

What can we learn from combining wellbeing satisfaction with the relative importance of wellbeing contributors?

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Abstract

This paper investigates the perceived wellbeing of residents of two coastal rural areas located in the central part of the Great Barrier Reef region in Australia. Typically, wellbeing studies concentrate on collating data from the respondents about their perceptions of levels of satisfaction on specific pre-determined points. However, recording respondents' satisfactions with various contributors to their wellbeing does not provide researchers with an indication of how important those contributors are to the respondents. This paper presents an approach to the analysis of wellbeing that combines the perceived importance of the wellbeing factors with the reported levels of satisfaction with the factor, aggregated to a regional level. A total of 372 individuals were asked to comment on how satisfied they were with 27 wellbeing factors from domains of society, ecology and economy and services. The highest reported satisfaction rates were associated with the family relations, safety, health, education levels and work (>75%). Information about the perceived importance of the wellbeing factors was also recorded and combined with the information about levels of satisfaction into an Index of Dissatisfaction – an index that allows one to identify an “action list”, or set of regional priorities that, if addressed by policy makers, have the potential to enhance regional wellbeing.

Keywords: Australia; Great Barrier Reef; perceptions; regional assessment; satisfaction; wellbeing

Introduction

Human wellbeing is becoming an increasingly important aspect of investigations in planning and management (Hagerty et al, 2001; Hassan et al, 2005; Veenhoven, 2002). Evaluations of the urban quality of life are well documented (Ge and Hokao, 2006; Giannias, 1998; Grayson & Young, 1994; Pacione, 2003; vanKamp et al, 2003), representing either general approaches or focusing on particular domains of the urban quality of life such as health, social cohesion, safety or leisure (for example, Bell, 2006; Berger-Schmitt, 2002; Lloyd and Auld, 2002). In the rural and semi-rural context, interest in human wellbeing has been largely derived from the natural resource management perspectives, in particular through popularization of the

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Millennium Ecosystem Assessment methodologies (Hassan et al, 2005; Millennium Ecosystem Assessment, 2003).

Furthermore, natural resource management agencies, regional planners and other decision makers are facing increased pressure to incorporate the social dimensions of resource management into landscape planning (Larson, in press). However, studies set in rural regions tend to focus on particular groups, such as landholders (Bohnet & Smith, 2007; Broderick, 2005) or indigenous populations (Larson et al, 2006; Richmond 2000). Little appears to be known about subjective preferences, individual contributors and the levels of satisfaction with human wellbeing in the general population that resides in rural areas of Australia.

Although they represent somewhat different and complex constructs, the terms “life satisfaction”, “quality of life”, “welfare” and “wellbeing” are often used interchangeably (Easterlin, 2003; McAllister, 2005). Yet the scope of wellbeing constructs has been expanding in recent years, and now includes not only health, social and economic domains but also incorporates ecological, institutional, cultural and other domains (Alkire, 2002; Cummins, 1996; Jacobs, 1991; Millennium Ecosystem Assessment, 2003; Mitchell, 2000; Narayan et al, 2000; Prescott-Allen, 2001; Schwartz, 1994; van Kamp et al, 2003). Consequently improvements in human wellbeing are increasingly viewed as being dependent on improving ecosystem management and ensuring conservation and sustainable use of resources (Hassan et al, 2005; Larson, in press). Evidently, human wellbeing approaches that consider the paradigm of a “sustainable development” warrant further research.

The importance of both objective and subjective indicators of wellbeing, as sources of different information that aids in reporting, planning, policy and decision making at various spatial levels, has been acknowledged in literature (Esterlin, 2003; Veenhoven, 2002). This study uses the term wellbeing, and it deals with the subjective interpretations and perceived levels of benefits and satisfactions gained through various factors.

To date, research in the area of subjective wellbeing has fallen into two, almost separate, areas: research into the aspects that should be considered for the subjective evaluations and relative importance of each factor in terms of its capacity to influence life conditions; and research into levels of satisfaction with the quality of life (Andrews & Withey, 1976; Deiner & Suh, 1997; Nussbaum & Sen, 1993; Santos et al, 2007). In Australia, the most comprehensive measure of subjective wellbeing is the Australian Unity Wellbeing Index, developed by Cummins and his colleagues at Deakin University, in partnership with the Australian Unity (Cummins et al, 2003). The Australian Unity Wellbeing Index is a subjective index that investigates how Australians feel about their life in Australia, based on extensive annual telephone surveys. These surveys include both measures close to the personal level and those more concerned with generic national issues. Although the survey is conducted at a national level, initial validations did indeed include rural Australians in the survey. People living in the rural areas reported higher levels of satisfaction with personal factors than those living in the cities, but lower levels of satisfaction with national issues. Economic hardship, reduced government and business services, declining opportunities and populations and cultural marginalisation have been put forward as potential explicators of the lower satisfaction scores (Cummins et al, 2003).

