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Health Related Quality of Life in the ACT: 1994-95

The Baseline

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SUMMARY

The Quality of Life Project asks people in the ACT community to rate their health-related quality of life using the Medical Outcomes Study's Short Form 36 (SF-36).[1] This report focuses on the findings from an analysis of the responses given to the SF-36, examining differences between socio-economic groups, disability and hospitalisation statuses, and people's perceptions of their environment. It is the first publication from the Quality of Life Project, and it is intended to provide a baseline for future studies. It uses a cross-sectional design based on two surveys conducted between 1994 and 1995 which contain 450 responses from people aged 18 years and older.

Results

The findings provide strong support for the ACT population being similar to an Australian average in the health-related quality of life of its adults. In fact, there is a suggestion that people in the ACT have better physical functioning and higher levels of vitality than nationally: these significant differences probably reflect the ACT's younger age structure, and a general trend towards better lifestyle and lower disease rates.

Within the ACT population some interesting associations emerged. In terms of age, it was found that:

- People aged 45 to 64 years had significantly better physical functioning than older people (65+ yrs) but worse than younger people (18-44 yrs).
- People in the youngest and oldest age groups tended to report better general health than the middle-aged group.
- Older people (65+ yrs) were significantly more likely to have good mental health than their younger counterparts (18-44 yrs and 45-64 yrs).
- When compared to the Australian norms the same general pattern is evident, however the ACT mean scale scores across each age group are higher than the corresponding scores from Australian data.

In relation to gender, it was found that women tended to score lower (poorer health) than men for the scales found to be significantly associated with mental health. The exception being general health where women tended to have better general health than men. These results are consistent with the Australian norms in that the same general pattern emerges.

For employment status, the findings suggest that:

- In a univariate analysis, people who were unemployed, or not in the labour force had significantly lower mean scores on the physical functioning scale (worse functioning) than those who were employed full time or part-time.
- Full-time workers presented significantly higher mean scores (better health) than part-time workers for the vitality and the mental health scales.

- Surprisingly, the highest mean score on the role-emotional scale (least limitations) was found for those persons unemployed or not in the labour force.

- In multivariate analyses, employment status had the strongest influence on the mental health dimension.
- Part-time workers had worse mental health, vitality and role-physical scores than other respondents; while participants who were not employed had better role-emotional and social functioning scores than those working.

In terms of educational attainment, the univariate analyses showed that people in the top two educational levels (yr 12 or better) had significantly better physical functioning and vitality than people in the lowest educational level. Respondents in the top two education levels also indicated significantly less bodily pain than those in the second lowest level (year 10 only).

Household composition yielded some interesting results. For example
- People who were married/de facto with children tended to have worse mental health than those who were married/de facto without children and singles without children.
- Widowed respondents were significantly more likely to have worse general health, more severe physical and emotional role limitations and poorer social functioning.
- People who were married without children tended to have the best physical functioning.

In relation to usual area of residence, it was found that:
- Residents in Central Canberra and Belconnen had less physical role limitations and better social functioning than residents of Woden Valley and Tuggeranong.
- In the multivariate analyses, people in Tuggeranong had significantly poorer physical functioning than those living in other areas; and people who were living in Belconnen reported the worst general health.

Not surprisingly, people who had been admitted to hospital within the last month tended to score significantly worse on all SF-36 scales except general health perceptions. Also, all scales except the mental health measure were significantly associated with disability status.

In terms of the environment, people who perceived that health relates to a healthy physical environment had less pain and more vitality than others.

Conclusions

As a baseline, this study has provided some insights and direction. However, the main message from the findings is the urgent need to properly monitor and evaluate the health status of the population, especially within sub-groups like people with disabilities and those discharged from hospital. This longitudinal approach where comparisons are made over time will provide valuable information about the effects of interventions and strategies on the health of the ACT population, with a view to maximising the health and well-being of individuals.

INTRODUCTION

The Quality of Life Project has been developed to provide an overview of the changing health related quality of life for people residing in the Australian Capital Territory (ACT). The Project was undertaken in collaboration with the National Centre for Cultural Heritage at the University of Canberra. The major aims of the Quality of Life project are:

- to provide a basis to examine the changing health-related quality of life of people living in the ACT;
- to assist the ACT Government in monitoring the trends of health and well-being in the Territory;
- to identify groups within the population who have a high or low quality of life; and
- to determine people's perceptions about aging and disability.

Purpose of this Study

The Quality of Life Project asks people in the ACT community to rate their health-related quality of life using the Medical Outcomes Study's Short Form 36 (SF-36).[1] This report focuses on the findings from an analysis of the responses given to the SF-36, examining differences between socio-economic groups, disability and hospitalisation statuses, and people's perceptions of their environment. It is the first publication from the Quality of Life Project, and it is intended to provide a baseline for future studies. It focuses on a cross-sectional time frame, looking at the ACT population for a two year period (1994-1995).

THE MEDICAL OUTCOMES STUDY SHORT FORM 36

The SF-36 was developed in 1988 by the RAND Corporation as part of its Medical Outcomes Study carried out in the USA. The SF-36 was 'constructed to yield a profile of scores that would be useful in understanding population differences in physical and mental health statuses, the burden of chronic disease, other medical conditions and the effect of treatments on general health status'.[1]

It is hypothesised that the SF-36 has 2 major dimensions of health;

- Physical Health
- Mental Health

Additionally, the SF-36 was designed '... to achieve minimum standards of precision necessary for group comparisons across eight conceptual areas'.[1] The subscales most sensitive to measuring physical health are;

- Physical function (PF)
- The impact of physical health on role performance (RP)
- Bodily pain (BP)
- General health perceptions (GH)

The subscales most sensitive to measuring mental health are;

- General mental health (MH)
- The impact of emotional health on role performance (RE)
- Social functioning (SF)
- Vitality (VT)

The subscales of PF, RP, BP, SF, and RE range from 0-100 with a score of 100 indicating better health status or absence of limitation or disabilities. The subscales of GH, VT, and MH are bipolar in nature with a range of 0 to 100. A score of 100 indicates when '... respondents report positive states and evaluate their health favorably'.[1]

SF-36 Validity

The SF-36 has been extensively validated for adults in the United States, the United Kingdom, and in some countries with a non-English speaking background.[2] Validation of the SF-36 in Australia has occurred relatively recently, with its use by McCallum.[2] The results indicate that the eight subscales 'demonstrated good internal consistency'. Moreover, the SF-36 discriminates well between people with or without a health condition. Nevertheless, although it was concluded that the SF-36 is a valid measure of health status for the Australian population, further investigation is required to determine its clinical validity.

SF-36 Australian Population Norms

The production of norms for the Australian population was provided on an interim basis by the Population Survey Monitor between 1994 and 1995.[3] The revision of these norms will be provided by the Australian Bureau of Statistics, National Health Survey 1995-96 (NHS 1995-96).

The SF-36 is also currently being used with hospital patients in the Care Continuum and Health Outcomes Project (CCHOP) a study being undertaken in the ACT by the Epidemiology Unit of the ACT Department of Health and Community Care.[4] The early indications suggest that this study will provide further support for the validity of the SF-36 in a clinical population.

METHODOLOGY

The sample selection and the data analysis were performed by the Epidemiology Unit of the ACT Department of Health and Community Care. The field work was undertaken by the students at the National Centre for Cultural Heritage at the University of Canberra.

Sampling

This report utilises combined data from the Quality of Life Project collected in April 1994 and April 1995. The study deliberately over sampled suburbs with higher densities of older people (see Appendix A). The sample size over the 1994-95 period was 830 dwellings with 450 participants aged 18 years of age or over. Data were collected on a number of characteristics such as age, gender, country of birth, employment status, household composition, and length of residence in the ACT.

In 1994 a total of 440 dwellings were visited and 228 interviews obtained, (127 people refusing to take part in the survey and 85 people were unable to be contacted) giving a response rate of 52%. In 1995 a total of 390 dwellings were visited and 222 interviews obtained, (104 people refusing to take part in the survey and 64 people were unable to be contacted) giving a response rate of 57%.

Data Analysis

The analyses performed on the data included z-tests to analyse the differences between Australia and the ACT across the eight SF-36 scales. Other analyses, such as one-way analysis of variance (ANOVA), Kruskal-Wallis non-parametric ANOVA, Duncans test and stepwise multiple Ordinary Least Squares regression, were utilised to test for significant differences between subgroups of the ACT population across the mean profile scores. The findings from the z-tests, parametric ANOVAs and stepwise multiple regression are presented in this publication. The non-parametric analyses produced similar results to the parametric tests, although the non-parametric tests tended to produce larger probability values. To avoid excessive reading of comparative analyses the non-parametric results are not presented since there were no major discrepancies found. On the other hand, caution is needed when interpreting the following findings because of violations to the normality assumption.

SAMPLE DEMOGRAPHICS

To provide a demographic breakdown of the sample, comparisons were made with the Australian Bureau of Statistics (ABS), 1994 ACT population estimates. As expected, the sample was found not to be representative. Due to the sampling design used, the age and sex-structures of respondents' data were significantly different from those of the ABS estimates for the ACT population. When the data were weighted for the sample design, distributions were similar to the ACT population (see Appendix B for demographic breakdown). Given that an oversampling framework was used, a sample weight was used in the remaining analyses.

