

ECONOMIC AND SOCIAL VALUES OF BEACH RECREATION ON THE GOLD COAST



Mike Raybould and Neil Lazarow

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INTRODUCTION AND OVERVIEW OF THE RESEARCH PROGRAM

The research program described in this report was funded by a Commonwealth Research Centre for Sustainable Tourism grant (CRCST Project #100054) and was conducted to investigate the economic and social values of beach recreation on the Gold Coast. The program comprised two sub-projects which were conducted concurrently. The major sub-project involved a survey of Gold Coast City residents use and attitudes toward Gold Coast ocean beach and foreshore areas. In addition, a desk-top study, based on available secondary data, was conducted of tourist use and values of Gold Coast beaches.

The principle researchers were Dr. Mike Raybould and Mr Neil Lazarow. The research commenced in November 2007 and was completed in July 2008.

EXECUTIVE SUMMARY

Study 1

- Study 1 considers the value of Gold Coast beaches to local residents only.
- Surveys were distributed by mail to 8000 local residents and 1862 responses were received—a return rate of approximately 23.5 per cent after allowing for surveys returned as non-deliverable.
- Over 80 per cent of respondents indicated that the beach, parks and foreshore were important or very important to them.
- On average residents visited 10 beaches per month during summer and 6 per month during winter—but visitation was strongly influenced by the distance people lived from the beach.
- It is estimated that Gold Coast residents made a total of just over 40 million beach visits in 2007.
- Using a crude travel cost model it is estimated that average travel costs per adult beach visit were between \$0.50 and \$2.30.
- It is estimated that Gold Coast residents spent somewhere between \$21.5 million and \$91 million in total (between \$64 per adult and \$270 per adult) accessing the beach in 2007.
- The costs incurred in accessing the amenity provide some guidance to the use-values that residents place on the beach and foreshore area; however they provide no indication of the non-use values (e.g. existence or bequest values) that people may hold for the amenity.

Study 2

- Study 2 considers the value of Gold Coast beaches to tourists only.
- It is based on analysis of available secondary data and a number of assumptions about tourist behaviour and value functions. As with any analysis of this type, the estimates are sensitive to the assumptions made.
- Approximately 4.9 million day visitors and 4.4 million overnight tourists (aged 15 and over) visited the Gold Coast in 2006.
- Domestic and international overnight visitors were responsible for approximately 23 million visitor nights in commercial and non-commercial (e.g. ‘visiting friends and relatives’) accommodation.
- Approximately 30 per cent of day visitors, 49.5 per cent of domestic overnight visitors, and 82.3 per cent of international overnight visitors use the beach at some point during their stay (TRA, 2004; 2006a; 2006b).
- This report estimates that tourists made just over 7 million visits to Gold Coast beaches in 2006.
- Analysis of relevant published research, actual travel costs incurred by day visitors, and market prices for relevant recreation goods, suggest a value for a beach visit of between \$15 and \$45.
- Based on the information available our best estimate of the gross value of Gold Coast beaches to tourists alone was between \$106 million and \$319 million in 2006.
- Surveys of visitors to the Gold Coast should be conducted in the future to check some of the assumptions about beach use and value functions made in this analysis and provide greater confidence in the estimates.

Chapter 1

**STUDY 1: A SURVEY OF GOLD COAST RESIDENTS' USE AND
ATTITUDES TOWARD OCEAN BEACHES**

Background and Aims of Study

The beach is generally recognised as the most important recreation amenity in the region for Gold Coast residents, as well as tourists. However, there is very little data to support the role that this amenity plays in the life of Gold Coast residents. This survey set out to collect data from Gold Coast residents regarding their beach use and the values they associate with the beach, and to develop estimates of the economic value of the beach to residents.

The study was commissioned by Sustainable Tourism Cooperative Research Centre (STCRC) at the request of the Gold Coast City Council and was funded through STCRC Grant #100054.

Survey design

The relevant community issues were identified and the content of the survey was developed through four stakeholder focus groups conducted in December 2007. Details of these focus groups and the participants are listed in Appendix A. Following the initial design, the draft survey was tested using a small convenience sample.

Survey administration

The survey was distributed by mail in April 2008. A total of 8000 surveys was mailed to Gold Coast residents, using a commercially obtained mailing list derived primarily from the electoral roll and telephone directories and supplied by Impact Lists Ltd.

Completed responses were received from 1862 residents by the closing date for the survey. The final response rate was approximately 23.5 per cent, after allowing for surveys returned and marked 'no longer at this address' or equivalent.

Results of the Survey

This section presents the results of the survey of Gold Coast residents.

Section 1: Relationship to the beach

Section 1 of the survey explored residents' relationship to the beach. The results indicate that the beach plays an important part in many residents' life and their decision to live on the Gold Coast. The mean response to most of the 6 questions in this section was around 5 on a 7 point scale. The mean response to question 3 was the lowest in this section (4.3) and probably reflects the realities of economic constraints on residents' decision about where to live.

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Table 1: Residents' relationship to the beach

Question	Mean *
1. How important would you say the beach is to you?	4.81
2. How important are the parks and foreshore behind the beach to you?	5.06
3. How important is proximity to the beach and foreshore in your decision about where to live	4.30
4. Are you proud of our city's beaches?	5.24
5. Are you proud of your most visited beach or foreshore area?	5.06
6. Do you encourage friends / family from outside the Gold Coast to visit our beaches?	4.90

* Responses were made on a seven point scale; 0 = completely unimportant or definitely not to 6 = very important or definitely.

Figures 1 and 2 show distribution of responses and illustrate the fact that responses were predominantly on the positive end of the scale to each question.

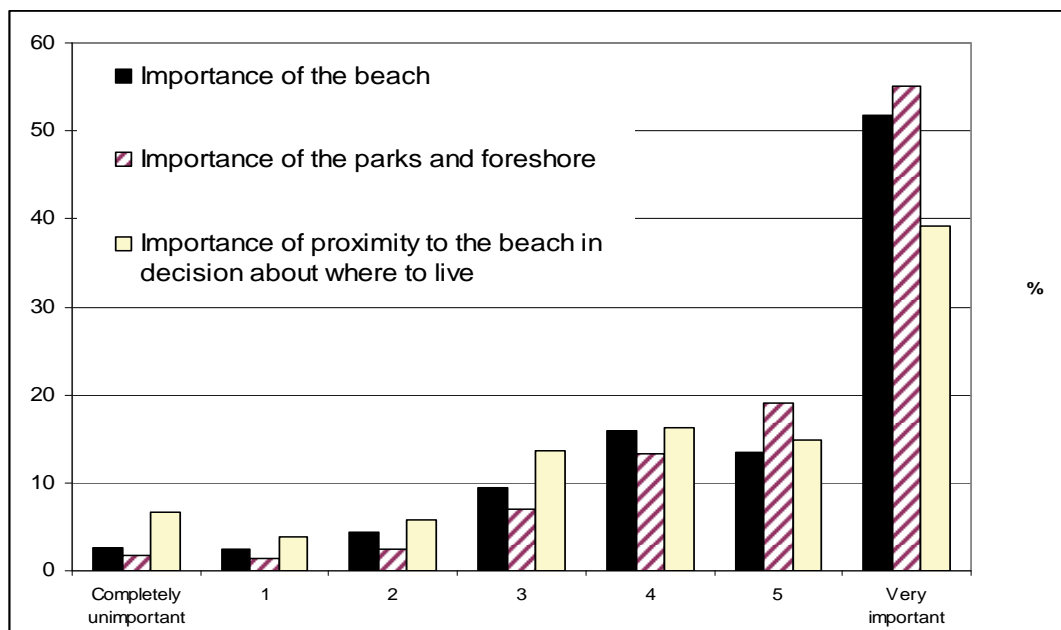
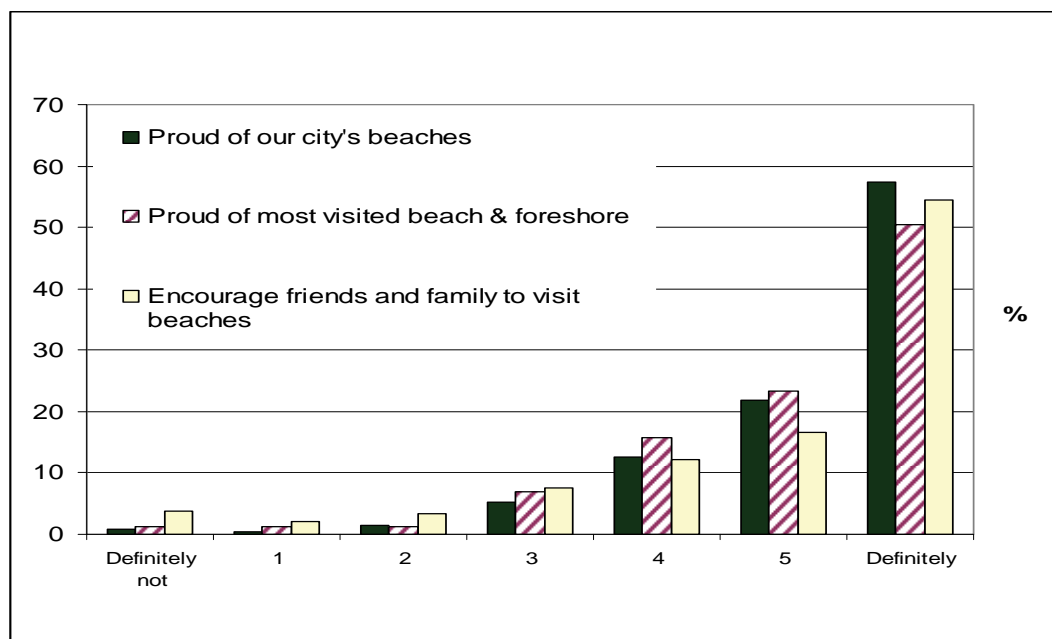


Figure 1: Importance of the beach and foreshore to residents

Figure 2: Pride in our city's beaches and foreshores



Section 2: Beach visitation patterns

Section 2 of the survey explored the frequency and patterns of residents' beach visitation. Overall, respondents to the survey indicated that they visited 10 beaches per month during summer and 6 per month during winter. However, visitation frequency was strongly influenced by how far people lived from the beach (Table 2). Residents who lived less than 1 km from the nearest ocean beach visited the beach more than twice as often as the population average and three times more frequently than those who lived more than 10 km from the nearest beach.

