

**Sustainability of Coastal/Marine Recreation:
Modeling Social Carrying Capacity for Hanauma Bay, Hawaii**

March 2005

Presented to:

University of Hawaii Sea Grant College Program, SOEST

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ACKNOWLEDGEMENTS

Special thanks to Dr. Amber Whittle for coordinating the data collection and entering the data. Acknowledgement also goes to Ms. Regina Luna and Ms. Debbie Tyrone for their data collection effort. This project would not have been possible without them.

This paper is funded by a grant/cooperative agreement from the National Oceanic and Atmospheric Administration, Project # R/FM-8, which is sponsored by the University of Hawaii Sea Grant College Program, SOEST, under Institutional Grant No. NA86RG0041 and NA16RG2254 from NOAA Office of Sea Grant, Department of Commerce. The views expressed herein are those of the author(s) and do not necessarily reflect the views of NOAA or any of its subagencies. UNIHI-SEAGRANT-OP-02-001.

EXECUTIVE SUMMARY

This study examines the consequences crowding in a coastal and marine site from a social capacity perspective. Social carrying capacity is the number and distribution of visitors that provide minimal acceptable recreation experiences (Shelby & Heberlein, 1986). What is acceptable for one person may be viewed differently for another person. These perceptions may also differ by recreational sites: one may seek solitude at a certain site, and yet the same individual may accept the presence of other users. The study reports on surveys collected from Hanauma Bay located on the Island of Oahu, Hawaii. Managers of the Bay face the difficult task of managing both the physical environment, and the diverse recreation uses within the bay. The site is already a subject of environmental assessments, however there have been no studies on the social carrying capacity of the bay. This study intends to provide resource managers with data that can instigate change in the way they perceive how this marine environment should be managed based on user perceptions and experiences. It is debatable whether social carrying capacity modeling is effectively applied in this environment. It is also debatable whether or not ecological data alone can influence decision making in these environments.

Six hundred and twenty-eight surveys were collected from July 6, 2000 to June 24, 2002 at Hanauma Bay. Two sets of questionnaires with 27 questions each were used to assess visitor perceptions prior to and after their visit to the bay. The survey included three sets of matched pre-and-post-test questions about perceived crowding, experience preferences, and benefits sought. The survey also included demographic information, travel characteristics and evaluation of the Bays' resources.

The analysis included descriptive techniques outlining differences in responses among residents and visitors, and among first time visitors and repeat visitors. It further explored changes in user perceptions as use level increased. The findings provide insight into user expectations and experiences, while addressing challenges in determining recommended use levels of the Bay.

The total sample reported a higher level of expected crowding than their perceived crowding (post experience score), indicating the sample was aware of crowding in advance. Particularly, residents were more sensitive to crowding levels. Overall, at use levels of over 3000, more than 40% of the respondents indicated "negative influences from people on the beach." When the use level exceeded about 3100, crowding was consistently perceived to be

problematic: at the use level of over 3100 to 3800, 100% of the respondents indicated that it was “crowded” in the Bay. At 3400, more than 55% of the respondents indicated that they perceived “negative influences from other people snorkeling.” At the use level over 3700, respondents increasingly reported it was “extremely crowded,” and satisfaction levels dropped.

The results indicate that perceived environmental benefits (i.e., to see abundant marine life, to view natural sites, and to be adventurous), and expertise in snorkeling are positively related to the samples’ global rating of satisfaction. However, ratings of satisfaction significantly lowered due to the increased numbers of people on the beach. In other words, those who perceived more benefits among the environmental attributes, and more experience with snorkeling are likely to be more satisfied, whereas those who reported negative influences from the numbers of people on the beach are likely to be less satisfied

Visitors ratings of perceived environmental benefits (i.e., to see abundant marine life, to view natural sites, and to be adventurous) are positively related to the ratings of satisfaction. However, ratings of enjoyment of activities (i.e., sunbathing, snorkeling), and perceived crowding negatively impacted satisfaction levels.

The findings of the study suggest that perceived crowding may be an indicator of actual user counts, and that crowding negatively influences satisfaction levels. Limiting use may be an effective tool to manage the Bay. The Bay is exceeding the social carrying capacity (as measured in this study) when more than 3,200 (+/- 200 users) people per day use the Bay. The number of visitors that provide acceptable recreation experiences may be less than 3,200 per day.

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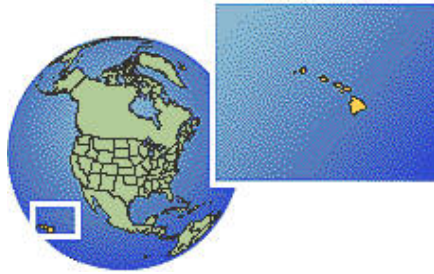
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I. INTRODUCTION



A. Background

Few studies have focused on the social carrying capacity for marine recreation areas. There is a need to incorporate more social science research into the management decision making processes for these areas. This study focuses on the social carrying capacity of Hanauma Bay Marine Park and on the Island of Oahu, Hawaii. Managers of these areas face the difficult task of managing both the physical environment, and the diverse recreation uses within the site. Presently, scientific data on the ecology of these marine recreation areas exists, yet these data are not enough to convince decision makers to adopt policies that support the recommendations of marine recreation resource managers. This study will provide resource managers with data that can instigate change in the way they perceive how marine environments should be managed. It is debatable whether social carrying capacity is effectively applied in these environments, and whether or not ecological data alone influences decision making in these environments.

B. Goals and Objectives

A primary goal of this research project is to develop an instrument which can be used to identify social carrying capacity norms, user issues, and values relative to coastal and marine recreation impacts in Hawaii. Importantly, this research will be of assistance in increasing the public's understanding of issues, and identifying ways to participate in the public policy dialogue relative to managing these resources. Secondly the project identifies areas of concern and interest that should be communicated to the various agencies and organizations involved with managing the resource, users and activities at the selected site. The following objectives guided this research project:

- 1) To develop and test the properties of a coastal/marine recreation impact attitudinal scale for future application in Hawaii.
- 2) To determine if the coastal/marine recreation impact attitudinal scale can be used to work within a varied mix of ocean recreation settings (bays, beaches, reefs) and user types (snorkeling, swimming etc.) and how these influence the psychometric properties of the scale.

- 3) To explore the relationship between attitudes toward resource use and its perceived condition, crowding, norms and satisfaction levels, value of the public good (contingent valuation) and the indirect/direct management tactics available to manage the resource.
- 4) To develop a public participation and decision making model that identifies predictors of potential policy interventions based on values and beliefs.
- 5) To present the findings in both written and oral presentations for County, State, Federal, and non-profit representatives.
- 6) To conduct a workshop on how the findings can be of assistance in the public policy process in Hawaii and beyond.
- 7) To demonstrate how the social sciences can provide data that compliments the natural sciences data to influence public policy and resources.

C. Rationale

An extensive and varied natural resource base has long provided a suite of values for human society (Stankey, McCool, Clark & Brown, 1999). Within the context of this study, these include commodity values, such as fisheries; ecological values, such as reef bio-diversity; and environmental quality values such as water quality. It also includes public use values, such as ocean recreation and tourism. Scuba, snorkeling, boating, fishing and many other ocean recreation resources are dependent upon the setting in which they take place. Stankey et al. (1999) note that we face increasing contentiousness about natural resource management due to growing demands placed on the resource: more people demanding greater amounts of a wider range of goods and services. Oceans and marine areas, once valued primarily for their commodity outputs, are now increasingly valued for a host of other goods and services – environmental, aesthetic, conservation, recreational – whose production is inconsistent with, or at least adversely affected by the production of traditional commodity values. Unfortunately, public policy, planning processes and organizations may not be able to address these multi-uses and demands. An important consideration for managing these resources is recognizing the need to monitor and manage the diverse recreational uses of these areas and the resultant impacts. Importantly, how can decisions be made systematically, logically and defensibly?

Competition for and use of coastal and marine recreation resources and opportunities has become a major resource management issue within many coastal communities. Specifically,

both the environmental and social carrying capacity of these areas are being exceeded. Consequently, local users are being displaced to less desirable areas, and satisfaction levels among tourists can decrease. Yet, decision-makers are usually limited to only environmental data available, and are therefore unable to fully utilize scientific data due to the lack of social and economic valuations.

There is a need to examine and report the consequences of recreation resource use in coastal and marine environments within the context of carrying capacity. Conflicts among users (divers vs. boaters vs. surfers etc.) is increasing in many areas, while resource managers are left without appropriate means to influence public decision making with regard to resource management. Consequently, there is a need to more fully understand the dynamics of this issue, to more accurately inform the public policy debate that is occurring, and to link the findings to public valuation of the resource. In many conflicts, resolution is hampered by the difficulty in identifying and involving all interested parties, and a misunderstanding about the issues of mutual concern.

A number of studies have been conducted to examine recreation resource use and community level planning issues. Studies have found that the most significant predictors of support for community based tourism was the perceived impact on one's own outdoor recreational opportunities, and the ability to influence decision making and public policy (Lankford & Howard 1994; Rollins, 1997; Lankford, Williams, & Knowle, 1997). Park (1999) found in Hawaii that ocean recreation impacts were of concern to residents. Lankford et al. (2000) found crowding, displacement and resentment toward tourists were related to ocean and marine recreation users in Hawaii. These findings have been verified in cross-cultural comparative studies (Taiwan, Hawai'i, Canada, Oregon, and Washington) along coastal and marine recreation areas (Lankford & Tanselli, 1989; Lankford & Howard, 1994; Lankford, Chen, & Chen 1994; Lankford, Williams, & Knowles, 1997; Rollins, 1997; Park, 1998).

Systematic analysis of coastal and marine recreation impacts can help local decision makers identify concerns and issues in order for appropriate policies and action to occur. Unfortunately, apathy, mistrust of public authorities, and the citizen's inability to project their needs, articulate their interests, and understand scientific data have kept much of the public and many of these types of issues away from the policy and planning process.

While the public and policy makers may not understand the range of values in a community with regard to recreation resources, this lack of understanding of values and attitudes may hinder public debate about ocean recreation related issues. Secondly, the lack of studies which examine ocean recreation resource use (attitudinal, value clarification, social carrying capacity, and contingent valuation of the resource), limits resource managers ability to convey to decision-makers a range of options. Once decision-makers understand not only the environmental aspects of a study, but also the attitudinal, value clarification, and contingent valuation, they can begin to balance the information related to multiple and competing goals for the resource.

A review of the literature suggests there is a lack of survey instrument that reliably measures attitudes, crowding, satisfaction etc. with an emphasis on identifying social carrying capacity issues and indicators in coastal/marine environments (Lankford & Hetzler, 1996). This proposed study was an attempt at addressing this important need. There is a need to link ecological data with social carrying capacity and attitudinal data, and contingent valuation method (CVM) (Peterson, Driver & Gregory, 1988). Specifically, there is a need to develop frameworks within which we could answer the following questions (Peterson et al., 1988; Stankey et al., 1999):

- 1) How do we promote management decisions and actions that are consistent with the management objectives and scientific data for marine and ocean recreation areas?
- 2) How do we integrate more fully ocean recreation management and other ocean resource uses in such a way as to minimize conflict and maximize complementarities?
- 3) What are the impacts of the effects of multi-uses (fishing, harvesting, sailing, snorkeling, touristic activities etc.) on the experiences of visitors to these ocean recreation areas?
- 4) How do we get decision makers to observe the warning signs of overuse of these natural resources?
- 5) How do we ensure that visitors will have a satisfying experience and return or provide positive word of mouth advertising for tourist based communities?

Environmental Decision Making

Typically, resource areas like Haunama Bay are managed using rational-comprehensive models involving goals and objectives; identification of alternative solutions; consequences of alternatives; implementation measures and later some level of evaluation (Friedmann, 1987). Such planning has been conducted by “subject matter experts” who are generally isolated from the socio-political context in order to ensure “objective” decisions (Stankey et al., 2000). Unfortunately, this “expert driven” model is problematic in ocean and marine recreation resource management. We often assume that all is needed is a process that develops solid scientific data that is sound in its technical foundation and objective. However, such plans affect the flow and allocation of values-be they commodity, aesthetic, scientific, or other forms- to people (Stankey et al., 2000). Because plans affect values, people and places, it is inherently a political undertaking. We concern ourselves with the nature of the environmental impact. These findings generally involve the eventual limiting of use and access, thereby confronting our social values. An example is that marine biologists suggest that the reef system is nearly defunct due to overuse in Haunama Bay. The recommendation is to limit access and numbers of visitors. In essence, we have a political and value judgment whose resolution through technical analysis is not possible. The missing data or piece of the puzzle is the attitudinal data from users and the community about which would describe the values held.

Carrying Capacity

Simply defined, carrying capacity can be defined as the amount of visitor use that can be appropriately accommodated within a park or outdoor recreation area. The concept has proven useful in wildlife and range management, where it generally refers to the number of animals of any one species that can be sustained in a given habitat (Manning, 1997). Initial scientific applications of the concept examined the relationships between visitor use and environmental conditions. The working hypothesis and early studies suggested that carrying capacity could be determined by soil compaction, erosion, vegetation destruction and other related variables. However, Manning (1997) noted it soon became apparent that the social aspects of the visitor experience was another important dimension to carrying capacity. Wagar (1964) identified that carrying capacity of recreation areas could be determined in terms of ecology and deterioration, but the concept had to be augmented by the consideration of human values. Therefore, the

working hypothesis was that increased visitor use causes social impacts as measured by crowding and related variables. Consequently, carrying capacity has two broad dimensions, social impacts and environmental impacts and thresholds. The study site proposed in this study is already subjects of environmental assessments, however there have been no studies on the social carrying capacity of these areas. Within a recreational context (recreational carrying capacity is the level of use an area can withstand while providing sustained quality recreational experiences [Wagar 1964]), carrying capacity is further defined into the following (Shelby & Heberlein 1986):

- 1) Physical capacity is the amount of space available for the activity based on design and use levels. For example, there a certain number of boaters that can be supported in Hanauma Bay at a given time.
- 2) Ecological or biological capacity is the ability of the resource to withstand recreational use without unacceptable damage to ecological components, such as the water quality, reef bio-diversity and fish diversity in Haunama Bay.
- 3) Facility capacity involves additions to the recreation environment intended to support visitor needs. For example, a boat ramp and parking area may be constructed to access the Bay.
- 4) Social capacity is the number and distribution of visitors that provide minimal acceptable recreation experiences. Social carrying capacity is the most difficult to define (Washburne 1982). What is acceptable of one may be viewed differently for another user. For example, a snorkeler to Haunama Bay might term the visit as unacceptable due to both the advertising and expectations of being in a pristine marine park. Basically, her/his expectations were not met, and the place was too crowded. Yet, another snorkeler the same day did not perceive the Bay to be crowded and was quit pleased due to expectations of only seeing tropical fish.

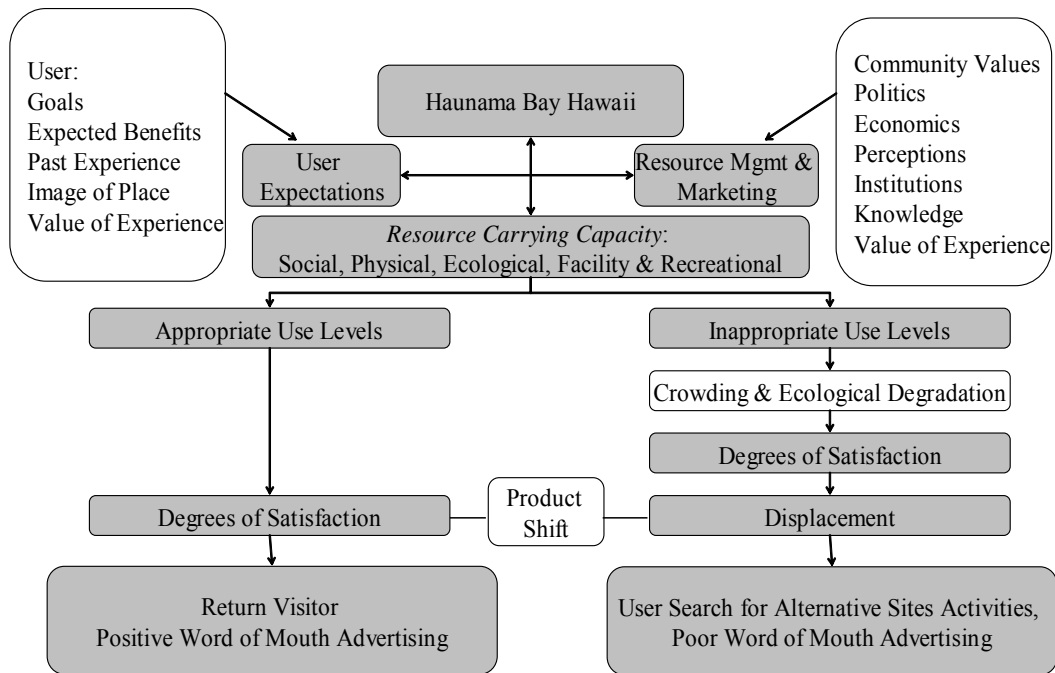
The task for resource managers is to manage the recreation resource while considering all four carrying capacity issues identified above (Symmonds, Hammitt, & Quisenberry 2000). The descriptive component of social carrying capacity is partly subjective (values, policy perspectives etc.) in determining how much impact or change in the recreation experience is acceptable. At what level of perceived crowding and conflict should be allowed before management intervenes? As a result of these and other questions, normative standards and methodologies have been examined.

Indicators and Standards of Quality

A number of researchers (Stankey et al. 1985; Stankey & Manning 1986; Graefe, Kuss, & Vaske, 1990; Shelby, Stankey, Shindler, 1992) have conducted studies on developing indicators of quality and standards for social carrying capacity. Essentially, the focus is on identifying the visitor experience to be provided and monitoring to determine whether or not acceptable conditions have been maintained. Indicators of quality define specifically the resource and social conditions to be managed. However, standards of quality define the minimum acceptable condition of each indicator variable. For example, it may be determined by this research that the number of users in the Bay is a key measure of satisfaction and solitude (two known motives for pursuing fishing and boating). Therefore, the number of encounters with other boaters is a good indicator of quality, furthermore, visitors may report that once they encounter more than three other boats per day they no longer achieve an acceptable level of satisfaction and solitude. Thus, the standard of quality for the number of encounters might be most appropriately set at three (which calls into question the direct and indirect management tactics used at the site, for example the number of parking slots for boat trailers). Obviously, this approach requires a baseline and monitoring over time. This approach has proven useful in backcountry and wilderness areas and is central to resource planning frameworks such as Limits of Acceptable Change (U.S. Forest Service, Stankey et al., 1985); Visitor Impact Management (Graefe et al. 1990); and Visitor Experience and Resource Protection (National Park Service, 1993). Much of the work in setting standards has centered around crowding, ecological impacts, wildlife management, minimum stream flows, and level of facility development (Manning 1997). However, this approach has not been utilized to any great depth in marine and ocean recreation settings.

Figure 1 below outlines the basic considerations of this research proposal using social carrying capacity as a model. Of usefulness here is that if data can show decision makers that visitors and residents are dissatisfied with the resource and experience, then this will equate to an economic metric. These data, when provided with the existing ecological scientific data on water quality, fish diversity and reef condition, should help to sway public and political opinion on the management of these important aquatic resource management tactics.

Figure 1.1: Social Carrying Capacity Model as Proposed for this Study



Expected Outcomes

The data from this study can be used to establish a framework and to help calibrate a baseline model that details the cross-sectional analysis of perceptions and indicators of social carrying capacity. Opportunities to determine temporal monitoring of changes in perceptions and conditions of the indicators will be made and recommended.

II. RESEARCH METHODS AND APPROACH



A. Study Site

A study site based upon their unique geography, particular resource, recreation use, conflicts, and crowding were identified on Oahu: Hanauma Bay. Located on the southeast corner of the island Oahu, Hanauma Bay evolved into a tourist "must see" destination during the 1970s and 1980s. The Bay was designated as the State first Marine Life Conservation District (MLCD) in 1967 (Hawaii Coral Reef Assessment Monitoring Program [CRAMP], 2003a). Since then, the number of visitors to Hanauma Bay rapidly increased and in 1988, the annual visitation count reached at 3 million (CRAMP, 2003b). Overwhelmed by commercial diving and snorkeling tours, as well as increasing numbers of visitors which peaked around 15,000 per day, the City and County of Honolulu took action to reduce visitation, improve facilities, ban fish feeding, and educate users about the bay's resources and appropriate behavior in the water. Commercial activities are now limited, however, bay users still number about 3,000/day and continue to impact the bay's natural resources by walking on the inshore reef, feeding fish, handling organisms, and stirring up silt.

B. Instrumentation

Utilizing the attitudinal scaling techniques similar to those used by Lankford and Howard (1994), relevant items was tested and confirmed based upon the psychometric properties of the instrument and subsequent scales developed (see treatment of data below). Items included statements on the image of the site, preferences, perceived benefits, satisfaction levels, perceived crowding, perceptions of the environmental condition of the site, and socio-demographics. Two questionnaires were used to measure the responses using a both a pre and post administration, and using a matched design (Mitra and Lankford, 1999). A pre-test of the questionnaire and sampling method were conducted at a site similar to the study site.

Random samples of users over a 12 month period at each site were taken. This survey period was selected to reflect seasonality of the site. First, random months was chosen, random days within each month and then random times of each day was chosen. Finally, random subjects were approached at each site for inclusion in the study.

The survey for Hanauma Bay was comprised of two sets of questionnaires with 27 subjects including three sets of matched pre-and-post-test questions about perceived crowding, perceived benefits and preferences. The pre and post-test design was possible because there was only one

access to the Bay. During the on-site intercept, respondents were asked to fill out a survey that identified the expected benefits they intended to realize from visiting the site that day, activities pursued, and questions on the priority and preference of this site/activity as compared to other Oahu opportunities.

At Hanauma Bay, respondents were intercepted upon their entry to the Bay and were given a card which provides them with a cold water bottle that can be turned in upon their exit from the Bay. At that time, a post interview questionnaire was administered, and coded by number, to the pre-test questionnaire the respondent completed prior to the experience, thereby allowed a matched design.

Perceived crowding was measured using nine-point Likert-type scales where 1 = not at all crowded to 9 = extremely crowded. Eleven distinctive setting attributes of the Bay were marked in the pre-test questionnaires as either “expect to see/do,” “not sure” or “not expected to see/do” and in the post-test questionnaires as “worse than expected,” “what I expected,” or “better than expected.” Ten situational evaluation items were measured on five-point scale indicating 1 = strongly agree to 5 = strongly disagree. The level of user satisfaction was measured by two types of scales in the post-test questionnaire: global satisfaction was measured on five-point Likert scale ranging 1 = highly dissatisfied and 5 = highly satisfied, while 14 satisfaction items were measured on three-point scale ranging 1 = added satisfaction, 2 = neutral and 3 = detracted from satisfaction. In order to avoid confusion due to opposite scale, the scale of global satisfaction was reversed (i.e., 1 = highly satisfied and 5 = highly dissatisfied) when they were coded. The survey also included demographic information, travel characteristics and evaluation of the Bays’ resources.

C. Subjects

The survey was conducted from July 2000 to June 2002 at Hanauma Bay by the Sustainable Tourism & Environment Program, School of Travel Industry Management at the University of Hawaii. The user count was made available by Hanauma Bay Education Program. During the survey period, the number of annual users ranged 1,005,189 (2000, Fiscal Year: July 99 to June 2000), 991,485 (2001, FY) and 854,538 (2002, FY). The monthly user count ranged from 59,424 to 117,004 and the average daily use was 2,603. The daily user count on the sample date ranged 1,474 to 4992. Residents’ count during the period ranged from 103 to 2,290,

and the visitors' (tourists') count ranged 1,371 to 4,476.

Table 2.1 indicates the sample size and that response rate for the Hanauma Bay study. During a total of 40 survey days, 628 of pre-questionnaires were collected among which 498 post-questionnaires were returned and matched to the pre-test questionnaires. Of 102 resident pre-test questionnaire respondents, 92 individuals (90.2 %) returned the post test survey with 526 visitors respondents, 406 (77.2 %) returned the post-test. The valid post test response rate of the sample was 79.3 %. This occurred because some of pre-respondents did not return their post questionnaires upon their exit from the Bay.

Table 2.1: Sample Size and Response Rate for Hanauma Bay

	Residents	Visitors	Total
Sample	102	526	628
Pre Response	102	526	628
Post Response	92	406	498
Post Response (%)	90.2%	77.2%	79.3%

The ratio of non-resident visitors sample was compared with the data from Department and Agency Reports of the City & County of Honolulu and Hawaii Coral Reef Assessment Monitoring Program (CRAMP). It was found that the distribution of the visitors and residents was representative of the users of the Bay. Table 2.2 shows that the proportion of residents and visitors of the sample was 16.2 % and 83.8 % respectively. According to Department and Agency Reports of the City & County of Honolulu, in 2002, residents consisted of 12.92 % of annual visitors to the Bay while visitors consisted of 87.1%. CRAMP reported that in 1990, residents accounted for 13 % of annual users of the Bay in 1990 were residents while visitors accounted for 87%. The proportional difference appears small and acceptable, thus the residents and visitor distribution of the sample can be considered valid representation of users.

**Table 2.2: Residents and Visitor Ratio
Comparison of Hanauma Bay Users**

	Residents (%)	Visitors (%)
Sample	16.2	83.8
City & County ^a	12.9	87.1
CRAMP ^b	13.0	87.0

^a Department and Agency Reports of the City & County of Honolulu (2003)

^b Hawaii Coral Reef Assessment and Monitoring Program (CRAMP) (1990)

D. Treatment of Data

Scale purification and confirmation began with Cronbach's coefficient alpha for screening the sample (using corrected item-to-total correlation). For an item to remain in the scale, it must have an item-to-total correlation of .50 or above (Bearden, Netemeyer, & Teel 1989; Zaichkowsky 1985). Principal components factorial analysis with oblique rotation was used because it is believed that the dimensions of the scale will be distinct, but not completely independent of one another (Bearden et al 1989; Parasuraman, Zeithaml, Berry, 1988; Ruckert & Churchill, 1984). The minimum coefficient for factor items to remain in the scale will be .30 (Nachmias & Nachmias 1987).

III. HANAUMA BAY RESULTS AND DISCUSSION



A. User Characteristics

This section summarizes travel characteristics of Hanauma Bay survey respondents. The sample was examined in terms of gender and age distribution, residency, and snorkeling skills and frequencies.

Gender Distribution

Table 3.1 shows the gender distribution of the sample: male comprised of 39.2% of the sample while female comprised of 57%. Both of the resident and visitor groups had more females represented (female residents consisted of 57.8% while female visitors consisted of 56.8%). Chi-square value indicates that there is no significant association in gender distribution between residents and visitors ($\chi^2 = 0.004$, $p = 0.952$)

Table 3.1: Gender Distribution

	Total		Residents		Visitors		χ^2 ^a	Prob.
	N	(%)	N	(%)	N	(%)		
Male	246	39.2	41	40.2	205	39.0	0.004	0.952
Female	358	57.0	59	57.8	299	56.8		
No response	24	3.8	2	2.0	22	4.2		
Total	628	100.0	102	100.0	526	100.0		

^a χ^2 indicates the Chi-square value, comparing percentages of gender between residents and visitors.

Age, Years of Residency in Oahu and Length of Visit to Oahu of the Sample

As table 3.2 shows, the age of the respondents ranged from 4 to an 80-year-old with the median value being 32 years old (SD = 13.11). Residents showed a slightly wider age distribution ranging 14 to 80 years old with the median value being 30 years old whereas the age of visitors (SD = 12.84) ranged from 4 to 74 years old with the median being 33 years old (SD = 14.42). The median value for the years of residency on Oahu was two years, with the minimum less than a year, and the maximum 37 years. The visitors' length of stay on Oahu ranged from one day to 120 days with seven days being the median length of stay.

Table 3.2: Age, Years of Residency in Oahu and Length of Visit

	Total (n = 628)	Residents (n = 102)	Visitors (n = 526)
Age			
Median	32	30	33
Std. Dev.	13.11	14.42	12.84
Minimum	14	14	14
Maximum	80	80	74
Years of Residency in Oahu			
Median		2	
Std. Dev.		10.68	
Minimum		0	
Maximum		37	
Length of visit to Oahu (Days)			
Median			7
Std. Dev.			8.32
Minimum			1
Maximum			120

Residency of Visitors

Table 3.3 shows residency of the sample. More than 80 % of the visitor respondents were domestic travelers consisting of 38.6 % from the Western U.S., 17.1 % from the Midwest, and 15.6% from the East coast, Canada (6.3 %) and other international countries (4.4 %). Since the survey was designed only in English, the respondents tended to be from English speaking regions.

Table 3.3: Residency of Visitors

State	Visitors	
	N	(%)
U.S. West	203	38.6
U.S. Mid West	90	17.1
U.S. East	82	15.6
U.S. Mountain	34	6.5
Canada	33	6.3
U.S. South	27	5.1
Other International	23	4.4
No Answer	34	6.5
Total	526	100.0

The distribution of gender, age, and residency of the sample was compared with the U.S. census data (DBEDT, 2000) and Annual Visitor Research Report (AVRR) from state of Hawaii, Department of Business, Economic Development, and Tourism (DBEDT, 2002) (Table 3.4). The sample of residents included 41 % of male and 59 % of female while the census conducted in 2000 reported more equal distribution (male 49.9% and female 50%). The visitor gender distribution, on the other hand, appears to be consistent with that of the visitors to Hawaii. The Annual Visitor Research Report shows the gender distribution of male 46.2% and female 53.8% while the sample visitors at Hanauma Bay was 40.7 % male and 59.3 % female.

The age of resident respondents is compared with the U.S. census conducted in 2000. Table 3.4 shows that the age of resident subjects at the Bay is more centered around the 20s while the census data shows a wider distribution with 35 to 44 years old being a bulge. The median age was 34 for the sample at the Bay while it was 36.2 for the census. Both of the visitor sample at the Bay and AVRR show similarities. The visitor sample shows more from 13 to 17 and 18 to 24 years old than the AVRR.

The residency of the sample appears to be representative of English speaking visitors. Table 3.4 shows that the sample at Hanauma Bay had the largest proportion of visitors from U.S. West (45.1%) followed by U.S. East (37.8%), Canada (6.3%) and Europe (2.5%) and all of which proportion exceeded that of the AVRR. According to the Annual Visitor Research Report, in 2002, visitors to Hawaii consisted of 38.9% from U.S. West, 24.8% from U.S. East, 23.2% from Japan, 3.0% from Canada and remaining 10.1% from other nations. The difference in residency distribution was derived from the survey design conducted only in English: the respondents tended to be from English speaking regions. Non English speaking visitors particularly the Japanese visitors require further research. Otherwise, the differences of the proportional distribution of the English speaking visitors seem to be similar and acceptable.

Table 3.4: Comparison of Gender, Age, and Residency Distribution

	Residents (%)		Visitors (%)		
	Sample at HB	U.S. Census ^a		Sample at HB	AVRR ^b
Gender					
Male	41.0	50.2		40.7	46.2
Female	59.0	49.8		59.3	53.8
Age					
^c					
<5	0.0	6.5	<13	0.0	12.1
5-9	0.0	7.0	13-17	8.1	5.0
10-14	1.0	6.9	18-24	17.0	10.1
15-19	12.9	6.7	25-40	47.9	30.9
20-24	20.8	6.9	41-59	23.1	28.5
25-34	30.7	14.1	60<	3.9	13.2
35-44	16.8	15.8			
45-54	7.9	14.1			
55-59	3.0	5.0			
60-64	2.0	3.8			
65-74	3.0	7.0			
75-84	2.0	4.8			
85<	0.0	1.4			
Median	32.0	36.2			
Residency					
U.S. West ^d				45.1	38.9
U.S. East ^d				37.8	24.8
Japan				0.0	23.2
Canada				6.3	3.0
Europe				2.5	1.7
Oceania				1.5	1.7
Other Asia				0.2	1.7
Latin America				0.2	0.2
Others				0.0	4.7

^a Source: Census 2000

^b Source: Annual Visitor Research Report (2002). State of Hawaii, Department of Business, Economic Development and Tourism (DBEDT)

^c The median value for sample at Hanauma Bay was 34.0 while 36.2 for U.S. Census data

^d U.S. West includes U.S. west coast and mountain states and the rest are categorized as U.S. East (DBEDT)

Snorkeling Skills and Frequency to Snorkel

Snorkeling appeared to be a major activities selected by the Bay users to see marine life. Given this site attribute, a rental service for snorkeling is available within the Bay and is the only facility providing such services. The sample of residents reported higher skills and frequency of snorkeling than visitors.

The degree of the snorkeling expertise of the sample was measured on five-point Likert-type scale where 1 = professional, 2 = expert, 3 = advanced, 4 = intermediate and 5 = novice / beginner. Table 3.5 indicates the sample's snorkeling skills and expertise in snorkeling. Forty seven percent of the sample said they were novice / beginner snorkelers. More visitors (49.8 %) than residents (32.7 %) reported their skills as novice / beginner. The majority of all sampled considered their snorkeling skill as being less than intermediate. In fact, the mean value of the entire sample's expertise was 4.2 (i.e., novice / beginner - intermediate). The sample of residents were found to be more experienced in snorkeling with mean value of 3.7 (i.e., intermediate – advanced) while visitors' mean value for experience was 4.2 (i.e., novice / beginner - intermediate). The mean values of these two groups were statistically different ($t = 4.313, p = .000$).

The frequency of snorkeling was measured on a five-point Likert scale with 1 = never and 5 = very often. Nearly half of the total sample reported their frequencies of snorkeling as being not often (43.1%), followed by never (24.6 %) and sometimes (21 %). The mean value of the sample total respondents was 2.2 (i.e., not often to sometimes). Residents of the sample indicated higher frequencies of snorkeling: residents achieved the mean of 2.7 while visitors achieved 2.1. The mean values of these two groups mean were also significantly different ($t = 6.268, p = .000$).

Table 3.5: Snorkeling Skills and Frequencies to Snorkel

Statements	Total (%)	Residents (%)	Visitors (%)	t-test Value	Prob.
How would you describe your snorkeling expertise? ^a					
Professional	1.1	2.0	1.0		
Expert	5.9	12.9	4.5		
Advanced	16.1	27.7	13.8		
Intermediate	29.9	24.8	30.9		
Novice/Beginner	47.0	32.7	49.8		
\bar{X}	4.2	3.7	4.2	-4.313	0.000 ^c
How often do you snorkel?					
Never	24.6	12.7	27.0		
Not Often	43.1	34.3	44.9		
Sometimes	21.0	27.5	19.7		
Often	8.6	16.7	7.0		
Very Often	2.6	8.8	1.4		
\bar{X}	2.2	2.7	2.1	5.268	0.000 ^c

^a Five-point Likert where 1 = professional, 2 = expert, 3 = advanced 4 = intermediate and 5 = novice/beginner.

^b Measured on five-point Likert where 1 = never and 5 = very often.

^c t-value is significant at $p < 0.01$. Where it is significant the mean values of residents and visitors groups are statistically different.

B. Knowledge of and Evaluation of Hanauma Bay

This section summarizes users' knowledge of and evaluation of the Bay. Knowledge is examined in terms of information known about the Bay, sources of influence to decide visitation, planned activity ranking, previous visitation, and familiarity with the Bay. The evaluation includes hours and money spent at the Bay, and perceptions of the environmental condition of the site.

