

# **The New Zealand Longitudinal Study of Ageing**

## **Summary Report**

### **-Health-**

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## Introduction

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The New Zealand Longitudinal Study of Ageing (NZLSA) recruited a sample of 3311 individuals (1449 males) aged between 50 and 85 years. Of these, 1985 (923 males) had previously participated in the 2006 and 2008 waves of the Health, Work and Retirement Study (HWR) and had given permission for their information from the HWR studies to be used in NZLSA.

This report provides a descriptive overview of the health status, health behaviours and health care utilisation reported by this sample, and the changes across the two waves of data which include the full NZLSA sample (2010 and 2012).

### Ageing and Health

Many aspects of health tend to deteriorate as people get older. From a positive ageing perspective, there are two important approaches to the inevitable physical changes that come with age. First, we can promote effective and healthy adaptation to changing physical needs. Second, we can work towards extending fitness, capacity, and well-being so that this decline is limited to the very final stage of life. To assist with information about the important factors that are related to better physical and mental health, the New Zealand Longitudinal Study of Ageing provides a series of bi-annual snapshots of the health status of our ageing population (50-85 years of age in 2010) and studies the relationships between their general health and structural and behavioural factors. As the number of data collection waves grow, we can also follow important changes in health in the population and the early factors that predict later wellbeing.

Structural factors measured here include age and retirement, ethnicity, gender, and indicators of socioeconomic status (income and education). These are broader factors that reflect the importance of the impact of socially structured groupings on health. From the individual perspective, some behavioural factors that are related to health outcomes are considered. These always interact with the broader social and environmental factors but will be examined separately in this initial report. Individual health behaviours include health care utilisation, physical activity levels, smoking and alcohol use. The findings for these aspects will be described in turn following a general overview of health status in 2010 and 2012.

### Self-Reported Health Status

Self-reported health has been found to reliably predict mortality in longitudinal studies of older groups people (DeSalvo, Bloser, Reynolds, He, & Muntner, 2006). Longer measures of this subjective view of one's own health places more emphasis on perceptions of quality of life than on bio-markers. The measure of health used for the HWR and NZLSA studies was the SF-12 (Ware, Kosinski, & Keller, 1996; 1998) which has become one of the most widely used standardised instruments for measuring self-reported physical and mental health status. The SF-12 includes 12 items measuring physical and mental health in relation to nine health scales: general health (self assessment of health overall), physical functioning, role physical (how much physical health has affected daily activities), mental health, role emotional (how much emotional health has affected daily activities), social functioning (how health has affected social activities), health transition (perceptions of health changes), bodily

pain, and vitality. All scores have been weighted so that they may be interpreted in the same direction: higher scores mean better health. The subscales have also been combined to provide two summary scores for physical and mental health respectively. Scores on the subscales and aggregated scores are normed to a scale of 0 to 100 (higher scores representing better health; mean = 50). As the means and standard deviations used to calculate scores in other studies are based on samples with different demographic characteristics to the HWR and NZLSA samples, all SF-12 scores were calculated using the means and standard deviations of the HWR 2006 representative sample. The original SF-12 factor weightings are retained.

For group comparisons and tests of significance of differences, a design weight was used. The design weight corrects for the differing probabilities of selection for Māori ethnicity in the general sample and those reporting a Māori ethnicity in the Māori descent over-sample.

## Change in Health Status

Comparisons of the 2010 and 2012 NZLSA survey data show that levels of mental and physical health did not change substantively for most people. Table 1 compares the SF-12 mean scores (and standard deviations) for those participants in both NZLSA 2010 and 2012 data waves. Figure 1 shows the changes reported for each mental health related subscale and Figure 2 the changes for the physical health subscales of the SF-12.

Table 1

*SF-12 mean scores (and standard deviations) across NZLSA 2010 and 2012 data waves for participants in both waves (Ns = 2556-2698 (2010); 2606-2695 (2012))*

Subscale	2010		2012	
	Mean	Std dev	Mean	Std dev
Physical functioning	48.9	10.6	48.6	11.0
Role physical	48.8	10.1	48.7	10.1
Body pain	48.6	10.4	48.3	10.4
General health	50.0	9.6	49.4	10.0
Vitality	52.5	8.2	52.3	8.4
Social functioning	50.6	8.0	50.3	8.3
Role emotional	49.5	9.7	49.3	9.8
Mental health	46.0	8.1	46.0	8.4
<b>Summary</b>				
Physical health	49.8	10.8	49.5	10.8
Mental health	49.4	7.7	49.3	8.0

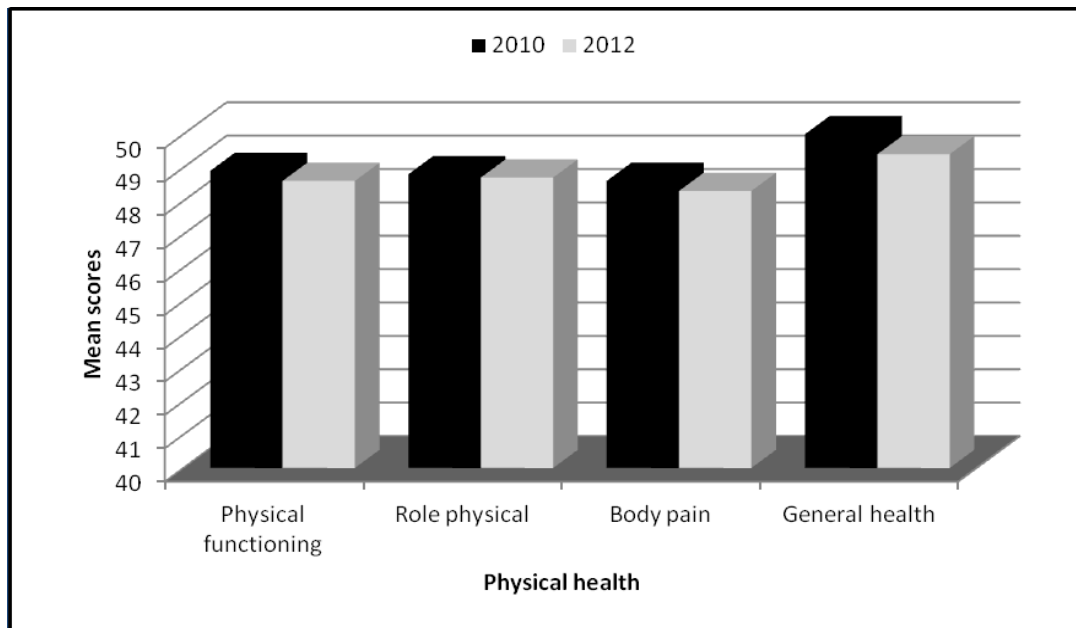


Figure 1. Change in the SF-12 physical health subscale scores from 2010 to 2012.

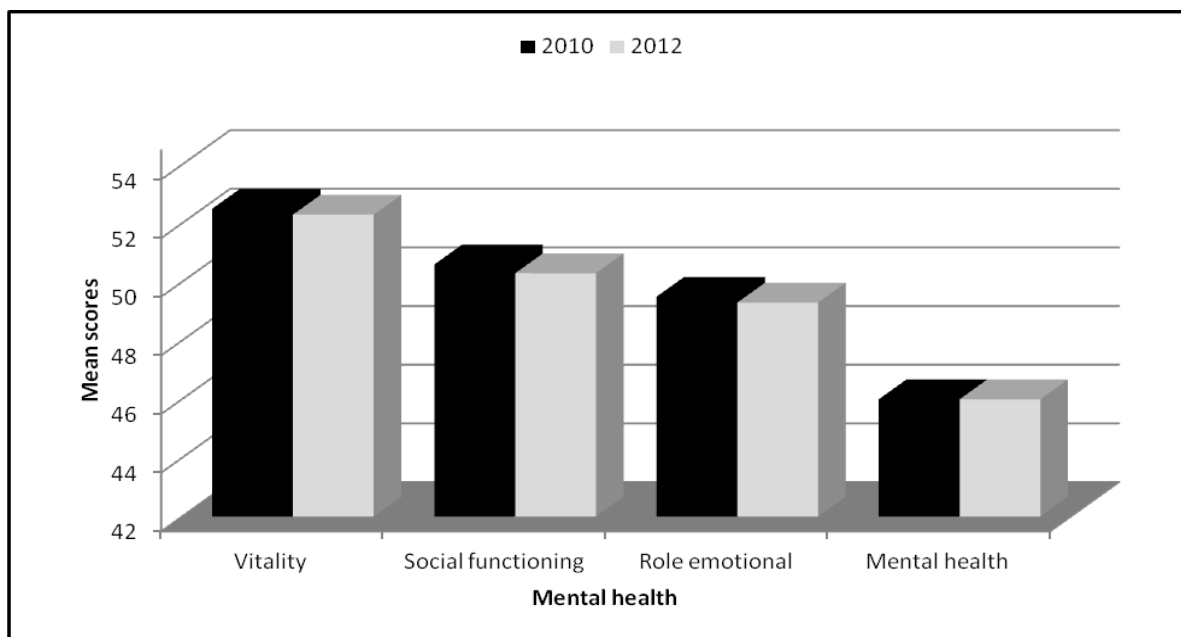


Figure 2. Change in the SF-12 mental health subscale scores from 2010 to 2012.

When comparing the SF-12 physical health summary scores, approximately 57% of the participants reported either no change or a small (less than 5 point) increase or decrease in physical health. Approximately 61% reported the same small level of change in mental health. However, Figure 1 shows that a sizeable minority did report notable increases or decreases in their health status. Change in health status did not vary according to the demographic and socioeconomic variables. Change in health may be a function of other factors including the onset of or recovery from disease or due to some other life event.



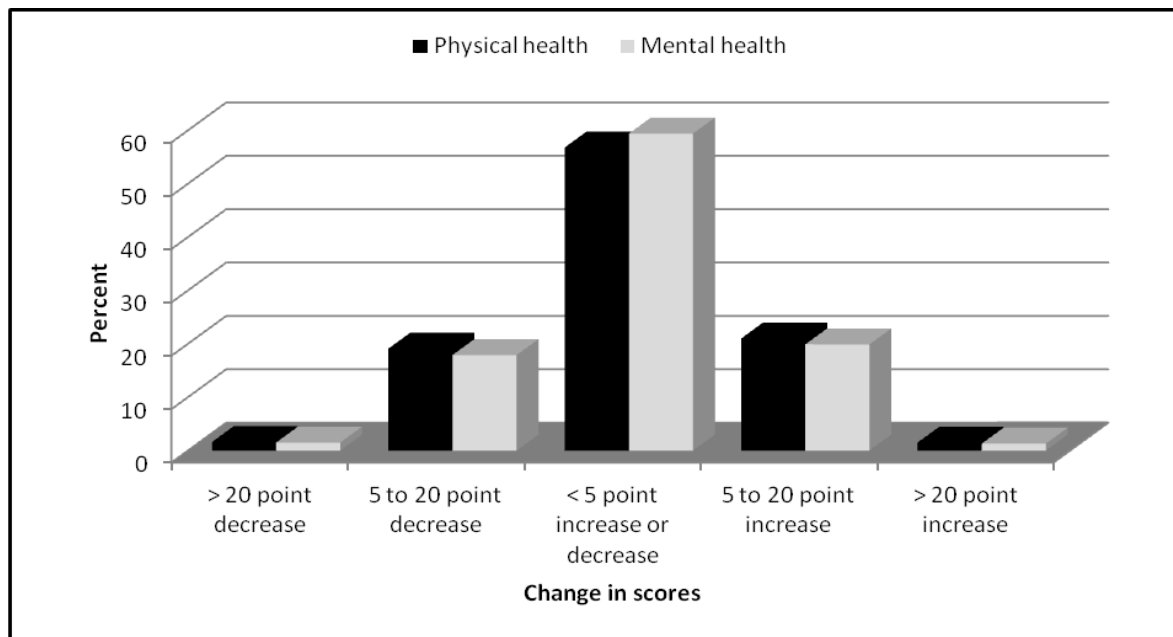


Figure 3. Percentage change in SF-12 physical and mental health component scores from 2010 to 2012.

## Structural Factors and Health

### Age

Four age categories were formed for the 2010 wave as follows: group 1 (50-54 years); group 2 (55-64); group 3 (65-74) and group 4 (75+). The corresponding age categories for the 2012 wave were each two years older to follow the same people throughout the study. Therefore group 1 included participants from 52-56 years of age, group 2 was aged 57 to 66, group 3 was aged 67 to 76, and group 4 was aged 77 years and older.

Figures 4 and 5 show that as expected in older populations, physical health scores decrease on average across age groups, while the mental health scores tend to increase for older people (Chandola, Ferrie, Sacker & Marmot, 2007). Figure 5 shows that the increase in mental health summary scores is slight and it is useful to examine the results for the subscales for more detailed information.

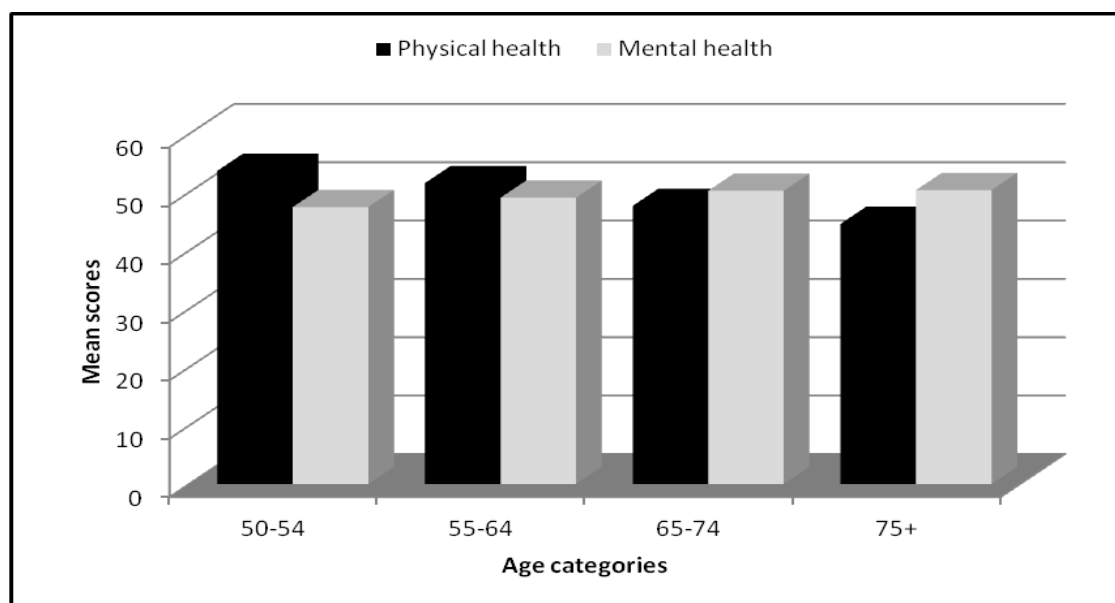


Figure 4. 2010 SF-12 physical health summary scores and SF-12 mental health summary scores across age groups.

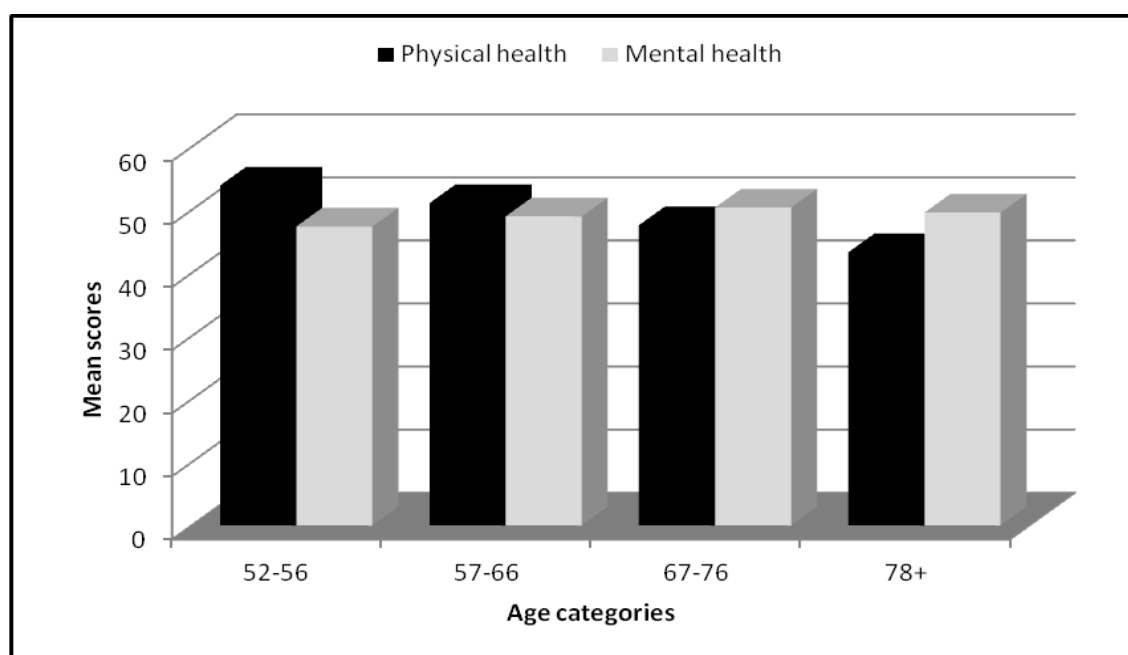


Figure 5. 2012 SF-12 physical health summary scores and SF-12 mental health summary scores across age groups.

