Section 2 Demographics

Section 2: Demographics and study population characteristics

Demographics

- Fifty participants from Australia were recruited into the study, including 44 (88.00%) participants with mitochondrial disease and 6 (12.00%) carers of people with mitochondrial disease. There were an additional five participants that were both a patient and carer, however they responded to the questionnaire and interview as a patient rather than a carer.
- The majority of participants were from NSW (n=18, 36.00%), Victoria (n=12, n=24.00%), and Queensland (n=10, 20.00%), and most live in major cities (n=30, 60.00%).
- Thirty-seven females (74.00%) and 13 males (26.00%) participated.

Baseline Heath – SF36 score

The Short Form Health Survey 36 (SF36) measures baseline health, or the general health of an individual. A higher score indicates better baseline health.

- The overall scores for the cohort for emotional well-being were in the second highest quintile indicating very good baseline health.
- The overall scores for the cohort for pain were in the middle quintile indicating moderate baseline health.
- The overall scores for the cohort for physical functioning, role functioning/emotional, energy/fatigue, social functioning, general health, and health change were in the second lowest quintile indicating poor baseline health.
- The overall score for role functioning /physical were in the lowest quintile indicating very poor baseline health.

SF36 scores by general health

- Those with higher general health scored significantly better compared to lower general health for the physical functioning, emotional well-being, social functioning, role functioning/emotional, energy/fatigue, pain and health change scales.

SF36 scores by physical functioning

- Those with higher physical functioning scored significantly better compared to those with lower physical functioning for the SF36 role functioning/physical, energy/fatigue, social functioning, pain, general health and health change subscales.

SF36 scores by emotional well-being

- Those with higher emotional well-being scored significantly better compared to those with lower emotional well-being for the SF36 role functioning/physical, role functioning/emotional, social functioning, pain, general health and health change subscales.

SF36 scores by social functioning

- Those with higher social functioning scored significantly better compared to those with lower social functioning for the SF36 physical functioning, role functioning/physical, role functioning/emotional, emotional well-being, energy/fatigue, pain, general health and health change subscales.

SF36 scores by hearing problems

- No significant differences were observed between those with hearing problems and those with no hearing problems for any of the SF36 subscales

SF36 scores by eye problems

- No significant differences were observed between those with eye problems and those with no eye problems for any of the SF36 subscales

SF36 scores by location

- No significant differences were observed between those that live in metropolitan areas and those that live in regional or rural areas for any of the SF36 subscales

SF36 scores by education

- No significant differences were observed between those with a university qualification and those with high school or trade qualifications for any of the SF36 subscales.

SF36 scores by Socio-Economic Indexes For Areas (SEIFA)

- No significant differences were observed between those that live in an area with a higher SEIFA score (more advantaged) and those that live in an area with a lower SEIFA score for any of the SF36 subscales.

Table 2.1: Demographics

Characteristic	n=	Percentage of participants
Participant type n=50		
Person with mitochondrial disease	44	88.00
Parent/care of someone with mitochondrial disease	6	12.00
Location: State n=50		
New South Wales	18	36.00
Victoria	12	24.00
Queensland	10	20.00
South Australia	5	10.00
Tasmania	3	6.00
Western Australia	2	4.00
Geographical location n=50		
Major City	30	60.00
Inner Regional	13	26.00
Outer Regional	6	12.00
Remote	1	2.00
Social Economic Indexes for Areas n=50 (1= most disadvantaged)		
1	3	6.00
2	2	4.00
3	4	8.00
4	5	10.00
5	3	6.00
6	6	12.00
7	3	6.00
8	8	16.00
9	13	26.00
10	3	6.00
Gender n=50		
Female	37	74.00
Male	13	26.00
Age of participant n=50		
25-34	6	12.00
35-44	8	16.00
45-54	13	26.00
55-64	13	26.00
65-74	5	10.00
75-84	5	10.00
Race n=49		
Caucasian/White	47	95.92
Australian	1	2.04
Portuguese	1	2.04

Table 2.1: Demographics (continued)

Characteristic	n=	Percentage of Participants
Highest level of education obtained n=50		
Less than High School degree	2	4.00
High school degree or equivalent	13	26.00
Some College but no degree	10	20.00
Trade	1	2.00
Associate degree	3	6.00
Bachelor Degree	9	18.00
Graduate degree	12	24.00
Employment status (can choose more than one category) n=50		
Currently receiving Centrelink support	11	22.00
Disabled, not able to work	17	34.00
Employed, working full time	10	20.00
Employed, working part time	6	12.00
Full/part time carer	4	8.00
Full/part time study	2	4.00
Not employed, looking for work	1	2.00
Retired	10	20.00
My health Record Access n=50		
No	26	52.00
Yes	5	10.00
I Don't know what "My health record" is	11	22.00
Not Sure	8	16.00
My health Record Use n=5		
Good	1	20.00
Acceptable	1	20.00
Poor	2	40.00
Very Poor	1	20.00
Carer status n=50		
Carer to children	14	28.00
Carer to spouse	2	4.00
Carer to parents	2	4.00
I am not a carer	32	64.00

Demographics

Fifty participants from Australia were recruited into the study, including 44 (88.00%) participants with mitochondrial disease and 6 (12.00%) carers of people with mitochondrial disease. There were an additional five participants that were both a patient and carer, however they responded to the questionnaire and interview as a patient rather than a carer. The majority of participants were from NSW (n=18, 36.00%), Victoria (n=12, n=24.00%), and Queensland (n=10, 20.00%), and most live in major cities (n=30, 60.00%). Thirty-seven females (74.00%) and 13 males (26.00%) participated. Demographics of participants are listed in Table 2.1

Disease description

Twenty-four (48.00%) participants described their disease as a syndrome with mitochondrial encephalomyopathy, lactic acidosis, and stroke-like episodes (MELAS) being the most commonly described syndrome. Other participants described their mitochondrial disease by their main symptoms (n=11, 22.00%), five (n=10.00%) described a deficiency, two (4.00%) described a mutation, two (4.00%) had a mixed description and six (12.00%) described mitochondrial disease in general.

Table 2.2: Mitochondrial disease description

Disease description	Number	Percentage of Participants
Syndrome		
CPEO	2	4.00
KSS	3	6.00
Leigh's syndrome	2	4.00
LHON	3	6.00
MELAS	11	22.00
MELAS/NARP/Leigh like	1	2.00
MERRF	1	2.00
NARP/MERRF	1	2.00
Symptoms		
General mitochondrial disease diagnosis, described main symptoms	11	22.00
No description		
General mitochondrial disease diagnosis	6	12.00
Deficiency		
Alpha-methylacyl-CoA racemase deficiency	1	2.00
Complex I and IV deficiency	2	4.00
Complex IV deficiency	1	2.00
COX deficiency	1	2.00
Mutation		
m.3302 A>G	1	2.00
MT 3113 A-G	1	2.00
Mixed		
MELAS, m.3233 A>G	1	2.00
Complex IV deficiency/ Leigh's Disease	1	2.00

Subgroup analysis

Subgroup analysis are included throughout the study and the subgroups are listed in Table 2.2. The Short Form Health Survey 36 (SF36) measures baseline health, or the general health of an individual. Four of the nine subscales have been used in the subgroup analysis, **general health**, those with a higher than average score for the cohort in the SF36 general health scale (n=22, 44.00%) compared to those with an average or less score (n=28, 56.00%); **physical health**, those that scored above average for the cohort in the SF36 Physical functioning scale (n=22, 44.00%) compared to those that scored average or below (n=28, 56.00%); **emotional well-being**, those that scored above average for the cohort in the SF36 Emotional well-being scale (n=26, 52.00%) compared to those that scored average or below (n=24, 48.00%); **social functioning**, those that scored above average for the cohort in the SF36 Social functioning scale (n=20, 40.00%) compared to those that scored average or below (n=30, 60.00%). Those that had **hearing problems** (n=24, 48.00%) were compared to those that had no hearing problems (n=26, 52.00%), and those with **eye problems** (for example drooping eyelids, inability to move eyes and vision loss) (n=34, 68.00%) were compared to those with no eye problems) n=16, 32.00%). The **location** of participants was evaluated by

postcode using the Australian Statistical Geography Maps (ASGS) Remoteness areas accessed from DoctorConnect (doctorconnect.gov.au), those living in a metropolitan area (n=30, 60.00%) were compared to those living in regional/rural areas (n= 20, 40.00%). Comparisons were made by **education** status, those with university degree (n= 24, 48.00%) and those with high school or trade (n=26, 52.00%); and by Socio-economic Indexes for Areas (**SEIFA**) (www.abs.gov.au), a higher score denotes a higher level of advantage. Those with a higher SEIFA score of 7-10 (n=27, 54.00%) compared to those with a lower SEIFA score of 1-6 (n=23, 46.00%).

Table 2.3: Demographics used for sub-group analysis

Characteristic	n=	Percentage of participants
SF36 General health		
Higher general health	22	56.00
Lower general health	28	44.00
SF36 Physical functioning		
Higher physical functioning	22	56.00
Lower physical functioning	28	44.00
SF36 Emotional well-being		
Higher emotional well-being	26	52.00
Lower emotional well-being	24	48.00
SF36 Social functioning		
Higher social functioning	20	40.00
Lower social functioning	30	60.00
Hearing problems		
Hearing problems	24	48.00
No hearing problems	26	52.00
Eye problems		
Eye problems	34	68.00
No eye problems	16	32.00
Location		
Metropolitan	30	60.00
Regional/rural	20	40.00
Education		
Trade or high school	26	52.00
University	24	48.00
Socio-Economic Indexes for Areas (SEIFA)		
Higher SEIFA	27	54.00
Lower SEIFA	23	46.00

Co-morbidities

Participants noted other conditions they have, the most commonly reported conditions were chronic pain (n=27, 54.00%), followed by sleep problems (n=21, 42.00%), anxiety (n=21, 42.00%) and depression (n=20, 41.00%). Only one participant noted that they had no other condition.

Table 2.4: Co-morbidities

Co-morbidities	N=	Percentage of participants
Anxiety	21	42.00
Arrhythmias	6	12.00
Arthritis	10	20.00
Asthma	12	24.00
Cardiovascular problems	5	10.00
Chronic pain	27	54.00
CNS problems	6	12.00
COPD	4	8.00
Depression	20	40.00
Diabetes	10	20.00
Eye/vision problems	4	8.00
Gastrointestinal	4	8.00
Hypertension	10	20.00
Musculoskeletal problems	13	26.00
Sleep problems	21	42.00
Other	15	

Baseline health

The Short Form Health Survey 36 (SF36) measures baseline health, or the general health of an individual. The SF36 comprises nine sub scales: physical functioning, role limitations due to physical health, role limitations due to emotional problems, energy and fatigue, emotional well-being, social function, pain, general health, and health change from one year ago. A higher score denotes a better health/function.

Summary statistics for the entire cohort are displayed alongside the possible range of each scale in Table 2.5, where the scale has a normal distribution mean and SD are used as a central measure, otherwise the median and IQR are used.

The overall scores for the cohort were in the second highest quintile for emotional well-being (median = 68.00, IQR=20.00) indicating good scores for the cohort. The scores for pain were in the middle quintile, (Median = 45.00, IQR= 45.00) indicating moderate scores, the scores for physical functioning (Median =32.50, IQR = 35.75), role functioning/emotional (Median = 33.33, IQR = 100.00), energy/fatigue (Mean = 22.50, SD = 17.71), social functioning (Median = 37.50, IQR = 25.00), general health (Median = 25.00, IQR = 20.00), and health change (Median = 25.00, IQR =25.00) were in the second lowest quintile indicating poor baseline health. The median score for role functioning /physical (Median = 0.00, IQR = 0.00) were in the lowest quintile indicating very poor baseline health.

Comparisons of SF36 have been made based on general health (Figures 2.1 to 2.8, Tables 2.6 to 2.7), physical functioning (Figures 2.9 to 2.16, Tables 2.8 to 2.9), emotional well-being (Figures 2.17 to 2.24, Tables 2.10 to 2.11), social functioning, (Figures 2.25 to 2.32, Tables 2.12 to 2.13), hearing problems (Figures 2.33 to 2.41, Tables 2.14 to 2.15), eye problems (Figures 2.42 to 2.50, Tables 2.16 to 2.17), location (Figures 2.51 to 2.59, Tables 2.18 to 2.19), education (Figures 2.60 to 2.68, Tables 2.20 to 2.21), and SEIFA (Figures 2.69 to 2.77, Tables 2.22 to 2.23).