Table 2: Beach visits each month by distance people live from the nearest ocean beach

Distance people live from nearest ocean beach	Visits per month in <u>summer</u>	Visits per month in <u>winter</u>
Less than 1km	21	14
1 – 5 km	13	8
6 – 10 km	9	5
10 + km	7	4
All	10	6

No other demographic variable (e.g. age, gender or household structure) was a significant determinant of the frequency of beach visit.

In survey questions 7 to 10, respondents were asked to identify up to 4 Gold Coast beaches and foreshores that they visited most in the previous 12 months. Figure 3 presents the responses to this question for each of the 25 ocean beaches identified on the Gold Coast. While the survey responses tend to support anecdotal evidence of the relative popularity of the beaches, some caution should be exercised in interpreting the absolute values as analysis of respondents postcodes indicates that high survey response rates were obtained from suburbs like Broadbeach and Burleigh Heads; this may have biased the visitation figures for beaches close to these suburbs.

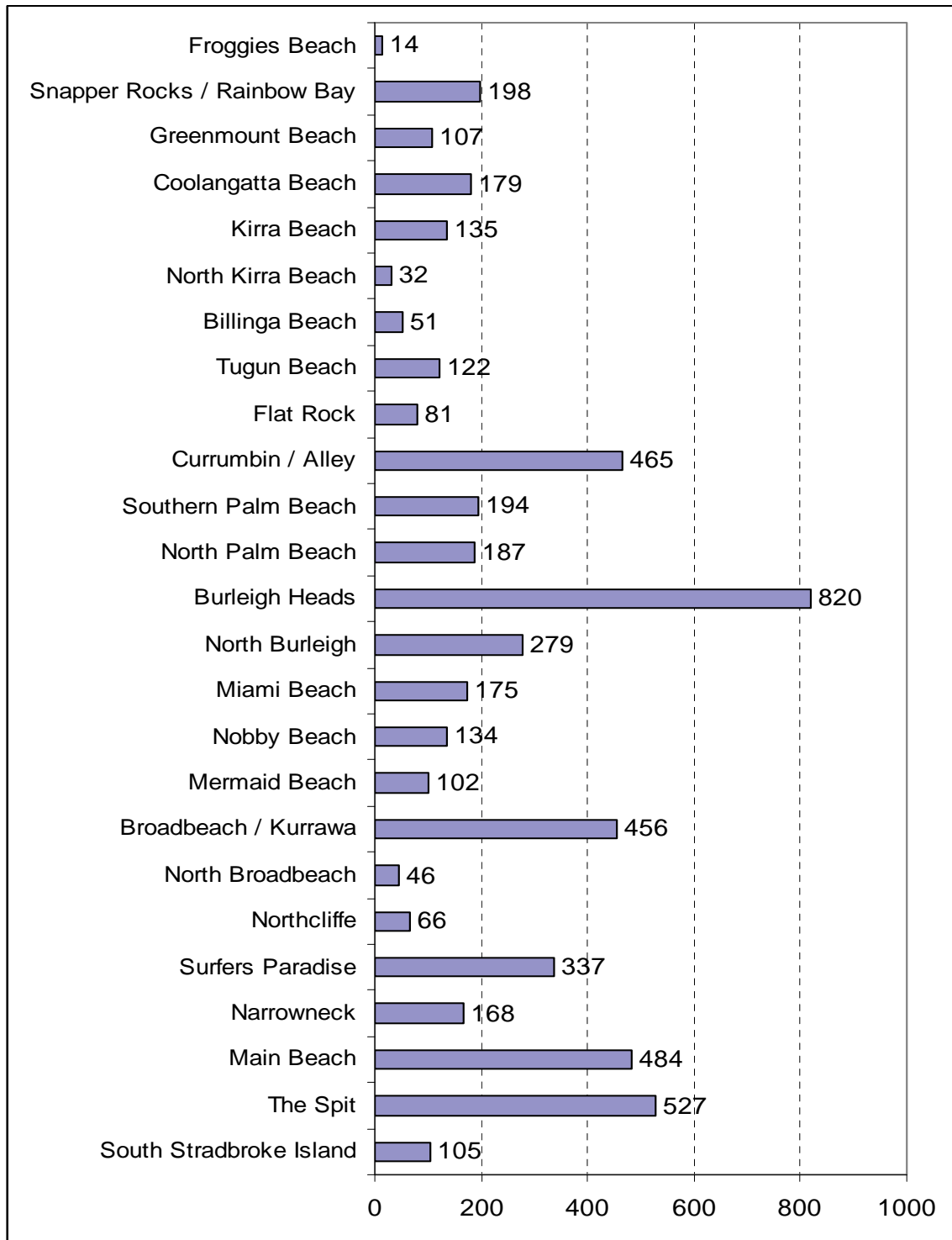
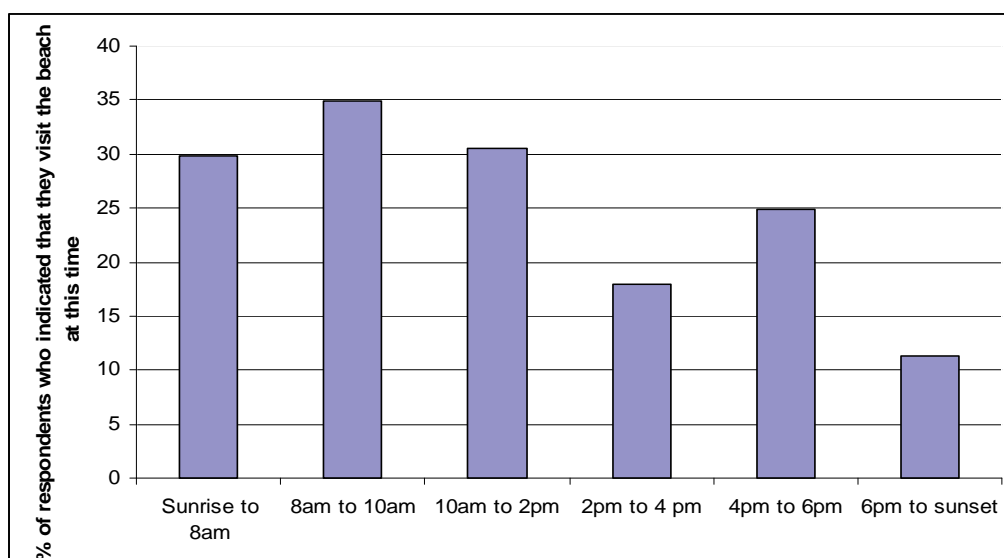


Figure 3: Most visited beaches

Question 12 asked respondents about the time of day that they mostly visited Gold Coast beach and foreshore areas. Figure 4 shows that sunrise to 8 am, 8 am to 10 am, and 4 pm to 6pm were all popular times. A surprisingly large number of people reported visiting the beach in the middle of the day (10 am to 2 pm). However, this question did not ask respondents to differentiate between visitation patterns during summer and winter, or between mid-week and weekend. These dimensions should be investigated in future research.

Figure 4: Most popular times for visiting the beach



* Multiple response options mean that values add up to more than 100%

Section 3: Attitudes to the beach and foreshore area visited most

Section 3 of the survey explored the factors that contributed to residents' decisions to use the beach and foreshore area that they use most frequently. The most important factors all related to cleanliness: of the beach, the adjacent parks and the ocean.