DISTRIBUTIONS OF THE SF-36 SCALES

The literature does not offer a standard approach for analysing SF-36 data. There are a number of difficulties caused by the non-normality of the distributions (see Table 1). In the Quality of Life study, the distribution of scores on the scales physical functioning, bodily pain and social functioning scales were J-shaped. The J-shaped patterns were generated with the maximum possible score of 100 in each scale being achieved by, 53%, 41%, and 58% of respondents respectively. The general health, mental health, and vitality scales were more normally distributed, though negatively skewed. The most difficult scales to deal with due to few points were the role-physical and role-emotional scales. For the role-physical scale with only five points, 12% of respondents scored the lowest possible score of 0, while 73% scored the highest possible score of 100. For the role-emotional scale with only four points, 6% scored 0 while 81% scored 100. These distributions are similar to those found in other studies.[1,2] (Appendix C provides a breakdown of the means and standard deviations for each SF-36 scale by the variables used in the analyses).

INTERPRETATION OF SF-36 MEAN SCORE PROFILES

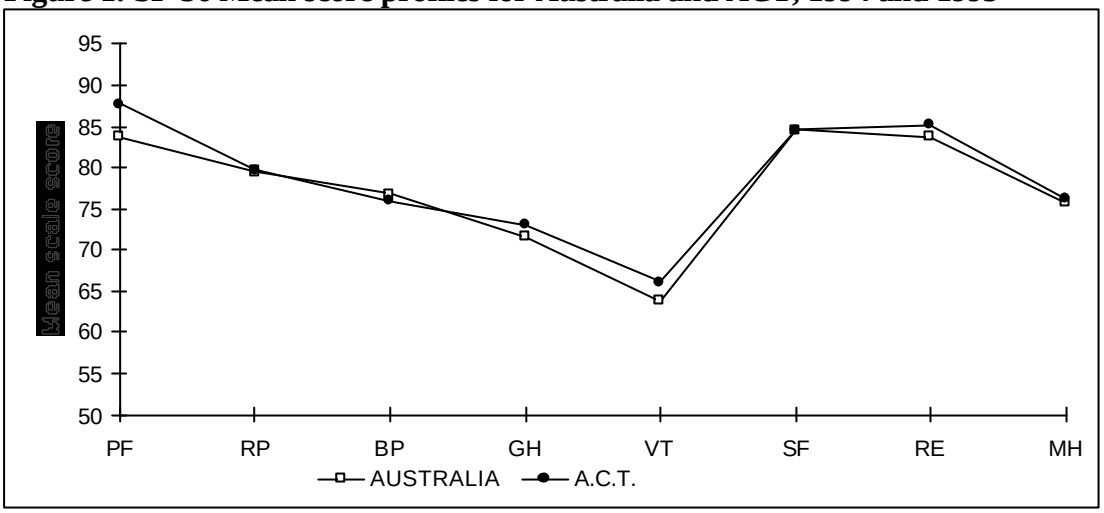
Utilising line graphs with the eight scales arranged from left to right according to the extent to which they measure physical or mental health are a recommended way of visualising the differences between sub-groups across the eight scales.[1] This is known as the SF-36 mean score profile.

Table 1: Indicators of SF-36 Scale Distributions.

SF-36 Scale	Mean	sd	Floor (%)	Ceiling (%)	Skewness
PF	91.57	16.78	0	51.5	-3.42
RP	81.93	34.46	12	72.9	-1.69
BP	78.39	24.73	1.4	40.7	-1.15
GH	74.68	20.13	0	8.9	-0.89
MH	78.56	16.76	0.5	6.7	-1.41
RE	88.08	27.72	5.9	79.3	-2.30
SF	86.20	21.23	0.6	57.2	-1.81
VT	69.14	17.28	0.4	3	-1.01

Stevenson [3] notes that line graphs usually denote trends in data. However, with the eight scales of the SF-36, the individual scale scores are not dependent on one another and therefore cannot be related to each other. The line is simply a way of visualising the mean score profiles. Figure 1 highlights the differences between the two line profiles for Australia and the ACT. Significant differences were found, the mean scores for the physical function scale were lower for Australia than the ACT ($z = -3.95$, $p < 0.001$); and average scores for the vitality scale were also lower for Australia ($z = -2.23$, $p < 0.05$). The other scales were not significantly different.

Figure 1: SF-36 Mean score profiles for Australia and ACT, 1994 and 1995



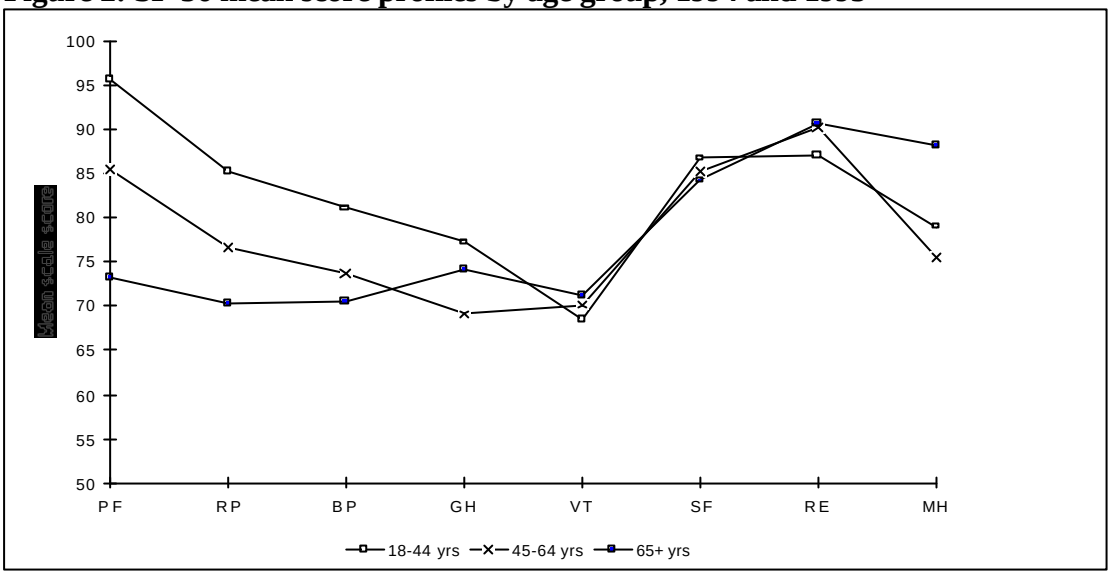
Sources: Stevenson CE, *SF-36: Interim norms for Australian data*. Canberra: Australian Institute of Health and Welfare (age-standardised to ABS 1991 Census data): Quality of Life Project 1994 &1995 weighted data.

ANALYSIS OF HEALTH STATUS

Age

Figure 2 shows the mean SF-36 scores for three age groups within the study. There were significant differences between age groups for all the scales hypothesized to best represent physical health: these scales are physical functioning ($F = 38.0$, $df = 2$, $p < 0.0001$), role-physical ($F = 4.3$, $df = 2$, $p < 0.05$), bodily pain ($F = 5.5$, $df = 2$, $p < 0.005$) and general health ($F = 7.3$, $df = 2$, $p < 0.005$). Duncans tests found that older people (45-64 yrs and 65+ yrs) tended to have significantly lower scores than their younger counterparts (aged between 18-44 yrs). This trend was most prominent for the role-physical and bodily pain scales. The physical functioning scale showed a more linear trend, with people aged 45 to 64 years having significantly better functioning than older people (65+ yrs) but worse than younger people (18-44 yrs). The general health scale tended to have an inverted 'U' relationship with age where the youngest and oldest age groups tended to report better general health than the middle-aged group.

Figure 2: SF-36 mean score profiles by age group, 1994 and 1995



Source: Quality of Life Project 1994 &1995 weighted data.

In terms of mental health, only the mental health scale was significant ($F = 6.4$, $df = 2$, $p < 0.05$). In terms of trends, older people (65+ yrs) were significantly more likely to have good mental health than their younger counterparts (18-44 yrs and 45-64 yrs). The other three scales (role-emotional, vitality and social functioning) had similar scores between the age groups.

When compared to the Australian norms the same general pattern is evident, however the ACT mean scale scores across each age group are higher than the corresponding scores from Australian data. Stevenson [4] found that 'the scores measuring predominantly physical health exhibit the expected decline with age...The decline is less marked for the scores measuring predominantly mental health. In fact the mental health score shows an increase in mental health for the oldest age group'.

In a multivariate analysis, age, gender, employment status, educational attainment, household composition, usual area of residence, recent hospitalisation and disability status were compared for their contribution to the eight SF-36 scales (see Appendix D for more detail). Age emerged as a significant factor for the physical functioning, role-physical and general health scales. The bodily pain scale was close to significance at α equals 0.06, while the mental health scale was significantly less influenced by age when other factors were considered. These findings highlight the importance age has in determining the physical health of people in light of other social and health status factors.