Table 2.5: SF36 summary statistics all participants

SF36 scale	Mean	SD	Median	IQR	Possible range
Physical functioning	35.70	30.76	32.50	43.75	0-100
Role functioning/physical	12.50	26.85	0.00	0.00	0-100
Role functioning/emotional	43.33	45.80	33.33	100.00	0-100
Energy/fatigue*	22.50	17.71	25.00	23.75	0-100
Emotional well-being	64.00	16.54	68.00	20.00	0-100
Social functioning	39.75	26.21	37.50	25.00	0-100
Pain	46.90	28.43	45.00	45.00	0-100
General health	28.00	18.82	25.00	20.00	0-100
Health change	35.50	24.79	25.00	25.00	0-100

*Normal distribution use mean and SD

Comparisons of SF36 sub scales by general health

Comparisons of SF36 sub scales were made between participants with higher general health and lower general health. Comparisons between higher general health and lower general health for the SF36 general health subscale were excluded due to selection bias. Boxplots of each SF36 scale by general health are displayed in Figures 2.1-2.8.

A two-sample t-test was used when assumptions for normality and variance were met (Table 2.6), or when assumptions for normality and variance were not met, a Wilcoxon rank sum test with continuity correction was used (Table 2.7). A two sample t-test indicated that the mean score for the SF36 emotional well-being scale was significantly higher for those with higher general health (Mean =72.36, SD = 11.83) compared to those with lower general health (Mean = 57.43, SD = 16.91) [t(48) = 3.52, p=0.0010], and the mean score for social functioning scale was significantly higher for those with higher general health (Mean =53.98, SD = 25.70) compared to those with lower general health (Mean = 28.57, SD = 20.93) [t(48) = 3.85, p=0.0003}.

A Wilcoxon rank sum test with continuity correction indicated a those with higher general health (Median = 52.50, IQR =57.50) had a significantly better outcome compared to those with lower general health (Median = 22.50, IQR = 32.50) for SF36 physical functioning scale [W=457.00, p=0.035]; those with higher general health (Median = 83.33, IQR =91.67) had a significantly better outcome compared to those with lower general health (Median = 0.00, IQR = 66.67) for SF36 functioning/emotional scale [W=425.50, p=0.0131]; those with higher general health (Median = 27.50, IQR =20.00) had a significantly better outcome compared to those with lower general health (Median = 10.00, IQR = 21.25) for SF36 energy/fatigue scale [W=440.00, p=0.0097]; those with higher general health (Median = 57.50, IQR =41.88) had a significantly better outcome compared to those with lower general health (Median = 32.50, IQR = 25.00) for SF36 pain scale [W=451.50, p=0.0049]; and those with higher general health (Median = 37.50, IQR =25.00) had a significantly better outcome compared to those with lower general health (Median = 25.00, IQR = 12.50) for SF36 health change scale [W=421.00, p=0.0179].

No significant differences were observed for physical functioning, role limitations/physical.

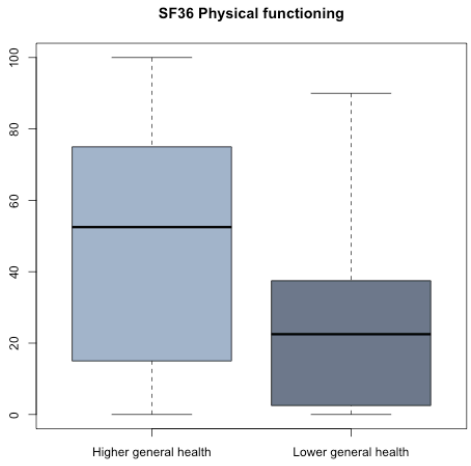


Figure 2.1: Boxplot of SF36 physical functioning by general health

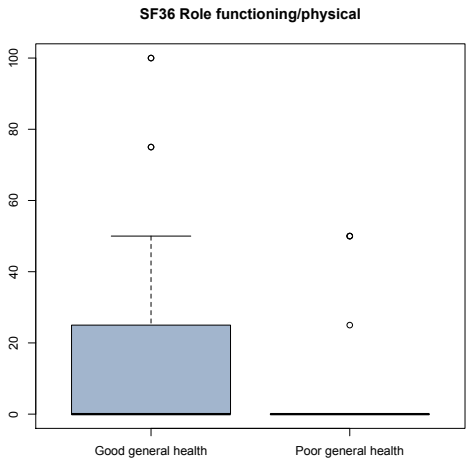


Figure 2.2: Boxplot of SF36 role limitations due to physical health by general health

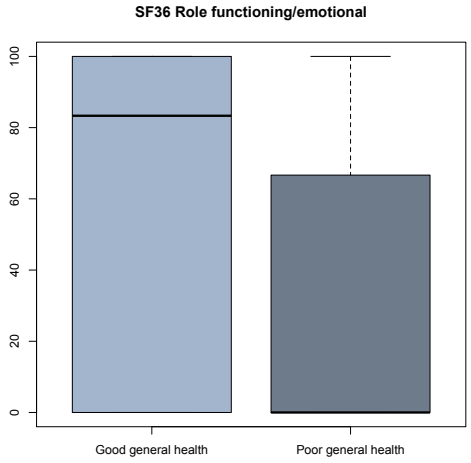


Figure 2.3: Boxplot of SF36 role limitations due to emotional problems by general health

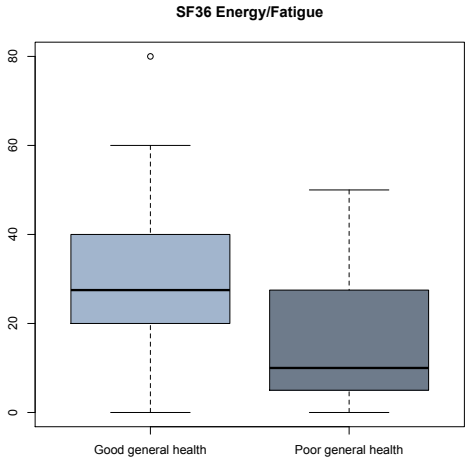
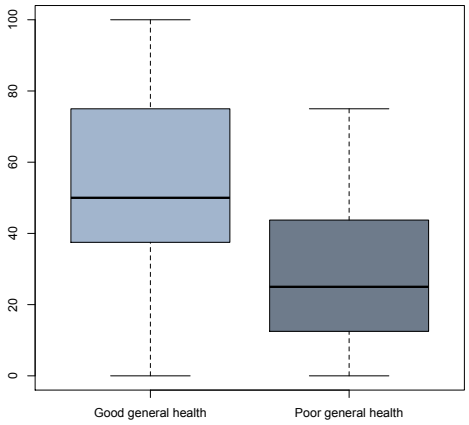


Figure 2.4: Boxplot of SF36 energy/fatigue by general health

Figure 2.5: Boxplot of SF36 emotional well-being by general health



2.6: Boxplot of SF36 social functioning by general health

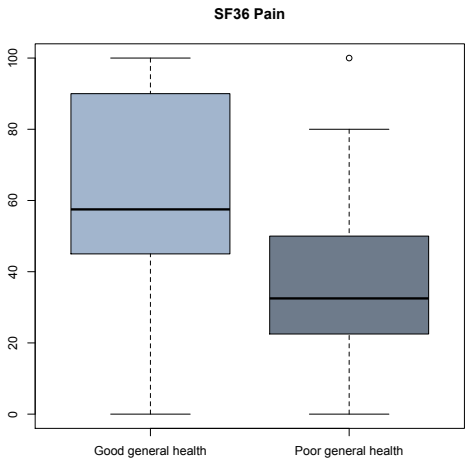


Figure 2.7: Boxplot of SF36 pain by general health

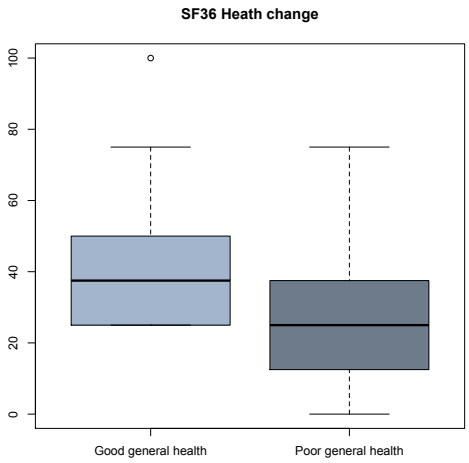


Figure 2.8: Boxplot of SF36 health change by general health

Table 2.6 Summary statistics and t-test SF36 scales by general health

SF36 by General Health	Group	Count	Mean	SD	t	dF	p
Emotional well-being	Higher general health	22	72.36	11.83	3.52	48	0.0010*
	Lower general health	28	57.43	16.91			
Social functioning	Higher general health	22	53.98	25.70	3.85	48	0.0003*
	Lower general health	28	28.57	20.93			

* Statistically significant at p<0.05

Table 2.7: Summary statistics and Wilcoxon rank sum test SF36 scales by general health

SF36 scale by general health	Group	Count	Median	IQR	W	p
Physical functioning	Higher general health	22	52.50	57.50	457.00	0.0035*
	Lower general health	28	22.50	32.50		
Role functioning/physical	Higher general health	22	0.00	25.00	367.50	0.1140
	Lower general health	28	0.00	0.00		
Role functioning/emotional	Higher general health	22	83.33	91.67	425.50	0.0131*
	Lower general health	28	0.00	66.67		
Energy/Fatigue	Higher general health	22	27.50	20.00	440.00	0.0097*
	Lower general health	28	10.00	21.25		
Pain	Higher general health	22	57.50	41.88	451.50	0.0049*
	Lower general health	28	32.50	25.00		
Health change	Higher general health	22	37.50	25.00	421.00	0.0179*
	Lower general health	28	25.00	12.50		

* Statistically significant at p<0.05

Comparisons of SF36 sub scales by physical functioning

Comparisons of SF36 subscales were made between those that had above average for the group SF36 physical functioning scores (higher physical functioning) compared to those with average or below scores (lower physical functioning). Comparisons between higher physical functioning and lower physical functioning for the SF36 physical functioning subscale were excluded due to selection bias. Boxplots of each SF36 scale by metastatic status are displayed in Figures 2.9-2.16. A two-sample t-test was used when assumptions for normality and variance were met (Table 2.8), or when assumptions for normality and variance were not met, a Wilcoxon rank sum test with continuity correction was used (Table 2.9).

A two sample t-test indicated that those with higher physical functioning (mean=35.68, SD=20.31) had significantly better baseline health compared to those with lower physical functioning (mean=21.96, sd=15.36) for the SF36 general health scale [t(48)=2.72, p=0.0090).

A Wilcoxon rank sum test with continuity correction indicated that those with higher physical functioning (Median =0.00, IQR = 43.75) had significantly better baseline health for role functioning/physical [W=410.00, p=0.0061] compared to those with lower physical functioning (Median =0.00, IQR = 0.00); and those with higher physical functioning (Median =25.00, IQR = 18.75) had significantly better baseline health for energy/fatigue [W=420.50, p=0.0276] compared to those with lower physical functioning (Median =12.50, 25.00); and those with higher physical functioning (Median =50.00, IQR = 25.00) had significantly better baseline health for social functioning [W=494.50, p=0.0002] compared to those with lower physical functioning (Median =25.00, IQR = 25.00); and those with higher physical functioning (Median =57.50, IQR = 22.50) had significantly better baseline health for pain [W=439.00, p=0.0102] compared to those with lower physical functioning (Median =32.50, IQR = 25.00); and those with higher physical functioning (Median =37.50, IQR = 50.00) had significantly better baseline health for general health [W=438.00, p=0.0064] compared to

those with lower physical functioning (Median =25.00, IQR = 12.50).