Table 3: Attitudes to the beach and foreshore areas visited most

Rank	Question 13: How important are each of the following in your decision to use the beach and foreshore area that you visit rather than other beaches that you might visit?	Mean *
1	Cleanliness of beach sand	5.30
2	Cleanliness of park adjacent to beach	5.26
3	Cleanliness of ocean	5.19
4	Concerns about vandalism and theft	5.03
5	Safety and lifeguarding services	4.93
6	Parking is available	4.91
7	Showers and toilets	4.70
8	Close to where you live	4.51
9	Easy access via paths or steps	4.41
10	Less crowded on the beach	4.30
11	Less crowded on the foreshore	4.17
12	Conditions on the day	4.15
13	Less crowded in the water	4.03
14	Viewing areas	3.74
15	Jogging or cycling paths	3.74
16	BBQ facilities in park	3.72
17	Play equipment in park	3.32
18	Shops nearby	3.00
19	More privacy	2.98
20	Dogs allowed	2.72
21	Fitness classes at the beach/park	2.30
22	Romantic location	2.28
23	Close to public transport	2.18

* Responses were made on a seven point scale; 0 = completely unimportant to 6 = very important

Section 4: Importance of activities

Section 4 of the survey explored the types of activities that were important to residents during their beach visits.

Table 4: Importance of activities

Rank	Question 14: How important are each of the following activities in your decision to go to the beach and foreshore?	Mean *
1	To be outdoors	5.06
2	Walking jogging on the beach	4.85
3	To be with family and friends	4.70
4	Walking jogging on the foreshore	4.68
5	Relaxing, reading, unwind	4.43
6	Swimming	4.32
7	To bond with nature	4.25
8	Picnics	4.11
9	Sightseeing, people watching	3.60
10	For solitude	3.43
11	Surf lifesaving	3.06
12	Sunbathing	2.74
13	For sport	2.39
14	Beach games	2.35
15	Fishing	2.32
16	To keep fit	2.20
17	Boardriding	2.18
18	Competition	1.66
19	Snorkelling	1.58

* Responses were made on a seven point scale; 0 = completely unimportant to 6 = very important

Section 5: Changes to activities

Section 5 of the survey explored the extent to which residents' beach and foreshore activities had changed over the last 3 to 5 years and the reasons for any change. Almost 18 per cent of respondents indicated that they visited the beach and foreshore area more while 31.5 per cent indicated that they visited less than they had in the past (Table 5).

Table 5: Changes in the frequency of visits over last 3 years

	Percent
Resident less than 3 years	4.6
No change	46.1
Visit more	17.9
Visit less	31.5

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The most frequently cited reasons for a more frequent or less frequent visitation pattern over the last 3 years were changes to family and work commitments (Table 6). Health and ageing issues were also important factors in residents' inability to get to the beach as much as they had in the past and in some peoples decision to seek more exercise on the beach.

Table 6: Reasons for change in beach visitation

People who visit more		People who visit less	
Rank	Reason	Rank	Reason
1	Family commitments changed	1	Work commitments changed
2	Work commitments changed	1	Family commitments changed
3	Relocated / moved house	3	Traffic and parking problems
4	Health / ageing issues (positive)	4	Too many people / crowding
		5	Health / ageing issues (negative)
		6	Relocated / moved house
		7	Physical character of beach changed
		8	Cultural / social character of beach has changed

Section 6: About last trip to beach

Section 6 of the report asked residents about their last visit to the beach or foreshore area. On average respondents travelled 14.4 minutes and 8.7 km to the beach and the distance that they lived from the beach was a significant determinant of time and distance travelled (Table 7).

Table 7: Time and distance travelled on last beach visit

Distance from the beach	Mean time travelled (minutes)	Mean distance travelled (km)
less than 1km	7	1.87
1 – 5km	11	4.36
6 –10km	16	9.56
10km plus	23	18.39
All	14.4	8.73

The dominant method of transport to the beach was private car although a large number of people who lived close to the beach walked (Table 8).

Table 8: Method of transport on last beach visit

Transport method	Frequency	Per cent
Car	1412	80.4
Walk	292	16.6
Public transport	15	0.9
Motorcycle	1	0.1
Bicycle	21	1.2
Other	16	0.9

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Among those who travelled to the beach by private car, 21.6 per cent drove a vehicle with an engine size of 1600cc or less, 51.7 per cent drove a vehicle with an engine between 1601cc and 2600cc, and 26.6 per cent drove a vehicle with an engine over 2600cc.

On average respondents reported that there were 2 occupants per vehicle during their last trip to the beach.

Question 20 of the survey asked respondents to indicate how much they had spent during their last visit to the beach on a number of different categories of goods. Table 9 shows that the estimated mean expenditure per person was approximately \$5.26 and over 75 per cent of the total expenditure was on food and beverage.

Table 9: Expenditure on goods and services during the last beach visit

Expenditure category	Mean expenditure per person (\$)
Food and beverage	3.99
Beach Supplies	0.55
Parking	0.08
Public Transport	0.09
Equipment Rental	0.15
Other	0.40
Total	\$5.26

Section 7: Beach Management

Section 7 (Question 21) of the survey explored residents attitudes towards beach management.

When asked if the natural character of their most visited beach was being well-maintained, 86 per cent of all respondents gave a positive response to this question. Just over 71 per cent of all respondents agreed that the dune system at their most visited beach appeared to be healthy. By contrast, only 47.1 per cent of all survey respondents agreed that GCCC appeared to be listening to the community concerns about their most visited beach and foreshore area, with approximately 30 per cent of respondents having a negative opinion of GCCC's performance (Figure 5).

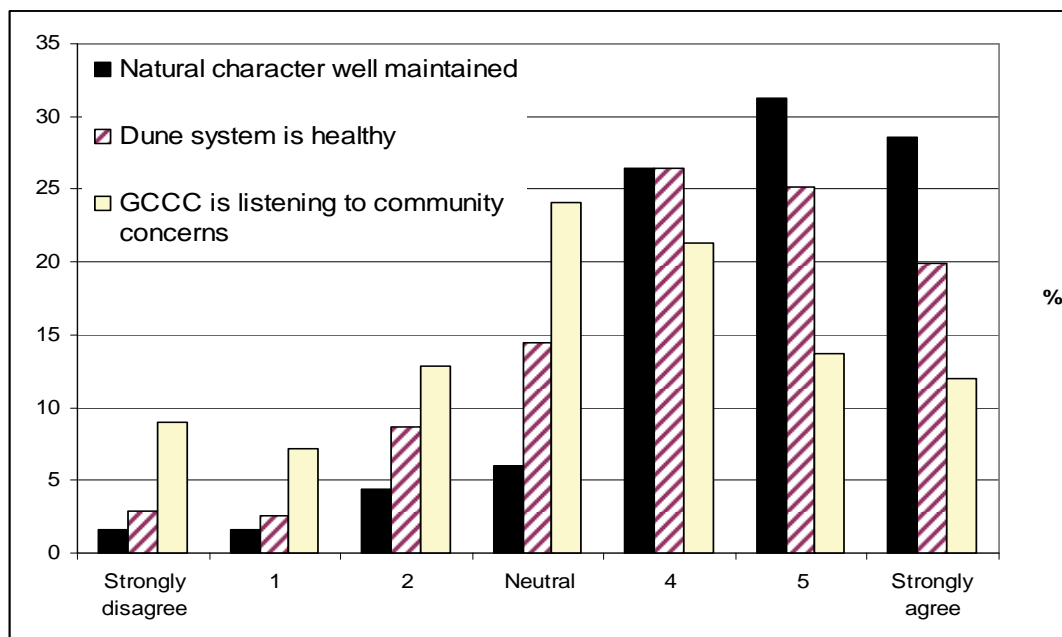


Figure 5: Gold Coast residents' opinions about beach management

The social atmosphere is an important component of beach recreation. With so many activities taking place on the beach or foreshore, there is a risk that some individuals or groups might come into conflict with each other or compete for space in some of the more popular locations. When asked whether there was a good social atmosphere at their most visited beach and foreshore area, most respondents (82.3 per cent) answered positively and when asked whether different user groups got along at their most visited beach / foreshore, most respondents (76 per cent) also answered positively (Figure 6).

Contrary to the researchers' expectations, the issue of overcrowding at surf breaks did not factor as an issue. This may be because of the generally low data returns for the southern beaches area of the city, or because board riders make up a comparatively small percentage of total beach and foreshore users and respondents to this survey.

A key issue for beach management is the need to preserve and possibly enhance the beach going experience for all beach and foreshore users. GCCC frequently receives requests for various types of private use of the Gold Coast's publicly owned beaches. This may be for a one-off event or for an on-going activity. There have also been occasions where individuals or organisations seek to profit privately from the use of the beach or foreshore without formal permission from Gold Coast City Council. Private use of the beach, especially when it is exclusive, can detract from the general welfare of beach users and this is an issue that requires ongoing management. It is also worth noting that public sentiment can change over time and for a range of reasons. For example, a wide range of commercial activities took place on Gold Coast beaches throughout the 1950s and 1960s, ranging from spray on sunscreen and surf mat hire through to weekly carnivals and airplane rides. In order to understand a little more about residents' views regarding private use of the beach and foreshore, 3 questions were included in the survey.

