

# CRC REEF RESEARCH TECHNICAL REPORT

## **THE DEVELOPMENT AND EVALUATION OF ACTIVITY SCHEDULES FOR TOURISTS ON ONE-DAY COMMERCIAL REEF TRIPS**

**Thesis Summary by David Green  
January 1997**

in partial fulfilment of the requirements for the Degree of  
Bachelor of Administration (Tourism) with Honours, in  
the Department of Tourism, at James Cook University of  
North Queensland, Townsville, QLD, 4811

The CRC Reef Research Centre was established under the Australian Government's Cooperative Research Centres Program.

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National Library of Australia Cataloguing-in-Publication entry

Green, David, 1974 - .

The development and evaluation of activity schedules for tourists on one-day commercial Reef trips

Bibliography.

Includes index.

ISBN 1 876054 45 X

1. Great Barrier Reef Marine Park Authority (Australia). 2. Marine parks and reserves - Queensland - Great Barrier Reef. 3. Recreational surveys - Queensland - Great Barrier Reef. I. Cooperative Research Centre for Ecologically Sustainable Development of the Great Barrier Reef (Australia). II. Title. (Series: CRC Reef Research technical report; 18).

338.4791943

This publication should be cited as:

Green, David. (1997)

*The development and evaluation of activity schedules for tourists on one-day commercial Reef trips*

CRC Reef Research Centre

Technical Report No. 18

Townsville; CRC Reef Research Centre, 29 pp.

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Published by the Cooperative Research Centre for Ecologically Sustainable Development of the Great Barrier Reef ? 1997

Further copies may be obtained from CRC Reef Research Centre, c/- James Cook University Post Office, Townsville, QLD 4811.

Printed by James Cook University of North Queensland.

# TABLE OF CONTENTS

*Foreword*

*Executive Summary*

1.	Introduction .....	1
1.1	Tourist Satisfaction on the Reef .....	1
1.2	Importance of activities in Tourist Satisfaction .....	2
1.3	Developing Activity Packages for Reef Day Trips .....	3
2.	Research Method.....	3
2.1	Overview .....	3
2.2	Subjects .....	4
2.3	Apparatus .....	6
2.4	Procedure .....	7
3.	Results .....	7
3.1	Understanding Visitor Satisfaction and Activity Participation.....	7
3.1.1	Examination of Factors influencing Satisfaction.....	7
3.1.2	Development of the Activity Schedules .....	9
3.1.3	Description of the three clusters.....	10
3.2	Evaluation of the Activity Schedules.....	13
3.2.1	Comparison of Baseline Versus Activity Samples .....	13
3.2.2	Satisfaction of the baseline sample .....	14
3.2.3	The activity schedules influence on satisfaction schedules.....	14
3.2.4	Comparison of satisfaction between baseline and activity samples....	16
3.2.5	Examination of other elements influencing satisfaction.....	17
3.2.6	Effect of weather on satisfaction .....	18
4.	Discussion .....	20
4.1	Aim 1: To determine demand for activity schedules, and development of the schedules.....	20
4.2	Aim 2: Evaluation of the activity schedules .....	20
4.2.1	Comparison of satisfaction levels .....	20
4.2.2	The effect of weather on satisfaction .....	21
4.2.3	Comparison of baseline and activity samples.....	21
5.	Conclusion.....	22
6.	Acknowledgments.....	23
7.	Literature Cited.....	24
8.	Appendices.....	25



## LIST OF TABLES

Table 2.1	Demographics of the baseline sample compared with the activity sample .....5
Table 3.1	Correlation coefficients between the rating given for trip overall and elements that may effect the overall satisfaction rating .....8
Table 3.2	The percentage of respondents in each cluster who participated in each of the activities available ..... 10
Table 3.3	Cross tabulation calculated for the three cluster solution to assess differences between each cluster for the respondents' age ..... 11
Table 3.4	Cross tabulation calculated for the three cluster solution to assess any differences that may exist between each cluster for the residence of respondents ..... 12
Table 3.5	Results from the oneway analysis of variance comparing mean ranking and standard deviation for trip satisfaction for each group in the cluster ..... 12
Table 3.6	Cross tabulation calculated to compare the baseline sample with the activity sample for differences that may exist between the samples for respondents residence ..... 14
Table 3.7	Correlation coefficients between overall trip satisfaction and the satisfaction rating given for the activity schedules..... 15
Table 3.8	Mean satisfaction scores given for each of the Activity Schedules..... 15
Table 3.9	Results of a T-test comparing satisfaction levels for various elements elements of the trip between the baseline and activity samples ..... 16
Table 3.10	Correlations between trip satisfaction and satisfaction with other elements concerning trip satisfaction..... 17
Table 3.11	Results of T-tests comparing satisfaction levels for elements of the trip between the baseline and activity samples..... 18
Table 3.12	Results of T-tests comparing satisfaction levels of visitors who indicated weather/seasickness as an element not meeting expectations with those who were satisfied..... 19
Table 3.13	Results of T-tests comparing satisfaction levels for various elements of the trip between the baseline and activity samples with the effects of weather removed..... 19

## **LIST OF FIGURES**

Figure 3.1	Indications of whether respondents would use an activity schedule if it were available .....	8
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## **LIST OF APPENDICES**

Appendix A	An example of the Activity Schedule developed for satisfaction measurement .....	25
Appendix B	Results of the cross tabulations for the baseline and activity sample with age level, gender and previous visits as the dependent variable .....	28

## **FOREWORD**

David Green's research into the effectiveness of activity schedules for tourists will undoubtedly prove to be an asset to the Marine Tourism Industry.

Demands on the Tourism Industry continuously change in response to changes in the marketplace and clientele. Tourism operators, therefore, must be adaptable and able to respond quickly to any changes. Our industry relies on customer enjoyment and satisfaction to ensure repeat customer visitation and positive word-of-mouth marketing.

This project by David Green presents an innovative tool to assist the Industry in achieving our aim of customer satisfaction.

Activity schedules seem to be a clever method to accommodate the huge diversity of visitors who go to the Reef. I personally think that this method could prove to be particularly useful for relaying information to our many non-English speaking passengers, leading to the elimination of some of the confusion caused by the language barrier.

It is good to see research results which have direct practical applications to our Industry.

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## **EXECUTIVE SUMMARY**

In just a relatively short period of time tourism has become one of the dominant human activities in the Great Barrier Reef Marine Park. One problem tourists face when they visit the reef is the dilemma of which activities to participate in, and how long to spend on any one activity. This research study investigates a proposed solution to this dilemma through the development of activity schedules for tourists to follow on one day commercial reef trips. Activity schedules can provide visitors with a set plan to follow to guide them on how they could spend their day completing the activities they desire within the time available.

This research was conducted with the assistance of Pure Pleasure Cruises, a day reef cruise company operating from Townsville, Australia. Passengers on Pure Pleasure were surveyed during two stages in the research project.

For the first stage of the research three separate activity schedules were developed by clustering activity participation rates of visitors to the reef into three significantly different groups. In the second stage of the research tourists to the reef were given the opportunity to follow an activity schedule that they felt may have best suited their needs. Respondents were then given a questionnaire to complete with regards to their satisfaction with the trip and various elements which were found to be positively correlated to trip satisfaction such as time on the reef and time to complete activities.