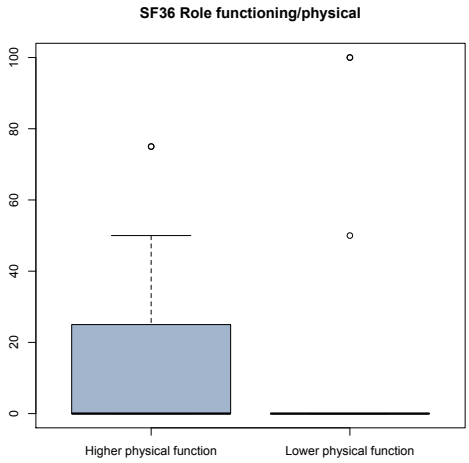


Figure 2.9: Boxplot of SF36 role limitations due to physical health by physical functioning

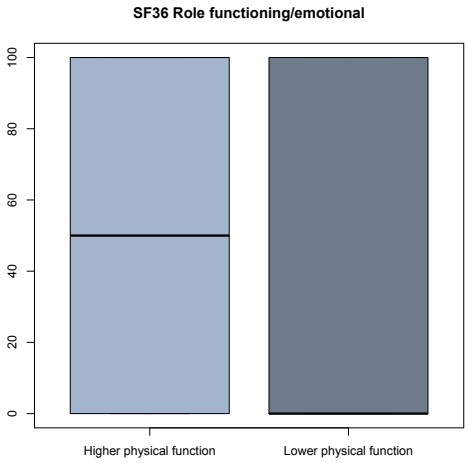


Figure 2.10: Boxplot of SF36 role limitations due to emotional problems by physical functioning

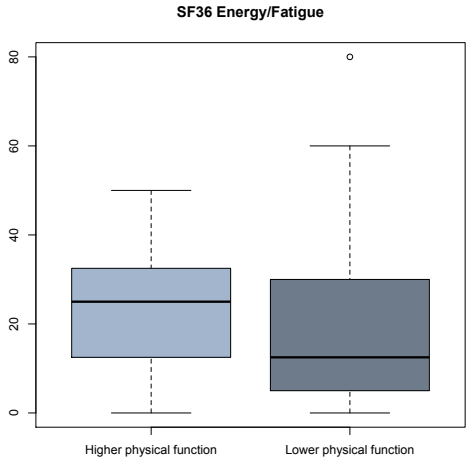


Figure 2.11: Boxplot of SF36 energy/fatigue by physical functioning

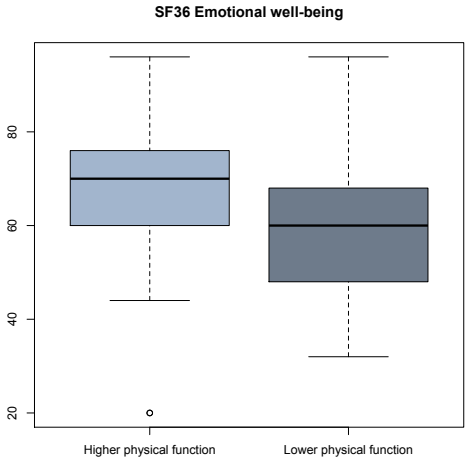


Figure 2.12: Boxplot of SF36 emotional well-being by physical functioning

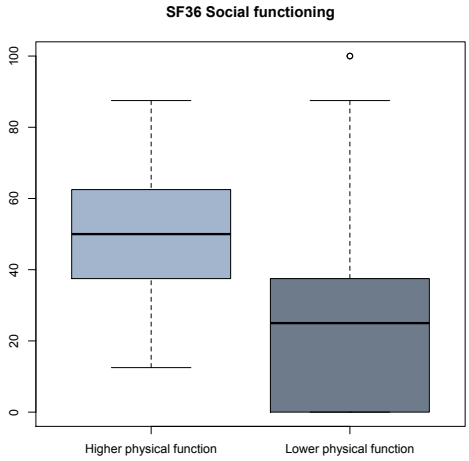


Figure 2.13: Boxplot of SF36 social functioning by physical functioning

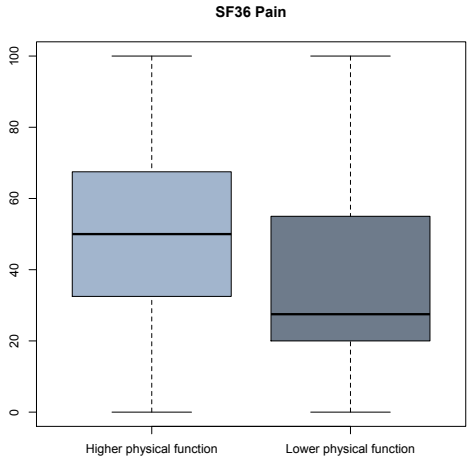


Figure 2.14: Boxplot of SF36 pain by physical functioning

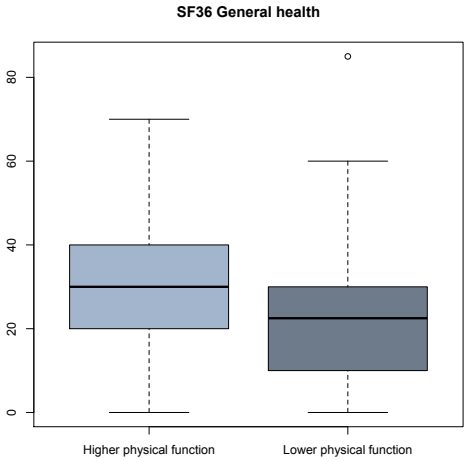


Figure 2.15: Boxplot of SF36 general health by physical functioning

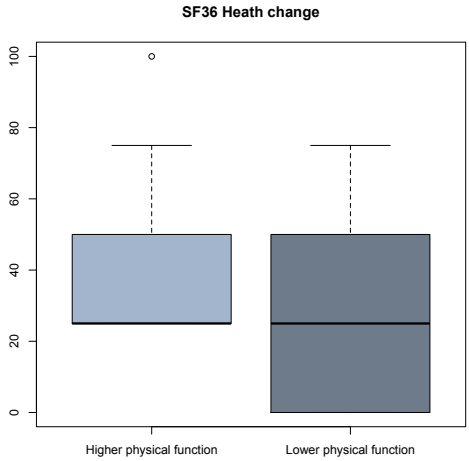


Figure 2.16: Boxplot of SF36 health change by physical functioning

Table 2.8: Summary statistics t-test SF36 subscales by physical functioning

SF36 by General Health	Group	Count	Mean	SD	t	dF	p
Emotional well-being	Higher physical functioning	22	65.09	19.64	0.41	48	0.6838
	Lower physical functioning	28	63.14	13.96			
General Health	Higher physical functioning	22	35.68	20.31	2.72	48	0.0090*
	Lower physical functioning	28	21.96	15.36			

Table 2.9: Summary statistics Wilcoxon rank sum test with continuity correction SF36 subscales by physical functioning

SF36 scale by physical functioning	Group	Count	Median	IQR	W	p
Role functioning/physical	Higher physical functioning	22	0.00	43.75	410.00	0.0061*
	Lower physical functioning	28	0.00	0.00		
Role functioning/emotional	Higher physical functioning	22	33.33	100.00	312.00	0.9408
	Lower physical functioning	28	16.67	100.00		
Energy/Fatigue	Higher physical functioning	22	25.00	18.75	420.50	0.0276*
	Lower physical functioning	28	12.50	25.00		
Social functioning	Higher physical functioning	22	50.00	25.00	494.50	0.0002*
	Lower physical functioning	28	25.00	25.00		
Pain	Higher physical functioning	22	57.50	22.50	439.00	0.0102*
	Lower physical functioning	28	32.50	25.00		
Health change	Higher physical functioning	22	37.50	50.00	438.00	0.0064*
	Lower physical functioning	28	25.00	12.50		

* Statistically significant at $p<0.05$

Comparisons of SF36 sub scales by emotional well-being

Comparisons of SF36 subscales were made between those that had above average for the group SF36 physical functioning scores (higher physical functioning) compared to those with average or below scores (lower physical functioning). Comparisons between higher emotional well-being and lower emotional well-being for the SF36 emotional well-being subscale were excluded due to selection bias. Boxplots of each SF36 scale by metastatic status are displayed in Figures 2.17-2.24. A two-sample t-test was used when assumptions for normality and variance were met (Table 2.10), or when assumptions for normality and variance were not met, a Wilcoxon rank sum test with continuity correction was used (Table 2.11).

A two sample t-test indicated that the mean score for the SF36 general health [t(48) = 2.48, p=0.0166] was significantly better for those with higher emotional well-being (Mean = 34.04, SD 20.45) compared to those with lower emotional well-being (Mean = 21.46, SD = 15.00).

A Wilcoxon rank sum test with continuity correction indicated that those with higher emotional well-being (Median =0.00, IQR = 43.75) had significantly better baseline health for role functioning/physical [W=398.50, p=0.0212] compared to those with lower emotional well-being (Median =0.00, IQR=0.00); those with higher emotional well-being (Median = 100.00, IQR = 8.33) had significantly better baseline health for role functioning/emotional [W=506.50, p<0.0001] compared to those with lower emotional well-being (Median =0.00, IQR=8.33); those with higher emotional well-being (Median = 50.00, IQR = 34.38) had significantly better baseline health for social functioning [W=467.00, p = 0.0024] compared to those with lower emotional well-being (Median =25.00, IQR=25.00); those with higher emotional well-being (Median = 50.00, IQR = 31.88) had significantly better baseline health for pain [W=417.00, p=0.0412] compared to those with lower emotional well-being (Median = 27.50, IQR=35.63); and those with higher emotional well-being (Median = 37.50, IQR = 50.00) had significantly better baseline health for health change [W= 462.50, p=0.0017] compared to those with lower emotional well-being (Median = 25.00, IQR=25.00);

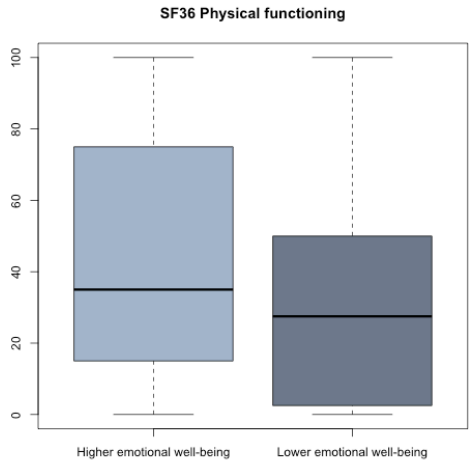


Figure 2.17: Boxplot of SF36 physical functioning by emotional well-being

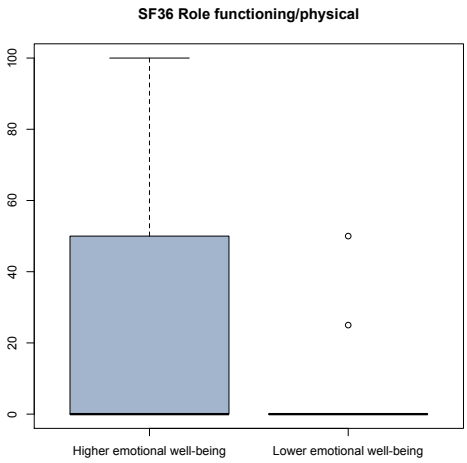


Figure 2.18: Boxplot of SF36 role limitations due to physical health by emotional well-being

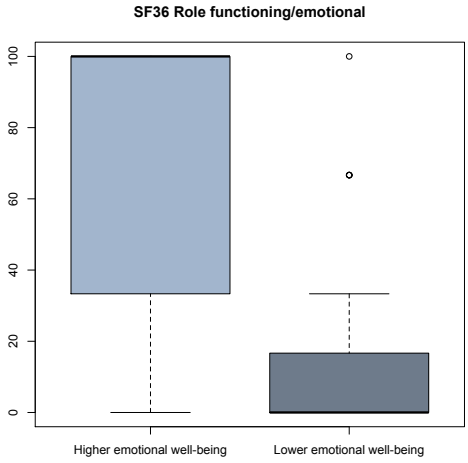


Figure 2.19: Boxplot of SF36 role limitations due to emotional problems by emotional well-being