Yet Costanza et al (2007) argue that quality of life at any point in time is a function of the degree to which each identified human need is met, and the importance of that need to the respondent or to the group, in terms of its relative contribution to their subjective wellbeing.

They propose that the measurement of quality of life should thus consist of two distinct scales, one that records the degree of fulfilment and the other that records the relative importance of the “need” to the subjective wellbeing. A single measurement representing the degree to which needs of varying priorities are being met thus provides an indication to decision and policy makers of where additional resources should be allocated. Costanza et al (2007) also argue that such single index would also provide a strategy with which communities can compare quality of life levels over time and relative to other communities.

Using data from a survey of more than 300 residents in two rural regions of northern Australia, this paper provides an empirical illustration (and indeed, extension) of Costanza’s et al’s (2007) key point. Specifically, it presents and tests a method for integrating information about perceived importance of wellbeing factors with information about ‘satisfaction’ with those factors, to identify an “action list” of wellbeing factors that might warrant attention from the decision and policy makers in the region under investigation. It is structured as follows.

The paper starts with a brief overview of the study area and the data collection and analysis methods. Results of the mail-out survey from the two case studies on satisfaction with the individual wellbeing factors are presented, followed by the results of the index that combines satisfaction and importance of the factors. The paper closes with the discussion on implications of the results and conclusions.

Study area

This study was conducted in two catchments of the Great Barrier Reef region in Australia. The Great Barrier Reef extends over 2,300 km, parallel to the coast of eastern Australia in Queensland, and covers an area of approximately 350,000 km². The archipelagic complex of over 2,900 reefs was proclaimed a Marine Park in 1975 and a World Heritage site in 1981. Forty catchments, covering a total area of almost 426,000 km², drain into the reef lagoon. The research presented in this paper was conducted in two catchments located in the central parts of the reef region: Murray and Tully rivers catchment (2,900 km²), located in the local government area of Cardwell Shire; and Whitsunday rivers catchment (1,950 km²) located in Whitsunday Shire (Figure 1).

The two shires were selected because they share a number of characteristics typical for the Great Barrier Reef region, however, they also have some important differences. Both Shires are located in the coastal tropical zone and are similar in size. However, Cardwell Shire belongs to the wet tropics bio-climatic area, while Whitsunday Shire is in dry tropics, thus receiving almost half the annual rainfall of the Cardwell Shire. The fastest growing segment of population in both case studies are people 65 years and older, with about one fifth of population born overseas. However, the Whitsunday Shire is growing faster, with population growth rate of 3% compared to 1.7% in Cardwell Shire, while Cardwell Shire has a larger proportion of Indigenous Australians (6.3%) compared to Whitsunday Shire (1.2%) and Australian average of 2.5% (ABS, 2006).

Crime rates against property in both shires are lower than for Queensland overall. On the other hand, there are about 30% more crimes against the person in both shires, per capita, than is the State average, while the “other offences” category, which includes offences such as drugs, alcohol and unlawful behaviour, is 170% higher in Whitsunday Shire and more than 200% higher in Cardwell Shire, compared to the State average (OESR, 2003).