Results indicated that bad weather had a dominating negative effect on trip satisfaction. This element was removed from the analysis so as to permit an accurate comparison between the baseline and activity samples. Further analysis demonstrated the positive effect of activity schedules with increased visitor satisfaction levels across a range of variables.



# 1. INTRODUCTION

## 1.1 Tourist Satisfaction on the Reef

Tourist satisfaction is determined by visitor attitudes both before and after their travel. That is, tourists compare their expectations with the actual reality encountered at the destination. There have been many definitions of tourist satisfaction, Pizam, Neumann and Reichel (1978) found that *“Tourist satisfaction is the result of the interaction between a tourists’ experience at the destination area and the expectations he had about that destination, when the weighted sum of total experiences compared to the expectations results in feelings of gratification, the tourist is satisfied; when the tourist’s actual experiences compared to his expectations result in feelings of displeasure, he is dissatisfied”* (p.315). Beard and Ragheb (1980) further defined satisfaction as *“the positive perceptions or feelings which an individual forms, elicits, or gains as a result of engaging in leisure activities and choices”* (p.22).

The tourist-environment fit theory states that the optimal fit between tourists and their environment occurs when the attributes of the environment mirror tourists beliefs, attitudes and values (Kingchan, 1994). According to Kingchan (1994) *“the degree of fit between individuals and their environment depends on their expectations and motives for travel, as well as their ability to apply their actual experience on site to meet these requirements. As the degree of ‘fit’ increases, tourists’ satisfaction also increases”* (p.40).

Pizam et al (1978) and Whipple and Thach (1988) both found that a *“halo effect”* may occur, wherein satisfaction or dissatisfaction with one of the components leads to satisfaction or dissatisfaction with the total tourism product. Consequently it is very important to identify and measure tourist satisfaction with each of the components. This point was expanded further by Hughes (1991) when she said, *“a segmented approach should indicate the aspects of the trip responsible for satisfaction/dissatisfaction and should also reduce the likelihood of one component causing satisfaction/ dissatisfaction with the whole tour”* (p.166). In order to accurately measure satisfaction, a range of aspects should be measured to determine their overall effect on tourists' satisfaction levels. According to Dorfman (1979) satisfaction can be influenced by personal goals, environmental conditions such as weather, scenery and crowding, and also the ability to participate in activities that may be desired.

Plant (1993) reported that the highest level of dissatisfaction visitors indicated for reef trips was associated with not having enough time to fully enjoy the reef. This research study proposes a solution to this dilemma through the development of activity schedules for tourists on one day reef trips. Through the use of activity schedules visitors will have a set plan to guide them on how they could spend their day completing the activities they desire within the limited time available.

## **1.2 Importance of activities in Tourist Satisfaction**

According to Buchanan (1983), satisfaction can be influenced by both individual activities and by the total "package" of activities engaged in. It has been argued that grouping visitors according to the packages of activities in which they participate can help tourist operators and managers to better understand user needs and demands and also to determine which user groups are causing any adverse environmental impacts, if this may be the case. According to McCool (1978) grouping activities into packages by their meaning can help managers and planners;

- 1) to understand better the kinds of opportunities visitors are seeking, and their consequent behaviour;*
- 2) to develop facilities and visitor contact programs to enhance those opportunities; and*
- 3) to identify those packages which may conflict with other packages in the use of a recreation site (p.165).*

Tourist activities have been described as the core of tourism experiences. Pearce and Moscardo (1989) reported that tourist activities have been shown to be important to tourism planning, tourist management and visitor satisfaction. The theme of tourist activities has also been dominant in the literature of destination image. Moscardo (1996) stated that "*In all the work on destination image and attractiveness there is an underlying assumption that destination choice is directly dependent on destination image which in turn places activities at the core of the destination choice process*" (p.37).

The recreational opportunity spectrum (ROS) is based upon several assumptions about activities. Stankey and Wood (1982) reported that a recreation opportunity is defined as the chance to participate in a specific activity in a specific setting to create an experience. Further it is assumed that visitors express their motives or needs through their choice of activities and settings. Another link between tourist activities and tourism research centres

around Canter's (1977) concept of place. According to Canter (1977), places have environmental components, activity components and conceptual components (Pearce, 1991).

Research in both tourism and other fields has identified activities as important features of places. Moscardo (1996) argued that:

*Activities can be seen as the link between tourism or recreation demand (visitor needs) and supply (opportunities for activities available at a destination). It would seem likely then that activity preference or participation would be a valuable basis for segmenting visitors. Such a conclusion is supported both by the literature concerned with market segmentation in general and from specific studies of visitor activity preferences and participation (p.380).*

### **1.3 Developing Activity Packages for Reef Day Trips**

The development of activity schedules for visitors on one-day commercial reef trips was proposed as a tool to help managers to better understand their clientele, to enhance opportunities that each group or type of tourist are seeking and finally to minimise any conflict that may arise between different user groups. McCool (1978) stated that *“The activity package does appear to be a viable tool for describing participation at water-based recreation resources in terms of meaning of the activities to the visitor”* (p.172). This research seeks to identify those visitors on day reef trips who are seeking similar activities and develop activity schedules for those people to follow during their day.

#### **The key aims of the research were:-**

1. To determine if there was any demand for something such as an activity schedule for guests to follow during their day on a major one-day commercial reef trip. If this was found to be the case, then a number of activity schedules were to be developed to match any distinct patterns of activity participation by tourists.
2. To examine the satisfaction levels of tourists to the reef. Satisfaction was compared for those who used activity schedules with those who did not.

## **2. RESEARCH METHOD**

### **2.1 Overview**

The aim of the research was to determine whether or not activity schedules would be

beneficial for guests and if in fact there would be any demand for their use. This was achieved by conducting two separate surveys of passengers on Pure Pleasures Cruises to Kelso Reef, from Townsville, Australia.

The first survey was conducted to determine a baseline sample of visitors to the reef on this particular cruise. The major goal of this questionnaire was to determine the satisfaction levels of tourists, the aspects of the tour that had the greatest influence on these satisfaction levels, and participation in available activities. The data obtained from this first questionnaire was subjected to statistical analysis to determine if there were any groups or types of tourists who shared similar preferences for the activities in which they participated. The results obtained were used in the development of the activity schedules which were then evaluated during the second stage of the study.

In this second stage, subjects were approached on the journey to the reef and asked if they would like an activity schedule to help them plan and guide their day. On the return voyage, those visitors who had earlier taken an activity schedule were asked to complete a survey regarding their satisfaction with both the activity schedule used and with various elements of their day.

## **2.2 Subjects**

The population for the research was all tourists aged 15 years and over who travelled with Pure Pleasure to Kelso Reef during the survey period of February to June 1996. In stage one of the research subjects were selected in a convenience sample depending on where they were sitting on the vessel during the survey period. All of the passengers who chose to sit in the main cabin or on the upper rear deck were asked to fill out a questionnaire. During this stage, 152 questionnaires were completed at a response rate of 93%. In all a total of six reef trips were surveyed during the first research period. A description of the baseline sample is displayed in comparison to the activity sample (taken in the second research period) in Table 2.1.