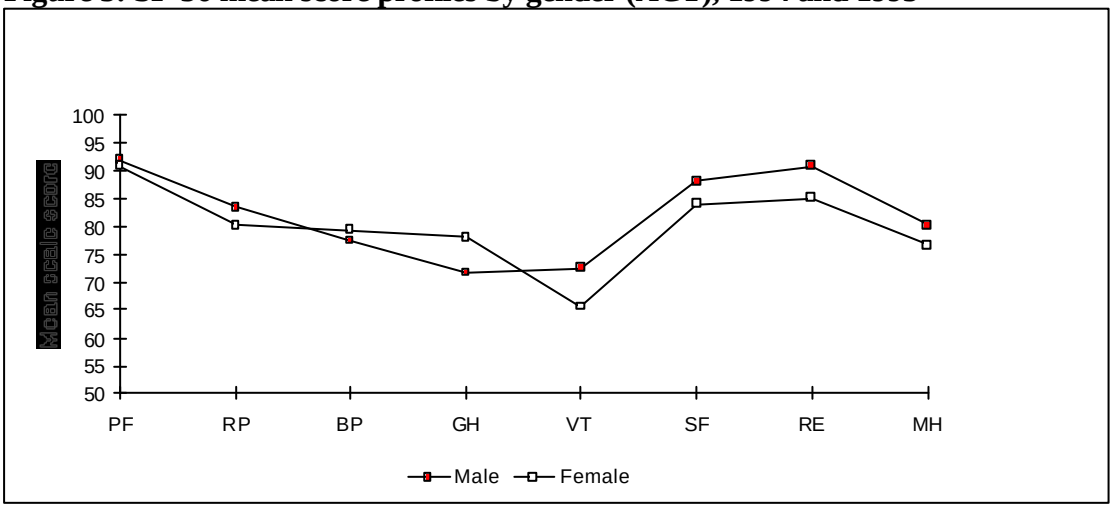
Gender

Figure 3 shows the mean SF-36 scores for males and females. There were significant differences between them for scales hypothesized to best represent mental health: these scales are mental health ($F = 5.3$, $df = 1$, $p < 0.05$), role-emotional ($F = 4.9$, $df = 1$, $p < 0.05$), social function ($F = 4.2$, $df = 1$, $p < 0.05$), vitality ($F = 18.4$, $df = 1$, $p < 0.0001$), and general health ($F = 10.7$, $df = 1$, $p < 0.005$). Note that the general health scale tends to be substantially influenced by physical and mental health dimensions. The other SF-36 scales (physical functioning, role-physical and bodily pain) were not significantly associated with the gender of respondents.

The results from Duncans tests suggest that women tended to score lower than men for the scales found to be significantly associated with mental health (mental health, role-emotional, social functioning and vitality). The exception being the general health scale where women tended to have better general health than men. These results are consistent with the Australian norms (see Figure 4) in that the same general pattern emerges.

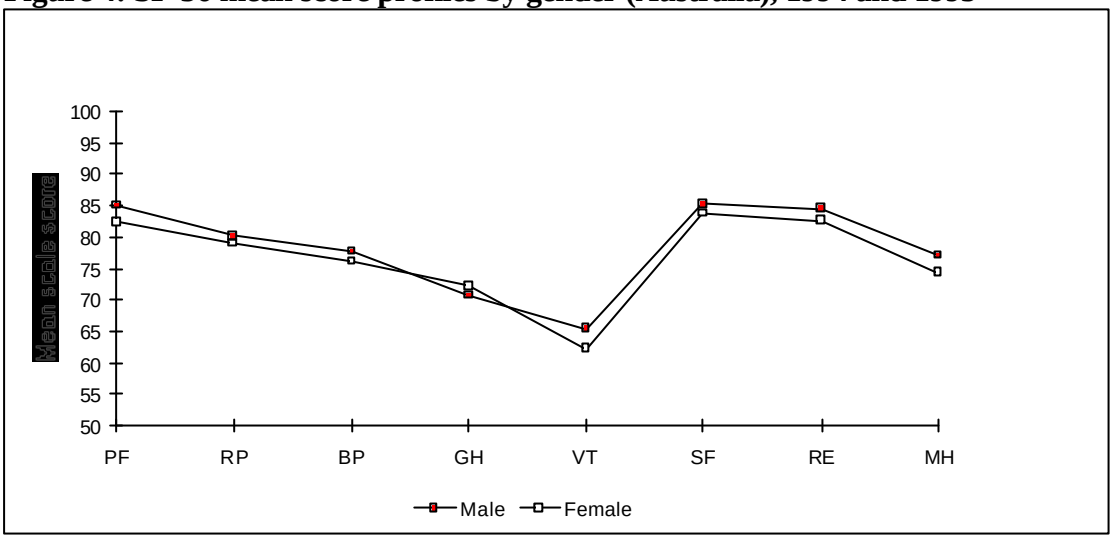
The multivariate analysis shown in Appendix D suggests that gender is significant for many of the SF-36 scales. Typically, the scales related to gender are those mentioned above, although the mental health scale is not significantly associated with gender in light of significant other factors, and the physical functioning scale becomes significantly related to gender once other factors are included. Like the univariate analyses, women tended to score lower than men on the role-emotional, social functioning, vitality and physical functioning scales; while men tended to report lower general health than women.

Figure 3: SF-36 mean score profiles by gender (ACT), 1994 and 1995



Source: Quality of Life Project 1994 &1995 weighted data

Figure 4: SF-36 mean score profiles by gender (Australia), 1994 and 1995

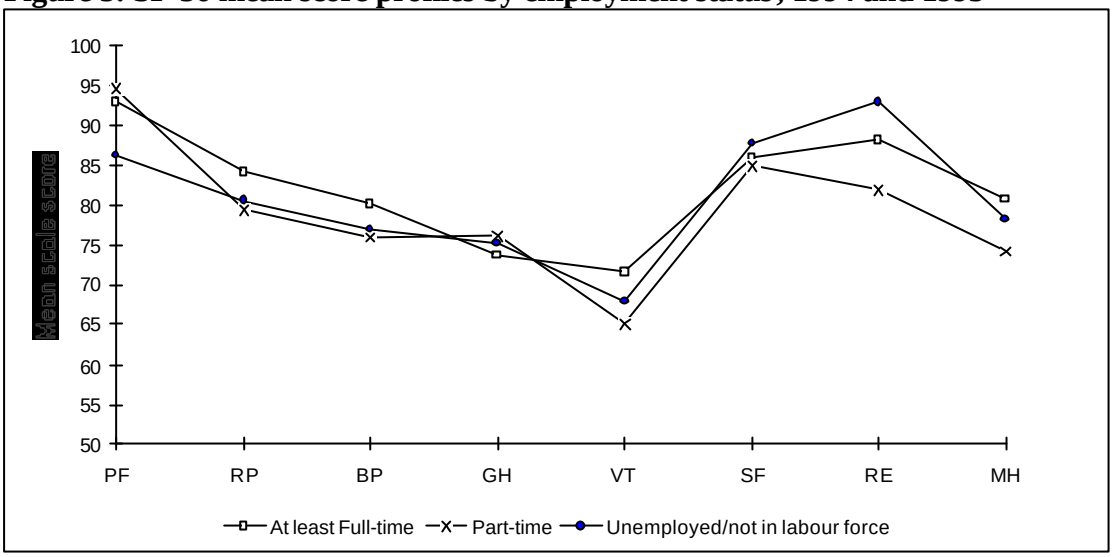


Source: Stevenson CE, *SF-36 :Interim norms for Australian data.* Canberra: Australian Institute of Health and Welfare.(using age-standardised data)

Employment Status

Figure 5 shows the SF-36 mean score profiles for employment status. The results suggest that the physical functioning ($F = 8.7$, $df = 2$, $p < 0.005$), vitality ($F = 5.4$, $df = 2$, $p < 0.005$), role-emotional ($F = 4.4$, $df = 2$, $p < 0.05$) and mental health scales ($F = 5.5$, $df = 2$, $p < 0.005$) show significant differences according to employment status levels. In particular, people who were unemployed, or not in the labour force had significantly lower mean scores on the physical functioning scale than those who were employed full time or part-time. Full-time workers presented significantly higher mean scores than part-time workers for the vitality and the mental health scales. Surprisingly, the highest mean score on the role-emotional scale was found for those persons unemployed or not in the labour force. Additionally, this group demonstrated significantly higher scores on the role-emotional scale than part-time workers.