Figure 6 shows that all aspects of physical health measured by the SF-12 (physical functioning, role physical, bodily pain and general health) show marked decreases, with physical functioning declining the most across the age groups. Figure 7 shows the general decrease across the sample for all subscales in 2012.

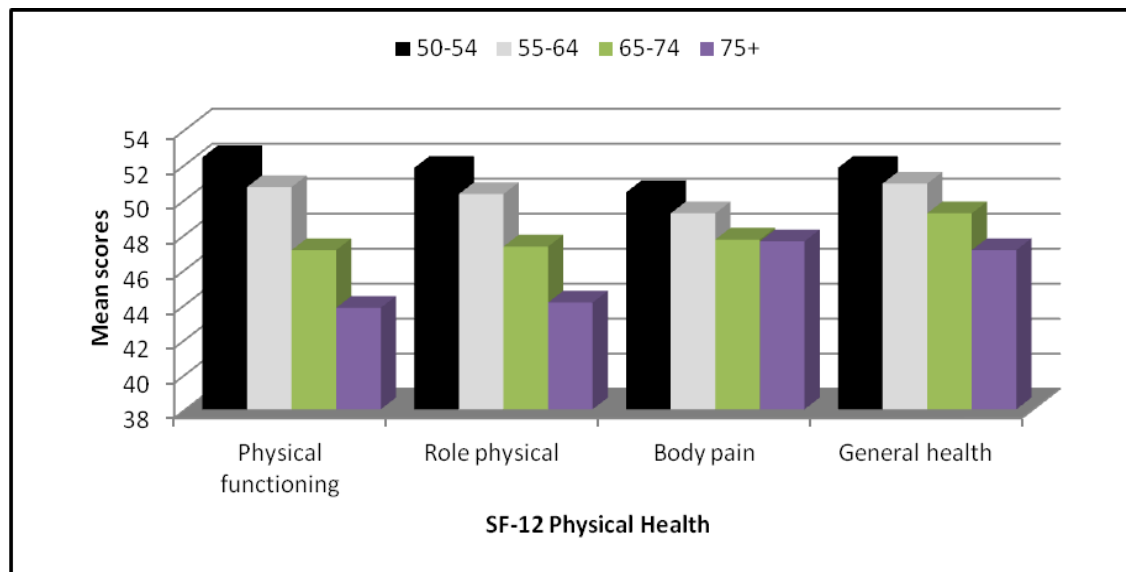


Figure 6. Mean SF-12 physical health subscale scores for 2010 across age groups.

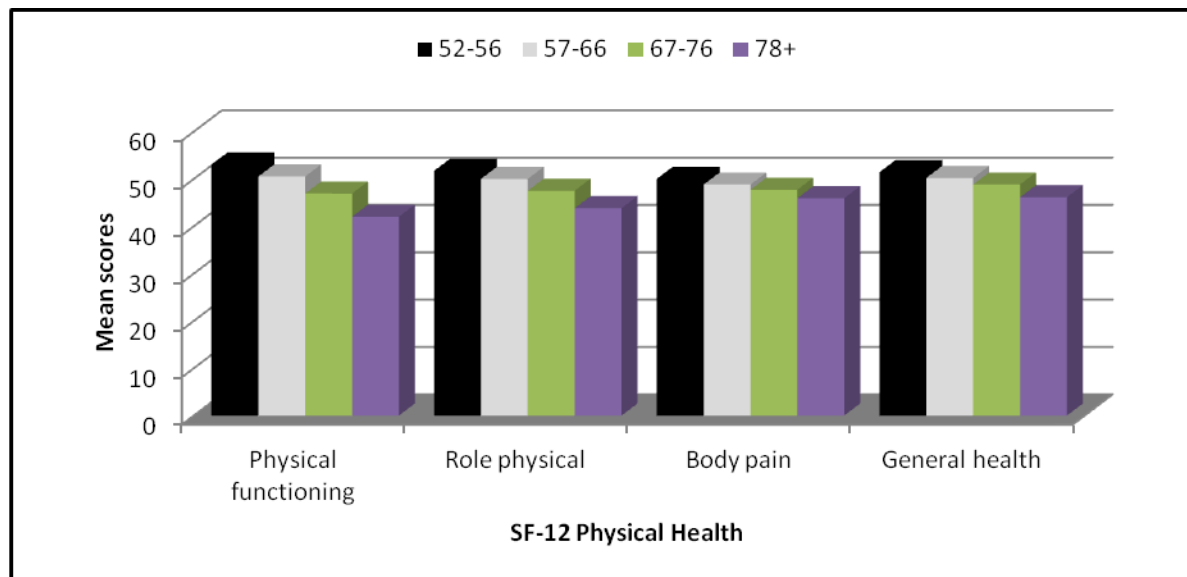


Figure 7. Mean SF-12 physical health Subscale scores for 2012 across age groups.

Figures 8 and 9 display the results for the subscales related to mental health (vitality, social functioning, role emotional, and mental health) in 2010 and 2012. Here it can be seen that, along with a decline in physical functioning across the age groups, reports of vitality, social functioning, and emotional role functioning tend to decline slightly. Between 2010 and 2012 there is very little change. Only the subscale scores of mental health itself (reports of feeling content with life) tend to improve, across the age groups, but with very little change across the two years for this sample. It seems that affective difficulties affecting the ability to physically engage in work and social life, do not affect general mood and sense of emotional wellbeing.

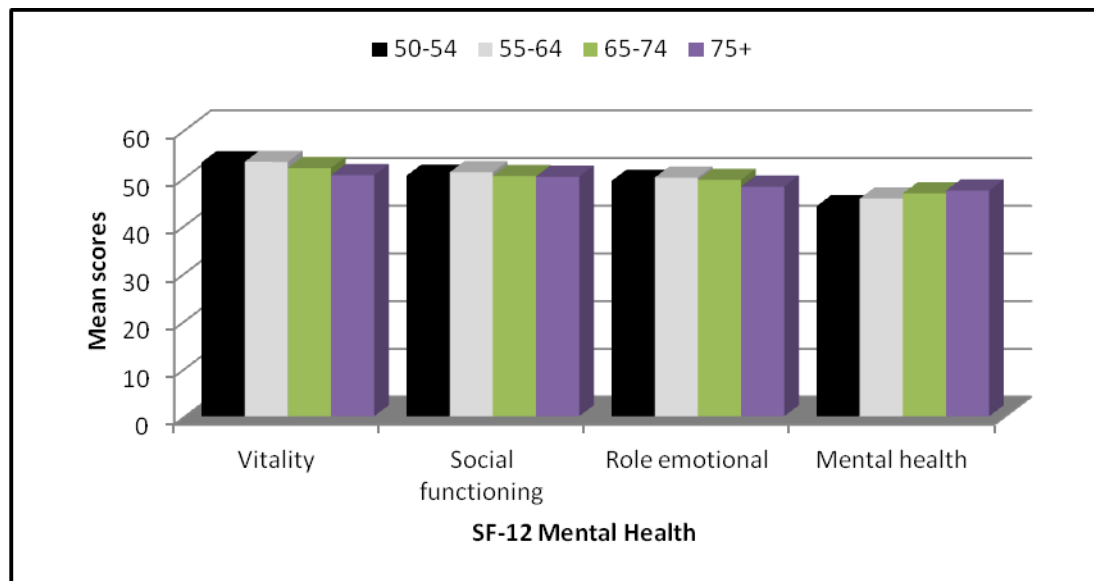


Figure 8. Mean SF-12 mental health subscale scores for 2010 across age groups.

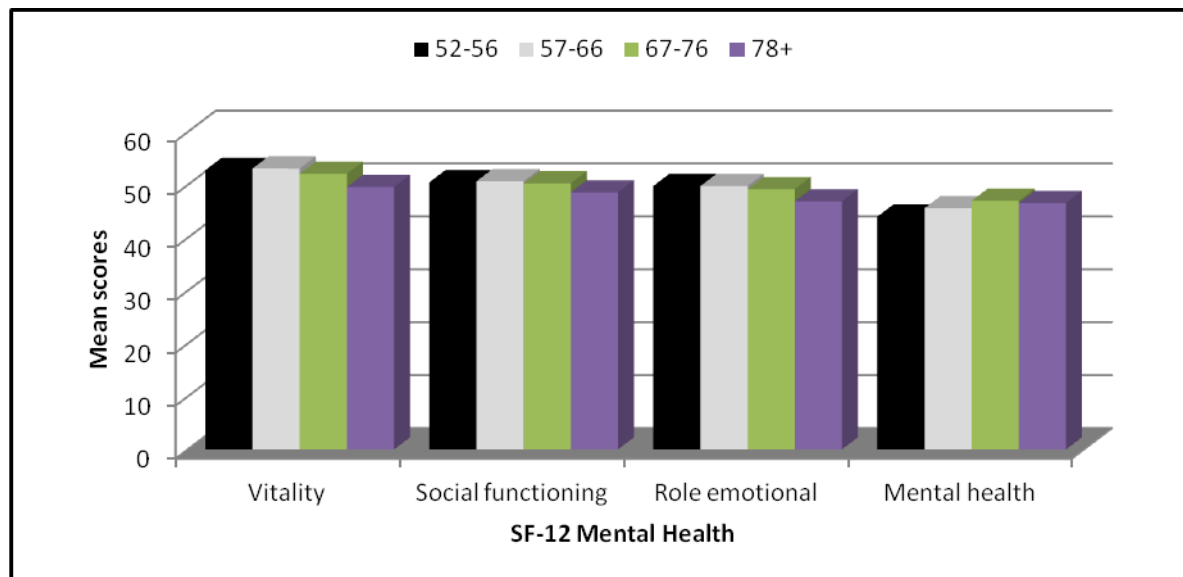


Figure 9. Mean SF-12 mental health subscale scores for 2012 across age groups.

## Work Status

Participants were divided into three groups; working (full time and part time workers), retired (not undertaking any paid work), and unemployed (seeking to work). Students, homemakers, those receiving benefits but not working, and individuals otherwise out of work but not seeking work were allocated to a fourth group which was not included in this analysis due to the potential for some of the groups to be defined based on the variables assessed (i.e., individuals on the sickness or invalids benefits would necessarily be in a poorer state of physical and/or mental health) or because the number of individuals matching these criteria was too small to provide meaningful data.

There were significant differences for SF-12 physical health summary scores between all groups as shown graphically in Figure 10. Table 2 shows that those who were working reported the highest physical health scores on average across both years.

In 2010 workers were significantly healthier than those who were retired ( $t(1515.7) = 15.40, p < .001$ ). Retired people were significantly less healthy than those who were unemployed ( $t(24.6) = 2.68, p < .05$ ). These findings most likely reflect a relationship between ill health and retirement, in which those with poorer health are more likely to be retired early while those with good health continue working or seeking work.

In 2012 workers (whose numbers had reduced by 175) remained significantly healthier on average than those who were retired ( $t(2125.6) = 15.40, p < .001$ ). The health of those unemployed was also lower and significantly different to those in employment ( $t(31.7) = 4.37, p < .001$ ). There was no longer any significant difference between those who were retired and those unemployed in 2012 ( $t(1192) = 1.58, p < .05$ ).

Table 2.

*Mean scores for working, retired, and unemployed groups on SF-12 physical health summary scores (PCS) showing significance tests for comparisons with working.*

Work Status	Mean (SD) PCS 2010	Weighted N 2010	Mean (SD) PCS 2012	Weighted N 2012
Working	53.6 (8.3)	1373	53.5 (8.4)	1198
Retired	46.7 (11.7)	920	47.1 (11.5)	1162
Unemployed	50.4 (6.1)	22	43.8 (12.5)	32

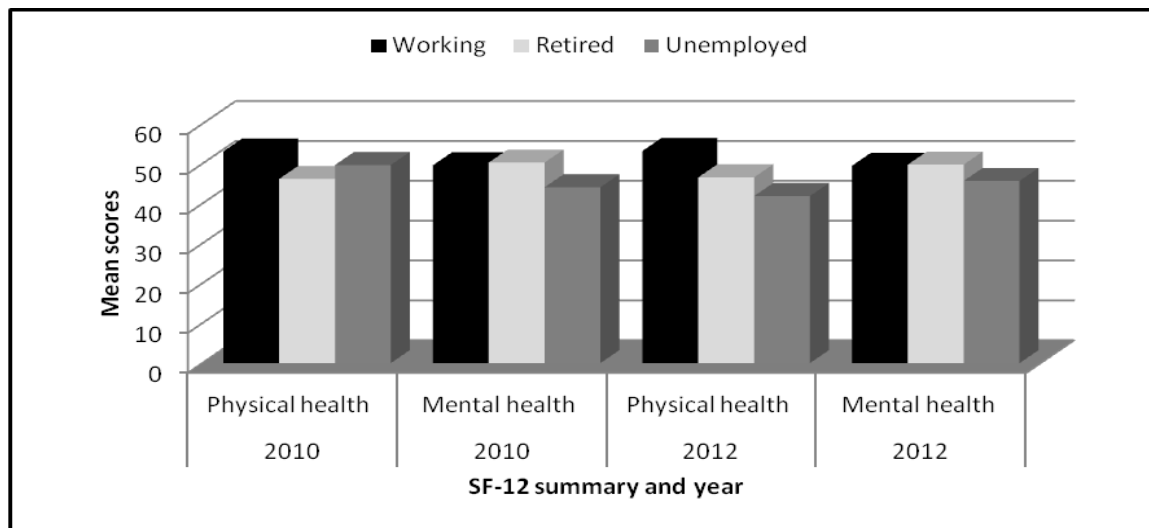


Figure 10. 2010 and 2012 SF-12 physical health summary scores and SF-12 mental health summary scores for working, retired, and unemployed groups.

Table 3.

Mean scores for working, retired, and unemployed groups on SF-12 mental health summary scores (MCS) showing significance tests for comparisons with working.

Work Status	Mean (SD) MCS 2010	Weighted N 2010	Mean (SD) MCS 2012	Weighted N 2012
Working	49.7 (7.2)	1373	49.7 (7.3)	1198
Retired	50.6 (7.3)	920	50.0 (7.5)	1162
Unemployed	42.5 (7.7)	22	47.0 (8.8)	32

In contrast, mental health was not always better for those who were in paid employment. In 2010 workers did report significantly better mental health than those who were retired ( $t(2291) = 3.19, p=.001$ ) and workers had significantly better mental health than those who were unemployed ( $t(1393) = 4.62, p<.001$ ). Those who were retired were also mentally healthier than those who were unemployed ( $t(940) = 5.19, p<.001$ ).

By 2012 the change in N for workers (reduced by 175) meant that the difference in mental health between retired participants and workers was no longer significant. Nor was there any difference between workers and those unemployed in regards to mental health. Those who were retired remained significantly healthier on average than those who were unemployed ( $t(1192) = 2.21, p<.05$ ). These shifts in the relationships with mental health may reflect the difference in health effects for those who retire earlier (due to ill health or forced retirement) and those who retire willingly a little later. Although unemployment seems to be a risk for poor physical and mental health as time goes on, the numbers are small and perhaps increasingly irrelevant once more participants reached the age of 65 and pension entitlement.

To explore these questions further, age group was included as a consideration in the comparisons. Figures 11 and 12 show the lower SF-12 physical health summary scores for those retired and those unemployed in the 65 to 74 year old age group in 2010 and 2012. There is no difference in physical health between those who are retired and those who are

working after age 75. These findings suggest that health may be more likely to cause retirement at younger ages, whereas retirement at older age has little effect on health.

Figures 13 and 14 show that unemployment is more likely to be related to poorer mental health, however there is little difference in mental health between those who are working and those who are retired at any age.

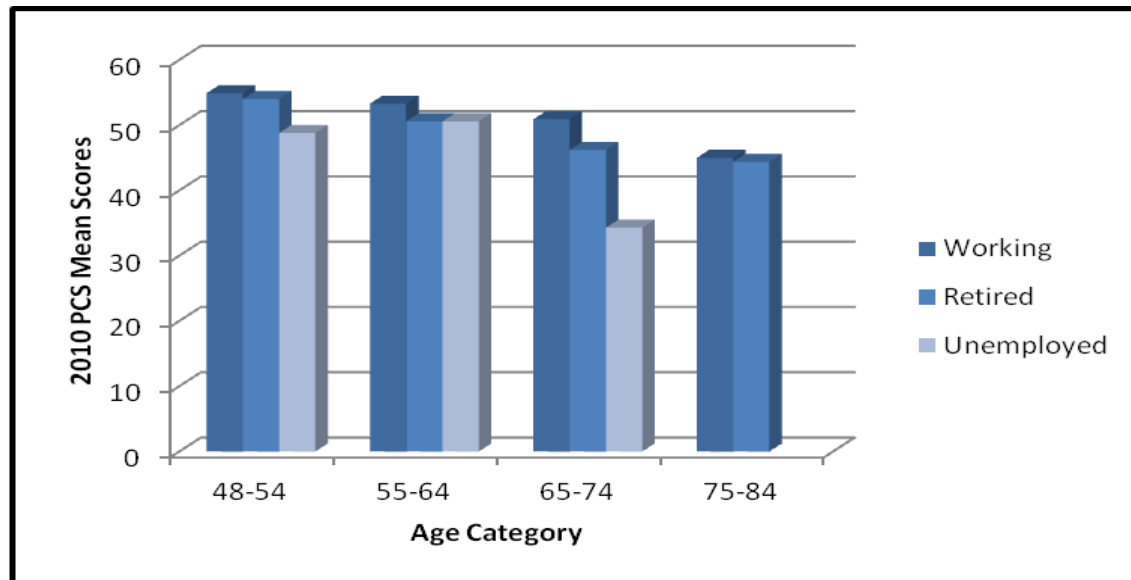


Figure 11. 2010 SF-12 physical health summary scores by age group and by work status.