**Table 2.1** Demographics of the baseline sample compared with the activity sample

	<b>BASELINE SAMPLE</b>	<b>ACTIVITY SAMPLE</b>
<b>GENDER OF VISITORS</b>		
Male	71 (46.7%)	84 (44.2%)
Female	80 (52.6%)	96 (50.5%)
<b>SIZE OF TRAVEL PARTY</b>		
Alone	13 (8.6%)	14 (7.4%)
As a Couple	62 (40.8%)	58 (30.5%)
With Family	24 (15.8%)	61 (32.1%)
Part of a Tour Group	4 (2.6%)	26 (13.7%)
With a Friend	11 (7.2%)	5 (2.6%)
With a Group of Friends	37 (24.3%)	18 (9.5%)
<b>AGE OF VISITORS</b>		
Under 20	11 (7.2%)	16 (8.4%)
20-29	53 (34.9%)	49 (25.8%)
30-39	33 (21.7%)	27 (14.2%)
40-49	21 (13.8%)	39 (20.5%)
50-59	21 (13.8%)	35 (18.4%)
60 and over	12 (7.9%)	19 (10.0%)
<b>EDUCATION LEVELS</b>		
Primary School	4 (2.6%)	6 (3.2%)
Secondary/High School	58 (38.2%)	75 (39.5%)
TAFE/University	83 (54.6%)	98 (51.6%)
Other	4 (2.6%)	1 (.5%)
<b>RESIDENCE OF VISITORS</b>		
Townsville	47 (30.9%)	66 (34.7%)
Other Queensland	13 (8.6%)	30 (15.8%)
Other Australia	33 (21.6%)	53 (27.9%)
United Kingdom	19 (12.7%)	17 (8.9%)
United States and Canada	18 (11.8%)	5 (2.6%)
Europe	18 (11.8%)	7 (3.7%)
New Zealand	1 (.7%)	3 (1.6%)
Asia	1 (.7%)	0 (0.0%)
<b>PREVIOUS EXPERIENCE</b>		
First Time Visitor	62 (40.8%)	92 (48.4%)
Repeat Visitor	88 (57.9%)	96 (50.5%)

The baseline sample was 46.7% male and 52.6% female. The median age range was in the 21-30 year bracket with 53 (34.9%) of the total sample. In the sample, 63 (40.8%) had previously visited the reef and 88 (57.9%) had not. The origins of visitors were; 47 (30.9%) from Townsville, 13 (8.6%) other Queensland, 33 (21.6%) other Australia, 19 (12.7%) United Kingdom, 18 (11.8%) United States and Canada, 18 (11.8%) European and there was 1 (.7%) person from both Asia and New Zealand.

During the second research (the activity sample) stage, 190 questionnaires were completed by visitors who had taken activity schedules. The participation rate was 90%, and again a total of six reef trips were surveyed during this second research period. Table 1 provides a description of this activity sample. The sample was 44.2% male and 50.5% female. The median age range again was in the 21-30 year bracket with 49 (25.8%) of the total sample. In the activity sample, 92 (48.4%) have previously visited the reef. The origins of visitors were; 66 (34.7%) from Townsville, 53 (27.9%) other Australia, 30 (15.8%) other Queensland, 17 (8.9%) United Kingdom, 7 (3.7%) European, 5 (2.6%) United States and Canada, and there was 3 (1.6%) of the sample from New Zealand.

### **2.3 Apparatus**

For the first stage of the research, a questionnaire was the only apparatus used. The questionnaire asked respondents to indicate the activities they had participated in, with levels of satisfaction for those activities, satisfaction levels with the trip as a whole and with various elements of the tour such as price, time spent at the reef, and time available to participate in all desired activities. Answers to these questions were sought in order to determine the effect, if any, these elements had on the overall satisfaction level for the trip. The questionnaire also asked respondents for various demographic details such as age, sex, travel party size and whether they had previously visited the reef or not. These results enabled comparisons to be made between the baseline sample and the activity sample. Respondents were also asked if they would have used an activity schedule had it been available to them.

In the second stage of research, the apparatus used were a questionnaire and three activity schedules. The questionnaire was similar to that used in stage one, with some minor changes. The question asking respondents whether they would use an activity schedule was removed and in its place two questions were added, which asked respondents to rate their satisfaction with the activity schedule they followed. The activity schedules used were generated with the results from the first questionnaire.





## **2.4 Procedure**

In stage one of the research, visitors were approached on the return voyage to Townsville and asked if they would fill out a questionnaire. It was explained to respondents that determining their satisfaction with various aspects of the trip was the main aim of the questionnaire. In the second stage, visitors were approached on the voyage to Kelso Reef and asked if they would like an activity schedule to follow for their day on the reef. If guests were interested, the three activity schedules were explained to them and they were left to select the schedule that they felt best suited their needs. Those that agreed were then issued with both the activity schedule and the questionnaire, with the knowledge that the questionnaire would be collected on the return voyage.

## **3. RESULTS**

### **3.1 Understanding Visitor Satisfaction and Activity Participation**

#### **3.1.1 Examination of Factors influencing Satisfaction**

A major assumption tested in stage one of the research was that the structure of the activities and the time available at the reef were important factors in people's overall satisfaction. Further, in order to design the activity schedules the researcher had to determine if there were any distinct patterns of activity participation that existed for current visitors to the reef.

The first step in the analysis used correlation coefficients to determine relationships between various elements of the trip and the rating given for overall trip satisfaction. Correlations which were significant at the .01 level are displayed in Table 3.1. There were significant positive correlations between high overall satisfaction and high scores for whether respondents thought the trip was full of activities, satisfaction with the trip organisation, satisfaction with the time permitted for each activity and satisfaction with the time spent on the reef. Significant negative correlations were shown to exist between high trip rankings and low responses for whether respondents felt the trip was hurried or rushed, and whether they felt there was enough time to participate in all the activities desired. Negative correlations were desired in this instance as the scales were reversed for these two questions with higher rankings indicating lower satisfaction levels with these aspects. The table also contains the mean ratings given for each component.