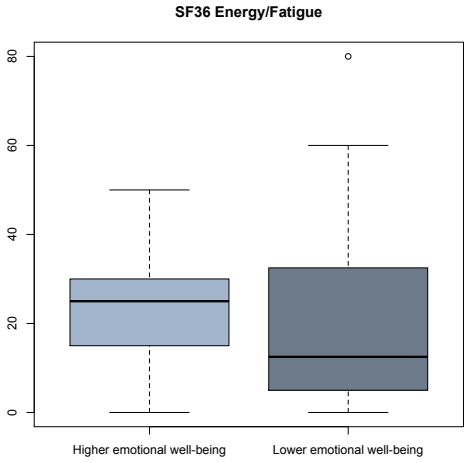


Figure 2.20: Boxplot of SF36 energy/fatigue by emotional well-being

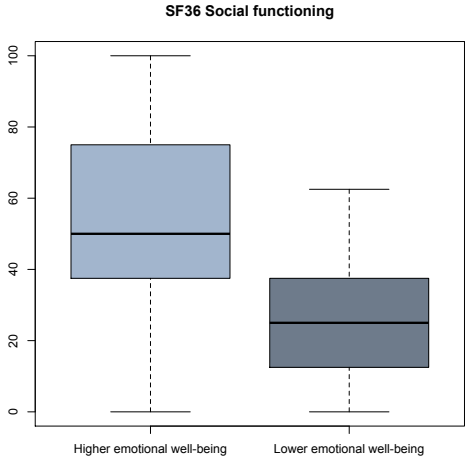


Figure 2.21: Boxplot of SF36 social functioning by emotional well-being

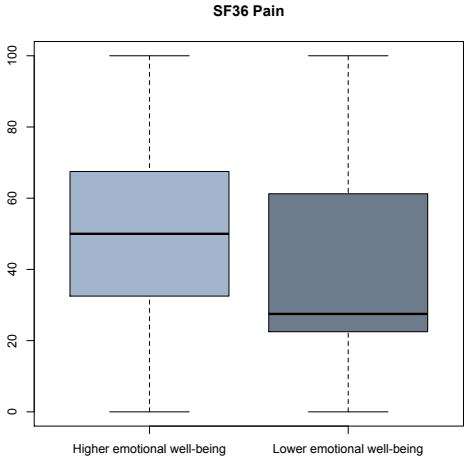


Figure 2.22: Boxplot of SF36 pain by emotional well-being

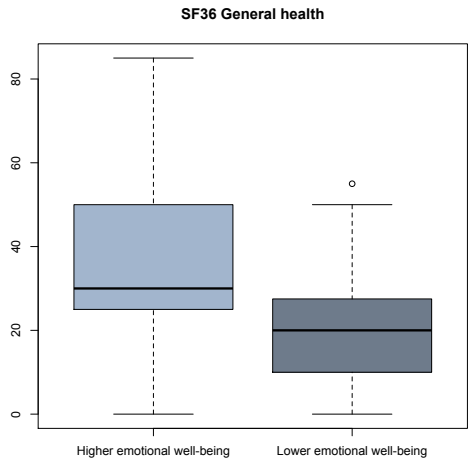


Figure 2.22: Boxplot of SF36 general health by emotional well-being

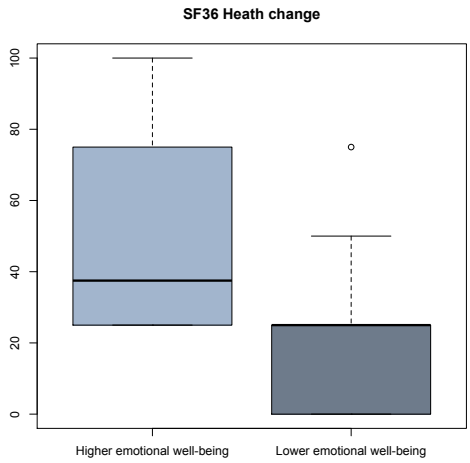


Figure 2.24: Boxplot of SF36 health change by emotional well-being

Table 2.10: Summary statistics and two sample t-test SF36 subscales by emotional well-being

SF36 scale by Emotional well-being	Group	Count	Mean	SD	t	dF	p
General health	Higher emotional well-being	26	34.04	20.45	2.48	48	0.0166*
	Lower emotional well-being	24	21.46	15.00			

Table 2.11: Summary statistics Wilcoxon rank sum test with continuity correction SF36 subscales by emotional well-being.

SF36 scale by Emotional well-being	Group	Count	Median	IQR	W	p
Physical functioning	Higher emotional well-being	26	35.00	56.25	380.50	0.1842
	Lower emotional well-being	24	27.50	46.25		
Role functioning/physical	Higher emotional well-being	26	0.00	43.75	398.50	0.0212*
	Lower emotional well-being	24	0.00	0.00		
Role functioning/emotional	Higher emotional well-being	26	100.00	66.67	506.50	<0.0001*
	Lower emotional well-being	24	0.00	8.33		
Energy/Fatigue	Higher emotional well-being	26	25.00	15.00	344.00	0.5383
	Lower emotional well-being	24	12.50	26.25		
Social functioning	Higher emotional well-being	26	50.00	34.38	467.00	0.0024*
	Lower emotional well-being	24	25.00	25.00		
Pain	Higher emotional well-being	26	50.00	31.88	417.00	0.0412*
	Lower emotional well-being	24	27.50	35.63		
Health change	Higher emotional well-being	26	37.50	50.00	462.50	0.0017*
	Lower emotional well-being	24	25.00	25.00		

Comparisons of SF36 sub scales by social functioning

Comparisons of SF36 subscales were made between those that had above average for the group SF36 social functioning scores (higher social functioning) compared to those with average or below scores (lower social functioning). Comparisons between higher social functioning and lower social functioning for the SF36 social functioning subscale were excluded due to selection bias. Boxplots of each SF36 scale by education status are displayed in Figures 2.25-2.32. A two-sample t-test was used when assumptions for normality and variance were met (Table 2.12), or when

assumptions for normality and variance were not met, a Wilcoxon rank sum test with continuity correction was used (Table 2.13).

A two sample t-test indicated that the mean score for the SF36 social functioning [t(48) = 4.09, p=0.0002] was significantly better for those with higher social functioning (Mean = 74.20, SD= 12.55) compared to those with lower emotional well-being (Mean = 57.20, SD = 15.00).

A Wilcoxon rank sum test with continuity correction indicated that those with higher social functioning (Median =50.00, IQR = 50.00) had significantly better baseline health for physical functioning [W=515.50, p<0.0001] compared to those with lower social functioning (Median =10.00, IQR=37.50); those with higher social functioning (Median =12.50, IQR = 50.00) had significantly better baseline health for role functioning/physical [W=444.00, p<0.0001] compared to those with lower social functioning (Median =0.00, IQR=0.00); those with higher social functioning (Median =100.00, IQR = 75.00) had significantly better baseline health for role functioning/emotional [W=429.50, p = 0.0056] compared to those with lower social functioning (Median =0.00, IQR=66.67); those with higher social functioning (Median =30.00, IQR = 15.00) had significantly better baseline health for energy/fatigue [W=464.50, p = 0.0011] compared to those with lower social functioning (Median =10.00, IQR=20.00); those with higher social functioning (Median =67.50, IQR = 35.63) had significantly better baseline health for pain [W=521.50, p < 0.0001] compared to those with lower emotional well-being (Median =27.50, IQR=22.50); those with higher emotional well-being (Median =32.50, IQR = 25.00) had significantly better baseline health for general health [W=468.00, p = 0.0008] compared to those with lower emotional well-being (Median =20.00, IQR=20.00); and those with higher emotional well-being (Median =50.00, IQR = 50.00) had significantly better baseline health for health change [W=475.00, p = 0.0002] compared to those with lower emotional well-being (Median =25.00, IQR=0.00).

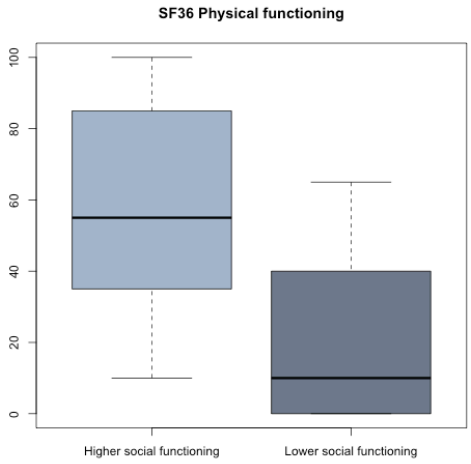


Figure 2.25: Boxplot of SF36 physical functioning by social functioning

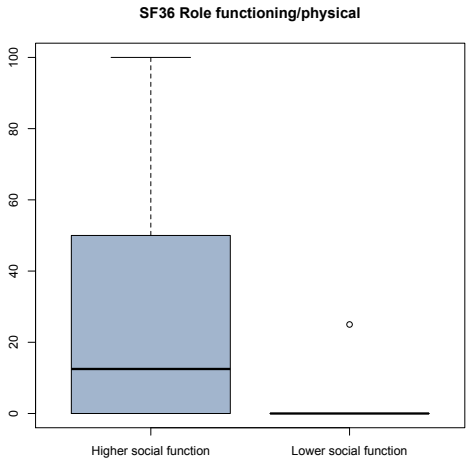


Figure 2.26: Boxplot of SF36 role limitations due to physical health by social functioning

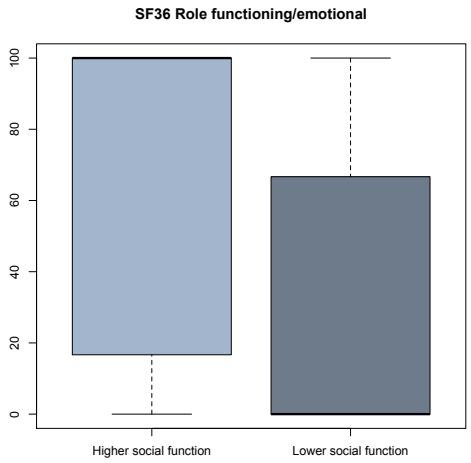


Figure 2.27: Boxplot of SF36 role limitations due to emotional problems by social functioning

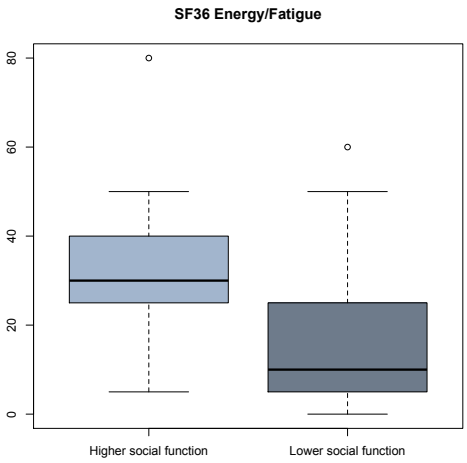


Figure 2.28: Boxplot of SF36 energy/fatigue by social functioning

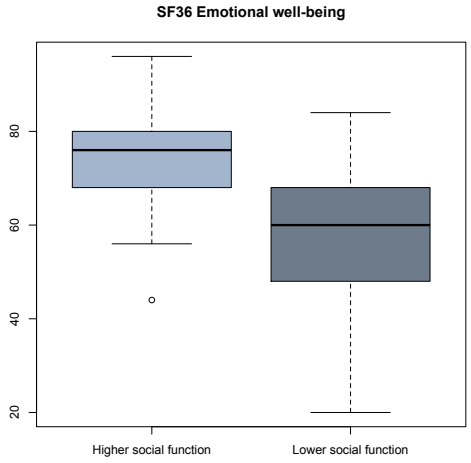


Figure 2.29: Boxplot of SF36 emotional well-being by social functioning

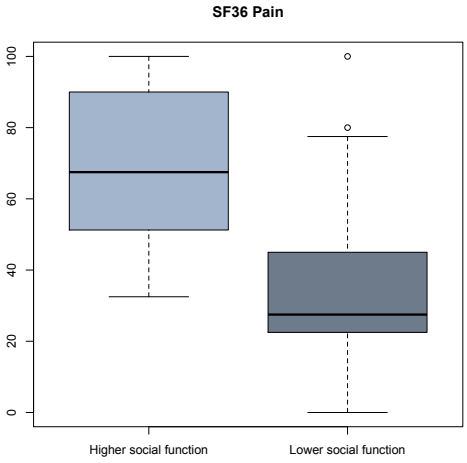
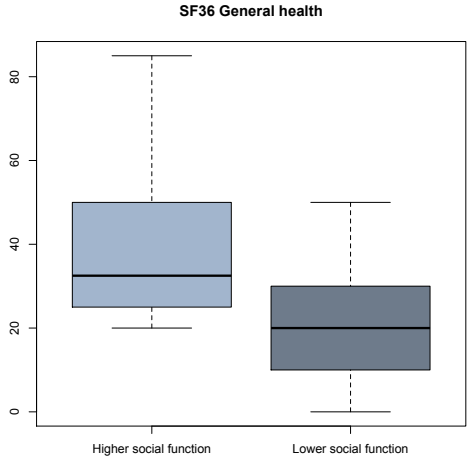