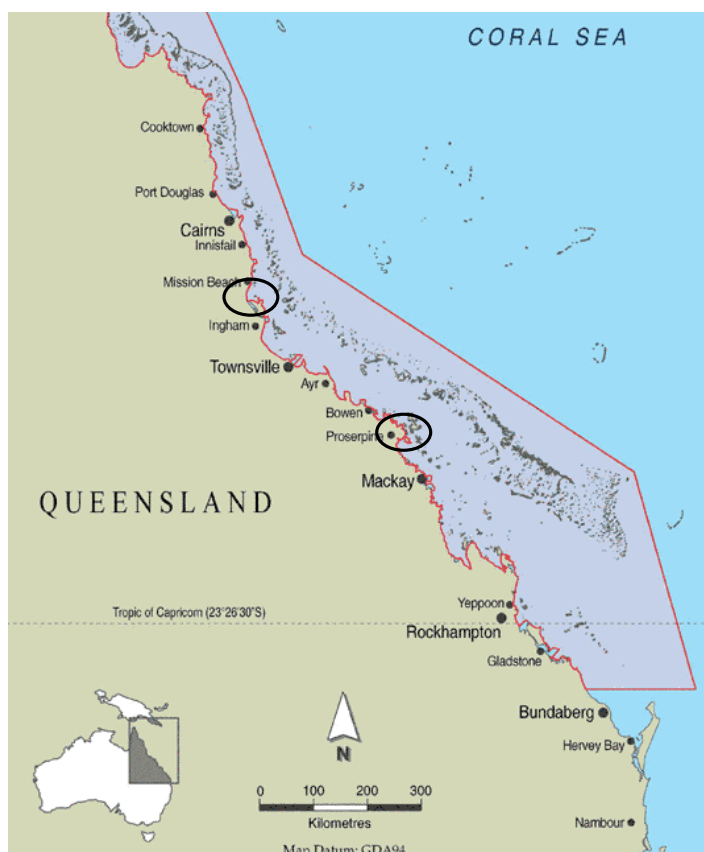


Figure 1. Location of case study areas within the Great Barrier Reef region of Australia

Educational levels are relatively low in both case studies, with 43% of the population of Cardwell Shire and 37% of Whitsunday Shire having finished 10 years of formal schooling or less. Unemployment rates in both case studies are lower than those for Queensland, however, household median weekly incomes are also slightly lower than Queensland state average (Hug & Larson, 2006). The highest gross economic value and majority of employment in Cardwell Shire are in the agricultural sectors, while the economy of the Whitsunday Shire is dominated by tourism.

Large parts of Cardwell Shire belong to the Wet Tropics World Heritage Area, thus 67% of all land in the shire is under protection, compared to 29% under protection in Whitsunday Shire. The main land uses in both shires are sugar cane and livestock grazing.

Methods

Data collection

The methodological approach used in this paper is based on an integrated conceptual model of wellbeing that includes factors of wellbeing from ecological, social and economic domains, developed by Larson (Larson, 2006; Larson et al, 2006; Larson, 2007; Larson, in press). The approach allows for subjective quantification of the factors of wellbeing most important to the respondent. The wellbeing factors included in the questionnaire were selected based on a two step process. First, a generic list of ecological, social, economic and services related factors was compiled from literature, influenced mainly by frameworks based on integration of natural environment with human wellbeing (Alkire, 2002; Hassan, 2005; Millennium Ecosystem Assessment, 2003; Prescott-Allen, 2001; van Kamp et al, 2003; Veenhoven,

1996). Then, the list was refined as a result of discussions with peers, government agency representatives, and community representatives from the proposed case study areas. Twenty seven wellbeing factors included in the final questionnaire were grouped into three domains:

- Society – Family and community domain, consisting of: Family relations; Community relations; Personal/family safety; Cultural identity; Personal/family health; Civil and political rights; Personal/family education levels; Council relations; and Sports, travel, entertainment.
- Ecology – Natural environment domain, consisting of: Air quality; Water quality; Soil quality; Access to the natural areas; Biodiversity; Swimming, bushwalking and other activities in the nature; Fishing, hunting, collecting produce; Beauty of the landscape and beaches; and Condition of the landscape and beaches.
- Economy and services domain, consisting of: Work; Income; Housing; Health services; Recreational facilities; Condition of the roads; Public infrastructure and transport; Training and education services; and Support services.

The participants were asked to choose 5-7 of the wellbeing factors that they considered the most important. They were then asked to assign to those factors relative levels of importance by allocating points between 1 (least important) and 100 (most important) to each factor selected. In addition, they were asked to record their satisfaction with each factor, on the scale from 0 (least satisfied) to 100 (most satisfied).

Based on the total number of registered households in the data base (7,858), it was determined that the survey sample of around 360 should be required for 5% confidence interval (Krejcie & Morgan, 1970). Selection of participants was based on a randomly chosen first number, followed by selected number entry in the original data base until the desired sample size was achieved. A total of 824 surveys were mailed out, using Dillman's (2000) tailored survey method technique. A total of 372 valid responses were received, 178 from the Cardwell Shire and 194 from the Whitsunday Shire, representing an overall mail-out response rate of about 45%. Sample was tested for non-response error by comparing the demographic data of respondents with demographic data from the Australian Bureau of Statistics (ABS), for the case study shires as a whole. The comparison included gender, age, marital status, cultural background, education and sector of employment. The non-response testing did not reveal any major gaps between survey sample and total population.

