

Using observed market expenditure to estimate the value of recreational surfing to the Gold Coast, Australia

Queensland Coastal Conference, 12 – 15 May 2009
Sea World Resort, Gold Coast

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INTRODUCTION

The Gold Coast, a coastal city of approximately 500,000 people, lies 75 kilometres southeast of Brisbane, the state capital of Queensland. The beaches of the Gold Coast have achieved iconic status both in Australia and internationally and the Gold Coast has been a popular domestic and international visitor destination for many years. A recent study estimated that Gold Coast residents made approximately 40 million visits to the beach and foreshore in 2007 and visitors made an additional 7 million trips over the same period (Raybould & Lazarow, 2009). This paper focuses on the importance of the Gold Coast beaches for recreation, in particular for surfing.

Beaches are important to the Gold Coast for many reasons:

- They provide an important coastal protection buffer between the highly urbanised land and the high energy ocean;
- The beaches, which are all publicly owned and accessible, provide an important focus for recreation for residents;
- The beaches form the basis of the region's tourism industry, which is of vital economic importance to the city; and
- Beaches and the nearshore zone provide valuable environmental habitat (Lazarow et al., 2008).

The Gold Coast is bordered by approximately 52km of beaches along its eastern boundary. The area is exposed to a high wave energy environment and is regularly subjected to storms and large waves. For almost 100 years, Gold Coast beaches have been modified in one way or another. Coastal protection projects undertaken in the region include the construction of rock sea walls along most of the coastline; the construction of major training walls at the Tweed River, Gold Coast Seaway, Tallebudgera and Currumbin Creeks; rock groynes at Kirra and Palm Beach; offshore sand dredging campaigns at a number of locations; sand bypassing systems at the Gold Coast Seaway and Tweed River; and the Northern Gold Coast Beach Protection Strategy, which included the construction of the Narrowneck artificial reef. As well as this, regular dredging occurs at Tallebudgera and Currumbin Creeks. The result is that in order to provide the necessary coastal protection, community, economic and even environmental services necessary to sustain the city and a healthy environment, Gold Coast beaches require active management.

Almost all Gold Coast beaches have been altered through engineering and coastal protection works – and this has in turn impacted surf quality in a number of different ways. This study, which was undertaken as part of the Gold Coast City Council's Shoreline Management Plan, sought to understand the economic importance of surfing to the region, and to provide a sound basis for the incorporation of surf quality issues into coastal planning and management in this region.

RECREATIONAL SURFING ON THE GOLD COAST

Recreational surfing has been practised on the Gold Coast for over 50 years and the area is home to a number of world renowned surf breaks including Snapper Rocks, Kirra, Currumbin Alley, Burleigh Heads and South Stradbroke Island (Figure 1). A large number of surf industry

businesses are based on the Gold Coast. As well as an important region for professional surfing, the Gold Coast has 17 registered boardriding clubs that run regular surfing competitions at many of the City's surfbreaks. The Gold Coast continues to be a popular holiday destination for recreational surfers and many surfers choose to live here because of the lifestyle, ease of access to the beach and good surf that is on offer.

METHODS

A survey was designed and piloted. Data collection was then undertaken using a mixed-mode survey strategy between February 2006 and May 2008. Mixed mode survey strategies, where combinations of techniques are used to collect information, has proven an effective strategy for collecting data from a diverse user group over time and across different locations (Dillman, 2007). The techniques used were face-to-face surveys and an internet based survey instrument.

Surveys were undertaken at the following locations: Duranbah, Coolangatta Bay, Currumbin, Palm Beach, Burleigh Heads, Miami – Surfers Paradise, Narrowneck and South Stradbroke Island (Figure 1). A total of 471 surveys were collected, of which 225 were face-to-face and 246 were internet based-surveys. Duranbah, although not within Gold Coast City boundaries, is an important part of the local surfing scene. In order to fully understand patterns of use and expenditure, it was important to include Duranbah, located immediately to the south of the State border, in this analysis. All respondents to the survey were treated as Gold Coast surfers whether they were permanent residents or short or long-stay visitors. For the purposes of this study, a surfer was defined as an individual who rides the power of a wave using the forces of nature in a non-motorised craft.