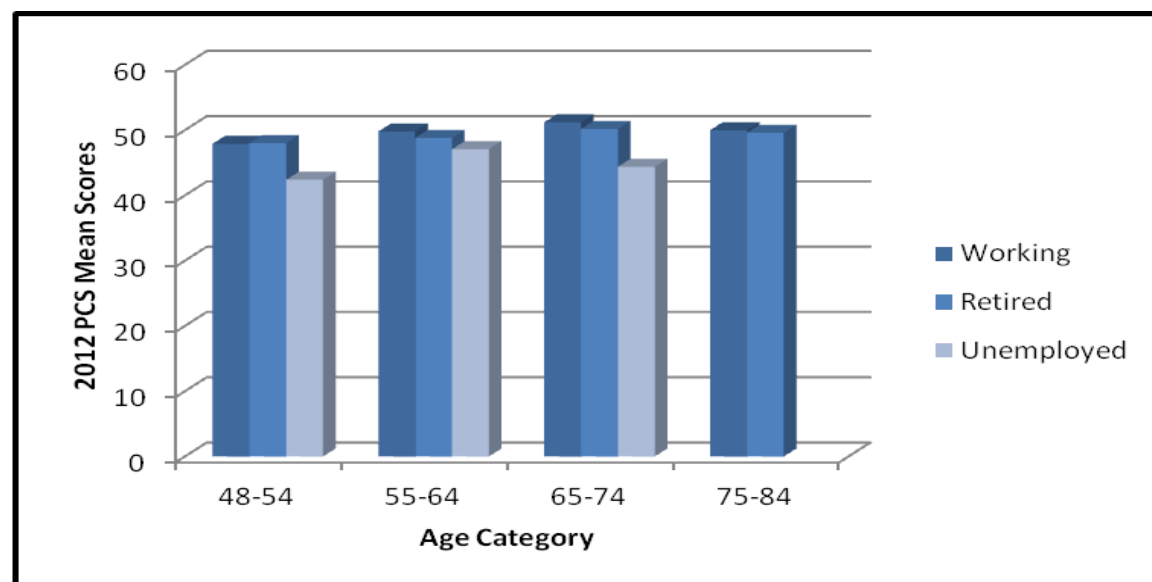


Figure 12. 2012 SF-12 physical health summary scores by age group and by work status.

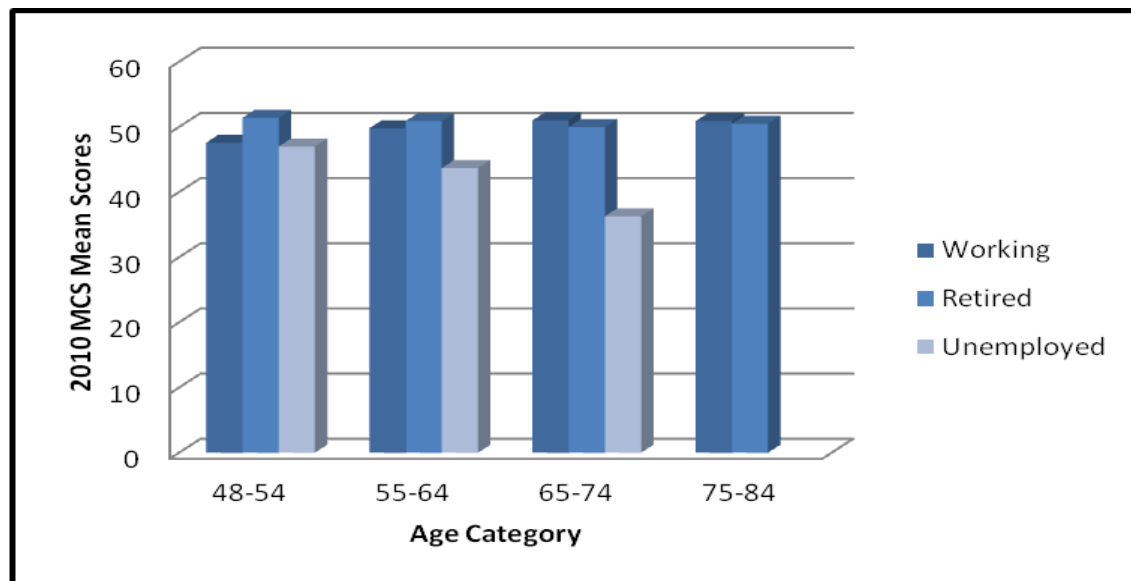


Figure 13. 2010 SF-12 mental health summary scores by age group and by work status.

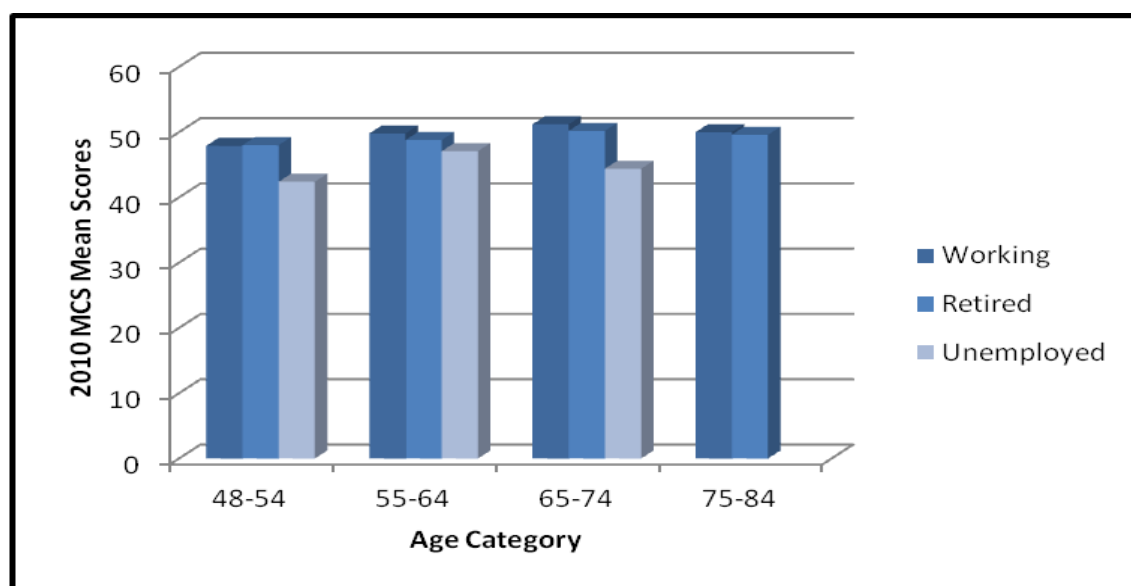


Figure 14. 2012 SF-12 mental health summary scores by age group and by work status.



## Gender

The only significant difference in health summary scores based on sex was found in the wave 1 data (2010) where males ( $M = 50.1$ ) were found to have slightly better mental health than females ( $M = 49.5$ ,  $t = 2.02$ ,  $df = 2529$ ,  $p = .04$ ). In 2012 the groups were equivalent. The summary scores for both sexes in 2010 and 2012 are presented in Figure 15.

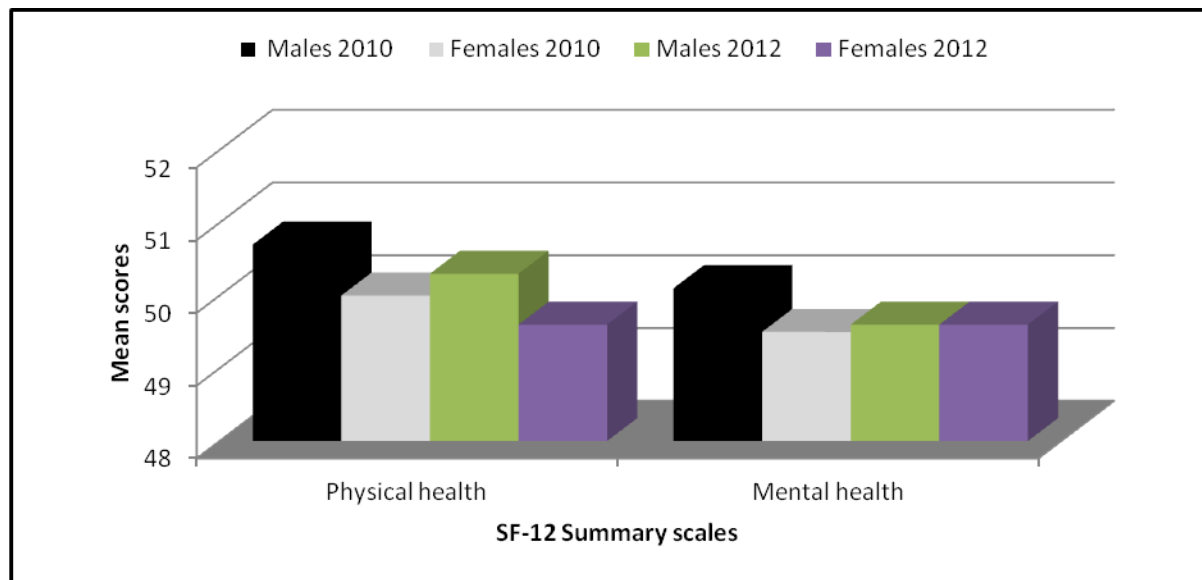


Figure 15. Mean SF-12 summary scores for men and women in 2010 and 2012.

When the physical and mental health components were investigated individually, a number of significant differences were found. The full set of results is presented in Table 1 in Appendix 1 but in summary: men were found to have significantly higher physical functioning scores than women in both years; women had better general health than men in both years; men scored higher than women in vitality and mental health in both years and in social functioning in 2010. It should be noted that although significant, the magnitude of the differences was slight given the 100 point measurement scale. The mean scores are plotted in the following figures.

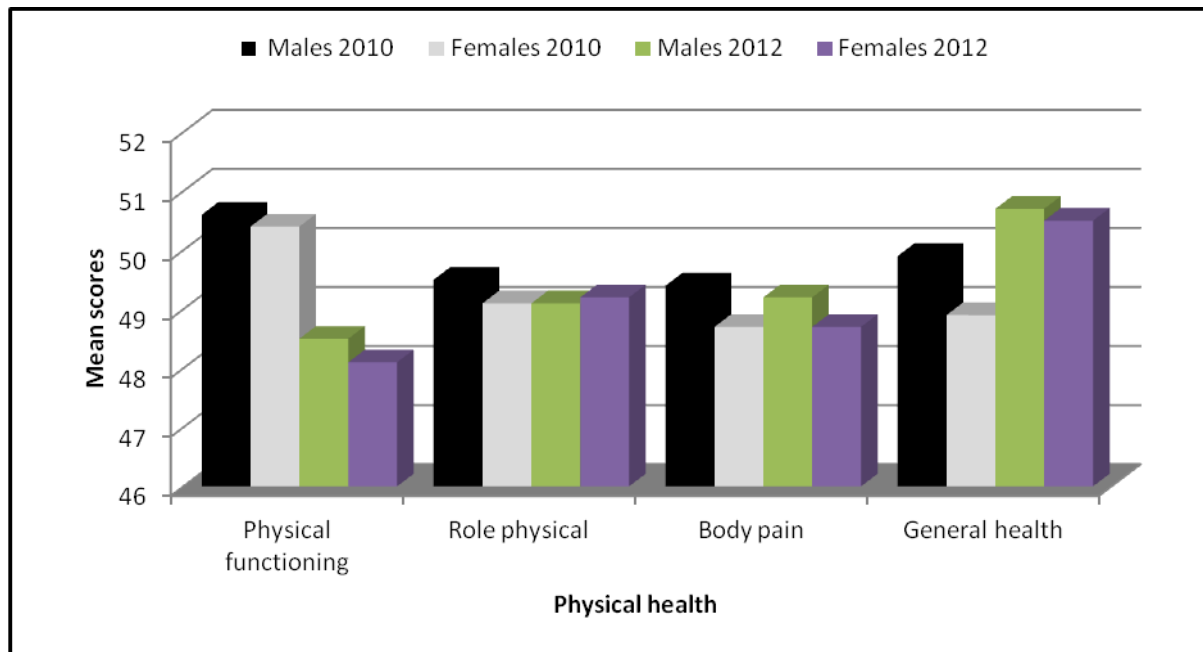


Figure 16. Mean SF-12 physical health subscale scores for males and females, 2010 and 2012.

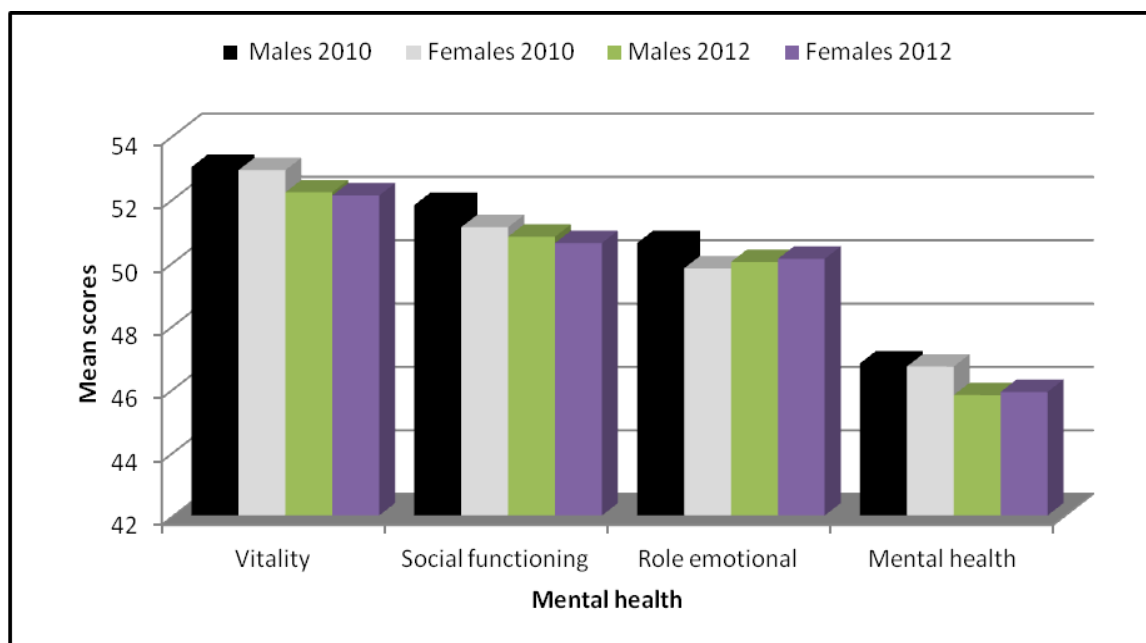


Figure 17. Mean SF-12 mental health subscale scores for males and females, 2010 and 2012.

## Ethnicity

Participants were grouped according to the preferred ethnicity they reported. Where participants reported multiple ethnicities, the minority group was selected, therefore, participants reporting both NZ European and Māori were included in the Māori group. This resulted in three groups, 'NZ European', 'Māori' and 'other'. A comparison of SF-12 scores across these groups found that Māori reported lower physical health and mental health summary scores than Europeans and others. The only exception was for mental health in 2012 where Māori reported having marginally better health than those in the 'other' category. Between groups comparisons were performed with weighted cases and independent t-tests results identified only one significant result such that NZ Europeans reported better mental health ( $M = 49.9$ ) than Māori ( $M = 47.0$ ) in 2010 ( $t = 3.42$ ,  $df = 247.1$ ,  $p < .001$ ). The results shown in Figures 18-19 suggest that both mental and physical health has remained relatively constant across the two years for all three ethnicity categories.

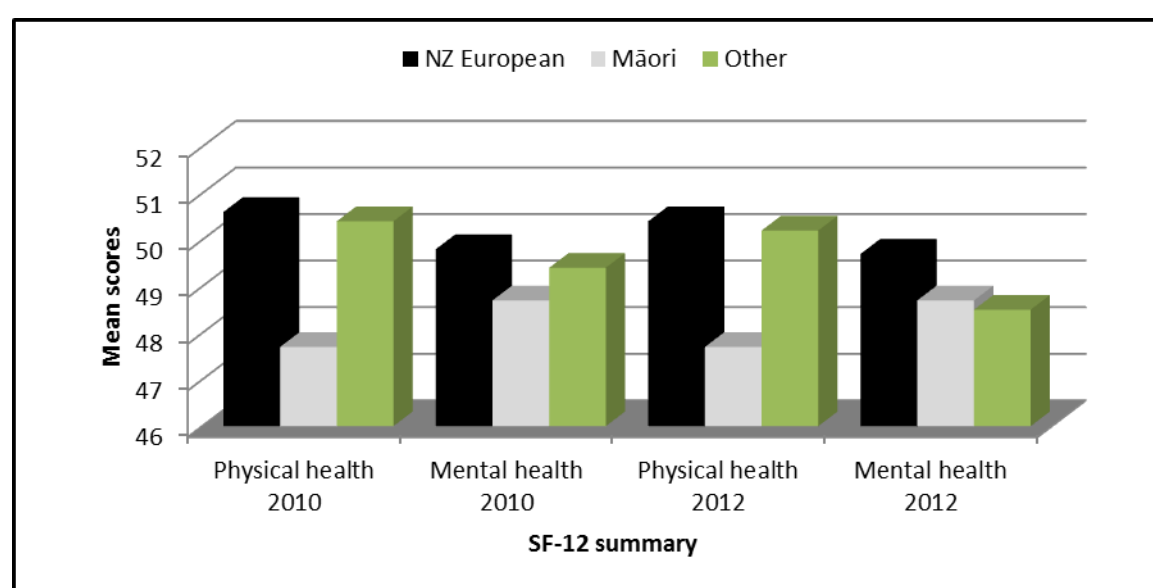


Figure 18. Mean SF-12 summary scores by ethnicity for 2010 and 2012.