Data analysis

Levels of participants' satisfaction with the factors of wellbeing selected as the most important to them were recorded in the survey and the average satisfactions recorded are reported here. The Percentage of Scale Maximum method (Cummins, 2003) was used to process the data, which was then analysed by independent t-test in SPSS 14.

A method developed by Larson (in press) was used to calculate the levels of importance of individual wellbeing factors, as perceived by respondents. One of the key critiques of subjective approaches to the study of human wellbeing is that choice of factors to be included in the surveys as well as weights assigned represent selective decisions made based on expert judgement, system of norms dominant in a given society, or arbitrarily (McAllister, 2005). The method used here addresses this limitation by allowing respondents to (a) select the factors; (b) add new factors as needed; and (c) assign a 'weight' to them. The weights, W ,

which each respondent, i , assigned to each factor, k , were then normalised to ensure that the sum of each individual's weights was equal to 100.

Each individual, i , was also asked to indicate – on a scale of 0 to 100 – how ‘satisfied’ (S) (s)he was with each factor, k , yielding S_{ik} . For ease of argument later in this paper, the score was inverted into a dis-satisfaction score as follows:

$$DS_{ik} = 100 - S_{ik} \quad (1)$$

Combination of individual weights attributed to factors and individual dis-satisfaction with that factor is then used to construct a weighted regional Index of Dis-Satisfaction (IDS) for each factor k :

$$IDS_k = \frac{1}{N} \sum_{i=1}^N W_{ik} \cdot DS_{ik} \quad (2)$$

Where N is the number of respondents per shire, be it Cardwell or Witsunday.

The following variables are thus taken into account in creation of the IDS: average weight assigned to the factor by all respondents; percentage of respondents selecting the factor; and average dis-satisfaction score assigned to the factor (formula 2).

Table 1 highlights the characteristics of the IDS:

- 1) factors with high importance and high dis-satisfaction (*i.e.* low satisfaction) score highly in the index;
- 2) factors with high importance and low dis-satisfaction or low importance and high dis-satisfaction score modestly;
- 3) factors with both low importance and low dis-satisfaction only contribute marginally.

Table 1. Characteristics of the Index of Dis-satisfaction

Dis-satisfaction Importance	High	Low
High	++	+
Low	+	+0

In his analyses of 16 studies on life satisfaction in English-speaking western countries, Cummins (1995) reported that life satisfaction of 75% (2.5%) was recorded in all of the studies. He therefore proposed that a “normal” or homeostatic level of satisfaction with life, in the population of western countries, is between 70-80% (Cummins & Nistico, 2002; Cummins et al, 2002; Cummins, 2003). The homeostatic level is explained as a cognitive mechanism by which most of the people in a population sample actively maintain their life satisfaction by means of internal homeostatic control, under normal conditions. However, homeostatic failure might occur as a result of unfavourable extrinsic conditions (Cummins et al, 2002). Cummins therefore proposes that if satisfaction values in the population sample are lying under the homeostasis level, then the majority of the population are experiencing homeostatic failure. Such failure, he argues, is caused by the external forces and objective changes in life circumstances.

This hypothesis might be of interest if the Index of Dis-Satisfaction (IDS) is to be used as a tool for informing policy and decision makers, arguing that policy and decision makers should not be concerned about the factors receiving satisfaction scores above 70%, but might want to further investigate causes of lower scores. Thus, index of dis-satisfaction (IDS) proposes to exclude from the “action list” wellbeing factors receiving high satisfaction scores (70% and above) and concentrate on factors that have highest potential to improve quality of life of the residents, if restored.

Results

Wellbeing satisfaction

Levels of satisfaction with the wellbeing factors, based on the satisfaction scores assigned by participants to each wellbeing factor selected, are presented in Table 2.