RESULTS

Demographic Information

Approximately 90% of surfers interviewed were male. The survey results suggest that Gold Coast surfers continue to surf as they get older, with 31% of respondents aged 18 - 30, 21% aged 31 - 40 and 20% aged 41 - 50 years. A Chi-square goodness of fit test to compare the survey sample with the general population indicated that there were significant differences between the sample population and the general population of the region. When compared with Gold Coast population estimates, the under 18 age group is significantly under-represented in the survey data (Australian Bureau of Statistics, 2006). Ethics Committee restrictions around this project required that anyone under 18 years of age needed to be interviewed with the consent of or in the presence of a legal guardian. This is the most likely explanation for this result and any interpretation of the results needs to be aware of this shortcoming in the data collection process. The survey sample, however,

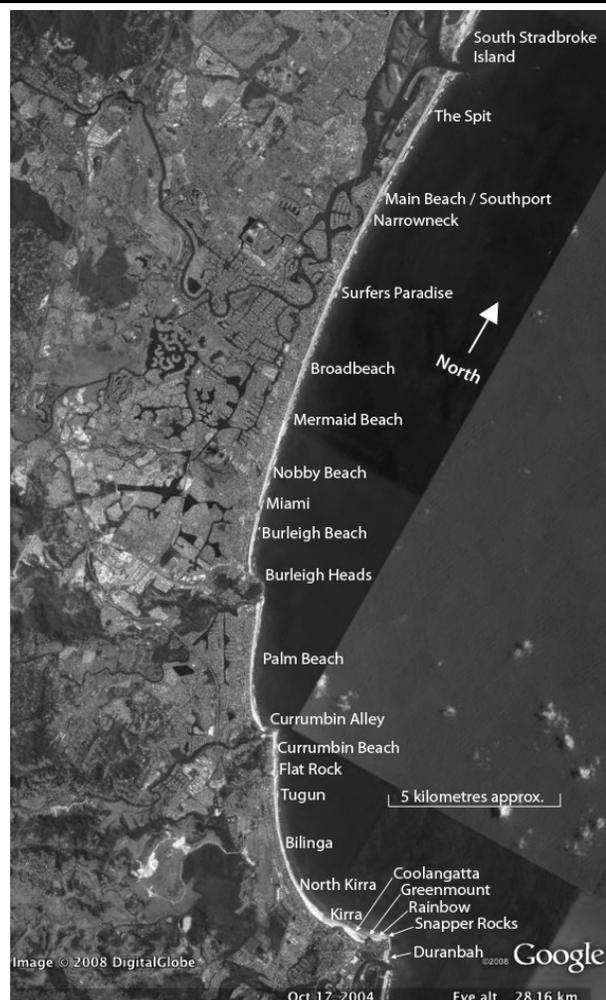


Figure 1. Gold Coast surfbreaks (Source: Adapted from Google Earth).

does bear some resemblance to the Australian Bureau of Statistics data (Australian Bureau of Statistics, 2007) on participation in sports and physical recreation (for surfsports) and more investigation into this relationship is recommended.

At any one time, there are significant numbers of non-resident surfers on the Gold Coast (37%). Thirty-eight percent of survey respondents had tertiary qualifications, with 25% of respondents holding bachelor degrees and 13% having attained postgraduate qualifications. Most survey respondents stated that they were employed (78%), with 29% employed part-time, 28% self-employed and 21% employed full-time. Household income amongst those surveyed varied considerably, with 33% of surfer households earning under \$AUD40,000 per year, 35% of surfer households earning between \$AUD41,000 - \$60,000 per year and approximately 23% of surfer households earning over \$AUD80,000 per year.

Thirteen percent of surfers travelled less than 1km to go surfing, 30% of surfers travel between 1 - 5km to go surfing and 60% of surfers travelled 10kms or less on average to go surfing (all distances are one-way). Eighteen percent of respondents travel more than 60kms to go surfing on the Gold Coast and this is most likely indicative of those who travel from Brisbane. Most Gold Coast surfers choose to drive to the beach when they go surfing (82%), although a sizeable minority of surfers walk to the beach (9%).

Gold Coast surfers rate their skill level highly, with 43% of respondents indicating that they were advanced and 46% of respondents rating themselves as of intermediate ability. Almost 60% of respondents have been surfing for over 10 years. As well as their high level of experience, Gold Coast surfers continue to surf frequently with over 50% of respondents to the survey saying that they surf 2-3 times per week or more and for approximately 2 hours per session. This is significantly higher than the reported national average of approximately once every 11 days (Surfing Australia, 2006).