Figure 2.30: Boxplot of SF36 pain by social functioning



2.31: Boxplot of SF36 general health by social functioning

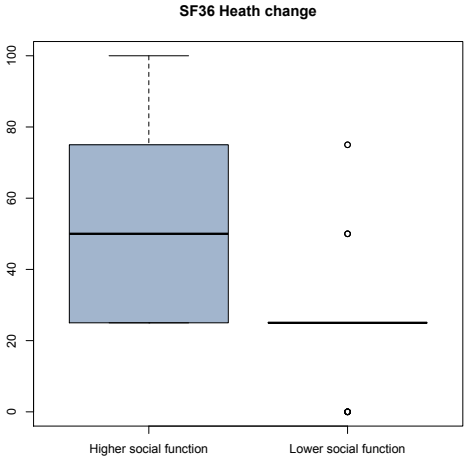


Figure 2.32: Boxplot of SF36 health change by social functioning

Table 2.12: Summary statistics and two sample t-test SF36 subscales by social functioning

SF36 scale by social functioning	Group	Count	Mean	SD	t	dF	p
Emotional well-being	Higher social functioning	20	74.20	12.55	4.09	48	0.0002*
	Lower social functioning	30	57.20	15.00			

Table 2.13: Summary statistics Wilcoxon rank sum test with continuity correction SF36 subscales by social functioning

SF36 scale by social functioning	Group	Count	Median	IQR	W	p
Physical functioning	Higher social functioning	20	50.00	50.00	515.50	<0.0001*
	Lower social functioning	30	10.00	37.50		
Role functioning/physical	Higher social functioning	20	12.50	50.00	444.00	<0.0001*
	Lower social functioning	30	0.00	0.00		
Role functioning/emotional	Higher social functioning	20	100.00	75.00	429.50	0.0056*
	Lower social functioning	30	0.00	66.67		
Energy/Fatigue	Higher social functioning	20	30.00	15.00	464.50	0.0011*
	Lower social functioning	30	10.00	20.00		
Pain	Higher social functioning	20	67.50	35.63	521.50	<0.0001*
	Lower social functioning	30	27.50	22.50		
General health	Higher social functioning	20	32.50	25.00	468.00	0.0008*
	Lower social functioning	30	20.00	20.00		
Health change	Higher social functioning	20	50.00	50.00	475.00	0.0002*
	Lower social functioning	30	25.00	0.00		

* Statistically significant at p<0.05

Comparisons of SF36 sub scales by hearing problems

Comparisons of SF36 subscales were made by hearing problems, comparing those with hearing problems with those that have no hearing problems. Boxplots of each SF36 scale by hearing problem status are displayed in Figures 2.33-2.41. A two-sample t-test was used when assumptions for normality and variance were met (Table 2.14), or when assumptions for normality and variance were not met, a Wilcoxon rank sum test with continuity correction was used (Table 2.15).

No significant differences were observed between those with hearing problems and those with no hearing problems for any of the SF36 subscales.

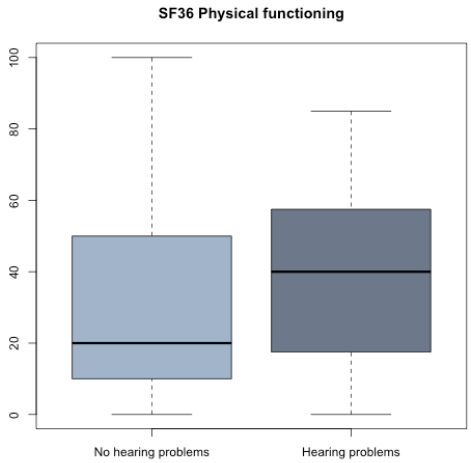


Figure 2.33: Boxplot of SF36 physical functioning by hearing problems

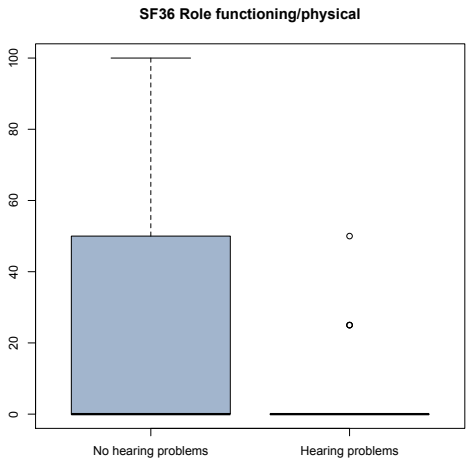


Figure 2.34: Boxplot of SF36 role limitations due to physical health by hearing problems

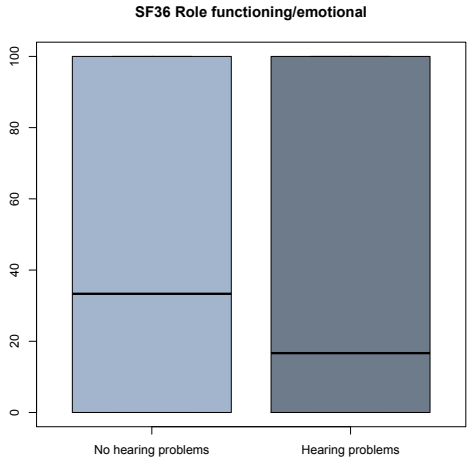


Figure 2.35: Boxplot of SF36 role limitations due to emotional problems by hearing problems

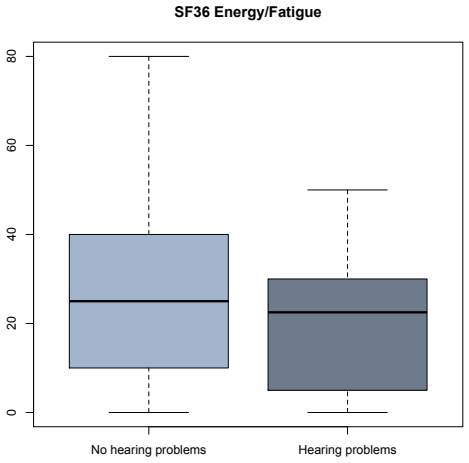


Figure 2.36: Boxplot of SF36 energy/fatigue by hearing problems

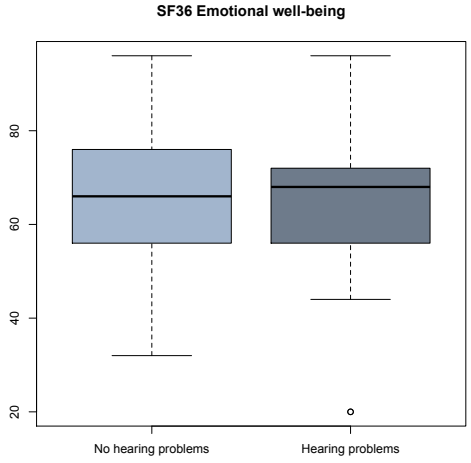
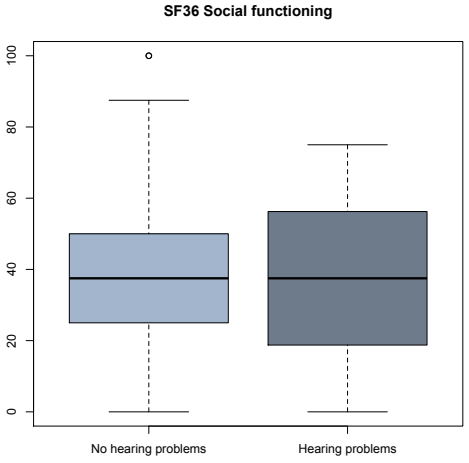


Figure 2.37: Boxplot of SF36 emotional well-being by hearing problems



2.38: Boxplot of SF36 social functioning by hearing problems

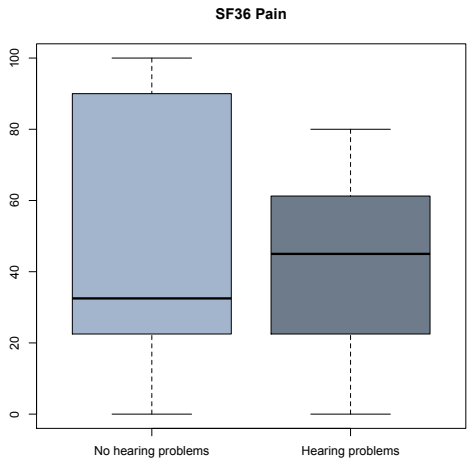
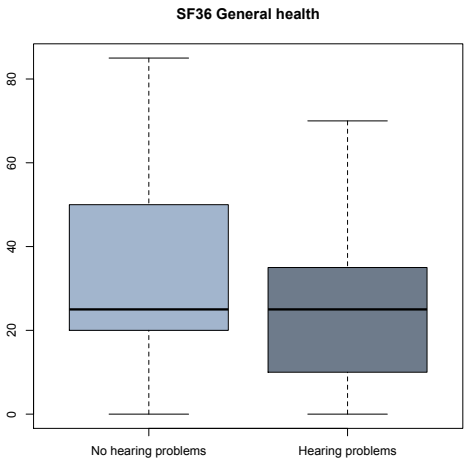


Figure 2.39: Boxplot of SF36 pain by hearing problems



2.40: Boxplot of SF36 general health by hearing problems

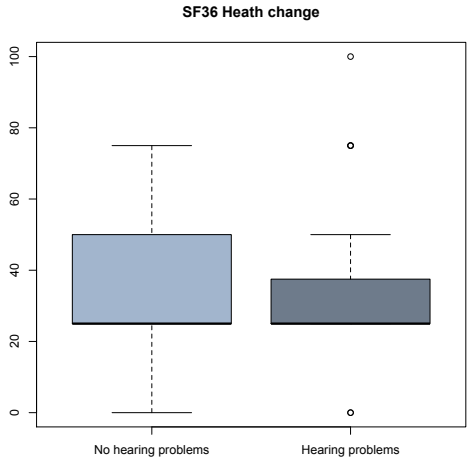


Figure 2.41: Boxplot of SF36 health change by hearing problems

Table 2.14: Summary statistics and two sample t-test SF36 subscales by hearing problems

SF36 scale by hearing problems	Group	Count	Mean	SD	t	dF	p
General health	No hearing problems	26	30.58	19.51	1.01	48	0.3185
	Hearing problems	24	25.21	18			

Table 2.15: Summary statistics Wilcoxon rank sum test with continuity correction SF36 subscales by hearing problems

SF36 scale by hearing problems	Group	Count	Median	IQR	W	p
Physical functioning	No hearing problems	26	20.00	38.75	267.00	0.3848
	Hearing problems	24	10.00	37.50		
Role functioning/physical	No hearing problems	26	0.00	37.50	356.50	0.2382
	Hearing problems	24	0.00	0.00		
Role functioning/emotional	No hearing problems	26	33.33	100.00	323.00	0.8249
	Hearing problems	24	16.67	100.00		
Energy/Fatigue	No hearing problems	26	25.00	28.75	357.00	0.3846
	Hearing problems	24	22.50	25.00		
Emotional well-being	No hearing problems	26	66.00	20.00	324.00	0.8226
	Hearing problems	24	68.00	14.00		
Social functioning	No hearing problems	26	37.50	25.00	331.00	0.7162
	Hearing problems	24	37.50	31.25		
Pain	No hearing problems	26	32.50	61.88	317.00	0.9299
	Hearing problems	24	45.00	36.88		
Health change	No hearing problems	26	25.00	25.00	335.50	0.6306
	Hearing problems	24	25.00	6.25		

* Statistically significant at $p<0.05$

Comparisons of SF36 sub scales by eye problems

Comparisons of SF36 subscales were made by eye problems, comparing those with eye problems with those that have no eye problems. Boxplots of each SF36 scale by eye problem status are displayed in Figures 2.42-2.50. A two-sample t-test was used when assumptions for normality and variance were met (Table 2.16), or when assumptions for normality and variance were not met, a Wilcoxon rank sum test with continuity correction was used (Table 2.17).