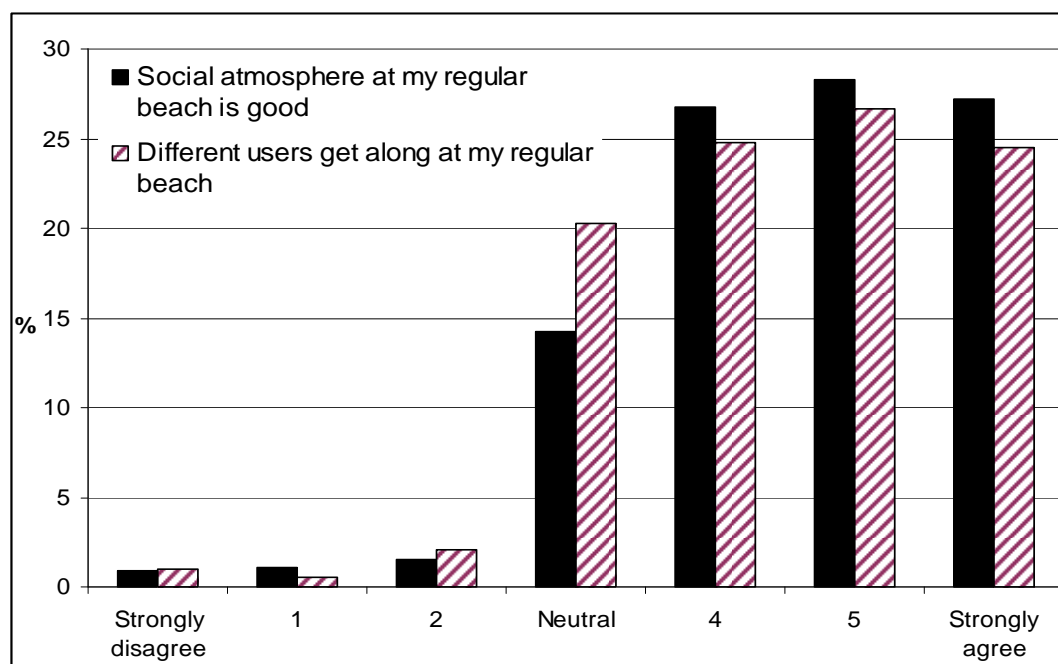


Figure 6: Social atmosphere and compatibility of uses at Gold Coast beaches

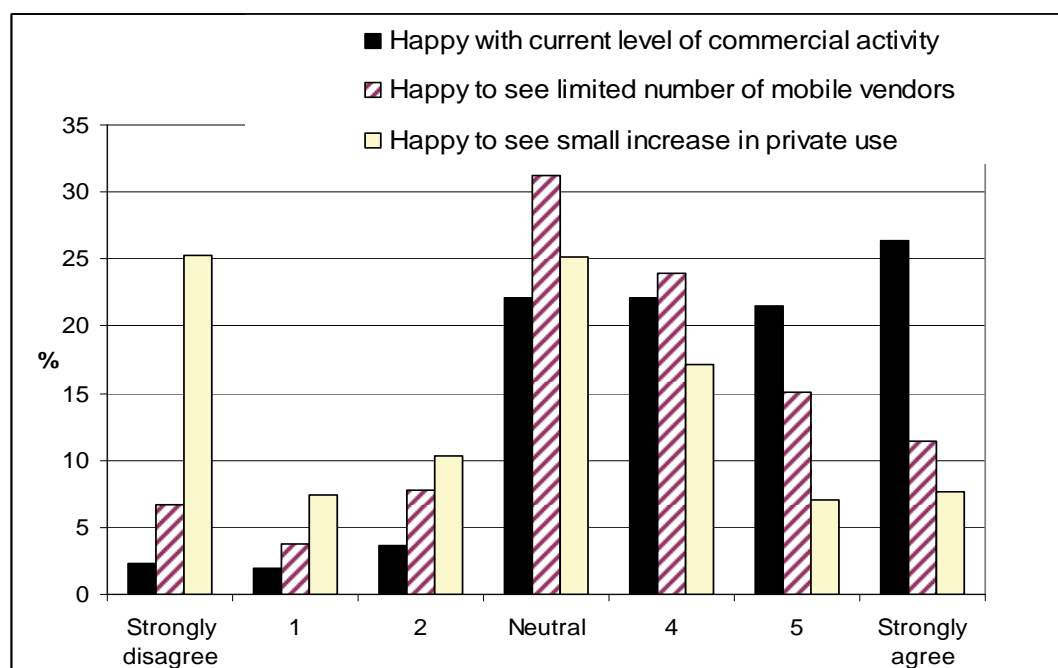
Seventy per cent of respondents indicated that they were happy with the current level of commercial activities at the beaches and foreshores that they used most (Figure 7). When asked whether they would be happy to see a limited number of mobile vendors (e.g. ice-cream, drinks, sunscreen, hats) on their most visited beach and foreshore, 50.6 per cent of respondents answered positively but 18.1 per cent answered the question negatively (Figure 7). However, when asked if they would be happy to see a small increase in the level of private use of their most visited beach and foreshore area (e.g. for weddings, skydiving, equipment rental and boot camps) only 31.9 per cent of respondents indicated that they were in favour of increased private use (Figure 7).

Section 8: Community consultation

Section 8 (Question 22) of the survey explored residents willingness to participate in community consultation processes and activities relevant to beach management.

Community participation is an important part of Gold Coast City Council's coastal planning and management process and a number of programs are currently underway that engage with the community at various levels, from on-ground works such as dune revegetation through to community involvement in the Bold Futures program, a program that aims to incorporate the community's vision for a sustainable city into a blueprint for the Gold Coast for the next 3 decades to the year 2037.

Figure 7: Attitudes to commercialisation of the beach



A number of questions about community consultation and involvement in beach management were included in the survey and these are displayed in Table 10. Approximately 25 per cent of respondents indicated a willingness to participate in on-ground activities such as dune revegetation and between 15 and 25 per cent of survey respondents responded that they would also participate in planning and 'ideas sharing' forums. These responses suggest that Gold Coasters have a keen interest in their coastal environment and that many residents might be willing to take on a more active role in the stewardship of the coast.

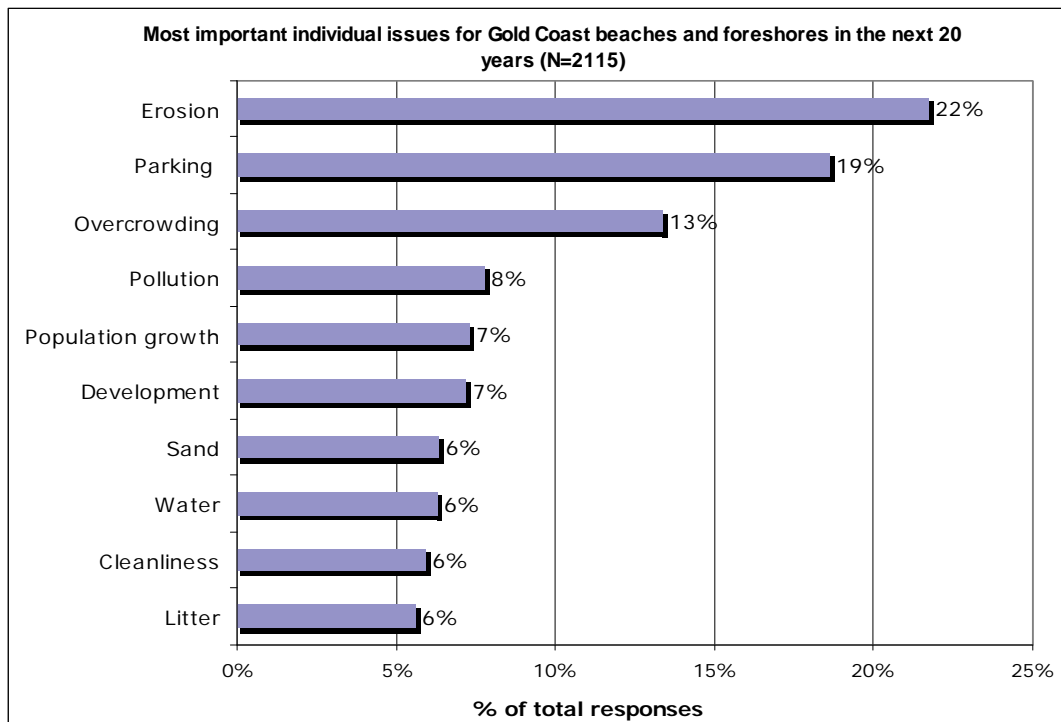
Table 10: Gold Coast residents' willingness to take an active role in coastal issues (N=1854)

Would you be willing to take an active role in coastal issues relating to the areas you visit most?	Yes	No	Don't Know
Participate in a local planning and management committee	17.4%	60.9%	21.7%
Share ideas, knowledge and register issues (e.g. through emails and focus groups)	27.1%	53.7%	19.1%
Attend public meetings	25.3%	57.6%	17%
Attend council meetings	15.9%	66.3%	17.8%
Participate in a dune care (dune revegetation) program at your local beach / foreshore	24%	56.8%	19.3%

Section 9: The future

Section 9 (Question 23) of the survey asked respondents to identify significant issues that they thought the Gold Coast beaches and foreshores would face in the next 20 years. The most important individual issue for Gold Coast residents is beach erosion (22 per cent), followed by parking (19 per cent) and issues related to overcrowding (13 per cent).