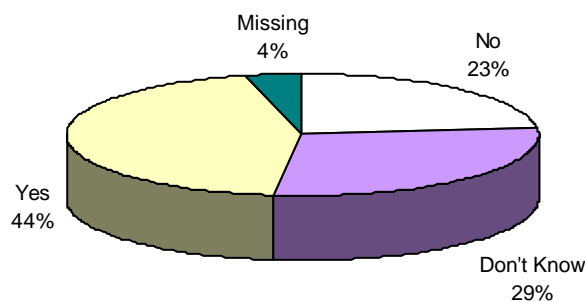
**Table 3.1** Correlation coefficients between the rating given for the trip overall and elements that may effect that overall satisfaction rating

•Correlation Coefficients•		
Meaning of variable	Mean Score	TRIP
• Overall Satisfaction	6.18	----
• Did the respondent feel the trip was full of activities.	4.48	<b>.3765</b>
• Did respondent feel the trip was hurried or rushed.	2.64*	<b>-.3621</b>
• Satisfaction with the trip organisation.	4.81	<b>.4124</b>
• Satisfaction with time permitted for each activity.	4.06	<b>.3165</b>
• Rating given for importance of spending time on reef.	1.54*	<b>-.1170**</b>
• Feelings on whether enough time to do all activities desired.	2.40*	<b>-.2608</b>
• Satisfaction with time spent on the reef.	4.17	<b>.2650</b>

\*lower numbers indicates higher satisfaction

\*\*not significant at the .01 level

These results support the argument that satisfaction for the trip overall was significantly related to trip organisation, and time available to participate in all the activities desired. The next statistical analysis calculated was a frequency to determine whether people would have followed a schedule, had it been available. Results, displayed in Figure 3.1, show 67 (44.1%) indicated they would have used one, whereas 35 (23%) said no and 44 (28.9%) said they did not know or were unsure.



**Figure 3.1** Indications of whether respondents would use an activity schedule if it were available

### 3.1.2 Development of the Activity Schedules

In order to develop activity schedules, the researcher had to determine if any groups or distinct types of tourists who liked to participate in the same activities existed. In the questionnaire, subjects had been asked to indicate which activities they had participated in. Those activities available were: snorkelling, swimming, SCUBA diving, fishing, sun baking, glass bottom boat rides and relaxing. Data from these results were subjected to a Hierarchical Cluster Analysis using Ward's method. Two, three and four-cluster solutions were examined.

The three-cluster solution was chosen due to the relatively even dispersion of frequencies between the three groups, and ease of interpretation. Further there were significant differences between the three clusters on all of the dependant variables using Goodman and Kruskal's Tau. These are the criteria for cluster solution choice offered by Ryan (1995).

Cross tabulations for the three identified clusters with each of the activities available on the cruise were used to determine whether or not people had participated in each activity for each of the three groups. A summary of the results showing participation rates for activities in each of the clusters is displayed in Table 3.2.

The first cluster was labelled the Activity Seekers because they had a relatively high rate of participation in all of the activities available on the cruise, except for sunbaking. The second cluster was labelled Relaxation seekers, these people were looking to enjoy the reef and coral by snorkelling and riding the glass bottom boat. This cluster had no people who participated in the fishing and SCUBA diving activities. The third and final cluster was labelled the High and Dry schedule. This group was identified as those people who did not snorkel, SCUBA dive, or swim. The main activities engaged in were the glass bottom boat rides, fishing and sunbaking. Using these results, the researcher was able to develop three separate activity schedules for each type of tourist to use whilst on the reef (The activity schedules are displayed in Appendix A).

**Table 3.2:** The percentage of respondents in each cluster who participated in each of the activities available

<b>Activities</b>	<b>Clusters</b>		
	<i>Cluster 1</i> Activity Seekers	<i>Cluster 2</i> Relaxation seekers	<i>Cluster 3</i> High and Dry
Fishing Trip	58%	0%	56%
Glass B. Boat	39%	60%	84%
SCUBA Diving	55%	0%	8% (n=2)
Snorkelling	93%	100%	0%
Sunbaking	5%	20%	36%
Swimming	51%	65%	8% (n=2)

### 3.1.3 Description of the three clusters

A series of cross tabulations were then calculated for the three activity groups to compare and describe them. The variables compared in the analysis included respondents' age levels, previous visits, their residence and also whether or not they would have used an activity schedule had it been available to them. No significant differences were found to exist between the three clusters for the responses to whether subjects would have used an activity schedule, and also for whether they had previously visited the reef. More than 50% of the sample in the Activity and High and Dry clusters indicated they would have used a schedule, whilst 35% of the Relaxation seekers indicated they would have followed a schedule had it been available. Although there is an observable difference here, it was not found to be statistically significant. For all three clusters results indicated that approximately 40% of respondents had previously visited the reef.

Significant differences were found to exist between the three cluster groups for respondents age and residence (the results are displayed in Tables 3.3 and 3.4 respectively). Table 3.3 shows that the Activity seeker cluster was a younger group with 78% of respondents less than 40 years old. The relaxation cluster had the majority of subjects (78%) within the 20-50 age bracket, and the high and dry cluster was typically an older tourist with 80% of the cluster above the age of 40 years.

**Table 3.3:** Cross tabulation calculated for the three cluster solution to assess differences between each cluster for the respondents' age

CLUST3 by AGE

Count Row Pct Col Pct	AGE						Row Total
	Under 20	21-30	31-40	41-50	51-60	60 & over	
CLUST3	1	2	3	4	5	6	
Activity Seekers	6 10.2 54.5	22 37.3 41.5	18 30.5 54.5	4 6.8 19.0	7 11.9 33.3	2 3.4 16.7	59 39.1
Relaxation Seekers	5 7.5 45.5	27 40.3 50.9	14 20.9 42.4	11 16.4 52.4	5 7.5 23.8	5 7.5 41.7	67 44.4
High and Dry		4 16.0 7.5	1 4.0 3.0	6 24.0 28.6	9 36.0 42.9	5 20.0 41.7	25 16.6
Column Total	11	53	33	21	21	12	151
Total	7.3	35.1	21.9	13.9	13.9	7.9	100.0

Statistic	Value	Approximate Significance.
Goodman & Kruskal Tau: with RESIDE dependent	.04384	.00029

Table 3.4 shows that the activity cluster had a higher number of respondents from Townsville (41%), other Australia (24%) and the United States and Canada (12%). Respondents in the relaxation cluster come from the widest range of countries, but there were lower percentages from each country. Approximately 20% of the cluster each came from Townsville, other Australia, the United Kingdom and Europe. This cluster also had the highest number of international tourists (51%). The activity cluster had 24% and the high and dry cluster 32% international tourists. The high and dry cluster has the majority of respondents from Townsville (36%), other Australia (28%) and the United Kingdom (16%).

**Table 3.4:** Cross tabulation calculated for the three cluster solution to assess any differences that may exist between each cluster for the residence of respondents

CLUST3 by RESIDE

Count Row Pct Col Pct	CLUST3	RESIDE								Row Total
		T'ville	Other Qld	Other Aust	U.K.	U.S.A. Canada	Europe	New Zealand	Asia	
		1	2	3	4	5	6	7	8	
1	Activity Seekers	24 40.7 51.1	6 10.2 46.2	14 23.7 42.4	3 5.1 15.8	7 11.9 38.9	4 6.8 22.2		1 1.7 100.0	59 39.3
2	Relaxation Seekers	14 21.2 29.8	6 9.1 46.2	12 18.2 36.4	12 18.2 63.2	9 13.6 50.0	13 19.7 72.2			66 44.0
3	High and Dry	9 36.0 19.1	1 4.0 7.7	7 28.0 21.2	4 16.0 21.1	2 8.0 11.1	1 4.0 5.6	1 4.0 100.0		25 16.7
Column Total		47 31.3	13 8.7	33 22.0	19 12.7	18 12.0	18 12.0	1 .7	1 .7	

Statistic	Value	Approximate Significance.
Goodman & Kruskal Tau: with RESIDE dependent	.02413	.03292

Next, overall trip satisfaction levels of respondents in the clusters were compared using a One-way analysis of variance. The resulting Fscore of 1.29 was not significant at the standard .05 level of significance (results showing group means and standard deviations are displayed in Table 3.5). This indicates there were no significant differences given for the overall rating of the trip by respondents in each of the three identified clusters.