Information Sources Used

The respondents were asked to select all the information sources used to visit the Bay. Friends appeared to be influential information source of the Bay. As Table 3.6 shows, the sample said that they heard about the Bay from friends (64.3%), followed by travel guide (23.8%) and Magazine (12.4%). A higher proportion of the residents heard about the Bay from friends (78.3%) while 61.9% of the visitors heard about the Bay from friends. Residents also used magazine as information sources (15.2%), followed by travel guide (10.9%), newspaper (10.9%), and TV (7.6%) whereas visitors used travel guides (26.1%), and followed by magazine (11.9%), and tour operator (5.4%).

Table 3.6: Information Sources Used

	Total		Residents		Visitors	
	N	(%)	N	(%)	N	(%)
How did you hear about Hanauma Bay?						
Friend	395	64.3	72	78.3	323	61.9
Travel Guide	146	23.8	10	10.9	136	26.1
Magazine	76	12.4	14	15.2	62	11.9
Tour operator	30	4.9	2	2.2	28	5.4
Newspaper	24	3.9	10	10.9	14	2.7
TV	24	3.9	7	7.6	17	3.3
Travel agency	19	3.1	3	3.3	16	3.1
Taxi Driver	7	1.1	1	1.1	6	1.1
Other	86	14.0	17	18.5	69	13.2
Total	721	117.4	119	129.5	602	115.5

Note: Percentages sum greater than 100 percent due to multiple answers selected.

Sources of Influence on Decision Making to Visit Hanauma Bay

Knowledge of the sources of influence on decision making to visit the Bay may be useful for effective marketing/de-marketing of the Bay. The result indicates that word of mouth generated through family/friends and recommendation is a primary source of deciding visitation, and thus, it should be kept in mind that it can be influential method to market/de-market the Bay. While family/friends and personal reasons seem to have more influence on residents' decision to visit the Bay, visitors' decision seem to be more influenced by recommendation, advertisement, tour operators and tour packages.

The respondents were asked to indicate all the sources which influence their decision making to visit the Bay. As shown in Table 3.7., the major sources of influence on decision making to visit the Bay were: family/friends (53.0%); followed by recommendations (29.7%); and personal reasons (21.0%). The residents' proportion was greater than that of visitors on family/friends (residents = 64.0%, visitors = 50.9%) and personal reasons (residents = 27.0%, visitors = 19.9%). On the other hand, a larger proportion of the visitors than residents indicated that the most influential sources to decide their visitation was recommendations from hotels and others (residents = 23.0%, visitors = 31.0%) advertisement, (residents = 4.0%, visitors = 10.1%) tour operators (residents = 1.0%, visitors = 2.9%) and tour packages (residents = 1.0%, visitors = 2.7%).

Table 3.7: Sources of Influence on Decision Making to Visit Hanauma Bay

	Total		Residents		Visitors	
	N	(%)	N	(%)	N	(%)
What most influenced your decision to visit Hanauma Bay						
Family/friends	330	53.0	64	64.0	266	50.9
Recommendation	185	29.7	23	23.0	162	31.0
Personal reasons	131	21.0	27	27.0	104	19.9
Advertisements	57	9.1	4	4.0	53	10.1
Tour operator	16	2.6	1	1.0	15	2.9
Tour package	14	2.2	1	1.0	13	2.5
Other	79	12.7	15	15.0	64	12.2
Total	733	117.6	120	120.0	613	117.3

Note: Percentages sum greater than 100 percent due to multiple answers selected.

Planned Activity Ranking

The ranking of planned activity may indicate the degree of priority set by users. Respondents were asked to rank ten activities which they are most likely to participate. Visiting Hanauma Bay was ranked as number one, indicating the users put high priority to visit the Bay.

Table 3.8 shows the planned activity ranking based on the average rank. Respondents ranked number one on visiting Hanauma Bay,” followed by “visit Arizona Memorial” (second) and outdoor activities (i.e., “surfing/bodyboarding” (third), and “hike Diamond Head” (forth). The high rank of Hanauma Bay may indicate that the sample planned to visit the Bay in advance and it had a relatively high priority. The rank of “visit Polynesian Cultural Center” where it located at the other side of the island (i.e., windward) was fifth, while other activities situated around the north shore were ranked lower (i.e., “visit Haleiwa town” as seventh and “visit Dole Plantation” as eighth). Honolulu Zoo, Aquarium and Sea life Park” was ranked eighth despite its relative proximity to the Bay. Visitors ranked “visit Haleiwa town” as significantly higher than residents (Mann-Whitney U value = 10549.0, $p = 0.025$).

Table 3.8: Planned Activity Ranking

Activities	Total		Residents		Visitors	
	n ^a	Rank	n ^a	Rank	n ^a	Rank
Visit Hanauma Bay	559	1	74	1	485	1
Visit Arizona Memorial	490	2	71	2	423	2
Go Surfing/Bodyboarding	474	3	67	4	438	3
Hike Diamond Head	492	4	73	3	419	4
Visit Polynesian Cultural Center	447	5	61	6	403	6
Go Shopping	509	6	71	5	386	5
Visit Haleiwa Town ^b	432	7	60	8	362	7
Visit Dole Plantation	440	8	70	7	380	8
Visit Honolulu Zoo, Aquarium, Sea life Park	438	9	64	9	374	9
Other	213	10	33	10	180	10

^a number of respondents who ranked the item.

^b Mann-Whitney U statistic indicates that residents differ significantly ($p < 0.05$) from visitors. Mean rank of residents = 186.20, visitors = 222.36. U value = 10549.0, $p = 0.025$

Previous Visitation

Almost half of the sample has visited the Bay in the past. More residents than visitors visited the Bay before, and those residents indicated a relatively recent visitation. Table 3.9 shows that 44.6% of the sample was repeat users while 55.4% visited the Bay for the first time. More residents indicated repeat visit (83.8%), while 37.1% of the visitors were repeaters ($\chi^2 = 73.521, p = 0.000$). Considering residents' close proximity to the bay, it is plausible that more residents visited the Bay before.

The year of the previous visit ranged from 1970 to 2002. Among the sample indicated repeat visit, 45.4% said that they visited the Bay in 2000 to 2002, followed by 1990 to 1999 (38.9%), and 1980 to 1990 (12.5%) with the median of 1999. Residents reported more recent visitation than visitors: 78.9% of the residents visited the Bay in 2000 to 2002 and in 1990 to 1999 (19.3%) with the median of 2001 while 33.3% of the repeat visitors came to the Bay in 2000 to 2002, in 1990 to 1999 (45.9%), and in 1980 to 1989 (12.5%) with the median of 1997. Visitors' last year of visit was more widely distributed ranging from 1970 to 2002 while that of residents' ranged from 1975 to 2002.

Table 3.9 : Previous Visitation

	Total		Residents		Visitors	
	N	(%)	N	(%)	N	(%)
Have you visited Hanauma Bay before? ^a						
Yes	278	44.6	83	83.8	195	37.1
No	346	55.4	16	16.2	330	62.9
What year was your last visit? (Year)						
2000 to 2002	98	45.4	45	78.9	53	33.3
1990 to 1999	84	38.9	11	19.3	73	45.9
1980 to 1989	27	12.5	0	0.0	27	17.0
1970 to 1979	7	3.2	1	1.8	6	3.8
n	216		57		159	
Median	1999		2001		1997	

^a Chi-square value is significant at $p < 0.01$. Where it is significant, residents have linear association with visitors. $\chi^2 = 73.521, p = 0.000$

Familiarity with Hanauma Bay

Table 3.10 indicates the respondents' familiarity with the Bay. Respondents were asked to mark their degree of the familiarity with the Bay on the five-point Likert where one being not at all familiar to five being extremely familiar. Slightly more than half of the sample indicated that they were not at all familiar (34.4%) or not very familiar (18.8%), while 23.9% said somewhat familiar, familiar (17.0%) and extremely familiar (5.6%) with the mean value 2.4 (not very familiar to somewhat familiar).

Residents reported more familiarity with the Bay: 37.3% said they were familiar, followed by somewhat familiar (23.7%) and extremely familiar (15.7%) with the mean value of 3.4 (somewhat familiar to familiar). On the other hand, 39.3% of the visitors said that they are not at all familiar with the Bay, followed by somewhat familiar (23.7%), not very familiar (20.2%), familiar (13.2%) and extremely familiar (3.6%) with the mean value of 2.2 (not very familiar to somewhat familiar). Residents were found to be more familiar with the Bay: the mean difference of two groups was found to be significant ($t = 8.939, p = .000$).

Table 3.10: Familiarity of Hanauma Bay

	Total (%)	Residents (%)	Visitors (%)
How familiar are you with Hanauma Bay? ^a			
Not at all familiar	34.4	9.8	39.3
Not very familiar	18.8	11.8	20.2
Somewhat familiar	23.9	25.5	23.7
Familiar	17.0	37.3	13.2
Extremely familiar	5.6	15.7	3.6
\bar{X} ^b	2.4	3.4	2.2

^a Five-point Likert where 1 = not at all familiar and 5 = extremely familiar.

^b T-value is significant at $p < 0.01$. Where it is significant the mean values of residents and visitors groups are statistically different. $t = 8.939, p = 0.000$

Length of Hours and Money Spent at Hanauma Bay

Respondents were asked to indicate the number of hours spent at the Bay and amount of money spent for rentals / purchase. Table 3.11 shows the length of hours spent at Hanauma Bay. The total sample spent an average of 2.7 hours in the Bay. Residents spent 2.6 hours, while visitors spent 2.8 hours. There are no significant mean differences between residents and visitors regarding with the hours spent at the Bay ($t = -1.306, p = 0.192$).

Table 3.11 : Length of Hours Spent at Hanauma Bay

	Total (n = 498)	Residents (n = 92)	Visitors (n = 406)
Approximately how long was your visit today at Hanauma Bay?			
\bar{X} ^a	2.7	2.6	2.8
Std. Dev.	1.08	1.10	1.07
Minimum	0	1	0
Maximum	8	8	6

^a $t = -1.306, p = 0.192$. The mean value of residents is not statistically different than that of visitors.

Of the 498 samples who returned the post questionnaires, 230 individuals (residents: $n = 16$, visitors: $n = 214$) indicated rented equipment and 34 subjects (residents: $n = 8$, visitors: $n = 26$) purchased equipment for the day experience at the Bay (see Table 3.12). The amount of money spent for rentals ranged from one to forth five dollars with a median of nine dollars spent ($SD = 8.89$). While residents' spending for rentals ranged from one to eighteen dollars ($SD = 5.83$, median of 5 dollars), visitors rentals ranged from one to forty five dollars ($SD = 9.02$, median of 9 dollars). The total amount of money spent for purchase in equipment ranged from 2 to 300 dollars (median of 4.5 dollars). Residents' spending on purchases ranged from 2 to 100 dollars ($SD = 33.91$, median of 2 dollars), while visitors spent 2 to 300 dollars ($SD = 57.91$, median of nine dollars).

The total sample appeared to spend several hours at the Bay. Although visitors seem to spend slightly longer hours than residents, the differences between the two groups are not significantly different. Visitors spend more money than residents and their range of spending

was wider than that of residents.

Table 3.12: Money Spent at Hanauma Bay

	Total (n = 498)	Residents (n = 92)	Visitors (n = 406)
Did you rent or purchase any equipment for your visit today?			
Rent			
n	230	16	214
Median	9	5	9
Std. Dev.	8.89	5.83	9.02
Minimum	1	1	1
Maximum	45	18	45
Purchase			
n	34	8	26
Median	4.5	2.0	6.0
Std. Dev.	52.78	33.91	57.90
Minimum	2	2	2
Maximum	300	100	300

User Evaluation of Hanauma Bay

Table 3.13 lists the overall evaluation of Hanauma Bay according to the users. In the post-test questionnaire, respondents were asked to evaluate the following items: environmental quality of the Bay; the quality of natural resources; negative impact from the number of people snorkeling and the number of people on the beach; capacity of the Bay; and willingness to spend more time if it was less crowded.

With regard to the environmental quality of the Bay, almost half of the respondents (45.2%) said “don’t know,” followed by “hasn’t changed” (18.0%), “deteriorated” (8.6%), and “improved,” (5.7%). Similarly, 57.7% of the sample evaluated the improvement of natural resources as “don’t know,” followed by “hasn’t changed” (20.7%), “deteriorating” (12.0%), and “improved” (9.5%). In both items, the proportion of respondents evaluated the environment/natural resources as deteriorated as opposed to them being improved. The relatively large proportion of don’t know response is plausible considering more than half of the visitors which comprised of 84.8% of the sample were first time visitors. They might not be

able to evaluate environmental changes over time.

Overall, residents of the sample appeared to be more sensitive to or aware of the environmental quality and natural resources than visitors ($\chi^2 = 69.664$, $p = 0.000$). Almost half of the residents (48.4%) indicated the environmental quality has not changed, followed by deteriorated (22%), don't know (20.9%) and improved (8.8%). On the other hand, 66.9% of the visitors said they did not know about the changes in the environment, and among the remaining visitors 17.4% said it hasn't changed, 8.6% said improved, and 7.1% said deteriorated.

Residents indicated that the quality of natural resources has not changed (43.8%), followed by deteriorating (18.0%), don't know (27.0%) and improving (11.2%). On the other hand, 64.6% of the visitors said they did not know about the changes in the environment, and among the remaining visitors 15.5% said it hasn't changed, 10.7% said deteriorating, and 9.2% said improved. The "don't know" proportion appeared to be greatly different between residents and visitors. Given the sample visitors' relative unfamiliarity with the bay, it is likely that they were less aware of the changes in the environmental quality of the Bay.

Eighteen percent of the total sample reported negative experience due to the number of people snorkeling. Likewise, 15.2% of the sample reported negative experiences from the number of people on the beach. A higher proportion of residents reported negative influence from number of people snorkeling (23.9%) than visitors (16.7%) and negative influences from number of people on the beach (16.7%) than visitors (14.9%). Neither of which, however achieved significant linear association between the two groups.

Although a relatively small proportion of the sample indicated negative influence from the number of the people snorkeling or at the beach, more concern was expressed regarding the accommodation capacity of the Bay. For the question regarding the capacity of the Bay, 38.4% said that the Bay cannot accommodate more visitors than there were today, while 32.6% said it can and 29.0% was not sure. There are no significant associations between residents and visitors. While 33.7% of the residents agreed the Bay can accommodate more users that particular day, 40.2% disagreed and 26.1% said not sure, 32.3% of the visitors agreed the Bay can accommodate more users than the particular day, 38.0% disagreed and 29.6% said not sure.

Interestingly, 47.8% of the sample said that they would spend more time at the bay if it was less crowded. The sample of residents showed a stronger preference of staying longer if less crowded than visitors ($\chi^2 = 4.901$, $p = 0.027$). While 58.4% of the residents said they

would spend more time if less crowded, 45.5% of the visitors agreed with this item.

Table 3.13: Evaluation of Hanauma Bay

Statements	Total (n = 498) (%)	Residents (n = 92) (%)	Visitors (n = 406) (%)	χ^2 ^a	Prob.
What do you think of the environmental quality of Hanauma Bay?					
Deteriorated	8.6	22.0	8.6	69.664	0.000 ^b
Hasn't changed	18.0	48.4	17.4		
Improved	5.7	8.8	7.1		
Don't know	45.2	20.9	66.9		
What do you think of the Bay's natural resources?					
Deteriorating	12.0	18.0	10.7	49.392	0.000 ^b
Hasn't changed	20.7	43.8	15.5		
Improving	9.5	11.2	9.2		
Don't know	57.7	27.0	64.6		
Did the number of people snorkeling negatively impact your enjoyment of today's trip?					
Yes	18.0	23.9	16.7	2.662	0.103
No	82.0	76.1	83.3		
Did the number of people on the beach negatively impact your enjoyment of today's trip?					
Yes	15.2	16.7	14.9	0.188	0.664
No	84.8	83.3	85.1		
Can Hanauma Bay accommodate more visitors than there were today?					
Yes	32.6	33.7	32.3	0.460	0.794
No	38.4	40.2	38.0		
Not Sure	29.0	26.1	29.6		
If the Bay was less crowded, would you spend more time here?					
Yes	47.8	58.4	45.5	4.901	0.027 ^c
No	52.2	41.6	54.5		

^a χ^2 indicates the Chi-square value.

^b Significant at $p < 0.01$

^c Significant at $p < 0.05$

Figures 3.1 to 3.4 display graphic percentage of changes in responses according to the use level. Appendix Figures 6.1 to 6.4 display the graphic percentage of these findings according to the use level by 500. The survey asked to indicate whether or not the number of people snorkeling negatively influenced users' enjoyment. Figure 3 shows that the sample reported more negative influence from the number of snorkelers as the use level increased, particularly at the use level of over 3400 ($r = -.189, p < .01$) (see Tables 6.1, 6.1.2, & 6.1.3 in Appendix for item-to-item correlation). The survey also asked whether or not the number of people on the beach negatively influenced users' enjoyment of the day. Figure 3.2 indicates that percentage of "yes" rose greatly around the use level of over 3000 ($r = -.073, p > .05$). For the question about the capacity of the Bay, respondents appear to indicate that the Bay cannot accommodate more user as with the increase of the use level (Figure 3.3). More respondents said that they would spend more time there if less crowded as the use level rose ($r = -.120, p < .01$) (Figure 3.4).

**Figure 3.1: Changes in Responses According to Use Level:
Did the Number of People Snorkeling Negatively Impact Your Enjoyment of Today's Trip? (n = 494)**

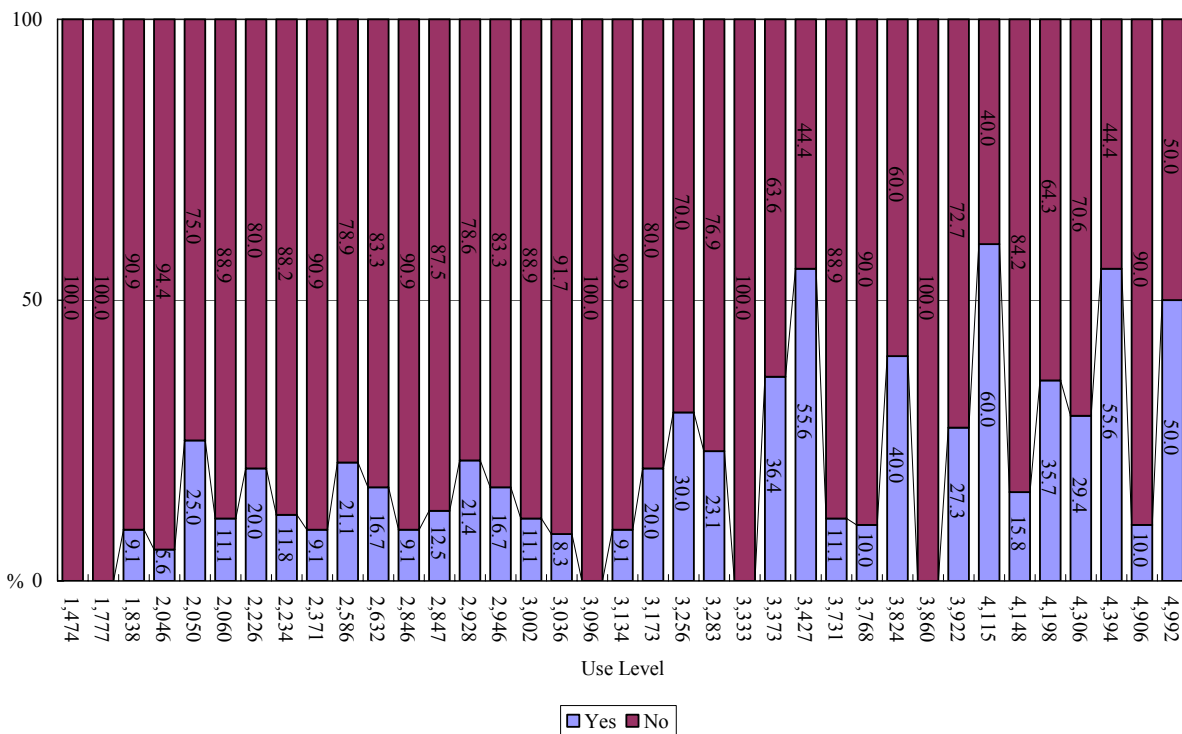


Figure 3.2: Changes in Responses According to Use Level :
Did the Number of People On the Beach Negatively Impact Your Enjoyment of Today's Trip?
 (n = 494)

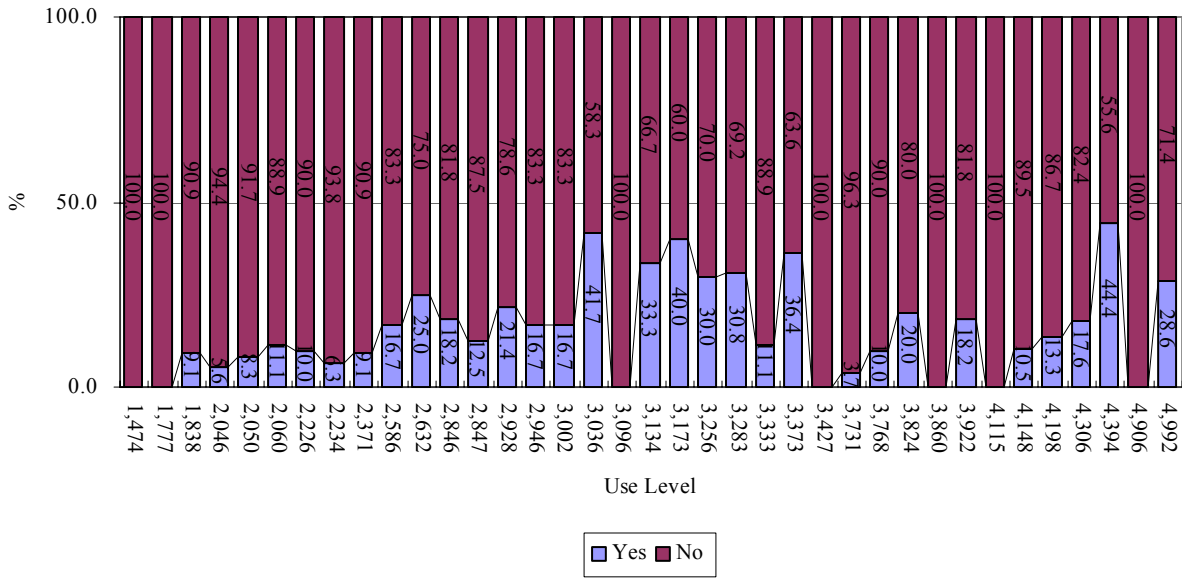
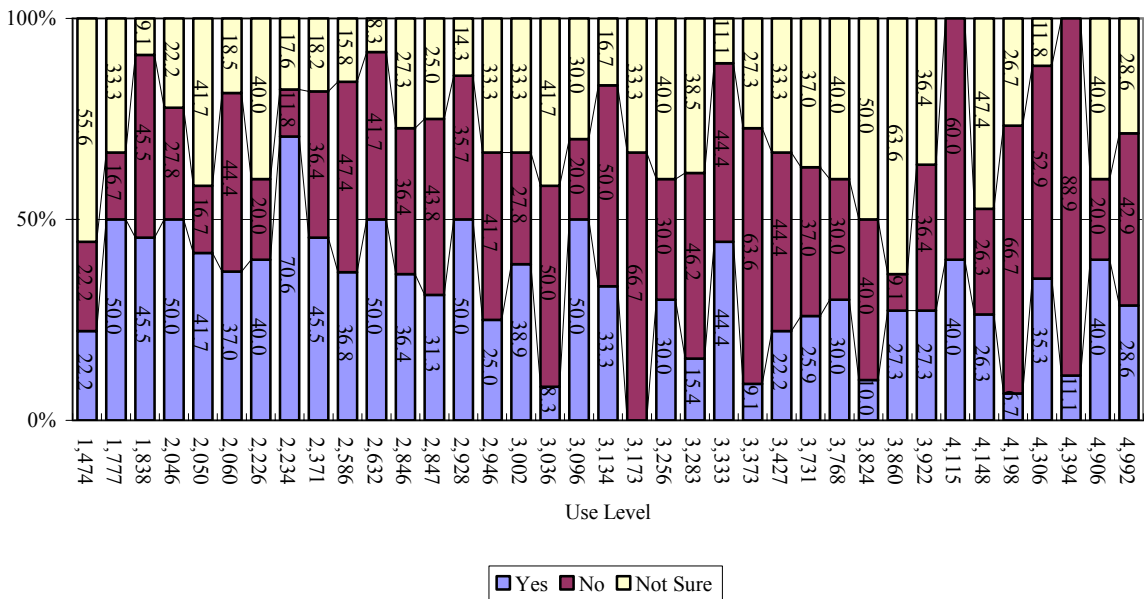
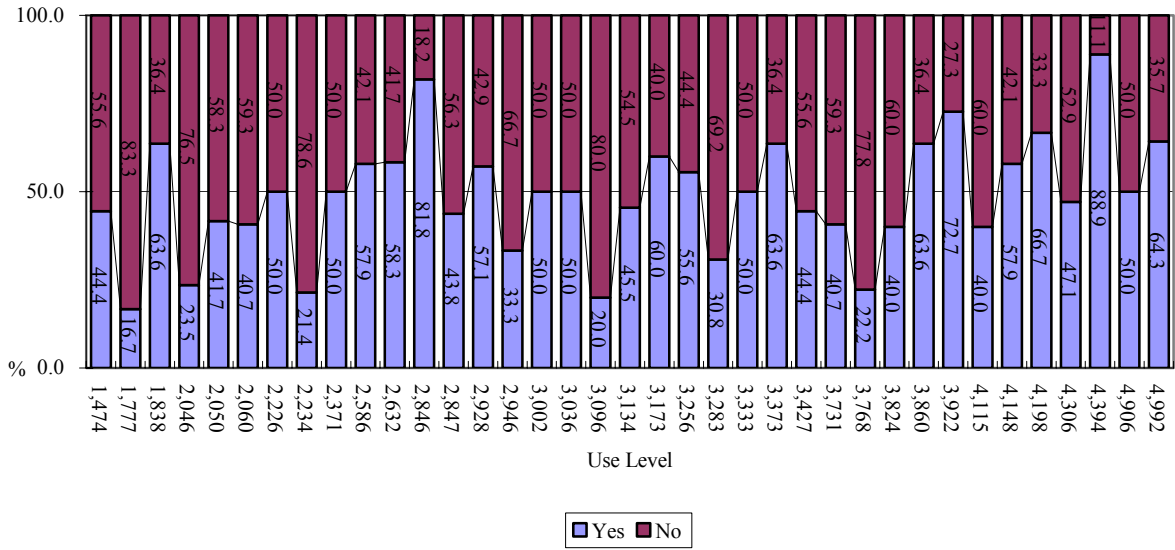


Figure 3.3: Changes in Responses According to Use Level:
Can Hanauma Bay Accommodate More Visitors than There Were Today? (n = 497)



**Figure 3.4: Changes in Responses According to Use Level:
If the Bay was Less Crowded, Would You Spend More Time Here? (n = 485)**



C. Crowding Perceptions

This section summarizes the crowding perceptions of the Bay users. The analysis included a test of differences among residents and visitors, a test of differences between pre and post measures, and the correlation among expected crowding (pre measure), perceived crowding (post measure) and actual total users. The expected crowding (pre-test questionnaire) and perceived crowding (post-test questionnaire) was measured on the traditional nine-point scale where one was not at all crowded and nine was extremely crowded. The total sample reported a higher level of expected crowding than their perceived crowding (post experience score), indicating the sample was aware of crowding in advance. Residents were more sensitive to crowding levels.

Table 3.14 shows the proportional distribution of expected crowding and perceived crowding to each scale. The sample total appears to report lower levels of perceived crowding than they expected. The mean value of expected crowding was 6.3 (moderately crowded) while that of perceived crowding (post experiences) was 5.5 (slightly crowded). Likewise, 95% (n = 96) of the residents expected the level of crowding would be more than slightly crowded while 89.1% (n = 82) actually reported that it was more than slightly crowded. Moreover, 96.9% (n = 492) of the visitors expected the level of crowding would be more than slightly crowded while 90.6% (n = 368) actually reported that it was more than moderately crowded. The mean value of the residents' expectation of crowding was 6.5 (moderately crowded) while that of perceived crowding was 5.5 (slightly crowded), whereas the mean value of visitors' expectation of crowding was 6.2 (moderately crowded) while that of perceived crowding was 5.2 (slightly crowded). A t-test was employed to examine significant mean differences between residents and visitors (Table 3.14). Although residents expected and perceived higher levels of crowding than visitors, the mean values were not significantly different (expected crowding: $t = 1.313$, $p < 0.5$; perceived crowding: $t = 0.076$, $p > 0.5$).

Table 3.14: Descriptive Statistic of Expected Crowding and Perceived Crowding

Statement ^a	Total		Residents		Visitors	
	N	(%)	N	(%)	N	(%)
Pre-test: How crowded do you think it will be today at Hanauma Bay? ^b						
Not at all crowded	7	1.1	1	1.0	6	1.2
	14	2.3	4	4.0	10	2.0
Slightly crowded	77	12.6	9	8.9	68	13.4
	17	2.8	3	3.0	14	2.8
Moderately crowded	53	8.7	7	6.9	46	9.1
	128	21.0	16	15.8	112	22.0
Extremely crowded	128	21.0	26	25.7	102	20.1
	94	15.4	16	15.8	78	15.4
	91	14.9	19	18.8	72	14.2
Post-test: How crowded was it today at Hanauma Bay? ^c						
Not at all crowded	24	4.8	5	5.4	19	4.7
	24	4.8	5	5.4	19	4.7
Slightly crowded	60	12.0	10	10.9	50	12.3
	32	6.4	5	5.4	27	6.7
Moderately crowded	53	10.6	9	9.8	44	10.8
	129	25.9	27	29.3	102	25.1
Extremely crowded	118	23.7	15	16.3	103	25.4
	47	9.4	15	16.3	32	7.9
	11	2.2	1	1.1	10	2.5

^a Nine-point Likert where 1 = not at all crowded and 9 = extremely crowded.

^b Total \bar{X} = 6.3; residents \bar{X} = 6.5; visitors \bar{X} = 6.2. The mean value of residents is not statistically different than that of visitors. $t = 1.313$, $p = 0.193$.

^c Total \bar{X} = 5.5; residents \bar{X} = 5.5; visitors \bar{X} = 5.2. The mean value of residents is not statistically different than that of visitors. $t = 0.076$, $p = 0.940$.

A paired-t test was conducted to test mean differences between pre and post-test perceptions of crowding. As Table 3.15 shows, the sample expected a higher level of crowding than they perceived ($t = 6.519$, $p = 0.000$). Table 3.15.2 indicates the paired-t test of pre and

post-test differences by residents and visitors. Both groups expected a higher level of crowding than perceived (residents: $t = 3.980$, $p = 0.000$; visitors: $t = 5.360$, $p = 0.000$). The lowered perceived crowding (post experience score) may indicate that the sample was prepared to experience a certain level of crowding prior to visitation, and experienced a lower level of crowding than expected. It can be assumed that the sample knew about the crowding.

Table 3.15: Paired t-test on Differences between Expected and Perceived Crowding

	n	\bar{X}		t-value	Prob.
		Pre	Post		
Perceived Crowding ^a	482	6.2	5.5	6.519	0.000 ^b

^a Nine-point Likert scale where 1= not at all crowded and 9 = extremely crowded.

^b Significant at $p < 0.01$.

Table 3.15.2: Paired t-test on Differences between Expected and Perceived Crowding by Residents and Visitors

Variable	Group	n	\bar{X}		t-value	Prob.
			Pre	Post		
Perceived Crowding ^a	Residents	91	6.5	5.6	3.980	0.000 ^b
	Visitors	391	6.2	5.5	5.360	0.000 ^b

^a Nine-point Likert scale where 1= not at all crowded and 9 = extremely crowded.

^b Significant $p < 0.01$.

Users may learn about potential crowding levels through their past experiences as well as other information sources. In fact, expected crowding significantly correlated with the number of visits ($r = -0.115$, $p < 0.01$), when they last visited the site ($r = -0.154$, $p < 0.05$), and familiarity with the Bay ($r = 0.099$, $p < 0.05$) (see Tables 6.1, 6.1.2, & 6.1.3 in Appendix for item-to-item correlation). The response indicates that those who previously visited the Bay were more likely to expect a higher level of crowding. The more recent their last visit, the lower the level of expected crowding. This is plausible since use levels of the Bay were higher in the past. The sample also indicated that the more familiarity with the Bay, the higher level of expected crowding. As such the information sources identified in Table 3.6 may effectively be

utilized to inform users of the potential level of crowding.

Moreover, Pearson correlation coefficients were employed to further identify associations among those who expected crowding (pre experience questionnaire), those who perceived crowding (post experience questionnaire) and total actual users. Table 3.16 shows that perceived crowding is significantly but weakly correlated with expectation of crowding ($r = 0.362, p = 0.000$) and total users ($r = 0.359, p = 0.000$). Although the sample reported lower levels of perceived crowding than expected crowding, those who rated crowding high in the pre-test appeared to have rated high in the post-test. The result also indicates that the higher the daily user count, the more crowding was perceived. The correlation of the above items appeared to be higher for residents.

Table 3.16: Correlations among Total User Count, Expected Crowding and Perceived Crowding

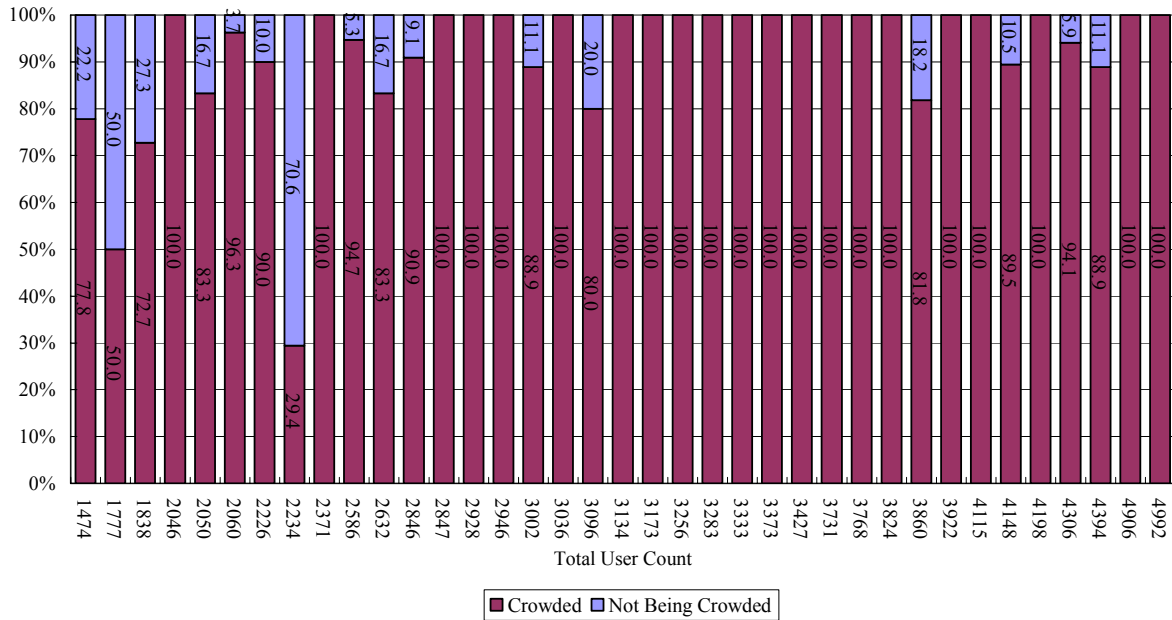
Variables	Total			Residents			Visitors		
	n	r	p	n	r	p	n	r	p
	Perceived Crowding ^a								
Expectation of Crowding ^a	609	0.362	0.000 ^b	101	0.467	0.000 ^b	508	0.336	0.000 ^b
Total Users	498	0.359	0.000 ^b	92	0.464	0.000 ^b	406	0.339	0.000 ^b

^a Nine-point Likert scale where 1 = not at all crowded and 9 = extremely crowded.