Figure 8: Most important individual issues for Gold Coast beaches and foreshores in the next 20 years

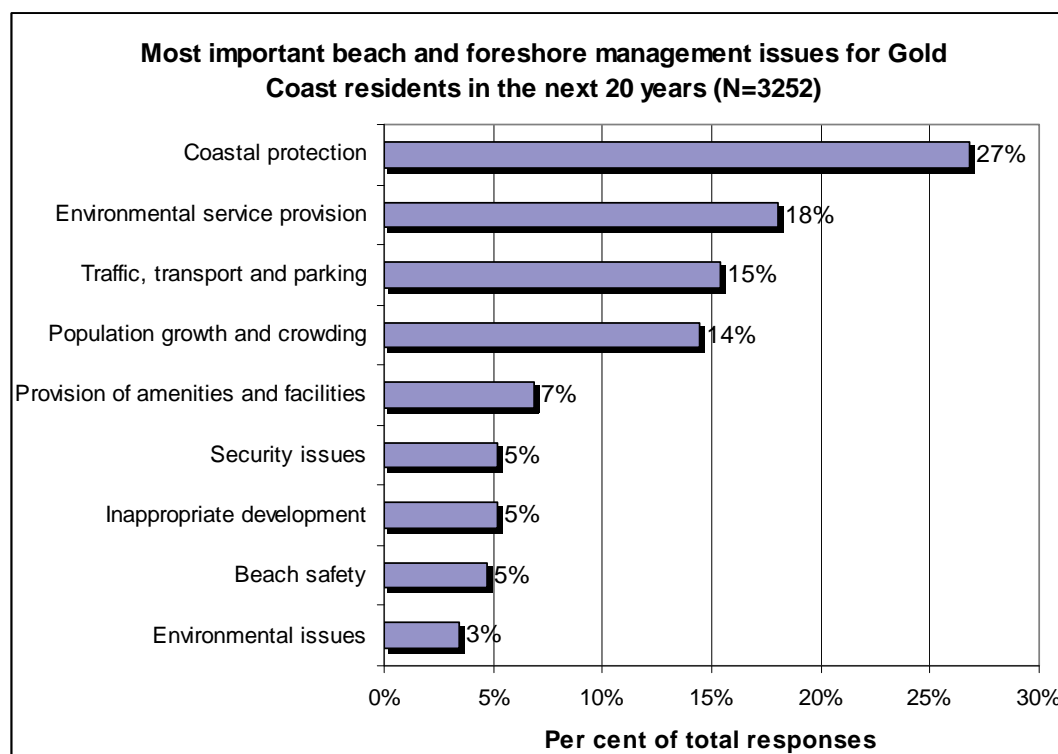


A number of common themes emerged from the responses to this question and it was possible to group related answers into beach and foreshore management categories. The result of this analysis (Figure 9) indicated that the most important resource management issues for Gold Coast residents were:

- Coastal protection issues (27 per cent), which included issues such as erosion, coastal protection and management programs such as beach nourishment, storm damage, cyclones, climate change and sea level rise;
- Environmental service provision (19 per cent), which included issues such as pollution, water quality and the cleanliness of beaches and foreshores (e.g. litter, rubbish);
- Traffic, transport and parking issues (15 per cent), which included issues such as the lack of parking, traffic congestion and public transport;
- Population growth and overcrowding (14 per cent), which included issues such as overcrowding, overpopulation and overuse of areas;
- Provision of amenities and facilities (7 per cent), which included issues such as surf quality and overcrowding, provision of showers, toilets, BBQs and safe swimming areas;
- Inappropriate development (5 per cent), which included issues such as too many developments and high-rise buildings too close to the beach;
- Security issues (5 per cent), which included issues such as vandalism, the homeless, theft and discarded needles;
- Beach safety issues (5 per cent), which included issues such as the importance of safety, lifeguards, sharks and the risks of rips and drowning; and
- Environmental issues (3 per cent), which included issues such as the importance of sand dunes and native vegetation.

It is useful to distinguish between ‘environmental service provision’ and ‘environmental issues’ for the purposes of this analysis. Environmental service provision is intended to capture the management issues related to providing good environmental quality, such as pollution and litter control programs (which might also include community education). Environmental issues describes respondents’ concerns about the importance of foreshore and dune vegetation, wildlife, issues related to the removal of trees and the overall natural character of the city.

Figure 9: Most important beach and foreshore management issues for Gold Coast residents in the next 20 years



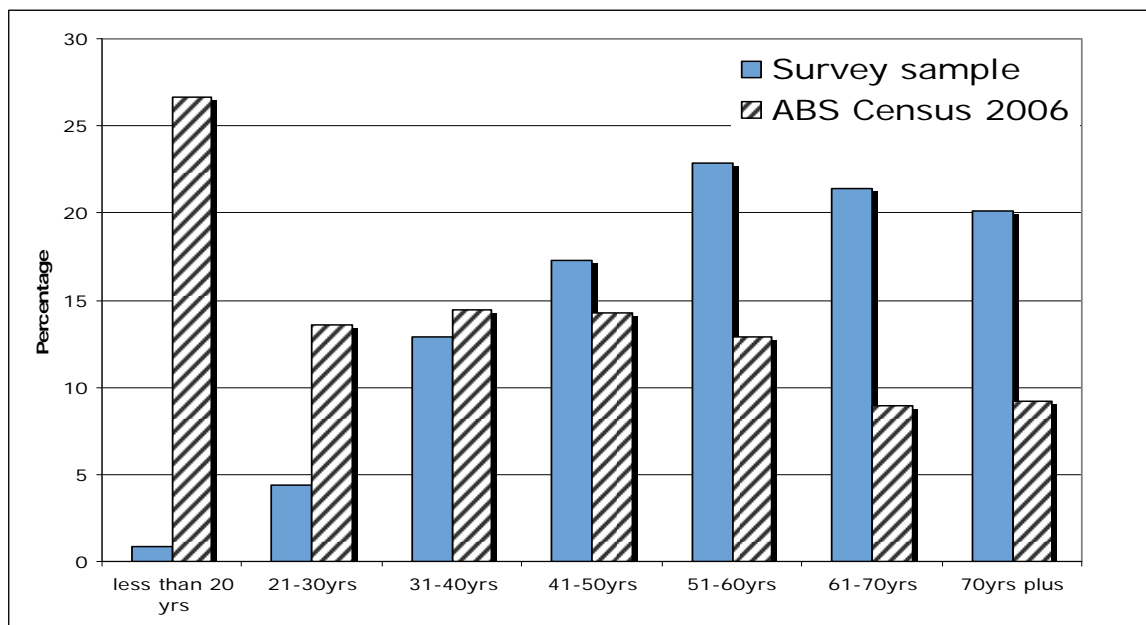
Section 10: Sample demographics

Section 10, the final section of the survey, asked respondents about their social, economic and geographic characteristics. This enabled comparisons to be made between the survey sample and the Gold Coast regional population data from the 2006 Census.

Slightly more females (56.1 per cent) than males (43.9 per cent) responded to the survey. Only 37.3 per cent of respondents to the survey (524 individuals) lived in households with dependent children. Over 85 per cent of respondents had lived on the Gold Coast for more than 5 years (over 70 per cent had lived on the Gold Coast for more than 10 years) and the average number of years that respondents had lived on the Gold Coast was 18 years.

Figure 10 compares the age of survey respondents with the age profile of the Gold Coast population from the 2006 Census.

Figure 10: Age of survey respondents compared with Gold Coast Census data



The survey was only distributed to persons over 18 years of age and this explains the large disparity in the under 20 years of age category. The apparent 'under representation' in the 21 to 30 and 31 to 40 age categories and 'over representation' in the older age groups is common in household mail surveys. Younger age groups, particularly the 21 to 30 group, are more likely to have changed address in the preceding 12 to 18 months and to be uncontactable through the mailing list. Older age groups are more likely to have the time to complete mail surveys and tend to be 'over-represented'.

Almost half the respondents to the survey (49 per cent) lived within 5 km of an ocean beach (Table 12).

Table 12: Distance respondents lived from the nearest ocean beach

Distance from nearest ocean beach	% of survey sample
< 1km	17.5
1 – 5km	31.5
6 – 10km	25.8
10km plus	25.2

Over 52 per cent of respondents indicated that they were working full-time or part-time and over 38 per cent were retired from paid work (Table 13).