**Table 3.5:** Results from oneway analysis of variance comparing mean ranking and standard deviation for trip satisfaction for each group in the cluster.

GROUP	COUNT	MEAN	STANDARD DEVIATION
<b>Grp 1</b> (Activity)	56	6.1429	.5536
<b>Grp2</b> (Relaxation)	66	5.9848	.8857
<b>Grp3</b> (High and Dry)	25	6.2400	.7234
<b>TOTAL</b>	147	6.0884	.7487

## **3.2 Evaluation of the Activity Schedules**

### **3.2.1 Comparison of Baseline Versus Activity Samples**

To evaluate the activity schedules, a comparison must first be made to determine if the activity sample was similar to the baseline sample. This ensures the sampling procedure for each stage of the research was uniform and that the activity schedules were in fact responsible for any differences that may be detected. The baseline sample was recoded for this analysis to eliminate those respondents who indicated that they would not have followed an activity schedule had it been available. This would reduce any chance of a bias that these subjects may have had on the results.

Cross tabulations were calculated to compare and describe the baseline against the activity sample. The variables compared in the analysis included respondents' age levels, gender, previous reef visits and their residence. Differences were tested using Goodman and Kruskal's Tau at the .05 level of significance. No significant differences were found to exist between the samples on the age level, gender and previous reef visits variables. Results from these cross tabulations are displayed in Appendix B.

For the comparison using respondents' residence as the dependent variable a significant difference was found to exist between the baseline and activity sample. Results displayed in Table 3.6 indicate that there were more subjects from other Australia in the activity sample and there were more from the United States/Canada and Europe in the baseline sample. The results also indicated that the activity sample consisted of more domestic visitors (82%), whereas the baseline sample had only 63%.

**Table 3.6:** Cross tabulation calculated to compare the baseline sample with the activity sample for differences that may exist between the samples for the respondents residence

GROUP by RESIDE

GROUP	Count Row Pct Col Pct	RESIDE							Row Total
		T'ville	Other Qld	Other Aust	U.K.	U.S.A. Canada	Europe	New Zealand	
		1	2	3	4	5	6	7	
Baseline Sample	1	36	11	22	14	13	13	1	110
		32.7	10.0	20.0	12.7	11.8	11.8	.9	37.8
		35.3	26.8	29.3	45.2	72.2	65.0	25.0	
Activity Sample	2	66	30	53	17	5	7	3	181
		36.5	16.6	29.3	9.4	2.8	3.9	1.7	62.2
		64.7	73.2	70.7	54.8	27.8	35.0	75.0	
Column Total		102	41	75	31	18	20	4	291
		35.1	14.1	25.8	10.7	6.2	6.9	1.4	100.0
Statistic		Value							Approximate Significance.
Goodman & Kruskal Tau: with RESIDE dependent		.00916							.01410

Overall, these results indicate that there are no major differences between the activity and baseline samples. The fact that there are more domestic visitors in the activity sample could have an influence on the satisfaction of the activity schedules and will be investigated further later in the chapter.

### 3.2.2 Satisfaction of the baseline sample

The mean satisfaction scores for the trip overall and those elements identified as being correlated to trip satisfaction were previously reported in Tables 3.5 and 3.1 respectively. Table 3.5 shows that the mean score for trip satisfaction in the baseline sample was 6.088 on a seven-point scale. This allowed little room for improvement that may have been due to the activity schedules. The satisfaction ratings measured in Table 3.1 also show that there was little room for improvement. Many of the elements had mean scores of greater than four on a five-point scale. This is a point that must be taken into consideration in further analysis.

### 3.2.3 The activity schedules influence on satisfaction schedules

Satisfaction with the activity schedules was measured using two questions in the second questionnaire. Respondents were asked to rate their satisfaction with the activity schedule on



both a five and seven-point scale question with one being not at all satisfied and five and seven being very satisfied and extremely satisfied respectively. The effect of the activity schedules on overall trip satisfaction was also measured by determining the correlation between schedule satisfaction and trip satisfaction. The results from these analyses are displayed in Table 3.7.

**Table 3.7:** Correlation coefficients between overall trip satisfaction and the satisfaction rating given for the activity schedules

Meaning of Variable	Mean Score	Correlation with Overall satisfaction
• Satisfaction with the activity schedule followed.	4.658	<b>.1718*</b>
• Respondents satisfaction with the activity schedule followed.	5.921	<b>.6199**</b>
<b>*p&lt; 0.05</b>		<b>**p&lt;0.01</b>

As can be seen in Table 3.7 satisfaction with the activity schedules was quite high. This means the majority of the sample was either somewhat or very satisfied with the activity schedule they used. Also, satisfaction with the activity schedules was found to be significantly positively correlated to trip satisfaction, meaning those who expressed high trip satisfaction also tended to express high satisfaction with the activity schedules used. Satisfaction with the individual activity schedules was also investigated. Satisfaction scores were uniformly high for each of the activity schedules (see Table 3.8).

**Table 3.8:** Mean Satisfaction Scores given for each of the Activity Schedules

Schedule	5 Point Scale		7 Point Scale	
	Mean	SD	Mean	SD
<i>Activity Seeker</i>	4.34	(0.716)	5.92	0.955
<i>Relaxation Seeker</i>	4.3	(0.564)	5.76	0.868
<i>High &amp; Dry</i>	4.52	(0.799)	5.93	1.006

### 3.2.4 Comparison of satisfaction between baseline and activity samples

The two samples were compared on overall satisfaction as well as satisfaction with those elements earlier identified as significantly correlated to satisfaction in Table 3.1, and relevant to understanding the impact of the activity schedules. Satisfaction differences were compared at the .05 level of significance by a series of t-tests to determine any shift in the mean ratings given for the responses. The results from the t-tests are displayed in Table 3.9, showing the mean comparison between the samples, the significance and whether there was any improvement due to the activity sample.

Table 3.9 shows that the activity sample gave a significantly lower rating to whether they felt the trip was hurried or rushed. A lower rating here indicated that the respondent felt the trip was less hurried or rushed. The other significant result shows that the activity sample had a stronger agreement with the statement that there was enough time to participate in all the activities desired. Thus, those people using the activity schedule felt they had a greater chance of being able to participate in all the activities they desired by the departure time.