Participation

For the purposes of this study, an attempt was made to determine both the absolute number of surfers as well as the number of surf sessions undertaken. A surf session is a surf by an individual that has a distinct start and end point. For example a single surfer might surf in the morning and again after school or work. On a single day, this surfer would then be classed as having had two surfing sessions. While it is a relatively straightforward process to estimate the total number of surfers on the Gold Coast, it is costly and was outside of the means of this study. Three alternate strategies were employed to calculate the number of surfers and the number of surf sessions on the Gold Coast.

In the first strategy, estimates based on the Sweeney Report, a national study into participation in outdoor recreation (including surfing) were applied to the Gold Coast (Surfing Australia, 2006). Based on an estimated national level of participation of 12%, it was estimated that there may be a resident surfing population of around 41,000 and up to 23,965 individual surf visitors on the Gold Coast per annum, making a total surfing population of approximately 65,000. The resident surfing population was determined by estimating 12% of the City population aged between 11 – 70 and the visitor population was estimated by comparing survey results against the proportion of visiting surfers. In the second strategy Council lifeguard records from municipal beaches where data was collected was used as the basis for estimating the number of surfers on the Gold Coast. Based on this strategy, it was estimated that there are approximately 75,000 surfers on the Gold Coast. The third and final strategy reports on data collected from the surveys. Using this strategy, it was estimated that there are approximately 120,000 surfers on the Gold Coast.

Estimated number of surfers and surf sessions

The estimated number of surfing sessions per year was determined by multiplying the number of surfers by the average number of reported surf sessions per surfer each year. This was undertaken using the results from all three strategies and reports a significant range (Table 1). This

is to be expected based on large variances in the estimated number of surfers. In terms of including surfers who are under 18 years of age in the count of surfers, estimation 1 was achieved using Gold Coast population data for residents from 11 years of age and estimations 2 and 3 are based on secondary data counts. While the reported age spread across the surveys may be biased against those under 18 years of age, this bias is eliminated in the estimates.

Expenditure on recreational surfing

The data collection strategy used for this study asked recreational surfers to estimate their total expenditure over a 12-month period on a range of items, including: board; wetsuit; leash and accessories; accommodation; camping; travel; clothing; fuel; and food. The results provide a series of gross per capita expenditures related to surfing.

Two methods were used to attempt to estimate per capita annual expenditure by surfers. For both methods, expenditure on equipment (board; wetsuit; leash and accessories) is considered to be constant - \$AUD983. This is because for the majority of survey respondents, their significant surfing activity took place on the Gold Coast and it is assumed that there is a positive relationship between equipment use in relation to expenditure and activity (wear and tear). In 'method 1', expenditure on sundries, which includes accommodation, travel, camping, fuel and food, was calculated to be approximately \$AUD3,000, bringing the total per capita annual expenditure for a Gold Coast surfer to just under \$AUD4,000. In 'method 2', an attempt is made to reflect only expenses that are likely to have been incurred in relation to surfing on the Gold Coast. Categories of expenditure that are most likely to be related to a trip of over 500km were excluded from the sundries total. In this case expenses related to accommodation, travel and camping have been excluded, leaving only fuel and food expenses as sundry items. When asked how much of their surfing activity takes place on the Gold Coast, the median response by survey respondents was 80%. While this figure does not necessarily represent a direct relationship between expenditure and effort, for the purposes of this report it was used as a proxy measure. Based on 'method 2', the average per capita annual expenditure for a surfer on the Gold Coast is estimated to be approximately \$AUD1,950. To determine the total estimated annual expenditure by recreational surfers on the Gold Coast, the number of surfers was multiplied by the expenditure per surfer each year. If total expenditure is calculated, then estimates range from \$AUD256 – \$474 million. Based on 'method 2', a more conservative estimate that only takes into account expenditure on the Gold Coast is presented in Table 2, and reports an annual expenditure range from \$AUD126 – \$233 million.

Table 1: Participation and expenditure in surfing

Source	Number of surfers	Estimated number of surf sessions	Total estimated expenditure
Estimation 1 (based on Sweeney Report)	64,770	6,736,000*	\$125,783,340+
Estimation 2 (based on Council data)	74,703	7,769,112*	\$145,073,226+
Estimation 3 (based on collected data)	120,012	12,481,248*	\$233,063,304+

* Based on 80% of total surfing effort = 104 sessions per year
+ Exact annual per capita estimate = \$AUD1,942

Estimates for expenditure related to an individual surf session were calculated by dividing per capita annual expenditure by the reported number of sessions per year and the results range from \$AUD18.67 - \$30.36. A number of studies have been undertaken that attempt to place a value on an individual surf session (Chapman & Hanemann, 2001; Gough, 1999; Nelsen & Pendleton, 2006; Tilley, 2001). The results from these studies range from \$AUD23 - \$124 and are discussed in more detail in Lazarow et al. (2007). Prior to 2007, no consistent strategy had been used to evaluate expenditure by surfers across locations. When compared with similar studies, the estimations presented here appear to be at the lower end of reported market expenditure for the

cost of a surf session. This point is emphasised when one considers that this study also includes the cost of equipment, which is generally not considered in other studies.