Figure 5: SF-36 mean score profiles by employment status, 1994 and 1995



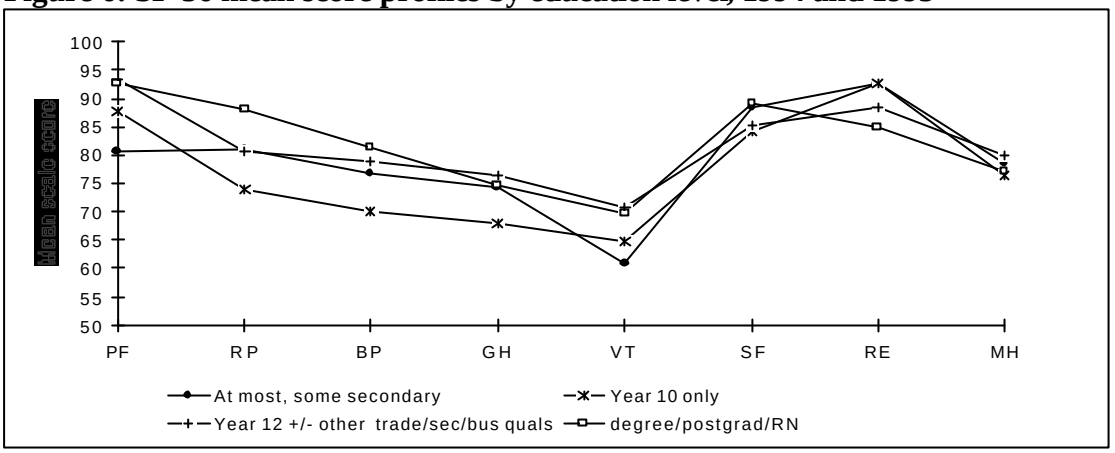
Source: Quality of Life Project 1994 &1995 weighted data

Results from the multivariate analysis shown in Appendix D suggest that employment status has a strong influence on the mental health dimension of the SF-36 scales. The mental health, role-emotional, social functioning and vitality scales were significantly contributed to by employment status when compared to other factors. In terms of the more physical aspects of health, employment status became significant after the inclusion of other significant indicators for the role-physical scale, while employment status became less significant for the physical functioning scale ($\alpha > 0.05$). The relationships remained similar to those found in the univariate analyses, with part-time workers having worse role-physical, mental health and vitality scores than other respondents. Participants who were not employed had better role-emotional and social functioning scores than those working.

Educational Attainment

Figure 6 shows the differences between education levels between the eight SF-36 scales. Differences between education levels were significant for the physical function ($F = 6.0$, $df = 3$, $p < 0.005$), bodily pain ($F = 2.8$, $df = 3$, $p < 0.05$) and vitality scales ($F = 3.9$, $df = 3$, $p < 0.01$). For instance, people in the top two educational levels (yr 12 or better) had significantly higher mean scores for the physical functioning and vitality scales than people in the lowest educational level. Respondents in the top two education levels also indicated significantly less bodily pain than those in the second lowest level (year 10 only).

Figure 6: SF-36 mean score profiles by education level, 1994 and 1995



Source: Quality of Life Project 1994 &1995 weighted data

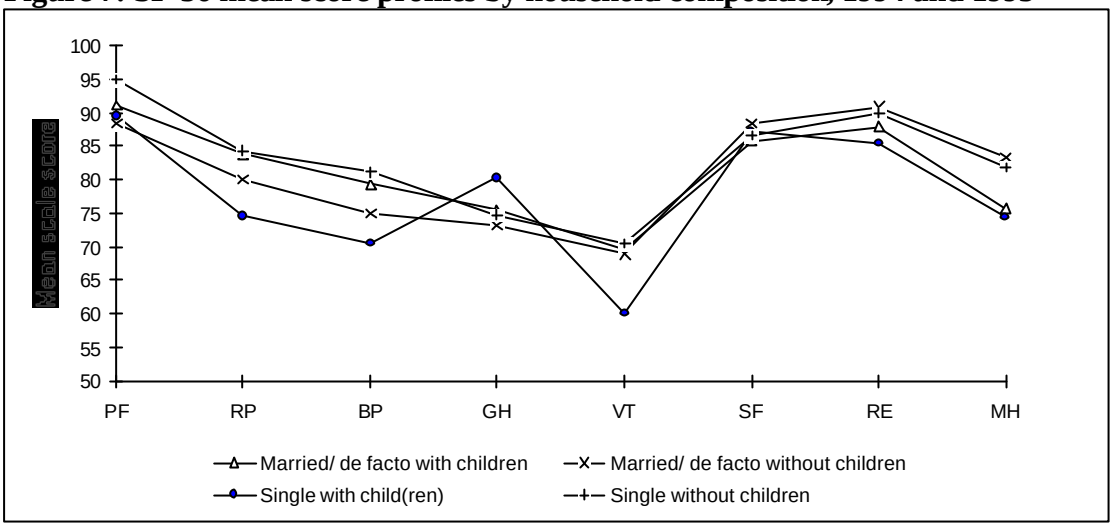
The findings from the multivariate analysis shown at Appendix D indicate that educational attainment was significantly associated with bodily pain, general health and vitality. Similar relationships to the univariate analyses emerged. Educational attainment, however, did not significantly contribute to the physical functioning model after the inclusion of other significant factors.

Household Composition

The mean SF-36 score profiles by different household composition types did not provide a clear picture (see Figure 7). The mental health scale was the only scale that was significantly different ($F = 6.3$, $df = 4$, $p < 0.005$). Respondents who were married/de facto with children tended to have a lower mental health score than those who were married/de facto without children and singles without children.

The results in the multivariate analysis shown at Appendix D suggest that household composition had a significant effect on both physical and mental health. It was found that in a multivariate model household composition significantly contributed to the explanation of physical functioning, physical role limitations, general health, mental health, emotional role limitations and social functioning. Widowed respondents were significantly more likely to have worse general health, more severe physical and emotional role limitations and poorer social functioning.

Figure 7: SF-36 mean score profiles by household composition, 1994 and 1995



Source: Quality of Life Project 1994 &1995 weighted data

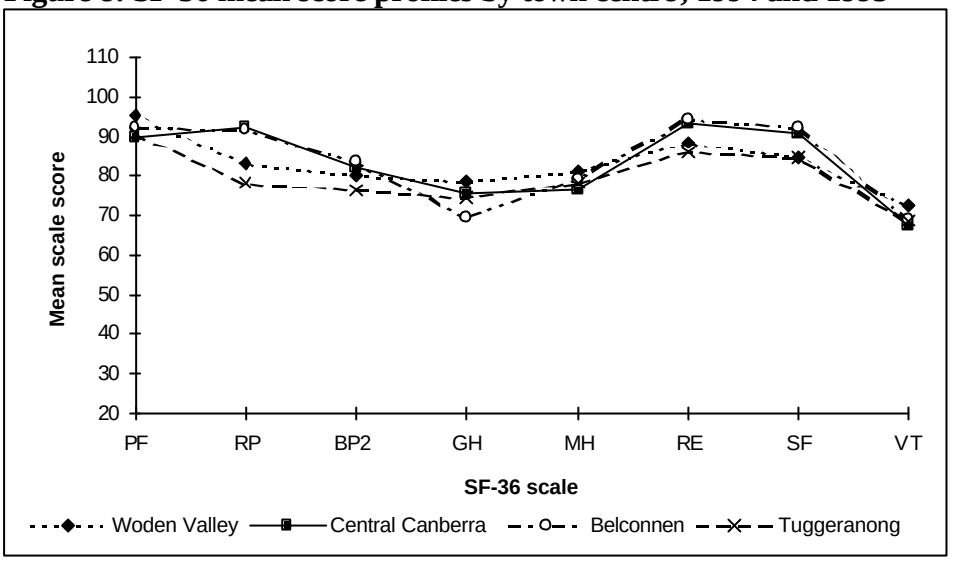
Interestingly, people who were married with children reported significantly lower mental health, while tending to have the least physical role limitations. In contrast, respondents who were married without children tended to have the best physical functioning.

Usual Area of Residence

Figure 8 shows the average SF-36 scores for each usual area of residence (town centres). The findings from univariate analyses indicate that where respondents live significantly influences SF-36 scores. In particular, usual area of residence was significantly related to physical role limitations and social functioning. On both these scales, residents in Central Canberra and Belconnen scored significantly better than residents of Woden Valley and Tuggeranong.

The results from the multivariate analysis shown in Appendix D suggest that in addition to the role-physical and social functioning scales, the physical functioning and general health scales were significantly affected by usual area of residence. In a mulitvariate model, respondents in Tuggeranong had significantly poorer physical functioning than those living in other areas, while those living in Belconnen and Central Canberra had significantly less severe physical role limitations than others, and those living in Central Canberra had the best social functioning. In contrast, people who were living in Belconnen reported the worst general health.