^b $p < 0.01$.

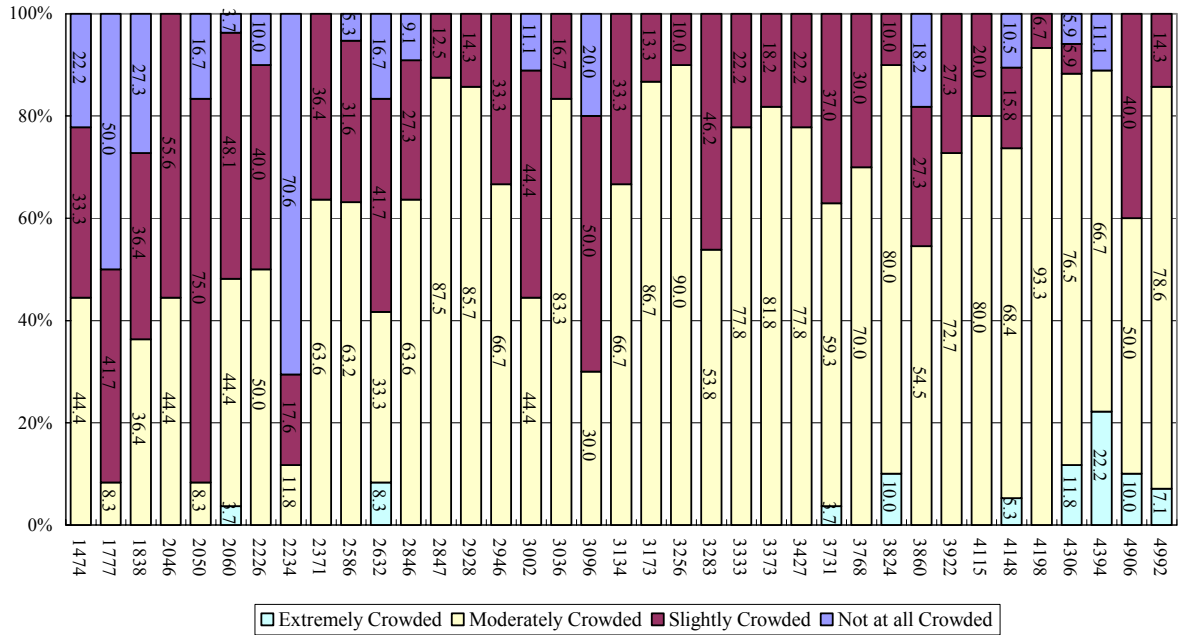
Figure 3.5 shows changes in perceived level of crowding according to use level. The X axis indicates total number of users on the survey day in ascending order. Perceived crowding was measured on a nine-point scale where 1 = not at all crowded, 3 = slightly crowded, 6 = moderately crowded, and 9 = extremely crowded, and it was labeled scale points 1 and 2 as not being crowded (a positive evaluation), and 3 through 9 as being crowded (a negative evaluation) (Shelby, B., Vaske, J., & Heberlein, T. A., 1989). Appendix Figures 6.5 to 6.5.2 display the graphic percentage of these findings according to the total user count by 500. When use level exceeded 3100, crowding was consistently perceived. Figure 3.5.2 shows the detailed response of perceived crowding. Respondents increasingly indicated it was extremely crowded at the use level above 3700 visitors. Fluctuation of the percentage may have been derived from the variability of user perceptions.

**Figure 3.5: Changes in Responses According to Use Level:
How Crowded Was It Today at Hanauma Bay? (2-Scale)**



Perceived Crowding was measured on the nine-point Likert where 1 = not at all crowded, 3 = slightly crowded, 6 = moderately crowded, and 9 = extremely crowded and coded as less than 3 = not being crowded and 3 and above = crowded.

**Figure 3.5.2: Changes in Responses According to Use Level:
How Crowded Was It Today at Hanauma Bay? (4-scale)**



Perceived Crowding was measured on the nine-point Likert where 1 = not at all crowded, 3 = slightly crowded, 6 = moderately crowded, and 9 = extremely crowded.

D. Pre-and-Post Experience Preferences and Benefits Sought and Achieved at Hanauma Bay

This section summarizes perceived preferences and benefits prior to and after the recreational experiences at the Bay. The analyses include factor analysis, brief description of the proportional distribution, tests of differences residents and visitors, a test of differences between pre and post tests, and a test of correlations to determine which preferences / benefits factor is associated with total number of users and perceived crowding.

Pre-and-Post Experience Preferences

Eleven experience preferences were measured on a three-point scale (Table 3.17). Experiences are defined as the types of natural resources, facilities, and activities that the visitor expected to see and they do while at the Bay. The pre-test questionnaires was coded on a scale with: 1 = “not expected to see/do,” 2 = “not sure,” and 3 = “expect to see/do.” The coding in the post-test questionnaires was 1 = “worse than expected,” 2 = “what I expected,” and 3 = “better than expected.” The total sample expressed relatively high levels of expectations, and the expectations were generally met. Residents expressed higher levels of expectations and a lower level of expectations being met. Although the results indicated user expectations were generally met, the Bay may need to focus their management efforts to exceed user expectations in order to achieve repeat users. For example, the results showed that as the use level increases, the Physical Facilities (i.e., clean facilities and adequate parking) was increasingly considered as worse than expected. The frequent use of the facility may make facilities less clean and parking harder to secure. The sample also felt that the entrance fee and the number of people at the Bay was more than they expected as the total users at the Bay increased.

Pre-test items were first factor analyzed (principle components with Oblique rotation) and post-test items were categorized based on the identified factors. Items were categorized into four factors comprised of Natural Resources & Snorkeling (five items), Physical Facilities (two items), Fee & Number of People (two items), and Activities (two items) (see Table 6.2 in Appendix for the items categorized in each factor).

Table 3.17 indicates standardized Alpha and the distributions of each item. Standardized Alpha of the factors ranged from 0.33 to 0.77. The pre and post-test “natural resources & snorkeling” and post-test “activities” exceeded 0.60 while other factors expressed some

instability and inconsistency of the item sets (see Appendix Table 6.3 for the correlated item-total correlation and Cronbach Alpha Coefficients for pre experience and post experience preferences). In the pre-test, the majority of the sample said that they expected most of these experience preferences.

Paired t-tests were used to examine the mean differences between the matched pre experience and post experience items. Pre experience test items were coded on: 1 = not expected to see/do, 2 = not sure, and 3 = expect to see. Post experience test items were coded on: 1 = worse than I expected, 2 = what I expected, and 3 = better than I expected.

As listed in Table 3.18, all the experience preference factors achieved significant pre and post differences ($p = 0.000$). In the post-test, the mean values of all the items was significantly lower than the pre-test, indicating the sample's expectations were relatively poorly met

Table 3.18.2 presents the paired t-test on the differences between pre and post experience preferences by residents and visitors. All the factors of experience preferences were significantly different. Both visitors and residents groups indicated more positive expectations than actual experiences.

In general, residents expressed higher expectations of the site and rated experiences lower than visitors (Table 3.19). Particularly, residents had significantly higher expectations than visitors to see abundant marine life ($t = 2.263, p < 0.05$) and to see lots of people ($t = 2.183, p < 0.05$). The fact that residents indicated more familiarity of the Bay in the previous section may also support this outcome (see Table 3.10). In the post-test, beautiful scenery ($t = -2.153, p < 0.01$) physical facilities ($t = -1.966, p < 0.01$), and cleanliness of facilities ($t = -3.067, p < 0.01$) achieved significant mean differences between residents and visitors. Residents reported lower levels of expectations met than visitors with regard to seeing beautiful scenery, availability of physical facilities, and seeing clean facilities.

Table 3.17: Factor and Descriptive Statistics of Pre Experience and Post Experience Preferences

What do you expect to see/do at Hanauma Bay?		N	Not expected to see/do (%)	Not sure (%)	Expect to see/do (%)	\bar{X}
Pre-test Factor 1: Natural Resources & Snorkeling ^a		(0.70) ^d				
	Beautiful Scenery	601	0.2	5.7	94.2	2.9
	Abundant marine life	606	1.2	6.9	91.9	2.9
	Snorkeling	607	3.1	5.1	91.8	2.9
	Clean ocean water	606	0.7	10.6	88.8	2.9
	Great reefs and corals	603	2.0	10.4	87.6	2.9
Pre-test Factor 2: Physical Facilities ^a		(0.52) ^d				
	Clean facilities	603	2.2	23.5	74.3	2.7
	Adequate parking	597	14.4	31.7	53.9	2.4
Pre-test Factor 3: Fee & Number of People ^a		(0.48) ^d				
	Lots of people	588	7.1	23.5	69.4	2.6
	Entrance fee	588	16.2	24.0	59.9	2.4
Pre-test Factor 4: Activities ^a		(0.51) ^d				
	Swimming	602	1.7	7.3	91.0	2.9
	Sunbathing	599	7.7	12.0	80.3	2.7
What did you see/do at Hanauma Bay?		N	Worse than I expected (%)	What I expected (%)	Better than I expected (%)	\bar{X}
Post-test Factor 1: Natural Resources & Snorkeling ^b		(0.77) ^c				
	Beautiful Scenery	493	2.6	85.4	12.0	2.1
	Abundant marine life	489	22.5	66.9	10.6	1.9
	Snorkeling	483	9.7	81.4	8.9	2.0
	Clean ocean water	493	10.5	82.6	6.9	2.0
	Great reefs and corals	485	18.8	72.4	8.9	1.9
Post-test Factor 2: Physical Facilities ^b		(0.18) ^c				
	Clean facilities	485	9.3	84.5	6.2	2.0
	Adequate parking	482	15.1	76.3	8.5	1.9
Post-test Factor 3: Fee & Number of People ^c		(0.33) ^c				
	Lots of people	484	17.4	73.1	9.5	2.1
	Entrance fee	492	11.4	75.0	13.6	2.0
Post-test Factor 4: Activities ^b		(0.73) ^c				
	Swimming	482	5.2	89.2	5.6	2.0
	Sunbathing	479	4.2	91.4	4.4	2.0

^a 1= not expected to see/do, 2 = not sure and 3 = expect to see/do.
^b 1= worse than I expected, 2 = what I expected and 3 = better than I expected.
^c (alpha).

Table 3.18: Paired t-test on Differences between Pre Experience and Post Experience Preferences

Variable	n	\bar{X}		t-value	Prob.	
		Pre ^a	Post ^b			
Factor 1: Natural Resources & Snorkeling ^c	446	14.5	9.8	47.284	0.000	^e
Abundant marine life	475	2.9	1.9	35.071	0.000	^e
Great reefs and corals	470	2.8	1.9	30.656	0.000	^e
Beautiful Scenery	472	2.9	2.1	42.420	0.000	^e
Clean ocean water	475	2.9	2.0	35.888	0.000	^e
Snorkeling	469	2.9	2.0	34.125	0.000	^e
Factor 2: Physical Facilities ^d	448	5.1	3.9	21.258	0.000	^e
Clean facilities	467	2.7	2.0	25.148	0.000	^e
Adequate parking	461	2.4	1.9	11.899	0.000	^e
Factor 3: Fee & Number of People ^d	453	5.1	4.1	19.402	0.000	^e
Entrance fee	466	2.5	2.0	13.941	0.000	^e
Lots of people	460	2.6	2.1	15.804	0.000	^e
Factor 4: Activities ^d	455	5.6	4.0	34.553	0.000	^e
Swimming	465	2.9	2.0	38.274	0.000	^e
Sunbathing	460	2.7	2.0	23.504	0.000	^e

^a 1= not expected to see/do, 2 = not sure and 3 = expect to see/do.

^b 1= worse than I expected, 2 = what I expected and 3 = better than I expected.

^c Due to five collapsed variables, mean value 1 to 5 = not expected to see/worse than expected, 6 to 10 = not sure/what I expected and 11 to 15 = expect to see/better than I expected.

^d Due to two collapsed variables, mean value 1 & 2 = not expected to see/worse than I expected, 3 & 4 = not sure/what I expected and 5 & 6 = expect to see/better than I expected.

^e p < 0.01.

Table 3.18.2: Paired t-test on Differences between Pre Experience and Post Experience Preferences by Residents and Visitors

Variables	Residents					Visitors				
	n	\bar{X}		t-value	Prob.	n	\bar{X}		t-value	Prob.
		Pre ^a	Post ^b				Pre ^a	Post ^b		
Factor 1: Natural Resources & Snorkeling ^c	88	14.6	9.6	28.627	0.000 ^e	358	14.4	9.9	39.895	0.000 ^e
Abundant marine life	91	3.0	1.8	18.573	0.000 ^e	384	2.9	1.9	30.250	0.000 ^e
Great reefs and corals	90	2.9	1.8	16.571	0.000 ^e	380	2.8	1.9	26.326	0.000 ^e
Beautiful Scenery	91	3.0	2.0	27.276	0.000 ^e	381	2.9	2.1	35.562	0.000 ^e
Clean ocean water	90	1.1	1.9	-14.726	0.000 ^e	385	1.1	2.0	-30.341	0.000 ^e
Snorkeling	90	2.9	2.0	17.195	0.000 ^e	379	2.9	2.0	29.750	0.000 ^e
Factor 2: Physical Facilities ^d	88	5.2	3.8	11.669	0.000 ^e	360	5.1	3.9	18.084	0.000 ^e
Clean facilities	88	2.7	1.9	12.247	0.000 ^e	379	2.7	2.0	22.057	0.000 ^e
Adequate parking	91	2.5	1.9	7.005	0.000 ^e	370	2.4	1.9	9.929	0.000 ^e
Factor 3: Fee & Number of People ^d	86	5.1	4.2	6.877	0.000 ^e	367	5.1	4.0	18.360	0.000 ^e
Entrance fee	88	2.4	2.0	3.740	0.000 ^e	378	2.5	2.0	13.972	0.000 ^e
Lots of people	87	2.7	2.1	7.231	0.000 ^e	373	2.6	2.1	14.044	0.000 ^e
Factor 4: Activities ^d	84	5.7	4.0	25.142	0.000 ^e	371	5.6	4.0	28.739	0.000 ^e
Swimming	87	2.9	2.0	26.339	0.000 ^e	378	2.9	2.0	32.024	0.000 ^e
Sunbathing	84	2.8	2.0	16.024	0.000 ^e	376	2.7	2.0	19.605	0.000 ^e

^a 1= not expected to see/do, 2 = not sure and 3 = expect to see/do.

^b 1= worse than I expected, 2 = what I expected and 3 = better than I expected.

^c Due to five collapsed variables, mean value 1 to 5 = not expected to see/worse than expected, 6 to 10 = not sure/what I expected and 11 to 15 = expect to see/better than I expected.

^d Due to two collapsed variables, mean value 1 & 2 = not expected to see/worse than I expected, 3 & 4 = not sure/what I expected and 5 & 6 = expect to see/better than I expected.

^f p < 0.01.

Table 3.19: T-test on Resident and Visitor Differences in Experience Preferences

Variable	Pre-test						Post-test					
	Residents		Visitors		t-value	Prob.	Residents		Visitors		t-value	Prob.
	n	\bar{X}^a	n	\bar{X}^a			n	\bar{X}^b	n	\bar{X}^b		
Factor 1: Natural Resources & Snorkeling ^c	100	14.6	486	14.4	1.392	0.164	90	9.6	383	9.9	-1.728	0.085
Abundant marine life	102	3.0	504	2.9	2.263	0.025 ^f	91	1.8	398	1.9	-1.073	0.284
Great reefs and corals	101	2.9	502	2.9	0.424	0.672	91	1.8	394	1.9	-1.350	0.178
Beautiful Scenery	101	3.0	500	2.9	1.772	0.078	92	2.0	401	2.1	-2.153	0.033 ^f
Clean ocean water	101	1.1	505	1.1	-1.095	0.275	91	1.9	402	2.0	-1.866	0.063
Snorkeling	102	2.9	505	2.9	0.428	0.669	90	2.0	393	2.0	-0.439	0.661
Factor 2: Physical Facilities ^d	100	5.3	492	5.1	1.448	0.148	90	3.8	383	3.9	-1.966	0.050 ^f
Clean facilities	100	2.7	503	2.7	0.412	0.681	90	1.9	395	2.0	-3.067	0.002 ^e
Adequate parking	101	2.5	496	2.4	1.515	0.130	92	1.9	390	1.9	-0.214	0.830
Factor 3: Fee & Number of People ^d	98	5.1	482	5.0	0.357	0.721	89	4.2	394	4.0	1.524	0.128
Entrance fee	98	2.4	490	2.5	-1.052	0.295	91	2.0	401	2.0	1.429	0.155
Lots of people	99	2.7	489	2.6	2.183	0.031 ^f	89	2.1	395	2.1	1.147	0.252
Factor 4: Activities ^d	99	5.7	496	5.6	1.764	0.080	87	4.0	389	4.0	-1.077	0.282
Swimming	101	2.9	501	2.9	1.753	0.081	88	2.0	394	2.0	-1.368	0.172
Sunbathing	99	2.8	500	2.7	1.219	0.225	87	2.0	392	2.0	-0.112	0.911

^a 1= not expected to see/do, 2 = not sure and 3 = expect to see/do.

^b 1= worse than I expected, 2 = what I expected and 3 = better than I expected.

^c Due to five collapsed variables, mean value 1 to 5 = not expected to see/worse than expected, 6 to 10 = not sure/what I expected and 11 to 15 = expect to see/better than I expected.

^d Due to two collapsed variables, mean value 1 & 2 = not expected to see/worse than I expected, 3 & 4 = not sure/what I expected and 5 & 6 = expect to see/better than I expected.

^e $p < 0.01$.

^f $p < 0.05$.

Pearson correlation coefficients were employed to identify which factors of post experiences (post-test) can be associated with use levels and perceived crowding. As Table 3.20 shows, total user count significantly but weakly correlated with post-experience physical facilities ($r = -0.112$, $p < 0.05$) and post-experience fee & number of people ($r = -0.188$, $p = 0.000$). The results indicated that the higher the use level (number of actual users), lower ratings for physical facilities (i.e., clean facilities and adequate parking) was indicated (see Table 6.2 in Appendix for the items categorized in each factor).

Table 3.20: Correlations among Total User Counts, Perceived Crowding and Post Experience Preferences Factors

Variables	Total			Residents			Visitors		
	n	r	p	n	r	p	n	r	p
Post Experience Preferences F1: Natural Resources & Snorkeling ^b									
Total User Counts	473	-0.025	0.590	90	0.047	0.659	383	-0.035	0.498
Perceived Crowding ^a	473	-0.072	0.118	90	0.099	0.354	383	-0.103	0.045 ^d
Post Experience Preferences F2: Physical Facilities ^b									
Total User Counts	473	-0.112	0.015 ^d	90	-0.063	0.554	383	-0.121	0.018 ^d
Perceived Crowding ^a	473	0.001	0.979	90	-0.006	0.953	383	0.004	0.932
Post-test Preferences F3: Fee & Number of People ^b									
Total User Counts	483	-0.188	0.000 ^c	89	-0.234	0.028 ^d	394	-0.184	0.000 ^c
Perceived Crowding ^a	483	-0.316	0.000 ^c	89	-0.259	0.014 ^d	394	-0.331	0.000 ^c
Post Experience Preferences F4: Activities ^b									
Total User Counts	476	-0.044	0.336	87	-0.156	0.148	389	-0.037	0.471
Perceived Crowding ^a	476	-0.036	0.435	87	-0.049	0.653	389	-0.036	0.477

^a Nine-point Likert scale where 1 = not at all crowded and 9 = extremely crowded.

^b 1 = worse than expected, 2 = what I expected and 3 = better than expected.

^c $p < 0.01$.

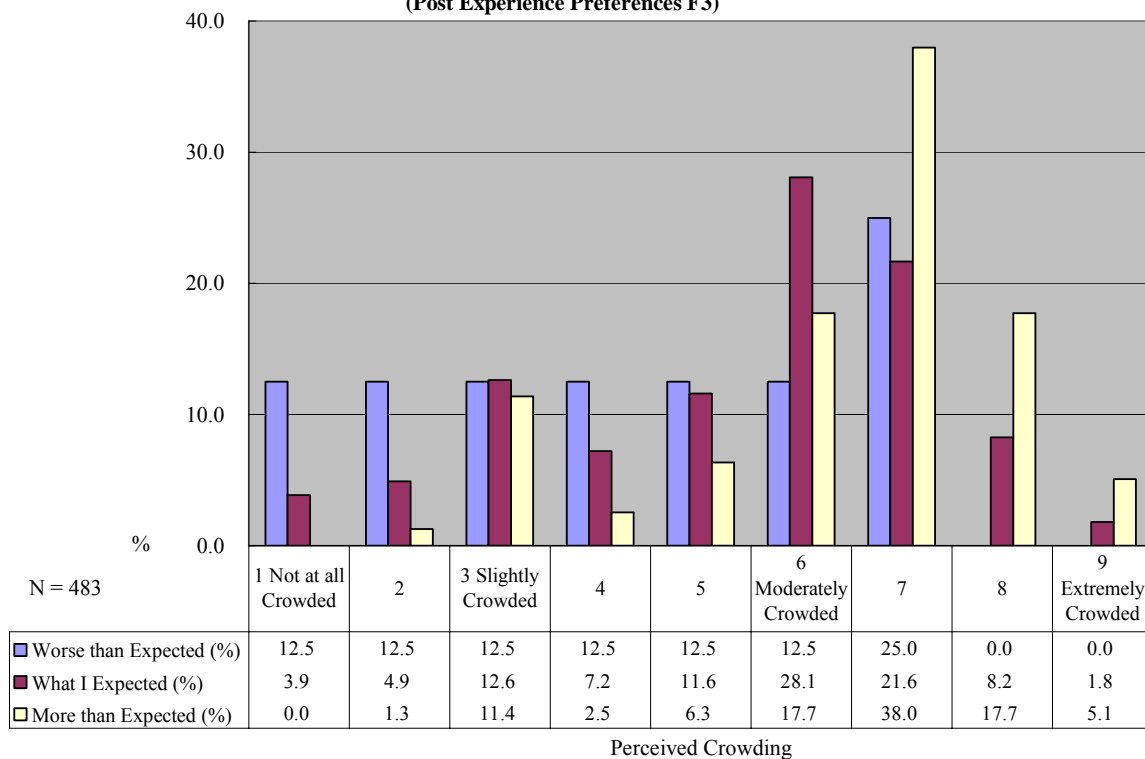
^d $p < 0.05$.

Both residents' and visitors' post-experience fee and number of people showed a significant correlation with the total user count (residents: $r = -0.234$, $p < 0.05$; visitors: $r = -0.184$, $p = 0.000$) and with perceived crowding (residents: $r = -0.259$, $p < 0.05$; visitors: $r = -0.331$, $p = 0.000$) (Table 3.20). Visitors rated seeing natural resources and snorkeling experiences lower as they perceived more crowding ($r = -0.103$, $p < 0.05$). The visitors' rating for physical facilities (i.e., facilities and parking) was also lowered as the total use level increased (r

= -0.121, p < 0.05).

The post-experience ratings of fees and the number of people were the only factors in experience preferences which achieved a significant correlation with perceived crowding (Table 3.20). Each unit measure for fee and the number of people was further examined by perceived crowding. Figure 3.6 shows the distribution of fee and the number of people rating within each measure of perceived crowding (see Appendix, Figures 6.1, 6.1.2, and 6.1.3 for other preferences factors). Overall, negative perceptions (i.e., more than expected) appear to increase as perceived crowding measures increase. Of those who said the entrance fee and the number of people was “more than expected,” 38% reported perceived crowding at a level of 7.0. On the other hand, of the sample who said the fee and use level was “what I expected,” 28% reported that it was moderately crowded (6.0). Twenty five percent of the positive response, “worse than expected,” however reported higher levels of perceived crowding (7.0).

Figure 3.6: Degree of Perceived Crowding within each Scale of Post Experience Fee & the Number of People (Post Experience Preferences F3) ^a



Figures 3.7 and 3.7.2 shows the correlations among total user count, perceived crowding and the post experience factors. The daily means of each factor and perceived crowding were extracted. The data were then sorted according to the Bay’s actual user count by survey day

which was pre-sorted in the ascending order.

Figure 3.7 shows that as the total number of actual users increases, physical facilities (i.e., clean facilities and parking availability) was likely to be considered as “worse than expected.” Natural resources and activities appear to have similar tendency, but it seems not as distinctive as physical facilities.

Figure 3.7: Fluctuation of Perceived Crowding and Post Experience Rating of Pre Experience Preferences Factors According to Use Level

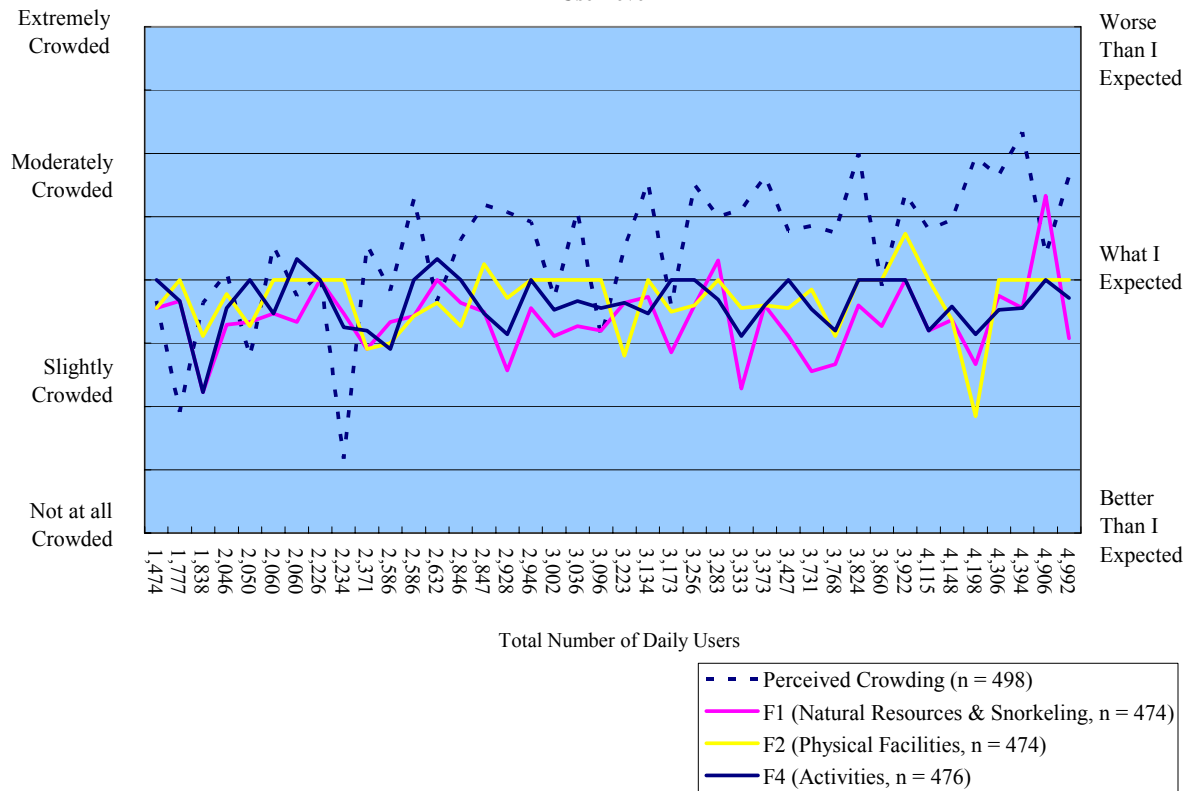
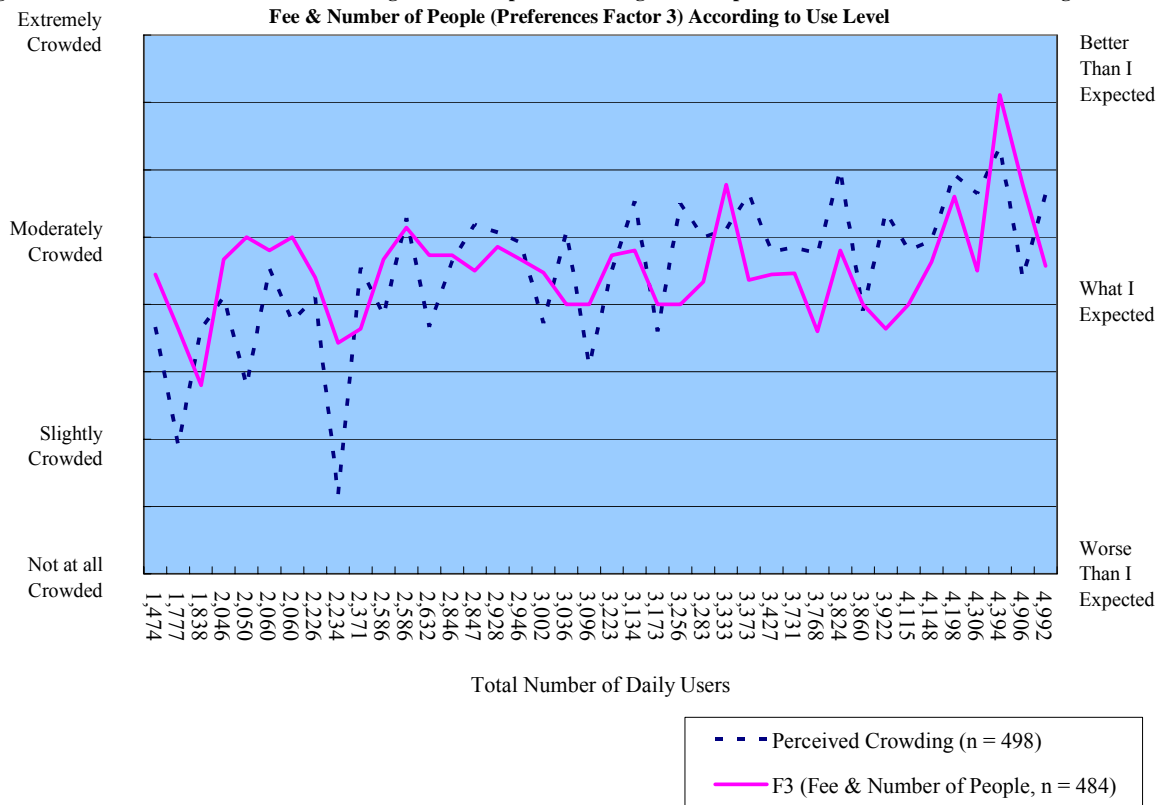


Figure 3.7.2 shows the fluctuation of perceived crowding and post experience preferences for fees and number of people (Experience Preferences Factor 3). Fees and the number of people were likely to be considered as “more than expected” as the total number of the users increased. Respondents tended to feel that they saw more people than expected, and that the fee was more than expected as use level increased.

Figure 3.7.2: Fluctuation of Perceived Crowding and Post Experience Rating of Pre Experience Preferences Factor According to Use Level
Fee & Number of People (Preferences Factor 3) According to Use Level



Sought and Perceived Benefits of the Experience

Similar to experience preferences, users of the Bay were allowed to indicate which type of personal benefits they sought while at the Bay. These statements were asked in the pre-experience (pre-test) questions and again in the post-experience (post-test) questions (See Table 3.21).

The benefits were measured on a five-point Likert scale where 1 = strongly agree and 5 = strongly disagree. In the pre-test questionnaire, respondents were asked to indicate their level of agreement with ten items that they intended to experience, while in the post-test questionnaire, indicated was their level of agreement with the matched ten items that they experienced. Factor analysis was conducted and reliability analysis was used to evaluate the stability and consistency of each factor. Pre-test items were first factor analyzed and post-test items were grouped based on the identified factors. Items were categorized into three factors comprised of learning benefits (three items), leisure and bonding benefits (four items), and environmental benefits (three items) (see Table 6.4 in Appendix for the items categorized in each factor).

Table 3.21: Factor Analysis and Descriptive Statistics of Pre Experience and Post Experience Benefits

Statement		N	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	\bar{X}^a
			(%)	(%)	(%)	(%)	(%)	
What are the kinds of things do you want to experience today?								
Pre-test Factor 1: Learning		(0.77) ^b						
	To learn about nature	592	26.0	42.6	26.0	3.4	2.0	2.1
	Expand my world view	583	25.7	35.3	30.0	6.0	2.9	2.3
	Increase environmental awareness	587	19.1	34.8	37.5	6.0	2.7	2.4
Pre-test Factor 2: Leisure & Bonding		(0.73) ^b						
	To change mood positively	588	29.4	39.6	25.3	2.7	2.9	2.1
	Gain a sense of freedom	591	27.4	37.1	29.9	3.0	2.5	2.2
	Bond with your family	595	29.6	31.3	26.4	5.9	6.9	2.3
	Socially bond with friends	577	26.3	30.0	31.4	6.8	5.5	2.4
Pre-test : Environmental Attributes		(0.77) ^b						
	See abundant marine life	605	68.9	22.3	6.3	0.8	1.7	1.4
	View natural sites	603	55.2	34.5	7.6	0.8	1.8	1.6
	To be adventurous	595	28.1	46.2	19.5	4.0	2.2	2.1
Did you experience any of the following while visiting Hanauma Bay?								
Post-test Factor 1: Learning		(0.77) ^b						
	To learn about nature	483	14.7	37.3	42.7	3.9	1.4	2.4
	Expand my world view	479	20.0	39.5	35.5	4.0	1.0	2.3
	Increase environmental awareness	483	17.8	44.5	32.9	3.3	1.4	2.3
Post-test Factor 2: Leisure & Bonding		(0.74) ^b						
	To change mood positively	483	31.9	48.2	16.4	2.5	1.0	1.9
	Gain a sense of freedom	479	28.8	40.7	26.3	3.1	1.0	2.1
	Bond with your family	470	26.6	36.0	31.7	3.2	2.6	2.2
	Socially bond with friends	466	20.8	35.4	38.6	3.4	1.7	2.3
Post-test Factor 3: Environmental Attributes		(0.79) ^b						
	See abundant marine life	482	38.2	41.1	13.3	5.6	1.9	1.9
	View natural sites	484	38.6	47.3	12.2	1.7	0.2	1.8
	To be adventurous	483	24.0	48.9	22.8	2.9	1.4	2.1

^a Five-point Likert where 1 = strongly agree and 5 = strongly disagree.

^b (alpha)

Table 3.21 indicates standardized Alpha and distribution of each item. Alpha of all factors exceeded 0.60 showing stability and consistency the sets of items (see Appendix Table 6.3 for the correlated item-total correlation and Cronbach Alpha Coefficients for pre-post benefits). Both in the pre and post-test, the majority of the sample responded positively, indicating high degree of intention of experiencing the listed benefits (see Appendix Table 6.5 for the correlated item-total correlation and Cronbach Alpha Coefficients for pre experience and post

experience benefits).

In the pre-test questionnaire environmental attributes appeared to be most supported by the sample: 68.9% of the sample strongly agreed with their intention to see abundant marine life and 55.2% of the sample strongly agreed with viewing natural site (Table 3.21). The mean values of these items fell under agree to strongly agree with 1.4 and 1.6 respectively. The degree of agreement however changed before and after the use of the Bay. The respondents perceived better leisure and bonding benefits while they experienced less learning and environmental benefits than they planned. In the post test questionnaire, only 38.2% of the sample strongly agreed with the perceived benefits by seeing abundant marine life and 38.6% of the sample strongly agreed with viewing natural resources. The mean values of these items still fell under agree to strongly agree with 1.9 and 1.8 respectively.