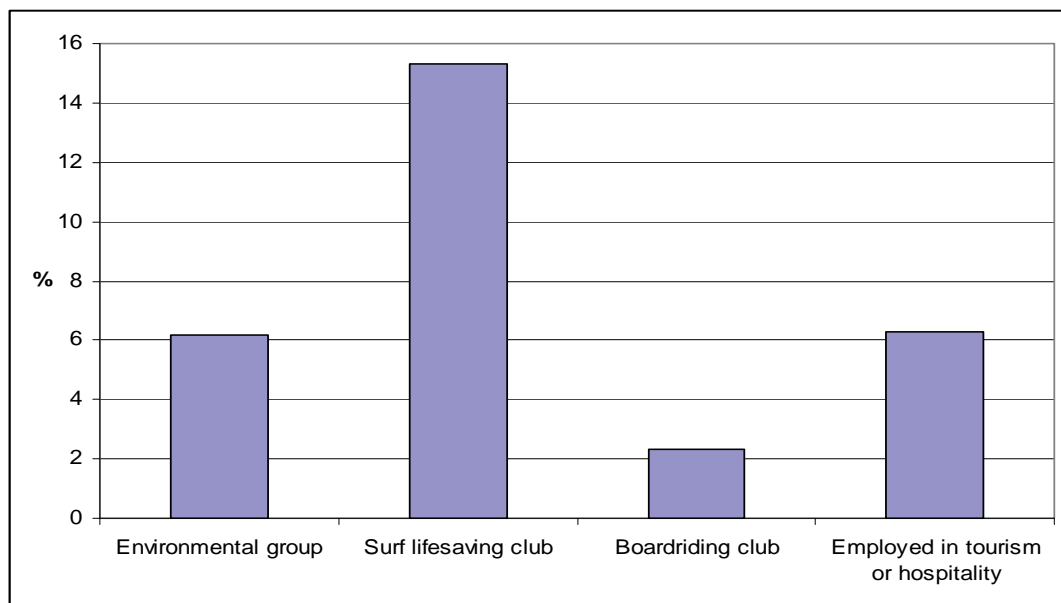
Table 13: Employment status of respondents

Employment status	%
Full time employed	36.1
Part time employed	16.0
Retired	38.4
Unemployed, seeking work	.9
Home duties	6.2
Student	1.1
Other	1.2

Eighty six and a half per cent (86.5%) of respondents to the survey either fully owned or were purchasing the property in which they lived, while 11.9 per cent were renting the property.

Membership of a relevant group or association might be factor in determining beach use but Figure 11 shows that, apart from membership of surf lifesaving clubs, membership of relevant interest groups was quite low among survey respondents.

Figure 11: Membership of relevant groups



Putting a Value on Residents' Use of Ocean Beaches

In this section we attempt to estimate the total number of beach visits made by Gold Coast residents and to attach some economic values to this recreation activity using a crude travel cost approach. People demonstrate a willingness to pay the costs involved in accessing an amenity like ocean beaches through the costs of travel incurred to get to the amenity. This travel cost establishes a lower bound for the value, or consumer surplus, that they derive from the services provided by the amenity.

Analysis of the survey results shows that the distance residents live from an ocean beach is the most significant determinant of how frequently they visit ocean beaches. This is consistent with the basic assumptions of the travel cost method.

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Geographic population distribution estimates for the Gold Coast were developed using 2006 Census data at collection district level and GIS software (MapInfo). Comparison of the survey sample with the geographic population estimates (Table 14) show that residents living between 1 km and 5 km from an ocean beach were under-represented in the survey (31.5 per cent in the sample compared to 42 per cent of the population) while residents living more than 10 km from an ocean beach were over-represented in the survey (25.2 per cent in the sample compared to 15.6 per cent of the population).

Table 14: Comparison of the survey sample with census population estimates

Zone: Distance from nearest ocean beach	Estimates based on 2006 Census *		
	Sample	Adult population	%
< 1km	17.5	58,619	17.4
1 – 5km	31.5	141,556	42.0
6 – 10km	25.8	84,112	25.0
10km plus	25.2	52,725	15.6

* Geographic population distribution was estimated using 2006 census data at collection district level and GIS software (MapInfo).

In order to minimise the effects of sample bias the beach visitation data collected in the survey (column 2 of Table 2) has been weighted using the Census based population distribution estimates to estimate total resident beach visits (Table 15). In total we estimate Gold Coast residents made approximately 40 million beach visits in 2007.

Table 15: Estimating total beach visits by local residents

Zone	Median ocean beach		Weighted visits by zone
	visits per adult p.a.	Adult population	
< 1km	210	58,619	12,309,990
1 – 5km	126	141,556	17,836,056
6 – 10km	84	84,112	7,065,408
10km plus	66	52,725	3,479,850
Estimated total beach visits by local residents p.a.			40,691,304

Some caution needs to be exercised in interpreting the beach visitation data. The median values for beach visits have been used because the means were heavily skewed by a small number of high users. However, the median values for beach visits are still substantially higher than those found in a similar Gold Coast survey by Raybould (2005). One explanation for this may be the fact that in the current survey the format of the question allowed respondents to indicate multiple named beach visits as part of the same trip, i.e. they may have visited two named beaches as part of the same trip in search of favourable swimming or surfing conditions and that would be counted as two beach visits.

Overall, 80.4 per cent of survey respondents travelled to the beach by private motor vehicle and 16.6 per cent walked to the beach (predominantly those who lived within 1 km of the beach). Less than 1 per cent of survey respondents used public transport to get to the beach. Because of this we have based the travel cost estimates only on private vehicle use. Table 16 takes the average distance respondents indicated that they travelled to the beach and multiplies that by the proportion of trips made by private vehicle to estimate an average number of vehicle kilometres per beach trip for respondents living in each of the four geographic zones.

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Table 16: Vehicle use in accessing the beach

Zone	Average distance travelled (km)	Proportion by private car	Average vehicle km / trip
< 1km	1.87	0.27	0.50
1 – 5km	4.36	0.86	3.75
6 – 10km	9.56	0.98	9.37
10km plus	18.39	0.98	18.02

Over 50 per cent of the respondents to this survey indicated that they drove medium sized vehicles (engine size 1600cc to 2600cc). Thus, vehicle costs associated with beach visits have been estimated based on RACQ (2007) published costs of running a typical four cylinder family car (2.4L Toyota Camry).

Table 17 presents two different approaches to estimating vehicle costs associated with beach visits. Method 1 uses RACQ (2007) running costs only (i.e. petrol, tyres and servicing) and is intended to provide a lower bound to the range of estimates. Method 2 applies total vehicle costs including depreciation, registration, insurance etc., and is intended to provide an upper bound for the range of estimates. The average trip cost (i.e. vehicle cost) is divided by the number of adult occupants in each vehicle (based on the survey we estimate an average 1.6 adults per vehicle) to calculate an average trip cost per adult. Average trip costs per adult are very low in the zones closest to the beach because of the large number of people who walk to the beach rather than use a private vehicle. For residents living 10 kilometres or more from the ocean average trip costs per adult range from \$3.08 to \$7.66.

The estimated trip costs presented in Table 17 appear to be consistent with Blackwell (2007) who found beach trip costs for local residents ranged from \$0.49 to \$2.39 per adult, depending on the statistical model used, when calculated using vehicle running cost only.

Table 17: Estimating vehicle costs per adult beach visit

Zone	Average vehicle km / trip	Method 1. Using vehicle Running Costs only (RACQ, 2007) ¹.		Method 2. Using vehicle Total Costs (RACQ, 2007) ¹.	
		Average trip cost (\$)	Average trip cost / adult (\$)	Average trip cost (\$)	Average trip cost / adult (\$)
< 1km	0.50	0.09	0.05	0.50	0.31
1 – 5km	3.75	0.64	0.40	2.91	1.82
6 – 10km	9.37	1.60	1.00	6.37	3.98
10km plus	18.02	3.08	1.92	12.26	7.66

*1. RACQ (2007) estimated private vehicle costs for average family car (2.4L Toyota Camry): Running Cost only = 17.09 cents per kilometre; Total Vehicle costs = 67.33 cents per kilometre.

Finally, in Table 18, trip costs per adult are multiplied by the estimated number of beach visits made by residents of each zone to provide an estimate of the gross annual travel costs incurred by residents to access ocean beaches on the Gold Coast. Based on a model using vehicle running costs only, residents are estimated to have spent approximately \$21.5 million (an average of \$64 per adult) in 2007 accessing the beach. If we adopt a model that uses total vehicle costs the estimated gross annual cost of accessing the beach for local residents is approximately \$91 million (an average of \$270 per adult) in 2007.

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Table 18: Estimating gross annual travel costs of residents visiting ocean beaches

Zone	Gross visits p.a.	Method 1. Using vehicle Running Costs only (RACQ, 2007)		Method 2. Using vehicle Total Costs (RACQ, 2007)	
		Average trip cost / adult (\$)	Gross cost p.a. (\$)	Average trip cost / adult (\$)	Gross cost p.a. (\$)
< 1km	12,309,990	0.05	663,873	0.31	3,874,788
1 – 5km	17,836,056	0.40	7,143,414	1.82	32,397,324
6 – 10km	7,065,408	1.00	7,070,389	3.98	28,139,668
10km plus	3,479,850	1.92	6,698,698	7.66	26,660,364
			\$21,576,375	\$91,072,144	

The two values estimated here should be considered upper and lower bounds of the ‘true’ use-value of ocean beaches to local residents. The higher value assumes that residents keep their vehicle primarily for recreation purposes and this will be false in many cases. When the primary use of the vehicle is to travel to work, or for work, this assumption results in a higher recreation travel cost than the true value. On the other hand, the lower value assumes that all vehicles are used primarily for purposes other than recreation and takes only the marginal cost of running the vehicle to the beach—again an assumption that will be false in some cases.