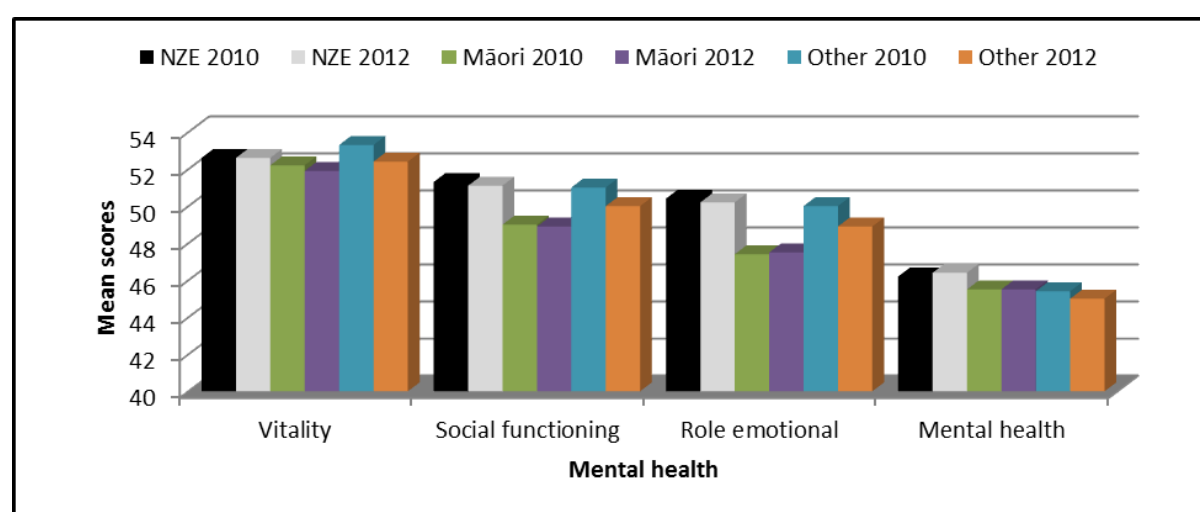


Figure 19. Mean SF-12 mental health scores by ethnicity for 2010 and 2012.

The previously noted trend of decreasing physical health status for NZ Europeans, others and then Māori respectively, is less clear when the component scores are examined. It appears that it is the general health component that is responsible for the gap between the NZ Europeans and ‘other’ ethnicities, as scores on the other three components are relatively similar. The Māori physical health scores are predominantly and notably lower except with respect to general health where they are on par with those in the ‘other’ group.

The mental health scores show less disparity between the three ethnicity categories although the difference between Māori and the other two groups is again apparent with respect to social functioning and emotional role.

## Discrimination

To assess the level of discrimination experience, participants were asked to report the frequency with which they felt that they had experienced several different types of discrimination. Types of discrimination ranged from receiving less respect to being threatened or harassed, while the frequency of that discrimination could range from never to almost daily. From a potential range of 0 to 30, the mean score was 2.4 in 2010 and 2.1 in 2012. This represented an experience of any type of discrimination occurring less than once a year. Forty three percent of the participants who answered these questions reported never having ever experienced any discrimination.

As the discrimination variable demonstrated a distinct positive skew, it was trichotomised into three groups: those reporting: no discrimination (score of 0); minimal discrimination (1-2); and more discrimination (score of 3 or more). The physical and mental health scores for the three groups across the two years are presented in Figure 20.

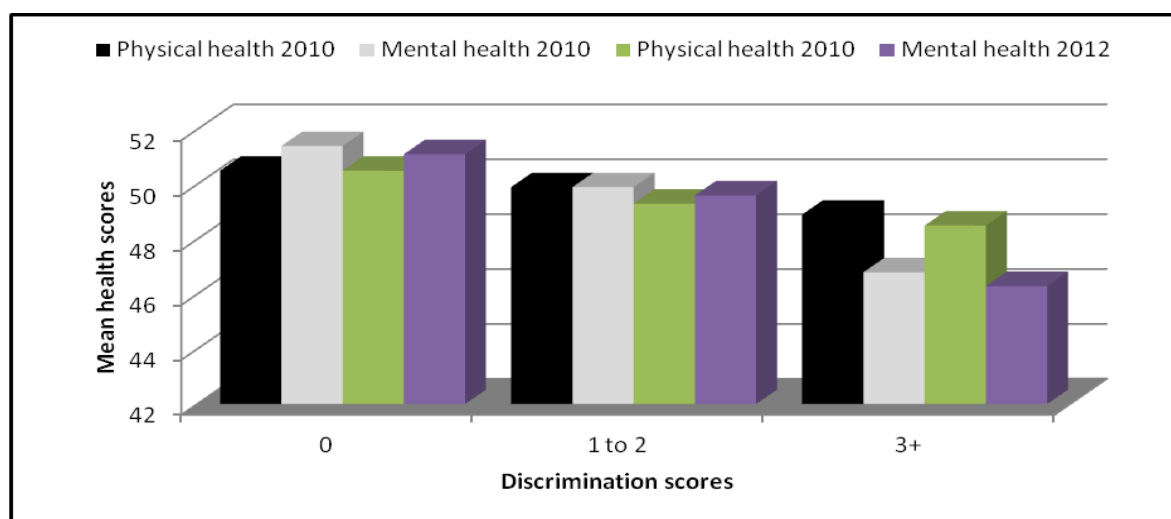


Figure 20. Mean mental and physical health summary scores by discrimination for 2010 and 2012.

Paired comparisons were examined using independent t-tests and the results showed that in both 2010 and 2012 the differences in mental health between the three groups were all significant. However in both years the only significant physical health comparison was

between those who reported no discrimination and those with a score of 3 or more on the combined scale. The means and test results are presented in Table 4.

Table 4.

*Means and t values for paired mental and physical health comparisons across different levels of discrimination in 2012 and 2012.*

Discrimination	Mean	Weighted N	t	df	p
<b>Physical health 2010</b>					
No discrimination (1)	50.9	1069	1 vs 2 ns		
Minimal discrimination (2)	50.1	601	2 vs 3 ns		
More discrimination (3)	49.6	829	1 vs 3 2.65	1896	.008
<b>Mental health 2010</b>					
No discrimination (1)	51.5	1069	1 vs 2 3.65	1153.5	.000
Minimal discrimination (2)	50.3	601	2 vs 3 7.86	1372	.000
More discrimination (3)	47.1	829	1 vs 3 12.98	1569.6	.000
<b>Physical health 2012</b>					
No discrimination (1)	50.7	1173	1 vs 2 ns		
Minimal discrimination (2)	49.8	616	2 vs 3 ns		
More discrimination (3)	48.9	661	1 vs 3 3.55	1832	.000
<b>Mental health 2012</b>					
No discrimination (1)	51.2	1173	1 vs 2 4.47	1145.7	.000
Minimal discrimination (2)	49.6	616	2 vs 3 6.26	1274.1	.000
More discrimination (3)	46.8	661	1 vs 3 11.57	1157.8	.000

The SF-12 component scores for the different levels of discrimination are displayed in Figures 21-24. Although the differences in health scores are small, a general relationship, between the experience of discrimination and physical and mental health, is evident. The more discrimination reported the lower the health scores.

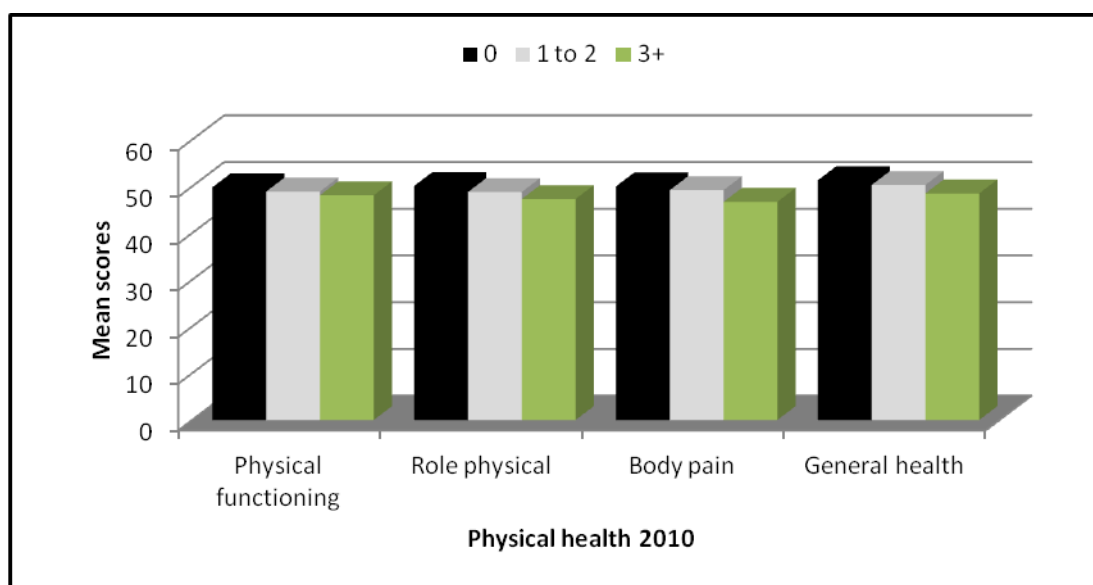


Figure 21. Mean physical health component scores by discrimination in 2010.

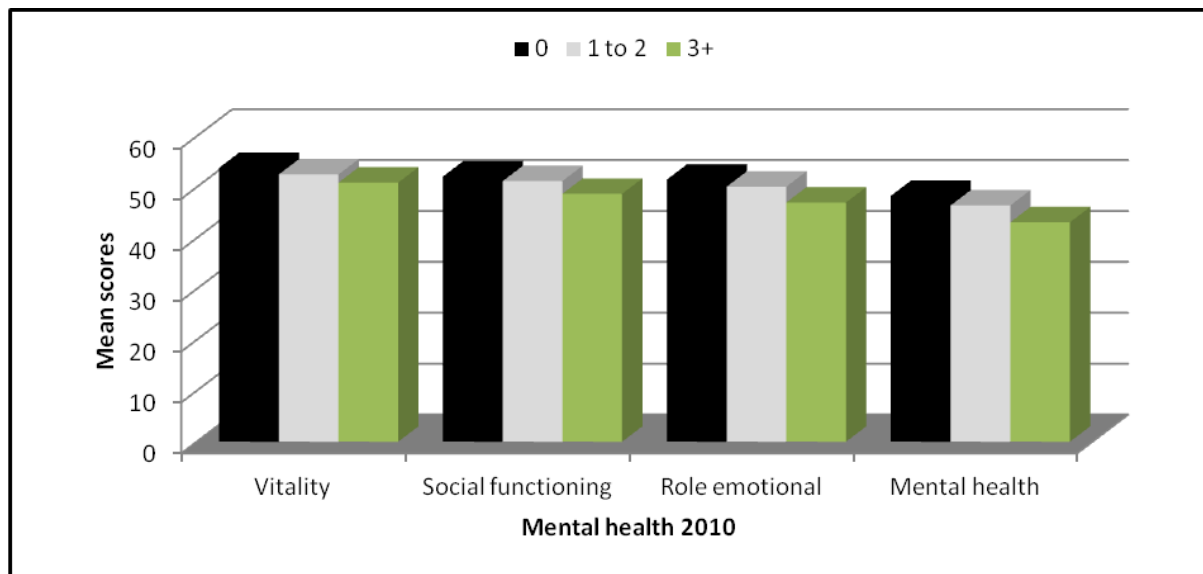


Figure 22. Mean mental health component scores by discrimination in 2010.

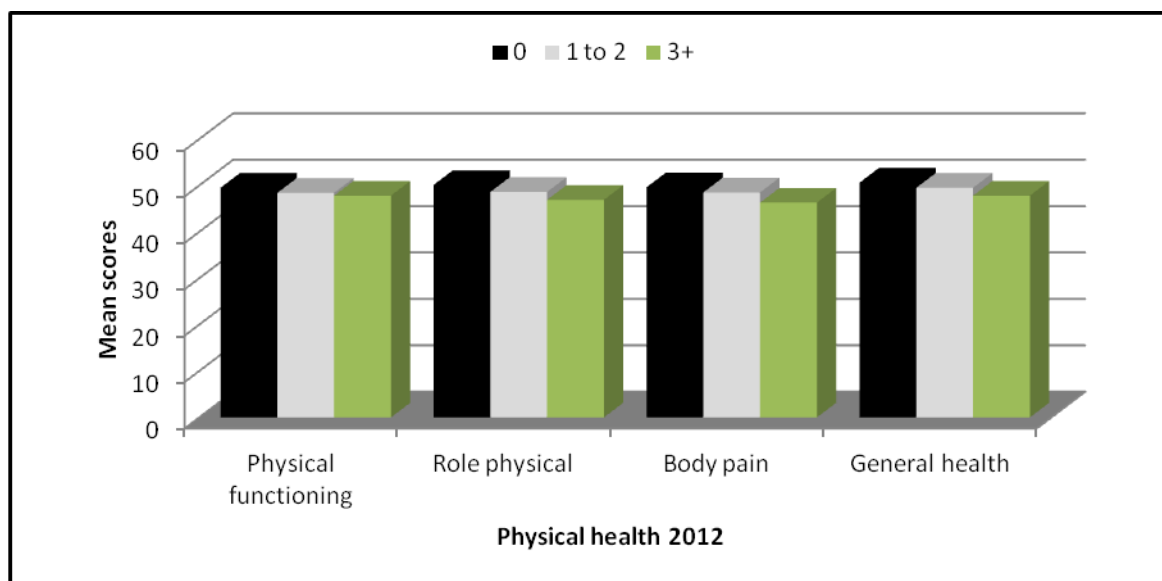


Figure 23. Mean physical health component scores by discrimination in 2012.

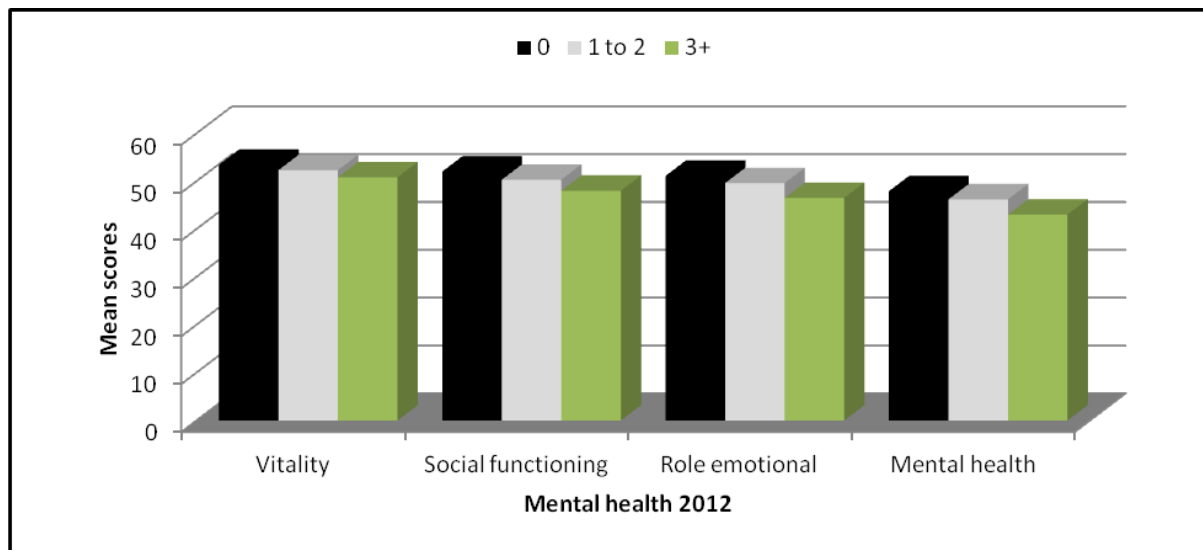


Figure 24. Mean mental health component scores by discrimination in 2012.

Discrimination scores were compared in relation to religion and once the scores were weighted, no significant differences were found between Christians, those of other faiths and those with no faith. A similar analysis according to gender found no significant differences in perceived discrimination between men and women in either year.

Significant differences in perceived discrimination were found with respect to ethnicity. In 2010 Māori reported experiencing more discrimination ( $M = 3.0$ ) than New Zealand Europeans ( $M = 2.2$ ,  $t = 3.05$ ,  $df = 267$ ,  $p = .003$ ), and in 2012 Māori reported more discrimination ( $M = 2.6$ ) than either NZ Europeans ( $M = 1.9$ ,  $t = 3.01$ ,  $df = 266.7$ ,  $p = .003$ ) or people of other ethnicities ( $M = 1.9$ ,  $t = 2.16$ ,  $df = 419.6$ ,  $p = .031$ ). These differences are portrayed in Figure 25.