No significant differences were observed between those with eye problems and those with no eye problems for any of the SF36 subscales.

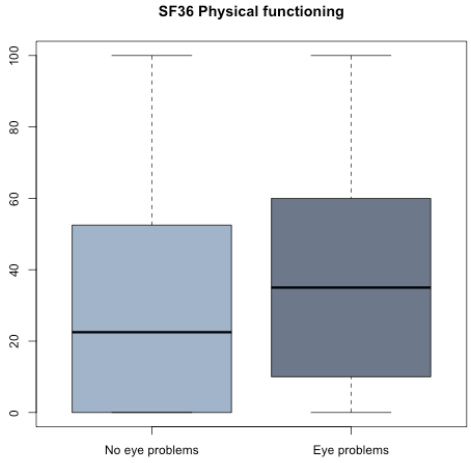


Figure 2.42: Boxplot of SF36 physical functioning by eye problems

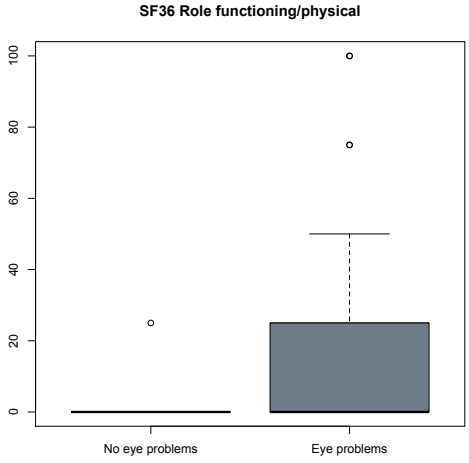


Figure 2.43: Boxplot of SF36 role limitations due to physical health by eye problems

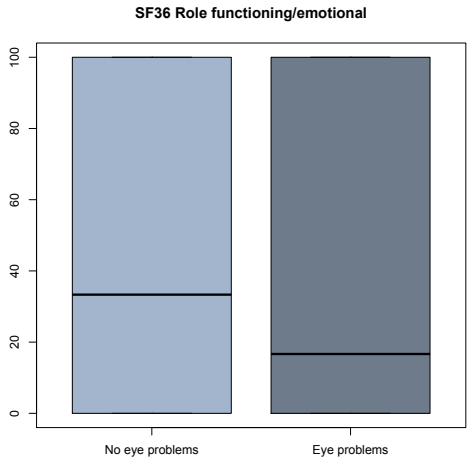


Figure 2.44: Boxplot of SF36 role limitations due to emotional problems by eye problems

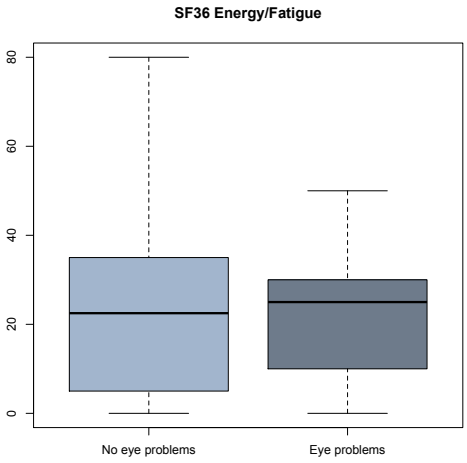


Figure 2.45: Boxplot of SF36 energy/fatigue by eye problems

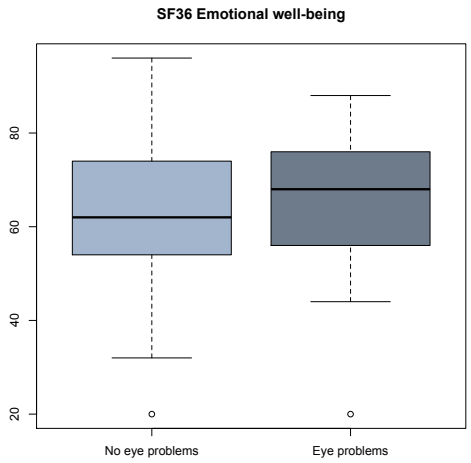
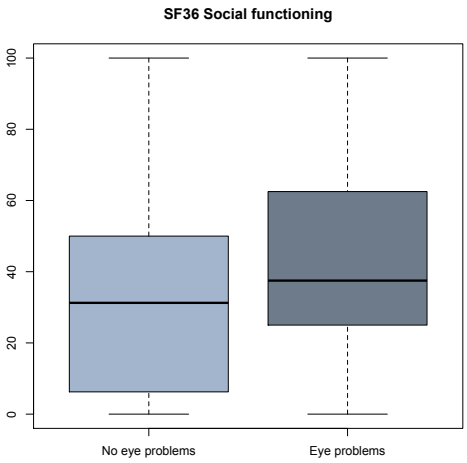


Figure 2.46: Boxplot of SF36 emotional well-being by eye problems



2.47: Boxplot of SF36 social functioning by eye problems

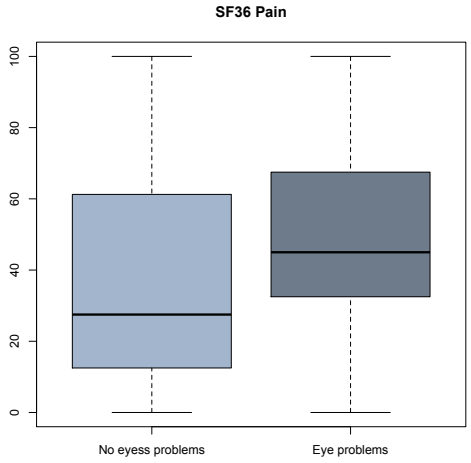
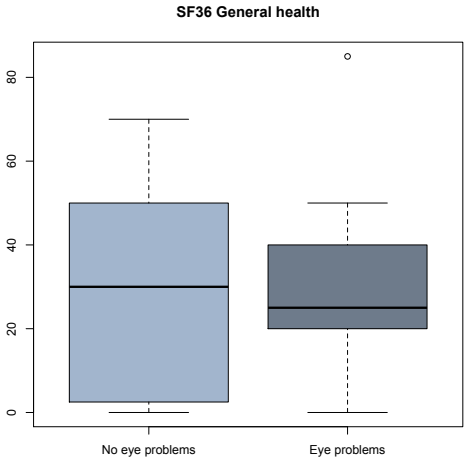


Figure 2.48: Boxplot of SF36 pain by eye problems



2.49: Boxplot of SF36 general health by eye problems

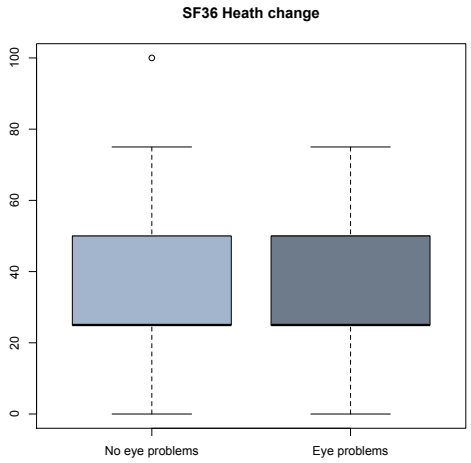


Figure 2.50: Boxplot of SF36 health change by eye problems

Table 2.16: Summary statistics and two sample t-test SF36 subscales by eye problems

SF36 scale by eye problems	Group	Count	Mean	SD	t	dF	p
Social functioning	No eye problems	16	31.25	28.87	-1.60	48	0.1166
	Eye problems	34	43.75	24			
Pain	No eye problems	16	39.06	32.82	-1.35	48	0.1839
	Eye problems	34	50.59	26			

Table 2.17: Summary statistics Wilcoxon rank sum test with continuity correction SF36 subscales by eye problems

SF36 scale by eye problems	Group	Count	Median	IQR	W	p
Physical functioning	No eye problems	16	22.50	51.25	233.50	0.4267
	Eye problems	34	18.51	35.00		
Role functioning/physical	No eye problems	16	0.00	0.00	205.00	0.0563
	Eye problems	34	0.00	25.00		
Role functioning/emotional	No eye problems	16	33.33	100.00	276.50	0.9281
	Eye problems	34	16.67	100.00		
Energy/Fatigue	No eye problems	16	22.50	27.50	256.00	0.7457
	Eye problems	34	25.00	20.00		
Emotional well-being	No eye problems	16	62.00	18.00	248.00	0.6236
	Eye problems	34	68.00	19.00		
General health	No eye problems	16	30.00	46.25	271.50	1.0000
	Eye problems	34	25.00	17.50		
Health change	No eye problems	16	25.00	25.00	259.50	0.7882
	Eye problems	34	25.00	25.00		

* Statistically significant at $p<0.05$

Comparisons of SF36 sub scales by location

Comparisons of SF36 subscales were made by location, comparing those that live in metropolitan areas with those that live in regional or rural areas. Boxplots of each SF36 scale by location are displayed in Figures 2.51-2.59. A two-sample t-test was used when assumptions for normality and variance were met (Table 2.18), or when assumptions for normality and variance were not met, a Wilcoxon rank sum test with continuity correction was used (Table 2.19).

No significant differences were observed between those that live in metropolitan areas and those that live in regional or rural areas for any of the SF36 subscales.

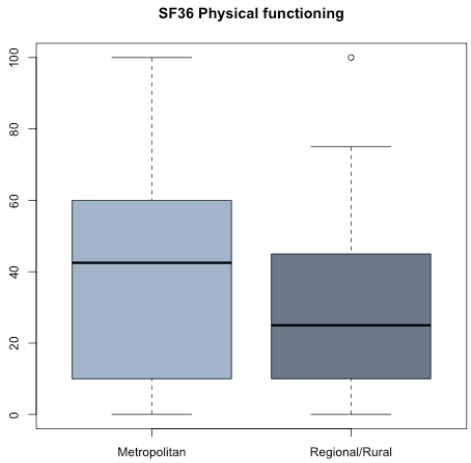


Figure 2.51: Boxplot of SF36 physical functioning by location

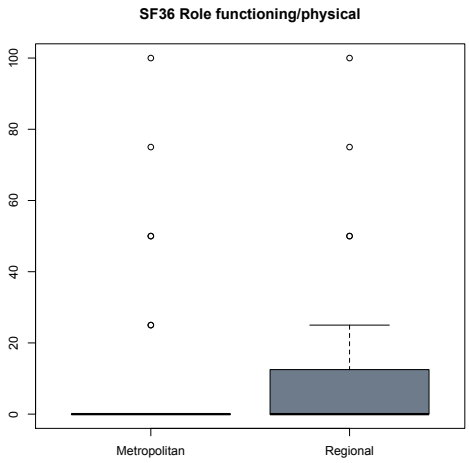


Figure 2.52: Boxplot of SF36 role limitations due to physical health by location

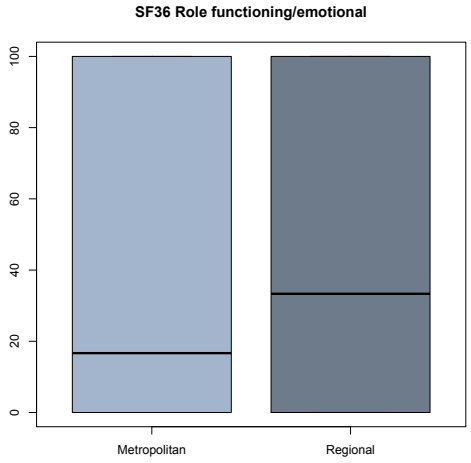


Figure 2.53: Boxplot of SF36 role limitations due to emotional problems by location