Table 2. Levels of satisfaction with the wellbeing factors, ranked from the lowest to the highest satisfaction (where 0 is lowest and 100 is highest), wellbeing factors listed based on first set of rankings

Wellbeing factors	Both Shires combined set		Cardwell Shire		Whitsunday Shire	
	Rank	Score	Rank	Score	Rank	Score
Council relations	1	35.8	3	45.7	1	28.8
Roads condition	2	42.7	2	40.4	2	44.7
Public transport	3	46.9	1	33.8	13	68
Recreational facilities	4	50.2	4	50.7	3	49.9
Civil and political rights	5	56.3	6	53.7	7	58.3
Fishing, hunting, collecting produce	6	57	8	55	8	58.4
Access to natural areas	7	58	7	55	9	61.2
Sports, travel, entertainment	8	60.5	13	66.5	6	57.9
Condition of the landscape and beaches	9	60.6	9	56.2	11	64.5
Biodiversity	10	61.3	-	-	10	61.3
Housing	11	61.6	22	77.4*	4	49.9*
Health services	12	61.7	10	56.5*	12	67.8*
Training and education services	13	62.7	5	50.8*	19	74.6*
Water quality	14	64.2	18	73.2*	5	57.6*
Support services	15	68.3	11	61.3	22	75.3
Community relations	16	68.6	12	65.3	15	71.8
Soil quality	17	69.8	14	69.2	14	70.3
Beauty of the landscape/beaches	18	71.9	16	70.8	16	72.9
Income/financial security	19	73	17	72	18	73.9
Air quality	20	73.3	15	70.1	21	75.3
Cultural identity	21	74.3	19	73.3	20	75
Swimming, bushwalking and other outdoor activities	22	74.7	21	76.7	17	72.9
Work	23	76.1	20	75.8	24	76.4
Personal/family education levels	24	77.3	23	79.2	23	75.7
Personal/family health	25	79.2	24	79.2	25	79.3
Personal/family safety	26	83.2	25	84.2	26	82.3
Family relations	27	86.2	26	88	27	84.6

* P<0.001; in italic = Factors receiving satisfaction scores of 70% and above

It can be observed from the table that satisfaction scores are fairly consistent across the two shires. In both Cardwell Shire and Whitsunday Shire, the respondents were least satisfied with the council relations, road conditions and recreational facilities, while the highest satisfaction was recorded with family relations, safety, health, education levels and work. Although satisfaction rankings with swimming, bushwalking and other outdoor activities; work; and air quality; differ between the two case studies, those factors have received on average more than 70 points of satisfaction in both cases.

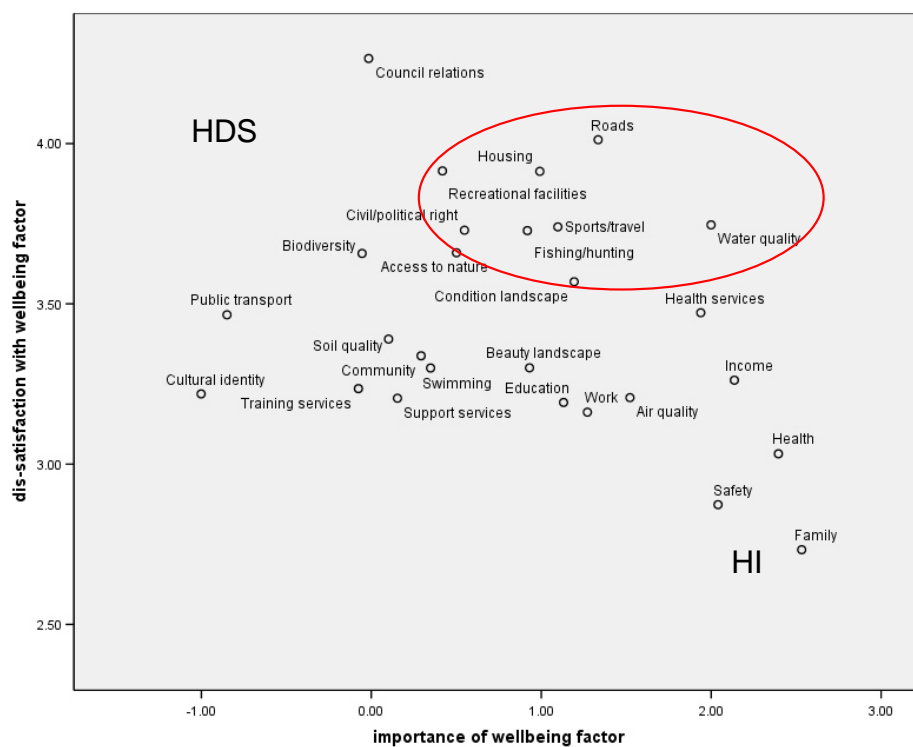
However, a few factors appear to be influenced considerably by the local conditions. For example, levels of satisfaction with both housing and water quality are significantly higher in Cardwell Shire than Whitsunday Shire (Table 2). Housing received an average satisfaction score of 77.4% in Cardwell Shire, while the score was significantly lower in Whitsunday Shire, 49.9%. Water quality similarly received significantly higher satisfaction scores in Cardwell Shire (73.2%) than Whitsunday Shire (57.6%). On the other hand, health services and training and educational services have received significantly higher satisfaction scores in Whitsunday Shire (67.8 and 74.6%, respectively) than in Cardwell Shire (56.5 and 50.8%, respectively). Public transport and support services also received very different rankings between the two shires, however, numbers of respondents selecting those factors were too low to justify statistical testing.