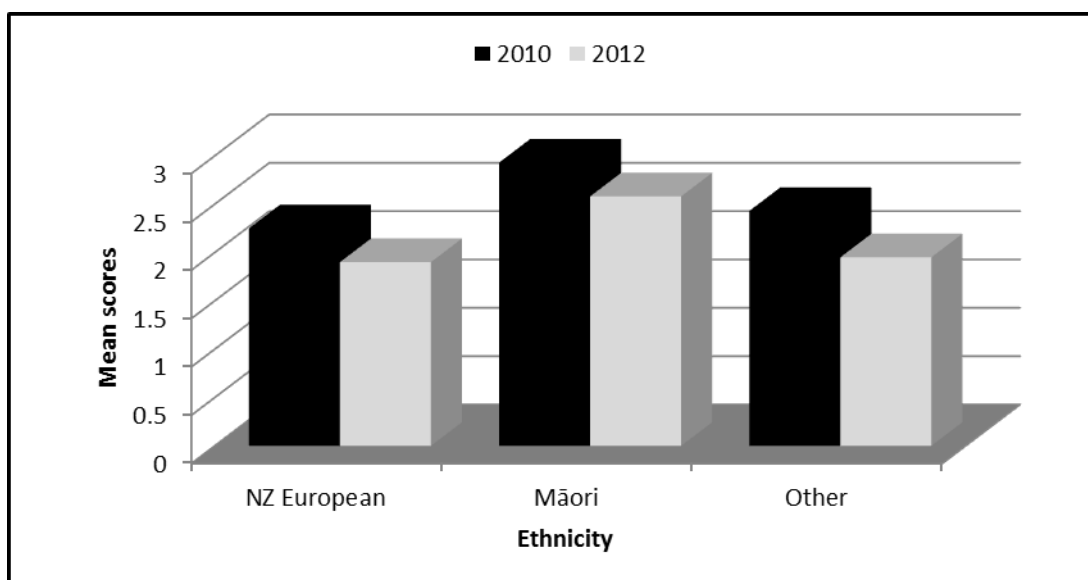


Figure 25. Mean discrimination scores by ethnicity for 2010 and 2012.

## Socioeconomic Status

Three measures of socioeconomic status (SES) were used: After-tax household income, highest educational qualification achieved, and the short form of the Economic Living Standards Index (ELSI), a scale which assesses SES based on consumption, recreation, and living conditions (Jensen, Spittal & Krishnan, 2005).

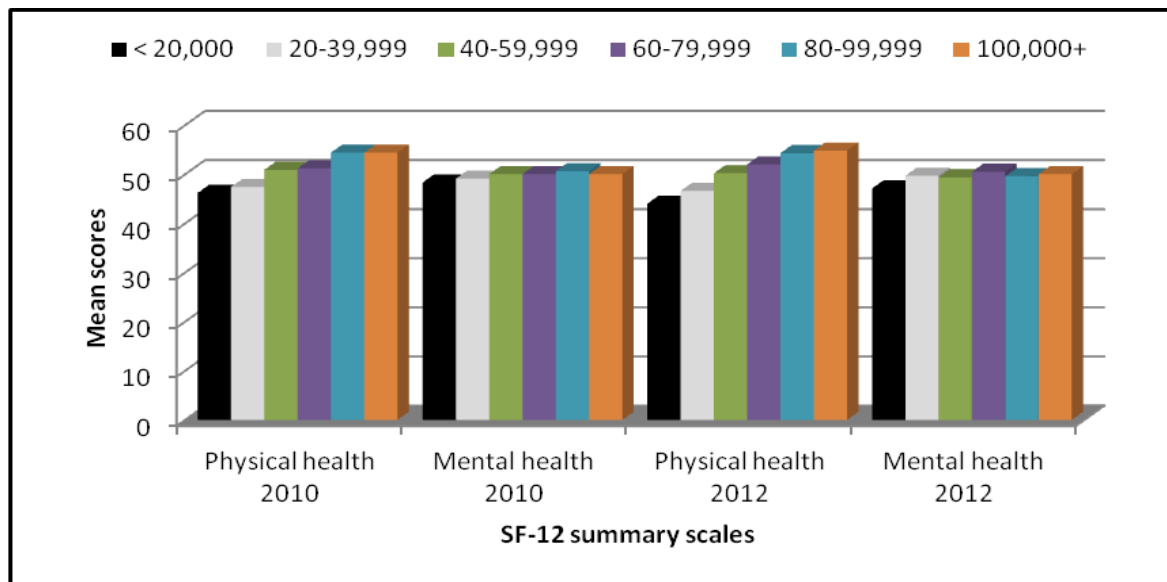


Figure 26. Mean physical and mental health summary scores according to after tax household income levels for 2010 and 2012.

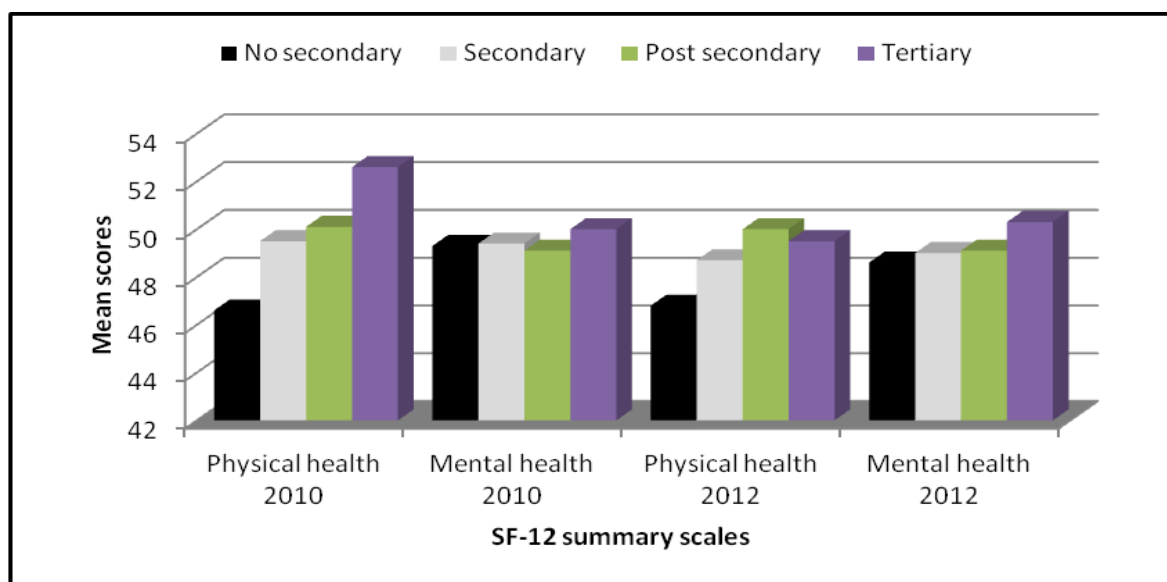


Figure 27. Mean summary scores for different educational levels in 2010 and 2012.

Higher levels of income and higher educational qualifications were consistently related to better physical and somewhat better mental health, as shown in Figures 26- 27. This is not a surprising result and confirms the consistent relationship found between inequalities and health in the international literature (see Noone, Stephens, & Alpass, 2014).



Consistent decreases in both mental and physical health scores as standard of living decreases are evident in Figure 28. Based on this consistency, the seven depicted categories were collapsed into three titled ‘hardship’, ‘comfortable’ and ‘good’ with respect to standards of living. Mental and physical health comparisons between these three groups revealed significant differences between all levels on both physical and mental health for both years. The results can be seen in Table 5.

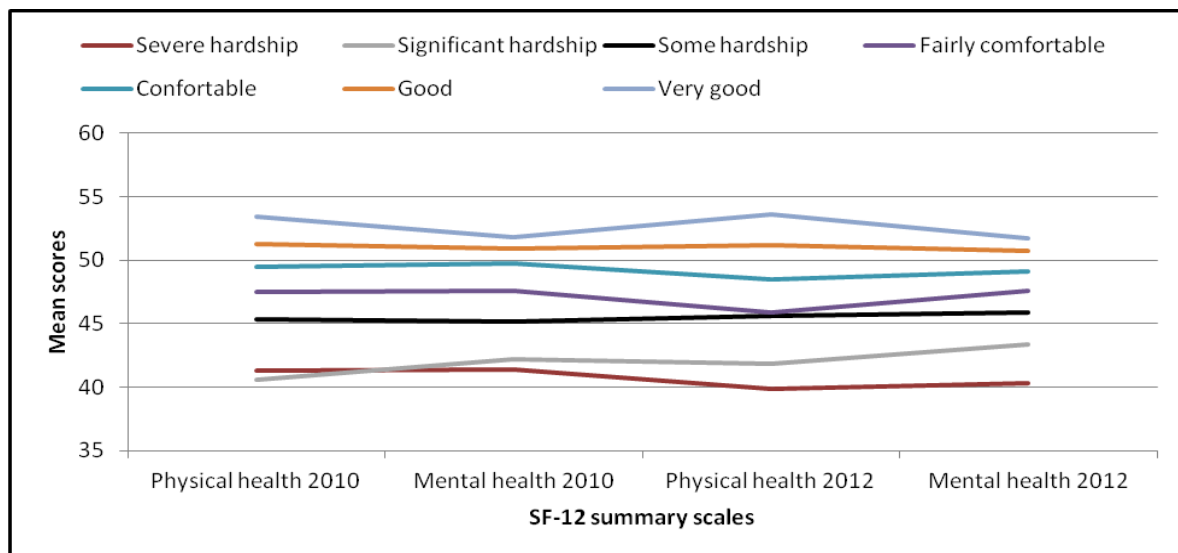


Figure 28. Mean 2010 and 2012 SF-12 summary scores for participants at different levels on the ELSI.

Table 5.

*Means and t values for paired mental and physical health comparisons across different levels of economic living standards in 2012 and 2012.*

Hardship category	Mean	Weighted N	t	df	p
<b>Physical health 2010</b>					
Hardship	43.7	262	H vs C 5.99	424.1	.000
Comfortable	48.9	650	C vs G 6.79	1139.6	.000
Good	52.2	1434	H vs G 10.59	319.7	.000
<b>Mental health 2010</b>					
Hardship	44.1	262	H vs C 7.90	427.3	.000
Comfortable	49.1	650	C vs G 6.14	1069.6	.000
Good	51.2	1434	H vs G 12.32	311.9	.000
<b>Physical health 2012</b>					
Hardship	42.9	215	H vs C 5.01	337.1	.000
Comfortable	47.8	624	C vs G 8.40	1025	.000
Good	52.2	1456	H vs G 10.24	250.7	.000
<b>Mental health 2012</b>					
Hardship	44.2	215	H vs C 6.02	330.4	.000
Comfortable	48.4	624	C vs G 7.61	1016.1	.000
Good	51.1	1456	H vs G 10.75	247.9	.000

## Loneliness

From Figure 29 it can be seen that the strongest association between loneliness and health is with mental health. Consequently the mental health component scores according to degree of loneliness are presented in Figures 30 and 31. Loneliness was consistently related to all the mental health related subscales of the SF-12 and has one of the strongest effects on mental health outcomes on both data waves in this sample.

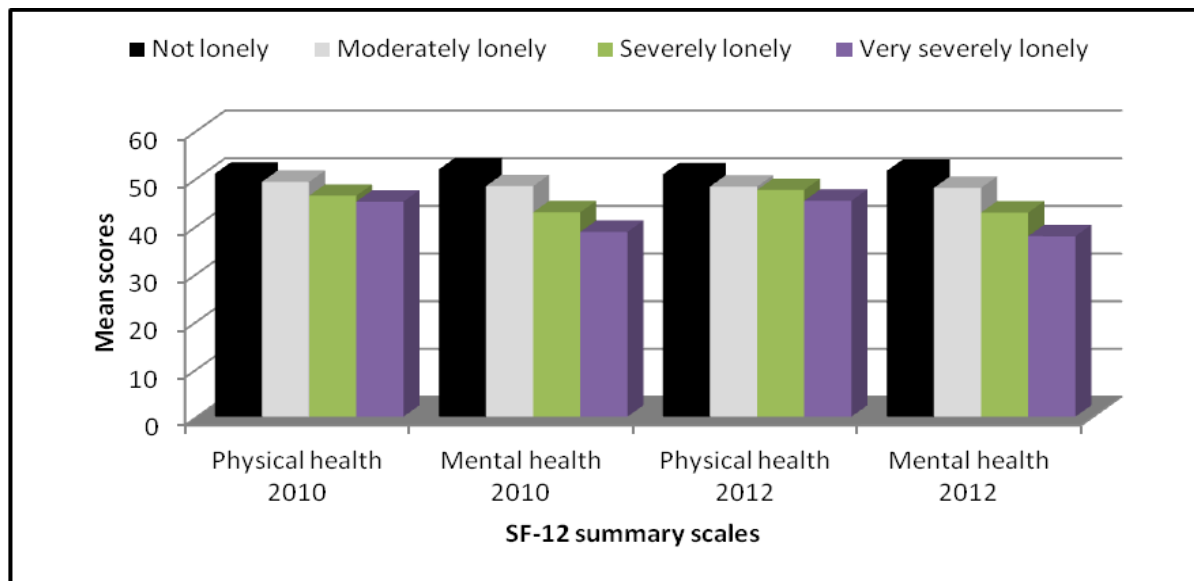


Figure 29. Mean mental and physical health summary scores by loneliness for 2010 and 2012.

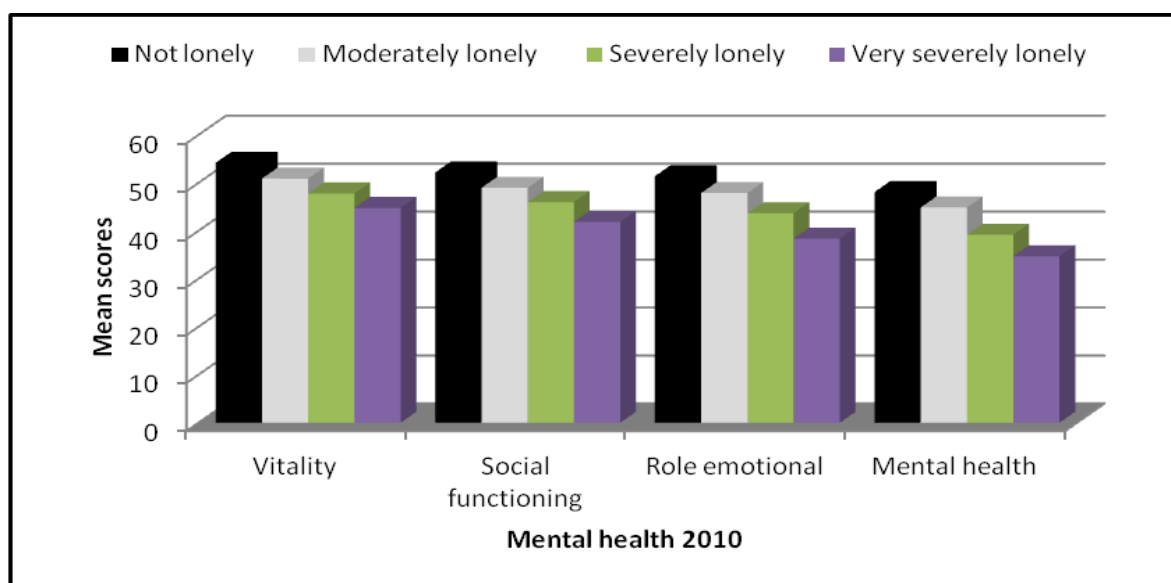


Figure 30. Mean mental health component scores for participants experiencing different levels of loneliness in 2010.

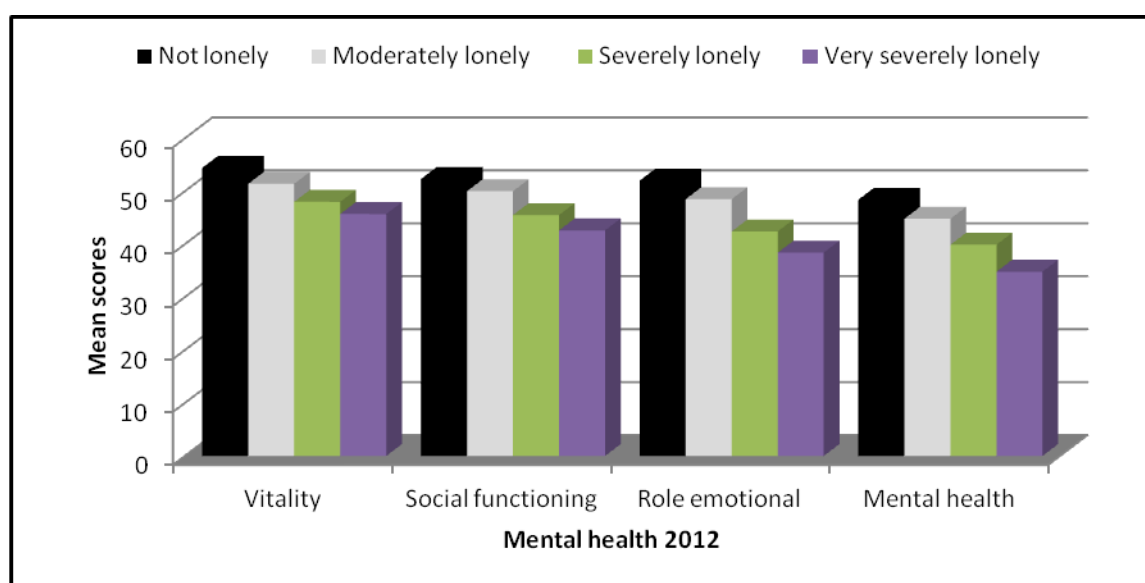


Figure 31. Mean mental health component scores for participants experiencing different levels of loneliness in 2012.