**Table 3.9:** Results of T-test comparing satisfaction levels for various elements of the trip between the baseline and activity samples

<b>Element</b>	<b>Baseline Mean (SD)</b>	<b>Activity Mean (SD)</b>	<b>Significance</b>	<b>Improvement</b>
• Did respondent feel trip was full of activities.	4.48 (0.57)	4.41 (0.63)	0.371	No
• Did respondent feel trip was hurried or rushed**	2.64 (1.07)	2.31 (1.05)	<b>0.015</b>	Yes, significant
• Satisfaction with trip organisation	4.81 (0.39)	4.72 (0.47)	0.087	No
• Satisfaction with time permitted for each acty.	4.06 (0.96)	4.15 (0.93)	<b>0.445</b>	Yes
• Whether they agree there was enough time for all activities desired.**	2.40 (0.99)	2.16 (0.86)	<b>0.036</b>	Yes, significant
• Importance of spending time on the Reef.	4.17 (0.93)	4.23 (0.98)	<b>0.6</b>	Yes
• Overall trip Satisfaction	6.07 (0.63)	6.04 (0.82)	0.758	No

\*\* lower scores indicate higher satisfaction levels here

For the remaining t-tests, no significant differences emerged between the baseline and activity samples. The activity schedules had no significant effect on overall satisfaction with the whole trip. This relationship was investigated further to determine if there were other elements confounding this result.

### 3.2.5 Examination of other elements influencing satisfaction

As the activity sample had a significantly greater amount of domestic visitors (shown in Table 3.6) than the baseline sample, a t-test was calculated to determine if there were any significant differences expressed for trip satisfaction. This may help explain the previous comparisons. Results indicated that there was no significant difference in the levels of satisfaction expressed by domestic and international visitors, with mean scores of 6.08 and 6.00 respectively, therefore this factor is unlikely to have affected the satisfaction results obtained.

The following analysis was calculated to determine if there were any underlying elements that may have had a stronger effect on trip satisfaction than those identified earlier in Table 3.1. Correlations were calculated to determine the effect on overall satisfaction caused by satisfaction with snorkelling, fishing, the glass bottom boat, swimming, the lunch served, the coral viewed and finally the value for money received. This was done using the baseline sample to determine if any of these elements had stronger correlations than those identified previously as important to trip satisfaction. The results are displayed in Table 3.10.

**Table 3.10:** Correlations between trip satisfaction and satisfaction with other elements concerning trip satisfaction

Meaning of Variable	Mean Score	Correlation with Trip
• Satisfaction with snorkelling	3.7	0.0255
• Satisfaction with fishing	1.15	0.99
• Satisfaction with glass bottom boat	2.44	0.909
• satisfaction with swimming	2.09	0.1103
• Satisfaction with lunch	4.216	0.0703
• Satisfaction with staff friendliness	4.928	<b>0.2561**</b>
• Satisfaction with coral viewed	4.778	<b>0.3387**</b>
• Value for money received	4.306	<b>0.4236**</b>

**\*\*p<0.01**

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The results in Table 3.10 show that the only elements found to have significant positive correlations with trip satisfaction were satisfaction with staff friendliness, the coral viewed and the value for money received. These elements all had significant correlations at the .01 level of significance. As these correlations were found to be significant, a series of t-tests were calculated to determine if there were any differences in satisfaction for these elements between the baseline and activity samples. The results are displayed in Table 3.11, showing the means, the significance level and whether there was any improvement given for the activity sample.

**Table 3.11:** Results of t-tests comparing satisfaction levels for elements of the trip between the baseline and activity samples

<b>Element</b>	<b>Baseline Mean (SD)</b>	<b>Activity Mean (SD)</b>	<b>Significance</b>	<b>Improvement</b>
•Satisfaction with staff friendliness.	4.927(0.26)	4.863(0.35)	0.66	No
•Satisfaction with the coral viewed.	4.777(0.46)	4.675(0.57)	0.096	No
•Satisfaction with the value for money	4.305(0.77)	4.195(0.89)	0.272	No

The results shown in Table 3.11 indicate that there were no significant differences between satisfaction with these elements between the baseline and activity samples. Therefore it can be concluded that these elements had no significant influence on the satisfaction levels obtained for the activity sample.

### 3.2.6 Effect of weather on satisfaction

The next step in the analysis was to determine if there were any external forces that may have had an influence on visitor satisfaction levels. The researcher noted during the survey period that the number of days of bad weather was greater for the activity sample than for the baseline sample. To test for the effect of weather on satisfaction, t-tests were calculated to determine if there were any significant differences in trip satisfaction. Satisfaction of those who indicated seasickness or bad weather as an aspect not meeting expectations were compared against those who did not for both the activity and baseline samples, the results are displayed in Table 3.12.

**Table 3.12:** Results of t-tests comparing satisfaction levels of visitors who indicated weather/seasickness as an element not meeting expectations with those who did not

Sample Mean satisfaction	Bad weather/ seasick	Expectations Met	Significance
Baseline sample	5.758 (0.435)	6.184 (0.668)	0.001
Activity sample	5.737 (0.947)	6.198 (0.716)	0.001

The results in Table 3.12 show that for both samples the mean satisfaction for the trip fell, with a significant difference at the 0.05 level of significance, if the respondent indicated that the weather was bad, or that they were seasick. In order to accurately measure satisfaction with the activity schedules for this research the element of weather was then removed. T-tests were again calculated to compare the baseline and activity samples for their satisfaction with the elements in Table 3.8. Before these tests were conducted all of the respondents who indicated that the weather was bad or that they were seasick were removed from the sample. The results from this analysis are displayed in Table 3.13.

**Table 3.13:** Results of t-tests comparing satisfaction levels for various elements of the trip between the baseline and activity samples with the effects of weather removed

Element	Baseline Mean (SD)	Activity Mean (SD)	Significance	Improvement
• Did respondent feel trip was full of activities.	4.48 (0.60)	4.51 (0.51)	0.665	Yes
• Did respondent feel trip was hurried or rushed**	2.45 (1.01)	2.12 (0.08)	<b>0.032</b>	Yes, significant
• Satisfaction with trip organisation	4.83 (0.37)	4.78 (0.43)	0.385	No
• Satisfaction with time permitted for each acty.	4.24(0.78)	4.30(0.81)	0.597	Yes
• Whether they agree there was enough time for all activities desired.**	2.24 (0.86)	2.05 (0.79)	0.109	Yes
• Importance of spending time on the reef.	1.54 (1.78)	2.09(2.13)	0.05	Yes
• Overall trip Satisfaction	6.18 (0.66)	6.19 (0.71)	0.887	Yes

\*\* lower scores indicate higher satisfaction levels here

Results from Table 3.13 show those in the activity sample indicated that they felt significantly less hurried or rushed. Although the other results were not significant the trend showed an improvement in the activity sample over the baseline, which was not evident earlier (Table 3.8). The reason for this was due to the fact that there were more days of bad weather during the activity sample survey period. The results further suggested that the activity sample had a stronger agreement that the trip was full of activities, greater satisfaction with time permitted for each activity and they had a stronger agreement that there was enough time to participate in all of the activities desired. Overall trip satisfaction was also increased for the activity sample. The importance of spending time on the reef was lower for the activity sample. This could be interpreted as a positive factor because the use of activity schedules may lessen the need to spend longer periods of time on the reef.