Both levels of importance and satisfaction scores were transformed using natural log function before plotting them on a graph (Figure 2). The majority of the wellbeing factors on the graph appear to be arranged along a negative sloping curve, less pronounced in the case of Whitsunday Shire ($R=0.302$; Figure 2a) than Cardwell Shire ($R=0.512$, Figure 2b). The factors range from those receiving high dissatisfaction scores but low importance, located in the upper left quadrant of the graphs (labelled HDS in Figure 2), to those receiving very high importance but low dissatisfaction scores, located in the lower right quadrant (labelled HI in Figure 2).

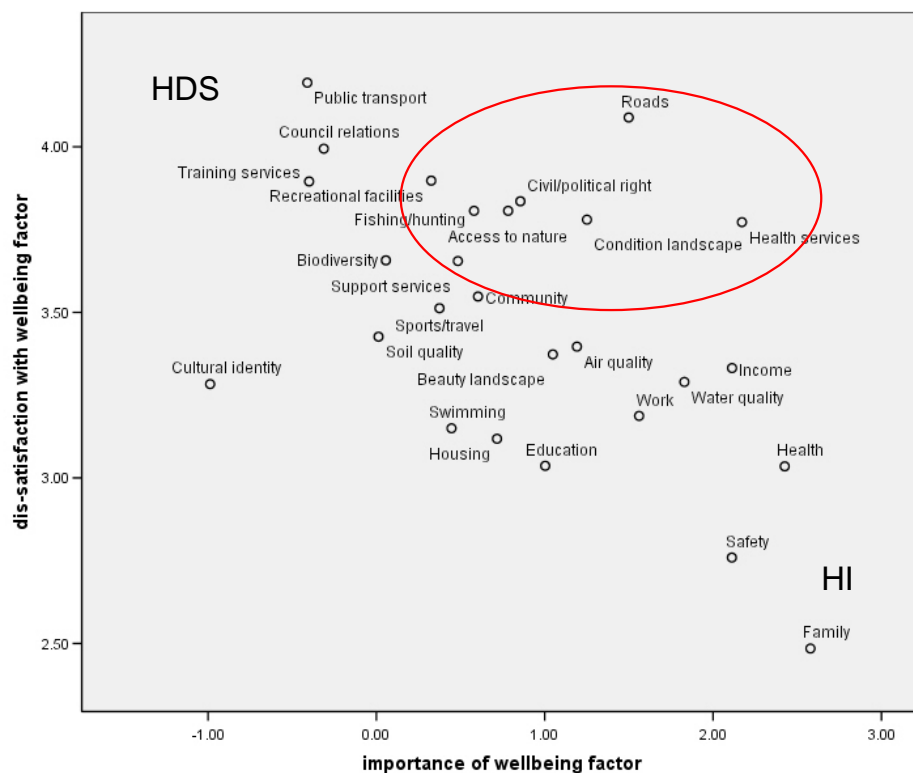
However, a few wellbeing factors appear as outliers. A few factors, such as cultural identity, located in the lower left quadrant, have received low weights for importance but relatively high scores of dis-satisfaction. Low importance of those factors is partially due to low numbers of respondents selecting them as contributors to their wellbeing. Therefore, this group of factors might be of concern to only a specific sub-group of the population and thus warrants further investigation.

Another group of outliers, located in the upper right quadrant of Figure 2 (circled), has received both high importance weights and high dissatisfaction scores. In Whitsunday Shire, this group comprises of roads, water quality, housing, sport travel and entertainment, health services, fishing and hunting and the condition of the landscapes and beaches; while in Cardwell Shire it comprises of roads, health services, civil and political rights, condition of the landscape and beaches and access to the natural areas. These wellbeing factors are labelled as “action items” as they appear to be issues that should receive further attention from the policy makers.