## Individual Factors

### Smoking Behaviour

Smoking status remained consistent across the two years with small reductions across each group according to ethnicity, gender, age, work status, and education. In 2010 the percentage of smokers in the sample was 19.7% and by 2012 this figure had reduced slightly to 16.3%. The number of past smokers was very similar, 27.9% in 2010 and 30.7% in 2012 and those who had never smoked constituted 52.4% of the sample in 2010 and 53.0% in 2012. Those who were most likely to remain smoking were males, Māori, those with no educational qualifications, and those unemployed. Hence, although smoking is seen as an individual behaviour, there are clear associations with social structure as shown in Figures 32 to 34. Figure 35 shows the clear association with health outcomes related to never smoking, past smoking and current smoking. Smoking is related to poorer physical and mental health.

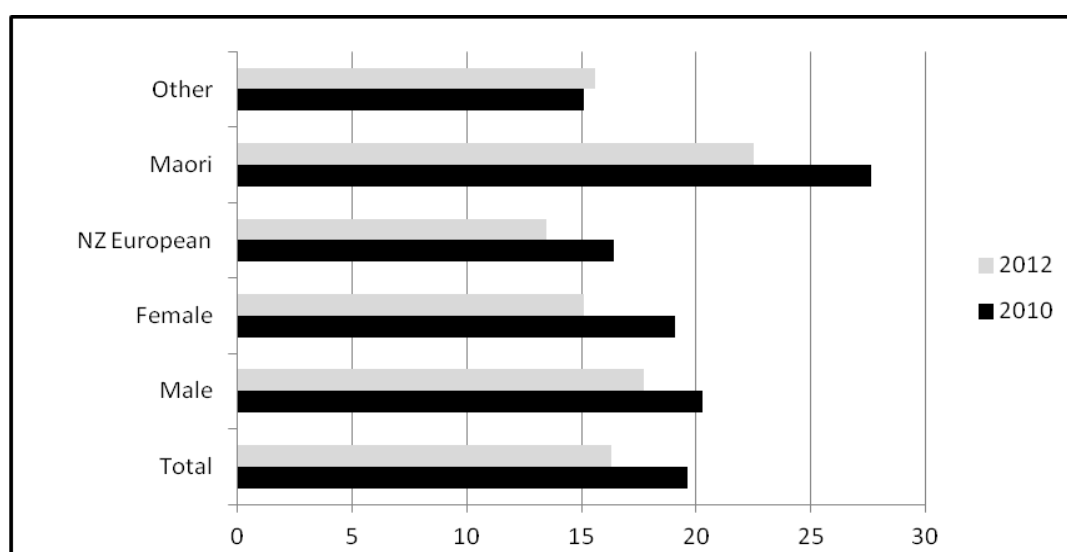


Figure 32. Percentage of smokers according to gender and ethnicity for 2010 and 2012.

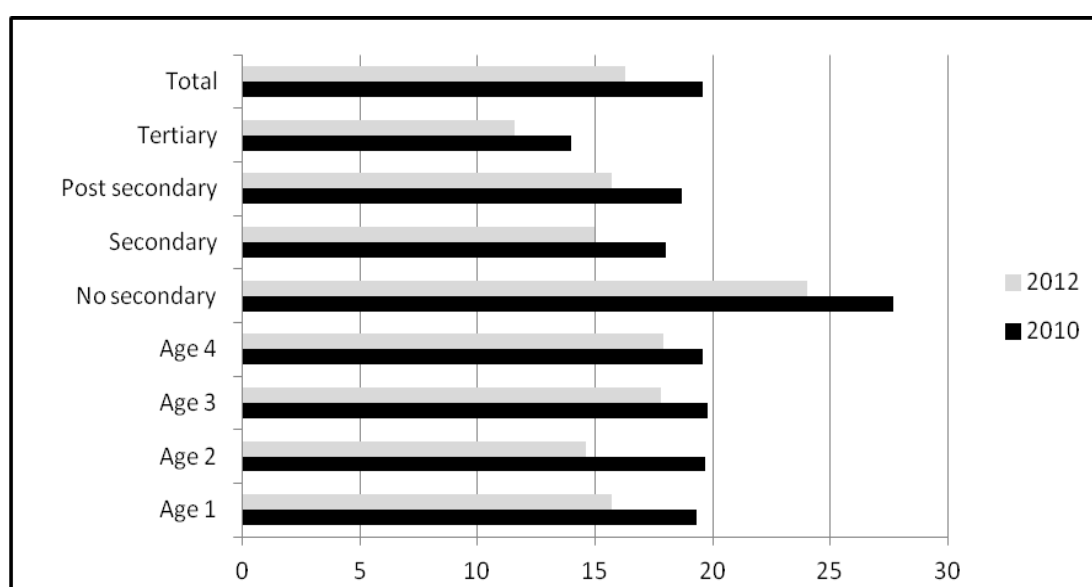


Figure 33. Percentage of smokers according to educational qualification and age group for 2010 and 2012<sup>1</sup>.

<sup>1</sup> Age 1 = 50-54 years; Age 2 = 55-64 years; Age 3 = 65-74 years; Age 4 = 75+ years in 2010.

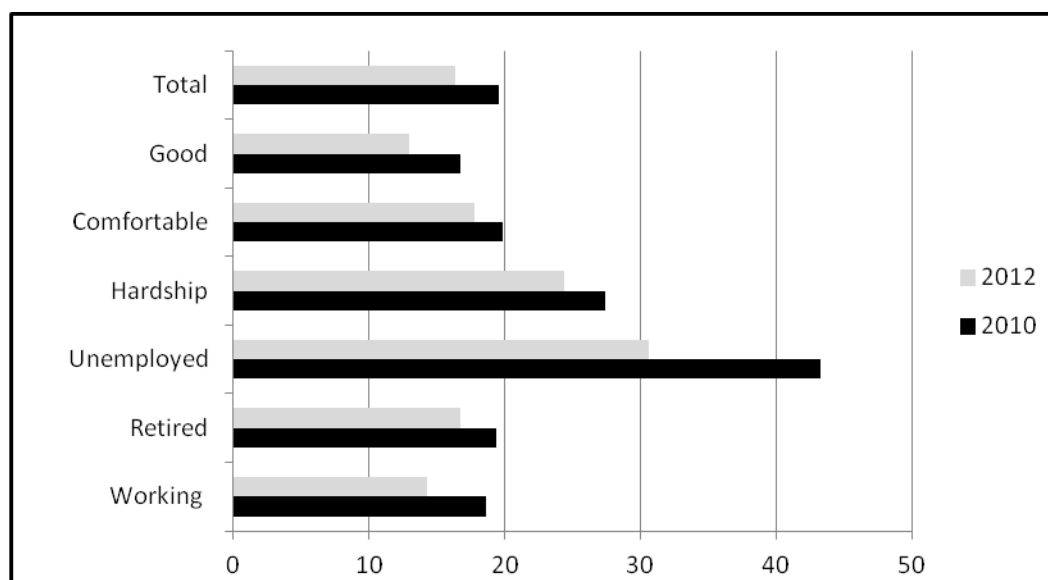


Figure 34. Percentage of smokers according to standard of living and employment status for 2010 and 2012.

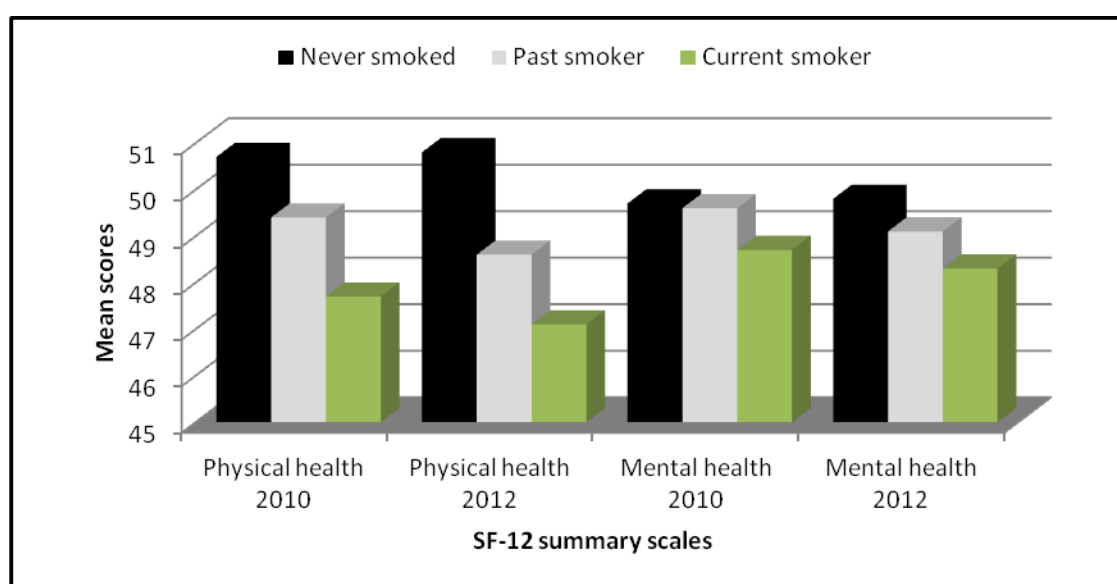


Figure 35. Mean physical and mental health summary scores for smokers by smoking status for 2010 and 2012.

## Alcohol Consumption

Alcohol use was measured with the AUDIT-C which is a screening tool designed for clinical assessment of levels of alcohol use (Towers et al., 2011). In survey research it provides an initial overview of alcohol use patterns in the population. Participants were first categorised as either a lifetime abstainer, current non-drinker, or light, moderate, or heavy user. AUDIT-C scores were used to categorise light drinkers ( $<4$ ), moderately hazardous drinkers ( $\geq 4$ ) and heavy drinkers who are likely to be dependent or serious abusers of alcohol ( $\geq 8$ ).

Figure 36 shows that men are more likely to be in the heavy drinker group and women are more likely to be light drinkers. The percentages point to the high level of alcohol use in the sample overall. To investigate this use further, we examined those who were categorised as hazardous drinkers by the AUDIT-C scores.

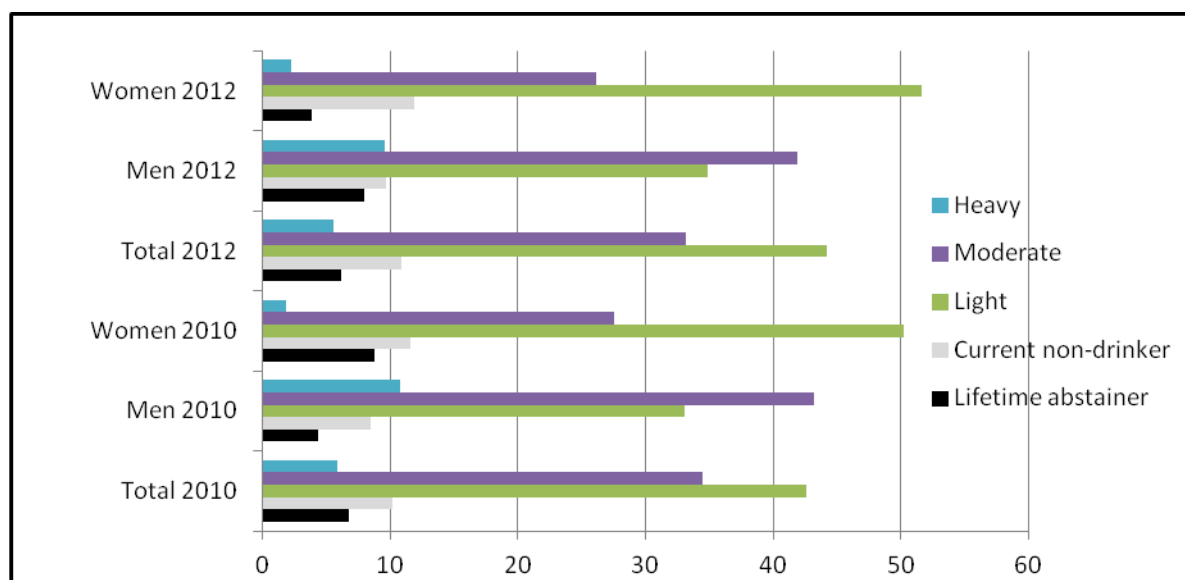


Figure 36. Alcohol consumption for men, women and the total sample expressed as a percentage.

Alcohol consumption was also measured in terms of the number of people in the sample who were categorised as hazardous drinkers (AUDIT-C score  $\geq 4$ ). This categorisation applied to 43.4% of the sample in 2010 (32% of women and 57% of men) and 40.6% of the sample in 2012 (30.4% of women and 53.2% of men).

Figures 37 to 40 portray the level of hazardous drinking by age, ethnicity, work status, living standards, educational qualifications, loneliness, tobacco use, and by health. These results show that those with higher education levels, higher incomes, good standard of living, and in employment are more likely to be categorized as hazardous drinkers using the AUDIT-C. In addition, current and past smokers are more likely to use alcohol hazardously.

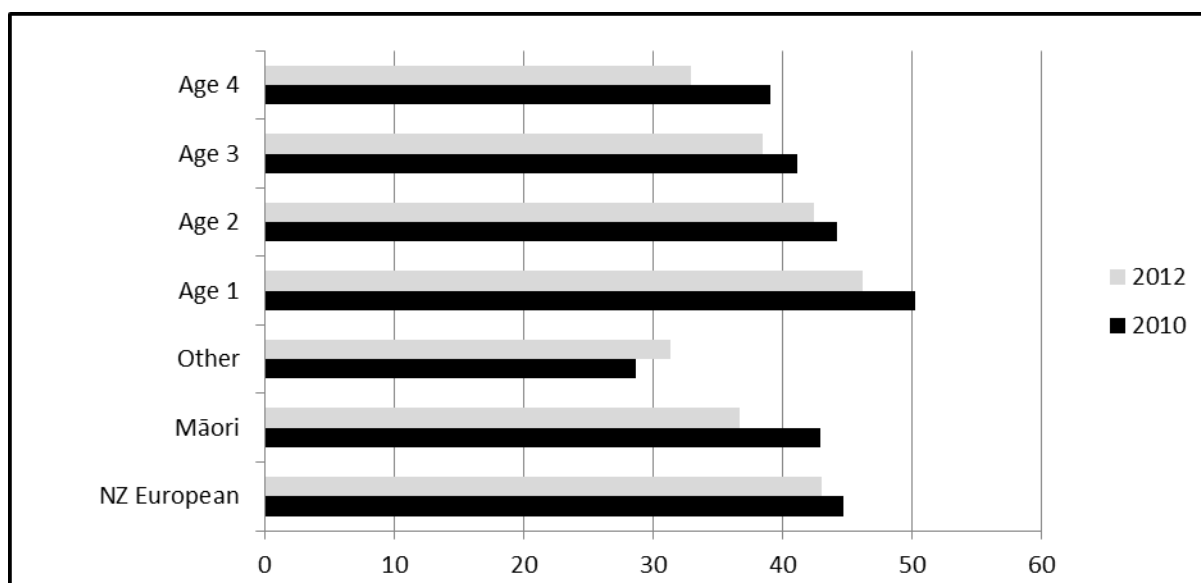


Figure 37. Percent of hazardous drinkers within age and ethnicity groups<sup>2</sup>.

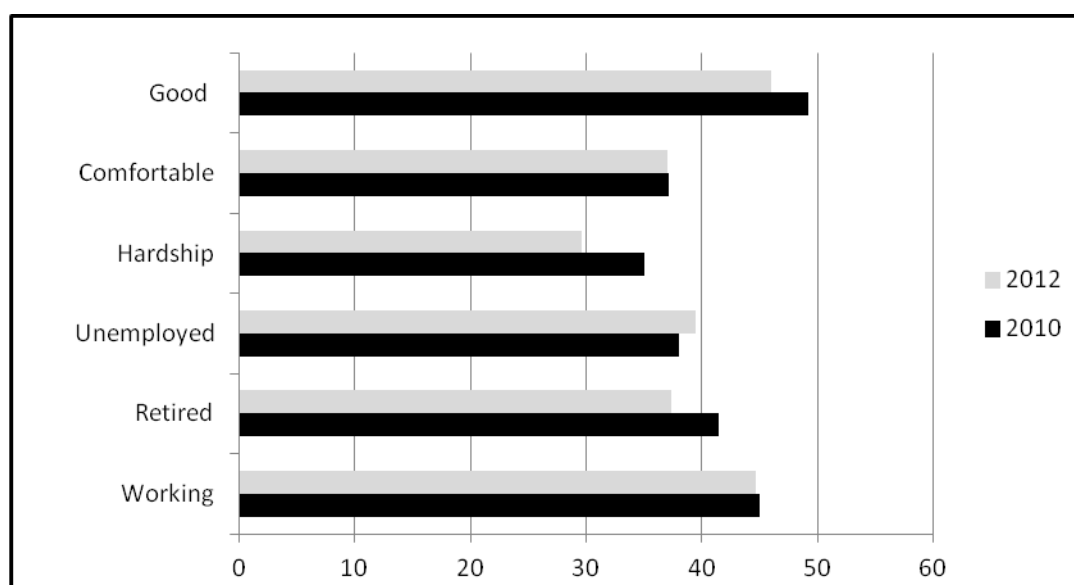


Figure 38. Percent of hazardous drinkers within living standard and employment groups.