DISCUSSION

There are a number of challenges associated with each of the three strategies used to estimate the total number of surfers on the Gold Coast. For example, the Sweeney Report only covers capital cities and may significantly under report participation in surfing in regional locations such as the Gold Coast. Further, Brisbane the state capital and home to close to 2 million people, does not have an open coastline. This means that surfers from Brisbane would need to travel approximately 100km in order to surf - either south to the Gold Coast or to the north. These two factors suggest that the figure of 65,000 might underestimate the total number of surfers on the Gold Coast. Estimates based on Council lifeguard data do not include Duranbah (10% of estimated surfing activity) or South Stradbroke Island (14.5% of estimated surfing activity). At the high end of the range, consideration must be given to the ability of a surfer to accurately estimate the number of other surfers in the water at any one time. It was not possible to verify this data, however, estimates that were significantly higher than the average were discounted.

While there are inherent risks and biases associated with attempting to apportion values to an activity that relies on natural processes to such a large extent, historical records for the region indicate that there are favourable wind and swell patterns for much of the year - resulting in consistently good surfing conditions on the Gold Coast (Bureau of Meteorology, 2008; Environmental Protection Agency, 2005). There is no doubt that on some days conditions are totally unsuitable for surfing, whereas on other days consistent southerly swells and offshore conditions last throughout the day resulting in many thousands of surfers finding good waves to surf on the Gold Coast. Gold Coast beaches are of significant social and economic value to both residents and visitors to the area. Beaches are a significant and highly profitable open-space resource (Pendleton & Kildow, 2006), the true value of which we are only beginning to understand. The figures quoted in this report do not consider indirect and non-use values such as the social and community benefits or costs associated with surfing such as fitness, joy, mentoring, sharing, community spirit or the risk of injury; or multipliers, which may substantially add to these amounts. Further investigation into these values is recommended.

While the beaches perform an invaluable coastal protection role, they also serve as the City's most important playground. To date, little attention has been placed on beach character and the impact that ongoing coastal protection and modification works can have on the natural and social character of a beach – and in turn the economic return that a beach can deliver. The study recommends that on a managed coastline such as the Gold Coast, coastal protection and management programs must incorporate strategies to improve surfing and other beach amenity whilst not compromising coastal security. On the Gold Coast, the use of offshore submerged control structures (artificial reefs built primarily for coastal protection purposes) is likely to continue as a coastal protection strategy into the foreseeable future and the use of these structures to create high quality surfbreaks (as well as marine habitat) and coastal protection barriers should be discussed and where possible implemented. With two sand bypass systems in operation as well as dredging operations at two creeks, there is also the potential to use this coastal protection infrastructure to intentionally improve surf quality.

CONCLUSION

Understanding the value of coastal resources, who uses them and how they can be impacted upon is vital information for coastal managers. The findings from this study demonstrate the significant economic and social importance of surfing amenity for both local residents and visitors to the Gold Coast, the need to clearly articulate and measure changes in recreational amenity and the need to consider any negative impacts on surfbreaks and the natural environment that may occur as a result of development, coastal planning and protection works. With high levels of participation, visitation and expenditure, the benefit of incorporating surf quality issues into coastal management programs is clear.

TAKE HOME MESSAGES

1. Surfing amenity has a significant economic and social importance of for both local residents and visitors along this managed coastline.
2. On a managed coastline like the Gold Coast, coastal planning and management programs such as dredging, sand pumping and beach nourishment must consider their impact on surf quality and how these programs might be better able to concurrently provide coastal protection services as well as maintain or improve surf quality.
3. Standards must be developed for measuring surf quality at surfbreaks that have been and continue to be affected by coastal protection programs. Where coastal security can be maintained, progress towards improving surf quality should be made.

ACKNOWLEDGEMENTS

Thanks to L. Gutter, R. Noriega, L. Caddick, L. Michaelsen, M. Talcove and S. Tiffeau for assistance with data collection. Thanks to Dr B. Blackwell and Dr B. Clouston for comments on early drafts of the report. Thanks also to those from the who participated in the Peer Review Group.

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