## **4. DISCUSSION**

### **4.1 Aim 1: To determine demand for activity schedules, and development of the schedules**

The first aim of the research was to determine if current visitors on day reef trips had any desire to use an instrument such as an activity schedule to help plan their day on the reef. The results in Figure 3.1 indicated that 44% of the sample felt that they would have used a schedule and a further 29% said that they did not know. This further 29% may be open to the idea of a schedule, and after explanation of the benefits, they may indeed be willing to use a schedule. These results indicate that there is some demand for an instrument such as an activity schedule, further supported by the fact there was a 90% response rate to requests to use the activity schedules. The results displayed in Table 3.1 indicated that trip satisfaction was positively correlated with elements such as time on the reef, time to participate in activities and time to complete all of the activities desired in the day. These results justified the further development of schedules to be measured by satisfaction comparisons.

### **4.2 Aim 2: Evaluation of the activity schedules**

#### **4.2.1 Comparison of satisfaction levels**

In order to measure satisfaction in this research the respondents were asked to rate their satisfaction with a number of elements including time to participate in activities, time on the reef and overall satisfaction. Satisfaction was measured using a number of elements because,

as reported by Pizam, Neumann, and Reichel (1978) and Whipple and Thach (1988), there can be a 'halo' effect wherein satisfaction with one component can lead to satisfaction/dissatisfaction with the whole tour.

The satisfaction levels of visitors prior to the use of the activity schedules were extremely high making it difficult to obtain significant differences for satisfaction if there were to be improvements caused by the activity schedules. To counter this problem a number of elements of satisfaction were measured. This meant that success of the schedules could still be evaluated by looking for improvements in the range of elements measured. If a trend of satisfaction increases were to emerge then the activity schedules could be deemed to be a success.

#### 4.2.2 The effect of Weather on Satisfaction

The effect of bad weather and seasickness on visitors emerged as a factor that had a high negative influence on trip satisfaction. Those who indicated they had a less satisfying day attributed this to the fact the weather was bad or that they were seasick, an external attribution. As the weather is an external factor, its influence was removed so the satisfaction levels of the baseline and activity samples could be accurately compared against one another for the purpose of evaluating the activity schedules.

#### 4.2.3 Comparison of Baseline and Activity Samples

A series of ttests were calculated to compare the satisfaction of visitors in the baseline sample with those in the activity sample, those indicating weather and seasickness as a negative effect were removed. The results of the analysis were previously displayed in Table 3.14. Overall the activity sample showed the trend of an increase in satisfaction as predicted. The activity sample felt significantly less hurried or rushed.

The results from the other analyses indicated that satisfaction increased for the activity sample across several factors. This means those using activity schedules had higher satisfaction levels than the baseline sample. The activity sample had higher overall trip satisfaction, greater satisfaction with the time permitted for each activity, a stronger agreement that the trip was full of activities and a stronger agreement that there was enough time to participate in all of the desired activities. Also, the importance of spending time on the reef was reduced for the activity sample as they knew by using a schedule they could complete all of the desired activities, therefore removing the need for longer time to be spent on the reef. Satisfaction



levels for each of the activity schedules were also found to be extremely high for each of the schedules, thus indicating that the schedules themselves were also found to be satisfying elements for the visitors.

## 5. CONCLUSION

Activities have been shown in the literature to be an important element when looking to segment visitors. In this research, the importance of activities was taken one step further and activities were used to segment visitors on day reef trips for the development of activity schedules. The results indicated that distinct groups of visitors can be clustered according to activity participation for the development of activity schedules.

To evaluate the schedules, satisfaction levels of visitors were compared with a sample of visitors who did not use the schedules as a guide for their day on the reef. After the first analysis the results showed no improvements in satisfaction which could be attributed to the activity schedules. Further analysis revealed that the effect of bad weather and seasickness had a dominant negative effect on visitor satisfaction. As the effect of weather was an external factor and can not be changed by the operator nor the activity schedule, its effect was removed from the analysis. In doing this, an accurate evaluation of the schedules was then possible without the influence of any confounding factors.

Further analysis then displayed that the use of activity schedules had increased satisfaction across a number of elements which collectively indicated trip satisfaction. This means it can be concluded that visitor satisfaction on one-day commercial reef trips can be enhanced through the use of activity schedules to guide visitors in activity participation throughout their day. Thus, in this research, activity schedules were successfully created for visitors on one-day commercial reef trips and these schedules were found to increase the satisfaction levels of tourists to the reef.

## **6. ACKNOWLEDGMENTS**

There are many people I would like to thank and express my appreciation for, in helping me to complete my thesis. Firstly a big thank you to my supervisor Dr. Gianna Moscardo for all her support, time and efforts in helping me to complete my thesis, and keeping me on track throughout the year.

Also, thank you for all of the staff at Pure Pleasure for their assistance and for allowing me to travel on the cruises. Special thanks to Trudy Wilson for her time in making all the arrangements for me.

A big thank you to the CRC Reef Research Centre for providing me with an Augmentative Research Grant. The money was a big help in allowing me to complete my research.

Finally a big thank you to my parents for all of their support, encouragement and threats over the years. It was all greatly appreciated.

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## Appendix A: The Activity Schedules developed for satisfaction measurement



### High and Dry Activity Schedule No.3

- 11:30** Boat arrives at the reef pontoon.  
Spend a few moments to familiarise yourself to your surroundings whilst the crew prepare the pontoon for the day.
- 11:45-12:15** Enjoy a ride on the Glass Bottom Boat  
Experience the wonders of the Great Barrier Reef without even getting your feet wet. Our experienced guide will take you over the most beautiful sites and give you an ecology of the reef and its 'inhabitants'.
- 12:30-1:15** Smorgasbord lunch  
Help yourself to the delights of the tasty smorgasbord lunch. A selection of fresh seafood, chicken and meats, local fresh fruits and salads all await your enjoyment.
- 1:15-1:45** Spend a while to let your lunch digest, whilst relaxing in the shade of the pontoon and absorbing the beauty of the crystal clear waters of the Great Barrier Reef.
- 1:45-2:15** Take a second ride on the Glass Bottom Boat
- 2:15-2:45** Spend the rest of the afternoon relaxing on the pontoon.  
Take some time to enjoy the North Queensland sun or just relax in the shade and enjoy the sea breeze
- OR**
- 1:20-2:45** Spend the afternoon on the fishing vessel.  
Travel to the outer edge of the reef, approximately 750 metres away from the reef pontoon. Pilchards and Squid are used for bait and all legal sized fish caught will be cleaned and given to the passenger to take home and enjoy.
- 2:45** Time to board the boat and prepare for the journey home.  
After signing off, enjoy the spectacle of the fish feeding before settling back and enjoying the ride back to Townsville.