Paired t-test was generated to examine the mean differences between the matched pre and post-test items. There were significant pre-post differences: learning benefits ($t = -2.156$, $p < 0.05$); leisure and bonding benefits ($t = 2.587$, $p < 0.05$) and environmental benefits ($t = -6.461$, $p = 0.000$) whereas all the mean values stayed within agree to strongly agree (see Table 3.22). The mean values of learning benefits and environmental benefits increased (Mean = 6.7 to 6.9, Mean = 5.0 to 5.8 respectively), indicating less of a benefit attainment.

Table 3.22: Paired t-test on Differences between Pre Experience and Post Experience Benefits						
Variables	n	\bar{X}^a		t-value	Prob.	
		Pre	Post			
Factor 1: Learning ^b	438	6.7	6.9	-2.156	0.032	^e
Increase environmental awareness	453	2.4	2.3	2.055	0.040	^e
To learn about nature	456	2.1	2.4	-5.623	0.000	^d
Expand my world view	448	2.2	2.3	-0.966	0.335	
Factor 2: Leisure & Bonding ^c	414	8.8	8.5	2.587	0.010	^e
Gain a sense of freedom	453	2.1	2.1	1.117	0.265	
To change mood positively	453	2.1	1.9	3.261	0.001	^d
Socially bond with friends	437	2.3	2.3	1.128	0.260	
Bond with your family	451	2.3	2.2	2.097	0.037	^e
Factor 3: Environmental Attributes ^b	450	5.0	5.8	-6.461	0.000	^d
See abundant marine life	465	1.4	1.9	-9.446	0.000	^d
View natural sites	466	1.6	1.8	-4.640	0.000	^d
To be adventurous	460	2.0	2.1	-1.142	0.254	
^a Five-point Likert where 1 = strongly agree and 5 = strongly disagree.						
^b Due to three collapsed variables, mean value 1 to 3 = strongly agree, 4 to 6 = agree, 7 to 9 Neutral, 10 to 12 = disagree and 13 to 15 = strongly disagree.						
^c Due to four collapsed variables, mean value 1 to 4 = strongly agree, 5 to 8 = agree, 9 to 12 = Neutral, 13 to 16 = disagree and 17 to 20 = strongly disagree.						
^d Significant at $p < 0.01$.						
^e Significant at $p < 0.05$.						

Table 3.22.2 indicates paired t-test on differences between pre-post benefits by residents and visitors. Interestingly, all of the mean values of residents' benefits items increased, indicating the sample residents perceived fewer benefits than they planned. Residents achieved significant pre-post differences only in one category, environmental attributes ($t = -2.668$, $p = 0.009$). In particular, residents significantly lowered their level of agreement after the experience about seeing abundant marine life ($t = -4.505$, $p = 0.000$). On the other hand, visitor respondents achieved significance in all factors: learning benefits ($t = -2.184$, $p = 0.030$); leisure

and bonding benefits ($t = 3.090$, $p = 0.002$) and environmental attributes ($t = -5.879$, $p = 0.000$). Visitors reported better leisure and bonding benefits than they planned: they perceived more benefits than they planned in terms of changing mood positively ($p = 0.000$) and bonding with their family ($p = 0.012$). The visitor respondents reported significantly less learning benefits particularly to learn about nature ($t = -5.434$, $p = 0.000$), and less perceived benefits regarding environmental attributes including to see abundant marine life ($t = -8.531$, $p = 0.000$) and to view natural sites ($t = -4.381$, $p = 0.000$).

Table 3.22.2: Paired t-test on Differences between Pre Experience and Post Experience Benefits by Residents and Visitors

Variables	Residents					Visitors				
	n	\bar{X}^a		t-value	Prob.	n	\bar{X}^a		t-value	Prob.
		Pre	Post				Pre	Post		
Factor 1: Learning ^b	85	7.0	7.1	-0.470	0.639	353	6.7	6.9	-2.184	0.030 ^e
Increase environmental awareness	88	2.4	2.3	1.149	0.254	365	2.3	2.2	1.732	0.084
To learn about nature	88	2.2	2.4	-1.621	0.109	368	2.1	2.4	-5.434	0.000 ^d
Expand my world view	85	2.3	2.4	-0.553	0.582	363	2.2	2.2	-0.800	0.424
Factor 2: Leisure & Bonding ^c	74	8.3	8.5	-0.571	0.570	340	9.0	8.5	3.090	0.002 ^d
Gain a sense of freedom	87	2.0	2.0	-0.523	0.602	366	2.1	2.1	1.395	0.164
To change mood positively	85	2.0	2.0	-0.108	0.914	368	2.1	1.9	3.704	0.000 ^d
Socially bond with friends	84	2.0	2.1	-1.101	0.274	353	2.4	2.3	1.799	0.073
Bond with your family	83	2.3	2.3	-0.210	0.834	368	2.3	2.1	2.522	0.012 ^e
Factor 3: Environmental Attributes ^b	87	5.3	5.9	-2.668	0.009 ^d	363	5.0	5.7	-5.879	0.000 ^d
See abundant marine life	88	1.5	2.0	-4.505	0.000 ^d	377	1.4	1.9	-8.351	0.000 ^d
View natural sites	87	1.7	1.9	-1.562	0.122	379	1.5	1.7	-4.382	0.000 ^d
To be adventurous	89	2.1	2.1	-0.112	0.911	371	2.0	2.1	-1.208	0.228

^a Five-point Likert where 1 = strongly agree and 5 = strongly disagree.

^b Due to three collapsed variables, mean value 1 to 3 = strongly agree, 4 to 6 = agree, 7 to 9 Neutral, 10 to 12 = disagree and 13 to 15 = strongly disagree.

^c Due to four collapsed variables, mean value 1 to 4 = strongly agree, 5 to 8 = agree, 9 to 12 = Neutral, 13 to 16 = disagree and 17 to 20 = strongly disagree.

^d $p < 0.01$.

^e $p < 0.05$.

Moreover, t-test was conducted to identify visitor-resident perceptible differences in benefits (Table 3.23). Residents sought more benefits of leisure and bonding than visitors ($t = -2.213$, $p < 0.05$) particularly social bond with friends ($t = -3.892$, $p < 0.01$). The sample residents also perceived significantly higher benefits of social bonding ($t = -2.841$, $p < 0.01$).

Table 3.23: T-test on Resident and Visitor Differences in Benefits

Variables	Pre-test						Post-test					
	Residents		Visitors		t-value	Prob.	Residents		Visitors		t-value	Prob.
	n	\bar{X}^a	n	\bar{X}^a			n	\bar{X}^a	n	\bar{X}^a		
Factor 1: Learning ^b	97	7.0	474	6.8	0.807	0.420	87	7.1	388	6.9	0.830	0.407
Increase environmental awareness	100	2.4	487	2.4	0.289	0.773	89	2.3	394	2.2	0.809	0.419
To learn about nature	100	2.2	492	2.1	0.503	0.615	90	2.4	393	2.4	-0.160	0.873
Expand my world view	97	2.4	486	2.2	1.080	0.280	88	2.4	391	2.2	1.742	0.082
Factor 2: Leisure & Bonding ^c	92	8.3	470	9.1	-2.213	0.027 ^e	80	8.5	368	8.6	-0.059	0.953
Gain a sense of freedom	99	2.0	492	2.2	-1.521	0.129	89	2.1	390	2.1	0.116	0.907
To change mood positively	98	2.0	490	2.1	-1.375	0.170	89	2.0	394	1.9	0.664	0.507
Socially bond with friends	99	2.0	478	2.4	-3.892	0.000 ^d	87	2.1	379	2.4	-2.841	0.005 ^d
Bond with your family	98	2.3	497	2.3	-0.159	0.874	84	2.3	386	2.2	1.329	0.187
Factor 3: Environmental Attributes ^b	100	5.4	488	5.1	1.521	0.129	88	5.9	389	5.8	0.700	0.484
See abundant marine life	101	1.6	504	1.4	1.606	0.109	89	2.0	393	1.9	0.766	0.444
View natural sites	100	1.7	503	1.6	1.543	0.123	88	1.9	396	1.8	1.090	0.276
To be adventurous	101	2.1	494	2.0	0.705	0.481	90	2.1	393	2.1	-0.002	0.999

^a Five-point Likert where 1 = strongly agree and 5 = strongly disagree.

^b Due to three collapsed variables, mean value 1 to 3 = strongly agree, 4 to 6 = agree, 7 to 9 Neutral, 10 to 12 = disagree and 13 to 15 = strongly disagree.

^c Due to four collapsed variables, mean value 1 to 4 = strongly agree, 5 to 8 = agree, 9 to 12 = Neutral, 13 to 16 = disagree and 17 to 20 = strongly disagree.

^d Significant at $p < 0.01$.

^e Significant at $p < 0.05$.

Pearson correlation coefficients were employed to identify which factors of post experience benefits can be associated with use levels and perceived crowding. Table 3.24 shows that perceived crowding significantly but weakly correlated with learning benefits ($r = -0.108$, $p < 0.05$). The sample expressed more disagreement with attained learning benefits as they perceived more crowding. Although it was not significant, the total users appeared to have negative influence on learning benefits and environmental benefits and perceived crowding may also have negative influence on all the benefits factors. In contrast, leisure and bonding benefits showed positive correlation with total users. Residents achieved no significant correlation among benefits factors, but the tendency of correlation appeared to be consistent with the result of total users except the fact that perceived crowding did not have negative influence on residents' environmental benefits. Visitors achieved significantly negative correlation among learning benefits and perceived crowding ($r = -0.114$, $p < 0.05$).

Table 3.24: Correlations among Total Users, Perceived Crowding and Post Experience Benefits

Variables	Total			Residents			Visitors		
	n	r	p	n	r	p	n	r	p
Post Experience Benefits F1: Learning ^b									
Total User Count	475	-0.025	0.580	87	-0.002	0.984	388	-0.030	0.561
Perceived Crowding ^a	475	-0.108	0.018 ^c	87	-0.081	0.458	388	-0.114	0.025 ^c
Post Experience Benefits F2: Leisure & Bonding ^b									
Total User Count	448	0.021	0.654	80	0.003	0.977	368	0.025	0.637
Perceived Crowding ^a	448	-0.065	0.168	80	-0.035	0.760	368	-0.072	0.169
Post Experience Benefits F3: Environmental Attributes ^b									
Total User Count	477	-0.029	0.526	88	-0.030	0.782	389	-0.028	0.580
Perceived Crowding ^a	477	-0.051	0.268	88	0.050	0.642	389	-0.072	0.155

^a Nine-point Likert scale where 1= not at all crowded and 9 = extremely crowded.

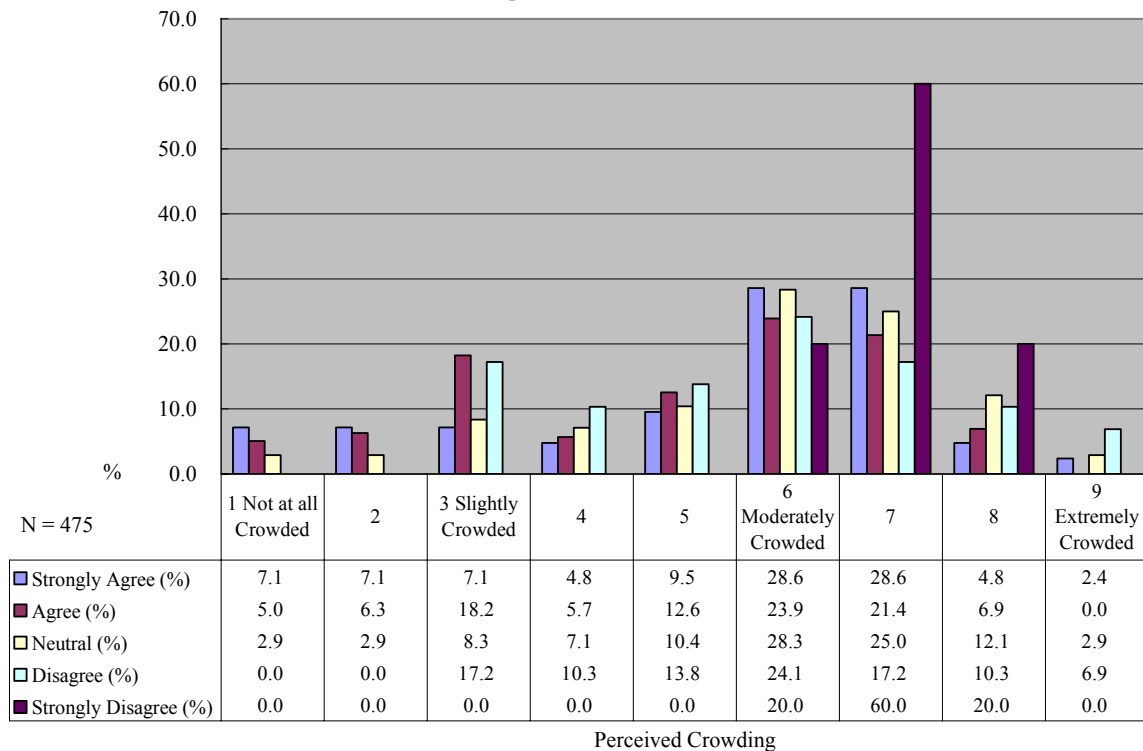
^b Coded as 1 = strongly disagree and 5 = strongly agree

^c Correlation is significant at $p < 0.05$.

Moreover, each category of post experience learning benefits was examined by perceived crowding scales in order to further identify association with perceived crowding. Figure 3.8

shows proportional distributions of perceived learning benefits within each scale of perceived crowding (see Appendix, Figure 6.7 and 6.7.2 for other benefits factors). A large percentage of the sample said it was more than moderately crowded particularly, 60% of the sample who strongly disagreed with perceived learning benefits reported higher level of perceived crowding (7.0).

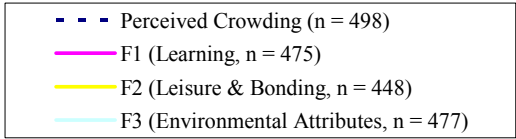
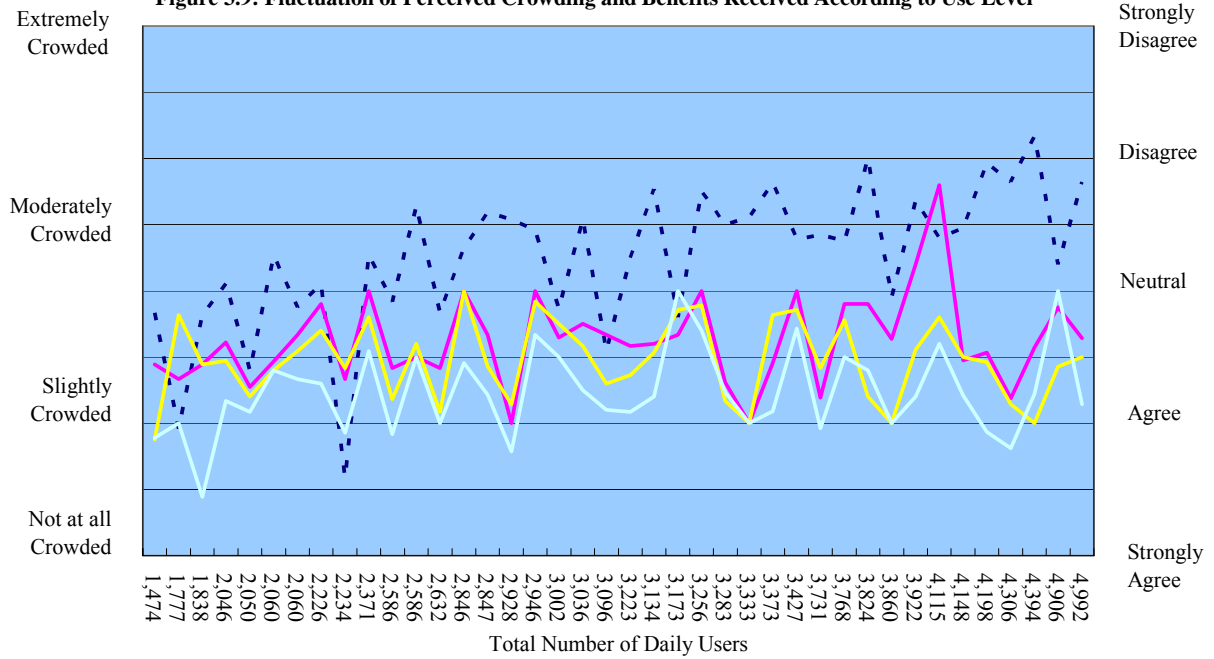
Figure 3.8: Degree of Perceived Crowding within each Scale of Post Experience Learning Benefits (Post Experience Benefits F1)^a



^a Increase environmental awareness, to learn about nature, and expand my world view.

Figure 3.9 shows fluctuation of perceived crowding and benefits according to the user counts. The daily means of each factor and perceived crowding were extracted, and the data were sorted according to the Bay’s user count of the survey day. In several survey days, the daily mean values of learning benefits reached neutral while perceived crowding reached moderately crowded. When the total user reached 4,115, the daily mean of learning benefits exceeded neutral, representing disagreement with the item whereas with a 4,394 daily user count, the daily mean of perceived crowding exceeded reached 7.3 (Moderately-extremely crowded).

Figure 3.9: Fluctuation of Perceived Crowding and Benefits Received According to Use Level



E. Satisfaction with the Experiences at Hanauma Bay

This section presents the findings specific to satisfaction while at the Bay. The analyses includes a brief description of the proportional distributions and factor analysis, a test of differences among residents and visitors, and a test of correlations to determine which satisfaction factors or items are associated with total number of users and perceived crowding.

User satisfaction was measured by two types of scales in the post-test questionnaire. Global Satisfaction was measured on a five-point Likert type scale where one was highly dissatisfied and five was highly satisfied. In addition, 14 satisfaction items were measured on a three-point scale with 1 = added satisfaction, 2 = neutral and 3 = detracted from satisfaction.

Overall Satisfaction

The majority of Hanauma Bay users appear to be satisfied with their visit to the Bay. It was comprised of 42.2% highly satisfied, followed by moderately satisfied (29.1%) and satisfied (19.2%) with the mean value of 2.0. Only 9.5% of the sample (n = 47) rated their visit as moderately dissatisfied to dissatisfied. Visitors appear to be slightly more satisfied than residents. While 44.4% of the visitors said that they were highly satisfied (Mean = 2.0), 32.6% of the residents responded likewise (Mean = 2.1). The mean value of residents and visitors do not statistically differ. The first time visitors indicated significantly higher mean rating of global satisfaction than repeat visitors ($t = -2.204$, $p = 0.05$, first time visitors mean = 4.1, repeat visitors mean = 3.9). The first time visitors were more satisfied than repeat visitors.

Table 3.25: Descriptive Statistics of Global Satisfaction

Statement	Total		Residents ^b		Visitors ^b	
	N	(%)	N	(%)	N	(%)
How satisfied are you with your visit to Hanauma Bay? ^a						
Highly Satisfied	209	42.2	30	32.6	179	44.4
Moderately Satisfied	144	29.1	33	35.9	111	27.5
Satisfied	95	19.2	20	21.7	75	18.6
Moderately Dissatisfied	33	6.7	5	5.4	28	6.9
Highly Dissatisfied	14	2.8	4	4.3	10	2.5

^a Coded as 1 = highly dissatisfied to 5 = highly satisfied. Total $\bar{X} = 4.0$.

^b The mean value of residents is not statistically different than that of visitors. $t = -1.646$, $p = 0.100$. Residents $\bar{X} = 3.9$; visitors $\bar{X} = 4.0$.

As table 3.26 indicates, there is a weak correlation between perceived crowding and satisfaction. This result accords with that of previous studies of the relationship between encounters and overall quality of recreation experience. Many empirical studies tested the hypothesis that crowding or encounters are negatively correlated with experience quality or overall satisfaction and identified generally weak relationships between them (Stewart and Cole, 2001; Musa, 2002; Manning, 2003). Stewart and Cole (2001) note the decline in experience quality that results from feeling crowded may be small when compared with the benefits that accrue from being able to engage in a recreational activity whenever one so desires. Whisman & Hollenhorst (1998) suggests that satisfaction in a recreation experience is a multidimensional concept comprised of multiple sources of satisfaction including psychological outcomes, behavior-type variables, and setting attributes (see Figure 6.8 in Appendix for proportional distributions of global satisfaction within each scale of perceived crowding).

Table 3.26: Correlations among Total Users, Perceived Crowding and Global Satisfaction

Variables	Total			Residents			Visitors		
	n	r	p	n	r	p	n	r	p
	Global Satisfaction ^a								
Total Users	498	-0.070	0.117	92	-0.076	0.474	406	-0.068	0.170
Perceived Crowding ^b	498	0.047	0.298	92	0.152	0.148	406	0.021	0.675

^a Coded ranging as 1 = highly dissatisfied to 5 = highly satisfied.

^b Nine-point Likert scale where 1= not at all crowded and 9 = extremely crowded.

The following Figures (Figures 3.10& 3.10.2) present the global satisfaction and the effects of crowding. The figure confirms a significant correlation among use level and perceived crowding ($r = 0.359$, $p = 0.000$). Essentially, as the total count of users rise, overall satisfaction declines. Table 3.11 extrapolates that perceived crowding be higher as actual use level increases.

Figure 3.10: Fluctuation of Perceived Crowding and Global Satisfaction According to Actual Use Level

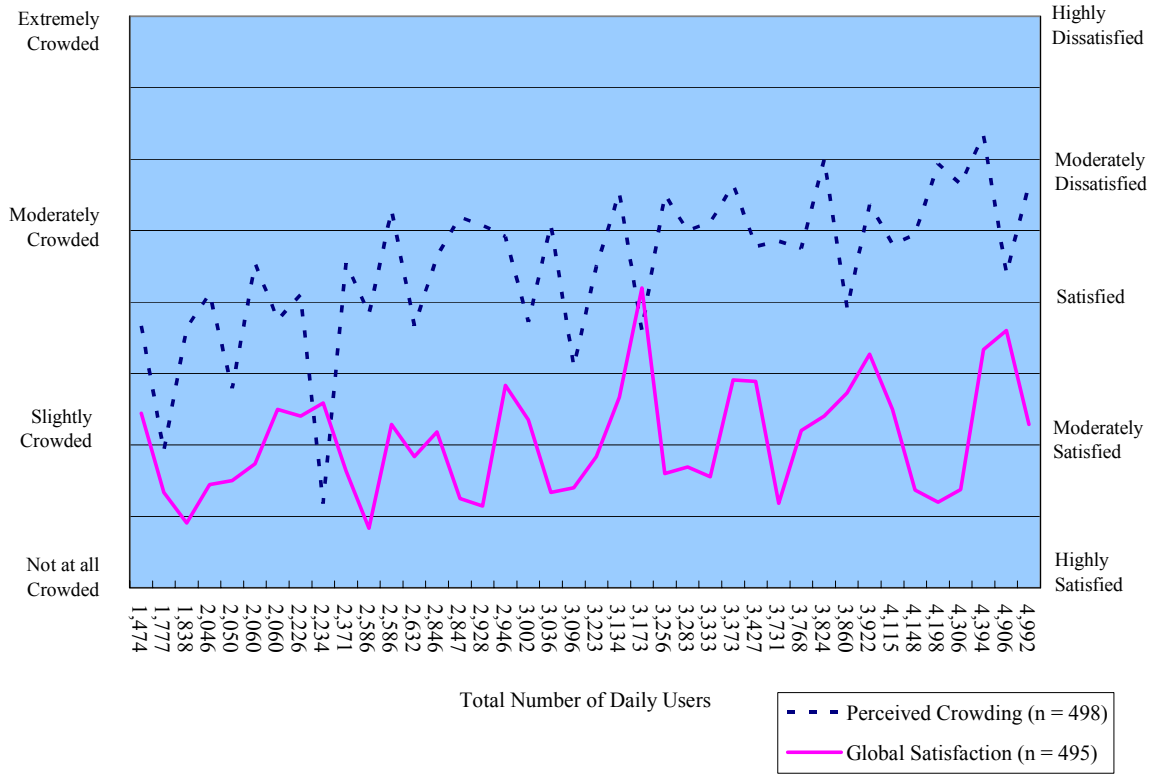
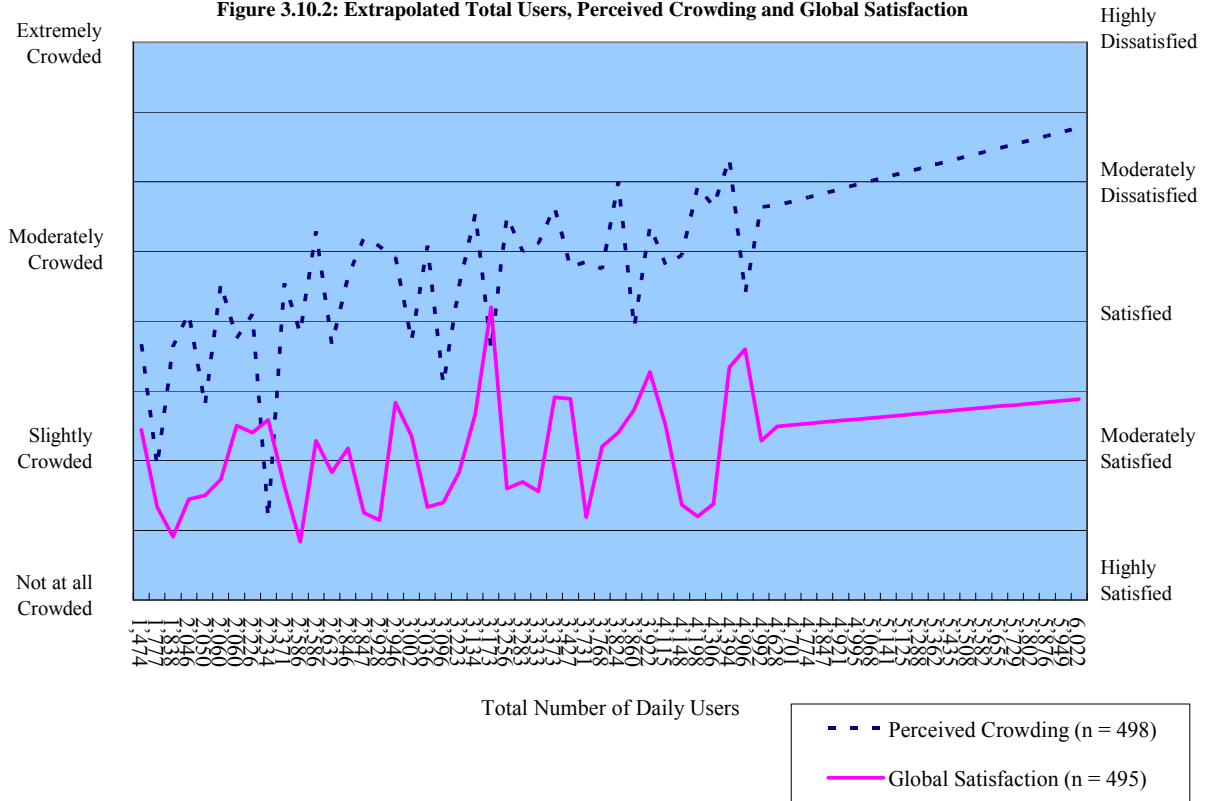


Figure 3.10.2: Extrapolated Total Users, Perceived Crowding and Global Satisfaction



Satisfaction Determinants

Fourteen satisfaction determinants were measured on a three-point scale (Table 3.27). The respondents evaluated their experiences regarding each item on a 3-point scale ranging from added satisfaction, neutral, and detracted from satisfaction. The total sample expressed a relatively positive degree of satisfaction with visitors expressing a higher level of satisfaction. However, the results suggest several variables which may add more satisfaction. For example, the results showed that as the use level increases, destruction and encounters have negative impacts on satisfaction. Satisfaction determinants were first factor analyzed (principle components with Oblique rotation). Items were categorized into four factors comprised of quality and availability of facilities (five items), distractions & encounters (four items), debris (two items), and marine resources (two items) (see Table 6.6 in Appendix for the items categorized in each factor).

Table 3.27 indicates standardized Alpha and the distributions of each item. Standardized Alpha of the factors ranged from 0.62 to 0.83. One item, weather condition was treated individually for more stable internal consistency (see Appendix Tables 6.7 and 6.7.2 for the correlated item-total correlation and Cronbach Alpha Coefficients for satisfaction determinants). Quality and availability of facilities, marine resources, and weather conditions received positive (above neutral) levels of satisfaction, while distractions and encounters, and debris were rated below the neutral value.

Generally, (Table 3.27) as user daily totals increased, ratings for detractions due to human encounters (in the form of being bumped into and sheer number of people) and debris in water were reported as problems (Table 3.27). Repeat visitors (44.6% of the sample) indicated significantly higher mean ratings of detractions than first time visitors in five items: clarity of water ($t = 3.627, p < 0.01$); debris on shore ($t = 2.460, p < 0.05$); seeing marine life ($t = 2.450, p < 0.05$), debris in water ($t = 2.307, p < 0.05$); bird feeding by other people ($t = 2.058, p < 0.05$); and cleanliness of park ($t = 1.982, p < 0.05$).

Table 3.27: Factor Structure and Descriptive Statistics of Satisfaction

Please rate the following items to your satisfaction today.		N	Added satisfaction (%)	No effect (%)	Detracted from satisfaction (%)	\bar{X}^a
Factor 1: Quality and Availability of Facilities		(0.62) ^b				
	Clean bathroom facilities	478	29.1	69.5	1.5	1.7
	Adequate parking	481	45.9	42.0	12.1	1.7
	Cleanliness of park	487	63.0	31.8	5.1	1.4 ^c
	Education center	475	29.1	69.5	1.5	1.7
	Hike up/down crater	482	28.6	59.5	11.8	1.8
Factor 2: Distractions & Encounters		(0.72) ^b				
	Being bumped while snorkeling	455	5.7	69.9	24.4	2.2
	Smoking by other people	463	9.1	69.1	21.8	2.1
	Bird feeding by other people	449	5.8	73.7	20.5	2.1 ^d
	Number of people	462	8.9	63.6	27.5	2.2
Factor 3: Debris		(0.83) ^b				
	Debris on shore	470	17.0	73.4	9.6	1.9 ^e
	Debris in water	471	17.2	68.4	14.4	2.0 ^f
Factor 4: Marine Resources		(0.62) ^b				
	Clarity of water	488	57.6	23.8	18.6	1.6 ^g
	Marine life	477	75.5	18.2	6.3	1.3 ^h
Weather conditions		485	63.5	25.4	11.1	1.5

^a 1= added satisfaction, 2 = no effect and 3 = detracted from satisfaction

^b (standardized item χ)

^c The mean value of first time visitors is statistically different than that of repeat visitors. $t = 1.982$, $p = 0.048$. First time visitors $\bar{X} = 1.4$, repeat visitors $\bar{X} = 1.5$.

^d The mean value of first time visitors is statistically different than that of repeat visitors. $t = 2.058$, $p = 0.040$. First time visitors $\bar{X} = 2.1$, repeat visitors $\bar{X} = 2.2$.

^e The mean value of first time visitors is statistically different than that of repeat visitors. $t = 2.460$, $p = 0.014$. First time visitors $\bar{X} = 1.9$, repeat visitors $\bar{X} = 2.0$.

^f The mean value of first time visitors is statistically different than that of repeat visitors. $t = 2.307$, $p = 0.022$. First time visitors $\bar{X} = 1.92$, repeat visitors $\bar{X} = 2.04$.

^g The mean value of first time visitors is statistically different than that of repeat visitors. $t = 3.627$, $p = 0.000$. First time visitors $\bar{X} = 1.5$, repeat visitors $\bar{X} = 1.8$.

^h The mean value of first time visitors is statistically different than that of repeat visitors. $t = 2.450$, $p = 0.015$. First time visitors $\bar{X} = 1.3$, repeat visitors $\bar{X} = 1.4$.

Table 3.28 indicates that resident satisfaction levels are impacted by the number of users.

Table 3.28: T-test on Resident-Visitor Differences with Satisfaction						
Variables	Residents		Visitors		t-value	Prob.
	n	\bar{X}^a	n	\bar{X}^a		
Factor 1: Quality and Availability of Facilities ^c	79	8.5	371	8.3	0.666	0.506
Clean bathroom facilities	88	1.8	390	1.6	1.748	0.081
Adequate parking	88	1.6	393	1.7	-0.376	0.707
Cleanliness of park	90	1.5	397	1.4	1.411	0.159
Education center	85	1.8	390	1.7	1.110	0.268
Hike up/down crater	90	1.8	392	1.8	-0.357	0.722
Factor 2: Distractions & Encounters ^c	80	8.9	356	8.6	1.313	0.190
Being bumped while snorkeling	85	2.2	370	2.2	-0.205	0.838
Smoking by other people	84	2.2	379	2.1	2.078	0.038 ^f
Bird feeding by other people	85	2.3	364	2.1	2.465	0.015 ^f
Number of people	89	2.2	373	2.2	-0.322	0.748
Factor 3: Debris ^d	86	4.2	383	3.8	3.249	0.001 ^e
Debris on shore	86	2.1	384	1.9	2.681	0.008 ^e
Debris in water	86	2.2	385	1.9	3.295	0.001 ^e
Factor 4: Marine Resources ^c	88	4.7	383	4.3	2.278	0.023
Clarity of water	91	1.8	397	1.6	2.909	0.004 ^e
Marine life	88	1.4	389	1.3	0.988	0.323
Weather conditions ^c	91	1.5	394	1.5	1.126	0.261
^a 1= added satisfaction, 2 = neutral and 3 = detracted from satisfaction.						
^b Due to five collapsed variables, mean value 1to5 = added satisfaction, 6to10 = neutral and 11to15						
^c Due to three collapsed variables, mean value 1to3 = added satisfaction, 4to6 = neutral and 7to9						
^d Due to two collapsed variables mean value 1to2 = added satisfaction, 3to4 = neutral and 5to6						
^e Significant at p < 0.01.						
^f Significant at p < 0.05.						

Pearson correlation coefficients were employed to identify which factors of satisfaction measures are associated with actual use levels and perceived crowding. Specifically, (Table 3.29) one can see that the satisfaction measures (quality and availability of facilities, distractions and encounters, debris, marine resources, and weather conditions) significantly correlate with the actual user count and / or perceived crowding scale. Visitors seem to be more affected by the total user number and perceived crowding.

Table 3.29: Correlations among Total Users, Perceived Crowding and Satisfaction Factors										
Variables	Total			Residents			Visitors			
	n	r	p	n	r	p	n	r	p	
	F1 Quality and Availability of Facilities ^b									
Total Users	450	-0.103	0.028 ^d	79	0.069	0.548	371	-0.138	0.008 ^c	
Perceived Crowding ^a	450	-0.176	0.000 ^c	79	-0.139	0.222	371	-0.184	0.000 ^c	
	F2 Distractions & Encounters ^b									
Total Users	435	-0.129	0.007 ^c	80	-0.069	0.544	355	-0.140	0.008 ^c	
Perceived Crowding ^a	435	-0.241	0.000 ^c	80	-0.112	0.324	355	-0.275	0.000 ^c	
	F3 Debris ^b									
Total Users	468	-0.044	0.337	86	-0.026	0.813	382	-0.044	0.391	
Perceived Crowding ^a	468	-0.099	0.032 ^d	86	-0.024	0.825	382	-0.117	0.022 ^d	
	F4 Marine Resources ^b									
Total Users	476	-0.078	0.088	88	-0.101	0.351	388	-0.072	0.155	
Perceived Crowding ^a	476	-0.130	0.004 ^c	88	-0.026	0.812	388	-0.158	0.002 ^c	
	Weather Conditions ^b									
Total Users	485	0.199	0.000 ^c	91	0.098	0.357	394	0.222	0.000 ^c	
Perceived Crowding ^a	485	0.028	0.542	91	-0.066	0.536	394	0.051	0.315	

^a Nine-point Likert scale where 1= not at all crowded and 9 = extremely crowded.