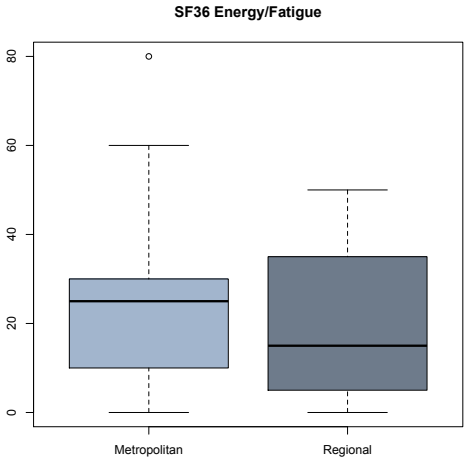


Figure 2.54: Boxplot of SF36 energy/fatigue by location

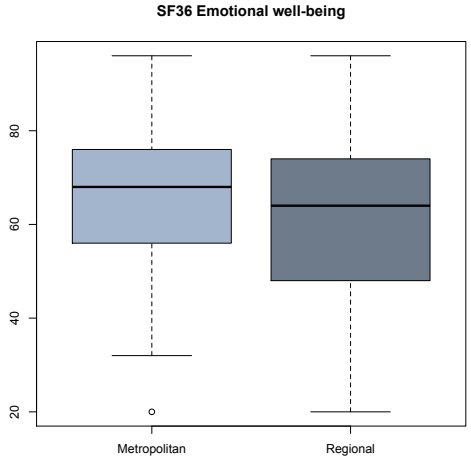
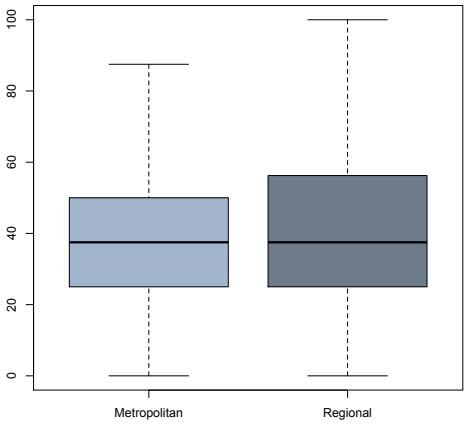


Figure 2.55: Boxplot of SF36 emotional well-being by location



2.56: Boxplot of SF36 social functioning by location

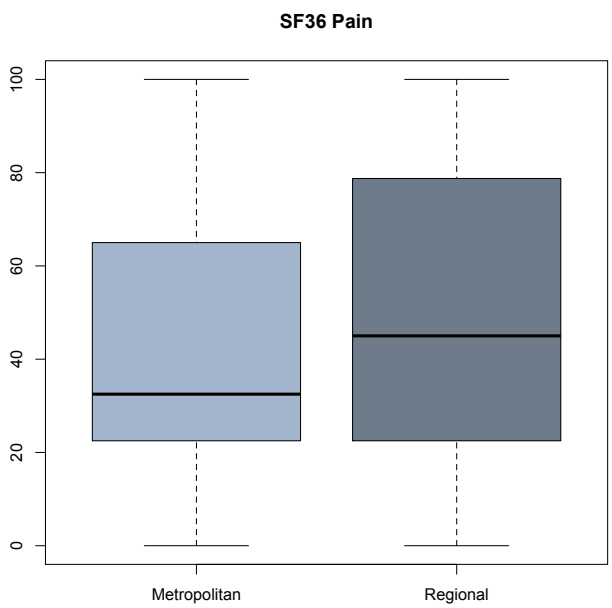
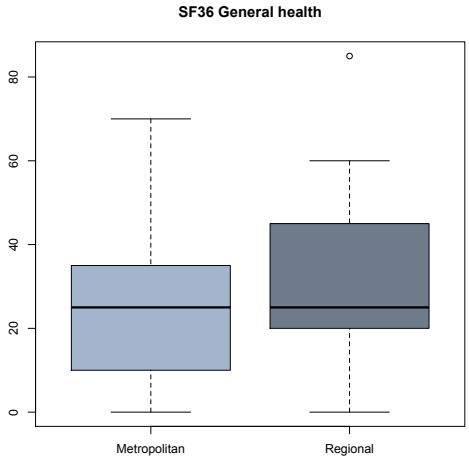


Figure 2.57: Boxplot of SF36 pain by location



2.58: Boxplot of SF36 general health by eye location

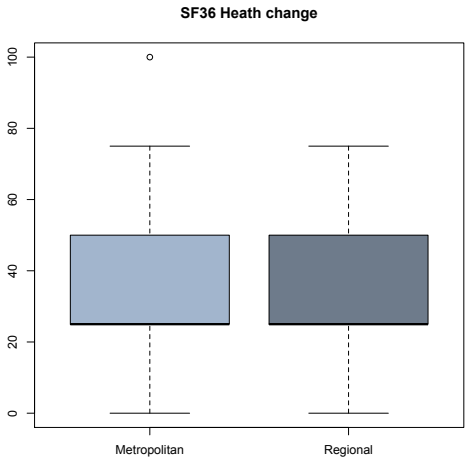


Figure 2.59: Boxplot of SF36 health change by location

Table 2.18: Summary statistics and two sample t-test SF36 subscales by location

SF36 scale by location	Group	Count	Mean	SD	t	dF	p
Emotional well-being	Metropolitan	30	64.80	16.46	0.42	48	0.6798
	Regional	20	62.80	17			
Pain	Metropolitan	30	43.08	27.56	-1.17	48	0.2490
	Regional	20	52.63	29			
General health	Metropolitan	30	25.83	17.96	-1.00	48	0.3237
	Regional	20	31.25	20			

Table 2.19: Summary statistics Wilcoxon rank sum test with continuity correction SF36 subscales by location

SF36 scale by location	Group	Count	Median	IQR	W	p
Physical functioning	Metropolitan	30	42.50	48.75	340.00	0.4315
	Regional	20	25.00	32.50		
Role functioning/physical	Metropolitan	30	0.00	0.00	283.00	0.6520
	Regional	20	0.00	6.25		
Role functioning/emotional	Metropolitan	30	16.67	100.00	288.50	0.8131
	Regional	20	33.33	100.00		
Energy/Fatigue	Metropolitan	30	25.00	20.00	333.00	0.5173
	Regional	20	15.00	27.50		
Social functioning	Metropolitan	30	37.50	25.00	308.50	0.8726
	Regional	20	37.50	28.13		
Health change	Metropolitan	30	25.00	25.00	330.50	0.5224
	Regional	20	25.00	25.00		

* Statistically significant at p<0.05

Comparisons of SF36 sub scales by education

Comparisons of SF36 subscales were made by education, those that had a university qualification were compared with those that high school or trade qualifications. Boxplots of each SF36 scale by education are displayed in Figures 2.60-2.68. A two-sample t-test was used when assumptions for normality and variance were met (Table 2.20), or when assumptions for normality and variance were not met, a Wilcoxon rank sum test with continuity correction was used (Table 2.21).

No significant differences were observed between those that with a university qualification and those with high school or trade qualifications for any of the SF36 subscales.

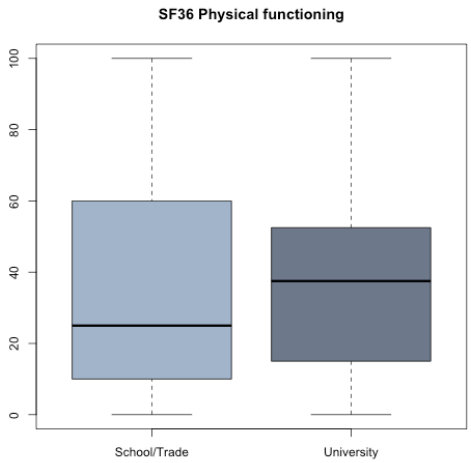


Figure 2.60: Boxplot of SF36 physical functioning by education

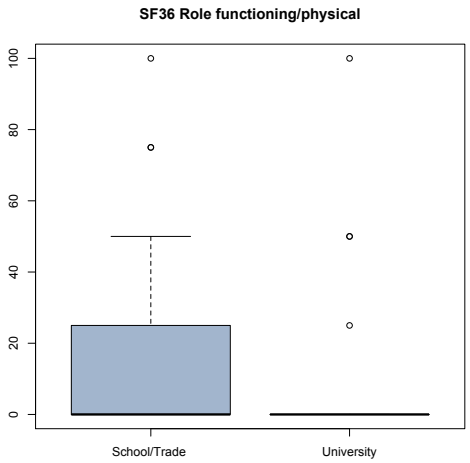


Figure 2.61: Boxplot of SF36 role limitations due to physical health by education

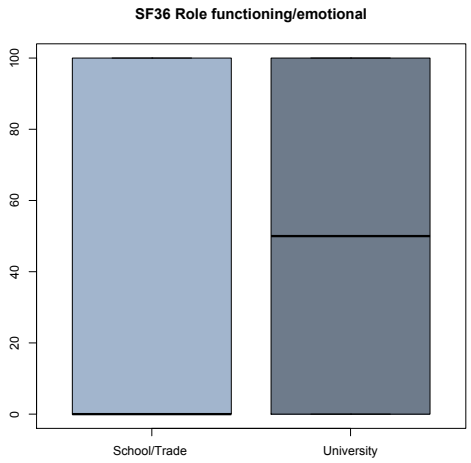


Figure 2.62: Boxplot of SF36 role limitations due to emotional problems by education

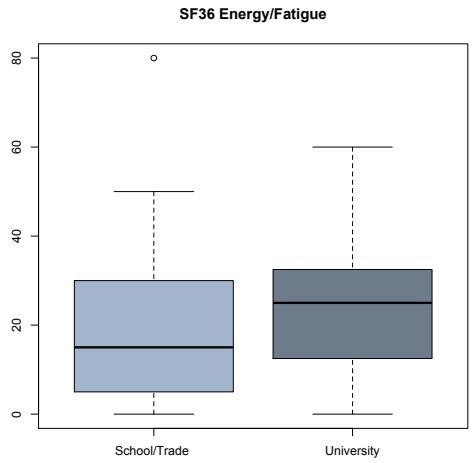


Figure 2.63: Boxplot of SF36 energy/fatigue by education

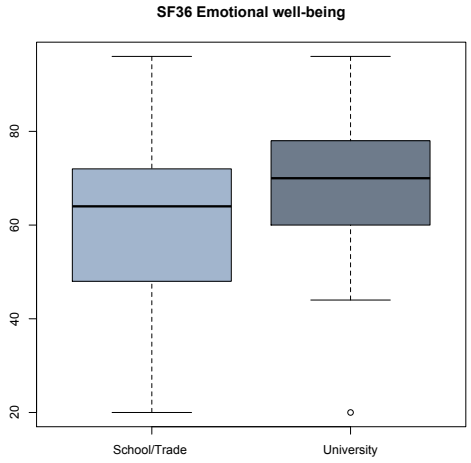
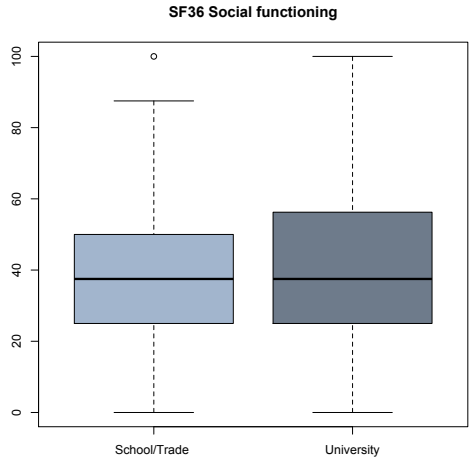


Figure 2.64: Boxplot of SF36 emotional well-being by education



2.65: Boxplot of SF36 social functioning by education

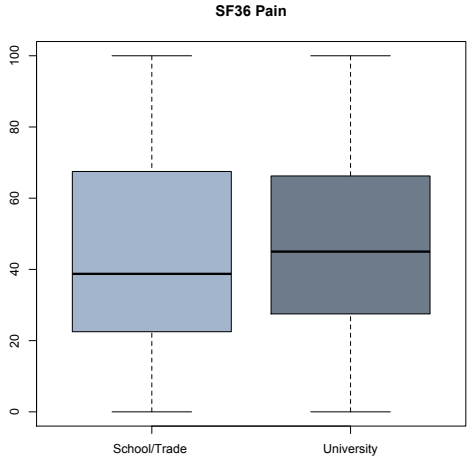
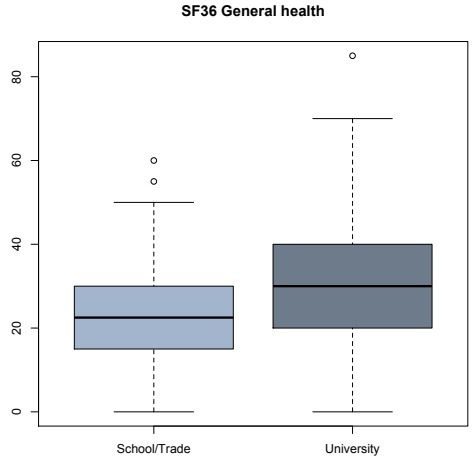