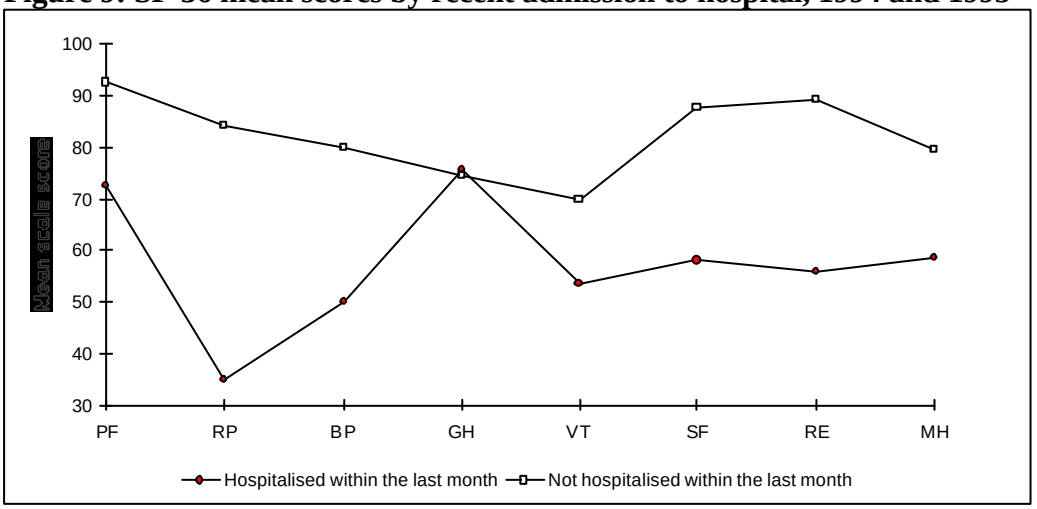
Figure 8: SF-36 mean score profiles by town centre, 1994 and 1995



Recent Hospitalisation

Not surprisingly, people who had been admitted to hospital (see Figure 9) within the last month tended to score significantly lower on all SF-36 scales except general health perception ($p < 0.0001$). Results from the multivariate analysis shown in Appendix D suggest a similar profile, with respondents recently hospitalised scoring significantly worse on all SF-36 scales except the general health scale. Furthermore, these results are consistent with data from the Care Continuum & Health Outcomes Project.[4] Hospital patients from the CCHOP had consistently lower adjusted average scores on the eight scales of the SF-36 when compared to samples from the general community.

Figure 9: SF-36 mean scores by recent admission to hospital, 1994 and 1995



Source: Quality of Life Project 1994 &1995 weighted data

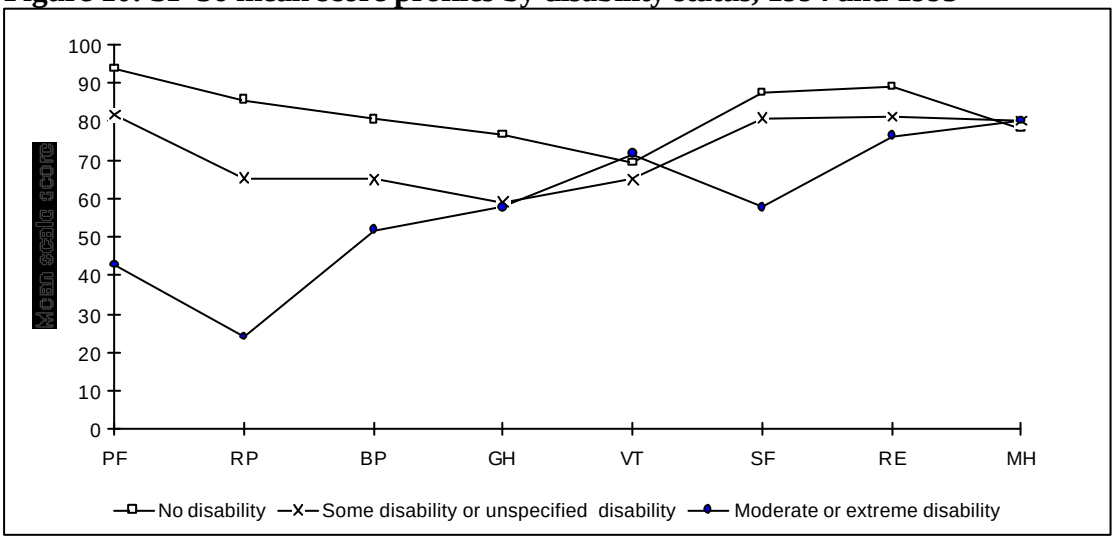
Disability Status

Figure 10 shows the differences between disability status for the eight SF-36 scales. The differences between disability levels were significant for the physical function ($F = 83.0$, $df = 2$, $p<0.0001$), role-physical ($F = 30.1$, $df = 2$, $p < 0.0001$), bodily pain ($F = 16.2$, $df = 2$, $p < 0.0001$), general health ($F = 18.3$, $df = 2$, $p < 0.0001$), and social function ($F = 16.7$, $df = 2$, $p < 0.0001$) scales.

Not surprisingly, for physical functioning and role-physical scales, respondents who had no disability scored significantly higher than those with some disability, who again score significantly higher than those with moderate or extreme disability. For the bodily pain and general health scales, those with no disability had significantly better pain scores than the others. For the social functioning scale, those with moderate or extreme disability had significantly lower mean scores than the rest.

The findings from the multivariate analysis shown in Appendix D suggest that all scales, except the mental health measure, were significantly associated with disability status. The scales hypothesized to best represent physical health (physical functioning, role-physical, bodily pain and general health) were found to have strong linear relationships with disability status, with poorer physical health related to more severe disability. In relation to mental health, respondents who had moderate or extreme disability were significantly more likely to have more emotional role limitations and poorer social functioning than those who had less severe or no disability. In contrast, those who had only some disability tended to have had lower levels of vitality than other respondents; while there were no significant differences between levels of disability status for the mental health scale.

Figure 10: SF-36 mean score profiles by disability status, 1994 and 1995

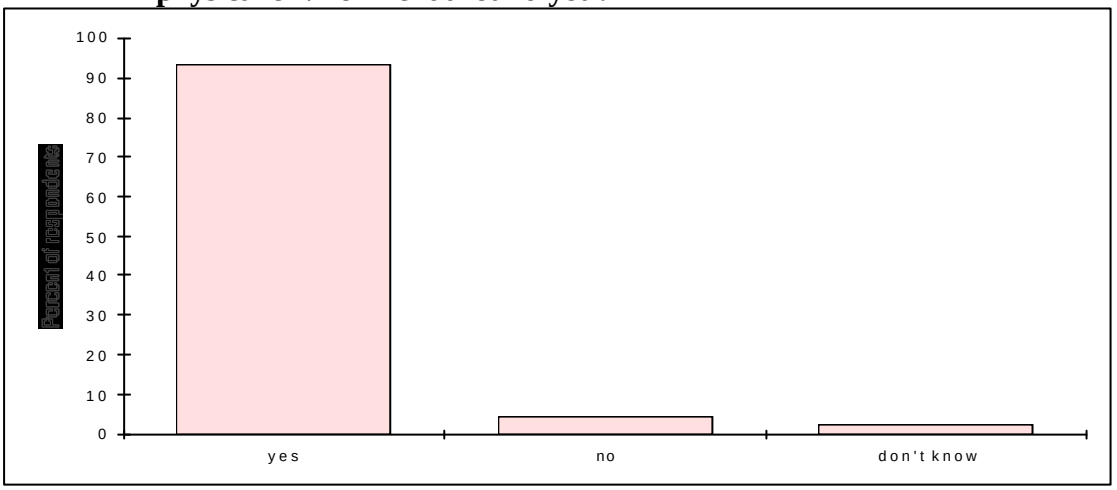


Source: Quality of Life Project 1994 &1995 weighted data

Environmental Views

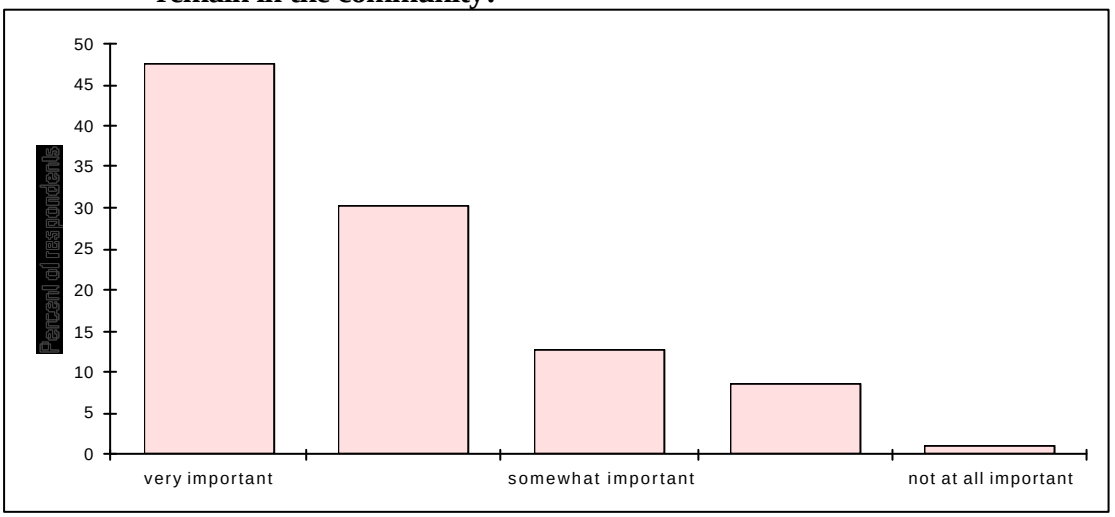
Figure 11, 12 and 13 demonstrate that the general population of the ACT places a high value on its natural environment and cultural heritage. A high proportion (93%) of the population believes that having a healthy physical environment around them is important for their health .