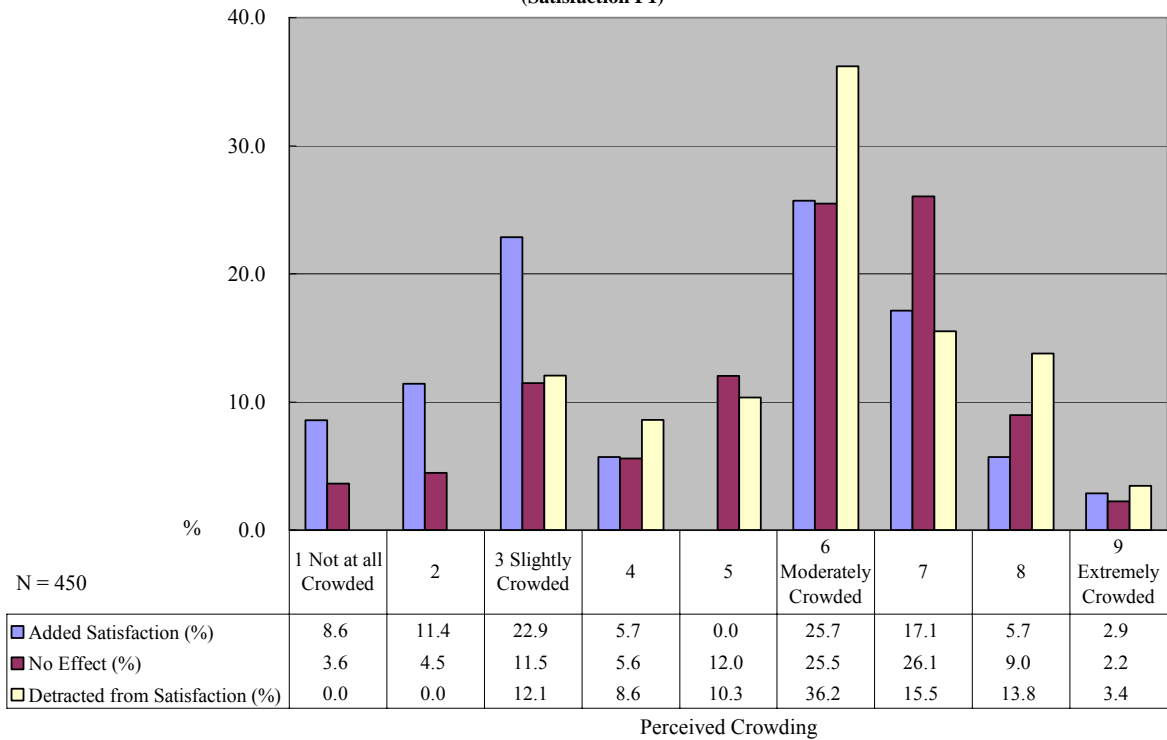
^b 1 = detracted from satisfaction, 2 = no effect and 3 = added satisfaction

^c Correlation is significant at p < 0.05.

^d Correlation is significant at p < 0.01.

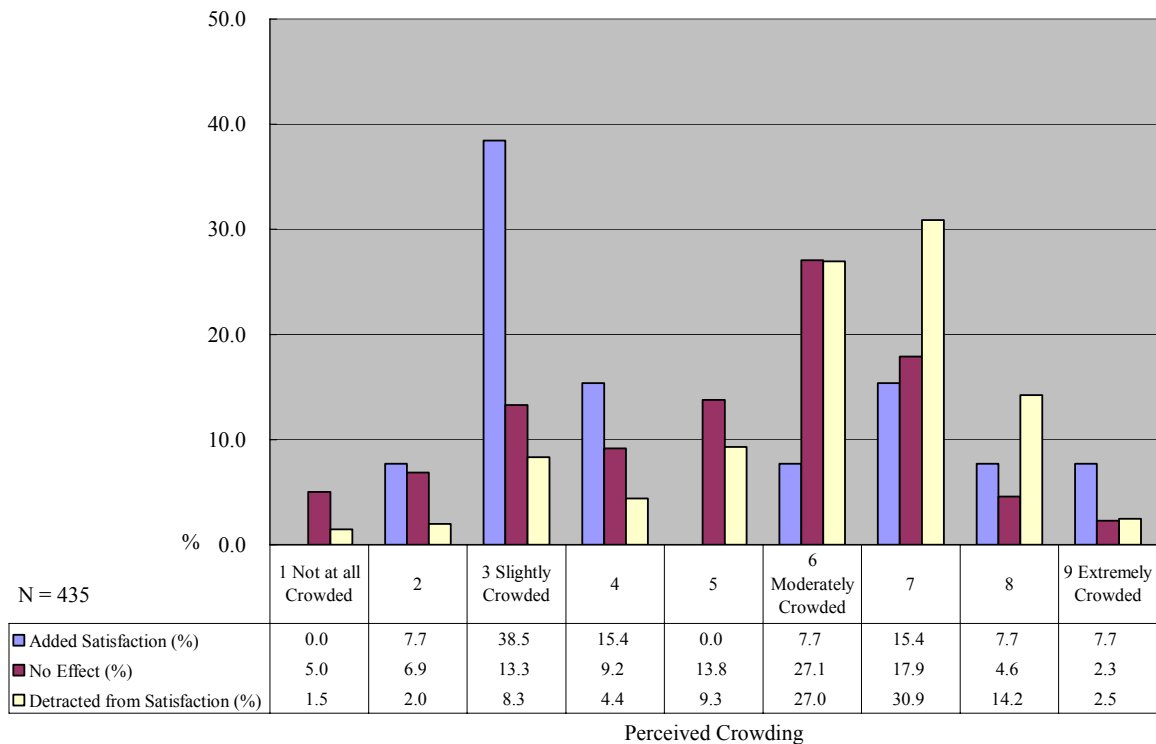
Figures 3.12 – 3.13.4 show the distributions of global satisfaction within each scale of perceived crowding. Satisfaction ratings for the quality and availability of facilities, distractions and encounters, debris, and marine resources are related to actual crowding perceptions (see Appendix, Figure 6.9 for weather conditions). The percentage of detractions (negative effects on satisfaction) appears to increase at the crowding rating of 6 (moderately crowded).

Figure 3.11: Degree of Perceived Crowding within each Scale of Satisfaction with Quality and Availability of Facilities (Satisfaction F1)^a



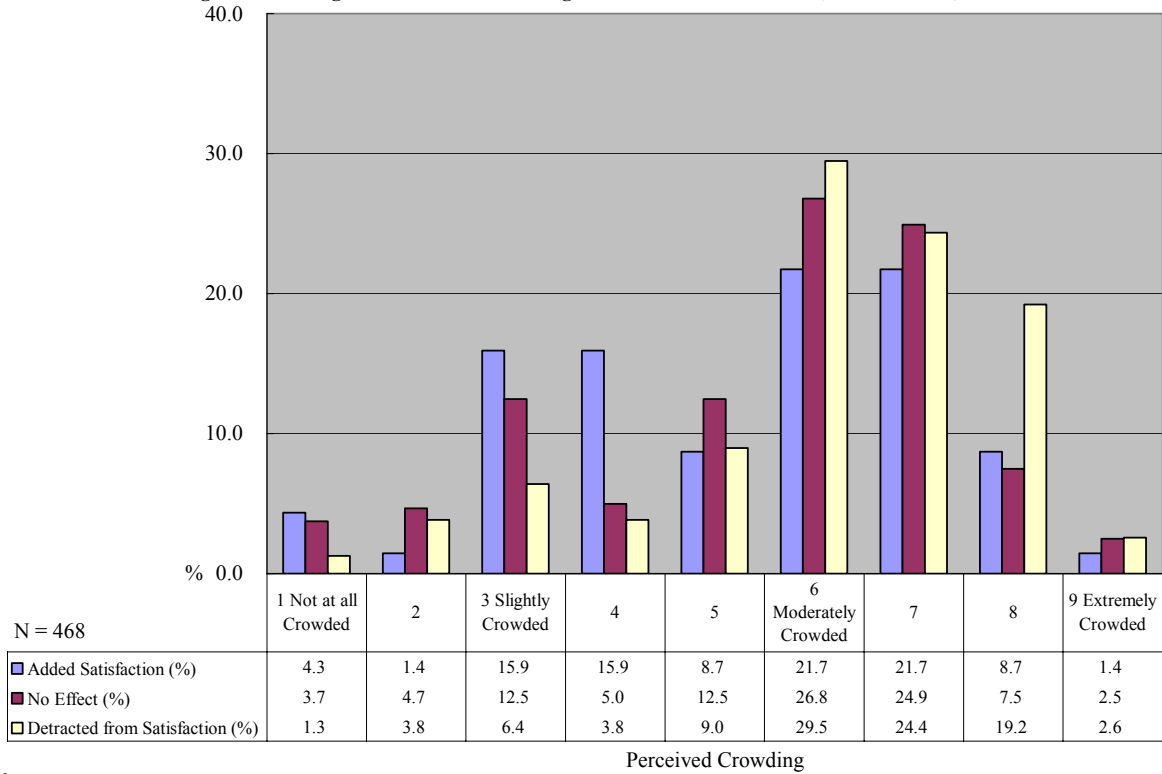
a Clean bathroom facilities, adequate parking, cleanliness of park, education center, and hike up/down crater.

Figure 3.11.2: Degree of Perceived Crowding within each Scale of Distractions & Encounters (Satisfaction F2)^a



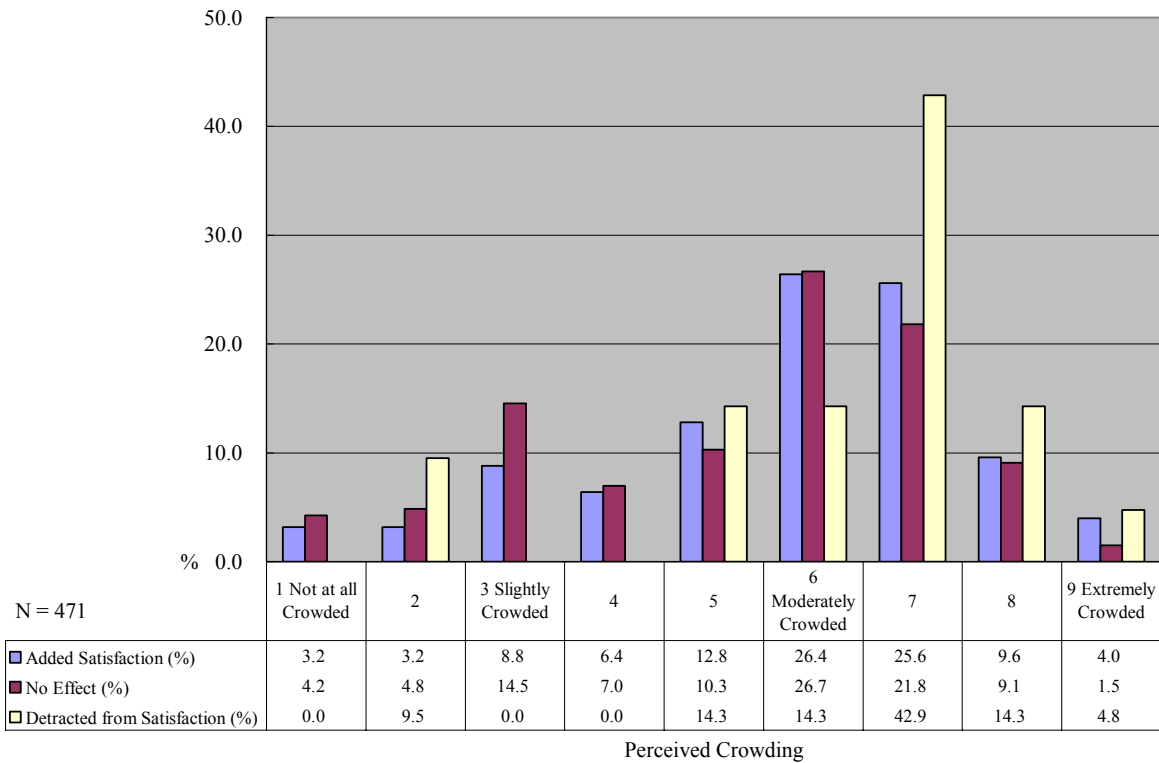
^a Being bumped while snorkeling, smoking by other people, bird feeding by other people, and number of people.

Figure 3.11.3: Degree of Perceived Crowding within each Scale of Debris (Satisfaction F3)^a



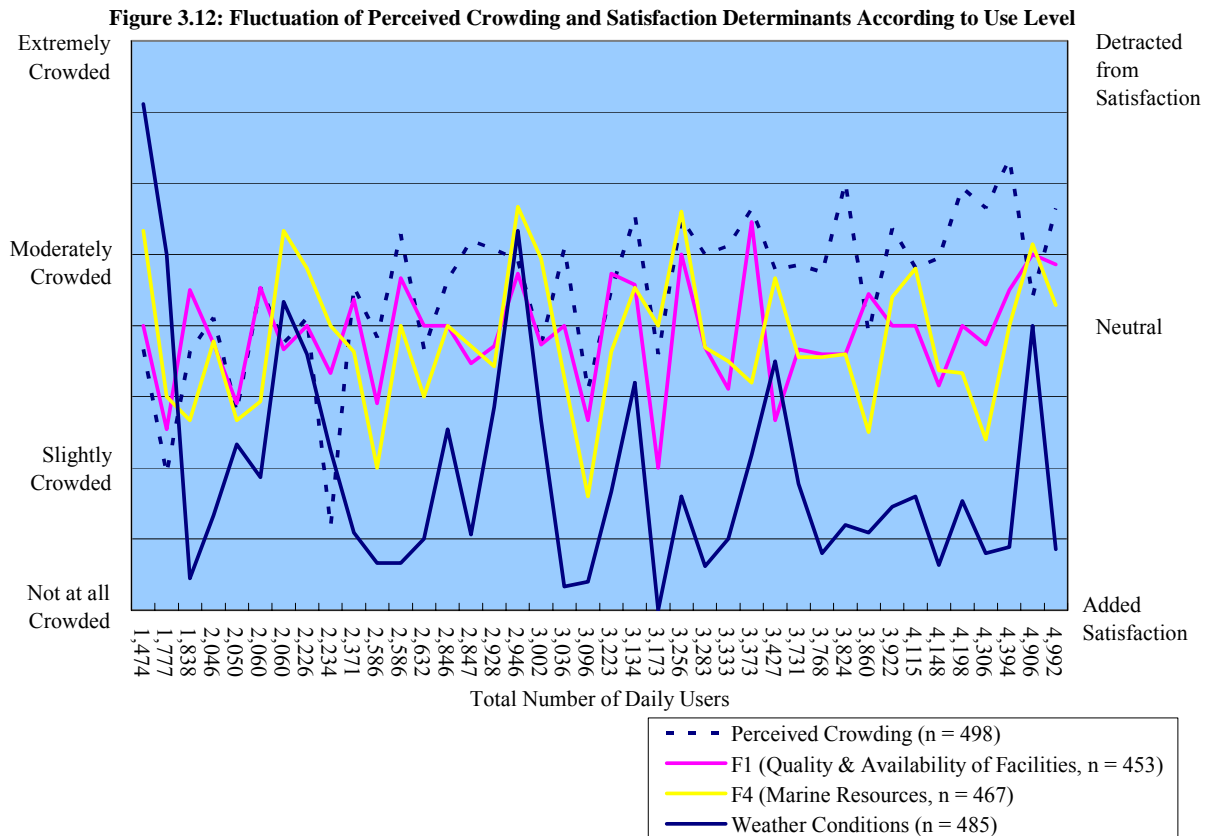
^a Debris on shore and debris in water.

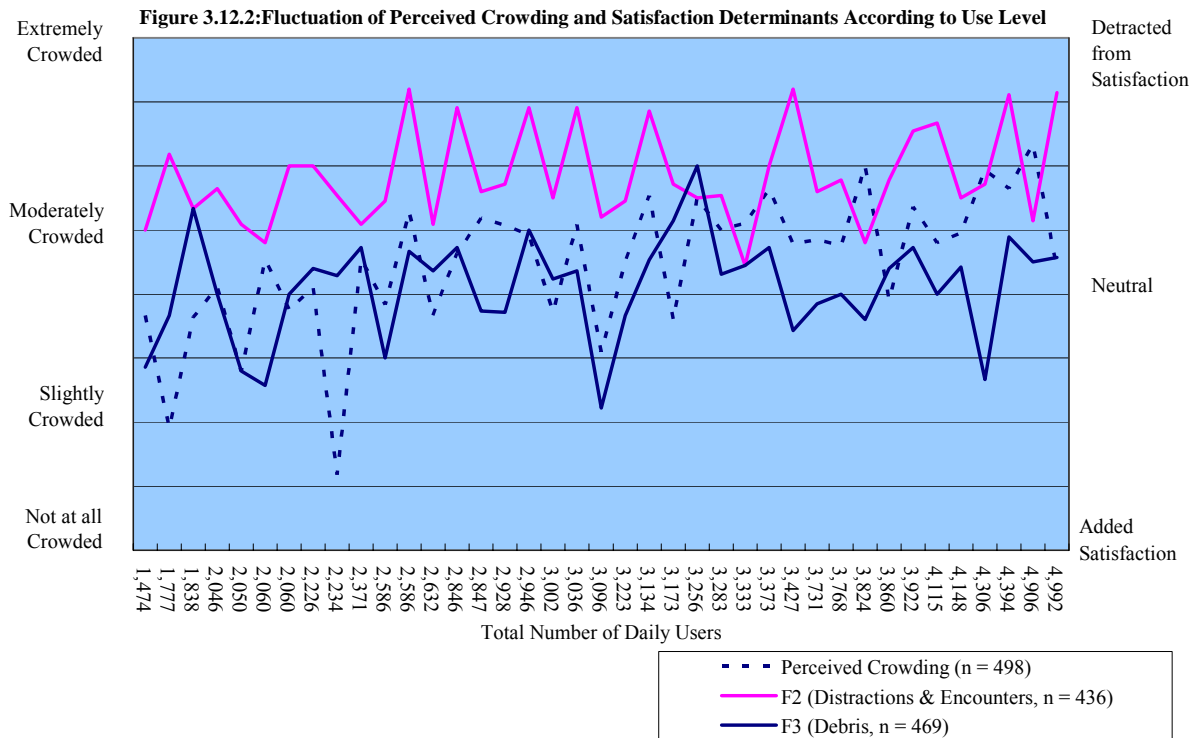
Figure 3.11.4: Degree of Perceived Crowding within each Scale of Satisfaction with Marine Resources (Satisfaction F4)^a



^a Clarity of water and marine life.

The following Figures (3.12 & 3.12.2) present factors of satisfaction measurements and the effects of crowding. Figure 3.12 shows that as the total number of actual users increases, quality and availability of facilities and marine resources were likely to be considered as negative elements of satisfaction. In addition, Figure 3.13.2 confirms debris (on the shore and in the water) was increasingly considered as a detraction.





Furthermore, a multiple linear regression was calculated to predict global satisfaction. A significant regression equation was found with an R^2 of 0.365 (Table 3.30). Significant predictors were: post experience benefits of environmental attributes ($\beta = 0.527, p < .01$); followed by number of people on the beach ($\beta = 0.191, p < .05$); and expertise in snorkeling ($\beta = -0.180, p < .05$). The result indicates that perceived environmental benefits (i.e., to see abundant marine life, to view natural sites, and to be adventurous) are positively related to the samples' global rating of satisfaction while, expertise in snorkeling, and negative effects due to the number of people on the beach negative effects on global satisfaction. In other words, users who perceived more benefits related to environmental attributes were more likely to be more satisfied, whereas those who are more experienced in snorkeling or reported negative influences from people on the beach were likely to be less satisfied.

Table 3.30: Direct Effects of Variables on Satisfaction ^a

Independent Variables	t-test		
	Beta	value	Prob.
Dependent Variable : Global Satisfaction ^b			
1 Post Experience Benefits of Environmental Attributes (Post-test Benefits F3) ^c	0.527	6.143	0.000
2 Number of People on the Beach ^d	0.191	2.236	0.028
3 Expertise in Snorkeling ^e	-0.180	-2.111	0.038
Adjusted R ²	0.365		
Dependent Variable : Satisfaction Index ^f			
1 Post Experience Benefits of Environmental Attributes (Post-test Benefits F3) ^c	0.556	6.751	0.000
2 Residents/Visitors ^g	0.259	3.344	0.001
3 Post Experience Preferences in Activities (Post-test Preferences F4) ^h	-0.254	-3.222	0.002
4 Pre Experience Benefits of Environmental Attributes (Pre-test Benefits F3) ^c	-0.235	-2.922	0.004
5 Expertise in Snorkeling ^e	-0.217	-2.779	0.007
6 Perceived Crowding ⁱ	-0.226	-2.865	0.005
Adjusted R ²	0.482		

^a Missing values were excluded listwise

^b 1 = highly dissatisfied to 5 = highly satisfied.

^c Five-point Likert 1 = strongly disagree and 5 = strongly agree.

^d Coded as 1 = yes and 2 = no.

^e Coded as 1 = novice/beginner, 2 = intermediate, 3 = advanced 4 = expert, and 5 = professional.

^f 1 = detract from satisfaction, 2 = no effect, and 3 = added satisfaction.

^g Coded as 1 = residents and 2 = visitors.

^h Coded ranging 1 = worse than I expected, 2 = what I expected and 3 = better than I expected.

ⁱ Nine-point Likert where 1 = not at all crowded and 9 = extremely crowded.

An index to measure satisfaction was created by summing ratings of three-scale global satisfaction and satisfaction items. Global satisfaction (5-point scale) was converted into a 3-point scale ranging from: 1 = moderately to highly satisfied; 2 = neutral; and 3 = moderately to highly dissatisfied. This is similar to other studies that summed the mean of statements that individually measured satisfaction (e.g., Schomaker & Knopf, 1982; Vaske, Graefe, & Fedler, 1986; Graefe, & Fedler, 1986; Whisman & Hollenhorst, 1998).

A significant regression equation was found with an R^2 of 0.482 (Table 3.30). The higher R^2 appears to support a perspective that overall user satisfaction, as measured as an index, may be a multidimensional concept (e.g., Vaske et al., 1986; Graefe & Fedler, 1986; Graefe & Drogin, 1989; Herrick & McDonald, 1992; Wishman & Hollenhorst, 1998). Significant predictors of the satisfaction index were post experience benefits of environmental attributes ($\beta = 0.556$, $p < .01$), followed by residents / visitors meaning visitors were more satisfied ($\beta = 0.259$, $p < .05$), post experience preferences in activities ($\beta = -0.254$, $p < .01$), pre experience benefits of environmental attributes ($\beta = -0.2354$, $p < .01$), expertise in snorkeling ($\beta = -0.217$, $p < .01$), and perceived crowding ($\beta = -0.226$, $p < .01$).

IV. MANAGEMENT IMPLICATIONS AND FUTURE RESEARCH



In interpreting the survey, there are several limitations to be noted. Many empirical studies suggested the use of a five-point Likert scale to measure overall user satisfaction of the recreational site rather than employing single measures of satisfaction. In this study, however, it was measured using a recoded three point scale for global satisfaction (i.e., 1 and 2 = satisfied, 3 = neutral and 4 and 5 = dissatisfied). Originally, the global satisfaction was measured on single scale of five-point Likert where 1 = highly dissatisfied and 5 = highly satisfied and also 14 satisfaction items were measured on a three scale where 1 = added satisfaction, 2 = neutral and 3 = detract from satisfaction. This may have led to more generalized results, and a reduction in the variance of the measures. Moreover, the respondents were English speakers. Further research is recommended for the non-English users. This may provide both insight into their satisfaction levels and perceptions, but may also provide a unique opportunity to examine cultural and ethnic variations.

The total sample reported a higher level of expected crowding (pre-test scores) than their perceived crowding (post experience score) scores indicated. This suggests the sample was aware of the crowded conditions in advance. Residents were more sensitive to crowding levels. As Table 4 shows, at the actual use level of over 3000, more than 40% of the respondents indicated “negative influences from people on the beach.” When the use levels exceeded about 3100, conditions were consistently perceived as crowded. At the use level of over 3100 to 3800, 100% of the respondents indicated that it was “crowded.” At 3400 users, more than 55% of the respondents indicated that they perceived “negative influences from other people snorkeling.” At the use level over 3700, respondents increasingly reported it was “extremely crowded.”

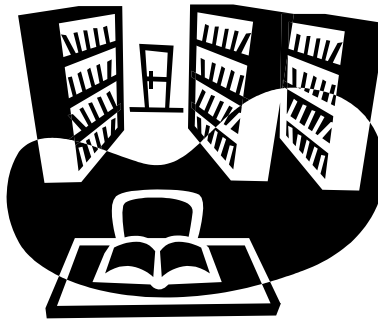
Table 4: Summary of Perceived Crowding Ratings

Use Level	
4,000	
3,900	
3,800	
3,700	Extremely Crowded
3,600	
3,500	
3,400	Negative Influence from other People Snorkeling (More than 55%)
3,300	
3,200	
3,100	Crowded
3,000	Negative Influence from People on the Beach (More than 40%)

The results also indicate that perceived environmental benefits (i.e., to see abundant marine life, to view natural sites, and to be adventurous), expertise in snorkeling are positively related to the global ratings of satisfaction. The number of people on the beach negatively impacted satisfaction levels for these attributes.

Moreover, perceived environmental benefits (i.e., to see abundant marine life, to view natural sites, and to be adventurous) positively influenced ratings of satisfaction. Visitors to the islands are likely to be more satisfied than the resident population. The findings of the study suggest that perceived crowding may be an indicator of actual use levels ($r = .359$, $p = .000$), and the crowding negatively influences satisfaction levels with in the Bay. Hence, limiting use may be an effective tool to manage the Bay. The Bay is exceeding the social carrying capacity (as measured in this study) when more than 3,200 (+/- 200 users) people per day use the Bay. The number of visitors that provide acceptable recreation experiences may be less than 3,200.

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VI. APPENDIX



Figure 6.1: Changes in Responses According to the Use Level by 500:
Did the Number of People Snorkeling Negatively Impact Your Enjoyment of Today's Trip? (n = 494)

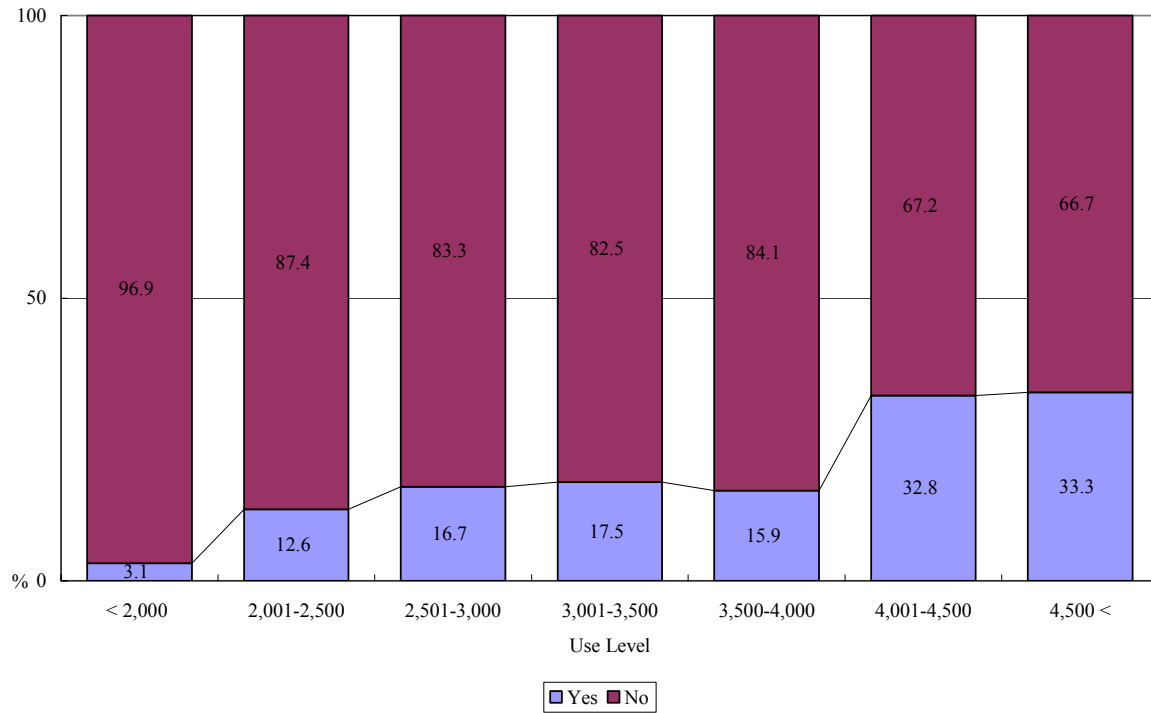
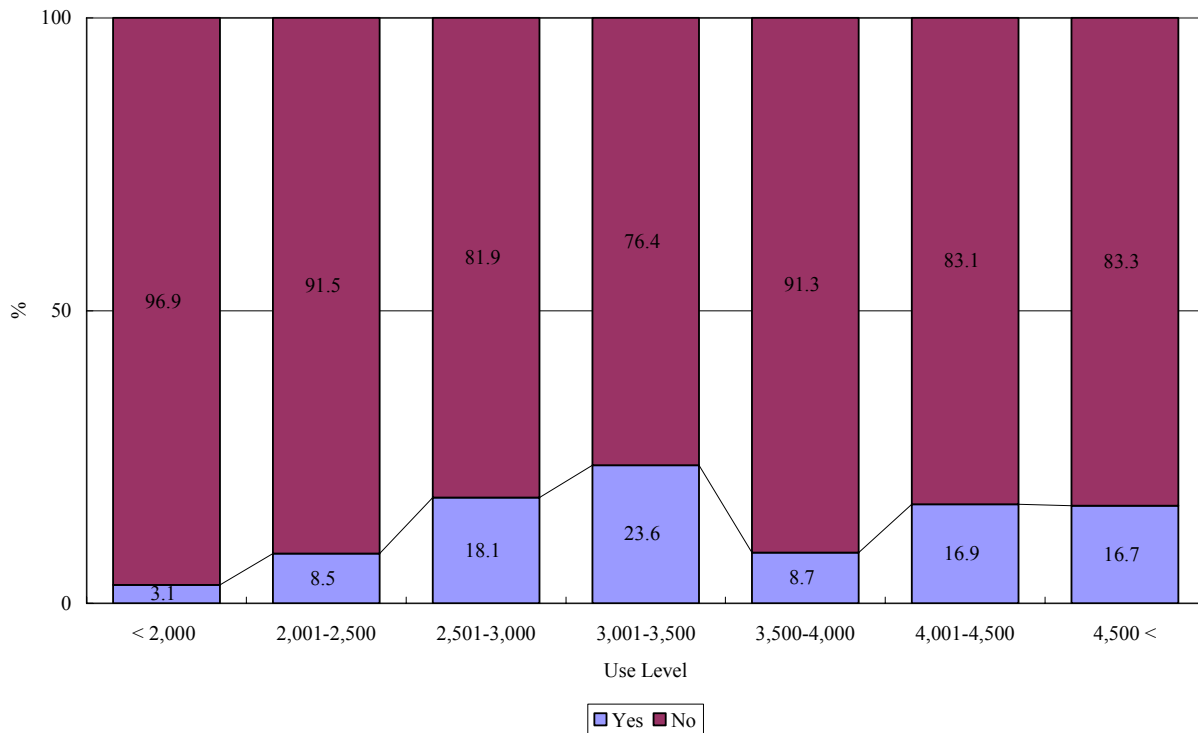
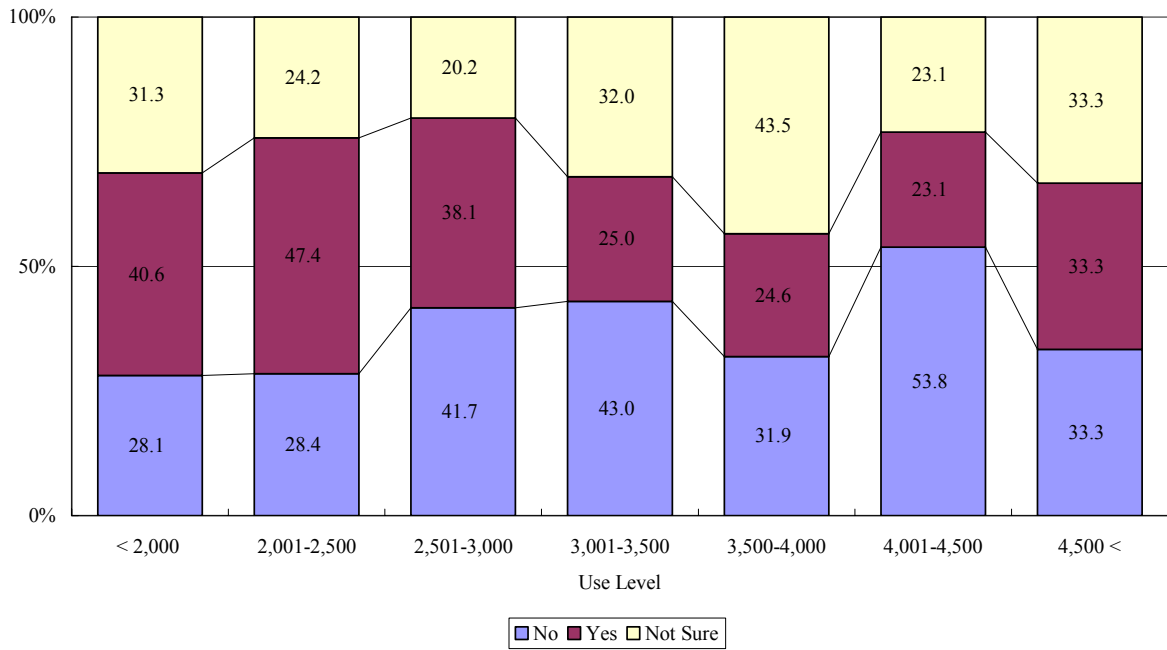


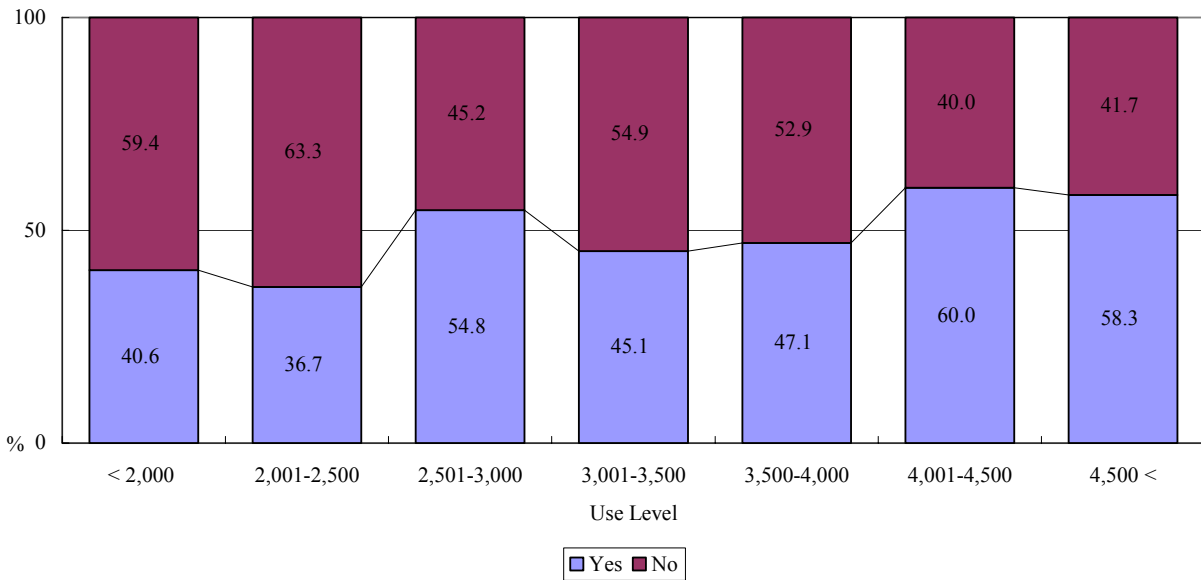
Figure 6.2: Changes in Responses According to the Use Level by 500:
Did the Number of People On the Beach Negatively Impact Your Enjoyment of Today's Trip? (n = 494)