Figure 2.66: Boxplot of SF36 pain by education



2.67: Boxplot of SF36 general health by education

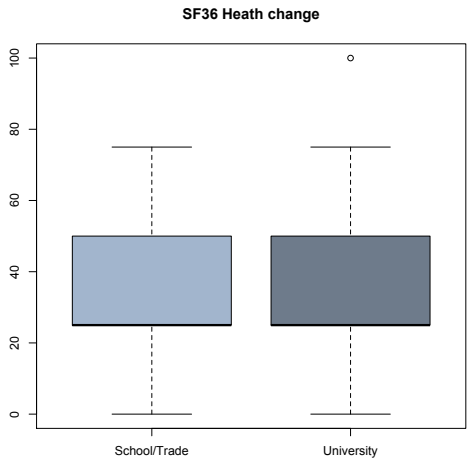


Figure 2.68: Boxplot of SF36 health change by education

Table 2.20: Summary statistics and two sample t-test SF36 subscales by education

SF36 scale by education	Group	Count	Mean	SD	t	dF	p
Emotional well-being	School/Trade	26	60.92	17.17	-1.38	48	0.1735
	University	24	67.33	15			
Social functioning	School/Trade	26	39.42	28.44	-0.09	48	0.9280
	University	24	40.10	24			
Pain	School/Trade	26	46.06	30.34	-0.22	48	0.8300
	University	24	47.81	27			
General health	School/Trade	26	25.00	17.03	-1.18	48	0.2446
	University	24	31.25	20			

Table 2.21: Summary statistics Wilcoxon rank sum test with continuity correction SF36 subscales by education

SF36 scale by education	Group	Count	Median	IQR	W	p
Physical functioning	School/Trade	26	25.00	47.50	277.50	0.5067
	University	24	37.50	36.25		
Role functioning/physical	School/Trade	26	0.00	12.50	344.50	0.3910
	University	24	0.00	0.00		
Role functioning/emotional	School/Trade	26	0.00	100.00	250.00	0.1949
	University	24	50.00	100.00		
Energy/Fatigue	School/Trade	26	15.00	20.00	250.00	0.2295
	University	24	25.00	17.50		
Health change	School/Trade	26	25.00	25.00	284.50	0.5724
	University	24	25.00	25.00		

Comparisons of SF36 sub scales by Socio-Economic Indexes For Areas (SEIFA)

Comparisons of SF36 subscales were made by SEIFA, those lived in an area with a higher SEIFA (more advantaged) were compared with those lived in an area with a lower SEIFA. Boxplots of each SF36 scale by SEIFA are displayed in Figures 2.69-2.77. A two-sample t-test was used when assumptions for normality and variance were met (Table 2.22), or when assumptions for normality and variance were not met,

a Wilcoxon rank sum test with continuity correction was used (Table 2.23).

No significant differences were observed between those lived in an area with a higher SEIFA (more advantaged) and with those lived in an area with a lower SEIFA.

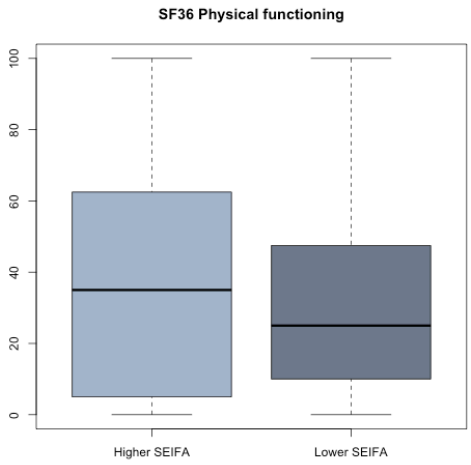


Figure 2.69: Boxplot of SF36 physical functioning by SEIFA

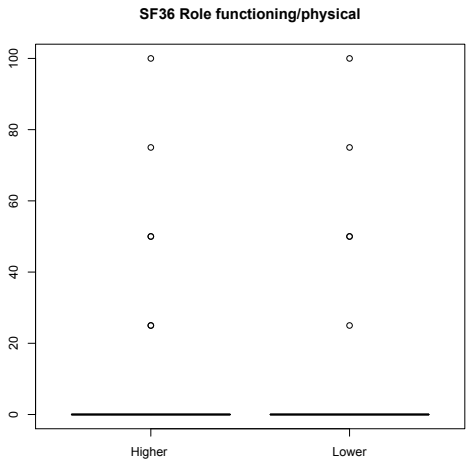


Figure 2.70: Boxplot of SF36 role limitations due to physical health by SEIFA

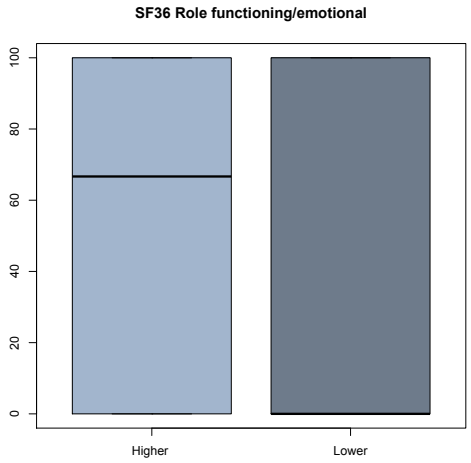


Figure 2.71: Boxplot of SF36 role limitations due to emotional problems by SEIFA

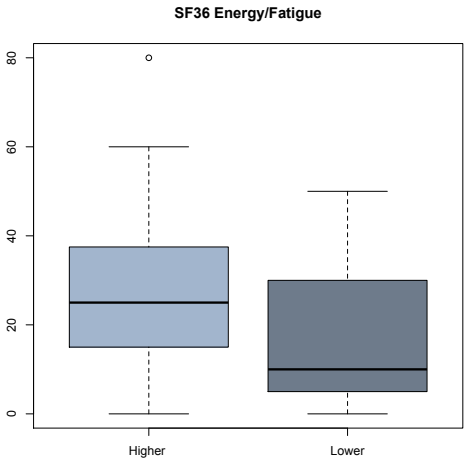


Figure 2.72: Boxplot of SF36 energy/fatigue by SEIFA

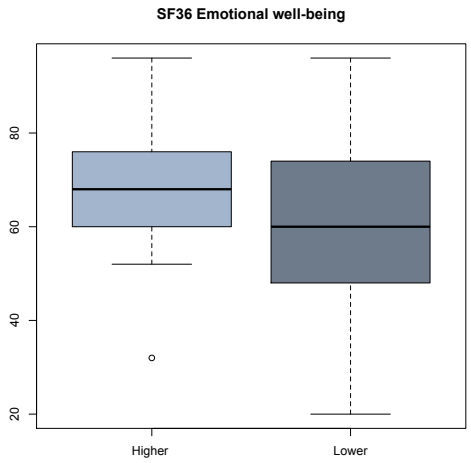
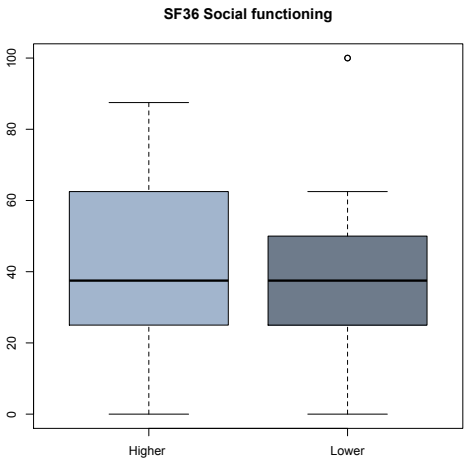


Figure 2.73: Boxplot of SF36 emotional well-being by SEIFA



2.74: Boxplot of SF36 social functioning by SEIFA

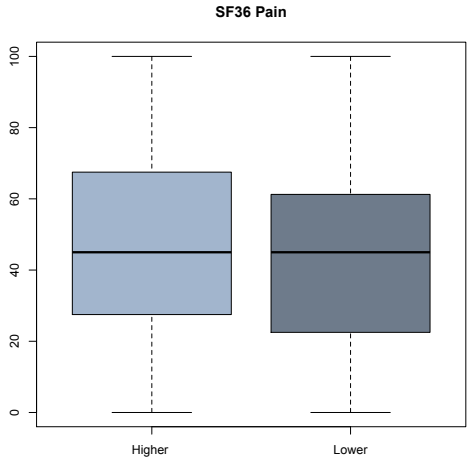
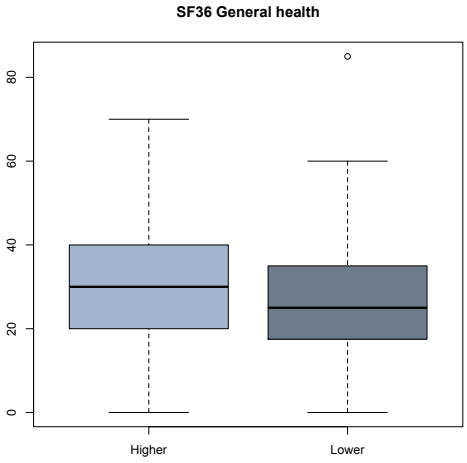


Figure 2.75: Boxplot of SF36 pain by SEIFA



2.76: Boxplot of SF36 general health by SEIFA

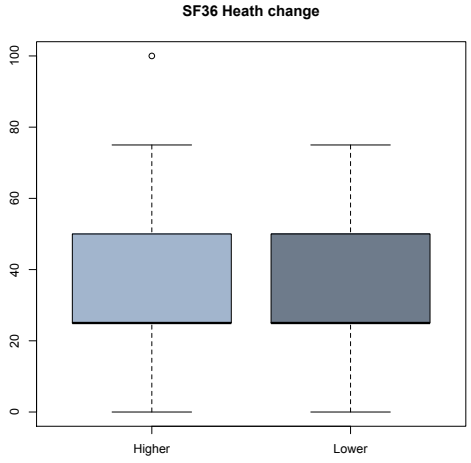


Figure 2.77: Boxplot of SF36 health change by SEIFA

Table 2.22: Summary statistics and two sample t-test SF36 subscales by SEIFA

SF36 scale by SEIFA	Group	Count	Mean	SD	t	dF	p
Role functioning/emotional	Higher SEIFA	27	42.22	46.27	1.22	48	0.2267
	Lower SEIFA	23	45.00	46			
General health	Higher SEIFA	27	25.83	17.96	0.21	48	0.8353
	Lower SEIFA	23	31.25	20			
Health change	Higher SEIFA	27	37.50	26.06			
	Lower SEIFA	23	32.50	23			

Table 2.23: Summary statistics Wilcoxon rank sum test with continuity correction SF36 subscales by SEIFA

SF36 scale by SEIFA	Group	Count	Median	IQR	W	p
Physical functioning	Higher SEIFA	27	35.00	57.50	344.00	0.5183
	Lower SEIFA	23	25.00	37.50		
Role functioning/physical	Higher SEIFA	27	0.00	0.00	310.00	1.0000
	Lower SEIFA	23	0.00	6.25		
Energy/Fatigue	Higher SEIFA	27	25.00	20.00	403.50	0.0701
	Lower SEIFA	23	15.00	27.50		
Emotional well-being	Higher SEIFA	27	68.00	20.00	389.50	0.1249
	Lower SEIFA	23	64.00	25.00		
Social functioning	Higher SEIFA	27	37.50	25.00	335.00	0.6364
	Lower SEIFA	23	37.50	28.13		
Pain	Higher SEIFA	27	32.50	40.63	311.50	0.9922
	Lower SEIFA	23	45.00	55.63		
Health change	Higher SEIFA	27	25.00	25.00	339.50	0.5503
	Lower SEIFA	23	25.00	25.00		