<sup>2</sup> Age 1 = 50-54 years; Age 2 = 55-64 years; Age 3 = 65-74 years; Age 4 = 75+ years in 2010.



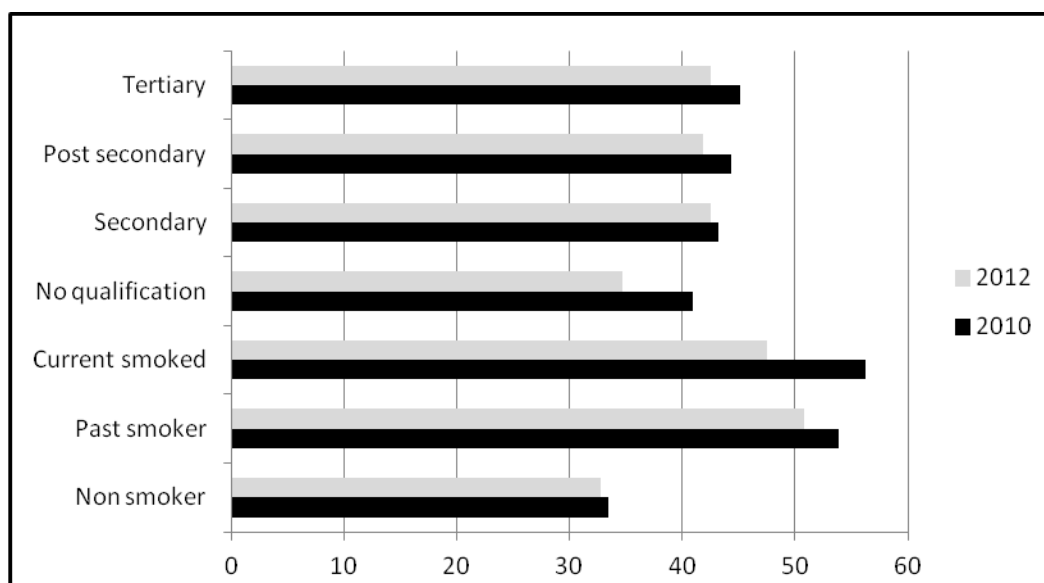


Figure 39. Percent of hazardous drinkers within highest educational qualification categories and according to smoking status.

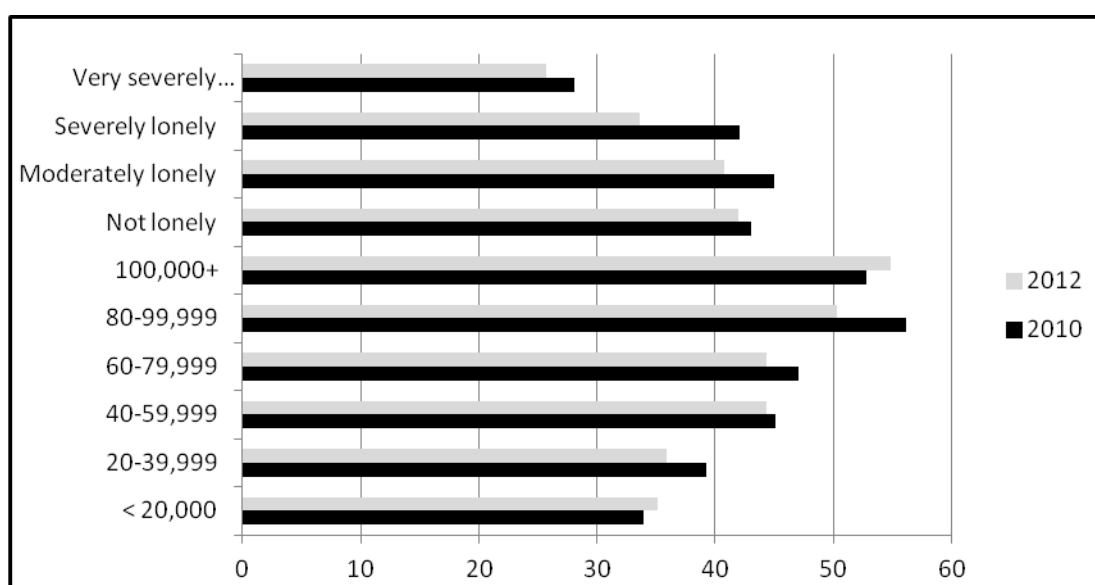


Figure 40. Percent of hazardous drinkers according to degree of loneliness and income level.

In regard to health and alcohol use, Figure 41 shows that, in direct contrast to the health of tobacco users, those who drink at light, moderate and heavy levels are also likely to report better physical and mental health. This is very likely related to the higher SES of alcohol users as shown in the previous figures.

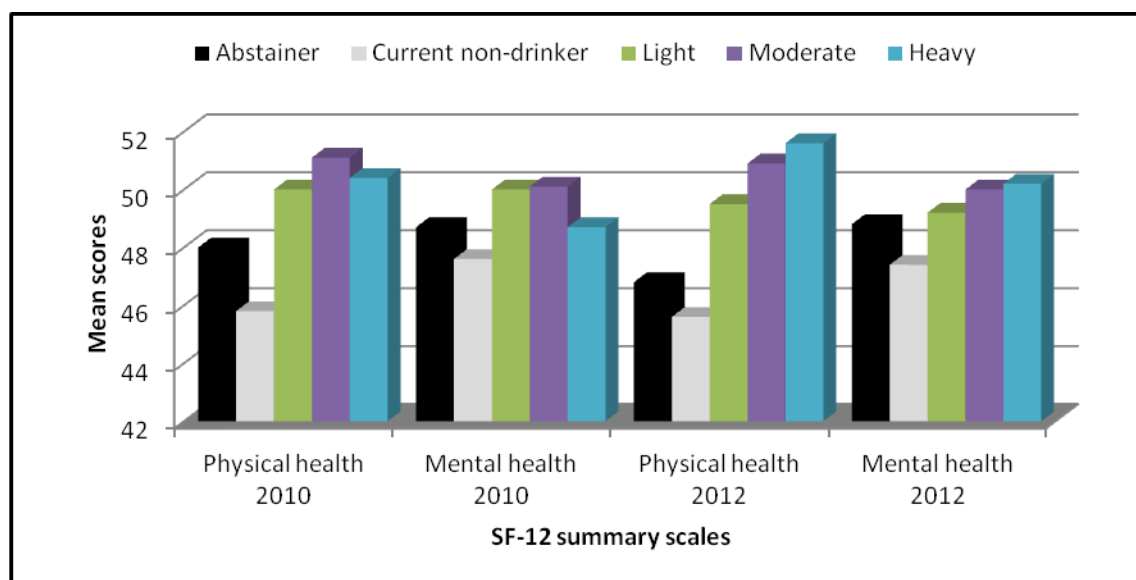


Figure 41. Mean SF-12 physical and mental health summary scores by level of drinking for 2010 and 2012.

Although higher levels of alcohol use are labelled hazardous, these hazards are not reflected in the mean health scores of this population. Figure 42 shows that those drinking at hazardous levels also report better physical and mental health.

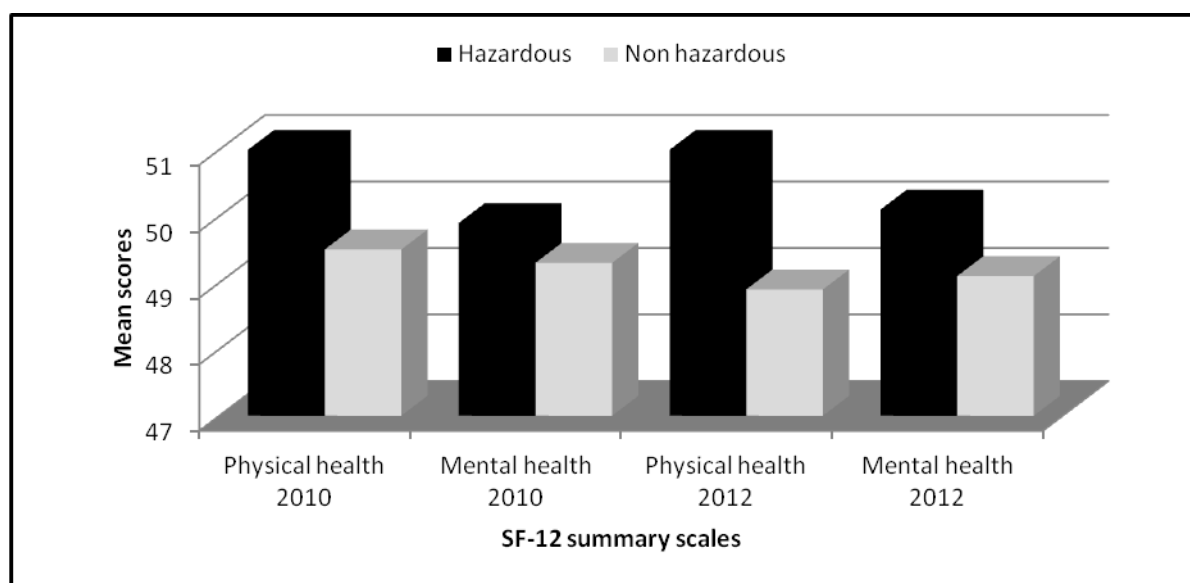


Figure 42. Mean SF-12 physical and mental health summary scores for hazardous and non-hazardous drinkers in 2010 and 2012.

## Physical Activity

Three different categories of physical activity were measured; vigorous (e.g. playing sport, attending a gym, digging the garden), moderate (e.g. gardening, walking) and mild (e.g. vacuuming, doing laundry). The frequency with which participants engaged in the different forms of activity are displayed in Figure 43. Although over 60% of participants

never engage in vigorous activity, there is a similar level of regular engagement in moderate activity. The 30% who never or less regularly engage in any activity is of concern in regards to potential health outcomes. Figure 44 shows that level of engagement in moderate activity is systematically related to mental and physical health in that the lower the rates of exercise, the poorer the self-rated health score.

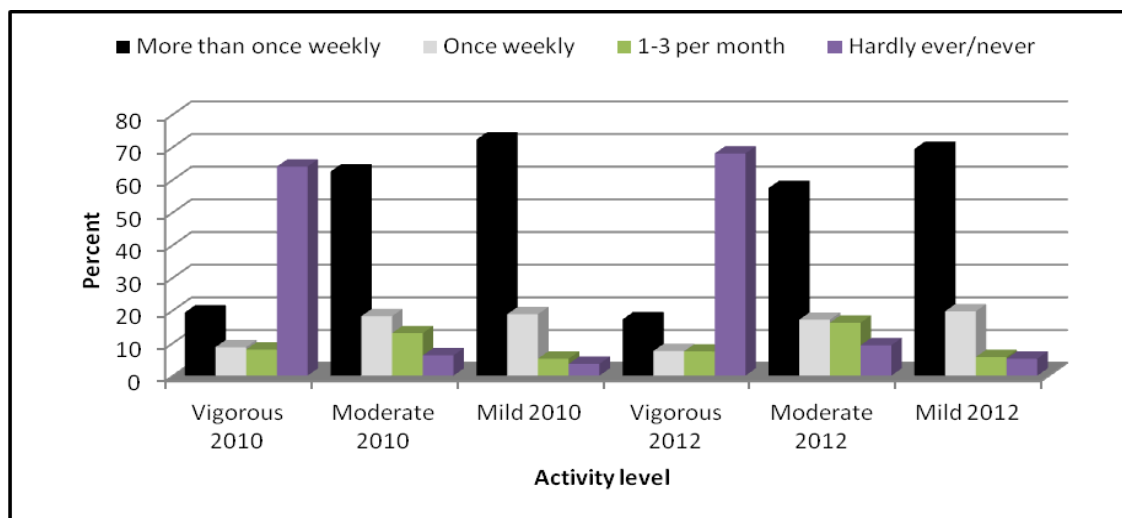


Figure 43. Frequency of engagement in different levels of physical activity in 2010 and 2012 expressed as a percentage.

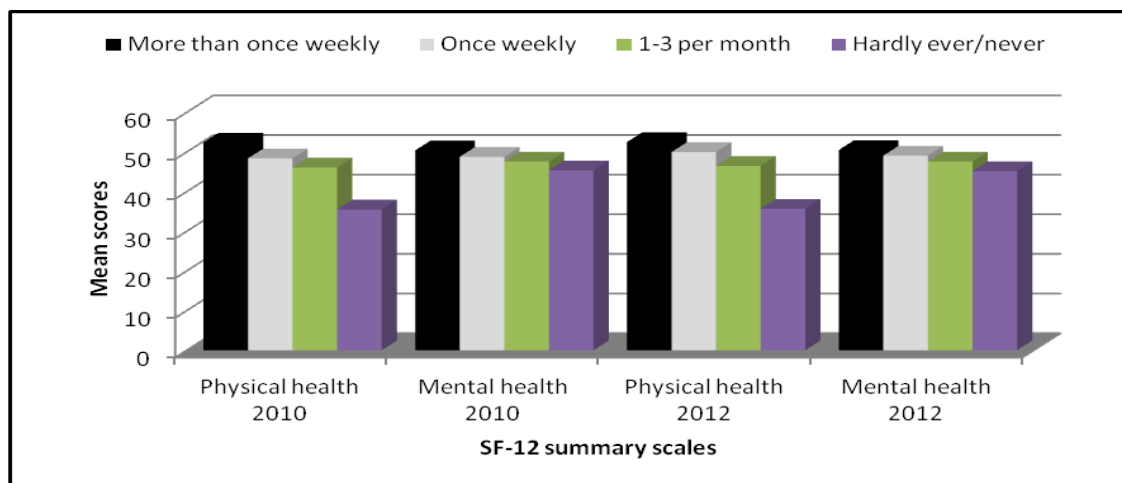


Figure 44. Mean SF-12 summary scores according to moderate activity level.

To draw statistical comparisons between these groups the activity variable was recoded into three categories; more than once a week, once a week, and less than once a week. ANOVAs found the model to be significant for both physical health and mental health in both years, and follow up t-tests found significant differences at all levels. The results are presented in Table 6.

Table 6.

*Means and t values for paired mental and physical health comparisons across different levels of moderate activity in 2010 and 2012.*

Moderate activity level	Mean	Weighted N	t	df	p
<b>Physical health 2010</b>					
> Once weekly (1)	52.8	1610	1 vs 2 7.51	626.3	.000
Once weekly (2)	48.8	434	1 vs 3 14.68	564.3	.000
< Once weekly (3)	43.2	445	2 vs 3 7.15	836.2	.000
<b>Mental health 2010</b>					
> Once weekly (1 )	50.5	1610	1 vs 2 4.09	637.5	.000
Once weekly (2)	48.9	434	1 vs 3 6.59	600.9	.000
< Once weekly (3)	47.5	445	2 vs 3 2.40	864.2	.017
<b>Physical health 2012</b>					
> Once weekly (1)	53.1	1408	1 vs 2 6.14	557.3	.000
Once weekly (2)	49.7	391	1 vs 3 18.01	824.9	.000
< Once weekly (3)	42.9	593	2 vs 3 9.43	952.4	.000
<b>Mental health 2012</b>					
> Once weekly (1)	50.7	1408	1 vs 2 3.21	570.2	.001
Once weekly (2)	49.3	391	1 vs 3 8.65	904.3	.000
< Once weekly (3)	47.2	593	2 vs 3 3.98	907.3	.000

## Healthcare Utilisation

Participants' use of healthcare services was measured only in 2012. However two items asking what respondents "can/can't" do due to finances were asked in 2010 and 2012. These questions and their response frequencies are presented in Table 7. They show a small but concerning percentage of those whose financial constraints may affect their access to medical care.

Table 7.

*Health behaviours related to financial constraints in 2010 and 2012 expressed as percentages.*

Have you ...	No	A little	A lot
Postponed doctor's visits to keep down costs (2010)	79.6	15.7	4.8
Postponed doctor's visits to keep down costs (2012)	82.0	14.1	3.9
Not picked up a prescription to keep down costs (2010)	94.3	4.3	1.4
Not picked up a prescription to keep down costs (2012)	94.8	4.0	1.2

Three additional questions regarding the influence of finances on health-related behaviours were asked in 2012. These used a 5-point response scale ranging from 1 'not true for me at all' to 5 'definitely true for me' regarding being able to afford: all needed health

care ( $M=4.0$ ,  $SD=1.2$ ); an appointment with a medical specialist if needed ( $M=3.6$ ,  $SD=1.4$ ); and anything I need to remain well ( $M=3.8$ ,  $SD=1.2$ ). The responses are displayed in Figure 45. Again, only a small percentage reported the effects of financial constraints, but in regard to specialist services, this percentage was over 10%.

Actual use of health services was explored in 2012 with respect to doctors' visits, presentations to the hospital emergency department (ED) and admissions to hospital. The following figures present the frequency of these events according to the age, sex and ethnicity of the participants. A gradual increase at the level of 3-5 doctor's visits per year is apparent in Figure 46 as age increases, although high levels of visits remain low. Figure 47 demonstrates the relative stability of doctor visits across the different participant characteristics.