Figure 11: Responses to "Do you think that your health relates to having a healthy physical environment around you?"



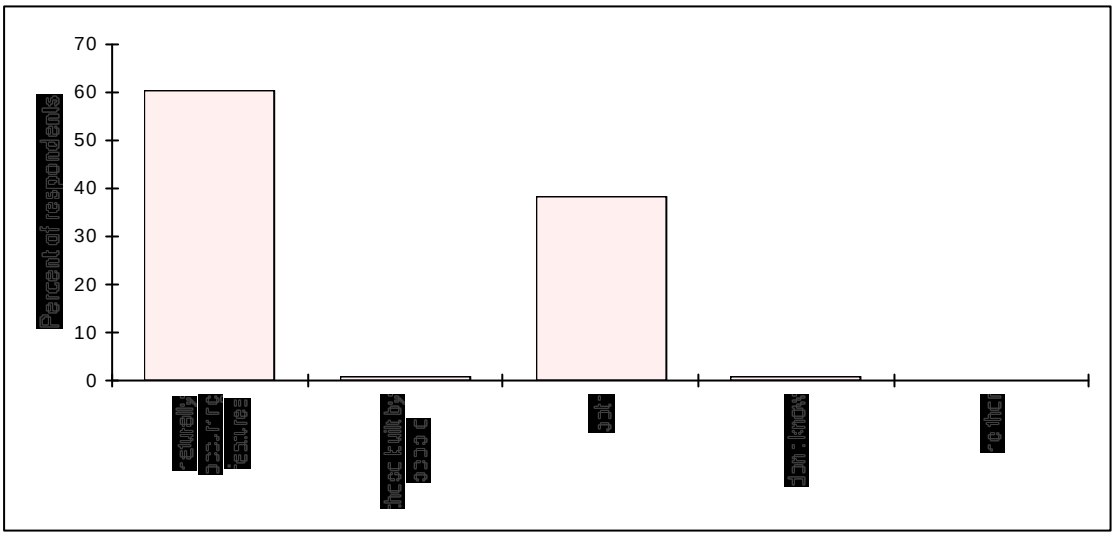
Source: Quality of Life Project 1994 &1995 weighted data

Figure 12: Responses to "How important is it to you to have familiar places and things remain in the community?"



Source: Quality of Life Project 1994 &1995 weighted data

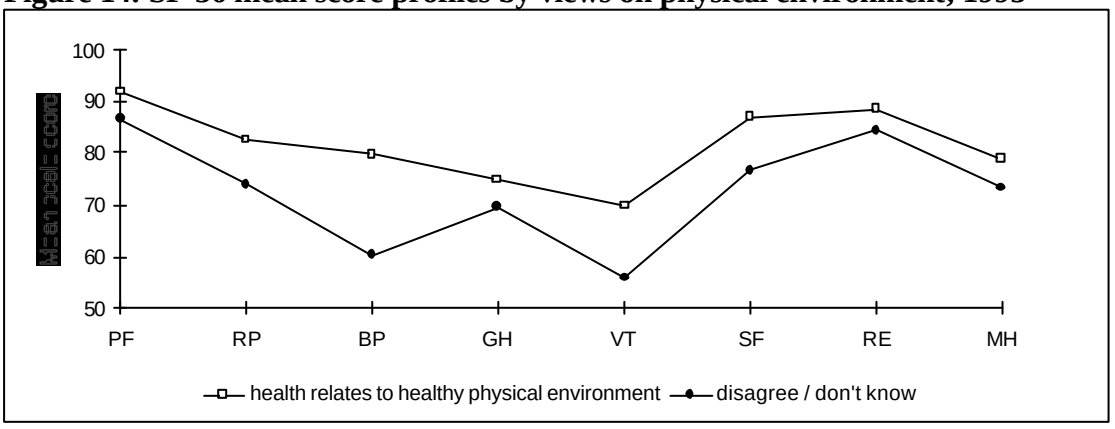
Figure 13: Responses to 'What do you value most in your environment - its naturally occurring physical features or those built by people?'.



Source: Quality of Life Project 1994 &1995 weighted data

Interestingly people's views on the importance of the physical environment were found to be associated with their health status as measured by the SF-36 (see Figure 14). Those who agreed that their health related to having a healthy physical environment around them scored significantly higher on the bodily pain ($F = 17.6$, $df = 1$, $p < 0.0001$) and vitality ($F = 18.4$, $df = 1$, $p < 0.0001$) scales than those who disagreed or don't know. Thus, respondents who perceived that health relates to a healthy physical environment had less pain and more vitality than others.

Figure 14: SF-36 mean score profiles by views on physical environment, 1995



Source: Quality of Life Project 1994 &1995 weighted data

DISCUSSION:

The findings presented in this publication provide strong support for the ACT being similar to an Australian average in the health-related quality of life of its adult population. In fact, there is a suggestion that people in the ACT have better physical functioning and higher levels of vitality than nationally: these significant differences probably reflect the ACT's younger age structure, and a general trend towards better lifestyle and lower disease rates.[5]

Within the ACT there are some important differences between various groups. In relation to acute hospital episodes, regardless of socio-demographic factors a recent stay in hospital (within the last month) was associated with overall lower health-related quality of life than that found for those not hospitalised. The only exception was general health where there was no significant difference between the two groups: this finding is encouraging since general health is a strong predictor of mortality.[6] On the other hand, the overall poorer quality of life of people recently hospitalised suggests that careful monitoring of health status is needed, especially since the average length of stay in hospital is reducing in the ACT. Such monitoring should help to ensure that strategies can be further developed to determine the best mix of services, and how best to educate people to maximise the quality of life of those needing care.

The findings for disability status also highlight the relatively poorer health-related quality of life of those reporting to be disabled. Interestingly, there were no significant differences between different levels of disability (none through extreme) in the degree of psychological distress being experienced, although other parts of emotional life were poorer for disabled people. Also, people who were disabled had worse general health suggesting they have poorer overall health and a higher probability of dying prematurely than those not disabled. Similar to hospitalisation, these results indicate that the health effects associated with disability should be closely monitored and evaluated over time to help ensure strategies are further developed to better quality of life.

In relation to age, there was a strong relationship with the physical dimension of quality of life. Regardless of disability status or recent hospital episodes, older people tended to have poorer physical functioning, more limited physical roles and worse general health. With an ageing population, therefore strategies should be targeting not only disease prevention, but also issues around improving the physical health of older people and shifting people's expectations and focus of their health as they move through the life course.

The mental health of young and middle-aged people also needs to be targeted since the univariate analyses indicate that people under aged 65 years had higher levels of psychological distress than older people. The stresses of finding work and family career paths during early adulthood can be overwhelming; while the stresses associated with work and family careers during middle age are often in conflict and very demanding. The causes of distress are complex and need to be viewed in a broader context than health. On the other hand, health professionals and policy makers in health should play a lead role in working with other sectors to ensure whole of government decisions are made with the intention of the best health outcomes for the population.

In terms of gender, regardless of disability status and recent hospitalisation women tend to report having poorer emotional lives than men. This finding may in part reflect a greater awareness by women of their bodies; but it also may indicate the more stressful lives that women lead today with work and family roles being common for many women, especially in the ACT. Results from the multivariate analysis further suggest that women have poorer physical functioning than men. This difference probably arises from a tendency for women to have more non-fatal chronic diseases than men (Aust. chronic disease ratio 0.88 males to 1 female).[7] In contrast, women have better perceptions of their general health than men: although this result seems to contradict the other findings, it is expected since women live longer than men, and a measure of general health seems to represent a complex set of markers used by individuals to gauge the seriousness of their health status.[6]

A range of more unexpected findings emerged that need further investigation. For example, the poorer health status reported by part-time workers compared to those working full-time or not in the labour force is interesting. In addition, the better social functioning and less emotional role limitations experienced by those not in the labour force compared to those working warrants further study. Similarly, the higher level of psychological distress among people married with children than others highlights an area for concern. People's perception of their environment also seems to have a significant association with health status. Why this association exists needs to be studied. Finally, the poorer physical functioning reported by Tuggeranong residents and the worse general health experienced by Belconnen dwellers is puzzling and warrants investigation.

As a baseline, this study has provided some insights and direction. However, the main message from the findings is the urgent need to properly monitor and evaluate the health status of the population, especially within sub-groups like people with disabilities and those discharged from hospital. This longitudinal approach where comparisons are made over time will provide valuable information about the effects of interventions and strategies on the health of the ACT population, with a view to maximising the health and well-being of individuals.

APPENDIX A

SAMPLING METHODOLOGY

The sampling design used in the study was a Stratified Random Sampling utilising Proportional Allocation within stratum. The sampling methodology was designed to ensure that older people were better represented than may have been the case in a simple random sample. This was achieved by dividing the suburbs of Canberra into two stratum. A number of suburbs were randomly selected from each stratum, as follows:

Stratum 1: Suburbs in which there is a high density of people aged over 65 years. The suburbs of Ainslie, Griffith, Narrabundah, and Deakin/Red Hill were randomly chosen from this stratum.