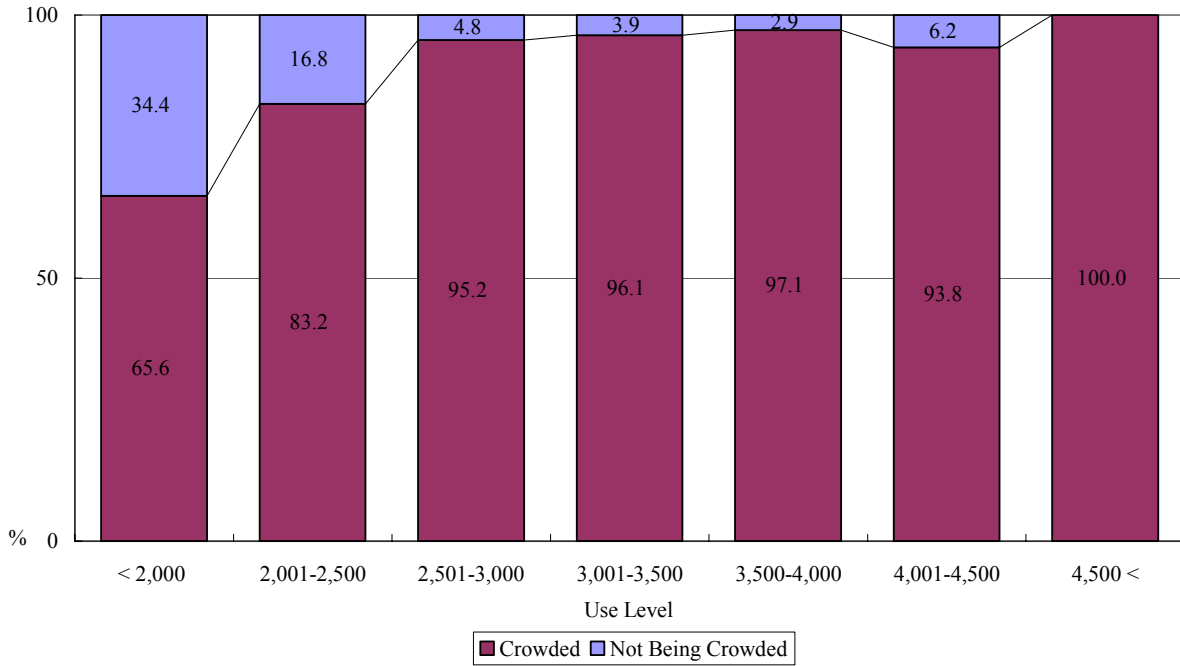
**Figure 6.3: Changes in Responses According to the Use Level by 500:
Can Hanauma Bay Accommodate More Visitors than There Were Today? (n = 497)**



**Figure 6.4: Changes in Responses According to the Use Level by 500:
If the Bay was Less Crowded, Would You Spend More Time Here? (n = 485)**

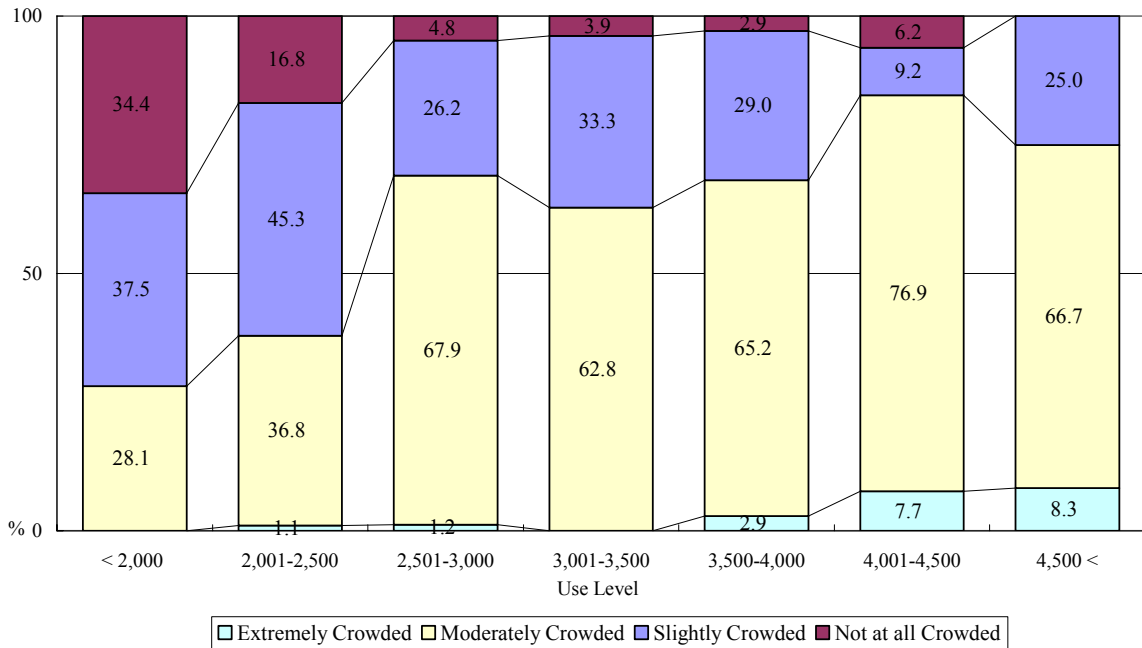


**Figure 6.5: Changes in Responses According to the Use Level by 500:
How Crowded Was It Today at Hanauma Bay? (2-Scale)**



Perceived Crowding was measured on the nine-point Likert where 1 = not at all crowded, 3 = slightly crowded, 6 = moderately crowded, and 9 = extremely crowded and coded as less than 3 = not being crowded and 3 and above = crowded.

**Figure 6.5.2: Changes in Responses According to Use Level by 500:
How Crowded Was It Today at Hanauma Bay? (4-Scale)**



Perceived Crowding was measured on the nine-point Likert where 1 = not at all crowded, 3 = slightly crowded, 6 = moderately crowded, and 9 = extremely crowded.

Table 6.1: Correlation Matrix for Variables at Hanauma Bay										
	Total	Residents / Visitors ^d	Length of Residency (Years)	Length of Visit to the Bay (Days)	Previous Visitation ^e	Last Visit (Year)	Familiarity ^f	Expertise in Snorkeling ^g	Frequency to Snorkel ^h	Hours in the Bay
Total	1.000									
Residents/Visitors ^d	0.003	1.000								
Length of Residency (Years)	-0.007	-0.049	1.000							
Length of Visit to the Bay (Days)	-0.005	0.041		1.000						
Previous Visitation ^e	-0.015	0.343 ^a	-0.241 ^b	-0.082	1.000					
Last Visit (Year)	-0.040	-0.320 ^a	-0.095	0.073		1.000				
Familiarity ^f	-0.025	-0.337 ^a	0.348 ^a	0.099 ^b	-0.732 ^a	0.211 ^a	1.000			
Expertise in Snorkeling ^g	0.019	-0.194 ^a	0.164	0.030	-0.296 ^a	0.182 ^a	0.407 ^a	1.000		
Frequency to Snorkel ^h	0.003	-0.240 ^a	0.005	0.035	-0.371 ^a	0.177 ^b	0.427 ^a	0.749 ^a	1.000	
Hours in the Bay	0.053	0.059	-0.037	0.161 ^a	0.055	0.058	-0.017	0.005	-0.069	1.000
Rent \$	0.039	0.120	0.295	-0.034	0.083	-0.160	-0.108	-0.035	-0.018	0.148 ^b
Buy \$	-0.296	0.024	-0.264	0.083	-0.159	0.031	0.203	0.004	-0.074	0.057
Age	-0.046	0.036	0.302 ^a	0.003	-0.174 ^a	-0.185 ^a	0.185 ^a	0.026	0.077	-0.017
Gender ⁱ	0.011	0.002	0.012	-0.051	0.057	0.019	-0.091 ^b	-0.256 ^a	-0.194 ^a	0.028
Negative Influence from # People Snorkeling ^e	-0.189 ^a	0.073	0.223 ^b	-0.060	0.059	0.036	-0.067	-0.213 ^a	-0.193 ^a	0.110 ^b
Negative Influence from # People on the Beach ^c	-0.073	0.020	0.148	-0.067	0.018	0.111	-0.040	-0.075	-0.142 ^a	0.069
Spend More Time if Less Crowded ^e	-0.120 ^a	0.101 ^b	0.104	0.002	0.018	0.024	-0.017	-0.079	-0.041	0.052
Expected Crowding ^j	0.239 ^a	-0.053	-0.006	0.056	-0.115 ^a	-0.154 ^b	0.099 ^b	0.053	-0.007	0.044
Perceived Crowding ^j	0.359 ^a	-0.003	-0.276 ^b	0.010	0.066	0.020	-0.042	0.054	0.031	0.057
Global Satisfaction ^k	-0.070	0.074	-0.021	0.033	0.099 ^b	0.007	-0.083	-0.125 ^a	-0.122 ^a	0.175 ^a
Natural Resources & Snorkeling (Preferences Pre F1) ^l	-0.063	-0.058	-0.093	0.037	-0.082 ^b	-0.047	0.122 ^a	0.095 ^b	0.119 ^a	0.063
Clean facilities (Preferences Pre F2 Item) ^l	-0.067	-0.017	0.134	0.053	-0.054	-0.060	0.107 ^a	0.034	0.043	0.065
Adequate parking (Preferences Pre F2 Item) ^l	-0.107 ^a	-0.062	0.082	0.022	-0.092 ^b	0.027	0.108 ^a	-0.063	-0.049	0.012
Entrance fee (Preferences Pre F3 Item) ^l	-0.106 ^b	0.047	-0.018	-0.067	-0.048	-0.026	0.083 ^b	-0.035	-0.021	0.064
Lots of people (Preferences Pre F3 Item) ^l	0.082 ^b	-0.084 ^b	0.067	-0.056	-0.115 ^a	-0.077	0.114 ^a	-0.049	-0.039	0.040
Activities (Preferences Pre F4) ^l	0.019	-0.062	-0.018	0.002	-0.069	-0.075	0.105 ^b	0.030	0.062 ^a	0.098 ^b
Natural Resources & Snorkeling (Preferences Post F1) ^m	-0.025	0.079	-0.025	-0.023	0.171 ^a	0.015	-0.192 ^a	-0.133 ^a	-0.148	0.066
Clean facilities (Preferences Post F2 Item) ^m	-0.051	0.138 ^a	-0.210	0.040	0.024	-0.087	-0.079	-0.069	-0.090	0.028
Adequate parking (Preferences Post F2 Item) ^m	-0.092 ^b	0.010	0.190	0.003	-0.001	-0.072	0.023	0.028	0.000	-0.095 ^b
Entrance fee (Preferences Post F3 Item) ^m	-0.062	-0.053	-0.085	0.053	-0.049	0.005	0.008	-0.021	-0.013	0.058
Lots of people (Preferences Post F3 Item) ^m	-0.226 ^a	-0.052	0.021	-0.035	-0.168 ^a	-0.047	0.108 ^b	0.005	0.013	0.033
Activities (Preferences Post F4) ^m	-0.044	0.029	0.124	0.023	0.029	-0.098	-0.045	0.012	-0.012	0.087
Learning (Benefits Pre F1) ⁿ	-0.024	0.034	-0.068	0.092 ^b	0.063	-0.040	-0.044	0.005	0.058	0.042
Leisure & Bonding (Benefits Pre F2) ⁿ	0.035	-0.093 ^b	-0.105	-0.020	-0.093 ^b	-0.088	0.049	0.061	0.120 ^a	0.014
Environmental Attributes (Benefits Pre F3) ⁿ	-0.065	0.063	-0.234 ^b	0.049	0.045	-0.037 ^a	-0.010	0.022	0.085 ^b	0.022
Learning (Benefits Post F1) ⁿ	-0.025	0.041	0.023	0.076	0.106 ^b	-0.063	-0.080	-0.089	-0.081	0.106 ^b
Leisure & Bonding (Benefits Post F2) ⁿ	0.021	0.000	-0.046	-0.045	0.042	0.004	-0.033	-0.027	-0.031	0.077
Environmental Attributes (Benefits Post F3) ⁿ	-0.029	0.037	-0.157	0.054	0.106 ^b	-0.024	-0.041	-0.060	-0.053	0.103 ^b
Quality & Availability of Facilities (Satisfaction F1) ^o	-0.103 ^b	0.031	0.043	-0.002	0.010	-0.216	-0.003	-0.026	-0.029	0.061
Distractions & Encounters (Satisfaction F2) ^o	-0.129 ^a	0.063	0.246 ^b	-0.064	0.019	-0.039	-0.041	-0.107 ^b	-0.117 ^b	0.085
Debris (Satisfaction F3) ^o	-0.044	0.149 ^a	0.229 ^b	-0.041	0.126 ^a	-0.154	-0.101 ^b	-0.081	-0.177 ^a	0.061
Marine Resources (Satisfaction F4) ^o	-0.078	0.109 ^b	-0.005	0.008	0.169 ^a	-0.066	-0.110 ^b	-0.156 ^a	-0.131 ^b	0.090 ^a
Weather Conditions (Satisfaction item) ^o	0.199	0.051	0.165	0.005	0.068	-0.129	-0.043	-0.019	-0.030	0.081

^a Significant at p < 0.01.
^b Significant at p < 0.05.
^c Cannot be computed because at least one of the variables is constant.
^d Coded as 1 = residents and 2 = visitors.
^e Coded as 1 = yes and 2 = no.
^f Five-point Likert where 1 = not at all and 5 = extremely.
^g Coded as 1 = novice/beginner, 2 = intermediate, 3 = advanced 4 = expert, and 5 = professional.
^h Five-point Likert where 1 = never and 5 = very often.
ⁱ Coded as 1 = male and 2 = female.
^j Nine-point Likert where 1 = not at all crowded and 9 = extremely crowded.
^k Coded ranging 1 = highly dissatisfied to 5 = highly satisfied.
^l Coded ranging 1 = not expect to see/do, 2 = not sure and 3 = expect to see/do.
^m Coded ranging 1 = worse than I expected, 2 = what I expected and 3 = better than I expected.
ⁿ Five-point Likert 1 = strongly disagree and 5 = strongly agree.
^o Coded ranging 1 = detracted from satisfaction, 2 = no effect and 3 = added satisfaction.

Table 6.1: Correlation Matrix for Variables at Hanauma Bay (Continued)										
	Rent \$	Buy \$	Age	Gender ⁱ	Negative Influence from # People Snorkeling ^e	Negative Influence from # People on the Beach ^c	Spend More Time if Less Crowded ^e	Expected Crowding ^j	Perceived Crowding ^j	Global Satisfaction ⁿ ^k
Total										
Residents/Visitors ^d										
Length of Residency (Years)										
Length of Visit to the Bay (Days)										
Previous Visitation ^e										
Last Visit (Year)										
Familiarity ^f										
Expertise in Snorkeling ^g										
Frequency to Snorkel ^h										
Hours in the Bay										
Rent \$	1.000									
Buy \$		^c 1.000								
Age	-0.018	0.291	1.000							
Gender ⁱ	0.087	-0.253	-0.105	1.000						
Negative Influence from # People Snorkeling ^e	0.015	0.067	0.134	0.053	1.000					
Negative Influence from # People on the Beach ^c	0.081	0.061	0.060	0.004	0.584	1.000				
Spend More Time if Less Crowded ^e	-0.041	0.093	0.182	-0.010	0.357	0.344	1.000			
Expected Crowding ^j	-0.099	-0.221	-0.046	0.038	-0.120	-0.115	-0.158	1.000		
Perceived Crowding ^j	-0.029	-0.333	-0.139	-0.072	-0.326	-0.299	-0.319	0.362	1.000	
Global Satisfaction ^k	0.093	0.034	0.015	0.020	0.276	0.205	0.065	0.097	0.047	1.000
Natural Resources & Snorkeling (Preferences Pre F1) ^l	-0.059	-0.188	-0.092	0.070	-0.015	-0.009	-0.028	-0.038	0.005	0.079
Clean facilities (Preferences Pre F2 Item) ^l	0.052	-0.291	0.077	0.126	0.170	0.101	0.104	-0.063	-0.105	0.041
Adequate parking (Preferences Pre F2 Item) ^l	0.036	0.107	0.114	0.072	0.117	0.122	0.036	-0.097	-0.066	0.037
Entrance fee (Preferences Pre F3 Item) ^l	0.176	0.019	0.093	-0.014	0.043	0.103	0.036	0.080	-0.121	0.068
Lots of people (Preferences Pre F3 Item) ^l	0.002	-0.149	-0.022	0.076	0.106	0.083	-0.048	0.244	0.060	0.087
Activities (Preferences Pre F4) ^l	-0.021	-0.259	-0.085	0.147	-0.015	-0.056	-0.095	0.097	0.088	0.051
Natural Resources & Snorkeling (Preferences Post F1) ^m	0.024	0.192	-0.036	-0.059	0.191	0.161	0.106	0.009	-0.072	0.358
Clean facilities (Preferences Post F2 Item) ^m	-0.048	-0.053	-0.044	-0.056	0.044	0.086	0.045	0.076	-0.007	0.099
Adequate parking (Preferences Post F2 Item) ^m	0.077	-0.075	-0.009	-0.012	0.011	0.015	-0.009	-0.077	-0.002	0.079
Entrance fee (Preferences Post F3 Item) ^m	0.092	0.190	-0.013	-0.065	0.000	-0.052	0.018	0.069	-0.066	0.077
Lots of people (Preferences Post F3 Item) ^m	-0.011	-0.081	0.104	0.034	0.241	0.178	0.163	-0.008	-0.414	0.083
Activities (Preferences Post F4) ^m	0.047	-0.181	-0.043	-0.016	0.098	0.081	0.077	0.106	-0.036	0.242
Learning (Benefits Pre F1) ⁿ	0.141	-0.277	0.030	0.048	-0.014	-0.040	-0.069	0.029	0.038	0.141
Leisure & Bonding (Benefits Pre F2) ⁿ	0.117	-0.262	0.019	0.050	0.064	0.042	-0.009	0.024	0.070	0.083
Environmental Attributes (Benefits Pre F3) ⁿ	0.006	0.160	-0.037	-0.023	-0.012	-0.021	0.015	0.003	0.063	0.100
Learning (Benefits Post F1) ⁿ	0.183	-0.181	0.017	0.057	0.200	0.089	0.022	-0.011	-0.108	0.366
Leisure & Bonding (Benefits Post F2) ⁿ	0.152	-0.128	-0.027	0.042	0.214	0.166	-0.045	0.036	-0.065	0.393
Environmental Attributes (Benefits Post F3) ⁿ	0.077	0.153	-0.050	-0.039	0.220	0.145	-0.004	0.066	-0.051	0.447
Quality & Availability of Facilities (Satisfaction F1) ^o	0.099	0.210	0.071	0.066	0.133	0.175	0.110	-0.049	-0.176	0.210
Distractions & Encounters (Satisfaction F2) ^o	0.007	-0.088	0.134	0.056	0.388	0.342	0.317	-0.030	-0.241	0.152
Debris (Satisfaction F3) ^o	0.074	-0.089	0.051	0.048	0.141	0.153	0.118	-0.024	-0.099	0.116
Marine Resources (Satisfaction F4) ^o	0.052	0.201	-0.012	0.073	0.240	0.131	0.087	0.021	-0.130	0.347
Weather Conditions (Satisfaction item) ^o	-0.001	0.190	0.043	0.062	0.054	0.064	0.089	0.142	0.028	0.187

^a Significant at p < 0.01.
^b Significant at p < 0.05.
^c Cannot be computed because at least one of the variables is constant.
^d Coded as 1 = residents and 2 = visitors.
^e Coded as 1 = yes and 2 = no.
^f Five-point Likert where 1 = not at all and 5 = extremely.
^g Coded as 1 = novice/beginner, 2 = intermediate, 3 = advanced 4 = expert, and 5 = professional.
^h Five-point Likert where 1 = never and 5 = very often.
ⁱ Coded as 1 = male and 2 = female.
^j Nine-point Likert where 1 = not at all crowded and 9 = extremely crowded.
^k Coded ranging 1 = highly dissatisfied to 5 = highly satisfied.
^l Coded ranging 1 = not expect to see/do, 2 = not sure and 3 = expect to see/do.
^m Coded ranging 1 = worse than I expected, 2 = what I expected and 3 = better than I expected.
ⁿ Five-point Likert 1 = strongly disagree and 5 = strongly agree.
^o Coded ranging 1 = detracted from satisfaction, 2 = no effect and 3 = added satisfaction.

Table 6.1: Correlation Matrix for Variables at Hanauma Bay (Continued)												
	Natural Resources & Snorkeling (Pref Pre F1) ¹	Clean facilities (Pref Pre F2 Item) ¹	Adequate parking (Pref Pre F2 Item) ¹	Entrance fee (Pref Pre F3 Item) ¹	Lots of people (Pref Pre F3 Item) ¹	Activities (Pref Pre F4) ¹	Natural Resources & Snorkeling (Pref. Post F1) ^m	Clean facilities (Pref. Post Item) ^m	Adequate parking (Pref. Post Item) ^m	Entrance fee (Pref. Post Item) ^m	Lots of people (Pref. Post Item) ^m	Activities (Pref. Post F4) ^m
Total												
Residents/Visitors ^d												
Length of Residency (Years)												
Length of Visit to the Bay (Days)												
Previous Visitation ^c												
Last Visit (Year)												
Familiarity ^f												
Expertise in Snorkeling ^e												
Frequency to Snorkel ^h												
Hours in the Bay												
Rent \$												
Buy \$												
Age												
Gender ⁱ												
Negative Influence from # People Snorkeling ^c												
Negative Influence from # People on the Beach ^c												
Spend More Time if Less Crowded ^c												
Expected Crowding ^j												
Perceived Crowding ^j												
Global Satisfaction ^k												
Natural Resources & Snorkeling (Preferences Pre F1) ¹	1.000											
Clean facilities (Preferences Pre F2 Item) ¹	0.304 ^a	1.000										
Adequate parking (Preferences Pre F2 Item) ¹	0.148 ^a	0.351 ^a	1.000									
Entrance fee (Preferences Pre F3 Item) ¹	0.088 ^b	0.129 ^a	0.196 ^a	1.000								
Lots of people (Preferences Pre F3 Item) ¹	0.158 ^a	0.131 ^a	0.185 ^a	0.313 ^a	1.000							
Activities (Preferences Pre F4) ¹	0.340 ^a	0.144 ^a	0.117 ^a	0.070	0.128 ^a	1.000						
Natural Resources & Snorkeling (Preferences Post F1) ^m	-0.064	-0.061	-0.079	0.011	0.028	-0.040	1.000					
Clean facilities (Preferences Post F2 Item) ^m	-0.059	-0.056	-0.056	0.033	0.079	-0.085	0.215 ^a	1.000				
Adequate parking (Preferences Post F2 Item) ^m	0.021	-0.037	0.073	-0.035	-0.049	-0.040	0.035	0.101 ^b	1.000			
Entrance fee (Preferences Post F3 Item) ^m	0.027	-0.010	0.036	0.370 ^a	0.059	0.001	0.102 ^b	-0.056	-0.206 ^a	1.000		
Lots of people (Preferences Post F3 Item) ^m	0.028	0.023	0.036	0.226 ^a	0.109 ^b	0.012	-0.016	-0.020	-0.183 ^a	0.201 ^a	1.000	
Activities (Preferences Post F4) ^m	0.034	-0.030	-0.027	0.057	-0.017	-0.089	0.420 ^a	0.111 ^b	0.036	0.070	0.027	1.000
Learning (Benefits Pre F1) ⁿ	0.053	0.110 ^a	0.078	0.044	-0.004	-0.061	-0.006	0.026	0.057	0.041	-0.040	0.072
Leisure & Bonding (Benefits Pre F2) ⁿ	0.059	0.059	0.078	0.040	0.048	0.107 ^b	-0.025	0.016	0.040	-0.004	0.000	-0.008
Environmental Attributes (Benefits Pre F3) ⁿ	0.135 ^a	-0.016	0.027	-0.045	-0.045	0.002	-0.006	-0.008	0.010	-0.002	-0.039	0.043
Learning (Benefits Post F1) ⁿ	0.047	0.047	0.084	-0.047	-0.071	-0.020	0.264 ^a	0.050	0.047	0.027	-0.016	0.122 ^a
Leisure & Bonding (Benefits Post F2) ⁿ	0.090	-0.015	0.004	-0.019	-0.030	0.054	0.253 ^a	0.030	-0.020	-0.014	0.053	0.156 ^a
Environmental Attributes (Benefits Post F3) ⁿ	0.073	-0.054	-0.001	-0.042	-0.043	0.032	0.407 ^a	0.064	-0.023	0.026	0.049	0.248 ^a
Quality & Availability of Facilities (Satisfaction F1) ^o	0.093	0.153 ^a	0.141 ^a	0.150 ^a	0.104 ^b	0.110 ^b	0.069	0.138 ^a	0.121 ^b	0.005	0.161 ^a	0.007
Distractions & Encounters (Satisfaction F2) ^o	0.030	0.037	0.071	0.048	0.038	0.053	0.169 ^a	0.058	0.042	0.043	0.249 ^a	0.068
Debris (Satisfaction F3) ^o	-0.032	0.133 ^a	0.030	0.068	0.012	0.092	0.134 ^a	0.036	0.003	-0.021	0.057	-0.037
Marine Resources (Satisfaction F4) ^o	-0.027	-0.035	-0.040	0.012	0.005	0.085 ^a	0.359 ^a	0.098	0.020	-0.016	0.062	0.096 ^a
Weather Conditions (Satisfaction item) ^o	0.041	-0.024	0.017	0.074	0.029	0.125	0.108	-0.017	-0.039	0.109	-0.024	0.096
^a Significant at p < 0.01.												
^b Significant at p < 0.05.												
^c Cannot be computed because at least one of the variables is constant.												
^d Coded as 1 = residents and 2 = visitors.												
^e Coded as 1 = yes and 2 = no.												
^f Five-point Likert where 1 = not at all and 5 = extremely.												
^g Coded as 1 = novice/beginner, 2 = intermediate, 3 = advanced 4 = expert, and 5 = professional.												
^h Five-point Likert where 1 = never and 5 = very often.												
ⁱ Coded as 1 = male and 2 = female.												
^j Nine-point Likert where 1 = not at all crowded and 9 = extremely crowded.												
^k Coded ranging 1 = highly dissatisfied to 5 = highly satisfied.												
^l Coded ranging 1 = not expect to see/do, 2 = not sure and 3 = expect to see/do.												
^m Coded ranging 1 = worse than I expected, 2 = what I expected and 3 = better than I expected.												
ⁿ Five-point Likert 1 = strongly disagree and 5 = strongly agree.												
^o Coded ranging 1 = detracted from satisfaction, 2 = no effect and 3 = added satisfaction.												

Table 6.1: Correlation Matrix for Variables at Hanauma Bay (Continued)											
	Learning (Benefits Pre F1) ^o	Leisure & Bonding (Benefits Pre F2) ^o	Environmental Attributes (Benefits Pre F3) ^o	Learning (Benefits Post F1) ^o	Leisure & Bonding (Benefits Post F2) ^o	Environmental Attributes (Benefits Post F3) ^o	Quality & Availability of Facilities (Satisfaction on F1) ^p	Distractions & Encounters (Satisfaction on F2) ^p	Debris (Satisfaction on F3) ^p	Marine Resources (Satisfaction on F4) ^p	Marine Resources (Satisfaction on item) ^p
Total											
Residents/Visitors ^d											
Length of Residency (Years)											
Length of Visit to the Bay (Days)											
Previous Visitation ^e											
Last Visit (Year)											
Familiarity ^f											
Expertise in Snorkeling ^g											
Frequency to Snorkel ^h											
Hours in the Bay											
Rent \$											
Buy \$											
Age											
Gender ⁱ											
Negative Influence from # People Snorkeling ^c											
Negative Influence from # People on the Beach ^c											
Spend More Time if Less Crowded ^c											
Expected Crowding ^j											
Perceived Crowding ^j											
Global Satisfaction ^k											
Natural Resources & Snorkeling (Preferences Pre F1) ^l											
Clean facilities (Preferences Pre F2 Item) ^l											
Adequate parking (Preferences Pre F2 Item) ^l											
Entrance fee (Preferences Pre F3 Item) ^l											
Lots of people (Preferences Pre F3 Item) ^l											
Activities (Preferences Pre F4) ^l											
Natural Resources & Snorkeling (Preferences Post F1) ^m											
Clean facilities (Preferences Post F2 Item) ^m											
Adequate parking (Preferences Post F2 Item) ^m											
Entrance fee (Preferences Post F3 Item) ^m											
Lots of people (Preferences Post F3 Item) ^m											
Activities (Preferences Post F4) ^m											
Learning (Benefits Pre F1) ⁿ	1.000										
Leisure & Bonding (Benefits Pre F2) ⁿ	0.494 ^a	1.000									
Environmental Attributes (Benefits Pre F3) ⁿ	0.565 ^a	0.496 ^a	1.000								
Learning (Benefits Post F1) ⁿ	0.491 ^a	0.269 ^a	0.256 ^a	1.000							
Leisure & Bonding (Benefits Post F2) ⁿ	0.277 ^a	0.489 ^a	0.230 ^a	0.626 ^a	1.000						
Environmental Attributes (Benefits Post F3) ⁿ	0.320 ^a	0.243 ^a	0.318 ^a	0.669 ^a	0.703 ^a	1.000					
Quality & Availability of Facilities (Satisfaction F1) ^o	0.150 ^a	0.141 ^a	0.012	0.319 ^a	0.223 ^a	0.236 ^a	1.000				
Distractions & Encounters (Satisfaction F2) ^o	0.032	0.045	-0.007	0.123 ^b	0.091	0.101 ^b	0.204 ^a	1.000			
Debris (Satisfaction F3) ^o	0.070	0.051	-0.057	0.127 ^a	0.101 ^b	0.071	0.268 ^a	0.415 ^a	1.000		
Marine Resources (Satisfaction F4) ^o	0.109 ^a	0.102 ^b	0.096 ^b	0.349 ^a	0.302 ^a	0.431 ^a	0.368 ^a	0.171 ^a	0.283 ^a	1.000	
Weather Conditions (Satisfaction item) ^o	0.104	0.089	0.057	0.171	0.173	0.164	0.195	0.091	0.148	0.282	1.000
^a Significant at p < 0.01.											
^b Significant at p < 0.05.											
^c Cannot be computed because at least one of the variables is constant.											
^d Coded as 1 = residents and 2 = visitors.											
^e Coded as 1 = yes and 2 = no.											
^f Five-point Likert where 1 = not at all and 5 = extremely.											
^g Coded as 1 = novice/beginner, 2 = intermediate, 3 = advanced 4 = expert, and 5 = professional.											
^h Five-point Likert where 1 = never and 5 = very often.											
ⁱ Coded as 1 = male and 2 = female.											
^j Nine-point Likert where 1 = not at all crowded and 9 = extremely crowded.											
^k Coded ranging 1 = highly dissatisfied to 5 = highly satisfied.											
^l Coded ranging 1 = not expect to see/do, 2 = not sure and 3 = expect to see/do.											
^m Coded ranging 1 = worse than I expected, 2 = what I expected and 3 = better than I expected.											
ⁿ Five-point Likert 1 = strongly disagree and 5 = strongly agree.											
^o Coded ranging 1 = detracted from satisfaction, 2 = no effect and 3 = added satisfaction.											