In the next step, levels of importance and satisfaction scores were combined into a single score, “Index of Dis-satisfaction”.



(a) Whitsunday Shire



(b) Cardwell Shire

Figure 2. Comparison of importance and satisfaction with wellbeing factors in Whitsunday Shire (a) and Cardwell Shire (b)

Index of dis-satisfaction (IDS)

The indices of dis-satisfaction (IDS) are presented in Table 3. High scores indicate that factor was selected by a large proportion of respondents, had received high scores for importance and /or had received low scores for satisfaction. Factors that received satisfaction scores of over 70 were deemed above homeostasis levels (Cummins et al, 2002) and thus not included in IDS.

Factors receiving the highest scores in IDS correspond well with the factors in the top right quadrant of Figure 2. In the case of Cardwell Shire, health services, roads and condition of the landscapes all received more than 100 points in the index. In Whitsunday Shire, water quality, health services and road condition received more than 200 points, with housing, sport, travel and entertainment and condition of the landscapes all receiving more than 100 points.

Table 3. Index of Dis-Satisfaction (IDS) for Cardwell Shire and Whitsunday Shire, where higher scores indicate higher attention attributed to the factors by respondents

Cardwell Shire		Whitsunday Shire	
Wellbeing action list	IDS scores	Wellbeing action list	IDS scores
Health services	360	Water quality	308***
Road condition	258	Health services	250*
Condition of the landscape	147	Road condition	212
Access to nature	94	Housing	127***
Civil and political rights	93	Sport, travel, entertainment	121***
Fishing, hunting	67	Condition of the landscape	118
Community relations	62	Fishing, hunting	93
Recreational facilities	58	Recreational facilities	79
Support services	55	Civil and political rights	74
Sport, travel, entertainment	39	Access to nature	64
Public transport	36	Council relations	52
Council relations	35	Biodiversity	36***
Soil quality	31	Public transport	15
Training and education	30		

IDS = Index of Dis - Satisfaction score;

Only factors with recorded dis-satisfaction score of >30% (satisfaction scores of <70%) are included

IDS scores for wellbeing factors different between the two shires at * =10% level; ** = 5% level and *** = 1% level

Health services have received the highest scores in IDS for Cardwell Shire, while water quality topped the ranking in Whitsunday Shire. This is in line with the satisfaction results reported in Table 2, where health services received lower satisfaction scores in Cardwell Shire, while water quality received lower satisfaction scores in Whitsunday Shire. Both water quality and housing received high IDS scores in Whitsunday Shire, however, due to a high level of satisfaction with those factors in Cardwell Shire, they were excluded from the Cardwell Shire IDS action list.

Overall, ranking of the factors at the regional level changed significantly when both importance and satisfaction were recorded rather than satisfaction only. For example, public transport, roads condition and council relations, topped the dis-satisfaction list by receiving lowest satisfaction scores in the study (Table 2). However, once the dis-satisfaction scores

were combined with the importance scores, out of those three factors only roads condition maintained its position at the top of the list (Table 3).

Discussion

The research reported in this paper investigated satisfaction with the various factors of wellbeing, and then combined satisfaction levels with the self-reported importance of each factor to individual wellbeing. Two case studies reported here are located in the coastal rural areas in the central part of the Great Barrier Reef region in Australia, thus contributing to the body of literature investigating quality of life and wellbeing in the context of rural regions of developed countries.

Five factors receiving the highest satisfaction scores in both case study regions, as recorded in this study, were family relations, personal/family safety, personal/family health, personal/family education levels and work. This finding appears to be in support of the “positive cognitive bias” argument developed by Cummins and Nistico (2002), which proposes that personal cognitive mechanisms create positively biased satisfaction levels with personal factors. If personal factors tend to receive higher satisfaction scores, self-assessment of personal factors is potentially not correlated to “objective conditions”. For example, very high satisfaction with personal and family safety was recorded in both Shires. However, such a high satisfaction with safety does not appear to be warranted based on objective data. Crime data for the regions indicate that both offence rates against person and other offences, such as drugs, liquor and good order offences, are higher in both areas under the study than in Queensland on average. Crime against property, however, was lower in both shires than state average.

On the other hand, satisfaction with the external factors is more driven by the actual life conditions. Variations between the two case studies in rating of several external factors, such as water quality and housing, potentially indicate that the scores are indeed representative of the “objective conditions” specific to the regions. Nonetheless, further research in comparison of subjective with more objective indicators is warranted, particularly in the context of what happens if the subjective and objective indicators are not consistent, and which one should take priority.