Stratum 2: Remaining suburbs. The suburbs of Chifley, Garran, Isabella Plains, Cook and Kambah were randomly chosen from this stratum.

In 1994 and 1995, 500 private dwellings were selected (250 from each). Students from the National Centre for Cultural Heritage at the University of Canberra administered a questionnaire by personal interview. Fifty pairs of interviewers conducted the survey. Within each stratum, the number of interviewers assigned to a particular suburb was in proportion to the number of private dwellings in that suburb.

The sample for each pair of interviewers was selected by members of the Epidemiology Unit in the following way. A random starting point (street and dwelling number) was assigned in a particular suburb. Following a specific direction and a prescribed systematic method for selecting dwellings, ten private dwellings were selected. The method for choosing a person in each household for interview, was the first person 18 years of age and older who had the most recent birthday. Interviewers were required to visit a selected household up to 3 times in order to make contact with the selected person.

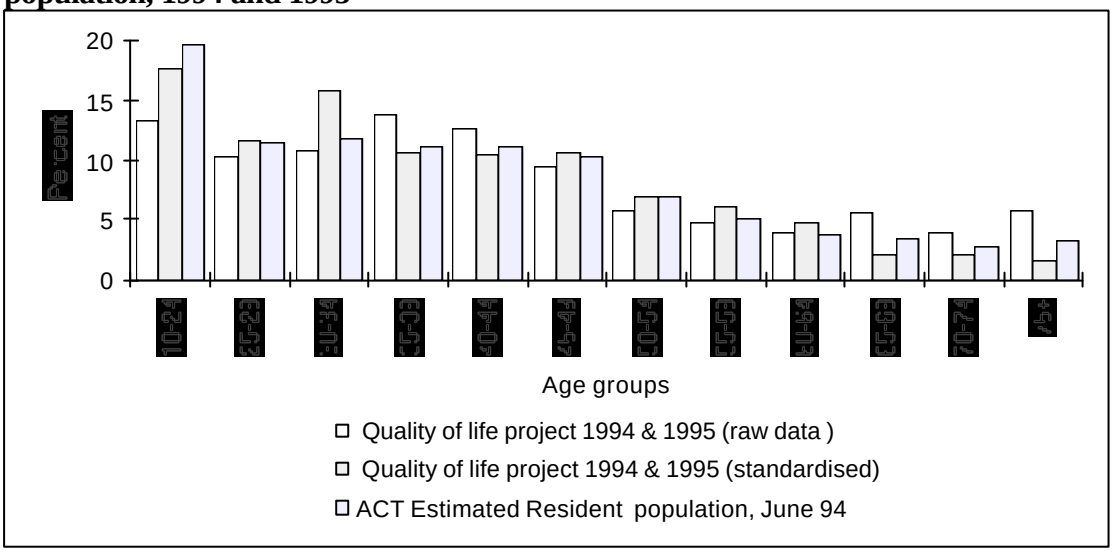
APPENDIX B

SAMPLE DEMOGRAPHICS

Age

Due to the nature of the study, suburbs were deliberately selected with higher densities of older people and hence older people were over-sampled. Figure 14 demonstrates this over representation of persons in the age groups 35-39, 40-44, 65-69 and 75 plus. When age-sex standardised to compensate for the over representation, most age categories (excluding 30-34 age category) better represented the ABS ACT population estimates.

Figure 15: Comparison between the age-structure of the sample and that of the ACT population, 1994 and 1995



Source: ABS, *Demography ACT*, Cat No.3311.8

Sex

In analysing the sex distribution of the study, it was found that females were significantly over-represented in the sample (65.2 %) as compared to males (34.8 %). In comparison, the 1991 Census estimates for the sex distribution in the ACT was 50.3 % female and 49.7 % for the male population. The proportion of males and females when age-sex standardised was more representative of the ABS estimations of the ACT population (see Figure 15).

Figure 16: Comparison between the gender-structure of the sample and that of the ACT population, 1994 and 1995

Source: ABS, *Demography ACT,* Cat No.3311.8

Employment Status

For the employment status distribution of the study, it was found that 63% of survey respondents aged 20 years and over were in full or part-time employment. In comparison, the Australian Bureau of Statistics, 1994 Labour Force Survey (NSW and ACT), reported that 69% of persons aged 20 years and over in the ACT were in full or part-time employment (Source: ABS : *The labour force NSW and ACT,*
Cat No. 6201.1).

Length of Residence

For the length of residence in the ACT, the analysis found that 82% of respondents aged 18 and over, had lived in the ACT for at least 5 years, compared to 72 % across the total ACT population. Comparison with the 1991 Census is difficult to make because the age groups have been categorised differently to the current study.

Household composition

In analysing the household composition of the study the sample appears to be similar to the 1991 Census estimates for the ACT population. However, direct comparisons are again difficult to make because of the different category structure used by the ABS as compared to the Quality of Life Project (see Appendix D, Table 1), Table 1).

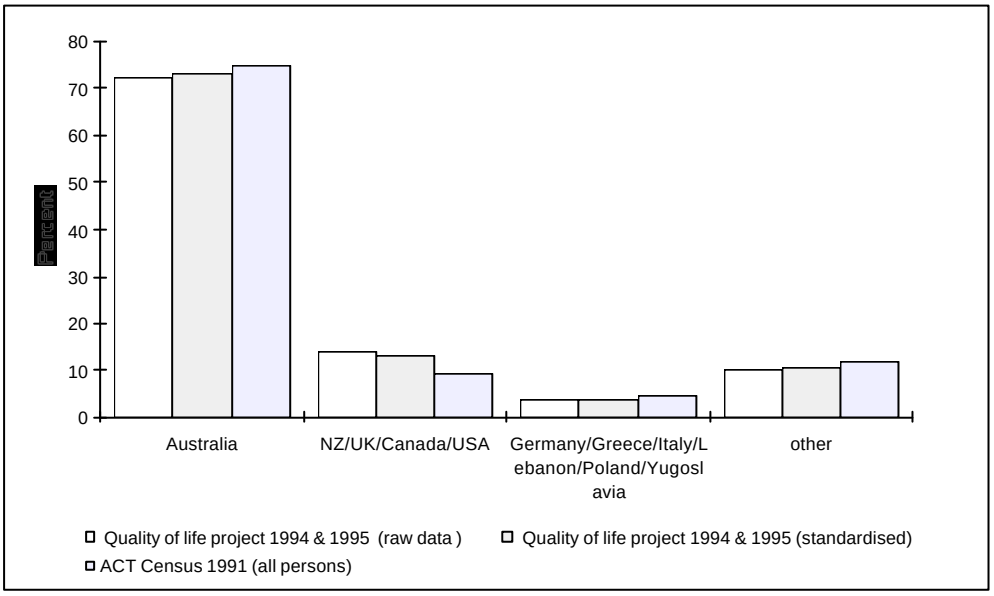
Disability Status

In terms of disability status, the analysis revealed that 16.7% (non-weighted) of the survey respondents (11.2%, standardised) described themselves as having a disability. In comparison the Australian Bureau of Statistics reported that 18.0% (weighted) of the Australian population described themselves as having a disability (Source: ABS. *Disability, aging and carers 1993,* Cat. No. 4330.0).

Country of Birth

The distribution of the sample for country of birth was similar to the distributions reported by the 1991 Census total population. For the Quality of Life sample 72% of respondents were born in Australia, compared to the 1991 Census estimate reporting 75% of the Australian population were born in Australia (see Figure 16).

Figure 17: Countries of birth of the respondents and the ACT population, 1994 and 1995



Source: ABS, Census characteristics of the ACT, 1991 Census, Cat No.2710.8

APPENDIX C

Table 2: Mean, standard deviation, sample size for the eight SF-36 scales by socio-demographic variables, recent hospitalisation status, and disability status.