Table 6.1.2: Correlation Matrix for Variables at Hanauma Bay (Residents)								
	Total	Length of Residency (Years)	Previous Visitation ^d	Last Visit (Year)	Familiarity ^e	Expertise in Snorkeling ^f	Frequency to Snorkel ^g	Hours in the Bay
Total	1.000							
Length of Residency (Years)	-0.005	1.000						
Previous Visitation ^d	-0.056	-0.236 ^b	1.000					
Last Visit (Year)	-0.222	-0.095		1.000				
Familiarity ^e	-0.055	0.345 ^a	-0.646 ^a	0.011	1.000			
Expertise in Snorkeling ^f	0.054	0.160	-0.194	-0.107	0.425 ^a	1.000		
Frequency to Snorkel ^g	-0.002	-0.003	-0.301 ^a	0.076	0.415 ^a	0.736 ^a	1.000	
Hours in the Bay	0.115	-0.035	0.097	0.011	-0.050	-0.128	-0.271 ^b	1.000
Rent \$	0.508 ^b	0.302		-0.811 ^a	0.028	0.206	-0.251 ^b	0.145
Buy \$	-0.432	-0.264	-0.098	1.000 ^a	0.106	-0.074	0.217	-0.201
Age	-0.082	0.300 ^a	-0.164	-0.139	0.339 ^a	0.177	0.161	-0.046
Gender ^h	-0.126	0.016	-0.089	0.125	-0.022	-0.328 ^a	-0.163	0.089
Negative Influence from # People Snorkeling ^d	-0.365 ^a	0.227 ^b	0.109	0.247	-0.105	-0.368 ^a	-0.309 ^a	-0.091
Negative Influence from # People on the Beach ^d	-0.236 ^b	0.150	0.106	0.312 ^b	-0.147	-0.220 ^b	-0.323 ^a	0.008
Spend More Time if Less Crowded ^d	-0.136	0.100	-0.055	0.125	0.117	-0.156	-0.115	-0.027
Expected Crowding ⁱ	0.417 ^a	-0.005	0.012	-0.066	0.013	-0.145	-0.211 ^b	0.210 ^b
Perceived Crowding ⁱ	0.464 ^a	-0.275 ^b	0.016	-0.160	-0.048	0.125	0.076	0.178
Global Satisfaction ^j	-0.076	-0.015	0.108	0.059	0.012	-0.048	-0.004	0.020
Natural Resources & Snorkeling (Preferences Pre F1) ^k	-0.075	-0.096	-0.106	-0.115	0.101	0.076	0.197	-0.024
Clean facilities (Preferences Pre F2 Item) ^k	-0.122	0.137	-0.098	-0.138	0.112	-0.003	0.022	0.087
Adequate parking (Preferences Pre F2 Item) ^k	-0.277 ^a	0.086 ^b	-0.072	-0.037	0.008	-0.112	-0.082	0.024
Entrance fee (Preferences Pre F3 Item) ^k	0.085	-0.021	-0.030	-0.116	-0.004	-0.025	0.008	-0.007
Lots of people (Preferences Pre F3 Item) ^k	0.075	0.070	-0.041	-0.048	-0.052	-0.168	-0.230 ^b	-0.084
Activities (Preferences Pre F4) ^k	0.052	-0.016	0.064	-0.026	-0.036	-0.061	0.064	0.070
Natural Resources & Snorkeling (Preferences Post F1) ^l	0.047	-0.015	0.232 ^b	0.295 ^b	-0.247 ^b	-0.224 ^b	-0.132	-0.037
Clean facilities (Preferences Post F2 Item) ^l	-0.036	-0.208	0.215 ^b	0.219	-0.221 ^b	-0.224 ^b	-0.240 ^b	0.021
Adequate parking (Preferences Post F2 Item) ^l	-0.047	0.210	-0.057	0.007	0.034	0.071	0.036	-0.169
Entrance fee (Preferences Post F3 Item) ^l	0.046	-0.103	-0.040	-0.151	0.048	0.108	0.151	0.085
Lots of people (Preferences Post F3 Item) ^l	-0.359 ^a	0.020	-0.077	-0.051	0.059	0.012	0.043	0.001
Activities (Preferences Post F4) ^l	-0.156	0.124	0.051	0.075	0.073	0.072	0.170	0.054
Learning (Benefits Pre F1) ^m	-0.065	-0.066	0.045	0.046	0.033	0.182	0.176	0.177
Leisure & Bonding (Benefits Pre F2) ^m	-0.013	-0.104	0.040	0.150	0.024	0.055	0.107	0.213
Environmental Attributes (Benefits Pre F3) ^m	-0.169	-0.236	0.088	0.253	-0.028	-0.029	0.080	0.122
Learning (Benefits Post F1) ^m	-0.002	0.036 ^b	0.196	0.008	-0.013	0.065	0.109	0.087
Leisure & Bonding (Benefits Post F2) ^m	0.003	-0.037 ^b	0.206	0.174	-0.134	0.050	0.110	-0.005
Environmental Attributes	-0.030	-0.150	0.229 ^b	0.181	-0.034	0.085	0.166	0.137
Quality & Availability of Facilities (Satisfaction F1) ⁿ	0.069	0.051	0.115	-0.192	-0.061	0.105	0.071	0.071
Distractions & Encounters (Satisfaction F2) ⁿ	-0.069	0.250	0.135	0.349 ^b	0.052	-0.104	-0.034	0.080
Debris (Satisfaction F3) ⁿ	-0.026	0.231	0.158	0.194	-0.050	0.037	-0.028	0.034
Marine Resources & Snorkeling (Satisfaction F4) ⁿ	-0.101	0.000	0.129	0.115	-0.153	-0.177	-0.071	0.132 ^b
Weather Conditions (Satisfaction item) ⁿ	0.098	0.171	0.143	-0.190	-0.079	-0.073	-0.096	0.065
^a Significant at p < 0.01.								
^b Significant at p < 0.05.								
^c Cannot be computed because at least one of the variables is constant.								
^d Coded as 1 = yes and 2 = no.								
^e Five-point Likert where 1 = not at all and 5 = extremely.								
^f Five-point Likert where 1 = professional, 2 = expert, 3 = advanced 4 = intermediate and 5 = novice/beginner.								
^g Five-point Likert where 1 = never and 5 = very often.								
^h Coded as 1 = male and 2 = female.								
ⁱ Nine-point Likert where 1 = not at all crowded and 9 = extremely crowded.								
^j Coded ranging 1 = highly satisfied to 5 = highly dissatisfied.								
^k Coded ranging 1 = expect to see/do, 2 = not sure and 3 = not expect to see/do.								
^l Coded ranging 1 = worse than I expected, 2 = what I expected and 3 = better than I expected.								
^m Five-point Likert 1 = strongly agree and 5 = strongly disagree.								
ⁿ Coded ranging 1 = added satisfaction, 2 = no effect and 3 = detract from satisfaction.								

Table 6.1.2: Correlation Matrix for Variables at Hanauma Bay (Residents) (Continued)										
	Rent \$	Buy \$	Age	Gender ^h	Negative Influence from # People Snorkeling ^d	Negative Influence from # People on the Beach ^d	Spend More Time if Less Crowded ^d	Expected Crowding ⁱ	Perceived Crowding ⁱ	Global Satisfaction ⁿ ^j
Total										
Length of Residency (Years)										
Previous Visitation ^d										
Last Visit (Year)										
Familiarity ^c										
Expertise in Snorkeling ^f										
Frequency to Snorkel ^g										
Hours in the Bay										
Rent \$	1.000									
Buy \$		1.000								
Age	0.340	-0.147	1.000							
Gender ^h	-0.024	-0.237	-0.063	1.000						
Negative Influence from # People Snorkeling ^d	-0.454	0.201	0.103	0.129	1.000					
Negative Influence from # People on the Beach ^d	-0.402	0.201	0.114	0.093	0.599 ^a	1.000				
Spend More Time if Less Crowded ^d	-0.045	-0.585	0.227 ^b	-0.087	0.378 ^a	0.322 ^a	1.000			
Expected Crowding ⁱ	0.461	-0.105	-0.173	0.063	-0.137	-0.161	-0.232 ^b	1.000		
Perceived Crowding ⁱ	0.260	0.287	-0.214 ^b	-0.214 ^b	-0.421 ^a	-0.361 ^a	-0.256 ^b	0.467 ^a	1.000	
Global Satisfaction ⁿ	0.086	0.078	0.051	-0.067	0.194	0.190	0.081	0.129	0.152	1.000
Natural Resources & Snorkeling (Preferences Pre F1) ^k	-0.400	0.266	-0.166	0.224 ^b	-0.103	-0.021	0.028	-0.072	-0.073	-0.106
Clean facilities (Preferences Pre F2 Item) ^k	0.178	-0.585	0.038	0.059	0.085	-0.026	0.185	-0.150	-0.254 ^b	-0.078
Adequate parking (Preferences Pre F2 Item) ^k	0.018	0.324	0.150	0.070	0.170	0.216 ^b	0.148	-0.219 ^b	-0.316 ^a	-0.040
Entrance fee (Preferences Pre F3 Item) ^k	0.084	0.372	-0.015	0.105	-0.158	0.059	-0.202	0.056	-0.063	-0.046
Lots of people (Preferences Pre F3 Item) ^k	-0.189		-0.088	0.084	0.070	-0.062	-0.181	0.352 ^a	0.094	0.174
Activities (Preferences Pre F4) ^k	0.315	0.201	-0.166	0.156	-0.047	-0.107	-0.144	0.223 ^b	0.159	0.102
Natural Resources & Snorkeling (Preferences Post F1) ^l	-0.058	0.585	-0.140	-0.173	0.111	0.250 ^b	0.058	0.157	0.099	0.345 ^a
Clean facilities (Preferences Post F2 Item) ^l	-0.358	-0.307	-0.218 ^b	-0.136 ^b	0.227 ^b	0.260 ^b	0.171	0.077	0.107	0.251 ^b
Adequate parking (Preferences Post F2 Item) ^l	0.091	-0.201	-0.011	-0.107	-0.101	-0.012	-0.136	-0.035	-0.118	0.099
Entrance fee (Preferences Post F3 Item) ^l	-0.091	0.755 ^b	-0.184	-0.100	-0.087	-0.192	-0.015	-0.060	0.078	0.039
Lots of people (Preferences Post F3 Item) ^l	-0.229	-0.201	0.124	0.120	0.360 ^a	0.139	0.217 ^b	-0.166	-0.423 ^b	0.037
Activities (Preferences Post F4) ^l	-0.183	-0.967 ^a	0.117	0.014	0.061	-0.048	0.089	0.105	-0.049	0.145
Learning (Benefits Pre F1) ^m	0.161	-0.535	0.013	0.000	0.049	-0.009	0.072	-0.222 ^b	-0.011	0.185
Leisure & Bonding (Benefits Pre F2) ^m	0.293	-0.444	0.058	0.092	0.031	0.027	-0.002	0.009	0.123	0.169
Environmental Attributes (Benefits Pre F3) ^m	-0.064	0.344	-0.001	-0.028	0.166	0.110	0.069	-0.122	0.027	0.201
Learning (Benefits Post F1) ^m	0.111	-0.222	0.001	-0.043	0.228 ^b	0.144	0.172	-0.079	-0.081	0.298 ^a
Leisure & Bonding (Benefits Post F2) ^m	-0.123	-0.483	-0.041	0.071	0.210	0.197	-0.075	-0.086	-0.035	0.415 ^a
Environmental Attributes	-0.035	0.188	-0.046	-0.085	0.147	-0.016	0.028	-0.091	0.050	0.340 ^a
Quality & Availability of Facilities (Satisfaction F1) ⁿ	0.027	0.169	0.069	-0.077	0.020	0.096	-0.028	-0.056	-0.139	0.211
Distractions & Encounters (Satisfaction F2) ⁿ	-0.254	-0.500	0.364 ^a	-0.059	0.406 ^a	0.343 ^a	0.240 ^b	0.070	-0.112	0.302 ^a
Debris (Satisfaction F3) ⁿ	0.053		0.028	-0.015	0.129	0.225 ^b	0.084	-0.046	-0.024	0.370 ^a
Marine Resources & Snorkeling (Satisfaction F4) ⁿ	-0.197	0.344	-0.001	0.033	0.186	0.265 ^a	-0.008	0.004	-0.026	0.299 ^a
Weather Conditions (Satisfaction item) ⁿ	0.519	0.376	0.133	-0.064	0.132	0.186	0.020	-0.150	-0.066	0.291
^a Significant at p < 0.01.										
^b Significant at p < 0.05.										
^c Cannot be computed because at least one of the variables is constant.										
^d Coded as 1 = yes and 2 = no.										
^e Five-point Likert where 1 = not at all and 5 = extremely.										
^f Five-point Likert where 1 = professional, 2 = expert, 3 = advanced 4 = intermediate and 5 = novice/beginner.										
^g Five-point Likert where 1 = never and 5 = very often.										
^h Coded as 1 = male and 2 = female.										
ⁱ Nine-point Likert where 1 = not at all crowded and 9 = extremely crowded.										
^j Coded ranging 1 = highly satisfied to 5 = highly dissatisfied.										
^k Coded ranging 1 = expect to see/do, 2 = not sure and 3 = not expect to see/do.										
^l Coded ranging 1 = worse than I expected, 2 = what I expected and 3 = better than I expected.										
^m Five-point Likert 1 = strongly agree and 5 = strongly disagree.										
ⁿ Coded ranging 1 = added satisfaction, 2 = no effect and 3 = detract from satisfaction.										

Table 6.1.2: Correlation Matrix for Variables at Hanauma Bay (Residents) (Continued)												
	Natural Resources & Snorkeling (Preferences Pre F1)	Clean facilities (Preferences Pre F2 Item) ^k	Adequate parking (Preferences Pre F2 Item) ^k	Entrance fee (Preferences Pre F3 Item) ^k	Lots of people (Preferences Pre F3 Item) ^k	Activities (Preferences Pre F4) ^k	Natural Resources & Snorkeling (Preferences Post F1)	Clean facilities (Preferences Post F2 Item) ^l	Adequate parking (Preferences Post F2 Item) ^l	Entrance fee (Preferences Post F3 Item) ^l	Lots of people (Preferences Post F3 Item) ^l	Activities (Preferences Post F4) ^l
Total												
Length of Residency (Years)												
Previous Visitation ^d												
Last Visit (Year)												
Familiarity ^e												
Expertise in Snorkeling ^f												
Frequency to Snorkel ^g												
Hours in the Bay												
Rent \$												
Buy \$												
Age												
Gender ^h												
Negative Influence from # People Snorkeling ^d												
Negative Influence from # People on the Beach ^d												
Spend More Time if Less Crowded ^d												
Expected Crowding ⁱ												
Perceived Crowding ⁱ												
Global Satisfaction ^j												
Natural Resources & Snorkeling (Preferences Pre F1) ^k	1.000											
Clean facilities (Preferences Pre F2 Item) ^k	0.198 ^b	1.000										
Adequate parking (Preferences Pre F2 Item) ^k	0.156	0.432 ^a	1.000									
Entrance fee (Preferences Pre F3 Item) ^k	0.156	0.057	0.115	1.000								
Lots of people (Preferences Pre F3 Item) ^k	0.051	0.004	-0.061	0.266 ^a	1.000							
Activities (Preferences Pre F4) ^k	0.294 ^a	0.004	-0.087	0.104	0.087	1.000						
Natural Resources & Snorkeling (Preferences Post F1) ^l	-0.169	0.045	-0.067	-0.123	0.128	0.011	1.000					
Clean facilities (Preferences Post F2 Item) ^l	-0.177	0.059	-0.068	-0.082	0.109	-0.043	0.445 ^a	1.000				
Adequate parking (Preferences Post F2 Item) ^l	-0.021	0.051	0.162	0.017	-0.002	0.001	0.147	-0.060	1.000			
Entrance fee (Preferences Post F3 Item) ^l	0.171	0.052	-0.102	0.248 ^b	0.095	0.002	-0.112	-0.172	-0.327 ^a	1.000		
Lots of people (Preferences Post F3 Item) ^l	-0.017	0.063	0.015	-0.059	-0.033	-0.064	-0.204	-0.073	-0.247 ^b	0.041	1.000	
Activities (Preferences Post F4) ^l	-0.108	-0.066	-0.005	-0.218 ^b	-0.148	0.122	0.151	0.090	0.110	-0.284 ^a	0.160	1.000
Learning (Benefits Pre F1) ^m	0.025	0.162	0.123	0.086	-0.116	-0.210 ^b	0.043	-0.084	0.129	0.024	-0.006	0.107
Leisure & Bonding (Benefits Pre F2) ^m	0.014	-0.034	-0.074	0.039	-0.030	-0.004	0.016	0.000	0.125	-0.180	-0.044	0.113
Environmental Attributes (Benefits Pre F3) ^m	0.047	-0.075	0.154	0.008	-0.020	-0.132	0.075	0.061	0.022	0.036	0.085	-0.016
Learning (Benefits Post F1) ^m	-0.161	0.081	0.146	-0.103	-0.059	-0.090	0.225 ^b	0.066	0.031	0.040	-0.019	-0.008
Leisure & Bonding (Benefits Post F2) ^m	-0.172	-0.013	0.001	0.084	0.051	0.147	0.193	0.136	0.119	-0.110	-0.026	0.133
Environmental Attributes	-0.039	-0.147	-0.017	-0.114	0.049	0.104	0.217 ^b	0.013	-0.039	0.148	0.014	0.045
Quality & Availability of Facilities (Satisfaction F1) ⁿ	0.040	0.143	0.167	0.019	0.084	0.124	0.104	0.141	0.156	-0.164	0.117	-0.163
Distractions & Encounters (Satisfaction F2) ⁿ	0.023	-0.027	-0.015	-0.191	-0.046	0.081	0.251 ^b	0.197	-0.042	-0.112	0.092	0.269 ^b
Debris (Satisfaction F3) ⁿ	-0.092	0.066	0.046	0.003	0.044	0.180	0.286 ^a	0.169	0.097	0.075	0.038	-0.023
Marine Resources & Snorkeling (Satisfaction F4) ⁿ	-0.165	-0.201	-0.106	0.001	0.043	0.091	0.322 ^b	0.196	0.071	-0.104	0.096	0.075
Weather Conditions (Satisfaction item) ⁿ	-0.104	-0.085	0.103	0.049	-0.129	-0.067	-0.014	-0.192	0.157	0.004	-0.012	-0.007
^a Significant at p < 0.01.												
^b Significant at p < 0.05.												
^c Cannot be computed because at least one of the variables is constant.												
^d Coded as 1 = yes and 2 = no.												
^e Five-point Likert where 1 = not at all and 5 = extremely.												
^f Five-point Likert where 1 = professional, 2 = expert, 3 = advanced 4 = intermediate and 5 = novice/beginner.												
^g Five-point Likert where 1 = never and 5 = very often.												
^h Coded as 1 = male and 2 = female.												
ⁱ Nine-point Likert where 1 = not at all crowded and 9 = extremely crowded.												
^j Coded ranging 1 = highly satisfied to 5 = highly dissatisfied.												
^k Coded ranging 1 = expect to see/do, 2 = not sure and 3 = not expect to see/do.												
^l Coded ranging 1 = worse than I expected, 2 = what I expected and 3 = better than I expected.												
^m Five-point Likert 1 = strongly agree and 5 = strongly disagree.												
ⁿ Coded ranging 1 = added satisfaction, 2 = no effect and 3 = detract from satisfaction.												

Table 6.1.2: Correlation Matrix for Variables at Hanauma Bay (Residents) (Continued)

	Learning (Benefits Pre F1) ⁿ	Leisure & Bonding (Benefits Pre F2) ⁿ	Environmental Attributes (Benefits Pre F3) ⁿ	Learning (Benefits Post F1) ⁿ	Leisure & Bonding (Benefits Post F2) ⁿ	Environmental Attributes (Benefits Post F3) ⁿ	Quality & Availability of Facilities (Satisfaction F1) ^o	Distractions & Encounters (Satisfaction F2) ^o	Debris (Satisfaction F3) ^o	Marine Resources (Satisfaction F4) ^o	Weather Conditions (Satisfaction item) ^o
Total											
Length of Residency (Years)											
Previous Visitation ^d											
Last Visit (Year)											
Familiarity ^c											
Expertise in Snorkeling ^f											
Frequency to Snorkel ^e											
Hours in the Bay											
Rent \$											
Buy \$											
Age											
Gender ^h											
Negative Influence from # People Snorkeling ^d											
Negative Influence from # People on the Beach ^d											
Spend More Time if Less Crowded ^d											
Expected Crowding ⁱ											
Perceived Crowding ⁱ											
Global Satisfaction ^j											
Natural Resources & Snorkeling (Preferences Pre F1) ^k											
Clean facilities (Preferences Pre F2 Item) ^k											
Adequate parking (Preferences Pre F2 Item) ^k											
Entrance fee (Preferences Pre F3 Item) ^k											
Lots of people (Preferences Pre F3 Item) ^k											
Activities (Preferences Pre F4) ^k											
Natural Resources & Snorkeling (Preferences Post F1) ^l											
Clean facilities (Preferences Post F2 Item) ^l											
Adequate parking (Preferences Post F2 Item) ^l											
Entrance fee (Preferences Post F3 Item) ^l											
Lots of people (Preferences Post F3 Item) ^l											
Activities (Preferences Post F4) ^l											
Learning (Benefits Pre F1) ^m	1.000										
Leisure & Bonding (Benefits Pre F2) ^m	0.535 ^a	1.000									
Environmental Attributes (Benefits Pre F3) ^m	0.583 ^a	0.600 ^a	1.000								
Learning (Benefits Post F1) ^m	0.472 ^a	0.335 ^a	0.202	1.000							
Leisure & Bonding (Benefits Post F2) ^m	0.357 ^a	0.516 ^a	0.274 ^b	0.616 ^a	1.000						
Environmental Attributes	0.409 ^a	0.385 ^a	0.449 ^a	0.652 ^a	0.612 ^a	1.000					
Quality & Availability of Facilities (Satisfaction F1) ⁿ	0.026	0.163	-0.070	0.332 ^a	0.247 ^b	0.223	1.000				
Distractions & Encounters (Satisfaction F2) ⁿ	-0.166	-0.012	-0.076	0.132	0.158	0.128	0.152	1.000			
Debris (Satisfaction F3) ⁿ	-0.092	-0.162	-0.191	0.250 ^b	0.213	0.186	0.392 ^a	0.387 ^a	1.000		
Marine Resources & Snorkeling (Satisfaction F4) ⁿ	0.139 ^b	0.161 ^b	0.123	0.357 ^a	0.319 ^a	0.223 ^a	0.467 ^a	0.195 ^b	0.382 ^a	1.000	
Weather Conditions (Satisfaction item) ⁿ	0.222	0.247	0.086	0.219	0.336	0.212	0.325	0.178	0.163	0.267	1.000

^a Significant at p < 0.01.
^b Significant at p < 0.05.
^c Cannot be computed because at least one of the variables is constant.
^d Coded as 1 = yes and 2 = no.
^e Five-point Likert where 1 = not at all and 5 = extremely.
^f Five-point Likert where 1 = professional, 2 = expert, 3 = advanced 4 = intermediate and 5 = novice/beginner.
^g Five-point Likert where 1 = never and 5 = very often.
^h Coded as 1 = male and 2 = female.
ⁱ Nine-point Likert where 1 = not at all crowded and 9 = extremely crowded.
^j Coded ranging 1 = highly satisfied to 5 = highly dissatisfied.
^k Coded ranging 1 = expect to see/do, 2 = not sure and 3 = not expect to see/do.
^l Coded ranging 1 = worse than I expected, 2 = what I expected and 3 = better than I expected.
^m Five-point Likert 1 = strongly agree and 5 = strongly disagree.
ⁿ Coded ranging 1 = added satisfaction, 2 = no effect and 3 = detract from satisfaction.

Table 6.1.3: Correlation Matrix for Variables at Hanauma Bay (Visitors)								
	Total	Length of Visit (Days)	Previous Visitation ^d	Last Visit (Year)	Familiarity ^e	Expertise in Snorkeling ^f	Frequency to Snorkel ^g	Hours in the Bay
Total	1.000							
Length of Visit (Days)	-0.003	1.000						
Previous Visitation ^d	-0.009	-0.085	1.000					
Last Visit (Year)	-0.003	0.083		1.000				
Familiarity ^e	-0.020	0.103 ^b	-0.708 ^a	0.189 ^b	1.000			
Expertise in Snorkeling ^f	0.012	0.034	-0.268 ^a	0.190 ^b	0.359 ^a	1.000		
Frequency to Snorkel ^g	0.004	0.041	-0.329 ^a	0.139	0.371 ^a	0.738 ^a	1.000	
Hours in the Bay	0.041	0.158 ^a	0.031	0.139	0.017	0.065	0.007	1.000
Rent \$	0.014	-0.034	0.043	-0.032	-0.077	-0.029	0.007	0.144 ^b
Buy \$	-0.283	0.083	-0.183	0.027	0.239	0.019	-0.139	0.082
Age	-0.039	0.004	-0.207 ^a	-0.160 ^b	0.181 ^a	-0.001	0.069	-0.015
Gender ^h	0.036	-0.052	0.084	-0.031	-0.111 ^b	-0.246 ^a	-0.209 ^a	0.010
Negative Influence from # People Snorkeling ^d	-0.146 ^a	-0.059	0.022	0.060	-0.028	-0.144 ^a	-0.136 ^a	0.158 ^a
Negative Influence from # People on the Beach ^d	-0.037	-0.065	0.004	0.114	-0.010	-0.027	-0.091	0.083
Spend More Time if Less Crowded ^d	-0.116 ^b	0.005	-0.012	0.075	-0.002	-0.024	0.016	0.063
Expected Crowding ⁱ	0.207 ^a	0.055	-0.118 ^a	-0.183 ^b	0.101 ^b	0.090 ^b	0.028	0.008
Perceived Crowding ⁱ	0.336 ^a	0.014	0.083	0.012	-0.045	0.031	0.017	0.030
Global Satisfaction ^j	-0.068	0.036	0.074	0.002	-0.076	-0.133 ^b	-0.136 ^a	0.208 ^a
Natural Resources & Snorkeling (Preferences Pre F1) ^k	-0.061	0.038	-0.063	-0.045	0.111 ^b	0.087	0.094 ^b	0.084
Clean facilities (Preferences Pre F2 Item) ^k	-0.058	0.052	-0.048	-0.026	0.106 ^b	0.042	0.047	0.060
Adequate parking (Preferences Pre F2 Item) ^k	-0.078	0.023	-0.078	0.046	0.109 ^b	-0.068	-0.061	0.014
Entrance fee (Preferences Pre F3 Item) ^k	-0.144 ^a	-0.070	-0.073	0.033	0.128 ^a	-0.029	-0.016	0.079
Lots of people (Preferences Pre F3 Item) ^k	0.083	-0.055	-0.099 ^b	-0.106	0.117 ^a	-0.042	-0.022	0.070
Activities (Preferences Pre F4) ^k	0.014	0.002	-0.066	-0.080	0.109 ^b	0.032	0.049	0.109 ^b
Natural Resources & Snorkeling (Preferences Post F1) ^l	-0.035	-0.022	0.147 ^a	-0.027	-0.166 ^a	-0.098	-0.134 ^a	0.079
Clean facilities (Preferences Post F2 Item) ^l	-0.055	0.040	-0.076	-0.042	0.019	0.035	0.017	0.022
Adequate parking (Preferences Post F2 Item) ^l	-0.100 ^b	0.004	0.001	-0.095	0.027	0.021	-0.005	-0.082
Entrance fee (Preferences Post F3 Item) ^l	-0.080	0.053	-0.031	-0.009	-0.021	-0.068	-0.068	0.057
Lots of people (Preferences Post F3 Item) ^l	-0.206 ^a	-0.036	-0.170 ^a	-0.027	0.102 ^b	-0.014	-0.013	0.041
Activities (Preferences Post F4) ^l	-0.037	0.023	0.017	-0.122	-0.048	0.016	-0.021	0.092
Learning (Benefits Pre F1) ^m	-0.017	0.096 ^b	0.055	-0.068	-0.048	-0.031	0.040	0.004
Leisure & Bonding (Benefits Pre F2) ^m	0.043	-0.018	-0.078	-0.173 ^b	0.019	0.042	0.101 ^b	-0.022
Environmental Attributes (Benefits Pre F3) ^m	-0.043	0.051	0.019	-0.091	0.022	0.055	0.110 ^b	-0.011
Learning (Benefits Post F1) ^m	-0.030	0.082	0.082	-0.078	-0.081	-0.127 ^b	-0.120 ^b	0.109 ^b
Leisure & Bonding (Benefits Post F2) ^m	0.025	-0.040	0.017	-0.021	-0.014	-0.053	-0.066	0.095
Environmental Attributes	-0.028	0.059	0.081	-0.061	-0.029	-0.090	-0.094	0.094
Quality & Availability of Facilities (Satisfaction F1) ⁿ	-0.138 ^a	0.002	-0.022	-0.161	0.024	-0.056	-0.046	0.057
Distractions & Encounters (Satisfaction F2) ⁿ	-0.140 ^a	-0.063	-0.031	-0.012	-0.036	-0.094	-0.124 ^b	0.080
Debris (Satisfaction F3) ⁿ	-0.044	-0.039	0.067	-0.166	-0.051	-0.069	-0.175 ^a	0.059
Marine Resources & Snorkeling (Satisfaction F4) ⁿ	-0.072	0.009	0.144 ^b	-0.077	-0.059	-0.121	-0.115	0.072
Weather Conditions (Satisfaction item) ⁿ	0.222	0.007	0.040	-0.106	-0.013	0.016	0.007	0.081
^a Significant at p < 0.01.								
^b Significant at p < 0.05.								
^c Cannot be computed because at least one of the variables is constant.								
^d Coded as 1 = yes and 2 = no.								
^e Five-point Likert where 1 = not at all and 5 = extremely.								
^f Five-point Likert where 1 = professional, 2 = expert, 3 = advanced 4 = intermediate and 5 = novice/beginner.								
^g Five-point Likert where 1 = never and 5 = very often.								
^h Coded as 1 = male and 2 = female.								
ⁱ Nine-point Likert where 1 = not at all crowded and 9 = extremely crowded.								
^j Coded ranging 1 = highly satisfied to 5 = highly dissatisfied.								
^k Coded ranging 1 = expect to see/do, 2 = not sure and 3 = not expect to see/do.								
^l Coded ranging 1 = worse than I expected, 2 = what I expected and 3 = better than I expected.								
^m Five-point Likert 1 = strongly agree and 5 = strongly disagree.								
ⁿ Coded ranging 1 = added satisfaction, 2 = no effect and 3 = detract from satisfaction.								

Table 6.1.3: Correlation Matrix for Variables at Hanauma Bay (Visitors) (Continued)										
	Rent \$	Buy \$	Age	Gender ^h	Negative Influence from # People Snorkeling ^d	Negative Influence from # People on the Beach ^d	Spend More Time if Less Crowded ^d	Expected Crowding ⁱ	Perceived Crowding ⁱ	Global Satisfaction ⁿ
Total										
Length of Visit (Days)										
Previous Visitation ^d										
Last Visit (Year)										
Familiarity ^c										
Expertise in Snorkeling ^f										
Frequency to Snorkel ^g										
Hours in the Bay										
Rent \$	1.000									
Buy \$		1.000								
Age	-0.044	0.372	1.000							
Gender ^h	0.091	-0.279	-0.115 ^b	1.000						
Negative Influence from # People Snorkeling ^d	0.036	0.048	0.139 ^a	0.030	1.000					
Negative Influence from # People on the Beach ^d	0.106	0.037	0.045	-0.018	0.580 ^a	1.000				
Spend More Time if Less Crowded ^d	-0.048	0.207	0.166 ^a	0.003	0.347 ^a	0.349 ^a	1.000			
Expected Crowding ⁱ	-0.122	-0.445 ^b	-0.015	0.033	-0.111 ^b	-0.102 ^b	-0.135 ^a	1.000		
Perceived Crowding ⁱ	-0.049	-0.399 ^b	-0.119 ^b	-0.036	-0.301 ^a	-0.284 ^a	-0.335 ^a	0.336 ^a	1.000	
Global Satisfaction ⁿ	0.087	0.028	0.000	0.038	0.293 ^a	0.208 ^a	0.052	0.095	0.021	1.000
Natural Resources & Snorkeling (Preferences Pre F1) ^k	-0.043	-0.236	-0.078	0.047	0.009	-0.005	-0.032	-0.037	0.021	0.120 ^b
Clean facilities (Preferences Pre F2 Item) ^k	0.048	-0.251	0.086	0.140 ^a	0.194 ^a	0.132 ^a	0.087	-0.048	-0.067	0.070
Adequate parking (Preferences Pre F2 Item) ^k	0.045	0.074	0.109 ^b	0.072	0.111 ^b	0.101 ^b	0.020	-0.078	-0.004	0.062
Entrance fee (Preferences Pre F3 Item) ^k	0.183 ^a	-0.041	0.118 ^a	-0.041	0.099	0.114 ^b	0.092	0.090 ^b	-0.137 ^a	0.094
Lots of people (Preferences Pre F3 Item) ^k	0.021	-0.152	-0.004	0.075	0.123 ^b	0.117 ^b	-0.011	0.219 ^a	0.052	0.076
Activities (Preferences Pre F4) ^k	-0.025	-0.320	-0.069	0.147 ^a	-0.003	-0.045	-0.077	0.074	0.075	0.050
Natural Resources & Snorkeling (Preferences Post F1) ^l	0.015	0.172	-0.022	-0.043	0.204 ^a	0.147 ^a	0.106 ^b	-0.011	-0.103 ^b	0.360 ^a
Clean facilities (Preferences Post F2 Item) ^l	-0.053	-0.026	0.001	-0.041	-0.024	0.035	-0.005	0.085	-0.037	0.052
Adequate parking (Preferences Post F2 Item) ^l	0.081	-0.061	-0.009	0.008	0.037	0.021	0.015	-0.086	0.024	0.075
Entrance fee (Preferences Post F3 Item) ^l	0.100	0.102	0.022	-0.057	0.021	-0.028	0.030	0.086	-0.092	0.090
Lots of people (Preferences Post F3 Item) ^l	-0.009	-0.039	0.104 ^b	0.019	0.224 ^a	0.187 ^a	0.161 ^a	0.018	-0.416 ^a	0.097
Activities (Preferences Post F4) ^l	0.046	0.157	-0.062	-0.021	0.106 ^b	0.095	0.076	0.115 ^b	-0.036	0.259 ^a
Learning (Benefits Pre F1) ^m	0.131	-0.238	0.034	0.058	-0.035	-0.049	-0.109 ^b	0.083	0.052	0.128 ^b
Leisure & Bonding (Benefits Pre F2) ^m	0.119	-0.233	0.016	0.043	0.078	0.048	-0.002	0.019	0.058	0.074
Environmental Attributes (Benefits Pre F3) ^m	-0.009	0.039	-0.049	-0.022	-0.075	-0.059	-0.007	0.039	0.073	0.067
Learning (Benefits Post F1) ^m	0.182 ^a	-0.203	0.017	0.077	0.192 ^a	0.076	-0.014	0.008	-0.114 ^b	0.379 ^a
Leisure & Bonding (Benefits Post F2) ^m	0.152 ^b	0.198	-0.024	0.034	0.217 ^a	0.160 ^a	-0.039	0.061	-0.072	0.390 ^a
Environmental Attributes	0.074	0.104	-0.054	-0.032	0.235 ^a	0.175 ^a	-0.015	0.101	-0.072	0.470 ^a
Quality & Availability of Facilities (Satisfaction F1) ⁿ	0.105	0.268	0.068	0.096	0.159 ^a	0.192 ^a	0.137 ^a	-0.044	-0.184 ^a	0.208 ^a
Distractions & Encounters (Satisfaction F2) ⁿ	0.017	-0.002	0.072	0.077	0.382 ^a	0.342 ^a	0.329 ^a	-0.049	-0.275 ^a	0.115 ^b
Debris (Satisfaction F3) ⁿ	0.063	-0.143	0.051	0.057	0.133 ^a	0.137 ^a	0.110 ^b	-0.007	-0.117 ^b	0.049
Marine Resources & Snorkeling (Satisfaction F4) ⁿ	0.055	0.181	-0.020	0.079 ^b	0.249 ^a	0.105	0.097 ^b	0.033 ^b	-0.158	0.353 ^a
Weather Conditions (Satisfaction item) ⁿ	-0.031	0.077	0.017	0.090	0.030	0.036	0.100	0.216	0.051	0.159
^a Significant at p < 0.01.										
^b Significant at p < 0.05.										
^c Cannot be computed because at least one of the variables is constant.										
^d Coded as 1 = yes and 2 = no.										
^e Five-point Likert where 1 = not at all and 5 = extremely.										
^f Five-point Likert where 1 = professional, 2 = expert, 3 = advanced 4 = intermediate and 5 = novice/beginner.										
^g Five-point Likert where 1 = never and 5 = very often.										
^h Coded as 1 = male and 2 = female.										
ⁱ Nine-point Likert where 1 = not at all crowded and 9 = extremely crowded.										
^j Coded ranging 1 = highly satisfied to 5 = highly dissatisfied.										
^k Coded ranging 1 = expect to see/do, 2 = not sure and 3 = not expect to see/do.										
^l Coded ranging 1 = worse than I expected, 2 = what I expected and 3 = better than I expected.										
^m Five-point Likert 1 = strongly agree and 5 = strongly disagree.										
ⁿ Coded ranging 1 = added satisfaction, 2 = no effect and 3 = detract from satisfaction.										