*We Hope you enjoyed*  
**YOUR SPECIAL DAY**  
*on the Outer Barrier Reef.*

## Relaxation Seekers

### Activity Schedule No.2

- 11:30** Boat arrives at the reef pontoon.  
Spend a few moments to familiarise yourself to your surroundings whilst the crew prepare the pontoon for the day.
- 11:30-12:30** Snorkelling.  
Time to change into your swimsuit and experience the reef first hand. Spend a while snorkelling and exploring the beauty of the Outer Reef. Please remember though, take care not to stand on any coral whilst out on the reef.
- 12:30-1:05** Smorgasbord lunch  
Help yourself to the delights of the tasty smorgasbord lunch. A selection of fresh seafood, chicken and meats, local fresh fruits and salads all await your enjoyment.
- 1:05-1:30** Enjoy a ride on the glass bottom boat  
Experience the wonders of the Great Barrier Reef without even getting your feet wet. Our experienced guide will take you over the most beautiful sites and give you an ecology of the reef and its 'inhabitants'.
- 1:35-2:40** Spend the remainder of the afternoon snorkelling.  
Enjoy the delights of Australia's Great Barrier Reef first hand. Please remember though not to stand on the coral whilst snorkelling as it is very delicate and may break easily.
- 2:45** Time to board the boat and prepare for the journey home.  
After signing of, enjoy the spectacle of the fish feeding before settling back and enjoying the ride back to Townsville.

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**YOUR SPECIAL DAY**  
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## Relaxation Seekers

### Activity Schedule No.2

- 11:30** Boat arrives at the reef pontoon.  
Spend a few moments to familiarise yourself to your surroundings whilst the crew prepare the pontoon for the day.
- 11:45-12:15** Enjoy a ride on the Glass Bottom Boat.  
Experience the wonders of the Great Barrier Reef without even getting your feet wet. Our experienced guide will take you over the most beautiful sites and give you an ecology of the reef and its 'inhabitants'.
- 12:15-1:00** Snorkelling.  
Time to change into your swimsuit and experience the reef first hand. Spend a while snorkelling and exploring the beauty of the Outer Reef. Please remember though, take care not to stand on any coral whilst out on the reef.
- 1:00-1:30** Smorgasbord lunch  
Help yourself to the delights of the tasty smorgasbord lunch. A selection of fresh seafood, chicken and meats, local fresh fruits and salads all await your enjoyment.
- 1:35-2:40** Spend the remainder of the afternoon snorkelling.  
Enjoy the delights of Australia's Great Barrier Reef first hand. Please remember though not to stand on the coral whilst snorkelling as it is very delicate and may break easily.
- 2:45** Time to board the boat and prepare for the journey home.  
After signing of, enjoy the spectacle of the fish feeding before settling back and enjoying the ride back to Townsville.

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## Activity Seekers

### Activity Schedule No.1

- 11:30** Boat arrives at the reef pontoon.  
Spend a few moments to familiarise yourself to your surroundings whilst the crew prepare the pontoon for the day.
- 11:45-1:05** Fishing trip.  
Travel to the outer edge of the reef, approximately 750 metres away from the reef pontoon. Pilchards and Squid are used for bait and all legal sized fish caught will be cleaned and given to the passenger to take home and enjoy.
- 1:05-1:30** Smorgasbord lunch  
Help yourself to the delights of the tasty smorgasbord lunch. A selection of fresh seafood, chicken and meats, local fresh fruits and salads all await your enjoyment.
- 1:45-2:15** Glass Bottom Boat  
Experience the wonders of the Great Barrier Reef without even getting your feet wet. Our experienced guide will take you over the most beautiful sites and give you an ecology of the reef and its 'inhabitants'.
- 2:15-2:45** Snorkelling.  
Time to change into your swimsuit and experience the reef first hand. Spend a while snorkelling and exploring the beauty of the Outer Reef. Please remember though, take care not to stand on any coral whilst out on the reef.
- OR**
- 1:40-2:45** Snorkel the rest of the day.  
Spend the remainder of the day enjoying the delights of Australia's' Great Barrier Reef first hand. Please remember though not to stand on the coral whilst snorkelling as it is very delicate and may break easily.
- 2:45** Time to board the boat and prepare for the journey home.  
After signing of, enjoy the spectacle of the fish feeding before settling back and enjoying the ride back to Townsville.

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## Activity Seekers

### Activity Schedule No.1

- 11:30** Boat arrives at the reef pontoon.  
Spend a few moments to familiarise yourself to your surroundings whilst the crew prepare the pontoon for the day.
- 11:45-12:15** Enjoy a ride on the Glass Bottom Boat  
Experience the wonders of the Great Barrier Reef without even getting your feet wet. Our experienced guide will take you over the most beautiful sites and give you an ecology of the reef and its 'inhabitants'.
- 12:15-12:50** Snorkelling.  
Time to change into your swimsuit and experience the reef first hand. Spend a while snorkelling and exploring the beauty of the Outer Reef. Please remember though, take care not to stand on any coral whilst out on the reef.
- 12:50-1:20** Smorgasbord lunch  
Help yourself to the delights of the tasty smorgasbord lunch. A selection of fresh seafood, chicken and meats, local fresh fruits and salads all await your enjoyment.
- 1:20-2:45** Fishing trip.  
Travel to the outer edge of the reef, approximately 750 metres away from the reef pontoon. Pilchards and Squid are used for bait and all legal sized fish caught will be cleaned and given to the passenger to take home and enjoy.
- 2:45** Time to board the boat and prepare for the journey home.  
After signing of, enjoy the spectacle of the fish feeding before settling back and enjoying the ride back to Townsville.

*We Hope you enjoyed*

**YOUR SPECIAL DAY**

*on the Outer Barrier Reef.*

**Appendix B: Results of the cross tabulations for the baseline and activity sample  
with age level, gender and previous visits as the dependent variable.**

**GROUP by AGE**

		AGE						
		Under20	21-30	31-40	41-50	51-60	61 & over	Row
GROUP	Count	1	2	3	4	5	6	Total
Baseline	Row Pct							
Sample	Col Pct							
1	8	38	25	17	13	10	111	
	7.2	34.2	22.5	15.3	11.7	9.0	37.5	
	33.3	43.7	48.1	30.4	27.1	34.5		
2	16	49	27	39	35	19	185	
	8.6	26.5	14.6	21.1	18.9	10.3	62.5	
	66.7	56.3	51.9	69.6	72.9	65.5		
Column	24	87	52	56	48	29	296	
Total	8.1	29.4	17.6	18.9	16.2	9.8	100.0	

Statistic	Value	ASE1	Approximate Significance.
Goodman & Kruskal Tau: with AGE dependent	.00617	.00447	.10519

**GROUP by PREVIS**

		PREVIS		
		Yes	No	Row
GROUP	Count	1	2	Total
Baseline	Row Pct			
Sample	Col Pct			
1	44	67	111	
	39.6	60.4	37.1	
	32.4	51.1		
2	92	96	188	
	48.1	51.1	62.9	
	67.6	58.9		
Column	136	163	299	
Total	45.5	54.5	100.0	

Statistic	Value	ASE1	Approximate Significance.
Goodman & Kruskal Tau: with PREVIS dependent	.00814	.01033	.11946 *2



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GROUPBY SEX

	Count Row Pct Col Pct	SEX		Row Total
		Male	Female	
		1	2	
GROUP	1	53	57	110
Baseline		48.2	51.8	37.9
Sample		38.7	37.3	
	2	84	96	180
Activity		46.7	53.3	62.1
Sample		61.3	62.7	
Column Total		137	153	290
		47.2	52.8	100.0

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Statistic	Value	ASE1	Approximate Significance.
Goodman & Kruskal Tau: with SEX dependent	.00022	.00173	.80232

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