VARIABLES	PF (n=432)		RP (n=441)		BP (n=439)		GH (n=431)		MH (n=438)		RE (n=432)		SF (n=440)		VT (n=431)	
Age	91.57(16.78)	***	81.93(34.46)	*	78.39(24.73)	**	74.68(20.14)	**	78.56(16.76)	**	88.08(27.72)		86.20(21.23)		69.14(17.28)	
18-44	95.75(22.59)		85.22(30.70)		81.11(21.70)		77.21(18.48)		79.02(15.35)		87.01(28.96)		86.81(18.86)		68.49(15.54)	
45-64	85.47(22.59)		76.68(40.01)		73.68(29.24)		69.07(22.15)		75.59(19.59)		90.17(25.80)		85.21(24.79)		70.23(19.92)	
65+	73.19(28.03)		70.35(40.91)		70.37(29.05)		74.17(22.66)		88.31(13.22)		90.81(20.96)		84.23(27.52)		71.12(21.91)	
Gender	91.57(16.78)		81.93(34.46)		78.39(24.73)		74.68(20.14)	*	78.56(16.76)	*	88.08(27.72)	*	86.20(21.23)	*	69.14(17.28)	***
Male	92.09(16.38)		83.47(34.33)		77.49(24.54)		71.66(21.19)		80.35(17.13)		91.01(24.30)		88.20(19.03)		72.51(14.95)	
Female	91.04(17.19)		80.31(34.61)		79.34(24.96)		77.95(18.42)		76.69(16.19)		85.12(30.57)		84.09(23.19)		65.57(18.83)	
Hospitalisation status:	91.57(16.78)	***	81.93(34.46)	**	78.39(24.73)	**	74.68(20.14)		78.56(16.76)	**	88.08(27.72)	***	86.20(21.23)	**	69.14(17.28)	***
Hospitalised within last month	72.38(31.67)		35.04(41.84)		50.23(39.54)		75.53(18.39)		58.41(15.22)		55.77(41.34)		57.86(35.93)		53.40(26.09)	
Not hospitalised within last month	92.39(15.38)		83.89(32.75)		79.57(23.25)		74.65(20.22)		79.33(16.35)		89.22(26.47)		87.39(19.58)		69.80(16.53)	
Disability status:	91.57(16.78)	***	81.93(34.46)	**	78.39(24.73)	**	74.68(20.14)	**	78.56(16.76)		88.08(27.72)		86.20(21.23)	**	69.14(17.28)	
No disability	93.88(12.76)		85.57(30.35)		80.59(21.65)		76.68(18.31)		78.36(16.71)		89.01(26.49)		87.75(19.27)		69.43(16.46)	
Some(or unspecified)disability	81.79(16.38)		65.16(46.63)		65.11(34.87)		59.22(28.25)		80.21(14.51)		81.17(36.66)		81.03(22.38)		64.91(21.04)	
Moderate or extreme disability	42.76(38.21)		24.30(43.66)		51.68(43.74)		57.67(21.13)		80.09(23.04)		76.34(36.48)		57.36(40.37)		71.51(26.68)	
Employment status:	91.53(16.81)	***	81.96(34.54)		78.29(24.75)		74.66(20.18)		78.51(16.77)	**	88.03(27.77)	*	86.14(21.26)		69.02(17.23)	*
At least full-time	92.94(14.77)		84.05(34.42)		80.17(23.18)		73.66(20.33)		80.73(15.34)		88.23(27.69)		85.80(19.84)		71.53(14.79)	
Part-time	94.73(9.85)		79.30(34.97)		76.03(24.52)		76.21(19.29)		74.16(18.15)		81.93(33.60)		85.01(21.96)		65.05(19.23)	
Unemployed./not in labour force	86.28(22.83)		80.51(34.44)		76.88(27.51)		75.21(20.68)		78.25(17.40)		92.93(20.70)		87.72(23.12)		67.93(18.80)	

(continued over)

(continued)

VARIABLES	PF (n=432)	RP (n=441)	BP (n=439)	GH (n=431)	MH (n=438)	RE (n=432)	SF (n=440)	VT (n=431)
Educational attainment	91.53(16.80) ***	81.85(34.51)	78.31(24.75) *	74.62(20.16)	78.57(16.79)	88.30(27.55)	86.32(21.20)	69.11(17.31) *
at most, some secondary	80.39(29.36)	80.93(36.85)	76.73(27.47)	74.55(19.68)	78.42(19.87)	92.39(24.16)	88.65(24.92)	61.10(21.71)
year 10 only	87.91(22.89)	73.97(42.46)	69.89(29.38)	67.99(22.74)	76.56(19.81)	92.84(14.46)	84.14(24.26)	64.82(19.38)
year 12 and or trade school	93.12(11.87)	80.70(34.34)	78.94(23.56)	76.20(20.32)	79.68(16.50)	88.50(28.18)	85.26(22.25)	70.73(16.76)
degree/postgrad/RN	92.71(16.92)	88.13(29.21)	81.37(23.49)	74.61(18.15)	77.26(15.01)	84.75(31.36)	88.96(15.74)	69.73(15.48)
Household composition:	91.57(16.78)	81.92(34.47) *	78.39(24.74)	74.68(20.14)	78.56(16.76) ** *	88.09(27.71) ***	86.20(21.23)	69.13(17.27)
Single with child	91.10(17.73)	83.77(33.22)	79.36(25.86)	75.37(19.55)	75.60(19.00)	88.02(29.07)	85.69(23.92)	69.50(16.41)
Married /de facto w/o child	88.36(15.61)	79.93(38.20)	75.08(23.69)	73.09(20.46)	83.30(15.68)	90.76(23.60)	88.51(19.33)	68.84(19.27)
Married /de facto with child	89.52(17.16)	74.59(33.56)	70.36(28.52)	80.23(12.40)	74.29(17.26)	85.48(28.74)	87.19(13.78)	59.93(19.31)
Single w/o child	94.84(14.93)	84.42(30.56)	81.07(21.61)	74.80(21.31)	81.84(11.27)	90.00(22.30)	86.45(17.16)	70.55(16.51)
Other household status	92.15(19.23)	43.34(51.43)	66.59(29.66)	61.49(23.71)	77.28(9.40)	55.52(51.73)	75.57(25.22)	63.66(21.72)
Usual area of residence	91.57(16.78)	81.93(34.46) *	78.39(24.73)	74.68(20.14)	78.56(16.76)	88.08(27.72)	86.20(21.23) *	69.14(17.28)
Woden Valley	95.25(8.39)	83.07(32.21)	80.10(24.16)	78.67(15.80)	80.95(15.25)	88.30(27.12)	84.34(18.23)	72.51(14.41)
Central Canberra	89.90(17.03)	92.33(22.27)	82.04(20.27)	75.31(19.53)	76.41(18.86)	93.10(20.95)	90.82(16.30)	67.22(21.45)
Belconnen	92.31(19.03)	91.77(23.05)	83.42(19.07)	69.76(24.82)	79.15(13.05)	94.00(16.57)	92.42(12.35)	69.09(13.34)
Tuggeranong	90.96(17.56)	78.20(37.54)	76.55(26.27)	74.62(20.03)	78.35(17.25)	86.09(30.22)	84.69(23.42)	68.79(17.61)

* p<0.05 ** p<0.01 *** p<0.005 **** p<0.0001

APPENDIX D

Table 3: Stepwise regression models of the eight SF-36 scales showing multivariate associations (Beta coefficients with standard errors in brackets) with socio-demographic variables, recent hospitalisation status, and disability status.

VARIABLES	PF (n=395)	RP (n=400)	BP (n=402)	GH (n=395)	MH (n=400)	(r
Age	-2.20(0.2) ****	-1.50(0.5) **	-	-1.08(0.3) ***	-	
Gender(female)	-4.28(1.3) ***	-	-	5.01(1.9) **	-	-7
Hospitalisation status:						
Not hospitalised within last month	^	^	^	-	^	
Hospitalised within last month	-15.67(3.1) ****	-42.65(7.3) ****	-27.80(5.6) ****	-	-20.32(4.1) ****	-35
Disability status:						
No disability	^	^	^	^	-	
Some(or unspecified)disability	-10.14(2.3) ****	-16.70(5.3) ***	-15.10(4.1) ***	-15.90(3.3) ****	-	
Moderate or extreme disability	-46.59(3.8) ****	-60.11(8.2) ****	-26.19(6.2) ****	-12.87(5.4) *	-	-16
Employment status:						
At least full-time	-	^	-	-	^	
Part-time	-	-7.56(3.5) *	-	-	-4.80(1.8) **	
Unemployed./not in labour force	-	^	-	-	^	10
Education Status						
at most, some secondary	-	-	^	^	-	
year 10 only	-	-	-9.37(3.4) **	-7.97(2.8) ***	-	
year 12 and or trade school	-	-	^	^	-	
degree/postgrad/RN	-	-	^	^	-	
Household composition:						
Single with child	^	^	-	^	^	
Married /de facto w/o child	^	^	-	^	^	
Married /de facto with child	4.36(1.3) **	6.49(3.1) *	-	^	-6.11(1.5) ****	
Single w/o child	^	^	-	^	^	
Other household status	^	-38.81(9.5) ****	-	-14.33(5.8) *	^	-34
Town centre:						
Woden Valley	^	^	-	^	-	
Central Canberra	^	17.28(4.7) ***	-	^	-	
Belconnen	^	11.94(4.7) *	-	-5.83(2.9) *	-	
Tuggeranong	-4.29(1.3) **	^	-	^	-	
Intercept	79.63(6.7)	4.62(14.7)	27.00(11.1)	75.81(3.4)	42.78(8.1)	28.
R-squared	0.45	0.27	0.13	0.16	0.10	

^ refers to the reference groups * p<0.05 ** p<0.01 *** p<0.005 **** p<0.0001

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Health Series Publications

The Epidemiology Unit of the Department of Health and Community Care has developed an on-going health series of publications to inform health professionals, policy developers and the community on health status in the Territory. Information contained therein will assist in the development of appropriate policy and service delivery models, the evaluation of programs, and an understanding of how the ACT compares with Australia as a whole with regard health status.

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Number 9 *Health Related Quality of Life in the ACT: 1994-95*
Gannon D, Gordon C, Egloff B, Shadbolt B, March 1997