Figures 48 to 52 record the numbers of hospitalisations and ED visits reported according to the same characteristics. Again, there is a slight increase according to age in hospital admissions and ED visits, but very little high level use. There are also few differences across demographic groups.

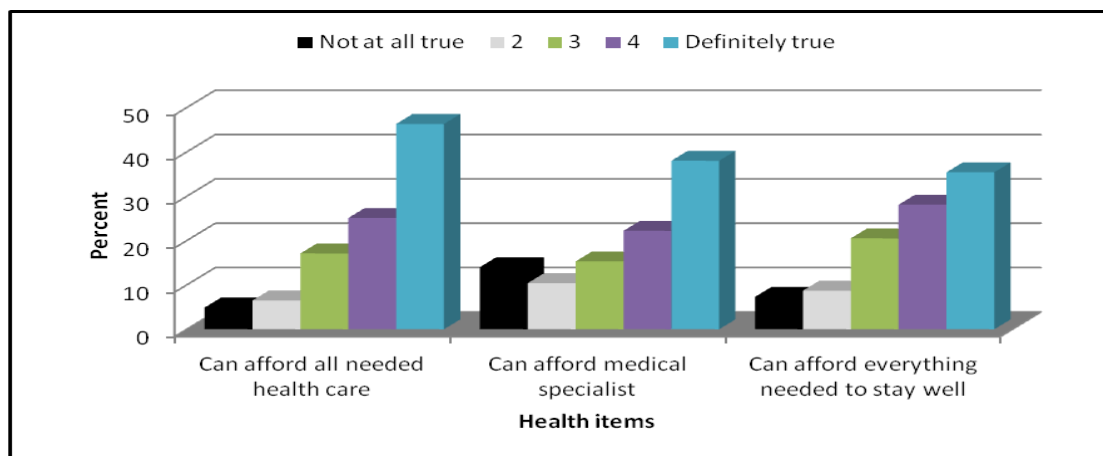


Figure 45. Percentage of respondents able to afford health related costs in 2012.

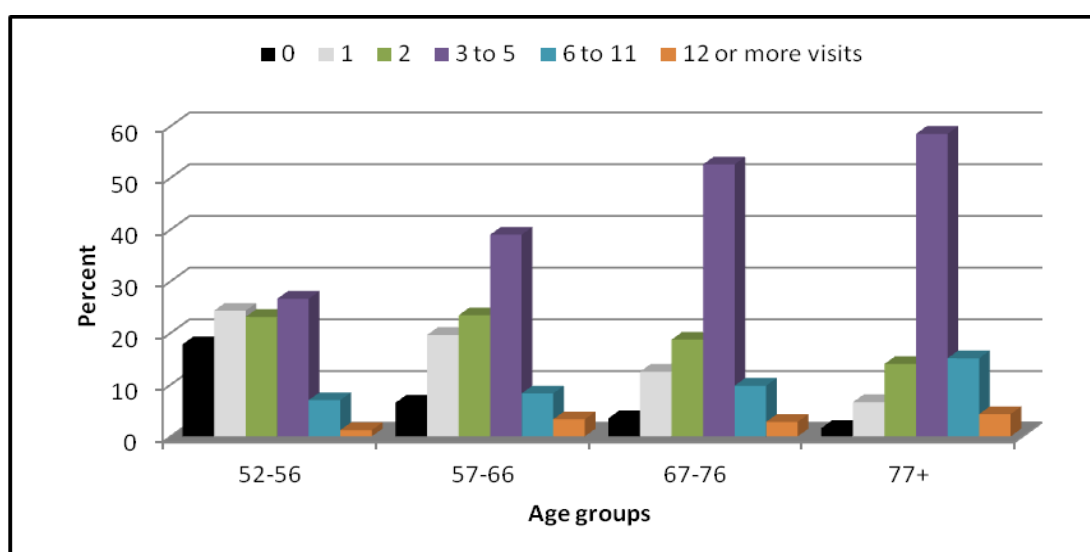


Figure 46. Number of Doctor's visits according to age in 2012.

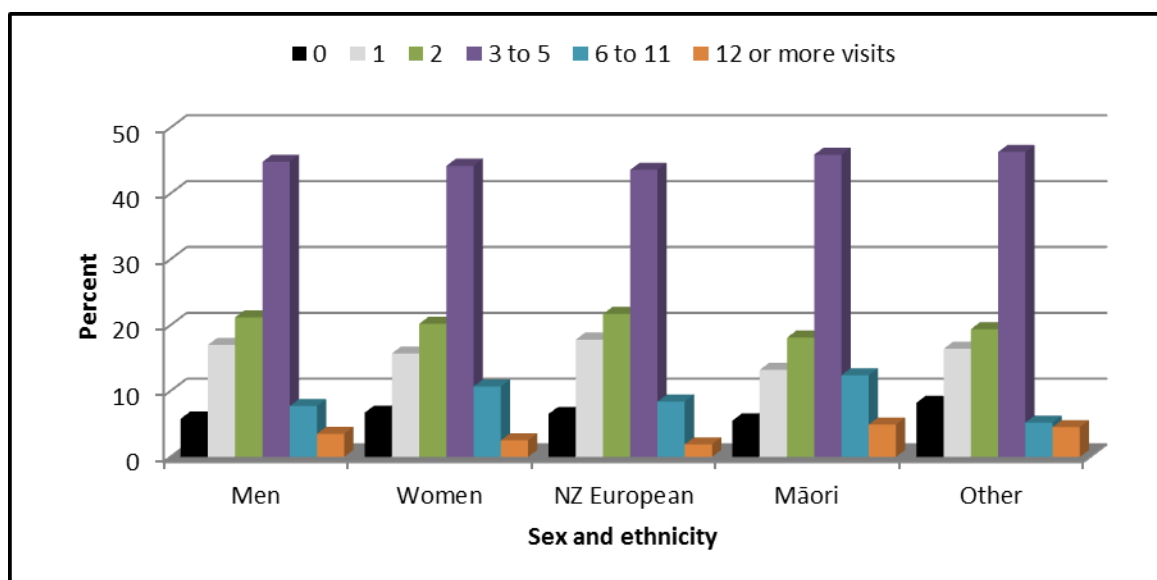


Figure 47. Number of Doctor's visits according to sex and ethnicity in 2012.

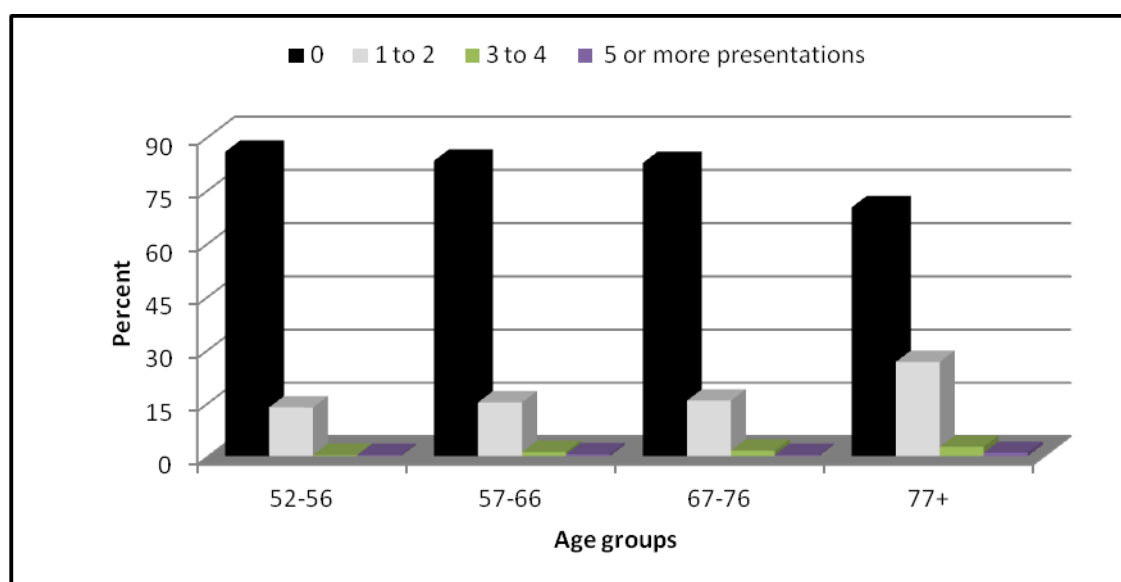


Figure 48. Number of presentations to ED according to age in 2012.

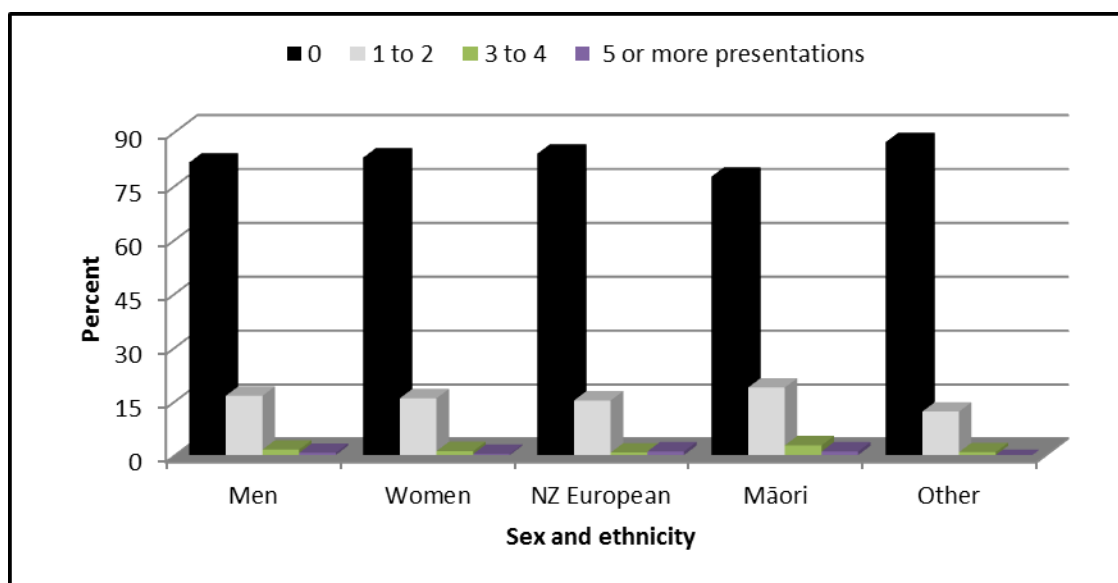


Figure 49. Number of presentations to ED according to sex and ethnicity in 2012.

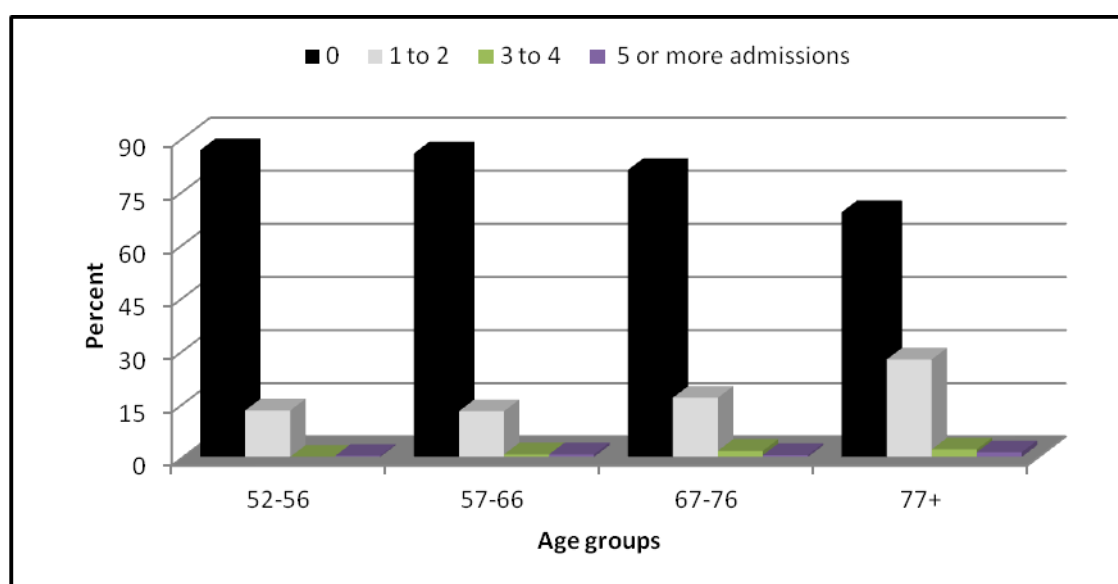


Figure 50. Number of hospitalisations according to age in 2012.

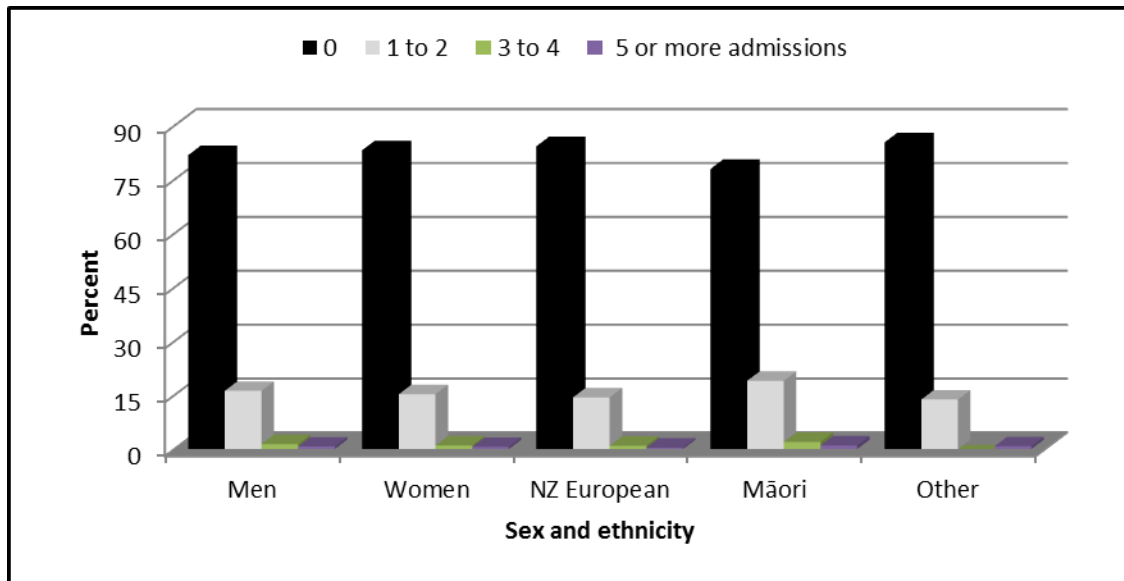


Figure 51. Number of hospitalisations according to sex and ethnicity in 2012.



## Summary and Concluding Comments

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As people grow older their physical health status tends to deteriorate, while mental health may improve. These changes are very gradual across the years from 50 to 80+ and very little change was observed between 2010 and 2012. As people age, they also tend to have more need of health services, and to use them more. As shown in our results, these changes are incrementally small, and there is not a great increase in frequency of health care use for those over 70 years. The small number of older people who report being unable to access health services could be the focus of concern.

Overall, the results summarised in this report provide a clear picture of the systematic relationship of health with socioeconomic status. As expected, those with lower education, income, and living standards, reported poorer physical health (but not mental health). These relationships may also be seen reflected in the results for ethnicity. They are also implicated in the contradictory findings for health related behaviours. Those who smoke, and past smokers, report poorer health as expected, but despite the very high levels of alcohol use reported, alcohol use is related to better health. This is very likely because alcohol use is also related to income and living standards. Whether this high level of alcohol use among the well to do young- old will cause health problems in the future is another issue of concern.

Those in paid employment are more likely to report better physical health at younger ages, whereas, by the age of 75 there is little difference in health for those who are working or retired. Looking for work but being unemployed is related to poorer health. The strongest relationship with both physical and mental health was for loneliness. The more loneliness reported by participants, the poorer their health. This is an important consideration as loneliness can be an issue for older people if they become isolated and should remain a focus of concern.

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Appendix 1.

**Table 1.**

A comparison of mean SF-12 subscale scores by gender for 2010 and 2012

Subscale	Sex	2010					2012				
		N	M	t	df	p	N	M	t	df	p
Physical functioning	M	1177	50.6				1212	50.4			
	F	1461	48.5	5.38	2614.4	.000	1511	48.1	5.64	2689.2	.000
Role physical	M	1198	49.5				1208	49.1			
	F	1474	49.1	0.97	2620.4	.334	1493	49.2	0.13	2699	.897
Body pain	M	1232	49.4				1188	48.7			
	F	1532	49.2	0.46	2762	.645	1493	48.7	0.11	2679	.916
General health	M	1221	49.9				1213	48.9			
	F	1518	50.7	2.13	2738	.034	1517	50.5	4.07	2524.9	.000
Vitality	M	1222	53.0				1235	52.9			
	F	1517	52.2	2.75	2738	.006	1528	52.1	2.31	2762	.021
Social functioning	M	1232	51.8				1187	51.1			
	F	1529	50.8	3.35	2699.3	.001	1494	50.6	1.49	2572.4	.137
Role emotional	M	1208	50.6				1211	49.8			
	F	1476	50.0	1.71	2682	.087	1497	50.1	0.68	2707	.500
Mental health	M	1217	46.8				1235	46.7			
	F	1503	45.8	3.52	2718	.000	1517	45.9	2.42	2751	.016