Relevance of satisfaction levels to policy and decision making could be improved by taking into account the recorded importance of each factor. Index of dis-satisfaction (IDS), presented here, combines data on importance of wellbeing factors with the data on satisfaction. The combined scores present a new angle to the data. For example, out of five factors with lowest satisfaction scores recorded in the study, only one has been identified as a concern by large number of respondents, and thus have remained high on the list once satisfaction scores were combined with the importance weights.

IDS method also appeared capable of capturing specific differences between the two case study areas. For example, both water quality and housing had low satisfaction scores in Whitsunday Shire and retained their prominent positions in the IDS for that shire. However, further testing of validity, sensitivity and transferability of the index is warranted.

Two of the high scoring factors in the IDS, water quality and the condition of the landscape and beaches, came from the ecological domain, thus indicating the importance of integrated approaches to wellbeing that also include environmental concerns.

Although the IDS method allowed the researcher to determine “problem areas” as perceived by majority of respondents, the method does not provide an insight into the nature of the problem perceived. A more specific, detailed and qualitative participatory method should be used as a follow up to this tool to further the understanding of the context and background of each wellbeing factor with high IDS score. Preliminary face to face interviews with the residents of the Whitsunday Shire, for example, indicate that the main concern about quality of water are periodic episodes of discoloration of the piped drinking water, and that main responsibility for this is perceived to be with the Shire Council (Larson & Stone-Jovicich, 2008).

Problem areas are likely to change over time, as a result of both extrinsic drivers and the intrinsic changes in population such as current stage in individual’s life cycle, recent experiences, or the attention particular factors receives from respondent’s peers (Schwarz & Strack, 1999). Therefore, longitudinal studies are of vital importance for following regional trends. By tracking both satisfaction and importance scores separately, researchers could test whether overall scores are improving because of changes in how well needs are being met or because of changes in the importance of wellbeing factor (Constanza et al, 2007).

Thus, two types of wellbeing factors have a potential to become “problem areas” in the future. One type are factors currently receiving high importance but also high satisfaction scores, such as for example safety. This type of factor might be susceptible to sudden change in satisfaction levels, for example, as a result of change in recent experience. The other type of factors of potential interest in the future are those currently receiving low satisfaction scores but being of concern to only a minority of the residents, such as public transport. Factors receiving low satisfaction scores could become important in the future if numbers of people concerned with the factor increase, for example, if increasing numbers of people are to become interested in public transport as costs of individual transport rise as a result of rising petrol prices. Although the mechanisms by which those two types of factors would potentially become issues in the future are different, both types of factors might warrant long term monitoring of change.

Better understanding of residents’ subjective wellbeing plays an increasingly recognised role in regional planning and policy and decision making. Data based on normative objective approaches such as data typically collected by central statistical agencies does not contain information on how those objective indicators are perceived by people (Veenhoven, 2002). A methodological approach reported here can be used as a tool for communication of priorities, as perceived by residents, to policy and decision makers.

Conclusions

The main focus of the subjective approaches to wellbeing is to provide insights into individual satisfaction with various contributors to wellbeing. They take into account individual experiences and help understand and communicate the interpretations, priorities and needs of the individuals. To better understand the subjective wellbeing on an aggregated level such as a region, it is therefore important to communicate both needs and the perceived satisfaction of those needs.

This study proposed a tool for aggregation of data on both importance and satisfaction with the wellbeing factors, Index of dis-satisfaction (IDS). The index was tested in two case study regions, and differences between the regions were recorded both in terms of importance of wellbeing contributors and levels of satisfaction. Factors receiving the highest scores in IDS, that is being of high importance to large number of respondents and attaining low satisfaction scores, came from both the domain of economy and services as well as from the domain of ecology and natural environment. Important role of ecological factors as contributors to wellbeing recorded in this study supports other studies suggesting that natural environment should be incorporated in wellbeing studies on a more equal footing to other domains.

Application of this tool in other regions would be needed to further investigate its validity, sensitivity and transferability. Factors of wellbeing important to rural populations in developed countries are not necessarily well understood, and this study aimed to further our understanding of both the wellbeing contributors and the perceived satisfaction in this context. Combination of importance with satisfaction provided a potentially useful policy tool that allows for ranking and creation of “action lists” of few factors most relevant in a specific regional context.

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