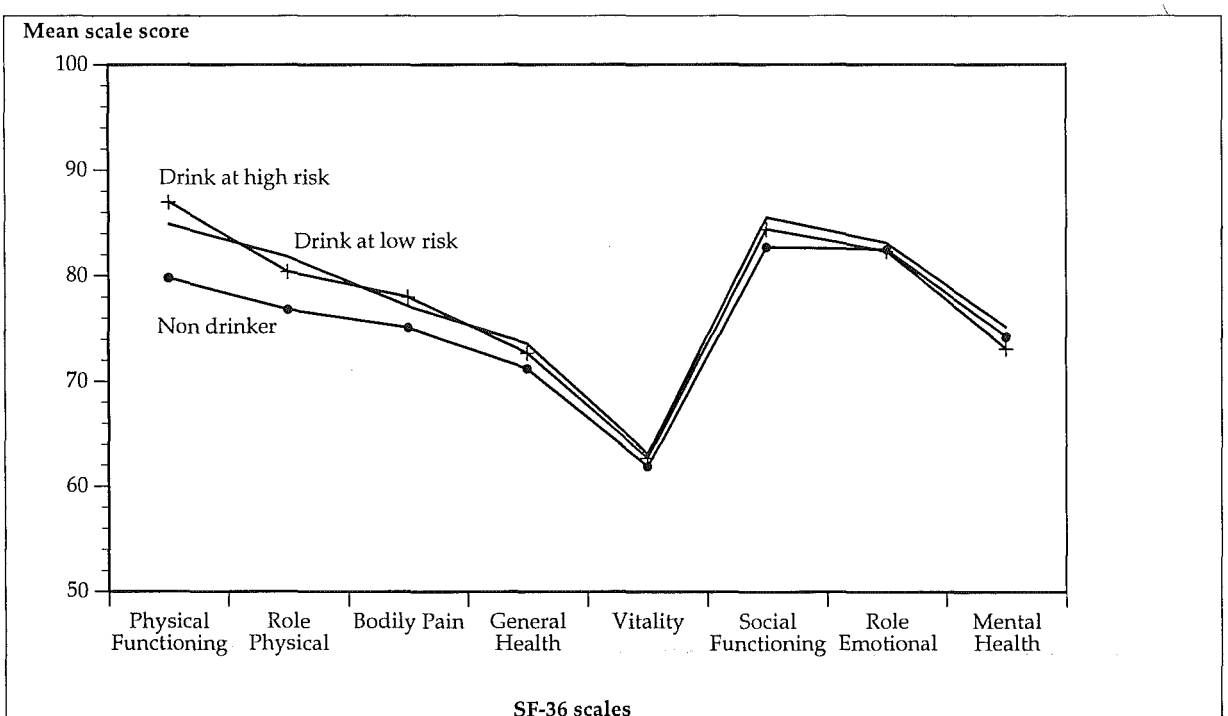


Figure 6.10: SF-36 mean score profiles for women by alcohol risk drinking status

7. Conclusions

7.1 Health differentials between population sub-groups

As noted in Chapter 1, the data presented here are intended for use as a basis for comparison in interpreting SF-36 data collected in Australian studies. However, the analyses presented in chapters 4, 5 and 6 also raise interesting issues relating to health differentials between population sub-groups. The mean score profiles show clear differences in self-reported health between different groups characterised by both demographic variables and risk related behaviours. However, it is important not to over-interpret these differences.

The comparisons between population groups presented here do not provide enough evidence to distinguish between cause and effect in health differentials. For example, women who report exercising for sport or recreation have generally higher SF-36 scale scores than those who do not exercise for sport or recreation. However, this could be explained equally plausibly by either (1) women who exercise deriving health benefits from that exercise and hence reporting better health; or (2) women in poor health being less able to undertake exercise for sport or recreation. The data presented here cannot distinguish between these two explanations.

Further, these analyses do not allow for other possible confounding variables besides age and sex. For example, there may be some other (unmeasured) factor which both (1) makes certain women more likely to exercise for sport or recreation than other women and (2) contributes to these women having better health. The data presented here cannot confirm or deny the existence of such confounding factors.

7.2 Future directions in the use of the SF-36

The SF-36 is in the ABS National Health Survey which will be concluded at the end of January 1996. This will provide a rich data source for the derivation of SF-36 norms and the analysis of relationships between self reported health and many other socio-economic, demographic and health related factors. Analysis of this data set will be one of the major tasks for Australian SF-36 researchers in the next few years.

Two other major directions for research in this area are (1) the aggregation of the eight SF-36 scales into two indices—a mental health index and a physical health index; and (2) the introduction of a smaller version of the SF-36—the SF-12.

Work by Ware and his colleagues in the United States suggests that SF-36 data can be aggregated to two factors—one representing mental health and one representing physical health. McCallum and his colleagues at the National Centre

for Epidemiology and Population Health in the Australian National University and at the University of Western Sydney are investigating the use of these factors with Australian data. It is likely that this approach will prove to be a useful way to interpret SF-36 data.

Because of constraints on the inclusion of extra questions in large surveys such as the National Health Survey, there is a demand for smaller health status measurement instruments. Ware and his colleagues have developed a 12 item instrument based on the SF-36 (known as the SF-12). This consists of the 12 questions which most nearly reproduce the two mental and physical health factors derived from the full SF-36. This SF-12 is currently being investigated and validated and is likely to become the preferred health status instrument for such survey work.

Appendix—Standard population counts and weights

Table A: Standard population[(a)] counts and weights used in age standardisation

Age group	Population in age group	Weight for age standardisation		
		Total population	Population aged 20 years and over	Population aged 18 to 64 years
18-24	1979071	0.156	0.116 (b)	0.184
25-34	2838668	0.223	0.234	0.263
35-44	2623639	0.206	0.216	0.244
45-54	1869911	0.147	0.154	0.174
55-64	1463079	0.115	0.121	0.136
65-74	1178740	0.093	0.097	0.109
75 and over	755126	0.059	0.062	
Total adult population	**12708234**			

(a) The total 1991 Australian population is used as the standard population

(b) The weight in this cell applies to people aged 20 to 24 years only

Source: Australian Bureau of Statistics

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