Table 6.1.3: Correlation Matrix for Variables at Hanauma Bay (Visitors) (Continued)												
	Natural Resources & Snorkeling (Preferences Pre F1) ^k	Clean facilities (Preferences Pre F2 Item) ^k	Adequate parking (Preferences Pre F2 Item) ^k	Entrance fee (Preferences Pre F3 Item) ^k	Lots of people (Preferences Pre F3 Item) ^k	Activities (Preferences Pre F4) ^k	Natural Resources & Snorkeling (Preferences Post F1) ^l	Clean facilities (Preferences Post F2 Item) ^l	Adequate parking (Preferences Post F2 Item) ^l	Entrance fee (Preferences Post F3 Item) ^l	Lots of people (Preferences Post F3 Item) ^l	Activities (Preferences Post F4) ^l
Total												
Length of Visit (Days)												
Previous Visitation ^d												
Last Visit (Year)												
Familiarity ^c												
Expertise in Snorkeling ^f												
Frequency to Snorkel ^e												
Hours in the Bay												
Rent \$												
Buy \$												
Age												
Gender ^h												
Negative Influence from # People Snorkeling ^d												
Negative Influence from # People on the Beach ^d												
Spend More Time if Less Crowded ^d												
Expected Crowding ⁱ												
Perceived Crowding ⁱ												
Global Satisfaction ^j												
Natural Resources & Snorkeling (Preferences Pre F1) ^k	1.000											
Clean facilities (Preferences Pre F2 Item) ^k	0.320 ^a	1.000										
Adequate parking (Preferences Pre F2 Item) ^k	0.143 ^a	0.335 ^a	1.000									
Entrance fee (Preferences Pre F3 Item) ^k	0.079	0.146 ^a	0.219 ^a	1.000								
Lots of people (Preferences Pre F3 Item) ^k	0.169 ^a	0.152 ^a	0.224 ^a	0.331 ^a	1.000							
Activities (Preferences Pre F4) ^k	0.344 ^a	0.164 ^a	0.145 ^a	0.068	0.127 ^a	1.000						
Natural Resources & Snorkeling (Preferences Post F1) ^l	-0.046	-0.080	-0.076	0.032	0.018	-0.042	1.000					
Clean facilities (Preferences Post F2 Item) ^l	-0.023	-0.093	-0.043	0.060	0.083	-0.085	0.165 ^a	1.000				
Adequate parking (Preferences Post F2 Item) ^l	0.029	-0.056	0.055	-0.050	-0.058	-0.045	0.017	0.141 ^a	1.000			
Entrance fee (Preferences Post F3 Item) ^l	0.004	-0.020	0.056	0.405 ^a	0.050	-0.004	0.134 ^a	-0.027	-0.188 ^a	1.000		
Lots of people (Preferences Post F3 Item) ^l	0.031	0.016	0.036	0.290 ^a	0.131 ^b	0.018	0.015	0.001	-0.172 ^a	0.219 ^a	1.000	
Activities (Preferences Post F4) ^l	0.046	-0.029	-0.028	0.084	-0.004	-0.100	0.437 ^a	0.118 ^b	0.032	0.092	0.021	1.000
Learning (Benefits Pre F1) ^m	0.061	0.100 ^b	0.071	0.033	0.021	-0.033	-0.018	0.053	0.041	0.048	-0.044	0.072
Leisure & Bonding (Benefits Pre F2) ^m	0.060	0.072	0.100 ^b	0.047	0.050	0.113 ^b	-0.024	0.031	0.026	0.018	0.002	-0.013
Environmental Attributes (Benefits Pre F3) ^m	0.159 ^a	-0.001	0.002	-0.064	-0.041	0.035	-0.029	-0.043	0.006	-0.005	-0.063	0.050
Learning (Benefits Post F1) ^m	0.087	0.039	0.074	-0.038	-0.068	-0.004	0.269 ^a	0.040	0.049	0.028	-0.014	0.134 ^a
Leisure & Bonding (Benefits Post F2) ^m	0.134 ^b	-0.016	0.005	-0.046	-0.045	0.042	0.264 ^a	0.007	-0.045	-0.001	0.066	0.164 ^a
Environmental Attributes	0.093	-0.036	0.006	-0.031	-0.053	0.025	0.432	0.072	-0.021	0.013	0.057	0.266 ^a
Quality & Availability of Facilities (Satisfaction F1) ⁿ	0.107 ^b	0.155 ^a	0.138 ^a	0.181 ^a	0.112 ^b	0.112 ^b	0.062	0.134 ^b	0.115 ^b	0.033	0.172 ^a	0.017
Distractions & Encounters (Satisfaction F2) ⁿ	0.035	0.050	0.095	0.106	0.061	0.054	0.153 ^a	0.011	0.059	0.071	0.281 ^a	0.052
Debris (Satisfaction F3) ⁿ	-0.011	0.148 ^a	0.040	0.079	0.018	0.088	0.099	-0.026	-0.019	-0.030	0.071	-0.045
Marine Resources & Snorkeling (Satisfaction F4) ⁿ	0.007	0.004	-0.016	0.007	0.006	0.096 ^a	0.365 ^a	0.056	0.011	0.001	0.062	0.099 ^b
Weather Conditions (Satisfaction item) ⁿ	0.073	-0.010	0.002	0.076	0.069	0.166	0.125	0.021	-0.080	0.129	-0.022	0.107
^a Significant at p < 0.01.												
^b Significant at p < 0.05.												
^c Cannot be computed because at least one of the variables is constant.												
^d Coded as 1 = yes and 2 = no.												
^e Five-point Likert where 1 = not at all and 5 = extremely.												
^f Five-point Likert where 1 = professional, 2 = expert, 3 = advanced 4 = intermediate and 5 = novice/beginner.												
^g Five-point Likert where 1 = never and 5 = very often.												
^h Coded as 1 = male and 2 = female.												
ⁱ Nine-point Likert where 1 = not at all crowded and 9 = extremely crowded.												
^j Code ranging 1 = highly satisfied to 5 = highly dissatisfied.												
^k Code ranging 1 = expect to see/do, 2 = not sure and 3 = not expect to see/do.												
^l Code ranging 1 = worse than I expected, 2 = what I expected and 3 = better than I expected.												
^m Five-point Likert 1 = strongly agree and 5 = strongly disagree.												
ⁿ Code ranging 1 = added satisfaction, 2 = no effect and 3 = detract from satisfaction.												

Table 6.1.3: Correlation Matrix for Variables at Hanauma Bay (Visitors) (Continued)											
	Educational Benefits (Benefits Pre F1) ⁿ	Leisure & Bonding (Benefits Pre F2) ⁿ	Environmental Attributes (Benefits Pre F3) ⁿ	Educational Benefits (Benefits Post F1) ⁿ	Leisure & Bonding (Benefits Post F2) ⁿ	Environmental Attributes (Benefits Post F3) ⁿ	Quality & Availability of Facilities (Satisfaction F1) ^o	Distractions & Encounters (Satisfaction F2) ^o	Debris (Satisfaction F3) ^o	Marine Resources (Satisfaction F4) ^o	Weather Conditions (Satisfaction item) ^o
Total											
Length of Visit (Days)											
Previous Visitation ^d											
Last Visit (Year)											
Familiarity ^c											
Expertise in Snorkeling ^f											
Frequency to Snorkel ^e											
Hours in the Bay											
Rent \$											
Buy \$											
Age											
Gender ^h											
Negative Influence from # People Snorkeling ^d											
Negative Influence from # People on the Beach ^d											
Spend More Time if Less Crowded ^d											
Expected Crowding ⁱ											
Perceived Crowding ⁱ											
Global Satisfaction ^j											
Natural Resources & Snorkeling (Preferences Pre F1) ^k											
Clean facilities (Preferences Pre F2 Item) ^k											
Adequate parking (Preferences Pre F2 Item) ^k											
Entrance fee (Preferences Pre F3 Item) ^k											
Lots of people (Preferences Pre F3 Item) ^k											
Activities (Preferences Pre F4) ^k											
Natural Resources & Snorkeling (Preferences Post F1) ^l											
Clean facilities (Preferences Post F2 Item) ^l											
Adequate parking (Preferences Post F2 Item) ^l											
Entrance fee (Preferences Post F3 Item) ^l											
Lots of people (Preferences Post F3 Item) ^l											
Activities (Preferences Post F4) ^l											
Learning (Benefits Pre F1) ^m	1.000										
Leisure & Bonding (Benefits Pre F2) ^m	0.492 ^a	1.000									
Environmental Attributes (Benefits Pre F3) ^m	0.560 ^a	0.488 ^a	1.000								
Learning (Benefits Post F1) ^m	0.496 ^a	0.259 ^a	0.271 ^a	1.000							
Leisure & Bonding (Benefits Post F2) ^m	0.258 ^a	0.486 ^a	0.220 ^a	0.628 ^a	1.000						
Environmental Attributes	0.300 ^a	0.222 ^a	0.286 ^a	0.672 ^a	0.720 ^a	1.000					
Quality & Availability of Facilities (Satisfaction F1) ⁿ	0.183	0.141 ^a	0.034	0.316 ^a	0.219 ^a	0.239 ^a	1.000				
Distractions & Encounters (Satisfaction F2) ⁿ	0.079	0.062	0.007	0.117 ^b	0.077	0.092	0.212 ^a	1.000			
Debris (Satisfaction F3) ⁿ	0.105 ^b	0.109 ^b	-0.030	0.097	0.081	0.046	0.238 ^a	0.417 ^a	1.000		
Marine Resources & Snorkeling (Satisfaction F4) ⁿ	0.098 ^b	0.101	0.082	0.345 ^a	0.303 ^a	0.471 ^a	0.344 ^a	0.159 ^a	0.246 ^a	1.000	
Weather Conditions (Satisfaction item) ⁿ	0.070	0.063	0.046	0.158	0.139	0.153	0.164	0.067	0.139	0.282	1.000
^a Significant at p < 0.01.											
^b Significant at p < 0.05.											
^c Cannot be computed because at least one of the variables is constant.											
^d Coded as 1 = yes and 2 = no.											
^e Five-point Likert where 1 = not at all and 5 = extremely.											
^f Five-point Likert where 1 = professional, 2 = expert, 3 = advanced 4 = intermediate and 5 = novice/beginner.											
^g Five-point Likert where 1 = never and 5 = very often.											
^h Coded as 1 = male and 2 = female.											
ⁱ Nine-point Likert where 1 = not at all crowded and 9 = extremely crowded.											
^j Coded ranging 1 = highly satisfied to 5 = highly dissatisfied.											
^k Coded ranging 1 = expect to see/do, 2 = not sure and 3 = not expect to see/do.											
^l Coded ranging 1 = worse than I expected, 2 = what I expected and 3 = better than I expected.											
^m Five-point Likert 1 = strongly agree and 5 = strongly disagree.											
ⁿ Coded ranging 1 = added satisfaction, 2 = no effect and 3 = detract from satisfaction.											

Table 6.2: Explanation of Preferences Variables Codes for Hanauma Bay

Factors and Variables	Pre-test	Post-test
Preferences ^a		
Factor 1: Natural Resources & Snorkeling	O	O
Abundant marine life	O	O
Great reefs and corals	O	O
Beautiful scenery	O	O
Clean ocean water	O	O
Snorkeling	O	O
Factor 2: Physical Facilities	O	O
Clean facilities	O	O
Adequate parking	O	O
Factor 3: Fee & Number of People	O	O
Entrance fee	O	O
Lots of people	O	O
Factor 4: Activities	O	O
Swimming	O	O
Sunbathing	O	O

^a Pre-test: "What do you expect to see/do at Hanauma Bay?" Marked on a three-point scale where expect to see/do, not sure, and not expected to see/do. Post-test: "What have you seen based on your experiences at Hanauma Bay?" Marked on a three-point scale where: worse than I expected, what I expected, and better than I expected.

Table 6.3: Factor Analysis of Pre Experience and Post Experience Preferences at Hanauma Bay

Statement	Pre					Post				
	M ^a	Std. Dev.	Correlated item-total correlation	α if item deleted	Standardized item χ	M ^b	Std. Dev.	Correlated item-total correlation	α if item deleted	Standardized item χ
Factor 1: Natural Resources & Snorkeling^c										
Abundant marine life	2.9	0.33	0.59	0.56		1.9	0.55	0.66	0.68	
Great reefs and corals	2.9	0.41	0.42	0.63		1.9	0.52	0.55	0.72	
Beautiful Scenery	2.9	0.24	0.48	0.62		2.1	0.38	0.52	0.73	
Clean ocean water	2.9	0.35	0.41	0.63		2.0	0.42	0.40	0.77	
Snorkeling	2.9	0.41	0.33	0.68		2.0	0.43	0.60	0.71	
χ (standardized item χ)				0.68	(0.70)				0.77	(0.77)
Factor 2: Physical Facilities^d										
Clean facilities	2.7	0.50	0.35	.		2.0	0.39	0.10	.	
Adequate parking	2.4	0.72	0.35	.		1.9	0.48	0.10	.	
χ (standardized item χ)				0.49	(0.52)				0.18	(0.18)
Factor 3: Fee & Number of People^e										
Entrance fee	2.4	0.76	0.31	.		2.0	0.50	0.20	.	
Lots of people	2.6	0.62	0.31	.		2.1	0.51	0.20	.	
χ (standardized item χ)				0.47	(0.48)				0.33	(0.33)
Factor 4: Activities^f										
Swimming	2.9	0.36	0.34	.		2.0	0.33	0.58	.	
Sunbathing	2.7	0.60	0.34	.		2.0	0.29	0.58	.	
χ (standardized item χ)				0.46	(0.51)				0.73	(0.73)

^a Items were coded on 1= not expected to see/do, 2 = not sure and 3 = expect to see/do.

^b Items were coded on 1 = worse than expected, 2 = what I expected, and 3 = better than expected.

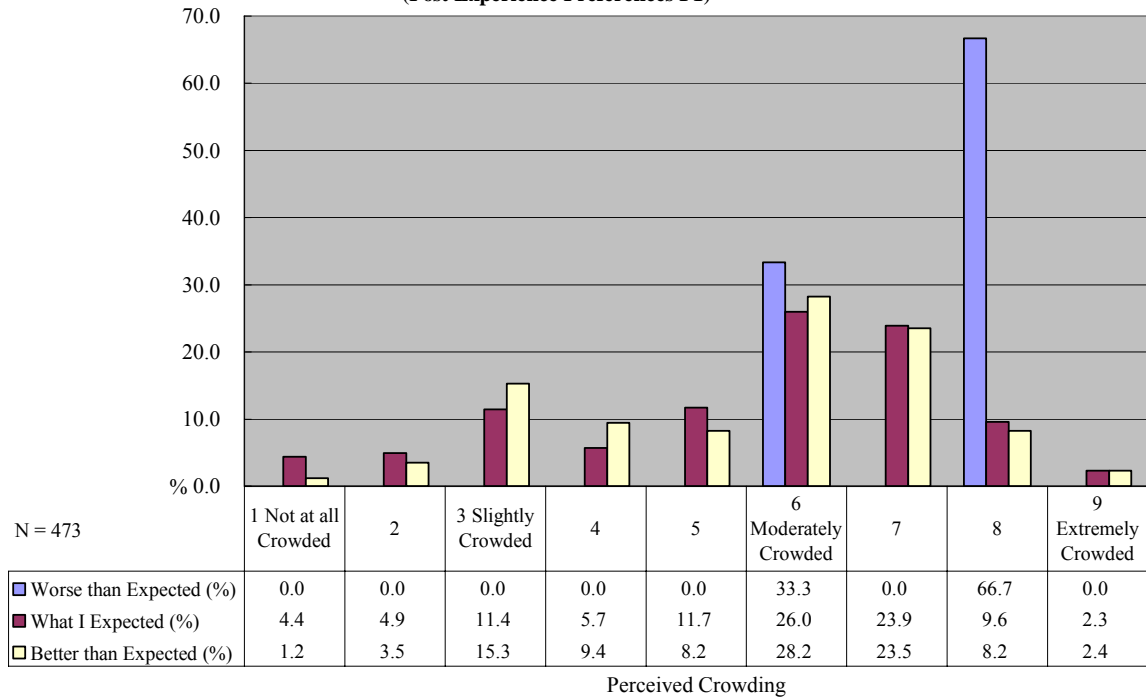
^c Pre-test: n = 586; Post-test n = 473

^d Pre-test: n = 592; Post-test n = 473

^e Pre-test: n = 580; Post-test n = 483

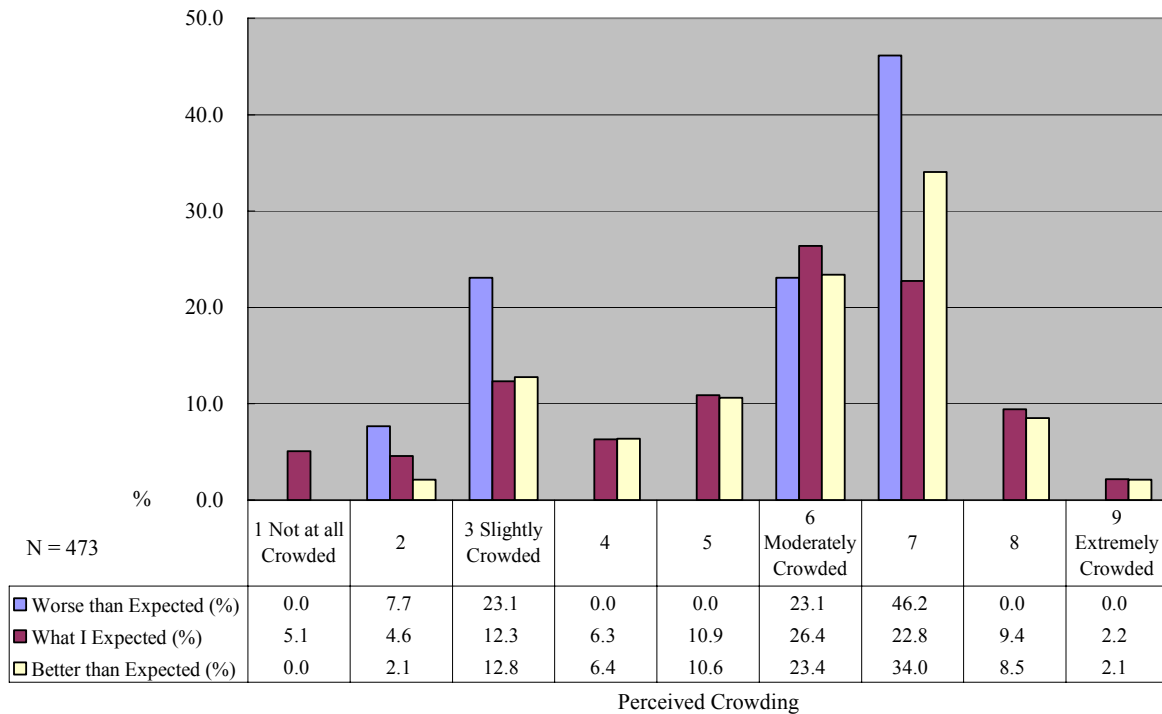
^f Pre-test: n = 595; Post-test n = 484

Figure 6.6: Degree of Perceived Crowding within each Scale of Post Experience Natural Resources & Snorkeling at Hanauma Bay (Post Experience Preferences F1) ^a



^a Abundant marine life, great reefs and corals, beautiful scenery, clean ocean water, and snorkeling.

Figure 6.6.2: Degree of Perceived Crowding within each Scale of Post-test Physical Facilities Hanauma Bay (Post Experience Preferences F2) ^a



^a Clean facilities and adequate parking.

Figure 6.6.3: Degree of Perceived Crowding within each Scale of Post-test Activities at Hanauma Bay (Post Experience Preferences F4)^a

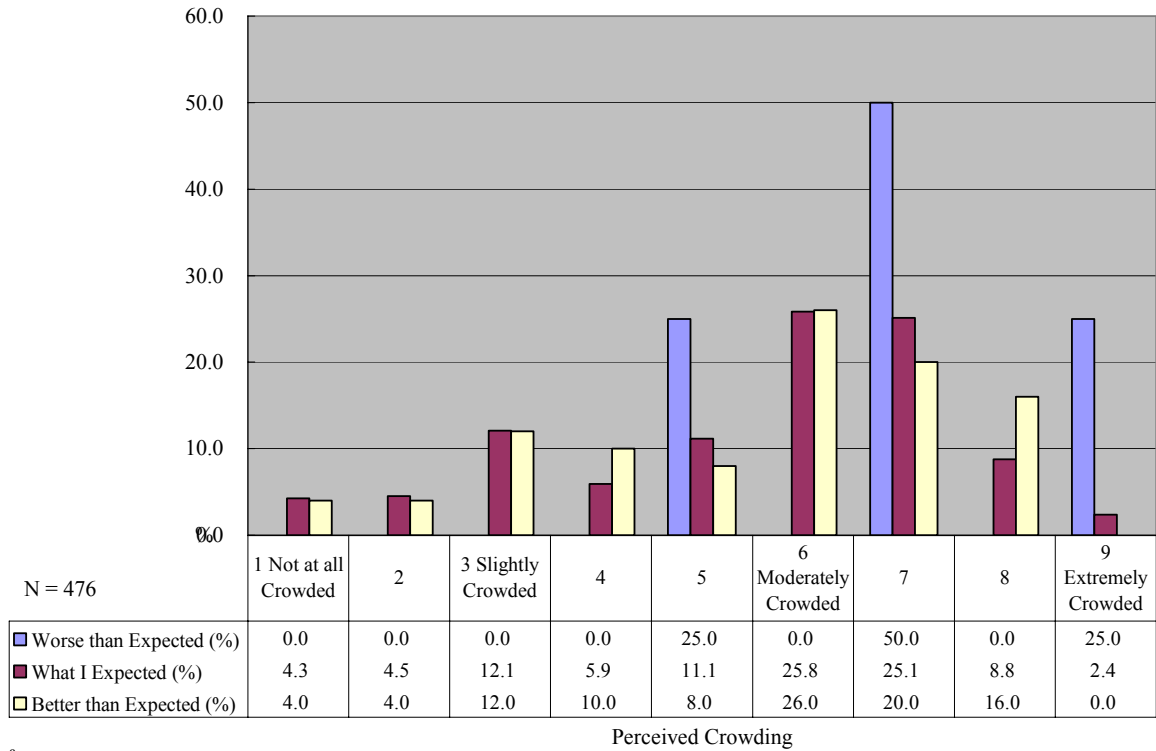


Table 6.4: Explanation of Benefits Variables Codes for Hanauma Bay

Factors and Variables		Pre-test	Post-test
Benefits ^a			
Factor 1: Learning		O	O
	Increase environmental awareness	O	O
	To learn about nature	O	O
	Expand my world view	O	O
Factor 2: Leisure & Bonding		O	O
	Gain a sense of freedom	O	O
	To change mood positively	O	O
	Socially bond with friends	O	O
	Bond with your family	O	O
Factor 3: Environmental Attributes & Adventure Experiences		O	O
	See abundant marine life	O	O
	View natural sites	O	O
	To be adventurous	O	O

^a Pre-test: "What kind of things do you want to experience today?" Post-test: "Did you experience any of the following while visiting Hanauma Bay?" Marked on a five-point Likert scale where 1 = strongly agree to 5 = strongly disagree.

Table 6.5: Factor Analysis of Pre Experience and Post Experience Benefits at Hanauma Bay

Statement	Pre-test					Post-test				
	M ^a	Std. Dev.	Correlated item-total correlation	α if item deleted	Standardized item χ	M ^a	Std. Dev.	Correlated item-total correlation	α if item deleted	Standardized item χ
Factor 1: Learning^b										
Increase environmental awareness	2.4	0.95	0.68	0.59		2.3	0.84	0.68	0.61	
To learn about nature	2.1	0.91	0.61	0.67		2.4	0.83	0.55	0.75	
Expand my world view	2.3	1.00	0.51	0.79		2.3	0.86	0.59	0.71	
χ (standardized item χ) ^b				0.76	(0.77)				0.77	(0.77)
Factor 2: Leisure & Bonding^c										
Gain a sense of freedom	2.2	0.96	6.81	0.59		2.1	0.88	0.67	0.59	
To change mood positively	2.1	0.95	6.88	0.59		1.9	0.82	0.62	0.63	
Socially bond with friends	2.4	1.11	6.62	0.46		2.3	0.89	0.41	0.74	
Bond with your family	2.3	1.16	6.65	0.41		2.2	0.96	0.43	0.73	
χ (standardized item χ) ^c				0.72	(0.73)				0.73	(0.74)
Factor 3: Environmental Attributes & Adventure Experiences^d										
See abundant marine life	1.4	0.79	0.66	0.62		1.9	0.95	0.65	0.68	
View natural sites	1.6	0.82	0.68	0.60		1.8	0.73	0.68	0.65	
To be Adventurous	2.1	0.91	0.48	0.83		2.1	0.84	0.55	0.78	
χ (standardized item χ) ^d				0.77	(0.77)				0.78	(0.79)

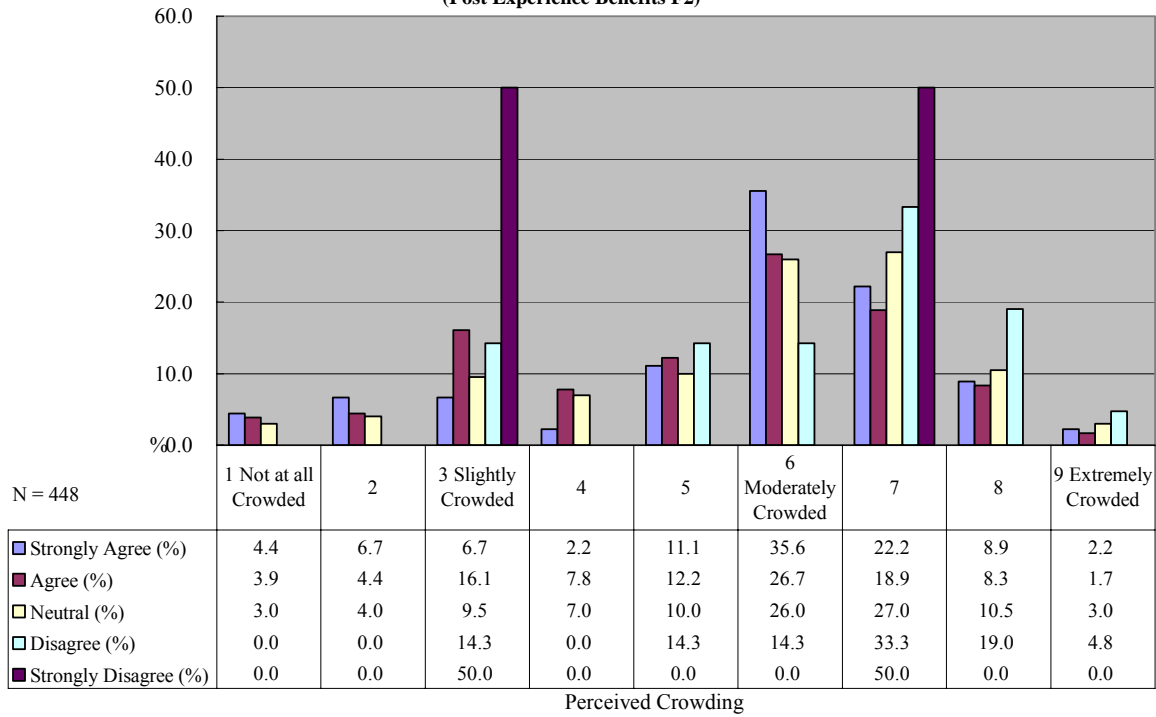
^a Items were coded on a 5-point Likert scale ranging 1 = Strongly Agree to 5 = Strongly Disagree

^b Pre-test: n = 571; Post-test n = 475

^c Pre-test: n = 562; Post-test n = 448

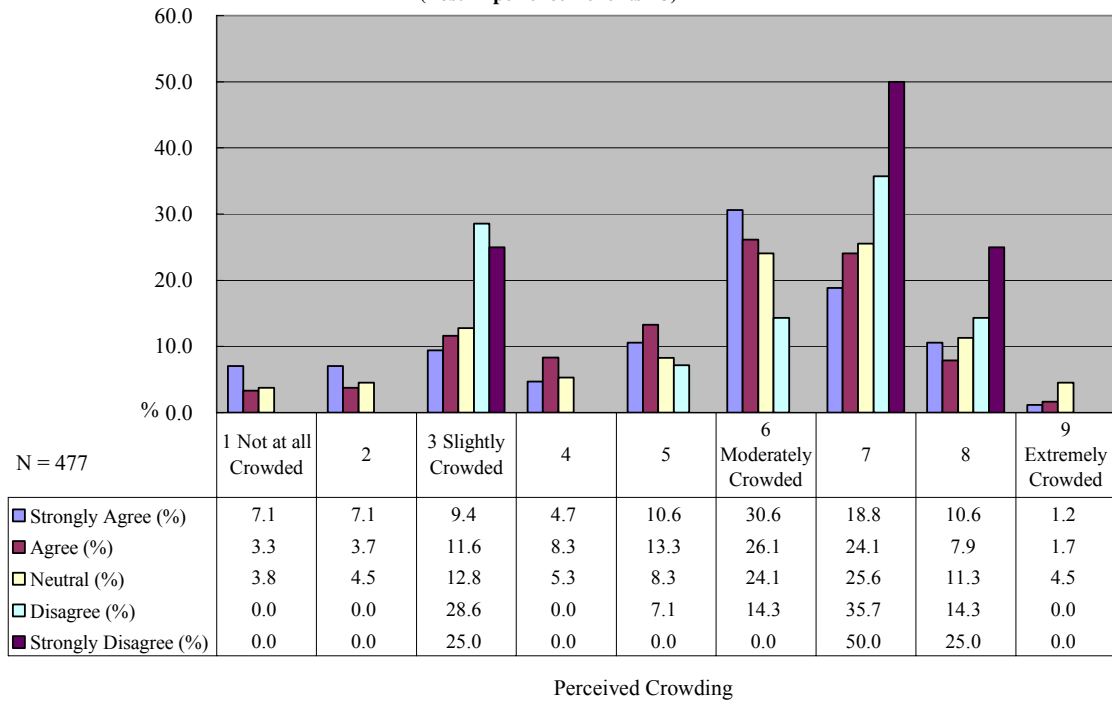
^d Pre-test: n = 588; Post-test n = 477

Figure 6.7: Degree of Perceived Crowding within each Scale of Post Experience Leisure & Bonding (Post Experience Benefits F2) ^a



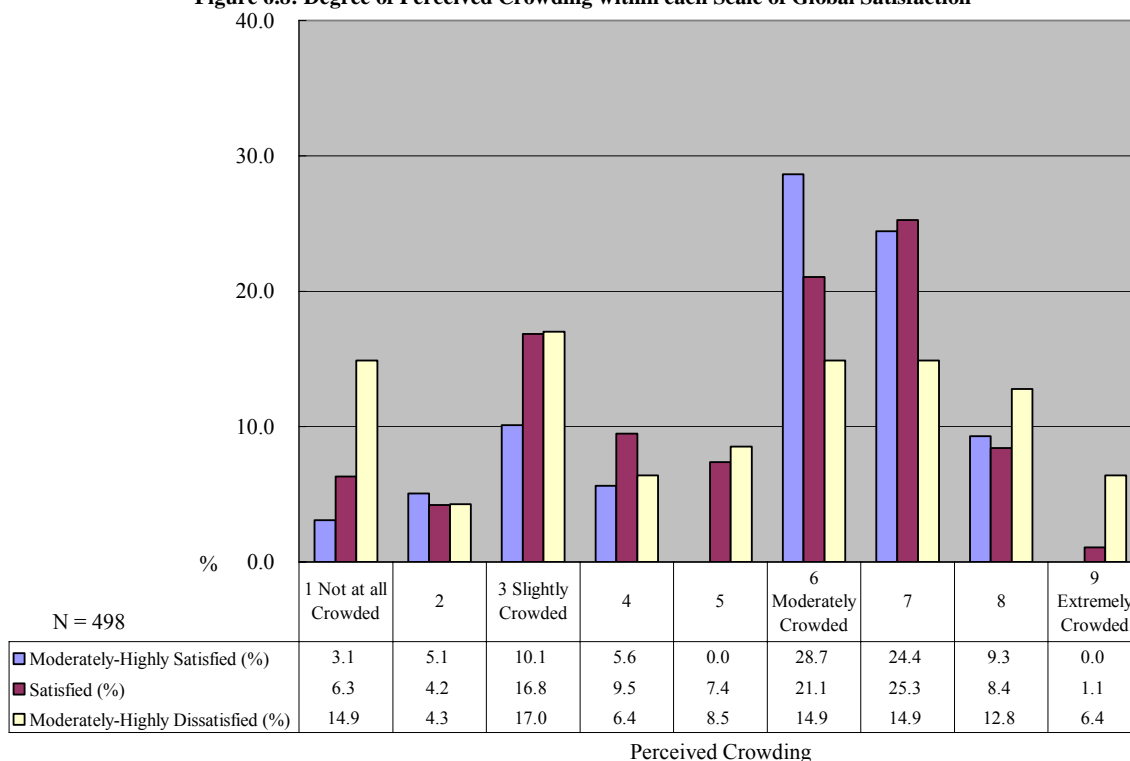
^a Gain a sense of freedom, to change mood positively, socially bond with friends, and bond with your family.

Figure 6.7.2: Degree of Perceived Crowding within each Scale of Post Experience Environmental Attributes (Post Experience Benefits F3) ^a



^a See abundant marine life, view natural sites, and to be adventurous.

Figure 6.8: Degree of Perceived Crowding within each Scale of Global Satisfaction



^a Global Satisfaction was coded on 1 & 2 = moderately-highly Satisfied, 3 = satisfied and 4 & 5 = moderately-highly

Table 6.6: Explanation of Satisfaction Variables Codes for Hanauma Bay		
Factors and Variables	Pre-test	Post-test
Satisfaction ^a		
Factor 1: Quality and Availability of Facilities		O
Clean bathroom facilities		O
Adequate parking		O
Cleanliness of park		O
Education center		O
Hike up/down crater		O
Factor 2: Distractions & Encounters		O
Being bumped while snorkeling		O
Smoking by other people		O
Bird feeding by other people		O
Number of people		O
Factor 3: Debris		O
Debris on shore		O
Debris in water		O
Factor 4: Marine Resources		O
Clarity of water		O
Marine life		O
Weather conditions		O

^a "Please rate the following items related to your satisfaction." Marked on a three-point scale where added satisfaction, no effect, and detracted from satisfaction.

Table 6.7: Factor Analysis of Satisfaction Determinants with Hanauma Bay

Statement	M ^a	Std. Dev.	Correlated item-total correlation	α if item deleted	Standardized item χ
Factor 1: Quality and Availability of Facilities^b					
Clean bathroom facilities	1.66	0.63	0.50	0.50	
Adequate parking	1.66	0.68	0.37	0.57	
Cleanliness of park	1.43	0.59	0.40	0.55	
Education center	1.72	0.48	0.32	0.59	
Hike up/down crater	1.85	0.61	0.29	0.61	
χ (standardized item χ)				0.62	(0.62)
Factor 2: Distractions & Encounters^c					
Being bumped while snorkeling	2.18	0.52	0.59	0.61	
Smoking by other people	2.13	0.53	0.59	0.66	
Bird feeding by other people	2.14	0.49	0.46	0.68	
Number of people	2.19	0.57	0.48	0.68	
χ (standardized item χ)				0.72	(0.72)
Factor 3: Debris^d					
Debris on shore	1.93	0.51	0.70	.	
Debris in water	1.97	0.56	0.70	.	
χ (standardized item χ)				0.82	(0.83)
Factor 4: Natural Resources^e					
Clarity of water	1.62	0.79	0.48	0.28	
Marine life	1.31	0.58	0.39	0.46	
Weather conditions	1.48	0.69	0.28	0.60	
χ (standardized item χ)				0.57	(0.57)

^a Items were coded on a 3 scale ranging 1 = added satisfaction, 2 = no effect, and 3 = detracted from satisfaction.

^b n = 450

^c n = 435

^d n = 450

^e n = 471

Table 6.7.2: Factor Analysis of Satisfaction Determinants Variables with Hanauma Bay

Statement	M ^a	Std. Dev.	Correlated item-total correlation	α if item deleted	Standardized item χ
Factor 4: Marine Resources					
Clarity of water	1.62	0.79	0.45	.	
Marine life	1.31	0.58	0.45	.	
χ (standardized item χ) ^b				0.60	(0.62)

^a Items were coded on a 3 scale ranging 1 = added satisfaction, 2 = no effect, and 3 = detracted from satisfaction.

^b n = 476

Figure 6.9: Degree of Perceived Crowding within each Scale of Weather Conditions (Satisfaction Item)^a