Neither value includes any assessment of the value of travel time taken to get to the beach. While this is frequently used in travel cost assessment, we argue that it is not appropriate in this context since beach trips are made in leisure time and the alternative use of the time is not usually to engage in income earning work.

The values estimated here can be seen as lower and upper bounds of use-values only for local residents. The travel cost approach considers only observed economic activity and cannot provide estimates of non-use values, such as existence values and bequest values, which may be held by many local residents. Many studies have found these non-use values to be substantially larger than the use-values.

Chapter 2

STUDY 2: ESTIMATING TOURISM VALUES OF GOLD COAST BEACHES

Aims, Scope and Limitations of the Report

This study comprises one part of a comprehensive attempt to identify value parameters for recreation activities associated with ocean beaches in the Gold Coast City region. This study considers only tourist values associated with beach recreation.

The objectives of this study were to:

- estimate the number of visits by tourists to Gold Coast ocean beaches
- attempt to attach some economic values to this recreation activity.

Because of time and budget constraints, this part of the research project was based on existing secondary data sources as described in the next section.

Given the constraints on data collection this study has attempted to identify some likely high and low bounds, or parameters, for beach recreation values and is not able to identify a single point value.

Method and Sources of Information

The first stage was to estimate the number of visits to Gold Coast ocean beaches by tourists. The number of visits to Gold Coast ocean beaches by international, domestic overnight, and domestic daytrip tourists was estimated primarily using Tourism Research Australia (TRA) data, specifically the International Visitor Survey (IVS) and the National Visitor Survey (NVS) available on CDMOTA (TRA, 2006a and 2006b).

The second stage of the study attempts to place an economic value on this visitation using the benefits transfer technique. This technique uses economic values for similar recreation activities in similar environments as benchmarks or indicators of the value that consumers might place on the specific recreation activity being studied. The economic values of the benchmark activities are often derived from direct survey methods (contingent valuation), demonstrated value methods (travel cost), or market prices. Benefit transfer approaches have attracted some criticism (Brouwer, 2000) but most of this has related to the relevance of the benchmarks. This study draws on benchmark studies that are as relevant as possible to beach recreation on the Gold Coast in terms of the nature of the activity and the geographic and economic environment.

Estimating the Number of Beach Visits

Estimates based on the National Visitor Survey and the International Visitor Survey (TRA, 2006a and 2006b) indicate that the Gold Coast received just over 9.3 million tourist visits and that tourists were responsible for almost 23 million visitor nights on the Gold Coast. These visitors were responsible for almost \$4 billion of direct expenditure (Table 19).

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Table 19: Gold Coast visitor numbers, nights, and expenditure by type of visitor, 2006

	Domestic Overnight Visitors (TRA, 2006a)	International Visitors (TRA, 2006b)	Day Visitors (TRA, 2006a)	Total
Number of Visitors	3,590,000	829,573	4,923,000	9,342,573
Number of Visitor Nights	15,562,000	7,392,315	n.a.	22,954,315
Gross Expenditure (\$000)	3,536,852	4,360	389,840	3,931,052
Expenditure per Night (\$)	227.27	489.28	86.84	

Surveys conducted by TRA have identified the kinds of activities tourists engaged in during their visit (Table 20). Approximately 30 per cent of day visits included a visit to the beach. Almost 50 per cent of domestic overnight visitors used the beach at some point during the visit and over 80 per cent of international visitors used the beach (TRA, 2004; 2006a; 2006b). Unfortunately the data does not identify exactly which beaches were visited, so an international visitor on a multi-destination tour might have visited the beach in Sydney but not on the Gold Coast. However, the Gold Coast is an internationally recognised beach destination and we have assumed that international tourists who have indicated an interest in beaches would be most likely to have visited the beach on the Gold Coast at some point during their stay.

Table 20: Percentage of visitors using the beach

Visitor Type	Percent (%)
Day Visitors (TRA, 2004)	30.0
Domestic Overnight Visitors (TRA, 2006a)	49.5
International Visitors (TRA, 2006b)	82.3

Domestic overnight visitors on the Gold Coast stay for an average of approximately five nights while international visitors stay for an average of approximately seven nights. Although not all of these visitors to the Gold Coast use the beach we must assume that many of those who do will visit it more than once during their stay. In the absence of any survey data, we have taken a conservative estimate of an average two visits to the beach for domestic visitors who have indicated that they visited it at all and three visits for international visitors who stay slightly longer and are more likely to be visiting for a holiday than domestic visitors. Combining this estimate with the relevant data from Tables 19 and 20 provides an estimate of the total number of beach visits by tourists to the Gold Coast (Table 21).

Table 21: Estimating the number of beach visits by tourists on the Gold Coast

Visitor type	Number of visitors	Proportion using beach	Estimated number of beach visits during trip	Total beach visits
Domestic Overnight	3,590,000	0.495	2	3,554,100
International	829,573	0.823	3	2,048,216
Day	4,923,000	0.300	1	1,476,900
Total	9,342,573			7,079,216

Benchmarking Recreation Values

What is a beach visit on the Gold Coast worth?

In the absence of any direct survey data of Gold Coast tourists, this section attempts to answer this question through a literature review of research studies that have attempted to value similar recreation amenities. Benchmark values established in these studies are used in a crude benefit transfer approach to value beach recreation on the Gold Coast. Collection of survey data directly from Gold Coast tourists in the future would enable more confident estimates to be made. Appendix B provides an annotated summary of 20 recently published research papers that have attempted to value recreation amenities and activities.

We are aware of only one study (Blackwell, 2007) that has attempted to value beach recreation in Australia. This research estimated consumer surplus values for a beach visit by visitors to the region using a travel cost method. When fuel costs only were used in the travel cost model, consumer surplus per person was estimated at \$11.86. When total vehicle running costs were used and a monetary value allocated to travel time, consumer surplus per person was estimated at \$107.75.

There have been a number of studies conducted in the USA and Table 22 summarises five of the most recent. These studies appear to establish a benchmark value for a beach visit of somewhere between US\$15 and US\$40 per person. Allowing a small amount for changes in CPI and for the US–Australian dollar exchange rate, this equates to around AUD\$18 to AUD\$45 per visit per person in 2006 dollars.

Table 22: Recent studies of the value of beach recreation in the USA

Author (Year)	Valuation method	Place	Value US\$
Bin et al. (2005)	Travel Cost	North Carolina	\$11– \$80 (day visitors) \$11– \$41 (overnight visitors)
Lew & Larson (2005)	Choice Modelling	San Diego	\$28.27
Kaval (2007)	Meta-analysis	Various	\$40
Pendleton & Kildow (2006)	Meta-analysis	Various	\$15 – \$50
King (n.d.) – 2001 data	Travel Cost	California	\$30.58

Support for benchmarks in this range can be found in a simple analysis of the travel costs that many visitors incur to get to the beach. These travel costs are actual costs that visitors demonstrate they are willing to pay to access this amenity.

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The NVS (TRA, 2006a) estimates that residents of Brisbane, Logan and Ipswich make just over 4 million day visits to the Gold Coast each year for tourism purposes (the NVS does not differentiate between Brisbane, Logan and Ipswich as origin points). Approximately 30 per cent, or 1.5 million, of these day visitors use the beach during their visit (Table 20).

The distance between central Brisbane and the Gold Coast is approximately 80 km (160 km for the round trip). It is likely that residents in the southern suburbs and Logan City make proportionally more of the trips than residents of the northern suburbs, who would be more likely to drive to beaches on the Sunshine Coast. We have weighted the average trip distance towards the southern suburbs and assume an average of 140 km round trip.

Based on RACQ (2007) private vehicle costs for an average family car, the travel cost associated with a beach visit with two adults in each vehicle would be approximately \$12 per person if we use running costs only or approximately \$47 per person if we use total vehicle costs (Table 23).

Table 23: Estimating private vehicle travel costs for day visitors to the Gold Coast

		Cents / km *	Beach visit cost / vehicle	Beach visit cost / adult
Method 1	Running costs only (Petrol, tyres, servicing)	0.1709	\$23.93	\$11.96
Method 2	Total costs (inc. depreciation, interest, insurance, registration)	0.6733	\$94.26	\$47.13

* Based on RACQ private vehicle costs for 2.4l Toyota Camry (RACQ, 2007)

Further support for values in this range can be found in marketed recreation services in the area. Tickets for the two water parks on the Gold Coast (the closest market equivalent to a beach visit) are priced at \$45 for adults and \$29 for children (2008 prices). The three major theme parks on the Gold Coast are currently priced at \$66 for adults and \$43 for children (2008 prices).

The literature described above and the estimates of travel costs incurred to access the beach appear to support a lower bound of around \$15 per person visit and an upper bound of around \$45. These values will be used as upper and lower limits in the following estimates of gross tourism values.

Estimating Gross Tourism Values of Gold Coast Beaches

Applying the estimates and rationale from the previous sections results in the gross value estimates shown in Table 24.

Table 24: Estimating gross tourism values of Gold Coast beaches

Visitor type	Beach visits	Gross value @ \$15 per visit	Gross value @ \$45 per visit
Domestic Overnight	3,554,100	53,311,500	159,934,500
International	2,048,216	30,723,236	92,169,708
Day	1,476,900	22,153,500	66,460,500
Total	7,079,216	106,188,236	318,564,708

Applying the lower-limit estimate of \$15 per visit results in a total annual beach value associated with tourist use of approximately \$106 million for 2006. Applying the upper-limit estimate of \$45 per visit results in a total annual beach value associated with tourist use of approximately \$319 million for 2006.

It should be stressed that, in the absence of detailed survey data, these estimates are based on a number of

assumptions and ‘best-estimates’ of tourist behaviour and the gross values are sensitive to those assumptions.

APPENDIX A: DETAILS OF THE FOCUS GROUPS USED IN THE DESIGN PHASE OF THE RESIDENT SURVEY

Session	Date & Time	Venue
1	December 4, 2007: 6.00pm – 7.30pm	Greenmount Beach Resort
2	December 5, 2007: 9.00pm – 10.30am	Griffith University, Multimedia building (G23) room 3.01
3	December 6, 2007: 10:00pm – 11.30am	GCCC – Robina Offices
4	December 6, 2007: 6.00pm – 7.30pm	Southport Surf Club Restaurant

In addition to various stakeholder groups within GCCC, the following stakeholder groups were represented in these focus groups or provided written submissions to the survey design team:

- Marine Teachers Association
- Coastal Alliance
- Friends of Currumbin
- GECKO
- Surf Lifesaving Qld
- Surfrider Foundation
- Griffith University Centre for Coastal Management
- Gold Coast Girls Boardriders Club
- Burleigh Heads Boardriders Club
- Friends of Federation Walk
- North End Boardriders Club

APPENDIX B: SUMMARY OF RECREATION VALUES LITERATURE

Ref.	Resource	Method	Location	Value
Bin, et al. (2005)	North Carolina Beaches	TCM (2003 data)	North Carolina, USA	Net benefits of a day at beach: \$11 – \$80 for day visitors \$11 – \$41 for overnight visitors.
Blackwell (2007)	Australian beaches	TCM	Qld and WA	Consumer surplus for visitors estimated at between \$11.86 and \$107.75 (local residents \$2.39 and \$17.41) depending on costs included in the model.
Lew & Larson (2005)	Recreation and amenities at beaches	RUM model of recreational choice (2000 – 2001 survey data) TC	San Diego	A beach day: \$28.27 Values of beach attributes: On-beach lifeguard (\$9.27) Activity zones (\$2.42) Free lot parking (\$4.32) Free street parking (\$6.45) Cobblestone (-\$4.25)
Kaval (2007, June)	Recreation benefits of U.S parks	Meta-analysis of studies 1967–2003	US	In 2006 price: High value activities (>\$100/person/day): mountain biking, canoeing, kayaking, rafting, backpacking, bird watching and rock-climbing Moderate benefit activities (\$35-\$100): picnicking, motor boating, snowmobiling, sightseeing, fishing, waterskiing (\$50), hunting, wildlife viewing, swimming (\$44) , going to the beach (\$40) , camping, off road vehicle driving, scuba diving. Lower benefit activities (<\$35): downhill skiing, cross country skiing, hiking, snorkelling, horseback riding, visit environmental education centre Benefit/person/day of U.S. parks = \$60.5
Whitehead, et al. (2006, November)	Beach access and width	TCM and Combined RP-SP TC model (2004 data primarily day visitors)	North Carolina counties	Status quo consumer surplus/trip = \$87.43 to \$98.44 (\$782.33 to \$1090.12 per annum) Value of improved access/trip (parking condition, i.e. spot, fees congestion) = \$23.03 to \$27.92 (\$268.16 to \$392.97 per annum) Value of an increase in beach width/trip (100 feet increase in width with periodic beach nourishment every 3 to 5 years) = \$6.36 to \$7.16 (\$61.18 to \$85.25 per annum)

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Ref.	Resource	Method	Location	Value
Dharmaratne & Brathwaite (1998)	Access value of all coastline recreational activities	CVM and TC (1993-1994 data)	Barbados	<p>CVM: Net benefits from west- and south-coast beaches = \$62 for first-time and \$51 for repeat visitors Net benefits from west- and south-coast beaches = \$28.99 for first-time and \$22.45 for repeat visitors when water quality was below the desired level.</p> <p>Value of west- and south-coast beaches comprise about 10% (first-time visitors) and 8% (repeat visitors) of the total access value for all recreational activities on the island</p> <p>TC: Benefits from all activities on the island valued \$620/visitor for both first-time and repeat visitors (or 14% of average total expenditure/visitor/visit)</p>
King (n.d.)	Recreational benefits of beaches	TCM (2001 data)	San Clemente, California	<p>One beach day: \$30.58 in high season and \$3 in low seasons</p> <p>Beach activities generated \$76 and \$116/person/day for the city and the state, respectively (including multiple effects).</p>
Bell & Leeworthy (1990)	Recreational use of beach	Modified TCM (using the on-site cost demand curve)? (1984 data)	Florida	A beach day in Florida: \$34 for long distance travellers (900 miles for auto travellers and 1,300 for air travellers)
Kriesel et al. (2004).	Value of beach improvements	CVM (1998 data)	Georgia Coast, USA	WTP for beach improvement: \$6.09/day or \$23.75 per year for an average household
Shivlani et al. (2003).	Value for beach restoration	CVM (RUM) (1998-1999 data)	South Florida	<p>WTP for beach nourishment for turtle nesting habitat: \$2.12/visit</p> <p>WTP for beach nourishment for recreational activities \$1.69/visit</p>
Blumberg (1997)	Beach recreational use		Long Island Sound, USA	Value per day was \$13.34 for beach swimming \$8.48 for boating, and \$7.46 for sport fishing.
McCollum et al. (1990) as cited				Value of outdoor recreation on federal forestlands, per person-day (Values in US\$ 2005): General recreation \$5.70 - \$16.91

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Ref.	Resource	Method	Location	Value
in Seidl & Myrick (2007)				Developed camping \$5.13 – \$26.12 Primitive camping \$4.15 – \$32.97 Swimming \$14.84 – \$40.33 Coldwater fishing \$13.31 – \$42.91 Warm water fishing \$18.75 – \$19.48 Day hiking \$26.34 – \$63.79 Big game hunting \$7.45 – \$19.53 Sightseeing \$10.14 – \$35.98 Recreation in wilderness areas \$4.26 – \$24.00
Bergstrom & Cordell (1991), as cited in Morgan & Owens (2001)	Marine and freshwater recreation	TCM (price adjusted to 1996 value by Morgan & Owens, 2001)	US	Swimming \$20.50 (stream/lake) Motorised boating \$22.53 Cold water fishing \$24.57 Anadromous fishing \$32.49 Warm water fishing \$17.27 Canoeing/kayaking – \$17.47
Walsh et al. (1992), as cited in Morgan & Owens (2001)	Marine and freshwater recreation	Review of studies from 1968-1988 (price adjusted to 1996 value by Morgan & Owens (2001))	US	Swimming \$31.72 Motorised boating \$43.59 Non-motorised boating \$67.24 Migratory water fowl hunting \$49.22 Cold water fishing \$42.29 Anadromous fishing \$74.60 Warm water fishing \$32.52
Shrestha et al. (2007)	Nature-based recreation in public natural areas	TCM (2000-2001 data)	Florida	Nature-based recreational trip = \$74.18 per day
Shrestha & Loomis (2003)	Outdoor recreation	Meta-analytic benefit transfer (value in US\$ 1996)	U.S. studies in the past 30 years	Meta-analytic BT results: Consumer surplus per person per day: \$47.10 (national BTF) and \$40.91 (aggregated regional model BTF) Average of reviewed studies: \$34.40 (national) and \$32.48 (regional)

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Ref.	Resource	Method	Location	Value
Hesseln et al. (2003).	Value of mountain hiking and biking demand	TCM (2001 data)	New Mexico	Net benefits for bikers = \$151 per trip Net benefits for hikers = \$130 per trip (Average hours spent onsite =10.2hs)
Loomis and Crespi (1999), as cited in Seidl & Myrick (2007)				The average daily value of camping, backpacking and hiking, picnicking, and stream fishing on federal forest lands was \$13.97, \$24.65, \$18.67 and \$27.97, respectively.
Rolfe & Prayaga (2007)	Recreational fishing at freshwater dams	TCM (both Zonal TCM and Individual TCM and CVM (200202003 data)	Queensland	Frequent anglers: \$220.88/person to \$440.77 depending on the site (ITCM) Occasional anglers: \$59 to \$904/person (ZTCM) Value of an improved fishing experience (an increase in catch rates by 20% per annum) = \$19.02 to \$36.45
Cantrell, et al. (2004)	Fishing	CVM (1998-1999 data)	Hawaii	Net value: \$7.95 per trip catching 3.8 fishes (Status quo) and the value increased to \$10.05, \$13.67, \$19.95, and \$20.52 for additional catch of 1, 3, 9 and 11 more fish, respectively.

Note: TCM: Travel Cost Method; RUM: Random Utility Maximisation model; CVM: Contingent Valuation Method; RP: Revealed Preference; SP: Stated Preference.

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